



OPERATOR'S MANUAL

Metal Working



VARIABLE SPEED VERTICAL MILL MODEL: VM-949E-VS

Baileigh Industrial, Inc.
P.O. Box 531
Manitowoc, WI 54221-0531
Phone: 920.684.4990
Fax: 920.684.3944
sales@baileigh.com

Book 2 of 2

REPRODUCTION OF THIS MANUAL IN ANY FORM WITHOUT WRITTEN APPROVAL OF BAILEIGH INDUSTRIAL, INC. IS PROHIBITED. Baileigh Industrial, Inc. does not assume and hereby disclaims any liability for any damage or loss caused by an omission or error in this Operator's Manual, resulting from accident, negligence, or other occurrence.

Rev. 04/2019

© 2019 Baileigh Industrial, Inc.

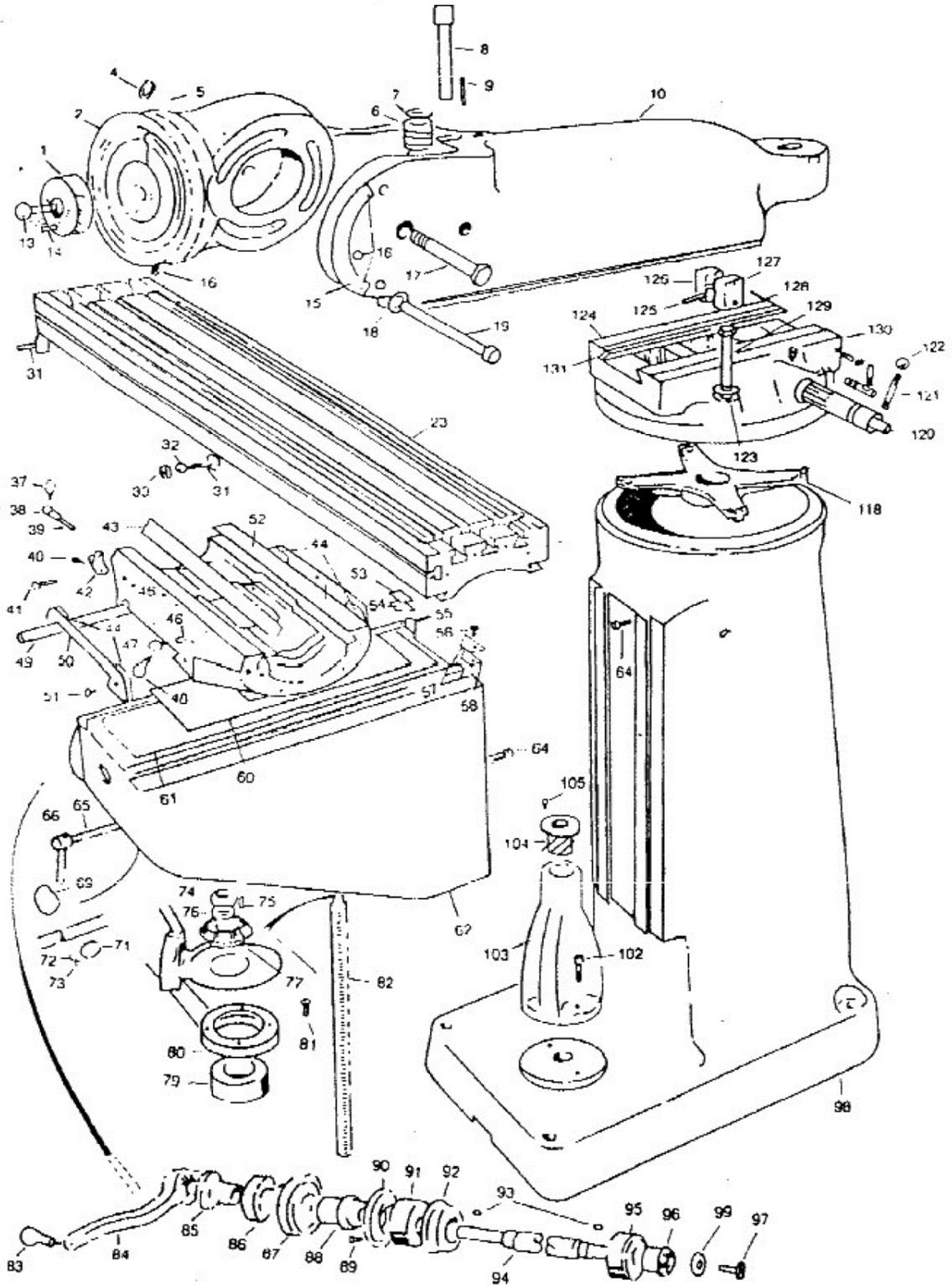


Table of Contents

BASE MACHINE PARTS DIAGRAM A	1
Base Machine Parts List A	2
VARIABLE SPEED HEAD BACK GEAR PARTS DIAGRAM B.....	4
Variable Speed Head Back Gear Parts List B	5
HEAD PARTS DIAGRAM C.....	6
Head Parts List C	7
LEADSCREW PARTS DIAGRAM D	10
Leadscrew Parts List D.....	11
VARIABLE SPEED HEAD TOP HOUSING PARTS DIAGRAM E.....	12
Variable Speed Head Top Housing Parts List E	13
CENTRAL LUBRICATING OIL-FEEDING EQUIPMENT PARTS DIAGRAM F	14
Central Lubricating Oil-Feeding Equipment Parts List F.....	14
ELECTRICAL SCHEMATIC	15
ELECTRICAL ENCLOSURE COMPONENTS	16



