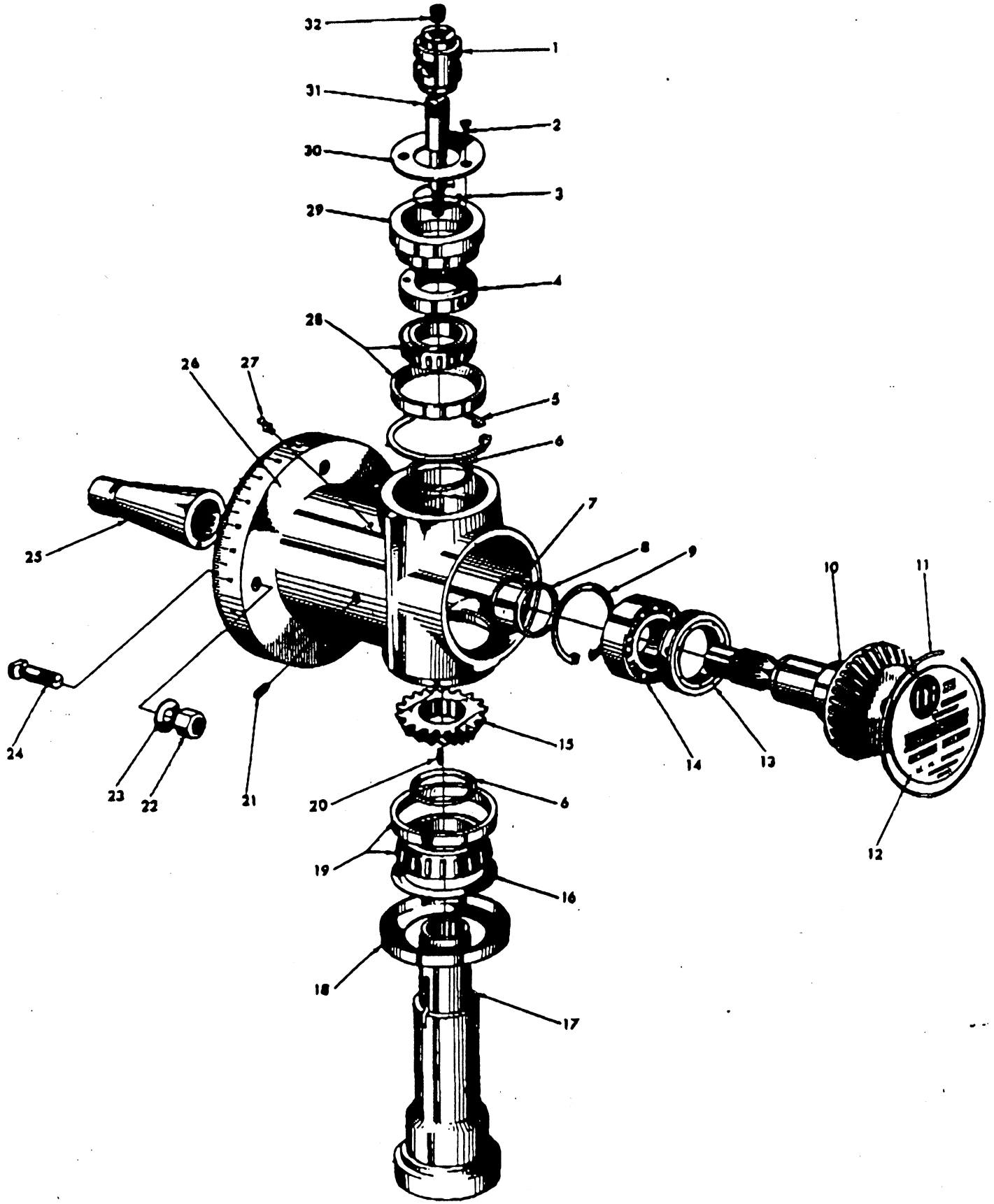


NOTE: LUBRICATE AT FITTINGS EVERY 8 HOURS OF RUNNING. USE LUBRICANT ESSO ANDOK C. OR EQUIVALENT.

SPINDLE SPEEDS AT THE VERTICAL ATTACHMENT ARE ONE-THIRD HIGHER (4:3 RATIO) THAN AVAILABLE HORIZONTAL SPINDLE SPEEDS. VERTICAL SPINDLE SPEEDS EXCEEDING 2000 R.P.M. ARE NOT RECOMMENDED.



