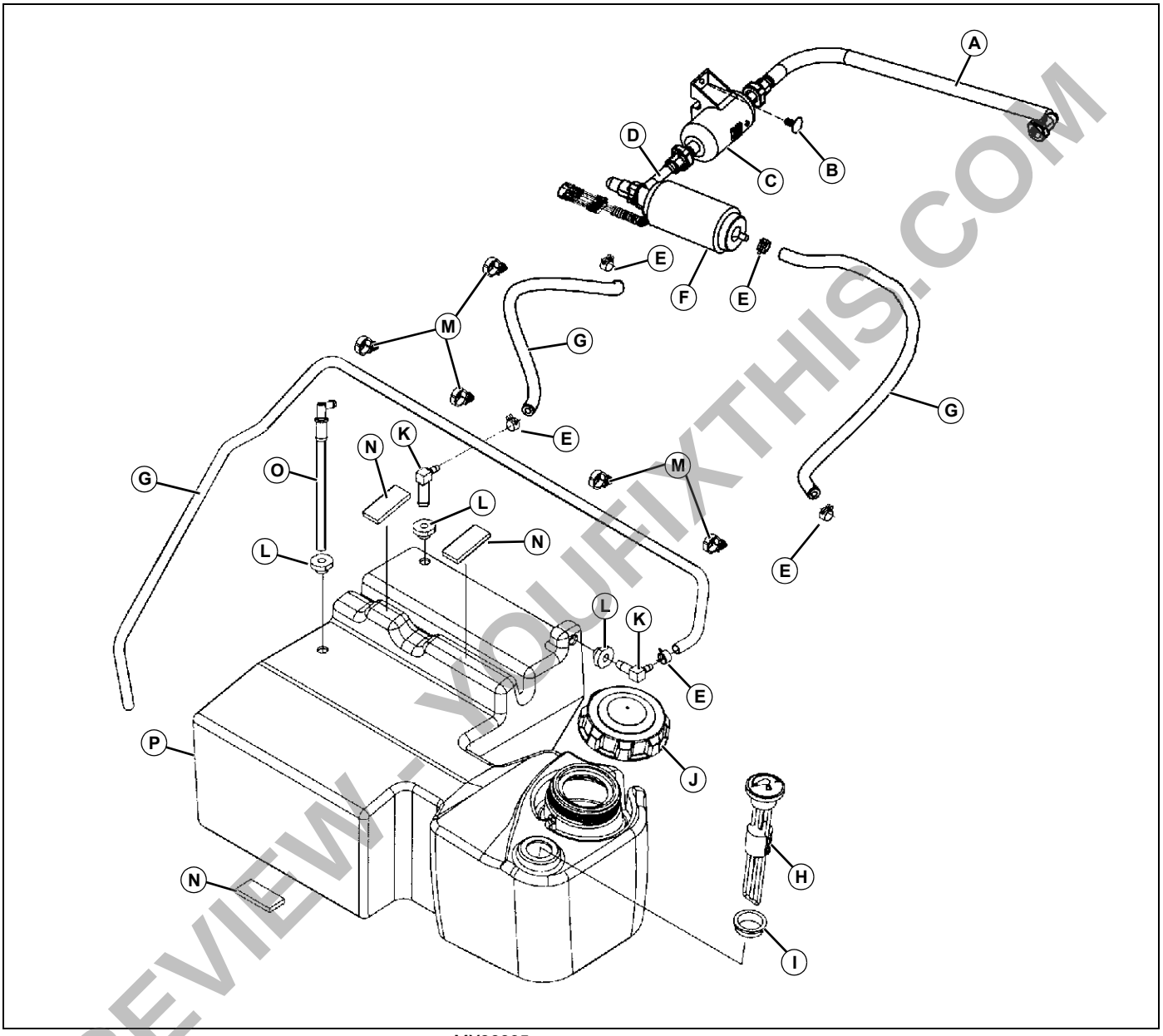
Component Location

Fuel System Components



MX38825

A- Fuel Line
B- Retainer
C- Fuel Filter
D- Fuel Line
E- Clamp
F- Fuel Pump
G- Hose (TY22551)
H- Fuel Gauge
I- Bushing
J- Filler Cap
K- Elbow Fitting
L- Bushing
M- Retainer
N- Pad
O- Pick Up Tube
P- Fuel Tank

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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

Engine - Gas

Electrical

Drive Train

Steering

Brakes

Miscellaneous

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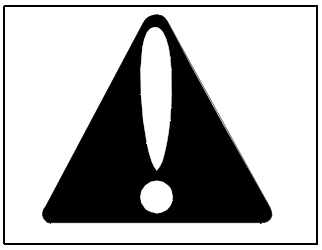
All information, illustrations and specifications in this manual are based on the latest information at the time of publication. The right is reserved to make changes at any time without notice.

