MILWAUKEE.

Replacement Parts Manual

Pub. No. 92

Nos. 2 and 3 MODEL KM
71/2hp No. 3—10hp No. 4

MODEL H

Plain — Universal — Vertical Milling Machines

with standard directional table control

with mono-lever and automatic cycle table control

KEARNEY & TRECKER CORPORATION

MILWAUKEE, WISCONSIN, U.S.A. 53214

Pub. No. 92

REPLACEMENT PARTS MANUAL

71/2 hp No. 3 and 10 hp No. 4

MODEL H

Plain—Universal—Vertical



Milling Machines

with mono-lever and automatic cycle table control with standard directional table control

One copy of this manual is furnished with each new machine. Additional copies may be obtained by writing direct to Kearney & Trecker Corporation.

Price: \$3.00

Capyright, 1955

Kearney & Trecker
Corporation
Milwaukee 14, Wisconsin
U. S. A.



This is a replacement parts manual for the 7-1/2hp No. 3 and the 10hp No. 4 Model H Plain, Universal and Vertical Kearney & Trecker milling machines. In the purchase of these machine tools you possess an absolute guarantee of precision built equipment - designed and manufactured so as to assure the greatest measure of long life performance. There remains, however, still another responsibility - that of providing prompt service for replacement parts and general maintenance resulting from natural wear or accidental damage to the machine - to keep them in sound operating condition. This manual will help you do that quickly.

About the manual itself; every effort has been made to make this book as clear and concise as is practical to avoid delay and misunderstanding in ordering parts. The various assemblies are arranged in a natural sequence and are indexed visually on pages 4 and 5. (Figs. 3 and 4)

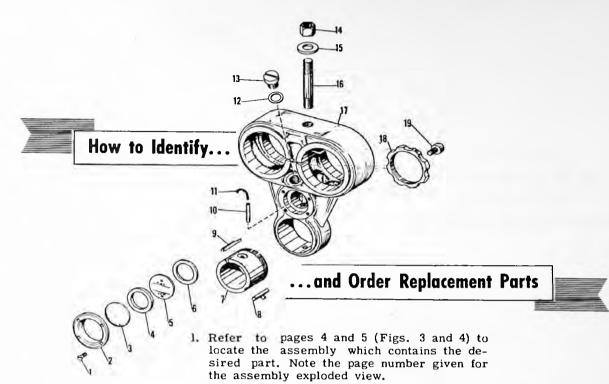
Instructions noted in the following pages must be followed carefully. In several instances it will be observed that certain parts are mated at the home factory. Such parts cannot be replaced individually and must be sent out in pairs or sets.

Kearney & Trecker maintains, insofar as possible, a complete record, based on machine serial number, of every machine built. To insure prompt and efficient service it is imperative, therefore, to include the machine size, model and serial number with every inquiry or order. This information will be found stamped in the lower border of the trademark located on the left side of the column.

It is our intention to continually improve the service you receive from Kearney & Trecker milling machines and make the parts replacement problem a simple procedure. By following the instructions for identifying and ordering parts, given on the next page, you will be assured of prompt service.

KEARNEY & TRECKER
Corporation
Milwaukee 14, Wisconsin
U.S.A.



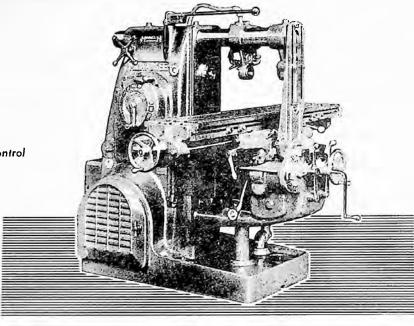


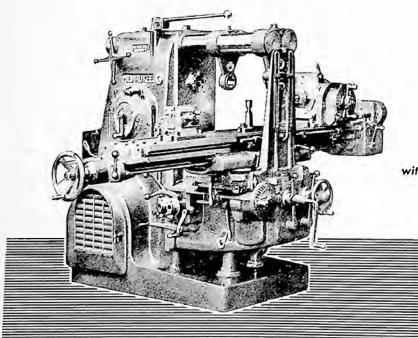
- 2. Locate the desired part and its item number in the assembly exploded view. For convenience and clearness in showing parts on some large units, it was necessary to remove them from the proper location in relation to the main casting. Such assemblies are indicated by a letter in a circle A, B, C, etc. A brief study of the exploded view will show where such sub-assemblies properly belong.
- In the parts list on the facing page, tind the corresponding item number to determine the part name description and code number.
- 4. Send the part name description, the code number and the SIZE, MODEL and SERIAL NUMBER OF THE MACHINE (stamped in the lower border of the trademark located on the left side of the column) to the Service Department, Kearney & Trecker Corporation, Milwaukee 14, Wisconsin, U.S.A.
- 5. For service by telephone, call Greenfield 6-8300, and give the information in paragraph 4 above.



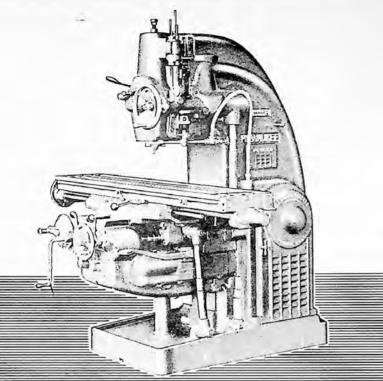
MODEL H
7½hp No. 3 — 10hp No. 4
PLAIN STYLE

with standard directional table control





MODEL H
7½hp No. 3 — 10hp No. 4
UNIVERSAL STYLE
with standard directional table control



MODEL H 7½ hp No. 3 — 10hp No. 4 VERTICAL STYLE with standard directional table control

MODEL H 71/2 hp No. 3 — 10hp No. 4 VERTICAL STYLE

with mono-lever and automatic cycle table control

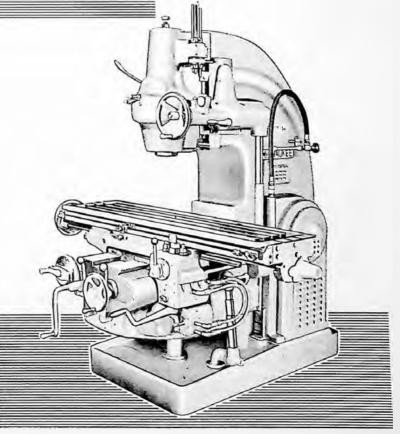
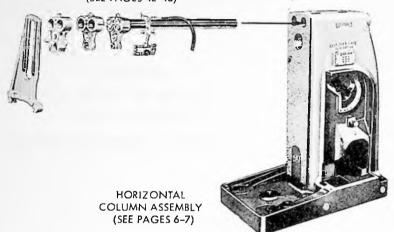
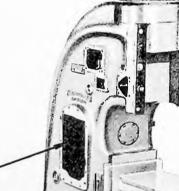


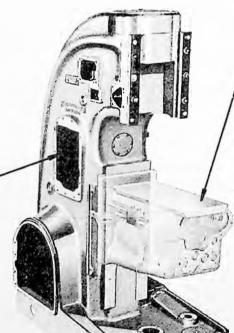
Figure 2

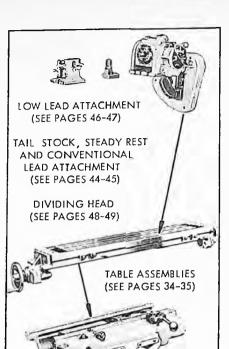
COOLANT SUPPLY SYSTEM, STYLE B ARBOR SUPPORT AND ARM BRACE (SEE PAGES 40-41)

INTERMEDIATE ARBOR SUPPORT AND STYLE A ARBOR SUPPORT (SEE PAGES 42-43)









PLAIN SADDLE ASSEMBLY (SEE PAGES 26-27)

UNIVERSAL SADDLE AND CROSS FEED BRACKET **ASSEMBLIES** (SEE PAGES 28-29)

UNIVERSAL SWIVEL BLOCK **ASSEMBLY** (SEE PAGES 30-31)

AUTOMATIC CYCLE PLAIN SADDLE AND HYDRAULIC VALVE BODY ASSEMBLIES (SEE PAGES 32-33)

> VERTICAL COLUMN LEFT SIDE (SEE PAGES 8-9)

Figure 3. Horizontal Column, Left Front of Vertical Column and Assemblies



SPEED GEAR

BOX ASSEMBLY

(SEE PAGES 12-13)

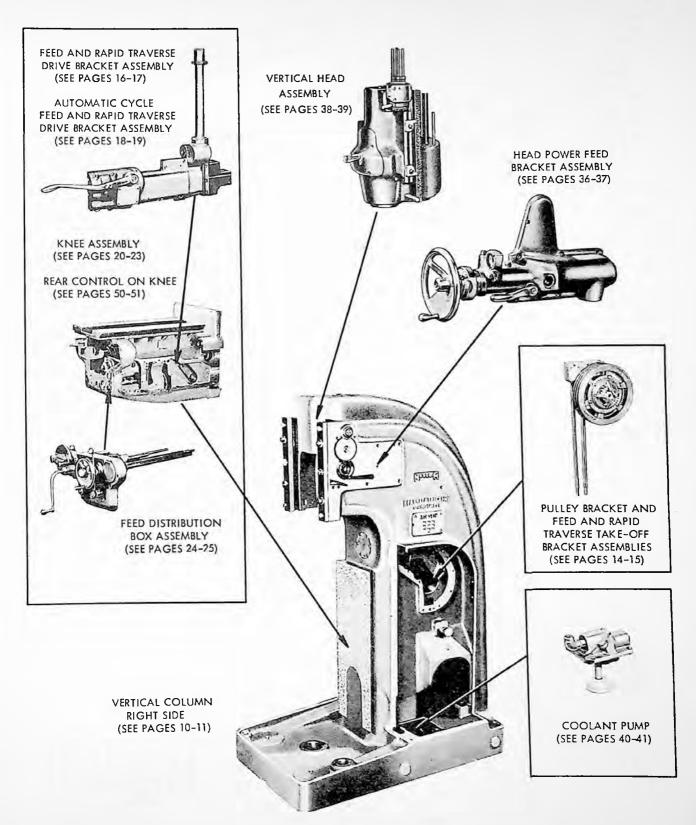


Figure 4. Right Front of Vertical Column and Assemblies

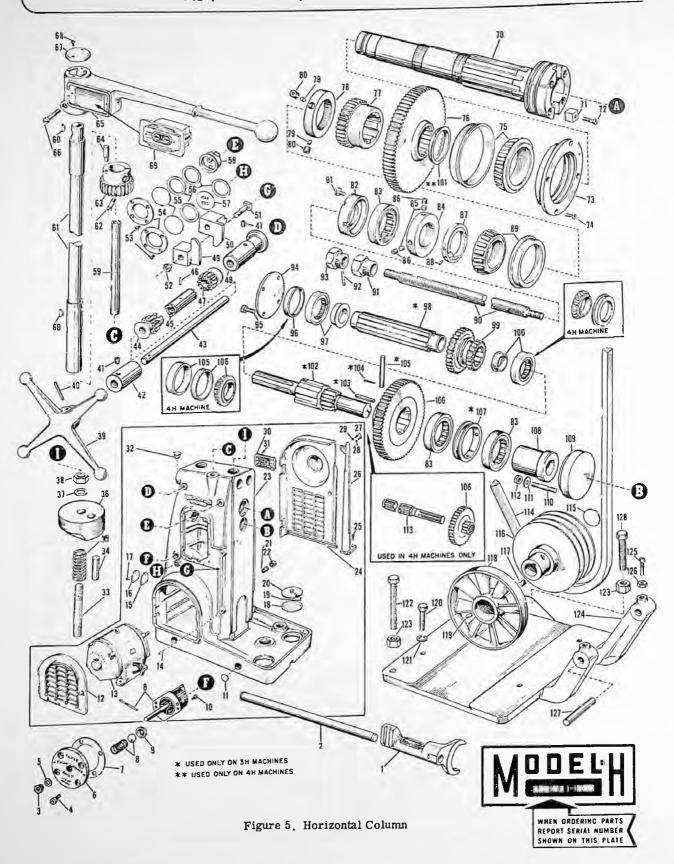


Figure 5. Horizontal Column

[
	em o. Part Name and Description	Code n 3H	e Nos. 4H	Qty
1	8	3H-A1	4H-A1	1
2		3H-A2	4H-A2	1
3	1 0	3H-A3	4H-A3	1
4		3H-A4	4H-A4	12
5 6		3H-A5	4H-A5	1
7		3H-A6	4H-A6	1
8	B-circi	3H-A7	4H-A7	1
٥	(Cuno BP-B1296)	3H-A8	4H-A8	1
9		3H-A9		i
10		JII-N3	III-AS	•
10	5/16"	3H-A10	4H-A10	2
11	Expansion plug, 2-3/4" dia			8
12	Motor door	3H-A12		1
12	Motor door hinge	3H-A13		2
		JH-AIJ	411-A13	2
	Hex cap screw, 3/8-16 x 13/16"	3H-A14		8
		311-A14		U
	Hex cap screw, 3/8-16 x 1/2"		4H-A14	8
			411-W14	O
	Lockwasher, #1220 shake-		4H-A15	8
	proof	3H-A15		1
	Door latch	3H-A16	4H-H10	1
	Set screw, 1/4-20 x	3H-A17	4H-A17	1
	5/8"	3H-A11		1
	Door handle			AR
	Spacing washer	3H-A19	4n-A19	
13	Electric motor 7-1/2 HP	3H-A20		1
1.4	Electric motor 10 HP		4H-A20	
14	Acme blue lable dowel,	211 4 91		2
	1/2 x 1"	3H-A21		2
	Acme blue label dowel,		ATT 4 91	9
	1/2 x 1-1/8"	211 4 22	4H-A21	2
15	Gasket	3H-A22	4H-A22	1
16	Coolant cleanout cover	3H-A23	4H-A23	1
17	Fil hd screw, 3/8-16 x	211 4 04	417 404	2
	13/16"	3H-A24		3
18	Coolant drain screen	3H-A25	4H-A25	2
19	Flat hd screw, 10-32 x	0** 4.00	477 400	
	3/8"	3H-A26	4H-A26	4
20	Coolant drain cover	3H-A27	4H-A27	2
21	WI nipple, 1" x 2"	3H-A28	4H-A28	1
22	Pipe cap, 1"	3H-A29	4H-A29	1
23	Column	3H-A30	4H-A30	1
24	Pulley door	3H-A31	4H-A31	1
	Pulley door hinge	3H-A32	4H-A32	2
	Hex hd screw, 3/8-16 x			
	1"	3H-A33	4H-A33	8
	Lockwasher, 3/8"	3H-A34	4H-A34	8
	Door latch	3H-A35	4H-A35	1
	Set screw 1/4-20 x			
	5/8"	3H-A36	4H-A36	1
	Door handle	3H-A37	4H-A37	1
	Spacing washer	3H-A38	4H-A38	AR
25	Fil hd screw, 1/2-13 x			
	1-3/4"	3H-A39	4H-A39	1
26	Coolant pipe guard	3H-A40	4H-A40	1
27	Hex hd screw, 1/2-13 x			
	1-1/8"	3H-A41	4H-A41	2
28	Washer, 1/2" (reworked)	3H-A42	4H-A42	1
29	Washer, 1/2"	3H-A43	4H-A43	1
30	Column vent plate	3H-A44	4H-A44	î.
31	Fil hd screw, 3/8-16 x			
		3H-A45	4H-A45	5
32	-, -	3H-A46	4H-A46	1
14		3H-A47	4H-A47	1
	Shirt			
33 34		3H-A48	4H-A48	2

Item		Code	Nos.	
No.			411	Qty
35	Spring	3H-A49	4H-A49	1
36	Overarm clamp	3H-A50	4H-A50	1
37	Washer, 3/4"	3H-A51		2
	Washer, 7/8"		4H-A51	2
38		3H-A52		2
	Hex nut, 7/8-9		4H-A52	2
39	Overarm handwheel	3H-A53	4H-A53	1
40	Taper pin, #4 x 1-5/8"	3H-A54		1
41	Taper pin, #5 x 2-3/8" Headless dowel screw,		4H-A54	1
	1/2-13 x 1-3/8"	3H-A55	4H-A55	2
42	Overarm shaft bushing (LH)	3H-A56	4H-A56	1
43	Overarm pinion shaft	3H-A57	4H-A57	1
44	Overarm pinion (LH)	3H-A58	4H-A58	1
45	Overarm clutch sleeve	3H-A59		1
46	Pin	3H-A60		1
47	Overarm pinion (RH)	3H-A61	4H-A61	1
48	Overarm shaft bushing (RH)			î
49	Cross and elevating trip		1102	-
50	dog (LH) Cross and elevating trip	3H-A63	4H-A63	1
JU	dog (RH)	3H-A64	4H-A64	1
51	Trip dog screw	3H-A65	4H-A65	2
52	Hex nut, 7/16 - 14	3H-A66	4H-A66	2
53	Oval hd screw, 10-32 x	JII-A00	411-A00	4
	3/8"	3H-A67	4H-A67	8
54	Oil gauge plate	3H-A68	4H-A68	2
55	Oil gauge glass	3H-A69	4H-A69	2
56	Oil gauge washer	3H-A70	4H-A70	4
57	Oil gauge plate	3H-A71	4H-A71	1
58	Oil flow gauge	3H-A72	4H-A72	1
59	Starting lever stand pipe	3H-A73	4H-A73	1
60	Hi-Pro key, HP 708	3H-A74	4H-A74	2
61 62	Starting lever shaft Fil hd screw, 3/8-16 x	3H-A75	4H-A75	1
J2	1-3/8"	3H-A76	4H-A76	1
63	Starting lever gear	3H-A77	4H-A77	1
64		3H-A78	4H-A78	1
65	Starting lever stop pin		4H-A79	1
66	Starting lever	3H-A79	4H-W13	1
บบ	Fil hd screw, 1/2-13 x	211 400	AU 400	1
en.	1-3/4"	3H-A80	4H-A80	
67 68	Starting lever cover Fil hd screw, 1/4-20 x	3H-A81	4H-A81	1
69	1/2"	3H-A82	4H-A82	2
บฮ	Cutler-Hammer starting	277 402	AU 402	1
70	switch	3H-A83	4H-A83	1
70	Spindle	3H-A84	4H-A84	2
71 72	Spindle drive key Fil hd screw, 7/16-14 x	3H-A85	4H-A85	Z
	1-1/8"	3H-A86	4H-A86	2
73 74	Spindle oil shield	3H-A87	4H-A87	1
17	Fil hd screw, 5/16-18 x 11/16"	3H-A88		4
	Fil hd screw, 5/16-18 x 5/8"			4
75		2H 4 90	4H-A88	1
	Timken bearing, 742B-749 Timken bearing, 77675B-	3H-A89		
-0	77375		4H-A89	1
76	Large spindle gear	3H-A90	4H-A90	1
77	Small spindle gear	3H-A91	4H-A91	1
78	Collar nut	3H-A92	4H-A92	1
79	Collar nut shoe	3H-A93	4H-A93	2
80	Soc set screw, 5/8-18 x 1/2"	3H-A94		2
	Soc set screw, 5/8-18 x	OH-Wad		
	5/8"		4H-A94	2

MACHINE TOOLS FOR MILLING AND BORING

Item No.	Part Name and Description	Code No 3H	os. 4H	Qty
81	Fil hd screw, 3/8-16 x			_
82	9/16" Rear spindle bearing	3H-A95	4H-A95	3
64	retainer	3H-A96	411 400	
83	Hyatt bearing, #1310TS	3H-A97	4H-A96 4H-A97	1
84	Collar nut	3H-A98	4H-A98	3
85	Collar nut shoe	3H-A99	4H-A99	2
86	Soc set screw, 1/2-20 x 1/2"			_
87	Spindle bearing drive	3H-A100		2
88	collar Spindle bearing drive	3H-A101	4H-A101	1
89	collar pin Timken bearing, 563B-	3H-A102	4H-A102	1
-	567W Timken bearing, 742B-	3H-A103		1
	750W		4H-A103	1
90	Draw-in bolt	3H-A104	4H-A104	
91	Draw bolt nut		4H-A105	
92	Taper pin, #4 x 1-1/4"		4H-A106	
93	Draw bold head		4H-A107	
94	Primary shaft bearing			
95	retainer Fil hd screw, 7/16-14 x		4H-A108	
96	7/8" Primary shaft bearing	3H-A109	4H-A109	4
	spacer	3H-A110	4H-A110	1
97	Hyatt bearing, R-1209 TS Timken bearing, 3320-	3H-A111		1
98	3384 Primary speed change		4H-A111	1
	shaft	*3H-A112		1
99	Primary speed sliding	011 4140	477 4 1 1 0	
100	gear	3H-A113		
100	Hyatt bearing, R-1309 TS Timken bearing, 3320B-	3H-A114		1
	3384		4H-A114	
101	Spindle gear oil slinger		4H-A115	
102	Spindle drive pinion	*3H-A116		1
103	Key	*3H-A117		1
104	Cotter pin, 1/8 x 1"	*3H-A118		2
105	Spindle drive gear pin	*3H-A119		1

Item		Code No	os.		
No.	Part Name and Description	3н	4H	Qty.	
106	Spindle drive gear	3H-A120	4H-A120	1	
107	Spindle drive gear bearing				
108	spacer Spindle drive pinion bearing	*3H-A121		1	
109	sleeve Spindle drive pinion bearing			1	
110	cover Stud	3H-A123		1	
111	Washer, 3/8"	3H-A124		2	
112	Hex nut, 3/8-16	3H-A125		2 2	
113	Spindle drive pinion	3H-A126	4H-A126 4H-A127	1	
114	Texrope belt B-68		4H-A128	-	
115	Expansion plug, 2" dia		4H-A129	1	
116	Motor sheave	3H-A130		î	
117	Flat pt soc set screw 1/2- 13 x 1"	3H-A131		2	
118	Motor fan	3H-A131		1	
119	Acme blue label dowel,	JII-N 132	4n-AIJ2	•	
	3/8 x 7/8"	3H-A133	4H-A133	1	
120	Hex hd screw, 1/2 x				
	1-3/4" Hex hd screw, 5/8 x	3H-A134		4	
	1-3/4"		4H-A134	4	
121	Lock washer, 1/2"	3H-A135		4	
122	Lock washer, 5/8" Hex hd screw, 3/4-10 x		4H-A135	4	
	4"	3H-A136		1	
	Hex hd screw, 3/4-10 x		411 4100		
102	5-5/8"	3H-A137	4H-A136		
123 124	Hex nut, 3/4-10 Motor base	3H-A137			
125	Soc hd cup pt set screw,	3H-W130	-U-V190	-	
123	3/8-16 x 1-1/4"	3H-A139	4H-A139	2	
126	Hex nut, 3/8-16	3H-A140		_	
127	Motor base support pin	3H-A141			
128	Hex hd screw, 3/4-10 x				
123	4-5/8"	3H-A142		1	
	Hex hd screw, 3/4-10 x				
	5-5/8"		4H-A142	1	

AR As required

• 3H machine only

• 4 belts used on 4H machine

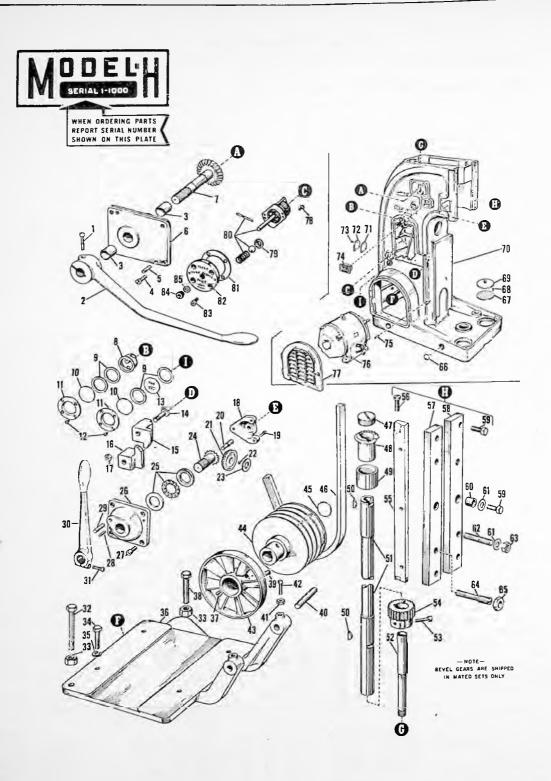


Figure 6. Vertical Column, Left Side

Figure 6. Vertical Column, Left Side

		FI	gure b.	veruca
Item		Code N	os.	
No.	Part Name and Description	3H	4H	Qty.
1	Allen cap screw, 3/8 x 1-3/4	9H D4	ALL DI	, i
2	Starting lever	3H-B1 3H-B2	4H-B1 4H-B2	1 1
3	Oilite bearing, A1110-1	3H-B3	4H-B3	2
4	Fillister head screw	3H-B4	4H-B4	4
5	Acme blue label dowel,			
•	5/16 x 1"	3H-B5	4H-B5	2
6 7	Starting lever cover	3H-B6	4H-B6	1
8	Starting lever cross shaft Oil flow gauge	3H-B7 3H-B8	4H-B7 4H-B8	1 1
9	Oil gauge washer	3H-B9	4H-B9	4
10	Oil gauge glass	3H-B10	4H-B10	2
11	Oil gauge plate	3H-B11	4H-B11	2
12	Oval hd screw,			
	10-32 x 3/8''	3H-B12	4H-B12	8
13	Oil gauge plate	3H-B13	4H-B13	1
14 15	Trip dog screw Cross and elevating trip	3H-B14	4H-B14	2
13	dog (RH)	3H-B15	4H-B15	1
16	Cross and elevating trip	01. 210	111-1010	1
	dog (LH)	3H-B16	4H-B16	1
17	Hex nut, 7/16-14	3H-B17	4H-B17	2
18	Pinion stud support	3H-B18	4H-B18	1
19	Fil hd screw,			
	5/16-18 x 3/4''	3H-B19	4H-B19	3
20 21	Head clamp pinion stud Head clamp bevel gear	3H-B20 3H-B21	4H-B20 4H-B21	1 1
22	Steel ball, 3/16" dia	3H-B22	4H-B22	19
23	Head clamp bevel collar	3H-B23	4H-B23	1
24	Head clamp bevel pinion	3H-B24	4H-B24	1
25	Ball thrust bearing	3H-B25	4H-B25	1
26	Clamp pinion bearing plate	3H-B26	4H-B26	1
27	Allen cap screw,			. 1
28	3/8-16 x 3/4"	3H-B27	4H-B27	4
48	Acme blue label dowel, 1/4 x 1"	3H-B28	4H-B28	2 1
29	Acme blue label dowel,	JII-D20	411-D20	- 1
	3/8 x 1-1/2"	3H-B29	4H-B29	1
30	Head clamp handle	3H-B30	4H-B30	1
31	Allen cap screw,			
1	5/16 x 1-1/8"	3H-B31	4H-B31	1
32	Hex hd screw,			. i
	3/4-10 x 4''	3H-B32		1
l	Hex hd screw, 3/4-10 x 5-5/8"		4H-B32	1
33	Hex nut, 3/4-10	3H-B33	4H-B33	2
34	Hex hd screw,	200		
٠.	1/2 x 1-3/4"	3H-B34		4
1	Hex hd screw,			
	5/8 x 1-3/4"		4H-B34	4
35	Lockwasher, 1/2"	3H-B35	411 DOE	4
	Lockwasher, 5/8"	3H-B36	4H-B35 4H-B36	
36	Motor base Acme blue label dowel,	3H-D30	411-030	
37	3/8 x 7/8"	3H-B37	4H-B37	1
38	Hex hd screw,	011 201	201	•
1 00	3/4-10 x 4-5/8"	3H-B38		1
	Hex hd screw,			
	3/4-10 x 5-5/8"		4H-B38	1
39	Flat pt soc screw,	0**	,,,	
	1/2-13 x 1"	3H-B39		
40	Motor base support pin	3H-B40 3H-B41	4H-B40 4H-B41	
41	Hex nut, 3/8-16 Sq hd cup pt set screw,	111-D41	411-13-11	4
42	3/8-16 x 1 -1/4"	3H-B42	4H-B42	2
43	Motor fan	3H-B43		
44	Motor sheave	3H-B44		
45	Expansion plug, 2" dia	3H-B45	4H-B45	1

lumn,	Left Side			
Item		Code No		
	Part Name and Description	3Н	4H	Qty.
46	Texrope belt, B-68	3H-B46	4H-B46	•3
47	Pipe plug, 1-1/4"	3H-B47	4H-B47	1
48	Starting lever bevel pinion	3H-B48	4H-B48	1
49	Oilite Bearing, A-2102	3H-B49	4H-B49	1
50	Hi-Pro key, HP-780		4H-B50	2
51	Starting lever shaft	3H~B51	4H-B51	1
52 53	Starting lever stand pipe Fil hd screw,	3H-B52	4H-B52	1
- 4	3/8-16 x 1-3/8"	3H-B53	4H-B53	1
54	Starting lever gear	3H-B54	4H-B54	1
55 56	Head taper gib Fil hd screw,	3H-B55	4H-B55	1
5.51	3/8-16 x 1-1/2"	3H-B56	4H-B56	2
57	Head gib (LH)	3H-B57	4H-B57	1
58 59	Head gib (RH) Hex hd screw	3H-B58	4H-B58	1
	5/8-11 x 1-1/2''	3H-B59	4H-B59	6
60	Head gib spacer	3H-B60	4H-B60	1
61	Washer	3H-B61	4H-B61	5
62	Stud, 5/8-11	3H-B62	4H-B62	3
63	Hex nut, 5/8-11	3H-B63	4H-B63	3
64	Head clamp stud	3H-B64	4H-B64	1
65	Hex nut, 3/4-10	3H-B65	4H-B65	1
66	Expansion plug,			
l	2-3/4'' dia	3H-B66	4H-B66	6
67 68	Column drain screen Flat hd mach screw,	3H-B67	4H-B67	2
i	10-32 x 3/8"	3H-B68	4H-B68	4
69	Column drain cover	3H-B69	4H-B69	2
70	Column	3H-B70	4H-B70	1
71	Gasket	3H-B71	4H-B71	1
72 73	Coolant cleanout cover Fil hd screw,	3H-B72	4H-B72	1
	3/8-16 x 13/16"	3H-B73	4H-B73	3
74	Cutler-Hammer starting switch	3H-B74	4H-B74	1
75	Acme blue label dowel, 1/2 x 1-1/8"	3H-B75	4H-B75	2
76	Electric Motor,		TH-DIO	
i	7-1/2 HP Electric Motor,	3H-B76		1
	10 HP		4H-B76	1
77	Motor door	3H-B77		1
	Motor door hinge	3H-B78	4H-B78	2
	Hex cap screw,			
	3/8-16 x 13/16" Hex cap screw,	3H-B79		8
	3/8-16 x 1/2"		4H-B79	8
	Lockwasher,	3H D00	4H-B80	
	#1220 shakeproof Door latch	3H-B80 3H-B81		-
	Set screw,	3H-D81	4H-B81	1
	1/4-20 x 5/8"	3H-B82	4H-B82	1
	Door handle	3H-B83	4H-B83	_
	Spacing washer	3H-B84	4H-B84	
78	Fil ha screw,	211-104	411-D04	AR
10	10-32 x 5/16	3H-B85	4H-B85	
79	Ball retainer	3H-B86		
80	Cuno 100 disc unit car-	3H-D00	4H-B86	5 1
80		रुष घर	AU DO	7 1
0.4	tridge (cuno BP-B1296)	3H-B87		_
81	Filter head gasket	3H-B88		_
82	Filter head	3H-B89	4H-B8	9 1
83	Soc cap screw,	011 000		
	3/8 x 3/4"	3H-B90	_	
84	1 0	3H-B91		
85	Washer	3H-B92	4H-B9	2 1

