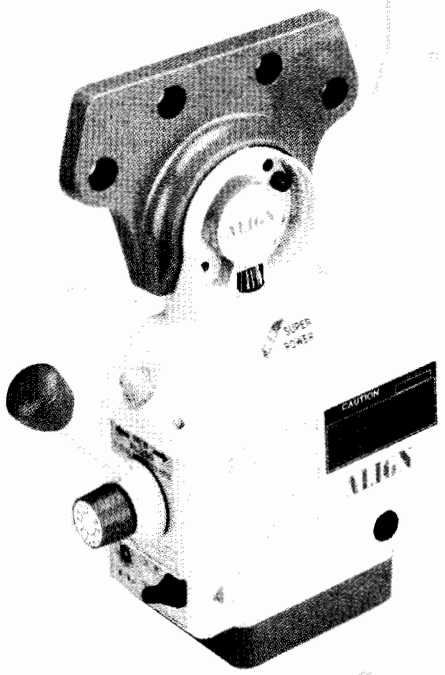
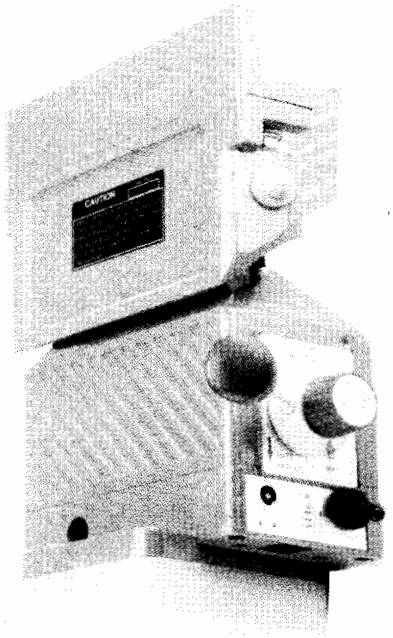
AL-99SP

Bestline Power Feed
For Mill/ Drill Machine

POWER TABLE FEED OPERATION MANUAL

SP-250(A,B,D) AL-250(A,B,D)
AL-235(A,B,D) AL-99





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CONGRATULATIONS ON YOUR NEW PURCHASE OF OUR POWER FEED
Please read this manual carefully before installation and using it. It will also help you to solve some easy problems by yourselves. Hope our product will bring you more effective and joyful working.

Standard and Models:
AL/SP series: Global standard.
CE series: European standard.
Based on different axis there are three kinds as A, B, D:
A type is used for X axis longitudinal feed.
B type is used for Y axis cross feed.
D type is used for Z axis vertical feed.

FEATURES OF CE-235 & CE-99:
1.Main power supply: 1-phase, 50/60 Hz A.C.110 V.
2.Limit switch is waterproof and controlled with voltage D.C.12 V.
3.Power cord and circuit are wrapped by protecting tube for waterproof and heat resistance.

FEATURES OF CE-250:
1.Main power supply: 1-phase, 50/60 Hz A.C.110 V.
2.Limit switch is waterproof and controlled with voltage A.C.110 V.
3.Power cord and circuit are wrapped by protecting tube for waterproof and heat resistance.

FEATURES OF SP-250, AL-250, AL-235, AL-99:
1.Main power supply: 1-phase, 50/60 Hz A.C.110 V.
2.Limit switch is waterproof and controlled with voltage A.C.110 V.

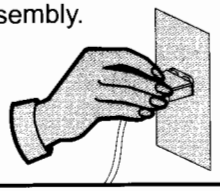
SPECIFICATION

Model	R.P.M.	Max R.P.M.	Gear Rate	Max Torque	Voltage
SP-250(A,B,D)	4~160	200	4.8:1	650 in-lb	110V 60Hz
AL-250(A,B,D)	0~200	200	4:1	550 in-lb	110V 60Hz
AL-235(A,B,D)	0~140	200	4:1	440 in-lb	110V 60Hz
AL-99	0~165	240	3.5:1	550 in-lb	110V 60Hz

VOLTAGE AS 220V-440V HAVE TO ADOPT TRANSFORMER

WARNNING

Please make sure if power supply be turned off before assembly, and avoid from accident caused during procedure of asssembly.



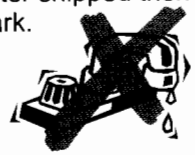
Please don't disassemble for fixing or refitment and free from accident or break down caused by unhealth assembly.

Please take apart the drill and remove worked item before assembly.

