



# LUBRICATION, ELECTRICAL, AND PARTS MANUAL



## METAL LATHE MODEL: PL-2080

Baileigh Industrial, Inc.  
P.O. Box 531  
Manitowoc, WI 54221-0531  
Phone: 920.684.4990  
Fax: 920.684.3944  
[sales@baileighindustrial.com](mailto:sales@baileighindustrial.com)

BOOK 2 of 3

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## Table of Contents

LUBRICATION AND MAINTENANCE .....	1
Quick Change Gear Box.....	3
Accessing and Cleaning the Coolant System .....	6
Oils for Lubricating Coolant .....	6
Inactive/Storage.....	7
ELECTRICAL SCHEMATIC COMPONENTS .....	8
ELECTRICAL SCHEMATIC (upper) .....	9
ELECTRICAL SCHEMATIC (lower) .....	10
ELECTRICAL PANEL .....	11
TROUBLESHOOTING .....	12
HEADSTOCK ASSEMBLY 1/8.....	16
HEADSTOCK ASSEMBLY 2/8.....	17
HEADSTOCK ASSEMBLY 3/8.....	18
HEADSTOCK ASSEMBLY 4/8.....	19
HEADSTOCK ASSEMBLY 5/8.....	20
HEADSTOCK ASSEMBLY 6/8.....	21
HEADSTOCK ASSEMBLY 7/8.....	22
HEADSTOCK ASSEMBLY 8/8.....	23
HEADSTOCK PARTS IDENTIFICATION .....	24
GEARBOX ASSEMBLY 1/2 .....	31
GEARBOX ASSEMBLY 1/2- A-A .....	32
GEARBOX ASSEMBLY 1/2- B-B.....	33
GEARBOX ASSEMBLY 1/2- C-C.....	34
GEARBOX ASSEMBLY 1/2- D-D.....	35
GEARBOX ASSEMBLY 1/2- E-E .....	36
GEARBOX ASSEMBLY 2/2 .....	37
GEARBOX PARTS IDENTIFICATION .....	38
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 1/8.....	44
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 2/8.....	45
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 3/8.....	46
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 4/8.....	47
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 5/8.....	48
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 6/8.....	49
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 7/8.....	50
APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 8/8.....	51
APRON PARTS IDENTIFICATION (rapid traverse device) .....	52



## LUBRICATION AND MAINTENANCE



**WARNING:** Make sure the electrical disconnect is OFF before working on the machine.

Maintenance should be performed on a regular basis by qualified personnel.

Always follow proper safety precautions when working on or around any machinery.

Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; DO NOT overload the machine or make any unauthorized modifications.



*Note: Proper maintenance can increase the life expectancy of your machine.*

### Installation Maintenance

- Check for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.

### Daily Maintenance

- Check for any unsafe conditions and fix immediately.
- Do a general cleaning by removing dust and metal chips from the machine.
- Top off the coolant tank. (80% of full tank capacity)
- Clean drain screen.
- Check that any guarding, shields, and emergency stop are in good working order.
- Inspect brake pedal and brake switch for proper operation.
- Wipe down and re-oil slide ways.

### Weekly Maintenance

- Thoroughly clean the machine including the coolant tank.
- Check sight glasses for gear oil levels (add oil as needed)
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.



### **3 Month Maintenance**

- After initial 3 months replace the headstock, gearbox, and apron oil and then every six months after that.
- Check that all nuts and bolts are properly tightened.

### **Headstock**

To fill the head stock, first take off the end gear cover. Remove the plug from the street elbow as indicated with the arrow in (fig. 64). Fill with 2.1 gallon (8 liters) of Shell Tellus #22 oil, or until the level in the sight glass is at the halfway mark. The first oil change should be after approx. 200 hours. Thereafter about every 6 months.

To drain the oil, connect a hose or tube to the valve shown below. Turn the handle 90° clockwise (cw) to open the valve.



figure 64



Drain Valve



## Quick Change Gear Box

To fill the Gear Box, first take off the front access cover by removing the two screws as shown in (fig. 65). Fill with 1.85 gallon (7 liters) of Shell Tellus #68 oil or until the level in the sight glass is at the halfway mark. Replace the cover. Change oil every 6 months.

The reservoir is an oil bath (dip)

To drain the reservoir, remove the drain plug on the front side bottom as indicated in (fig. 62). Drain the used oil into a container with a minimum capacity of 2 gallons (7.57 liters). Replace the plug and fill the reservoir as described above.

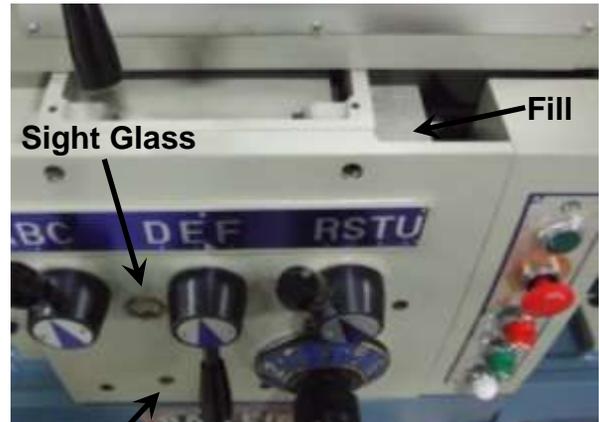


figure 65

## Apron

The apron is lubricated from an internal reservoir of oil. Ensure that the sight gauge (fig. 67) shows oil at the halfway mark.

To fill the apron, remove the fill cap (fig. 66). Add 3/4 gallon (2.8 liters) of Shell Tellus #68 oil. The drain plug is located at the bottom of the apron (fig. 67).



figure 66

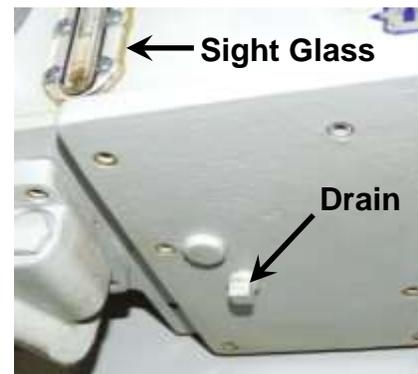


figure 67



### Lead screw, Feed Rod, and Half Nut

Lubricate surfaces daily with brush or cloth. Lead screw must be cleaned and threads lightly oiled. Remove cap on lead screw bracket to fill with Shell Tellus #32 oil. To replace oil, remove the drain plug as shown in (fig. 68).

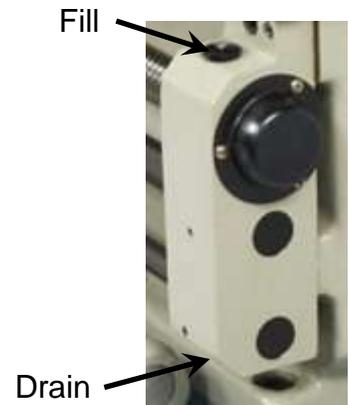


figure 68

### Bed Ways, Saddle, and Cross Slide

Before operation, push the one-shot pump (1 – 3) times, three times a day under normal usage. The oil comes from the apron reservoir. The oil flow is controlled with the lube flow adjustor.

Lube Flow Adjustor

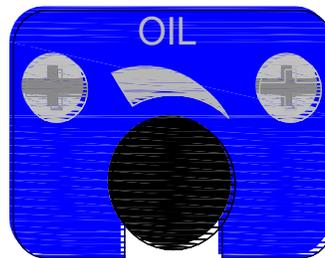


figure 69

### Tail Stock

Oil the tailstock daily at the three oil fittings located at the top of the tailstock (see fig. 70). Lubricate with 2 – 3 drops of light lubricating oil.



figure 70



### Quick Change Gears

Inspect and grease the gear teeth weekly. The gears must not be allowed to run dry. Re-attach gear cover after lubricating.



figure 71

### Compound Rest, Cross Slide, Feed Screw, & Nut

Lubricate indicated fittings (fig. 72) with 2 – 3 drops daily, or as needed, with a Shell Tellus 32 oil or equivalent. There are (4) grease fittings on the compound slide and (2) grease fittings on the cross traverse slide.

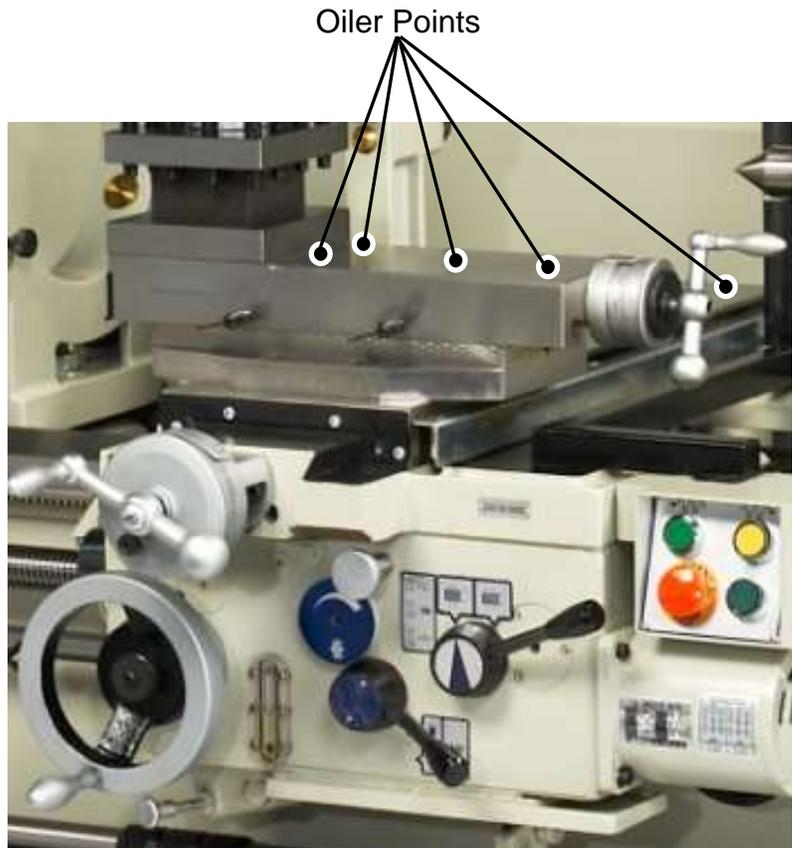


figure 72



### **Oil Disposal**

- Used oil products must be disposed of in a proper manner following your local regulations.

### **Accessing and Cleaning the Coolant System**

- The coolant tank is located at the back of the lathe and is an integral part of the frame. See (fig. 73)
- Remove the rear cover to access the reservoir, the pump, and the motor.
- Suction the coolant from the tank, and wash out any dirt and debris. (Check for anything that might be obstructing the pump inlet.)
- Clean any debris from the coolant return screen.
- Refill the tank with coolant solution. (80% of full tank capacity)
- Replace the access cover.



figure 73



figure 74

### **Oils for Lubricating Coolant**

Any 10:1 (water to coolant) solution will work, however we recommend Baileigh B-Cool 20:1 (water to coolant) biodegradable metal cutting fluid. It has excellent cooling and heat transfer characteristics, is non-flammable, and extends tool and machine life. Each gallon of concentrate makes 21 gallons of coolant.



### Inactive/Storage

If the Lathe is to be inactive for a long period of time, prepare the machine as follows:

- Detach the plug from the electrical supply panel.
- Remove the chuck, steady rest, follow rest, tool post, and tail stock. Cover with a rust protectant.
- Empty and clean the coolant tank.
- Clean and grease the machine so no bare metal is left unprotected.
- Use desiccant bags (if available) to absorb moisture.
- Cover the machine



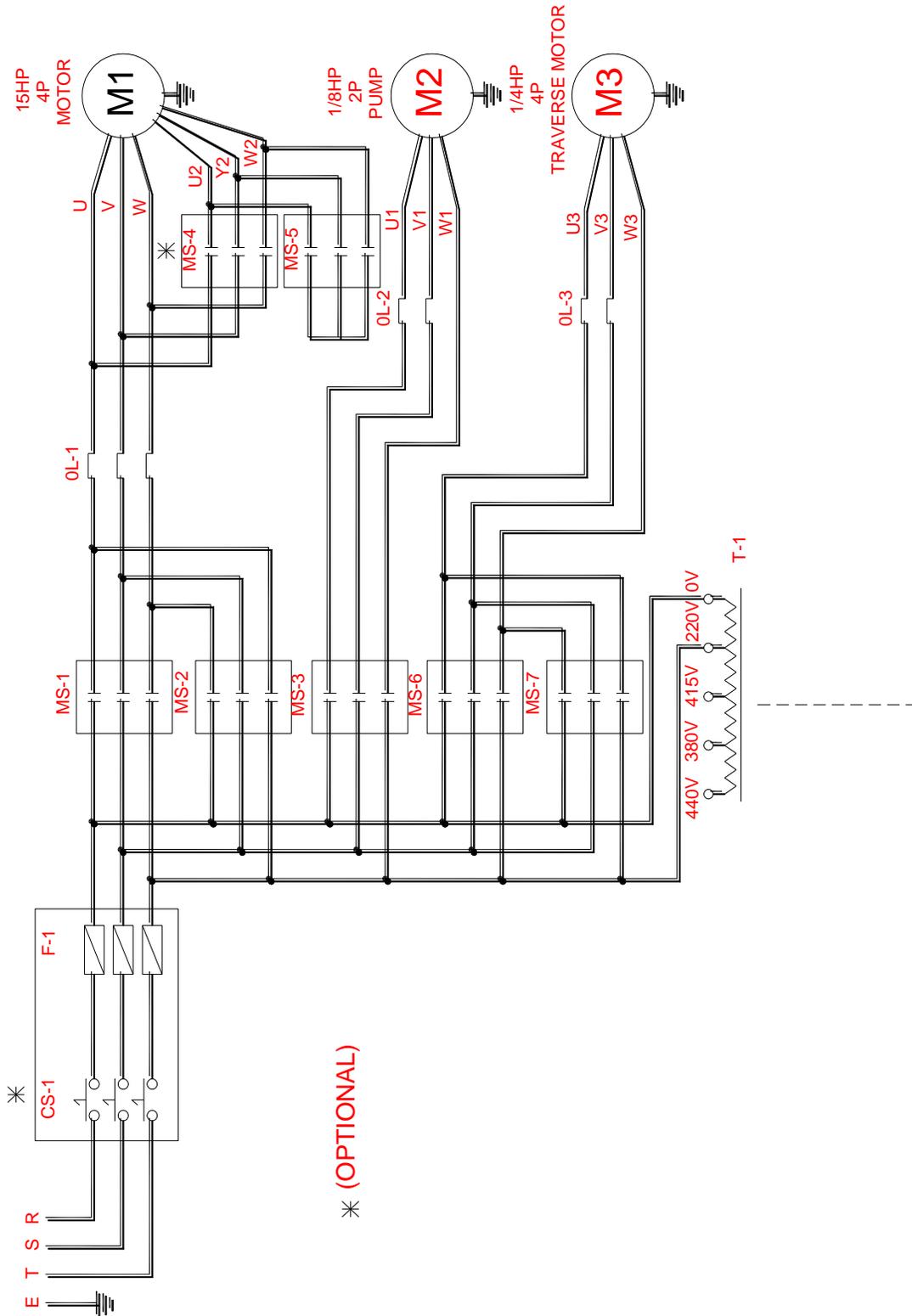
## **ELECTRICAL SCHEMATIC COMPONENTS**

Type	Specification	Name
LS-1	15A,125VACTM1308	Guard Limit Switch (N.O.)
LS-2	15A,125VACTM1308	Chuck Limit Switch (N.C.)
LS-3	15A,125VACTM1308	Brake Limit Switch (N.C.)
LS-4	15A,125VACTM1704	Forward Micro Switch (N.O.)
LS-5	15A,125VACTM1704	Reverse Micro Switch (N.O.)
LS-6	15A,125VACTM7311	Brake Limit Switch (N.C.)
CS-1	KG32A(B) 32A Switch	Brake Limit Switch (N.C.)
CS-2	6A,250VAC,1a	Control Main Switch
CS-3	6A,250VAC,1a	Coolant Pump Switch
F-1	50A/32A	Listed Fuse
F-2	5A/4A	Circuit Fuse
F-3	5A/4A	Circuit Fuse
PL-1	AC12V	Working Light
PL-2	110V	Pilot Lamp
PB-1	10A 250VAC 1a1b	Emergency Stop Push Button
PB-2	6A 250VAC 1a	Inching
PB-3	10A 250VAC 1a1b	Emergency Stop Push Button
PB-4	6A 250VAC 1a	Inching
PB-5	30Ø 1a1b,6A 250VAC G	Longitudinal Rapid Traverse (Left)
PB-6	30Ø 1a1b,6A 250VAC Y	Longitudinal Rapid Traverse (Right)
MS-1	C-35 70A 110V / CN-35	Magnetic Contactor (Spindle Forward)
MS-2	C-35 70A 110V / CN-35	Magnetic Contactor (Spindle Reverse)
MS-3	C-11 20A 110V / CN-11	Magnetic Contactor (Coolant)
MS-4	C-25G 50A 110V / CN-25	Magnetic Contactor
MS-5	C-25G 50A 110V / CN-18	Magnetic Contactor
MS-6	C-11 20A 110V / CN-11	Magnetic Contactor
MS-7	C-11 20A 110V / CN-11	Magnetic Contactor
CR-1	C-11 20A 110V / CN-11	Control Relay
OL-1	RH-35 / 45 110V / RH-35 / 30	Thermal Relay (Spindle F/R)
OL-2	RH-10E / 0.37 110V	Thermal Relay (Coolant)
OL-3	RH-10E / 0.55 110V	Thermal Relay
T-1	150VAC	Control Circuit Transformer
TR	0~5SEC 110VAC	CDX Time