^{*} Used on 3H machine only

AR As required



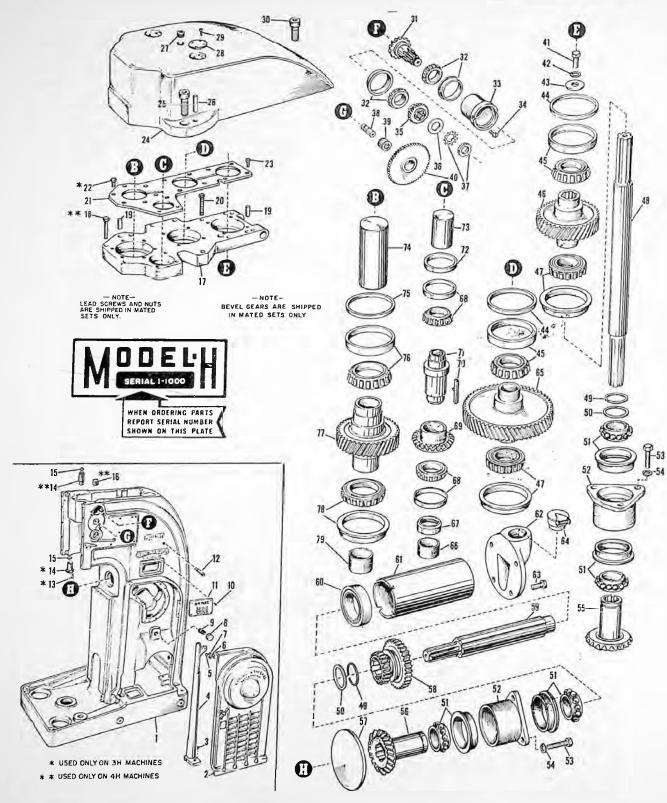


Figure 7. Vertical Column, Right Side

Figure 7. Vertical Column, Right Side

			_		-
					1
Item		Code	Nos.		ı
No.	Part Name and Description		4н	Qty.	L
					ı
1	Column	077 01	422 04		1
1 2	Column	3H-C1	4H-C1	1	ı
2	Pulley door	3H-C2	4H-C2	1	l
	Pulley door hinge	3H-C3	4H-C3	2	L
	Hex hd screw, 3/8-16 x 1" Lockwasher, 3/8"		4H-C4	8 8	1
	Door latch	3H-C5 3H-C6	4H-C5 4H-C6	1	l
	Set screw, 1/4-20 x 5/8"	3H-C7	4H-C7	1	ı
	Door handle	3H-C8	4H-C8	1	ı
	Spring washer	3H-C9	4H-C9	AR	ı
3	Fil hd screw,	011-05	411-00	,,,,,	ı
_	1/2-13 x 1-3/4"	3H-C10	4H-C10	1	1
4	Coolant pipe guard	3H-C11	4H-C11	ī	Ĺ
5	Washer, 1/2" (reworked)	3H-C12		ī	ı
6	Hex hd screw,			_	ı
	1/2-13 x 1-1/8"	3H-C13	4H-C13	2	l
7	Washer, 1/2"	3H-C14		1	ı
8	Pipe cap, 1"	3H-C15		1	ı
9	WI nipple, 1 x 2"	3H-C16	4H-C16	1	١
10	Fil hd screw,				ı
	3/8-16 x 7/8"	3H-C17	4H-C17	5	ı
11	Coolant vent plate	3H-C18	4H-C18	1	1
12	Clamp rod	3H-C19	4H-C19	1	ı
13	Flat hd mach screw,				١
	10-32 x 1/2"	*3H-C20		3	1
14	Shifter rod sleeve	3H-C21	4H-C21	1	1
15	Expansion plug, 1-1/8 x				ı
	3/32''	3H-C22		1	1
16	Compensator hole plug *	*	4H-C23	1	1
17	Drive bearing plate	3H-C24	4H-C24	1	1
18	Hex hd screw,			•	1
	$1/2-13 \times 4-3/4$ "		**4H-C25	2	1
19	Acme blue label dowel,	017 000	ATT COC		1
	1/2 x 1-3/4''	3H-C26	4H-C26	2	١
20	Fil hd screw,	277 (1977		0	Į
	5/8-11 x 1-3/4"	3H-C27		9	1
ļ	Hex hd screw,		4H-C27	10	1
0.1	1/2-13 x 2-3/16"	3H-C28	4H-C28	1	
21	Drive plate cover		4n-C20	2	1
22	Hex hd screw, 3/8-16 x 1"	311-023		2	١
23	Soc cap screw, 7/16-14 x 3/4"	3H-C30		7	1
	Fil hd screw,	011-000		•	1
	7/16-14 x 7/8"		4H-C30	15	- 1
24	Drive housing	3H-C31		1	١
25	Allen cap screw,	 		_	١
45	3/4 x 1-3/4"	3H-C32	4H-C32	2	١
26	Acme blue label dowel,				
1 20	1/2 x 2"	3H-C33	4H-C33	2	1
27	Pipe plug, 1/2"	3H-C34	4H-C34	1	
28	Sleeve adjusting cover	3H-C35	4H-C35	2	-
29	Fil hd screw, 10-32 x 1/2"	3H-C36	4H-C36	#6	
30	Allen cap screw,				
••	3/4 x 1-3/4"	3H-C37		1	
	Allen cap screw,				
	3/4 x 1"		4H-C37	1	
31	Feed cross shaft	3H-C38	4H-C38	1	
32	Timken bearing,				
	08231-08125	3H-C39	4H-C39	1	
33	Feed cross shaft bearing				
	sleeve	3H-C40		1	
34	Fil hd screw, 3/8-16 x 9/16	3''3H-C41	4H-C41	2	

	Right Side			
Item No.	Part Name and Description	Code N 3H	los. 4H	Qty.
35	Feed cross shaft gear	3H-C42	4H-C42	1
36 37	Feed cross shaft washer	3H-C43	4H-C43	1
31	Gurney locknut and washer, #3	3H-C44	4H-C44	1
38	Feed gear drive idler	011-011	111-011	
	gear shaft	3H-C45	4H-C45	1
39	Hyatt bearing, 93416	3H-C46	4H-C46	1
40	Feed drive idler gear	3H-C47	4H-C47	1
41	Hex hd screw,	3H-C48	AT C49	1
42	5/8-11 x 1-1/2'' Lockwasher, 5/8''	3H-C49	4H-C48 4H-C49	1
43	Washer	3H-C50	4H-C50	i
44	Drive gear adjusting washer		4H-C51	2
45	Timken bearing, 453A-462	3H-C52	4H-C52	2
46	Drive gear	3H-C53	4H-C53	1
47	Timken bearing, 453B-462	3H-C54	4H-C54	2
48	Drive shaft	3H-C55	4H-C55	1
49	Snap ring	3H-C56	4H-C56	2
50	Drive shaft bearing	2H C57	4U C57	•
51	adjusting washer New Departure bearing,	3H-C57	4H-C57	2
JI	NM-0210B	3H-C58	4H-C58	4
52	Drive shaft bearing sleeve	3H-C59	4H-C59	2
53	Hex hd screw,	011 000	11. 000	_
	5/8-11 x 1-5/8"	3H-C60	4H-C60	6
54	Lockwasher, 5/8"	3H-C61	4H-C61	6
55	Vertical drive spiral			
	bevel gear (driven)	3H-C62	4H-C62	1
56	Vertical drive spiral		*** 000	
	gear (driver)	3H-C63	4H-C63	1
57	Plug	3H-C64	4H-C64	1
58 59	Primary speed sliding gear Primary speed change shaft	3H-C65 3H-C66	4H-C65 4H-C66	1
60	Hyatt bearing, R-1209 TS	3H-C67	4H-C67	1
61	Bearing spacer	3H-C68	4H-C68	î
62	Primary shaft bearing			
	retainer	3H-C69	4H-C69	1
63	Fil hd screw, 1/2-13 x			
	15/16"	3H-C70	4H-C70	4
64	Gits Oiler, TS-409	3H-C71	4H-C71	1
65	Drive idler gear	3H-C72	4H-C72	1
66	Feed screw oil sleeve	3H-C73	4H-C73	1
67 68	Head feed screw oil slinger Timken bearing,	3H-C74	4H-C74	1
uo	12303-12175	3H-C75	4H-C75	2
69	Feed screw nut drive gear	3H-C76		1
70	Key	3H-C77		1
71	Head feed nut	3H-C78		ī
72	Feed screw bearing			_
	adjusting washer	3H-C79	4H-C79	1
73	Feed screw cover	3H-C80	4H-C80	1
74	Counter shaft cover	3H-C81	4H-C81	1
75	Counter drive gear adjustin			
	washer	3H-C82		
76	Timken bearing, 3920-3982			
77		3H-C84		
78 79		84 3H-C85 3H-C86		
	Counter shaft oil sleeve			

^{*} Used on 3H Machine Only

^{**} Used on 4H Machine Only

^{# 8} Used on 4H Machine

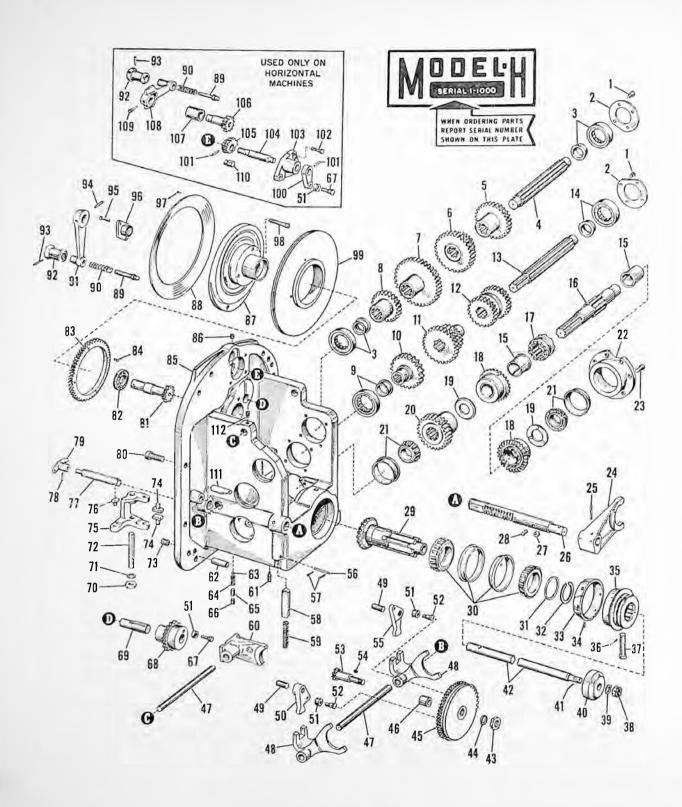


Figure 8. Speed Gear Box

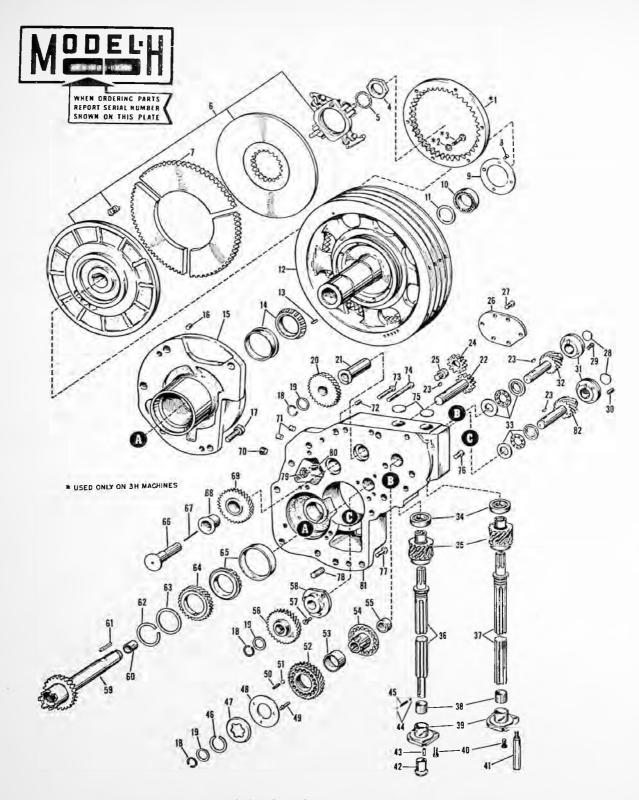
Figure 8. Speed Gear Box

Iter No				
1	Screw	3H-D1	4H-D1	8
2	Idler shaft bearing retainer		4H-D2	2
3	Hyatt bearing, R-1306 YS	3H-D3	4H-D3	2
4	Speed change idler shaft	3H-D4	4H-D4	1
5	Rear idler gear	3H-D5	4H-D5	1
6	Center idler gear	3H-D6	4H-D6	1
7	Front idler gear (large)	3H-D7	4H-D7	1
8	Front idler gear (small)	3H-D8	4H-D8	1
9	Hyatt bearing, R-1208 TS	3H-D9	4H-D9	1
10	Range gear (driven)	3H-D10	4H-D10	1
11	Front secondary sliding			
	gear	3H-D11	4H-D11	1
12	Rear secondary sliding gear	· 3H-D12	4H-D12	1
13	Secondary speed change			
	shaft	3H-D13	4H-D13	1
14	Hyatt bearing, R-1306 TS	3H-D14	4H-D14	1
15	Spindle reverse bevel gear	077 D 16	411 515	_
16	bushing	3H-D15	4H-D15	2
	Reverse bevel gear shaft	3H-D16	4H-D16	1
17	Spindle reverse clutch	3H-D17	4H-D17	1
18 19	Spindle reverse bevel gear Reverse bevel gear thrust	3H-D18	4H-D18	2
10	coliar	3H-D19	4H-D19	2
20	Range gear (driver)	3H-D20	4H-D20	1
21	Timken bearing, #2523B-	on Dio	111-1520	•
	2580	3H-D21	4H-D21	2
22	Reverse bevel gear shaft	2	202	-
	bearing carrier	3H-D22	4H-D22	1
23	Allen head screw, 3/8-16 x			_
	3/4"	3H-D23	4H-D23	6
24	Clutch shifter yoke	3H-D24	4H-D24	1
25	Taper pin, #5 x 1-3/4"	3H-D25	4H-D25	1
26	Clutch shifter yoke rod	3H-D26	4H-D26	1
27	Detent roller	3H-D27	4H-D27	1
28	Detent roller pin	3H-D28	4H-D28	1
29	Spindle drive bevel gear	3H-D29	4H-D29	1
30	Timken bearing, #362B-			
	368	3H-D30	4H-D30	2
31	Spindle drive bevel gear			
0.0	bearing collar	3H-D31	4H-D31	1
32	Snap ring	3H-D32	4H-D32	1
33	Brake cone	3H-D33	4H-D33	1
34	Copper brake band rivet,			
n =	#10 x 3/8"	3H-D34	4H-D34	7
35	Clutch shifter spool	3H-D35	4H-D35	1
36	Cotter pin, 3/32 x 7/8"	3H-D36	4H-D36	1
37	Clutch shifter spool pin	3H-D37	4H-D37	1

Item		Code	Nos	
No.	Part Name and Description	3H	4H	Qty.
<u> </u>				
38 39	Nut	3H-D38	4H-D38	1
	Washer, 5/8"	3H-D39	4H-D39	1
40 41	Clutch cone	3H-D40	4H-D40	1
42	Cotter pin, 7/64 x 1-1/4"	3H-D41	4H-D41	1
43	Clutch shifter rod Hex nut	3H-D42	4H -D42	1
44		3H-D43	4H-D43 4H-D44	1
45	Lockwasher, 3/4"	3H-D44	4H-D44	1
1 15	Secondary speed change cam	011 D45	4H-D45	1
46	Speed dial pinion bushing	3H-D45	4H-D46	1
47	Speed that prinon bushing Speed shift fork shaft	3H - D46		2
48		3H-D47	4H-D47	2
49	Secondary speed shift fork	3H-D48	4H-D48	4
7.5	Acme blue label dowel, 5/8 x ₃ 1-1/2"	211 1240	411 D40	0
50	Secondary speed shift	3H-D49	4H-D49	2
	crank (front)	3H-D50	4H DE0	1
51	Speed selector roll	3H-D50	4H-D50 4H-D51	1 †4
52	Speed selector roll pin	3H-D51	4H-D52	2
53	Speed dial plate pinion	3H-D52	4H-D53	1
54	Hy-Pro key, HP-606	3H-D53	4H-D54	1
55	Secondary speed shift	311-D34	411-1034	1
- 50	crank (rear)	3H-D55	4H-D55	1
56	Detent plunger pin	3H-D56	4H-D56	1
57	Cotter pin, 3/32 x 5/8"	3H-D57	4H-D57	2
58	Detent plunger	3H-D58	4H-D58	1
59	Detent plunger spring	3H-D59	4H-D59	1
60	Primary speed shifter yoke	3H-D33	4H-D60	i
61	Headless dowel screw, 3/8-	on-Doo	411-1500	•
01	16 x 1-3/16"	3H-D61	4H-D61	1
62	Acme blue label dowel, 5/8	011 201	111 1501	•
	x 1-3/4"	3H-D62	4H-D62	1
63	Steel ball, 5/16" dia	3H-D63	4H-D63	1
64	Spring	3H-D64	4H-D64	î
65	Pin, 5/16 x 1/2"	3H-D65	4H-D65	ī
66	Set screw, 3/8-16 x 3/8"	3H-D66	4H-D66	î
67	Speed selector roll pin	3H-D67	4H-D67	†2
68	Primary speed cam gear	3H-D68	4H-D68	1
69	Primary speed cam shaft	3H-D69	4H-D69	î
70	Hex nut, 5/8-18	3H-D70	4H-D70	1
71	Lockwasher, 5/8"	3H-D71	4H-D71	1
72	Spindle reverse shifting		-11 2/1	•
_	voke stud	3H-D72	4H-D72	1
73	Allen set screw, 5/8-11 x		2.1	•
	7/8"	3H-D73	4H-D73	2
74	Shoe	3H-D74	4H-D74	2
75	Spindle reverse shifting			_
	yoke	3H-D75	4H-D75	1
	•			

76	Shoe			
77		3H-D76	4H-D76	1
78	Spindle reverse rod	3H-D77	4H-D77	1
79	Taper pin, #3 x 3/4"	3H-D78	4H-D78	1
80	Spindle reverse knob	3H-D79	4H-D79	1
60	Allen head screw, 1/2-13 x			
81	1-1/4"	3H-D80	4H-D80	11
82	Cam drive pinion	3H-D81	4H-D81	1
02	New departure bearing, #1204	0		
83		3H-D82	4H-D82	1
84	Speed dial plate gear Countersunk head	3H-D83	4H-D83	1
U-7	rivet, 1/4 x 1"	211 704	ATT DOA	
85	Speed gear box	3H -D84	4H-D84	4
86	Set screw, 1/2-13 x 5/8"	3H-D85	4H-D85	i
87	Speed dial bearing	3H-D86	4H-D86	2
88	Speed diar bearing Speed selector dial	3H-D87	4H-D87	1
00	(20-1000 RPM)	217 1000	417 7000	
89	Speed selector lever plunger	3H-D88	4H-D88	1
		3H-D89	4H-D89	2
90	Spring	3H-D90	4H-D90	2
91	Speed selector lever	3H-D91	4H-D91	1
92	Speed selector knob	3H-D92	4H-D92	2
93	Taper pin #2 x 1"	3H-D93	4H-D93	2
94	Taper pin #4 x 1-5/8"	3H-D94	4H-D94	1
95	Fil hd screw, 5/8-18 x			
	11/16"	3H-D95	4H-D95	2
96	Speed change pinion			
	bearing	3H-D96	4H-D96	1
97	Escutcheon pin #15	3H-D97	4H-D97	16
98	Screw, 3/8-16 x 7/8"	3H-D98	4H-D98	3
99	Speed dial plate	3H-D99	4H-D99	1
100	Range change shaft arm	3H-D100	4H-D100	1
101	Taper pin, #4 x 1-1/4"	3H-D101	4H-D101	2
102	Screw	3H-D102	4H-D102	3
103	Range change shaft support	211 10102	4U D102	1
	bracket	3H-D103	4H-D103 4H-D104	1
104	Range change gear shaft	3H-D104 3H-D105	4H-D104 4H-D105	1
105	Range change gear		4H-D105	1
106	Range change lever pinion	3H-D106 3H-D107	4H-D100	1
107	Oilite bearing #A-1104-3	3H-D107	4H-D108	1
108	Taper pin screw	3H-D100	4H-D100	1
109	Range change lever	3H-D109	4H-D110	1
110	Stop pin	3H-D110	4H-D111	1
111	Stop pin	3H-D111	4H-D112	1
112	Screw	211-1117	111-17112	•

- †3 Used on vertical machines ‡1 Used on vertical machines



• Figure 9. Pulley Bracket and Feed and Rapid Traverse Take-Off Bracket

Figure 9. Pulley Bracket and Feed and Rapid Traverse Take-Off Bracket

Item	Code Nos.				
No.	Part Name and Description	3H	4H	Qty.	
1	Clutch gear ring, Twin				
	Disc, #6187	3H-E1		1	
2	Lockwasher, 3/8"	3H-E2		8	
3	Hex hd screw, 3/8-16 x 1-1/2"	3H-E3		8	
4	Hex nut, 1-1/2-12 x 2"	3H-E3	4H-E4	1	
5	Shakeproof lockwasher,	· · ·		-	
	1244	3H-E5	4H-E5	1	
6	Special C10 Twin Disc				
	clutch	3H-E6		1	
	Special C-11-1/2 Twin		ATT TO		
7	Disc clutch	3H-E7	4H-E6 4H-E7	1	
8	Driving plate Oval hd screw, 10-32	JH-EI	411-121	•	
·	x 3/8"	3H-E8	4H-E8	4	
9	Ball bearing retaining plate	3H-E9	4H-E9	1	
10	New Departure bearing,				
	1208	3H-E10	4H-E10	1	
11	Sleeve gear bearing collar	3H-E11	4H-E11	1	
12	Pulley	3H-E12	4H-E12	1	
13	Key	3H-E13	4H-E13	1	
14	Timken bearing, 394A-	3H-E14	4H-E14	1	
15	399A Pulley bracket	3H-E15	4H-E15	1	
16	Soc flat pt set screw, 1/2	311-13	411-613	1	
10	x 7/8"	3H-E16	4H-E16	2	
17	Hex cap screw, 5/8-11 x	210	10	_	
••	1-3/4"	3H-E17	4H-E17	5	
18	Snap ring	3H-E18	4H-E18	3	
19	Fitting collar	3H-E19	4H-E19	3	
20	Rapid traverse and pump				
	drive gear	3H-E20	4H-E20	1	
21	Rapid traverse idler gear	011 701	477 501		
0.0	bushing	3H-E21 3H-E22	4H-E21 4H-E22	1 1	
22 23	Oil pump gear (driver)	3H-E23	4H-E23	3	
24	Hi-Pro key, HP-708 Oil pump gear (driven)	3H-E24	4H-E24	1	
25	Oil pump gear stud	3H-E25	4H-E25	î	
26	Oil pump cover	3H-E26	4H-E26	1	
27	Fil hd screw, 5/16-18				
	x 11/16"	3H-E27	4H-E27	6	
28	Expansion plug, 1-3/16"				
	dia	3H-E28	4H-E28	2	
29	Fil hd screw 5/16-18				
	x 5/8"	3H-E29	4H-E29	3	
30	Soc set screw, 1/4 x 5/16"	3H-E30	4H-E30		
31	Drive worm bearing (outer)	3H-E31	4H-E31	2	
32	Feed drive worm	3H-E32 3H-E33	4H-E32 4H-E33	1 1	
33	Thrust bearing	JH-EJJ	4H-E33	1	
34	New Departure bearing 1206	3H-E34	4H-E34	2	
35	Feed and drive worm	31. 201	201	_	
0.0	wheel	3H-E35	4H-E35	2	
36	Feed drive shaft	3H-536	4H-E36		
37	Rapid traverse drive shaft	3H-E37	4H-E37		
38	Oilite bushing	3H-E38	4H-E38		
39	Feed and rapid traverse				
	drive shaft retainer	3H-E39	4H-E39	2	
40	Fil hd screw, 3/8-16 x 3/4"		4H-E40		
41	Positive stop screw	3H-E41		1	
	Positive stop screw	 3H-E42	4H-E41 4H-E42	1	
	Positive stop				

Item		Code N	os,	
No.	Part Name and Description	3H	4H	Qty.
		011 540	411 540	
42	Coolant shaft drive clutch	3H-E43 3H-E44	4H-E43 4H-E44	1 1
43	Key	3H-E45	4H-E45	2
44	Steel ball, 3/16" dia	3H-E46	4H-E46	ī
45	Spring	3H-E47	4H-E47	i
46	Snap ring Rapid traverse slip clutch	311-541	411-1541	1
47	_	3H-E48	4H-E48	1
48	plate Rapid traverse slip clutch	3 11-110	2.10	-
40	friction plate	3H-E49	4H-E49	1
49	Friction plate drive pin	3H-E50	4H-E50	3
50	Spring	3H-E51	4H-E51	21
51	Steel ball, 5/16"	3H-E52	4H-E52	21
52	Rapid traverse worm drive	011 202		
JL	gear	3H-E53	4H-E53	1
53	Rapid traverse slip clutch			1
00	bushing	3H-E54	4H-E54	1
54	Rapid traverse slip clutch			_
0.	sleeve	3H-E55	4H-E55	1
55	Rapid traverse worm drive			
-	(inner)	3H-E56	4H-E56	1
56	Feed worm drive gear	3H-E57	4H-E57	1
57	Fil hd screw, 5/16-18			1
•	x 7/8"	3H-E58	4H-E58	3
58	Feed drive worm bearing			
	(inner)	3H-E59	4H-E59	1
59	Feed drive sleeve gear	3H-E60	4H-E60	1
60	Feed drive sleeve gear			
	bushing	3H-E61	4H-E61	2
61	Key	3H-E62	4H-E62	1
62	Snap ring	3H-E63	4H-E63	1
63	Pulley bearing fitting			
	collar	3H-E64	4H-E64	1
64	Rapid traverse drive gear	3H-E65	4H-E65	1
65	Timken bearing, #39412-			
	39250	3H-E66	4H-E66	1
66	Rapid traverse idler gear			
	stud	3H-E67	4H-E67	2
67	Oilwicking	3H-E68	4H-E68	AR
68	Rapid traverse drive idler			
	gear bushing	3H-E69	4H-E69	1
69	Rapid traverse drive idler			
1	gear	3H-E70	4H-E70	1
70	Allen pipe plug, 1/2"	3H-E71	4H-E71	1
71	Pipe plug, 1/4"	3H-E72	4H-E72	2
72	Allen flat pt set screw	3H-E73	4H-E73	2
73	Hex hd screw, 5/8-11			
	x 2-13/16"	3H-E74	4H-E74	1
74	Fil hd screw, 1/2-13			
	x 4-3/4"	3H-E75	4H-E75	2
75	Expansion plug, 1-3/8"	3H-E76	4H-E76	
76	Fil hd screw, 1/2-13			
	x 3/4"	3H-E77	4H-E77	1
77	Hex hd screw, 5/8-11			_
i .	x 1-3/4"	3H-E78	4H-E78	5
78	Acme blue label dowel,			
1	5/8 x 2"	3H-E79	4H-E79	2
79	Hex nut, 3/8-16	3H-E80		
80	Soc cup pt set screw,		200	•
	3/8 x 1"	3H-E81	4H-E81	1
81	Feed and rapid traverse	01. 201	- 111 - LOI	•
	take-off bracket	3H-E82	4H-E82	1
82	Rapid traverse drive worm			
			200	•

AR as required



7 1/2 hp No. 3 and 10hp No. 4 Model H Milling Machines

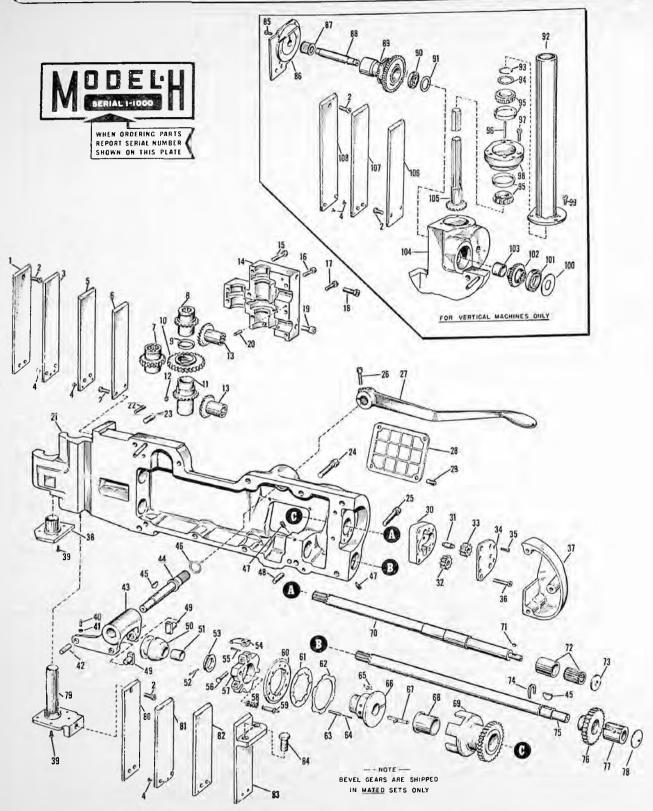


Figure 10. Feed and Rapid Traverse Drive Bracket

Figure 10. Feed and Rapid Traverse Drive Bracket

Item			Nos.	
No.	Part Name and Description	3Н	4H	Qty.
1	Drive shaft guard	3H-F1	4H-F1	1
2	Fil hd screw, 3/8-16 x	011 700	477 770	4
3	3/4'' Drive shaft guard	3H-F2 3H-F3	4H-F2 4H-F3	4 1
4	Oval hd screw, 8-32 x	011-10	311-1 0	•
	11/32"	3H-F4	4H-F4	**8
5	Drive shaft guard	3H-F5	4H-F5	1
6 7	Drive shaft guard Feed drive gear	3H-F6 3H-F7	4H-F6 4H-F7	1 1
8	Rapid traverse drive	311-11	411-7.1	•
	bevel gear	3H-F8	4H-F8	1
9	Rapid traverse drive bevel			
4.0	gear collar	3H-F9	4H-F9	1
10	Feed drive spiral gear	3H-F10		1 1
11 12	Feed drive bevel gear Key	3H-F11 3H-F12	4H-F11 4H-F12	1
13	Feed and rapid traverse	511-112	411-112	•
	bevel gear	3H-F13	4H-F13	2
14	Feed and rapid traverse			
	drive bracket cap	3H-F14		1
15	Fil hd screw, 7/16-14 x 2"	3H-F15	4H-F15	4
16	Fil hd screw, 7/16-14 x 1-1/2''	3H-F16	4H-F16	1
17	Fil hd screw, 7/16-14 x	311-110	411-1-10	•
• •	1-3/4"	3H-F17	4H-F17	3
18	Soc cap screw 7/16 x 1"	3H-F18	4H-F18	1
19	Soc cap screw, 7/16 x			
	3/4"	3H-F19	4H-F19	1
20	Acme blue label dowel, 5/16 x 1-1/4"	3H-F20	4H-F20	1
21	Feed and rapid traverse	JII-120	411-1 20	
	drive bracket	3H-F21	4H-F21	1
22	Oil metering pin	3H-F22	4H-F22	1
23	Allen set screw, 3/8-16 x			
	1-1/2"	3H-F23	4H-F23	2
24	Fil hd screw, 1/2-13 x	3H-F24	4H-F24	+4
25	1-3/4'' Fil hd screw, 1/2-13 x	JN-F24	4N-F24	†4
23	2-1/2"	3H-F25	4H-F25	†4
26	Soc cap screw, 3/8 x			
	1-1/4"	3H-F26	4H-F26	1
27	Rapid traverse lever	3H-F27	4H-F27	1
28	Rapid traverse clutch	0** 700	477 770.0	. 1
	cover	3H-F28	4H-F28	1
29	Fil hd screw, 5/16-18 x	3H-F29	4H-F29	4
30	5/8" Oil pump body	3H-F30	4H-F30	1
31	Oil pump gear stud	3H-F31	4H-F31	î
32	Oil pump gear (driven)	3H-F32	4H-F32	1
33	Oil pump gear (driver)	3H-F33	4H-F33	1
34	Oil pump cover	3H-F34	4H-F34	1
35	Fil hd screw, 1/4-20 x			. 1
	5/8"	3H-F35	4H-F35	4
36	Fil hd screw, 5/16-18 x	3H-F36	4H-F36	4
	1-5/16"	2U-1,20	4U-130	"

Item	Part Name and Departmen	Code :	Nos. 4H	Qty
No.	Part Name and Description	эп	40	Gra
0.5	7			
37	Feed selection cover	3H-F37	4H-F37	1
38	housing Feed drive oil retainer	3H-F31	40-531	1
30	plate and tube	3H-F38	4H-F38	1
39	Fil hd screw, 5/16-18 x	011-1-00	111-1 00	^
	9/16"	3H-F39	4H-F39	8
40	Headless set screw,			
	1/4-20 x 25/32"	3H-F40	4H-F40	1
41	Hex nut, 1/4-20	3H-F41	4H-F41	1
‡42	Rapid traverse clutch fork	217 1740	411 540	,
43	pin	3H-F42 3H-F43	4H-F42 4H-F43	1
44	Rapid traverse clutch fork Rapid traverse lever shaft	3H-F44	4H-F44	1
45	Hi-Pro key, HP-806	3H-F45	4H-F45	2
46	"O" ring packing,			~
-	AN 6227-19	3H-F46	4H-F46	1
47	Dog pt set screw,			
	3/8-16 x 1-1/16"	3H-F47		2
47	Dog pt set screw,			
	3/8-16 x 11/16"		4H-F47	2
48	Acme blue label dowel,	211 540	411 1340	1
49	3/8 x 2-3/4" Rapid traverse clutch fork	3H-F48	4H-F48	1
49	shoe	3H-F49	4H-F49	2
50	Rapid traverse clutch	311-1 13	411-1-43	۵
00	sliding cone	3H-F50	4H-F50	1
51	Rapid traverse clutch			_
	cone bushing	3H-F51	4H-F51	1
52	Taper pin, #3 x 1-5/8"	3H-F52	4H-F52	1
53	Collar	3H-F53	4H-F53	1
54	Clutch finger	3H-F54	4H-F54	4
55	Cotter pin, 3/32 x 5/8"	3H-F55		4
56	Clutch finger pin	3H-F56	4H-F56	4
57 58	Adjusting yoke	3H-F57	4H-F57	1 1
59	Spring Clutch adjusting plunger	3H-F58 3H-F59	4H-F58 4H-F59	1
60	Rapid traverse clutch float-	3H-133	411-133	1
00	ing plate	3H-F60	4H-F60	1
61	Clutch plate (driver)	3H-F61	4H-F61	4
62	Clutch plate (driven)	3H-F62	4H-F62	5
63	Spring	3H-F63	4H-F63	6
64	Rapid traverse clutch plate pin	3H-F64	4H-F64	6
65	Key	3H-F65	4H-F65	3
66	Rapid traverse clutch hub	3H-F66	4H-F66	1
67	Key	3H-F67	4H-F67	1
68	Rapid traverse clutch			
CC	gear bushing	3H-F68	4H-F68	1
69	Rapid traverse clutch gear	3H-F69	4H-F69	1
70 71	Rapid traverse clutch shaft	3H-F70	4H-F70	1
71 72	Hi-Pro key, HP-404	3H-F71	4H-F71	1
73	Hyatt bearing, S-93524 Rapid traverse clutch	3H-F72	4H-F72	1
10	shaft collar	3H-F73	4H-F73	1
74	Feed back gear retaining	5n-F (3	411-112	1
	washer	3H-F74	4H-F74	1
		311 1 1 1	111 - 1 1 1	-

