

INSTRUCTION MANUAL AND PARTS LIST FOR McLAREN MILLING HEAD



WELLS-INDEX®

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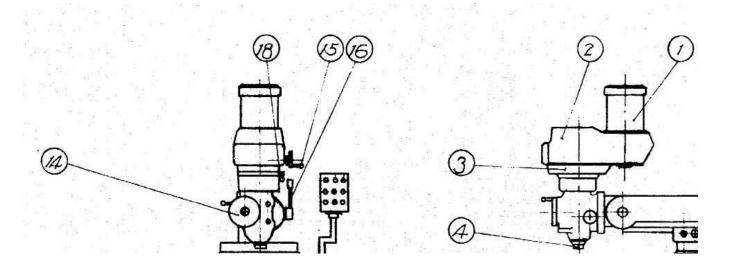
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McLAREN MILLING HEAD INSTRUCTION MANUAL & PARTS LIST

INSTRUCTION MANUAL

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I. LOCATION OF CONTROLS AND ADJUSTMENTS FOR INDEX MILLING MACHINES



No. 1 - Motor

No. 2 - Belt Housing

No. 3 – Gear Housing

No. 4 – Spindle

No. 14 – Automatic Feed Hand Wheel

No. 15 – Speed Change Hand Wheel

No. 16 - Pinion Shaft Hub Handle

No. 18 – Hi-Low Speed Change Handle

II. Operation

A. Head stock

1. Reversing Switch

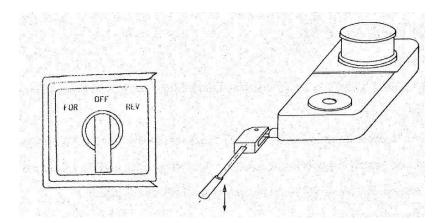
The rotation of the motor is controlled by the reversing switch. When the high low speed lever is placed at the high gear position (forward), and the switch is on the "FOR", then the motor turns clockwise. When the switch is on "REV", the motor turns counterclockwise. When the switch is on "OFF", then the power source is cut off. When high low speed lever is placed at the "LOW" position (backward), the directions are reversed.

2. Spindle Brake

Power must be shut off before braking. When the spindle speed is lower than 200 RPM, operator can pull down or up the brake lever 1 to stop the spindle.

3. Chucking of Tooling Shank and Dismantling

- A. Firstly, the screw of the draw bar is right turn when the spindle is at the highest point. When the screw is turned clockwise, it is for locking of tooling shank, and vice versa. To take out the tooling shank, the draw bar must be turned from three to five rounds. Then, use a soft mallet to hit slightly on the draw bar to allow the tooling shank to separate from the spindle. Turn the draw bar until the tooling shank comes off totally.
- B. When there is a slot in the shank and the spindle taper is R8, it is necessary to turn the tooling shank, in the process of chucking, so that the tooling shank key way will slide into the key grooves.



III. Spindle Feed

A. Manual Feed

The manual feed lever is installed on the right side of head stock. The spindle will travel vertically when the lever is turned. There are 12 positions to be chosen. An operator can freely take out the lever and install it again at the position deemed proper and fit. In manual feed, the feed control handle 4 must be placed at the position "A" as shown.

B. Manual Micro-Feeding

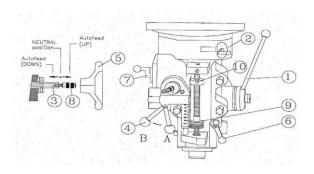
To use the manual micro-motion feed, the power feeding transmission engagement crank 2 shall be placed at "OUT" position, and feed reverse knob 3, at neutral position. Feed control lever 4 must be pulled from "A" to "B". This is to engage the overload clutch. Turn the feed hand wheel 5 clockwise for quill downward feed, and vice-versa.

C. Automatic Feed

- (1) Loosen the quill lock 6.
- (2) Turn the power feed transmission engagement crank 2 from "OUT" to "IN" position. Make certain to engage the worm gear cradle with the spindle gear hub so that the driving will be directed from the spindle worm and worm gear before it is passed to the speed change gears.
- (3) Feed speed is in three stages. H, L, and M. Selection may be made by quill feed selector 7.
- (4) Pull the feed control lever 4 from "A" to "B" position to engage the overload clutch for automatic feed mechanism.

