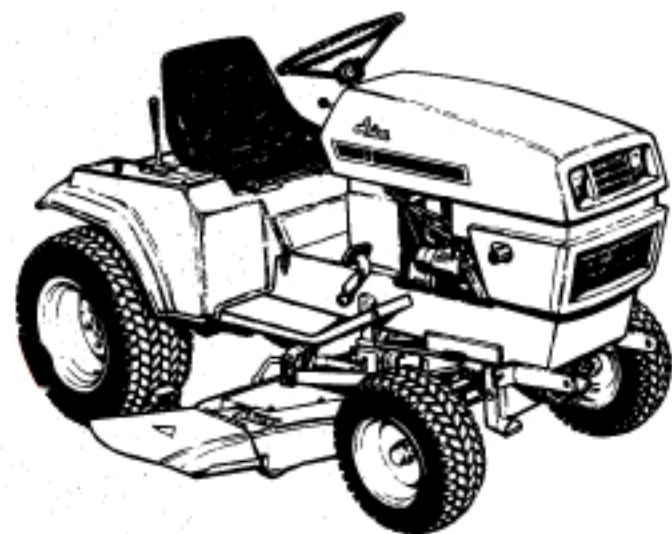


PARTS AND REPAIR MANUAL



PRM 31000

1974 AND 1975

Ariens

12•14•16HP GARDEN TRACTORS AND ATTACHMENTS

931000 SERIES

THIS MANUAL COVERS THE
COMPLETE LINE OF ARIENS
12-14-16 HP GARDEN TRAC-
TORS AND ATTACHMENTS
— MODELS 1974 THROUGH
1975.

ARIENS COMPANY



BRILLION, WIS. 54110

INDEX

931000 GARDEN TRACTOR

1974 THROUGH 1975

MODEL NUMBER and SERIAL NUMBER of your machine will be stamped on the frame or printed on the Serial Number Decal which will be located on the frame near the engine on all Ariens products. Do not be confused with other identification plates located on the engine or attachments.



1. EXPLODED VIEW AND PARTS LIST 4-43

MODEL NO.	SERIAL NO.	DESCRIPTION	YEAR	PAGE NO.
931001	000301 & Up	12 h.p. Garden Tractor	1974/75	4 through 25
931002	000301 & Up	14 h.p. Garden Tractor	1974	4 through 24
931003	000301 & Up	16 h.p. Garden Tractor	1974	4 through 24
831001	000101 & Up	42" Mower Attachment	1974	30 through 31
831002	000101 & Up	48" Mower Attachment	1974	32 through 33
831003	000101 & Up	48" Sno-Thro	1974	26 through 29
831004	000101 & Up	54" Blade	1974	34
831005	000101 & Up	34" Rear Tiller	1974	35 through 38
831007	000101 & Up	Trailer	1974	41
731003	None	Sleeve Hitch	1974	43
731007	None	Rear P.T.O. Kit	1974	39
731010	None	540 RPM Front P.T.O. Kit	1974	40
731011	None	3 Point Hitch	1974	42

2. GARDEN TRACTOR 44-73

- A. CONTROLS 44
- B. OPERATION 45
- C. LUBRICATION 47
- D. MAINTENANCE 50
- E. ADJUSTMENTS 51
- F. STORAGE 57
- G. 731007 REAR P.T.O. INSTALLATION 57
- H. VICKERS HYDRO TRANSMISSION REPAIR 60-72
- I. TROUBLESHOOTING 72-76

3. ROTARY MOWER ATTACHMENT 77-92

- A. INSTALLATION 77
- B. REMOVAL 79
- C. OPERATION 79
- D. LUBRICATION 80
- E. MAINTENANCE AND ADJUSTMENTS 80-82
- F. NEW STYLE GEAR BOX — REPAIR PROCEDURE 83-85
- G. NEW STYLE GEAR BOX WITH IMPROVED OUTPUT SHAFT — REPAIR PROCEDURE 86-88
- H. TROUBLESHOOTING 89-90

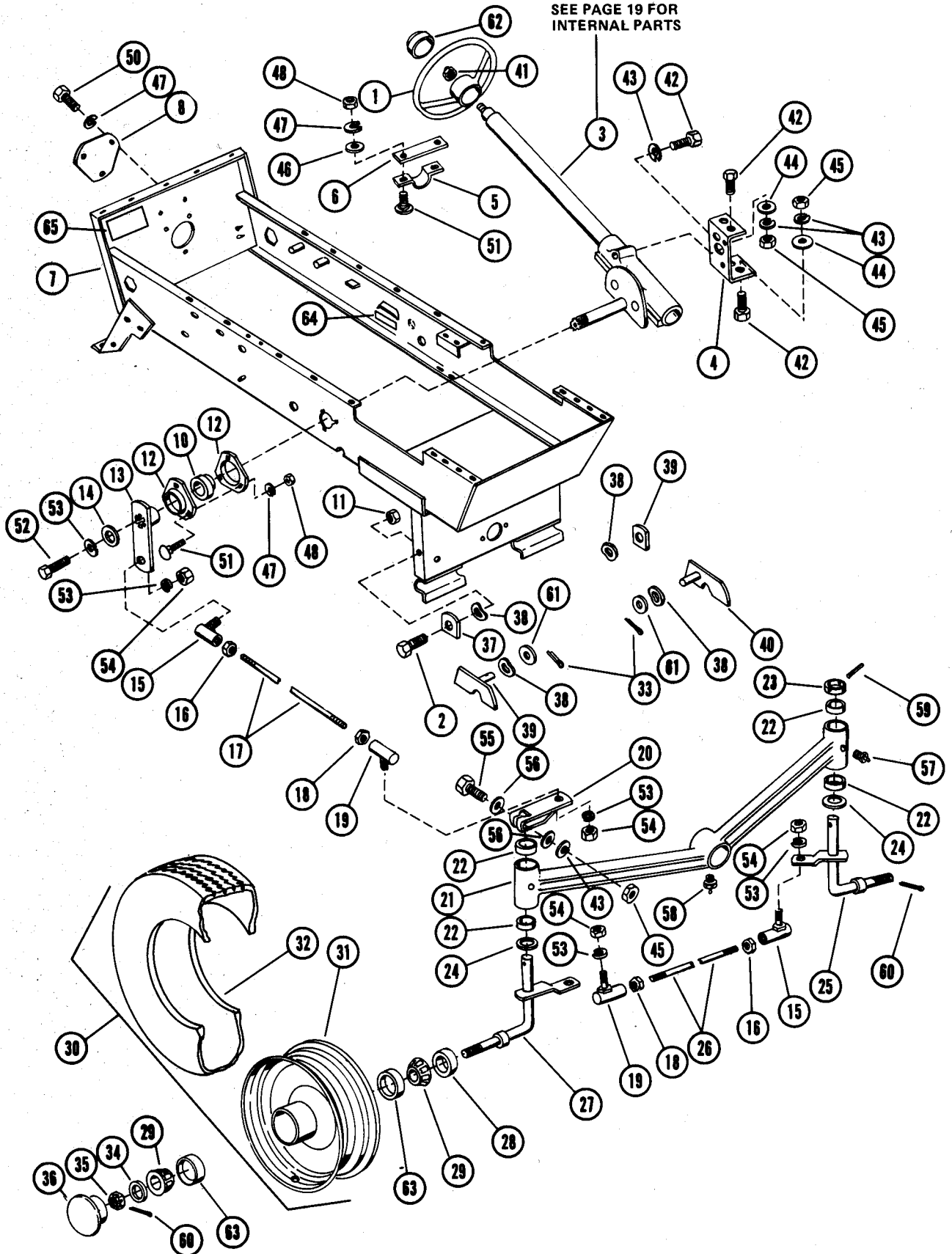
4.	SNO-THRO ATTACHMENT — 48" SINGLE STAGE	91-97
A.	ASSEMBLY	91
B.	INSTALLATION	92
C.	CONTROLS	93
D.	OPERATION	94
E.	ADJUSTMENTS	94
F.	TROUBLESHOOTING	96-97
5.	REAR TILLER ATTACHMENT	98-106
A.	INSTALLATION	98-101
B.	REMOVAL	101
C.	CONTROLS	101
D.	OPERATION	102-104
E.	LUBRICATION	104
F.	MAINTENANCE	104-106
G.	STORAGE	106
6.	540 RPM FRONT P.T.O. ATTACHMENT	107-109
A.	ASSEMBLY	107
B.	SAFETY FIRST	108
C.	OPERATION	109
7.	BELT CROSS REFERENCE	110
8.	ENGINE CROSS REFERENCE	110

NOTE: Contact Engine Manufacturer for Exploded View and Parts List, or Repair Instructions on Engine.

FRAME, STEERING, FRONT WHEEL AND DRIVE

MODEL NO. 931001,931002,931003

SEE PAGE 19 FOR
INTERNAL PARTS



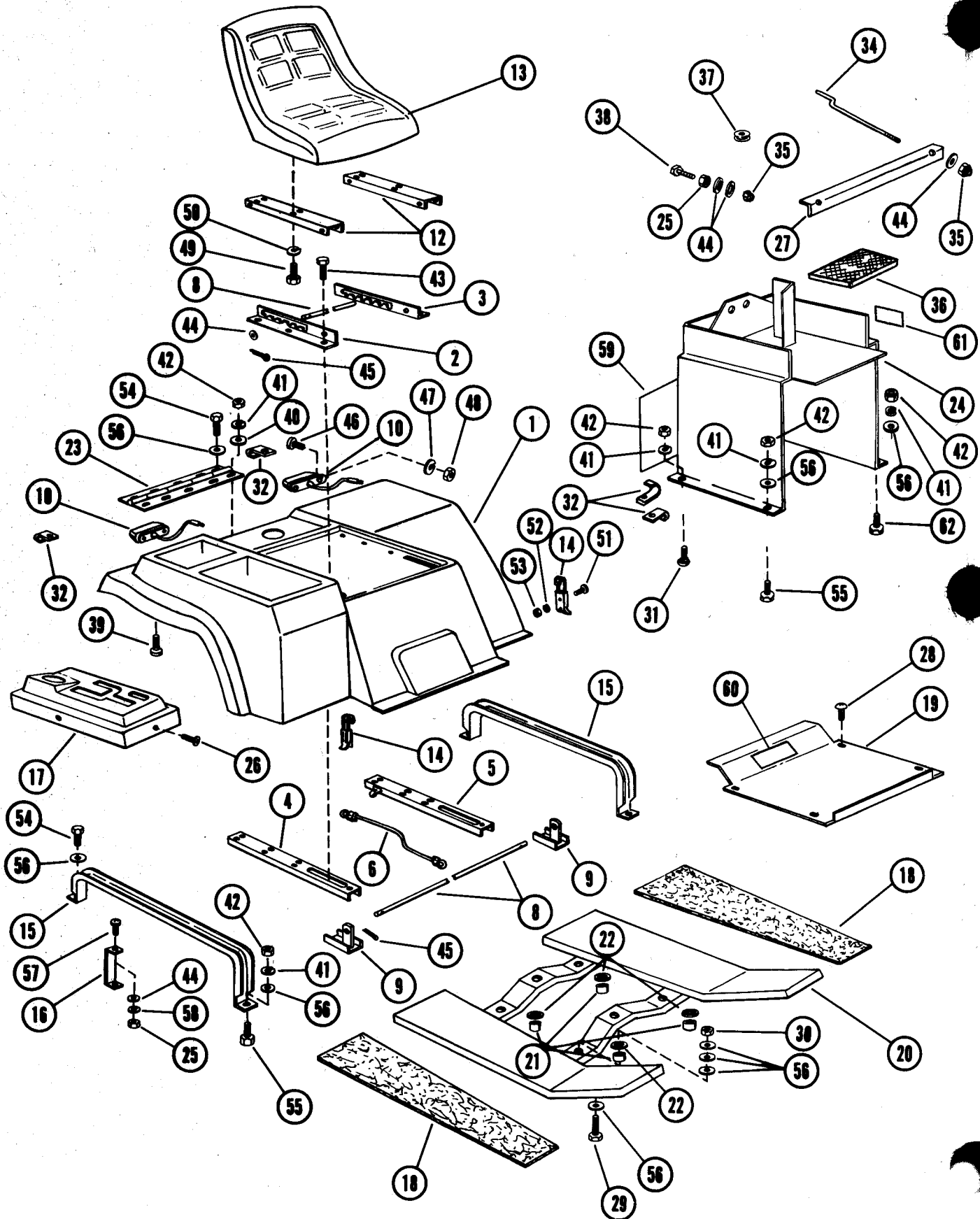
FRAME, STEERING AND FRONT WHEEL

MODEL NO. 931001,931002,931003

REF NO.	PART NO.	DESCRIPTION	QTY.	REF NO.	PART NO.	DESCRIPTION	QTY.
1	031084	STEERING WHEEL	1	33	067024	PIN, cotter 1/8 x 3/4	2
2	059004	CAP SCREW, HH, 3/8 - 16 x 1	2	34	064029	WASHER, 1-1/64 ID x 1-1/2 OD x .125 Thick	2
3	631007	STEERING GEAR ASS'Y	1	35	065102	NUT, Slotter, Hex - 1"	2
4	031173	BRACKET, Mounting	1	36	031087	DUST CAP	2
5	031038	CLAMP	1	37	029013	LOCK STRIP	2
6	031049	PAD	1	38	029024	WASHER, Spring	4
7	531007	FRAME 931002 & 931003	1	39	029014	LATCH R.H.	1
	531004	FRAME, 931001	1	40	029015	LATCH L.H.	1
8	031031	COVER	1	41	65003	NUT, Hex Jam, 5/8"	1
10	054101	BEARING & COLLAR	1	42	59145	CAP SCREW, HH, 3/8 x 1"	7
11	065098	LOCKNUT, 3/8"	2	43	063021	LOCKWASHER, 3/8"	8
12	031020	BEARING FLANGE	2	44	064008	WASHER, Flat, 3/8"	AR 5
13	031039	HUB ASS'Y	1	45	065018	NUT, Hex, 3/8"	5
14	064126	WASHER, 2" OD. x 9/16" ID x .135 Thick	1	46	064002	WASHER, Flat, 5/16"	2
15	031130	BALL JOINT, L.H.	2	47	063003	LOCKWASHER, 5/16"	8
16	065105	NUT, Hex Jam 1/2" - 20 UNF (L.H.)	2	48	065015	NUT, Hex, 5/16"	5
17	031171	ROD, 11-1/8" Long	1	50	059022	CAP SCREW, HH, 5/16 x 3/4	3
18	065044	NUT, Hex Jam 1/2 - 20 UNF (R.H.)	2	51	062015	BOLT, Carriage, 5/16 x 1"	5
19	031129	BALL JOINT, R.H.	2	52	059146	CAP SCREW, HH, 1/2 x 1-1/4"	1
20	031175	STEERING ARM	1	53	063006	LOCKWASHER, 1/2"	5
21	531011	FRONT AXLE ASS'Y	1	54	065006	NUT, Hex, 1/2" - 20, UNF	4
22	055091	BUSHING	4	55	059152	CAP SCREW, HH, 3/8 x 2-1/2	1
23	031140	SPINDLE COLLER, L.H.	1	56	064131	WASHER, Flat, 3/8"	2
24	075067	WASHER, 1-1/32 ID x 1-3/4 OD. x .060 Thick	2	57	022093	ZERK FITTING	2
25	031143	SPINDLE, L.H.	1	58	031121	ZERK FITTING, 90°	1
26	031169	ROD, 18-1/2" Long	1	59	058037	ROLL PIN, 1/4 x 1-3/4	1
27	031142	SPINDLE, R.H.	1	60	067006	PIN, Cotter, 3/16 x 1-1/4	2
28	056074	SEAL	2	61	064043	WASHER	2
29	054069	BEARING	4	62	031083	CAP	1
30	631001	FRONT WHEEL ASS'Y - Consists of	2	63	054070	BEARING CUP	4
31	071104	RIM 1		64	078278	DECAL (Lift Selector)	1
32	071103	TIRE 1		65	078282	DECAL, Warning	1

HOOD, REAR DECK, SEAT, DASH SUPPORT, RUNNING BOARD

MODEL NO. 931001,931002,931003



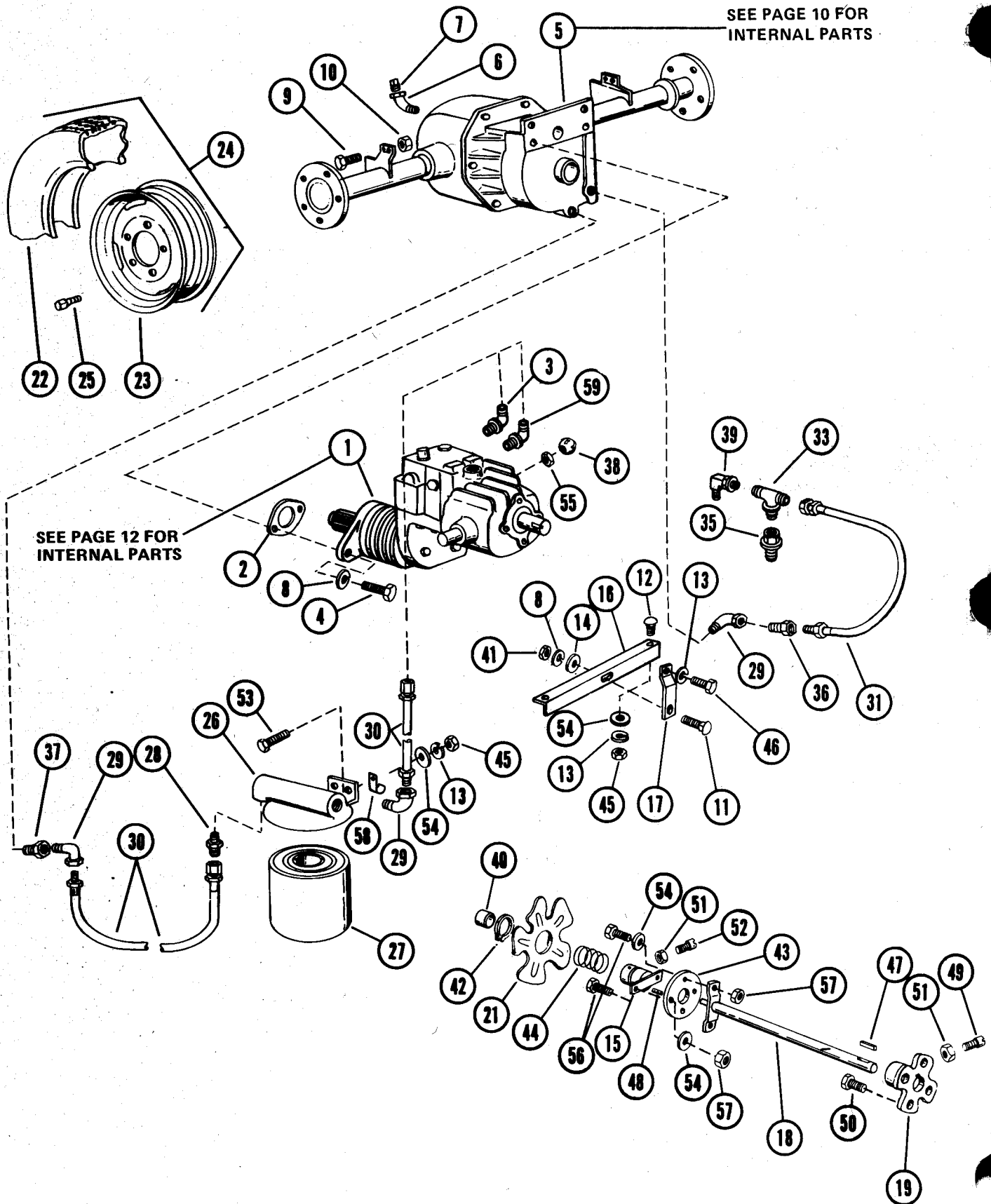
HOOD, REAR DECK, SEAT, DASH SUPPORT, RUNNING BOARD

MODEL NO. 931001,931002,931003

REF NO.	PART NO.	DESCRIPTION	QTY.	REF NO.	PART NO.	DESCRIPTION	QTY.
1	031009	REAR DECK	1	31	062011	BOLT, Carriage, 5/16 x 3/4	2
2	031132	ANGLE, Righr Hand	1	32	069094	"J" CLAMP	5
3	031133	ANGLE, Left Hand	1	34	031089	ROD, Battery Hold Down	2
4	031197	SEAT SUPPORT	1	35	065070	NUT, Crown	3
5	031134	SUPPORT	1	36	031092	PAD	1
6	069102	CABLE, 24"	1	37	075065	GROMMET	1
7	031161	RING	1	38	059150	CAP SCREW, HH, 1/4 x 1-1/2	1
8	031135	ROD, 12-5/16" Long	2	39	061042	SCREW, Machine, Truss H, 5/16 x 3/4	4
9	031131	CHANNEL	2	40	064123	WASHER, Flat, 5/16	4
10	631006	TAIL LIGHT	2	41	063003	LOCKWASHER, 5/16	10
		BULB - for item 10 GE 1895 (not ill.)	2	42	065015	NUT, Hex, 5/16	10
	31375	LENS - Red for item 10 (not ill.)	2	43	074043	SCREW, Self-Tapping, HH, No. 10 x 1/2"	6
12	031136	CHANNEL	2	44	064127	WASHER, Flat, 1/4"	7
13	031153	SEAT	1	45	067003	PIN, Cotter, 1/16 x 1/2"	4
14	031094	LATCH	2	46	061040	SCREW, Machine, Truss H, No. 10 x 1/2"	4
15	031056	CHANNEL	2	47	063011	LOCKWASHER, No. 10	4
16	031055	SUPPORT	2	48	065055	NUT, Hex, No. 10	4
17	031081	CONSOLE DECK (Model 931002, 931003)	1	49	059023	CAP SCREW, HH, 3/8" x 3/4"	4
	031338	CONSOLE DECK (Model 931001)	1	50	063021	LOCKWASHER, 3/8"	4
18	029174	MAT, Running Board	2	51	061012	SCREW, Machine R.H. No. 10-32 x 1/2"	4
19	531003	FLOOR PLATE	1	52	063026	LOCKWASHER, No. 10	4
20	531014	RUNNING BOARD ASS'Y	1	53	065026	NUT, Hex, No. 10-32	4
21	031019	SPACER	4	54	074041	SCREW, Self-Tapping, HH, 5/16 x 3/4	5
22	075066	GROMMET	4	55	059022	CAP SCREW, HH, 5/16 x 3/4	3
23	031028	HINGE	1	56	064002	WASHER, Flat, 5/16	19
24	531010	DASH SUPPORT S-14 & S-16	1	57	061039	SCREW, Machine, Truss H, 1/4 x 3/4	4
	531006	DASH SUPPORT ASS'Y, S-12	1	58	063002	LOCKWASHER, 1/4"	4
25	065032	NUT, Hex, 1/4"	5	59	078275	CAUTION DECAL	1
26	074044	SCREW, Self-Tapping, No. 10 x 3/8"	4	60	078280	DECAL	1
27	031086	BATTERY HOLD DOWN	1	61	078281	DECAL	1
28	074042	SCREW, Self-Tapping, R.H. 1/4 x 1/2	4	62	059003	CAP SCREW	1
29	059069	CAP SCREW, HH, 5/16 x 1-1/4	4				
30	065101	LOCKNUT, Hex, 5/16"	4				

MAIN DRIVE

MODEL NO. 931001,931002,931003



MAIN DRIVE

MODEL NO. 931001,931002,931003

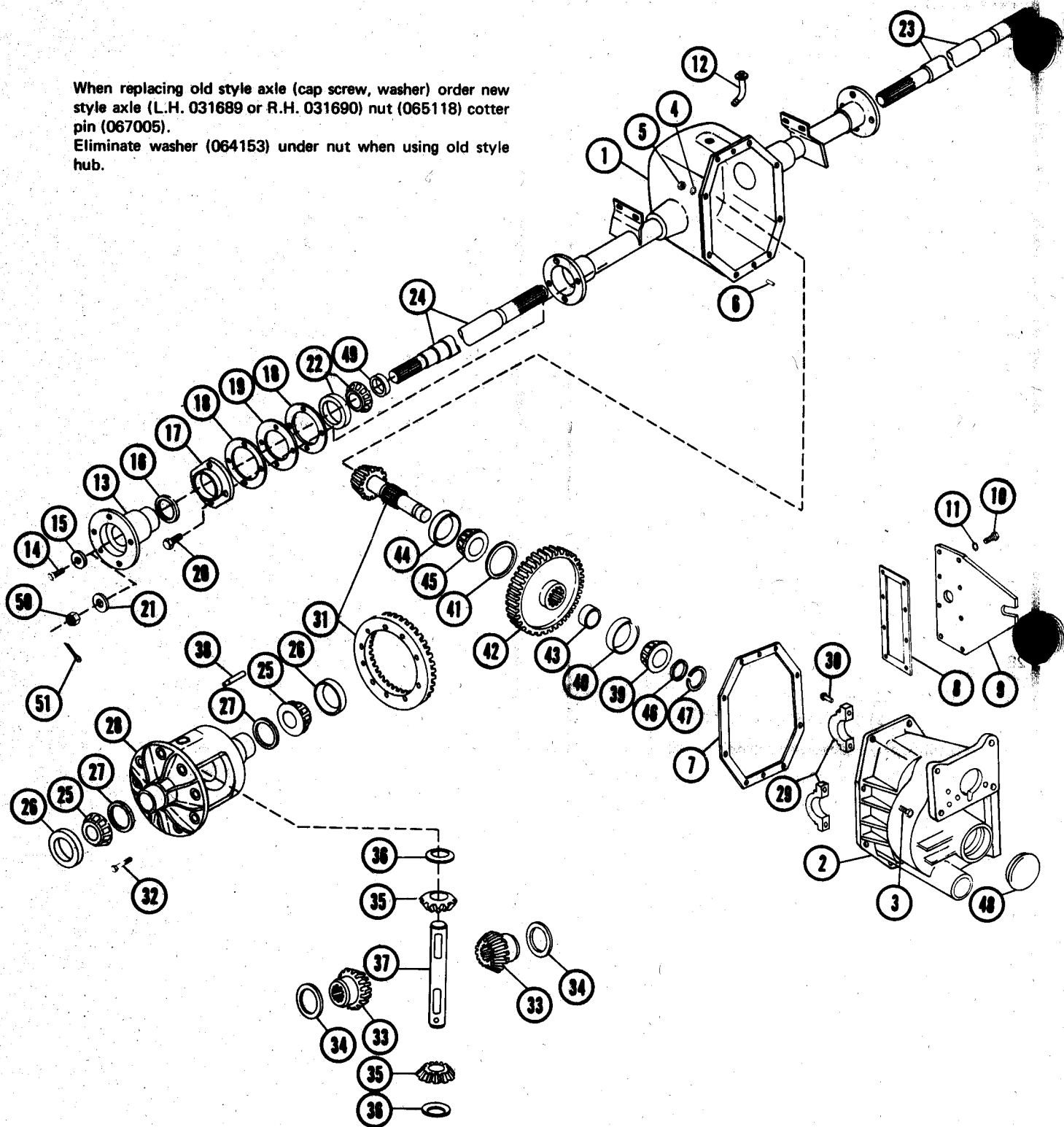
REF NO.	PART NO.	DESCRIPTION	QTY.	REF NO.	PART NO.	DESCRIPTION	QTY.
1	031096	TRANSMISSION, 931002, 931003	1	30	031062	HOSE, 18 Long, 1/2 ID	2
	031336	TRANSMISSION, 931001	1	31	031059	HOSE, 23 Long, 3/8 ID	1
2	031095	GASKET	1	33	031120	ELBOW, 90°, (S-12)	1
3	031052	ELBOW, 90°, W/"O" Ring	1		031054	"T" FITTING (S-14, S-16)	1
4	059005	CAP SCREW, HH, 3/8 x 1-1/4	2	35	031067	REDUCER, 3/4 to 9/16 (S-14, S-16)	1
5	631012	AXLE	1	36	031123	BUSHING, Hex, 1/2 to 3/8	1
6	031125	STREET ELBOW, 1/2" x 45°	1	37	031122	BUSHING, Hex, 3/4 to 1/2	1
7	001137	PLUG, Pipe, 1/2"	1	38	075062	KNOB	1
8	063021	LOCKWASHER, 3/8"	3	39	031052	ELBOW, 90°, St. Thread (S-14, S-16)	1
9	059042	CAP SCREW, HH, 1/2 x 1-1/4	4	40	031144	SPACER, Split	1
10	065097	LOCKNUT, Hex, 1/2	4	41	065018	NUT, Hex, 3/8"	1
11	062013	BOLT, R.H. Sq. Neck, 3/8 x 1	1	42	057056	RING, Retaining	1
12	062031	BOLT, R.H. Sq. Neck, 5/16 x 1	2	43	031075	WASHER, Special	3
13	063003	LOCKWASHER, 5/16	5	44	083119	SPRING	1
14	064069	WASHER, Flat	1	45	065015	NUT, Hex, 5/16"	4
15	031077	COUPLING	1	46	059135	CAP SCREW, HH, 5/16 x 3/4	1
16	031027	ANGLE	1	47	066003	KEY, Woodruff, 3/16 x 3/4	1
17	031025	BRACE	1	48	058052	PIN, Spring, 5/16 x 1-1/2	2
18	531012	SHAFT, W/Roll Pin	1	49	060031	SETSCREW, Sq. Hd., 5/16 x 1	2
19	631026	HOUSING & BUSHING ASS'Y	1	50	059133	CAP SCREW, HH, 3/8 x 1-1/4 Grade 5	4
21	029043	FAN	1	51	065061	NUT, Jam, 5/16	4
24	631002	TIRE & WHEEL ASS'Y, Consists of	2	52	060028	SETSCREW, Sq. Hd., 5/16 x 3/4	2
22		071105 TIRE, 23 x 10.50-12	1	53	059003	CAP SCREW, HH, 5/16 x 1	2
23		071106 WHEEL W/Valve	1	54	064123	WASHER, Flat, 5/16	8
25	070038	WHEEL BOLT	10	55	065103	NUT, Hex, Jam, 1/4"	1
26	031045	FILTER BASE	1	56	059134	CAP SCREW, HH, 5/16 x 101/4	4
27	031146	FILTER	1	57	065101	LOCKNUT, Hex, 5/16	4
28	031128	ADAPTER, 3/4" to 1/2"	1	58	069094	"J" CLAMP	1
29	031124	STREET ELBOW, 90°, 1/2"	3	59	031120	ELBOW 90° w/O Rings (931002, 003)	1

REAR AXLE

MODEL NO. 931001,931002,931003

When replacing old style axle (cap screw, washer) order new style axle (L.H. 031689 or R.H. 031690) nut (065118) cotter pin (067005).

Eliminate washer (064153) under nut when using old style hub.

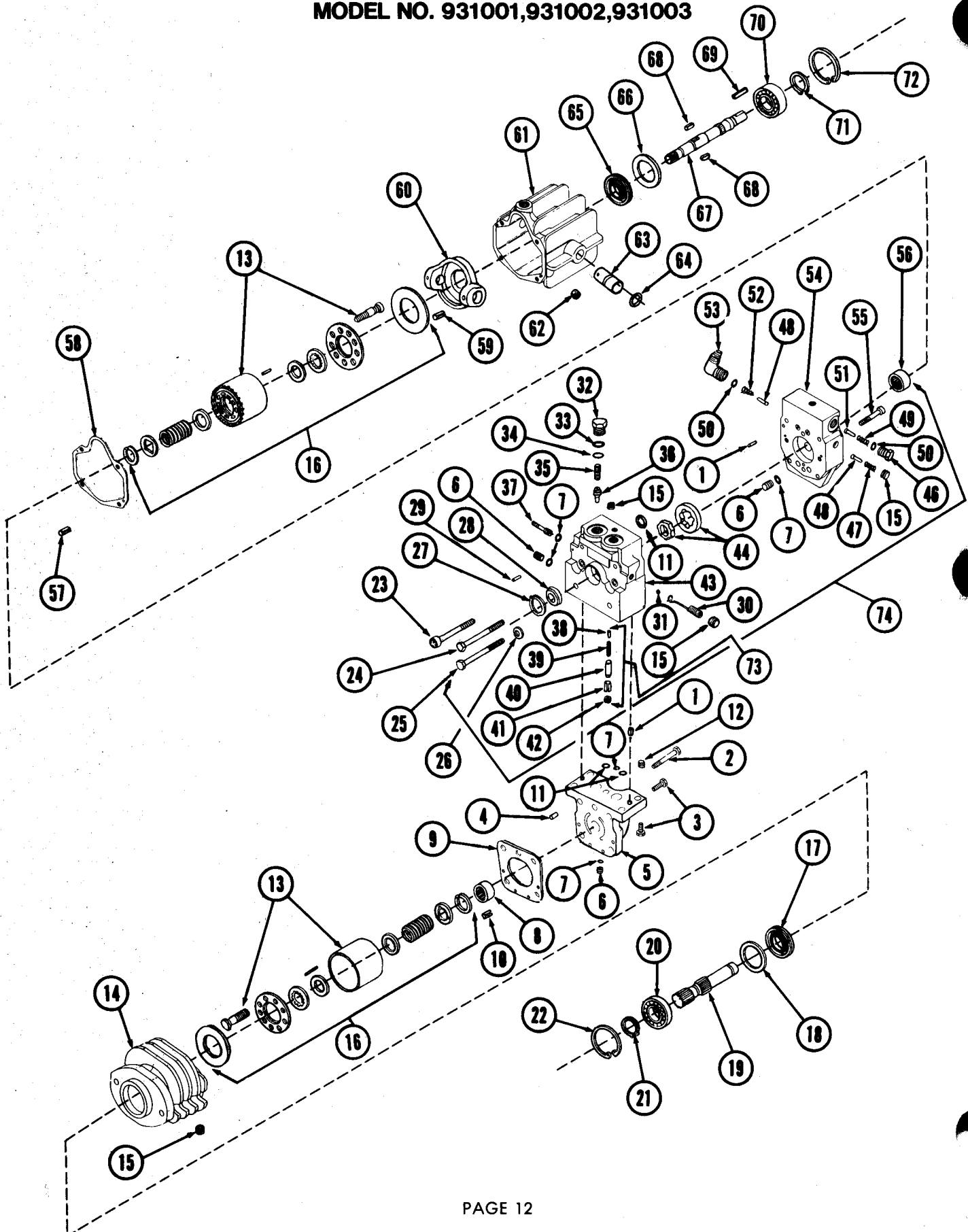


PARTS LIST REAR AXLE MODEL 931001,931002,931003

REF. NO.	PART NO.	DESCRIPTION	NO REQ'D	REF. NO.	PART NO.	DESCRIPTION	NO REQ'D
1	031684	Rear Housing Weld Assembly	1	32	070043	Special Bolt	10
2	531051	Front Housing w/Bearing Cap	1	33	031651	Side Gear	2
3	059181	Cap Screw, Hex Head, 5/16" x 1"	8	34	064154	Throw Washer	2
4	063018	Lockwasher, External Tooth, 5/16"	8	35	031652	Bevel Mate Gear	2
5	065015	Hex Nut, 5/16"	8	36	064155	Thrust Washer	2
6	031637	Dowel Pin, 1/4" x 3/4"	2	37	031653	Pinion Mate Shaft	1
7	031638	Housing Gasket	1	38	031654	Lock Pin	1
8	031167	Gear Cover Gasket	1	39	054132	Bearing Cone	1
9	031100	Lock Pin Guide	1	40	054133	Bearing Cup	1
10	074045	Self-Tapping Screw, Hex Head, No. 10 x 1/2"	4	41	031655	Rear Pinion Bearing Shim .003	AR
11	063024	Lockwasher, External Tooth, No. 10	4	41	031656	Rear Pinion Bearing Shim .005	AR
12	031639	Vent Tube Assembly	1	42	031657	Spur Gear	1
13	031686	Axle Shaft Flange, Wheel Hub	2	43	031658	Front Pinion Bearing Spacer	1
14	059184	Hex Head, Cap Screw, 7/16" x 3/4" NYLOK	2	44	054134	Bearing Cup	1
15	064157	Special Washer	2	45	054135	Bearing Cone	1
16	031641	Felt Seal	2	46	531049	Shim Kit consists of the following,	
17	031687	Dust Shield	2		031659	Front Pinion Bearing Shim .031	AR
18	031642	Wheel Bearing Gasket	4		031660	Front Pinion Bearing Shim .033	AR
19	031688	Wheel Bearing Retainer	2		031661	Front Pinion Bearing Shim .035	AR
20	070027	Flange Whizlock Screw 5/16-18 x 3/4"	8		031662	Front Pinion Bearing Shim .037	AR
21	064153	Washer	2		031663	Front Pinion Bearing Shim .039	AR
22	054129	Bearing and Cone Assembly	2		031664	Front Pinion Bearing Shim .041	AR
23	031689	Axle Shaft - Left Hand	1		031665	Front Pinion Bearing Shim .043	AR
24	031690	Axle Shaft - Right Hand	1		031666	Front Pinion Bearing Shim .045	AR
25	054130	Bearing Cone	2		031667	Front Pinion Bearing Shim .047	AR
26	054131	Bearing Cup	2		031668	Front Pinion Bearing Shim .049	AR
27	031645	Differential Bearing Adjusting Shim .003	AR		031669	Front Pinion Bearing Shim .051	AR
	031646	Differential Bearing Adjusting Shim .005	AR		031670	Front Pinion Bearing Shim .053	AR
	931647	Differential Bearing Adjusting Shim .010	AR		031671	Front Pinion Bearing Shim .055	AR
	031648	Differential Bearing Adjusting Shim .030	AR		031672	Front Pinion Bearing Shim .057	AR
28	031649	Differential Case	1	47	057026	Retaining Ring	1
29	NA	Bearing Cap (This Cap is bolted to Ref. No. 2 and then machined as a matched Assembly)	2	48	031673	Cup Plug	1
30	059126	Hex Head, Cap Screw, 7/16" x 2"	4	49	056093	Oil Seal	2
31	531050	Ring and Pinion Gear Set	1	50	065118	Nut	2
				51	067005	Cotter Pin	2

VICKERS TRANSMISSION

MODEL NO. 931001,931002,931003



VICKERS TRANSMISSION

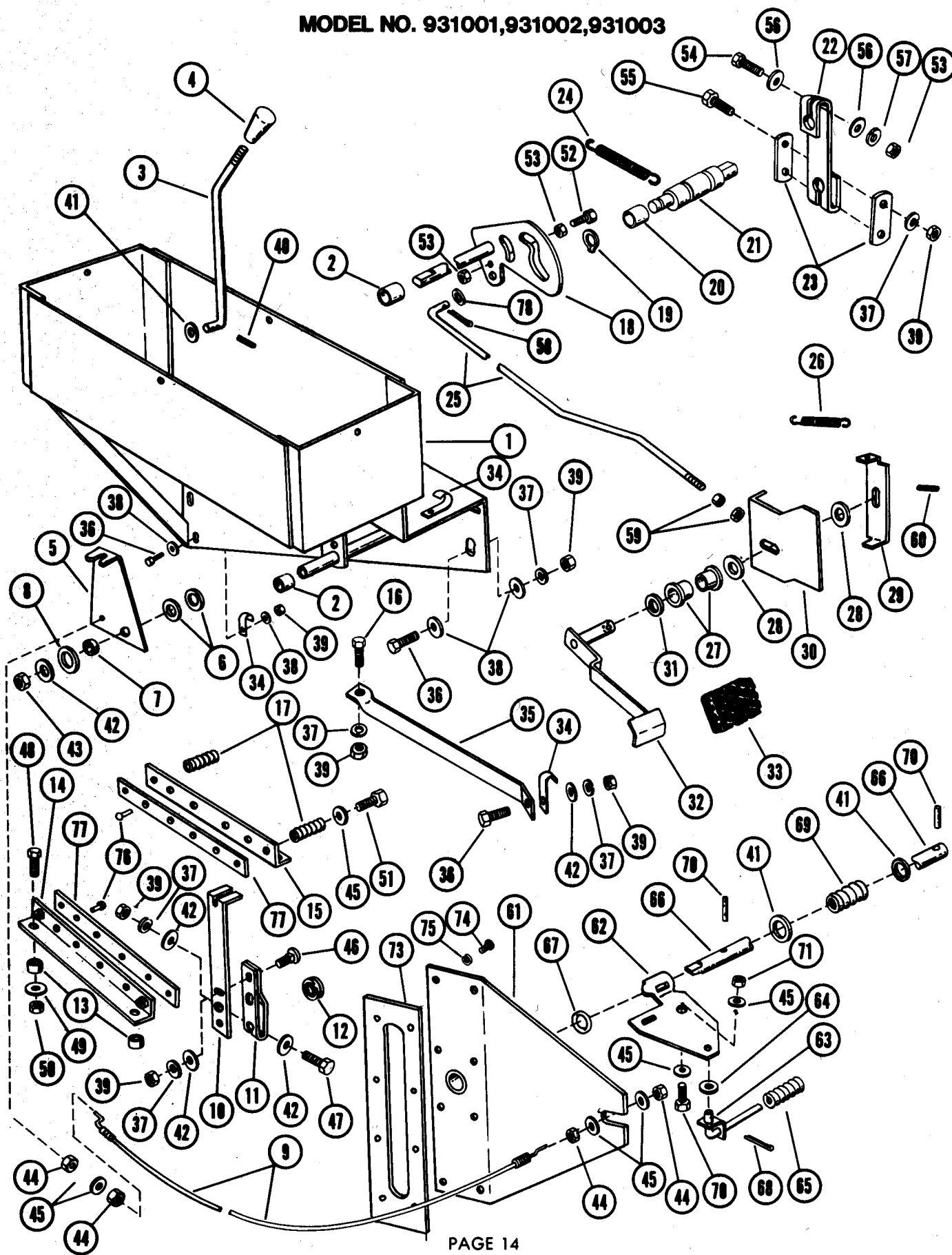
MODEL NO. 931001,931002,931003

REF. NO.	PART NO.	DESCRIPTION	931001	931002 931003	REF. NO.	PART NO.	DESCRIPTION	931001	931002 931003
1	058014	SPRING PIN, 3/16 x 1/2"	4	4	35	083156	SPRING	1	1
2	059130	CAP SCREW, Hex Head, Gr. 5 5/16 x 2-3/4	2	2	36	031605	POPPET	1	1
3	059134	CAP SCREW, Hex Head, Gr. 5 5/16 x 1-1/4	6	6	37	031604	PLUNGER	1	1
4	058016	SPRING PIN, 3/16 x 1"	2	2	38	031603	PIN	2	2
5	031593	VALVE PLATE, (includes Bearing)	1	1	39	083155	SPRING	2	2
6	031585	PLUG	4	4	40	031602	VALVE	2	2
* 7	056084	"O" RING	7	7	41	031592	GUIDE	2	2
8	054124	BEARING	1	1	42	031591	PLUG	2	2
* 9	031594	GASKET	1	1	43	031590	TRANSFER BLOCK	1	1
10	031595	PIN	2	2	44	531033	CHARGE PUMP KIT	1	1
* 11	056086	"O" RING	4	4	46	031601	PLUG	1	1
12	001138	PIPE PLUG, 3/8-18	2	2	47	083154	SPRING	2	2
13	531027	CYLINDER BLOCK & PISTON KIT	2	2	48	031584	VALVE	2	3
14	031596	MOTOR HOUSING	1	1	49	083152	SPRING		1
15	031588	PLUG	6	6		083151	SPRING	1	
16	531028	ROTATING GROUP KIT	2	2	* 50	056083	"O" RING	2	2
17	056085	SEAL	1	1	51	031586	VALVE	1	1
18	031597	WASHER	1	1	52	083151	SPRING		1
19	031578	SHAFT	1	1	53	031120	ELBOW 90°		1
20	054122	BEARING	1	1	54	531029	VALVE PLATE A (Includes 52)	1	1
21	057065	RETAINING RING	1	1	55	059090	CAP SCREW, Socket H.D. 5/16 x 3/4	2	2
22	057066	RETAINING RING	1	1	56	054125	BEARING	1	1
23	059177	C.S. SOCKET Hd 5/16 x 3-1/2	2	2	57	058060	SPRING PIN, 3/16 x 3/8	2	2
24	059176	CAP SCREW, Hex Head, Gr. 5 5/16 x 3-3/4	2	2	* 58	031600	GASKET	1	1
25	059178	CAP SCREW, Hex Head, Gr. 5 3/8 x 2-1/2	2	2	59	058059	PIN	2	2
26	064150	WASHER	2	2	60	031599	YOKE	1	1
27	057068	RETAINING RING	1	1	61	031598	PUMP HOUSING	1	1
28	056087	SEAL	1	1	62	031583	PLUG	2	2
29	058061	SPRING PIN 1/8x 5/16	1	1	63	031582	PINTLE	2	2
30	083153	SPRING	1	1	* 64	056082	"O" RING	2	2
31	031598	BALL	1	1	* 65	056081	SEAL	2	2
32	031587	CAP	1	1	66	031579	SPACER	1	1
* 33	056058	"O" RING	1	1	67	031581	PUMP SHAFT	1	1
34	031606	SHIM	AR	AR	68	031580	KEY	2	2
					69	066029	KEY, Square 3/16 x 1	2	2
					70	054123	BEARING	1	1
					71	057012	RETAINING RING	2	2
					72	057067	RETAINING RING	1	1
					73	These items are serviced in Valve Repair Kit No. 531031			
					74	These items are serviced in transfer block and valve plate assembly which is assembled and tested at the factory. No. 531030			

*These items are serviced in seal Kit No. 531032

HYDROSTATIC CONTROLS, CONSOLE AND BRAKE NEUTRALIZER

MODEL NO. 931001,931002,931003



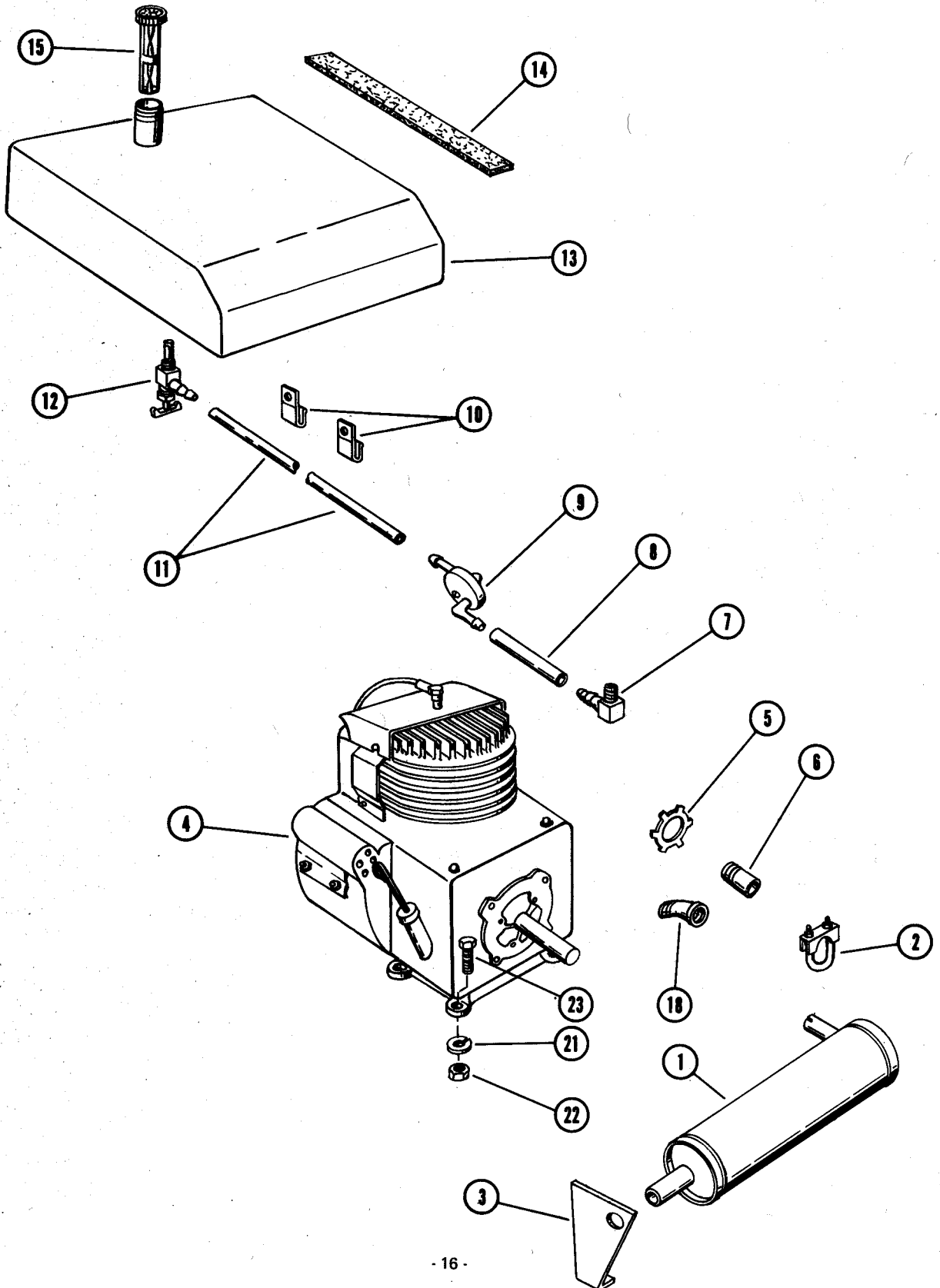
HYDROSTATIC CONTROLS, CONSOLE AND BRAKE NEUTRALIZER

MODEL NO. 931001,931002,931003

REF NO.	PART NO.	DESCRIPTION	QTY.	REF NO.	PART NO.	DESCRIPTION	QTY.
1	031160	CONTROL BOX	1	40	058005	PIN, Springm 3/16 x 7/8	2
2	055024	BUSHING	2	41	064003	WASHER, Flat, 1/2"	4
3	031064	SHIFT ROD	1	42	064069	WASHER, Flat, 3/8"	5
4	075049	HANDLE	1	43	065098	LOCKNUT, Hex, 3/8"	1
5	031258	ARM	1	44	065100	NUT, Hex Jam, 5/16"	4
6	064130	WASHER, Spacer	2	45	064123	WASHER, Flat, 5/16"	8
7	029161	BUSHING	1	46	062029	BOLT, Carriage, 3/8 x 1	1
8	031162	WASHER, Special	1	47	059152	CAP SCREW, HH, 3/8 x 2-1/2	1
9	069100	CABLE, 24-7/8" Long	1	48	059069	CAP SCREW, HH, 5/16 x 1-1/4"	2
10	031261	ARM	1	49	063003	LOCKWASHER, 5/16"	2
11	031260	CLEVIS	1	50	065015	NUT, Hex, 5/16"	2
12	075066	GROMMET	1	51	061044	SCREW, Machine Fillister Hd, 5/16 x 2-1/2	2
13	031127	SPACER	2	52	059132	CAP SCREW, HH, 1/4 x 1	1
14	631009	FRICTION ANGLE ASS'Y W/Lining	1	53	065032	NUT, Hex, 1/4"	3
15	631010	FRICTION ANGLE ASS'Y W/Lining	1	54	059148	CAP SCREW, HH, 1/4 x 1-3/4	1
16	059023	CAP SCREW, HH, 3/8" x 3/4"	1	55	059147	CAP SCREW, HH, 3/8 x 2"	2
17	083125	SPRING, 1-1/2 Long	2	56	064127	WASHER, Flat, 1/4"	2
18	031259	CAM	1	57	063002	LOCKWASHER, 1/4"	1
19	057063	SNAP RING	1	58	067028	PIN, Cotter, 3/16 x 3/4	1
20	031137	ROLLER, 1/2" OD	1	59	065035	NUT, Hex, 7/16	2
21	031023	ECCENTRIC PIN	1	60	058007	PIN, Spring, 1/4 x 1-1/4	1
22	031033	PINTLE ARM	1	61	031100	LOCK PIN GUIDE	1
23	031032	DOUBLE WASHER, 2-3/16"	2	62	031099	PIVOT PLATE	1
24	083116	SPRING, 2-13/16" Long	1	63	031098	PIN	1
25	031026	ROD, Neutralizer	1	64	064128	WASHER, Special	1
26	083122	SPRING, 3-1/2" Long	1	65	083121	SPRING	1
27	055082	BUSHING, 15/16 OD	2	66	031097	PIN	1
28	064125	WASHER, 2-1/2" OD	2	67	056075	"O" RING	1
29	031029	ARM, Neutralizer	1	68	067024	PIN, Cotter, 1/8 x 3/4	1
30	031030	PLATE, Neutralizer	1	69	083120	SPRING	1
31	64036	WASHER, Special	1	70	059135	CAP SCREW	1
32	031035	LEVER ASS'Y	1	71	065101	LOCKNUT, Hex, 5/16	1
33	075051	PEDAL PAD	1	72	058003	ROLL PIN, 3/16 x 1-1/4	2
34	069094	"J" CLAMP	3	73	031167	GASKET	1
35	031024	BRACE	1	74	074045	TAPPING SCREW	8
36	059004	CAP SCREW, HH, 3/8" x 1	4	75	063026	LOCKWASHER	8
37	063021	LOCKWASHER, 3/8"	9	76	068054	RIVET	8
38	064008	WASHER, Flat, 3/8"	5	77	29219	LINING	2
39	065018	NUT, Hex, 3/8"	9	78	64121	WASHER	1

MUFFLER, FUEL LINES & TANK

MODEL NO. 931001,931002,931003



MUFFLER, FUEL LINES & TANK

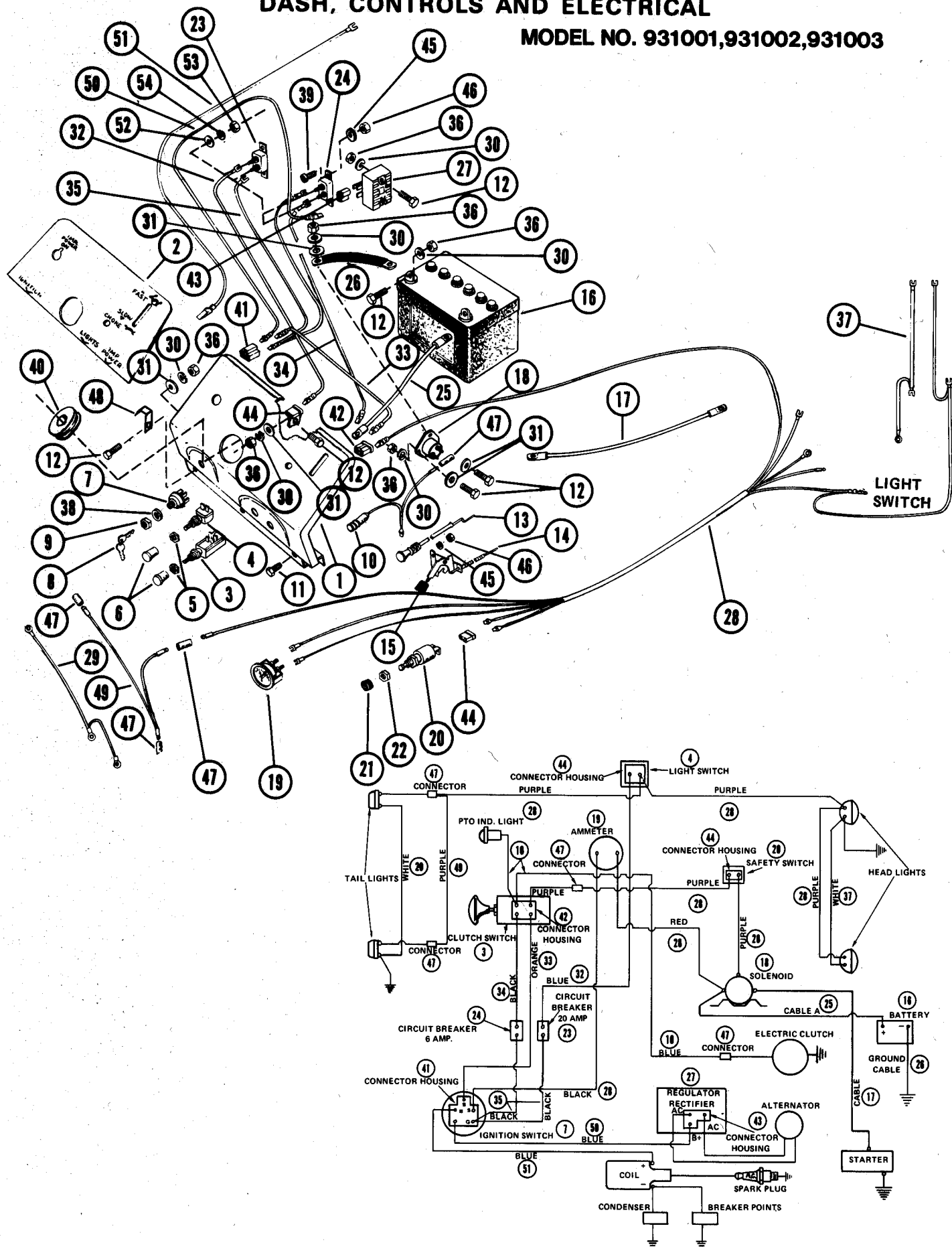
MODEL NO. 931001,931002,931003

REF NO.	PART NO.	DESCRIPTION	931001	931002	931003
1	031184	MUFFLER			1
	031155	MUFFLER	1	1	
2	023077	CLAMP	1	1	
	031082	CLAMP			1
3	031182	BRACKET, Muffler	1	1	
	031187	BRACKET, Muffler			1
* 4		ENGINE, S-12, Kohler No. 301S- 47404D	1		
		ENGINE, S-14 Kohler No. 321-S 60238		1	
		ENGINE, S-16 Kohler No. 341S- 71109A			1
5	070039	LOCKNUT, Special	1	1	
	070040	LOCKNUT, Special			1
6	031177	PIPE, 1-1/4 x 2"			1
	031180	PIPE, 1 x 1-1/2	1	1	
8	029113	HOSE, 4" Long	1	1	1
9	029108	FILTER, Fuel	1	1	1
10	069094	"J" CLAMP	2	2	2
11	031264	HOSE, 50" Long	1	1	1
12	031356	VALVE, Shut Off	1	1	1
13	031090	TANK, Fuel	1	1	1
14	031126	FELT, 16" Long	4	4	4
15	031079	GAS GAUGE & CAP	1	1	1
18	031190	ELBOW, Street, 45°, 1-1/4			1
21	063021	LOCKWASHER, 3/8	4	4	4
22	065018	NUT, Hex, 3/8	4	4	4
23	059151	CAP SCREW, HH, 3/8 x 1-1/2	4	4	4

*Order Replacement Engine and Replacement Engine Parts From Your
Nearest Kohler Service Central

