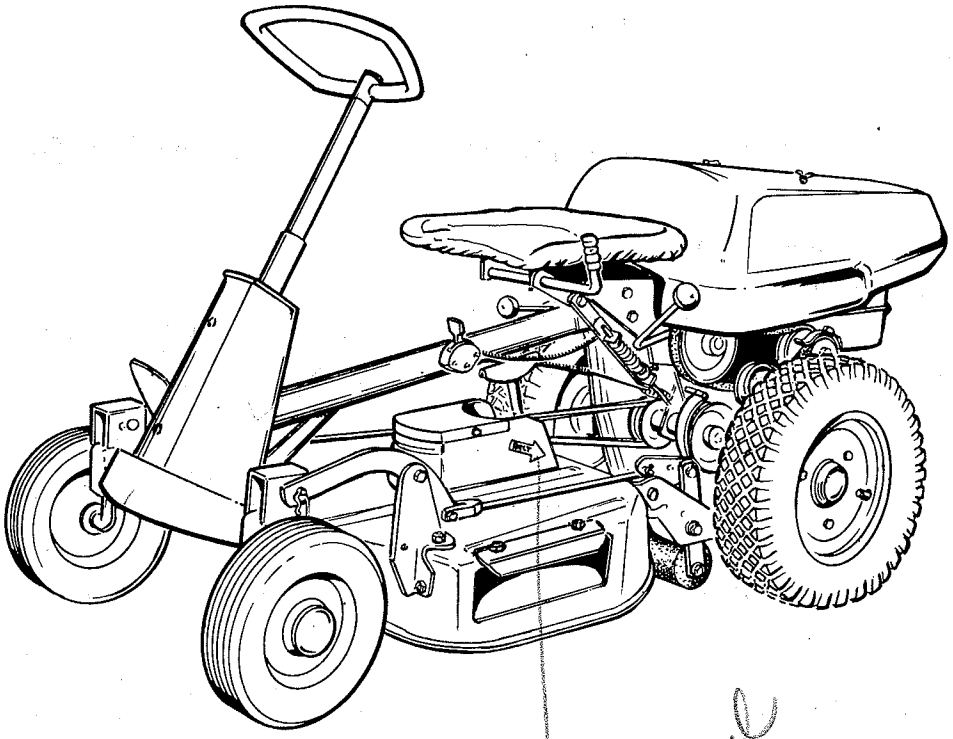
Simplicity®

1964/65

OWNER'S MANUAL AND PARTS LIST

Wonder-Boy

Model 400
and
24" Rotary Mower



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SIMPLICITY MANUFACTURING COMPANY / PORT WASHINGTON, WIS.

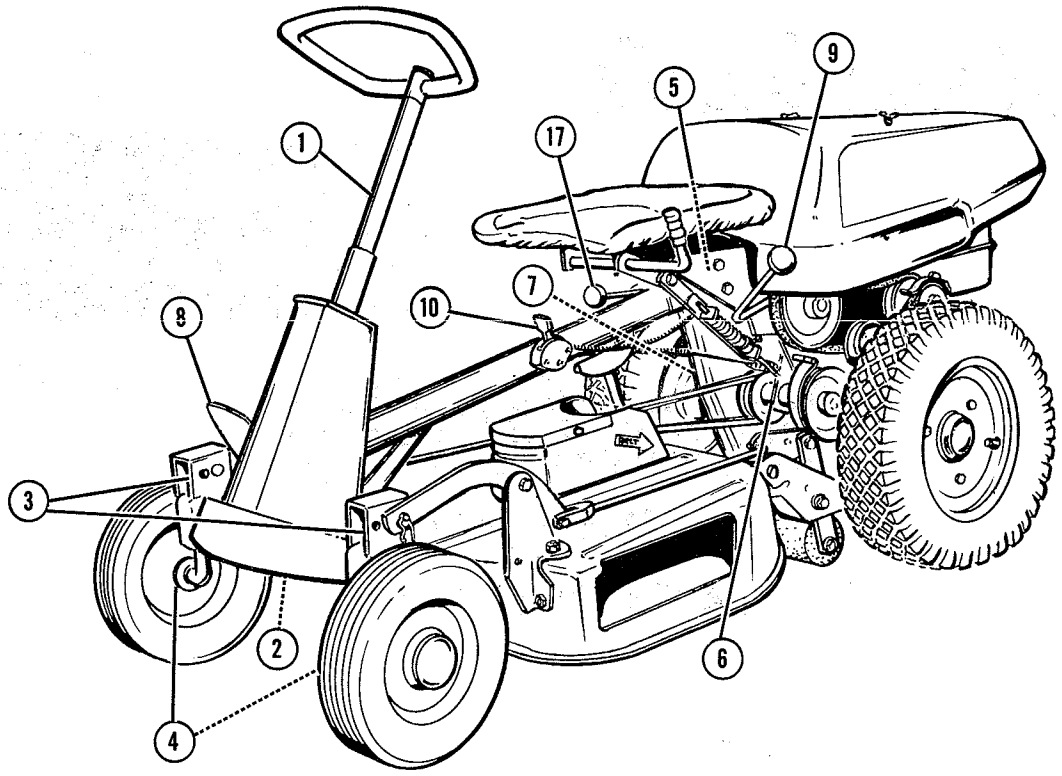


Fig. WB-1

Mfgrs. No..... 234

4 H. P. WONDER-BOY—Model 400

PACKING LIST

The Wonder-Boy is shipped in one carton and is completely assembled except for the steering wheel (1).

INSTRUCTIONS FOR ASSEMBLING

Attach steering wheel column (1), Fig. WB-1, to steering post with 5/16 screw and nut provided. There are three sets of holes to provide various height settings for the steering wheel. Choose the setting that will be most comfortable for the operator.

LUBRICATION

Lubricate with a few drops of oil the following:

A. Axle pivot pin (2) Fig. WB-1
B. Front wheel king pins (3) Fig. WB-1
C. Two idler pulleys (15) Fig. WB-2
D. Front wheels (4) Fig. WB-1

Lubricate with a general purpose grease the [illegible] fittings located at —

E. Top and side of gear case (5) Fig. WB-1
F. Power take-off housing (6) Fig. WB-1
G. Input bearing housing (16) Fig. WB-2
H. Two speed axle housing (7) Fig. WB-1
I. Main axle housing under engine.

Service engine air cleaner and engine crankcase as recommended in engine manual. NEVER use oil in the crankcase more than 25 hours. REMEMBER — CLEAN AIR AND CLEAN OIL WILL GIVE YOU LONG TROUBLE FREE OPERATION—DIRT CAN RUIN YOUR ENGINE IN A HURRY.

Tire Pressure. For shipping purposes the rear tires are inflated to approximately 35 lbs. When Wonder-Boy is ready for operation, deflate rear tires to 15 lbs.

OPERATION

The foot pedal (8) Fig. WB-1 on the right side of the front axle assembly, controls the clutch. To engage the clutch depress the foot pedal slowly and hold in depressed position while forward or reverse movement of the Wonder-Boy is desired. To declutch the unit, release the foot pedal.

FORWARD — REVERSE

Shift lever (9, Fig. WB-1) when rotated all the way up meshes forward gears. When rotated all the way down, reverse drive gears are meshed. Center position is neutral. When operating, revolve or rotate shift lever to the extreme limit of its up or down travel to insure full engagement of gears.

TWO SPEED DIFFERENTIAL GEAR SHIFT

Moving shift lever (17, Fig. WB-1) toward seat engages high speed gears. Moving shift lever away from seat engages low speed gears. Center position is neutral and is used to permit moving Wonder-Boy when not under its own power. For Wonder-Boy to move under its own power it must be in high or low speed position.

When shifting the two speed differential, release clutch pedal to declutch. You may shift while in motion but do not shift when pulling a load or moving up or down a hill.

MILES PER HOUR

"Lo".....2 to 3
"Hi".....3 to 5

BRAKE

To use the brake, release clutch pedal and revolve shift lever (9, Fig. WB-1) to more tightly mesh the gears. Pull up when traveling forward or push downward when in reverse.

ENGINE CONTROLS
(Choke, Speed Selection or Shut-Off)

Refer to the engine manual for starting and operating instructions.

The speed selection or shut-off lever (10, Fig. WB-1) is marked to indicate where lever should be placed to vary engine speed or shut-off.

POWER TAKE-OFF

Lever (12, Fig. WB-2) when revolved forward tightens belt that drives power take-off shaft and also tightens belt from power take-off shaft to implement. Belt tension is regulated by moving set collar (13, Fig. WB-2) on control rod. Proper adjustment will result in a ½" to ⅝" gap between set collar and bracket when implement is attached and lever (12) is engaged. A readjustment of the set collar must be made when belts stretch or other implements are attached.

NOTE 1. When attaching belts from implements to the power take-off shaft, be sure lever (12, Fig. WB-2) is revolved back, this will permit pulling power take-off housing forward to facilitate installation of belt.

NOTE 2. Method in which belt is twisted from power take-off shaft to rotary mower will determine direction of rotation of blade. Be sure the twist is always applied, to drive blade with sharp edge leading.

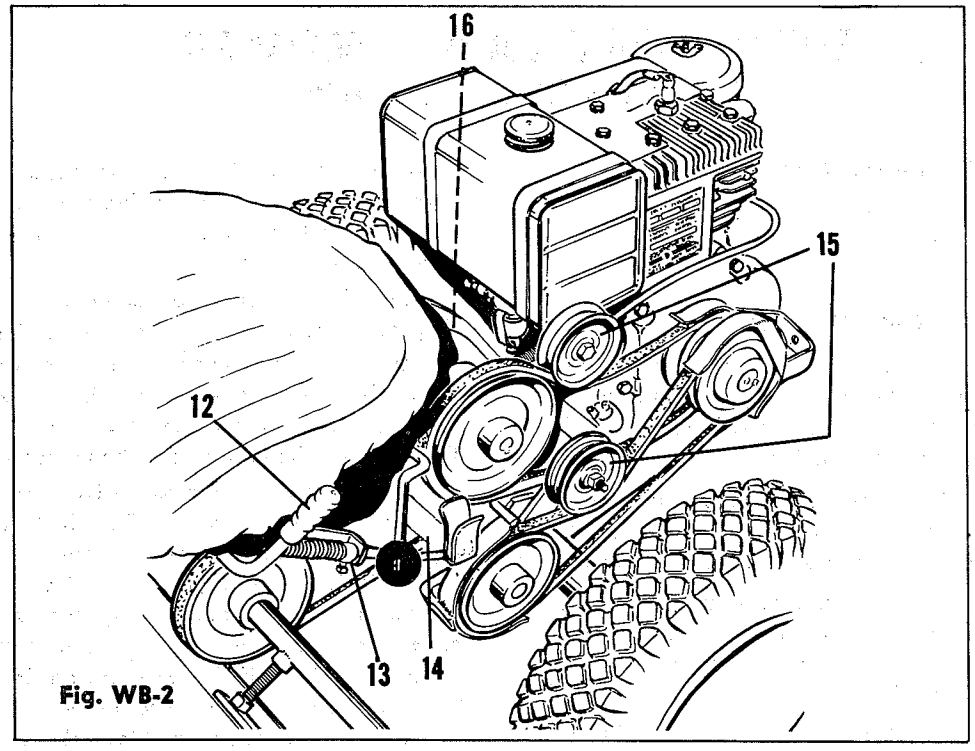


Fig. WB-2

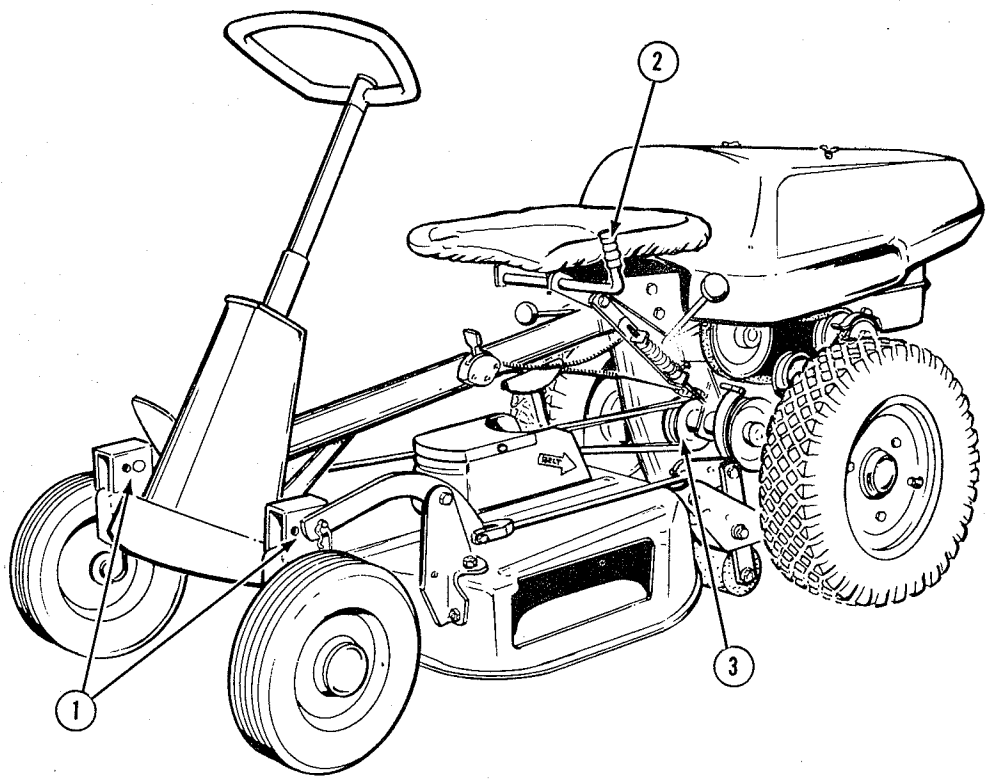


Fig. NR-1

Mfgrs. No..... 236

24" ROTARY LAWN MOWER

For Use with Model "400"

PACKING LIST

The 24" Rotary Mower, Article No. 236, is shipped complete in one carton.