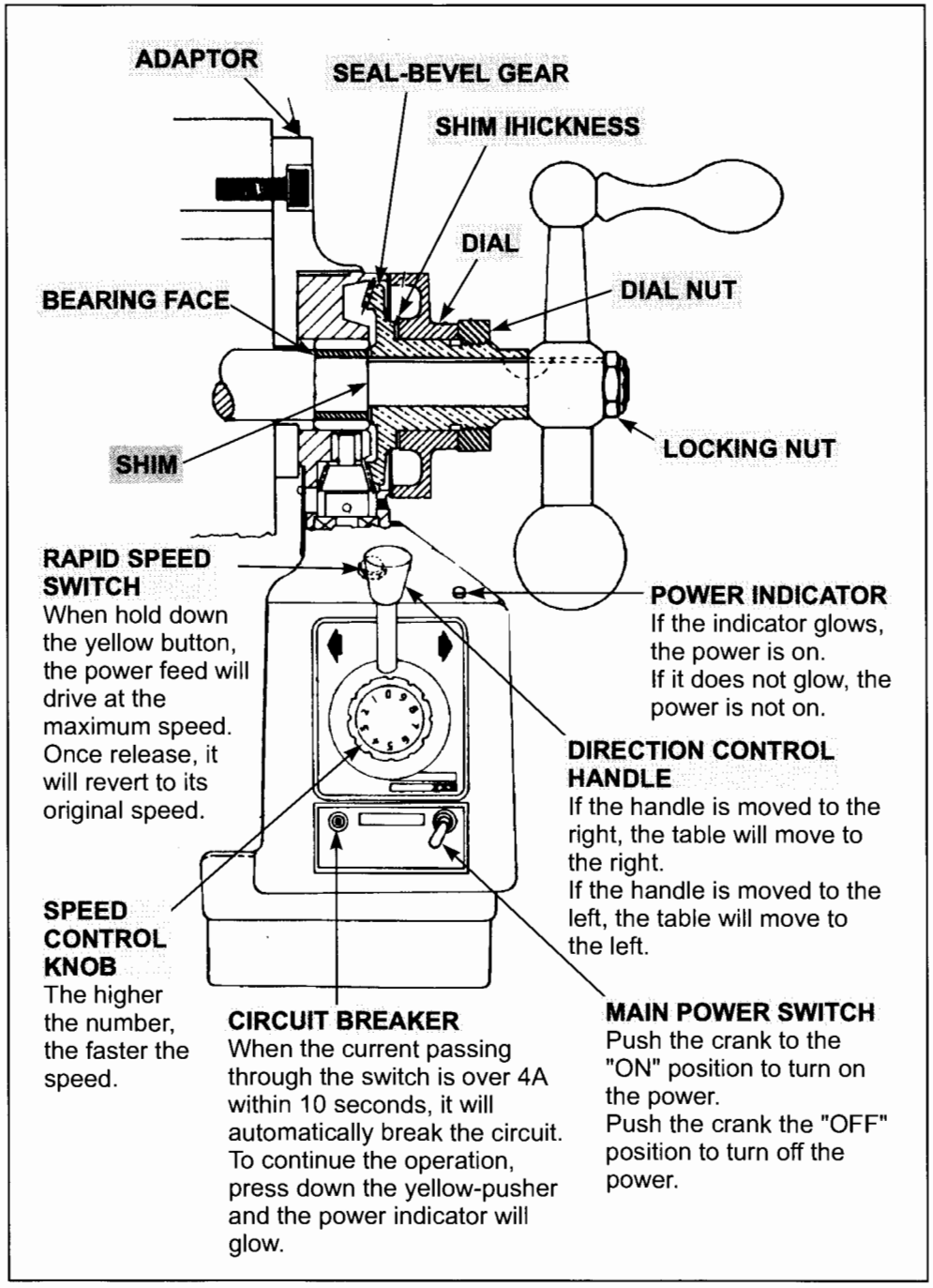
Please make sure input voltage for power feed as A.C.110 V and avoid wrong power then burn down circuit board, except A.C.110 V, please adopt the transformer.

Please adjust suitable length of cord and watch out the wiring, never pressure power cord by clog then ambroin broken cause short or spark.

Please don't set the power feed in excessive wettish working zone and don't wash down the power feed by water or water shipped then cause short or spark.

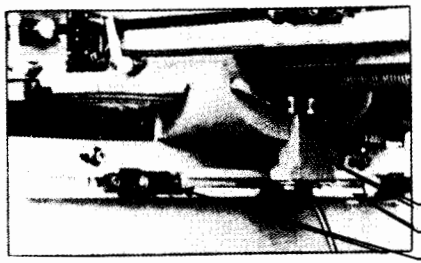


HOW TO INSTALL THE LONGITUDINAL FEED(A TYPE)



HOW TO INSTALL CROSS FEED(B TYPE)

HOW TO INSTALL T-WAY TRACK FOR CROSS-FEED

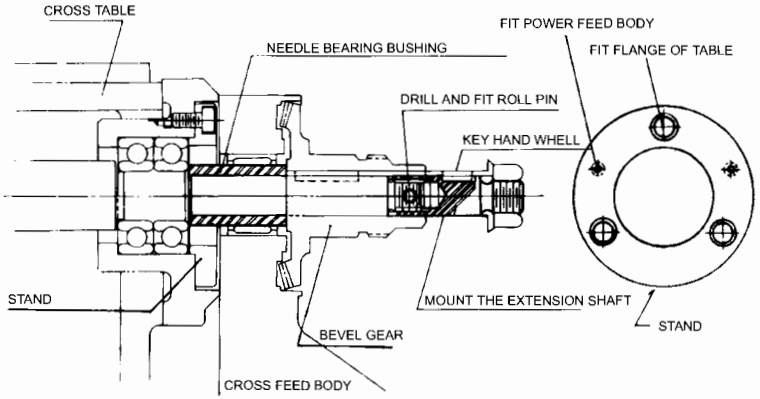


T-way bar and bracket for limit switch are designed for simple installation on cross slide.

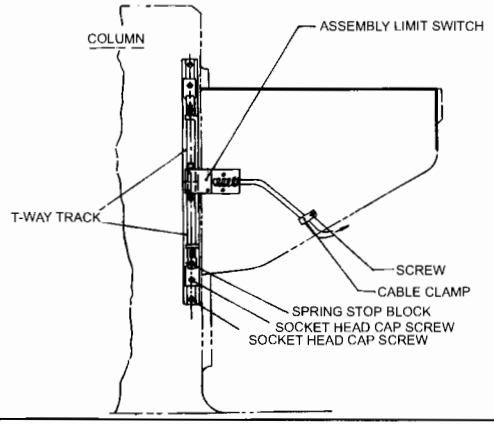
FIXED SUPPORT
T-WAY TRACK
STOP BLOCK

INSTALLATION INSTRUCTIONS

For ideal installation. You should not modify the cross travel lead screw.



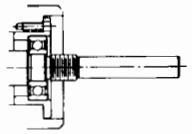
HOW TO INSTALL T-WAY TRACK FOR KNEE-LIFT FEED



VIEW OF LIFT SIDE OF KNEE AND COLUMN

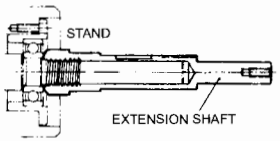
HOW TO INSTALL KNEE LIFT FEED(D TYPE)

1.



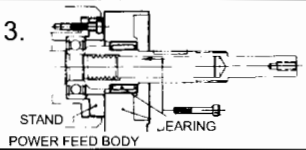
Note: Remove hand crank, dial, dial socket, Bearing flange and.....Etc.

2.



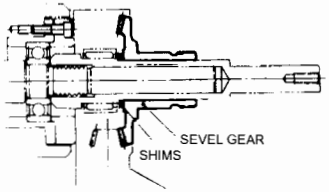
Note: Install extension shaft.
Important:
1.Shaft end must be against inner ring of bearing.
2.Inner shaft is 16 or 18 threaded unc.

3.



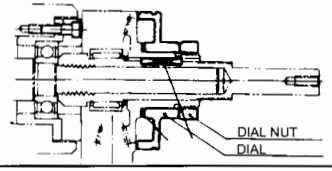
Note: Tighten stand to flange then tighten knee feed on the flange.
Important: For angular positioning.

