JOHN DEERE
WORLDWIDE COMMERCIAL & CONSUMER EQUIPMENT DIVISION

Gator Utility Vehicles
Turf Gator

TM1686 NOVEMBER 2003

TECHNICAL MANUAL

JOHN DEERE

North American Version
Litho in U.S.A.

INTRODUCTION

Manual Description

This technical manual is written for an experienced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- Specifications and Information
- Identification Numbers
- Tools and Materials
- Component Location
- Schematics and Harnesses
- Theory of Operation
- Operation and Diagnostics
- Diagnostics
- Tests and Adjustments
- Repair
- Other

NOTE: Depending on the particular section or system being covered, not all of the above groups may be used.

The bleed tabs for the pages of each section will align with the sections listed on this page. Page numbering is consecutive from the beginning of the Safety section through the last section.

We appreciate your input on this manual. If you find any errors or want to comment on the layout of the manual please contact us.

Safety

Specifications and Information

Engine (FE290D)

Electrical

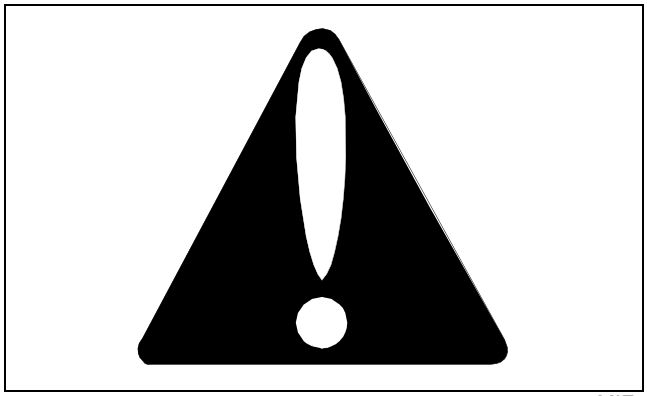
Power Train

Steering

Brakes

Miscellaneous

Recognize Safety Information



MIF

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

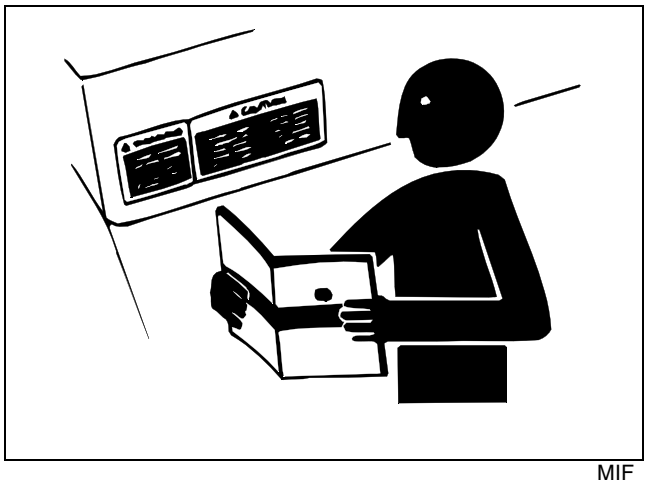
Follow recommended precautions and safe servicing practices.

Understand Signal Words

A signal word - DANGER, WARNING, or CAUTION - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

Replace Safety Signs



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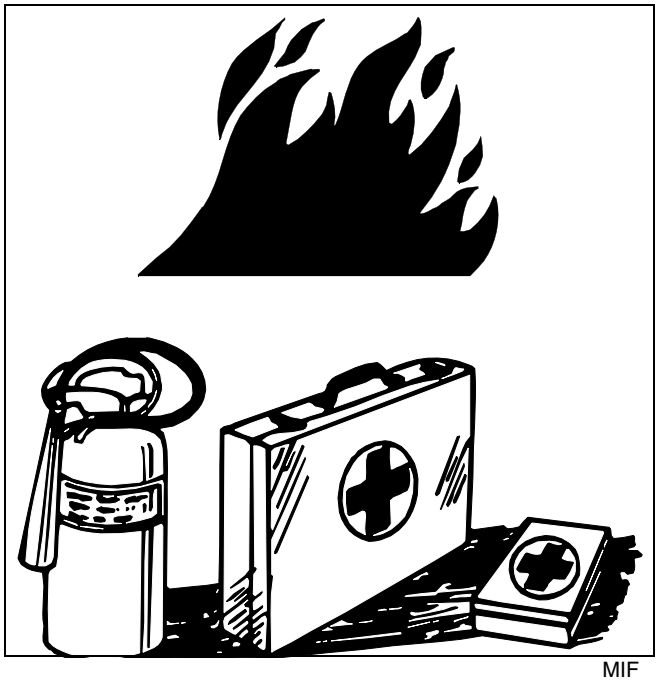
Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

Handle Fluids Safely - Avoid Fires

Be Prepared For Emergencies



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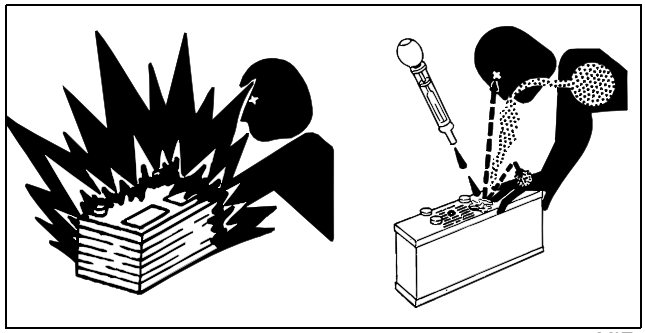
- When you work around fuel, do not smoke or work near heaters or other fire hazards.
- Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.
- Make sure machine is clean of trash, grease, and debris.
- Do not store oily rags; they can ignite and burn spontaneously.
- Be prepared if a fire starts.
- Keep a first aid kit and fire extinguisher handy.
- Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

Use Care In Handling and Servicing Batteries



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Prevent Battery Explosions

- Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.
- Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.
- Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

Prevent Acid Burns

- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid acid burns by:

1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

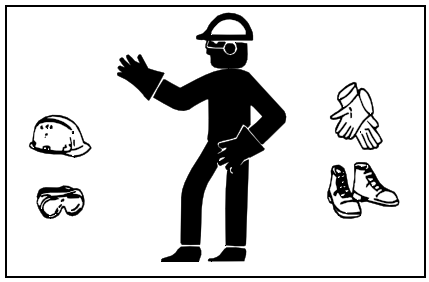
If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10 - 15 minutes.
4. Get medical attention immediately.

If acid is swallowed:

1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.

Wear Protective Clothing



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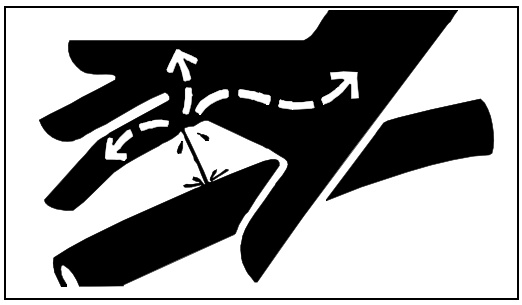
Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

Use Care Around High-pressure Fluid Lines

Avoid High-Pressure Fluids



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Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid injury from escaping fluid under pressure by stopping the engine and relieving pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

Avoid Heating Near Pressurized Fluid Lines

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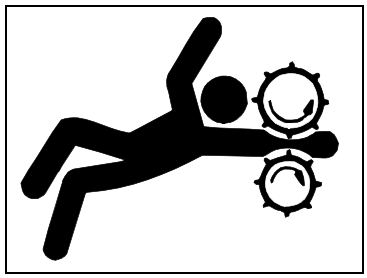
Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

Service Machines Safely



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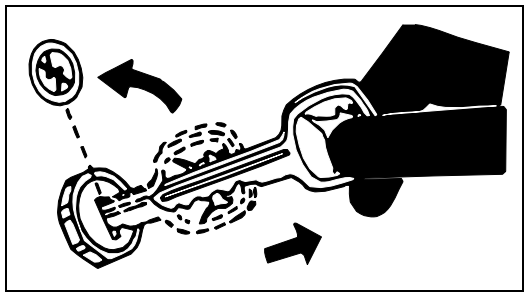
Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.

Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards. Use power tools only to loosen threaded parts and fasteners. For loosening and tightening hardware, use the correct size tools. **DO NOT** use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches. Use only service parts meeting John Deere specifications.

Park Machine Safely



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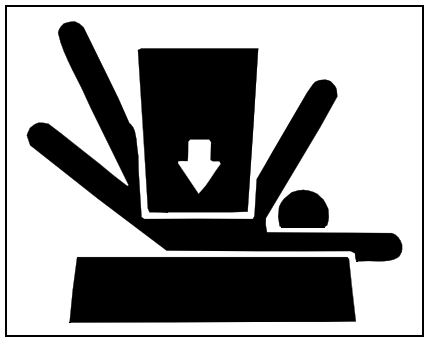
Before working on the machine:

1. Lower all equipment to the ground.
2. Stop the engine and remove the key.
3. Disconnect the battery ground strap.
4. Hang a “DO NOT OPERATE” tag in operator station.

Support Machine Properly and Use Proper Lifting Equipment



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If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.

Lifting heavy components incorrectly can cause severe injury or machine damage. Follow recommended procedure for removal and installation of components in the manual.

Work In Clean Area

Before starting a job:

1. Clean work area and machine.
2. Make sure you have all necessary tools to do your job.
3. Have the right parts on hand.
4. Read all instructions thoroughly; do not attempt shortcuts.

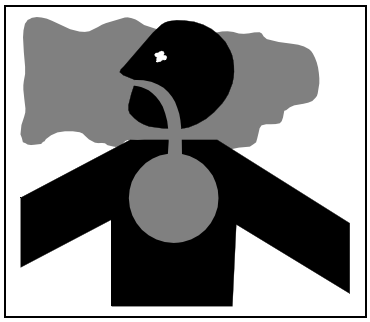
Using High Pressure Washers

Directing pressurized water at electronic/electrical components or connectors, bearings, hydraulic seals, fuel injection pumps or other sensitive parts and components may cause product malfunctions. Reduce pressure and spray at a 45 to 90 degree angle.

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

Work In Ventilated Area



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Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

Warning: California Proposition 65 Warning

Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Remove Paint Before Welding or Heating

Avoid potentially toxic fumes and dust. Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch. Do all work outside or in a well ventilated area. Dispose of paint and solvent properly. Remove paint before welding or heating: If you sand or grind paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

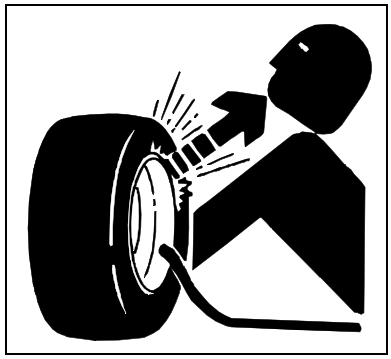
Avoid Harmful Asbestos Dust

Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos. Keep bystanders away from the area.

Service Tires Safely



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Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

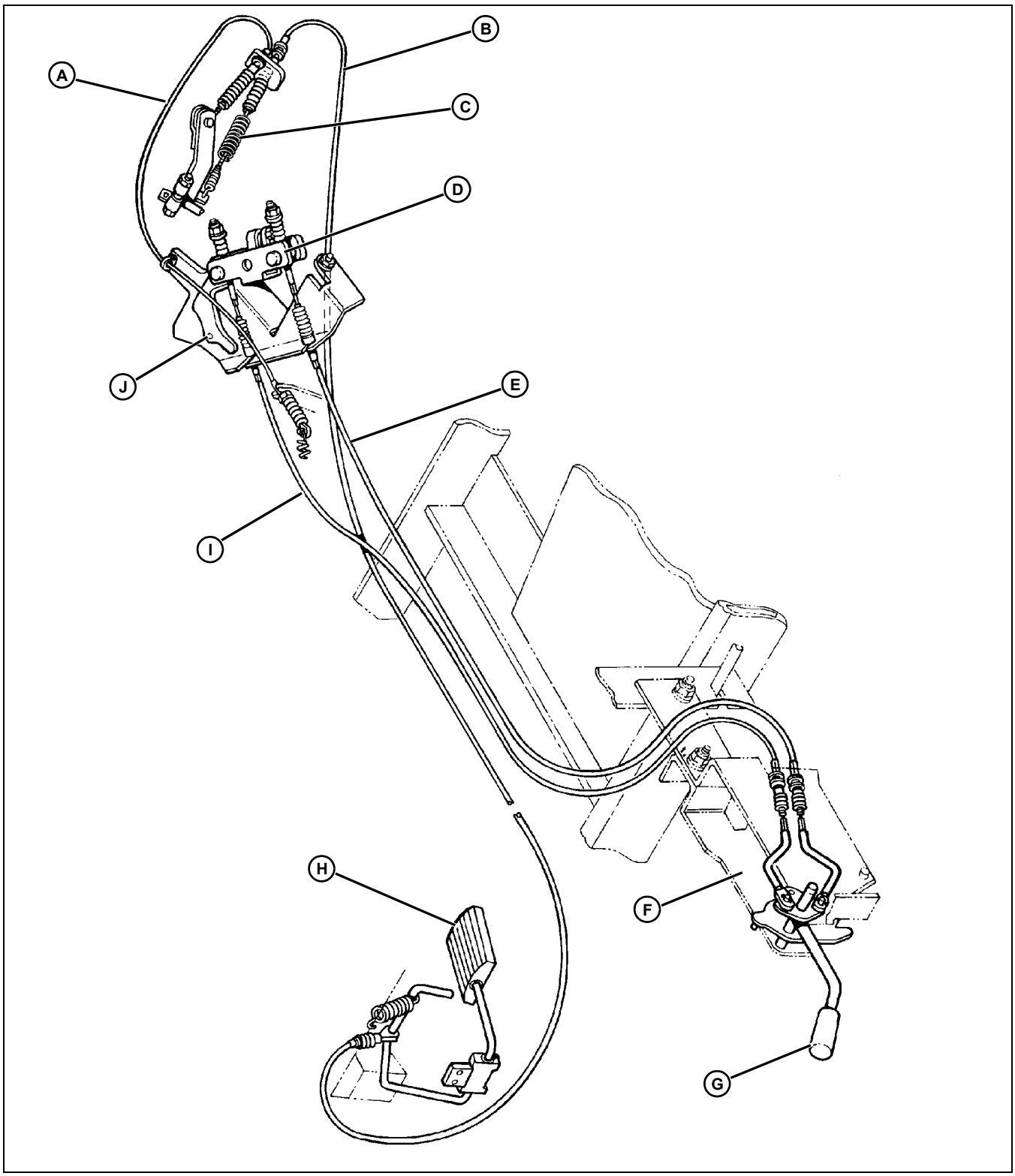
Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

