



# OPERATOR'S MANUAL

**Metal Working**



## VARIABLE SPEED VERTICAL MILL MODEL: VM-1054E-VS

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**Book 2 of 2**

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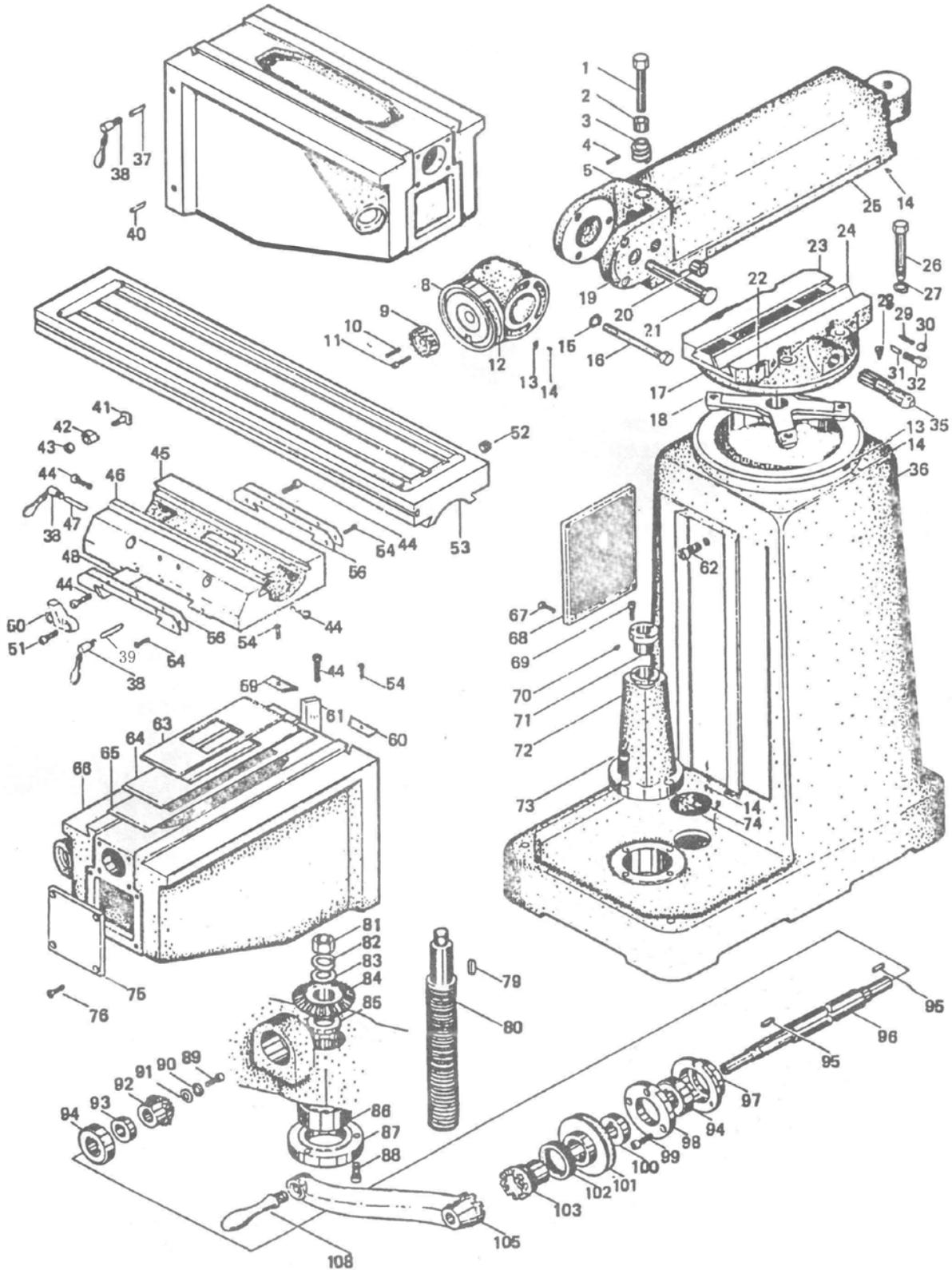


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# BASE MACHINE PARTS DIAGRAM