WHEN ORDERING, GIVE MACHINE SERIAL NUMBER, VERTICAL MILLING ATTACHMENT SERIAL NUMBER, KEY NUMBER, PART NUMBER AND PART NAME

VERTICAL MILLING ATTACHMENT
(ASSEMBLY NUMBER 42-00103 0001-1)
60000 -4

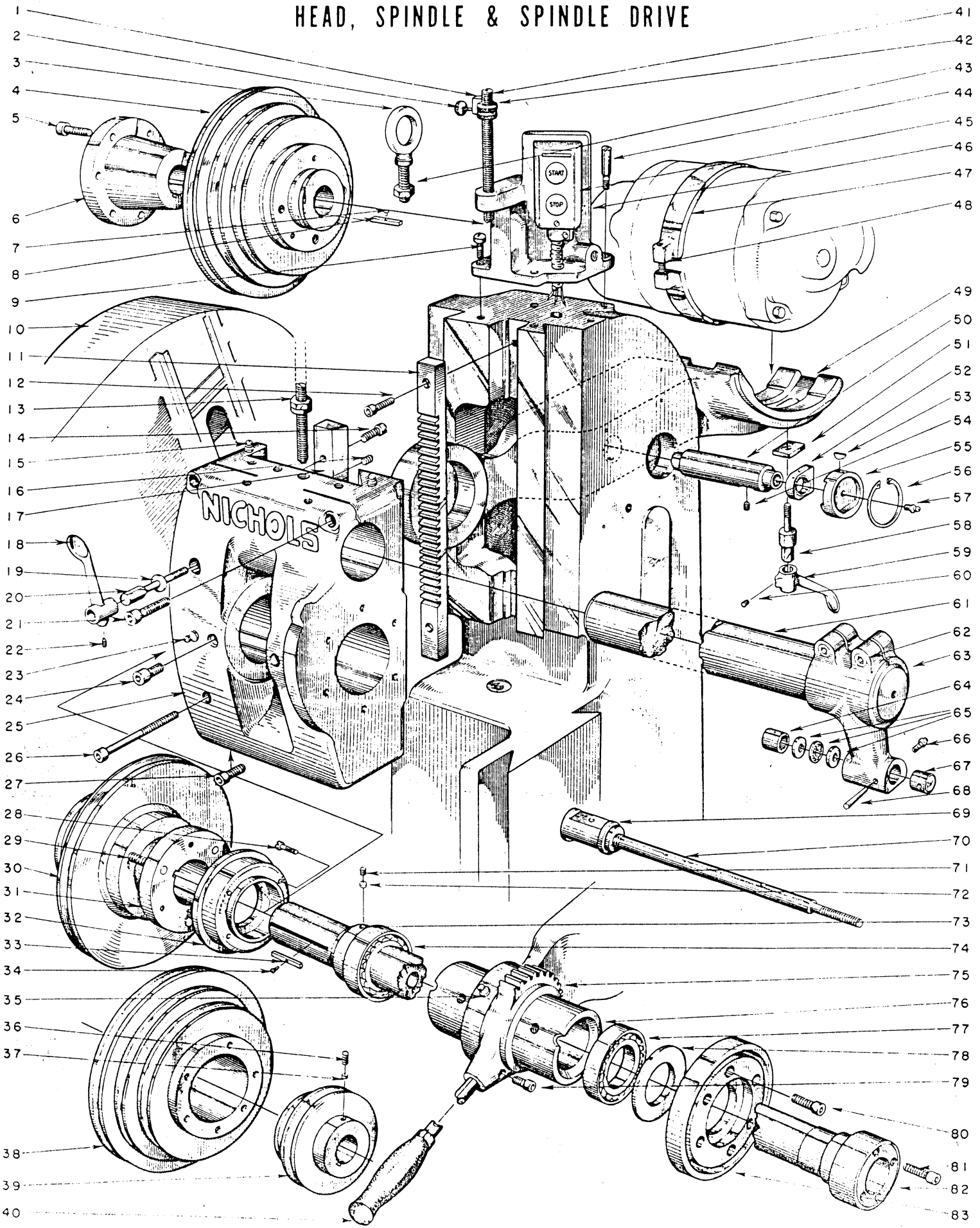
<u>Key No.</u>	<u>Part No.</u>	<u>No. Req.</u>	<u>Description</u>
1	45-59012-0001-1	1	Nut, draw in rod
2	48-90210-2016-2	3	Screw, Upper flinger
3	45-76510-0001-1	1	Ring, Snap
4	45-59008-0003-1	1	Nut, Spindle
5	48-18307-0001-1	1	Ring, Snap, Spindle Bore
6	45-80601-0003-1	2	Shim, Adjusting Gear and Bearing
7	48-18304-0003-1	1	Ring, Snap, Drive Gear
8	45-80601-0002-1	1	Washer, Drive Gear
9	48-18307-0002-1	1	Ring, Snap Drive, Shaft Bore
10	45-20006-0001-2	1	Gear, Drive
11	48-18303-0003-1	1	Ring, Snap, Name Plate
12	48-82006-0006-1	1	Name Plate
13	45-76608-0002-1	1	Ring, Clamp Drive Gear
14	48-04501-0004-1	1	Bearing, Drive Gear
15	45-20002-0001-1	1	Gear, Spindle
16	48-87501-0004-1	1	Flinger, Spindle Lower
17	45-81002-0001-2	1	Spindle
18	45-08508-0004-1	1	Cap, Dust Cover
19	[48-04506-0007-1 48-14506-0013-1]	[1 cup 1 cone]	Bearing, Spindle Lower
20	45-56015-0001-1	1	Key, Spindle Gear
21	48-92331-1020-2	3	Screw, Clamp
22	48-95003-1037-2	4	Nut, T Bolt
23	48-87510-0003-1	4	Washer, T Bolt
24	45-06503-0009-1	4	Bolt T
25	45-00607-0004-1	1	Adapter, Spindle
26	45-06006-0001-4	1	Frame
27	48-18901-0008-1	1	Fitting, Grease
28	[48-04506-0001-1 48-04506-0002-1]	[1 cup 1 cone]	Bearing, Spindle Upper
29	45-06512-0001-1	1	Cap, Dust Cover
30	45-87501-0006-1	1	Flinger, Spindle Upper
31	45-77502-0001-1	1	Rod, Draw In
32	45-78520-0002-1	1	Screw, Draw In Rod

