

**Lull**®

---

***Illustrated Parts Manual***

***Model  
422***

**10709897**

**S/N 102 to 186**

October 1980 - December 1982

***ANSI***

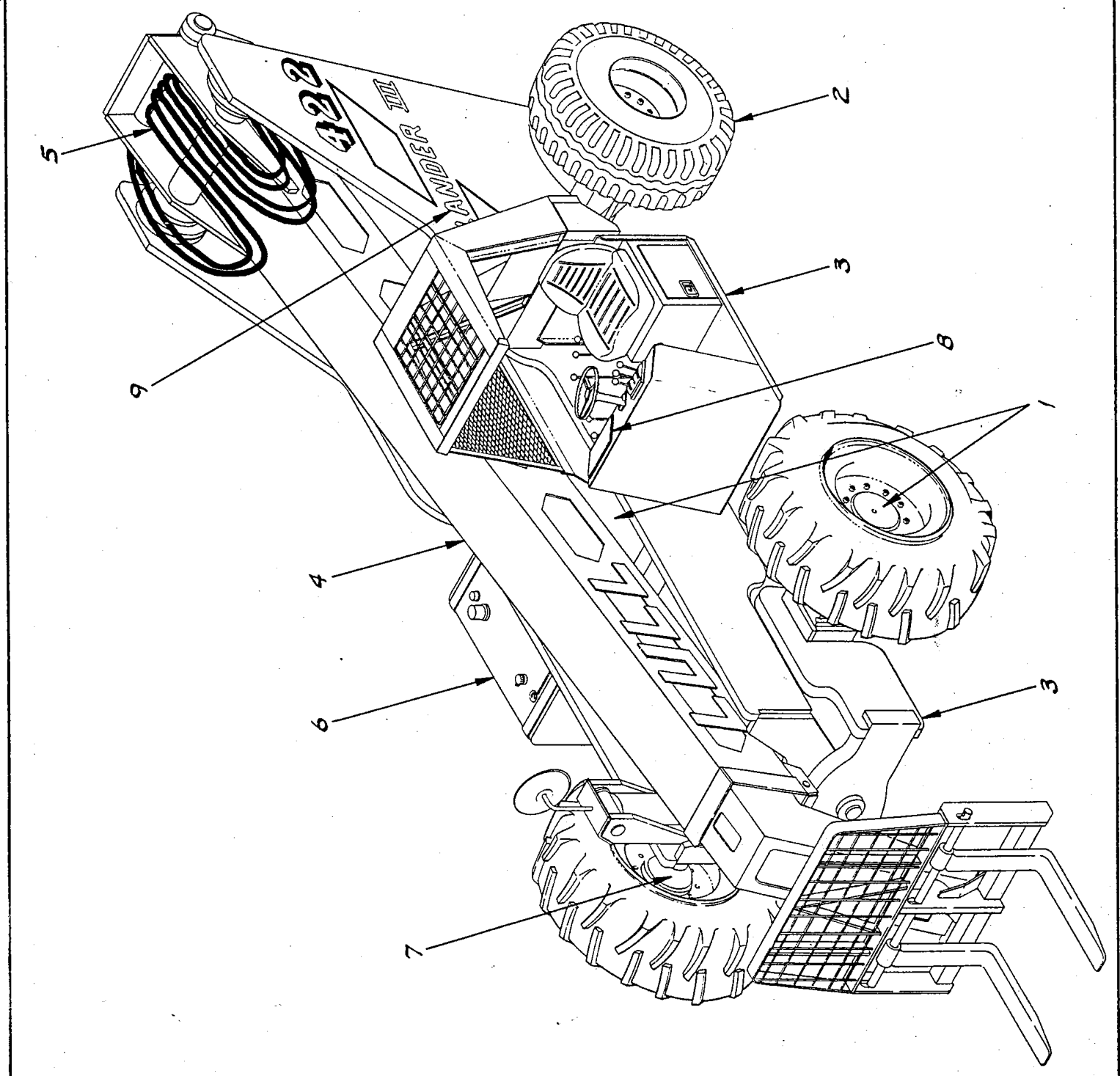
---

***JLG***®

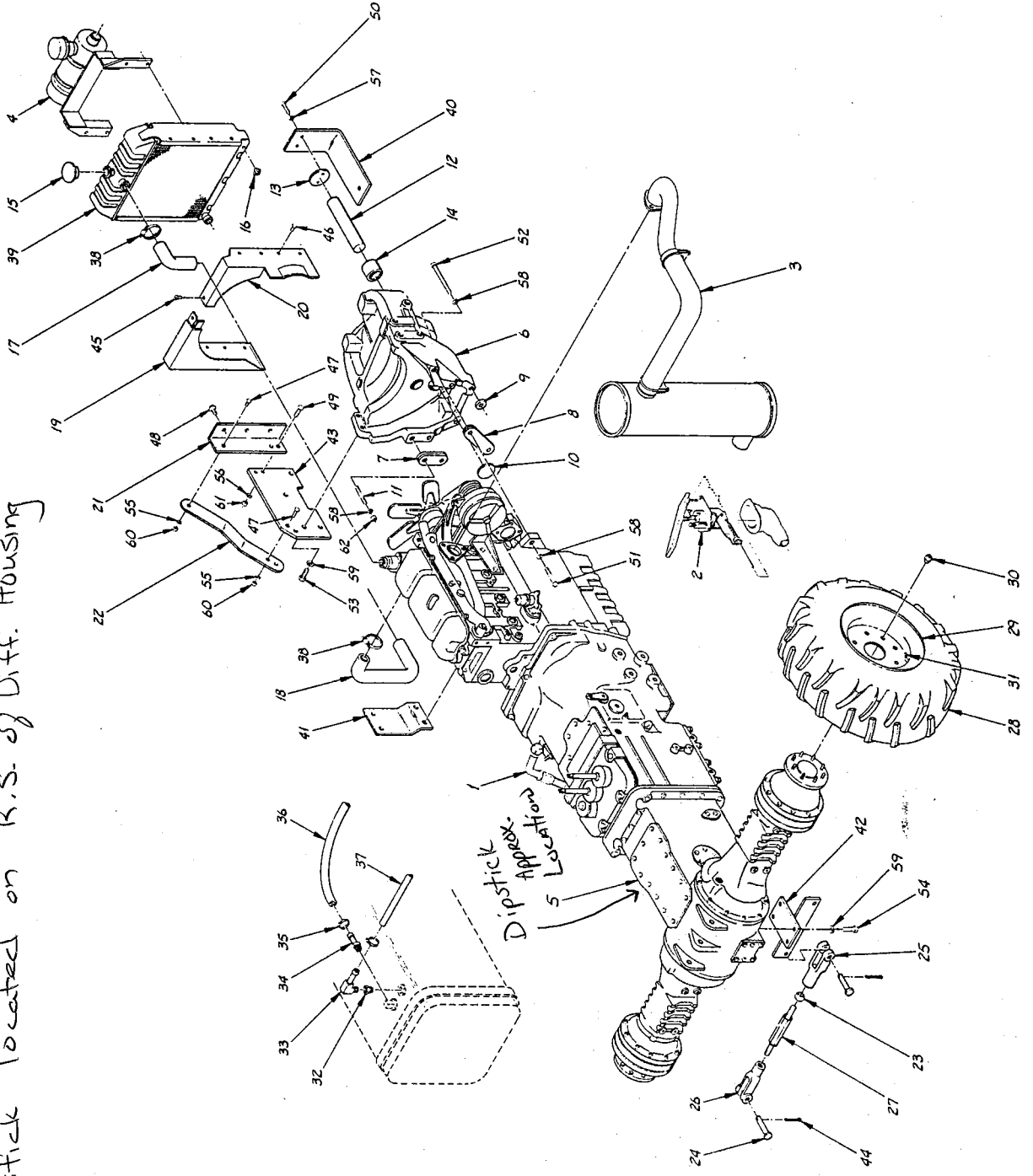


ITEM NO.	ASSEMBLY NUMBERS	DESCRIPTION
1	19051	DRIVE TRAIN ASSEMBLY
	19052	TRANSMISSION FILTER ASS'Y
	19053	THROTTLE & E.S.O ASSEMBLY
	19054	EXHAUST ASSEMBLY
	19055	AIR CLEANER ASSEMBLY
2	19056	STEER AXLE ASS'Y
	19057	STEER AXLE CYLINDER ASS'Y
3	19058	MAIN FRAME ASSEMBLY
	19059	OPERATOR'S PLATFORM
	19060	INSTRUMENT PANEL ASS'Y
4	19061	TELESCOPIC BOOM
5	19062	UPPER HYDRAULIC'S
	19063	HOIST CYLINDER ASSEMBLY
	19064	BOOM EXTENSION CYLINDER
	19065	MASTER CARRIAGE TILT CYL.
	19066	CARRIAGE TILT CYLINDER
6	19067	LOWER HYDRAULIC'S
	19068	FRAME TILT CYLINDER ASS'Y
	19069	BOOM CONTROL LEVERS
	19070	THREE SPOOL CONTROL
7	19071	BRAKE ASSEMBLY
8	19072	WIRING HARNESS ASS'Y
	19073	WIRING DIAGRAM
9	19074	DECAL LOCATION
10	19075	LUBRICATION SCHEDULE
	19076	STANDARD FORK CARRIAGE
	19077	TOW PACKAGE ASSEMBLY
	19078	
	19079	
	19080	

<b>LULL</b>	ST. PAUL MINNESOTA 55121
Engineering Co., Inc.	
DRAWN BY <b>JEFF DAUB</b>	S/N 101 THRU
DRAWING TITLE	
<b>FINAL ASSEMBLY</b>	SCALE <b>C</b>
<b>MODEL 422</b>	DRAWING NO. <b>19050</b>



Dipstick located on R.S. of Diff. Housing

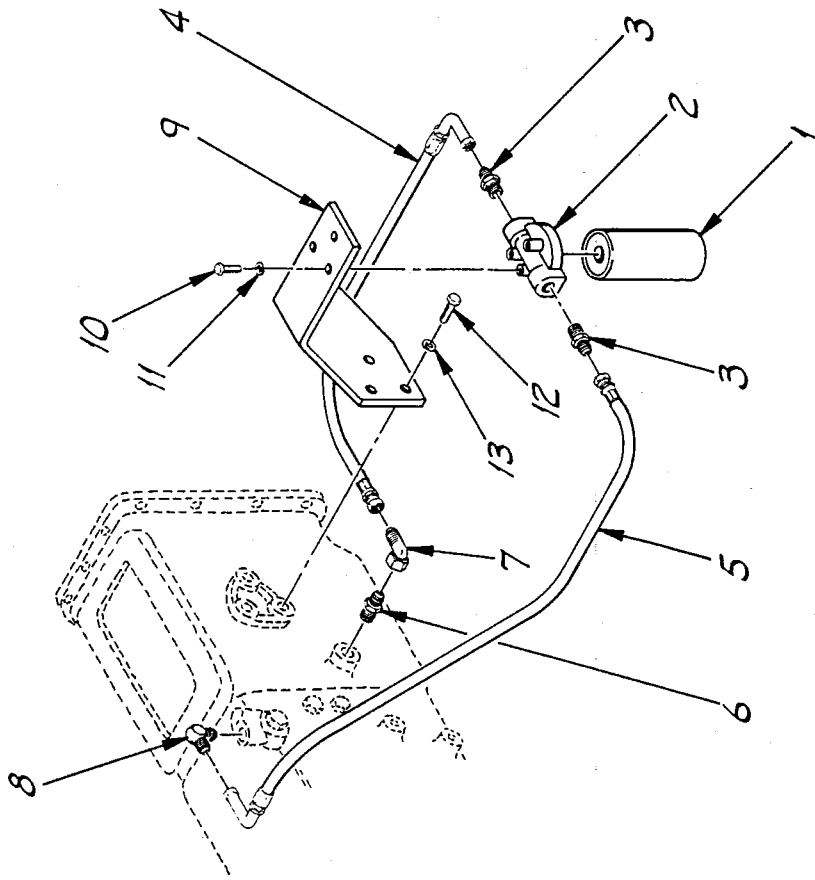


ITEM	PART NO	DESCRIPTION	REQ.
1	COM L	NUT, HX. 5/8" - 18 NF	1
2	COM L	NUT, HX. 3/8" - 16 NC	4
3	COM L	NUT, HX. 1/4" - 20 NC	6
4	COM L	LOCKWASHER, 3/4"	8
5	COM L	LOCKWASHER, 5/8"	2
6	COM L	LOCKWASHER, 7/16"	5
7	COM L	LOCKWASHER, 3/8"	4
8	COM L	LOCKWASHER, 1/4"	6
9	COM L	BOLT, HX. 3/4" - 10 NC - 2"	4
10	COM L	BOLT, HX. 5/8" - 11 NC - 1 1/2"	4
11	COM L	BOLT, HX. 7/16" - 20 NC - 3 1/2"	2
12	COM L	BOLT, HX. 3/8" - 16 NC - 1"	2
13	COM L	BOLT, HX. 3/8" - 16 NC - 1"	2
14	COM L	BOLT, HX. 5/16" - 24 NF - 5/8"	4
15	COM L	BOLT, HX. 1/4" - 20 NC - 1"	6
16	COM L	SCREW, HX. 5/16" x 3/8"	8
17	COM L	SCREW, SLTD. 1/4" - 20 NC - 1/2"	1
18	COM L	COTTER PIN, 5/16" x 1 1/2"	1
19	COM L	ANCHOR BRACKET	2
20	190018	ANCHOR BRACKET	2
21	188498	BRACKET, FUEL FILTER	1
22	188208	LOCK PLATE, PIVOT	1
23	191794	RADIATOR	1
24	194043	HOSE CLAMP	4
25	191710	HOSE 1/4" RETURN	32
26	194587	HOSE 3/4" SUPPLY	65
27	193618	HOSE CLAMP	4
28	193679	CONNECTOR	1
29	217317	ELBOW, 90°	1
30	213351	REDUCER	1
31	213673	VALVE STEM	1
32	22434	LUG NUT	16
33	21662	ARM	2
34	21660	TIRE, 16.9 x 24	2
35	22575	STABILIZER BAR	2
36	22574	CLEVIS, L.H. THREAD	2
37	22573	CLEVIS, R.H. THREAD	2
38	22572	CLEVIS PIN	4
39	22571	JAM NUT	4
40	22570	SUPPORT BRACE	2
41	22569	BRACKET	2
42	22568	FAN SHROUD, RIGHT	2
43	22567	FAN SHROUD, LEFT	1
44	22566	RADIATOR HOSE, LOWER	1
45	22565	RADIATOR HOSE, UPPER	1
46	22564	DRAIN COCK	1
47	22563	RADIATOR CAP	1
48	22544	BUSHING	2
49	22552	RETAINING PLATE	1
50	22551	PIVOT SHAFT	1
51	22550	STUD, SPECIAL	1
52	22549	PLUG, PIVOT SHAFT	1
53	22548	SPACER, SHORT	2
54	22547	SPACER, LONG	1
55	22546	REAR PIVOT HOUSING	1
56	22000	CHASSIS	1
57	19065	AIR CLEANER ASSY	1
58	19054	EXHAUST ASSEMBLY	1
59	19053	THROTTLE E.S.O. ASSY	1
60	19052	TRANSMISSION FILTER	1

**LULL** Engineering Co., Inc.  
 ST. PAUL, MINNESOTA, MINN.

QUANTITY: 5/N 101 THRU  
 SCALE: D  
 DRAWING NO: 19051

DRIVE TRAIN ASSEMBLY  
 MODEL 422



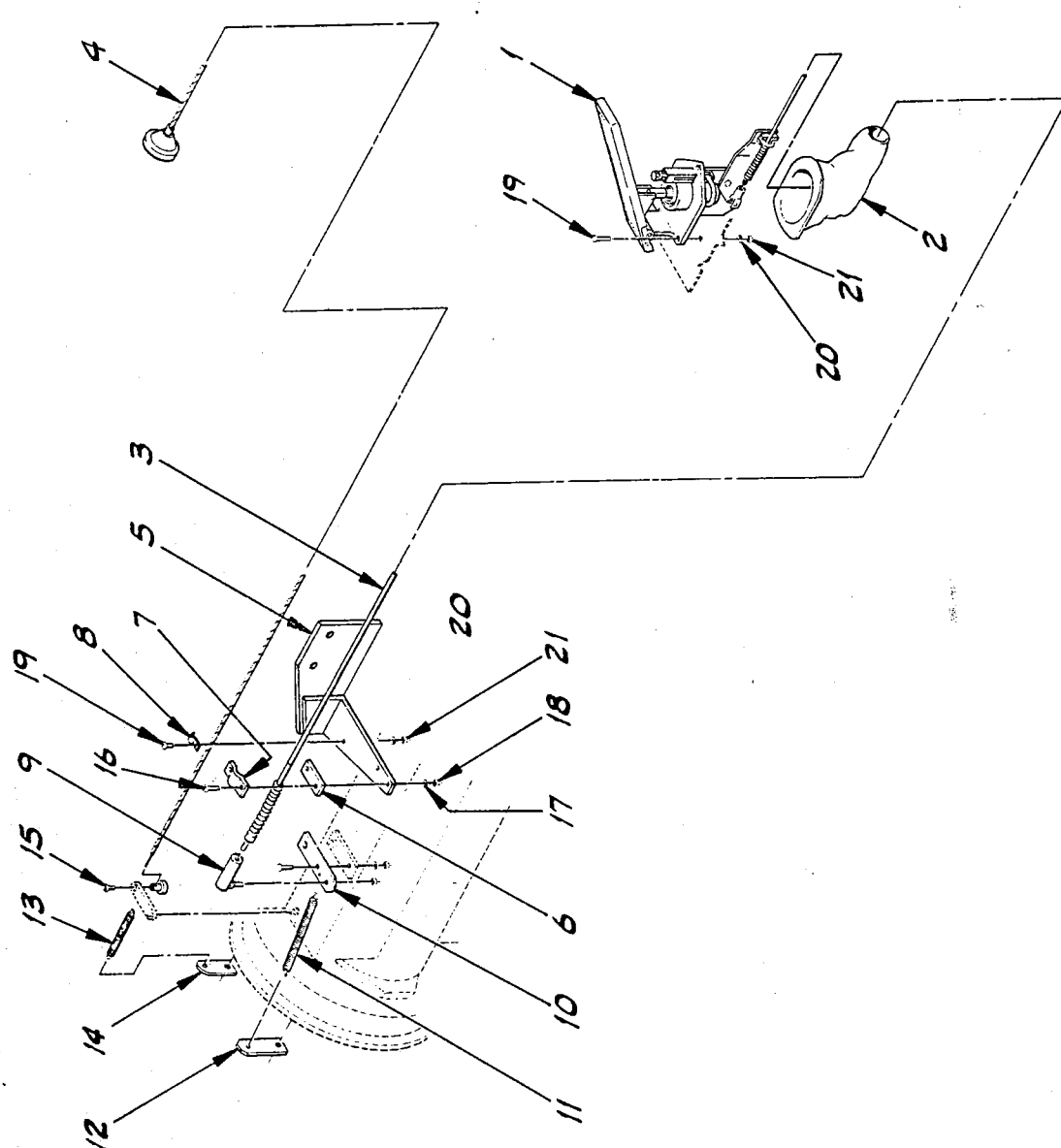
ITEM	PART NO.	DESCRIPTION	REQ.
13	COM'L	LOCKWASHER, 7/16"	3
12	COM'L	BOLT, HX. 7/16"-14 NC x 1 1/4"	3
11	COM'L	LOCKWASHER, 5/16"	3
10	COM'L	BOLT, HX. 5/16"-18 NC x 1"	3
9	188508	FILTER SUPPORT BRKT.	1
8	P18952	90° MALE ELBOW	1
7	P21579	90° MALE ELBOW, SW.	1
6	P18944	CONNECTOR, O-RING	1
5	P21637	HYD. HOSE, 1/2" x 10"	1
4	P21636	HYD. HOSE, 1/2" x 18"	1
3	P18996	CONNECTOR, O-RING	2
2	P19132	FILTER BASE	1
1	P19133	FILTER, TRANSMISSION	1

**WLL** Engineering Co., Inc.  
 ST. PAUL,  
 MINNESOTA  
 55121

DRAWN BY  
**JEFF DAUB**  
 S/N 101 THRU

DRAWING TITLE  
**TRANSMISSION FILTER  
 ASSEMBLY  
 MODEL 422**

SCALE **B**  
 DRAWING NO.  
**19052**



ITEM	PART NO.	DESCRIPTION	REQ.
21	COM'L	NUT, HX 1/4"-20 NC	5
20	COM'L	LOCKWASHER, 1/4"	5
19	COM'L	BOLT, HX 1/4"-20 NC x 3/4"	5
18	COM'L	NUT, HX #10-24 NC	2
17	COM'L	LOCKWASHER, #10	2
16	COM'L	SCREW, RD. HD. #10-24 x 1/2"	2
15	P20455	CABLE STOP, SHUT-OFF	1
14	177864	SPRING ANCHOR	1
13	P17337	SPRING, SHORT	1
12	177704	SPRING ANCHOR	1
11	P15274	SPRING, LONG	1
10	17771A	EXTENSION, THROTTLE	1
9	P10505	BALL JOINT	1
8	P12497	CLIP, SHUT-OFF CABLE	1
7	P17678	CLAMP, THROTTLE CABLE	1
6	P19128	SHIM, CLAMP	1
5	188888	CABLE MOUNT BRACKET	1
4	P13445	CABLE, ENGINE SHUT-OFF	1
3	P19264	CABLE, THROTTE	1
2	P19268	RUBBER BOOT	1
1	P19263	ACCELERATOR PEDAL	1

**WLL** Engineering Co., Inc.  
 ST. PAUL  
 MINNESOTA  
 55121

DRAWN BY  
**JEFF DAUB**

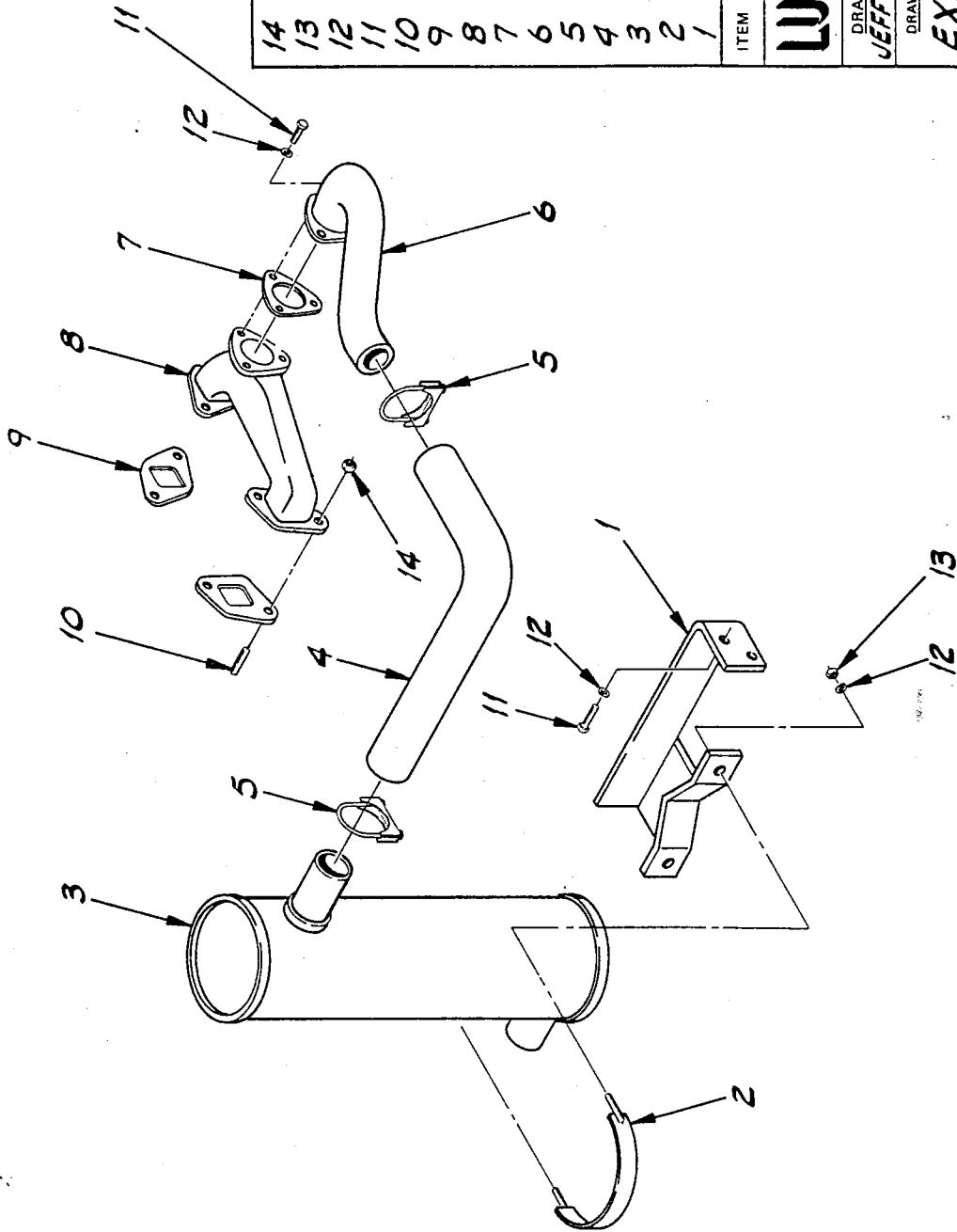
DRAWING TITLE  
**S/N 101 THRU**

SCALE  
**B**

DRAWING NO.  
**19053**

**THROTTLE AND ENGINE  
 SHUT-OFF ASSEMBLY**

MODEL 422



ITEM	PART NO.	DESCRIPTION	REQ.
14	COM'L	NUT, HX 3/8"-24 NF	4
13	COM'L	NUT, HX 3/8"-16 NC	2
12	COM'L	LOCKWASHER, 3/8"	7
11	COM'L	BOLT, HX 3/8"-16 NCx1	5
10	P22214	STUD	4
9	P22170	GASKET, MANIFOLD	2
8	P22198	EXHAUST MANIFOLD	1
7	P22197	GASKET, ELBOW	1
6	P22561	EXHAUST ELBOW	1
5	P12169	MUFFLER CLAMP	2
4	P21684	EXHAUST PIPE	1
3	P21675	MUFFLER	1
2	19012A	MUFFLER STRAP	1
1	19009B	MUFFLER BRACKET	1

**LULL**

Engineering Co., Inc.

ST. PAUL,  
MINNESOTA  
55121

DRAWN BY  
**JEFF DAUB**

S/N 101 THRU

DRAWING TITLE

**EXHAUST SYSTEM  
ASSEMBLY  
MODEL 422**

SCALE

**B**

DRAWING NO.

**19054**

REF	PI2179	FILTER ELEMENT	REQ.
24	P22173	GASKET, FRONT	1
23	P22172	GASKET, CENTER	1
22	P22171	GASKET, REAR	1
21	P22199	INTAKE MANIFOLD	1
20	COM'L	NUT, HX 1/4"-20 NC	4
19	COM'L	LOCKWASHER, 1/4"	4
18	COM'L	BOLT, HX 1/4"-20 NC x 1"	4
17	COM'L	BOLT, HX 5/16"-24 NF x 1"	4
16	COM'L	NUT, HX 5/16"-18 NC	4
15	COM'L	LOCKWASHER, 5/16"	8
14	COM'L	BOLT, HX 5/16"-18 NC x 1"	4
13	PI0601	HOSE CLAMP	4
12	P20905	CLAMP, AIR CLEANER	1
11	PI9727	VACUATOR CUP	1
10	P20342	VACUATOR VALVE	1
9	P21683	RUBBER ELBOW	1
8	18347-21	TUBE EXTENSION	1
7	PI9873	90° RUBBER ELBOW	1
6	190388	MOUNTING PLATE	1
5	190378	L.H. SUPPORT BRACKET	1
4	190368	R.H. SUPPORT BRACKET	1
3	PI2165	MOUNTING BAND	2
2	PI2164	RAIN CAP	1
1	PI2163	AIR CLEANER, COMPLETE	1

**LULL**

Engineering Co., Inc.

ST. PAUL,  
MINNESOTA  
55121

DRAWN BY  
JEFF DAUB

S/N 101 THRU

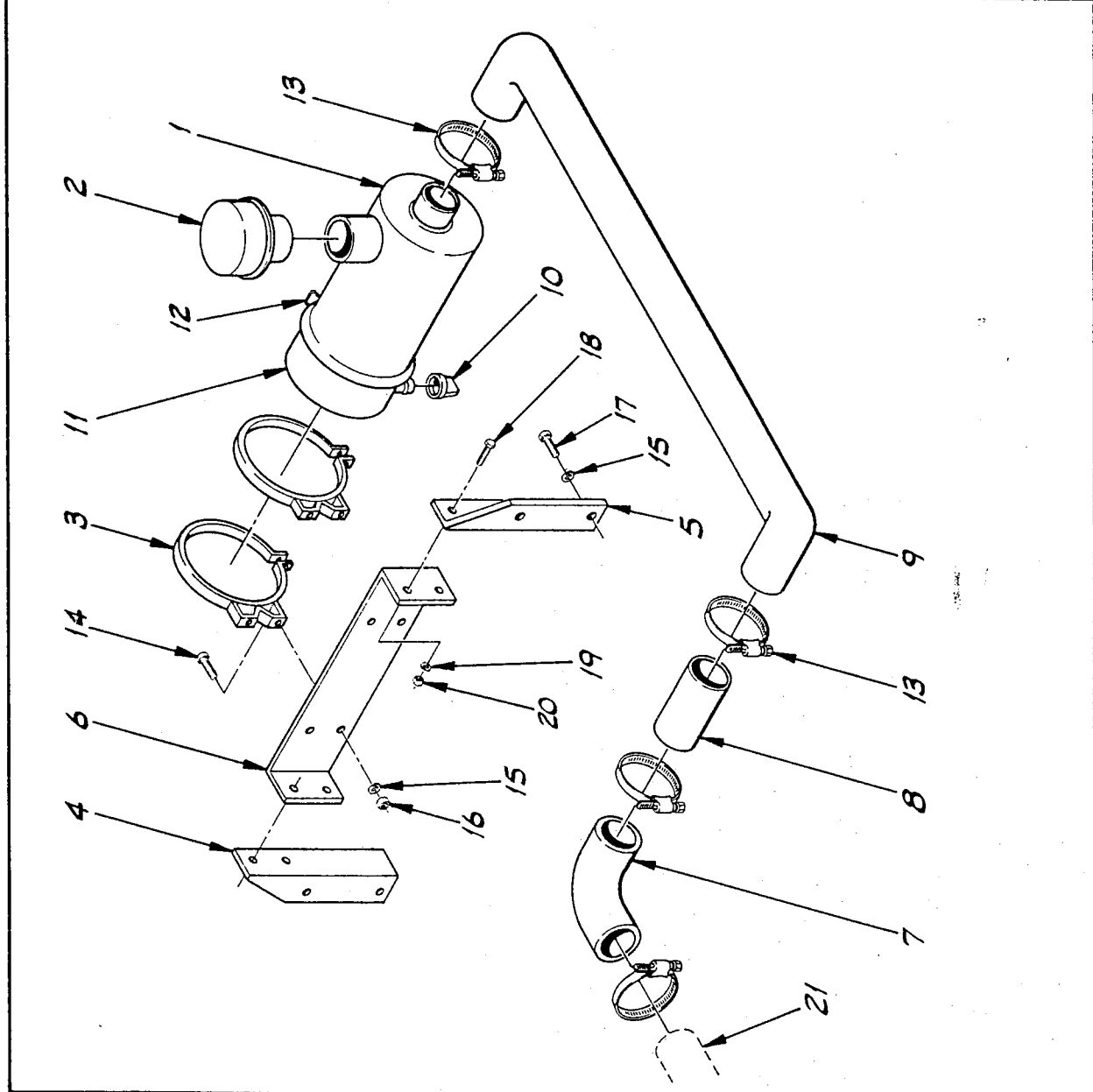
DRAWING TITLE

AIR CLEANER  
ASSEMBLY  
MODEL 422

SCALE  
B

DRAWING NO.

