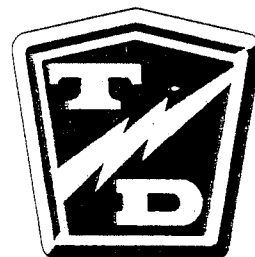


[®]
TAYLOR-DUNN



MANUAL MS-534-08

OPERATORS and MAINTENANCE MANUAL

This Manual Covers Serial

Numbers: 104650 & up

90400 & up

113227 & up

MODELS:

SS5-34 Serial #'s 104650 & Up

SS5-36 Serial #'s 90400 & Up

MX-600 Serial #'s 113227 & Up

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Mailing Address: P.O. Box 4240, Anaheim, California 92803

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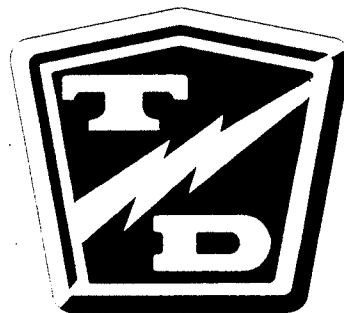
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Operator and Maintenance Manual

A guide to the operation and maintenance of Taylor-Dunn Vehicles



INTRODUCTION

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NOTES

INTRODUCTION

Your purchase...

Introduction

Your purchase of this vehicle shows that you believe in high quality products manufactured in the USA. Taylor-Dunn a leading manufacture of electric burden and personnel carriers since 1949; wants to be sure that you get the most out of your vehicle and that it provides years of reliable service. Please continue to read this manual and enjoy your high quality Taylor-Dunn vehicle.

What's contained
in this manual?

This manual is to serve as a guide for the service, repair and operation of the Taylor-Dunn vehicle, and is not intended as a training guide. Taylor-Dunn has made every effort to include as much information as possible about the operation and maintenance of it's vehicles.

Included in this manual are the:

- Vehicle Description
- Safety Rules and Guidelines
- Operational Information
- Operator Responsibilities
- Owner Responsibilities
- Control Operation and Location Information
- Maintenance and Troubleshooting Information
- Parts Lists of Standard Parts

Before servicing....

Before servicing, operating, training, performing maintenance on this or any Taylor-Dunn vehicle; read the entire manual and note all cautions, warnings and notes contained in this manual.



Who Should Read This Manual

This manual is intended for use by anyone who is going to operate, own, perform maintenance, service or order parts for a Taylor-Dunn vehicle. Each person should be familiar with the parts of this manual that apply to them.

Responsibilities

Of the Owner...

The owner of this or any Taylor-Dunn vehicle is responsible for the training of operators, overall maintenance and repairs of the vehicle. Owners should keep a record of conducted training and services or repairs performed on the vehicle. (OSHA Regulation, 29 CFR (Code of Federal Regulations) 1910.178 Powered Industrial Truck Operator Training.)

Of the Operator...

The operator is responsible for the safe operation of the vehicle; preoperational and operational checks on the vehicle, and reporting any problems to service and repair personnel.

Of the Service Personnel...

The service personnel are responsible for the service and maintenance of the vehicle, from lubrication to repair of damaged or worn parts. At no time should a service person allow any untrained personnel to service or repair this or any vehicle. For the purposes of training a qualified service person may oversee the repairs or services being made to a vehicle by an individual in training. At no time should an untrained individual be allowed to service or repair a vehicle without supervision. This manual is not a training guide.

INTRODUCTION

How To Use This Manual

This manual is organized into four main sections:

- Section 1: "Safety Rules and Operational Information," outlines the safety issues and operational issues of the vehicle. Including the location of controls and their operation; and the operational checks that are to be performed. Along with subjects that should be included in any operator and service training programs implemented by the owner.
- Section 2: "Maintenance and Repair," gives specific information on the maintenance and repair of the vehicle and a schedule for maintenance checks.
- Section 3: "Electrical and Charger Troubleshooting," gives the troubleshooting procedures for testing the electrical system, and battery charger.
- Section 4: "Parts," gives an illustrated view of various assemblies and a table listing the part numbers, and quantities needed.

On the next page you will find a list of conventions that are used throughout this manual.
(Conventions are symbols and/or words that are used to define warnings, cautions or notes.)

Conventions

Throughout this manual you will find the following notations:

WARNING

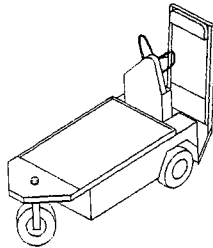
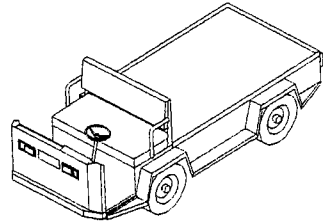
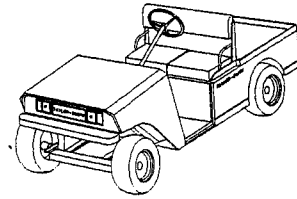
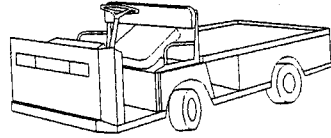
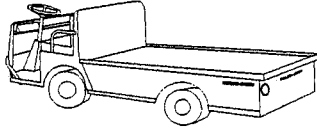
A shaded box with the word **Warning** on its left denotes a warning. A warning alerts you of a hazard that may cause injury to yourself or others. Be sure to follow any instructions contained within a warning and exercise extreme care while performing the task.

CAUTION

The symbol at the left and the bold text contained within a box denotes a caution and is used to inform you that property damage may occur. Be sure to exercise special care and follow any instructions contained within a caution.

NOTE 1: Alerts you to additional information about a subject. A number immediately after the word note is included for reference within each subject.

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Vehicle Description and Specifications

Describes the Vehicle and Its Standard Specifications

VEHICLE DESCRIPTION

Vehicle Description

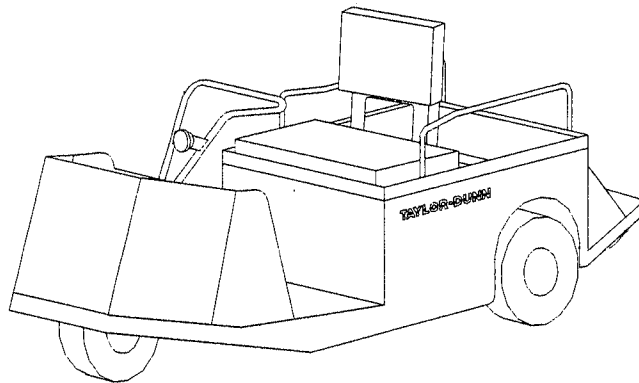
This manual applies to vehicles with the same model and serial numbers listed on the front cover.

This vehicle is designed for driving on smooth surfaces in and around industrial plants, nurseries, institutions, motels, mobile home parks and resorts. It is not to be driven on public highways.

The maximum operating speed of this vehicle is the speed that the vehicle may travel on a level surface with no load. Exceeding this speed, while traveling down an incline or on a level surface, may result in steering difficulty, motor damage and/or loss of control of the vehicle. That may result in injury and/or property damage. It is just as important that the vehicle not be towed faster than 5-mi/h.

This vehicle conforms to requirements for Type E vehicles as described in O.S.H.A. Standard Section 1910.178 (Powered Industrial Trucks) and with all applicable portions of the American National Standard for Personnel and Burden Carriers (ANSI B56.8), in effect at the time of manufacturing.

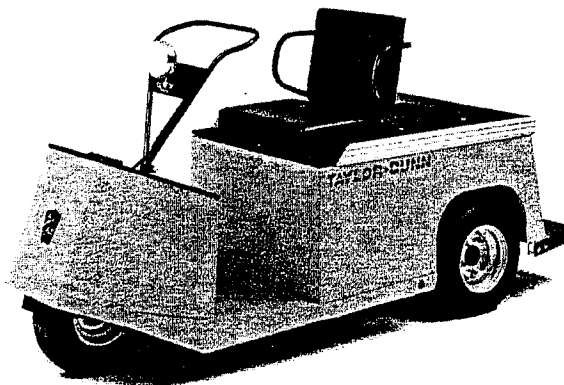
The model and serial number for this vehicle are imprinted on a decal located on the inner left side of the front cowl. The vehicle serial number is stamped in the frame, under the drivers seat to the right of the safety interlock switch on the MX-600, on the frame tube to the left of the motor on the SS5-34, and on the left frame rail under the seat on the SS5-36.



Taylor-Dunn Mfg. Standard Model SS5-36 shown. This is one of the vehicles described and covered by this manual.

Standard Specifications(SS5-34)

ITEM	SPECIFICATION
Standard Dimension	191.7L X 72.4W X 104.1H centimeters 75-1/2"L X 28-1/2"W X 41" H inches
Dry Weight	332.3 kg (Including Batteries) 713 lbs. Including Batteries
Turning Radius	190.5 centimeters 75" inches
Brakes	Drive Line Band Brake (Mechanical Standard)
Motor	24 Volts, 4.5 hp @ 935 rpm
Tires	4.80 X 8 Load Range B Pnuematic
Tire Presure	50 psi max.
Maximum Load	227 kg (On Level Surface) 500 lbs. (Including Driver and Optional Equip- ment)
Battery	Four 217 AH, 6 Volt
Charger	120V, 12Amp, 60hZ AC Input 24V, 25Amp DC Output
Gradeability	15-percent (empty) 5-percent (loaded)
Maximum Speed(Empty)	16-km/h 10-mi/h



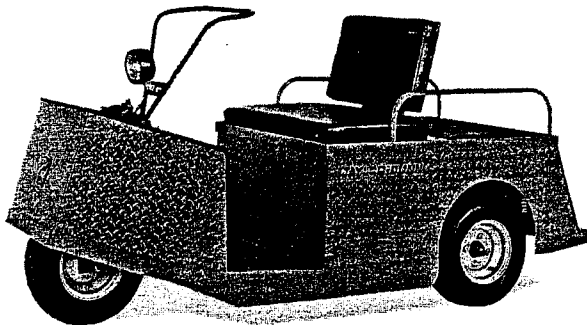
SS5-34

■ SS5-34

VEHICLE DESCRIPTION

Standard Specifications(SS5-36)

ITEM	SPECIFICATION
Standard Dimension	219.7L X 76.2W X 104.1H centimeters 86-1/2"L X 30"W X 41"H inches
Bed Size	19"L X 30"W inches
Dry Weight	352.3 kg (Including Batteries) 775 lbs. Including Batteries
Turning Radius	190.5 centimeters 75" inches
Brakes	2-Wheel Rear Drum (Mechanical Standard)
Motor	24 Volts, 4.5 hp @ 935 rpm
Tires	4.80 X 8 Load Range B Pnuematic
Tire Presure	50 psi max.
Maximum Load	227 kg (On Level Surface) 500 lbs (Including Driver and Optional Equip- ment)
Battery	Four 217 AH, 6 Volt
Charger	120V, 12Amp, 60hZ AC Input 24V, 25Amp DC Output
Gradeability	15-percent (empty) 5-percent (loaded)
Maximum Speed(Empty)	16-km/h 10-mi/h



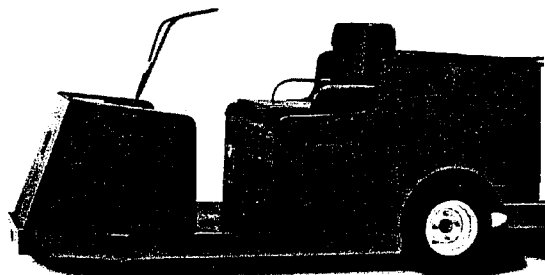
SS5-36

■ SS5-36



Standard Specifications(MX-600)

ITEM	SPECIFICATION
Standard Dimension	218L X 81.3W X 104H centimeters 86"L X 32"W X 41"H inches
Bed Size	86"L X 32"W X 41"H inches
Dry Weight	352.3 kg (Including Batteries) 775 lbs. Including Batteries
Turning Radius	205 centimeters 81" inches
Brakes	2-Wheel Rear Drum (Mechanical Standard)
Motor	24 Volts, 4.5 hp @ 935 rpm
Tires	4.80 X 8 Load Range B Pnuematic
Tire Presure	50 psi max.
Maximum Load	272 kg (On Level Surface) 600 lbs. (Including Driver and Optional Equip- ment)
Battery	Four 217 AH, 6 Volt
Charger	120V, 12Amp, 60hZ AC Input 24V, 25Amp DC Output
Gradeability	15-percent (empty) 5-percent (loaded)
Maximum Speed(Empty)	16-km/h 10-mi/h



MX-600

■ MX-600

VEHICLE DESCRIPTION

Taking Delivery of Your Vehicle

You should inspect your vehicle immediately after delivery; use the following guidelines to inspect your vehicle for obvious problems:

- Examine the contents of all packages and accessories that may have come in separate packages with the vehicle.
- Make sure everything listed on the packing slip is there.
- Inspect all components of the packages for signs of damage.
- Examine all visible wires and the vehicle for obvious signs of damage.
- Check that all wire connections, battery cables, etc., are secure.
- Check battery cells to be sure they are filled.
- Check the tire pressure, tightness of lug nuts and for signs of obvious damage or wear.
- Check the operation of each of the following controls. They should operate smoothly without sticking or requiring undue effort:
 - Accelerator Pedal
 - Brake Pedal
 - Forward/Reverse Selector Switch
 - Battery Disconnect Switch (Optional)
 - Key-Switch
 - Parking Brake
 - Steering Wheel
 - Horn
 - Lights



What To Do If You Find a Problem

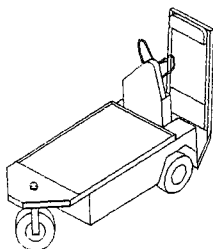
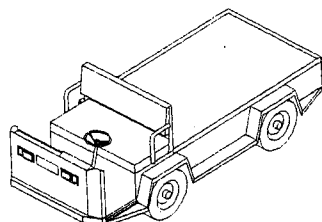
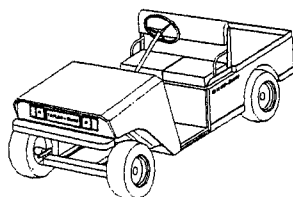
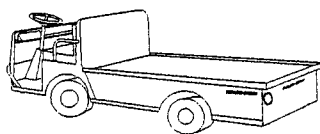
If there is a problem with the vehicle or any of the accessories that may have been shipped with the vehicle, file a claim with the carrier immediately. The claim must be filed within 48 hours of receiving the vehicle and the accessories. Forward a copy of the claim to your local Taylor-Dunn dealer.

The only personnel authorized to repair, modify or adjust any part of this or any Taylor-Dunn vehicle is a factory authorized service technician. All other personnel are expressly prohibited from working on, repairing, adjusting or modifying any part of this or any Taylor-Dunn vehicle.

⚠ WARNING

Do not attempt to modify, adjust or repair any part of this vehicle unless you are authorized to do so. Incorrect repairs may result in injury to yourself and others. Incorrect or unauthorized repairs will result in the invalidation of your warranty.

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Safety Rules and Operational Information

Safety rules, guidelines, control functions, operating guidelines and storage information

SAFETY RULES

Safety Rules and Guidelines

Responsibilities

It is the responsibility of the owner to ensure that the operator understands the various controls and safe operation of this vehicle. As well as, obeying the following safety rules and guidelines:

WARNING

This vehicle was not designed to be driven on public highways. The size, speed, and maneuverability of this vehicle would cause a serious traffic hazard on a public highway. Driving this vehicle on public highways can result in serious injury or even death.

CAUTION

This vehicle may overturn if turned sharply, while driving at high speeds on inclines or level surfaces.

Safety Rules

This vehicle is designed to be driven over smooth surfaces in and around places such as warehouses, nurseries, motels, parks, and resorts. Operators should read the safety rules, and guidelines below, and on the facing page; before operating this vehicle:

- Do not drive this vehicle unless you are a qualified and trained operator.
- Keep all body parts (head, arms, and legs), inside the vehicle at all times.
- Drive slowly when making turns especially if the ground is wet, slippery or when driving on an incline.
- Drive only on level surfaces or on inclines of no more than 10-percent (5.6-degrees).
- Do not drive over loose objects, holes, or bumps.
- Observe all traffic regulations and speed limits.
- Maintain a safe distance from all objects.
- Keep the vehicle under control at all times.
- Yield the right of way to pedestrians, and all emergency vehicles.
- Do not overtake or attempt to pass another vehicle at intersections, blind spots, or other dangerous locations.
- Keep a clear view ahead all times.

SAFETY RULES

Driver Training Program Guidelines

The owner of this vehicle is responsible for conducting an "Operator Training Program," for all those personnel that will be operating this vehicle. The program shall not be condensed for those claiming to have previous vehicle operation experience.

NOTE 1: Successful completion of the "Operator Training Program" shall be required for all personnel that will operate this vehicle.

The "Operator Training Program" shall include the following:

- Operation of the vehicle under normal circumstances. (Associated with your particular environment.)
- *How to safely operate the vehicle.
- *How to safely transport cargo and personnel.
- All safety rules contained in this manual.
- Proper operation of vehicle controls.
- Operator maintenance checks.
- A test on the operators ability to identify and operate the controls installed on this vehicle.
- A driving test.

NOTE 2: *Emphasis should be placed on these areas while conducting training.

Driver Qualifications

Who is Qualified to Drive?

A qualified driver is a person who has successfully completed the owners "Operator Training Program," and have shown through testing to possess the visual, auditory, physical, and mental abilities to safely operate this vehicle.

Minimum Requirements

The following are the minimum requirements necessary to qualify as an operator of this vehicle:

- Demonstrate a working knowledge of each control
- Understand all safety rules and guidelines as presented in this manual
- Know how to load and unload cargo
- Know how to properly park this vehicle
- Demonstrate the ability to handle this vehicle in all conditions


SAFETY RULES

Vehicle Controls

The following text describes the use, and location of each of the controls available on this vehicle:

Control	Location and Operation
Key-Switch	<p>A key-switch located on the right side of the instrument panel turns on the vehicle. On the MX-600 the key switch is located on the instrument panel to the right of the seat. Rotate the key clockwise to turn the vehicle on counterclockwise to turn the vehicle off.</p> <p>The key-switch should be in the off position whenever the operator leaves the driver's seat.</p> <p>This switch is also designed to secure and disable the vehicle. You can remove the key ONLY when the key-switch is in the OFF position.</p>
Forward/Reverse Lever	<p>The forward-reverse rocker switch, located on the dash, on the SS5-34/36 and on the panel to the right of the seat on the MX-600. It determines the direction of travel (forward or reverse) of the vehicle. Push the top of the switch to make the vehicle go forward. Push the bottom of the switch to go in reverse. DO NOT SHIFT from forward to reverse or vice-versa while the vehicle is in motion. Make sure the vehicle is completely stopped before shifting.</p> <p>The Forward-Reverse switch has a neutral position. The Forward-Reverse switch should be in the neutral position with the park brake set whenever the operator leaves the driver's seat.</p>
Accelerator Pedal	<p>The accelerator pedal located to the right of the brake pedal. It controls the speed of the vehicle, is designed for right foot operation only, operates the same way as the accelerator pedal in an automobile, and controls the vehicle's speed. Depress the pedal to speed the vehicle up. Release the pedal to slow down.</p>
Seat Interlock Switch	<p>A switch located under the driver's seat disables the vehicle when the driver leaves the seat. The driver must be seated for the vehicle to operate.</p>

NOTE: This switch is standard on the SS5-36 and on the MX-600 models. This is an added safety feature and should never be bypassed.

Control	Location and Operation
Foot Brake Pedal	The foot brake pedal located to the left of the accelerator pedal and is for operation with the right foot only. It works the same as the brake in an automobile. Applying pressure to the brake pedal slows the vehicle according to the amount of pressure you apply. Removing your foot from the pedal releases the braking action.
Steering	The standard steering system is a loop tiller type. To turn right, turn the tiller to the left. To turn left, turn the tiller to the right .
Park Brake	The parking brake is part of the foot brake pedal. To set the parking brake, push down on the lower half of the brake pedal until the pedal locks in the down position. To release the park brake, apply pressure on the upper half of the brake pedal until the pedal disengages from the lock position.
 CAUTION	Do not operate the vehicle with the parking brake applied. Severe motor and control damage may result.
Horn Button	The horn button is located on the left side of the floor board and is designed for left foot operation. Depress the button to sound the horn, release it to turn it off.
Headlights and Accessories (Optional)	The headlight switch is located of the left side of the instrument panel. An accessory switch, if any, is adjacent and to the right of it. On the MX-600 these switches are located on the instrument panel to the right of the seat
Hour Meter (optional)	The hour meter is located to the right of the battery status indicator. This tracks the number of hours the vehicle has been in operation. On the MX-600 it is located on the kick panel just to the right of the seat.
Battery Status Indicator	The battery status indicator is located to the right of the accessory switch. The normal operating range is in the green zone. The vehicle needs charging if it is in the yellow zone to the left. If it is in the red zone to the left, the vehicle should be taken out of service immediately to be charged. On the MX-600 it is located on the kick panel just to the right of the seat.

SAFETY RULES

Guidelines for Vehicle Operation

The following text contains the guidelines for driving, loading, unloading, parking, and towing the vehicle:

Driving

- Slow and sound the horn when approaching a corner or other blind intersection.
- There is no horseplay or dangerous driving allowed while operating the vehicle.
- Do not drive this vehicle in hazardous areas unless this vehicle is approved and labeled for such operation.
- Report any accidents or vehicle problems to your supervisor immediately.

Loading and Unloading

- Do not load cargo that can easily fall off this vehicle.
- Do not exceed the load capacity of this vehicle.
- Do not carry more than the maximum number of passengers allowed for this vehicle.
- Be extra careful when handling cargo that is longer, higher, or wider than the vehicle.

⚠ CAUTION

Taylor-Dunn does not recommend transporting cargo that is longer, higher, or wider than the vehicle.

Parking

- Park the vehicle by turning the key-switch off, placing the forward/reverse lever in neutral, and setting the park brake.
- If parking on an incline block the wheels to prevent movement.
- Do not block fire aisles, emergency equipment, or stairways.

Towing

- Attach the tow strap to the front bumper tow-bar and place the forward/reverse switch in neutral.
- Use another driver to steer and control the speed of the vehicle, while it is being towed.
- The driver of the towed vehicle is to maintain a safe distance from the towing vehicle and use the brakes when the towing vehicle slows or stops.
- Do not exceed 5-mi/h or carry any passengers while towing the vehicle.

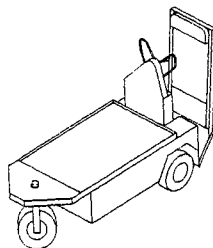
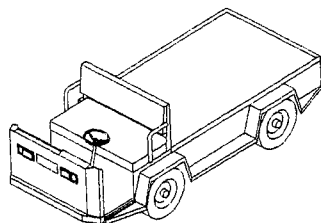
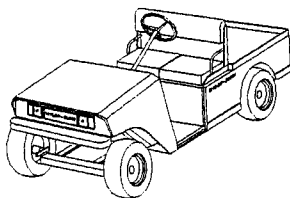
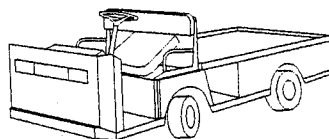
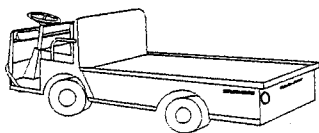
NOTE 2: This vehicle is not to be towed using a commercial tow truck. It may be towed either behind another vehicle of the same type or on a flat bed tow vehicle.

WARNING

Exceeding the towing speed limit or carrying passengers can result in damage to the vehicle and serious injury. At no time are passengers allowed in the towed vehicle. The only personnel allowed to ride in the towed vehicle is the operator/driver.

All cargo must be removed from the vehicle prior to towing.

TAYLOR-DUNN[®] MFG.



Maintenance and Service Procedures

Maintenance and Service Information, Including Lubrication
Information, Scheduled Maintenance, and Disassembly.

Introduction to Maintenance

This section contains the procedures necessary to repair and service your vehicle. You will also find periodic maintenance information, and guidelines to follow, before doing any kind of maintenance or service on this vehicle. Vehicle maintenance or repairs should only be performed by a qualified mechanic.

This section contains the following:

- Maintenance guidelines
- Maintenance Guidelines for Vehicles Used in Severe Conditions
- Maintenance checklist
- Lubrication Chart
- Troubleshooting Guide
- Detailed Maintenance Procedures.

On page 2-4, you will find a Severe Duty Inspection, this inspection is to be carried out and followed as written. Be sure to read the Severe Duty Inspection before continuing.

Maintenance Guidelines

- Allow only qualified and authorized personnel to maintain, repair, adjust and inspect the vehicle.
- Before starting any repairs or maintenance, immobilize the vehicle by turning the key switch off, removing the key and setting the park brake.
- Disconnect both of the main battery leads before working on or disconnecting any electrical component or wire.
- Block the chassis with jack stands before working under a raised vehicle.
- Conduct vehicle performance checks in an authorized area where safe clearance exists.
- Before starting the vehicle, follow the recommended safety procedures in Section 2, "Safety Rules and Operational Information."
- Avoid fire hazards and have fire protection equipment present in the work area. Do not use an open flame to check level or leakage of battery electrolyte. Do not use open pans of fuel or flammable fluids for cleaning parts.
- Ventilate the work area properly.
- Regularly inspect and maintain in a safe working condition, brakes, steering mechanisms, speed and directional control mechanisms, warning devices, lights, governors, guards and safety devices.
- Inspect and maintain battery limit switches, protective devices, electrical conductors and connections in conformance with Taylor-Dunn's recommended procedures.
- Keep the vehicle in clean condition to minimize fire hazards and facilitate detection of loose or defective parts.

WARNING

Periodic maintenance and service must be performed on this vehicle as scheduled in the maintenance table on page 2-5. Failure to complete these scheduled maintenance and service procedures can result in personal injury, and/or property damage. It is the owner and/or operator's responsibility to insure that proper service and maintenance is performed, on the vehicle(s), described in this manual.

Maintenance and Service

Maintenance Guidelines for Vehicles Used in Severe Conditions

The following list is meant as a guide and is not all inclusive:

SEVERE CONDITIONS refer to operation:

- In extreme temperatures
- On bumpy, dusty, or ill maintained roads
- In excessively wet areas
- In corrosive or contaminated areas
- At or near maximum capacity for more than 50% of the operating time
- On multiple shifts

Severe Duty Maintenance Guidelines:

If this vehicle is operated in severe conditions all maintenance items listed in the table on the facing page should be carried out twice as often as stated. In addition the whole vehicle should be inspected monthly for signs of damage and repaired immediately.

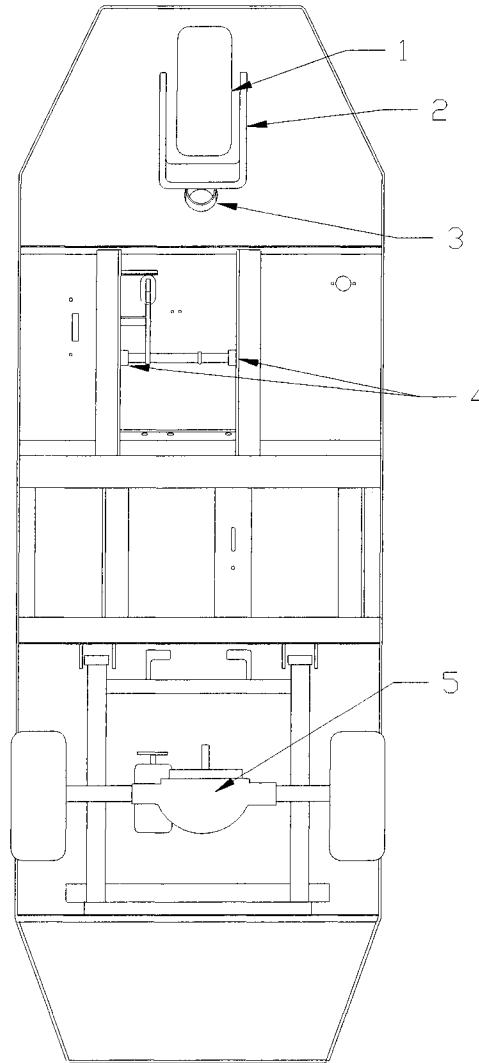


Periodic Maintenance Table

Periodic Maintenance Checklist					
Maintenance Item	Weekly (20hrs)	Monthly (80hrs)	Quarterly (250hrs)	Semi - Annual (500hrs)	Annuaaly (1000hrs)
Check Condition of Tires	X				
Check and Fill Batteries	X				
Check Brake System		X			
Check Steering System		X			
Lubricate Vehicle			X		
Clean and Tighten All Wire Connections			X		
Wash and Service Batteries			X		
Check Park Brake				X	
Check Front Wheel Bearings				X	
Check Rear Axle Oil				X	
Change Rear Axle Oil					X
Check and Tighten all Nuts and Bolts					X
Clean and Repack Front Wheel Bearings					X

Maintenance and Service

Lubrication



#	Description	Locations	Lubricant
1	Front Wheel Bearing	1	High Temp Wheel Bearing Grease
2	Front Fork Pivots	2	General Purpose Grease
3	Steering Collars	1	General Purpose Grease
4	Brake Shaft Collars	2	General Purpose Grease
5	Rear Axle Differential	1	SAE 30 Oil (SS-536, MX-600) SAE 140 API GL-5 (SS 534)

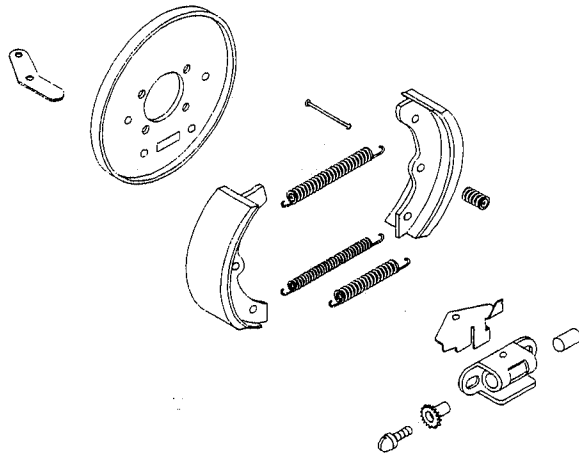


Trouble shooting Guide

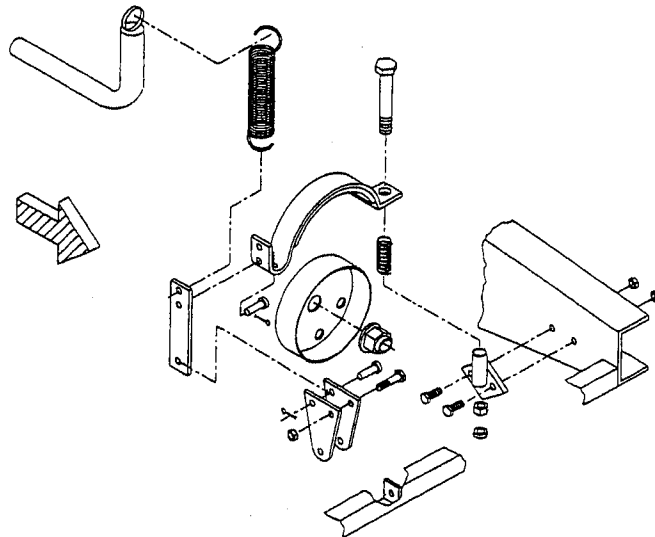
Symptom	Probable Cause
Steering Pulls in One Direction	Worn Wheel or Collar Bearing Low Tire Pressure Broken or Missing Spring Bent Frame or Fork
Hard Steering	Dry Lube Points in Steering Linkage Low Tire Pressure
Lack of Power or Slow Operation	Brakes or Paking Brakes Dragging Worn Drive Gears or Bearings Loose or Worn Drive Belt Low Battery Defective Speed Controller Defective or Worn Motor Brushes
Abnormal Noise	Worn Drive Gears or Bearings Loose or Worn Drive Belt Worn Front/Rear Axle Bearings Loose Lug Nuts Motor Bearings Worn
Oil Leak in Rear Bearing Area	Rear Wheel Bearing and/or Gasket Failed Drive Over Filled
No Brakes	Brakes out of Adjustment Brake Pedal Linkage Binding or Broken
Brake Pedal Low	Brake Worn (1/16-inch Wear Limit) Brakes Out of Adjustment
Braking Power Low	Brake Worn (1/16-inch Wear Limit) Brakes Out of Adjustment Brake Pedal Linkage Binding

Brakes

**MECHANICAL REAR DRUM BRAKES
(STANDARD ON SS5-36 & MX-600)**



**DRIVE LINE BRAKE BAND (STANDARD
ON SS5-34)**



Brakes

This section covers the installation and repair of the brake systems that are installed on the SS5-34, SS5-36 and MX-600. These vehicles come equipped either with the mechanical rear brakes, (found on the SS5-36 & MX-600,) or the drive line brake band, (found on the SS5-34.)

Be sure that you are fully aware of the brake system installed on the vehicle you are working on, before continuing.

WARNING

The OEM does not supply asbestos fiber-brake pads/shoes with this or any vehicle. However, there is the possibility that the OEM brake pads/shoes were replaced with those containing asbestos fibers. Since this possibility does exist the brake pads should be handled as if, they do contain asbestos.

Never use an air hose or dry brush to clean brake assemblies. Use an OSHA approved vacuum cleaner or any alternate method approved by OSHA to minimize the hazard caused by airborne asbestos fibers and brake dust.

Do not grind, sand, break, or chisel the brake pads/shoes as this will cause unnecessary dust possibly releasing asbestos fibers into the air.

Always wear protective clothing and a face shield when working on the brake pads.

Inhaled asbestos fibers have been found to cause cancer and respiratory diseases.

Do not drive the vehicle if any worn or broken part is detected in any part of the brake system. The cause of the damage must be repaired immediately.

NOTE 1: The park brake system is similar regardless of the brake system installed in the vehicle. However since there are some minor differences be sure to locate the figure that matches the brake system installed on your vehicle.

NOTE 2: To apply the park brake, apply pressure to the lower half of the foot pedal until it locks in place. To release the park brake apply pressure to the upper half of the pedal.

Brakes

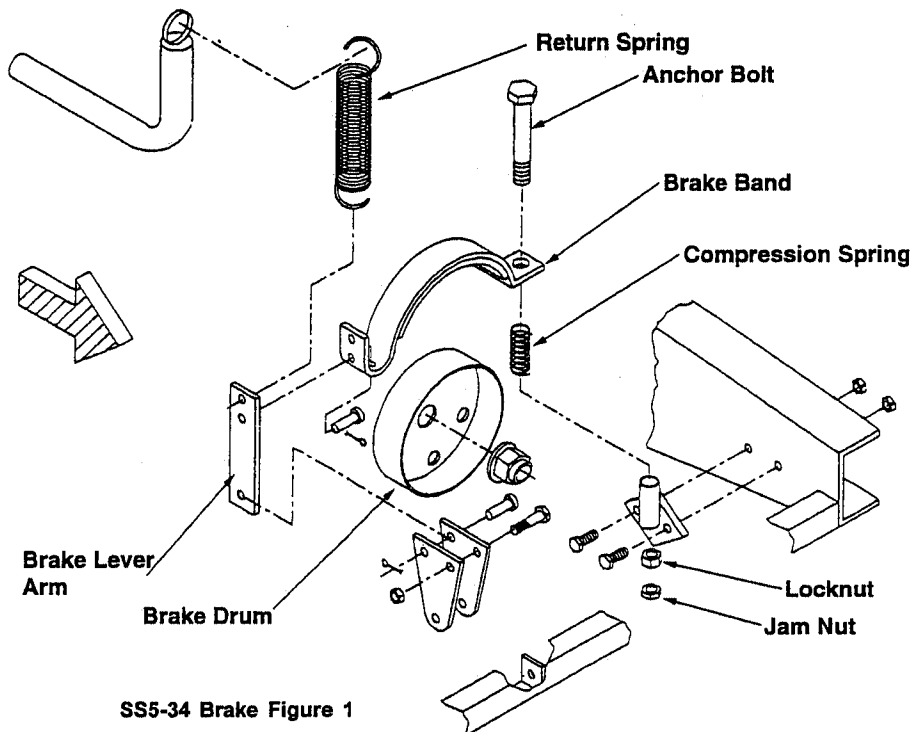
SS5-34 Brake System

The SS5-34 comes standard with a mechanical drive line brake. The brake drum is attached to the pinion shaft. The brake band is anchored to the frame of the vehicle and attached to the brake pedal by the brake lever arm, as shown in the figure below.

Here we will cover how to remove and service the mechanical drive line brake system. Before beginning this or any service you should review the service guidelines and warnings on page 3-2.

⚠ WARNING

There are springs attached to parts of this braking system. There is a possibility that these springs may break or slip out of their mounting holes while servicing the brake. To prevent possible injury to the head or face a face shield should be worn whenever you are working on or around the brake band.



SS5-34 Brake Figure 1



Adjusting the Brake Band

The brake band may need to be adjusted periodically to compensate for the normal wear of the brake lining or pad on the band. To adjust the brake band do the following.

1. Park the vehicle in a clean flat area and remove the key.
2. Block the tires to prevent the vehicle from accidentally moving.
3. Lift the and secure the deck, so that it will not fall.
4. Tighten the brake band anchor bolt, until brake pad engages the drum with sufficient force to stop the vehicle when the brake pedal is halfway down to the floor board.

NOTE 3: With this adjustment, the parking brake is automatically adjusted so that when the lower slot of the pedal engages the locking angle welded to the frame, proper braking force is applied. As the lining wears, the pedal travel will increase to the point where the upper slot must engage the locking angle to provide adequate braking force. The brake band must be adjusted before lining wear reaches the point where engagement in the upper slot fails to provide adequate braking force.

Brakes

Adjusting the Brake Cable

The brake cable length must be adjusted so that the brake lever arm, (located below the brake drum) is pivoted rearward as far as possible. Use the following procedure, and refer to the *figure on page 2-11, and on page 2-8.*

To adjust the brake pedal linkage:

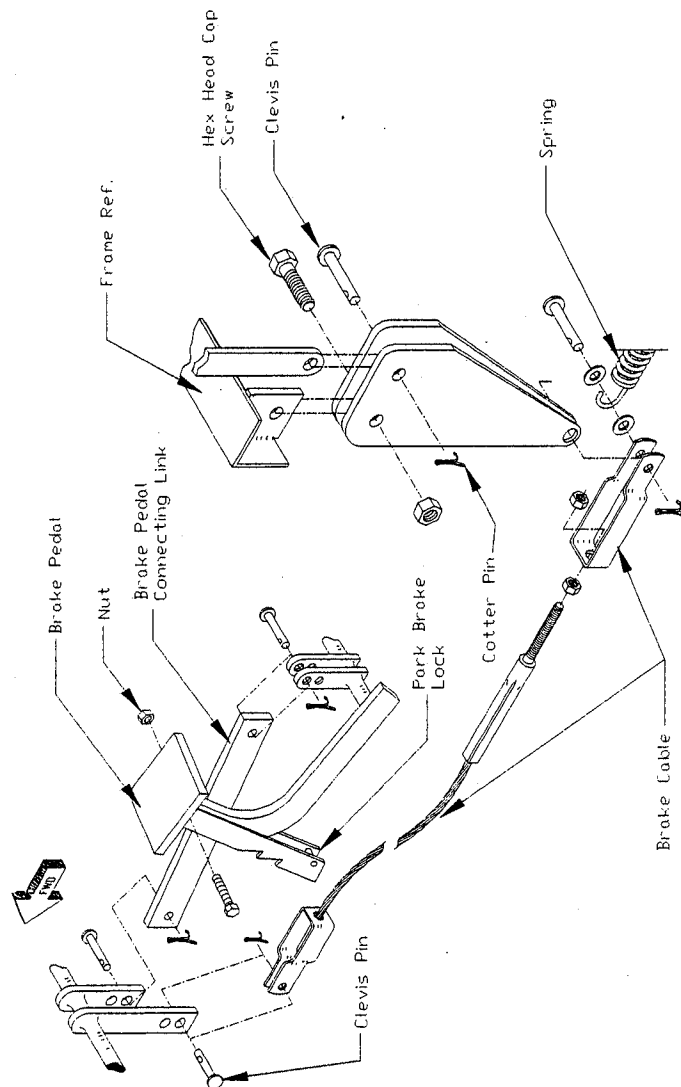
1. Park the vehicle on a clean level surface and block the rear wheels to prevent movement.
2. Raise the front of the vehicle and support it with jack stands.

⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

3. Loosen the jam nut on the brake cable.
4. Tighten the adjusting bolt until the brake cable is slightly tight.

NOTE 6: There should be some slack in the brake cable. Do Not overtighten the brake cables. Overtightening of the adjusting nut and the cables will result in brake drag, and premature failure of the brake shoes.
5. Tighten the jam nut against the clevis and lower the vehicle.
6. Check the brake pedal to see that the park brake lock engages with medium pressure on the lower half of the pedal. (*Also See Park Brake Lock on the page, starting on page 2-15.*)
7. Release the park brake and test drive the vehicle checking for brake drag.
8. Check the travel of the brake pedal. It should have about 1/2" of travel before it engages the brakes.



SS5-34 Brake Pedal Assembly: Shown is an exploded view of the brake pedal, and its linkage to the brake band of the SS5-34.

Brakes

Removing the Brake Assembly

In order to remove the brake assembly refer to the following instructions:

1. Read all cautions and warnings on page 3-2.
2. Park the vehicle on a level surface and block the tires to prevent the accidental movement.
3. Remove the key and place the forward/reverse switch in the neutral position.
4. Remove the deck board and seat from the vehicle and place it to one side out of the way.
5. Remove the spring from the lever bar.
6. Remove the cotter pin and the clevis pin from the brake band.
7. Remove the brake band anchor bolt and brake band.
8. Remove the brake drum from the pinion shaft.
9. Clean and inspect the brake band and brake drum. Replace all worn parts as needed.

NOTE 4: If the brake lining or pad is 1/16" or less in thickness, the lining must be replaced. Also, if the brake drum is severely scored, damaged or less than 5.85" in diameter it must be replaced with a new brake drum.

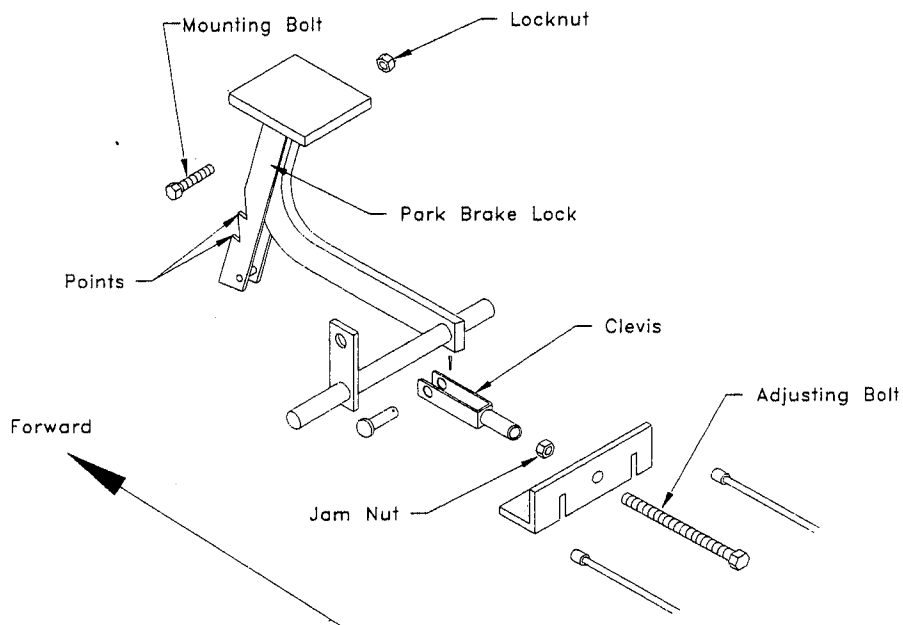
NOTE 5: If the brake drum is glazed or lightly scored. The glazing or scoring should be removed from the drum by sanding.