4.



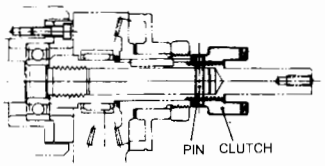
Note: Install gear key not in.
Important: Use hand to push & turn bevel gear to check backlash.
1.If necessary add a few shims to obtain proper backlash.
2.Modify leading edge of gear to obtain proper back lash. Then repack gear with grease. Replace gear then push and turn to check for backlash.

5.



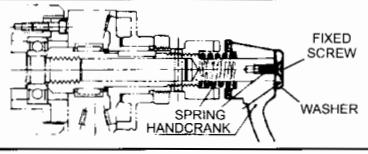
Note: Remove the bevel gear arter STEP 4 is O.K. then install key, replace gear, install dial, and tighten dial nut. Add a few shim if dial is grinding the gear.
Important: Pack with grease before installing the gear. Do not use silicon-type grease.

6.

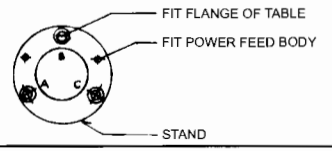


Note: Install checkclutch against bevel gear then drive through one hole of 5mm Dia. Then drive spring pin.
Important: Be sure you have followed each step carefully and correctly before installing the spring pins.
Suggestions: Install hand crank rotate in clockwise direction to check for proper shimming and that there is no binding action.

7.



Note: Install spring handcrank (already installed), then tighten washer and screw.
Important: For operational safety, please lbricate this part and install as per instructions.

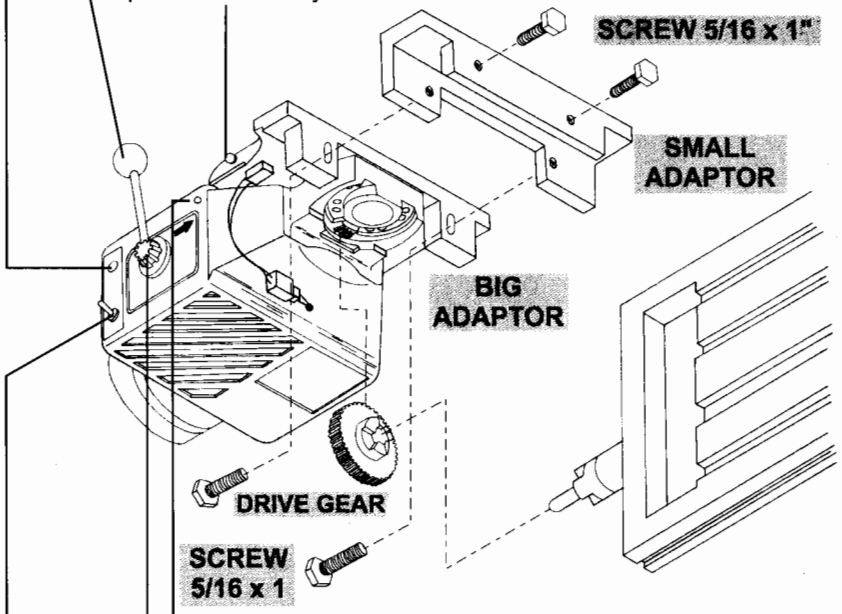


HOW TO INSTALL AL/CE-99 LONGITUDINAL FEED

CIRCUIT BREAKER
To protect the circuit from current overload. When the current passing the switch is over 3A for about 10 seconds, the protective device will slip off automatically to break the circuit. Press down the red pusher of the protective device and indicator will glow so as to continue the function.

DIRECTION HANDLE
To control the driving direction of the POWER FEED. Move the handle to the right, TABLE will move to the left, TABLE will move to the left. C.

RAPID SWITCH
Press down the orange button the, Power Feed will drive with its max. Speed. The speed gose back to its previous velocity after a release of such button.

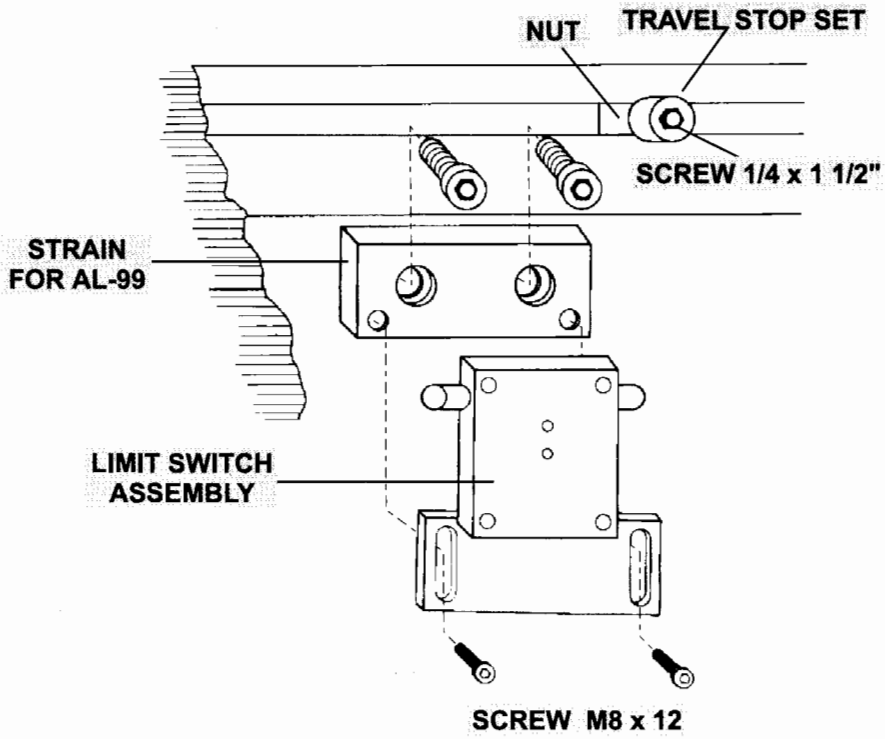


INDICATOR
To show if the power is on. Indicator glows to show the power is on and if it doesn't light up, that means no power is supplied.

SPEED CONTROL KNOB
Control the rotating speed of POWER FEED.

ON-OFF SWITCH
A power service controller. Push the creank to the position ON to serve power and to the position OFF to stop power supply.