ASSEMBLY AND ATTACHMENT

1. Attach the rear roller bracket assembly to the mower housing with the four cap screws provided (Fig. NR-2). Note that both flat washers and lock washers are used at (3, Fig. NR-2).
2. Bolt the two front hitch arm assemblies to the housing with four carriage bolts, placing the bolt heads on the under side of the mower deck (6, Fig. NR-2).
3. Insert the ends of the leveling rods into the holes at (11, Fig. NR-2) on the rear roller bracket. Insert cotter pins, but do not secure until final leveling adjustment is made.
4. Place height adjusting handle (1, Fig. NR-2) in proper position as shown and screw into anchor stud (2, Fig. NR-2). When the adjusting handle is turned in the clockwise direction, the mower is raised, both front and rear. Reversing the direction lowers the mower.
5. Position the mower under the center of the Wonder-Boy and attach it to the front axle assembly with the two pins and spring clips provided (10, Fig. NR-2). Use the rear set of holes in the axle assembly (1, Fig. NR-1). After the drive belt has stretched through use, the mower may be moved to front holes.
6. Before attaching the cross drive belt, make sure the mower clutch lever (2, Fig. NR-1) is in the disengaged position. Place the belt on the mower pulley (8, Fig. NR-2), then twist it one quarter turn in the direction indicated by the arrow on the mower before placing it on the power take-off pulley (3, Fig. NR-1). The spring loaded power take-off shaft assembly should be pulled forward as far as possible to facilitate the attachment of the cross drive belt.

LEVELING ADJUSTMENT

Place the Wonder-Boy and mower on a flat surface and check the height of the blade tip from the ground at the front and rear of the housing. For best cutting operation the rear tip should be about ¼" higher than the front tip. To obtain this adjustment, re-position, as necessary, the threaded rods in their clevises (7, Fig. NR-2) then re-insert the rod ends in the rear roller bracket holes (11, Fig. NR-2) and secure with cotter pins.

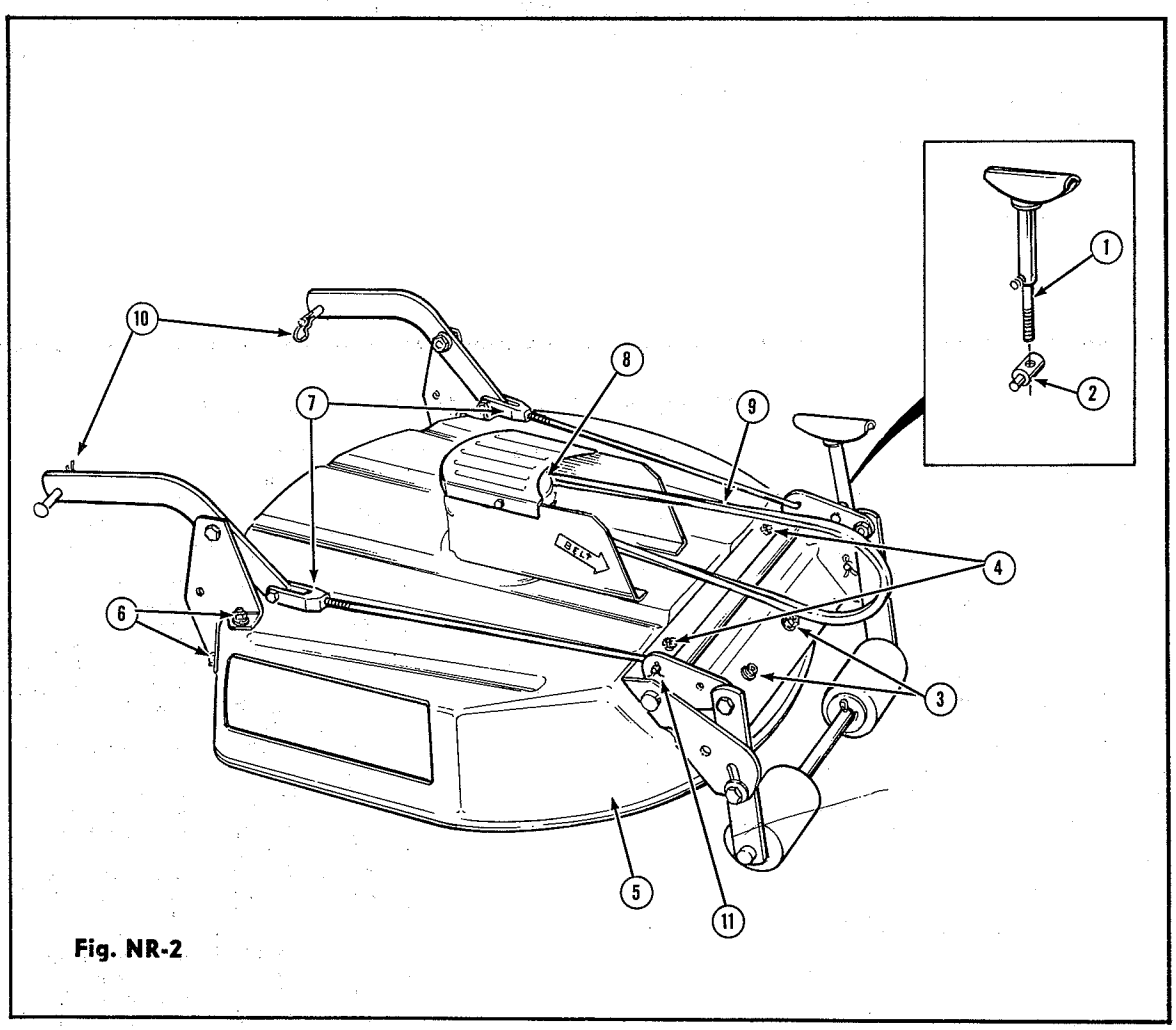
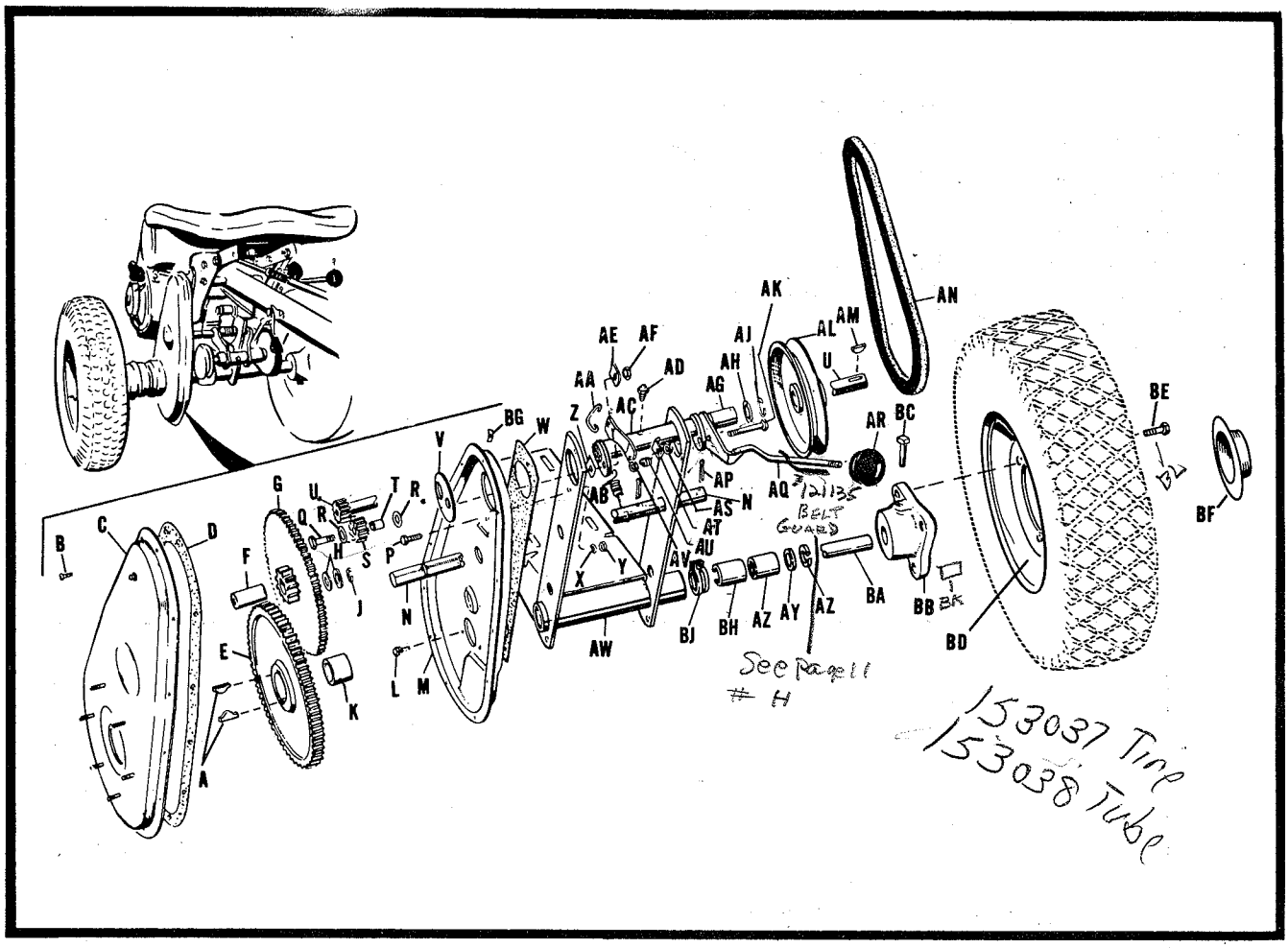