BASE MACHINE PARTS DIAGRAM A





Base Machine Parts List A

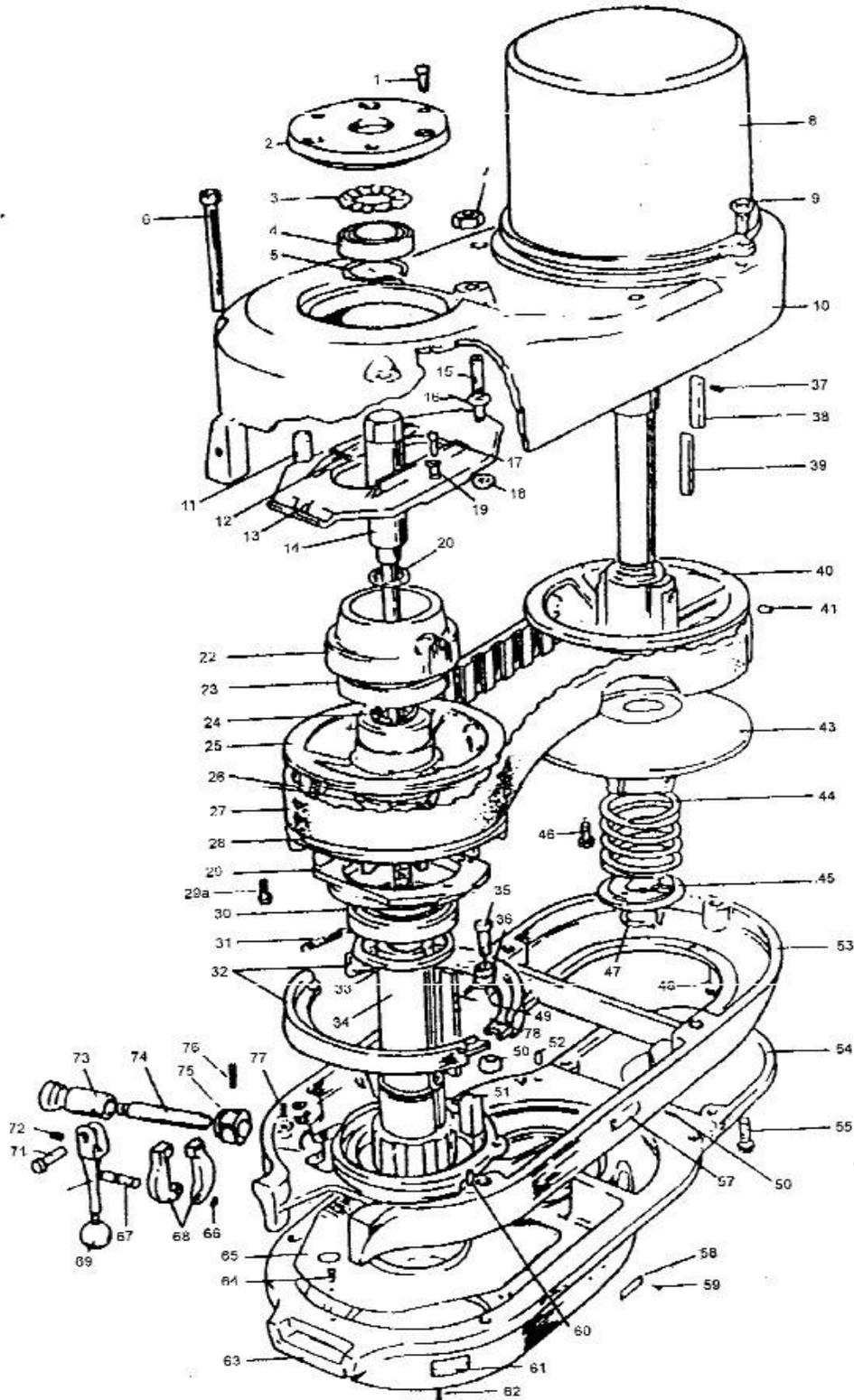
Item	Description	Item	Description
1	Quill Housing Adj. Gear	56	Allen Cap Screw (2 Req.)
2	Ram Adapter	57	Right Hand Column Wiper Holder
4	Nut	58	Knee Wiper Felt
6	Vertical Adjusting Worm	60	Chip Guards-Upper
7	Worm Thrust Washer (2 Req.)	61	Chip Guards-Lower
8	Vertical Adjusting Worm Shaft	62	Knee 12"
9	Worm Key	64	Stop Screw
10	Ram	65	Knee Lock Shaft Assembly
13	Socket Cap Screw	69	Knee Lock Plunger
14	Roll Dowel Pin	71	Knee Blinder Plug (plastic)
15	Angle Plate	72	Dog Point Set Screw
16	Round HD Drive Screw (5 Req.)	73	Set Screw
17	Adapter Pivot Pin	74	Jam Nut
18	Chamfered & Hnd. Washer (7 Req.)	75	Key
19	Adapter Locking Bolt (3 Req.)	76	Washer
23	Table 42" or 49"	77	Bevel Gear
31	Stop Piece T-Bolt (3 Req.)	79	Sealed Ball Bearing
32	Table Stop Piece (2 Req.)	80	Bearing Retainer Ring
33	Hex Nut (3 Req.)	81	Socket Head Cap Screw
37	Table Lock Bolt Handle	82	Elevating Screw Assembly
38	Saddle Lock Bolt	83	Handle
39	Saddle Lock Plunger	84	Elevating Crank
40	Socket HD Cap Screw (2 Req.)	85	Gear Shaft Clutch Insert
41	Gib Adjusting Screw (3 Req.)	86	Dial Lock Nut
42	Table Stop Bracket	87	Dial with 100 Graduations
43	Saddle Table Gib Stop Bracket	88	Dial Holder
44	Felt Wipers (4 Req.)	89	Socket Head Cap Screw
46	Table Lock Plunger	90	Bearing Retaining Ring
47	Table Lock Belt	91	Grease Sealed Bearing
48	Table Lock Bolt Handle	92	Bearing Cap
49	Saddle/Knee Gib	93	Key
50	Saddle Knee Wiper Plate (4 Req.)	94	Elevating Shaft for 12" Knee
51	Oval Head Screw (8 Req.)	95	Grease Sealed Bearing
52	Saddle	96	Bevel Pinion
53	Left Hand Column Wiper Holder	97	Set Screw
54	Knee Wiper Felt	98	Column
55	Knee/Column Gib	99	Washer