10. Reinstall the brake assembly by doing steps 1 through 7 in reverse order.
11. Adjust the brake band. *Refer to the previous heading, "Adjusting the Brake Band."*

SS5-36 and MX-600 Brake System

The SS5-36 and MX-600 comes standard with rear mechanical brakes. The brake system is shown in the figure below.

Here we will cover how to remove and service the mechanical brake system. Before beginning this or any service you should review the service guidelines and warnings on page 3-2.



Foot Brake Assembly: Shown is the brake pedal, and how it connects to the brake cables on the SS5-36 and MX-600.

Brakes

Adjusting the Brake Pedal Linkage (SS5-36 & MX-600)

To adjust the brake pedal linkage, refer to the following procedures. (Refer to *Figure below, and on page 2-13.*)

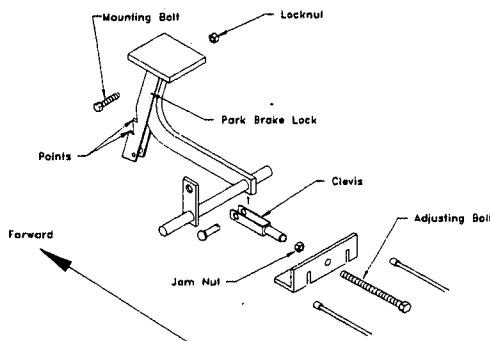
1. Park the vehicle on a clean level surface and block the rear wheels to prevent movement.
2. Raise the front of the vehicle and support it with jack stands.

⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

3. Loosen the jam nut on the brake linkage.
4. Tighten the adjusting bolt until the brake cables are slightly tight.

NOTE 6: There should be some slack in the brake cables. Do Not overtighten the brake cables. Overtightening of the adjusting bolt and the cables will result in brake drag., and premature failure of the brake shoes.
5. Tighten the jam nut against the clevis and lower the vehicle.
6. Check the brake pedal to see that the park brake lock engages with medium pressure on the lower half of the pedal. (*Also See Park Brake Lock on the next page.*)
7. Release the park brake and test drive the vehicle checking for brake drag.
8. Check the travel of the brake pedal. It should have about 1/2" of travel before it engages the brakes.

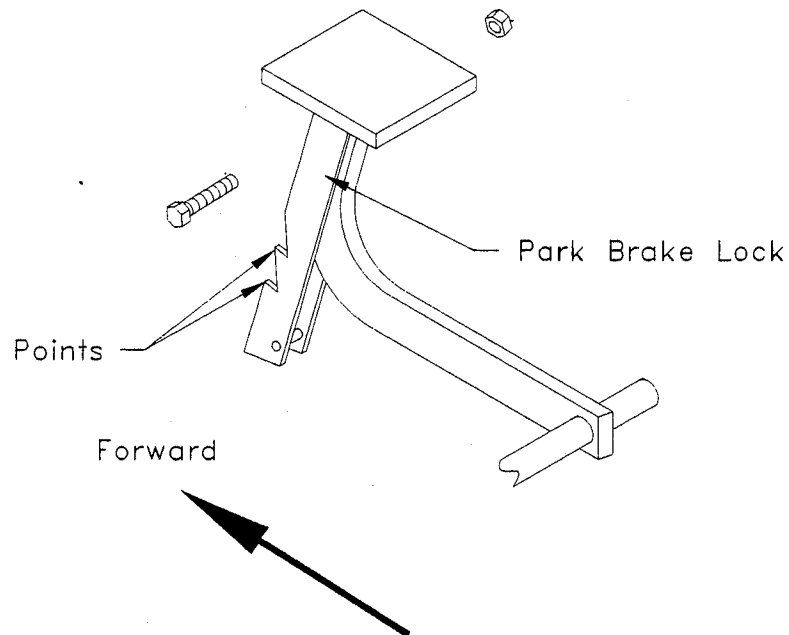


Foot Brake Assembly: Shown is the brake pedal, and how it connects to the brake cables on the SS5-36 and MX-600.

Inspecting and Replacing the Park Brake Lock(All Models)

The park brake lock is incorporated into the service brake pedal. *The park brake lock is the same for all the vehicles, and so are the service procedures. (Refer to the Figure Below.)*

In order to replace or service the park brake lock continue to the next page.



Park Brake Lock: The park brake lock is the same on all three models. The service, and replacement procedures are the same as well. To service the park brake lock refer to the following pages for these procedures.

Brakes

Replacement and Wear of Park Brake Lock (All Models)

In the following procedure you will be told how to replace the Park Brake Lock assembly.

1. Park the vehicle on a clean flat surface and block the rear wheels to prevent movement.
2. Turn the key off and place the forward/reverse switch in neutral.
3. Disconnect the main positive and negative terminals from the battery.
4. With the brake pedal in its fully extended position, remove the 1/2" bolt and locknut from under the pedal.

⚠ WARNING

Always use new locknuts and bolts. Locknuts and bolts become less effective if used more than once. If the locknuts or bolts holding the brake to the drive come loose, serious injury may occur.

5. Remove the pedal and park brake lock assembly from the brake arm.
6. Install a new pedal and park brake lock assembly, following steps 4 through 5 in reverse order. (Substituting the word *install* for *remove* in steps 4 and 5.)

In the following procedure you will be told how to check the Park Brake Lock for Wear.

1. After removing the park brake lock as shown above. Inspect the points of the notches on the park brake lock.
2. If they are broken or worn, replace the assembly with a new one as instructed above.

Wear Limits:

If you apply the park brake lock and it does not catch or slips easily it must be replaced.

Press on the lower half of the pedal if the park brake lock engages with little effort on the upper most notch. Check the linkage adjustments and adjust as needed. (Refer to "Adjusting the Brake Pedal Linkage," on page 3-13.)

Rear Brakes

The rear brakes are mechanical auto adjusting drum brakes and require no periodic adjustments to ensure safe operation. Servicing of these brakes consists of replacing the brake drum and replacing the brake shoes when they become worn.

In this section we will cover how to inspect and replace the brake drum and shoes.

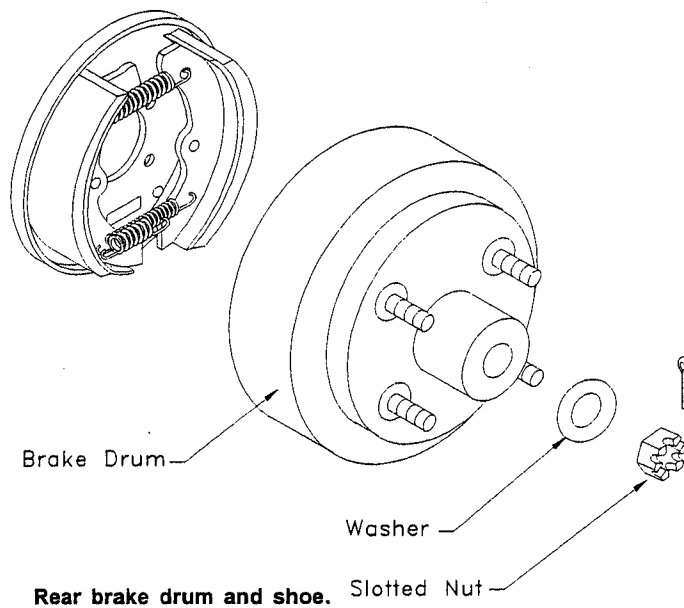
Wear Limit:

Brake Shoes-

Measure the brake shoe at various locations. It should be thicker than 1/16" at its thinnest point. If you measure 1/16" or less at any given point the shoes must be replaced.

Brake Drum-

The brake drum should be replaced if it is scored or damaged. The presence of grooves or damage on the inside diameter of the drum can effect the braking capabilities of the vehicle.



Brakes

Replacing the Brake Drum

To replace the rear brake drum use the following procedure.

1. Raise the rear of the vehicle one side at a time. Placing jack stands under the vehicle to support it. **Do not Attempt** to raise the rear end by placing jacks or other lifting devices in the center of the rear end.

⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

2. Remove the rear wheel and tire assembly.
3. Remove the cotter pin, castle nut and washer from the end of the axle shaft.
4. Remove the brake drum.
5. Inspect the inside of the brake drum for wear or damage. If it is grooved or damaged it must be replaced.
6. Visually inspect the brake shoes for wear and replace as needed.
7. Install the new brake drum.
8. Repeat steps 1 through 3 in reverse order.

Replacing the Brake Shoes

To replace the brake shoes, use the following procedure.

1. Raise the rear of the vehicle until the rear wheels are clear of the floor and place jack stands under the vehicle. Raise the rear of the vehicle one side at a time. Place jack stands under the vehicle to support it. **Do not Attempt** to support or raise the rear end by placing jacks or other lifting devices in the center of the rear end.

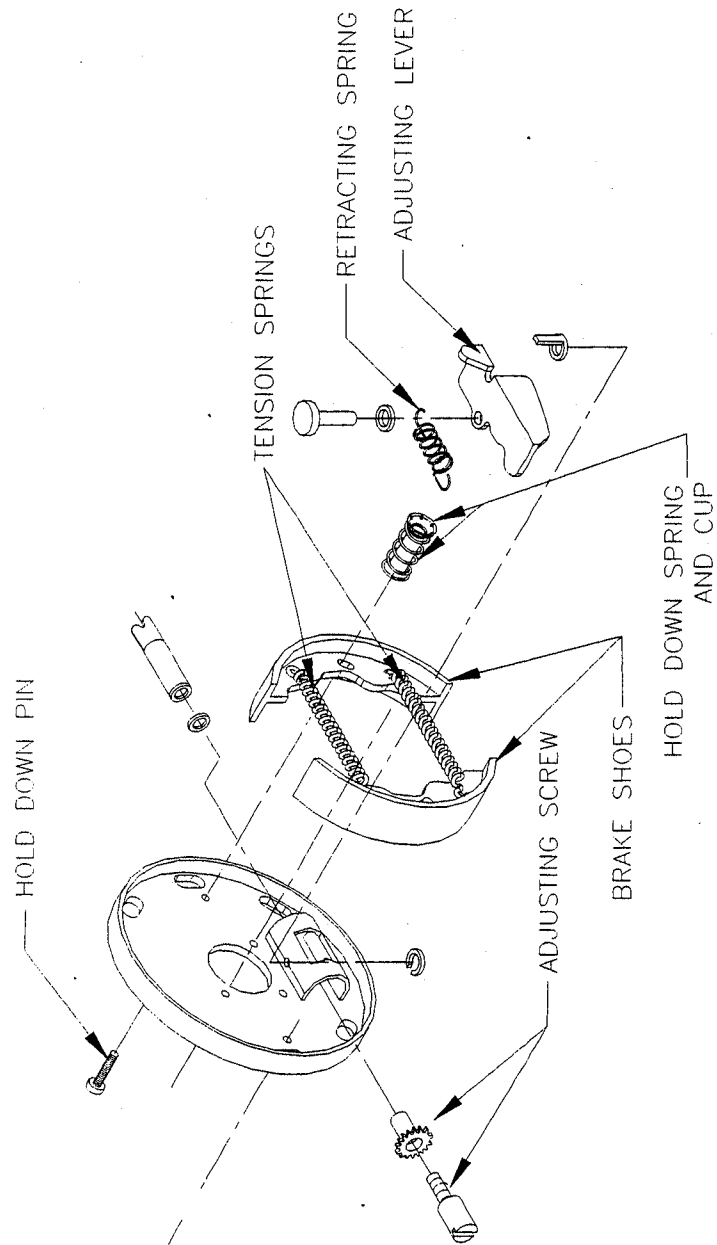
⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

2. Remove the rear tire and wheel assembly.
3. Remove the cotter pin, castle nut and washer from the end of the axle shaft.
4. Remove the brake drum.
5. Inspect the inside of the brake drum for wear or damage. If it is grooved or damaged it must be replaced.
6. Remove the brake shoe springs.
7. Remove the brake shoe hold down spring from each shoe.
8. Remove the brake shoes and adjusting assembly.
9. Disassemble and clean the adjusting screw assembly.
10. Apply Hi-Temp grease to the adjusting screw assembly, hold-down and retracting spring contacts on the brake shoes.
11. Install the adjusting screw assembly.
12. Install the brake shoe hold down springs.
13. Install the brake shoe springs.
14. Install the brake drums and tire/wheel assembly.
15. Pump the brakes to automatically adjust the brake shoes.
16. Lower and road test the vehicle.

NOTE 7: The brakes may pull slightly to one side or the other due to the auto self adjustment system. As the brake shoes wear, one side may automatically adjust before the other.

Brakes



Exploded view of mechanical rear brake assembly.



NOTES

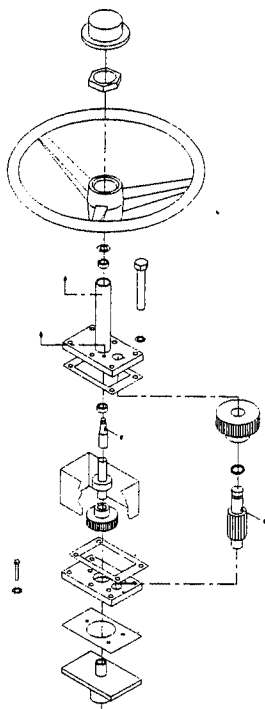
FRONT FORK AND STEERING ASSEMBLIES

Front Fork and Steering

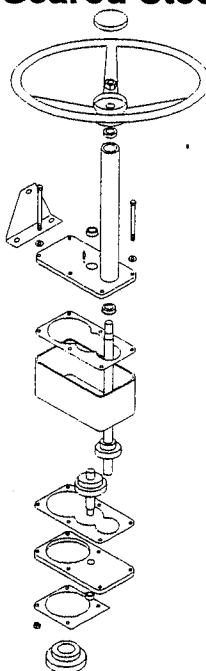
In this section we will cover how to service and repair the front fork, axle and steering assemblies. Included in the steering will be the tiller steering system and the geared steering system. Examples of these complete assemblies are shown below.

The standard steering assembly for the SS5-34, SS5-36 and MX-600 is the Tiller. Since the Geared option is widely used in these vehicles as well we included it in this section.

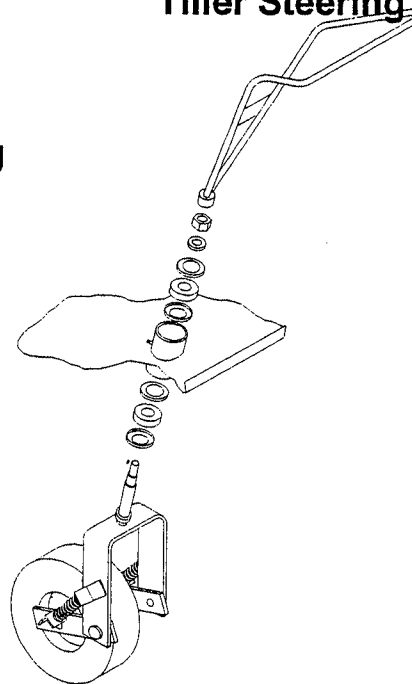
SS5-34 Geared Steering



SS5-35 MX-600 Geared Steering



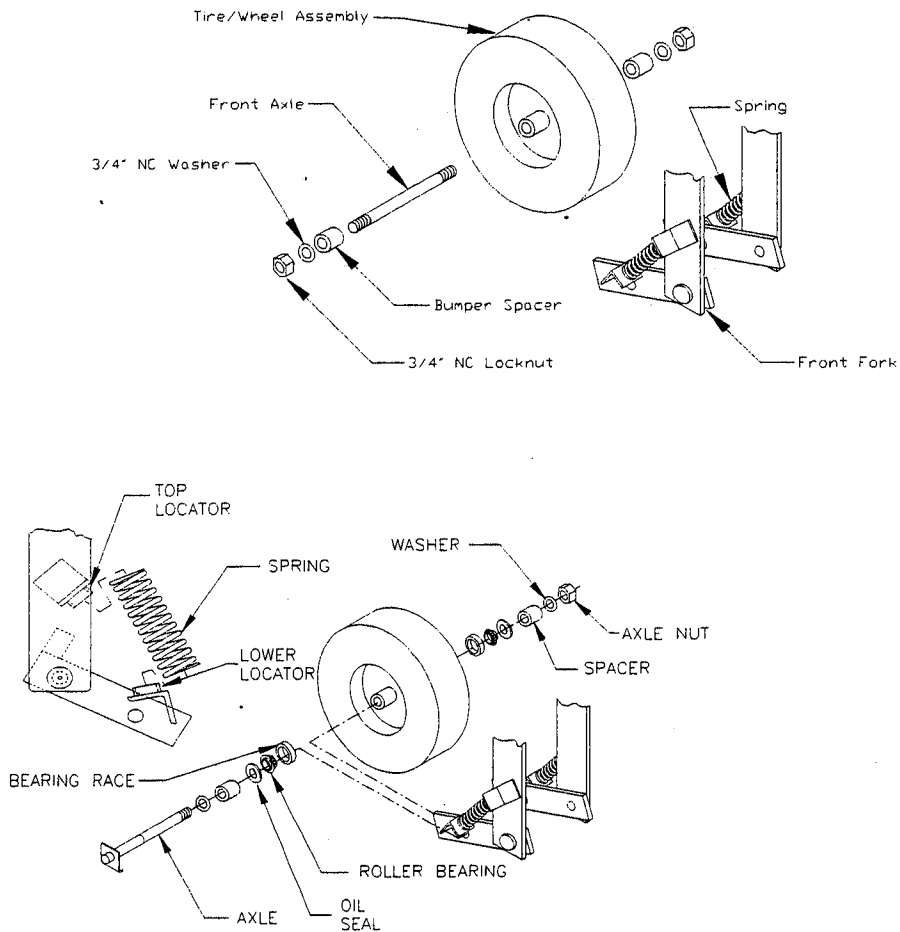
SS5-34 SS5-36 and MX-600 Tiller Steering



Front Fork

Here we will cover the Front Fork only. The following procedures will cover the disassembly and repair of the front fork and the axle. For information on the steering assemblies refer to the appropriate heading under Steering Assemblies, starting on page 3-25.

NOTE 1: There are two types of front axles used within the serial numbers covered by this manual. Both type are shown below. The basic instructions for removing, servicing and installing are the same.



Front Axle Assemblies

FRONT FORK AND STEERING ASSEMBLIES

Removing the Front Fork

In order to remove the front fork follow these procedures.

1. Park the vehicle on a clean level surface.
2. Turn the key off and place the forward/reverse switch in the neutral position.
3. Block the rear wheels to prevent movement.
4. Loosen the spindle mounting nut on the tiller and remove it from the steering shaft.
5. Remove the woodruff key from its slot on the steering shaft.
5. Remove the locknut located from the top of the steering shaft.
6. Raise the front of the vehicle allowing the steering shaft to slide through the cowl.

NOTE 2: The fork should be supported to prevent it from putting undue pressure on the lower oil seal, bearing and bearing race. This is also done to prevent the fork from falling once it is removed from the cowl and damaging these parts.

7. Support the front fork to prevent it from falling as the front of the vehicle is raised.
8. Remove the fork from under the vehicle and remove the front axle and springs as described in "Removing the Front Axle and Replacing the Springs."
9. Replace seals, bearings and races as required.
10. Install the new fork in reverse order.

Removing the Front Springs

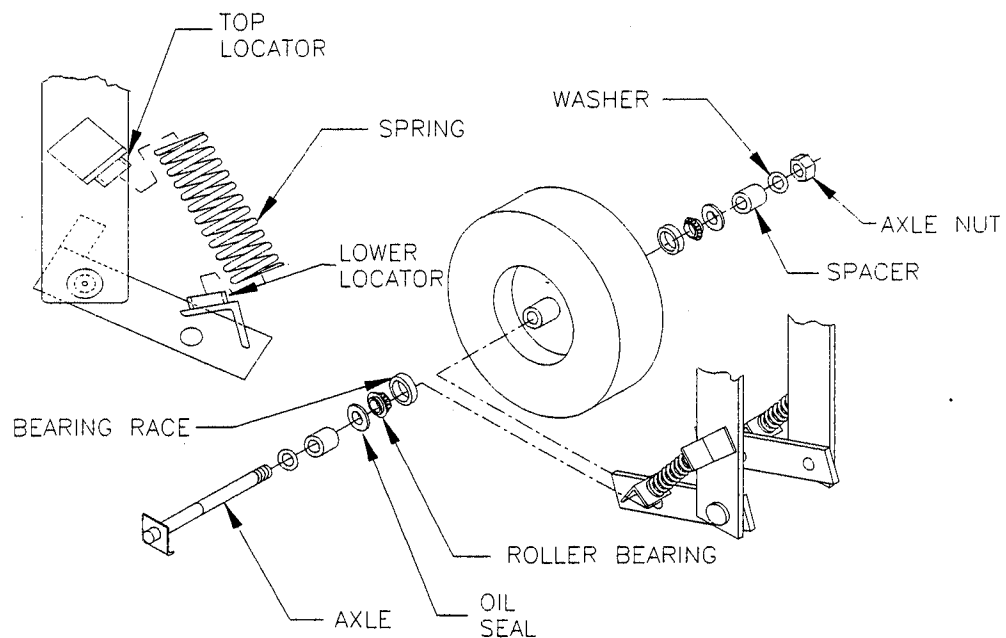
In order to remove the front springs follow these procedures:

1. Raise the front of the vehicle and support it with jack stands

⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

2. Compress the front spring by hand and slide it off the top locator.
3. Tilt the spring out away from the fork and remove it from the lower locator.
4. Install the new spring in reverse order, then lower the vehicle and test drive.



Front Fork Assembly with Suspension and Axle Parts

FRONT FORK AND STEERING ASSEMBLIES

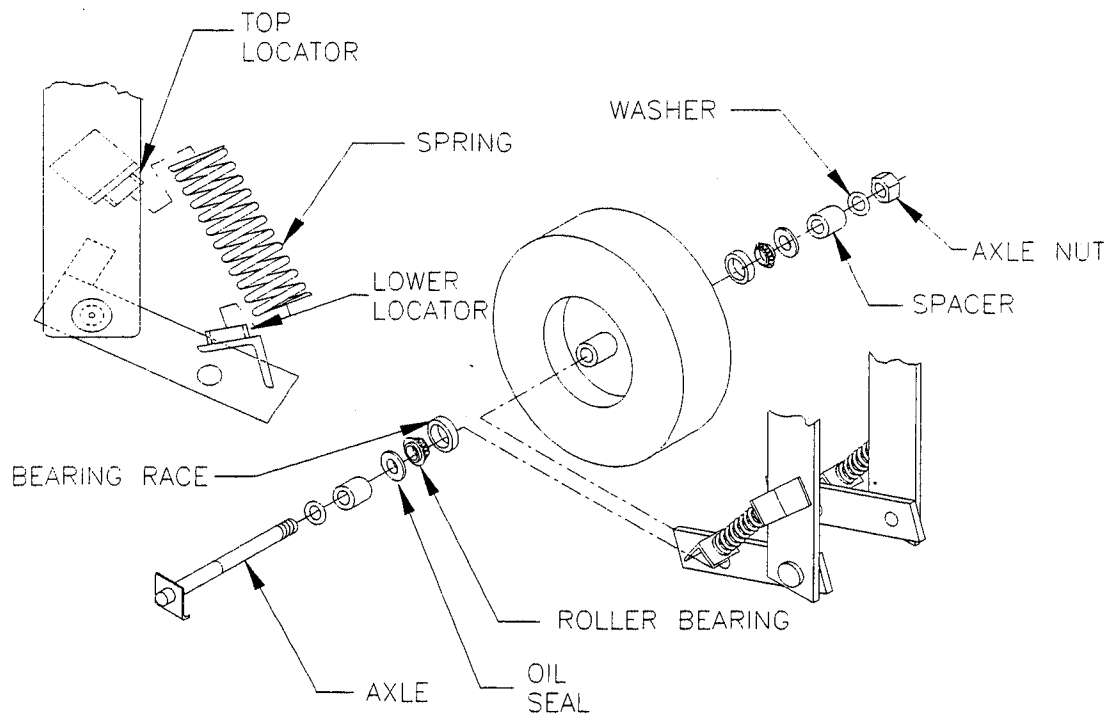
Removing the Front Axle

This can be done with the fork still in the vehicle or while it is removed. To remove and replace the front axle assembly use the following procedure.

1. Raise and support the front of the vehicle.
2. Remove the axle nut(s) and washer from the axle.
3. Pull the axle through the fork slowly.

NOTE 3: Do not let the spacers, oil seals, roller bearings or bearing races fall out while removing the axle be sure that these parts can be removed without damaging them or letting them drop to the floor.

4. Install the new axle in reverse order.



Front Fork Assembly with Suspension and Axle Parts

Replacing the Front Wheel Bearings

To replace worn or damaged wheel bearing follow the procedure below.

1. Park the vehicle on a level surface.
2. Remove the front axle as described in the procedures on the preceding page.
3. Remove the oil seal, bearings and bearing races from the wheel.
4. Install new bearing races, bearings and oil seals.
5. Install the axle through the fork and wheel.

NOTE 4: Remember to install the spacers and outer washers in their proper location while installing the axle.

WARNING

Always use new locknuts and bolts. Locknuts and bolts become less effective if used more than once. If the locknuts or bolts holding the brake to the drive come loose, serious injury may occur.

6. Install and tighten the axle locknut.
7. Tighten the axle locknut until the wheel slightly drags when it is rotated by hand.
8. Inject grease into the wheel using a grease gun on the hubs grease fitting.
9. Lower the vehicle and test drive.

FRONT FORK AND STEERING ASSEMBLIES

Replacing and Adjusting the Front Fork Collar Bearing

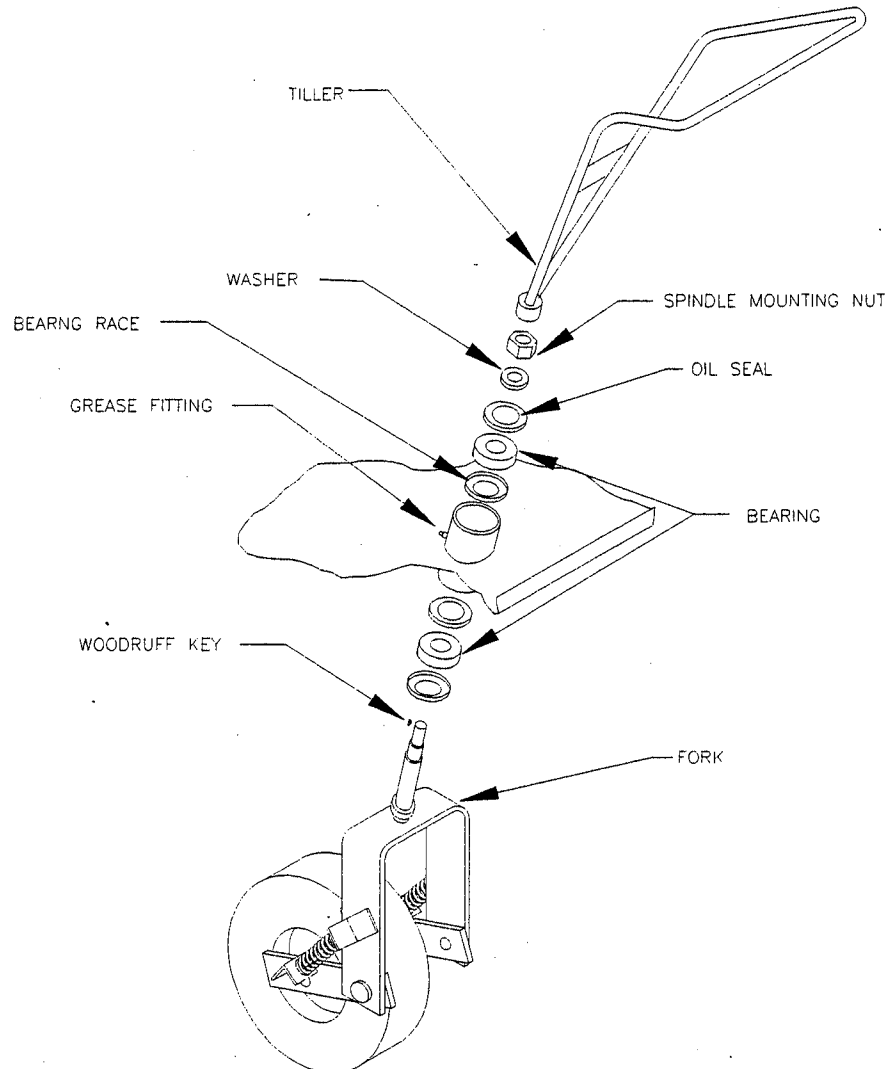
In order to replace and adjust the collar bearings use the following procedure.

1. Park the vehicle on a level surface and refer to the precautions on page 3-6.
2. Raise the front of the vehicle and support it with jack stands.

⚠ WARNING

Always use new locknuts and bolts. Locknuts and bolts become less effective if used more than once. If the locknuts or bolts holding the brake to the drive come loose, serious injury may occur.

3. Remove the fork and steering tiller as described in "Removing the Front Fork," on page 3-22.
4. Remove the upper and lower bearing, bearing race and oil seal.
5. Install the new bearings, races and oil seals.
6. Install the front fork and the spindle mounting nut.
7. Tighten the spindle mounting nut while rotating the fork manually. Continue tightening the nut until it requires 2ft-lbs of torque to rotate the fork assembly.
8. Loosen the nut slowly until the fork turns freely.
9. Install the tiller.
10. Lower the vehicle and test drive.



Exploded View of Steering Fork and Tiller Assembly.

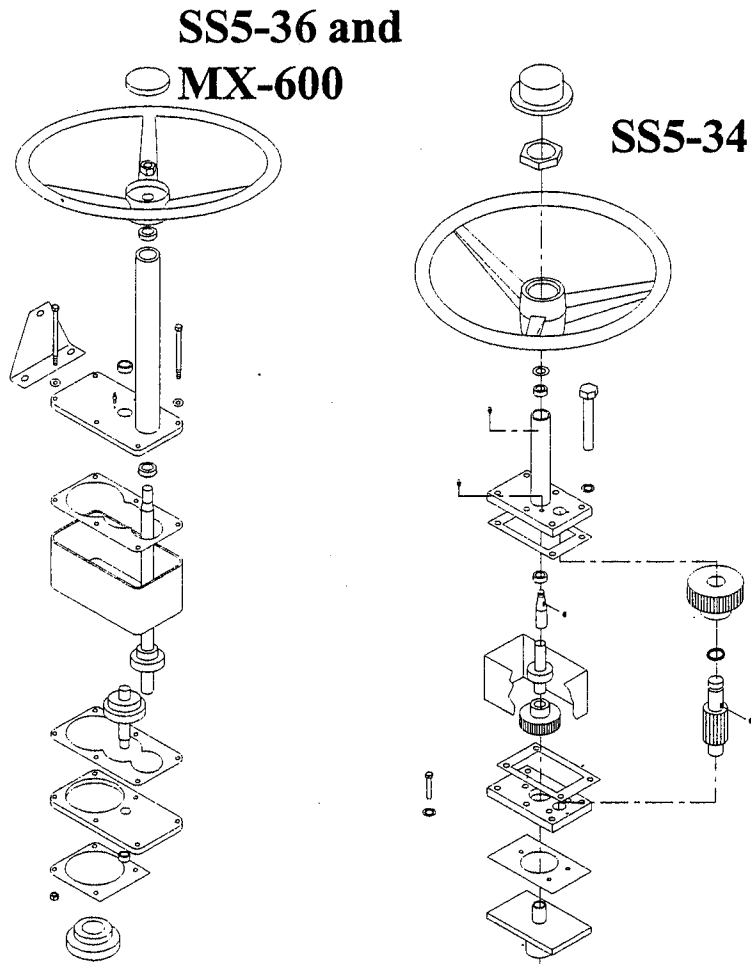
FRONT FORK AND STEERING ASSEMBLIES

NOTES

Optional Geared Steering

Here we will cover the optional geared steering assembly. This assembly is an option on all three vehicles. However it is seen mostly on the SS5-34 and S5-36.

In this section we will cover how to remove and service this steering system.



SS5-34 Optional Geared Steering Assembly



SS5-34 Geared Steering Assembly

The SS5-34 uses a different geared steering assembly than the SS5-36 and MX-600. Here we will show you how to disassemble and service this geared steering assembly.

Disassembly

In order to disassemble this steering gear box follow this procedure. (Refer to the figure on the facing page.)

1. Park the vehicle on a level surface and block all the wheels.
2. Refer to the precautions on page 3-2.
3. Remove the cap from the center of the steering wheel.
4. Remove the nut from the center of the steering wheel.
5. Remove the steering wheel and woodruff key from the shaft.
6. Remove the 6 bolts from the top cover.
7. Lift the top cover off the gear box, discarding the gasket.

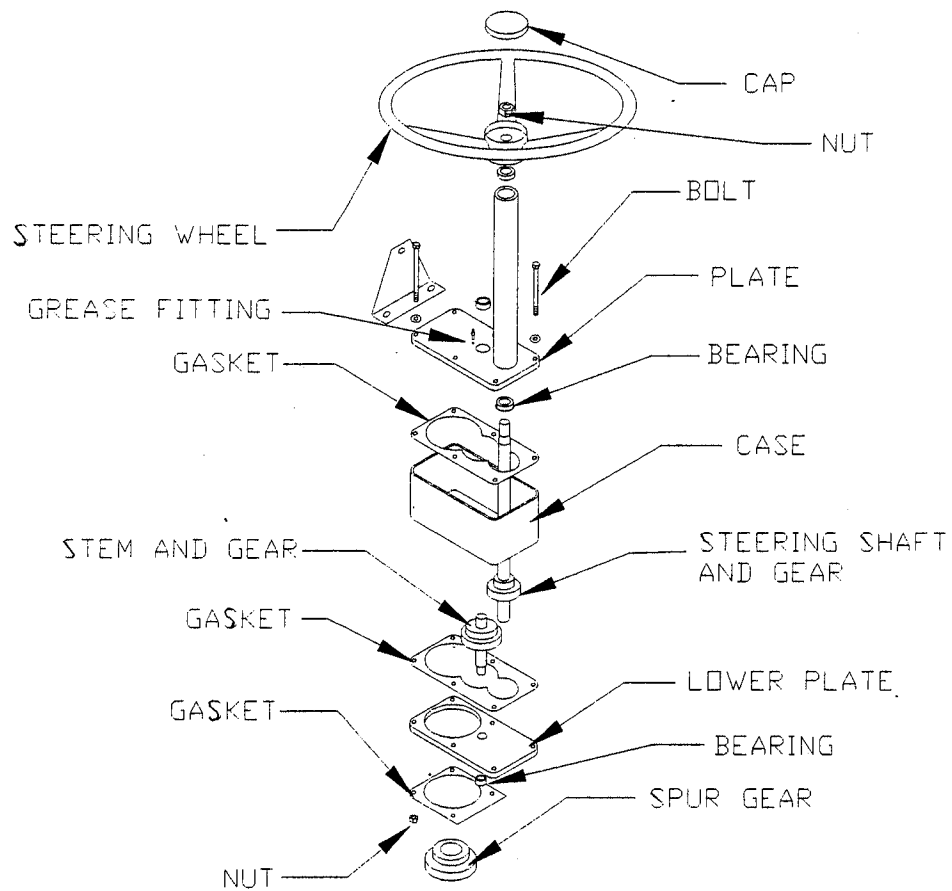
NOTE 5: The spur gear and shaft may come out of the gear box when removing the top cover. Do not let the gears drop to the floor if it comes out with the removal of the top cover.

8. Remove as much grease as possible from the inside of the gear box and dispose of it properly.
9. Remove the gear case and clean the remaining grease from the bottom of the gear box.
10. Remove and discard the lower gasket.
11. Remove the 3 remaining bolts from the bottom of the gear box.
12. Clean all parts except for the gaskets in solvent.
13. Reassemble in reverse order installing new gaskets.

NOTE 6: Check the bronze bushings for wear and replace them as needed.

14. Once the assembly is completely reassembled use a grease gun to fill the gear box with grease.

FRONT FORK AND STEERING ASSEMBLIES



SS5-35 and MX-600 Optional Geared Steering

SS5-36 and MX-600 Steering Assembly

The SS5-36 and MX-600 use the same geared steering assembly. This assembly is disassembled and serviced in much the same way as the geared steering assembly is for the SS5-34. The only difference is the gear set up inside of the case.

Disassembly

In order to disassemble this steering gear box follow this procedure. (Refer to the figure on the facing page.)

1. Park the vehicle on a level surface and block all the wheels.
2. Refer to the precautions on page 3-2.
3. Remove the cap from the center of the steering wheel.
4. Remove the nut from the center of the steering wheel.
5. Remove the steering wheel from the shaft.
6. Remove the 6 bolts from the top cover.
7. Lift the top cover off the gear box, discarding the gasket.

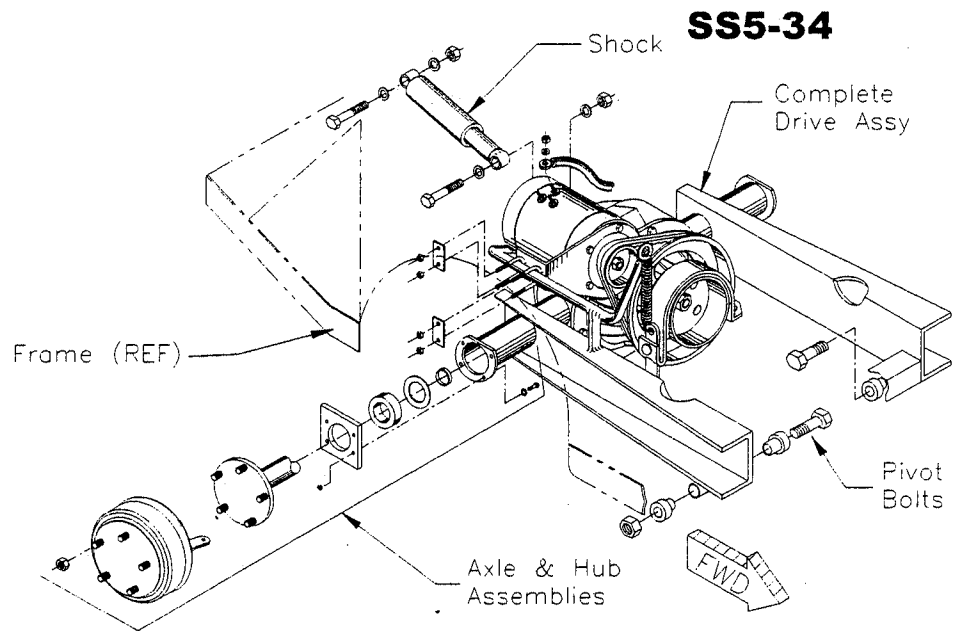
NOTE 7: The stem, and gear may come out of the gear box when removing the top cover. Do not let the gear drop to the floor.

8. Remove as much grease as possible from the inside of the gear box and dispose of it properly.
9. Remove the gear case and clean the remaining grease from the bottom of the gear box.
10. If the stem and gear did not come out with the top cover, remove it now.
11. Remove and discard the lower gasket.
12. Clean all parts except for the gaskets in solvent.
13. Reassemble in reverse order installing new gaskets.

NOTE 8: Check the bronze bushings for wear and replace them as needed.

14. Once the assembly is completely reassembled use a grease gun to fill the gear box with grease.

Drive and Rear Axle



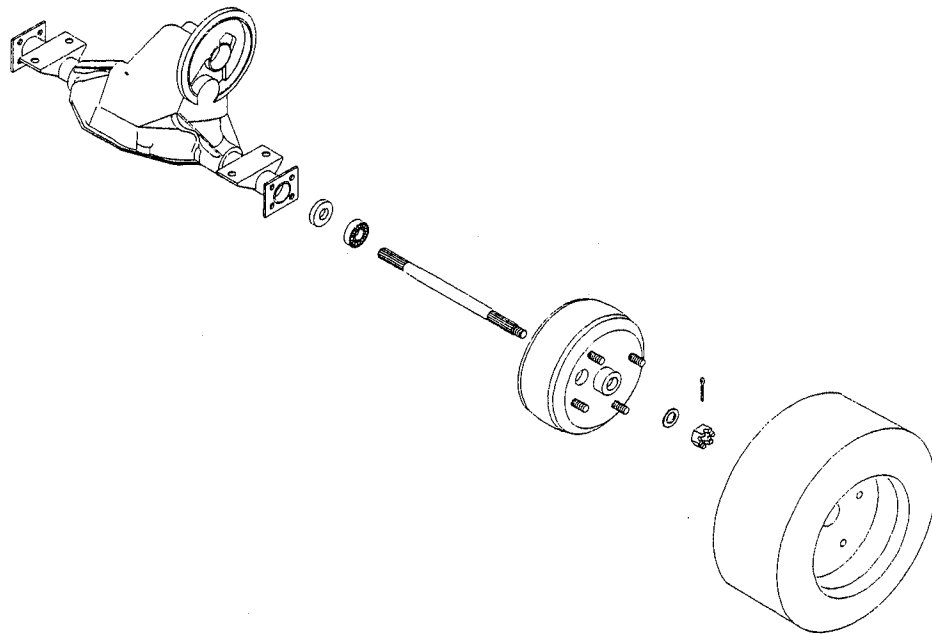


Rear Axle and Drive Assembly

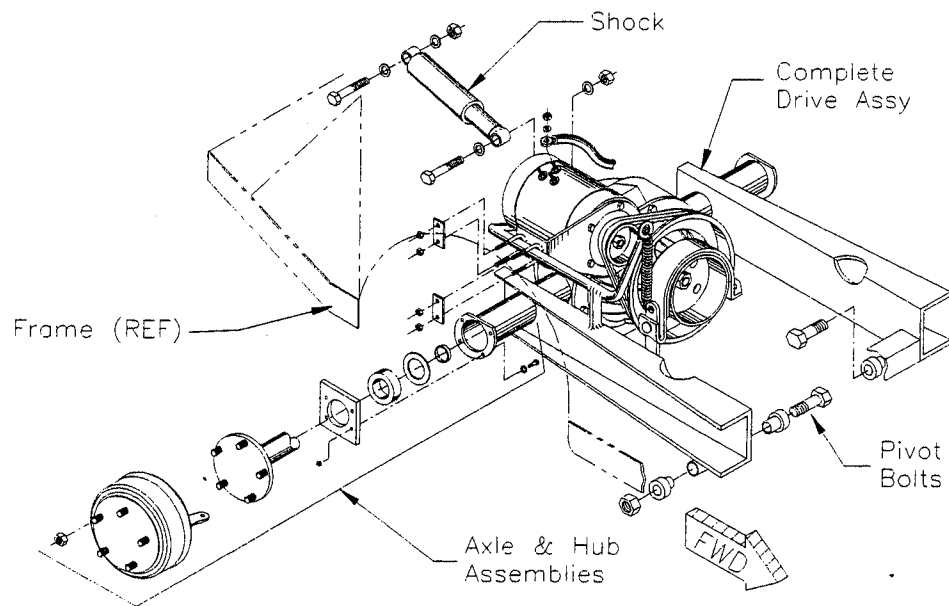
In this section we will cover how to install, remove and service the rear axle and drive assemblies. The figure below shows the rear axle and drive assemblies together.

