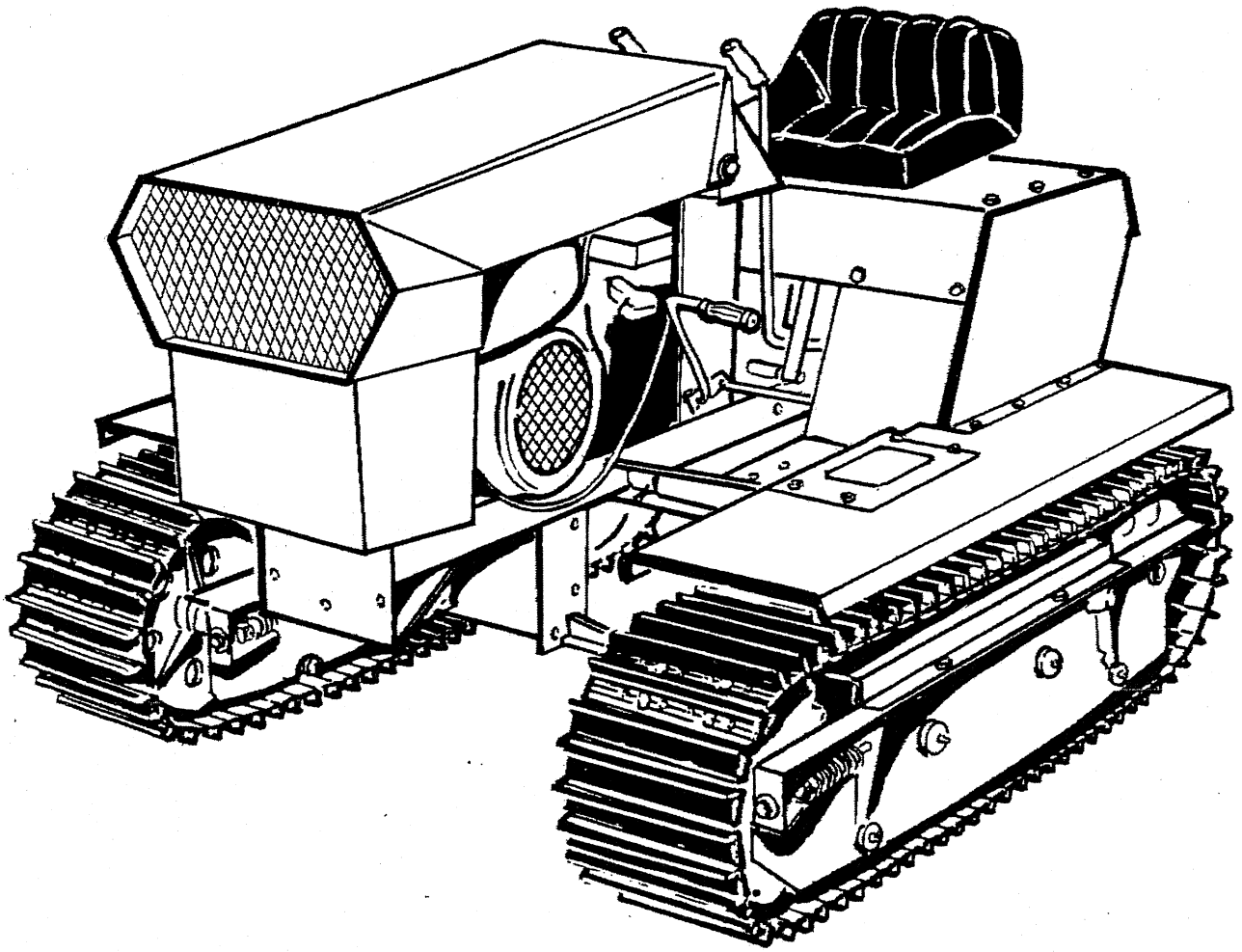
PRICE $10.00

MAGNATRAC® 3000

TECHNICAL MANUAL



C. F. STRUCK CORPORATION - CEDARBURG, WISCONSIN 53012

PARTS LIST - MT3000C CRAWLER TRACTOR

MAG3C1:1 - Version 05/31/89

SMALL PARTS & FASTENINGS

Cap Screw	1/4x1/2"	(7)
Cap Screw	1/4x3/4"	(3)
Cap Screw	1/4x1-1/2"	(3)
Cap Screw	1/4x1-3/4"	(2)
Cap Screw	5/16x3/4"	(34)
Cap Screw	5/16x1"	(14)
Cap Screw	5/16x1-3/4"	(2)
Cap Screw	3/8x3/4"	(6)
Cap Screw	3/8x1"	(13)
Cap Screw	3/8x1-1/2"	(1)
Cap Screw	3/8x2"	(1)
Cap Screw	3/8x2-1/2"	(2)
Cap Screw	3/8x2-3/4"	(3)
Cap Screw <Socket Head>	7/16x7/8"	(2)
Cap Screw	1/2x1"	(6)
Cap Screw	1/2x1-1/2"	(4)
Cap Screw	1/2x2"	(10)
Cap Screw	5/8x2-1/2"	(2)
Thumb Screw	5/16x3/4"	(1)
Carriage Bolt	1/4x1/2"	(2)
Carriage Bolt	5/16x3/4"	(3)
Carriage Bolt	5/16x7"	(2)
Carriage Bolt	3/8x1"	(4)
Carriage Bolt	3/8x1-1/2"	(1)

Washer	1/4"		(24)
Washer	5/16"		(76)
Washer	3/8"		(76)
Washer	3/8"	<thin>	(5)
Washer	1/2"		(23)
Washer	5/8"	<thin>	(32)
Washer	3/4"	<thin>	(9)
Washer	7/8"	<thin>	(247)
Washer	1"	<thin>	(33)

Note: do not confuse 1" Washer (above) with #258 "special" 1" Washer!

Lock Washer	1/4"	(4)
Lock Washer	5/16"	(43)
Lock Washer	3/8"	(13)
Lock Washer	7/16"	(6)
Lock Washer	1/2"	(7)
Lock Washer	5/8"	(2)
Star Washer	3/8" <Internal Tooth>	(3)
Star Washer	3/8" <Internal & External Tooth>	
Star Washer	9/16" <Internal Tooth>	
Nut	1/4"	(4)
Nut	5/16"	(40)
Nut	3/8"	(4)
Nut	7/16"	(16)
Nut	1/2"	(2)
Nut	5/8"	(2)
Lock Nut	1/4"	(15)
Lock Nut	5/16"	(15)
Lock Nut	3/8"	(14)
Lock Nut	1/2"	(14)
Flange Nut	5/16" (fine thread)	(1)
Snap Ring	7/8" ("coil" type)	(15)
Snap Ring	1" ("coil" type)	(7)
Cotter Pin	1/8x1"	(7)
Cotter Pin	3/16x1-1/2"	(4)
Woodruff Key	<#9>	(2)
Hitch Pin	<#2>	(4)
Hitch Pin	<#3>	(3)
Spring Pin	(1/8 x 3/4")	(4)
Spring Pin	(1/4 x 1-1/2")	(8)
Allen Wrench	1/8"	(1)
Allen Wrench	5/32"	(1)
Allen Wrench	3/8"	(1)
Plastic Tie	(6" long)	(6)
Edging	(plastic; 12" long)	(2)

LOWER TRACK FRAME

201	**Lower Track Frame**
-201AR	Right Wall
-201AL	Left Wall
-201BR	Right Wall
-201BL	Left Wall
-201CR	Right Side
-201CL	Left Side
-201DR	Right Plate
-201DL	Left Plate
-201E	Support (2)
-201F	Angle (8)
-201G	Quadrant (4)
-201H	Strip (2)
-201I	Gusset (2)
-201J	Segment (4)
-201K	Filler
-201L	Bar (2)
-201M	Collar (16)
-201N	Brace (8)
-201O	Stop (4)
-201P	Angle (2)
-201Q	Reinforcement (2)
-201R	Spanner
202R	**Right Cover Plate**
202L	**Left Cover Plate**
203	**Guard Assembly (2)**
-203A	Cover
-203B	Clip (2)
204R	**Right Fender Assembly**
-204AR	Right Fender
-204B	Rod
-204C	Strip
204L	**Left Fender Assembly**
-204AL	Left Fender
-204B	Rod
-204C	Strip
205R	**Right Support Assembly**
-205A	Rod
-205B	Plate
205L	**Left Support Assembly**
-205A	Rod
-205B	Plate
206R	**Right Wall**

206L Left Wall

207 Pan

208R Right Steering Lever
-208A Lever
-208B Tab
-208C Tube

208L Left Steering Lever
-208A Lever
-208B Tab
-208C Tube

209 Front Idler Sprocket (2)
-209A Tube
-212B Sprocket <A557B22> (2)

210 Idler Wheel (9-1/2" dia.) (4)
-210A Tube
-210B Flange Plate (9-1/2" dia.) (2)

211 Idler Wheel (4" dia.) (4)
-210A Tube
-211B Flange Plate (4" dia.) (2)

212 Rear Drive Sprocket (2)
-212A Tube
-212B Sprocket <A557B22> (2)
-212C Sprocket <H60A26>

213 Idler Axle Assembly (8)
-213A Axle
-673A Zerk (straight)

214 Rear Axle Assembly (2)
-214A Axle
-214B Plate
-673A Zerk (straight)

215 Front Axle (2)

216A Bushing (Full Round) (4)
216B Bushing (3/4 Round) (4)

217 Yoke & Clevis Assembly (2)
-217A Clevis & Pin
-217B Cap Screw & Loop Assembly

217A Clevis & Pin (1)

218 Threaded Rod (4)

219 **Pivot Shaft**

220 **Primary Drive Assembly** (2)
-220B Sprocket <50A54> (2)
-220C Sprocket <H60B9>

221 **Brake Drum** (cast iron) (2)

223 **Brake Shaft** (2)

224 **Track Connector Link** (2)
-224A Shoe
-224B Connector Link

225 **Track Assembly** (2)
-224A Shoe (69)
-224D Inner & Outer Links <continuous> (2)

227 **Key** (1/4" square x 1") <RED ENDS> (4)
(Above "RED" Keys shipped taped to "end" of each "axle" of #436 Transaxle)

228 **Key** (1/4" square x 1", plain) (5)

229R **Right Fender Cover**

229L **Left Fender Cover**

230 **Support Channel**

231R **Right Axle Support** (2)
-231AR Bracket
-201M Collar

231L **Left Axle Support** (2)
-231AL Bracket
-201M Collar

232 **Shim** (22)

251 **Sprocket** <50B11> (2)

252 **Bearing Assembly** with "shells" (6)
252A Bearing with collar (6)
252B Mounting Shell (12)

253A **Spring** (green) (2)

253B **Spring** (gold) (2)

254 **Chain** (#50 with connector) (2)

255 **Chain** (#60 with connector) (2)

256 **Handgrip** (5/8" ID) (2)

257 **Track Connector Pin** (with cotter pins) (8)

258 **Washer** ("special" 1" ID x 1-5/16" OD) (10)

260 **Pull Plate** (2)

261R **Right Bearing Support Assembly** (1)
-261A Plate
-261BR Right Angle
-261C Threaded Rod

261L **Left Bearing Support Assembly** (1)
-261A Plate
-261BL Left Angle
-261C Threaded Rod

262 **Tube** (4)

UPPER TRACTOR FRAME

401	**Upper Tractor Frame**
-401A	Channel
-401B	Hitch
-401C	Plate .
-401D	Brace
-401E	Angle (2)
-401F	Bearing (4)
-401G	Plate w/locknut
-401H	Bracket
-401K	Rest
-401L	Dash
-401N	Tower
-401M	Tube
-401O	Gusset
-401P	Floor Assembly
-401S	Guard
-401V	Tube (4)
-401W	Nose
-401X	Plate, support
-401Y	Stop
-401Z	Mount
-401AA	Crank
-401BB	Pedal
-401CC	Pin (2)
-401DD	Plate
-401EE	Tab
-401FF	Reinforcement

402	**Hood**
- 402A	Top
- 402B	Side (2)
- 402C	Bottom
- 402D	Grill

403 **Belt Guard**

404 **Brake Rod**

405	**Parking Brake**
-405A	Pin
-405B	Latch

406 **Angle**

407 **Plate** (notched)

408 **Plate** ("u" shaped)

409 **Tube**

410 **Belt Release** (Transaxle)
-410A Plate
-410B Loop
-410C Clip

411 **Belt Release** (Engine)
-411A Plate
-411B Pin
-411C Loop

413 **Strip, battery**

414 **Hood Latch**
-414A Pin
-414B Strip

415 **Belt Guide**

416 **Clip**

417 **Shift Ball**

418 **Grommet** (3)

419 **Seat**

420 **Pulley Assembly**
-420A Pulley (5" dia.)
-420B Hub (3/4" bore)

421 **Pulley** (6.5" dia. x 1" bore)

422 **"V" Idler** (4" dia. x 3/8" bore)

423 **Flat Idler** (4" dia. x 3/8" bore)

424 **Brake Band** (3)

425 **Brake Drum** (steel)

426 **Drive Belt** <XDV58X880>

427 **Switch** (neutral safety)

428 **Spring** (5/8" dia. x 9-1/2" long) (2)

429 **Throttle Control** (short)

430 **Choke Control** (long)

431 **Gas Hose** (1/4" dia. x 90" long)

432 **Terminal Cover**

433 Coated Clip (4)

434 Pinch Clip (2)

435 Gas Tank Assembly
-435A Tank
-435B Strap (2)
-435C Mounting Bracket
-435D Pet Cock

436 Transaxle

437 Engine

438 Grommet

440 Leaf Spring

441 Interlock Switch

442 Battery

443 Solenoid

444 Ignition Switch

445 Ammeter

446 Head Light (with hardware) (2) *

447 Light Switch

448 Connector (3/8") (2) *

449 Bracket

450 Electrical Tape

451 Wire Harness Assembly
-451A Plug
-451B Wire (red, 25" long)
-451C Wire (red, 26-1/4" long)
-451D Wire (black, 5-1/4" long)
-451E Wire (yellow, 16" long)
-451F Wire (green, 14" long)

452 Wire (heavy wgt. black, 17" long)

453 Wire (heavy wgt. black, 17" long)

454 Wire (heavy wgt. black, 8-3/4" long)

455 Wire (light wgt. yellow, 30" long)

456 **Wire** (light wgt. black, 39" long)

457A **Wire** (light wgt. blue, 49-1/2" long with fuse) *

457B **Wire** (light wgt. blue, 10" long) *

458 **Wire** (light wgt. green, 14" long)

459 **Spring** (7/8" dia. x 1-1/2" long)

460 **Spring** (7/16" dia. x 1-1/8" long)

461 **Pipe** (3/8x2-1/2" long)

462 **Pipe** (3/8x5" long)

463 **Pipe Cap** (3/8")

464 **Elbow** (90 degree, 3/8")

465 **Edging** (reinforced plastic, 20 feet) *

466R **Right Bracket**

466L **Left Bracket**

467 **Exhaust Deflector** (with spark arrestor screen & screws) *

(*) Optional Accessory

MT3000C CRAWLER TRACTOR
MAG3C2:1 - Version 06/01/89

Your Tractor, as well as any attachment you assemble in the future, will use the following "numbering system" and "terms" as defined below. Any change from the definitions below will be noted in the instructions for the specific attachment you are assembling.

Assembly Instructions for your MT3000 CRAWLER TRACTOR are broken into two separate Assembly Sections. The first Section describes the assembly of the Lower Track Frame and has the numbering system MT3000-**200.** The second Section describes the assembly of the Upper Tractor Frame and has the numbering system MT3000-**400.**

HOW DOES THE NUMBERING SYSTEM WORK?

A "whole number" like **#201** refers to a "complete assembly", made from a single component or a series of components. A number with a "letter" after it, like **#201A,** means it is the **"A"** component of the "complete assembly" **#201.** A number with an R or L after it, like **#201AR,** means it is the "right version" of the component A of the finished assembly **#201.**

For convenience, the prefix MT3000 has been dropped, and just the part number (**201A, 202, 401A, 402,** etc.) is used to identify the part in the instructions and accompanying drawings.

PROCEDURE NOTE

* Complete the Lower Track Frame assembly completely before going on to the Upper Tractor Frame assembly. * Read each **STEP** completely before proceeding to do the assembly it describes. * Always complete one step before going on to the next! * Install each part exactly as shown. Tighten the hardware securely unless otherwise noted.

UNPACKING THE KIT

Care must be exercised in unpacking the Kit to avoid bending or scratching the various components. As the parts are unpacked, lay them out neatly and check the parts against the enclosed Parts List. Notify us immediately of any shortages.

TERMS USED IN THE ASSEMBLY

The directions "left & right" and "upper & lower" referred to in the following instructions, are determined by standing **behind** the Tractor and looking forward.

"Inside" refers to the side of the part which is closest to an imaginary center line running down the length of the Tractor. "Outside" refers to the side farthest from the above defined center line.

A "Lock Nut" is a Nut with three "depressions" stamped into three of its "outside" faces.

A "shim" refers to a piece of metal (washer or plate) used to "fill out" an open space.

The "flat" Washers you will be using are of two types: Washers <standard> will be of the sizing and thickness you are familiar with in regular "hardware store" washers; Washers <thin> will be significantly "thinner" and of smaller diameter than Washers <standard> of the same hole size. Washers will be referred to in the following instructions by their "hole size"; the term <thin> will be used only where **both types** (having the **same hole size**) are used in the same Kit! Other Washers (Lock Washers, Star Washers, etc.) are all standard and should be familiar.

SETTING UP FOR ASSEMBLY

To aid assembly it's suggested to support the **#201** Lower Track Frame such that **solid, unmovable** supports approximately 8" high are placed under the **#201L** Bars running the full length of each Bar between the **#201BR** & **#201BL** Right & Left Walls.

SAFETY NOTE

As you add more parts to your assembly, your Tractor will rapidly become heavier...this means that you should never forget the weights involved in your assembly and become careless such that you allow your "supports" to become dislodged or that you try to work under a poorly supported Tractor!

NEVER work under your Tractor! Remove "supports" from Tractor when tracks are mounted (at end of STEP 35 of the "Lower Track Assembly").

Read all instructions carefully before you proceed with a particular phase of assembly...familiarize yourself with all the parts. ALWAYS PROCEED WITH CAUTION!

ASSEMBLY - LOWER TRACK FRAME

PROCEDURE NOTE

If you have the FH75 FRONT HITCH, proceed immediately to the instructions for the FH75 and complete STEPS 1 & 3...then return to begin STEP 1 below! When Tractor is completed, return to FH75 FRONT HITCH instructions and complete remaining STEPS.

( ) **STEP 1** Remove the 3/8x1-1/2" Cap Screws holding the Transaxle to the #401 Upper Tractor Frame...save the #466R & #466L Right & Left Brackets, Cap Screws, Washers & Nuts for later reassembly in Upper Tractor Frame.

( ) **STEP 2** Slide one 1" Washer over each "axle end" of Transaxle followed by #220 Primary Drive Assembly - Note: small #220C Sprocket must be facing "outside." Align the 1/4" Keyway of #220C Sprocket with the mating 1/4" Keyway on its respective axle - insert a pair (**two**) #227 "RED" Keys into the (above) aligned keyways making sure the "outside end" of the second Key is flush with the "outside face" of #220C Sprocket.

<NOTE: Your Tractor is shipped with "pairs" of #227 "RED" Keys tapped to "each axle end" of your #436 Transaxle...make sure the Keys fit "all the way" into their respective keyways. You may need to file a slight radius on the "inside" Key of each "pair" to compensate for the "radius" of the keyway on the Transaxle "axle" closest to the Transaxle housing!>

( ) **STEP 3** Lower Transaxle into rear of Lower Track Frame making sure the 1-3/4" slots in the #201D Plates fit around the "center section" of each #220 Primary Drive Assembly and that the #201D Plate is between its respective #220B & #220C Sprockets on each side.

( ) **STEP 4** Slide the #252 Bearing's "locking collar" over each axle end - keep "grooved end" of each collar (which will later "mate" with the "hub end" of its respective #252 Bearing) to the "outside". Form (two) #252 Bearing assemblies by placing a #252 Bearing "cartridge" between its two respective stamped steel "shells."

( ) **STEP 5** Take each #252 Bearing assembly and slide it (hub end first) over its respective "axle end" making sure to engage the "hub end" of each Bearing into the mating "groove" of its already mounted "locking collar".

<NOTE: The collars are locked by rotating them; as you do the above assembly, rotate the collars only enough to engage the "groove" of the collar into the "hub" of the Bearing.>

Don't lock the collar at this time; rather, rotate it so #252 Bearing can slide freely on the axle. Using 5/16x3/4" Cap Screws & Washers (no Lock Washers) mount each Bearing to its respective #201C Side...tighten Cap Screws.

( ) **STEP 6** At this point the Transaxle should be suspended in the Lower Track Frame and held in place only by a #252 Bearing on each axle end. Check that both locking collars are engaged on their respective Bearing hubs

and that they haven't been rotated (locked) - the Transaxle should still be able to slide freely from left to right.

( ) **STEP 7** Center the Transaxle in the Track Frame so that an even amount of axle is protruding from the "outside" of the #252 Bearing on both the right and left side. Take a few of the "special" #258 Washers (**do not** use the regular 1" Washers!) and stack them together to determine how many it will take to "shim" the distance between the "inside face" of the #252 Bearing's "locking collar" and the "outside face" of its respective #220C Sprocket.

<NOTE: Add only the Washers you really need - too many Washers will cause undue side pressure on the Bearings...Because the Washers are thin it is acceptable if one side has one less Washer than the other.>

( ) **STEP 8** Remove the #252 Bearings on each side and install the #258 Washers determined in step above. Rebolt the Bearings in place, this time using a 5/16" Lock Washer between the 5/16" Washer and the head of each 5/16x3/4" Cap Screw. (In this assembly check that the Transaxle can move freely, approximately 1/32" left or right - collars are still not locked! If no movement is possible, then you must remove one excess #258 Washer and reassemble).

( ) **STEP 9** Take 1" Washers and "shim out" protruding end of each axle and secure with 1" Snap Ring. <NOTE: Check drawing for proper procedure for installing all Snap Rings required in this Kit.> Using a hammer and drift pin (or similar punch) rotate the locking collars of each #252 Bearing "forward" and lock in place with "set screw" on each collar.>

Insert a Woodruff Key <#9> into slot of 1" diameter "shaft" protruding from "left" side of Transaxle. Slip #425 Brake Drum "hub first" completely onto end of this shaft and engage Woodruff Key...secure with 1" Snap Ring over end of (above) shaft...leave set screw in Drum loose.

PROCEDURE NOTE

The Lower Track Frame is actually composed of two similar "track units" which are linked together by two 1-5/16" dia. solid steel bars. The following instructions will detail the assembly of various component assemblies **on one** side of the Lower Track Frame; **it is to be understood** that once a particular assembly is completed on one side of the Track Frame, it will be immediately duplicated in a similar manner on the other side of the Track Frame before going on to the next assembly step!

( ) **STEP 10** Take #212 Rear Drive Sprocket assembly and per the drawing, slip this "unit" up into the lower rear of the Lower Track Frame making sure the large #212B Sprockets are between the #201A & #201B Walls and that the smaller #212C Sprocket is into the "box" formed by #201C Side & #201D Plate.

Align the #212A Tube of the Rear Drive Sprockets with the 1-3/4" slots in #201A & #201B Walls and #201C Side & #201D Plate.

( ) **STEP 11** Insert end of #214 Rear Axle through "collared" 7/8" hole of a #231 Axle Support. <NOTE: #214B Plate on end of #214 Axle Assembly "nests" under the "lip" of the "outside" #231 Axle Support.> Slide protruding Axle end through #212A Tube ("aligned" above).

Slip the "collared" 7/8" hole of a second #231 Axle Support over protruding end of (above) #214 Rear Axle. <NOTE: Your Kit contains "two" #231R Right Axle Supports and "two" #231L Left Axle Supports for use in this STEP. The drawing illustrates the installation of the "two" #231R Right Axle Supports...check drawing to make sure "lip" of each Axle Support is in its proper position over end of its respective #214 Axle.>

( ) **STEP 12** With 7/8" Washers, shim out the protruding end of the #214 Axle - secure end with a 1/4x1-3/4" Cap Screw...do not add Nut! <NOTE: The Cap Screw should be holding the #231 Supports tightly against their respective "outside faces" of #201A Wall and #201D Plate...but still allowing the #212 Rear Drive Sprocket assembly modest freedom to slide up and down!>

( ) **STEP 13** Slip a "stack" of six #232 Shim Plates between the "underside lip" of #231 Axle Support and the "upperside lip" of #201D Plate - align 1/2" holes of Support and Shims and secure (from "below") with 1/2x2" Cap Screws & Lock Nuts.

<NOTE: When inserting #232 Shim Plates (above), check drawing to make sure that you have installed them with their respective 1/2" wide slots pointing in the proper direction...the Shim Plates are "slotted" so that you may make future adjustments by "loosening" (not "removing") the respective 1/2x2" Cap Screws and slide the Shim Plates in & out as required!>

In a similar manner, take a "stack" of five #232 Shim Plates and insert them between the "topside lip" of the #231 Support and the "underside lip" of the #201A Wall; again, align 1/2" holes and secure (this time from "above") with 1/2x2" Cap Screws & Lock Nuts.

( ) **STEP 14** By sliding the #212 Rear Drive Sprocket assembly left or right, line up the "centerline" of #212C Sprocket with its mating #220C Sprocket above. Next, determine how many 7/8" Washers are necessary on each end of the #212A Tube to hold this "centered" position.

Remove the 1/4x1-3/4" Cap Screw and slide out #214 Axle...insert the 7/8" Washers (determined above) and replace Axle. <NOTE: When reinserting #214 Axle, place the 7/8" Washers (determined in STEP 12 above) "against the inside face" of #214B Plate...check drawing.> Reinstall the 1/4x1-3/4" Cap Screw in Axle's end and secure with 1/4" Lock Nut...don't overtighten.

( ) **STEP 15** To determine "proper tensioning" of #255 Chain, take the #255 Chain and wrap it around #212C and #220C Sprockets and secure with connector link provided. <NOTE: To ease assembly of the #255 Chain, hook a wire to each end of #255 Chain; from below, run wires up around #212C Sprocket, then pull on wires and draw Chain around #212C Sprocket. Join Chain "ends" at "top center" of #220C Sprocket & secure with connector link.>

#255 CHAIN TENSIONING:

To increase tension: loosen the 1/2x2" Cap Screws and remove a #232 Shim Plate from between the #231 Axle Support & #201D Plate and reinstall it between the #231 Axle Support & #201A Wall...tighten Cap Screws.

To decrease tension: loosen the 1/2x2" Cap Screws and remove a #232 Shim Plate from between the #231 Axle Support & #201A Wall and reinstall it between the #231 Axle Support & #201D Plate...tighten Cap screws.

( ) STEP 16 Increase (or decrease) the tension in the #255 Chain until the Chain is reasonably tight...rotate chain & sprocket assembly to check that you have not overtightened it.

<NOTE: New chains should be installed under slight tension as they will elongate a small amount due to final seating of the chain's pins and bushings during the first few days of operation.>

When you have the Chain tension set properly, "tap" #232 Shim Plates "together" and align the remaining 3/8" holes in Shim Plates with mating 1/4" holes in their respective #201A Wall & #201D Plate...pass a 3/16 dia." x 1-1/2" long Cotter Pin through each set of aligned 1/4" & 3/8" holes and secure ends of Cotter Pins.

Tighten all eight 1/2x2" Cap Screws assembled in STEP 13 (above).

( ) STEP 17 Form two #252 Bearings by placing Bearing "cartridges" between "pairs" of stamped "shells". Insert 5/16x3/4" Cap Screws (with Lock Washers next to each head) into each of the three 5/16" square holes in one of the (above) #252 Bearing assemblies.