Item	Description	Item	Description
102	Socket Head Cap Screw	123	Chamfered and Hardened Washer
103	Pedestal	124	Turret
104	Elevating Screw Nut	125	Ram Clamp Bar
105	Socket Head Cap Screw	126	Ram Clamp Untapped
118	Spider	127	Ram Clamp Tapped
119	Ram Lock Stud	128	Split Pin
120	Ram Pinion	129	Locking Bolt
121	Ram Pinion Handle	130	Ram Pinion Screw
122	Plastic Ball	131	Ram/Turret Gib



VARIABLE SPEED HEAD BACK GEAR PARTS DIAGRAM B



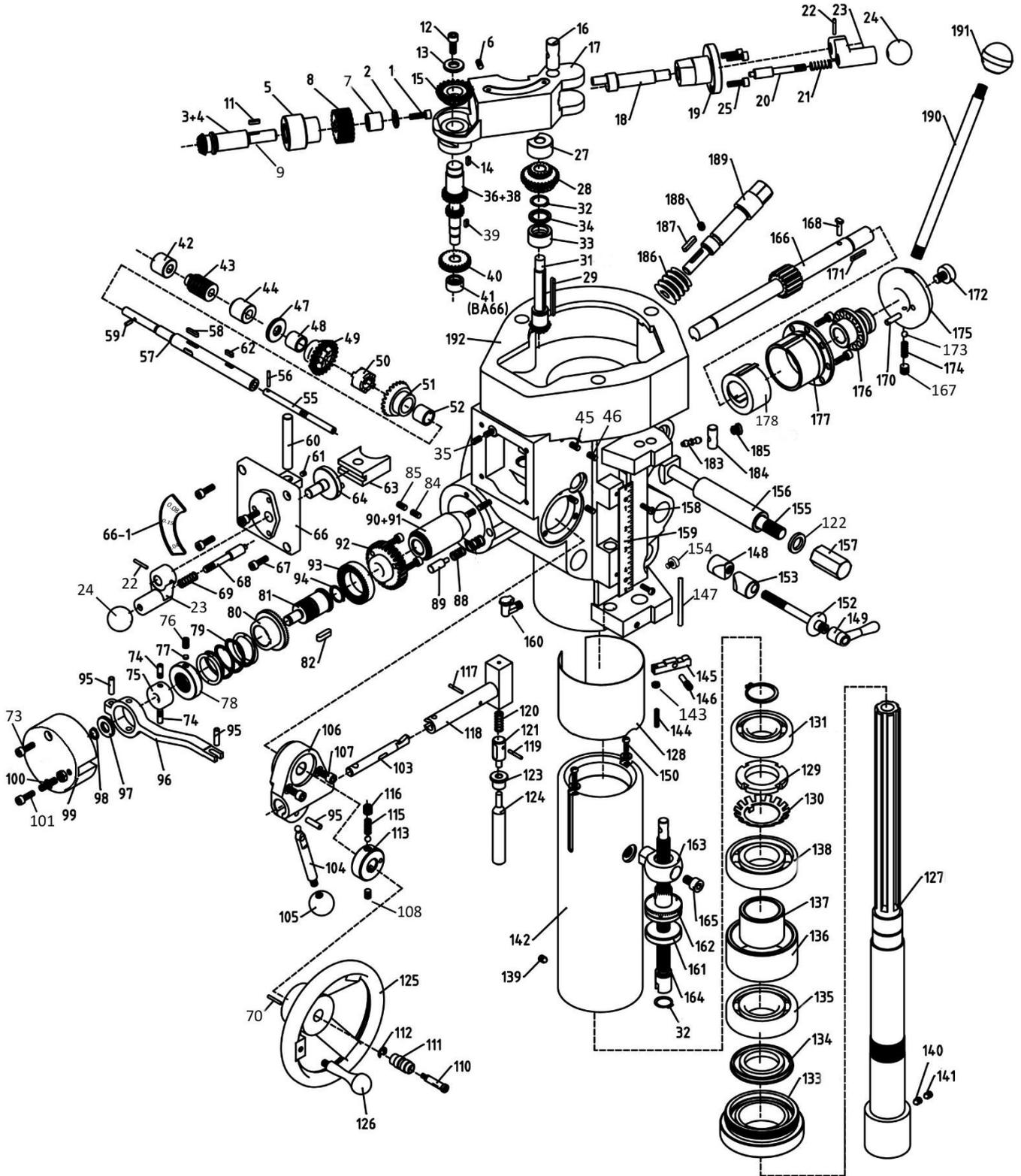


Variable Speed Head Back Gear Parts List B

Item	Description	Item	Description
1	Socket Cap Screw (3 Req.)	40	Stationary Motor Varidisc
3	Spring Washer	41	Socket Set Screw
4	Ball Bearing	42	Plastic Insert (2 Req.)
5	Snap Ring No.	43	Adjustable Motor Varidisc Assembly
7	Hex Jam Nut	44	Spring
E8	Motor	45	Adjustable Varidisc Spring Collar
9	Hex Hd. Screw (2 Req.)	46	Socket Hd. Cap Screw (2 Req.)
10	Belt Housing	47	Ret. Ring
13	Speed Change Plate	48	Socket Cap Screw
14	Drawbar	49	Plastic Key
15	Cotter Pin	51	Key
16	Speed Change Plate Pivot Stud	53	Belt Housing Base
17	Socket Hd. Cap Screw (2 Req.)	54	Motor Pulley Cover
18	Washer	55	Socket Cap Screw
19	Pivot Sleeve (2 Req.)	58	HI - LOW Range Nameplate
20	Draw Bar Washer	59	Rivet
22	Spindle Pulley Bring Sliding Housing	60	Taper Pin (2 Req.)
23	Ball Bearing	61	Quill Feed Nameplate
24	Plastic Insert (2 Req.)	63	Gear Housing
25	Adjustable Driven Varidisc	64	Round Hd. Machine Screw (3 Req.)
26	Snap Ring No.	66	Snap Ring
27	Belt	67	Brake Finger Pivot Stud
28	Stationary Driven Varidisc	68	Brake Operating Finger
29	Brake Bearing Cap	69	Bakelite Ball Handle
29a	Socket Hd. Cap Screw (2 Req.)	70	Brake Lock Handle
