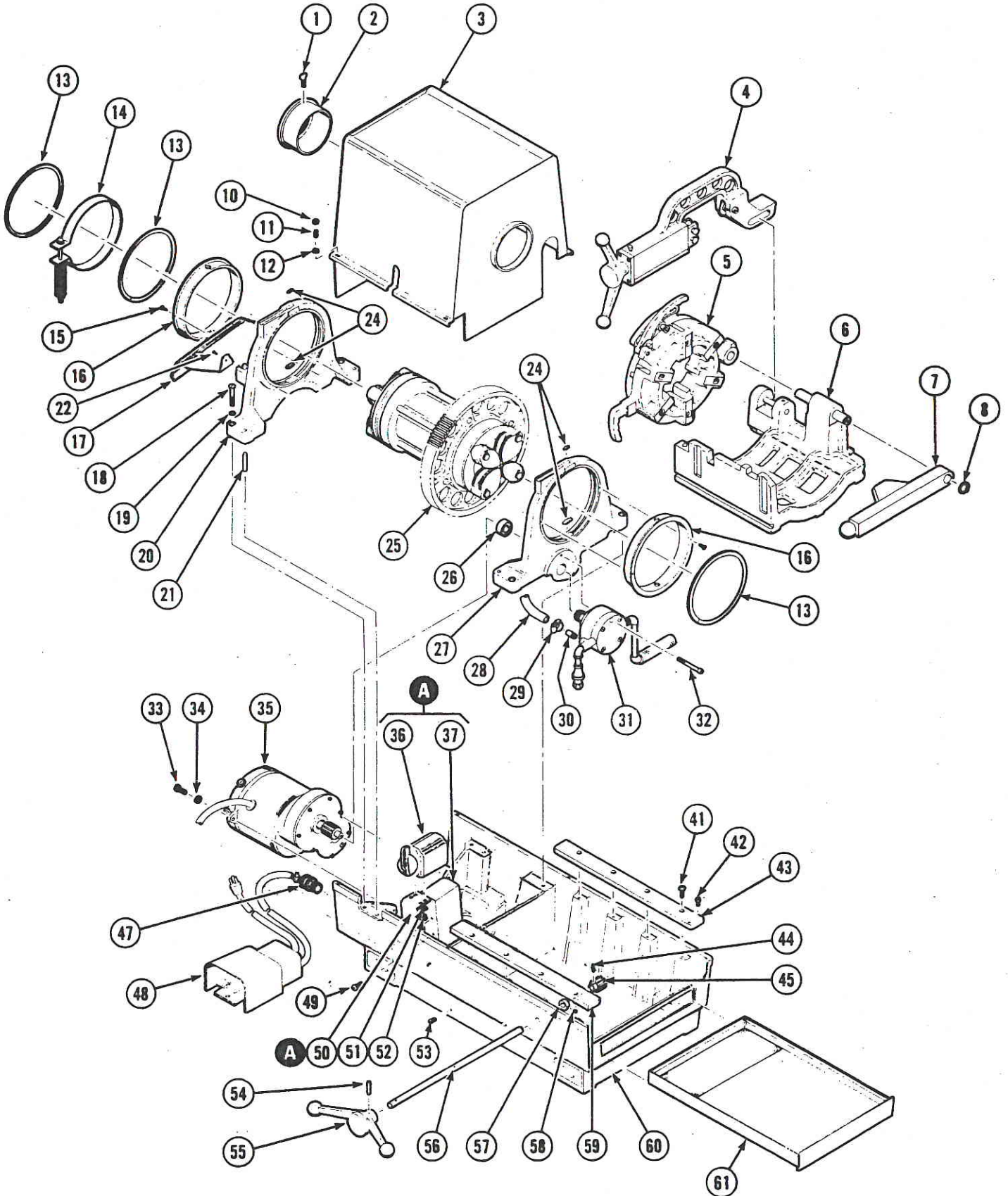


STANDARD SINGLE PHASE MAIN ASSEMBLY



HAJO TOOL A/S

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STANDARD SM 4000 MAIN ASSEMBLY

Item	Part No.	Qty	Description
1.	03404	1	Thumbscrew, 3/8-16x1
2.	12548	1	Adapter, Small Pipe
3.	20317	1	Cover, Spindle
4.	20160	1	Cutter Assy, 1/2-4
5.	20200	1	Die Head Assy, 2 1/2-4
6.	20150	1	Carriage Assy.
7.	20170	1	Reamer Assy, 2 1/2-4
8.	Y-5100-87	1	Ring, Retaining
10.	B-354-P	4	Nut, Acorn, 1/4-20
11.	H-110-D	4	Setscrew, 1/4-20x1
12.	C-109-MP	4	Lockwasher, 1/4
13.	YKSA-775	3	Ring, Retaining
14.	20314	1	Brake Assy.
15.	P-703-H	4	Pin, Grooved, 3/16x5/8
16.	20308	2	Bearing, Spindle
17.	01244	1	Shield, Motor
18.	F-509-S	4	Screw, SHdCap, 1/2-13x2
19.	C-113-M	4	Washer, Lock, 1/2
20.	20311	1	Spindle Block, Rear
21.	O-509	4	Pin, Dowel, 3/8x2
22.	NF-503-F	2	Screw, Slf Tap, #10-24x1/2
24.	12006	4	Wick, Lube Oil
25.	20054	1	Spindle Assy, Std.
26.	01018-1	1	Bearing, Ball, 203SZZ
27.	20310	1	Spindle Block, Front
28.	20061-24	1	Tubing, Ctg Oil, 24"
29.	04514-10	2	Clamp, Ctg Oil Tube
30.	20068	2	Fitting, Ctg Oil Tube
31.	20067	1	Pump Assy.
32.	F-112-SL	1	Screw, SHdCap, 1/4-20x7/8
33.	F-206	2	Screw, SHdCap, 5/16-18x1
34.	C-110	2	Washer, Lock, 5/16
35.	20040	1	Gearmotor Assy, 115V.
	20041	1	Gearmotor Assy, 230V.
36.	01221	1	Controller, 115V/230V..
37.	01345-1	1	Resistor Assy, 115V.
	01346-1	1	Resistor Assy, 230V.
41.	E-206	8	Screw, FltHd, 5/16-18x1
42.	F-103	2	Screw, SHdCap, 1/4-20x1/2

Item	Part No.	Qty	Description
43.	20108	1	Rail, Base, Rear
44.	U-715	1	Pin, Spring, 3/16x1
45.	20111	1	Gear, Spur, 12T.
47.	01376	1	Bushing, Strn Relief
48.	20016	1	Switch&Cord Assy, 115V.
	20015	1	Switch&Cord Assy, 230V.
49.	G-107	2	Screw, BHdCap, 1/4-20x1
50.	20105	1	Bracket, Switch&Resistor
51.	C-109-M	2	Washer, Lock, 1/4
52.	L-1100	2	Screw, SltdRdHd, 1/4-20x1/4
53.	01020	1	Plug, Pipe, Drain, 3/8
54.	P-906-A	1	Pin, Grooved, 1/4x1x 3/8
55.	20113	1	Handle, Oprtng, Carriage
56.	20109	1	Shaft, Carriage
57.	20112	1	Collar, Carriage Shaft
58.	H-102-D	1	Setscrew, 1/4-20x1/4
59.	20107	1	Rail, Base, Front
60.	20101	1	Base
61.	20110	1	Tray, Chip