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- (5) When the feed reverse knob 8 presses inward, it is for downward feed, and vice-versa. The middle position is neutral.
- (6) The working depth may be set by micrometer adjustment nuts 9(each graduation is 0.02mm or (0.001"). When the quill stop-block 10 contacts the micrometer adjustment nut 9, the feed control lever 4 may simply jump from "B" to "A"-position owing to-the connecting motion between the feed trip lever and feed trip plunger. This will disengage the overload clutch and stop the spindle feed.
- (7) Do not move the power feed transmission engagement crank when the spindle is in revolution.



IV. SPEED CHANGE

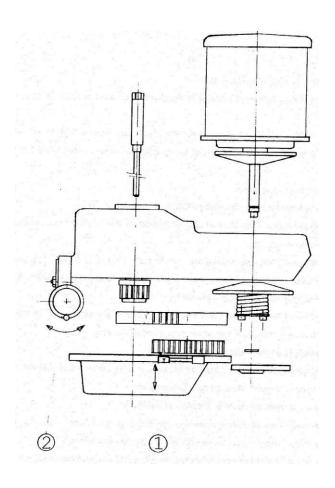
A. Speed Change of Spindle

The speed change may be changed by the chosen high and low speed lever 1. When 1 is engaged in the right front, it is for the high speed and the spindle may rotate as high as 500 to 3000RPM. When 1 is positioned at the right rear, the spindle may have a speed of 60-580RPM. The neutral lever position is in the right down.

- (1) The spindle must be motionless completely during the speed change.
- (2) To shift the high speed into the low one, the spindle must be slightly turned to make it easier for the back row gear to engage.
- (3) To shift the low speed into the high one, use the brake lever so as to put a stop to the spindle clutch. Then turn the spindle slightly so that the clutch may be engaged feasibly. A "click" sound of engagement may be sensed at this moment.
- (4) The direction of low speed rotation is opposite to that of the high speed. By the reversing switch, the direction may be changed to that of the high speed revolution.

B. Speed Change Hand Wheel

- (1) When the turning hand wheel is turned clockwise, it is for higher speed, and vice versa.
- (2) Do not change the speed when the spindle stands still.
- (3) Avoid using it when the speed is in excess of 3000RPM.
- (4) In the process of speed change from high speed to low speed, and vice versa, do not change the speed rapidly to safeguard the service life of the internal mechanism.



V. TROUBLE SHOOTING

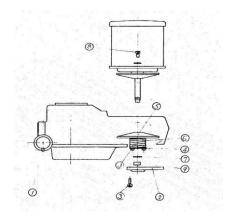
A. REMOVING THE MOTOR

- 1. Start the motor and turn the speed switch 1 to the center position of 60-4200 RPM
- 2. Cut off the motor power source and take off wire press board and reversing switch.
- 3. Take out the three concave hexagonal bolts under the motor pulley cover.
 - a. Using two screwdrivers to insert into the two holes between the motor pulley cover and the belt housing. Then push down to loosen the motor pulley cover 2.
 - b. Place a screwdriver in the speed change spring piece 4 to loosen the motor pulley cover when the above mentioned method failed.

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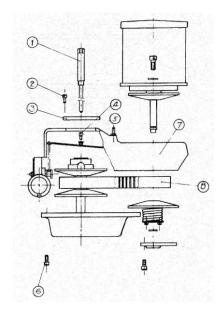
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- 4. Lock two hexagonal bolts (M6 x 45) into the motor vari-disc 5 to compress the speed change spring so as to separate the retainer ring 7.
- 5. Take off the two hexagonal bolts 8 that locked the motor. The motor may be lifted up. Motor vari-disc and speed change belt are still kept inside the belt housing.
- 6. Change the speed to 4200 RPM and pull back the belt. Install the motor's wheel and the retainer ring to the shaft. Take out the two screwdrivers from the belt housing.
- 7. To install, reverse the order of the above steps.