DASH, CONTROLS AND ELECTRICAL

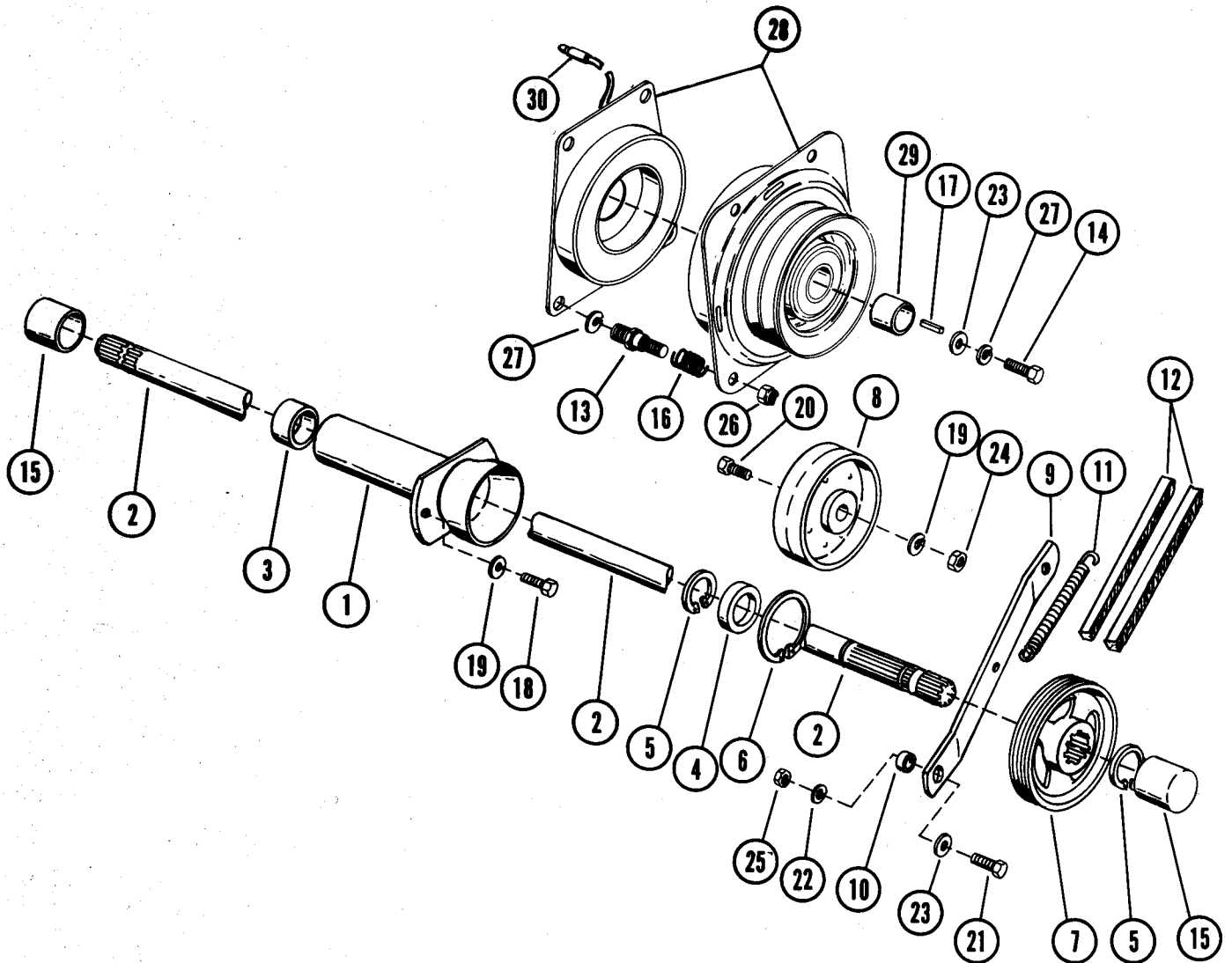
MODEL NO. 931001,931002,931003



**DASH, DASH CONTROLS & ELECTRICAL
MODEL NO. 931001,931002,931003**

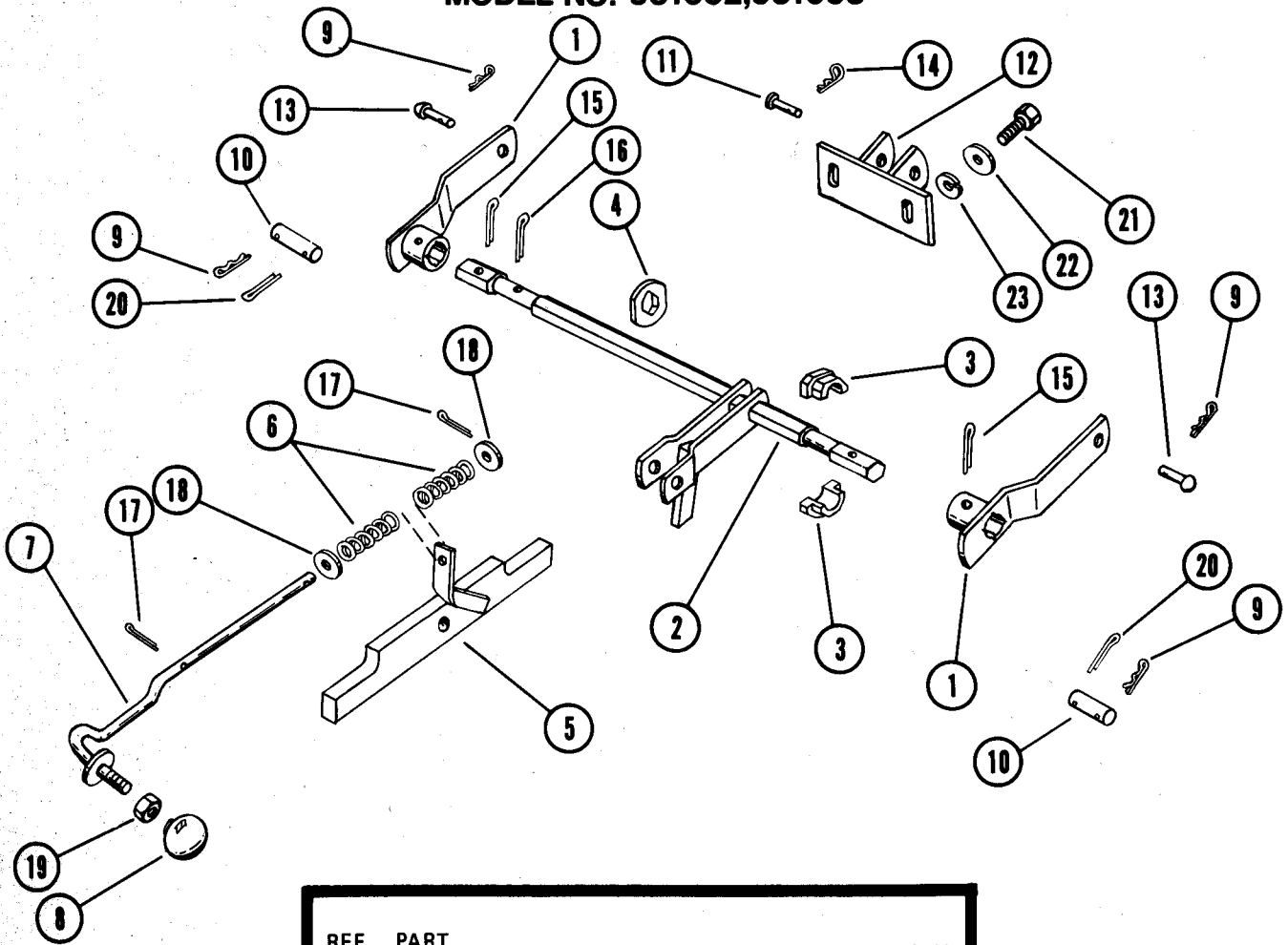
REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.	REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	531001	DASH W/Decal	1	30	063002	LOCKWASHER, 1/4"	9
2	078266	DASH DECAL	1	31	064127	WASHER, Flat 1/4"	6
3	031150	SWITCH' Clutch	1	32	031114	WIRE HARNESS, 6-1/2" Long (Blue) Circuit Breaker to Light Switch	1
4	031151	SWITCH, Lights	1	33	031112	WIRE HARNESS, 10" Long (Orange) Ignition to Clutch Switch	1
5	065104	NUT, Jam, 1/2"	2	34	031113	WIRE HARNESS, 7-1/2" Long (Black) Circuit to Clutch Switch	1
6	075068	KNOB, Switch	2	35	031115	WIRE HARNESS, 14-1/2" Long (Black) Ignition to Circuit Breaker	1
7	031152	SWITCH, Ignition	1	36	065032	NUT, Nex, 1/4"	9
8	013157	KEY SET	1	37	031104	WIRE HARNESS, 30" Long (White) Ground for Head Lights	1
9	065106	NUT, Special, 9/16"	1	38	063029	LOCKWASHER, Internal Tooth, 9/16"	1
10	031179	PTO Indicator & Wire Ass'y	1	39	061040	SCREW, Machine, Truss, Hd. No. 10 x 1/2	2
11	074043	SCREW, Self-Tapping, No. 10 x 1/2	4	40	075061	GROMMET	1
12	059001	CAP SCREW, HH, 1/4 x 3/4	9	41	023478	CONNECTOR HOUSING, 5 Wire	1
13	069103	CHOKE CONTROL ASS'Y	1	42	023595	CONNECTOR HOUSING, 4 Wire	1
14	069104	THROTTLE CONTROL	1	43	031106	CONNECTOR HOUSING, 3 Wire	1
15	075019	KNOB, Throttle Control	1	44	031105	CONNECTOR HOUSING, 2 Wire	2
16	031085	BATTERY, 12 Volt	1	45	063011	LOCKWASHER, External Tooth, No. 10	4
17	031111	CABLE ASS'Y, Solenoid to Starter	1	46	065055	NUT, Hex, No. 10 - 32	4
18	029132	SOLENOID STARTER SWITCH	1	47	031101	WIRE CONNECTOR	4
19	031117	AMMETER	1	48	031070	CLIP	2
20	031107	SWITCH, Safety	1	49	031168	WIRE ASS'Y, 44-1/2" Long	1
21	075063	BOOT	1	50	031119	WIRE, Ignition to Rectifier (Blue)	1
22	065071	NUT, Special, 5/8"	1	51	031118	WIRE, Coil to Ignition (Blue)	1
23	031102	CIRCUIT BREAKER, 20 Amp	1	52	064141	WASHER	4
24	031108	CIRCUIT BREAKER, 6 Amp	1	53	065026	NUT	4
25	031110	CABLE ASS'Y, Battery to Solenoid	1	54	063011	LOCKWASHERS	4
26	031103	CABLE ASS'Y, Battery to Ground	1				
27	031109	REGULATOR RECTIFIER	1				
28	031116	WIRE HARNESS - 5 Wire	1				
29	031147	WIRE HARNESS, 35" Long (White) Ground for Tail Lights	1				

FRONT PTO AND ELECTRICAL CLUTCH MODEL NO. 931001,931002,931003



REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF NO.	PART NO.	DESCRIPTION	NO REQ'D
1	631013	PTO HOUSING W/Needle Bearing	1	16	083148	SPRING	4
2	031183	SHAFT	1	17	066027	KEY, Square, 1/4 x 5/8"	1
3	054102	NEEDLE BEARING	1	18	059023	CAP SCREW, HH, 3/8 x 3/4	2
4	054052	BEARING	1	19	063021	LOCKWASHER, 3/8"	3
5	057062	EXTERNAL SNAP RING	2	20	059068	CAP SCREW, HH, 3/8" x 2	1
6	057024	SNAP RING	1	21	059042	CAP SCREW, HH, 1/2" x 1-1/4	1
7	031022	SHEAVE	1	22	063006	LOCKWASHER, 1/2	1
8	073055	IDLER PULLEY	1	23	064047	WASHER, Special	2
9	031071	IDLER ARM	1	24	065018	NUT, Hex, 3/8"	1
10	031053	SPACER	1	25	065021	NUT, Hex, 1/2"	1
11	083126	SPRING	1	26	065116	LOCKNUT, 5/16"	4
12	072076	"V" BELT - Matched Set of Two	1	27	063005	LOCKWASHER, 7/16"	5
13	031544	STUD	4	28	531023	CLUTCH	1
14	059142	CAP SCREW, HH, 7/16 x 1	1	29	031358	SLEEVE	1
15	075060	COVER, PTO Shaft	2	30	031265	TERMINAL	1

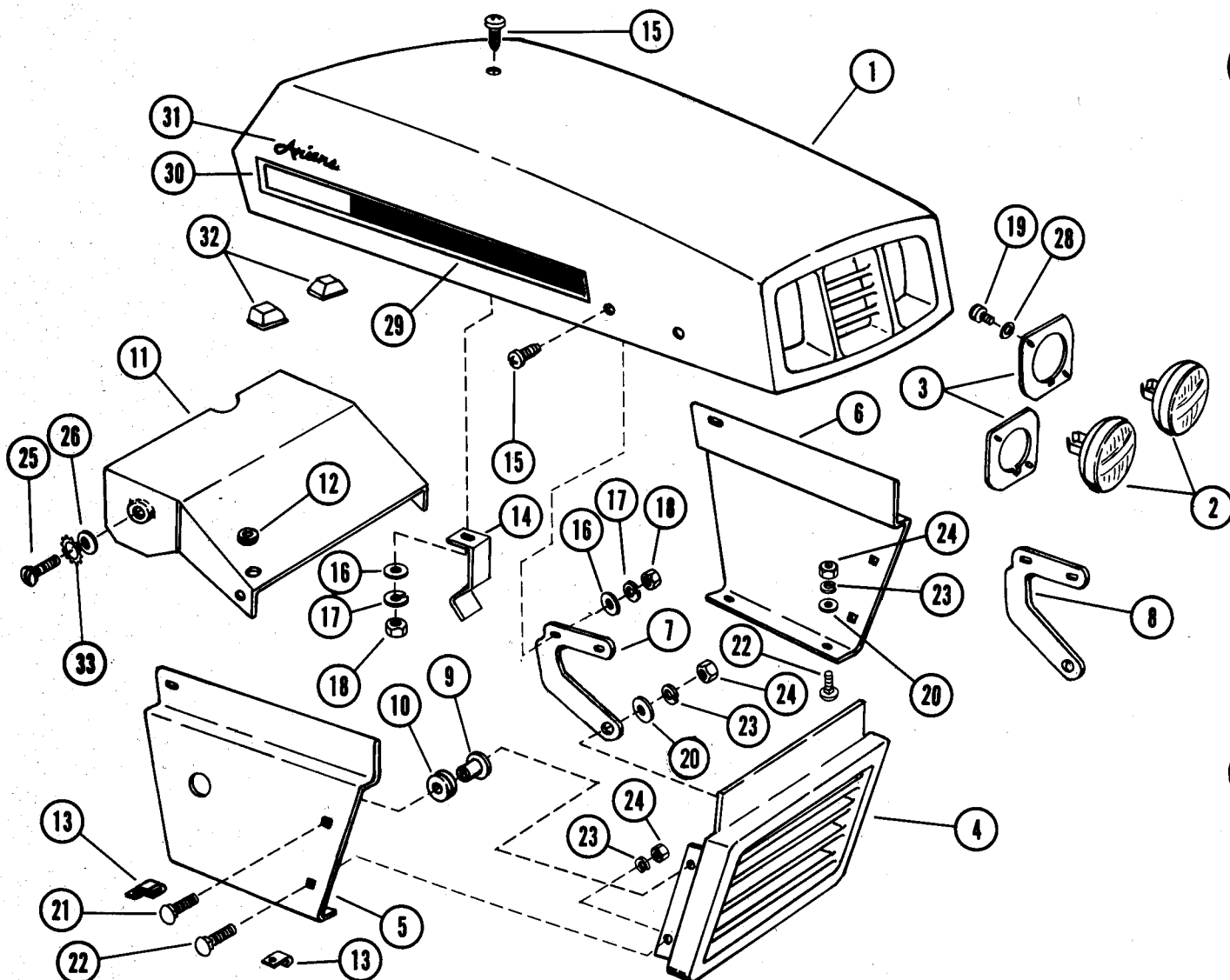
REAR ROCK SHAFT **MODEL NO. 931002,931003**



REF NO.	PART NO.	DESCRIPTION	QTY.
1	031006	ARM	2
2	031003	SHAFT	1
3	055085	BEARING, Rockshaft	4
4	064113	WASHER, 1-1/32 Hex	1
5	031005	LATCH	1
6	083105	SPRING	2
7	031004	LATCH ROD	1
8	075052	KNOB	1
9	067022	HAIRPIN COTTER	4
10	031012	PIN	2
11	031008	PIN, Clevis	1
12	031007	BRACKET	1
13	068055	RIVET, Drilled	2
14	067029	HAIRPIN COTTER	1
15	067025	PIN, Cotter, 3/16 x 2	2
16	067012	PIN, Cotter, 3/16 x 1-1/2	1
17	067024	PIN, Cotter, 1/8 x 3/4	2
18	064069	WASHER, Flat, 3/8	2
19	065001	NUT, Hex, Jam, 3/8	1
20	067004	PIN, Cotter, 1/8 x 1	2
21	059023	CAP SCREW, HH, 3/8 x 3/4	2
22	063021	LOCKWASHER, 3/8	2
23	064004	WASHER, Flat, 3/8	2

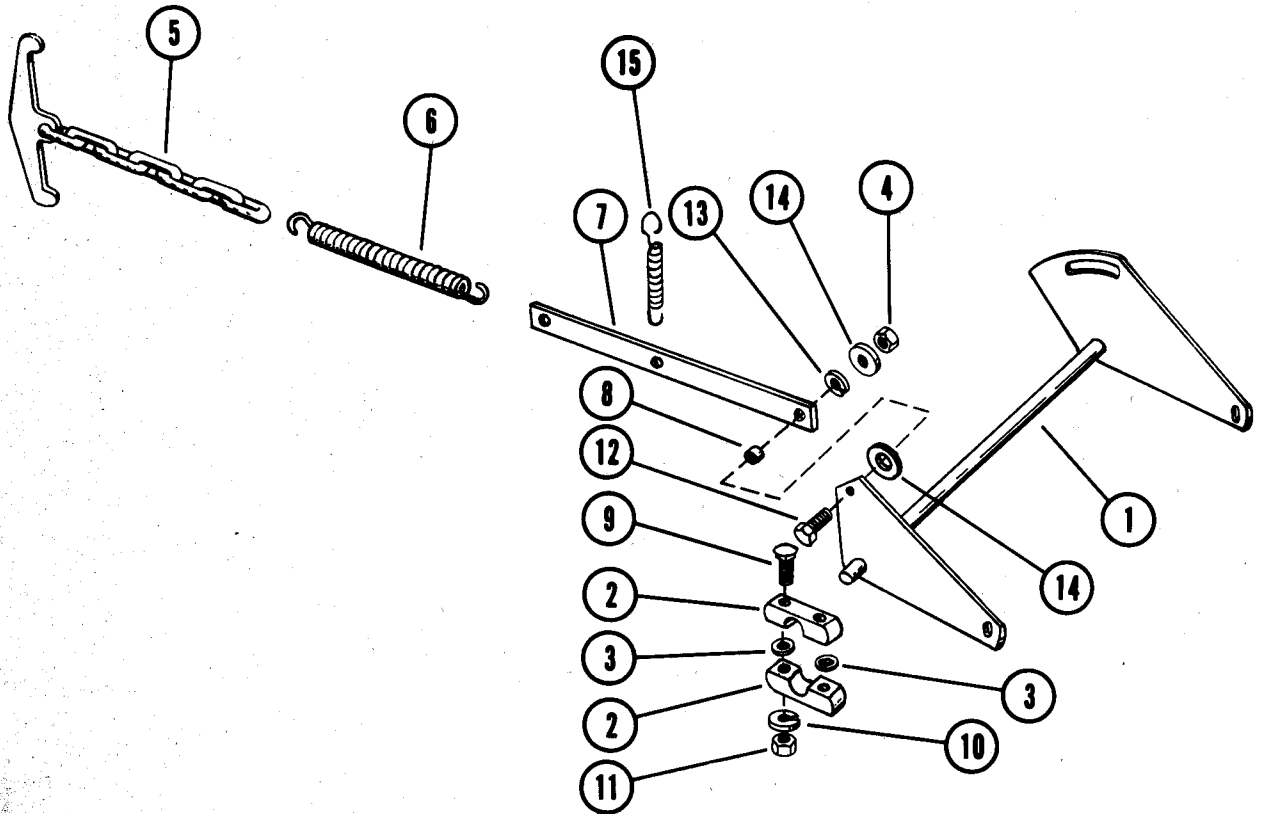
HOOD, GRILL, HEADLIGHTS AND HEAT SHIELD

MODEL NO. 931001,931002,931003



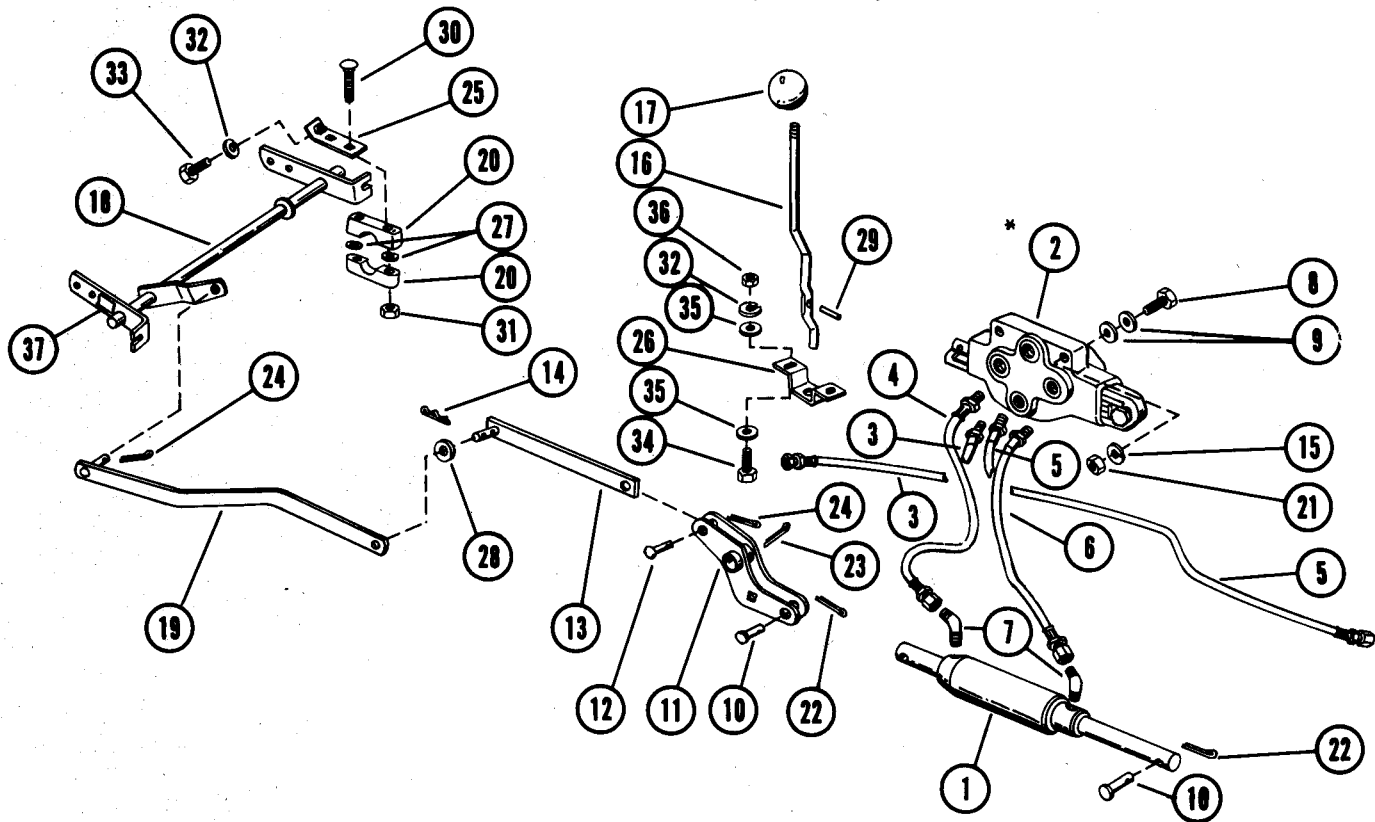
REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.	REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	531002	HOOD S-12	1	19	061040	SCREW, Machine, Truss H No. 10 - 1/2"	4
1	531008	HOOD S-14	1	20	064008	WASHER, Flat, 3/8"	6
1	531009	HOOD S-16	1	21	062032	BOLT, Carriage 3/8" x 2	2
2	031149	HEAD LIGHT	2	22	062013	BOLT, Carriage, 3/8" x 1	6
3	031159	RETAINER RING	2	23	063021	LOCKWASHER, 3/8"	8
4	031046	GRILL	1	24	065018	NUT, Hex, 3/8"	8
5	031139	SIDE, Right Hand	1	25	061042	SCREW, Machine, Truss H, 5/16 x 3/4	2
6	031138	SIDE, Left Hand	1	26	064123	WASHER, Flat, 5/16"	2
7	031185	HINGE, Right Hand	1	28	064001	WASHER	8
8	031186	HINGE, Left Hand	1		078272	DECAL, Hood Stripe Black (not III.)	1
9	031145	SPACER, 3/4"	2	29	078263	R.H. HOOD DECAL	1
10	075064	GROMMET	2		078264	L.H. HOOD DECAL	1
11	031091	MUFFLER SHIELD, S-12 & S-14	1	30	078253	R.H. S-16 DECAL	1
	031188	MUFFLER SHIELD, S - 16	1		078254	L.H. S-16 DECAL	1
12	075066	GROMMET	1		078255	R.H. S-14 DECAL	1
13	069094	"J" CLAMP	2		078256	L.H. S-14 DECAL	1
14	031093	LATCH	1		078257	R.H. S-12 DECAL	1
15	061039	SCREW, Machine, Truss H, 1/4 x 3/4	5		078258	L.H. S-12 DECAL	1
16	064127	WASHER, Flat, 1/4"	5	31	078252	ARIENS SCRIPT DECAL	2
17	063002	LOCKWASHER, 1/4"	5	32	075058	HOOD STOP	2
18	065032	NUT, Hex, 1/4"	5	33	063018	STAR LOCKWASHER	2

CENTER ROCK SHAFT MODEL NO. 931001,931002,931003



REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	031050	CENTER ROCK SHAFT	1
2	029011	BEARING BLOCK	4
3	064115	SHIM, .005 Thick	4
4	065032	NUT, Hex, 1/4"	1
5	031017	CHAIN, 11 Links	1
6	083107	SPRING	1
7	031181	LINK, 9-1/2" Long	1
8	031021	SPACER	1
9	062005	BOLT, Carriage, 3/8 x 2-1/4	4
10	063021	LOCKWASHER, 3/8	4
11	065018	NUT, Hex, 3/8	4
12	059132	CAP SCREW, HH, 1/4 x 1"	1
13	063002	LOCKWASHER, 1/4"	1
14	064127	WASHER, Flat, 1/4"	2
15	083149	SPRING	1

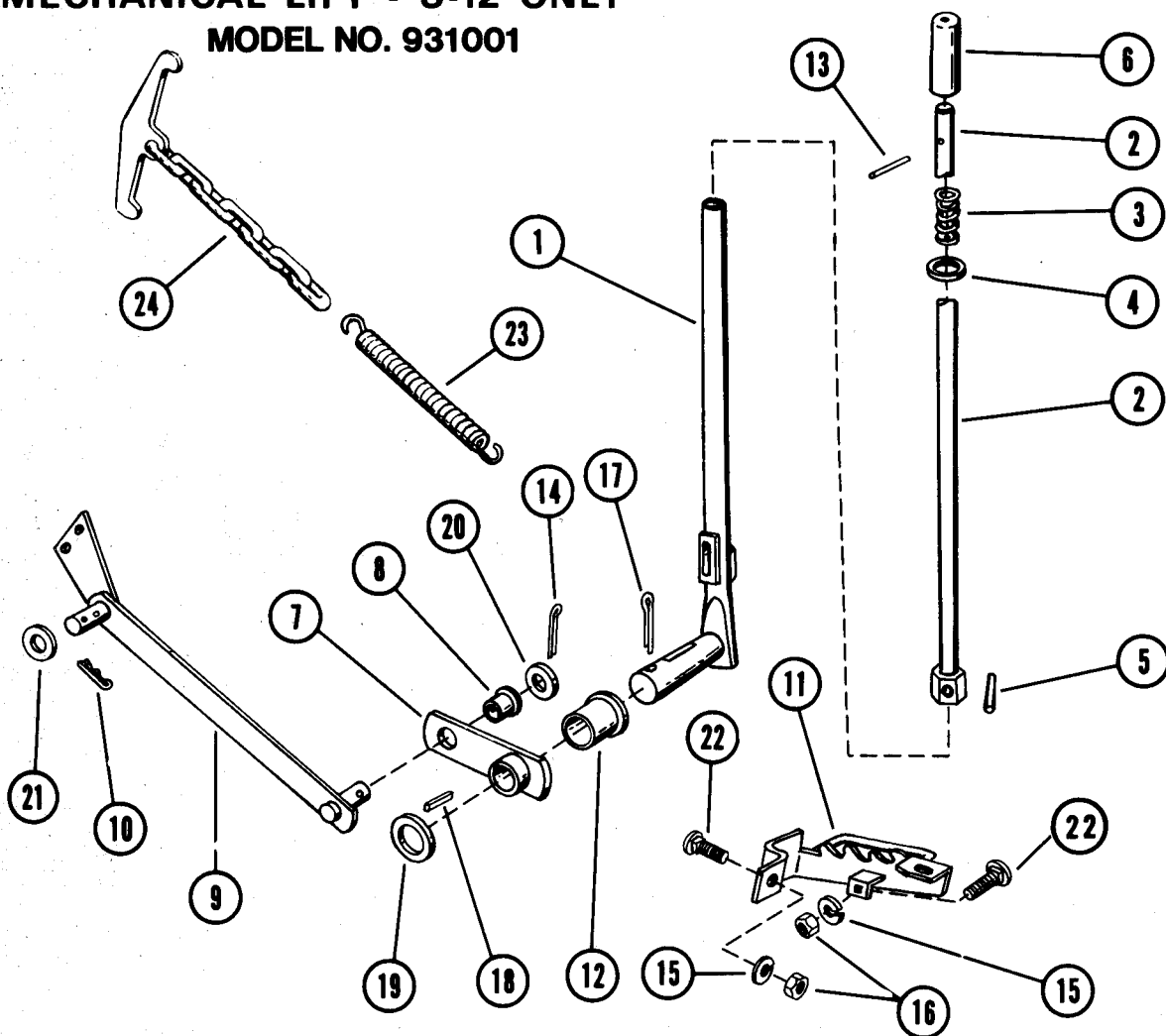
HYDRAULIC LIFT AND FRONT ROCK SHAFT MODEL NO. 931001,931002,931003



REF NO.	PART NO.	DESCRIPTION	931002	931003	931001	REF NO.	PART NO.	DESCRIPTION	931002	931003	931001
1	531043	CYLINDER	1			20	029011	BEARING BLOCK	4	4	
* 2	031170	VALVE	1			21	065032	NUT, Hex, 1/4"	2		
3	031060	HOSE, 11" Long, Valve to Reservoir	1			22	067004	PIN, Cotter, 1/8 x 1	2		
4	031057	HOSE, 21-1/2" Long, Valve to Cylinder	1			23	067006	PIN, Cotter, 3/16 x 1-1/4	1		
5	031061	HOSE, 15-3/4" Long, Valve to Pump	1			24	067026	PIN, Cotter, 3/16 x 1"	2	2	
6	031058	HOSE, 24-1/2" Long, Valve to Cylinder	1			25	031014	BRACE	1	1	
7	031068	ADAPTER, 1/4 to 9/16, 45°	2			26	031076	BRACKET	1		
8	059062	CAP SCREW, HH, 1/4 x 1-3/4	2			27	064115	SHIM, .005 Thick	4	4	
9	064127	WASHER, Flat, 1/4"	4			28	064009	WASHER, Flat, 3/4	1		
10	031051	PIN, Clevis	2			29	058053	GROOVE PIN, 1/4 x 3/4	1		
11	031063	BELL CRANK	1			30	062005	BOLT, Carriage, 3/8 x 2-1/4	4	4	
12	068061	PIN	1			31	065098	LOCKNUT, Hex, 3/8	4	4	
13	031072	LINK	1			32	063003	LOCKWASHER, 5/16"	3	3	
14	067029	HAIRPIN COTTER	1			33	059134	CAP SCREW, HH, 5/16 x 1-1/4	1		
15	063002	LOCKWASHER, 1/4"	2			34	059022	CAP SCREW, HH, 5/16 x 3/4	2		
16	031189	CONTROL ROD	1			35	064002	WASHER, Flat, 5/16	4		
17	075052	KNOB	1			36	065015	NUT, Hex, 5/16	2		
18	531005	FRONT ROCKSHAFT	1	1		37	078281	DECAL	1	1	
19	031015	ARM	1	1							

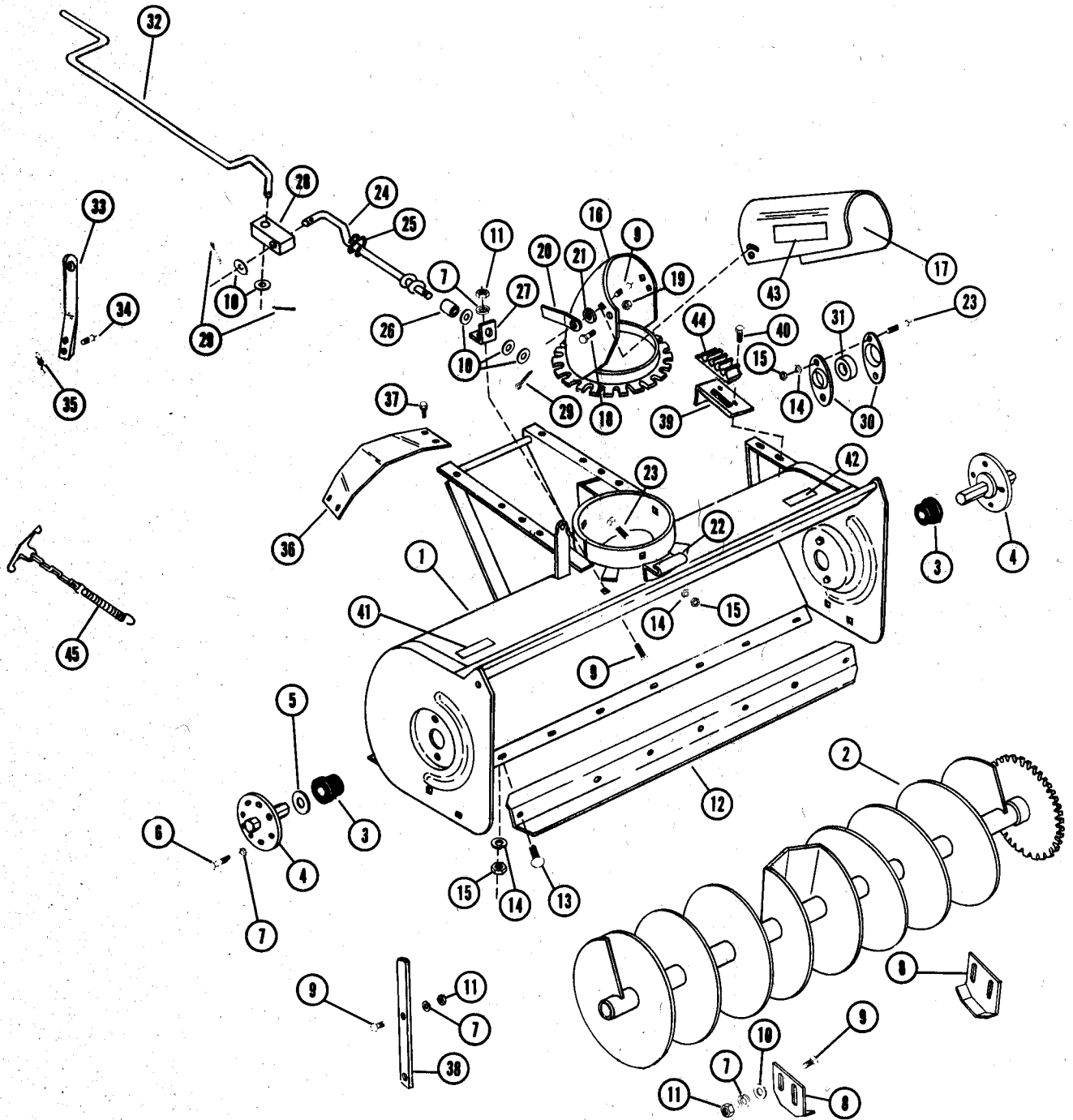
*531041 "O" Ring Kit Available

MECHANICAL LIFT - S-12 ONLY
MODEL NO. 931001



REF NO.	PART NO.	DESCRIPTION	QTY.
1	31340	LEVER	1
2	31341	ROD	1
3	83104	SPRING 1	1
4	064096	WASHER 1	1
5	58054	SPRING PIN 3/8" x 2-1/2"	1
6	075053	HAND GRIP	1
7	031342	ARM WELD	1
8	055088	BUSHING	1
9	031154	LIFT WELD	1
10	067029	HAIRPIN COTTER	1
11	031178	QUADRANT WELD	1
12	055082	BUSHING	1
13	058034	SPRING PIN 1/8" x 3/4"	1
14	067026	COTTER PIN 3/16" x 1"	1
15	065021	LOCKWASHER 3/8"	2
16	065018	HEX NUT 3/8"	2
17	067006	COTTER PIN 3/16" x 1-1/4"	1
18	066028	WOODRUFF KEY 3/16" x 1"	1
19	064010	PLAIN WASHER 7/8"	1
20	064004	PLAIN WASHER 5/8"	1
21	064009	PLAIN WASHER 3/4"	1
22	062013	ROUND HEAD, Short Square Necked Bolt, 3/8" x 1"	2
23	083107	SPRING	1
24	031017	CHAIN, 11 Links	1

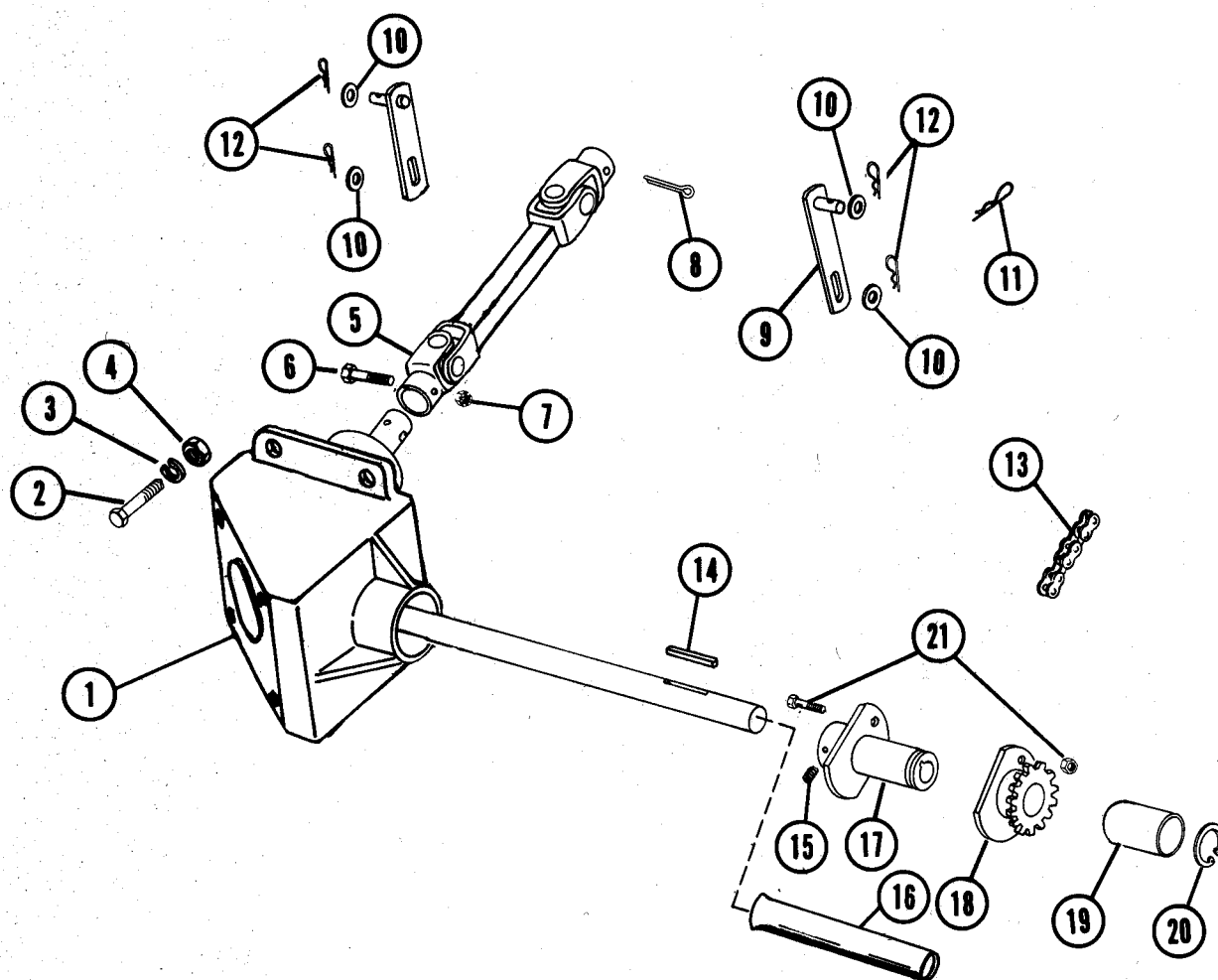
MODEL 831003 48 ST HOUSING, AUGER AND CHUTE CONTROL



MODEL 831003 48 ST HOUSING, AUGER AND CHUTE CONTROL

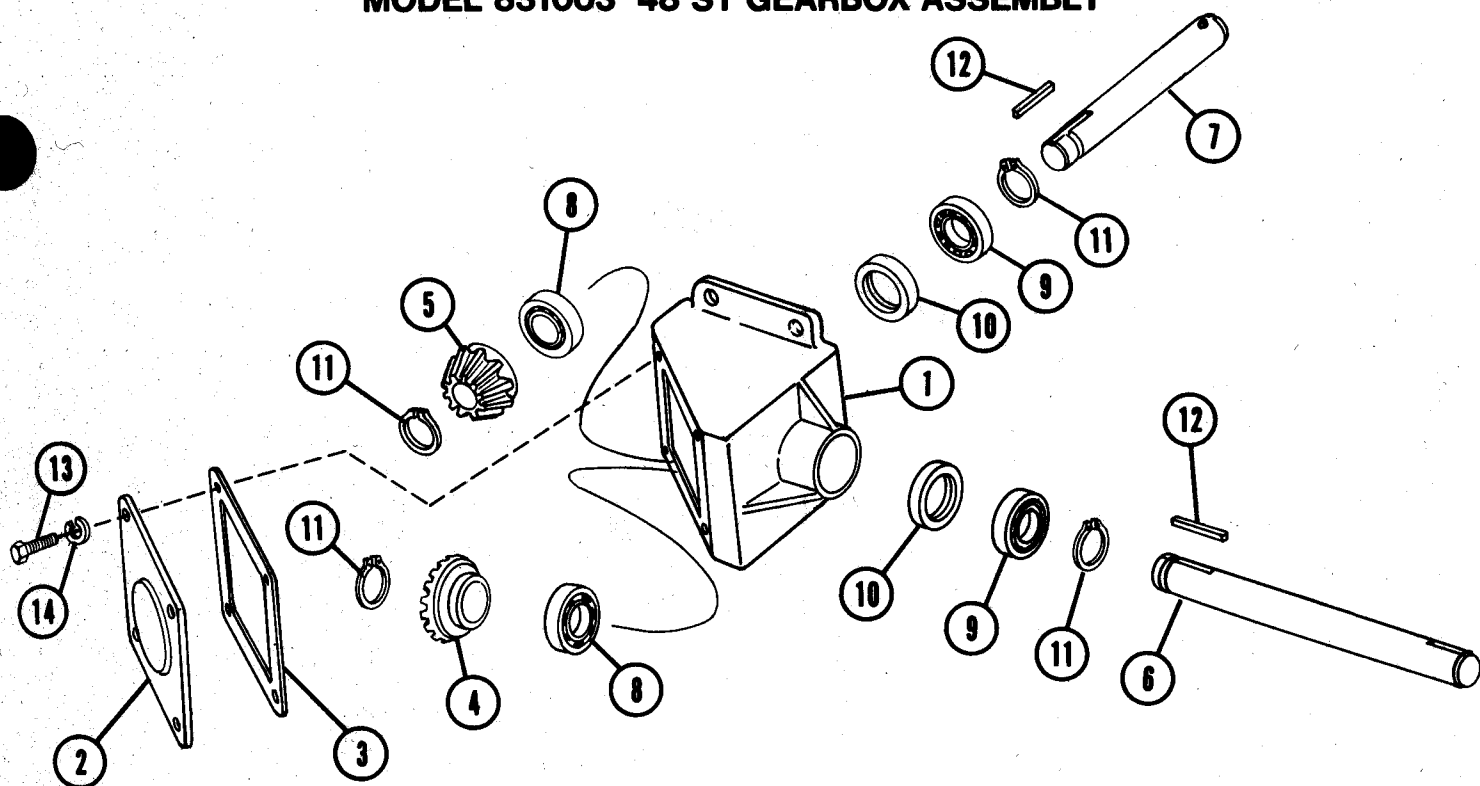
REF. NO.	PART NO.	DESCRIPTION	831003
1	531016	AUGER HOUSING, W/Decal	1
2	031365	AUGER	1
3	054111	BEARING	2
4	029224	MOUNTING PLATE	2
5	064009	WASHER, Flat, 3/4"	AR
6	059154	CAP SCREW, 3/8-16 x 3/4" H.H. Gr. 5	8
7	063021	LOCKWASHER, 3/8"	13
8	029225	SKID SHOE	2
9	062010	CARRIAGE BOLT, 3/8-16 x 3/4"	7
10	064008	WASHER, Flat 3/8"	8
11	065018	NUT, Hex, 3/8-16	9
12	031367	WEAR PLATE	1
13	062011	CARRIAGE BOLT, 5/16-18 x 3/4"	8
14	063003	LOCKWASHER, 5/16"	13
15	065015	NUT, Hex 5/16-18	13
16	029226	SHROUD	1
17	529010	DEFLECTOR W/Decal	1
18	059155	CAP SCREW, 1/4-20 x 1/2", H.H. Gr. 5	2
19	065070	LOCKNUT, 1/4-20	2
20	029228	LOCKING LEVER	2
21	064147	WASHER, Special	2
22	029229	SPOUT RING HOLDER	3
23	062034	CARRIAGE BOLT, 5/16-18 x 3/4	5
24	029230	DISC CONTROL COIL	1
25	083142	SPRING	1
26	029231	SPLIT SPACER	1
27	029232	BRACKET	1
28	031268	JOINT BLOCK	1
29	067001	PIN, Cotter, 3/32 x 3/4	3
30	054113	FLANGETTE	2
31	054112	BEARING	1
32	031368	CHUTE CONTROL HANDLE	1
33	031369	SUPPORT	1
34	062028	CARRIAGE BOLT, 3/8-16 x 1, Gr. 5	2
35	065023	WING NUT, 3/8-16	2
36	031371	PTO SHIELD	1
37	074046	TAPTITE, 1/4-20 x 1/2, H.H.	4
38	029239	BAR	2
39	031411	SHIELD	1
40	074050	TAPTITE, 1/4-20 x 1/2, Type BF	2
41	078252	ARIENS SCRIPT NAME PLATE	1
42	078291	DECAL, Caution	1
43	078298	DECAL, Warning	1
44	075074	SHEAR BOLT HOLDER	1
45	631046	SPRING & CHAIN ASS'Y	2

MODEL 831003 48 ST DRIVE ASSEMBLY, SHEAR HUB AND ATTACHING GROUP



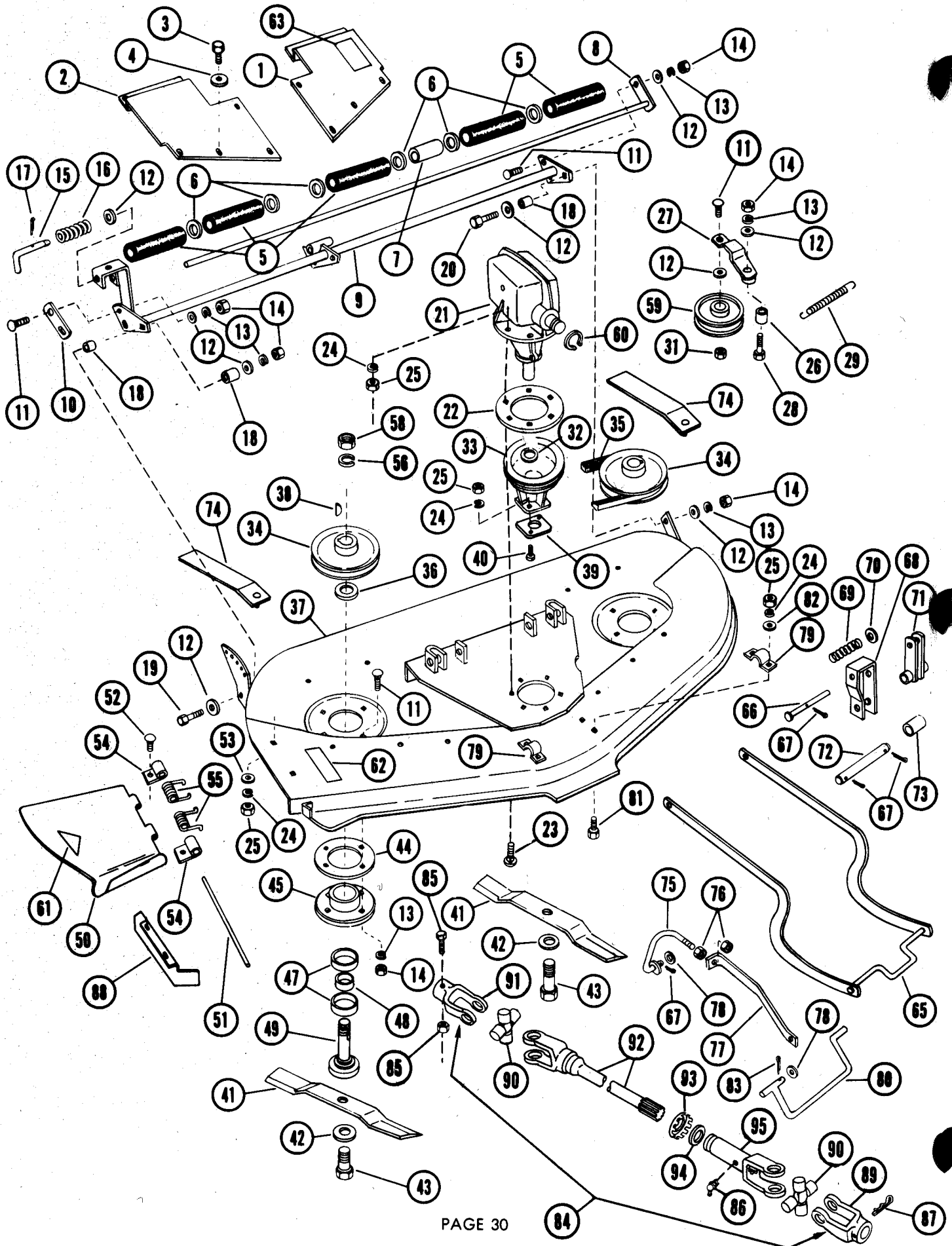
REF NO.	PART NO.	DESCRIPTION	QTY.
1	631050	GEAR BOX ASS'Y (See page 7)	1
2	059133	CAP SCREW, 3/8-16 x 1-1/4" H.H. Gr. 5	4
3	063021	LOCKWASHER, 3/8"	4
4	065018	NUT, Hex, 3/8-16	4
5	631048	UNIVERSAL SHAFT ASS'Y	1
6	059162	CAP SCREW, 1/4-20 x 2", H.H. Gr. 5	1
7	065070	LOCKNUT, 1/4" - 20	1
8	067030	PIN, Cotter, 3/16 x 3-1/4	1
9	031372	LIFT STRAP	1
10	064003	WASHER, Flat, 1/2"	4
11	067022	HAIRPIN COTTER, .148 x 2-3/4	4
12	067029	HAIRPIN COTTER	2
13	029250	CHAIN	1
14	066003	KEY, Woodruff No. 9	1
15	060004	SETSCREW, 5/16-18 x 3/8	1
16	031371	SHIELD	1
17	031374	SHEAR HUB	1
18	031373	SPROCKET	1
19	055197	SLEEVE BUSHING	1
20	057064	SNAP RING	1
21	531025	SHEAR BOLT AND NUT	1

MODEL 831003 48 ST GEARBOX ASSEMBLY



REF NO.	PART NO.	DESCRIPTON	QTY.
1	031461	HOUSING	1
2	031462	LID	1
3	031463	GASKET	1
4	031469	BEVEL GEAR OUTPUT	1
5	031471	BEVEL GEAR INPUT	1
6	031470	OUTPUT SHAFT	1
7	031472	INPUT SHAFT	1
8	054118	BALL BEARING	2
9	054119	BALL BEARING	2
10	056080	OIL SEAL	2
11	057012	SNAP RING	4
12	066031	KEY, 3/16" Lg. x 11/16"	2
13	059028	CAPSCREW 1/4" -20 x 1/2"	4
14	063002	LOCK WASHER, 1/4"	4

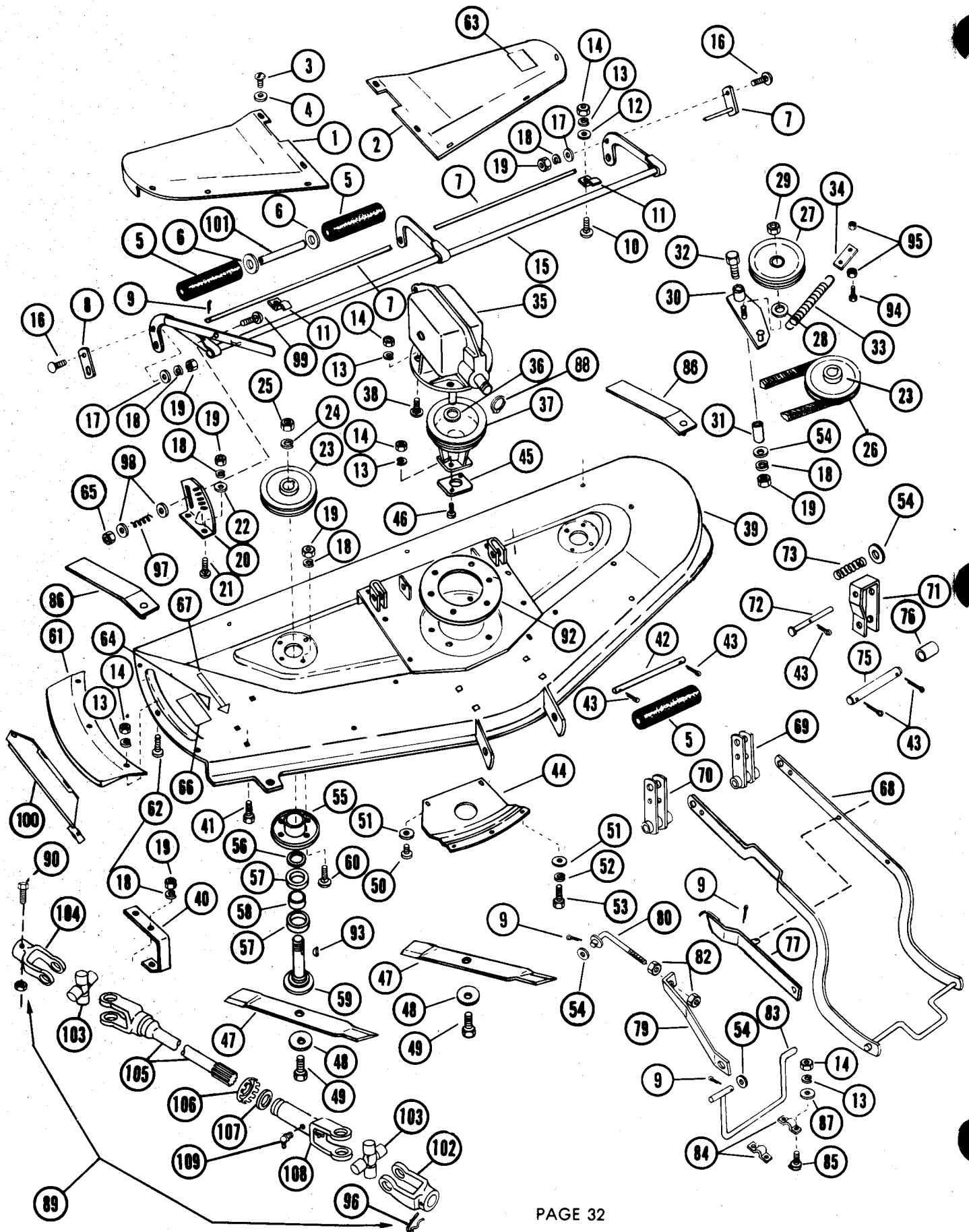
42" MOWER - MODEL 831001



42" MOWER - MODEL 831001

REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D	REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	531019	SHIELD, L.H. ASSEMBLY	1	49	029156	SPINDLE SHAFT	2
2	031205	SHIELD R. H.	1	50	031208	SHIELD	1
3	074046	SCREW, Self Tapping 1/4" x 1/2" Lg.	12	51	031207	ROD	1
4	064127	WASHER, Plain, 1/4"	12	52	062033	CARRIAGE BOLT, 5/16" x 5/8" Lg.	2
5	031141	ROLL	5	53	064002	WASHER 5/16"	2
6	064004	WASHER, Plain 5/8"	6	54	031206	HINGE	2
7	031565	SPACER	1	55	083128	SPRING, Torsion	2
8	031216	SHAFT	1	56	063027	LOCKWASHER, 3/4"	2
9	031215	ROLLER ADJUSTMENT	1	58	065016	NUT, Jam 3/4"	2
10	031156	LINK	1	59	073054	IDLER	1
11	062029	CARRIAGE BOLT, 3/8" x 1" Lg.	11	60	057049	RETAINING RING, External	1
12	064008	WASHER, Plain 3/8"	9	61	078226	SAFETY LABEL	1
13	063021	LOCKWASHER, 3/8"	13	62	078269	WARNING DECAL, Rotating Parts	1
14	065018	NUT, Hex 3/8"	13	63	078271	CAUTION DECAL	1
15	031210	PIN	1	65	031217	MOWER HANGER	1
16	083129	SPRING, Compression	1	66	031127	PIN	2
17	067024	PIN, Cotter	1	67	067004	PIN, Cotter 1/8" x 1" Lg.	7
18	029161	BUSHING	3	68	031226	SUPPORT CHANNEL	2
19	059005	CAP SCREW, Hex. Hd. 3/8" x 1-1/4" Lg.	1	69	083130	SPRING, Compression	2
20	059004	CAP SCREW, Hex. Hd. 3/8" x 1" Lg.	1	70	064003	WASHER, Plain, 1/2"	2
21	631015	GEAR BOX ASSEMBLY	1	71	031220	ARM	2
22	031214	SHIM	AR	72	031221	PIN	2
23	062034	CARRIAGE BOLT, 5/16" x 3/4" Lg.	6	73	031219	SPACER	2
24	063003	LOCKWASHER, 5/16"	14	74	031218	RAMP	2
25	065015	NUT, Hex. 5/16"	14	75	031222	ADJUSTING ROD	1
26	055090	BUSHING	1	76	065021	NUT, Jam, 1/2"	2
27	031196	IDLER ARM	1	77	031225	ARM	1
28	059027	CAP SCREW, Hex. Hd. 3/8" x 1-3/4" Lg.	1	78	064120	WASHER 1/2"	2
29	083127	SPRING, Extension	1	79	031224	STRAP	2
31	065060	LOCKNUT, 3/8"	1	80	031223	SUPPORT SHAFT	1
32	064095	WASHER 5/8"	1	81	062011	CARRIAGE BOLT, 5/16" x 3/4" Lg.	4
33	031042	SHEAVE	1	82	064123	WASHER, Plain 5/16"	4
34	073060	SHEAVE	2	83	067027	PIN, Cotter, 1/4" x 1-1/2" Lg.	1
35	072080	V BELT	1	84	631014	PTO ASSEMBLY	1
36	064108	WASHER, Special	AR	85	059157	SHEAR BOLT & NUT	1
37	531020	DECK	1	86	022093	ZERK FITTING	1
38	066003	KEY, Woodruff No. 9	2	87	067030	HAIRPIN, Cotter	1
39	031234	PLATE	1	88	731001	LEAF MULCHER KIT	1
40	061048	MACHINE SCREW 5/16-18 x 1	2	89	031559	YOKE, Attachment End	1
41	031213	BLADE	3	90	031558	JOURNAL CROSS & BEARING	2
42	031191	WASHER, Belleville	3	91	031557	YOKE, Tractor End	1
43	059153	CAP SCREW, Hex. Hd. 7/16" x 1 UNF	3	92	031563	YOKE AND TUBE	1
44	029177	SHIM	AR	93	031561	RETAINER CAP	1
45	031044	SPINDLE HOUSING	2	94	031562	GREASE SEAL	1
47	054120	BEARING	4	95	031560	YOKE & SHAFT	1
48	031144	SPACER	2				