Notes:

- Lubricate at fittings every 8 hours of running. Use Lubricant Esso Andok C or equivalent.
- Spindle speeds at the vertical attachment are one-third higher (4:3 ratio) than available horizontal spindle speeds. Vertical spindle speeds exceeding 2,000 RPM are not recommended.
- A standard draw-in rod is furnished. A draw-in collet attachment is available at additional cost. (See back page for parts description).
- Parts list applies to vertical milling attachments from serial number 1039.

WHEN ORDERING, GIVE MACHINE SERIAL NUMBER, VERTICAL MILLING ATTACHMENT SERIAL NUMBER. _____
KEY NUMBER, PART NUMBER AND PART NAME

HEAD, SPINDLE & SPINDLE DRIVE

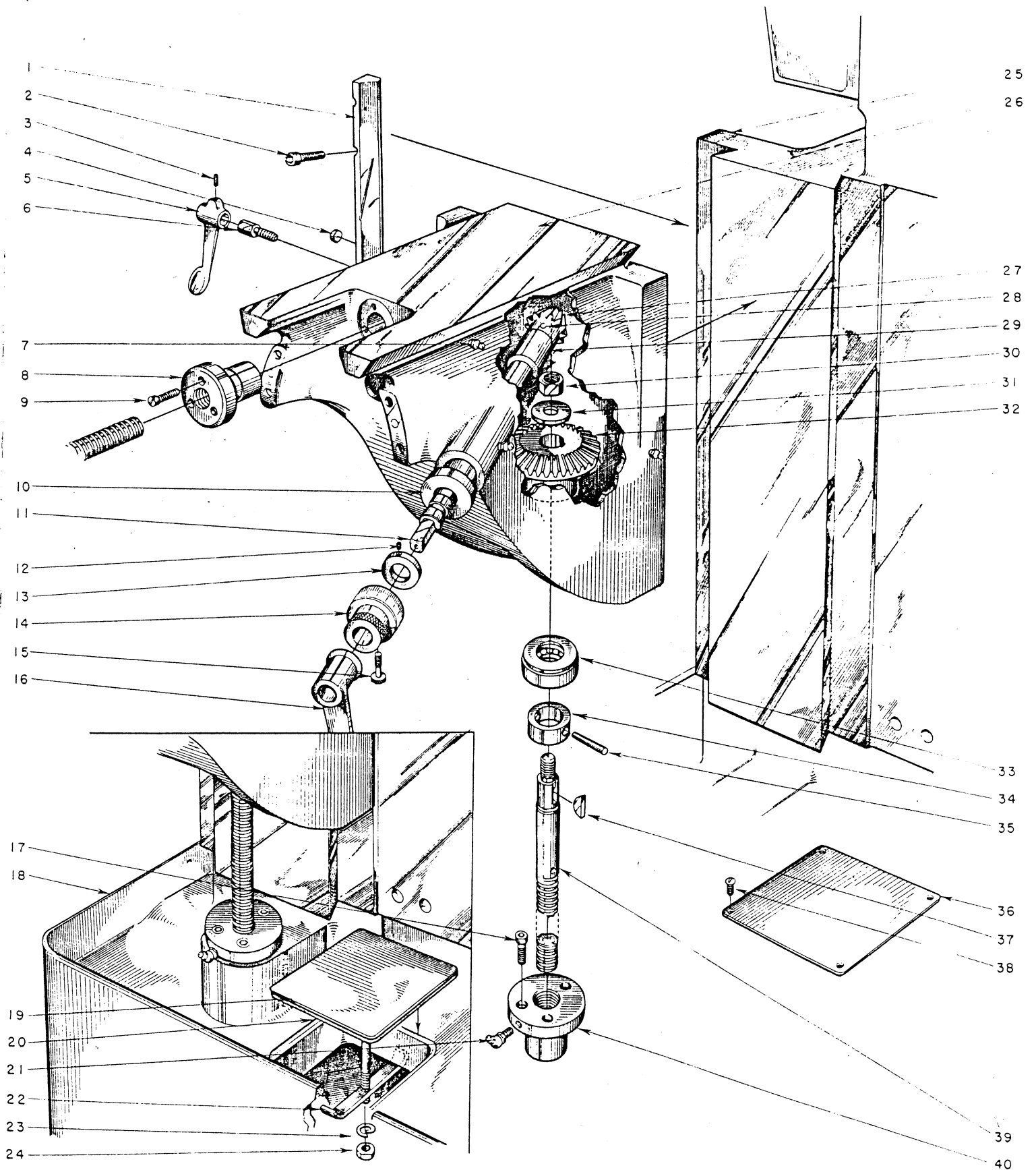


WHEN ORDERING GIVE PART NO. AND MACHINE SERIAL NUMBER

1	WA-54	1	C - Clamp
2	WL-47	1	Screw - C - Clamp Lock
3	WB-311	1	Eyebolt - Williams Eyebolt No. 27
4	WC-136	1	Pulley - 5 Step
5	WA-1360-616-20	3	Screw - Motor Pulley Mounting 3/8 - 16 x 1 1/4 Socket Head
6	WA-1299	1	Adapter - Pulley 1" Bore
7	WA-1363-6-6	1	Screw - Key 6 - 32 x 3/8 Fillister Head Machine
8	WA-346	1	Key - 1/4 Square
9	WA-1361-616-16	1	Screw - Head Stop Bracket 3/8 - 16 x 1 Fillister Head Cap
10	WC-217	2	Guard - Belt (Standard)
11	WB-20	1	Rack - Head
12	WA-1360-516-14	2	Screw - Rack 5/16 - 18 x 7/8 Socket Head Cap
13	WA-1424-816-J	2	Nut - Head Stop Screw Lock 1/2 - 13 Jam Nut - Heavy S.F.
14	WA-1361-616-16	1	Screw - Top - Head Gib 3/8 - 16 x 1 Fillister Head Cap
15	WA-243-01	2	Fitting - Grease Alemite No. 1652
16	WA-1371-416-4	1	Screw - Head Stop Screw Lock 1/4 - 20 x 1/4 Cup Point Socket Set
17	WB-131	1	Gib
18	WA-499	1	Handle - Binding Screw 1/4 - 20 x 5/16 Flat Point Socket Set
19	WA-339	1	Washer - Head Binding Screw
20	WA-698	1	Screw - Head Binding
21	WA-1360-716-28	2	Screw - Overarm Clamping 7/16 - 14 - 1 3/4 Socket Head Cap
22	WA-1369-416-5	2	Screw - Binding Handle Lock 1/4 - 20 x 5/16 Flat Point Socket Set
23	WA-243-07	2	Fitting - Spindle Bearing Grease Alemite No. 1610
24	WA-1369-716-12	2	Screw - Bearing Spacer 7/16 - 14 x 3/4 Socket Head Cap
25	WJ-17-3	1	Head - Timken Bearing