Fig. NR-2



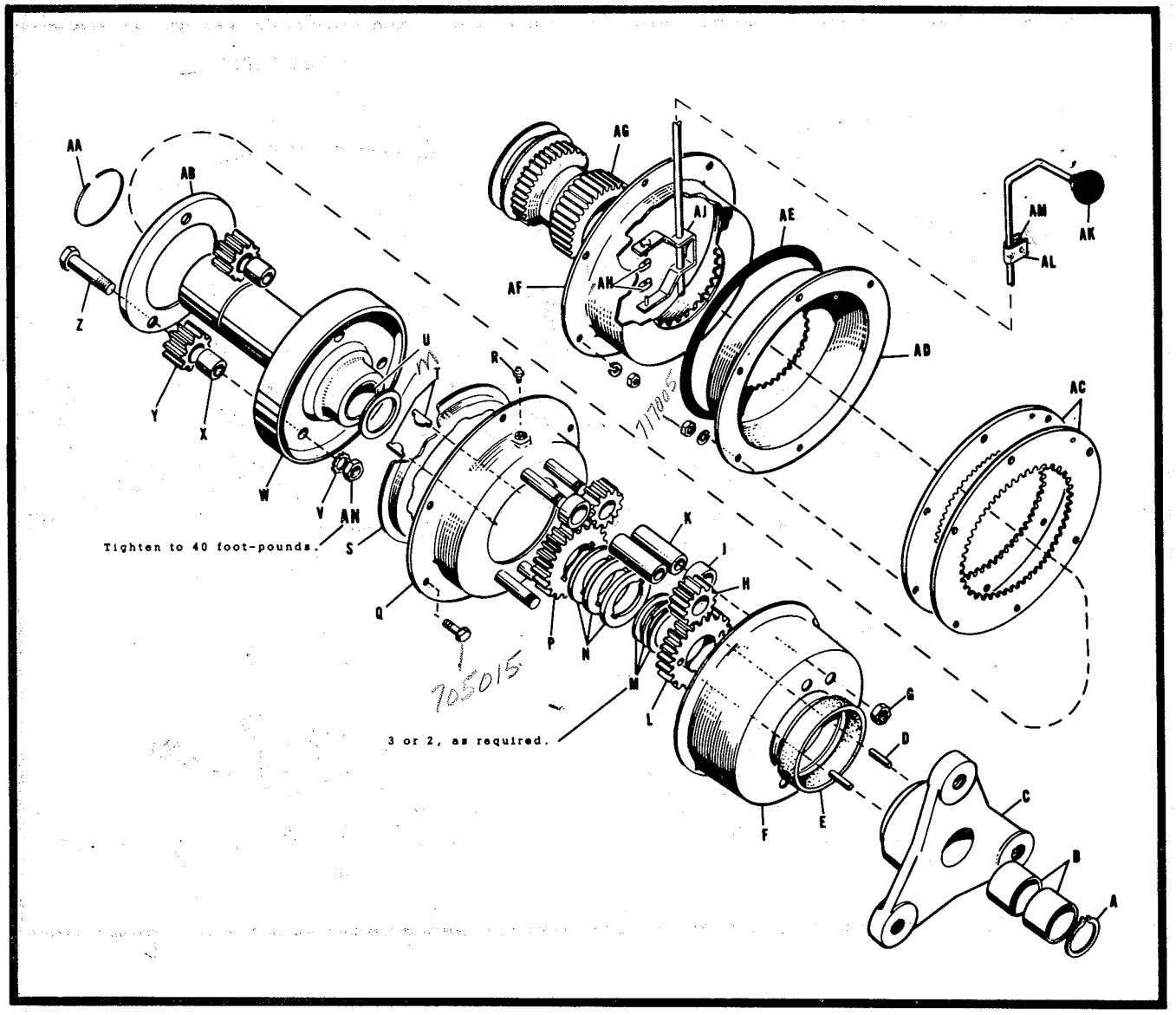
TRANSMISSION ASSEMBLY—Model 400

Order by Part Number

Ref. Letter	Part No.	Description
A	725501	Key, Hi Pro HP-608
B	714004	Screw, Self Tapping #10x⅜
C	121144	Cover Assembly, Gear Case
D	153115	Gasket, Gear Case
E	121310	Gear, Drive
F	153078	Bearing, Intermediate Pinion
G	121306	Gear Assembly
H	153079	Washer
J	153124	Ring, Retaining
K	153089	Bearing
L	708001	Capscrew, 5/16-18x⅜
M	153105	Case, Gear
N	121043	Shaft, Intermediate
P	705005	Capscrew, Hex Hd., ⅜-16x1
Q	715033	Hex Hd., Bolt
R	719002	Washer, Plain, 5/16
S	121118	Pinion, Reverse
T	121163	Spacer, Pinion
U	121115	Pinion & Pulley Shaft
V	~~153094~~	Shield 158473
W	153114	Gasket, Bearing Housing
X	720002	Washer, Lock, ⅜
Y	717003	Nut, Full Hex, ⅜-16
Z	121107	Spacer
AA	153011	Spring, Extension
AB	153121	Spring, Reverse Lever
AC	153044	Housing Assembly, Bearing
AD	727004	Grease Fitting, Alemite #1911

Ref. Letter	Part No.	Description
AE	121139	Plate, Lock
AF	153090	Nut, Full Hex
AG	8051038	Bearing
AH	153079	Washer
AJ	153124	Ring, Retaining
AK	705007	Capscrew, Hex Hd., 5/16-18x1
AL	121124	Pulley, Transmission
AM	725003	Key, Woodruff, 3/16x¾
AN	121078	V Belt
AP	722003	Pin, Cotter 3/16x1¼
AQ	121372	Lever Assembly, Shift
AR	8021050	Knob
AS	717013	Nut, Hex Jam, ⅜-16
AT	121042	Plate, Friction
AU	8191047	Spring
AV	717510	Nut, Lock, ⅜-16
AW	121220	Housing Assembly, Axle
AX	153089	Bearing, Axle
AY	153088	Washer
AZ	121128	Ring, Retaining
BA	121222	Axle, Rear
BB	121089	Hub, Wheel, L.H.
BC	715002	Screw, Set, Sq. Hd., ⅜-16x1¼
BD	121257	Wheel, less tire & tube
BE	8261100	Bolt, Hub 7/16-20NF 3/4
BF	121137	Hub Cap, Rear
BG	718008	Speed Nut
BH	121295	Cover, Axle House
BJ	121296	Clamp
BK	121279	Spacer 1/16"
BL	706003	Bolt 7/16-20NF 1½

* *Purchase Locally*



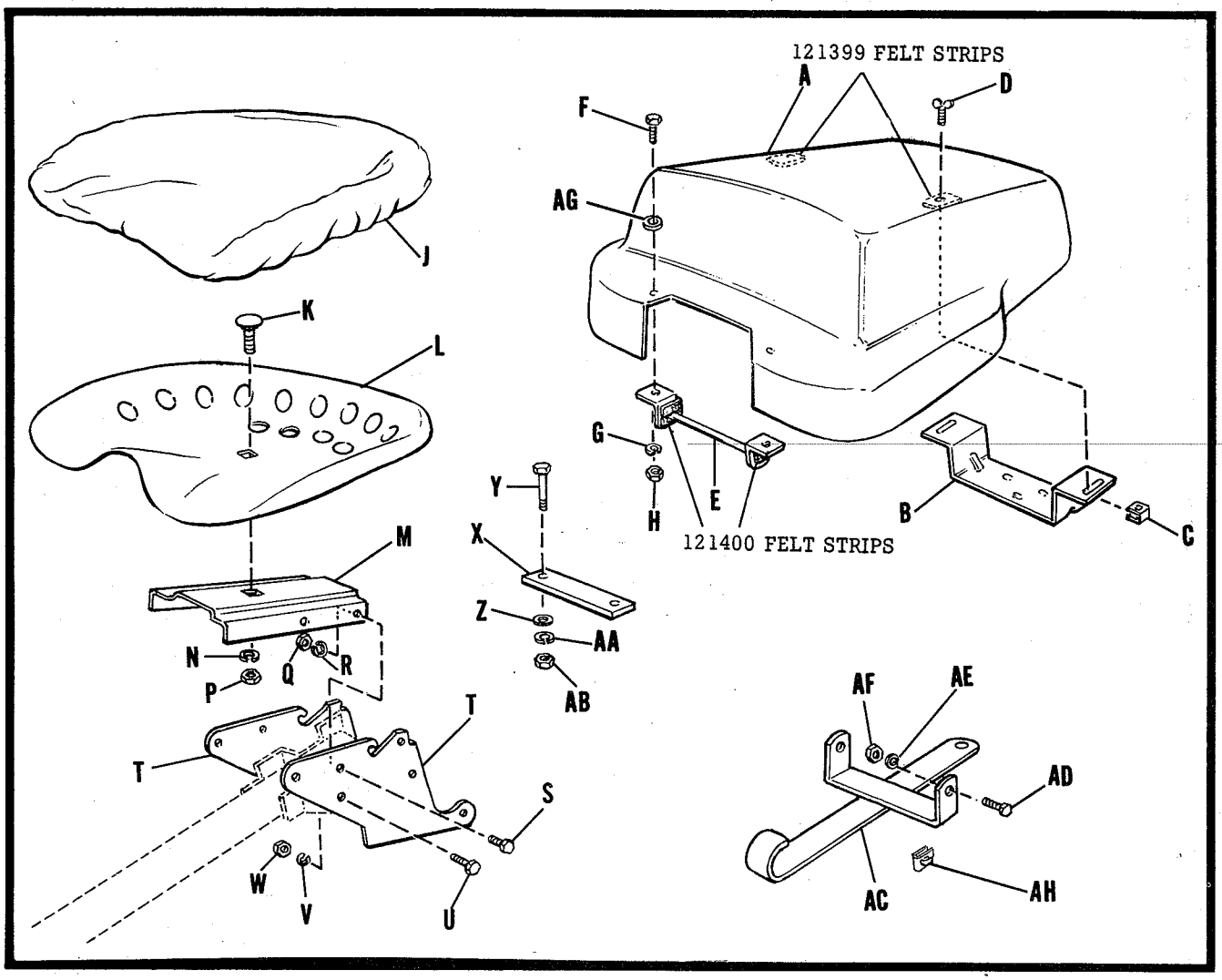
DIFFERENTIAL ASSEMBLY—Model 400

Order by Part Number

Ref. Letter	Part No.	Description
A	8151063	Ring, Retaining
B	153068	Bearing
C	121088	Hub, Wheel, R.H.
D	10 3034	Pin, Roll
E	121190	Seal, Differential Cover
F	121154	Cover, Differential
G	717510	Nut, Lock, Hex Full ⅜-24
H	121311	Pinion, Differential
J	121084	Spacer, Differential
K	121083	Spindle, Pinion, Differential
L	121313	Gear Differential
M	153088	Washer
N	153077	Washer, Axle
P	121312	Gear, Differential
Q	121152	Carrier Assembly
R	727002	Fitting, Grease, Alemite #1641
S	121185	Plate, Thrust
T	725501	Key, Hi-Pro HP608
U	153068	Bearing

Ref. Letter	Part No.	Description
V	721004	Washer, Lock, External Shakeproof
W	121164	Spider Assembly
X	121163	Spacer, Pinion
Y	121118	Pinion
Z	121184	Bolt, Hex Hd.
AA	121167	Ring, Snap
AB	121162	Ring, Bolt
AC	121151	Gear, Ring
AD	121148	Cover Assembly
AE	121186	Seal, Housing Assembly
AF	121146	Housing Assembly
AG	121187	Sun Gear Assembly
AH	121169	Block, Shift
AJ	121375	Clevis Assembly
AK	122005	Knob
AL	153074	Guide, Rod
AM	121175	Liner
AN	718015	Nut, Full Hex

* *Purchase Locally*

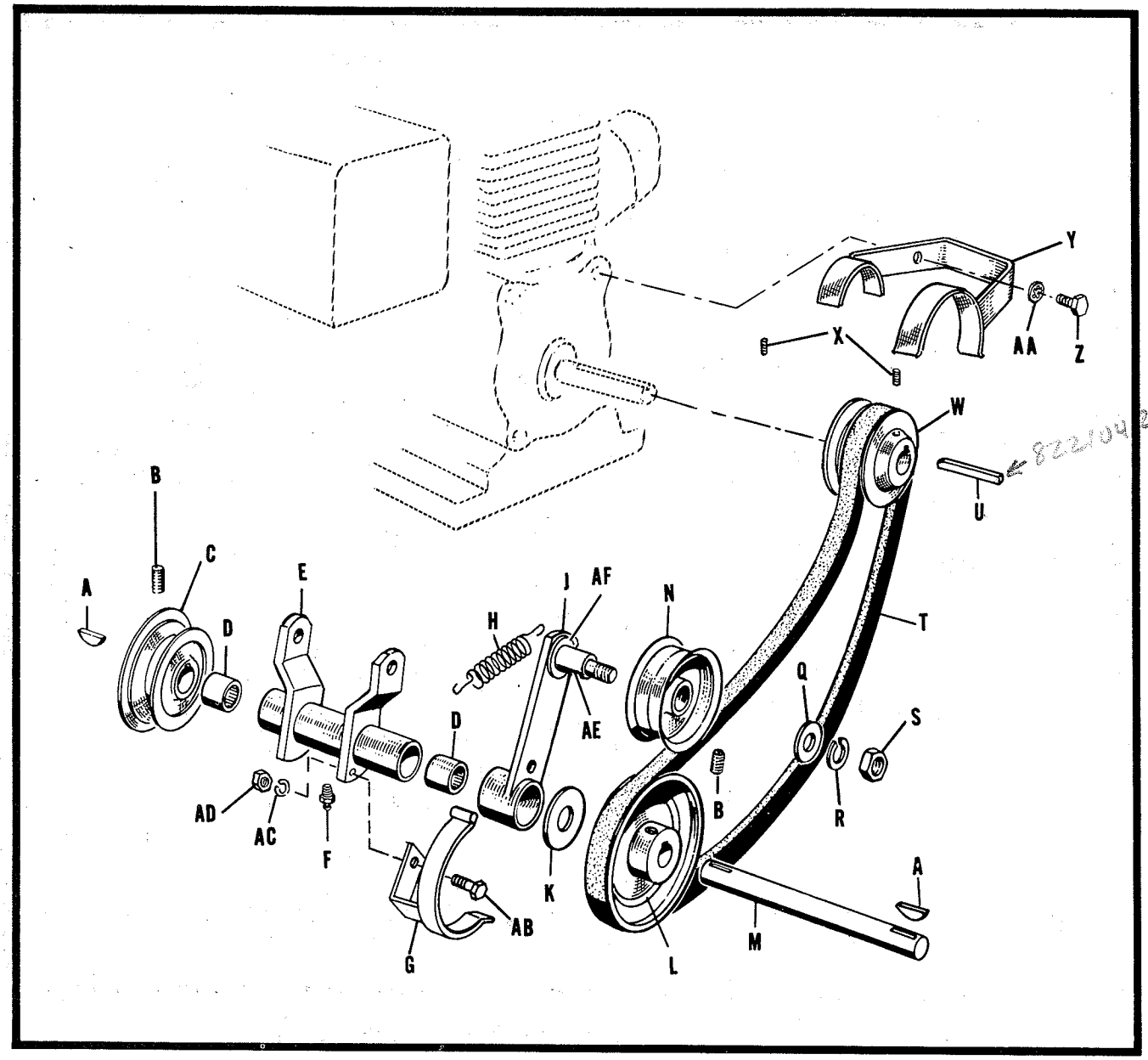


HOOD, SEAT AND SEAT SUPPORT—Model 400

Order by Part Number

Ref. Letter	Part No.	Description
A	121382	Hood
B	121381	Hood Bracket
C	718022	Nut, Tinnerman
D	715037	Thumb Screw
E	121383	Bracket Assembly, Hood
F	705030	Capscrew, Hex, ¼-20x¾
G	720003	Washer, Lock, ¼
H	717005	Nut, Hex, Full, ¼-20
J	121177	Seat Pad
K	703001	Carriage Bolt, ½-13x1 lg.
L	121029	Seat
M	121212	Seat Support
N	720004	Washer, Lock, ½
P	717006	Nut, Hex, Full ½-13
Q	717003	Nut, Hex, Full ⅜-16
R	720002	Washer, Lock, ⅜

