



PART & ELECTRICAL MANUAL

e-mill Milling Head for 3HP & 5HP

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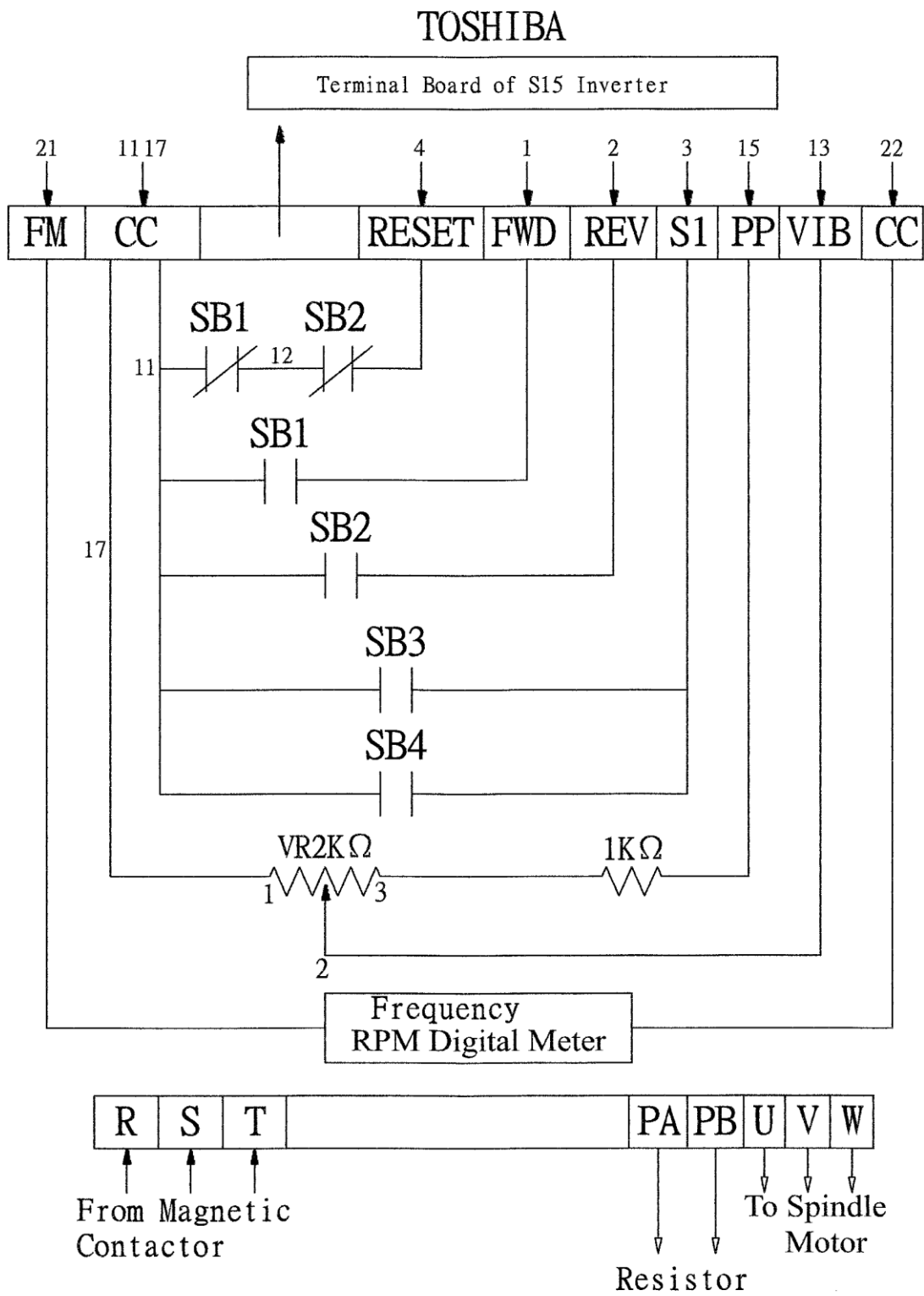
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CONTENT

DESCRIPTION	PAGE #
1. Electrical Circuit, Diagram & Breakdown of Electrical Components	3
A. Regular Circuit Diagram for Milling Head	4
B. UL Electric Diagram for Milling Head	10
C. Electrical Part List with Part Number Listed	15
2. Mechanical Drawing & Parts Breakdown List	19
2-1. 3HP (Milling Head)	20
2-2. 3HP Head Top Housing	30
2-3. 3HP Head Back Gear	34
2-4. 5HP (Milling Head) Hand Feed Ass'y	40
2-5. 5HP (Milling Head) Spindle Ass'y	44
2-6. 5HP (Milling Head) Auto Feed Ass'y	46
2-7. 5HP e-mill Head Top Housing	52
2-8. 5HP e-mill Head Back Gear	56

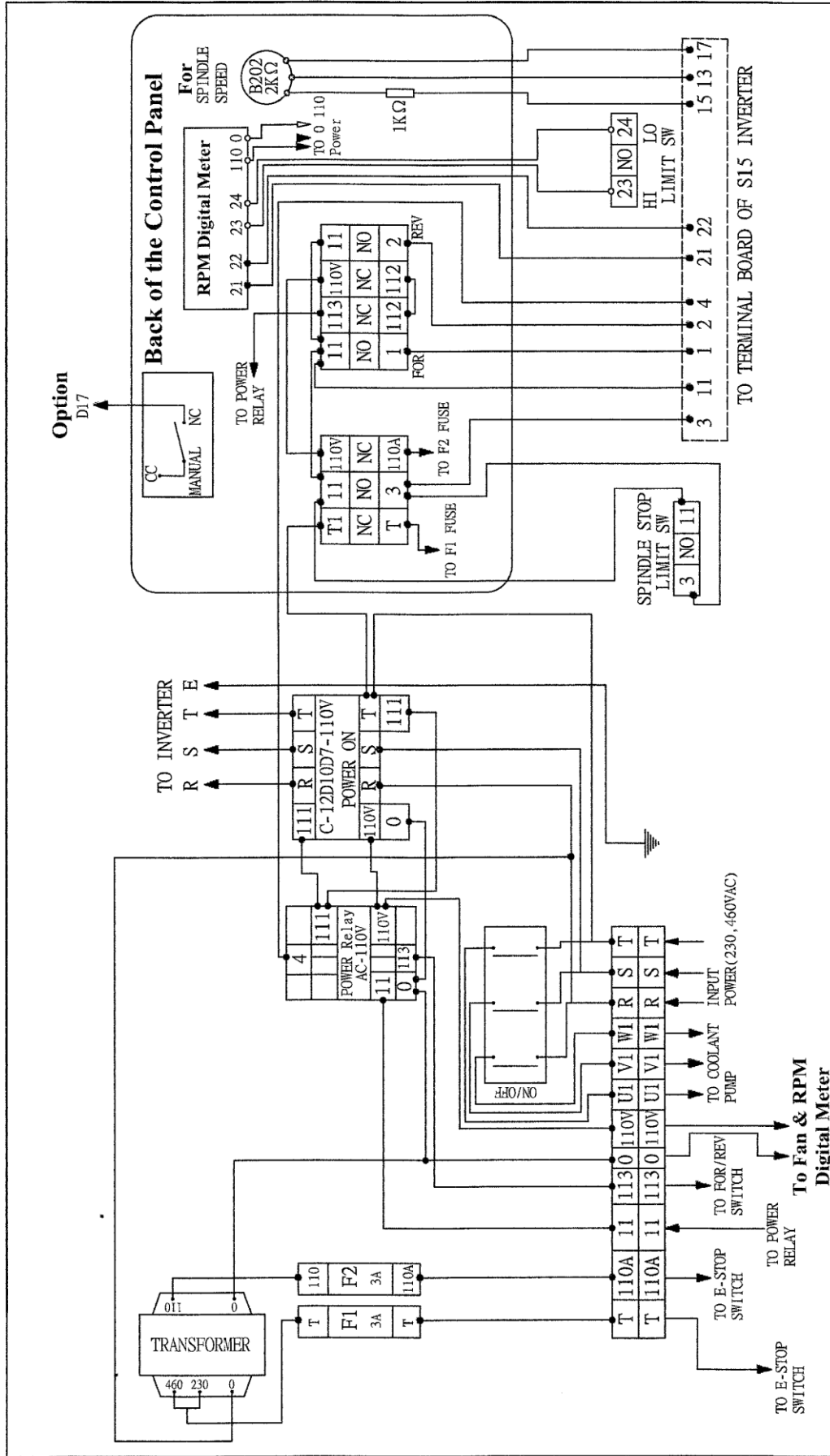
1. Electric Circuit, Diagram & Breakdown of Electrical Components

A. Regular Circuit Diagram for Milling Head

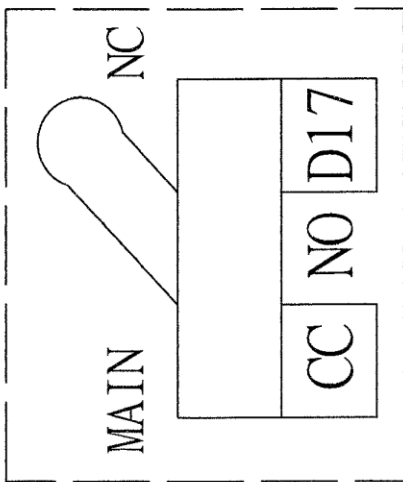


The Circuit Diagram

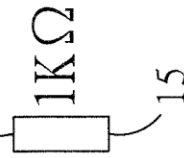
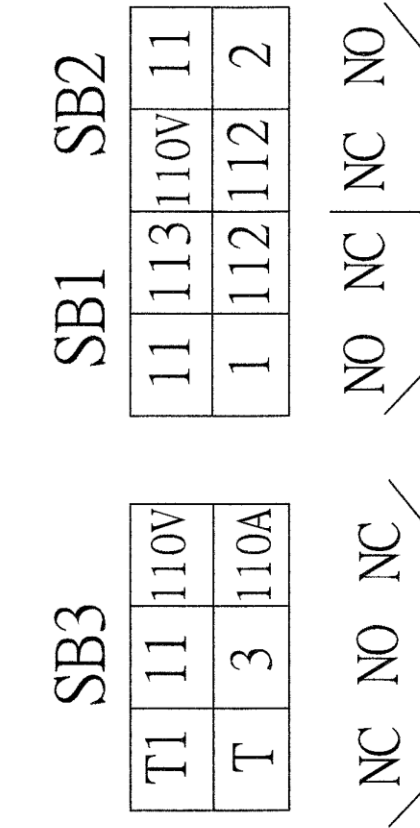
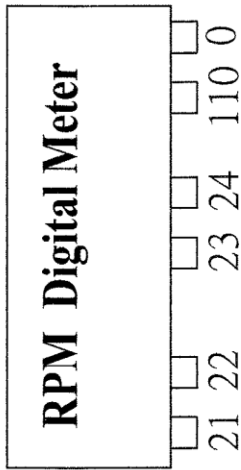
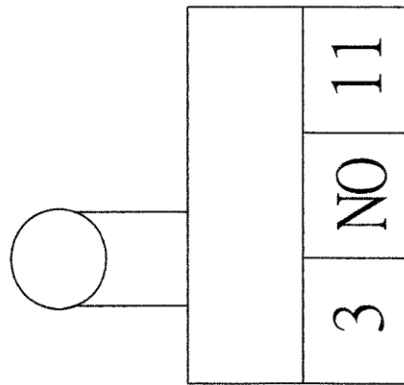
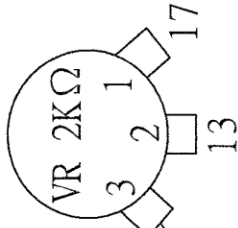
TOSHIBA S15 WIRING DIAGRAM



Back of the Control Panel



**FOR
SPINDLE
SPEED**

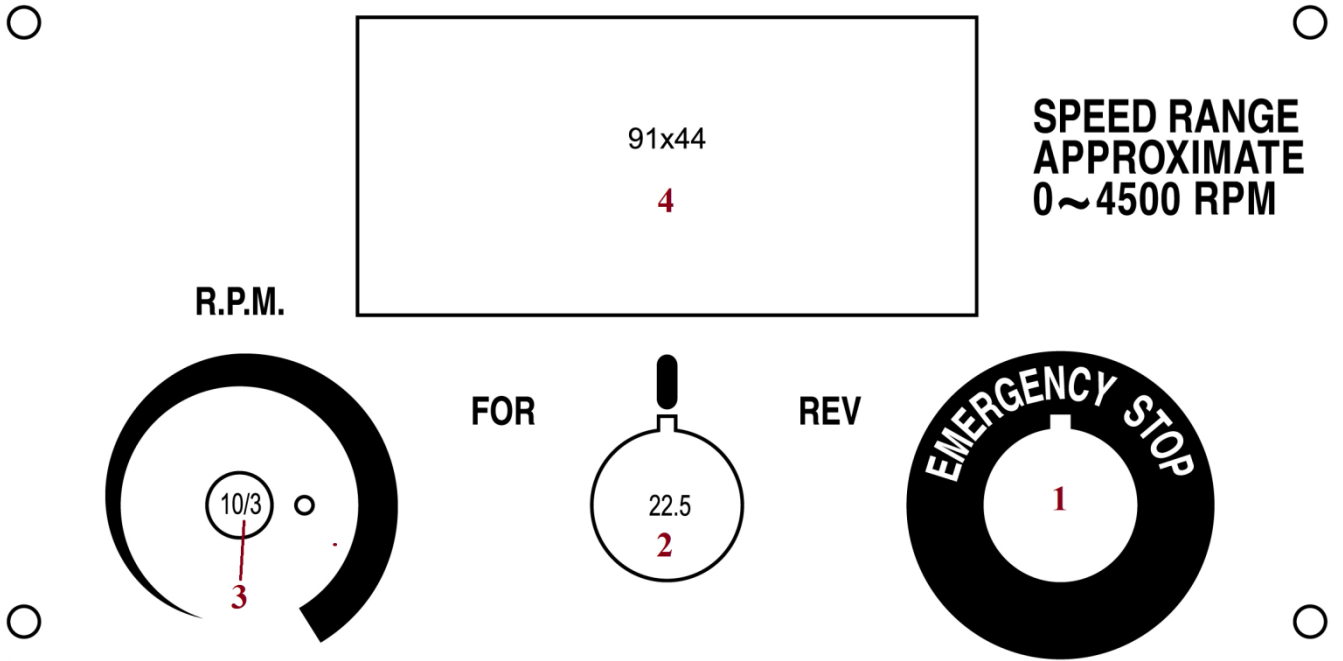


OPT.

RESET

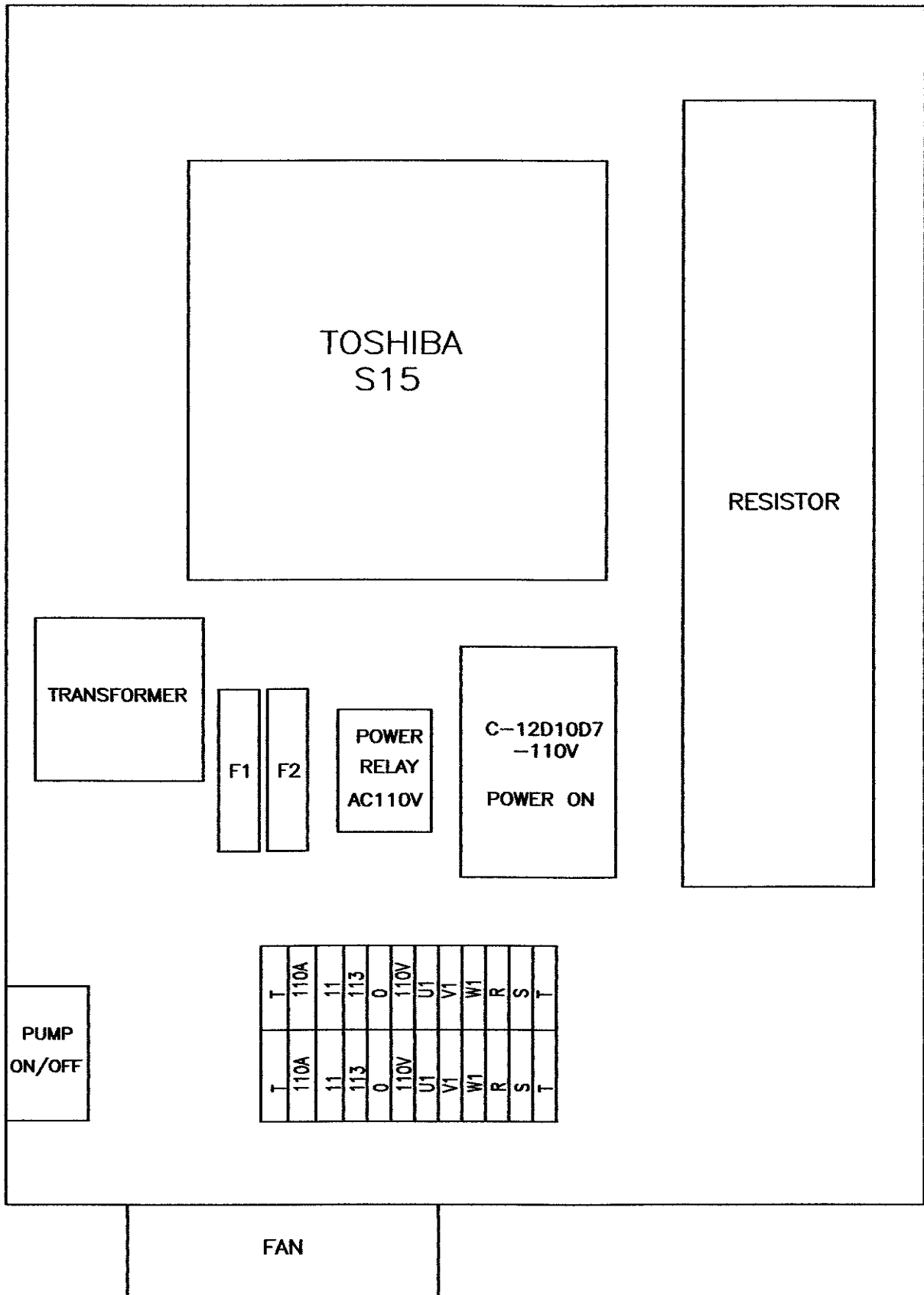
RESET

Control Panel



Item#	Part#	Description	QTY
1	9500	Emergency Switch	1
2	9501	F/R Switch	1
3	9502	Variable Resistor	1
4	9503-2	Digital Counter	1