	WJ-17-2	1	Head - Ball Bearing
26	WA-1380-616-64	1	Screw - Long - Head Gib 3/8 - 16 x 4 Socket Head Cap
27	WA-1360-616-16	1	Screw - Bottom Head Gib 3/8 - 16 x 1 Socket Head Cap
28	WA-1361-416-20	4	Screw - Rear Bearing Cap 1/4 - 20 x 1 1/4 Fillister Head Cap
29	WA-1360-616-44	3	Screw - Spindle Pulley Mounting 3/8 - 16 x 2 3/4 Socket Head Cap
30	WC-136	1	Pulley - 5 Step
31	WA-500	1	Adapter - Spindle Pulley
32	WA-494	1	Cap - Rear Bearing - Timken Spindle
	WL-7	1	Cap - Rear Bearing - Ball Bearing Spindle
33	WA-346	1	Key - 1/4 Square
34	WA-1363-6-6	2	Screw - Key 6 - 32 x 3/8 Fillister Head Machine
35	WA-243-01	2	Fitting Grease Alemite No. 1652
36	WA-1369-716-8	1	Screw - High Speed Pulley Lock 7/16 - 14 x 1/2 Flat Point Socket Set
37	WA-427	1	Pad - High Speed Pulley Lock Screw
38	WC-221	1	Pulley - Low Speed - 3 Step
39	WC-220	1	Pulley - High Speed - 2 Step
40	WB-676	1	Lever Assembly - Segment
41	WA-56	1	Screw - Head Stop
42	WL-46	1	Nut - Head Stop
43	WA-1424-1016J	1	Nut - Eyebolt Lock 5/8 - 11 Jam Nut - Heavy S.F.
44	WA-38	1	Stud - Oil Pot Bracket
45	WA-403	1	Enclosure - Push Button Allen-Bradley No. 2 S.A.
46	WC-111	1	Bracket - Head Stop
47	WK-1	1	Ring - Motor Binding
48	WA-1360-616-20	1	Screw - Motor Binding Ring Clamp 3/8 - 16 x 1 1/4 Socket Head Cap
49	WJ-6-03	1	Bracket - Motor - Timken Bearing Head
	WJ-6-02	1	Bracket - Motor - Ball Bearing Head
50	WA-1358	1	Shaft - Pivot
51	WL-36	1	Washer - Motor Binding
52	WA-1359	2	Block - Pivot
53	WA-546	2	Key - Pivot Cap Woodruff No. 5
54	WA-1369-716-8	1	Screw - Pivot Shaft Lock 7/16 - 14 x 1/2 Flat Point Socket Set
55	WA-1305	1	Cap - Front Pivot
	WA-1306	1	Cap - Rear Pivot
56	WA-1414-1	2	Ring - Pivot Cap Snap Waldes No. 5000 - 244
57	WA-243-09	1	Fitting - Pivot Cap Grease Alemite No. 1762-B
58	WA-701	1	Bolt - Motor Ring Positioning
59	WA-499	1	Handle - Binding Screw
60	WA-1369-416-5	1	Screw - Binding Handle Lock 1/4 - 20 x 5/16 Flat Point Socket Set
61	WL-38	1	Overarm - Standard (20 1/4")
	WB-176	1	Overarm - Long (24 1/2")
62	WA-1360-716-12	2	Screw - Bearing Spacer
63	WB-5	1	Bracket - Overarm
64	WA-241	1	Bearing - Needle Torrington No. B-912