### ELECTRICAL SCHEMATIC (upper)

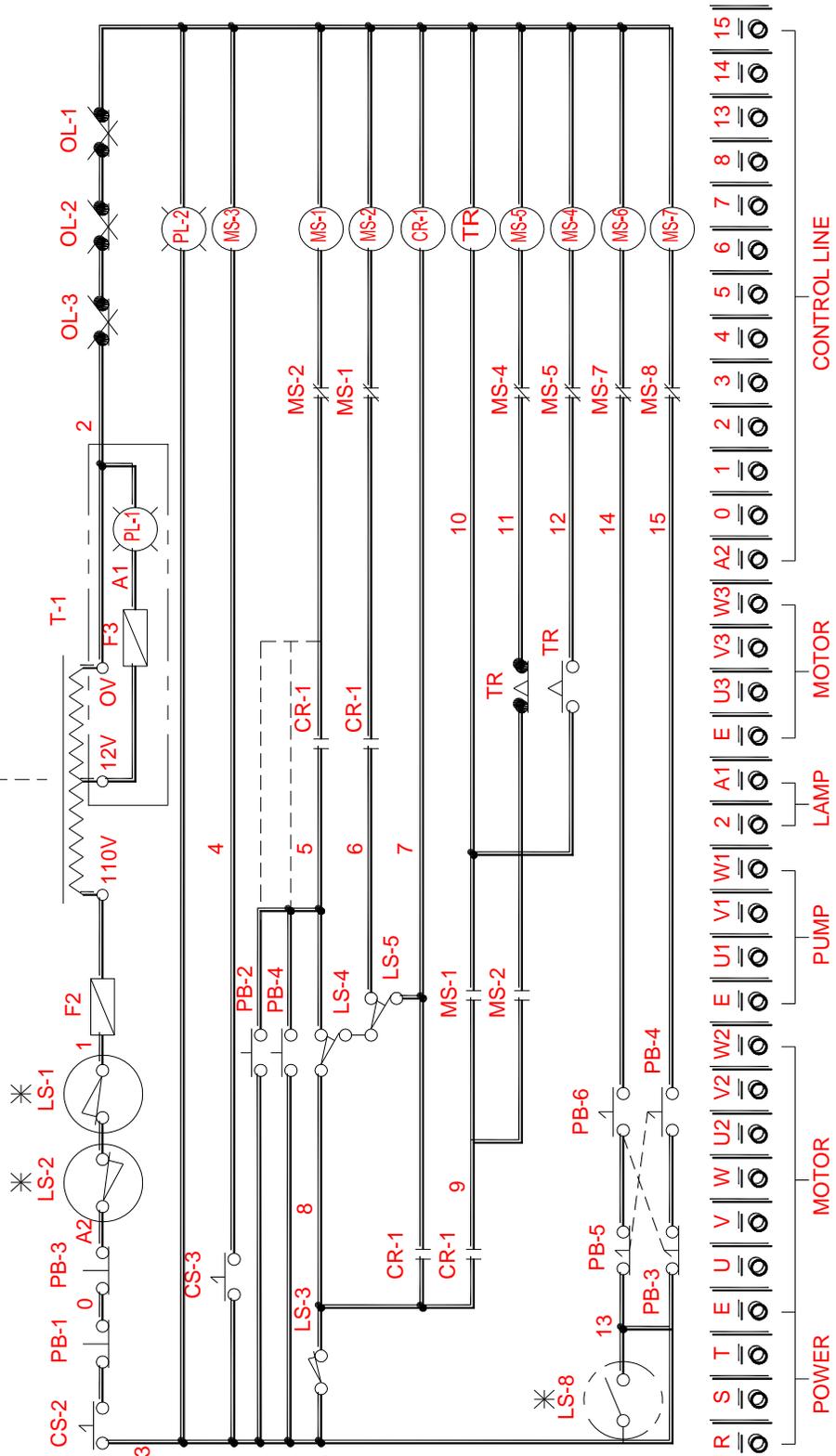
15 Horsepower, External Mounting Box, w/Longitudinal Rapid Traverse





# ELECTRICAL SCHEMATIC (lower)

15 Horsepower, External Mounting Box, w/Longitudinal Rapid Traverse





## ELECTRICAL PANEL





## TROUBLESHOOTING

**⚠ WARNING:** Make sure the electrical disconnect is OFF before working on the machine.

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Motor Does Not Start	No power.	Check the power source.
	Emergency stop button not reset.	Release the emergency button by turning the knob to the right.
	Motor damaged.	Replace motor.
	Motor power cable not connected properly.	Check the cable connection and reconnect cable. Change cable if worn out.
	Motor circuit breaker tripped.	Reset the breaker to ON position.
	Magnetic switch damaged or burned out.	Replace switch.
	Transformer damaged.	Replace transformer.
	Forward/Reverse lever on the carriage is in neutral.	Make sure lever is either in Forward or Reverse position.
	Foot brake limit switch is faulty.	Replace limit switch.
Circuit Breaker Trips	Chuck Guard Raised or faulty micro switch.	Lower guard or replace switch.
	Short circuit in power cord or plug.	Inspect cord or plug for damaged insulation or shorted wires.
	Loose connections or short circuit in motor.	Inspect all motor connections.
	Incorrect circuit breaker installed.	Install correct circuit breaker.



SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Gear Change Levers Will Not Shift	Gears not aligned in headstock.	Maintain pressure on the lever while rotating the spindle with the jog button until the gear falls into place.
Poor Surface Finish	Incorrect spindle speed or feed rate. Dull tool or improper tool selection. Depth of cut too much. Too much play in gibs.	Adjust for proper feed rate and spindle speed. Use sharp tools and select proper tool for the application. Use more passes to remove less material. Follow gib adjustment procedure.
Machine Vibrates Excessively at Startup and While Running	Piece part is not properly balanced. Check for broken or worn gear. Unbalanced chuck or faceplate.	Re-position piece part so it is centered with the spindle bore. Inspect gears and replace when necessary. Have chuck or faceplate either re-balanced or replaced.
Excessive Vibration of Tool or Machine While Cutting	Tool holder is loose. Tool not properly supported in tool holder. Removing too much material from piece part in one pass. Gibs are not properly adjusted. Cutting tool dull or broken.	Clean slide and re-tighten tool holder. No more than 1/3 of tool should extend from holder. Secure tool properly. Take more passes and reduce depth of cut. Check gibs and re-adjust if needed. Re-sharpen or replace cutting tool.
Cannot Remove Tool From Tailstock Barrel	Barrel is not retracted completely into tailstock. Taper not properly cleaned before inserting tool.	Turn the tailstock hand wheel until it pushes the tool out from the barrel. Always clean barrel taper before inserting tool.



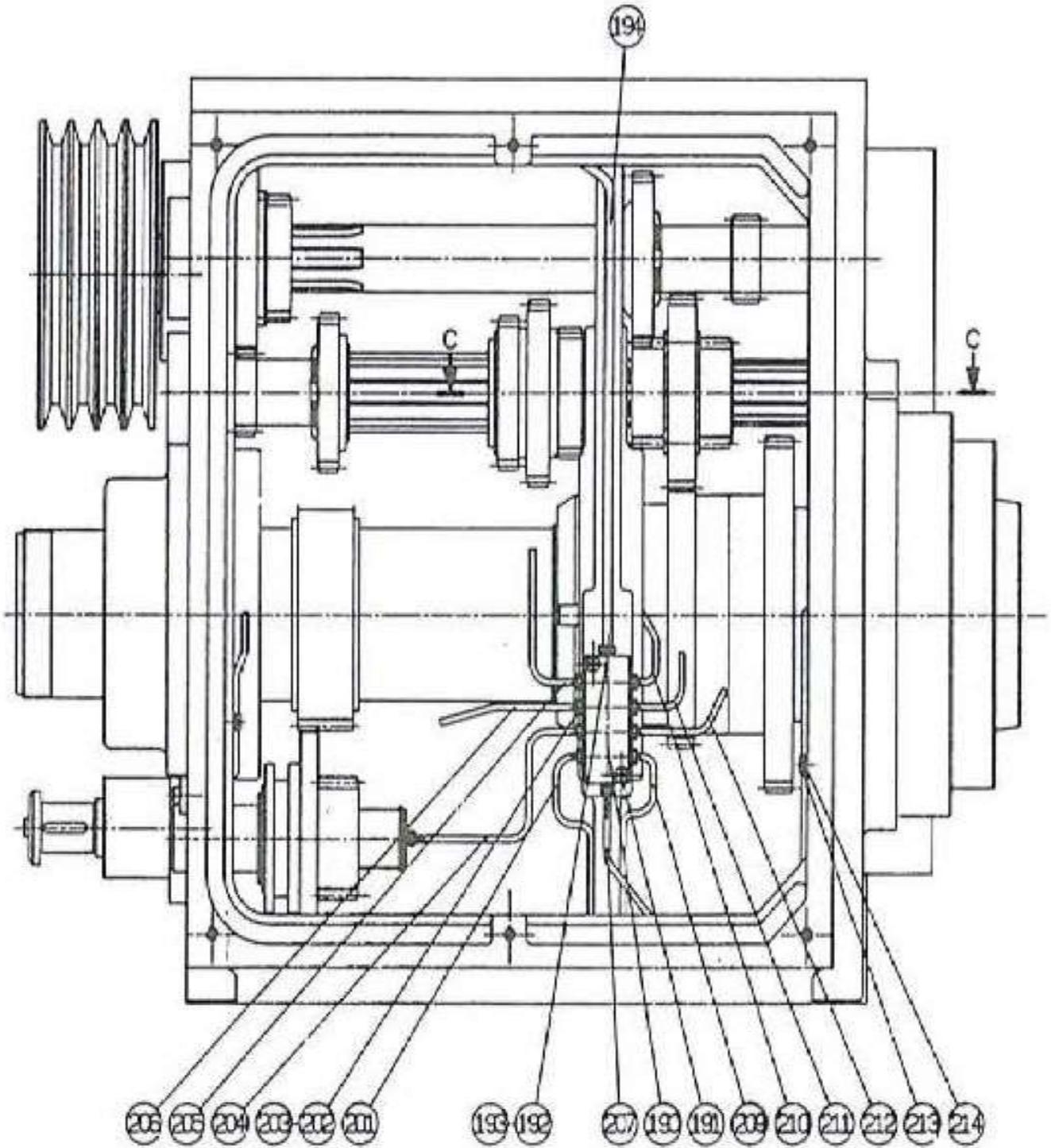
SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Cross Slide, Compound Rest, or Carriage Feed is Loose	Gibs need adjustment.	Follow procedure to re-adjust gibs.
	Hand wheel is loose.	Re-tighten fasteners on hand wheel.
	Mechanism for lead screw worn out or in need of adjustment.	Tighten fasteners on lead screw mechanism. Adjust cross slide for backlash.
Hand wheels are Hard to Turn	Gibs are dirty.	Remove gibs, clean ways, lubricate, replace and re-adjust gibs.
	Gibs may be too tight.	Loosen gibs slightly until wheel turns freely.
	Cross slide backlash setting too tight.	Loosen slightly until free.
Inconsistent Turning Results on Piece Part	Headstock and tailstock not aligned to each other.	Follow procedure to re-align.
	Bed-ways are not level front-to-back or side-to-side.	Re-level machine as necessary.
Jaws of Chuck Will Not Move	Jaws filled with chips and debris.	Remove and clean the jaws, clean and lubricate chuck threads, replace jaws into chuck.
Carriage Will Not Feed or is Hard to Move	Lock lever on carriage is over tightened.	Loosen lock lever so carriage is free to move.
	Gears broken or not engaged.	Adjust or replace gears.
	Gibs may be over tightened.	Loosen gibs slightly.
Tailstock Barrel Will Not Move	Barrel lock lever is tight	Loosen lever
Tool Has Short Edge Life	Cutting speed too high for application.	Reduce cutting speed.
	Cross feed set too high.	Lower cross increase amount of coolant to tool area.
	Insufficient cooling	Add coolant



SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Excessive Machine Noise and Overheating	Excessive material removal from piece part.  Wrong feed rate or spindle speed.  V-Belts are slipping.	Decrease depth of cut.  Use correct feed rates and spindle feed values.  Inspect, tension, and replace belts.