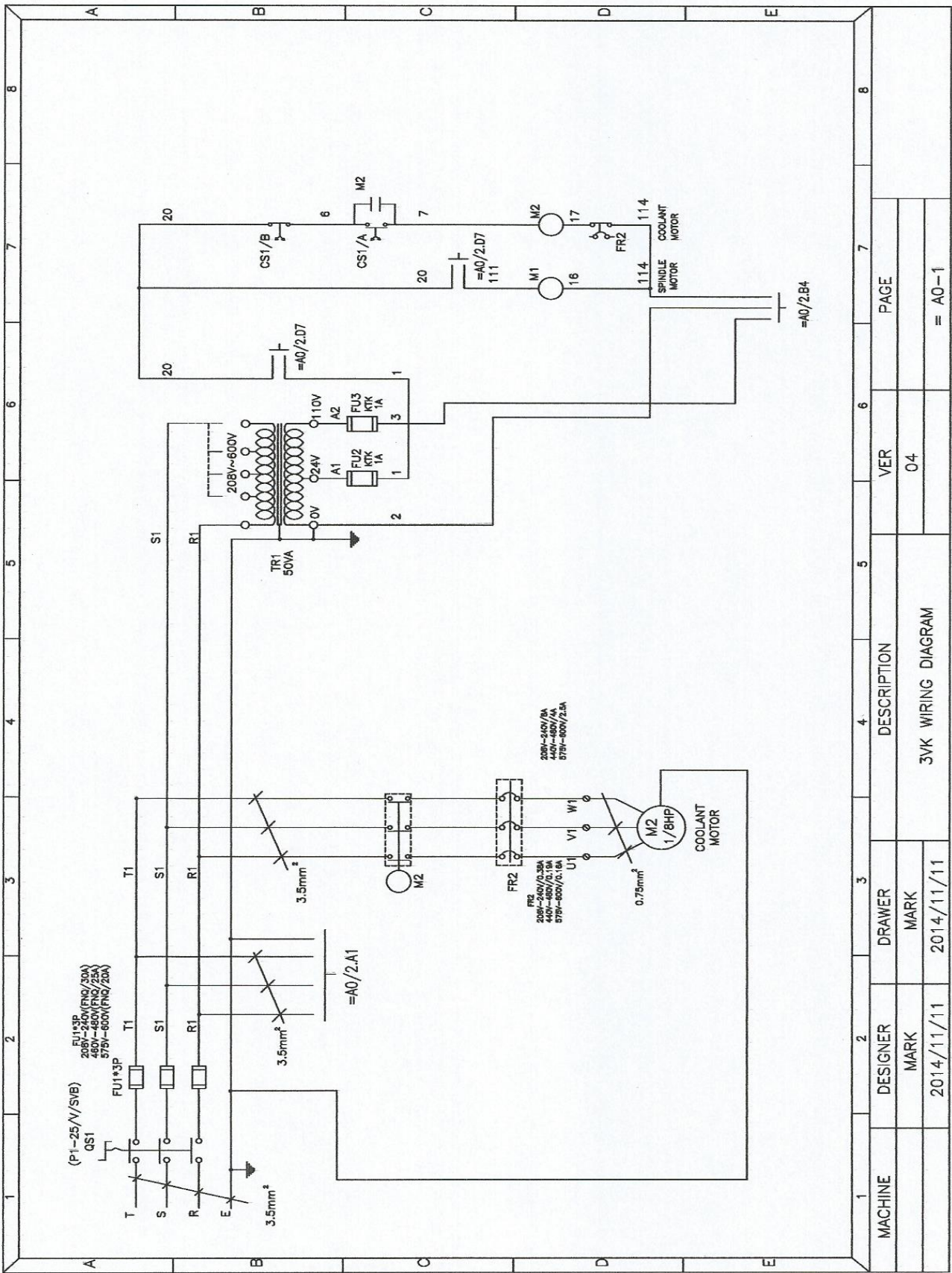
Electric Cabinet Layout

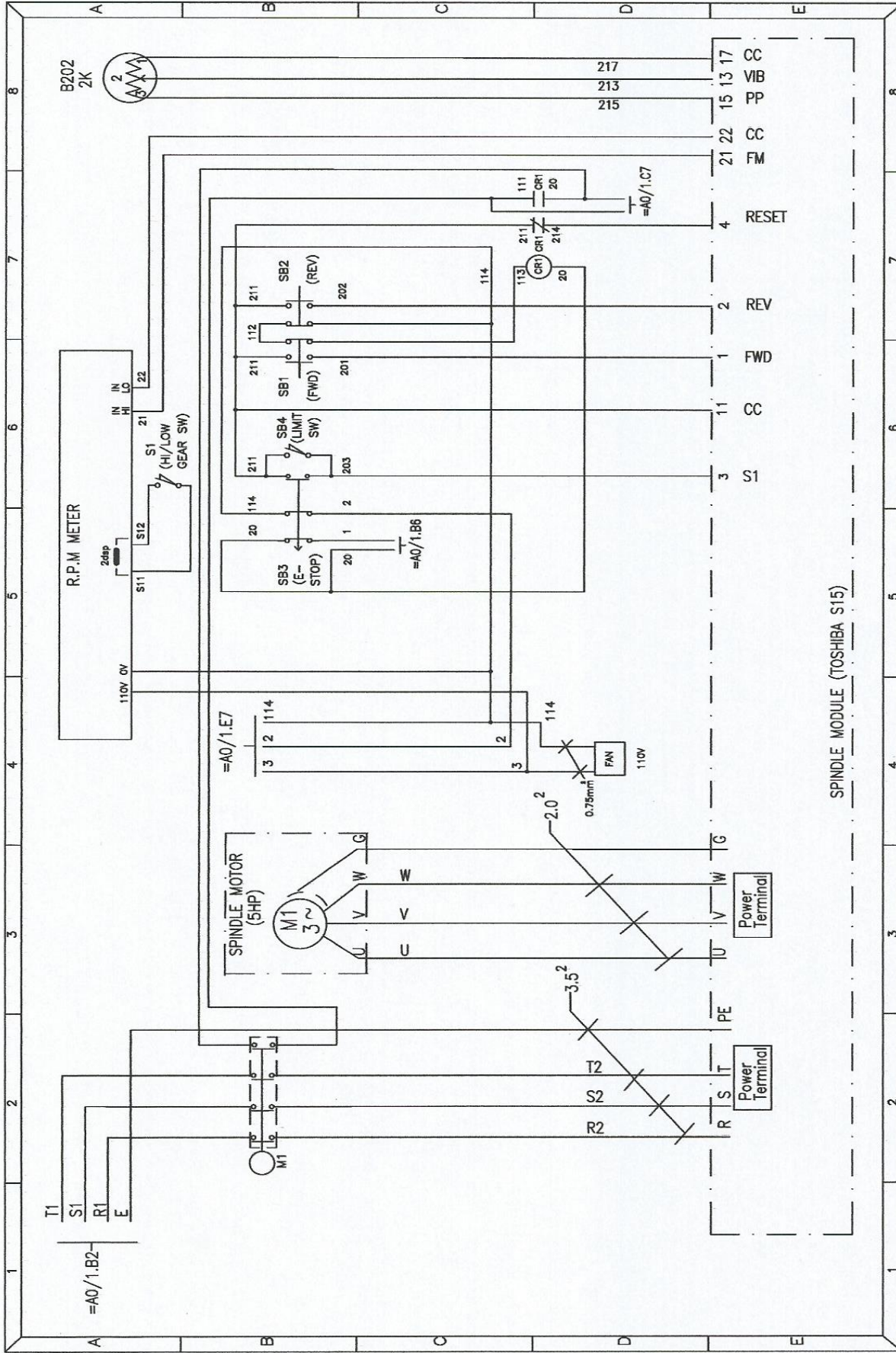


Electric Component List

		ACER		Model: 3VS, VSII, VK, VKH, 5VK	
Item #	Description and function	Suppliers Reference	Technical data	Supplier	
36	E-STOP Emergency Stop	S04509-RWA800FPMT34	690V 10A 4KV	Allen Bradley	
37	SB3 Emergency Stop	S04509-RWA800FPMT35	690V 10A 4KV	Allen Bradley	
38	LIMIT SW SPINDLE STOP LIMIT SWITCH	TZ7311	10A 250VAC	TEND	
39	LIMIT SW HI/LOW GEAR SWITCH	SHL-Q2255 AC-15 2A 125V	2A 125V	OMRON	
40	SB1 Switch Forward	S04509-RWA800FPMT32	690V 10A 4KV	Allen Bradley	
41	SB2 Switch Reverse	S04509-RWA800FPMT32	690V 10A 4KV	Allen Bradley	
42	R.P.M METER Digital R.P.M Meter	PWRMMX-1-A13A	DC0-10V 0~5300/660RPM	PWR ELECTRONICS	
43	S15 Inverter Inverter	VF-S15	240V/3P/3.7KW	Toshiba	
44	Resistor Braking Resistors		1350W		
45	Transformer Single Phase Transformer	1Q24VA	24VA	Cheng-Ten Electronics	
46	F1 Fuse 1		3A	TEND	
47	F2 Fuse 2		3A	TEND	
48	Power Relay Power Relay 110V	MY2N-J	5A 250VAC	OMRON	
49	Power On Power On Contactor	C12D10D7	220V 3P 5.5HP	NHD	
50	ON/OFF Coolant On/Off Button		3P 10A 500V 2.2KW	SUEN-AN	
51	Fan Cooling Fan	GA1123XBL	AC110/120V 18/19W	Gulf Electronics	
52	VR Variable Resistor	B202 2K +1K0	2K Ohms	JASON	

B. UL Electric Diagram for Milling Head

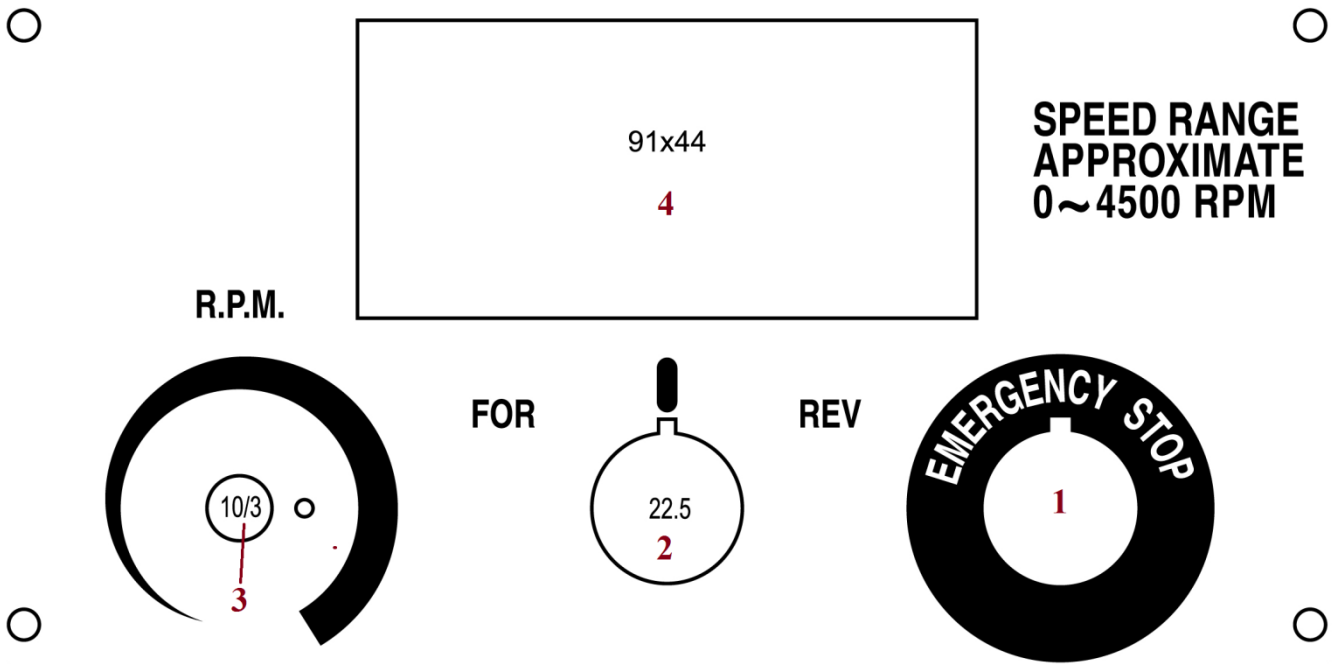




SPINDLE MODULE (TOSHIBA S15)

1	2	3	4	5	6	7	8
MACHINE	DESIGNER	DRAWER	DESCRIPTION	VER	PAGE		
	MARK	MARK	3VK WIRING DIAGRAM	04			
	2014/11/11	2014/11/11					= A0-2

Control Panel

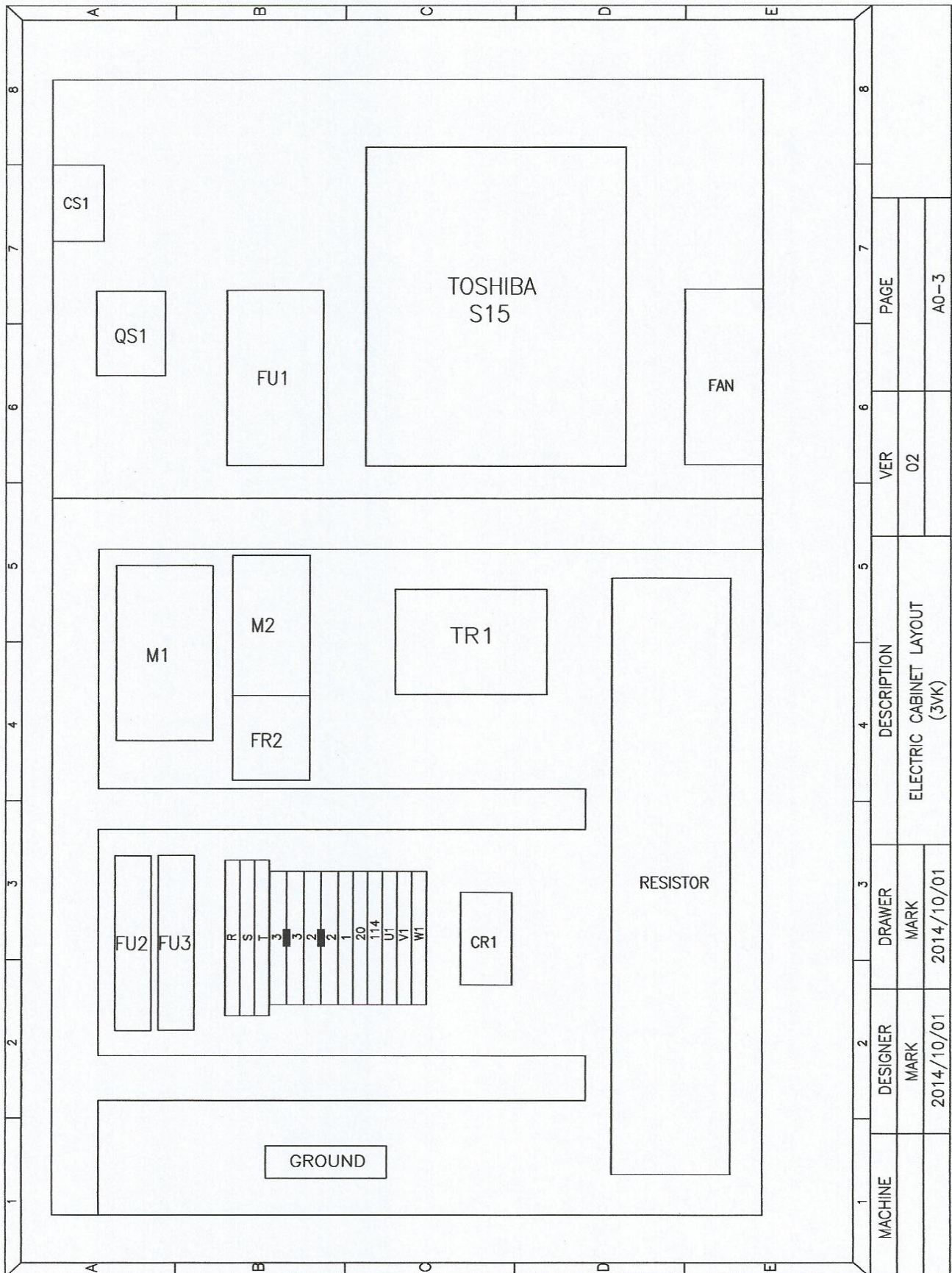


Item#	Part#	Description	QTY
1	9500	Emergency Switch	1
2	9501	F/R Switch	1
3	9502	Variable Resistor	1
4	9503-2	Digital Counter	1

Input power at 230V/3P/60HZ, the power disconnect breaker is at 25A, wiring must be 3.5mm² or greater.

Input power at 460V/3P/60HZ, the power disconnect breaker is at 20A, wiring must be 3.5mm² or greater.

Electric Cabinet Layout



1	2	3	4	5	6	7	8
MACHINE	DESIGNER MARK	DRAWER MARK	DESCRIPTION ELECTRIC CABINET LAYOUT (3VK)	VER 02	PAGE A0-3		
	2014/10/01	2014/10/01					

Electric Component List

PARTS NUMBER IN CIRCUIT DIAGRAM	PARTS NAME	MAKER	PARTS CATALOG NUMBER	QTY	UL No.	UL File
QS1	Main Switch	EATON	TO-2-1/V/SVB	1	E36332	UL508
CR1	Relay Seat	OMRON	PYF-08A-E-T OMZ	1	E41515	
	Relay	OMRON	MY-2NJ AC24V	1	E41515	
SPINDLE MODULE	TOSHIBA S15 INVERTER	Toshiba Electric System	VF-S15	1	E204788	
	Braking Resistors	Toshiba Electric System	ZQR450W 6.5Ω	3		
FU1	Circuit Breaker	EATON (Moeller)	FAZ-C20/3-NA/1	1	E177451	
FU2,FU3	Circuit Breaker	EATON (Moeller)	FAZ-SI/1	2	E177451	
M1	Contacto	EATON (Moeller)	DILM17-01 A4/AC24V	1	E29096	
M2	Contacto	EATON (Moeller)	DILM9-01 A4/AC24V	1	E29096	
FR2	Thermal Over Load Relay	Moeller	ZB12-0.6	1	E29096	
	Terminal Block	Wago	2002-1301/3C 2.5mm	12	E45172	04CA08683
	Terminal Block	Wago	2004-1301	3	E45172	05CA06105
	Terminal End	Wago	2002-1392/3C 2.5mm	5	E45172	04CA08683
	Terminal End	Wago	2004-1391/Grey	1	E45172	05CA06105
SB4	Limit Switch	Azbil	LCB1-501	1	E81046	
S1	Limit Switch	OMRON	SHL-Q2255	1	E76675	
PB5	Push Button	Allen-Bradley	800FP-SM22/800F-ALP/800F-X10	1	E338755+E14840	UL508
M1 3~	Spindle Motor	Min-Looun Electrical Engineering	AEVF	1	E222265	
FAN	Cooling Fan	Gulf Electrics Co.	GA1123XBL	1	E330961	
TR 1	Control Transformer	LUNG CHI ELECTRIC CO	TS01C-50VA	1	E323396	
R.P.M METER	RPM DIGITAL COUNTER	PWR	PWRMMX-1-A13A+C	1	CE only	EC48C010
SB1	FORWARD SWITCH	Allen-Bradley	800FP-SM22/800F-ALP/800F-X10	1	E338755+E14840	UL508
SB2	REVERSE SWITCH	Allen-Bradley	800FP-SM22/800F-ALP/800F-X10	1	E338755+E14840	UL508
SB3	EMERGENCY SWITCH	Allen-Bradley	800FP-SM22/800F-ALP/800F-X10	1	E338755+E14840	UL508
B202 2K	Variable Resistor	JASON	2kΩ	1		
	Fan Filter	Etek Chang Sing Enterprise	F4; test to IP degree 54 at TUV	1	AK50242179 0001	E56070
	Cable	YIHUAN	0.5*1C White		1015	E250011
	Cable	YIHUAN	0.75*1C White		1015	E250011
	Cable	YIHUAN	0.75*1C Red		1015	E250011
	Cable	YIHUAN	1.25*1C White		1015	E250011
	Cable	YIHUAN	1.25*1C Red		1015	E250011
	Cable	YIHUAN	2.0*1C Black		1015	E250011
	Cable	YIHUAN	3.5*1C Black		1015	E250011
	Cable	YIHUAN	22AWG*IP Grey		2464	E250011
	Cable Conduit & Fitting	Kai Suh Suh Enterprise	HD-3, HD-4, HD-5.7		E97527	