65	WA-242	1	Bearing - Thrust Boston Gear Works No. A - 09
66	WA-243-02	1	Fitting - Grease Alemite No. 1608
67	WA-31	1	Plug - Overarm Bracket
68	WA-256-02	1	Pin - No. 3 Taper
69	WB-314-02	1	Nut - Draw-in Rod
	WA-1424-816	1	Nut - Draw-in Rod 1/2 - 13 Hex. Nut Heavy S.F.
70	WB-314-01	1	Rod - Draw-in
	WB-96	1	Rod - Draw-in
71	WA-1369-516-4	1	Screw - Spindle Nut Lock 5/16 - 18 x 1/4 Flat Point Socket Set
	WA-1369-516-8	1	Screw - Spindle Nut Lock 5/16 - 18 x 1/2 Flat Point Socket Set
72	WA-52-02	1	Pad - Spindle Nut Lock Screw (Timken Spindle)
	WA-956	1	Pad - Spindle Nut Lock Screw (Ball Bearing Spindle)
73	WA-496	1	Nut - Spindle Bearing (Timken Spindle)
	WA-730	1	Nut - Spindle Bearing (Ball Bearing Spindle)
	WA-167	1	Nut - Spindle Bearing
74	WA-566	1	Bearing - Rear - Timken Spindle No. 3 Precision Cone No. L 305649 - Cup No. L 305610
	WA-1353	1	Bearing - Rear Ball Bearing Spindle New Departure No. 3 L10T - 5CF
	WA-421	1	Bearing - Rear Spindle New Departure No. 3298 PT - CF
75	WA-715-1	1	Segment - Gear - Timken Spindle
	WA-715-2	1	Segment - Gear Ball Bearing Spindle
76	WA-495	1	Spacer - Timken Spindle
	WB-256	1	Sleeve - Outer - Ball Bearing Spindle
	WB-257	1	Sleeve - Inner - Ball Bearing Spindle
	WB-82	1	Sleeve - inner
77	WA-566	1	Bearing - Front - Timken Spindle No. 3 Precision Cone No. L 305649 Cup No. L 305610
	WA-420-01	1	Ball Bearing - Front Flanged New Departure No. QNOL10 - DBL5CF
	WA-420-02	1	Ball Bearing - Front Plain New Departure No. QOL10-DBL5CF
78	WA-502	1	Flinger - Timken Bearing Spindle
	WA-168	1	Flinger - Ball Bearing Spindle
79	WA-1360-516-14	1	Screw - Segment Handle Lock 5/16 - 18 x 7/8 Socket Head Cap
80	WA-1360-516-14	6	Screw - Front Bearing Cap 5/16 - 18 x 7/8 Socket Head Cap
81	WA-1360-516-8	2	Screw - Spindle Nose 5/16 - 18 x 1/2 Socket Head Cap
82	WC-134	1	Spindle - Timken Bearing
	WC-179	1	Spindle - Ball Bearing
	WC-46	1	Spindle - Ball Bearing
83	WB-295	1	Cap - Front Bearing - Timken Spindle
	WB-557	1	Cap - Front Bearing - Ball Bearing Spindle
	WA-169	1	Cap - Front Bearing

* - PARTS FOR DUPLEX SPINDLE ASSEMBLY ONLY.