Component Location

Cable Components



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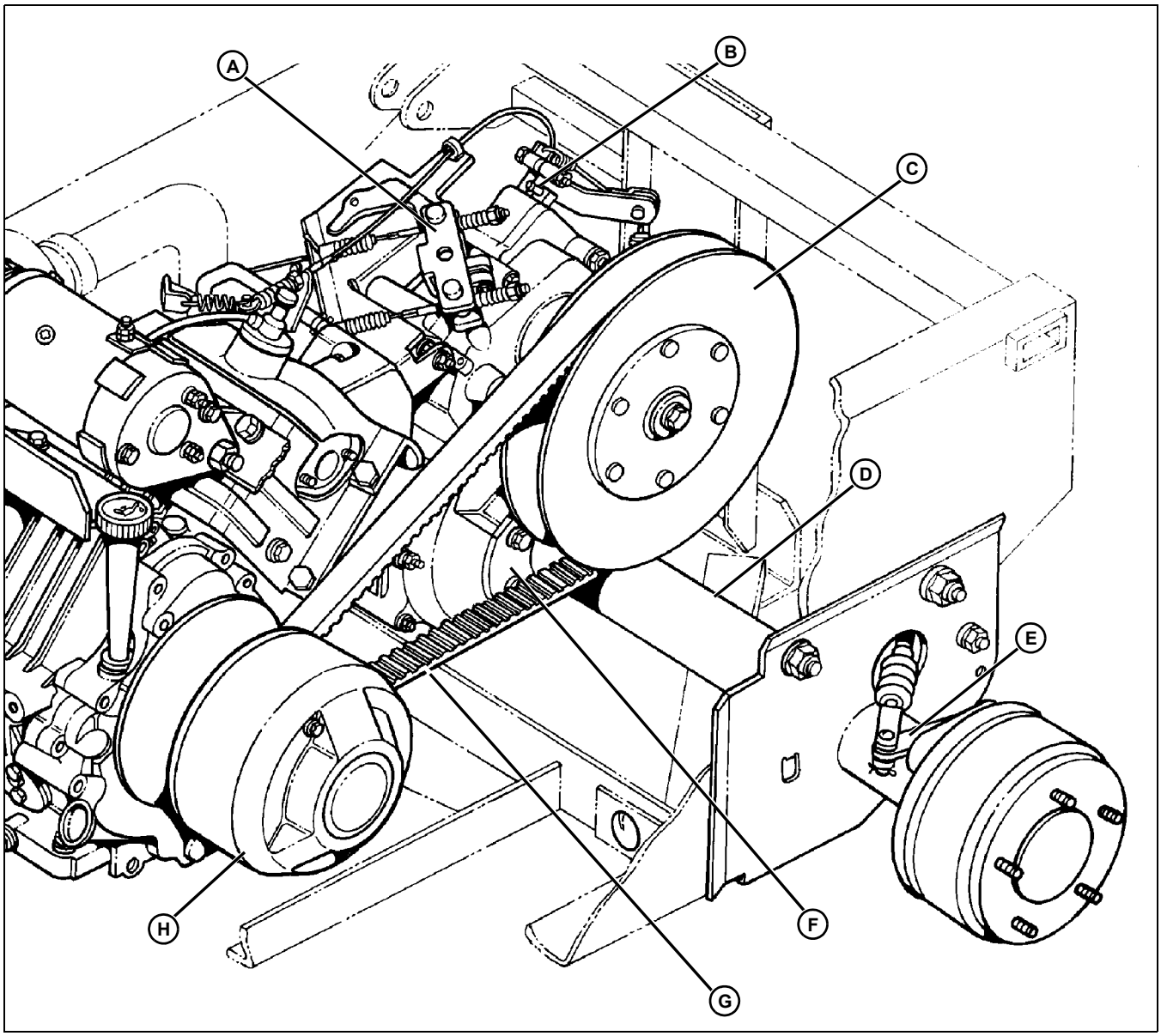
A - Governor Cable
B - Pedal to Transaxle Cable
C - Compression Spring
D - Shift Linkage
E - Reverse Cable
F - Shift Quadrant
G - Shift Lever

H - Pedal
I - Forward Cable
J - Neutral Lock (Alignment Hole)

Drive Components



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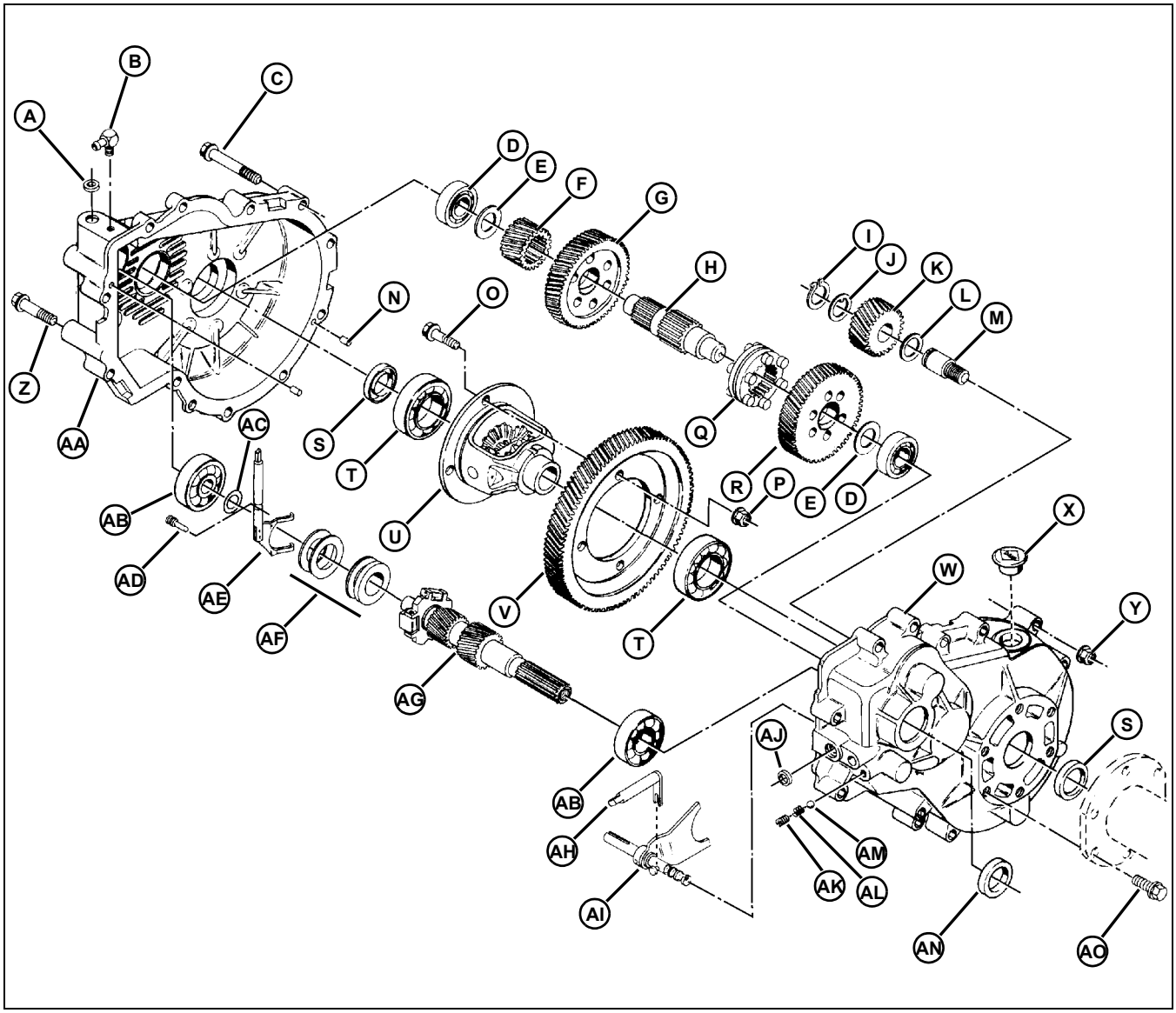
A - Shift Linkage
B - Governor Shaft
C - Secondary Clutch
D - Axle Housing
E - Brake Arm
F - Transaxle
G - Drive Belt
H - Primary Clutch