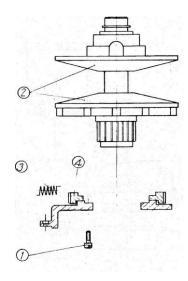
B. REPLACEMENT OF SPEED CHANGE BELT

- 1. Refer to V-A for removing the motor.
- 2. Take off the draw bar 1.
- 3. Remove the four hexagonal concave bolts 2 and use them to lift the bearing housing 3.
- 4. Remove from atop the two hexagonal concave bolts 4 and take off the bolt sleeves 5.
- 5. Remove six hexagonal concave bolts 6 under the gear housing to remove the upper belt housing 7.
- 6. When the speed change belt 8 is replaced accordingly, reverse the above steps to reassemble.



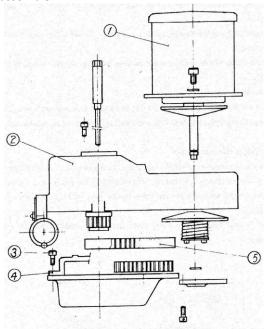
C. REPLACEMENT OF BRAKE BLOCK

- 1. Refer to V-A for removing the motor.
- 2. Refer to V-B on replacement of speed change belt to dismantle the upper belt housing.
- 3. Remove the gear housing 1 and four hexagonal bolts 2.
- 4. Remove the hexagonal concave bolt 1 of the two setting bearing housing and remove the front vari-disc assembly set 2. Brake block 3 can be replaced then.
- 5. Remove six hexagonal concave bolts 6 under the gear housing to remove the upper belt housing 7.
- 6. Reverse the above steps to reassemble.



D. REPLACEMENT OF THE TIMING BELT

- 1. Refer to V-A for removing the motor.
- 2. Refer to V-B on replacement of speed change belt to dismantle the upper belt housing. Then the timing belt can be replaced.
- 3. Reverse the above steps to reassemble.

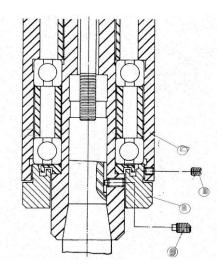


E. REPLACEMENT OF COLLET ALIGNING SCREW

- 1. Prior to replacement, use a marking pencil to draw a line on quill 1 and its nose piece 2.
- 2. Loosen the setting screw 3 nose piece. Use a hook spanner to take off the nose piece 2. NOTE: This is a left hand thread!
- 3. Use a hexagonal spanner of approximate length to take off the collet aligning screw 4 for replacement.
- 4. When the collet aligning screw is replaced, set the nose piece 2 tightly until it is positioned on the marked line.
- 5. Set the screw 3 of the nose piece tightly.
- 6. Note: To replace the collect aligning screw, the collet must be placed inside the quill. Set the collet aligning screw 4 tightly so that it will contact the bottom of the screw key way. Then turn it backward by approximately ¼ of a turn to keep a 0.25mm (0.01") play for easy installation and removal of the shank.

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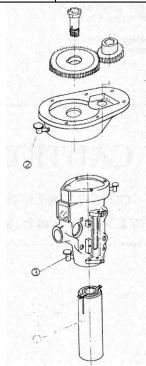
INSTRUCTION MANUAL