**Base Machine Parts List**

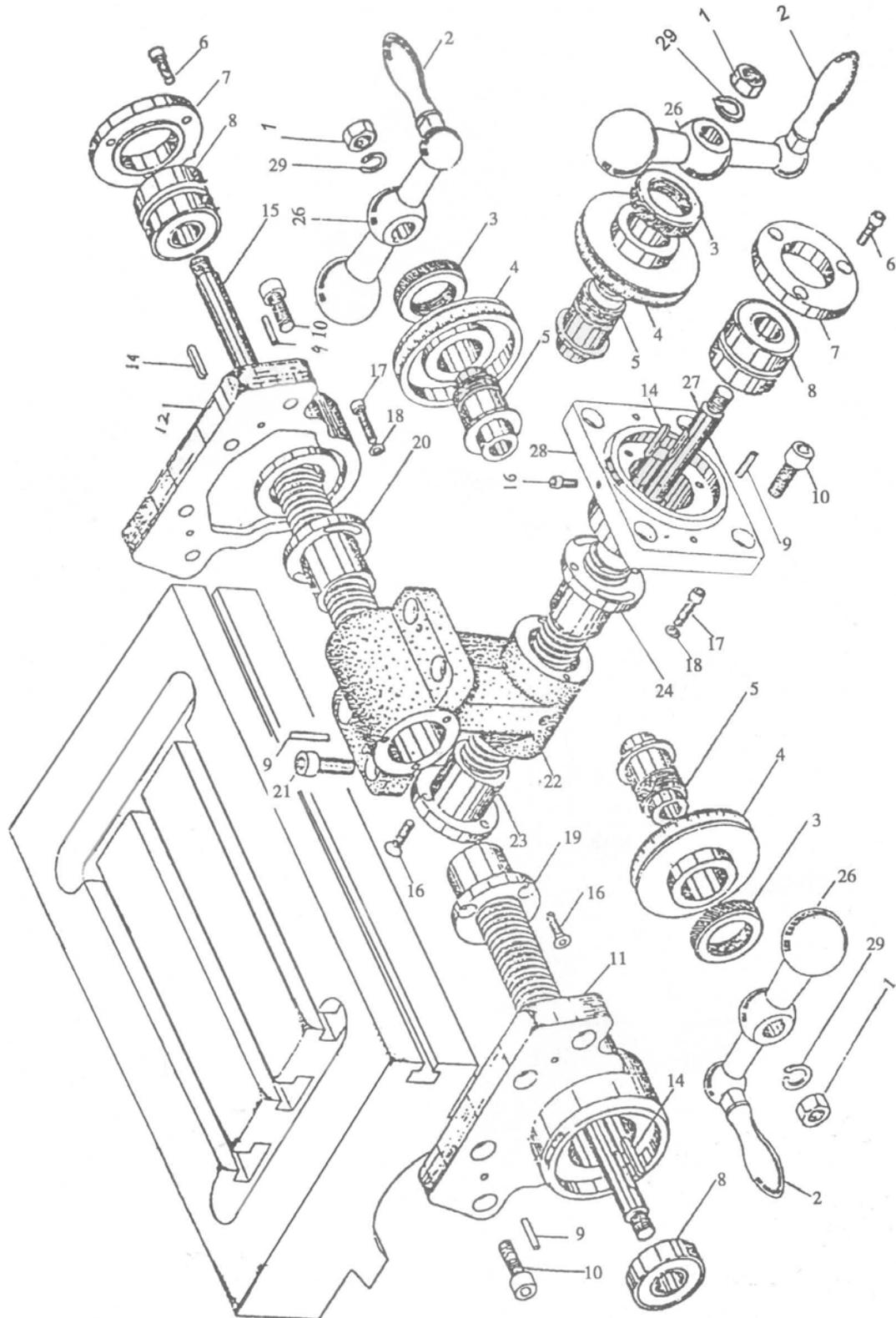
Item	Description	Item	Description
C001	Worm Shaft	C053	Work Table
C002	Sleeve of Worm Shaft	C054	Round Head Screw
C003	Worm	C056	Oil Scraper
C004	Spring Pin	C059	Right Oil Scraper
C005	Ram	C060	Left Oil Scraper
C008	Adapter	C061	Gib Of Knee
C009	Worm	C062	Travel Set Screw
C010	Spring Pin	C063	Chip Guard
C011	Hex. Socket Screw	C064	Chip Guard
C012	Mark	C065	Chip Guard
C013	Zero Indicator	C066	Knee
C014	Rivet	C067	Hex. Socket Screw
C015	Spring Lock Washer	C068	Side Cover Plate
C016	Lock Screw	C069	Hex. Socket Screw
C017	Mark	C070	Oil Nozzle
C018	Bracket	C071	Elevating Nut
C019	Ruler	C072	Lead Screw Bracket
C020	Sleeve	C073	Hex. Socket Screw
C021	Axle of Adapter	C074	Filter Screen
C022	Zero Indicator	C075	Front Cover
C023	Turret	C076	Hex. Socket Screw
C024	Gib	C077	Hex. Socket Screw
C025	Ruler	C079	Key
C026	Bracket Screw	C080	Elevating Lead Screw
C027	Spring Lock Washer	C081	Hex. Head Nut
C028	Set Screw	C083	Washer
C029	Lock Screw	C084	Bevel Gear
C030	Hex. Head Screw	C085	Washer
C031	Lock Pin	C086	Bearing
C032	Lock Screw	C087	Bearing Shield
C035	Gear Shaft	C088	Hex. Socket Screw
C036	Body	C089	Hex. Socket Screw
C037	Lock Pin	C092	Pinion Bevel Gear



Item	Description	Item	Description
C038	Lock Handle	C093	Adjusting Spacer
C039	Lock Pin	C094	Bearing
C040	Lock Pin	C095	Key
C041	Travel Set Handle	C096	Elevating Shaft
C042	Travel Set Block	C097	Baring Bracket
C043	Nut	C098	Bearing Shield
C044	Adjusting Screw for Gib	C099	Hex. Socket Screw
C045	Saddle	C100	Washer
C046	Gib Of Table	C101	Dial Plate
C047	Lock Pin	C102	Nut
C048	Gib Of Saddle	C103	Clutch Sleeve
C050	Travel Stop Block	C105	Elevating Crank Handle
C051	Hex. Socket Screw	C106	Washer
C052	Screw Plug	C108	Handle