ASSY-LIMIT ASSEMBLY



TROUBLE SOLUTION

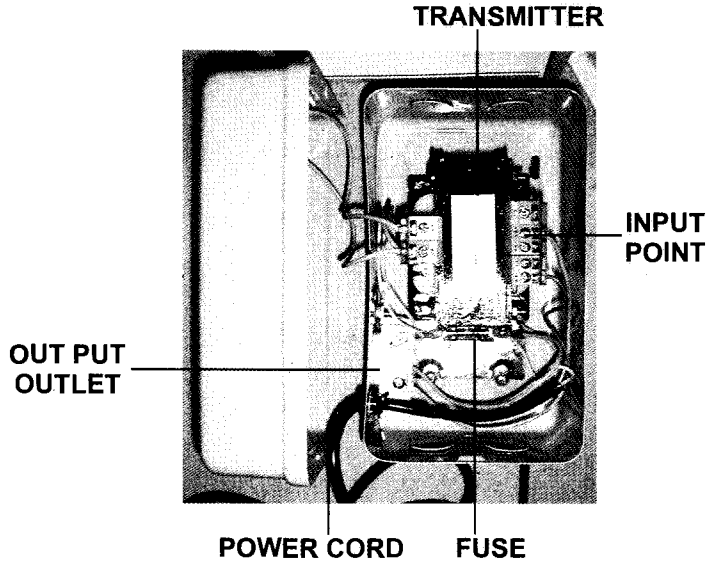
1. When the POWER FEED doesn't work and the INDICATOR doesn't glow.
   CHECK:
   1)Check if it is plugged in.
   2)Check if ON-OFF switch at on.
   3)Check if BREAKER is turned off.
2. POWER FEED doesn't work and the INDICATOR lights up.
   CHECK: If the BRUSH is normal.
3. POWER FEED can only move to one direction.
   CHECK: If ASSY-LIMIT SWITCH is normal.
4. Touch ASS-LIMIT SWITCH POWER FEED in-between the TABLE and unable to stop it.
   CHECK: If ASS-LIMIT SWITCH is normal.

HOW TO INSTALL TRANSMITTER OF TR-1

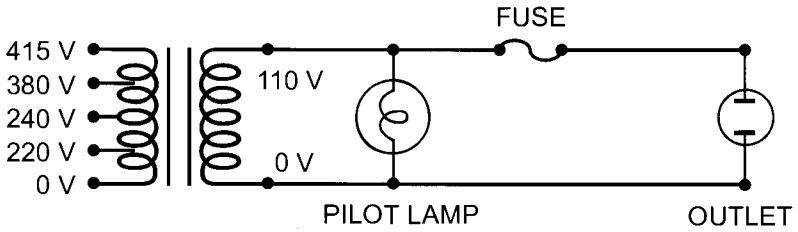
TRANSMITTER OF TR-1 IS USED FOR 220V, 240V, 380V AND 415V THEN TRANSFER TO 110V.ATTACHING POWER PILOT LAMP AND ONE OUTPUT OUTLET.

ASSEMBLING GUIDE:

1.Make sure the voltage of working environment.
2.Choose the exact input point and well ftix up.
3.Make sure whole screws of transformer are well locked.
4.Setting transformer on stable and dry wall.
5.Collecting cable and wire on the wire box of working place.
6.Keep from accident caused, don't disassemble and refit locked parts or wiring of transformer when assembly proceeding.



CIRCUIT

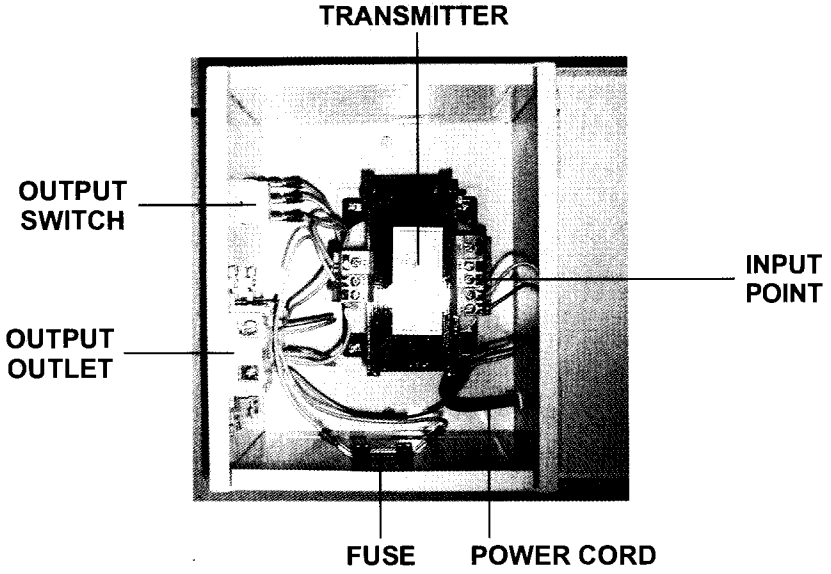


HOW TO INSTALL TRANSMITTER OF TR-2

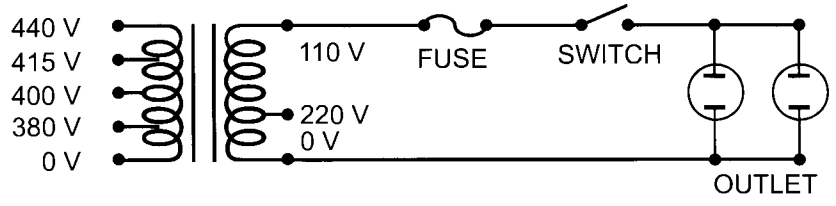
TRANSMITTER OF TR-2 IS USED FOR 380V, 400V, 415V AND 440V THEN TRANSFER TO 110V OR 220V. ATTACHING POWER SWITCH AND TWO OUTPUT OUTLET.