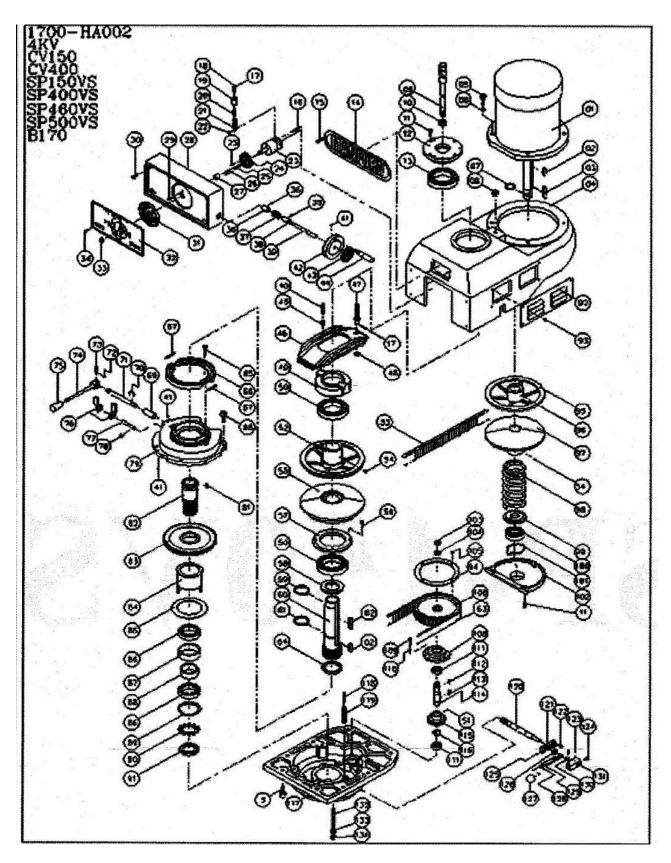


VI. LUBRICATION

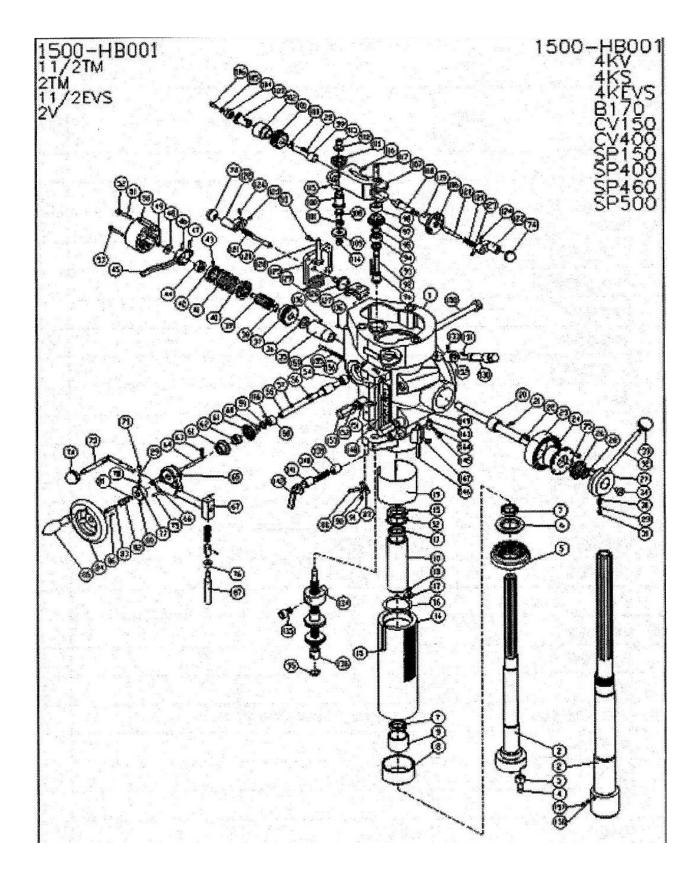
A. Recommended Oil and Locations:

Recommended Lube	Qty.	Time	Position	
Vo.atra Oil #3	rII	Turing Daily	1- Head Stock Quill	
Vactra Oil #2	Full	Twice Daily	Holes	
Vactra Oil #2	Full	Once Daily	2	
			3 - Quill and Head	
Vactra Oil #2	Full	Three times a day	Stock Internal	
			Holes	