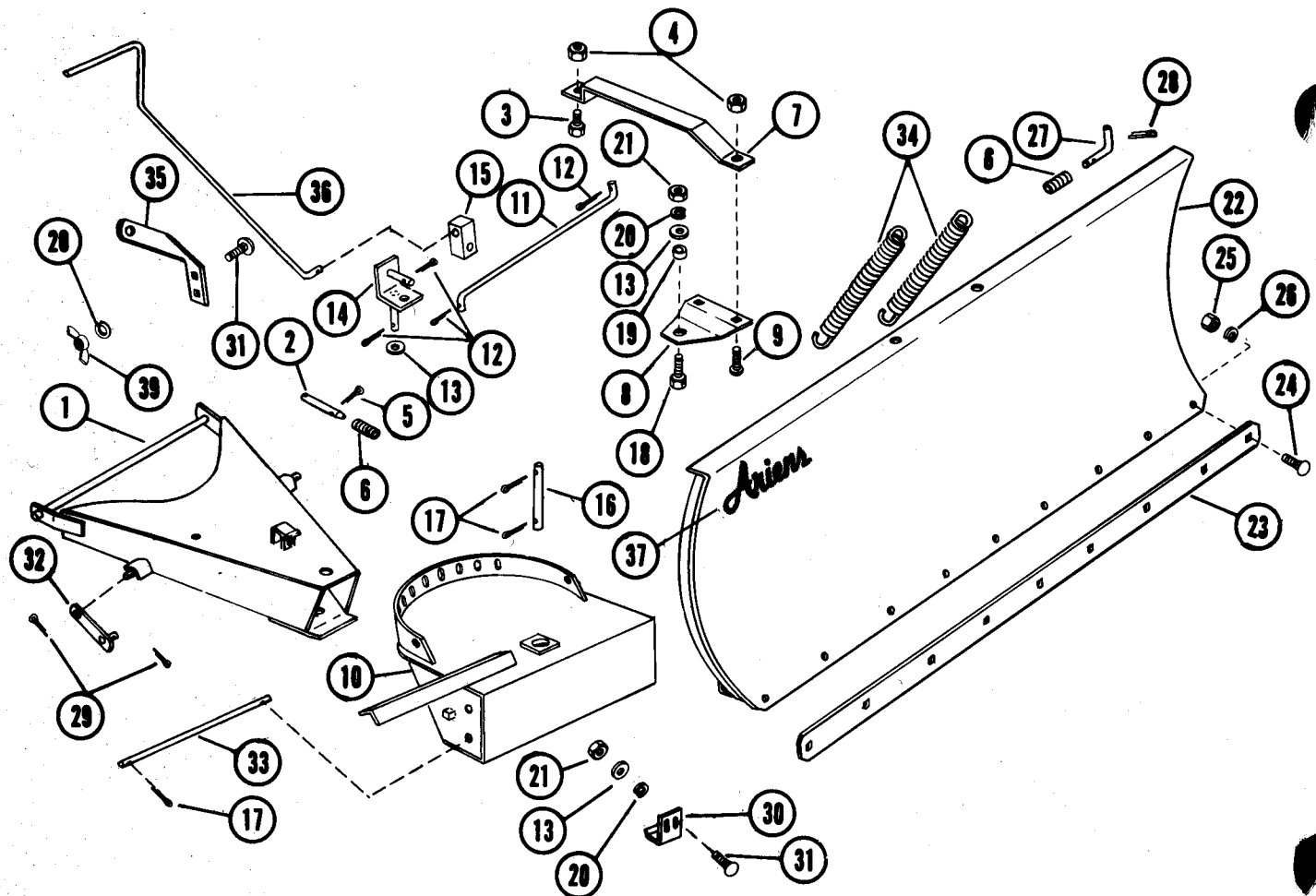
48" MOWER PAN - MODEL 831002



48" MOWER PAN - MODEL 831002

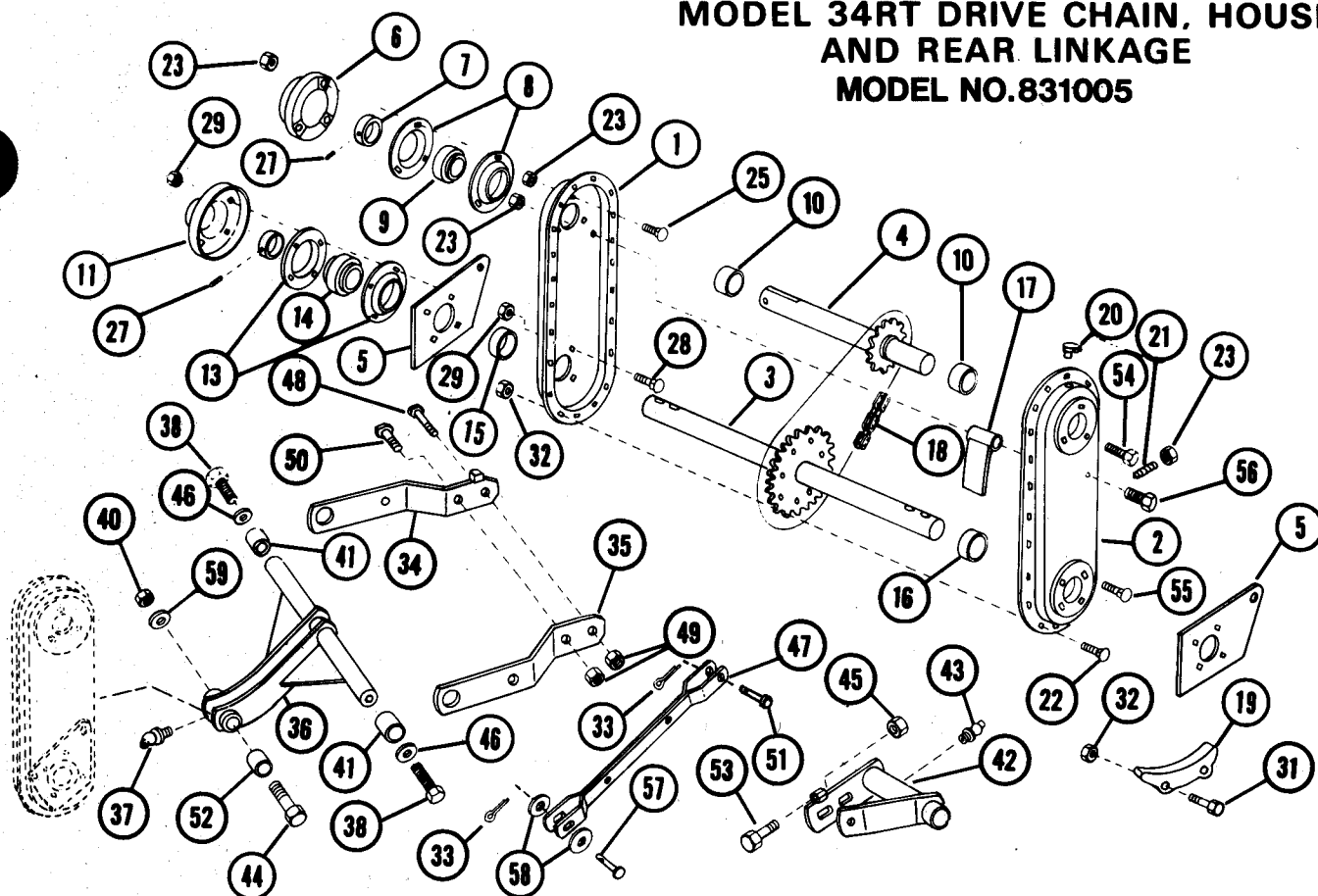
REF NO.	PART NO.	DESCRIPTION	NO. REQ'D	REF NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	031228	SHIELD, R.H.	1	54	064003	WASHER, Plain 1/2"	5
2	531021	SHIELD, L.H.	1	55	031044	FLANGED BEARING HOUSING	2
3	074046	SCREW, Self Tapping, 1/4" - 1/2" Lg.	10	56	064048	WASHER 3/4"	A/R
4	064127	WASHER, Plain 1/4"	10	57	054120	BEARING	4
5	031141	ROLL	5	58	031144	SPACER	2
6	064011	WASHER 11/16"	4	59	031235	SPINDLE SHAFT	2
7	031238	SHAFT	1	60	062035	CARRIAGE BOLT, 3/8" x 3/4" Lg.	8
8	031156	LINK	1	61	031255	CHUTE EXTENSION	1
9	067026	PIN, Cotter 3/16" x 1" Lg.	5	62	061049	MACHINE SCREW, 5/16" x Lg.	3
10	062015	CARRIAGE BOLT, 5/16" - 1" Lg.	3	63	078271	CAUTION DECAL	1
11	031241	TAB	3	64	078226	SAFETY LABEL	1
12	064123	WASHER, Plain 5/16"	3	65	065101	LOCKNUT 5/16" - 18	1
13	063003	LOCKWASHER, 5/16"	18	66	078269	ROTATING PARTS DECAL	1
14	065015	NUT, Hex Hd. 5/16"	18	67	078270	CUTTING WIDTH DECAL	1
15	031236	ROLL FRAME	1	68	031242	MOWER HANGER	1
16	062013	CARRIAGE BOLT, 3/8" x 1" Lg.	2	69	031247	ARM, L. H.	1
17	064008	WASHER, Plain 3/8"	2	70	031220	ARM, R.H.	1
18	063021	LOCKWASHER, 3/8"	16	71	031226	SUPPORT CHANNEL	2
19	065018	NUT, 3/8"	16	72	031227	PIN	2
20	031288	HEIGHT QUADRANT	1	73	083130	SPRING, Compression	2
21	062029	CARRIAGE BOLT 3/8 x 1" Lg.	2	75	031221	PIN	2
22	064069	WASHER 3/8"	2	76	031219	SPACER	2
23	073053	SHEAVE	2	77	031243	ARM	1
24	063027	LOCKWASHER, 3/4"	2	79	031246	ARM	1
25	065016	NUT, Jam 3/4"	2	80	031244	ADJUSTING ROD	1
26	072081	BELT	1	82	065021	NUT, 1/2"	2
27	073061	IDLER PULLEY	1	83	031245	SUPPORT SHAFT	1
28	064138	WASHER 1/2"	1	84	031224	STRAP	2
29	065097	NUT, Hex. 1/2"	1	85	062011	CARRIAGE BOLT 5/16"	4
30	031230	IDLER ARM	1	86	031218	RAMP	2
31	029079	SPACER	1	87	064123	WASHER 5/16"	2
32	059035	CAP SCREW, Hex. Hd., 3/8" x 2-1/2" Lg.	1	88	057049	RETAINING RING, External	1
33	083117	SPRING, Extension	1	89	631014	PTO ASSEMBLY	1
34	031240	PLATE	1	90	531026	SHEAR BOLT & NUT	1
35	631016	GEAR BOX ASSEMBLY	1	92	031214	SHIM	A/R
36	064095	WASHER 5/8"	1	93	066003	KEY, Woodruff No. 9	2
37	031042	SHEAVE	1	94	059004	CAPSCREW 3/8 x 1" Lg.	1
38	062034	CARRIAGE BOLT, 5/16" x 3/4" Lg.	6	95	065001	NUT 3/8"	2
39	531022	MOWER DECK	1	96	067030	HAIR PIN	1
40	031239	SKID	1	97	083131	SPRING	1
41	062010	CARRIAGE BOLT, 3/8" x 3/4" Lg.	3	98	064002	WASHER, 5/16 Wrought	2
42	031232	PIN	1	99	062036	CARRIAGE BOLT 5/16" - 18 x 1-3/4"	2
43	067004	PIN, Cotter 1/8" x 1" Lg.	8	100	731002	MULCHER (KIT ONLY)	1
44	031233	SHIELD	1	101	031564	SPACER	2
45	031234	PLATE	1	102	031559	YOKE, Attachment End	1
46	061048	MACHINE SCREW, Flat Hd. 5/16" x 1" Lg	2	103	031558	JOURNAL CROSS & BEARING	2
47	031237	BLADE	3	104	031557	YOKE, Tractor End	1
48	031191	WASHER	3	105	031563	YOKE AND TUBE	1
49	059153	CAP SCREW, Hex. Hd. 7/16" x 1" Lg.	3	106	031561	RETAINER CAP	1
50	074046	SCREW, Self Tapping 1/4" x 1/2" Lg.	2	107	031562	GREASE SEAL	1
51	064127	WASHER, Plain 1/4"	5	108	031560	YOKE & SHAFT	1
52	063002	LOCKWASHER, 1/4"	3	109	022093	ZERK FITTING	1
53	059028	CAP SCREW, Hex. Hd. 1/4" x 1/2" Lg.	3				

54" BLADE - MODEL 831004



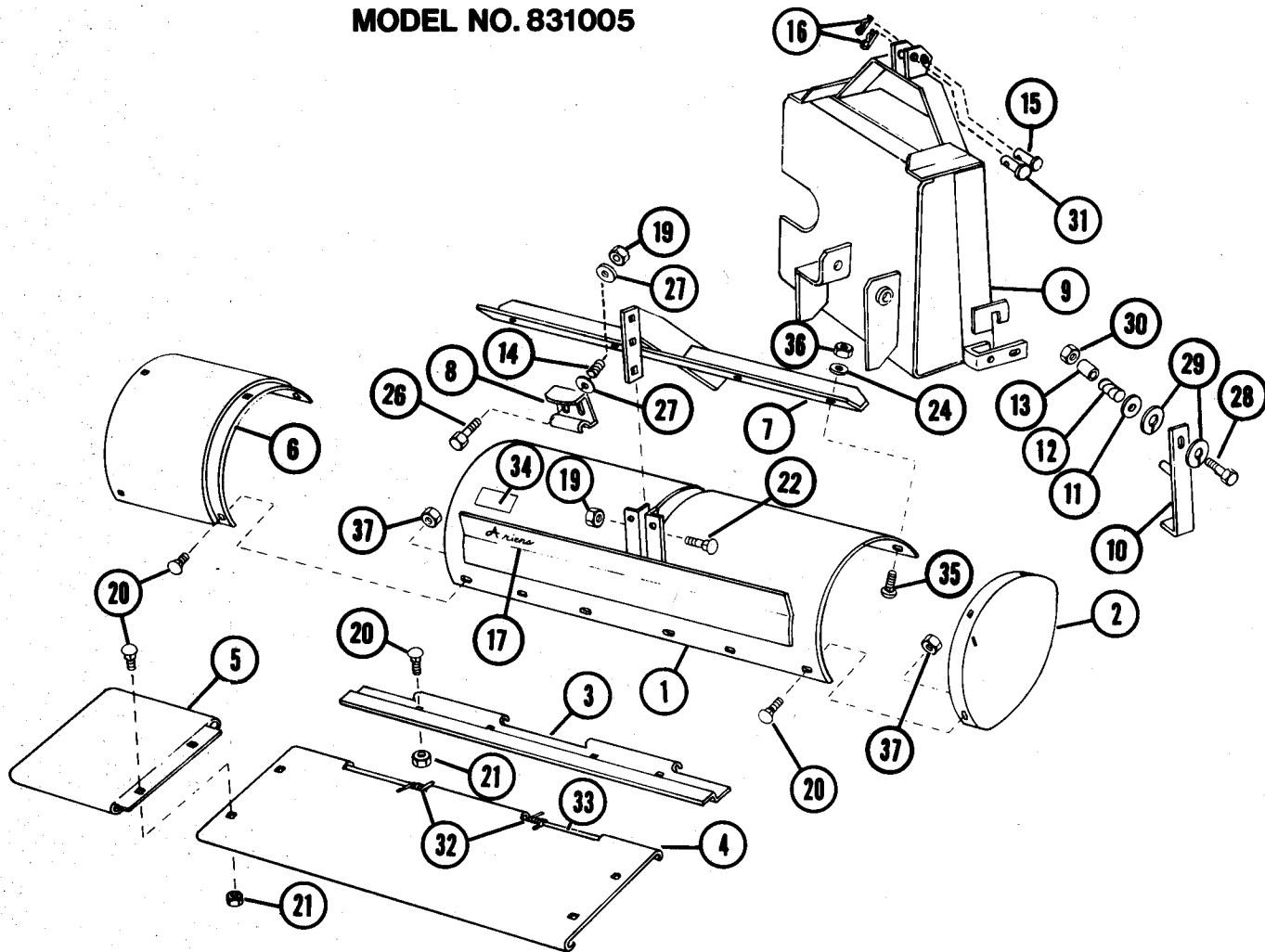
PART NO.	REF. NO.	DESCRIPTION	NO REQ'D	PART NO.	REF. NO.	DESCRIPTION	NO REQ'D
1	031250	FRAME	1	20	063021	LOCKWASHER, 3/8"	1
2	031254	LATCH PIN	1	21	065018	NUT, Hex 3/8"	1
3	059069	CAP SCREW, Hex Head, 5/16" x 1-1/4" Lg	1	22	031248	BLADE	1
4	065101	NUT, 5/16" - 18	2	23	031249	WEAR PLATE	1
5	067004	PIN, Cotter 1/8" x 1" Lg.	1	24	062015	CARRIAGE BOLT, 5/16" x 1" Lg.	9
6	083132	SPRING, Compression	2	25	065015	NUT, Hex 5/16"	9
7	031267	STRAP	1	26	063003	LOCKWASHER, 5/16"	9
8	031252	PIVOT PLATE	1	27	031277	JACK PIN	1
9	062034	CARRIAGE BOLT, 5/16" x 3/4"	1	28	067004	PIN, Cotter	1
10	031251	SUPPORT	1	29	067022	PIN, Cotter	4
11	031253	ROD	1	30	031271	SKID SHOE	2
12	067024	PIN, Cotter 1/8" x 3/4" Lg.	4	31	062029	CARRIAGE BOLT 3/8" x 1" Lg.	6
13	064008	WASHER, 3/8"	2	32	031273	ARM	2
14	031269	ANGLE	1	33	031272	ROD	1
15	031268	BLOCK JOINT	1	34	083133	EXTENSION SPRING	1
16	031276	PIN	1	35	031274	SUPPORT	1
17	067026	PIN, Cotter, 3/16" x 1" Head.	2	36	031275	ROD	1
18	059004	CAP SCREW, Hex Head, 3/8" x 1" Lg.	1	37	078067	ARIENS SCRIPT DECAL	1
19	029140	SPACER	1	38	078294	CAUTION DECAL	1
				39	065023	WING NUT	2

MODEL 34RT DRIVE CHAIN, HOUSING AND REAR LINKAGE MODEL NO.831005



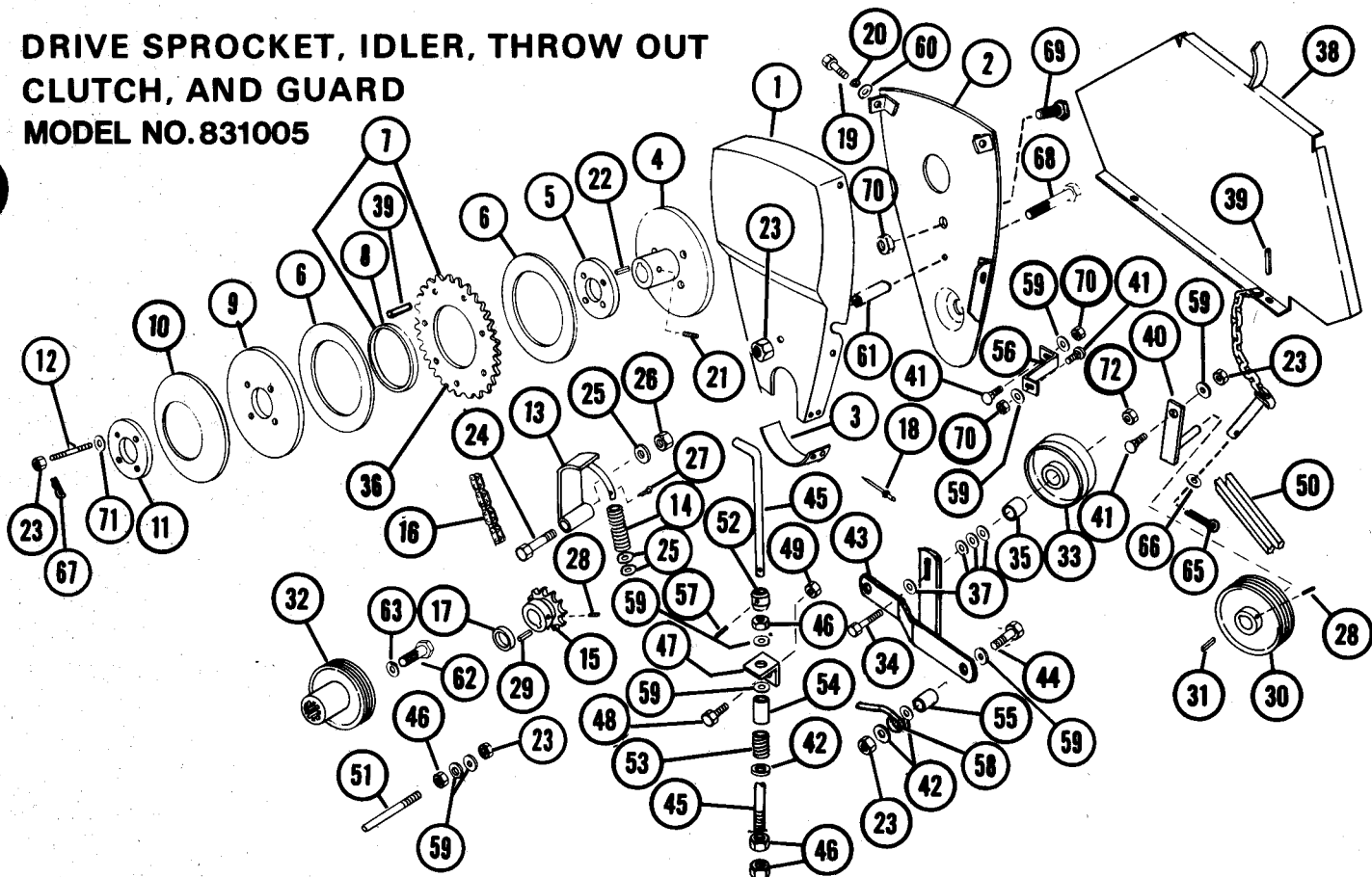
REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF. NO.	PART NO.	DESCRIPTION	NO REQ'D
1	31435	CHAIN HOUSING, L. H.	1	34	31412	UPPER LINK ARM, L. H.	1
2	31434	CHAIN HOUSING, R. H.	1	35	31413	UPPER LINK ARM, R. H.	1
3	31442	LOWER SHAFT WELD	1	36	31405	LOWER ARM WELD	1
4	31436	UPPER SHAFT WELD	1	37	31406	GREASE FITTING, 1/8" - 67-1/2°	1
5	31445	LOWER LINK PLATE	2	38	59146	CAP SCREW, Hex Head, 1/2" x 1-1/4"	2
6	31438	PIVOT HUB	2	40	065021	HEX NUT, 1/2"	2
7	31441	LOCKING COLLAR	2	41	31407	SPACER	2
8	54116	FLANGETTE	4	42	31409	UPPER LINK WELD ASSEMBLY	1
9	54115	BALL BEARING	2	43	22093	GREASE FITTING, 1/4" Straight	1
10	31437	PIPE SPACER, Upper Shaft	2			Self Tapping	1
11	31446	BEARING GUARD CAP	2	44	59167	CAP SCREW, Hex Head, 1/2" x 3-1/2"	1
13	54117	FLANGETTE	4	45	65017	HEX LOCKNUT, 1/2"	1
14	54043	BALL BEARING	2	46	64144	SPECIAL WASHER	2
15	31443	SPACER TINE SHAFT, Long	1	47	31379	LIFT LINK	1
16	31444	SPACER TINE SHAFT, Short	1	48	59166	CAP SCREW, Hex Head, 5/8" x 3-1/2"	1
17	31440	PADDLE CHAIN TIGHTNER	1			UNF, Special	1
18	31439	CHAIN, RD60, 50 Links	1	49	65002	HEX JAM NUT, 5/8"	3
19	31447	WEAR BAR	2	50	59165	CAP SCREW, Hex Head, 5/8" x 2"	1
20	31449	OIL HOLE COVER	1			UNF, Special	1
21	60032	HEX SOCKET SETSCREW, 5/16" x 1-1/2"	1	51	31381	PIN	1
22	62040	BOLT, 5/16" x 1/2"	11	52	31408	BUSHING	1
23	65101	HEX LOCKNUT, 5/16 - 18	14	53	59164	CAP SCREW, Hex Head, 1/2" x 2-1/2",	1
25	62044	CARRIAGE BOLT, 5/16" x 1-1/2"	6			Full Thread	
27	60006	HEX SOCKET SETSCREW, 5/16" x 1/4"	2	54	59083	CAP SCREW, 1/4 - 20 x 1 Gr. 5	4
28	62043	CARRIAGE BOLT, 3/8" x 1-1/2"	8	55	62012	CARRIAGE BOLT, 1/4" - 20 x 3/4"	4
29	65098	HEX LOCKNUT, 3/8"	16	56	59170	CAP SCREW, 5/16" - 18 x 2 Gr. 5	1
31	59162	CAP SCREW, Hex Head, 1/4" x 2" Gr. 5	2	57	31460	PIN	1
32	65070	HEX LOCKNUT, 1/4"	24	58	64069	WASHER, 3/8"	2
33	067029	HAIRPIN COTTER	2	59	64003	WASHER	1

MODEL NO. 831005



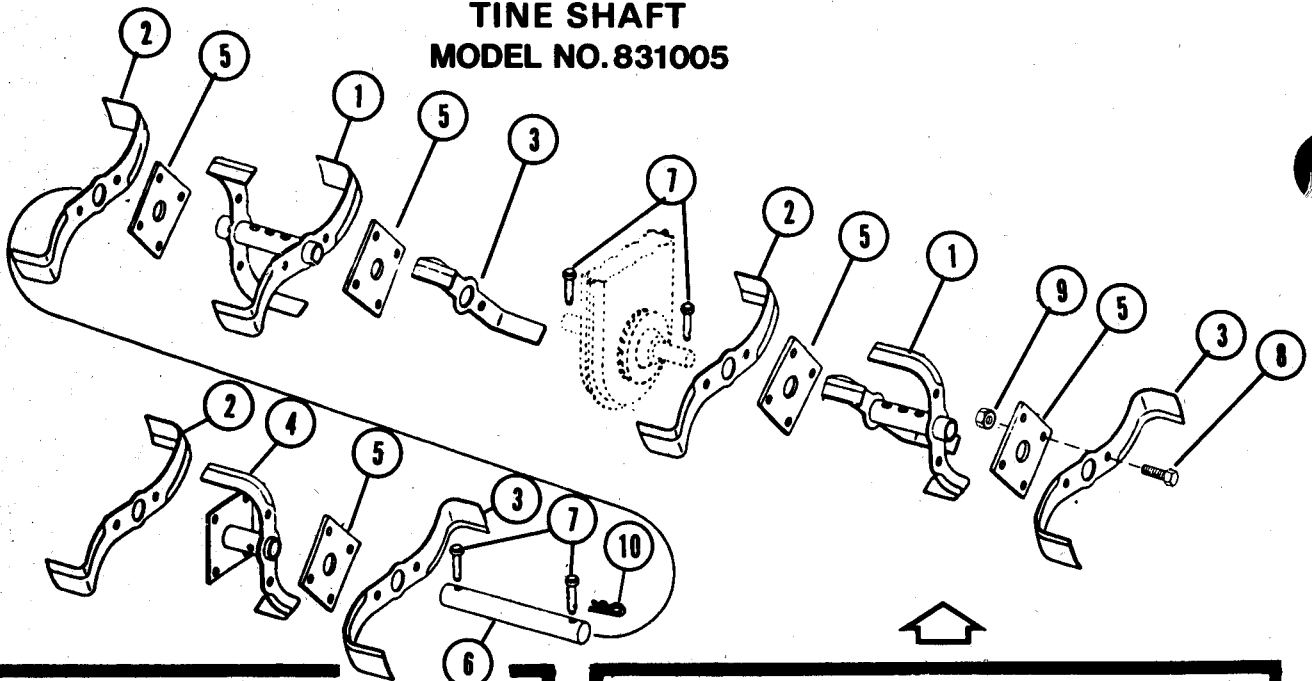
REF. NO.	PART NO.	DESCRIPTION	NO REQ'D	PART REF. NO.	DESCRIPTION	NO REQ'D	
1	531015	SHROUD	1	19	65070	HEX LOCKNUT, 1/4"	5
2	31457	SHROUD END COVER	2	20	62046	CARRIAGE BOLT, 5/16" x 3/4"	4
3	31422	HINGE PLATE	1	21	65101	HEX LOCKNUT, 5/16"	19
4	631055	LEVELER BLADE ASSEMBLY	1	22	62042	CARRIAGE BOLT, 1/4" x 3/4" Gr. 5	3
5	31456	LEVELER BLADE EXTENSION	1	24	64123	PLAIN WASHER, 5/16"	4
6	31455	SHROUD EXTENSION	1	26	59148	CAP SCREW, Hex Head, 1/4" x 1-3/4"	2
7	31424	SHROUD BRACE	1	27	64127	PLAIN WASHER, 1/4"	4
8	31425	LATCH	1	28	59147	CAP SCREW, 3/8-16 x 1-3/4"	2
9	31384	TRACTOR MOUNTING WELD	1	29	63029	WASHER, 3/8" LOCK	4
10	31380	KICK STAND WELD	2	30	65018	LOCKNUT, 3/8" - 16	2
11	31383	SPACER	2	31	31391	PIN	1
12	83138	SPRING	2	32	83145	SPRING	2
13	31382	SPACER	2	33	31468	ROD	2
14	83144	SPRING	2	34	78271	CAUTION DECAL	1
15	31385	SHIELD RETAINER PIN	1	35	62041	CARRIAGE BOLT	4
16	067029	HAIRPIN COTTER	2	36	65015	NUT	4
17	78295	SCRIPT DECAL	1	37	65095	CROWN NUT	15

DRIVE SPROCKET, IDLER, THROW OUT CLUTCH, AND GUARD MODEL NO.831005



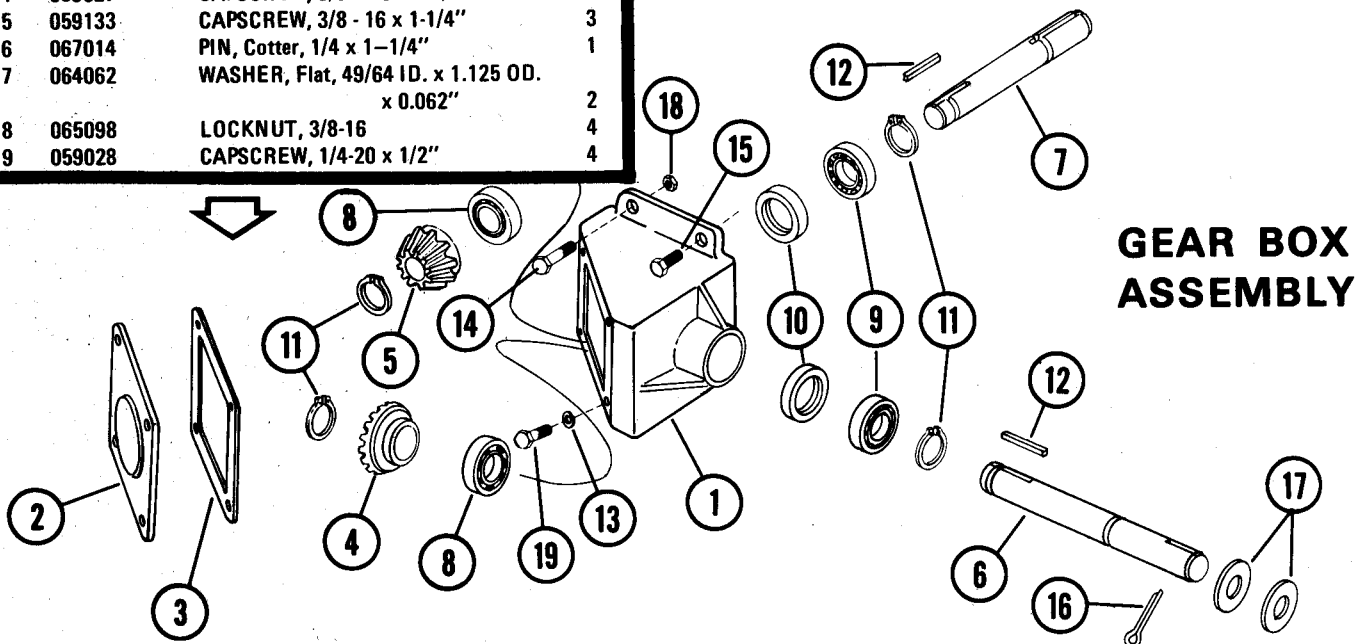
REF. NO.	PART NO.	DESCRIPTION	NO REQ'D	REF. NO.	PART NO.	DESCRIPTION	NO REQ'D
1	031417	OUTER CHAIN GUARD	1	36	031426	SPROCKET	1
2	031414	INNER CHAIN GUARD	1	37	064003	WASHER	4
3	031423	PLASTIC SHIELD	1	38	031418	GUARD	1
4	031427	HUB ASSEMBLY	1	39	058057	ROLL PIN, 5/16" x 3/4"	6
5	031428	SPACER RING	1	40	031400	BELT GUIDE	1
6	031432	CLUTCH FRICTION DISC.	2	41	062028	CARRIAGE BOLT, 3/8" x 1"	3
7	631058	SPROCKET	1	42	064145	WASHER, 3/8"	4
8	055092	BUSHING	1	43	031386	IDLER ARM	1
9	031429	OUTER DISC.	1	44	059147	CAP SCREW, HH, 3/8" x 1-3/4"	1
10	031430	BELLIEVILLE WASHER	1	45	031398	LEVER	1
11	031431	SPRING DEFLECTOR RING	1	46	065018	NUT, Hex 3/8"	3
12	031433	STUD	4	47	031396	ANGLE, Lever Mount	1
13	031420	CHAIN TIGHTNER PADDLE	1	48	059082	CAP SCREW, HH, 1/4" x 3/4"	1
14	083143	SPRING	1	49	065070	LOCKNUT, Hex, 1/4"	1
15	031402	SPROCKET, 10T	1	50	072105	"V" BELT (Matched Set of 2)	1
16	031404	DRIVE CHAIN	1	51	031401	ROD, Belt Guide	1
17	031403	SPROCKET SPACER	1	52	031399	LOCK HUB	1
18	068039	RIVET	2	53	083139	LEVER SPRING	1
19	059168	CAP SCREW, HH, 5/16" x 1/2" Grade 5	2	54	031397	LEVER SPACER	1
20	063003	LOCKWASHER, 5/16"	2	55	031387	BUSHING, Idler Arm	1
21	060004	SETSCREW, Hex Socket 5/16" x 1/4"	1	56	031394	BRACKET, Idler	2
22	066018	KEY, Square 1/4" x 1-3/4"	1	57	058048	ROLL PIN, 1/8" x 5/8"	1
23	065098	LOCKNUT, Hex 3/8"	7	58	031393	BELT FINGER	2
24	059169	CAP SCREW, HH 5/16" x 2-1/4" Grade 5	1	59	064008	WASHER 3/8"	8
25	064123	WASHER, 5/16"	3	60	064002	WASHER 3/8"	2
26	065101	LOCKNUT, Hex, 5/16"	1	61	031419	SPACER	1
27	067024	PIN, Cotter, 1/8" x 3/4"	1	62	059147	CAP SCREW, 3/8" - 16 x 2	1
28	060032	SETSCREW, Hex Socket, 5/16" x 1/2"	4	63	063004	LOCKWASHER, 3/8"	1
29	066013	KEY, Square 3/16" x 1"	1	65	067012	COTTER PIN	1
30	031392	SHEAVE	1	66	064064	WASHER, 3/4" I.D. x 1-3/8" O.D. x 1/8"	1
31	066023	KEY, Square 3/16" x 1-3/4"	1	67	067014	COTTER PIN, 1/8" x 1-1/4"	1
32	031550	PULLEY, PTO	1	68	059160	CAP SCREW, 3/8" - 16 x 2-3/4"	1
33	073065	IDLER	1	69	061048	MACHINE SCREW, 5/16" - 18 x 1" F. H.	1
34	059144	CAP SCREW, HH, 1/2" x 2-1/2" Grade 5	1	70	065095	CROWN LOCKNUT, 5/16" - 18	2
35	031395	SPACER	1	71	064063	WASHER, 1" I.D. x 1-1/2" O.D. x 3/64"	1
				72	065097	LOCKNUT	1

TINE SHAFT MODEL NO.831005



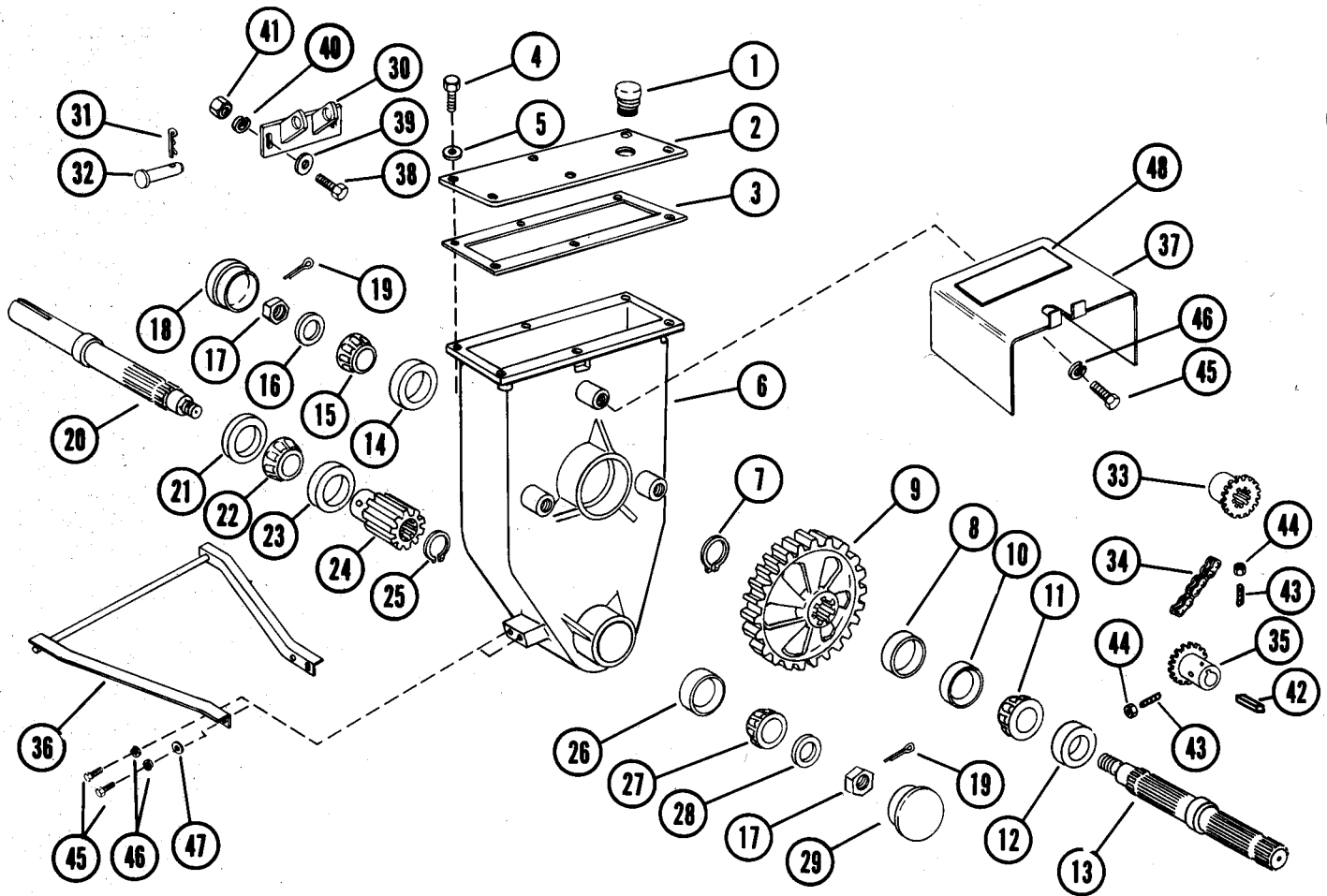
REF. NO.	PART NO.	DESCRIPTION	NO REQ'D
	631054	GEARBOX ASSEMBLY	1
1	031461	HOUSING	1
2	031462	LID	1
3	031463	GASKET	1
4	031464	OUTPUT GEAR	1
5	031465	INPUT GEAR	1
6	031466	OUTPUT SHAFT	1
7	031467	INPUT SHAFT	1
8	054118	BEARING, Ball	2
9	054119	BEARING, Ball	2
10	056080	SEAL, Oil	2
11	057012	RING, Retaining	4
12	066031	KEY, HT.	2
13	063002	LOCKWASHER, 1/4" Std.	4
14	059027	CAPSCREW, 3/8 x 16 x 1-3/4"	2
15	059133	CAPSCREW, 3/8 - 16 x 1-1/4"	3
16	067014	PIN, Cotter, 1/4 x 1-1/4"	1
17	064062	WASHER, Flat, 49/64 ID. x 1.125 OD. x 0.062"	2
18	065098	LOCKNUT, 3/8-16	4
19	059028	CAPSCREW, 1/4-20 x 1/2"	4

REF. NO.	PART NO.	DESCRIPTION	NO REQ'D
1	31448	TINE, Inner	2
2	31450	TINE, L.H.	3
3	31451	TINE, R.H.	3
4	31452	TINE EXTENSION	1
5	31453	PLATE	5
6	31454	SHAFT EXTENSION	1
7	31458	PIN, Tine Tube Connector	6
8	59026	CAP SCREW, Hex Head, 7/16" x 1"	22
9	65019	LOCKNUT, 7/16"	22
10	67004	PIN, Cotter	6



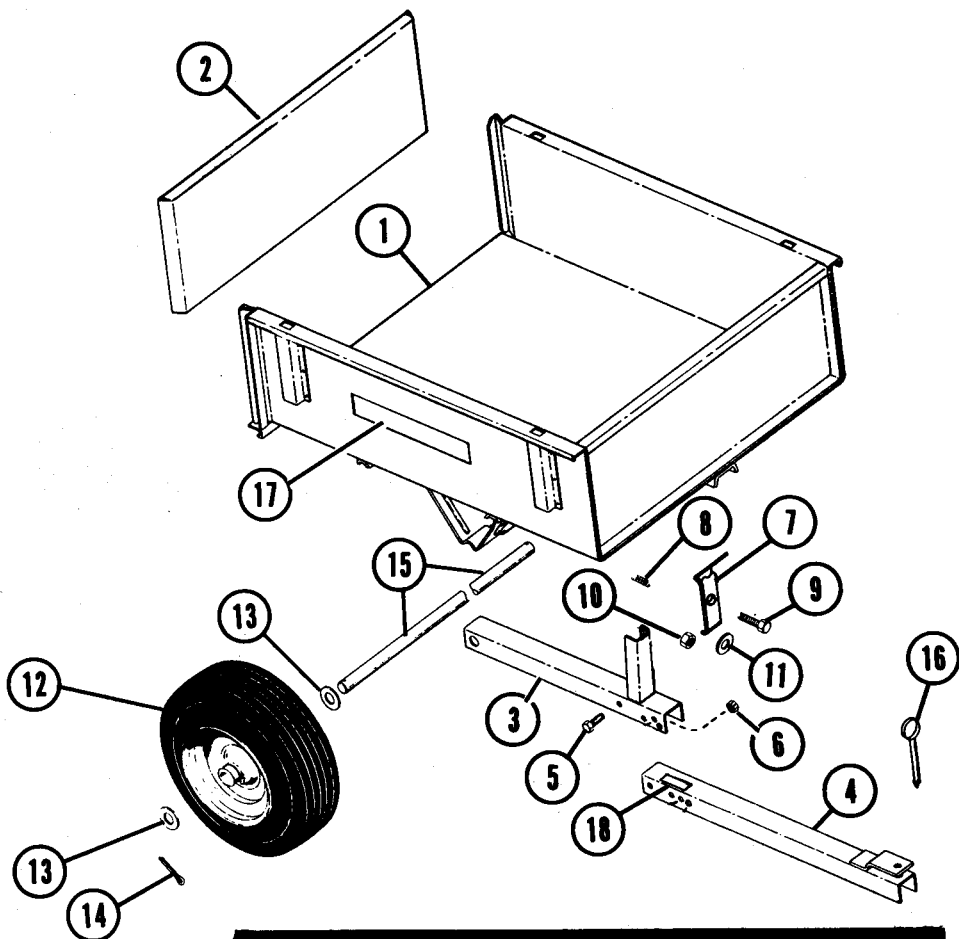
GEAR BOX ASSEMBLY

FRONT PTO - 540 RPM KIT - MODEL 731010



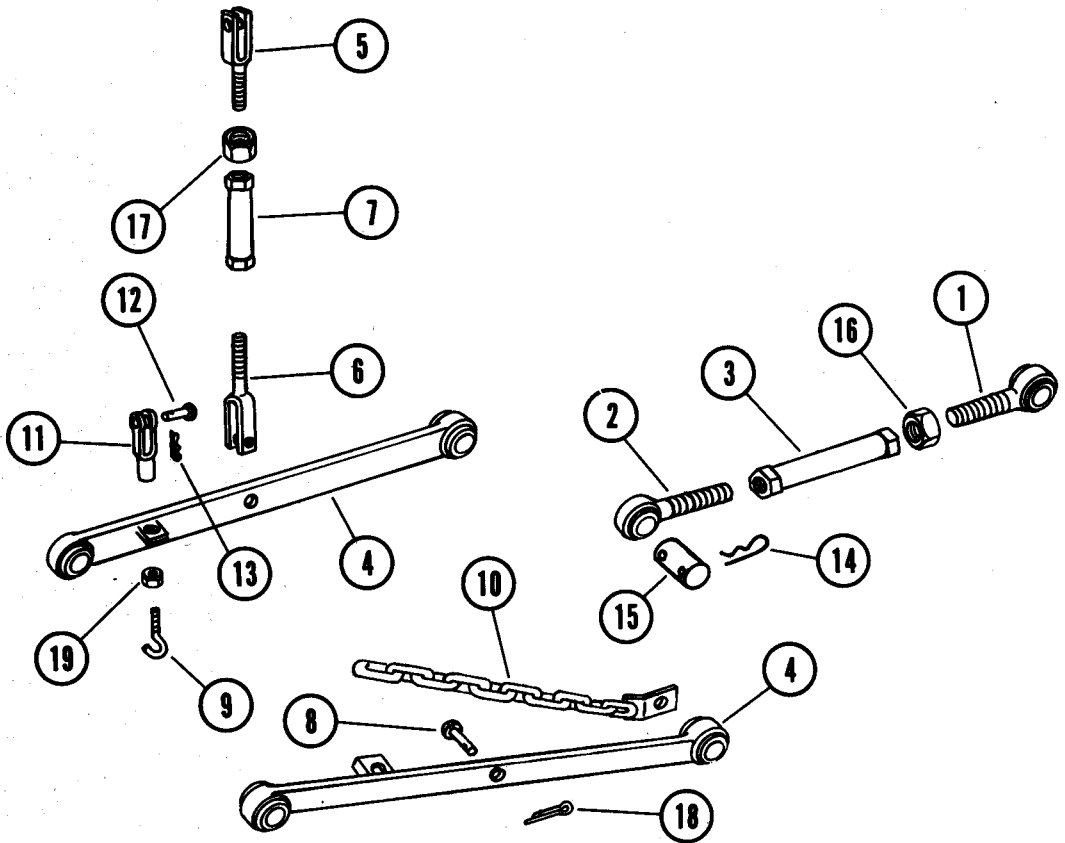
REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF NO.	PART NO.	DESCRIPTION	NO REQ'D
1	031307	AIR VENT	1	25	057062	SNAP RING	1
2	031331	COVER	1	26	054044	BEARING CUP	1
3	031330	GASKET	1	27	054045	BEARING CONE	1
4	059028	CAP SCREW, 1/4" - 20 x 1/2" Lg.	6	28	064009	WASHER, 13/16"	1
5	063002	LOCKWASHER 1/4"	6	29	031347	DUST CAP	1
6	031322	GEAR BOX	1	30	031316	PLATE	1
7	057056	SNAP RING	1	31	067029	PIN, Hair Cotter	1
8	031328	SPACER	1	32	031008	PIN	1
9	031329	GEAR	1	33	031319	HUB	1
10	054109	BEARING CUP	1	34	031321	CHAIN	1
11	054108	BEARING CONE	1	35	031320	SPROCKET	1
12	056077	SEAL	1	36	031318	BRACE	1
13	631044	SHAFT ASSEMBLY	1	37	031317	SHIELD	1
14	054070	BEARING CUP	1	38	059004	CAP SCREW 3/8" x 1" Lg.	2
15	054069	BEARING CONE	1	39	064008	WASHER 3/8"	2
16	064109	WASHER 3/4"	1	40	063021	LOCKWASHER 3/8"	2
17	065049	NUT, Slotted Jam 5/8"	2	41	065018	NUT 3/8"	2
18	031087	DUST CAP	1	42	066026	KEY 1/4"	1
19	067004	PIN, Cotter	2	43	060028	SET SCREW 5/16" - 18 - 3/4"	2
20	631043	SHAFT	1	44	065061	NUT, Jam 5/16"	2
21	056076	SEAL	1	45	059069	CAP SCREW 5/16" - 18 - 1-1/4"	7
22	054106	BEARING CONE	1	46	063003	LOCKWASHER 5/16"	7
23	054107	BEARING CUP	1	47	064002	WASHER 5/16"	2
24	031325	PINION GEAR	1	48	078271	CAUTION DECAL	1

DUMP TRAILER-8DT- MODEL 831007



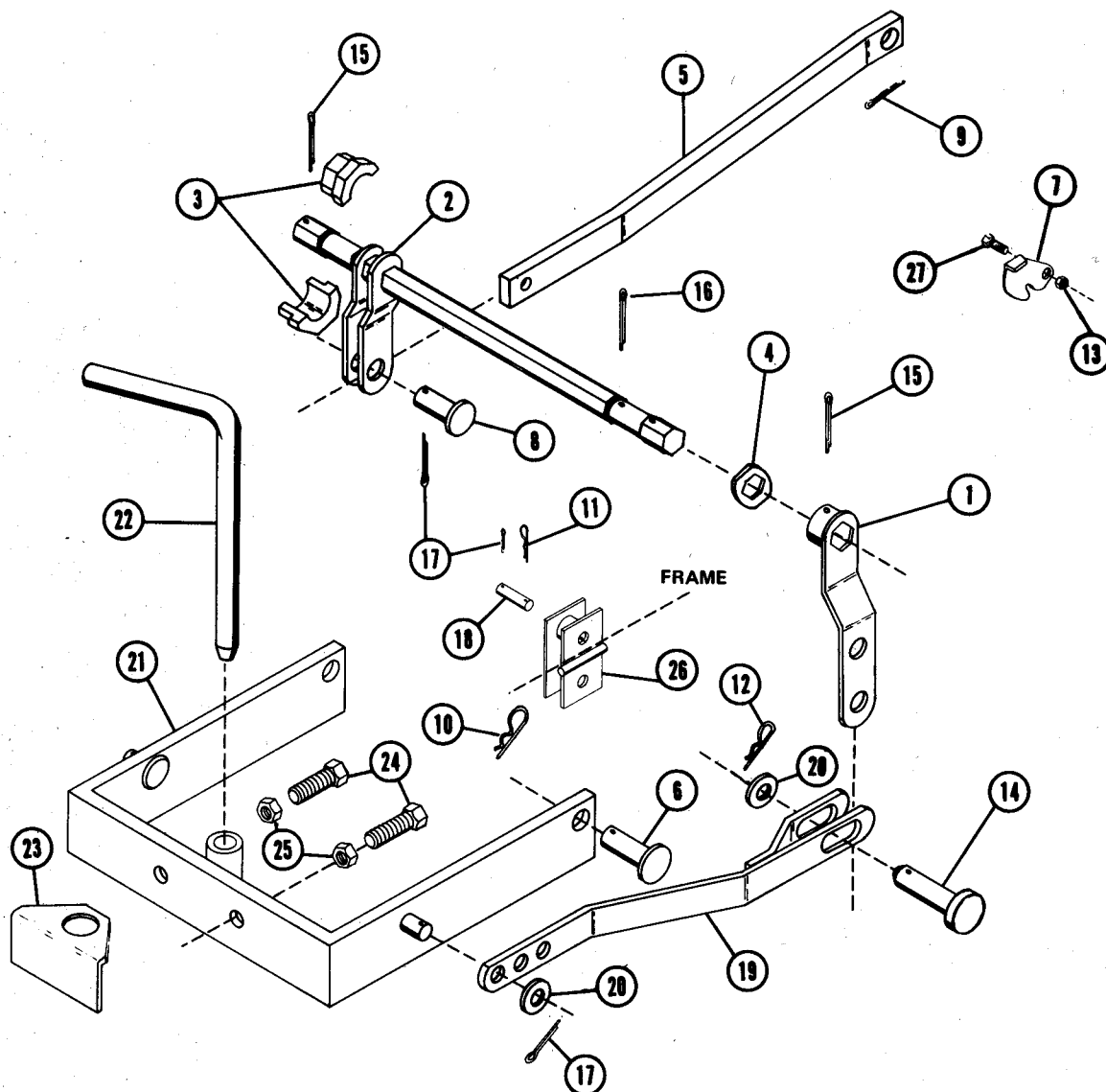
REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	031349	BOX	1
2	031350	TAILGATE	1
3	031351	TONGUE	1
4	031352	HITCH	1
5	059154	CAP SCREW, 3/8-16 x 3/4, H.H. Grade 5	4
6	065098	LOCKNUT, 3/8-16 UNC	4
7	031353	LOCK LEVER	1
8	083135	SPRING, Compression	1
9	059163	CAP SCREW, 5/16-18 x 2-1/2, H.H. Gr. 5	1
10	065101	NUT, 5/16-18	1
11	064002	WASHER, Flat, 5/16"	1
12	631047	TIRE & WHEEL ASSEMBLY	2
		Consisting of:	
		1 - 71108 Rim	
		1 - 71109 Tire	
		2 - 55094 Bushings	
		1 - 10352 Zerk	
13	064006	WASHER, Flat, 1"	4
14	067031	PIN, Cotter, 3/16 x 1-3/4	2
15	031354	SHAFT	1
16	031410	PIN, Locking	1
17	078295	DECAL, Arians	2
18	081162	LABEL, Serial No.	1

THREE POINT HITCH - MODEL 731011



REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	031300	ROD, L. H. Threads	1
2	031298	ROD, R. H. Threads	1
3	031299	TURN BUCKLE, 3/4"	1
4	031301	LOWER ARM	2
5	031295	CLEVIS ROD, L. H. Threads	2
6	031296	CLEVIS ROD, R. H. Threads	2
7	031297	TURN BUCKLE, 5/8"	2
8	068055	DRILLED RIVET, 1/2 x 1-1/4"	2
9	031293	EYE BOLT	2
10	031294	SWAY CHAIN	2
11	031292	YOKE END	2
12	031302	CLEVIS PIN	2
13	067029	HAIRPIN COTTER	2
14	067022	HAIRPIN COTTER	2
15	031012	PIN	1
16	065025	NUT, Hex Jam, 3/4"	1
17	065002	NUT, Hex Jam, 5/8"	2
18	067006	PIN, Cotter, 3/16 x 1-1/4"	2
19	065031	NUT, Hex, 5/16 UNF	2

SLEEVE HITCH KIT NO. 731003



REF. NO.	PART NO.	DESCRIPTION	NO. REQD.	REF. NO.	PART NO.	DESCRIPTION	NO. REQD.
1	031534	ARM	2	15	067025	COTTER PIN, 3/16 x 2	2
2	031533	SHAFT	1	16	067012	COTTER PIN, 3/16 x 1-1/2	1
3	055085	BEARING, Half	4	17	067004	COTTER PIN, 1/4 x 1	5
4	064113	WASHER, 1-1/32 Hex	1	18	031012	PIN	2
5	031278	LIFT LINK	1	19	031281	LIFT STRAP	2
6	031286	CLEVIS PIN 5/8 x 1-1/2	2	20	064003	WASHER 1/2	4
7	031348	LATCH	1	21	031280	BAIL ASSEMBLY	1
8	031535	CLEVIS PIN 1/2 x 1-1/2	1	22	031283	HITCH PIN	1
9	067023	COTTER PIN, .094 x 1-7/8	1	23	031282	STABILIZER PLATE	1
10	067013	HAIR PIN COTTER, 3/32 x 2-1/4	2	24	059013	CAP SCREW, 5/8-11 x 2-1/2	2
11	067022	HAIR PIN COTTER, .148 x 2-3/4	2	25	065007	NUT, 5/8-11	2
12	067008	HAIR PIN, .0915 x 1-7/8	2	26	031279	ADAPTOR HITCH PIVOT	2
13	065039	LOCKNUT, Hex 3/8 - 16	1	27	059023	CAP SCREW, 3/8-16 x 3/4	1
14	013315	CLEVIS PIN, 1/2 x 1-1/2	2				

CONTROLS

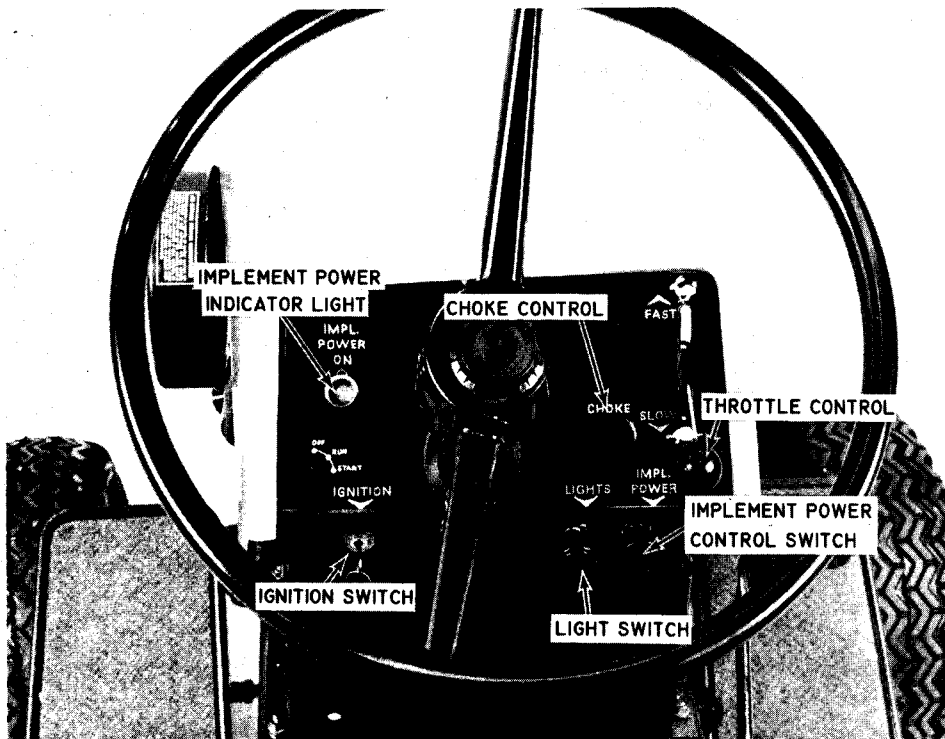
Implement Power Control Switch (1 - Figure 1). Pull the switch out (ON) to engage the electromagnetic clutch to drive the mower and front mounted attachments.

NOTE: This switch (1) must be pushed in (OFF) to disengage the drive before the engine will start.