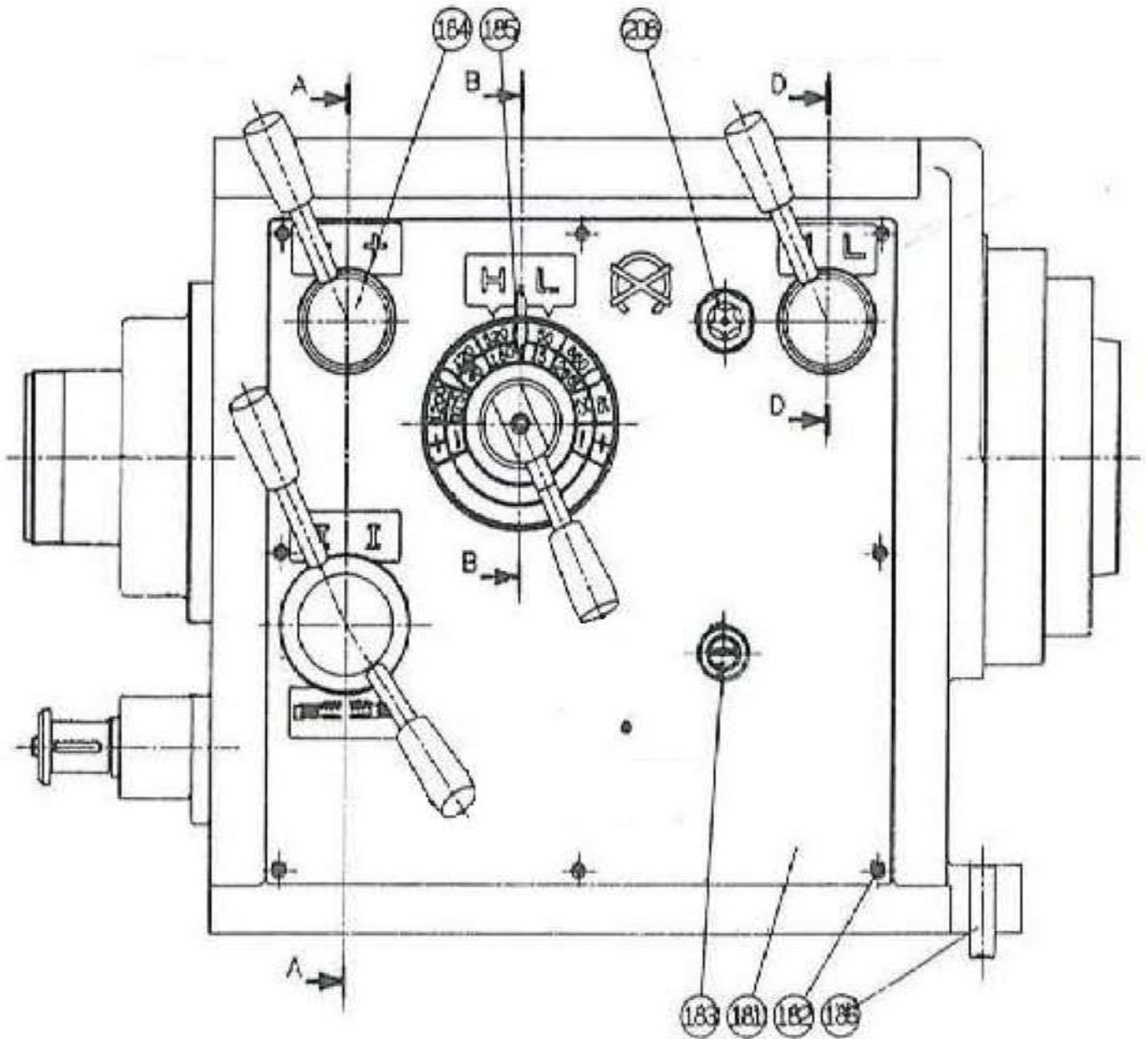


HEADSTOCK ASSEMBLY 1/8



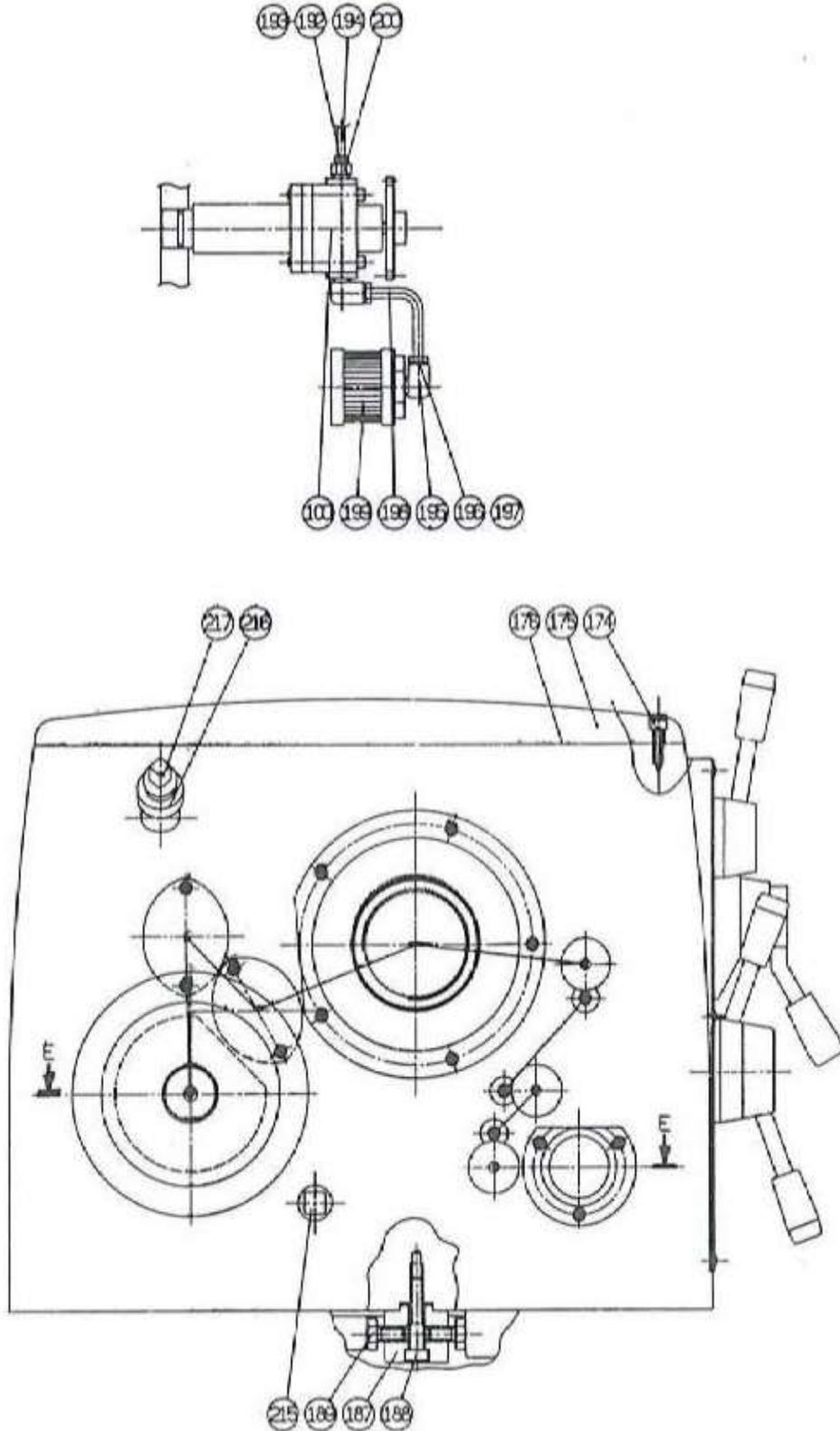


HEADSTOCK ASSEMBLY 2/8



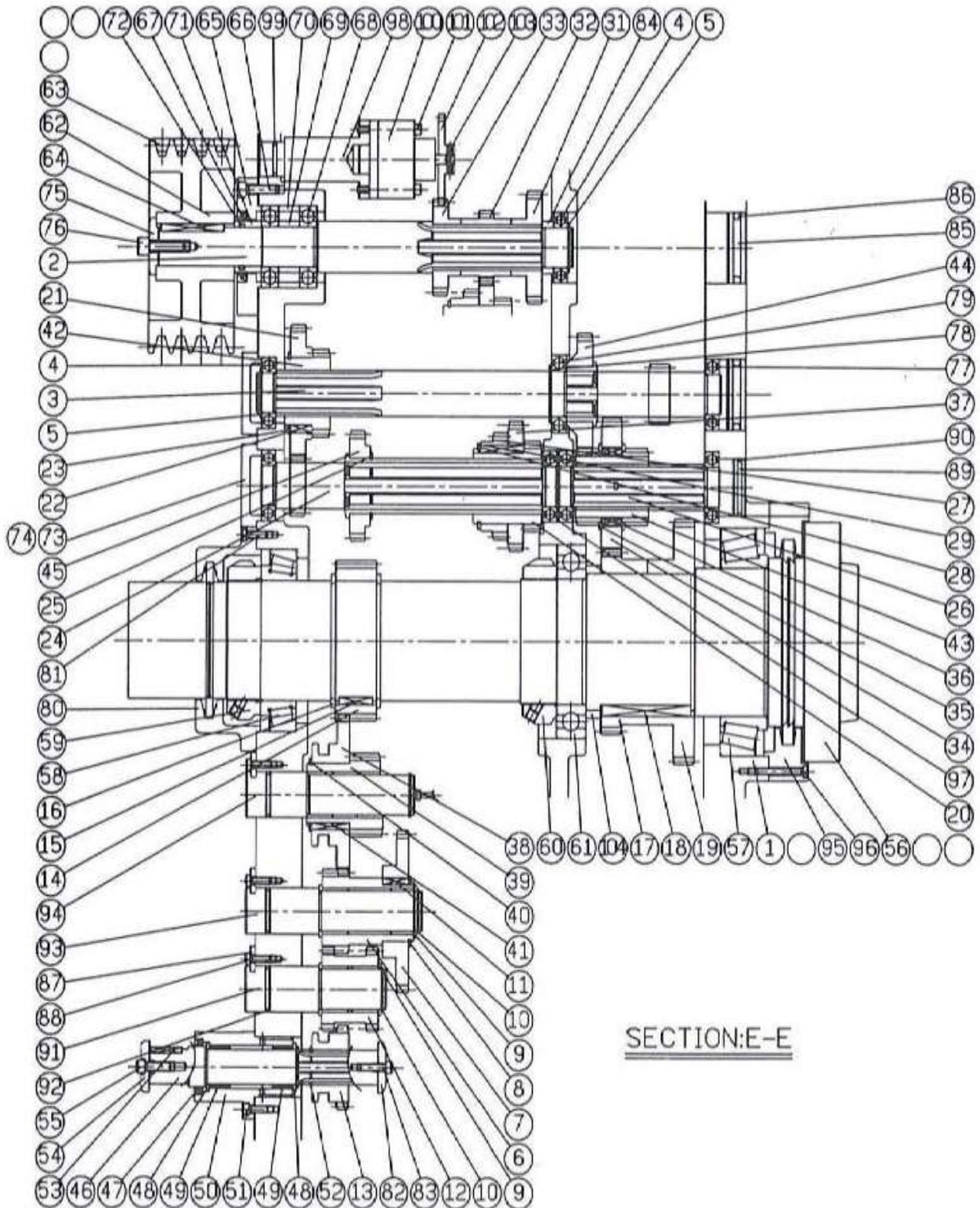


## HEADSTOCK ASSEMBLY 3/8



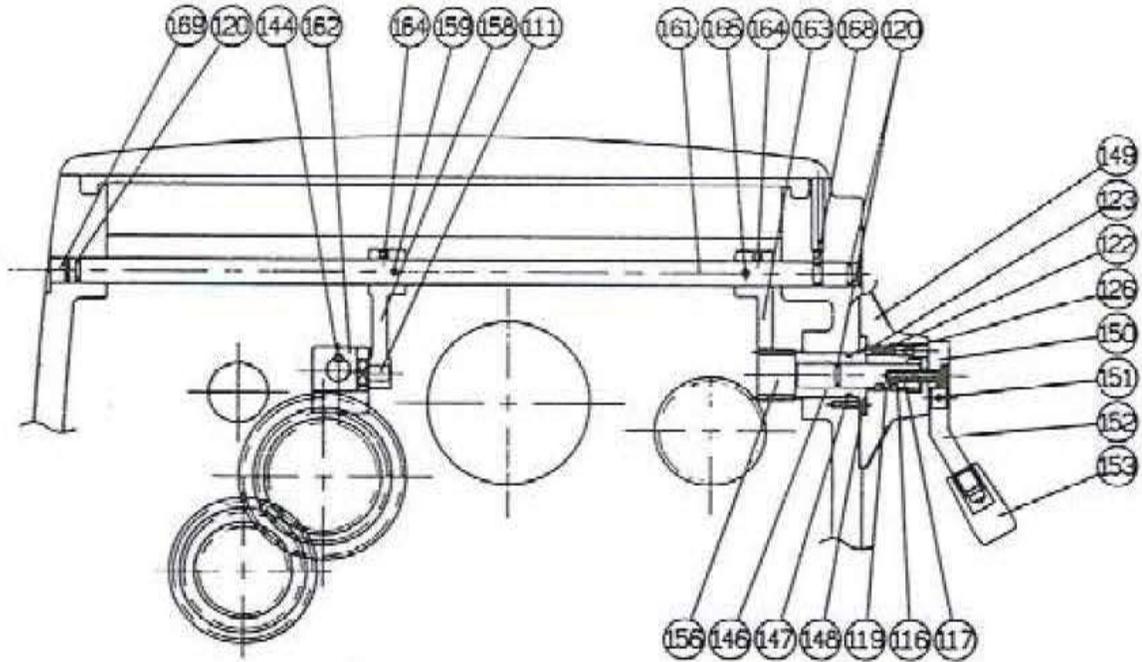


# HEADSTOCK ASSEMBLY 4/8

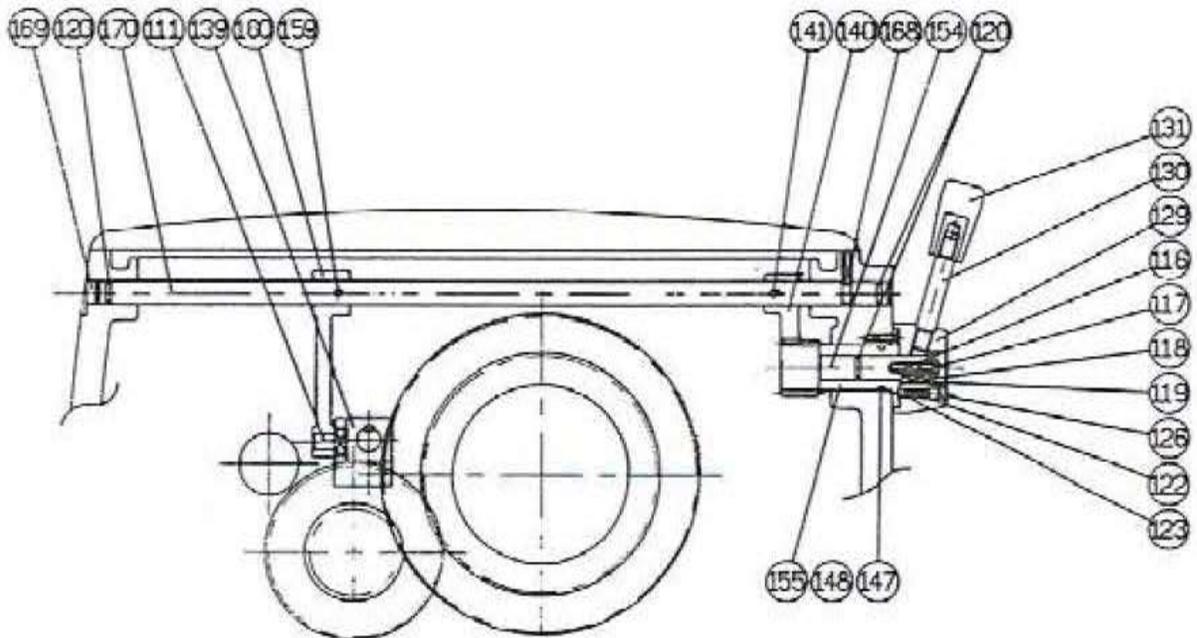




**HEADSTOCK ASSEMBLY 5/8**



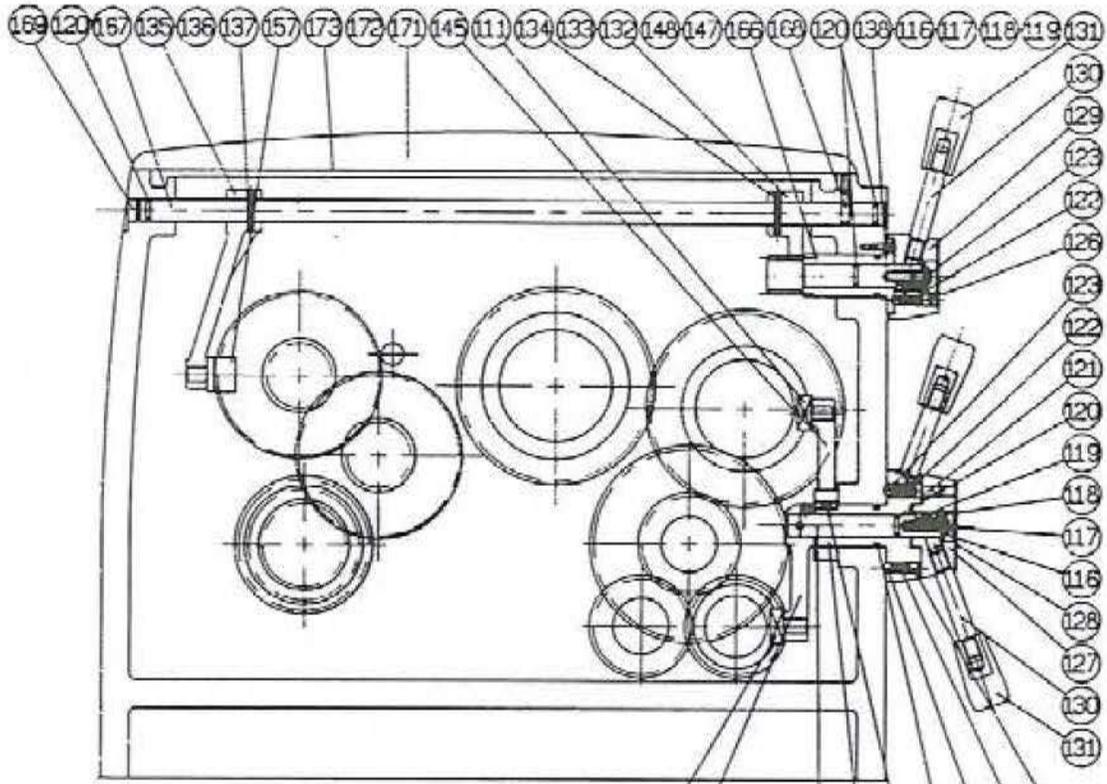
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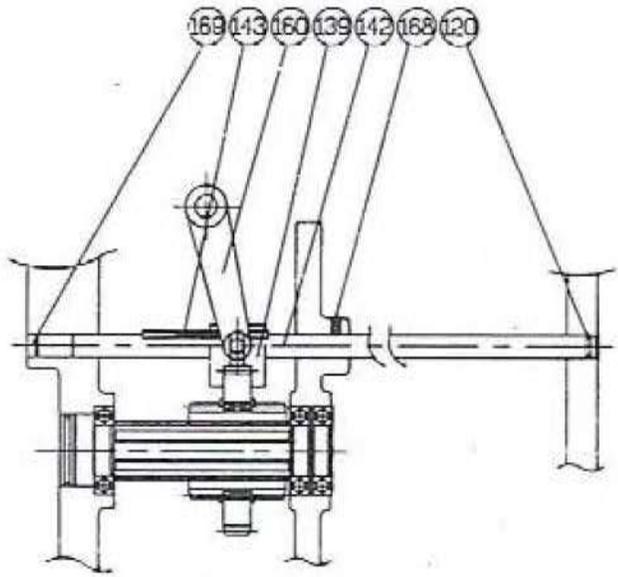
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**HEADSTOCK ASSEMBLY 6/8**



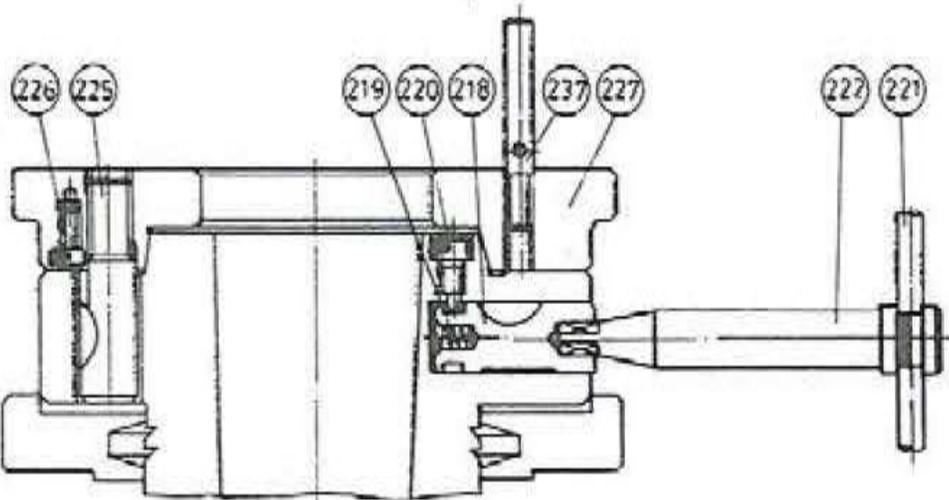
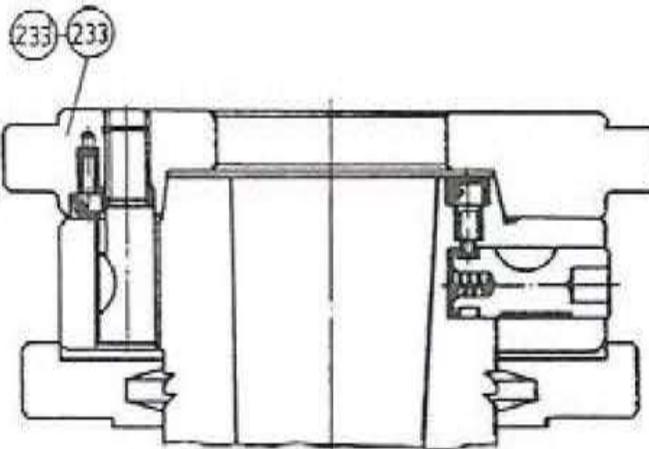
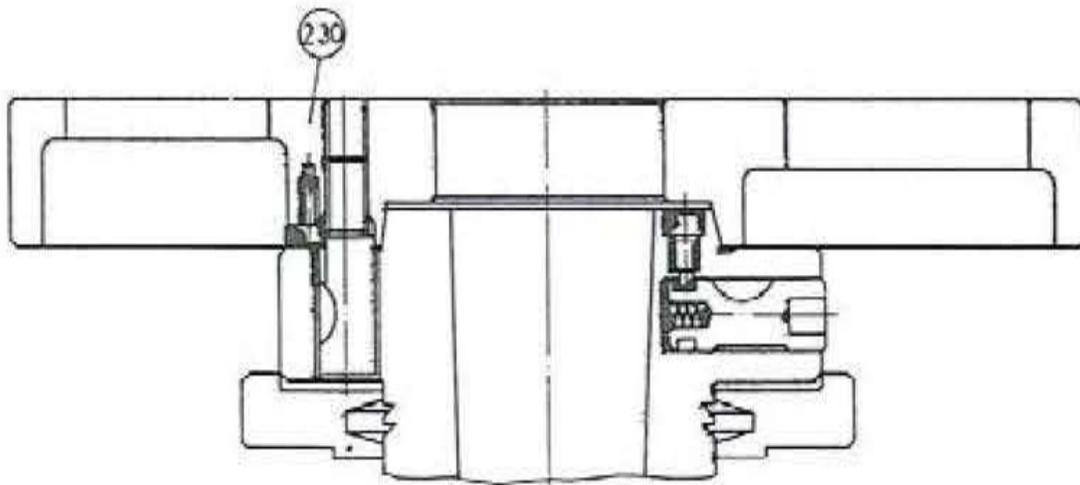
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SECTION: C-C