			VARIABLE SPEED	DRIVE ASSEMBLY		1		
M.	Otv	Part Number	Description	CVM)tu	Part Number	Description
1		M1514	3HP Motor 220V/440V 60Hz	7			1710-G074	Brake Lock Shaft
2		HKE-2R-0810	Key	7			HETW-E4	Snap Ring E-Type
3		1510-G049	Key	7			1500-A035	Brake Lock Pin, S45C
4		1710-T012	Upper Pulley Box	7			1510-G070	Brake Lock & Handle
5	_	HCAP-W03100	Screw	7			1510-G070	Black Plastic Ball Handle
,		11CAF-W03100	Sciew	- '	,	1	1310-0003	Black Flastic Ball Hallule
_	٠.							
6		HWS-3/8	Spring Washer	7			1710-G067	Brake Finger Pivot Stud
7		HSTW-S30	Snap Ring C-Type	7			1510-G068	Brake Operation Finger
8		HBBE-W030-16		7			HETW-E6	Snap Ring E-Type
9		1510-G087	Draw Bar R8 (Inch)	7	9	1	1710-G053	Brake Base
10	1	1500-A039	Washer R8 (Inch) S45C/cm					
				8	1		HKE-1R-08012	Key
11	4	HCAP-M06020	Hex-Socket Head Screw	8	2	1	1510-T039	Spindle Pulley Hub
12	1	1550-A004	Top Bearing Bracket	8	3	1	1510-T040	Spindle Bull Gear Assembly
13	1	BR-6007	Ball Bearing	8	4	1	1510-T057	Bull Gear Bearing Sleeve
14	1	N1500-A100	Logo	8	5	1	1510-T048	Bull Gear Bearing Sleeve Washer
15	4	HAEC-W10005	Hex-Socket Head Screw					_
				8	6	2	BR-6908	Ball Bearing
16	1	HPB-0340	Hi-Low Detent Plunger	8		1	1510-T043	Bull Gear Bearing Spacer
17		HPB-0420	Hi-Low Detent Plunger	8			1510-T044	Bull Gear Bearing Spacer
18		1510-T088	Speed Change Chain Stud	8			HSTW-R62	Snap Ring C-Type
19		1510-T091	Speed Change Chain Stud	9	U	1	AW08-40MM	Spacer
20	1	1510-T011	Speed Change Chain Stud				4540 ====	December 1 and 200
				9			1510-T056	Bearing Lock Nut
21		1510-T010	Chain	9			1710-T097	Side Belt Housing Cover
22		1510-T092	Chain Washer	9			HAEC-M06008	Cross-Recessed Head Screw
23	1	1710-T035	Speed Change Chain Drum	9	4	1	15001-A024	Timing Belt Pulley Flange
24	1	1510-T033	Feed Drive Worm Gear	9	5	1	1510-G040	Stationary Motor Vari-Disc
25		HPB-0510	Hi-Low Detent Plunger					
	_			9	6	1	HSET-M06008	Set Screw
26	1	HPB-0530	Hi-Low Detent Plunger	9			1510-G043	Adjustable Motor Vari-Disc
27		1510-T003		9			1510-G043 1510-G044	Spring
			Bushing					
28		1710-T005	Speed Change Housing	9			1510-G045	Spring Washer
29		1510-T004	Lock Screw	10	0	1	BR-6204	Ball Bearing
30	4	HCAP-M06035	Hex-Socket Head Screw					
				10	1	1	BR-6204	Washer
31	1	N1710-T002	Variable Speed Dial 60Hz	10	2	1	1710-G054	Motor Pulley Cover
32	1	N1710-T094	Speed Indicator Plate	10	3	1	HBBE-W05	Nut
33	1	HBBA-W025	Nut	10	4	1	HWS-5/8	Washer
34	4	HAEB-M04006	Screw	10	5	4	HAAF-M05008	Screw