Implement Power Indicator Light (2 - Figure 1). This light glows red when the implement power control switch (1) is pulled out to indicate that the mower or front mounted attachment is engaged.

Throttle Lever (3 - Figure 1). Raise the lever to increase engine speed. Lower the lever to decrease engine speed.

Ignition Switch (4 - Figure 1). Turn the key fully clockwise to start the engine and release when the engine starts. Turn the key counterclockwise to stop the engine.



Choke Control (5 - Figure 1). Pull choke control out when attempting to start a cold engine or when starting during cold weather. When engine starts, gradually push choke in. Normally, it is not necessary to use the choke when starting a warm engine.

Light Switch (6 - Figure 1). Pull the switch out to turn on the front and rear lights. The ignition key must be turned on before the lights work.

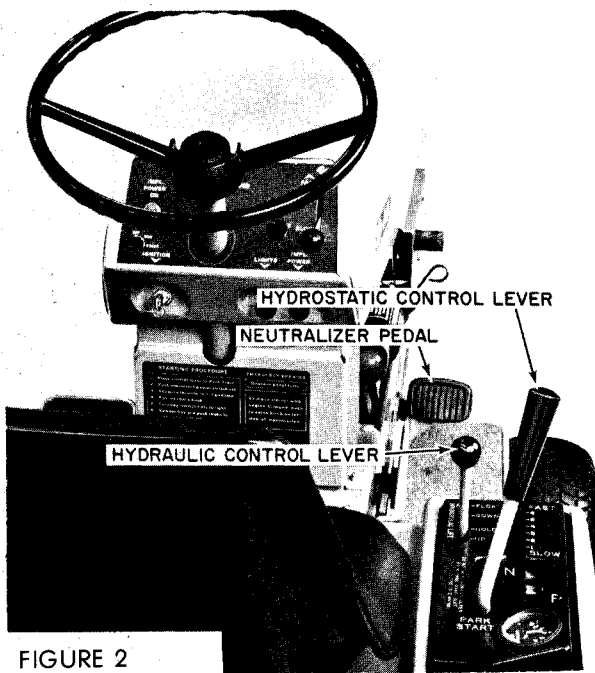


FIGURE 2

Manual Lift Lever (7 - Figure 29). (Model S-12 only). To raise attachment, pull lever all the way rearward until it locks in the raised position. To lower attachment, pull lever rearward slightly, press the thumb release and then push lever forward.

Hydraulic Control Lever (8 - Figure 2). (Models S-14 and S-16 only). This lever controls the hydraulic system used to raise and lower attachments. The lever has four positions — UP, HOLD, DOWN and FLOAT. The normal out-of-use position is the "HOLD" position, whereby the hydraulic cylinder is locked so that the attachment will not raise or lower. When it is desired to raise the implement, move the lever to the "UP" position; to lower the attachment move the lever to the "DOWN" position. Place the lever in the "FLOAT" position to allow the attachments to follow the ground contours.

Ammeter (9 - Figure 2). The ammeter indicates the rate of battery charge or discharge. The indicator should register on the (+) side of the dial when the engine is running at any speed above a slow idle. When the engine is idling or with a fully charged battery, the ammeter may not show charge. Should the ammeter register on the (-) side of the dial for an extended period of time with the engine running, it indicates the alternator is not charging the battery. Check the battery connections or contact your dealer.

Hydrostatic Control Lever (10 - Figure 2). This lever regulates both tractor speed and direction.

NOTE: This lever must be placed in the "Park-Start" position before engine will start.

Move the lever forward from neutral to increase the forward travel speed. Move the lever rearward to back the tractor and regulate reverse speed.



DO NOT MOVE CONTROL LEVER FROM "PARK-STOP" POSITION UNLESS ENGINE IS RUNNING.

Neutralizer Pedal (11 - Figure 2). When this pedal is depressed the hydrostatic control lever will return to neutral and stop the forward or reverse motion of the tractor. KEEP FOOT OFF PEDAL DURING NORMAL OPERATION OF WHEN MOVING THE HYDROSTATIC CONTROL LEVER. The pedal is intended only as an optional control for emergency stops. Use of the pedal and a hydrostatic control lever simultaneously can result in misadjusted hydrostatic linkage.

OPERATION

PRE-STARTING INSPECTION

Prior to starting the engine for each day's operation, the following checks and services should be performed:

- Check oil in engine crankcase. Add oil as required to maintain proper level.
- Check fuel supply. Use regular gasoline only.
- Check air filter for excessive dirt. Clean as required.
- Make visual check with regards to safety precautions, obstructions, lubrication, and maintenance.

STARTING THE ENGINE

Use the following procedure to start the engine:

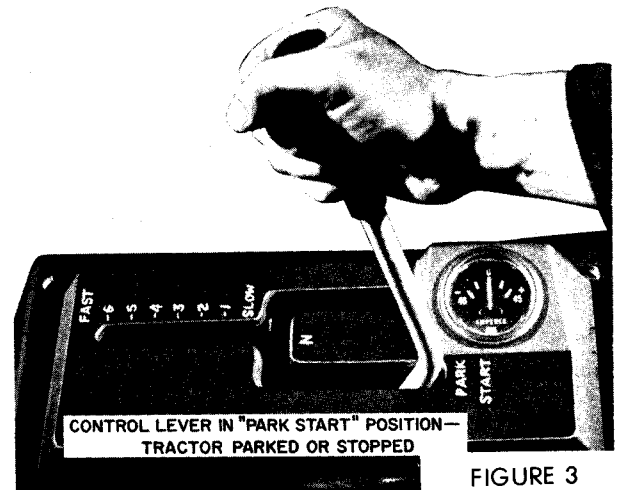


FIGURE 3

- Place the hydrostatic control lever in the "Park-Start" position, shown in Figure 3.

NOTE: This is a safety feature. The engine will not start unless the control lever is pulled all the way to the rear of the "Park-Start" slot.

- Be sure the Implement Power Control Switch (1) Figure 1, is pushed in (OFF).

NOTE: This is a safety feature. The engine will not start unless the switch is off (pushed in).

3. Raise throttle lever (3) Figure 1, to approximately $\frac{1}{2}$ fast position.

4. Pull choke control (5) Figure 1, all the way out if engine is cold. If engine is warm, little or no choke will be required.

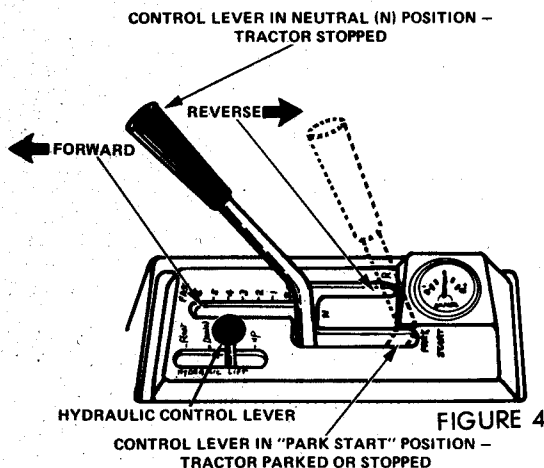
5. Turn ignition key (6) Figure 1, clockwise all the way. Release key as soon as the engine starts and push choke button in. In cold weather it may be necessary to push choke in gradually until engine warms up. If engine fails to start on the first attempt, turn key to off, wait a few minutes and try again. Do not operate the starting motor continuously for more than 30 seconds at a time.

Always allow engine to warm up before applying load. In below freezing weather, allow engine to run at a fast idle for a period of at least 5 minutes before using the tractor. Serious internal damage to the engine and hydrostatic transmission could result if this procedure is not followed.

OPERATING THE TRACTOR — HYDROSTATIC CONTROL LEVER

When the hydrostatic control lever is placed in the "Park-Start" position as shown in Figure 3, a pin engages the teeth on the reduction gear inside the rear axle housing. This mechanically locks the rear wheels and prevents them from turning. When the control lever is moved into the neutral (N) position, Figure 4, the pin is disengaged; however, the hydrostatic transmission will not allow the rear wheels to turn provided there is sufficient oil in the transmission and the free-wheeling valve is pulled out all the way out.

To move the tractor forward and to increase forward travel speed, gradually push the hydrostatic control lever forward in the slot from the neutral (N) position, shown in Figure 4. To stop or slow down, gradually pull the control lever toward the neutral (N) position.



NOTE: The lines and numbers next to the forward slot do not indicate a given speed and serve as guide lines only.

To move the tractor backward and increase reverse travel speed, generally pull the hydrostatic control lever back in the reverse (R) slot from the neutral (N) position, shown in Figure 4. To stop or

slow down, gradually push the control lever toward the neutral (N) position.

All braking is done by the control lever. To stop the tractor, return the control lever to NEUTRAL position. The neutralizer pedal is not a brake pedal, it will return the control lever to neutral and stop the tractor in an emergency.

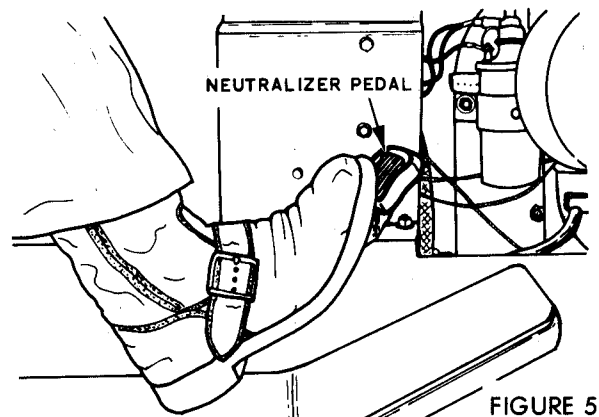
The hydrostatic control linkage can be forced out of adjustment by moving the hydrostatic control lever with the engine stopped. **DO NOT MOVE CONTROL LEVER FROM "PARK-START" SLOT UNLESS ENGINE IS RUNNING.**

Because of the dynamic braking characteristics of the hydrostatic transmission the control lever is extremely sensitive to the slightest movement when in the forward or reverse slots. Always move lever slowly when in these slots.

When the tractor comes under a load such as a steep grade or a tougher soil condition, it is normal for the hydrostatic drive to hesitate momentarily to build up pressure. Do not shift the control lever in an attempt to increase speed at such times. To do so will cause rapid changes in oil flow within the transmission which will cause the tractor to accelerate rapidly or jump. Awareness of this operating characteristic may prevent damage to your tractor, attachments and surrounding property.

When the tractor is stopped on a hill or grade and the control in neutral, a slight amount of tractor movement is considered normal.

The forward travel speed of the tractor is infinitely variable from 0 to 8 mph. The reverse travel speed is infinitely variable from 0 to 3 mph with the engine running full throttle.



NOTE: KEEP FOOT OFF PEDAL DURING NORMAL OPERATION OR WHEN MOVING THE HYDROSTATIC CONTROL LEVER. THE PEDAL IS INTENDED FOR EMERGENCY STOPS ONLY. USE OF THE PEDAL AND HYDROSTATIC CONTROL LEVER SIMULTANEOUSLY CAN RESULT IN MIS-ADJUSTED HYDROSTATIC LINKAGE.

THROTTLE LEVER SETTING

When operating power driven attachments such as the mower, snow thrower or the rotary tiller, run the engine at full throttle unless the attachment operator's manual specifies otherwise. Use the hydrostatic control lever, **not the throttle lever** to select a safe travel speed when using power driven attachments.

Safe or proper travel speed depends on the attachment used as well as the type of terrain or lawn, field and garden conditions in which the tractor is operated.

STOPPING THE TRACTOR

To stop the tractor, gradually return the hydrostatic control lever (10) Figure 2, to neutral (N). Then place the control lever in the "Park-Start" position.

EMERGENCY STOPS

For emergency or "panic" stops, the neutralizer pedal can be used, see Figure 5. When the pedal is depressed, the control lever is shifted to the neutral (N) position from either the forward or reverse position to stop the tractor.

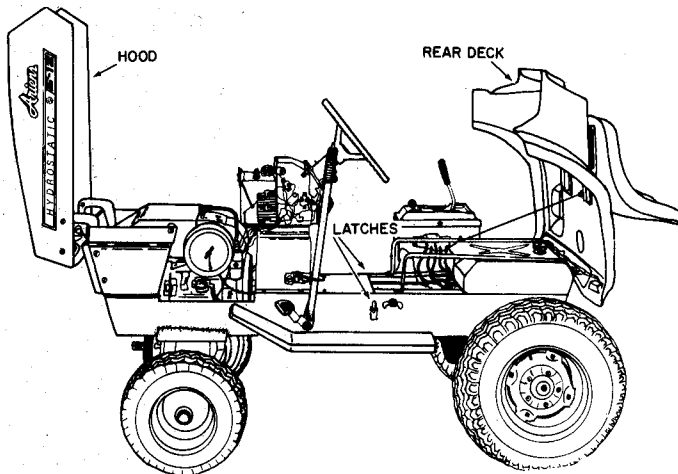


FIGURE 6

NOTE: Keep foot off pedal during normal operation of when moving the hydrostatic control lever. The pedal is intended for emergency stops only. Use of the pedal and hydrostatic control lever simultaneously can result in misadjusted hydrostatic linkage.

STOPPING THE ENGINE

Always use the following procedure to stop the engine:

1. Move the hydrostatic control lever (10) Figure 2, in "Park-Start" position.
2. Disengage Implement Power Control Switch (1) Figure 1, and rear driven attachments.
3. Lower attachment so that it is resting on the floor or ground.
4. Lower the throttle lever (3) Figure 1, and allow engine to idle for a short period before turning it off. Do not stop a hot engine at high speed as internal engine damage could result.
5. Turn the ignition key (6) Figure 1, counter-clockwise to stop engine.



IMPORTANT: Remove ignition key before dismounting from tractor. This will prevent children and inexperienced operators from starting the tractor.

RAISING THE REAR DECK

The transmission and control linkage are readily accessible by raising the rear deck, shown in Figure 6. To raise the rear deck, place the hydrostatic control lever in the "Park-Start" position, release the two latches and raise the rear deck to its stop.

CAUTION: Always shut off engine before raising the rear deck. Be sure to lock the rear deck down with the latches provided before operating the tractor.

RAISING THE HOOD

The engine, battery and electrical components are readily accessible by raising the hood, see Figure 6. To raise the hood grasp each side and raise it up and forward to its stop.



CAUTION: ALWAYS SHUT ENGINE OFF BEFORE RAISING HOOD. NEVER TOUCH MUFFLER, EXHAUST PIPE OR ENGINE UNTIL THEY HAVE HAD TIME TO COOL AFTER OPERATING THE ENGINE.

FREE-WHEELING VALVE

The free-wheeling valve is located under the rear deck and the left side of the transmission, see Figure 7. This valve must be kept closed (pulled out) at all times except when it becomes absolutely necessary to push the tractor with the engine stopped. If this should happen, open the valve by pushing the knob "in".

Before attempting to push the tractor be sure the hydrostatic control lever is in neutral (N) and the free-wheeling valve pushed in. If the lever is in the "Park-Start" position, the rear wheels will be mechanically locked.

The tractor will not move with the engine running unless the free-wheeling valve is closed (pulled out). Be sure to close the valve tightly after pushing the tractor.



FIGURE 7



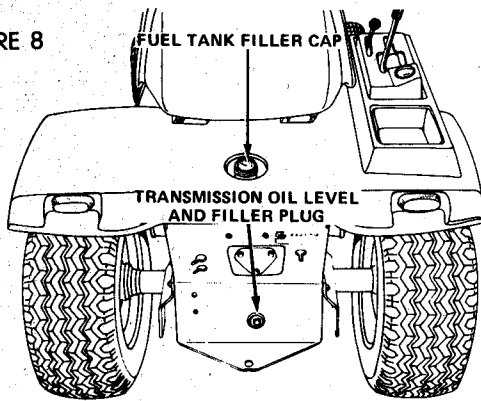
IMPORTANT: DO NOT PUSH OR TOW TRACTOR LONG DISTANCES AS INTERNAL TRANSMISSION DAMAGE COULD RESULT. LOAD TRACTOR ON A TRAILER OR TRUCK WHEN MOVING LONG DISTANCES.

LUBRICATION

FILLING THE TANK

The fuel tank filler cap is located behind the seat, see Figure 8. Wipe the dust and dirt from around the cap before removing it to prevent dirt from falling into the tank while filling. Use an approved gasoline container and keep it clean.

FIGURE 8



The fuel tank capacity is 4¾ U.S. gallons.

Use regular grade gasoline. Be sure the gasoline is clean and fresh. Do not use premium gasoline. Do not mix oil with gasoline.

ENGINE

Check the engine crankcase oil level daily or every 5 hours operation. It is essential that the oil level be maintained in the "safe" operating range as shown in Figure 9 at all times or serious engine damage could result.

To check the oil, stop engine and wipe all dirt and dust from around the dip stick, Figure 10. Pull dip stick out, wipe off the oil, re-insert dip stick and push it down tight. Pull the dip stick out and observe the oil level. Add sufficient oil of the proper viscosity to bring the oil up to the "fill" (F) mark, see Figure 9. Be sure tractor is level to correctly read dip stick.

CHECK OIL LEVEL

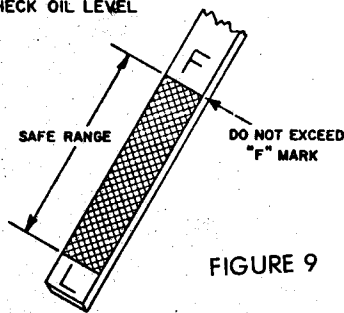


FIGURE 9

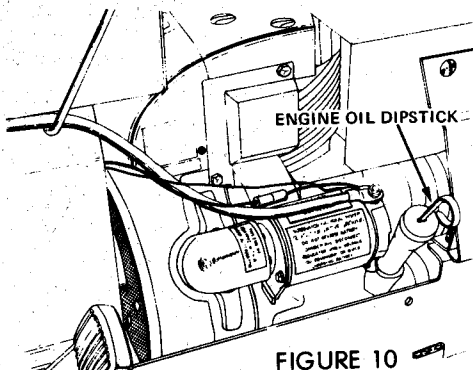


FIGURE 10

DO NOT OVERFILL — Oil level must never exceed full mark. Oil capacity of the engine crankcase is 4 U.S. pints.

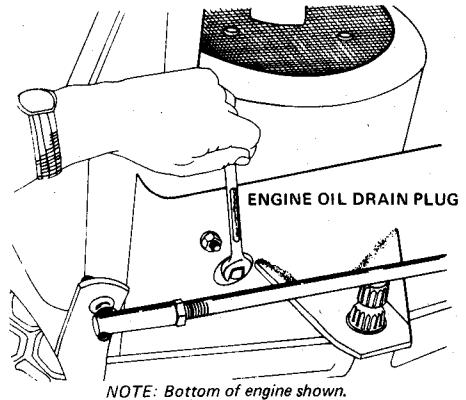
Use Ariens Gard-N-Yard oil (SAE 10W-30 MS classification) when using lawn and garden attachments. Use Ariens Sno-Thro oil (SAE 5W-20 MS classification) when using snow removal attachments.

CHANGE ENGINE OIL

When the tractor is new, the oil should be changed after the first 5 hours of operation.

Under normal operating conditions, the oil should be changed every 25 hours of operation. If extremely dusty or dirty conditions prevail, change oil more frequently.

Drain the crankcase by removing the drain plug, shown in Figure 11 and allow the oil to drain into a container. If possible, run engine just prior to changing oil, as the oil will flow more freely and carry away more contamination when hot.



NOTE: Bottom of engine shown.

FIGURE 11

Replace drain plug. Remove dip stick and refill crankcase with 4 U.S. pints of oil. Check oil on the dip stick to see that the oil level is at the full (F) mark. Do not overfill.

TRANSMISSION OIL GRADE AND VISCOSITY

Ariens Gard-N-Yard 10W-30 or an equivalent detergent type motor oil meeting the requirements of the American Petroleum Institute (A.P.I.) Service Classification MS should be used. Oil viscosity (weight) should be SAE 10W-30 and is recommended for year-round use.

TRANSMISSION OIL LEVEL

The hydrostatic transmission, differential and hydraulic lift system (if the tractor is so equipped) all operate from a common oil reservoir. Note that the rear end is the oil reservoir. The oil level in the reservoir should be checked every 25 hours of operation or monthly.



CAUTION: Proper oil level is essential for full braking effect and protection against severe damage to the transmission.

Use the following procedure to check the transmission oil level:

1. Drive tractor onto level ground.
2. On tractors with hydraulic lift systems, move hydraulic control lever to the "DOWN" position until the lift cylinder is fully retracted.
3. Stop engine.

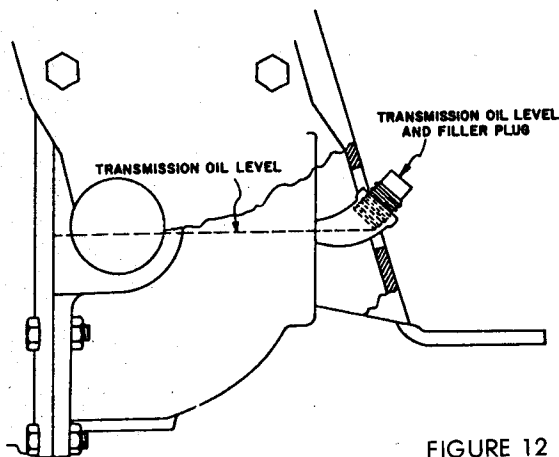


FIGURE 12

4. Wipe dirt from around the oil level and filler plug. See Figure 8.

5. Remove plug. Oil level should just enter the threaded part of the pipe elbow at the filler plug, see Figure 12.

6. If necessary, use a small funnel to add sufficient SAE 10W-30 with MS classification motor oil to bring the oil up to the proper level. Replace plug.

Be very careful to prevent dirt and foreign materials from entering the oil reservoir when checking or adding oil.

CHANGE TRANSMISSION FILTER (Figure 13)

When the tractor is new, change the filter after the first five hours of operation. Thereafter, the filter should be changed every 500 hours or once every two years. It is not necessary to change the transmission oil.

Use the following procedure to change the transmission oil filter.

1. Drive the tractor onto level ground.
2. Unscrew and discard oil filter. Use an oil filter removal tool if necessary.
3. Fill the new filter with 10W-30 oil. Moisten the rubber gasket with oil and install the filter.
4. Start engine and allow oil to circulate. Check for leaks.
5. Wipe dirt from around the oil level and filler plugs. See Figure 8. Remove plug.
6. Add sufficient SAE 10W-30 motor oil so that the oil just enters the threaded part of the pipe elbow at the filler plug. **DO NOT OVERFILL.** Install the filler plug.

Be very careful to prevent dirt and foreign materials from entering the reservoir or oil filter when changing the oil and filter.

Be sure breather is not clogged. Wipe clean with a rag and solvent.

OIL HYDROSTATIC CONTROL LINKAGE

Oil the roller in the cam slotted plate shown in Figure 13 with a few drops of light oil every 25 hours of operation or monthly.

GREASE STEERING SYSTEM

Under normal conditions the steering system should be lubricated every 50 hours of operation or quarterly whichever occurs first. The following list of

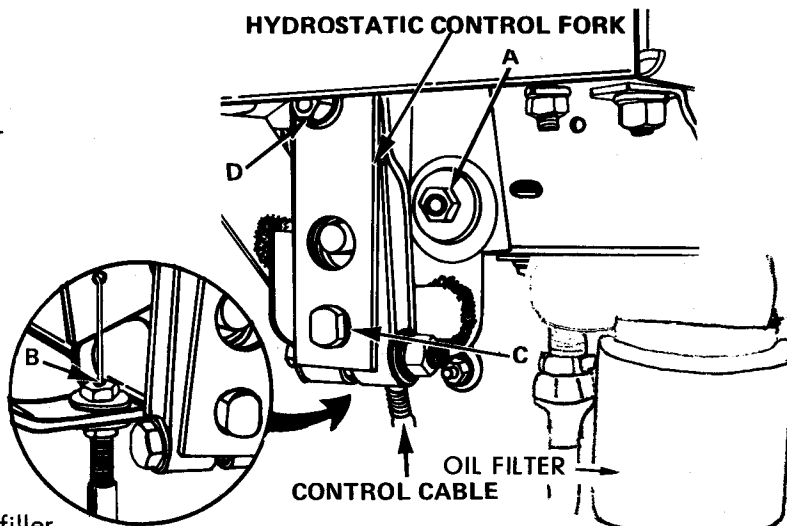


FIGURE 13

grease fittings are identified in Figure 14. Wipe each fitting clean before and after lubrication! Use a good grade of general purpose grease such as Ariens Moly Lithium Grease.

1. Left king pin.
2. Axle pivot.
3. Right king pin.
4. Steering gearbox.

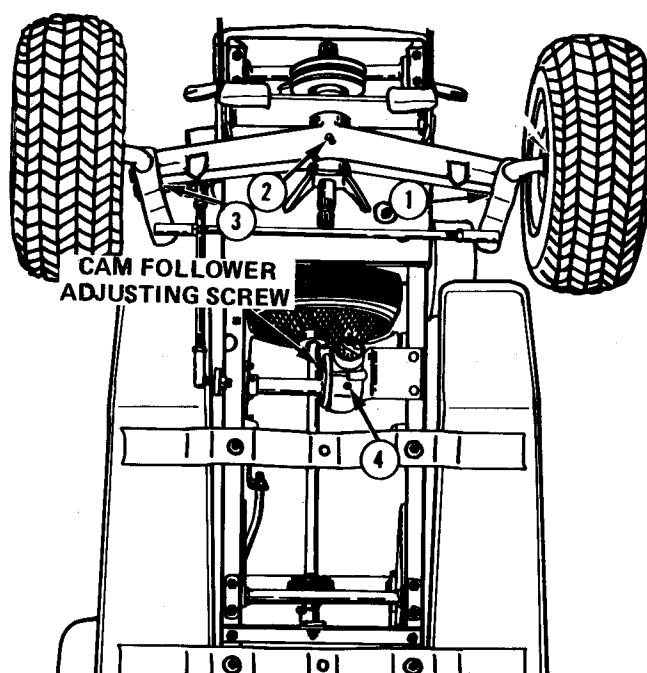
Rotate steering wheel clockwise until the spindle arm contacts the axle stop and fill gearbox until grease is forced out around the cam follower adjusting screw.

5. Periodically oil hydrostatic control pivot shaft at Point C, Figure 13.

6. Periodically lubricate all lift linkage pivot areas.

REPACK FRONT WHEEL BEARINGS

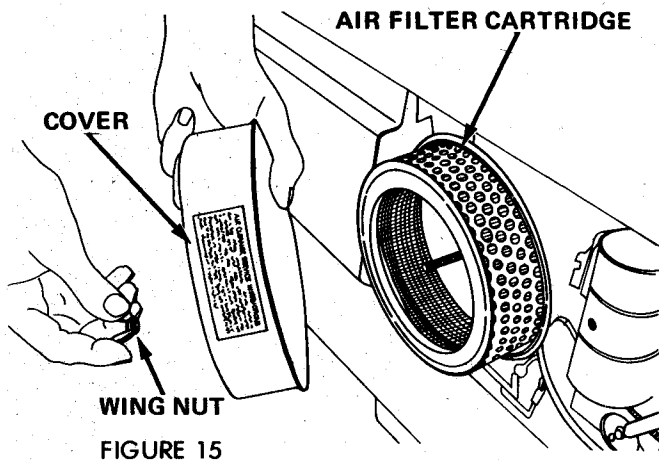
Remove front wheels and repack front wheel bearings with bearing grease every 250 hours or once each year.



MAINTENANCE

AIR FILTER SERVICE

Check the air filter daily or every 5 hours of operation. When operating in extremely dusty conditions, check the air filter daily.



To clean the cartridge, remove the wing nut and the cover, shown in Figure 15 and then remove the cartridge. Gently tap the cartridge on a flat surface. Do not use any liquid cleaner to wash cartridge. Do not use compressed air to remove dirt as this may rupture the cartridge.

Examine cartridge carefully and replace it with a new one if it is bent, crushed or if there is a noticeable loss of power. Reassemble cartridge and cover making sure it seats around the back plate. Install wing nut and tighten finger tight.

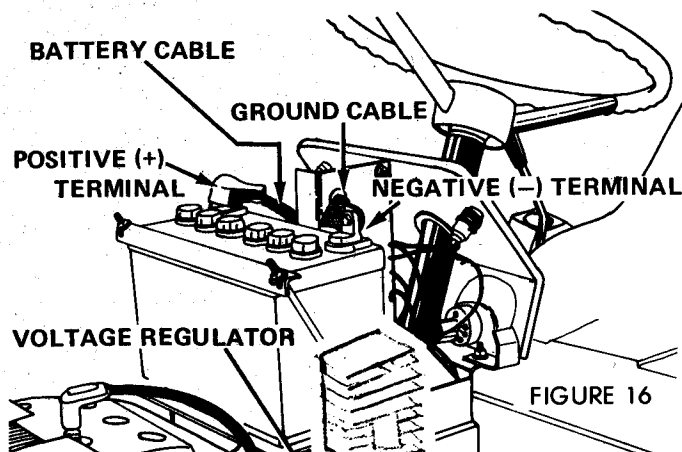


IMPORTANT: Do not run engine with air filter removed.

BATTERY SERVICE

Check the battery electrolyte level once each month. Add distilled water to bring the level to the bottom of the split ring in the filler tube of each cell.

Each spring and fall remove corrosion from the terminals and apply a light coat of grease to the terminals. Keep battery cables securely tightened to terminals and be sure battery is properly fastened down in battery holder at all times. Keeping battery clean will prolong battery life.

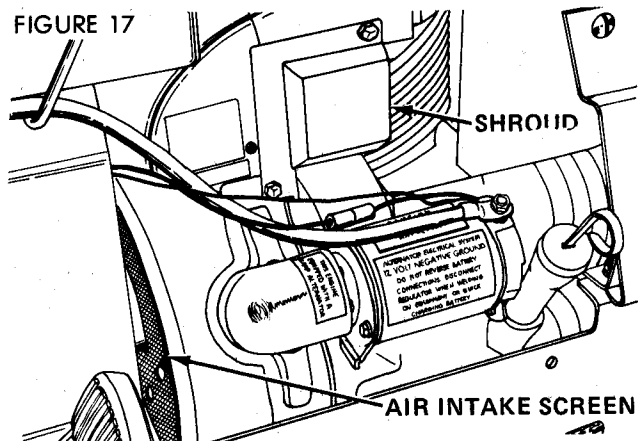


CAUTION: Storage batteries give off highly inflammable hydrogen gas. Do not allow sparks or flame near battery. Do not lay tools across battery terminals which may cause a spark resulting in an explosion.

Maintain the battery at full charge during storage during winter months to prevent freezing. When water is added during freezing weather, run the engine at least one hour to thoroughly mix the water and electrolyte.

When installing the battery, make certain that the ground cable is connected to the negative (-) terminal on the battery, see Figure 16. Be sure the battery cable is connected to the positive (+) terminal.

FIGURE 17



WARNING: Reversed battery cables or reversed cables from a battery charger or booster battery can cause damage to the voltage regulator. Always disconnect the regulator before using a charger, booster battery or when electric welding is done on the tractor.

ENGINE COOLING

The engine is air cooled. Air must circulate freely around the engine from the air intake screen shown in Figure 17 and over the cooling fins in the cylinder head and block to prevent overheating.

Every 50 hours of operation or quarterly check the air intake screen. Wipe away any dirt or debris which has collected on the screen. Remove the shroud. Figure 17 and inspect the cooling fins. Remove any dirt, or chaff accumulations from the cooling fins with compressed air. Replace shroud.

TRANSMISSION COOLING

Dirt and grime accumulations on transmission cooling fins can cause overheating. Check and clean the cooling fins every 50 hours of operation or quarterly.

Be sure transmission cooling fan is in good condition.

TIRE PRESSURES

Check tire pressures at least once each month. Inflate tires to pressures shown in the chart below. Use a low pressure tire gauge for accurate readings.

Keep tires properly inflated at all times. Over-inflation will cause operator discomfort. Under-inflation will cause short tire life. Always see that the tire valve caps are in place and securely tightened to prevent air loss.

TIRE SIZE	LOADING		
	Light (Lawn Work)	Medium (Snow - Thru)	Heavy
Front 16 x 6.50 x 8	8 p.s.i.	12 p.s.i.	16 p.s.i.
Rear 23 x 10.50 x 12	6 p.s.i.	8 p.s.i.	10 p.s.i.

FUEL PUMP AND FILTER

The engine may fail to start due to lack of fuel at the carburetor if the fuel pump shown in Figure 18 loses its prime. This can occur when the fuel tank is run dry or may be due to evaporation of fuel from the system after a storage period. In either case, make certain there is fresh fuel in the tank and operate the

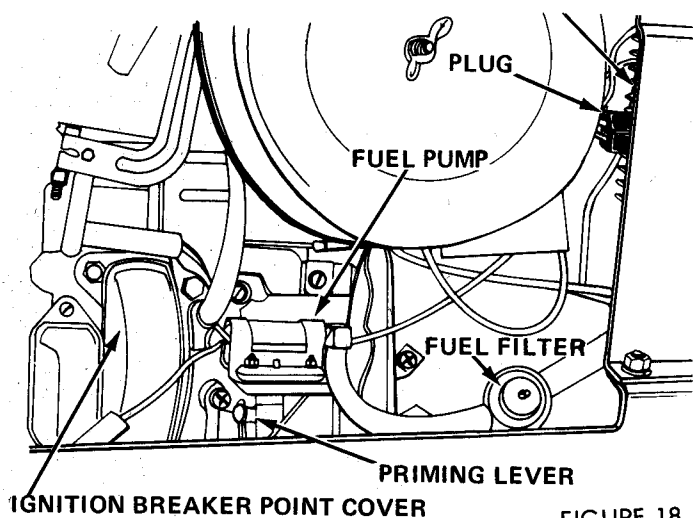


FIGURE 18

LUBRICATION AND PERIODIC SERVICE SCHEDULE

Hours of Operation/ Time Interval	Service Required
Every 5 Hours or Daily	Check Engine Crankcase Oil Service Engine Air Filter
Every 25 Hours or Monthly	Service Battery Check Tire Pressures Check Transmission Oil Level Change Engine Oil Clean Park Lock Assembly Oil Hydrostatic Control Linkage
Every 50 Hours or Quarterly	Grease Steering System Clean Engine Cooling Fins Clean Transmission Cooling Fins Check Spark Plug
Every 250 Hours or Yearly	Repack Front Wheel Bearings Clean Fuel Filter

NOTE: When tractor is new, change the engine oil and the transmission oil filter after the first five hours of operation.

priming lever on the fuel pump several times to start fuel flow.

If a faulty fuel pump is suspected, see your Ariens dealer.

When dirt or other foreign material is allowed to enter the fuel tank it will collect in the fuel filter shown in Figure 18. This will eventually cause fuel stoppage. The filter can be disassembled and cleaned.

ADJUSTMENTS

SEAT ADJUSTMENT

The seat is adjustable forward and backward to seven positions. To adjust seat position, grasp seat back and raise seat. Slide the seat forward or backward as required to the most comfortable position.

HYDROSTATIC CONTROL ADJUSTMENT

The hydrostatic controls should be adjusted so the tractor does not creep forward or backward when the control lever is in the neutral (N) slot in the control console as shown in Figure 19. In addition, the control lever should automatically be shifted to this position from either "forward" or "reverse" when the neutralizer pedal is fully depressed.

If the tractor creeps when the hydrostatic control lever is in the neutral (N) position on the control console, make the following adjustment:

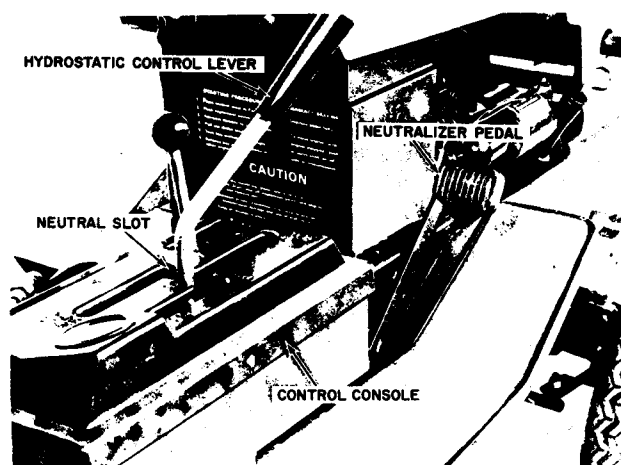


FIGURE 19

1. Jack up the rear of the tractor until the drive wheels clear the ground and **BLOCK SECURELY**.

2. With the control lever in "park-start" position, raise the rear deck.

3. Start engine; place control lever in the neutral position and increase engine speed to full throttle.

4. Loosen clamp bolt B, Figure 20 and 21 a sufficient amount to allow the cam follower to rotate. Turn the eccentric "clockwise" or "counterclockwise" as required until the rear tractor wheels completely stop. Retighten clamp bolt B.

Check adjustment by moving the control lever to both forward and reverse positions several times. Each time the lever is returned to neutral, the rear wheels should stop completely if they drift, re-adjust the eccentric until a true neutral position is found.



CAUTION: USE EXTREME CAUTION WHEN ADJUSTING THE HYDROSTATIC LINKAGE WITH THE ENGINE RUNNING DUE TO THE COOLING FAN BLADES TURNING.

If a positive neutral cannot be found by adjusting the eccentric, it will be necessary to adjust the hydrostatic linkage using the following procedure:

1. Use steps 1 and 2 of the previous procedure.
2. Loosen clamp bolt B, Figure 20 and rotate the eccentric until the cam follower roller is at its lowest position parallel to the dwell position of the cam slot as shown in Figure 20. Retighten bolt B. This will assure a maximum fine adjustment range.

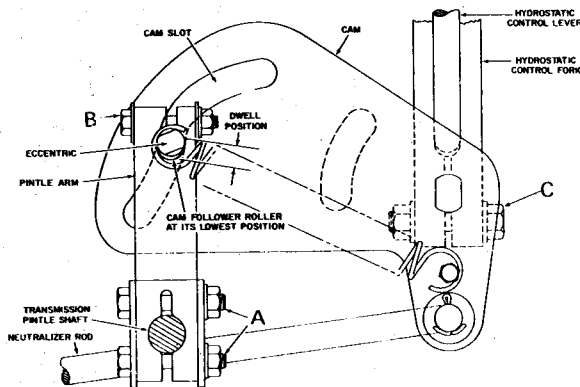


FIGURE 20

NOTE: The dwell position is the length of the cam slot, shown in Figure 20, where no pintle arm movement is encountered when the cam assembly is moved up and down.

3. With the control lever move the cam, Figure 20, up and down until the cam follower roller is centered in the cam dwell position. DO NOT adjust the hydrostatic control shifter fork if the control lever is not in the neutral slot of the console. This is the FINAL adjustment to make.

4. Loosen pintle lever clamp bolts A, Figure 20, a sufficient amount to allow the pintle lever to slip on the pintle shaft. With the control lever in the "park-start" position, start the engine and increase engine speed to between $\frac{2}{3}$ and full throttle. The

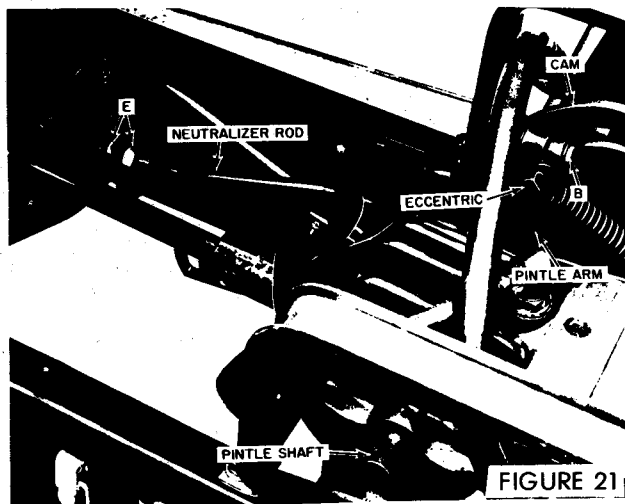


FIGURE 21

transmission will find its own neutral position. Re-check to assure that the cam follower roller is still in the center of the cam dwell position and stop the engine. Carefully tighten clamp bolts D to between .30 and 35 ft.-lbs. of torque. Be careful not to move the cam while tightening the bolts or the neutral adjustment will be incorrect.

5. Loosen hydrostatic control fork adjustment bolt D, Figure 25. Hold the cam so that the cam follower roller stays in the dwell position and move the hydrostatic control fork so that it aligns with the neutral slot in the control console. Securely tighten bolt D, Figure 25.

6. Any additional fine adjustment can be made by adjusting the eccentric roller.

If the neutralizer pedal does not automatically shift the hydrostatic control lever to the neutral position from either "forward" or "reverse" when the pedal is fully depressed, adjust length of the neutralizer rod by means of nuts E, Figure 21.

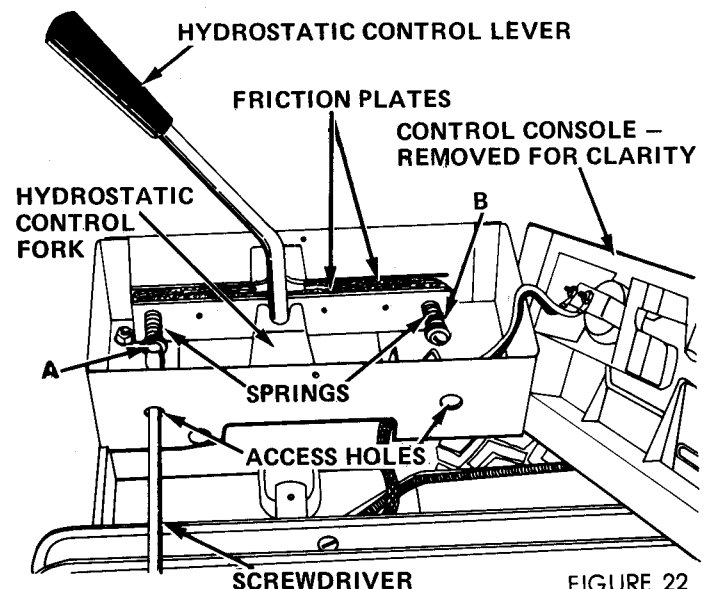
HYDROSTATIC CONTROL LEVER FRICTION ADJUSTMENT

The hydrostatic friction plates, shown in Figure 22, must be adjusted so the control lever moves through the "forward" and "reverse" modes with a minimum of force. However, there must be sufficient spring pressure on the friction plates so that, under normal operating conditions, the control lever will remain at any selected setting.

If the tractor has a tendency to slow down or speed up without touching the control lever, it will be necessary to increase the spring pressure on the friction plates by tightening the screws at A and B, Figure 22. Access to these screws can be gained by raising the rear deck of the tractor and inserting a screwdriver through the access holes as shown.

If the tractor has a tendency to speed up, tighten screw A slightly more than screw B.

If the tractor has a tendency to slow down, tighten screw B slightly more than screw A.



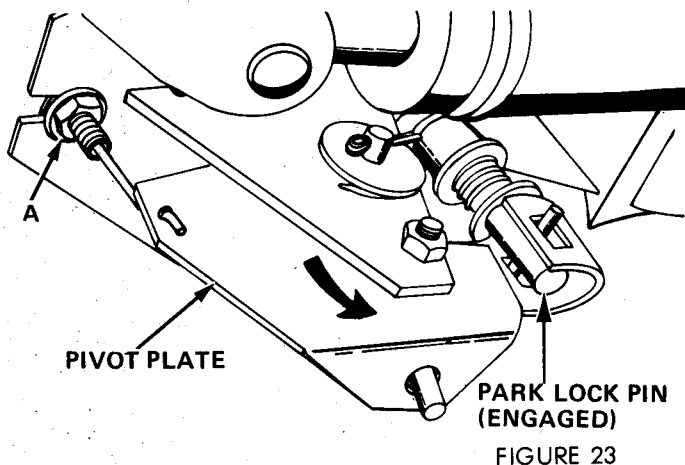
PARK LOCK MAINTENANCE AND ADJUSTMENT

When the hydrostatic control lever is placed in the "park-start" position, the cable shown in Figure 23 is pushed out of the cable housing causing the pivot plate to rotate in the direction of the arrow. This results in the park-lock pin engaging a reduction gear in the differential housing which locks the rear wheels. When the control lever is moved forward, the pivot plate rotates opposite to the direction of the arrow shown in Figure 23 and the park-lock pin disengages from the reduction gear thus unlocking the rear wheels.

The park-lock mechanism should be kept clean of any dirt or grass build-up and the moving parts should be oiled occasionally to assure that the park-lock functions properly.

The park-lock mechanism is properly adjusted when the over-center latch pin, Figure 23 actuates at Point C, Figure 24 (approximately $\frac{1}{2}$ to $\frac{2}{3}$ the length of the slot on the console cover), as the control lever is moved from the front of the slot back into the park-start position. A distinct "click" can be heard when the over-center latch actuates. When the mechanism is properly adjusted, the park-lock pin will engage the teeth of the reduction gear when the control lever reaches Point B, Figure 24, and the pin will be completely disengaged at Point A.

Adjustment is made by loosening nuts A, Figure 23, and moving the cable housing "in" or "out" until the over-center latch actuates when the control lever reaches Point C, Figure 24, as the lever is moved from the front of the slot, rearward into the park-start position. Moving the cable housing "in" toward the tractor causes the park-lock pin to engage later. Moving it "out" away from the tractor causes the pin to engage earlier in the reduction gear.



PARK LOCK BRAKE ADJUSTMENT

The park lock brake must be adjusted to hold the control lever at the rear of the "park-start" slot in the console. Otherwise, while starting the engine, the control lever will need to be held back to fully depress the safety switch located under the console cover.

The "park-lock" brake is adjusted by tightening or loosening nut A, Figure 25.

FRONT WHEEL TOE-IN ADJUSTMENT

Proper toe-in of the front wheels is necessary to

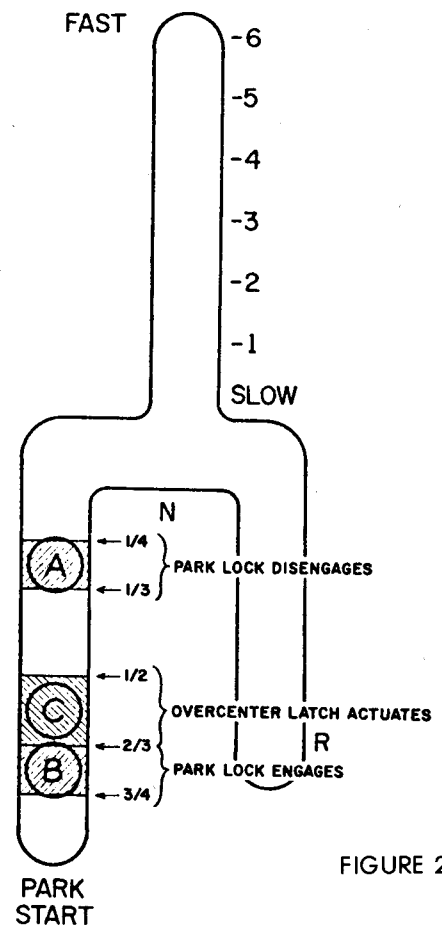


FIGURE 24

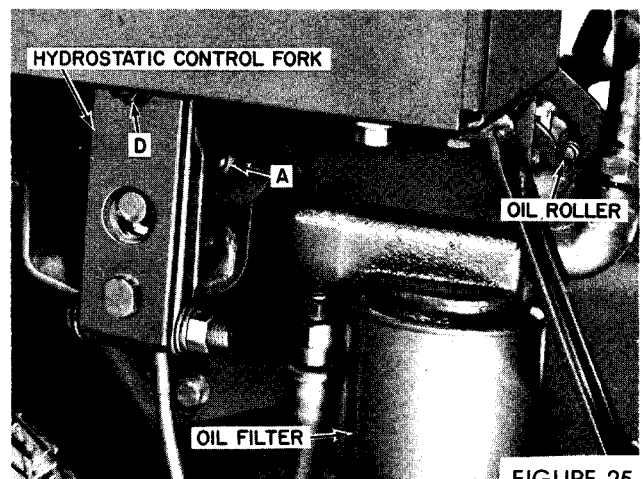
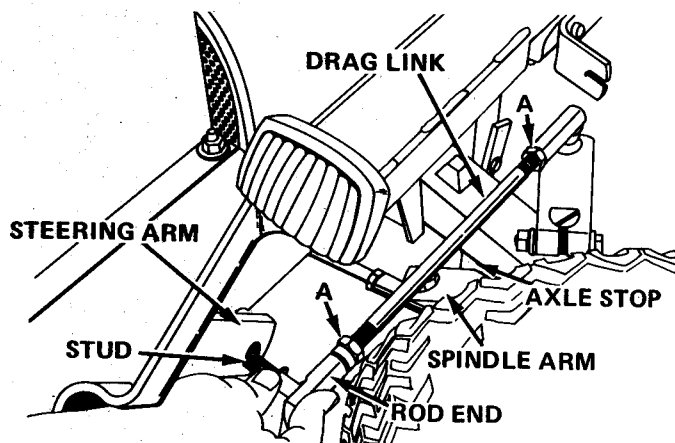


FIGURE 25

assure proper steering and to reduce tire wear. The proper amount of toe-in is when the front of the wheels are $\frac{1}{16}$ " to $\frac{1}{8}$ " closer together than the rear of the wheels, measured at the horizontal centerline of the rim flange.

If the steering develops a wandering characteristic or if excessive tire wear develops, the toe-in of the front wheels should be checked. If the toe-in is incorrect, adjust as follows:

1. Loosen jam nuts A and B, Figure 26.
2. Rotate tie-rod until toe-in is correct. Shorten tie-rod to decrease toe-in. Lengthen it to increase toe-in.
3. Tighten jam nuts A and B after correct toe-in obtained.



STEERING STOP ADJUSTMENT FIGURE 26

STEERING GEAR ADJUSTMENT

If loose play is noticed in the steering system after continued use, the steering gear may require adjusting to remove excessive backlash between the gears. Adjust steering gear using the following procedure:

1. Raise front of tractor so that the tires clear the ground.
2. Remove cotter pin identified in Figure 27.
3. Loosen jam nut C, Figure 27, and turn adjusting screw out (counterclockwise) $1\frac{1}{2}$ turns.
4. Tighten adjusting plug, Figure 27, to 12-15 ft.-lbs. of torque.
5. Rotate adjusting plug out slightly to align nearest slot in the plug with the cotter pin hole and reinstall the cotter pin.
6. Hold jam nut and turn adjusting screw, Figure 27, clockwise (in) until backlash is removed from steering wheel. **DO NOT FORCE ADJUSTING SCREW.** Tighten jam nut while holding adjusting screw in position.
7. Turn steering wheel from lock to lock and check for binding or dragging inside gearbox. If any binding or dragging exists, it will be necessary to loosen the adjusting screw and/or the adjusting plug slightly until steering wheel turns freely with no loose play.

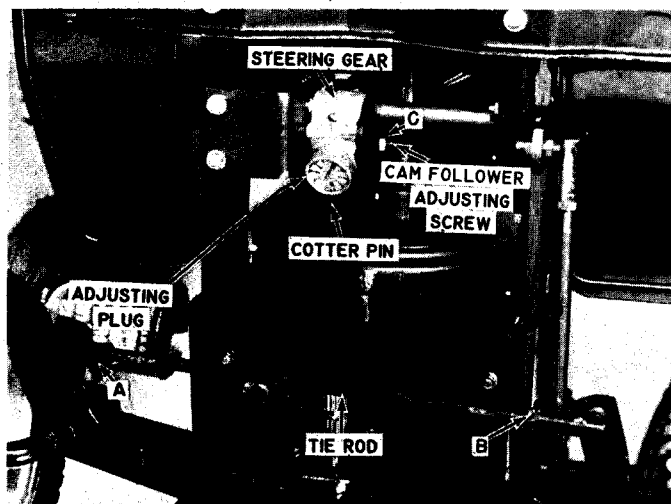


FIGURE 27

STEERING STOP ADJUSTMENT

When making a full right hand turn, the spindle arm should contact the axle stop as shown in Figure 26. When making a full left hand turn, the left spindle arm should contact the left axle stop. Proceed as follows to adjust the steering stops.

1. Rotate front wheels to the right until right spindle arm contacts the axle stop, Figure 26.
2. Remove drag link rod end from steering arm, Figure 26, and loosen jam nuts A.
3. Rotate drag link as required while preventing the loose rod end from turning until the stud is approximately $\frac{1}{2}$ hole to the rear of the hole in steering arm, Figure 26. Be sure axle stop contacts steering arm.
4. Reinstall rod end stud in steering arm and tighten jam nuts A.
5. Rotate wheels completely to the left. The left spindle arm should contact left axle stop. If it does not, repeat step 2 and shorten drag links slightly until both spindle arms contact their respective axle stops when making full turns in either direction.

REAR WHEEL TREAD ADJUSTMENT

The rear wheels are normally assembled in the narrow tread position, shown in Figure 28. The wheels can be turned on the hubs for a wider tread. The wide tread provides greater stability on hillsides and on rough terrain.

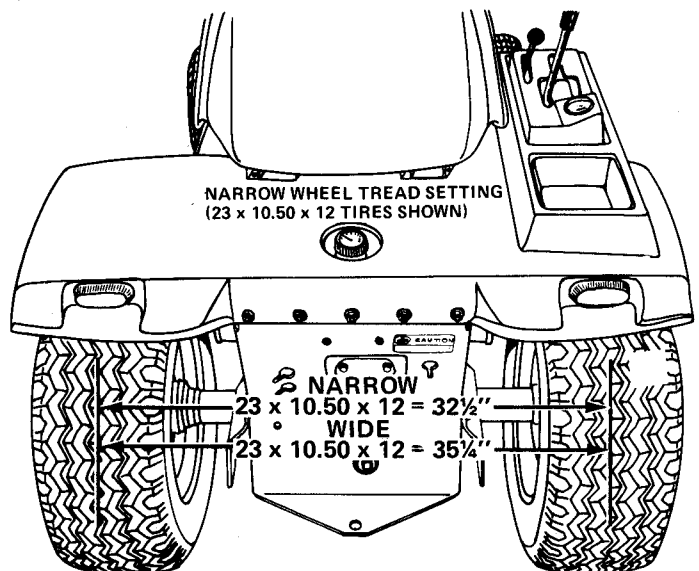


FIGURE 28

Remove the wheel bolts, turn the wheels around with the valve stems inward and re-assemble on the hub.

If Chevron tread tires are used, remove the wheel bolts and re-assemble the wheels on opposite sides of the tractor with the valve stems turned inward. Interchanging the wheels is necessary to maintain proper direction of rotation for traction tires.

MANUAL LIFT OPERATION

Manual Lift Lever (Figure 29) (Model S-12 only). To raise attachment, pull lever to the rear until the locking pin engages in the proper quadrant notch to obtain desired attachment height. To lower attach-

ment, pull lever rearward slightly, depress thumb release and push lever forward.



CAUTION: WHEN ADJUSTING CHAIN TENSION ALWAYS GRASP CHAIN HANDLE FIRMLY [NOT THE CHAIN] AS CONSIDERABLE TENSION IS ON THE CHAIN AND INJURY TO THE HANDS COULD RESULT.

The center rock shaft shown in Figure 30 is used to raise and lower the rotary mower. This rock shaft is connected to the manual lift lever through the link. The connection at the rock shaft is made through the slotted hole which allows the rock shaft to move up and down when in the lowered position, allowing the mower to float without causing the lift lever to move.

The center rock shaft flotation spring, shown in Figure 30, provides mower flotation. The tension on the spring can be increased by pulling on the chain, see Figure 30 and 31, and latching a chain link in the notch in the back of the tractor frame.

The front rock shaft works in conjunction with the center rock shaft through the manual lift lever. It is used to raise and lower the front mounted attachments such as the blade and snow thrower.

The two springs shown in Figure 30 are used to provide lift assist. The tension on these springs should be adjusted using the chains shown in Figure 31, so the front mounted attachments can be raised or lowered with the lift lever by the operator.

HYDRAULIC LIFT OPERATION

The hydraulic lift system is standard equipment on the S-14 and S-16 along with the front rock shaft.

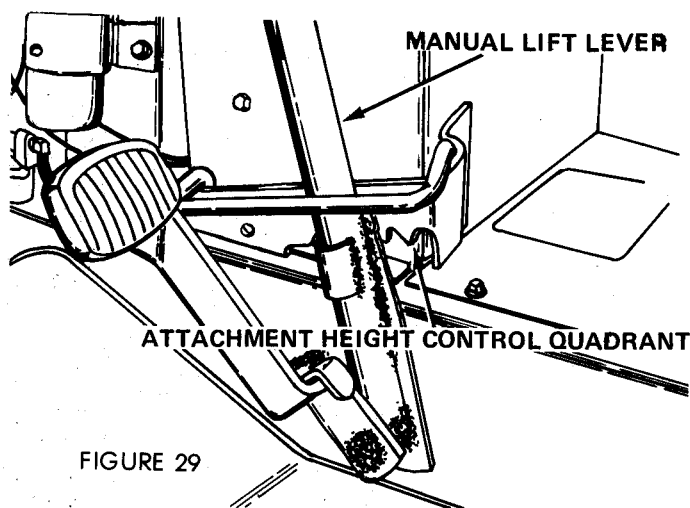
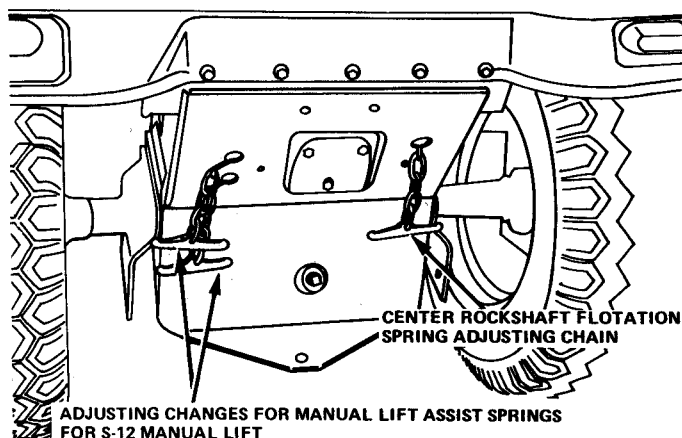


FIGURE 29

The hydraulic control lever is located on the control console, shown in Figure 32. It is a UP, HOLD, DOWN and FLOAT. The normal out-of-use position is the "HOLD" position whereby the system locks the cylinder so that the attachment will not lower or raise. When it desired to raise the attachment, the lever is pulled to the "UP" position and the cylinder is actuated to lift the attachment. When the lever is moved to the "DOWN" position, the oil pressure in the cylinder is reversed and the cylinder forces the attachment down.



When an attachment is being used which is designed to follow ground contours, the lever should be placed in the "FLOAT" position. The cylinder is then free to move as the attachment position requires.

Figure 33 shows the components of the hydraulic lift system. The hydrostatic transmission charge pump supplies the oil flow from the rear axle transmission oil reservoir. Oil flow to and from the cylinder is controlled by the valve. The back end of the cylinder is anchored to the tractor frame. The forward end of the cylinder is pinned to the lower end of the bell crank.

When the cylinder is extended or retracted, the bell crank pivots and raises or lowers both the front and center rock shafts at the same time through the front and center rock shaft linkages shown in Figure 34. The connection to the center rock shaft is made through the slotted hole which allows the center rock shaft to move up and down, allowing the mower to float independent of the flotation provision in the hydraulic system.