Check drawing and insert this Bearing assembly into the "hole cluster" on "outside" of #261A Plate. Secure Cap Screws with 5/16" Nuts on "inside" of #261A Plate; leave Cap Screws loose enough so that Bearing cartridge may swivel within the stamped shells... protruding hub of Bearing must point toward Tractor's centerline.

( ) STEP 18 Install a 1" Snap Ring on one end of a #223 Brake Shaft. Slip three 1" Washers over remaining end of #223 Shaft and slip Shaft into 1" bore of "non-hub" side of #221 Brake Drum. <NOTE: Use flat surface to determine which side of Drum does not have a "protruding hub".>

Insert a #228 Key into mating 1/4" keyway of Drum & Shaft...slip on one 1" Washer. Insert Shaft into "outside" of 1" bore of previously mounted #252 Bearing in #261A Plate. On "inside" of (above) #261A Plate, slip a "locking collar" over protruding #223 Shaft and engage the protruding hub of #252 Bearing with the "collar". Leave collar engaged, but loose <similar to STEP 5 above>. Slip #223 Shaft into two 1" Washers and then into 1" bore of "non-hub" face of #251 Sprocket followed by a second #228 Key and one 1" Washer.

( ) STEP 19 From the inside, insert three 5/16x3/4" Cap Screws into the 5/16" holes in #261B Angle - the Screw ends should point out of the #261B Angle and toward the Tractor's centerline.

Take the second #252 Bearing assembly and mount it simultaneously over the protruding end of #223 Shaft & the three (above) protruding Cap Screws...secure "loosely" with 5/16" Nuts & Lock Washers. <NOTE: Check drawing, make sure that the hubs of both mounted #252 Bearings

are facing toward the Tractor's centerline.>

Slip a second "locking collar" over protruding end of #223 Shaft and engage (but do not "lock") the collar to its mating hub of #252 Bearing mounted in #261B Angle. Complete this assembly by using 1" Washers to shim out remaining end of Shaft and secure its end with 1" Snap Ring.

( ) STEP 20 At this time, check that the #251 Sprocket can move left & right approximately 1/32". If more than that, add additional 1" Washers between "hub" of #251 Sprocket and "outside face" of #252 Bearing mounted in #261B Angle...if less than 1/32", remove 1" Washer (from above). <NOTE: You may add 1" Washers to the "non-hub" face of the #251 Sprocket if it provides better final sprocket alignment!>

Tighten the six 5/16x3/4" Cap Screws holding the two #252 Bearings. Again, check the 1/32" tolerance and adjust if necessary per instructions above. When adjustment is satisfactory, use drift pin or "flat nosed" punch to rotate "locking collars" of both #252 Bearings "forward" and lock set screw in each collar.

<NOTE: Per your original instructions, you will now proceed to make a second #261 Bearing & Drum assembly for the other side of your Tractor!>

PROCEDURE NOTE

Before proceeding, it is suggested to take some of the "curl" out of the ends of each #424 Brake Band...you should then have Brake Bands whose ends form a "tangent" to the "circle" formed by their "future" mating #221 Brake Drum.

( ) STEP 21 Slip the "large yoke" end of #217 Yoke assembly around one of the "loop ends" of #424 Brake Band. Insert end of 5/16x1-3/4" Cap Screw into 5/16" Washer and then into the 5/16" holes of Yoke & "aligned loop" of Brake Band (above)...secure end of Cap Screw with a second 5/16" Washer and a 5/16" Lock Nut...approximately one thread (1/16") should appear on the "outside" of the Lock Nut. <NOTE: Don't overtighten the Lock Nut; the Brake Band should be able to swivel slightly in the #217 Yoke.>

Follow drawing and lower the Brake Band assembly "in between" the #201C Side and #201D Plate...Yoke assembly should be rearward. <NOTE: If the 5/16x1-3/4" Cap Screw seems a bit tight, you can "trim" the "threaded end" of the Cap Screw with a file to achieve a smooth, non-binding fit between the Side & Plate (above).>

( ) STEP 22 Insert a 3/8x2-3/4" Cap Screw into the "rear" hole of the "two 3/8" hole cluster" on the "top-front" of #201C Side. On the inside of #201C Side, slip six 3/8" Washers <standard> over the "inward protruding" 3/8x2-3/4" Cap Screw. Pass the Cap Screw through the remaining "loop" of #424 Band, then through six more 3/8" Washers <standard>, and finally into the mating 3/8" hole of #201D Plate.

Secure on the "outside" with a 3/8" Lock Nut - tighten, but do not over tighten and crush #201C & #201D "inward"; Band must be able to still rotate slightly. <NOTE: You may "fine tune" this Band alignment with a 3/8" Washer <thin> which can be added to, or substituted for, one

of the (above) 3/8" Washers <standard> to help "center" the Band between its respective #201C Side & #201D Plate.>

( ) **STEP 23** Take each of the previously assembled #261 Bearing & Drum assemblies and insert them into the 4-3/4" square opening on "inside face" of their respective #201D Plate. Carefully engage each #221 Drum into the "center" of its respective #424 Brake Band. Align the four 3/8" slots in their #261A Plate with their mating 3/8" holes in #201D Plate.

Insert a 3/8x1" Carriage Bolt into each of the top two 3/8" slots of the #261A Plate and their mating 3/8" holes in "top" of #201C Plate. Secure inside with 3/8" Nut & Lock Washer. Slip a 3/8" Lock Washer, followed by a 3/8" Washer <standard>, over end of two 3/8x1" Cap Screws. Insert these two Cap Screws into the two remaining 3/8" slots in bottom of #261A Plate and engage the mating 3/8" threaded holes in bottom of #201C Plate...leave Carriage Bolts & Cap Screws sufficiently loose that the #261 Bearing & Drum assemblies can slide back & forth!

( ) **STEP 24** Insert #261C Threaded Stem into 1/2" hole in #260 Pull Plate. Align the remaining two 3/8" holes of Pull Plate with the mating 3/8" threaded holes in "front face" of #201C Side. Secure with 3/8x1" Cap Screws & Lock Washers...tighten.

Using three 3/8x3/4" Cap Screws & Lock Nuts, mount the #202 Cover Plates over their respective "outside face" of #201C Side. Check drawing for proper placement. <NOTE: Head of previously mounted 3/8-16x3" Cap Screw passes through the oversized hole in the #202 Plate.>

( ) **STEP 25** Take #254 Chain and wrap around #251 and #220B Sprockets - secure with Connector Link supplied. Install 1/2" Lock Nut over end of #261C Threaded Stem. Tighten Nut so that #261 Bearing & Drum assembly is drawn forward to tighten #254 Chain (above).

<NOTE: New chains should be installed under slight tension as they will elongate a small amount due to final seating of the chain's pins and bushings during the first few days of operation.>

Rotate Sprocket & Chain assembly to make sure Chain is reasonably tight...adjust 1/2" Lock Nut to hold proper tension. When Chain tension is satisfactory, tighten the two 3/8x1" Carriage Bolts & the two 3/8x1" Cap Screws to hold proper Chain tension.

( ) **STEP 26** Slip the #209 Front Idler Sprocket assembly between the inside front ends of #201A and #201B Walls. Slide #215 Front Axle through 7/8" slot in #201A Wall; then through #209A Tube (of #209 Front Idler Sprocket assembly); and finally through 7/8" slot in #201B Wall.

Slide #215 Front Axle to "rearward" end of slots in #201A & #201B Walls. Locate the #209 Front Idler Sprocket assembly on a common "centerline" with the #212 Rear Drive Sprocket assembly. <NOTE: The common "centerline" connecting the two sets of sprockets will be parallel to #201A & #201B Walls. In addition, note that you may have to make minor "shim washer" adjustments (with 7/8" Washers <thin> below) to compensate for a slight "bowing" of the Walls due to the extreme heat necessary to weld these parts together.>

( ) **STEP 27** Determine how many 7/8" Washers would be required on each side of the #209A Tube (of #209 Front Idler Sprocket assembly) to hold the

(above) "centerline" alignment - Check "NOTE" above.

Remove #215 Front Axle; insert washers (determined above) and reinsert Axle. Center, so that equal portions of Axle protrude from #201A & #201B Walls. Shim out Axle ends with 7/8" Washers until even with "snap ring groove" in each end of Axle - secure with 7/8" Snap Ring. <NOTE: Don't "overshim"; Axle must be able to slide front to rear in its slots.>

PROCEDURE NOTE

Whenever the following instruction refers to a #253 Spring, use the #253A Spring (green) on the "outside" (the #201A Wall is on the "outside") and use the #253B Spring (gold) on the "inside" (the #201B Wall is on the "inside".

( ) **STEP 28** Screw a 7/16" Nut onto the end of each #218 Threaded Rod (end which has been threaded only 1-1/4" from its end)...screw Nut on until Rod end just appears through "backside" of Nut.

Slide a 1/2" Washer over end of each #218 Threaded Rod. Insert the threaded end of each #218 Rod into its respective 1/2" hole in each #201G Quadrant in "front ends" of #201A & #201B Walls. Pass Rod through its respective 1/2" hole in end of #215 Front Axle, and follow in order with:

#216B Bushing (3/4 Round), #262 Tube, #253 Spring, #216A Bushing (Full Round) followed by a 7/16" Nut screwed on until Rod appears through "backside" of Nut. <NOTE: Check drawing to make sure that you have (above) parts in the proper order and that the respective #216A & #261B Bushings are in their proper position!> Your "Spring Tension Assemblies" are now complete.

( ) **STEP 29** Take #210 Idler Wheel (9-1/2" dia.) assembly and from below, insert it up into its position between #201A & #201B Walls. <NOTE: You may have to tilt the Wheel to get it to pass up into its position.> From "outside", insert #213 Idler Axle ("zerk end" should point out) into "collared" 7/8" hole in #201A Wall and engage #210A Tube of #210 Idler Wheel; pass through the Tube and into the "collared" 7/8" hole in #201B Wall on opposite side.

( ) **STEP 30** Center the #210 Idler Wheel on the "common centerline" between the #209 & #212 Sprocket assemblies (as determined above). Determine how many 7/8" Washers are needed on each end of #210A Tube to hold the (above) alignment.

Remove #213 Axle, insert 7/8" Washers (determined above) and reinsert #213 Axle (keeping "zerk end" pointing outward). Drive a 1/4" dia. x 1-1/2" long Spring Pin into 1/4" hole on Axle's "inside" end...Pin should be "centered" in Axle! Locate Axle so Spring Pin fits tightly into mating "cross-slot" in #201B Wall. Shim out "outside end" of Axle with 7/8" Washers up to "groove"; secure with 7/8" Snap Ring.

( ) **STEP 31** Take #211 Idler Wheel (4" dia.) assembly; from below, insert it up into its position between #201A & #201B Walls (check drawing). From "outside", insert #213 Axle ("zerk end" should point out) into "collared" 7/8" hole in #201A Wall and engage #210A Tube of #211 Wheel

assembly; pass through the Tube and into "collared" 7/8" hole in #201B Wall on opposite side.

( ) STEP 32 Center the #211 Idler Wheel assembly on the "common centerline" between #209 & #212 Sprocket assemblies (as determined above). Determine how many 7/8" Washers are needed on each end of #210A Tube to hold the (above) alignment.

Remove #213 Axle, insert 7/8" Washers (determined above) and reinsert #213 Axle (keeping "zerk end" pointing outward). Drive a 1/4" dia. x 1-1/2" long Spring Pin into 1/4" hole on Axle's "inside" end...locate Spring Pin so that approximately 1/2" of the Pin is exposed above the Axle's surface! Locate Axle so Spring Pin fits tightly into mating "vertical slot" in #201B Wall. Shim out "outside end" of Axle with 7/8" Washers up to "groove"; secure with 7/8" Snap Ring.

( ) STEP 33 Using a pressure type grease gun and a good grade of general purpose grease, lubricate all "zerk" fittings in your assembled unit: "zerk" in each of the #209 Front Idler Sprocket assemblies & each of the #212 Rear Drive Sprockets, "zerk" in each of the #214 Rear Axles, and lastly a "zerk" in each of the #213 Idler Axles.

As this is the first time you will be greasing the bearings, do not be alarmed at how much grease they may take, as you are filling all the "voids" in the bearing assemblies for the first time - make sure you have the bearings all fully greased.

Subsequent lubrication should take much less grease and should be done on the average, every few hours...every tank of gas is a good reminder to grease your Tractor. <NOTE: Though lubrication of your Tractor may seem frequent, it must be remembered that the "lubricant" is used as much to "flush-out" dirt & grit from the bearings, as it is to "lubricate" the bearing surfaces!>

Following a frequent lubrication schedule can add years to the life of your Tractor's bearings!

( ) STEP 34 Unroll a #225 Track Assembly and form it into a "circle". <NOTE: "Cleats" of Track must be pointing outwardly (away) from the "circle's center".> Join the ends of the Track's "chain" with the "cleated" #224 Track Connector Link. Align the holes in the ends of the Track's "chain" with the holes in the #224 Connector Link.

Insert a #257 Pin into each of the "aligned holes" (above). Install so that the "cotter pin hole end" of each Pin is located to the "inside" (between the two Track chains). Secure all Pins with "cotter pins" provided.

<NOTE: The #257 Pin has a slight "shoulder" near its head...this means the Pin must be tapped in with a hammer to "seat" it. This proceedure will keep the Pin from rotating during Track operation!>

( ) STEP 35 With the #209 Front Idler Sprocket assembly pushed back as far as possible, loop the #225 Track over its respective #209 Front Idler Sprockets and #212 Rear Drive Sprockets engaging the Sprocket's "teeth" in the Track's "chain".

ASSEMBLY TIP

As a first step, "work" the 1st "chain" of each Track over the 1st #212B Sprocket of the #209 Front Idler Sprocket Assembly & the 1st #212B Sprocket of the #212 Rear Drive Sprocket Assembly. Next, "work" both chains of each Track over their mating "pairs" of #212 Sprockets located "front & rear"... at the same time, note that each Track's "pair of chains" should fall between the #210B Flange Plates of each #210 Idler Wheel and the #211B Flange Plates of each #211 Idler Wheel.

<NOTE: Mount the #225 Track so that the Track's shoes are pointing in the proper direction relative to the "Direction of Forward Travel"...see drawing.> At this time, carefully remove the "supports" you placed under the Track Frame, and lower the Frame down onto its Tracks so that it is solely self-supporting!

SUGGESTION FOR FUTURE MAINTENANCE

When you mount your Tracks, you may want to install them so they synchronize the "zerk fitting" in the Front Idler Sprockets with the "zerk" in the Rear Drive Sprockets; in other words, at the same time when the "zerk" in the Front Idler Sprockets points straight "forward", the "zerk" in the Rear Drive Sprockets will point straight "rearward"...this will make greasing more convenient.

PROCEDURE NOTE

If you are installing the D108 BACKHOE, insert STEPS 2, 3, 4, 5 & 6 of the BACKHOE HITCH instructions at this time, then omit STEP 36 (below).

( ) **STEP 36** Using four 1/2x1" Cap Screws & Lock Washers, mount the #230 Support Channel to the "back side" of its respective #201CR & #201CL Right & Left Sides - don't tighten! Using approximately three 1/2" Washers (near each end of Channel), "shim" the distance between the "underside lip" of #230 Channel & the "topside lip" of #201R Spanner...secure each end of Channel (from "below") with 1/2x2" Cap Screw and Lock Nut...tighten!

At this time, securely tighten the 1/2x1" Cap Screws already mounted (above).

( ) **STEP 37** Mount the #203 Guard by sliding the two "grooves" (formed by the "lip" of the #203A Cover & #203B Clips) onto the "horizontal edge" of the #201B Wall. Align the two 5/16" holes on the opposite edge of the #203A Cover with its mating two 5/16" holes in the "horizontal edge" of the #201A Wall. Secure Cover with 5/16x3/4" Cap Screws, Lock Washers & Nuts.

********** NOTE **********

At this point, all of the mechanism of the LOWER TRACK FRAME has been installed. Again, to repeat the statement made before you began this assembly: All the assembly steps (above) referred to assembly of a specific part or a specific side of the Tractor; **but it was understood, that you would repeat this assembly again wherever this part appeared!.**

Hence, the instructions for the Brake Assembly referred to assembling **both** Right and Left Brakes; the installation of the **#212** Rear Drive Sprocket referred to the installation of **both** Rear Drive Sprockets, and so on.

Now is an excellent time to go over your complete assembly and check for errors in alignment, parts put in upside down or backward etc.

ASSEMBLY - UPPER TRACTOR FRAME

MAG3C3:1 - Version 05/31/89

( ) **STEP 1** Remove the 5/16" Nuts from the four 5/16x1-1/2" Cap Screws holding Engine to #401 Upper Tractor Frame...Remove Engine! Leave the four 5/16x1-1/2" Cap Screws in place and temporarily secure each Cap Screw "above" with four 5/16" Washers and a 5/16" Nut.

( ) **STEP 2** Take #401 Upper Tractor Frame and lower it over your previously assembled #201 Lower Track Frame. As you lower the #401 Frame, check that you have entered the "shift lever" of the Transaxle into the hole provided in the rear of the #401A Channel and that the "front end" of the #401A Channel "nests" around the two #201E Supports.

PROCEDURE NOTE

If you are assembling the D108 BACKHOE, insert the following STEP and omit STEP 3 (below): Align the two "outside" 1/2" holes and one "centered" 5/8" hole in #401C Plate with its mating two "outside" 1/2" holes and one "centered" 5/8" hole in #501B Gusset...secure with two 1/2x1" Cap Screws & Lock Nuts and with "one" 5/8x1-1/2" Cap Screw, Lock Washer & Nut...don't tighten.

( ) **STEP 3** Align the four 1/2" holes in #401C Plate with their mating holes in #230 Support Channel. Secure with four 1/2x1-1/2" Cap Screws, Lock Washers & Nuts...don't tighten.

( ) **STEP 4** Center the "forward end" of #401A Channel over the #201E Supports and align the 5/8" slots in the #201E Supports with their mating 5/8" holes in the "forward sides" of #401A Channel.

Determine how many 5/8" Washers are necessary between the "outside faces" of the #201E Supports and the "inside faces" of the underside of the #401A Channel, to hold this "centered" position.

PROCEDURE NOTE

A. If you plan on mounting the HL900 LOADER to your Tractor, it is suggested that you complete STEPS 1B through 1F, 2, 3, 4 & 5 of your PK908 PUMP KIT at this time and then omit STEP 5 (below).

B. If you plan on mounting the D108 BACKHOE to your Tractor, it is suggested that you complete STEPS 2, 3, 4 & 5 of your PK908 PUMP KIT at this time and then omit STEP 5 (below).

C. In both cases (above), complete the balance of the STEPS for the PK908 PUMP KIT after you have completed the assembly of your Tractor! Complete the balance of the STEPS for the LOADER and/or BACKHOE after you have completed the PUMP KIT.

( ) **STEP 5** Slip three 5/8" Washers over each end of two 5/8x2-1/2" Cap Screws. From "inside" #401A Channel, slip each Cap Screw into each

previously "aligned" (above) 5/8" slot & hole mating each side of the #401A Channel to its respective #201E Support...secure Cap Screws "outside" with 5/8" Lock Washers & Nuts...don't tighten (Don't fail to insert the 5/8" Washers <determined above> as you make this assembly).

PROCEDURE NOTE

A. If you are assembling the D108 BACKHOE, omit STEP 6A (below) and insert the following: Tighten the two 1/2x1" Cap Screws and the one 5/8x1-1/2" Cap Screw securing the #401C Plate to the #501B Gusset...also tighten the two 5/8x2-1/2" Cap Screws holding the "front end" of #401A Channel.

B. If you are assembling the HL50 HYDRAULIC LIFT, complete STEPS 1, 2, 3, 5 & 6 of your HL50 instructions at this time; then return to complete the assembly of your Tractor before completing the final STEPS of your HL50 instructions.

( ) **STEP 6A** Make sure that you have installed the (above) 5/8" Cap Screws so that their "threaded ends" are pointing outward! Now tighten the four 1/2x1-1/2" & two 5/8x2-1/2" Cap Screws you assembled above.

( ) **STEP 6B** Align "center" 3/8" hole in #407 Plate with "threaded hole" in protruding "boss" on **right** side of Transaxle..."slotted end" of #407 is forward! Slip a 3/8" Star Washer (Internal Tooth) over end of 3/8x1" Cap Screw and secure above "aligned" #407 Plate...leave "finger tight"!

Slip a 3/8" Star Washer (Internal Tooth), followed by a 3/8" Washer over end of 3/8x1-1/2" Cap Screw and insert into "outside" of the 3/8" wide "horizontal" slot in "right rear" of #401A Channel...engage end of Cap Screw into the 3/8" "threaded" hole in rear of #407 Plate...leave finger tight!

Insert 3/8x1-1/2" Carriage Bolt into "outside" of remaining 3/8" wide slot (at an opposing 45 degree angle) in right rear of Channel and into the mating 3/8" wide slot (at 45 degree angle) in "forward end" of #407 Plate...secure "inside" Channel with 3/8" Washer, Lock Washer & Nut...leave finger tight!

( ) **STEP 7** Align 3/8" slot in #401G Plate with the "threaded hole" in "boss" on **left** side of Transaxle. Slip a 3/8" Star Washer (Internal Tooth), followed by a 3/8" Washer, followed by a 3/8" Star Washer (Internal & External Tooth), over the end of 3/8x1" Cap Screw.

Insert this Cap Screw through the 3/8" slot in #401G Plate and engage threads in "boss" of Transaxle...screw all the way in by hand, but don't tighten.

( ) **STEP 8** Determine if 3/8" Washer "shims" are needed between the "inside face" of the #401G Plate and the "outside face" of the "threaded boss" on **left** side of Transaxle. If 3/8" Washers are needed, remove the 3/8x1" Cap Screw (above), insert the Washer (or Washers) and reassemble per above...if necessary, to achieve accurate shimming, use a combination of 3/8" Washers <standard> & <thin>.

In a similar manner, using 3/8" Washers <standard> & <thin>, "accurately" shim out the space between the "inside face" of the #407

Plate and the "outside face" of the "threaded boss" on **right** side of Transaxle.

Tighten all the Cap Screws & the Carriage Bolt assembled in **STEPS 6 & 7** (above).

<NOTE: The reason for the "accurate shimming" (above) is to allow you to tighten the Transaxle into position without creating any side pressures (left or right) which could "stress" and damage the Transaxle's housing.>

( ) **STEP 9** Slip a 3/8" Washer over the ends of four 3/8x1-1/2" Cap Screws. Insert two of the above Cap Screws into the two 1/2" holes on the "left inside" of the #401B Hitch. Engage the protruding ends of the (above) two Cap Screws into the "mating" two slots in rear of #466L Left Bracket...secure with 3/8" Washers, Lock Washers & Nuts...leave loose!

( ) **STEP 10** Align the two remaining holes in "front face" of #466L Left Bracket with their mating holes in "rear face" of "mounting pad" of Transaxle. Insert the two remaining 3/8x1-1/2" Cap Screws into the above aligned holes and secure with 3/8" Washers, Lock Washers & Nuts (note that Cap Screws should face "rearward")...leave loose!

( ) **STEP 11** In a similar manner as above, mount the #466R Right Bracket in its position on the "right outside" of #401B Hitch using four more 3/8x1-1/2" Cap Screws, Lock Washers & Nuts...leave loose!

( ) **STEP 12** Check that all Cap Screws holding the Transaxle are in place, aligned and fully tightened (Step 8 above). **Now,** tighten the eight 3/8x1-1/2" Cap Screws holding the #466R & #466L Right & Left Brackets in position!

( ) **STEP 13** Slip #424 Brake Band around #425 Brake Drum (already mounted to Transaxle). Insert 3/8x2-1/2" Cap Screw into 3/8" hole of #401H Bracket; "inside", slip on two 3/8" Washers followed by one "loop end" of #424 Brake Band and then six more 3/8" Washers...screw Cap Screw into the 3/8" Lock Nut welded to #401G Plate...don't "overtighten" the Cap Screw; Brake Band should still be free to rotate!

( ) **STEP 14** Screw a Flanged Nut onto the "threaded end" of #404 Brake Rod ("flanged side" of the Flanged Nut first), followed by #217A Clevis. Insert remaining end of #404 Brake Rod into remaining "loop end" of #424 Brake Band (above).

Secure end of Rod with 5/16" Washer and 1/8x1" Cotter pin. Check drawing for proper relationship of Brake Band, Brake Drum and Brake Rod...note that #404 Brake Rod rides in "forward" slot in #401H Bracket.

Center #425 Brake Drum on #424 Brake Band and tighten set screw.

( ) **STEP 15** Insert #405A Pin into #401M Tube on left side of #401N Tower. Secure Pin inside Tower with 1/8x1" Cotter Pin.

( ) **STEP 16** Slide "forks" of #217A Clevis around #401EE Tab and align 5/16" hole in Clevis with mating hole in Tab. Insert Clevis Pin through "aligned" holes...secure with Hitch Pin <#3>.

( ) **STEP 17** Rotate #405B Parking Brake "Latch" forward so that it lays on top of Flange Nut. By screwing the Flange Nut and #217A Clevis "on" (or "off") of #404 Brake Rod you can adjust Brake pressure.

Adjust the Brake Rod so that "firm pressure" on the #401BB Pedal will tighten the #424 Brake Band while at the same time allow the #405B Brake Latch to drop behind the "flanged side" of the Flange Nut...this will hold the Tractor in a braked position...the Flanged Nut should be screwed "tight" against #217A Clevis.

( ) **STEP 18** An "extra firm" pressure on the Pedal will release the pressure on the Latch so that you may swing up & back, and allow the #401BB Pedal to come back into the operating position.

Check the adjustment of this #405B Latch periodically, as the Brake Band will stretch and wear over a period of time. (Screw the Flange Nut and Clevis further onto the Brake Rod to tighten the Brake as wear makes this adjustment necessary).

( ) **STEP 19** Remove the 5/16" Nuts & Washers from the four 5/16x1-1/2" Cap Screws protruding from the four 5/16" holes in "top front" of #401A Channel. On top of Channel mount Engine over these four protruding Cap Screws...secure with 5/16" Washers, Lock Washers & Nuts. (Screw tight, but don't fully tighten these Cap Screws at this time).

( ) **STEP 20** Using two 7/16x7/8" Cap Screws <Socket Head> & Lock Washers, mount the #411A Plate to the "crankshaft face" of the Engine...leave Cap Screws finger tight.

Loop #426 Drive Belt around #421 Pulley and slide Pulley onto Engine's crankshaft...pulley's "hub" must point "outward"! Align Pulley's keyway with Engine's keyway and insert #228 Key (1/4" square x 1" long) into these "aligned" keyways.

Slide #421 Pulley "in" until there's approximately a 1/32" clearance between the Pulley's "inside face" and the "outside face" of #411A Plate...push in Key and lock set screw in Pulley. <NOTE: #426 Drive Belt passes "above" the #411B Pin welded to #411A Plate.>

( ) **STEP 21** Slip nine 3/4" Washers over end of 3/4" diameter shaft protruding from **right** side of Transaxle. Insert #9 Woodruff (half-moon) Key into slot in this shaft...it may require "tapping in".

Insert "tapered hub" of #420 Pulley into "tapered hole" of "body" of #420 Pulley and secure with the two 1/4x1" Cap Screws provided with "hub"...leave loose!

Slide the "two-piece" #420 Pulley (hub first) onto this shaft (loosely against the 3/4" Washers). Tighten the two 1/4x1" Cap Screws "evenly" holding the "tapered hub" to the #420 Pulley. Loop #426 Drive Belt around (above) #420 Pulley.