Transaxle Components



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A - Seal, Governor Shaft**
B - Fitting, 90° Elbow
C - Screw, Flange Head (Long)
D - Bearing
E - Washer
F - Gear, Splined Pinion
G - Gear, Final Drive
H - Shaft, Drive Gears
I - C-Clip
J - Washer, Tabbed*
K - Gear, Reverse Idler
L - Washer*
M - Support Bearing
N - Pin, Alignment
O - Screw, Flange Head Socket
P - Nut, Flange Head
Q - Lock Collar Assembly
R - Gear, Final Drive
S - Seal, Oil
T - Bearing
U - Differential Assembly
V - Gear, Ring
W - Transaxle Housing, LH
X - Plug, Rubber
Y - Nut, Lock
Z - Screw, Flange Head (Short)
AA- Transaxle Housing RH
AB- Bearing, Input Shaft
AC- Shim(s)
AD- Screw, Retaining**
AE- Governor Shaft Assembly**

AF- Actuating Sleeve Assembly

AG- Input Shaft and Governor (Backing Plate) Assembly

AH- Rod, Shift Assembly

AI - Lock Fork Assembly

AJ- Seal, Actuator Shaft

AK- Set Screw***

AL- Spring***

AM- Ball Bearing***

AN- Seal, Input Shaft

AO- Screw, Flange Head

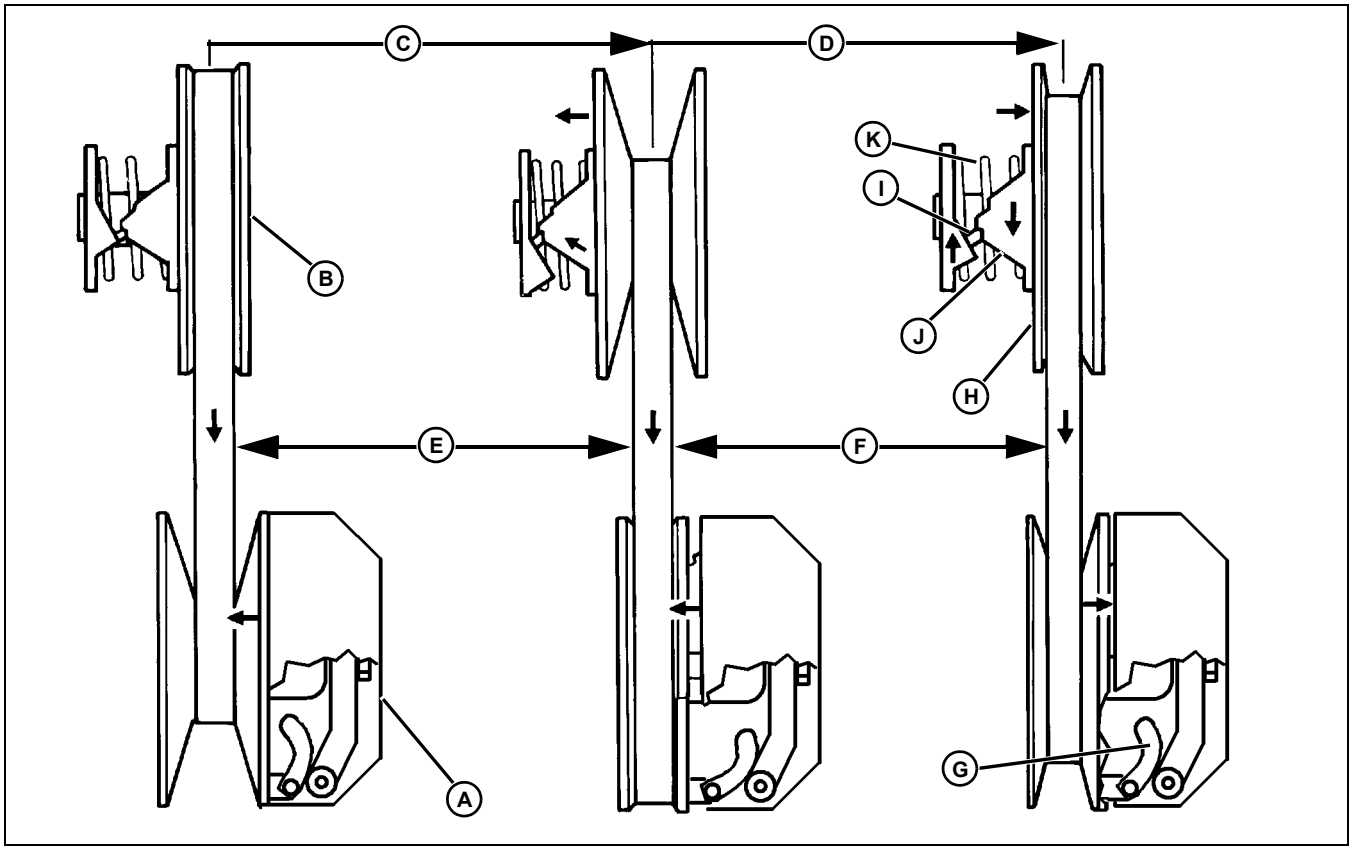
* Included in Thrust Washer Kit

** Included in Governor Actuator Kit

*** Included in Detent Kit

Theory of Operation

Clutch Operation



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Theory of Operation:

The variable clutch system is speed and load sensitive. The primary (A) and secondary (B) clutches work together, automatically up-shifting (C) and back-shifting (D). This shifting changes the ratio between the clutches, allowing the engine to operate at optimum efficiency, at the peak of its power curve.

The primary clutch is engine speed sensitive, and is mounted on the engine crankshaft. It operates on the principle of centrifugal force. The secondary clutch, mounted on the transaxle input shaft, is load sensitive to the rear drive wheels.

Engagement RPM, Minimum Load, Low Output Speed (E):

Primary clutch sheaves are moving closer together, just starting to move drive belt. Drive belt is running at the top of secondary clutch. A high ratio between the clutches exist, similar to a low gear, as long as there is a minimum load.

High Engine RPM, Light Load, High Output Speed (F):

As engine speed increases, centrifugal forces of the flyweights (G) force the primary clutch to up-shift, moving the drive belt to outer pulley diameter, overcoming secondary clutch spring. Drive belt then is pulled deep in secondary clutch giving a low ratio, similar to a high gear.

High Engine RPM, Increasing Load, Lower Output Speed:

Back-shifting occurs as a load is encountered, such as a hill or soft terrain. The stationary side of the secondary clutch resists forward movement of the wheels, at the same time, torque from the drive belt moves the moveable sheave (H) up the ramp. The ramp buttons (I), ramp (J), and spring (K) forces the belt to the outside diameter of the secondary clutch, and overcomes centrifugal forces of the primary clutch causing the back-shifting.

Transaxle Component Location and Operation

Function:

The transaxle provides:

- a means for shifting into forward and reverse;
- differential action between axles for turning.

Neutral (LOCKED IN Position):

When locked into neutral (see Transaxle Neutral Lock below) the shift lever centers the shift collar between the forward drive gear, and reverse drive gear, so they are not engaged. The input shaft rotates freely, not transferring power to the reduction gear shaft.

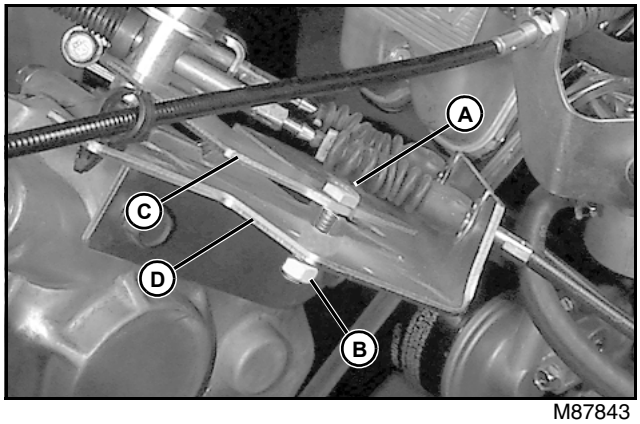
Forward Power Flow:

When shifted into the forward position the shift collar engages the forward drive gear. Power is transmitted through the reduction gear shaft that is in constant mesh with the differential gear. The differential gear and housing rotate and transfer power through the bevel pinion and side gears to the axles.