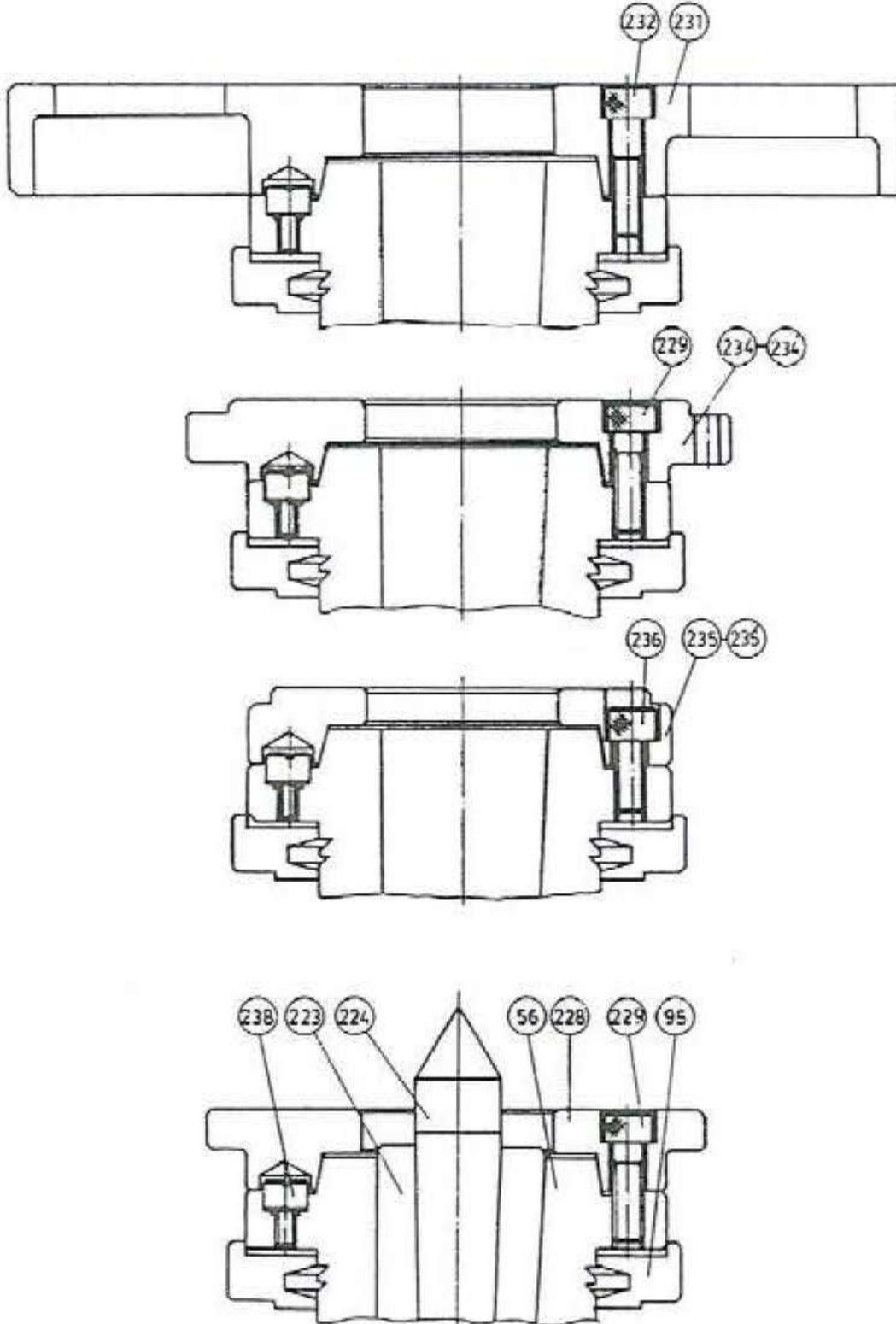


**HEADSTOCK ASSEMBLY 7/8**





**HEADSTOCK ASSEMBLY 8/8**





## HEADSTOCK PARTS IDENTIFICATION

No.	Part No.	Name	Specification	Qty.
1	70-0101-00	Headstock Casting	For 20"	1
2	63-0102-03	Shaft		1
3	63-0103-00	Gear Shaft	D.P9X16T	1
4	RB6007	Bearing	6007	6
5	RR01STW35	Retaining Ring (external)	STW#35	3
6	65-0104A-00	Gear	D.P9X24T	1
7	65-0104B-00	Gear	D.P9X48T	1
8	RR01STW52	Retaining Ring (external)	STW#52	1
9	65-0143A-00	Spacer		4
10	RR01STW#35	Retaining Ring (external)	STW#35	3
11	KY026X6X25	Single Round Head Key	6X6X25L	1
12	65-0105-00	Gear	D.P9X24T	1
13	69-0106-00	Gear	D.P9X29T	1
14	69-0107-00	Gear	D.P9X48T	1
15	KY038X7X35	Double Round Head Key	8X7X35L	1
16	RR01STW#130	Retaining Ring (external)	STW#130	2
17	69-0108-00	Gear	D.P9X75T	1
18	KY0320X12X85	Double Round Head Key	20X12X85L	1
19	65-0109-00	Gear	D.P9X94T	1
20	63-0110-00	Gear	D.P9X26T	1
21	65-0111-00	Gear	D.P9X40T	1
22	KY038X7X20	Single Round Head Key	8X7X20L	1
23	RR01STW#65	Retaining Ring (external)	STW#65	1
24	65-0112A-00	Gear Shaft	D.P9X16T	1
25	RR01STW#48	Retaining Ring (external)	STW#48	1
26	65-0112B-00	Shaft		1
27	63-0113-00	Gear	D.P9X31T	1
28	RR01STW#62	Retaining Ring (external)	STW#62	1
29	KY038X7X40	Single Round Head Key	8X7X40L	1
31	63-0115-00	Gear	D.P9X33T	1
32	63-0116-00	Gear	D.P9X21T	1
33	63-0117-00	Gear	D.P9X28T	1
34	65-0118A-00	Gear	D.P9X40T	1



No.	Part No.	Name	Specification	Qty.
35	RR01STW#65	Retaining Ring (external)	STW#65	2
36	KY0110X6X19	Flat Key	10X6X19L	3
37	63-0119-00	Gear	D.P9X38T	1
38	65-0121A-00	Gear	D.P9X48T	1
39	65-0121B-00	Gear	D.P9X24T	1
40	RR01STW#55	Retaining Ring (external)	STW#55	1
41	KY036X6X36	Single Round Head Key	6X6X36L	1
42	65-0123-00	Gear	D.P9X25T	1
43	65-0124B-00	Gear	D.P9X21T	1
44	65-0127-00	Gear	D.P9X35T	1
45	65-0128-00	Gear	D.P9X32T	1
46	65-0131-00	Shaft		1
47	OSTC35X48X8	Oil Seal	TC35X48X8	1
48	10-0276-00	Spacer		2
49	RBTLA30X37X20	Needle Bearing (TLA3020)	Ø30XØ37X20	2
50	60-0135-00	Bearing Cover		1
51	SW02M6X16	Socket Head Cap Screw	M6XP1.0X16L	3
52	RR01STW#30	Retaining Ring (external)	STW#30	2
53	KY036X6X30	Double Round Head Key	6X6X30L	1
54	50-0207-00	Spacer		1
55	SW02M8X30	Socket Head Cap Screw	M8XP1.25X30L	2
56	69-0132A-00	Spindle	D1-11"	1
56	69-0132B-00	Spindle	A1-11"	1
57	RB32030	Taper Roller Bearing (front)	#32030	1
58	RB6026	Bearing	#6026	1
59	69-0146-00	Locking Nut		1
60	69-0147-00	Locking Nut		1
61	RB32028	Bearing	#32028	1
62	69-0133-00	Pulley		1
63	BT01B83	V-Belt (matched set)	B-83-2108L	4
64	KY038X7X60	Double Round Head Key	8X7X60L	1
65	63-0134-00	Bearing Cover		1
66	SW02M8X30	Socket Head Cap Screw	M8XP1.25X30L	3
67	OSTC45X62X9	Oil Seal	TC45X62X9	1
68	RB6207	Bearing	#6207	2



No.	Part No.	Name	Specification	Qty.
69	63-0135-00	Spacer		1
70	63-0136-00	Spacer		1
71	63-0137-00	Spacer		1
72	OR01P34	Oil Ring	P34	1
73	65-0138-00	Bearing Cover		2
74	SW02M6X20	Socket Head Cap Screw	M6XP1.0X20L	4
75	63-0139-00	Spacer		1
76	SW02M1035	Socket Head Cap Screw	M10XP1.5X35L	1
77	RB6007	Bearing	#6007	1
78	RR01STW#40	Retaining Ring (external)	STW#40	1
79	RB6008	Bearing	#6008	1
80	69-0140-00	Bearing Cover		1
81	SW02M6X20	Socket Head Cap Screw	M6XP1.0X20L	5
82	65-0141-00	Spacer		1
83	SW02M6X25	Socket Head Cap Screw	M6XP1.0X25L	1
84	65-0142-00	Spacer		1
85	63-0143-00	Plug		2
86	OR01P52	O-Ring	P52	2
87	65-0144-00	Spacer		3
88	SW02M6X20	Socket Head Cap Screw	M6XP1.0X20L	3
89	65-0145-00	Plug		1
90	OR02G45	O-Ring	G45	1
91	65-0148-00	Shaft		1
92	OR02G35	O-Ring	G35	3
93	65-0149-00	Shaft		1
94	65-0150-00	Shaft		1
95	69-0151A-00	Bearing Cover		1
95	69-0151B-00	Bearing Cover		1
96	SW02M6X45	Socket Head Cap Screw	M6XP1.0X45L	6
97	69-0152-00	Spacer		1
98	63-0157-00	Pump Bracket		1
99	OR01P24	O-Ring	P24	1
100	50-01148-00	Oil Pump		1
101	SW02M6X55	Socket Head Cap Screw	M6XP1.0X55L	3
102	63-0158-00	Gear		1



No.	Part No.	Name	Specification	Qty.
103	SW14M5X10	Socket Head Set Screw	M5XP0.8X10L	2
104	65-01112-00	Spacer		1
111	65-0168-00	Shifting Block		4
112	65-0169-00	Shifting Arm		1
113	PN03Ø5X30	Spring Pin	Ø5X30L	1
114	SW15M6X8	Socket Head Set Screw	M6XP1.0X8L	1
115	65-0170-00	Shaft		1
116	SW14M5X20	Socket Head Set Screw	M5XP0.8X20L	4
117	17-0504-02	Screw		4
118	50-0167-00	Washer		3
119	KY035X5X15	Double Round Head Key	5X5X15L	4
120	OP01P12	O-Ring	P12	5
121	65-0171-00	Feed Selector Pin		1
122	SG02Ø6XØ0.8X30	Compression Spring	Ø6XØ0.8X30L	5
123	SB01Ø1/4"	Steel Ball	Ø1/4"	5
124	65-0172-00	Lever Head		1
125	KY026X6X16	Single Round Head Key	6X6X16L	1
126	SW14M8X8	Socket Head Set Screw	M8XP1.25X8L	4
127	65-0173-00	Sleeve		1
128	65-0174-00	Indicator		1
129	50-0164-00	Lever Head		2
130	50-0165-00	Shifting Lever		4
131	50-01138-00	Knob		4
132	65-0175-00	Quadrant Gear	M1.75X36T	1
133	SW15M6X8	Socket Head Set Screw	M6XP1.0X8L	1
134	PM03Ø5X32	Spring Pin	Ø5X32L	1
135	69-0176-00	Shifting Block		1
136	SW15M6X8	Socket Head Set Screw	M6XP1.0X8L	1
137	PN03Ø5X30	Spring Pin	Ø5X30L	1
138	65-0177-00	Shaft		1
139	69-0178-00	Speed Changing Fork		1
140	65-0179-00	Quadrant Gear		1
141	PN03Ø5X25	Spring Pin	Ø5X25L	1
142	63-0180-00	Shaft		1
143	KY035X5X90	Double Round Head Key	5X5X90L	1



No.	Part No.	Name	Specification	Qty.
144	KY035X5X65	Double Round Head Key	5X5X65L	1
145	65-0181-00	Shifting Arm		1
146	65-0182-00	Speed Changing Sleeve		1
147	OR01P24	O-Ring	P24	4
148	SW08M5X12	Counter Sunk Flat Screw	M5XP0.8X12L	6
149	50-0189-02	Speed Changing Disk		1
150	50-0191-00	Changing Block		1
151	PN03Ø4X20	Spring Pin	Ø4X20L	1
152	50-0192-00	Lever		1
153	50-0166-00	Knob		1
154	63-0183-00	Shaft		1
155	65-0184-00	Speed Changing Sleeve		1
156	63-0185-01	Shaft		1
157	65-0186-00	Speed Changing Fork		1
158	65-0187-00	Shifting Arm		1
159	PN03Ø5X30	Spring Pin	Ø5X30L	2
160	63-0188-00	Shifting Arm		1
161	65-0196-02	Shaft		1
162	69-0191-00	Speed Changing Fork		1
163	63-0192-00	Quadrant Gear		1
164	SW15M6X8	Socket Head Set Screw	M6XP1.0X8L	2
165	PN03Ø5X30	Spring Pin	Ø5X30L	1
166	65-0193-00	Speed Changing Sleeve		1
167	65-0196-02	Shifting Rod		1
168	SW15M6X12	Socket Head Set Screw	M6XP1.0X12L	4
169	17-0629-01	Plug		7
170	65-0197-00	Shifting Rod		1
171	65-0198-00	Headstock Cover		1
172	SW02M8X25	Socket Head Cap Screw	M8XP1.25X25L	6
173	65-0199-00	Packing		1
181	63-01100-00	Indicator		1
182	SW22M4X8	Socket Round Head Screw	M4XP0.7X8L	8
183	50-01146-00	Oil Sight Glass	HE#30	1
184	50-0168-00	Indicator		1
185	69-01101-00	Indicator		1



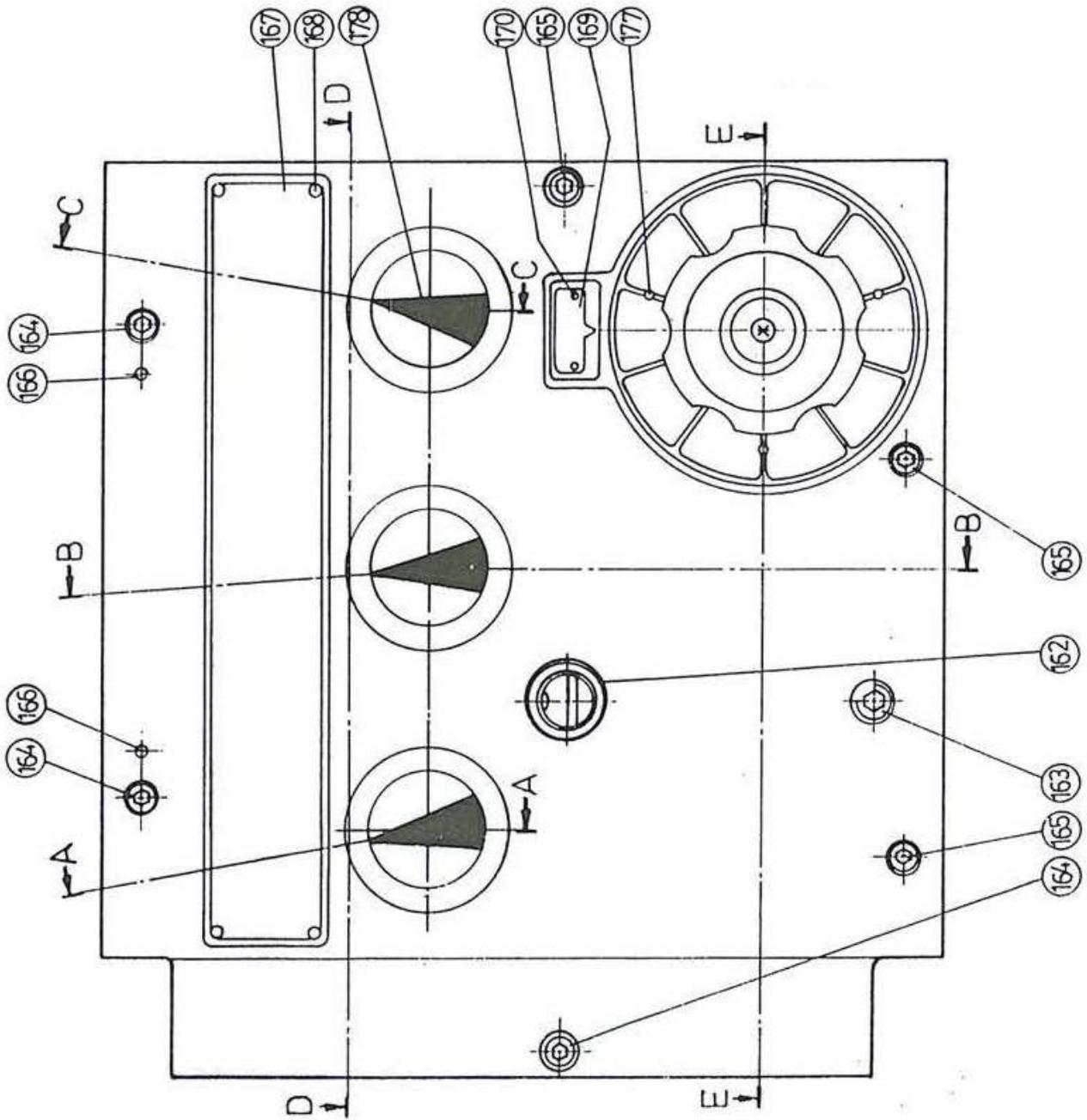
No.	Part No.	Name	Specification	Qty.
186	50-01113-00	Positioning Pin		1
187	50-01114-00	Regulating Block		1
188	SW02M12X55	Socket Head Cap Screw	M12XP1.75X55L	1
189	SW02M12X20	Hexagon Head Screw	M12XP1.75X20L	2
190	65-01134-00	Distributor		1
191	SW04M5X25	Cross Recessed Head Screw	M5XP0.8X25L	2
192	50-01154-00	Thimble Nut		2
193	50-01155-00	Thimble		2
194	OT01Ø6	Oil Tube	Ø6	1
195	50-01149-00	Elbow Joint		2
196	50-01150-00	Thimble Nut		2
197	50-01151-00	Thimble		2
198	OT01Ø8	Oil Tube	Ø8	1
199	50-01152-00	Oil Filter		1
200	50-01153-00	Straight Joint		1
201	OT01Ø4	Oil Tube	Ø4	1
202	50-04133-00	Thimble Nut		14
203	50-04134-00	Thimble		14
204	OT01Ø4	Oil Tube	Ø4	1
205	OT01Ø4	Oil Tube	Ø4	1
206	OT01Ø4	Oil Tube	Ø4	1
207	OT01Ø4	Oil Tube	Ø4	1
208	50-01145-00	Oil Sight Glass	HFTX22	1
209	OT01Ø4	Oil Tube	Ø4	1
210	OT01Ø4	Oil Tube	Ø4	1
211	OT01Ø4	Oil Tube	Ø4	1
212	OT01Ø4	Oil Tube	Ø4	1
213	50-01156-00	Single Tube Clip		8
214	SW04M5X8	Cross Recessed Head Screw	M5XP0.8X8L	8
215	17-0172-00	Drain Plug		1
216	17-0173-00	Elbow		1
217	17-0174-00	Plug		1
218	69-01110-00	Cam		6
219	50-01111-00	Detent Spring		6
220	63-01112-00	Detent Screw		6