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Safety

Recognize Safety Information



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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

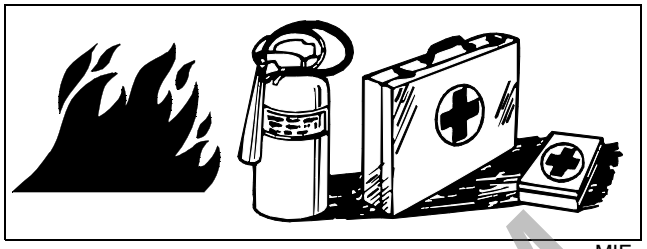


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Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

Handle Fluids Safely - Avoid Fires

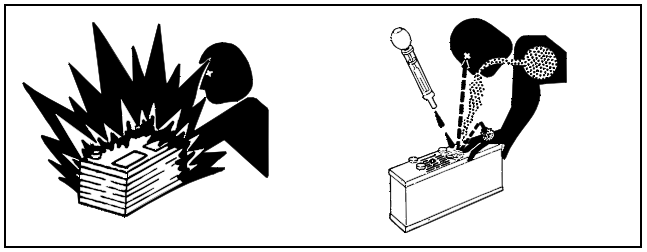
Be Prepared For Emergencies



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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.

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3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

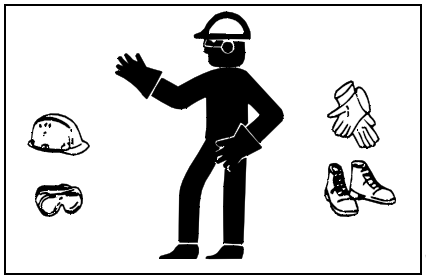
If you spill acid on yourself:

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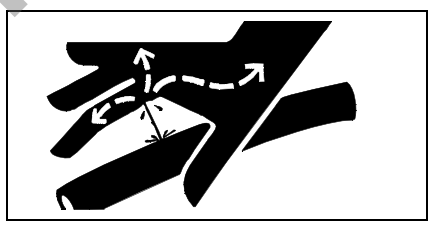
Wear close fitting clothing and safety equipment appropriate to the job.

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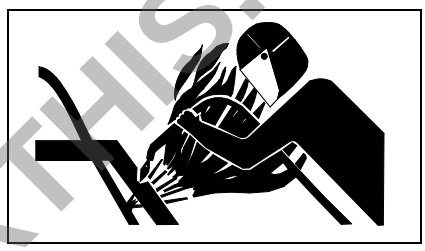
Escaping fluid under pressure can penetrate the skin causing serious injury.

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.

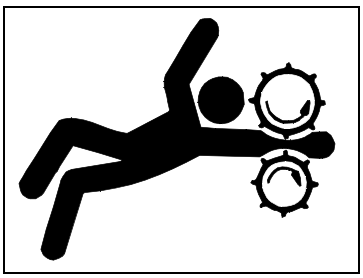
Avoid Heating Near Pressurized Fluid Lines



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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.

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Park Brake Switch Test

Reason:

To make sure the brake handle switch has continuity when lever is released.

This switch illuminates a light on the instrument panel and provides a visual indication to the operator that the park brake is locked.

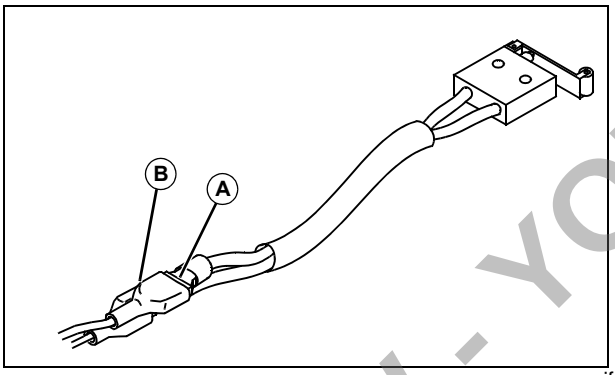
Equipment:

- Ohmmeter

Procedure:

1. Park machine safely. See “Park Machine Safely” in the Safety section.
2. Remove center console. See “Center Console Removal and Installation” on page 388 of Miscellaneous section.
3. Check continuity.

Results:



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- There should be continuity between terminals (A and B) when lever is released.
- There should not be continuity between terminals (A and B) when lever is locked.
- If continuity is not correct, replace the park brake handle/switch assembly.

Fuse Test

Reason:

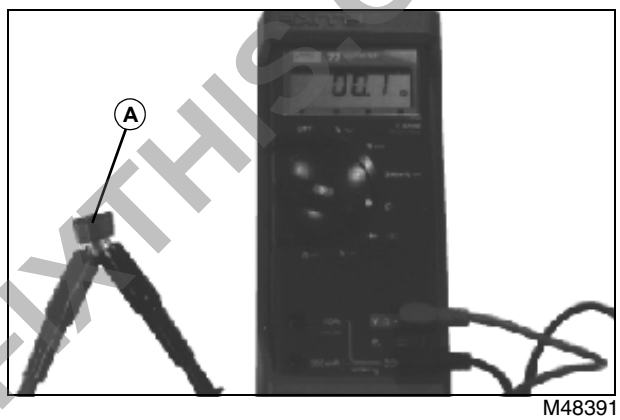
To verify that the fuse has continuity.