BASE, COLUMN & KNEE

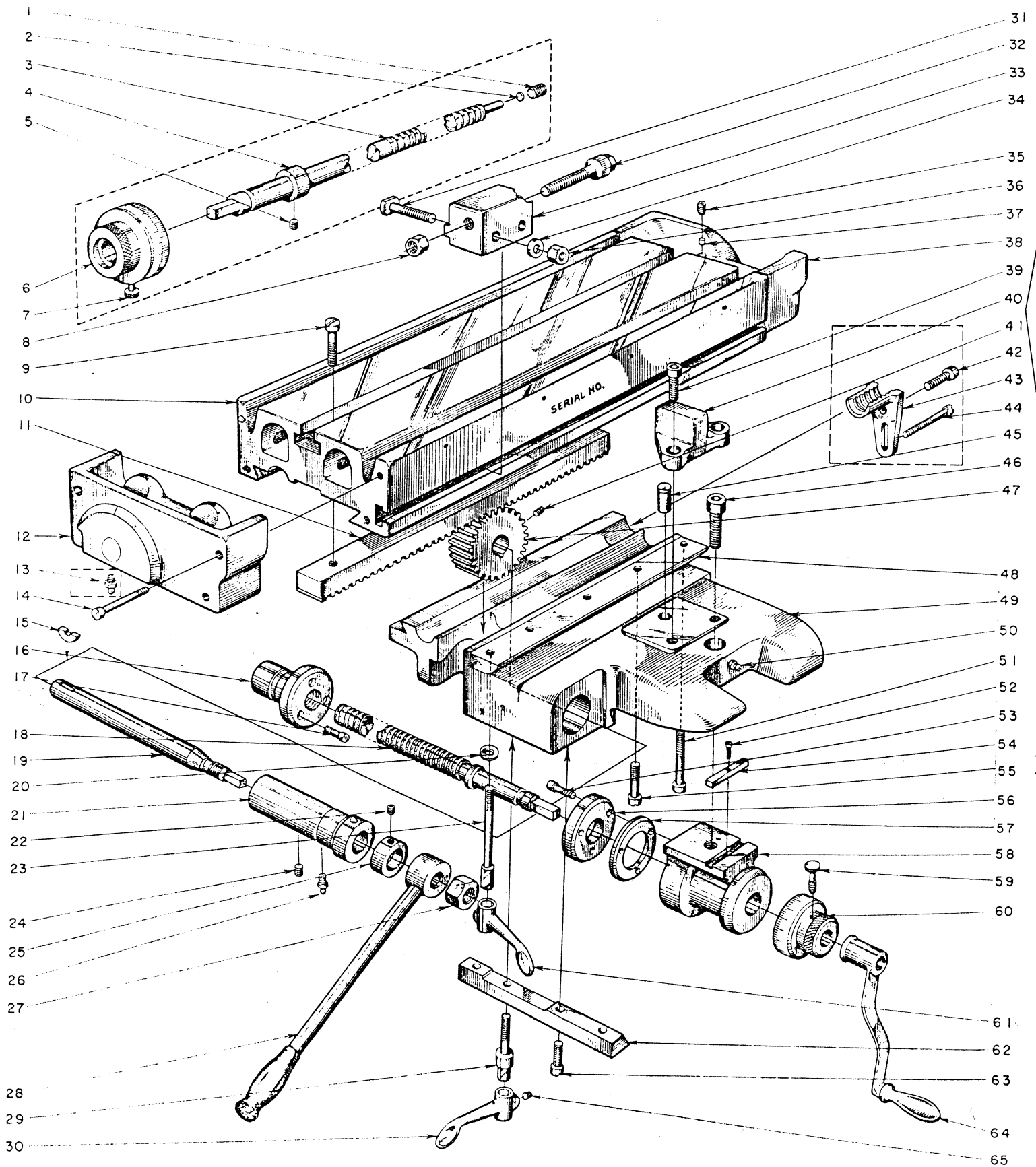


WHEN ORDERING GIVE PART NO. AND MACHINE SERIAL NUMBER

1	WB-19	1	Gib - Knee
2	WA-1360-616-24	4	Screw - Knee Gib 3/8 - 16 x 1 1/2 Socket Head Cap
3	WA-1369-416-5	1	Screw - Binding Handle Lock 1/4 - 20 x 5/16 Cup Point Socket Set
4	WA-1422-2	1	Pad - Knee Gib
5	WA-499	1	Handle - Binding
6	WA-781	1	Screw - Knee Binding
7	WA-243-01	3	Fitting - Grease Alemite No. 1652
8	WL-19	1	Nut - Transverse
9	WA-1361-416-8	3	Screw - Transverse Nut Mounting 1/4 - 20 x 1/2 Fillister Head Cap
10	WL-53	1	Bushing - Elevating Shaft Outer
11	WK-5	1	Shaft - Elevating
12	WA-1371-8-4	1	Screw - Elevating Shaft Collar Lock 8 - 32 x 1/4 Cup Point Socket Set
13	WA-1860	1	Collar - Elevating Shaft Thrust
14	WL-13-1	1	Dial No. 5 - Metric Watt Graduations
15	WL-12	1	Screw - Dial Lock
16	WB-6	1	Crank - Short
17	WA-1360-516-14	3	Screw - Elevating Nut Mounting 5/16 - 18 x 7/8 Socket Head Cap