C. Electrical Part List with Part Number Listed

Regular electrical part list for milling head

Part #	Item #	Description and function	ACER	Model:	Supplier	Technical data	Suppliers Reference	QTY
9500	E-STOP	Emergency Stop	Allen Bradley	3VS, 3VSII, 3VK, 3VKH, 5VK, 6VK	Allen Bradley	690V 10A 4KV	S04509-RWA800FPMT34	1
9500	SB3	Emergency Stop	Allen Bradley		Allen Bradley	690V 10A 4KV	S04509-RWA800FPMT35	1
9505-1	LIMIT SW	SPINDLE STOP LIMIT SWITCH	TEND		TEND	10A 250VAC	TZ7311	1
9555	LIMIT SW	HI/LOW GEAR SWITCH	OMRON		OMRON	2A 125V	SHL-Q2255 AC-15 2A 125V	1
9501	SB1	Switch Forward	Allen Bradley		Allen Bradley	690V 10A 4KV	S04509-RWA800FPMT32	1
9501	SB2	Switch Reverse	Allen Bradley		Allen Bradley	690V 10A 4KV	S04509-RWA800FPMT32	1
9503-2	R.P.M METER	Digital R.P.M Meter	PWR ELECTRONICS		PWR ELECTRONICS	DC0-10V 0~5300/660RPM	PWRMMX-1-A13A	1
9507-10	S15 Inverter	Inverter	Toshiba		Toshiba	240V/3P/3.7KW	VF-S15	1
9507-11	S15 Inverter	Inverter	Toshiba		Toshiba	460V/3P/3.7KW	VF-S15	1
9506-10	Resistor	Braking Resistors				1350W 230V	ZQR450W6.5J	3
9506-11	Resistor	Braking Resistors				1350W 460V	ZQR450W20J	3
9512	Transformer	Single Phase Transformer	Cheng-Ten Electronics		Cheng-Ten Electronics	24VA 230V	IQ24VA	1
9512-1	Transformer	Single Phase Transformer	Cheng-Ten Electronics		Cheng-Ten Electronics	24VA 460V	IQ24VA	1
9700	F1	Fuse 1	TEND		TEND	3A		1
9700	F2	Fuse 2	TEND		TEND	3A		1
9514	Power Relay	Power Relay 110V	OMRON		OMRON	5A 250VAC	MY2N-J	1
9507-4	Power On	Power On Contactor	NHD		NHD	220V 3P 5.5HP	C12D10D7 24V	1
9511	ON/OFF	Coolant On/Off Button	SUEN-AN		SUEN-AN	3P 10A 500V 2.2KW		1
9510-2	Fan	Cooling Fan	Gulf Electronics		Gulf Electronics	AC110/120V 18/19W	GA1123XBL	1
9502	VR	Variable Resistor	JASON		JASON	2K Ohms	B202 2K +IKΩ	1
9570-1	TR1	Transformer	LUNG GHI		LUNG GHI	500VA 0-480V/0-110V	LCP-TBS JY-190	1
9701	SQ1	Supply Disconnecting Switch	KEDU		KEDU	440V 15KA 16A	ZH-C316	1
9702	FU1	Fuse Blocks	CHANGXIN		CHANGXIN	3P-500V/32A	RT18-32X	1
9703	FU2	Fuse Blocks	TEND		TEND	250V/10A	TFB-102	1
9703	FU3	Fuse Blocks	TEND		TEND	250V/10A	TFB-102	1
9704	FU1	Fuse	CHANGXIN		CHANGXIN	500V-50KA/aM30A	10*38*3P	1
9705	FU2	Fuse	TEND		TEND	30mm/5A	30mm	1
9705	FU3	Fuse	TEND		TEND	30mm/5A	30mm	1
9706	KM1	Spindle Magnetic Contactor	TECO		TECO	230V / 5HP /3KW	CU-11 /Coil 110V	1
9706	KM2	Coolant Magnetic Contactor	TECO		TECO	230V / 5HP /3KW	CU-11 /Coil 110V	1

Part #	Item #	Description and function	ACER	Model:	3VS, 3VSI, 3VK, 3VKH, 5VK, 6VK	Suppliers Reference	QTY
				Supplier	Technical data		
9706	KM5	Down Magnetic Contactor	TECO		230V / 5HP /3KW	CU-11 /Coil 110V	1
9707	FR1	Spindle Overload Relay	TENYU		12-18A/230V(15A)	TH-12	1
9708	FR2	Coolant Overload Relay	TENYU		0.9-1.5A/ 230V(0.9A)	TH-12	1
9709	FR4	Up/down Overload Relay	TENYU		7-11A/230V(7.6A)	TH-12	1
9710	X1 X2 X3	Terminal Blocks	TEND		600V / 25A	TB25-12P*3P	1
9711	PB1	Emergency Stop switch	CHANGXIN		250V/6A/1B(R)	K2BS542	1
9712	PB2	Spindle Start Switch	CHANGXIN		250V/6A/1A /110V(G)	K2BW33G1	1
9711	PB3	Spindle Stop Switch	CHANGXIN		250V/6A/1B(R)	K2BA42	1
9712	PB4	X-Y Axis Start Switch	CHANGXIN		250V/6A/1A /110V(G)	K2BW33G1	1
9711	PB5	X-Y Axis Stop Switch	CHANGXIN		250V/6A/1B(R)	K2BA42	1
9713	PB6	Up Start Switch	CHANGXIN		250V/6A/1A(BK)	K2BA21	1
9713	PB7	Down Start Switch	CHANGXIN		250V/6A/1A(BK)	K2BA21	1
9713	CS1	Coolant Start/Stop Switch	CHANGXIN		250V/6A/1A(BK)	K2BD21	1
9714	HL	Indicator Light	NHD		AC-110V (W)	NLD-22 W	1
9715	LS1	Trip Spindle Limit Switch	TEND		10A 250VAC	TZ7311	1
9716	LS2	Forward Limit Switch	CHANGXIN		250V 15A	KZ-5109	1
9716	LS3	Reverse Limit Switch	CHANGXIN		250V 15A	KM-1308	1
9716	LS4	Reverse Limit Switch	CHANGXIN		250V 15A	KM-1308	1
9717	EL	Work Light	ARC		AC-24V/50W	A-L81A	1
9718	XS	Y Axis Power Feed	Skyey		110V/2.5A	LK 3021F	1

UL listing electrical part list for milling head

ACER		UL Model: 3VS, 3VSI, 3VK, 3VKH, 5VK, 6VK			
PART #	ITEM NAME	PARTS NAME	MAKER	PARTS CATALOG NUMBER	QTY
9503-2	R.P.M METER	Digital R.P.M Meter	PWR Electronic Company	PWRMMX-1-A13A	1
9500	E-STOP	Emergency Stop	Allen Bradley	S04509-RWA800FPMT34	1
9500	SB3	Emergency Stop	Allen Bradley	S04509-RWA800FPMT35	1
9505-1	SB4	LIMIT Switch	Azbil	LCB1-501 10A 250VA	1
9555	SI	HI/LOW GEAR SW	OMRON	SHL-Q2255 AC-15 2A 125V	1
9501	SB1	Switch Forward	Allen Bradley	S04509-RWA800FPMT32	1
9501	SB2	Switch Reverse	Allen Bradley	S04509-RWA800FPMT32	1
9510-2	FAN	Cooling Fan	GULF	GA1123XBL AC110/120V 18/19W	1
9513	CR1	Relay Seat	OMRON	PYF-08A-E-T OMZ	1
9514		Relay	OMRON	MY-2NJ AC24V	1
9507-10	Spindle Module	Inverter	Toshiba Electric System	VF-S15 230V	1
9507-11	Spindle Module	Inverter	Toshiba Electric System	VF-S15 460V	1
9506-10		Braking Resistors	Toshiba Electric System	230V ZQR450W 6.5Ω	3
9506-11		Braking Resistors	Toshiba Electric System	460V ZQR450W 620Ω	3
9593		Terminal Block	Wago	2002-1301/3C 2.5mm	7
9594		Terminal Block	Wago	2004-1307	2
9595		Terminal Block	Wago	281-681	3
9596		Terminal End	Wago	2002-1392/3C 2.5mm	3
9597		Terminal End	Wago	2004-1391/Grey	1
9598		Terminal End	Wago	281-324	1
9502	B202 2K	Variable Resistor	JASON	2kΩ	1
9599		Screwless End		INTBR-F/ Grey	2
9562	PB1	Emergency Switch	SCHNEIDER	XB5-AS542/240V/3A/1B (RED)	1
9563	PB2	Spindle Start Switch	SCHNEIDER	XB5-AW33B1/240V/3A/1A (GED)	1
9564	PB3	Spindle Stop Switch	SCHNEIDER	XB5-AA42/240V/3A/1B (RED)	1
9565	PB4	X-Y Axis Stop Switch	SCHNEIDER	XB5-AA42/240V/3A/1B (RED)	1
9566	PB5	X-Y Axis Start Switch	SCHNEIDER	XB5-AW33B1/240V/3A/1A (GED)	1
9567	PB6	Start Switch-Up	SCHNEIDER	XB5-AA21/240V/3A/1A (BLACK)	1
9568	PB7	Start Switch-Down	SCHNEIDER	XB5-AA21/240V/3A/1A (BLACK)	1
9569	CS1	Coolant On/Off Switch	SCHNEIDER	XB5-AD21/240V/3A/1A (BLZCK)	1

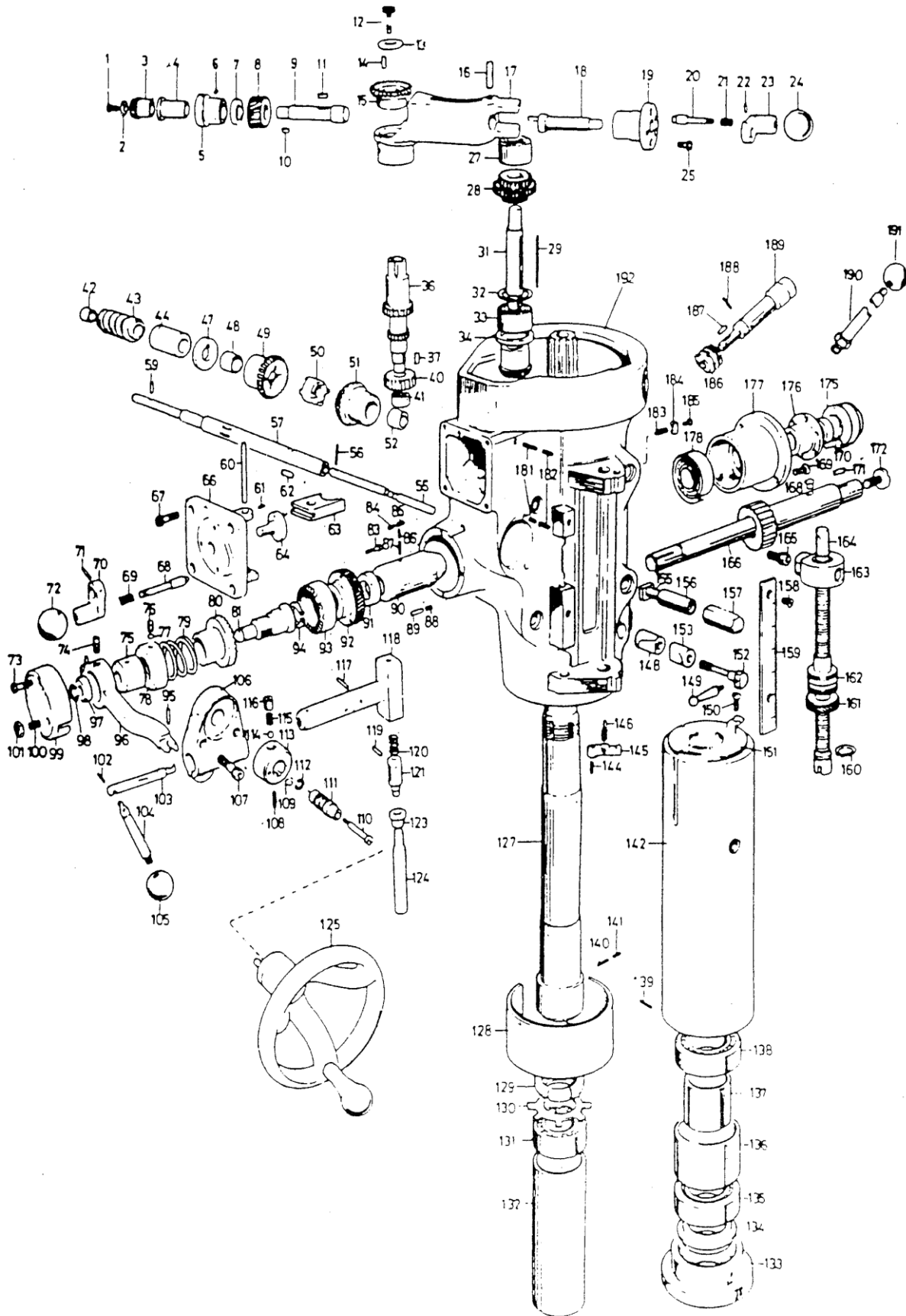
ACER		UL Model: 3VS, 3VSI, 3VK, 3VKH, 5VK, 6VK		PARTS CATALOG NUMBER		QTY
PART #	ITEM NAME	PARTS NAME	MAKER			
9570	TR1	Transformer	LUNG GHI	LCP-TBS JY-270/500VA 0-480V/0-110V		1
9571	QS1	Supply Disconnecting Switch	EATON	P1-25N/SVB/600V 10KA/25A		1
9572	FR2	Coolant Overload Relay	SCHNEIDER	LR3D03/0.25-0.4A/0.38A		1
9573	FR4	Up/Down Overload Relay	SCHNEIDER	LR3D14/7-10A/8A		1
9574	FU1	Fuse Blocks	BUSSMANN	10*38*3P/3P -600V/32A		1
9575	FU2	Fuse Blocks	BUSSMANN	10*38*1P/1P -600V/32A		1
9576	FU3	Fuse Blocks	BUSSMANN	10*38*1P/1P -600V/32A		1
9577	FU1	Fuse	BUSSMANN	FNQ/30A/3P-600A/20KA		3
9578	FU2	Fuse	BUSSMANN	ST2.5 - TWIN 3031241/1P-600A/20KA		1
9579	FU3	Fuse	BUSSMANN	ST2.5 - TWIN 3031241/1P-600A/20KA		1
9580	KM1	Spindle Magnetic Contactor	SCHNEIDER	LC1D18 B7/COIL AC-24V		1
9581	KM2	Coolant Magnetic Contactor	SCHNEIDER	LC1D09 B7/COIL AC-24V		1
9582	KM3	X-Y Axis Magnetic Contactor	SCHNEIDER	LC1D09 B7/COIL AC-24V		1
9583	KM4	Magnetic Contactor-Up	SCHNEIDER	LC1D09 B7/COIL AC-24V		1
9584	KM5	Magnetic Contactor-Down	SCHNEIDER	LC1D09 B7/COIL AC-24V		1
9592	X1	Terminal Blocks	PHOENIX	MSB2.5-MS35/600V / 20A		1
9585	HL	Indicator Light	SCHNEIDER	XB7-EV6/LED AC-24V(WHITE)		1
9586	LS2	Forward Limit Switch	MOUJEN	MJ-7103B/250V/15A		1
9587	LS3	Reverses Limit Switch	MOUJEN	TM-1308/250V/15A		1
9588	LS4	Reverses Limit Switch	MOUJEN	TM-1308/250V/15A		1
8008-1	M1 3~	Spindle Motor	MING-LOOUN	AC-230V/460V-5HP/3.7KW		1
9589	M3	Up/Down Motor	JIN SHIN	AC-230V/460V-2HP/1.492KW		1
9590	M2	Coolant Motor	Taiwan Chang Steel Electric	MC-8180/AC230/460V		1
9591	POWER FEED	Y Axis Power Feed	ALIGN	AC-110V/90W		2
9592	EL	Work Light	GOLDEN	G-L80/AC-24V/70W		1
9001-1	LUB 110V	Lubrication Pump	CHEN-YING	CESMA-2L 110V/0.1A/4W		1

2. Mechanical Drawings & Parts Breakdown List

Note: When ordering parts, please be prepared with,

1. Machine model & serial number.
2. Item number.
3. Part number and description.
4. Year of Production.
5. Voltage & horsepower.
6. Quantity

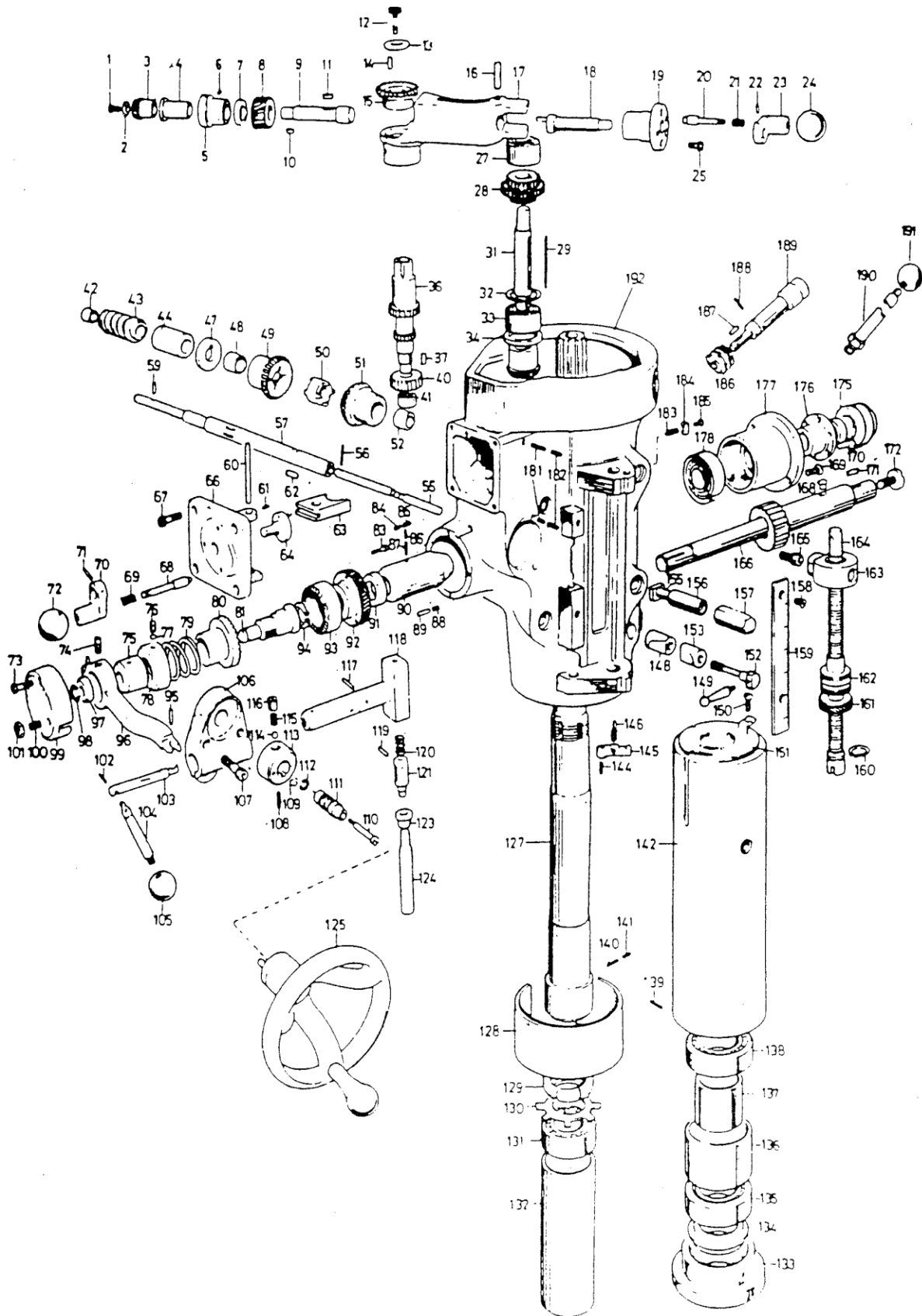
2-1. 3HP (MILLING HEAD)



3HP (MILLING HEAD)

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	QT'Y
1	6141	B1+17	RD.HD Screw	1
2	6140		Bevel Pinion Washer	1
3	6139	B03	Feed Bevel Pinion	1
4	6183		Feed Worm Gear Shaft Sleeve	1
5	6137	B05	Worm Cradle Bushing	1
6	6123		Set Screw	1
7	6136		Worm Gear Spacer	4
8	6134	B08	Fed Drive Worm Gear	1
9	6133		Feed Drive Worm Gear Shaft	1
10	6142		Worm Shaft Key	1
11	6135		Key	1
12	6150		Lock Nut	1
13	6149		Washer	1
14	6147		Cluster Gear Key	1
15	6148	B15	Feed Reverse Bevel Gear	1
16	6122	B16	Feed Engage Pin	1
17	6121	B17	Worm Gear Cradle	1
18	6126	B18	Worm Gear Cradle Throw-out	1
19	6125	B19	Shift Sleeve	1
20	6169	B20	Gearshift Plunger	1
21	6170	B21	Compression Spring	1
22	6128		Roll Pin 3X20	1
23	6168	B23	Shift Crank	1
24	6131	B24	Black Plastic Ball	1
25	6132		Cap Screw 5X12	3
27	6157	B27	Cluster Gear Shaft Upper Bearing	1
28	6153	B28	Cluster Gear Assembly	1
29	6160		Cluster Gear Key 3X3X45	1
31	6151	B31+35	Cluster Gear Shaft	1
32	6158		Snap Ring 16	1
33	6156	B33	Bevel Gear Bearing	1
34	6159	B34	Bevel Gear Thrust Spacer	1
36	6143	B36+38	Feed Driving Gear	1
37	6145		Key	1
40	6144		Feed Drive Gear	1