19055



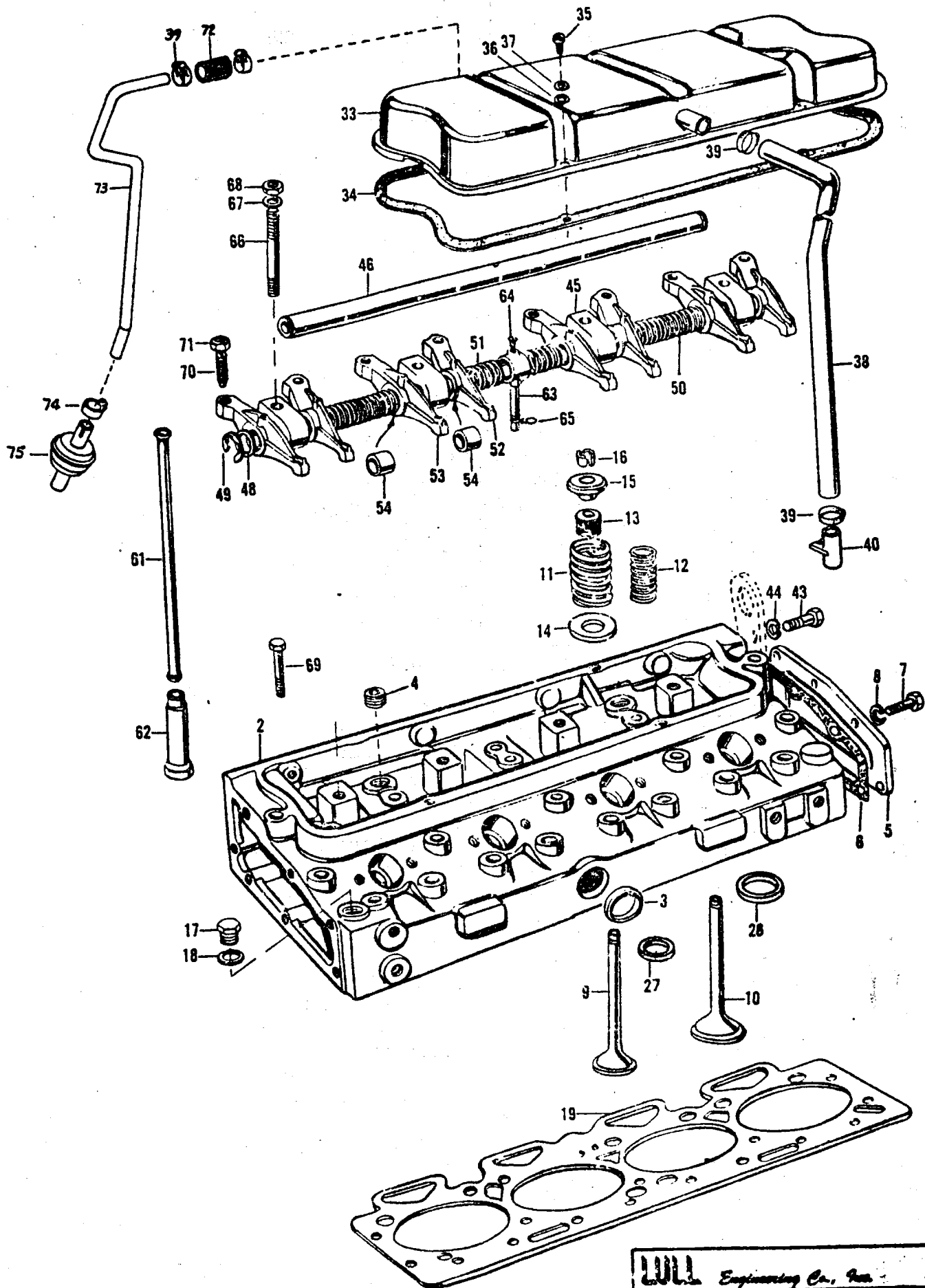


INDEX OF PARTS

<u>ASSEMBLY</u>	<u>PAGE</u>
Cylinder Head & Rockershaft . . . . .	1, 2, 3
Cylinder Block . . . . .	4, 5
Rings, Pistons, Connecting Rods & Bearing . . . . .	6, 7
Camshaft & Timing Gears . . . . .	8, 9
Crankshaft & Main Bearing . . . . .	10, 11
Oil Pan, Pump & Filter . . . . .	12, 13
Water Pump & Outlet . . . . .	14, 15
Fuel Injection Lines . . . . .	16, 17
Fuel Pump & Filter . . . . .	18, 19
Transmission Case & Control Valve . . . . .	20, 21
Gear Shift . . . . .	22, 23
Gear Group . . . . .	24, 25
Shaft & Clutch Group . . . . .	26, 27
Torque Converter . . . . .	28, 29
Differential Housing . . . . .	30, 31
Differential, Internal . . . . .	32, 33
Front Axle . . . . .	34, 35
Disc Brakes . . . . .	36, 37
Differential Lock . . . . .	38, 39
Parts Not Illustrated . . . . .	40
* Torque Converter . . . . .	41

\* For S/N 169, 171-173, 175-177, 181, 182, 184 & 186 ONLY

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55121
INDEX OF PARTS 422 CHASSIS	PART NUMBER 1835	



<b>WILL</b> Engineering Co., Inc. <small>CHICAGO, ILL.</small>		<small>ST. PAUL,  MINNESOTA</small>
<b>CYLINDER HEAD &amp;  ROCKERSHAFT</b>		<b>PUBLICATIO  NO 1836</b>

CYLINDER HEAD, COVER, VALVES AND ROCKERSHAFT

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22051	Head Assembly, Cylinder (Incl. Items 3 thru 18)	1
3	P22006	Plug (1-1/4" Cup Type)	1
4	P22052	Plug (1/2" - 14 Hex., Sckt. Hd.)	2
5	P22053	Cover, Rear	1
6	P22169	Gasket, Rear Cover	1
7	Com'1.	Bolt (5/16 x 3/4" NF, Hex.)	6
8	Com'1.	Washer (5/16" Lock)	6
9	P22062	Valve, Intake (Std)	4
9	P22063	Valve, Intake (+.003")	x
9	P22064	Valve, Intake (+.015")	x
9	P22065	Valve, Intake (+.030")	x
10	P22066	Valve, Exhaust (Std.)	4
10	P22067	Valve, Exhaust (+.003")	x
10	P22068	Valve, Exhaust (+.015")	x
10	P22069	Valve, Exhaust (+.030")	x
11	P22061	Spring, Valve (Outer)	8
12	P22060	Spring, Valve (Inner)	8
13	P22091	Seal, Valve Stem	8
14	P22058	Washer, Valve Spring	8
15	P22057	Cap, Intake Valve Spring	8
16	P22056	Lock, Valve (Set of 2)	4
17	P22054	Plug, Top Face	1
18	P22055	Washer (5/8" Aluminum)	1
19	P22167	Gasket, Cylinder Head	1
27	P22070	Insert (Intake)	4
28	P22071	Insert (Exhaust)	4
33*	P22072	Cover, Cylinder Head	1
34*	P22167	Gasket, Cylinder Head Cover	1
35	P22074	Screw, Cylinder Head Cover	4
36	Com'1.	Washer (1/4 x 9/16 x 1/16")	4
37	Com'1.	Washer (1/4" Lock)	4
38	P22090	Pipe, Breather	1
39	P13613	Clamp, Hose	2
40	P22091	Bracket, Breather Pipe	1
43	Com'1.	Bolt (3/8 x 7/8" NF, Hex.)	4
44	Com'1.	Washer (3/8" Lock)	4
45	P22075	Bracket, Rockershaft	4
46*	P22076	Rockershaft	1
48	Com'1.	Washer (3/4 x 15/16 x 3/32")	2
49	P22078	Ring, Snap	2
50	P22079	Spring, Rockershaft (Long)	2
51	P22080	Spring, Rockershaft (Short)	2
52	P22081	Lever, Right Hand (Incl. Item 54)	4
53	P22082	Lever, Left Hand (Incl. Item 54)	4
54	P22083	Bushing, Lever	1

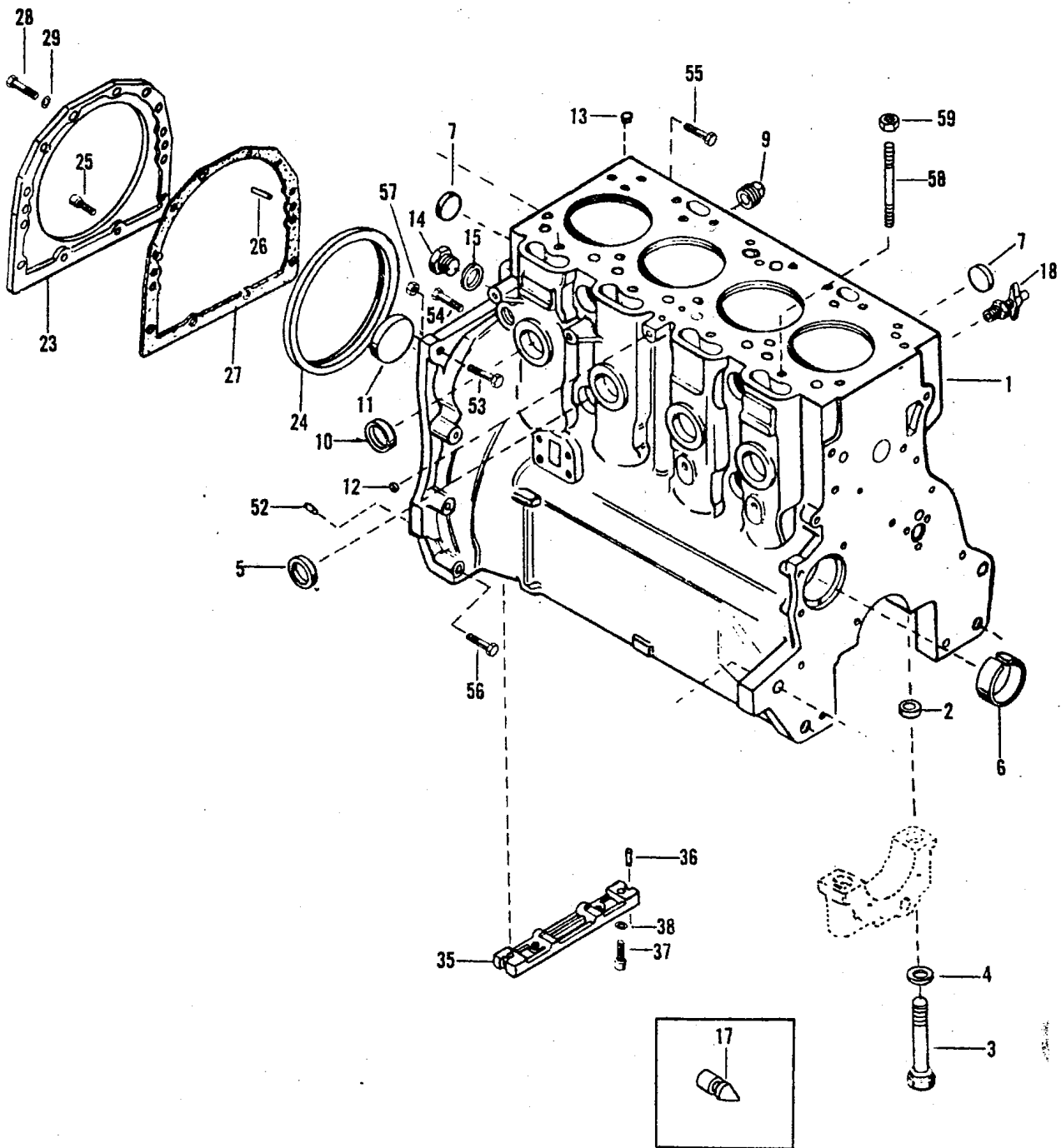
<u>ITEM</u>	<u>PART. NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
61	P22084	Rod, Push	8
62	P22085	Tappet, Valve	8
63	P22086	Oil Line, Rockershaft	1
64		Screw (#10 - 32 x 7/16" Hex.)	1
65	P22087	"O" Ring (1/4" I.D. x 1/4")	1
66	P22088	Stud (7/16" NF x 2-1/2")	4
67	Com'l.	Washer (7/16 x 7/8 x 3/32")	4
68	Com'l.	Nut (7/16" NF, Hex., Lock)	4
69	Com'l.	Bolt (1/2 x 4-1/8" NF, Hex.)	12
69	Com'l.	Bolt (1/2 x 3-1/2" NF, Hex.)	6
69	Com'l.	Bolt (1/2 x 4-15/16" NF, Hex.)	2
70	P22089	Screw, Tappet Adjusting	8
71	Com'l.	Nut (3/8" NF, Hex.)	8
72	P22092	Hose, Breather	1
73	P22093	Extension, Breather Pipe	1
74	P22094	Clip	1
75	P22095	Breather	1

\* For S/N 102 & 106 Use as Follows:

Item #33 P22073  
Item #34 P22194  
Item #46 P22077

<b>WLL</b> <i>Engineering Co., Inc.</i>		ST. PAUL, MINNESOTA 6121
DESCRIPTION	PUBLICATION NUMBER	
CYLINDER HEAD & ROCKERSHAFT, CON'T	1837	

# CYLINDER BLOCK



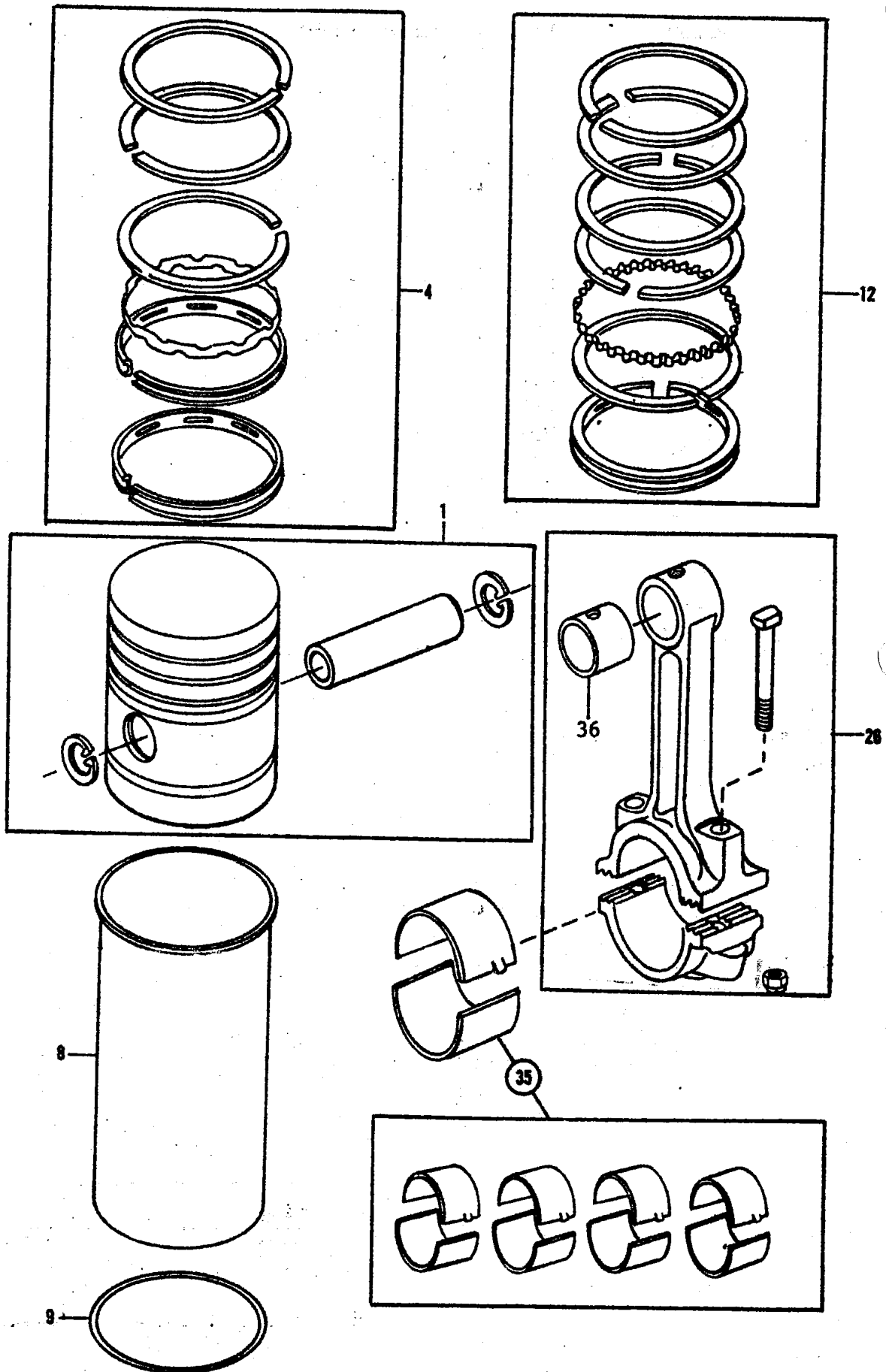
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22002	Block Assembly (Short) See Note	1
2	P22003	Dowel, Main Bearing Cap	10
3	Com'1.	Bolt (5/8 x 3-3/4" NF, Hex.)	10
4	Com'1.	Washer, Bearing Cap Bolt	10
5	P22005	Plug (1-3/8" Cup Type)	4
6	P22004	Bushing, Camshaft	1
7	P22006	Plug (1-1/4" Cup Type)	6
9	P22012	Plug (3/4 - 14 Sq. Hd.)	4
10	P22007	Plug (1-1/2" Cup Type)	4
11	P22008	Plug, Camshaft Hole (3" Cup Type)	1
12	P22009	Plug (1/4" Cup Type)	1
13	P22010	Plug (5/16" Cup Type)	1
14	P22011	Plug (7/8" NF, Sckt. Hd.)	1
15	P22013	Washer (29/32 x 1-1/8 x 3/32" Copper)	1
17*	P22014	Pointer, Timing Pin	1
18	P22015	Drain, Cylinder Block	1
23	P22017	Housing, Rear Oil Seal	1
24	P22018	Seal, Housing	1
25	Com'1.	Screw (5/16 x 1" NF, Sckt. Hd.)	2
26	P22019	Dowel, Oil Seal Housing	2
27	P22192	Gasket, Housing to Block	1
28	Com'1.	Bolt (5/16 x 1" NF, Hex.)	10
29	Com'1.	Washer (5/16" Flat)	10
35	P22020	Bridge, Block to Pan	1
36	P22188	Gasket, Bridge	2
37	Com'1.	Screw (1/4 x 3/4" NF, Phil. Hd.)	2
38	Com'1.	Washer (1/4" Flat)	2
52	Com'1.	Dowel, Engine to Transmission	2
53	Com'1.	Bolt (7/16 x 1-3/4" NC, Hex.)	1
54	Com'1.	Bolt (3/8 x 1-3/4" NF, Hex.)	3
55	Com'1.	Bolt (7/16 x 2" NC, Hex.)	1
56	Com'1.	Bolt (7/16 x 2-1/4" NC, Hex.)	5
57	Com'1.	Nut (7/16" NC, Hex.)	1
58	P22021	Stud (1/2 x 4-1/2" NF)	2
59	Com'1.	Nut (1/2" NF, Hex.)	2

\* For S/N 102 & 106 Use P22015

NOTE: Short Engine includes Stripped Block, Pistons, Rings, Connecting Rods, Connecting Rod Bearings, Crankshaft and Crankshaft Bearings.

<b>LULL</b> Engineering Co., Inc.		<small>ST. PAUL, MINNESOTA 55171</small>
<small>ISSUE TITLE</small>	<b>PUBLICATION NUMBER</b>	
CYLINDER BLOCK	1838	

# PISTONS AND RINGS, CONNECTING RODS AND BEARINGS

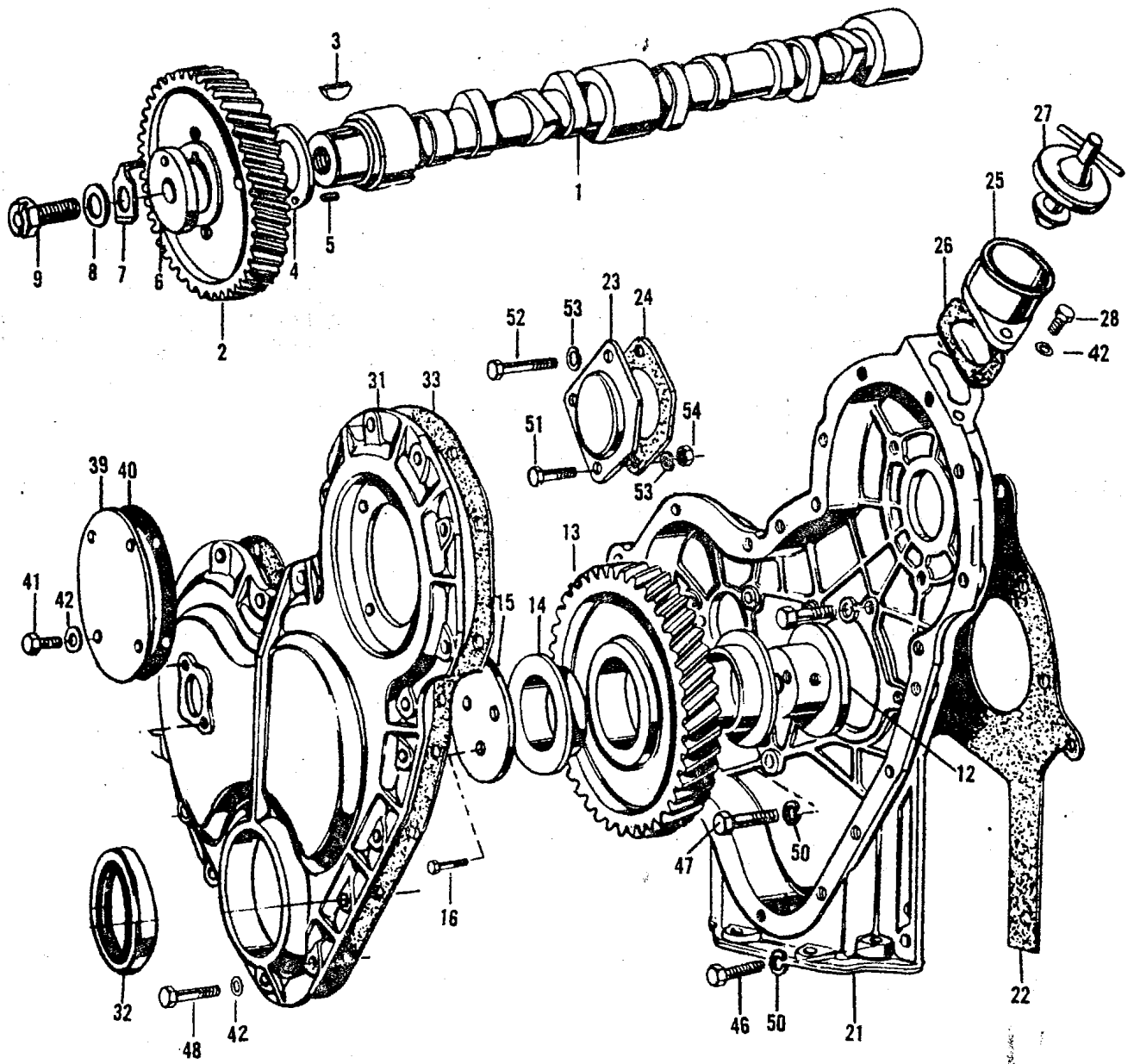


<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22022	Piston Assembly	4
4	P22023	Ring Set, Single Piston	4
8	P22025	Liner, Cylinder (Standard)	4
8	P22026	Liner, Cylinder (+.010")	4
8	P22027	Liner, Cylinder (+.040")	4
9	P22028	Shim, Liner	4
12	P22024	Ring Set, Piston (Re-Ring)	4
26	P22029	Rod Assembly, Connecting	4
35	P22030	Insert Set, Connecting Rod Bearing (Std.)	1
35	P22031	Insert Set, Connecting Rod Bearing (-.010")	1
35	P22032	Insert Set, Connecting Rod Bearing (-.020")	1
35	P22033	Insert Set, Connecting Rod Bearing (-.030")	1

<b>LULL</b> <i>Engineering Co., Inc.</i>		ST. PAUL, MINNESOTA 55121
DRAWING TITLE		PUBLICATION NUMBER
RINGS, PISTONS, & CONNECTING RODS		1839



# CAMSHAFT, TIMING GEARS AND HOUSING



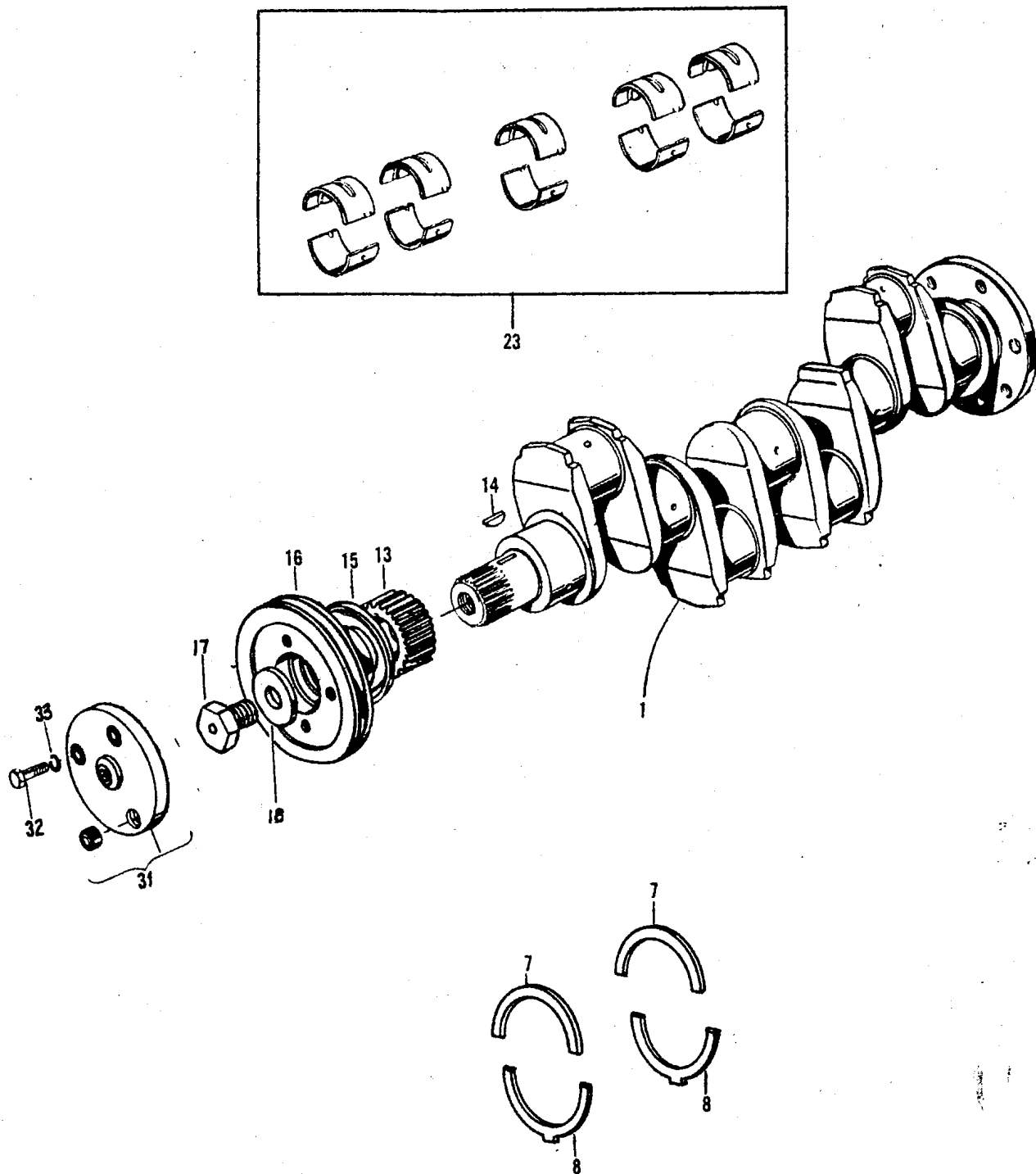
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22096	Camshaft	1
2*	P22097	Gear, Camshaft Timing	1
3	P22044	Key, Gear to Camshaft	1
4	P22099	Washer, Gear to Camshaft	1
5	P22100	Dowel, Camshaft Washer	1
6	P22101	Washer, Timing Gear, Front	1
7	P22102	Washer, Tab	1
8	P22103	Washer, Retaining Bolt	1
9	P22104	Bolt, Gear Retaining	1
12	P22105	Hub, Idler Gear	1
13	P22106	Gear Assembly, Idler	1
15	P22107	Plate, Idler Gear	1
16	Com'1.	Bolt (3/8 x 2-1/2" NF, Hex.)	3
21	P22108	Housing, Timing Gear	1
22	P22180	Gasket, Timing Gear, Housing to Block	1
23	P22109	Plate, Hydraulic Pump Hole Cover	1
24	P22193	Gasket, Blanking Plate	1
25*	P22110	Filler, Oil	1
26	P22189	Gasket, Oil Filler Housing	1
27*	P22112	Cap, Oil Filler	1
28	Com'1.	Bolt (5/16 x 3/4" NF, Hex.)	2
31	P22114	Cover, Timing Gear Housing (Incl. Item 32)	1
32	P22115	Seal, Oil	1
33	P22182	Gasket, Cover to Housing	1
39	P22116	Cover, Inspection	1
40	P22181	Gasket, Inspection Cover	1
41	Com'1.	Bolt (5/16 x 1/2" NF, Hex.)	4
42	P22117	Washer (5/16 x 9/16 x 1/16" Aluminum)	10
46	Com'1.	Bolt (5/16 x 7/8" NF, Hex.)	22
47	Com'1.	Bolt (5/16 x 1" NF, Hex.)	1
48	Com'1.	Bolt (5/8 x 2-1/2" NF, Hex.)	4
50	Com'1.	Washer (5/16" Lock)	23
51	Com'1.	Bolt (3/8 x 1-3/4" NC, Hex.)	1
52	Com'1.	Bolt (3/8 x 2-1/2" NC, Hex.)	2
53	Com'1.	Washer (3/8" Lock)	3
54	Com'1.	Nut (3/8" NC, Hex.)	1

\* For S/N 102 & 106 Use as Follows:

Item #2 P22098  
Item #25 P22111  
Item #27 P22113

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55121
DRAWING TITLE		PUBLICATION NUMBER
CAMSHAFT & TIMING GEARS		1840

# CRANKSHAFT AND BEARINGS



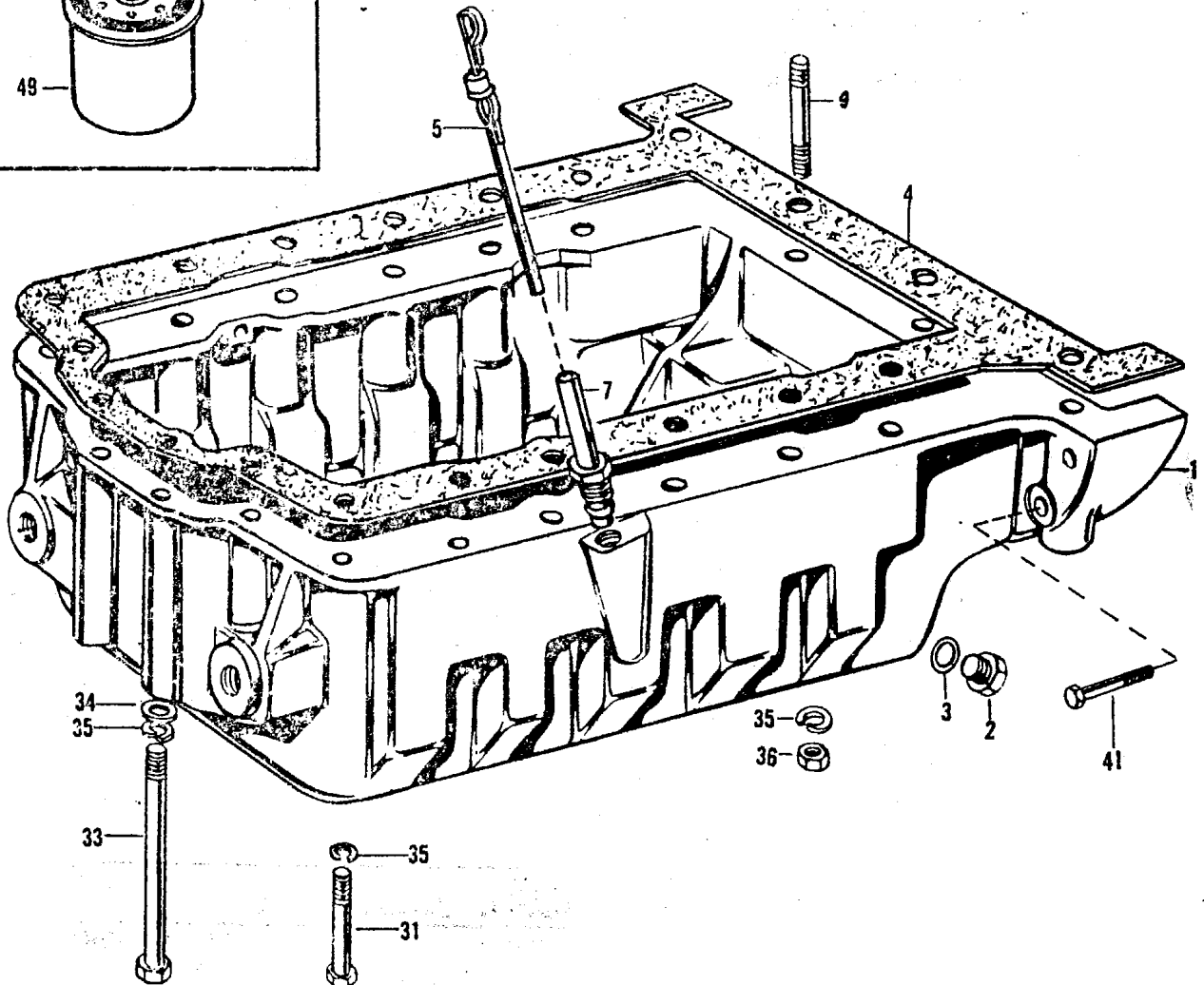
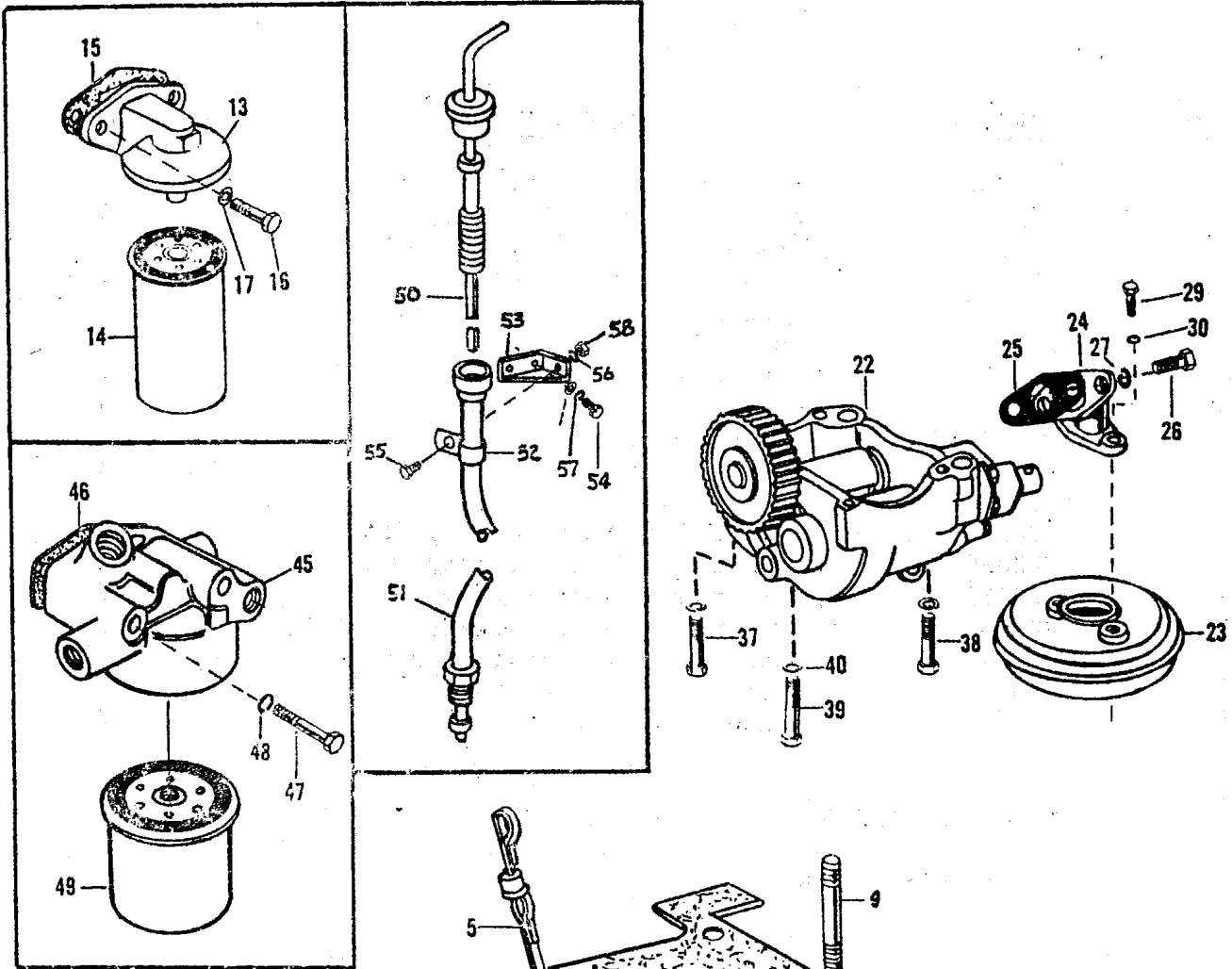
<u>ITEM</u>	<u>PART. NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22034	Kit, Crankshaft and Bearings	1
7	P22039	Washer, Thrust, Top (Std.)	2
7	P22040	Washer, Thrust, Top (+.007")	x
8	P22041	Washer, Thrust, Bottom (Std.)	2
8	P22042	Washer, Thrust, Bottom (+.007")	x
13	P22043	Gear, Crankshaft	1
14	P22044	Key, Gear	1
15*	P22045	Flange, Thrower	1
16*	P22047	Pulley, Crankshaft	1
17	P22049	Bolt, Pulley	1
18	P22050	Washer, Bolt	1
23	P22035	Insert Set, Main Bearing (Std.)	1
23	P22036	Insert Set, Main Bearing (-.010")	1
23	P22037	Insert Set, Main Bearing (-.020")	1
23	P22038	Insert Set, Main Bearing (-.030")	1
31	P22338	Adapter, Propshaft to Crankshaft Pulley	1
32	Com'l.	Bolt (3/8 x 1-1/4" NC, Hex.)	4
33	Com'l.	Washer (3/8" Lock)	4

\* For S/N 102 & 106 Use as Follows:

Item #15 P22046  
Item #16 P22048

<b>LULL</b> <i>Engineering Co., Inc.</i>		ST. PAUL, MINNESOTA 55127
DRAWING TITLE	PUBLICATION NUMBER	
CRANKSHAFT & MAIN BEARINGS	1841	