Item		Code N	os.	
No.	Part Name and Description	3Н	4H	Qty.
75	Feed drive shaft	3H-F75	4H-F75	1
76	Main feed drive pinion	3H-F76	4H-F76	1
77	Feed drive shaft bearing			
	(outer)	3H-F77	4H-F77	1
78	Expansion plug, 1-3/4" dia	3H-F78		1
	Expansion plug, 1-11/16"		411 7700	
	dia		4H-F78	1
79	Rapid traverse drive oil	211 E70	4H E70	1
	retaining plate and tube	3H-F79 3H-F80	4H-F79 4H-F80	1
80	Drive shaft guard	3H-F81	4H-F81	1
81	Drive shaft guard	3H-F82	4H-F82	1
82 83	Drive shaft guard Drive shaft guard	3H-F83	4H-F83	1
84	Hex hd screw, 3/8-16 x 1"	3H-F84	4H-F84	2
*85	Fil hd screw, 1/4-20 x	011-1 04	111-101	-
00	1/2''	3H-F85	4H-F85	4
*86	Vertical head feed bevel			
00	gear cover	3H-F86	4H-F86	1
*87	Hyatt bearing, 93316	3H-F87	4H-F87	1
*88	Feed drive bevel gear shaft	3H-F88	4H-F88	1
*89	Vertical head feed gear			
	assembly	3H-F89	4H-F89	1
*90	New Departure bearing,			
	20203	3H-F90	4H-F90	1
*91	Head feed drive bevel			
	gear washer	3H-F91	4H-F91	1
*92	Outer telescopic tube and			
	flange	3H-F92	4H-F92	1
*93	Snap ring	3H-F93	4H-F93	1
*94	Vertical feed shaft			
	bearing washer	3H-F94	4H-F94	1
*95	Timken bearing, 1932-1985	3H-F95	4H-F95	2
*96	Oil wicking	3H-F96	4H-F96	1
*97 *98	Fil hd screw, 5/16-18 x 1"	3H-F97	4H-F97	1
790	Vertical feed shaft bearing carrier	211 1700	4H-F98	1
* 99		3H-F98 3H-F99	4H-F98	3
99	Fil hd screw, 1/4-20 x 11/16'' Fil hd screw, 1/4-20 x 5/8''	311-F 99	4H-F99	3
*100	Drive shaft pinion bearing		111-1 33	
100	washer	3H-F100	4H-F100) 1
*101	Gurney ball bearing, 106-N			
*102	Drive shaft pinion	3H-F102		
*103	Drive shaft pinion bearing	3H-F103		
*104	Feed and rapid traverse	31. 1 100		
	drive bracket	3H-F104	4H-F104	1 1
*105	Vertical head feed bevel		_	
	gear shaft	3H-F105	4H-F10	5 1
*106	Drive shaft guard	3H-F106		6 1
*107	Drive shaft guard	3H-F107		
*108	Drive shaft guard	3H-F108		8 1

- Used on vertical machines only
 6 used on vertical machine
 5 used on 4H machine
 Used only on machine with rear control

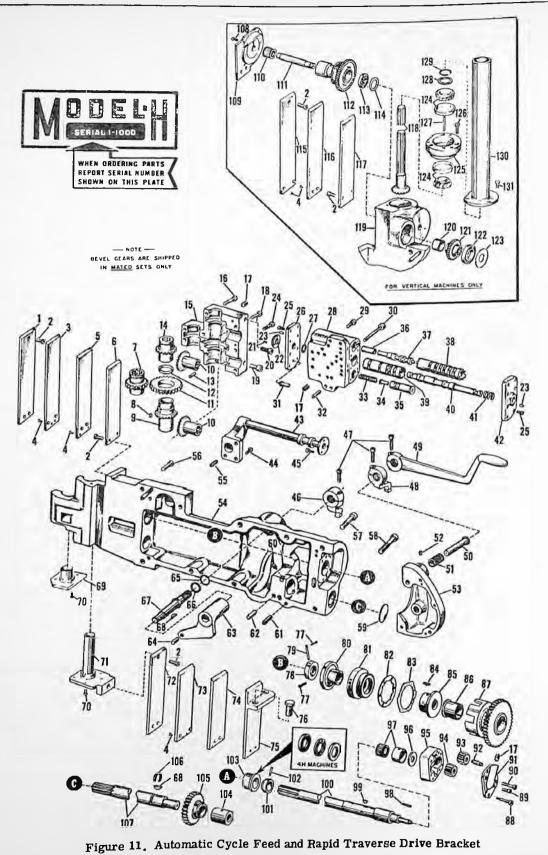




Figure 11. Automatic Cycle Feed and Rapid Traverse Drive Bracket

Iten			Nos.	
No.	Part Name and Description	а 3Н	4H	Qty
1	Drive shaft guard	3H-G1	4H-G1	1
2	Fil hd screw, 3/8-16 x			
_	3/4"	3H-G2	4H-G2	4
3	Drive shaft guard	3H-G3	4H-G3	1
4	Oval hd screw, 8-32 x	011 01	411 04	+0
_	11/32"	3H-G4	4H-G4	*8 1
5	Drive shaft guard	3H-G5	4H-G5	1
6 7	Drive shaft guard	3H-G6	4H-G6 4H-G7	1
8	Feed drive gear	3H-G7	4H-G8	1
9	Key	3H -G8		1
_	Feed drive bevel gear	3H-G9	4H-G9	1
10	Feed and rapid traverse	3H-G10	4H-G10	2
11	bevel gear	3H-G11		1
11 12	Feed drive spur gear Rapid traverse drive bevel	311-011	411-011	•
12	gear collar	3H-G12	4H-G12	1
13	Acme blue label dowel,	511-012	111-012	-
13	5/16 x 1-1/4"	3H-G13	4H-G13	1
14	Rapid traverse drive	 0.10	010	_
	bevel gear	3H-G14	4H-G14	1
15	Feed and rapid traverse			
	drive bracket cap	3H-G15	4H-G15	1
16	Fil hd screw, 7/16-14 x			
	2"	3H-G16	4H-G16	4
17	Soc pipe plug, 1/8"	3H-G17	4H-G17	14
18	Fil hd screw, 7/16-14 x			
	1-3/4"	3H-G18	4H-G18	3
19	Soc cap screw, 7/16 x 1"	3H-G19	4H-G19	1
20	Soc cap screw, 7/16 x 1"	3H-G20	4H-G20	1
21	Oval hd screw, 10-32 x			
	3/8"	3H-G21	4H-G21	3
22	Rapid traverse control			
	valve piston wiper	3H-G22	4H-G22	1
23	Acme blue label dowel,			
	3/16 x 3/4"	3H-G23	4H-G23	4
24	Fil hd screw, 7/16-14 x 2"	3H-G24	4H-G24	1
25	Soc cap screw, 5/16 x 5/8"	3H-G25	4H-G25	16
26	Rapid traverse valve			
	body cover (rear)	3H-G26	4H-G26	1
27	"O" ring packing, AN6227-			
	15	3H-G27	4H-G27	2
28	Rapid traverse valve			
	body	3H-G28	4H-G28	1
29	Soc cap screw, 3/8 x 1"	3H-G29	4H-G29	3
30	Soc cap screw, 3/8 x 4"	3H-G30	4H-G30	4
31	Pressure relief valve			
	plunger stop	3H-G31	4H-G31	1
32	Acme blue label dowel,			
_	3/8 x 1-1/4"	3H-G32	4H-G32	2
13	Spring	3H-G33	4H-G33	1
	Relief valve plunger	3H-G34	4H-G34	1
5	Pressure relief valve			
	sleeve	3H-G35	4H-G35	1
	5.0070	3H-G36	4H-G36	

Item No.	Part Name and Description	Code 3H	Nos. 4H	Qty.
		011 005	411 000	
37 38	Pilot valve Rapid traverse pilot valve sleeve	3H-G37 3H-G38	4H-G37 4H-G38	1
39	Rapid traverse control valve sleeve	3H-G39	4H-G39	1
40	Rapid traverse control valve piston	3H-G40	4H-G40	1
41	Rapid traverse control valve return spring	3H-G41	4H-G41	1
42	Rapid traverse valve body cover (front)	3H-G42	4H-G42	1
43	Oil return bracket and tube assembly	3H-G43	4H-G43	1
44	Soc cap screw, 3/8 x 3/4"	3H-G44	4H-G44	3
45 46	Fil hd screw, 10-32 x 5/16" Rapid traverse valve	3H-G45	4H-G45	3
47	shifter (rear) Soc cap screw, 3/8 x	†3H-G46	†4H-G46	1
48	1-1/4" Rapid traverse valve	3H-G47	4H-G47	4
49	shifter (front)	3H-G48 3H-G49	4H-G48 4H-G49	1
50	Rapid traverse lever Rapid traverse lever pin	3H-G50	4H-G50	î
51	Rapid traverse lever sleeve	3H-G51	4H-G51	1
52	Dog pt set screw, 3/8-16 x 13/16"	3H-G52	4H-G52	1
53	Feed selection cam housing	3H-G53	4H-G53	1
54	Feed and rapid traverse drive bracket	3H-G54	4H-G54	1
55	Allen set screw, 3/8-16 x 1-1/2"	3H-G55	4H-G55	1
56 57	Oil metering pin Soc cap screw, 1/2 x	3H-G56	4H-G56	1
58	1-3/4" Soc cap screw, 1/2 x	3H-G57	4H-G57	‡ 5
59	2-1/2" Expansion plug, 1-3/4"	3H-G58 3H-G59	4H-G58 4H-G59	‡5 1
60	Headless dowel screw, 3/8-16 x 1-1/16"	3H-G60		1
61	Headless dowel screw, 3/8-16 x 11/16" Soc set screw, 3/8 x		4H-G60	1
62	1-1/2" Acme blue label dowel,	3H-G61	4H-G61	2
§63	3/8 x 2-3/4" Rapid traverse rear	3H-G62	4H-G62	1
	control link	3H-G63	4H-G63	1
§ 64	Rapid traverse fork pin	3H-G64	4H-G64	1
§ 65	"O" ring packing, AN6227-19	3H-G65	4H-G65	1

Item	Bowt Name and Degenintion	Code No		
No.	Part Name and Description	3H	4H	Qty.
§66	Washer	3H-G66	4H-G66	1
§67	Rapid traverse lever			
	shaft	3H-G67	4H-G67	1
68	Hi-Pro key	3H-G68	4H-G68	2
69	Feed drive oil retaining			
	plate and tube	3H-G69	4H-G69	1
70	Fil hd screw, 5/16-18 x			
	9/16"	3H-G70	4H-G70	8
71	Rapid traverse drive oil	011 071	411 001	
	retaining plate and tube	3H-G71	4H-G71	1
72	Drive shaft guard	3H-G72	4H-G72	1
73	Drive shaft guard	3H-G73	4H-G73	1
74	Drive shaft guard	3H-G74	4H-G74	1
75 76	Drive shaft guard	3H-G75	4H-G75	1
10	Hex hd screw, 3/8-16 x 1"	3H-G76	4H-G76	2
77		3H-G77	4H-G77	2
78	Cotter pin, 3/32 x 1/2" Rapid traverse clutch	311-011	411-011	
10	shaft collar	3H-G78	4H-G78	1
79	Rapid traverse shaft	311-010	111-010	•
10	collar pin	3H-G79	4H-G79	1
80	Rapid traverse operating	011 010		-
00	sleeve	3H-G80	4H-G80	1
81	Clutch cylinder	3H-G81	4H-G81	1
82	Rapid traverse clutch			
02	plate (Twin Disc #1939-A)	3H-G82	4H-G82	8
83	Rapid traverse clutch			
	plate (Twin Disc #1933)	3H-G83	4H-G83	8
84	Key	3H-G84	4H-G84	3
85	Rapid traverse clutch hub	3H-G85	4H-G85	1
86	Clutch gear bushing	3H-G86	4H-G86	1
87	Rapid traverse clutch gear	3H-G87	4H-G87	1
88	Allen shoulder screw,			
0.0	5/16 x 1-3/4''	3H-G88	4H-G88	2
89	Soc cap screw, 1/4 x			
	5/8"	3H-G89	4H-G89	4
90	Soc cap screw, 5/16 x			
	1-3/4"	3H-G90	4H-G90	2
91	Oil pump body cover	3H-G91	4H-G91	1
92	Oil pump gear stud	3H-G92	4H-G92	1
93	Oil pump gear (driven)	3H-G93	4H-G93	1
94	Oil pump gear (driver)	3H-G94	4H-G94	1
95	Oil pump body	3H-G95	4H-G95	1
96	Rapid traverse clutch			
	shaft collar	3H-G96	4H-G96	1
97	Hyatt bearing, 93516	3H-G97	4H-G97	1
98	Key	3H-G98	4H-G98	1
99	Hi-Pro key, HP -708	3H-G99	4H-G99	2
100	Rapid traverse clutch			
	shaft	3H-G100	4H-G100	1
101	Rapid traverse thrust			
	sleeve	3H-G101		
102	Taper pin, #2 x 1-1/2"	3H-G102		_
		3H-G103	4H-G103	} 1

Item		Code No	e	
No.	Part Name and Description	3H		Qty.
	Ture name and Description	JII	111	2.3.
104	Feed drive shaft bearing			- 1
	(outer)	3H-G104	4H-G104	1
105	Main feed drive pinion	3H-G105	4H-G105	1
106	Feed back gear retaining	011 0200	0150	- 1
	washer	3H-G106	4H-G106	1
107	Feed drive shaft	3H-G107	4H-G107	i l
р108	Fil hd screw, 1/4-20 x		0-0.	- Î
,	1/2"	3H-G108	4H-G108	4
b109	Vertical feed bevel gear	0		_ 1
•	cover	3H-G109	4H-G109	1
þ110	Hyatt bearing, 93316	3H-G110	4H-G110	īl
þ111	Feed drive bevel gear			- 1
•	shaft	3H-G111	4H-G111	1
þ112	Vertical feed gear			- 1
•	assembly	3H-G112	4H-G112	1
р113	New Departure bearing	0112		- 1
,	20203	3H-G113	4H-G113	1
b114	Head feed drive bevel	0	111-0110	•
r	gear washer	3H-G114		1
þ115	Drive shaft guard	3H-G115	4H-G115	
þ116	Drive shalt guard	3H-G116		
b117	Drive shaft guard	3H-G117		1
р118	Vertical head feed bevel	311-0111	411-0111	•
P110	gear shaft	3H-G118	4H-G118	1
þ119	Feed and rapid traverse	311-0110	411-0110	•
PILO	drive bracket (vertical)	3H-G119	4H-G119	1
р 120	Drive shaft pinion bearing	3H-G120		
b121	Drive shaft pinion	3H-G121	4H-G121	î
þ122	Gurney ball bearing,	311-G121	411-0121	•
y	106 N	3H-G122	4H-G122	1
þ123	Drive shaft pinion	011 0122		-
y 1 2 0	bearing washer	3H_G123	4H-G123	1
þ124	Timken bearing, 1932-	011-0120	111-0120	•
P121	1985	3H-G124	4H-G124	2
þ125	Vertical feed shaft	011-G124	111-012-1	-
7120	bearing carrier	3H-G125	4H-G125	1
b126	Fil hd screw, 5/16-18 x 1"	3H-G126	4H-G126	
b127	Oil wicking	3H-G127	4H-G127	
b128	Vertical feed shaft bearing	311-0121	HI-GIZI	AH
p120	washer	3H-G128	4H-G128	1
L100		3H-G129		
þ129	Snap ring	011-0123	111-0123	•
þ130	Outer telescopic tube and	3H-G130	4H-G130	1
	flange	011-0100		-
þ131	Fil hd screw, 1/4-20 x	3H-G131		3
	11/16"	311-6131	77	J
	Fil hd screw, 1/4-20 x		4H-G131	. 3
	5/8"		411-0131	

^{* 6} used on vertical machines † 3H and 4H horizontal machine only

^{† 4} used on 3H machine
§ Used with rear control only
b Vertical machine only
AR As required

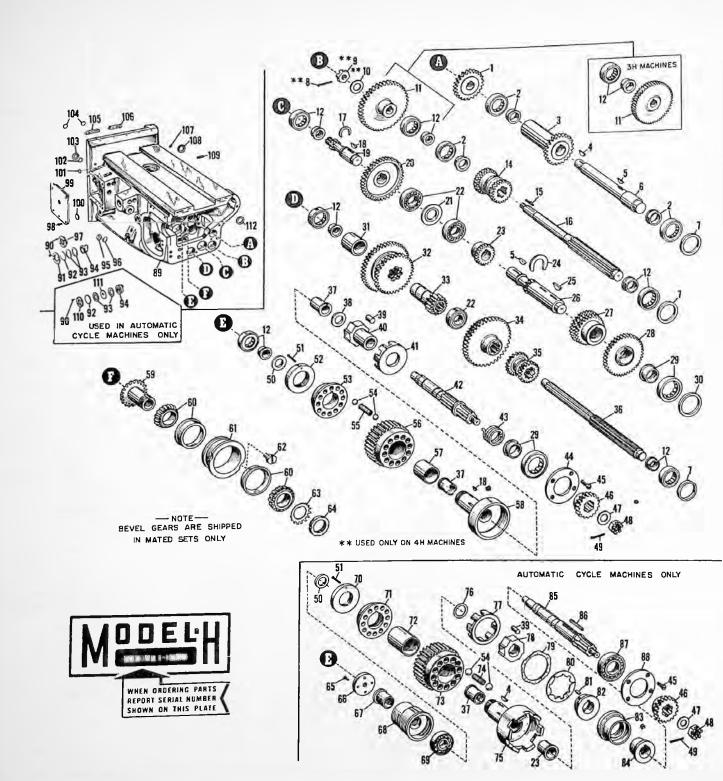


Figure 12. Knee (Gear Trains)

Figure 12. Knee (Gear Trains)

Item No.	Part Name and Description	Code 3H	Nos. 4H	Qty.
1	Rapid traverse idler gear			
	(short)	3H-H1	4H-H1	1
2	Hyatt bearing, R-1205 TS	3H-H2	4H-H2	3
3	Rapid traverse idler gear			
	(long)	3H-H3	4H-H3	1
4	Hi-Pro key, HP-606	3H-H4	4H-H4	*1
5	Hi-Pro key, HP-806	3H-H5	4H-H5	2
6	Rapid traverse idler gear			
	shaft	3H-H6	4H-H6	1
7	Primary feed shaft bearing			+
	washer	3H-H7	4H-H7	3
8	Cotter pin, 5/32 x 1-1/2"		4H-H8	1
9	Castellated nut, 5/8-11		4H-H9	1
10	Washer, 5/8"		4H-H10	1
11	Primary feed shaft drive			
	gear	3H-H11	4H-H11	1
12	Hyatt bearing, R-1304 TS	3H-H12	4H-H12	†6
14	Primary feed sliding gear	3H-H14	4H-H14	1
15	Hi-Pro key, HP-806	3H-H15		1
	Key		4H-H15	1
16	Primary feed shaft	3H-H16	4H-H16	1
17	Feed back gear retaining			
	washer	3H-H17	4H-H17	1
18	Hi-Pro key, HP-706	3H-H18	4H-H18	1
19	Feed back gear pinion			
	shaft	3H-H19	4H-H19	1
20	Feed back gear	3H-H20	4H-H20	1
21	Pinion shaft bearing spacer	3H-H21	4H-H21	1
22	Hyatt bearing, U-1205 TS	3H-H22	4H-H22	3
23	Gear on secondary feed			_
20	shaft (rear)	3H-H23	4H-H23	1
24	Secondary feed gear			_
41	retaining washer	3H-H24	4H-H24	1
25	Hi-Pro key, HP-1008	3H-H25	4H-H25	2
26	Secondary feed shaft	3H-H26	4H-H26	1
27	Double gear on secondary	011 1110		-
2.	feed shaft	3H-H27	4H-H27	1
20	Double gear on secondary	J AAU1	****	•
28	feed shaft (front)	3H-H28	4H-H28	1
20		3H-H29	4H-H29	12
29	Hyatt bearing, R-1206 TS	311-1123	144-446.0	+-
30	Secondary feed shaft	3H-H30	4H-H30	1
	bearing washer	311-1100	411-1100	•
31	Feed sliding double back	3H-H31	4H-H31	1
	gear bushing	011-1101	411-1101	•
32	Feed sliding double back	3H-H32	4H-H32	1
	gear	3H-H33	4H-H33	1
33	Feed back gear pinion	QU-HIO	411-1100	1
34	Tertiary feed sliding	3H-H34	4H-H34	1
	gear (large)	J11~1134	411-1134	1
35	Tertiary feed sliding	217 1125	AU TIOE	
	gear (small)	3H-H35	4H-H35	1
36	Tertiary feed shaft	3H-H36	4H-H36	1
37	Feed roller clutch sleeve			
	bushing	3H-H37	4H-H37	2
38	Feed safety clutch thrust			
JO .		OVY TIOO	ATT TIOO	4
30	washer	3H-H38 3H-H39	4H-H38 4H-H39	1 8

Item		Code 1	Nos.	
No.	Part Name and Description	3Н	4н	Qty.
40	Feed roller clutch hub	3H-H40	4H-H40	1
41	Feed clutch roller cage	3H-H41	4H-H41	1
42	Feed safety clutch shaft	3H-H42	4H-H42	1
43	Spring	3H-H43	4H-H43	1
44	Feed safety clutch shaft	3H-H44	4H-H44	1
45	washer Fil hd screw,			_
46	5/16-18 x 11/16" Feed safety clutch shaft	3H-H45	4H-H45	4
	pinion	3H-H46	4H-H46	1
47	Washer, 5/8"	3H-H47	4H-H47	1
48	Castellated nut, 5/8-11"	3H-H48	4H-H48	1
49	Cotter pin, $5/32 \times 1-1/2$	3H-H49	4H-H49	1
50	Feed safety clutch shaft	QU 1750	AU UEC	
_	washer	3H-H50	4H-H50	1
51 52	Cotter pin, 1/8 x 1-1/8" Feed safety clutch sleeve	3H-H51	4H-H51	1
	nut	3H-H52	4H-H52	1
53	Feed safety clutch end	017 ****	A 17	
	plate	3H-H53	4H-H53	1
54	Steel ball, 9/16" dia	3H-H54	4H-H54	524
55	Spring	3H-H55	4H-H55	§12
56	Feed safety clutch gear	3H-H56	4H-H56	1
57	Feed safety clutch gear	20 110-	ALI TYPE	
I _	bushing	3H-H57	4H-H57	1
58	Feed roller clutch sleeve	3H-H58	4H-H58	1
59	Elevating bevel pinion	3H-H59	4H-H59	1
60	Timken bearing, 14276B- 14137	3H-H60	4H-H60	2
61	Elevating bevel pinion		470	
	bearing sleeve	3H-H61	4H-H61	1
62	Fil hd screw, 1/2-13 x 3/4" Fil hd screw,	3H-H62		2
	1/2-13 x 1"		4H-H62	2
63	Gurney lockwasher, #7	3H-H63	4H-H63	1
64	Gurney locknut, #7	3H-H64	4H-H64	1
65	Soc cap screw,	20 1100		1
	1/4-20 x 1'' Soc can screw	3H-H65		1
	Soc cap screw, 1/4-20 x 7/8"	3H-H66		2
	Soc cap screw,			
	1/4-20 x 5/8" Soc cap screw,	3H-H67		1
	1/4-1/2''		4H-H68	4
66	Bearing carrier cover	3H-H69	4H-H69	i
67	Bearing carrier bushing	3H-H70	4H-H70	1
68	Safety clutch shaft		4H-H71	1
69	bearing carrier New Departure bearing,	3H-H71	_	_
70	20304 Feed safety clutch sleeve	3H-H72	4H-H72	1
	nut	3H-H73	4H-H73	1
71	Feed safety clutch end plate	3H-H74	4H-H74	1
72	Feed safety clutch gear	44 17		
. 2	bushing	3H-H75	4H-H75	1
73	Feed safety clutch gear	3H-H76		1
	, ,			

Item		Code N	os.	
No.	Part Name and Description	3н `	4H	Qty.
74	Spring	3H-H77	4H-H77	§12
75 76	Feed roller clutch Feed safety clutch thrust	3H-H78	4H-H78	1
10	washer	3H-H79	4H-H79	1
77	Feed clutch roller cage	3H-H80	4H-H80	1
78 79	Feed roller clutch hub	3H-H81	4H-H81	1
80	Clutch plate bronge (driven) Clutch plate steel (driver)	3H-H82 3H-H83	4H-H82 4H-H83	3 3
81	Brake plate key	3H-H84	4H-H84	3
82	Clutch plate retainer	3H-H85	4H-H85	ĭ
83	Brake cylinder	3H-H86	4H-H86	1
84	Brake piston	3H-H87	4H-H87	1
85	Feed safety clutch shaft	3H-H88	4H-H88	1
86 87	Round end key New Departure bearing,	3H-H89	4H-H89	1
88	20206 Feed safety clutch shaft	3H-H90	4H-H90	1
89	bearing retainer Knee (standard direction	3Н-Н91	4H-H91	1
0.5	control machines) Knee (automatic cycle	3H-H92	4H-H92	1
90	machines) Oval hd screw,	3H-H92	4H-H92	1
30	10-32 x 3/8"	3H-H93	4H-H93	8
91	Oil sight gauge	3H-H94	4H-H94	1
92	Oil gauge glass	3H-H95	4H-H95	1
93	Oil gauge washer	3H-H96	4H-H96	2
94	Sight oil flow gauge	3H-H97	4H-H97 4H-H98	1
95 96	Oil filler screw Washer	3H-H98 3H-H99	4H-H99	1 1
97	Knee vent plate	3H-H100	4H-H100	
198	Fil hd screw,	DI 2100	122 21200	
	1/2-13 x 15/16''	3H-H101	4H-H101	5
199	Rear control opening cover	3H-H102	4H-H102	1
1100	Expansion plug, 1-1/8" dia	3H-H103 3H-H104	4H-H103 4H-H104	1 1
101 102	Expansion plug, 7/8" dia "O" Ring, 6227-19	3H-H105	4H-H105	
103	Knee clamp shaft spacer	3H-H106		
104	Expansion plug, 1-1/4" dia	3H-H107		
105	Oil pad	3H-H108	4H-H108	1
106	Oil pad	3H-H109	4H-H109	1
107	Dog pt set screw, 3/8-16 x 11/16"	3H-H110		1
	Dog pt set screw,		477 77440	
400	3/8-16 x 7/8"	2H 11111	4H-H110	
108	Oil seal, Victoprene 60318	3H-H111 3H-H112		
109 110	Coolant drip spout Oil flow gauge plate	3H-H112	_	
111	Oil gauge indicator plate	3H-H114		_
112	Oil seal. Victoprene 60388	3H-H115		1
	Oil seal, Victoprene 60562		4H-H11	5 1

- 2 used on machines with mono-lever control
 5 used on machines with mono-lever control
 1 used on machines with mono-lever control
 9 springs and 18 balls used on 3H machines
 Used only on machines without rear control

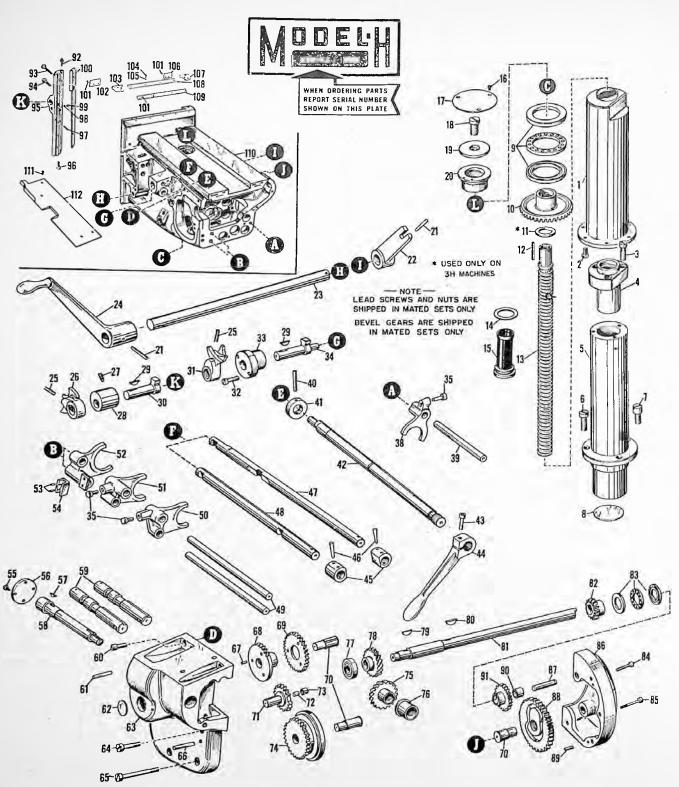


Figure 13. Knee (Miscellaneous Parts)

Figure 13. Knee (Miscellaneous Parts)

	Item No.		Code 3H	Nos. 4H	Qty.
-	1	Elevating screw shield assembly	3H-J1	AU 11	1
١	2	Fil hd screw, 3/8-16 x 13/16"	3H-J2	4H-J1 4H-J2	6
١	3	Fil hd screw, 3/8-16 x 1-3/8"	3H-J3	4n-J2	3
1		Fil hd screw, 1/2-13 x 1"		4H-J3	3
1	4	Elevating screw nut	3H-J4	4H-J4	1
ı	5	Elevating nut extension	3H-J5	4H-J5	1
ı	6	Fil hd screw, 1/2-13 x			
١		1-1/8" Fil hd screw, 5/8-11 x	3H-J6		2
ı		1-1/4"		4H-J6	2
ı	7	Knee bumper screw	3H-J7	4H-J7	1
ı	8	Expansion plug, 2-1/2" dia	3H-18		1
ı		Expansion plug, 2-5/8" dia		4H-J8	1
1	9	Gurney thrust bearing, 13-B		477 70	1
1	10	Gurney thrust bearing, 15-B		4H-J9	1
ı	10 11	Elevating bevel gear	3H-J10 3H-J11	4H-J10	1 1
ı	12	Elevating screw collar Key	3H-J11	4H-J12	1
ı	13	Elevating screw	3H-J13	4H-J13	1
ı	14	Intake screen retaining			•
ı		plug washer	3H-J14	4H-J14	1
1	15	Oil intake screen,	2U T1E	AU TIE	1
ı	16	retaining plug and ring	3H-J15 3H-J16	4H-J15	3
ı	10	Flat hd screw, $8-32 \times 1/2$ " Flat hd screw, $8-32 \times 3/8$ "	2H-110	4H-J16	3
ı	17	Elevating bevel gear cover	3H-J17	4H-J17	1
ı	18	Fil hd screw, 3/4-16 x	01. 01.		
ı		1-3/8"	3H-J18	4H-J18	1
ı	19	Elevating screw retainer	3H-J19	4H-J19	1
ı	20	Elevating bevel gear			
ı		bearing	3H-J20	4H-J20	1
ı	21	Taper pin, #4 x 1-3/4"	3H-J21	4H-J21	2
ı	22	Rapid traverse lever			
		shifter arm	3H-J22	4H-J22	1
	23	Rapid traverse lever shaft	3H-J23	4H-J23	1 1
	24	Rapid traverse lever (rear)	3H-J24	4H-J24	1
	25	Cup pt soc set screw, 5/16-18 x 1"	3Н-J25	4H-J25	2
	26	Vertical feed trip lever	3H-J26	4H-J26	1
	27	Dog pt screw,			_
		3/8-16 x 13/16"	3H-J27	4H-J27	1
	28	Vertical feed trip lever			
		shaft bushing	3Н-Ј28	4H-J28	1
	29	Hi-Pro key, HP-708	3H-J29	4H-J29	2
	30	Vertical feed trip lever	011 700	411 100	
		arm shaft	3H-J30	4H-J30 4H-J31	1
	31	Cross feed trip lever	3Н-Ј31	4U-191	1
	32	Fil hd screw, 1/4-20 x 1-1/16"	3H-J32	4H-J32	2
	33	Cross feed lever shaft			_
	20	bushing	3H-J33	4H-J33	1
	34	Cross feed trip lever arm			
		shaft	3H-J34	4H-J34	1
	35	Feed shifting fork pin	3H-J35	4H-J35	3
	38	Primary shaft high speed	011 700	411 700	
		shifter	3H-J38	4H-J38	1
	39		3H-J39	4H-J39	1
	40	Taper pin, #4 x 1-7/8"	3H- J 40	4H-J40	1