Equipment:

- Ohmmeter or continuity tester

Procedure:

1. Park machine safely. See “Park Machine Safely” in the Safety section.
2. Remove fuse from connector.



M48391

3. Check visually for broken filament (A).
4. Connect ohmmeter or continuity tester to each end of fuse.
5. Check for continuity.

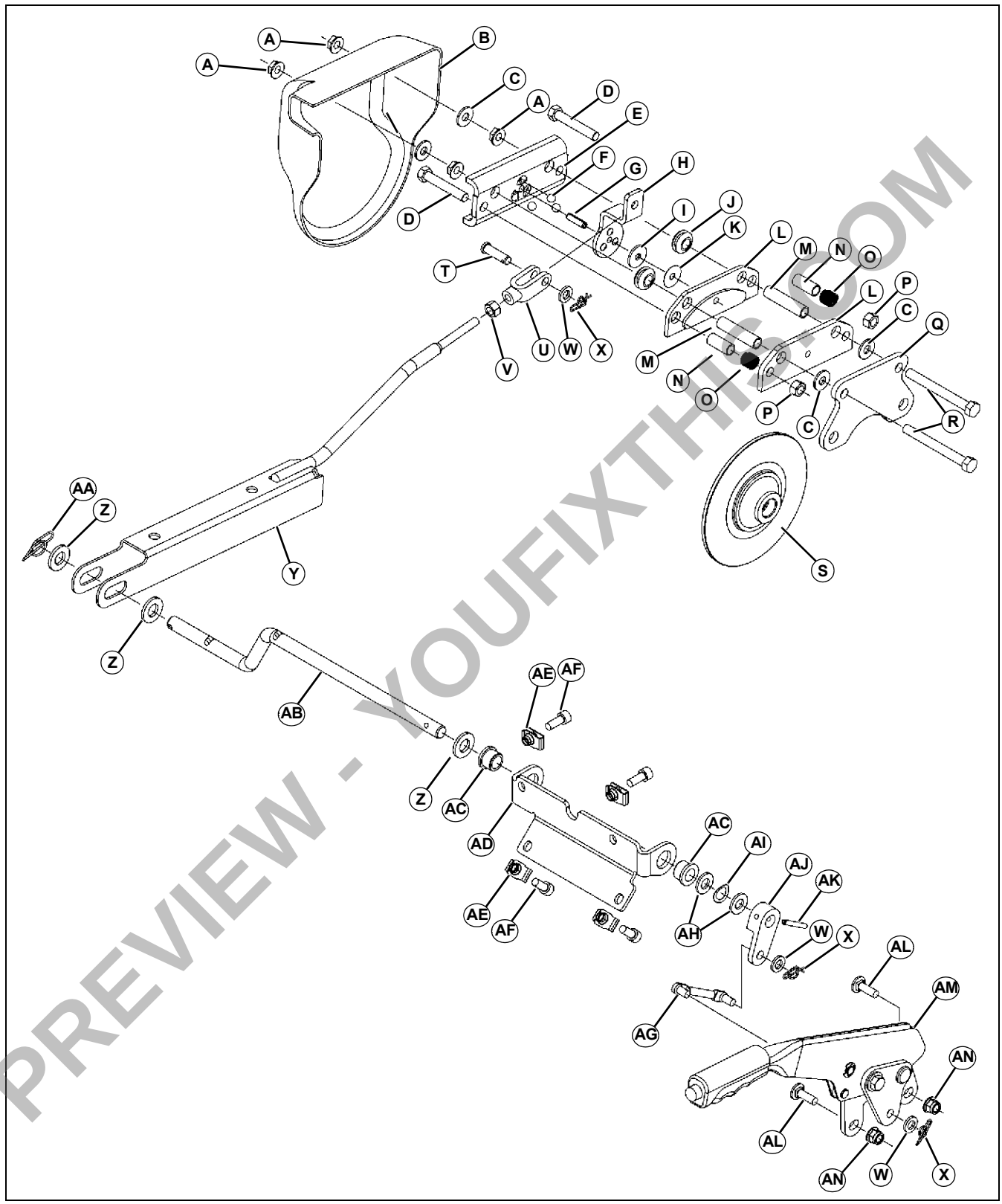
Results:

- If continuity is not indicated, replace fuse.

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Park Brake Components (SN 20001-)



MX40275

A- Nut (4 used)
B- Cover
C- Washer (4 used)
D- Bolt (2 used)
E- Plate
F- Balls (3 used)

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Theory of Operation

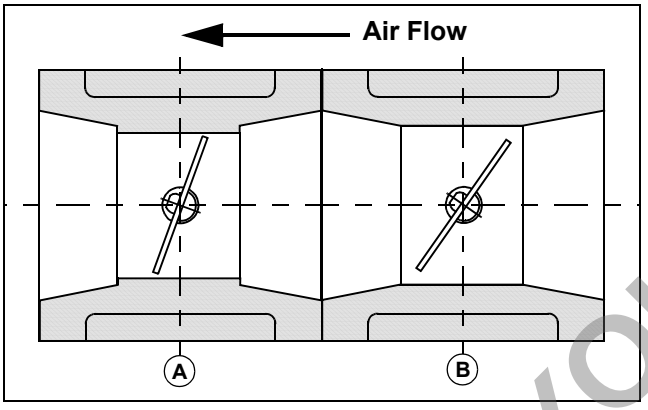
Throttle System Theory

Operation:

There are two throttle plates in the throttle assembly. The outer sub-throttle plate, on the air intake side, is controlled by the foot pedal connected by a throttle cable.