# OIL PAN, PUMP AND FILTER



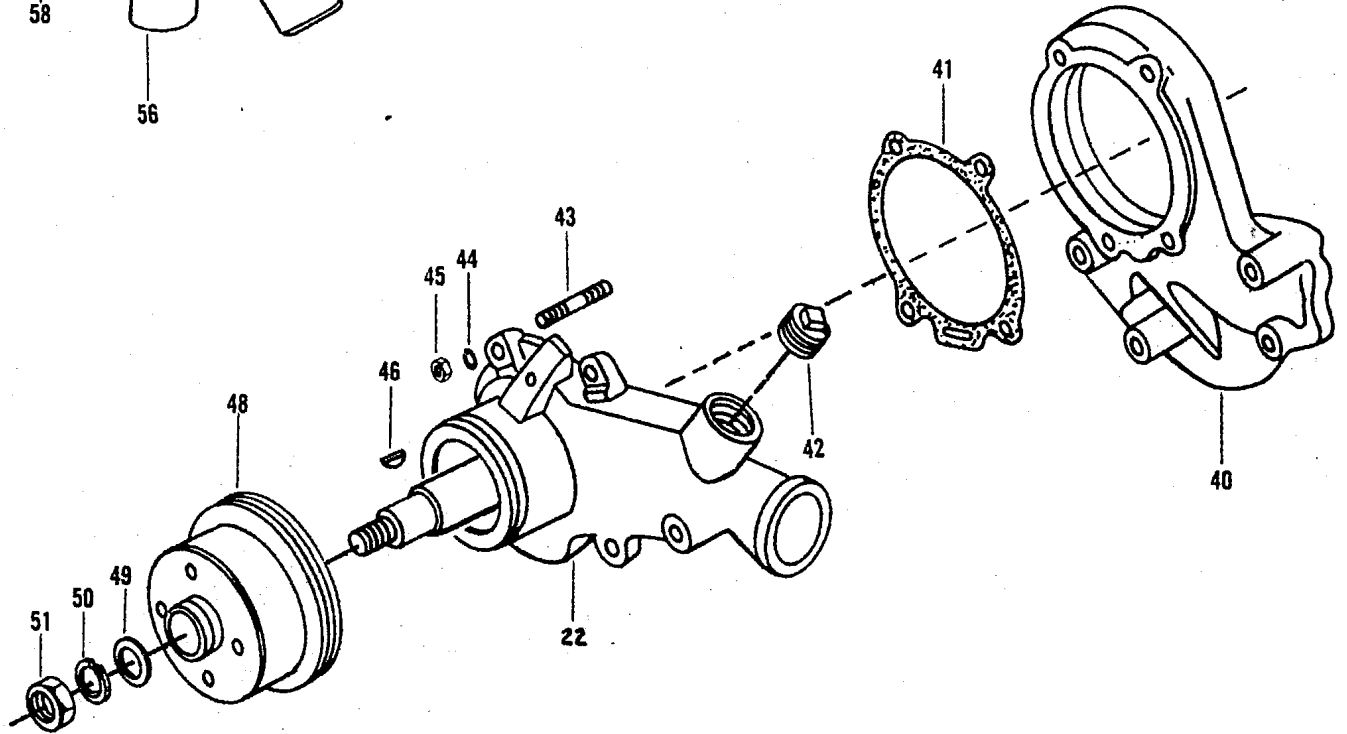
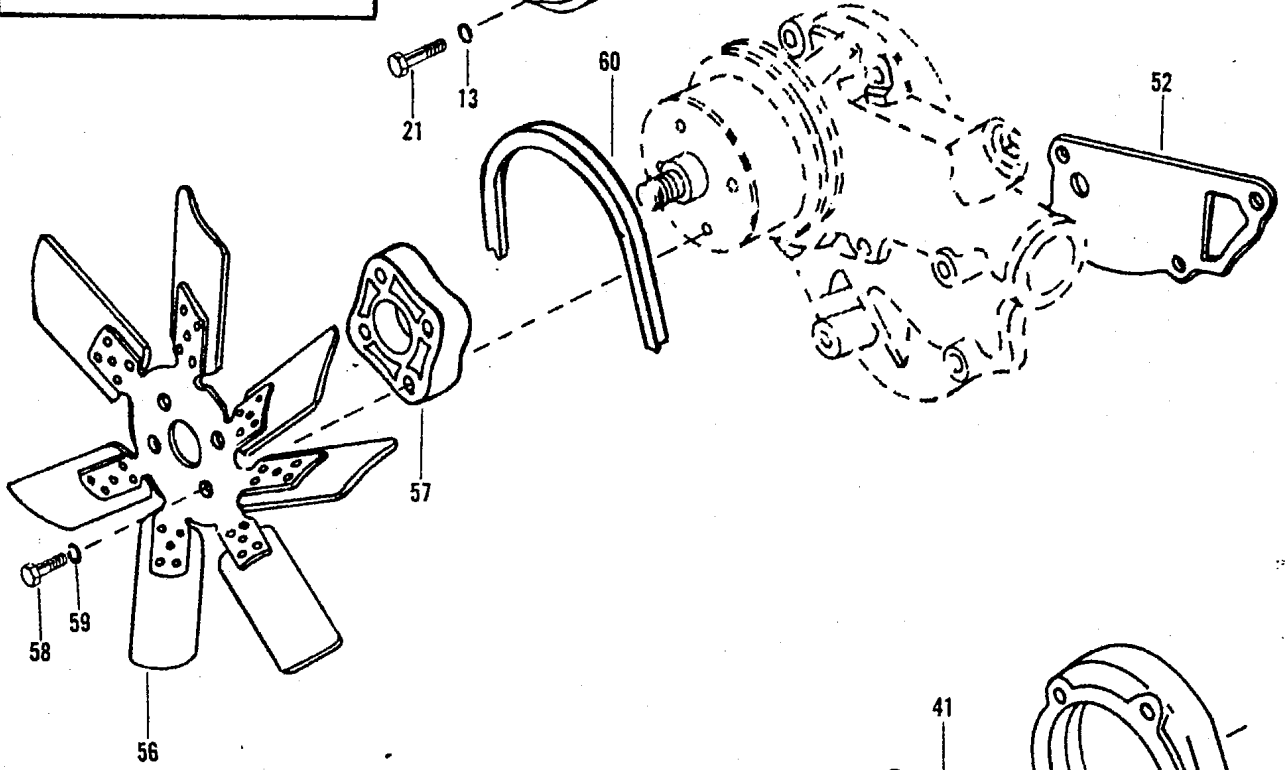
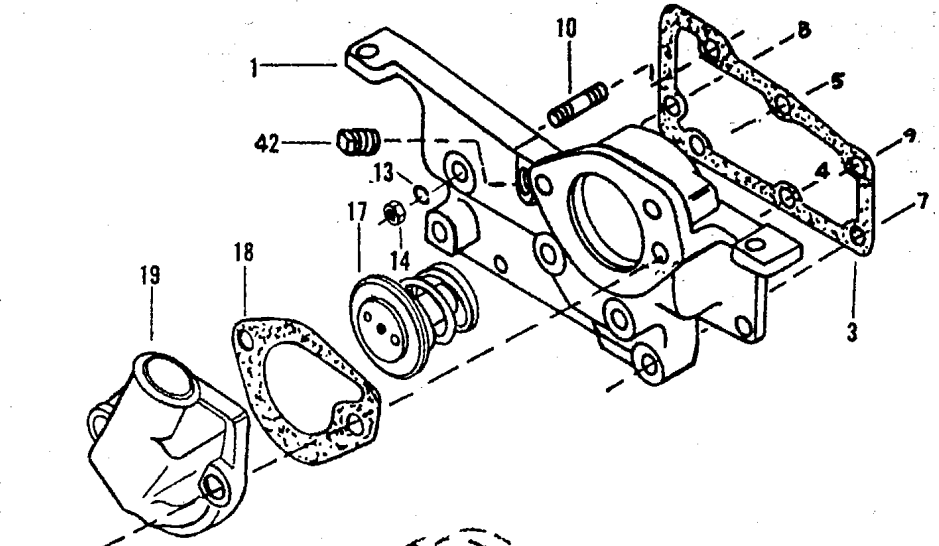
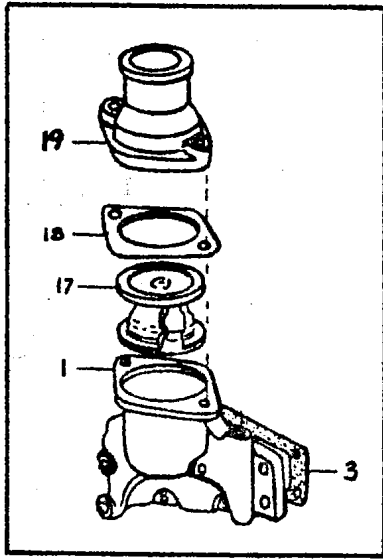
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22118	Pan, Oil	1
2	P22119	Plug, Pan	1
3	P22166	Gasket, Plug	1
4	P22183	Gasket, Oil Pan	1
5	P22120	Dipstick, Oil Level	1
7	P22122	Tube, Dipstick	1
9	P22131	Stud (5/16" NF x 3-15/16")	2
13	P22126	Head, Filter	1
14	P20995	Filter, Oil	1
15	P22191	Gasket, Filter	1
16	Com'1.	Bolt (7/16 x 1-1/4" NF, Hex.)	2
17	Com'1.	Washer, Bolt	2
22	P22128	Balancer Assembly	1
23	P22129	Strainer Assembly, Oil	1
24	P22130	Connection, Strainer	1
25	P22190	Gasket, Connection	1
26	Com'1.	Screw (5/16 x 2-1/4" NF, Hex.)	2
27	Com'1.	Washer (5/16" Lock)	2
29	Com'1.	Bolt (1/4 x 5/8" NF, Hex.)	2
30	Com'1.	Washer (1/4" Lock)	2
31	Com'1.	Bolt (5/16 x 3-1/4" NF, Hex.)	12
33	Com'1.	Bolt (5/16 x 5-1/2" NF, Hex.)	6
34	Com'1.	Washer (5/16 x 5/8 x 5/64")	7
35	Com'1.	Washer (5/16" Lock)	20
36	Com'1.	Nut (5/16" NF, Hex.)	2
37	Com'1.	Bolt (3/8 x 2-1/2" NF, Hex.)	2
38	Com'1.	Bolt (3/8 x 3" NF, Hex.)	1
39	Com'1.	Bolt (3/8 x 5-1/4" NF, Hex.)	1
40	Com'1.	Washer (3/8" Lock)	4
41	Com'1.	Bolt (7/16 x 2-5/8" NC, Hex.)	4
41	Com'1.	Bolt (7/16 x 1-3/4" NC, Hex.)	2

For S/N 102 & 106 only, use as follows for oil filter & dipstick.

45	P22127	Head Assembly, Filter	1
46	P22195	Gasket, Head to Block	1
47	Com'1.	Bolt, Filter Head to Block (7/16 x 4-1/2" NF, Hex.)	2
48	Com'1.	Washer, Bolt (7/16" Lock)	2
49	P20995	Filter (Spin-On)	1
50	P22121	Dipstick Assembly	1
51	P22123	Tube Assembly, Dipstick	1
52	P22124	Clip, Dipstick Tube	1
53	P22125	Bracket, Dipstick Tube Support	1
54	Com'1.	Bolt, Bracket (1/4 x 5/8" NF, Hex.)	2
55	Com'1.	Bolt, Tube Support (1/4 x 5/8" NF, Hex.)	1
56	Com'1.	Washer, Tube Support (1/4 x 9/16 x 1/16")	2
57	Com'1.	Washer (1/4" Lock)	3
58	Com'1.	Nut, Bolt (1/4" NF, Hex.)	1

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55121
13 OIL PAN PUMP, & FILTER	<b>PUBLICATION NUMBER</b> 1842	

# WATER OUTLET AND PUMP



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1*	P22132	Body, Water Outlet	1
3	P22174	Gasket, Outlet Body	1
4	Com'1.	Bolt (5/16 x 7/8" NF, Hex.)	2
5	Com'1.	Bolt (5/16 x 2-1/2" NF, Hex.)	
6	Com'1.	Washer (5/16" Lock)	3
8	Com'1.	Bolt (3/8 x 1-3/4: NF, Hex.)	1
9	Com'1.	Bolt (3/8 x 2-1/2" NF, Hex.)	1
10	Com'1.	Stud (3/8 x 2-9/16" NF)	1
13	Com'1.	Washer (3/8" Lock)	6
14	Com'1.	Nut (3/8" NF, Hex.)	1
17	P22134	Thermostat	1
18*	P22175	Gasket, Thermostat Housing	1
19*	P22135	Connection, Thermostat Housing	1
21	Com'1.	Bolt (3/8 x 1-1/2" NF, Hex.)	2
22	P22137	Pump Assembly	1
40	P22138	Body, Rear Half	1
41	P22184	Gasket, Body Halves	1
42	P22052	Plug (1/2" P.T. Sq. Hd.)	1
43	P22139	Std (5/16" x 1-3/8" NF)	4
44	Com'1.	Washer (5/16" Lock)	4
45	Com'1.	Nut (5/16" NF, Hex.)	4
46	P22140	Key, Shaft	1
48	P22141	Pulley, Pump and Fan Drive	1
49	Com'1.	Washer (5/8" Flat)	1
50	Com'1.	Washer (5/8" Lock)	1
51	Com'1.	Nut (5/8" NF, Hex.)	1
52	P22185	Gasket, Pump to Block	1
56	P22142	Fan, Cooling	1
57	P22143	Extension, Pulley	1
58	Com'1.	Bolt (5/16 x 1-3/4" NF, Hex.)	4
59	Com'1.	Washer (5/16" Lock)	4
60	P20867	Belt	1

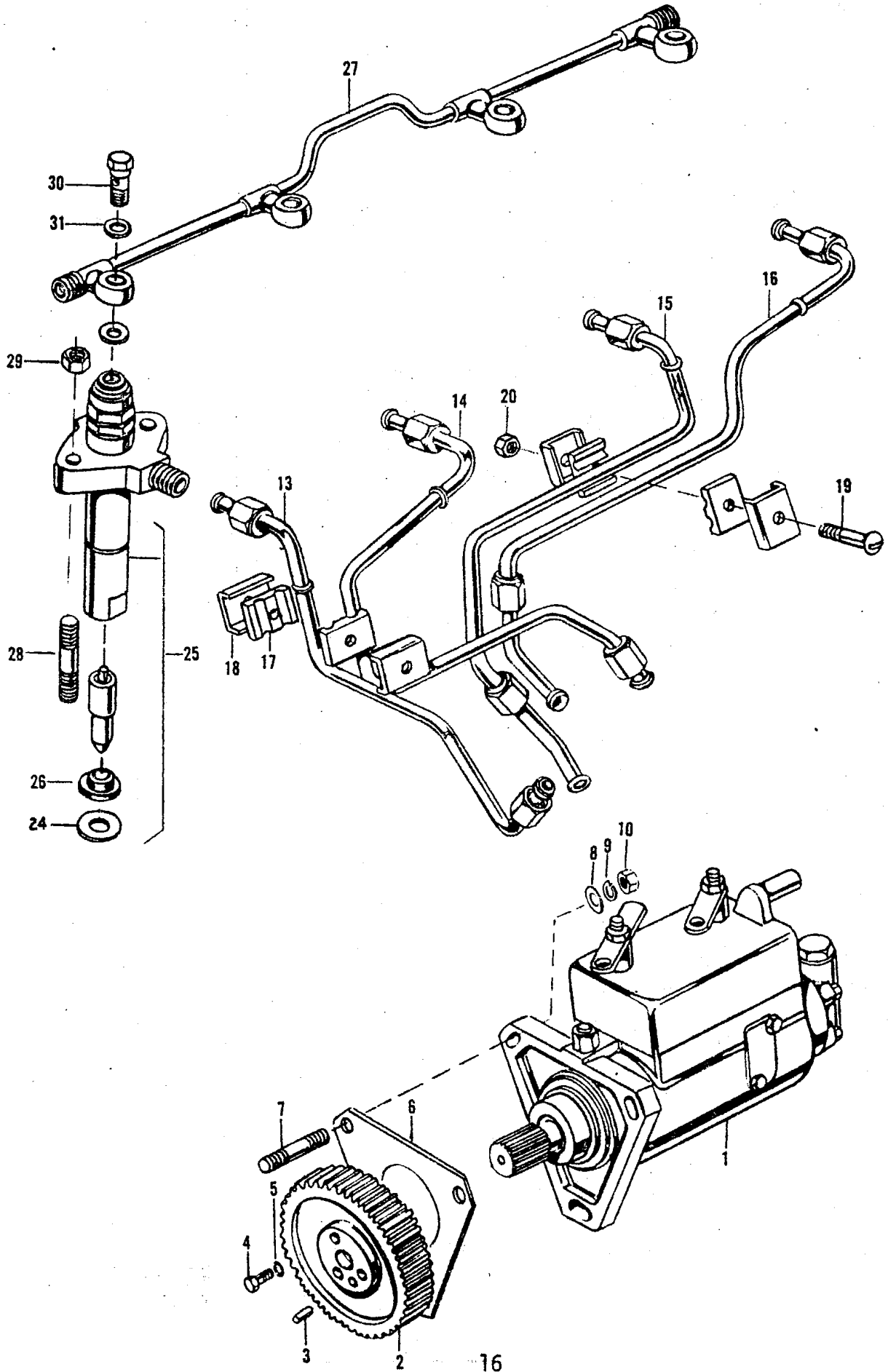
\* For S/N 102 & 106 Use as Follows:

Item #1 P22133  
Item #18 P22196  
Item #19 P22136

<b>WLL</b> <i>Engineering Co., Inc.</i>		<small>ST. PAUL, MINNESOTA 55121</small>
<small>COMP. FILE</small>	<b>PUBLICATION NUMBER</b>	
WATER PUMP & OUTLET	1843	



# FUEL INJECTION LINES



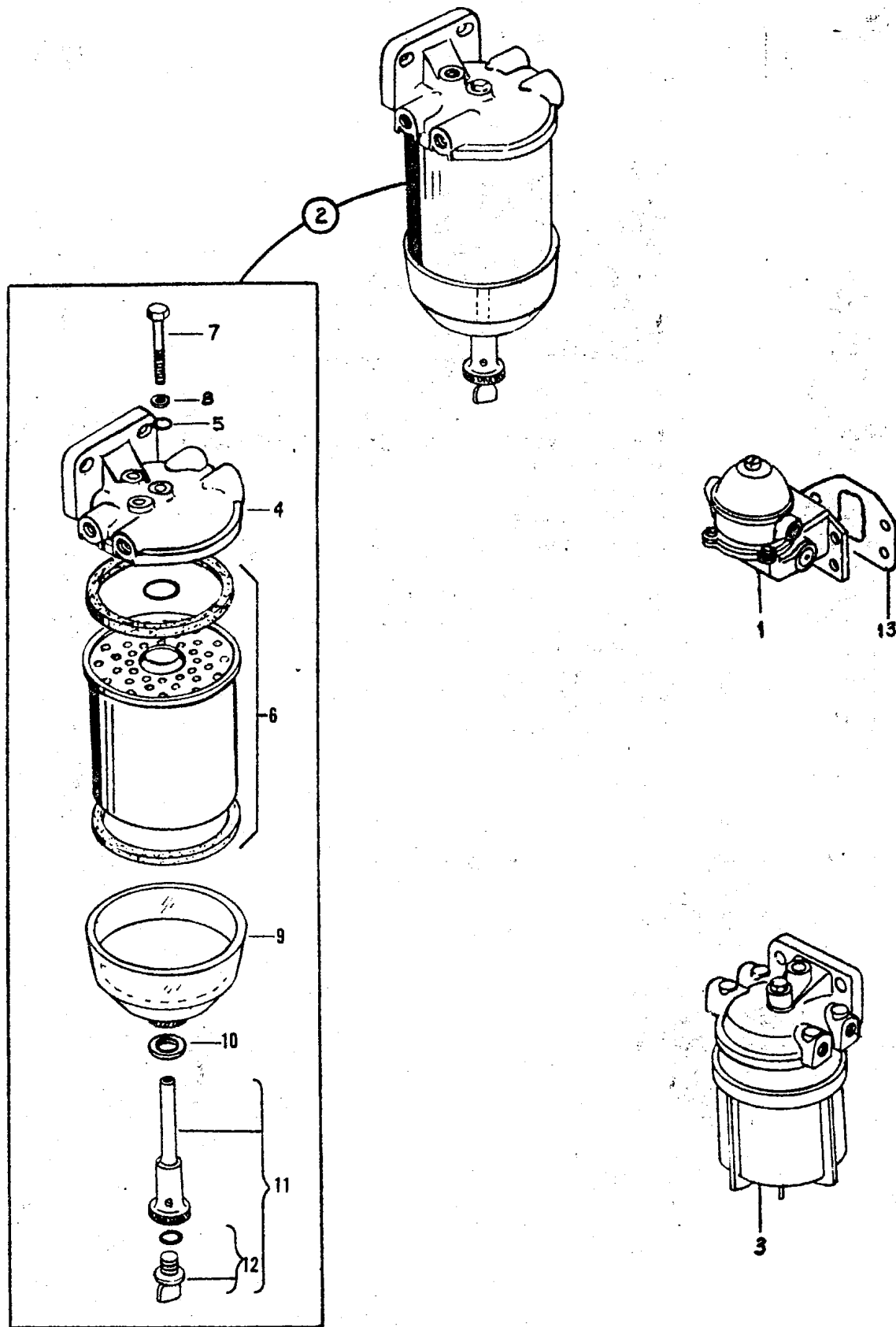
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1*	P22144	Pump Assembly, Injection	1
2	P22146	Gear, Pump Drive	1
3	P22147	Dowel, Gear	1
4	Com'1.	Bolt (5/16 x 3/4" NF, Hex.)	3
5	Com'1.	Washer (5/16" Lock)	3
6	P22187	Gasket, Injection Pump	1
7	P22139	Stud (5/16" NF x 1-3/8")	3
8	Com'1.	Washer (5/16" Flat)	3
9	Com'1.	Washer (5/16" Lock)	3
10	Com'1.	Nut (5/16" NF, Hex.)	3
13*	P22148	Line Assembly, Injection, #1 Cylinder	1
14*	P22149	Line Assembly, Injection, #2 Cylinder	1
15*	P22150	Line Assembly, Injection, #3 Cylinder	1
16*	P22151	Line Assembly, Injection, #4 Cylinder	1
17	P22156	Damper, Injection Lines	4
18	P22157	Plate, Damper	4
19	Com'1.	Screw (#10 - 32 x 1" Rd. Hd. Sltd.)	2
20	Com'1.	Nut	2
24	P22165	Washer, Injection Nozzle	2
25*	P22158	Injector	4
26	P22164	Shield, Injector	4
27	P22160	Line, Leak-Off	1
28	P22161	Stud (5/16" NF x 1-9/16")	8
29	Com'1.	Nut (5/16" NF, Hex.)	8
30	P22162	Bolt (Banjo)	4
31	P22163	Washer	8

\* For S/N 102 & 106 Use as Follows:

Item #1	P22145
Item #13	P22152
Item #14	P22153
Item #15	P22154
Item #16	P22155
Item #25	P22159

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55101
FUEL INJECTION LINES		PUBLICATION NUMBER 1844

FUEL FILTER AND PUMP



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22200	Fuel Pump Assembly	1
2*	P22201	Fuel Filter Assembly	1
3	P22203	Pre Filter Assembly (Water Trap)	1
4	P22220	Head, Fuel Filter	1
5	P22221	"O" Ring, Head Bolt Seal	1
6*	P22001	Filter Element w/Gasket & "O" Ring	1
7	Com'l.	Bolt (1/4 x 2" NC, Hex.)	1
8	Com'l.	Washer (1/4" Flat)	1
9	P22222	Glass Bowl	1
10	P22223	Rubber Washer	1
11	P22224	Stud (Incl. Item 12)	1
12	P22225	Plastic Screw w/Rubber Washer	1
13	P22186	Gasket, Fuel Pump	1

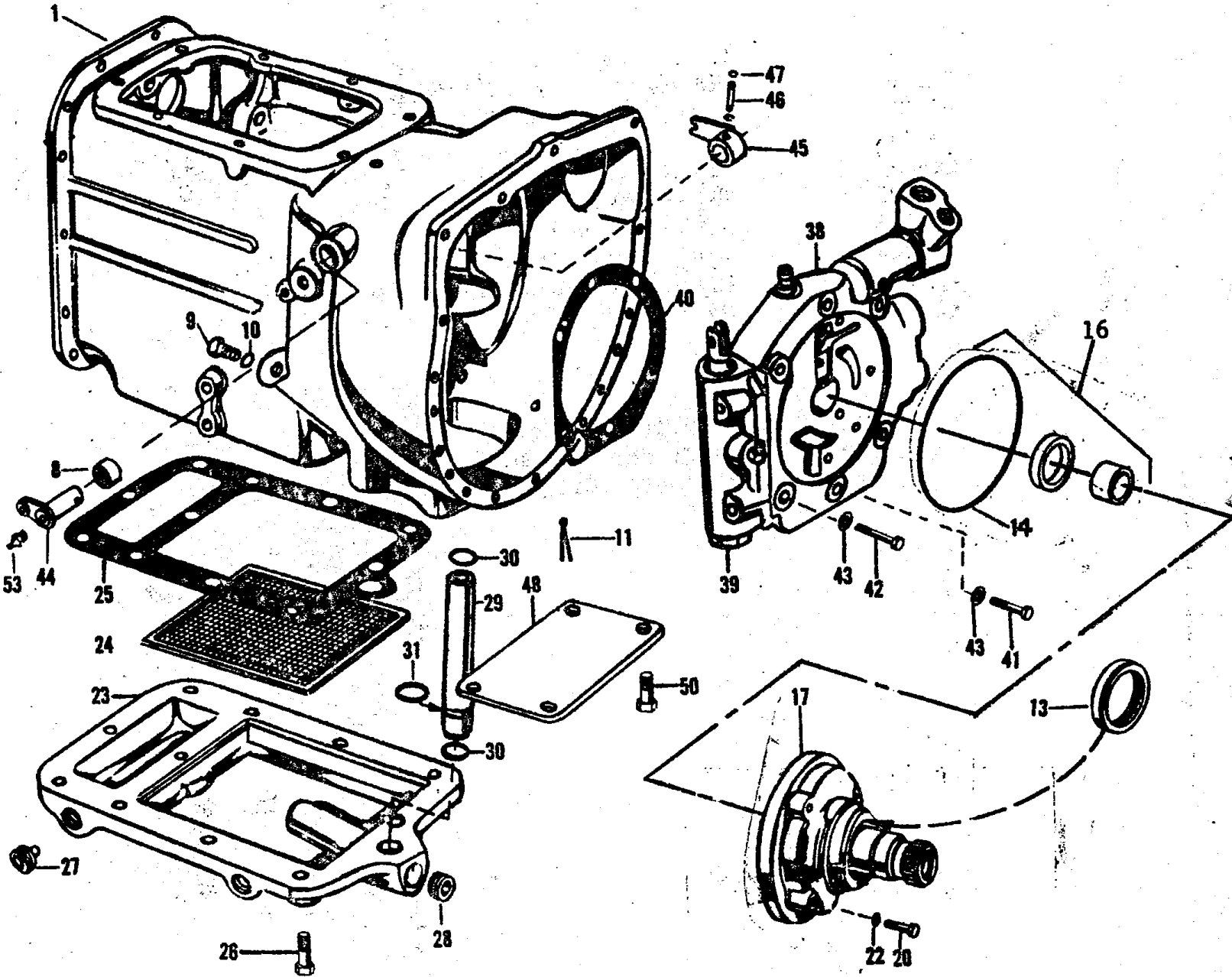
\* Use P22202, Fuel Filter Assembly  
and P21001, Fuel Filter Element  
for S/N 102 & 106 only (Filter not shown)

<b>WLL</b> <i>Engineering Co., Inc.</i>		ST. PAUL, MINNESOTA 65125
<small>CHARACTER</small> <b>FUEL PUMP &amp; FILTER</b>	<small>PUBLICATION NUMBER</small> <b>1845</b>	

# TRANSMISSION CASE AND VALVE

Funk Reverser Transmission and gear box  
C-3 Tranny  
80w-90 in gear box

Check Tranny Cold, engine off, Level surface



This complete Assembly use C-3

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22226	Case Assembly	1
8	P22227	Bearing (Needle)	2
9	P22228	Cap, Filler	1
10	P22229	"O" Ring, Filler Cap	1
11	Com'1.	Pin (3/16 x 1" Cotter)	1
12	P22230	Pump Assembly, Oil (Incl. Item 13)	1
13	P22231	Seal	1
14	P22248	Gasket, Oil Pump	1
16	P22607	Pump Kit	1
17			
20	Com'1.	Bolt (5/16 x 1-3/4" NC, Hex.)	4
22	Com'1.	Washer (5/16" Sealing)	4
23	P22234	Sump, Oil	1
24	P22235	Screen, Oil Sump	1
25	P22249	Gasket	1
26	Com'1.	Bolt (7/16 x 1-3/8" NC, Hex.)	11
27	P22236	Plug, Drain	1
28	P22237	Plug, Oil Sump	2
29	P22238	Tube, Suction	1
30	P22239	"O" Ring, Tube	2
31	P22240	"O" Ring	1
38	P22241	Distributor Assembly	1
39	P22242	Valve Assembly	1
40	P22250	Gasket, Oil Distributor	1
41	Com'1.	Bolt (3/8 x 2" NC, Hex.)	4
42	Com'1.	Bolt (3/8 x 2-1/2" NC, Hex.)	2
43	Com'1.	Washer (3/8" Sealing)	6
44	P22243	Shaft	1
45	P22244	Lever	1
46	P22245	Pin, Headless	1
47	P22246	Ring, Snap	2
48	P22247	Cover	1
50	Com'1.	Bolt (5/8 x 1" NC, Hex.)	2
53	P15272	Grease Fitting (1/4" Drive)	1

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55121
DRAWING TITLE		PUBLICATION NUMBER
TRANSMISSION CASE & CONTROL VALVE		1846

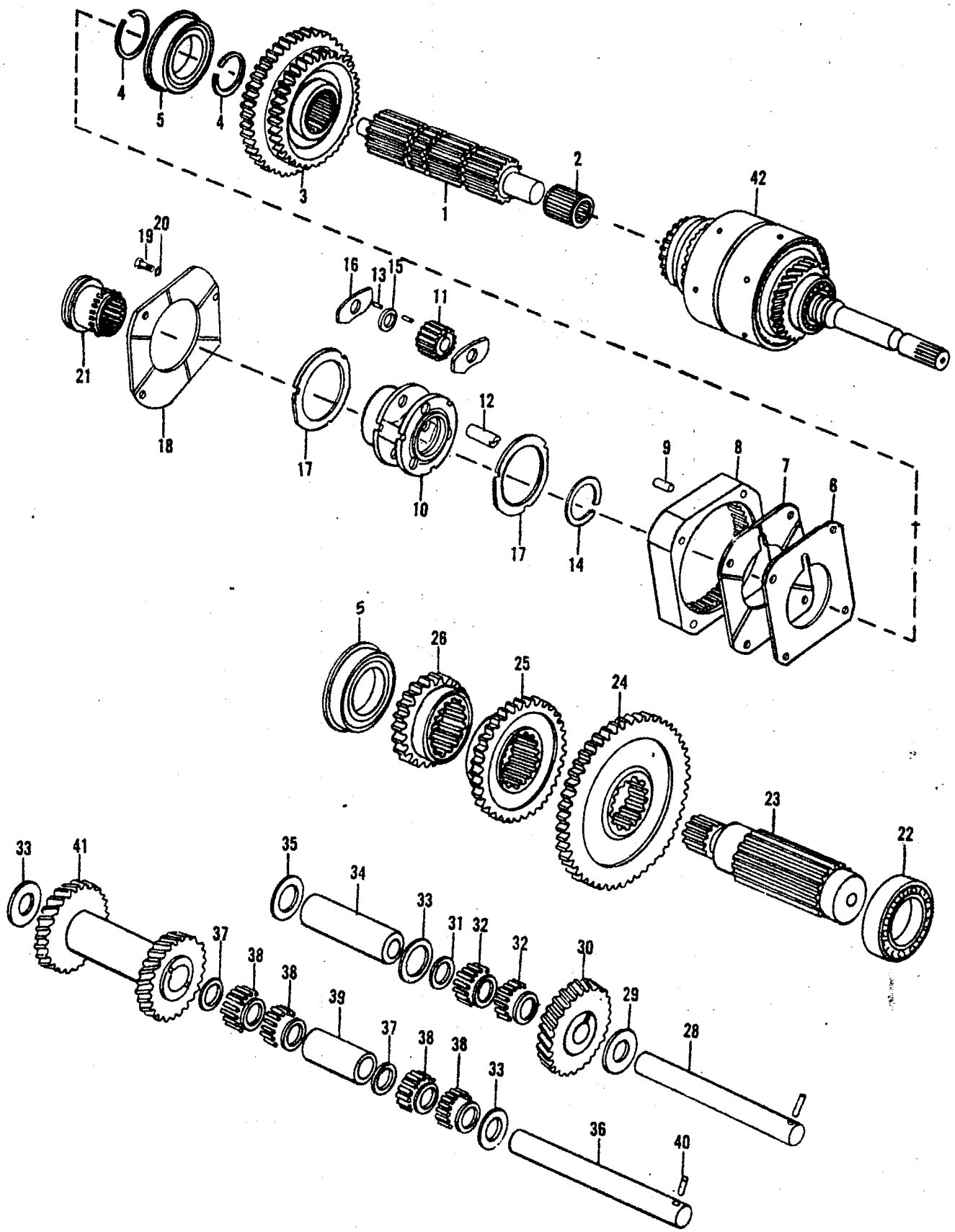


<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22252	Lever, Gear Shift	1
2	P22253	Lever, Planetary Shift	1
3	P22254	Pin, Lever	2
4	P22255	Cover, Lever	2
5	P22256	Spring, Shifter Boot	2
6	P22257	Spring, Gear Shifter	1
7	P22258	Seat, Gear Shift Lever Spring	1
13	P22261	Support, Gear Shift Lever	1
14	P22251	Gasket, Support	1
15	P22259	"O" Ring, Shift Lever	1
16	P22260	Plug, Filler (2-5/16" Dia.)	1
17	Com'l.	Bolt, Support to Transmission (7/16 x 1-1/4" NC, Hex.)	2
17	Com'l.	Bolt, Support to Transmission (7/16 x 2" NC, Hex.)	2
17	Com'l.	Bolt, Support to Transmission (7/16 x 3" NC, Hex.)	2
23	P22263	Rail, Intermediate and High	1
24	P22264	Fork, Intermediate and High	1
25	P22265	Rail, Shifter, Planetary	1
26	P22267	Selector, Planetary	1
27	P22271	Screw, Fork (3/8" NF, Dog Pt. Sw. Hd.)	3
28	P22268	Plunger, Shift Rail	1
29	P22269	Spring, Shifter Rail	2
30	P22270	Plate, Gear Shift Lever Stop	2
31	Com'l.	Bolt, Stop Plate (3/8 x 3/4" NC, Hex.)	2
32	Com'l.	Washer, Stop Plate (3/8" Lock)	2
33	P22266	Fork, Planetary Shift	1

<b>LULL</b> <i>Engineering Co., Inc.</i>		ST. PAUL MINNESOTA 56121
DRAWING TITLE		PUBLICATION NUMBER
GEAR SHIFT GROUP		1847