Before beginning any of the procedures in this or any section of this manual you should first refer to the maintenance precautions listed on page 3-2.

SS5-36 and MX-600



Drive and Rear Axle



Complete SS5-34 Drive and Rear End Assembly



Removing the SS5-34 Rear End Assembly

Here we are referring to the complete assembly including wheels, axle, housing, drive and drive motor. In order to remove this complete assembly from the vehicle use the following procedure.

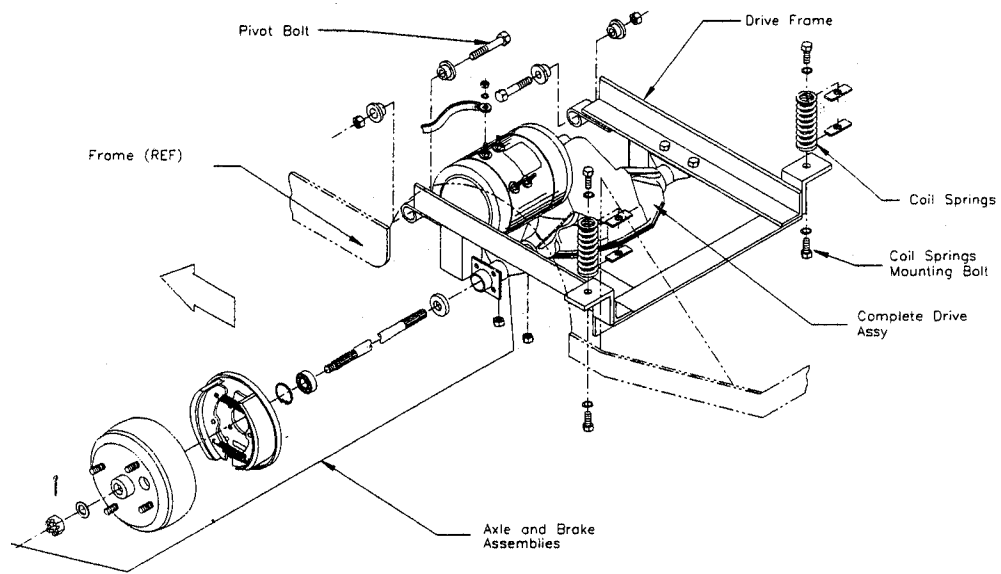
1. Park the vehicle on a clean level surface.
2. Lift the front of the vehicle and place blocks under the frame, that are large enough to prevent the front wheel from touching the floor.

⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

3. Lower the front of the vehicle onto jack stands.
4. Raise the deck board and disconnect the motor wires.
5. From under the vehicle remove the brake linkage from the brake lever.
6. Remove the shock from its lower mount.
7. Remove the swing arm pivot bolts.
8. Raise the rear of the vehicle and remove the rear end assembly from the vehicle.
9. Install in reverse order.

Drive and Rear Axle



Complete SS5-36 Drive and Rear End Assembly



Removing the SS5-36 Rear End Assembly

Here we are referring to the complete assembly including wheels, axle, housing, drive and drive motor. In order to remove this complete assembly from the vehicle use the following procedure.

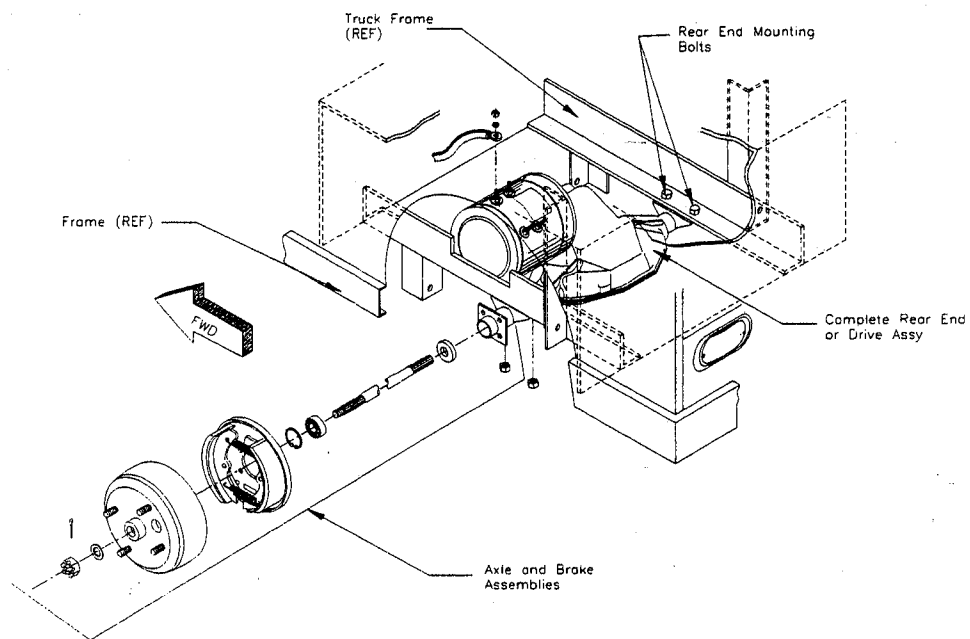
1. Park the vehicle on a clean level surface.
2. Lift the front of the vehicle and place blocks under the frame, that are large enough to prevent the front wheel from touching the floor.
3. Lower the front of the vehicle onto jack stands.

⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

4. Support the rear end assembly with a jack and jack stands too.
6. Remove the bolts mounting the rear coil springs to the drive frame and lower the entire frame and rear end assembly.
7. Raise the rear of the vehicle and support it with jack stands.
8. Disconnect the wires from the motor, and brake cables.
9. Remove the bolts from the rear end mounting brackets, holding the rear end assembly to the drive frame.
10. Remove the rear end assembly from the vehicle.
11. Install in reverse order.

Drive and Rear Axle



Complete MX-600 Drive and Rear End Assembly



Removing the MX-600 Rear End Assembly

Here we are referring to the complete assembly including wheels, axle, housing, drive and drive motor. In order to remove this complete assembly from the vehicle use the following procedure.

1. Park the vehicle on a clean level surface.
2. Lift the front of the vehicle and place blocks under the frame, that are large enough to prevent the front wheel from touching the floor.

WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

3. Lower the front of the vehicle onto jack stands.
4. Raise the rear of the vehicle and support it with jack stands too.

NOTE: You may want to remove the tires in order to make it easier to remove the mounting bolts from the frame.

5. Place another set of jack stands under the drive assembly, and remove the bolts mounting the drive assembly to the frame. Then lower the entire rear end assembly.
6. Disconnect the brake cables.
7. Disconnect the wires from the motor
8. Remove the rear end assembly from under the vehicle.
11. Install in reverse order.

Drive and Rear Axle

Differential and Rear Axle

The differential and rear axle assemblies are slightly different between the SS5-34 and the SS5-36 and MX-600. For this reason we have divided this section into two separate sub sections. The first for the SS5-34 and the second for the SS5-36 and MX-600.

The SS5-34 has a belt driven differential while the SS5-36 and MX-600 are both direct drive helical gear driven differentials.

In these sections we will cover how to disassemble and service these differential and rear axle assemblies. Also the belt adjustments for the belt drive system will be included in the section as well.

To properly service the differential it will have to be removed as described on pages 2-39 thru 2-43. At this point we are assuming that the entire assembly has been removed from the vehicle and has been placed on a clean, level work area or on a stand, designed to hold such an assembly. An exception to this is when the axles need to be serviced. Then the entire rear end assembly does not need to be removed. However, for simplicity all of the following instructions have been written as if the rear end assembly has been removed from the vehicle.

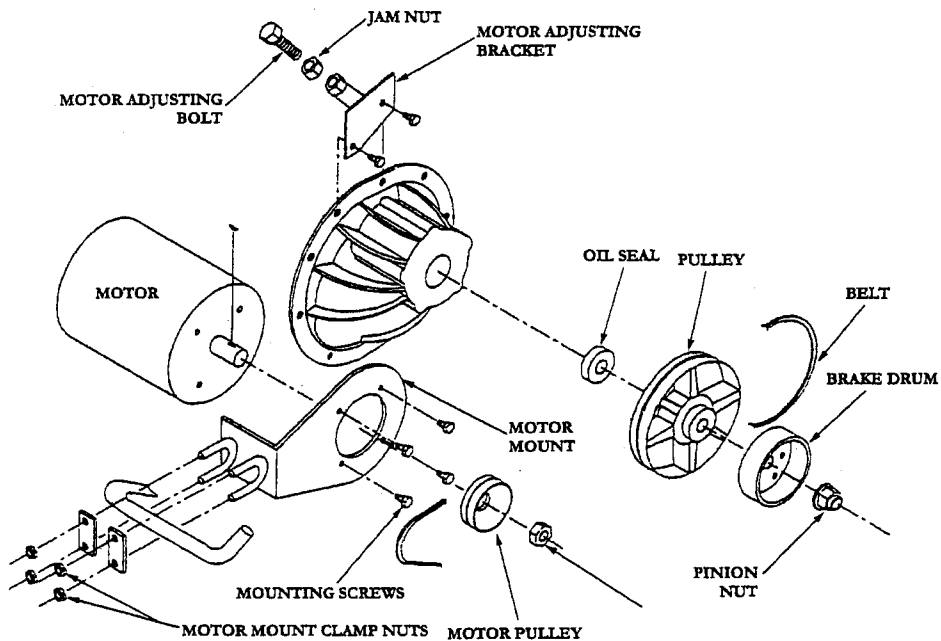
To service the SS5-34 drive the procedures are covered on pages 2-45 through 2-53. To service the SS5-36 and MX-600 the procedures are covered on pages 2-55 through 2-61. There are certain procedures that overlap between the different vehicles. Instead of rewriting these procedures you will find notations telling you where to find the proper procedure.

SS5-34 Drive Service

To properly service this assembly it will have to be removed as described on page 2-37. At this point we are assuming that the entire assembly has been removed from the vehicle and has been placed on a clean, level work area or on a stand, designed to hold such an assembly.

Disassembly of The Belt Drive Assembly

1. Remove the brake as described in steps 1-8 on page 2-11, "*Removing the Brake Assembly.*"
2. Loosen the motor mount clamp nuts and the motor adjusting bolts locknut.
3. Turn the motor adjusting bolt until the belts can be removed without prying or forcing them off.
4. Remove the belts.
5. Remove the motor by removing the motor mount clamp nuts.
6. Remove the pulley from the pinion shaft.
7. Inspect the seal in the pinion bearing retainer. Replace it if it is worn or damaged.
8. Reassemble in reverse order and adjust the belt tension and the pulley alignment as described in "*Adjusting Belt Tension,*" on page 2-48 and "*Aligning Pulleys,*" on page 2-49.



Belt Drive Disassembly

Drive and Rear Axle

Removing and Servicing the Rear Axle

This procedure does not require that the rear end or drive assembly be removed in order to complete. However if the rear end assembly is removed from the vehicle, you may skip procedure #1.

1. Raise and support the rear of the vehicle with a suitable lifting device.

⚠ WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

2. Remove the tire and wheel assembly.
3. Remove the four bolts attached to the axle retaining plate.
4. Pull axle out of housing.
5. Remove the bearing gasket.
6. Inspect all bearings for roughness or play. Replace the bearings as needed.

⚠ CAUTION

If the bearings are removed from the axle the axle retainer and bearings must be replaced with new ones. Failure to replace these parts could result in the axle coming out of the vehicle while driving.

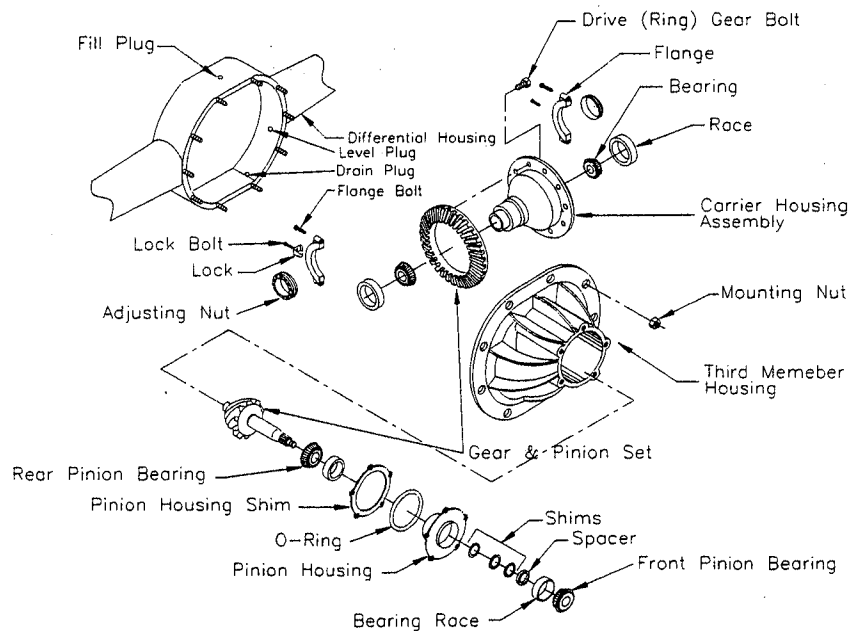
7. Inspect the axle for metal fatigue.
8. Install a new rear axle in reverse order.

Differential Service and Repair

1. Raise the drive wheels and support the vehicle with jack stands.
2. Drain the oil from the drive.
3. Remove the belt drive assemblies.
4. Remove the rear wheels.
5. Using a slide hammer, slide the axles out from the drive housing.
6. Remove the third member mounting nuts and third member from the housing.
7. Mark the bearing flanges to insure that they can be installed in the same place during reassembly.
8. Remove the carrier bearing flanges and the carrier assembly from the housing.
8. Remove the pinion housing assembly from the third member.

NOTE 9: Do not lose shims !

9. Replace bearings, bearing races, and gears as needed.



SS534 3RD MEM.DWG

Differential Assembly for the SS5-34

Drive and Rear Axle

10. Read the following list of things to remember while reassembling the differential and then reassemble it in reverse order.
 - a.) Pre-lube all bearings and gears during reassembly.
 - b.) Cross tighten ring gear bolts to 72 ft.-lbs.
 - c.) If pinion bearing or gears are replaced, the drive must be reshimmed. (See Re-Shimming the Pinion Bearings, below.)
 - d.) Use new seals.

Adjusting Backlash

1. Install the correctly shimmed pinion gear and pinion gear housing. (See page 2- 47.)
2. Temporarily install the drive sprocket and brake drum. Torque the pinion nut to 175ft.-lbs.
3. Tighten the carrier bearing cap bolts to 15 ft.-lbs.
4. Position the carrier assembly against the pinion gear. While rotating the carrier, turn the adjusting nuts to contact the carrier bearings.
5. Loosen the adjusting nut on the toothed side of the ring gear slightly.
6. Tighten the other nut so that there is no gear backlash, but not so tight to cause binding.
7. Tighten the adjusting nut on the toothed side of the ring gear so that there is .008 to .012 backlash.
8. Tighten the carrier bearing cap bolts to 40-55 ft.-lbs.

Reshiming the Pinion Bearing

1. Remove the pinion housing from the third member.
2. Install the drive gear and brake drum (or equivalent spacer,) on to the pinion shaft and tighten to 175ft.-lbs.
3. Check the torque required to rotate the pinion shaft. Torque spec is 7 to 10 in-lbs.

NOTE 10: Do not rotate bearings when dry, they must have a lubricant, or they will be damaged.

4. Add or remove shims as necessary.



Selecting Pinion Housing Shims

The pinion housing shims are available in thickness' from 0.005" to 0.021", in increments of 0.001", to correctly position the pinion gear. However, the standard shim thickness is 0.015" thick.

The following numbering system is used on pinions to indicate the amount you must add or subtract from the standard shim, in order to correctly position the pinion gear. Locate the number on the flat surface on the small shaft at the end of the pinion gear. Match the number with the shim required. Refer to the table below:

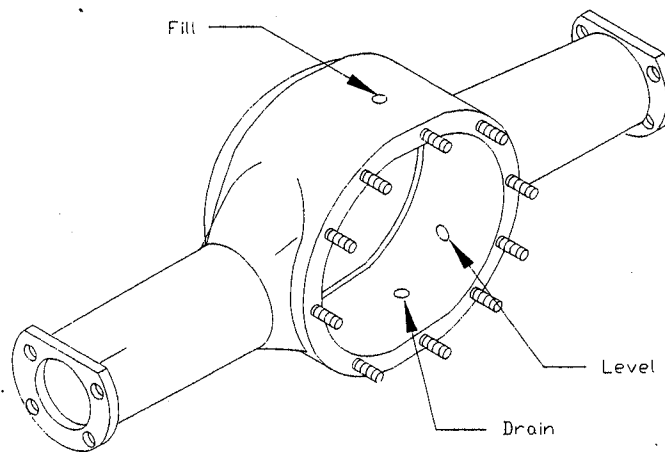
Pinon Numbering System

If the Number is	Add Shim(s) as Follows
+0	No Adjustment
+1	Add .001 Shim
+2	Add .002 Shim
+3	Add .003 Shom
+4	Add .004 Shim
+5	Add .005 Shim
-1	Subtract .001 Shim
-2	Subtract .002 Shim
-3	Subtract .003 Shim
-4	Subtract .004 Shim
-5	Subtract .005 Shim

Drive and Rear Axle

Changing the Differential Oil

- 1.. Place a three-(3) quart or larger drain pan under the drive.
2. Remove the differential drain plugs.
3. Replace the drain plugs and remove the differential fill and level plugs.
4. Install oil into the differential through the filler hole until the oil starts to come out of the level hole. (This usually about two-(2) quarts.)
5. Install the level plug.
6. Install the remaining plugs.



GENERIC FILL AND DRAIN PLUGS IN DIFF.DWG

Differential Housing

Motor Removal

In order to remove the motor from the drive assembly use the following procedure.

1. Park the vehicle on a level surface and block the wheels to prevent movement and disconnect the batteries.
2. Remove the deck board and place it out of the way.
3. Mark the wire leads on the motor to insure their proper location when reinstalling the motor.
4. Remove the wire leads from the motor and loosen the motor mount clamp.
5. Loosen the motor adjusting bolt lock nut and turn the adjusting bolt until the belts can be easily removed.
6. Remove the belts.
7. Remove the motor four motor mounting bolts.
8. Remove the motor assembly from the vehicle.
9. Install in reverse order.

NOTE 1: After installing the motor the belts must be adjusted. See Adjusting belts, on page 2-52. If you are installing a new motor remove the pulley from the old motor and install it on the new one. Then follow the procedure above in reverse order.

Drive and Rear Axle

Adjusting Belt Tension

Whenever the belts are removed from the pulleys or as the belts become worn the belt tension must be readjusted. In order to adjust the belt tension follow these procedures.

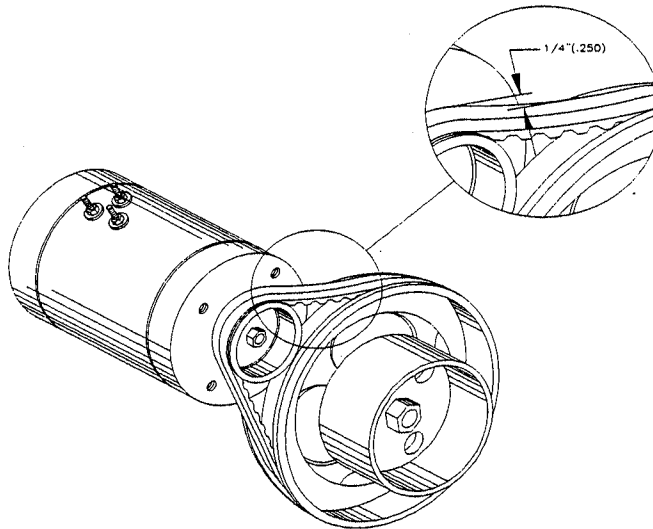
1. First use a straight edge to check the alignment of the pulleys. The face of the pulleys should be in line with each other.

NOTE 3: If the two pulleys are not in line then refer to adjusting pulley alignment on the next page.

2. Loosen the lock nut on the motor adjusting bolt.
3. Turn the adjusting bolt in or out as needed to tension the belts properly.

NOTE 4: There should be a 1/4" deflection in the belts at the mid point between the two pulleys as shown in the figure below.

4. Check the deflection in the belts and then rotate the pulleys one full turn and check the deflection again.
5. If the deflection is correct. Tighten the lock nut on the motor adjusting bolt. If the deflection is not correct repeat steps 2 through 4 again.



Belt Deflection of 1/4" (.250")

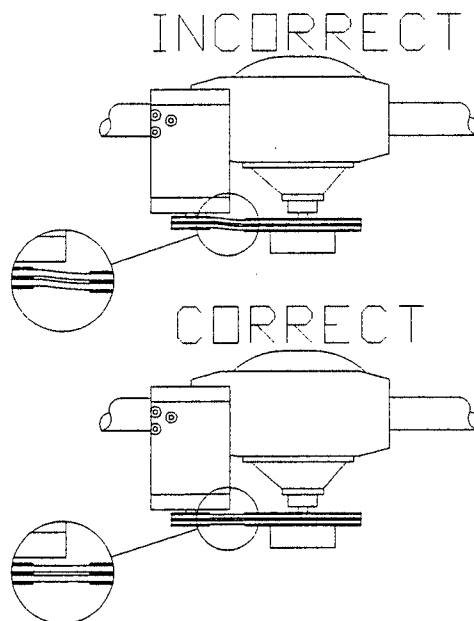
Aligning Pulleys

To align the pulleys use the following procedure.

1. Place a straight edge against the face of the two pulleys.

NOTE 5: The straight edge should rest flat on the faces of both of the pulleys. If it does not rest flat on both pulleys. Then continue, if it does rest flat on the face of the two pulleys then no adjustment is needed.

2. Loosen the motor mount clamp nuts and move the motor either forward or backward until the two pulley faces are in line with each other.
3. Tighten the motor mount clamp nuts and check the belt deflection, as described on the previous page. Adjust the belts as needed. Refer to Adjusting Belt Tension on the previous page.

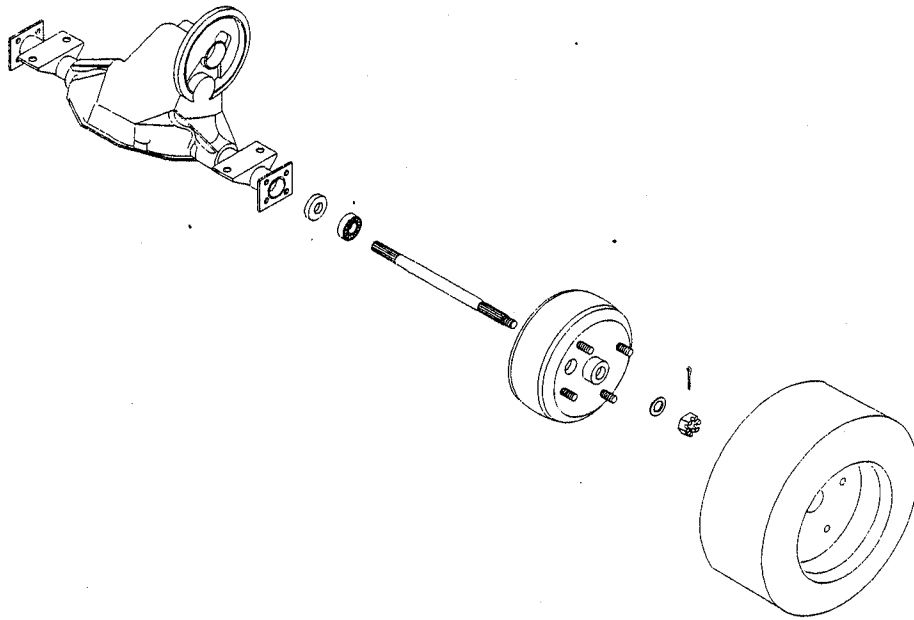


Belt Drive Pulley Alignment

Drive and Rear Axle

SS5-36 and MX-600 Drive Service

To properly service this assembly it will have to be removed as described on page 3-41 or 3-43, depending on whether you are working on a SS5-34 or MX-600. At this point we are assuming that the entire assembly has been removed from the vehicle and has been placed on a clean, level work area or on a stand, designed to hold such an assembly.



SS5-36 and MX-600 Drive Assembly



Removing and Servicing the Rear Axle

This procedure does not require that the rear end or drive assembly be removed in order to complete. However if the rear end assembly is removed from the vehicle, you may skip procedure #1.

1. Raise and support the rear of the vehicle with a hoist or other suitable lifting device.

WARNING

Always use a lifting strap, hoist and jack stands of adequate capacity to lift and support the vehicle. Failure to use lifting and supporting devices of rated load capacity to support the vehicle may result in serious injury and property damage.

2. Remove the tire and wheel assembly.
3. Remove the four bolts attached to the axle retaining plate.
4. Pull axle out of housing.
5. Remove the bearing gasket.
6. Inspect all bearings for roughness or play. Replace the bearings as needed.

CAUTION

If the bearings are removed from the axle, the axle retainers must be replaced with new ones. Failure to replace these parts could result in the axle coming out of the vehicle while driving.

7. Inspect the axle for metal fatigue.
8. Install a new rear axle in reverse order.

Drive and Rear Axle

Servicing the Differential

At this point we are assuming that the complete drive assembly and differential has been removed from the vehicle, and has been properly placed in a safe work area.

To service the differential use the following procedure

1. Drain the oil from the differential into the appropriate receptacle.
2. Remove the axle shafts from the differential as described on the previous page.
3. Remove the cover plate from the differential and let the remaining oil drain from the housing.

NOTE 11: Do not damage the housing sealing surface or deform the cover plate.

4. Dispose of the old oil properly.
5. Remove the bearing cap screws and bearing caps.

NOTE 12: Bearing caps are marked for identification, during reassembly. Make sure they are put back in their original position.

6. Remove the differential case assembly from the housing.
7. Remove the differential bearings from each side of the case.
8. Remove the drive gear from the case.
9. Punch or drill a 1/8" hole in the center of each bearing bore plug.
10. Insert a suitably sized sheet metal screw into the hole until the bore plug is forced out of the bearing bore.
11. Remove the snap ring from each bearing bore.
12. Drive the intermediate shaft from the flange side of the housing.

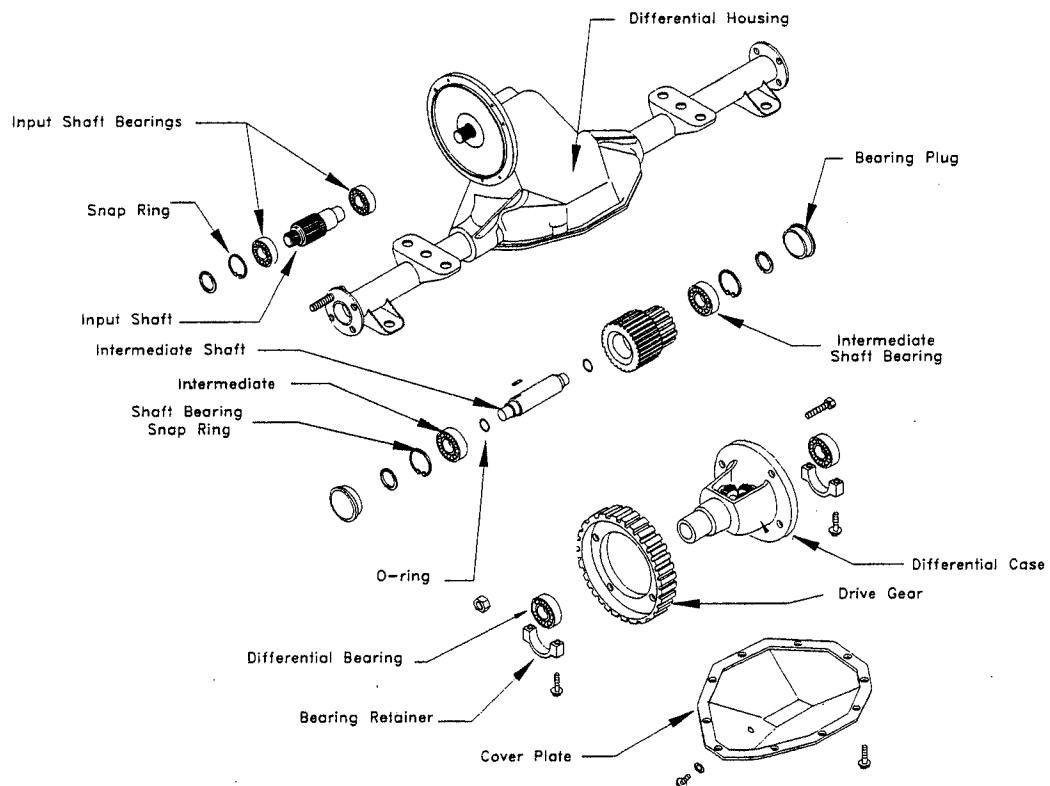
NOTE 13: Use a brass drift pin to drive the shaft from the housing.

13. Remove the intermediate bearings from the housing.
14. Remove the O-Rings from the intermediate shaft.
15. Remove the snap rings from the input shaft bore.
16. Pull the input shaft assembly from the housing.
17. Remove the bearings from the input shaft.

NOTE 14: Use an arbor press to remove the bearings from the shafts.

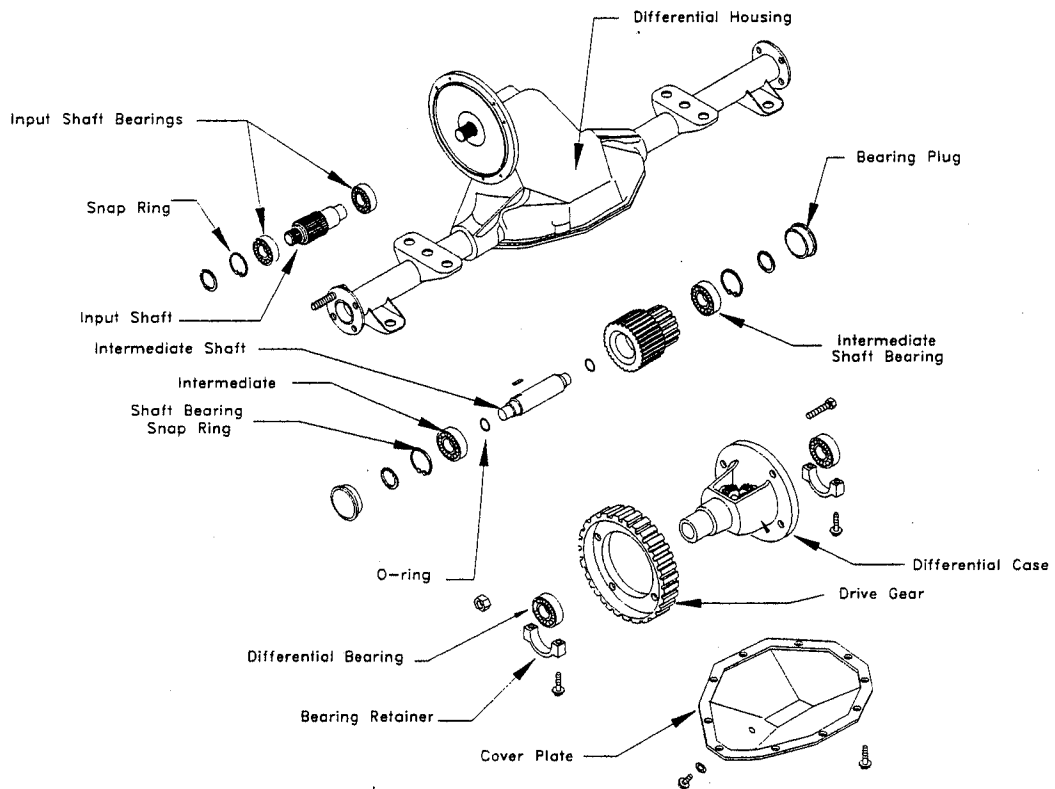
18. Remove the O-Rings from the outer input bearing bore and both intermediate bearing bores.
19. Inspect all parts for signs of wear or damage.

NOTE 15: Bearing, seal and gear surfaces should be inspected for pitting, wear, overheating or scoring. Replace these parts as needed.



Exploded View of SS5-36 and MX-600 Differential Assembly

Drive and Rear Axle



Exploded View of SS5-36 and MX-600 Differential Assembly



20. All parts should be cleaned with emulsion cleaners or petroleum based cleaners.
21. Lubricate all parts with SAE 30 oil.
22. Press inner and outer bearings on to the input shaft to the bearings shoulders.
23. Install the input shaft.

NOTE 16: A plastic or leather mallet should be used to tap the shaft into position, if resistance is encountered.

24. Install the outer snap rings and O-Rings onto the intermediate shaft.
25. Assemble the intermediate shaft and gear assembly through the bottom opening of the housing.

NOTE 17: Small end of intermediate shaft and gear assembly must be tilted toward the bottom opening until bearing trunnion visually engages the intermediate bores.

26. Align both bearing trunnions with intermediate bores.
27. Insert the flange side bearing into the opening.

NOTE 18: To seat the bearing past the O-Ring, a plastic or leather mallet may be required.

28. After the flange side bearing is seated install the snap ring.
29. Repeat procedures for opposite side.
30. Align the final drive gear mounting holes with the differential case and install the four bolts through the differential case and secure the drive gear in place by tightening the nuts.

NOTE 19: The bolts should be installed from the flange side of the differential case.

31. Press the differential bearing onto each trunnion of the differential case.
32. Position the housing with the opening up and insert the entire assembly into the housing.
33. Install the differential bearing caps

NOTE 20: Remember that the bearing caps are marked. Be sure to reinstall the bearing caps back into their original position.

34. Install the bearing cap screws and torque them to 35-45 ft. lbs.
35. Install the cover plate and torque the cover plate screw to 18-28 ft. lbs.
36. Install new intermediate bore plugs into both sides of the housing.

NOTE 21: Bore plugs should be firmly against the snap rings, when fully seated. Use a properly sized driver and hammer to install the plugs.

37. Fill differential housing with one pint of SAE 30 oil.

Drive and Rear Axle

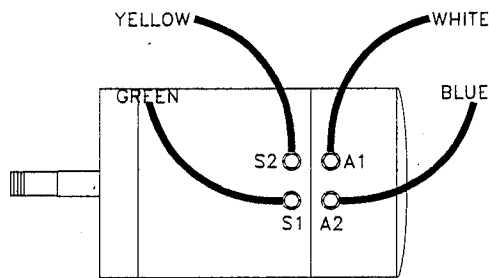
Motor Removal

All other motor repair and servicing issues are covered on pages 2-62 through 2-65. As these are the same for all three vehicle models.

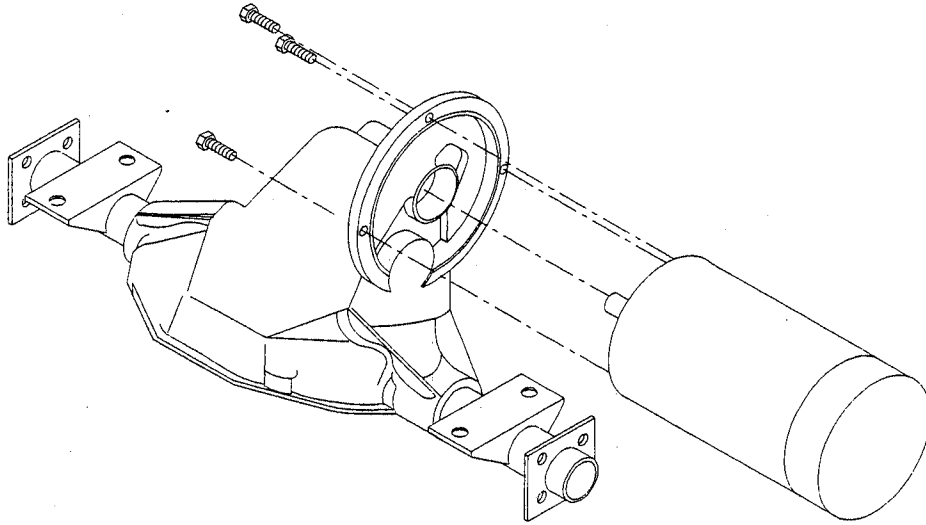
To remove the motor from the differential use the following procedure. Refer to the figures at the bottom of this page and at the right.

NOTE 22: If you are servicing a MX-600 the differential and rear end assembly must be removed from the vehicle to complete this task. Refer to page 2-43, for removal instructions. If you are servicing a SS5-36 you may simply remove the deck board to gain access to the motor.

1. Support the motor.
2. Label the wires connected to the motor to insure that they are returned to their proper location on the motor during reassembly.
3. Remove the wires from the motor.
4. Remove the motor mounting bolts from the drive.
5. Pull the motor away from the drive and set on a clean level surface such as a work bench.
6. Install the new motor or reassemble in reverse order.



Wire Connections on Motor



Motor Mounted on Assembled SS5-36 and MX-600 Differential

Motor

Removal

In order to remove the motor from the drive assembly use the following procedure.

1. Park the vehicle on a level surface and block the wheels to prevent movement and disconnect the batteries.
2. Remove the deck board and place it out of the way.
3. Mark the wire leads on the motor to insure their proper location when reinstalling the motor.
4. Remove the wire leads from the motor and loosen the motor mount clamp.
5. Loosen the motor adjusting bolt lock nut and turn the adjusting bolt until the belts can be easily removed.
6. Remove the belts.
7. Remove the motor four motor mounting bolts.
8. Remove the motor assembly from the vehicle.
9. Install in reverse order.

NOTE 1: After installing the motor on a SS5-34 the belts must be adjusted. See Adjusting belts, on page 2-52. If you are installing a new motor remove the pulley from the old motor and install it on the new one. Then follow the procedure above in reverse order.

Brushes

The motor brushes must be checked regularly for wear. Use the following procedure to check the brushes in the motor for wear in the SS5-34

1. Remove the motor from the drive assembly as describe in "Removal," above.
2. Insert a .035" rod or paper clip into the inspection hole directly above the brushes.
3. If the rod travels in the hole 1.5" or more than the brushes must be replaced.

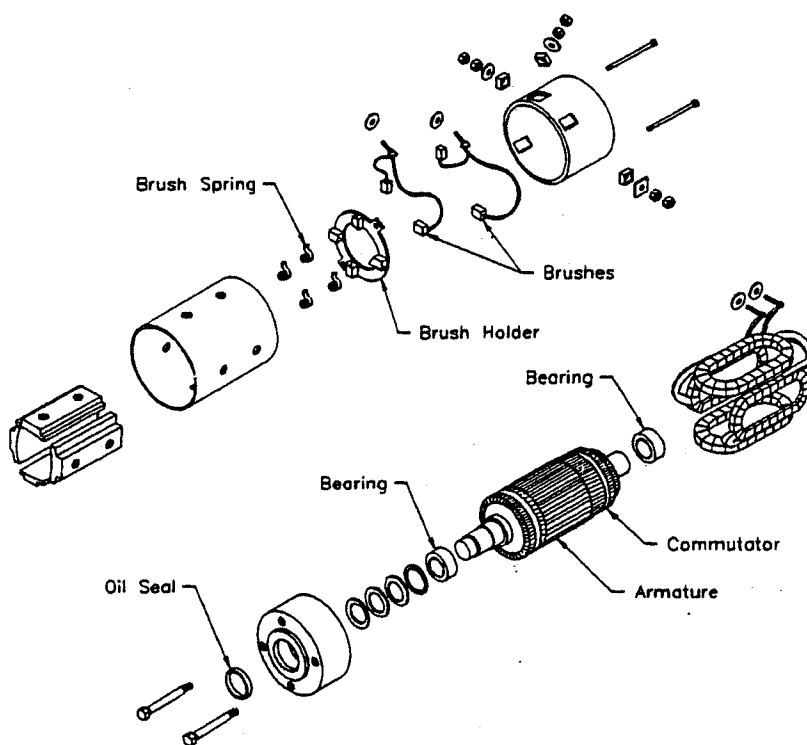
NOTE 2: The wear limit is 1.5". If the distance the rod or paper clip travels inside of the motor is 1.5" or greater the brush must be replaced. We recommend that all the brushes be replaced at the same time.

To install new brushes refer to "Installing New Brushes," on the next page.

Installing New Brushes

In order to install new brushes in the motor use the following procedure. (*Refer to the Figure below for Motor Disassembly.*)

1. Remove the motor from the rear end assembly.
2. Remove the motor cover revealing the brush holder and brushes.
3. Disassemble the brush studs from the cover.
4. Remove the old brushes and install the new ones.
5. Inspect the commutator for wear.
6. Replace the motor cover and reinstall the motor on the rear end assembly.



Exploded View of Motor

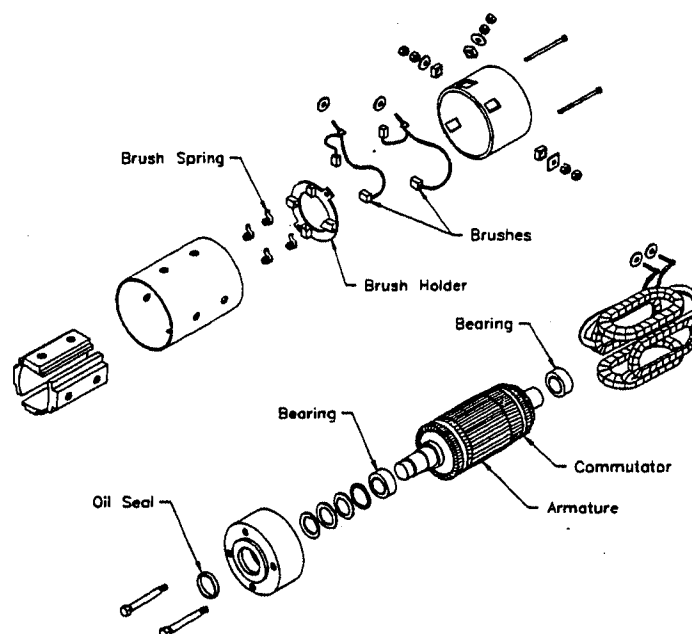
Drive and Rear Axle

Motor Disassembly

1. Remove the motor as described in the procedures of "Removal," on page 2-60.
2. Disassemble the motor.

NOTE 6: Mark the housing to insure proper alignment when reassembling.

3. Inspect the armature and commutator as described in "Inspecting the Armature," on page 2-61.
4. If the bearings were removed due to wear, install new bearings on the shaft. (Other wise continue on to step #5.)
5. Reassemble the motor.
6. Install the motor onto the rear end assembly.