Item No.	Part Name and Description	Code 3H	Nos. 4H	Qty.
41	Knee clamp shaft collar	3H-J41	4H-J41	1
42	Knee clamp shaft	3H-J42	4H-J42	1
43	Fil hd screw, 3/8-16 x	3H-J43	417 749	. I
l	1-1/4"	3H-J44	4H-J43 4H-J44	1 1
44	Knee clamp lever Trip rod coupling	3H-J45	4H-J45	2
45 46	Taper pin, #4 x 1-7/16"	3H-J46	4H-J46	2
47	Vertical feed trip rod	3H-J47	4H-J47	ī
48	Cross feed trip rod	3H-J48	4H-J48	1
49	Tertiary shaft shifting rod	3H-J49	4H-J49	2
50	Tertiary shaft high speed shifter	3H-J50	4H-J50	1
51	Tertiary shaft low speed			1
	shifter	3H-J51	4H-J51	1
52	Back gear shifter	3H-J52	4H-J52	1
53	Pin, 3/16 x 1"	3H-J53	4H-J53	2
54	Back gear shifter cam	3H-J54	4H-J54	1 4
55	Fil hd screw, 1/4-20 x 1/2"	3H-J55	4H-J55	4
56	Feed change shaft thrust plate	3H-J56	4H-J56	1
57	Hi-Pro key, HP-606	3H-J57	4H-J57	î
58	Feed change shaft	3H-J58	4H-J58	ī
59	Feed change housing			
	trip rod	3H-J59	4H-J59	2
60	Fil hd screw, 7/16-14 x 1"	3H-J60	4H-J60	2
61	Acme blue label dowel,			
	3/8 x 1-1/4"	3H-J61	4H-J61	1
62	Expansion plug, 1-3/8" dia	3H-J62	4H-J62	1
63	Feed change gear housing	3H-J63	4H-J63	1
64	Fil hd screw, 1/2-13 x	011 764	417 164	1
65	1-3/4" Fil hd screw, 1/2-13 x	3H-J64	4H-J64	
05	2-1/2"	3H-J65		4
	Fil hd screw, 1/2-13 x	311-300		1
	3-5/8"		4H-J65	4
66	Acme blue label dowel,			-
	3/8 x 1-3/4"	3H-J66	4H-J66	1
67	Section hd rivet, #5 x 7/8"	3H-J67	4H-J67	3
68	Secondary change inter-			
-00	mittent gear	3H-J68	4H-J68	1
69	Intermittent gear (driver)	3H-J69	4H-J69	1 3
70 71	Shifting cam stud	3H-J70 3H-J71	4H-J70 4H-J71	1
72	Back gear shifter cam Acme blue label dowel,	2U-111	411-91T	*
	5/16 x 7/8"	3H-J72	4H-J72	1
73	Back gear shifter roller	3H-J73	_	î
74	Secondary shifter cam	3H-J74		1
75	Feed change helical gear			
	(driver)	3H-J75	4H-J75	1
76	Feed change helical gear			
	bearing	3H-J76	4H-J76	1
77	New Departure bearing,			
	3203	3H-J77	4H-J77	1
78	Feed change helical gear			
	(driven)	3H-J78	4H-J78	1
79	Hi-Pro key, HP-705	3H-J79	4H-J79	1
80	Hi-Pro key, HP-806	3H-J80	4H-J80	1
81	Feed change cross shaft	3H-J81	4H-J81	1
82	Secondary shifter cam	217 700	ATZ TOO	1
83	driving gear Ball thrust bearing	3H-J82 3H-J83	4H-J82 4H-J83	1
00	Dan turust bearing	211-103	J11-309	•

		Code		\neg
Item	Part Name and Description	Code N 3H	os. 4H	آ ،۔۔
No.	Part Name and Description	Jn	4H	Qty.
84	Soc cap screw, 3/8 x			
04	1-3/4"	3H-J84		3
	Soc cap screw, 3/8 x			ĭ
	1-1/2"		4H-J84	1
85	Soc cap screw, 3/8 x			1
	2-1/2"	3H-J85	4H-J85	1
86	Feed selection cam housing			1
	(With standard table direc-	011 700		
	tional control machines)	3H-J86	4H-J86	1
	Feed selection cam housing (Automatic cycle machines)	3H-J86	4H-J86	.
87	Primary shifter cam driv-	20-100	4D-100	1
01	ing gear stud	3H-J87	4H-J87	1
88	Primary shifter cam	3H-J88	4H-J88	î
89	Acme blue label dowel,		*** •00	•
	1/4 x 2"	3H-J89		2
	Acme blue label dowel,			
	1/4 x 1-1/2"		4H~J89	2
90	Primary shifter cam			
	driving gear bushing	3H-190	4H-J90	1
91	Primary shifter cam driving			
l	gear	3H-J91	4H-J91	1
92	Gib screw	3H-J92	4H-J92	1
93	Hex hd screw, 5/8-11 x	077 700		
	2-1/2"	3H-J93		2
1	Hex hd screw, 5/8-11 x 2-3/4"		4H-J93	2
94	Hex hd screw, 5/8-11 x		411-193	4
, J.	2-5/16"	3H-J94	4H-J94	4
95	Knee gib support	3H-J95	4H-J95	1
96	Fil hd screw, 1/2-13 x	011 000		-
	1-1/2"	3H-J96	4H-J96	1
97	Acme blue label dowel,			
	3/8 x 1-1/2"	3H-J97	4H-J97	1
98	Knee clamp shoe	3H-J98	4H-J98	1
99	Knee clamp pin	3H-J99	4H-J99	1
100	Knee gib	3H-J100	4H-J100	1
101	Rd hd mach screw,			_
100	10-32 x 3/8"	3H-J101	4H-J101	8
102	Column dovetail wiper	077 7400	411 7400	
102	spring (LH)	3H-J102	4H-J102	1
103 104	Column dovetail wiper (LH)	3H-J103	4H-J103 4H-J104	1 *7
105	Wiper screw	3H-J104	4H-J104 4H-J105	*7
106	Wiper screw spring	3H-J105	411-1103	
1.50	Column dovetail wiper spring (RH)	3H-J106	4H-J106	1
107	Column dovetail wiper (RH)	3H-J107	4H-J107	
108	Column face bearing wiper	3H-J108	4H-J108	
109	Column face bearing wiper	311-3100	111 0 100	_
	spring	3H-J109	4H-J109	1
110	Knee (standard table direc-	01. 0100		
}	tion control machines)	3H-J110	4H-J110	1
1	Knee (automatic cycle			
	machines)	3H-J110	4H-J110	1
111	Flat hd mach screw.			
1	1/4-20 x 1/2"	3H-J111	4H-J111	l −4
112	Knee chip guard (machines			
	with rear control)	3H-J112	4H-J112	2 1
	Knee chip guard (machines		477 7447	3 1
	without rear control)	3H-J112	4H-J113) 1
1				

^{* 9} used on 4H machines

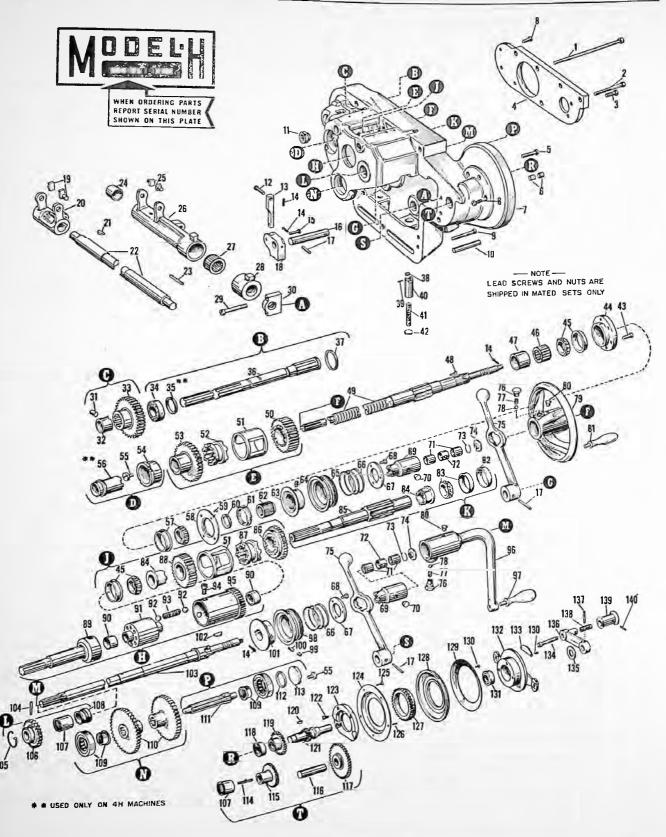


Figure 14. Feed Distribution Box

Figure 14. Feed Distribution Box

Iten No.			Nos. 4H	Qt
1	Soc cap screw,			
•	1/2-13 x 8-1/4"	3H-K1	4H-K1	2
2	Soc cap screw,			
	1/2 x 3-1/4"	3H-K2	4H-K2	2
3	Fil hd screw,			
	3/8-16 x 21/32"	3H-K3	4H-K3	2
4	Feed distribution box			
	dial plate	3H-K4	4H-K4	1
5	Soc cap screw,			
_	1/2 x 1-3/4"	3H-K5	4H-K5	1
6	Special soc set screw	3H-K6	4H-K6	4
7	Feed distribution box	3H-K7	4H-K7	1
8	Fil hd screw,	3H-K8	4H-K8	8
9	3/8-16 x 7/8"	3U-V9	4H-NO	0
Э	Soc cap screw, 1/2 x 2-3/4"	3H-K9	4H-K9	5
10	Acme blue label dowel,	311-113	411-110	u
10	1/2 x 3"	3H-K10	4H-K10	2
11	Spacing plug	3H-K11	4H-K11	2
12	Reverse lever link pin	011 1111		_
	(upper)	3H-K12	4H-K12	2
13	Reverse lever link	3H-K13	4H-K13	2
14	Cotter pin, 3/32 x 3/4"	3H-K14	4H-K14	6
15	Reverse lever link pin,			
	(lower)	3H-K15	4H-K15	2
16	Cross and elevating			
	reverse lever shaft	3H-K16	4H-K16	2
17	Taper pin, #4 x 1-7/8"	3H-K17	4H-K17	2
18	Cross feed and elevating			
	inner lever detent	3H-K18	4H-K18	2
19	Cross feed and elevating			
	clutch fork shoe	3H-K19	4H-K19	2
20	Cross feed clutch fork	3H-K20		1
21	Hi-Pro key, HP-806	3H-K21	4H-K21	1
22	Cross feed clutch fork		417 7700	
	shaft	3H-K22		1
23	Key	3H-K23	4H-K23	1
24	Elevating clutch fork and	211 1/04	411 1/04	
	trip segment bushing	3H-K24	4H-K24	1
25	Cross feed and elevating	3H-K25	4H MJE	2
	clutch fork shoe	3H-K23	4H-K25	2
26	Elevating clutch fork and	3H-K26	4H-K26	1
	trip segment	3H-K27	4H-K27	1
27	Hyatt bearing, 94620	3H-K28	4H-K28	1
28	Cross feed trip segment	JII = IXZ0	711-1120	1
29	Clutch fork shaft bearing	3H-K29	4H-K29	2
0.0	Screw	3H-K29	4H-K30	1
30	Clutch fork shaft bearing	3H-K31	4H-K31	1
31	Pin, 5/16 x 9/16" Table feed shaft bearing	3H-K31	4H-K32	1
32	Table feed shaft drive gear	3H-K33	4H-K33	1
33	New Departure bearing,	011-1100	111-1100	•
34	-	3H-K34	4H-K34	1
	1207		4H-K35	1
15	Collar			•

No. Part Name and Description 3H 4H Qty	Item		Code Nos		
Table feed shaft (plain machines only)		Part Name and Description			Otv.
machines only) Table feed shaft (vertical machines only) 37 Table feed shaft (vertical machines only) 38 Detent plunger roller 38 Detent plunger roller 38 Detent plunger roller 38 Detent plunger 39 Detent plunger 31 H-K37	1.07				
machines only) Table feed shaft (vertical machines only) 37 Table feed shaft (vertical machines only) 38 Detent plunger roller 38 Detent plunger roller 38 Detent plunger roller 38 Detent plunger 39 Detent plunger 31 H-K37					
Table feed shaft (vertical machines only) 7 Table feed shaft bearing spacer 8 Detent plunger roller 9 Detent roller pin 10 Trip detent plunger 11 Spring 12 Detent lever plug 13 H-K41 14 Spring 15 Soc cap screw, 15/16 x 3/4'' 16 Cross feed screw bearing 17244B-17119 17244B-17119 18 Key 19 Cross feed screw (machines with our rear control) 10 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 11 Clutch gear spacer 12 Cross feed clutch gear (front) 13 Cross feed clutch gear (front) 15 Clutch gear spacer 1724B-17119 18 Cross feed clutch gear (front) 19 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 11 Clutch gear spacer 12 Cross feed clutch gear (front) 13 Cross feed clutch gear (front) 15 Clutch gear spacer 17244B-17119 18 Cross feed clutch gear (front) 19 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 11 Clutch gear spacer 12 Cross feed clutch gear (front) 13 H-K50 14 H-K50 15 Cross feed clutch gear (front) 16 Cross feed clutch gear (front) 17 Cross feed clutch gear (front) 18 Cross feed clutch gear (front) 19 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 10 Cross feed clutch gear (front) 11 Clutch gear spacer 12 H-K50 13 H-K50 14 H-K50 15 Cross feed clutch gear (front) 16 Cross feed clutch gear (front) 17 Hanken bearing, 17244B-17119W 18 H-K50 19 H-K50 10 Cross feed screw bearing adjusting washer 10 Cross feed screw bearing adjusting washer 11 Cross feed screw bearing adjusting ring 18 H-K61 19 H-K62 10 Cross feed screw bearing adjusting ring 20 Cross feed dal collar 3H-K62 21 AH-K62 22 Cross feed dal collar 3H-K63 24 H-K62 25 Cross feed dal collar 3H-K63 25 Cross feed dal collar 3H-K63 26 Cross feed dal collar 3H-K63 27 Cross feed dal collar 3H-K63 28 H-K62 29 H-K59 20 Cross feed dal collar 3H-K63 31 H-K61 32 H-K62 33 H-K61 34 H-K37	36		211 1/06	411 2504	1
machines only 3H-K36			3H-K36	4H-K36	1
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Spacer 3H-K37 4H-K37 1 3B Detent plunger roller 3H-K38 4H-K38 2 3B Detent roller pin 3H-K38 4H-K39 2 40 Trip detent plunger 3H-K40 4H-K40 2 3H-K41 4H-K41 2 2 2 Detent lever plug 3H-K41 4H-K42 2 2 3B Soc cap screw, 5/16 x 3/4" 3H-K43 4H-K42 2 3H-K44 3H-K43 6 4H-K42 2 3H-K44 3H-K43 6 4H-K45 2 3H-K44 3H-K45 2 3H-K44 3H-K45 2 3H-K45 3H-K45 3H-K45 3H-K46 3H-K46 3H-K46 3H-K46 3H-K47 3H-K46 3H-K47 3H-K46 3H-K47 3H-K48 3H-K48 3H-K48 3H-K48 3H-K48 3H-K48 3H-K49 3H-K50 3H-K51 3H-K52 3H-K51 3H-K52 3H-K52 3H-K53 3H-K54 3H-K53 3H-K55	ì		3H-K36	4H-K36	1
Detent plunger roller 3H-K38 4H-K38 2	37	•			- 1
39 Detent roller pin 40 Trip detent plunger 31 H-K39 4H-K39 2 41 Spring 31 H-K40 4H-K40 2 42 Detent lever plug 31 H-K41 4H-K41 2 43 Soc cap screw, 5/16 x 3/4" 44 Cross feed screw bearing carrier 45 Timken bearing, 17244B-17119 31 H-K45 4H-K45 2 46 Torrington bearing, B-2420 3H-K46 - 1 Orange roller bearing, 7294 - 4H-K46 1 47 Roller bearing carrier 31 H-K47 4H-K47 1 48 Key 49 Cross feed screw (machines without rear control) Cross feed screw (machines without rear control) 31 H-K49 4H-K49 1 50 Cross feed clutch gear (front) 51 Clutch gear spacer 31 H-K50 4H-K50 1 52 Cross feed clutch gear (front) 53 Cross feed clutch gear (rear) 54 Cross feed clutch gear (rear) 55 Fil hd screw, 3/8-16 x 9/16" 56 Cross feed screw oil retainer 57 Timken bearing, 17244B-17119W 31 H-K50 4H-K57 1 58 Cross feed screw oil retainer 59 Flat hd screw, 8-32 x 1/2" 50 Cross feed screw bearing adjusting washer 61 Cross feed screw bearing adjusting washer 62 Cross feed screw bearing adjusting ring 31 H-K62 4H-K62 1 31 H-K50 4H-K50 1	ĺ				
## Trip detent plunger		Detent plunger roller			
## Spring					
1	40	Trip detent plunger			_
Soc cap screw	41	Spring			
5/16 x 3/4" 44 Cross feed screw bearing carrier 45 Timken bearing, 17244B-17119 46 Torrington bearing, B-2420 3H-K45 4H-K45 2 47 Roller bearing carrier 3H-K46 4H-K47 41 48 Key 49 Cross feed screw (machines without rear control) Cross feed screw (machines with rear control) 3H-K49 4H-K49 51 Clutch gear (front) 51 Clutch gear spacer 3H-K50 52 Cross feed clutch gear (front) 53 Cross feed clutch gear (rear) 54 Cross feed clutch gear (rear) 55 Fil hd screw, 3/8-16 x 9/16" 56 Cross feed reverse clutch gear sleeve 57 Timken bearing, 17244B-17119W 3H-K50 4H-K50 1 58 Cross feed reverse clutch gear sleeve 59 Flat hd screw, 8-32 x 1/2" 3H-K50 4H-K50 1 50 Cross feed screw oil retainer 3H-K51 5H-K55 5H-K55 5H-K55 5H-K55 5H-K55 5H-K55 5H-K56 5H-K56 5H-K56 5H-K56 5H-K57 5H-K56 5H-K66 5H	42	Detent lever plug	3H-K42	4H-K42	2
Cross feed screw bearing carrier Timken bearing, 17244B-17119 3H-K45 4H-K45 2 Torrington bearing, B-2420 Orange roller bearing, 7294 TROller bearing carrier Without rear control) Cross feed screw (machines with rear control) Cross feed clutch gear (front) Clutch gear spacer Screw feed clutch gear (rear) Cross feed clutch gear (rear) Tear) Cross feed clutch gear (rear) Tear) Cross feed clutch gear (rear) The screw feed clutch gear (rear) The screw feed clutch gear (rear) Timken bearing, 17244B-17119W Tear) Timken bearing, 17244B-17119W Tear) Timken bearing adjusting washer Cross feed screw bearing adjusting ring Cross feed dial collar Cross feed dial collar Cross feed dial collar Cross feed dial collar SH-K63 SH-K44 SH-K45 SH-K45 SH-K49 SH-K49 SH-K49 SH-K49 SH-K49 SH-K49 SH-K50 SH-K60 SH-K6	43	Soc cap screw,			į
Carrier 3H-K44 4H-K44 1 1 1 1 1 1 1 1 1	l	5/16 x 3/4"	3 H-K 43	4H-K43	6
Timken bearing,	44	Cross feed screw bearing			- 1
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17244B-17119 3H-K45 4H-K45 2 46 Torrington bearing, B-2420 3H-K46 1 Orange roller bearing, 7294 4H-K46 1 47 Roller bearing carrier 3H-K47 4H-K47 1 48 Key 3H-K48 4H-K48 1 49 Cross feed screw (machines without rear control) 3H-K49 4H-K49 1 Cross feed screw (machines with rear control) 3H-K49 4H-K49 1 50 Cross feed clutch gear (front) 3H-K50 4H-K50 1 51 Clutch gear spacer 3H-K51 4H-K51 2 52 Cross feed reverse clutch 3H-K52 4H-K52 1 53 Cross feed clutch gear (rear) 3H-K53 4H-K53 1 54 Cross feed clutch gear bearing 3H-K54 4H-K54 1 55 Fil hd screw, 3/8-16 x 9/16" 3H-K55 4H-K55 4 56 Cross feed reverse clutch gear sleeve 4H-K56 1 57 Timken bearing, 17244B-17119W 3H-K57 4H-K57 1 58 Cross feed screw oil retainer 3H-K58 4H-K58 1 59 Flat hd screw, 8-32 x 1/2" 3H-K59 4H-K59 4 60 Cross feed screw bearing adjusting washer 3H-K60 4H-K60 1 61 Cross feed screw bearing adjusting ring 3H-K61 4H-K61 1 62 Cross feed dial collar 3H-K62 4H-K62 1 63 Cross feed dial collar 3H-K63 4H-K63 1 64 Dowel pt screw,	45				
## Torrington bearing,			3H-K45	4H-K45	2
B-2420 Orange roller bearing,	46				- 1
Orange roller bearing, 7294 47 Roller bearing carrier 48 Key 49 Cross feed screw (machines without rear control) Cross feed screw (machines with rear control) Cross feed clutch gear (front) 50 Cross feed clutch gear (front) 51 Clutch gear spacer 52 Cross feed clutch gear (rear) 53 Cross feed clutch gear (rear) 54 Cross feed clutch gear bearing 38-K53 48-K53 54 Cross feed clutch gear bearing 38-K53 48-K53 55 Fil hd screw, 3/8-16 x 9/16" 56 Cross feed reverse clutch gear sleeve 57 Timken bearing, 17244B-17119W 38-K57 48-K58 48-K57 59 Flat hd screw, 8-32 x 1/2" 60 Cross feed screw bearing adjusting washer 38-K60 48-K61 51 Cross feed screw bearing adjusting ring 38-K61 48-K61 59 Cross feed screw bearing adjusting ring 38-K61 48-K61 59 Cross feed screw bearing adjusting mut 38-K62 48-K62 48-K62 48-K63			3H-K46		1 1
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retainer 3H-K58 4H-K58 1 59 Flat hd screw, 8-32 x 1/2" 3H-K59 4H-K59 4 60 Cross feed screw bearing adjusting washer 3H-K60 4H-K60 1 61 Cross feed screw bearing adjusting ring 3H-K61 4H-K61 1 62 Cross feed screw bearing adjusting nut 3H-K62 4H-K62 1 63 Cross feed dial collar 3H-K63 4H-K63 1 64 Dowel pt screw,	58		011-1101	111 1101	· 1
59 Flat hd screw, 8-32 x 1/2" 31 - K59 4 - K59 4 60 Cross feed screw bearing adjusting washer 31 - K60 4 - K60 1 61 Cross feed screw bearing adjusting ring 31 - K61 4 - K61 1 62 Cross feed screw bearing adjusting nut 31 - K62 4 - K62 1 63 Cross feed dial collar 64 Dowel pt screw,	00		JH NEO	4H-K50	1 1
8-32 x 1/2" 3H-K59 4H-K59 4 Cross feed screw bearing adjusting washer 3H-K60 4H-K60 1 Cross feed screw bearing adjusting ring 3H-K61 4H-K61 1 Cross feed screw bearing adjusting nut 3H-K62 4H-K62 1 Cross feed dial collar 3H-K63 4H-K63 1 Dowel pt screw,	50		on-noo	4H-F10	1
60 Cross feed screw bearing adjusting washer 3H-K60 4H-K60 1 61 Cross feed screw bearing adjusting ring 3H-K61 4H-K61 1 62 Cross feed screw bearing adjusting nut 3H-K62 4H-K62 1 63 Cross feed dial collar 3H-K63 4H-K63 1 64 Dowel pt screw,	29	riat no screw,		411 1/50	, I
adjusting washer 3H-K60 4H-K60 1 61 Cross feed screw bearing adjusting ring 3H-K61 4H-K61 1 62 Cross feed screw bearing adjusting nut 3H-K62 4H-K62 1 63 Cross feed dial collar 3H-K63 4H-K63 1 64 Dowel pt screw,	00		2H-K2A	4 n-k 59	7
61 Cross feed screw bearing	60			477 7500	. I
adjusting ring 3H-K61 4H-K61 1 62 Cross feed screw bearing adjusting nut 3H-K62 4H-K62 1 63 Cross feed dial collar 3H-K63 4H-K63 1 64 Dowel pt screw,		• 5	3H-K60	4H~K60	7
62 Cross feed screw bearing adjusting nut 63 Cross feed dial collar 64 Dowel pt screw, 65 Cross feed dial collar 66 Cross feed dial collar 67 Cross feed dial collar 68 Cross feed dial collar 69 Cross feed dial collar 60 Cross feed dial collar 60 Cross feed dial collar 61 Cross feed dial collar	61	Cross feed screw bearing			. I
62 Cross feed screw bearing adjusting nut 63 Cross feed dial collar 64 Dowel pt screw, 3H-K62 4H-K62 1 3H-K63 4H-K63 1		adjusting ring	3H-K61	4H-K61	1
adjusting nut 3H-K62 4H-K62 1 63 Cross feed dial collar 3H-K63 4H-K63 1 64 Dowel pt screw,	62				
63 Cross feed dial collar 3H-K63 4H-K63 1 64 Dowel pt screw,			3H-K62	4H-K62	1
64 Dowel pt screw,	63		3H-K63	4H-K63	1
1					
0/10-10 x 1/2	٠.		3H-K64	4H-K64	1
		0/10-10 X 1/2	211-110-I		

Item No.	Part Name and Description	Code N 3H	os. 4H	Qty
65	Serrated graduated dial	3H-K65	AII WCE	
	(200 411-210112)		4H-K65	1
66	pp6	3H-K66	4H-K66	2
67	Graduated dial spring	211 1668	471 7505	
	retainer	3H-K67	4H-K67	2
68	Fil hd screw, 10-32 x 1/2"	3H-K68	4H-K68	6
69	Handwheel clutch	3H-K69	4H-K69	2
70	Plug	3H-K70		2
71	Torrington bearing, B-1210			4
72	Bearing spacer	3H-K72		2
73	Snap ring	3H-K73	4H-K73	2
74	Hand feed clutch stop	3H-K74	4H-K74	2
75	Cross and elevating	3H-K75	4H-K75	2
20	reverse lever	3H-K13	411-613	Z
76	Hand elevating crank set	3H-K76	4H-K76	2
22	screw	3H-K77	4H-K77	2
77	Spring	3H-K78	4H-K78	2
78 79	Steel ball, 1/4" dia	3H-K79	4H-K79	1
80	Cross feed handwheel	3H-K80	4H-K80	2
81	Glts oiler, RS-532 Rockwood handle, #3QA	3H-K81		1
82	Elevating clutch shaft	311-K01	411-101	1
02	bearing spacer	3H-K82	4H-K82	1
83	Timken bearing,	311-1102	411-1402	•
UJ	17244-17119	3H-K83	4H-K83	1
84	Elevating clutch gear	011-1100	111-1100	•
04	bushing	3H-K84	4H-K84	2
85	Elevating clutch shaft	3H-K85	4H-K85	1
86	Elevating clutch gear (front)		4H-K86	ī
87	Elevating reverse clutch	3H-K87	4H-K87	î
88	Elevating clutch gear (rear)	3H-K88	4H-K88	î
89	Elevating slip clutch shaft	3H-K89	4H-K89	1
90	Elevating slip clutch hub	011 1100	111 1400	-
00	bushing	3H-K90	4H-K90	2
91	Elevating slip clutch hub	3H-K91	4H-K91	1
92	Steel ball, 9/16" dia	3H-K92	4H-K92	**1
93	Spring	3H-K93	4H-K93	•6
94	Soc cap screw,			
	3/8-24 x 3/8''	3H-K94	4H-K94	3
95	Elevating slip clutch sleeve	3H-K95	4H-K95	1
96	Hand elevating crank	3H-K96	4H-K96	1
97	Rockwood handle #4QA	3H-K97	4H-K97	1
98	Serrated graduated dial			
	(100 divisions)	3H-K98	4H-K98	1
99	Soc set screw, 1/4 x 1/4"	3H-K99	4H-K99	1
100	Soc dog pt screw,			
	1/4 x 5/16"	3H-K100	4H-K100	1
101	Elevating shaft dial collar	3H-K101		
102	Hi-Pro key, HP-505	3H-K102		
103	Hand elevating shaft (for			
	machines without rear			
	control)	3H-K103	4H-K103	3 1
	Hand elevating shaft (for			
	machines with rear control)			3 1

Item		Code No	ne	
No.	Part Name and Description	3H		Qty.
104	Taper pin, #4 x 1-9/16"	3H-K104	4H-K104	1
105	Snap ring		4H-K105	1
106	Hand elevating gear	3H-K106	4H-K106	1
107	Torrington bearing,			
Į.	B-1616	3H-K107	4H-K107	2
108	Elevating shaft bearing			
	(front)	3H-K108	4H-K108	1
109	Hyatt bearing, R-1305TS	3H-K109	4H-K109	2
110	Cross and elevating			
1	reverse gear	3H-K110	4H-K110	2
111	Cross and elevating			
	reverse gear shaft	3H-K111		1
112	Bearing washer	3H-K112	4H-K112	1
113	Reverse gear shaft			
	bearing cover	3H-K113		1
114	Key	3H-K114	4H-K114	1
115	Feed selection gear		23	
	(driven)	3H-K115	4H-K115	1
116	Acme blue label dowel,			
	7/16 x 1-3/4"		4H-K116	1
117	Feed dial idler gear	3H-K117	4H-K117	1
118	New Departure bearing,	077 75440		
1	1203	3H-K118	4H-K118	1
119	Feed selection gear			
	(driver)		4H-K119	_
120	Hi-Pro key, HP-404	3H-K120		
121	Feed dial pinion shaft	3H-K121	4H-K121	1
122	Fil hd screw,	3H-K122	ATT 1/100	3
	5/16-18 x 9/16"			
123	Dial support ring	3H-K123	4H-K123 4H-K124	_
124	Grease shield	3H-K124	4H-K124	1
125	Flat hd screw,	20 7126	4H-K125	5
	8-32 x 3/8"	3H-K125		
126	Pin	3H-K120		_
127 128	Feed dial carrier gear Feed dial carrier	3H-K128		
128	Feed dial (3/8-90 feed	011-11120	111 15140	
129	range)	3H-K129	4H-K129	1
130	Escutcheon pin, #15		4H-K130	
131	New Departure bearing,			
131	88503	3H-K131	4H-K131	l 1
132	Feed dial support			
132	bracket	3H-K132	4H-K13	2 1
133	Feed indicator plate	3H-K133		
134	Lever plunger	3H-K134		4 1
135	Dial support washer	3H-K135	4H-K13	5 1
136	Feed dial lever	3H-K136	4H-K13	6 1
137	Taper pin, #3 x 1-5/8"	3H-K137	4H-K13	
138	Spring	3H-K138	4H-K13	
139	Lever knob	3H-K139	4H-K13	9 1
140	Taper pin, #2 x 1"	3H-K140) 4H-K14	0 1
140				

^{• 18} used on 4H machines

^{** 8} used on 4H machines

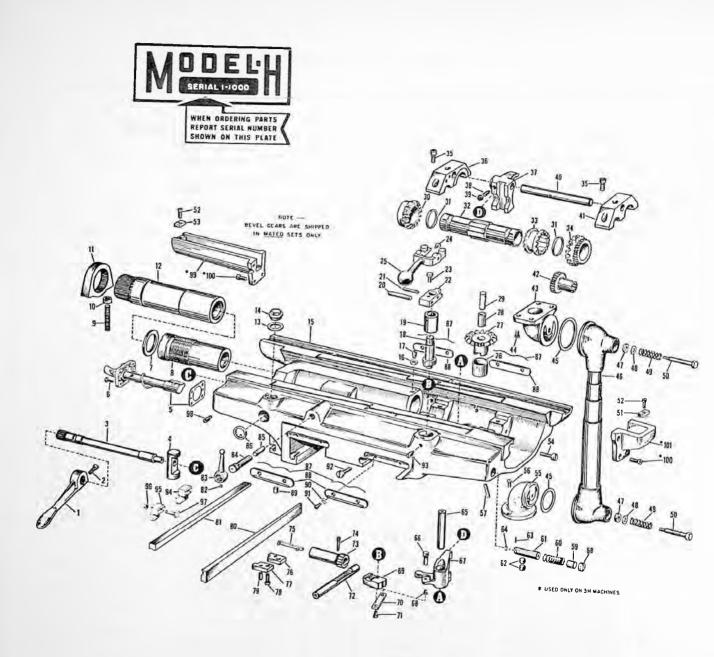


Figure 15. Plain Saddle

Figure 15. Plain Saddle

Item	Code Nos.					
No.	Part Name and Description	3H	os. 4H	Qty.		
	Title title title beller pro-		***	٠٠, .		
1	Saddle clamp handle	3H-L1	4H-L1	1		
2	Fil hd screw, 3/8-16 x 7/8"		4H-L2	1		
3						
	Saddle clamp eccentric	3H-L3	4H-L3	1		
4	Saddle clamp	3H-1A	4H-LA	1		
5	Bijur KIB lubricator pump,	_				
	1'' stroke, C-1957	3H-L5	4H-L5	1		
6	Soc cap screw,					
	1/4-20 x 3/4''	3H-L6	4H-L6	4		
7	Table nut spacer	3H-L7	4H-L7	1		
8	Table nut	3H-L8	4H-L8	1		
9	Soc hd oval point set screw,	o 110	1 110	•		
		211 10	411 10			
10	1/2-13 x 3"	3H-L9	4H-L9	2		
10	Hex nut, 1/2-13	3H-L10	4H-L10	2		
11	Adjusting nut yoke	3H-L11	4H-L11	1		
12	Adjusting table screw nut	3H-L12	4H-L12	1		
13	Washer	3H-L13	4H-L13	1		
14	Oil hole plug screw	3H-L14	4H-L14	1		
15	Plain saddle	3H-L15	4H-L15	1		
16	Hex nut, 3/8-16	3H-L16	4H-L16	1		
17	Dog point screw,	BII-DIO	411-110	-		
11		011 1 10	477 7 177			
	3/8-16 x 7/8"	3H-L17	4H-L17	1		
18	Table trip lever shaft	3H-L18	4H-L18	1		
19	Table trip lever shaft					
	bearing	3H-L19	4H-L19	1		
20	Acme blue label dowel,					
	3/8 x 2-1/2"	3H-L20	4H-L20	1		
21	Taper pin, #5 x 1-3/8"	3H-L21	4H-L21	ī		
22	Table trip lever block	3H-L22	4H-L22	1		
23	Table trip lever block screw		4H-L23	1		
24	Table trip lever fork pin	3H-L24	4H-L24	1		
25	Table trip lever	3H-L25	4H-L25	1		
26	Table drive bevel gear					
	bearing	3H-L26	4H-L26	1		
27	Table drive bevel gear	3H-L27	4H-L27	1		
28	Table drive gear plug	3H-L28		î		
				1		
29	Table drive gear felt	3H-L29				
30	Table screw clutch gear	3H-L30		1		
31	Clutch gear collar	3H-L31	4H-L31	2		
32	Feed reverse gear sleeve	3H-L32	4H-L32	1		
33	Table feed reverse clutch	3H-L33	4H-L33	1		
34	Table screw clutch gear	3H-L34		1		
		5 · 140 I	201	-		
35	Soc cap screw,	ou ror		c		
	7/16-14 x 7/8"	3H-L35		6		
	Soc cap screw,					
	$7/16-14 \times 1-1/4$		4H-L35			
36	Bearing cap (LH)	3H-L36		1		
37	Clutch shifter yoke	3H-L37		1		
38	Dog pt set screw,			_		
30	3/8-16 x 15/16"	3H-L38		1		
		011-1100		1		
	Dog pt set screw,		AU 1 20			
	3/8-16 x 1-3/16"		4H-L38	1		
39	Hex nut, 3/8-16	3H-L39	4H-L39	1		
40	Shifter yoke rod	3H-L40	4H-L4 0	1		
41	Bearing cap (RH)	3H-L41	4H-L41	1		
42	Auxiliary drive shaft gear	3H-L42	4H-L42	1		
		3H-L43	4H-L43	i		
43	Saddle coolant return elbow	311-L43	411-143	1		
44	Fil hd screw,					
	3/8-16 x 13/16"	3H-L44	4H-L44	4		
45	Coolant fitting washer	3H-L45	4H-L45	2		
46	Telescopic coolant return					
40		3H-L46	4H-L46	1		
	assembly					
47	Coolant fitting washer	3H-L47	4H-L47	2		
48	Coolant fitting washer	3H-L48	4H-L48	2		