31	Brake Spring (2 Req.)	71	Brake Lock Pin
32	Brake Shoe Assembly (2 Req.)	72	Socket Set Screw
33	Spindle Pulley Spacer	73	Sleeve for Brake Lock Shaft
34	Spindle Pulley Hub	74	Brake Lock Shaft
35	Hex Hd. Screw	75	Brake Lock Cam
36	Brake Shoe Pivot Sleeve	76	Roll Pin
37	Roll Dowel Pin	77	Socket Set Screw
38	Drive Key		
39	Key		



HEAD PARTS DIAGRAM C





Head Parts List C

Item	Description	Item	Description
1	RD.HD.Screw	36	Feed Driving Gear
2	Bevel Pinion Washer	37	Key
3	Feed Bevel Pinion	38	Cluster Gear Input Shaft
4	Feed Worm Gear Shaft Sleeve	40	Feed Drive Gear
5	Worm Cradle Bushing	41	Needle Bearing
6	Set Screw	42	Bushing
7	Worm Cradle Spacer (4 Req.)	43	Worm
8	Feed Drive Worm Gear	44	Feed Worm Shaft Bushing
9	Feed Drive Worm Gear Shaft	47	Feed Worm Shaft Thrust Washer
10	Worm Shaft Key	48	Bushing
11	Key	49	Feed Reverse Bevel Gear
12	Screw	50	Feed Reverse Clutch
13	Washer	51	Feed Reverse Bevel Gear
14	Cluster Gear Key	52	Bushing
15	Feed Reverse Bevel Gear	55	Reverse Clutch Rod
16	Feed Engage Pin	56	Roll Pin
17	Worm Gear Cradle	57	Feed Worm Shaft
18	Worm Gear Cradle Throw-out	59	Pin
19	Shift Sleeve	60	Feed Shaft Rod
20	Gearshift Plunger	61	KP. Set Screw
21	Compression Spring	62	Key
22	Roll Pin	63	Feed Gear Shift Crank
23	Shift Crank	64	Cluster Gear Shift Crank
24	Black Plastic Ball	66	Cluster Gear Cover
25	Cap Screw (3 Req.)	67	Cap Screw (4 Req.)
27	Braze Bush	68	Gear Shift Plunger
28	Cluster Gears Assembly	69	Compression Spring
29	Cluster Gear Key	70	Shift Crank
31	Cluster Gear Shaft	71	Roll Pin
32	Snap Ring	72	Black Plastic Ball
33	Braze Bush	73	Cap Screw (2 Req.)
34	Washer	74	Screw
35	Feed Reverse Bevel Pinion	75	Bushing