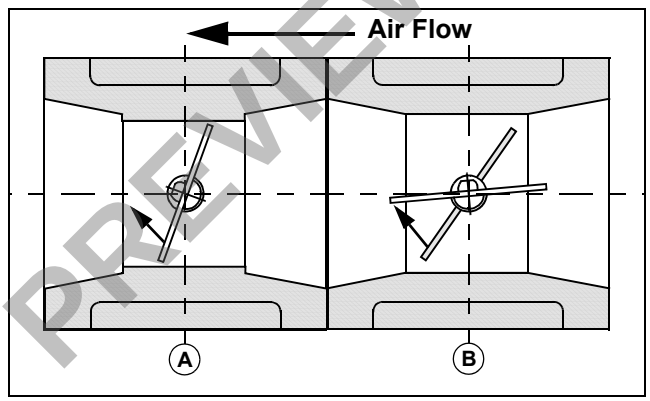
The electronic throttle plate, on the engine side, is controlled by the Electronic Control Unit (ECU) module. The ECU module rotates the throttle plate with a stepping motor. The position of the throttle plate is sensed with a dual element variable resistor. The dual element variable resistor varies a control voltage from the ECU module.

Slow Idle:



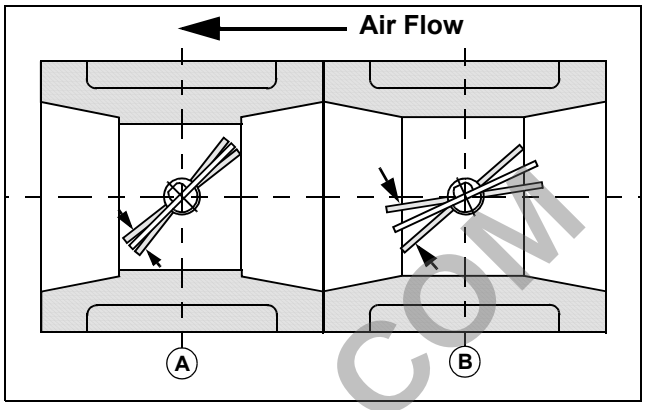
At slow idle the electronic throttle (A) is closed slightly more than the sub-throttle (B). The slow idle speed is controlled by the ECU module and electronic throttle.

Acceleration - Foot Pedal Pressed:



During acceleration the electronic throttle (A) moves slower than the sub-throttle (B) due to a slight delay in the control module, stepping motor and throttle position feedback loop. The engine speed and acceleration is controlled by the electronic throttle.

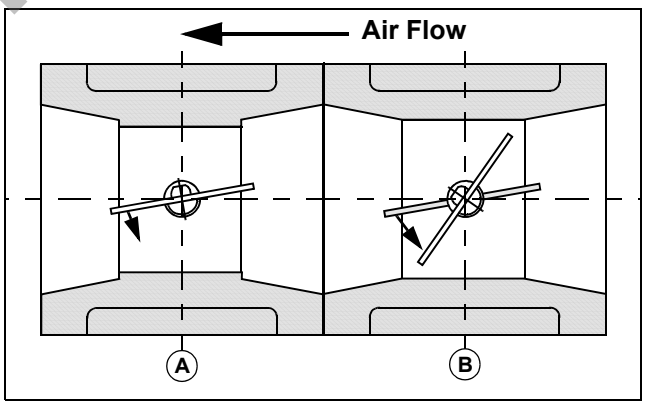
Operation on Rough Ground:



Because the engine speed is controlled by the electronic throttle (A), it is closed slightly more than the sub-throttle (B).

Rough ground causes the sub-throttle to fluctuate widely due to the operator's foot bouncing on the accelerator pedal. The ECU dampens the movements and the electronic throttle (A) fluctuates less than the sub throttle. This causes smoother engine operation over rough terrain.

Deceleration - Foot Pedal Released:



When the foot throttle is released the sub-throttle (B) closes more quickly than the electronic throttle (A).

Engine speed and ground speed are controlled by the sub-throttle for a while until the electronic throttle closes. Over-shooting the desired slower speed is eliminated.

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Auxiliary Alternator Kit

Charging Circuit Operation - Auxiliary Alternator

Function:

To maintain battery voltage between 12.4 and 13.2 volts.

Operating Conditions:

- The key switch in the run position.
- The must engine running for the charging system to operate.

Theory of Operation:

The charging system consists of the G2A auxiliary alternator with an integrated voltage regulator/rectifier. Charging output is controlled by an internal regulator/ rectifier.