Item		Code No	os.	
No.	Part Name and Description	3Н		Qty.
40	Spring	3H-L49	4H-L49	2
49 50	Spring Coolant fitting screw		4H-L50	2
51	Coolant packet block (RH)		4H-L51	ī
52	Fil hd screw,	011 201		- 1
	5/16-18 x 9/16"	3H-L52	4H-L52	2
53	Coolant pocket block	3H-L53	4H-L53	1
54	Gib screw, $3/8-16 \times 1-1/2$ "	3H-L54		2
	Gib screw, 1/2-13 x 1-1/2"		4H-L54	2
55	Coolant return elbow	3H-L55	4H-L55	1
56	Fil hd screw, 1/2-13 x 15/16"	3H-L56	4H-L56	3
57	Pin, 1/4 x 1-3/8"		4H-L57	i
58	Plug	3H-L58	4H-L58	ī
59	Spring spacer	3H-L59	4H-L59	1
60	Spring	3H-L60	4H-L60	1
61	Table trip detent plunger	3H-L61	4H-L61	1
62	Special soc set screw	3H-L62	4H-L62	2
63	Detent plunger roller pin	3H-L63	4H-L63	1
64	Detent plunger roller	3H-L64	4H-L64	1
65	Clutch shifter arm stud	3H-L65	4H-L65	1
66	Reverse shifter arm stop	3H-L66	4H-L66	1
67	pin Reverse shifter yoke arm	3H-L67	4H-L67	i
68	Link pin, short	3H-L68	4H-L68	i
69	Table trip lever detent	3H-L69	4H-L69	ī
70	Table trip lever link	3H-L70	4H-L70	1
71	Link pin (long)	3H-L71	4H-L71	1
72	Release shaft gear rack	3H-L72	4H-L72	1
73	Handwheel release shaft gea	r 3H-L73	4H-L73	1
74	Headless dowel screw	3H-L74	4H-L74	1
75	Key	3H-L75	4H-L75	1
76	Saddle limit stop (rear)	3H-L76	4H-L76	1
77	Saddle limit stop (front)	3H-L77	4H-L77 4H-L78	1 2
78 79	Fil hd screw, 3/8-16 x 3/4' Acme blue label dowel,	3H-L10	4H=F10	2
13	5/16 x 3/4"	3H-L79	4H-L79	2
80	Saddle gibs	3H-L80	4H-L80	1
81	Saddle gibs	3H-L81	4H-L81	1 -4
82	Soc set screw, 1/4 x 1/4"	3H-L82	4H-L82	- 1
83	Clamp lever	3H-L83	4H-L83	1
84	Clamp screw	3H-L84	4H-L84	1
85	Table clamp plug	3H-L85	4H-L85	1
86	Bijur oil window, B-4904	3H-L86	4H-L86	1
87	Spring	3H-L87	4H-L87	4
88	Knee top bearing wiper	3H-L88	4H-L88	4
89	Pipe plug, 3/4"	3H-L89	4H-L89	
00	Pipe plug, 1/2"	3H-L90		_
90 91	Spring Wings sarew	3H-L91	4H-L91	8
	Wiper screw Gib screw, 3/8-16 x 1/2"	3H-L92	4H-L92	4
92 93	Dog pt screw, 3/8-16 x 3/4"	3H-L93		1
33	Dog pt screw, 3/8-16 x 15/16		4H-L93	1
94	Trip dog (rear)	3H-L94	4H-L94	1
95	Trip dog (front)	3H-L95	4H-L95	1
96		3H-L96	4H-L96	2
97	Trip dog screw,		444 - 6-	
	7/16-14 x 1-3/4"	3H-L97	4H-L97	
98		3H-L98		
99		3H-L99		
100		3H-L10		1
101	Saddle extension (RH)	211-110	• -	•
1				

Only 3 used on 4H machines



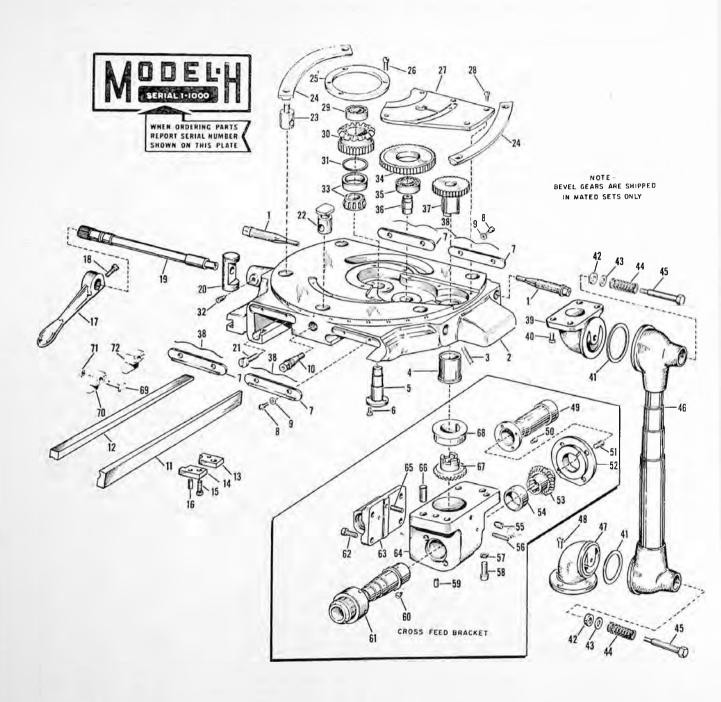


Figure 16. Universal Saddle and Cross Feed Bracket

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Figure 16. Universal Saddle and Cross Feed Bracket

Item No.	Part Name and Description	Code Nos. 3H 4H		Qty.	
1	Clamp screw (long)	3H-M1	4H-M1	4	
2	Universal saddle	3H-M2	4H-M2	1	
3	Pin, 1/4 x 1-3/8"	3H-M3	4H-M3	1	
4	Table drive gear bearing	3H-M4	4H-M4	1	
5	Table drive level gear stud	3H-M5	4H-M5	1	
6	Fil hd screw,				
	5/16-18 x 9/16"	3H-M6	4H-M6	2	
7	Knee top bearing wiper	3H-M7	4H-M7	4	
8	Wiper screw	3H-M8	4H-M8	8	
9	Spring	3H-M9	4H-M9	8	
10	Clamp screw (short)	3H-M10	4H-M10	1	
11	Saddle gib	3H-M11	4H-M11	î	
12	Saddle gib	3H-M12		î	
13	Saddle limit stop (rear)	3H-M13		1	
14	Saddle limit stop (front)		4H-M14	1	
15	Fil hd screw,	211 1117	171-14174	1	
- 0	3/8-16 x 3/4"	3H-M15	4H-M15	2	
16	Acme blue label dowel,	211-MII3	311-14119	4	
10	5/16 x 3/4"	3H-M16	AU Mic	9	
17	Saddle clamp handle	3H-M17	4H-M16 4H-M17	2	
18		2U-MII1	4H-W111	1	
10	Fil hd screw, 3/8-16 x 1-3/8"	211 3410	431 3410		
10		3H-M18	4H-M18	1	
19	Saddle clamp eccentric	077 3440	455 354 5	_	
90	shaft	3H-M19	4H-M19	1	
20	Saddle clamp	3H-M20		1	
21	Gib screw, 3/8-16 x 1-1/2"		4H-M21	4	
22	Swivel block clamp		4H-M22	1	
23	Swivel block clamp bolt		4H-M23	4	
24	Swivel block clamp ring	3H-M24		2	
25	Universal saddle ring	3H-M25	4H-M25	1	
26	Fil hd screw,				
	5/16-18 x 3/4"	3H-M26		1	
	Fil hd screw,				
	3/8-16 x 7/8"		4H-M26	3	
27	Universal saddle cover	3H-M27	4H-M27	1	
28	Fil hd screw,				
	5/16-18 x 11/16"	3H-M28	4H-M28	4	
29	New Departure bearing,				
	1204	3H-M29		1	
	New Departure bearing,				
	1206		4H-M29	1	
30	Table drive bevel gear	3H-M30		1	
31	Bevel gear adjusting			_	
31	washer	3H-M31	4H-M31	1	
20		217-1412]	111-1111	1	
32	Dog point set screw,	3H-M32	1 453	1	
	3/8-16 x 13/16"	3H-M3Z		1	
	Dog point set screw,		411 1420		
	3/8-16 x 7/8"	011 3400	4H-M32	1	
33	Timken bearing, 1779-1729	3H-M33		1	
	Timken bearing,			_	
	26126-26274		4H-M33	1	
34	Table drive idler gear	3H-M34	4H-M34	1	
35	New Departure bearing				
	1205	3H-M35		1	
	New Departure bearing				
	1207		4H-M35	1	
36	Table drive idler gear stud	3H-M36	4H-M36	1	
	Table drive gear	3H-M37	4H-M37	1	
37		3H-M38			
38	Wiper spring Coolant return elbow	3H-M39			
39	L OCIONI FRIUTII EIDUW	JA1 - 414 U U	A	-	

Item No.	Part Name and Description	Code Nos.		Qty.	
	1 a 1 1 1 a 1 a 1 a 1 a 1 a 1 a 1 a 1 a				
4.0	Til 1.1				
40	Fil hd screw,	211 3440	ATT MAO	1	
4.	3/8-16 x 13/16"	3H-M40	4H-M40	4	
41	Coolant fitting washer	3H-M41	4H-M41	2 2	
42	Coolant fitting washer	3H-M42	4H-M42	2	
43	Coolant fitting washer, 5/8"	3H-M43	4H-M43		
44	Spring	3H-M44	4H-M44	2	
45	Coolant fitting screw	3H-M45	4H-M45	2	
46	Telescopic coolant return	077 3440			
4.00	assembly	3H-M46	4H-M46	1	
47	Coolant return elbow	3H-M47	4H-M47	1	
48	Fil hd screw,				
40	1/2-13 x 15/16''	3H-M48	4H-M48	3	
49	Rear telescopic tube			_	
	assembly	3H-M49	4H-M49	1	
50	Fil hd screw,				
	10-32 x 15/16"	3H-M50	4H-M50	4	
51	Fil hd screw,				
	3/8-16 x 13/16"	3H-M51	4H-M51	4	
52	Table feed sliding bevel				
	gear bearing	3H-M52	4H-M52	1	
53	Table feed sliding bevel				
	gear	3H-M53	4H-M53	1	
54	Table feed sliding bevel				
	gear bearing	3H-M54	4H-M54	1	
55	Dog point screw,				
	3/8-16 x 7/8"	3H-M55	4H-M55	1	
56	Pin, 1/4 x 1-3/8"	3H-M56		1	
	Pin, 3/16 x 1-1/8"		4H-M56	1	
57	Lockwasher, 1/2"	3H-M57	4H-M57	4	
58	Allen cap screw,				
	$1/2 \times 1-1/4$ "	3H-M58	4H-M58	4	
59	Coolant drip spout	3H-M59	4H-M59	1	
60	Fil hd screw,				
	5/16-18 x 5/8''	3H-M60	4H-M60	2	
61	Front telescopic tube				
	assembly	3H-M61	4H-M61	1	
62	Hex hd screw,				
	7/16-14 x 1-1/8"	3H-M62		4	
	Allen cap screw, 7/16 x 1"		4H-M62	4	
63	Cross feed nut	3H-M63	4H-M63	1	
64	Cross feed bracket	3H-M64			
65	Acme blue label dowel,				
	3/8 x 1''	3H-M65		1	
	Acme blue label dowel,			_	
	3/8 x 1-1/2"		4H-M65	1	
. 66	Acme blue label dowel,		12	•	
	5/8 x 1-1/2"	3H-M66		2	
	Acme blue label dowel,	011 11100		-	
	5/8 x 1-5/8"	-	4H-M66	5 2	
67	Table feed drive bevel	-	Z 24 - 141 O	, 2	
٠.		2H M67	4H-M6	7 1	
68	gear Cross feed bracket	3H-M67	411-1410	1 1	
00		211 1400	AU MC		
60	bearing sleeve	3H-M68	4H-M6	3 1	
69	Trip dog screw,	277 3572	427 340		
B.C.	7/16-14 x 1-3/4"	3H-M69	4H-M6	9 2	
70	Cross and elevating trip		4		
_	dog (front)	3H-M70			
71	Hex nut, 7/16-14	3H-M71	4H~M7	1 2	
72	Cross and elevating trip				
	dog (rear)	3H-M72	4H-M7	2 1	

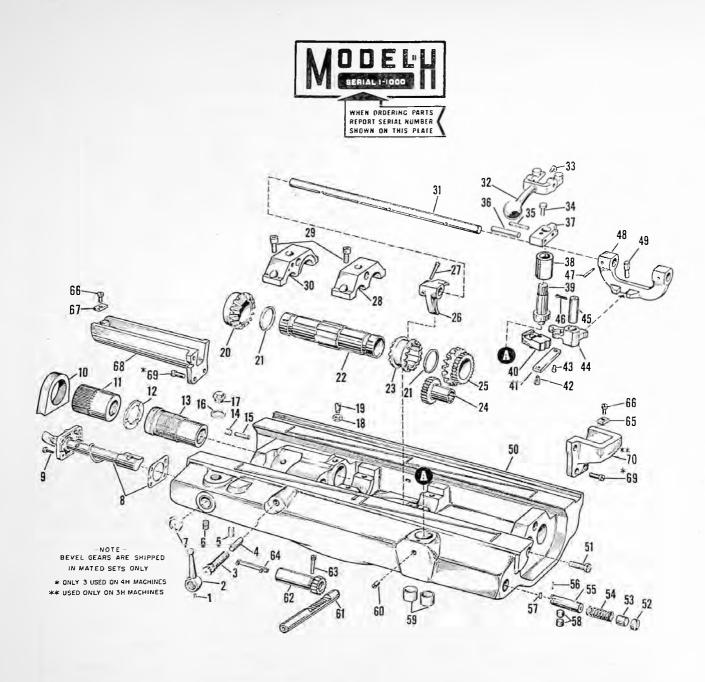


Figure 17. Universal Swivel Block

Figure 17. Universal Swivel Block

i				
Item		Code	Nos.	
No.	Part Name and Description	3Н	4H	Qty.
1	Allen set screw.			
l	1/4 x 1/4"	3H-N1	4H-N1	1
2	Clamp lever	3H-N2	4H-N2	ī
3	Clamp screw	3H-N3	4H-N3	1
4	Table clamp plug	3H-N4	4H-N4	1
5	Oval hd soc set screw.			
ł	1/2-13 x 1-3/8"	3H-N5		1
	Oval hd soc set screw,			
	1/2-13 x 1-3/4"		4H-N5	1
6	Pipe plug, 3/4"	3H-N6		1
!	Soc pipe plug, 1/2"		4H-N6	1
7	Bijur oil window, B-4904	3H-N7	4H-N7	1
8	Bijur KIB lubricator pump			
	(1" stroke), C-1957	3H-N8	4H-N8	1
9	Soc hd cap screw,			
	1/4-20 x 3/4"	3H-N9	4H-N9	4
10	Nut adjusting yoke	3H-N10	4H-N10	1
11	Table screw adjusting nut	3H-N11	4H-N11	1
12	Table nut spacer	3H-N12	4H-N12	1
13	Table screw nut	3H-N13	4H-N13	1
14	Flat pt soc set screw,			
	3/8-16 x 3/4"	3H-N14	4H-N14	2
15	Yoke lock screw plug	3H-N15	4H-N15	2
16	Fiber washer	3H-N16	4H-N16	1
17	Oil hole plug screw	3H-N17	4H-N17	1
18	Hex nut	3H-N18	4H-N18	1
19	Dog pt set screw	3H-N19	4H-N19	1
20	Table screw clutch gear	3H-N20	4H-N20	1
21	Clutch gear collar	3H-N21	4H-N21	2
22	Feed reverse gear sleeve	3H-N22	4H-N22	1
23	Table feed reverse clutch	3H-N23	4H-N23	1
24	Auxiliary drive shaft gear	3H-N24	4H-N24	1
25	Table screw clutch gear	3H-N25	4H-N25	1
26	Clutch shifter	3H-N26	4H-N26	1
27	Taper pin screw	3H-N27	4H-N27	1
28	Bearing cap (RH)	3H-N28	4H-N28	1
29	Soc hd cap screw,			
	7/16-14 x 7/8"	3H-N29		6
ł	Soc hd cap screw,			
	7/16-14 x 1-1/4"		4H-N29	6
30	Bearing cap (LH)	3H-N30	4H-N30	1
31	Reverse clutch shifter shaft		4H-N31	1
32	Table trip lever	3H-N32	4H-N32	1
33	Table trip lever fork pin	3H-N33	4H-N33	1
34	Table trip lever block			
	screw	3H-N34	4H-N34	1
35	Taper pin, #5 x 1-3/4"	3H-N35	4H-N35	1

Item		Code Nos.			
No.	Part Name and Description	зн	4H	Qty.	
36	Acme blue label dowel,				
	3/8 x 2-1/2"	3H-N36	4H-N36	1	
37	Table trip lever block	3H-N37	4H-N37	1	
38	Table trip lever shaft				
	bushing	3H-N38	4H-N38	1	
39	Table trip lever shaft	3H-N39	4H-N39	1	
40	Table trip lever detent	3H-N40	4H-N40	1	
41	Table trip lever link	3H-N41	4H-N41	1	
42	Link pin (long)	3H-N42	4H-N42	1	
43	Link pin (short)	3H-N43	4H-N43	1	
44	Reverse shifter yoke arm	3H-N44	4H-N44	1	
45 46	Clutch shifter arm stud	3H-N45	4H-N45	1	
47	Cotter pin, 1/8 x 1"	3H-N46	4H-N46	1	
41	Taper pin, #4 x 1-3/8"	3H-N47		2	
48	Taper pin, #4 x 1-1/4"		4H-N47	2	
49	Reverse clutch shifter yoke	3H-N48	4H-N48	1	
50	Clutch shifter yoke stop pin	3H-N49	4H-N49	1	
51	Universal swivel block Fil hd screw, 3/8-16 x	3H-N50	4H-N50	1	
	1-1/2" Fil hd screw, 1/2-13 x	3H-N51		2	
	1-1/2"		4H-N51	2	
52	Plug	3H-N52	4H-N52	1	
53	Spring spacer	3H-N53	4H-N53	î	
54	Spring	3H-N54	4H-N54	1	
55	Table trip detent plunger	3H-N55	4H-N55	ī	
56	Detent roller pin	3H-N56	4H-N56	ī	
57	Detent plunger roller	3H-N57	4H-N57	î	
58	Special soc set screw	3H-N58	4H-N58	2	
59 60	Coolant return tube Headless dog pt set screw,	3H-N59	4H-N59	2	
	3/8-16 x 13/16"	3H-N60		1	
	Headless dog pt set screw,	1.00		•	
	3/8-16 x 15/16"		4H-N60	1	
61	Release shaft gear rack	3H-N61	4H-N61	1	
62	Handwheel release shaft			•	
	gear	3H-N62	4H-N62	1	
63	Headless dowel screw	3H-N63	4H-N63	î	
64	Key	3H-N64	4H-N64	i	
65	Coolant pocket block (RH)	3H-N65		1	
66	Fil hd screw, 5/16-18 x				
67	9/16"	3H-N66	4H-N66	2	
	Coolant pocket block (LH)	3H-N67	_	1	
68 69	Saddle extension (LH)	3H-N68	4H-N68	1	
	Fil hd screw	3H-N69	4H-N69	*6	
70	Saddle extension (RH)	3H-N70		1	

^{*3} Used on 4H machines only

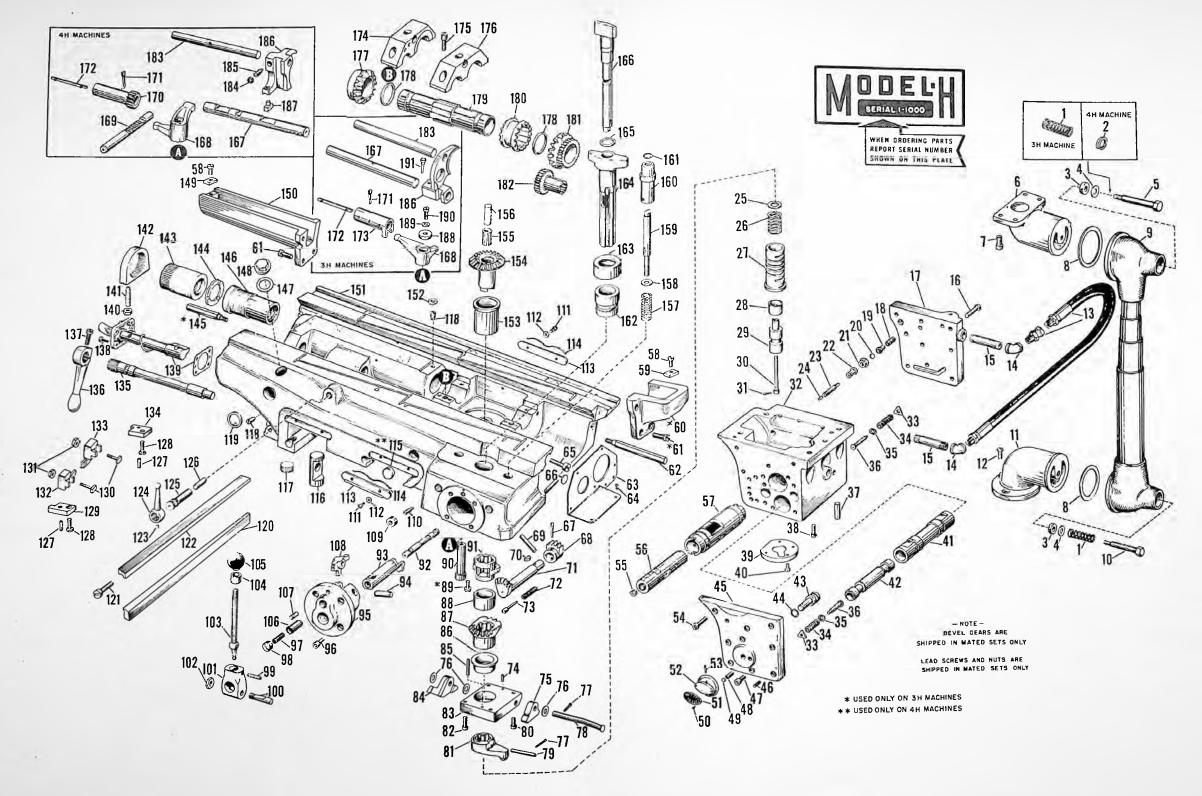


Figure 18. Automatic Cycle Plain Saddle and Hydraulic Valve Body

Plain Saddle and Hydraulic Valve Body

Iter	n	Code Nos.			
No	. Part Name and Description		4H	Qty.	
1	Spring	3H-P1	4H-P1	1	
2	Lockwasher, 5/8"		4H-P2	1	
3	Coolant fitting washer	3H-P3	4H-P3	2	
4	Washer	3H-P4	4H-P4	2	
5	Coolant fitting stud	3H-P5	4H-P5	1	
6	Saddle coolant return				
	elbow	3H-P6	4H-P6	1	
7	Fil hd screw, 3/8-16 x			-	
	13/16"	3H-P7	4H-P7	4	
8	Coolant fitting washer	3H-P8	4H-P8	2	
9	Telescopic coolant return	3H-P9	4H0P9	-	
_	tube assembly	3H-P9	4H-P9	1	
10	Coolant fitting stud	3H-P10		1	
11	Column coolant return	3H-510	4H-P10	1	
11	_	011 011	411 511		
10	elbow	3H-P11	4H-P11	1	
12	Fil hd screw, 1/2-13 x	011 540	411 515		
	15/16"	3H-P12	4H-P12	3	
13	Ario flexible hose and			_	
	fitting, 3/8" ID	3H-P13		1	
14	Elbow, 3/8"	3H-P14	4H-P14	4	
15	WI nipple, 3/8 x 3-1/4"	3H-P15	4H-P15	4	
16	Soc hd cap screw, 3/8 x	*			
	1-1/2"	3H-P16	4H-P16	9	
17	Valve body cover (back)	3H-P17	4H-P17	1	
18	Spring	3H-P18	4H-P18	2	
19	Valve ball guide	3H-P19	4H-P19	2	
20		3H-P20	4H-P20	2	
21	Steel ball, 7/16" dia Valve seat insert	3H-P21	4H-P21	2	
		3H-P21	4n-P21	4	
22	Automatic reverse	011 000	411 7000		
	valve stem bushing	3H-P22	4H-P22	2	
23	Automatic reverse valve				
	stem	3H-P23	4H-P23	2	
24	Automatic reverse				
	valve stem plug	3H-P24	4H-P24	2	
25	Rate piston spring				
	washer	3H-P25	4H-P25	1	
26	Spring	3H-P26	4H-P26	1	
	-	3H-P27	4H-P27	1	
27	Rate cylinder sleeve	3H-P28	4H-P28	1	
28	Rate return piston			1	
29	Rate piston	3H-P29	4H-P29		
30	Rate piston screw	3H-P30	4H-P30	1	
31	Cotter pin, 1/16 x 1"	3H-P31	4H-P3I	1	
32	Control valve body	3H-P32	4H-P32	1	
33	Spring retaining collar	3H-P33	4H-P33	2	
34	Spring	3H-P34	4H-P34	2	
35	Automatic reverse spring				
,,,	retaining washer	3H-P35	4H-P35	2	
	Cowing potaining nin	3H-P36	4H-P36	2	
36	Spring retaining pin	311 1 00	200	- [
37	Acme blue label dowel,	3H-P37	4H-P37	2	
	3/8 x 1-1/4"	011-P31	111-E-01	-	
88	Soc hd cap screw, 7/16 x	077 1000	ALL DOG	_ [
	1-1/4"	3H-P38	4H-P38	5	
9	Rate cylinder retaining			.	
	plate	3H-P39	4H-P39	1	
0	Soc hd cap screw, 1/4 x				
•	5/8"	3H-P40	4H-P40	4	
1	Automatic reverse				
•	valve sleeve	3H-P41	4H-P41	1	
	Automatic reverse valve	3H-P42	4H-P42	1 1	
2	Aumiliant leverse valve	3H-P43	4H-P43	î l	
3	Manual reverse rate valve				
4	"O" Ring, PRP 902-10	3H-P44	4H-P44	1	
5	Valve body cover (front)	3H-P45	4H-P45	1	
6	Soc hd oval pt set screw,				
	5/16 x 5/8"	3H-P46	4H-P46	2	
7	Soc hd cap screw, 3/8 x				
•	3/4"	3H-P47	4H-P47	1	
0		3H-P48	4H-P48	1	
8	Spring Steel ball, 5/16" dia	3H-P49	4H-P49	î	
	STOOL PRINT DIVIDE CLEAN	- 1 IV		- 1	
9 D .	Escutcheon pin, #15	3H-P50	4H-P50	2	

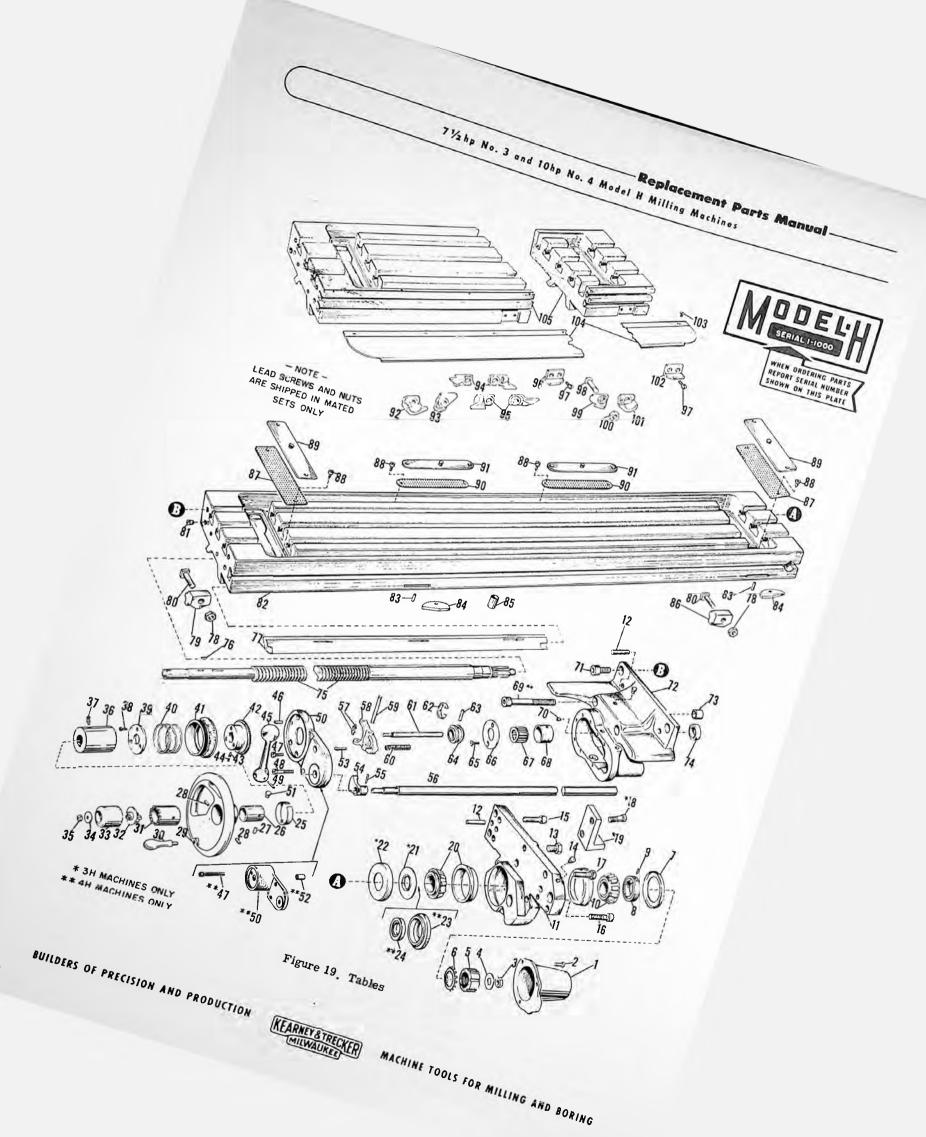
tem	Code Nos.				
No.	Part Name and Description	ЗН	4H	Qty.	
51	Selector knob plate	3H-P51	4H-P51	1	
52	Selector knob	3H-P52	4H-P52	1	
53	Taper pin, #02 x 3/4"	3H-P53	4H-P53	1	
54	Soc hd cap screw, 3/8 x 1"	3H-P54	4H-P54	8	
55	Soc hd pipe plug, 1/4"	3H-P55	4H-P55	1	
56	Table direction piston	3H-P56	4H-P56	1	
57	Table direction cylinder	_			
	sleeve	3H-P57	4H-P57	1	
	AUTOMATIC CYCLE P	LAIN SADI	JLE		
58	Fil hd screw, 5/16-18 x 9/16"	3H-P58	4H-P58	2	
59	Coolant pocket block	011-F 00	411~F30	4	
35	(RH)	3H-P59	4H-P59	1	
60	Saddle extension (RH)	3H-P60		î	
61	Fil hd screw,			-	
-	7/16-14 x 1"	3H-P61	4H-P61	6*	
62	Positive stop	3H-P62	4H-P62	1	
63	Auxiliary drive shaft				
	gear cover	3H-P63	4H-P63	1	
64	Rd hd mach screw,				
	10-32 x 3/8"	3H-P64	4H-P64	3	
65	Gib screw	3H-P65	4H-P65	2	
66	Expansion plug,				
	9/16"	3H-P66		1	
	Expansion plug,				
	5/8"		4H-P67	1	
67	Taper pin screw	3H-P67	4H-P67	1	
68	Table trip lever segment	3H-P68		1	
69	Pin	3H-P69		1	
70	H1-Pro key, HP-604	3H-P70			
71	Shifter bevel gear segment	3H-P71	4H-P71	1	
72	Spring	3H-P72		1	
73	Detent plunger	3H-P73	4H-P73	1	
74	Acme blue label dowel,	011 054	411 1074	,	
75	1/4 x 7/8"	3H-P74	4H-P74	1	
13	Right hand reverse bell crank	3H-P75	4H-P75	1	
76	Washer	3H-P76	4H-P76	3	
77	Cotter pin, 3/32 x 7/8"	3H-P77			
78	Bell crank shaft	3H-P78		1	
79	Automatic reverse lever	JII-F IO	111-1 10	•	
	pin	3H-P79	4H-P79	1	
80	Soc hd screw,	011 1 10		_	
-	5/16 x 5/8"	3H-P80	4H-P80	2	
81	Automatic reverse lever	3H-P81	4H-P81	1	
82	Soc hd cap screw,	011 1 01	101	•	
02	5/16 x 7/8"	3H-P82	4H-P82	2	
83	Bell crank support	3H-P83			
84	Left hand reverse bell				
٠.	crank	3H-P84	4H-P84	1	
85	Acme blue label dowel.				
	1/4 x 1-1/4"	3H-P85	4H-P85	1	
86	Bell crank support bushing	3H-P86	4H-P86	1	
87	Hand trip bevel gear	2 2 3			
	segment	3H-P87	4H-P87	1	
88	Spacing collar	3H-P88	4H-P88		
89	Soc hd cap screw,				
	5/16 x 5/8''	3H-P89		1	
90	Clutch shifter arm stud	3H-P90	4H-P90	1	
91	Feed trip bevel segment	3H-P91	4H-P91	1	
92	Feed and rapid traverse	011 1 01		_	
-	shifter rod	3H-P92	4H-P92	1	
93	Feed and rapid traverse	011 1 02		_	
	Shifter rod sleave and				
	shifter rod sleeve and	3H. D03	4H_D03	1	
94	shifter rod sleeve and pinion Acme blue label dowel,	3H-P93	4H-P93	1	