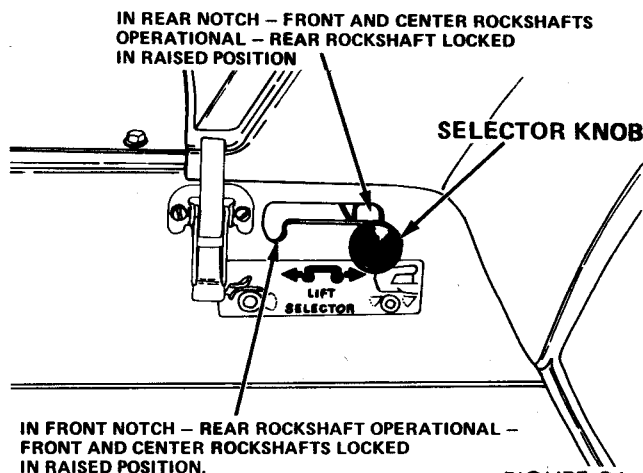


FIGURE 34



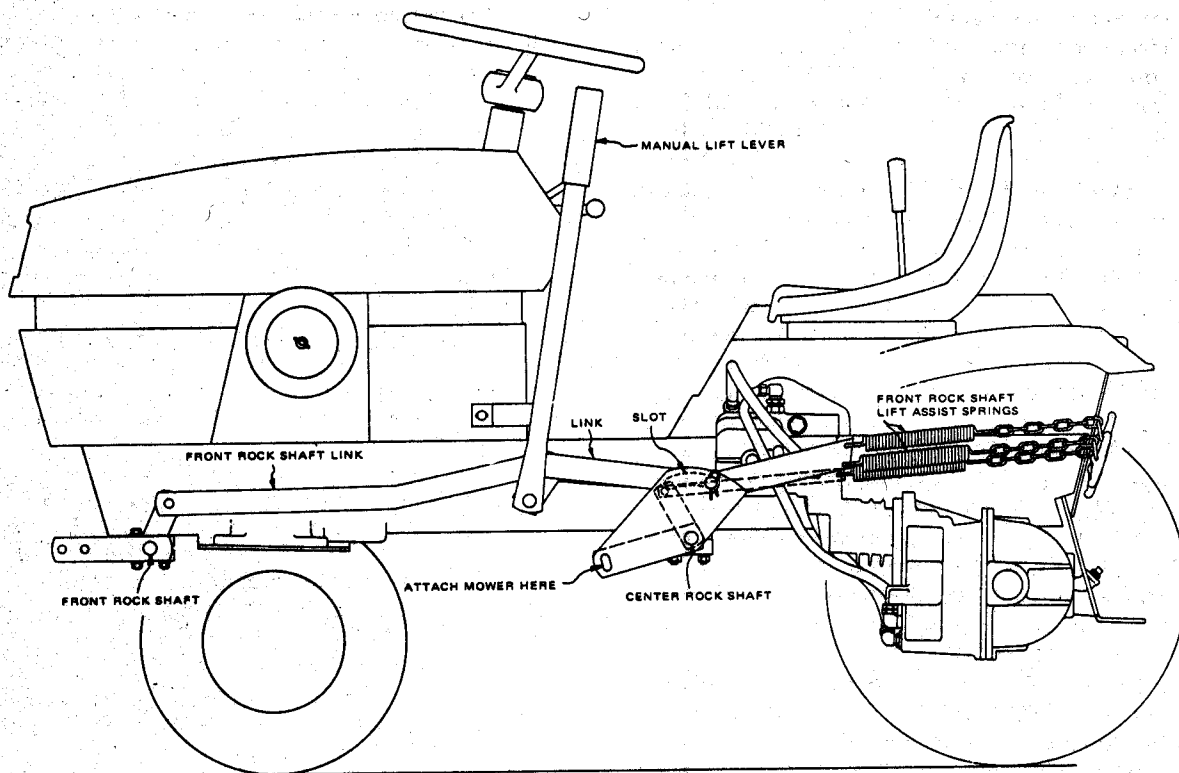


FIGURE 30

The center rock shaft flotation spring shown in Figure 34 provides mower flotation. The tension on the spring can be increased by pulling the chain shown in Figure 31 and latching a chain link in the notch in the back of the tractor frame.

HYDRAULIC LIFT REAR ROCK SHAFT

The rear rock shaft comes with a lift selector

device so that the front and center rock shafts can be operated independently of the rear rock shaft while utilizing only one hydraulic cylinder. The alternately latched, split lift linkage system holds the front and center rock shafts in their raised positions while the rear rock shaft is operated by the cylinder or vice versa. This allows a rear mounted attachment to be used without removing the front or center mounted

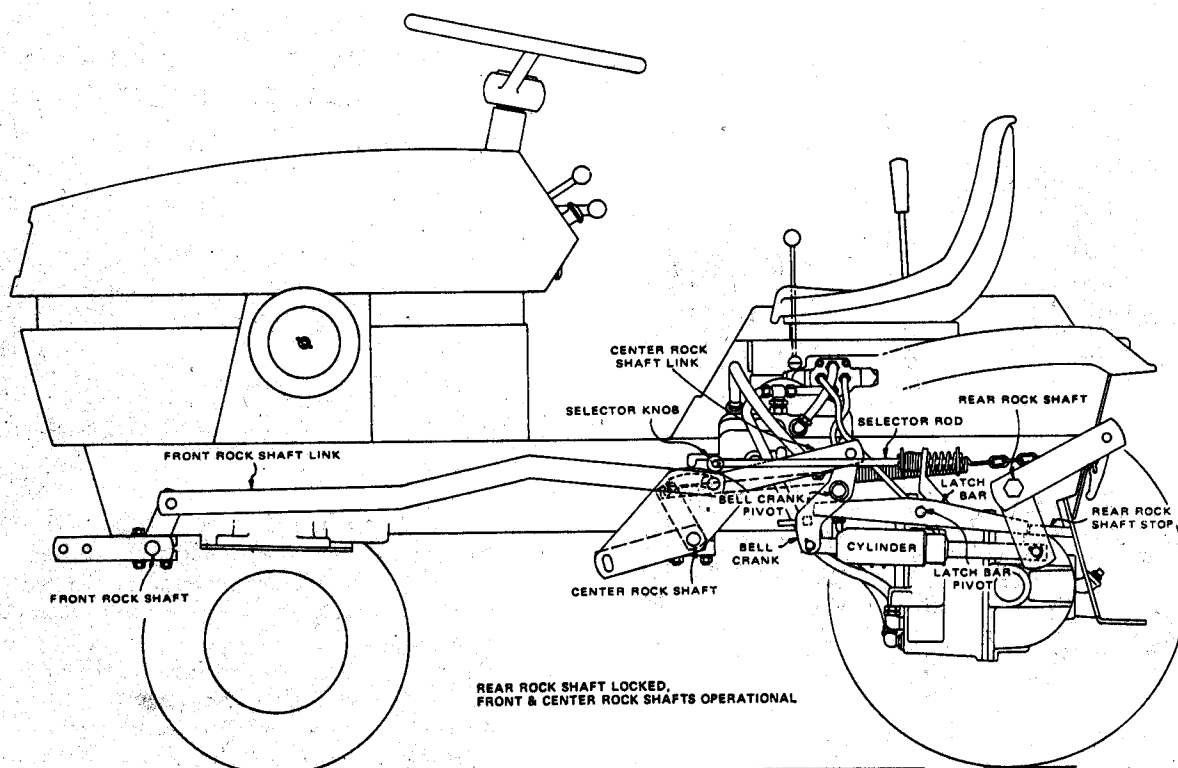


FIGURE 33

attachments and vice versa.

To make the rear rock shaft operational, move the hydraulic control lever to the "UP" position and hold it there until the cylinder is fully extended. Place the selector knob in the front notch as shown in Figure 34.

To make the front and center rock shafts operational, move the hydraulic control lever to the "UP" position and hold it there until the cylinder is fully extended. Place the selector knob in the rear notch (Figure 34).

STORAGE

PREPARATION FOR STORAGE

1. Remove all oil, grease and dirt from engine and transmission.
2. Clean the tractor exterior and tires thoroughly, removing all mud, dirt and grease.
3. Touch up all unpainted and exposed areas with paint to prevent rust.
4. Change engine oil.
5. Disconnect fuel line at fuel filter and drain fuel tank. Run the engine until the fuel is exhausted from the system. Drain the carburetor by loosening the nut on the bottom of the carburetor bowl. Clean the fuel filter.

6. Remove and clean the battery. Check electrolyte level and have battery fully charged. Store battery in a cool, dry place where it will not freeze.

7. Remove the spark plug and pour one tablespoon of SAE 30 oil into the cylinder. Turn engine over manually at least two revolutions.

8. Re-gap spark plug. Replace if required.

9. Grease the steering system.

10. Store tractor in a cool, dry place to reduce tire deterioration. Block up tractor to take the weight off the tires.

11. Inspect tractor for visible signs of wear, breakage or damage. Order any parts required and make necessary repairs to avoid delays when starting next season.

NOTE: Your authorized Ariens dealer is trained and equipped to service your tractor. A periodic check-up by your dealer will help to reduce your maintenance costs.

PREPARATION FOR USE AFTER STORAGE

1. Replace battery and check electrolyte level.
2. Fill fuel tank with fresh, clean regular gasoline.
3. Check transmission oil level.
4. Check tire inflation.

Ariens

ASSEMBLY INSTRUCTIONS

REAR PTO KIT MODEL 731007

FOR MODEL 931002 & 931003
GARDEN TRACTORS

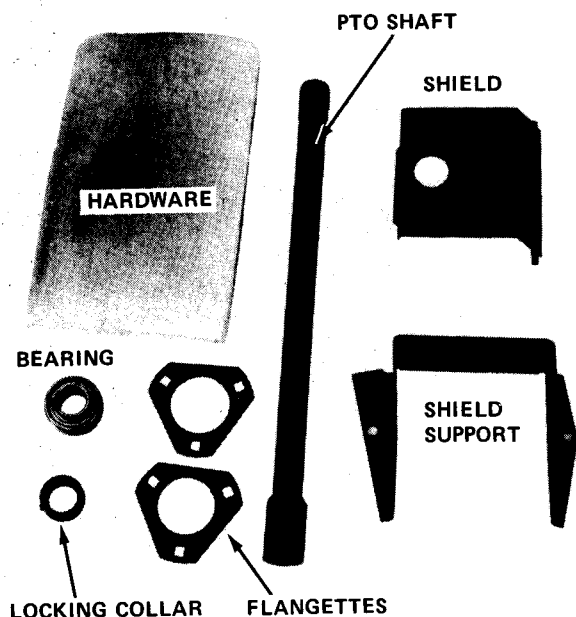


FIGURE 1

GENERAL

The rear PTO kit is designed to be installed on the S-12, S-14 and S-16 Garden Tractors. The rear PTO is required when rear mounted, powered equipment, such as the RT 34 Rotary Tiller attachment is used.

Figure 1 identified the parts included with the rear PTO kit.

The terms "left" and "right", "front" and "rear", "clockwise" and "counterclockwise" are determined from a position facing the rear of the Garden Tractor.

ASSEMBLY

a. Remove the rubber protective cap from the splined end of the PTO shaft.

b. Remove all paint from the splines on both ends of the PTO shaft. Remove paint approximately 2 inches above the splines so that the bearing assembly can be installed on the shaft as shown in Figure 2.

c. Pre-assemble the bearing, locking collar and flangettes on the PTO shaft as shown in Figure 2. The eccentric shoulder on the bearing must be facing the splines on the shaft. Do not tighten the locking collar.

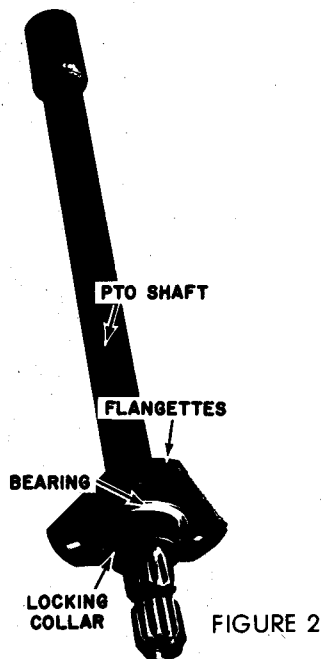


FIGURE 2

d. Remove access plate from rear of tractor frame and install the pre-assembled PTO shaft as shown in Figure 3. Guide the splined collar on the PTO shaft over the splined stub shaft at the rear of the hydrostatic transmission. **NOTE:** The stub shaft at rear of transmission is easily visible after removing the access plate.

e. Secure the bearing flangettes to the tractor frame with three (3) $\frac{3}{16}$ " x $\frac{3}{4}$ " cap screws and lock-washers, Figure 3.

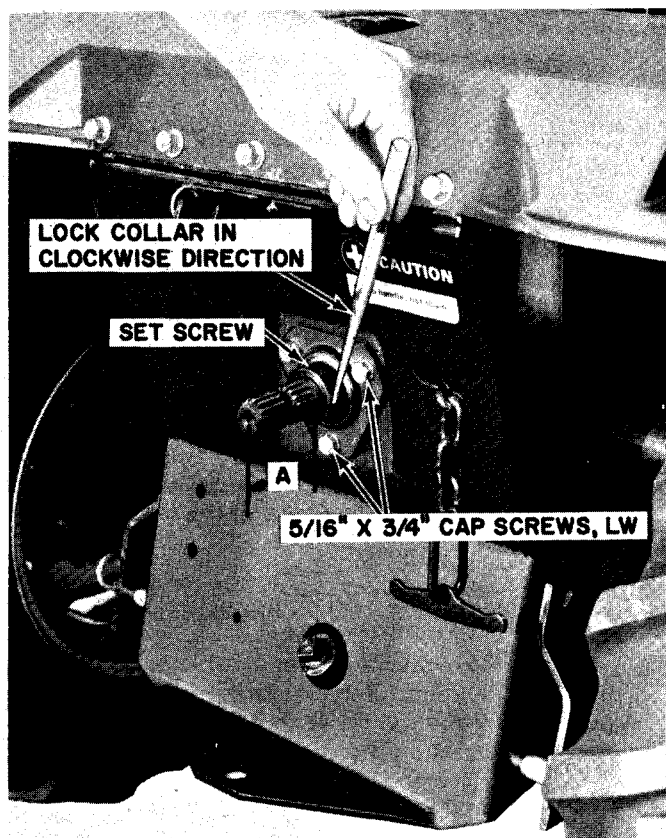


FIGURE 3

f. Be certain the shoulder on the locking collar is seated over the eccentric shoulder on the bearing. Turn locking collar clockwise until just finger tight. Slide the PTO shaft front or rear until distance A, Figure 3, is 2". **NOTE:** Measure distance A from end of PTO shaft to outside edge of locking collar.

g. Place a drift punch in the indentation provided in the locking collar, Figure 3, and tap the collar in a clockwise direction until bearing is securely locked. Secure bearing in the locked position by tightening the setscrew, Figure 3.

h. Assemble shield to the shield support as shown in Figure 4.



FIGURE 4

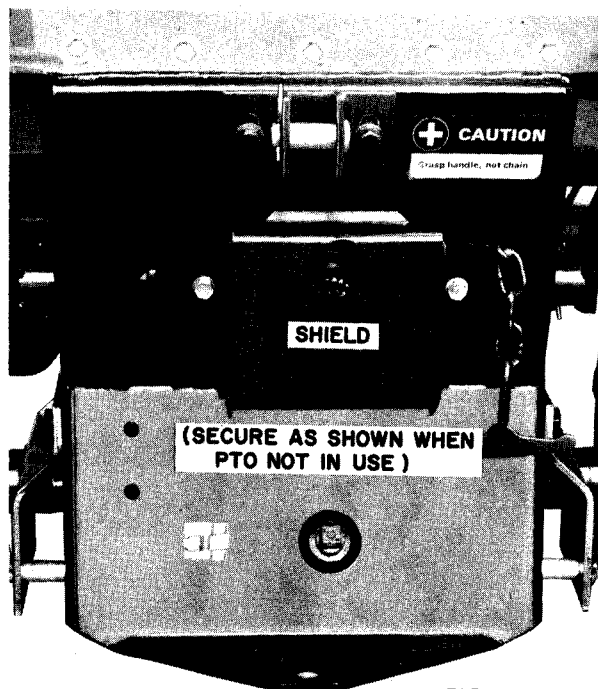


FIGURE 5

i. Install shield assembly on tractor frame with two (2) $5/16"$ x $1/2"$ self-tapping screws, flat washers and lockwashers, Figure 4. Use flat washers over the slotted holes. Move shield assembly in the slotted holes until the access hole in the shield fits over the oil fill plug easily. Secure the shield assembly.

j. Attach locking clip to the tractor frame with the small machine screw provided. Secure with a flat washer, lockwasher and nut. The flat washer should be installed over the inside of the tractor frame.

When using the rear PTO, the shield should be held in position with the locking clip as shown in Figure 4.

When the rear PTO is not in use, place the rubber protective cap over the end of the shaft and position the shield as shown in Figure 5.

When installing rear P.T.O. shaft on an S-14 or S-16 tractor check the alignment of the rear P.T.O. shaft relative to the hole in the rear of the tractor frame. The P.T.O. shaft will have some freedom on the hydrostatic shaft to be positioned up and down and/or sideways. The P.T.O. shaft must be centered in the hole in the tractor frame without any side pressure when secured in position with the flanges. Side pressure will cause premature wear of the hydrostatic unit. If necessary to align adjust the rear axle or hydrostatic transmission.

1. P.T.O. shaft too high or too low adjust rear axle as follows: Loosen the four bolts holding the rear axle to the frame. Adjust rear axle up or down to align P.T.O. shaft and retighten bolts. See Figure 1.

2. P.T.O. shaft to one side. Adjust as follows: Loosen the two bolts securing the hydrostatic unit to the rear axle and align P.T.O. shaft. Retighten the bolts. See Figure 2.

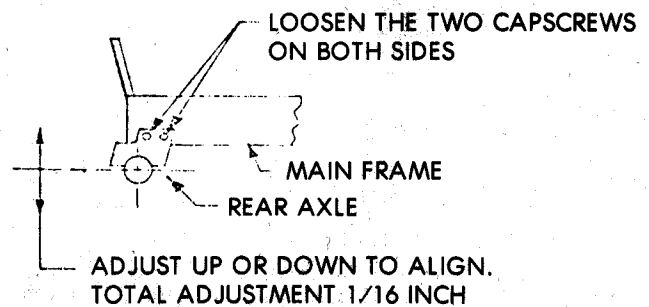


FIGURE 1

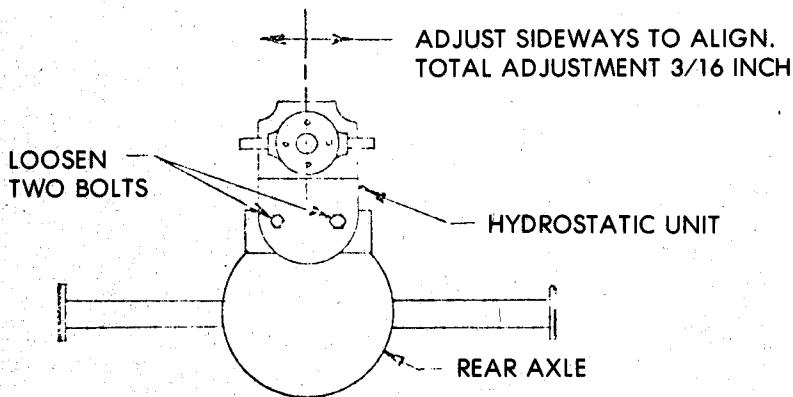


FIGURE 2

VICKERS T66 TRANSMISSION FOR S 12-14-16

SECTION 1 — INTRODUCTION

A. PURPOSE OF MANUAL

This manual describes the basic operational characteristics and provides service and overhaul information for the Vickers T66 and TA6 Series-10 Design Transmission Packages.

B. DESCRIPTION

Both transmission packages are hydraulic drive assemblies capable of high pressure operation in two directions of flow output. Drive speeds of both transmissions vary with model and circuit applications. Figure 1 illustrates the T66 transmission and its four major components: a variable displacement, reversible piston pump, a transfer block that also houses control valves, and the fixed displacement piston motor.

The TA6 transmission pump and the TB6 transmission motor are composed of identical components of the T66 transmission package except they are not joined by a common transfer block and valve plate.

C. GENERAL INFORMATION

1. Related Documentation — Installation information and dimensions are not contained in this manual. If required, installation drawings are available from your local Vickers Mobile Sales Office.

2. Model Codes — The basic TA6, TB6 and T66 transmission packages are designed and manufactured to meet the requirements of a variety of applications. Optional features are then incorporated to fulfill the operating demands of the particular application. A model code that represents the basic design plus the optional features is assigned to each model. To identify the specific design characteristics of your transmission, copy the model number stamped on the back side of the transfer block. For a breakdown of the code refer to the TA6, installation drawing, or the T66 installation drawing.

Be sure to include the complete model number and date code when addressing service inquiries to Vickers. This will help to provide prompt and accurate answers to your inquiry.

SECTION II — GENERAL OVERHAUL PROCEDURES

CAUTION: Block vehicle if it is on a slope. The transmission cannot act as a parking brake.

Before breaking a circuit connection, make certain that the power is off and the system pressure has been released.

Lower all vertical cylinders, discharge all accumulators, and block any load whose movement could generate pressure.

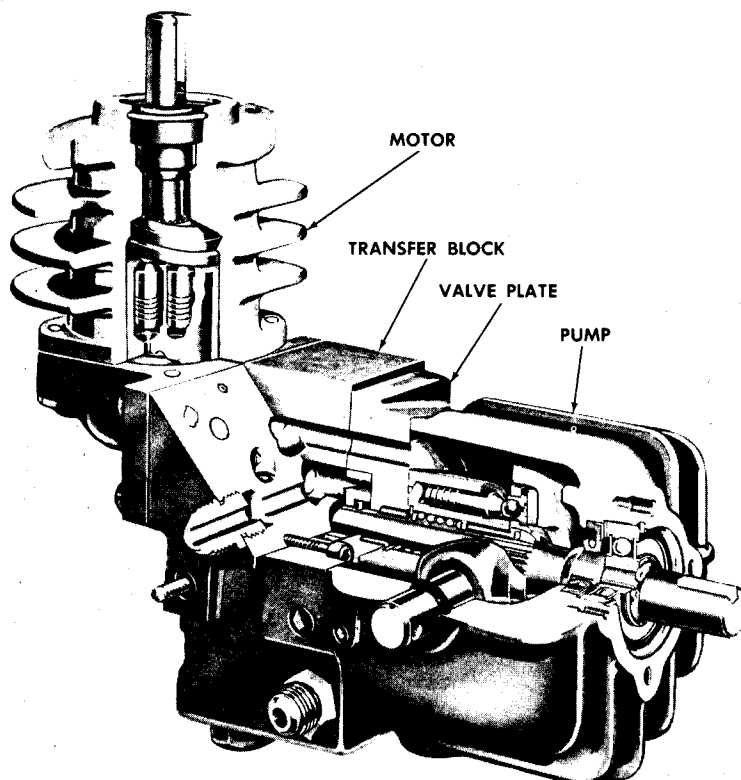


FIGURE 1

Completely drain the oil from the vehicle hydraulic system. Discard this oil and use new, clean oil when restoring the unit to service.

After removing the hydrostatic transmission from the vehicle, and before disassembly, cap or plug all ports and disconnected hydraulic lines, and clean the outside of the unit thoroughly to prevent entry of dirt into the system.

CAUTION: Absolute cleanliness is essential when working on a hydraulic system. Always work in a clean area. The presence of dirt and foreign materials in the system can result in serious damage or inadequate operation.

SECTION III — DISASSEMBLY

The exploded views of the assemblies in Figures 2, 3, 4 and 5 are provided as additional visual aids that support the sequential disassembly procedures that follow. Both the T66 and TA6 transmission are composed of identical assemblies, except the TA6 is not equipped with a motor. The motor disassembly procedure can obviously be disregarded when working on the TA6 transmission. Also, only disassemble the transmission to the level that is necessary to repair the unit.

NOTE: Keep parts for each unit clean and separate from those of another unit or assembly. Although some parts may look similar they could have slightly different and critical dimensions.

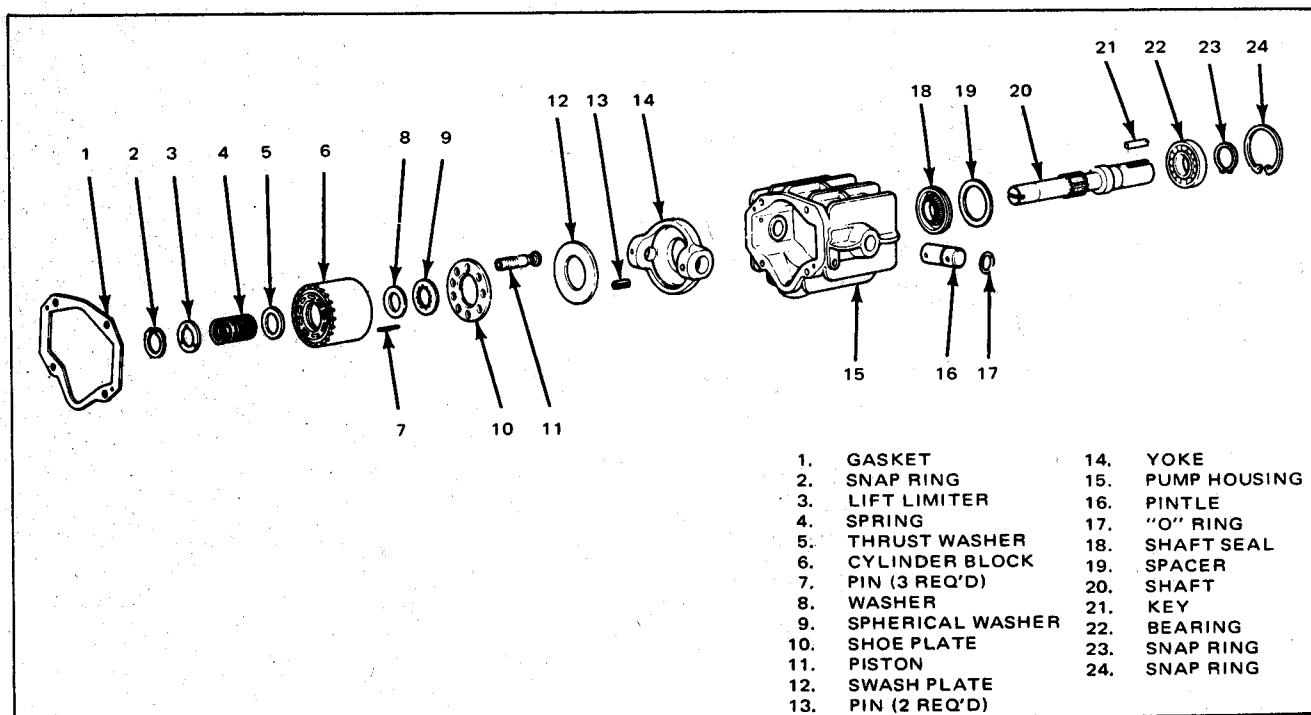


FIGURE 2 T66 and TA6 Pump

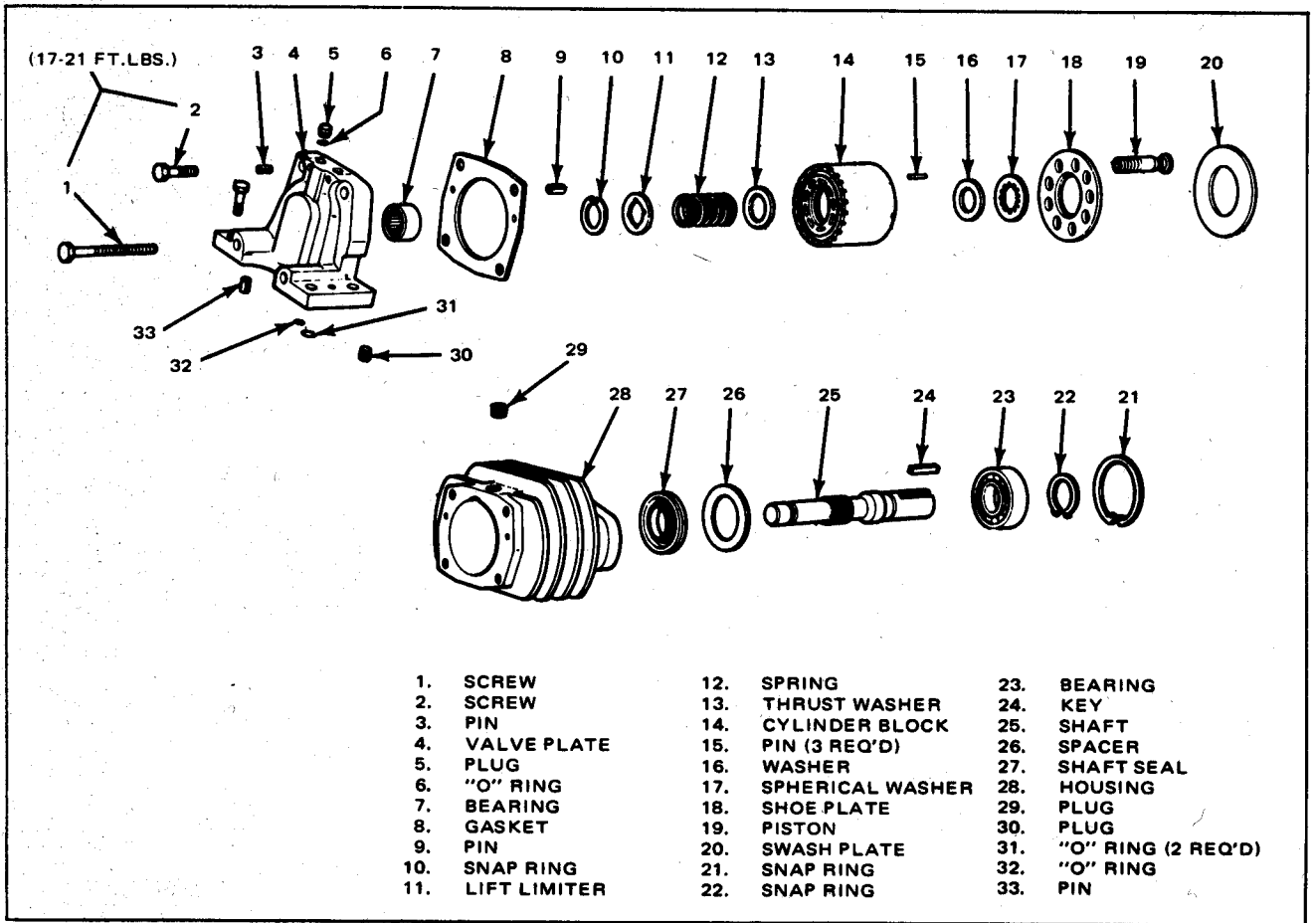


FIGURE 3 T66 Motor

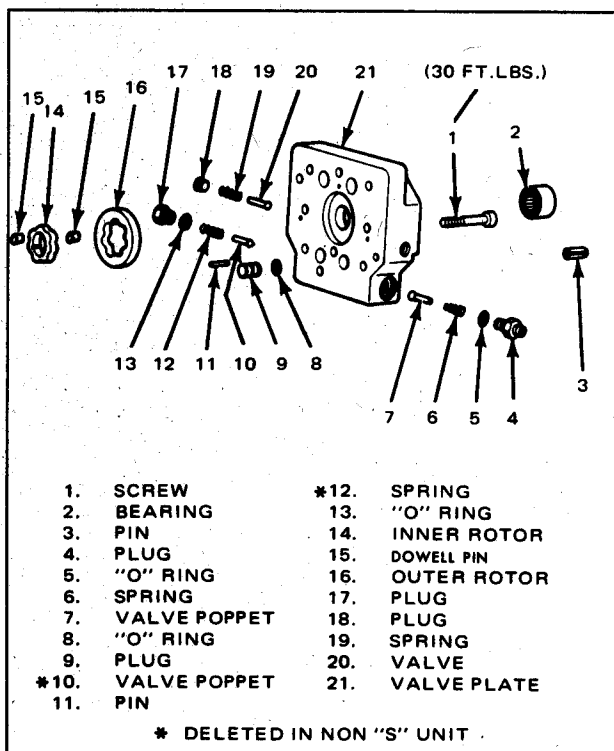


FIGURE 4 T66 and TA6 Valve Plate Assembly

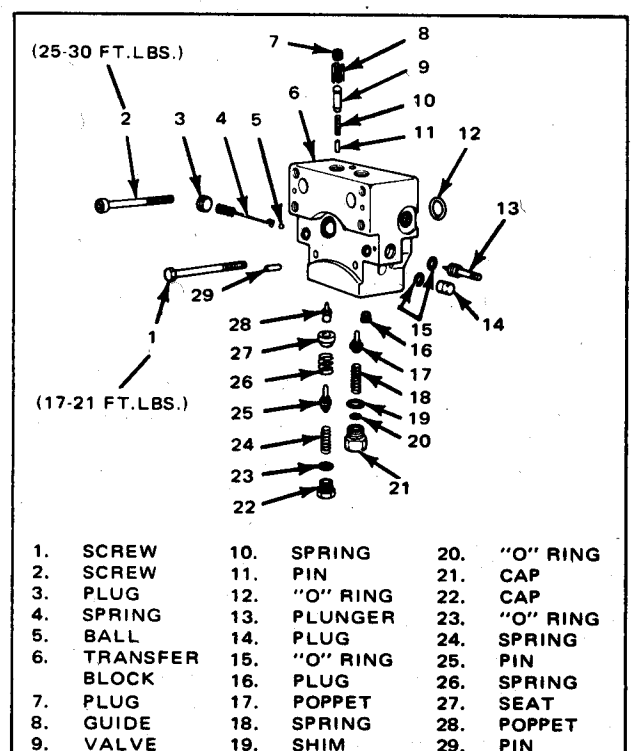


FIGURE 5 T66 and TA6 Transfer Block Assembly

TOOLS

Figure 6 illustrates the recommended set of tools that are used during disassembly or reassembly. Some equivalent tools are noted in the instruction.

1. Bearing puller
2. Shaft seal driver
3. Bearing puller
4. Torque wrench (150 ft.-lb.)
5. No. 5 Truarc (90°) pliers
6. No. 24 Truarc (straight) pliers
7. No. 23 Truarc (90°) pliers
8. No. 22 Truarc (90°) pliers
9. No. 21 Truarc (straight) pliers

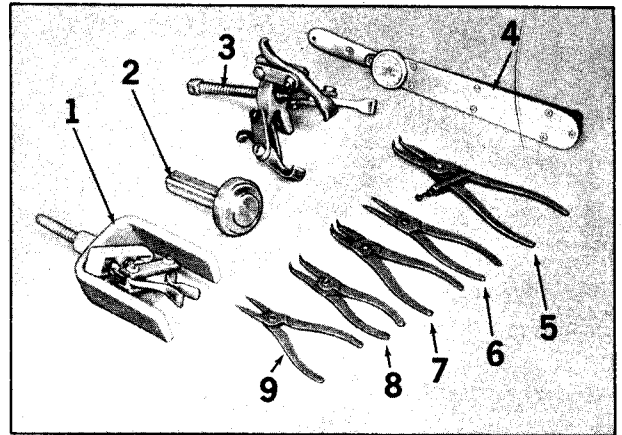
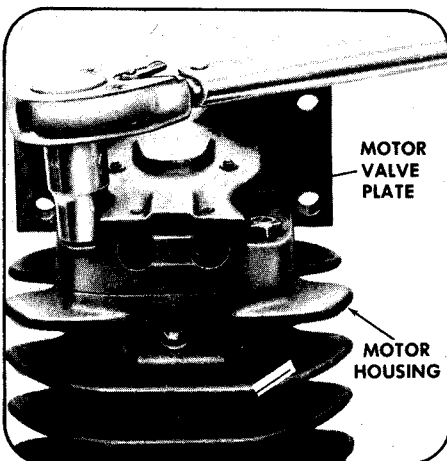


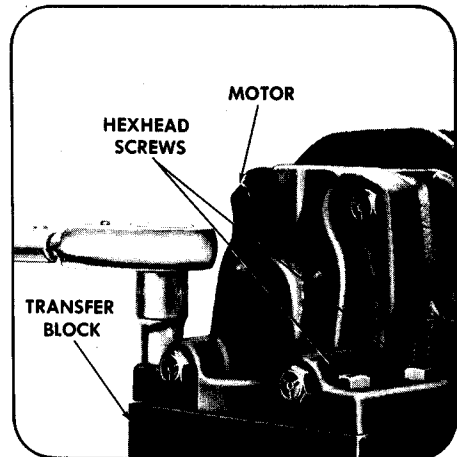
FIGURE 6

① DISASSEMBLY OF MOTOR

Place the transmission on a clean workbench. Have a supply of clean, lint-free rags, shop paper, or craft paper handy to lay parts on and to cover parts from dirt and foreign particles.



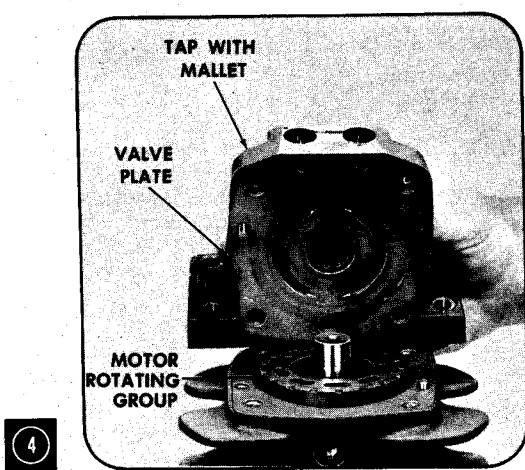
②



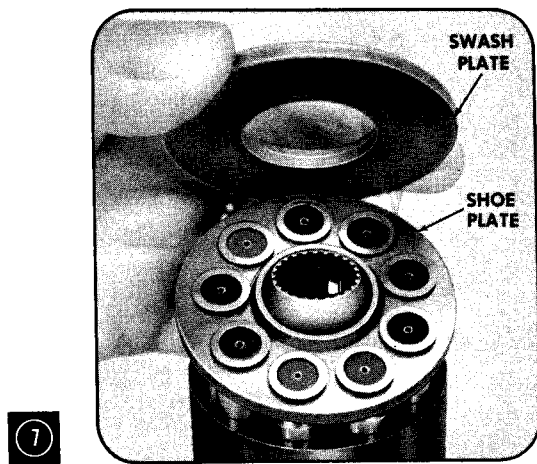
Separate the motor assembly from the transfer block by removing four hex head screws. Discard "O" rings and replace with new ones.

③

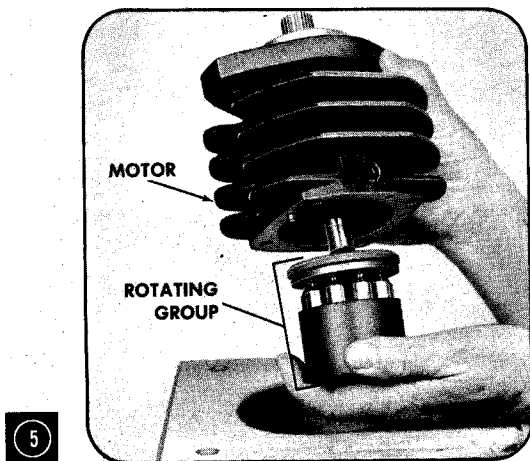
Separate motor valve plate from the motor housing by removing four screws.



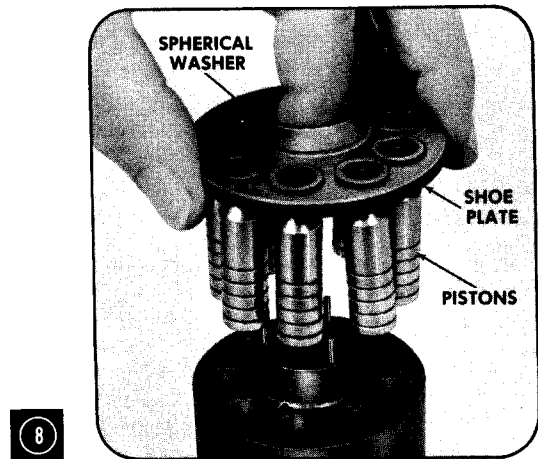
If valve plate doesn't separate easily from motor housing, tap corner of valve plate with plastic mallet.



Remove swash plate from shoe plate.



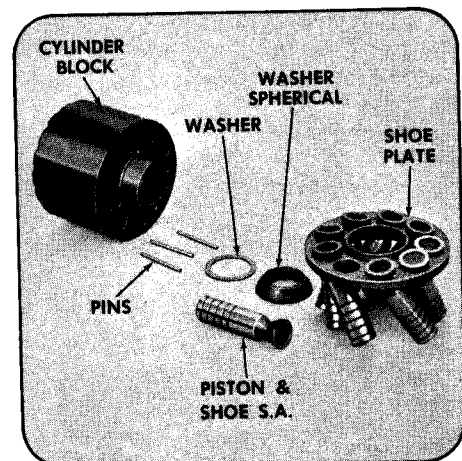
With one hand under rotating group end, tilt housing until rotating group slides into your hand. NOTE: Swash plate may stick in housing. Be sure to remove.



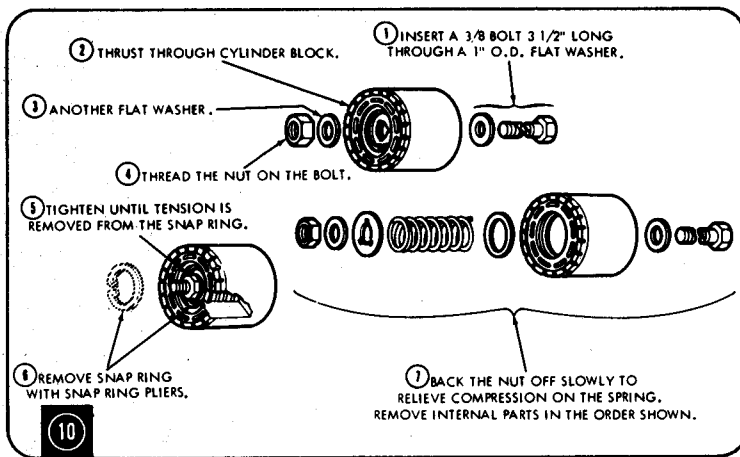
Remove assembled parts as shown. Be careful not to scratch the pistons or cylinder running surfaces.



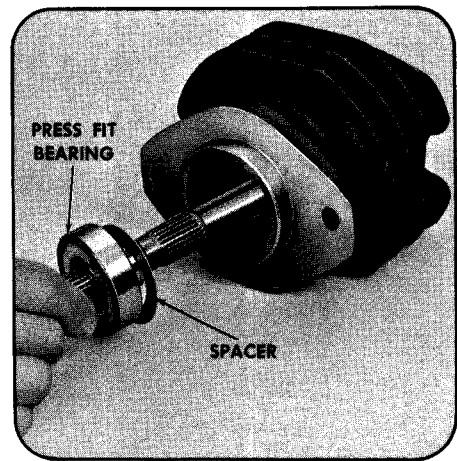
If this group does not need to be disassembled, place it on a clean surface and proceed to step 14. To disassemble this group proceed to step 8.



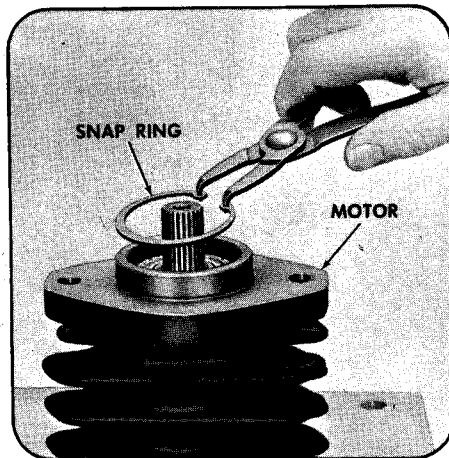
Generally, no further disassembly is required. However, if the cylinder block is to be disassembled, proceed to step 10.



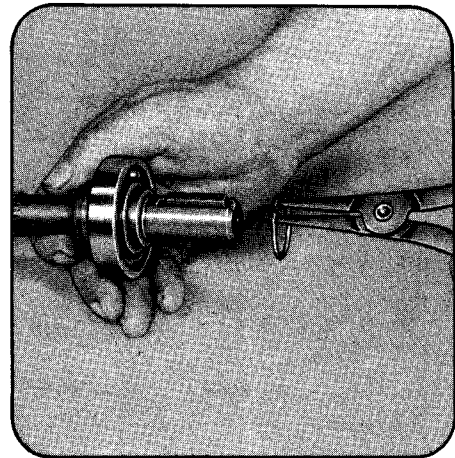
To relieve cylinder block spring tension, refer to Figure 10. **WARNING** — exercise extreme caution. Spring is under a great deal of tension.



Remove shaft. The spacer and press fit bearing should come out with it. Replace shaft seal.



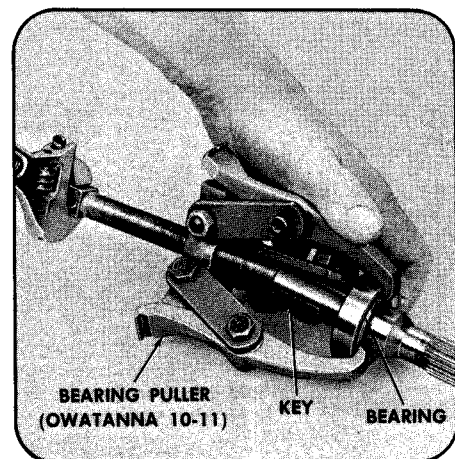
To remove the motor shaft, first remove the large snap ring with the 90° Truarc pliers.



Remove snap ring and key from motor shaft before you remove the bearing.

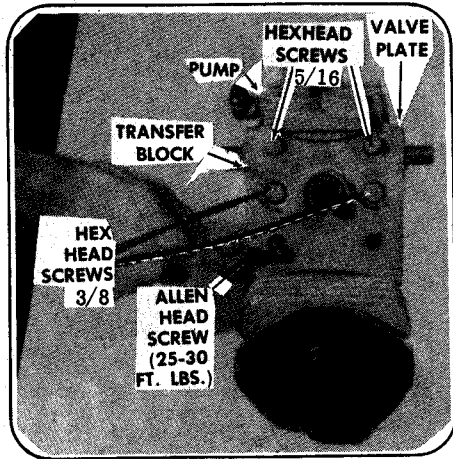


Remove the shaft by tapping on the small end with a soft tipped hammer or mallet.



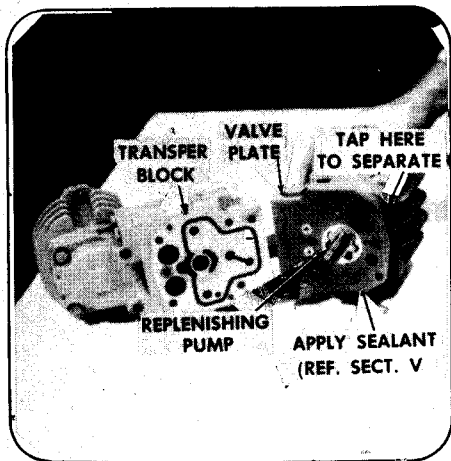
If it is necessary to remove the bearing, first remove the key; then use an Owatanna 10-11 bearing puller, or equivalent puller, or an arbor press. Any other method of removal may damage bearing.

DISASSEMBLY OF PUMP



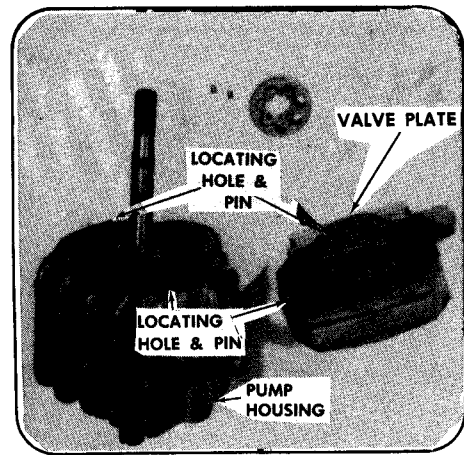
16

To disassemble the pump, remove the transfer block by removing two recessed Allen-head screws, the two 5/16 hex head screws, and two 3/8 hex head screws.



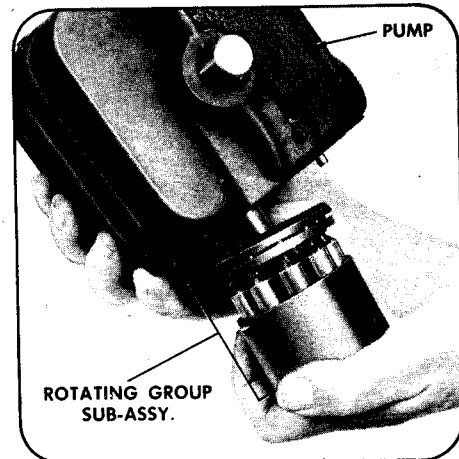
17

Separate valve plate from transfer block by pulling them apart. If required, tap valve plate with a plastic mallet to separate them.



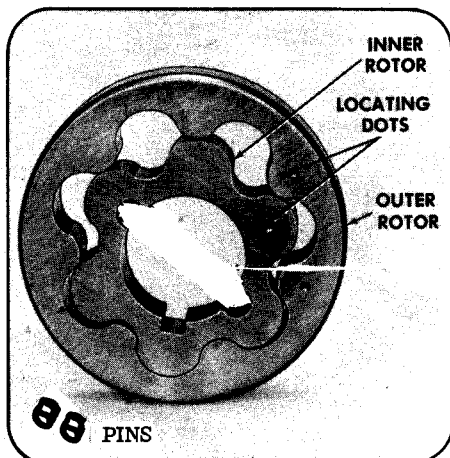
19

Pull valve plate straight up from pump housing.



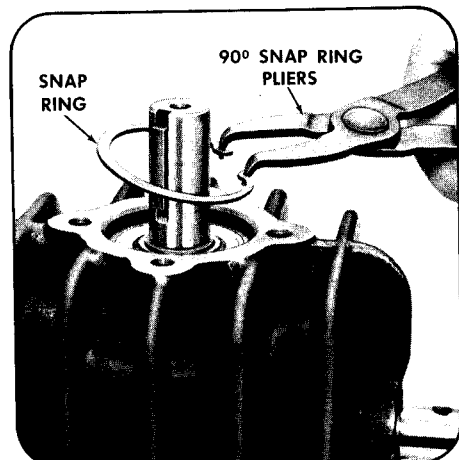
20

Pick up pump housing with one hand and slowly tilt it forward to remove group as assembled unit. To disassemble rotating group perform steps 7 thru 10.



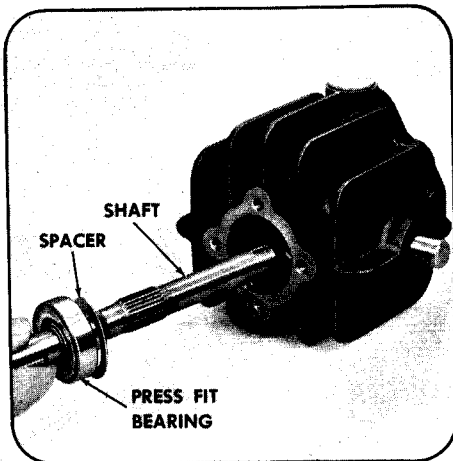
18

Remove replenishment pump from valve plate. Assembly Note: Dots not to be visible when replenishing pump is in pocket.



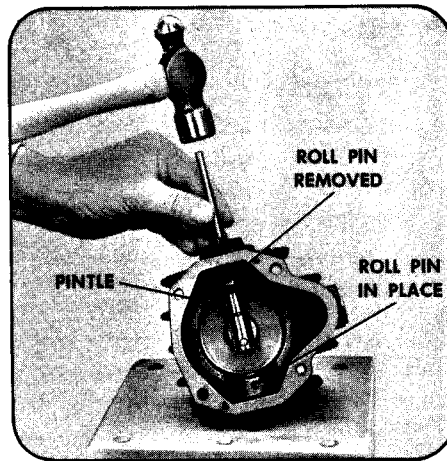
21

Now to remove the pump shaft. First remove the snap ring with 90° snap ring pliers.



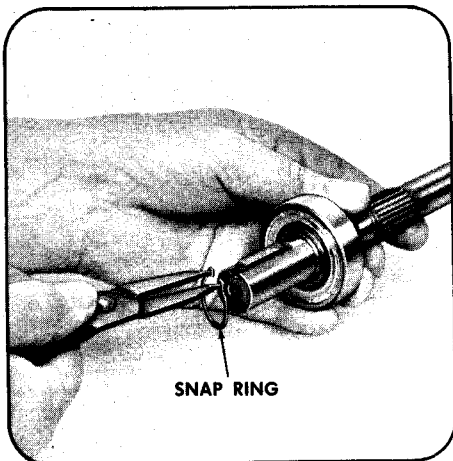
22

Remove the pump shaft by tapping the small end of the shaft with a plastic tip hammer. Remove the shaft with the loose spacer and the press fit bearing installed on it. Replace shaft seal.



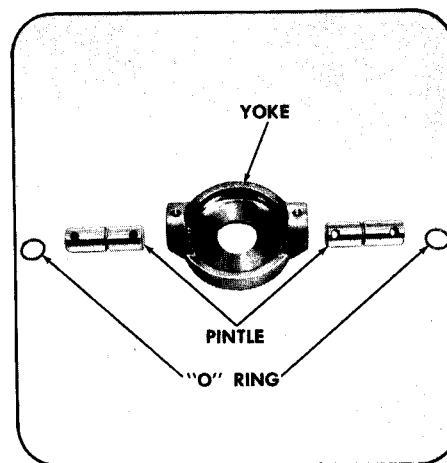
25

Now place a 1/4-inch brass rod on the pintle, and tap the pintle out of the yoke.



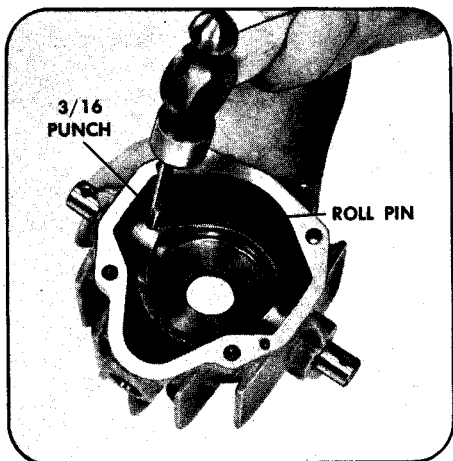
23

To remove the bearing, remove the key, and then the snap ring. Refer to step 15 for bearing removal.



26

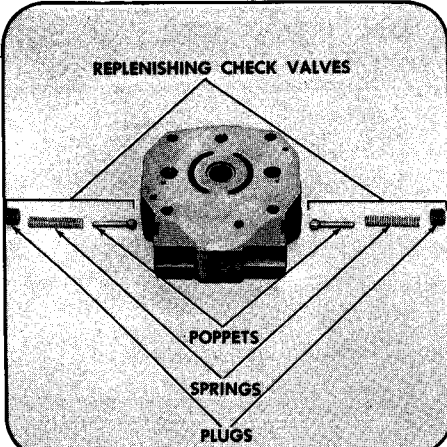
Repeat this procedure on the other pintle. Remove yoke from housing. Pintles must not be installed backward.



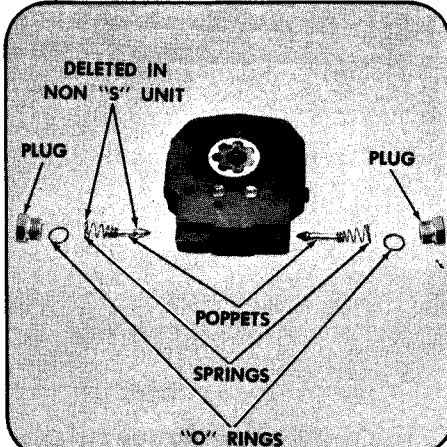
24

To remove both pintles and yoke from the housing, set a 3/16-inch punch on the roll pin. Tap punch with a hammer until roll pin is disengaged from yoke.

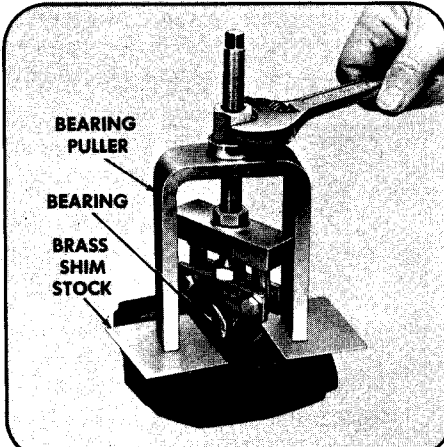
DISASSEMBLY OF VALVE PLATE



Remove the two replenishing system check valves by removing the Allen-head plugs. Don't interchange valve parts.

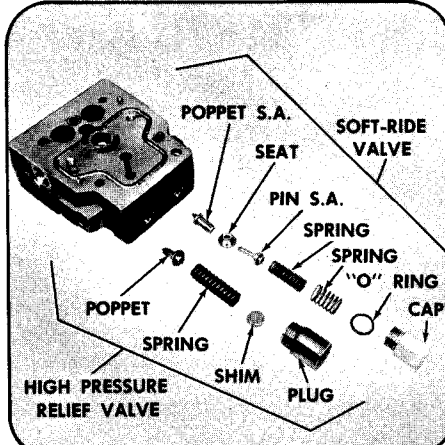


Remove replenishing pump relief valve. (Some models have only one valve.)

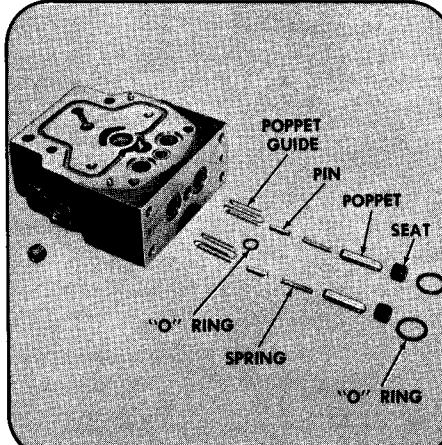


To remove bearing, place valve plate on protective surface. Put brass shim stock or other protective stock under puller. Use Owatanna MD956-B-1, an equivalent puller, or an arbor press.

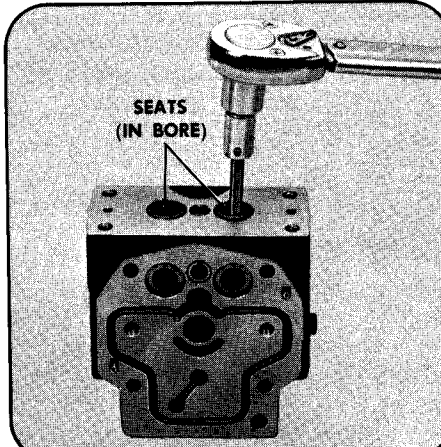
DISASSEMBLY OF TRANSFER BLOCK



Set transfer block with finished surface facing up. Remove caps and take out both the soft-ride valve and high-pressure relief valve.



To remove high pressure check valves, first remove three "O" rings. Assembly Note: Be sure open ends of guide point outward.



Remove high-pressure check valve seats with an Allen-head wrench. Assembly Note: During assembly, torque valve seats to 30-35 ft.-lbs.

SECTION IV — INSPECTION AND REPAIR

Clean all parts thoroughly with mineral spirits prior to inspection and after any stoning or machining operation. Inspection and repair procedures are as follows:

1. **Valve Plate** — Inspect the flat surface mates with the cylinder block for wear or scoring. Remove minor defects by lightly stoning the surface with a hard Arkansas stone that is flat within 0.001 inch. Be sure to stone lightly; the surface is hardened and excessive stoning will remove hardened surface. If wear or damage is extensive, replace the valve plate.

2. **Rotating Group** — Inspect the bores and the valve plate mating surface of the cylinder block for wear and scoring. Remove minor defects on the running face by lightly stoning or lapping the surface. If the defects cannot be removed by these methods, replace cylinder block.

If one or more piston and shoe subassemblies need to be replaced, check that all piston and shoe subassemblies in the unit ride properly on the swash plate (Figure 7). In a set of nine pistons, variations in thickness greater than 0.001 of an inch from one shoe to another, will result in excessive internal leakage and shoe wear. The replacement of all nine piston and shoe subassemblies in the pump and motor, as well as the cylinder block, is recommended for maximum service between overhauls.