Items not shown in the illustration

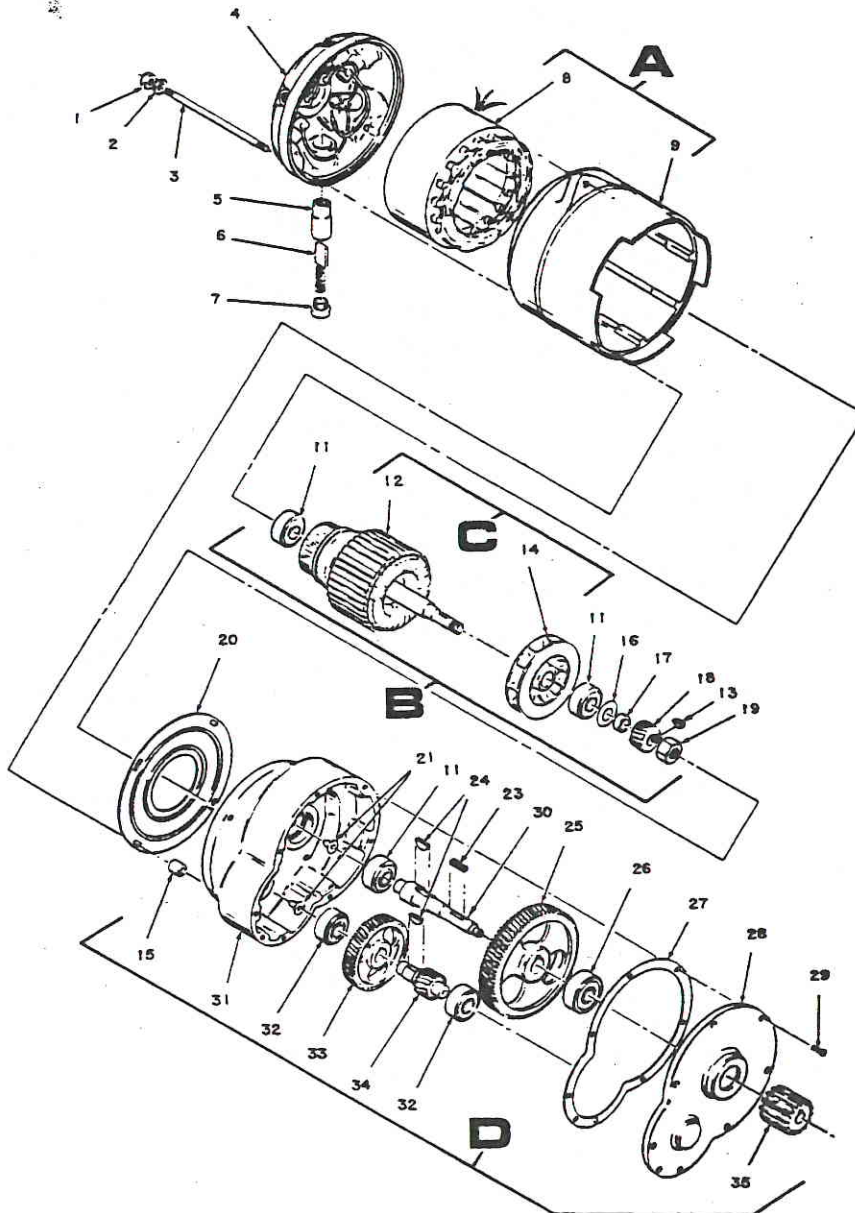
--	13735	1	Lubricator Pump. See Detailed Lube Pump Assy #20080
--	20035	1	Switch, Limit, Carriage
--	K-961	1	Screw, SltdFilHd, #10-32x1

Optional Items. See Wiring Diagram

--	20190	1	Meter, Hour, 115V. 60Hz.
--	20191	1	Meter, Hour, 230V. 50Hz.
--	20106	1	Bracket, Hour Meter Mtg.
--	H-108-D	2	Setscrew, 1/4-20x3/4
--	B-354-P	2	Nut, Acorn, 1/4-20
--	20036	1	Filter, Radio Interf.
--	G-051	2	Screw, BHdCap, #10-24x1/2
--	B-132	2	Nut, Hex, #10-24
--	20037	1	System-on Light, 115V.
--	20038	1	System-on Light, 230V.

GEARMOTOR ASSEMBLY

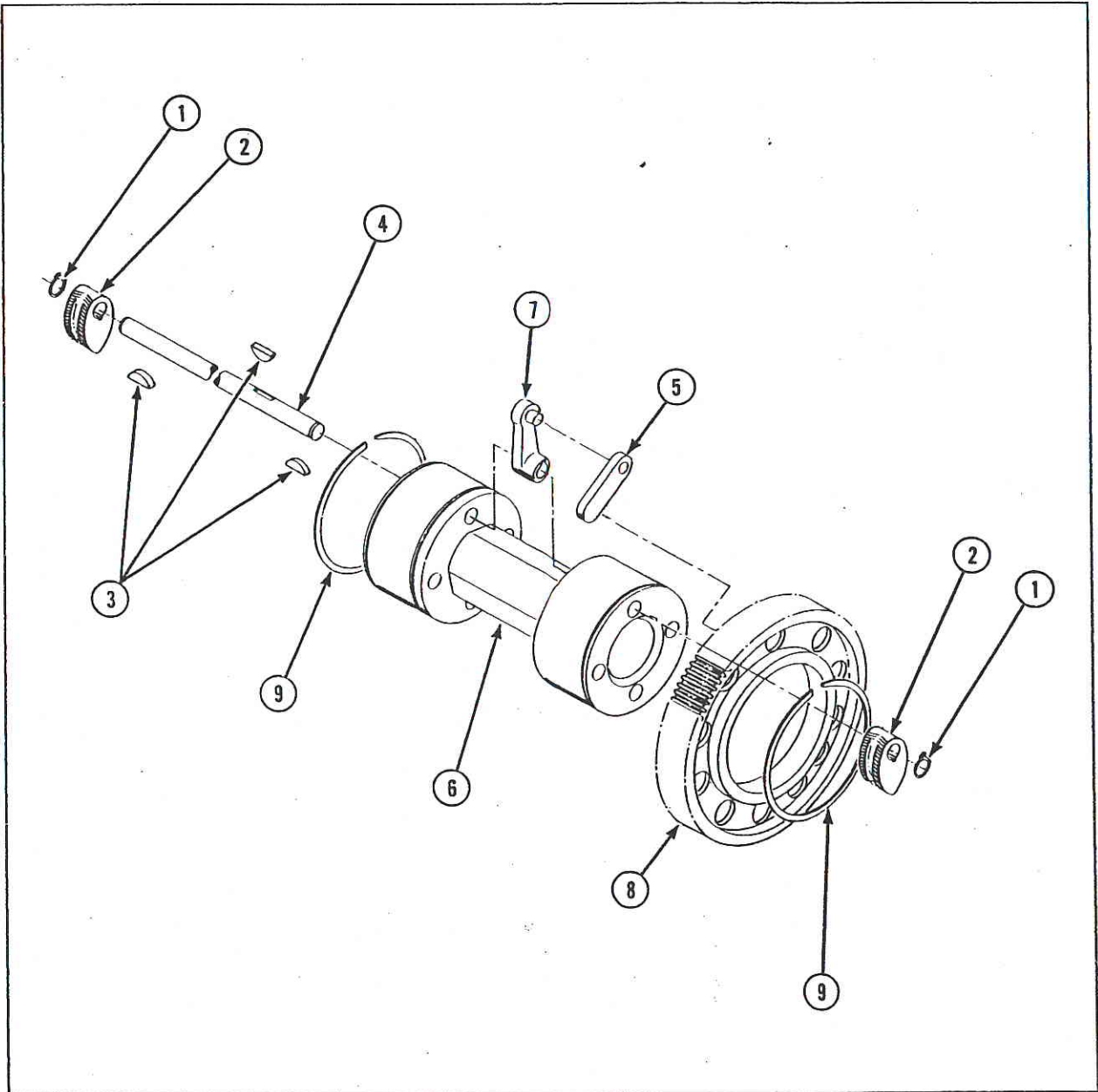
115V- #20040 230V- #20041



Item	Part No.	Description	Req'd	Item	Part No.	Description	Req'd
A	20120	Housing & Stator Assy, 115V	1	14	01355	Fan Assy, Motor	1
	20119	Housing & Stator Assy, 230V	1	15	01325	Retainer, Stator Baffle, Neoprene	4
B	20130	Armature Assy, Complete 115V	1	16	01332	Spacer, Slinger	1
	20129	Armature Assy, Complete 230V	1	17	01333	Spacer, Sleeve	1
C	20131	Arm. & Fan Assy, 115V	1	18	01336	Gear, Helical	1
	20132	Arm. & Fan Assy, 230V	1	19	01334	Nut, Hex.	1
D	20140	Gearcase Assembly	1	20	01323	Baffle, Stator, Motor	1
1	B-101	Nut, Hex.	4	21	01383-1	Plug, Hole, Plastic	2
2	C-109-MP	Washer, Lock, Hel. Spg.	4	23	20321	Key, Square	1
3	01361	Tie Rod, Motor	4	24	W-808	Key, Woodruff	1
4	01351	End Bell, Motor	1	25	20049	Gear, Helical	1
5	01352	Holder, Elec. Cont. Brush	6	26	01392-1	Bearing, Ball	1
6	01360-1	Brush, Elec. Cont.	6	27	01381-1	Gasket	1
7	01355	Cap, Elec. Cont. Brush, Mtr.	6	28	01382	Cover, Gearcase Housing	1
8	20121	Stator, Motor, 115V	1	29	K-1106	Screw, Machine, Sl. Fil. Hd.	7
8	20123	Stator, Motor, 230V	1	30	20320	Shaft, Output, Gearcase	1
9	20122	Housing, Stator, Motor	1	31	01381	Housing, Gearcase	1
11	01018-1	Bearing, Ball	2	32	01337	Bearing, Ball	2
12	20133	Armature only, 115V	1	33	01390	Gear, Helical	1
12	20134	Armature only, 230V	1	34	20048	Gearshaft, Helical	1
13	W-405	Key, Woodruff	1	35	20301	Gear, Spur, Gearmotor Outputshaft	1