ASSEMBLING GUIDE:

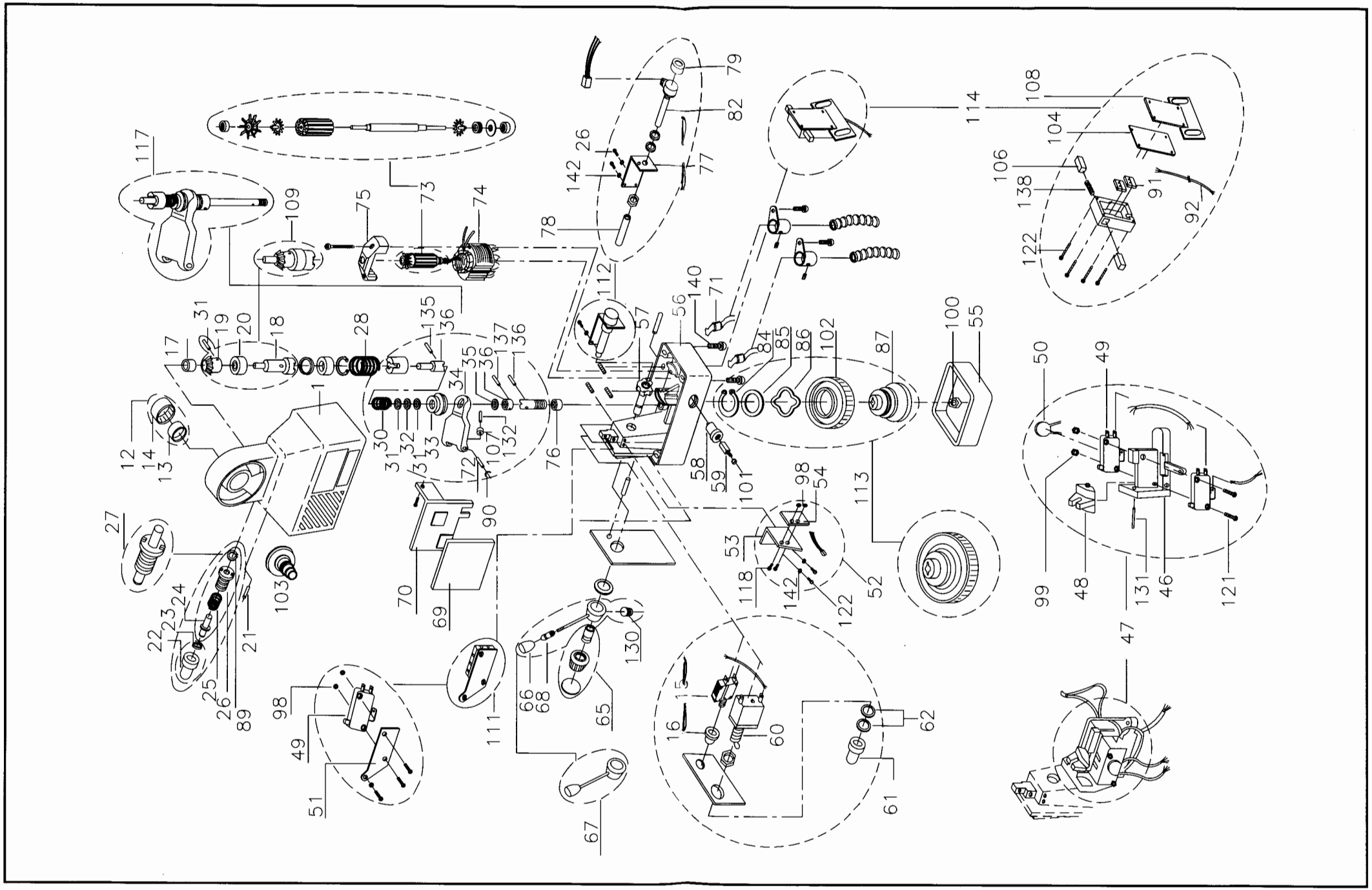
1.Make sure the voltage of working environment.
2.Choose the exact input point and well fix up.
3.Make sure whole screws of transformer are well locked.
4.Setting transformer on stable and dry wall.
5.Collecting cable and wire on the wire box of working place.
6.Keep from accident caused, don't disassemble and refit locked parts or wiring of transformer when assembly proceeding.



