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TAYLOR-DUNN®



Models Included: BG-015-00 (G 1-50)

MANUAL MG-150-03

*Operation, Troubleshooting and
Replacement Parts Manual*

Revision: D

Serial number Starting: 157990

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TAYLOR-DUNN SERVICE CENTER

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B2-48 With Dump Bed Option



B2-10 Ambulance



*B2-48 with Steel Cab, Foldaway
4-Passenger Seat an*



P2-50 30,000 Pound Tow Tractor



ET 3000



ET1-50 Full Size Truck

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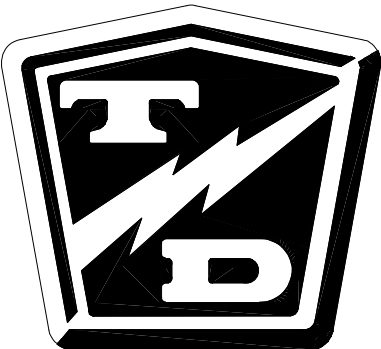
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ABOUT THIS MANUAL

The purchase of this vehicle shows a belief in high quality products manufactured in the USA. Taylor-Dunn®, a leading manufacturer of electric burden and personnel carriers since 1949, wants to be sure this vehicle provides years of reliable service. Please continue to read this manual and enjoy this high quality Taylor-Dunn® vehicle.

This manual is to serve as a guide for the service, repair, and operation of Taylor-Dunn® vehicles 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 this vehicle.

Included in this manual are:

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

Before servicing, operating, training or performing maintenance on this or any other Taylor-Dunn® vehicle, read the appropriate Taylor-Dunn® manual.

Each Taylor-Dunn® manual references the applicable models and serial numbers on the front cover.

Please, be aware of all cautions, warnings, instructions, 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 on, service, or order parts for this Taylor-Dunn® vehicle. Each person should be familiar with the parts of this manual that apply to their use of this vehicle.



RESPONSIBILITIES

Of the Owner...

The owner of this or any Taylor-Dunn® vehicle is responsible for the overall maintenance and repairs of the vehicle, as well as the training of operators. Owners should keep a record of conducted training and maintenance performed on the vehicle. (OSHA Regulation, 29 CFR 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 the reporting of any problems to service and repair personnel.

Of the Service Personnel...

The service personnel are responsible for the service and maintenance of the vehicle. At no time should a service person allow any untrained personnel to service or repair this or any Taylor-Dunn® 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.

Of the Passengers ...

The passengers are responsible to remain fully seated, keeping their hands, arms, and legs inside the vehicle at all times. Each passenger should be fully aware of the vehicle's operation. All forms of recklessness are to be avoided. Do not engage in horseplay.



INTRODUCTION

HOW TO USE THIS MANUAL

This manual is organized into five main sections:

INTRODUCTION

This section describes how to use this service manual and how to identify your vehicle.

Safety Rules and Operating Instructions

This section outlines the safety and operational issues, location and operation of controls, and the operational checks that are to be performed on this vehicle. It also includes various subjects that should be included in the operator and service training program.

Maintenance Service and Repair

This section gives specific information on the servicing of the vehicle and a schedule for maintenance checks.

Electrical and Charger Troubleshooting

This section identifies the troubleshooting procedures for testing the electrical system and battery charger.

Illustrated Parts

This section provides an illustrated view of various assemblies. The illustrations are accompanied by tables identifying the parts.

Conventions

Symbols and/or words that are used to define warnings, cautions, instructions, or notes found throughout this manual:

 WARNING

or,

 WARNING

A shaded box with the word “Warning” on its left denotes a warning. A warning alerts the reader of a hazard that may result in injury to themselves 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 the reader that property damage may occur. Be sure to exercise special care and follow any instructions contained with in a caution.

NOTE: Alerts the reader to additional information about a subject.



INTRODUCTION

HOW TO IDENTIFY YOUR VEHICLE

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

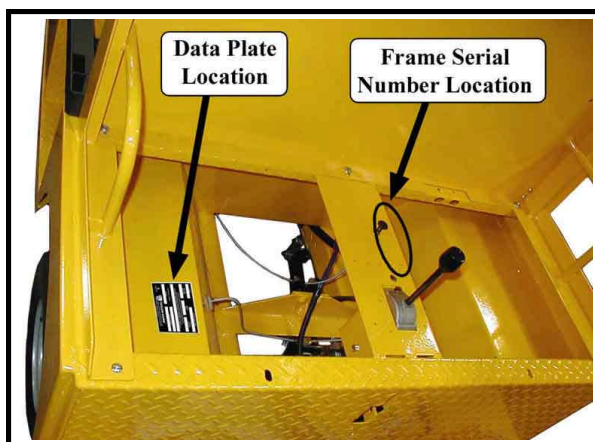
These vehicles are designed for driving on smooth surfaces in and around facilities such as industrial plants, nurseries, institutions, motels, mobile home parks, and resorts. They are not to be driven on public highways.

⚠ WARNING

This vehicle is not designed to be driven on public roads or highways. It is available in maximum designed speed of 18 mph. Do not exceed the maximum designed speed. Exceeding the maximum designed speed may result in steering difficulty, motor damage, and/or loss of control. Do not exceed locally imposed speed limits. Do not tow this vehicle at more than 5 mph.

This vehicle conforms to requirements for Type G 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).

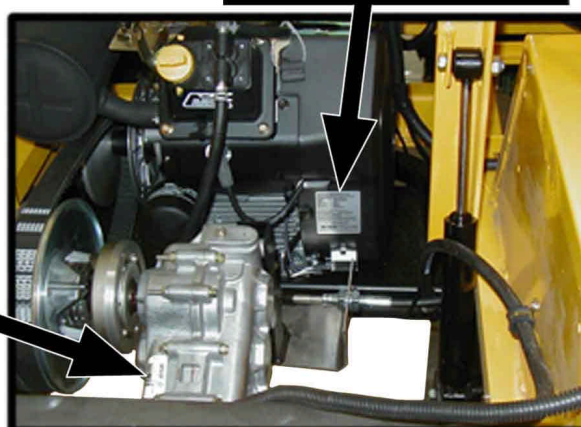
The locations of the model and serial numbers are illustrated below:



Engine Data Plate



Transmission Data Plate



As viewed from the rear of the vehicle

TAKING DELIVERY OF YOUR VEHICLE

Inspect the vehicle immediately after delivery. Use the following guidelines to help identify any 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.
- Check that all wire connections, battery cables, and other electrical connections are secure.
- Check battery cells to be sure they are filled.
- Check the tire pressure, tightness of lug nuts, and for any signs of damage.

Check the operation of each of the following controls:

- Accelerator
- Brake
- Parking Brake
- Key-Switch
- Forward/Reverse Switch
- Reverse Beeper (if equipped)
- Front Headlight Switch
- Steering Wheel
- Horn



What To Do If a Problem is Found

If there is a problem or damage as a result of shipping, note the damage or problem on the bill of lading and file a claim with the freight carrier. The claim must be filed within 48 hours of receiving the vehicle and its accessories. Also, notify your Taylor-Dunn® dealer of the claim.

If there is a problem with the operation of the vehicle, **DO NOT OPERATE THE VEHICLE**. Immediately contact your local Taylor-Dunn® distributor and report the problem. The report must be made within 24 hours of receiving the vehicle and its accessories.

The only personnel authorized to repair, modify, or adjust any part of this or any Taylor-Dunn® vehicle is a factory authorized service technician.

WARNING

The only personnel authorized to repair, modify, or adjust any part of this or any Taylor-Dunn® vehicle is a factory authorized service technician. Repairs made by unauthorized personnel may result in damage to the vehicles systems which could lead to an unsafe condition resulting in severe bodily injury and/or property damage. Unauthorized repairs may also void the vehicles warranty.



B2-48 With Stake Side Dump Bed Option



SC1-59 Stock Chaser



E4-55 Sit Down Tow Tractor

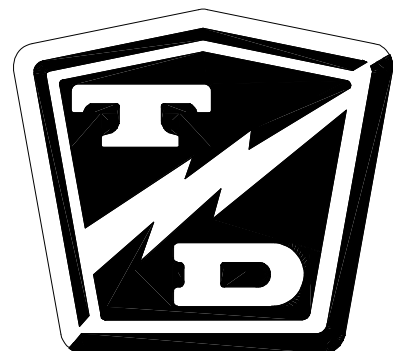


C4-25 Sit Down Tow Tractor

Safety Rules and Operating Instructions

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SAFETY RULES AND OPERATING INSTRUCTIONS

STANDARD SPECIFICATIONS BURDEN CARRIER (CHASSIS ONLY*)

ITEM	MODEL	SPECIFICATION
Occupancy		1-driver, 1-passenger
Dimensions		304.8 L x 112.4W x 122H Centimeters 120L x 44.25W x 48H Inches
Turning Radius		317.5 Centimeters (125 Inches)
Dry Weight		517 kg (1140 lbs)
Maximum Load Deck dimensions		681kg (1,500 lbs) 91.44W x 193L Centimeters (36W x 76-25L Inches)
Engine*	CH18S	18hp@3600rpm, Kohler® specification # 62643
Transmission	H12 F-n-R	Automatic Variable Pitch V-Belt Primary with Helical Gear Forward and Reverse Switching Gear Box Dana® Specification # 012AJ281-3
Brakes		Rear Wheel Hydraulic Disc, Hand Operated Park Brake 4 Wheel Hydraulic Disc, Hand Operated Park Brake
Steering		Automotive Steering 24:1
Tires		5.70 x 8 Load Range B
Frame		Steel Unitized Body, Heavy Duty 16 Gauge Steel, Diamond Plate
Instrumentation		Battery Discharge Indicator, Key Switch, Horn Button, Forward/Reverse Switch, Headlight Switch Hour Meter
Light Accessories		Headlight, Dual Tail/Brake Lights

**Refer to the engine manual for information regarding engine specifications.*

This vehicle conforms to requirements for Type G 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).



SAFETY RULES AND GUIDELINES

It is the responsibility of the owner of this vehicle to assure that the operator understands the various controls and operating characteristics of this vehicle (extracted from the American National Standards Institute Personnel and Burden Carriers ANSI B56.8). As well as, following the safety rules and guidelines outlined in ANSI B56.8 and listed below.

These vehicles are designed for driving on smooth surfaces in and around facilities such as industrial plants, nurseries, institutions, motels, mobile home parks, and resorts. They are not to be driven on public highways.

WARNING

This vehicle is not designed to be driven on public roads or highways. It is available in maximum designed speeds ranging from 8 to 18 mph. Do not exceed the maximum designed speed. Exceeding the maximum designed speed may result in steering difficulty, motor damage, and/or loss of control. Do not exceed locally imposed speed limits. Do not tow this vehicle at more than 5 mph.

WARNING

Read and follow all of the guidelines listed below. Failure to follow these guidelines may result in severe bodily injury and/or property damage.

- Do not drive this vehicle unless you are a qualified and trained operator.
- Keep all body parts (head, arms', legs') inside the vehicle while it is moving.
- Drive slowly when making a turn especially if the ground is wet or slippery.
- Drive slowly when driving on an incline.
- This vehicle may overturn easily if turned sharply while driven at high speeds, or on an incline.
- Drive only on level surfaces or on surfaces having an incline of no more than 10% (5.6 degrees).
- Do not drive over loose objects, holes, or bumps.
- Observe all traffic regulations and speed limits (see speed warning above).
- Keep to the right under normal conditions.
- Maintain a safe distance from all objects.
- Keep the vehicle under control at all times.
- Yield right of way to pedestrians, ambulances, fire trucks, or other vehicles in emergencies.
- Do not overtake another vehicle at intersections, blind spots, or other dangerous locations.
- Keep a clear view ahead at all times.

WARNING Before working on a vehicle:

- 1. Make sure the key-switch is in the "OFF" position, then remove the key.**
- 2. Place the shift lever in the neutral position.**
- 3. Set the park brake.**
- 4. Place blocks under the front wheels to prevent vehicle movement.**
- 5. Disconnect the positive and negative battery cables at the battery.**



DRIVER TRAINING PROGRAM

According to ANSI B56.8, the owner of this vehicle shall conduct an Operator Training program for all those who will be operating this vehicle. The training program shall not be condensed for those claiming to have previous vehicle operation experience. Successful completion of the Operator Training program shall be required for all personnel who operate this vehicle.