18	WD-5	1	Base
19	WB-158	1	Cover - Base or WB-159 Strainer Base 1
20	WB-157	1	Gasket - Base Cover
21	WA-243-06	1	Fitting - Angle Grease Alemite No. 1636
22	WA-531	1	Clamp Cover
23	WA-1502-616	1	Washer - Base Cover Lock 3/8 Heavy
24	WA-1425-616	1	Nut - Cover Clamp 3/8 - 16 Hex. Nut - Reg. S.F.
25	WE-8	1	Column
26	WC-9	1	Knee
27	WA-2048	1	Gear - Small Bevel
28	WA-256-01	1	Pin - Taper No. 3
29	WL-55	1	Bushing - Elevating Shaft Inner
30	WA-1424-816	1	Nut - Elevating Gear 1/2 - 13 Hex. Nut - Heavy S.F.
31	WA-362	1	Washer 1/2" Hardened
32	WA-2049	1	Gear - Large Bevel
33	WA-240	1	Bearing - Elevating Screw Thrust Bantam No. 875
34	WL-29	1	Collar - Elevating Screw
35	WA-256-01	1	Pin - Taper No. 3
36	WA-1765	1	Plate - Reservoir Cover
37	WA-255	1	Key - Elevating Screw No. 7 Woodruff
38	WA-1364-10-5	4	Screw - Reservoir Cover Plate 10 - 24 x 5/16 Round Head Machine
39	WB-23	1	Screw - Elevating
40	WB-457	1	Nut - Elevating