35		HSET-M05006	Set Screw					
- 55	,	11521 11105000	See Sei en	10	6	1	UH151-B016	Pulley Set
20		4 F 0 0 D 0 0 0	Communication Contra	10		2	011131 0010	
36		1500-B088	Compression Spring					Timing Belt Pulley Flange
37		1710-T030	Worm	10			1510-T084	Cover
38		1710-T027	Worm Cradle Bushing	10				Hex-Socket Head Cap Screw
39		1710-T029	Speed Control Shaft	11	0	3	HWD-M5	Washer
40	2	HCAP-M05020	Hex-Socket Head Cap Screw					
				11	1	2	BR-6203	Ball Bearing
41	1	HSET-M06006	Set Screw	11	2	1	HKE-2R-0515	Key
42	1	1510-T017	Handle	11	3	1	HKE-2R-0518	Key
43	1	N1510-T020	Speed Change Waring Plate	11	4		1510-T080	Bull Gear Pinion Counter Shaft
44		1510-T019	Handle	11			1510-T083	Bull Gear Pinion Counter Gear
45		1510-1019	Pivot Sleeve	- 11	-	-		
43		2310 0013	Siceve	11	6	-1	1510 TOOF	Spacer
		1510 6013	Canad Change Blots	11			1510-T095	Spacer
46		1510-G013	Speed Change Plate	11			1510-T049	Gear Housing
47		1510-G016	Speed Change Plate Pivot Stud	11			1510-T093	Spring Supported Pin
48		HWD-M10	Clutch Washer	11			1510-T055	Spring
49	1	1510-G022	Sliding Housing	12	0	1	1510-T059	Bull Gear Shifter Pinion Shaft
50	2	BR-6010	Ball Bearing					
				12	1	1	1510-T060	Hi-Low Detent Plate
51	1	HSET-M08006	Set Screw	12	2			Hex-Socket Head Cap Screw
52		1510-G025	Adjustable Driven Vari-Disc Assembly	12			HPB-0320	Hi-Low Detent Plunger
53		1510-G027	Belt 38x890	12				Hex-Socket Head Cap Screw
54		HSET-M05008	Screw	12			HSET-M04016	Set Screw
55		1510-G028	Stationary Driven Vari-Disc	12	-	-		22.20.00
55	1	1310-0028	Stationary Driven Vall-DISC		6	-	1510 TOC5	Adjustment Dist -
		LICAD A COCCC	Unit Conduct Hond Cond C	12			1510-T065	Adjustment Plate
56		HCAP-M06035	Hex-Socket Head Cap Screw	12			1500-A046	Black Plastic Ball 1/4" Diameter
57		1510-G0259	Brake Bearing Cap	12			1510-T070	Hi-Low Shift Crank
58		1510-G033	Spindle Pulley Spacer	12			1510-T066	Hi-Low Detent Plunger
59		HSTW-S35	Snap Ring C-Type	13	0	1	1510-T067	Spring
60	1	1510-G034	Spindle Clutch Device					
				13	1	1	1510-T071	Hi-Low Pinion Block
61	1	HSTW-S40	Snap Ring C-Type	13			1510-G090	Studs
62		1510-G039	Sliding Key	13			1500-A077	Washer
63		1500-A023	Timing Belt 225L	13			HBBE-W35	Nut
				13	+	3	1190F-4622	ITUL
64		1510-T038	Timing Pulley Clutch Sleeve					
65	1	1510-G035	Brake Ring Screw					
66	1	1510-G032	Brake Shoe					
67	2	1510-G031	Brake Spring					
68			Hex-Socket Head Cap Screw					
		1510-G073	Sleeve for Brake					
69								