Ref. Letter	Part No.	Description
S	705005	Capscrew, Hex, ⅜-16x1 lg.
T	121359	Side Plate
U	705005	Capscrew, Hex Hd., ⅜-16x1 lg.
V	720002	Washer, Lock, ⅜
W	717003	Nut, Hex Full, ⅜-16
X	121377	Spacer, Engine
Y	705020	Capscrew, Hex, 5/16-18x2
Z	719002	Washer, Plain, 5/16
AA	720001	Washer, Lock, 5/16
AB	717001	Nut, Hex, Full, 5/16-18
AC	121252	Draw Bar Assembly
AD	705005	Capscrew, Hex, ⅜-16x1 lg.
AE	720002	Washer, Lock, ⅜
AF	717003	Nut, Hex, Full, ⅜-16
AG	719006	Washer, Plain, ¼
AH	154404	Clip



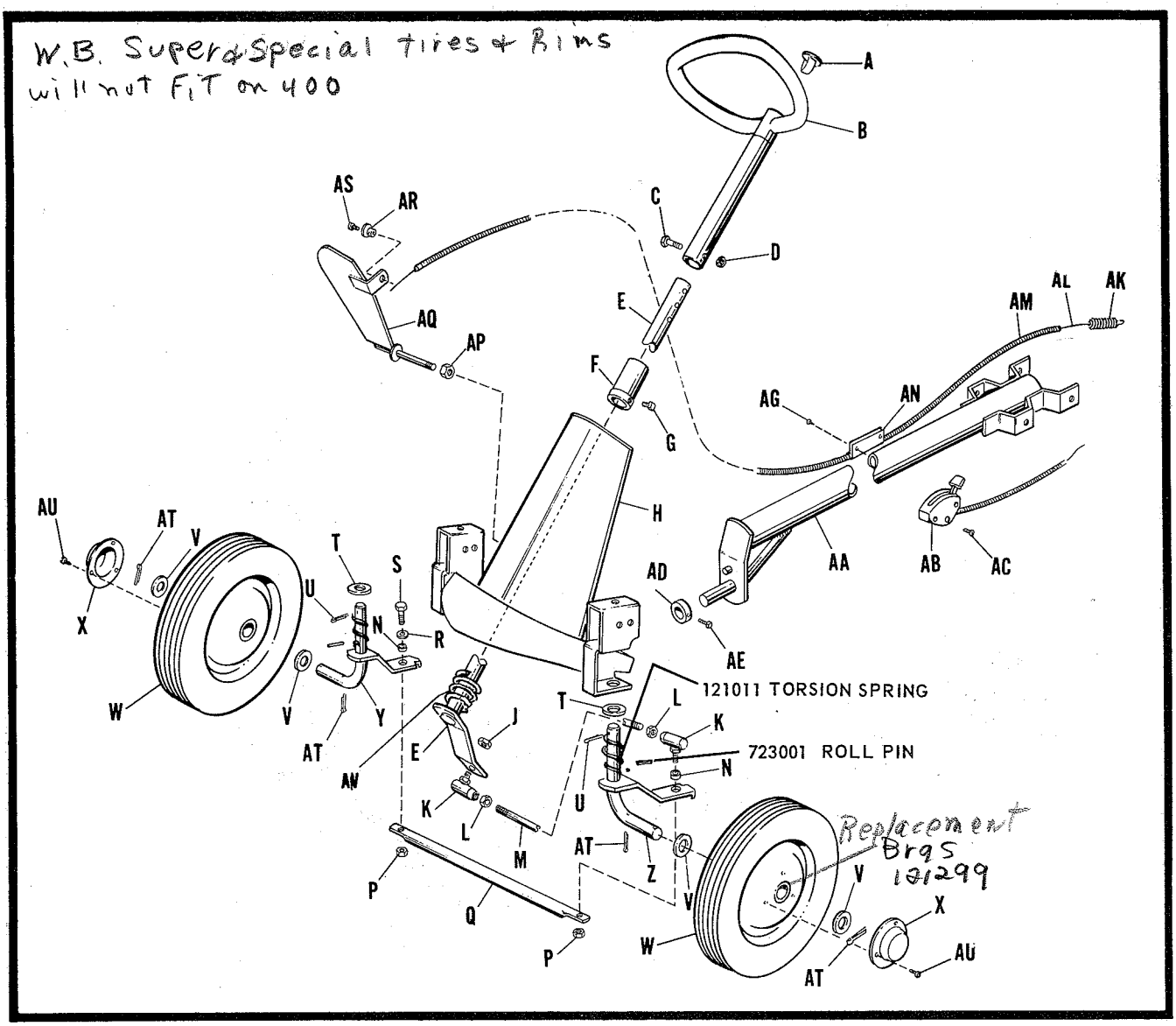
POWER TAKE-OFF AND ENGINE PULLEY—Model 400

Order by Part Number

Ref. Letter	Part No.	Description
A	725003	Key, Woodruff, 3/16x¾
B	713501	Screw, Set, 5/16-18x½
C	108025	Pulley
D	108054	Bearing, Needle
E	121045	Bracket Assembly, Drive
F	727002	Grease Fitting, Alemite #1641
G	121297	Retainer, Belt
H	8111047	Spring
J	121049	Lever, Idler Assembly
K	719002	Washer
L	109052	Pulley
M	108014	Shaft, Idler
N	154534	Pulley, Idler
Q	719001	Washer, Plain, ⅜

Ref. Letter	Part No.	Description
R	720002	Washer, Lock, ⅜
S	717003	Nut, Full Hex, ⅜-16
T	121398	V Belt
U	~~121226~~	Key, Engine Pulley 822/042
W	121069	Pulley, Engine
X	713503	Screw, Set, Cup Point, Socket Hd., 5/16-18x5/16
Y	121378	Bracket Assembly, Belt Guard
Z	706010	Capscrew, Hex Hd., ½-20x¾
AA	721506	Washer, Lock, ½ Internal Shakeproof
AB	705030	Capscrew, Hex Hd., ¼-20x¾
AC	720003	Washer, Lock, ¼
AD	717005	Nut, Full Hex, ¼-20
AE	154177	Race, Inner Bearing
AF	719002	Washer

* *Purchase Locally*



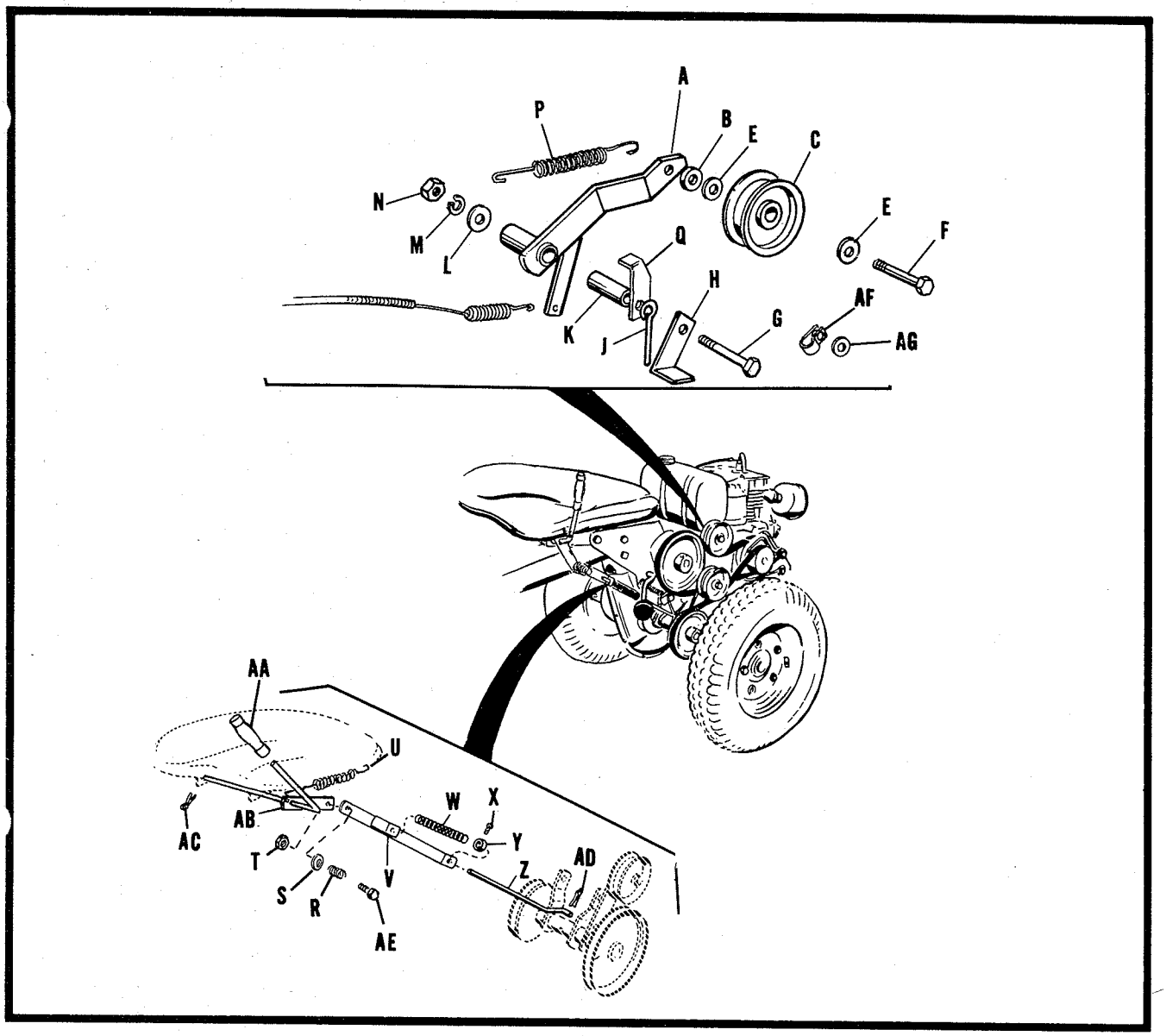
FRONT AXLE AND FRONT SUPPORT—Model 400

Order by Part Number

Ref. Letter	Part No.	Description
A	121342	Button, Plug
B	121371	Handle, Steering
C	705018	Capscrew, Hex Hd., 5/16x1½
D	717511	Nut, Hex, Full, 5/16-18 NC
E	121337	Arm Assembly, Steering
F	121340	Collar & Tube Assembly
G	713006	Set Screw, S. Hd., Cup Pt. 5/16x½
H	121328	Support, Steer Rod, Sub Assembly
J	717515	Nut, Lock, Full Hex, ⅜-24
K	121127	Ball Joint
L	717010	Nut, Hex Full, ⅜-24
M	121350	Rod, Tie
N	121349	Spacer
P	717510	Nut, Lock, Full Hex, ⅜-16
Q	121348	Link, Drag
R	719001	Washer, Plain, ⅜
S	705005	Capscrew, Hex Hd., ⅜x1
T	8061012	Washer
U	722003	Cotter Pin
V(6)	~~8061012~~	Washer 108181 (2-8-65)

Ref. Letter	Part No.	Description
W	121012	Wheel & Tire Assembly
X	121136	Hub Cap, Front
Y	121397	Spindle Assembly, R.H.
Z	121396	Spindle Assembly, L.H.
AA	121351	Frame Assembly, Front
AB	121293	Throttle Control Assembly
AC	714010	Screw, Self Tapping, #10-24x½
AD	8021028	Collar, Set
AE	713504	Set Screw, Socket Hd., 5/16x⅜
AG	714005	Screw, Self Tapping, #10-24x½
AK	121367	Spring
AL	121365	Clutch Wire
AM	121366	Clutch Wire Cable
AN	121368	Cable Clamp
AP	717510	Lock Nut, Full Hex, ⅜-16
AQ	121360	Foot Pedal Assembly
AR	121364	Clutch Wire Pivot
AS	713001	Set Screw, Sq. Hd., ¼-20x⅜
AT	722003	Cotter Pin
AU	714003	Self-tapping Screw
AV	154398	Spring