## WORK TABLE PARTS DIAGRAM



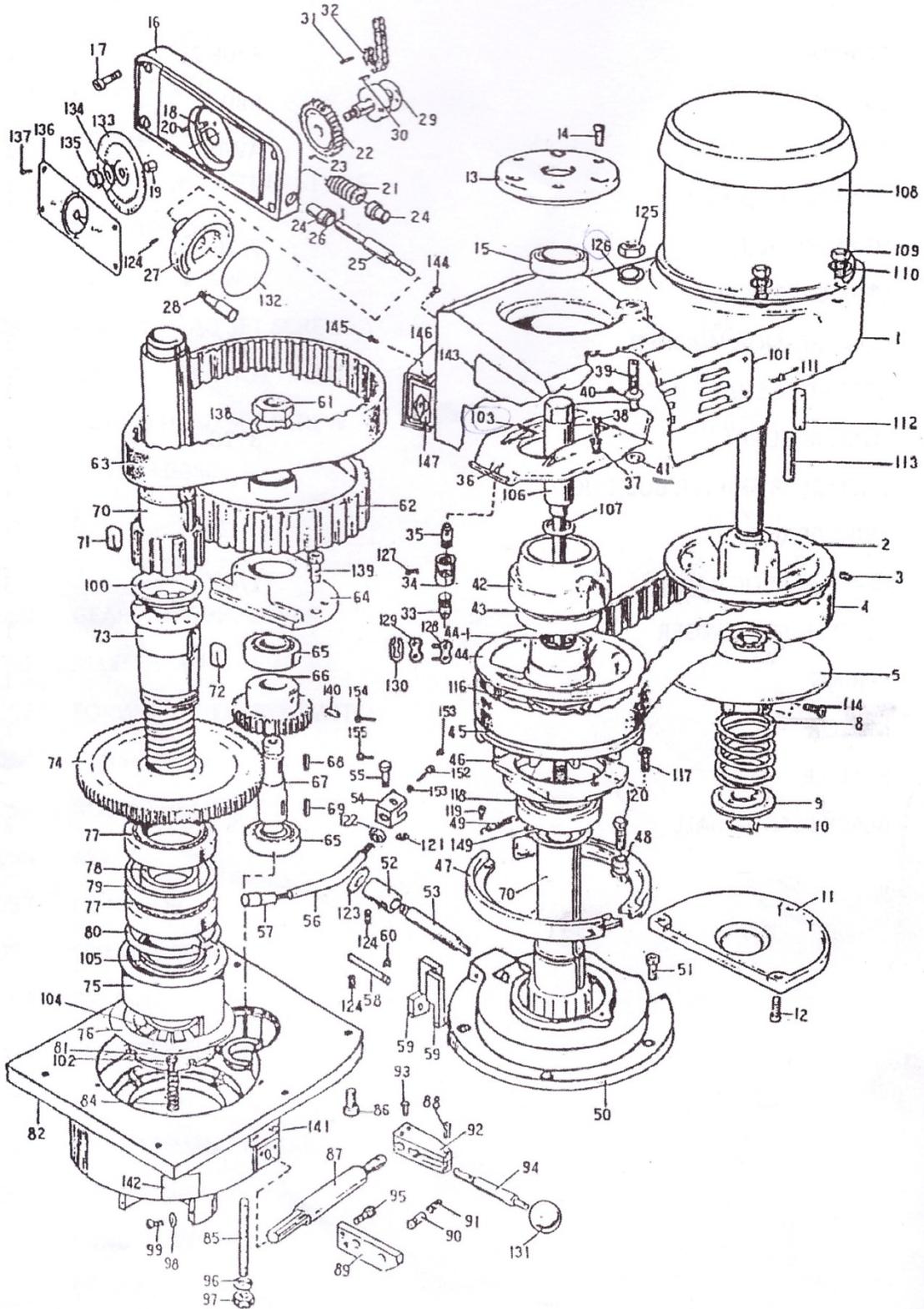


## Work Table Parts List

Item	Description
D001	Hex. Head Nut
D002	Handle
D003	Dial Plate Lock Nut
D004	Dial Plate
D005	Dial Plate Holder
D006	Screw
D007	Bearing Shield
D008	Bearing
D009	Pin
D010	Screw
D011	Left Bearing Bracket
D012	Right Bearing Bracket
D013	Bearing
D014	Key
D015	Longitudinal Feed Screw
D016	Screw
D017	Screw
D018	Washer
D019	Longitudinal Feed Nut
D020	Longitudinal Feed Nut
D021	Screw
D022	Feed Nut Bracket
D023	Cross Lead Feed Nut
D024	Cross Lead Feed Nut
D026	Crank Handle
D027	Cross Feed Screw
D028	Bearing Bracket
D029	Lock Washer