Item No.	part Name and Description	Code Nos. 3H 4H		Qty.
95	Feed and rapid traverse lever bracket	3H-P95	4H-P95	1
96	Soc hd cap screw, 3/8 x 3/4"	3H-P96	4H-P96	4
97 98	Spring Plug screw,	3H-P97	4H-P97	1
99	3/4-16 x 7/16" Acme blue label dowel,	3H-P98	4H-P98	1
100	5/16 x 1-1/2" Feed and rapid travers.	3H-P99	4H-P99	1
101	lever hub cotter Feed and rapid traverse lever hub (for machines without low lead	3H-P100	4H-P100	1
	attachment) Feed and rapid traverse lever hub (for machines with low lead attach-	3H-P101		11
102 103	ment) Hex nut, 1/2-13 Feed and rapid traverse	3H-P101 3H-P102		11 11
104	lever Feed and rapid traverse	3H-P103	4H-P103	1
. 05	lever chip seal	3H-P104		1
105 106	Shifter lever knob Feed and rapid traverse	3H-P105	4H-P105	1
107	detent plunger Acme blue label dowel,	3H-P106	4H-P106	1
108	3/8 x 7/8" Feed and rapid traverse	3H-P107	4H-P107	1
	bell crank		4H-P108	1
109 110	Soc hd pipe plug, 1/2" Dowel screw		4H-P109 4H-P110	2
111	Wiper screw		4H-P111	8
112	Wiper screw spring		4H-P112	8
113	Knee top bearing wiper		4H-P113	
114 115	Wiper spring		4H-P114 4H-P115	
116	Saddle plug Saddle clamp	3H_D116	4H-P115	1
117	Pipe plug, 3/4"	3H-P117		1
118	Pipe plug, 1/2" Dog pt set screw,		4H-P117	1
119	3/8-16 x 7/8" Bijur oil window,		4H-P118	
120	B-4904 Saddle gib		4H-P119 4H-P120	
121	Gib screw	3H-P12I		
122 123	Saddle gib Soc set screw,		4H-P122	
124	1/4 x 1/4"	3H-P123	4H-P123	
125	Clamp lever Clamp screw		4H-P125	
126 127	Table clamp plug Acme blue label dowel	3H-P126		
128	5/16 x 3/4" Fil hd screw,	3H-P127		
129	3/8-16 x 21/32" Saddle limit step (front)	3H-P128		
130	Saddle limit stop (front) T-Bolt	3H-P129 3H-P130		
131	Hex nut, 7/16-14	3H-P131		_
132	Trip dog (LH)	3H-P132	4H-P132	2 1
133	Trip dog (RH)		4H-P133	
134 135	Saddle limit stop (rear)	3H-P134		
136	Saddle clamp eccentric Saddle clamp lever	3H-P135 3H-P136		
137	Fil hd screw, 3/8-16 x 7/8"	3H-P137		
	Soc hd cap screw,			

Item No.	Part Name and Description	Code No.	s. 4H	Qty.
139	Bijur KIB lubricator			
	pump (1"stroke), C-1957	3H-P139 4		1
140	Hex nut, 1/2-13	3H-P140 4	H-P140	2
141	Rd pt soc set screw,	211 101 41		2
l	1/2-13 x 2-1/2" Rd pt soc set screw,	3H-P141		-
	1/2-13 x 3-1/2"	4	4H-P141	2
142	Adjusting nut yoke	3H-P142 4		1
143	Adjustable table screw			
1,44	nut		4H-P143	1
144 145	Spacer washer Positive stop	3H-P144 3H-P145	4H-P144	1 1
146	Table screw nut		4H-P146	
147	Washer		4H-P147	
148	Oil hole plug	3H-P148		
149	Coolant pocket block (LH)		4H-P149	
150	Saddle extension (LH)	3H-P150	4H-P150	1
151	Saddle	3H-P151		1
			4H-P151	
152	Hex nut, 3/8-16	3H-P152	4H-P152	1
153	Table drive bevel	3H-P153	4H-P153	1
154	gear bearing Table feed drive bevel	3H-P133	411- F133	1
101	gear	3H-P154	4H-P154	1
155	Table drive gear plug	3H-P155	4H-P155	
156	Table drive gear felt	3H-P156	4H-P156	1
157	Spring	3H-P157	4H-P157	2
158	Table reverse plunger			
	washer	3H-P158		
159	Reverse plunger	3H-P159		
160	Reverse plunger sleeve	3H-P160 3H-P161		
161 162	"O" Ring, AN6227-12 Feed trip sleeve	3H-P101	411-FIG	' '
102	bearing	3H-P162	4H-P16	2 1
163	Trip sleeve chip guard	3H-P163		3 1
164	Feed trip sleeve	3H-P164	4H-P16	4 1
165	Neoprene packing	3H-P165		
166	Rate change trip post	3H-P166	4H-P16	
167		3H-P167 3H-P168	4H-P16	
168 169	Reverse shifter yoke arm Release shaft gear rack	3H-P100	4H-P16	
170	Handwheel release			· 1
1 110	shaft gear		4H-P17	0 1
171	Headless dowel screw	3H-P171	4H-P17	1 1
172	Key	3H-P172	4H-P17	2 1
173	Handwheel release shaft			
1	fork	3H-P173		, 1
174		3H-P174		
175	Soc cap screw, 7/16 x 1"	3H-P175		6
	Soc cap screw,		4H-P1	75 6
176	7/16 x 1-1/4'' Bearing cap (RH)	3H-P176		
177		3H-P177		
178		3H-P178	4H-P1	78 2
179	Feed reverse gear sleeve	3H-P179		
180	Table feed reverse clutch	3H-P180		
181	Table screw clutch gear	3H-P181		
182		3H-P182 3H-P183		
183		3H-P100	4H-P1	
184	_	-	111-1-1	
185	3/8-16 x 1"		4H-P1	85 1
100		3H-P186		
186	and the second second second		4H-P1	87 1
188	Bell crank retainer	3H-P18	8	1
189	Lockwasher, 5/16"	3H-P18	9	1
190) Fil hd screw, 5/16-18 x 3,	/4" 3H-P19	0	1
191		3H-P19	1	1

^{*} Only 3 used on 4H machines





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Figure 19. Tables

Item No.	Part Name and Description	Code 3H	Nos. 4H	Qty.	
	and Decemption		***	4-7	
1	Table bracket cover (RH)	3H-Q1	4H-Q1	1	
2	Fil hd screw, 5/16-18 x	•			
	11/16"	3H-Q2		3	
	Fil hd screw, 5/16-18 x				
_	9/16"		4H-Q2	3	
3	Hex nut, 1/2-13"	3H-Q3	4H-Q3	1	
4	Washer, 1/2"	3H-Q4		1	
-	Washer, 1/2"		4H-Q4	1	
5 6	Bearing adjusting nut	3H-Q5	4H-Q5	1	
О	Lockwasher, Timken 3809			1	
7	Lockwasher, #7		4H-Q6	1	
8	Bearing cover	3H-Q7	4H-Q7	1 1	
9	Bearing clutch collar Pin	3H-Q8	4H-Q8	1	
9		3H-Q9	411.00	1	
10	Pin, 1/4 x 5/8"		4H-Q9	1	
10	Timken bearing, 41286B- 41125W	3H-Q10		1	
	Timken bearing, 44348B-	2H-Ø10		1	
	44143W		44 010	1	
11	Table bracket (RH)	2H 011	4H-Q10 4H-Q11	_	
12	Acme Blue Label dowel,	3H-QII	4n-Q11	1	
12	3/8 x 1-1/2"	3H-Q12		4	
	Acme Blue Label dowel,	311-612		7	
	1/2 x 1-3/4"		4H-Q12	4	
13	Table bracket plug	3H-Q13	4H-Q13	1	
14	Gits oiler, RS533	3H-Q14		_	
15	Soc hd cap screw, 1/2 x	311-611	111-6211	-	
15	1-1/2"	3H-Q15	22	2	
	Soc hd cap screw, 5/8 x	311-613		-	
	1-1/2"		4H-Q15	2	
16	Soc hd cap screw, 1/2-13		411-Q10	-	
10	x 1-1/2"	3H-Q16		2	
	Soc hd cap screw, 5/8-13	311-Q10		-	
	x 1-1/2"		4H-Q16	2	
17	Hex hd cap screw, 1/2-13		111 6210	-	
11	x 1-7/8"	3H-Q17		4	
	Hex hd cap screw, 5/8-11	on Q.		•	
	x 1-7/8"		4H-Q17	3	
18	Fil hd screw, 1/2-13 x			•	
10	13/16"	3H-Q18		2	
19	Saddle extension cover	3H-Q19		1	
20	Timken bearing, 41286B-				
20	41125	3H-Q20	22	1	
	Timken bearing, 44348B-				
	44143		4H-Q20	1	
21	Grease retainer	3H-Q21		1	
22	Bearing cover	3H-Q22		1	
23	Oil seal carrier		4H-Q23	1	
-			4H-Q24	1	
24	Gits oil seal, O.S. 1750		_	1	
25	Snap ring	3H-Q45	4H-Q25	1	

Item		Code		
No.	Part Name and Description	3H	4H	Qty.
ļ				
	11 11 11 11	211 026	4H 026	1
26	Handwheel bushing	3H-Q26 3H-Q27	4H-Q26 4H-Q27	1
27	Handwheel retaining pin			2
28	Pin	3H-Q28	4H-Q28	
29	Handwheel	3H-Q29	4H-Q29	1
30	Rockwood handle, #3QA	3H-Q30	4H-Q30	1
31	Clutch in handwheel	3H-Q31	4H-Q31	1
32	Handwheel clutch	3H-Q32	4H-Q32	1
33	Handwheel clutch knob	3H-Q33	4H-Q33	1
34	Clutch washer	3H-Q34	4H-Q34	1
35	Hex nut, 5/16-24"	3H-Q35	4H-Q35	1
36	Graduated dial spacer	3H-Q36	4H-Q36	1
37	Soc dog pt set screw, 5/16			
	x 5/8"	3H-Q37	4H-Q37	1
38	Fil hd screw, 10-32 x 1/2"	3H-Q38	4H-Q38	3
39	Graduated dial spring re-			
	tainer	3H-Q39	4H-Q39	1
40	Spring	3H-Q40	4H-Q40	1
41	Graduated dial	3H-Q41	4H-Q41	1
42	Serrated dial collar	3H-Q42	4H-Q42	1
43	Dog pt set screw, 1/4-20	•	-	
	x 1/2"	3H-Q43	4H-Q43	1
44	Soc set screw, 1/4-20	•		
	x 1/4"	3H-Q44	4H-Q44	1
45	Table reverse lever	3H-Q45	4H-Q45	1
46	Acme Blue Label dowel,	~ -	•	
	1/4 x 1/2"	3H-Q46	4H-Q46	1
47	Fil hd screw, 5/16-18	~	_	
	x 11/16"	3H-Q47		- 4
	Fil hd screw, 5/16-18			
	x 3-3/4"		4H-Q47	3
48	Fil hd screw, 5/16-18			_
	1-1/4"	3H-Q48	4H-Q48	2
49	Taper pin, #2 x 1-3/8"	3H-Q49	4H-Q49	1
50	Table bracket cover (LH)	3H-Q50	4H-Q50	î
51	Gits oiler, RS532	3H-Q51	4H-Q51	î
52	Oilite bearing, A-1110-1		4H-Q52	1
53			-	2
54	Clutch release yoke pin	3H-Q53	4H-Q53	1
	Clutch release cam	3H-Q54	4H-Q54	
55	Taper pin, #2 x 7/8"	3H-Q55	4H-Q55	_ 1
56	Handwheel release shaft	3H-Q56	4H-Q56	1 2
57	Shifter yoke pin	3H-Q57	4H-Q57	
58	Clutch release yoke	3H-Q58	4H-Q58	1
59	Clutch release yoke	011 050	477 050	
	shaft	3H-Q59	4H-Q59	1
60	Spring (Not used in Auto-			
	cycle mach)	3H-Q60	4H-Q60	1
61	Clutch release rod	3H-Q61	4H-Q61	1
62	Snap ring	3H-Q62	4H-Q62	ī
63	Clutch release rod pin	3H-Q63	4H-Q63	î
64	Clutch release plate	3H-Q64	4H-Q64	î
	rerease place	211 601	in Qui	-

Item		Code No		
No.	Part Name and Description	3н	4H	Qty.
65	Flat hd mach screw,			
00	1/4-20 x 5/8"	3H-Q65		2
	Fil hd screw, 10-32 x 1/2"		4H-Q65	2
66	Bearing retainer	3H-Q66	4H-Q66	1
67	Hyatt bearing, 94516	3H-Q67	4H-Q67	1
68	Bearing race	3H-Q68	4H-Q68	1
69	Soc cap screw, 5/8 x 5"		4H-Q69	2
70	Cone pt pin	3H-Q70	4H-Q70	1
71	Fil hd screw, 1/2-13 x			
	1-1/4"	3H-Q71		4
	Soc hd cap screw, 5/8-11			
	x 1-1/2"		4H-Q71	2
72	Table bracket (LH)	3H-Q72	4H-Q72	1
73	Oilite bearing, A-1203	3H-Q73	4H-Q73	1
74	Gits oil seal, O.S1000	3H-Q74	44 074	1
n.c	Gits oil seal, O.S1250	3H_025	4H-Q74	1
75 76	Table screw	3H-Q75	4H-Q75	- 1 2
76	Hi-pro key, HP-606	3H-Q76	4H-Q76	
77	Table gib	3H-Q77	4H-Q77	1
78	Hex nut, 7/16-14"	3H-Q78	4H-Q78	4
79	Table trip dog (LH)	3H-Q79	4H-Q79	2
80	T-Bolt	3H-Q80	4H-Q80	4
81	Pipe plug, 3/4"	3H-Q81	4H-Q81	1
82	Table	3H-Q82	4H-Q82	1 2
83	Limit stop pin	3H-Q83	4H-Q83	2 1
84	Limit block	3H-Q84	4H-Q84 4H-Q85	- 2
85 86	Coolant return tube	3H-Q85	4H-Q85	2
87	Table trip dog (RH)	3H-Q86 3H-Q87	4H-Q87	2
88	Table screen (large) Fil hd screw, 10-32 x 5/16"		4H-Q88	8
89		3H-Q89	4H-Q89	2
90	Table screen cover (large)	3H-Q89	4H-Q89	2
90	Table screen (small) Table screen cover (small)	3H-Q91	4H-Q91	2
*92	Reverse dog (LH)	3H-Q91	4H-Q92	1
*93	Stop dog (LH)	3H-Q92 3H-Q93	4H-Q92	1
*94	Rate change dog "B"	3H-Q94	4H-Q94	2
*95	Rate change dog 'A''	3H-Q95	4H-Q95	2
*96	Table limit block (LH)	3H-Q96	4H-Q96	1
*97	Fil hd screw, 5/16-18			
1	x 11/16"	3H-Q97	4H-Q97	4
*98	T-Bolt	3H-Q98	4H-Q98	8
*99	Stop dog (RH)	3H-Q99	4H-Q99	1
*100	Hex nut, 7/16-20"	3H-Q100	4H-Q100	
*101	Reverse dog (RH)	3H-Q101	4H-Q101	
*102	Table limit block (RH)	3H-Q102	4H-Q102	2 1
*103	Flat hd mach screw,	0	411 0101	, 10
	1/4-20 x 1/2"	3H-Q103	4H-Q103	
*104	Table coolant guard	3H-Q104		
*105	Table (Autocycle)	3H-Q105	4H-Q10	5 1

^{*} For automatic cycle machines only

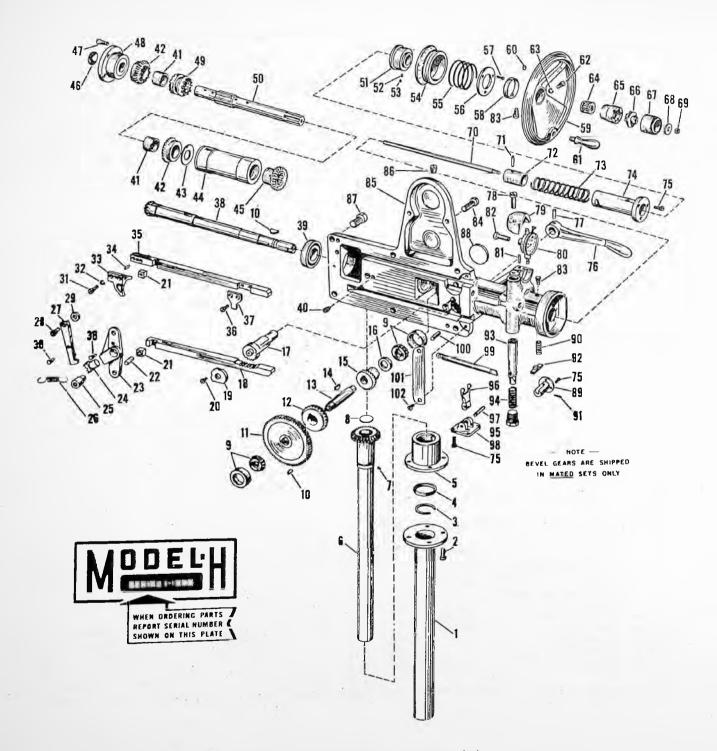


Figure 20. Vertical Head Power Feed Bracket

Figure 20. Vertical Head Power Feed Bracket

Item		Code	Nos.		
No.	Part Name and Description	3H	4H	Qty.	
1	Inner telescopic tube and				
	flange	3H-R1	4H-R1	1	
2	Fil hd screw,	_			
•	3/8-16 x 1-1/16"	3H-R2	4H-R2	4	
3 4	Snap ring	3H-R3	4H-R3	1	
4	Head feed drive gear washer	3H-R4	4H-R4	1	
5	Head feed drive miter	311-104	411-114	•	
_	gear bearing	3H-R5	4H-R5	1	
6	Head feed drive miter	011 110		_	
	gear (upper)	3H-R6	4H-R6	1	
7	Pin, 3/16 x 9/32"	3H-R7	4H-R7	1	
8	Expansion plug,				
	1-3/16" dia	3H-R8	4H-R8	1	
9	Timken bearing,			_	
10	07204B-07079	3H-R9	4H-R9	2	
10 11	Hi-Pro Key, HP-606	3H-R10	4H-R10	2	
12	Head feed take-off gear Vertical head feed	3H-R11	4H-R11	1	
12	miter gear	3H-R12	4H-R12	1	
13	Feed take-off gear shaft	3H-R12	4H-R13	1	
14	Hi-Pro key, HP-706	3H-R14	4H-R14	i	
15	Head feed take-off bevel	011 1111	717 202 1	•	
	gear	3H-R15	4H-R15	1	
16	Fitting washer	3H-R16	4H-R16	7	
17	Head feed starting lever				
	eccentric and pinion	3H-R17	4H-R17	1	
18	Trip plunger (lower)	3H-R18	4H-R18	1	
19	Starting lever bearing	3H-R19	4H-R19		
20	Fil hd screw,			_	
0.1	1/4-20 x 1/2"	3H-R20	4H-R20	3	
21	Trip plunger shoe	3H-R21	4H-R21	2	
22	Acme blue label dowel,	017 700	477 DOG		
23	3/8 x 1" Vertical head feed trip	3H-R22	4H-R22	2	
23	equalizing lever	3H-R23	4H-R23	1	
24	Vertical head trip detent	3H-R24	4H-R24	1	
25	Equalizing lever plug	3H-R25	4H-R25	1	
26	Spring	3H-R26	4H-R26	î	
27	Detent lever	3H-R27	4H-R27	î	
28	Detent lever stud	3H-R28	4H-R28	ī	
29	Detent spacer	3H-R29	4H-R29	ī	
30	Spring post	3H-R30	4H-R30	2	
31	Fil hd screw,				
	5/16-18 x 1"	3H-R31		2	
	Allen hd screw,				
	5/16-18 x 3/4"		4H-R31	2	
32	Lockwasher, 5/16"	3H-R32	4H-R32	2	

Item		Code 1	-	
No.	Part Name and Description	3Н	411	Qty.
33	Head feed clutch shifter	3H-R33	4H-R33	1
34	Acme blue label dowel,			•
1	1/4 x 3/4"	3H-R34	4H-R34	1
35	Trip plunger	3H-R35	4H-R35	1
36	Fil hd screw,			
	5/16-18 x 7/16"	3H-R36	4H-R36	2
37	Trip plunger connecting	3H-R37	411 7000	
20	block Handwheel shaft and bevel	3H-R31	4H-R37	1
38	pinion	3H-R38	4H-R38	1
39	New Departure bearing,	311 1100	111-1130	1
	20206	3H-R39	4H-R39	1
40	Dog pt set screw	3H-R40	4H-R40	î
41	Head feed reverse bevel		_	_
	gear bushing	3H-R41	4H-R41	2
42	Head feed reverse clutch			
	miter gear	3H-R42	4H-R42	2
43	Thrust washer	3H-R43	4H-R43	1
44	Clutch shaft bevel bearing	011 044	411 D44	
45	retainer	3H-R44	4H-R44	1
45	Reverse clutch shaft bevel	3H-R45	4H-R45	1
46	gear Expansion plug, 1-3/8" dia	3H-R45	4H-R45 4H-R46	1
47	Fil hd screw, 3/8-16 x	3H-R47	4H-R47	4
48	Reverse clutch shaft end	VAA A.A.		•
	bearing	3H-R48	4H-R48	1
49	Head feed reverse clutch	3H-R49	4H-R49	1
50	Head feed reverse clutch			
	shaft	3H-R50	4H-R50	1
51	Serrated dial collar	3H-R51	4H-R51	1
52	Soc pt screw, 1/4 x 5/16"	3H-R52	4H-R52	1
53	Soc set screw, 1/4 x 1/4"	3H-R53	4H-R53	1
54	Graduated dial	3H-R54	4H-R54	1
55 56	Spring	3H-R55	4H-R55	1
56	Graduated dial spring	ou nee	AU DEC	1
57	retainer	3H-R56 3H-R57	4H-R56 4H-R57	3
58	Fil hd screw, 10-32 x 1/2"	3H-R58	4H-R58	1
59	Pin retainer spring Head adjusting handwheel	3H-R59	4H-R59	1
60	Handwheel retaining pin	3H-R60	4H-R60	ī
61	Rockwood handle, 3QA	3H-R61	4H-R61	1
62	Adjusting screw	3H-R62	4H-R62	1
63	Lockwasher, 5/16"	3H-R63	4H-R63	1
64	Hyatt bearing, 93416	3H-R64	4H-R64	1
65	Vertical head handwheel			
	clutch	3H-R65	4H-R65	1
66	Handwheel clutch	3H-R66	4H-R66	1
67	Handwheel clutch knob 7/8"	3H-R67	4H-R67	1

		Code N	20	- 1
Item			4H	<u>ль.</u> I
No.	Part Name and Description	3H	411	Qty.
				$\overline{}$
		211 DE0	AU DCO	1
68	Clutch washer	3H-R68	4H-R68	1
69	Hex nut, 5/16-24	3H-R69	4H-R69	_
70	Handwheel release rod	3H-R70	4H-R70	1 1
71	Handwheel release rod pin	3H-R71	4H-R71	1
72	Vertical handwheel release			. 1
	shaft	3H-R72	4H-R72	1
73	Spring	3H-R73	4H-R73	1
74	Handwheel shaft retainer			
	bushing	3H-R74	4H-R74	1
75	Fil hd screw,			
	$1/4-20 \times 1/2$ "	3H-R75	4H-R75	10
76	Head feed starting lever	3H-R76	4H-R76	1
77	Taper pin. #3 x 1-1/2"	3H-R77	4H-R77	1
78	Fil hd screw, 5/16 -			
	18 x 1-1/4"	3H-R78	4H-R78	2
79	Indicator cap	3H-R79	4H-R79	1
	Starrett indicator			
	(standard)	3H-R80	4H-R80	1
81	Acme blue label dowel,			
	1/4 x 1-3/8"	3H-R81	4H-R81	2
82	Fil hd screw, 1/4-28 x 1"	3H-R82	4H-R82	1
83	Gits oiler, RS-532	3H-R83	4H-R83	2
84	Soc cap screw, 3/8 x 1"	3H-R84	4H-R84	2
85	Vertical head power feed			
	bracket	3H-R85	4H-R85	1
86	Plug, 1/2-13 x 1/2"		4H-R86	1
87	Soc cap screw, 5/8 x 1-1/4"		4H-R87	*5
88	Expansion plug, 2-1/4" dia	3H-R88	4H-R88	ī
89	Indicator lever carrier	3H-R89	4H-R89	ī
90	Spring	3H-R90	4H-R90	î
91	Pin	3H-R91	4H-R91	î
92	Indicator lever	3H-R92	4H-R92	î
93	Precision stop plunger	3H-R93	4H-R93	1
94	Spring	3H-R94	4H-R94	1
95	01	3H-R95	4H-R95	1
96	Vertical head handwheel	2u-Kaa	4n-R95	1
1 "	release yoke	811 700	417 700	
97	Polongo water at	3H-R96	4H-R96	1
98	Release yoke pin	3H-R97	4H-R97	1
99	Release yoke carrier plate	3H-R98	4H-R98	1
100	Precision stop tripplunger	3H-R99	4H-R99	1
100	Acme blue label dowel,			_
101	1/2 x 1-1/2"	3H-R100	4H-R100	2
101	Power feed bracket cover			
102	plate	3H-R101	4H-R101	. 1
102	Flat hd screw, 10-32 x			
1	3/8"	3H-R102	4H-R102	2

^{* 6} used on 4H machine

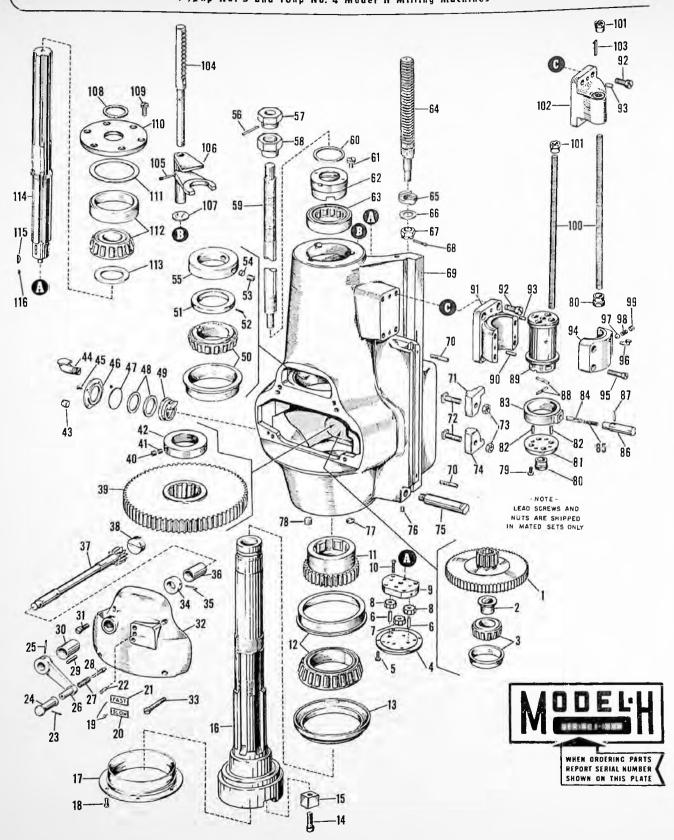


Figure 21. Vertical Head

Figure 21. Vertical Head

.,				
Item			Nos.	
No.	Part Name and Description	3H	4H	Qty.
1	Spindle drive sliding gear	3H-S1	4H-S1	1
2	Bearing sleeve	3H-S2	4H-S2	1
3	Timken bearing, 453-B-461		411-52	î
J	Timken bearing, 453-B-460	3n-33	4H-S3	1
4	Vertical bond ail access			1
5	Vertical head oil pump cover	r 3H-54	4H-S4	1
ə	Fil hd screw,			
	5/16-18 x 11/16"	3H-S5	4H-S5	4
6	Oil pump stud	3H-S6	4H-S6	2
7	Oil pump gear (driver)	3H-S7	4H-S7	1
8	Oil pump gear (driven)	3H-S8	4H-S8	2
9	Vertical head oil pump body	3H-S9	4H-S9	1
10	Fil hd screw, 5/16-18 x 7/8"	'3H-S10	4H-S10	6
11	Small spindle gear	3H-S11	4H-S11	1
12	Timken bearing, 742B-749	3H-S12		1
	Timken bearing,			
	77675B-77375		4H-S12	1
13	Spindle oil slinger	3H-S13	4H-S13	1
14		311-513	411-010	1
14	Fil hd screw, 7/16-14 x 1-1/8"	011 014	411 014	2
4.5		3H-S14	4H-S14	
15	Spindle drive key	3H-S15	4H-S15	2
16	Spindle	3H-S16	4H-S16	1
17	Spindle oil retainer	3H-S17	4H-S17	1
18	Fil hd screw, 5/16-18 x 3/4'	'3H-S18	4H-S18	6
19	Escutcheon pin, #15	3H-S19	4H-S19	4
20	Speed plate (slow)	3H-S20	4H-S20	1
21	Speed plate (fast)	3H-S21	4H-S21	1
22	Acme blue label dowel,			_
	3/8 x 3/4"	3H-S22		1
	Acme blue label dowel,	JII-DZZ	22	-
	3/4 x 1"		4H-S22	1
00				-
23	Taper pin, #2 x 7/8"	3H-S23	4H-S23	1
24	Speed selection knob	3H-S24	4H-S24	1
25	Taper pin, #4 x 1-9/16"	3H-S25	4H-S25	1
26	Pinion shaft lever	3H-S26	4H-S26	1
27	Spring	3H-S27	4H-S27	1
28	Plunger	3H-S28	4H-S28	1
29	Acme blue label dowel,			
	5/16 x 1-1/8"	3H-S29	4H-S29	1
30	Oilite bearing, A-1108	3H-S30	4H-S30	2
31	Fil hd screw, 3/8-16 x		500	_
J.	1-3/8"	3H-S31	0.5	3
		011-031		J
	Fil hd screw, 7/16-14 x		ATT CO.	,
	2-1/4"	011 000	4H-S31	2
32	Vertical spindle head cover	3H-S32	4H-S32	1
33	Fil hd screw, 3/8-16 x			
	1-3/8"	3H-S33		1
	Fil hd screw, 7/16-14 x			
	1-1/4"		4H-S33	2
34	Pinion shaft retainer collar	3H-S34	4H-S34	1
	Taper pin, #4 x 1/2"	3H-S35	4H-S35	î
50	zapos priij ". n s/s	J. 200	111-000	1

74				
Item	Part Name and Description	Code		
No.	Part Name and Description	3H	4H	Qty.
36	Oilite bearing, #A-1108-8	3H-S36	4H-S36	1
37	Gear shifter pinion shaft	3H-S37	4H-S37	î
38	Pipe plug	3H-S38	4H-S38	î
39	Large spindle gear	3H-S39	4H-S39	î
40	Collar nut screw	3H-S40	4H-S40	î
41	Plug	3H-S41	4H-S41	î
42	Spindle lock nut	3H-S42	4H-S42	î
43	Pipe plug, 1/4"	3H-S43	4H-S43	i l
44	Gits oiler, LP-1401	3H-S44	4H-S44	i
45	Oval hd screw, 10-32 x 3/8"		4H-S45	4
46	Oil flow gauge plate	3H-S46	4H-S46	1
47	Oil gauge glass	3H-S47	4H-S47	î
48	Oil gauge washer	3H-S48	4H-S48	2
49	Oil sight washer	3H-S49	4H-S49	1
50	Timken bearing, 742B-750W			1
	Timken bearing, 563B-567W		4H-S50	i
51	Spindle bearing drive collar	3H-S51	4H-S51	1
52	Spindle bearing drive collar	311-231	40-201	•
32	• .	3H-S52	411 050	, !
E 2	pin		4H-S52	1 2
53	Special soc set screw	3H-S53	4H-S53	
54	Collar nut shoe	3H-S54	4H-S54	2
55	Collar nut	3H-S55	4H-S55	1
56	Taper pin, #4 x 1/4"	3H-S56	4H-S56	1
57	Draw bolt head	3H-S57	4H-S57	1
58	Draw bolt nut	3H-S58	4H-S58	1
59	Arbor draw-in bolt	3H-S59	4H-S59	1
60	Spindle oil shield felt	3H-S60	4H-S60	1
61	Fil hd screw, 3/8-16 x 9/16		4H-S61	3
62	Spindle oil shield	3H-S62	4H-S62	1
63	Hyatt bearing, 1310TS	3H-S63	4H-S63	1
64	Head feed screw	3H-S64	4H-S64	1
65	Head feed screw drive			
	washer	3H-S65	4H-S65	1
66	Washer, 7/8"	3H-S66	4H-S66	1
67	Castle nut, 7/8-14	3H-S67	4H-S67	1
68	Cotter pin, 1/8 x 1-3/4"	3H-S68	4H-S68	1
69	Vertical spindle head	3H-S69	4H-S69	1
70	Positive stop pin	3H-S70	4H-S70	2
71	Upper trip dog	3H-S71	4H-S71	1
72	T-Bolt, 7/16-14 x 1-17/32"		4H-572	2
73	Hex nut, 7/16-14	3H-S73	4H-S73	2
74	Lower trip dog	3H-S74	4H-S74	1
75	Clamp rod	3H-S75	4H-S75	1
76	Pipe plug, 1/8"	3H-S76	4H-S76	2
77	Expansion plug, 1-5/8" dia	3H-S77	4H-S77	1
78		3H-S78	4H-S78	1
	Pipe plug, 3/4"	311-010		
79	Fil hd screw, 5/16-18 x	3H-S79	4H-S79	2
0.0	11/16"	211-213		_
80	Precision stop graduated	3H-S80	4H-S80	1
	collar	2U-200		_