Reverse Power Flow:

When shifted into reverse, the shift collar engages the reverse drive gear, that transmits power through the reduction gear shaft that is in constant mesh with the differential gear. Power is then transferred through the differential to the axle.

Transaxle Neutral Lock



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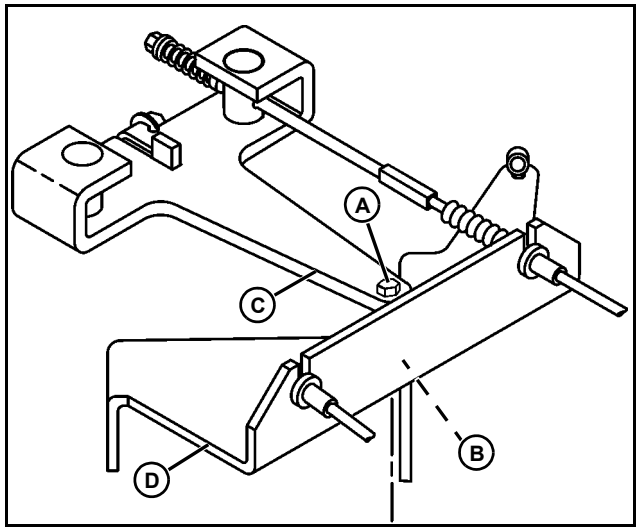
Early Models



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Late Models

There is NO Neutral Position on the shift lever. To LOCK transaxle in NEUTRAL a 6 mm bolt (A) and nut (B) or 1/4” bolt and nut are used in the shift linkage (C) located on top of the transaxle. For testing purposes, or towing, a 6 mm or 1/4” bolt is inserted through the shift linkage, an added nut and the shift linkage bracket (D). The nut prevents shearing pressure from moving the bolt away from a vertical position.

DO NOT tow vehicle without installing 6 mm bolt and nut.

Diagnostics

Drive System Diagnosis

Test Conditions:

- Front wheels blocked
- Rear wheels jacked off floor
- Engine OFF

System: Drive Train

(1) Is the drive belt in good condition?

Yes - Go to next step.

No - Replace drive belt.

(2) Do the rear axles rotate smoothly and quietly with no free play in axles, bearings or housings?

Yes - Go to next step.

No - Check axles and housings. Check axle couplers.

(3) Are the brakes dragging?

Yes - Adjust brakes. See “Brake Adjustment” on page 167in the Brake section.

No - Go to next step.

Test Conditions:

- Front wheels blocked
- Rear wheels jacked off floor
- Engine running

System: Drive Train

(1) Does the transaxle shift smoothly into forward and reverse and stay in gear during operation?

Yes - Go to next step.

No - Shut off engine and allow engine to cool. Adjust shift linkage. See “Transaxle Shift Cable Adjustment” on page 123. Retest.

Test Conditions:

- Wheels blocked
- Transaxle LOCKED in Neutral. See “Transaxle Neutral Lock” on page 121.
- Engine running

System: Drive Train

(1) Is the primary clutch disengaged with the engine running?

Yes - Go to next step.

No - Check engine idle rpm. Adjust idle to specification if needed. If engine rpm is to specification, repair or replace clutch.

Test Conditions:

- Wheels blocked
- Transaxle LOCKED in Neutral. See “Transaxle Neutral Lock” on page 121.
- Engine running
- Accelerate engine to 1600 rpm

System: Drive Train

(1) Does the primary clutch engage drive belt at 600 - 700 engine rpm?

Yes - Go to next step.

No - Check drive belt, replace as necessary. Repair or replace primary clutch.

Test Conditions:

- Wheels blocked
- Transaxle LOCKED in Neutral. See “Transaxle Neutral Lock” on page 121.
- Engine running at fast idle

System: Drive Train

(1) Does the primary clutch movable sheave move toward the stationary sheave?

Yes - Go to next step.

No - Repair or replace primary clutch.

(2) Do the secondary clutch sheaves separate?

Yes - Go to next step.

No - Repair or replace secondary clutch.

(3) With the secondary clutch fully up-shifted, do the primary clutch sheaves close completely? Note: the drive belt will not ride at the top of the primary clutch sheaves when they are fully closed.

Yes - End of tests.

System: Drive Train

No - Check center distance between clutches. See “Check/Adjust Clutch Center Distance” on page 34 in the Engine section. Repair or replace drive and/or secondary clutches.

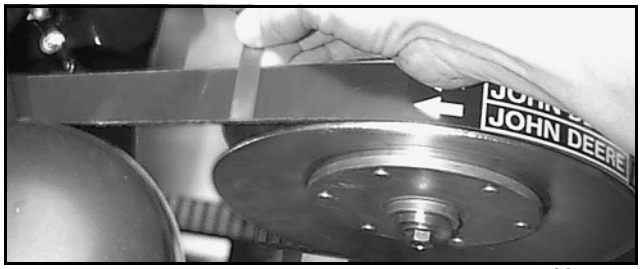
Tests and Adjustments

Drive Belt Check

Reason:

To check drive belt wear and condition of drive belt.

Procedure:



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1. Measure drive belt width. Drive belt must not be less than **27 mm (1-1/16 in.).**

2. Check drive belt condition. Drive belt must not be cracked. Some amount of glazing is normal.

Results:

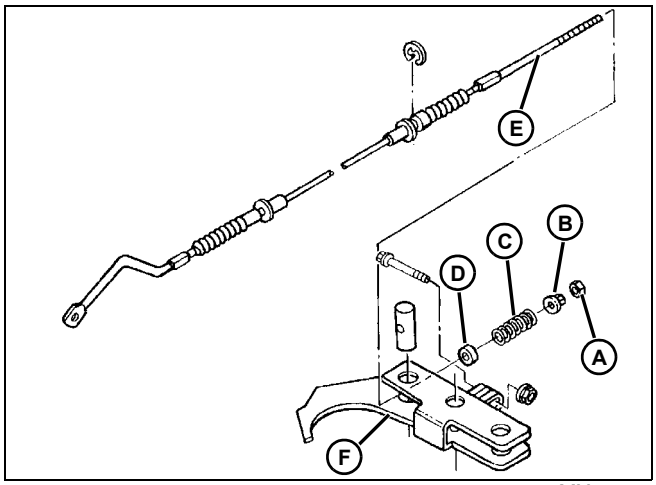
- If drive belt less than specification, replace.
- If drive belt is within specification, and there is a performance complaint, check primary clutch and secondary clutch. See “Drive System Diagnosis” on page 122.

Transaxle Shift Cable Adjustment

Reason:

To insure both forward and reverse gears will be completely engaged.

Procedure:



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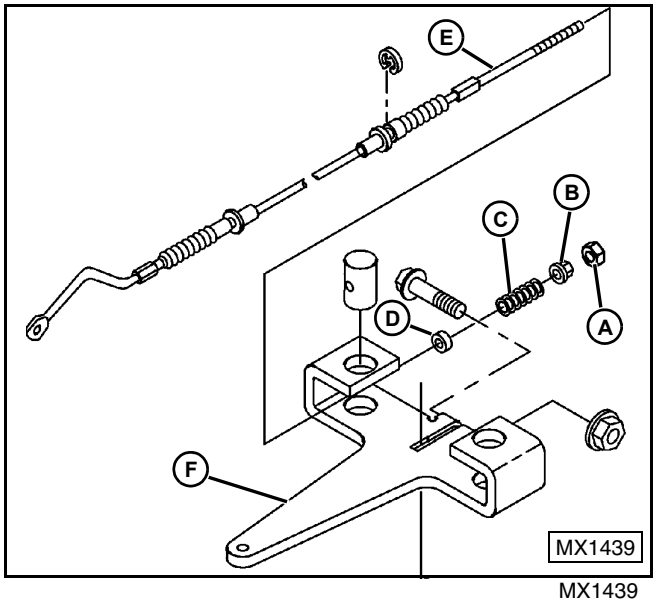

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1. Remove jam nut (A), nut (B), and install new springs (C) on shift cable rods (E) against original spacer (D). Install nut (B) onto first few threads of rod.