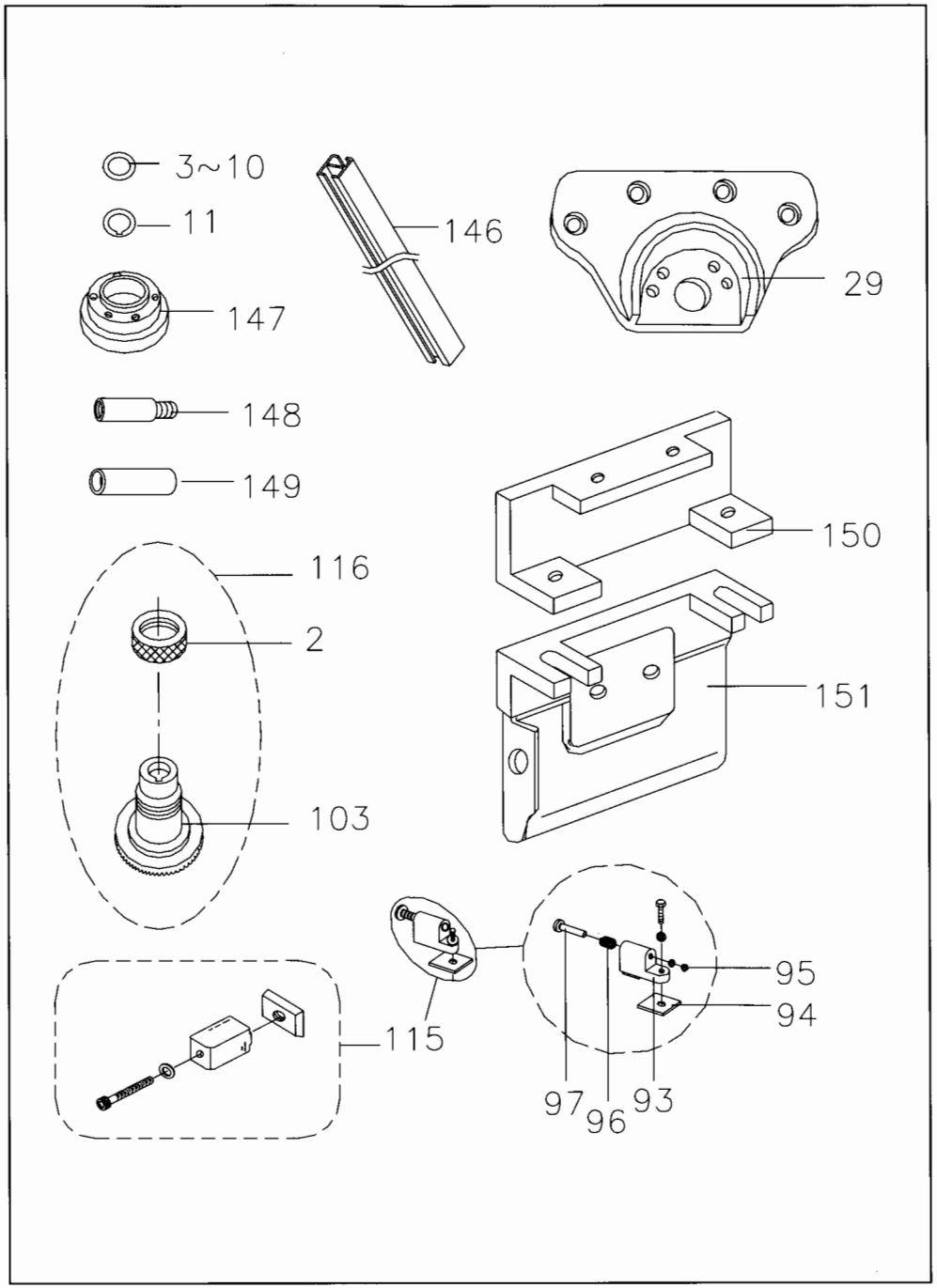
CIRCUIT



SCHEMATIC DIAGRAM OF PARTS

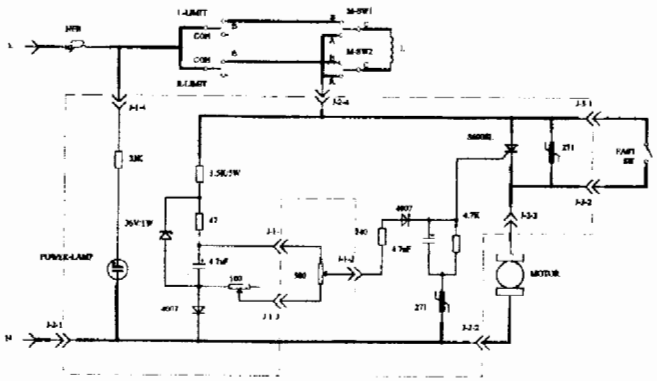


SCHEMATIC DIAGRAM OF ACCESSORY

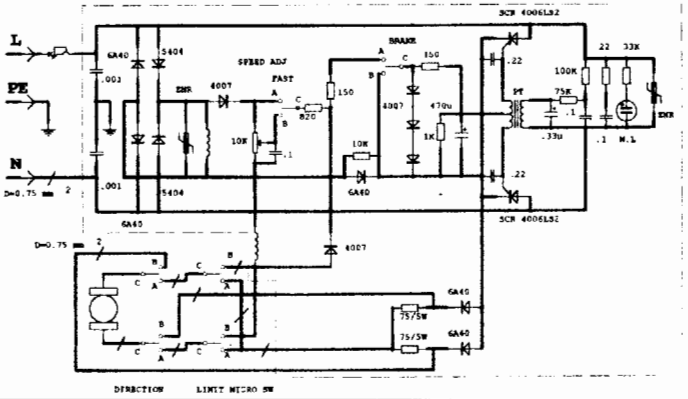


CIRCUIT DIAGRAM

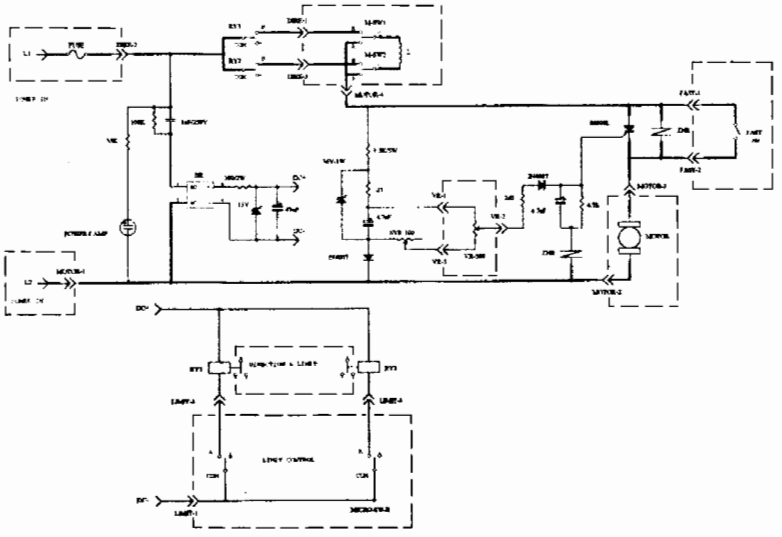
AL-235
AL-99



SP-250
AL-250
CE-250



CE-235
CE-99



NO.	PART NAME	PART NO.	SPECIFICATION	REMARK
1	TOP HOUSING	A0100		FOR AL-235\250
	SP TOP HOUSING	P01020		FOR SP SER.
	99 TOP HOUSING	A0100X		FOR AL\CE-99
2	BEVEL GEAR NUT	A0100-01		
3	WASHER	A0100-02A	0.2xϕ34xϕ45	
4	WASHER	A0100-02B	0.4xϕ34xϕ45	
5	WASHER	A0100-02C	0.6xϕ34xϕ45	
6	WASHER	A0100-02D	0.1xϕ34xϕ45	
7	WASHER	A0100-04A	0.2xϕ16xϕ23.5	
8	WASHER	A0100-04B	0.4xϕ16xϕ23.5	
9	WASHER	A0100-04C	0.6xϕ6xϕ23.5	
10	WASHER	A0100-04E	0.1xϕ16xϕ23.5	
11	WASHER	A0100-07A	2xϕ16xϕ25.4	
12	NEEDLE BEARING	A0101A		
13	INNER RING	A0101B		
14	NEEDLE BEARING	A0101C		
15	CIRCUIT BREAKER	A0102		
16	CAP OF CIRCUIT BREAKER	A0102-01		
17	BUSHING BEARING	A0103	ϕ6xϕ12x 11.5	
18	DRIVE GEAR SHAFT	A0106		FOR AL SER.
	DRIVE GEAR SHAFT	P01022		FOR SP SER.
19	DRIVE GEAR	A0106V		FOR AL SER.
	SP DRIVE GEAR	P01021		FOR SP SER.
	99 DRIVE GEAR	A0106X		FOR AL\CE-99
20	SPACER	A0109		
21	LIGHT TRANSMITTER	A0110		
22	HEX. SEAL BOOT	A0111-01		
23	NUT FOR RAPID SWITCH	A0111-01A		
24	RAPID SWITCH PLUNGER	A0111-02		
25	SPRING FOR RAPID SWITCH	A0111-03		
26	RAPID SWITCH HOUSING	A0111-04		
27	RAPID SWITCH BUTTON	A0111-1-5		
28	SPRING FOR TOP HOUSING	A0112		
29	ADAPTOR	A0113		
30	SPRING FOR CLUTCH	A0301-05		