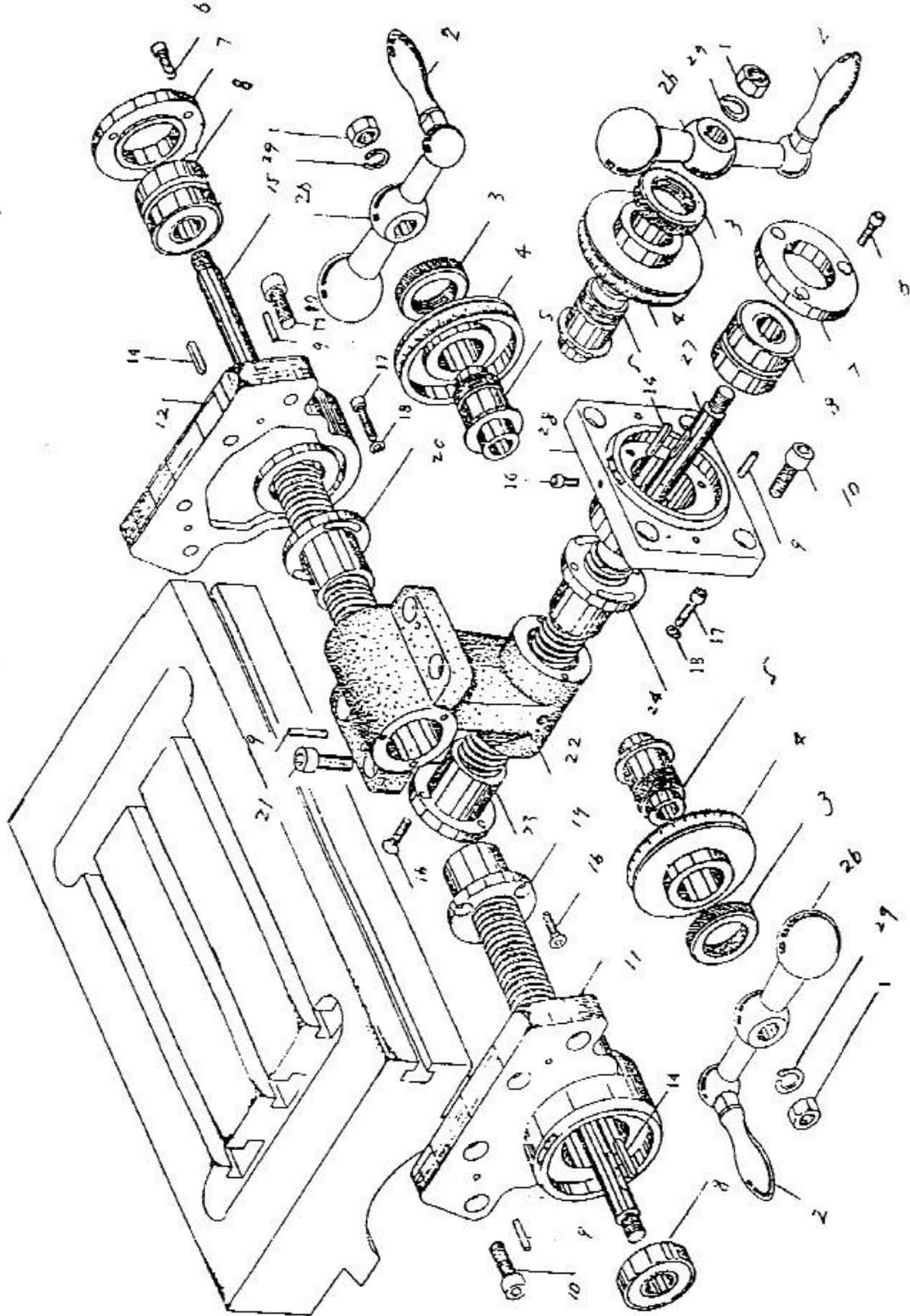
Item	Description	Item	Description
76	Socket Set Screw	112	Snap Ring
78	Overload Clutch Locknut	113	Handwheel Clutch
79	Safety Clutch Spring	114	Steel Ball
80	Overload Clutch	115	Compression Spring
81	Overload Clutch Sleeve	116	Handwheel Clutch Spring Screw
82	Single Spring Washer (3 Req.)	118	Cam Rod Sleeve Assy
83	Round Head Screw (3 Req.)	119	Roll Pin
84	Mock-it Lock Screw	120	Compression Spring
85	Socket Set Screw	121	Trip Plunger
86	Lock Screw	123	Trip Plunger Bushing
87	Socket Set Screw	124	Feed Trip Plunger
88	Compression Spring	125	Handwheel
89	Overload Clutch Spring Plunger	127	Spindle
90	Quill Pinion Shaft Bushing	128	Quill Skirt
91	Pinion Shaft Worm Gear Spacer	129	Locknut
92	Overload Clutch Worm Gear	130	Lock Washer
93	Overload Clutch Ring	131	Bearing
94	Snap Ring	132	Sleeve
95	Dowel Pin	133	Nose-piece
96	Overload Clutch Trip Lever	134	Spindle Dirt Shield
97	Overload Clutch Washer	135	Bearing
98	Snap Ring	136	(Bearing Spacer - Large)
99	Clutch Arm Cover	137	(Bearing Spacer - Small)
100	Socket Set Screw	138	Bearing
101	Chem Bracket Locknut	140	Special Socket Set Screw
103	Cam Rod	141	Collet Alignment Screw
104	Trip Handle	142	Quill
105	Black Plastic Ball	144	Socket Set Screw
106	Feed Trip Bracket	145	Feed Trip Lever
107	Cap Screw (2 Req.)	146	Trip Lever Pin
108	Socket Set Screw	148	Quill Lock Sleeve
109	Key	149	Lock Handle
110	Feed Reverse Knob Stud	151	Felt Washer
111	Reverse Knob	152	Quick Lock Bolt



Item	Description
153	Quill Lock Sleeve Tapped
155	T - Blot Assy
156	Lower Clamping Blot Spacer (2 Req.)
157	Locknut
158	Rivet
159	Micrometer Scale
160	Snap Ring
161	Quill Micro -stop Nut
162	Micrometer Nut
163	Quill Stop Knob
164	Quill Stop Micro-screw
165	Screw
166	Quill Pinion Shaft
168	Spring Pin
169	RD. Head Screw (2 Req.)
170	Roll Pin
171	Key
172	Pinion Shaft Hub Screw
175	Rack Feed Handle Hub
176	Pinion Shaft Hub Sleeve
177	Spring Cover
178	Clock Spring (Clock Spring Assy.)
181	Socket Set Screw
182	Lock Screw
183	Reverse Trip Ball Lever
184	Feed Reverse Trip Plunger
185	Reverse/Trip Ball Lever Screw
186	Worm Gear
187	Key
188	Socket Set Screw
189	ADJ Worm Shaft
190	Pinion Shaft Hub Handle
191	Black Plastic Ball Handles
192	Quill Housing