If necessary, hand-lap the shoes with 500-A emery paper (Tuff-Bak Durite Silicon Carbide) backed-up by a lapping plate. Good results may be obtained by dipping the emery paper in kerosene and keeping it wet during polishing.

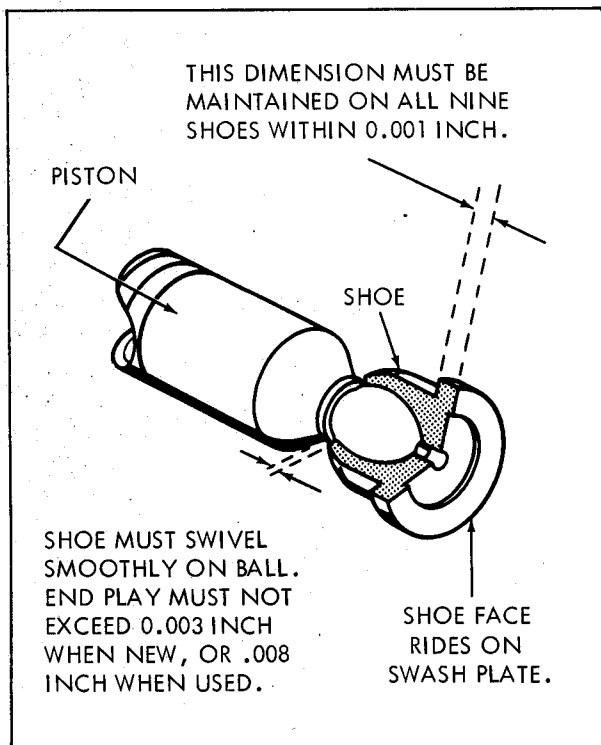


FIGURE 7

3. **Swash Plate** — Inspect the swash plate for wear and scoring. If the defects are minor, lightly stone the swash plate. If wear or damage is extensive, replace the swash plate.

4. **Bearings and Drive Shaft** — Inspect all bearings for roughness or excessive play; replace if necessary. Examine the sealing area of the shaft for scoring or wear. If the drive shaft is bent or worn excessively, replace it.

5. **Replenishing Pump** — Inspect the surface of all parts subject to wear. Remove light scoring from the face of the inner and outer rotor with crocus cloth laid over a flat surface, with a medium India stone, or by lapping.

SECTION V — ASSEMBLY

The procedures for assembling the transmission are basically the reverse of the disassembly procedures shown in detail in Section 3. However, the following instructions describe certain additional procedures that should be adhered to:

Install new gaskets, seals, and "O" rings during assembly. To ease assembly of the gaskets and seals, apply a thin film of Vaseline or clean hydraulic oil to the "O" rings. If a new rotating group is being used, squirt clean oil on it.

PISTON PUMP

1. **Yoke** — Install the yoke in the housing. With "O" rings in place, insert the pintles through the housing and into the yoke. Check that the yoke does not rub against the housing. Align the pintle holes with the holes in the yoke. Press in roll pins until they are 0.10 inch from top of yoke.

2. **Drive Shaft and Bearing** — Install new shaft seal in the housing. Place the flat washer over the shaft seal. Then install the drive shaft in the housing. Secure the drive shaft bearing with the retaining snap ring.

3. **Swash Plate** — Install the chamfered edge of the swash plate toward the shaft seal. Be sure that the swash plate is properly seated in the yoke and that it can be freely rotated with the fingers.

4. **Rotating Group Assembly** — If the spring and washers were removed from the cylinder block, reassemble them. When properly assembled with the three pins in place, the spring can be compressed about 1/8 inch.

REPLENISHING PUMP AND VALVING

1. Position the pins in drive shaft and carefully install the inner and outer rotor elements into the valve plate. Refer to step 18 under disassembly of pump.

2. Oil the replenishing pump with clean hydraulic oil for prelubrication.

3. Be sure the locating pins are in the valve plate, and that the "O" ring seals are in place.

4. New sealant must be applied to the valve plate before re-assembly. Remove all old sealant and residue with lacquer thinner or acetone on a cloth. Purchase **Ford Perfect Seal (8A-19554-B) R134-A** from a local Ford Dealer or purchase **Sealing Compound**

Grade No. 4 direct from **P.&O.B. Mfg. Co., 11100 Kenwood Road, Cincinnati, Ohio — Phone (513) 793-6332.**

Apply sealant compound on valve plate approximately 0.38 wide around perimeter, then proceed with assembly. (See Illustration 26.)

5. Assemble Remaining Parts — Relief valve, springs, "O" ring seals and plugs. (Refer to exploded views and photos for details.)

SECTION VI — START-UP AFTER REPAIR

Take the following precautions when starting a vehicle after repair:

1. Before connecting drain lines and before installing transmission in vehicle, fill transmission pump and motor with new, clean oil through case drain openings.

2. Connect all hydraulic lines to the proper transmission port lines and set hydraulic controls in neutral position.

3. Loosen or remove reservoir cap and add new, clean oil to reservoir.

4. Jog the starter several times (about one minute) with engine coil wire disconnected. Recheck reservoir oil level. If necessary, add oil to maintain operating oil level.

5. Replace engine coil wire. Start the engine and run it to a speed of about 800 rpm (avoid high speed start-up). Recheck reservoir oil level again.

6. Increase pump speed to 1800 rpm and move the controls to the forward position and run vehicle slowly on level ground for a few yards.

7. Then, after a short interval (about 10 seconds), place controls in reverse and move vehicle slowly backwards an equal distance.

8. After several short trips back and forth, the air should be dispelled from your hydraulic system. Check oil level; add oil if necessary.

After all the above steps are complete, you may operate the vehicle at regular speeds and loads. In cold weather, make sure the hydraulic components are warm to the touch before operating the vehicle.

ADJUSTMENTS

No periodic adjustments are required other than maintaining proper shaft alignment with the driving medium.

ADDING FLUID TO THE SYSTEM

When adding hydraulic fluid to the system, pour it through a 10-micron filter. If such a filter is not available, use a funnel with a fine wire screen (.200 mesh or better).

OIL FILTER

The oil filter controls the cleanliness of the oil. Experience with various kinds of duty and operating conditions will help you to determine how often to schedule a filter cartridge change. Check the condition of the oil periodically until you can establish a replacement pattern. In the meantime, change the cartridge after the first 50 hours of vehicle operation.

TROUBLESHOOTING

The cause of improper functioning in a hydraulic system is best diagnosed with the use of proper and adequate testing equipment and a thorough understanding of the complete hydraulic system.

CAUTION: A hydraulic transmission unit that exhibits an excessive increase in heat or noise is a potential failure. When either of these conditions are noticed, immediately shut down the machine, locate the trouble, and correct it.

Detailed trouble-shooting information is given in the following charts.

SECTION VII — GENERAL MAINTENANCE

LUBRICATION

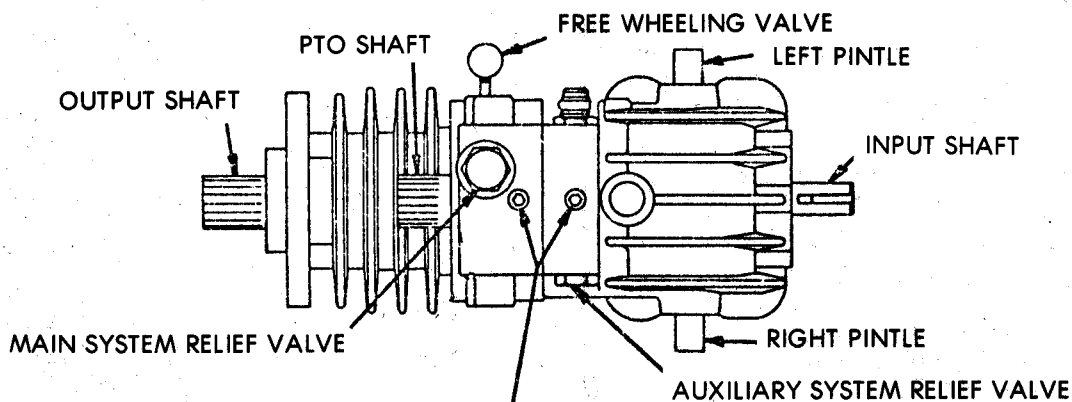
Internal lubrication is provided by the system oil flow.

REPLACEMENT PARTS

Use only genuine parts manufactured or sold by Vickers Incorporated as replacement parts for these transmissions. Only Vickers knows the true quality level required of each part.

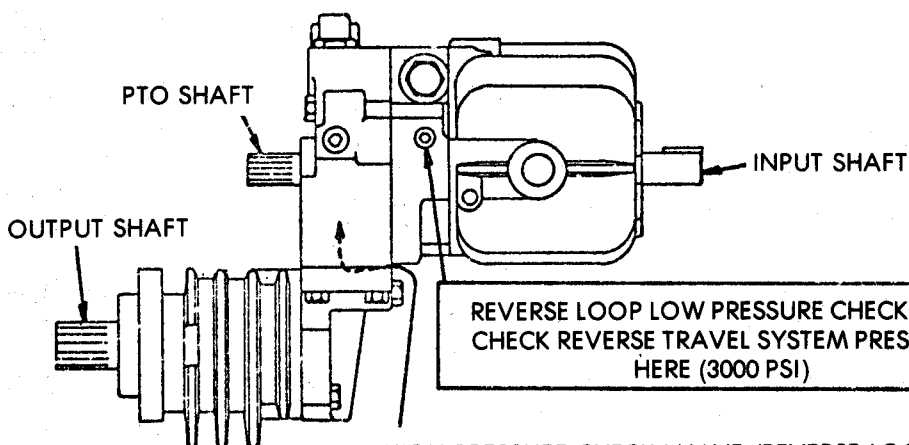
VICKERS HYDROSTATIC TRANSMISSION ON S-12 - S-14 & S-16 GARDEN TRACTORS

TOP VIEW



CHECK AUXILIARY SYSTEM RELIEF PRESSURE
AT EITHER LOCATION (550 PSI)

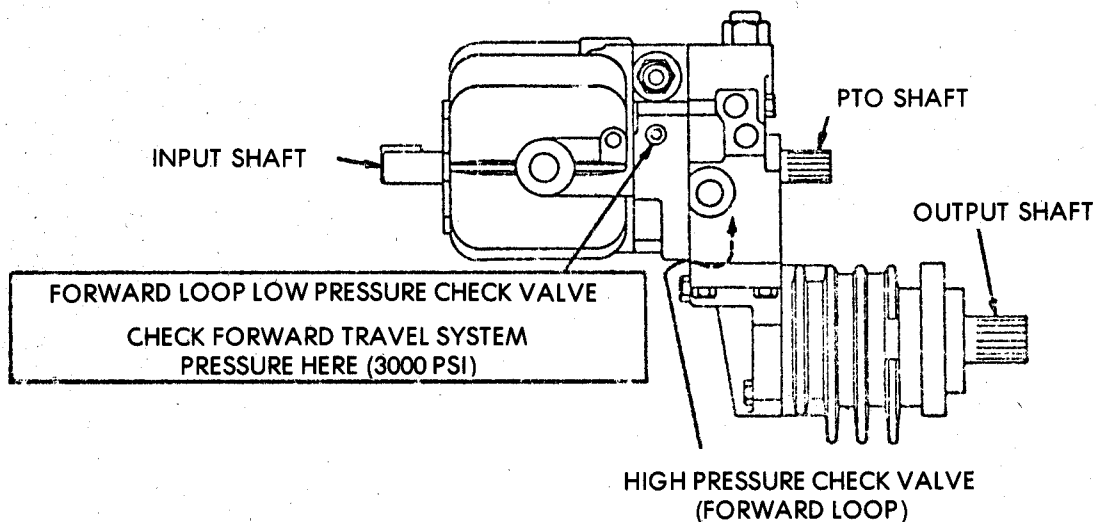
RIGHT SIDE



REVERSE LOOP LOW PRESSURE CHECK VALVE
CHECK REVERSE TRAVEL SYSTEM PRESSURE
HERE (3000 PSI)

HIGH PRESSURE CHECK VALVE (REVERSE LOOP)

LEFT SIDE



FORWARD LOOP LOW PRESSURE CHECK VALVE
CHECK FORWARD TRAVEL SYSTEM
PRESSURE HERE (3000 PSI)

HIGH PRESSURE CHECK VALVE
(FORWARD LOOP)

TROUBLE SHOOTING

TRANSMISSION TROUBLESHOOTING GUIDE

Has Malfunction Been	Probable Cause	
	Code	Code Legend
Steady?	1, 2, 3, 4, 5, 6, 7, 8	1. Charge system.
Intermittent?	6	2. Inlet check valve.
In one direction of travel?	2, 4, 5	3. Pump rotating group.
In both directions of travel?	1, 3, 4, 6, 7, 8	4. Motor rotating group.
Occurring under light load?	2, 5, 6, 8	5. High-pressure check valves.
Occurring under heavy load?	1, 2, 3, 4, 5, 6, 7, 8	6. Soft-ride valve.
Independent of load?	1, 3, 4, 6, 7, 8	7. High-pressure relief valve.
Occurring at maximum vehicle speed?	1, 4	8. Tow valve.
At minimum vehicle speed?	1, 3, 4	
Independent of vehicle speed?	1, 2, 5, 6, 7, 8	
Occurring at wide open throttle?	3	
Occurring at partial throttle?	1, 3, 5, 8	
Independent of throttle?	1, 2, 3, 4, 5, 6, 7, 8	
Occurring when system is hot?	1, 3, 4, 6	
When system is cold?	1, 6	
Independent temperature?	1, 2, 3, 4, 5, 6, 7, 8	
Deteriorating rapidly?	3, 4, 5, 6, 7, 8	
Deteriorating slowly?	1, 2, 3, 4, 5, 6	

12 - 14 - 16 GARDEN TRACTOR (VICKERS)

MODEL	TYPE OF FAILURE	CAUSE	SOLUTION
1)	Excessive noise in hydrostatic transmission.	Air in the system.	Check for air leaks on suction line.
			"Bleed" hydraulic lines at highest point downstream of replenishing pump and while system is under pressure.
		Vacuum condition.	Check inlet (suction) lines and fittings for air leaks.
			Check replenishing pump function.
2)	Hydraulic transmission overheating.	Oil too thick.	Be certain correct type of oil is used for refilling or adding to the system.
		Cold weather.	Run hydraulic system until unit is warm to the touch and noise disappears.
		Heating exchanger not functioning.	Locate trouble and repair and replace.
		Cooling fan not operating.	Repair.
		Cooling fins packed with accumulated debris.	Remove material from between fins.
		Fluid level low.	Add oil to operating level.

TROUBLE SHOOTING

MODEL	TYPE OF FAILURE	CAUSE	SOLUTION
3)	System not developing pressure.	Sheared shaft key.	Locate and repair.
		Misadjusted or broken control linkage.	
		Disconnected or broken drive mechanisms.	
4)	Loss of fluid.	Ruptured hydraulic lines.	Check all external connections, tubing, and hoses. Tighten connections, replace ruptured tube or hose.
		Loose fittings.	Observe mating sections of hydrostatic transmission for leaks. Replace seals or gaskets if possible.
		Leaking gaskets or seals in hydrostatic transmission.	
5)	Engine will not crank.	Hydrostatic control lever not in "PARK-START" position.	Move lever to "PARK-START" position.
		Implement Power Control Switch Out (ON).	Push Implement Power Control Switch in (OFF).
		Battery connections dirty.	Clean battery connections.
		Dead battery.	Re-charge or replace battery.
		Defective safety switch.	Replace switch.
		Mal-adjusted safety switch.	Adjust switch.
6)	Engine difficult to start.	Loose electrical connections.	Tighten all connections firmly.
		Out of fuel.	Refuel.
		Fuel tank shut-off valve closed.	Open valve.
		Dirt or water in fuel system.	Clean and flush entire fuel system.
		Carburetor out of adjustment.	Adjust carburetor.
		Worn, pitted ignition breaker points.	Replace breaker points.
		Maladjusted breaker points.	Adjust breaker points.
		Faulty condenser.	Replace condenser.
7)	Engine will not idle.	Faulty spark plug.	Re-gap or replace spark plug.
		Carburetor out of adjustment.	Adjust carburetor.
		Dirt or water in fuel system.	Clean and flush entire fuel system.

TROUBLE SHOOTING

MODEL	TYPE OF FAILURE	POSSIBLE CAUSE	SOLUTION
8)	Engine misses or runs erratically.	Faulty spark plug.	Re-gap or replace spark plug.
		Worn, pitted ignition breaker points.	Replace breaker points.
		Mal-adjusted breaker points.	Adjust breaker points.
		Faulty condenser.	Replace condenser.
		Carburetor out of adjustment.	Adjust carburetor.
		Dirt or water in fuel system.	Clean and flush entire fuel system.
		Cold engine.	Choke engine until warmed up.
		Governor not operating properly.	
9)	Engine backfiring.	Faulty engine valves.	
		Carburetor out of adjustment.	Re-adjust carburetor.
10)	Engine knocking.	Sticky intake valve.	
		Loose cylinder head or blown head gasket.	
		Carburetor out of adjustment.	
11)	Tractor will not move with engine running.	Improper fuel.	Use only fresh, regular gasoline.
		Crankcase oil level low.	Fill to proper level. If knock has developed due to running engine out of oil, have your dealer check the connecting rod bearing.
		Engine overloaded.	Reduce load — use slower ground speed. Avoid overloading engine.
		Free-wheeling valve open.	Close free-wheeling valve.
		Transmission oil level low.	Add transmission oil to proper level.
		Park-lock cable out of adjustment.	Adjust cable.
		Park-lock pin sticking.	Clean and lubricate park-lock pin and over center assembly.
		Park-lock cable failed.	Install new cable. Be sure to properly adjust and lubricate the new cable.
		Hydrostatic control linkage out of adjustment.	Adjust hydrostatic control linkage.
		No hydraulic pressure or flow in system.	

TROUBLE SHOOTING

MODEL	TYPE OF FAILURE	POSSIBLE CAUSE	SOLUTION
12)	Engine loses power.	Restricted air filter.	Clean air filter. Replace if excessively dirty or damaged.
		Too much oil in crankcase.	Check oil level — drain excess if over full.
		Overheating.	Remove shrouds — clean dirt and grease from engine fins and shrouds.
		Choke partly closed.	Adjust choke control wire.
		Carburetor out of adjustment.	Adjust carburetor.
		Dirt or water in fuel system.	Clean and flush entire fuel system.
		Faulty spark plug.	Re-gap or replace spark plug.
		Worn, pitted ignition breaker points.	Replace breaker points.
		Mal-adjusted breaker points.	Adjust breaker points.
		Faulty condenser.	Replace condenser.
13)	Tractor creeps with hydrostatic control lever in neutral.	Engine overloaded.	Reduce load — use slow ground speed — avoid overloading engine.
		Faulty engine valves or piston rings.	
		Breather assembly plugged.	
14)	Hydrostatic control linkage will not stay in adjustment.	Hydrostatic control linkage out of adjustment.	Adjust hydrostatic control linkage.
14)	Hydrostatic control linkage will not stay in adjustment.	Improper operation — attempting to move hydrostatic control lever with neutralizer pedal depressed.	Use neutralizer pedal for emergency stops only. Keep foot off the pedal in normal operation.
		Transmission oil level low.	Add transmission oil to proper level.
		Excessive load.	Do not operate under extreme load to avoid damage to system.
15)	Hydraulic lift operates erratically.	Transmission oil cold.	Allow transmission to warm up before applying load.
16)	Improper steering.	Tires improperly inflated.	Inflate tires as recommended.
		Hard steering.	Lubricate properly — check and adjust toe-in.
		Excessive steering wheel play.	Replace worn ball joint assemblies.

TROUBLE SHOOTING

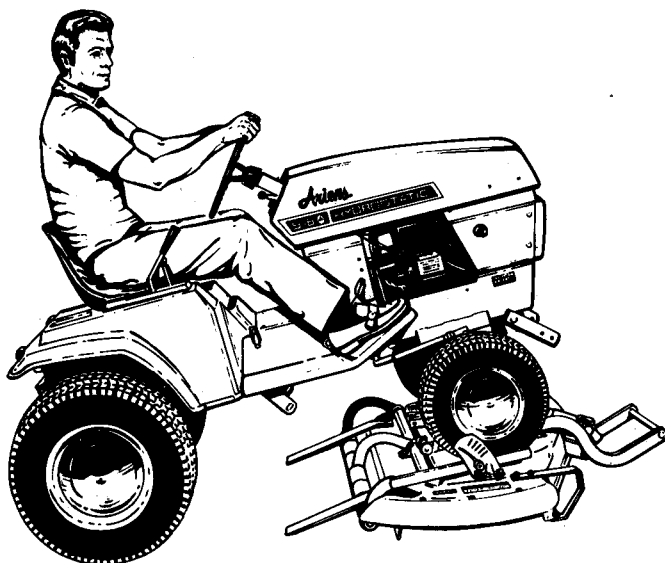
MODEL	TYPE OF FAILURE	POSSIBLE CAUSE	SOLUTION
17)	Excessive front tire wear.	Bent or damaged spindles, tie rod or drag link. Linkage out of adjustment.	Replace damaged parts. Adjust linkage.
18)	Rear rock shaft will not raise or lower.	Place selector knob in front position.	Selector knob in proper position.
19)	Front and center rock shaft will not raise or lower.	Place selector knob in rear position.	Selector knob not in proper position.
20)	Engine backfires after shut-down.	Gas fumes igniting in muffler.	Reduce throttle to low speed, pull out the choke and turn off key.
21)	Hard to lift hood.	Lack of lubrication.	Grease hood clip and bolt.
22)	No prime condition on hydro-static transmission.	Lack of oil in reservoir. Wrong or clogged filter. Loose filter. Scored charge pump. Broken drive pin. Loose pump housing. Air in system. Internal damage. Broken axle will appear as no prime.	Add oil. Replace filter. Tighten. Replace. Replace. Tighten. Bleed system at implement relief valve. Take readings with 1000 PSI gauge. Replace axle.
23)	No lift.	Lack of oil in reservoir. Air in system. Selector not engaged. Faulty charge pump. Faulty lift valve.	Add oil. Bleed system. Push down on arms while in the float position to lock in position. Replace. Replace or repair.
24)	PTO matched belts failing.	Idler not riding on belts properly. Pulleys not lined up. Slop of idler arm.	Bend arm. Replace pulley with 531109 pulley and washer. Add washer.

Ariens

42 RM & 48 RM ROTARY MOWER

MODEL NO. 831012 48 RM
SERIAL NO. 000101 AND UP

MODEL NO. 831011 42 RM
SERIAL NO. 000101 AND UP



INSTALLATION



CAUTION: WHEN APPLYING OR RELIEVING THE FLOTATION SPRING TENSION, ALWAYS GRASP CHAIN HANDLE FIRMLY (NOT THE CHAIN) AS CONSIDERABLE TENSION IS ON THE SPRING AND INJURY TO THE HANDS COULD RESULT.

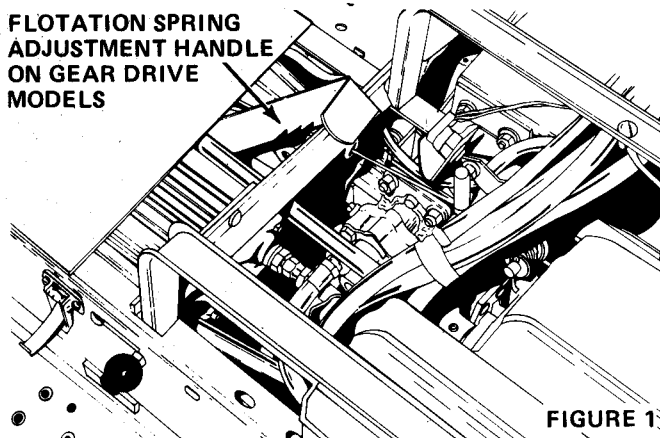
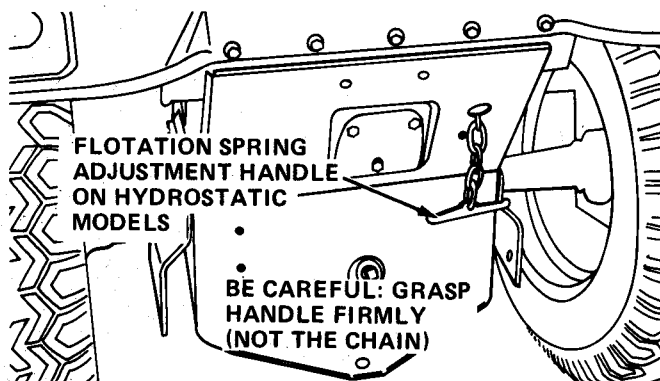


FIGURE 1

1. Before attaching mower to the tractor, be sure to release tension from the flotation spring. On hydrostatic models by grasping the chain handle, Figure 1, pulling up and to the rear until chain disengages from the notch in the tractor frame. With the chain disengaged, allow it to move completely forward so that no tension remains on the spring. On gear drive models lift the cover on the rear deck and release the flotation spring handle from the frame.

2. Place the ramps, Figure 2, on the rear of the mower deck. Be sure the rivets in the ramps are engaged in the holes provided in the mower deck.

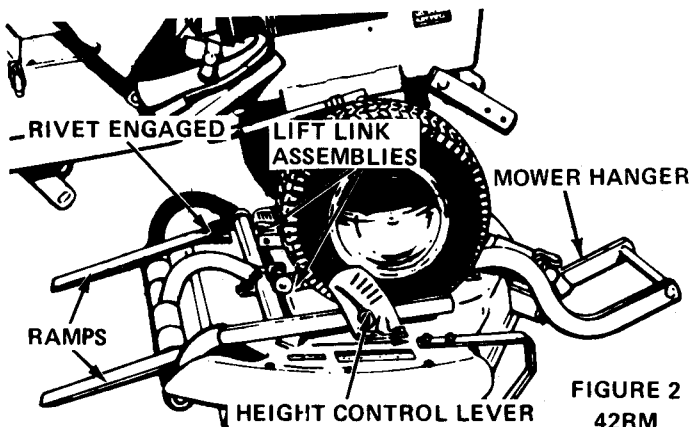


FIGURE 2
42RM

3. Place the height control lever, Figure 2, all the way down so the roller is not supporting the weight of the mower and place the two mower lift link assemblies to the front.

4. Align the front tractor wheels with the two ramps and drive the tractor up and over the mower deck. Stop the tractor and remove the ramps as soon as the front wheels are over the mower.

NOTE: The selector knob on the left side of tractor frame on rear rock shaft equipped models must be in the rear position to make the center rock shaft operational.

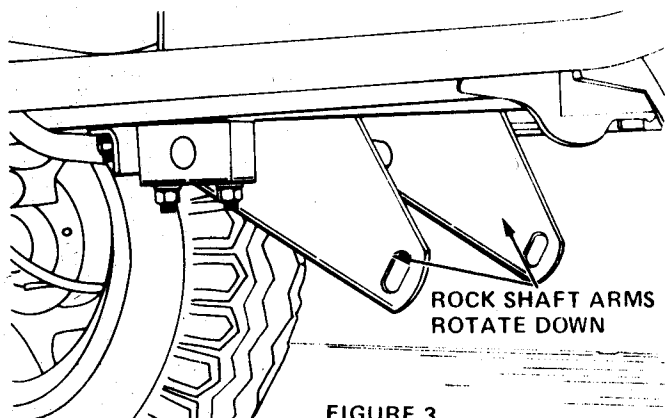


FIGURE 3

5. On S-12 and S-10G tractors with manual lift systems, move the lift lever into the forward position to lower the center rock shaft arms. Reach under the tractor and rotate the rock shaft arms completely down, see Figure 3. On tractors equipped with a hydraulic lift system, move the hydraulic control lever to the "down" position to lower the center rock shaft arms. Reach under the tractor and rotate the rock shaft arms completely down as shown in Figure 3.

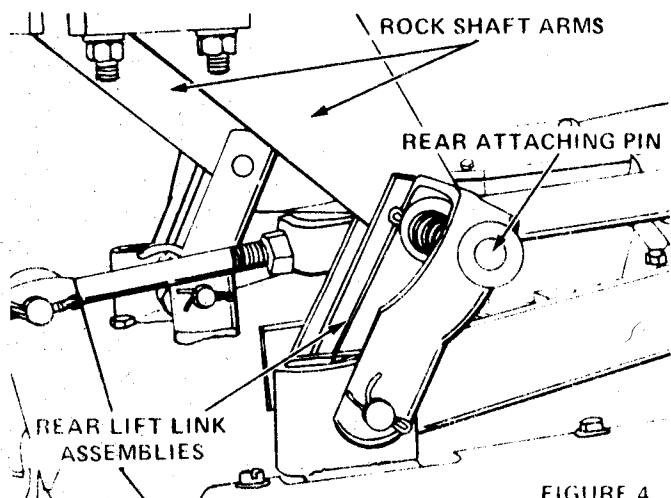


FIGURE 4

NOTE: Be sure the 31243 arm is positioned on **INSIDE** of 31242 mower hanger and hook is positioned on tube. See figure below. Improper positioning of arm will result in mower pan hang up and uneven cutting.

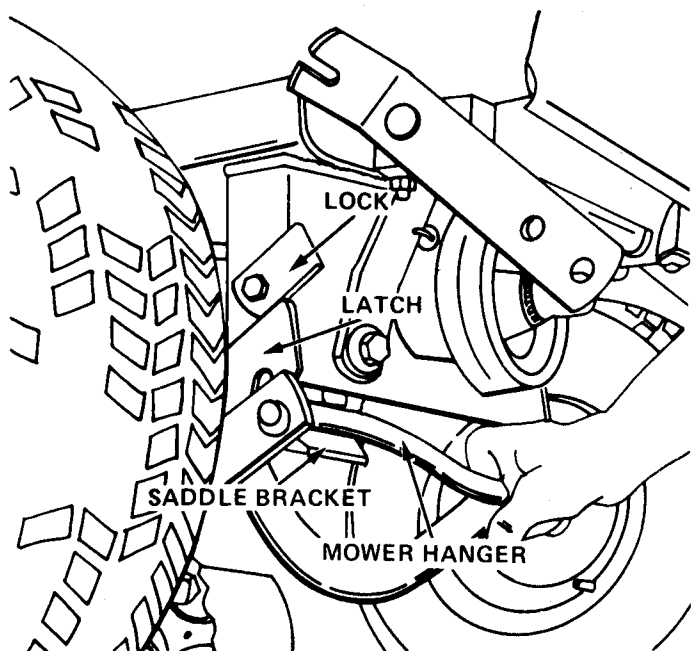
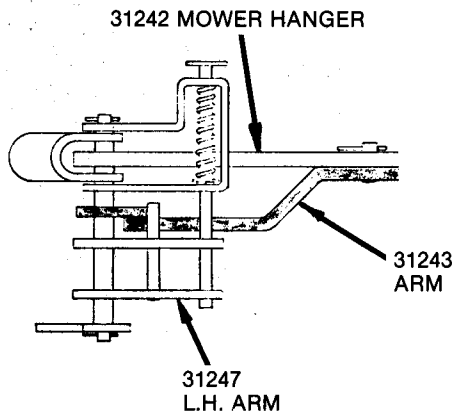


FIGURE 5

6. Pull the spring loaded rear attaching pins out and move the rock shaft arms up or down until holes in rock shaft arms align with the pins. Release the pins so they engage the holes in the rock shaft arms as shown in Figure 4.

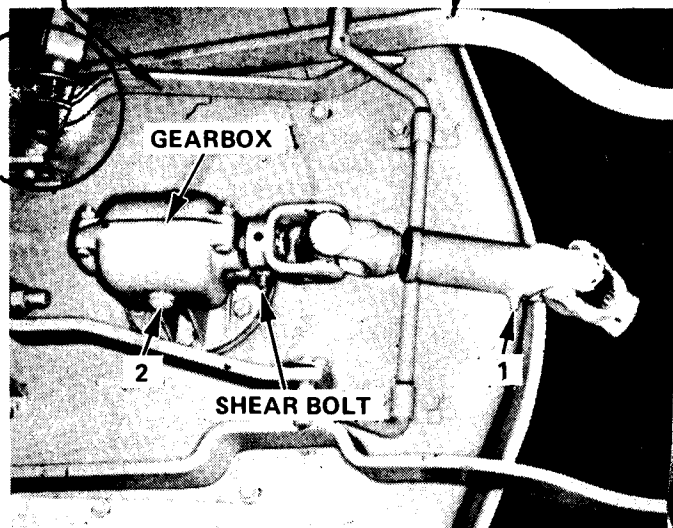
IMPORTANT: PIN MUST COMPLETELY ENGAGE BOTH PARTS OF THE REAR LIFT LINK.

7. Raise the latches and locks, Figure 5, and place the mower hanger into the tractor saddle brackets.

NOTE: It may be necessary to raise front of mower deck slightly and lower height control lever to allow mower hanger to seat in the saddle brackets.

31243 ARM. POSITION INSIDE OF MOWER HANGER AS SHOWN.

31242 MOWER HANGER



8. Lower the latches and locks. The locks must be completely lowered on both sides of the tractor to assure a positive hitch.

9. Apply a light coat of grease to the tractor P.T.O. stub shaft and the splines on the P.T.O. yoke, Figure 6. Slide yoke over the stub shaft and secure as shown with the special hairpin cotter provided. This "special" hairpin cotter is available through your Ariens dealer.

Adjust tension on mower flotation spring, Figure 1. See Adjustment Section for details.

10. Adjust the height control lever, Figure 2, into the height notch of the adjustment quadrant.

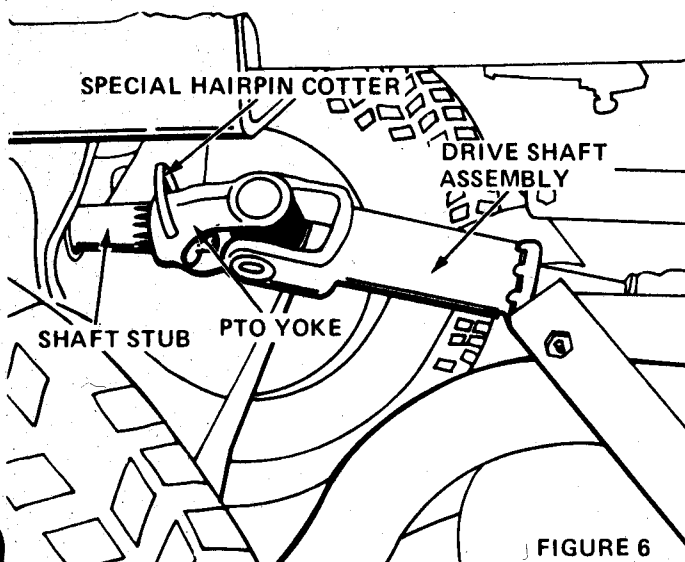


FIGURE 6

REMOVAL

1. Relieve flotation spring tension, Figure 1, by grasping chain handle firmly, pulling up and to the rear until chain disengages from the tractor frame. Allow chain to move forward until no tension remains on the spring.

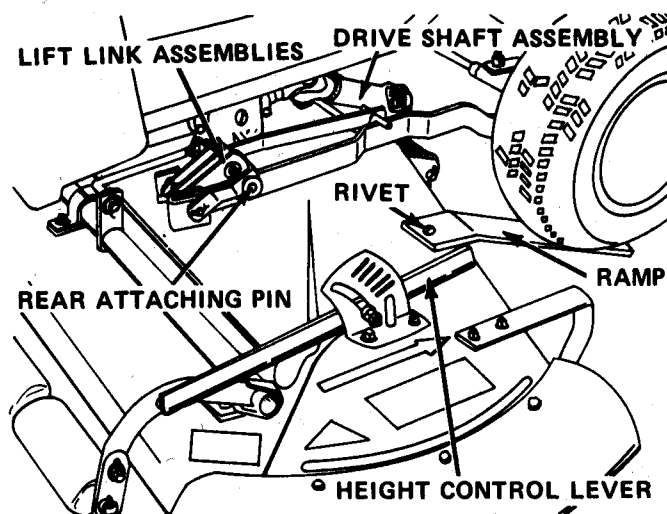


CAUTION: Grasp chain handle firmly (not the chain) as considerable tension is on the chain and injury to the hands could result.

2. Remove special hairpin cotter from the drive shaft yoke and remove yoke from tractor P.T.O. stub shaft, Figures 6 and 7. Place drive shaft UNDER the tractor steering tie rod to prevent damage to the tie rod.

3. Raise the latches and locks, Figure 5, and disengage mower hanger from tractor saddle brackets.

NOTE: It may be necessary to raise front of mower deck slightly and raise or lower height control lever to disengage mower hanger.



48 RM FIGURE 7

4. Pull rear attaching pins "out" until they are disengaged from the rear rock shaft arms.

5. Place the height control lever, Figure 7, all the way down as shown so that the roller is not supporting the weight of the mower.

6. Place the ramps in position on the front of the mower deck as shown in Figure 7. Be sure the rivets in the ramps are engaged in the holes provided on the mower deck.

7. Back the tractor up, over and off of the mower.

OPERATION CONTROLS

Before operating your rotary mower, carefully read this manual and the tractor Operator's Manual. Become thoroughly familiar with the controls, safety precautions and proper operating procedures. The more familiar you become with the tractor and mower the better results you will have in its use. Start the engine and allow it to warm up as described in the tractor owner's manual.

1. Start mower blades rotating by pulling the implement power control switch OUT while engine is running at 1/3 fast throttle. Increase engine speed to fast throttle after mower blades are rotating.



CAUTION: KEEP BYSTANDERS AWAY FROM AREA WHILE THE BLADES ARE ROTATING.

2. The mower blade speed is directly related to the engine speed. For best mowing results OPERATE THE ENGINE AT FAST THROTTLE. Regulate the travel speed with the hydrostatic control lever or gear shift lever so the engine maintains full RPM when operating. The power requirement increases in dense, high grass conditions. If travel speed of the tractor is too fast for mowing conditions, the engine and thus the mower will slow down, reducing the cutting efficiency of the mower. In some conditions, excessive FORWARD travel speeds may cause the engine to stall and the mower to plug.

LUBRICATION

Figure 8 shows the lubrication points on the mower. Lubricate as follows:

1. P.T.O. Fitting — Lubricate every 25 hours of operation or once each season with several strokes of a grease gun.

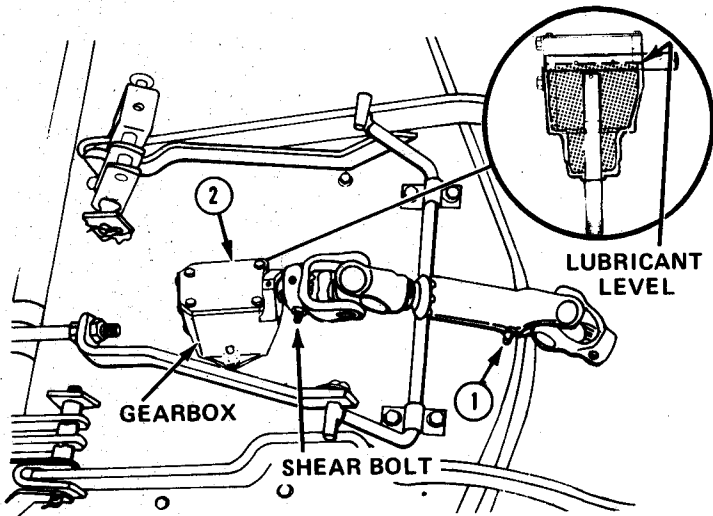


FIGURE 8

2. **Gearbox** — Check lubricant level every 25 hours of operation or once a season by removing cover on top of the gearbox. The lubricant level should be to the center line of input shaft, See Figure 8. If lubricant level is not correct, fill gearbox to proper level and replace cover and screws. Obtain special Ariens No. 000150 Moly Multi-Purpose Grease from your dealer.

IMPORTANT: USE ONLY ARIENS NO. 000150 MOLY MULTI-PURPOSE GREASE IN GEAR BOX.

3. Oil all pivot points.

MAINTENANCE AND ADJUSTMENTS

GENERAL

Ariens dealers will provide any service which may be required to keep the Mower operating at peak efficiency. The Mower is equipped with the finest quality parts obtainable. However, should servicing be required, it can be obtained from an Ariens dealer. Consult your Ariens dealer for details.

BE CAREFUL: NEVER ATTEMPT TO SERVICE OR MAKE ANY ADJUSTMENTS TO THE MOWER WHILE THE ENGINE IS RUNNING.

WHEN SERVICING OR MAKING ADJUSTMENTS, USE THE FOLLOWING PROCEDURE:

1. Disengage the implement power control switch.
2. On hydro-static models place the hydrostatic control lever in the Park-Start position. On gear drive tractors place the gear shift lever in Neutral position. Engage the parking brake.
3. Stop the engine.
4. Remove the ignition key.
5. Disconnect the spark plug wire.

GEARBOX

The input shaft (attached to PTO) may develop end play with use. If this shaft moves in and out more than .004", have your Ariens dealer adjust the gearbox.

ADJUSTING BLADE LEVEL AND PITCH

Proper leveling of the blades is essential in obtaining a smooth, evenly cut lawn. Blade pitch is correct when the front blade tips are slightly lower than the rear blade tips. Improper pitch adjustment will affect engine power requirements. Can cause uneven cutting and excessive shear bolt shearing.

Use the following procedure to adjust blade level and pitch.

1. Check tire pressure and adjust as required (front tires — 8 lbs.; rear tires — 6 lbs.).
2. Place tractor on a smooth level surface, preferably a concrete slab or smooth floor.
3. Place cutting height control lever, Figure 9, in the highest cutting position.
4. With the attachment lift lever, or hydraulic control, lower the mower so the roller assembly firmly rests on the floor.

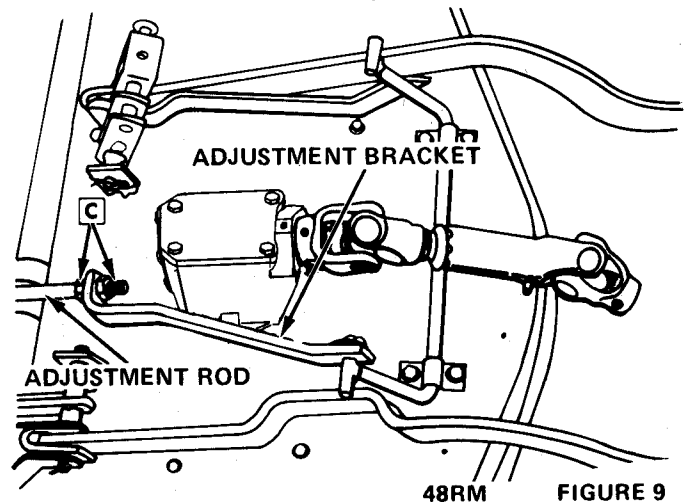


FIGURE 9

5. Rotate the blades until they are parallel to the roller assembly as shown in Figure 10. Measure distance from floor to outer blade tips at points A and B. These distances must be equal. If they are not, loosen roller assembly adjusting bolts C and D and pivot the mower deck using the center support as a

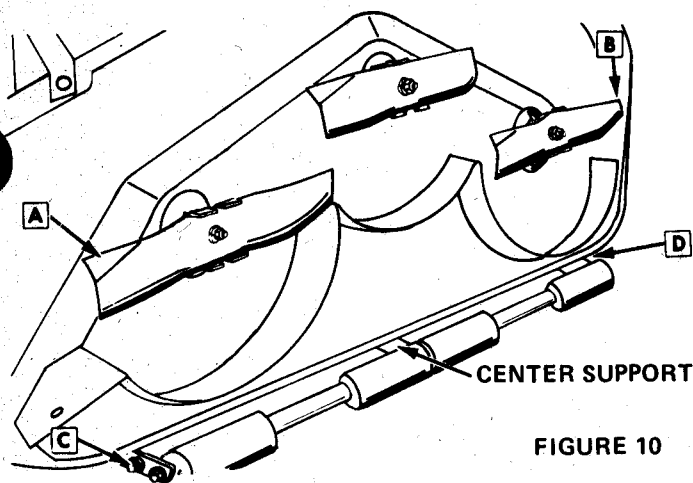


FIGURE 10

pivot until blade tips at A and B are equal distances from the floor.

IMPORTANT: ROLLER ASSEMBLY MUST BE LEVEL WITH THE FLOOR TO ASSURE PROPER MOWING PERFORMANCE AND MAXIMUM ROLLER LIFE. RETIGHTEN BOLTS C AND D.

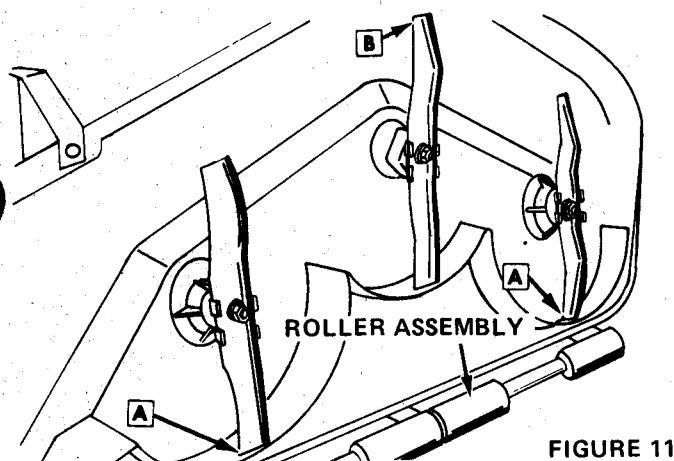


FIGURE 11

NOTE: If there are any indications of damage to the mower deck, blades or blade spindles, measure the blade tips at A and B, then rotate the blades 180 degrees and measure the opposite blade tip ends. If the measurements vary more than 1/8" on any blade, see your Ariens dealer for service. If the variation is not excessive, level the mower using the lowest measurement from blade tip to ground at A and B. Figure 10.

6. Tighten roller assembly mounting bolts securely.

7. Rotate the blades until they are perpendicular to the roller assembly as shown in Figure 11.

8. Measure distance from floor to both outboard blade tips at Points A, Figure 11.

9. Then measure from floor to front of center blade tip at point B. Front blade tip B must be 1/8"

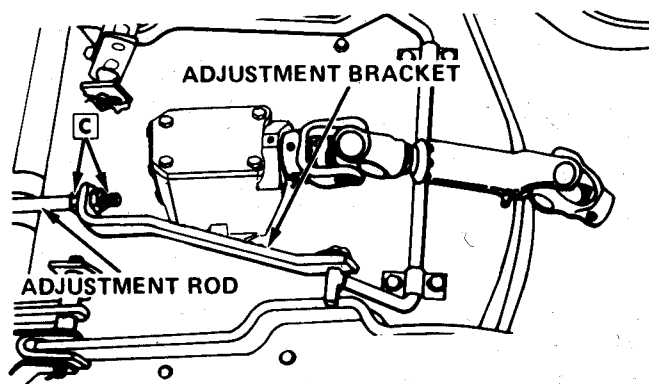
closer to the floor than outer blade tips A. Loosen adjusting nuts C on adjusting brackets, Figure 9, and move the nuts forward or back until center blade tip is 1/8" closer to the floor than the outer blade tips. Retighten adjusting nuts C.

CUTTING HEIGHT

The cutting height is adjustable to any of five positions by using the adjusting lever shown in Figure 9. Raise the lever to increase cutting height. Lower lever to decrease cutting height.



BE CAREFUL WHEN ADJUSTING THE FLOTATION SPRING, ALWAYS GRASP THE CHAIN HANDLE FIRMLY, FIGURE 1, (NOT THE CHAIN) AS CONSIDERABLE TENSION ON THE CHAIN COULD CAUSE INJURY TO THE HANDS.

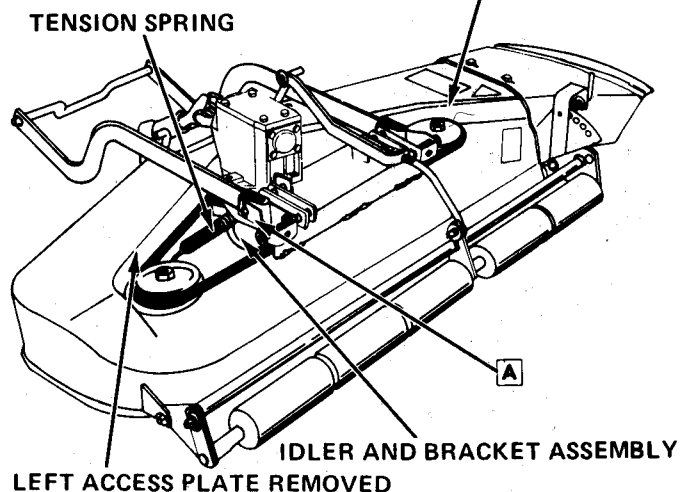


48 RM FIGURE 9 REPEATED

MOWER FLOTATION

The mower flotation spring, Figure 1, should have sufficient tension so the mower will follow the contour of the ground and float over uneven areas. Proper flotation will reduce the tendency of the mower to scalp. If there is excessive tension on the flotation spring, it will tend to carry the mower off the roller resulting in uneven cutting. Experimentation will be

RIGHT ACCESS PLATE REMOVED



LEFT ACCESS PLATE REMOVED

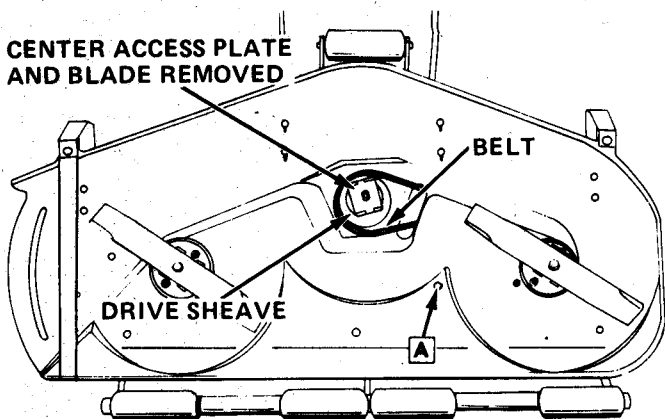
42RM FIGURE 12

required to find the correct spring tension for the type of terrain being mowed. For most conditions, the chain on the right rear panel of the hydrostatic drive tractors can be latched so that 5 to 8 chain links are through the notch in the tractor frame. On gear drive tractors, the rear deck must be raised to permit adjustment of the mower flotation spring. Pull the handle up and hook on to frame to increase flotation.

DRIVE BELT REPLACEMENT

Constant tension is maintained on the drive belt by a spring loaded idler; therefore, belt adjustment is not required. Should it ever become necessary to replace a worn or damaged belt, use the following procedure:

1. Remove left and right access plates from top of mower deck, Figure 12.
2. Unhook tension spring, Figure 12.

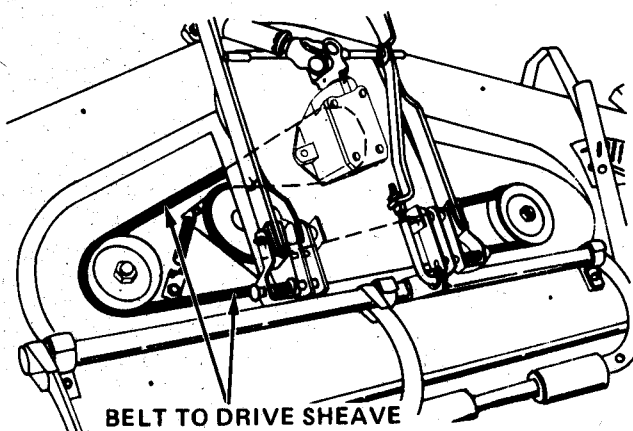


48 RM FIGURE 13

3. From underside of mower remove center mower blade and access plate on 48 RM, or center mower blade and sheave on 42 RM. See Figure 13.

4. Remove bolt A, Figures 12 and 13, and remove the idler and bracket assembly.

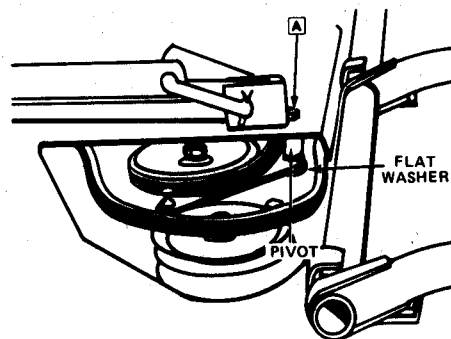
5. Remove worn or damaged belt.



48 RM FIGURE 14

6. From top of mower deck, push belt loop through the access hole and install on the center blade drive sheave, Figures 13 and 14.

NOTE: MAKE SURE BELT IS IN THE GROOVE OF CENTER BLADE DRIVE SHEAVE.



48 RM FIGURE 15

7. Re-install the belt idler assembly with the pivot between the two spans of belt, see Figure 15. Be sure the large flat washer is installed under the idler bracket pivot and that the bushing is placed in the pivot as shown in Figure 16. (48 RM ONLY). Secure the idler bracket assembly at point A with the bolt previously removed.

8. Place the belt over the two outside belt sheaves and replace the tension spring, Figure 12.

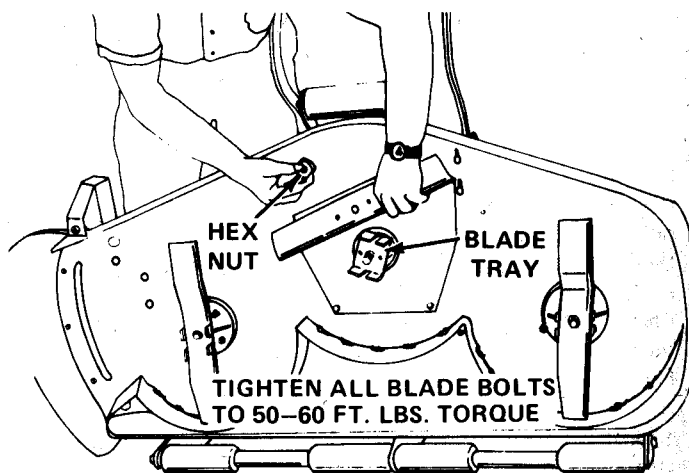
NOTE: Before hooking spring, be sure belt is still positioned on center drive sheave.

9. Replace the two access plates on top of mower deck and the center access plate on underside of the deck.

10. Reinstall sheave (42 RM) and the center mower blade with lockwasher and nut. Torque to 50-60 ft. lbs.

BLADE CARE

Blades should be kept sharp, tightly mounted, and in balance at all times. They can be sharpened on the mower with a file or removed and sharpened on a grinding wheel. Always sharpen both ends evenly to maintain proper balance. Sharpen blades at the same angle the original bevel was sharpened.



48 RM FIGURE 16

The center mower spindle is equipped with a drive pin which will shear when striking a solid object. Replace with genuine Ariens drive pins.

NEW STYLE GEAR BOX — REPAIR PROCEDURE

NEW STYLE GEAR BOX — REPAIR PROCEDURE

The new style gear boxes are available under the following part numbers. Installed at Model 831001 Serial No. 004300 and Model 831002 Serial No. 004300.

Old style gear boxes and internal parts are no longer available. When old style gear box or internal parts require replacement, order the new replacement kit.

This new style gear box is equipped with a "Load Ring" and therefore special assembly procedures are required. If the new style gear box must be repaired or adjusted, please follow these assembly procedures.

MOWER	OLD NO.	NEW REPLACEMENT KIT	NEW GEAR CASE ASSEMBLY ONLY
42RM	631015	531062	631122
48RM	631016	531063	631123

ASSEMBLY OF OUTPUT SHAFT, LOAD RING & RELATED PARTS

1. Disassemble gear box replacing all damaged and worn parts.

2. Press the upper Bearing Cup 54044 into gear case, if necessary.

3. Assemble Groove Pin (58049), Key (66012), Gear (31845), and Bearing Cone on shaft as shown in Figure 1. Pre-pack cone with Ariens #150 Grease. Insert assembly into gear box.

4. Slide bearing Spacer 31847, Washer 64165, special washer supplied with Load Ring 531064, Bearing Cup 54045, on output shaft. Pack Bearing Cone 54044 with Ariens #150 Grease and slide it into position on output shaft. See Figure 1.

5. Place the 31848 Spacer, 66012 Key, 31844 Sheave, Blade Tray, Blade, Lockwasher and Nut 63025, on output shaft. Torque Nut 65025 to 35-40 ft. lbs. This will set loc

CAUTION!!!

DO NOT use impact wrench or over torque. It will deform or shear the 58049 Drive Pin and overload the bearings.

6. Remove the Nut 65025, Lockwasher, Blade, Blade Tray, Sheave 31844, Spacer 31848, Bearing Cone 54045.

7. Pack lower cavity with Ariens #150 Grease.

8. Reassemble by removing the special washer supplied in the 531064 Load Ring Kit on the output shaft. Replace all items removed in step 6 above plus the 56066 Seal.

9. Torque 65025 Nut to 35-40 ft. lbs.

CAUTION: Do Not use impact wrench or over torque. This will deform or shear the 58049 Shear Pin and overload the bearings.

10. Output shaft end play should be .001 to .006 inch and spin freely.

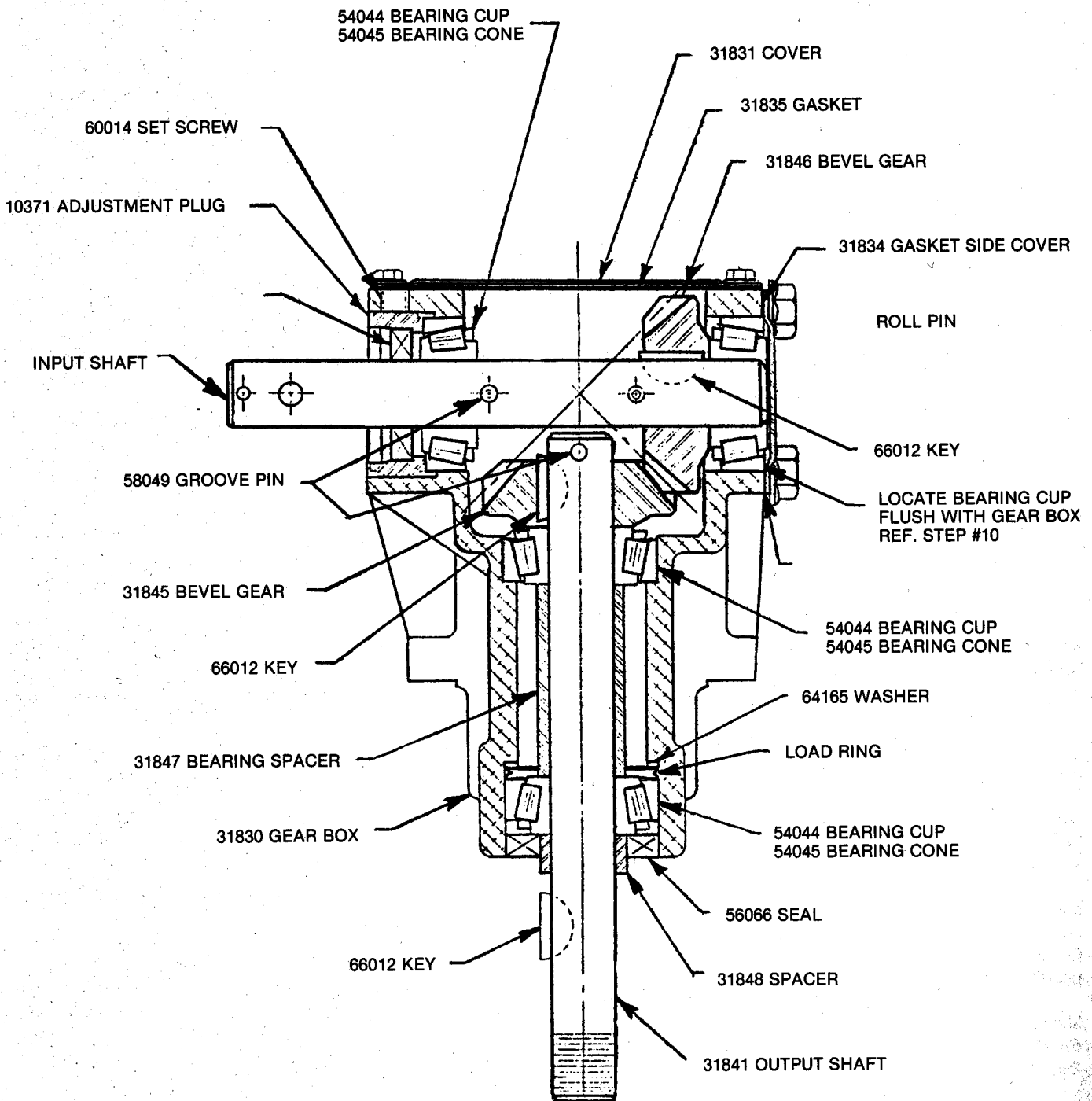
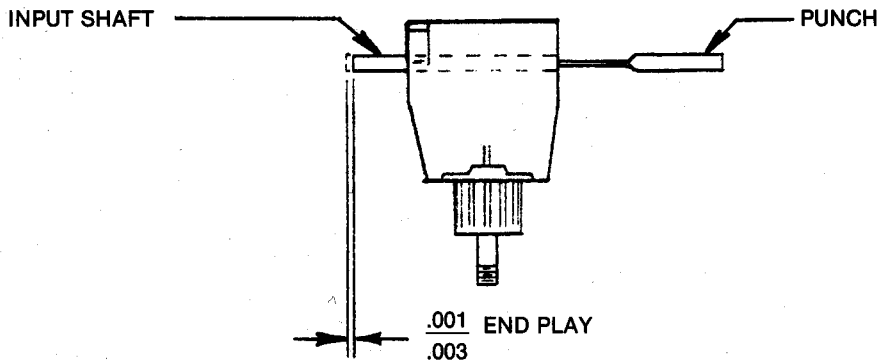


FIGURE 1



ASSEMBLY OF INPUT SHAFT AND RELATED PARTS

11. Press 54044 Bearing Cup in flush as shown. Figure 1.

12. Install Key 66012 and the Groove Pins 58049 and Roll Pin into Shaft 31840.

13. Pre-pack bearing cones with Ariens #150 Grease. Slide the gear and cone onto the shaft and position in gear case.

14. Install other bearing cone and cup on the shaft.

15. Apply gasoila sealant (or equivalent) to threads on Plug 10371. Install plug into gear box, pressing cup into case. If there is backlash, turn adjustment plug back several turns and lightly tap bearing cup opposite adjustment plug (use bearing driver #57), into gear box until there is no backlash between gears. Turn adjustment plug in until the 58049 Groove Pin just touches the bearing cone, check backlash between gears. Using bearing adjustment wrench #90, turn adjustment plug in until there is approximately .005 to .015 inch backlash between gears.