The Operator Training program shall include the following:

- Operation of this vehicle under circumstances normally associated with your particular environment.
- Emphasis on the safety of cargo and personnel.
- All safety rules contained within this manual.
- Proper operation of all vehicle controls.
- A vehicle operation and driving test.

Driver Qualifications.

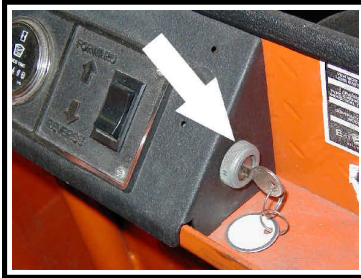
Only those who have successfully completed the Operator Training program are authorized to drive this vehicle. Operators must possess the visual, auditory, physical, and mental ability to safely operate this vehicle as specified in the American National Standards Institute Controlled Personnel and Burden Carriers ANSI B56.8.

The following are 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 properly load and unload cargo.
- Know how to properly park this vehicle.
- Recognize an improperly maintained vehicle.
- Demonstrate ability to handle this vehicle in all conditions.



VEHICLE CONTROLS



Ignition Switch

An ignition switch, located on the right center side of the instrument panel, starts the engine. Refer to **Starting** in this section for instructions for this switch.

The ignition switch should be in the “OFF” position whenever the operator leaves the vehicle.

This switch is also designed to secure and disable the vehicle. The key can only be removed when the ignition switch is in the “OFF” position.



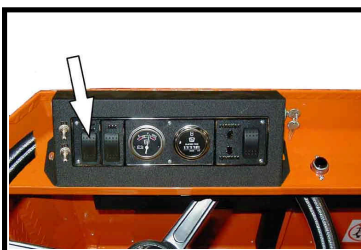
Shift Lever

The shift lever is located between the driver and front passenger seats. The shift lever locks into the position selected. Push the knob down to unlock the lever, and move the lever into the desired direction, forward to shift into the forward direction or pull back to shift into the reverse direction. The center position is neutral. Allow the vehicle to come to a complete stop before shifting gears.



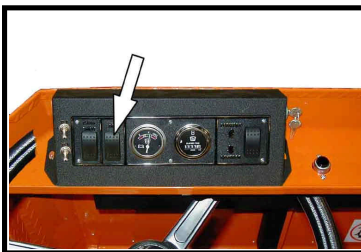
Horn Switch

The horn switch is located on the right side of the instrument panel. Depress the switch to sound the horn, release it to turn it off.



Headlight Switch

The headlight switch is located on the top left of the instrument panel. Push the right side of the switch to turn the lights on. Push the left side of the switch to turn the light off.



Accessory Switch (Optional)

The accessory switch is located on the left side of the instrument panel and to the right of the headlight switch. Push the top of the switch to turn on the accessory. Push the bottom of switch to turn off the accessory. The accessory can be turned on with the key switch in the “OFF” position. If a vehicle is equipped with windshield wipers and one or more accessories, the windshield wipers are controlled from this switch. Other accessories are controlled from the auxiliary switch.



SAFETY RULES AND OPERATING INSTRUCTIONS



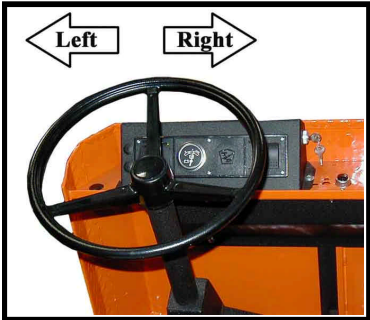
Fuel Gauge

The fuel gauge is located to the left of the hour meter. The needle pointing to "F" indicates a full tank of fuel, "E" indicates an empty tank of fuel.



Hour Meter

The hour meter is located to the right of the battery status indicator. It records the number of hours the vehicle has been in operation.



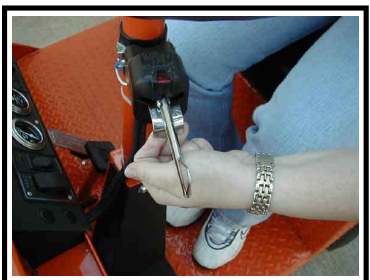
Steering

The steering wheel and steering system are similar to an automobile. To turn right, turn the steering wheel clockwise. To turn left, turn the steering wheel counter-clockwise. If equipped with tilt steering, the release lever is located on the lower left of the steering column. Pull the lever up to reposition the steering wheel.



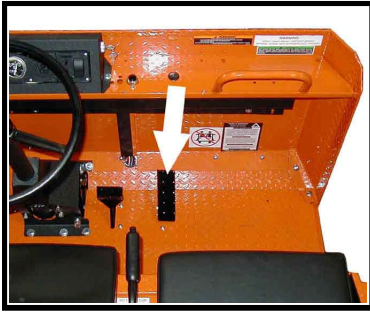
Directional Signals (Optional)

The turn signal lever is located on the left side of the steering column. Push the lever forward to activate the right turn signal and pull the lever back to activate the left turn signal.



Hazard Light Switch (Optional)

The hazard light switch is located on the left side of the steering column. The switch is a small tab. To activate the hazard lights, pull the tab out. To turn the hazard lights off, push forward or pull back the directional signal lever.



Accelerator Pedal

The accelerator pedal is located to the right of the brake pedal. It controls the speed of the vehicle and operates similar to the accelerator pedal in an automobile. Depress the pedal to increase speed and release the pedal to decrease speed.



Foot Brake Pedal

The foot brake pedal, is located to the right of the steering column, it is for operation with the right foot only. It works similar to the brake in an automobile. Applying pressure to the brake pedal slows the vehicle according to the amount of pressure applied. Relieving pressure from the pedal releases the braking action.



Park Brake

The parking brake is actuated with a hand lever, which is located in the center of the kick panel between the seats. To set the parking brake, push the handle forward and down until it locks. To release the park brake, pull the handle up until it stops.



Seat Interlock Switch

A switch located under the driver's seat disables the engines ignition system when the driver leaves the seat. The driver must be seated for the engine to run.

Whenever the driver leaves the vehicle, the driver should turn the ignition switch off and set the park brake and place the shift lever in the neutral position.

⚠ WARNING

The seat interlock switch is only one part of the vehicle safety system. The interlock switch should not be relied upon as the only safety feature used to disable or disengage this vehicle. Doing so could result in unexpected movement of the vehicle causing severe bodily injury



VEHICLE OPERATIONAL GUIDELINES

Safety Guidelines

- Only qualified and trained operators may drive this vehicle.
- Drive only on level surfaces or on surfaces having an incline of no more than 10% (5.6 degrees).
- Drive slowly when making a turn, especially if the ground is wet or when driving on an incline.
- This vehicle may overturn easily if turned sharply or when driven at high speeds.
- Observe all traffic regulations and speed limits.
- Keep all body parts (head, arms, legs) inside this vehicle while it is moving.
- Keep the vehicle under control at all times.
- Yield right of way to pedestrians, ambulances, fire trucks, or other vehicles in emergencies.
- Do not overtake another vehicle at intersections, blind spots, or other dangerous locations.
- Do not drive over loose objects, holes, or bumps.
- Yield right of way to pedestrians and emergencies vehicles.
- Stay in your driving lane under normal conditions, maintaining a safe distance from all objects.
- Keep a clear view ahead at all times.



Starting:

1. Make sure the Shift lever is in the neutral position.
2. Set the parking brake.
3. Hold down the foot brake.
4. If the engine is cold, Pull the choke knob out. **Remember:** Push the choke knob back in once the engine has warmed up.
5. Insert the key and turn it to the "ON" position.
6. Rotate the key to the start position until the engine starts and then release.

NOTE: If the engine does not start within 5-seconds, release the key and wait 10-seconds before attempting to start again.

7. Place the shift lever in the desired direction of travel.
8. Release the parking brake.
9. Release the foot brake.
10. Slowly depress the accelerator pedal.



While driving:

- Slow down and sound the horn to warn pedestrians or when approaching a corner or other intersection.
- No reckless driving.
- Do not drive this vehicle on steep inclines or where prohibited.
- Immediately report any accidents or vehicle problems to a supervisor.

Loading and Unloading

- Do not carry more than the maximum number of passengers allowed for this vehicle.
- Do not exceed the cargo load capacity.
- Do not load cargo that can fall off.
- Be careful when handling cargo that is longer, wider, or higher than this vehicle, be sure to properly secure all loads.

Parking

Before leaving the vehicle:

- Set the parking brake.
- Place the Shift lever in the neutral position.
- Turn the key switch to the “OFF” position and remove the key.

In addition:

- If parking this vehicle on an incline, turn the wheels to the curb, or block the wheels.
- Do not block fire aisles, emergency equipment, stairways, or exits.

Towing

To tow this vehicle, attach a tow strap to the front bumper tow-bar.

Place the Shift lever in the neutral position.

Use another driver to steer this vehicle while it is being towed. Be sure the driver uses the brakes when the towing vehicle slows or stops. Do not tow the vehicle faster than 5 m.p.h. or its maximum designed speed, whichever is lower.

If at all possible, this vehicle should be placed on a carrier, rather than towing.



STORING AND RETURNING TO SERVICE

Both storing your vehicle and returning it to service should only be performed by authorized personnel.

Storing Your Vehicle

- Clean the battery, then fill and charge before putting the vehicle in storage. Do not store batteries in a discharged condition.
- Lube all grease fittings.
- Clean, dry, and check all exposed electrical connections.
- Inflate tires to proper pressure (if applicable).
- For extended storage, the vehicle should be elevated so that the tires do not touch the ground.

If stored for a prolonged period, the batteries should be charged as follows:

Storage Temperature (F)	Charging Interval (months)
Over 60	1
Between 40 and 60	2
Below 40	6

Returning to Service

- Check the state of charge of the battery and charge if required.
- Perform ALL maintenance checks in the periodic checklist.
- Remove any blocks from the vehicle and/or place the vehicle down on to the ground.
- Test drive before putting into normal service.



PERIODIC MAINTENANCE CHECKLIST (CHASSIS ONLY*)

Maintenance Item	Weekly (20hrs)	Monthly (80hrs)	Quarterly (250hrs)	Semi - Annual (500hrs)	Annually (1000hrs)
Check Condition of Tires and Tire Pressure	●				
Check All Lights, Horns, BEEPERS and Warning Devices	●				
Check and Fill Battery	●				
Check Brake System		●			
Check Steering System		●			
Check for Fluid Leaks		●			
Lubricate Vehicle			●		
Clean and Tighten All Wire Connections			●		
Wash and Service Battery			●		
Check Park Brake				●	
Check Front Wheel Bearings				●	
Check Rear Axle Oil				●	
Change Rear Axle Oil					●
Check and Tighten all Nuts and Bolts					●
Clean and Repack Front Wheel Bearings					●

**Refer to the engine manual for information regarding engine periodic maintenance.*

⚠ WARNING

Only properly trained and authorized technicians should perform maintenance or repairs to this vehicle. Repairs or maintenance by improperly trained or unauthorized personnel could cause improper operation of the vehicle or premature failure of components resulting in severe bodily injury and/or property damage.



MAINTENANCE GUIDELINES FOR SEVERE DUTY APPLICATIONS

This maintenance checklist is based on the average application. If the vehicle is operated under “severe conditions”, Service procedures should be conducted more frequently than specified. The frequency of service under severe conditions is determined by the use of the vehicle. The owner/operator must evaluate the operating environment to determine the increase in maintenance frequency.

In addition, the whole vehicle should be inspected monthly for signs of damage. The damage must be repaired immediately.

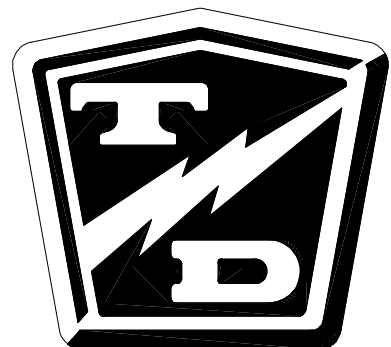
The following list is meant as a guide and is not all-inclusive of a “severe duty” application.

- Extreme temperature.
- Bumpy, dusty, or ill maintained roads.
- Excessively wet areas.
- Corrosive or contaminated areas.
- Frequent loading of vehicle at/near capacity.
- Use on multiple shifts.

General Maintenance

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Troubleshooting Guide	4
Lubrication Chart	5





MAINTENANCE GUIDELINES

WARNING

Periodic maintenance and service must be performed on this vehicle. Failure to complete these scheduled maintenance and service procedures can result in severe bodily injury and/or property damage. It is the owner and/or operators responsibility to insure that proper service and maintenance is performed on the vehicle, described in this manual.