2. Push shift lever in operator’s station down into forward position.

NOTE: To assure that the gears are NOT engaged while holding the transaxle shift arm in the forward position, rotate the secondary clutch by hand until the transaxle pops into gear and then note the position of the transaxle shift arm. This will give a reference point to help determine the lever position when the gears are NOT aligned. Ensure that the NOT aligned position is

achieved.

3. Make sure that the shift arm (F) is rotated in the forward direction but that the gears are NOT engaged.

4. Hold the shift cable with clamps to avoid twisting while tightening the adjusting nut (B) until the forward spring is completely compressed. DO NOT continue to tighten the nut beyond the point where the operators station shift lever starts to move.

5. Rotate secondary clutch by hand until the shift arm pops into gear.

6. Move the shift lever to the reverse position, but gears are NOT engaged.

7. Hold the shift cable with clamps to avoid twisting while tightening the adjusting nut (A) until the reverse spring is completely compressed. DO NOT continue to tighten the nut beyond the point where the operators station shift lever starts to move.

8. To test that adjustment was done correctly, move shift lever into forward then rotate secondary clutch by hand and check that it pops in gear when aligned. Repeat for reverse.

9. Install jam nuts (A) on both rods, and tighten against adjusting nuts to lock in place.

Engagement And Full Up–Shift Check

Reason:

To determine if the engine and drive train are operating at peak performance.

CAUTION: Avoid Injury! Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

Conditions:

- Cargo box raised.
- Indoor testing - rear wheels off ground and vehicle supported safely on jack-stands.
- Front wheels blocked.
- Tachometer displaying engine speed.
- Engine throttle cable set correctly. See “Adjust Throttle Pedal Cable” on page 32 in Engine section.
- Drive belt width at or above minimum specification.
- Engine warmed up.

Procedure:

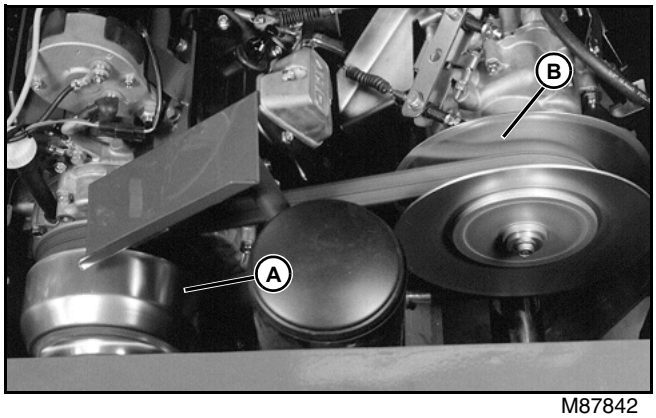
1. Place transaxle in forward gear with park brake off.

CAUTION: Avoid Injury! Rear wheels will rotate during test. Keep clear!

2. Block front wheels. Raise rear wheels slightly off ground with axles safely supported on jack stands.

3. Start engine.

4. Slowly increase engine rpm. Observe engine rpm when clutch starts to engage and move drive belt.



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5. Accelerate from idle to wide-open-throttle and back to idle several times. Watch drive belt for a smooth transition from bottom to top of primary clutch (A). Watch closely for any hesitation or engine surging.

6. When approaching idle, watch for a positive disengagement from drive belt.

NOTE: On clutches with some hours of use, system may not disengage as smoothly due to primary clutch spring taking a set and other wear in the drive components.

7. Shut off engine.

Results:

- Clutch should slowly start to engage and move drive belt between 600–700 rpm. Drive belt should be riding high in primary clutch (A) and low in secondary clutch (B).
- If clutch has harsh engagement, erratic transition, hesitation, or clutch noise (chirping); perform primary clutch lubrication. Check primary clutch for flyweights binding, pivot pins worn, flat spots on rollers or rollers sticking, and no groove in sheave. Repair or replace primary clutch.
- If engine is surging; check engine and governor performance.
- Smooth engagement and transition (up-shift), primary clutch is good. Go to “Secondary Clutch Back-Shifting Check”.

Secondary Clutch Back-Shifting Check

Reason:

To determine condition of secondary clutch and back-shifting performance.

Conditions:

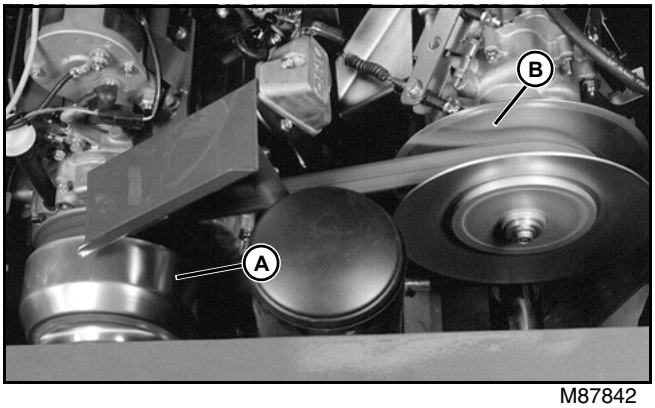
- Cargo box raised.
- Indoor testing - rear wheels off ground and vehicle supported safely on jack-stands.
- Front wheels chocked.
- Tachometer displaying engine speed.

Procedure:

CAUTION: Avoid Injury! Rear wheels will rotate during test. Keep clear!

1. Rear wheels off ground at least one in. and axles safely supported on jack stands. Block front wheels.
2. Transaxle in forward and park brake OFF. Start engine.
3. Operate engine at wide open throttle.

Results:



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- Engine and wheel speed should remain at constant speed. Drive belt should be riding high in primary clutch (A) and low in secondary clutch (B).

Procedure:

1. Momentarily load power train by slowly applying foot brake until back-shift is made.
2. Quickly observe engine speed, then release brake.

Results:

- Clutches should back-shift as brake is increased.
- Drive belt should not squeal or slip.
- If clutches do not back-shift completely (belt is at top of driven clutch), See “Secondary Clutch Spring Torsion Check” below.
- Check secondary clutch for complete up-shift. Check for load on drive train, such as an engaged brake or failed axle bearings. See “Brake Adjustment” on page 167 in the Brake section.
- Engine throttle should open 100%.

Secondary Clutch Spring Torsion Check

Reason:

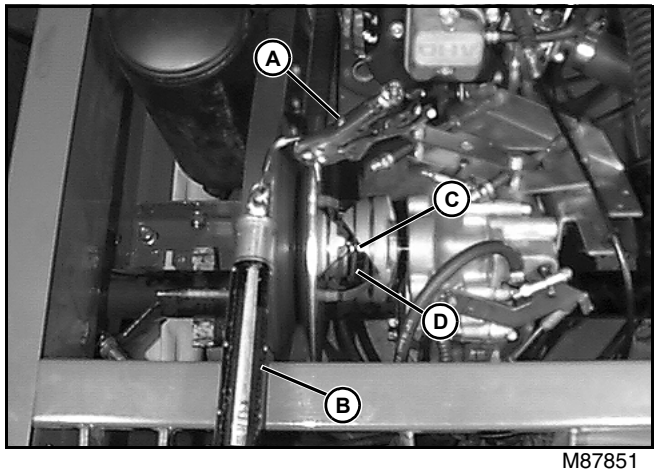
Verify condition and spring adjustment of secondary clutch.