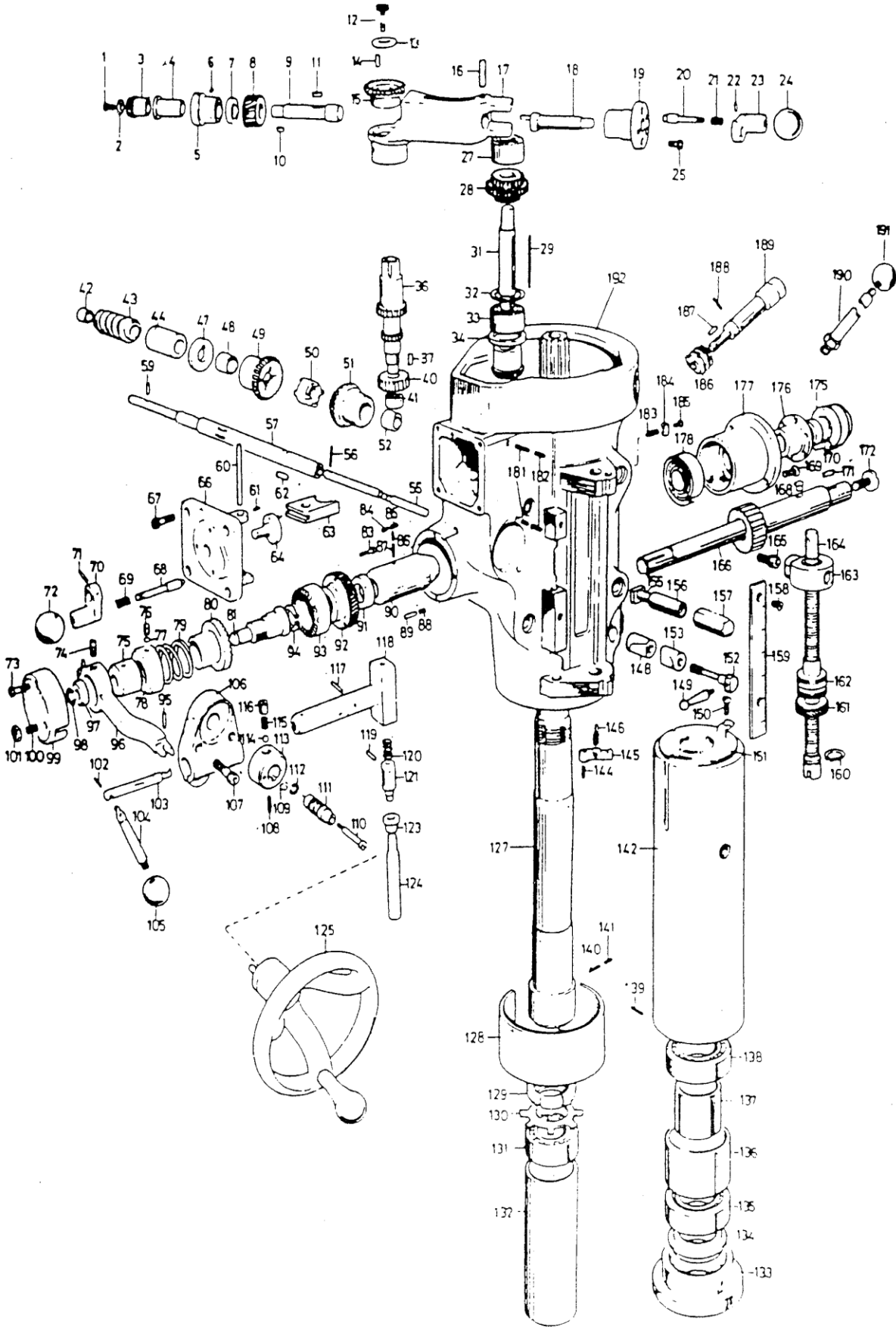
3HP (MILLING HEAD)



3HP (MILLING HEAD)

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	QT'Y
41	6252		Needle Bearing #BA66	1
42	6227	B42	Bushing	1
43	6225	B43	Worm	1
44	6224	B44	Feed Worm Shaft Bushing	1
47	6223	B47	Feed Worm Shaft Thrust Washer	1
48	6221	B48	Bushing	1
49	6220	B49	Feed Reverse Bevel Gear	1
50	6222	B50	Feed Reverse Clutch	1
51	6220		Feed Reverse Bevel Gear	1
52	6221		Bushing	1
55	6216	B55	Reverse Clutch Rod	1
56	6217		Roll Pin 3X20	1
57	6209	B57	Feed Worm Shaft	1
59	6226		Pin 3X10	1
60	6163	B60	Feed Shift Rod	1
61	6164		KP.Set Screw 5X5	1
62	6230		Key	1
63	6162	B63	Feed Gear Shift Fork	1
64	6166	B64	Cluster Gear Shift Crank	1
66	6161	B66	Cluster Gear Cover	1
67	6165		Cap Screw 5X12	4
68	6169		Gear Shift Plunger	1
69	6170		Comperession Spring	1
70	6168		Shift Crank	1
71	6167		Roll Pin	1
72	6171		Black Plastic Ball	1
73	6206		Cap Screw	2
74	6202	B74	Clutch Ring Pin	2
75	6200	B75	Clutch Ring	1
76	6199		Socket Set Screw	1
77	6199-1		Brass Plug	1
78	6198	B78	Overload Clutch Lock Nut	1
79	6197	B79	Safety Clutch Spring	1
80	6194	B80	Overload Clutch	1
81	6195	B81	Overload Clutch Sleeve	1

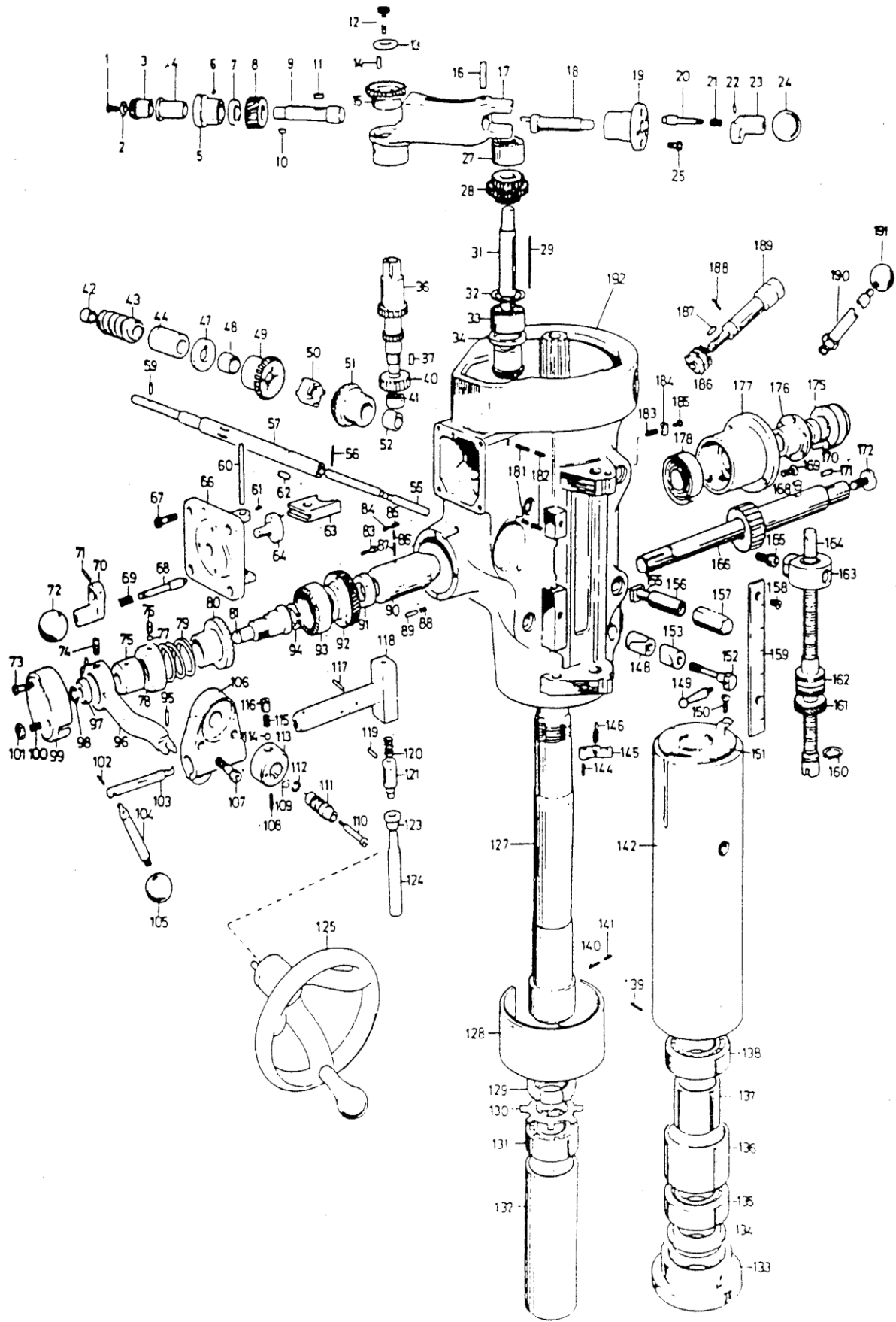
3HP (MILLING HEAD)



3HP (MILLING HEAD)

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	QT'Y
83	6189		Round Head Screw	3
84	6228		Mock-it Lock Scrw	1
85	6228		Socket Set Screw	1
86	6246		Lock Screw	1
87	6246-1		Socket Set Screw	1
88	6191	B88	Compression Spring	1
89	6193	B89	Overload Clutch Lever Spring Plunger	1
90	6186	B90	Quill Pinion Shaft Bushing	1
91	6190	B91	Pinion Shaft Worm Gear Spacer	1
92	6187	B92	Overload Clutch Worm Gear	1
93	6188	B93	Overload Clutch Ring	1
94	6188-1		Snap Ring 15	1
95	6236-1	B95	Dowrl Pin	1
96	6203	B96	Overload Clutch Trip Lever	1
97	6201	B97	Overload Clutch Washer	1
98	6195-1		Snap Ring 10	1
99	6205	B99	Clutch Arm Cover	1
100	6207		Socket Set Screw	1
101	6208		Chem Blacked Lock Nut	1
103	6239	B103	Cam Rod	1
104	6234	B104	Trip Handle	1
105	6233	B24	Black Plastic Ball	1
106	6231	B106	Feed Trip Braket	1
107	6232		Cap Screw 6X20	2
108	6219		Socket Set Screw 6X6	1
109	6229		Key	1
110	6214	B110+111	Feed Reversd Knob Stud	1
111	6213	B110+111	Reverse Knob	1
112	6215	B110+111	Snap Ring "C"	1
113	6218	B113	Handwheel Clutch	1
114	6255		Steel Ball 3/16	1
115	6219-2	B115	Compression Spring	1
116	6219-1		Handwheel Clutch Spring Screw 8X6	1
117	6237		Roll Pin	1

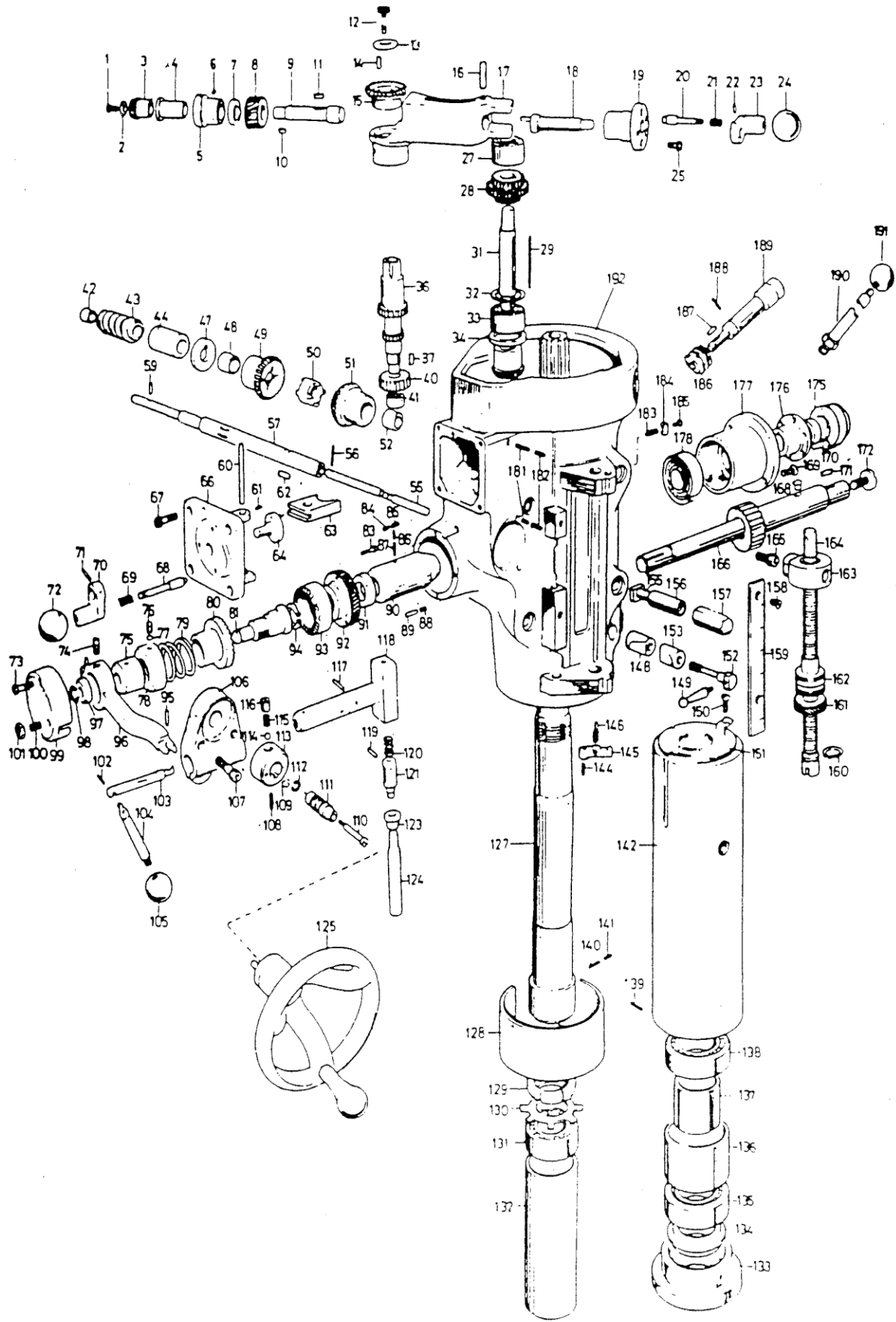
3HP (MILLING HEAD)



3HP (MILLING HEAD)

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	QT'Y
118	6236		Cam Rod Sleeve Assy	1
119	6241		Roll Pin	1
120	6242	B120	Compression Spring	1
121	6240	B121	Trip Plunger	1
123	6118-1		Trip Plunger Bushing	1
124	6118	B124	Feed Trip Plunger	1
125	6210	B125+126	Handwheel	1
127	6084	B127	Spindle	1
128	6086	B128	Quill Skirt	1
129	6090	B129	Lock Nut	1
130	6091		Lock Washer	1
131	6092		Bearing 6206	1
132	6094		Sleeve	1
133	6098	B133	Nose-Piece	1
134	6097	B134	Spindle Dirt Shield	1
135	6093		Bearing 7207	1
136	6095	B136	Bearing Spacer-Large	1
137	6096	B137	Bearing Spacer-Small	1
138	6093		Bearing 7207	1
140	6253	B140	Special Socket Set Screw	1
141	6254		Collet Alignment Screw 6X6	1
142	6085	B142	Quill	1
144	6113		Socket Set Screw 4X20	1
145	6111	B145	Feed Trip Lever	1
146	6112	B146	Trip Lever Pin	1
148	6116-1	B148	Quill Lock Sleeve	1
149	6119	B149	Lock Handle	1
151	6088	B151	Felt Washer	1
152	6117	B152	Quick Lock Bolt	1
152-1	6117-1	B152-1	Spring	1
153	6116	B153	Quill Lock Sleeve Tapped	1
155	5036	B155	T-Bolt Assy	1
156	6120	B156	Lower Clamping Bolt Spacer	2
157	5038	B157	Lock Nut	1
158	6244		Chem Blacked RD.HD.Screws	2
			16	

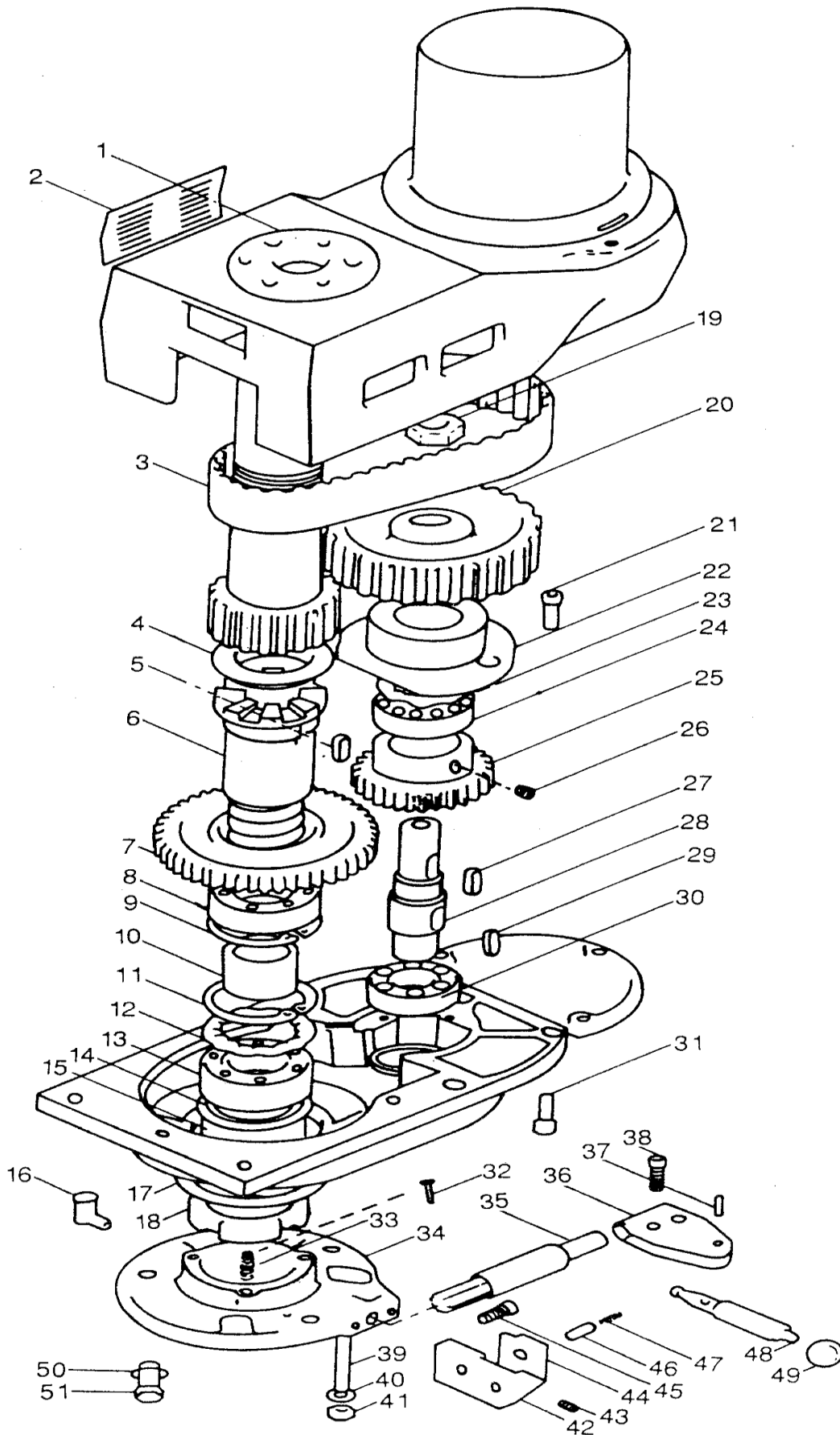
3HP (MILLING HEAD)