# INSTANT REVERSE TRANSMISSION

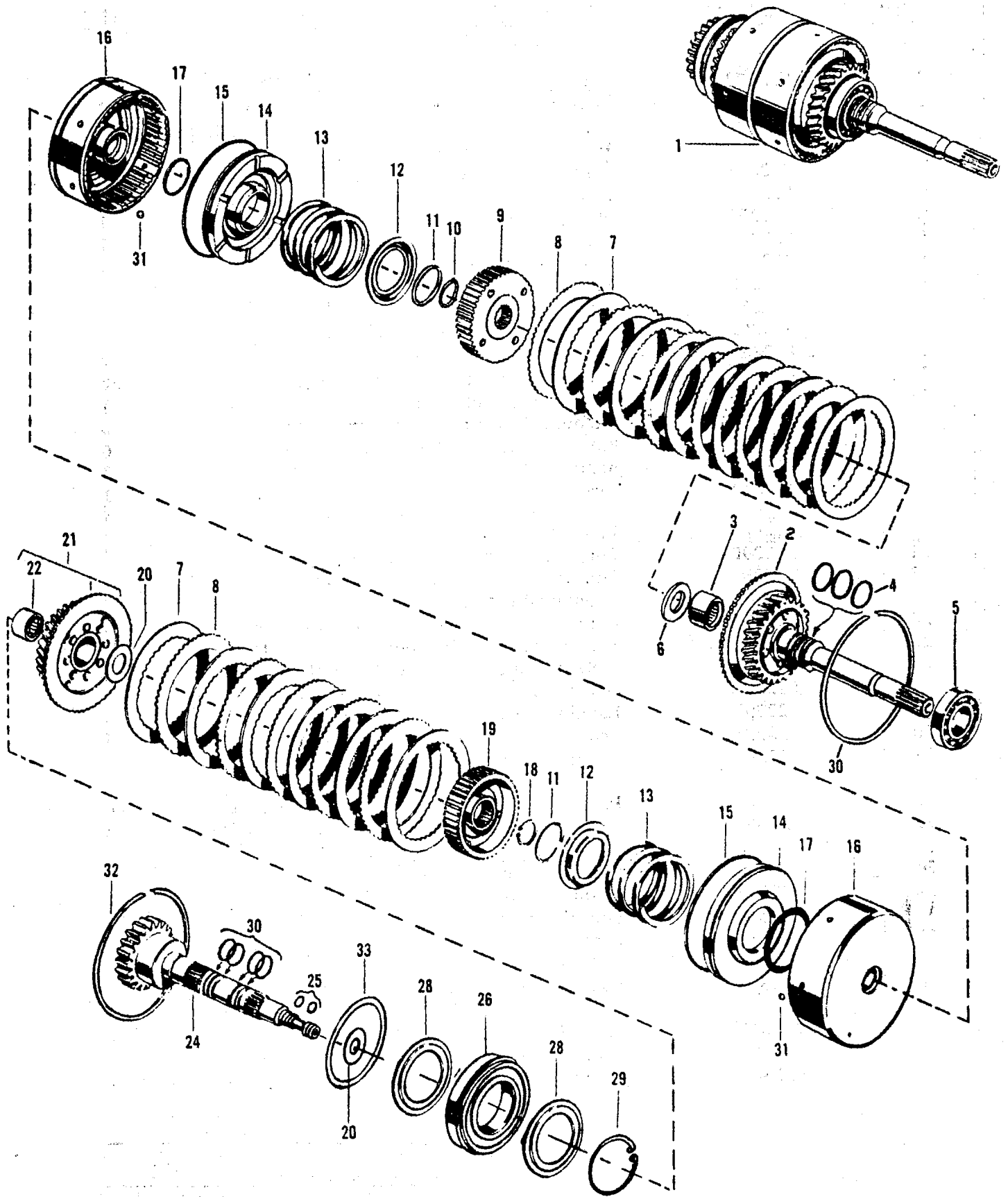


<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22272	Shaft, Main (22 Teeth, 18 Splines)	1
2	P22273	Bearing, Pilot Main Shaft (Roller)	1
3	P22274	Gear, Main Shaft, Intermediate and High (47 - 30 Teeth)	1
4	P22275	Ring, Snap, Rear Bearing (External)	2
5	P22276	Bearing, Ball	2
6	P22277	Shim, Planetary	1
7	P22278	Plate, Front Cover	1
8	P22279	Gear, Planetary Ring	1
9	P22280	Pin, Dowel (3/8 x 1-1/8")	2
10	P22281	Carrier, Planetary Pinion	1
11	P22282	Pinion, Planetary	3
12	P22283	Shaft, Planetary Pinion	3
13	P22284	Roller, Pinion (16 Per Path)	96
14	P22285	Ring, Snap (External)	1
15	P22286	Washer, Roller, Planetary Pinion	3
16	P22287	Washer, Pinion Thrust	6
17	P22288	Washer, Gear Thrust	2
18	P22289	Plate, Rear Cover	1
19	Com'l.	Bolt (3/8 x 2-7/8" NC, Hex.)	4
20	Com'l.	Washer (3/8" Lock)	3
21	P22290	Coupler, Planetary Shift	1
22	P22291	Bearing, Countershaft, Front (Ball)	1
23	P22292	Countershaft (17 - 21 Teeth)	1
24	P22293	Gear, Countershaft Driven (45 Teeth)	1
25	P22294	Pinion, High (39 Teeth - 17 Splines)	1
26	P22295	Pinion, Intermediate (22 Teeth - 17 Splines)	1
28	P22296	Shaft, Idler Gear (3/4 x 8-25/32")	1
29	P22297	Washer, Idler Gear (Inner)	1
30	P22298	Gear, Idler (28 Teeth)	1
31	P22299	Spacer, Bearing, Idler Shaft (3/4 x 1-7/64 x 1/16")	3
32	P22300	Bearing, Idler Shaft & Countershaft	100
33	P22301	Washer, Thrust, Idler & Countershafts (57/64 x 1-3/4 x 1/16")	3
34	P22302	Spacer, Idler Gear	1
35	P22303	Washer, Spacer, Idler Gear	1
36	P22304	Countershaft (13/16 x 8-25/32")	1
37	P22305	Washer, Countershaft Bearing (55/64 x 1-5/32 x 1/16")	6
39	P22306	Spacer, Countershaft Bearing (7/8 x 1-1/8 x 3-1/16")	1
40	P10375	Pin, Shaft (1/4 x 1" Roll)	2
41	P22307	Gear (25-27 Teeth)	1
42	P22308	Shaft and Clutch Assembly	1

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 65121
DRAWING TITLE		PUBLICATION NUMBER
GEAR GROUP, INTERNAL		1848

# Funk Reverser

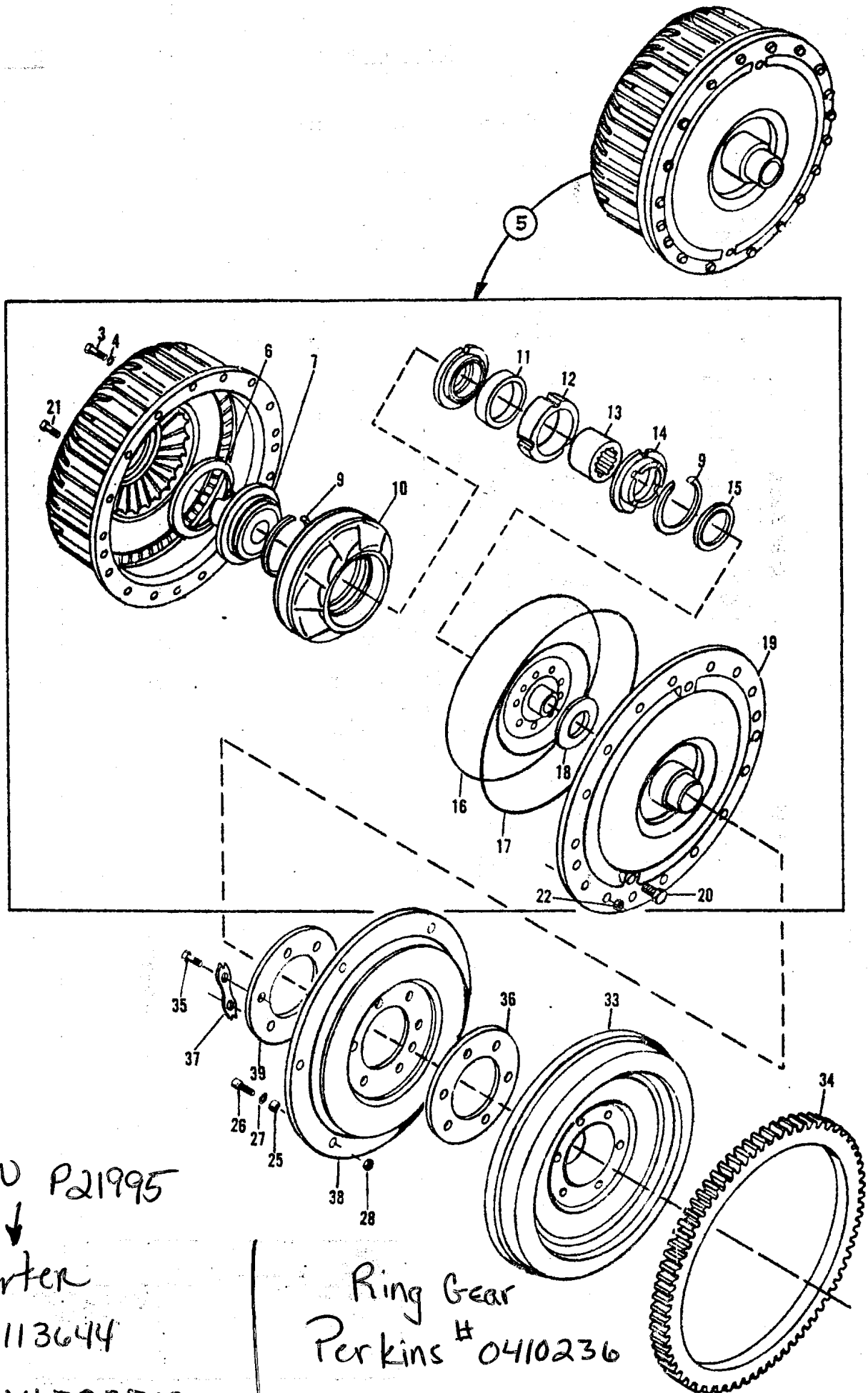
## SHAFT AND CLUTCH ASSEMBLY



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22308	Shaft and Clutch Assembly	1
2	P22309	Shaft, Input Gear (Incl. Item 3,4,5)	1
3	P22310	Bearing (Needle)	1
4	P22311	Ring (1-3/8 x 3/32")	3
5	P22312	Bearing, Input Shaft	1
6	P22301	Washer, Thrust	1
7	P22313	Plate (Internal Spline)	12
8	P22314	Plate (External Spline)	12
9	P22315	Hub (45 Ext. and 20 Int. Teeth)	1
10	P22316	Ring, Snap	1
11	P22317	Ring, Snap	2
12	P22318	Retainer, Clutch Spring	2
13	P22319	Spring, Clutch	2
14	P22320	Piston, Clutch	2
15	P22321	"O" Ring, Seal	2
16	P22322	Cylinder (Incl. Item 17)	2
17	P22323	"O" Ring	1
18	P22324	Ring, Snap	1
19	P22325	Hub, Clutch (45 Ext. and 22 Int. Teeth)	1
20	P22326	Washer, Thrust	2
21	P22327	Gear (Incl. Item 22)	1
22	P22328	Bearing	1
24	P22329	Shaft Assembly, Output (Incl. Item 25)	1
25	P22330	Ring (5/8 x 3/32")	1
26	P22331	Bearing, Output Shaft	1
28	P22332	Slinger	2
29	P22333	Ring, Snap	1
30	P22334	Ring (1-1/16 x 3/32")	4
31	P22335	Ball (1/4" Dia.)	2
32	P22336	Ring, Snap	2
33	P22337	Shim (3-15/16 x 4-5/8 x 1/64")	A/R

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55121
SHAFT & CLUTH GROUP		PUBLICATION NUMBER 1849

TORQUE CONVERTER



Lull P/N P21995

↓  
Starter

Delco # 1113644

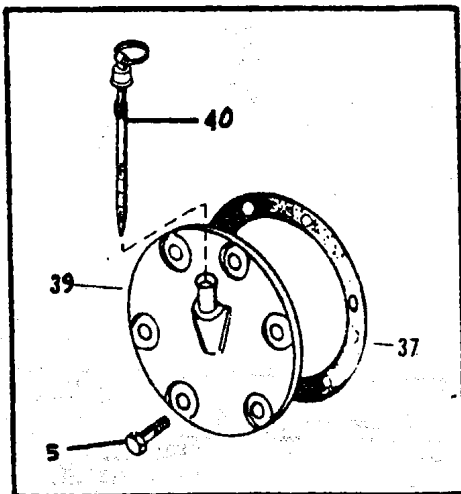
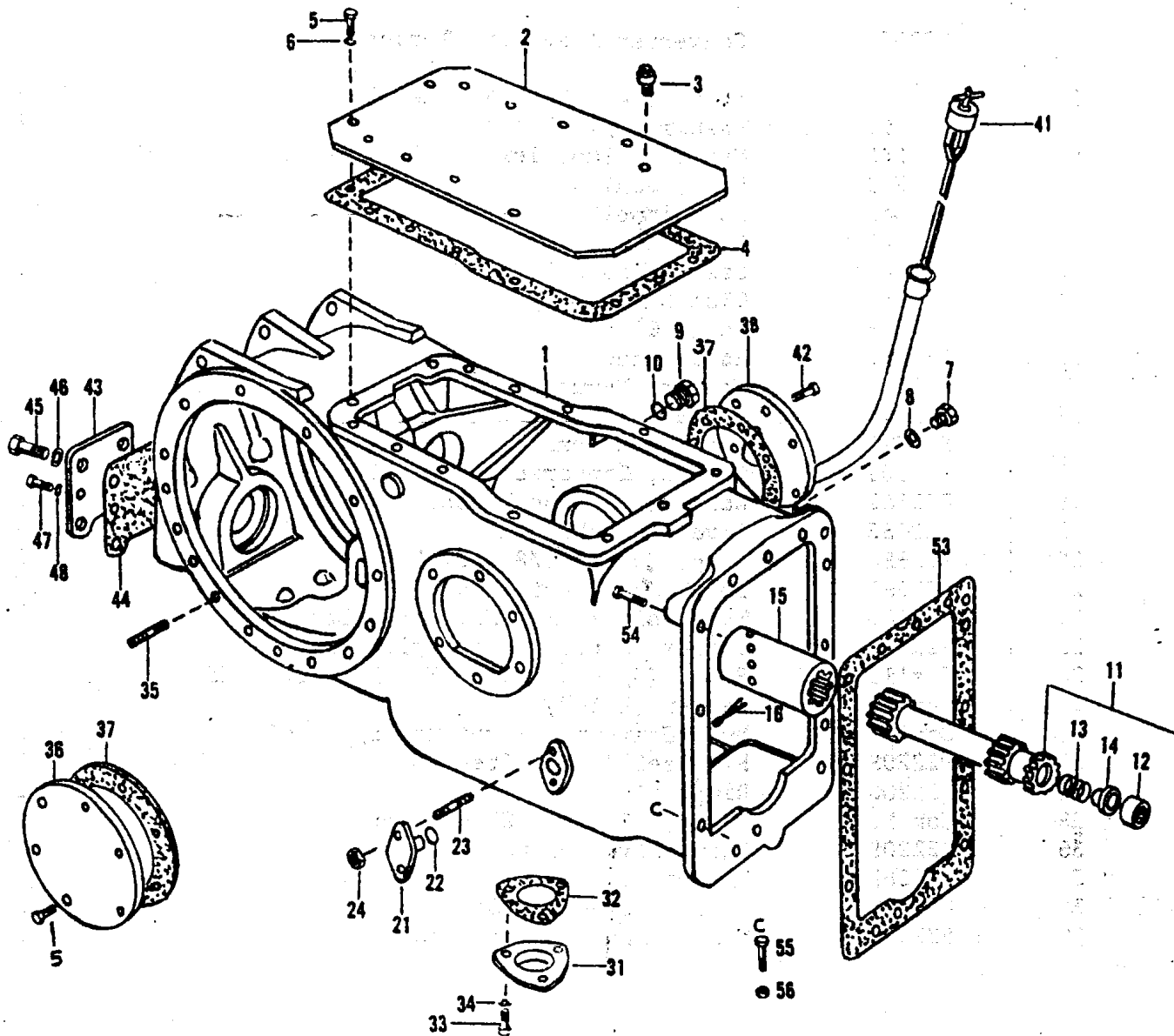
Perkins # NA003702

Ring Gear  
Perkins # 0410236

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22339	Converter Assembly, Torque	1
3	Com'1.	Bolt (1/4 x 5/8" NC, Hex.)	8
4	Com'1.	Washer (1/4" Lock)	8
5	P22340	Housing, Impeller (Incl. Items 3, 4, 6 & 7)	1
6	P22341	Ring, Sealing	1
7	P22342	Hub, Impeller	1
9	P22343	Ring, Snap	2
10	P22344	Stator Assembly	1
11	P22345	Clutch Assembly	1
12	P22346	Race, Outer	1
13	P22347	Race, Inner	1
14	P22348	Washer, Thrust	2
15	P22349	Washer, Thrust	2
16	P22350	Turbine Assembly	1
17	P22351	Gasket, Converter Cover (Outer)	1
18	P22352	Washer, Turbine Thrust	1
19	P22353	Cover Assembly	1
20	P22354	Plug, Cover (1/8 - 27 P.T.)	2
21	P22355	Bolt, Cover Retaining	18
22	Com'1.	Nut, Bolt (5/16" NF, Hex., Lock)	18
25	P22356	Spacer, Converter to Drive Plate	6
26	Com'1.	Screw (5/16 x 1-1/8" NF, Hex. Skt. Hd.)	6
27	Com'1.	Washer (5/16")	6
28	Com'1.	Nut, Converter Mounting (5/16" NF, Hex., Lock)	6
33	P22205	Flywheel (Incl. Item 34)	1
34	P22206	Ring, Starter	1
35	Com'1.	Bolt (1/2 x 1-1/2" NF, Hex.)	6
36	P22208	Shim, Flywheel to Crankshaft	2
37	P22209	Tabwasher	3
38	P22204	Plate, Converter Drive	1
39	P22207	Plate, Drive Plate Retaining	1

<b>WILL</b> Engineering Co., Inc.		<small>ST. PAUL, MINNESOTA 1921</small>
TORQUE	PUBLICATION	
CONVERTER	NUMBER	
	1850	

# DIFFERENTIAL HOUSING



This assembly use 80-90w.

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22360	Housing, Differential	1
2	P22362	Cover, Differential Housing	1
3	P22363	Breather Assembly	1
4	P22361	Gasket, Differential Cover	1
5	Com'l.	Bolt, Cover to Differential Housing (7/16 x 7/8" NC, Hex.)	25
6	Com'l.	Washer, Cover to Differential Housing (7/16" Lock)	13
7	P22364	Plug, Housing Drain	1
8	P22365	Washer, Plug	1
9	P22366	Plug, Housing	1
10	P22367	Washer, Plug	2
11	P22370	Shaft Assembly, Rear Drive (Incl. Items 12, 13 & 14)	1
12	P22373	Bearing, Shaft	1
13	P22371	Spring, Shaft	1
14	P22372	Abutment, Shaft	1
15	P22369	Coupling, Rear Drive	1
16	Com'l.	Cotter Pin (3/16 x 2-1/2")	1
21	P22377	Pin, Pump Support	2
22	P22378	"O" Ring, Pump Support Pin	2
23	P22379	Stud (5/16 NC - NF x 1-1/16")	4
24	Com'l.	Nut (5/16" NF, Hex.)	4
31	P22380	Housing Cover, Bottom	1
32	P22381	Gasket, Cover Plate	1
33	Com'l.	Bolt (5/16 x 5/8" NC, Hex.)	3
34	Com'l.	Washer (5/16" Lock)	3
35	P22388	Stud, Housing (1/2" NC - NF x 2-3/8")	30
36	P22382	Side Cover, Housing, Plain	1
37	P22383	Gasket, Cover	2
38	P22385	Side Cover and Tube Assembly, Oil Filler	1
39	P22384	Side Cover with Dipstick Access	1
40	P22386	Dipstick, Oil Level (Short)	1
41	P22387	Dipstick, Oil Level (Long)	1
43	P22374	Cover	1
44	P22375	Gasket, Cover	1
45	Com'l.	Bolt, Cover (1/2 x 7/8" NC, Hex.)	4
46	Com'l.	Washer, Cover Bolt (1/2" Lock)	4
47	Com'l.	Bolt, P.T.O Cover (7/16 x 7/8" NC, Hex.)	2
48	Com'l.	Washer, Cover Bolt (7/16" Lock)	2
53	P22368	Gasket, Differential Housing to Transmission	1
54	Com'l.	Bolt (7/16 x 2-1/4" NC, Hex.)	5
55	Com'l.	Bolt (7/16 x 1-7/8" NF, Hex.)	11
56	Com'l.	Nut (7/16" NF, Hex.)	11

<b>WILL</b> <i>Engineering Co., Inc.</i>		ST. PAUL, MINNESOTA 1951
DIFFERENTIAL HOUSING	PUBLICATION NUMBER 1851	

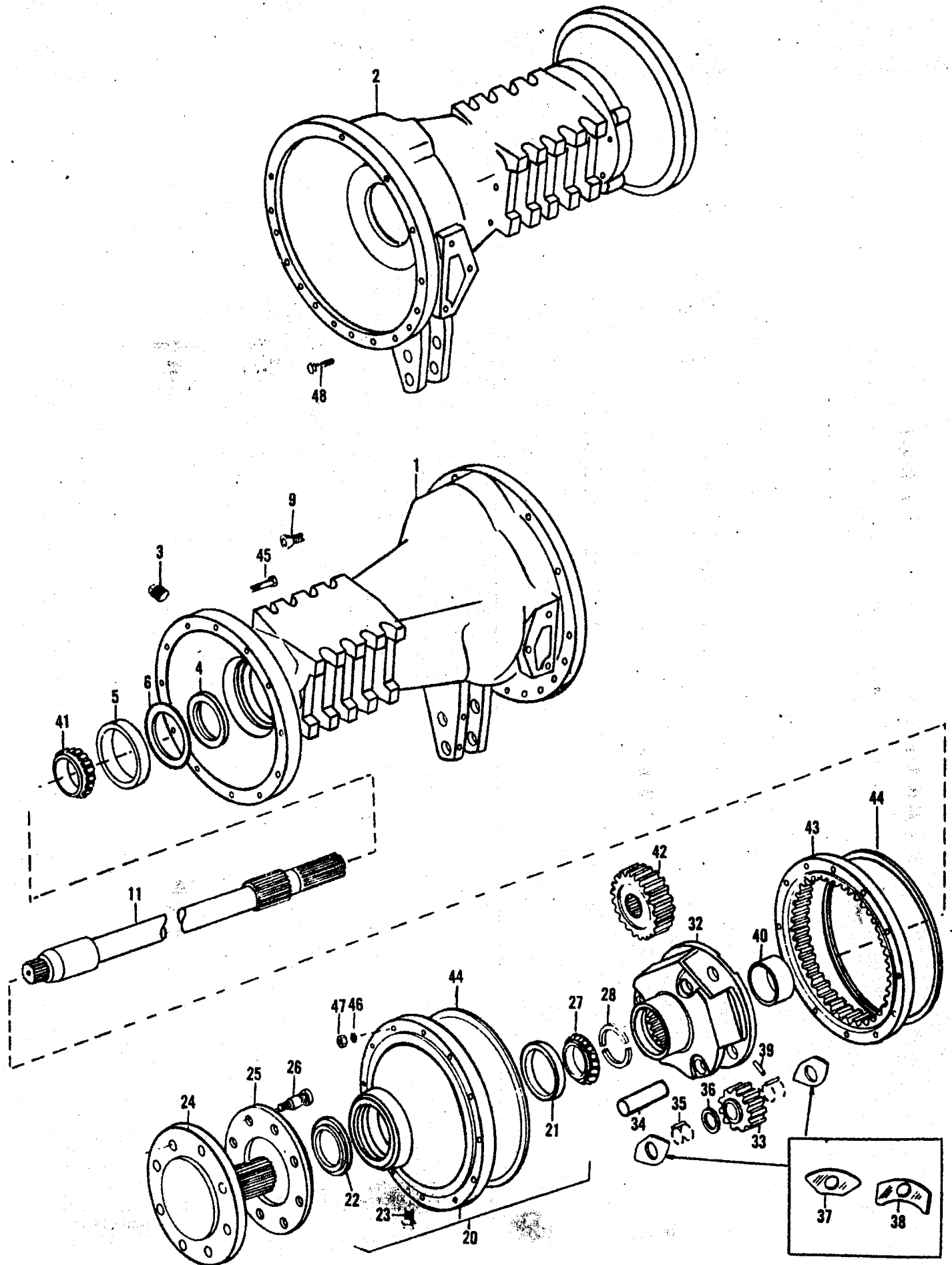




<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
4	P22595	Cap, Coupling	1
2	P22389	Case Assembly (Matched) Incl. Item 4	1
5	P22390	Cup, Bearing, Case	1
9	P22391	Gear, Side (14 Teeth, 39 Splines)	2
10	P22392	Washer, Thrust (3 x 4-5/32 x 1/16")	2
11	P22393	Cross, Pinion	1
12	P22394	Pinion (3-25/64" Dia.)	4
13	P22395	Washer, Thrust (1 x 2" Cupped)	4
14	P22396	Cone, Case (Left)	1
15	P22397	Cone, Case (Right)	1
16	P22398	Cup, Bearing, Carrier Plate (Left)	1
17	P22399	Sleeve Assembly, Drive Pinion Bearing	1
18	P22400	Pin, Dowel, Sleeve Locating	1
19	P22401	Cup, Bearing	2
20	P22402	Cone, Driving Pinion Bearing	2
21	P22403	Spacer, Pinion (3/4 x 2-3/8 x 2-3/8")	1
31	P22404	Gear and Pinion (Matched Set)	1
41	P22405	Bearing, Pinion Pilot	1
42	P22406	Ring, Snap, Bearing Retaining	1
43	Com'l.	Bolt, Bearing Sleeve (9/16 x 1-1/4" NC, Hex)	6
44	P22407	Shim, Bearing Pre-Load (0.29" - .031")	x
44	P22408	Shim, Bearing Pre-Load (.034" - .036")	x
44	P22409	Shim, Bearing Pre-Load (.039" - .041")	x
44	P22410	Shim, Bearing Pre-Load (.044" - .046")	x
44	P22411	Shim, Bearing Pre-Load (.049" - .051")	x
45	P22412	Plate, Differential Carrier (Left)	1
46	P22413	Plate, Differential Carrier (Right)	1
47	P22414	"O" Ring, Carrier Plate	4

<b>LULL</b> <i>Engineering Co., Inc.</i>		ST. PAUL, MINNESOTA 65721
<small>DRAWING TITLE</small>	<small>PUBLICATION NUMBER</small>	
DIFFERENTIAL, INTERNAL	1852	

# REAR AXLE



PART NO.DESCRIPTIONQTY.

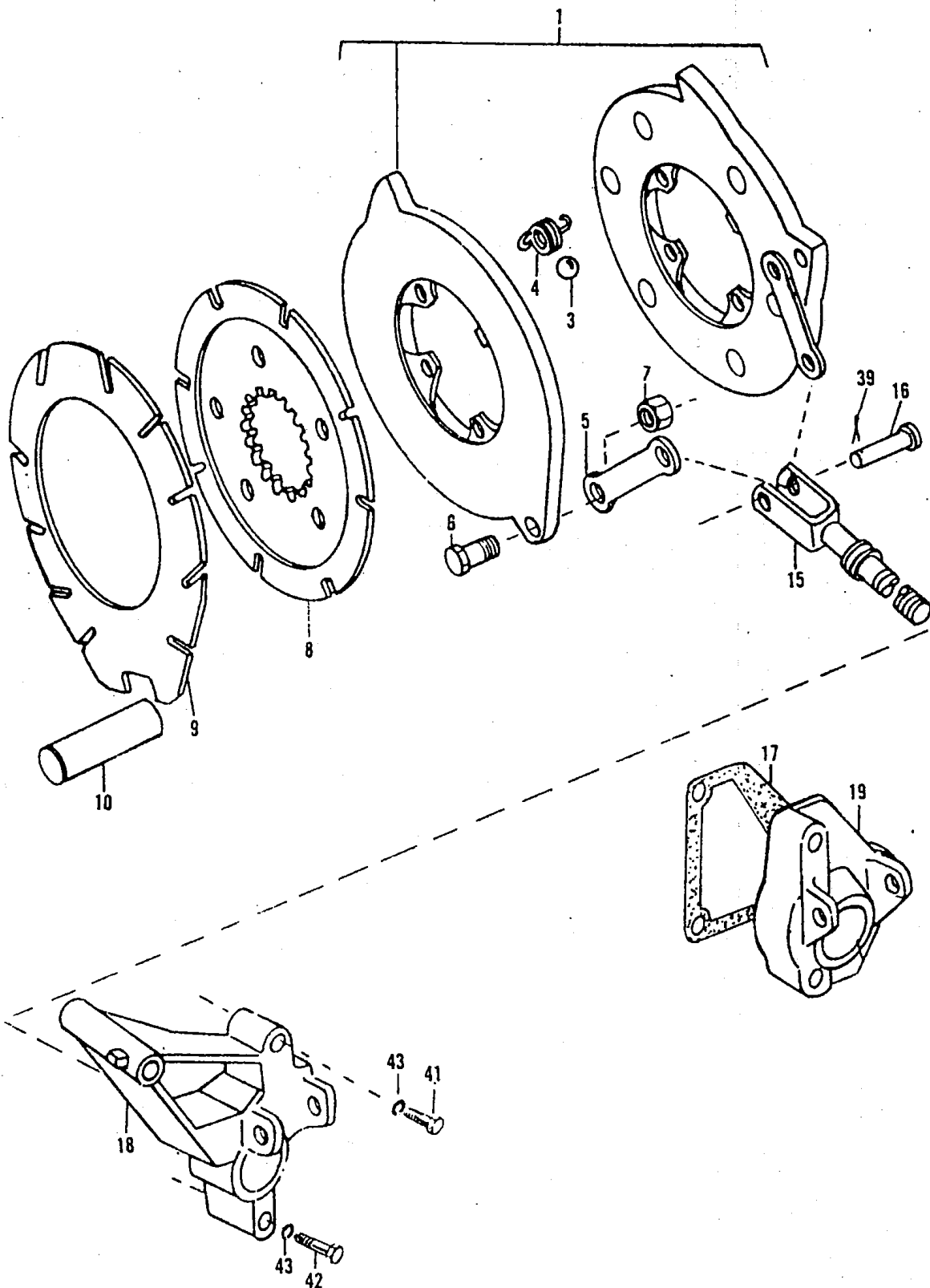
P22415	Housing, Axle (Left)	1
P22416	Housing, Axle (Right)	1
P22417	Plug, Drain (1/2" P.T. Sq. Hd.)	2
P22418	Seal, Axle Shaft	2
P22419	Cup, Axle Shaft Bearing	2
P22420	Shim, Axle Bearing (.005")	x
P22421	Shim, Axle Bearing (.010")	x
P22422	Shim, Axle Bearing (.015")	x
Com'l.	Screw (5/16 x 13/16" NF, Flat Sckt. Hd.)	4
P22423	Shaft, Front Axle	2
P22425	Cover Assembly, Front Axle Drive (Incl. Items 21, 22 & 23)	2
P22427	Cup, Bearing	2
P22429	Seal, Oil	2
P22430	Plug, Drain	2
P22431	Axle, Wheel	2
P22432	Shield, Dust	2
P22433	Wheel Lug	16
P22435	Cone, Cover	2
P22437	Ring, Snap	2
P22438	Carrier, Planetary Pinion	2
P22440	Pinion, Planetary	6
P22441	Shaft, Planetary	6
P22442	Roller (29 Per Path)	348
P22443	Washer, Roller Spacer (1-3/64 x 1-17/64 x 1/16")	6
P22444	Washer, Thrust	8
P22445	Washer, Thrust	4
P22446	Pin, Pinion (Spirol)	6
P22447	Bushing, Carrier	2
P22449	Cone, Front Axle	2
P22451	Gear, Axle Shaft Sun	2
P22452	Gear, Planetary Ring	2
P22453	Gasket, Ring Gear	4
Com'l.	Bolt (7/16 x 3-7/8" NF, Hex.)	24
Com'l.	Washer (7/16" Lock)	24
Com'l.	Nut (7/16" NF, Hex.)	24
Com'l.	Bolt (1/2 x 1-7/8" NC, Hex.)	16

\* For S/N 102 & 106 Use as Follows:

Item #11	P22424
Item #20	P22426
Item #21	P22428
Item #27	P22436
Item #32	P22439
Item #40	P22448
Item #41	P22450
Item #28	P22437

<b>LULL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55101
FRONT AXLE ASSEMBLY	PUBLICATION NUMBER 1853	

DISC BRAKES



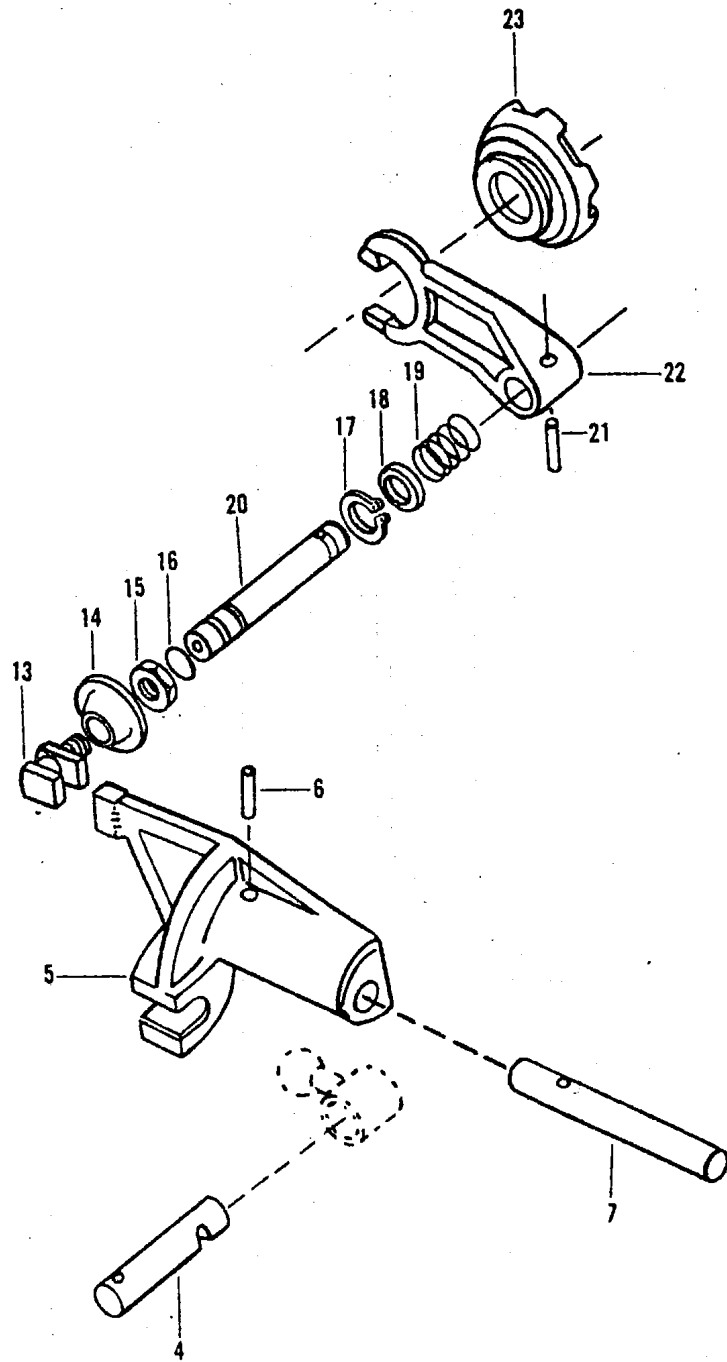
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P22455	Actuator Assembly, Brake (Incl. Items 3 thru 7)	2
3	P22456	Ball (7/8")	6
4	P22457	Spring, Return	4
5	P22458	Link	2
6	P22459	Pin, Pivot	2
7	P22460	Nut	2
8	P22461	Disc (Friction)	10
9	P22462	Disc (Intermediate)	6
10	P22463	Pin, Reaction	2
15	P22464	Rod, Brake	2
16	P22465	Pin, Rod	2
17	P22466	Gasket, Bracket	2
18*	P22467	Bracket, Brake Lever (Left)	1
19*	P22468	Bracket, Brake Lever (Right)	1
39	Com'l.	Cotter Pin (5/32 x 1-1/4")	2
41	Com'l.	Bolt (3/8 x 2-1/4" NC, Hex.)	4
42	Com'l.	Bolt (3/8 x 2-3/4" NC, Hex.)	2
43	Com'l.	Washer (3/8" Lock)	6

For S/N 102 Use As Follows:

Item #18    P22485  
Item #19    P22484

<b>WILL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55121
DISC BRAKE ASSEMBLY		PUBLICATION NUMBER 1854

# DIFFERENTIAL LOCK



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
4	P22502	Pin, Handle Pivot	1
5	P22503	Lever	1
6	P25504	Pin (3/16 x 1-1/4" Groove)	1
7	P22505	Shaft, Lever	1
13*	P22506	Clevis, Differential Lock	1
14	P22507	Boot, Clevis	1
15	Com'l.	Jam Nut (7/16" NE)	1
16	P22508	Seal, Shaft	1
17	P22509	Ring, Spring Retaining	1
18	P22510	Washer	1
19	P22511	Spring	1
20	P22512	Shaft	1
21	P10378	Pin (1/4 x 1-1/2" Roll)	1
22	P22513	Fork	1
23	P22514	Coupler, Fork	1

\* For S/N 102 Use P22515

<b>WLL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 1912
DIFFERENTIAL LOCK ASSEMBLY		PUBLICATION NUMBER 1855

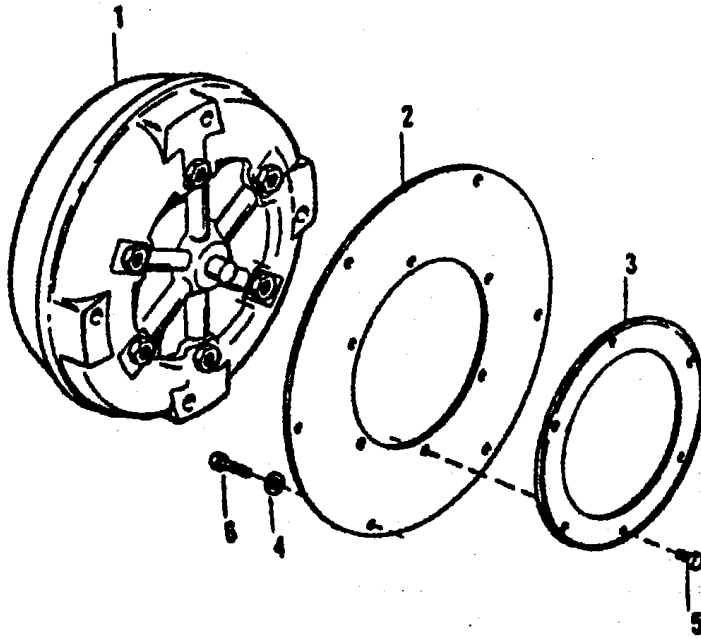


PARTS NOT ILLUSTRATED

Gasket Set, Top Overhaul	P22176
*Gasket Set, Top Overhaul	P22177
Gasket Set, Bottom Overhaul	P22178
*Gasket Set, Bottom Overhaul	P22179
Starter	P22554
*Starter	P22555
Starter Solenoid	P22556
*Starter Solenoid	P22557
Alternator (37 amp.)	P22558
*Alternator (61 amp.)	P22559
Glow Plug (Heater)	P22210

\* For S/N 102 & 106 only

# TORQUE CONVERTER



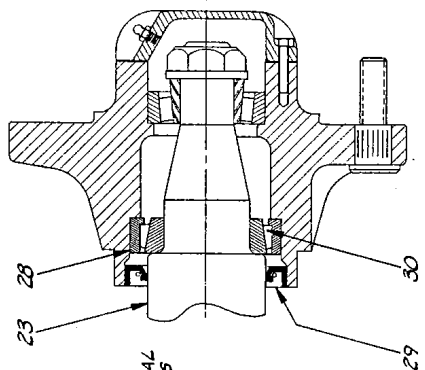
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	P25450	Converter Assembly, Torque	1
2	P25451	Plate, Drive	1
3	P25452	Plate, Reinforcement	1
4	P25675	Washer, Drive Plate	6
5	P13515	Bolt (3/8 X 1/2 NF, Hex, Lock, Grade 8)	6
6	P25660	Bolt (M8 - 1.25 X 25mm Hex.)	6

S/N 169, 171-173, 175-177, 181, 182, 184 & 186 ONLY.