** Purchase Locally*
† Specify Color



CONTROL LINKAGE AND POWER TAKE-OFF—Model 400

Order by Part Number

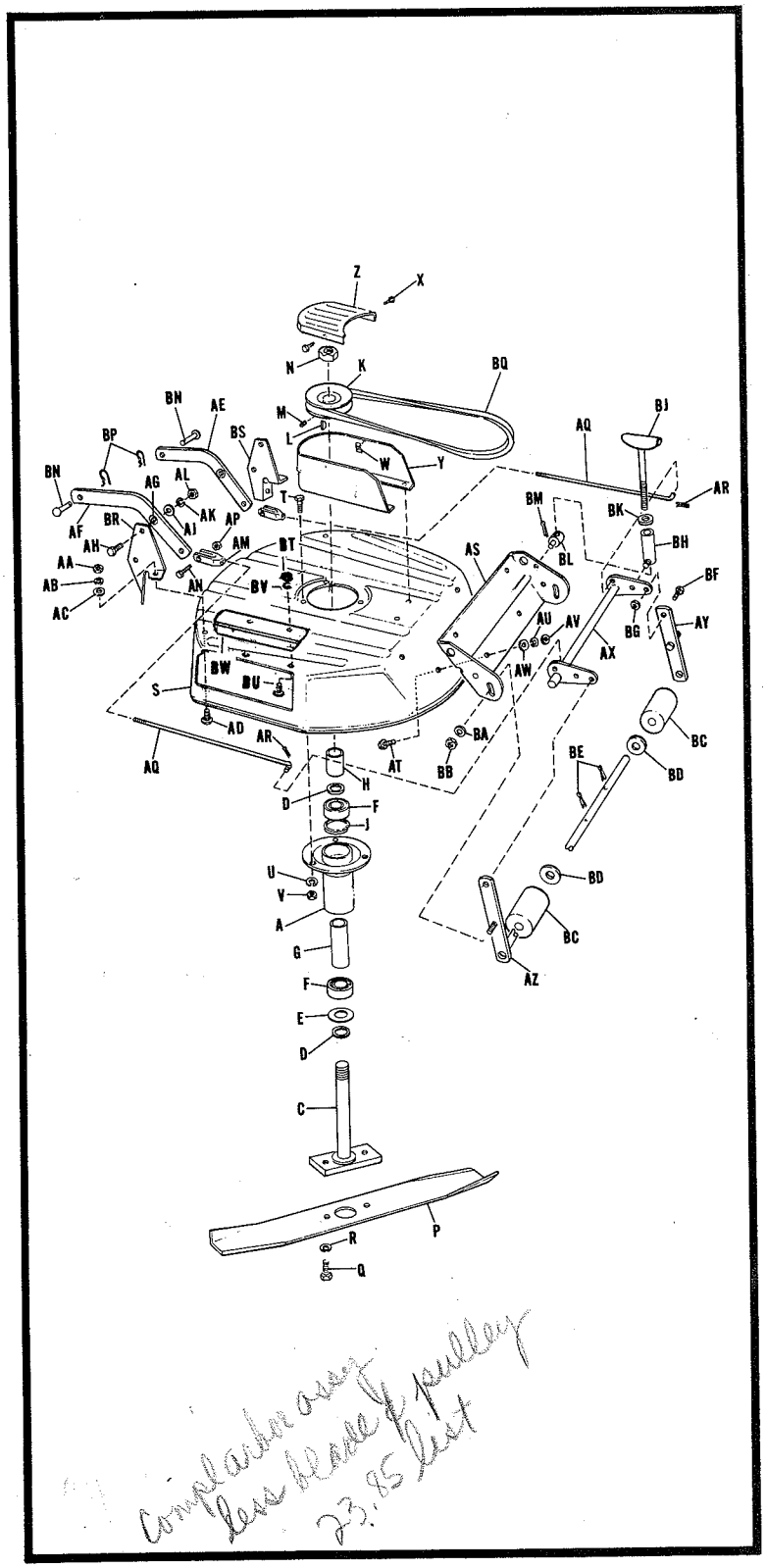
Ref. Letter	Part No.	Description
A	121369	Idler Lever Assembly
B	8161215	Spacer
C	154534	Idler Pulley
E	719002	Washer, Plain, 5/16
F	705009	Capscrew, Hex Hd., 3/8x1 1/2
G	705013	Capscrew, Hex Hd., 3/8x3
H	121135	Guide, Belt
J	121044	Pin, Lock
K	8061058	Spacer, Idler Lever
L	719001	Washer, Plain, 3/8
M	720002	Washer, Lock, 3/8
N	717003	Nut, Hex, Full, 3/8
P	121037	Spring, Idler Lever
Q	121038	Stop, Lever
R	8191047	Spring

urchase Locally

Ref. Letter	Part No.	Description
S	719002	Washer, Plain, 5/16
T	717510	Nut, Lock, Full Hex, 3/8-16
U	121037	Spring
V	8081503	Guide Assembly, Clutch Rod
W	8191045	Spring
X	713001	Set Screw, Sq. Hd., 1/4x3/8
Y	8191022	Set Collar
Z	121289	Rod, P.T.O. Clutch
AA	121201	Grip
AB	121304	Lever Assembly, Clutch
AC	722006	Cotter Pin, 1/8x1
AD	722016	Cotter Pin, 3/32x5/8
AE	705016	Capscrew, Hex Hd., 3/8x1 1/4
AF	8061117	Clip
AG	719001	Washer, Plain, 3/8

PARTS LIST
FOR 24" ROTARY MOWER
Model 400

Order by Part Number



Ref. Letter	Part No.	Description
A	108203	Tube Assembly, Arbor
C	108268	Arbor Assembly
D	108181	Washer
E	108257	Washer
F	108202	Bearing, Ball
G	108201	Spacer
H	108145	Spacer
J	108134	Backing Ring
K	108246	Pulley
L	725006	Woodruff, Key, 3/16x⅝ Dia.
M	713504	Set Screw, Socket Head, 5/16-18 NCx⅜ lg.
N	717517	Nut, Hex, Jam, Lock, ¾-16 NF
P	108276	Knife Blade
Q	715030	Capscrew, Hex Hd.
R	720002	Washer, Lock, ⅜
S	108269	Housing
T	705004	Capscrew, Hex Hd., ⅜-16 NCx¾ lg.
U	720002	Washer, Lock, ⅜
V	717003	Nut, Hex, Full, ⅜-16 NC
W	718009	Nut, Tinnerman
X	714006	Screw, Self Tap. #10x½ lg.
Y	108275	Pulley Guard
Z	108104	Cover, Guard
AA	717003	Nut, Hex, Full, ⅜-16 NC
AB	720002	Washer, Lock, ⅜
AC	719001	Washer, Plain, ⅜
AD	703004	Bolt, Carriage, ⅜-16 NCx¾ lg.
AE	108271	Lever, Front, R.H.
AF	108272	Lever, Front, L.H.
AG	8171045	Bushing
AH	705005	Capscrew, Hex Hd., ⅜-16 NCx1 lg.
AJ	719001	Washer, Plain, ⅜
AK	720002	Washer, Lock, ⅜
AL	717003	Nut, Hex, Full, ⅜-16 NC
AM	108157	Clevis, Adjusting
AN	715042	Capscrew, Hex Hd., ⅜-16x1¼
AP	717510	Nut, Hex, Full Lock, ⅜-16 NC
AQ	108286	Rod, Height Adjusting
AR	722001	Pin, Cotter, 3/32x¾ lg.
AS	108270	Roller Bracket
AT	705017	Capscrew, Hex Hd., 5/16-18 NCx¾ lg.
AU	720001	Washer, Lock, 5/16
AV	717001	Nut, Hex, Full, 5/16-18 NC
AW	719002	Washer, Plain
AX	108283	Lever Assembly, Rear
AY	108278	Bar Assembly, Roller
AZ	108277	Bar & Shaft Assembly, Roller
BJ	719001	Washer, Plain, ⅜
BB	717510	Nut, Hex, Full Lock, ⅜-16 NC
BC	108178	Roller
BD	116001	Washer
BE	722011	Pin, Cotter, 3/16x1 lg.
BF	705005	Capscrew, Hex, Hd., ⅜-16 NCx1 lg.
BG	717003	Nut, Hex, Full, ⅜-16 NC
BH	108287	Socket Assembly, Crank
BJ	108169	Screw Assembly, Adjusting
BK	719001	Washer, Plain, ⅜
BL	108172	Pivot
BM	722001	Pin, Cotter
BN	100028	Pin
BP	8161045	Clip, Spring
BQ	108099	V-Belt
BR	108274	Bracket, Front, L.H.
BS	108273	Bracket, Front. R.H.
BT	717005	Nut, Full Hex, ¼-20
BU	705002	Screw, Hex Hd. Cap, ¼-20x½"
BV	721002	Washer, Lock
BW	108353	Deflector

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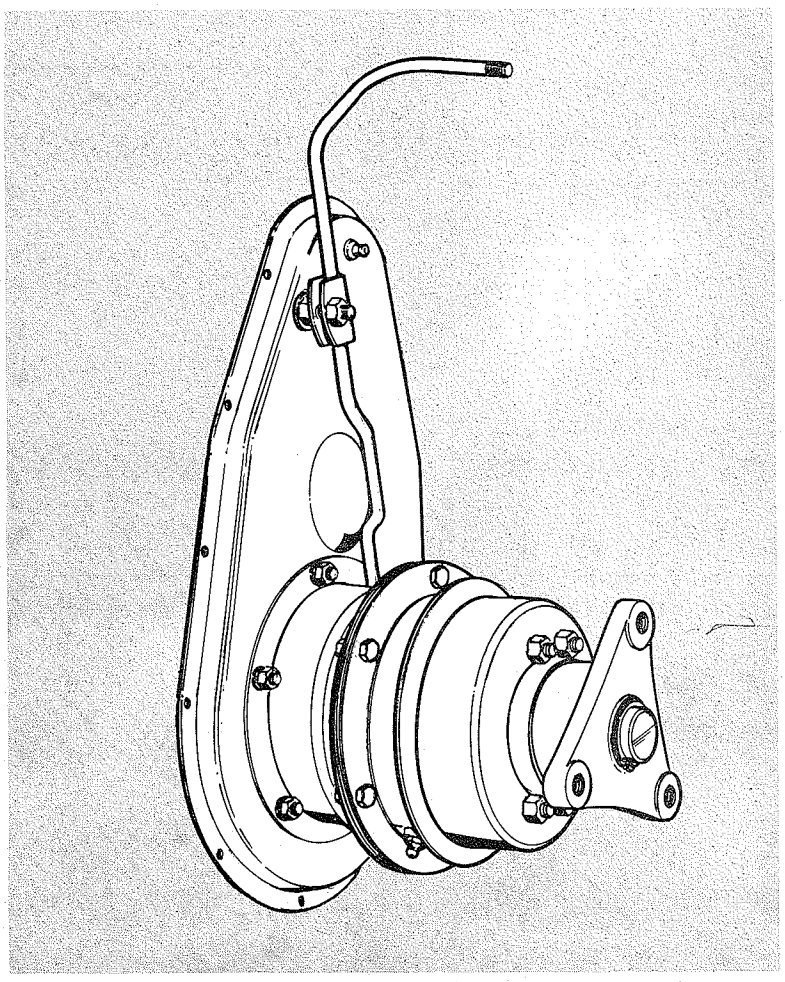
SERVICE manual

INSTRUCTIONS FOR DISASSEMBLY AND REASSEMBLY
of
2-SPEED AXLE AND DIFFERENTIAL ASSEMBLY
as used on
SIMPLICITY POWER EQUIPMENT



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NOTE: This manual illustrates the procedures for disassembly and reassembly of the 2-speed axle and differential assembly as used on "Wonder-Boy" riders. These basic procedures also apply to the 2-speed assemblies as used on other tractors.

This manual provides a step-by-step guide for the disassembly and reassembly of the 2-speed axle as used on Wonder Boy Riding Tractors. Follow the sequence of steps and refer to the various illustrations where necessary.

1. Raise and securely support the rear end of the tractor and remove both rear wheels and the left hand wheel hub.

2. Remove the hose clamp and axle housing cover from the left side of the axle tube. Remove the snap-ring and washer from the axle. Refer to Figure 1. When the snap-ring and washer have been removed from the axle, withdraw the axle by pulling on the right hand wheel hub. Giving the hub a slight rotation forward and backward may be helpful in sliding the differential gears through the pinions in the differential assembly.