NO.	PART NAME	PART NO.	SPECIFICATION	REMARK
31	WASHER TRA	A0301-06	512	
32	WASHER BEARING NTA	A0301-07	512	
33	BEARING CUP	A0301-08		
34	LIFTFORK	A0301-09		
35	WASHER	A0301-10	1xϕ8xϕ18	
36	SHAFT MOUNT	A0301-12A		
37	WIRE	ALW-25-1	24AWGx L59	
38	WIRE	ALW-26	18AWGx L50	
39	WIRE	ALW-3	22AWG	
40	WIRE	ALW-6	22AWGx L116	
41	WIRE	ALW-7	22AWGx L160	
42	WIRE	ALW-8	22AWGx L100	
43	WIRE	ALW-9	22AWGx L100	
44	BEARING	B00001	627ZZ	
45	BEARING	B00006	608ZZ	
46	MICRO SWITCH HOLDER	C0501		
47	MICRO SWITCH ASSY	C0501-6V		
48	SWITCH ACTURATOR	C0502		
49	MICRO SWITCH	C0504		
50	CAPACITOR	C0506		
51	MICRO SWITCH HOLDER	C0507		
52	MICRO SWITCH ASSY	C0508		
53	MOUNTING PLATE	C0508-01		
54	MICRO SWITCH	C0508-02		
55	BOTTOM COVER	D0701V		FOR AL SER.
	99 BOTTOM COVER	D0701		FOR 99 SER.
	SP BOTTOM COVER	P01010		FOR SP SER.
56	BOTTOM HOUSING	P01941		FOR AL\SP
	99BOTTOM HOUSING	P01942		FOR AL\CE-99
57	250 CAM ASSEMBLY	E0902V		FOR 250 SER.
	235 CAM ASSEMBLY	E0902P		FOR 235 SER.
	99 CAM ASSEMBLY	E0902X		FOR AL\CE-99
58	CARBON BRUSH SET	E0904		
59	BRUSH	E0905		
60	ON-OF SWITCH	E0907		

NO.	PART NAME	PART NO.	SPECIFICATION	REMARK
61	CAP OF ON-OFF SWITCH	E0907-01		
62	WASHER	E0907-02		
63	SPRING WASHER	E0910	627	
64	SET SCREW	E0911	1/4"x 1/4"	
65	SPEED CONTROL KNOB	E0912		FOR AL SER.
	SPEED CONTROL KNOB	P01024		FOR SP SER.
66	HANDLE KNOB	E0913		
67	180° CONTROL HANDLE	E0913-01		
	90° CONTROL HANDLE	E0913-02		
68	INNRE RING	E0913A		
69	CIRCUIT BOARD INSULATOR	E0915V		
70	250 CIRCUIT BOARD ASSY	E0916V		FOR 250 SER.
	235 CIRCUIT BOARD ASSY	JC2H		FOR 235 SER.
	CE CIRCUIT BOARD ASSY	JC5H		FOR CE235\99
71	STRAIN RELIEF	E0917		
72	LIFTFORK SHAFT	E0922		
73	AL ARMATURE ASSY	E0925V		FOR AL SER.
	SP ARMATURE ASSY	P01907		FOR SP SER.
74	250 MOTOR FIELD	E0926V		FOR 250 SER.
	235 MOTOR FIELD	E0926P		FOR 235 SER.
75	BEARING MOUNT	E0927A		
76	BUSHING	E0928	ϕ8xϕ14.8x 20	
77	STRAIN OF POTENTIOMETER	E0929-01		
78	RING OF POTENTIOMETER	E0929-02		
79	CAP OF POTENTIOMETER	E0929-03		
80	WASHER OF POTENTIOMETER	E0929-04		
81	NUT OF POTENTIOMETER	E0929-05		
82	250 POTENTIOMETER	E0929V	10KΩ	FOR 250 SER.
	235 POTENTIOMETER	E0929P	500Ω	FOR 235\99
83	POWER CORD	E0930	0.75x 3Cx 2.7M	
84	CRESCENT RING	E0934-01	S38	
85	WASHER	E0934-02	1.5xϕ38xϕ54	
86	SPRING WASHER	E0934-03	6205	
87	HUB OF ZYTEL GEAR	E0934-04		
88	CRESCENT RING	F01001	IR24	

NO.	PART NAME	PART NO.	SPECIFICATION	REMARK
89	E-RING	F10040	E4	
90	E-RING	F10050	E5	
91	MICRO SWITCH	F1104		
92	CONTROL CORD	F1106A-2	0.75x 4Cx 1.7M	FOR AL\SP-250
	CONTROL CORD	F1106V	0.75x 3Cx 1.7M	FOR 235\99
93	TRAVEL STOP	G0100-011		
94	NUT	G0103		
95	CRESCENT RING	G0106		
96	SPRING	G0107		
97	TRAVEL STOP SHAFT	G0108		
98	NUT	N10020	M 2	
99	NUT	N10030	M 3	
100	NUT	N22001	5/16"	
101	CARBON BRUSH CAP	E0906		
102	PLASTIC GEAR	P01007		
103	BEVEL GEAR	P01012	16x 4	FOR AL SER.
	BEVEL GEAR	P01013	5/8"x 1/8"	FOR AL SER.
	BEVEL GEAR	P01014	22x 4	FOR AL SER.
	BEVEL GEAR	P01016	16x 4	FOR SP SER.
	BEVEL GEAR	P01025	5/8"x 3	
	BEVEL GEAR	P01026	17x 5	
	BEVEL GEAR	P01039	20x 6	
	SP BEVEL GEAR	P01017	5/8"x 1/8"	FOR SP SER.
	SP BEVEL GEAR	P01032	22x 4	
	SP BEVEL GEAR	P01054	20x 6	
104	LIMIT SWITCH COVER	P01015		
105	LIMIT SWITCH HOLDER	P01018		
106	ACTUATOR	P01019		
107	LIFTFORK RING	P01028		
108	HOLD PLATE	P01040	30°	
109	DRIVE GEAR ASSY	P01901		FOR AL SER.
110	LIFTFORK ASSEMBLY	P01903		
111	MICRO SWITCH ASSY	P01904		
112	250 POTENTIOMETER ASSY	P01905		FOR 250 SER.
	235 POTENTIOMETER ASSY	P01908		FOR 235\99