3HP (MILLING HEAD)

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	QT'Y
159	6243	B159	Micrometer Scale	1
160	6115		Snap Ring 16	1
161	6108	B161	Quill Micro-stop Nut	1
162	6107	B162	Micrometer Nut	1
163	6105	B163	Quill Stop Knob	1
164	6104	B164	Quill Stop Micro-Screw	1
165	6106		Screw 3/8	1
166	6172	B166	Quill Pinion Shaft	1
168	6185	B168	Spring Pin 5X12	1
169	6180-1		RD.Head Screw	1
170	6179		Roll Pin	1
171	6184		Key 3X3X20	1
172	6183	B172	Pinion Shaft Hub Screw	1
173	6176		Steel Ball	1
174	6175	B174	Compression Spring	1
175	6178	B175	Rack Feed Handle Hub	1
176	6182	B176	Pinion Shaft Hub Sleeve	1
177	6180	B177	Spring Cover	1
178	6181	B178	Clock Spring (Clock Spring Assy.)	1
181	6246-1		Socket Set Screw	1
182	6246		Lock Screw	1
183	6110	B183	Reverse Trip Ball Lever	1
184	6109	B184	Feed Reverse Trip Plunger	1
185	6114	B185	Reverse Trip Ball Lever Screw	1
186	5039	B186	Worm Gear	1
187	5041		Key 4X4X18	1
188	5042		Socket Set Screw	1
189	5040	B189	ADJ Worm Shaft	1
190	6174	B190	Pinion Shaft Hub Handle	1
191	6173	B191	Black Plastic Ball Handles 3/8	1
192	6101		Quill Housing	1
193	6101-1	B147	Adjust Shaft	1
194	6010-2	B154	Screw	1

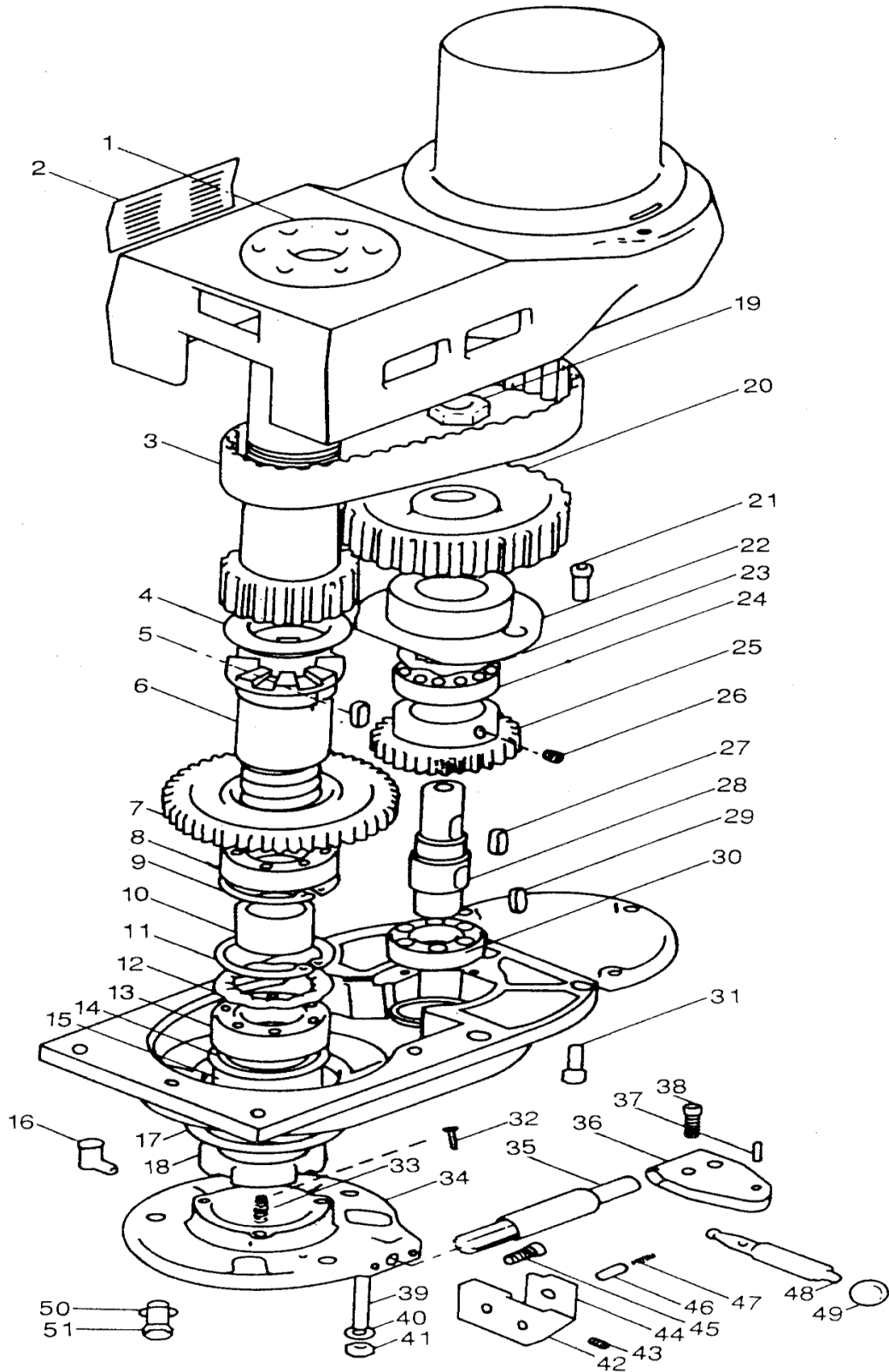
2-2. 3HP Head Top Housing



3HP Head Top Housing

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
1	7013	VS13	Top Bearing Cap	1
2	H7088	VS101	Ventilator	2
3	7036	VS63	Timing Belt	1
4	7038	VS100	Timing Pulley Clutch Sleeve	1
5	7081	VS72	Key--	1
6	7039	VS73	Splined Gear Hub	1
7	7040	VS74	Spindle Bull Gear	1
8	7041	VS77	Bearing-6908ZZ	1
9	7042	VS80	Snap Ring	1
10	7043	VS78	Bull Gear Bearing Spacer	1
11	7042	VS80	Snap Ring	1
12	7058	VS73-1	Wave Spring Washer	1
13	7041	VS77	Bearing-6908ZZ	1
14	7057-2	VS	Washer	1
15	7057	VS79	Bearing Sleeve Spacer	1
16	7054	VS82-1	Oil Cap	1
17	7048	VS75	Ball Bearing Gear Sleeve	1
18	7056	VS81	Bearing Lock Nut	1
19	7087	VS61	Jam Nut	1
20	7086	VS62	Timing Belt Pulley	1
21	7085	VS12	Socket HD Cap Screw	3
22	7084	VS64	Bull Gear Pinion Bearing Cap	1
23	7082	VS64-1	Wave Spring Washer	1
24	7079	VS65	Ball Bearing --6203ZZ	1
25	7083	VS66	Bull Gear Pinion	1
26	7077	VS03	Socket Set Screw--	1
27	7078	VS68	Key--	1
28	7080	VS67	Bull Gear Pinion Counter Shaft	1
29	7078	VS69	Key--	1
30	7079	VS65	Ball Bearing --6203ZZ	1
31	7073	VS51	Socket HD Cap Screw	6
32	7055-1	VS102	T-Tip Pin	3
33	7055	VS84	Compression Spring	3
34	7049	VS83	Fixed Clutch Bracket	1

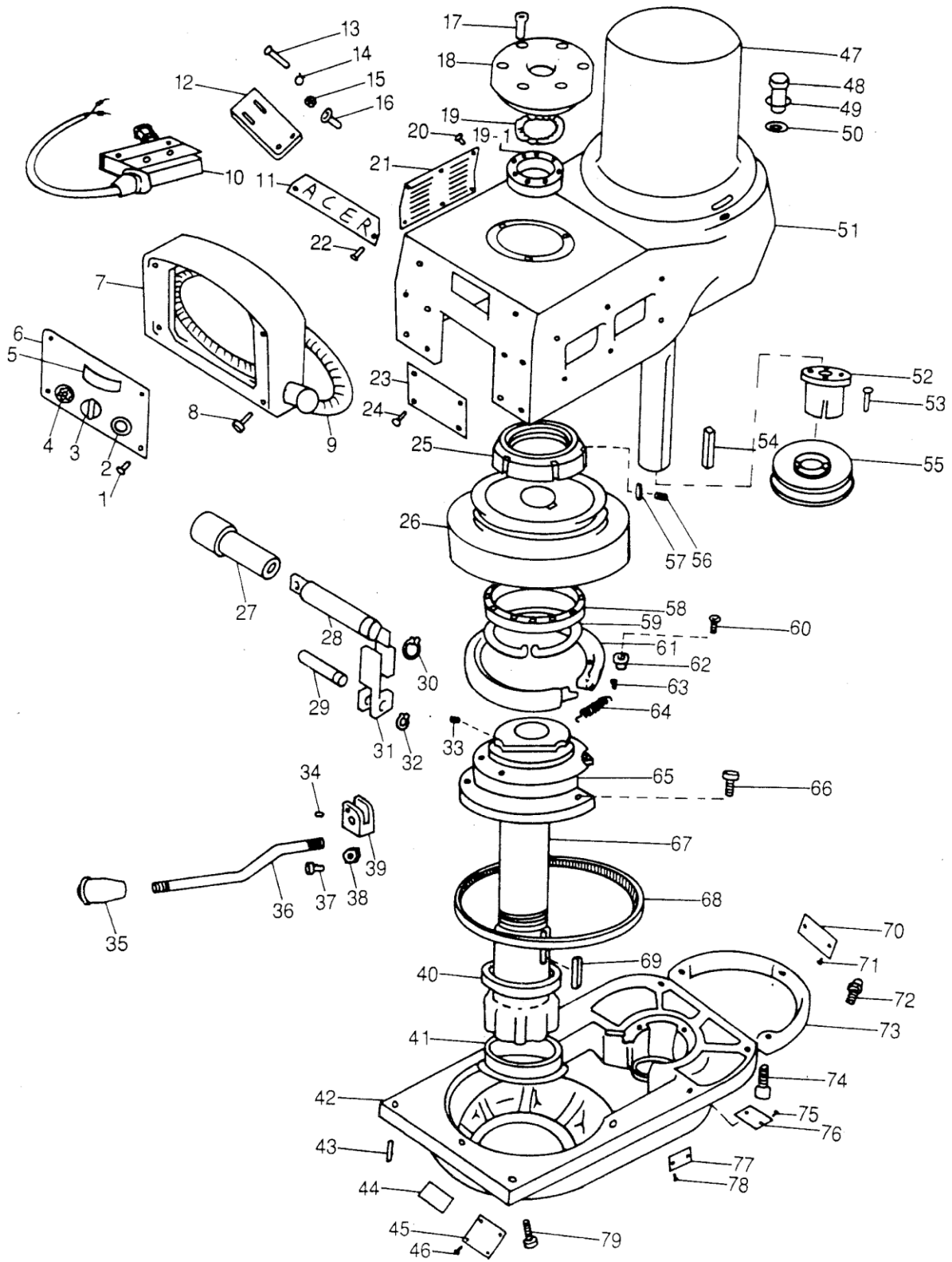
3HP Head Top Housing



3HP Head Top Housing

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
35	7059	VS87	Bull Gear Shift Pinion Shaft	1
36	7071	VS92	Hi-Low Pinion Block	1
37	7072	VS88	Spring Pin	1
38	7072-1	VS92-1	Socket HD Cap Screw	2
39	7063	VS85	Stud	3
40	7062	VS85-1	Spring Washer	3
41	7061	VS85-2	Hex Nut	3
42	7060	VS89	Hi-Low Detent Plate	1
43	7064	VS	Socket Set Screw--	1
44	7065	VS89-1	Adjustable Plate	1
45	7068	VS12	Socket HD Cap Screw	2
46	7066	VS90	Hi-Low Detent Plunger	1
47	7067	VS91	Spring	1
48	7070	VS94	Hi-Low Shift Crank	1
49	7069	B24	Bakelite Ball	1
50	7045	VS86	Hex Cap Screw	3
51	7046	VS86-1	Spring Washer	3

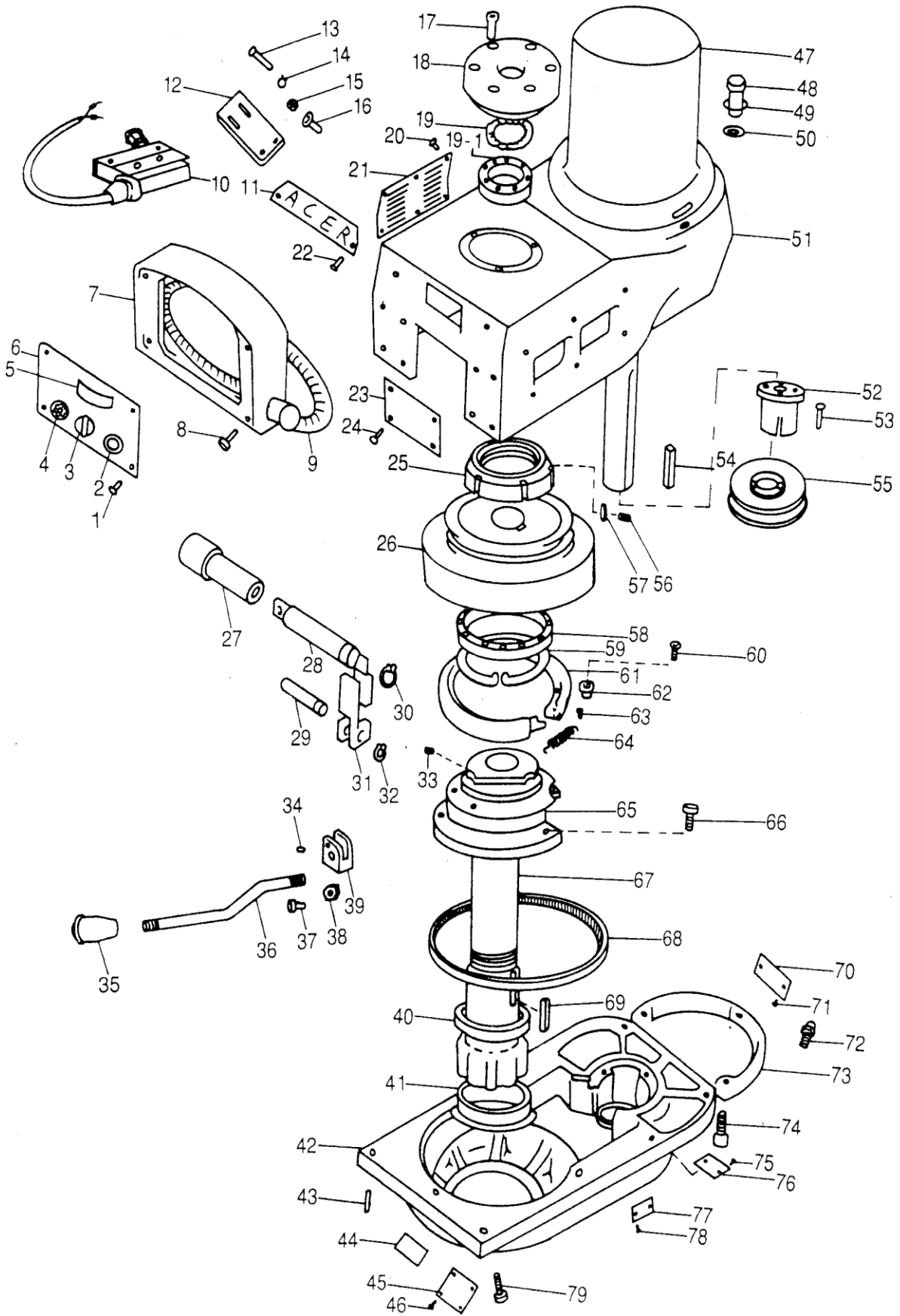
2-3. 3HP Head Back Gear



3HP Head Back Gear

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
1	7022-1	VS17-1	Round + Cap Screw	4
2	9500	VS	Emergency Switch	1
3	9501	VS	F/R Switch	1
4	9502	VS	Variable Resistor	1
5	9503	VS	RPM Meter-10V	1
	9503-1		RPM Meter-7.5V	1
	9503-2		RPM Digital Counter	1
6	H7023-1	VS16-5	Chromed Face Plate	1
	H7023-2		Chromed Face Plate UL	1
7	H7005-1	VS16-6	Speed Chanter Housing	1
8	H7025	VS17	Socket HD Cap Screw	4
9	9504	VS	Control Wire Cable	1
10	9505	VS	Limit Switch w/Cable	1
11	H8010-1	VS1-4	ACER Name Plate	1
12	H8010-2	VS1-5	Limit Switch Bracket Plate	1
13	7022-2	VS	Round Socket Cap Screw	2
14	7022-3	VS	Spring Washer	2
15	7022-4	VS	Hex Nut	2
16	7022-5	VS	Socket HD Cap Screw	2
17	8001	VS14	Socket HD Cap Screw	3
18	7013	VS13	Top Bearing Cap	1
19	8003	VS13-1	Wave Spring Wahser	1
19-1	8004	VS15	Ball Bearing --6007ZZ	1
20	H7088-1	VS101-1	Round Cap Wooden Screw	12
21	H7088	VS101-1	Ventilator	2
22	H8010-3	VS1-6	Round Socket Cap Screw	2
23	H8010-4	VS1-7	Covering Plate	1
24	H8010-5	VS1-8	Round HD Screw	4
25	8034-1	VS70-2	Spindle Pulley Hub Lock-Nut	1
26	8028-1	VS45-1	Stationary Driven Pulley	1
27	H8073	VS52	Sleeve for Brake Lock Shaft	1
28	H8074	VS53	Brake Lock Shaft	1
29	8068	VS58	Brake Finger Pivot Stud	1
30	8068-1	VS60-1	Snap Ring	1