( ) **STEP 22** Using a 3/8x1" Cap Screw & Lock Nut, mount one "loop end" of one #428 Spring to the 3/8" hole on the "outside upper left" of #401N Tower...tighten Cap Screw so that Spring's "loop" is snug against the "outside face" of the #401N Tower, but still loose enough so that Spring can easily rotate on its Cap Screw. Attach remaining "loop end" of #428 Spring to #401CC Pin welded to #401AA Crank...secure with 1/8x1" Cotter Pin.

( ) **STEP 23** Using a 3/8x1" Cap Screw & Lock Nut, mount one "loop end" of a second #428 Spring to the 3/8" hole on the "inside upper right" of #401N Tower...tighten Cap Screw so that Spring's "loop" is snug against the "inside face" of the #401N Tower, but still loose enough so that Spring can easily rotate on its Cap Screw. Attach remaining "loop end" of #428 Spring to #401CC Pin welded to #401DD Plate...secure with 1/8x1" Cotter pin.

( ) **STEP 24** Slide 3/8" Washer over end of 3/8x2-1/2" Cap Screw and insert into #423 Flat Idler. Slide on seventeen more 3/8" Washers on Cap Screw end and insert into the "lower" 3/8" wide slot on "outside face" on right side of #401N Tower...secure "inside" Tower with 3/8" Washer & Lock Nut...center on its slot and tighten! <NOTE: You may need to add (or subtract) from the seventeen 3/8" Washers (above) until the #423 Idler is on a "common centerline" with the mounted #420 & #421 Pulleys.>

( ) **STEP 25** Slide 3/8" Washer onto 3/8x2-3/4" Cap Screw and insert into "loop" of #415 Belt Guide. (Note that "hooked end" of Belt Guide is pointing in same direction as Cap Screw threads). Slide on five more 3/8" Washers and insert into #422 "V" Idler followed by six more 3/8" Washers.

Insert this complete Idler Assembly into "slot" on "outside face" of #401DD Plate and secure on other side with 3/8" Washer and 3/8" Lock Nut..."center" Idler Assembly in its "slot" and tighten.

( ) **STEP 26** Check that the "centerline" of #422 "V" Idler falls on the "common centerline" established for the #423 Flat Idler and the #420 & #421 Pulleys.

Loosen the 3/8x2-3/4" Cap Screw and add (or subtract) 3/8" Washers between the "inside face" of the #422 "V" Idler and the "outside face" of the #401DD Plate to gain the necessary alignment.

While 3/8x2-3/4" Cap Screw is still loose, "loop" the #426 Drive Belt around #423 & #422 Idlers. <NOTE: Drive Belt passes between the "top" of #422 "V" Idler and the "underside" of #415 Guide and also between the "bottom" of the #423 Flat Idler and "above" the 5/8" diameter "shaft end" of the #401AA Crank.>

( ) **STEP 27** At this time (with #426 Drive Belt under "spring tension") you will adjust the **position** of the 3/8x2-3/4" Cap Screw mounted in "slot" in #401DD Plate. Slide this Cap Screw (& #422 Idler assembly) up (or down) the slot until the #428 Spring (attached to the #401CC Pin welded to #401DD Plate) is approximately 9-1/2" long (length measured from Spring's "loop center" to "loop center"). <NOTE: Have a "helper" depress and hold the #401BB Pedal to relieve Drive Belt "tension" as you make the (above) #422 Idler adjustment...always have him "slowly" & "safely" release the Pedal each time you check your Idler setting!>

Check to make sure that the #415 Belt Guide is 1/8" to 1/4" above the "backside surface" of the #426 Drive Belt...then firmly tighten 3/8x2-3/4" Cap Screw; being careful to hold all adjustment settings!

( ) **STEP 28** With the #426 Drive Belt still under tension, loosen the two 7/16x7/8" Cap Screws <Socket Head> holding #411A Plate to "Engine's face". Using what "play" is available, align the #411C Loop so that it is about 3/32" away from the "backside" of the #426 Drive Belt "looped"

around #421 Pulley...tighten the two Cap Screws <Socket Head> with 3/8" Allen Wrench provided.

<NOTE: Tighten the (above) Cap Screws <Socket Head> enough so that they "flatten" their respective 7/16" Lock Washer; but, because the threads are in an aluminum casting, don't "overtighten" them as you could potentially "tear" the threads out of the casting!>

( ) STEP 29 Align 5/8" hole in "top" of #410A Plate with "threaded" 3/8" hole in "right rear" of #401A Channel. Slip 3/8" Lock Washer followed by 3/8" Washer over end of 3/8x1" Cap Screw.

Insert this Cap Screw into the 5/8" hole in the top of #410A Plate and engage the threads in the #401A Channel...leave loose.

( ) STEP 30 Align the 5/16" "square hole" in "long end" of #410B Loop with the 5/16" "slot" in "lower end" of #411C Loop. Insert (from above) a 5/16x3/4" Carriage Bolt through this aligned "hole & slot" and secure below with 5/16" Washer, Lock Washer & Nut...leave loose.

( ) STEP 31 Align the 5/16" wide slot in "top end" of #410B Loop with its mating 5/16" hole on "right side" of #401P Floor Assembly. Slip a 5/16x1" Cap Screw into the "front face" of the (above) 5/16" hole in #401P Floor Assembly and pass through the "aligned" 5/16" wide slot in #410B Loop...secure with 5/16" Washer, Lock Washer & Nut...leave loose!

( ) STEP 32 Loosen the 3/8x1" Cap Screw and using the "play" in the "oversized" 5/8" hole in #410A Plate, adjust the #410B Loop so that it is about 3/32" away from the "backside" of the #426 Drive Belt "looped" around the #420 Pulley...tighten the 3/8x1" Cap Screw after you've made your adjustment.

( ) STEP 33 Determine how many 5/16" Washers are necessary to "shim" the space between the "front face" of #410B Loop and "backside" of #401P Floor Assembly.

Remove the 5/16x1" Cap Screw, insert the 5/16" Washers (determined above), reinsert Cap Screw through this complete assembly and securely tighten Cap Screw.

( ) STEP 34 Insert a 5/16x3/4" Carriage Bolt into one of the 5/16" slots on the "inside" of #416 Clip. Insert Carriage Bolt of this assembly, into the 5/16" hole on the "underside" of "right side" of #401P Floor Asembly...secure "above assembly" with 5/16" Lock Washer & Nut...leave loose.

( ) STEP 35 Align the remaining 5/16" slot in #416 Clip with the 5/16" slot in #410C Clip. Insert a 5/16x3/4" Carriage Bolt into the "inside face" of #410C Clip and pass through the slot in #416 Clip.

Secure on "outside" of #416 Clip with 5/16" Washer, Lock Washer & Nut...leave loose.

( ) STEP 36 Adjust the "long lower strip" of #410B Loop so that it is approximately "parallel" with the #426 Drive Belt (which should be under tension at this time). After making this adjustment, securely tighten the remaining three 5/16x3/4" Carriage Bolts (assembled above).

<NOTE: The #420 Pulley may appear slightly out of alignment with its mating Pulley and Idlers...due to the adequate length of the #426 Belt this misalignment will cause absolutely no problem!>

********** CAUTION **********

The assembly and adjustments of the #426 Drive Belt and its related #422 & #423 Pulleys, #415 Belt Guide and #410 & #411 Belt Releases are the **most important** STEPS you will make on your Tractor.

If you do not **completely understand** these STEPS, or would like any further explaination, please feel free to call the Factory (day or night) for whatever help you may require!

****

( ) STEP 37 Insert #208A Handles through the "rectangular cut-out" in front center face of #401P Floor Assembly...check drawing for proper orientation of Handles. Note that the two #208A Levers emerge "forward & above" the "top edge" of #401P Floor Assembly.

Align the centers of the two #208C Tubes with the 5/8" holes in their respective #202R & #202L Right & Left Cover Plates. Insert #219 Pivot Shaft through these two Tubes and two Cover Plates...check drawing.

( ) STEP 38 The #208R & #208L Right & Left Steering assemblies should now ride on the #219 Pivot Shaft and are free to slide left & right. Center the #208B Tab (on each #208C Tube) over its respective #221 Brake Drum (which you have previously assembled on the left and right side of Tractor).

Determine how many 5/8" Washers will be needed between the "outside end" of each #208C Tube and its respective #202 Cover Plate, and between the two #208C Tubes themselves.

Remove #219 Pivot Shaft, insert the 5/8" Washers (determined above) and reinsert Shaft...secure ends of Shaft with 1/8x1" Cotter Pins.

( ) STEP 39 Slide "forks" of each #217A Clevis (top end of each #217 Yoke & Clevis assembly) onto the end of the #208B Tab of its respective #208R & #208L Right & Left Steering assemblies. Align 5/16" holes and secure with Clevis Pin and Hitch Pin <#3>.

Pull back on each #208A Steering Lever...you should be able to pull back approximately 4-1/2" (measured at the end of the Lever) before the #424 Brake Band tightens around the #221 Brake Drum.

If you do not have the (above) 4-1/2" movement of the Levers, you may remove the Clevis Pin in the "fork end" of #217A Clevis and screw the Clevis up (or down) to adjust for the proper movement of the Levers...replace Clevis Pin and secure with orginal Hitch Pin.

This adjustment is to be made for both the Right & Left Steering Levers. Slip a #256 Handgrip over each #208A Lever.

PROCEDURE NOTE

A. If you have the DK1800 DELUXE KIT, you may install the Seat Glides portion at this time and omit STEP 40A (below).

B. If you have the D108 BACKHOE KIT, omit STEP 40A (below) and in its place insert STEPS 6 & 7 of the D108 BACKHOE HITCH KIT...use parts from STEP 40A (below) to complete STEPS 6 & 7 of BACKHOE HITCH KIT.

( ) **STEP 40A** Slip a 5/16" Lock Washer over each end of four 5/16x1" Cap Screws and insert them (from below) into the 8 x 10" "pattern" of four 5/16" holes in top of **#207** Pan. Above, slip five 5/16" Washers over each protruding end of the (above) four Cap Screws. Engage these four Cap Screws into the mating four threaded holes in bottom of **#419** Seat...tighten!

( ) **STEP 40B** Slip one 9/16" Lock Washer over "threaded end" of **#427** Switch. Screw "threaded end" of Switch into 9/16" threaded hole on "inside" of **#449** Bracket...tighten securely. Install **#418** Grommet into hole in "lower center" of **#401N** Tower. From "inside" Tower, insert "loop ends" of Wires **#451B** & **#458** through **#418** Grommet (above)...slip one Wire through the Grommet at a time to provide "entrance clearance".

Using the screws & lock washers provided with the **#427** Switch, mount "loop ends" of Wires **#451B** & **#458** to the two terminals on the **#427** Switch. <NOTE: Either Wire may be attached to either terminal of Switch...check drawing.>

( ) **STEP 41** Slip a 5/16" Washer over the end of two 5/16x1" Cap Screws. From "inside" **#449** Bracket, slip one of the (above) Cap Screws into each of the two "open slots". Slip the two protruding Cap Screws into their mating 5/16" wide slots in "lower crossbar" of **#401P** Floor Assembly. Secure with 5/16" Washer, Lock Washer & Nut over each of the 5/16x1" Cap Screws...finger tighten.

( ) **STEP 42** Put gear shift "lever" (from **#436** Transaxle) in "neutral" and then push it as far forward as it will go without "force". Take the **#449** Bracket (keeping it parallel to the "horizontal top surface" of the **#401A** Channel) and raise it up in its slots (and left or right if necessary) until the "ball" of the **#427** Switch touches the "vertical center surface" of the gear shift "lever"...lightly tighten the two Cap Screws.

Recheck your positioning of the "ball" of the **#427** Switch and make whatever adjustments are necessary...fully tighten the two 5/16x1" Cap Screws. Check your assembly; see if you can push "in" the Switch's "ball" approximately 1/8" by pushing forward on the gear shift lever...you will be able to make a final check of your assembly after you complete the balance of your electrical system.

( ) **STEP 43** Slip a 3/8" Washer over end of 3/8x2" Cap Screw and insert this Cap Screw into "front face" of 3/8" wide vertical slot in "top center" of **#401P** Floor Assembly...see drawing. Over protruding end of Cap Screw

slip on #409 Tube followed by #408 Plate, #459 Spring and 3/8" Washer...secure with 3/8" Lock Nut.

<NOTE: #409 Tube should slip through the 5/8" hole in #408 Plate. Tighten this assembly, but leave it loose enough so that you can still "tap" it up & down its slot to gain final positioning.>

( ) STEP 44 #408 PLATE ASSEMBLY CHECK:

A. The reason for the #408 Plate Assembly is to prevent the operator from pulling both #208A Steering Brake Levers back at the same time...to do so would "overload" the Transaxle and shear the #227 Keys, or potentially break the Transaxle's axles!

B. As you pull "back" (and simultaneously "up") on either #208A Lever, you will notice that each Lever will hit the underside of its respective "ear" of #408 Plate and begin to rotate the #408 Plate upward; the "ear" on the other side of the Plate will simultaneously rotate downward toward the remaining #208A Steering Lever, and will block it from being pulled up...hence, **only one** Steering Lever can be pulled fully back at any one time!

C. Finally, with one Steering Lever pulled fully back (a tight braked position) the other Steering Lever should still be able to rise up about 1/8"...the other "ear" of #408 Plate should never be "dead tight" against the Steering Lever which isn't being pulled! You can adjust for this "1/8" clearance" by loosening the 3/8x2" Cap Screw (holding the #408 Plate) and raise (or lower) the #408 Plate as needed...retighten 3/8" Lock Nut.

( ) STEP 45 Place the #207 Pan over #401K Rest. Align the two 3/8" holes in "rear" of Pan with mating 5/16" threaded holes in "rear" of #401K Rest...loosely secure with two 5/16x3/4" Cap Screws and 5/16" Washers. Align the four 5/16" holes in "lower front face" of Pan with mating 5/16" threaded holes in "top front face" of #401P Floor Assembly...loosely secure with four 5/16x3/4" Cap Screws and 5/16" Washers.

( ) STEP 46 Take #205L Left Support Assembly and insert its #205A Rod into the #401V Tube of #401P Floor Assembly on left side "rear" of Upper Tractor Frame. Secure end of Rod with Hitch Pin <#2>.

Check drawing to make sure you are using the #205L Left Support and not the #205R Right Support...#205B Plate should be "face up".

( ) STEP 47 Slide #204B Rod of #204L Left Fender assembly all the way into the #401V Tube on "underside front" of #401P Floor Assembly on left side of Tractor Frame. Secure end of Rod with Hitch Pin <#2>. <NOTE: Each of the two "ends" of the Hitch Pin <#2> pass through its own 1/2" hole in "front face" of #401P Floor Assembly before "one end" engages its mating 1/8" hole in end of #204B Rod.>

Note that "rear end" of #204L Fender fits on top of the (above) mounted #205L Support.

( ) STEP 48 Take #206L Left Wall and align the row of four slots in its "lower edge" with the line of four 5/16" holes in rear of #204L Left Fender. Slide the "top edge" of the Left Wall under the (above) mounted #207

Pan and align the Pan's three slots with the Wall's three 5/16" threaded holes.

Slide one 5/16" Washer over the end of each of five 5/16x1" Cap Screws. From the top, insert four of these Cap Screws into the row of four aligned "slots & holes" in the base of the Left Wall & Fender.

Insert the fifth Cap Screw into the remaining "outside" 5/16" hole joining the Left Fender to its Left Support. Secure all Cap Screws below with 5/16" Washers, Lock Washers & Nuts...leave loose.

( ) **STEP 49** Slide a 5/16" Washer over the end of each of three 5/16x3/4" Cap Screws. Align and (by moving the Wall forward & back on its slots) "center" the three 5/16" threaded holes in "top edge" of **#206L** Wall with the three mating 5/16" wide slots in "left edge" of **#207** Pan...secure from above with the three 5/16x3/4" Cap Screws & 5/16" Washers prepared (above)...leave loose.

Using this same procedure (above), mount the **#205R** Right Supports, **#204R** Right Fender and **#206R** Right Wall on "right side" of Tractor...tighten all 5/16" Cap Screws assembled in this STEP and in STEPS 45 & 48 (above).

<NOTE: At this time remove the twelve 5/16x3/4" Cap Screws holding the **#207** Pan in place...you are removing the Pan to give you "interior room" to complete the balance of your Tractor assembly. Be aware that the Pan can be removed whenever you need access to the Tractor's interior for future servicing. In addition, remove the four Hitch Pins (long) installed in the ends of **#204B** & **#205A** Rods and you can then slide each Fender & Wall assembly approximately 3" "outwardly" to further open the interior area for servicing. (Note that you will be called on later to put the Fender & Wall assemblies back into position and secure them with orginal Cap Screws & Hitch Pins.)>

( ) **STEP 50** Notches have been cut into your **#204R** & **#204L** Right & Left Fenders to allow clearance for the use of our HL900 LOADER. For those **who do not** use the LOADER, it is **mandatory** (for your safety) that you cover these openings with the **#229R** & **#229L** Right & Left Covers provided.

Mount the **#229R** & **#229L** Right & Left Covers over the "notch" opening of its respective Right & Left Fender. Align the four 5/16" holes in each Cover with the mating holes in its respective Fender.

<NOTE: "Folded edge" of each Cover should be facing down and next to **#401P** Floor Assembly and that the "clipped corner" should be forward. Secure in place with 5/16x3/4" Cap Screws, Washers & Lock Nuts.>

PROCEDURE NOTE

If you are assembling the HL50 HYDRAULIC LIFT, do not assemble the **#229R** Right Cover (above).

( ) STEP 51A Tighten the 7/16" Nut (on the #218 Rod closest to the #201G Quadrant) until an 1/8" diameter hole is completely exposed on the "frontside" of the Nut. <NOTE: With pliers, grip the area of the #218 Rod between the #201G Quadrant and #215 Axle to keep it from rotating.>

Drive an 1/8" diameter by 3/4" long Spring Pin into (above) 1/8" hole until it is "centered" in the #218 Rod. Apply a second 7/16" Nut to this same end of Rod and screw it tight against the Spring Pin. Using two wrenches, tighten both 7/16" Nuts (above) toward each other so they both tightly contact the 1/8 x 3/4" Spring Pin. <NOTE: For future adjustments of #218 Rod; hold the "outside" Nut when tightening the Rod...hold the "inside" Nut when loosening the Rod.>

( ) STEP 51B Using the #218 Threaded Rods (prepared above) and the 7/16" Nut closest to the #216A Bushing **(Full Round)**, begin to tighten the "Spring Tension Assemblies" mounted on each side of the #215 Front Axle (assembled previously). Tighten each "Spring Assembly" so that you draw each end of the #215 Axle 1/4" forward at a time - don't tighten the "Spring Assembly" on one side completely, before tightening a like amount on the other side.

Continue this back and forth tightening of the "Spring Tension Assemblies" until the #225 Track appears taut!

( ) STEP 52 Tighten the "outside" #253A Spring (green), until its overall length is 5-1/2" long (length of Spring **only**; do not include the two #216 Bushings in your measurement!)

Next, measure the distance "X" as shown in the drawing (this is the distance between the "forward edge" of the slot in #201A Wall and the "forward edge" of #209A Tube of #209 Front Idler Sprocket assembly).

( ) STEP 53 Return to the #253B Spring (gold) on the other end of this same (above) Axle, and tighten it until its "X" distance (the distance between the "forward edge" of the slot in #201B Wall and the "forward edge" of the #209A Tube) is the same as that determined (above) on the other side of this same Axle.

Proper tensioning of the #225 Track requires that the #215 Front Axle and the #214 Rear Axle (when viewed from above) are always parallel to each other; in addition, the "face" of the #209 Front Idler Sprockets should be approximately parallel to the "inside face" of the #201A Wall!

( ) STEP 54 Lock each of the #218 Rods in position by tightening a "second" 7/16" Nut & Lock Washer against the "first" 7/16" Nut. <NOTE: When tightening the "second" 7/16" Nut, hold the "first" Nut with an "open end wrench"...the first Nut must not turn, or it will change your Spring Tension setting!>

PROCEDURE NOTE

If you have the GT2 GAS TANK option, you may begin to install it now and incorporate its instructions with the instructions (below) for the regular #435 Gas Tank.

( ) STEP 55 From "outside" slip 1/4x1/2" Cap Screws into the "forward pattern" of four 1/4" holes in #206L Left Wall. Take #435C Mounting Bracket of #435 Gas Tank assembly, and slip it behind #206L Wall and engage the (above) Cap Screws. On the "inside", secure the top two Cap Screws with 1/4" Lock Nuts. Slip a 1/4" Washer over the two remaining (bottom) Cap Screws and secure with 1/4" Lock Nuts.

Using the #435B Straps and 1/4x1-1/2" Cap Screws, Lock Washers & Nuts provided, secure the #435A Tank to the #435C Mounting Bracket. Insert "threaded end" of #435D Pet Cock into "threaded hole" in "lower rear" of #435A Tank - tighten so "tappered end" of Pet Cock will face #401J Support when finally assembled...Check Drawing carefully.

<NOTE: Temporarily locate #207 Pan to check location of Tank's Gas Cap. If Gas Cap is not "centered" in 3-1/2" hole (of #207 Pan), loosen #435B Straps, center Cap in hole and carefully retighten Straps.>

( ) STEP 56 Slip one end of #431 Gas Hose into a #433 Coated Clip. Slide Clip down, so that approximately 11" of Hose is "sticking out" of Clip...close "tabs" of Coated Clip with pliers.

With a pliers, compress a #434 Pinch Clip and slip it over the (above) end of Gas Hose...push it down about 1". Slip this end of Hose all the way onto the "tapered stepped tube" coming from the Fuel Filter leading to the Engine's Carburetor.

With pliers, carefully compress the "mounted" #434 Pinch Clip and slide it about 1/4" from the end of the Hose.

( ) STEP 57 Remove the "lower one of the two" 1/4x1/2" Cap Screw holding the "blower housing" to its "cylinder air shroud" on the "left front" of the Engine.

Insert this Cap Screw into a 1/4" Washer and then into the 3/8" hole in the "tab" of the #433 Coated Clip mounted to the Gas Hose (above).

Remount this 1/4x1/2" Cap Screw (& Coated Clip assembly) into the threaded hole it came from on Engine...make sure the Clip is positioned so it rests "flat against" the "blower housing" and that the Hose is "outboard" (check drawing).

( ) STEP 58 Route #431 Gas Hose "down" & "tightly around" the left underside of Engine. Slip a second #433 Coated Clip around the #431 Gas Hose and secure its "tabs" with the 5/16x1-1/2" Cap Screw holding the "left rear" corner of the Engine...remove slack from Hose and tighten Cap Screw.

Using large smooth radii, route the remaining end of Hose "under" the #401AA Crank, through the 5/8" hole in "bottom right" of #401N Tower, through the "righthand" 5/8" hole in #401P Floor Assembly, and finally through the 5/8" hole on "left side" of #401B Hitch.

Check that Hose isn't slack, but at the same time that it isn't stretched or pinched.

( ) STEP 59 With a pliers compress a #434 Pinch Clip and slip it over the remaining end of Hose. Slide Hose onto Gas Tank's Pet Cock "tapered stepped outlet". Secure Hose by compressing and sliding forward the Pinch Clip to approx. 1/4" from Hose end. <NOTE: When you slide the Left Fender & Wall assembly back into position, slip the excess Hose into the 5/8" hole in "left side" of the #401B Hitch for safe

keeping...Hose should always be kept from "drooping" between Gas Tank and Hitch.>

( ) **STEP 60** Mount #444 Ignition Switch into 5/8" hole in "upper right" corner of #401L Dash. <NOTE: Switch is mounted from behind; keep Lock Washer behind Dash and secure on top with Nut provided.>

( ) **STEP 61** From behind Dash, mount #447 Light Switch in 3/8" hole in "upper left" corner of Dash...keep Nuts one on either side of Dash, and try to keep "threaded portion" of Switch from protruding above Nut on top side. Note that "terminals" are pointed downward.

"Behind" and "forward" of the #401L Dash, install (and "center") a 12" strip of Plastic Edging over the 1" high "vertical edge"...this Plastic Edging will allow Wires (from the following assembly) to drape over this edge without fraying!

In a similar manner, install and "center" a second 12" strip of Plastic Edging onto the "top horizontal" edge of #401L Dash.

( ) **STEP 62** Mount #445 Ammeter from "outside" of Dash into 2-1/8" hole in "top center" of Dash. Secure (behind Dash) by slipping the "yoke" assembly over the two screw ends protruding from rear of Ammeter. Secure by screwing Nut over each "screw end"...tighten.

( ) **STEP 63** Slip #440 Leaf Spring around #401AA Crank ("inside" #410N Tower) and align Spring's 1/8" hole with mating hole in #401AA Crank. From "front", insert 1/8x1" Cotter Pin into "aligned holes" and clinch Cotter Pin from behind.

Check #440 Leaf Spring's assembly against drawing...Spring must "wrap around" the #401AA Crank properly.

( ) **STEP 64** Insert threaded end of #441 Switch (a single Nut should already be mounted "half way" down the threaded stem) into "front face" of 5/8" hole in #401Z Mount and secured "in back" with second Nut provided. Note that "terminals" of Switch should point "upward".

( ) **STEP 65** Mount #443 Solenoid against "inside" right wall of #401W Nose...keep "dimpled end" up. Secure with 1/4x1/2" Cap Screws, Washers & Lock Nuts. <NOTE: You insert Cap Screws from "outside" of #401W Nose.>

( ) **STEP 66** Take 5/16" loop of #454 Wire (black) and connect it to the 5/16" terminal on the "rear" of #443 Solenoid. Connect the 1/4" loop on the other end of #454 Wire to the terminal on Starter at "lower front" of Engine.

( ) **STEP 67** Stack "back to back" the 5/16" loop ends of #456 Wire (black) and #452 Wire (black) and mount them to the 5/16" terminal on "front" of Solenoid.

( ) **STEP 68** At this time (if required) fill #442 Battery with acid per enclosed instructions. Insert Battery into "cavity" inside "front center" of #401W Nose.

Insert a 5/16-18x7" Carriage Bolt into "square hole" in each end of #413 Strip. Drop this Strip & Carriage Bolt assembly around the sides of

the Battery and engage the Bolts into the holes in the #401X Plate below.

Secure below the #401X Plate with 5/16-18" Lock Nuts...don't over tighten and crack the Battery.

<NOTE: This complete STEP may have already been completed at the Factory!>

( ) STEP 69 Connect the #451A Plug (five prong female) into the #444 Switch (five prong male).

( ) STEP 70 Slip "push clip" end of #455 Wire (yellow) onto the "outside" terminal of #441 Switch. Slip the "push clip" end of #458 Wire (green) onto the "inside" terminal of #441 Switch.

Mount 3/16" loop end of #455 Wire (yellow) to "center" terminal on #443 Solenoid.

( ) STEP 71 Insert #438 Grommet into the 3/4" hole in "vertical lift tab" on "top rear" of Engine (near spark plug).

Slide "plug connector" end of #451C Wire (red) through the #438 Grommet (above) and attach to its mating plug coming from the Regulator-Rectifier mounted on Engine. Slip the "push clip" end of #451E Wire (yellow) through the #438 Grommet and then attach onto the terminal on the "top left rear" of Engine's blower housing.

( ) STEP 72 Attach 3/16" loop end of #451F Wire (green) to the "inside" terminal of #447 Light Switch.

( ) STEP 73 Attach the 3/16" loop end of #451D Wire (black) on the positive (charging) side of #445 Ammeter. Attach the 3/16" loop end of #456 Wire (black) over the negative (discharging) side of Ammeter...determine the "charging" & "discharging" positions by looking at the "face" of the Ammeter. Secure (above) terminals with Lock Washers & Nuts provided.