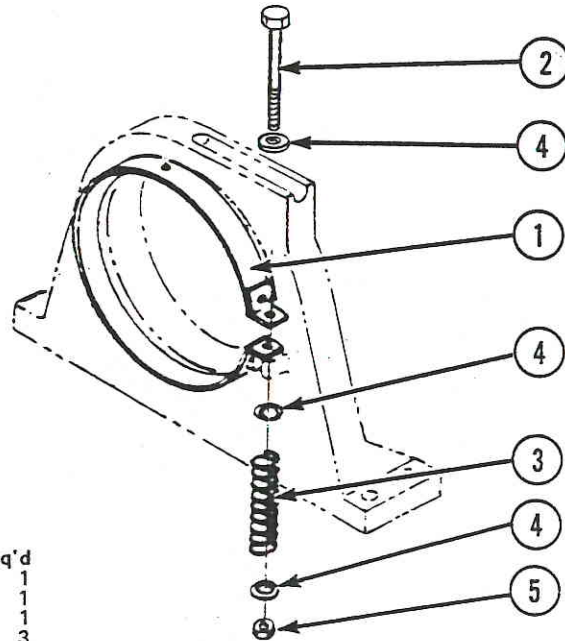
SPINDLE ASSEMBLY

20054



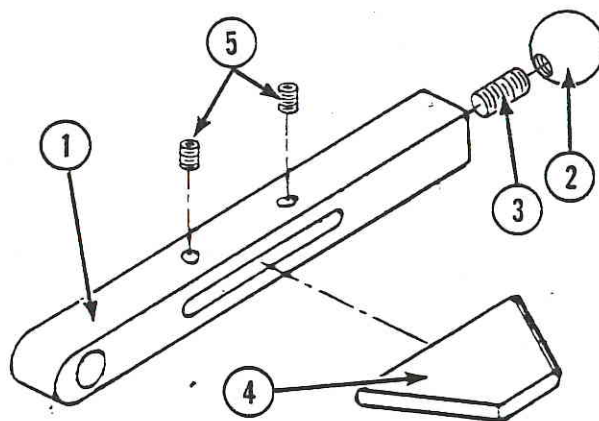
Item	Part No.	*Req'd	Description
1.	Y-5100-75	8	Ring, Retaining, Ext.
2.	20305	8	Jaw, Chuck, Reversible
3.	W-808	12	Key, Woodruff, 1/4 x 1 D.
4.	20306	4	Shaft, Jaw
5.	20205	4	Line, Jaw Lever
6.	20307	1	Spindle
7.	20303	4	Lever, Jaw, Spindle
8.	20302	1	Gear, Spur, Spindle, 169T.
9.	YKSA-775	3	Ring, Retaining, Ext.

BRAKE ASSEMBLY #20314



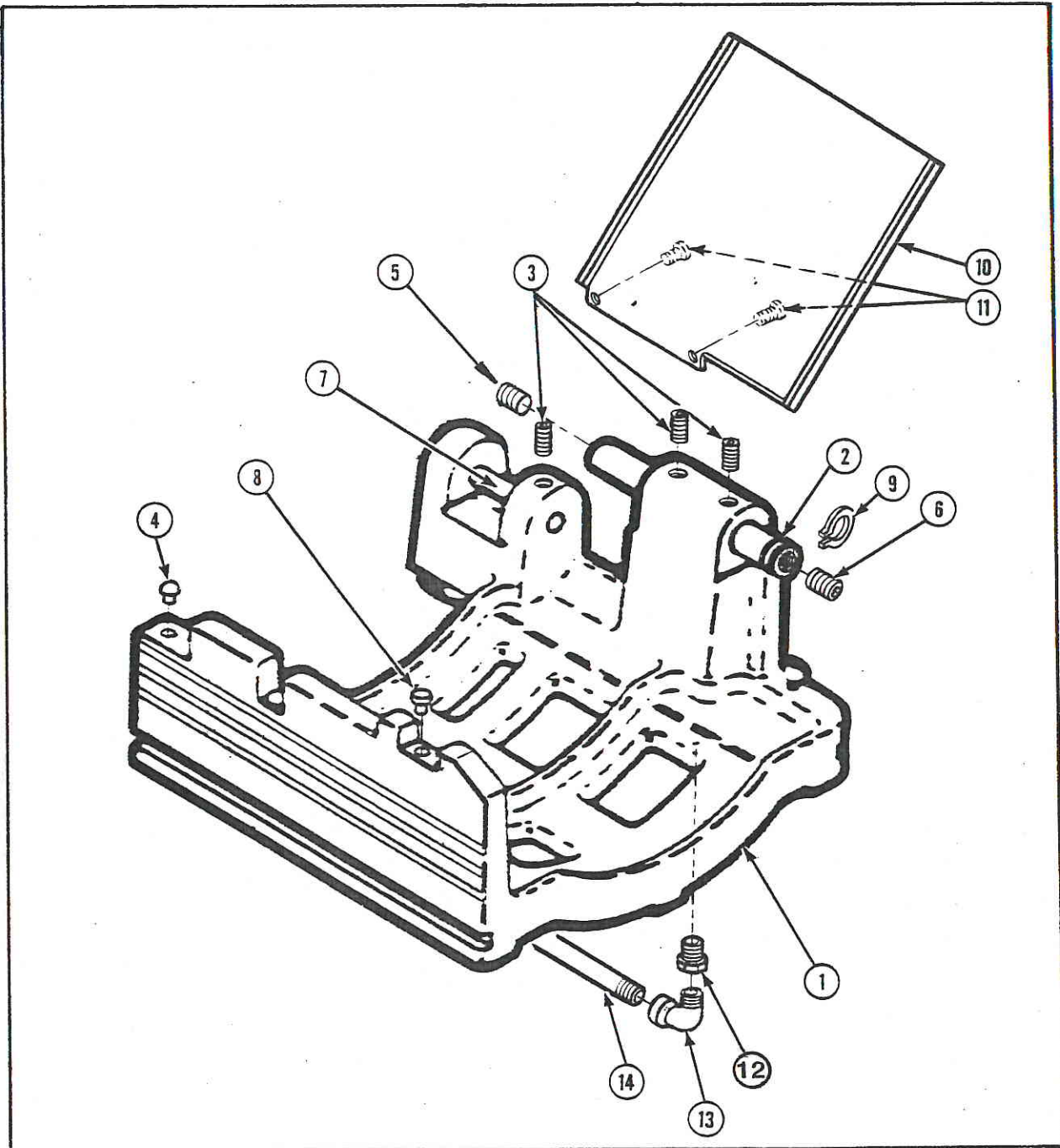
Item	Part No.	Description	Req'd
1	20313	Brake Shoe & Lining Assy.	1
2	04261-1	Bolt, Brake Adjusting	1
3	01254	Spring, Compr.	1
4	DA-104-W	Washer, Flat, 3/8"	3
5	B-303	Nut, Hex, 3/8-16	1

BLADE REAMER ASSEMBLY 2 1/2"-4" -- #~~04268~~ 20170



Item	Part No.	Description	Req'd
20153 1	04268	Holder, Reamer Blade	1
2	04943-1	Knob, Phenolic, R-10	1
3	H-508-D	Setscrew, Hxsc, Cp.Pt. 1/2-13x1 1/4"L	1
4	12237	Reamer, Flat 2 1/2"-4"	1
5	H-305-D	Setscrew, Hxsc, Cp.Pt. 3/8-16x1/2"L	2