Item		Code N		
No.	Part Name and Description	3H	4H	Qty.
81	Precision stop cover	3H-S81	4H-S81	1
81 82	Acme blue label dowel,	D11 D01	411-501	1
04	1/4 x 3/4"	3H-S82	4H-S82	2
0.2	Precision stop adjusting	311-502	411-302	Z
83		3H-S83	4H-S83	1
0.4	ring Precision stop bracket pin	3H-S84	4H-S84	1
84		3H-S85		1
85	Spring	3H-S86	4H-S85	_
86	Precision stop bracket	_	4H-S86	1
87	Taper pin, #00 x 3/4"	3H-S87	4H-S87	1
88	Key	3H-S88	4H-S88	2
89	Precision stop barrel	3H-S89	4H-S89	1
90	Acme blue label dowel,	DYT COO	411 000	
	5/16 x 1-3/4"	3H-S90	4H-S90	2
91	Precision stop bracket	3H-S91	4H-S91	1
92	Fil hd screw, 1/2-13 x			
	1-1/8"	3H-S92	4H-S92	4
93	Acme blue label dowel,			_
	1/2 x 1-1/8"	3H-S93	4H-S93	2
94	Precision stop bracket cap	3H-S94	4H-S94	1
95	Fil hd screw,			
	7/16-14 x 1-1/2"	3H-S95	4H-S95	4
96	Gits oiler, #1204	3H-S96	4H-S96	1
97	Steel ball, 3/8" dia	3H-S97	4H-S97	1
98	Spring	3H-S98	4H-S98	1
99	Headless set screw,			
	7/16-14 x 1/2"	3H-S99	4H-S99	1
100	Precision stop screw	3H-S100	4H-S100	4
101	Locknut, 1/2-20	3H-S101	4H-S101	4
102	Single precision stop			
	bracket	3H-S102	4H-S102	1
103	Key	3H-S103		1
104	Spindle gear shifter rod	3H-S104		1
105	Headless dowel screw	3H-S105		_
106	Spindle gear shifter	3H-S106		
107	Expansion plug, 1-5/8" dia	3H-S107	4H-S107	
108	Counter shaft cover felt	311-5101	5101	-
1	washer	3H-S108	4H-S108	1
109		311-3100	411-0100	•
109	Fil hd screw,	211 6100		4
	3/8-16 x 13/16"	3H-S109		_
110	Hex hd screw, 3/8-16 x 1"		4H-S109	
110	Spindle counter shaft cover	3H-S110	4H-S110	1
111	Counter shaft bearing			
445	adjusting washer	3H-S111		
112	Timken bearing, 522-527	3H-S112		1
	Timken bearing, 612-615		4H-S112	! 1
113	Counter shaft bearing re-			
	taining washer	3H-S113		
114	Spindle counter shaft	3H-S114	4H-S114	
115	Hi-Pro key, HP-606	3H-S115	4H-S115	
116	Hi-Pro key, HP-404	3H-S116		1
	, ,			

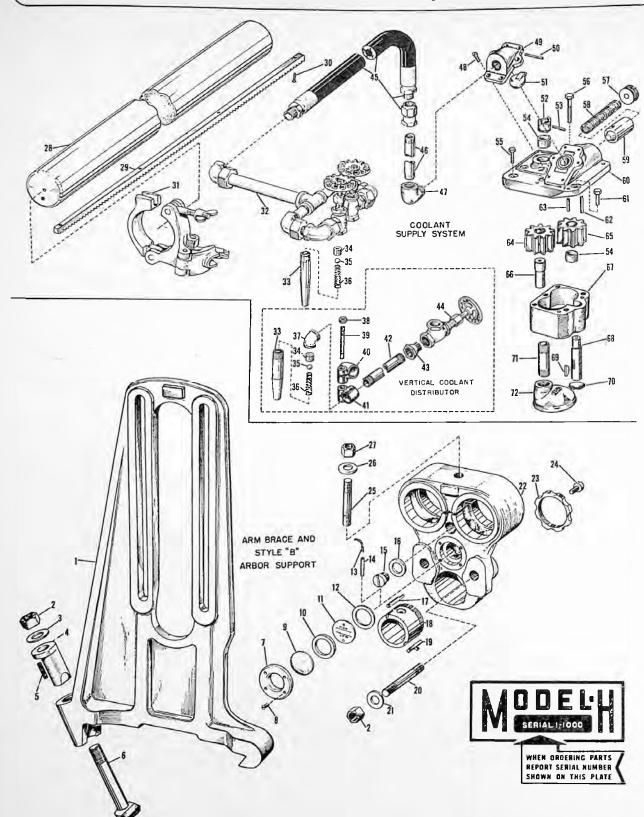


Figure 22. Coolant Supply System, Style B Arbor Support and Arm Brace

Figure 22. Coolant Supply System, Style B Arbor Support and Arm Brace

Item		Code 1	vos	
No.	Part Name and Description		4H	Qty.
1	Arm brace	3H-T1	4H-T1	
2	Hex nut, 5/8-11	3H-T2	4H-T2	1 3
3	Washer	3H-T3	4H-T3	1
4	Clamp sleeve	3H-T4	4H-T4	1
5	Spring	3H-T5	4H-T5	il
6	Clamp stud	3H-T6	4H-T6	i
7	Oil gauge plate	3H-T7	4H-T7	î
8	Oval hd screw,			- 1
	10-32 x 3/8"	3H-T8	4H-T8	4
9	Oil gauge glass	3H-T9	4H-T9	1
10	Oil gauge washer	3H-T10	4H-T10	1
11	Oil gauge plate	3H-T11	4H-T11	1
12	Oil gauge washer	3H-T12	4H-T12	1
13	Oil wicking	3H-T13	4H-T13	AR
14	Copper tube, 1/4 x			
	2-7/8"	3H-T14	4H-T14	1
15	Oil filler plug	3H-T15	4H-T15	1
16	Fiber washer	3H-T16	4H-T16	1
17	Oil retainer	3H-T17	4H-T17	1
18	Arbor support bushing	3H-T18	4H-T18	1
19	Key	3H-T19	4H-T19	1
20	Stud	3H-T20	4H-T20	2
21	Washer	3H-T21	4H-T21	1
22	Style "B" arbor support	3H-T22	4H-T22	1
23	Bushing nut	3H-T23	4H-T23	1
24	Screw	3H-T24	4H-T24	1
25	Stud	3H-T25		1
26 27	Washer Hex nut, 3/4-10	3H-T26 3H-T27	4H-T26 4H-T27	1 1
21	nex nut, 3/4-10	3N-121	4n-121	1
	*OVERARM	S		
*28	Overarm (horizontal			
20	machines only)	3H-T28	4H-T28	2
•29	Overarm rack	3H-T29		2
*30	Fil hd screw,			
	5/16-24 × 11/16"	3H-T30	4H-T30	†8
	COOLANT SUPPLY	SYSTEM		
•31	Coolant distributor clamp			
-91	assembly	3H-T31	4H-T31	1
*32	Distributor complete	3H-T32	4H-T32	î
33	Coolant nozzle	3H-T33	4H-T33	12
34	Nozzle ball retainer	3H-T34	4H-T34	12
3 4 35	Steel ball, 1/2" dia	3H-T35	4H-T35	12
36	Spring	3H-T36	4H-T36	‡2
537	Elbow, 1/2"	3H-T37		
931	Hex nut, 7/16-14	3H-T38		1
639	Stud	3H-T39		1
800				

Item		Code N	los.		
No.	Part Name and Description	3н	4H	Qty	
§40	Coolant pipe clamp	3H-T40	4H-T40	1	
§41	Coolant pipe clamp	3H-T41	4H-T41	1	
§42	Coolant pipe	3H-T42	4H-T42	1	
§43	Reducing bushing, 3/4 x 1/2"	211 7742	477 (010		
544	Angle valve, 3/4"	3H-T43 3H-T44	4H-T43	1	
45	Coolant hose	_	4H-T44	_	
46		3H-T45	4H-T45	1	
40	WI pipe 3/4 x 31" WI pipe 3/4 x 32-1/2"	3H-T46		1	
47	Street ell, 3/4"		4H-T46	1	
48	Fil hd screw,	3H-T47	4H-T47	1	
	1/4-20 x 5/8"	3H-T48	4H-T48	6	
49	Check valve cover	3H-T49	4H-T49	1	
50	Pin for check valve cover	3H-T50	4H-T50	1	
51	Check valve	3H-T51	4H-T51	1	
52	Coolant pump drive clutch	3H-T52	4H-T52	1	
53	Taper pin, #3 x 1-1/16"	3H-T53	4H-T53	1	
54	Iron oilite bearing, SM-576	3H-T54	4H-T54	2	
55	Hex hd screw,	30-134	411-134	2	
JJ	3/8-16 x 1"	3H-T55	AU TEC	_	
56	Hex hd screw,	3n-133	4H-T55	5	
	1/2-13 x 2-3/16"	3H-T56	4H-T56	1	
57	Pipe plug, 1"	3H-T57	4H-T57	1	
58	Spring	3H-T58	4H-T58	1	
59	Coolant relief plunger	3H-T59	4H-T59	1	
60	Coolant pump cover	3H-T60	4H-T60	1	
61	Hex hd screw 1/2-13 x 1-1/8"	211 0001	ATT TOO		
62	Acme blue label dowel,	3H-T61	4H-T61	1	
63	1/4 x 1-1/4" Acme blue label dowel,	3H-T62	4H-T62	1	
	5/16 x 1"	3H-T63	4H-T63	4	
64	Coolant pump gear (idler)	3H-T64		i	
65	Coolant pump gear				
	(driver)	3H-T65	4H-T65	1	
66	Coolant pump gear stud	3H-T66		1	
67	Coolant pump body	3H-T67		1	
68	Coolant pump drive shaft	3H-T68		1	
69	Hi-Pro key, HP-706	3H-T69			
70	Expansion plug 1-1/4" dia	3H-T70			
71	WI nipple, 3/4 x 3"	3H-T71	_	1	
72	Strainer	3H-T72	4H-T72	1	

^{*} Horizontal machines only

^{† 10} used on 4H machines
† 1 used on vertical machines
§ Vertical machines only

AR As required

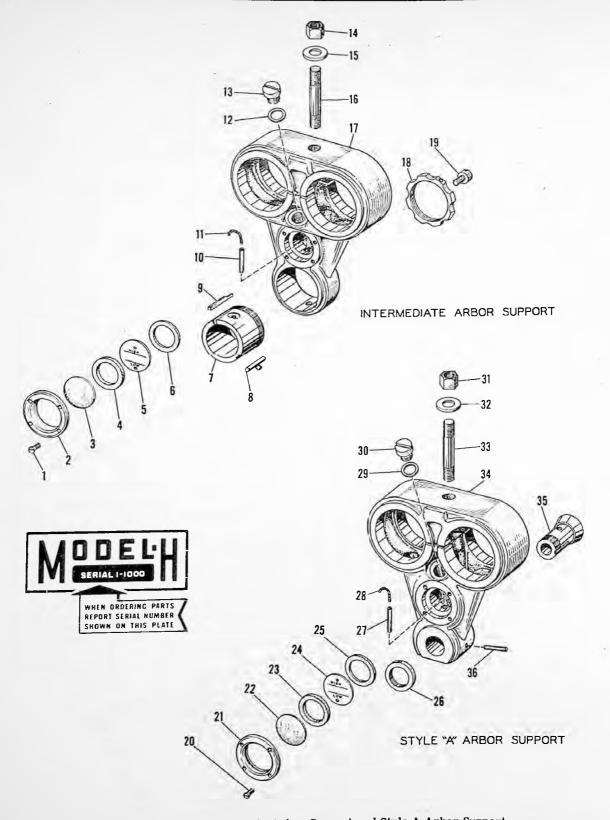


Figure 23. Intermediate Arbor Support and Style A Arbor Support

Figure 23. Intermediate Arbor Support and Style A Arbor Support

Item No.	Part Name and Description	Code N 3H	os. 4H	Qty.
,				
1	Oval hd screw,			
	10-32 x 15/32"	3H-U1	4H-U1	4
2		3H-U2	4H-U2	1
3	Oil gauge glass	3H-U3	4H-U3	1
4	Oil gauge washer	3H-U4	4H-U4	1
5	Oil gauge washer Oil gauge back plate	3H-U5	4H-U5	1
6	Oil gauge washer	3H-U6	4H-U6	1
7	Oil gauge washer Arbor support bushing	3H-U7	4H-U7	1
8	Key	3H-U8	4H-U8	1
9	Oil retainer	3H-U9	4H-U9	1
10	Copper tube,			
	1/4 x 2-5/16"	3H-U10		1
	Copper tube,			
	1/4 x 2-1/4"		4H-U10	1
11	Oil wicking	3H-U11	4H-U11	1
12	Fiber washer	3H-U12	4H-U12	1
13	Oil filler plug	3H-U13	4H-U13	1
14	Hex nut, 3/4-10	3H-U14		ī
15	Washer, 3/4"	3H-U15	4H-U15	ī
16	Washer, 5/4	3H_1116	4H-II16	1
	Stud Intermediate arbor support	211 1117	4H-1117	î
17	Duebles and Support	311-011	4H-U18	1
18	Bushing nut	30-010	40-010	
19	Fil hd screw,	277 7710	4H-U19	1
	3/8-16 x 11/16''			•
	STYLE "A" ARBOR	SUPPORT		
20	Oval hd screw,			
	10-32 x 15/32''	3H-U20		4
21	Oil gauge plate	3H-U21	4H-U21	1
22	Oil gauge glass	3H-U22	4H-U22	1
23	Oil gauge washer	3H-U23	4H-U23	1
24	Oil gauge back plate	3H-U24		1
25	Oil gauge washer	3H-U25	4H-U25	1
26	Bushing nut	3H-U26	4H-U26	1
27	Copper tube, 1/4 x 3"	3H-U27		1
	Copper tube, 1/4 x 3-7/8"		4H-U27	1
28	Oil wicking	3H-U28		
29	Fiber washer	3H-U29		
30	Oil filler plug	3H-U30		
31	Hex nut, 3/4-10	3H-U31		_
32	Washer, 3/4"	3H-U32		_
_	Stud	3H-U33		
33	Style "A" arbor support	3H-U34		
34			4H-U35	
35 36	Bushing Pin	3H-U36		
		217-030		

7 ½ hp No. 3 and 10hp No. 4 Model H Milling Machines

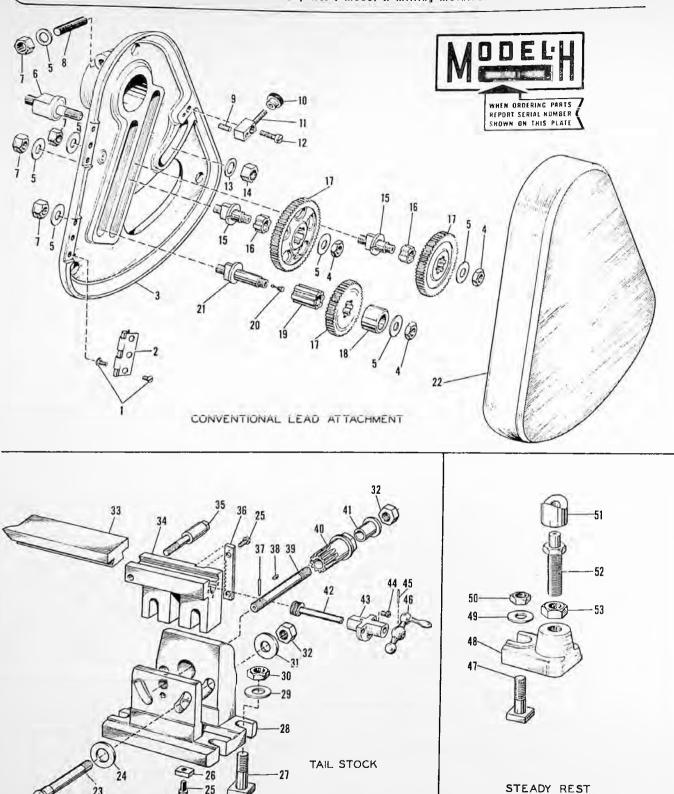


Figure 24. Conventional Lead Attachment, Tail Stock and Steady Rest

Figure 24. Conventional Lead Attachment, Tail Stock and Steady Rest

Thom:				
Item No.	Part Name and Description	Code:	Nos. 4H	Qty.
	CONVENTIONAL LEAD A	ттаснм	ĖNT	_
1	Flat hd screw, 10-32 x 1/2"	3H-V1	4H-V1	12
2	Butt hinge, #800 Stanley	3H-V2	4H-V2	2
3	Change gear bracket	3H-V3	4H-V3	1
4	Hex nut, 1/2-13	3H-V4	4H-V4	3
5	Washer, 1/2"	3H-V5	4H-V5	7
6	Change gear bracket stud	3H-V6	4H-V6	1
7	Hex nut, 1/2-13	3H-V7	4H-V7	4
8 9	Stud	3H-V8	4H-V8	1
ย	Acme blue label dowel,			
10	1/4 x 7/8" Knurled nut	3H-V9	4H-V9	1
11	Door lock bolt	3H-V10	4H-V10	1
12	Fil hd screw, 5/16-18 x 1"	3H-V11	4H-V11	1
13	Washer	3H-V12	4H-V12	1
14	Hex nut	3H-V13	4H-V13	1
15	Idler stud	3H-V14	4H-V14	1
16	Splined bushing (short)	3H-V15 3H-V16	4H-V15	2 2
17	Change gears	3H-410	4H-V16	2
11	Change gear, 24T - 12P	3H-V17	4H-V17	1
	Change gear, 28T - 12P	3H-V17	4H-V18	1
	Change gear, 32T - 12P	3H-V19	4H-V19	1
	Change gear, 40T - 12P	3H-V20	4H-V20	1
	Change gear, 44T - 12P	3H-V21	4H-V21	1
	Change gear, 48T - 12P	3H-V22	4H-V22	2
	Change gear, 56T - 12P	3H-V23	4H-V23	1
	Change gear, 64T - 12P	3H-V24	4H-V24	î
	Change gear, 72T - 12P	3H-V25	4H-V25	î
	Change gear, 86T - 12P	3H-V26	4H-V26	i
	Change gear, 100T - 12P	3H-V27	4H-V27	î
18	Spacing collars			•
10	Spacing collar (small)	3H-V28	4H-V28	1
	Spacing collar (large)	3H-V29	4H-V29	î
19	Splined bushing (long)	3H-V30	4H-V30	ī
20	Gits oiler, RS-531	3H-V31	4H-V31	î
21	Differential index compound			•
	stud	3H-V32	4H-V32	1
22	Change gear bracket cover	3H-V33	4H-V33	î
				-

Item Code Nos				
No.	Part Name and Description	Code 1 3H	Nos. 4H	Qty
	TAILSTOCK			
23	Clamp screw	3H-V34	4H-V34	2
24	Washer, 5/8	3H-V35	4H-V35	2
25	Fil hd screw, 5/16-18 x			
	11/16"	3H-V36	4H-V36	4
26	Tongue	3H-V37	4H-V37	2
27	T-Bolt	3H-V38	4H-V38	4
28	Tailstock	3H-V39	4H-V39	1
29	Washer, 5/8"	3H-V40	4H-V40	4
30	Hex nut, 5/8-11	3H-V41	4H-V41	4
31	Washer, 5/8"	3H-V42	4H-V42	2
32	Hex nut, 3/4"	3H-V43	4H-V43	3
33	Center	3H-V44	4H-V44	1
34	Center block	3H-V45	4H-V45	1
35	Center locking screw	3H-V46	4H-V46	1
36	Elevating rack	3H-V47	4H-V47	1
37	Taper pin, #1 x 1-1/8"	3H-V48	4H-V48	1
38	Hi-Pro key, HP-504	3H-V49		1
39	Clamping stud	3H-V50	4H-V50	1
40	Elevating rack pinion	3H-V51	4H-V51	1
41	Sleeve	3H-V52	4H-V52	1
42	Center adjusting worm	3H-V53	4H-V53	1
43 44	Worm sleeve Fil hd screw, 1/4-20 x	3H-V54	4H-V54	1
	1/2"	3H-V55	4H-V55	3
45	Taper pin, #1 x 13/16"	3H-V56		1
46	Ball crank, #00	3H-V57	4H-V57	1
	STEADY RE	ST		
47	T-Bolt	3H-V58	4H-V58	1
48	Steady rest base	3H-V59	4H-V59	1
49	Washer, 5/8"	3H-V60	4H-V60	1
50	Hex nut, 5/8"	3H-V61	4H-V61	1
51	Steady rest vee block	3H-V62	4H-V62	1
52	Steady rest adjusting			
	screw	3H-V63	4H-V63	1
53	Hex nut, 3/4-10	3H-V64		1

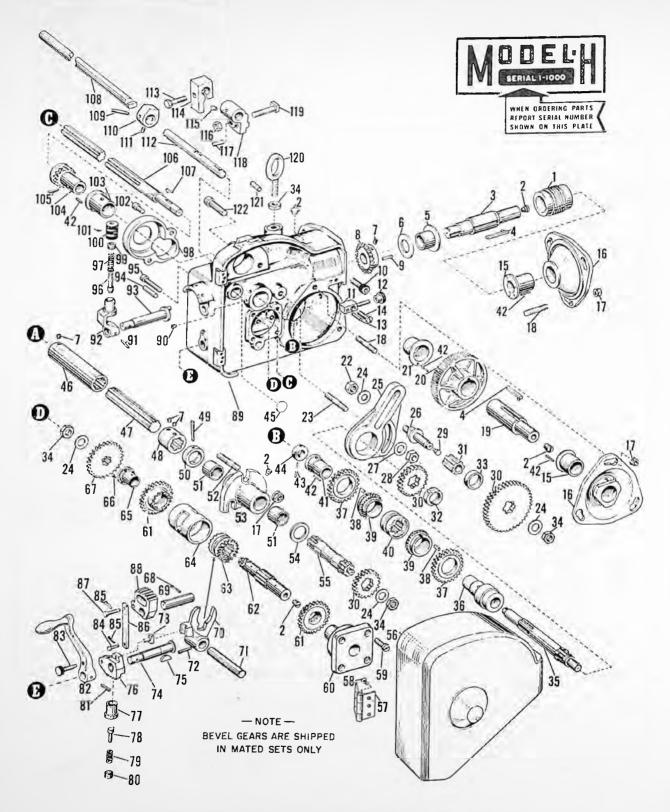


Figure 25. Low Lead Attachment

Figure 25. Low Lead Attachment

Item		Code Nos.		
No.	Part Name and Description		4H	Qty.
1	Worms			
•	Worm 24-1	3H-W1	4H-W1	1
	Worm 96-1	3H-W2	4H-W2	1
	Worm 24-8	3H-W3	4H-W3	î
2	Gits oiler, RS-533	3H-W4	4H-W4	9
3	Worm and worm			
	wheel shaft	3H-W5	4H-W5	1
4	Key	3H-W6	4H-W6	2
5	Worm and worm wheel			
	shaft bushing	3H-W7	4H-W7	1
6	Reverse bevel gear			
	washer	3H-W8	4H-W8	1
7	Soc dog pt screw,			
	5/16 x 5/16"	3H-W9	4H-W9	4
8	Reverse bevel gear	3H-W10	4H-W10	1
9	Key	3H-W11	4H-W11	1
10	Soc cap screw, 1/2-13 x			
	1-1/2"	3H-W12		2
	Soc cap screw, 5/8-13 x			
	1-1/2"		4H-W12	2
11	Door lock bolt	3H-W13		1
12	Knurled nut	3H-W14	4H-W14	1
13	Acme blue label dowel,			
	1/4 x 7/8"	3H-W15		1
14	Fil hd screw, 5/16-18 x 1"	3H-W16	4H-W16	1
15	Worm and worm wheel	_		_
	support bearing bushing	3H-W17	4H-W17	2
16	Worm and worm wheel			_
	support bearing	3H-W18		2
17	Hex collar nut	3H-W19		9
18	Stud	3H-W20		6
19	Table screw extension	3H-W21	4H-W21	1
20	Worm wheels	0		
	Worm wheel 24-1	3H-W22		1
	Worm wheel 96-1	3H-W23		1
0.1	Worm wheel 24-8	3H-W24	4H-W24	1
21	Table screw extension	0	417 17105	
0.0	bushing	3H-W25		1
22	Hex nut, 1/2-13	3H-W26		1
23	Stud	3H-W27		1
24	Washer, 1/2"	3H-W28		4
25	Change gear arm	3H-W29		1
26	Change gear stud	3H-W30		1
27	Washer, 1/2"	3H-W31		1
28	Hex nut	3H-W32		1
29	Gits oiler, RS-531	3H-W33	4H-W33	1
30	Change gears	011 1107	417 1110 1	
	Change gear 20T 10P			2
	Change gear 21T 10P	3H-W35		1
	Change gear 22T 10P	3H-W36	4H-W36	1
	Change gear 23T 10P		4H-W37	1
	Change gear 24T 10P	3H-W38	4H-W38	1
	Change gear 25T 10P	3H-W39	4H-W39	1
	Change gear 26T 10P	3H-W40	4H-W40	1
	Change gear 27T 10P	3H-W41	4H-W41	1
	Change gear 28T 10P	3H-W42	4H-W42	1
	Change gear 29T 10P	3H-W43	4H-W43	1
	Change gear 30T 10P	3H-W44	4H-W44	1
	Change gear 32T 10P	3H-W45	4H-W45	1
	Change gear 34T 10P	3H-W46	4H-W46	1
	Change gear 36T 10P	3H-W47	4H-W47	1
	Change gear 38T 10P	3H-W48	4H-W48	1
	10m 10m	211 11/40		
	Change gear 40T 10P	3H-W49	4H-W49	1
31 8	Change gear 40T 10P Splined bushing	3H-W49	4H-W49	1

Item	n t North and Donnielin	Code 1		
No.	Part Name and Description	3Н	4H	Qty.
33	Casaina aollan	511 IVE 0		
	Spacing collar	3H-W52	4H-W52	1
34	Hex nut, 1/2-13	3H-W53	4H-W53	4
35	Hand crank shaft	3H-W54	4H-W54	1
36	Hand crank shaft support			
	bearing	3H-W55	4H-W55	i
37	Hand crank shaft spur gear	3H-W56	4H-W56	2
38	Key	3H-W57	4H-W57	2
39	Reverse clutch bevel	U	371 - AFO 1	4
-	gear	3H-W58	4H-W58	•
40	Reverse clutch	3H-W59		2
41	Hand crank shaft	311 ~ M 02	4H-W59	1
4.7	bushing	211 11160		
42		3H-W60	4H-W60	1
	Pin, 1/8 x 1/2"	3H-W61	4H-W61	5
43	Taper pin, #2 x $1-1/4$	3H-W62	4H-W62	1
44	Hand crank shaft collar	3H-W63	4H-W63	1
45	Expansion plug, 1" dia	3H-W64	4H-W64	î
46	Spiral head drive shaft			_
	connector (long)	3H-W65	4H-W65	1
47	Spiral head drive shaft	J11- 11-00	411-1100	1
11	extension	211 11156	*** 11100	
4.0		3H-W66	4H-W66	1
48	Spiral head drive shaft			
	(short)	3H-W67	4H-W67	1
49	Taper pin, #4 x 1-5/8"	3H-W68	4H-W68	1
50	Spiral head drive shaft			
	collar	3H-W69	4H-W69	1
51	Spiral head drive shaft			
0 -	support bracket bushing	3H-W70	4H-W70	2
52	Stud	3H-W70		3
		3H - M 11	4H-W71	J
53	Spiral head drive shaft		1/20	
	support bracket	3H-W72	4H-W72	1
54	Spiral head drive shaft			
	washer	3H-W73	4H-W73	3
55	Spiral head drive shaft	3H-W74	4H-W74	1
56	Spiral change gear box	0		
0.5	cover	3H-W75	4H-W75	1
57				2
57	Stanley butt hinge, No.800	3H-W76	4H-W76	4
58	Flat hd screw, 10-32 x		2017	
	1/2"	3H-W77	4H-W77	12
59	Fil hd screw, 3/8-16 x			
_	5/8"	3H-W78	4H-W78	4
60	•	011		
UU	Reverse gear shaft	3H-W79	4H-W79	1
21	bearing (RH)		4H-W80	2
61	Reverse gear	3H-W80		1
62	Reverse gear shaft	3H-W81	4H-W81	
63	Reverse gear shaft clutch	3H-W82	4H-W82	1
64	Reverse gear spacer	3H-W83	4H-W83	1
65	Reverse gear shaft			
	bearing (LH)	3H-W84	4H-W84	1
66		U11		
00	Flat hd screw, 3/16-32 x	3H-W85	4H-W85	3
	1/2"	3H-W00	411-11-1	
67	Reverse shaft driving	****	*** *** \$1/86	1
	gear	3H-W86	4H-W86	1
68	Cotter pin, 7/64 x 1"	3H-W87	4H-W87	1
69	Trip segment shaft	3H-W88	4H-W88	1
70	Clutch shifter	3H-W89	4H-W89	1
71	Clutch shifter shaft	3H-W90	4H-W90	1
		3H-W91	4H-W91	1
72	Taper pin set screw	3M-11-27	311	
73	Detent block shifter	11100	4H-W92	1
	shoe	3H-W92	4H-W-2	1
74	Direction lever shaft	3H-W93	4H-W93	
75	Hi-Pro key, HP-706	3H-W94	4H-W94	1
76	Detent block	3H-W95	4H-W95	1
77	Detent plunger sleeve	3H-W96	4H-W96	1
		3H-W97	4H-W97	1
78	Detent plunger	311-110.	***	

Y40-m		Code N	os.	1
Item No.	Part Name and Description	3H	4H	Qty.
140.				1
79	Detent spring	3H-W98	4H-W98	1
80	Detent nlunger screw	3H-W99	4H-W99	1
81	Taper pin, #3 x 1-1/8"	3H-W100	4H-W100	1
82	Direction lever and			
	handle	3H-W101	4H-W101	1
83	Knurled head screw	3H-W102	4H-W102	1
84	Connecting link pin		441 1114 00	,
	(short)	3H-W103	4H-W103	1
85	Cotter pin, 3/32 x 3/4"	3H-W104		1
86	Connecting link	3H-W105	4H-W105	•
87	Connecting link pin	3H-W106	4H-W106	1
0.0	(long)	3H-W100	4H-W100	1
88	Trip segment Spiral change gear box	3H-W108		1
89 90	Dog pt set screw, 1/4-20 x	011-11100	-11 11 100	
90	15/32''	3H-W109	4H-W109	1
91	Taper pin, #2 x 1-1/16"	3H-W110		
92	Selection lever	3H-W111		
93	Reverse eccentric shaft	3H-W112		
94	Acme blue label dowel,			
	3/8 x 2-1/4"	3H-W113		1
	Acme blue label dowel,			
	1/2 x 2-1/2"		4H-W113	1
95	Soc cap screw, $1/2-13 x$			
	2''	3H-W114		1
96	Selection lever plunger	3H-W115		
97	Spring	3H-W116		
98	Clutch shaft gear guard	3H-W117		
99	Plunger guide	3H-W118		
100	Selection lever knob	3H-M119	4H-W119	. 1
101	Cone pt set screw, 8-32 x	20 10100	4H-W120) 1
100	3/8"	3H-W120 3H-W121		
102	Soc cap screw, 1/2 x 1"	311-W1Z1	411-44151	-
103	Auxiliary drive shaft	3H-W122	4H-W122	1
104	bushing	311- W I ZZ	111 1112	
104	Auxiliary drive shaft bushing pinion	3H-W123	4H-W123	1
105	Taper pin, #4 x 1-1/16"	3H-W124		
106	Auxiliary drive shaft	3H-W125		
107	Hi-Pro key, HP-906	3H-W126		
108	Trip shaft	3H-W127	4H-W127	1
109	Taper pin, #4 x 1-3/8"		4H-W128	
110	Trip shaft key	3H-W129		
111	Soc set screw, 1/4-20 x			
	1/4"		4H-W130	
112	Trip rack	3H-W131	4H-W131	1
113	Hex hd screw, 3/8-16 x			
	1-1/4"	3H-W132		
114	Trip dog	3H-W133		
115	Gits oiler, RS-531	3H-W134	4H-W134	
116	Hex nut, 7/16-14	3H-W135	4H-W135	5 2
117	Acme blue label dowel,		411 11/1 04	5 2
Ì	1/4 x 1-1/2"	3H-W136	4H-W136	2 ر
118	Trip shaft support	011 111100	AU 11/1 25	7 2
	bracket	3H-W137	4H-W13	8 1
119	T-bolt	3H-W138	4H-W138	9 1
120	Eye bolt, 1/2"	3H-M139	4U-M19:	•
121	Acme blue label dowel,	311, 10140		1
	3/8 x 1-3/8"	3H-W140	7.7	
	Acme blue label dowel,		4H-W140) 1
	1/2 x 1-1/2"		-41-1111	
122	Soc cap screw, 1/2 x	3H-W141		1
	2-1/2",	011 (1111		
	Soc cap screw, 1/2 x		4H-W14	1 1
1	2-14"			
1				