Exploded View of Motor for All Models

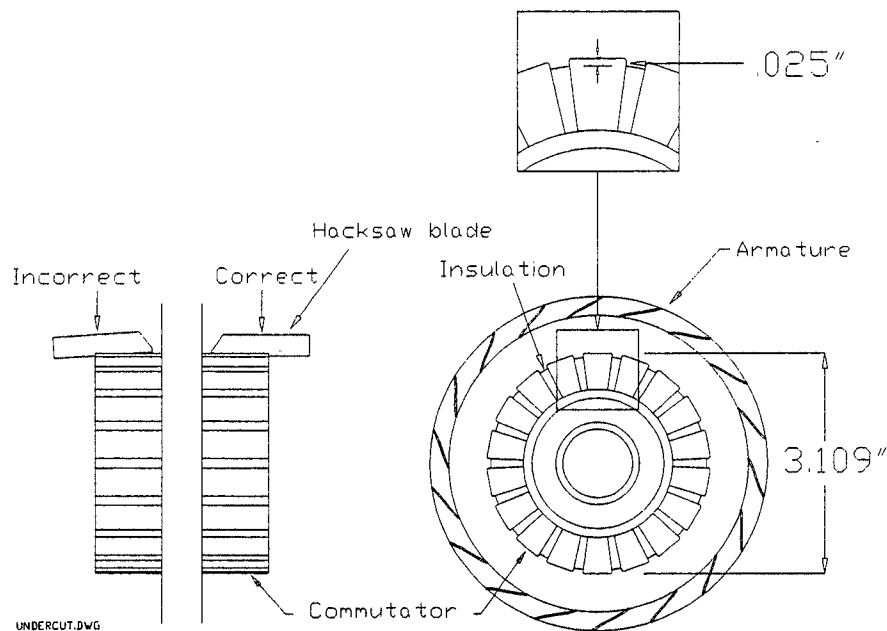
Inspecting the Armature

1. If any solder has been thrown from the armature the motor must be replaced.

NOTE 7: Check the inside of the motor housing around the commutator for bits of solder.

2. If the commutator is grooved it must be cut on a lathe.
3. Measure the undercut on the commutator.
 - a.) If less than .025" then the mica must be undercut. *See the figure below.*
4. Measure the commutator diameter.
 - a.) 70-049-00 or 70-049-05 MOTOR-If less than 3.109" then the armature is worn out and the motor must be replaced.
5. Spin the bearings by hand.
 - a.) If any vibration or roughness is felt, they must be replaced.

NOTE 8 : It will require a press to replace the bearings.



Correct Way to undercut the Commutator and Correct Mica Depth

Drive and Rear Axle

NOTES

Battery

Cleaning

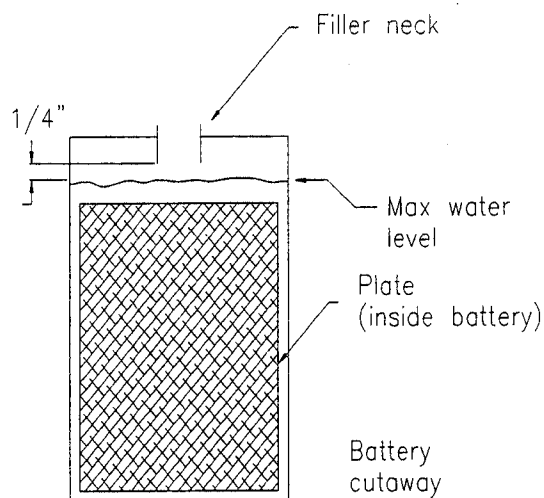
1. Dry dirt can be readily blown off with low-pressure air or brushed off.
2. Wetness or wet dirt on the covers indicates battery acid. Using a nonmetallic brush with flexible bristles wash it off with a strong solution of baking soda and hot water (1 lb. of soda to gallon of water). Continue until all fizzling stops, which indicates that the acid has been neutralized. Then rinse thoroughly with clear water. DO NOT get any of the solution into the battery cells.

WARNING

Battery electrolyte is poisonous and dangerous. It contains sulfuric acid. Avoid contact with skin eyes or clothing. Wear rubber gloves and safety glasses while servicing batteries. DO NOT INGEST!

WARNING

Batteries produce an explosive gas when charging. DO NOT SMOKE, produce an open flame or spark while checking or servicing a battery.



Battery Fill Level: This figure show the proper fill

Battery

Servicing

1. Check the electrolyte level in all batteries. If low fill with distilled water up to the correct level (*Refer to the figure on the previous page*).

⚠ CAUTION

Do not overfill the battery. An overfilled battery may leak acid.

2. Clean the battery (*See Battery Cleaning on the previous page.*)
 3. Clean the cell posts connectors and battery box with water.
-

Charging

To charge the batteries do the following:

1. Check the electrolyte level. If low, fill with distilled water up to the correct level (see figure on previous page).

⚠ WARNING

Explosive mixtures of Hydrogen gas are present within battery cells at all times. Do not work with or charge battery in an area where open flames (including gas furnace or water heater pilots), sparks, cigarettes, or any other sources of combustion are present. Always provide ample ventilation in rooms where batteries are being charged.

2. Park the vehicle in an approved area for charging and plug the charger in.
3. Allow the charger to cycle completely before unplugging.



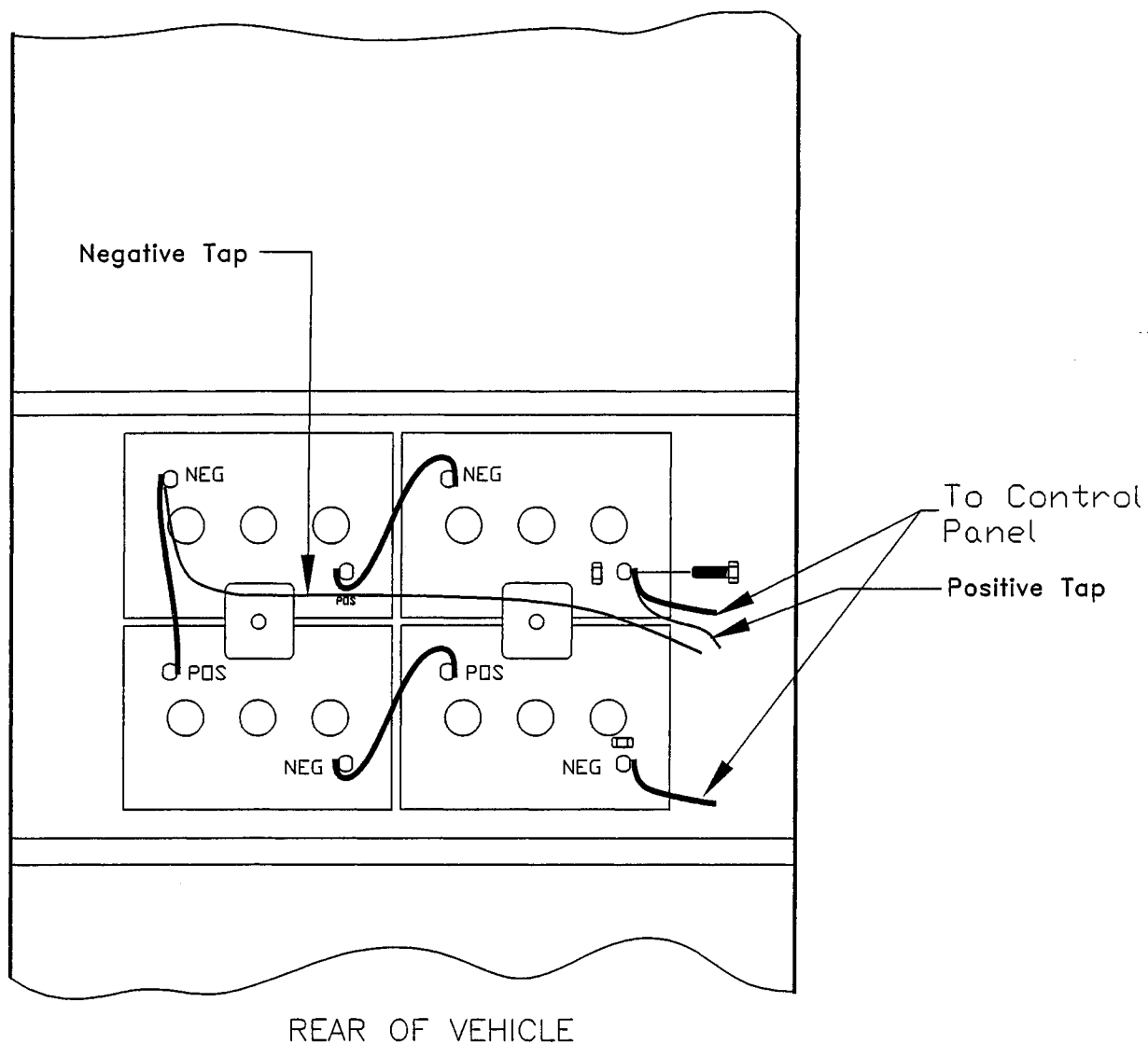
Battery Storage

The following pointers will help extend the life of the battery when storing your vehicle for the winter season:

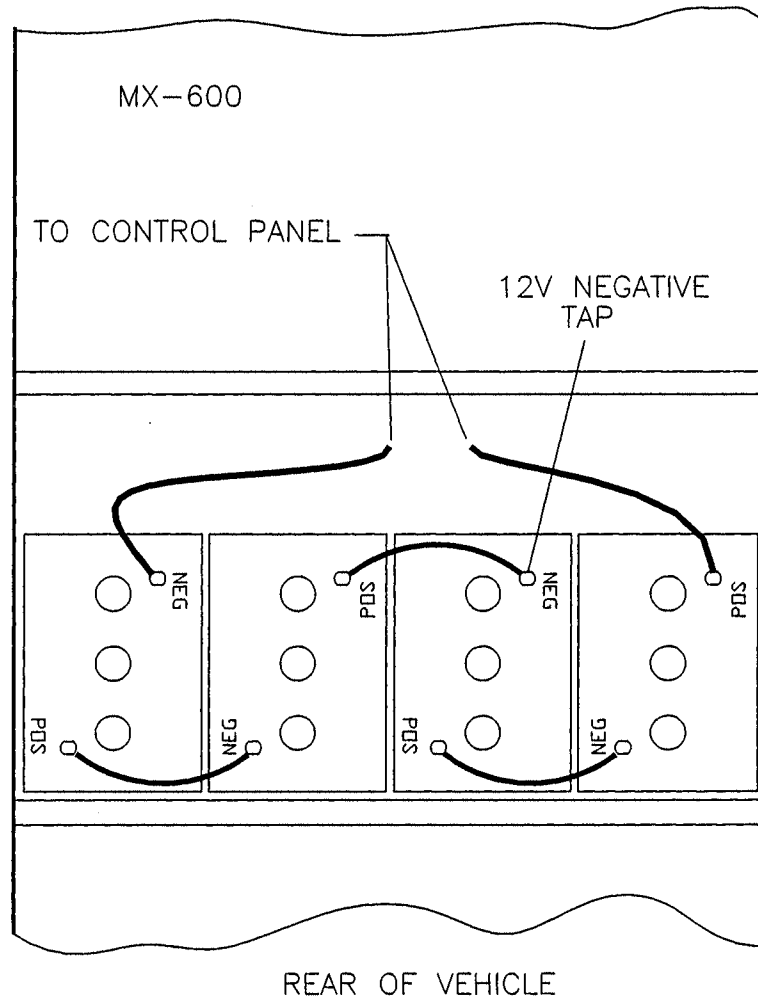
- Clean and check the electrolyte level and charge level of the battery. Do not store a battery low in electrolyte or in a low state of charge.
- Recharge a battery not in use every 1 to 2 months.
- If possible, store the vehicle in a cool dry place.

If the batteries are removed from the vehicle, do not place them directly on the ground, concrete or solid metal surface. It is recommended to store them on a wooden pallet or equivalent.

NOTE 2: The battery configurations and their connections are shown on the following pages.



Battery Configuration: Shown are the batteries and how they are connected together for the SS5-34 and SS5-36.



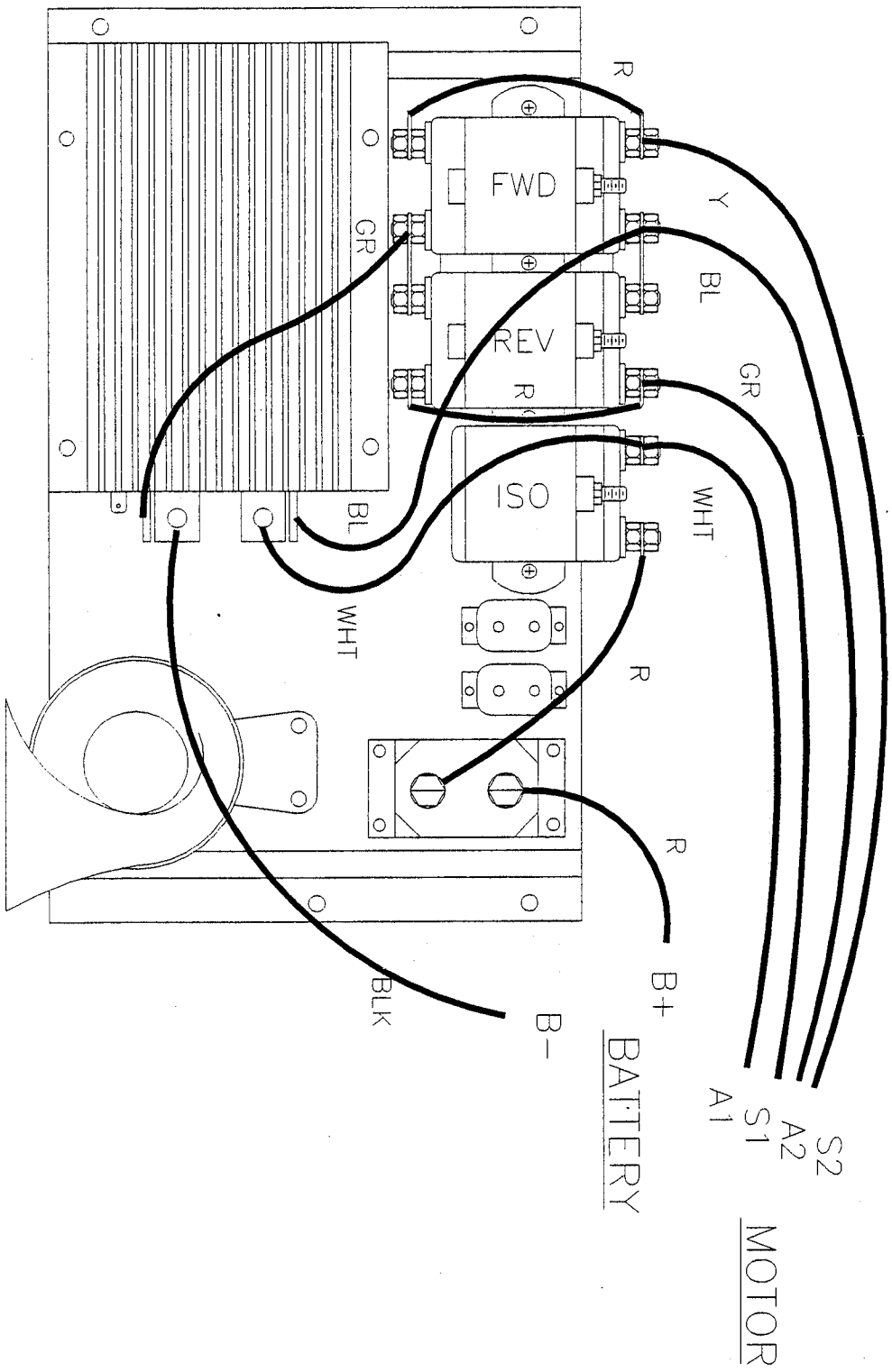
Battery Configuration: Shown are the batteries and how they are connected together for the MX-600.

Battery

NOTES

Electrical and Charger Troubleshooting





Typical Control Panel

PMC TROUBLESHOOTING

Test Equipment Required:

- Digital multi-meter (DMM) with diode test function, FLUKE 79 model shown.
- Shunt or clamp-on DC Ammeter to measure up to 400 Amps.
- Test light with a rated voltage equal to or exceeds maximum battery voltage or Taylor-Dunn test light part number #62-027-00 for systems up to 48 volts.
- Test harness, Taylor-Dunn #62-027-31.

IMPORTANT NOTES and INSTRUCTIONS

- This troubleshooting guide assumes that you are familiar with the use of a digital multi-meter including, voltage tests, continuity tests and diode testing. If you do not understand any part of these tests, you should refer testing to a qualified technician.
- Make sure the batteries are in good condition and fully charged before performing any tests.
- If the truck exhibits intermittent problems, it must be in the failed mode for troubleshooting. If it is running normally when the testing is done, you will not find the problem.
- All voltage tests are done referenced to battery negative unless otherwise specified.
- Battery volts = full voltage available at batteries at the time of test.
- All tests are done with key-switch on and any safety switches (if equipped) closed.
- This test procedure must be performed in the order it was written. If you start in the middle or skip sections when not instructed to do so, you may not get the proper results.
- Perform each test in the order it is written. If the test result is good, then proceed to the next test or go to the next section if instructed to do so.

Electrical Troubleshooting

DURING ALL TESTS

⚠ WARNING

Both drive wheels are to be supported off the ground by jack stands with the front wheels blocked.

- All test in this manual refer to the full battery voltage as 36-Volts. If you are working on a 48-Volt system then the full battery voltage will be 48-Volts.
- After any repairs are made completely test vehicle before lowering the drive wheels to the ground.
- Disconnect both of the battery leads during any maintenance, or before disconnecting any electrical component or wire.

If the truck runs normally in only one direction and does not run in the opposite direction then go to the **SOLENOIDS** section.

If the truck runs slow and/or lacks power go to the **SPECIAL TROUBLESHOOTING** section.

CONTROL WIRES AT PMC

With the F&R switch in gear (forward or reverse), depress the Accelerator pedal to engage the first micro switch only (creep speed) and perform the following tests.

TEST #1:

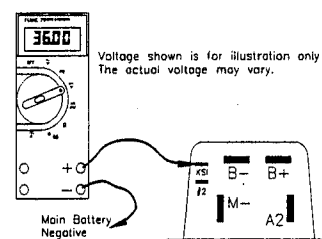
Test voltage at pin 'KSI' on the PMC control. *Refer to Control Wires Figure 1.*

Results:

The Voltage reading should equal the battery voltage.

Action:

If the result equals the battery voltage continue to TEST#2. If it does not equal the battery voltage continue on to the KSI section.



Control Wires Figure 1

TEST #2:

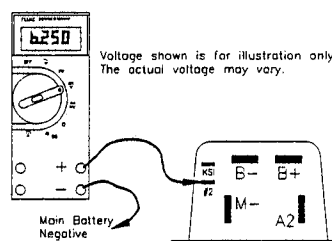
Test voltage at pin #2 at the PMC. *Refer to Control Wires Figure 2.*

Results:

The Voltage reading should be between 6 and 6.5 Volts.

Action:

If the result is between 6 and 6.5 Volts continue to the TEST#3. If the result is not between 6 and 6.5Volts, go to the **ACCELERATOR MODULE** section.



Control Wires Figure 2

Electrical Troubleshooting

With the F&R switch still in gear, depress the accelerator pedal fully.

TEST #3:

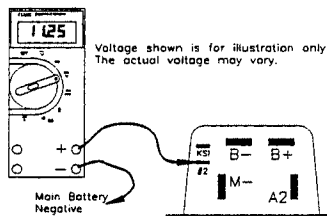
Test voltage at pin #2 on the PMC control. *Refer to Figure.*

Result:

The Voltage reading should be between 11 and 11.5Volts.

Action:

If the result is between 11 and 11.5 Volts continue to the test #1 in the **POWER WIRING** section. If the result is not between 11 and 11.5Volts go to the **ACCELERATOR MODULE** section.



Test of Control Wires: Measuring voltage between pin #2 of the PMC and Battery Negative.

POWER WIRING

NOTE 1: All tests in this section are with the resistor at the ISO solenoid disconnected. Reconnect the resistor when exiting this section.

Depress the Accelerator pedal to engage the first micro switch only (creep speed) and perform the following tests.

TEST #1:

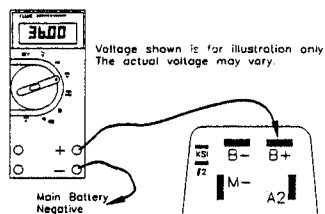
Test voltage from the main battery negative post to the 'B+' terminal on the PMC. *Refer to Test of Power Wiring figure at the right.*

Result:

The Voltage reading should equal the battery voltage.

Action:

If the result equals the battery voltage continue to TEST#2. If it does not equal the battery voltage continue on to the **SOLENOIDS** section.



Test of Power Wiring: Measuring the voltage between the B+ of the PMC and Battery Negative.

TEST #2:

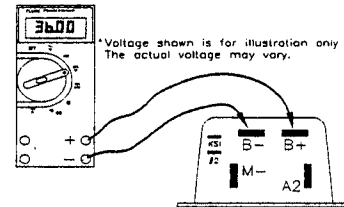
Test voltage from the 'B+' terminal on the PMC control to the 'B-' terminal on the PMC control. *Refer to the top right figure.*

Result:

The Voltage reading should equal the battery voltage.

Action:

If the result is equal to the battery voltage then continue to TEST #3. If the result is not equal to the battery voltage then the problem is in the wiring or connections from the main battery negative post to the 'B-' terminal on the PMC control. **Stop here and repair/replace the wiring and/or connections.**



Test of Power Wiring: Measuring the voltage between the B+ and B- terminals of the PMC. The correct meter reading is equal to the voltage at the batteries at time of test.

TEST #3:

Remove the resistor from the ISO solenoid. Measure the resistor using the resistance or ohm setting on the meter and check the ISO resistor. *Refer to figure, below.*

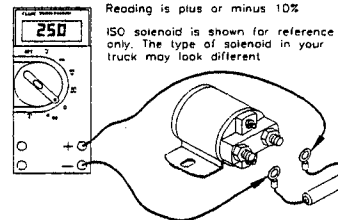
Result:

The reading should be 250, +/- 10-percent

Action:

If the result is 250 ohms, reconnect the resistor and continue to TEST #4. If the result is not 250 ohms then replace the resistor.

NOTE 2: A defective resistor could cause intermittent operation of control but would not stop it from working.



Measuring the Resistance of ISO Solenoid Resistor: The resistor is test with the meter set to ohms. The correct reading is 250 ohms +/- 10- percent.

Electrical Troubleshooting

Depress the accelerator pedal fully and perform the following tests.

TEST 4:

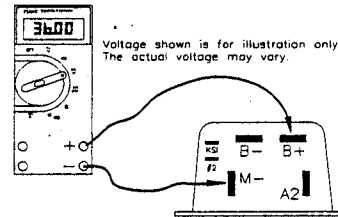
Test voltage from the 'M-' terminal on the PMC control to the 'B+' terminal on the PMC control. *Refer to top right figure.*

Result:

The Voltage reading should equal the battery voltage +/- 1Volt.

Action:

If it is within 1 volt of the battery voltage then continue to TEST #5. If it is not within 1 volt of the battery voltage then the PMC control is bad and must be replaced. **Stop here and replace the PMC Control.**



Measuring Voltage Across B+ and M- of PMC: The correct meter reading should equal the battery voltage at time of test.

TEST #5:

Connect the test light across the motor 'S1' and 'S2' terminals. *Refer to Testing Motor Figure below right.*

Result:

The light should be OFF.

Action:

If the light is OFF then continue to TEST #6. If the light is ON then the field is open and the motor must be replaced. **Stop here and replace the motor.**

TEST #6:

Connect the test light across the motor 'A1' and 'A2' terminals.

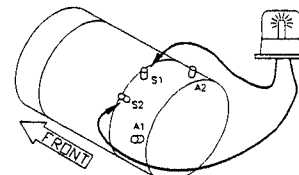
Result:

The light should be OFF.

Action:

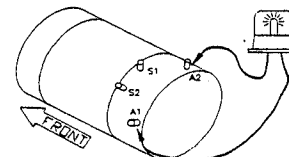
If the light is OFF, go to the **SOLENOIDS** section. If the light is ON then the armature is open and the motor must be replaced. **Stop here and replace the motor.**

If no fault was found up to this point then go to the **SOLENOIDS** section



Motor shown for reference only.
Terminal positions on your motor
may not be in the same
location.

Testing Motor: The light is connected across the S1 and S2 terminals of the motor. If the light comes on the motor is to be replaced. If it does not light continue with testing.



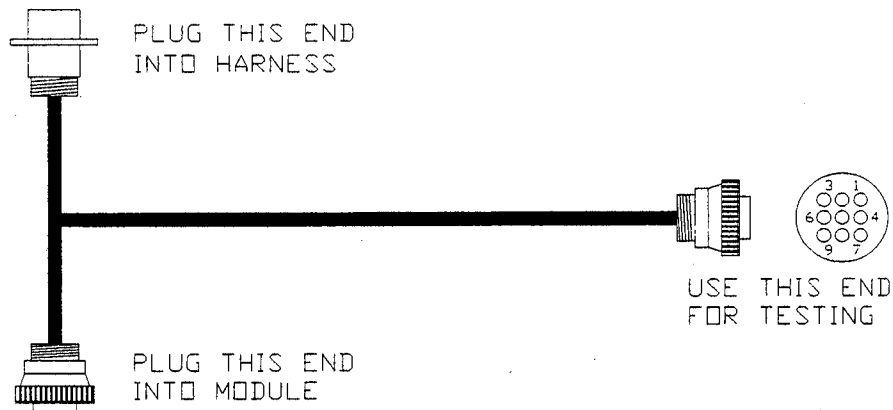
Motor shown for reference only.
Terminal positions on your motor
may not be in the same
location.

Testing Terminal A1 and A2 of Motor: The light is connected across terminals A1 and A2 of the motor. If the light is on the motor should be replaced. If it does not come on go to the **SOLENOIDS** section.

ACCELERATOR MODULE (magnetic or solid state only)

These tests are valid for the Magnetic and Solid State modules only. These tests will not work with the potentiometer (POT) modules. The Magnetic and Solid State modules can be identified by how many positions are available in the harness connector. The Magnetic and Solid State modules use a 9-position connector, the POT module uses a 7 position connector. The POT module is not compatible with Taylor-Dunn PMC controllers. If your truck is equipped with a POT module, it must be upgraded to a new module to be used with a PMC control. Contact your Taylor-Dunn distributor for more information.

NOTE 3: These tests are done at the accelerator module using the 62-027-31 test harness (see figure below). Connect the short end of the harness to the accelerator module and the trucks control harness. Testing will be done at the connector on the long end of the harness. The truck should not run with the harness connected. If your truck runs with the harness connected, there is a problem somewhere other than the accelerator module. *Refer to the Harness Figure at the bottom of this page.*



Test Harness: This shows the test harness that is used for conducting the following tests.

Electrical Troubleshooting

From this point on the end view of the test harness will be shown to clarify pin positions used for testing. There are no further reproductions of this figure in this section of the manual.

Depress the Accelerator pedal to engage the first micro switch only (creep speed) and perform the following tests.

⚠ WARNING

The rear drive wheels should be raised off the ground and the vehicle supported by jack stands.

TEST #1:

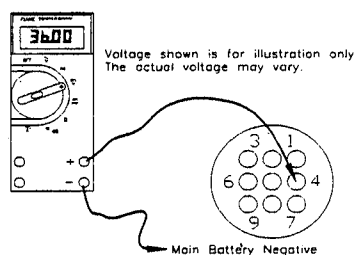
Test voltage at PIN #4 in the test harness. *Refer to Testing the Accelerator, Figure 1*

Result:

The Voltage reading should equal the battery voltage.

Action:

If it is not equal to the battery voltage then go to the KSI section, otherwise continue with the next test.



Testing the Accelerator 1

TEST #2:

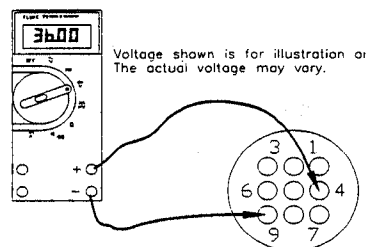
Test voltage from PIN #4(+) to PIN #9(-). *Refer to Testing the Accelerator, Figure 2.*

Result:

The Voltage reading should equal the battery voltage.

Action:

If it is not equal to the battery voltage then check the wire in pin #9 to the circuit breaker on the control panel and the circuit breaker. **Stop here and repair the problem,** otherwise continue with the next test.



Testing the Accelerator 2

TEST #3:

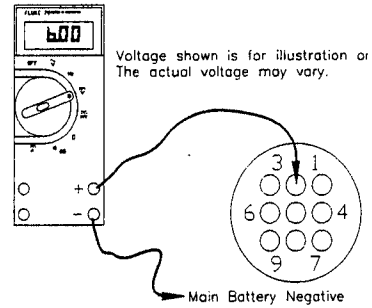
Test voltage at PIN #2. *Refer to Test Accelerator, Figure 3.*

Result:

The meter should read from 6Volts to 6.5Volts.

Action:

If not 6 to 6.5 volts then the accelerator module is bad. **Stop here and repair the problem,** otherwise continue with the next test.



Test Accelerator 3

TEST #4:

Test voltage at PIN #5. *Refer to Test Accelerator, Figure 4*

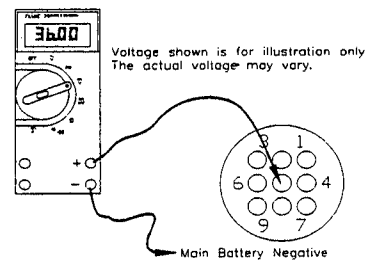
Result:

The voltage reading should equal the battery voltage.

Action:

If not equal to the battery voltage then the accelerator module is bad. **Stop here and repair the problem,** otherwise continue with the next test.

NOTE 4: A broken accelerator return spring will cause no output at PIN #5.



Test the Accelerator 4

Electrical Troubleshooting

Now depress the Accelerator pedal fully and perform the following tests.

TEST #5:

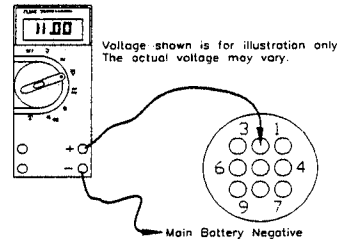
With the Accelerator pedal fully depressed, test voltage at PIN #2.
See Test the Accelerator, Figure 5

Result:

Voltage reading should be between 11 and 11.5 Volts.

Action:

If it is not 11 to 11.5 volts then the accelerator module is bad. **Stop here and replace the module**, otherwise continue on to test #6.



TEST #6:

Test the continuity of pin #2 in the wire harness. By placing the meter leads on pin #2 of each end of the wire harness. *Refer to Accelerator Figure #6*

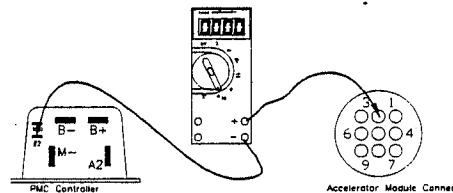
Test the Accelerator 5

Result:

Should hear audible alarm, showing that there is continuity in wire.

Action:

If there is no continuity. **Stop here and replace the wire harness**, otherwise continue on to test #7.



NOTE 5: Some models route wire #2 through a seat switch. If equipped with a seat switch, check the continuity of the seat switch

with an Ohmmeter.

TEST #7:

Test voltage from the 'M-' terminal on the PMC control to the 'B+' terminal on the PMC control. *Refer to Test the Accelerator, Figure 7.*

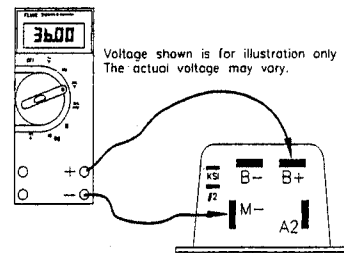
Result:

The Voltage reading should equal the battery voltage.

Action:

If it is not within 1 volt of the battery voltage then the PMC control is bad and must be replaced. **Stop here and replace the PMC.**

If no faults were found, continue with the next section, KSI.



Test the Accelerator 7

Electrical Troubleshooting

KSI

TEST #1

Check the safety interlock switches (if equipped) for continuity. *Refer to Figures in Appendix.*

Result:

Should hear audible alarm, showing that there is continuity in the switch.

Refer to Figures in the Appendix at the end of this manual.

Action:

If there is no continuity. **Stop here and replace the safety interlock switch,** otherwise continue on to test #2.

NOTE 6: Due the fact that there are 4 possible standard safety interlock switches and many optional switches. We have placed figures of the standard switches in the appendix. please refer to appendix for meter lead placement for test #1.

TEST #2

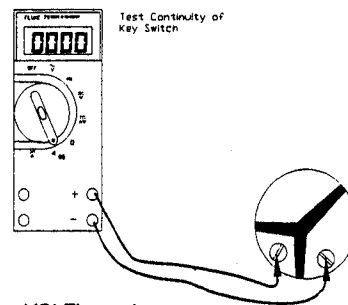
Test the key-switch for continuity. *Refer to KSI Figure #1*

Result:

Should hear audible alarm, showing that there is continuity in the key-switch.

Action:

If there is no continuity. **Stop here and replace the key-switch,** otherwise continue on to test #3.



KSI Figure 1

TEST #3

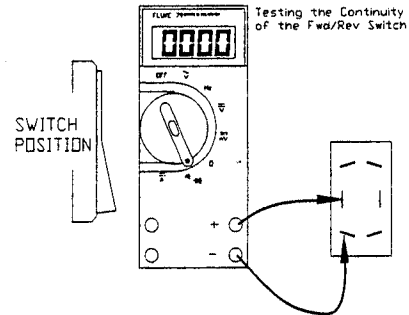
Test the F&R switch for continuity in forward and reverse. *Refer to KSI Figure 2*

Result:

Should hear audible alarm, showing that there is continuity in the switch.

Action:

If there is no continuity. **Stop here and replace the F&R switch**, otherwise continue on to test #4.



TEST #4:

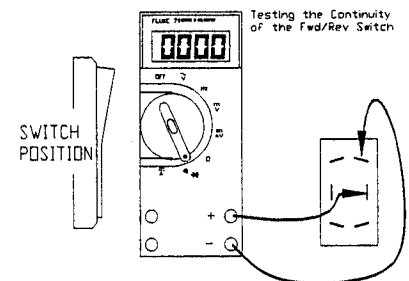
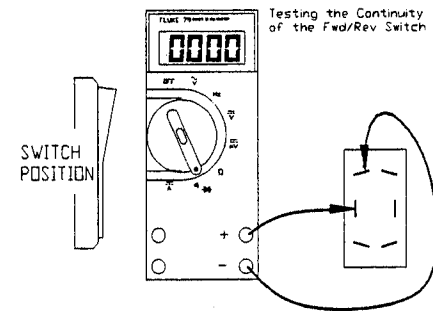
Test the control wires for continuity and visually inspect them for opens.

Result:

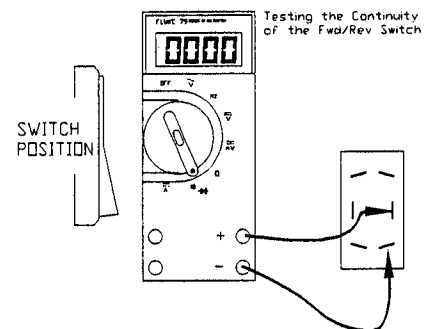
Should hear audible alarm, showing that there is continuity in wire. There should not be any cracks in the wire insulation or any of the wire strands broken.

Action:

If there are opens, cracks in the insulation or broken wire strands. **Stop and replace the faulty control wires**, otherwise continue on to the next section Solenoids.



NOTE 7: If you reached this point without a solution, then you may have an unanticipated problem or have made an error during testing



KSI Figure 2

Electrical Troubleshooting

SOLENOIDS

TEST #1:

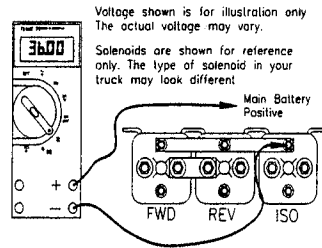
Remove the resistor from the ISO solenoid. Measure the resistor using the resistance or ohm setting on the meter and check the ISO resistor.
Refer to Solenoids Figure 1.

Result:

The reading should be 250
+/-10% (225 to 275 ohms).

Action:

If the result is 250 ohms,
reconnect the resistor and
continue to TEST #2. If the
result is not 250 ohms then
replace the resistor.



Solenoids Figure 1

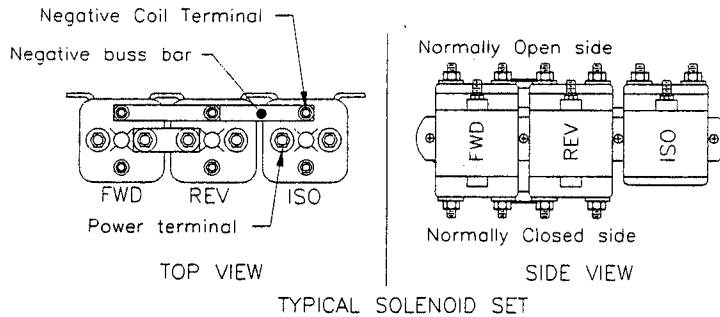
NOTE 8: A defective resistor
could cause intermittent operation
of control but would not stop it from working.

Reconnect the main positive and negative battery cables and continue with the test procedures.

If your truck runs in forward only then go to the **FORWARD ONLY** section.

If your truck runs in reverse only then go to the **REVERSE ONLY** section.

If your truck does not run in either direction, continue with testing on the next page.



Typical Solenoid Set

Place the F&R switch in neutral and perform the following tests.

TEST #1:

Depress the accelerator pedal and listen for the ISO solenoid to click.

Result:

Should hear the ISO solenoid click.

Action:

If the ISO solenoid clicks then go to the **ISO** section.

If the ISO solenoid does not click then continue with the next test.

Test #2:

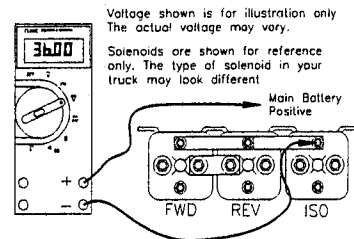
Test voltage from the battery positive terminal to the negative coil terminal on the ISO solenoid. *Refer to Solenoids Figure 2.*

Result:

The voltage reading should equal the battery voltage.

Action:

If it is not equal to the battery voltage then check the negative control wiring and the negative circuit breaker. **Stop here and repair the problem**, otherwise continue with the next test. Now depress the Accelerator pedal fully and perform the following tests.



Solenoids Figure 2

TEST #3:

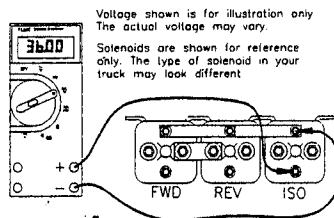
Test voltage across the ISO coil terminals. *Refer to Solenoids Figure 3.*

Result:

The voltage reading should equal the battery voltage.

Action:

If not equal to the battery voltage then check the wiring, the MS1 switch output (pin 5 of the accelerator module), all safety interlock switches and the key-switch. **Stop here and repair the problem**, otherwise continue to the next test. *(Cont'd on Next Page.)* If the voltage across the ISO coil terminals is equal to the battery voltage then the ISO coil is bad and the solenoid must be replaced. **Stop here and repair the problem**, otherwise continue on to the next section ISO.



Solenoids Figure 3

Electrical Troubleshooting

ISO

TEST#1

Connect the test light across the ISO power terminals and depress the accelerator pedal fully. *ISO Solenoids Figure 1.*

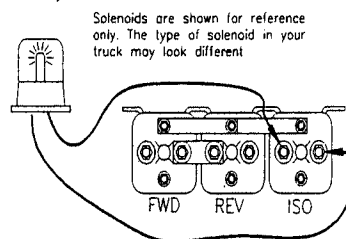
Result:

The light should not come on.

Action:

If the light comes on when the pedal is depressed then the ISO solenoid contacts are open and the solenoid must be replaced. **Stop here and replace the ISO solenoid.**

If the light does not come on, then check the power wiring to the batteries and the power wiring to the PMC for opens. **Stop here and repair the problem.**



ISO Solenoids Figure 1

NOTE 9: If you reached this point without a solution, then you may have an unanticipated problem or have made an error during testing.

FORWARD ONLY

TEST #1:

Place the F&R switch in neutral and depress the accelerator pedal. While listening to the solenoids, keep the pedal depressed and move the F&R switch to reverse.

Result:

You should hear the reverse solenoid click.

Action:

If the reverse solenoid clicks then go to the **REVERSE CONTACTS** section, otherwise continue with the next test.

TEST #2:

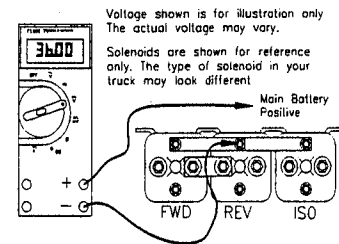
Check voltage from the main battery positive terminal to the negative coil terminal on the reverse solenoid. *Forward Solenoid Figure 1.*

Result:

The voltage reading should equal the battery voltage.

Action:

If not equal to the battery voltage then check the solenoid negative bus bar for loose connections. **Stop here and repair the problem**, otherwise continue with the next test.



Forward Solenoid Figure 1

TEST #3:

Check the voltage across the reverse solenoid coil. *Refer to Forward Solenoid Figure 2*

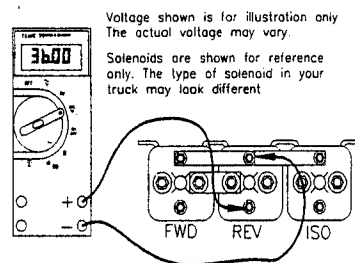
Result:

The voltage reading will be either battery voltage or zero.

Action:

If equal to the battery voltage then the reverse solenoid is bad and must be replaced. **Stop here and replace the Reverse Solenoid**, otherwise continue with the next test.

If not equal to the battery voltage, check the control wiring and the F&R switch for open or bad connections. **Stop here and repair the problem**, otherwise continue with to the next section Reverse Contacts.



Forward Solenoid Figure 2

Electrical Troubleshooting

REVERSE CONTACTS

TEST #1:

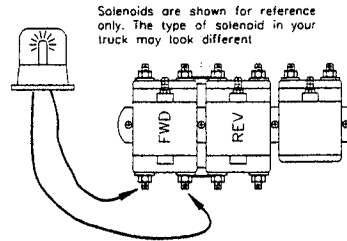
Connect the test light across the normally closed contacts of the *forward* solenoid, place the F&R switch in reverse, depress the accelerator pedal fully. ***Reverse Contacts Figure 1.***

Result:

The light should not come on.

Action:

If the light comes on when the pedal is depressed then the forward solenoid contacts are open and the solenoid must be replaced. **Stop here and repair the problem,** otherwise continue with the next test.



Reverse Contacts Figure 1

TEST #2:

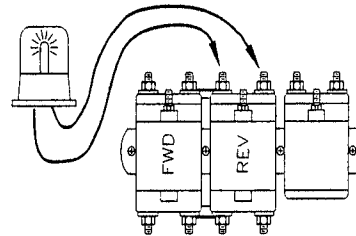
Connect the test light across the normally open contacts of the *reverse* solenoid and depress the accelerator pedal fully. ***Refer to Reverse Contacts Figure 2.***

Result:

Refer to the ACTION, below.

Action:

If the light comes on when the pedal is depressed then the reverse solenoid contacts are open and the solenoid must be replaced. **Stop here and repair the problem.**



Reverse Contacts Figure 2

If the light did not come on at all, then check all power wiring for opens. **Stop here and repair the problem.**

REVERSE ONLY**TEST #1:**

Place the F&R switch in neutral and depress the accelerator pedal.
While listening to the solenoids, keep the pedal depressed and move the F&R switch to forward.