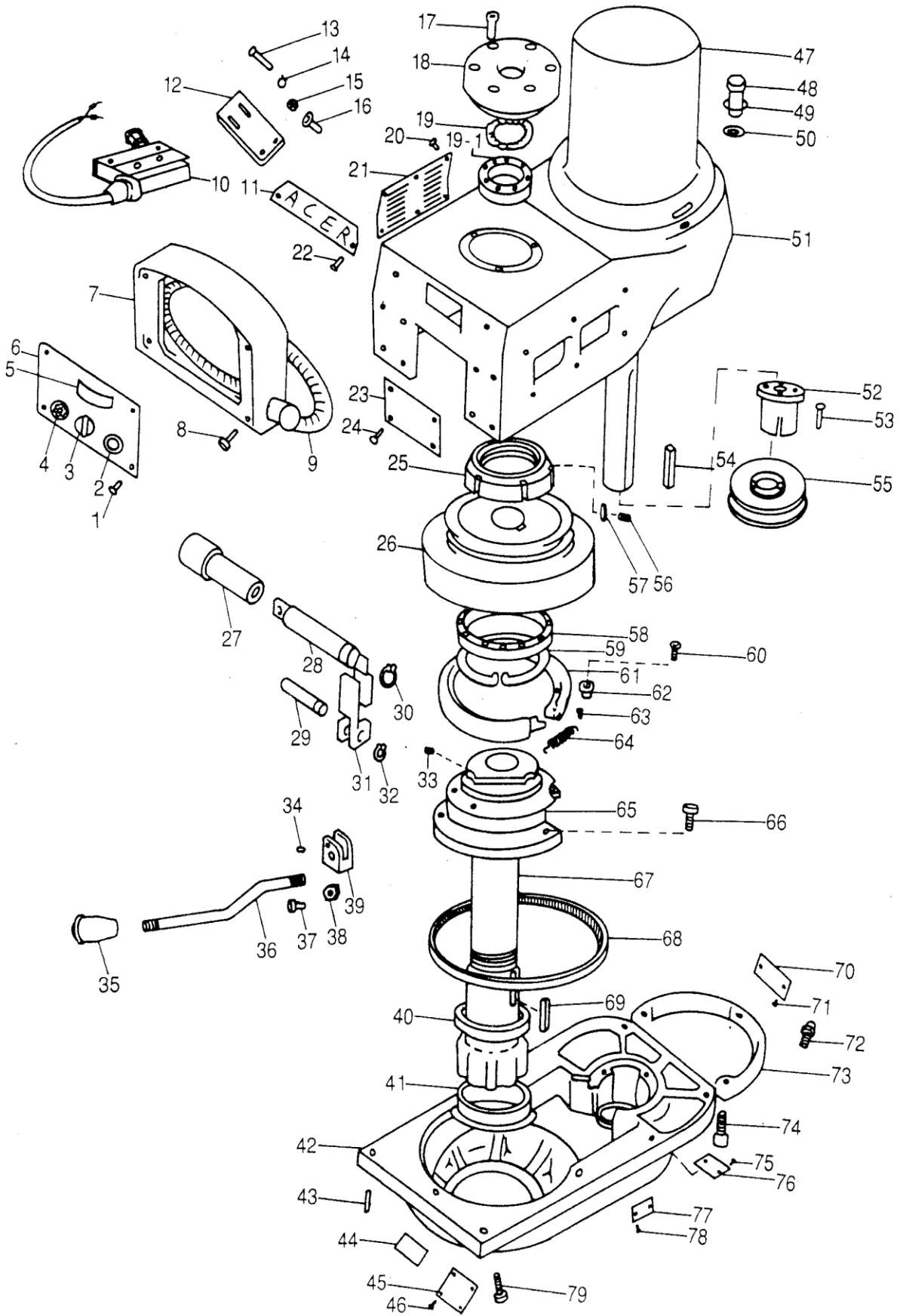
3HP Head Back Gear



3HP Head Back Gear

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
31	8067	VS59	Brake Operating Finger	2
32	8066	VS60	Snap Ring	1
33	H8077	VS99	Socket Set Screw	2
34	8072	VS54-1	Socket Set Screw	1
35	8069	VS57	Bakelite Ball Handle	1
36	8070	VS56	Brake Lock Handle	1
37	8071-1	VS55-1	Socket HD Cap Screw	1
38	8070-1	VS56-1	Hex Nut	1
39	8070-2	VS54	Brake Handle Block	1
40	8033	VS98	Spindle Pulley Spacer	1
41	7038	VS100	Timing Pulley Clutch Sleeve	1
42	H8063	VS82	Gear Housing	1
43	8060	VS82-1	Taper Pin	1
44	H8063-1	VS82-3	Oil Add Name Plate	1
45	8061	VS82-1	Quill Feed Name Plate	1
46	8059	VS	Drive Screw	4
47	8008-1	VS	3HP Spindle Motor	1
48	8009	VS	Socket HD Cap Screw	2
49	8009-1	VS	Spring Washer	2
50	8009-2	VS	Washer	1
51	H8010	VS01	Belt Housing	1
52	8040-2	VS02-2	V-Belt Pulley Sleeve	1
53	8040-3	VS02-3	Hex HD Scrw	2
54	8039	VS06	Key	1
55	8040-1	VS02-1	V-Belt Pulley	1
56	8034-2	VS70-3	Socket Set Screw	2
57	8034-3	VS70-4	Round Copper Tip	2
58	8023	VS43	Ball Bearing-6010ZZ	1
59	H8053-1	VS50-1	Snap Ring	1
60	8035	VS14	Round Socket Cap Screw	1
61	8032	VS47	Brake Shoe Assembly	1
62	8036	VS48	Brake Shoe Pivot Sleeve	1
63	8032-1	VS47-1	Round Cap Screw	4
64	8031	VS49	Brake Spring	2

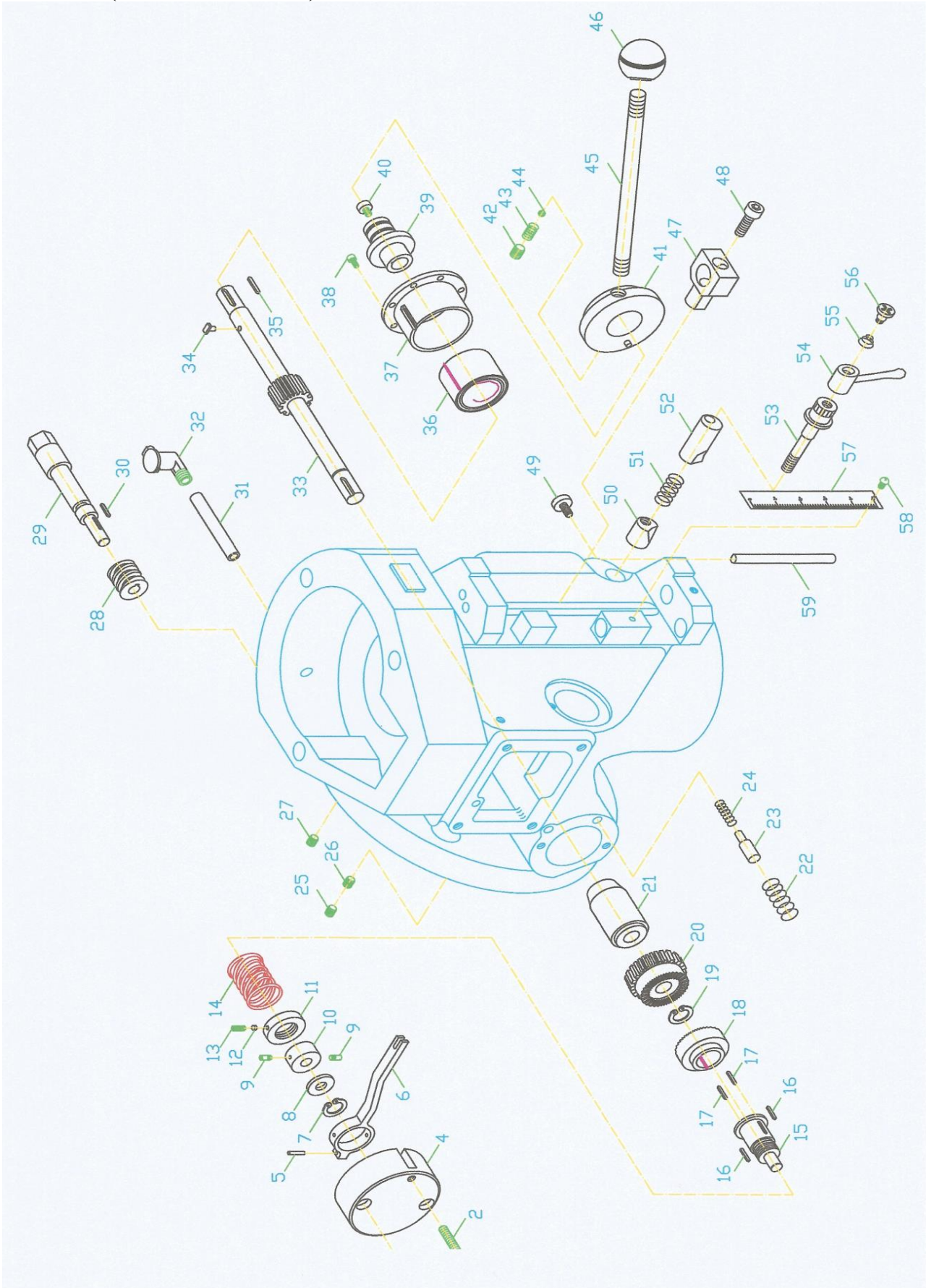
3HP Head Back Gear



3HP Head Back Gear

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
65	H8053-2	VS50-2	Belt Housing Base	1
66	H8064	VS51	Socket HD Cap Screw	3
67	8034-5	VS70-1	Spindle Pulley Hub	1
68	8027-1	VS04-1	V Belt	1
69	8049-1	VS71-1	Key	1
70	8063-2	VS07-1	Grease Add Name Plate	1
71	8059	VS	Drive Screw	2
72	8063-3	VS82-4	Grease Nibble	1
73	8054	Vs11	Motor Pulley Cover	1
74	8055	VS12	Socket HD Cap Screw	3
75	8063-2	VS01-1	Grease Add Name Plate	1
76	8059	VS	Drive Screw	2
77	8058	VS82-2	Hi-Low Range Name Plate	1
78	8059	VS	Drive Screw	2

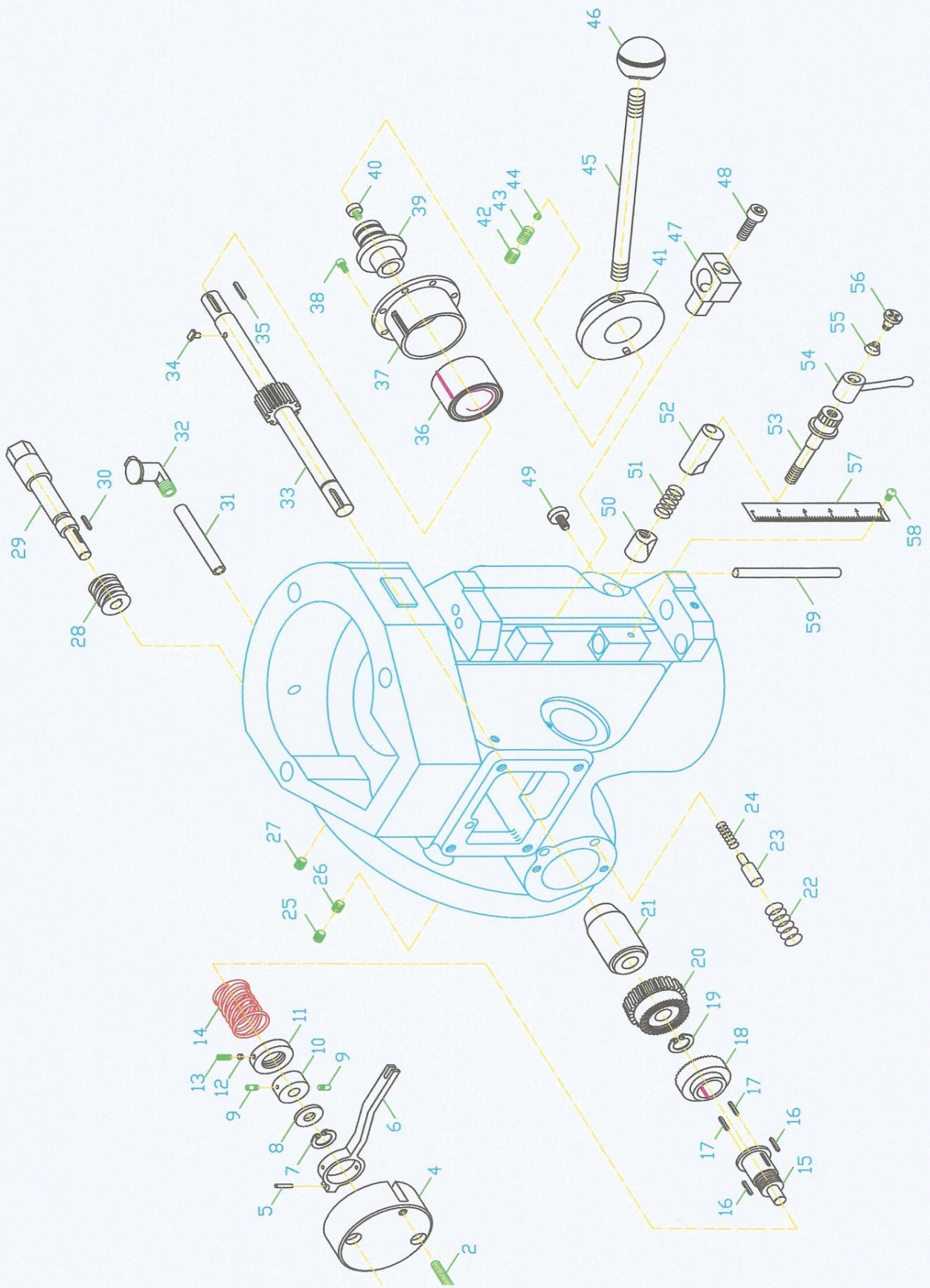
2-4. 5HP (MILLING HEAD) HAND FEED ASS'Y



5HP (MILLING HEAD) HAND FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
1	5K-6208	M6	Hex Nut	1
2	5K-6207	M6x16	Socket Set Screw	1
3	5K-6206	M5x35	Socket HD Cap Screw	2
4	5K-6205	B99	Clutch Arm Cover	1
5	5K-6204	5x20	Roll Pin	1
6	5K-6203	FB96	Overload Clutch Trip Lever	1
7	5K-6195-1	C10	Snap Ring	1
8	5K-6201	B97	Overload Clutch Washer	1
9	5K-6202	B74	Clutch Ring Pin	2
10	5K-6200	B75	Clutch Ring	1
11	5K-6198	B78	Overload Clutch Lock nut	1
12	5K-6199-1		Brass Plug	1
13	5K-6199	M6x6	Socket Set Screw	1
14	5K-6197	FB79	Safety Clutch Spring	1
15	5K-6195	FB81	Overload Clutch Sleeve	1
16	5K-6196	5x20	Key	2
17	5K-6196	5x25	Key	2
18	5K-6194	FB80	Overload Clutch	1
19	5K-6188-1	C16	Snap Ring	1
20	5K-6187+88	FB92+93	Overload Clutch Worm Gear and Ring	1
21	5K-6186	FB90+91	Quill Pinion Shaft Bushing	1
22	5K-6192	B88-1	Compression Spring	1
23	5K-6193	B89	Overload Clutch Lever Spring Plunger	1
24	5K-6191	FB88	Compression Spring	1
25	5K-6246-1	M6x6	Socket Set Screw	1
26	5K-6246	M6x16	Lock Screw	1
27	5K-5042		Set Screw Plunger	1
28	5K-5039	B186	Worm Gear	1
29	5K-5040	FB189	ADJ Worm Shaft	1
30	5K-5041	4x20	Key	1
31	5K-6133-1		Bronze Tubing	1
32	5K-6133		Oil Cup	1
33	5K-6172	FB166	Quill Pinion Shaft	1
34	5K-6172-1	B168	Cap Tip- T shape	1
35	5K-6184	3x20	Key	1
36	5K-6181	FB178	Clock Spring	1

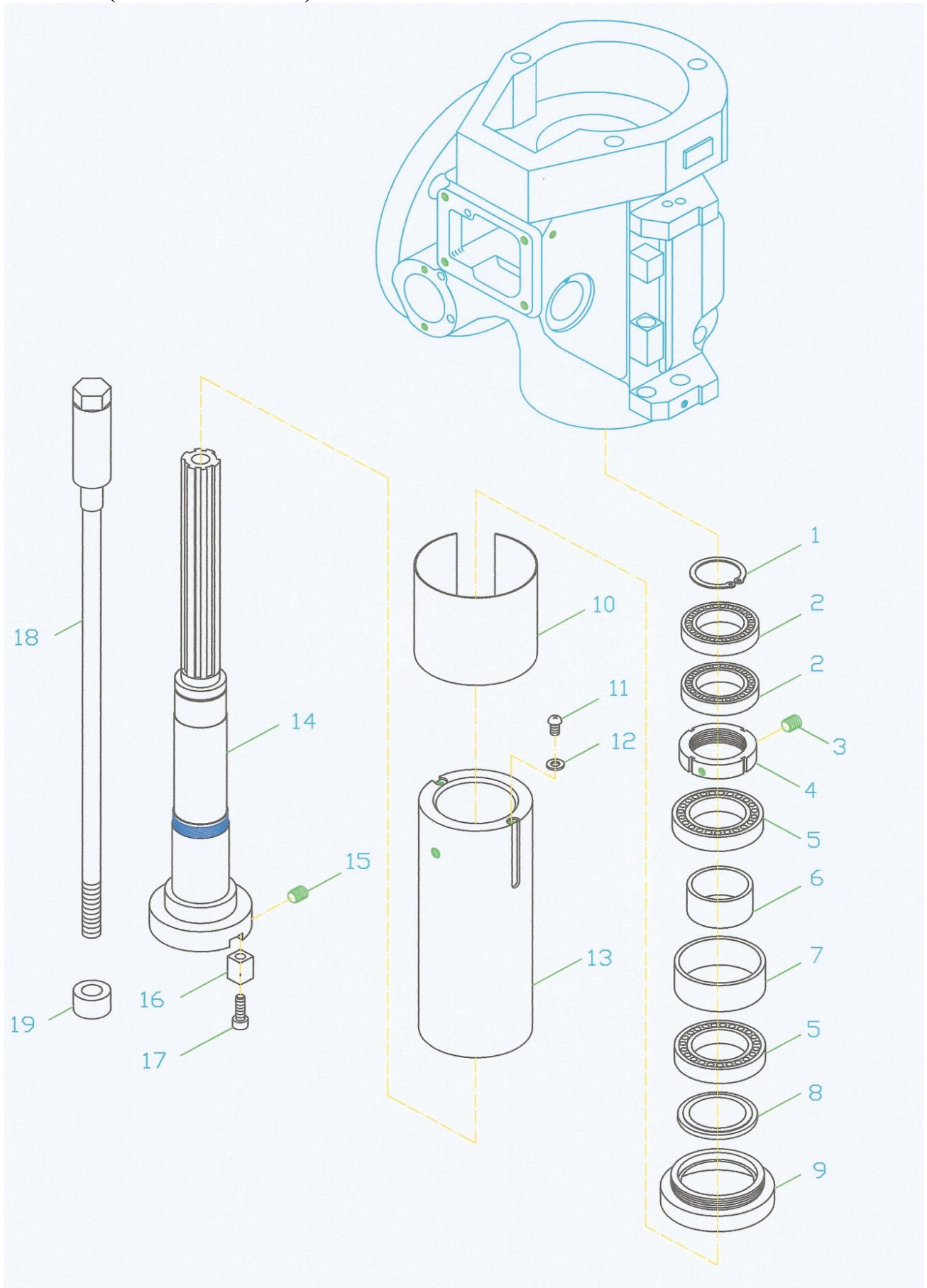
5HP (MILLING HEAD) HAND FEED ASS'Y



5HP (MILLING HEAD) HAND FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
37	5K-6180	FB177	Spring Cover	1
38	5K-6180-1	M5x12	Socket HD Cap Screw	2
39	5K-6182	B176	Pinion Shaft Hub Sleeve	1
40	5K-6183	B172	Pinion Shaft Hub Screw	1
41	5K-6178	B175	Rack Feed Handle Hub	1
42	5K-6177	M8x6	Socket Set Screw	1
43	5K-6175		Compression Spring	1
44	5K-6176		Steel Ball	1
45	5K-6174	B190	Pinion Shaft Hub Handle	1
46	5K-6173	B191	Black Plastic Ball	1
47	5K-6105	FB164	Quill Stop Knob	1
48	5K-6106	3/8x5/8x24T	Socket HD Cap Screw	1
49	5K-6253	B154	Cap Screw	1
50	5K-6116B	B148	Quill Lock Sleeve Tapped	1
51	5K-6116-1	B152-1	Compression Spring	1
52	5K-6116A	FB153	Quill Lock Sleeve	1
53	5K-6117	FB152	Quill Lock Bolt	1
54	5K-6119	FB149	Lock Handle	1
55	5K-6117-1		Spring	1
56	5K-6117-2		Spring Screw	1
57	5K-6243	B159	Micrometer Scale	1
58	5K-6244	M4x8	Round HD Cap Screw	2
59	5K-6251	B147	Set Bar	1