16. Turn adjustment plug back ¼ turn. With

punch centered on the end of the input shaft, tap shaft and bearing back against adjustment plug to obtain .001 to .003 inch end play between input shaft and shaft bearings.

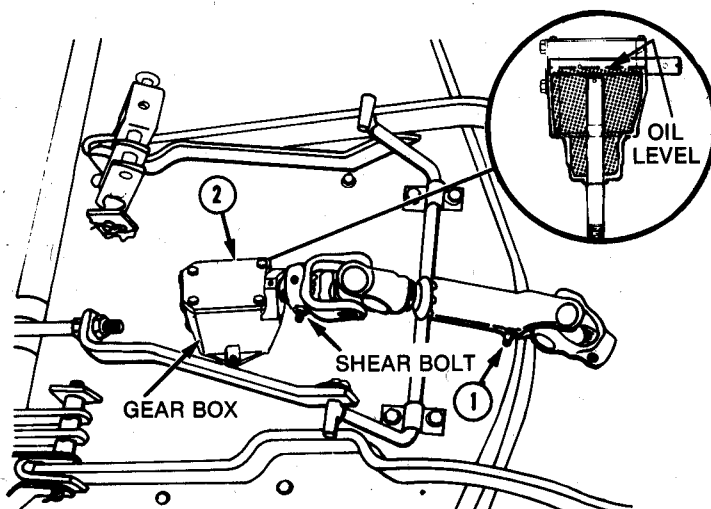
17. Position Cover 31832 on gear box. Using feeler gauge check gap between cover and gear box. Select number of gaskets required. Each gasket is .005 thick. Always round up to the next number of gaskets required as they will compress slightly. Select correct number of gaskets and position in place against gear box. Apply gasoila sealant or equivalent to capscrews and mount cover to gear box. Torque capscrews to 10-11 ft. lbs.

CAUTION: DO NOT use end cover and mounting hardware to press bearing into case as this will deform and bend cover, after which it will not seal properly.

18. Secure adjustment plug with set screw.

19. Fill gear case with #150 Grease to the top of the input shaft.

20. Install top cover with gasket and hardware.



NEW STYLE GEAR BOX WITH IMPROVED OUTPUT SHAFT

NEW STYLE GEAR BOX WITH IMPROVED OUTPUT SHAFT

This change was made at the following model and serial numbers — Model 831001 Serial No. 006345 and Model 831002 Serial No. 006216 to improve and simplify the output shaft for gear boxes on the Rotary Mowers. The groove pin has been replaced by a locknut to eliminate the groove pin deflection when blade nut was over torqued. The 531064 Load Ring has been eliminated to simplify assembly procedures.

All parts orders for the Load Ring (531064), old style Output Shaft (31841), will be filled by using the new 531087 Shaft Assembly.

NEW GEAR BOX ASSEMBLY PROCEDURE

Assembly of output shaft.

1. Disassemble gear box, replacing all damaged and worn parts.

2. Press the upper Bearing Cup 54044 into gear case, if necessary.

3. Assemble Bearing Cone 54045, Key 66027, Gear 31829 or 31845 and secure with Locknut 65128 on Output Shaft 31912. Torque locknut to 50 ft. lbs. Insert assembly into gear box. See Figure 1.

4. Place 64041 Washer (.032 thick), Bearing Cup 54044, Bearing Cone 54045, Spacer 31923 and Sheave 31844 on output shaft and secure with 65025 Nut. Torque to 50-60 ft. lbs.

5. Check shaft end play. Must be between .003-.008 and spin freely.

If end play is greater than .008, remove 64041 Washer and replace with one of the following washers to obtain end play (.003-.008):

64119	.025th
64118	.015th
64117	.005th

If end play is less than .003, add one of the above washers to obtain correct end play.

Once the correct end play is determined, remove output shaft and pack bearing cones with Ariens #150 Grease. Reassemble, packing lower cavity with grease, as shown in Figure 1, using washers selected to give the correct end play. Add the 56066 Seal, 31913 Spacer and 66012 Key.

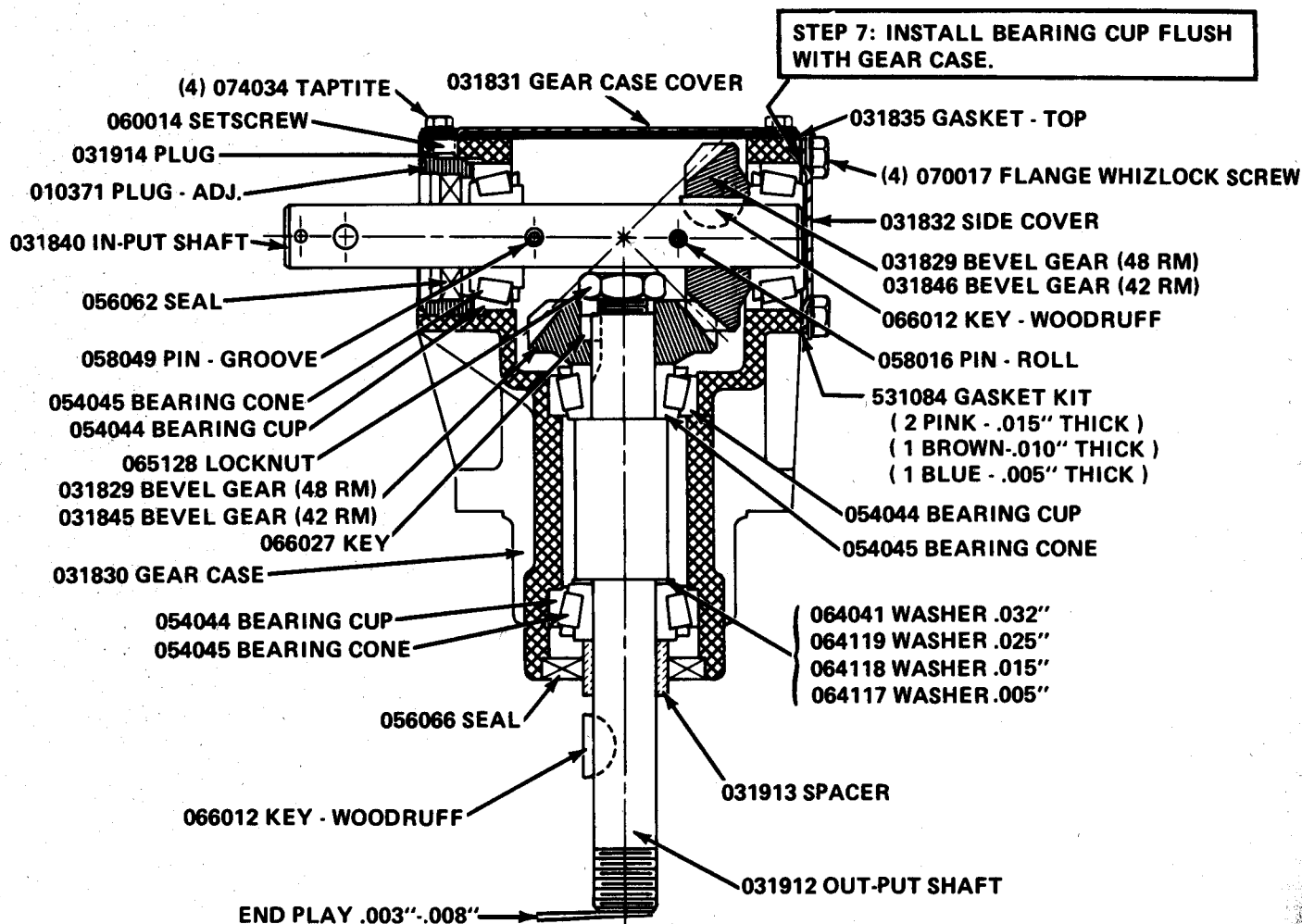


FIGURE 1

ASSEMBLY INPUT SHAFT AND RELATED PARTS

7. Press 54044 Bearing Cup in **flush** with end of gear case as shown in Figure 1.

8. Install Key 66012 and the Groove Pin 58049 and Roll Pin 58016 into Input Shaft 31840.

9. Pre-pack bearing cones with Ariens #150 Grease. Slide the gear and cone onto the shaft and position in gear case.

10. Install opposite bearing cone and cup on the shaft.

11. Apply gasoila sealant (or equivalent) to thread on Plug 10371. Install plug into gear box,

13. Position Cover 31832 on gear box. Using feeler gauge check gap between cover and gear box. Select number of gaskets required per 531084 Gasket Kit. Always round up to the next number of gaskets required as they will compress slightly. Select correct gaskets and position in place against gear box. Apply gasoila sealant or equivalent to capscrews and mount cover to gear box. Torque capscrews to 10-11 ft. lbs.

CAUTION: DO NOT use end cover and mounting hardware to press bearing into case as this will

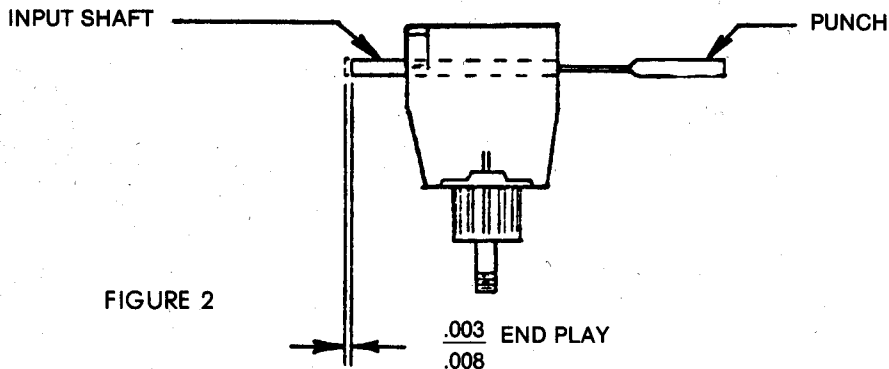


FIGURE 2

pressing cup into place until there is approximately .005 to .015 inch backlash between gears. If there is more than .015 backlash turn adjustment plug back several turns and lightly tap bearing cup opposite adjustment plug (use bearing driver #57) into gear box until there is no backlash between gears. Repeat above until .005 to .015 in backlash is obtained.

CAUTION: DO NOT use cover and mounting hardware to press bearing cup into case, as this will deform and bend cover, after which it will not seal properly.

12. Turn adjustment plug back $\frac{1}{4}$ to $\frac{1}{2}$ turn. With punch centered on the end of the input shaft, tap shaft and bearing back against adjustment plug to obtain .003 to .008 inch end play between input shaft and shaft bearings.

deform and bend cover, after which it will not seal properly.

14. Secure adjustment plug with set screw and 31914 Plug. Place Plug 31914 between set screw and adjustment plug. This plug will not allow the set screw to deform threads on the adjustment plug.

15. Fill gear case with #150 Grease to the top of the input shaft.

16. Install top cover with gasket and hardware.

17. Mount the gear box to the mower deck. Four Taptite Screws 74060 with locking compound is now being used in this application. This taptite has a 6 point (Torx) socket head which provides greater torquing capabilities versus the hex head screw previously used. Also, two through bolts are used on outer ears for improved clamping.

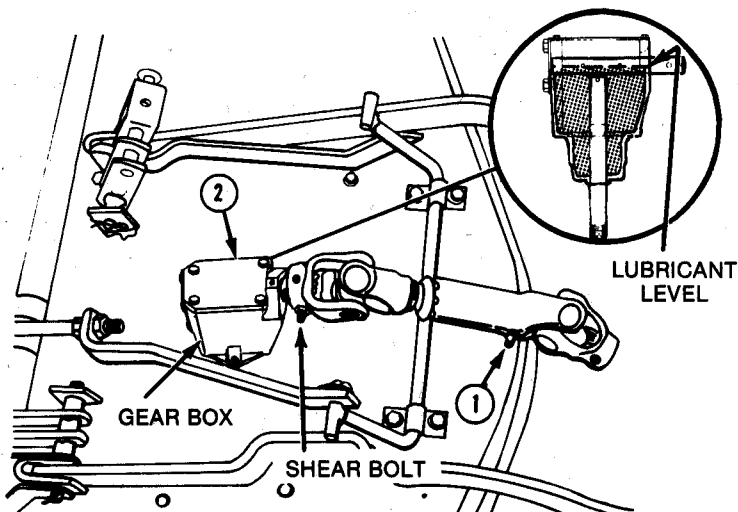


FIGURE 3

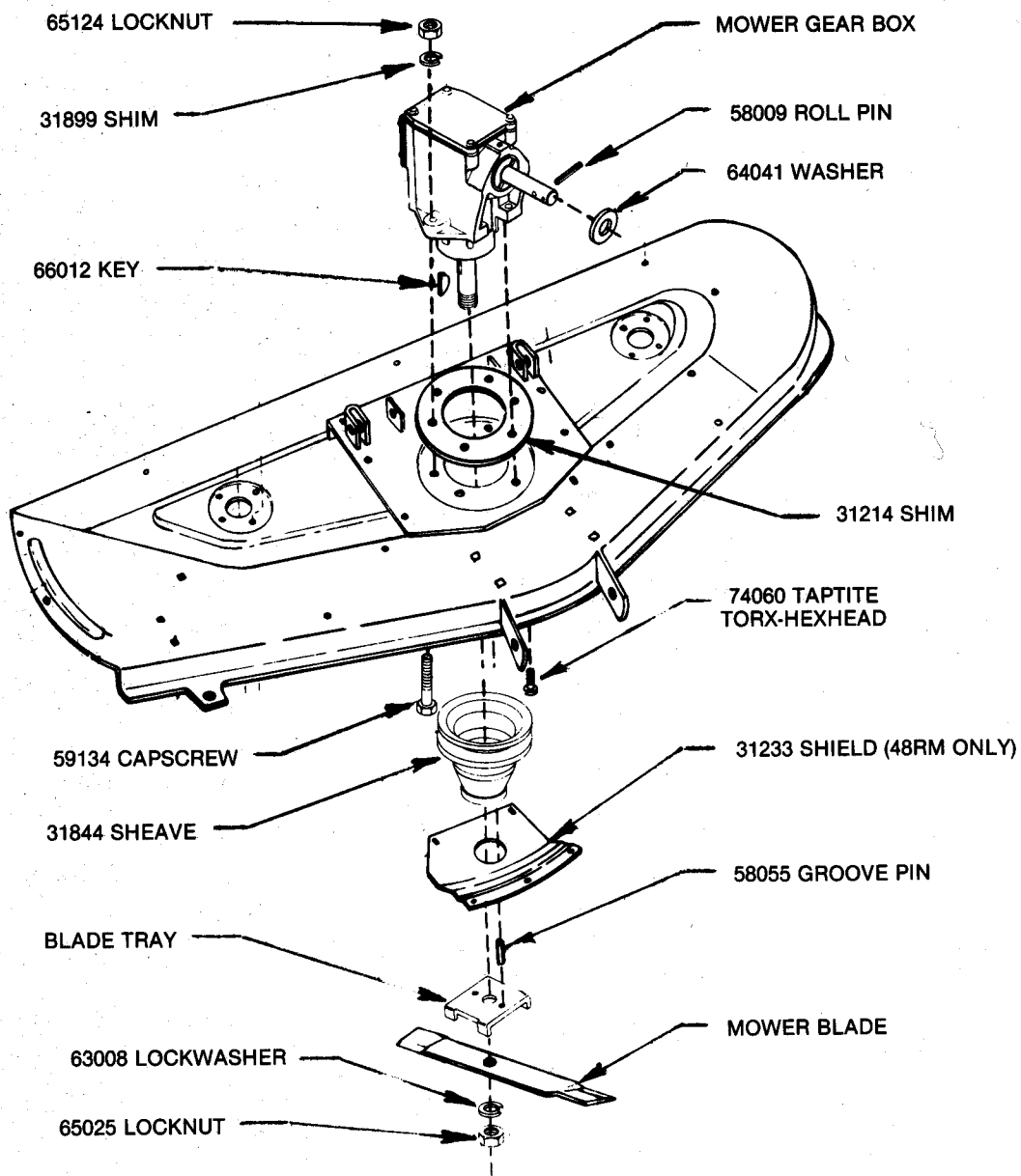


FIGURE 4

TROUBLE SHOOTING

MODEL	TYPE OF FAILURE	CAUSE	SOLUTION
1)	Mower gear box failing.	Blade over torqued. Should be 35-40 ft. lbs. Lack of lubrication. Wrong lubrication.	Repair or replace. See page 83. Add #150 grease. Ariens #150 grease.
2)	Poor cutting 48" deck.	31243 arm improperly installed.	See page 78.
3)	Mower bearing failure.	Unknown.	Replace bearings with 54120 bearing or replace assembly 531104 36 RM and 42 RM 531105 48 RM.
4)	Lack of traction.	Ballast weight required for specific condition.	Add wheel weights and/or calcium chlorides and water solution to the rear tires. See tractor Operator's Manual for recommendations.
5)	Tractor wheels digging up the lawn.	Turning too fast and too short. Tires over-inflated.	Decrease travel speed when turning. Adjust tire pressure.
6)	Ragged cut.	Blades dull or damaged.	Repair or replace damaged blades. Sharpen blades.
7)	Blades do not turn.	Drive belt broken or stretched beyond adjustment. P.T.O. input shaft shear bolt sheared.	Replace belt. Replace shear bolt — #59157.
8)	Grease leakage at input shaft bearing.	Use of incorrect grease.	Use Ariens #150 Grease (6 ozs.).
9)	631015 & 631016 gear box failure.		Replace with 531062 & 531063.
10)	531062 & 531063 Gear Box Failure.		See page 83.
11)	Cannot raise or lower the mower. (Tractors equipped with rear rock shaft).	Selector knob on tractor incorrectly positioned.	Place selector knob in the rear position.
12)	Mower vibrates excessively.	Blade mounting bolts loose. Blades bent or damaged. Left or right spindles bent or bearings damaged. Drive belt worn irregular or damaged. Blades out of balance or damaged.	Tighten mounting bolts as recommended. Repair or replace bent or damaged blades. See your authorized New Holland dealer. Replace drive belt. Repair or replace blades.

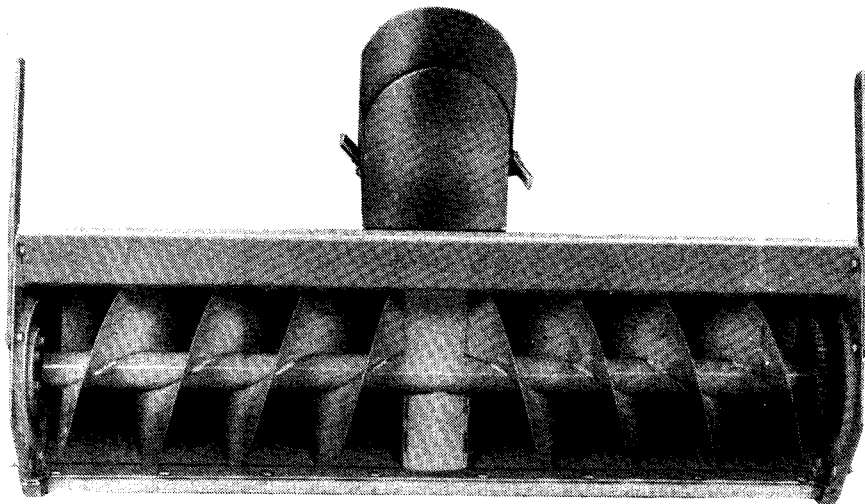
TROUBLE SHOOTING

MODEL	TYPE OF FAILURE	CAUSE	SOLUTION
13)	Cut grass uneven.	Mower not leveled.	Level as prescribed in "Adjustment Section."
		Forward pitch of blades incorrect.	Adjust blade pitch as prescribed in "Adjustment Section."
		Flotation spring tensioned excessively.	Relieve some of the tension so mower does not float "excessively."
		Lift linkage binding.	Free and lubricate linkage.
14)	Mower stalls easily.	Drive belt worn out.	Replace drive belt.
		Operating tractor engine speed too slow.	Operate tractor engine speed at full RPM and govern travel speed with hydrostatic control lever.
		Travel speed too fast.	Reduce travel speed.
15)	Mower scalps the ground.	Insufficient mower flotation.	Increase tension on mower flotation spring.
		Cutting height too low.	Increase cutting height.
		Traveling too fast on rough terrain.	Slow down.
16)	Tractor unstable on slopes, when turning or on rough terrain.	Tire pressure incorrect.	Inflate tires as recommended.
		Turning too fast and too short.	Slow down.
		Traveling too fast and turning too short on hillsides.	Slow down and add one or two wheel weights to each rear wheel.
17)	Lack of traction.	Tire pressure incorrect.	Inflate tires as recommended.
		Excessive build-up under deck.	Remove build-up of material.
		Lift linkage binding.	Free all lift linkage and lubricate so that mower can float freely.
		Insufficient mower flotation.	Tighten flotation spring.

Ariens

SNO-THRO

48 ST



ASSEMBLY INSTRUCTIONS

48" SNO-THRO — MODEL 831003

The 48 ST Sno-Thro is designed for use on all Ariens 931000 series Garden Tractors.

"Left" and "right" are always determined from a position facing the direction of forward travel during normal operation.

The gearbox is filled with type "O" lubricant and does not require periodic lubrication.

1. Apply a light coating of grease to the underside of the chute base ring and position the chute and deflector assembly on the auger housing as shown in Figure 1 and 2. The notches in the chute base must engage the worm type control as shown.

Place the three chute guides over the base ring as shown in Figure 1 and 2. Align holes in guides with the three square holes in auger housing and secure at Points A with round head carriage bolts with nuts to the outside. Secure at Point B with a hex head bolt.

Turn the worm control manually to assure that the chute and deflector turn freely. If there is any binding, it may be necessary to pry the openings in the chute guides further apart until the binding is eliminated.

2. Secure drift cutters to the auger housing as shown at C. Figure 2 with the two hex head cap screws, lockwashers and nuts provided.

3. Install the skid shoes as shown in Figure 2. Each skid shoe should be installed at the same height. Secure at D with the carriage bolts, flat washers, lockwashers and nuts provided. Flat washers must be next to the slotted holes as shown.

4. Attach the chute control support to the tractor steering tower as shown in Figure 2. Secure with the carriage bolts, lockwashers and wing nuts provided.

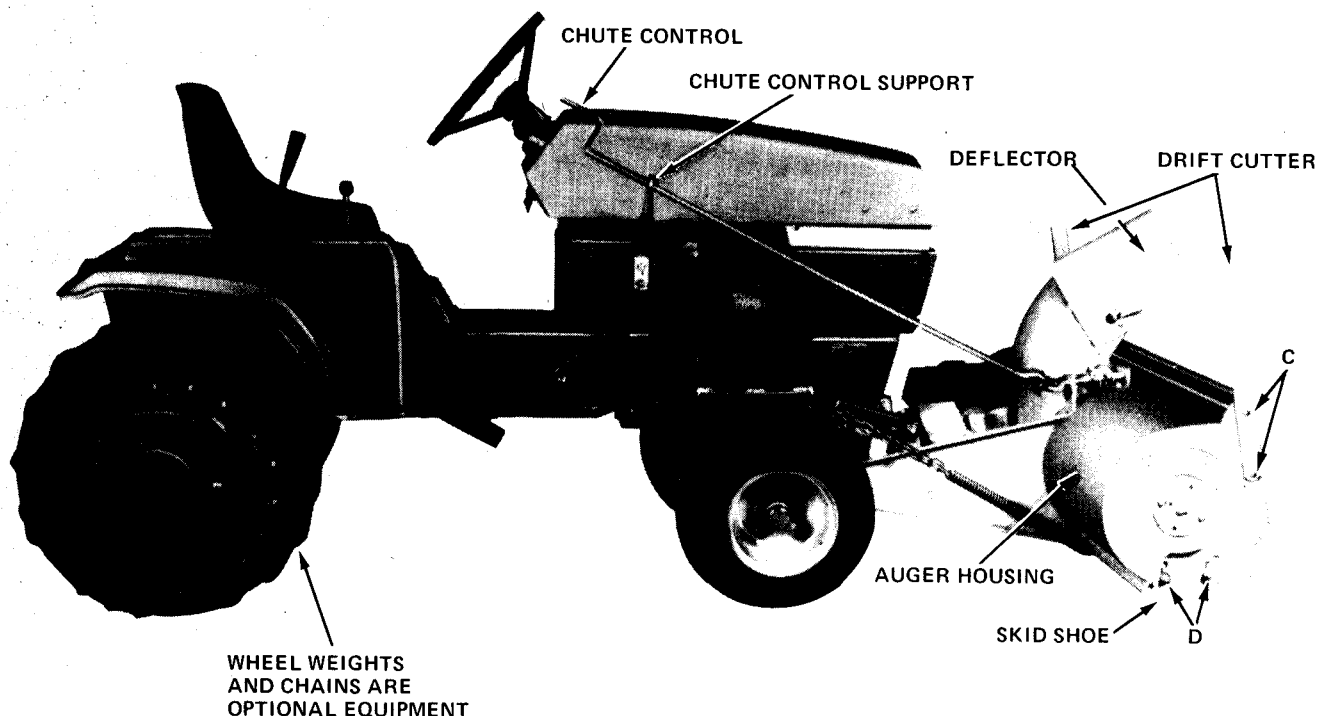


FIGURE 2

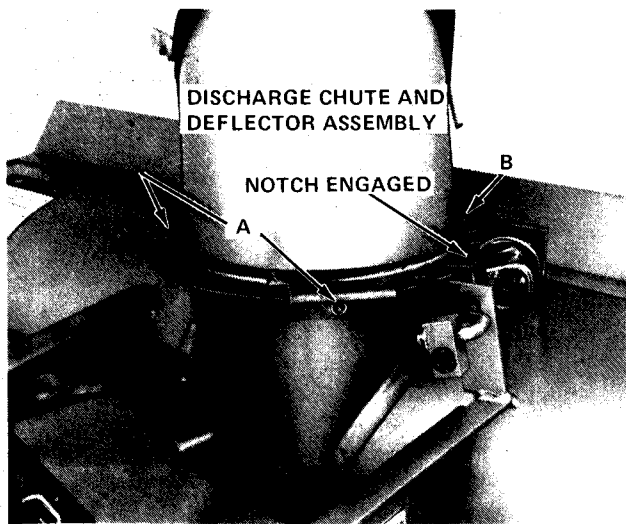


FIGURE 1

INSTALLATION

48" SNO-THRO

1. Apply a light coat of grease to the tractor saddle brackets, the splined P.T.O. shaft and the sliding portions of the drive shaft assembly. The protective covering must be removed from the splined P.T.O. shaft.

2. Raise the locks and the latches on the front of the tractor. Align front of tractor squarely with the pivoted rod on sno-thro and carefully drive the tractor forward until pivot rod is cradled in the tractor saddle brackets. See Figure 3.

3. Stop engine and remove ignition key.

4. Lower the latches and locks, Figure 3.

5. Attach drive shaft assembly to the tractor splined P.T.O. shaft and secure with the special hairpin cotter provided. See Figure 3.

6. Release spring tension from front rock shaft lift springs on manual lift tractors as shown in Figure 4. Grasp the chain handle firmly, pull rearward to release chain links from tractor frame and carefully allow chain to move forward in the slots.

7. Raise or lower front rock shaft arms to align mounting hole with sno-thro lift arm pivots. Secure

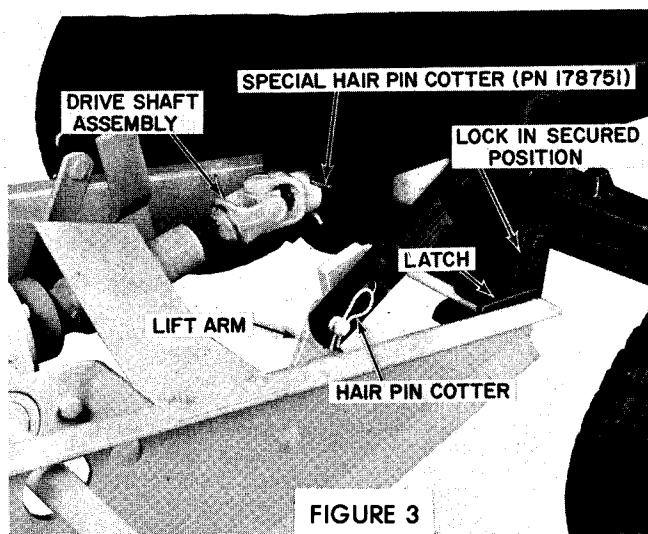


FIGURE 3

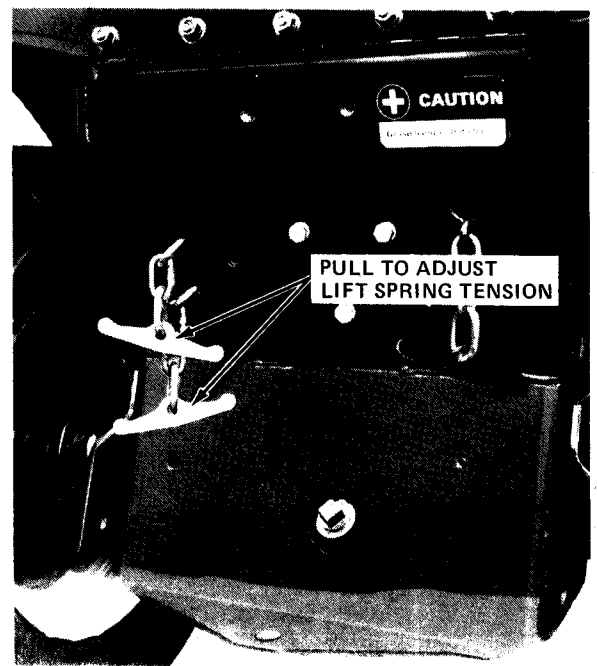


FIGURE 4

with the hairpin cotters as shown in Figure 3.

8. Reapply spring tension to the front rock shaft lift springs as shown in Figure 4.

BE CAREFUL WHEN ADJUSTING SPRING TENSION, ALWAYS GRASP THE CHAIN HANDLE FIRMLY (NOT THE CHAIN) AS CONSIDERABLE TENSION IS ON THE CHAIN AND INJURY TO THE HANDS COULD RESULT.

9. Install the lift assist spring, Figure 5, by attaching open end of spring to auger housing as shown at A, Figure 5. Raise sno-thro. Grasp chain handle firmly and apply spring tension by pulling the handle rearward and engaging chain links in the front rock shaft arms as shown.

Tighten spring on right hand side of tractor until Distance B, Figure 5, is equal on both sides of tractor.

10. Install chute crank through chute crank support as shown in Figure 5. Secure to the worm control pivot block with a flat washer and hairpin cotter.

11. On rear rock shaft equipped tractors the selector knob must be in the rear position to make the front rock shaft operational.

The 48 ST Sno-Thro is designed for use on all Ariens 931000 series Garden Tractors.

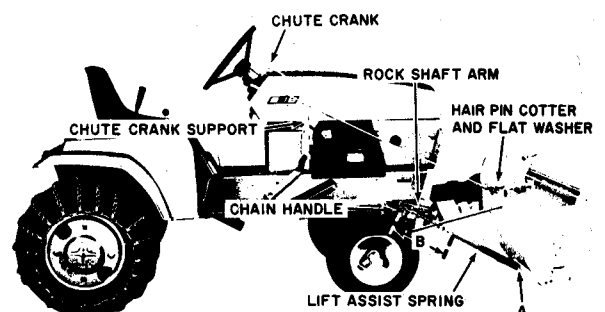


FIGURE 5

SAFETY FIRST

IMPORTANT



BE A SAFE OPERATOR. Before attempting to operate the sno-thro, thoroughly acquaint yourself with:

1. The safety information in the Owner's Manual.
2. The operating instructions in the Owner's Manual.
3. The controls on the tractor and sno-thro.

Unsafe operating practices and improper use of the tractor and sno-thro on the part of the operator can result in injuries. Observe the following safety precautions at all times:

1. Clear work area of debris and objects which might be picked up and thrown.
2. Stop and inspect for damage after striking a foreign object. Repair any damage before re-starting and operating the sno-thro.
3. Never direct snow discharge toward bystanders nor allow anyone near the machine while in operation.
4. When the tractor is parked, stored, or left unattended, always lower the sno-thro so it is resting on the ground or floor. If left in a raised position, the manual lift lever could accidentally be moved allowing the attachment to fall and injure someone.
5. NEVER ATTEMPT TO CLEAR AUGER OR DISCHARGE CHUTE WHILE ENGINE IS RUNNING. DIS-

ENGAGE THE PTO CLUTCH, STOP THE ENGINE AND REMOVE THE IGNITION KEY.

6. Disengage PTO clutch when transporting.
7. Disengage PTO clutch and stop the engine when changing angle of the deflector.
8. Give complete and undivided attention to the job at hand so complete control of the tractor and sno-thro is maintained at all times.
9. Learn how to stop the tractor quickly.
10. Drive slowly over rough ground and on slopes. Be alert for holes, ditches and other irregularities that could cause the tractor to overturn.
11. Avoid steep hillside operation which could cause the tractor to overturn.
12. Reduce speed when turning so there is no danger of tractor overturning.
13. Always look behind you before backing up.
14. Maintain proper transmission oil level to prevent loss of braking control on hydrostatic tractors.
15. Do not allow children to operate the sno-thro.
16. Do not allow adults to operate the sno-thro without proper instruction.
17. Do not allow passengers to ride on tractor at any time.
18. Do not operate tractor in any position other than in the operator's seat.
19. Do not stop or start suddenly when going up hill or down hill.
20. Never operate tractor engine in a closed building.
21. Re-fuel tractor outdoors with the engine shut off. Replace gas cap securely. Use an approved gasoline container. Do not smoke when handling fuel. Avoid spilling.
22. Never touch muffler, exhaust pipe or engine until they have had time to cool after operating the engine.
23. Dress appropriately — wear relatively tight fitting clothing when operating the tractor. Loose or torn clothing can catch in moving parts or controls.
24. Use only approved draw bar hitch points to pull loads.

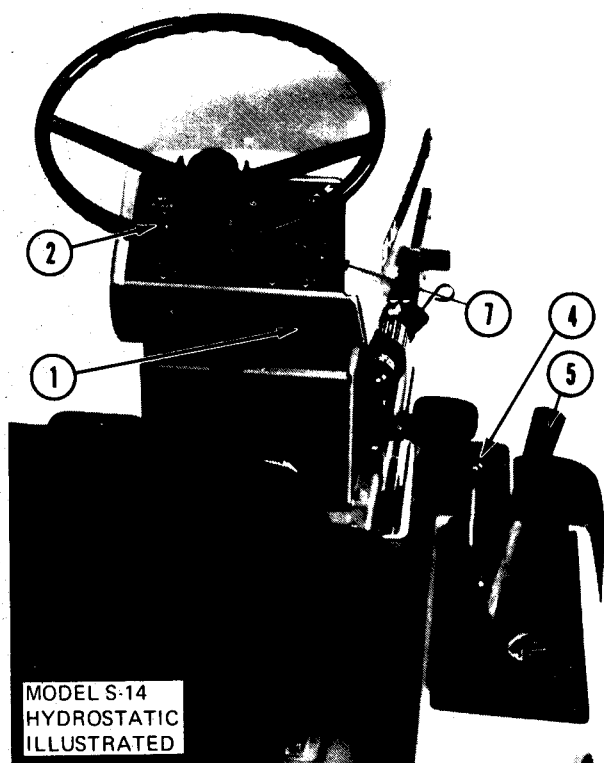


FIGURE 12

CONTROLS

TRACTOR

Familiarize yourself thoroughly with the tractor controls as outlined in the section under controls in the Owner's Manual supplied with the tractor.

SNO-THRO (Figure 13)

6. **Chute Crank** — This control regulates the direction of snow discharge.
9. **Deflector** — Controls the height the snow can be thrown.
8. **Runners** — Controls the distance the scraper blade is held above the surface being cleared.

OPERATION

The optional wheel weights and tire chains provide the extra traction needed for soft ground conditions, ice and heavy snow removal jobs. These accessories are not included with the sno-thro but can be purchased through your Ariens dealer.

The auger, auger drive chain and gearbox are protected by a shearbolt designed to shear if a solid object enters the auger. Do not install substitutes.

Make visual check with regards to safety precautions, obstructions, lubrication, and maintenance

On the S-14 and S-16 tractors with the hydraulically operated lift (4) Figure 12, raise the attachment by moving the control lever to the UP position. The sno-thro may be held in any position desired by allowing the lever to stay in the "hold" position. While operating the sno-thro, the lever should be moved to the "float" position, to permit the attachment to follow the contour of the ground.

4. For maximum snow removal and discharge operate the engine at full throttle and regulate the travel speed with the hydrostatic control lever and/or shift lever (5) Figure 12 and 13.

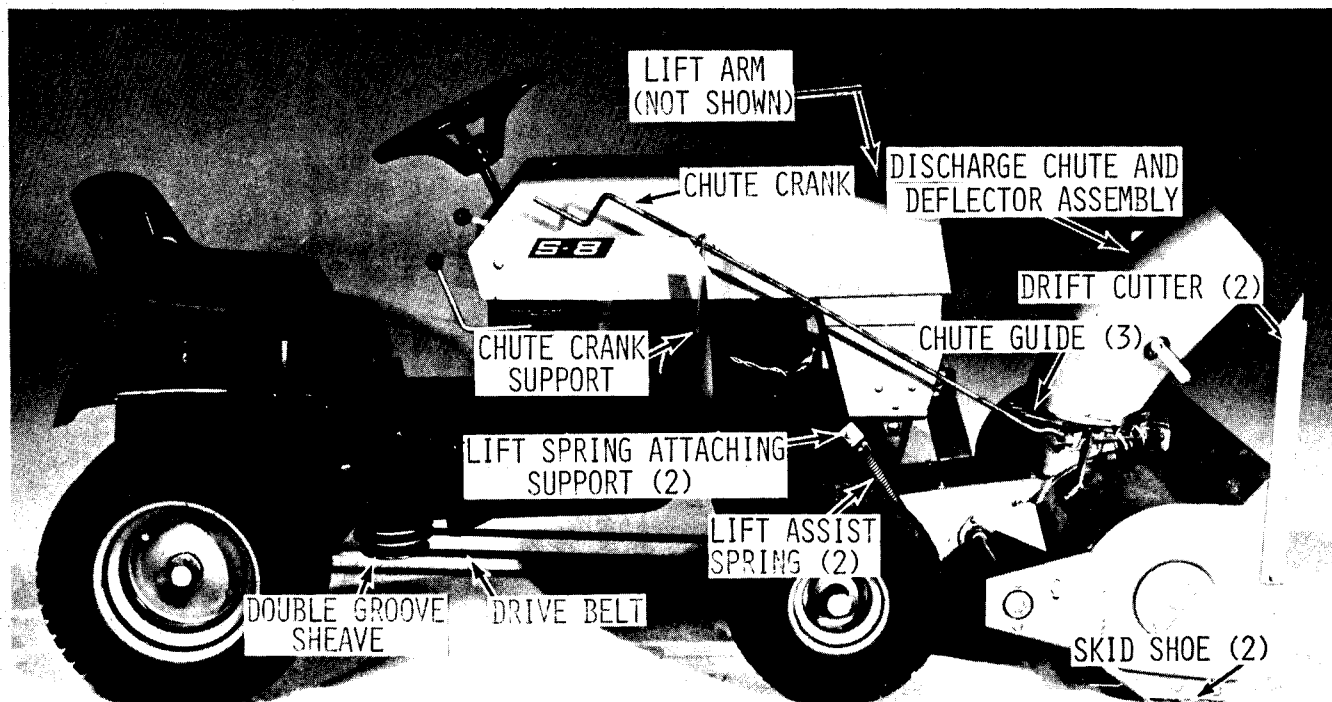


FIGURE 13

before starting the engine.

TRACTOR

For operation see the section on operation in the Owner's Manual packed with the tractor.

SNO-THRO

1. Adjust the deflector (9) Figure 13, to the desired height before starting engine. Raising the deflector will cause snow to be thrown the greatest distance. Lowering the deflector will shorten the distance.

2. Turn the chute crank (6) Figure 13, so that snow will be thrown in the desired direction.

3. Lower the sno-thro and start the auger rotating by pulling the implement power control switch (1) Figure 12, "out" with the engine running at $\frac{1}{2}$ fast throttle (7) Figure 12. Increase engine speed to full throttle after the sno-thro auger is rotating.

On the S-8 and S-12 tractor the sno-thro is raised by pulling the manual lift lever (3) Figure 13, until the latch snaps into a notch of the control quadrant. To lower sno-thro, pull lever slightly rearward, depress button and move the lever forward.

ADJUSTMENTS

1. The deflector, Figure 14, has a slotted hole on each side for adjustment. To change the angle of the deflector, loosen the two locking levers. Tighten the

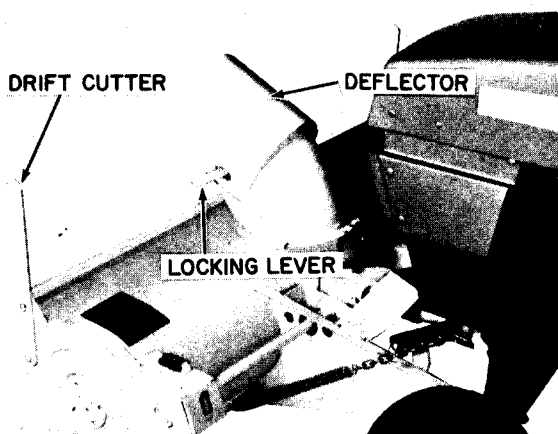


FIGURE 14

locking levers when the deflector is adjusted at the desired angle.

2. The runners, Figure 15, are mounted on slotted holes to provide the desired clearance between the base of the auger housing and the surface of the area to be cleared. When operating on a smooth surface such as cement or asphalt, the runners can be set at the lower end of the slots as shown. When operating on a rough surface such as

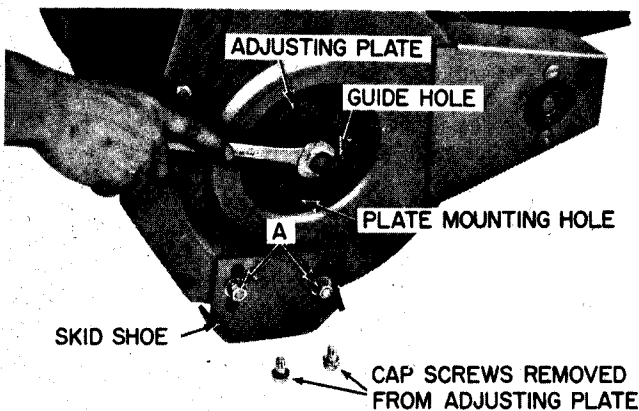


FIGURE 15

gravel or earth, the runners should be set at the upper end of the slots to prevent foreign material from entering and possibly damaging the snow thrower. Adjust the runners by loosening nuts A and moving the shoes up or down as required.

3. The auger drive chain should be adjusted until the chain deflects from $3/8''$ to $1/2''$ with finger pressure applied midway between the sprockets, Figure 16. Adjust drive chain as follows:

Remove two cap screws from the adjusting plates on each end of the auger, Figure 15. Place a wrench on the nut welded to the left hand adjusting plate and rotate the plate until proper chain deflection is achieved and the plate mounting holes align with the holes in the auger housing. Rotate the right hand adjusting plate an equal amount. The guide hole shown in Figure 15 is provided on each adjusting plate to assure that both ends of the auger are adjusted evenly.

Recheck chain deflection and readjust if necessary. After obtaining the proper adjustment, secure end plates to the auger housing with the cap screws previously removed.

NOTE: After continued use it may be necessary to remove a half link from the chain and repeat the above procedure to obtain the proper chain tension.

4. The cutting edge shown in Figure 15 is both reversible and replaceable. If excessive wear is noticed after continued use, the eight mounting bolts can be removed and the plate reversed for double life.

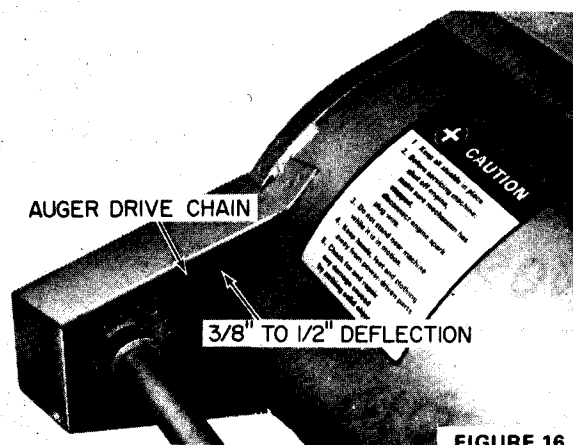


FIGURE 16

LUBRICATION

Once a month during season or every 25 operating hours, lubricate the auger drive chain, Figure 16, with heavy duty chain lubricant.

Grease discharge chute base shown in Figure 14 after each use.

TROUBLE SHOOTING

MODEL	TYPE OF FAILURE	CAUSE	SOLUTION
1)	Cannot completely clear the snow area.	Not following a proper pattern of operation.	Follow suggestions outlined in "Methods of Snow Removal" section.
2)	Insufficient traction and maneuverability.	Tire chains and wheel weights required.	Install the optional tire chains and wheel weights for better traction. Add two sets of wheel weights if necessary.
		Not removing top layers of snow first in deep snow or drifts.	Follow suggestions outlined in "Operation" section.
		Travel speed too fast for uneven terrain or ice conditions.	Reduce travel speed.
3)	Discharge chute hard to turn or does not turn.	Chute guides binding.	Remove discharge chute and pry guides open enough to allow the chute base to rotate properly.
		Chute base and guides rusted.	Remove chute. Clean rusted areas and apply coating of grease to chute base ring and guides.
		Chute directional worm control damaged.	Repair worm control so the spirals engage notches in the chute base without binding.
		Chute base ring or directional worm control frozen with ice.	Remove ice so that discharge chute turns freely.
4)	Cannot raise or lower the snow thrower. (S-14 tractors equipped with rear rock shaft).	Selector knob on tractor incorrectly positioned.	Place selector knob in the rear position.
5)	Snow thrown too far or not far enough.	Deflector improperly adjusted.	Adjust deflector higher to throw snow further. Adjust lower to decrease throwing distance.
		Discharge chute partially blocked.	Remove obstruction from the chute.
		Engine speed too slow.	Operate engine at full throttle.

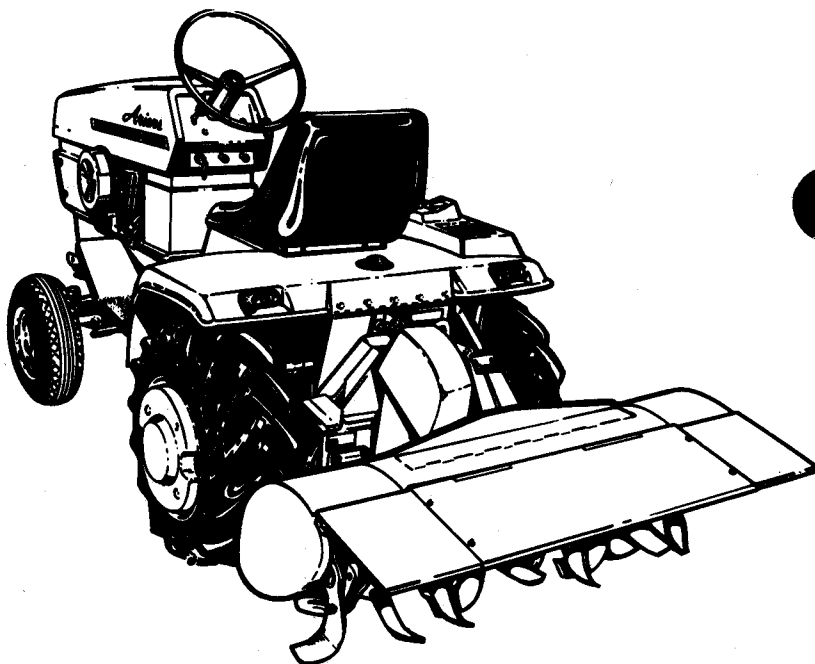
TROUBLE SHOOTING

MODEL	TYPE OF FAILURE	CAUSE	SOLUTION
6)	Auger plugs.	Travel speed too fast for conditions.	Decrease travel speed to meet conditions.
		Foreign object lodged in auger housing or discharge chute.	Remove obstruction.
		Auger damaged from striking foreign object.	Repair or replace the auger.
		Auger drive chain too loose — jumps sprocket teeth.	Repair or replace chain if damaged. Maintain proper adjustment.
		Tractor P.T.O. drive belts worn excessively.	Replace belt.
		P.T.O. drive shaft universal joints out of phase.	Re-assemble drive shaft so that universal joints are properly phased.
7)	Excessive vibration.	Auger damaged or bent.	Repair or replace auger.
8)	Auger does not rotate.	Sheared shearbolt.	Replace with new shearbolt

Ariens

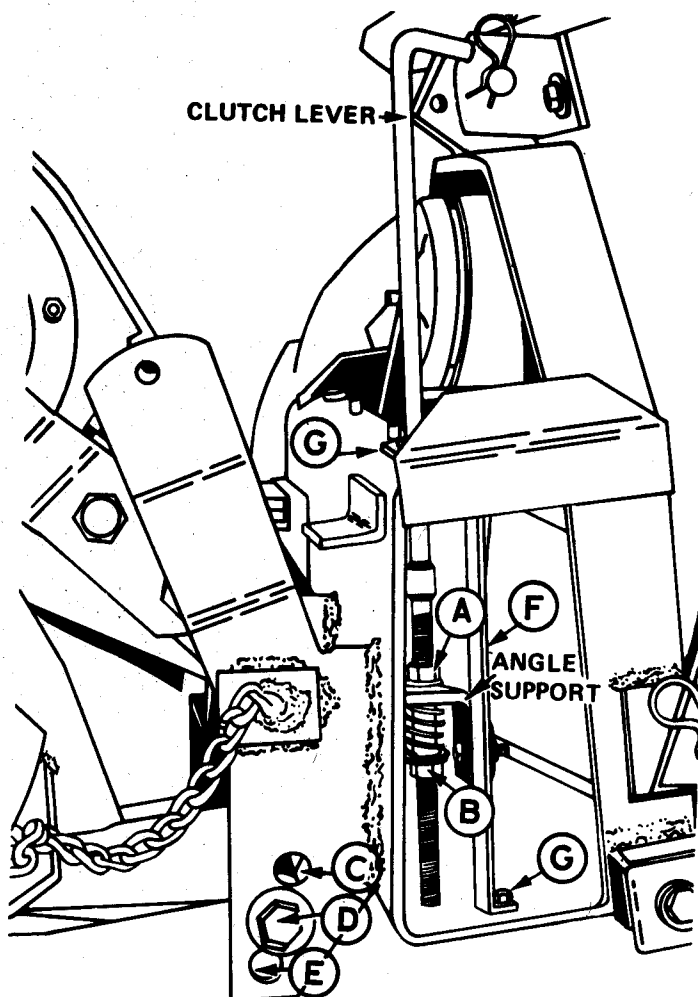
34 RT ROTARY TILLER

MODEL NO. 831006
SERIAL NO. 000101 AND UP



STABILIZER BRACKET ADJUSTMENT (ITEM ⑥)

With Clutch Lever engaged, loosen 3/8 x 1 Carriage Bolts ⑥ at top and bottom of mounting frame. Adjust both stabilizers together against idler bar arm. Retighten hardware. Operate clutch lever, idler bar arm should operate freely thru-out stabilizer bars.



INSTALLATION

NOTE: The Garden Tractors must be equipped with a rear PTO kit, part no. 731007 for models 931002 and 931003, part no. 731014 for models 931005, 931006, 931007, 931008, 931009 and 931010, or part no. 731018 for models 931011 and 931012. Lift Assist Kit, part no. 731017 recommended for model 931011.

The following is a list of those parts which are shipped loose in the carton.

Part No.	Description	Qty.
031792	Owner's Manual	1
067029	Hairpin Cotter	2
631110	Lift Link	1
031381	Pin	1
031460	Pin	1
064069	Washer, 3/8"	2
031456	Lever Blade Extension	1
031455	Shroud Extension	1
062040	Carriage Bolt, 5/16" x 3/4"	19
031550	Pulley, PTO	1
063004	Lockwasher, 3/8"	1
031450	Tine, L. H.	3
031451	Tine, R. H.	3
031452	Tine Extension	1
031453	Plate	5
031454	Shaft Extension	1
031438	Pin, Tine Tube Connector	6
067004	Pin, Cotter	6

The definitions "left", "right", "front" and "rear" relate to the tractor and rotary tiller as the operator is seated during normal operation.

1. Lower the PTO shield and secure with the locking clip as shown in Figure 1.

2. On manual lift tractor 931011, with the lift handle in the up position, grasp the tee handle on the

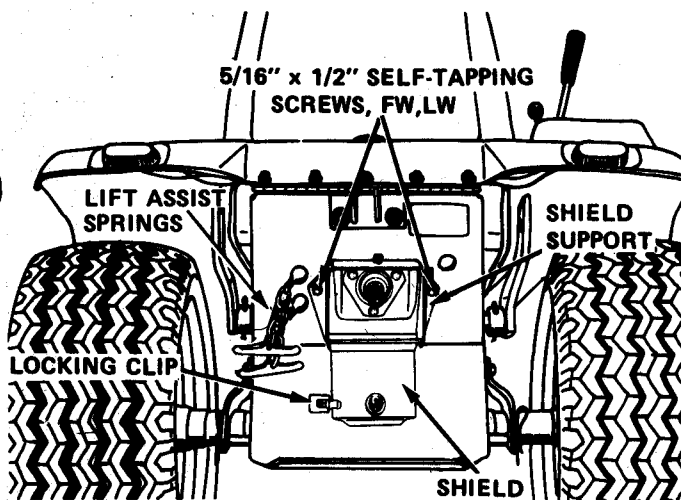


Figure 1

lift assist springs and pull out to lock in the maximum assistance position. External lift assist springs in kit No. 731017 are recommended for the tiller in addition to the standard internal springs supplied. See Figure 1.

3. Lower the mounting stands as shown in Figure 2.
4. Engage tiller clutch lever, Figure 2.

CAUTION: IF NOT DONE WHEN BACKING UP TO UNIT, DRAW PLATE ON TRACTOR WILL DAMAGE IDLER.

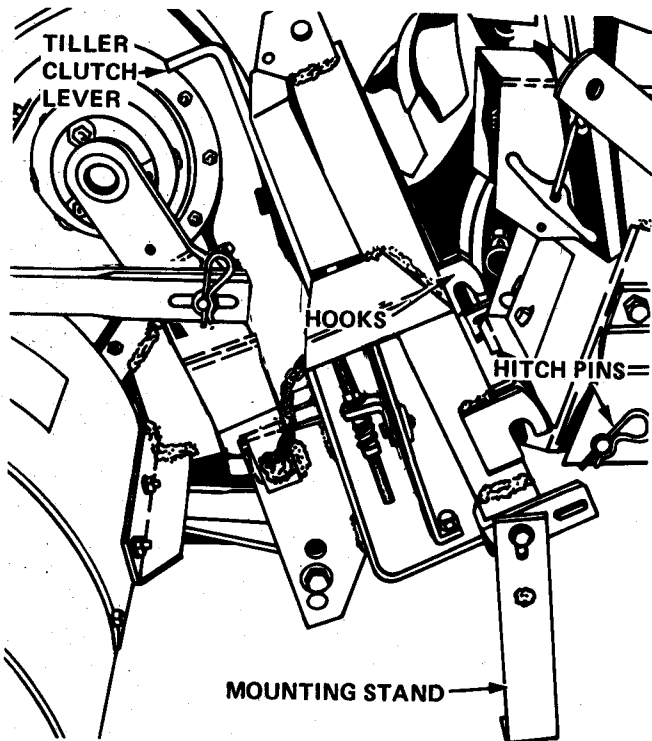


Figure 2

4. Slowly back the tractor up to the tiller, being careful to align the hitch pins with the tiller attaching hooks, Figures 2 and 3. Continue backing the tractor until the hooks are secured to the tractor hitch pins and the mounting stands have been forced forward as shown in Figure 3. **NOTE: The attaching hooks must**

be high enough to clear the tractor hitch pins. If hooks do not clear the pins when tractor is backed up, loosen bolts C, Figure 3, each side and move the mounting stands down in the slotted holes as required. Tighten bolts C.