Result:

The Forward solenoid should click.

Action:

If the forward solenoid clicks then go to the **FORWARD CONTACTS** section, otherwise continue with the next test.

TEST #2:

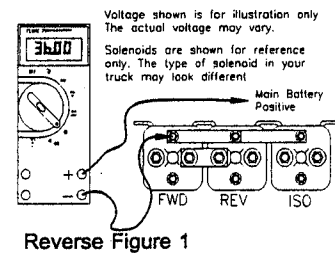
Check voltage from the main battery positive terminal to the negative coil terminal on the forward solenoid. *Refer to Reverse Figure 1.*

Result:

The voltage reading should equal the battery voltage.

Action:

If not equal to the battery voltage then check the solenoid negative bus bar for loose connections. **Stop here and repair the problem,** otherwise continue with the next test.



Electrical Troubleshooting

TEST #3:

Check the voltage across the forward solenoid coil. ***Refer to Reverse Figure 2.***

Result:

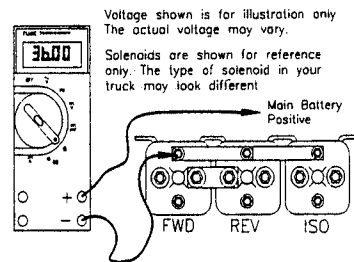
Refer to the Action below.

Action:

If equal to the battery voltage then the forward solenoid is bad and must be replaced. **Stop here and repair the problem,** otherwise continue with the next test.

If not equal to the battery voltage, check the control wiring and the F&R switch.

Stop here and repair the problem, otherwise continue with the next section Forward Contacts.



Reverse Figure 2

FORWARD CONTACTS

TEST #1:

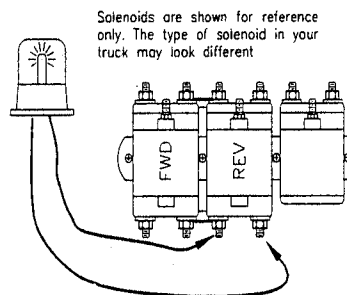
Connect the test light across the normally closed contacts of the *reverse* solenoid, place the F&R switch in forward and depress the accelerator pedal fully. *Refer to Fwd Figure 1.*

Result:

The light should not come on.

Action:

If the light comes on when the pedal is depressed then the reverse solenoid contacts are open and the solenoid must be replaced. **Stop here and repair the problem,** otherwise continue with the next test.



Fwd Figure 1

TEST #2:

Connect the test light across the normally open contacts of the *forward* solenoid and depress the accelerator pedal fully. *Refer to Fwd Figure 2.*

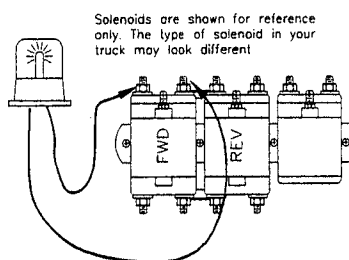
Result:

Refer to Action below.

Action:

If the light comes on when the pedal is depressed then the forward solenoid contacts are open and the solenoid must be replaced. **Stop here and repair the problem.**

If the light did not come on at all, then check all power wiring for opens. **Stop here and repair the problem.**



Fwd Figure 2

NOTE 10: If you reached this point without a solution then you may have an unanticipated problem or have made an error during testing.

Electrical Troubleshooting

SPECIAL TROUBLESHOOTING

Read symptoms carefully, the symptoms must be exactly as stated to go to the proper section. If your symptoms are different from what is represented here, you have an unanticipated failure and should contact your Taylor-Dunn service representative.

Eliminate all possible mechanical problems before starting the electrical troubleshooting. Make sure your batteries are in good condition and fully charged. Some examples of mechanical problems that could be misinterpreted as an electrical problem;

- Dragging brakes
- Binding drive gears or chain
- Tight or frozen 3rd member bearings
- Tight or frozen wheel bearings
- Overloaded truck (refer to vehicles manual for load restrictions)
- The truck should be able to be pushed easily by hand on a hard level surface.

Continuous testing under high current could lead to overheating and failure of otherwise good components. ***Do not*** perform tests that involve high current for more than 2 seconds at a time. Allow 5 minutes between high current tests for cooling.

DURING ALL TESTS

Both drive wheels are to be supported off the ground by jack stands with the front wheels blocked.

After any repairs are made completely test vehicle before lowering the drive wheels to the ground.

Disconnect both of the battery leads during any maintenance, or before disconnecting any electrical component or wire.

Testing should be done with the drive wheels off the ground, supported with jack stands. In this situation, high current would be considered as any continuous reading over 65 Amps.

NOTE 11: Your Amp meter may peak in excess of 200 Amps for a very short amount of time (milliseconds) and then level off to a normal reading. The normal current reading will vary depending on the model of truck, the motor installed, and the drive configuration.

SYMPTOMS		GO TO
➤	Runs slow in forward and reverse with normal motor current.	ACCELERATOR MODULE (Previous section)
➤	Runs slow in both directions plus high armature and field current in both directions. NOTE: Armature and field current should be equal.	MOTOR
➤	Runs slow in both directions plus high armature current in both directions. NOTE: Field current will be very low.	SOLENOIDS (this section)
➤	Runs normal in one direction only plus runs slow or lacks power in the opposite direction with high armature current in the opposite direction or;	SOLENOIDS (this section)
➤	Accelerates slowly and exceeds normal speed in the opposite direction with high armature current only. NOTE: Field current will be very low in the opposite direction.	
➤	Accelerates slowly and exceeds normal speed in both directions plus high armature current. NOTE: Field current will be very low.	SOLENOIDS (this section)
➤	Full speed only.	PMC CONTROL
➤	Does not run in either direction plus there is noise from motor (hum or whine) with high field current and low armature current.	PLUGGING DIODE
➤	Excessive spark when connecting battery	ISO (this section)
➤	Does not run or runs very slow with low motor current and high battery current.	FREEWHEEL DIODE
➤	Jumps into high speed when direction is selected after depressing the accelerator pedal.	HPD

Electrical Troubleshooting

MOTOR

High motor current in both the field and the armature that is accompanied with a lack of power would indicate a shorted armature and/or field.

Another symptom that may exist is a jumping or stuttering at low speeds and/or the motor will not run unless the armature is manually rotated. If this symptom exists, it indicates that there may be open segments in the armature, worn out or stuck motor brushes. Visually inspect the brushes, if they are OK, continue with the testing below.

Disconnect the four motor wires and perform the following tests.

TEST #1:

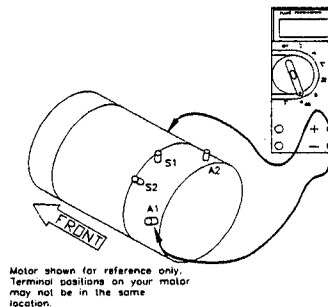
Check continuity from 'A1' to the frame of the motor. *Refer to Motor 1.*

Result

You should not get a continuity reading. The display should read **-OL-**.

Action:

If you have continuity from 'A1' to the frame of the motor then the motor armature or armature circuit (brushes) are shorted. **Stop here and repair the problem,** otherwise continue



Motor Figure 1

with the next test.

TEST #2:

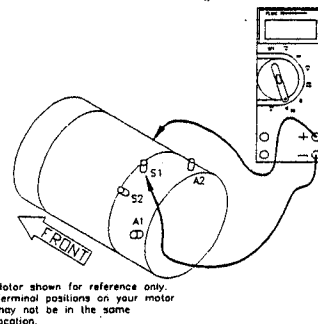
Check continuity from 'S1' to the frame of the motor. *Refer to Motor Figure 2.*

Result

You should not get a continuity reading. The display should read -OL-.

Action:

If you have continuity from 'S1' to the frame of the motor then the motor field is shorted. **Stop here and repair the problem,** otherwise continue to Motor Inspection.



Motor Figure 2

Motor Inspection

1. Remove and disassemble the motor.
2. Visually inspect the inside of the brush end housing. If you can see any silver specs of metal around the inside of the housing, it indicates that the armature has overheated and melted the solder around the commutator. The armature is bad and the motor must be replaced. **Stop here and repair the problem,** otherwise continue with the next TEST #3.
3. Visually inspect the armature wires where they loop around at the shaft end of the armature. The insulation should be a light to medium reddish brown color. If the insulation is dark brown to black or the insulation is cracked and peeling then the armature has been over-

Electrical Troubleshooting

heated and burnt, the motor must be replaced. **Stop here and repair the problem,** otherwise continue with the next TEST #3.

TEST #3:

Perform a continuity test around the armature commutator. Place one of the test leads on a single commutator segment. While holding the first test lead on the segment, check the continuity to the other segments around the commutator.

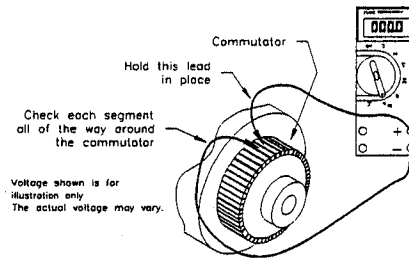
Refer to Motor Figure 3.

Result:

The meter reading should be 0000.

Action:

If you find an open segment the armature is bad and the motor must be replaced. **Stop here and repair the problem.**



Motor Figure 3

NOTE 12: If you reached this point without a solution then you may have an unanticipated problem or have made an error during testing.

PMC CONTROL

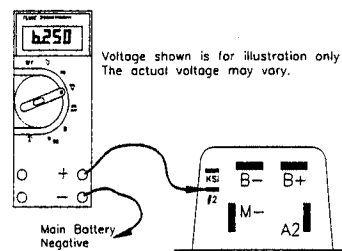
Disconnect the wire from the 'M-' terminal on the PMC control and tape it off to prevent electrical contact. Turn the key-switch on, close all interlock switches (if equipped) and depress the accelerator pedal to engage the first micro switch only (creep speed) and perform the following tests

TEST #1:

Test the voltage at pin #2 on the PMC controller. **Refer to PMC Figure 1.**

Result

The meter reading should be between 6 and 6.5Volts.



PMC Figure 1

Action:

If the voltage at pin #2 is not 6 to 6.5 volts then go to the **ACCELERATOR MODULE** in the previous section, otherwise continue with TEST #2.

TEST #2:

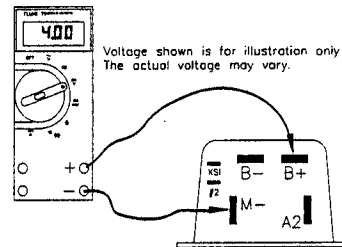
Test the voltage across 'B+' and 'M-' on the PMC control.

Result:

The meter reading should not be equal to the battery voltage. *Refer to PMC Figure 2.*

Action:

If you have full battery voltage then the PMC control is shorted and must be replaced. **Stop here and repair the problem,** otherwise continue with the next test.



PMC Figure 2

If the voltage at pin #2 is correct and the voltage at 'M-' is correct then there is a short in the harness between the wire connected to the PMC 'M-' and

Electrical Troubleshooting

main battery negative. **Stop here and repair the problem.**

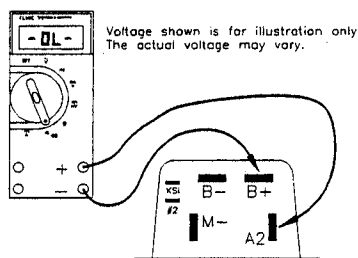
NOTE 13: If you reached this point without a solution then you may have an unanticipated problem or have made an error during testing.

PLUGGING DIODE

Remove the wires from the 'B+' and 'A2' terminals on the PMC control and perform the following test.

TEST #1:

Using the diode test function on your DMM check for the presence of a diode across 'B+' and 'A2' on the PMC control. *Refer to Diode Figure 1.*



Result:

This should read as an open connection. The meter reading will be -OL-.

Diode Figure 1

Action:

If you find this diode shorted then the PMC control must be replaced. **Stop here and repair the problem.**

NOTE 14: If you reached this point without a solution then you may have an unanticipated problem or have made an error during testing.

FREEWHEEL DIODE

Remove the wires from the 'B+' and 'M-' terminals on the PMC control and perform the following test

TEST #1:

Using the diode test function on your DMM check for the presence of a diode across 'B+' and 'M-' on the PMC control. *Refer to Diode Figure 2.*

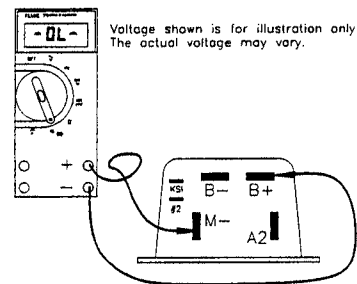
2.

Result:

This should read as an open connection. The meter reading will be -OL-.

Action:

If you find this diode shorted then the PMC control must be replaced. **Stop here and repair the problem.**



Diode Figure 2

Electrical Troubleshooting

NOTE 15: If you reached this point without a solution then you may have an unanticipated problem or have made an error during testing.

ISO

Remove the wires and the resistor from the ISO solenoid and perform the following tests.

TEST #1:

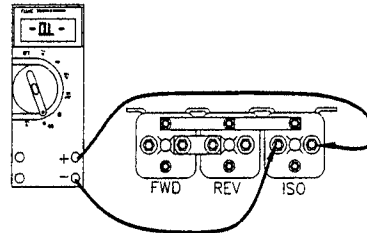
Test continuity across the ISO power contacts. *Refer to ISO Figure 1.*

Result:

The meter should autorange or show an OL on the display.

Action:

If the meter reading is not -OL- then the contacts are closed, the contactor should be replaced. **Stop here and replace the ISO solenoid**, other wise continue to TEST #2.



ISO Figure 1

TEST #2:

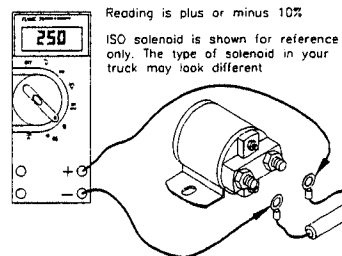
Disconnect and test the ISO resistor. Connect the meter to each end of the resistor and measure the resistance. *Refer to ISO 2.*

Result:

The meter reading should be 250 (+/-10%) 225 to 275.

Action:

If it is not 250 ohms (+/-10%) then replace the resistor. **Stop here and repair the problem.**



ISO Figure 2

NOTE 16: If you reached this point without a solution then you may have an unanticipated problem or have made an error during testing.

SOLENOIDS

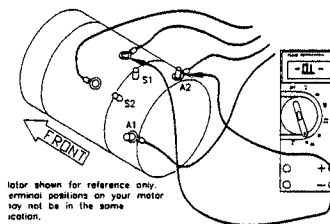
There is a very slight possibility that a failure in the motor could cause these symptoms. Perform the tests covered in the **MOTOR** section first. If the motor is OK, continue with the following tests.

Remove the wires from the 'S1' and 'S2' terminals on the motor. Remove the wire from the 'M-' terminal on the PMC control. Make sure none of these wires can come into electrical contact with the frame or any other wire.

With the key-switch on and the forward and reverse switch in neutral, perform the following tests.

TEST #1:

Check continuity from the motor 'A2' terminal to the wire that was connected to the motor 'S1' terminal. **DO NOT** make this test to the 'S1' terminal, just the wire. *Refer to Solenoid Figure 1.*



Solenoid Figure 1

Result:

This should read as an open connection. The meter reading will be -OL-.

Action:

If it reads as a short then one of the following has occurred;

- The reverse solenoid is shorted or,

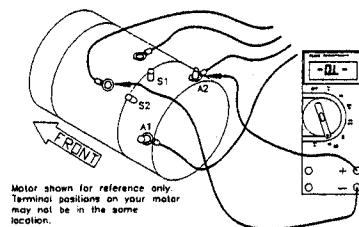
Electrical Troubleshooting

- The wire connected to the motor 'S1' terminal is shorted to the wire connected to the motor 'A2' terminal or,
- The wire connected to the motor 'S1' terminal is shorted to the wire connected to the PMC 'A2' terminal.

Stop here and repair the problem, otherwise continue with TEST #2.

TEST #2:

Check continuity from the motor 'A2' terminal to the wire that was connected to the motor 'S2' terminal. **DO NOT** make this test to the 'S2' terminal, just the wire. **Refer to Solenoid Figure 2.**



Solenoid Figure 2

Result:

This should read as an open connection. The meter reading will be -OL-.

Action:

If it reads as a short then one of the following has occurred;

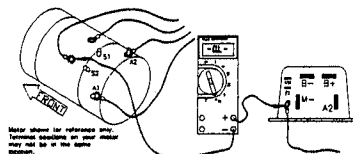
- The forward solenoid is shorted or,
- The wire connected to the motor 'S2' terminal is shorted to the wire connected to the motor 'A2' terminal or,
- The wire connected to the motor 'S2' terminal is shorted to the wire connected to the PMC 'A2' terminal.

Stop here and repair the problem, otherwise continue with TEST #3.

With the key-switch on and the F&R switch in forward, depress the accelerator pedal and perform the following tests.

TEST #3:

Check continuity from the wire that was connected to the PMC 'M-' terminal to the wire that was connected to the motor 'S2' terminal. **Refer to Solenoid Figure 3.**



Solenoid Figure 3

Result:

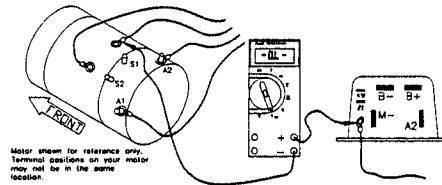
This should read as an open connection.

Action:

If it reads as a short then one of the following has occurred;

- The forward solenoid is shorted or,
- The wire connected to the PMC 'M-' terminal is shorted to the wire connected to the motor 'S2' terminal.

Stop here and repair the problem, otherwise continue with the next TEST #4.



Solenoid Figure 4

With the key-switch on and the F&R switch in reverse, depress the accelerator pedal and perform the following tests.

TEST #4:

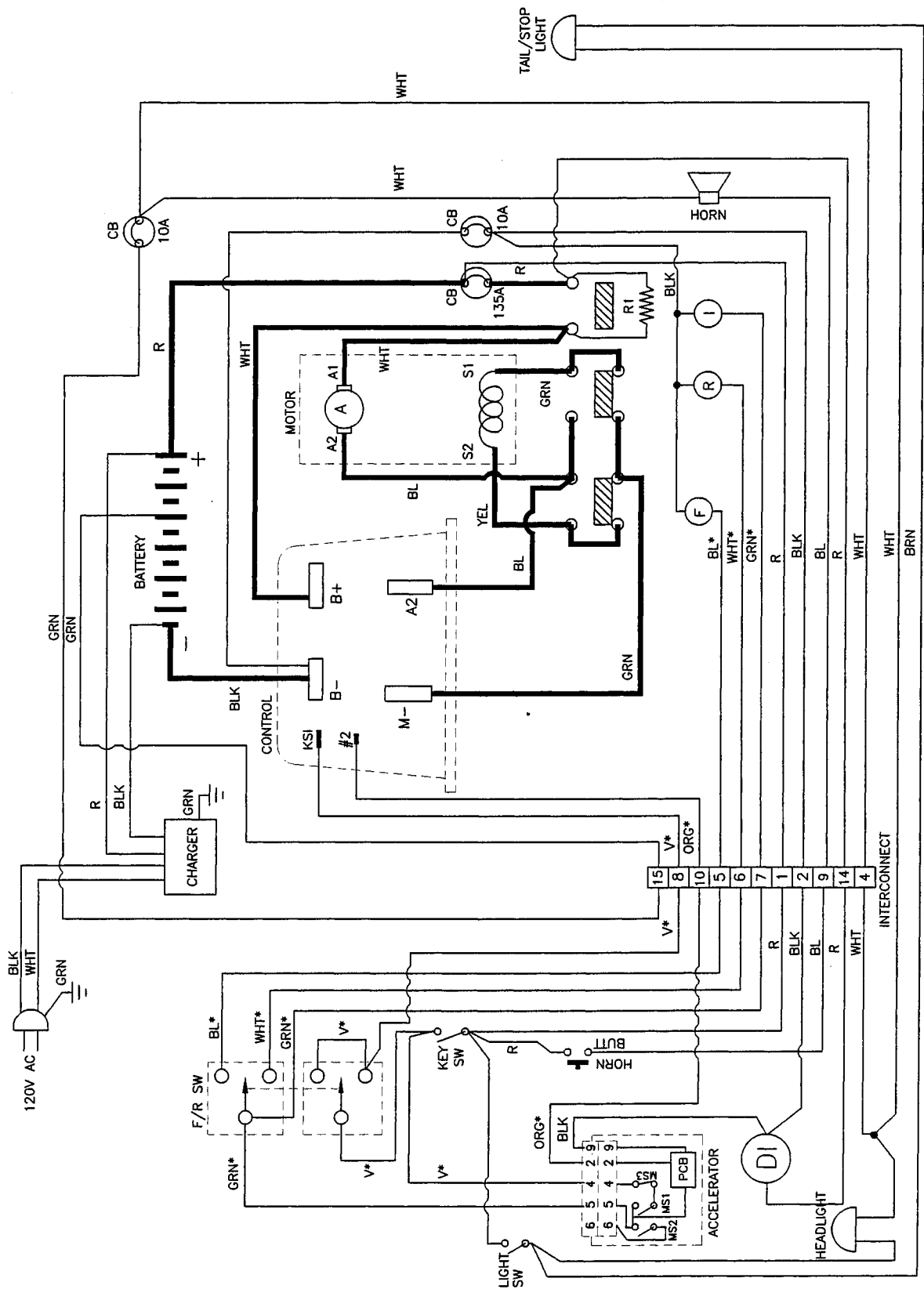
Check continuity from the wire that was connected to the PMC 'M-' terminal to the wire that was connected to the motor 'S1' terminal.

Refer to Solenoid 4.

Electrical Troubleshooting

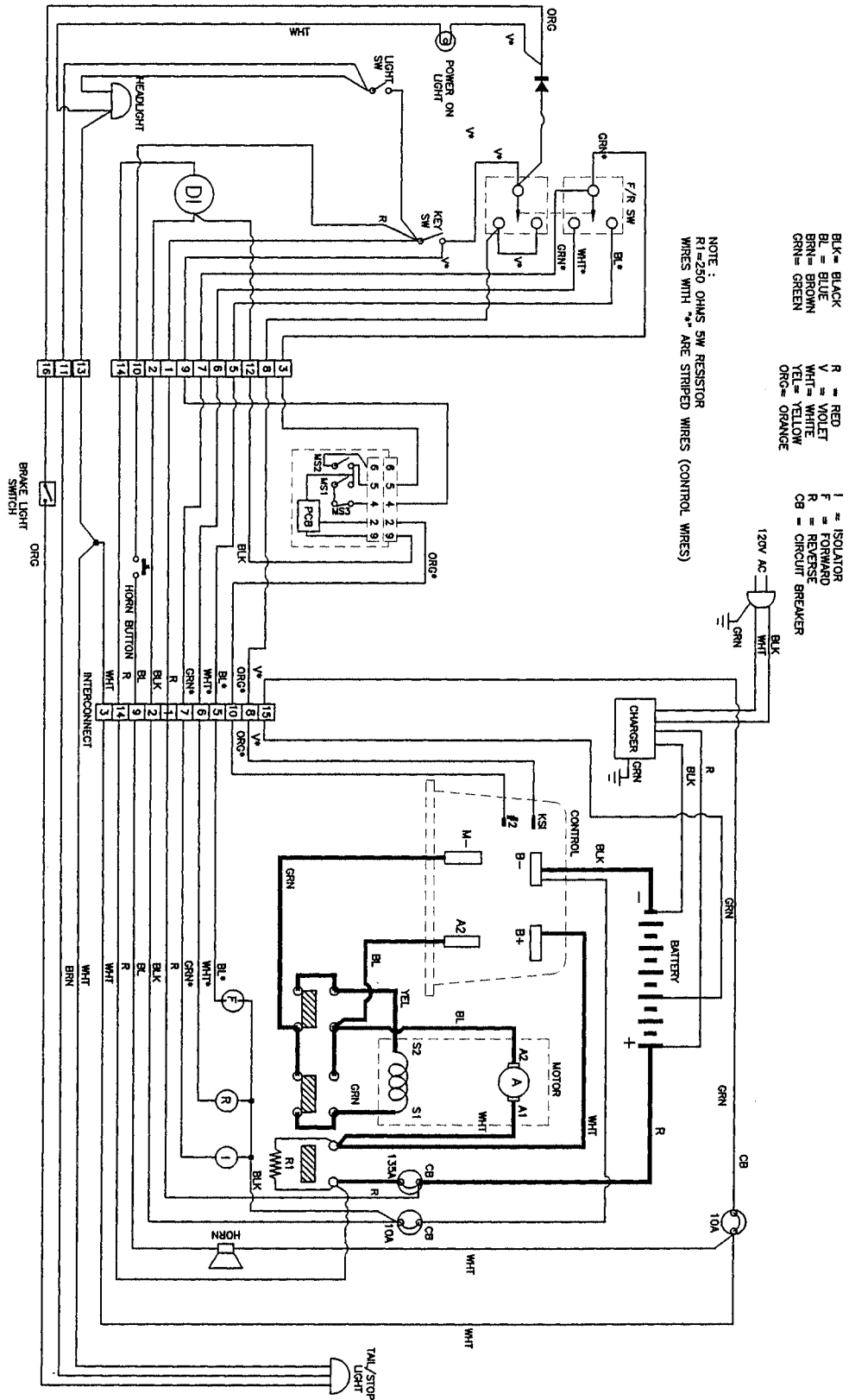
Schematic Diagrams

On the following pages you will find the schematic diagrams for the SS5-34, SS5-36, and MX-600. Please use these diagrams to help with the troubleshooting, and repair of these vehicles electrical systems.

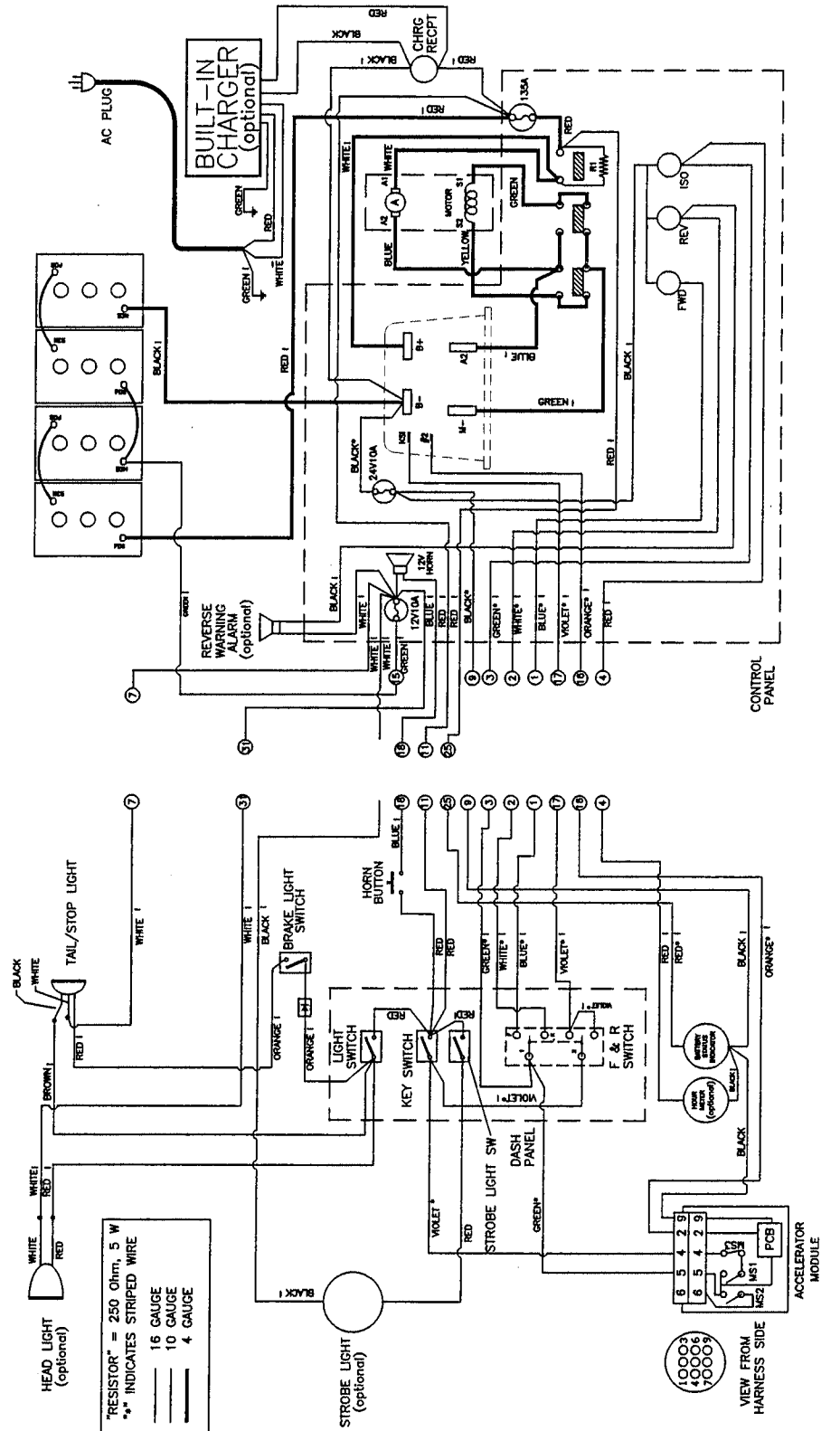


Electrical Troubleshooting

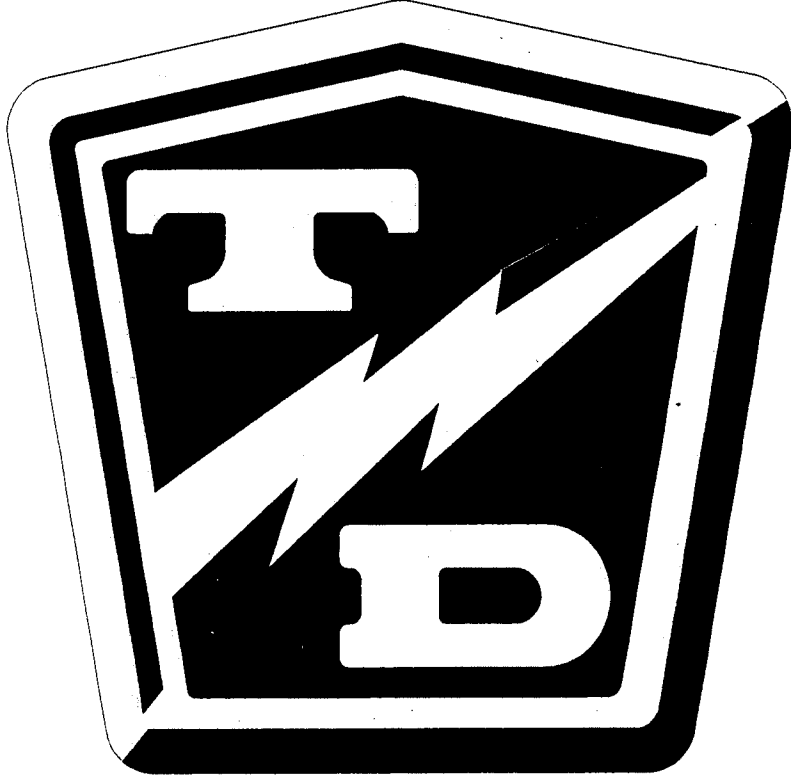
SS5-36 Schematic



MX-600 Schematic



TAYLOR-DUNN





Lestronic II Charger Troubleshooting

Operating Instructions and Theory of Operation Lester Lestronic II battery charger

The Lestronic II chargers are designed as semiautomatic chargers. The charger turns itself on when the built in charger is plugged into the wall outlet or, when the portable charger is plugged into the batteries. As the battery charges, the battery voltage rises. The charger periodically checks the battery voltage and compares it to the previous reading. When the battery voltage stops rising a predetermined amount then the batteries are no longer accepting a charge and the charger shuts off. The charger will not turn back on unless the AC cord on built in chargers is disconnected from the wall outlet or, the DC plug on portable chargers is disconnected from the batteries.

The charger does not check the current state of charge when it is plugged in, it assumes that the batteries require charging when it is connected. For this reason, it is recommended to discharge the batteries approximately 50% (1175-1200 as indicated on a hydrometer) before connecting the charger. If the charger is connected before the batteries are discharged 50%, the batteries may enter an overcharge state before the charger can sense that the batteries are no longer accepting a charge.

The relay that operates the charger is powered by the batteries being charged. If the voltage on the batteries to be charged is less than approximately 65% of the rated charger DC voltage, the relay will not pick up and the charger will not turn on. In this situation, a manual charger would have to be used to bring the battery voltage up so that the Lestronic charger can sense that they are connected and turn itself on.

Battery Charger Troubleshooting

In typical installations, the charger will remain on for up to 12 hours depending on the state of charge of the battery when the charge cycle was started.

A charger could remain on for longer than 12 hours if;

- The charging cycle is interrupted at any time during the charging cycle.
- Defective batteries causing a fluctuating DC voltage that confuses the charger.
- A brownout (drop in AC line voltage) during the charging cycle.
- An electrically noisy charging environment.
- A charger could turn off in less than 12 hours but still show symptoms of overcharging if;
- The batteries were not discharged to 50% before connecting the charger.
- The electrolyte in the batteries is too high (boil over).
- The electrolyte in the batteries is too low (excessive gassing or sulfur smell).

NOTE 1: The only way to test the charger to see if it is turning off correctly is to monitor the battery voltage and the electrolyte specific gravity during the charging cycle.

Specific gravity

Using a hydrometer take the specific gravity reading of several cells the charge cycle at 1-hour intervals. If the specific gravity of the electrolyte does not rise for three consecutive readings and the charger does not shut off then the charger is running too long.

Battery voltage

Using an accurate 5-1/2 digit digital voltmeter (Instek model GDM8055 or equivalent), monitor the battery voltage during the charging cycle. Take readings every 30 minutes. If the battery voltage does not increase 0.012 volts in two consecutive readings then the charger is running too long.

Battery Charger Troubleshooting

Test Equipment Required for Troubleshooting:

Digital multimeter (DMM) with diode and capacitor test function, FLUKE 79 model shown.

IMPORTANT NOTES and INSTRUCTIONS

- This troubleshooting guide assumes that you are familiar with the use of a digital multimeter including, voltage tests, continuity tests and diode testing. If you do not understand any part of these tests, you should refer testing to a qualified technician.
- Make sure the AC electrical socket the charger is plugged into is in good condition.
- Make sure that the AC voltage at the electrical socket is the same as the AC voltage on the charger nameplate.
- Make sure the batteries are in good condition and no less than 80% discharged as per hydrometer.

NOTE 2: A fully discharged battery will not activate the charger.

- The battery voltage must be above approximately 65% of the chargers rated DC voltage. If the batteries are below approximately 65% of the chargers rated DC voltage, the charger will not turn on (refer to 3rd paragraph on page one).
- If the charger exhibits intermittent problems, it must be in the failed mode for troubleshooting.
- Battery volts = Full voltage available at batteries at the time of test.
- This test procedure must be performed in the order it was written. If you start in the middle or skip sections when not instructed to do so, you may not get the proper results. If the test result is good, then proceed to the next test or go to the next section if instructed to do so.

DURING ALL TESTS

- Both drive wheels are to be supported off the ground by jack stands with the front wheels blocked.
- The charger cabinet must remain electrically grounded.
- Disconnect both of the battery leads and unplug the charger from the AC source before disconnecting any electrical component or wire.

The following tests are for a built-in charger. If you have a portable charger go to page S-10.

Troubleshooting for Built-in Charger

Disconnect the charger from the AC source.

Locate the charger harness connectors where the charger harness is connected to the trucks control harness. There will be two 10-gauge and two 14-gauge wires.

Slide the insulators off the connectors on the two 10-gauge wires and perform the following tests.

- 1) Test the voltage from the red wire to main battery negative. This

⚠ CAUTION

Make sure these two wires do not come into electrical contact with any other object.

voltage should be equal to the battery voltage. If it is less than the battery voltage then this wire is broken or has a bad connection. Stop here and repair the problem.

- 2) Test the voltage from the red 10-gauge wire (+) to the other 10-gauge wire (white or black depending on model). This voltage should be equal to the battery voltage. If it is less than the battery voltage, then the white (or black) wire is broken or has a bad connection. Stop here and repair the problem.

- Slide the insulators back onto the connectors on the two 10-gauge wires.
- Slide the insulators off the connectors on the two 14-gauge wires.

⚠ CAUTION

High Voltage. Do not touch the 14-gauge wires and make sure these two wires do not come into electrical contact with any other object.

- Connect the charger to the AC source and perform the following tests.

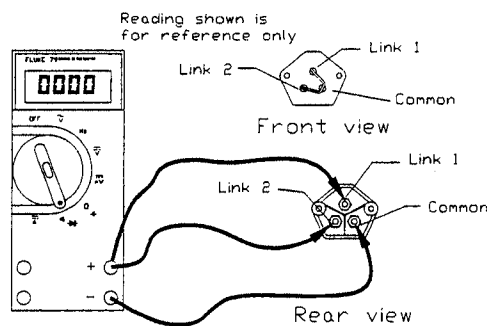
Battery Charger Troubleshooting

- 1) Test the voltage across the two 14-gauge wires. This voltage should be the same as the voltage at the AC receptacle (rated voltage of the charger). If it is less than the rated AC voltage of the charger then the 14-gauge white or black wire(s) is broken or has a bad connection between the charger connectors and the AC plug. Stop here and repair the problem.
 - Disconnect the charger from the AC source.
 - Disconnect the batteries.
 - Disconnect the charger from the trucks harness.
 - Remove the charger from the truck.
 - Remove the charger cover and perform the following tests.

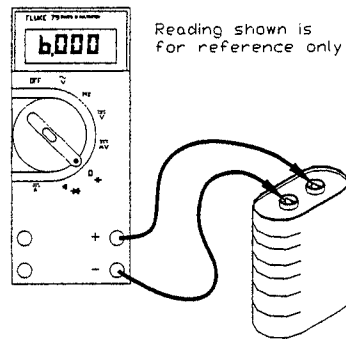
⚠ WARNING

HIGH VOLTAGE may be stored in the capacitor. **Discharge the capacitor before continuing. Connect a 2k ohm resistor across the capacitor terminals for 10 seconds. Do not touch the capacitor terminals with your hands. The resistor should be held with a pair of insulated pliers.**

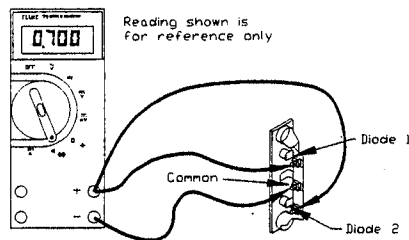
- 1) Inspect the internal wiring of the charger and repair as required.
- 2) Check the continuity of both fuse links and replace if bad.



- 3) Disconnect one transformer lead from the capacitor. Test the capacitor using the capacitor test function of your meter. It is a 6-microfarad capacitor. If the capacitor is bad, it must be replaced. **Stop here and repair the problem.**



- 4) Reconnect the transformer lead to the capacitor and disconnect one transformer lead from one of the diodes. Test each of the diodes using the diode test function of your meter. If either one of the diodes are bad, replace the diode assembly. **Stop here and repair the problem.**
- 5) Reconnect the lead to the diode.



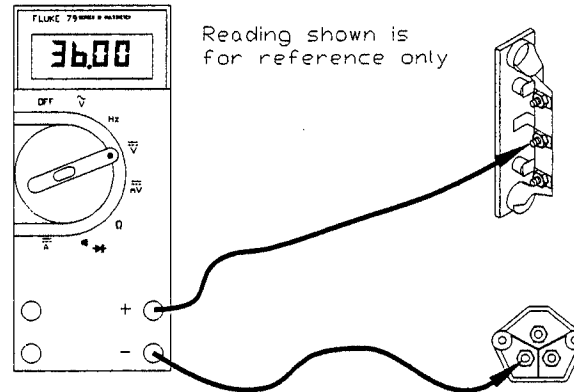
- 6) Reconnect the charger to the trucks harness and slide the wiring insulators back into place. Connect the charger to the AC source and perform the following tests.

⚠ CAUTION

High Voltage inside the charger. Do not touch any internal components with your hands or any conductive tools while the charger is plugged in. Once the charger has been plugged in refer to the High Voltage Capacitor Warning on previous page.

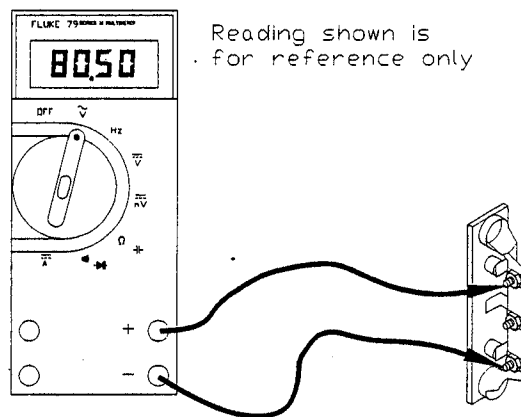
Battery Charger Troubleshooting

- 7) Test the voltage from the fuse assembly (-) to the diode block (+). This voltage should be equal to the battery voltage. If it is less than the battery voltage then the wires from the harness connectors to the charger are bad. **Stop here and repair the problem.**



- 8) Test the voltage across the white and black wires that are connected to the timer board. This voltage should be the same as the rated AC voltage of the charger. If it is less than the rated AC voltage of the charger then the wires from the harness connectors to the charger are bad. **Stop here and repair the problem.**
- 9) If the timer relay does not pick-up (click) when the AC source is connected, then the timer control circuit or the relay is bad. The timer must be replaced as an assembly; the relay is not available separately. **Stop here and repair the problem.**
- 10) Test the AC voltage across the transformer primary circuit. The transformer primary consists of the two solid wires with the brown fiber insulator that are connected to the timer board. This voltage should be the same as the rated AC voltage of the charger. If it is less than the rated AC voltage of the charger, then the timer relay is bad. The timer must be replaced as an assembly; the relay is not available separately. **Stop here and repair the problem.**

- 11) Test the AC voltage across the transformer low voltage secondary circuit. The transformer low voltage secondary circuit consists of the two solid wires with the brown fiber insulator that are connected to the two diodes. The voltage here will vary depending on the state of charge on the batteries. Look for a voltage between 208% and 250% of the rated DC voltage of the charger. If you do not get a voltage between 208% and 250% of the rated DC voltage of the charger, the transformer is bad and must be replaced. **Stop here and repair the problem.**



Battery Charger Troubleshooting

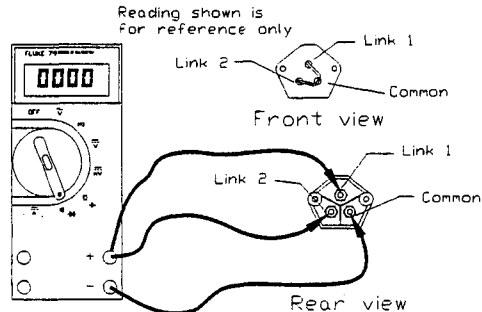
Troubleshooting for Portable Charger

Disconnect the charger from the AC source.