WARNING

Before starting
any repairs:

1. Make sure the key-switch is in the “OFF” position, then remove the key.
2. Place the Shift Lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

WARNING

Read and follow all of the guidelines listed below. Failure to follow these guidelines may result in severe bodily injury and/or property damage.

- Avoid fire hazards and have fire protection equipment present in the work area. 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.”
- 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.
- 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.
- Only properly trained and authorized technicians should perform maintenance or repairs to this vehicle.

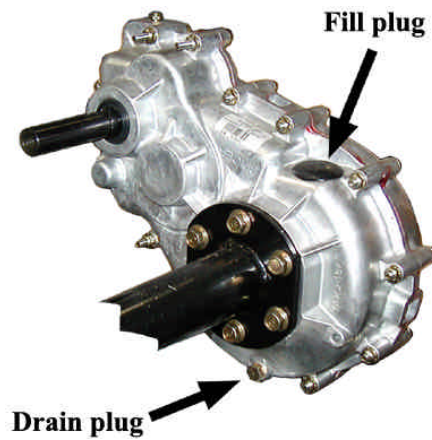
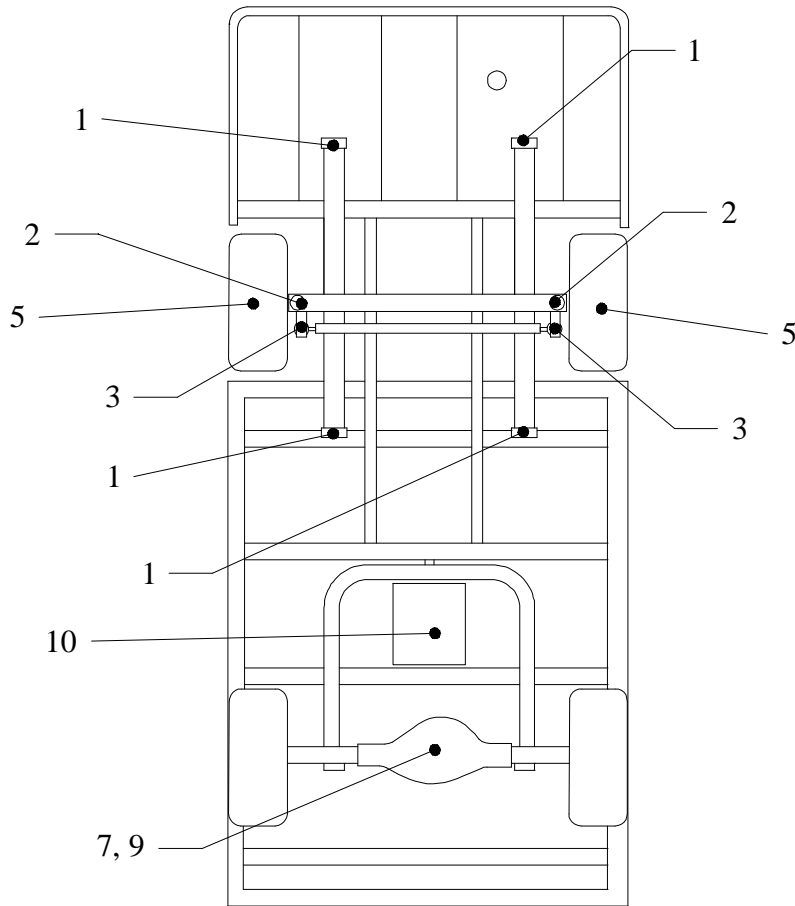


TROUBLESHOOTING GUIDE

Symptom	Probable Cause
Steering Pulls in One Direction	Front End Out of Alignment
	Low Tire Pressure
Hard Steering	Dry Lube Points in Steering Linkage
	Damaged King Pin/Ball Joint
	Low Tire Pressure
Excessive Steering Play	Worn Ball Joints
	Mis-Adjusted or Worn Steering Gear
	Loose Steering Linkage
Lack of Power or Slow Operation	Brakes or Parking Brakes Dragging
	Worn Drive Gears
	Front End Out of Alignment
	Engine Problem (refer to the engine manual)
Abnormal Noise	Worn Drive Gears or Bearings
	Worn Front /Rear Axle Bearings
	Loose Lug Nuts
	Engine Components Worn (refer to the engine manual)
Oil Leak in Rear Bearing Area	Rear Wheel Bearing and/or Gasket Failed
	Drive Over Filled
Brake Pedal Soft or Spongy	Air in Brake Lines
Brake Pedal Low	Brake Worn (1/16" Wear Limit)
	Brake Fluid Low
	Brakes Out of Adjustment
Braking Power Low	Brake Worn (1/16" Wear Limit)
	Brake Pads Contaminated with Fluid
	Brake Pedal Linkage Binding
	Brakes Out of Adjustment
	Air in Brake Lines



LUBRICATION CHART

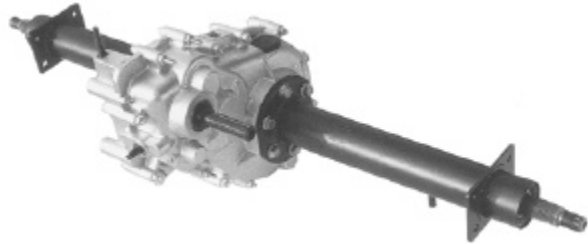


Transmission #7 and #9 as viewed from left rear

#	Description	Locations	Lubricant Type
1	Front Leaf Springs	6	General Purpose Grease
2	King Pin	2	General Purpose Grease
3	Ball Joints	4	General Purpose Grease
4			
5	Front Wheel Bearings	2	High Temperature Wheel Bearing Grease
6			
7	Transmission Drain Plug	1	
8			
9	Transmission Fill Plug	1	20-24 oz. 30 Weight Motor Oil
10	Engine Oil		See engine manual

Engine / Transmission

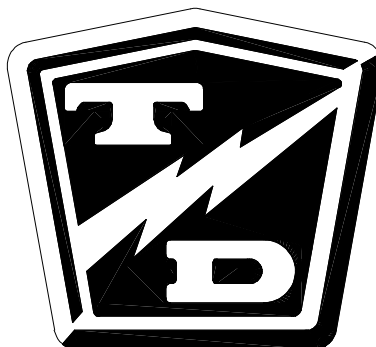
For information regarding Rear Axle service, refer to supplementary manual part number M7-001-07



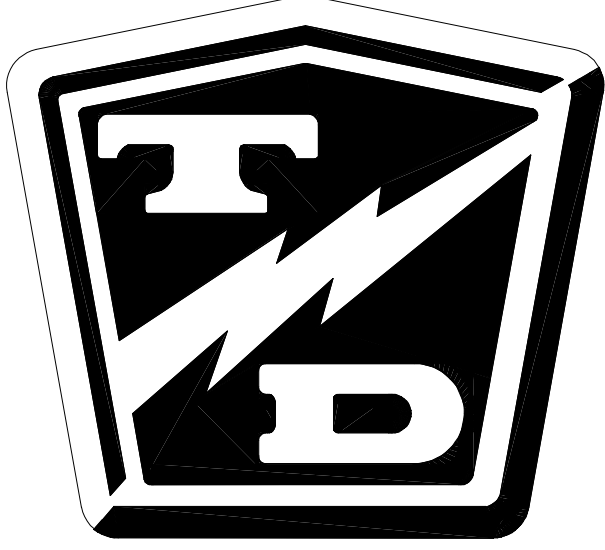
For information regarding Kohler Command Engine service, refer to the Kohler web site at: www.kohlerengines.com

Enter TP-2428 in the search box.

Refer to the specifications page in this manual for the Kohler Engine model and spec number.



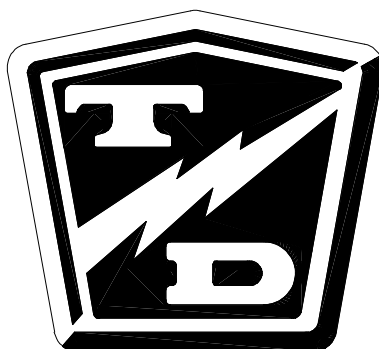
TAYLOR - DUNN



Shift Linkage

Contents

Adjustment 2





ADJUSTMENT

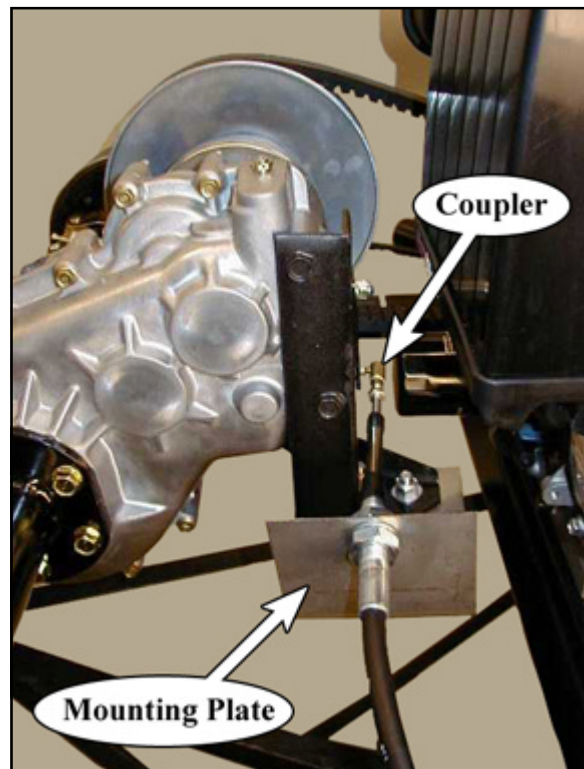
⚠ CAUTION

Do not modify the stainless steel shift cable mounting plate at the transmission. This mounting plate is spring steel and functions as an active part of the shifting mechanism. Modification of this mounting plate may cause improper operation of the shift linkage resulting in damage to the transmission.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

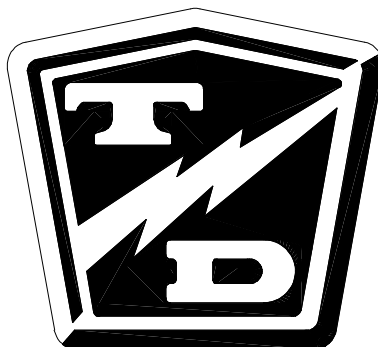
- 1) Loosen the ball joint jam nut and the cable mounting nuts on the spring steel mounting plate.
- 2) Disconnect the coupler from the ball joint at the transmission.
- 3) Place the shift lever in forward.
- 4) Move the transmission shift lever to the forward detent.
- 5) Using the cable nuts and/or the ball joint coupler, adjust the linkage so that the coupler easily slides onto the ball joint.
- 6) Tighten all mounting and jam nuts.
- 7) While slowly rotating the transmission input sheave, shift the transmission from forward to reverse and back to forward to confirm proper adjustment.
- 8) Reconnect the battery and test drive.



Front Axle Service

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Replace the King Pins and Bushings	9
Replace the Steering Knuckle	11





INSPECT THE FRONT WHEEL BEARINGS AND KING PIN

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Grab the top and bottom of the tire/wheel assembly. Feel for any movement or play while pulling and pushing on the top and bottom of the tire. Any movement or play is indication of loose wheel bearings or king pin.

*NOTE: Refer to the **Adjust Front Wheel Bearings** section for information regarding the adjustment of the wheel bearings.*

*NOTE: If the king pin is loose, then refer to **Replace the King Pins and Bushings** for information regarding replacing the king pin bushings. There are no adjustments for the king pin or bushings.*



8. Spin the wheel and listen for any grinding noise. Any grinding noise may be an indication of worn or damaged wheel bearings.

*NOTE: Refer to the **Replace Front Wheel Bearings** section for information regarding the replacement of the wheel bearings.*

9. Lower the vehicle.
10. Reconnect the main positive and negative cables at the batteries.
11. Remove the blocks from behind the wheels.
12. Release the park brake and test drive the vehicle.