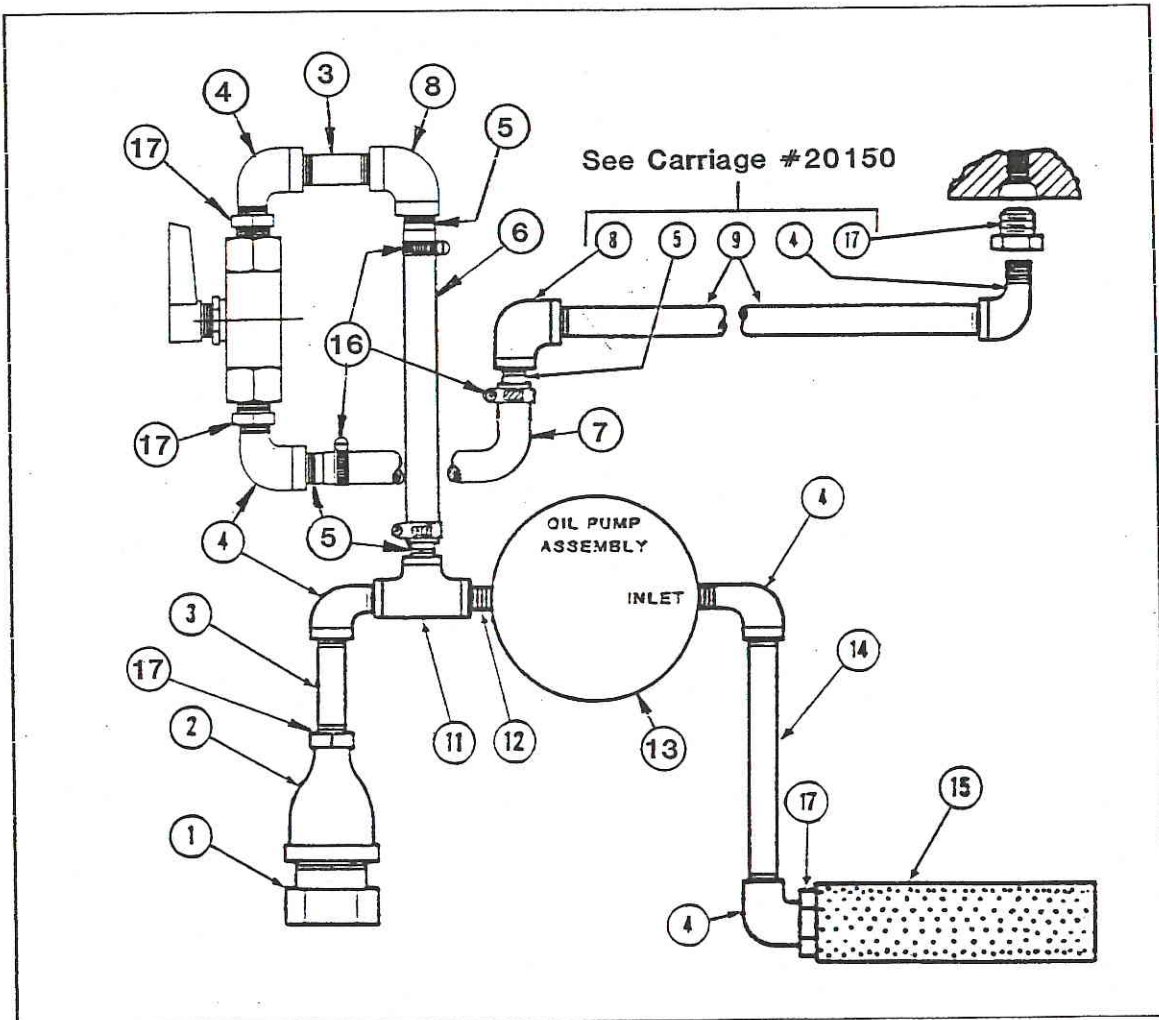
CARRIAGE & OIL TUBE ASSEMBLY #20150



Item	Part No.	Req'd	Description
1.	20151	1	Carriage
2.	20152	1	Pin, Die Head & Reamer Holding
3.	H-205-D	3	Setscrew, 5/16-18 x 1/2
4.	04655	1	Pin, Cutter Rest
5.	H-305	1	Setscrew, 3/8-16 x 1/2
6.	13140	1	Plug, Pipe, 1/8-27 NPT
7.	20157	1	Pin, Cutter Pivot
8.	01572	1	Pin, Die Head Rest
9.	Y-5100-87	1	Ring, Retaining, Reamer
10.	20156	1	Shield, Oil Drip
11.	NF-503-F	2	Screw, S-Tap, #10-24 x 1/2
12.	12892	1	Bushing, Pipe Reducer, 3/8 to 1/4 NPT.
13.	12891	1	Elbow, Street, Pipe, 1/4 x 1/4 x 90 Deg.
14.	20158	1	Nipple, Pipe, 1/4 x 20 L.
15.	12798	1	Elbow, Pipe, 1/4 x 1/4 x 90 Deg.
16.	20068	1	Nipple, Pipe, 1/4 x 2 L.

PUMP AND OIL LINE ASSEMBLY

20060



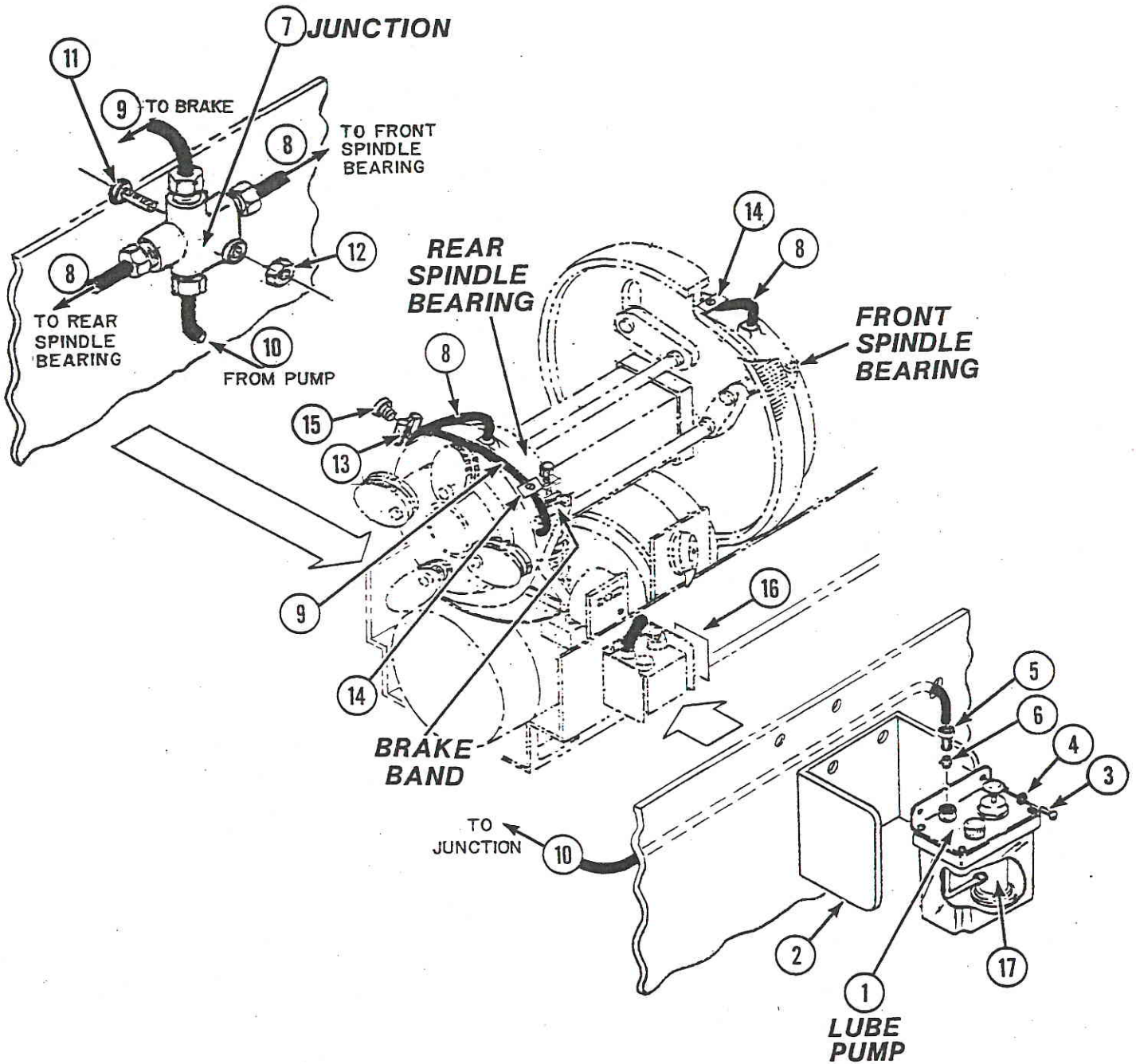
Item	Part No.	Req'd	Description
1.	04630	1	Valve Assy, Pressure Relief Includes: #04631 Body, #04632 Spring, #04633 Ball, #04638 Screw
2.	12795	1	Reducer, Bell, Pipe, 1/2 to 3/8
3.	12799	2	Nipple, Pipe, 1/4 x 2 L.
4.	12891	4	Elbow, Street, Pipe, 1/4 x 1/4
5.	20068	3	Adapter, Pipe to Hose
6.	20061	8"	Hose, Reinforced, 1/2d.
7.	20061	18"	Hose, Reinforced, 1/2d.
8.	12798	1	Elbow, Pipe, 1/4
11.	20062	1	Tee, Pipe, 1/4 x 1/4 x 1/4
12.	13460	1	Nipple, Pipe, Close, 1/4
13.	20067	1	Pump Assy.
14.	20069	1	Nipple, Pipe, 1/4 x 5 L.
15.	20063	1	Strainer Assy.
16.	01568	4	Clamp, Hose
17.	12892	4	Bushing, Pipe Reducer, 3/8 to 1/4
18.	12236	1	Valve, Oil Control