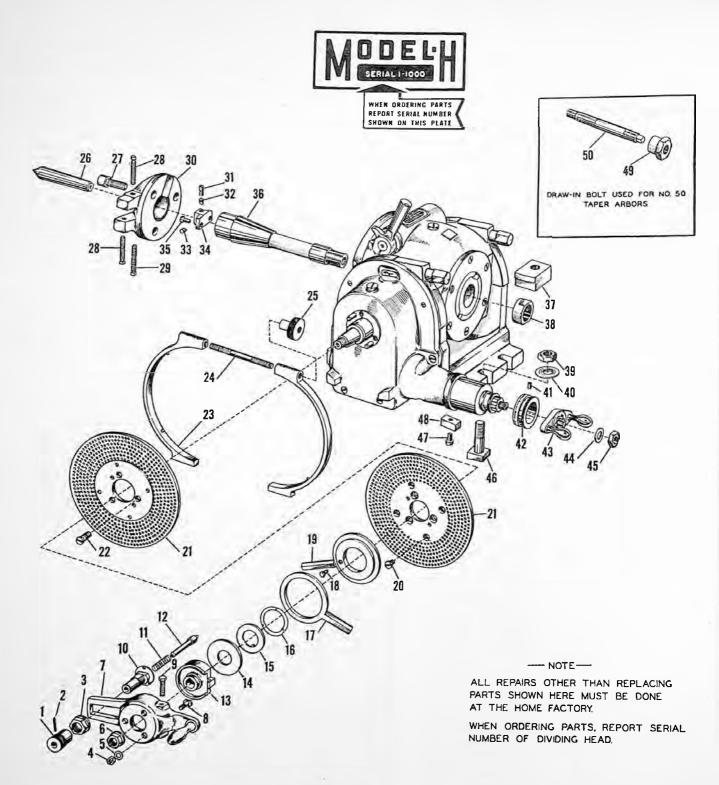


Figure 26. Model K Dividing Head



Figure 26. Model K Dividing Head

Item No.	Part Name and Description	Code 1		
	Tart Name and Description	3H	4H	Qty.
1	Index plunger knob	3H-X1	4H-X1	1
2	Taper pin, #1 x 1-1/16"	3H-X2	4H-X2	ī
3	Clamp nut	3H-X3	4H-X3	1
4	Hex nut, 3/8-16	3H-X4	4H-X4	3
5	Washer, 3/8"	3H-X5	4H-X5	3
6	Clamp nut	3H-X6	4H-X6	1
7	Index crank	3H-X7	4H-X7	1
8	Tee bolt, 3/8-16 x			
	13/16"	3H-X8	4H-X8	3
9	Adjusting screw,			
	3/8-24 x 1-1/8"	3H-X9	4H-X9	2
10	Index plunger sleeve	3H-X10	4H-X10	1
11	Spring	3H-X11	4H-X11	1
12	Index plunger	3H-X12	4H-X12	1
13	Index crank adjusting lever	3H-X13	4H-X13	1
14	Index crank back plate	3H-X14	4H-X14	1
15	Spring retainer	3H-X15	4H-X15	1
16	Spring	3H-X16	4H-X16	1
17	Index finger	3H-X17	4H-X17	1
18	Hex hd screw, 10-32 x			
	1/16"	3H-X18	4H-X18	1
19	Index finger	3H-X19	4H-X19	1
20	Fil hd screw, 5/16-18 x			
	7/16"	3H-X20	4H-X20	4
21	Index plates			
	Index plate, 100-96-92-84-		*** ***	
	72-66-60	3H-X21	4H-X21	1
	Index plate, 98-88-78-76-	077 3700	411 1/00	,
	68-58-54	3H-X22	4H-X22	1
	Index plate, 99-91-83-77-	3H-X23	4H-X23	1
	69-62-56	JH-AZJ	4H-A23	1
	Index plate, 94-87-81-73-	3H-X24	4H-X24	1
	64-59-52	JU-774	4U-V74	1
	Index plate, 97-89-82-74- 67-61-53	3H-X25	4H-X25	1
	• • • • • •	JH-A20	4D-V52	•
	Index plate, 93-86-79-	3H-X26	4H-X26	1
	71-63-57-51	3H-Y70	4H-A40	1

Item		Code 1	-	1
No.	Part Name and Description	311	4H	Qty.
22	Fil hd screw, 3/8-16 x			
	1-3/32"	3H-X27	4H-X27	3
23	Index plate clamp ring	3H-X28	4H-X28	1
24	Stud	3H-X29	4H-X29	1
25	Knurled nut	3H-X30	4H-X30	1
26	Center	3H-X31	4H-X31	1
27	Allen hd screw, 5/8 x			
	1-1/2"	3H-X32	4H-X32	3
28	Sq hd set screw, 3/8-16 x			
	3/4"	3H-X33	4H-X33	2
29	Sq hd set screw, 3/8-16 x			
	1"	3H-X34	4H-X34	1
30	Driving dog	3H-X35	4H-X35	1
31	Spindle drive key screw	3H-X36	4H-X36	1
32	Expansion key plug	3H-X37	4H-X37	1
33	Expansion wedge key	3H-X38	4H-X38	1
34	Spindle drive expansion			
	key	3H-X39	4H-X39	1
35	Fil hd screw, 1/4-20 x			
	11/16"	3H-X40	4H-X40	2
36	Centering plug	3H-X41	4H-X41	1
37	Clamp block	3H-X42	4H-X42	1
38	Nut	3H-X43	4H-X43	1
39	Hex nut, 5/8-11	3H-X44	4H-X44	5
40	Washer, 5/8"	3H-X45	4H-X45	5
41	Allen set screw, 5/16-18 x			
	3/8"	3H-X46	4H-X46	1
42	Graduated collar	3H-X47	4H-X47	1
43	Crank	3H-X48	4H-X48	1
44	Washer, 1/2"	3H-X49	4H-X49	1
45	Hex nut, 1/2-13	3H-X50	4H-X50	1
46	Tee bolt	3H-X51	4H-X51	5
47	Fil hd screw, 5/16-18 x			_
	11/16"	3H-X52	4H-X52	2
48	Vise tongue	3H-X53	4H-X53	2
49	Draw bolt head	3H-X54	4H-X54	1
50	Draw-in bolt	3H-X55	4H-X55	1
		011-V00	111-AJJ	•

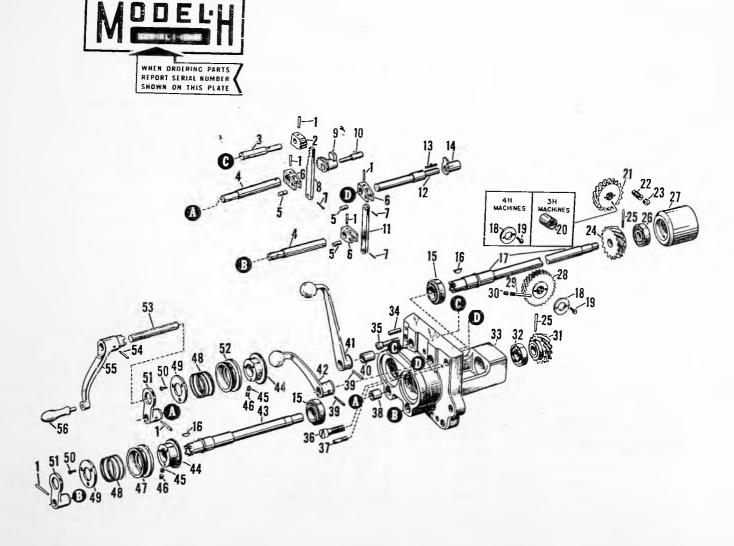


Figure 27. Rear Control On Knee

Figure 27. Rear Control On Knee

				
Item		Code	Vac	
No.	Part Name and Description	Code I	NOS. 4H	Qty.
				· · · · · ·
1 ,	To			
1 2	Taper pin, #3 x 1-1/8"	3H-Y1	4H-Y1	6
-	Cross feed rear control	211 110	411 710	
3	lever segment Cross feed rear control	3H-Y2	4H-Y2	1
Ιĭ	lever shaft	3H-Y3	4H-Y3	1
4	Crank guard shaft	3H-Y4	4H-Y4	2
5	Clevis pin	3H-Y5	4H-Y5	3
6	Clevis joint	3H-Y6	4H-Y6	3
7	Cotter pin, 3/32 x 1"	3H-Y7	4H-Y7	3
8	Clevis joint rack	3H-Y8	4H-Y8	1
9	Cross feed trip rod segment		4H-Y9	1
10	Cross feed trip rod segment			
	shaft	3H-Y10	4H-Y10	1
11	Link	3H-Y11	4H-Y11	1
12	Vertical feed rear			
	control lever shaft	3H-Y12	4H-Y12	1
13	Key	3H-Y13	4H-Y13	1
14	Vertical feed lever shaft	:		
١	arm	3H-Y14	4H-Y14	1
15	New Departure bearing,	211 115	4H-Y15	2
٠, ا	88506	3H-Y15 3H-Y16	4H-Y15	2
16	Hi-Pro key, HP-505	2U-110	411-110	4
17	Cross feed rear control shaft	3H-Y17	4H-Y17	1
18	Spiral gear thrust	011-111	-11 1-1	-
10	collar	3H-Y18	4H-Y18	*1
19	Fil hd screw, 3/16-32 x3/8'		4H-Y19	†2
20	Spacer and oil sealed	-11 120		,
l -~	sleeve	3H-Y20		1
21	Cross feed rear control			
	spiral gear (driven)	3H-Y21	4H-Y21	1
22	Dog pt set screw, 3/8-16 x			
	1-3/16"	3H-Y22		1
	Dog pt set screw, 1/2-13 x			
	1-3/8''		4H-Y22	1
23	Soc set screw, 3/8 x 3/8"	3H-Y23		1
	Soc set screw, 1/2 x 1/4"		4H-Y23	1
24	Cross feed rear control			
	spiral gear (driver)	3H-Y24	4H-Y24	1
25	Taper pin, #4 x 1-7/8"	3H-Y25	4H-Y25	2
26	New Departure bearing,	ATT 1700	ATT 3/06	1
	3304	3H-Y26	4H-Y26	1
27	Cross feed spiral gear	211 1/07	4H-Y27	1
	bearing carriage	3H-Y27	4H-12/	1
28	Vertical rear control	2H A30	4H-Y28	1
	spiral gear (driven)	3H-Y28 3H-Y29	411-120	1
29	Soc set screw, 3/8 x 3/8"	JH-129	4H-Y29	1
1	Set screw, 3/8 x 1/2"		711-123	

Item		Code N		
No.	Part Name and Description	3H	4н	Qty.
30	Dowel screw	3H-Y30	4H-Y30	1
31	Vertical rear control			. 1
20	spiral gear (driver)	3H-Y31	4H-Y31	1
32	New Departure bearing, 3205	3H-Y32	4H-Y32	1 l
33	Rear control bracket	3H-Y33	4H-Y33	î
34	Acme Blue Label dowel,			1
•	1/2 x 2"	3H-Y34	4H-Y34	2
35	Fil hd screw, 1/2 x			. 1
	1-11/16"	3H-Y35	4H-Y35	4
36	Fil hd screw, 1/2-13 x	3H-Y36	4H-Y36	1
37	1-1/2" Soc set screw, 3/8 x	311-130	411-130	1
31	1-1/4"	3H-Y37	4H-Y37	2
38	Oilite bearing, A-1049-3	3H-Y38	4H-Y38	4
39	Taper pin, #4 x 1-5/16"	3H-Y39	4H-Y39	2
40	Oilite bearing, A-1049-4	3H-Y40	4H-Y40	2
41	Cross feed rear control		4	. '
40	lever	3H-Y41	4H-Y41	1
42	Vertical feed rear control	3H-Y42	4H-Y42	1
43	lever Vertical rear control	3H-142	40-142	•
7.0	shaft	3H-Y43	4H-Y43	1
44	Rear control serrated			
	dial collar	3H-Y44	4H-Y44	2
45	Soc dog pt screw,			_
	5/16 x 1/4"	3H-Y45	4H-Y45	2
46	Soc set screw, 5/16 x	211 1/46	4H-Y46	2
47	1/4" Vertical rear control	3H-Y46	40-140	4
72.1	serrated dial	3H-Y47	4H-Y47	1
48	Spring	3H-Y48	4H-Y48	2
49	Rear control dial spring			
	retainer	3H-Y49	4H-Y49	2
50	Fil hd screw, 10-32 x 1/2"	3H-Y50	4H-Y50	6
51	Rear control crank			_
	guard	3H-Y51	4H-Y51	2
52	Cross feed rear control	211 7/52	AU V50	1
53	serrated dial Rear control crank guide	3H-Y52	4H-Y52	1
33	pin	3H-Y53	4H-Y53	1
54	Taper pin, #4 x 1-7/16"	3H-Y54		î
55	Rear control cross and			
1	elevating crank	3H-Y55	4H-Y55	1
56	Rockwood handle, 3QA	3H-Y56	4H-Y56	1

^{* 2} used on 4H machines † 4 used on 4H machines

SAFETY EVERYBODY'S BUSINESS

PUB-578

First Edition - May, 1976

Kearney & Trecker Corporation

PREFACE

SAFETY . . . Everybody's Business

A metal cutting machine tool can be a very safe machine. Or you as a user can make it be a very dangerous one. The difference depends on you and the other people who are required to perform functions relating to the machine tool operation. Yes, this also depends on management and others who may be observers of the metal cutting machine tool. Everybody must become safety conscious. If everybody thinks safety, accidents can be prevented. If an effort is made by everyone to understand and follow the basic safety procedures that follow and also the safety rules prescribed in your own company... you can prevent serious injury to personnel and costly damage to equipment.

We recognize that these suggested safety precautions are a beginning and not an end. They cannot include all of the eventualities that might arise in all companies . . . and in all types of operations on all types of metal cutting machine tools.

So when you are following these suggestions, add a large amount of common sense attitudes and good judgment along with them.

Always think safety! Remember, a metal cutting machine tool can be very safe or very dangerous. It depends on you, It is the intent of the Kearney & Trecker Corporation to update this safety information. We would welcome comments or suggestions from our product

users. Your input will be given our serious consideration for inclusion in the next update of this information.

Some parts of the information contained in this booklet are also included in the front of each manual. THE CUSTOMER RECEIVES THESE MANUALS WHEN HE PURCHASES A KEARNEY & TRECKER PRODUCT.

As you read this safety literature, you will notice that it is addressed to all occupation skill groups that are concerned with machine operation, supervision and maintenance. Since the Kearney & Trecker Corporation believes that safety is everybody's business, we are not attempting to separate these safety guide lines where separate manuals would be required for the machine operators, supervisors, maintenance technicians, etc. We believe that you will agree that this is a good approach. Please take time to read the ENTIRE manual.

When an accident occurs, investigation may reveal the cause and pinpoint what should have been done to have prevented the accident. This can only provide HINDSIGHT. The purpose of a good safety program is to prevent the accident from occurring in the first place. This can be accomplished by the use of FORESIGHT and knowing the results of our actions when working around machine tools.

THINK SAFETY - WORK SAFELY

GENERAL SAFETY REMINDERS

- 1. The employer is responsible for selecting competent and qualified employees. Kearney & Trecker conducts training classes. We strongly suggest you enroll your employees.
- 2. MANUALS ARE PROVIDED WITH EACH MACHINE TOOL. THE USER SHOULD HAVE THESE MANUALS AVAILABLE FOR THE PERSONNEL WORKING WITH THE MACHINE TOOL.
- Guards and shields are to be in place at all times.
- 4. Operators must be forbidden from changing workpieces or performing other work close to a revolving cutter . . . Stopping the spindle is a good work habit.
- When contaminants are released to the atmosphere as a result of machining, an exhaust system is recommended.
- 6. All employees should be aware of first aid facilities and be encouraged to use same, regardless of the severity of the injury.
- 7. Employees should be encouraged to report to their supervisors any hazardous condition on the machine tool or in the immediate area.
- Air hoses it is recommended that air hoses not be available for use around the machine tool. Flying chips may cause personal injury or damage equipment.
- 9. Levels of illumination in the immediate area of the machine tool should comply with National Standards.
- Fire prevention must be practiced and fire protection available to prevent loss of life, personal injury and to protect property.

- 11. Protective footware safety shoes afford good protection against rolling objects, dropping heavy objects, accidentally kicking sharp edged materials. Comfortable protective footware is a good investment.
- 12. Eye protection eye protection devices must be considered as optical instruments and they should be carefully selected, fitted and used. Compulsory wearing of spectacles with impact resistant lenses is a good safety policy.
- 13. The employer must insist that his employees study this safety information and practice safety.
- 14. Users must have available adequate lifting facilities capable of lifting within the safe load limits; also appropriate slings and hitches.
- 15. Every floor opening resulting from the machine tool installed in pits or below floor level should be covered with a material of proper strength with non-slip features.
- 16. When machines are installed above floor level and a platform is built around the machine tool, the platform must be constructed of materials of proper strength with non-slip features of the walking surfaces. Railings and toe boards must be installed where appicable.
- 17. Management personnel have the responsibility to alert operating personnel of any unsafe practice they may observe.

MACHINE TOOL SAFETY

Metalcutting machine tools play an essential role in a modern society; HIGH HORSEPOWER, SHARP CUTTING TOOLS, RAPIDLY MOVING PARTS, HIGH VOLTAGE, and AUTOMATIC OPERATION are necessary ingredients of a satisfactory machine tool, and are all POTENTIAL HAZARDS!

The METAL REMOVAL process often results in rapidly propelled metal chips and sharp edges and burrs on the finished workpiece. These are POTENTIAL HAZARDS! Due to these potential dangers inherent in a machine tool, protective guards, safety design features and warning signs are utilized. For MAXIMUM PERSONAL SAFETY it is imperative that all operators, maintenance personnel, observers, and all others that could be exposed to inherent machine hazards are made FULLY AWARE of potential dangers, and are THOROUGHLY INSTRUCTED in the SAFETY PRECAUTIONS they MUST FOLLOW to avoid those dangers. It is essential that persons required to become involved with the machine are properly trained and have the required knowledge and skill to perform their respective functions.

If assistance is required, contact your local Kearney & Trecker representative. Adherence to the following list of recommended SAFETY PRECAUTIONS, plus the application of common sense attitudes, will reduce to a minimum the possibility of personal injury resulting from the use of a Kearney & Trecker machine tool.

FOR MAXIMUM SAFETY AROUND MACHINE TOOLS:

- BEFORE you START a machine, be sure you know what is going to happen. KNOW your MACHINE.
- 2. Be sure you know how to STOP the machine before you start it. KNOW your MACHINE.
- 3. MAINTAIN the machine in GOOD OPER-ATING ORDER. Report unusual conditions or machine malfunctions immediately.

- 4. Always STOP your CUTTER before RE-MOVING a finished WORKPIECE from in front of the spindle. Do not place your hands near a rotating tool.
- 5. Never attempt to perform any cleaning, chip removal or work piece clamping while units are in motion. This is like running a race and some day you may lose the race
- 6. If you are assigned an assistant for any reason, both the assistant and the operator have the responsibility of deciding who will be in command of the machine and its controls. Only one person should control the machine. ANYONE ELSE SHOULD STAND CLEAR AND BE VISIBLE TO THE PERSON WHO IS ASSIGNED TO OPERATE THE MACHINE CONTROLS. Also, be alert for any bystanders or unauthorized person who may be in the area of the machine travel limits and chip disposal areas. An area that may not be a hazard to the machine operator at his control station may be hazardous to an assistant or bystander.
- 7. Remember that your work area may change during the day as material is delivered to and removed from your machine area. Be alert for pinch point and work hazard areas created by workpiece storage.
- 8. Keep the immediate area clean. Avoid slippery floors, remove debris, remove obstacles, remove chips, etc.
 - Chips that are allowed to accumulate in the area in which you must walk are a hazard that can cause you to fall or slip against the machine or its controls.
- 9. Remember that many accidents occur that are not related to the actual machine operation and actual metal cutting process. Accidents during material handling represent a large percentage of reported personal injuries.

MACHINE TOOL SAFETY (Cont.)

- 10. Report any HYDRAULIC OIL LEAKS OR COOLANT LEAKS. These should be CORRECTED IMMEDIATELY and not be allowed to accumulate causing an area to become unsafe for walking.
- 11. ONE COMMON CAUSE OF INJURY IS ATTEMPTING TO PERFORM MAINTENANCE OR CLEANING WHILE A MACHINE IS IN MOTION OR AUTOMATIC MODE. ANOTHER IS ACCIDENTAL START UP OF THE MACHINE BY A SECOND PERSON WHILE ONE MAN IS PERFORMING MAINTENANCE OR LUBRICATION.

Never attempt to perform maintenance or lubrication while the machine is in operation. The operator and the person(s) performing maintenance must be mutually aware of each other's presence in the machine area.

During maintenance or lubrication, the machine should be taken out of service. THE CONTROLS SHOULD BE PROPERLY MARKED WITH A WARNING SIGN AND LOCKED.

Re-read Items 5 and 6 above.

Remember that no one will normally be injured by a machine that is taken out of service. Use all precautions to avoid accidental start-up of a machine while it is being serviced.

- 12. DULL cutting tools are DANGEROUS. DON'T use them. Make certain that all CUTTING TOOLS are properly SHARP-ENED and correctly assembled to appropriate tool holders, arbors, etc.
- NEVER use cutters, wrenches, or other tools that do not fit the machine properly.
- Be sure the workpiece is held SECURELY in the vise or fixture.
- Be sure that all protective GUARDS are in place BEFORE the machine is STARTED.

- 16. NEVER apply a wrench to MOVING work or parts.
- 17. DO NOT attempt to ADJUST a tool while the machine is RUNNING. Shut off machine at main disconnect.
- 18. Be sure of CLEARANCE between CUT-TERS and WORKPIECE and FIXTURES before STARTING the machine.
- 19. DO NOT ADJUST COOLANT FLOW OR DELIVERY NOZZLES with the spindle running. Hands or coolant nozzles may be pulled into the revolving cutter resulting in personal injury or damage to the machine.
- 20. Be sure that the machine's moving parts are kept CLEAR of all LOOSE OBJECTS, TOOLS, CHUCK WRENCHES, ETC. Do not use the machine as a work bench.
- 21. DO NOT attempt to BRAKE or SLOW down moving machine parts with your HANDS or MAKESHIFT devices.
- 22. DO NOT CLEAN a machine with an AIR HOSE. Flying chips can cause personal injury or damage to machine.
- 23. NEVER CLIMB on or around machine on makeshift devices such as skids, tote pans, boxes, etc. Use only SAFETY APPROVED LADDERS.
- 24. Be AWARE of conditions that may be a FIRE HAZARD, such as volatile liquids and machining materials with a low flash point.
- DON'T attempt to use the machine BE-YOND its designated CAPABILITIES.
- 26. NEVER attempt to MEASURE MOVING WORKPIECES in the machine, or NEAR the revolving CUTTER, always stop cutter and machine motion when measuring.
- 27. The machine should NOT be left RUN-NING while UNATTENDED.

MACHINE TOOL SAFETY (Cont.)

- 28. When making repairs, be sure to take all NECESSARY PRECAUTIONS to prevent PERSONAL INJURY from LOOSENED or UNSUPPORTED machine parts or units.
- 29. DO NOT wear RINGS, WATCHES, JEW-ELERY around moving machinery.
- 30. DO NOT wear LOOSE fitting CLOTHES. Clothing should be comfortable, but LONG SLEEVES, NECKTIES, etc., should NOT be WORN.
- 31. SHOP APRONS are deliberately made with a light tie-string for a purpose; do NOT REPLACE the light string with a heavy cord or wire.
- 32. Wearing of SAFETY SHOES is recommended.
- 33. WEARING of GLOVES or other hand covering articles is not recommended around moving machinery. GLOVES MUST BE CONSIDERED THE SAME AS LOOSE FITTING CLOTHES.
- 34. ALWAYS WEAR approved SAFETY GLAS-SES when operating metal cutting machine tools. Clear vision helps you do good work as well as avoid accidents.
- 35. NEVER LEAN on the MACHINE. You may inadvertently set it in motion, or fall into a moving cutter.
- 36. LONG HAIR should be covered with a protective cover such as a HAIR NET.
- 37. NEVER use a RAG or other material to remove chips from a revolving cutter. Use a BRUSH provided for such application.
- 38. NEVER handle SHARP CUTTERS BARE-HANDED. Wrap the cutter in a rag. See also Items 47 and 48.

- 39. ALWAYS be sure the WRENCH fits the nut. Use a straight arm body pull do not jerk. Be prepared for the bolt to shear or the wrench to slip. KEEP BALANCED.
- 40. In using any WRENCH, it is better to PULL than to PUSH. If it is necessary to PUSH, use the open palm. When using an adjustable wrench, exert handle pressure toward the moveable jaw. Stand to one side when you are pulling down on wrenches above your head. DO NOT hammer on a wrench with a hard hammer; if necessary, use a babbitt pounder.
- 41. Screw drivers should not be used as a WEDGE or CHISEL or PUNCH.
- 42. Pliers SHOULD NOT be used as a wrench.
- 43. DO NOT use a file as a pry bar.
- 44. When filing DO NOT use a file that does not have a HANDLE firmly attached and covering the pointed tang.
- 45. Hand tools expecially those with POINTS and SHARP EDGES should NEVER be carried in pockets or under trouser belts. Use a tool box or a tool belt.
- 46. NEVER misuse compressed air as a practical joke. KEEP air at PRESSURE LEVEL recommended by industry standards. Improper use of an air hose may cause permanent disability or even death.
- 47. When handling cutters which are already mounted on tool holders, grasp the tool holder in the area of the flange, not the area of the cutter. On tooling for MACH-INING CENTERS, the code ring area provides a safe place for handling the cutter/tool holder assembly.

On larger size cutters (exceeding approximately 5-inch diameter) or where the cutter/holder assembly must be changed manually, or where the tool must be inserted horizontally, it will be found practical to use a rag to protect the hands.

MACHINE TOOL SAFETY (Cont.)

48. On STANDARD KNEE TYPE MACHINES with a POWER DRAW ROD unit, heavy cutter/arbor assemblies should be supported on the machine table in suitable cradles and/or wood blocks. The use of the knee, table and saddle axis movements allows you to position the arbor for easy alignment to the spindle and drive keys. This nearly eliminates the possibility of cross threading the start of the arbor and draw-bolt threads. Let the

machine do the work for you. This is easier and safer instead of trying to insert a heavy arbor/cutter assembly with your own strength. Use the same wood cradles or blocks when removing a heavy cutter/arbor assembly. This will avoid the possibility of personal injury and also prevent possible expensive damage to the cutters in the event you should drop the heavy cutter/arbor assembly onto the machine table.

ELECTRICAL SAFETY

- 1. All electrical/electronic troubleshooting and repair should be undertaken only by personnel who are properly trained and have adequate knowledge and skill.
- 2. It must be assumed at all times that POWER is "ON" so all conditions must be treated as live. This practice develops a caution that may prevent an accident.
- 3. REMOVE LOAD from circuit or equipment.
- 4. OPEN disconnect or breaker and (a) lock in open position or (b) remove fuses or (c) install "Hold-Off" tag or (d) have someone stand by. A switch in the open position with a lock that you only have a key for is positive protection from someone accidentally turning power on while you are working.
- MAKE CERTAIN you have opened the circuit by using the proper test equipment —
 NOTE: Test equipment must be checked at regular intervals.
- 6. Capacitors MUST be given time to discharge, otherwise it should be done manually with CARE.

- 7. When trouble-shooting "LIVE" equipment, the necessary precautions must be taken as follows:
 - a. MAKE CERTAIN your tools and body are clear of ground.
 - b. Use extra PRECAUTION in DAMP areas.
 - BE ALERT and work without any outside distraction.
- 8. BEFORE applying POWER to any equipment, it must be established without a DOUBT that all persons are CLEAR.
- The CONTROL PANEL DOORS shall be open ONLY when it is necessary to check out the electrical equipment or wiring. After CLOSING the door, make certain that the disconnecting means is operating properly with the DISCON-NECT HANDLE MECHANISM.
- ALL COVERS on junction boxes must be CLOSED before leaving any job.
- BEFORE STARTING, read and understand all WARNING markings and notices.

ELECTRICAL SAFETY (Cont.)

- 12. READ all marking such as nameplates and identification plates.
- 13. DO NOT alter circuits unless authorized to do so by the manufacturer.
- 14. DO NOT alter or by-pass protective interlocks.
- 15. DO NOT place jumper wires across fuses.
- 16. DO NOT alter overcurrent protective devices.
- 17. WHEN conductors are REPLACED, they shall conform to the manufacturer's SPE-CIFICATIONS, including PROPER COLOR CODING.

- 18. GROUND connections cause fault currents to flow directly into the ground instead of following through the body into the ground. ALL ELECTRICAL APPARATUS MUST BE PROPERLY GROUNDED.
- 19. Use CAUTION when connecting test equipment probes to test points. SHOCK HAZ-ARDS could exist at the test points or in the test point area and/or TRANSIENTS induced by the probes could cause a MACHINE ACTION.
- 20. AVOID wearing glasses that have a METAL FRAME.
- 21. AVOID wearing a necklace or chain that is made of a METALLIC substance.

LIFTING EQUIPMENT

There is a variety of accessories that might be needed for a lifting or turning job.

- Hooks They are made in many shapes and sizes. The hook must not be loaded over its capacity and must be used properly.
- 2. Chains Not recommended for heavy lifts because flaws are difficult to detect and they are too cumbersome to handle.
- Manila Rope Provides a good grip on the job and is light and flexible to handle. Must be protected against the weather and other destructive elements such as solvents, oil, and heat. Manila rope should be inspected frequently.
- 4. Nylon Rope Gradually replacing manila rope. Basically the same strength and not affected by destructive elements.
- 5. Wire Rope Most slings are made of wire rope. It is preferred because it is stronger than fabric ropes; it is flexible and can be shaped to most lifting requirements.

Remember, your first responsibility is to practice safety. Before you begin any lift, we suggest you go through a mental check list. Ask yourself questions like the following:

- 1. What is the weight of this load?
- 2. What type of accessory, hitch or connection is required?
- 3. Will the lift be a straight lift or whether an angle rig is required. This determination will affect the lifting capability of the accessory.
- 4. Are the slings free of kinks, knots, or broken strands.
- 5. Is proper clearance available to make the lift safely.

For further information on hoisting your Kearney & Trecker products, we refer you to the Product Installation Instructions provided with your machine.

PERSONAL PROTECTIVE EQUIPMENT

When involved in the lifting of heavy loads, we suggest you protect yourself by wearing the following protective gear.

- Safety Shoes Foot injuries can be eliminated or their seriousness can be reduced through the wearing of approved safety shoes.
- 2. Safety Glasses Eye protective devices must be considered as optical instrument and they should be carefully selected, fitted and used.
- 3. Safety Helmets Because of the possibility of falling objects, the head is exposed to hazards, therefore, head protection devices should be worn.
- Gloves Although it is recommended that gloves not be worn unless absolutely necessary, gloves can protect the hands from cuts or abrasions caused by slings or sharp edges.

LIFTING TIPS

Because the type of hoisting equipment in each customer's facility is unknown to the Kearney & Trecker Corporation, these instructions are written with the intent of being general rather than specific. However, whether you have in your facility a bridge, jib, gantry, semigantry, cantilever wall crane, or some other lifting crane, these safety rules will apply.

In some cases where adequate hoisting equipment is not available, it may be necessary to contact an outside contractor. Whatever your conditions are, you must practice good safety procedures. The operation of the hoisting equipment may not be your full time job, but if you are involved when hoisting Kearney & Trecker products, you must follow all of these good safety practices. Remember, a child could manipulate the controls. Your job is safety.

- 1. NEVER lift more than the rated capacity of the hoisting equipment.
- 2. If in doubt, have the hoisting equipment INSPECTED for safe operating conditions. INSPECT all slings. DON'T TAKE CHANCES, if in doubt, check with proper authority.

- 3. BALANCE LOAD in sling before LIFTING more than a few inches. Distribute load evenly.
- 4. Use a sling LARGE enough for the LOAD.
- 5. To PREVENT damage from the slings to the finished parts of the machine, be sure machine parts are properly PROTECTED by PADDING.
- ALWAYS be sure your slings are free of knots and kinks. Also, SLACK must be taken out of the sling before lifting.
- 7. TO PREVENT a serious accident that may be caused by sharp corners and edges cutting the sling, use proper BLOCKING and PADDING.
- CLARIFY HAND SIGNALS with coworkers. If signals are not understood, make no move until they are clarified.
- DO NOT lift loads with extra slings or cables suspended from the hook.

LIFTING TIPS (Cont.)

- 10. ALL loads must be lifted gradually. Sudden jerks may DAMAGE cables or slings.
- 11. BEFORE lifting a machine or a component of a machine VERIFY that all interrelated connections are disconnected.
- 12. BEFORE you signal to have a load lifted, be sure that all tools, parts, chips, coolant, oil, etc. are REMOVED from the LOAD.
- 13. DO NOT carry loads over aisles unless absolutely necessary.
- 14. As the lift starts OBSERVE the slings or lifting devices to assure that they are FUNCTIONING PROPERLY.
- 15. BEFORE making the lift, ask all employees to STAND CLEAR. NEVER allow a person to work under the load while the load is suspended from the crane hook.

- 16. When setting loads down, prepare the landing area beforehand and DON'T create a condition of LEANING and UNSTABLE units
- 17. When lowering the load on blocks, the blocks MUST be even in height for a LEVEL and STABLE load.
- 18. DON'T set your load down in aisles. It is your duty to keep AISLES CLEAR for other employees.
- 19. ALWAYS be suspicious of a heavy load which must be lifted by eye bolts and NEVER lift such loads at an angle unless the eye bolts are short shouldered.
- Between lifts, DON'T leave slings or hooks or other equipment lying around on the floor.
- 21. ALWAYS use good horse sense and good judgment in handling all loads.