Conditions:

- Transmission in gear.
- Park brake set.
- Drive belt removed.

Procedure:

IMPORTANT: Avoid damage! Do not damage sheave when clamping locking pliers. Use protective strips of brass or aluminum.



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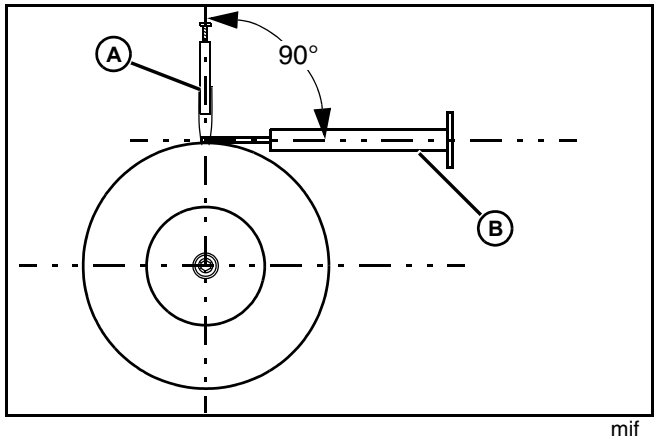

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1. Clamp locking pliers (A) to movable (inboard) sheave.

2. Using spring scale (B) hooked into jaw of locking pliers as close to sheave edge as possible, measure the force required to rotate the movable sheave. Force measurement is taken while returning cam to closed position right before buttons (C) touch.

Specification:

Standard Wrap Brown Spring . . . . . 22 - 20 N (5 - 9 lb)
Standard Wrap Green Spring . . . . 62 - 80 N (14 - 18 lb)

NOTE: Standard torsion spring (D) installation sets spring tab in hole "2" in moveable sheave half. Due to variations in the spring rate of the torsion spring, the spring tab may be factory set in holes "1" or "3".

Results:

- Spring force within specification; secondary clutch is OK.

Check engine rpm and performance.

- Spring force less than specification, up-shift will be faster and engine load greater, reducing engine rpm and response time. Check spring position, set spring tab in next higher number hole, (i.e. move from hole "2" to "3") and re-check spring force. Replace spring if still not within specifications.

- Spring force higher than specification, up-shift or acceleration will be slower, reducing engine load, increasing engine rpm and response time. Check spring position, set spring tab in next lower number hole, (i.e. move from hole "2" to "1") and recheck spring force. Replace spring if still not within specifications.

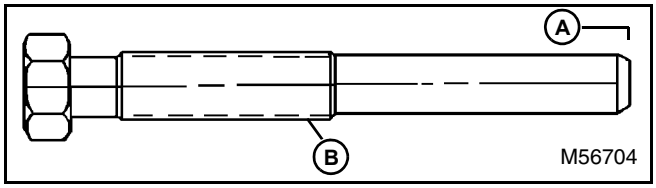
Repair

Primary Clutch Removal

IMPORTANT: Avoid damage! Lightly grease (A) end of puller (B) to help prevent puller wear. To prevent clutch thread damage, DO NOT thread bolt in any farther than necessary to remove clutch.

1. Remove black plug in front of rear tire on left side of frame.

2. Remove drive belt.



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3. Remove plastic plug from clutch cover.

4. Remove clutch mounting bolt and washers.

5. Use JDG813-1A Clutch Removal Tool (B). Thread puller into clutch and against crankshaft. Tighten until clutch pops free from crankshaft taper.

NOTE: An air impact wrench works well to remove the primary clutch.

6. Install clutch in reverse order of removal. Tighten clutch bolt to 40 ± 8 N•m (24 – 35 lb-ft).

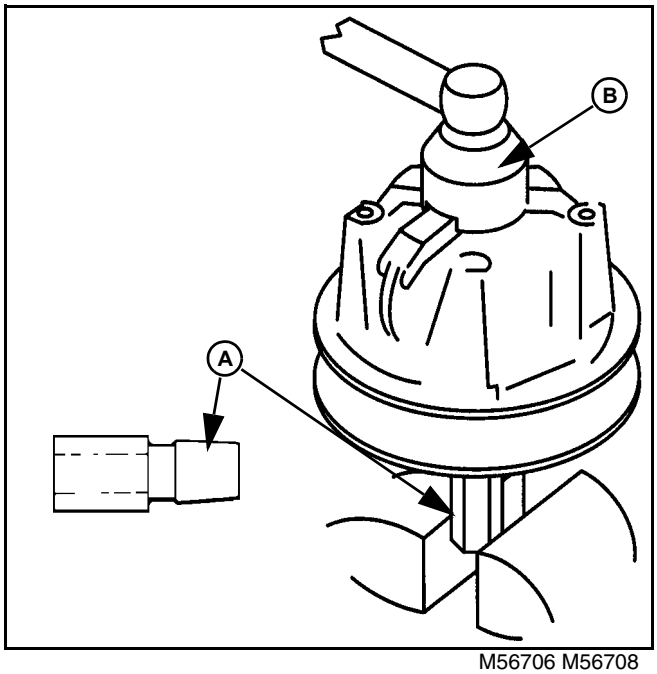
Primary Clutch Repair

1. Remove clutch cover bolts. Remove cover. (Cover should pop off; do not pry on cover.)

2. Install JDG813-3 Tapered Holding Tool (A) and retain it with a M10 X 1.5 X 150 mm hex-head bolt.

3. Place an index mark on the spider and movable sheave with black marker.

IMPORTANT: Avoid damage! Always use JDG813-2 Spanner Wrench (B) to remove spider. Unequal pressure on clutch towers could cause stress fractures or break them off. A medium strength thread lock is used on spider threads.



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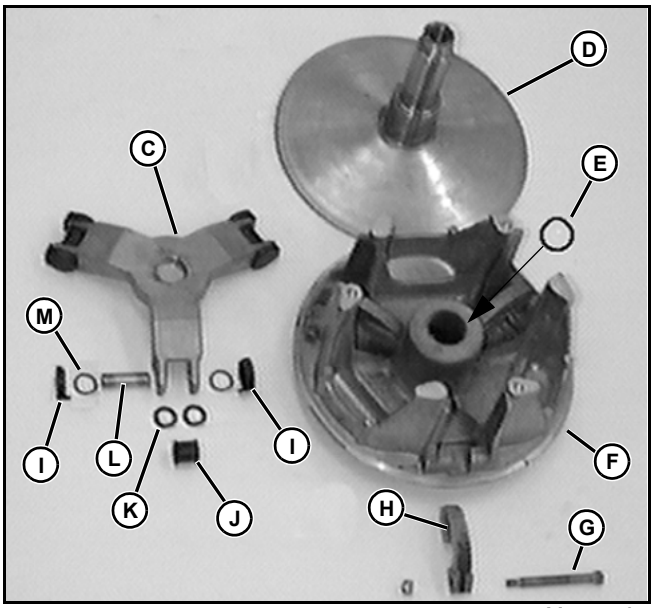
4. Use JDG813-2 Spanner Wrench (B) to remove spider.

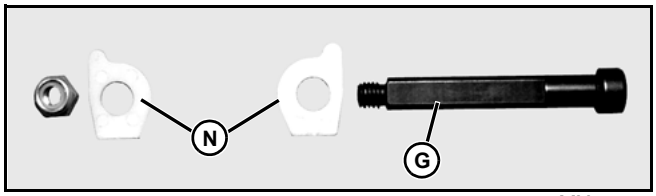
NOTE: If buttons (I) or rollers (J) are excessively worn, order button and roller replacement kit AM130222.