PROCEDURE NOTE

If you have the ELK1800 FRONT LIGHT KIT option, complete STEPS 74 & 75 (below)...if not, omit STEPS 74 & 75 (below).

( ) STEP 74 Insert #418 Grommet in "top rear" 1/2" hole on each side of #401W Nose. Slip a 3/8x1" Carriage Bolt into the 3/8" square hole of each Head Light "mounting bracket". (The bracket's two "ears", and the Carriage Bolt should point in opposite directions.

Insert the "Carriage Bolt end" of each (above) Carriage Bolt and Bracket assembly into the remaining 3/8" hole on each side of #401W Nose (hole is located just ahead of Grommet mounted above). Secure inside with 3/8" Lock Washers & Nuts.

( ) STEP 75 Slip "loop bracket" of each #446 Head Light into its respective "mounting bracket" (mounted above) and secure with a 3/8x2-1/2" Cap Screw, Lock Washer & Nut. <NOTE: "Spacer tube" is inserted between the ends of the "brackets" of each Head Light as the 3/8x2-1/2" Cap Screw is inserted.>

Clean 1/2" of insulation off the end of wire comming from each Head Light and from both ends of #457B Wire (blue). Slip "bare wire end" of each Head Light through its respective Grommet behind each Light. Attach 3/16" loop end of #457A Wire (blue) to the "outside" terminal of #447 Switch...run #457A Wire "forward" (under Engine's crankshaft...see drawing) and into #401W Nose.

Inside #401W Nose, connect (wind together) "bare end" of "left" Head Light wire (on left side of Tractor) with one "bare end" of #457B Wire (blue)...secure by "screwing on" a #448 Connector over this two wire joint. Wind together the "bare wire end" of the "right" Head Light (on right side of Tractor) with the remaining "bare wire end" of #457B Wire (blue) and the "bare wire end" of #457A Wire...secure by "screwing on" a #448 Connector over this three wire joint. <NOTE: To ensure that the #448 Connectors never come off these two connections (and cause an electrical short), it is suggested to wrap the Connectors (and some of the associated wiring) with electrical tape!>

( ) **STEP 76** Take two #433 Coated Clips and slip the three Wires (#455, #456 & #457A) into the center of the "Clips"...secure the Wires by squeezing the "tabs" of each Clip closed (be carefull not to "pinch" any Wires).

Remove the Nuts, Lock Washers & Washers from the two 5/16x1-1/2" Cap Screws holding Engine to #401A Channel (on **right side** of Tractor).

( ) **STEP 77** Slip "tab" of "rear" #433 Clip over the 5/16x1-1/2" Cap Screw protruding from the "right rear" Engine "mounting boss"...secure with 5/16" Washer, Lock Washer & Nut.

Slip "tab" of "forward" #433 Clip over the 5/16x1-1/2" Cap Screw protruding from the "right front" Engine "mounting boss" followed by 5/16" loop end of #453 Wire (black)...secure with 5/16" Lock Washer & Nut.

To guarantee good electrical contact, you may want to remove this last 5/16x1-1/2" Cap Screw and scrape any paint off the top of the "Engine's right front mounting boss" and also where the Cap Screw "head" contacts the "underside" of the #401A Channel. Reassemble again and tighten.

( ) **STEP 78** Check your assembly (above) with the drawing to make sure you have the two #433 Coated Clips mounted so that the "flat side" of the Clip lays against its respective Engine "mounting boss" and that the "coated loop" portion of the Clip is in an "outboard" position at "right angles" to the Engine.

Tighten all four 5/16x1-1/2" Cap Screws holding Engine...as you tighten, don't let either Clip rotate...they must stay "parallel" with Engine's crankshaft.

( ) **STEP 79** Insert 1/4x3/4" Cap Screw into remaining 1/4" loop of #452 Wire (black) and insert this into (+) terminal of #442 Battery...secure with 1/4" Washer & Lock Nut. Mount #432 Terminal Cover over the (+) terminal of Battery - note how #452 Wire fits into slot provided for it in narrow end of Terminal Cover.

( ) **STEP 80** Take the "assembled wiring" (above) and group the Wires into "bundles" and secure with a wrap of #450 Electrical Tape every 3 to 4". Form a neat "wiring harness" without kinks, and route to avoid any

possible contact with sharp or hot objects which may cause "shorts" in the future! <NOTE: Plastic Ties are provided to assist you in securing your wiring!>

PROCEDURE NOTE

Your wiring is now complete. Use this opportunity to completely go over the (above) Assembly Instructions and check for any wiring mistakes. Check that all terminal connections are tight and that they do not touch each other.

Cover any questionable terminals with Electrical Tape. Be aware that if you improperly "wire" your Tractor you will run the risk of almost immediate "burn-out" of Alternator, Regulator-Rectifier, etc.

Charge Battery at this time with a standard 12 volt Charger set on "slow charge"!

( ) **STEP 81** Referring to drawing, carefully remove the complete Air Cleaner assembly from the Engine's carburetor. <NOTE: Place a wad of paper in the carburetor's "throat" to block any hardware from falling in.>

Squeeze the "rubber tubes" to collapse them as you pull them out of their holes in the Engine's blower housing.

( ) **STEP 82** Insert "cable end" of #429 Throttle Control (shortest of the two Controls provided) through 9/16" hole in "top left face" of #401L Dash. Slide orginal Nut and Lock Washer up "cable" and secure the Control from behind Dash.

Run "cable" forward along left side of Engine, and engage "offset" end of "cable wire" into hole on Engine's "Throttle Arm"...check drawing and "loosely" secure with Throttle Cable Clamp.

With #429 Throttle Control on Dash "pushed in", throttle on Carburetor should be closed and "Swivel B" should be resting against "rear" of Quarter Circle (on Carburetor)...check drawing! Tighten "cable clamp" at this position!

Pulling Throttle Control on Dash "out" should open throttle completely ("Swivel B" should rest against "front" of Quarter Circle (on Carburetor)...giving the Control a 1/4 turn "clockwise" should "lock" the Control at that setting.

( ) **STEP 83** Insert "cable end" of #430 Choke Control through 9/16" hole in "right" of #401L Dash. Slide original Nut and Lock Washer up "cable" and and secure Choke Control from behind Dash.

Run "cable end" forward along left side of Engine and engage "offset end" of "cable wire" into hole on "choke lever" of Carburetor...secure "loosely" with Choke Cable Clamp.

Remove paper wading in Carburetor. With Choke Control on Dash pushed completely in, the "choke lever" should rotate the "butterfly valve" in the Carburetor's "throat" to the fully opened position. At this point, tighten the "cable clamp".

Check that pulling out Choke Control rotates the "choke lever" so that it completely closes the "butterfly valve" in throat of Carburetor.

( ) **STEP 84** Make sure the Carburetor "gasket" is in place; then reinstall the Air Cleaner. Be sure to connect all "rubber tubes" to their respective holes in the Engine's blower housing.

Insert 1/4x3/4" Cap Screw into remaining 1/4" loop of **#453** Wire (black) and insert this into (-) terminal of **#442** Battery...secure with 1/4" Washer & Lock Nut.

PROCEDURE NOTE

If you have purchased the LTM81 LOW TONE MUFFLER, you will find that it has been installed on your Engine at the factory...the following are instructions for the Exhaust Deflector which you are to install as follows:

Using the drawing as your guide, mount the **#467** Exhaust Deflector over the Spark Arrestor Screen against the "outside face" of Engine's Muffler...secure with the four "self-tap" screws provided.

Note that the Exhaust Deflector is mounted so as to direct the "exhaust gasses" at a 45 degree angle ("forward & down").

( ) **STEP 85** Slide one 1/2" Washer over the end of each of two 1/2x1" Cap Screws. Align each 1/2" hole in "sides" of **#401L** Dash with its mating 1/2" hole on each **#402B** Side of **#402** Hood. Slip a 1/2" Washer between each Side and Dash of the (above) aligned holes.

From "outside", insert a 1/2x1" Cap Screw with Washer through each of the (above) "aligned" holes....secure "inside Dash" with 1/2" Washer & Lock Nut. Tighten to eliminate vibration, but "free" enough so Hood can be raised with only modest effort.

( ) **STEP 86** Slip 1/4" Washer over end of 1/4x1-1/2" Cap Screw and insert into 9/32" hole of **#414B** Strip. Slide on four 1/4" Washers over Cap Screw and then insert into 9/32" hole in "lower left side" of **#401L** Dash.

Inside Dash, slip over the protruding Cap Screw a **#460** Spring and a 1/4" Washer...secure with 1/4" Lock Nut. Tighten Nut so that the **#414** Hood Latch may be "tipped away" from the Dash up to a point where "end" of **#414A** Pin is 1/2" away from the surface of the "side of Dash".

In operation, the **#414A** Pin is held 1/2" away from Dash, the Hood is raised so that the 3/8" hole in the left **#402B** Side is in alignment with the mating 3/8" hole in **#401L** Dash; then the Pin is released to "fully penetrate" these aligned 3/8" holes, thereby securing the Hood in a raised position.

( ) **STEP 87** From above, insert a 1/4x1/2" Carriage Bolt into each of the slots in "front bottom" of **#402C** Bottom. From below, engage the Carriage Bolts into their mating 1/4" holes in **#406** Angle...secure below with 1/4" Washers, & Lock Nuts...leave loose.

( ) **STEP 88A** Check drawing for proper assembly of **#406** Angle; then slide it back until it rests against the "front face" of **#401W** Nose...tighten 1/4x1/2" Carriage Bolts.

Secure **#402** Hood by inserting a 5/16x1" Thumb Screw through the slot in **#406** Angle and engage the threads in the 5/16" hole in **#401W** Nose.

( ) STEP 88B Below the Engine's "crankshaft" remove the "pipe plug" from the Engine's "crankcase".

Apply "pipe joint compound" to the ends of the #461 Pipe (short) and screw tightly into the threaded hole (opened above) below the Engine's "crankshaft". Tightly screw the #464 Elbow over the remaining end of the (above) #461 Pipe...stop tightening when the Elbow is at approximately a 45 degree angle with the #401A Channel.

Apply "pipe joint compound" to the ends of the #462 Pipe (long) and screw one end tightly into the "open end" of the #464 Elbow. Follow this by screwing on tightly the #463 Cap over the "remaining end" of the #462 Pipe.

( ) STEP 89 Open #402 Hood and secure it in "up position" with #414A Pin. Mount #403 Belt Guard by inserting the two 5/16x1" Weld Screws into their respective slots on "right side" of #401S Guard and #401N Tower while simultaneously aligning the slot in the "front end" of Belt Guard "behind" its mating slot in #401 Nose. Secure "front end" of Guard with 5/16x1" Cap Screw, Washers, Lock Washer & Nut; secure the two 5/16x1" Weld Screws with 5/16" Washers, Lock Washers & Nuts...close and secure Hood with Thumb Screw.

( ) STEP 90 Screw #417 Shift Ball onto the "threaded end" of "gear shift handle".

PROCEDURE NOTE

If your are installing the DK1800 DELUXE KIT, follow the following Steps for installation of its #465 Edging:

A. Starting at "bottom center" of "front" of Hood, slowly slide on the #465 Edging (black) along the entire front edge. Work Edging slowly around corners as the Edging will make smooth corners if you take your time. When you get around & back to the bottom, cut off remaining Edging (cut so it "seems to be" 1/4" too long) so that you can "butt" the ends together first, then push on the balance of the Edging.

B. Using the same procedure as above, install Edging from the "lower front corner" of the left side of #207 Pan, up and completely around the #207 Pan and then back down to the "lower front corner" on the right side of #207 Pan.

C. Install Edging around the "front ends" of #204R & #204L Right & Left Fenders.

D. Finish by installing Edging around the "rear edge" of #204R & #204L Right & Left Fenders leading right up the rear edge of their respective #206R & #206L Right & Left Walls.>>

( ) STEP 91 At this point, slide "in" the Right and Left Fender & Wall assemblies and secure with original four Hitch Pins. In addition, using the original twelve 5/16x3/4" Cap Screws & Washers, replace the #207 Pan Assembly per the orginal instructions (STEP 49 above)...tighten all Cap Screws securely.

( ) STEP 92 "Open" #435D Pet Cock on #435A Gas Tank, then fill Tank with gas per manufacturer's instructions. Fill Engine with oil per manufacturer's recommendations.

********** CAUTION **********

There are two "safety switches" which must be "closed" for the Engine to start. #427 Switch has been adjusted in STEP 42 (above); this Switch senses if the Transaxle is in a "neutral" gear position.

The #441 Switch senses if the Tractor is fully "declutched" and that the "service brake" is on...you will now check the adjustment of this Switch: With the #401BB Pedal "fully depressed" the "leaf" of the #440 Spring will rotate to contact and depress the "plunger" on the #441 Switch. ((NEVER make any adjustments with the Engine running!))

****

( ) STEP 93 Insert "key" in #444 Ignition Switch and turn "clockwise"; if Starter does not activate with #401BB Pedal "fully depressed", then the "plunger" on the #441 Switch is not being depressed by #440 Spring sufficiently to complete the "electrical circuit".

Correct this condition by loosening the "forward Nut" on the threaded stem of #441 Switch and push the Switch "rearward"...take up the "slack" by locking tight the "rearward Nut".

( ) STEP 94 If the Starter is able to be activated in **any position other than** with the #401BB Pedal **fully depressed,** then the "leaf" of the #440 Spring is depressing the #441 Switch too soon!

Correct this condition by loosening the "rearward Nut" of #441 Switch and push #441 Switch "forward"...take up the "slack" by locking tight with "front Nut" on threaded stem of #441 Switch.

When satisfied with your adjustment, slip "rubber boot" over end of "plunger" of #441 Switch...line up "boot" on "groove" of plunger and "end of threaded stem" of Switch.

********** CAUTION **********

As the #441 & #427 Switches are important "safety items", we encourage you to contact the Factory for any assembly or service questions you may have...now or in the future.

****

( ) STEP 95 Put the Transaxle in the "neutral gear position" and apply "forward pressure" to the "shift lever" so that it engages and compresses the "ball" of the #427 Switch. With #401BB Pedal completely depressed (it's advisable to lock #405 Parking Brake each time you start your tractor) pull out #429 Throttle Control about 1/2 way...choke fully if Engine is cold.

Insert "key" in #444 Switch and turn "clockwise"; when Engine starts, release "key" and "pressure" on gear shift lever.

<NOTE: The (above) "starting sequence" will allow the Engine to start only if the Tractor is in a declutched, braked position with the gear shift in a "neutral" position. If Engine starter does not "engage", trouble shoot the electrical system by tracing the circuit from the #444 Ignition Switch, through the #441 & #427 Switches to the #443 Solenoid. Always consult with the Factory if you have any questions.>

( ) STEP 96 With Engine running, set the Throttle and Choke Controls for smooth operation at the particular temperature you are working. Rely on the Engine manufacturer's manual (included with your Tractor Instruction Manual) for information on operation, maintenance, and safety for your Engine.

You may "lock" both the Throttle & Choke Controls (in the position you have selected) by rotating the Control's "handles" 1/4 turn **clockwise.** They are "unlocked" by a 1/4 turn **counter-clockwise.** (DO NOT "over-tighten" or "over-loosen" these Controls...a 1/4 turn in either direction is sufficient!)

( ) STEP 97 With your "left foot" still depressing #401BB Pedal, release the #405 Parking Brake (by "swinging it rearward"), select the "gear" you wish...then **slowly** release the Pedal. <NOTE: Once Engine starts, you no longer need to hold the gear shift lever against the #427 Switch.>

Initially the #426 Drive Belt may grab or jump as it is new and has not "broken in". Hence it's advisable to start your Tractor in an "open area" away from people and obstacles and using the "Low Gear", drive your new Tractor around to "break in" the Drive Belt and at the same time get the "feel" of your Tractor! <NOTE: If Belt continues to grab and not release smoothly, go over the assembly procedure in STEPS 26 through 36 and check for assembly errors. If the problem can not be corrected, call Factory for help...**never operate Tractor with improper "clutch action"...it is potentially very dangerous!**>

( ) STEP 98 With the Tractor moving, you can turn "left or right" by **gradually** pulling back on the appropriate Right or Left Steering Lever. The **harder** you pull on the selected Steering Lever the **faster** and **sharper** the turn, up to the point where the Track stops completely and the Tractor begins to pivot around it.

<<<NEVER pull **both** Steering Levers back at the **same** time! This "locks up" and overloads the Transaxle and can cause "shearing" of the #227 Keys in the Transaxle's axles or shearing of the axles themselves!>>>

( ) STEP 99 When you wish to stop your Tractor, depress the #401BB Pedal completely and you will come to a positive "braked" stop. Shift Transaxle into a "neutral gear position", set #405 Parking Brake (rotate #405B Latch "forward" and behind "flange Nut" on #404 Brake Rod), then slowly release the #401BB Pedal...Tractor will assume an idling position.

<For added safety, you are reminded to always stop the Engine, remove the "ignition key" and set the Parking Brake each time you leave your Tractor unattended!!>

MAINTENANCE

The following items should always be checked each time you prepare to start your Tractor:

(1) Gas and Oil should be full and clean - check for any leakages.

(2) Grease "zerk fittings" in each of the **#209** Front Idler Sprockets, each of the **#214** Rear Axles, each of the **#212** Rear Drive Sprockets and lastly in each of the **#213** Idler Axles.

******** SPECIAL NOTE: Greasing the Tractor's Sprockets & Idlers accomplishes two things; it first lubricates the bearings, but secondly, and just as importantly, it cleans the bearings by "forcing out" sand, water & mud which can cause the bearings to wear out prematurely! Therefore, frequent greasing (every few hours) while operating in wet or dusty environments is **strongly recommended! ******

(3) Check Air Cleaner on Engine and service per the manufacturer's recommendations.

(4) Check **#426** Drive Belt for undue wear or fraying...a sign of possible "significant" misalignment or improperly adjusted Pulleys or allied components.

(5) Check that Throttle & Choke Controls operate freely without binding ...remember, only a **1/4 turn** is required to "lock" the control; to tighten further will eventually wear out the locking device!

(6) Give a "once over" to the complete Tractor looking for loose, worn or misadjusted parts. Unusual vibration or rattling is normally a sign of trouble; hence if these conditions appear, **stop the Tractor immediately** to find out & correct the problem **before** any further operation of the Tractor!

<NOTE: The **#436** Transaxle is shipped completely assembled and filled with oil at the Factory. The oil is designed to last the life of the Transaxle unless an unusual leak develops. The Transaxle holds 3 pints of SAE E.P. 90 oil.>

PROPER TRACTOR OPERATION

The following are a series of "comments" which are the result of customer suggestions and the experiences of our own engineering and test personnel collected over the past 20 years:

A. When "releasing" the clutch (#401BB Pedal), release it **slowly...**this will eliminate damaging shock loads to the Transaxle, and in the case of Tractors equipped with Loaders and (or) Backhoes it will keep the unit from suddenly (and **dangerously**) lurching forward and back!

B. For the same reasons as above, never apply the Steering Levers suddenly...they should be applied slowly and smoothly! In addition, always check that you have properly adjusted the #408 Plate so that you can NEVER pull back on **both** Steering Levers **at the same time!**

C. When operating in snow, mud and ice environments, always clean the Track compartment after the end of the day's work. NEVER allow mud to "harden" or ice and snow to "freeze" in the Track system overnight...to do so will "lock up" the drive train (much the same way as pulling back on both Steering Levers at the same time) and shear the #227 Keys and potentially break the Transaxle's axle!

D. For those with Tractors equipped with "Cleated" GROUSER Track Shoes, it is **strongly recommended** that you equip your Tractor with "Ribbed" STREET PLATE Track Shoes if you are going to add the Backhoe and (or) Loader attachments to your Tractor!!

E. Grease your Tractor every tankfull of gas...Remember, grease is used as much as a bearing "cleansing agent" as it is a "lubricant"!

F. When loading, unloading and removing Ballast Boxes (and their allied attachments) always proceed cautiously...remember that you are adding and removing significant weights to your "base" Tractor, and that your addition and removal operation can throw your Tractor quickly **out of balance!**

Always block your Tractor to compensate for **any** weight gain or loss to your Tractor; leave your Tractor "blocked" until you have completely finished all procedures regarding the attachments & "counterweights" involved...contact the Factory if you have **any doubts** about proper procedures regarding the above comments!

G. Maintain the proper adjustment of your #441 Interlock Switch...refer to STEPS 92, 93 & 94 in the assembly instructions for the Upper Track Frame. Maintain proper adjustment of your #427 Switch...refer to STEP 42 in assembly instructions for the Upper Tractor Frame.

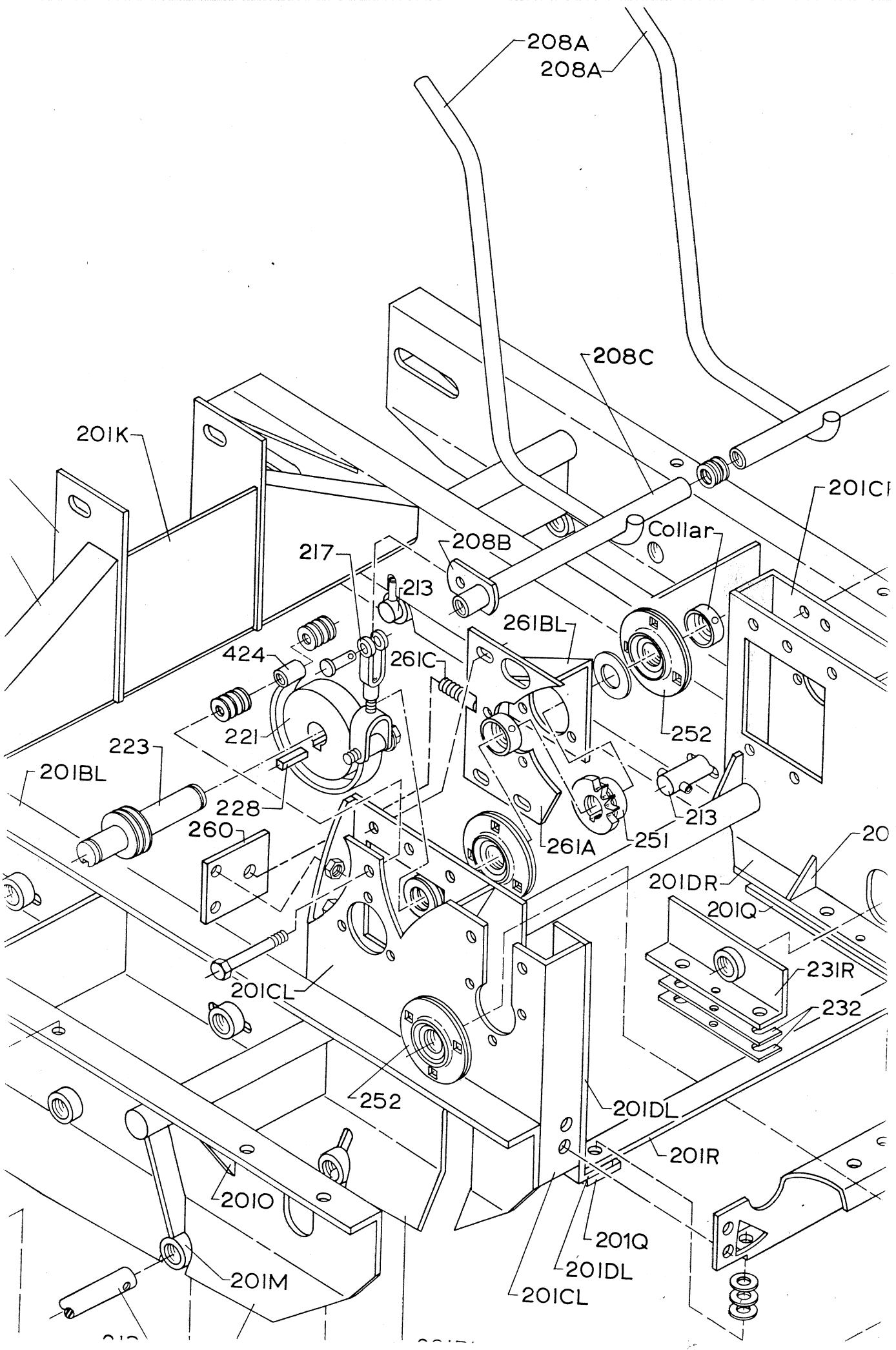
H. Maintain the proper adjustment of your #253A & #253B Track Tension Springs...refer to STEPS 52, 53 & 54 in the assembly instructions for the Upper Track Frame.

I. Maintain the proper adjustment of your #424 Brake Bands...refer to STEP 39 in the assembly instructions for the Upper Track Frame.