The following items are not included in Pump & Oil Line Assy. No. 20060

4.	12891	1	Elbow, Street, Pipe, 1/4 x 1/4
5.	20068	1	Adapter, Pipe to Hose
8.	12798	1	Elbow, Pipe, 1/4
9.	20158	1	Pipe, 1/4 x 20 L.
17.	12892	1	Bushing, Pipe Reducer, 3/8 to 1/4

LUBE PUMP ASSEMBLY

#20080



Item	Part No.	Description	Req'd
1	13735	Lubricator, Manual (w/Filter Element)	1
2	17526	Guard, Manual Lubricator	1
3	G-104-S	Screw, Cap, Soc. But. Hd. 1/4"-20x5/8"L	2
4	CB-109-A	Washer, Lock, Int. Tooth, 1/4"	2
5	13736	Sleeve, Compression, 5/32" Tubing	6
6	13737	Bushing, Compression, 5/32" Tubing	7
7	13738	Junction, 4-Way, 5/32"	1
8	13739-21	Tubing, Steel, Lube Oil, 5/32x21"L	2
9	13739-28	Tubing, Steel, Lube Oil, 5/32x28"L	1
10	13739-33	Tubing, Steel, Lube Oil, 5/32x33"L	1
11	G-108	Screw, Cap, Soc. But. Hd. 1/4"-20x1 1/4"L	1
12	B-101	Nut, Hex, 1/4"-20	1
13	01560	Clamp, Jiffy, Double Loop, 1/8"	2
14	01559	Clamp, Jiffy, Single Loop, 1/8"	4
15	NF-503-F	Screw, S-Tap, SI Pn Hd TPF #10-24x 1/2"L	3
16	13754	Plate, Instruction, Lubricator	1
17	13753	Filter Element (Replacement)	--

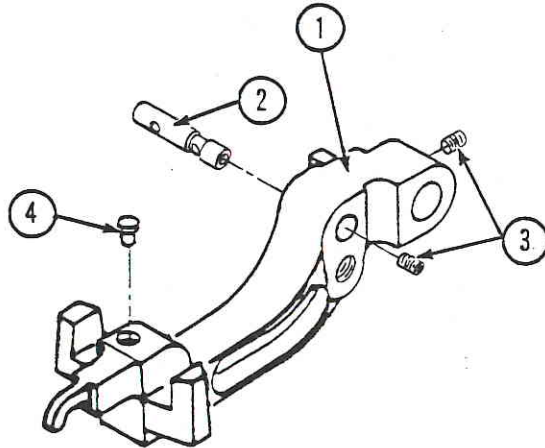


HANS JORGENSEN

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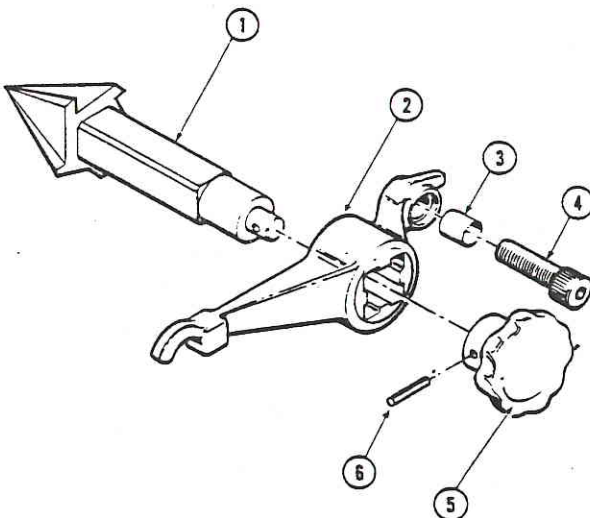
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SMALL DIE HEAD ADAPTER #20180



Item	Part No.	Description	Req'd
1	20154	Adapter, Small Die Hd.	1
2	12886	Pin, Adapter, Small Die Hd.	1
3	13140	Plug, Pipe, Hx. Soc. 1/8-27 NPT	2
4	01572	Pin, Die Hd. Rest	1

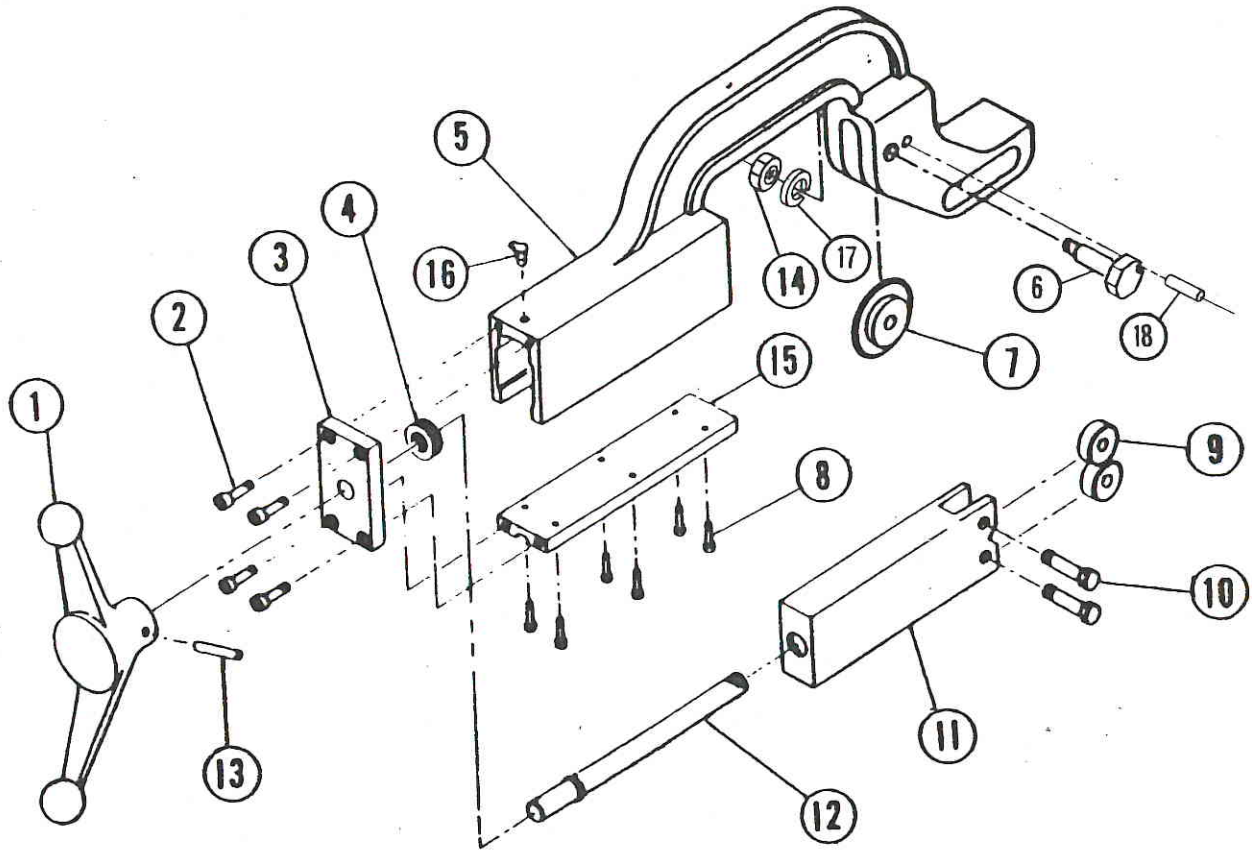
CONE REAMER ASSEMBLY, 1/8-2" PART NO. #10060