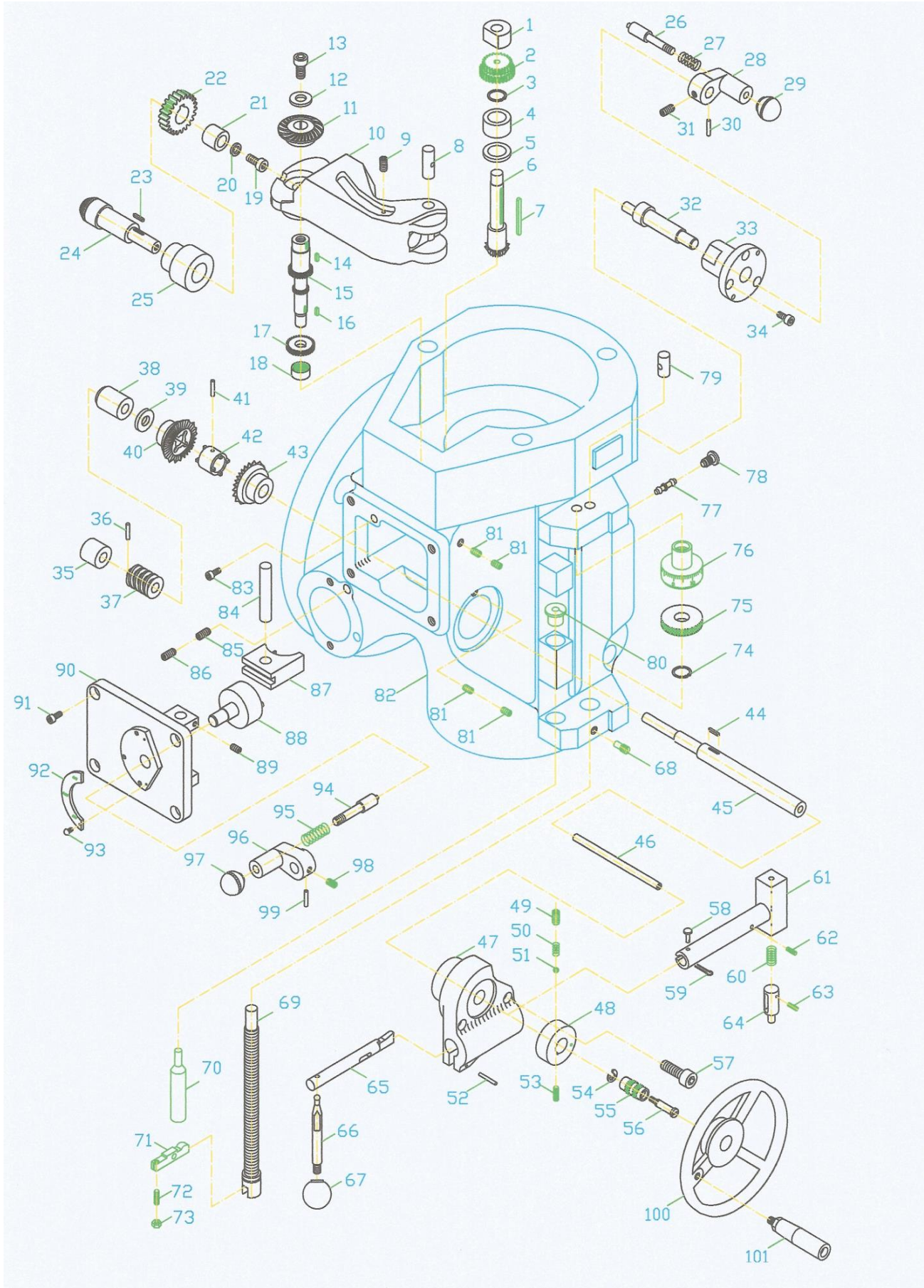
2-5. 5HP (MILLING HEAD) SPINDLE ASS'Y



5HP (MILLING HEAD) SPINDLE ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
1	5K-6090	C40	Snap Ring	1
2	5K-6092		Ball Bearing- 6008LLB	2
3	5K-6094-1	M8x6	Socket Set Screw	2
4	5K-6094	FB129	Lock Nut	1
5	5K-6093		Ball Bearing- 7010	2
6	5K-6096	FB137	Bearing Spacer- Small	1
7	5K-6095	FB136	Bearing Spacer- Large	1
8	5K-6097	FB134	Spindle Dirt Shield	1
9	5K-6098	FB133	Nose Piece	1
10	5K-6086	FB128	Quill Skirt	1
11	5K-6088-1	M5x8	Felt Washer Screw	2
12	5K-6088-2	M5	Washer	2
13	5K-6085	FB142	Quill	1
14	5K-6084	FB127	Spindle #40	1
15	5K-6085-1	M5x8	Socket Set Screw	1
16	5K-6099	FB127-1	Keeper Key	2
17	5K-6100	M8x25	Socket HD Cap Screw	2
18	5K-8014		Drawbar	1
19	5K-8020		Drawbar Washer	1

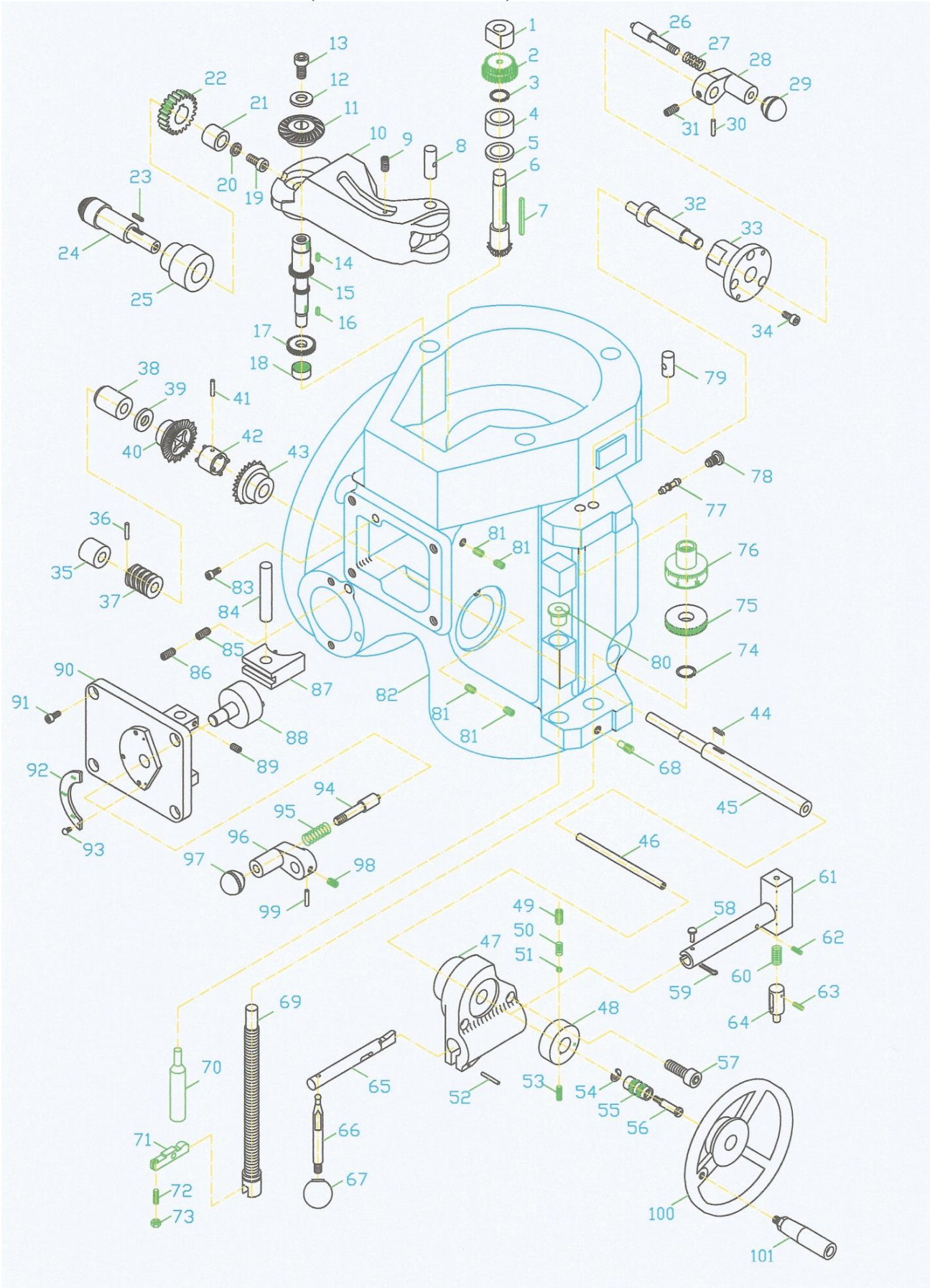
2-6. 5HP (MILLING HEAD) AUTO FEED ASS'Y



5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
1	5K-6157	B27	Cluster Gear Shaft Upper Bearing	1
2	5K-6153	FB28	Cluster Gear Assembly	1
3	5K-6158	C16	Snap Ring	1
4	5K-6156	FB33	Bevel Gear Bearing	1
5	5K-6159	FB34	Bevel Gear Thrust Spacer	1
6	5K-6151	FB31+35	Cluster Gear Shaft	1
7	5K-6160	M3x35	Cluster Gear Key	1
8	5K-6122	B16	Feed Engage Pin	1
9	5K-6123	M6x6	Socket Set Screw	1
10	5K-6121	FB17	Worm Gear Cradle	1
11	5K-6148	FB15	Feed Reverse Bevel Gear	1
12	5K-6149	FB13, 3/8"	Washer	1
13	5K-6150	3/8x1/4	Socket HD Cap Screw	1
14	5K-6147	3x8	Key	1
15	5K-6143	FB36	Feed Driving Gear Shaft	1
16	5K-6145	3x10	Key	1
17	5K-6144	FB40	Feed Drive Gear	1
18	5K-6252	BA66	Needle Bearing	1
19	5K-6124	M6x12	Socket HD Cap Screw	1
20	5K-6140	M6	Washer	1
21	5K-6136-1		Worm Gear Bushing	1
22	5K-6134		Feed Drive Worm Gear	1
23	5K-6135	3x12	Key	1
24	5K-6139		Feed Bevel Pinion	1
25	5K-6136+37		Worm Gear Cradle Bushing	1
26	5K-6169	B20	Gear Shift Plunger	1
27	5K-6170	B21	Compression Spring	1
28	5K-6168	B23	Shift Crank	1
29	5K-6131	B24	Black Plastic Ball	1
30	5K-6128	3x20	Spring Pin	1
31	5K-6168-1	M5x5	Socket Set Screw	1
32	5K-6126	B18	Worm Gear Cradle Throw-out	1
33	5K-6125	B19	Shift Sleeve	1
34	5K-6132	M5x12	Socket HD Cap Screw	3
35	5K-6227	B42	Bushing	1
36	5K-6226	3x10	Spring Pin	1

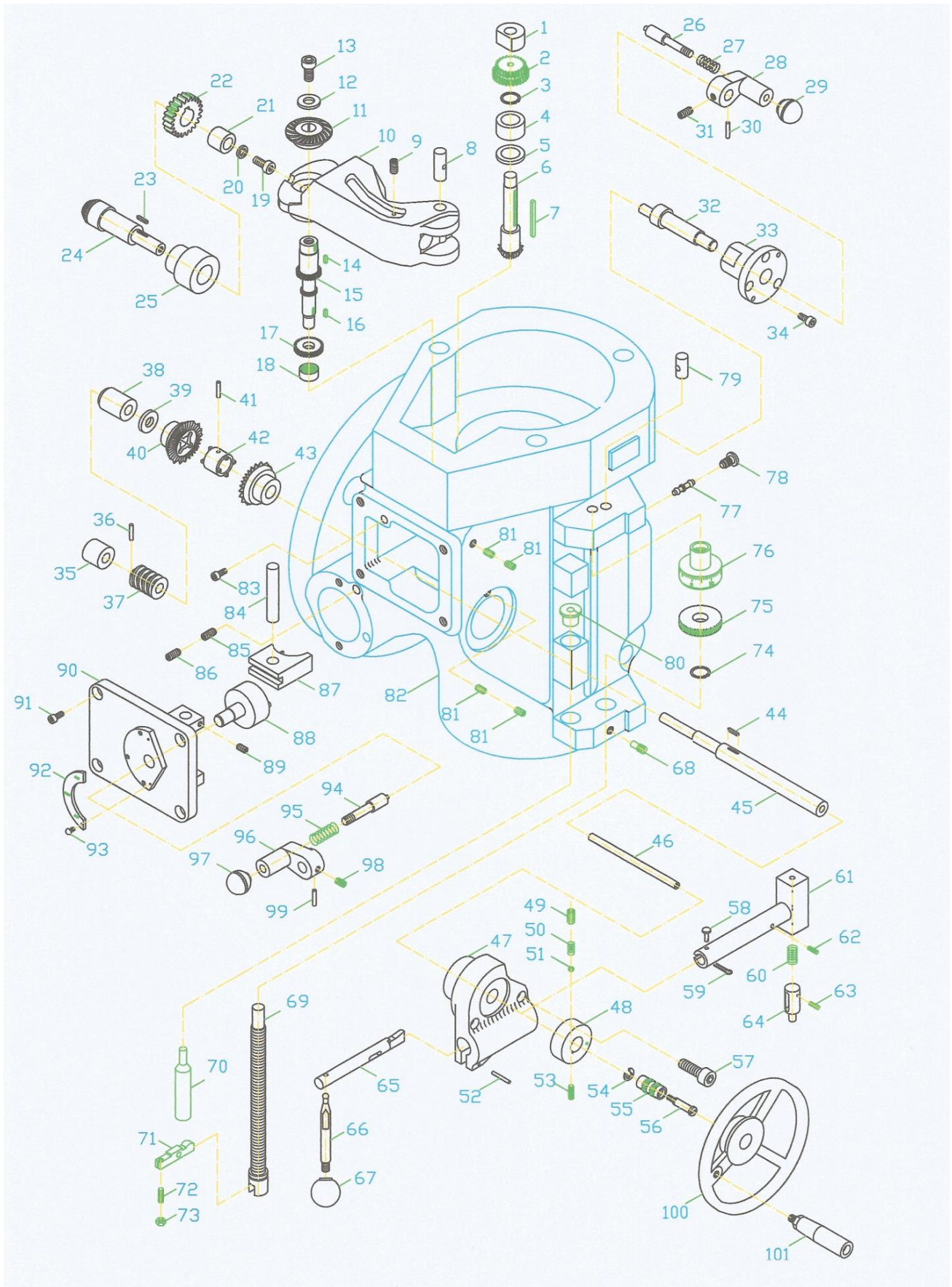
5HP (MILLING HEAD) AUTO FEED ASS'Y



5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
37	5K-6225	B43	Worm	1
38	5K-6224	FB44	Feed Worm Shaft Bushing	1
39	5K-6223	B47	Feed Worm Shaft Thrust Washer	1
40	5K-6220	B48+49	Feed Reverse Bevel Gear	1
41	5K-6217	3x20	Spring Pin	1
42	5K-6222	B50	Feed Reverse Clutch	1
43	5K-6220	B48+49	Feed Reverse Bevel Gear	1
44	5K-6230	3x15	Key	1
45	5K-6209	FB57	Feed Worm Shaft	1
46	5K-6216	FB55	Reverse Clutch Rod	1
47	5K-6231	FB106	Feed Trip Bracket	1
48	5K-6218	B113	Handwheel Clutch	1
49	5K-6219-1	M8x6	Socket Set Screw	1
50	5K-6219-2	B115	Compression Spring	1
51	5K-6255	B114	Steel Ball	1
52	5K-6231-1	5x20	Dowel Pin	1
53	5K-6219	M6x6	Socket Set Screw	1
54	5K-6215	B112, E5	Snap Ring	1
55	5K-6213	B111	Reverse Knob	1
56	5K-6214	B110	Feed Reverse Knob Stud	1
57	5K-6232	M6x25	Socket HD Cap Screw	2
58	5K-6236-1		Dowel Pin	1
59	5K-6241-1	#2	Y Pin	1
60	5K-6242	B120	Compression Spring	1
61	5K-6236	FB118	Cam Rod Sleeve Assembly	1
62	5K-6237	3x16	Spring Pin	1
63	5K-6241	3x12	Spring Pin	1
64	5K-6240	B121	Trip Plunger	1
65	5K-6239	FB103	Cam Rod	1
66	5K-6234	FB104	Trip Handle	1
67	5K-6131	B24	Black Plastic Ball	1
68	5K-6112		Trip Lever Pin	1
69	5K-6104	B164	Quill Stop Micro-Screw	1
70	5K-6118	B124	Feed Trip Plunger	1
71	5K-6111	B145	Feed Trip Lever	1
72	5K-6113	B146, M4x20	Socket Set Screw	1
73	5K-6113-1	M4	Hex Nut	1
74	5K-6115	C16	Snap Ring	1

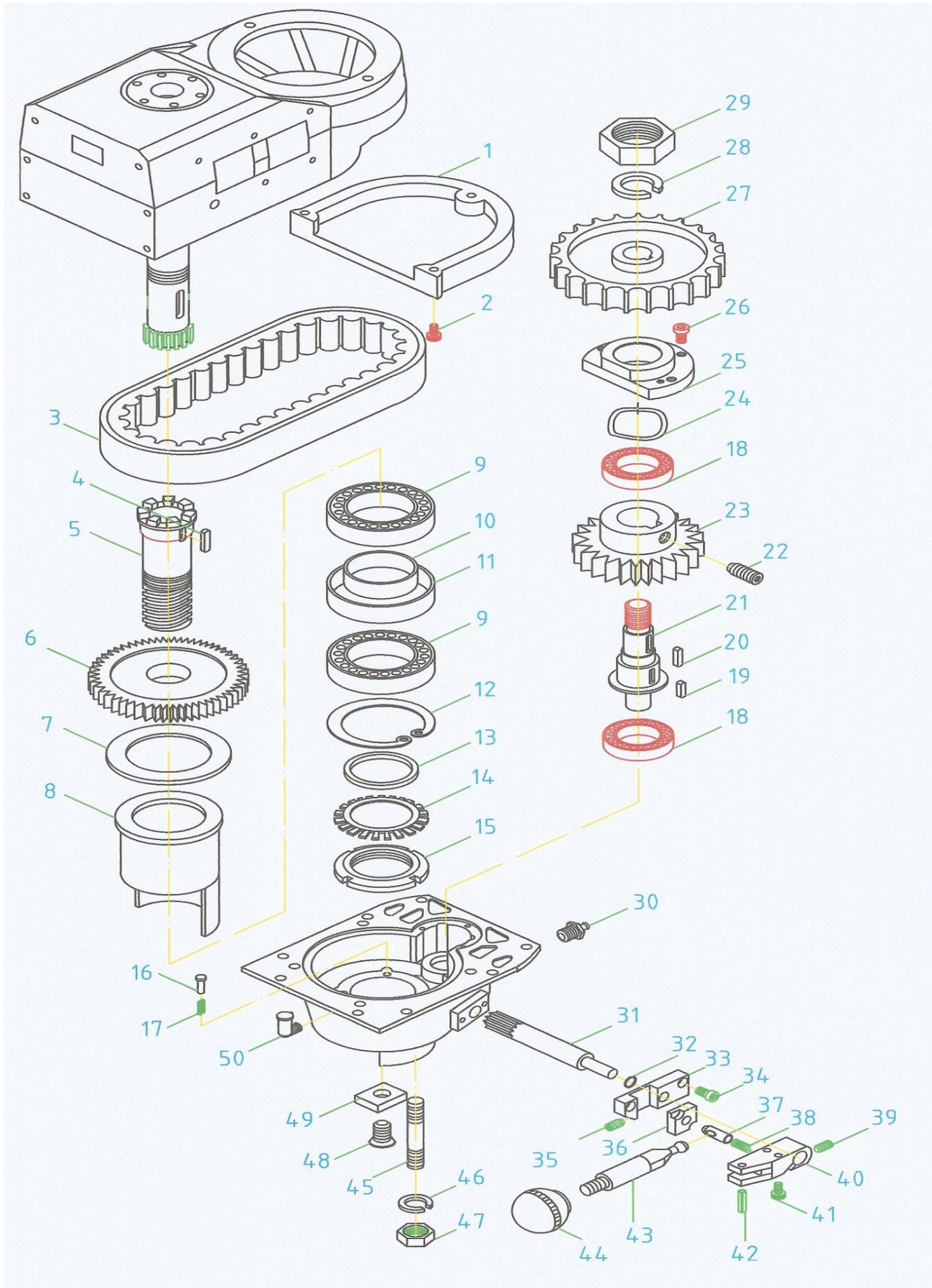
5HP (MILLING HEAD) AUTO FEED ASS'Y



5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
75	5K-6108	B161	Quill Micro-Stop Nut	1
76	5K-6107	B162	Micrometer Nut	1
77	5K-6110	B183	Reverse Trip Ball Lever	1
78	5K-6114	B185	Reverse Trip Ball Lever Screw	1
79	5K-6109	B184	Feed Reverse Trip Plunger	1
80	5K-6118-1	B123	Trip Plunger Bushing	1
81	5K-6246	M6x8	Socket Set Screw	4
82	5K-6101	FB192	Quill Housing	1
83	5K-6101-1	M6x30	Socket HD Cap Screw	1
84	5K-6163	B60	Feed Shift Rod	1
85	5K-6228	M6x12	Mock-It Lock Screw	1
86	5K-6228-1	M6x8	Socket Set Screw	1
87	5K-6162	B63	Feed Gear Shift Fork	1
88	5K-6166	FB64	Cluster Gear Shift Crank	1
89	5K-6164	M5x5	Socket Set Screw	1
90	5K-6161	FB66	Cluster Gear Cover	1
91	5K-6165	M5x12	Socket HD Cap Screw	4
92	5K-6165-1	VS66-1	Feed Rate Plate	1
93	5K-6165-2		Drive Screw	2
94	5K-6169	B20	Gear Shift Plunger	1
95	5K-6170	B21	Compression Spring	1
96	5K-6168	B23	Shift Crank	1
97	5K-6171	B24	Black Plastic Ball	1
98	5K-6168-1	M5x5	Socket Set Screw	1
99	5K-6167	3x20	Spring Pin	1
100	5K-6210	B125	Handwheel	1
101	5K-6210-1	B126	Handle	1