ADJUST FRONT WHEEL BEARINGS

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

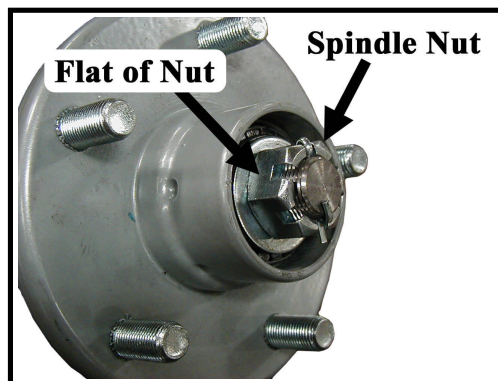
6. Raise the front of the vehicle and support with jack stands.

⚠ WARNING

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

7. Remove the hub dust cap and cotter pin.
8. While rotating the hub, tighten the spindle nut to 30 ft-lbs. This seats the bearings.
9. Back off the spindle nut one flat until the hub turns, but is not loose.
10. Spin the wheel and listen for any grinding noise. Any grinding noise may be an indication of worn or damaged wheel bearings.

*NOTE: Refer to the **Replace Front Wheel Bearings** section for information regarding the replacement of the wheel bearings.*



Hub with Dust Cap Removed

11. Install a new cotter pin.
12. Install the dust cap.
13. Lower the vehicle.
14. Reconnect the main positive and negative cables at the batteries.
15. Remove the blocks from behind the wheels.
16. Release the park brake and test drive the vehicle.





FRONT AXLE REMOVAL AND INSTALLATION

Removal

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Remove both front wheels. Refer to **Tires and Wheels** section for information regarding removing the front wheels.
8. Tie up or support the front axle so it can not fall out of the vehicle.
9. Disconnect the drag link ball joint or rod end from the steering knuckle or the steering gear pitman arm.

*NOTE: Refer to the **Replacing the Ball Joints** section for information regarding the removal of the ball joints or rod ends.*

10. If equipped with front brakes, disconnect the hydraulic brake lines from the brake bodies.
11. Disconnect the front axle beam from the front springs and remove the axle from the vehicle.

*NOTE: In some configurations the front springs and or shocks will have to be removed in order to remove the axle beam. Refer to section **Front Suspension** for information regarding removing the springs and shocks.*





Installation

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Install the front axle in reverse order of removal.

NOTE: Use all new cotter pins.

*NOTE: Refer to the **Replacing the Ball Joints** section for information regarding the installing the ball joints or rod ends.*

*NOTE: Refer to **Tires and Wheels** section for information regarding removing the front wheels.*

8. Realign the front wheels. Refer to **Steering Component Service** section for information regarding realigning the front wheels.
9. If equipped with front brakes, bleed the brakes. Refer to **Brake Service** section for information regarding bleeding the brakes.
10. Lower the vehicle.
11. Reconnect the main positive and negative cables at the batteries.
12. Remove the blocks from behind the wheels.
13. Release the park brake and test drive the vehicle.





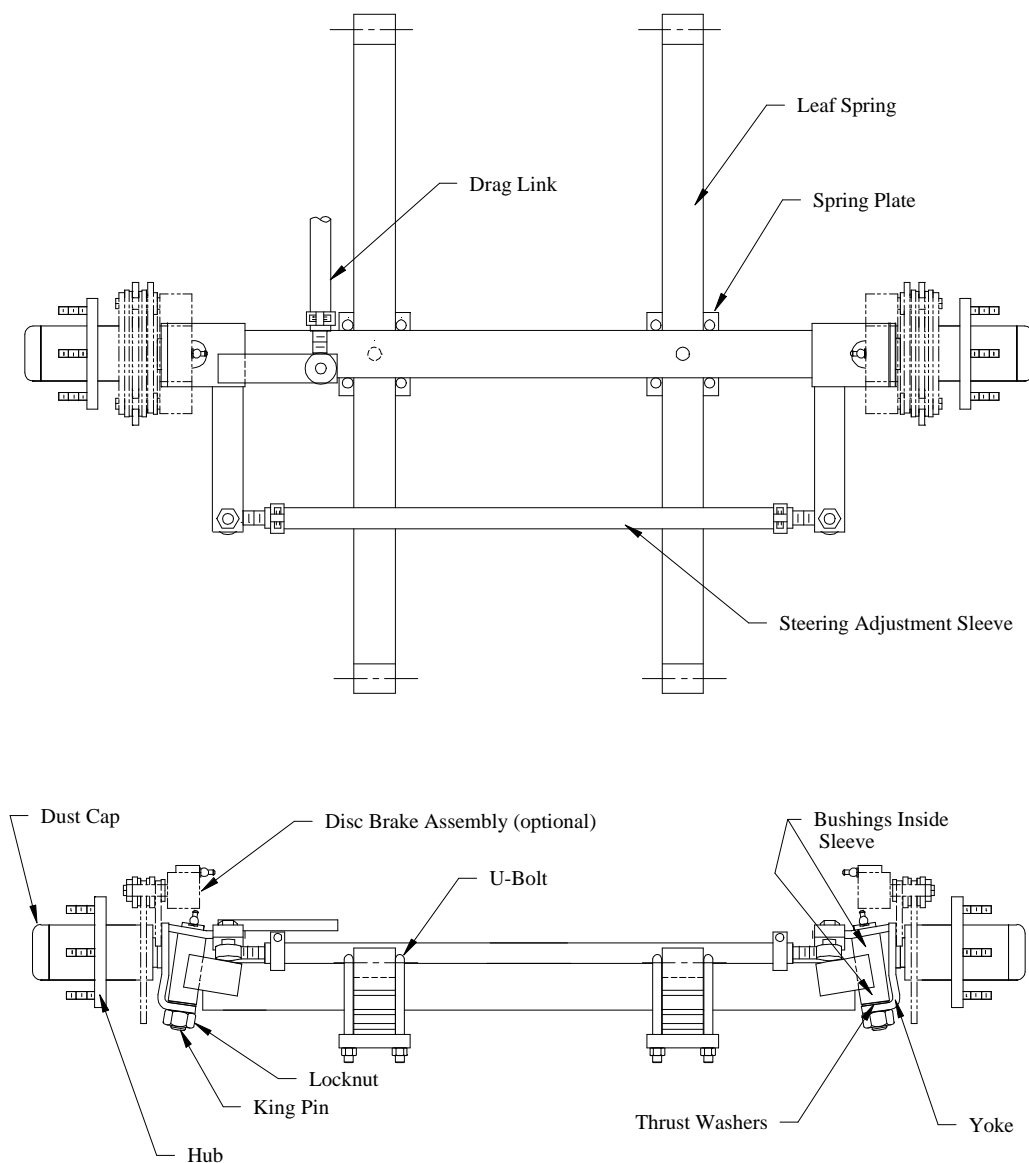
FRONT AXLE DISASSEMBLY

Disassembling and reassembling involves removing and replacing the left and right steering knuckles and king pin bushings. Refer to the following sections for information regarding these procedures:

Replace the Steering Knuckle

Replace the King Pins and Bushings

NOTE: The front axle does not have to be removed unless the axle beam must be replaced. Refer to **Front Axle Removal and Installation** for information regarding removing the front axle.





REPLACE FRONT WHEEL BEARINGS

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Remove the tire/wheel assembly from the hub. Refer to **Replace the Steering Knuckle** for information regarding removing the steering knuckle.
8. Remove the hub dust cap, cotter pin, and spindle nut.
9. Remove the hub from the steering knuckle.

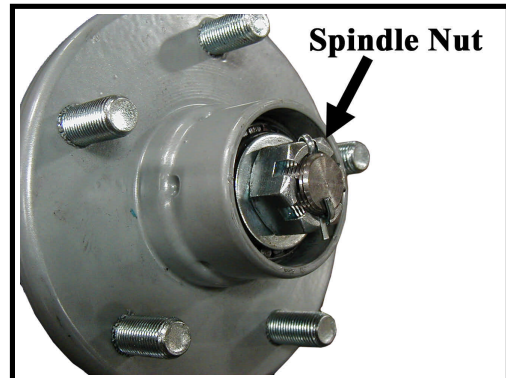
*NOTE: For a front disc brake option you must remove the brake body before removing the hub. Refer to the **Brakes** section for information regarding the removal of the brake body.*

NOTE: Catch the outer bearing as it falls out.

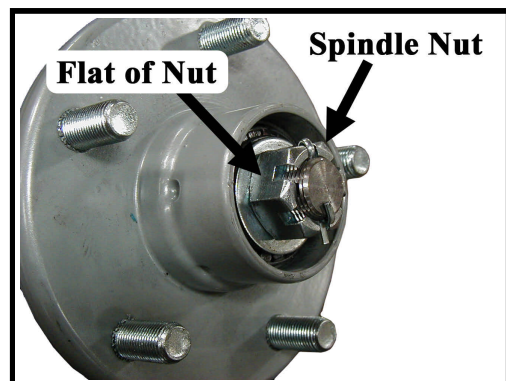
10. Thoroughly clean all grease from the inside of the hub and the bearings.
11. Inspect and replace the races and bearings as a set.

NOTE: It is recommended to replace all four bearings and races in the left and right wheels as a set.

12. Assemble in reverse order, using new grease seals.
 - a. Pack inner and outer bearings with grease.
 - b. While rotating the hub, tighten the spindle nut to 30 ft-lbs. This seats the bearings.
 - c. Back off the spindle nut one flat until the hub turns, but is not loose.
 - d. Install a new cotter pin.



Hub with Dust Cap Removed



Hub with Dust Cap Removed



Maintenance, Service, and Repair

13. Install the hub dust cap.
14. Reinstall the brake body and the tire/wheel assembly.

*NOTE: Refer to the **Brakes** section for information regarding the installation of the brake body.*

15. Lower the vehicle.
16. Reconnect the main positive and negative cables at the batteries.
17. Remove the blocks from behind the wheels.
18. Release the park brake and test drive the vehicle.





REPLACE THE KING PINS AND BUSHINGS

There are different types of king pin bushings depending on the configuration of your vehicle.

- Bronze bushings in the axle beam.
- Bronze bushings in the steering knuckle.
- Metal backed teflon bushings in the axle beam or suspension arm.

NOTE: Bronze bushings must be reamed or broached to the proper diameter after they are pressed into the axle beam or steering knuckle.

⚠ WARNING

Failure to correctly broach or ream bronze bushings may result in steering difficulty and loss of control of the vehicle causing severe bodily injury and /or property damage.

Refer to the illustration below for the type of bushing in your vehicle.

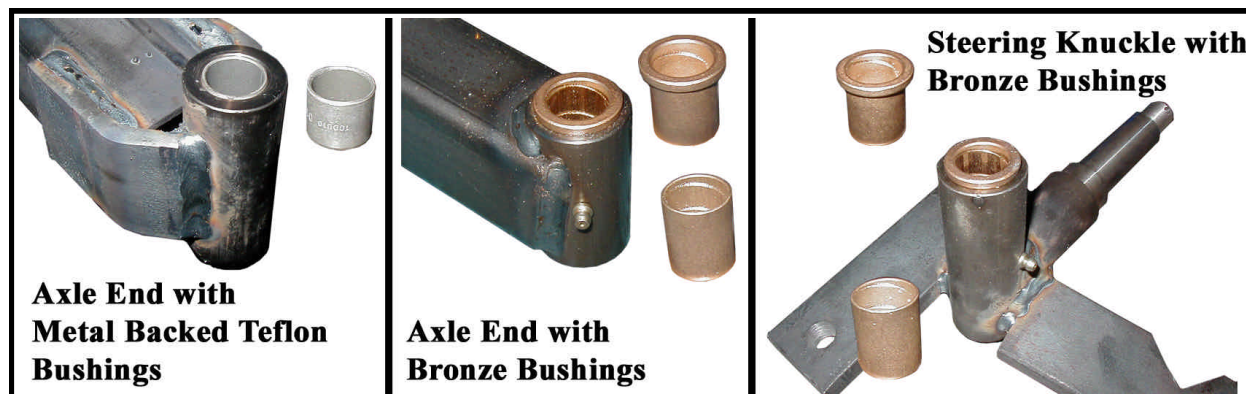
⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.





Maintenance, Service, and Repair

7. Remove the steering knuckle. Refer to **Replace the Steering Knuckle** for information regarding removing the steering knuckle.

NOTE: It is not necessary to remove the tie rod or drag link for this procedure.

8. Press the king pin bushings out from the axle, steering knuckle or suspension arm.
9. Press new bushings into the axle, steering knuckle or suspension arm.
10. Inspect the king pin for damage or wear. If any damage or wear is noted then the king pin must be replaced.
11. Reassemble in reverse order.

⚠ WARNING

Failure to correctly broach or ream bronze bushings may result in steering difficulty and loss of control of the vehicle causing severe bodily injury and /or property damage.