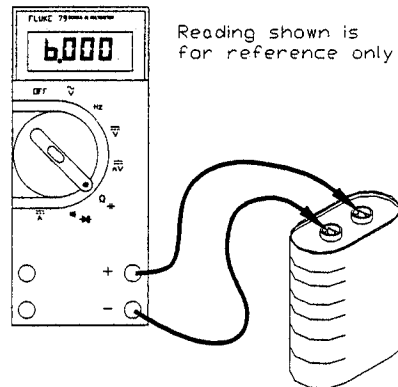
- 1) Test the voltage from the positive terminal on the DC receptacle to main battery negative. This voltage should be equal to the battery voltage. If it is less than the battery voltage then this wire is broken or has a bad connection. **Stop here and repair the problem.**
- 2) Test the voltage from the positive terminal on the DC receptacle to the negative terminal on the DC receptacle. This voltage should be equal to the battery voltage. If it is less than the battery voltage, then the wire on the negative terminal of the DC receptacle is broken or has a bad connection. **Stop here and repair the problem.**

Remove the charger cover and perform the following tests.

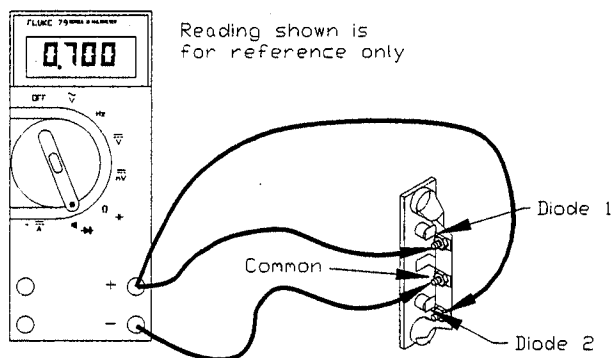
- 1) Inspect the internal wiring of the charger and repair as required.
- 2) Check the continuity of both fuse links and replace if bad.



- 3) Disconnect one lead from the capacitor. Test the capacitor using the capacitor test function of your meter. It is a 6-microfarad capacitor. If the capacitor is bad, it must be replaced. **Stop here and repair the problem.**



- 4) Reconnect the lead to the capacitor and disconnect one transformer lead from one of the diodes. Test each of the diodes using the diode test function of your meter. If either one of the diodes are bad, replace the diode assembly. **Stop here and repair the problem.**



- 5) Reconnect the lead to the diode.

Battery Charger Troubleshooting

- 6) Connect the charger to the AC source.
Insert the DC charger plug into the DC receptacle and perform the following tests.

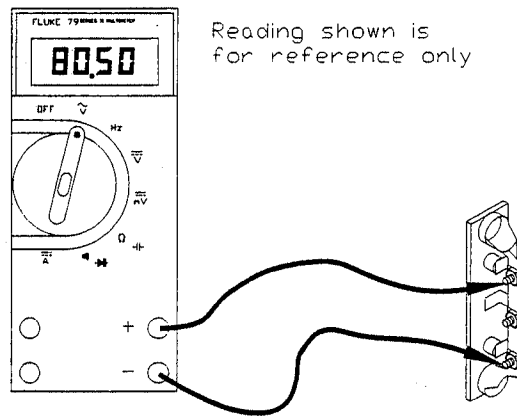
⚠ WARNING

High Voltage inside the charger. Do not touch any internal components with your hands or any conductive tools while the charger is plugged in. HIGH VOLTAGE may be stored in the capacitor. Discharge the capacitor before continuing. Connect a 2k ohm resistor across the capacitor terminals for 10 seconds. Do not touch the capacitor terminals with your hands. The resistor should be held with a pair of insulated pliers.

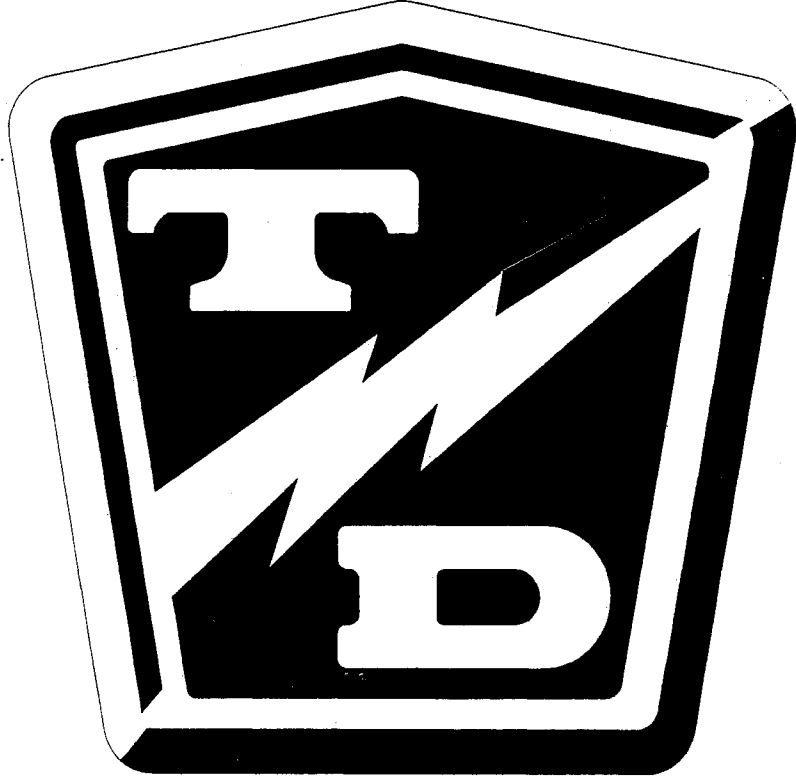
- 7) Test the voltage from the fuse assembly (-) to the diode block (+). This voltage should be equal to the battery voltage. If it is less than the battery voltage, DC cord is bad. **Stop here and repair the problem.**
- 8) Test the voltage across the white and black wires that are connected to the timer board. This voltage should be the same as the rated AC voltage of the charger. If it is less than the rated AC voltage of the charger then the AC cord is bad. **Stop here and repair the problem.**
- 9) If the timer relay does not pick-up (click) within 5 seconds of connecting the DC charger plug, then the timer control circuit or the relay is bad. The timer must be replaced as an assembly; the relay is not available separately. **Stop here and repair the problem.**
- 10) Test the AC voltage across the transformer primary circuit. This

voltage should be the same as the rated AC voltage of the charger. If it is less than the rated AC voltage of the charger, then the timer relay is bad. The timer must be replaced as an assembly; the relay is not available separately. **Stop here and repair the problem.**

- 11) Test the AC voltage across the transformer secondary circuit. The voltage here will vary depending on the state of charge on the batteries. Look for a voltage between 208% and 250% of the rated DC voltage of the charger. If you do not get a voltage between 208% and 250% of the rated DC voltage of the charger the transformer is bad and must be replaced. **Stop here and repair the problem.**



TAYLOR-DUNN[®]



Illustrated Parts List



ILLUSTRATED PARTS

IDENTIFYING YOUR VEHICLE

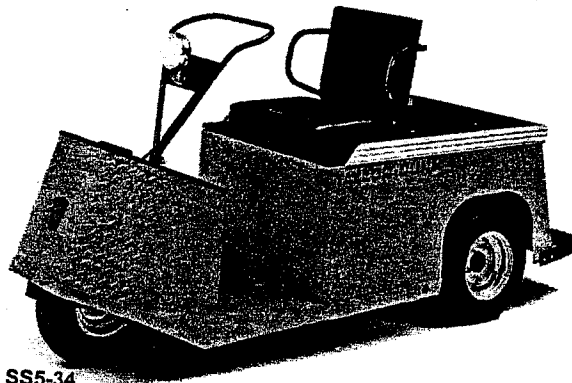
If you are unsure of the vehicle that you are working on. Refer to the figures at the right.

Starting from the top of the page they are as follows:

- SS5-34
- SS5-36
- MX-600

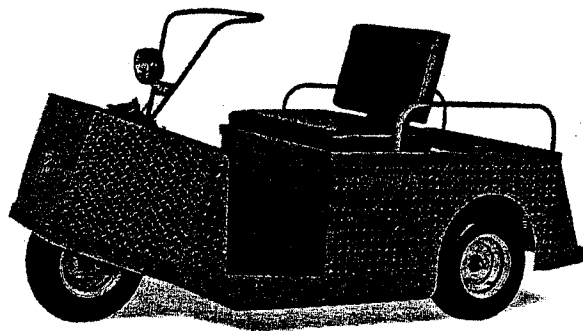
Whenever necessary the model of the vehicle is identified with the parts that are specific to that model. If there is no model identification either in the Diagram Heading or within the table, then the part can be utilized in all models.

 **TAYLOR-DUNN®**



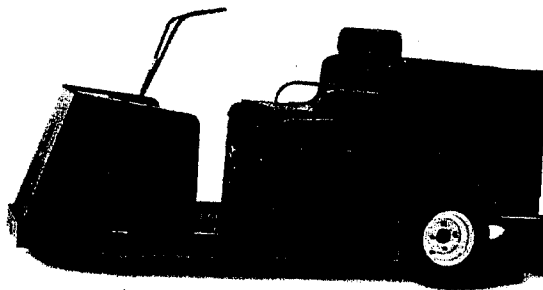
SS5-34

■ SS5-34



SS5-36

■ SS5-36

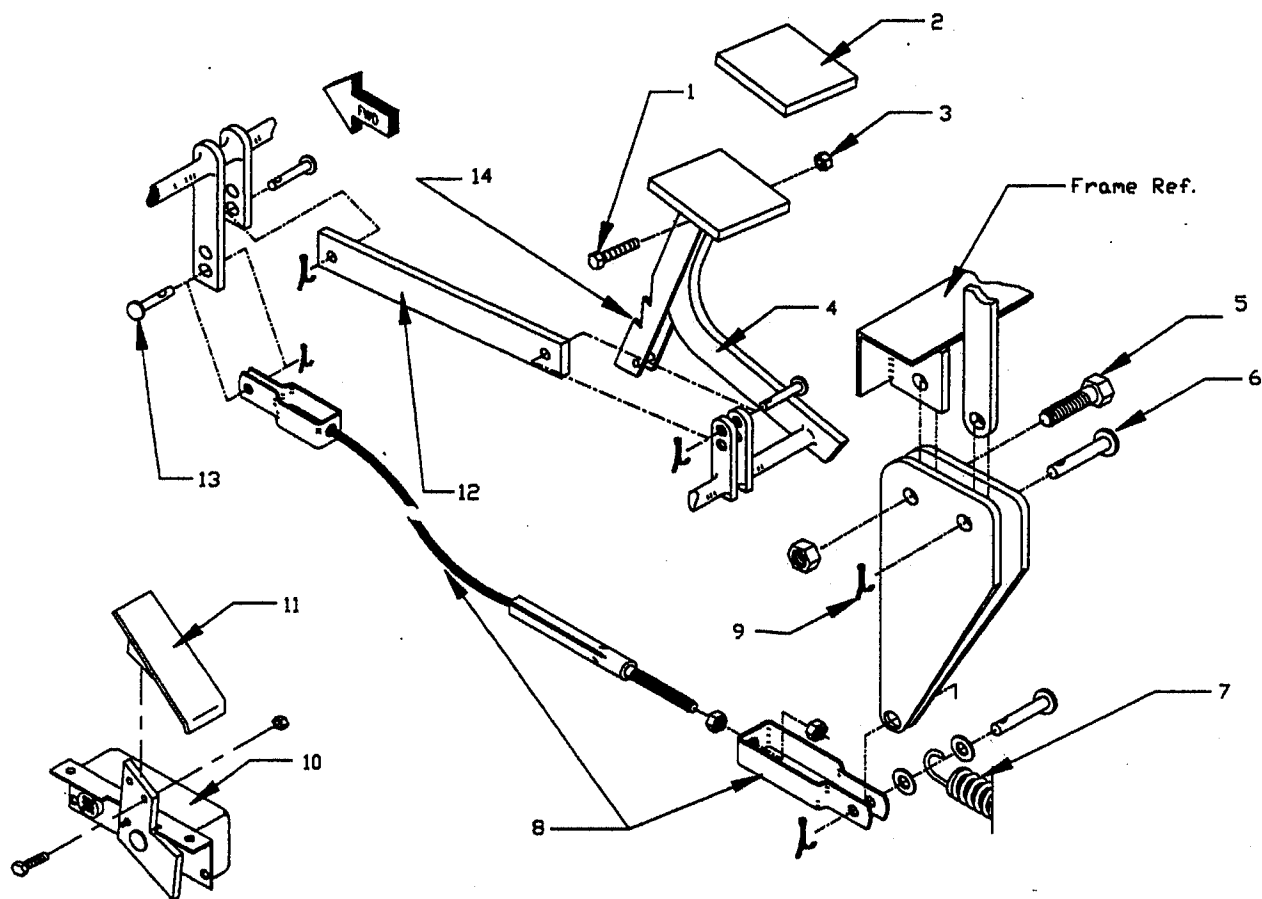


MX-600

■ MX-600

ILLUSTRATED PARTS

BRAKE PEDAL LINKAGE AND ACCELERATOR PEDAL (SS5-34)

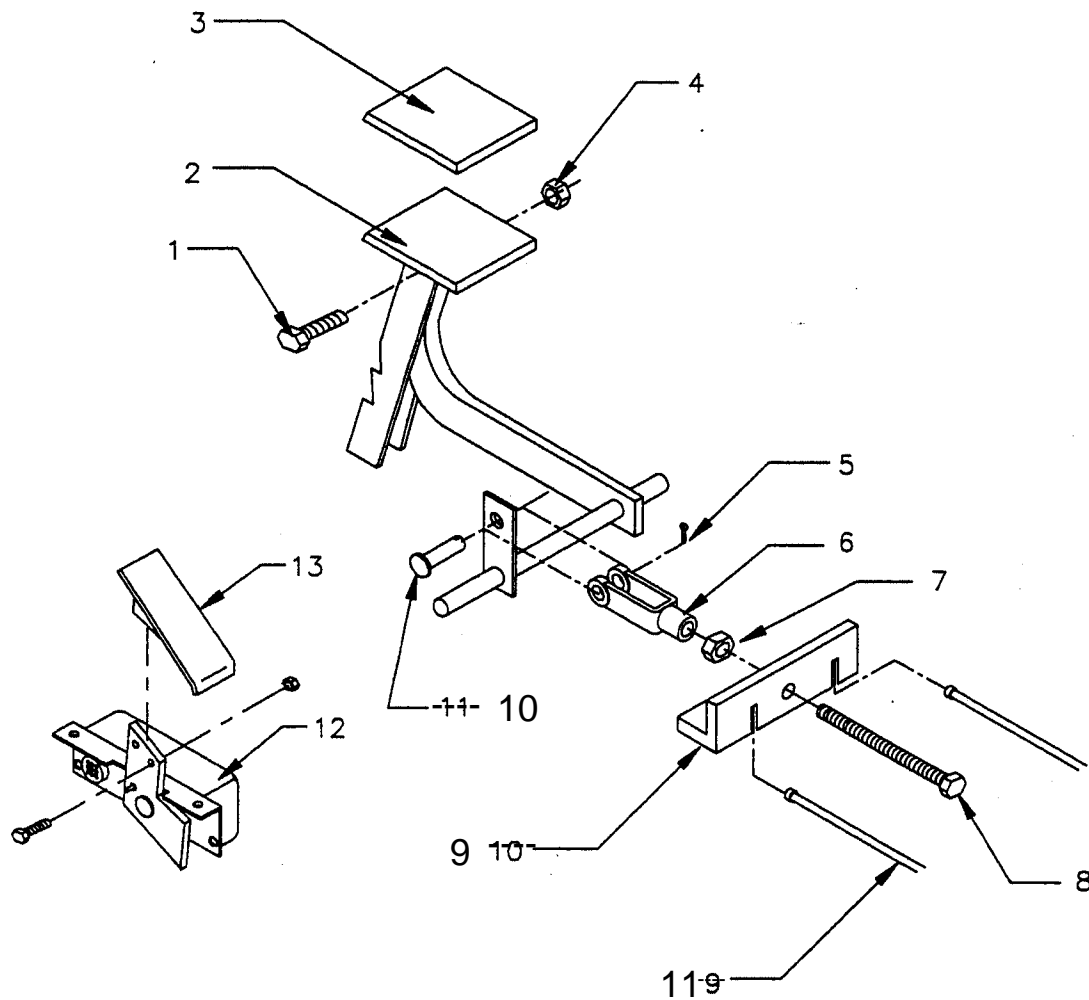


Brake Linkage/ Accelerator Pedal

ITEM#	PART#	DESCRIPTION	QTY
1	88-140-14	1/2" NC X 1-1/2" Hex Head Cap Screw	1
2	98-200-00	Brake Pedal Pad, Rubber	1
3	88-089-81	1/2" NC Locknut	2
4	01-534-67	Brake Arm Weldment	1
5	88-140-14	1/2" NC X 1-1/2" Hex Head Cap Screw	1
6	96-772-00	3/8" X 1" Clevis Pin	3
7	85-060-00	Return Spring	1
8	96-813-00	28-1/4" to 31-1/4" Brake Cable Assy	1
9	88-517-11	3/32" X 1" Cotter Pin	7
10	62-033-00	Accelerator Module	1
11	98-254-10	Accelerator Pedal	1
12	50-432-00	Brake Pedal Connecting Link	1
13	96-771-00	3/8" X 3/4" Clevis Pin	1
14	51-508-00	Brake Pedal, w/P.Brake Locks	1

ILLUSTRATED PARTS

BRAKE PEDAL LINKAGE (SS5-36 AND MX-600)

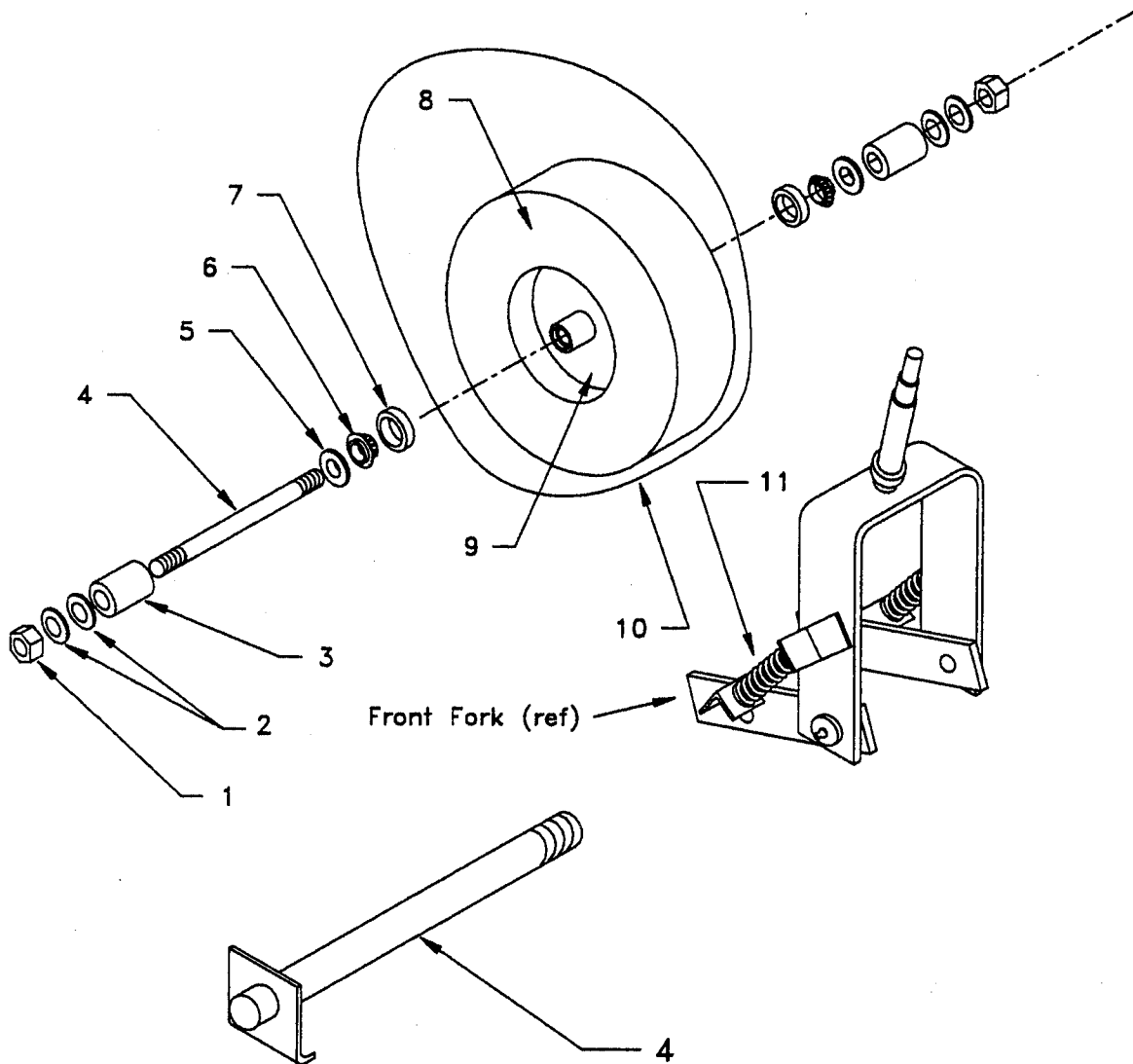


Brake Linkage (SS5-36 and MX-600)

ITEM#	PART#	DESCRIPTION	QTY
1	88-140-13	1/2" X 1/4" NC Bolt	1
2	02-536-09	Pedal Lock	1
3	98-200-00	Pedal Pad	1
4	88-149-81	1/2" NC Locknut	1
5	88-527-11	1/8" X 1" Cotter Pin	1
6	96-762-00	Clevis	1
7	88-119-81	3/8" NF Jam nut	1
8	88-111-20	3/8" X 3" NF Bolt	1
9	02-536-06	Brake Equalizer	1
10	96-772-00	3/8" X 1" Clevis Pin	1
11	96-826-12	Park Brake Cable Assy	1
12	62-033-00	Accelerator Module	1
13	98-254-10	Accelerator Pedal	1

ILLUSTRATED PARTS

FRONT AXLE, WHEEL AND SUSPENSION



Front Axle, Wheel and Suspension (SS5-34, SS5-36, and MX-600)

ITEM#	PART#	DESCRIPTION	QTY
1	88-229-81	3/4" NC Locknut	2
2	88-228-61	3/4" NC Washer	2
3	16-206-00	Spacer	2
4	15-010-00 15-010-10	Front Axle(Threaded each end) Front Axle(Single Ended)	1 1
5	45-308-00	Oil Seal	2
6	80-015-00	Tapered Roller Bearing	2
7	80-105-00	Bearing Race	2
8	10-075-00	4.80 X 8 Tire, Tubeless, LR 'B'	1
9	13-001-00	4.80 X 8 Rim and 4" Hub Assy (Only for Front Wheel, With Bearings and Seals.)	1
10	13-576-10	4.80 X 8 Tubeless, LR 'B' (With Bearings, Solid Rim and 4" Hub.)	1
11	85-140-10	Spring	1

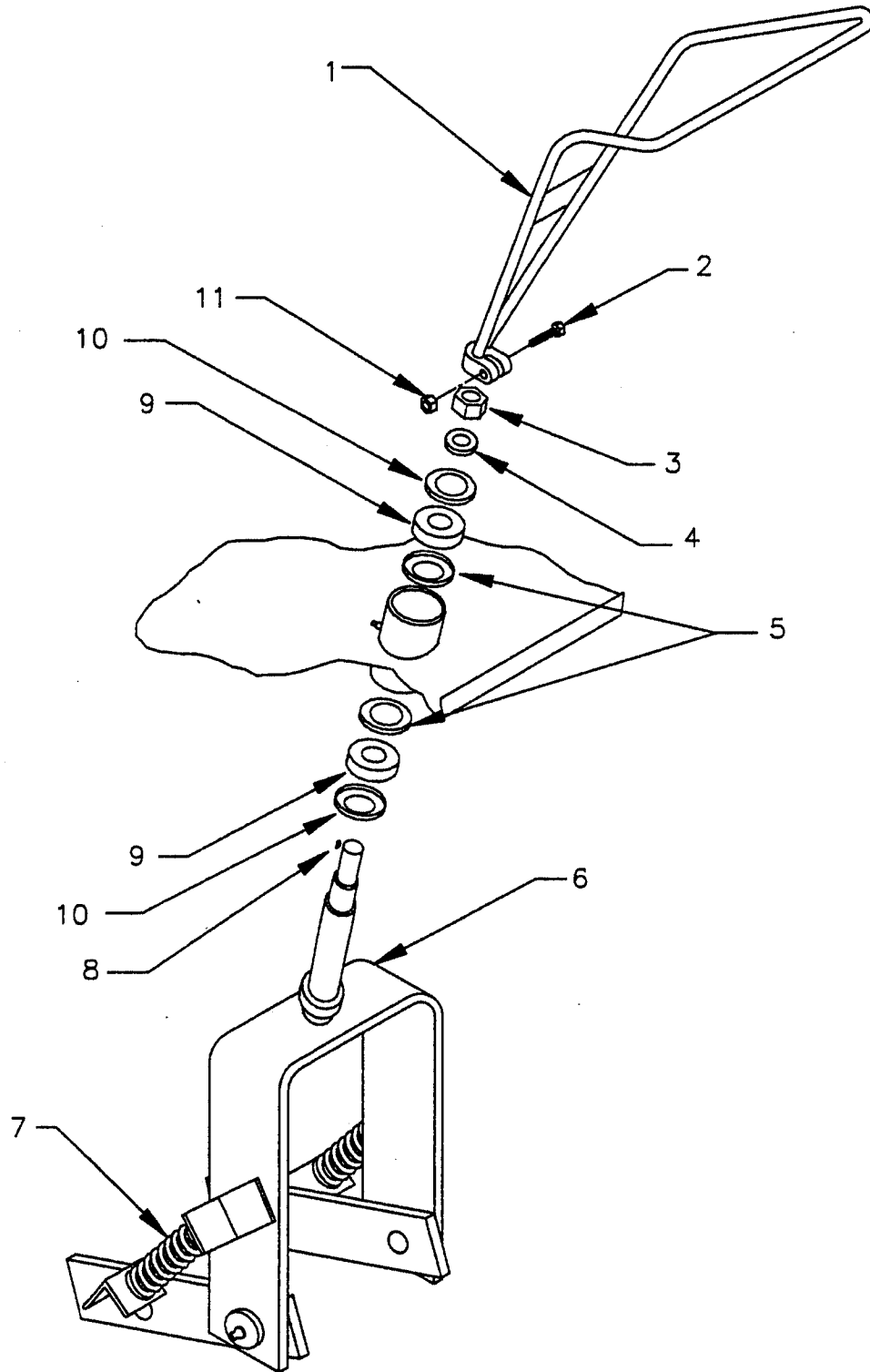
Optional Tire, Wheel, and Hub Parts

Not	12-120-10	Hub, With 4-Bolt Pattern	1
Shown	13-734-50	4.80 X 8 Tire, Mantoter	1
	13-734-12	Tire and Wheel Assy with 4.80 X 8 Tubeless Tire	1
	13-734-21	Tire and Wheel Assy with 4.80 X 8 Tubed Tire	1
	97-236-00	1/2" Lug Nut(For use with #12-120-10)	4
	11-030-00	Tube for #13-734-21	1

NOTE: Refer to page 4-49 for more information on the tires, rims and hubs.

ILLUSTRATED PARTS

TILLER STEERING

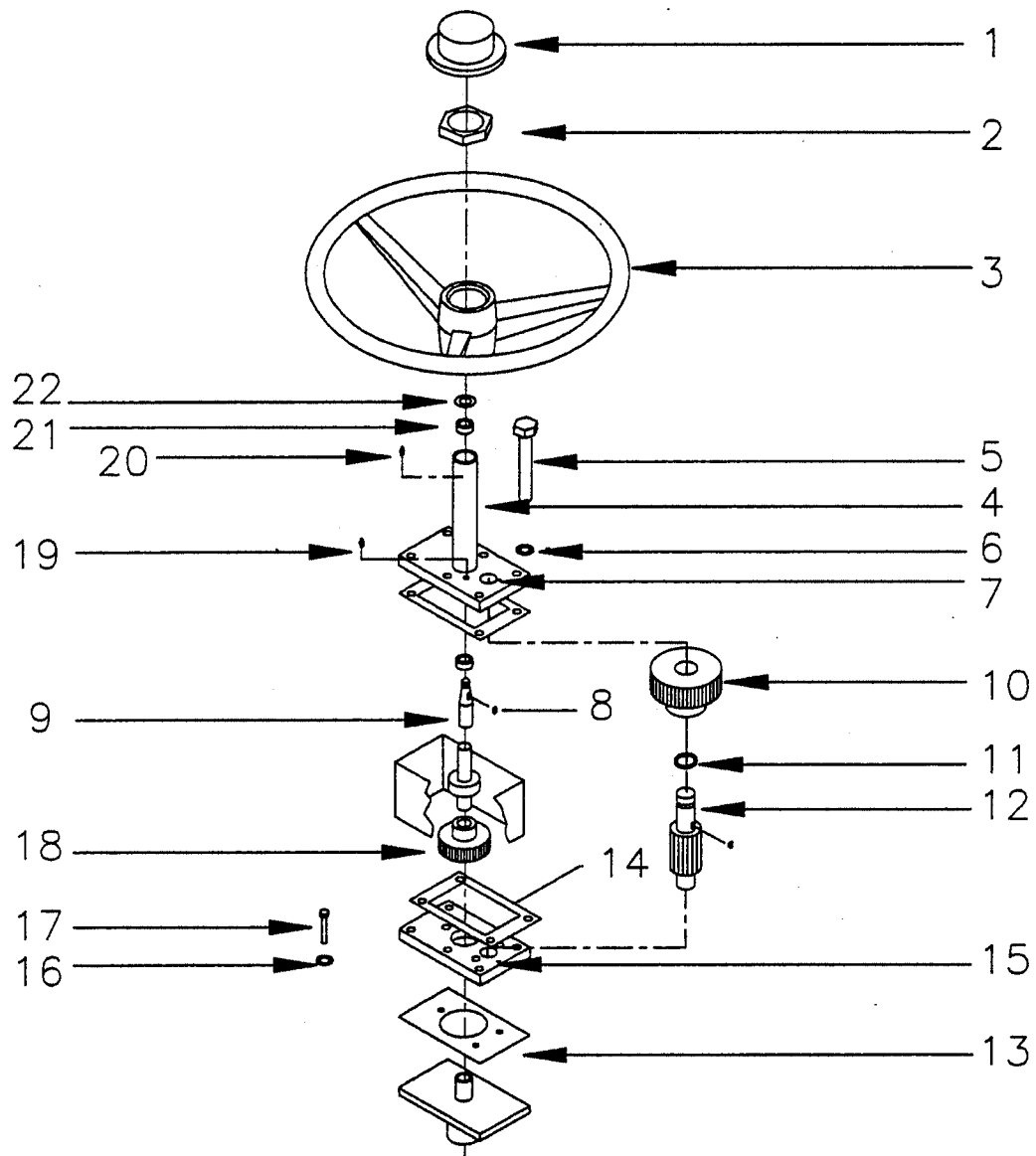


Tiller Steering

ITEM#	PART#	DESCRIPTION	QTY
1	19-101-20	Steering Tiller	1
2	88-140-14	1/2" X 1-1/2" NC Bolt	1
3	97-230-00	1-1/4" NF X 9/16" Locknut	1
4	16-409-00	Spacer	1
5	80-102-00	Bearing Race	2
6	14-079-20	Front Fork with Springs	1
7	85-140-10	Spring	2
8	97-100-00	Woodruff Key	1
9	80-011-00	1-1/4" Tapered Roller Bearing	2
10	45-307-00	Oil Seal, 1-1/2"ID	2
11	88-149-81	1/2" Locknut	1
Not Shown	72-005-00	4" Head Light	1

ILLUSTRATED PARTS

GEARED STEERING (SS5-34)

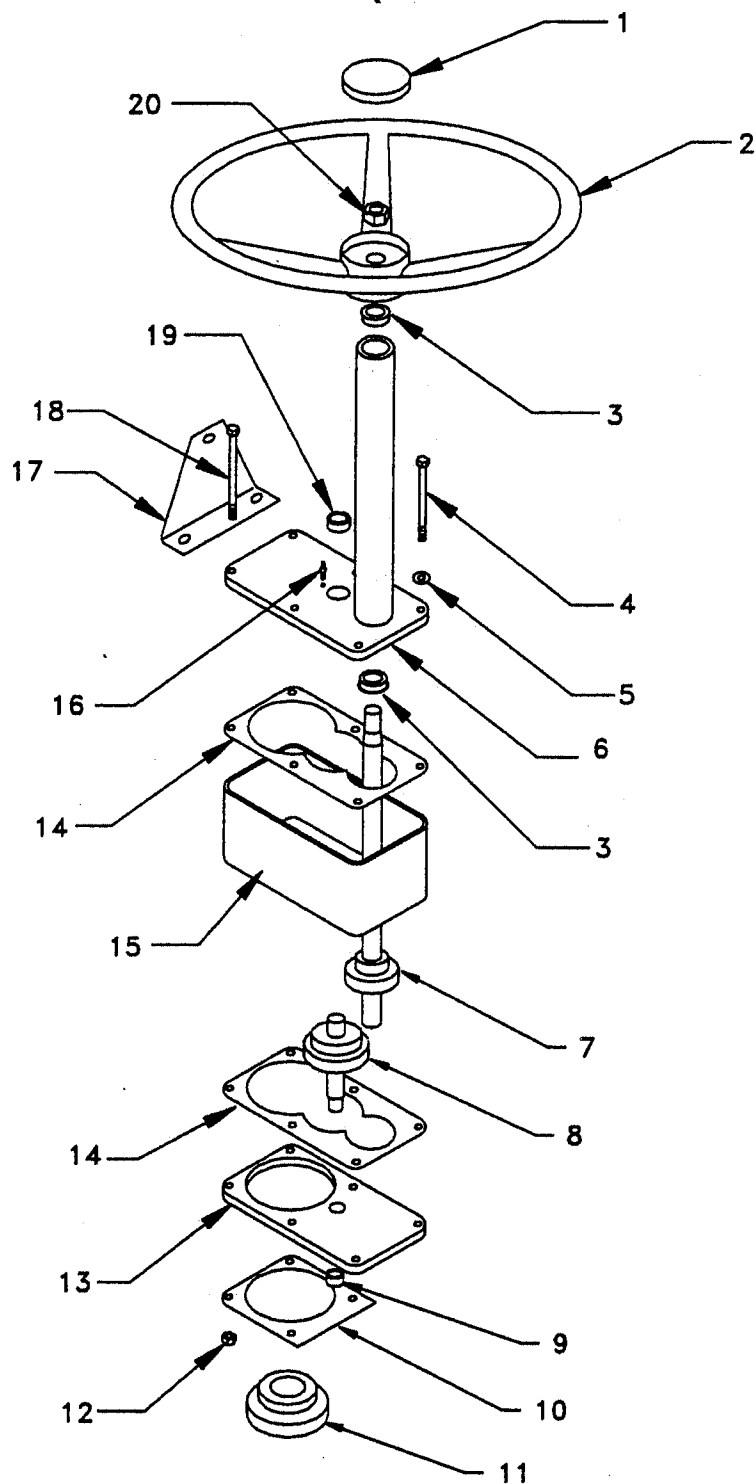


Geared Steering (SS5-34)

ITEM#	PART#	DESCRIPTION	QTY
1	95-915-20	Cap, Black Plastic	1
2	88-199-82	5/8" Jam Nut	1
3	19-007-20	Steering Wheel	1
4	18-309-00	Gear Box Only, (With Bolts, Bushings, and Zerk Fittings.)	1
5	88-068-25	1/4" X 4-1/2" NC HEX Hd Cap Screw	6
6	88-068-62	1/4" Lockwasher	6
7	32-203-00	3/4" ID X 7/8" OD X 1/2" Long Bronze Bushing	1
8	97-100-00	3/16" Woodruff Key	1
9	20-031-00	Steering Shaft with Gear	1
10	31-253-00	36-Tooth 16D.P., 3/4" Bore, Spur Gear, with Keyway	1
11	80-706-00	3/4" OD O-Ring	1
12	31-255-00	7-Tooth Stem Pinion	1
13	45-003-00	4" X 4-1/2" OD Gasket	1
14	45-004-00	4" X 6" OD Gasket	2
15	32-207-00	3/8" ID X 5/8" OD X 1/2" Long Bronze Bushing	1
16	88-088-62	5/16" Lockwasher	3
17	88-088-11	5/16" X 1" HEX Hd Cap Screw	3
18	31-254-00	36-Tooth 12D.P., 7/8" Bore, Spur Gear, with Keyway	1
19	87-074-00	1/4"-28NF Zerk Fitting	1
20	87071-00	3/16" Zerk Fitting	1
21	80-400-10	3/4" ID Ball Bearing	2
22	16-405-00	3/4" ID X 1-1/4" OD Spacer	1
Not Shown	72-005-00	4" Headlight	1
Not Shown	72-505-05	Headlight Mount	1

ILLUSTRATED PARTS

GEARED STEERING (SS5-36 AND MX-600)

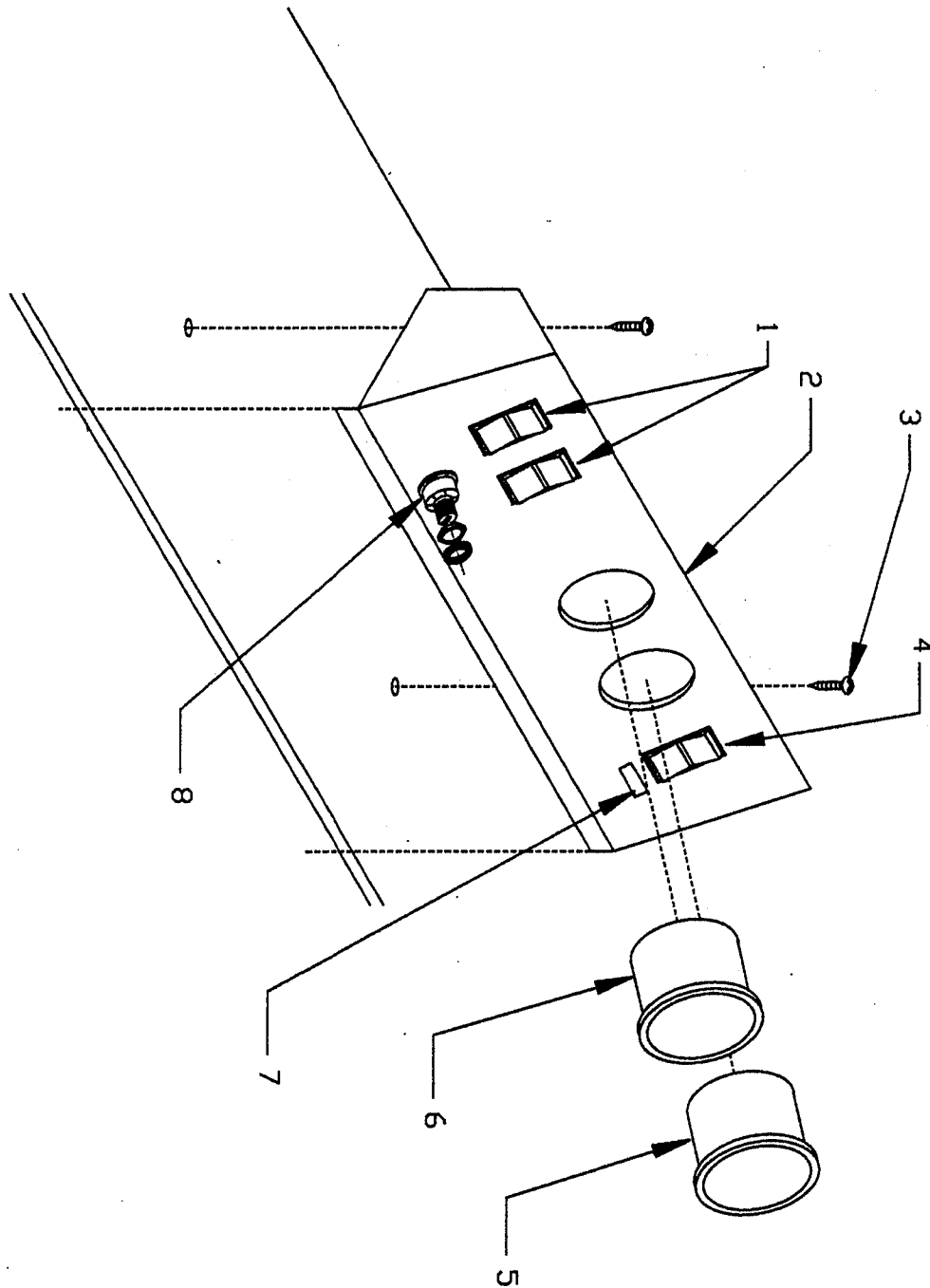


Geared Steering (SS5-36 and MX-600)

ITEM#	PART#	DESCRIPTION	QTY
1	19-011-25	Cover	1
2	19-011-20	Steering Wheel	1
3	80-400-10	3/4"ID Bearing	2
4	88-060-22	1/4" X 3-1/2" NC Hex Bolt	2
5	88-068-82	1/4" Lockwasher	6
6	18-309-13	Plate and Sleeve, Weldment	1
7	20-031-20	Steering Shaft and Gear	1
8	31-255-10	Stem and Gear, Weldment	1
9	32-207-00	3/8" ID X 5/8" OD Bronze Bushing	1
10	45-003-10	Mounting Plate Gasket	1
11	31-254-00	36 Tooth, Spear Gear	1
12	88-069-81	1/4" Locknut	4
13	18-039-11	Bottom Plate	1
14	45-004-10	Gear Box Gasket	1
15	18-309-12	Gear Box Case	1
16	87-071-00	3/16" Zerk Fitting	1
17	71-505-05	Head Light mounting Bracket(Optional)	1
18	88-060-25	1/4" X 4-1/2"NC HEX Bolt	4
19	32-203-00	3/4"ID X 7/8"OD Bronze Bushing	1
20	88-199-82	5/8" NF Jam Nut	1
Not Shown	72-005-00	Head Light	1

ILLUSTRATED PARTS

INSTRUMENT PANEL (SS5-34 AND SS5-36)



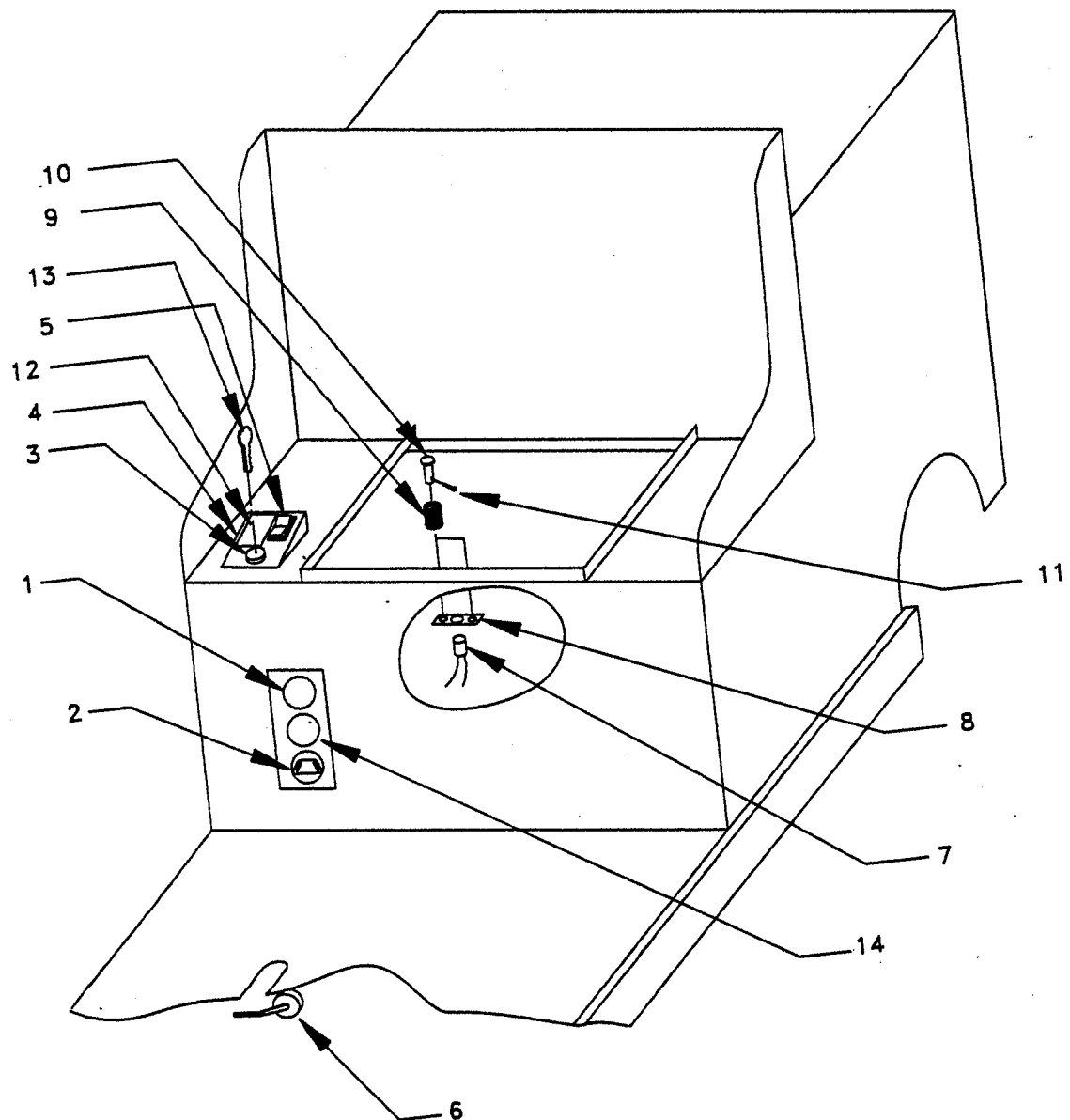
Instrument Panel (SS5-34 and SS5-36)

ITEM#	PART#	DESCRIPTION	QTY
1	71-039-10	Rocker Switch	1-2
2	02-536-10	Instrument Panel Console	1
3	88-065-09	1/4" X 3/4" NC Phillips Hd Screw	2
4	71-039-00	Forward/Reverse Switch	1
5	74-009-10	24-volt, Battery Status Indicator	1
6	74-000-00	Hour Meter (Optional)	1
7	72-028-20	Power On Light	1
8	71-120-00	Key Switch	1
Not Shwn	71-039-20	Plug	1

NOTE: See page 4-18 for MX-600 Instrument Panel.