No.	Part No.	Name	Specification	Qty.
220	69-01112-00	Detent Screw		6
221	50-01115-00	Key Grip		1
222	69-01116-00	Cam Drive Key		1
223	69-01117-00	Center Sleeve		1
224	63-01118-00	Center	MT#5	1
225	69-01119-00	Cam Lock Stud		6
226	SW02M8X20	Socket Head Cap Screw	M8XP1.25X20L	6
227	69-01120B-00	Driving Plate 12"	D1-11"	1
228	69-01120A-00	Driving Plate 12"	A1-11"	1
229	SW02M20X65	Socket Head Cap Screw	M20XP2.5X65L	2
230	69-01121A-00	Face Plate 24" (optional)	D1-11"	1
231	69-01121A-00	Face Plate 24" (optional)	A1-11"	1
232	SW02M20X65	Socket Head Cap Screw	M20XP2.5X65L	4
233	69-01122A-00	Chuck Back Plate 12" (3-jaw)	D1-11"	1
233	69-01122B-00	Chuck Back Plate 12" (3-jaw)	A1-11"	1
236	SW02M20X40	Socket Head Cap Screw	M20XP2.5X40L	1
237	50-01129-00	Driving Pin		1
238	69-01133-00	Positioning Pin		1

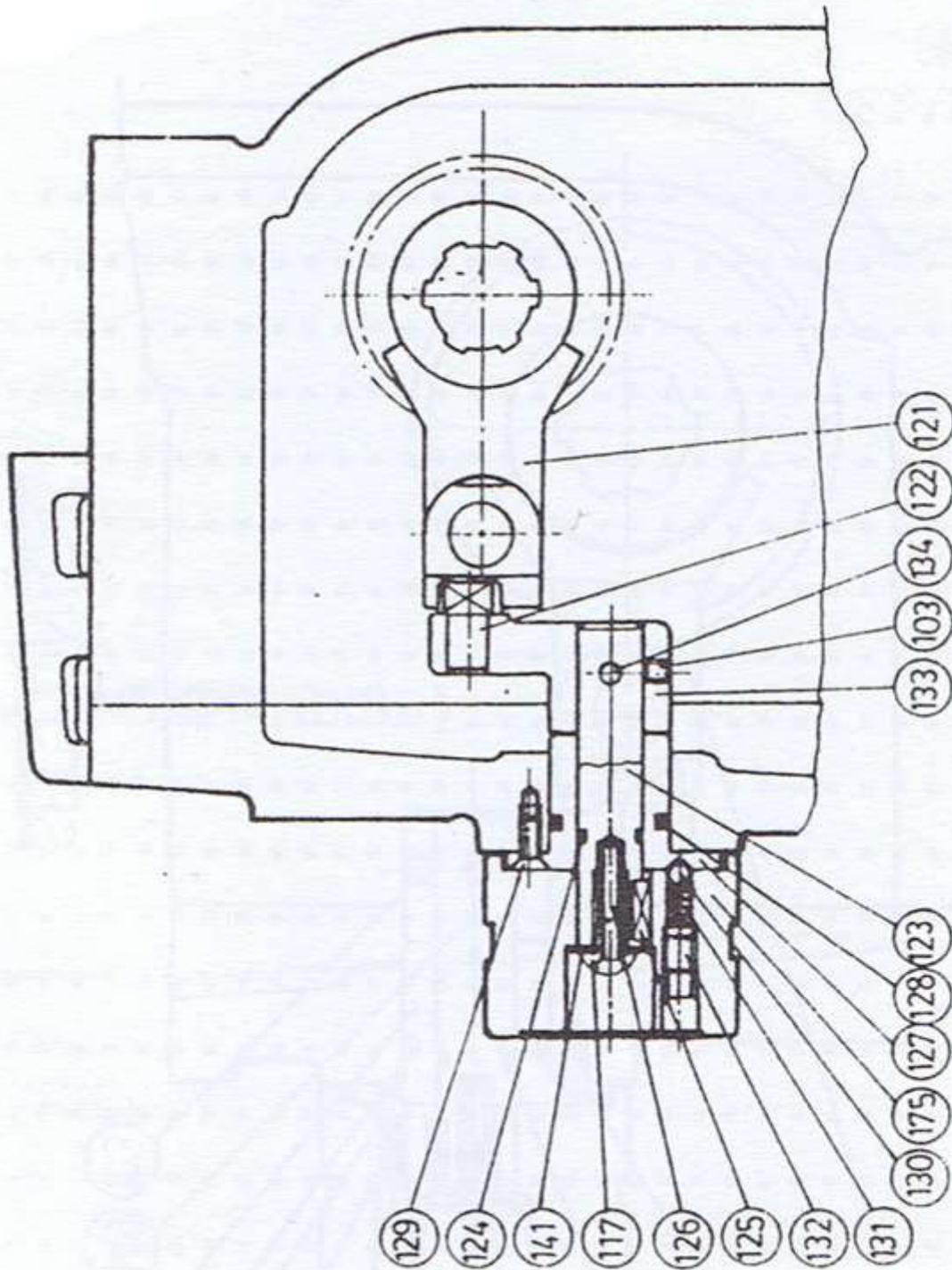


**GEARBOX ASSEMBLY 1/2**





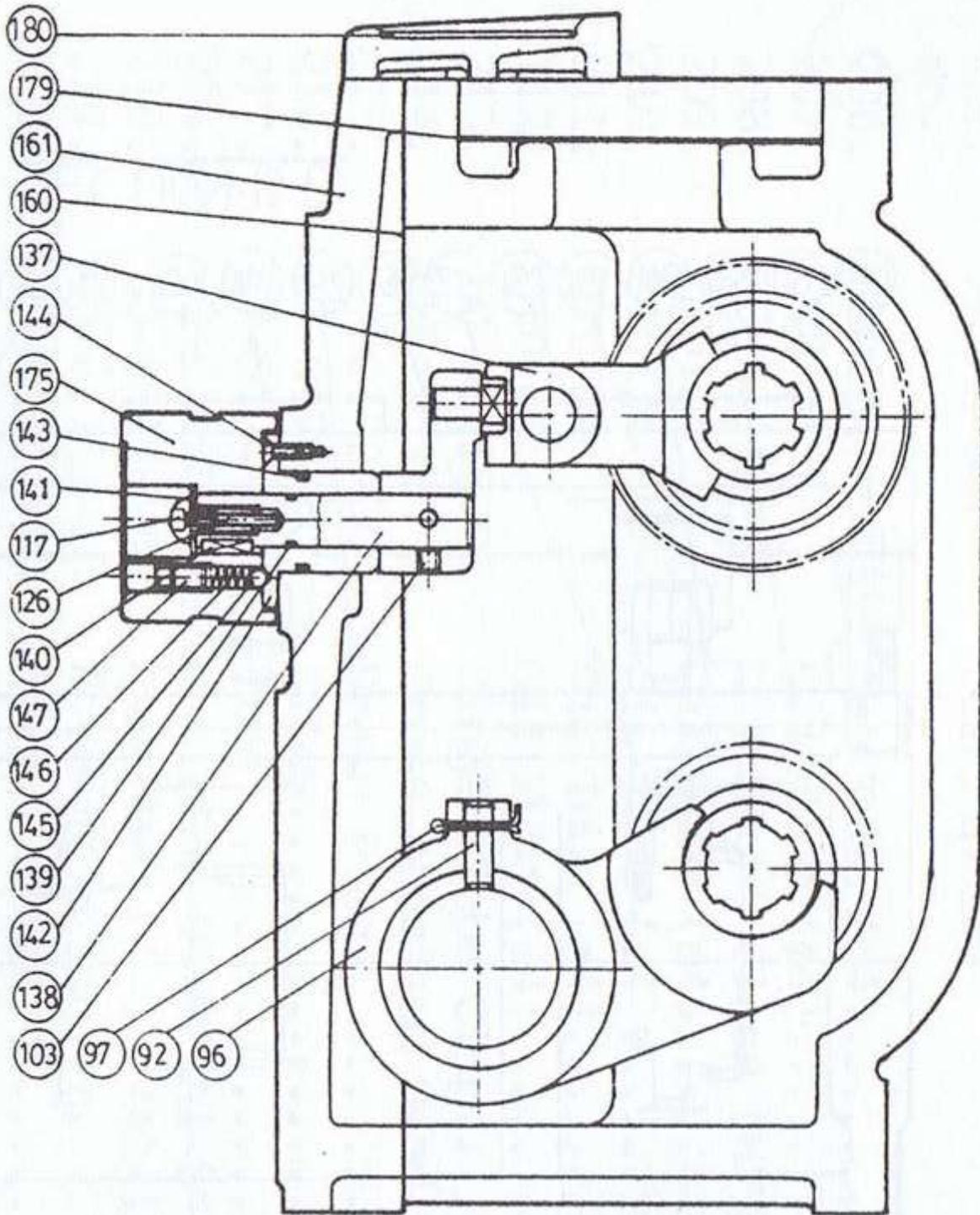
GEARBOX ASSEMBLY 1/2- A-A



SECTION: A-A



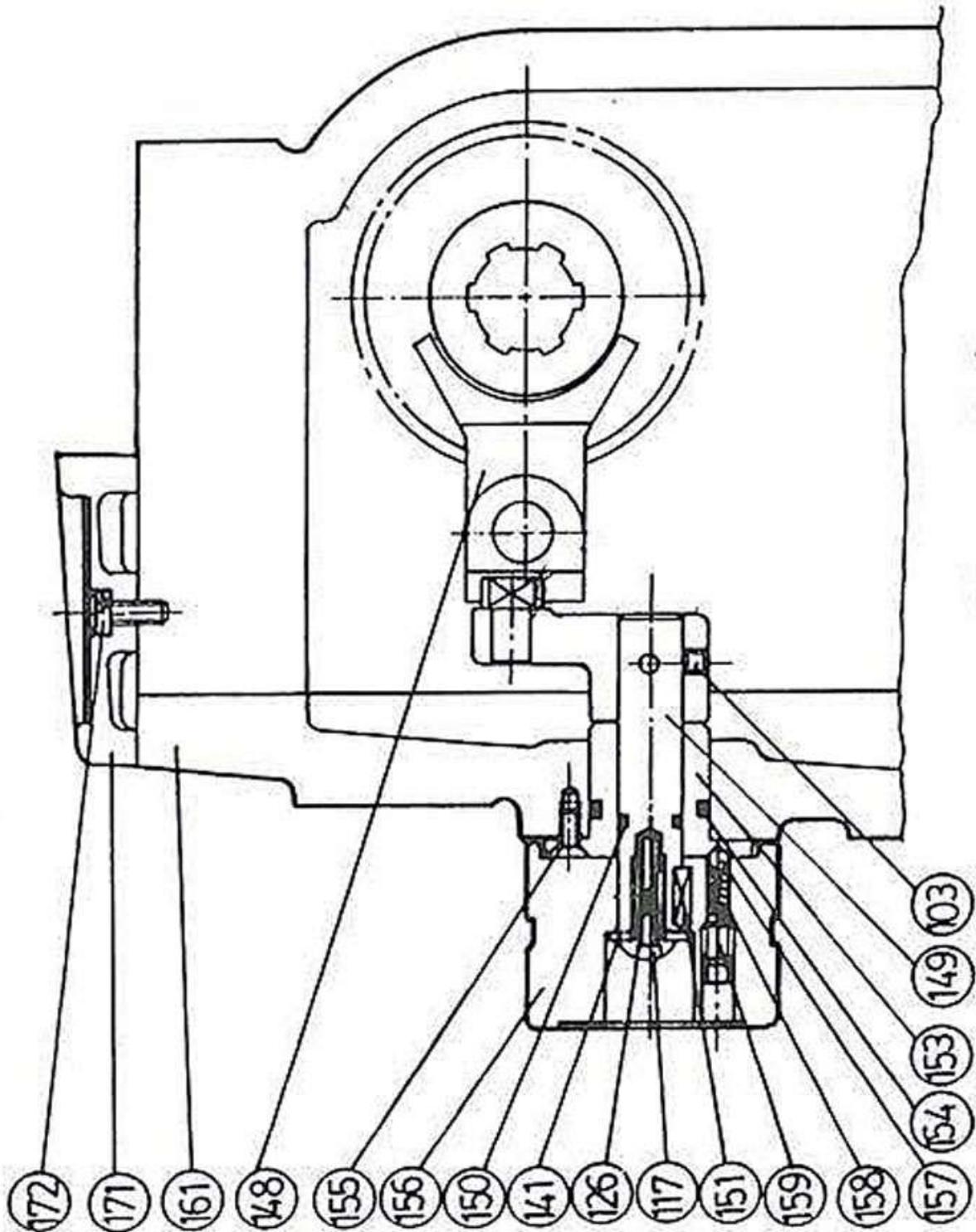
**GEARBOX ASSEMBLY 1/2- B-B**



**SECTION: B-B**



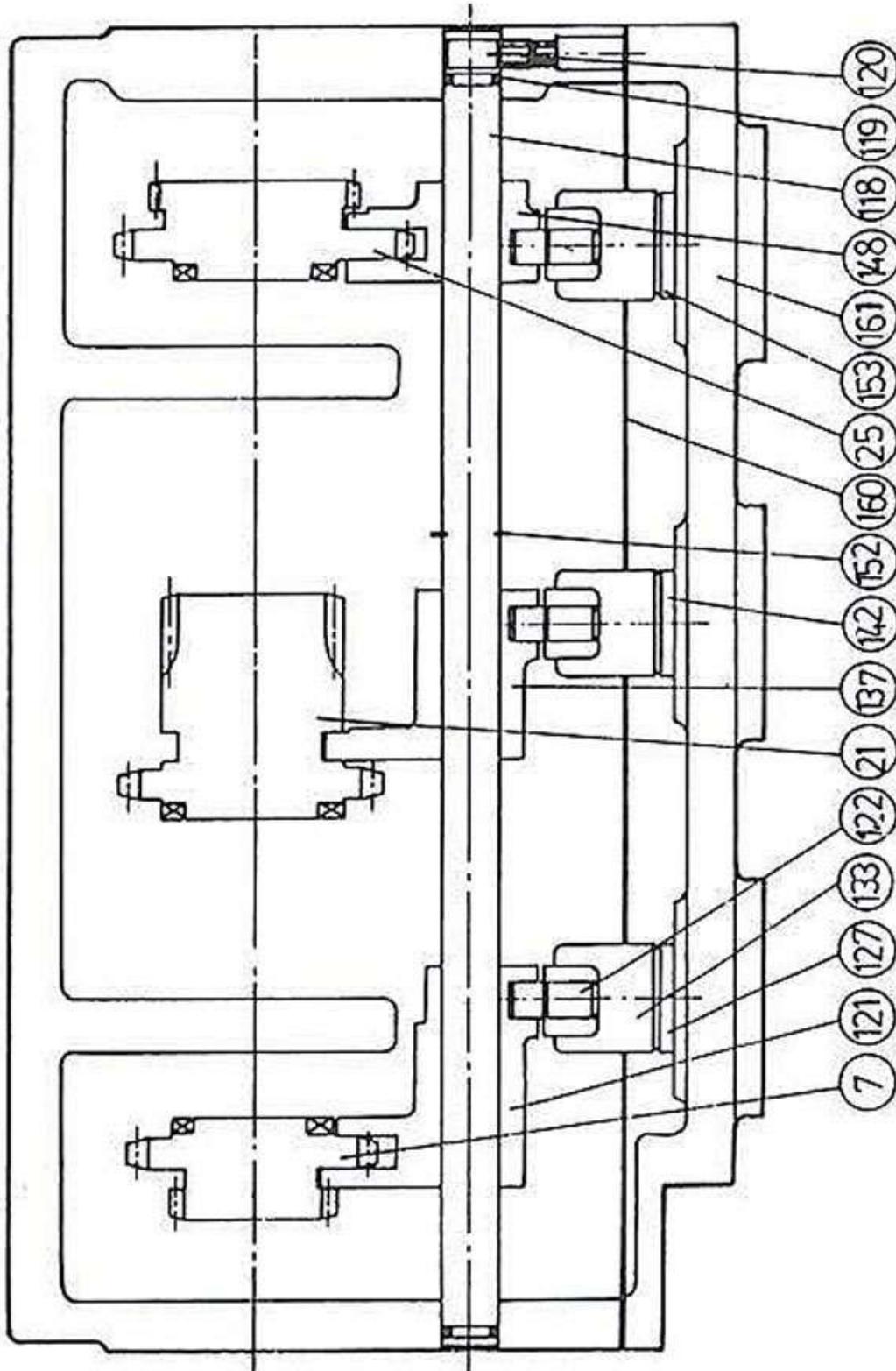
GEARBOX ASSEMBLY 1/2- C-C



SECTION: C-C



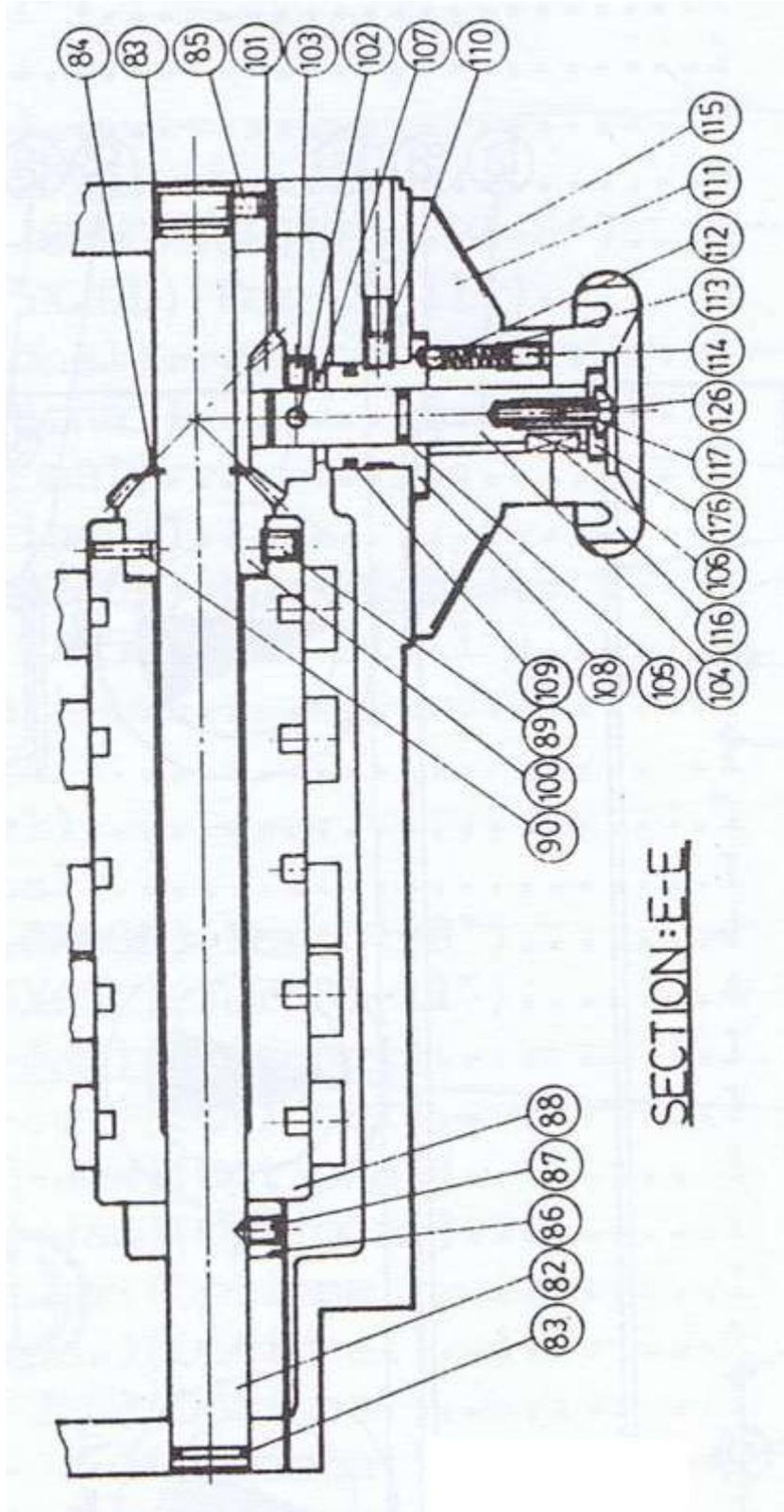
GEARBOX ASSEMBLY 1/2- D-D



SECTION: D-D

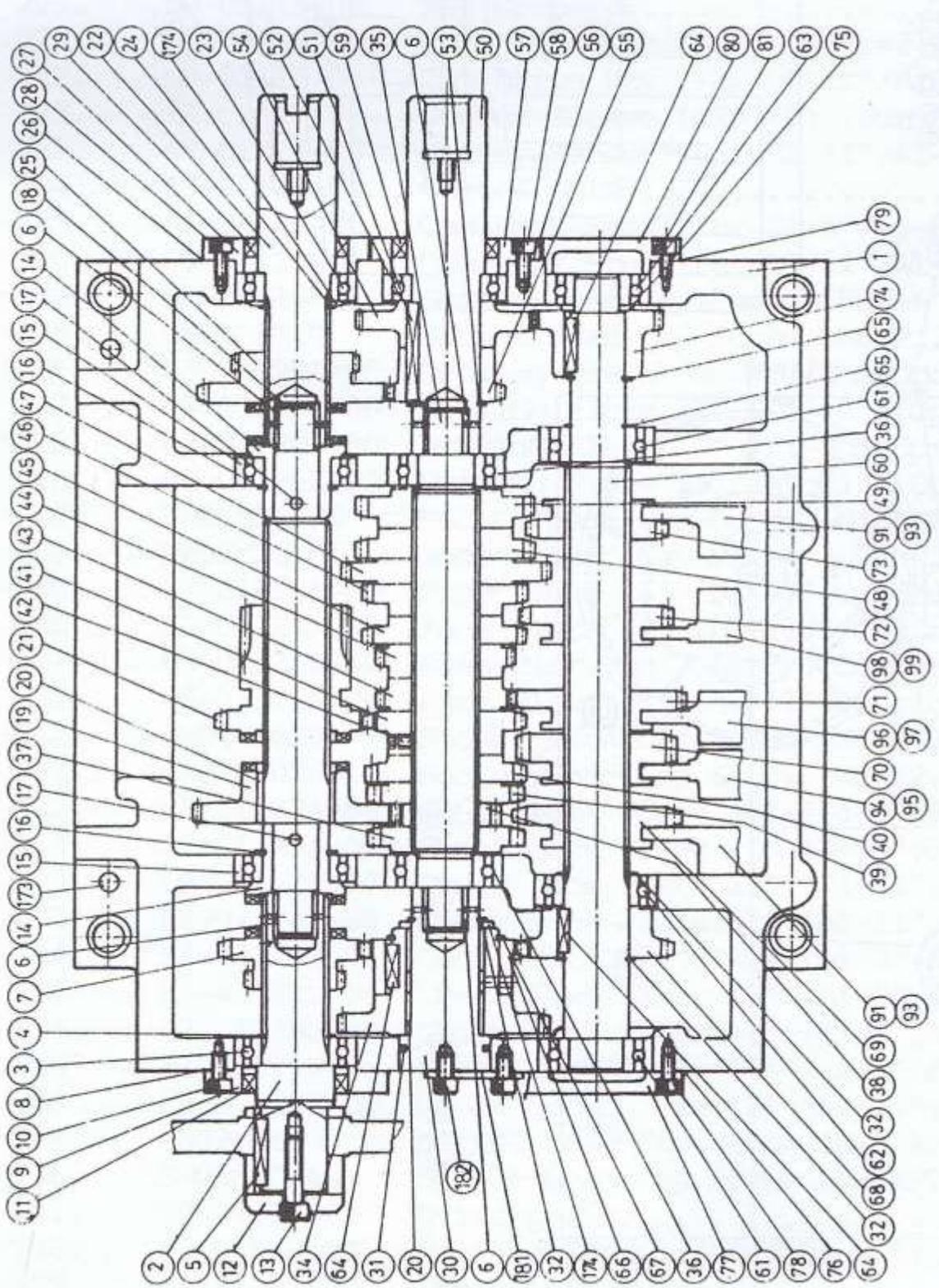


**GEARBOX ASSEMBLY 1/2- E-E**





# GEARBOX ASSEMBLY 2/2





## GEARBOX PARTS IDENTIFICATION

No.	Part No.	Name	Specification	Qty.
1	50-0201-00	Gear Box Casting		1
2	50-0202-00	Input Shaft		1
3	RB6006	Deep Groove Ball Bearing	#6006	1
4	RR01STW30	Retaining Ring (external)	STW#30	1
5	KY036X6X30	Double Round Head Key	6X6X30L	1
6	50-0203-00	Dry Bearing		4
7	50-0204-00	Clutch Gear	M2X19T, M3X19T	1
8	50-0205-00	Packing		1
9	50-0206-00	Bearing Cover		1
10	SW02M6X10	Socket Head Cap Screw	M6XP1.0X10L	3
11	OSTC35X48X8	Oil Seal	TC 35X48X8	1
12	50-0207-00	Washer		2
13	SW02M8X25	Socket Head Cap Screw	M8XP1.25X25L	1
14	50-0208-00	Clutch		2
15	RB6006	Deep Groove Ball Bearing	#6006	2
16	RR01STW30	Retaining Ring (external)	STW#30	2
17	PM03Ø6X30	Spring Pin	Ø6X30L	2
18	50-0209-00	Shaft		1
19	50-0210-00	Clutch Gear	M2.25X40T	1
20	50-0211-00	Dry Bearing		3
21	50-0212-00	Clutch Gear	M3X23T, M2.25X20T	1
22	63-0213-00	Shaft		1
23	RB6006	Deep Groove Ball Bearing	#6006	1
24	RR01STW30	Retaining Ring (external)	STW#30	1
25	50-0214-00	Clutch Gear	M2.5X35T, M1.5X35T	1
26	50-0215-00	Packing		1
27	50-0216-00	Bearing Cover		1
28	SW02M6X12	Socket Head Cap Screw	M6XP1.0X12L	3
29	OSTC35X48X8	Oil Seal	TC 35X48X8	1
30	50-0217-00	Shaft		1
31	OR01P34	O-Ring	P34	2
32	RR01STW30	Retaining Ring (external)	STW#30	3



No.	Part No.	Name	Specification	Qty.
34	50-0218A-00	Gear	M2X46T	1
35	50-0219-00	Spline Shaft		1
36	RB6205	Deep Groove Ball Bearing	#6205	2
37	50-0220-00	Gear	M3.25X19T	1
38	50-0221-00	Gear	M2.5X20T	1
39	50-0222-00	Gear	M3.25X20T1	1
40	50-0223-00	Gear	M3X22T	1
41	50-0224-00	Gear	M3X23T	1
42	SW14M6X10	Socket Head Set Screw	M6XP1.0X10L	1
43	50-0225-00	Gear	M2.25X24T	1
44	50-0226-00	Gear	M2.25X27T	1
45	50-0227-00	Gear	M2.75X24T	1
46	50-0228-00	Gear	M2.75X26T	1
47	50-0229-00	Gear	M2.25X40T	1
48	50-0230-00	Gear	M2.75X27T	1
49	50-0231-00	Gear	M2.75X28T	1
50	63-0232-00	Shaft		1
51	RB6006	Deep Groove Ball Bearing	#6006	1
52	KY036X6X45	Double Round Head Key	6X6X45L	1