*NOTE: Refer to **Replace the Steering Knuckle** for information on installing the steering knuckle.*

*NOTE: It is recommended that the thrust washers or bearing be replaced whenever replacing the king pin bushings. Refer to the **Replacement Parts** section for the orientation of the bearing or washers in your vehicle.*

12. Grease the bushings (bronze only).
13. Lower the vehicle.
14. Reconnect the main positive and negative cables at the batteries.
15. Remove the blocks from behind the wheels.
16. Release the park brake and test drive the vehicle.





REPLACE THE STEERING KNUCKLE

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support with jack stands.

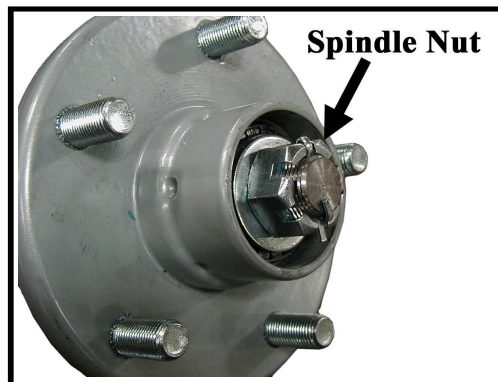
⚠ WARNING

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

7. Remove the tire/wheel assembly. Refer to **Tires and Wheels** section for information regarding removing the tire/wheel assembly.
8. Remove the hub bearing cap, cotter pin and nut, then remove the hub from the steering knuckle.

*NOTE: For a front disc brake option you must remove the brake body before removing the hub. Refer to the **Brakes** section for information regarding the removal of the brake body. Do not remove the hydraulic brake line from the brake body. If the brake line is removed then it will be necessary to bleed the brakes.*

NOTE: Catch the outer bearing as it falls out.



Hub with Dust Cap Removed

9. Remove the drag link and/or tie rod from the steering knuckle. Refer to **Replace the Ball Joints, Tie Rods, Drag Link** in this section for information regarding removal of the drag link or tie rod.
10. While supporting the knuckle, remove the king pin and thrust bearing.
11. Remove the knuckle from the axle.





Maintenance, Service, and Repair

12. Thoroughly clean and/or replace all bearings, nuts, washers, and bushings.

NOTE: Both the left and right side bushings and thrust bearings should be replaced as a set.

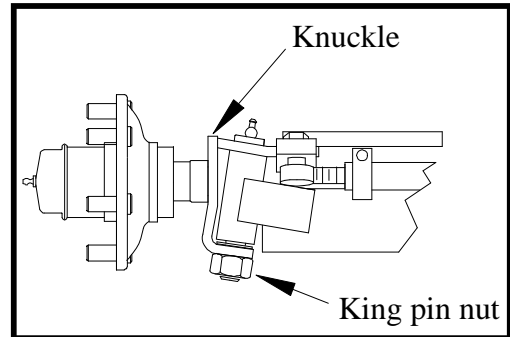
13. Assemble in reverse order.
14. Pack the thrust bearing with grease.
15. Install the king pin and tighten the king pin nut until it contacts the bottom of the knuckle. Do not tighten so much as to squeeze the legs of the knuckle together.

*NOTE: Refer to **Replace Front Wheel Bearings** for information regarding proper tightening of the spindle nut*

16. Install new cotter pins.
17. Realign the wheels.

*NOTE: Refer to the **Steering** section for information regarding realignment of the front wheels.*

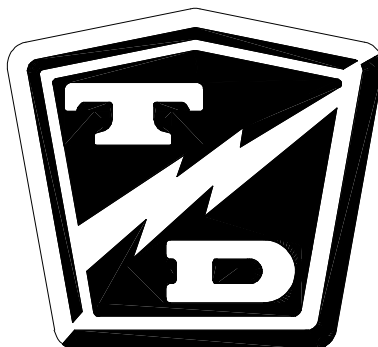
18. Lower the vehicle.
19. Reconnect the main positive and negative cables at the batteries.
20. Remove the blocks from behind the wheels.
21. Release the park brake and test drive the vehicle



Steering Component Service

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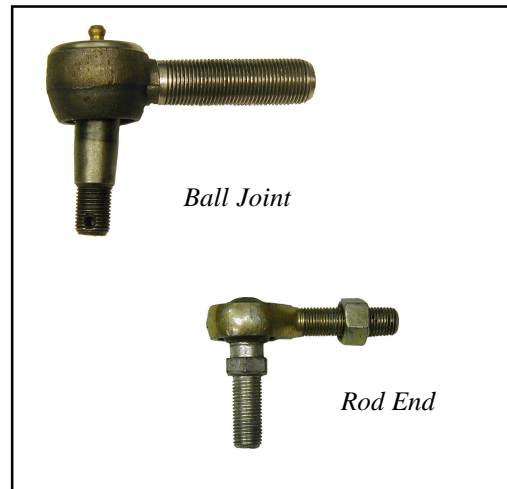
FRONT END ALIGNMENT

This section will refer to two different types of ball joints. One type has a grease fitting and a tapered shaft where it is fitted to the steering arm or pitman arm. The second type cannot be greased and has a straight shaft. See the illustrations to the right. Depending on the configuration of your truck, it may be equipped with one or both types of ball joints.

In this text:

The first type has a grease fitting and will be referred to as a "Ball Joint."

The second type has no grease fitting and will be referred to as a "Rod End."



Center the Steering

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Turn the front wheels so that they are in the straight ahead position and then tie off the wheels so that they cannot turn from the straight ahead position.
8. Disconnect the drag link from the pitman arm.

*NOTE: Refer to **Replace the Ball Joints** section for information regarding removing the ball joint or rod end from the drag link.*

9. Center the steering gear and tie off the steering wheel so that it cannot rotate.

*NOTE: Refer to **Center the Steering Gear** section for information regarding centering of the steering gear.*



10. At this point both the steering wheel **and** the front wheels should be tied up and held in position. If one or the other is not tied up then you must start from the beginning.

⚠ WARNING

Do not drive the vehicle while the steering wheel or front wheels are tied in position. Driving the vehicle while the steering wheel or front wheels tied in the position may cause loss of control of the vehicle resulting in severe bodily injury and/or property damage.

11. Loosen the ball joint clamps or the rod end jam nuts on the drag link.

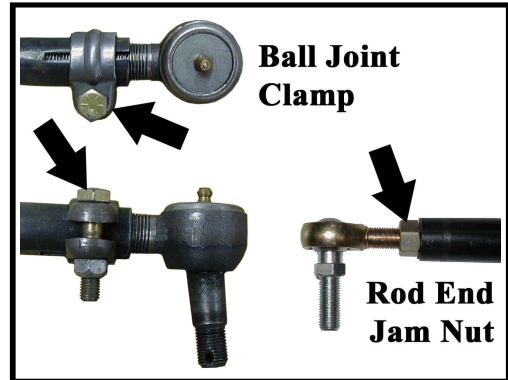
NOTE: Remember the position and orientation of the clamps.

12. Adjust the drag link so that it can be easily inserted into the pitman arm.

13. Tighten the ball joint or rod end nut as specified below:

Ball joint - 40-45 ft-lbs.

Rod end - 20-25 ft-lbs.



14. If equipped with ball joints, position the ball joint clamps in their original location and orientation.
15. Tighten the ball joint clamps (28-32 ft. lbs.) or the rod end jam nuts on the drag link.
16. Untie the steering wheel and the front wheels.
17. Reconnect the main positive and negative cables at the batteries.
18. Rotate the steering wheel from a full left turn to a full right turn and make sure that the ball joint clamps do not contact any other component.

⚠ WARNING

If the clamps are positioned so that they contact other components, it may result in steering failure and loss of control of the vehicle causing property damage and/or severe bodily injury.

19. Remove the blocks from behind the wheels.
20. Release the parking brake and test drive the vehicle.





Maintenance, Service, and Repair

Front wheel alignment

*NOTE: It is recommended to center the steering before aligning the front wheels. Refer to the **Center the Steering** section for information.*

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Turn the front wheels so that they are in the straight ahead position and tie off the steering wheel so that it cannot rotate.

⚠ WARNING

Do not drive the vehicle while the steering wheel or front wheels are tied in position. Driving the vehicle while the steering wheel or front wheels tied in the position may cause loss of control of the vehicle resulting in severe bodily injury and/or property damage.

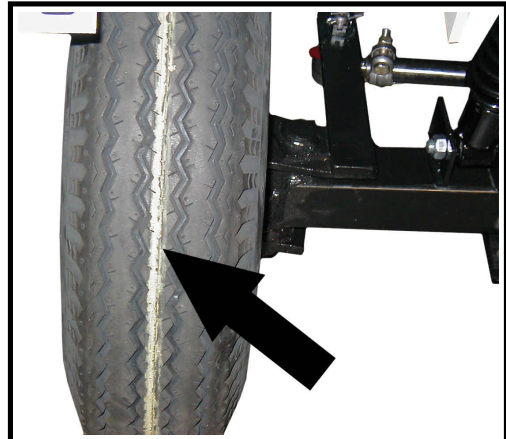
8. Using a piece of chalk, mark a line around the center of both front tires.

HINT: Hold the chalk on the center of the tire and rotate the tire to mark the line.

9. Loosen the ball joint clamps or the rod end jam nuts on the tie rod.

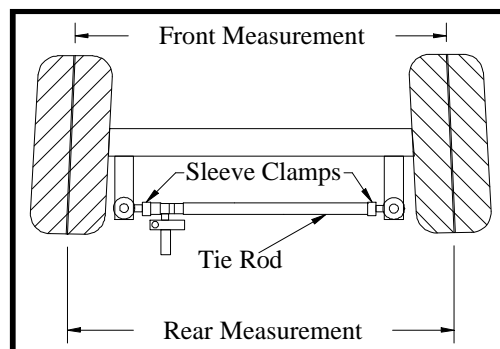
NOTE: Remember the position and orientation of the ball joint clamps.

10. Lower the front wheels to the ground and push the vehicle back and forth a few feet to settle the suspension.





11. Measure the distance between the lines at the front of the tires.
12. Measure the distance between the lines at the rear of the tires.
13. Adjust the tie rod so that the distance at the front and rear of the tires is the same.
14. If equipped with ball joints, position the ball joint clamps in their original location and orientation.
15. Tighten the ball joint clamps (28-32 ft. lbs.) or the rod end jam nuts.
16. Untie the steering wheel.



⚠ WARNING

Rotate the steering wheel from a full left turn to a full right turn and make sure that the ball joint clamps do not contact any other component. Clamps positioned so that they contact other components may result in steering failure and loss of control of the vehicle causing severe bodily injury and/or property damage.

17. Reconnect the main positive and negative cables at the batteries.
18. Remove the blocks from behind the wheels.
19. Release the parking brake and test drive the vehicle.





INSPECT BALL JOINTS

NOTE: A set of ball joints and/or rod ends will wear at the same rate. If a ball joint and/or rod end is worn out, then all should be replaced as a set.

⚠ WARNING

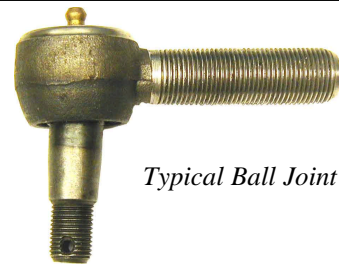
1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Tie off the front wheels so that they cannot turn.

⚠ WARNING

Do not drive the vehicle while the steering wheel or front wheels are tied in position. Driving the vehicle while the steering wheel or front wheels tied in position may cause loss of control of the vehicle resulting in severe bodily injury and/or property damage.

7. While watching the ball joints, rapidly rotate the steering wheel to the left and right.
8. If the ball joint housing moves up or down then the ball joint is worn out and should be replaced. Refer to section **Replacing a Ball Joint** for information regarding replacing ball joints.
9. Untie the front wheels.
10. Reconnect the main positive and negative cables at the batteries.
11. Remove the blocks from behind the wheels.
12. Release the parking brake and test drive the vehicle.



Typical Ball Joint



INSPECT ROD ENDS

NOTE: A set of ball joints and/or rod ends will wear at the same rate. If a ball joint and or rod end is worn out, then all should be replaced as a set.