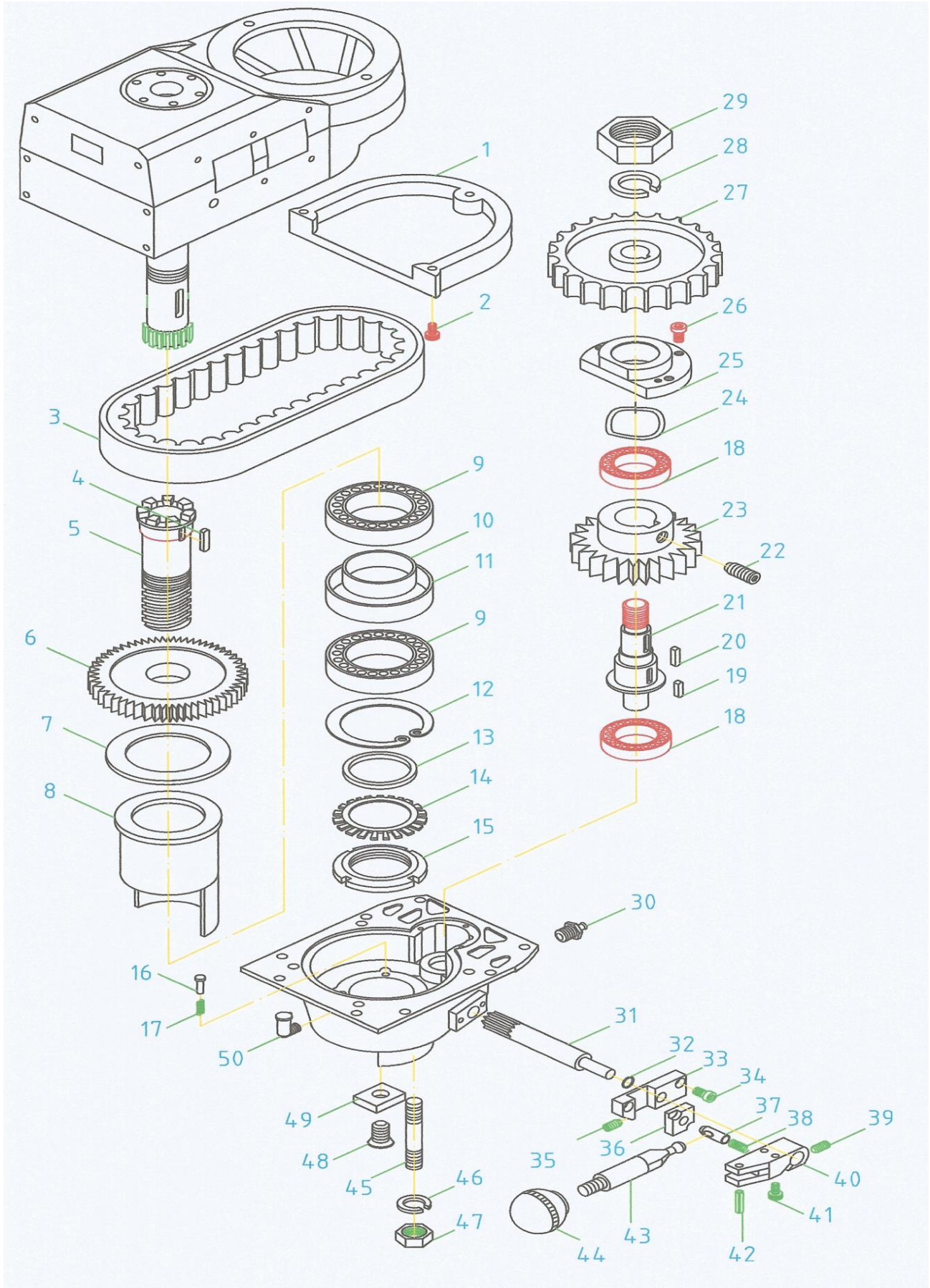
2-7. 5HP E-mill HEAD TOP HOUSING



5HP E-mill HEAD TOP HOUSING

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
1	8054	VS11	Motor Pulley Cover	1
2	8055	VS12	Socket HD Cap Screw	3
3	5E7036	FVS63	Timing Belt	1
4	5E7081	FVS72	Key	1
5	5E7039	FVS73	Splined Gear Hub	1
6	5E7040	FVS74	Spindle Bull Gear	1
7	5E7057-2	FVS100	Bull Gear Washer	1
8	5E7048	FVS75	Ball Bearing Gear Sleeve	1
9	5E7041	FVS77	Bearing—6910VV	2
10	5E7043	FVS78	Bull Gear Bearing Spacer	1
11	5E7057	FVS79	Bearing Sleeve Spacer	1
12	5E7042	FVS80	Snap Ring	1
13	5E7039-1	FVS	Gear Hub Spacer	1
14	5E7058	FVS73-1	Wave Spring Washer	1
15	5E7056	FVS81	Bearing Lock Nut	1
16	7055-1	VS102	T-Tip Pin	3
17	7055	VS84	Compression Spring	3
18	7079	VS65	Ball Bearing-6203ZZ	2
19	7078	VS69	Key	1
20	7078	VS69	Key	1
21	7080	VS67	Bull Gear Pinion Counter Shaft	1
22	7077	VS03	Socket Set Screw	1
23	7083	VS66	Bull Gear Pinion	1
24	7082	VS64-1	Wave Spring Washer	1
25	7084	VS64	Bull Gear Pinion Bearing Cap	1
26	7085	VS12	Socket HD Cap Screw	3
27	5E7086	FVS62	Timing Belt Pulley	1
28	5E7087-1	FVS	Spring Washer	1
29	7087	VS61	Jam Nut	1
30	8063-3	VS82-4	Grease Nibble	1
31	5E7059	FVS87	Bull Gear Shrift Pinion Shaft	1
32	5E7059-1	VS	Wave Spring Washer	1
33	7060	VS89	Hi-Low Detent Plate	1
34	7068	VS12	Socket HD Cap Screw	2
35	7064	VS	Socket Set Screw	1
36	7065	VS89-1	Adjustable Plate	1

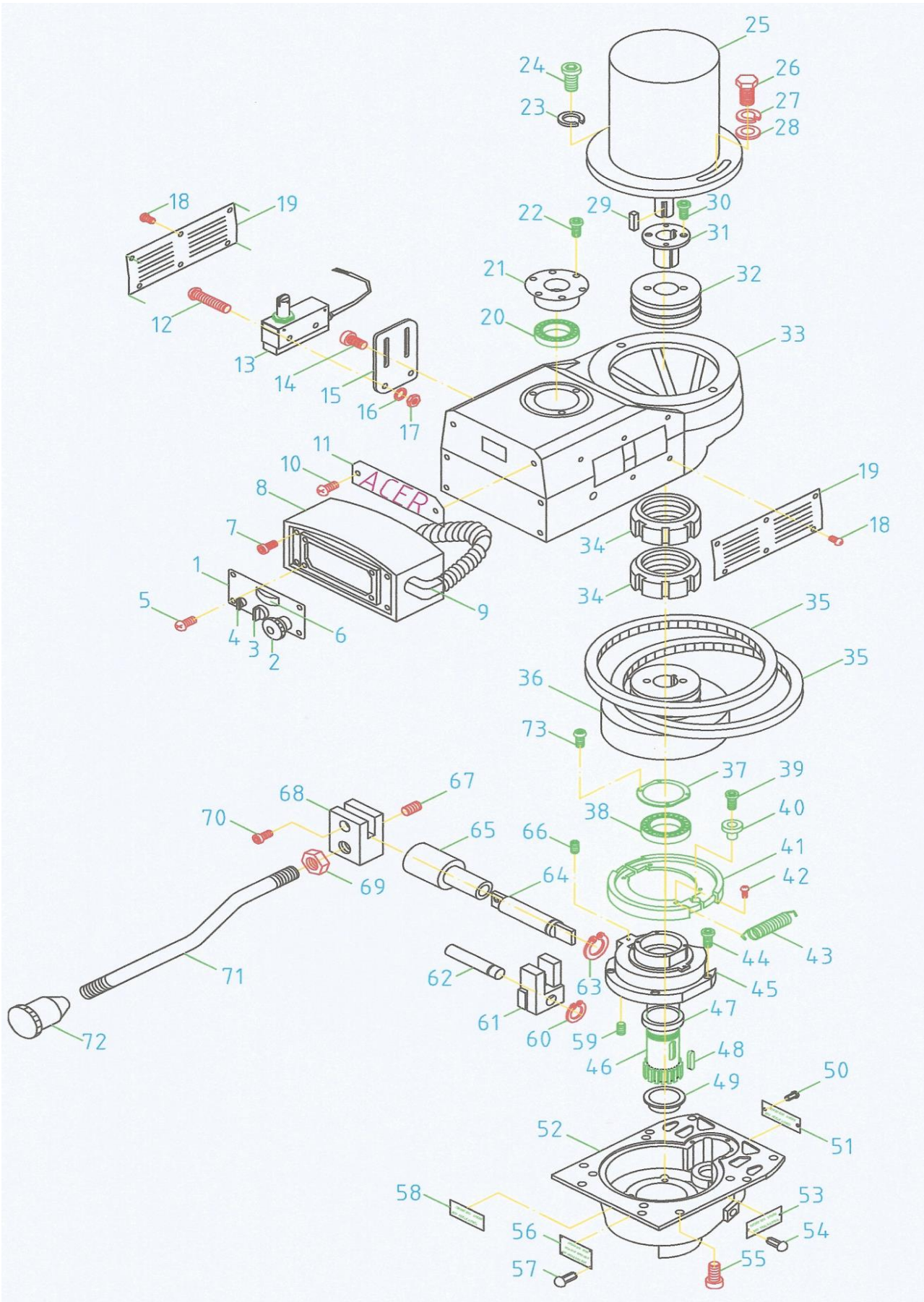
5HP E-mill HEAD TOP HOUSING



5HP E-mill HEAD TOP HOUSING

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
37	7066	VS90	Hi-Low Detent Plunger	1
38	7067	VS91	Spring	1
39	5E7071-1	VS	Socket Set Screw	1
40	7071	VS92	Hi-Low Pinion Block	1
41	7072-1	VS92-1	Socket HD Cap Screw	2
42	7072	VS88	Spring Pin	1
43	7070	VS94	Hi-Low Shift Crank	1
44	7069	B24	Bakelite Ball	1
45	5E7063	FVS85	Stud	3
46	5E7062	FVS85-1	Spring Washer	3
47	5E7061	FVS85-2	Hex Nut	3
48	5E7049-1	FVS83-1	Flat HD Cap Screw	2
49	5E7049-2	FVS83-2	Brass Locating Plate	2
50	7054	VS82-1	Oil Cup	1

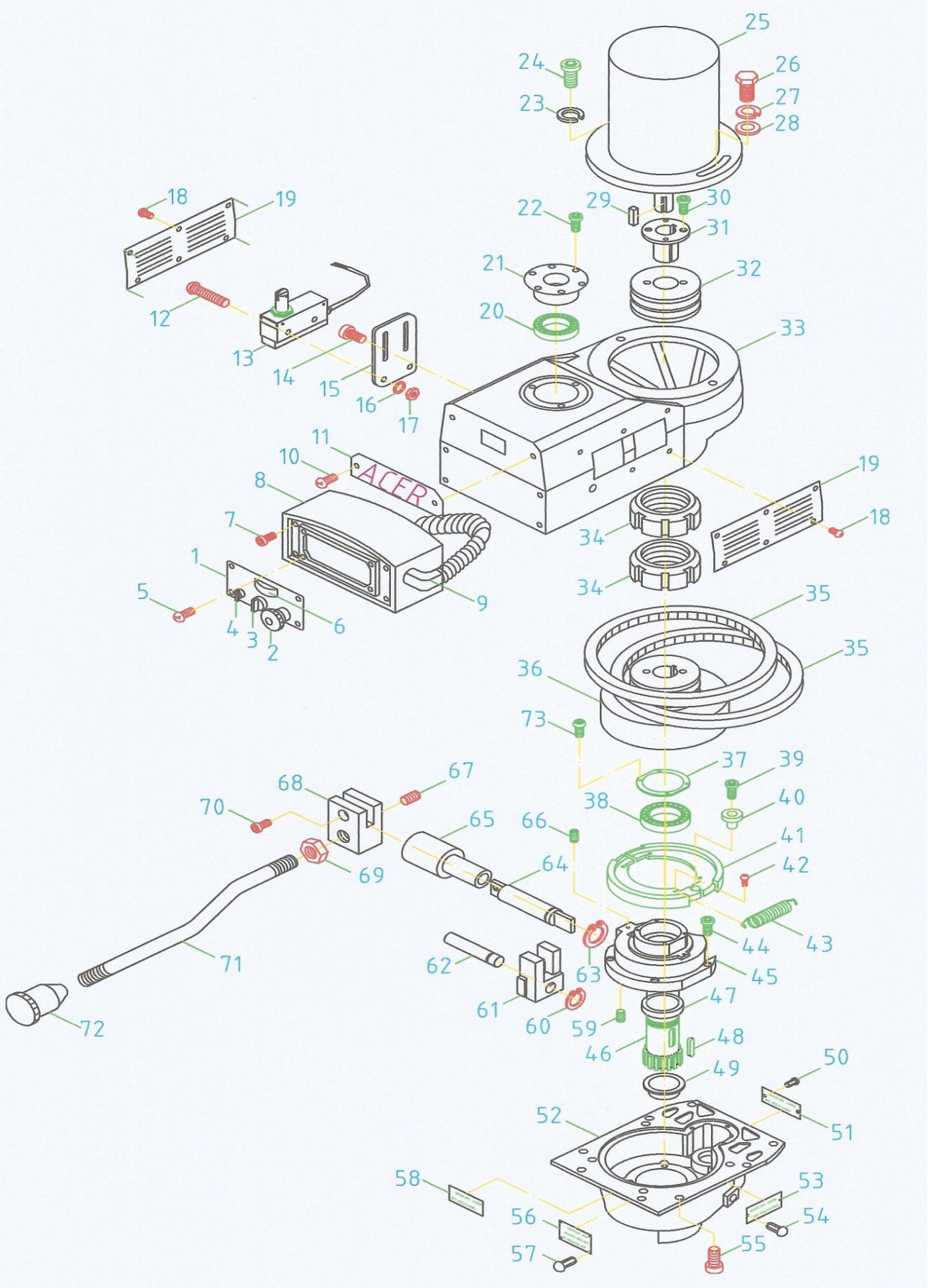
2-8. 5HP E-mill HEAD BACK GEAR



5HP E-mill HEAD BACK GEAR

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
1	5EH7023-1	FVS16-5	Chrome Face Plate	1
2	9500	VS	Emergency Switch	1
3	9501	VS	F/R Switch	1
4	9502	VS	Variable Resistor	1
5	7022-1	VS17-1	Round Socket Cap Screw	4
6	5E9503	VS	RPM Meter	1
7	H7025	VS17	Socket HD Cap Screw	4
8	H7005-1	VS16-6	Speed Changer Housing	1
9	9504	VS	Control Wire Cable	1
10	H8010-3	VS1-6	Round Socket Cap Screw	2
11	H8010-1	VS1-4	ACER Name Plate	1
12	7022-2	VS	Round Socket Cap Screw	2
13	9505	VS	Limit Switch w/Cable	1
14	7022-5	VS	Socket HD Cap Screw	2
15	H8010-2	VS1-5	Limit Switch Bracket Plate	1
16	7022-3	VS	Spring Washer	2
17	7022-4	VS	Hex Nut	2
18	H7088-1	VS101-1	Round Cap Wooden Screw	12
19	H7088	VS101	Ventilator	2
20	5E8004	FVS15	Ball Bearing—6209ZZ	1
21	5E7013	FVS13	Top Bearing Cap	1
22	8001	VS14	Socket HD Cap Screw	3
23	8009-3	VS	Wave Lock Washer	1
24	8009	VS	Socket HD Cap Screw	1
25	5E8008-1	VS	5 HP Spindle Motor	1
26	8009	VS	Socket HD Cap Screw	1
27	8009-3	VS	Wave Lock Washer	1
28	8009-2	VS	Washer	1
29	8039-1	VS06-1	Key	1
30	8040-3	VS02-3	Hex HD Screw	2
31	8040-2	VS02-2	V-Belt Pulley Sleeve	1
32	5E8040-1	FVS02-1	3V Belt Pulley	1
33	5E8010	FVS01	Belt Housing	1
34	5E8034-1	FVS70-2	Spindle Hub Lock Nut	2
35	5E8027-1	FVS04-1	3V Belt	2
36	5E8028-1	FVS45-1	Stationary Driven Pulley	1
37	5EH8053-3	FVS50-3	Brake Shoe Lock Plate	1
38	5E8023	FVS43	Ball Bearing—6013VV	1
39	8035	VS14	Round Socket Cap Screw	1

5HP E-mill HEAD BACK GEAR



5HP E-mill HEAD BACK GEAR

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
40	8036	VS48	Brake Shoe Pivot Sleeve	1
41	5E8032	FVS47	Brake Shoe Assembly	1
42	8032-1	VS47-1	Round Cap Screw	4
43	8031	VS49	Brake Spring	2
44	H8064	VS51	Socket HD Cap Screw	4
45	5EH8053-2	FVS50-2	Belt Housing Base	1
46	5E8034-5	FVS70-1	Spindle Pulley Hub	1
47	5E8033	FVS98	Spindle Pulley Spacer	1
48	5E8049-1	FVS71-1	Key	1
49	5E7038	FVS105	Timing Pulley Clutch	
			Sleeve	1
50	8059	VS	Drive Screw	2
51	8063-2	VS01-1	Grease Add Name Plate	1
52	5EH8063	FVS82	Gear Housing	1
53	8058	VS82-2	Hi-Low Range Name Plate	1
54	8059	VS	Drive Screw	2
55	8055	VS12	Socket HD Cap Screw	8
56	8061	VS82-1	Quill Feed Name Plate	1
57	8059	VS	Drive Screw	4
58	H8063-1	VS82-3	Oil Add Name Plate	1
59	H8077	VS99	Socket Set Screw	1
60	8066	VS60	Snap Ring	1
61	8067	VS59	Brake Operating Finger	2
62	8068	VS58	Brake Finger Pivot Stud	1
63	8066-1	VS60-1	Snap Ring	1
64	H8074	VS53	Brake Lock Shaft	1
65	H8073	VS52	Sleeve for Brake Lock	
			Shaft	1
66	H8077	VS99	Socket Set Screw	1
67	8072	VS54-1	Socket Set Screw	1
68	8070-2	VS54	Brake Handle Block	1
69	8070-1	VS56-1	Hex Nut	1
70	8071-1	VS55-1	Socket HD Cap Screw	1
71	5E8070	FVS56	Brake Lock Handle	1
72	8069	VS57	Bakelite Ball Handle	1
73	5EH8053-4		Round Socket Cap Screw	4