With the key switch in the run position, battery sensing circuit current flows from battery positive terminal through the 201 and 202 Red wires, F6 fuse, 208 Red wire, S1 key switch, 420J, 420F, 425, 426 Yel wires, and connections to the auxiliary alternator internal voltage regulator/rectifier. This battery sensing circuit allows the voltage regulator/ rectifier to monitor battery voltage.

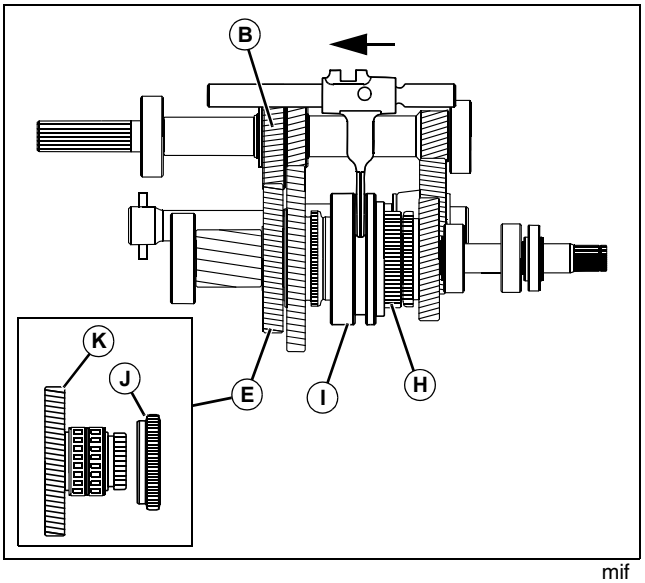
A rotating permanent magnet in the alternator induces AC current in the alternator stator coils. The AC current flows to the internal voltage regulator/rectifier. The voltage regulator/rectifier converts AC current to DC current needed to charge the battery.

If battery voltage is low, the regulator/rectifier allows DC current to flow to the battery to charge it through the battery charging circuit, 250 Red wire. When the battery is fully charged, the voltage regulator/rectifier stops current flow to the battery.

The ground circuit 190 Blk wire provides a path to ground for the internal voltage regulator/rectifier and G2A alternator.

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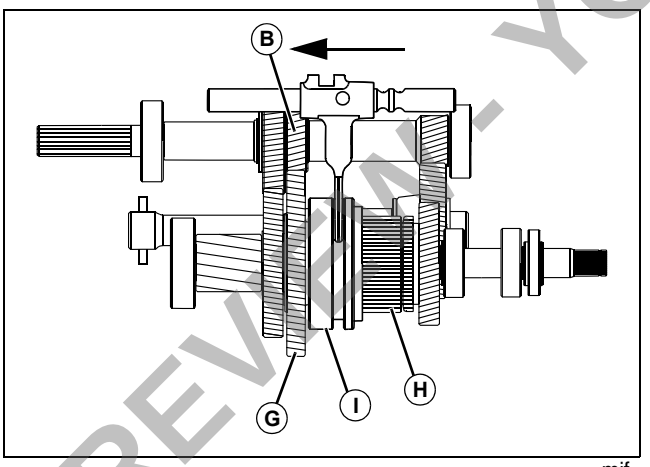
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Picture Note: Shown in High Forward

High Forward: In high forward the inside set of splines of the shift collar (I) engage the collar gear (H) to the forward high gear assembly (E). The shift collar engages the gear collar (J) which is splined to the gear (K). This is a set of gears (J and K) that separate to allow the removal and installation of the low speed gear and bearings to the hub of gear (K). Power is transferred from the input shaft (B) through the high speed gear set (E), shift collar (I) and collar gear (H) to the reduction shaft.

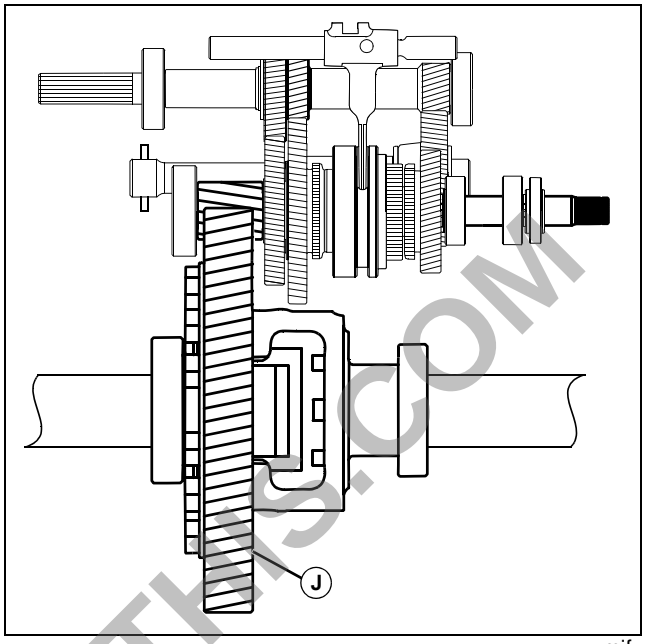


mif

Picture Note: Shown in Low Forward

Low Forward: In low forward the inside set of splines of the shift collar (I) engage the collar gear (H) to the forward low gear (G). Power is transferred from the input shaft (B) through the low speed gear (G), shift collar (I) and collar gear (H) to the reduction shaft.