ITEM	PART NO.	DESCRIPTION	REQ'D
1	13212	CONE REAMER, 5-FLUTE	1
2	10065	HOLDER, CONE REAMER	1
3	02139-1	SPACER, ATTACHING SCREW	1
4	F-607-S	SCREW, REAMER ATTACHING	1
5	01652	KNOB, CONE REAMER	1
6	U-717	PIN, SPRING, 3/16"x1 1/4"L.	1

WHEEL TYPE CUTTER ASSEMBLY

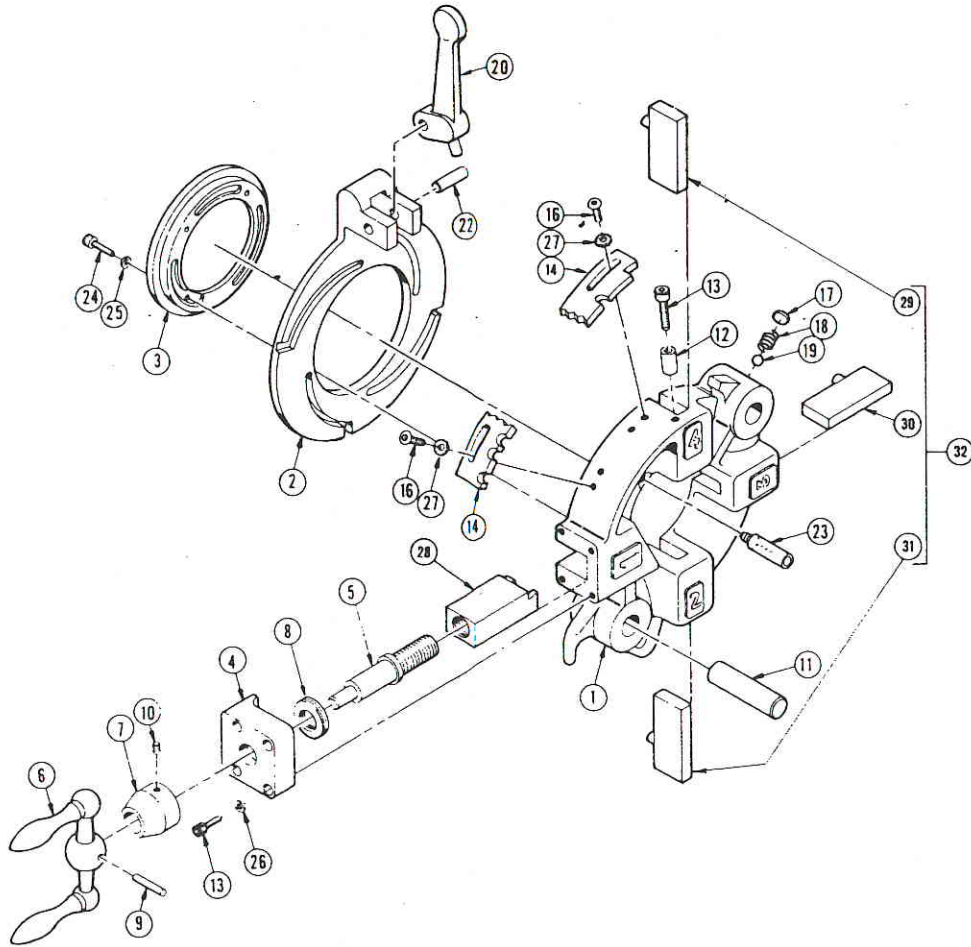
½-4" - #~~01055~~ 20160



Item	Part No.	Description	Req'd
1	04711	Handle, Operating	1
2	F-107	Screw, Cap, Soc Hd ¼-20x1" L	4
3	04652	Plate, Front	1
4	04656	Bearing, Thrust	1
5	01055 20155	Body, Cutter, Wheel	1
6	16325	Bolt	1
7	04121	Cutting Wheel, Sch 80 Pipe	1
8	F-063	Screw, Cap, Soc Hd #10-32x3/4" L	6
9	04117	Roller	2
10	01124	Screw, Roller & Ctg Whl 3/8-24x1 ¼" L	2
11	04651	Roller Block	1
12	04103	Screw, Feed	1
13	P-9061-A	Pin, Grooved, TP-A ¼x1-3/8" L	1
14	B-155-P	Nut, Hex, ½-20	1
15	04653	Plate, Bottom	1
16	01023-22	Cup, Oil, Lubricating	1
17	C-113-MP	Washer, Lock, Hel Spg ½" (PLTD)	1
18	P-704-A	Pin, Grooved, TP-A 3/16x3/4" L	1

GROOVING HEAD ASSEMBLY

3/4"-2", #12200-2



Item	Part No.	Description	Req'd
1.	12210	Housing, Grooving Head	1
2.	1632	Scroll Plate, SOM	1
3.	1433	Retainer, Scroll Plate	1
4.	12217	Bearing Block, Groover Housing	1
5.	12095	Screw, Feed, Grooving Tool	1
6.	12215	Handle, Feed Screw, Grooving Tool	1
7.	12097	Indicator, Groove Depth	1
8.	12096	Bearing, Thrust	1
9.	P-706-A	Pin, Grooved, Handle Att., 3/16" x 1"	1
10.	H-103-A	Set Screw, Groove Depth Indicator, 1/4"-20 x 5/16"	1
11.	1431-1	Pin, Die Head Rest	1
12.	13113	Spacer, Scroll Plate Stop	1
13.	F-107	Screw, Scroll Plate Stop and Bearing Block Att., 1/4"-20 x 1 Soc. Hd. Cap	5
14.	13386	Selector Plate, 3/4"-2"	1
16.	G-104	Screw, Selector Plate Att., 1/4"-20 x 5/8" But. Hd. Cap	4
17.	12135	Plug, Expansion, 3/8"	1
18.	12220	Spring, Compression, Die Head	1
19.	13385	Ball, Bearing, 5/16" dia.	1
20.	1633	Lever and Pin Assembly, Operating, Snap-O-Matic	1
22.	0-406	Pin, Dowel, Operating Lever Pivot, 5/16" x 1 1/4" lg.	1
23.	12216	Tube, Oil Dispensing	1
24.	F-053	Screw, Ret. Plate Att., 10 -24" x 3/4" Soc. Hd. Cap	1

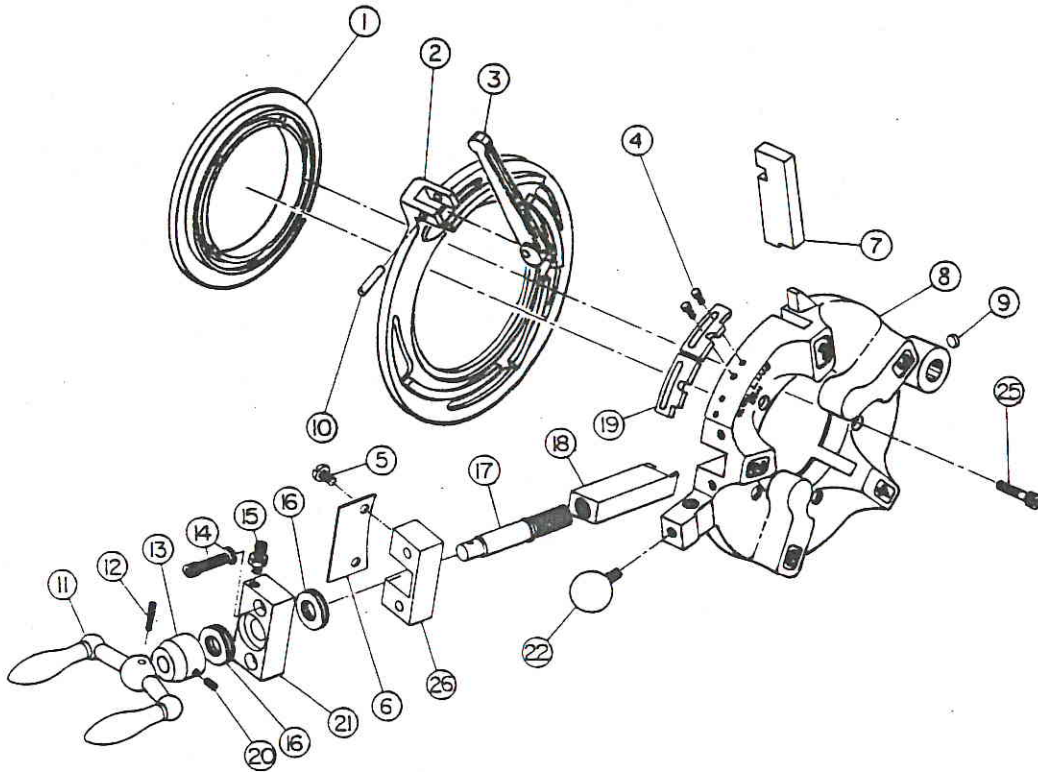
Item	Part No.	Description	Req'd
25.	C-107-HC	Washer, Spring Lock, No. 10 Hi-Collar	4
26.	C-109-HC	Washer, Spring Lock, 1/4" Hi-Collar	4
27.	CC-109-A	Washer, Lock, 1/4" Ext. Tooth	4
28.	—	See Optional Accessories below	
29.	13388	Die, Centering, Left Hand	1
30.	13389	Die, Centering, Straight	1
31.	13387	Die, Centering, Right Hand	1
32.	13390	Set of three centering dies	