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			LOWER HEAD	ASSEMBLY	, PAGE	1	
VB 4	~	Dank Name to a	Description	C)/8 *	01	Dank Name In a	Description
		Part Number	Description		Qty.	Part Number	Description
1		1500-B192	Milling Head	41	_	1800-B079	Safety Clutch Spring
2		1500-B127+129		42	_		Overload Clutch Locknut
2		1500-B193+129	•	43	_	HSET-M05005	Set Screw
3		1500-B026	Stop Block	44	_	1500-B075	Clutch Ring
4		5/16" x 5/8"	Hex-Socket Head Cap Screw	45	1	1500-B096	Overload Clutch Trip Lever
5		1500-B194	Nut		_	4500 0074	Cl. I B: B:
		1500-B133	Nut	46	_	1500-B074	Clutch Ring Pin
_		4500 D424	Colorado - Diras Chilada	47	_	HPB-0518	Overload Clutch Lever Spring Washer
6		1500-B134	Spindle Dirt Shield	48	_	1500-B097	Overload Clutch Washer
7		BR-7207	NSK Bearing (P4)	49		HSTW-S10	Snap Ring C-Type
8		1500-B137	Bearing Spacer (Large)	50	1	1500-B099	Clutch Arm Cover
9		1500-B136	Bearing Spacer (Large)	F4		LICET MOSCOCO	C-+ C
10	1	1500-B132	Sleeve	51	_	HSET-W020060	
11		DD C20C	Descripe	52	_	HBBA-W020	Nut
11		BR-6206	Bearing	53		HCAP-M05035	Hex-Socket Head Cap Screw
12		AW06-30MM	Lock Washer	54		1500-B042	Bushing Food Morro Shoft
13		1500-B129	Locknut Washer	55	1	1500-B057	Feed Worm Shaft
14		1500-B142	Quill	F.C		LIVE 2D 224E	Flat Var.
15		HSET-M05005	Set Screw	56		HKE-2R-3315	Flat Key
4.0				57	_	HKE-2R-3310	Flat Key
16	1		147	58	_	1500-B044	Feed Worm Shaft Bushing
17		HWA-M5	Washer	59	_	1500-B047	Feed Worm Shaft Thrust Washer
18		HCAP-M05010	Hex-Socket Head Cap Screw	60	1	HSTW-S12	Snap Ring C-Type
19		1500-B128	Quill Skirt				
20	1	1500-B166	Quill Pinion Shaft	61	_	1500-B049	Feed Reverse Bevel Gear
				62		1500-B050	Feed Reverse Clutch
21		1500-B168	Pin	63		HPB-0312	Overload Clutch Lever Spring Plunger
22		HKE-2R-3318	Flat Key	64		1500-B055	Reverse Clutch Rod
23		1500-B178	Clock Spring	65	1	1500-B106	Feed Trip Bracket
24		1500-B177	Spring Cover				
25	2	HCAP-M05012	Hex-Socket Head Cap Screw	66	_	HCAP-M06020	Hex-Socket Head Cap Screw
				67	_	1500-B118	Cam Rod Sleeve Assembly
26		1500-B176A	Pinion Shaft Hub Sleeve		1		Spring
27		1500-B175	Back Feed Handle Hub (Quill Feed Lever)		1		Trip Plunger
28		HPB-0516	Overload Clutch Lever Spring Plunger		_	HPB-0312	Overload Clutch Lever Spring Plunger
29		HETC-W015	Steel Ball		1	HPB-0314	Overload Clutch Lever Spring Plunger
30	1	1500-B174	Compression Spring				
					1		Cam Rod
31		HSET-W025030		73		1500-B104	Trip Handle
32		1500-B190	Pinion Shaft Hub Handle	74		1500-A046	Black Plastic Ball " Diameter
33		1500-B191	Black Plastic Ball	75	1	HPB-0520	Overload Clutch Lever Spring Plunger
34		1500-B172	Pinion Shaft Hub Screw			4500 B433	T : 01
35	1	1500-B090	Quill Pinion Shaft Bushing	76		1500-B123	Trip Plunger Bushing
				77		1500-B113	Handwheel Clutch
36		1500-B091	Quill Pinion Shaft Worm Gear Spacer	78		1500-B115	Compression Spring
37			Overload Clutch Worm Gear	79		1500-B116	Handwheel Clutch Spring Screw
38		HSTW-S15	Snap Ring C-Type	80	1	HSET-W020020	Set Screw
39			Overload Clutch				
40	1		Overload Clutch				