⚠ WARNING

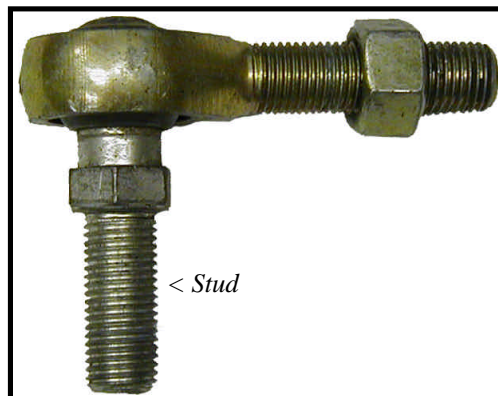
1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Visually inspect each rod end for any signs of play between the ball and the nylon or brass bushing in the housing.

⚠ WARNING

Do not drive the vehicle while the steering wheel or front wheels are tied in position. Driving the vehicle while the steering wheel or front wheels tied in position may cause loss of control of the vehicle resulting in severe bodily injury and/or property damage.

7. If any play is evident, then the rod end is worn out and should be replaced. Refer to section **Replace the Ball Joints, Tie Rods, and Drag Link** for information regarding replacing ball joints.
8. Reconnect the main positive and negative cables at the batteries.
9. Remove the blocks from behind the wheels.
10. Release the parking brake and test drive the vehicle.



Typical rod end. Studded rod end shown, your vehicle may be equipped with spherical rod ends that do not have a stud.



ADJUST THE STEERING GEAR

*NOTE: In some vehicle configurations it may be necessary to remove the steering gear to perform this procedure. Refer to **Replace the Steering Gear** for information regarding removing the steering gear.*

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support with jack stands.

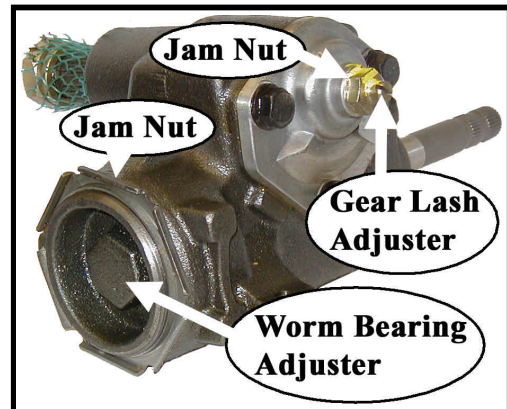
⚠ WARNING

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

7. Disconnect the drag link from the pitman arm.

*NOTE: Refer to **Replace the Ball Joints** section for information regarding removing the ball joint from the drag link.*

8. Loosen the gear lash jam nut and the worm bearing adjuster jam nut.
9. Unscrew the gear lash adjuster all of the way to the stop.
10. Loosen the worm bearing adjuster and then tighten just enough to remove all end play from the input shaft and then an additional 1/8 turn more.
11. While holding the worm bearing adjuster so that it cannot turn, tighten the worm bearing adjuster jam nut.
12. Find the center position of the steering shaft:
 - A. Turn the steering shaft all of the way in one direction.
 - B. While counting the rotations, turn the steering shaft all of the way in the opposite direction.
 - C. Turn the steering shaft 1/2 the number of turns in the original direction.





13. While rotating the input shaft back and forth through its centered position, adjust the gear lash adjusting screw so that there is a slight drag as the steering gear is rotated through its centered position.
14. While holding the gear lash adjusting screw so that it cannot turn, tighten the gear lash adjusting screw jam nut.
15. Reconnect the main positive and negative cables at the batteries.
16. Remove the blocks from behind the wheels.
17. Release the parking brake and test drive the vehicle.





REPLACE THE STEERING SHAFT

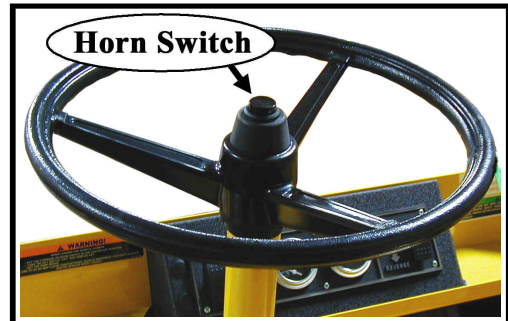
⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

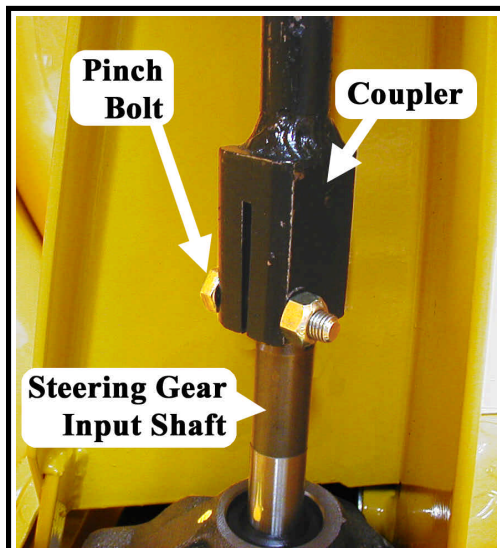
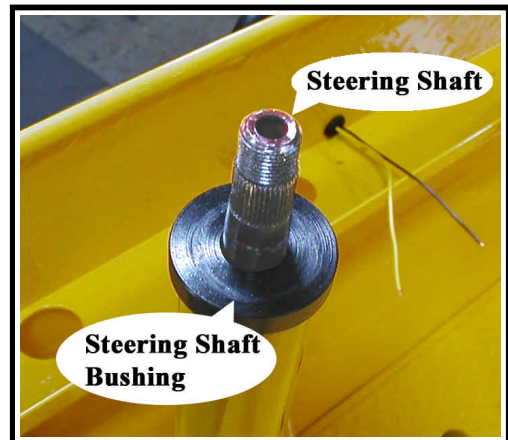
6. If equipped with a horn switch in the steering wheel, remove the switch, disconnect the wires from the switch and cut the terminals off of the wires.
7. Remove the steering wheel.

*NOTE: Refer to **Replace the Steering Wheel** section for information regarding removing the steering wheel.*

8. Remove the upper steering shaft bushing or bearing from the steering column.



9. Remove the steering gear access cover from the steering column (if equipped).
10. Remove and discard the pinch bolt and nut from the steering shaft coupler.



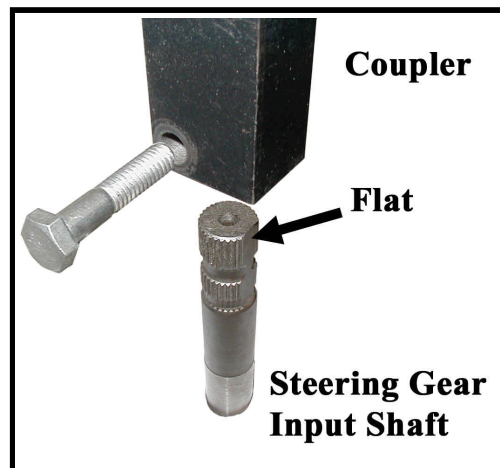
*NOTE Most vehicle configurations will now allow the steering shaft to slide off of the steering gear input shaft and then back down out of the steering column. If there is not enough clearance for this procedure then the steering gear must be removed. Refer to **Replace the Steering Gear** for information regarding removing the steering gear.*



11. Remove the steering shaft from the vehicle.
12. Lightly grease the input shaft splines, steering wheel splines and the upper steering shaft bushing.
13. Install the steering shaft in reverse order using a new pinch bolt. Orientate the shaft so that the pinch bolt is opposite the flat in the steering gear shaft. See the illustration to the right.

⚠ WARNING

Make sure that the pinch bolt is not aligned with the flat on the steering shaft. Aligning the bolt with the flat could result in failure of the steering and loss of control of the vehicle. This could lead to property damage and/or severe bodily injury.



⚠ WARNING

Do not use the original pinch bolt and nut. Failure to replace the pinch bolt and nut may result in failure of the steering causing loss of control of the vehicle. This could lead to property damage and/or severe bodily injury.

14. Tighten the pinch bolt to 24-26 ft-lbs.
15. Reconnect the main positive and negative cables at the batteries.
16. Remove the blocks from behind the wheels.
17. Release the parking brake and test drive the vehicle.



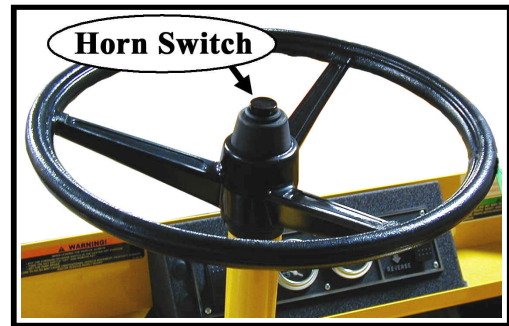


REPLACE THE STEERING WHEEL

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. If equipped with a horn switch in the steering wheel, remove the switch and disconnect the wires from the switch.
7. Remove the steering wheel nut.
8. Using a steering wheel puller, remove the steering wheel.
9. Position the front wheels in the straight ahead position.



10. Lightly grease the steering wheel splines and install the replacement steering wheel orientated as shown in the illustration to the right.
11. Tighten the steering wheel nut to 28-32 ft lbs.
12. Reinstall the horn switch (if equipped).
13. Reconnect the main positive and negative cables at the batteries.
14. Remove the blocks from behind the wheels.
15. Release the parking brake and test drive the vehicle.





REPLACE THE STEERING GEAR

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

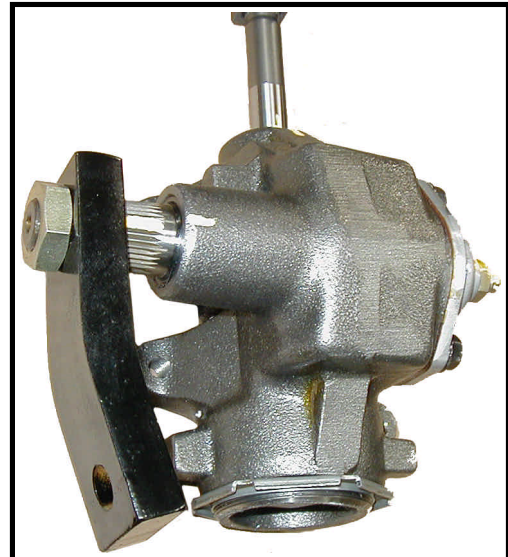
6. Remove the steering wheel. Refer to **Replace the Steering Wheel** section for information regarding removing the steering wheel.
7. Remove the steering shaft. Refer to **Replace the Steering Shaft** section for information regarding removing the steering shaft.
8. Remove the pitman arm using a pickle fork.

*NOTE: On some vehicle configurations it may be required to remove the drag link from the pitman arm. Refer to **Replace the Ball Joints** section for information regarding removing the ball joint from the pitman arm.*

9. Support the steering gear so that it cannot fall out of the vehicle.
10. Remove the bolts holding the steering gear to the vehicle frame and remove the steering gear from the vehicle.

⚠ WARNING

Failure to support the steering gear will result in the steering gear falling out of the vehicle and could cause property damage and/or severe bodily injury.



Steering Gear with Pitman Arm

11. Center the steering gear. Refer to **Center the Steering Gear** section for information regarding centering the steering gear.
12. Install in reverse order. Torque the pitman arm nut to 75-100 ft-lbs.
13. Reconnect the main positive and negative cables at the batteries.
14. Remove the blocks from behind the wheels.
15. Release the parking brake and test drive the vehicle.



REPLACE THE STEERING GEAR

WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Remove the steering wheel. Refer to *Replace the Steering Wheel* section for information regarding removing the steering wheel.
7. Remove the pitman arm from the steering gear.
8. Support the steering gear so that it cannot fall out of the vehicle.

WARNING

Failure to support the steering gear will result in the steering gear falling out of the vehicle and could cause property damage and/or severe bodily injury.

9. Remove the bolts holding the steering gear to the vehicle frame and remove the steering gear from the vehicle.
10. Install in reverse order. Torque the pitman arm nut to 181-217 ft-lbs.
11. Reconnect the main positive and negative cables at the batteries.
12. Remove the blocks from behind the wheels.
13. Release the parking brake and test drive the vehicle.