# VARIABLE SPEED MILLING HEAD PARTS DIAGRAM - A





**Variable Speed Milling Head Parts List - A**

Item	Description	Item	Description
VS-1	Belt Housing Assembly	VS-77	Bearing 6908ZZ
VS-2	Motor Fixed Pulley	VS-78	Inner Spacer
VS-3	Screw M8*8	VS-79	Out Spacer
VS-4	Variable Speed Timing Belt	VS-80	Retaining Ring 62
VS-5	Moveable Motor Pulley	VS-81	Gear Shaft Locknut M40*1.0
VS-5/1	Sleeve	VS-82	Rear Gear Box
VS-8	Spring	VS-84	Spring
VS-9	Spring Cover	VS-85	Bolt
VS-10	Retainer Ring	VS-86	Screw M8*25
VS-11	Motor Pulley Rear Cover	VS-87	H/L Speed Change Gear Shaft
VS-12	Screw M6*16	VS-88	Pin 3*18
VS-13	Bearing Cover	VS-89	H/L Speed Change Adjust Block
VS-14	Screw M6*25	VS-90	Alignment Pin
VS-15	Bearing 6007ZZ	VS-91	Spring
VS-16	Speed Change Box	VS-92	H/L Speed Control Lever Base
VS-17	Screw M6*30	VS-93	Screw M5*12
VS-18	Screw M6*6	VS-94	H/L Speed Control Lever
VS-19	Bushing	VS-95	Screw M6*16
VS-20	Screw	VS-96	Spring Washer 7/16"
VS-21	Worm	VS-97	Nut 7/16"
VS-22	Worm Wheel	VS-98	Washer 3/16"
VS-23	Pin 5*10	VS-99	Screw
VS-24	Brass Bushing	VS-100	Clutch Ring
VS-25	Speed Change Shaft	VS-101	Cover
VS-26	Pin 3*12	VS-102	Pin
VS-27	Speed Change Handwheel	VS-103	Pin 4*30
VS-28	Handle	VS-104	Nut
VS-29	Worm Holder	VS-105	Spacer Washer
VS-30	Pin 3*18	VS-106	Draw Bar
VS-31	Pin 3*24	VS-107	Washer
VS-32	Speed Change Chain 35#	VS-108	Motor (2P)
VS-33	Bolt	VS-109	Screw
VS-34	Adjust Screw Sleeve	VS-110	Spring Washer 3/8"



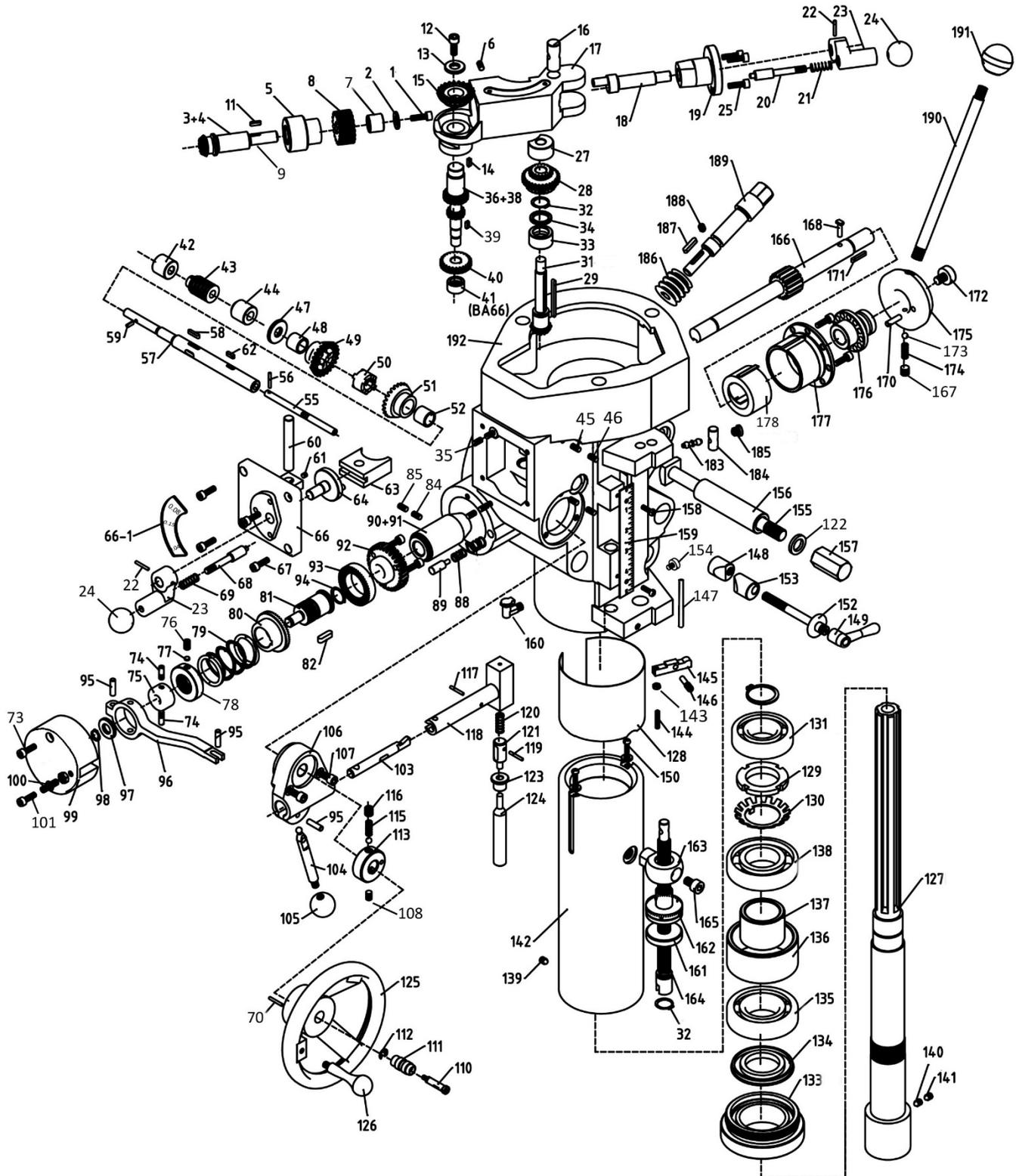
Item	Description	Item	Description
VS-35	Adjust Screw	VS-111	Screw
VS-36	Speed Change Plate	VS-112	Key 7*7*25
VS-37	Washer	VS-113	Key 7*7*30
VS-38	Screw M5*20	VS-114	Set Screw M4*10
VS-39	Adjust Screw	VS-116	Retaining Ring 40
VS-41	Washer	VS-117	Screw
VS-42	Speed Change Shaft Cover	VS-118	Bearing 6010ZZ
VS-43	Bearing 6012ZZ	VS-119	Screw
VS-44	Moveable Spindle Pulley	VS-120	Screw M6*25
VS-44-1	Housing	VS-121	Retaining Ring
VS-45	Fixed Spindle Pulley	VS-122	Nut 3/8"
VS-46	Brake Bearing Base	VS-123	Washer
VS-47	Brake Pad Assembly	VS-124	Set Screw M6*36
VS-48	Lock Nut	VS-125	Nut 3/8"
VS-49	Brake Spring	VS-126	Spring Washer 3/8"
VS-50	Brake Base	VS-127	Set Screw M4*6
VS-51	Screw M6*16	VS-128	Chain Ring
VS-52	Brake Shaft Bushing	VS-129	Chain Side Block
VS-53	Brake Shaft	VS-130	Lock Ring
VS-54	Brake Handle Joint Base	VS-131	Black Plastic Ball 1/4"
VS-55	Lock Pin	VS-132	Logo Label
VS-56	Brake Handle	VS-133	Speed Shift Indicator Label
VS-57	Black Plastic Ball 3/8"	VS-134	Washer 5/16"
VS-58	Brake Turning Shaft	VS-135	Nut 5/16"
VS-59	Brake Pad Finger Block	VS-136	Speed Shift Fixed Label
VS-60	Retaining Ring	VS-137	Screw M4*6
VS-61	Nut	VS-138	Spring Washer 5/8"
VS-62	Timing Belt Pulley	VS-139	Screw M5*20
VS-63	Timing Belt 225L	VS-140	Set Screw 1/4"
VS-64	Bearing Housing	VS-141	H/L Speed Shift Indicator Label
VS-65	Bearing 6203ZZ	VS-142	Quill Feed Plate
VS-66	Small Gear	VS-143	Logo Label
VS-67	Gear Shaft	VS-144	Screw
VS-68	Key 5*5*15	VS-145	Screw M6
VS-69	Key 5*5*18	VS-146	Power Switch Cover