M56707A

5. Replace pivot bolt (G) if worn through plating. Check cam weight (H) for binding.

NOTE: 14.2 mm wide cam weights (H) have plastic thrust washers (N) inserted on each side of the cam weight.



MX1402

6. Check for flat spots or binding of spider rollers (J). Replace as necessary.

7. Use a medium strength thread lock on the spider threads during assembly. Tighten to 136 ± 13 N•m (100 ± 10 lb-ft).

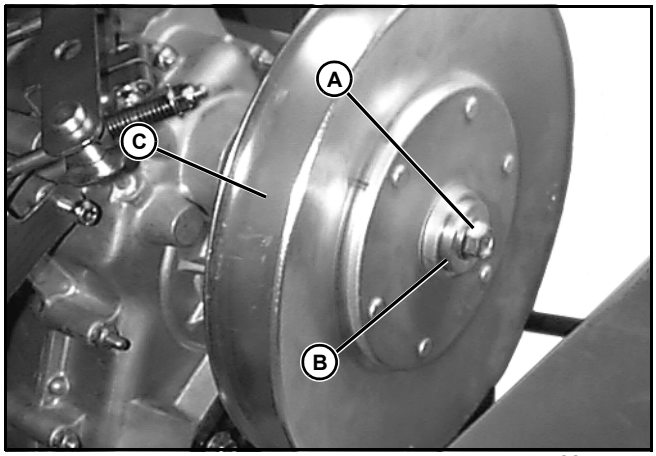
Secondary Clutch Removal and Installation

1. Remove drive belt.

2. Hold clutch with a strap wrench, and remove cap screw (A) and bushing (B).

3. Tap on inside of clutch with a rubber mallet.

4. Remove secondary clutch (C).



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5. Installation is done in the reverse order of removal.

- Apply Moly High Temperature EP Grease, or equivalent, to splines of transaxle input shaft.
- Install new mounting cap screw or apply Thread Lock and Sealer to original cap screw. New cap screw will have Thread Lock applied.
- Tighten cap screw to 75 ± 7 N•m (50 – 60 lb-ft).

Secondary Clutch Disassembly

1. Release tension on spring (A) by prying spring out of hole (B) in cam.

2. Remove set screw (C).

NOTE: Cam is press fit on shaft. Use a three-jaw puller and an impact wrench, at low speed, to remove cam from shaft.

Suggest:

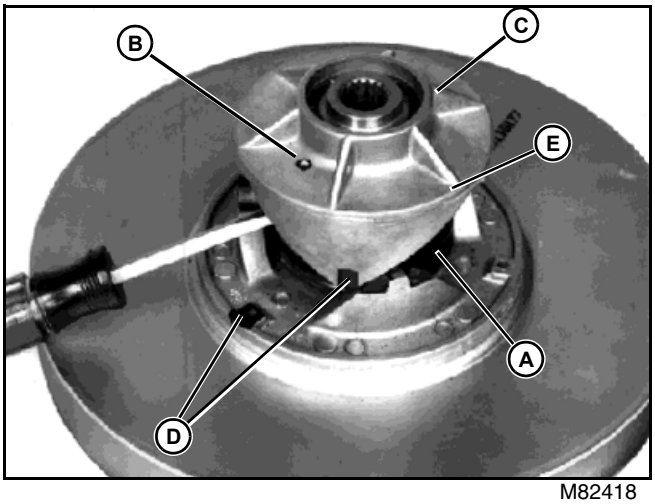
If the above button click is invalid.

Please download this document

first, and then click the above link

to download the complete manual.

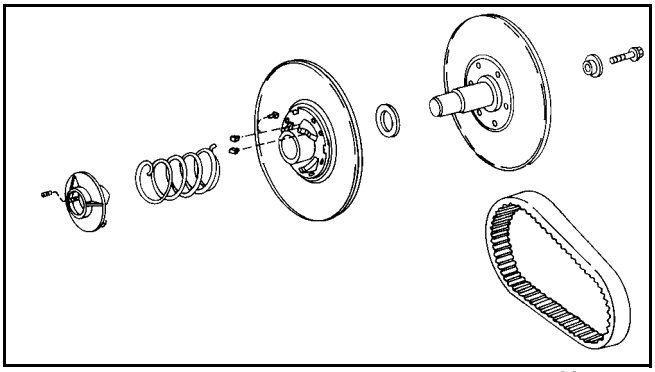
Thank you so much for reading



M82418

3. Place alignment marks (D) on cam (E) and movable sheave to aid in assembly.

CAUTION: Avoid Injury! Hold cam securely to prevent sudden spring release.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4. Remove cam using a three-jaw puller and impact wrench.

NOTE: Before removing spring, mark the hole on the sheave that the spring tab is installed in (i.e 1, 2, 3 or 4).

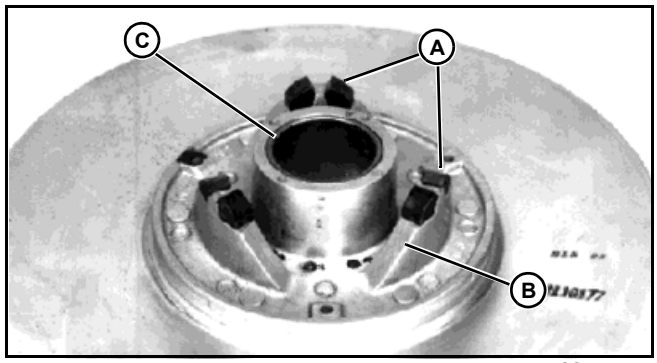
5. Remove spring, movable sheave and spacer from shaft.

NOTE: Ramp buttons are mounted with tabs on backside. Tabs are interference fit into holes on face of ramps. Remove buttons only if replacement is necessary.

Secondary Clutch Inspection

1. Inspect six ramp buttons (A) for wear or cracks. To replace buttons:

- Apply heat to movable sheave ramp (B) until button mounting tabs release from holes in ramp. Pull off buttons.
- If button mounting tabs break off inside holes in ramp, remove tabs using a drill bit.
- Install ramp button tabs into ramp holes. If tabs are loose, apply thread lock and sealer (medium strength) on tabs.

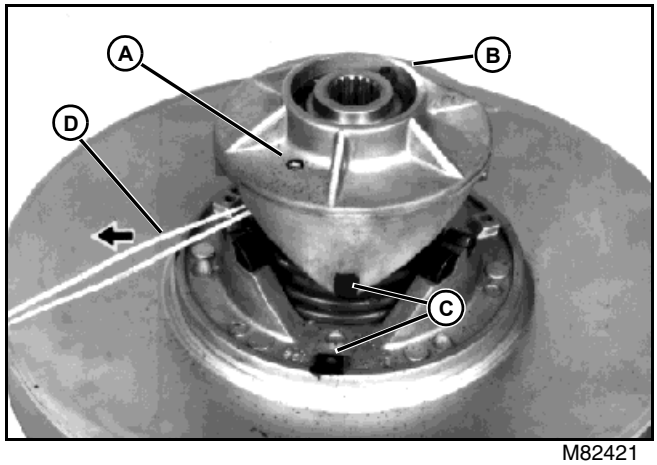


M82422

2. Inspect bushing (C) for wear or damage. Replace movable sheave if necessary.

Secondary Clutch Assembly

1. Install spacer and movable sheave on fixed sheave.



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2. Install spring. Insert spring tab into previously marked hole (A) in movable sheave. Place cam on spring.

3. Align set screw bores (B) and alignment marks (C). Press cam on shaft until it stops.

4. Apply thread lock and sealer (medium strength) to threads of set screw and install.

5. Pry spring away from cam and loop a piece of string (D) around top spring tab. Pull on string until tab seats in hole in cam.

6. Re-check spring torsion. See “Secondary Clutch Spring Torsion Check” on page 125.