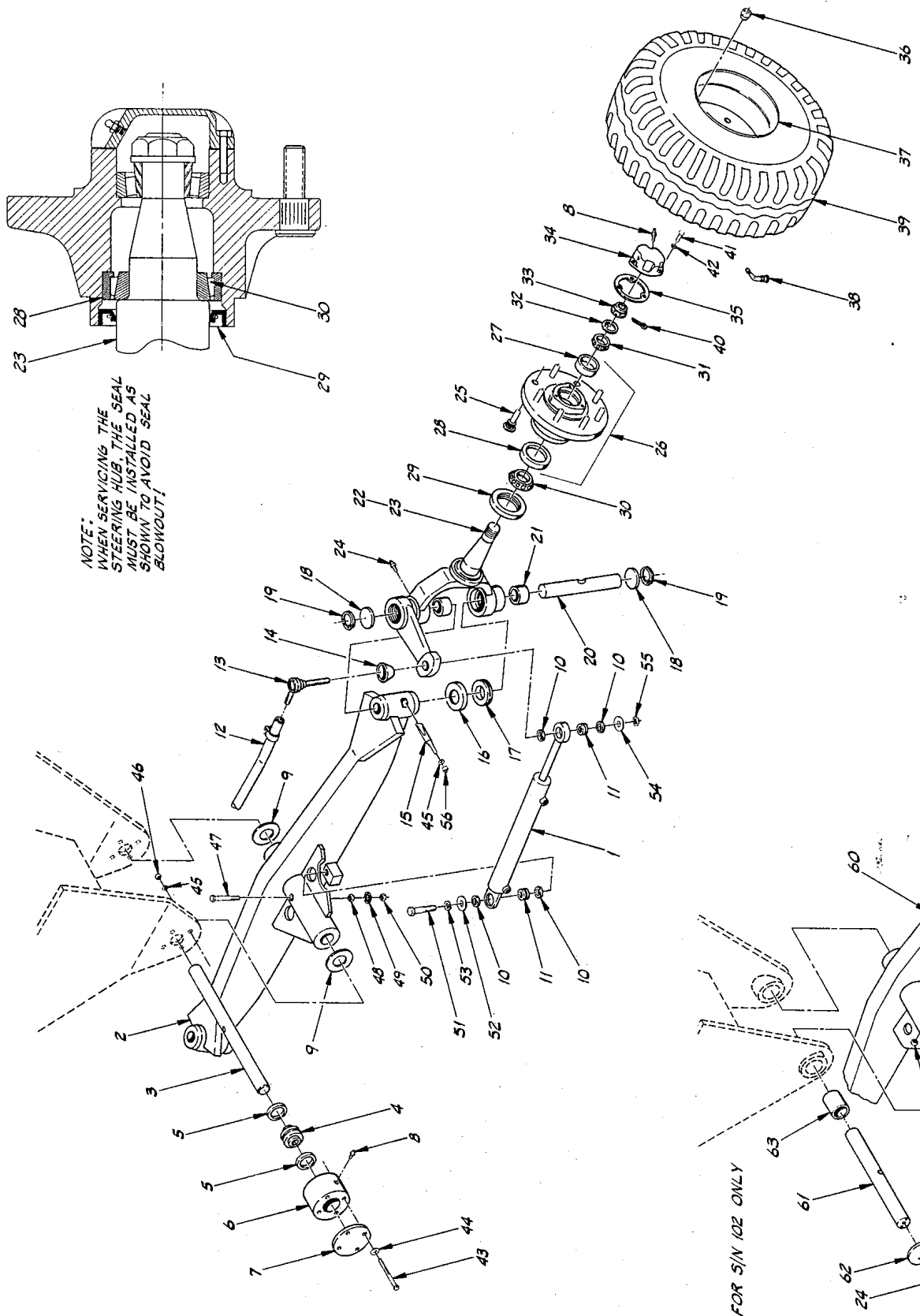
<b>WLL</b> Engineering Co., Inc.		MINNESOTA 10721
MODEL TITLE	PART NUMBER	
TORQUE CONVERTER	1856	

ITEM	PART NO.	DESCRIPTION	REQ.
63	189308	BUSHING	2
62	189654	COVER PIN	2
61	189648	TRUION PIN	1
60	189630	STEER AXLE	1
59	COM'L	LOCKWASHER, 5/8"	4
58	COM'L	LOCKWASHER, 3/8"	4
57	COM'L	BOLT, HK, 5/8-16 NC x 1"	4
56	COM'L	NUT, HK, 1/2-20 NF	2
55	COM'L	NUT, CASTELATED, 1/8-14	2
54	COM'L	FLATWASHER, 1/8"	2
53	COM'L	LOCKWASHER, 1/8"	2
52	COM'L	FLATWASHER, 1"	2
51	COM'L	BOLT, HK, 1-12 UNS x 3 1/4"	2
50	COM'L	JAM NUT, HK, 5/8-18 NF	1
49	COM'L	STARWASHER, 5/8"	1
48	COM'L	NUT, HK, 5/8-18 NF	1
47	COM'L	BOLT, HK, 1/2-13 NC	1
46	COM'L	NUT, HK, 1/2-13 NC	1
45	COM'L	LOCKWASHER, 1/2"	8
44	COM'L	FLATWASHER, 1/2"	10
43	COM'L	BOLT, HK, 1/2-13 NC x 5/4"	8
42	COM'L	LOCKWASHER, 5/8"	6
41	COM'L	BOLT, HK, 5/8-18 NC x 1"	6
40	COM'L	COTTER PIN, 5/16 x 2"	2
39	P21661	TIRE REAR, 1500R19.5	2
38	P18673	VALVE STEM	2
37	P20085	RIM, REAR	1/6
36	P22434	LUG NUT	2
35	P22534	GASKET, HUB CAP	2
34	P22533	CAP, WHEEL HUB	2
33	P22532	NUT, HUB RETAINER	2
32	P22531	WASHER, BEARING	2
31	P22530	ROLLER BEARING, OUTER	2
30	P22529	ROLLER BEARING, INNER	2
29	P22528	SEAL, OIL	2
28	P22527	CUP, INNER	2
27	P22526	CUP, OUTER	2
26	P22525	HUB ASSEMBLY	4
25	P22524	WHEEL LUG BOLT	4
24	P18772	GREASE ZERK	4
23	P22535	SPINDLE, L.H. INCL. #21	2
22	P22536	SPINDLE, R.H. - NOT SHOWN	2
21	P22537	BUSHING, SPINDLE	4
20	P22538	PIN, AXLE	4
19	P22543	SNAP RING	4
18	P22542	EXPANSION PLUG	4
17	P22541	THRUST BEARING	2
16	P22540	DUST SHIELD	2
15	P22539	LOCK PIN SEAL	2
14	P21704	RUBBER SEAL	2
13	P21681	TIE ROD END	2
12	P21682	TUBE W/CLAMPS	2
11	P11430	BUSHING, SELF-ALIGN	1
10	189694	SPACER, STEER CYL.	4
9	19104	SHIM	2
8	19103	GREASE ZERK	4
7	19102	COVER, BEARING	4
6	19101	HOUSING, BEARING	2
5	191034	SPACER, BEARING	2
4	P20484	BEARING, SELF-ALIGN	2
3	191044	TRUION PIN	1
2	191000	STEER AXLE	1
1	19057	STEERING CYL. ASSY	1

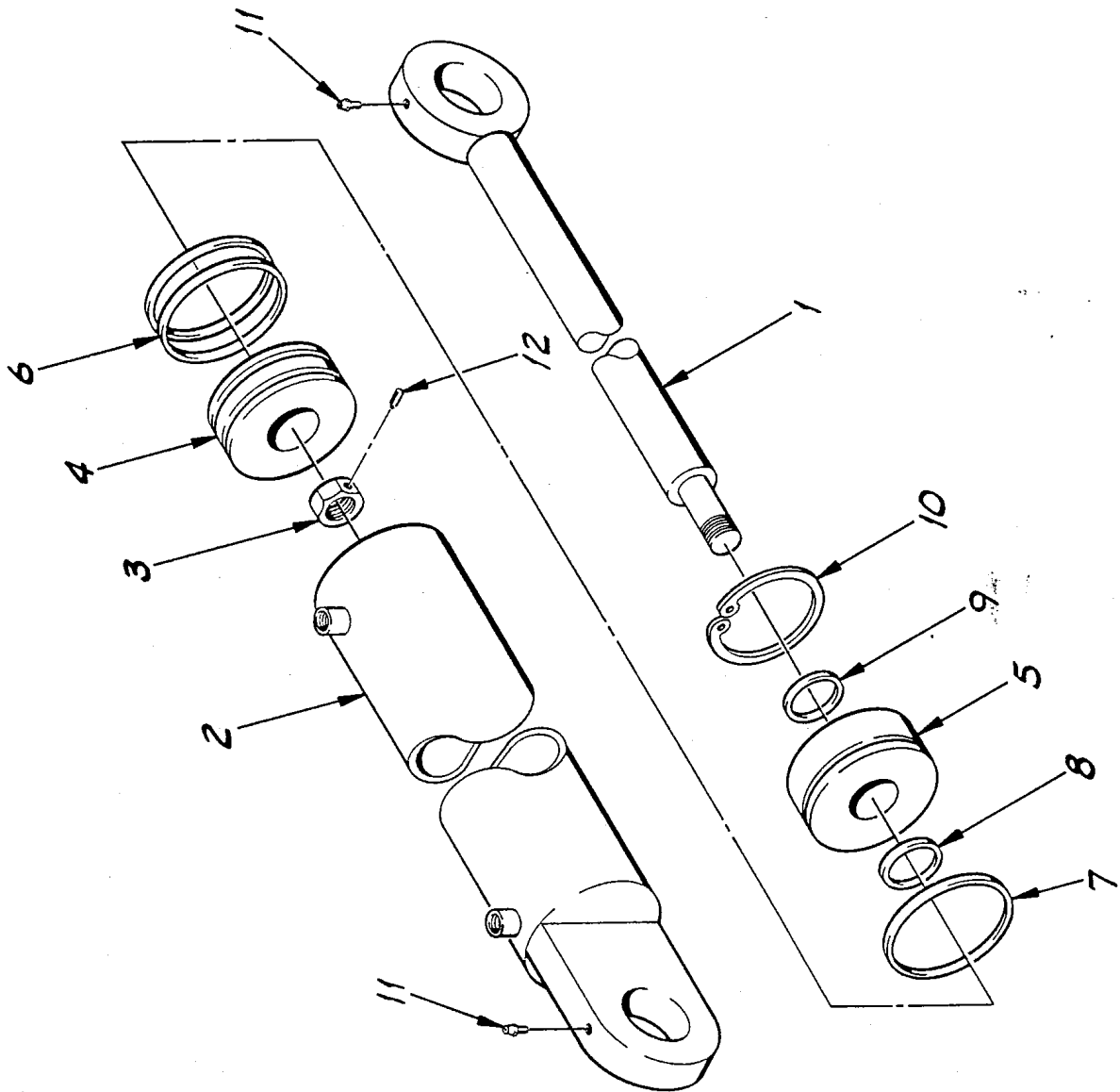
**LULL** Engineering Co., Inc.  
 ST. PAUL, MINNESOTA, U.S.A.  
 8000 Hennepin Ave.  
 5' N 101 THRU  
**REAR STEER AXLE ASSEMBLY**  
 MODEL 422  
 SCALE: D  
 19056



**NOTE:**  
 WHEN SERVICING THE  
 STEERING HUB, THE SEAL  
 MUST BE INSTALLED AS  
 SHOWN TO AVOID SEAL  
 BLOWOUT!



FOR S/N 102 ONLY



ITEM	PART NO.	DESCRIPTION	REQ.
12	COM'L	SET SCREW, C.P. 1/4"-20 NC	1
11	P16611	GREASE ZERK	2
10	P19418	SNAP RING	1
9	P19417	SEAL, ROD	1
8	P19416	WIPER	1
7	P11425	O-RING	1
6	P19419	SEAL, PISTON	2
5	18968A	GLAND	1
4	18967A	PISTON	1
3	16649A	LOCKNUT	1
2	18958B	TUBE WELDMENT	1
1	18949B	ROD WELDMENT	1

**WILL**

Engineering Co., Inc.

ST. PAUL,  
MINNESOTA  
55121

DRAWN BY  
JEFF DAUB

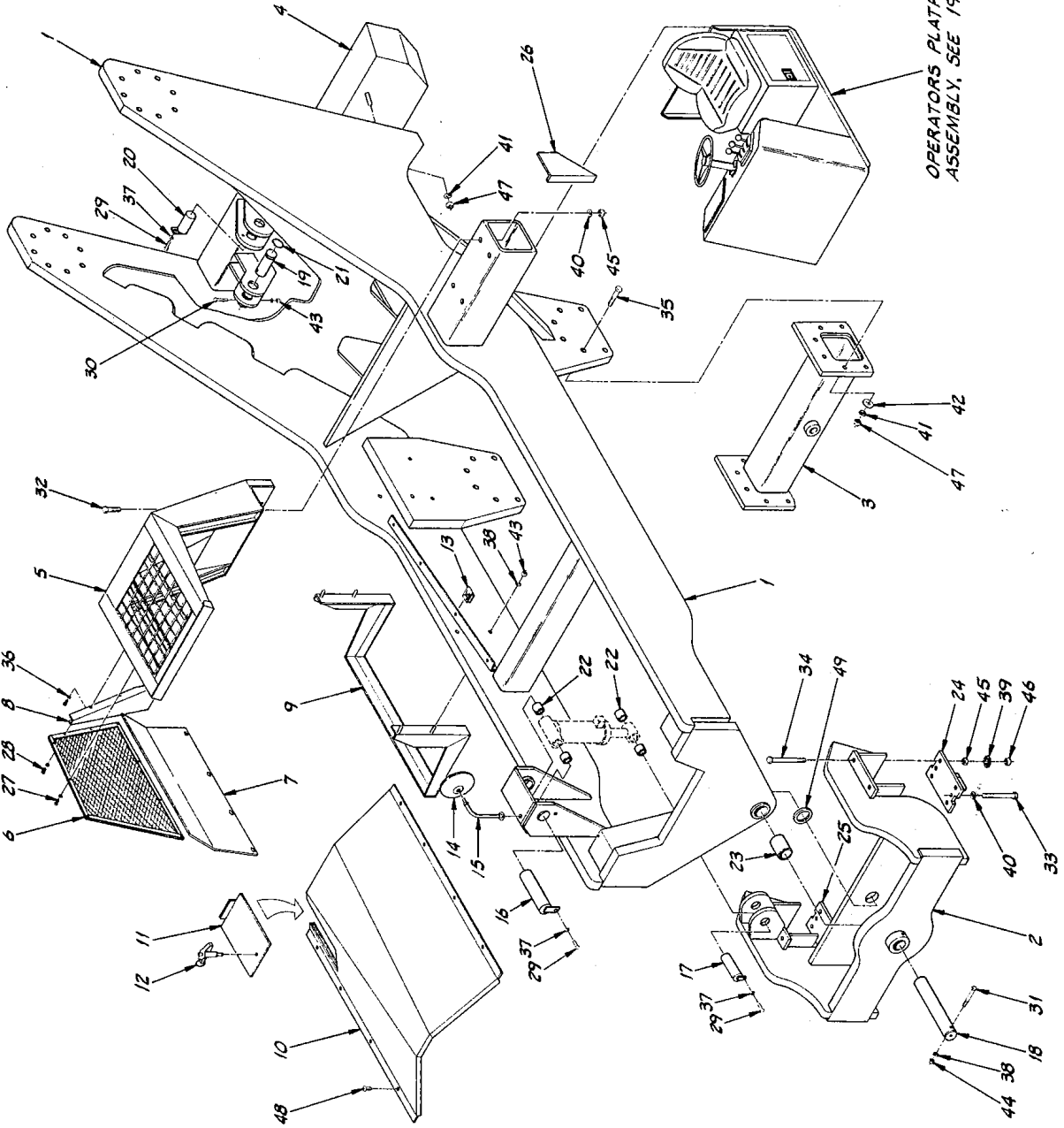
SIN 102 THRU

DRAWING TITLE

STEER CYLINDER  
ASSEMBLY  
MODEL 422

SCALE  
B

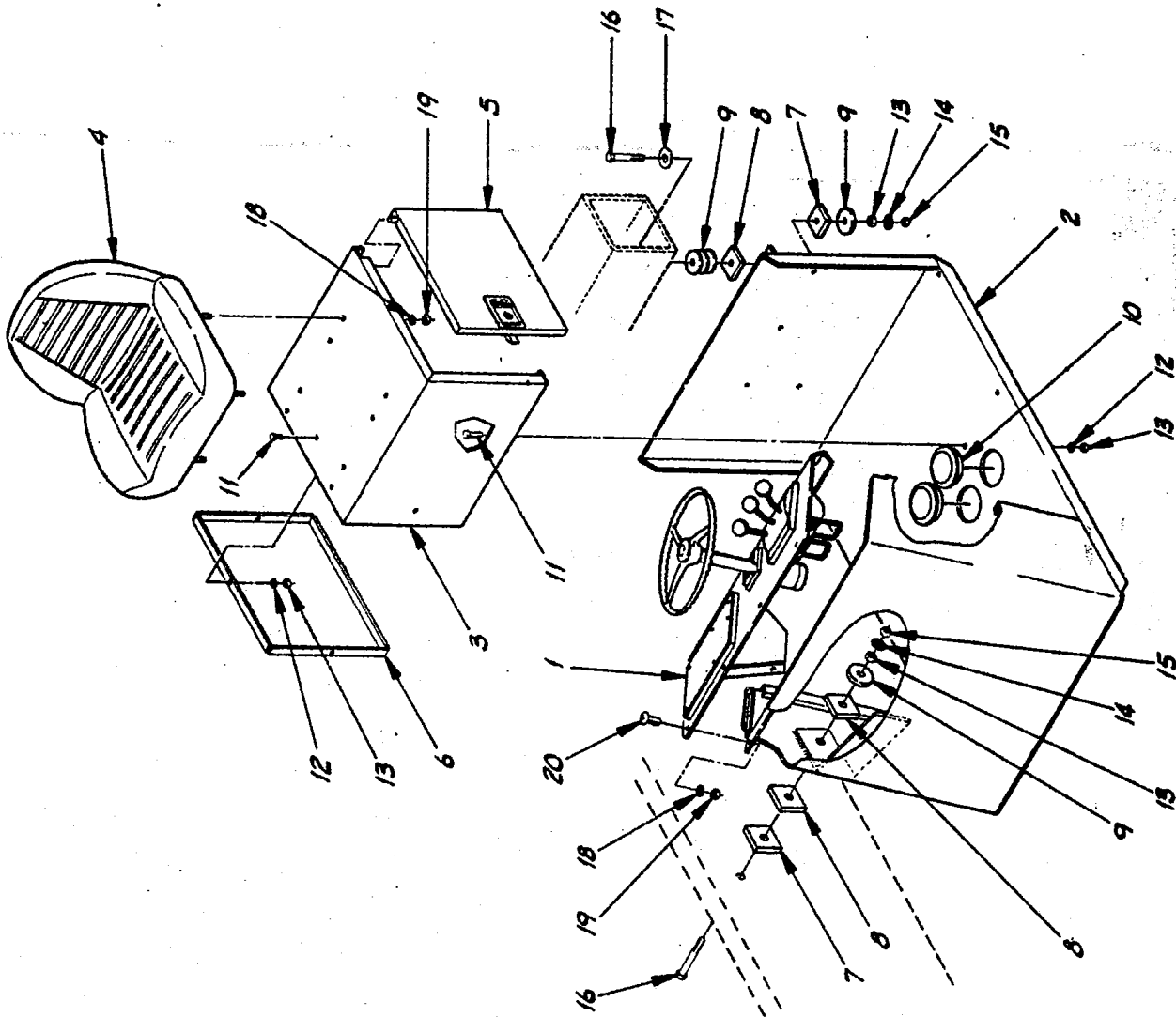
DRAWING NO.  
19057



OPERATORS PLATFORM  
ASSEMBLY, SEE 19059

ITEM	PART NO.	DESCRIPTION	REQ.
1	17015-1	SHIM SPACER, 14 GA.	1
2	17015-2	SHIM SPACER, 12 GA.	1
3	17015-3	SHIM SPACER, 10 GA.	1
4	17015-4	SCREW, R.H. 3/8"-16NC x 3/4"	8
5	46	COM L NUT, HX. 3/4"-16 NF	15
6	44	COM L NUT, HX. 3/4"-16 NF	12
7	44	COM L NUT, HX. 1/2"-13 NC	5
8	43	COM L NUT, HX. 3/8"-16 NC	1
9	42	COM L FLATWASHER, 1"	12
10	41	COM L LOCKWASHER, 1"	15
11	39	COM L STARWASHER, 3/4"	8
12	38	COM L LOCKWASHER, 3/4"	8
13	37	COM L LOCKWASHER, 3/8"	5
14	36	COM L LOCKWASHER, 1/4"	4
15	35	COM L BOLT, HX. 1"-12 NF x 3/4"	15
16	34	COM L BOLT, HX. 3/4"-16 NF x 9"	12
17	33	COM L BOLT, HX. 3/4"-16 NF x 7 3/4"	8
18	32	COM L BOLT, HX. 3/4"-16 NF x 1 1/2"	4
19	31	COM L BOLT, HX. 1/2"-13 NC x 5 1/2"	4
20	30	COM L BOLT, HX. 3/8"-16 NC x 2 1/2"	1
21	29	COM L BOLT, HX. 3/8"-16 NC x 3/4"	1
22	28	COM L BOLT, HX. 1/4"-20 NC x 3/4"	5
23	27	COM L BOLT, HX. S.T. 1/4"-20 NC x 1/2"	6
24	26	162964 COVER PLATE	9
25	190948	MOUNT, L.H. STABILIZER	1
26	189208	MOUNT, R.H. STABILIZER	1
27	21593	BUSHING, OSC FRAME	2
28	21593	BUSHING, TILT CYLINDER	2
29	19106	RETAINING RING	2
30	188838	PIN, HOIST CYLINDER	2
31	183874	PIN, MASTER CARR. TILT	1
32	183108	PIN, OSC FRAME PIVOT	2
33	183364	PIN, TILT CYL., LOWER	1
34	183364	PIN, TILT CYL., UPPER	1
35	183394	SUPPORT BRACE, MIRROR	1
36	183394	SUPPORT BRACE, MIRROR	1
37	183394	SUPPORT BRACE, MIRROR	1
38	183394	SUPPORT BRACE, MIRROR	1
39	183394	SUPPORT BRACE, MIRROR	1
40	183394	SUPPORT BRACE, MIRROR	1
41	183394	SUPPORT BRACE, MIRROR	1
42	183394	SUPPORT BRACE, MIRROR	1
43	183394	SUPPORT BRACE, MIRROR	1
44	183394	SUPPORT BRACE, MIRROR	1
45	183394	SUPPORT BRACE, MIRROR	1
46	183394	SUPPORT BRACE, MIRROR	1
47	183394	SUPPORT BRACE, MIRROR	1
48	183394	SUPPORT BRACE, MIRROR	1
49	183394	SUPPORT BRACE, MIRROR	1

<b>LULL</b> Engineering Co., Inc. ST. PAUL, MINNESOTA DATE:	
DRAWN BY JEFF DAVIS	S/N 101 THRU
PARTS LIST	SCALE D
MAIN FRAME ASSEMBLY	DATE 19058
MODEL 422	



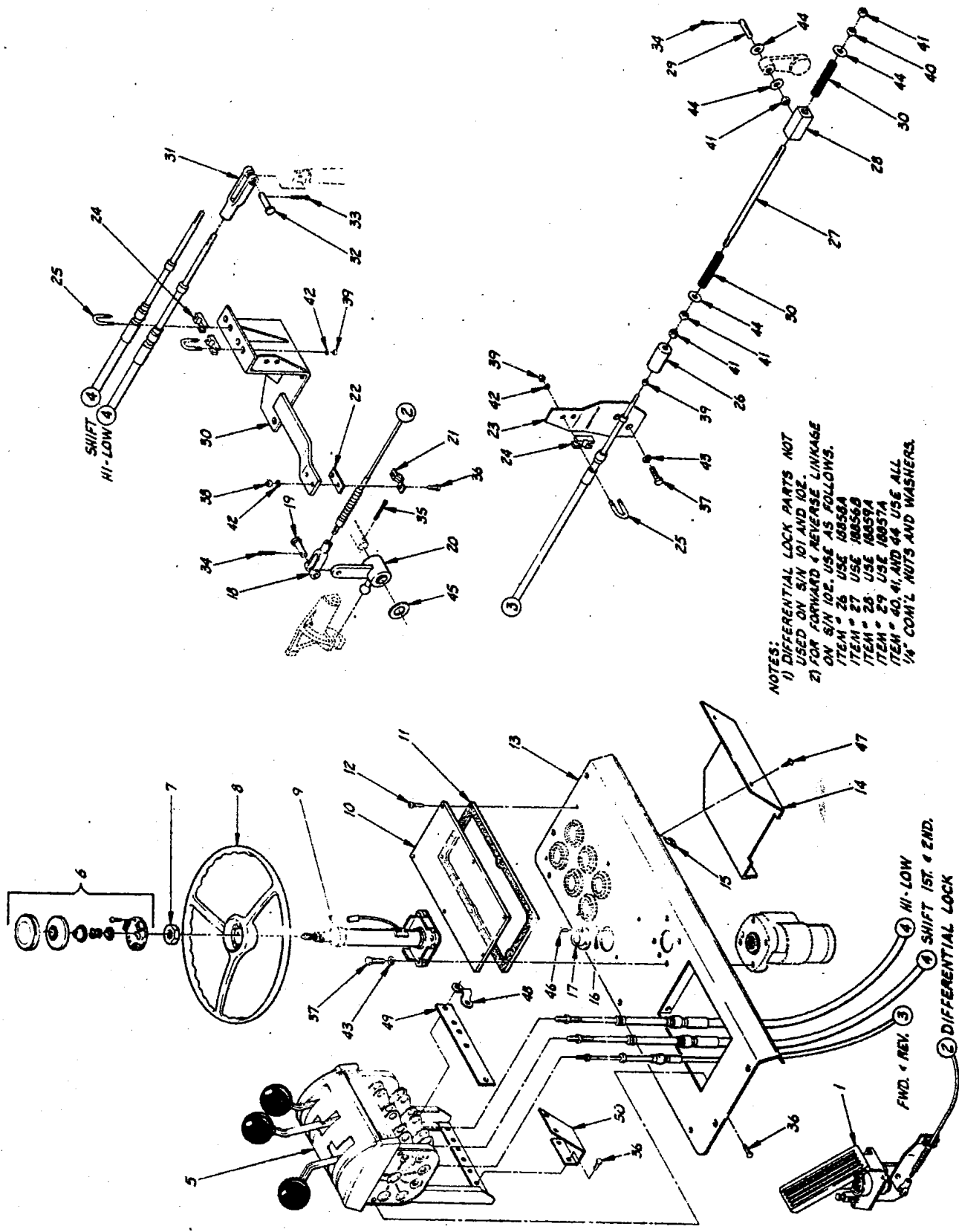
ITEM	PART NO.	DESCRIPTION	REQ.
20	COM'L	SCREW, R.D. 5/16"-18 NC x 3/4"	7
19	COM'L	NUT, HX. 5/16"-18 NC	12
18	COM'L	LOCKWASHER, 5/16"	12
17	COM'L	FLATWASHER, 3/8"	1
16	COM'L	BOLT, HX. 3/8"-16 NC x 3"	4
15	COM'L	JAM NUT, HX. 3/8"-16 NC	4
14	COM'L	STARWASHER, 3/8"	4
13	COM'L	NUT, HX. 3/8"-16 NC	13
12	COM'L	LOCKWASHER, 3/8"	9
11	COM'L	BOLT, HX. 3/8"-16 NC x 1"	9
10	P16186	ACCESS COVER	2
9	P20398	FLATWASHER	AK
8	I5862A	RUBBER MOUNTING PAD	AK
7	I5864A	STEEL MOUNTING PAD	AK
6	I6282B	BAFFLE	1
5	I6378B	DOOR W/ LOCK	1
4	P17742	SEAT	1
3	I5738C	SEAT STAND	1
2	I8830D	PLATFORM	1
1	I9060	INSTRUMENT PANEL	AK

**LULL** Engineering Co., Inc.  
 ST. PAUL, MINNESOTA 55121

DRAWN BY: **JEFF DAUB**  
 QUANTITY TITLE: **S/N 101 THRU**  
**OPERATOR'S PLATFORM ASSEMBLY**  
 MODEL 422

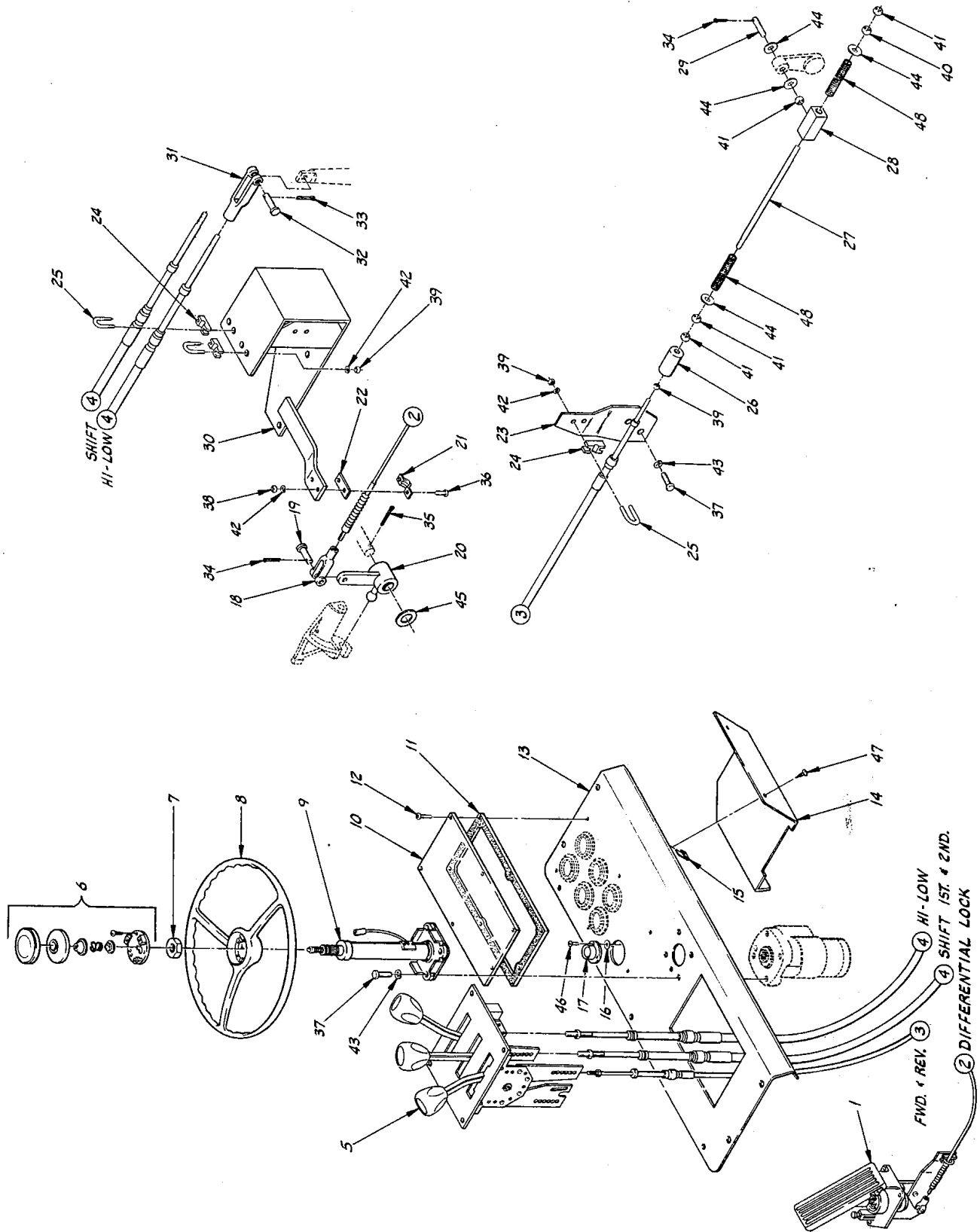
SCALE: **C**  
 DRAWING NO.: **19059**

ITEM	PART NO.	DESCRIPTION	QTY
1	189228	EXTENSION BRACKET	1
2	189218	BRACKET CLAMP	1
3	189107	CABLE CLAMP	1
4	COM'L	SCREW, R.H. 10-24 x 3/4"	1
5	COM'L	FLATWASHER, 3/4"	1
6	COM'L	LOCKWASHER, 3/8"	1
7	COM'L	LOCKWASHER, 1/2"	1
8	COM'L	LOCKWASHER, 3/8"	1
9	COM'L	LOCKWASHER, 1/2"	1
10	COM'L	LOCKWASHER, 3/8"	1
11	COM'L	LOCKWASHER, 1/2"	1
12	COM'L	LOCKWASHER, 3/8"	1
13	COM'L	LOCKWASHER, 1/2"	1
14	COM'L	LOCKWASHER, 3/8"	1
15	COM'L	LOCKWASHER, 1/2"	1
16	COM'L	LOCKWASHER, 3/8"	1
17	COM'L	LOCKWASHER, 1/2"	1
18	COM'L	LOCKWASHER, 3/8"	1
19	COM'L	LOCKWASHER, 1/2"	1
20	COM'L	LOCKWASHER, 3/8"	1
21	COM'L	LOCKWASHER, 1/2"	1
22	COM'L	LOCKWASHER, 3/8"	1
23	COM'L	LOCKWASHER, 1/2"	1
24	COM'L	LOCKWASHER, 3/8"	1
25	COM'L	LOCKWASHER, 1/2"	1
26	COM'L	LOCKWASHER, 3/8"	1
27	COM'L	LOCKWASHER, 1/2"	1
28	COM'L	LOCKWASHER, 3/8"	1
29	COM'L	LOCKWASHER, 1/2"	1
30	COM'L	LOCKWASHER, 3/8"	1
31	COM'L	LOCKWASHER, 1/2"	1
32	COM'L	LOCKWASHER, 3/8"	1
33	COM'L	LOCKWASHER, 1/2"	1
34	COM'L	LOCKWASHER, 3/8"	1
35	COM'L	LOCKWASHER, 1/2"	1
36	COM'L	LOCKWASHER, 3/8"	1
37	COM'L	LOCKWASHER, 1/2"	1
38	COM'L	LOCKWASHER, 3/8"	1
39	COM'L	LOCKWASHER, 1/2"	1
40	COM'L	LOCKWASHER, 3/8"	1
41	COM'L	LOCKWASHER, 1/2"	1
42	COM'L	LOCKWASHER, 3/8"	1
43	COM'L	LOCKWASHER, 1/2"	1
44	COM'L	LOCKWASHER, 3/8"	1
45	COM'L	LOCKWASHER, 1/2"	1
46	COM'L	LOCKWASHER, 3/8"	1
47	COM'L	LOCKWASHER, 1/2"	1
48	COM'L	LOCKWASHER, 3/8"	1
49	COM'L	LOCKWASHER, 1/2"	1
50	COM'L	LOCKWASHER, 3/8"	1
51	COM'L	LOCKWASHER, 1/2"	1
52	COM'L	LOCKWASHER, 3/8"	1
53	COM'L	LOCKWASHER, 1/2"	1
54	COM'L	LOCKWASHER, 3/8"	1
55	COM'L	LOCKWASHER, 1/2"	1
56	COM'L	LOCKWASHER, 3/8"	1
57	COM'L	LOCKWASHER, 1/2"	1
58	COM'L	LOCKWASHER, 3/8"	1
59	COM'L	LOCKWASHER, 1/2"	1
60	COM'L	LOCKWASHER, 3/8"	1
61	COM'L	LOCKWASHER, 1/2"	1
62	COM'L	LOCKWASHER, 3/8"	1
63	COM'L	LOCKWASHER, 1/2"	1
64	COM'L	LOCKWASHER, 3/8"	1
65	COM'L	LOCKWASHER, 1/2"	1
66	COM'L	LOCKWASHER, 3/8"	1
67	COM'L	LOCKWASHER, 1/2"	1
68	COM'L	LOCKWASHER, 3/8"	1
69	COM'L	LOCKWASHER, 1/2"	1
70	COM'L	LOCKWASHER, 3/8"	1
71	COM'L	LOCKWASHER, 1/2"	1
72	COM'L	LOCKWASHER, 3/8"	1
73	COM'L	LOCKWASHER, 1/2"	1
74	COM'L	LOCKWASHER, 3/8"	1
75	COM'L	LOCKWASHER, 1/2"	1
76	COM'L	LOCKWASHER, 3/8"	1
77	COM'L	LOCKWASHER, 1/2"	1
78	COM'L	LOCKWASHER, 3/8"	1
79	COM'L	LOCKWASHER, 1/2"	1
80	COM'L	LOCKWASHER, 3/8"	1
81	COM'L	LOCKWASHER, 1/2"	1
82	COM'L	LOCKWASHER, 3/8"	1
83	COM'L	LOCKWASHER, 1/2"	1
84	COM'L	LOCKWASHER, 3/8"	1
85	COM'L	LOCKWASHER, 1/2"	1
86	COM'L	LOCKWASHER, 3/8"	1
87	COM'L	LOCKWASHER, 1/2"	1
88	COM'L	LOCKWASHER, 3/8"	1
89	COM'L	LOCKWASHER, 1/2"	1
90	COM'L	LOCKWASHER, 3/8"	1
91	COM'L	LOCKWASHER, 1/2"	1
92	COM'L	LOCKWASHER, 3/8"	1
93	COM'L	LOCKWASHER, 1/2"	1
94	COM'L	LOCKWASHER, 3/8"	1
95	COM'L	LOCKWASHER, 1/2"	1
96	COM'L	LOCKWASHER, 3/8"	1
97	COM'L	LOCKWASHER, 1/2"	1
98	COM'L	LOCKWASHER, 3/8"	1
99	COM'L	LOCKWASHER, 1/2"	1
100	COM'L	LOCKWASHER, 3/8"	1



NOTES:  
 1) DIFFERENTIAL LOCK PARTS NOT USED ON S/N 101 AND 102.  
 2) FOR FORWARD & REVERSE LINKAGE ON S/N 102, USE AS FOLLOWS.  
 ITEM = 27 USE 18858A  
 ITEM = 28 USE 18858B  
 ITEM = 29 USE 18857A  
 ITEM = 40, 41 AND 44 USE ALL 1/4" COM'L NUTS AND WASHERS.