Item	Description	Item	Description
VS-70	Input Clutch Gear Shaft	VS-147	Power Switch
VS-71	Key 8*8*16	VS-149	Retaining Ring
VS-72	Key 8*8*12	VS-152	Screw M4*16
VS-73	Output Clutch Gear Shaft	VS-153	Nut
VS-74	Big Gear	VS-154	Screw M4*25
VS-75	Gear Quill (Bearing Housing)	VS-155	Screw M6*12
VS-76	Spring Washer		



# VARIABLE SPEED MILLING HEAD PARTS DIAGRAM - B





**Variable Speed Milling Head Parts List - B**

Item	Description	Item	Description
B1	Screw M5*10	B99	Clutch Plate
B2	Washer	B100	Setscrew M6*16
B3	Bevel Pinion Shaft	B101	Locknut
B5	Bushing	B103	Slide Shaft
B6	Pin	B104	Feed Control Lever
B7	Worm Spacer	B105	Plastic Ball
B8	Feed Worm	B106	Feed Trip Bracket
B9	Worm Shaft	B107	Screw M6*20
B11	Key	B108	Screw M6*20
B12	Screw M8*12	B110-112	Pull Lever
B13	Washer	B113	Hand Wheel Clutch
B14	Key	B114	Steel Ball 3/16"
B15	Reversing Gear	B115	Spring
B16	Dowel Pin	B116	Screw M8*8
B17	Worm Bracket	B117	Long Pin 3*14
B18	Eccentric Shaft	B118	Slide Block
B19	Shaft Sleeve	B119	Pin 3*12
B20	Bar	B120	Spring
B21	Spring	B121	Stop Plunger
B22	Pin 3*20	B122	Spring Washer 1/2"
B23	Crank	B123	Plunger Pushing
B24	Plastic Ball 1/4"	B124	Push Bar
B25	Screw M5*12	B125	Handwheel
B27	Copper Sleeve	B126	Handle
B28	Multi-Gear	B127	Spindle
B29	Key 3*3*45	B128	Quill Skirt
B31	Multi-Gear Shaft	B129	Locknut
B32	Retaining Ring	B130	Toothed Washer
B33	Copper Sleeve	B131	Bearing 6206ZZ
B34	Washer	B132	Sleeve
B35	Screw M6*25	B133	Quill End Nut
B36	Feed Gear	B134	Spindle Dirt Shield
B38	Multi-Gear Shaft	B135	Bearing 7207