Optional Accessories Not Included in #12200-2

28.	12205	Grooving Tool, Victaulic, 1"-2" (Sch. 80 Max.)
	12206	Cut-Off Tool, 1"-2"
	12212	Beveling Tool, 37 1/2°, 1"-2"
	12269	Beveling Tool, 45°, 1"-2"
	12878	Grooving Tool, First Step, 1"-2"
	13088	Grooving & Cut-Off Tool, Type "ES," 2"
	13767	Beveling Tool, 45° J-Bevel, 1"-2" (Sch. 80 Max.)
	13310	Reaming-Chamfering Tool, 30° x 25°, 3/4"-1 1/2"
	13944	Reaming-Chamfering Tool, Michigan Pipe, 10° x 30°; 1"-2"
	13779	Reaming-Chamfering Tool, 10° x 37 1/2°, 1"-2"
	12219	Grooving Tool, Saran Pipe, 1"-2"
	13361	Grooving Tool, Titan Plastic Lined Pipe, 1"-2" (Sch. 40 Max.)

GROOVING & BEVELING HEAD ASSEMBLY

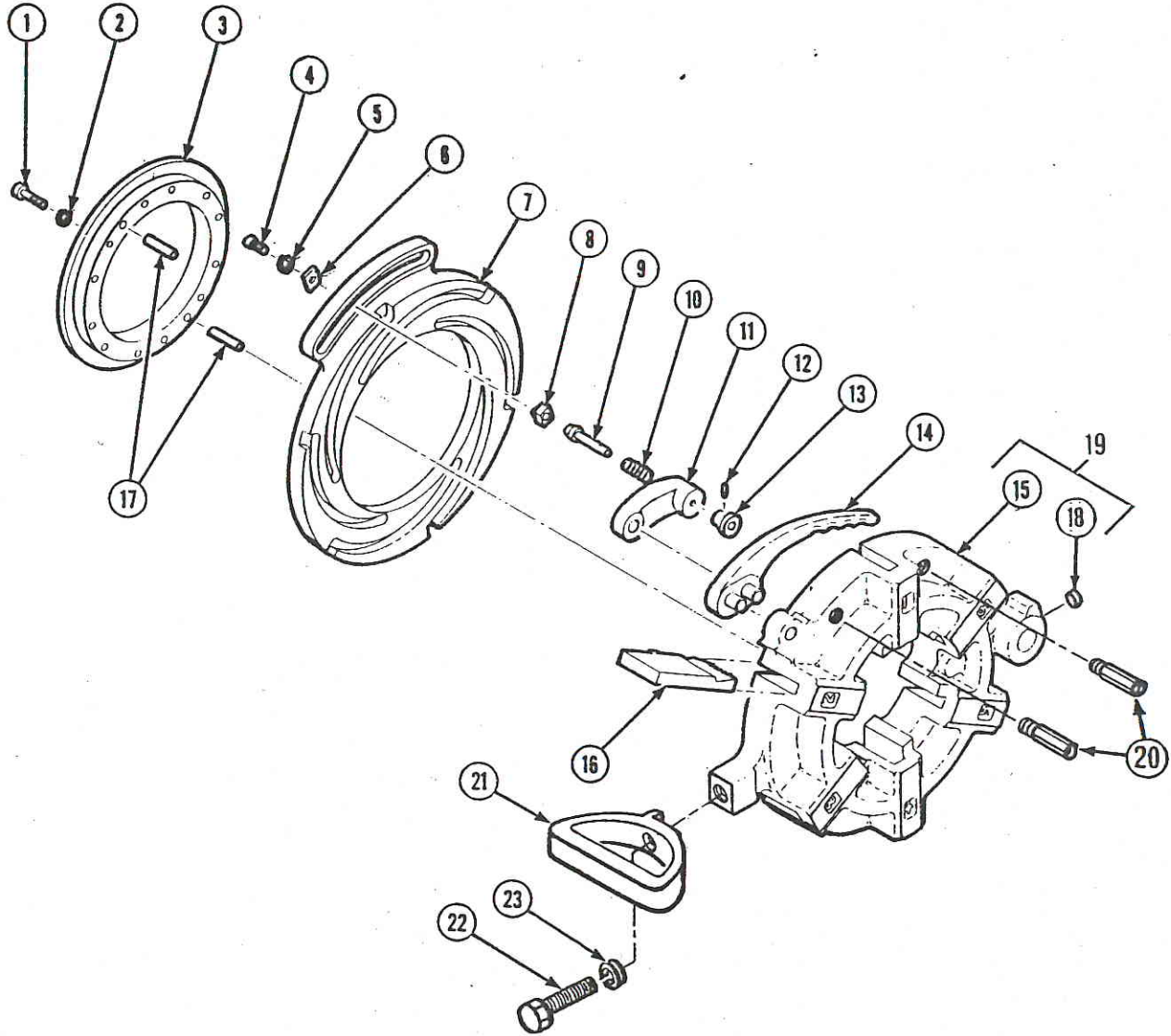
2 1/2-3" - # 00574, 3 1/2-4" - #00575



Item	Part No.	Description	Req'd
1	04905	Retainer, Scroll Plate	1
2	12122	Scroll Plate	1
3	06602	Lever & Pin Assembly	1
4	A-102-P	Screw, Hex, Hd. Cap, 1/4-20x1/2	2
5	L-1100	Screw, Sl. Rd. Hd, 1/4-20x1/4	2
6	12228	Cover, Die Sl. Ext.	1
7	12101	Die Set, Centering, 2 1/2-3"	1
7	12104	Die Set, Centering, 3 1/2-4"	1
8	20220	Housing, Grooving/Beveling	1
9	12235	Plug, Expansion, 1/2"	1
10	O-408	Pin, Dowel, 5/16x1 3/4 (included w/item 3)	1
11	12215	Handle, Feedscrew	1
12	P-706-A	Pin, Grooved, 3/16x1	1
13	13059	Indicator, Groove Depth, 2 1/2-3"	1
13	13060	Indicator, Groove Depth, 3 1/2-4"	1
14	F-209	Screw, Soc.Hd.Cap, 5/16-18x1 3/4	2
14	C-110-HC	Washer, Lock, 5/16	2
15	F-105	Screw, Soc. Hd. Cap, 1/4-20x3/4	1
15	B-101-P	Nut, Hex, 1/4-20	1
16	12096	Bearing, Thrust	2
17	12227	Screw, Feed	1
18	12229-40	Grooving Tool, Sch. 40 Pipe, 1/2-6"	1
18	12229-80	Grooving Tool, Sch. 80 Pipe, 2 1/2-6"	1
18	12213	Double Bevel Tool, 37 1/2°, 2 1/2-6"	1
18	12268	Double Bevel Tool, 45°, 2 1/2-6"	1
18	12218	Saran Tool, 2 1/2-6"	1
19	06608-2	Selector Plate, 2 1/2" NPT	1
19	06609-2	Selector Plate, 3" NPT	1
19	06608-1	Selector Plate, 3 1/2" NPT	1
19	16608-2	Selector Plate, 4" NPT	1
20	H-103-D	Setscrew, HXSC, 1/4-20x5/16	1
21	12094	Bearing Block, Feed Screw	1
22	04943-1	Knob, Phenolic	1
22	H-508-D	Setscrew, HXSC, 1/2-13x1 1/4	1
25	F-211	Screw, Soc. Hd. Cap, 5/16-18x2 1/4	5
25	C-110-HC	Washer, Lock, 5/16"	5
26	12226	Extension, Slot	1