J. NEVER allow anyone other than the operator to ride the Tractor!!

*** AN INFORMED OPERATOR IS A SAFE OPERATOR ***

CAUTION: STRUCK TRACTOR KITS AND ATTACHMENTS ARE DESIGNED SOLELY FOR USE BY MATURE ADULTS...YOUNG PEOPLE SHOULD NOT OPERATE THIS EQUIPMENT WITHOUT THOROUGH INSTRUCTION AND CONSTANT SUPERVISION!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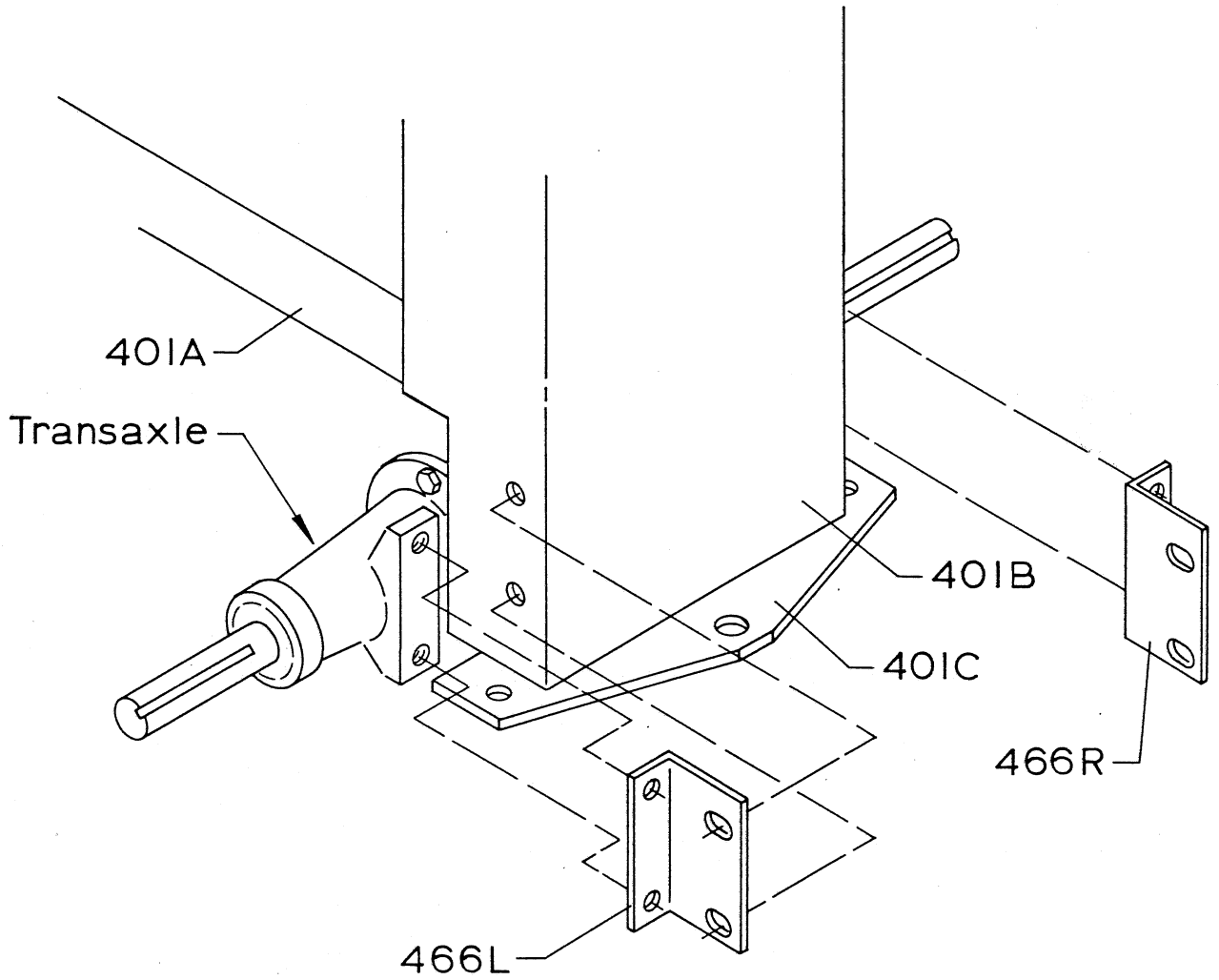
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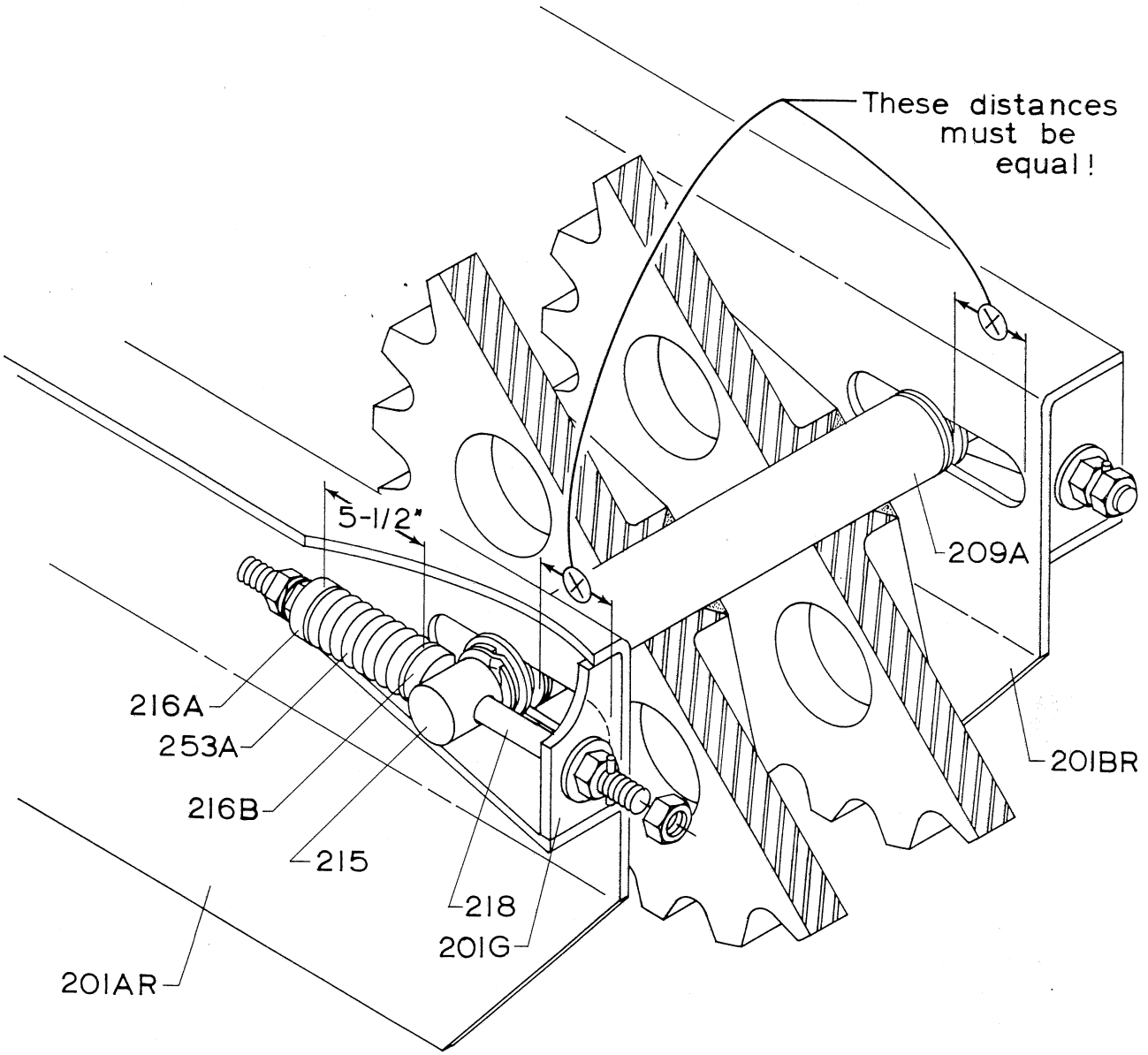
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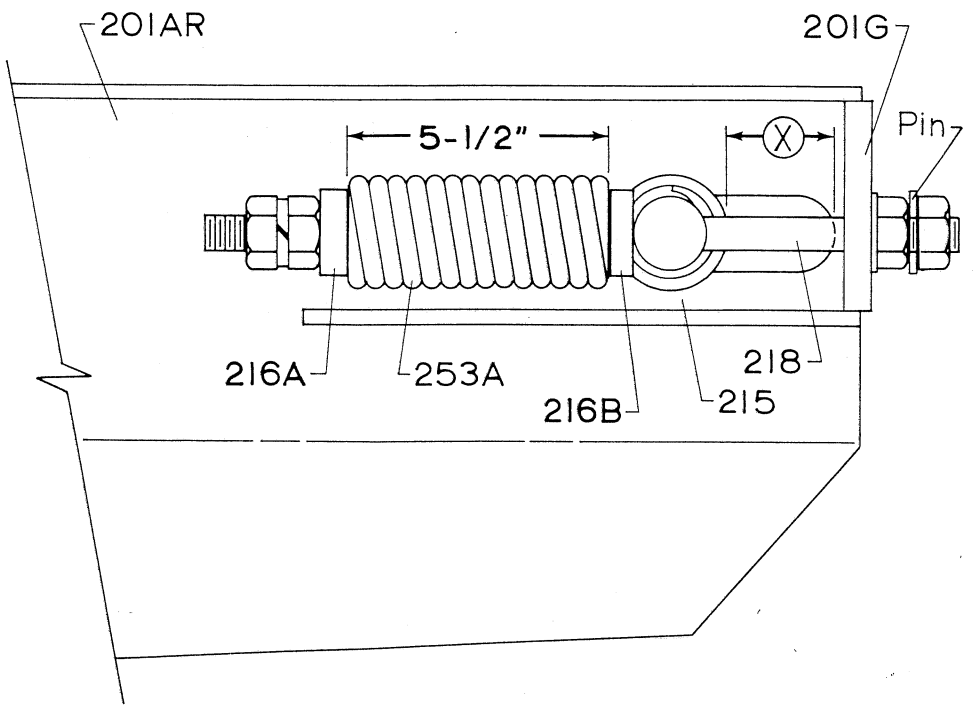
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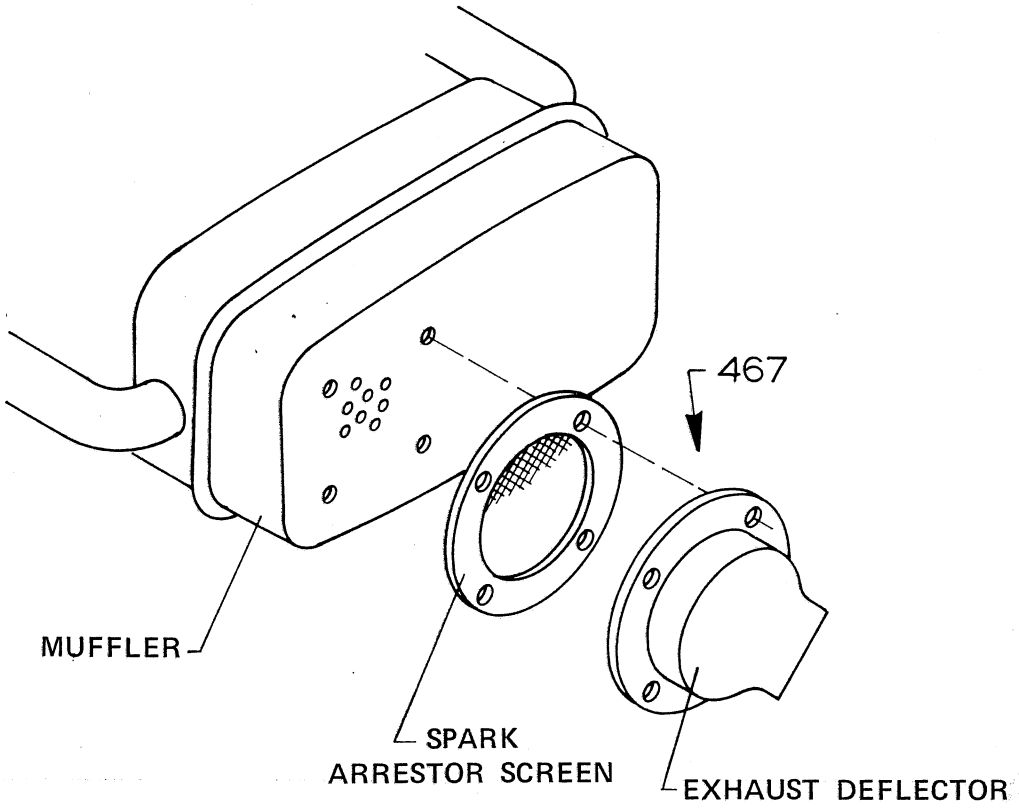
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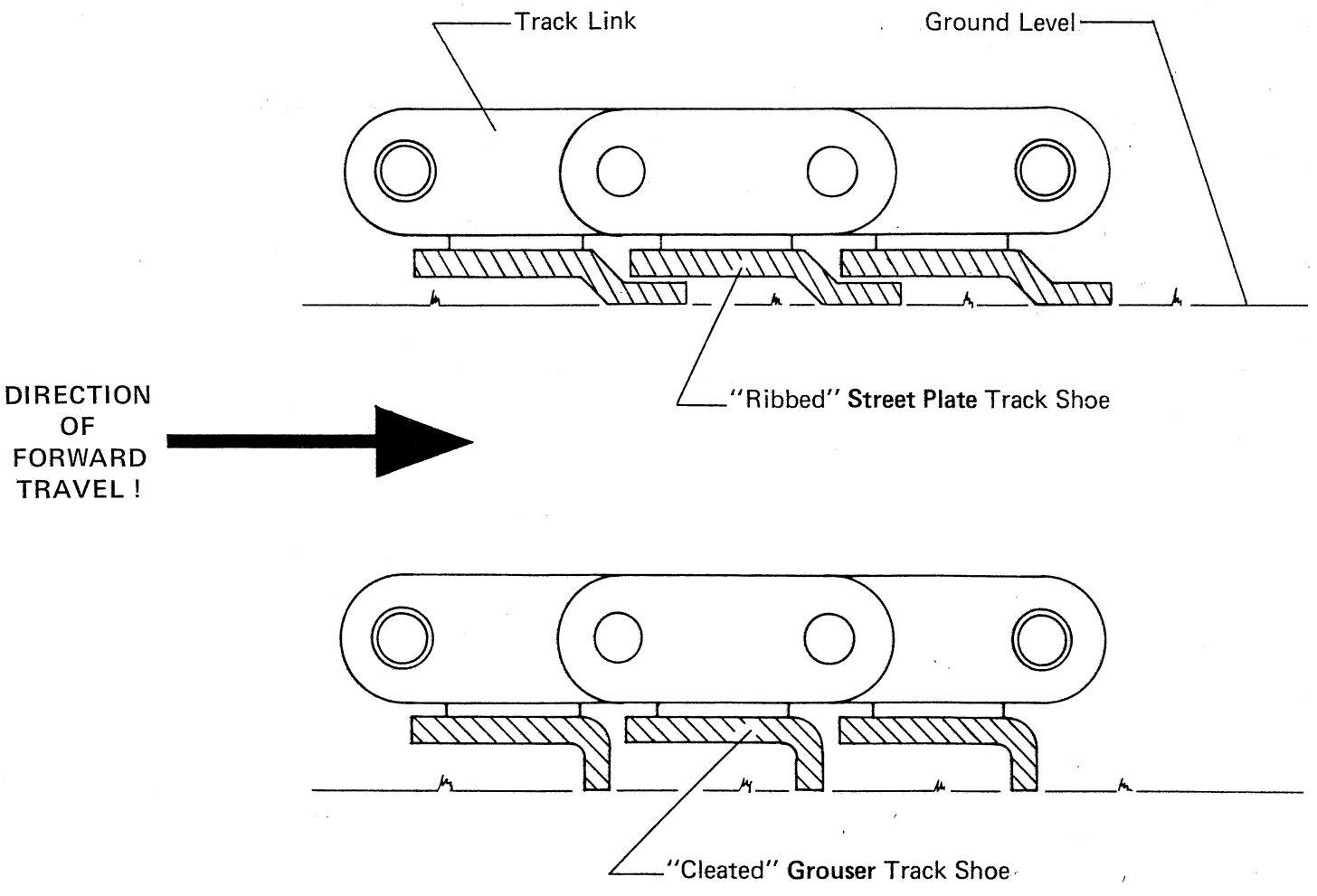
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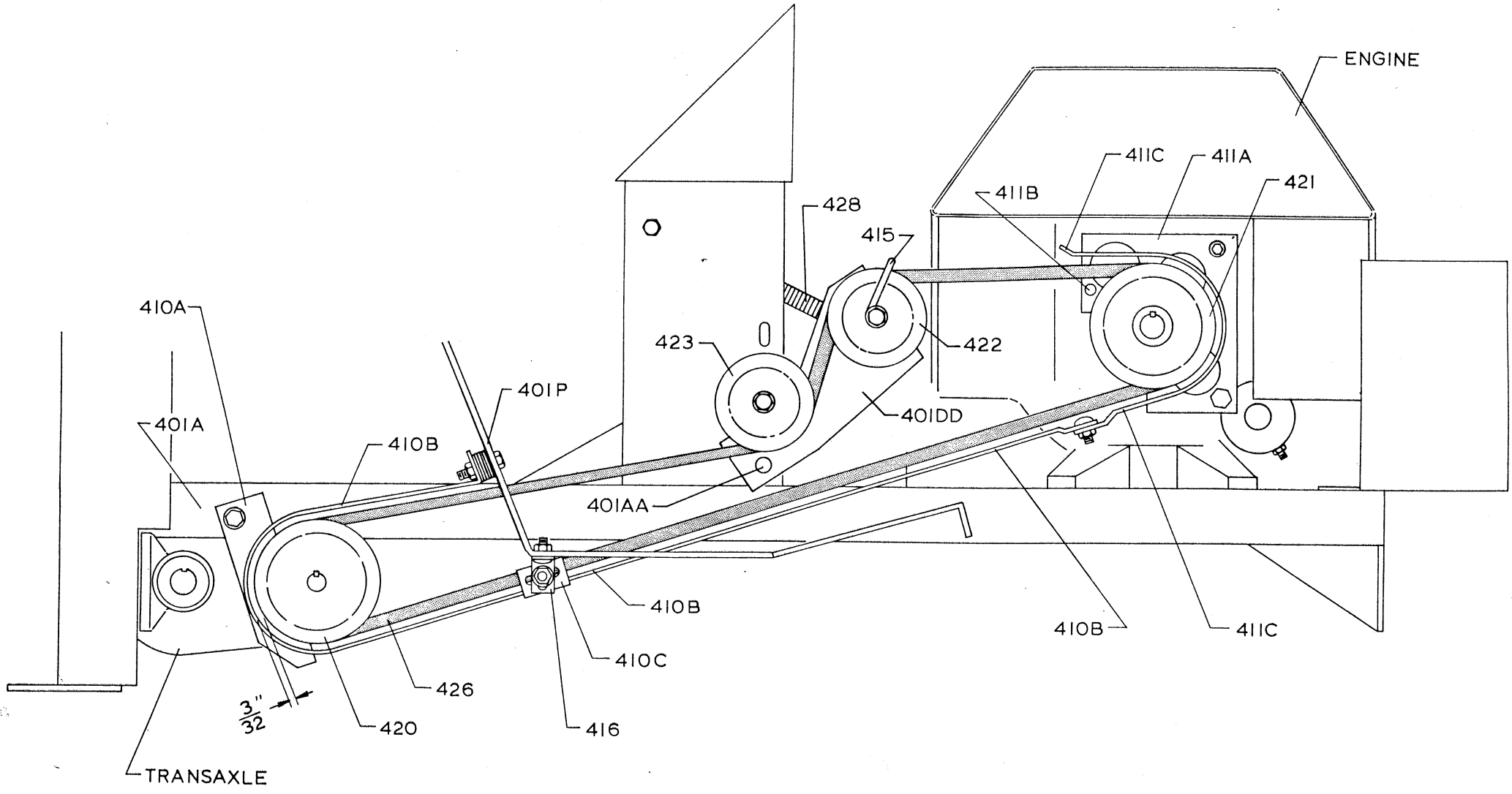
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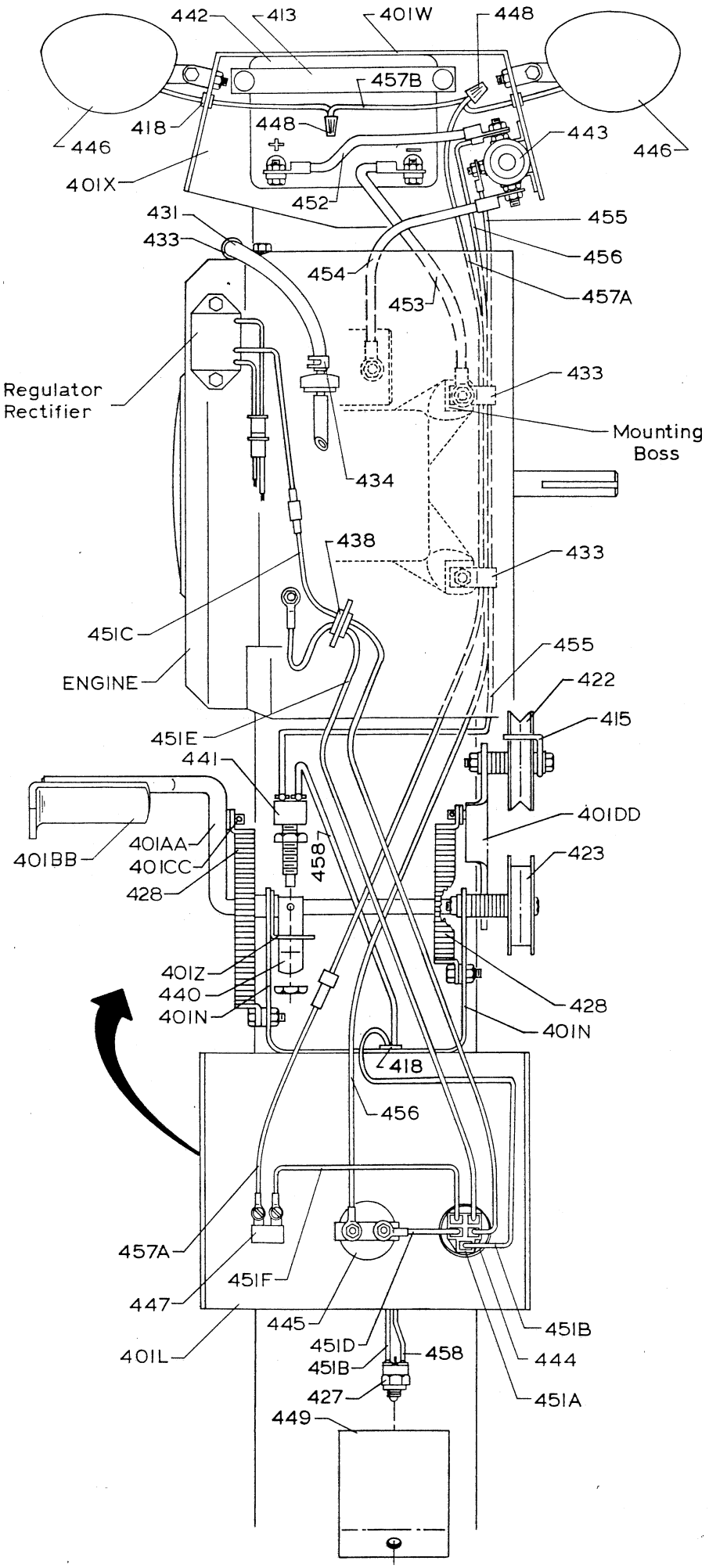
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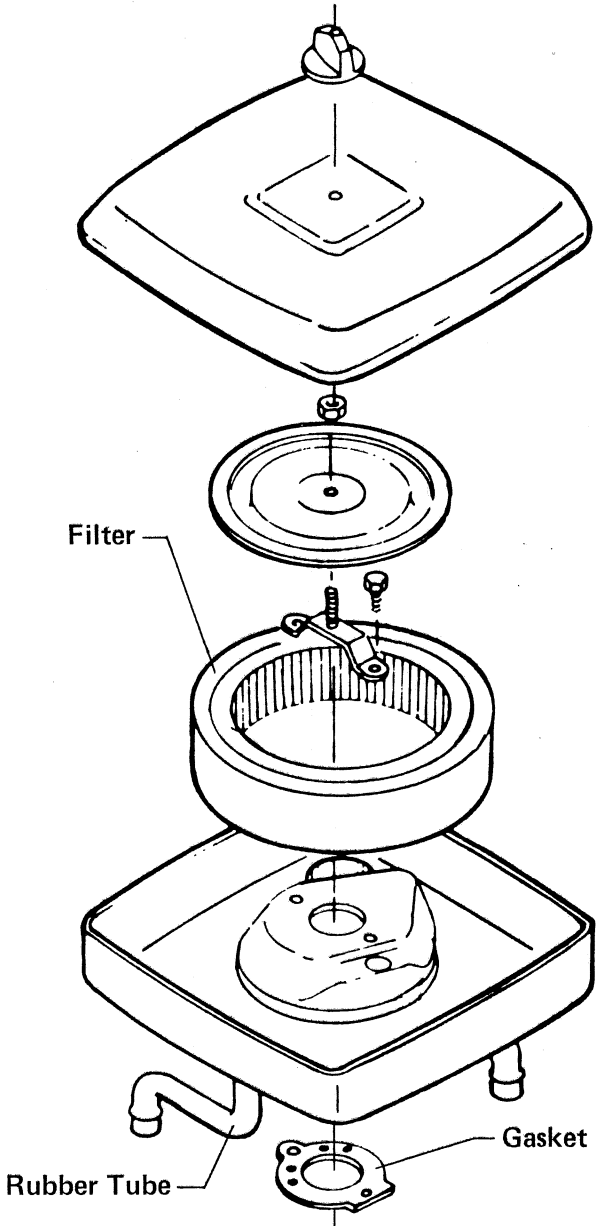
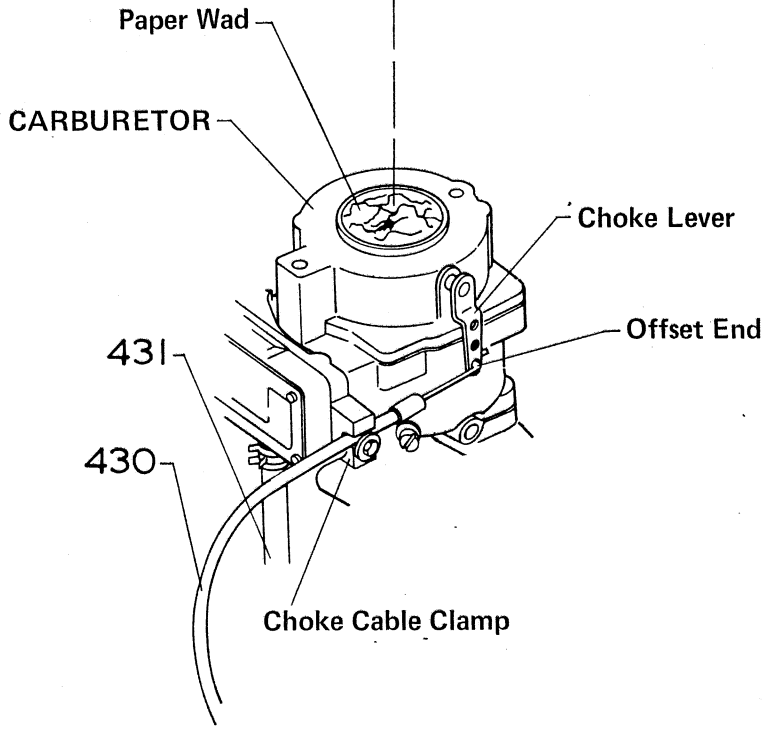
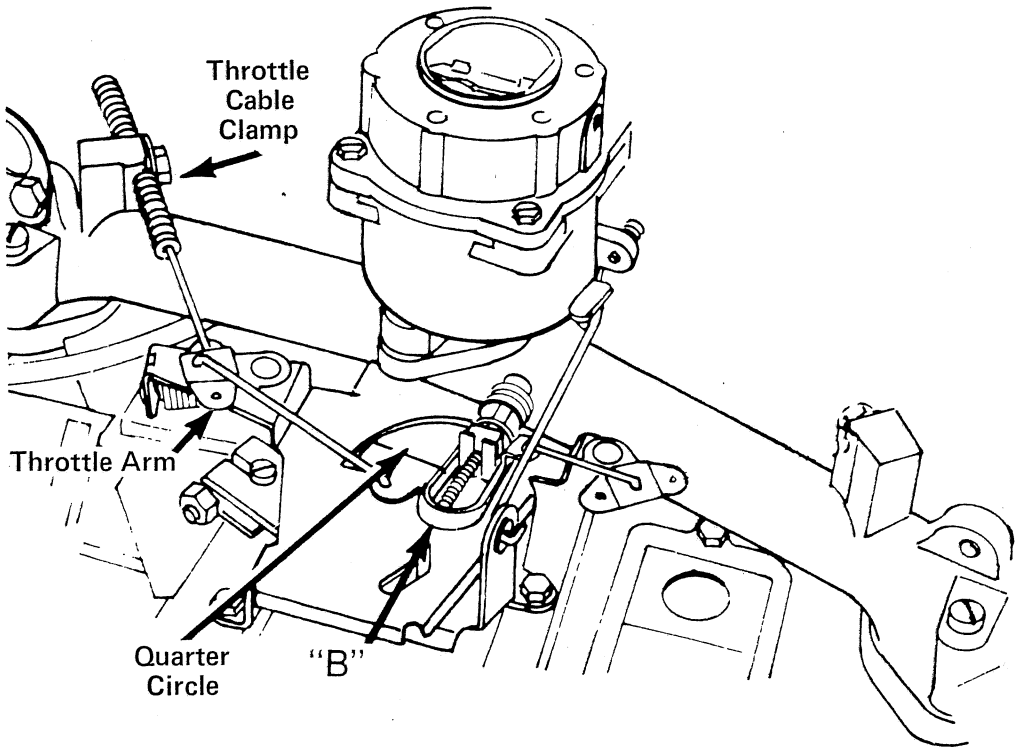
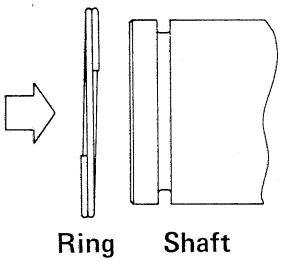