NO.	PART NAME	PART NO.	SPECIFICATION	REMARK
113	ZYTEL GEAR ASSY	P01909		
114	LIMIT SWITCH ASSY	P01910		FOR AL\SP-250
	LIMIT SWITCH ASSY	P01924		FOR AL-235
	LIMIT SWITCH ASSY	P01925		FOR CE-250
	LIMIT SWITCH ASSY	P01926		FOR CE-235
115	TRAVEL STOP SET	P01916		
	TRAVEL STOP SET	P01943		FOR AL\CE-99
116	BEVEL GEAR SET	P01917	5/8"	
117	LIFTFORK ASSEMBLY	P01923		
118	SCREW	T12010	M 2x 10	
119	SCREW	T13015	M 3x 15	
120	SCREW	T13020	M 3x 20	
121	SCREW	T13030	M 3x 30	
122	SCREW	T14006	M 4x 6	
123	SCREW	T14010	M 4x 10	
124	SCREW	T14010-1	M 4x 10	
125	SCREW	T14070	M 4x 70	
126	SET SCREW	T20001	3/16"x 3/8"	
127	SET SCREW	T20003	5/16"x 1"	
128	SET SCREW	T55035	M 5X 35	
129	SET SCREW	T60001	1/4"x 1"	
130	SET SCREW	T74004	M 4x 4	
131	PIN	U32025	ϕ2x 24.8	
132	PIN	U32516	ϕ2.5x 16	
133	PIN	U33015	ϕ3x 15	
134	PIN	U35014	ϕ5x 14	
135	PIN	U42515	ϕ2.5x 15	
136	PIN	U43014	ϕ3x 13.7	
137	PIN	U43017	ϕ3x 17.5	
138	SPRING	W04001		
139	WASHER	W10050	1xϕ5xϕ12	
140	WASHER	W10080	1xϕ8xϕ18	
141	WASHER	W10080-1	0.6xϕ8xϕ12	
142	SPRING WASHER	W20040	ϕ4	
143	ON-OFF BRAND	D20014		

NO.	PART NAME	PART NO.	SPECIFICATION	REMARK
144	LIMIT SWITCH FIXTURE	P01919		
	LIMIT SWITCH FIXTURE	P01948		FOR AL\CE-99
145	EXTENSION SHAFT	P01922	16 t	OPTION
	EXTENSION SHAFT	P01929	20 t	OPTION
146	T-WAY TRACK	A0301-15A	60 CM	OPTION
	T-WAY TRACK	A0301-15B	66 CM	OPTION
	T-WAY TRACK	A0301-15E	30 CM	OPTION
147	ALUM STAND	PFB-01	28 t	OPTION
	ALUM STAND	PFB-02	35 t	OPTION
	STAND	PFB-18	13 t	OPTION
148	EXTENSION SHAFT	PFB-06	L 54.7	OPTION
	EXTENSION SHAFT	PFB-07	L 69	OPTION
	EXTENSION SHAFT	PFB-07A	L 79	OPTION
	EXTENSION SHAFT	PFB-08	L 80	OPTION
	EXTENSION SHAFT	PFB-15	L 52	OPTION
	EXTENSION SHAFT	PFB-16	L 60	OPTION
149	EXTENSION SHAFT RING	PFB-03	L 40	OPTION
	EXTENSION SHAFT RING	PFB-04	L 54.7	OPTION
	EXTENSION SHAFT RING	PFB-05	L 65	OPTION
	EXTENSION SHAFT RING	PFB-09	L 27	OPTION
	EXTENSION SHAFT RING	PFB-10	L 33	OPTION
	EXTENSION SHAFT RING	PFB-13	L 30	OPTION
	EXTENSION SHAFT RING	PFB-14	L 42	OPTION
150	SMALL ADAPTOR	A011399A		FOR AL\CE-99
151	BIG ADAPTOR	A011399		FOR AL\CE-99

TROUBLE SHOOTING

THE POWER FEED DOES NOT WORK AND THE POWER INDICATOR DOES NOT GLOW :

1.Ensure there is no problem with power supply.
2.Check if the circuit breaker on the power feed unit kicked out.
3.Check for proper contact at the ON-OFF switch.

THE MOTOR DOES NOT WORK WHEN PUSH DIRECTION LEVER TO EITHER LEFT OR RIGHT :

1.Open power feed unit by loosening bottom 4 hex screws.
2.Check if the carbon brush is making proper contact with the armature or if carbon brush is all used up already.
3.Check that internal wiring to the printed circuit board are all connected.
4.Check that the potentiometer connections are intact and that it is functioning properly.

SPEED CONTROL IRRATIC OR ALWAYS AT HIGH SPEED ONLY :

1.Check rapid micro switch. Make sure it is not stuck. If its position is too high up, lightly tap on it to lower.
2.Check V.R. is in good connection and proper function.

BREAKER ALWAYS KICKS OUT ON POWER FEED UNIT UNDER NORMAL USAGE :

Short circuit in the armature, need to be replaced new armature.

CURRENT LEAKAGE :

1.Check limits switch assembly for possible short.
2.Check armature by first removing the brush cap.
3.Measure for short with an ohmmeter across the carbon brush and the outer cover of the power feed unit.

CAUTION:

1.It will damage the gear of power feed if you suddenly change the direction of power feed by pushing the direction control handle while the machine is under high-speed operation. If you intend to change the direction, please push the handle to the "off" position. Waiting until the machine is completely stopped, then push the handle to your intended direction.
2.Please make sure the position of the stop screw for your milling machine is keeping on "loose" status.
3.While the power feed is under operation, please don't change to use manual control the direction suddenly.