The higher gear ratio produces a lower speed rotation of the reduction shaft.

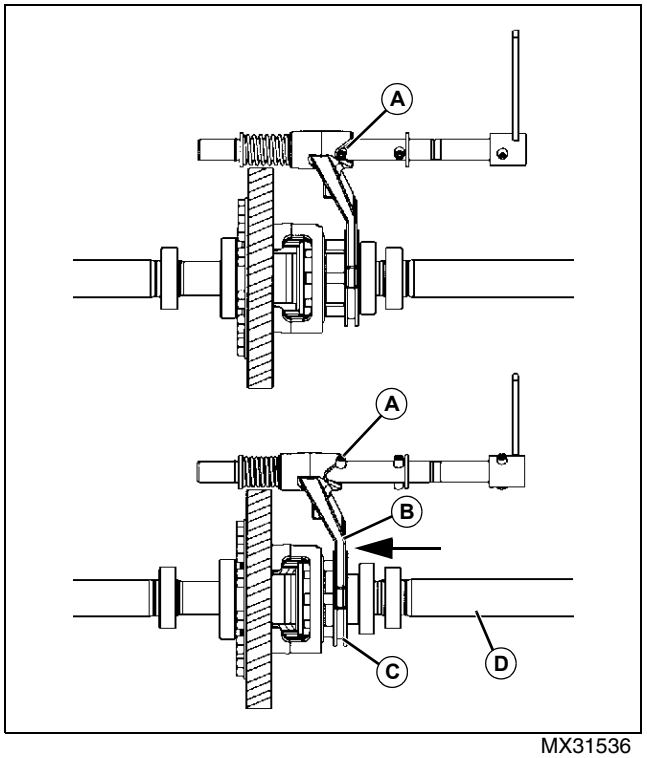


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The reduction shaft gears transfer power to the differential ring gear (J) and then to the axles.

Differential Lock:

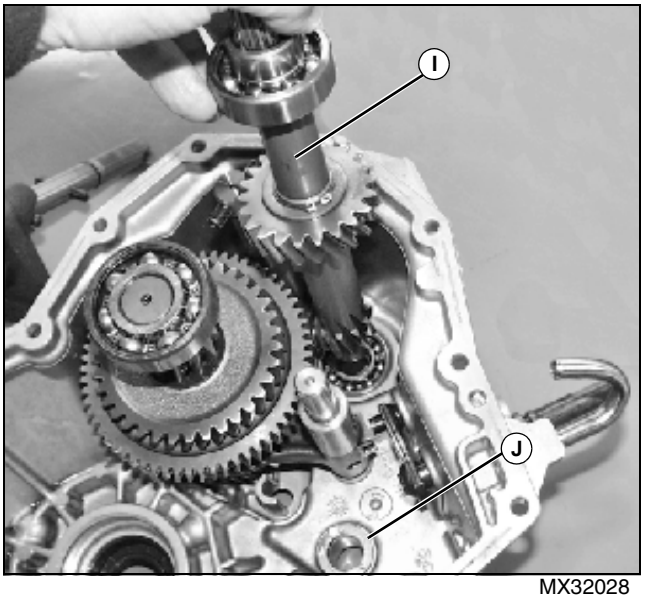
The rear wheels can be locked together by a fork shift differential. The differential is engaged by the operator station shift lever, or when the park brake lever is set. The differential is locked in the first 12 degrees of park brake lever movement, before the park brake is set.



MX31536

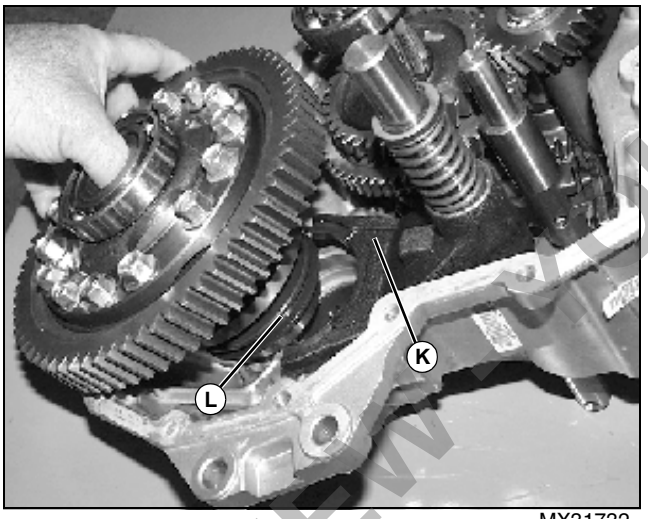
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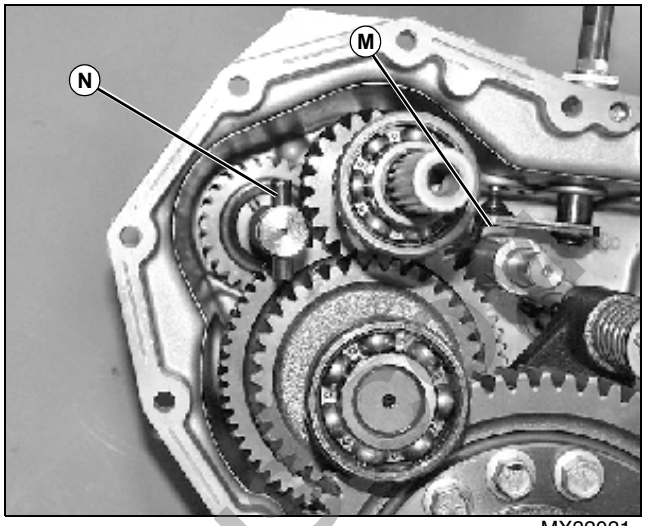
MX32028