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			LOWER HE	AD ASSEMBL	, PAGE	2	
CVNA	Otv	Part Number	Description	CVM	Qty.	Part Number	Description
81		HSTW-E5	Snap Ring E-Type	121		1500-B021	Compression Spring
82			Feed Reverse Knob Stud	122	_	1500-B021	Shift
83			Feed Reverse Knob Stud Bolt	122	_	HSET-W020020	
					_		
84			Handwheel & Handwheel Handle	124		HPB-0320	Overload Clutch Lever Spring Plunger
85	1		Handle	125	1	1500-B066	Cluster Gear Cover
86	1	HPB-0316	Overload Clutch Lever Spring Plunger	126	1	1500-B064	Cluster Gear Shift Crank
87		1500-B124	Feed Trip Plunger	127	_	1500-B063	Feed Gear Shift Fork
88		1500-B146	Trip Lever Pin	128	_	1500-B060	Feed Shift Rod
89		1500-B145	Feed Trip Lever	129	_	HPB-0318	Overload Clutch Lever Spring Plunger
90		HSET-M04020	Set Screw	130	_	1500-B189	Adjustable Worm Shaft
30		11321 1410-4020	Set Serew	150	_	1300 5103	Adjustusie Worm Share
91	1	HBBE-M04	Nut	131	. 1	HKE-2R-4418	Flat Key
92	1	1500-B031	Cluster Gear Shaft	132	1	1500-B186	Worm Gear
93	1	1500-B034	Bevel Gear Thrust Spacer	133	1	1500-B140	Set Screw
94	1	1500-B033	Bevel Gear Bushing	134	. 1	1500-B163	Quill Stop Knob
95	1	HSTW-S16	Snap Ring C-Type	135	1	HCAP-W030050	Hex-Socket Head Cap Screw
96	1	HKE-2R-3345	Flat Key	136	1	1500-B164	Quill Stop Micro-Screw (Metre)
97	1	1500-B028	Cluster Gear		1		Quill Stop Micro-Screw (Inch)
98	1	1500-B027	Cluster Gear Shaft Upper Bushing		1		Micro Meter Nut (Metre)
99	1	1500-B009	Feed Drive Worm Gear Shaft	139	1	1500-B148	Quill Lock Sleeve
100	1	HKE-2R-3308	Flat Key	140	1	1500-B200	Spring
101		1500-B008	Feed Drive Worm Gear Shaft	141		1500-B153	Quill Lock Sleeve Tapped
102		1500-B005	Worm Cradle Bushing	142	_	1500-B149	Quill Lock Bolt & Spring
103		1500-B004	Feed Worm Gear Shaft Sleeve	143		1500-B184A	Feed Reverse Trip Plunger
104		1500-B003	Feed Bevel Pinion	144		1500-B183	Reverse Trip Ball Lever
105	1	1500-B002	Washer	145	1	1500-B185	Reverse Trip Ball Lever Screw
106	1	HCAP-M05012	Hex-Socket Head Cap Screw	146	1	1500-B147	Indicator Rod
107		1500-B017	Worm Gear Cradle	147	_	1500-B154	Indicator Rod Screw
108		1500-B036+38	Feed Driving Gear	148	_	N1500-B159	Micro-Screw Gauge (Metric)
109		1500-B040	Feed Drive Gear		_	N1500-B195	Micrometer Scale (Inch)
110		HKE-2R-3310	Flat Key	149	_		Cross-Recessed Head Screw
	_	3323	,	150	_	1500-B155	1/2" x 12 NC T-Bolt
111	1	1500-B015	Feed Reverse Bevel Gear		<u> </u>		
112		1500-B013	Washer	151	. 2	1500-B156	Lower Clamping Bolt Spacer
113		HCAP-M08016	Hex-Socket Head Cap Screw	152		HWA-N4	Washer
114		BR-BA060	Bearing	153		1500-B157	1/2" x 12 NC Adapter Nut
115		1500-B054	Set Screw M6 x 25	154		HBBE-W040-13	
				155		1500-B082	M4 x 15 Hex-Socket Head Cap Screw
116	1	HSET-M06006	Set Screw				
117		1500-B016	Feed Engage Pin	156	1	1500-B088	Compression Spring
118		1500-B018	Worm Gear Cradle Throw-Out	157	_	1500-B140	Special Socket Set Screw
119		1500-B019	Shift Sleeve	158		HSET-M06005	Set Screw
120		1500-B020	Gear Shift Plunger	159		1500-B089	Overload Clutch Lever Spring Plunger