53	RR01STW30	Retaining Ring (external)	STW#30	1
54	50-0233-00	Gear	M1.5X50T	1
55	50-0234-00	Gear	M2.5X20T	1
56	50-0235-00	Packing		1
57	50-0236-00	Bearing Cover		1
58	SW02M6X12	Socket Head Cap Screw	M6XP1.0X12L	3
59	OSTC35X48X8	Oil Seal	TC35X48X8	1
60	50-0237-00	Spline Shaft		1
61	RB6205	Deep Groove Ball Bearing	#6205	2
62	RB6006	Deep Groove Ball Bearing	#6006	1
63	RB6204	Deep Groove Ball Bearing	#6204	1
64	KY036X6X20	Double Round Head Key	6X6X20L	2
65	RR01STW25	Retaining Ring (external)	STW#25	2
66	50-0218B-00	Gear	M3X23T	1
67	RR01STW48	Retaining Ring (external)	STW#48	1
68	50-0238-00	Gear	M3X22T	1



No.	Part No.	Name	Specification	Qty.
69	50-0239-00	Gear	M3.25X22T	1
70	50-0240-00	Gear	M3X22T	1
71	50-0241-00	Gear	M2.25X33T	1
72	50-0242-00	Gear	M2.75X22T	1
73	50-0243-00	Gear	M2.75X22T	1
74	50-0244-00	Gear	M1.5X36T	1
75	50-0245-00	Spacer		1
76	50-0246-01	Packing		1
77	50-0247-00	Bearing Cover		1
78	SW02M6X12	Socket Head Cap Screw	M6XP1.0X12L	3
79	50-0248-00	Packing		1
80	50-0249-00	Bearing Cover		1
81	SW02M6X12	Socket Head Cap Screw	M6XP1.0X12L	3
82	50-0250-00	Cam Shaft		1
83	OR01P18	O-Ring	P18	2
84	RR01STW22	Retaining Ring (external)	STW#22	1
85	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
86	50-0251-00	Collar		1
87	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
88	50-0252-00	Cam		1
89	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
90	PM03Ø5X16	Spring Pin	Ø5X16L	1
91	50-0253-00	Shifting Fork		2
92	50-0294-01	Pin (re-machined)	Ø6X26L	5
93	PN06Ø2.5X30	Split Pin	Ø2.5X30L	1
94	50-0254-00	Shift Fork		1
95	PN06Ø2.5X30	Split Pin	Ø2.5X30L	1
96	50-0255-00	Shifting Fork		1
97	PN06Ø2.5X30	Split Pin	Ø2.5XX30L	1
98	50-0256-00	Shifting Fork		1
99	PN06Ø2.5X30	Split Pin	Ø2.5X30L	1
100	50-0257-00	Bevel Gear	M2X24T	1
101	50-0258-00	Bevel Gear	M2X24T	1
102	PN03Ø5X36	Spring Pin	Ø5X36L	1
103	SW14M6X8	Socket Head Set Screw	M6XP1.0X8L	4



No.	Part No.	Name	Specification	Qty.
104	50-0259-01	Shaft		1
105	OR01P12	O-Ring	P12	1
106	KY035X5X15	Double Round Head Key	5X5X15L	1
107	50-0260-0	Spacer		1
108	50-0261-00	Sleeve		1
109	OR01P24	O-Ring	P24	1
110	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
111	50-0262-00	Speed Changing Disk		1
112	SB01Ø1/4"	Steel Ball	Ø1/4"	1
113	SG02Ø6XØ0.5X30	Compression Spring	Ø6XØ0.5X30L	1
114	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
115	50-0263-00	10 Step Indicator		1
116	50-0264-00	Changing Knob		1
117	17-0504-2	Socket Button Head Screw	M8XP1.25X20L	4
118	50-0265-00	Shaft		1
119	OR01P12	O-Ring	P12	1
120	SW02M8X10	Socket Head Set Screw	M8XP1.25X10L	1
121	50-0266-00	Shifting Arm		1
122	50-0267-00	Shifting Block		3
123	50-0268-00	Shaft		1
124	OR01P12	O-Ring	P12	1
125	KY035X5X15	Double Round Head Key	5X5X15L	1
126	SW14M6X20	Socket Head Set Screw	M6XP0.8X20L	4
127	50-0269-00	Sleeve		1
128	OR01P24	O-Ring	P24	1
129	SW08M5X12	Counter Sunk Flat Screw	M5XP0.8X12L	2
130	SB01Ø1/4"	Steel Ball	Ø1/4"	1
131	SG02Ø6XØ0.5X30	Compression Spring	Ø6XØ0.5X30L	1
132	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
133	50-0270-00	Shifting Arm		3
134	PN03Ø5X30	Spring Pin	Ø5X30L	1
137	50-0273-00	Shifting Arm		1
138	50-0274-00	Shaft		1
139	OR01P12	O-Ring	P12	1
140	KY035X5X15	Double Round Head Key	5X5X15L	1