REPLACE THE BALL JOINTS, TIE RODS, AND DRAG LINK

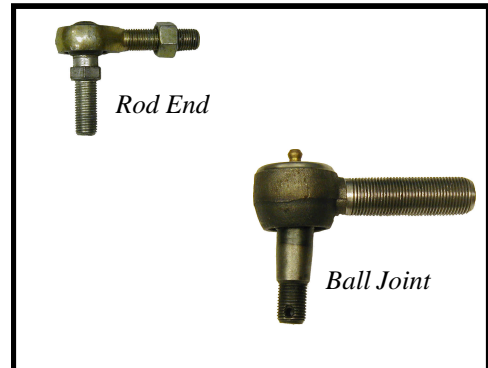
This section will refer to two different types of ball joints. One type is has a grease fitting and a tapered shaft where it is installed on the steering arm or pitman arm. The second cannot be greased and has a straight shaft. See the illustrations to the right. Depending on the configuration of your vehicle, it may be equipped one or both types of ball joints.

In this text:

The first type will be referred to as a "Ball Joint."

The second type will be referred to as a "Rod End."

NOTE: If a rod end or ball joint is worn out, we recommend replacing all of the ball joints and/or rod ends as a set.



Replacing a Rod End

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

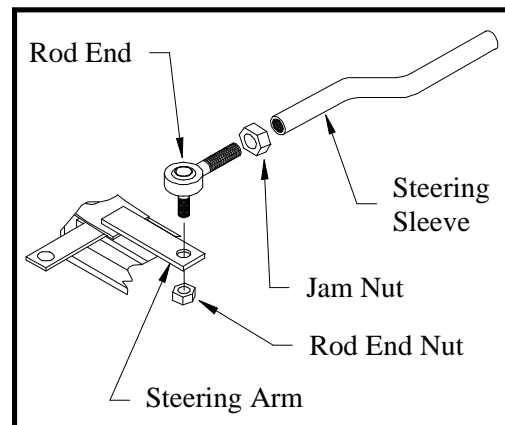
6. Raise the front of the vehicle and support with jack stands.

⚠ WARNING

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

7. Loosen the rod end jam nut or clamp on the steering sleeve.
8. Remove the rod end nut.
9. Remove the rod end from the steering arm.

HINT: Count the number of turns required to remove the rod end from the steering sleeve. This will make it easier to realign the wheels.





Maintenance, Service, and Repair

10. Install the new rod end into the steering sleeve. Screw it into the sleeve the same number of turns counted in the previous step. Do not tighten the rod end clamp or jam nut at this time.
11. Install the rod end into the steering arm. Tighten the rod end nut to 20-25 ft-lbs.
12. Realign the front wheels.

*NOTE: Refer to the **Steering** section for information regarding realignment of the front wheels.*

13. Lower the vehicle.
14. Reconnect the main positive and negative cables at the batteries.
15. Remove the blocks from behind the wheels.
16. Release the park brake and test drive the vehicle.

Replacing a Ball Joint

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support with jack stands.

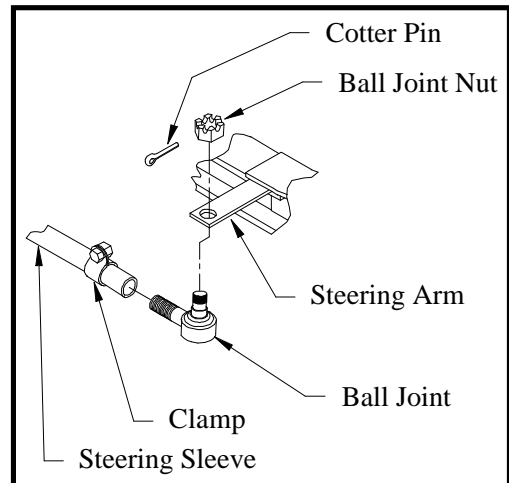
⚠ WARNING

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

7. Loosen the ball joint clamp on the steering sleeve.
8. Remove the cotter pin and ball joint nut.
9. Using a pickle fork, remove the ball joint from the steering arm.
10. Remove the ball joint from the steering sleeve.

HINT: Count the number of turns required to remove the ball joint from the sleeve. This will make it easier to realign the wheels.

11. Install the new ball joint into the steering sleeve. Screw it into the sleeve the same number of turns counted in the previous step. Do not tighten the ball joint clamp at this time.





12. Install the ball joint into the steering arm. Tighten the ball joint nut to 40-45 ft-lbs. and install a new cotter pin.

13. Realign the front wheels.

*NOTE: Refer to the **Steering** section for information regarding realignment of the front wheels.*

14. Lower the vehicle.

15. Reconnect the main positive and negative cables at the batteries.

16. Remove the blocks from behind the wheels.

17. Release the park brake and test drive the vehicle.

Replacing the Drag Link

The Drag Link is the linkage that connects the steering gear pitman arm to the steering knuckle. Refer to the illustration on the following page.

⚠ WARNING

- 1. Make sure the key-switch is in the "OFF" position, then remove the key.**
- 2. Place the Shift lever in the neutral position.**
- 3. Set the park brake.**
- 4. Place blocks under the rear wheels to prevent vehicle movement.**
- 5. Disconnect the main positive and negative cables at the battery.**

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Remove the ball joints or rod ends from the steering knuckle and pitman arm.

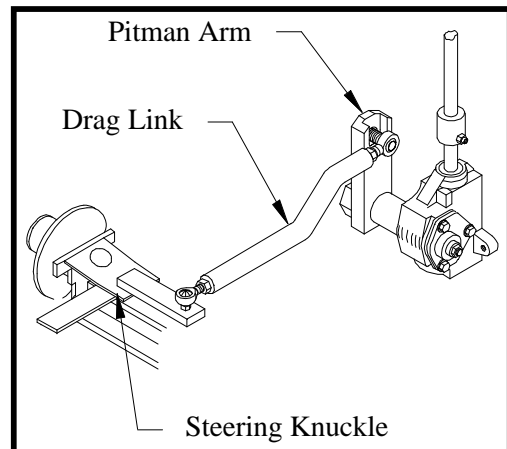
*NOTE: Refer to the **Replacing the Ball Joints** section for information regarding the removal of the ball joints or rod ends.*

8. Remove the drag link as an assembly.

9. Install in reverse order.

10. Realign the front wheels.

*NOTE: Refer to the **Steering** section for information regarding realignment of the front wheels.*



Typical Drag Link



Maintenance, Service, and Repair

11. Lower the vehicle.
12. Reconnect the main positive and negative cables at the batteries.
13. Remove the blocks from behind the wheels.
14. Release the park brake and test drive the vehicle.

Replacing the Tie Rod

The Tie Rod is the linkage that connects the two steering knuckles together. Refer to the illustration below..

⚠ WARNING

- 1. Make sure the key-switch is in the "OFF" position, then remove the key.**
- 2. Place the Shift lever in the neutral position.**
- 3. Set the park brake.**
- 4. Place blocks under the rear wheels to prevent vehicle movement.**
- 5. Disconnect the main positive and negative cables at the battery.**

6. Raise the front of the vehicle and support with jack stands.

⚠ WARNING

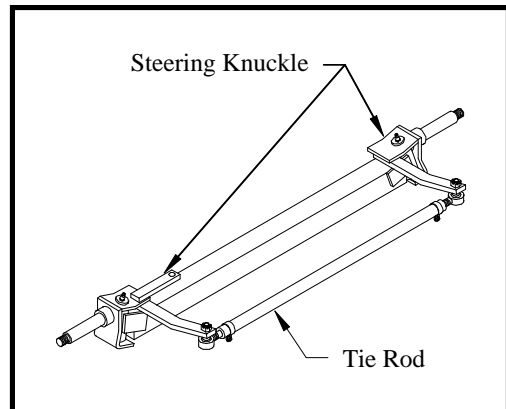
Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle. Failure to use lifting and support devices of rated load capacity may result in severe bodily injury.

7. Remove the ball joints or rod ends from the steering knuckles.

*NOTE: Refer to the **Replacing the Ball Joints** section for information regarding the removal of the ball joints or rod ends.*

8. Remove the tie rod as an assembly.
9. Install in reverse order.
10. Realign the front wheels.

*NOTE: Refer to the **Steering** section for information regarding realignment of the front wheels.*



Typical Front Axle Assembly

11. Lower the vehicle.
12. Reconnect the main positive and negative cables at the batteries.
13. Remove the blocks from behind the wheels.
14. Release the park brake and test drive the vehicle.



CENTER THE STEERING GEAR

NOTE: The drag link must be disconnected from the pitman arm or the pitman arm removed from the steering gear to perform this procedure. Refer to the appropriate section for details.

1. Remove the pitman arm.
2. Rotate the input shaft clockwise until it stops.
3. While counting the rotations, rotate the input shaft counter clockwise until it stops.
4. Rotate the input shaft clockwise 1/2 the rotations counted in the previous step.
4. Mark the input and pitman shaft in relation to the housing.

PITMAN SHAFT ALIGNMENT

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Center the steering gear. Refer to **Center the Steering Gear** section for information regarding centering the steering gear.
7. Tie the steering wheel in position so that it cannot rotate.

⚠ WARNING

Do not drive the vehicle while the steering wheel or front wheels are tied in position. Driving the vehicle while the steering wheel or front wheels tied in position may cause loss of control of the vehicle resulting in severe bodily injury and/or property damage.

8. Install the pitman shaft on the steering gear so that it is as close as possible to centered between the steering stops. Torque the pitman arm nut to 75-100 ft-lbs.
9. Adjust the drag link as required to position the front wheels to the straight ahead position.
10. Untie the steering wheel.
11. If required, remove and reposition the steering wheel. Refer to **Replace the Steering Wheel** section for information regarding repositioning the steering wheel.
12. Reconnect the main positive and negative cables at the batteries.
13. Remove the blocks from behind the wheels.
14. Release the parking brake and test drive the vehicle.



REPAIR THE STEERING GEAR

Disassembly

*NOTE: The steering gear must be removed from the vehicle for this procedure. Refer to **Replace the Steering Gear** section for information regarding removing the steering gear.*

NOTE: The steering gear is packed with grease. Only perform maintenance on the steering gear in an area that will contain any grease that may spill out of the steering gear when it is disassembled.

Refer to the illustration at the end of this section for a blown up view of the steering gear assembly.

1. Center the steering gear.
 - A. Turn the steering shaft all of the way in one direction.
 - B. While counting the rotation, turn the steering shaft all of the way in the opposite direction.
 - C. Turn the steering shaft 1/2 the number of turns in the original direction.
2. Remove the worm bearing adjuster locking ring and the worm bearing adjuster.

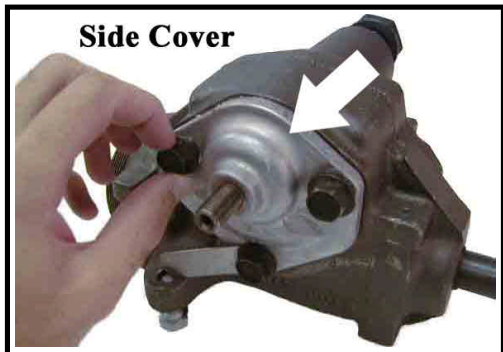
Worm Bearing Adjuster



3. Remove the side cover/pitman shaft assembly by removing the three side cover bolts and then pulling the assembly out of the housing.

NOTE: The side cover/pitman shaft assembly normally does not have to be disassembled.

Side Cover

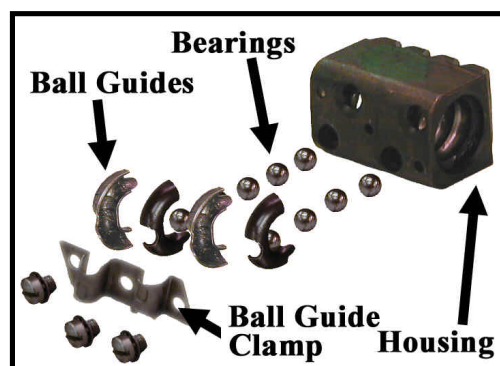




4. Remove the worm shaft and ball nut assembly from the bottom of the housing.
5. Remove the worm shaft seal.
6. Remove the pitman shaft seal.
7. Remove the upper worm bearing and bearing cup from the housing.



8. The ball nut assembly consists of two sets of ball bearings that recirculate in two channels in the ball nut housing. The bearings may fall out once the bearing guides are removed. Be careful not to lose any of the bearings.
9. Remove the ball guide clamps, ball guides and all of the ball bearings.
10. Remove the ball nut from the worm shaft.
11. Thoroughly clean and inspect all parts for signs of corrosion, damage or wear and replace as required.