LEADSCREW PARTS DIAGRAM D



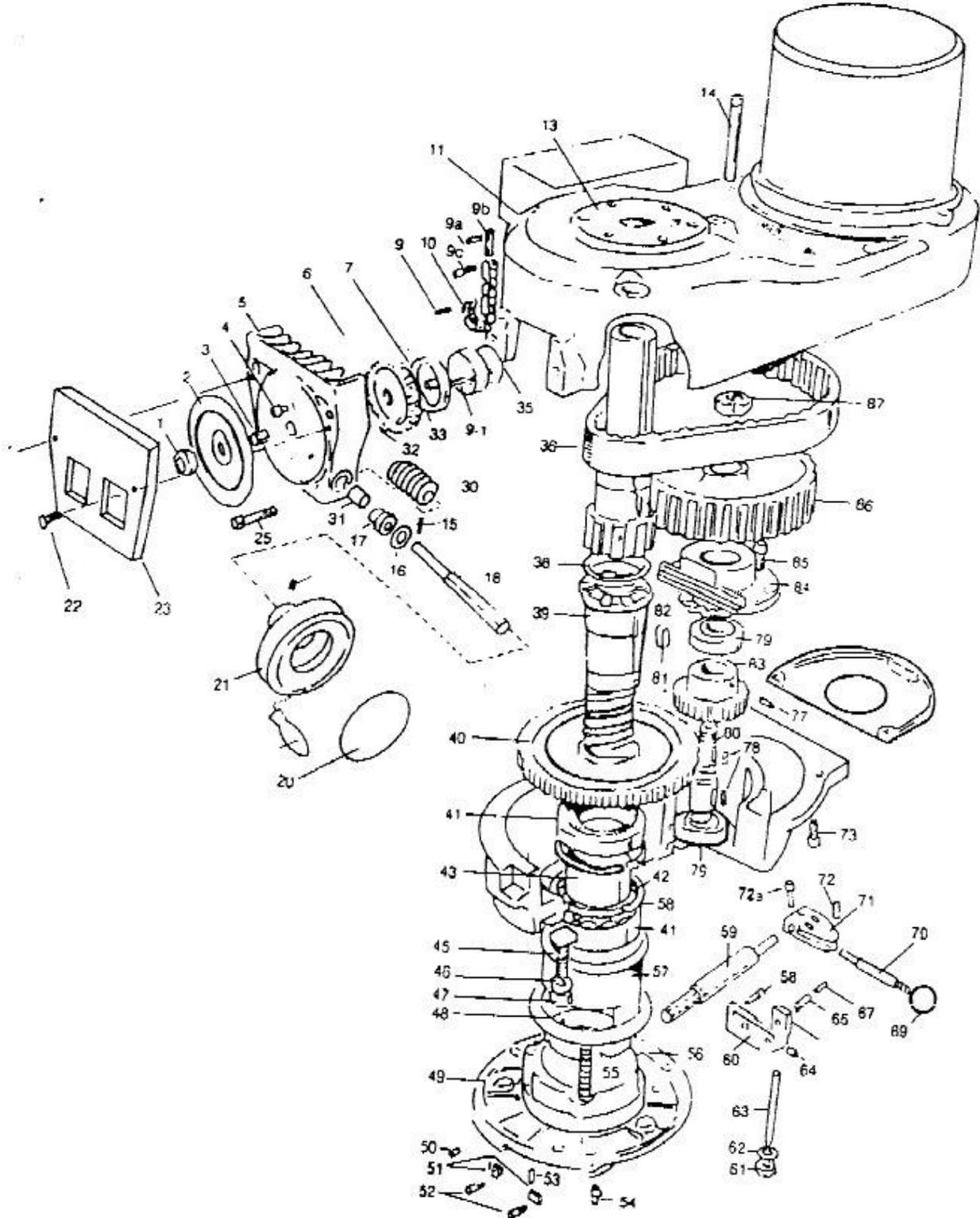


Leadscrew Parts List D

Item	Description
001	Nut
002	Ball Crank Handle
003	Dial Lock Nut
004	Dial
005	Dial Holder
006	Screw
007	Bearing Retainer Ring
008	Bearing 204
009	Pin
010	Screw
011	Left Bearing Bracket
012	Right Bearing Bracket
013	Bearing 204
014	Key
015	Longitudinal Feed Screw
016	Screw
017	Screw
018	Washer
019	Longitudinal Feed Nut
020	Longitudinal Feed Nut
021	Screw
022	Nut Bracket
023	Cross Feed Nut
024	Cross Feed Nut
026	Three Ball Crank Hand
027	Cross Feed Screw
028	Bearing Bracket
029	Lock Washer