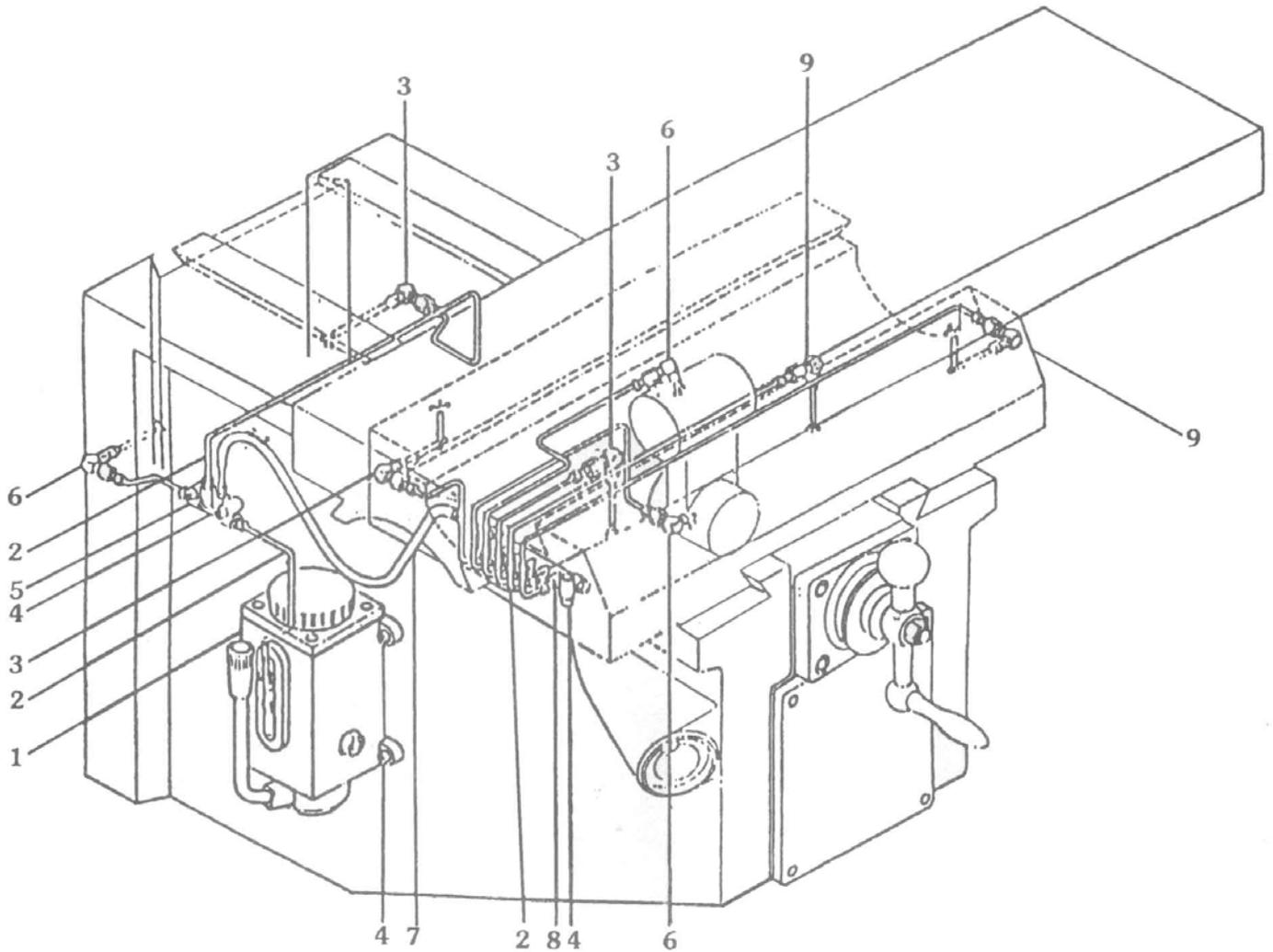
Item	Description	Item	Description
B39	Key 3*3*8	B136	(Bearing Spacer - Large)
B40	Cooper Worm Wheel	B137	(Bearing Spacer - Small)
B41	Bearing BA66	B138	Bearing 7207
B42	Copper Sleeve	B139	Screw M5*5
B43	Auto. Feed Worm	B140	Special Socket Set Screw
B44	Copper Sleeve	B141	Collet Alignment Screw
B45	Screw M8*8	B142	Quill
B46	Screw M6*8	B143	Lock Nut M4
B47	Thrust Washer	B144	Socket Set Screw M4*16
B48	Bushing	B145	Feed Trip Lever
B49	Bevel Pinion	B146	Trip Lever Pin
B50	Clutch	B147	Side Indicator Bar
B51	Bevel Pinion	B148	Quill Lock Sleeve
B52	Copper Sleeve	B149	Lock Handle
B55	Feed Control Pull Bar	B152	Washer
B56	Pin $\Phi 3 \times 20$	B153	Quill Lock Sleeve Tapped
B57	Feed Worm Shaft	B154	Lock Screw
B59	Pin $\phi 3 \times 16$	B155	T - Blot Assy
B60	Sliding Shaft	B156	Lower Clamping Blot Spacer (2 Req)
B61	Screw M5*5	B157	Locknut
B62	Key 3*3*15	B158	Round Head Screws (2 Req.)
B63	Feed Changing Fork	B159	Micrometer Scale
B64	Eccentric Shaft	B160	Oil Cup
B66	Clutch Plate	B161	Quill Micro - Stop Nut
B67	Screw	B162	Micrometer Nut
B68	Alignment Bar	B163	Quill Stop Knob
B69	Spring	B164	Quill Stop Micro - Screw
B70	Pin 3*15	B165	Screw
B73	Screw M5*35	B166	Quill Pinion Shaft
B74	Screw	B168	Spring Pin
B75	Clutch Ring	B169	Rd. Head Screw (2 Req.) M5*12
B76	Screw M6*6	B170	Roll Pin
B77	Brass Plug	B171	Key 3*3*20
B78	Overload Clutch Nut	B172	Pinion Shaft Hub Screw