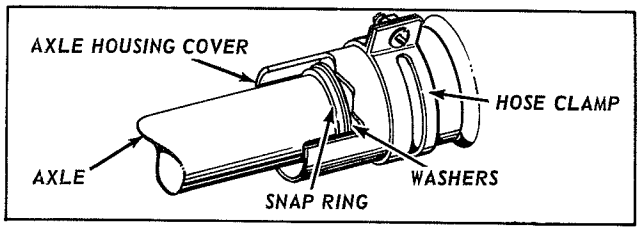

Figure 1

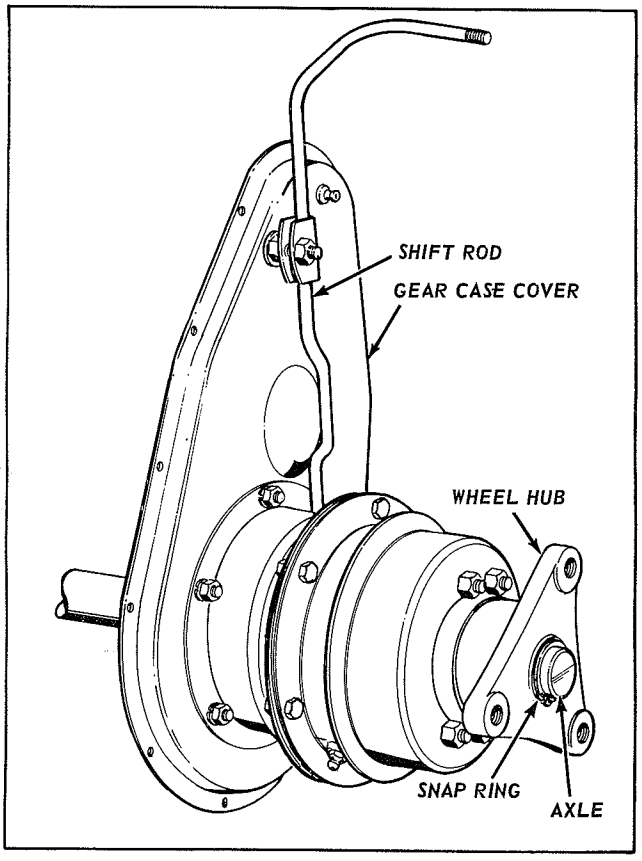

Figure 2

3. Remove the gear case cover by undoing the 12 self tapping screws and speed nuts.

4. To remove the right hand wheel hub from the axle, remove the snap-ring from the end of axle and slide the wheel hub off of end of axle. Refer to Figure 2. The right hand wheel hub has the side differential gear attached to it by 4 roll pins. Two of the roll pins are smaller in diameter than the other two, and fit inside of the larger ones. To remove the gear from the wheel hub, it will be necessary to drive a wedge between the gear and the hub at various points around the gear until the gear is free of the roll pins. Refer to Figure 3.

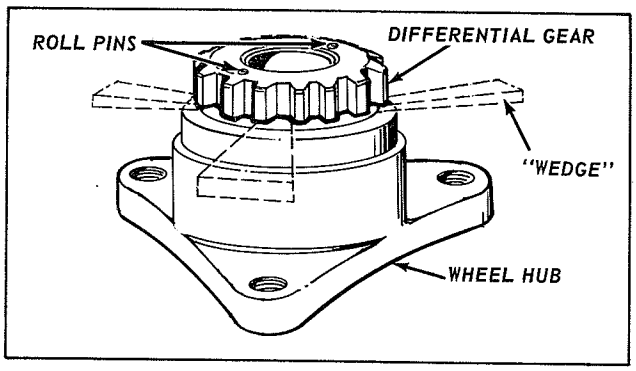

Figure 3

5. Remove the differential cover by undoing the 4 hex lock nuts shown in Figure 4. After the cover is removed, you will be able to remove the 4 sets of pinion gears with their spacers and spindles by sliding them from their positions on the differential bolts.

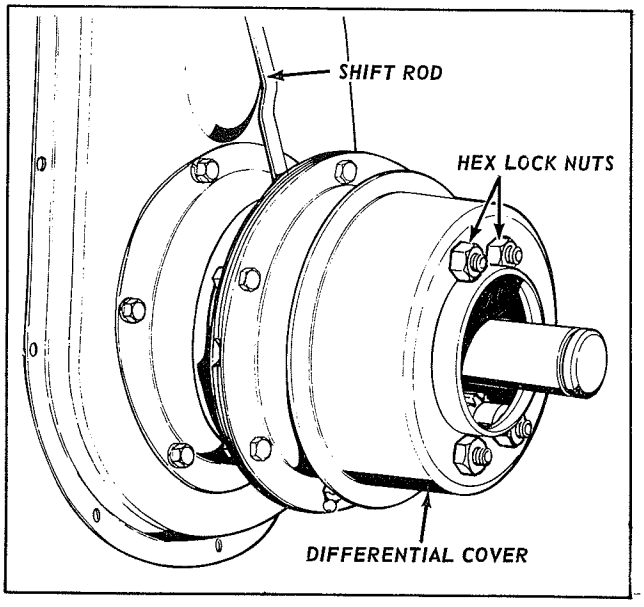

Figure 4

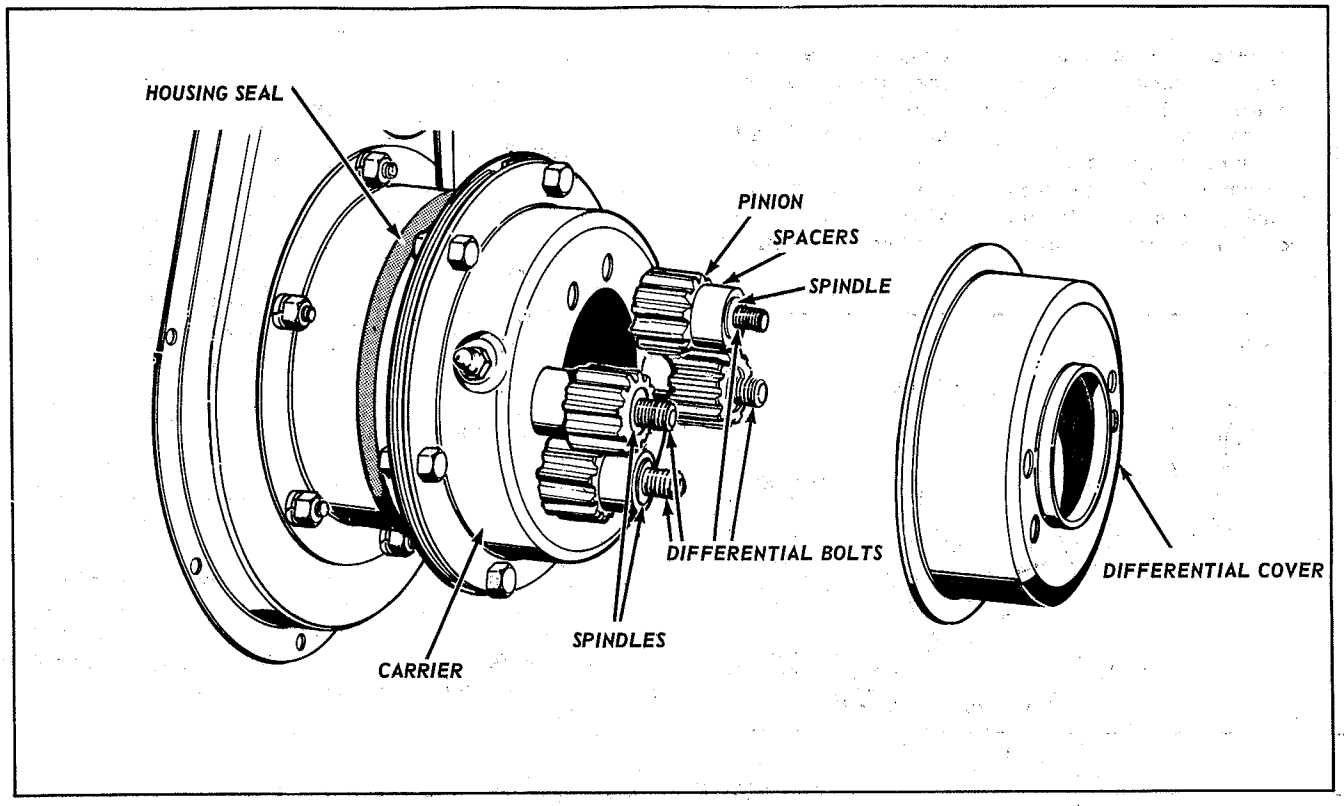

Figure 5

6. To remove the drive gear, place supports under the gear case cover as shown in Figure 6 and sharply rap the end of spider assembly hub with a raw-hide mallet. The drive gear is keyed to the spider hub with 2 keys which are removed after gear is free of hub.

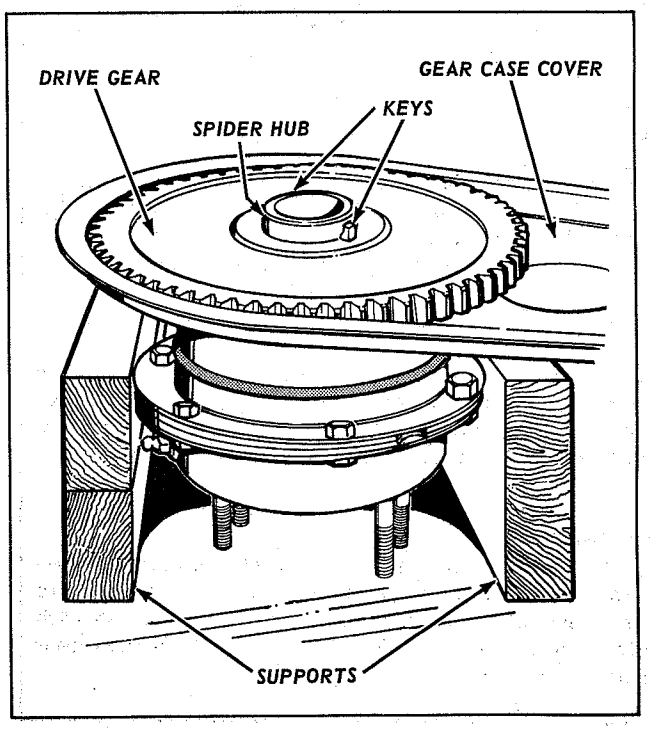

Figure 6

7. Remove the 6 hex nuts and lockwashers that hold the gear case cover to the housing assembly, and separate the housing assembly and gear case cover. Be sure to remove the hex nut that holds the shift rod to the rod guide on the side of gear case cover. Remove the snap ring from the hub of spider assembly as shown in Figure 7. Slide the sun-gear off of the hub of spider assembly, while turning the shift rod to allow the sun-gear to free itself from the shift blocks attached to the shift clevis. When the sun-gear is free of the spider and the shift clevis, separate the housing assembly from the cover assembly and allow the housing seal to drop free.

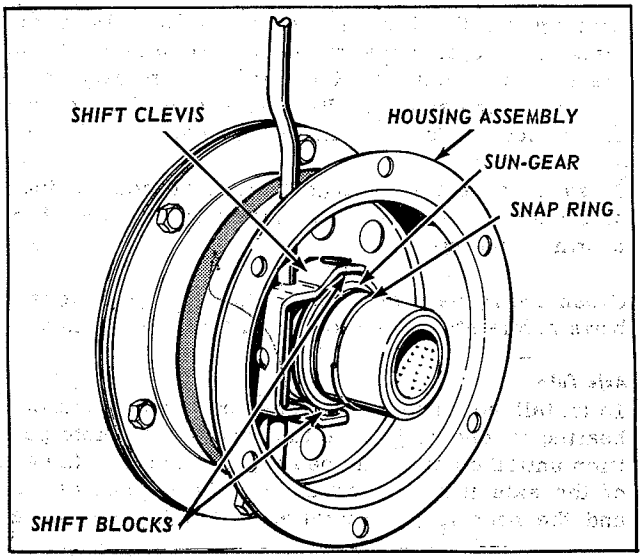

Figure 7

8. To disassemble the carrier assembly and the cover assembly, remove the 6 hex capscrews, lockwashers, and hex nuts holding carrier & cover. Refer to Figure 8. When the two pieces are apart the 2 ring gears held in place between them can be removed. The remaining item is the spider assembly with 3 pinion gears held in position by hex bolts and nuts located and held by a bolt ring.

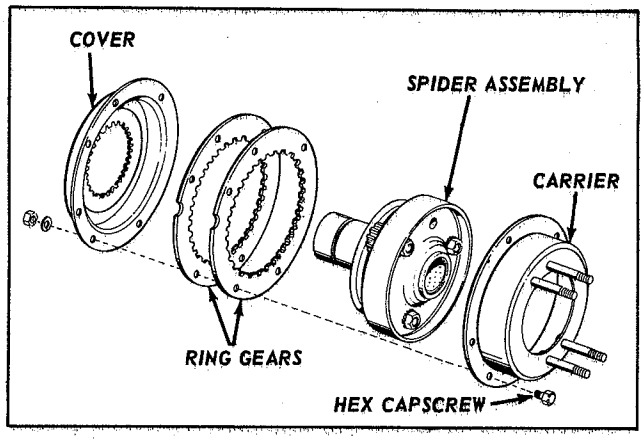

Figure 8

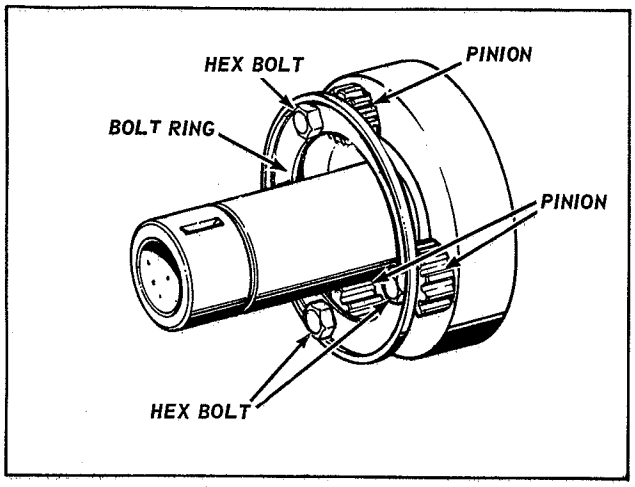

Figure 9

Removal of pinion gears from the spider assembly requires the removal of 3 hex nuts and external tooth lockwashers and withdrawal of hex bolts from the bolt ring. Refer to Figure 9. Each of the pinion gears revolves on a spacer held by a hex bolt.