VARIABLE SPEED HEAD TOP HOUSING PARTS DIAGRAM E



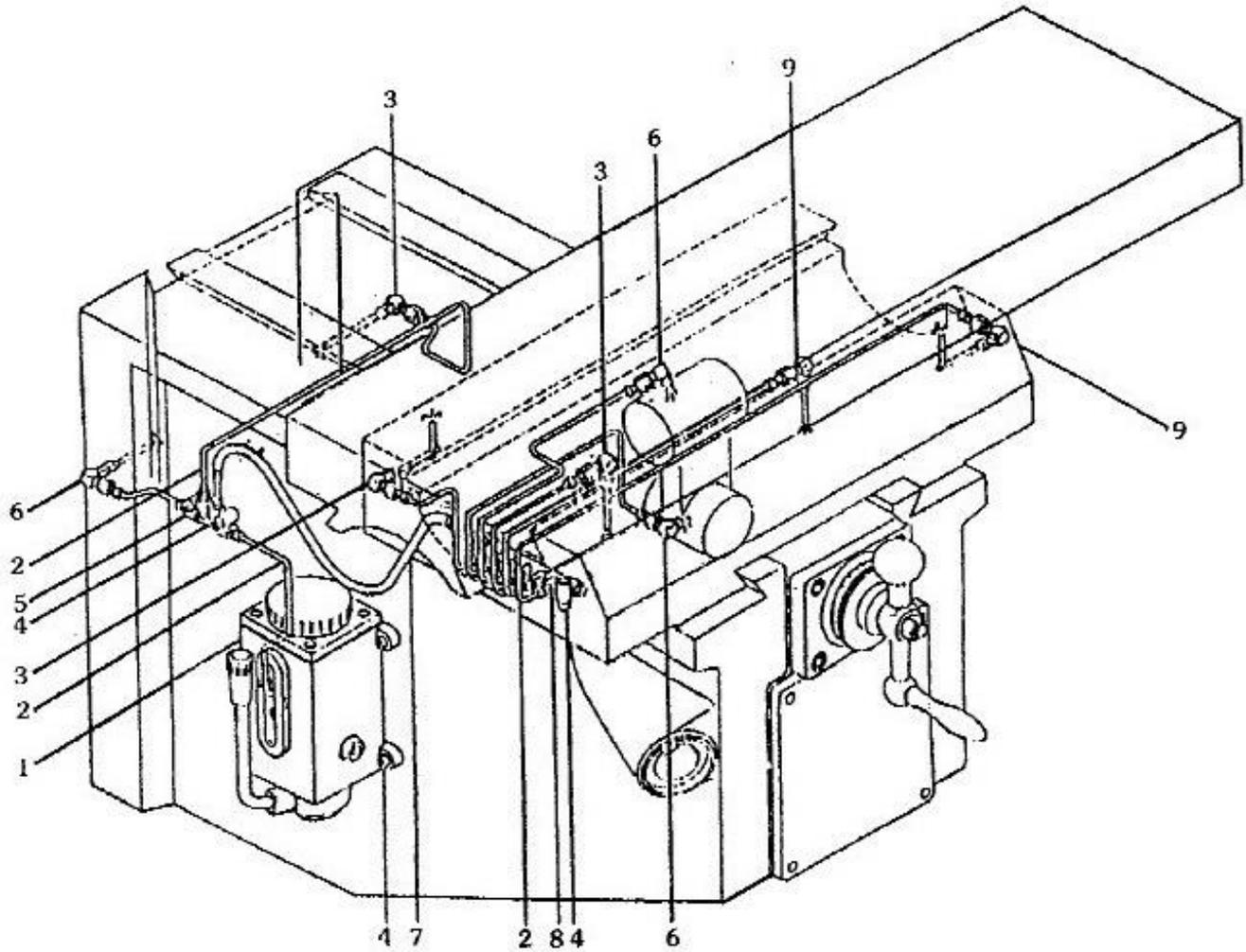


Variable Speed Head Top Housing Parts List E

Item	Description	Item	Description
1	Hex Cap Nut	49	Fixed Clutch Bracket
2	Vari-Speed Dial	50	Socket Set Screw
3	Bronze Bearing	51	Guide for Clutch Bracket
4	Full Dog Socket Set Screw	52	Flat Hd. Socket Cap Screw (2 Req.)
5	Speed Changer Housing	53	Dowel Pin
9	Roll Pin	54	Oil Cup
9-1	Roll Pin	55	Compression Spring (3 Req.)
9a	Roll Pin	56	Bearing Locknut
9b	Speed Change Stud	57	Bearing Sleeve
9c	Cotter Pin	58	Wave Spring Washer
10	Speed Changer Chain	59	Bull Gear Shift Pinion
13	Top Bearing Cap	60	HI - LOW Detent Plate
15	Roll Pin	61	Hex Nut (3 Req.)
16	Spring	62	Lock Nut
17	Bearing	63	Studs (3 Req.)
18	Speed Change Shaft	64	Socket Set Screw
19	Handle	65	Adjustable Plate
20	Caution Plate	66	HI - LOW Detent Plunger
21	Speed Change Handwheel	67	Spring
22	Flat Hd. Cap Screw (2 Req.)	68	Socket Cap Screw (2 Req.)
23	Plastic Face Plate	69	Bakelite Ball Handle
24	Set Screw	70	HI - LOW Shift Crank
25	Socket HD Cap Screw (4 Req.)	71	HI - LOW Pinion Block
30	Worm Gear	72	Roll Pin (1 Req.)
31	Bearing	72a	Socket Hd. Cap Screw (2 Req.)
33	Speed Changer Spur Gear	73	Socket Cap Screw (4 Req.)
35	Speed Change Chain Drum	77	Socket Set Screw
36	Belt	78	Key (2 Req.)
38	Timing Pulley Clutch Sleeve	79	Ball Bearing (2 Req.)
39	Spindle Bull Gear Hub	80	Bull Gear Pinion Counter Shaft
40	Spindle Bull Gear Assembly	81	Key
41	Ball Bearing (2 Req.)	82	Wave Spring Washer
42	Snap Ring (2 Req.)	83	Bull Gear Pinion
43	Bull Gear Bearing Spacer	84	Bull Gear Pinion Bearing Cap
45	Vert. Tee Bolts (3 Req.)	85	Socket Hd. Cap Screw (2 Req.)
46	Steel Washer (3 Req.)	86	Timing Belt Pulley
47	Hex Jam Nut-Finished HdN (3 Req.)	87	Jam Nut
48	Ball Bearing Gear Sleeve Washer		