Engineering Co., Inc.  
 S/N 101 THRU  
 INSTRUMENT PANEL  
 ASSEMBLY  
 MODEL 422  
 PART NO. 19060  
 REV. D

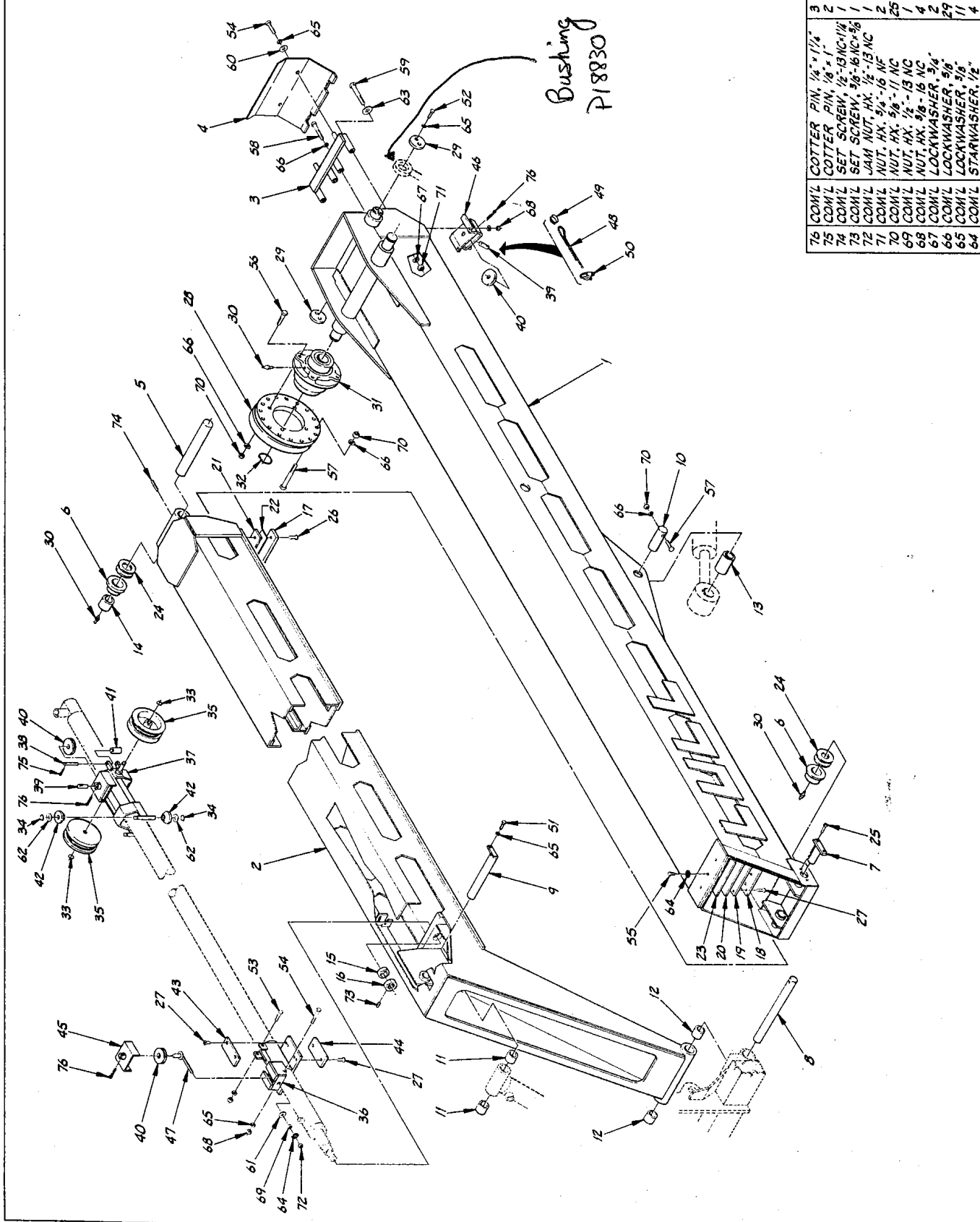


ITEM	PART NO.	DESCRIPTION	REQ.
48	19187	SPRING	1
47	COM'L	SCREW, R.H. #10-24x3/4"	2
46	COM'L	SCREW, R.H. #4-32x5/8"	2
45	COM'L	FLATWASHER, 5/4"	3
44	COM'L	LOCKWASHER, 3/8"	7
43	COM'L	LOCKWASHER, 1/4"	4
42	COM'L	JAM NUT, HX. 3/8"-16 NC	12
41	COM'L	NUT, HX. 3/8"-16 NC	4
40	COM'L	NUT, HX. 1/2"-28 NF	1
39	COM'L	NUT, HX. 1/4"-20 NC	7
38	COM'L	BOLT, HX. 3/8"-16 NC x 1/4"	6
37	COM'L	BOLT, RD. 1/4"-20 NC x 3/4"	6
36	COM'L	COTTER PIN 3/16" x 1"	4
35	COM'L	COTTER PIN 1/8" x 3/4"	4
34	COM'L	COTTER PIN 3/32" x 1/2"	2
33	COM'L	CLEVIS PIN	2
32	19040	CLEVIS PIN	2
31	17680	CABLE SUPPT BRKT.	1
30	19182C	CABLE SUPPT BRKT.	1
29	19034A	PIN	1
28	19033A	TEE	1
27	19032B	ROD	1
26	19035A	COUPLING	1
25	191029	U-BOLT CLAMP	3
24	191030	CABLE SHIM	3
23	18855B	BRACKET, CABLE	1
22	19128	SHIM	1
21	17678	CLAMP, CABLE	1
20	19160C	LEVER, DIFF. LOCK	1
19	190509	CLEVIS PIN	1
18	190508	CLEVIS PIN	1
17	188916	LEVEL INDICATOR	1
16	188544	WASHER, CONICAL	6
15	19254	SPEED NUT	2
14	19005C	VANDAL COVER, LOWER	1
13	19150C	INSTRUMENT PANEL	1
12	19424	SOCKET SCREW	6
11	18536	VANDAL COVER	1
10	16536B	VANDAL COVER	1
9	18726	STEERING COLUMN	1
8	183006	STEERING WHEEL	1
7	183009	NUT, STEERING WHEEL	1
6	18727	HORN KIT	1
5	191719	SHIFT CONTROL	1
4	191696	CABLE, SHIFT & HI-LOW	2
3	191697	CABLE, FWD. & REV.	1
2	17264	CABLE, DIFF. LOCK	1
1	19263	PEDAL, DIFF. LOCK	1

WULF Engineering Co., Inc.  
 ST. PAUL, MINNESOTA 55121  
 DRAWING NO. 19060-1  
 INSTRUMENT PANEL ASSEMBLY  
 MODEL 422  
 SCALE D  
 QUANTITY 19060-1



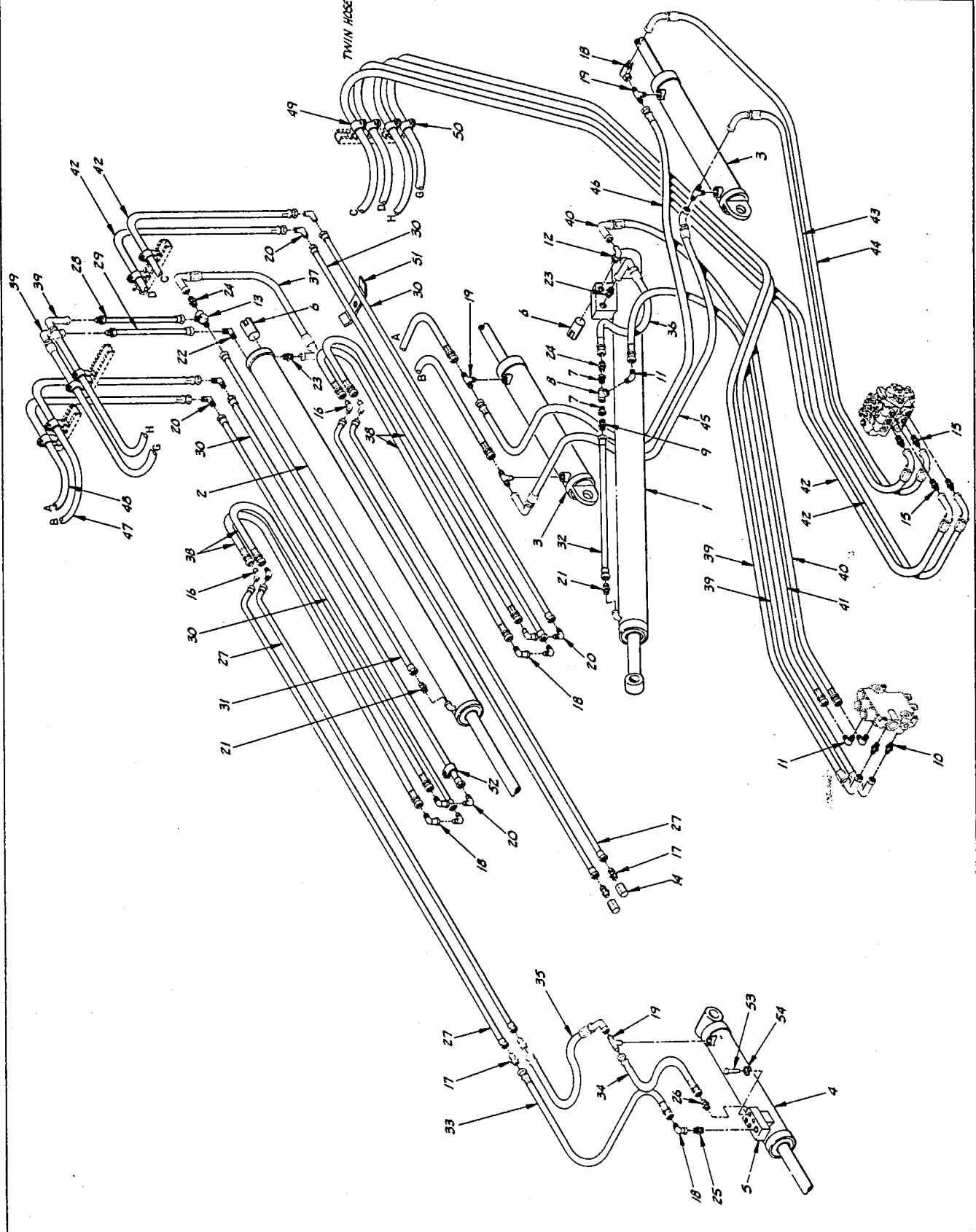
ITEM	PART NO.	DESCRIPTION	REQ.
63	COM/L	FLATWASHER, 3/4"	2
62	COM/L	FLATWASHER, 5/8"	4
61	COM/L	FLATWASHER, 1/2"	2
60	COM/L	FLATWASHER, 3/8"	2
59	COM/L	BOLT, HX. 3/4 - 16 NF x 6 1/2"	2
58	COM/L	BOLT, HX. 5/8 - 11 NC x 6"	2
57	COM/L	BOLT, HX. 5/8 - 11 NC x 4"	8
56	COM/L	BOLT, HX. 5/8 - 11 NC x 2 1/2"	8
55	COM/L	BOLT, HX. 1/2 - 13 NC x 3 1/2"	3
54	COM/L	BOLT, HX. 3/8 - 16 NC x 4 1/2"	2
53	COM/L	BOLT, HX. 3/8 - 16 NC x 3 1/2"	2
52	COM/L	BOLT, HX. 3/8 - 16 NC x 1"	4
51	COM/L	BOLT, HX. 3/8 - 16 NC x 3/8"	1
50	P19259	WIRE CLIP	4
49	P19258	THIMBLE	2
48	P19257	WIRE ROPE, 3/16" DIA.	34
47	161875	CABLE ADJUSTMENT	1
46	162668	SHEAVE MOUNT	1
45	182163	SHEAVE SUPPORT	1
44	162574	SLIDE PLATE, LOWER	2
43	162564	SLIDE PLATE, UPPER	2
42	162464	ROLLER, FRONT	2
41	162474	ROLLER, REAR	2
40	162484	SHEAVE	3
39	162494	SHAFT, SHEAVE MOUNT	3
38	162504	SHAFT, REAR ROLLER	2
37	182030	HOSE REEL WELDMENT	1
36	181970	FRONT SUPPORT	1
35	158162	SHEAVE HOSE TAKE-UP	2
34	P18839	SNAP RING, EXTERNAL	4
33	P18840	SNAP RING, EXTERNAL	2
32	P21693	SNAP RING, EXTERNAL	2
31	P21592	BEARING	2
30	P15272	GREASE ZERK	8
29	190064	CHP MASTER TILT CYL	2
28	188700	ECCENTRIC MOUNTING	2
27	181474	CAPSCREW, BRASS	12
26	P20164	CAPSCREW, F.H. SOCKET	4
25	P20162	CAPSCREW, F.H. SOCKET	4
24	P2043	SPACER WASHER	1
23	158864	BASE SLIDE PLATE	1
22	179623	SHIM, 16 GA.	1
21	157644	SHIM, 12 GA.	1
20	163624	SHIM, .12"	1
19	163614	SHIM, .06"	1
18	157744	SLIDE PLATE, FRONT	2
17	157654	SLIDE PLATE, REAR	2
16	163694	NUT, BOOM CYL ROD	1
15	163694	BOSS, BOOM CYL ROD	1
14	P20394	BUSHING	2
13	P19111	BUSHING	1
12	P19109	BUSHING	2
11	P19106	BUSHING	2
10	18103-2	PIN, HOIST CYLINDER	1
9	157694	PIN, CARRIAGE TILT CYL.	1
8	157234	PIN, CARRIAGE	1
7	171888	PIN, FRONT ROLLER	2
6	157698	BOOM ROLLER	4
5	166784	ROLLER SHAFT	1
4	157770	COVER, INNER HYD'S	1
3	182158	EXTENSION CYL. SUPPT	1
2	180088	INNER BODY WELDT	1
1	18896-R	OUTER BODY WELDT	1



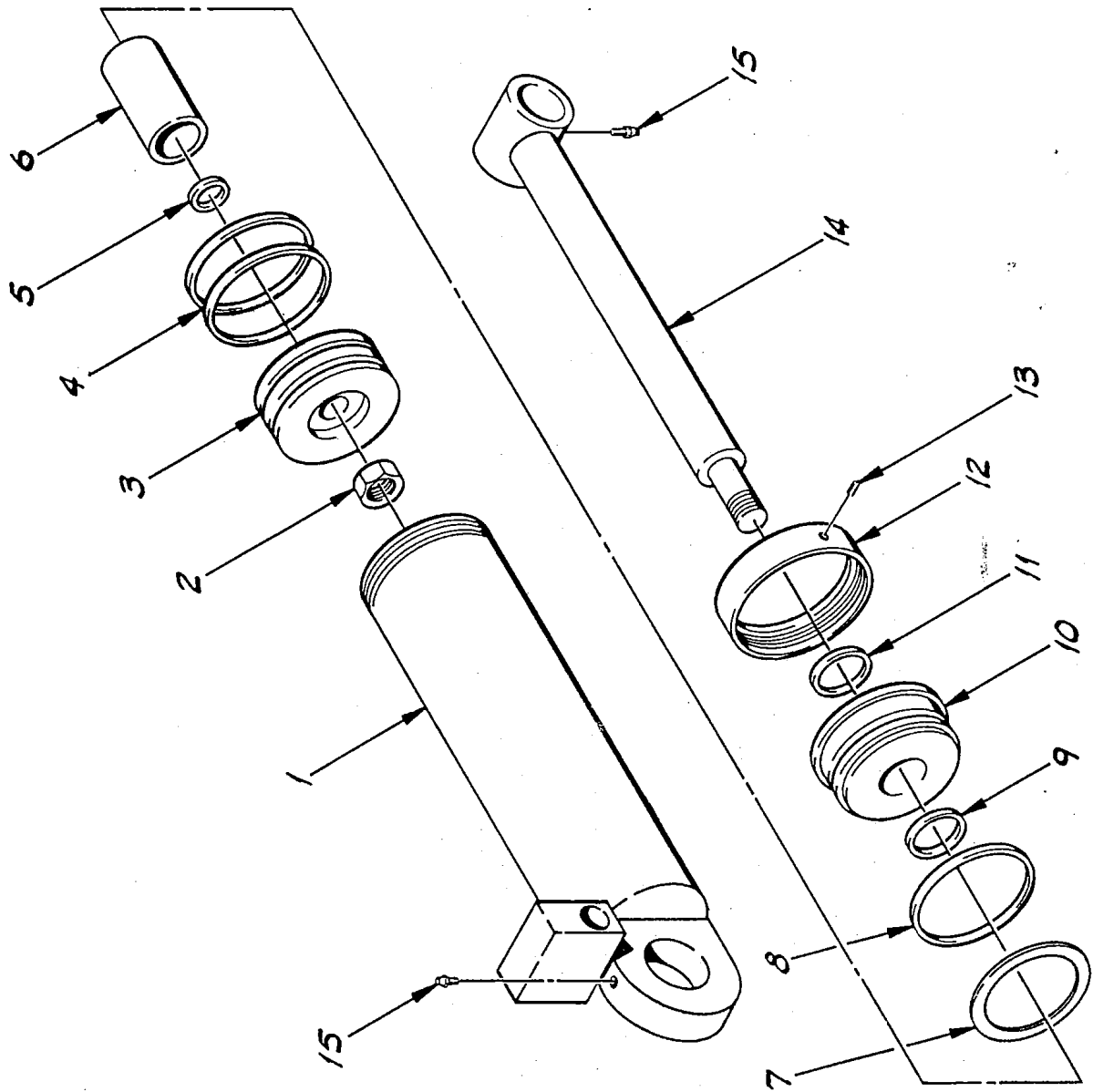
ITEM	PART NO.	DESCRIPTION	REQ.
76	COM/L	COTTER PIN, 1/4" x 1 1/4"	3
75	COM/L	COTTER PIN, 1/8" x 1"	2
74	COM/L	SET SCREW, 1/2 - 13 NC x 1 1/2"	1
73	COM/L	SET SCREW, 3/8 - 16 NC x 3/8"	1
72	COM/L	JAM NUT, HX. 1/2 - 13 NC	1
71	COM/L	NUT, HX. 3/4 - 16 NF	25
70	COM/L	NUT, HX. 5/8 - 11 NC	1
69	COM/L	NUT, HX. 1/2 - 13 NC	4
68	COM/L	NUT, HX. 3/8 - 16 NC	2
67	COM/L	LOCKWASHER, 3/4"	2
66	COM/L	LOCKWASHER, 5/8"	29
65	COM/L	LOCKWASHER, 3/8"	11
64	COM/L	STARWASHER, 1/2"	4

QTY	PART NO.	DESCRIPTION	REV.
4	54	COM'L STARWASHER 5/16"	1
4	53	COM'L BOLT HK 5/16" - 18 NC x 2"	1
6	52	P17454 TUBE CLAMP	1
4	51	182734 TUBE SUPPORT	1
4	50	P20486 HOSE CLAMP 1.25" O.D.	1
8	49	P20486 HOSE CLAMP .62" O.D.	1
1	48	P21615 HYD. HOSE .36" I.D.	1
1	47	P21614 HYD. HOSE .30" I.D.	1
1	46	P21613 HYD. HOSE .30" I.D.	1
1	45	P21612 HYD. HOSE .30" I.D.	1
1	44	P21611 HYD. HOSE .30" I.D.	1
1	43	P21610 HYD. HOSE .30" I.D.	1
2	42	P21609 HYD. HOSE .38" I.D.	1
1	41	P21605 HYD. HOSE .75" I.D.	1
1	40	P21604 HYD. HOSE .75" I.D.	1
1	39	P21603 HYD. HOSE .75" I.D.	1
1	38	P21602 HYD. HOSE .75" I.D.	1
2	37	P21361 HYD. HOSE .25" I.D.	1
1	36	P19249 HYD. HOSE .25" I.D.	1
1	35	P19078 HYD. HOSE .36" I.D.	1
1	34	P18993 HYD. HOSE .36" I.D.	1
1	33	P18855 HYD. HOSE .75" I.D.	1
1	32	P21384 HYD. TUBING .62" O.D.	1
1	31	P21331 HYD. TUBING .62" O.D.	1
4	30	P21451 HYD. TUBING .31" O.D.	1
1	29	P18972 HYD. TUBING .75" O.D.	1
1	28	P18971 HYD. TUBING .62" O.D.	1
1	27	P18970 HYD. TUBING .36" O.D.	1
1	26	P19478 CONNECTOR, STRAIGHT	1
1	25	P19415 CONNECTOR, STRAIGHT	1
2	24	P19246 TUBE ADAPTOR	1
2	23	P19053 90° ELBOW	1
1	22	P18964 CONNECTOR, STRAIGHT	1
8	21	P18759 90° ELBOW, UNION	1
5	20	P18758 TEE, STRAIGHT	1
6	19	P18757 90° ELBOW, SWIVEL	1
4	18	P18748 UNION, BULKHEAD	1
4	17	P18747 45° ELBOW, BULKHEAD	1
4	16	P18744 CAP	1
4	15	P18729 CONNECTOR, STRAIGHT	1
2	14	P18725 TEE, FEMALE RUN	1
1	13	P18724 90° ELBOW, O-RING	1
3	12	P17808 90° ELBOW	1
2	11	P17804 ADAPTOR	1
1	10	P17699 CONNECTOR	1
1	9	P10197 TEE	1
1	8	P10103 BUSHING, REDUCER	1
2	7	P1904 SAFETY VALVE	1
2	6	P1784 SAFETY VALVE	1
1	5	P19941 CARRIAGE TILT CYL.	1
1	4	P21685 MASTER CARR. TILT CYL.	1
2	3	P19939 BOOM EXTENSION CYL.	1
1	2	P19936 HOIST CYLINDER	1

**LULL** Engineering Co., Inc.  
 11700 W. 10th Ave.  
 MINNETONKA, MN 55345  
 QUANTITY: **SIN 101 THRU**  
 DRAWN BY: **JEFF DAUG**  
 CHECKED BY: **WILLIAM**  
**UPPER HYDRAULIC ASSEMBLY**  
**MODEL 422**  
 REVISION: **D**  
 DATE: **19062**





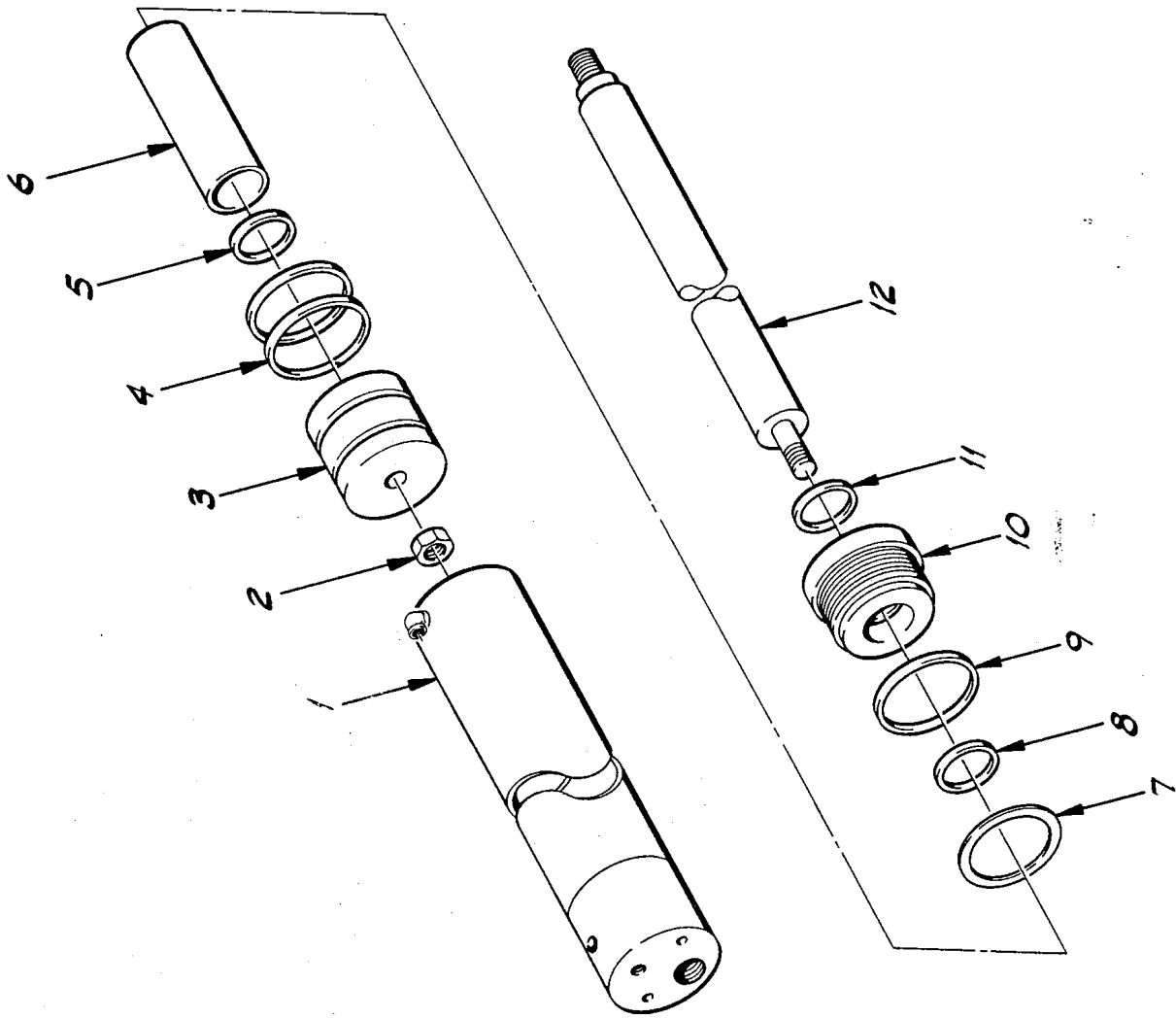


REF	PART NO.	DESCRIPTION	REQ.
15	P20825	SEAL KIT	1
14	P16611	GREASE ZERK	2
13	P20849	SHAFT WELDMENT	1
12	P19208	LOCKSCREW	1
11	P19227	RETAINING NUT	1
10	P20050	DUST SEAL	1
9	P20850	END GLAND	1
8	P20046	URETHANE U-CUP	1
7	P19229	O-RING, END GLAND	1
6	P20056	BACK-UP RING	1
5	P20851	STROKE BLOCK	1
4	P19231	O-RING, PISTON	1
3	P19232	URETHANE U-CUP	2
2	P19233	PISTON	1
1	P19234	LOCKNUT	1
	P20848	TUBE WELDMENT	1

**LULL** Engineering Co., Inc.  
ST. PAUL, MINNESOTA 55121

DRAWN BY: JEFF DAUB  
S/N 101 THRU

DRAWING TITLE: HOIST CYLINDER ASSEMBLY  
MODEL 422  
P19936  
SCALE: B  
DRAWING NO.: 19063



REF	PART NO.	DESCRIPTION	REQ.
12	P20826	SEAL KIT	1
11	P20838	SHAFT	1
10	P20048	DUST SEAL	1
9	P20829	END GLAND	1
8	P20062	O-RING, END GLAND	1
7	P20043	URETHANE U-CUP	1
6	P20052	BACK-UP RING	1
5	P20839	STROKE BLOCK	1
4	P20059	O-RING, PISTON	1
3	P20045	URETHANE U-CUP	2
2	P20828	PISTON	1
1	P20085	LOCKNUT	1
	P20837	TUBE WELDMENT	1

**LUHL**

Engineering Co., Inc.

ST. PAUL,  
MINNESOTA  
55121

DRAWN BY  
JEFF DAUB

S/N 101 THRU

DRAWING TITLE

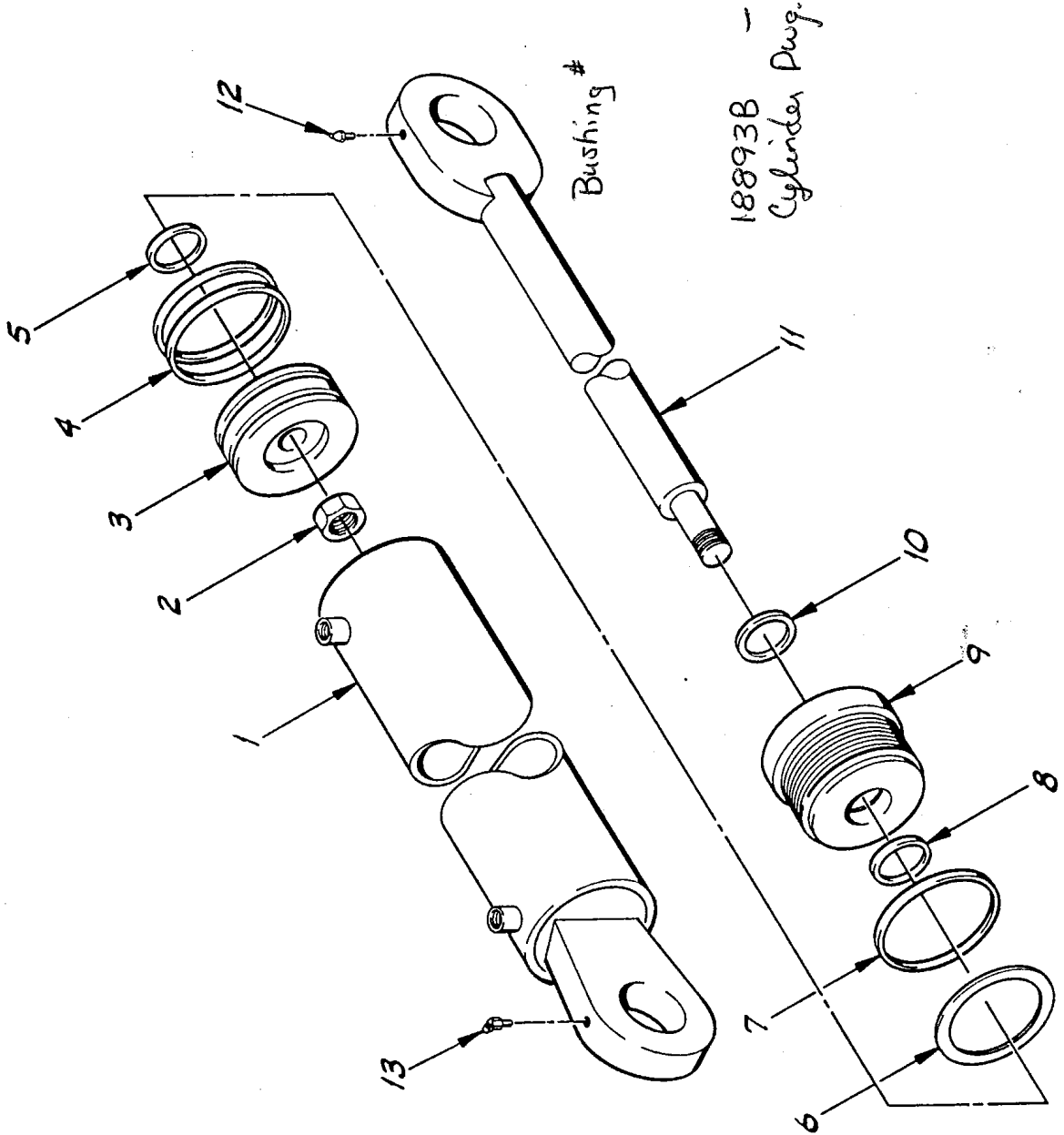
BOOM EXTENSION  
CYLINDER ASSEMBLY  
MODEL 422

P19939

SCALE  
B

DRAWING NO.