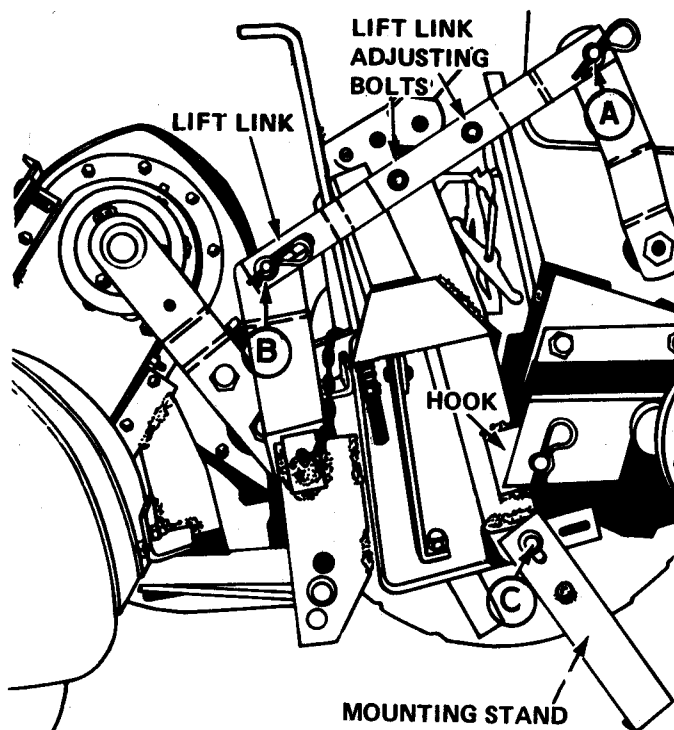


Figure 3

5. Start the tractor and move the lift lever to the down position until the rock shaft arms are completely lowered. Attach lift link to the right hand tractor rock shaft arm with a drilled rivet and hairpin cotter at A, Figure 3. Secure lift link to the lift link support with a

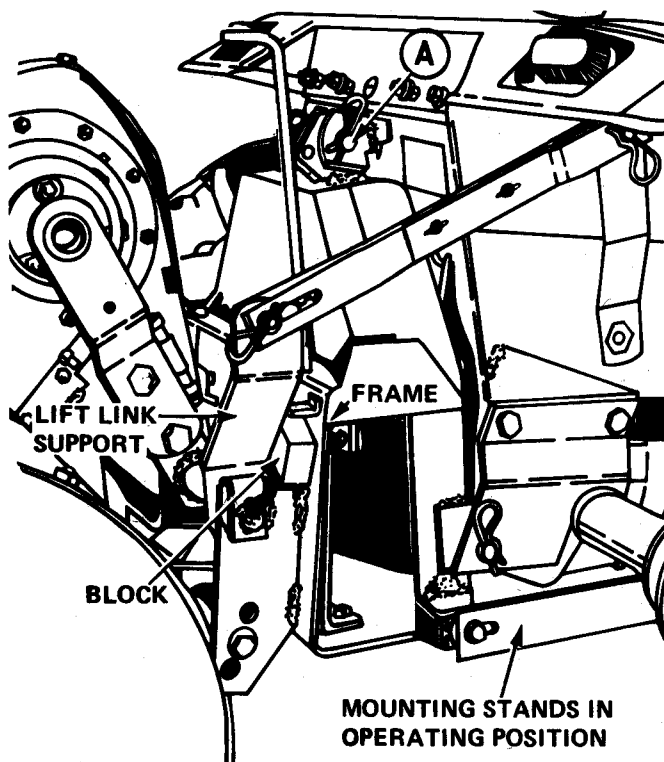


Figure 4

clevis pin, two flat washers and hairpin cotter at B. Install flat washers over the slotted holes as shown.

6. Place a small block of wood or similar object between the lift link support and the stop on the tiller frame, Figure 4. With the block used to aid in attaching the top of tiller mounting frame to the tractor, raise the tiller with the lift lever until the clevis pin can be installed at A, Figure 4. Secure clevis pin with a hairpin cotter as shown. Move the lift lever to the down position and remove the block used to help raise the attachment.

7. Rotate the mounting stands completely forward as shown in Figure 4 and engage the locking pins in the slots provided in the mounting stand brackets.

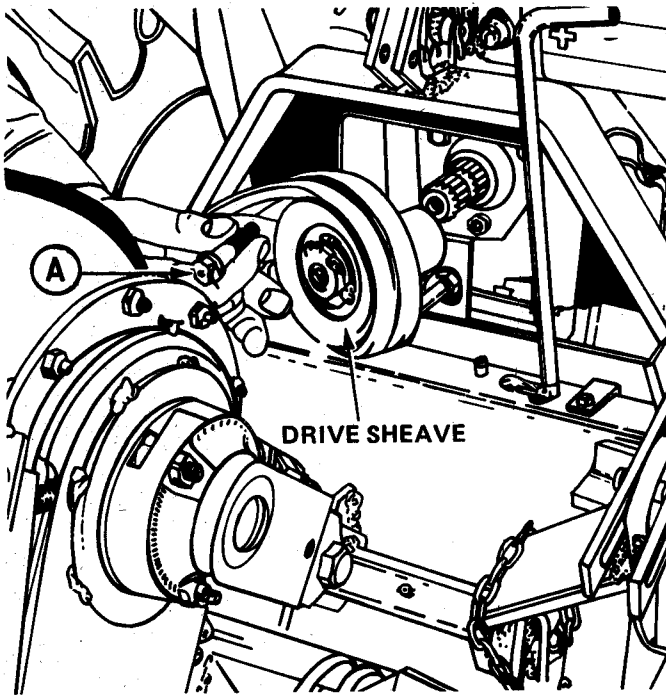


Figure 5

Models 931002 and 931003

8A. The PTO measurement "A", Figure 6, should be between 2" and 2-1/8". If it is incorrect refer to PTO Kit installation instructions.

8B. Disengage tiller clutch lever. Install belts and double V belt drive sheave on the tractor PTO stub shaft as shown in Figures 5 and 6. Secure with a 3/8" x 2" cap screw and lockwasher as shown at A, Figure 5.

9A. Engage tiller clutch lever, Figure 7, and check alignment of the drive and driven sheaves as shown by the straight line B, Figure 7. The sheaves must be in alignment. If adjustment is needed, align belts as follows.

9B. Loosen the two setscrews in the driven sheave, Figure 7. Slide driven sheave in or out to align and secure in position. Recheck alignment with tiller clutch engaged.

9C. Re-check the sheave and idler alignment, Figure 7, to assure that the drive belts will run straight in the sheaves and idler is centered on belts. **NOTE:** Tiller clutch lever must be engaged to check belt alignment.

9D. The idler force spring on the tiller clutch

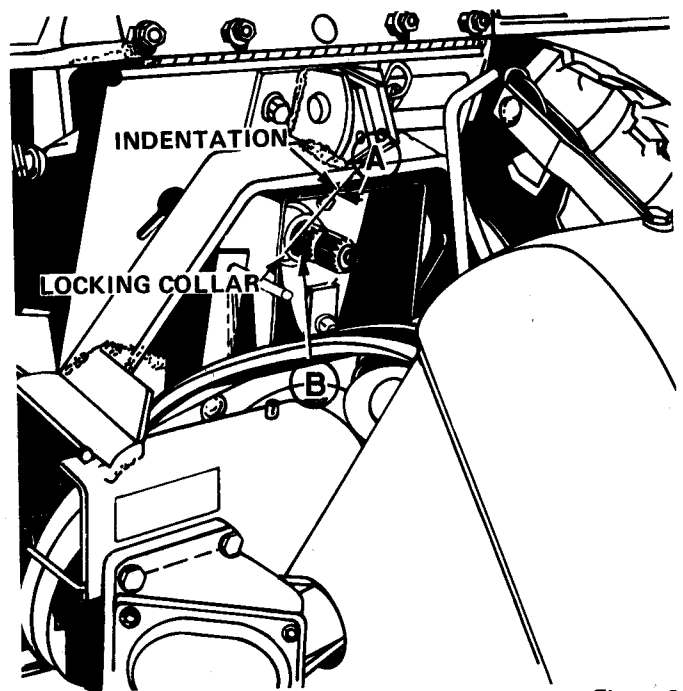


Figure 6

lever must not be compressed flat when engaged. Excessive idler force will cause idler arm deflection and decrease belt life.

NOTE: On manual lift tractor model 931011 a lift assist spring kit is recommended for ease of lifting the tiller.

10. Secure belt shield to top of tiller frame with the 5/16" x 1 1/4" clevis pin and hair pin cotter provided.

11. After tiller is completely assembled and

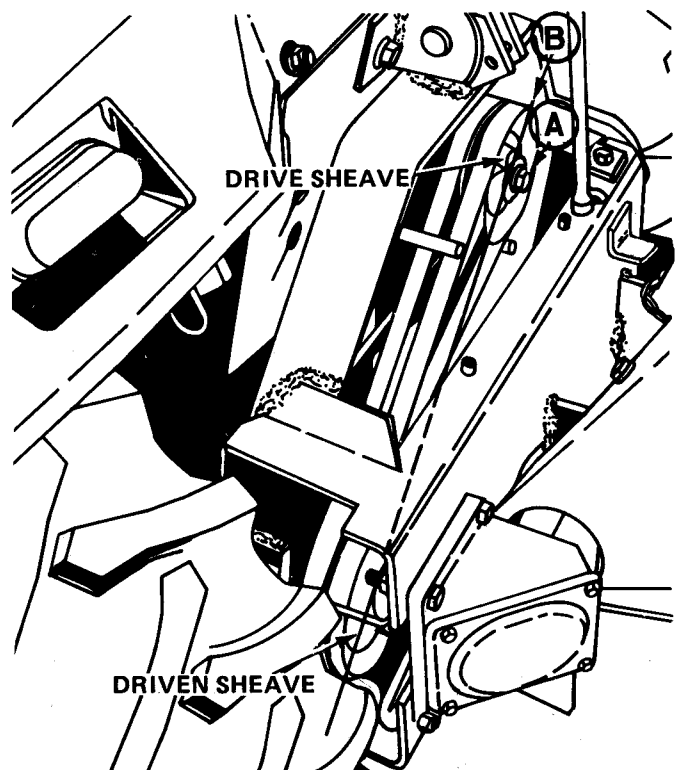


Figure 7

installed on the tractor, raise the tiller to the highest position with the lift lever. The lift link support should just clear the stop on the frame (approximately 1/16"). Refer to Figure 4. Support tiller securely. Loosen adjustment bolts. Lower the lift arms until the lift link can be adjusted the amount needed to set the proper clearance and tighten bolts securely.

REMOVAL

1. Before attempting to remove tiller be sure unit is on a level, solid surface.
2. Place a small block of wood or similar object between the lift link support and the stop on the tiller frame, Figure 4. With the block used to aid in removing the top of tiller mounting frame from the tractor, raise the tiller with the lift lever until the clevis pin can be removed at A, Figure 4. Remove clevis pin and hairpin cotter as shown. Move the lift lever to the down position and remove the block used to help raise the attachment.
3. Turn engine off. Disconnect the lift link from tractor rock shaft arm at A, Figure 3.
4. Remove the drive sheave, Figure 5.
5. Rotate the mounting stands down, Figure 2, start engine and slowly drive the tractor forward. The mounting stands will cause the tiller to raise, disengaging the hooks from the tractor hitch pins.
6. Secure PTO shield as shown in Figure 8.

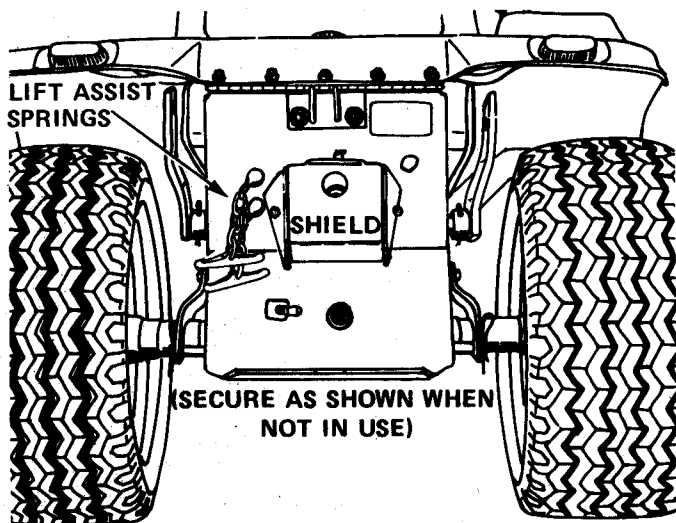


Figure 8

CONTROLS

Throttle Lever (Figure 9). Raise the lever to increase engine speed. Lower the lever to decrease engine speed. ALWAYS OPERATE THE TILLER AT FULL SPEED.

Ignition Switch (Figure 9). Turn the key fully clockwise to start the engine and release when the engine starts. Turn the key counter-clockwise to stop the engine.

Choke Control (Figure 9). Pull the choke control out when engine is cold or when starting during cold weather. When engine starts, gradually push choke

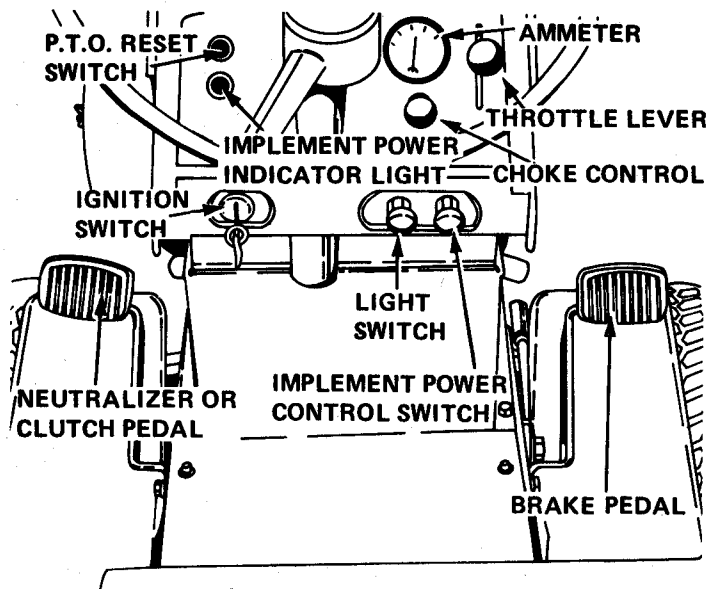


Figure 9

in. Normally it is not necessary to use the choke when starting a warm engine.

Hydraulic Lift Lever (Figure 10). This lever controls the hydraulic system used to raise and lower attachment. The lever has four positions — UP, HOLD, DOWN and FLOAT. The normal out-of-use position is the "HOLD" position, whereby the hydraulic cylinder is locked so that the tiller will not raise or lower.

When it is desired to raise the tiller, move the lever to the "UP" position; to lower the tiller, move the lever to the "DOWN" position. When placed in the "FLOAT" position the attachment will follow the ground contours.

Manual Lift Lever (Model 931011 only). This lever permits lifting the tiller manually. Pull lever to lift

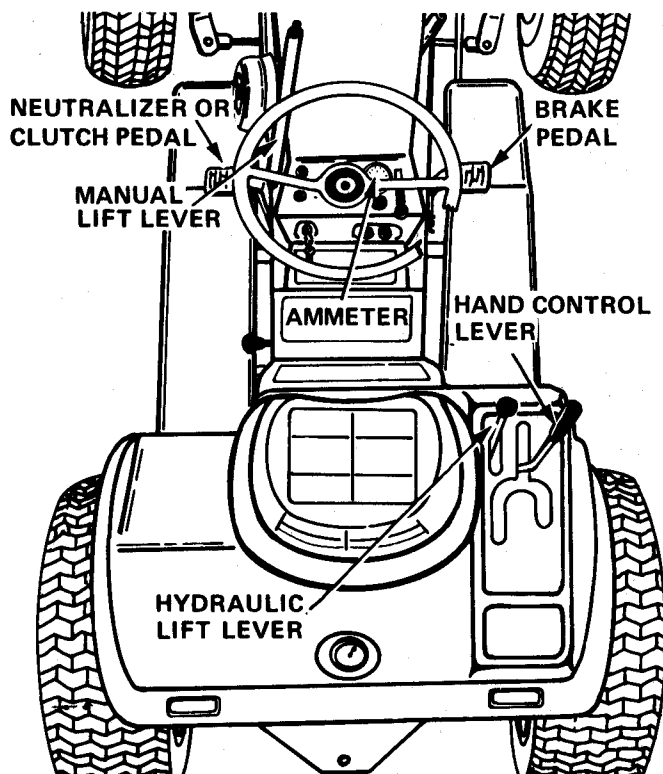


Figure 10

tiller; depress button on top of lever and release lever to lower tiller. Assist springs at the rear of tractor (see Figure 1) aid in lifting tiller. Additional lift assistance is available with Kit No. 731017.

Hand Control Lever (Figure 10). This lever regulates both tractor speed and direction. It controls the hydraulic drive on hydrostatic models; it shifts gears on the gear drive models.

NOTE: This lever must be in the "Park-Start" position on hydrostatic models; or "Neutral" position on gear drive units before the engine can be started.

On hydrostatic models, move the lever forward from neutral to increase the forward speed. Move the lever rearward from neutral to back the tractor and regulate reverse speed. Use of maximum engine speed with very slow ground speed is recommended for best results with the tiller attachment.

On gear drive models, depress the clutch pedal and place the Hand Control Lever in any of four forward or one reverse position. Tractor will move in the direction and at the speed selected when the clutch pedal is released. When operating the tiller, use of the slowest ground speed is recommended. To shift into first gear, move the small latch on the console to one side to permit shifting the hand control lever into position.

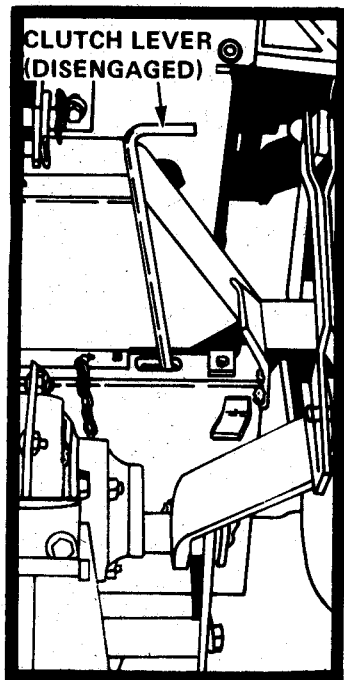


Figure 11

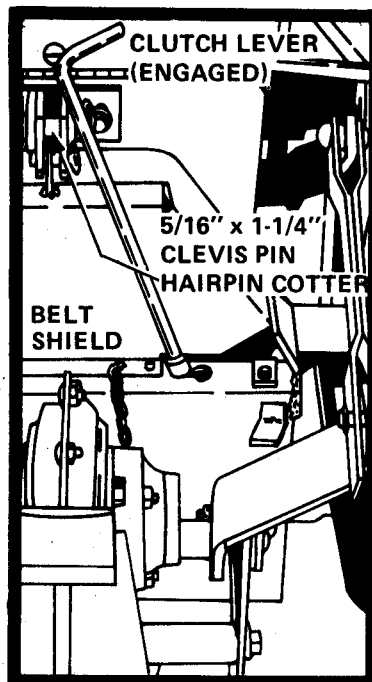


Figure 12

Neutralizer or Clutch Pedal (Figure 9)

Gear Drive Models: This pedal is the clutch on gear drive tractors. Depressing the clutch pedal disengages the engine from the drive gears and permits shifting gears with the Hand Control Lever. Releasing the clutch pedal connects the engine to the drive gears and the tractor will move forward, or backward, depending upon the gear selected.

Hydrostatic Drive Units: When this pedal is depressed, the hydrostatic control lever will return to neutral and stop the forward or reverse motion of the tractor.

NOTE: Keep foot off neutralizer pedal when moving the hand control lever. Use of the neutralizer pedal and control lever simultaneously can result in mis-adjusted hydrostatic linkage. Become familiar with the use of the neutralizer pedal. Using the foot controlled neutralizing pedal for all slowing down and stopping operations will make emergency or "panic" stops become "automatic" by use.

Tiller Clutch Lever (Figures 11 and 12) The tiller clutch lever is easily accessible from the operator's seat. To engage the tiller, pull lever up and to the left (Figure 12). To disengage the tiller, pull lever up to the right (Figure 11) and release.

OPERATION

STARTING THE ENGINE AND TILLER

Use the following procedure to start the engine and tiller:

1. Have tiller clutch lever in the disengaged position, Figure 11.

2. Place the hand control lever in the "Park-Start" or "Neutral" position as shown in Figure 10. **NOTE:** This is a safety feature. The engine will not start unless the control lever is pulled all the way to the rear of the "Park-Start" slot or is in neutral position on gear drive models.

3. Raise throttle lever to approximately $\frac{1}{3}$ open position as shown in Figure 9.

4. Pull choke control, Figure 9, all the way out if the engine is cold. If engine is warm, little or no choke will be required.

5. Turn ignition key shown in Figure 9 clockwise all the way. Release key as soon as the engine starts and push choke control in. In extremely cold weather it may be necessary to push choke in gradually until engine warms up. If engine fails to start on the first attempt, turn key to off, wait a few minutes and try again. Do not operate the starting motor continuously for more than 30 seconds at a time. **ALWAYS ALLOW ENGINE TO WARM UP BEFORE APPLYING LOAD.**

6. Raise tiller to transport position with the implement lift control.

7. Move hand control lever, Figure 10, to a forward position and drive tractor to the area to be tilled.

8. Pull tiller clutch lever, Figure 12, up and to the left to engage the tiller drive.

9. Raise throttle lever until full engine speed is reached.

10. With the lift lever, Figure 10, lower tiller to operating depth.

11. Move hand control lever partially forward to operate at a slow ground speed. Shift to first gear on gear drive models.

STOPPING THE ENGINE AND TILLER

Always use the following procedure to stop the engine and tiller:

1. Move lift lever, raise the tiller to a transport position.
2. Disengage the tiller clutch lever. Be sure the tines have stopped rotating.
3. Move the hand control lever in "Park-Start" or "Neutral" position.
4. Lower the tiller so it is resting on the floor or ground.
5. Lower the throttle lever and allow engine to idle for a short period before turning it off.
6. Turn the ignition key counter-clockwise to stop engine.
7. **IMPORTANT** — Remove ignition key before dismantling from tractor. This will prevent children and inexperienced operators from starting the tractor.

OPERATING TIPS

Tilling methods vary depending upon individual requirements, soil conditions, and the shape and contour of the area to be tilled.

Always operate tractor at full throttle to meet power requirements and to obtain proper engine cooling. Select a slow travel speed (first gear) to obtain maximum soil pulverization.

Never back the tractor or make sharp turns when tines are in the soil or leveler blade is down. This could result in extensive damage to the tiller.

The tiller tends to propel the tractor forward. Travel slowly. Be prepared to disengage the tiller clutch and stop the tractor quickly.

Do not till wet or extremely moist soil. Wet soil tends to "ball up" and cake, making tilling difficult.

Tall grass or weeds should be cut, defoliated or burned before tilling.

When tilling sod or hard ground, make the first

pass with the tiller adjusted to a shallow depth. Increase the depth after each pass over the area.

IMPORTANT



Raise tiller out of the soil when making turns to prevent damage to the chain case or pivot.

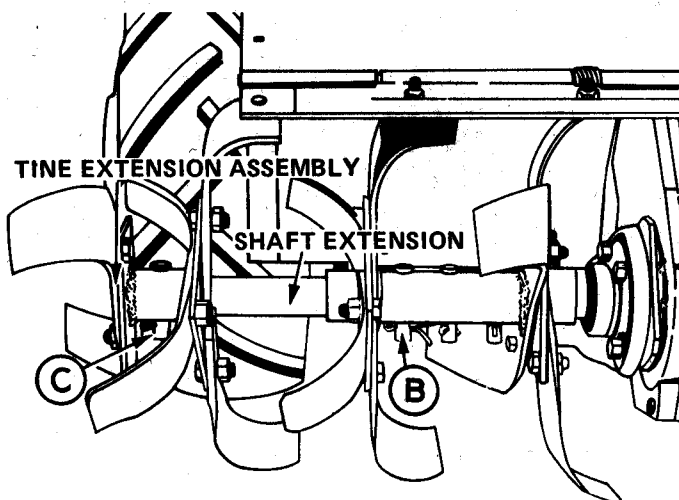


Figure 14

Install the 8" tine extension on the side of the tiller best suited to meet the individual requirement. When tilling around citrus trees, bushy shrubs, etc., the extension should be mounted on the right hand side of the tiller to permit the closest cultivation. When tilling row crops, it is normally desirable to install the extension on the left side of the tiller. Maximum cutting width can be obtained by installing the optional 8" extension. This will increase the width to 42". Use of two tine extensions (42" width) is not recommended on the 10 H.P. MODEL.



The extensions are designed for cultivating at shallow depths in soft soil conditions. When tilling at deeper depths or in hard soil conditions, remove the extensions to avoid damage to the chain case.

The leveler blades, Figure 16, should be lowered as shown when tilling to produce a finer tilth and more level seed bed. When cultivating, raise the leveler blade and secure with the latch located on the rear of the chain case. This will provide coarser mulching and quicker soil release which is usually desirable when cultivating.

Add one or two wheel weights per rear wheel to increase stability when operating on sloping or hilly ground or if the tiller tends to propel the tractor forward. If using turf tires, it may be desirable to add tire chains to provide adequate traction.

TINE EXTENSION INSTALLATION

The basic tiller has a cutting width of 26". An 8" tine extension is included with the tiller to increase the cutting width to 34". The extension is interchangeable and may be installed on either the right or left side of the tiller, depending upon the individual requirements. An optional extension may also be installed on the side opposite from the standard

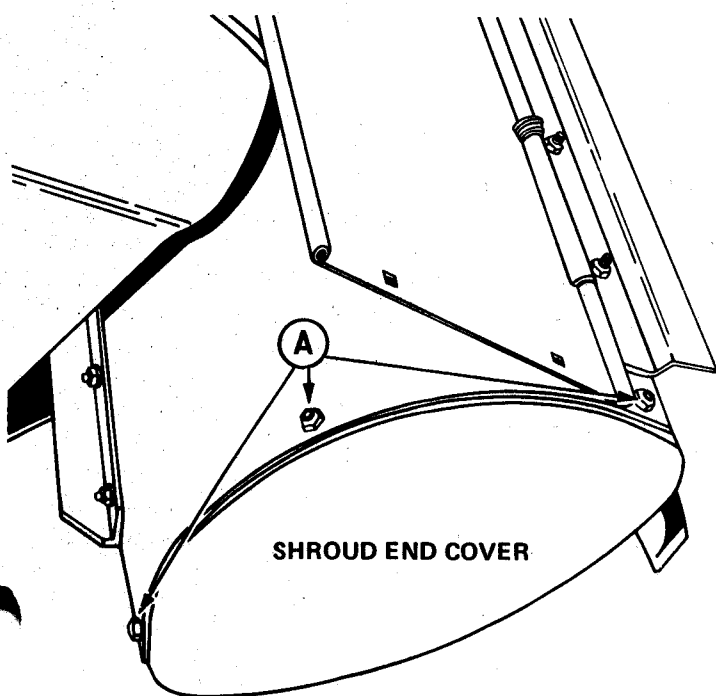


Figure 13

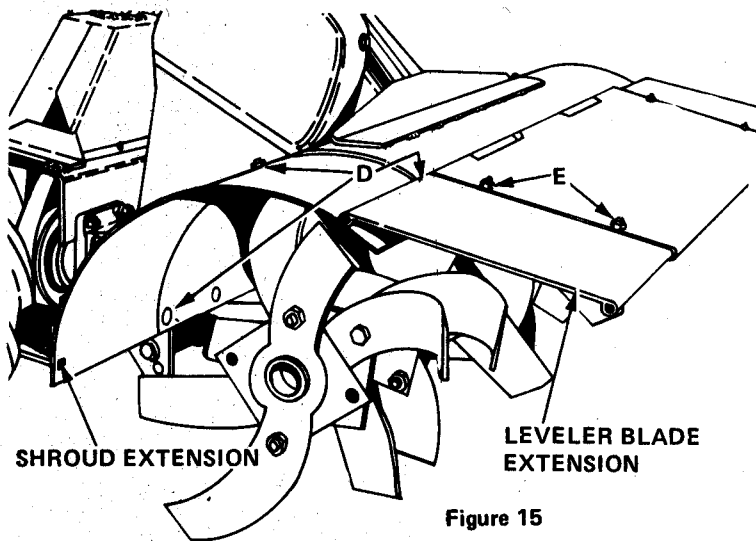


Figure 15

extension to increase the cutting width to 42". The same procedure may be followed to install either the standard or optional extensions.

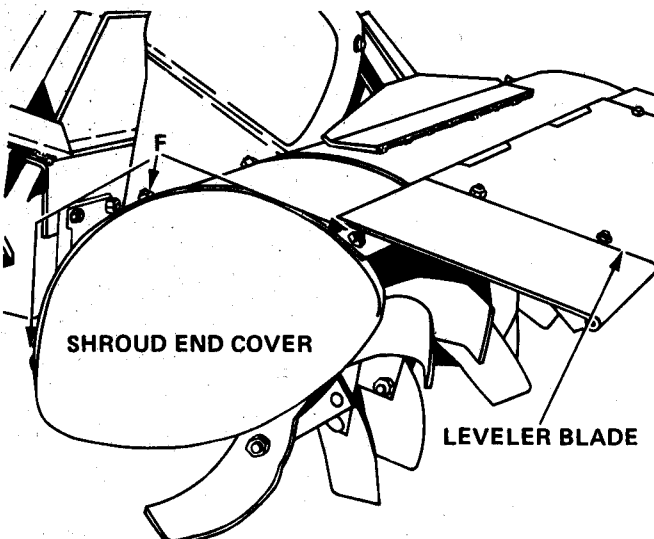
NOTE: Use of two tine extensions (42" width) is not recommended on 10 H.P. models.

NOTE: Procedure for installing tine extension is the same for either side of the tiller with the following exception:

When extensions are mounted on right side of tiller, the double blades will be outermost. When extensions are installed on the left side of tiller, the single blade will be outermost.

Use the following procedure to install the tine extensions:

1. Remove bolts A, Figure 13, and remove the shroud end cover.
2. Install the shaft extension as shown in Figure 14. Secure at B with a drilled pin and cotter.
3. Secure tine extension assembly to the shaft extension with a drilled pin and cotter at C, Figure 14.
4. Attach shroud extension to shroud, Figure 15. Secure with three 5/16" x 1/2" carriage bolts and lock nuts at D.
5. Attach leveler blade extension to leveler blade as shown in Figure 15. Secure with two 5/16" x



1/2" carriage bolts and lock nuts at E.

6. Attach the shroud end cover to the shroud at F, Figure 16, with the three 5/16" x 1/2" carriage bolts and lock nuts previously used.

LUBRICATION

Lubricate the following places shown in Figure 17, every 8 hours of operation.

1. **Enclosed Drive Chain** — Add approximately one teaspoonful of oil.
2. **Upper Pivot Bushing** — Grease with several strokes of a grease gun.
3. **Lower Pivots** — Oil lightly.
4. **Rotating Tine Pivot** — (Located under shroud). Grease with several strokes of a grease gun.
5. **Gear Box** — (Figure 18). Pack Gear Box with Ariens No. 000150 Moly Multi-Purpose Grease.

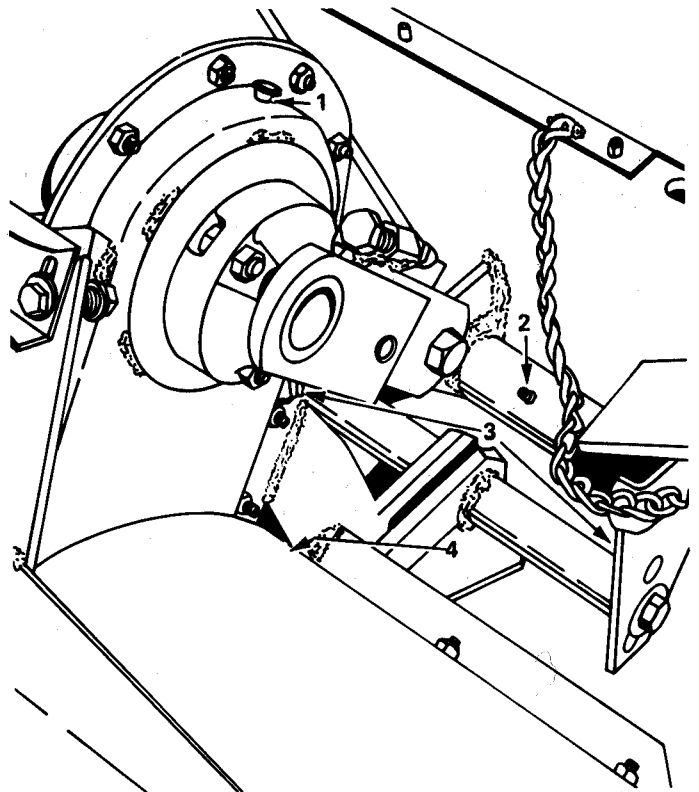


Figure 17

MAINTENANCE



BEFORE PERFORMING ANY ADJUSTMENTS AND MAINTENANCE

1. Disengage the tiller clutch lever, Figure 19.
2. Place the hand control lever in the "Park-Start" position or gear shift in "Neutral" and set parking brake.
3. Lower the tiller until it is resting on the ground or block the tiller up securely.
4. Stop the engine.

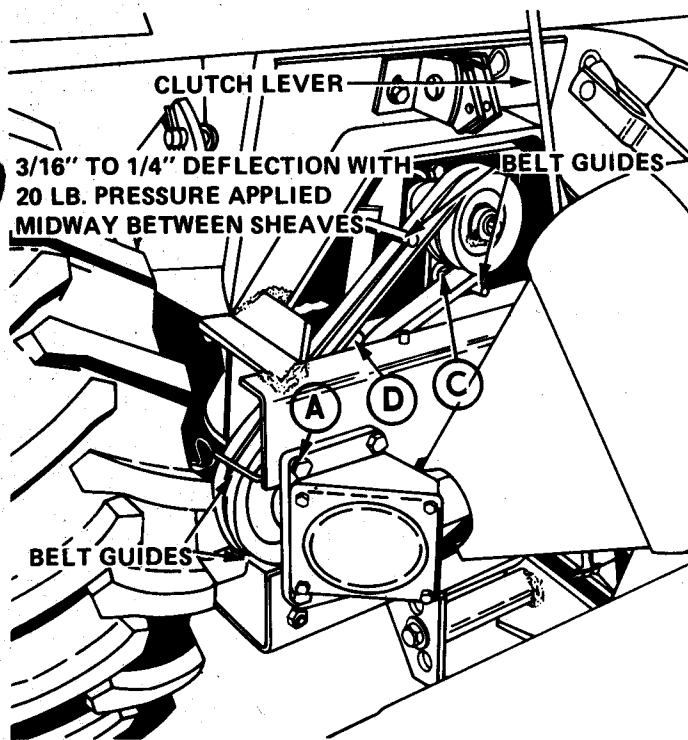


Figure 18

5. Remove the ignition key.
6. Disconnect the engine spark plug wire.

BELT GUIDES

Engage the tiller clutch lever and measure the distance between each of the four belt guides and the drive belts, Figure 18. There should be from $\frac{3}{16}$ " to $\frac{1}{4}$ " clearance between each guide and the drive belts with the clutch lever engaged. Adjust clearance by loosening bolts A, B, C, D and moving the guides until proper clearance is obtained. Tighten the bolts securely.

BELT TENSION

It is important that the drive belts are kept tight. If the clutch lever engages too easily or does not stay engaged, it will be necessary to adjust the belt tension. Proper tension is obtained when the belts deflect $\frac{3}{16}$ " to $\frac{1}{4}$ " with a 20 lb. force applied midway between the belt sheaves. (See Figure 18). Tension must be checked with the clutch lever engaged.

Tighten belts by loosening nut A and tightening nut B, Figure 19, until proper tension is reached. After belts are tightened, lock the clutch lever by tightening nut A against the angle support. Too much idler force can cause idler arm deflection and shorten belt life.

STABILIZER BRACKET ADJUSTMENT (ITEM F)

With Clutch Lever engaged, loosen $\frac{3}{8} \times 1$ Carriage Bolts (G) at top and bottom of mounting frame. Adjust both stabilizers together against idler bar arm. Retighten hardware. Operate clutch lever, idler bar arm should operate freely thru-out stabilizer bars.

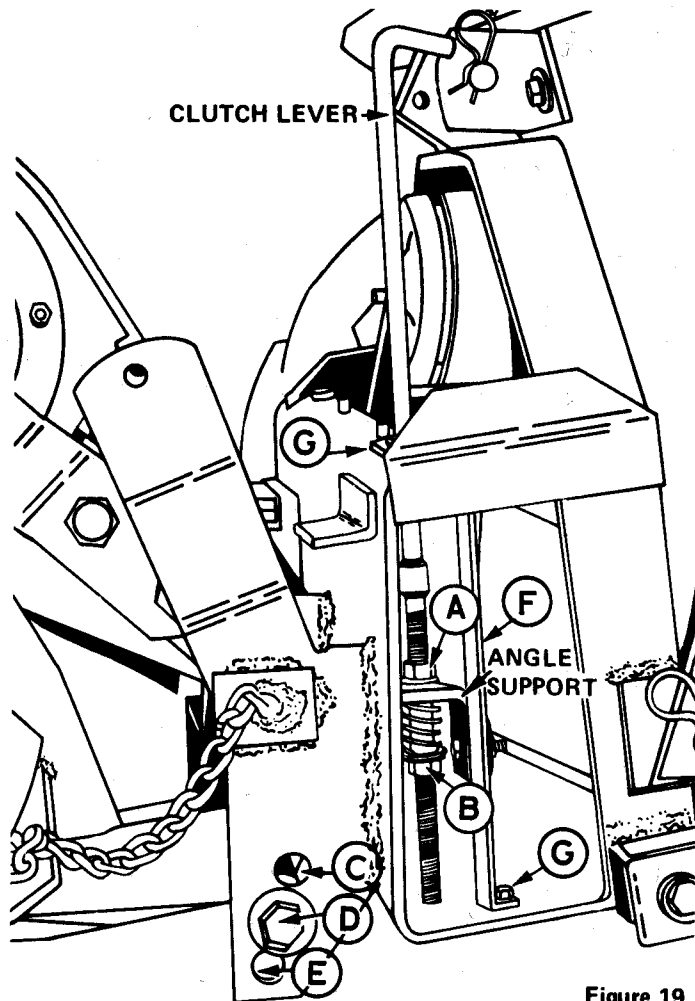


Figure 19

TILLER AGGRESSIVENESS

The lower link of the tiller can be adjusted to any one of three positions to increase or decrease the tendency of the tiller to propel the tractor forward. The tiller is factory-assembled in the center hole D,

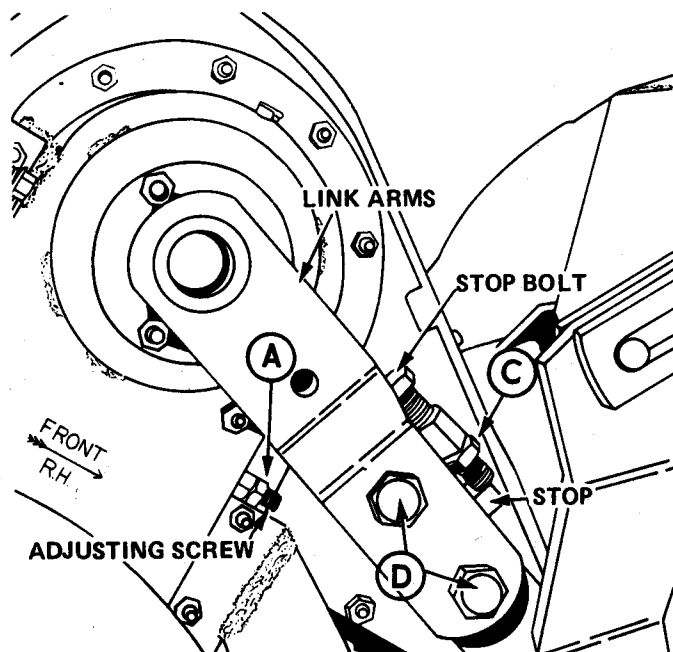


Figure 20

Figure 19. This setting is usually desirable for most tilling operations.

The top hole C is the most aggressive setting and is recommended for initial tilling in hard soil conditions.

The lower hole E is the least aggressive setting. This setting may be used when operating in soft soil conditions.

ENCLOSED DRIVE CHAIN TENSION

Use the following procedure to adjust the enclosed drive chain tension:

1. Raise tiller high enough so that the tines can be rotated.
2. Loosen jam nut A, Figure 20, and turn adjusting screw "in" until a slight drag is felt on the chain.
3. Move the tines back and forth by hand until chain slack or "backlash" is felt. Continue to turn the adjusting screw "in" while moving the tines until the backlash is removed and a slight drag is felt on the chain.
4. Turn the adjusting screw out approximately $\frac{1}{2}$ turn or as necessary until the tines turn freely. Tighten jam nut A securely.



DO NOT OVERTIGHTEN THE CHAIN AS EXCESSIVE WEAR ON THE CHAIN AND SPROCKETS WILL RESULT.

EXTERNAL DRIVE CHAIN TENSION

The external drive chain is properly adjusted when distance B, Figure 21, is from $\frac{3}{4}$ " to 1".

Use the following procedure to adjust the drive chain:

NOTE: The chain shield has been removed for clarity. It is not necessary to remove the shield when adjusting chain tension.

1. Loosen jam nut C, Figure 20.
2. Loosen bolts D, Figure 20, enough so that the link arms can move up.
3. Pry link arms up until the chain pushes the curved tightener spring rod outward $\frac{3}{4}$ " to 1", Figure 21.

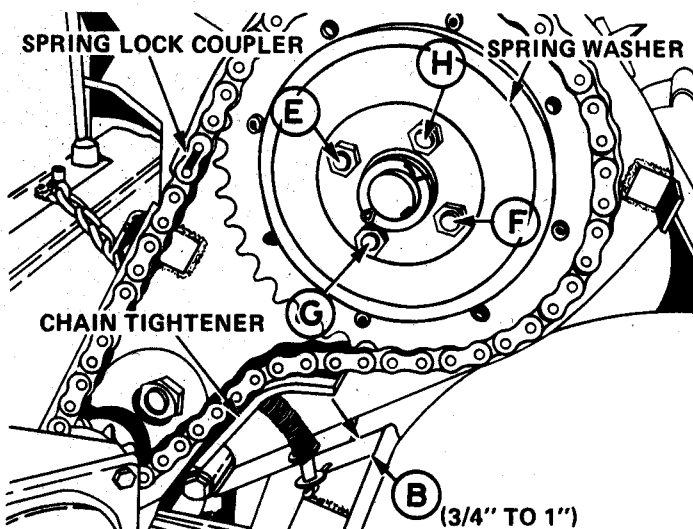


Figure 21

4. Turn stop bolt down against the stop. Tighten jam nut C and link arm bolts D.

CLUTCH PRESSURE ADJUSTMENT

Before the clutch slips excessively, it is necessary to re-adjust the spring washer pressure. Use the following procedure:

1. Remove the external drive chain shield.
2. Loosen nuts E, F, G, and H, Figure 21, then tighten them finger-tight.
3. Retighten nuts a full $2\frac{1}{2}$ turns to provide correct spring washer pressure. The following sequence must be used to tighten nuts or improper spring washer deflection will result: Tighten nut E, F, G, H, $\frac{1}{2}$ turn.

Continue to tighten nuts E, F, G, and H in the above order until each nut is tightened $2\frac{1}{2}$ turns.

CAUTION: DO NOT OVERTIGHTEN! Overtightening will eliminate the slip feature of the clutch and will result in damage to the gear case if the tiller hits some solid object.

4. Replace the drive chain shield.

STORAGE

The following maintenance should be performed at the end of each tilling season to provide longer and most efficient service from the tiller.

1. Remove tiller from the tractor using the procedure outlined in this manual.
2. Thoroughly clean the tiller and remove all materials which has built up under the shrouding and on the tines.
3. Remove the external drive chain and clean it thoroughly with diesel fuel. Immerse chain in clean oil, allow it to drain completely, then re-install it on the tiller. **NOTE:** The chain can easily be removed by removing the chain shield, then disconnecting the chain at the spring lock coupler, Figure 21.
4. Remove rust from any exposed metal and cover the areas with paint or a light coat of oil.
5. Lubricate tiller as recommended in this manual.
6. Lightly oil the leveler blade hinge.
7. Coat the tines with oil to prevent rusting.
8. Remove drive belts and store in a dark, dry area.
9. Store tiller in a dry place.

ASSEMBLY INSTRUCTIONS FOR 540 RPM FRONT PTO ATTACHMENT MODEL NO. 731010

The 540 RPM PTO attachment consists of the following parts which are identified in Figure 1.

1. Stabilizer bracket
2. Coupling assembly
3. Support bracket
4. Gear box
5. PTO shield
6. Hardware:
 - (1) $\frac{1}{4}$ " x $2\frac{1}{2}$ " square key
 - (1) Clevis pin
 - (1) Hairpin cotter
 - (2) $\frac{5}{16}$ " x $\frac{3}{4}$ " setscrews
 - (2) $\frac{5}{16}$ " jam nuts
 - (7) $\frac{5}{16}$ " x $\frac{3}{4}$ " hex head cap screws
 - (7) $\frac{5}{16}$ " lockwashers
 - (2) $\frac{5}{16}$ " flat washers
 - (2) $\frac{3}{8}$ " x 1" hex head cap screws
 - (2) $\frac{3}{8}$ " flat washers
 - (2) $\frac{3}{8}$ " lockwashers
 - (2) $\frac{3}{8}$ " plain nuts

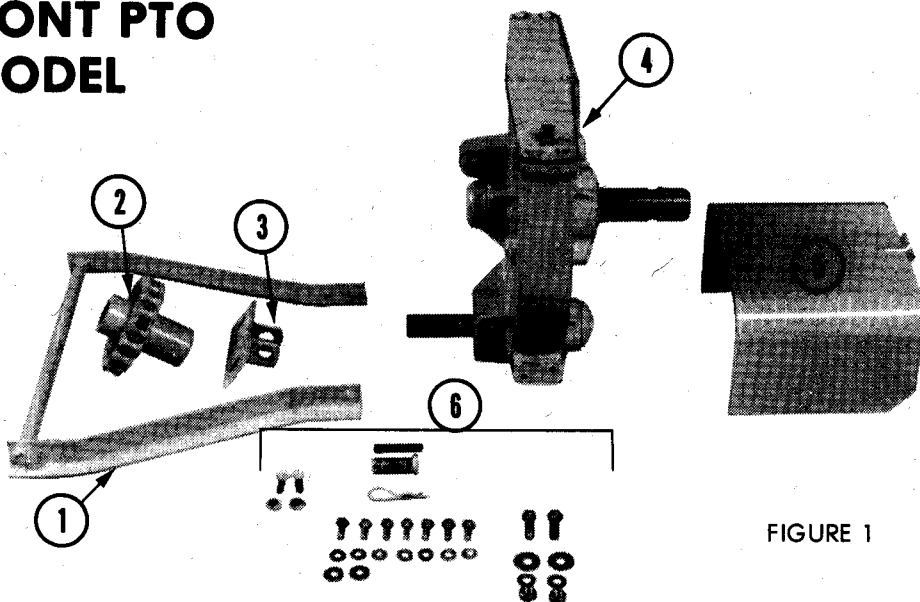


FIGURE 1

ASSEMBLY

Use the following procedure to assemble the PTO attachment:

1. Remove paint from gear box input shaft and output shaft.

2. Assemble stabilizer bracket to gear box assembly with four $\frac{5}{16}$ " x $\frac{3}{4}$ " hex head cap screws, two flat washers and four lockwashers. Use flat washers over the slotted holes at A, Figure 2. (both sides of the gear box.) Do not tighten cap screws until final assembly.

3. Install a $\frac{1}{4}$ " x $2\frac{1}{2}$ " square key in gear box input shaft and slide coupling assembly on shaft as shown in Figure 2.

4. Attach support bracket to gear box with a clevis pin and hairpin cotter, Figure 2.

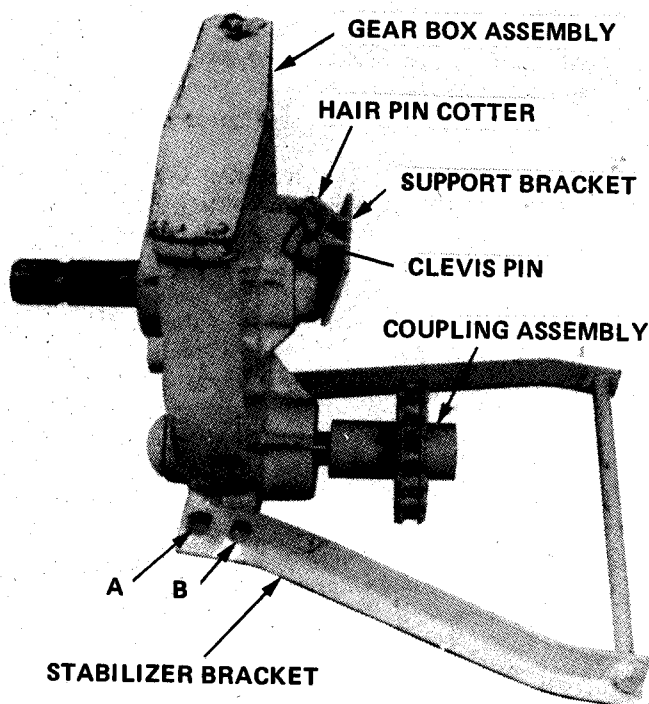
5. Position PTO attachment in front of tractor and engage coupling assembly splines with splines on tractor PTO shaft as shown in Figure 3. At the same time, place stabilizer bracket pivot rod in tractor saddle brackets as shown in Figure 5. Lock in place by lowering the latches and locks.

6. Raise or lower the gear box assembly with a jack as shown in Figure 3, until the support bracket is flush against the tractor frame and the gear box input shaft is properly aligned with the tractor PTO shaft. Alignment is correct when the coupling assembly slides onto the tractor PTO shaft without force being applied. With gear box supported in this position, tighten bolts A and B on both sides of the gear box.

7. Mark the exact location of support bracket on tractor frame, Figure 3, and remove PTO attachment from tractor.

8. Remove support bracket from PTO attachment and reposition on the tractor frame at the same location it was previously marked (see step 6). Using the support bracket as a template, locate and drill two $\frac{13}{32}$ " holes in the tractor frame.

FIGURE 2



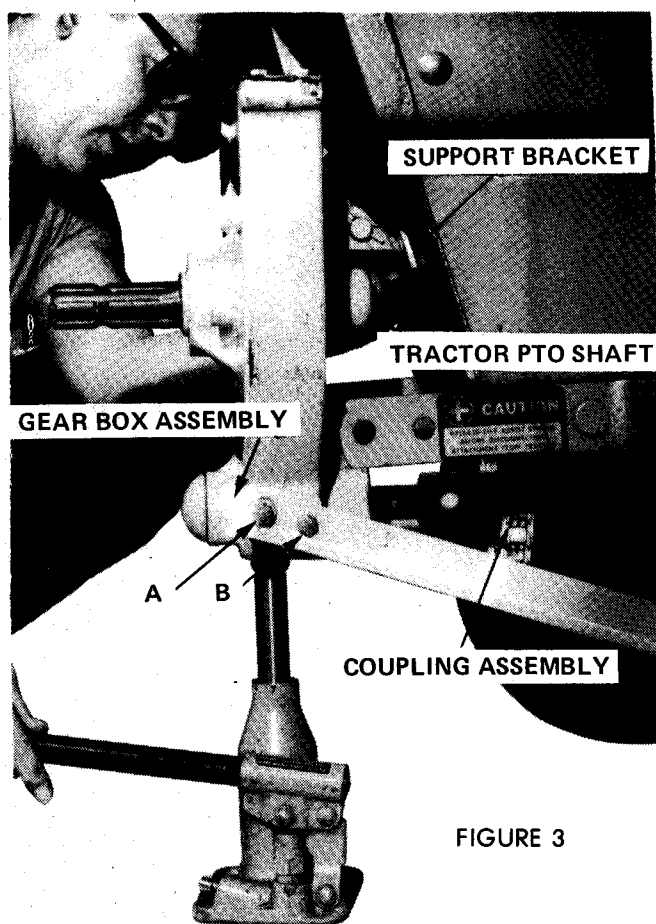


FIGURE 3

IMPORTANT: DRILL HOLES AT CENTER OF SUPPORT BRACKET MOUNTING HOLES. [See Figure 4].

9. Attach support bracket to tractor frame with two 3/8" x 1" cap screws, flat washers, lockwashers and nuts as shown in Figure 4. DO NOT TIGHTEN CAP SCREWS.

10. Re-install PTO attachment on tractor as shown in Figures 3 and 5. Secure with a clevis pin and hairpin cotter, Figure 3, and the tractor saddle bracket latches and locks, Figure 5.

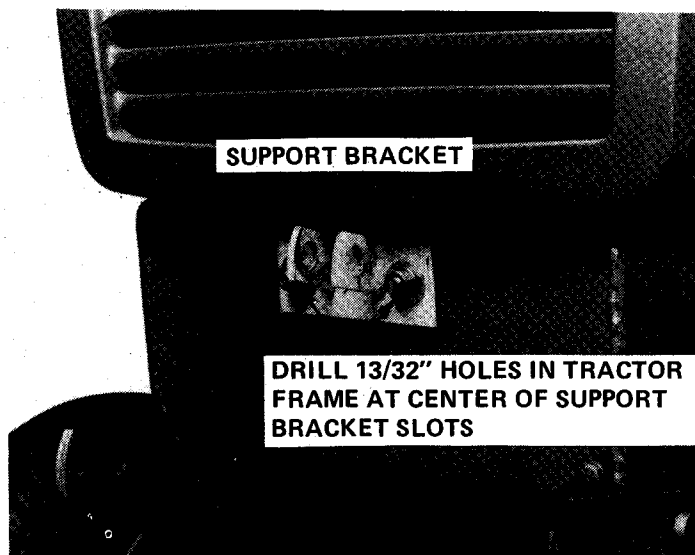


FIGURE 4

11. Tighten support bracket mounting bolts and re-check alignment of coupling assembly with gear box input shaft and tractor PTO shaft. COUPLING ASSEMBLY SHOULD SLIDE FREELY ACROSS SHAFTS, ROTATE SPLINED OUTPUT SHAFT TO ASSURE THAT THERE IS NO BINDING IN CHAIN COUPLER. If necessary, loosen support bracket and bolts A and B, Figure 3, and reposition PTO attachment until alignment is correct. Tighten all mounting bolts.

12. Slide chain coupler toward tractor until the splined hub engages the tractor PTO shaft to the center of the groove in tractor PTO shaft. Secure coupler to PTO attachment input shaft with two 5/16" x 3/4" setscrews and jam nuts.

13. Attach shield, Figure 5, to PTO attachment with three 5/16" x 3/4" cap screws and lockwashers.

14. Remove cover, Figure 5, and fill gear box with six ounces of Ariens gear lubricant No. 90 or its equivalent.

IMPORTANT: THE GEARBOX IS SHIPPED WITHOUT LUBRICANT. DO NOT ATTEMPT TO OPERATE ATTACHMENT BEFORE INSTALLING LUBRICANT.

SAFETY FIRST

IMPORTANT: BE A SAFE OPERATOR. Before attempting to operate the 540 RPM PTO attachment, THOROUGHLY ACQUAINT YOURSELF WITH:

1. The Safety Information in this Manual and the Tractor Operator's Manual.
2. The Operating Instructions in this Manual and the Tractor Operator's Manual.
3. The controls on the Tractor.

BE CAREFUL!

1. Before using the 540 RPM PTO attachment to power any equipment:
 - a. Select a level, solid surface to park the tractor.
 - b. Move hydrostatic control lever to "park-start" position before dismounting from tractor.
 - c. Block tractor tires securely so there is no danger of the tractor drifting.
 - d. Disconnect drive shaft of any tractor-mounted attachment or remove the attachment.
 - e. Disengage PTO clutch, shut off engine and remove ignition key before attempting to attach drive shaft or the equipment to be powered to the 540 RPM PTO attachment.
 - f. Clear work area of any debris or objects.
2. When using the 540 RPM PTO attachment to power equipment:
 - a. Keep all shields and guards in place.
 - b. Be careful when mounting or dismounting from tractor.
 - c. Do not operate tractor or PTO assembly in the vicinity of other people.
 - d. Do not allow children to operate tractor or the PTO attachment.

- e. Do not allow adults to operate tractor or PTO attachment without proper instructions.
 - f. Learn how to disengage PTO clutch and stop tractor quickly.
 - g. Never operate tractor engine in a closed building.
 - h. Dress appropriately; wear relatively tight fitting clothes. Loose or torn clothing can catch in moving parts or controls.
 - i. Keep children, bystanders and pets away from the work area.
 - j. Keep hands, feet and clothing away from power driven parts.
3. Before servicing the 540 RPM PTO attachment:
- a. Disengage PTO clutch.
 - b. Shut off engine and remove ignition key.
 - c. Disconnect engine spark plug cable.
 - d. Make sure drive shaft has stopped revolving.

OPERATION

IMPORTANT: THE 540 RPM PTO ATTACHMENT IS SHIPPED WITHOUT OIL. REFER TO ASSEMBLY INSTRUCTIONS BEFORE ATTEMPTING TO OPERATE THE ATTACHMENT.

CAUTION: ALWAYS PARK TRACTOR ON A LEVEL SOLID FOOTING WITH HYDROSTATIC CONTROL LEVER IN "PARK-START" POSITION AND WHEELS SECURELY BLOCKED WHEN USING THE 540 RPM PTO ATTACHMENT.

The 540 RPM PTO is designed to utilize the S-12, S-14 and S-16 Garden Tractor as a stationary power source for small load requirement PTO operation. This

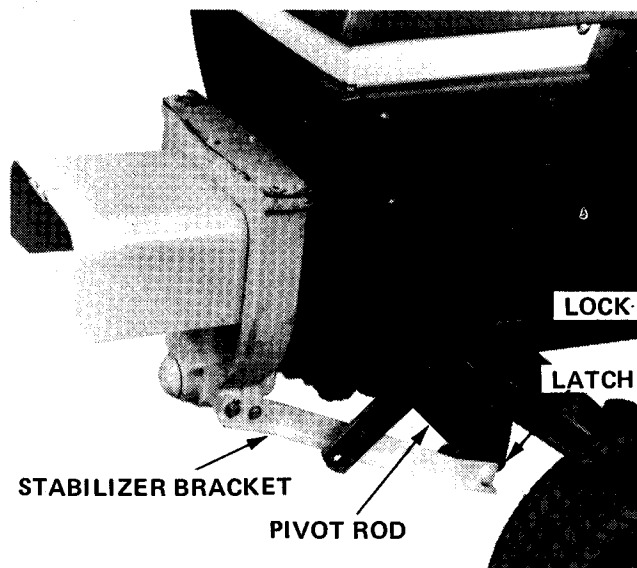


FIGURE 5

includes portable elevators, portable augers for loading grain and other light duty applications requiring a 540 RPM PTO.

When using the 540 RPM PTO to power any equipment, always position the tractor so that the universal joint angle of the remote equipment PTO shaft is at a minimum.

IMPORTANT:

ENGAGE THE TRACTOR PTO CLUTCH AT APPROXIMATELY ½ ENGINE THROTTLE, THEN INCREASE THROTTLE TO OBTAIN DESIRED PTO RPM.

DISENGAGE TRACTOR PTO CLUTCH BEFORE SHUTTING TRACTOR ENGINE OFF.

ENGINE LISTINGS

PRODUCT: 31,000 Series Tractor

MODEL YEAR	MICRO FICHE CARD NO.	MODEL NUMBER	SERIAL NUMBER AND UP	ENGINE H.P. MAKE STARTER	ARIENS ID# NUMBER	ORIGINAL ENGINE NUMBER	REPLACEMENT ENGINE			REPLACEMENT SHORT BLOCK		
							ENGINE NUMBER	REMOVE PARTS	ADD PARTS	SHORT BLOCK NUMBER	MINI BLOCK	CYLINDER BLOCK
1973-1974	13	931001 S-12 Hydro	000101	12 Kohler Elec.	82090	K301S-47404D	47460	See Modifications (D), (G) Below		B-237530	A-237416	
1973-1974	13	931002 S-14 Hydro	000101	14 Kohler Elec.	82091	K321S-60238				B-237843		
1973-1974	13	931003 S-16 Hydro	000101	16 Kohler Elec.	82092	K341S-71109A	K341-71119	STARTER	STARTER	4552201		

BELT CROSS REFERENCE

YEAR	APPLICATION	PART NO.
1974/75	Tractor Front PTO	72076
1974/75	42" Rotary Mower Blade Belt	72080
1974/75	48" Rotary Mower Blade Belt	72081
1974/75	34" Rotary Tiller Drive	72105