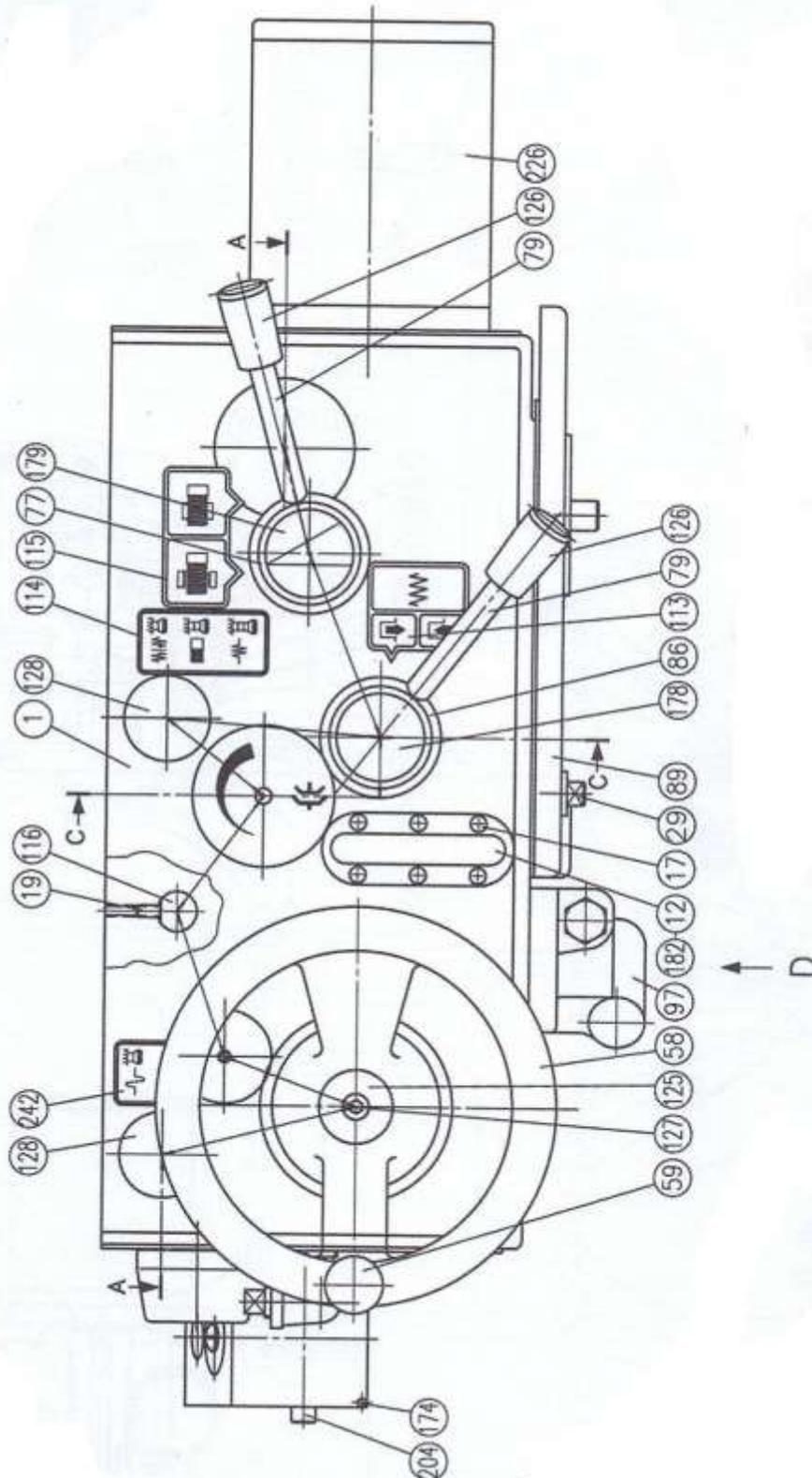
No.	Part No.	Name	Specification	Qty.
141	50-0167-00	Washer		3
142	50-0275-00	Sleeve		1
143	OR01P24	O-Ring	P24	1
144	SW08M5X12	Counter Sunk Flat Screw	M5XP0.8X12L	2
145	SB01Ø1/4"	Steel Ball	Ø1/4"	1
146	SG02Ø6XØ0.5X30	Compression Spring	Ø6XØ0.5X30L	1
147	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
148	50-0276-00	Shifting Fork		1
149	50-0277-00	Shaft		1
150	OR01P12	O-Ring	P12	1
151	KY035X5X15	Double Round Head Key	5X5X15L	1
152	RR01STW16	Retaining Ring (external)	STW#16	1
153	50-0278-00	Sleeve		1
154	OR01P24	O-Ring	P24	1
155	50-0278-00-2	Counter Sunk Flat Screw	M5XP0.8X12L	2
156	50-0289-00	Feed Selector Knob		1
157	SB01Ø1/4"	Steel Ball	Ø1/4"	2
158	SG02Ø6XØ0.5X30	Compression Spring	Ø6XØ0.5X30L	2
159	SW14M8X10	Socket Head Set Screw	M8XP1.25X10L	1
160	50-0280-00	Packing		1
161	63-0281-00	Gear Box Front Cover		1
162	OG-HE30	Oil Sight Glass	HE#30	1
163	OP02P.T3/8	Drain Plug	PT-3/8	1
164	SW02M8X25	Socket Head Cap Screw	M8XP1.25X25L	3
165	SW02M8X40	Socket Head Cap Screw	M8XP1.25X40L	3
166	PN03Ø5X30	Spring Pin	Ø6X30L	2
167	50-0282-00	A-B-C Indicator		1
168	RT01Ø2X5	Button Head Rivet	Ø2X5L	6
169	50-0283-00	Indicator		1
170	RT01Ø2X5	Button Head Rivet	Ø2X5L	2
171	63-0284-00	Upper Cover		1
172	SW02M6X20	Socket Head Cap Screw	M6XP1.0X20L	2
173	63-0285-00	Taper Pin w/Internal Thread	#7X32L	2
174	10-0276-00	Spacer		2
175	50-0180-00	Feed Selector Knob		2



No.	Part No.	Name	Specification	Qty.
176	50-0288-00	Washer		1
177	RT01Ø2X5	Button Head Rivet	Ø2X5L	3
178	50-0181-00	Indicator		3
179	50-0290-01	Oil Cover		1
180	50-0291-00	Safety Gasket		1
181	50-0292-00	Cushion Block		1
182	SW02M6X10	Socket Head Cap Screw	M6XP1.0X10L	2

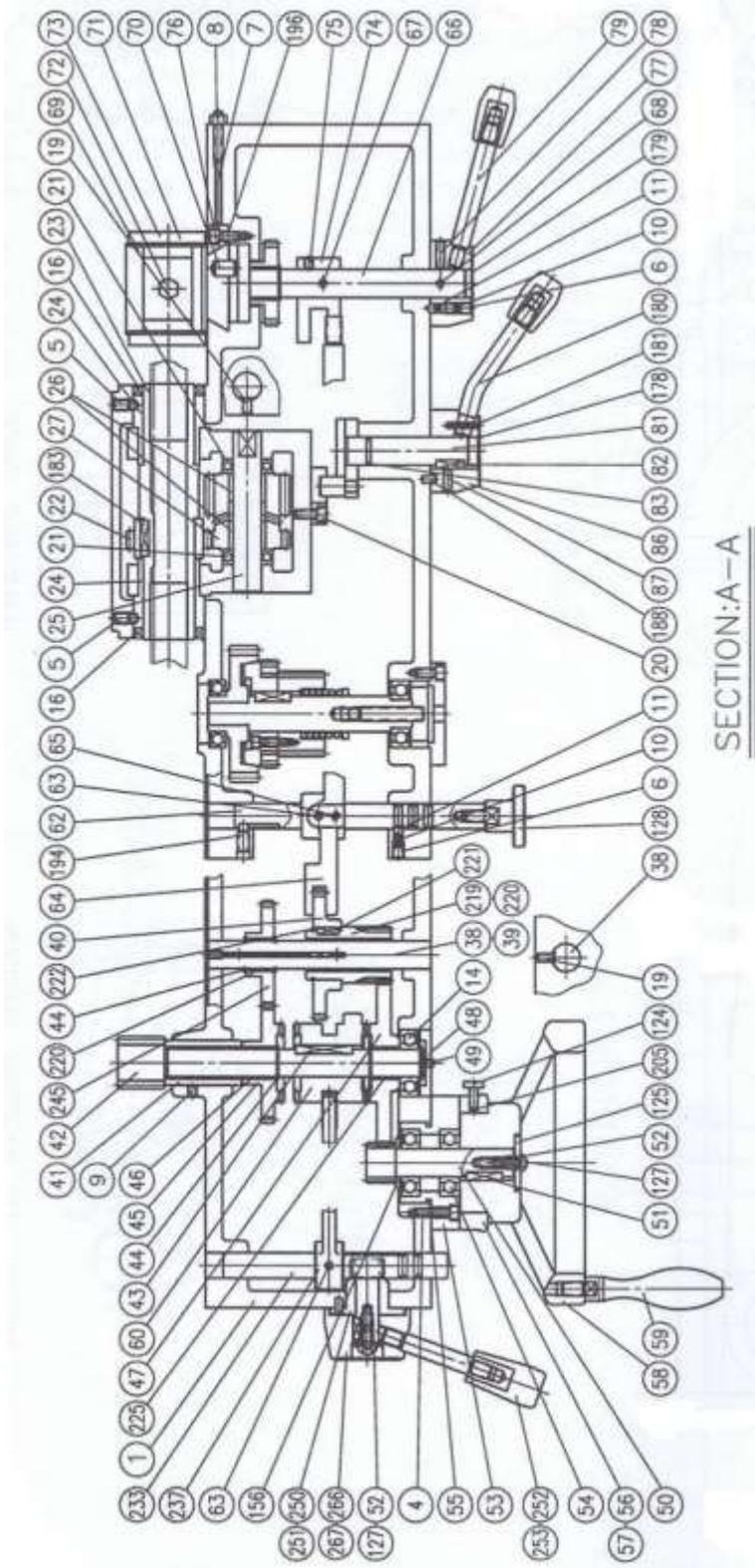


**APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 1/8**



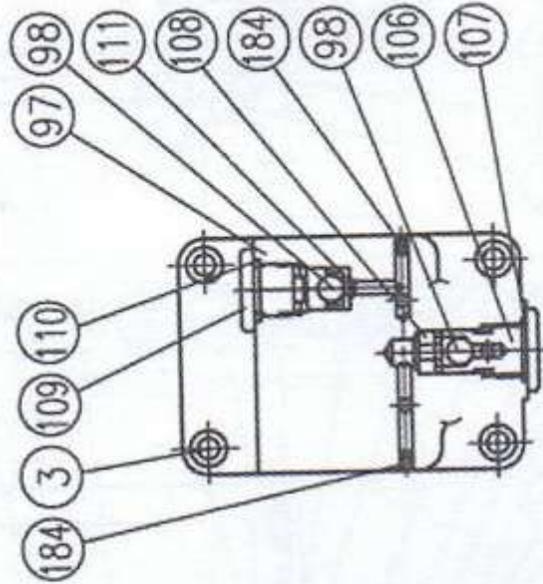


# APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 2/8

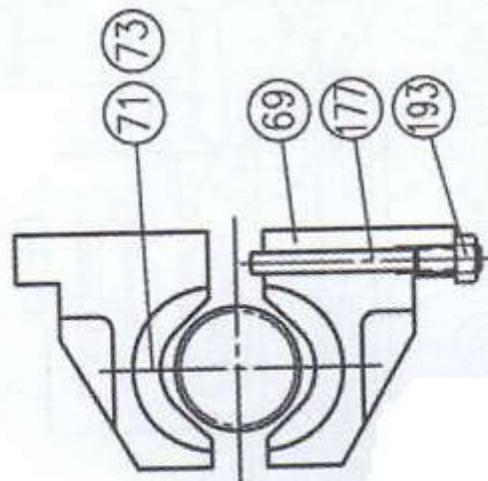




APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 3/8



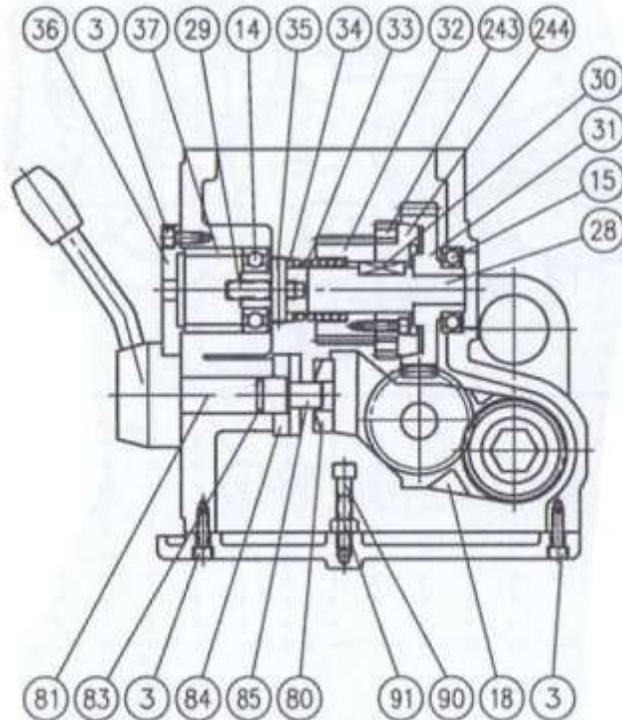
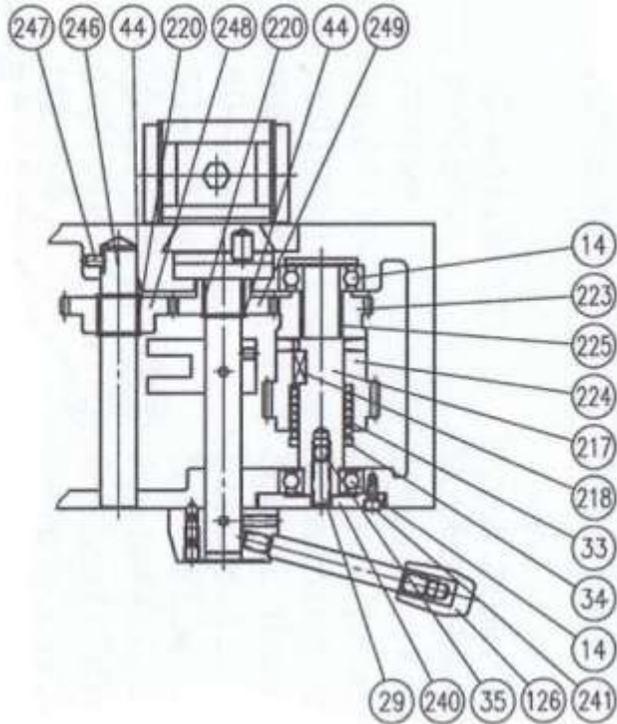
VIEW OF ARROW D



HALF NUT BASE



**APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 4/8**

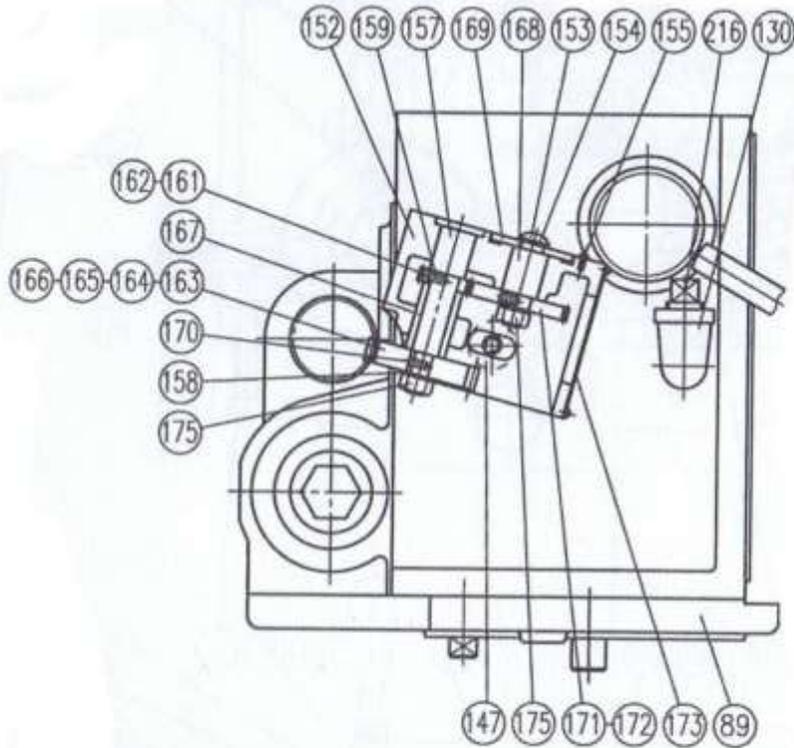


SECTION: C-C

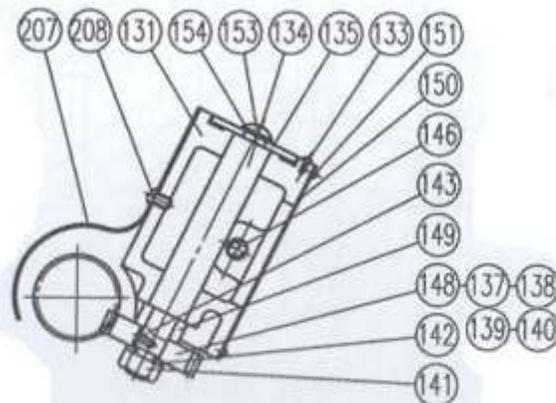




**APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 6/8**



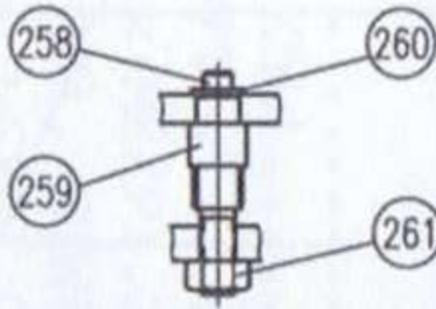
OPTIONAL THREAD  
DIAL INDICATOR



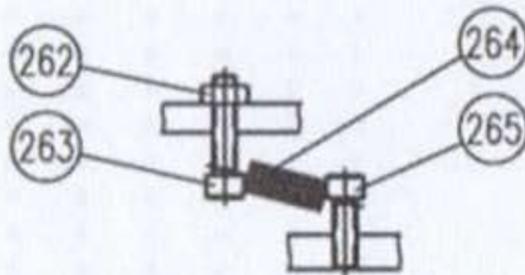
METRIC AND IMPERIAL THREAD  
DIAL INDICATOR



APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 7/8



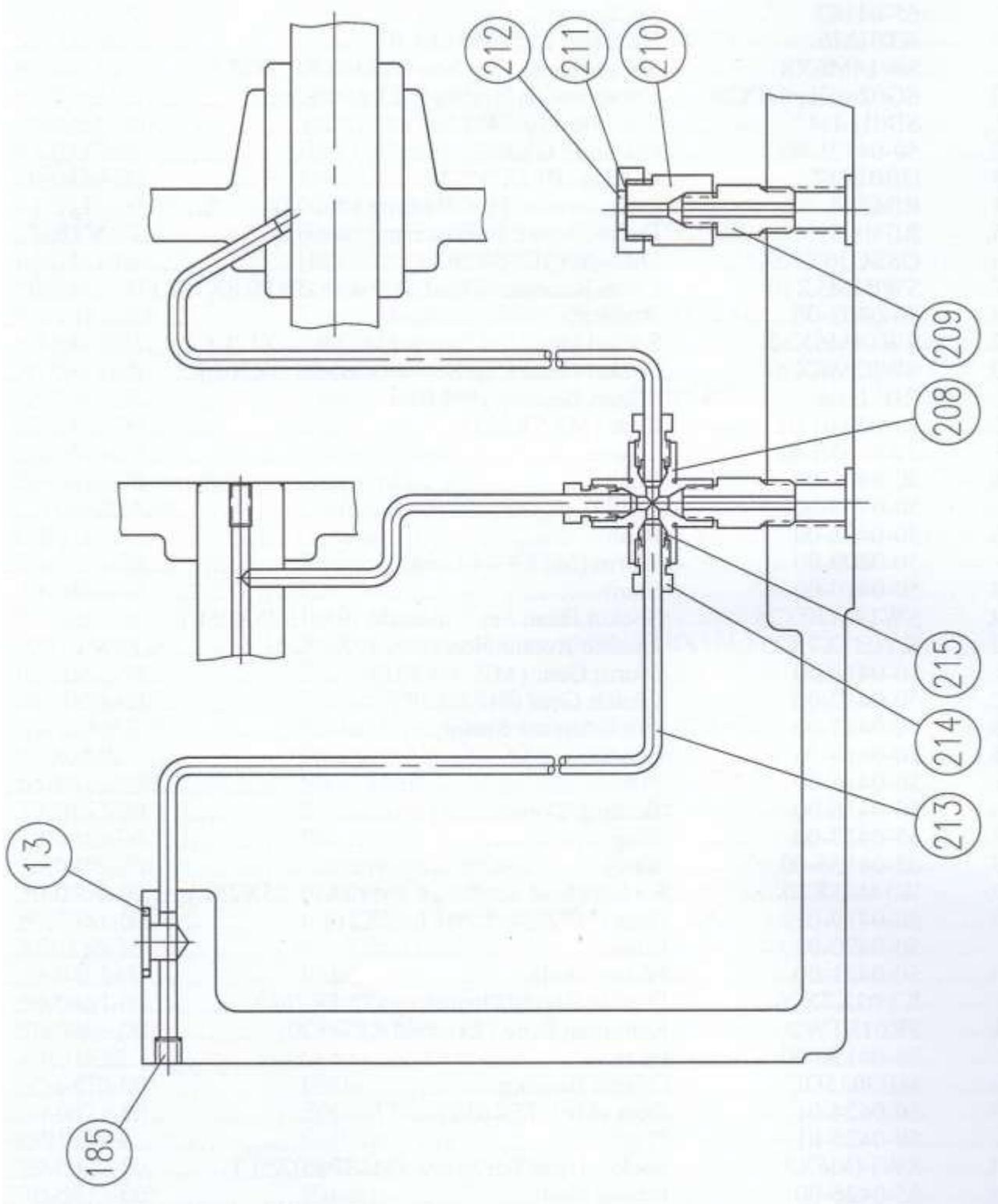
SECTION: D-D



SECTION: E-E



**APRON ASSEMBLY - Left Hand (Rapid Traverse Device) 8/8**





## APRON PARTS IDENTIFICATION (rapid traverse device)

No.	Part No.	Name	Specification	Qty.
1	65-0402-00	Apron (Left Hand)		1
2	SW02M12X50	Socket Head Cap Screw	M12XP1.75X50L	4
3	SW02M6X16	Socket Head Cap Screw	M6XP1.0X16L	17
4	SW02M6X20	Socket Head Cap Screw	M6XP1.0X20L	4
5	SW14M8X16	Socket Head Cap Screw	M8XP1.25X16L	2
6	SW14M8X8	Socket Head Cap Screw	M8XP1.25X8L	3
7	65-04163	Set Screw		4
8	NT01M6	Hexagon Nut	M6XP1.0	4
9	SW14M6X8	Socket Head Cap Screw	M6XP1.0X8L	1
10	SG02Ø6XØ0.8X20	Compression Spring	Ø6XØ0.8S20L	3
11	SB01Ø1/4"	Steel Ball	Ø1/4"	3
12	50-04126-00	Oil Sight Glass		1
13	OR01P12	O-Ring	P12XW2.4	1
14	RB6204	Deep Groove Ball Bearing	#6204	4
15	RB6005	Deep Groove Ball Bearing	#6005	1
16	OSSC36X50X7	Oil Seal	SC36X50X7	2
17	SW04M5X10	Cross Recessed Head Screw	M5XP0.8X10L	6
18	50-0403-00	Bracket		1
19	SW14M6X12	Socket Head Set Screw	M6XP1.0X12L	2
20	SW02M6X20	Socket Head Cap Screw	M6XP1.0X20L	3
21	RB51104	Thrust Bearing	#51104	2
22	50-0404B-01	Gear	M2.5X22T	1
23	50-0405B-01	Sleeve		1
24	50-0406-00	Bushing		2
25	50-0407-00	Shaft		1
26	50-0408-00	Bushing		2
27	50-0409-00	Worm	M3X9.44 Lead	1
28	50-0410-00	Shaft		1
29	SW14M10X25	Socket Head Set Screw	M10XP1.25X25L	1
30	KY037X7X25	Double Round Head Key	7X7X25L	1
31	50-0411-00	Worm Gear	MP3.0X30T	1
32	50-0412-00	Clutch Gear	M2.0X28T	1
33	50-0413-00	Compression Spring		1



No.	Part No.	Name	Specification	Qty.
34	50-0414-00	Spacer		1
35	50-0415-00	Pin		1
36	50-0416-00	Bearing Cover		1
37	65-0417-00	Plug		1
38	65-04156-00	Shaft		1
39	W14M5X10	Socket Head Set Screw	M10XP1.25X10L	1
40	50-0419-01	Gear ( MP2X44T)	MP1.75X21T	1
41	50-0420-01	Bushing		1
42	50-0421-00	Pinion Shaft		1
43	KY03X7X20	Double Round Head Key	7X7X20L	1
44	PR01STW20	Retaining Ring (external)	STW#20	3
45	65-04150-00	Gear		1
46	MB2025DU	Oil less Bearing		1
47	50-0424-01	Gear	MP1.75X65T	1
48	50-0425-01	Plug		1
49	SW14M6X5	Socket Head Set Screw	M6SP1.0X5L	1
50	65-0426-00	Pinion Shaft		1
51	KY036X6X25	Double Round Head Key	6X6X25L	1
52	SW14M5X20	Socket Head Set Screw	M5XP0.8X20L	1
53	50-0427-02	Bracket		1
54	RB6204	Deep Groove Ball Bearing	#6204	2
55	OR02G50	O-Ring	G50XØ3.1	1
56	50-0428-01	Dial	Metric	1
57	50-0429-01	Dial	Imperial	1
58	63-0430-00	Hand Wheel		1
59	50-0431-00	Handle		1
60	65-04138-00	Cam		1
61	PN03Ø4X30L	Spring Pin	Ø4X30L	1
62	65-0433-00	Feed Axis Selecting Shaft		1
63	PN03Ø5X30	Spring Pin	Ø5X30L	2
64	50-0434-00	Shifting Fork	Right Hand	1
65	SW14M6X6	Socket Head Set Screw	M6XP1.0X6L	1
66	65-0435-00	Cam Shaft		1
67	PN03Ø5X35	Spring Pin	Ø5X35L	1
68	PN03Ø5X60	Spring Pin	Ø5X60L	1



No.	Part No.	Name	Specification	Qty.
69	63-0437-01	Half Nut Base	Right Hand	1
70	50-0439-00	Pin		2
71	63-0440-00	Half Nut (metric)	6mm	1
72	SW01M8X12	Hexagon Head Screw	M8XP1.25X12L	2
73	63-0441-00	Half Nut Imperial)	4 TPI	1
74	50-0442-00	Safety Interlock Piece		1
75	SW14M6X8	Socket Head Set Screw	M6XP1.0X8L	1
76	50-0443-01	Parallel Gib		1
77	50-0444-00	Lever Head		1
78	SW14M6X20	Socket Head Set Screw	M6XP1.0X20L	1
79	50-0445-00	Lever		1
80	50-0446-00	Setting Block		1
81	50-0447-00	Axle	Right Hand	1
82	KY036X6X20	Double Round Head Key	6X6X20L	1
83	OR01P16	O-Ring	P16	1
84	50-0449-00	Swing Block		1
85	50-0450-00	Pin		1
86	50-0451-00	Lever Head		1
87	SW14M6X16	Socket Head Set Screw	M6XP1.0X16L	1
88	65-0452-00	Packing		1
89	65-0454-00	Bottom Cover	Right Hand	1
90	SW02M8X40	Socket Head Cap Screw	M8XP1.25X40L	1
91	NT01M8	Hexagon Nut	M8XP1.25	1
92	65-04121-00	Short Shaft		1
93	50-0457-00	Swing Arm	Right Hand	1
94	50-0458-00	Pin		2
95	50-0459-00	Compression Spring		1
96	50-0460-00	Extension Spring		1
97	65-0461-00	Lube Pump Casting	Right Hand	1
98	SB01Ø5/16"	Steel Ball	Ø5/16"	2
99	65-0463-00	Plunger		1
100	50-0464-00	Compression Spring		1
106	50-0469-00	Check Valve		1
107	OR01P16	O-Ring	P16	1
108	50-0470-00	Collar		1



No.	Part No.	Name	Specification	Qty.
109	50-0471-00	Special Bolt		1
110	OR01P14	O-Ring	P14	1
111	50-0472-00	Bushing		1
112	50-0473-00	Packing		1
113	50-0475-00	Feed Engagement Indicator	Right Hand	1
114	50-0476-00	Feed Axis Selecting Indicator		1
115	50-0478-00	Half Nut Engagement Indicator	Right Hand	1
116	50-0479-00	Cone Clutch Adjusting Indicator		1
117	50-0480-02	Acting Rod		1
123	50-0484-00	Taper Pin w/Internal Thread	#7X57L	2
124	50-0540-00	Screw		1
125	50-0513-00	Washer		1
126	50-01138-00	Knob		2
127	17-0504-02	Socket Button Head Screw	M8XP1.25X20L	1
128	50-04116-00	Knob		1
129	17-0274-00	Drain Plug		1
130	50-04135-00	Elbow 90°	P.T 3/8"	1
131	50-0485-01	Thread Dial Body		1
133	RT01Ø2X5	Button Head Rivet	Ø2X5L	1
134	50-0486-02	Thread Dial Indicator		1
135	50-0486B-00	Indicator		1
137	50-0488-01	Helical Gear (Metric)	MP2.0X14T	1
138	50-0489-01	Helical Gear (Metric)	MP2.0X15T	1
139	50-0490-01	Helical Gear (Metric)	MP2.0X16T	1
140	50-0491-01	Helical Gear (Metric)	MP2.0X22T	1
141	NT01M10	Hexagon Nut	M10XP1.5	1
142	WR01M10	Washer	M10	1
143	PN01Ø3X8	Pin	Ø3X8L	1
144	50-0493-00	Indicator Table (Used for Metric)		1
145	RT01Ø2X5	Button Head Rivet	Ø2X5L	4
146	SW02M8X80	Socket Head Cap Screw	M8XP1.25X80L	1
147	50-0495-01	Spacer		1
148	50-0496-01	Helical Gear (for Imperial)	MP2.0X16T	1
149	50-0497-01	Spacer		1
150	50-0498-00	Indicator Table (for Imperial)		1



No.	Part No.	Name	Specification	Qty.
151	RT01Ø2X5	Button Head Rivet	Ø2X5L	4
152	50-0499-01	Thread Dial Body (Cut Imp. & mm)	Imp. Lead Scr.	1
153	50-0486B-00	Socket Button Head Screw	M6XP1.0X10L	1
154	WR03M6	Spring Washer	M6X1.5T	1
155	RT01Ø2X5	Button Head Rivet	Ø2X5L	1
156	50-0422B-01	Spacer		2
157	50-04101-01	Axle A (Optional)		1
158	WR01M8	Washer	M8	2
159	PN01Ø3X8	Pin	Ø3X8L	2
161	50-04103-01	Spur Gear (Optional)	M1.0X22T	1
162	50-04104-01	Spur Gear (Optional)	M1.0X24T	1
163	50-04105-01	Helical Gear	MP2.0X15T	1
164	50-04106-01	Helical Gear	MP2.0X16T	1
165	50-04107-01	Helical Gear	MP2.0X20T	1
166	50-04108-01	Helical Gear	MP2.0X25T	1
167	50-04109-01	Spacer (Optional)		1
168	50-04110-02	Axle B (Optional)		1
169	50-04110B-00	Indicator (Optional)		1
170	PN01Ø3X8	Pin (Optional)	Ø3X8L	1
171	50-04111-01	Spur Gear (Optional)	M1.0X22T	1
172	50-04112-02	Spur Gear	M1.0X44T	1
173	50-04113-01	Indicator Tube (Optional)		1
174	RT01Ø2X5	Button Head Rivet	Ø2X5L	4
175	NT01M8	Hexagon Nut	M8XP1.25	2
176	OSTC15X25X7	Oil Seal TC	Ø15XØ25X7	1
177	50-04128-00	Socket Head Set Screw	M8XP1.25X70L	1
178	50-0181-00	Indicator		1
179	50-0168-00	Indicator		1
180	50-04115-00	Lever		1
181	PN034X20	Spring Pin	Ø4X20L	1
182	OR02W1.9XD54.5	O-Ring	W1.9XD54.5	1
183	KY036X6X25	Double Round Head Key	6X6X25L	1
184	50-0372-00	Copper Plug	Ø4X6L	3
185	SW14M6X6	Socket Head Set Screw	M6XP1.0X6L	1



No.	Part No.	Name	Specification	Qty.
188	50-04127-00	Pin		1
193	NT01M8	Hexagon Nut	M8XP1.25	1
194	50-04119-00	Socket Head Set Screw	M8XP1.25X20L	1
195	PR01STW10	Retaining Ring (External)	STW#10	1
196	SW02M6X15	Socket Head Cap Screw	M6XP1.0X15L	5
197	50-04123-00	Sleeve		1
198	50-0358-02	Lube Flow Controller		1
199	50-04125-00	Pin	Ø4X6L	1
200	OR01P20	O-Ring	P20	1
201	OR01P9	O-Ring	P9	1
202	50-0359-01	Indicator		1
203	SW04M5X10	Cross Recessed Head Screw	M5XP0.8X10	2
204	SW02M8X90	Socket Head Cap Screw	M8XP1.25X90L	1
205	50-0538-00	Pad Piece	Ø5X3L	1
206	50-04117-00	Lead Screw Guard		1
207	SW22M5X8	Cross Recessed Head Screw	M5XP0.8X8L	2
208	PN02#3X38	Taper Pin	#3X38L	1
209	SJ01PT18XM8	Straight Joint	PT1/8XM8	1
210	50-04129-00	Straight Joint		1
211	50-04130-00	Oil Filter Screen	T=0.2	1
212	50-04131-00	Nut		1
213	50-04132-00	Straight Joint	P.T1/8"	4
214	50-04133-00	Thimble Nut	M8XP1.0XØ4	4
215	50-04134-00	Thimble	Ø4	4
216	50-04136-00	Plug	P.T3/8"	1
217	50-04139-00	Shaft		1
218	KY037X7X18	Double Round Head Key	7X7X18L	1
219	65-04140-00	Gear	M1.5X21T	1
220	MB2020DU	Oil Less Bearing		1
221	KY035X5X15	Double Round Head Key	5X5X15L	1
222	RR01STW35	Retaining Ring (External)	STW#35	1
223	65-04141-00	Gear	M2X30T	1
224	65-04165-00	Worm Gear	M2X34T	1
225	MB2015DU	Oil Less Bearing		1
226	65-04143-03	Motor		1



No.	Part No.	Name	Specification	Qty.
227	SW02M6X15	Socket Head Cap Screw	M6XP1.0X15L	1
232	65-04144-00	Plug		1
233	65-04145-01	Feed Axis Selecting Shaft		1
234	65-04146-02	Worm		1
235	KY034X4X20	Double Round Head Key	4X4X20L	4
236	RB51105	Thrust Bearing	Ø25XØ42X11	1
237	65-04148-00	Shifting Fork		1
238	65-04149-01	Spacer		1
239	65-0416A-00	Bearing Cover		1
240	65-04159-00	Bearing Cover		1
241	SW02M5X10	Socket Head Cap Screw	M5XP0.8X10L	1
242	65-04160-00	Indicator		1
243	65-04154-00	Gear	M2X36T	1
244	65-04155-00	Clutch		1
245	65-04157-00	Gear	M2X36T	1
246	65-04158-00	Shaft		1
247	SW14M6X10	Socket Head Set Screw	M6XP1.0X10L	1
248	65-04161-00	Gear	M2X28T	1
249	65-04162-00	Gear	M2X30T	1
250	65-04177L-00	Bushing		1
251	SW08M5X12	Counter Sunk Flat Screw	M5X12L	1
252	50-0165-00	Lever		1
253	50-01138-00	Knob		1
254	65-04176L-00	Gear Shaft		1
255	KY035X5X15	Double Round Head Key	5X5X15L	1
256	65-04187-00	Washer	Ø8XØ20X2T	1
257	65-04178L-00	Safe Plate		1
258	SW08M6X12	Counter Sunk Flat Screw	M6X12L	1
259	65-04179-01	Support Pin		1
260	65-04186-00	Washer		1
261	NT01M12	Nut	M12	1
262	NT01M8	Nut	M8	1
263	SW02M8X35	Socket Head Cap Screw	M8XP1.25X35L	1
264	65-04185-00	Spring		1
265	SW02M8X25	Socket Head Cap Screw	M8XP1.25X25L	1



No.	Part No.	Name	Specification	Qty.
266	50-0164-00	Lever Head		1
267	KY035X5X15	Double Round Head Key	5X5X15L	1



NOTES



NOTES



**BAILEIGH INDUSTRIAL, INC. 1625 DUFEK DRIVE MANITOWOC, WI 54220**

**PHONE: 920. 684. 4990 FAX: 920. 684. 3944**

**[www.baileigh.com](http://www.baileigh.com)**

**BAILEIGH INDUSTRIAL, INC. 1455 S. CAMPUS AVENUE ONTARIO, CA 91761**

**PHONE: 920. 684. 4990 FAX: 920. 684. 3944**

**BAILEIGH INDUSTRIAL LTD. UNIT 1 FULLWOOD CLOSE**

**ALDERMANS GREEN INDUSTRIAL ESTATE**

**COVENTRY, CV2 2SS UNITED KINGDOM**

**PHONE: +44 (0)24 7661 9267 FAX: +44 (0)24 7661 9276**

**[WWW.BAILEIGHINDUSTRIAL.CO.UK](http://WWW.BAILEIGHINDUSTRIAL.CO.UK)**

**BAILEIGH INDUSTRIAL GMBH HOFENER STRAÙE 64**

**70736 FELLBACH**

**DEUTSCHLAND**

**[WWW.BAILEIGHINDUSTRIAL.DE](http://WWW.BAILEIGHINDUSTRIAL.DE)**