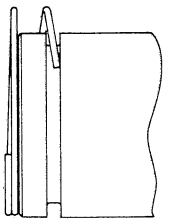


CHOKE CONTROL ASSEMBLY

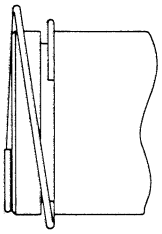


THROTTLE CONTROL ASSEMBLY

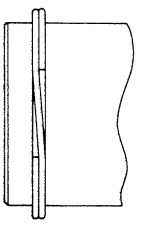




(1) Separate coils and insert end of ring into groove;



(2) wind ring into groove;

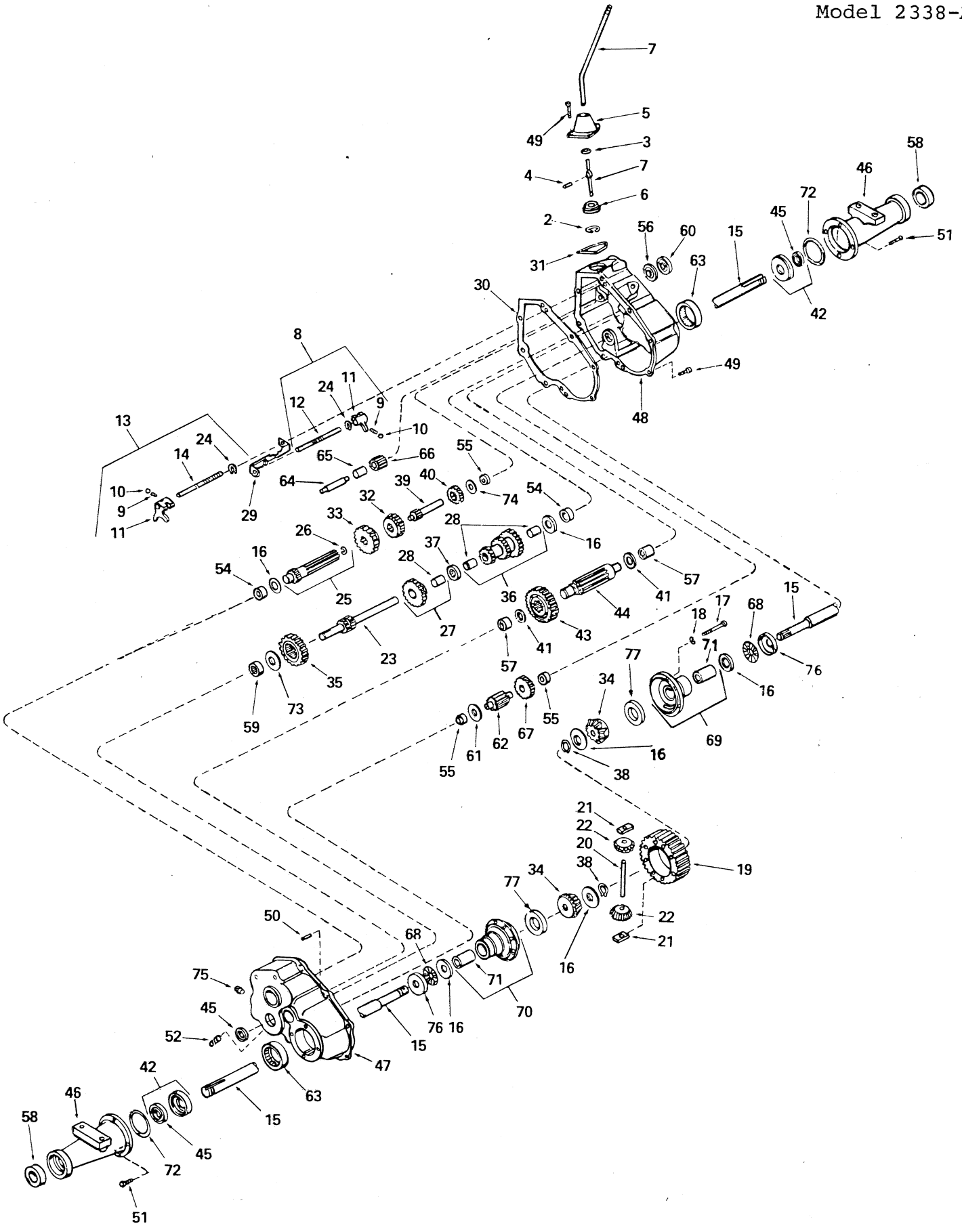


(3) inspect for proper seating in the groove.

SNAP RING ASSEMBLY

A-2147

Model 2338-A



TECUMSEH PRODUCTS COMPANY
Engine And Gear Service Division
Grafton, Wisconsin

TRANSAXLE MODEL 2338-A

REF. NO.	PART NUMBER	PART NAME
2	792016	Ring, Snap
3	792001	Ring, Quad
4	792049	Pin, Roll
5	784093	Housing, Shift lever
6	784094	Keeper, Shift lever
7	784102	Lever, Shift
8	784054	Rod Assy., Shift (Incl. Nos. 9 thru 12 & 24)
9	792003	Spring
10	792004	Ball, Steel
11	784004	Fork, Shifter
12	784055	Rod, Shifter (3rd & 4th)
13	784056	Rod Assy., Shift (Incl. Nos. 9, 10, 11, 14 & 24)
14	784057	Rod, Shifter (low)
15	774124	Axle (13-11/32" long)
16	780042	Washer, Thrust
17	792005	Screw, Hex hd., 1/4-20 x 2-1/2
18	792006	Lockwasher, Split 1/4"
19	778033A	Gear, Ring
20	786019	Pin, Drive
21	786027	Block, Drive
22	778197	Pinion, Bevel
23	776029A	Shaft & Gear, Brake
24	792017	Ring, Snap
25	776189A	Shaft & Bearing Assy., Pinion (Incl. No. 26)
26	780018	Bearing, Needle
27	778034	Gear Cluster Assy. (Incl. No. 28)
28	780053	Bushing
29	784074	Stop, Shifter
30	788023	Gasket, Case & Cover
31	788022	Gasket, Shift lever housing
32	778019A	Gear, Shifting (3rd & 4th)
33	778020	Gear, Shifting (1st, 2nd & Rev.)
34	778231	Gear, Bevel
35	778037	Gear, Idler
36	778035A	Gear Cluster Assy. (Incl. No. 28)
37	786024	Spacer
38	792018	Ring, Snap
39	776067	Shaft, Input
40	778024A	Spur Gear, Input shaft
41	780052	Washer, Thrust
42	788021	Seal & Retainer Assy., Oil (Incl. No. 45)

REF. NO.	PART NUMBER	PART NAME
43	778036	Gear, Output
44	776028	Pinion, Output
45	788008	Seal, Oil
46	782024	Housing, Axle (5.781" long)
47	772016A	Cover Assy., Transaxle (Incl. Nos. 54, 55, 57, 59 & 63)
48	770012	Case Assy., Transaxle (Incl. Nos. 54, 55, 57 & 63)
49	792007	Screw, Flanged hex hd., 1/4-20 x 3/4
50	786026	Pin, Dowel
51	792037	Screw, Hex hd. Sems, 5/16-18 x 1
52	792019	Plug, Magnetic drain
54	780049	Bearing, Needle
55	780140	Bearing, Needle
56	780024	Bearing, Ball
57	780047	Bearing, Needle
58	780050	Bearing, Ball
59	780046	Bearing, Needle
60	788025	Seal, Oil
61	780001	Washer
62	776031	Shaft & Pinion
63	780048	Bearing, Needle
64	776030	Shaft, Reverse idler
65	786025	Spacer, Reverse idler
66	778016	Idler, Reverse
67	778038	Spur Gear (22 teeth)
68	780039	Bearing, Thrust
69	774072A	Carrier Assy., Differential (Incl. No. 71)
70	774071A	Carrier Assy., Differential (Incl. No. 71)
71	780041	Bushing
72	788024	"O" Ring
73	780007	Washer, Thrust
74	780051	Washer, Thrust
75	792010	Plug, Pipe
76	780075	Race, Thrust
77	780107	Washer

CHAPTER 5. FOUR-SPEED TRANSAXLES

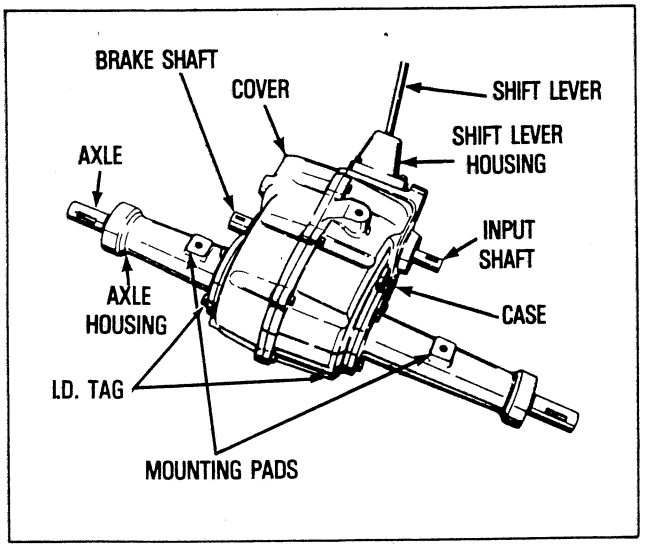
SECTION 1. 2300 SERIES

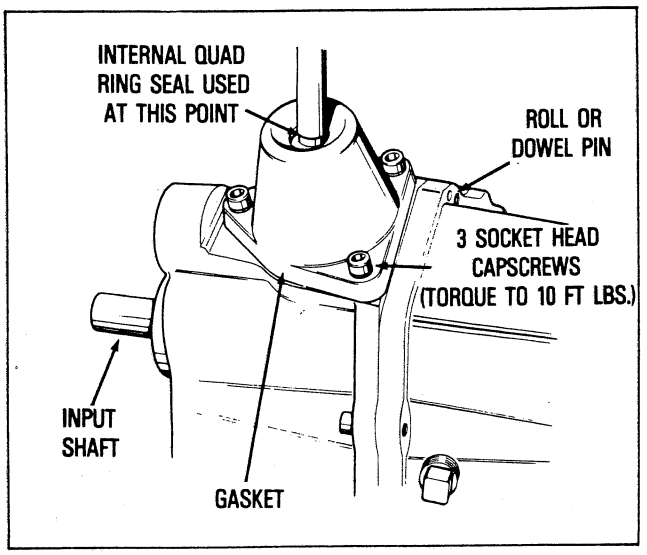
CAUTION

DECLUTCHING IS REQUIRED WHEN SHIFTING TO AVOID GEAR CLASHING AND DAMAGE.

A. GENERAL

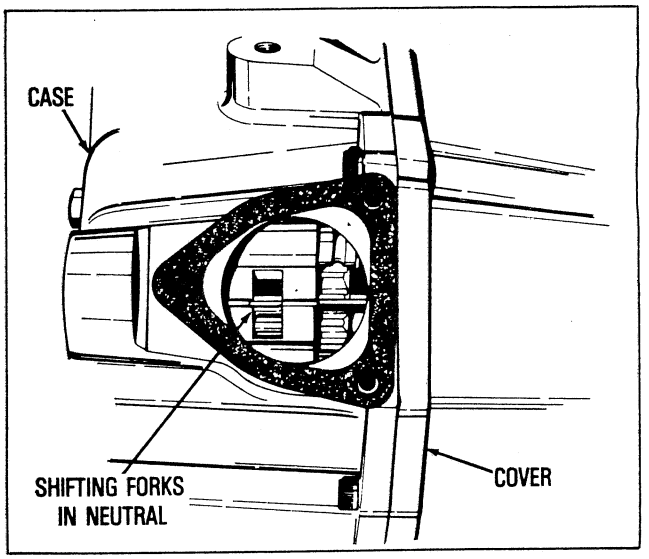
The 2300 series transaxles have a four speed forward and one reverse transmission.



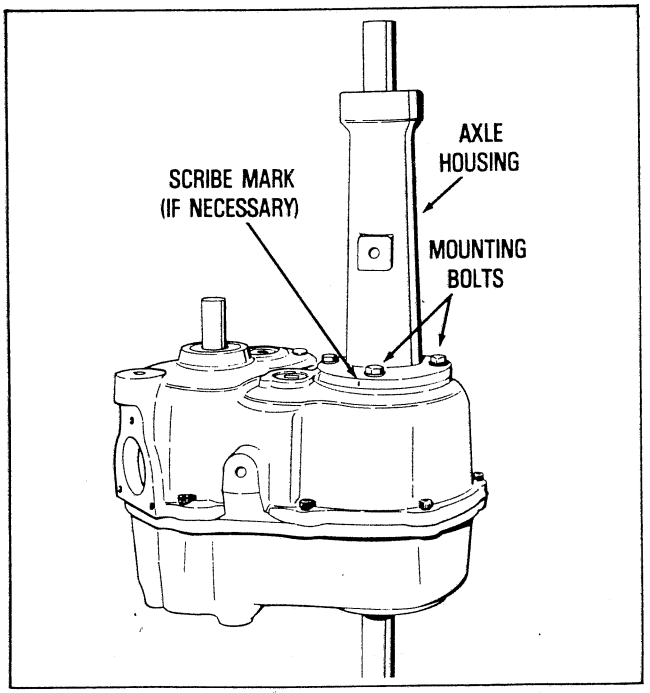


B. DISASSEMBLY

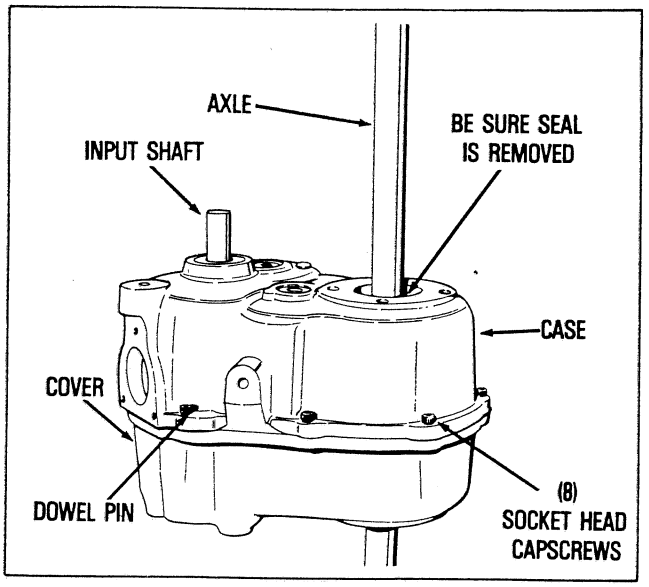
1. Position the shifter forks in neutral before disassembly.



2. Remove both axle housings, and use the exposed axle as a ram to separate the seal retainers from the case and cover.
3. When disassembling the rest of the unit, it should be held so that;
   a. It lies on the cover, properly blocked up, so that no weight rests on the brake shaft.
   b. The cover should sit rigidly so that the removal of parts can be done in a systematic step by step procedure.
   c. It will not fall causing an accident or injury.
4. Oil seals are of the double lip type so sleeve protectors do not offer much protection when removing them. Upon replacement, new seals should be used.



5. Tap dowel pins into the cover and remove eight socket head capscrews.

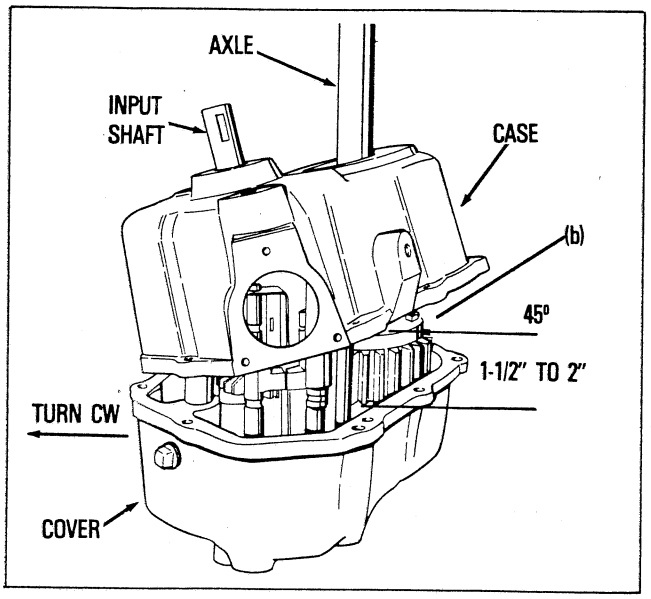


6. To separate the case from the cover:

   a. Lift the case 1-1/2 to 2" above the cover.

   b. Tilt the case so that the shift rods will clear edge.

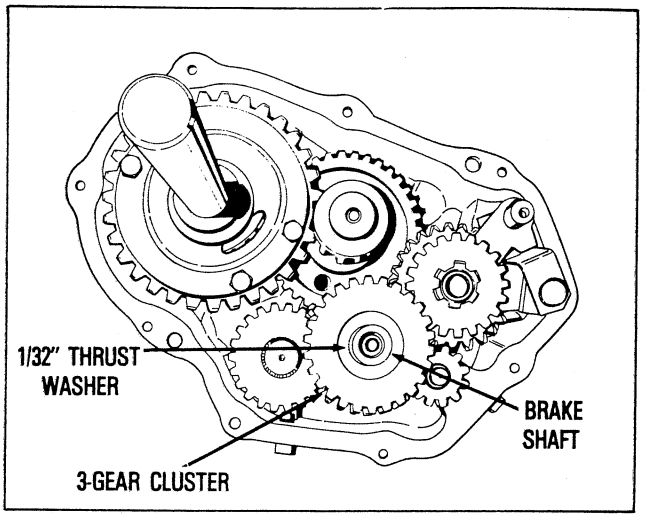
   c. Rotate the case so that boss hidden inside will clear gears, then lift free of the differential.



7. Remove thrust washer and three gear cluster from brake shaft, noting whether the cluster has a sloppy fit.

   a. To service the cluster bushings, refer to Chapter 11.

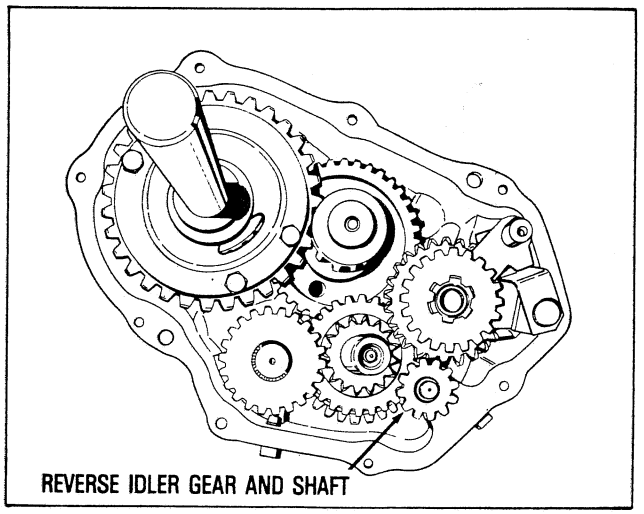
   b. Inspect gear teeth for wearing, chipping or breaks. Wear or chipping on the bevel area only, indicates shifting while the equipment is in motion.



8. Remove the reverse idler gear, spacer and shaft from boss in cover.

   Note that the spacer goes between the gear and the cover, and that the gear bevels go down.

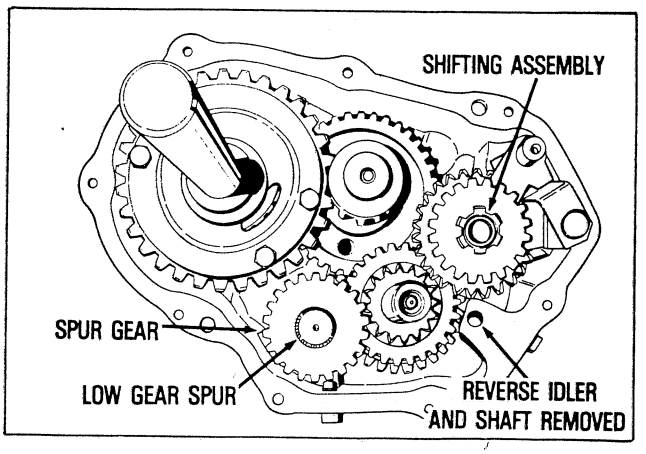
   Excessive wear on teeth bevels indicates improper shifting technique.



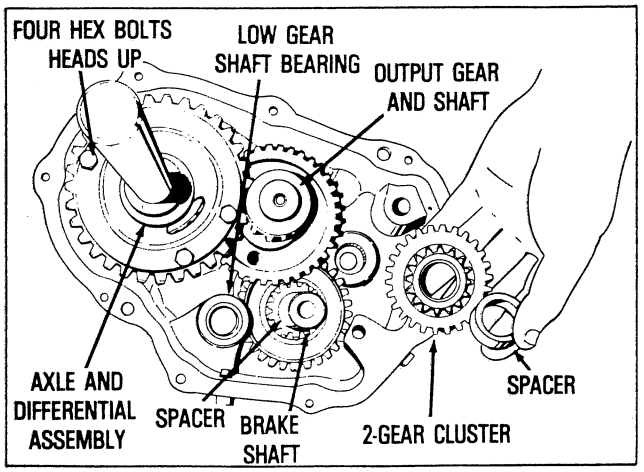
9. Lift out the shifter assembly. Service of this unit is described in Chapter 10.

   If it is evident that the shifter assembly needs no further teardown, place it aside in a clean place, intact, for easy reassembly.

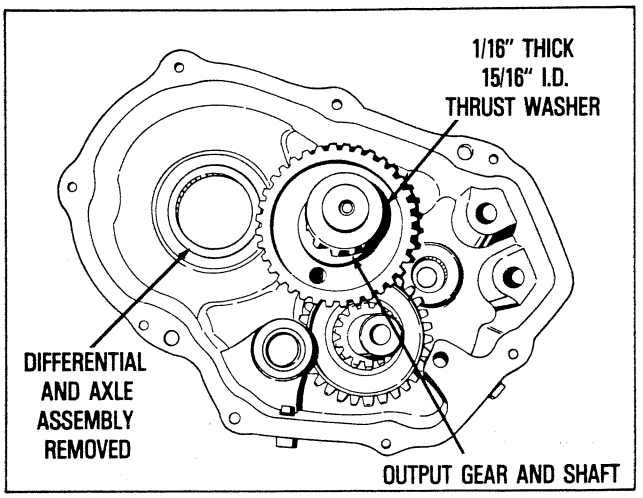
10. Remove the low gear and shaft, and splined spur gear. Separate gear and shaft. Note that NO thrust washer is between the gear and case.



11. Remove the two gear cluster and spacer from the brake shaft.
12. Lift the differential unit out of the cover.

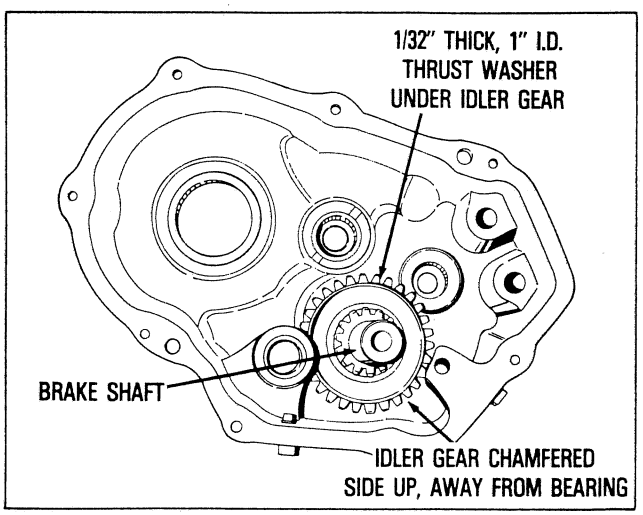


13. Remove the output shaft and gear and thrust washer from each end of the shaft.

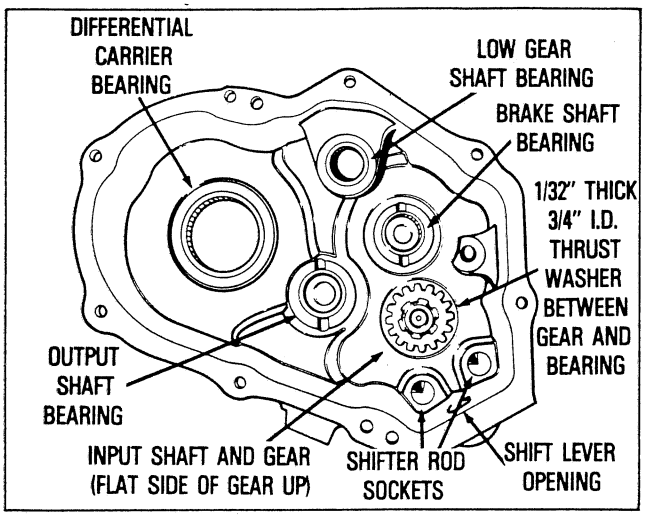


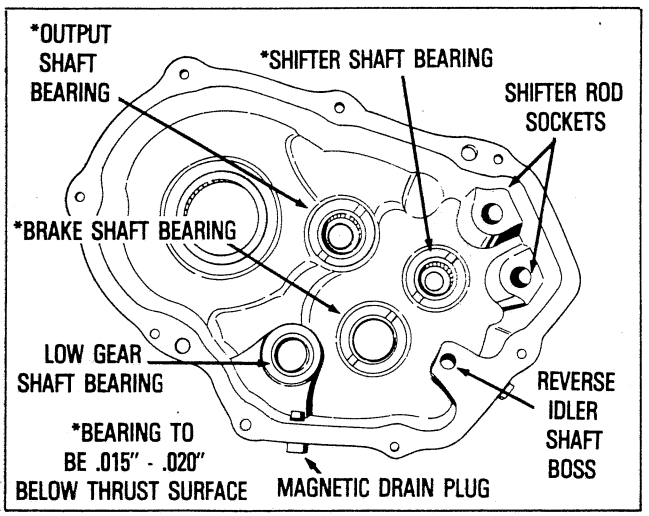
14. Remove the brake shaft.

    Note that the brake shaft idler separates from the shaft. If separated, be sure that when re-assembled, the idler gear chamfers are away from the cover.



15. Remove input shaft from case by tapping with a non-metallic hammer.





C. INSPECTION AND REPAIR

1. Gears.
   a. Check bevels for evidence of galling due to improper shifting.

      NOTE: Peerless Transaxles must be stopped for shifting.

   b. Check face of teeth for wear. Large shiny areas indicate too much tooth contact and possible excessive wear. Replace gears indicating damage or excessive wear.
2. Shafts and Axles.
   a. Check surface for rust, pitting, scratches or wear.
   b. Check keyways, splines, threads, and grooves for wear. Replace parts if worn or damaged beyond a refinishable state.
3. Case and Cover.

   Check for cracks, stripped threads, metal chips, flat sealing surfaces and rust. Clean out any rust. Replace parts if any damage is found that cannot be repaired.

4. Thrust Washers and Spacers.

   Check for shininess indicating wear. Replace if wear is evident. Try to determine cause of thrust washer wear such as: lack of end play due to re-use of gasket, or use of wrong thrust washer.

5. Shifting Assembly.

   Refer to Chapter 10.

6. Gaskets.

   Replace all gaskets.