5. Install input shaft (I). Install washer (J) if not already in place.



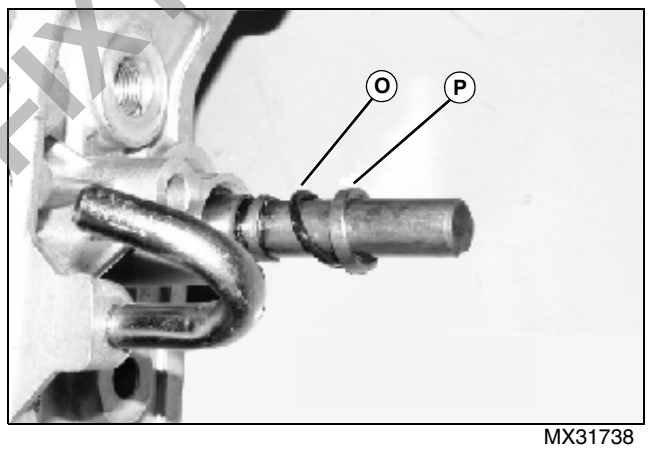
MX31732

6. Install differential lock fork and shaft (K) into case. Leave fork up far enough to engage fork into groove of differential lock collar (L). Slide fork shaft and differential down together until differential bearing is seated in bearing bore.



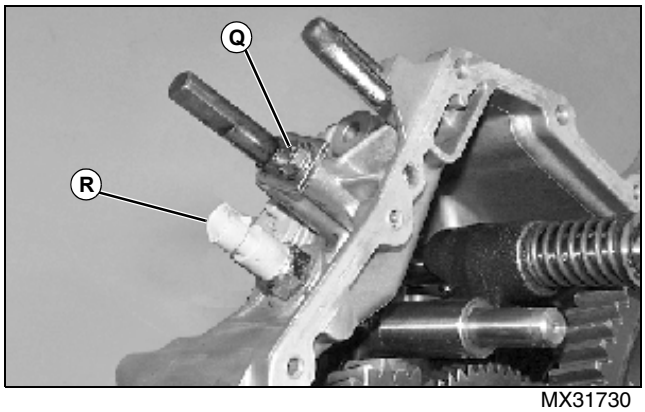
MX32031

7. Engage the shift arm into the slot in the shift fork (M). Position roll pin (N) in reverse idler shaft as shown so it will align with slot in other half of transmission case.