Item	Description	Item	Description
B79	Spring	B173	Steel Ball 3/16"
B80	Overload Clutch	B174	Compression Spring
B81	Shaft Sleeve	B175	Rack Feed Handle Hub
B82	Key 5*8*13	B176	Pinion Shaft Hub Sleeve
B84	Screw M6*8	B177	Spring Cover
B85	Screw M6*8	B178	Clock Spring (Clock Spring Assy.)
B88	Spring	B183	Reverse Trip Ball Lever
B89	Bar	B184	Feed Reverse Trip Plunger
B90+91	Bushing	B185	Reverse/Trip Ball Lever Screw
B92	Feed Worm Wheel	B186	Worm Gear
B93	Teethed Clutch Ring	B187	Key 4*4*18
B94	Retaining Ring	B188	Socket Set Screw
B95	Pin 5*14	B189	Adj Worm Shaft
B96	Feed Control Lever	B190	Quill Feed Handle
B97	Washer	B191	Black Plastic Ball Handles 3/8"
B98	Retaining Ring	B192	Quill Housing



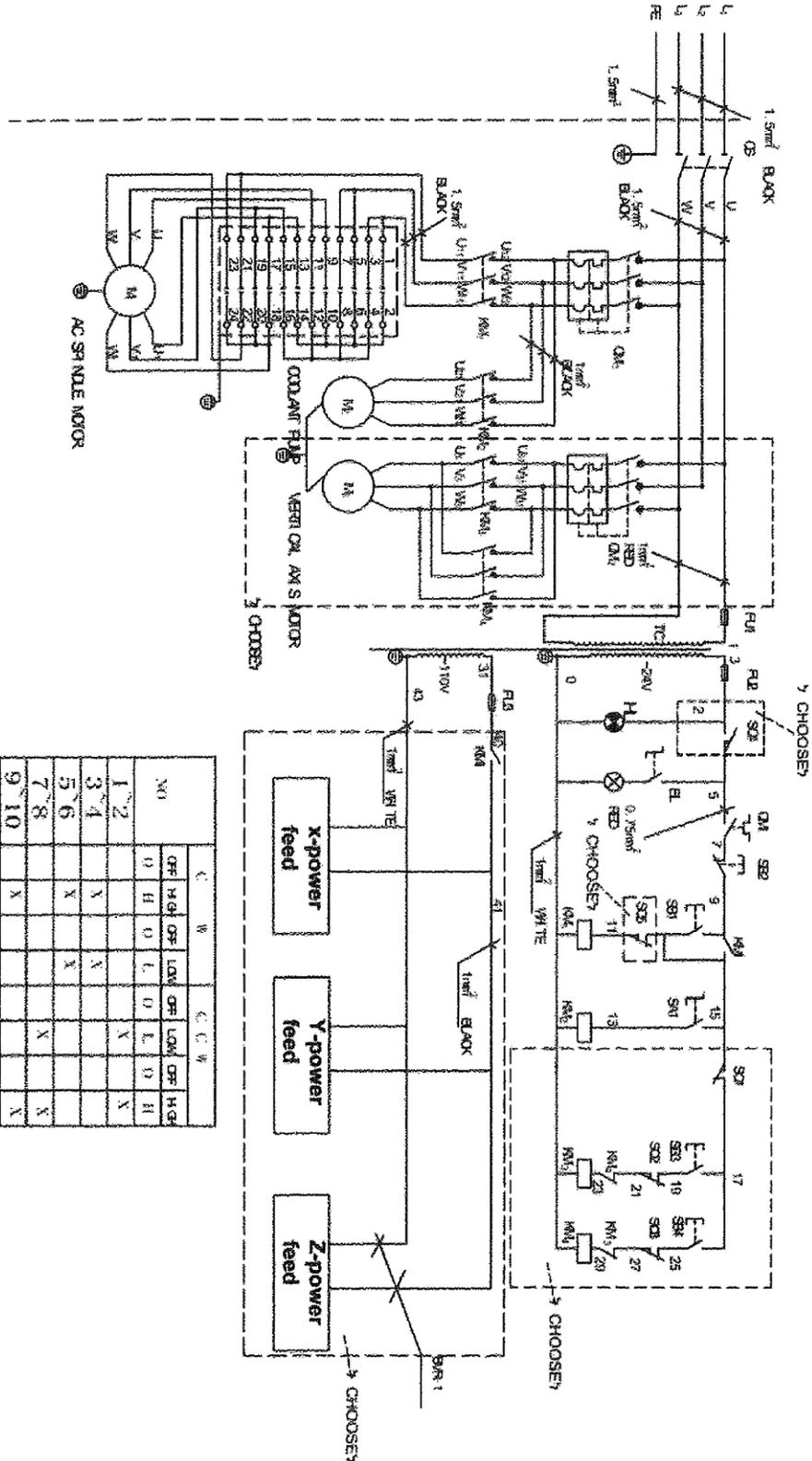
## LUBRICATION SYSTEM PARTS DIAGRAM AND LIST