19064



REF	PART NO.	DESCRIPTION	REQ.
13	P20118	SEAL KIT	1
12	P15337	GREASE ZERK, 45°	1
11	P16611	GREASE ZERK	1
10	P20126	SHAFT WELDMENT	1
9	P20051	DUST SEAL	1
8	P20127	END GLAND	1
7	P20042	URETHANE U-CUP	1
6	P20063	O-RING, END GLAND	1
5	P20053	BACK-UP RING	1
4	P20059	O-RING, PISTON	1
3	P20046	URETHANE U-CUP	2
2	P20128	PISTON	1
1	P20085	LOCKNUT	1
	P20125	TUBE WELDMENT	1

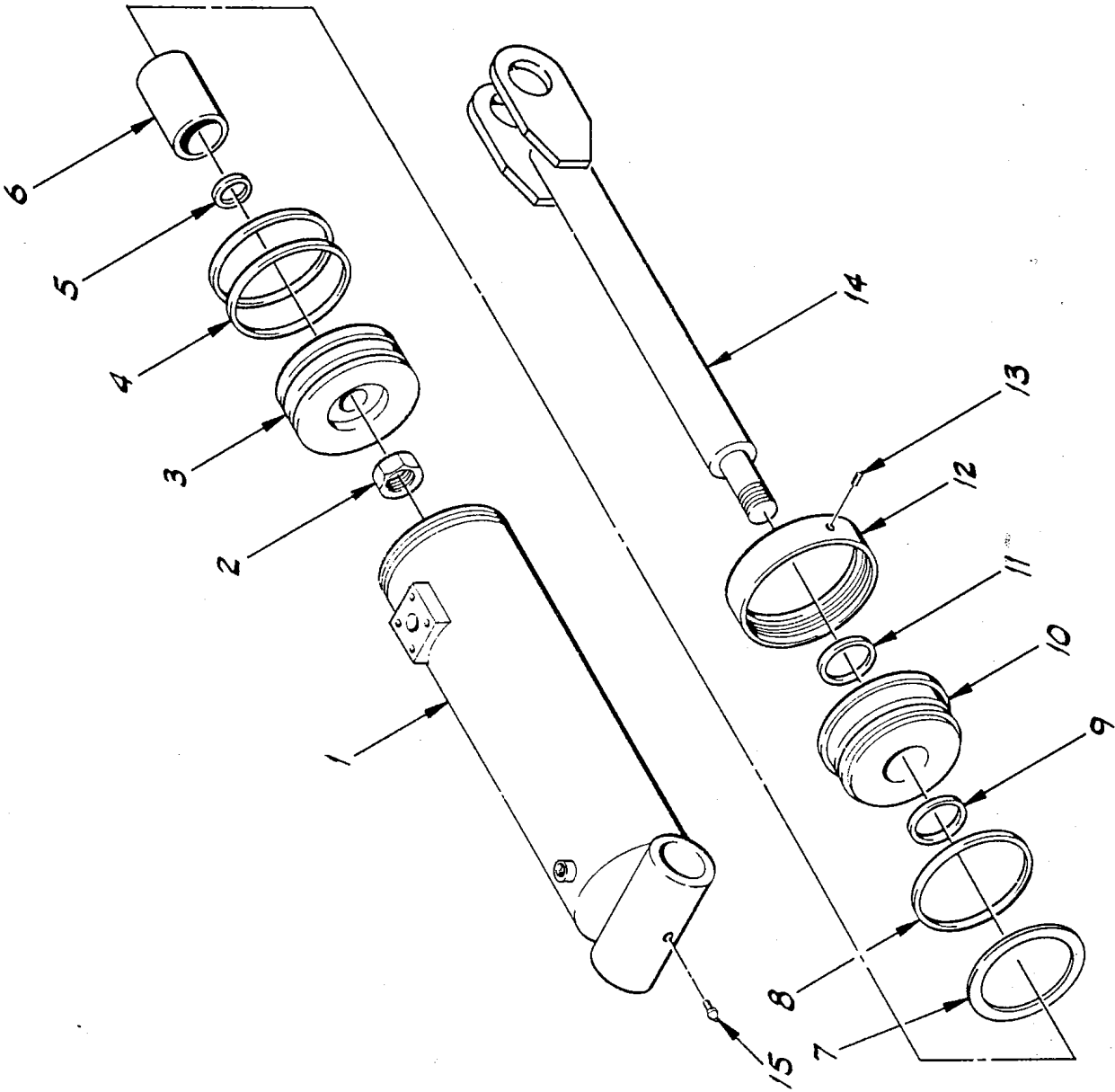
**LULL** Engineering Co., Inc.  
ST. PAUL  
MINNESOTA  
55121

DRAWN BY  
**JEFF DAUB**

DRAWING TITLE  
**S/N 101 THRU**

P21685  
SCALE **B**  
DRAWING NO.  
**19065**

**MASTER CARRIAGE TILT  
CYLINDER ASSEMBLY  
MODEL 422**



REF	PART NO.	DESCRIPTION	REQ.
15	P19522	SEAL KIT	1
14	P16611	GREASE ZERK	1
13	P20845	SHAFT WELDMENT	1
12	P19208	LOCKSCREW	1
11	P19207	RETAINING NUT	1
10	P19241	DUST SEAL	1
9	P20088	END GLAND	1
8	P19242	URETHANE U-CUP	1
7	P19211	O-RING, END GLAND	1
6	P20055	BACK-UP RING	1
5	P19245	STROKE BLOCK	1
4	P19214	O-RING, PISTON	1
3	P19215	URETHANE U-CUP	2
2	P19216	PISTON	1
1	P19217	LOCKNUT	1
	P20844	TUBE WELDMENT	1

**LULL** Engineering Co., Inc.  
 ST. PAUL, MINNESOTA 55121

DRAWN BY **JEFF DAUB**  
 DRAWING TITLE **S/N 101 THRU**

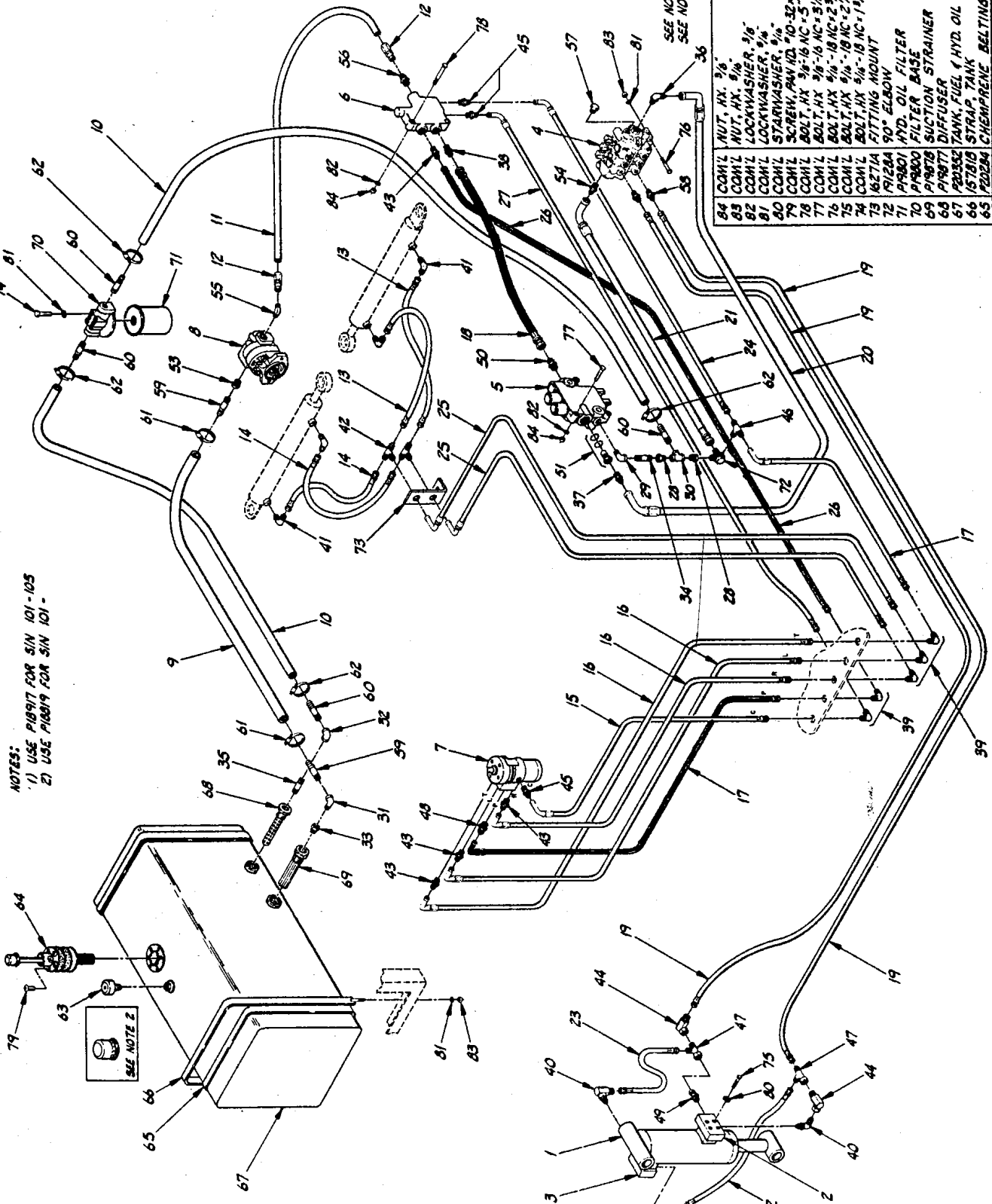
**CARRIAGE TILT CYLINDER ASSEMBLY**  
 MODEL 422

P19941  
 SCALE **B**  
 DRAWING NO. **19066**

2 Spool Valve  
 Main System Relief - 2600 PSI - Steering 1800 PSI - 3 spool Valve 2400

NOTES:  
 (1) USE P18917 FOR SIN 101-105  
 (2) USE P18819 FOR SIN 101-

SEE NOTE #2

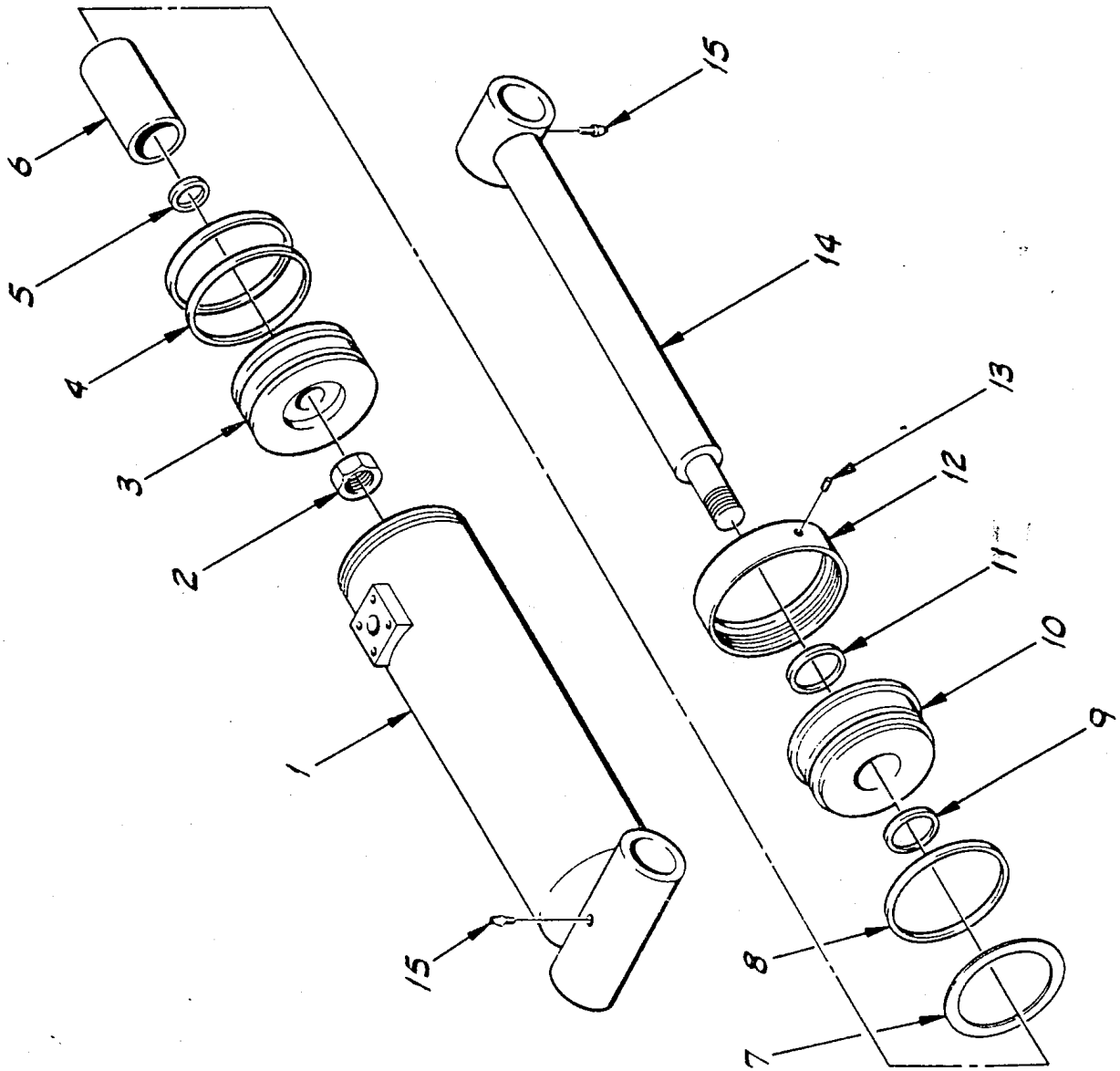


84	CON/L NUT, AX. 3/8"	6
83	CON/L NUT, AX. 9/16"	7
82	CON/L LOCKWASHER, 9/16"	10
81	CON/L LOCKWASHER, 9/16"	6
80	CON/L STARWASHER, #10-32x1"	6
79	CON/L SCREW, PAN HD. #10-32x1"	6
78	CON/L BOLT, AX. 3/8-16 NC x 3 1/4"	2
77	CON/L BOLT, AX. 9/16-18 NC x 2 1/4"	2
76	CON/L BOLT, AX. 9/16-18 NC x 2 1/4"	3
75	CON/L BOLT, AX. 9/16-18 NC x 1 1/4"	3
74	CON/L BOLT, AX. 9/16-18 NC x 1 1/4"	5
73	1/2 TIA FITTING MOUNT	1
72	P18284 90° ELBOW	1
71	P18901 HYD. OIL FILTER	1
70	P18900 SUCTION BASE	1
69	P18918 FILTER STRAINER	1
68	P18971 DIFFUSER	1
67	P20352 TANK, FUEL	1
66	157810 STRAP, TANK	2
65	P20284 CHEMPRENE BELTING	2

ITEM	PART NO.	DESCRIPTION	QTY	REMARKS
64	P1878	FILTER STRAINER	1	
63	P1874	BREATHER	1	
62	P1843	HOSE CLAMP	4	
61	P1842	HOSE NIPPLE, 1.25	4	
60	P1842	HOSE NIPPLE, 1.50	4	
59	P20355	CONNECTOR	2	
58	P18756	PLUG, O-RING, HX. HD.	2	
57	P18756	PLUG, O-RING, O-RING	1	
56	P21630	45° ELBOW, O-RING	1	
55	P21629	CONNECTOR, O-RING	1	
54	P21629	CONNECTOR, O-RING	1	
53	P21619	45° ELBOW	1	
52	P18782	POWER BEYOND	1	
51	P18782	ADAPTER	1	
50	P18782	CONNECTOR	1	
49	P18782	CHECK VALVE	1	
48	P18782	TEE, SWIVEL	1	
47	P18782	TEE, SWIVEL	1	
46	P18782	TEE	1	
45	P18960	CONNECTOR	3	
44	P18757	90° ELBOW, SWIVEL	2	
43	P18754	CONNECTOR, SHORT	2	
42	P18744	TEE, BULKHEAD	4	
41	P18941	90° ELBOW	2	
40	P18935	90° ELBOW	4	
39	P18935	90° ELBOW, BULKHEAD	4	
38	P18905	ADAPTER, O-RING	3	
37	P18905	ADAPTER, O-RING	1	
36	P20348	NIPPLE	1	
35	P20348	NIPPLE	1	
34	P18921	REDUCER	1	
33	P18921	REDUCER	1	
32	P18921	90° ELBOW	1	
31	P18921	90° ELBOW, STREET	1	
30	P18921	TEE	1	
29	P18921	90° ELBOW	1	
28	P18921	REDUCER	1	
27	P21640	HYD. HOSE	2	1/2 x 62"
26	P21639	HYD. HOSE	1	1/2 x 64"
25	P21638	HYD. HOSE	2	1/2 x 105"
24	P21618	HYD. HOSE	1	1/2 x 47"
23	P21617	HYD. HOSE	1	1/2 x 14"
22	P21616	HYD. HOSE	1	1/2 x 16"
21	P21616	HYD. HOSE	1	1/2 x 22 1/2"
20	P21616	HYD. HOSE	1	1/2 x 45"
19	P21616	HYD. HOSE	2	1/2 x 120"
18	P18982	HYD. HOSE	1	3/4 x 34"
17	P18982	HYD. HOSE	2	3/4 x 24"
16	P18982	HYD. HOSE	2	3/4 x 26 1/2"
15	P18914	HYD. HOSE	1	3/4 x 23 1/2"
14	P18914	HYD. HOSE	2	3/4 x 20 1/2"
13	P18914	HYD. HOSE	2	3/4 x 20 1/2"
12	P21628	HOSE END FITTING	1	
11	P21629	HOSE HYDRAULIC	1	
10	P21720	HOSE RETURN 1.25 I.D.	1	
9	P20476	HOSE SUCTION 1.50 I.D.	1	
8	P22530	GEAR PUMP, VICKERS	1	
7	P18993	VALVE, ORBITAL	1	
6	P18993	VALVE, FLOW CONTROL	1	
5	P18993	VALVE, 3 SPOOL, AMPRO	1	
4	165844	SAFETY VALVE, UPPER	1	
3	165844	SAFETY VALVE, LOWER	1	
2	165844	SAFETY VALVE, LOWER	1	
1	P21686	FRAME TILT CYL. ASSY	1	

ST. PAUL MINNAPOLIS MADISON	Engineering Co., Inc.
QUANTITY	SIN 102 THRU
REVISION	
<b>LOWER HYDRAULIC ASSEMBLY</b>	
MODEL 422	
DATE	D
REVISED	1957





REF	PART NO.	DESCRIPTION	REQ.
15	P19523	SEAL KIT	1
14	P16611	GREASE ZERK	2
13	P20124	SHAFT WELDMENT	1
12	P19208	LOCKSCREW	1
11	P19207	RETAINING NUT	1
10	P19209	DUST SEAL	1
9	P20840	END GLAND	1
8	P19210	URETHANE U-CUP	1
7	P19211	O-RING, END GLAND	1
6	P20055	BACK-UP RING	1
5	P20842	STROKE BLOCK	1
4	P19214	O-RING, PISTON	1
3	P19215	URETHANE U-CUP	2
2	P19216	PISTON	1
1	P19217	LOCKNUT	1
	P20123	TUBE WELDMENT	1

**LULL**

Engineering Co., Inc.

ST. PAUL,  
MINNESOTA  
55121

DRAWN BY  
JEFF DAUB

SIN 101 THRU

DRAWING TITLE

FRAME TILT CYLINDER  
ASSEMBLY  
MODEL 422

P21686

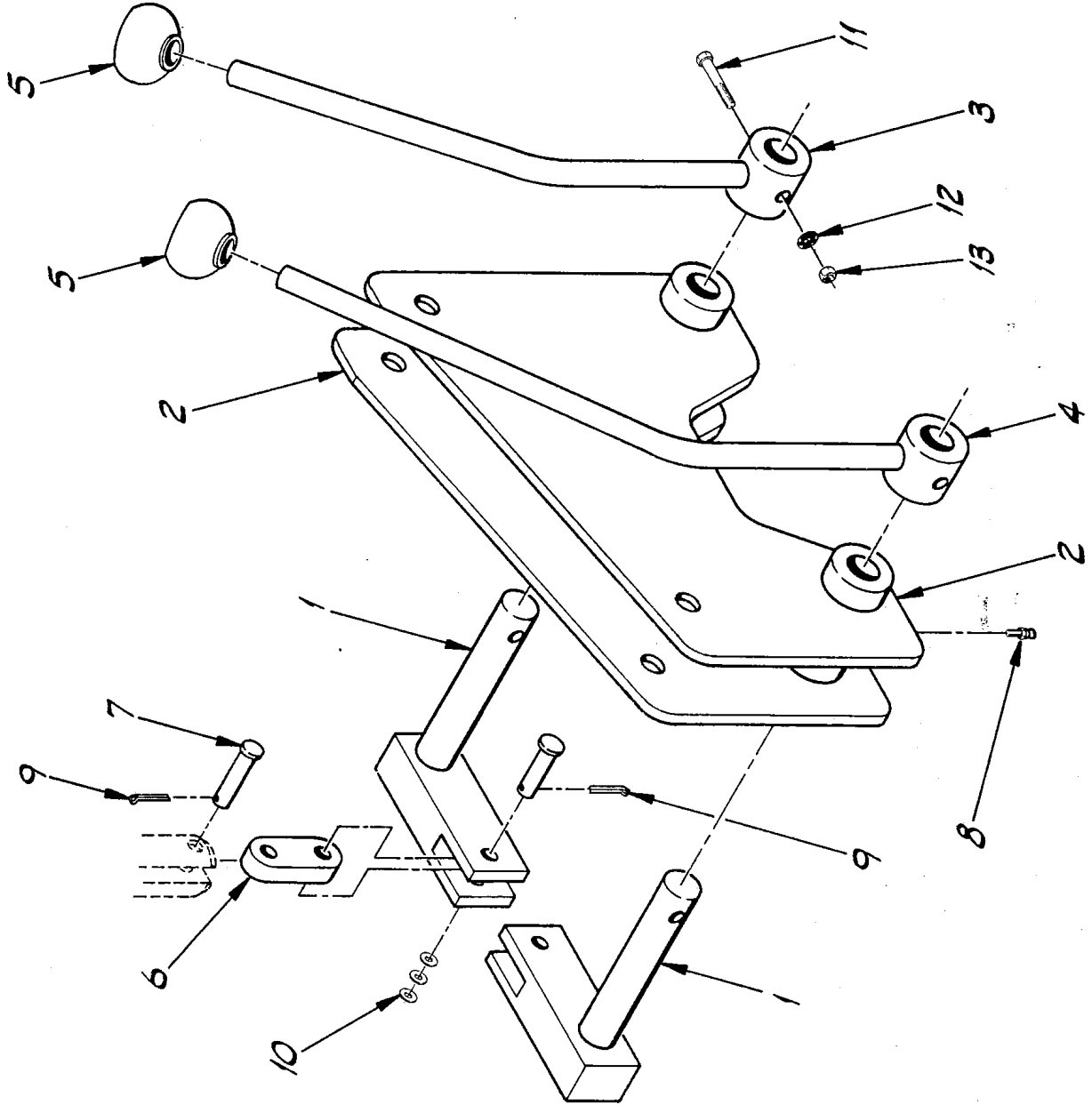
SCALE

B

DRAWING NO.

19068

NOTE: FOR S/N 101-106, & 109,  
LEVER AND SHAFT MUST  
BE PURCHASED TOGETHER.



ITEM	PART NO.	DESCRIPTION	REQ.
13	COM'L	NUT, HX 5/16" - 11 NC	2
12	COM'L	STARWASHER, 5/16"	2
11	COM'L	BOLT, HX 5/16" - 11 NC x 1 1/2"	2
10	COM'L	FLATWASHER, 3/16"	6
9	COM'L	COTTER PIN 3/32" x 1/2"	4
8	P16611	GREASE ZERK	2
7	P19849	CLEVIS PIN	2
6	188864	LINK, PIVOT SHAFT	2
5	P18721	KNOB	2
4	191698	HANDLE, EXTENSION	1
3	191688	HANDLE, HOIST	1
2	188768	SUPPORT BASE	1
1	188828	PIVOT SHAFT	2

**LULL**

Engineering Co., Inc.

ST. PAUL,  
MINNESOTA  
55121

DRAWN BY  
JEFF DAUB

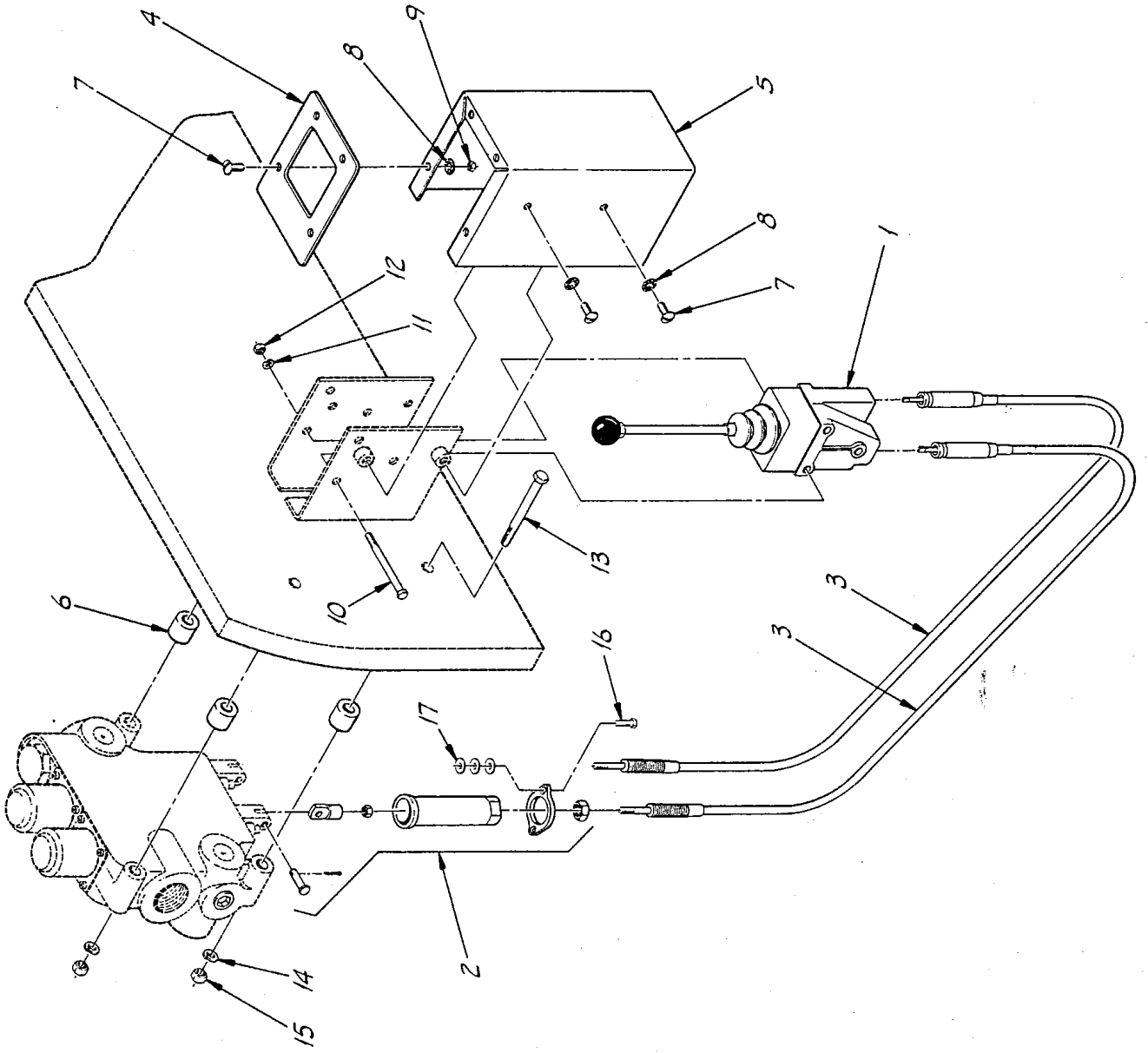
S/N 101 THRU

DRAWING TITLE

**BOOM CONTROL LEVER  
ASSEMBLY  
MODEL 422**

SCALE  
**B**

DRAWING NO.  
**19069**

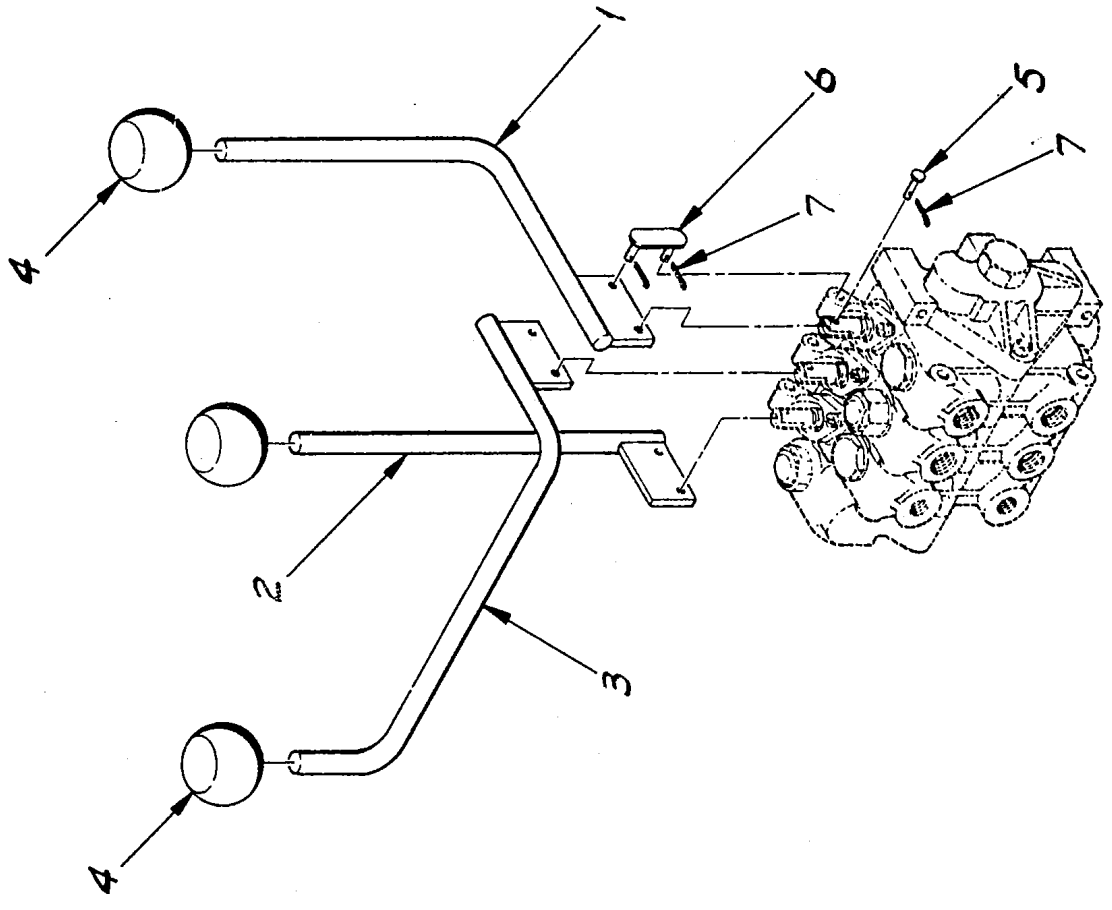


ITEM	PART NO.	DESCRIPTION	REQ.
17	COM'L	FLATWASHER, 1/4"	4
16	COM'L	BOLT, HX. 1/4"-20 NC x 1"	4
15	COM'L	NUT, HX. 3/8"-16 NC	3
14	COM'L	LOCKWASHER, 3/8"	3
13	COM'L	BOLT, HX. 3/8"-16 NC x 4 1/4"	3
12	COM'L	NUT, HX. 5/16"-18 NC	3
11	COM'L	LOCKWASHER, 5/16"	3
10	COM'L	BOLT, HX. 5/16"-18 NC x 4 1/4"	3
9	COM'L	NUT, HX. #10-24 NC	4
8	COM'L	STARWASHER, #10	8
7	COM'L	SCREW, RD. HD. #10-24 x 5/8"	8
6	176444	SPACER	3
5	P21797	COVER, JOYSTICK	1
4	P21796	TRIM PLATE	1
3	P21795	CABLE	2
2	P21794	ADAPTER KIT	2
1	P21793	JOYSTICK CONTROL	1

**LULL**  
 Engineering Co., Inc.  
 ST. PAUL,  
 MINNESOTA  
 55121

DRAWN BY  
*Jeff Lull*  
 DRAWING TITLE  
**BOOM CONTROL LEVER  
 ASSEMBLY**  
 MODEL 422

SIN III, 135, 137 THRU  
 SCALE  
 C  
 DRAWING NO.  
 19069-1



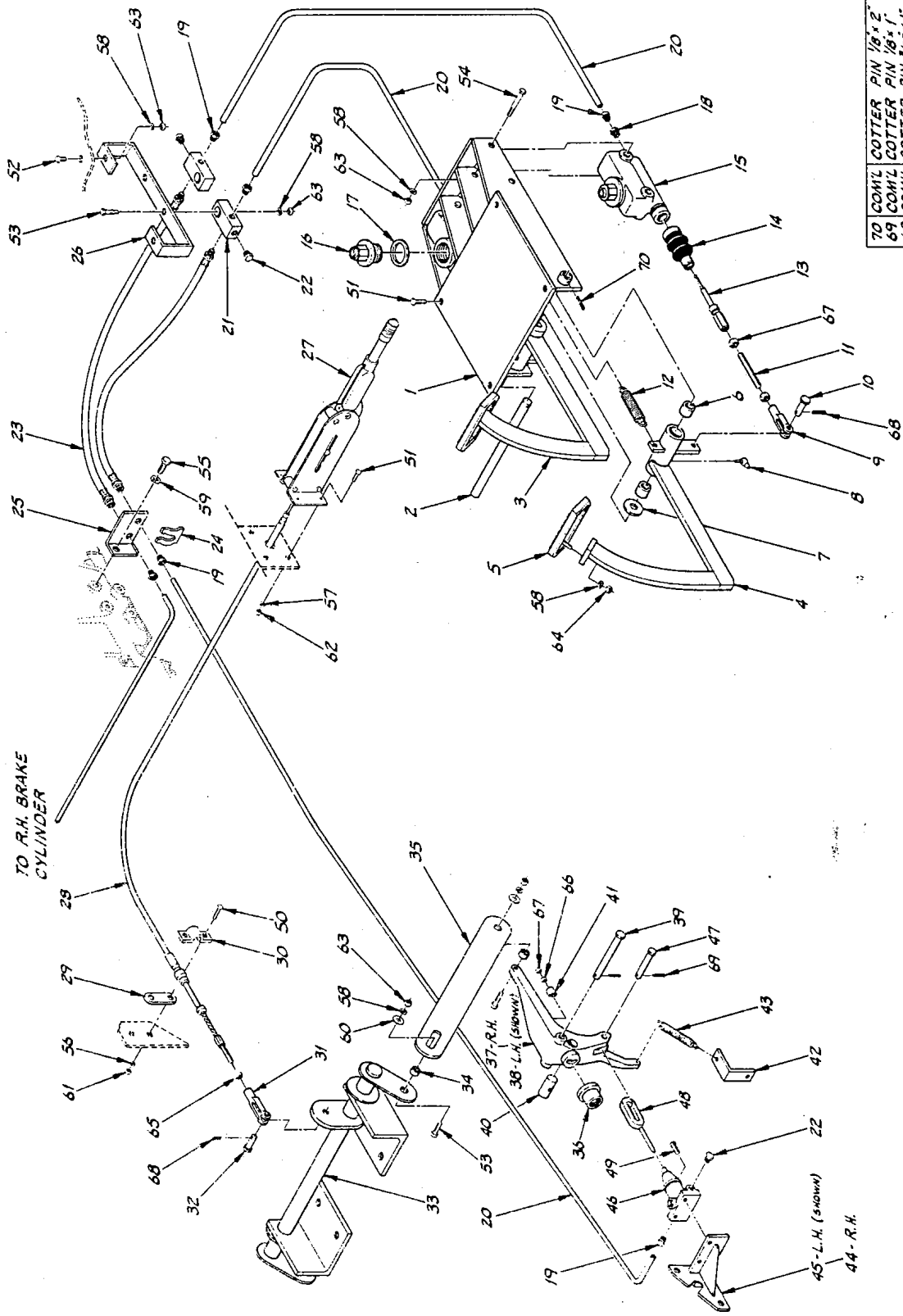
ITEM	PART NO.	DESCRIPTION	REQ.
7	COM'L	COTTER PIN 1/16" x 1"	9
6	P19505	PIN LINK	3
5	P10512	CLEVIS PIN	3
4	P18721	KNOB, HANDLE.	3
3	19019B	VALVE HANDLE, CARR TILT	1
2	19017B	VALVE HANDLE, FRAME	1
1	19015B	VALVE HANDLE, AUXILIARY	1