ILLUSTRATED PARTS

CONTROLS AND INSTRUMENTS (MX-600)



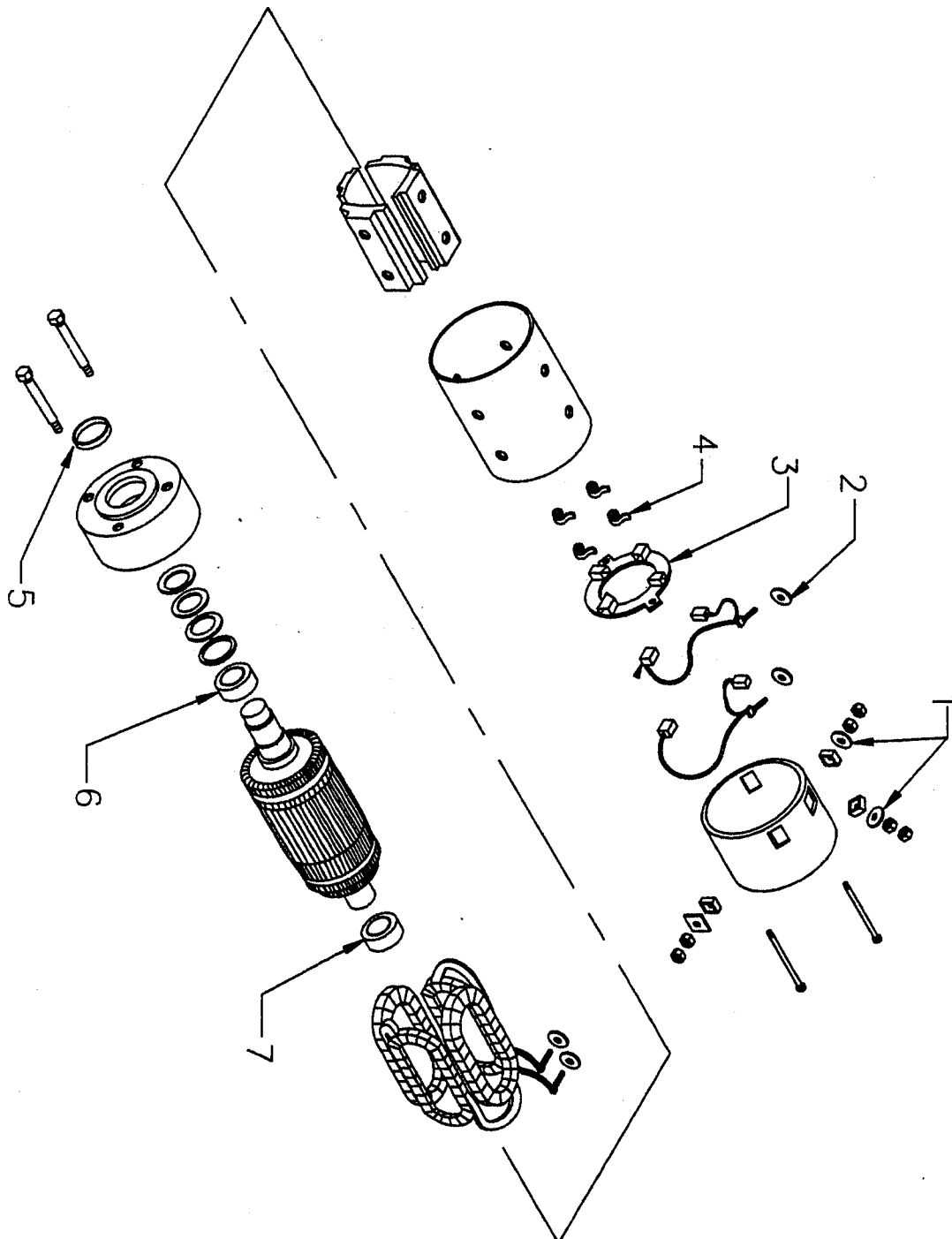
Instrument Panel (MX-600)

ITEM#	PART#	DESCRIPTION	QTY
1	74-009-10	24V Battery Status Indicator	1
2	76-013-00	Charging Receptacle	1
3	71-120-00	Key Switch W/Keys	1
4	00-300-04	Instrument Panel	1
5	71-039-00	3-Position Rocker Switch	1
6	71-111-00	Brake Light Switch	1
7	71-102-10	Seat Switch	1
8	02-610-18	Seat Switch Mount	1
9	85-030-00	Compression Spring for Seat Switch	2
10	96-773-00	Anchor Pin for Seat Switch	2
11	88-527-11	1/8" Cotter Pin	2
12	94-312-00	Forward/Reverse Label	1
13	71-120-80	Keys	1
14	74-000-00	Hour Meter (Optional)	1

NOTE: A seat switch kit is available part number 71-102-60, this includes item numbers 7 through 11.

ILLUSTRATED PARTS

MOTOR SS5-34

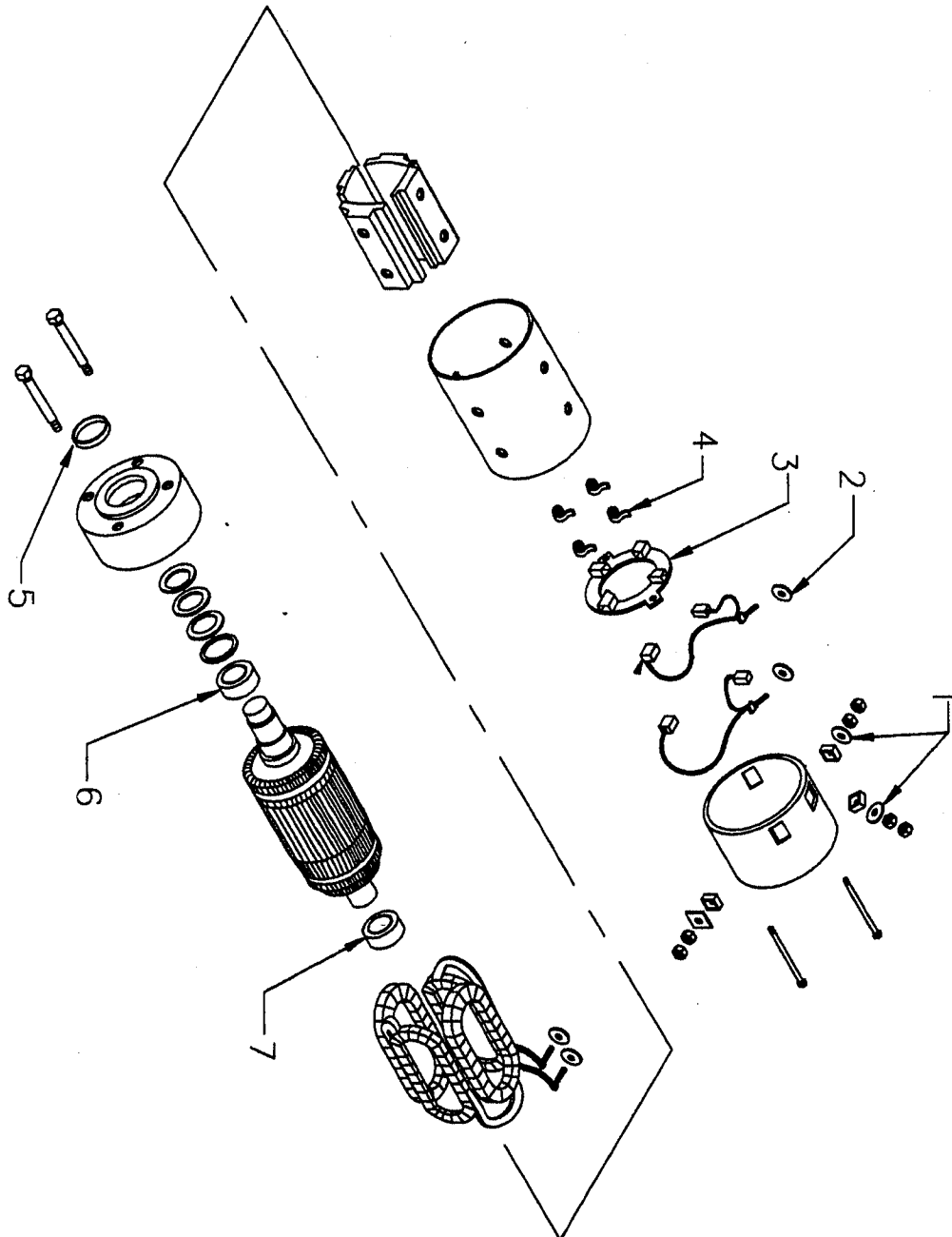


Motor (P/N 70-049-00)

ITEM#	PART#	DESCRIPTION	QTY
1	70-210-62	Kit, Insulators and Motor Terminals	1
2	70-104-00	Brush Assembly W/ Stud	2
3	70-172-00	Brush Holder Assembly	1
4	85-412-00	Brush Spring	4
5	45-506-00	Oil Seal	1
6	80-504-00	Ball Bearing	1
7	80-209-00	Ball Bearing	1

ILLUSTRATED PARTS

MOTOR SS5-36 & MX-600

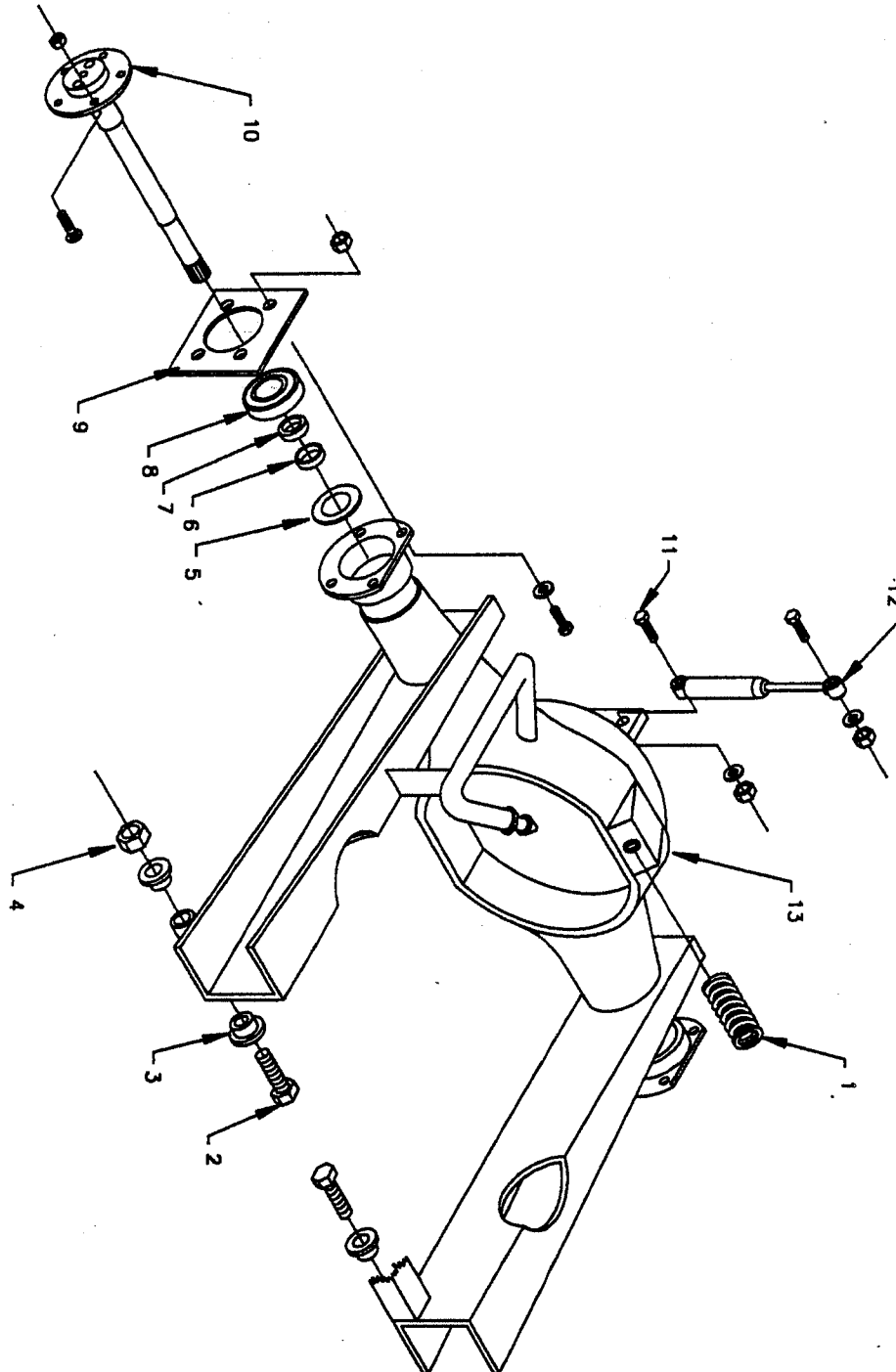


Motor (P/N 70-049-05)

ITEM#	PART#	DESCRIPTION	QTY
1	70-195-15	Terminal Screw	2
2	72-201-15	Stator Assembly Including Shell	1
3	70-210-50	Insulation Bushing	2
4	85-410-15	Springs	4
5	70-172-15	Brush Holder with Springs	1
6	70-104-15	Brushes with Termination Screw	2
7	32-508-15	Bearing Retainer	1
8	80-209-00	Bearing	1
9	70-210-51	Insulation Bushing	2

ILLUSTRATED PARTS

REAR AXLE (SS5-34)

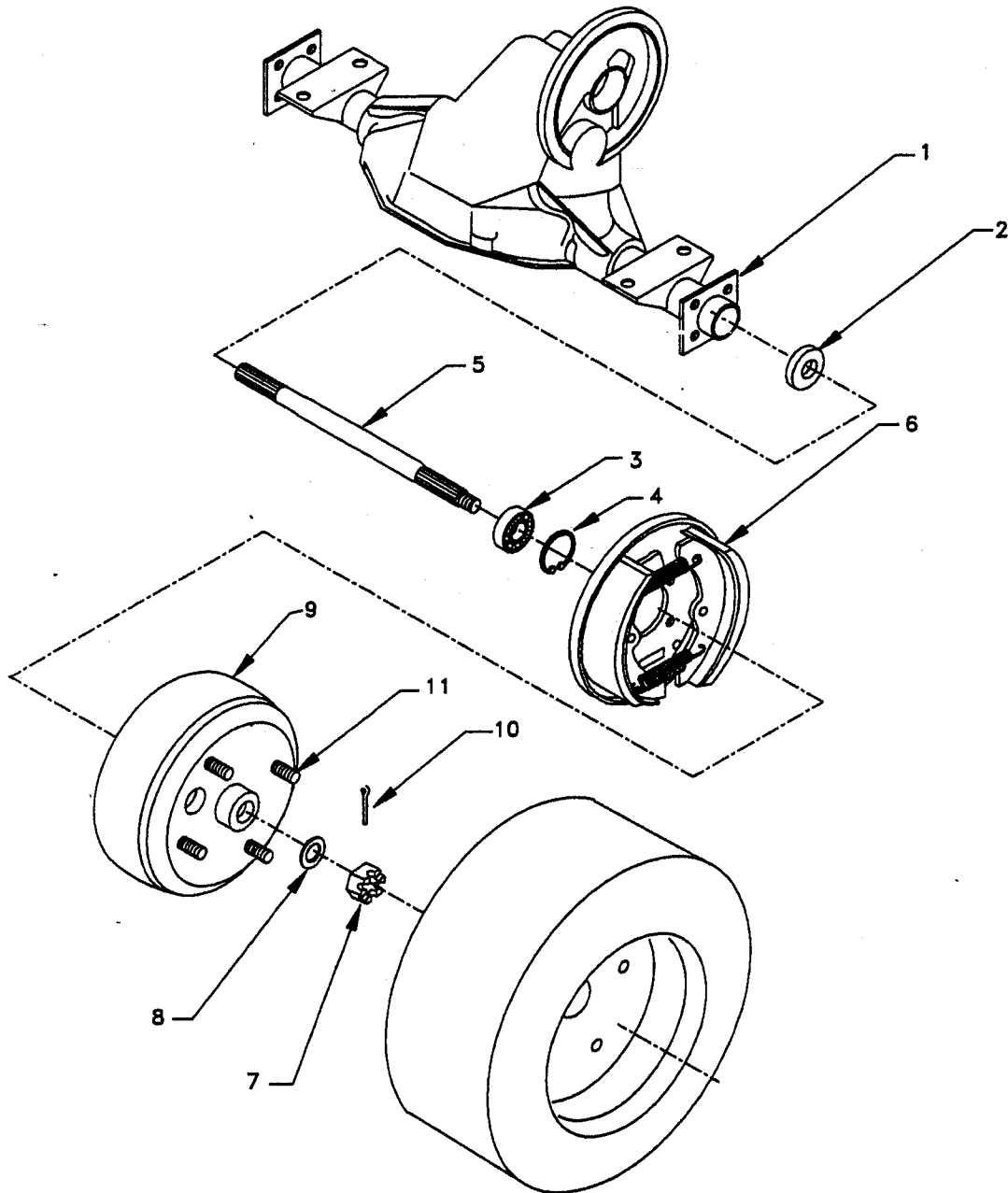


SS5-34 Rear Axle

ITEM#	PART#	DESCRIPTION	QTY
1	85-140-00	2-7/16" X 6-1/4" Spring	1
2	96-240-00	1/2" X 4" Bolt	2
3	98-601-00	Rubber Grommet, 1/2" ID	4
4	88-149-81	1/2"NC Locknut	2
5	45-045-00	Rear Axle Bearing Gasket	2
6	45-301-00	Oil Seal	2
7	32-515-00	Bearing Retainer Ring	2
8	80-503-00	Bearing for Rear Axle	2
9	32-514-00	Rear Axle Retaining Plate	2
10	41-165-11	Right Side Axle w/ Bearing and Retainer Plate	1
	41-166-11	Left Side Axle w/ Bearing and Retainer Plate	1
11	88-180-18	5/8"NC X 2-1/2" Hex Head Cap Screw	2
12	86-602-00	Shock Absorber	1
13	41-296-00	Housing	1

ILLUSTRATED PARTS

REAR AXLE (SS5-36 AND MX-600)



SS5-36 and MX-600 Rear Axle(P/N 4S-150-00)

ITEM#	PART#	DESCRIPTION	QTY
1	41-281-10	Differential Assy	1
2	45-303-20	Seal	2
3	80-480-20	Axle Bearing	2
4	88-480-13	Internal Snap Ring	4
5	41-126-99 41-126-98	Right Axle Shaft Left Axle Shaft	1 1
6	41-344-99 41-344-98	Right Brake Left Brake	1 1
7	88-199-85	Slotted Hex Nut	2
8	88-188-61	5/8" SAE Washer	2
9	41-518-00	Brake Drum	2
10	88-527-11	1/8" X 1" Cotter Pin	2
11	66-610-28	Wheel Stud	4

DIFFERENTIAL (SS5-34)

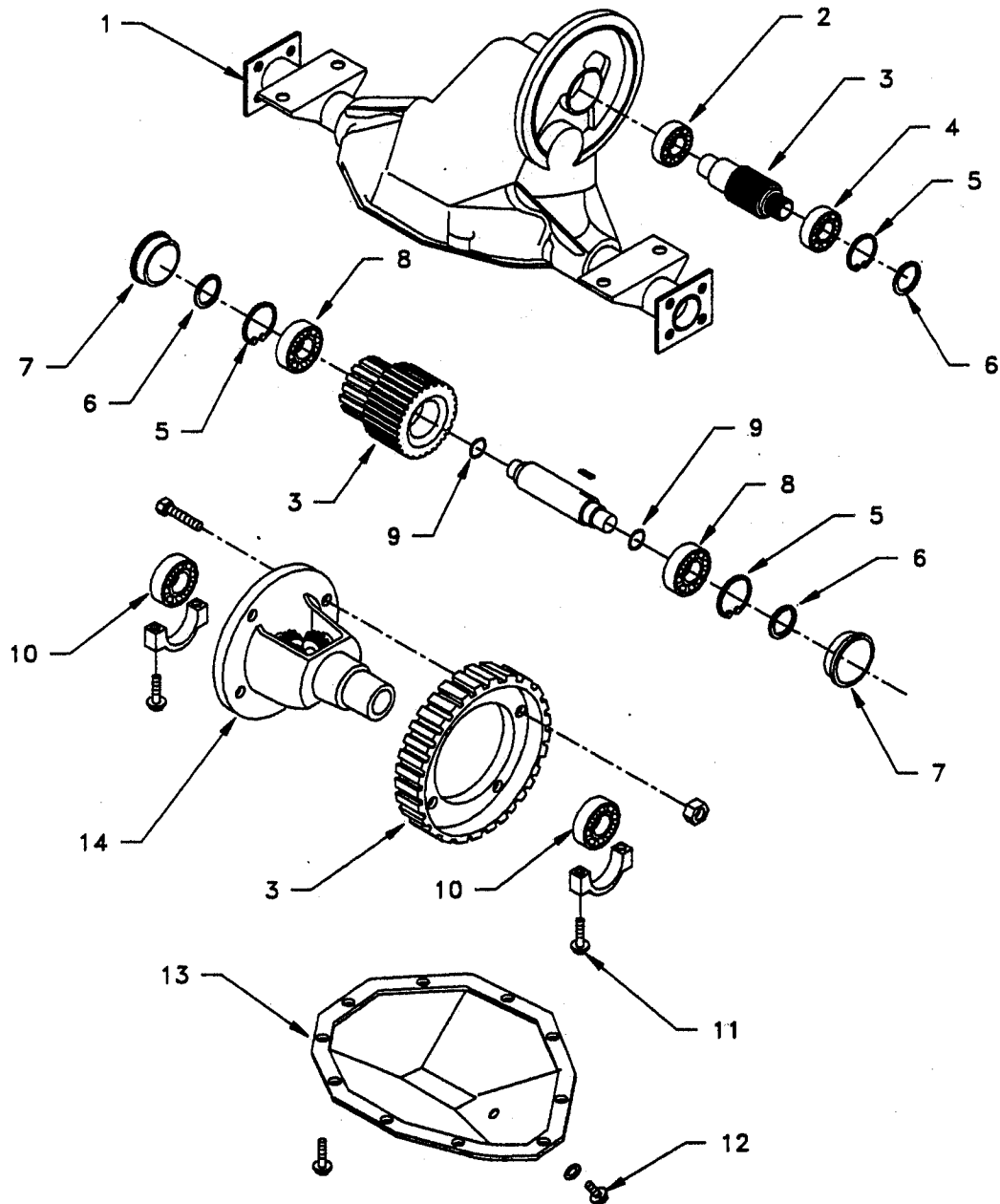


3rd Member and Axle Assembly

ITEM#	PART#	DESCRIPTION	QTY
1	41-709-00	3rd member Housing (1.628 ID Carrier Bearing)	1
	41-710-00	3rd member Housing (1.784 ID Carrier Bearing)	1
2	88-119-80	3/8" NF Nut	14
3	41-712-00	Differential Assembly (1.628 ID Carrier Bearing)	1
	41-713-00	Differential Assembly (1.784 ID Carrier Bearing)	1
4	80-127-00	Carrier Bearing Race, (For 1.628 ID Carrier Bearing)	2
	80-128-00	Carrier Bearing Race, (For 1.784 ID Carrier Bearing)	2
5	80-511-00	Carrier Bearing (1.628 ID Carrier Bearing)	2
	80-512-00	Carrier Bearing (1.784 ID Carrier Bearing)	2
6	31-235-00	Ring and Pinion Gear Set (2.69-2.75)	1
7	41-997-00	Oil Plug	3
8	41-296-00	Rear End Housing	1
9	80-554-00	Pinion Bearing	2
10	41-711-00	Pinion Housing Shim	1
11	80-702-00	O-Ring	1
12	44-340-90	Pinion Housing Shim	1
13	16-419-00	.002 Shim (Add Shims As Needed)	*
	16-420-00	.010 Shim (Add Shims As Needed)	*
	16-411-00	.005 Shim (Add Shims As Needed)	*
14	16-415-00	Spacer	1
15	80-125-00	Pinion Bearing Race	2
16	41-707-00	Differential Bearing Adjuster Nut (For 80-511-00)	2
	41-707-50	Differential Bearing Adjuster Nut (For 80-512-00)	2
17	88-080-04	5/16" X 3/8" NC Hex Bolt	2
18	88-140-16	1/2" X 2" Hex Bolt	2
19	96-243-00	7/16" X 7/8" Hex Bolt (Locking Head)	10
Not Shown	45-339-00	Oil Seal, Pinion Shaft	1
	41-701-00	Roll Pin, Spider Gear Shaft	1

ILLUSTRATED PARTS

DIFFERENTIAL (SS5-36 AND MX-600)

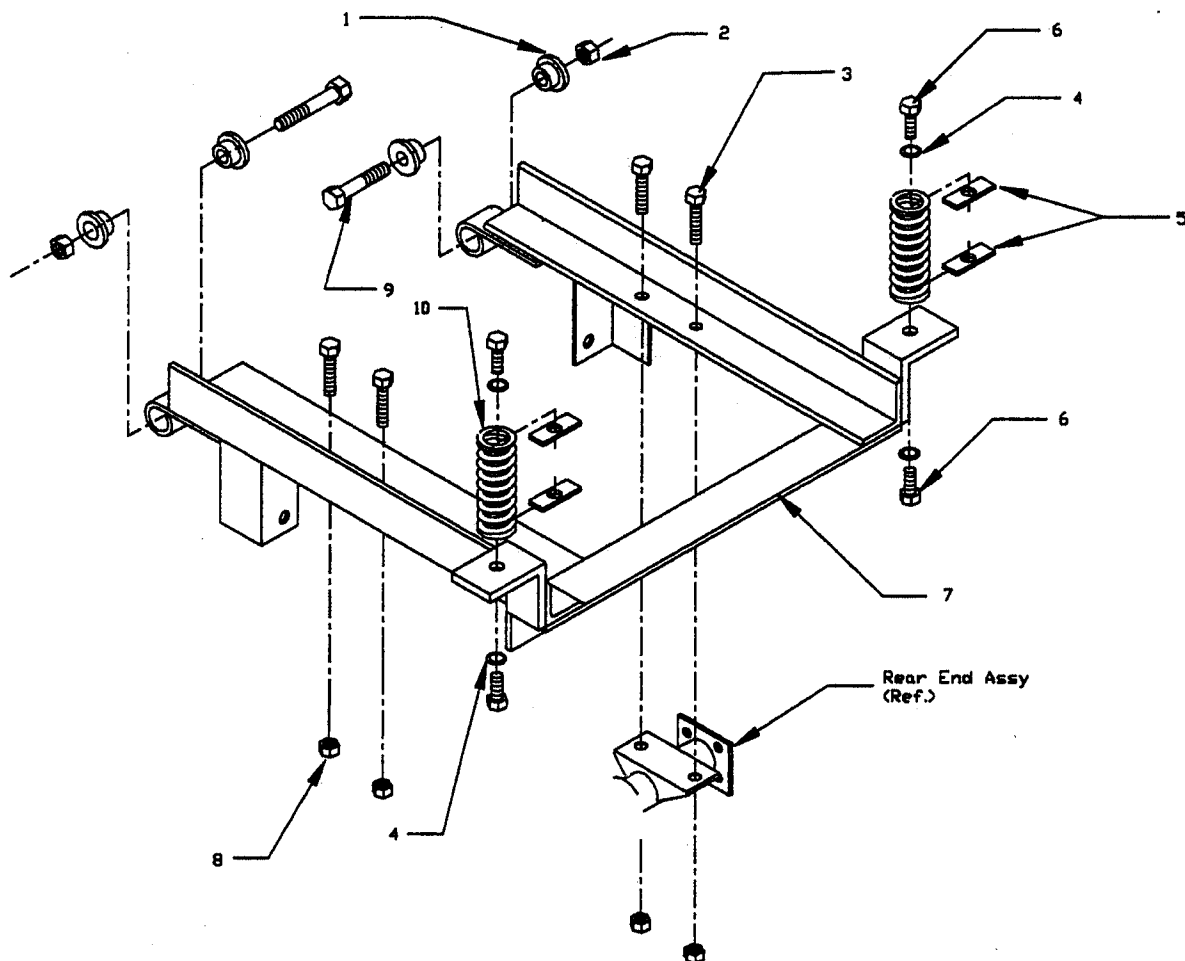


SS536 & MX-600 Differential Assy

ITEM#	PART#	DESCRIPTION	QTY
1	41-280-10	Differential Housing Assy	1
2	80-480-10	Pinion Bearing	2
3	31-265-00	Gear Set	1
4	80-480-15	Shaft Bearing	1
5	88-840-12	Snap Ring	3
6	80-175-10	O-Ring	3
7	41-973-00	Cup Plug	2
8	80-480-01	Bearing	2
9	80-715-00	O-Ring	2
10	80-408-00	Carrier Bearing	2
11	96-330-10	Bearing Cap Bolt	4
12	41-127-94	Fill Plug	1
13	41-127-64	Carrier Cover	1
14	41-716-00	Differential Case Assy	1

ILLUSTRATED PARTS

SS5-36 DIFFERENTIAL FRAME

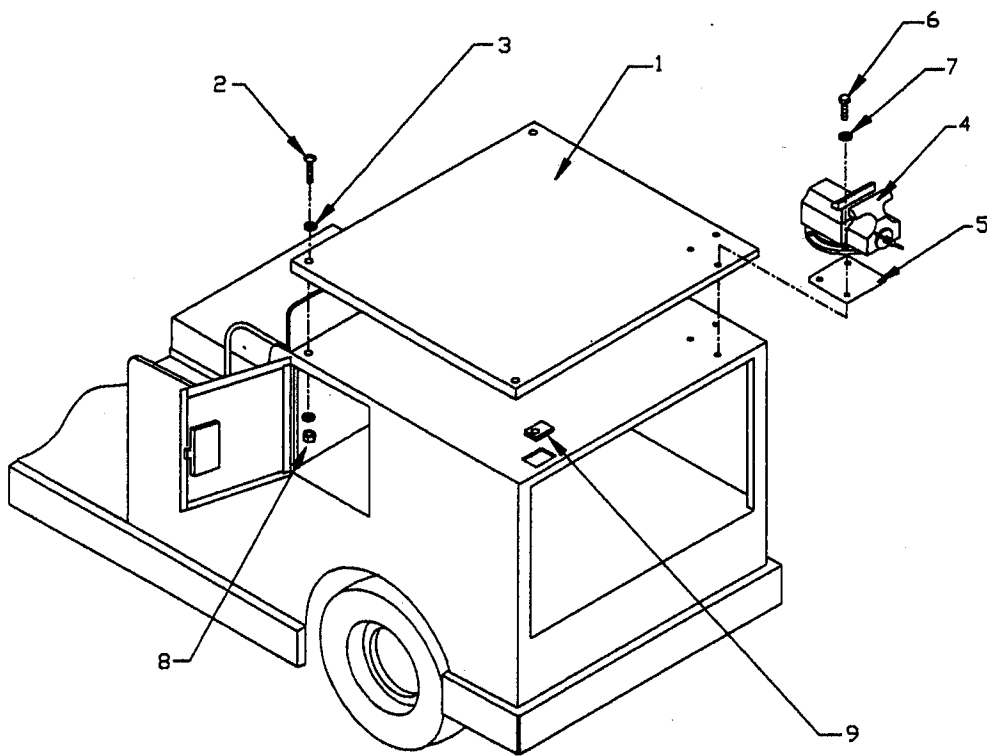


SS536 Differential Frame

ITEM#	PART#	DESCRIPTION	QTY
1	98-601-00	Rubber Grommet, 1/2" ID	4
2	88-149-81	1/2" Locknut	2
3	88-100-15	1/2" X 1-3/4" Bolt	4
4	88-108-62	3/8"" Lockwasher	4
5	85-141-00	Spring Clip	4
6	88-100-11	3/8" NC X 1" Bolt	4
7	00-536-01	Drive Frame	1
8	88-149-81	1/2" Locknut	4
9	96-240-00	1/2" X 4" Bolt	2
10	85-140-00	Spring	2

ILLUSTRATED PARTS

DECK AND VISE ASSY (MX-600)



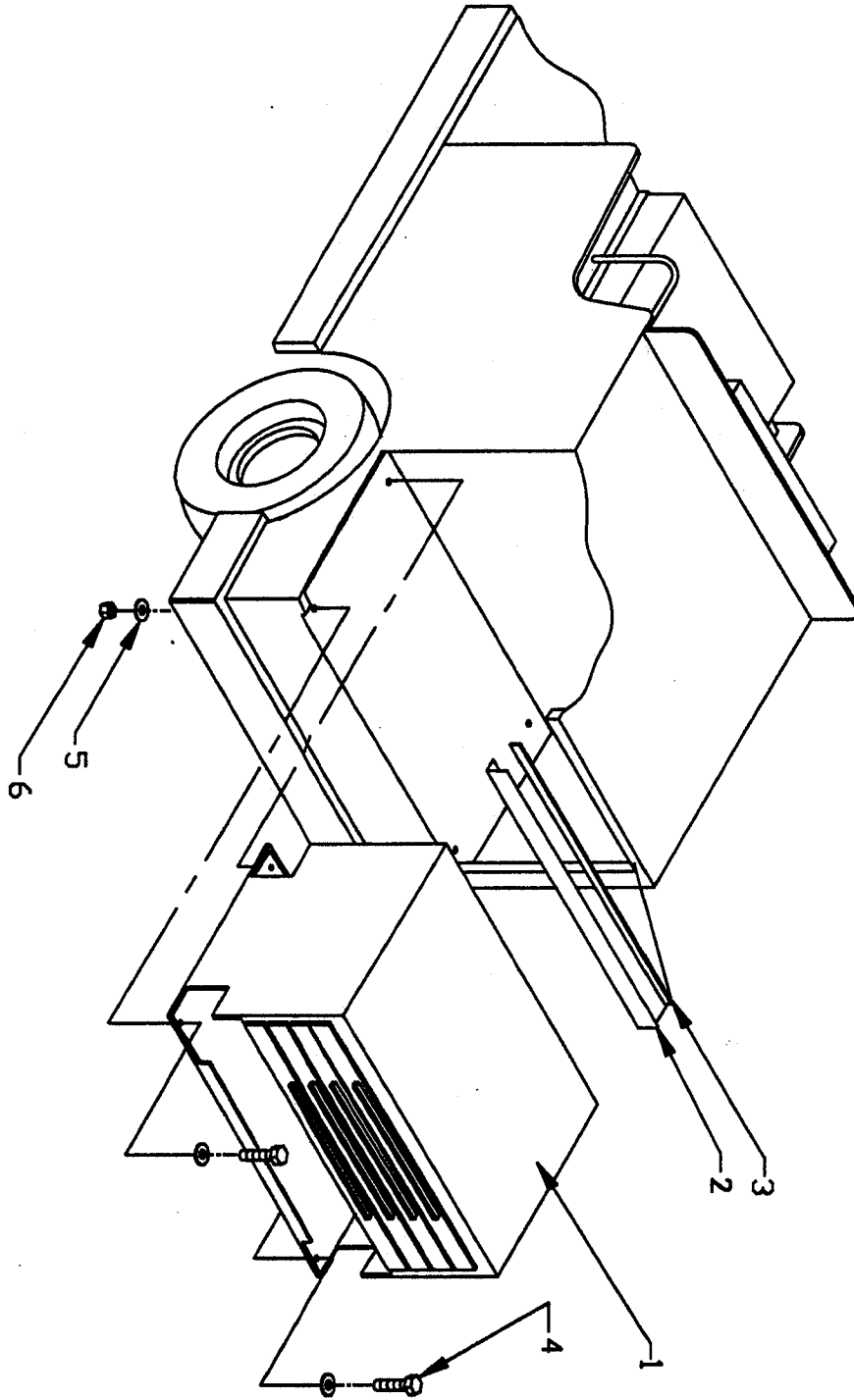
MX Vise.dwg

MX-600 Deck and Vise Assy

ITEM#	PART#	DESCRIPTION	QTY
1	90-408-20	30" X 27-1/2" Deckboard	1
2	88-065-13	1/4" NC X 1-1/4" Truss Head Screw	3
3	88-068-61	1/4" SAE Washer	5
4	97-840-01	4-1/2" Jaw Width Vise	1
5	00-380-01	Vise Mount Plate	1
6	88-100-15	3/8"NC X 1-3/4" Hex Head Bolt	3
7	88-108-62	3/8" Lockwasher	3
8	88-069-81	1/4" Locknut	2
9	97-211-20	1/4" NC Retainer Nut	1
Not Shown	91-340-21	Tool Box Lock	1
	91-340-26	Keys for Toolbox Locks	1
	00-300-08	Steel Deck Cover	1

ILLUSTRATED PARTS

TOOLBOX ASSY (MX-600)

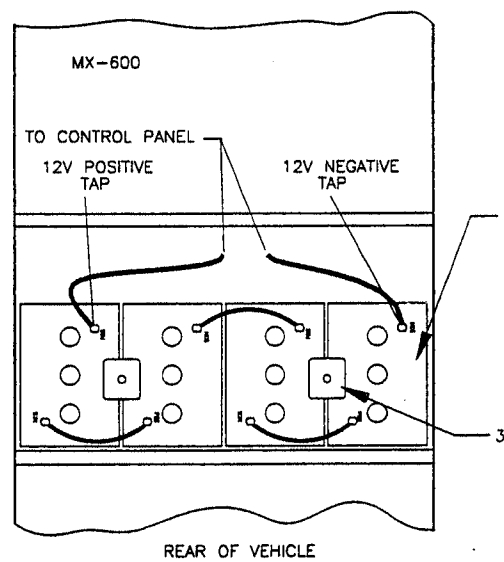
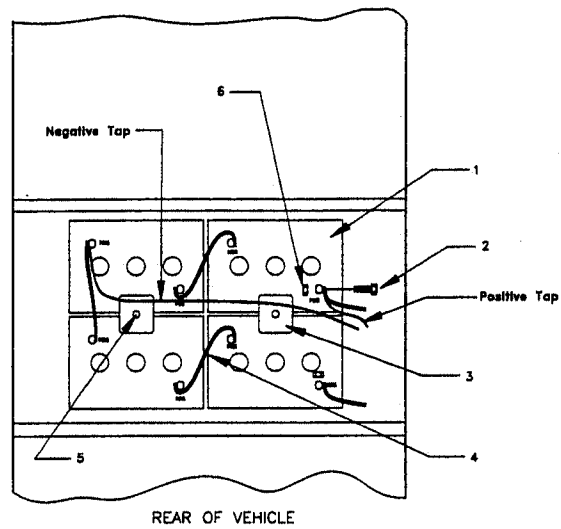


MX-600 Tool Box

ITEM#	PART#	DESCRIPTION	QTY
1	91-340-25	Tool Chest	1
2	00-300-02	Trim	1
3	94-400-32	Double Sided Tape	3 ft
4	88-140-11	1/2"NC X 1" Hex Head Bolt	4
5	88-148-61	1/2" SAE Washer	8
6	88-159-84	1/2"NC Locknut	4
Not Shown	91-340-21	Tool Box Lock	1
	91-340-26	Keys for Toolbox Locks	1
	00-300-08	Steel Deck Cover	1