7. Oil Seals.

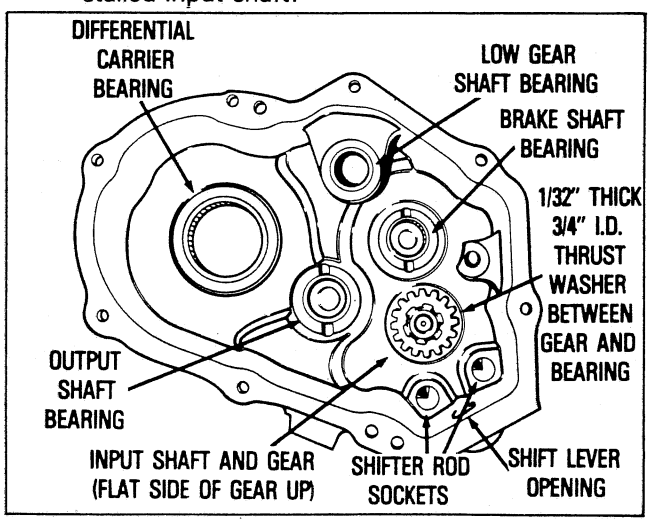
   It is a good habit to replace all seals. It is necessary to replace all double lip seals. See Chapter 1, paragraph F, "OIL LEAKS, SEAL AND GASKET SERVICE".

8. Bearings and Bushings.

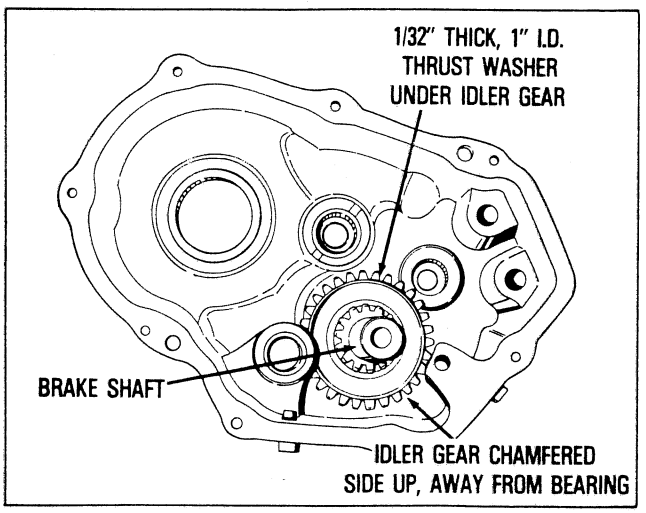
   Refer to Chapter 11.

D. ASSEMBLY

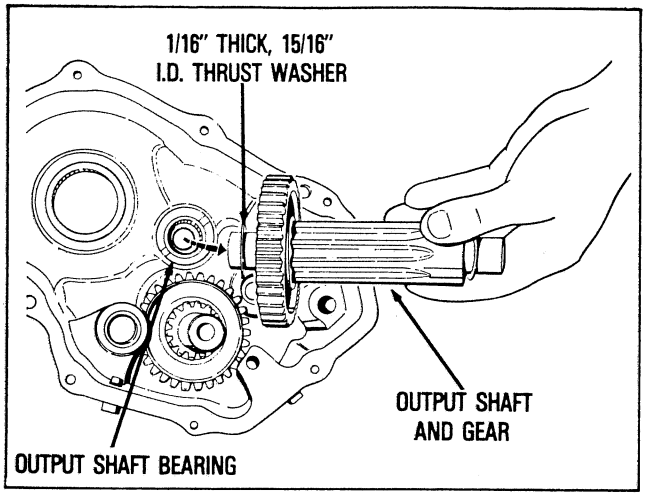
1. Install input shaft in case. Use a soft mallet to seat shaft and gear completely. Often, binding in the assembled unit can be traced to a partially installed input shaft.



2. Center one 1/32" thick by 1" I.D. thrust washer on the cover brake shaft needle bearing, then install the brake shaft and gear, (chamfer side away from cover).

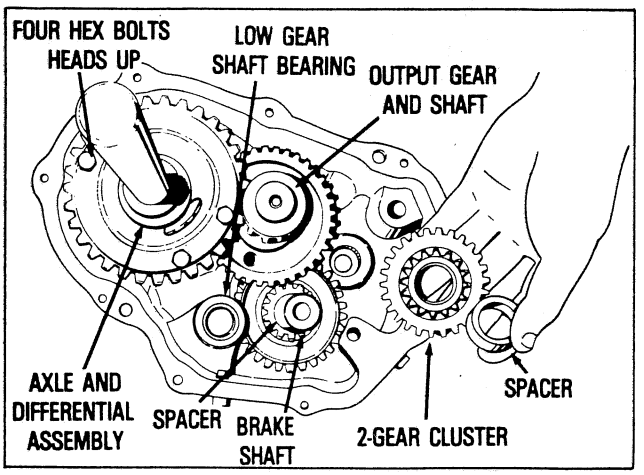


3. Install the output shaft and gear after centering a 1/16" thick by 15/16" I.D. thrust washer on each end of the shaft.



4. Insert the differential assembly into the cover. Note that the four bolt heads should be out away from the output gear.

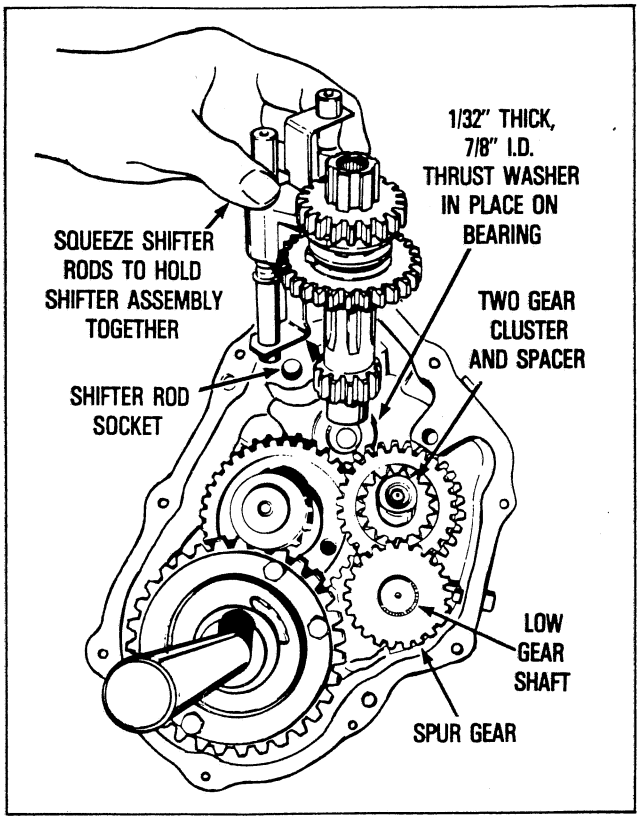
5. Install the two gear cluster and spacer on the brake shaft.



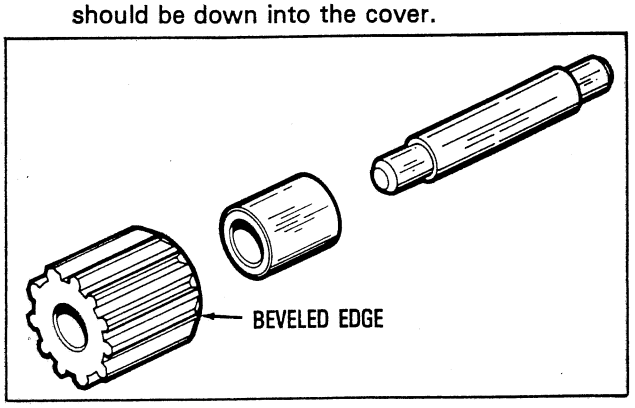
6. Install a 1/16" thick by 3/4" I.D. thrust washer, gear and low gear idler shaft in cover. Do not put a thrust washer on the exposed end of this shaft. Be sure the small gear meshes with the larger gear of the two gear cluster.

7. Center one 1/32" thick by 7/8" I.D. thrust washer on cover shifter shaft bearing.

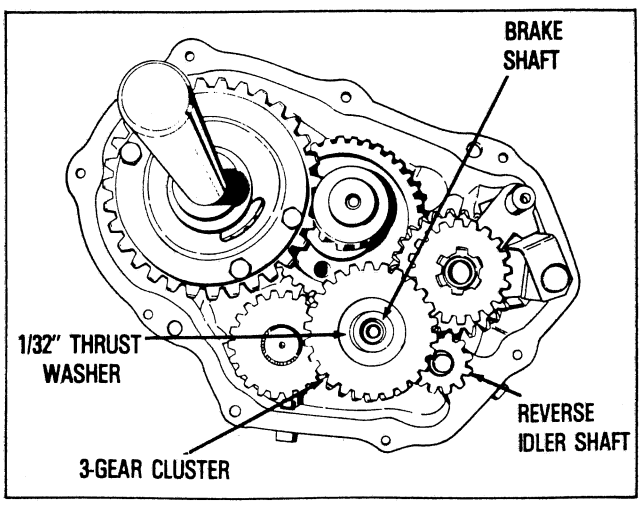
8. Install shifter assembly as a unit into the cover.



9. Install the reverse idler shaft, spacer and gear into the cover. The beveled side of the idler gear should be down into the cover.

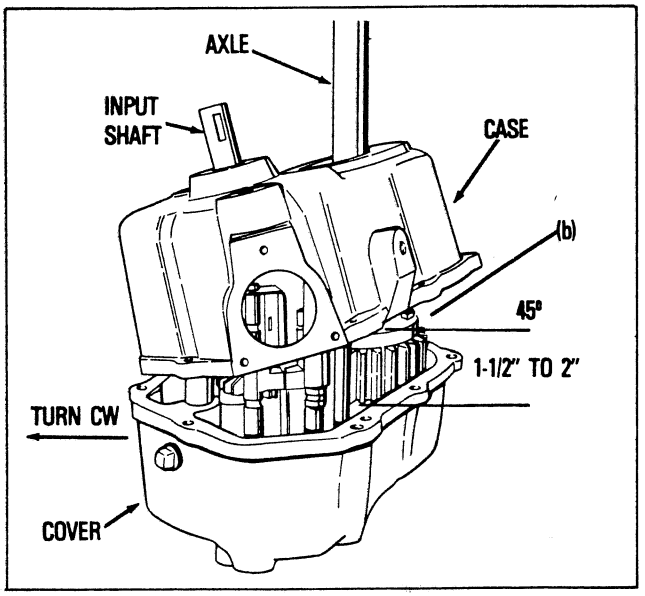


10. With the small gear of the three gear cluster toward the spacer, install the three gear cluster and other 1/32" thick by 7/8" I.D. thrust washer on the brake shaft.

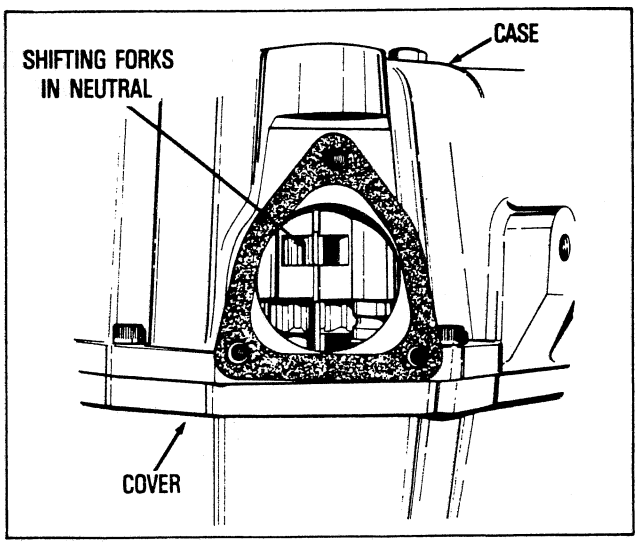


11. Position the gasket on the cover sealing surface, then install case over the differential shaft. Be sure the boss goes under gears and that edge of the case goes over the shaft rods in the opposite manner from which it was removed.

12. Once in position, if case hangs 1/2 to 1" high, turn the input shaft to get gears to mesh. The case should drop about 1/4" from closing.



13. Use a pair of needle nose pliers on the shifter stop on each shifter fork to agitate the shifter rod ends into their machined recesses in the case.

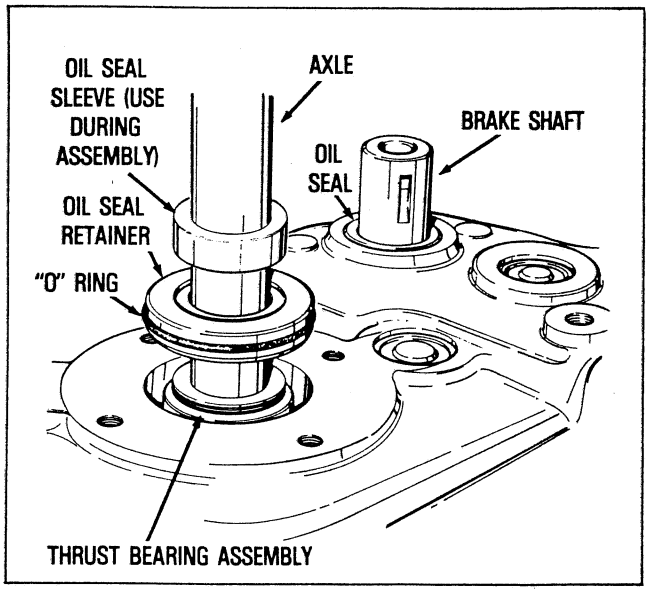


14. Align the case and cover with the two dowels, then install and tighten the eight socket head capscrews. Torque screws to 10 ft. lbs. Unit can now be placed flat on the work bench.

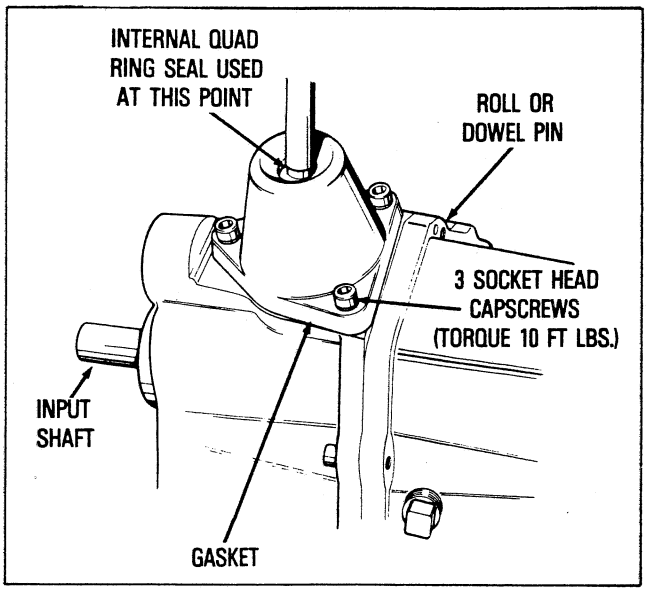
Place seal retainers and new seals in position.

CAUTION: Sleeves must be used to protect seals, especially axle ends or where wheels attach.

15. Install new "O" rings on seal retainers and position axle supports to case and cover. Be sure mounting pads face in the same direction as when removed. Install capscrews and torque to 13 ft. lbs.



16. Install shift lever housing and new gasket.



E. TESTING AND LUBRICATION

1. For testing, refer to Chapter 1, Paragraph H.
2. For proper lubrication type and amount, refer to page 1-6.

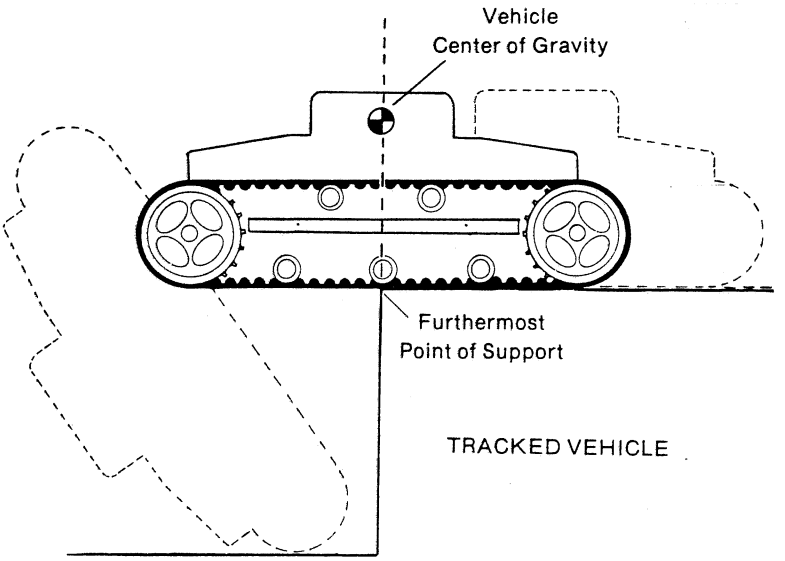
TRACKED VEHICLE — Operation & Procedure

A Tracked Vehicle, by its very nature, requires the use of operating techniques and procedures that are unfamilar to most people used to driving wheeled vehicles.

This means that a person intending to operate a Tracked Vehicle must allow himself ample opportunity to familiarize himself with the controls and characteristics of the machine.

It is the purpose of this booklet to inform and instruct prospective Tracked Vehicle operators in an effort to help them use it safely.

SAFETY WARNING: NO PERSON SHOULD ATTEMPT TO OPERATE A TRACKED VEHICLE BEFORE READING THIS BOOKLET THOROUGHLY. IF ANY PORTION OF THIS BOOKLET IS NOT CLEARLY UNDERSTOOD, WRITE TO US AT THE ADDRESS ON THE FRONT COVER.

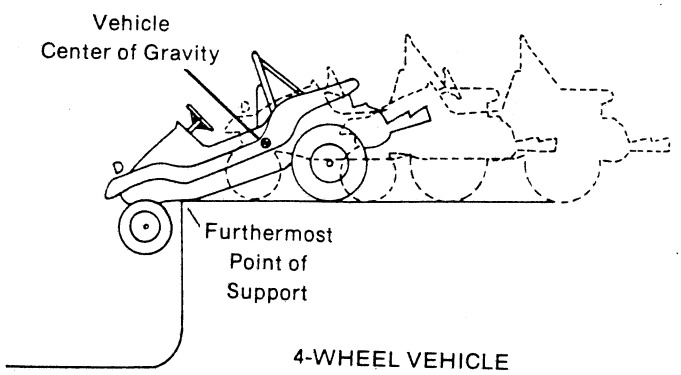


TRACKED VEHICLE

SAFETY WARNING: ANYTIME A PORTION OF THE TRACK IS NOT IN CONTACT WITH THE GROUND, STABILITY IS REDUCED. NEVER ATTEMPT TO 'JUMP' A TRACKED VEHICLE OVER DROP-OFFS, HILL CRESTS, OR OTHER OBSTACLES. THIS CAN BE EXTREMELY HAZARDOUS.

TRACKED VEHICLE CHARACTERISTICS

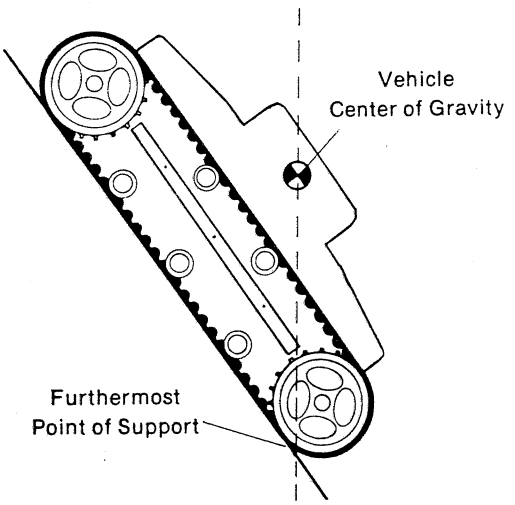
Tracked vehicles possess certain inherent features not found on standard four-wheel vehicles. For instance, a standard vehicle will hit bottom when the wheels on either end are driven over a drop-off. In most cases this will stop vehicle motion and give immediate warning.



4-WHEEL VEHICLE

A Tracked Vehicle, however will continue on without any warning until its center of gravity passes across an imaginary line drawn straight up from the furthermost point of support with the ground. It will drop SUDDENLY. (See illustration upper right). THIS WILL HAPPEN EVEN AT THE VERY SLOWEST SPEEDS.

A Tracked Vehicle can climb or descend steep slopes, so steep in fact that the vehicle can tip over forward or backward, before it loses traction.



Tipover occurs when the Vehicle's center of gravity passes across an imaginary line drawn straight up from the furthermost point of support with the ground.

When the Vehicle's center of gravity passes this point, the vehicle will tip over SUDDENLY.

TRACKED VEHICLE OPERATION

A Tracked Vehicle, by its very nature, is a vehicle requiring a great degree of care and judgment during operation. It should be kept in mind that while your Tracked Vehicle is designed to operate in rough terrain, this same fact allows for the possibility of a hazardous condition developing at any time. Safe operation of your Tracked Vehicle must be based on the understanding of the vehicle's limitations, thorough knowledge of the controls and their functions, and the operator's good judgment and experience.

SAFETY WARNING: WHERE THE OPERATOR IS NOT CERTAIN OF THE VEHICLE'S ABILITY TO TRAVERSE AN OBSTACLE OR TERRAIN SITUATION, OR, IS NOT CERTAIN OF HIS OWN ABILITY TO SAFELY OPERATE THE VEHICLE, AN ALTERNATE ROUTE MUST BE TAKEN.

OPERATION ON SLOPES

Tracked Vehicle operation on slopes presents an obvious opportunity for the vehicle to tip over. This type of operation demands constant attention to changes in terrain and the ability to anticipate and avoid possible hazards.

This ability can only be developed through careful study of the points noted in this section and a slow, planned effort on the operator's part to become proficient.

The most effective guard against hazards while operating on slopes, especially during downhill operation is to keep vehicle speed very slow.

SAFETY WARNING: WHEN OPERATING ON SLOPES VEHICLE SPEED SHOULD BE KEPT VERY SLOW AND THE OPERATOR SHOULD BE EXTREMELY ALERT FOR CHANGES IN TERRAIN.

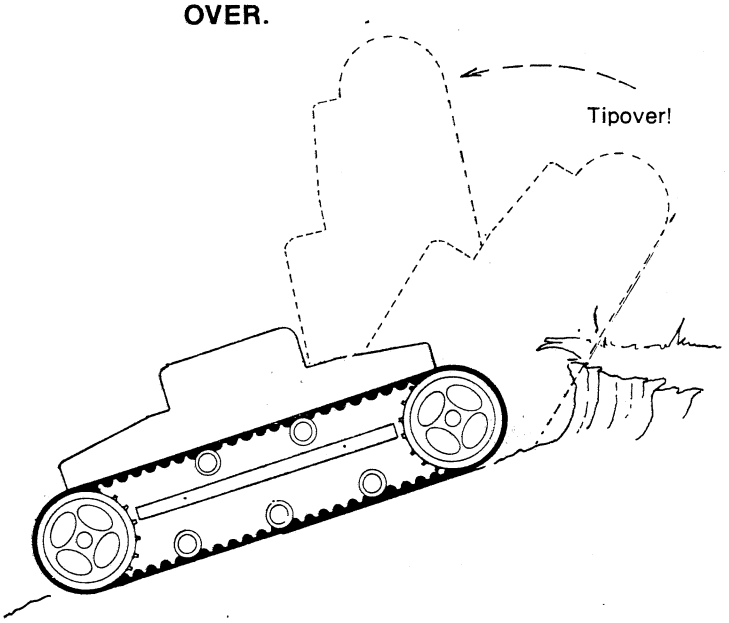
Vehicle stability on a hill, for example, is determined not only by the general slope of the hill but also by terrain conditions (rocks, ditches, logs, drop-offs, etc.)-and by the nature of the hill surface (gravel, sand, grass, snow, rock, etc.), the payload which the vehicle is carrying, the manner in which the payload is distributed within the vehicle, attachments and accessories which have been added to the vehicle, and so forth.

Similarly, driving technique and its effect on vehicle stability enters into any determination of what constitutes a safe slope. Excessive speed, sudden braking, choice of path - all can be critical.

UPHILL OPERATION

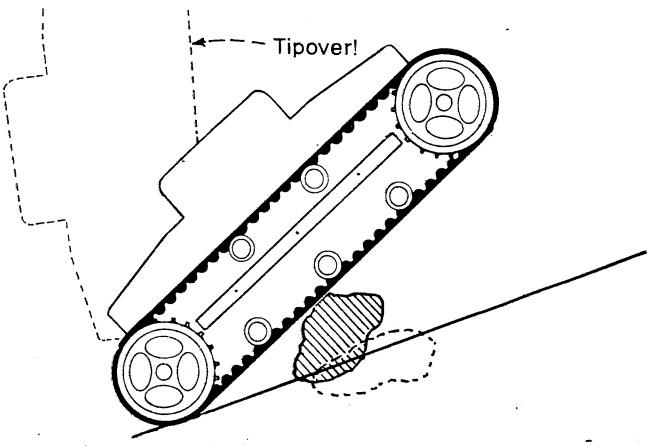
The following illustrations depict some situations in which a Tracked Vehicle can be expected to tip over. Variations in speed, loading, terrain and vehicle condition must all be analyzed to determine whether or not a specific obstacle can be traversed. If in doubt, do not attempt.

SAFETY WARNING: ON STEEPER SLOPES SMALLER OBSTACLES WILL CAUSE A TRACKED VEHICLE TO TIP OVER.



It is common to see a situation where natural erosion has caused the very top of a bank or hill to rise sharply. Always check for this condition before attempting to climb any such type of terrain. A Tracked Vehicle could climb up to a point at which it falls over backward.

It is also very important to check for this terrain condition before going down over the edge of a bank or dropoff.



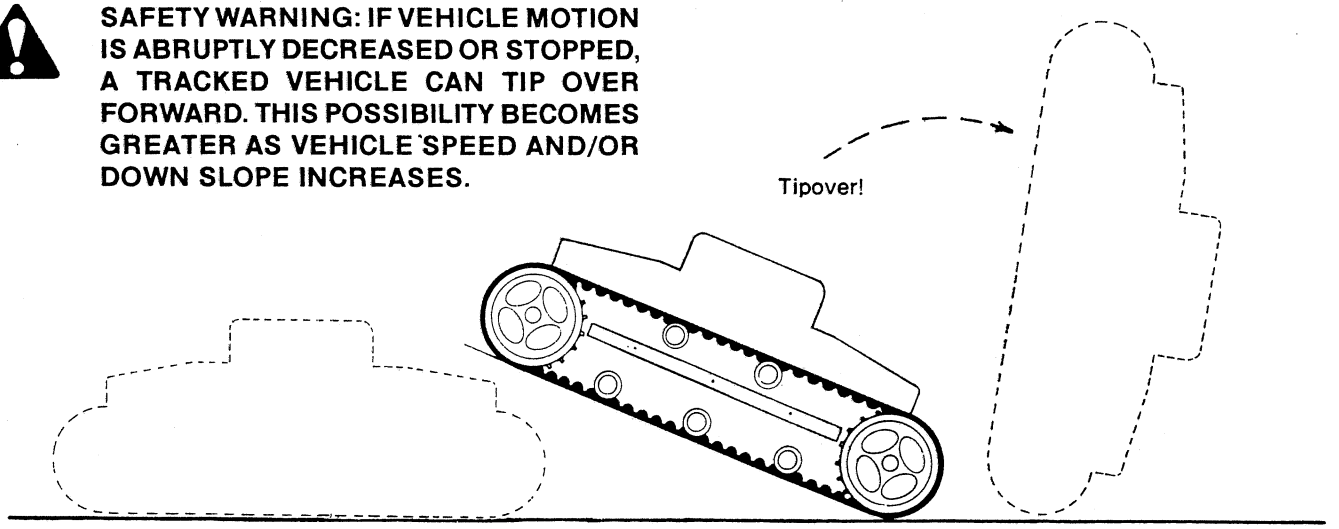
The same situation can occur where an imbedded object is pulled from the ground. The vehicle track may 'grab' a rock or log. As the object emerges from the ground, rolling under the track, the vehicle could climb to the point at which it falls over backward.