BEARING REPLACEMENT

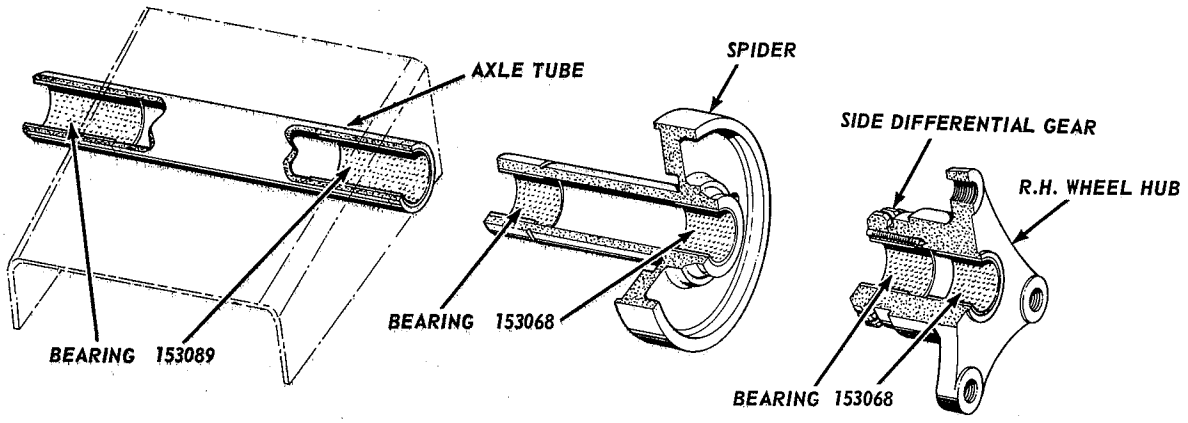

Figure 10

Bearings for the 2-speed axle are used in 3 different places. Two bearings are used in the axle tube, two are used in the spider hub, and two are used in the right hand wheel hub. Refer to Figure 10 for correct part numbers to be used in each place.

Press or drive the bearings out of their seats using a suitable mandrel to avoid damaging the surface of the bearing housings.

Clean and inspect the bearing housings for nicks or burrs before attempting to install the new bearings.

Axle Tube

To install new bearings in the axle tube, position a bearing in one end of the tube and press it into position until the end of the bearing is flush with the end of the axle tube. Insert a new axle through the tube and the bearing just installed. Use the axle as an aligning mandrel for the installation of the bearing to be used in the opposite end of axle tube. Slide the second bearing over the axle until it is in position to be pressed into place flush with end of axle tube.

Spider

Install the bearings in the spider hub in the same manner as outlined for the axle tube. These two bearings are positioned correctly when the ends of the bearings are flush with ends of spider tube.

R.H. Wheel Hub

The bearings in the right hand wheel hub are installed in the same manner as the axle tube bearings, and are positioned correctly when the bearings are flush with outer face of hub, and flush with the differential gear attached to the hub.

REASSEMBLY

Before beginning to re-assemble the two-speed axle clean all of the component parts, and inspect parts for wear or damage. Bear in mind that all rotating or rubbing surfaces should be given a coating of general purpose automotive type grease before assembly.

For proper assembly of the two-speed axle unit, follow the sequence of steps outlined below, and refer to the illustrations as required.

1. With shift rod and clevis in place in the housing assembly as shown in Figure 1, turn the shift rod and clevis to allow the sun-gear to be installed into the housing assembly. Position the shift blocks in the ring on the sun-gear as the gear is slid into place in the housing assembly.

   Fasten the housing assembly to the gear case cover using 6 hex nuts and lockwashers. Refer to Figure 2. Do not tighten at this time as loosening of the nuts will be required for proper adjustment of shifting action.

   Place the housing assembly seal over housing as shown in Figure 2.

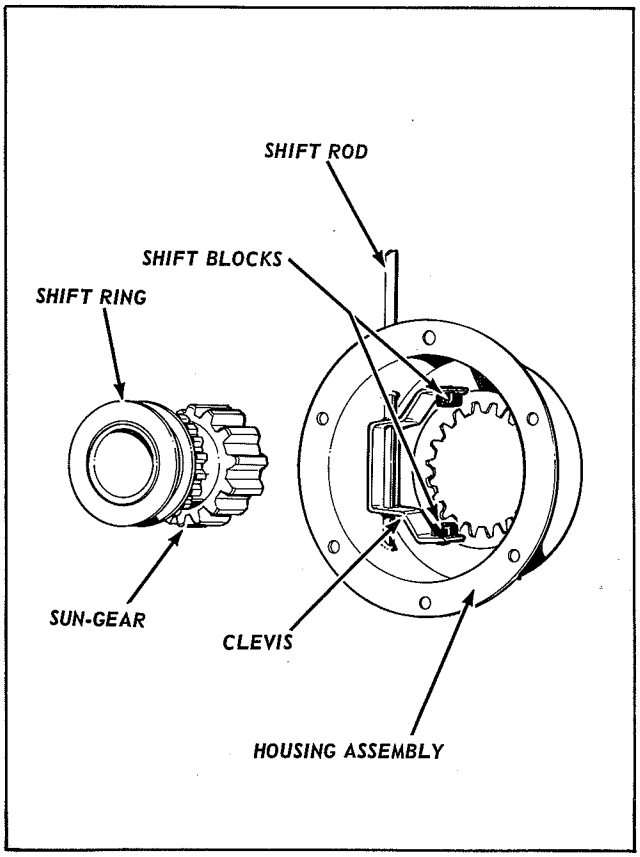

Figure 1

2. Place the gear case cover in a horizontal position on work bench, and place the cover assembly and the 2 ring gears over the sun gear and housing assembly as shown in Figure 2. Line up the ring gears so that the bolt holes line up with holes in flange of cover assembly and housing assembly. Each ring gear has a notch or cut-out on the outside diameter for purpose of aligning ring gears with each other.

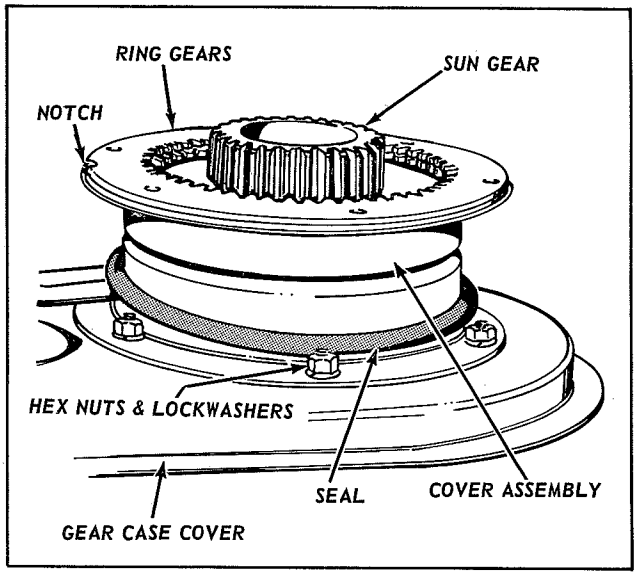

Figure 2

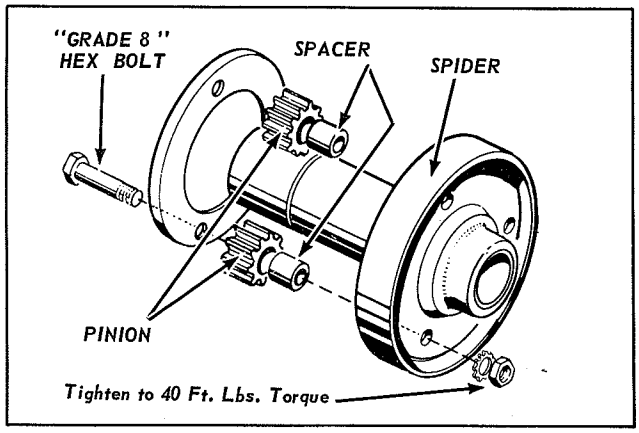

Figure 3

3. If the spider assembly has been dis-assembled, place the special "grade 8" pinion bolts through the bolt ring as shown in Figure 3, and assemble spacers to the bolts. Install the pinions over the spacers, and insert the bolt ends through the mounting holes in spider and secure with external tooth lockwashers and hex nuts. Tighten these nuts with a torque wrench to 40 ft. lbs. torque.

   Insert the hub of spider into the bore of the sun-gear as shown in Figure 4, carefully positioning the pinions so they mesh with the ring gear teeth. Be careful that alignment of ring gears is not disturbed.

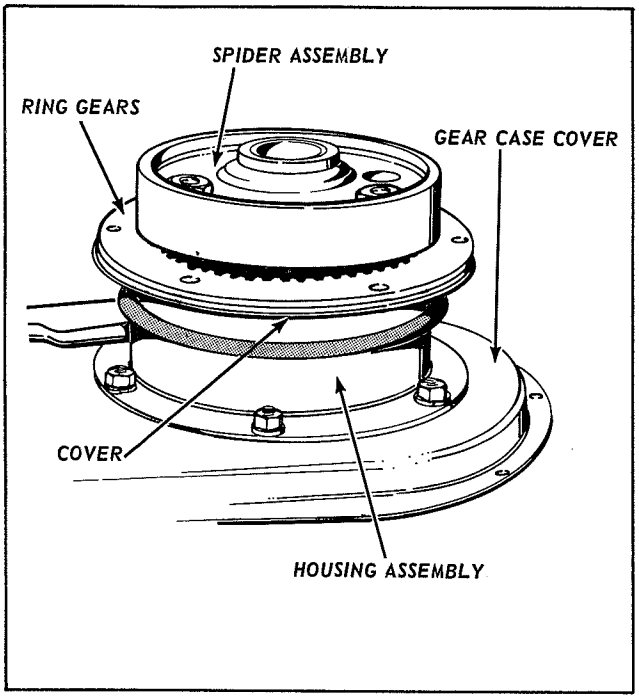

Figure 4

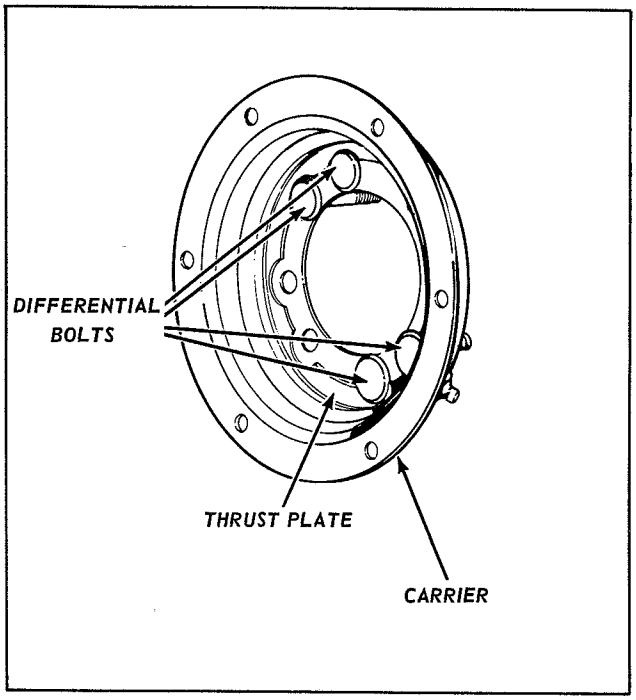

Figure 5

4. Install the thrust plate in position in the carrier as shown in Figure 5. Note that the thrust plate has several half-moon cutouts around its inside diameter to allow for positioning over the heads of the differential bolts. Assemble the carrier to the cover assembly and fasten with 6 hex bolts, lockwashers and hex nuts, being careful not to disturb the alignment of ring gears during assembly.

   Turn the gear case cover over, and place the snap-ring on spider hub as shown in Figure 6.

5. Support the spider as shown in Figure 7 with a block small enough to pass through the opening in the carrier and large enough to amply support the face of the spider tube. Assemble the drive gear to hub of spider assembly using the 2 keys to lock the gear to the hub.

   Press the gear onto spider hub until contact is made between hub of gear and snap-ring on spider hub.