SADDLE, TABLE & TABLE SCREW ATTACHMENT



WHEN ORDERING GIVE PART NUMBER AND MACHINE SERIAL NUMBER

KEY NO.	PART NO.	NO. REQ.	PART NAME
1	WA-1369-416-4	1	Screw - Feed Screw Adjusting 9/16 - 12 x 5/8 Flat Point Socket Set Screw
2	WA-1422-1	1	Pad - Feed Adjusting Screw
3	WK-4-1	1	Screw - 21" Table Feed - Inch Thread
	WK-4-2	1	Screw - 21" Table Feed - Metric Thread
	WB-164-1	1	Screw - 30" Table Feed - Inch Thread
	WB-164-2	1	Screw - 30" Table Feed - Metric Thread
4	WA-16	1	Collar - Table Screw
5	WA-1369-416-4	1	Screw - Collar Lock 1/4 - 20 x 1/4 Flat Point Socket Set Screw
31	WA-2300-1	1	Dial - 3" Dia. - Inch Graduations WL-13-2 Dial - No. 10 - 2" Dia. Inch Grad. WA-2300-2 Dial - 3" Dia. - Metric Graduations WL-13-4 No. 10 - 2" Dia. - Metric
32	7	1	Screw - Dial Lock
	WA-2291	2	Nut - Micrometer Stop Screw - Inch Thread 7/16 - 20 Hex. Nut - Light S.F.
33	8	2	Nut - Micrometer Stop Screw - Metric Thread
	WA-2616	2	Screw - Rack 3/8 - 16 x 1 3/8 Fillister Head Cap Screw
	WA-1361-616-22	3	Screw - Rack 3/8 - 16 x 1 3/8 Fillister Head Cap Screw
34	9	5	Table - 21" WC-109 Table - 30" - Single Slot
	WA-1361-616-22	5	Rack - 21" Table WB-299 Rack - 30" Table
	WC-96	1	Cap-Left End
	WB-29		
	WB-236		
35	13	2	Fitting - Drive Grease Alemite No. 1608
	WA-243-02	2	Screw - Table Cap 1/4 - 20 2 1/4 Fillister Head Cap
	WA-1361-416-36	8	Key - Table Pinion
	WL-50	1	Nut - Transverse
36	15	1	Screw - Transverse Nut Mounting 1/4 - 20 x 1/2 Fillister Head Cap
	WL-19	1	Screw - Transverse Feed
	WA-1361-416-8	3	Shaft - Table Pinion
37	17	1	Washer - 3/8 Hardened
	WK-6	1	Bushing - Table Pinion Eccentric
	WK-12	1	Screw - Collar Lock 1/4 - 20 x 1/4 Flat Point Socket Set
38	18	1	Screw - Table Binding
	WA-339	1	Screw - Eccentric Bushing Lock 5/16 - 18 x 3/8 Flat Point Socket Set
	WL-49	1	Collar - Table Pinion Shaft
39	20	1	Fitting - Angle Grease Alemite No. 1636
	WA-1369-416-4	1	Nut - Pinion Shaft Handle 3/4 - 16 Hex. Nut - Light S.F.
	WA-702	1	Lever Assembly - Table
	WA-1369-516-6	1	Screw - Saddle Binding
40	23	1	Handle - Binding
	WA-26	1	Tee Bolt - Micrometer Stop
	WA-243-06	1	Screw - Micrometer Stop - Inch Thread WA-49-2 Screw - Micrometer Stop - Metric Thread
41	26	4	Body - Micrometer Stop - L.H. WA-2149 Body - Micrometer Stop - R.H.
	WA-1432-1216	1	Washer - 3/8 Hardened
	WC-448	1	Screw - Adjusting Screw Lock 5/16 - 18 x 5/8 Flat Point Socket Set
42	27	4	Nut - Micrometer Stop Tee Bolt 3/8 - 16 Hex. Nut - Reg. S.F.
	WA-697-02	1	Pad - Feed Lock Screw
	WA-499	1	Cap - Right End
43	28	1	Screw - Table Stop 3/8 - 16 x 1 Socket Head Cap Screw
	WA-163	4	Stop - Table - Hand Miller
	WA-49-1	2	Screw - Table Pinion Lock 5/16 - 18 x 5/8 Full Dog Point Socket Set
44	30	1	Screw - Half Nut Mounting 3/8 - 16 x 1 Socket Head Cap
	WA-214	1	Nut - Half
	WA-339	4	Screw - Half Nut Lower 1/4 - 20 x 2 1/4 Fillister Head Cap
45	31	1	Dowel - Table Stop
	WA-1369-516-10	1	Screw - Saddle Post 1/2 - 13 x 1 1/2 Socket Head Cap
	WA-1425-616	4	Pinion - Table
46	32	1	Gib - Table
	WA-52-01	1	Saddle
	WC-110	1	Fitting - Grease Alemite No. 1652 with Table Feed Screw Add;
47	33	1	Screw - Table Gib - Long 3/8 - 16 x 2 3/4 Fillister Head Cap
	WA-1360-616-16	2	Screw - Key 6 - 32 x 3/8 Fillister Head Machine
	WA-1586-1	1	Screw - Retainer 1/4 - 20 x 3/4 Socket Head Cap
	WA-1366-516-10	1	Key - Saddle Post
	WA-1360-616-16	1	Screw - Table Gib - Short 3/8 - 16 x 2 Fillister Head Cap
48	34	1	Retainer - Saddle Screw
	WL-14	1	Spacer - Saddle Screw
	WA-1361-416-36	1	Post - Keyed Saddle - 2" Dial
	WA-1433-1	1	Screw - Dial Thumb
49	35	1	Dial No. 5 Inch Graduations WL-13-03 Dial - No. 5 Metric Graduations
	WA-1360-816-24	1	Handle - Binding
	WL-54	1	Gib - Saddle
	WB-67	1	Screw - Saddle Gib 3/8 - 16 x 1 3/8 Fillister Head Cap
50	36	1	Crank - Short
	WJ-14	1	Screw - Binding Handle Lock 1/4 - 20 x 5/16 Flat Point Socket Set
	WA-243-01	3	Gib - Knee
51	37	1	
	WA-1361-616-44	2	
	WA-1363-6-6	1	
52	38	1	
	WA-1360-416-12	3	
53	39	1	
	WA-346	1	
	WA-1361-616-32	2	
54	40	1	
	WA-1248	1	
	WA-1249	1	
55	41	1	
	WB-441	1	
	WL-12	1	
	WL-13-01	1	
	WA-499	1	
	WB-68	1	
	WA-1361-616-22	3	
	WB-6	1	
	WA-1369-416-5	2	
	WB-19	1	
	WA-1360-616-24	4	