MX31738

8. Lubricate and install the O-ring (O) and spacer (P) into the recess in the transaxle case.



MX31730

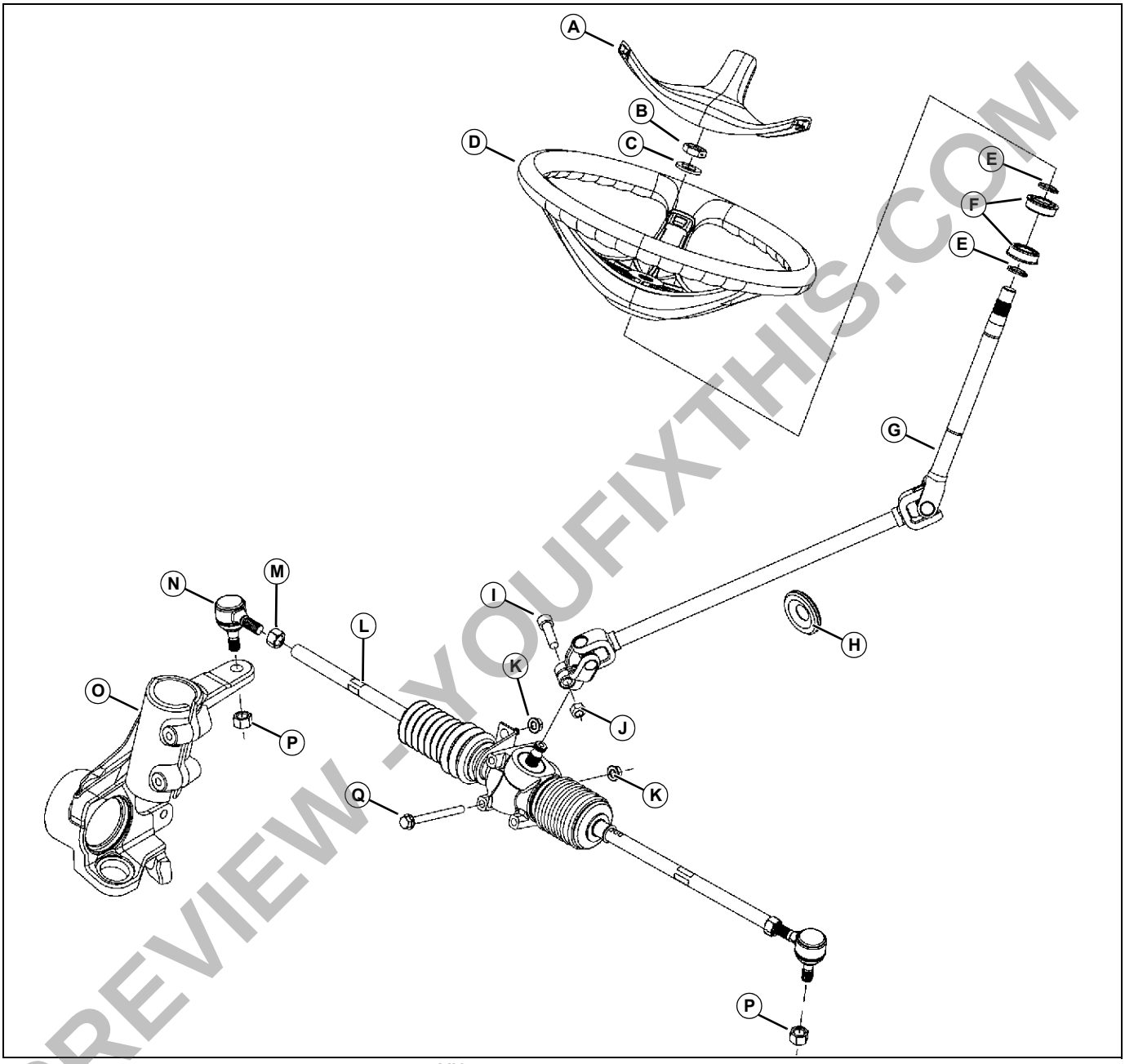
9. Install the keeper plate and cap screw (Q), and neutral switch (R).

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Component Location

Steering System



MX38921

A- Cover
B- Nut M16
C- Washer
D- Steering Wheel
E- Snap Ring
F- Bearing
G- Steering Shaft
H- Grommet
I- Screw M10 x 35
J- Lock Nut
K- Nut (5 used)
L- Steering Rack
M- Jam Nut
N- Tie Rod End
O- Knuckle
P- Lock Nut
Q- Screw M8 x 90 (3 used)

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Brake Pedal Travel Excessive

1. Is the brake fluid low?

Yes: Add fluid. See “Check Brake Fluid Level” on page 361.

No: Go to next step.

2. Do the master cylinder seal, brake lines or brake calipers leak?

Yes: Repair or replace components.

No: Go to next step.

3. Is there air in the brake system?

Yes: Bleed brake lines. See “Bleeding Brakes” on page 361 and “Bleeding Master Cylinder” on page 362.

No: Go to next step.

Brakes Pull Left or Right

1. Is the brake fluid low?

Yes: Add fluid. See “Check Brake Fluid Level” on page 361.

No: Go to next step.

2. Do the brake lines or brake calipers leak?

Yes: Repair or replace components.

No: Go to next step.

3. Is there air in the brake system?

Yes: Bleed brake lines. See “Bleeding Brakes” on page 361 and “Bleeding Master Cylinder” on page 362.

No: Go to next step.

Pedal Feels Hard With Little Travel

1. Is the master cylinder push rod adjusted correctly?

Yes: Adjust brake rod. See “Master Cylinder Rod Adjustment” on page 361.

No: Go to next step.

2. Is the brake pedal or pivot bent, broken or worn?

Yes: Repair or replace components as needed.

No: Go to next step.

Park Brake Will Not Engage or Hold

1. Is the park brake linkage incorrectly adjusted, stretched, worn or binding?

Yes: Adjust or replace brake linkage. See “Park Brake Adjustment” on page 363.

No: Go to next step.

2. Is the park brake lever or locking pawl bent, broken, binding or worn?

Yes: Repair or replace components as needed.

No: Go to next step.

3. Does the park brake mechanism have missing or worn components?

Yes: Replace components.

Park Brake Will Not Release

1. Is the park brake linkage incorrectly adjusted or binding?

Yes: Adjust or replace brake linkage. See “Park Brake Adjustment” on page 363.

No: Go to next step.

2. Is the park brake lever or locking pawl bent, broken, binding or worn?

Yes: Repair or replace components as needed.

No: Go to next step.

3. Are the park brake springs broken or missing?

Yes: Replace components.

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