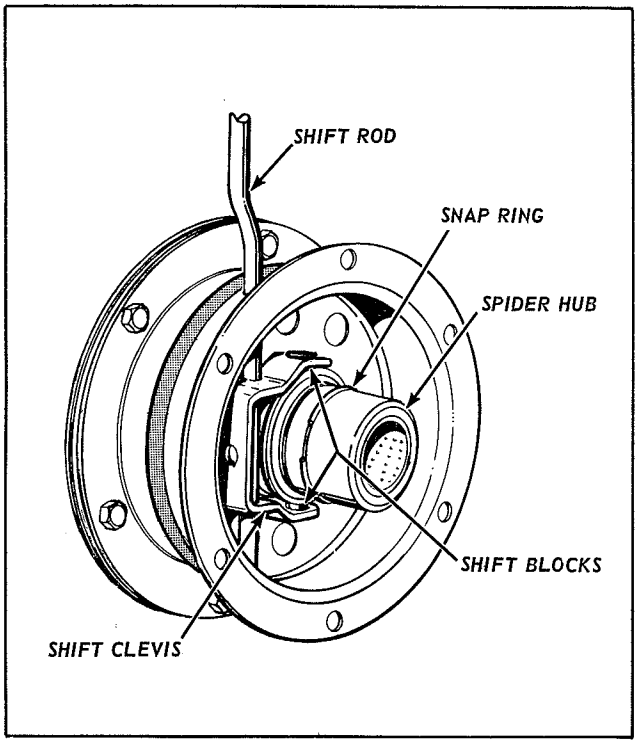

Figure 6

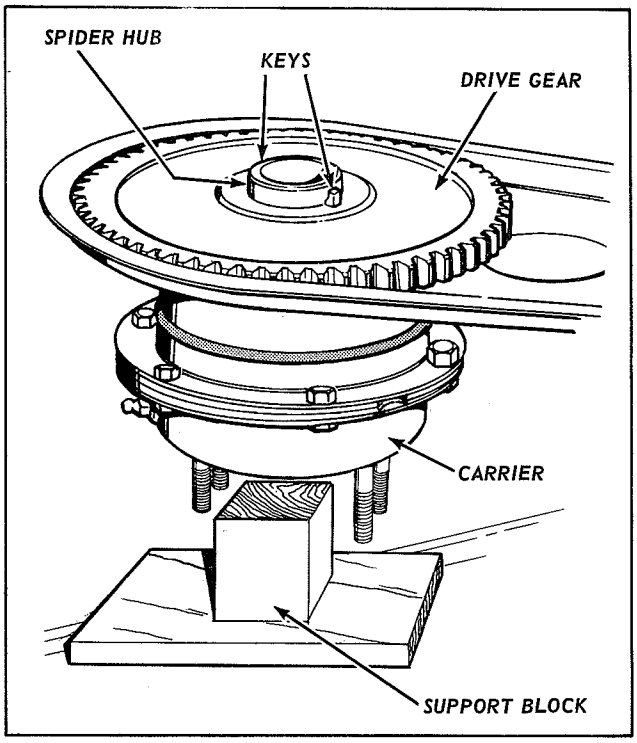

Figure 7

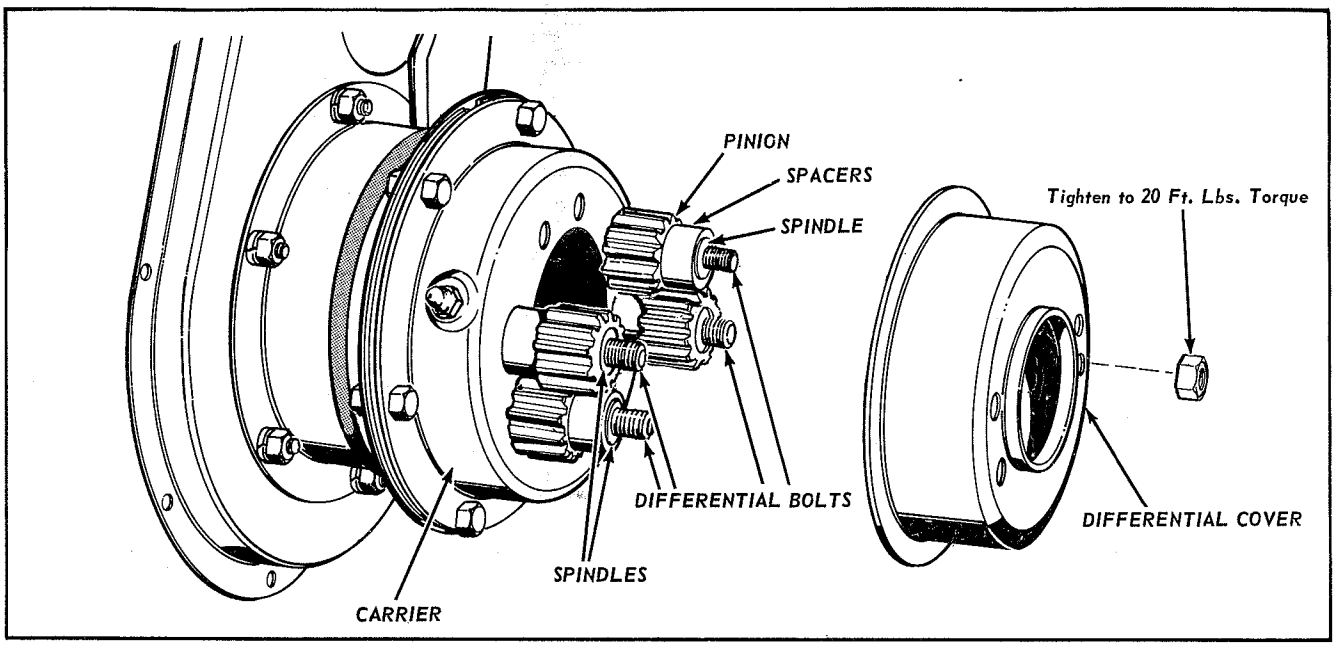

Figure 8

6. Place a differential spindle on each bolt of the carrier, and then install spacers and pinions in an alternate sequence as shown in Figure 8. Place the cover in position and tighten the 4 hex lock nuts to 20 ft. lbs. torque using a torque wrench.

7. Mount the gear case cover to the gear case, using 12 self tapping screws and speed nuts.

8. Place a flat washer on axle as shown in Figure 9. Assemble the differential gear and 2 keys to the axle and place the 3 key-slot washers next to the gear as shown in Figure 9. Insert the axle into spider and axle tube and secure in place with a flat washer and snap-ring at left end of axle tube as shown. Install 2 or 3 flat washers (as required) next to the key-slot washers.
Install the axle tube cover and hose clamp.

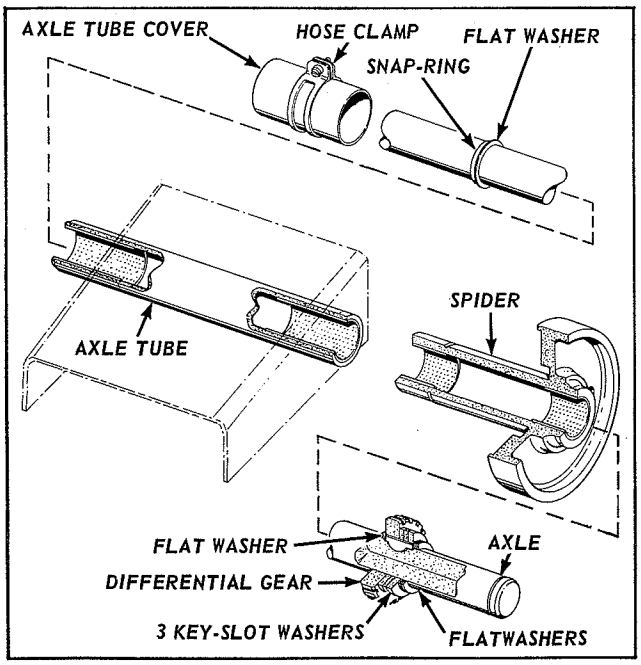

Figure 9

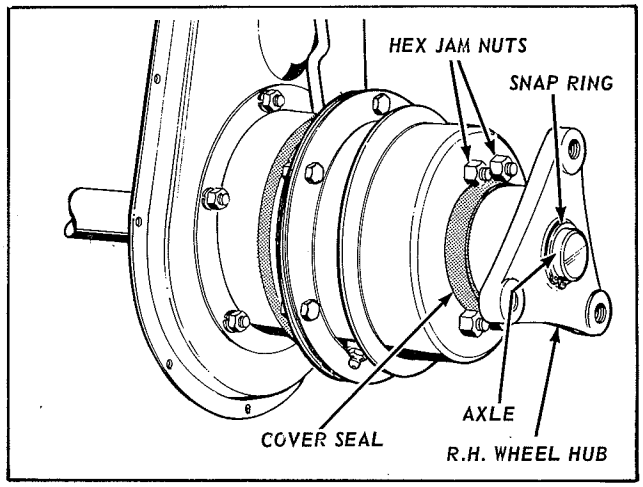

Figure 10

9. Place the rubber differential cover seal in position on the lip of the differential cover and assemble the R.H. wheel hub and differential gear to the axle. Position the pinion gears by rotating the carrier to allow gear on wheel hub to mesh with pinions. Install the snap-ring to end of axle to hold the wheel hub in place. Refer to Figure 10.

After the R.H. Wheel Hub and snap-ring have been assembled to the axle, inspect the cover seal for compression against the wheel hub. Refer to Figure 11. It is important to have this seal firmly compressed against the wheel hub to properly seal the differential against the entry of dirt and grit. If the seal does not compress after the hub and snap-ring are in place, it may be necessary to remove 1 of the flat washers that are between the key-slot washers and the differential side gear.

AXLE END-PLAY

Refer to Figure 11. The maximum amount of end-play for the axle is 3/64". Measure the end-play by removing the axle tube cover at left end of axle tube and insert a feeler-gauge between the flat washer and the end of axle tube. If the end-play exceeds 3/64", insert shim washers between the snap-ring and end of axle tube to remove the excess

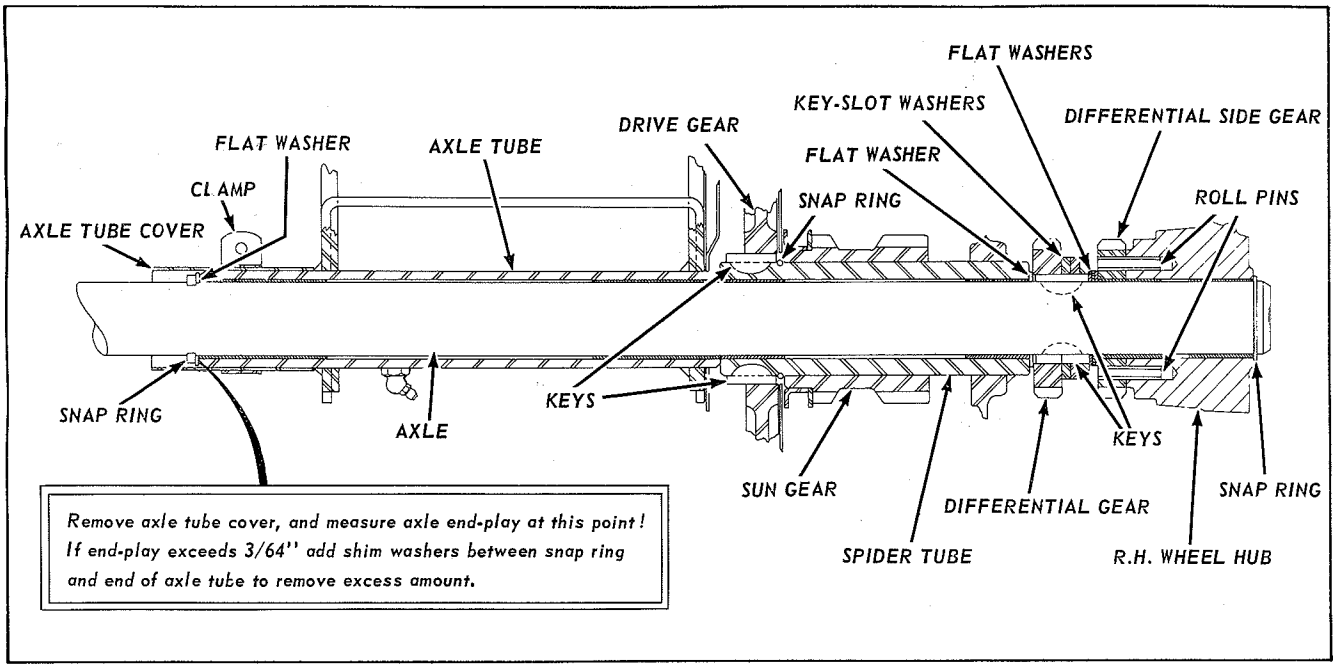

Figure 11

SHIFT ADJUSTMENT

If the shift lever is difficult to move after re-assembly of 2 speed axle, adjustment to correct this condition must be made in the following manner.

1. Loosen the 6 hex nuts around the mounting flange of cover assembly as shown in Figure 10.

2. Move the cover slightly until the lever can be shifted into "HI" range. Leave the shift lever in "HI" and re-tighten the nuts securely. It should now be possible to easily shift the unit into "HI" or "LO" range. Note--It sometimes may be necessary to loosen the 12 screws holding the gear case cover in position; to obtain sufficient movement for adjustment. If so, be certain to re-tighten screws after adjustment and before use of tractor.

GENERAL ADVICE

While the 2-speed axle is designed and manufactured to give long and faithful service under a wide variety of operating conditions, two requirements must be met by the operator to insure this satisfactory operation. These requirements are--

1-Lubrication of the axle tube and lubrication of spider and differential carrier by means of grease gun applied to grease fittings located on axle tube and on differential carrier.

2-Reasonable operation of the tractor; particularly when using the grader blade or snow plow. Ramming the blade against immovable rocks or mounds of ice will subject the differential side gear on the R.H. Wheel Hub to undue stresses that are apt to damage the gear teeth. Additional operation of the tractor after damage to differential side gear will cause rapid damage to pinions and other parts.