DOWNHILL OPERATION

SUDDEN STOPS

If a Tracked Vehicle is driven down a slope and the tracks are stopped suddenly, the vehicle's exceptional traction may cause it to tip over forward.

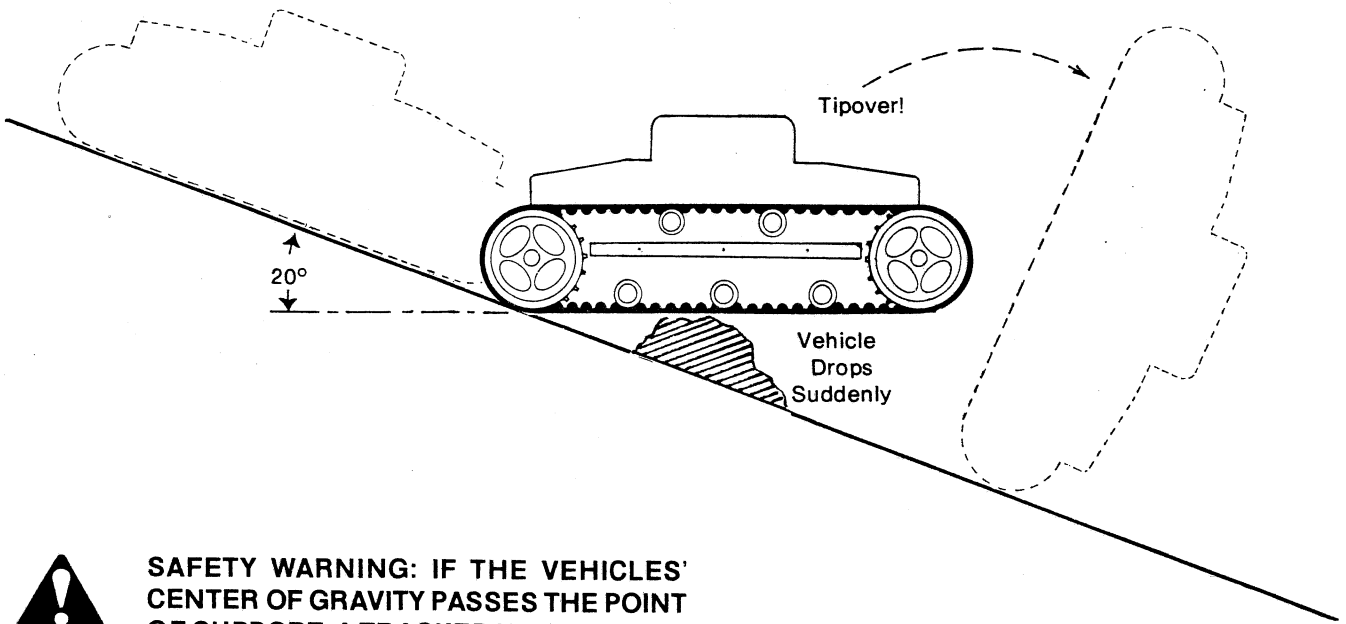
SAFETY WARNING: IF VEHICLE MOTION IS ABRUPTLY DECREASED OR STOPPED, A TRACKED VEHICLE CAN TIP OVER FORWARD. THIS POSSIBILITY BECOMES GREATER AS VEHICLE SPEED AND/OR DOWN SLOPE INCREASES.



CROSSING OVER AN OBJECT

This illustration is drawn to depict an obstacle situation in which a Tracked Vehicle can be expected to tip over. Variations likely to occur in natural terrain, the approach to the obstacle, operator skill and loading of a Tracked Vehicle may reduce the size of obstacle or steepness of the slope required, which could cause tipover.

SAFETY WARNING: ON STEEPER SLOPES, SMALLER OBSTACLES WILL CAUSE A TRACKED VEHICLE TO TIP OVER.

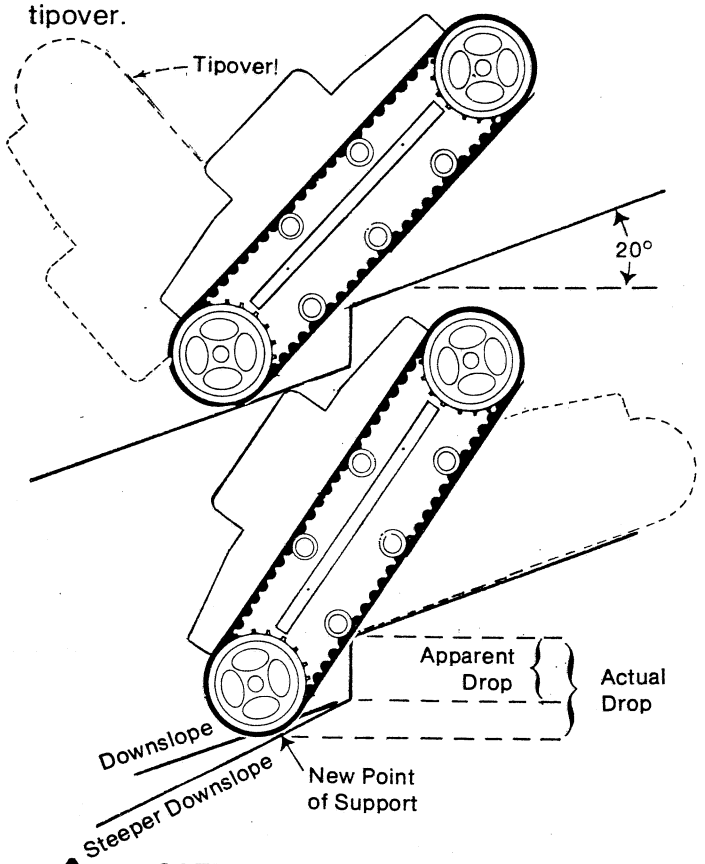


SAFETY WARNING: IF THE VEHICLES' CENTER OF GRAVITY PASSES THE POINT OF SUPPORT, A TRACKED VEHICLE WILL BEGIN TO TIP. UNLESS THE TERRAIN ON THE DOWNSIDE OF THE OBJECT PROVIDES A NEW POINT OF SUPPORT, FAR ENOUGH AHEAD OF THE VEHICLE CENTER OF GRAVITY TO NEGATE THE EFFECT OF INERTIA, A TRACKED VEHICLE WILL TIP OVER FORWARD.

SAFETY WARNING: OBSTACLES, SOME OF WHICH MIGHT BE DRIVEN OVER SAFELY WHILE ON LEVEL TERRAIN, CAN CAUSE A HAZARD WHILE OPERATING ON SLOPES.

DROPOFFS

This illustration is drawn to depict a dropoff situation in which a Tracked Vehicle can be expected to flip. Variations occuring in natural terrain, the approach to the obstacle, operator skill, and loading of a Tracked Vehicle may reduce the size of the dropoff or the steepness of the slope, which could cause tipover.



SAFETY WARNING: A TRACKED VEHICLE MUST BE OPERATED WITH GREAT CARE AT ALL TIMES AND ON ANY SLOPE. SLOPES STEEPER THAN 20° SHOULD BE REGARDED AS ULTRA-HAZARDOUS AND APPROACHED WITH EXTREME CAUTION. EVEN ON SLOPES OF LESS THAN 20°, A TRACKED VEHICLE CAN BE TIPPED OVER BY A SUDDEN STOP, EXCESSIVE SPEED, UNEVEN TERRAIN, OR OTHER SPECIAL CONDITIONS OR COMBINATIONS OF SUCH CONDITIONS.

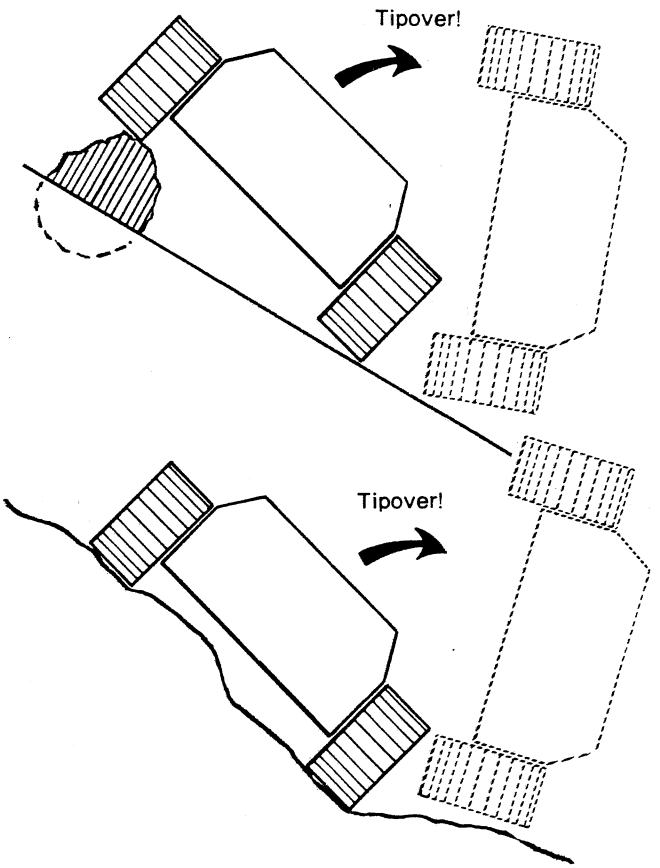
An important variable in determining if a given obstacle will cause a Tracked Vehicle to tip over is the vertical distance between the last point of contact and the new point of support. Note that the new point of support can be on level ground, a downhill slope, or a steeper downhill slope. The apparent size of the obstacle or dropoff is not the same as the drop it causes. Among the many other variables are the steepness of the slopes, size of the obstacle causing the drop, the shape of the last point of support, the load on the Tracked Vehicle, initial speed, tightness of the track, traction, symmetry of the obstacle to the Tracked Vehicle and operator skill and judgment.

SIDEHILL OPERATION

The illustrations show how driving over an obstacle with the uphill track or into a hole with the downhill track will cause the vehicle to tip over sideways.

A slippery surface, like snow, ice, frozen sand, and loose gravel can also be dangerous. It is possible to slide into a tree or rock or to slide off the edge of a cliff.

SAFETY WARNING: REGARD ALL OPERATIONS ON SLOPING TERRAIN AS HAZARDOUS.



PARKING THE VEHICLE

When a Tracked Vehicle is parked on a sufficient slope, failure two engage the parking brake-or failure of the parking brake to function properly-can result in the vehicle rolling down the slope, out of control.

OPERATING SAFETY PRECAUTIONS

1. Keep hands and feet inside vehicle.
2. Never attempt to operate the vehicle from anywhere other than the driver's seat.
3. Avoid unnecessary quick stops.
4. Avoid quick turns.
5. Shut off engine and engage parking brake when leaving vehicle.
6. Park sideways on slopes.

LIMITED WARRANTY

For 90 days from purchase date, we will at our option replace or repair for the original purchaser, free of charge, any part or parts found upon examination at our factory to be defective under normal use and service on account of **defects in material and/or workmanship.**

All transportation charges on, and damages and loss incurred in connection with the transportation of parts for inspection for replacement or repair under this warranty shall be borne by purchaser.

The EXPRESS WARRANTY contained herein SHALL NOT APPLY to any Tractor, Attachment or part which shall have been altered in any way NOR SHALL SUCH EXPRESS WARRANTY APPLY to any damages resulting from accident, misuse or abuse, NOR SHALL SUCH EXPRESS WARRANTY APPLY to any damages resulting from failure to follow the C. F. Struck Corp.'s Instructions for operation and maintenance of Tractors, Attachments and parts. In addition the Express Warranty contained herein shall not apply to Engines, Transmission, Gear Boxes, etc. which are not of our manufacture as they are covered by the manufacturer's own warranty. In addition, we reserve the right to make design and specification changes on future machines without notice and without obligation on our part to present owners.

The foregoing EXPRESS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. C. F. Struck Corp. neither assumes nor authorizes any other person, natural or corporate, to assume for it any other obligation or liability in connection with or with respect to any Tractors, Attachments or parts.

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LIMITED WARRANTY
FOR
NEW PEERLESS GEAR POWER TRAIN COMPONENTS

A. Products Warranted

Peerless Gear and Machine Division of Tecumseh Products Company ("Tecumseh"), subject to the limitations contained below, will, at its option, repair or replace, without charge for parts or labor only, any part of a new Power Train Component (which as used herein means and includes the transaxle, gear box, transmission, differential and right angle drives, and any part of the Power Train Component), EXCEPT any new Power Train Component incorporated in equipment used for commercial or rental purposes, which is found upon examination by any Tecumseh Authorized Service Outlet or by Tecumseh's factory in Grafton, Wisconsin, to be DEFECTIVE IN MATERIAL AND/OR WORKMANSHIP if received by Tecumseh or a Tecumseh Authorized Service Outlet for such examination within ONE YEAR (two years for Peerless 900 Series Transaxles) from the date of sale to the original consumer purchaser. New Power Train Components incorporated in equipment used for commercial purposes are warranted in the same manner and to the same extent EXCEPT such Power Train Components are warranted for NINETY (90) DAYS ONLY, and must be received by Tecumseh or by a Tecumseh Authorized Service Outlet for such examination within 90 days from the date of sale to the original purchaser. New Power Train Components incorporated in equipment used for rental purposes are warranted in the same manner and to the same extent EXCEPT such Power Train Components are warranted for THIRTY (30) DAYS ONLY, and must be received by Tecumseh or a Tecumseh Authorized Service Outlet within 30 days from the date of sale to the original purchaser.

B. Products And Items Not Warranted

1. Alterations or Modifications of Power Train Components.
   All obligations under this warranty shall be terminated if the new Power Train Component is altered or modified in any way.
2. Accidents, Normal Maintenance, Failure to follow the Original Equipment Manufacturer's Manual.
   This warranty covers only parts of new Power Train Components which are found upon examination to be defective in material or workmanship as delivered to the original purchaser. This warranty does not cover defects caused by depreciation or damage caused by normal wear, accidents, improper maintenance, improper use or abuse of the product, failure to follow the instructions contained in an Instruction Manual for the operation of the Power Train Component and parts. The cost of normal maintenance and replacement of service items which are not defective shall be paid for by the original purchaser.

C. Securing Warranty Service

Warranty service can be arranged for by contacting either a Tecumseh Authorized Service Outlet (any Tecumseh Registered Service Dealer, Tecumseh Authorized Service Distributor, or Tecumseh Central Warehouse Distributor) or by contacting Tecumseh, c/o Service Manager, Engine and Gear Service Division, 900 North Street, Grafton, Wisconsin 53024. Warranty service can only be performed by a Tecumseh Authorized Service Outlet or by Tecumseh at its factory in Grafton, Wisconsin. At the time of requesting warranty service, evidence must be presented of the date of sale to the original purchaser. The purchaser shall pay any charges for making service calls and/or for transporting the product to and from the place where the inspection and/or warranty work is performed. The purchaser shall be responsible for any damage or loss incurred in connection with the transportation of Power Train Components and/or of part(s) of the Power Train Components submitted for inspection and/or warranty work.

D. Limitation of Damages and Implied Warranties

The foregoing EXPRESSED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. Neither Tecumseh nor any of its affiliates makes any warranties, representations or promises, written or oral, as to the quality of the Power Train Component or any of its parts, other than as set forth herein.

ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT THAT EITHER MAY APPLY TO ANY PART(S) OF POWER TRAIN COMPONENTS, SHALL BE LIMITED IN DURATION TO THE PERIODS OF THE EXPRESSED WARRANTIES DEFINED IN PARAGRAPH A HEREOF. IN NO EVENT WILL TECUMSEH BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES AND/OR EXPENSES. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you. This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

E. No Dealer Warranty

Tecumseh neither assumes nor authorizes any other person, natural or corporate, to assume for Tecumseh any other obligations or liabilities in connection with or with respect to any part(s) of a Power Train Component. The seller or dealer of part(s) of a Power Train Component has no authority, whatsoever, to make any representations or promises on behalf of Tecumseh or to modify the terms or limitations of Tecumseh's warranty in any way.

PEERLESS GEAR & MACHINE DIVISION

TECUMSEH PRODUCTS COMPANY

PEERLESS GEAR & MACHINE DIVISION, Clinton, Michigan

For Service or Service Parts, contact any of our Tecumseh Authorized Service Dealers. You will find our dealers listed in the Yellow Pages of your telephone book under "Engines, Gasoline". If you have any difficulty at all, contact us.

yellow pages

Engine and Gear Service Division
Tecumseh Products Company
Grafton, WI 53024
Telephone: 414/377-2700

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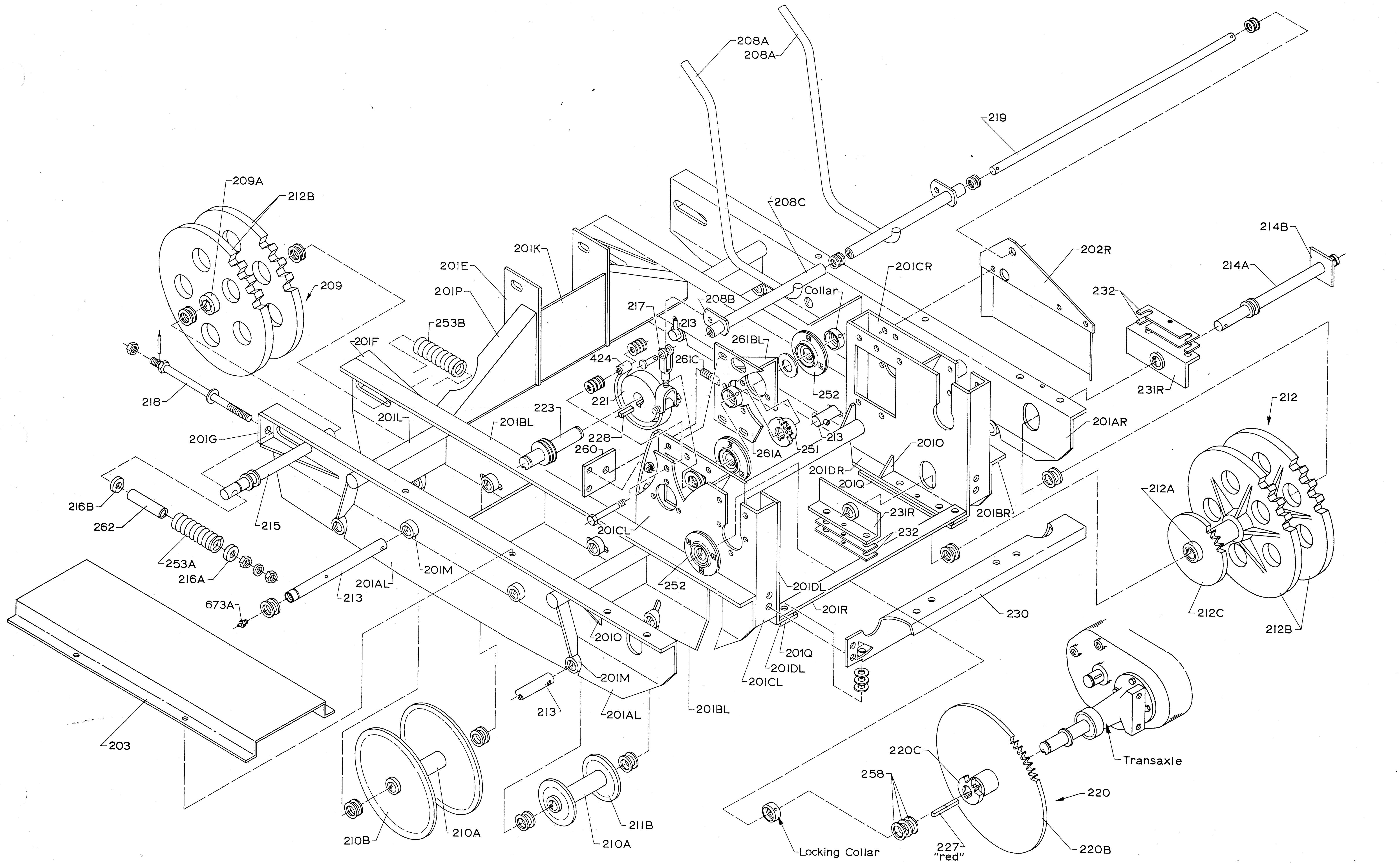
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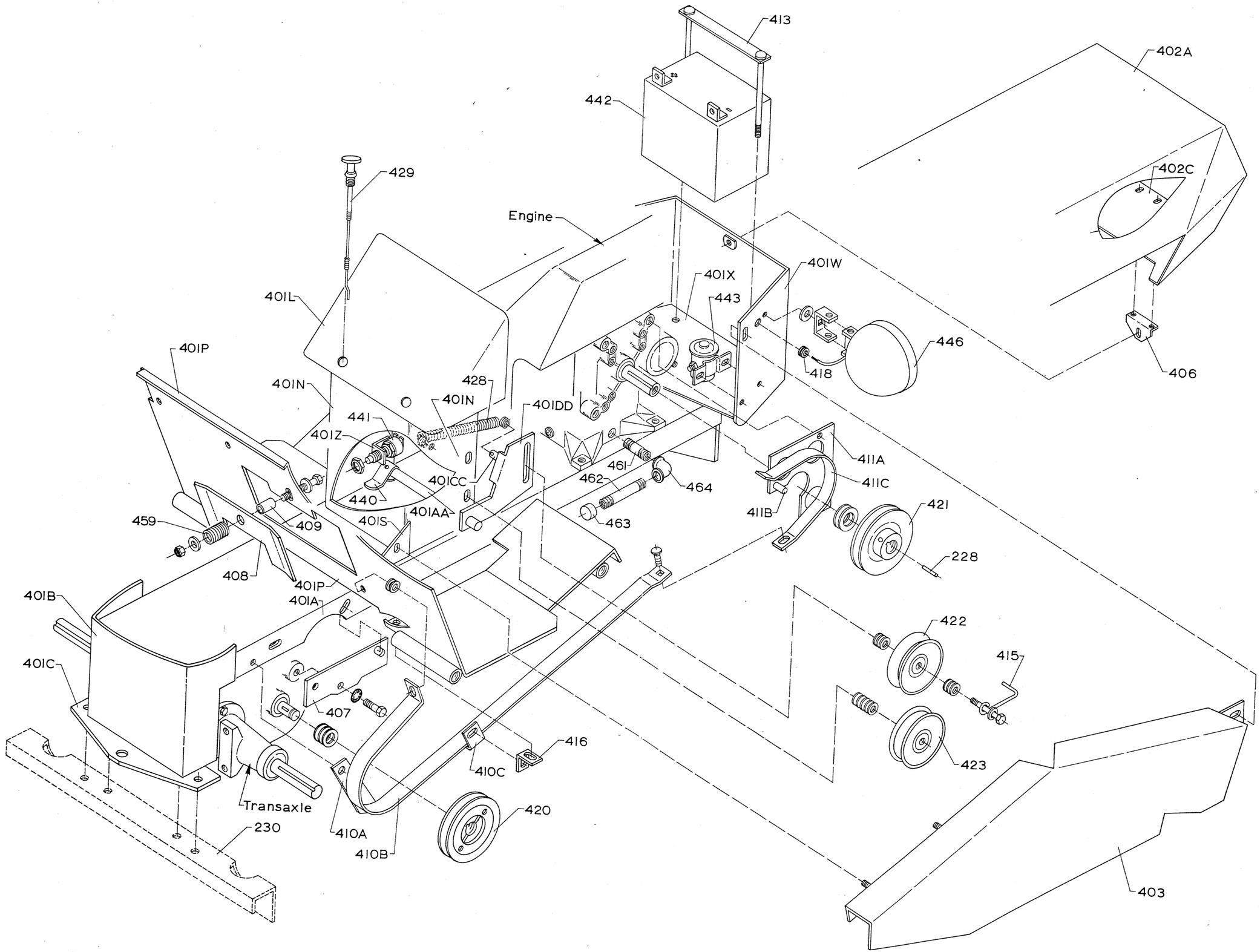
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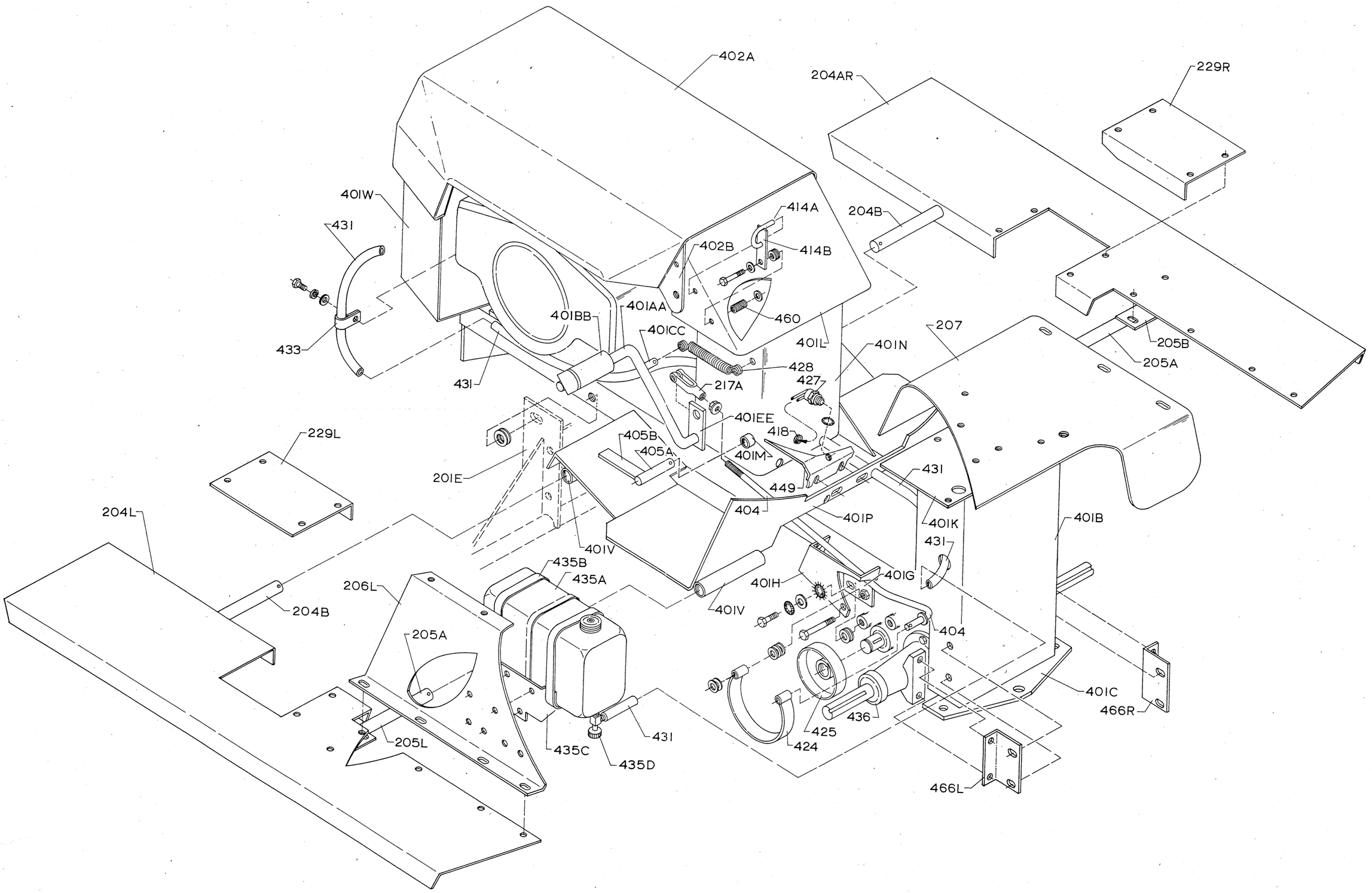
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