Item	Description	Item	Description
B001	Hand Oil Pump	E006	Ratio Oil Distributor
B002	Pipe $\Phi 4$	E007	Steel Flexible Tube
B003	Ratio Oil Distributor	E008	A Type Oil Distributor
B004	Screws	E009	Ratio Oil Distributor
B005	A Type Oil Distributor		



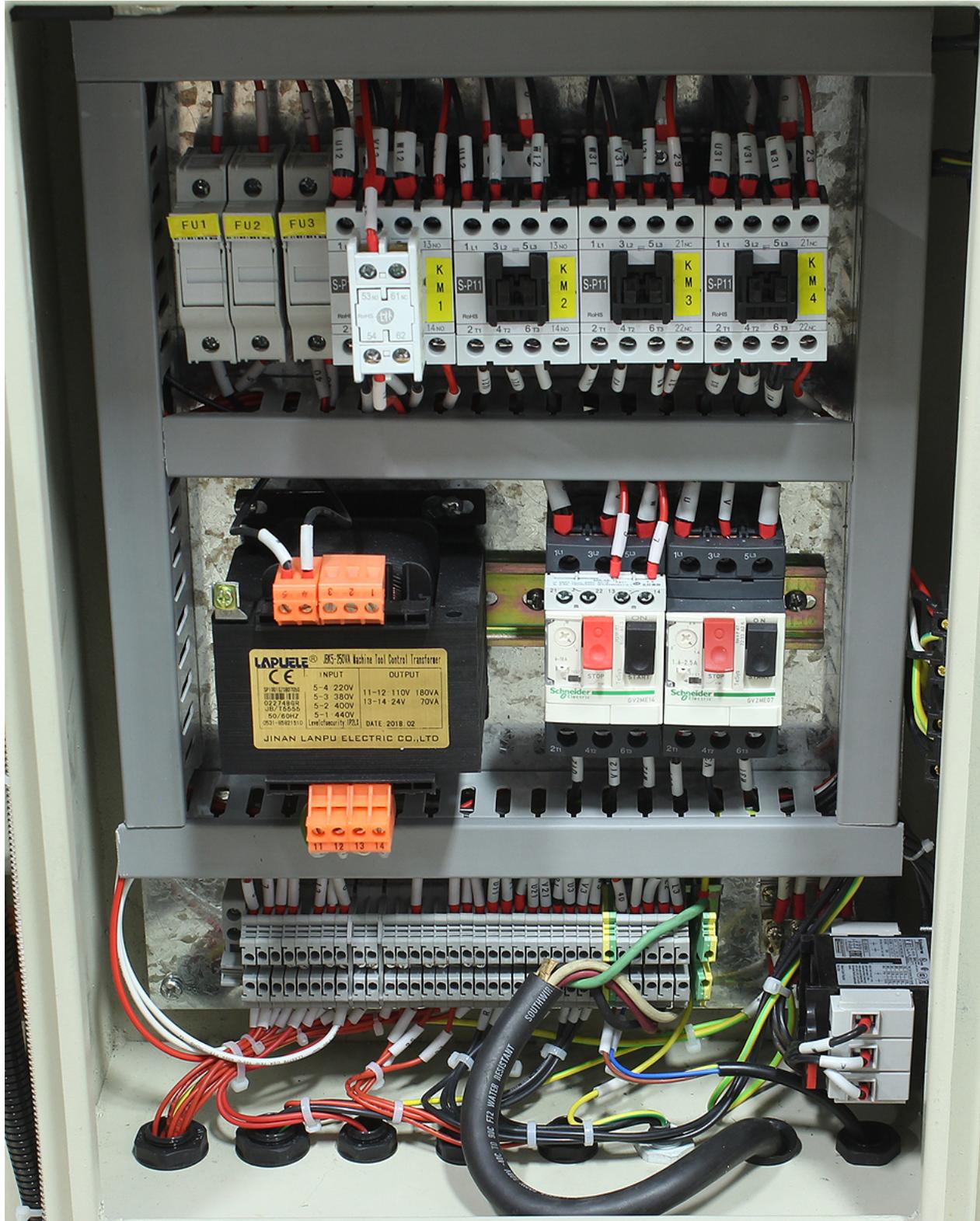
# ELECTRICAL SCHEMATIC



NO	C		W		C		W	
	OFF	HIGH	OFF	LOW	OFF	LOW	OFF	HIGH
1	0	H	0	L	0	L	0	H
2			X				X	
3			X				X	
4			X				X	
5			X				X	
6			X				X	
7			X				X	
8			X				X	
9			X				X	
10			X				X	
11			X				X	
12			X				X	
13			X				X	
14			X				X	
15			X				X	
16			X				X	
17			X				X	
18			X				X	
19			X				X	
20			X				X	
21			X				X	
22			X				X	
23			X				X	
24			X				X	



## ELECTRICAL ENCLOSURE COMPONENTS





NOTES



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