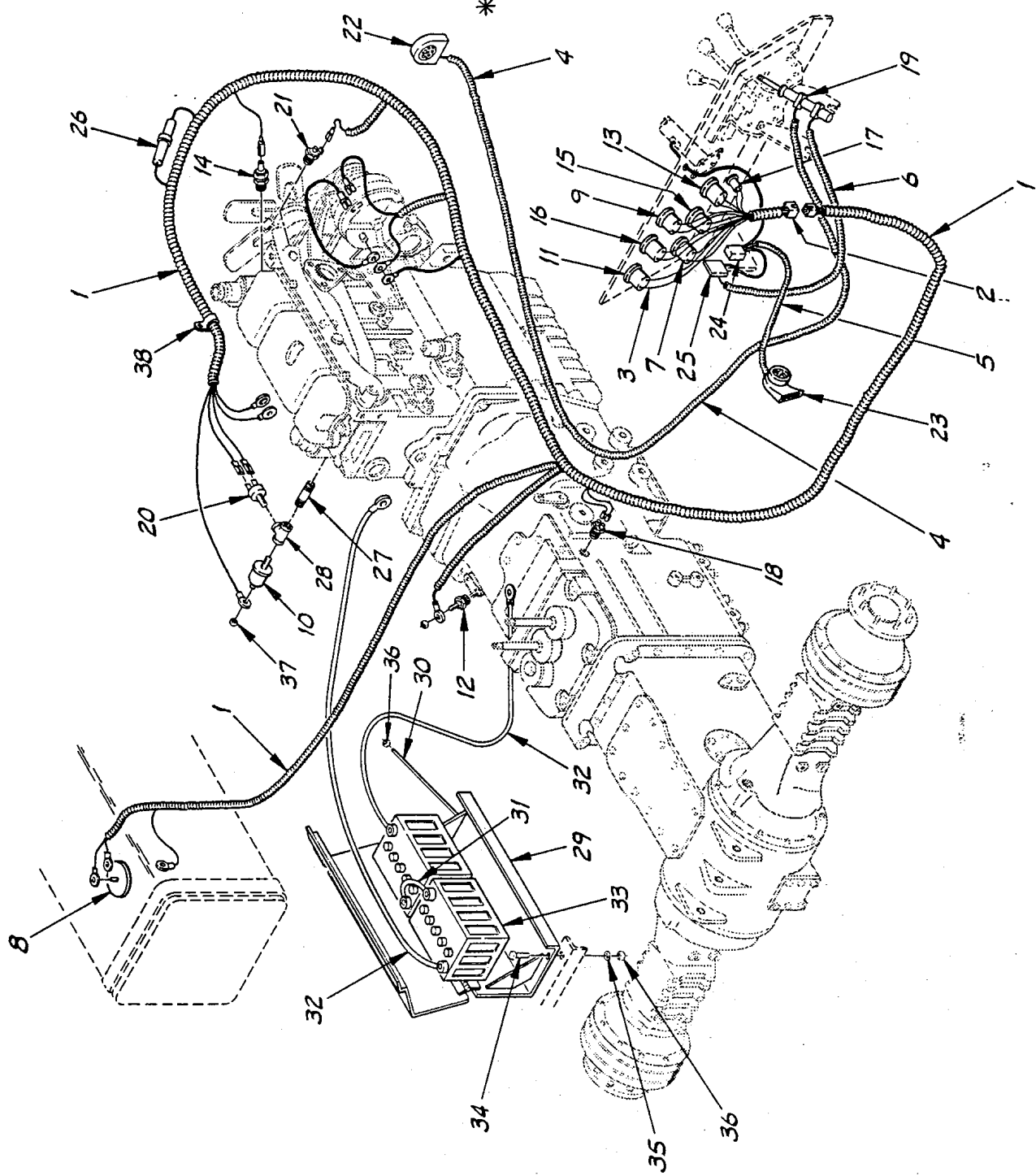
<b>WLL</b> Engineering Co., Inc.		ST. PAUL, MINNESOTA 55121
DRAWN BY <b>JEFF DAUB</b>	S/N 101 THRU	
DRAWING TITLE		
<b>THREE SPOOL CONTROL HANDLE ASSEMBLY</b>		
MODEL 422		
SCALE	<b>B</b>	
DRAWING NO.	<b>19070</b>	

ITEM	PART NO.	DESCRIPTION
12	COM'L	NUT, HX. 3/8"-16 NC
13	COM'L	NUT, HX. 3/8"-18 NC
14	COM'L	FLATWASHER, 3/8"
15	COM'L	LOCKWASHER, 5/8"
16	COM'L	LOCKWASHER, 5/8"
17	COM'L	LOCKWASHER, 5/8"
18	COM'L	LOCKWASHER, 5/8"
19	COM'L	BOLT, HX. HD. 3/8"-11 NC x 1 1/2"
20	COM'L	BOLT, HX. HD. 3/8"-16 NC x 3 1/2"
21	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
22	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
23	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
24	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
25	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
26	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
27	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
28	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
29	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
30	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
31	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
32	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
33	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
34	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
35	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
36	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
37	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
38	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
39	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
40	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
41	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
42	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
43	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
44	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
45	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
46	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
47	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
48	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
49	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
50	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
51	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
52	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
53	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
54	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
55	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
56	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
57	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
58	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
59	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
60	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
61	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
62	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
63	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
64	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
65	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
66	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
67	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
68	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
69	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"
70	COM'L	BOLT, HX. HD. 3/8"-16 NC x 1 1/2"

ST. PAUL, MINNESOTA 55121
WILL Engineering Co., Inc.
DESIGNED BY: S/N 103 THRU
BRAKE ASSEMBLY
MODEL #22
19071



1	COM'L	COTTER PIN 1/8" x 2"
4	COM'L	COTTER PIN 3/8" x 1"
3	COM'L	COTTER PIN 3/8" x 1"
6	COM'L	JAM NUT 3/8" x 20 NF
2	COM'L	JAM NUT 3/8" x 20 NF
2	COM'L	JAM NUT 3/8" x 20 NF
2	COM'L	JAM NUT 3/8" x 20 NF



ITEM	PART NO.	DESCRIPTION	REQ.
38	P17553	CLAMP, LOOM	3
37	COM'L	NUT, HX. 10-32 NF	1
36	COM'L	NUT, HX. 5/16"-18 NC	6
35	COM'L	LOCKWASHER, 5/16"	6
34	COM'L	BOLT, HX. HD. 5/16"-18NCx1	4
33	P19076	BATTERY, 6 VOLT	2
32	P18122	BATTERY CABLE 10"	1
31	P21722	BATTERY CABLE 58"	2
30	17784A	HOLD DOWN ROD	2
29	17780D	BATTERY BOX	1
28	P10200	TEE	1
27	P10757	NIPPLE	1
26	P19103	FUSE, SFE 30 AMP	4
25	P19096	FUSE BLOCK	1
24	P13709	HORN RELAY	1
23	P13707	HORN	1
22	P13774	BACK-UP ALARM	1
21	P22210	GLOW PLUG, HEATER	1
20	P20073	SWITCH, OIL PRESS.	1
19	P21726	SWITCH, REVERSE	1
18	P18673	SWITCH, NEUTRAL START	1
17	P20998	SWITCH, IGNITION	1
16	P18733	GAUGE, HOURMETER	1
15	P18732	GAUGE, AMMETER	1
14	P18813	SENDER, WATER TEMP	1
13	P18735	GAUGE, WATER TEMP	1
12	P19472	SENDER, TRANS. OIL	1
11	P18734	GAUGE, TRANS. OIL	1
10	P18731	SENDER, OIL PRESS.	1
9	P18730	GAUGE, OIL PRESSURE	1
8	P18729	SENDER, FUEL	1
7	P18728	GAUGE, FUEL	1
6	18989A	HARNES. REV. SWITCH	1
5	18988A	HARNES. HORN	1
4	P21712	HARNES. BACK-UP	1
3	P19284	HARNES. GAUGES-GRD.	1
2	P17982	HARNES. UPPER	1
1	P21656	HARNES. LOWER	1

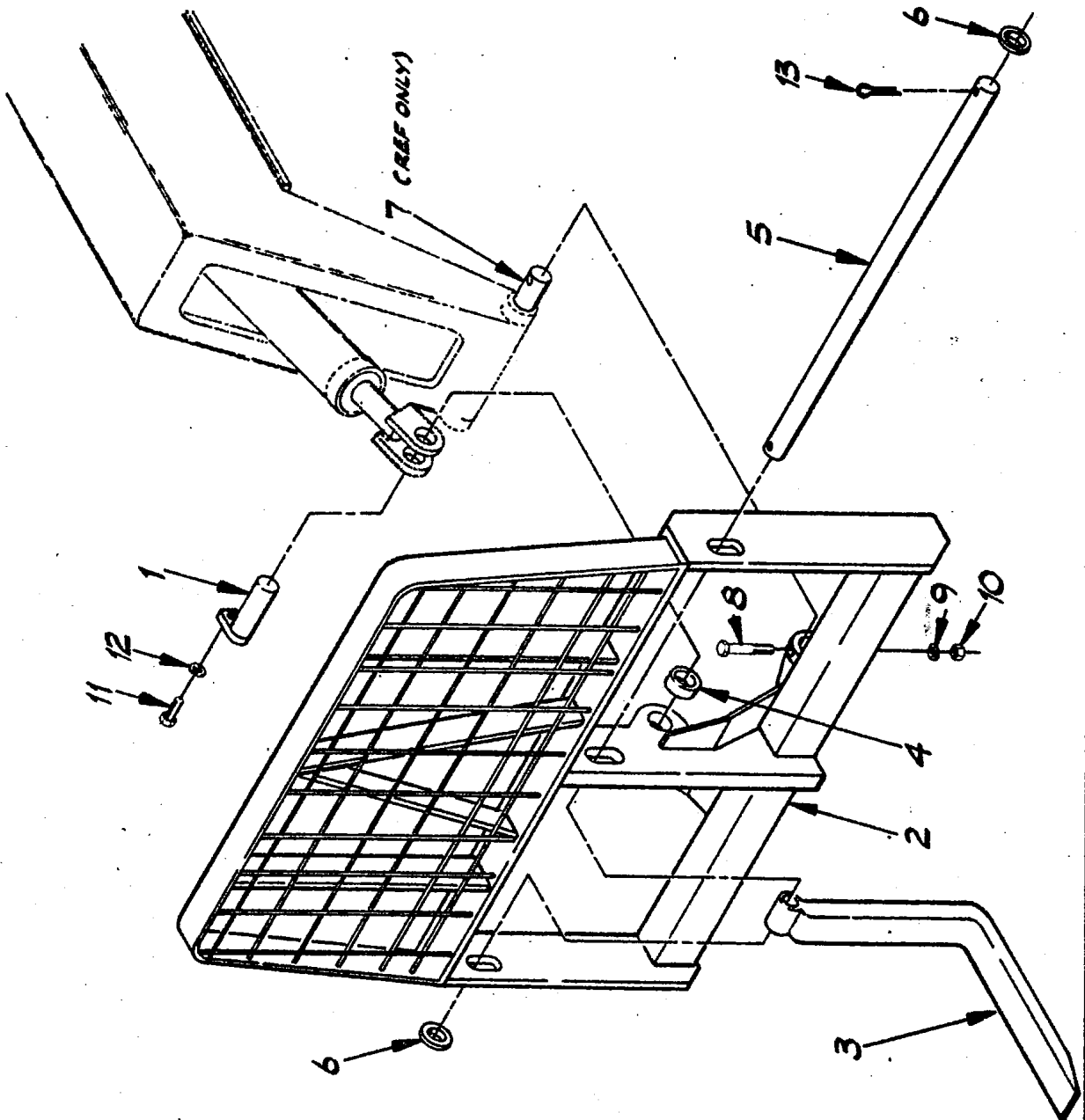
**LULL** Engineering Co., Inc.  
 ST. PAUL, MINNESOTA 55121

DRAWN BY: **JEFF DAUB**  
 DRAWING TITLE: **S/N 101 THRU**

**WIRING HARNESS ASSEMBLY**  
 MODEL 422

SCALE: **C**  
 DRAWING NO.: **19072**

\* USE P21700 FOR S/N 101-104, 106 -



13	COM'L	2
12	COM'L	1
11	COM'L	1
10	COM'L	1
9	COM'L	1
8	COM'L	1
7	15723A	REF
6	18129A	2
5	18134A	1
4	16267A	1
3	16511C	2
2	18143D	1
1	18128A	1

COTTER PIN 3/8 DIA x 2" LG  
 LOCKWASHER 3/8  
 BOLT, HEX 3/8-16 NC x 1"  
 NUT, HEX 1/2-13 NC  
 LOCKWASHER 1/2  
 BOLT, HEX 1/2-13 NC x 4" GR.5  
 PIN, CARRIAGE  
 FLAT WASHER  
 FORK SHAFT  
 BUSHING  
 42" PALLET FORK  
 50" STANDARD CARRIAGE  
 PIN, CARRIAGE

**LULL**

Engineering Co., Inc.

S/N 101 THRU

**50" STANDARD CARRIAGE  
ASSEMBLY**

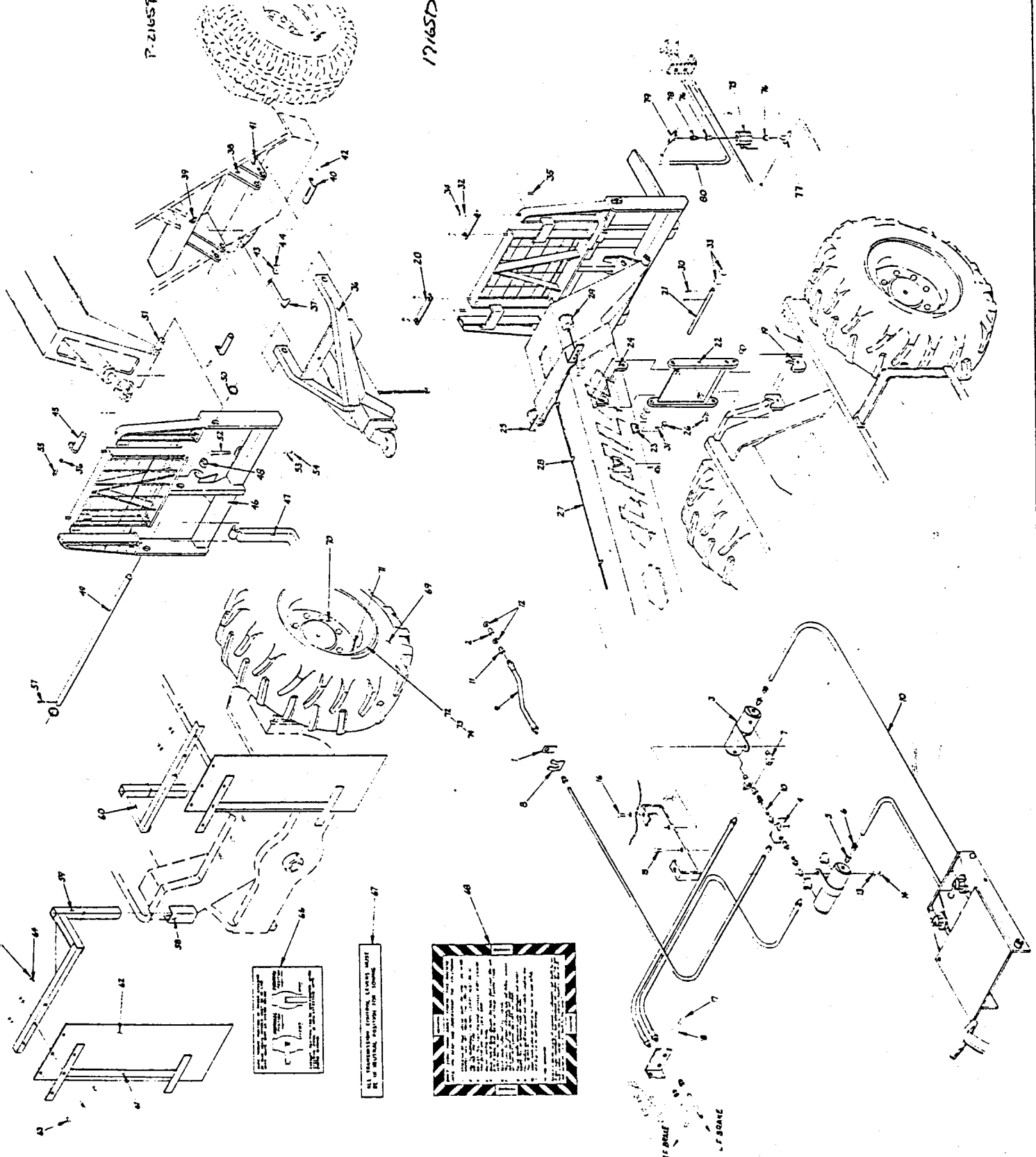
**B**

MODEL 422

19076

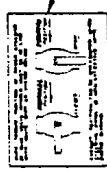
60	STEER	HYD HOSE 1/8" - 25 LG	2
71	TELE	TELE	1
72	TELE	TELE	1
73	TELE	TELE	1
74	TELE	TELE	1
75	TELE	TELE	1
76	TELE	TELE	1
77	TELE	TELE	1
78	TELE	TELE	1
79	TELE	TELE	1
80	TELE	TELE	1
81	TELE	TELE	1
82	TELE	TELE	1
83	TELE	TELE	1
84	TELE	TELE	1
85	TELE	TELE	1
86	TELE	TELE	1
87	TELE	TELE	1
88	TELE	TELE	1
89	TELE	TELE	1
90	TELE	TELE	1
91	TELE	TELE	1
92	TELE	TELE	1
93	TELE	TELE	1
94	TELE	TELE	1
95	TELE	TELE	1
96	TELE	TELE	1
97	TELE	TELE	1
98	TELE	TELE	1
99	TELE	TELE	1
100	TELE	TELE	1

**LULL**  
 Engineering Co., Inc.  
 2140 W. 10th St.  
 WICHITA, KANSAS 67203  
 TOY PACKAGE  
 ASSEMBLY  
 MODEL 912  
 OPT30V  
 R  
 19077



P-21657

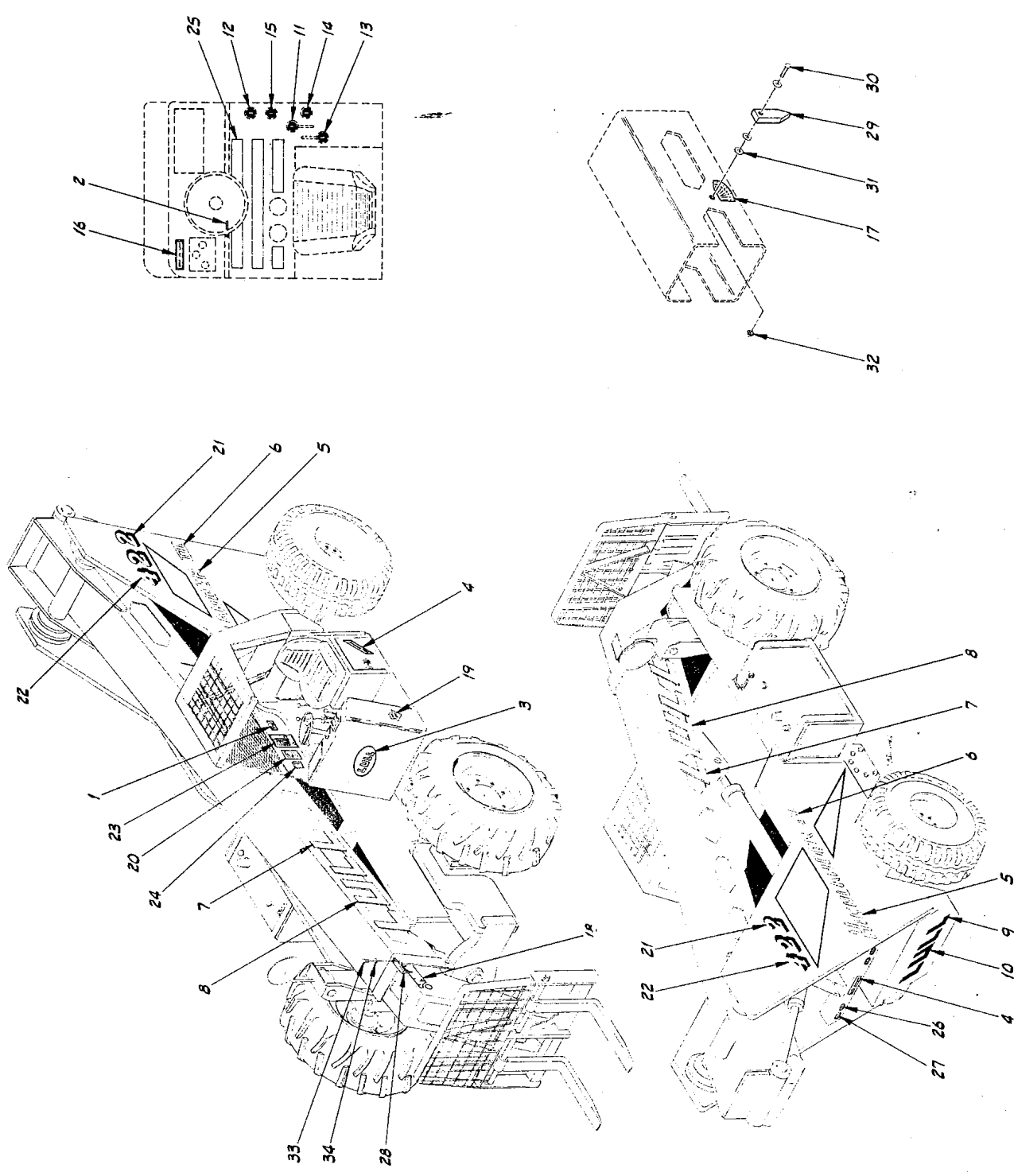
17165D



1. INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE.

**WARNING**  
 THIS PRODUCT IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT WAS DESIGNED.





REF.	QTY	PART NO.	DESCRIPTION	REQ.
REF. P17609	1/4		PAINT, SILVER	1
REF. P16953	1/4		PAINT, BLACK	1
REF. P16952	1/4		PAINT THINNER	1
REF. P16951	1/4		PRIMER	1
REF. P16950	6		PAINT, ORANGE	6
35	1	COM'L DRIVE SCREW, RH, 4x1/2"		1
34	1	COM'L LOCKWASHER, 3/8"		1
33	1	COM'L BOLT, HK, 3/8"-16 NC 3/4"		1
32	1	LOCKNUT, 3/8"-16 NC 3/4"		1
31	1	COM'L FLATWASHER, 3/8"		1
30	1	COM'L BOLT, HK, 5/8"-18 NC 1/2"		1
29	1	633354 ANGLE INDICATOR		1
28	2	163054 POINTER, BOOM EXT		2
27	2	18992 REFLECTOR, YELLOW		2
26	2	18991 REFLECTOR, RED		2
25	1/4	P1645 NO-SLIP SURFACING		1
24	1	P21606 FORK LIFT SIGNALS		1
23	2	P21650 LOADCHART		2
22	2	P21649 NUMBER 4"		2
21	4	P21648 NUMBER 2"		4
20	1	P21646 WARNING		1
19	1	P21644 DIFFERENTIAL LOCK		1
18	1	P18074 BOOM EXT. INDICATOR		1
17	1	P18009 ANGLE INDICATOR		1
16	1	P20956 STOP, HI-LOW		1
15	1	P21645 HOIST, UP OR DOWN		1
14	1	P16818 VEHICLE TILT		1
13	1	P18190 AUXILIARY		1
12	1	P18189 BOOM, FWD. OR BACK		1
11	1	P18188 CARRIAGE TILT		1
10	1	P19902 LETTER, 'U' SMALL		1
9	2	P18186 LETTER, 'L' SMALL		2
8	2	P18185 LETTER, 'L' LARGE		2
7	6	P21647 ROMAN NUMERAL III		6
6	2	P18184 HIGHLANDER		2
5	2	P17607 MANUFACTURE		2
4	2	P17606 LULL LOGO		2
3	2	P17586 ENGINE SHUT-OFF TAG		2
2	1	P16834 SERIAL NUMBER TAG		1

**LULL**  
 Engineering Co., Inc.  
 ST. PAUL, MINNESOTA 55131  
 DRAWN BY: JEFF DAUB  
 S/N 101 THRU  
 SCALE: D  
 DECAL LOCATION  
 MODEL 422  
 19074

### SYSTEM CAPACITIES

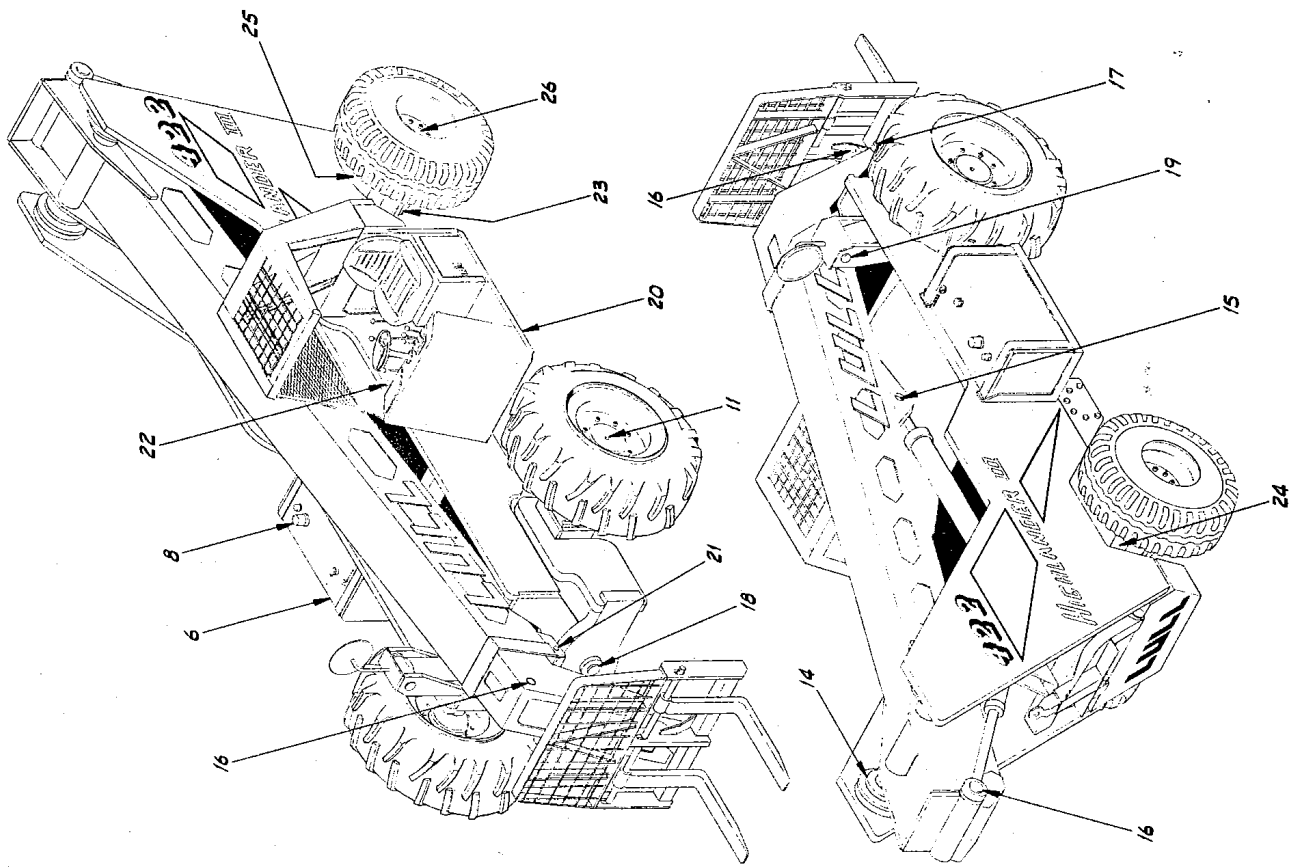
ENGINE CRANKCASE & TRANSMISSION	8 QTS.	FRONT TIRE - 16.9-24, 10 PLY	PER TIRE
DIFFERENTIAL HUB (EACH)	11 GALS.	CALCIUM CHLORIDE	200 LBS.
PLANETARY HUB (EACH)	1.5 QTS.	WATER	55 GALS.
COOLING SYSTEM	11 QTS.	MAXIMUM TIRE PRESSURE, COLD	18 PSI.
HYDRAULIC SYSTEM & RESERVIOR	27 GALS.	REAR TIRE - 15-19.5, 9 PLY	PER TIRE
FUEL TANK	40 GALS.	MAXIMUM TIRE PRESSURE, COLD	70 PSI.
		FRONT TIRE (TOWING) 14.00-20, 8 PLY PER TIRE	
		MAXIMUM TIRE PRESSURE, COLD	40 PSI.

LOCATION / ITEM	ITEM DESCRIPTION	MAXIMUM HOURLY OPERATION TIME INTERVALS						LUBRICATION AND FILTER PART NUMBERS
		FIRST 20 HRS.	16 HRS.	40 HRS.	100 HRS.	200 HRS.	500 HRS.	
1	ENGINE OIL	CR	INSP	CR	CR	CR	CR	USE P20995 MIL-L-46152
2	ENGINE OIL FILTER	CR		CR	CR	CR	CR	USE P22001 FOR SIN 102 & 106 USE P22001 USE PERIOD
3	FUEL FILTER			INSP				RECOMMENDED VISCOSITY SAE 30 SAE 20 SAE 10 ABOVE 90°F 90°-32° BELOW 32°
4	TRANSMISSION DIFFERENTIAL CR			INSP				M-1127 OR AMOCO 1000
5	TRANSMISSION FILTER CR			CR				USE P19368
6	HYDRAULIC RESERVIOR		INSP				CR	MOBIL DTE -15
7	HYD. RESERVIOR FILTER						CR	USE P19801
8	HYD. TANK BEATHER				CLN			*CR USE P18819 FOR SIN 101-
9	AIR CLEANER			CLN				USE P12179
10	RADIATOR COOLANT			INSP				CR PERMAGUARD ANTI-FREEZE
11	PLANETARY HUB				INSP			CR M-1127 OR AMOCO 1000
12	MASTER BRAKE CYLINDER				INSP			DOT 3 BRAKE FLUID
13	BATTERY				INSP			DISTILLED WATER
UNDER DUSTY OR SEVERE OPERATION - SERVICE 2 TIMES MORE OFTEN								
14	BOOM PIVOT		INSP					ZERK QUANTITY PER ITEM
15	HOIST PIVOT		INSP					SUPER PERMALUBE
16	TILT CYLINDER PIVOT		INSP					
17	CARRIAGE PIVOT		INSP					
18	OSCILLATION PIVOT			INSP				
19	FRAME TILT PIVOT			INSP				
20	BRAKE PEDAL PIVOT			INSP				
21	BOOM ROLLERS			INSP				
22	BOOM CONTROL LEVERS			INSP				
23	STEERING CYL. PIVOT			INSP				
24	STEER AXLE PIVOT			INSP				
25	SPINDLE			INSP				
26	WHEEL HUB			INSP				SUPER PERMALUBE

**LULL** Engineering Co., Inc.  
 ST. PAUL, MINNESOTA 55111  
 DRAWN BY: JEFF DALBE  
 QUANTITY: SIN 101 THRU  
 LUBRICATION SCHEDULE MODEL 422  
 SCALE: D  
 19075

INSP = INSPECT PROPER LEVELS AND ADD LUBRICATION IF NECESSARY.  
 CR = CHANGE LUBRICANT AND REPLACE FILTER.  
 CLN = CLEAN ITEM WITH CARE TO DISCHARGE DUST, ECT.

ALL FLUID SYSTEMS SHOULD BE INSPECTED AND CHANGED WHENEVER OIL SHOWS TRACES OF CONTAMINATION OR HIGH OPERATING TEMPERATURES EVIDENCED BY STRONG ODOR, DISCOLORING OR SEPARATION.



The parts information in this publication is based on data available at the time it was printed. Because of continual improvement and advancing product design, your vehicle may not be identical to the parts information shown. Whenever there is a question, obtain the latest parts information available from your local dealer. JLG Industries, Inc. continually updates these publications electronically within our *OnLine Services*.



### **Benefits**

- Available 24 hours a day, 7 days a week for your convenience.
- Prices and parts manuals are always current - reduces errors and saves time.
- Improves service to your customers with quick access to valuable information.
- Reduces time required to gather information.
- Reduces processing time for warranty claims.

### **Program Features**

- In a few easy steps you can:
- Look-up prices and availability.
- Identify parts using graphical parts manuals.
- Enter orders using part numbers, or order by selecting from graphical parts manuals.
- Review order status.
- Review invoices and credits.
- Review shipping information.
- Submit warranty claims

**Visit Us at**

**<http://www.jlg.com>**

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_



**CORPORATE OFFICE  
JLG INDUSTRIES, INC.**

1 JLG Drive  
McConnellsburg, PA. USA  
17233-9533  
Phone: (717) 485-5161  
Toll Free: (877) 554-5438  
Fax: (717) 485-6417

---

*Service Direct: (717) 485-6657 Service Fax: (717) 485-6488 or (717) 485-6815  
Parts Direct: (717) 485-6472 Parts Fax: (800) 733-8939 or (717) 485-6441*

---

JLG Industries (Australia)  
P.O. Box 5119  
11 Bolwarra Road  
Port Macquarie  
N.S.W. 2444  
Australia  
Phone: (61) 2 65 811111  
Fax: (61) 2 65 810122

JLG Industries (UK)  
Unit 12, Southside  
Bredbury Park Industrial  
Estate  
Bredbury  
Stockport  
SK6 2sP  
England  
Phone: (44) 870 200 7700  
Fax: (44) 870 200 7711

JLG Deutschland GmbH  
Max Planck Strasse 21  
D-27721 Ritterhude/Ihlpohl  
Bei Bremen  
Germany  
Phone: (49) 421 693 500  
Fax: (49) 421 693 5035

JLG Industries (Italia)  
Via Po, 22  
20010 Pregnana Milanese-MI  
Italy  
Phone: (39) 02 9359 5210  
Fax: (39) 02 9359 5845

JLG Latino Americana Ltda.  
Rua Eng. Carlos Stevenson,  
80-Suite71  
13092-310 Campinas-SP  
Brazil  
Phone: (55) 19 3295 0407  
Fax: (55) 19 3295 1025

JLG Europe B.V.  
Jupiterstraat 234  
2132 HJ Hoofddorp  
The Netherlands  
Phone: (31) 23 565 5665  
Fax: (31) 23 557 2493

JLG Industries (Norge AS)  
Sofeimyrveien 12  
N-1412 Sofienyr  
Norway  
Phone: (47) 6682 2000  
Fax: (47) 6682 2001

JLG Polska  
Ul. Krolewska  
00-060 Warszawa  
Poland  
Phone: (48) 91 4320 245  
Fax: (48) 91 4358 200

JLG Industries (Europe)  
Kilmartin Place,  
Tannochside Park  
Uddingston G71 5PH  
Scotland  
Phone: (44) 1 698 811005  
Fax: (44) 1 698 811055

JLG Industries (Pty) Ltd.  
Unit 1, 24 Industrial Complex  
Herman Street  
Meadowdale  
Germiston  
South Africa  
Phone: (27) 11 453 1334  
Fax: (27) 11 453 1342

Plataformas Elevadoras  
JLG Iberica, S.L.  
Trapadella, 2  
P.I. Castellbisbal Sur  
08755Castellbisbal  
Spain  
Phone: (34) 93 77 24700  
Fax: (34) 93 77 11762

JLG Industries (Sweden)  
Enkopingsvagen 150  
Box 704  
SE - 175 27 Jarfalla  
Sweden  
Phone: (46) 8 506 59500  
Fax: (46) 8 506 59534

---

Visit our Web Site at: <http://www.jlg.com>