ILLUSTRATED PARTS

BATTERY

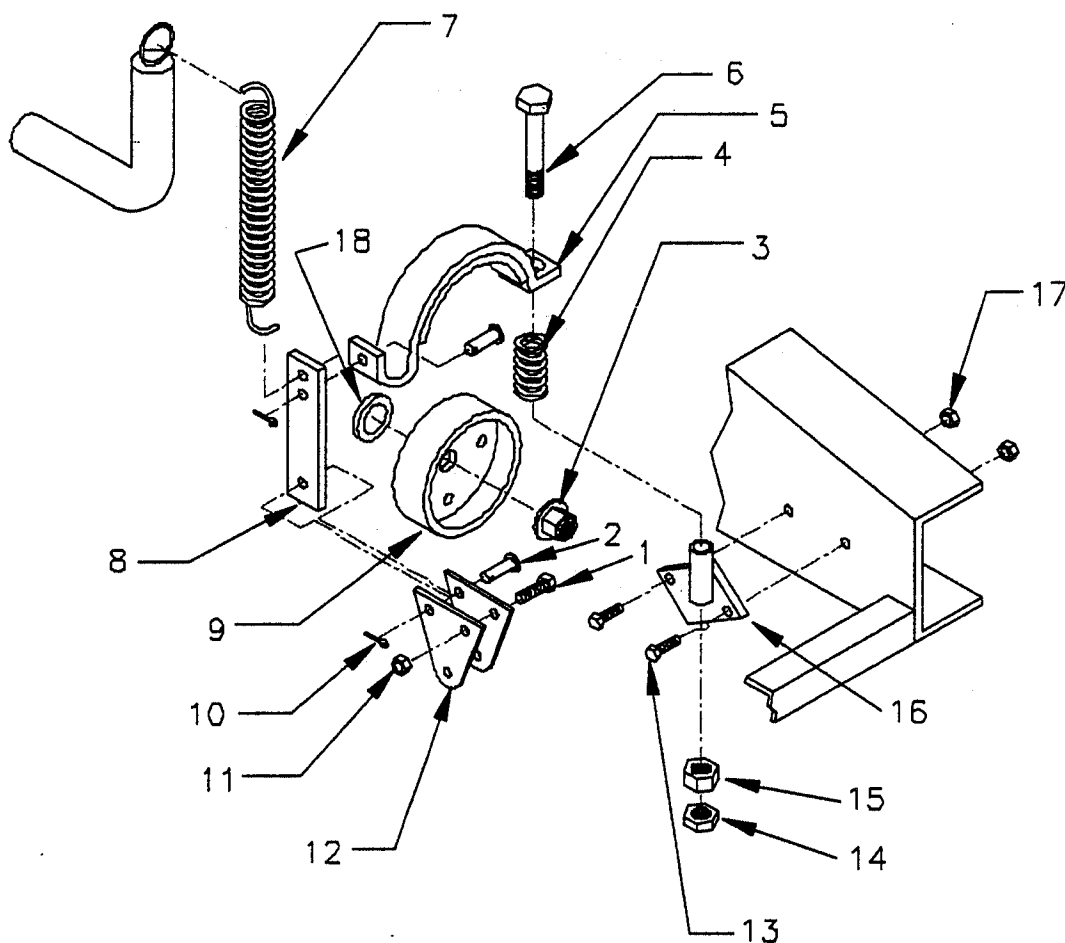


Batteries

ITEM#	PART#	DESCRIPTION	QTY
1	77-042-50	Battery, 217AH, 105min	4
	77-047-00	Battery, 244AH, 145min (Optional)	4
	77-044-00	Battery, 230AH, 105min (Optional)	4
	77-042-80	Battery, Moist Dry, 217AH, 105min (Optl)	4
	77-047-80	244AH, 145min, Dry Charge (Optional)	4
2	88-081-12	5/16" NC X 1" Bolt	8
3	50-250-00	Battery Hold Down	2
4	50-243-10	Battery Hold Down Rod (For #3)	2
5	75-231-00	Battery Jumper 10-1/4" Long	3
6	88-089-80	5/16" NC Nut	2

ILLUSTRATED PARTS

BRAKE ASSY (SS5-34)

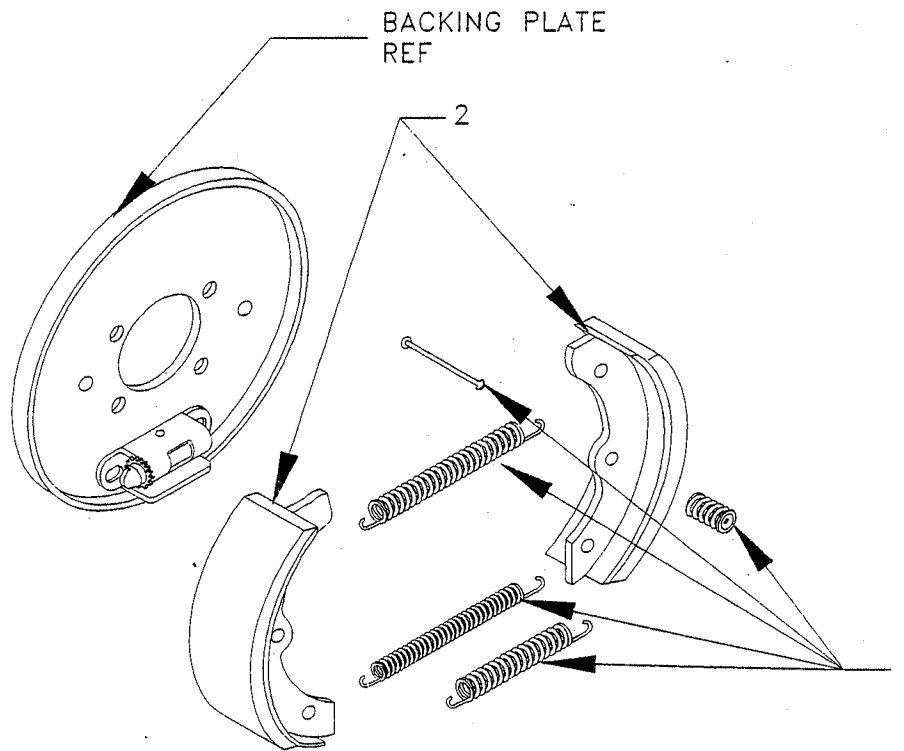


Mechanical Brake Band Assy (SS5-34)

ITEM#	PART#	DESCRIPTION	QTY
1	88-100-11	3/8" NC X 1-3/4" hex Head Cap Screw	1
2	96-771-00	3/8" X 3/4" Clevis Pin	2
3	97-250-00	3/4"-20 Extra Fine Pinion Nut	1
4	85-060-20	5/8" OD X 2-1/2" Compression Spring	1
5	41-660-60	Brake Half Band	1
6	96-245-10	1/2" NC X 5" hex Head Cap Screw	1
7	85-270-00	1-1/4" OD X 4-3/8" Extension Spring	1
8	50-661-00	Brake Lever Bar	1
9	41-532-00	Brake Drum	1
10	88-517-11	3/32" X 1" Cotter Pin	2
11	88-089-81	5/16" NC Locknut	4
12	50-662-00	Brake Lever	1
13	88-080-11	5/16" NC X 1" Hex Head Cap Screw	2
14	88-159-84	1/2" NF Jam Nut	1
15	88-159-84	1/2"-20 NF Locknut	1
16	41-380-10	Brake Mounting Bracket	1
17	88-089-81	5/16" NC Locknut	2
18	45-339-00	Pinion Seal	1

ILLUSTRATED PARTS

REAR BRAKE (SS5-36 AND MX-600)



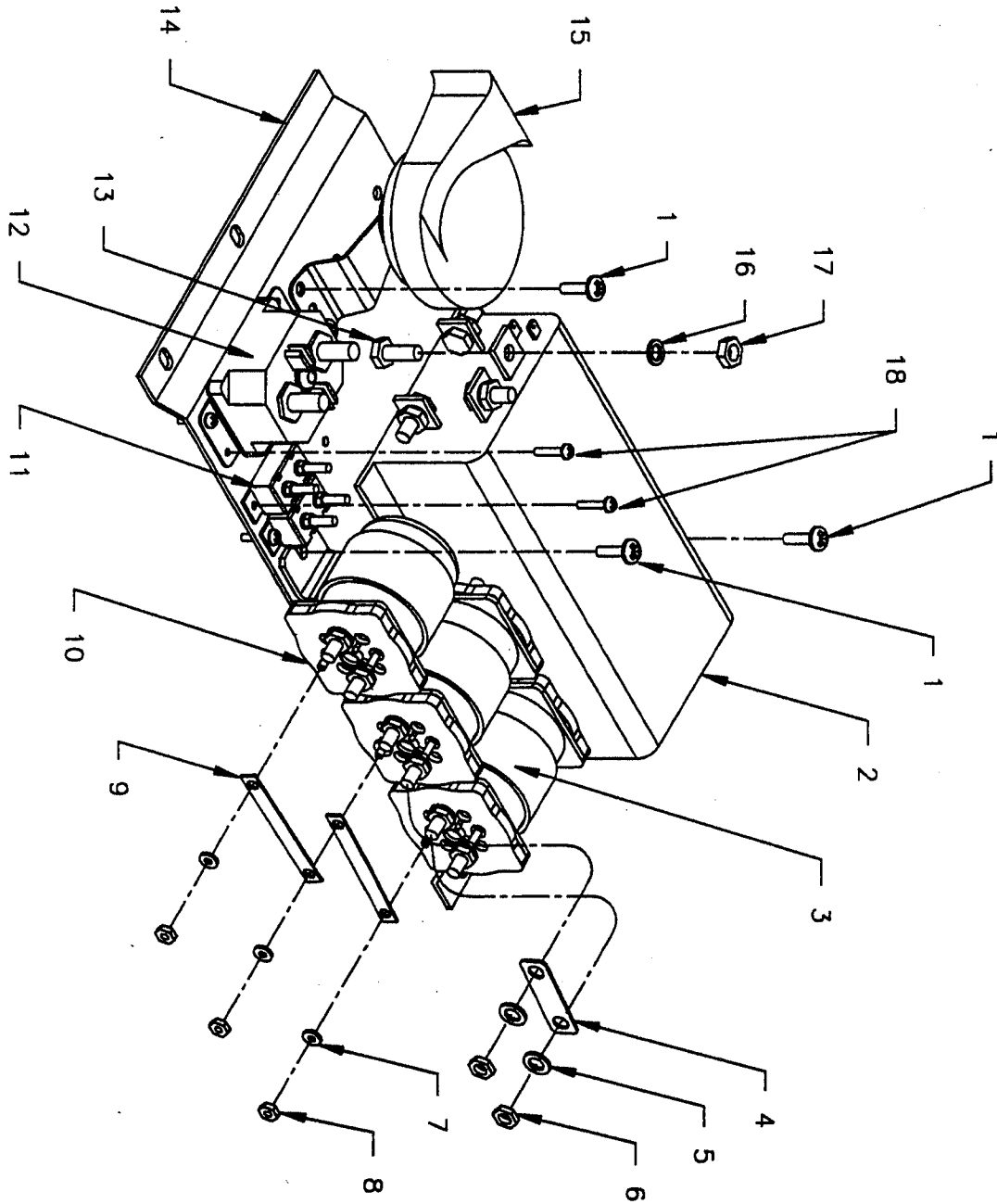
brake shoes and backing plate v. number.dwg

Rear Brake (SS5-36 and MX-600)

ITEM#	PART#	DESCRIPTION	QTY
1	85-344-60	Spring Kit	1
2	41-634-00	Brake Shoes (Shows 1 Set)	2

ILLUSTRATED PARTS

PMC CONTROL PANEL



PMC Control Panel

ITEM#	PART#	DESCRIPTION	QTY
1	88-838-06	#14 X 1/2" Pan Head Screw	4
2	62-204-00	PMC Controller	1
3	72-501-43	Forward/Reverse Solenoid	2
4	61-838-41	5/8" X 1-1/2" Bus Bar	2
5	88-088-62	5/16" Lockwasher	10
6	88-099-91	5/16" Nut	10
7	88-048-62	#10 Lockwasher	6
8	88-049-80	10-32 Nut	6
9	61-838-42	3/8" X 2-5/8" Bus Bar	2
10	72-501-42	ISO Solenoid	1
11	79-840-00	10-Amp Circuit Breaker	2
12	79-844-00	135-Amp Auto Reset Circuit Breaker	1
13	88-080-11	5/16" X 1" Hex Head Cap Screw	4
14	01-534-89	Control Panel Mount (SS5-34 & SS5-36)	1
	00-300-03	Control Panel Mount (MX-600)	1
15	73-004-20	12V Horn	1
16	88-088-62	5/16" Lockwasher	4
17	88-089-80	5/16" Hex Nut	4
18	88-818-06	#8 X 1/2" Pan Head Screw	7

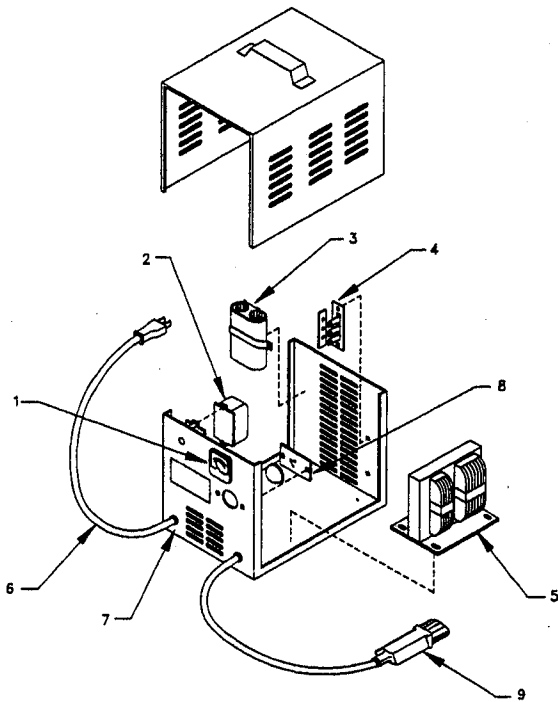
Harnesses and Panel Assy

ITEM#	PART#	DESCRIPTION	QTY
Not Shown	75-148-43	Control Panel Harness (MX-600)	1
	75-148-25	Control Panel Harness(SS5-34 & SS5-36)	1
	75-149-25	Power Harness (All)	1
	62-015-07	Control Panel Assy(MX-600)	1
	62-015-00	Control Pnl Assy (SS5-34 & SS5-36)	1

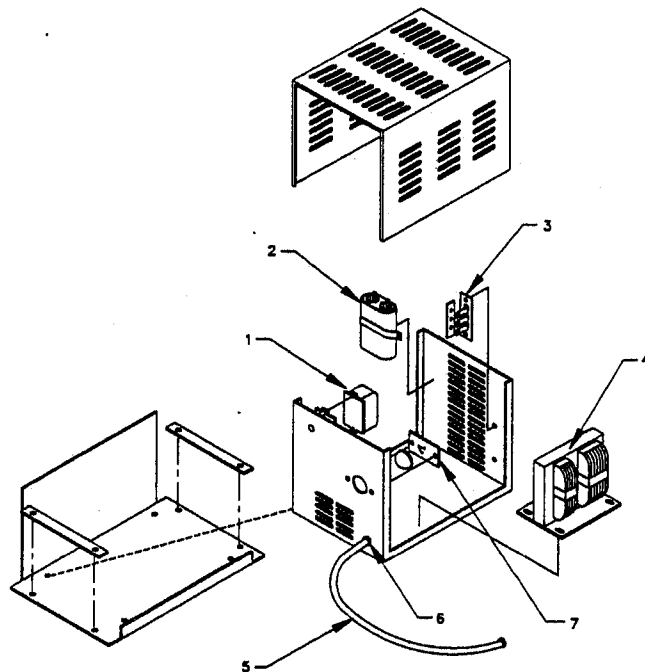
ILLUSTRATED PARTS

BATTERY CHARGER

**PORTABLE
CHARGER**



**BUILT-IN
CHARGER**



Charger W numbers 2.dwg

Portable Battery Charger 24-Volt 25-Amp (79-301-10)

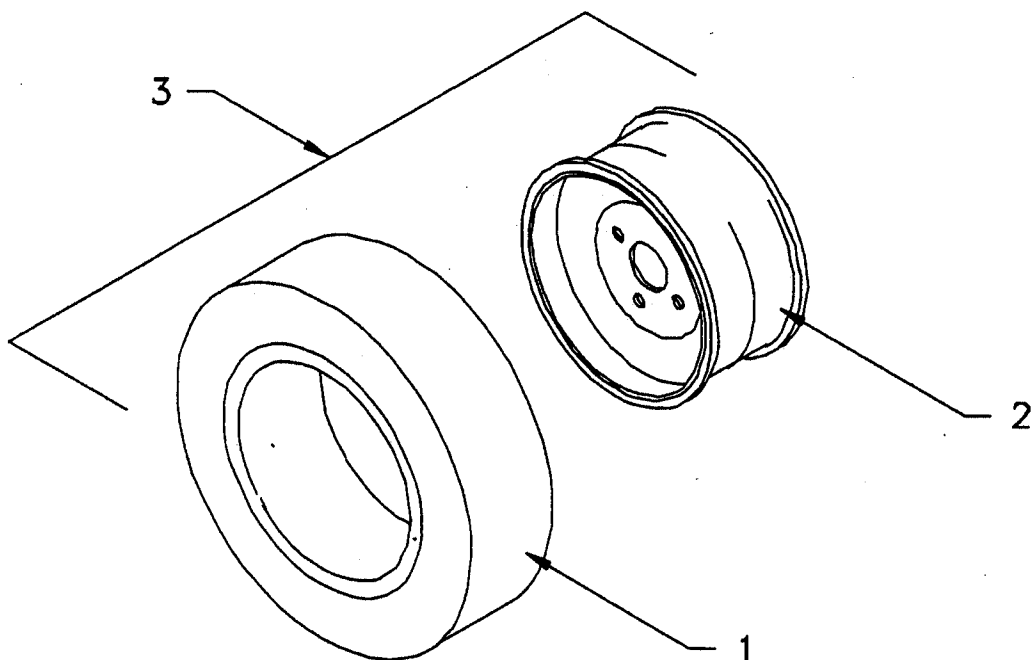
ITEM#	PART#	DESCRIPTION	QTY
1	79-851-10	Ammeter	1
2	79-805-64	Timer	1
3	79-902-00	Capacitor	1
4	79-749-13 74-749-10	Heat Sink With Diodes Diodes Only	1 1
5	79-644-30	Transformer	1
6	79-575-10	AC Cord Set with Plug	1
7	79-831-00	Fuse Assembly	1
8	79-530-00	Bushing for Cords	2
9	79-566-10	DC Cord	1

Built-In Battery Charger 24-Volt 25-Amp (79-301-05)

ITEM#	PART#	DESCRIPTION	QTY
1	79-805-66	Timer	1
2	79-902-00	Capacitor	1
3	79-749-13 74-749-10	Heat Sink With Diodes Diodes Only	1 1
4	79-644-29	Transformer	1
5	79-575-30	AC Cord Set with Plug	1
6	79-530-00	Bushing for Cords	2
7	79-831-00	Fuse Assembly	1

ILLUSTRATED PARTS

REAR TIRE AND WHEEL



TIRE AND WHEEL ILLUSTR PARTS.DWG

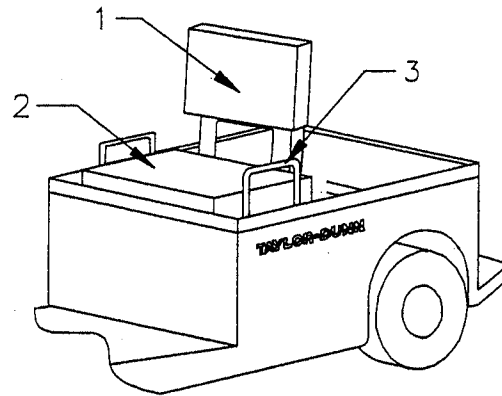
Tire and Wheel Assemblies

ITEM#	PART#	DESCRIPTION	QTY
TIRES			
1	10-075-00	4.80 X 8 Load Range B Tubeless Tire	N/A
	10-074-00	4.80 X 8 Mantoter	N/A
	10-261-00	16-1/4 X 4 X 11-3/4 Solid Tire	N/A
RIMS			
2	12-022-10	Rim With 4 hole Pat. for 4.80 X 8 Tire (SS5-36 & MX-600)	N/A
	12-043-10	Split Rim W/4 hole Pat. for 4.80 X 8 Tire (SS5-36 & MX-600)	N/A
	12-012-00	Rim With 5 hole Pat. for 4.80 X 8 Tire (SS5-34)	N/A
	12-054-00	Iron Rim With 5 hole Pat. for 16-1/4 X 4 X 11-1/4 Tire (SS5-34)	N/A
TIRE and RIM			
3	13-734-00	4.80 X 8 LR'B' Tire and Split Rim(Standard on SS5-34)	N/A
	13-734-11	4.80 X 8 LR'B' Tire and Split Rim(SS5-34)	N/A
	13-734-41	4.00 X 8 Non Marking Tire and Split Rim (SS5-34)	N/A
	13-734-12	4.80 X 8 LR'B' Tire and Split Rim(SS5-36 & MX-600)	N/A
	13-734-21	4.80 X 8 Tire and Split Rim (Standard on SS5-36 & MX-600)	N/A
	13-954-10	16-1/4 X 4 X 11-3/4 Solid Tire and Iron Rim(SS5-34)	N/A
	13-734-50	4.80 X 8 Mantoter Tire and Split Rim (SS5-36 & MX-600)	N/A
FRONT TIRE, RIM and HUB			
Not Shown	13-001-00	4.80 X 8 Rim & 4"Front Hub, W/ Bearings & Seals(Rim Only)	N/A
	13-576-10	4.80 X 8 Tubeless Tire, LR 'B', W/ Bearngs, Split Rim & 4"Front Hub	N/A
	12-120-00	5 Stud Hub (Optional) SS5-34	N/A
	12-120-10	4 Stud Hub (Optional) MX-600 and SS5-36	N/A
	11-030-00	Tube	N/A
	13-989-00	Valve Stem	N/A

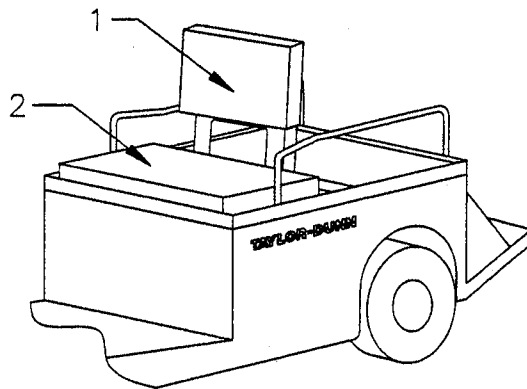
ILLUSTRATED PARTS

SEAT CUSHIONS

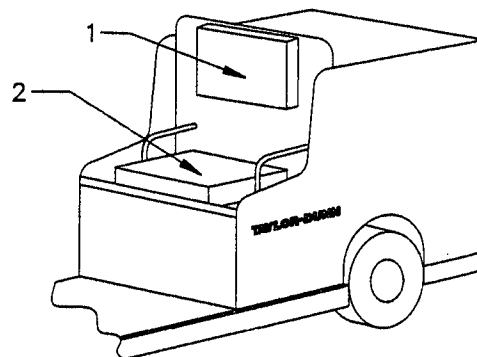
SS5-34



SS5-36



MX-600

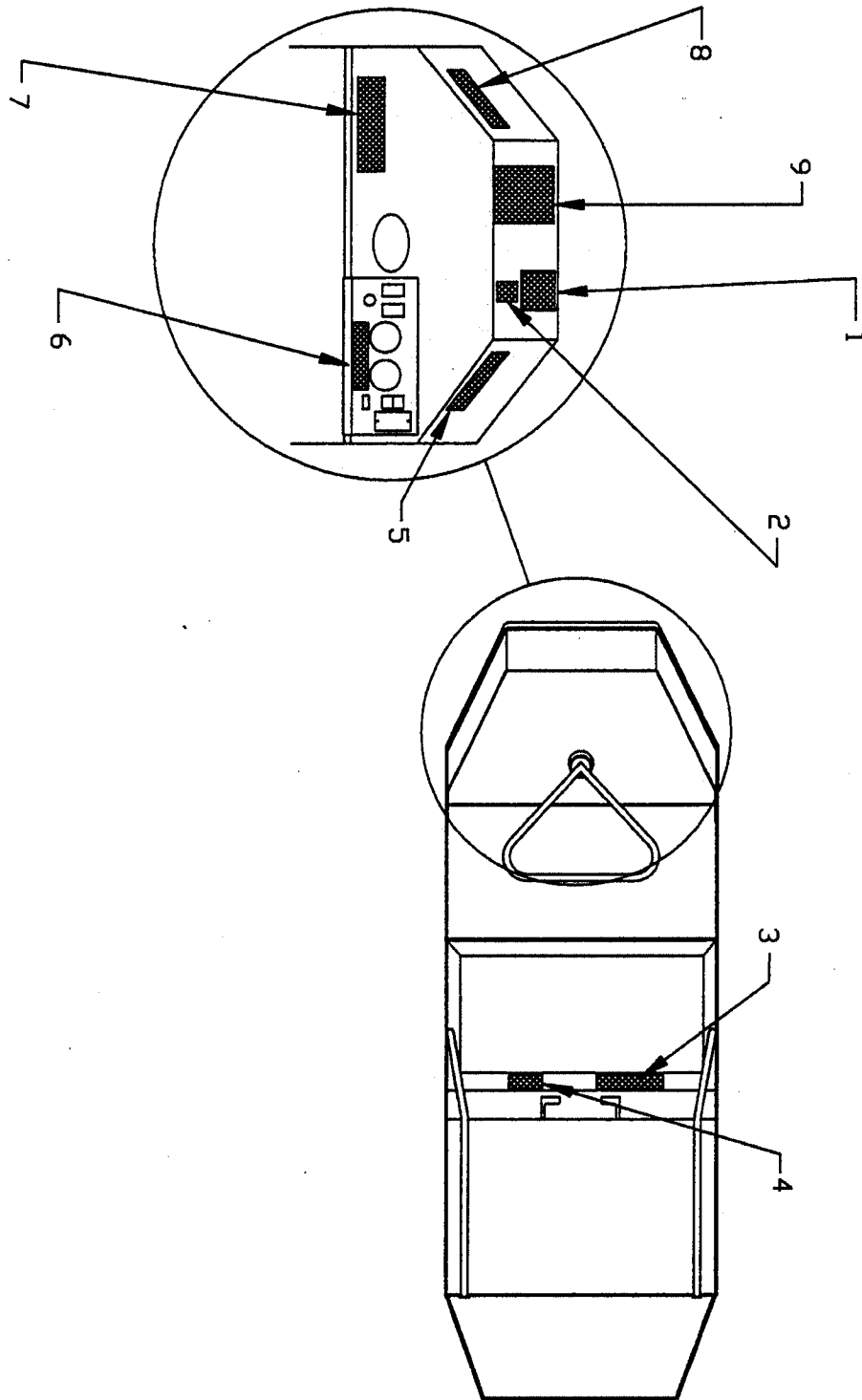


Seat Cushions

ITEM#	PART#	DESCRIPTION	QTY
SS5-34			
1	90-144-00	Backrest (Optional)	1
2	90-166-00	Seat Cushion	1
3	02-534-25	Hip Restraint	2
SS5-36			
1	93-004-00	Backrest/2nd Passenger Seat	1
2	93-005-00	Seat Cushion	1
MX-600			
1	90-144-00	Backrest	1
2	93-006-00	Seat Cushion	1

ILLUSTRATED PARTS

DECALS



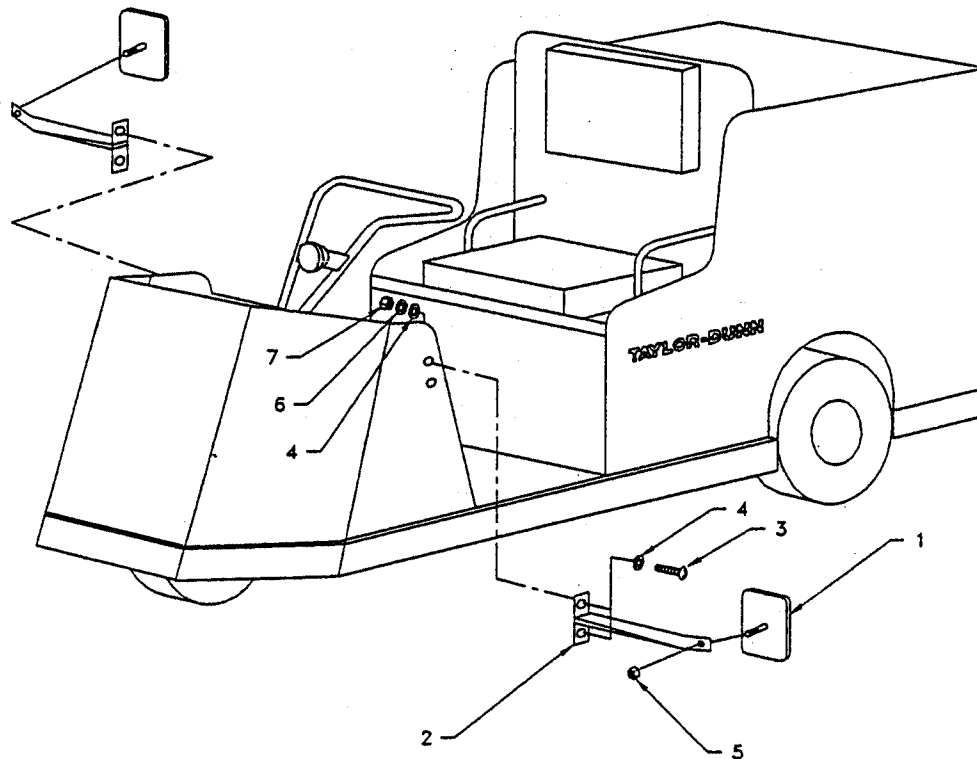
Decals

ITEM#	PART#	DESCRIPTION	QTY
1	94-373-10	Vehicle Data Decal	1
2	94-333-00	F-M Approved Decal	1
3	94-385-00	Battery Warning Decal	1
4	94-319-00	Battery Disconnect Decal	1
5	94-384-01	Not A Motor Vehicle Decal (Domestic)	1
	94-384-04	Traffic Standards Notice Decal (Export)	1
6	94-383-00	Console Decal	1
7	94-384-00	Park Brake Decal	1
8	94-386-01	Roll Over Warning Decal (MX-600 Only)	1
9	94-309-50	Park Brake Warning Decal	1
10	94-313-20	Safety Warning Decal	1
Not Shwn	94-386-00	Prevent Damage to Tools	1

NOTE: Part Number 94-386-00 and 94-386-011 is applied only to the MX-600. The 94-386-00 decal is placed just behind the seat and centered.

ILLUSTRATED PARTS

MIRRORS OPTION



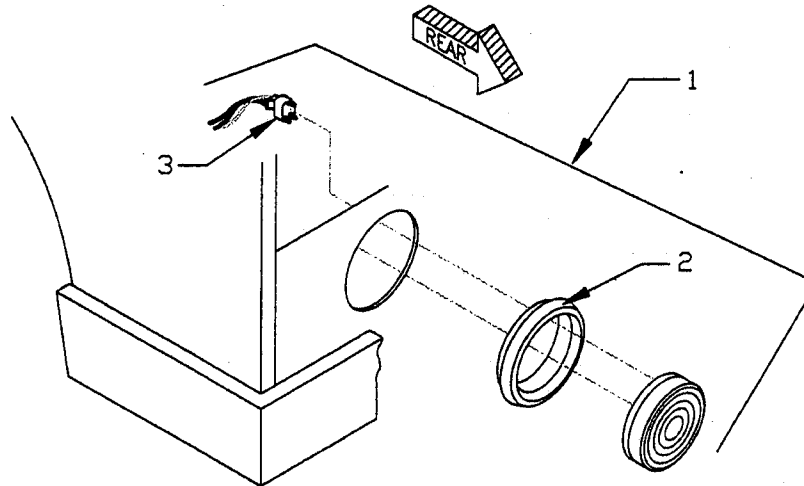
Mirror Option

ITEM#	PART#	DESCRIPTION	QTY
1	92-201-00	4-1/2" X 8-1/2" Mirror (Rt or Lt Side)	1
2	92-202-00	Mirror Bracket (Rt or Lt Side)	1
3	88-065-08	1/4"NC X 5/8" Truss Head Screw	4
4	88-068-60	1/4" Washer	8
5	88-069-87	1/4" Keps Nut	1
6	88-068-62	1/4" Lockwasher	4
7	88-069-83	1/4" Acorn Nut	4

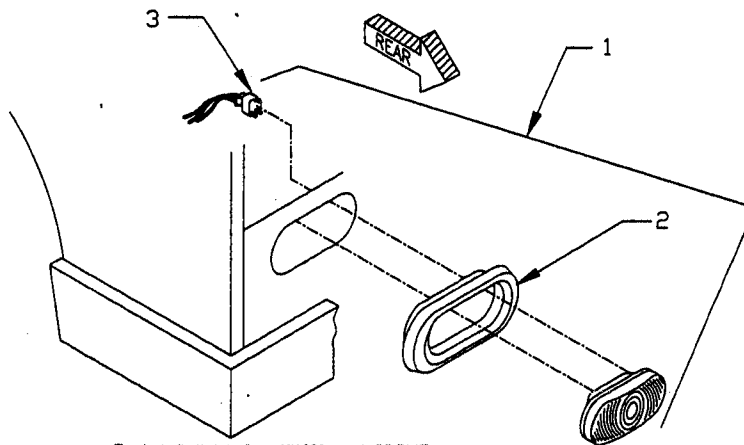
NOTE: All quantities are for a single mirror. To order parts for two mirrors double all quantities.

ILLUSTRATED PARTS

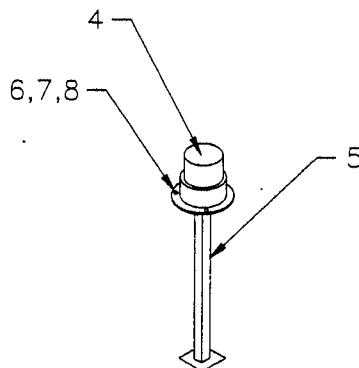
STROBE AND STOP LIGHT OPTION



SS-MX Round Tail Light.DWG



Oval tail-light for MX600 and SS.DWG



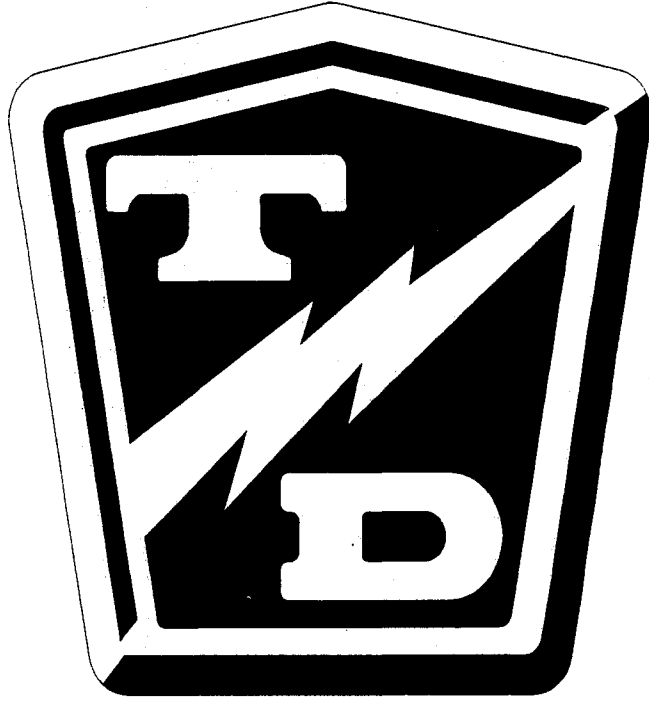
Strobe and Stop Light Option

ITEM#	PART#	DESCRIPTION	QTY
1	72-022-00	4" Round Stop & Tail Light Assy	2
	72-025-00	Oval Stop & Tail Light Assy Complete	2
2	72-022-51	Round Rubber Grommet	2
	72-025-51	Oval Rubber Grommet	2
3	72-022-52	Pig Tail (For Both Stop & Tail Lights)	2
4	72-023-20	Strobe Light, 12-48 Vdc, Amber	1
5	72-023-32	Pole for Strobe Light (MX-600 Only)	1
6	88-025-06	8-32 X 1/2" Truss Head Machine Screw	3
7	88-028-62	#8 Lockwasher	3
8	88-029-80	8-32 Hex Nut	3
Not Shown	75-106-13	Wire Harness (For Strobe Light)	1
	98-603-00	3/8" ID Rubber Grommet (For Harness)	1
	72-023-21	Flash Tube for Strobe Light	1

NOTE: 72-022-00 4-inch Round Light is installed on the SS5-34 and the 72-025-00 Oval Light is installed on the SS5-36 and MX-600.

NOTE: All strobe light information is for the MX-600 at the time of printing no strobe light information was available. However the part number 72-023-21 is the flash tube for all strobe lights.

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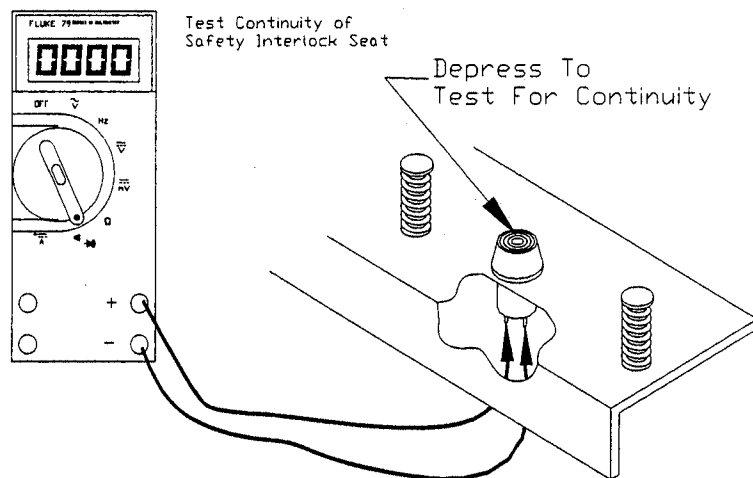
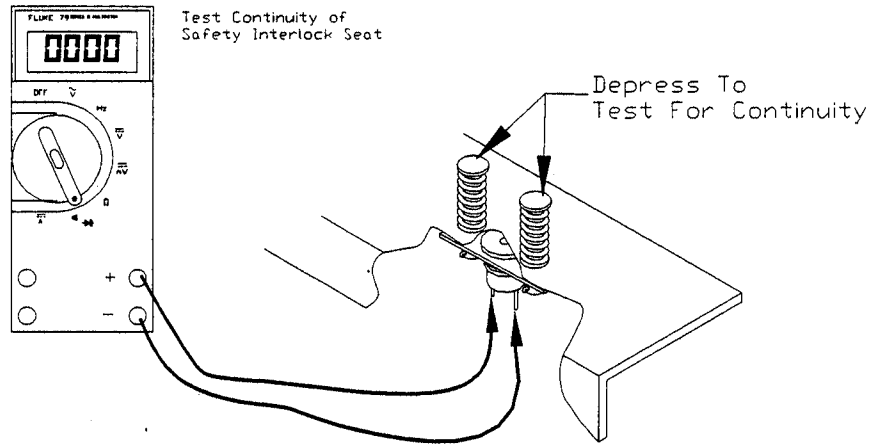
Appendix

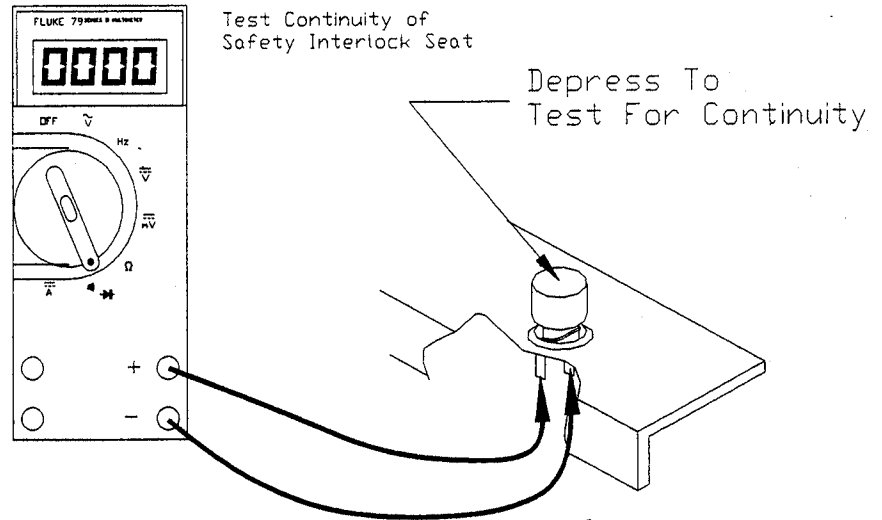
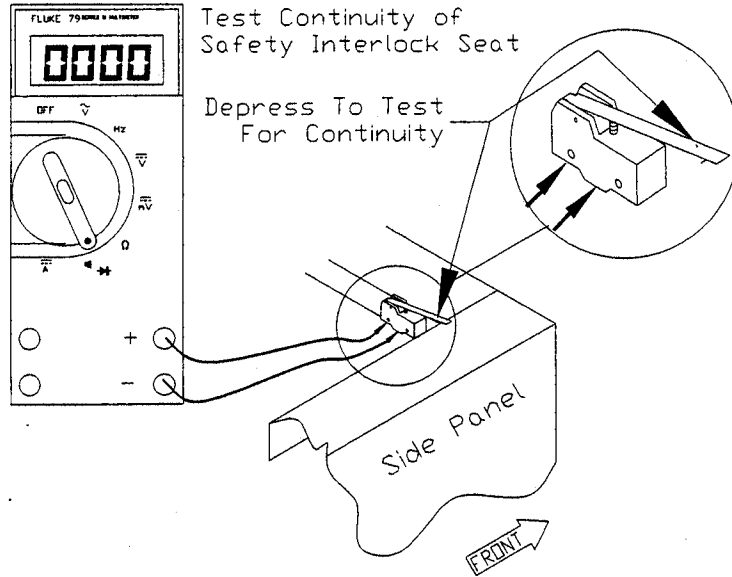


introduction

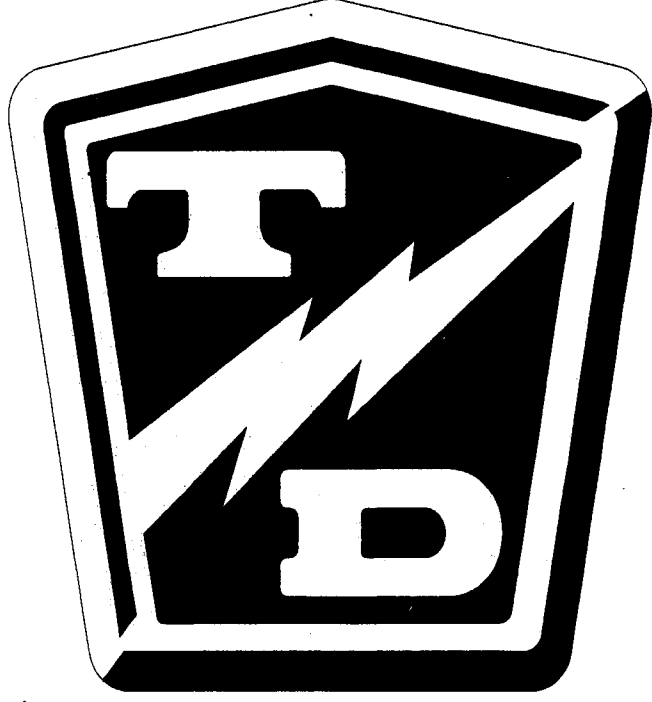
FIGURES FOR KSI TEST

NOTE 1: POSSIBLE SEAT SWITCH CONFIGURATIONS. SOME VEHICLES DO NOT HAVE A SEAT SWITCH.





TAYLOR - DUNN[®]





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