CENTRAL LUBRICATING OIL-FEEDING EQUIPMENT PARTS DIAGRAM F

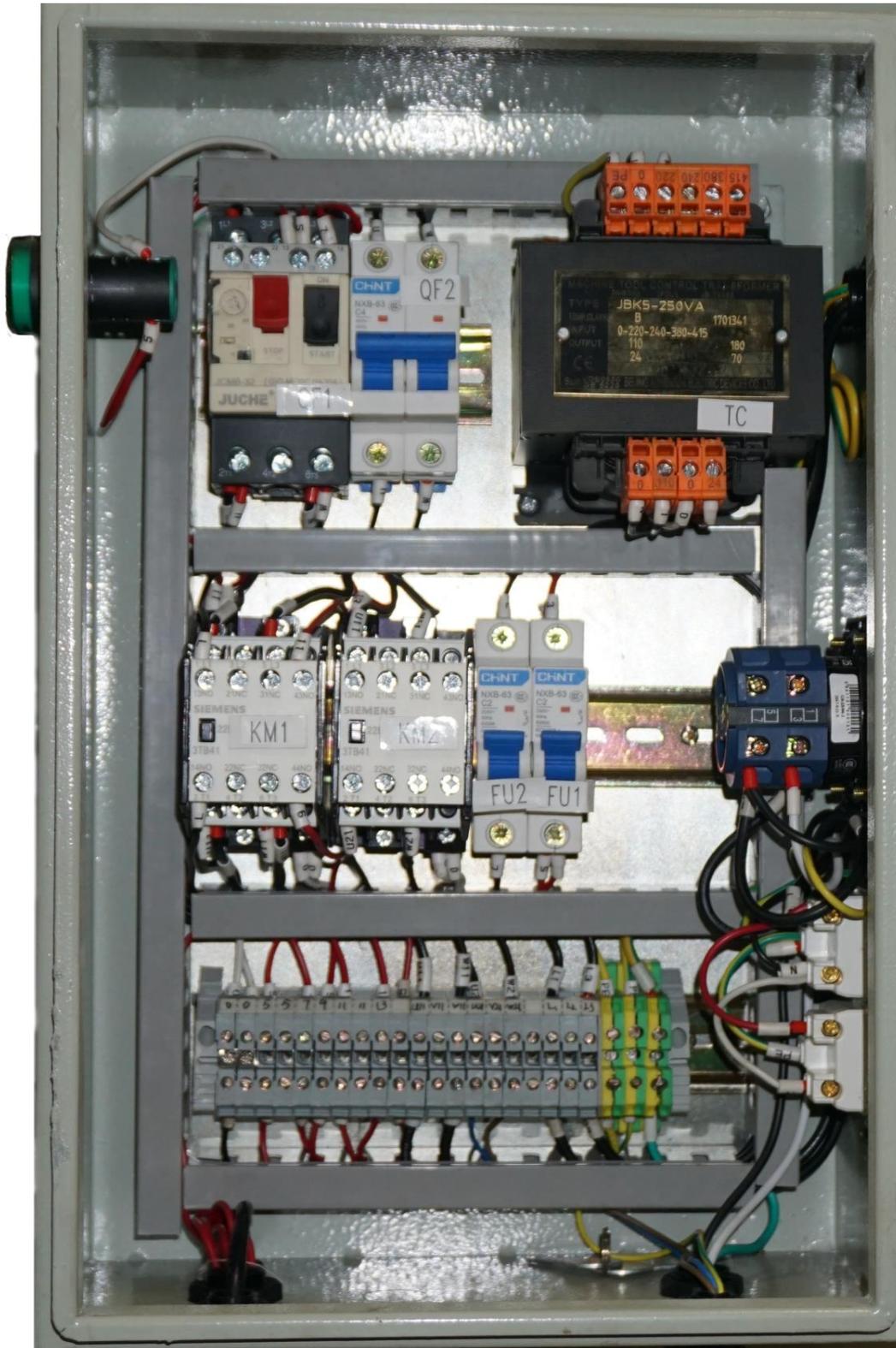


Central Lubricating Oil-Feeding Equipment Parts List F

Item	Description	Item	Description
1	Hand Oiler	6	Ratio Oil Distributor CPS3 (3 sets)
2	Aluminum Pipe 4" Dia.	7	Outside Steel Flexible Tube
3	Ratio Oil Distributor CPS4 (3 sets)	8	A Type Oil Distributor A8
4	Socket Head Cap Screw	9	Ratio Oil Distributor CPS5 (2 sets)
5	A Type Oil Distributor A4		



ELECTRICAL ENCLOSURE COMPONENTS





NOTES



BAILEIGH INDUSTRIAL, INC. 1625 DUFEK DRIVE MANITOWOC, WI 54220
PHONE: 920. 684. 4990 FAX: 920. 684. 3944
www.baileigh.com

BAILEIGH INDUSTRIAL LTD. UNIT D SWIFT POINT
SWIFT VALLEY INDUSTRIAL ESTATE, RUGBY
WEST MIDLANDS, CV21 1QH UNITED KINGDOM
PHONE: +44 (0)24 7661 9267 FAX: +44 (0)24 7661 9276
WWW.BAILEIGH.CO.UK