QUADMATIC DIE HEAD ASSEMBLY

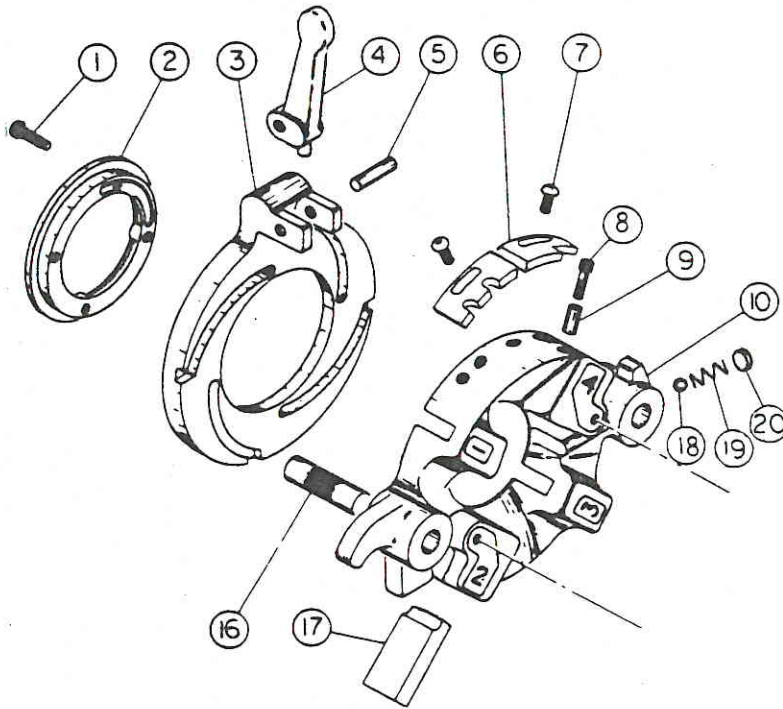
2 1/2 - 4" - #20200



Item	Part No.	Description	Req'd	Item	Part No.	Description	Req'd
1	F-107	Screw, Cap, Soc. Hd.	12	13	12668	Knob, Selector Pin	1
2	C-109-HC	Washer, Lock, Hel. Spg.	12	14	20204	Lever, Operating	1
3	20203	Retainer, Scr. Plate	1	15	20201	Housing, Die Head	1
4	F-1003	Screw, Cap, Soc. Hd.	4	16	--	Set of Threading Dies (Specify Size & Type)	1
5	C-109-M	Washer, Lock, Hel. Spg.	4	17	O-402	Pin, Dowel	2
6	12696	Washer, Selector Ret.	4	18	12235	Plug, Expansion	1
7	20202	Scroll P't	1	19	20210	Housing Assembly, Die Head	1
8	12694	Selector, Size	4	20	12216	Dispenser, Cutting Oil	2
9	12667	Pin, Selector	1	21	06950	Handle, Die Head	1
10	12669	Spring, Compr.	1	22	A-504-P	Screw, Cap, Hex. Hd.	1
11	20304	Link, Operating Lever	1	23	C-113-MP	Washer, Lock, Hel. Spg.	1
12	U-407	Pin, Spring	1				

SNAP-O-MATIC DIE HEAD ASSEMBLIES

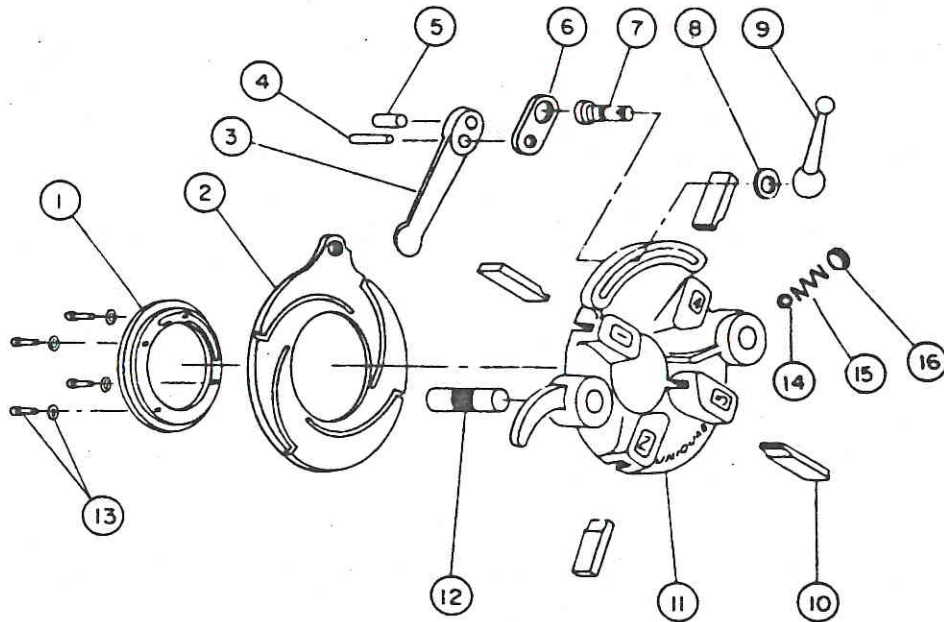
1/2 - 3/4" - #12922, 1 - 2" - #12925



Item	Part No.	Description	Req'd
1	F-053	Screw, Soc. Hd., #10-24x3/4	4
1	C-107-HC	Washer, Lock, #10	4
2	01673	Retainer, Scroll Plate, 1/8-3/4	1
2	01433	Retainer, Scroll Plate, 1"-2"	1
3	01642	Scroll Plate, 1/8-3/4	1
3	01632	Scroll Plate, 1"-2"	1
4	01633	Lever, Operating	1
5	O-406	Pin, Dowel, Operating Lever	1
6	01646	Selector Plate, 1/8"	1
6	01645	Selector Plate, 1/4 & 3/8"	1
6	01644-1	Selector Plate, 1/2"	1
6	01644-2	Selector Plate, 3/4"	1
6	01635-1	Selector Plate, 1"	1
6	01634-1	Selector Plate, 1"-1 1/4-1 1/2"	1
6	01636-1	Selector Plate, 1 1/2"	1
6	01636-2	Selector Plate, 2"	1
7	G-104-S	Screw, Soc. But Hd., 1/4-20x5/8	4
7	CC-109-A	Washer, Lock, Ext. Tooth, 1/4"	4
8	F-107	Screw, Cap, Soc. Hd., 1/4-20x1"	1
9	13113	Stop, Scroll Plate	1
10	01641	Housing, Die Head, 1/8-3/4	1
10	01631	Housing, Die Head, 1"-2"	1
16	01431-1	Pin, Pivot, Die Head	1
17	--	Set of Threading Dies, (specify size & type)	1
18	13385	Ball, Bearing, 5/16 Dia.	1
19	12220	Spring, Compression	1
20	12135	Plug, Expansion, 3/8 Dia.	1

UNIQUAD DIE HEAD ASSEMBLY

1/2 - 2" - #12914



Item	Part No.	Description	Req'd
1	01433	Retainer, Scroll Plate	1
2	01432	Scroll Plate, Uniquad	1
3	01437	Lever, Operating	1
4	O-407	Pin, Dowel, 5/16x1 1/2	1
5	O-703	Pin, Dowel, 1/2x1 1/4	1
6	02183	Link, Operating Lever	1
7	02182	Screw, Link Pivot	1
8	DA-204-N	Washer, Flat, 3/8"	1
9	01436	Lever, Locking, Scroll Plate	1
10	-	Set of Threading Dies (specify size & type)	1
11	01431	Housing, Die Head	1
N/S	O-202	Pin, Dowel, 3/16x5/8	2
12	01431-1	Pin, Die Head	1
13	F-053	Screw, Cap, Soc. Hd, #10-24x3/4	4
13	C-107-HC	Washer, Lock, Hel, Spring, #10	4
14	13385	Ball, Bearing, 5/16 DIA	1
15	12220	Spring, Compression	1
16	12135	Plug, Expansion, 3/8"	1