Reassembly

1. Lightly lubricate all parts before reassembly.
2. Install a new worm shaft seal and pitman shaft seal into the housing.
3. Install the upper worm bearing cup.
4. Divide the ball bearing into two equal groups.
5. Position the ball nut onto the worm as shaft as shown in the illustration.
6. Insert the ball guides into the ball nut.
7. Insert each group of bearings into the ball guides.

NOTE: Do not rotate the worm shaft while installing the bearings. This may cause one or more of the bearings to enter the crossover passage in the ball nut, causing improper operation.

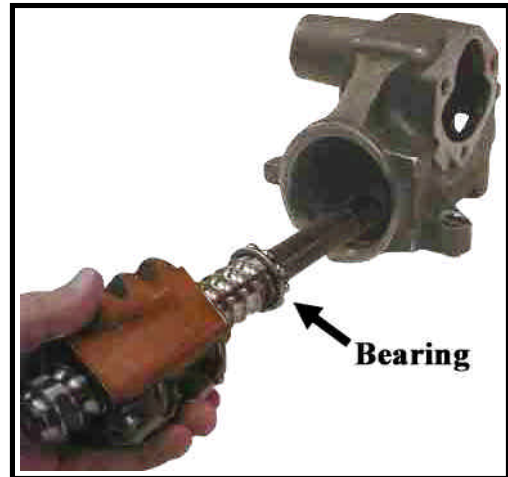
8. Install the ball guide clamp.





Maintenance, Service, and Repair

9. Place the upper worm bearing on the worm shaft and install the worm shaft/ball nut assembly into the housing being careful not to damage the worm shaft seal.



10. Install the assembled worm bearing adjuster into the housing and tighten just enough to remove all play in the worm shaft.
11. Install, but do not tighten the worm bearing adjuster lock nut.
12. Rotate the worm shaft to center the ball nut in the housing.
13. Place a new gasket onto the housing and install the assembled pitman shaft/side cover onto the housing using two of the three mounting bolts.
14. Pack the steering gear with grease through the open side cover bolt hole and then install the bolt.
15. Adjust the steering gear.

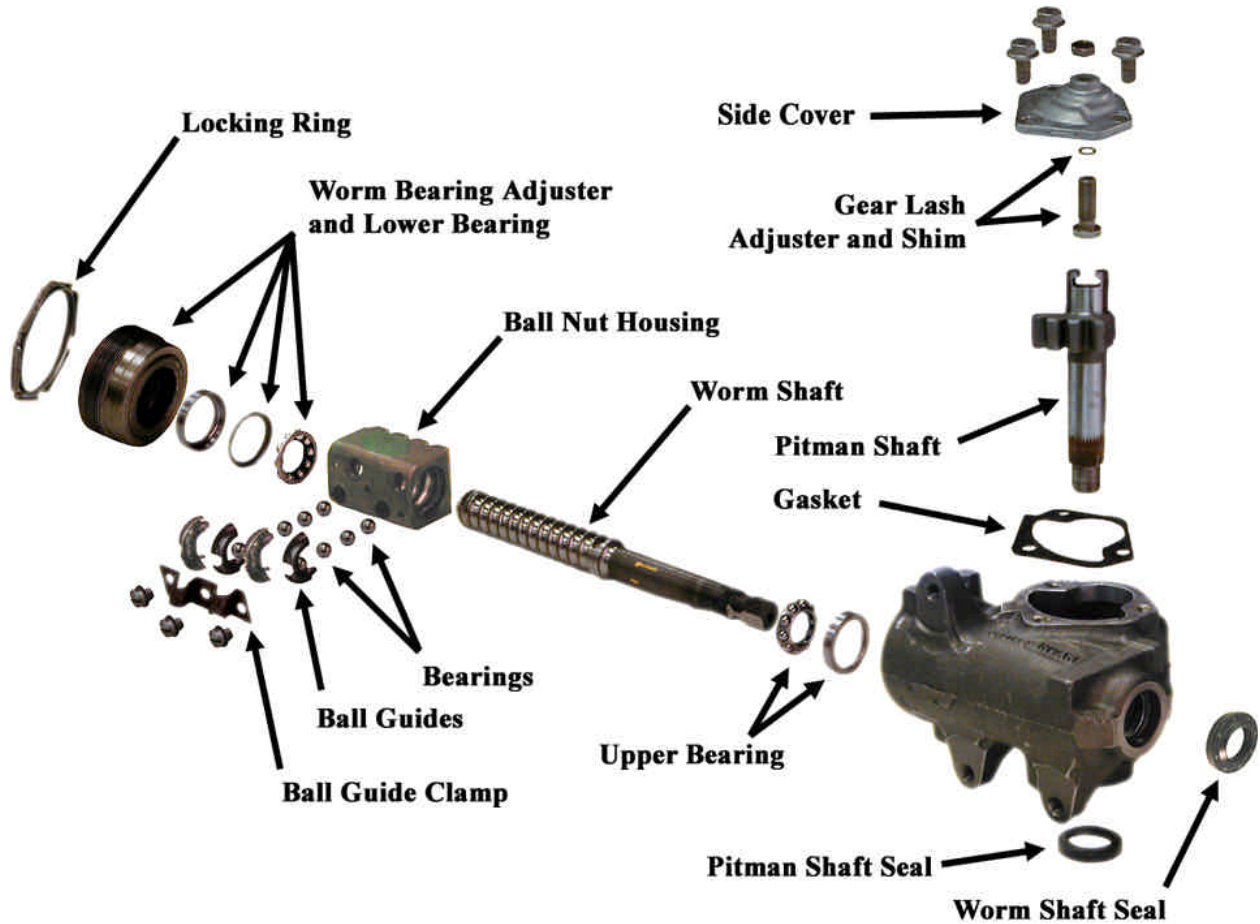


*NOTE: Refer to **Adjust the Steering gear** section for information regarding adjusting the steering gear.*

16. Once the adjustments are completed, make sure that the locking ring and jam nut are tight.



Exploded View of Steering Gear



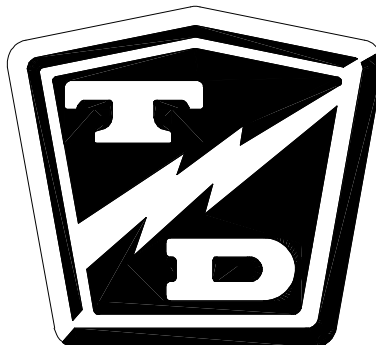
TAYLOR - DUNN



Brake Service

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INSPECT THE SERVICE BRAKE

Disc Brake Pads

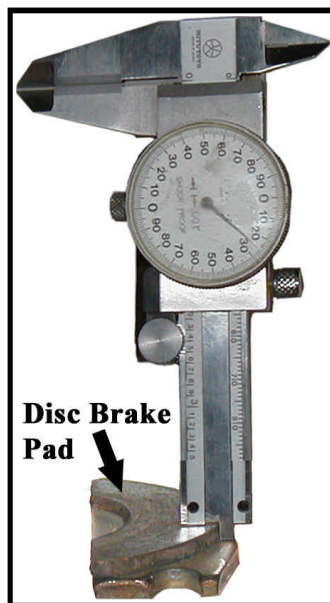
⚠ WARNING

Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

*NOTE: The brake pad must be removed to accurately measure the lining thickness. Refer to **Replace the Front or Rear Brake Pads** section for information on removing the brake pads.*

Measure the brake pad lining at the thinnest point on the pad. If the brake pad lining is 1/16-inch or less then the brake pad must be replaced.

It is recommended to replace the left and right side brake pads as a set.





Disc Brake Rotor

⚠ WARNING

Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

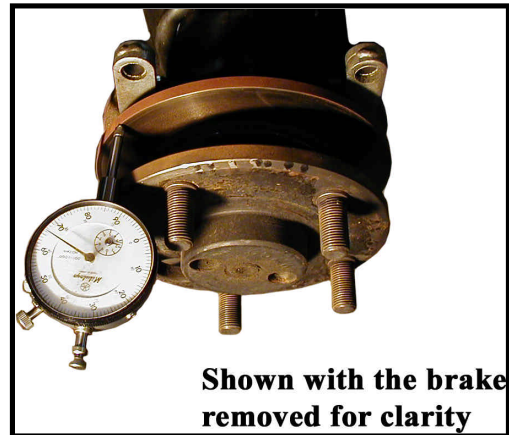
*NOTE: The front brake rotor is an integral part of the front hub. If the brake rotor is worn beyond its service limits, then the front hub must be replaced. Refer to **Front Axle Service** for information on replacing the front hub.*

*NOTE: Depending on the rear axle configuration, the rear brake rotor may be an integral part of the rear axle. If the brake rotor is worn beyond its service limits, then the rear axle must be replaced. Refer to **Transmission** section for information regarding replacing the rear axle*

*NOTE: The wheel must be removed to accurately measure the rotor thickness. Refer to **Tires and Wheels** section for information on removing the wheel.*

1. Measure the run out of the rotor at its maximum diameter. If the run out exceeds 0.005, then the rotor must be machined. Do not machine the rotor beyond its service limits.

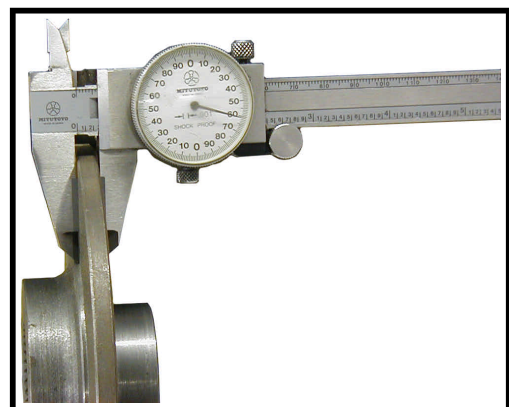
NOTE: A bent axle or damaged rear axle could cause excessive brake rotor run out.



2. Measure the thickness of the brake rotor in 3 places. If the brake rotor thickness is less than 0.20-inches, then the rotor must be replaced.

⚠ WARNING

Do not use a rotor that is worn beyond its service limits. A rotor worn beyond its service limits could fail and cause loss of brakes resulting in severe bodily injury and/or property damage.



Rotor removed for clarity. The rotor does not have to be removed for this procedure.



Maintenance, Service, and Repair

Brake Shoes

⚠ WARNING

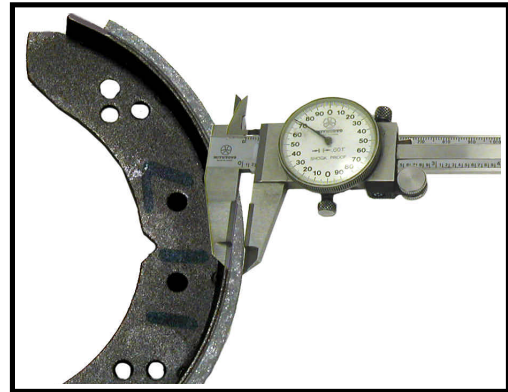
Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

*NOTE: The wheel must be removed to accurately measure the brake shoes. Refer to **Tires and Wheels** section for information on removing the wheel.*

Measure the brake shoe lining at the thinnest point on the shoe. If this is 1/16-inch or less then the brake shoe must be replaced.

NOTE: If this is a riveted lining, then the measurement must be to the top of the rivets.

It is recommended to replace the left and right side brake shoes as a set.



Brake Drum

⚠ WARNING

Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

*NOTE: The wheel must be removed to accurately measure the brake drum. Refer to **Tires and Wheels** section for information on removing the wheel.*

The service limit for the inside diameter of the brake drum is 7.060 inches.

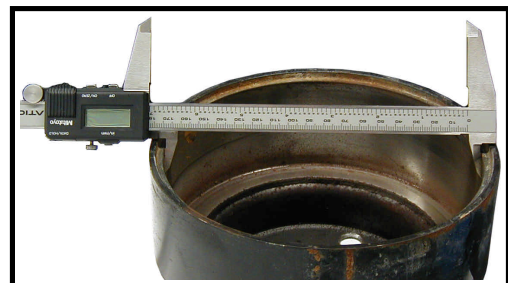
If the brake drum is grooved or worn beyond the service limit then the brake drum must be replaced.

Measure the inside diameter of the brake drum in 3-places.

If the difference between any of the measurements exceeds 0.010-inches then the brake drum must be replaced

⚠ WARNING

Do not use a brake drum that is worn beyond its service limits. A drum worn beyond its service limits could fail and cause loss of brakes resulting in severe bodily injury and/or property damage.



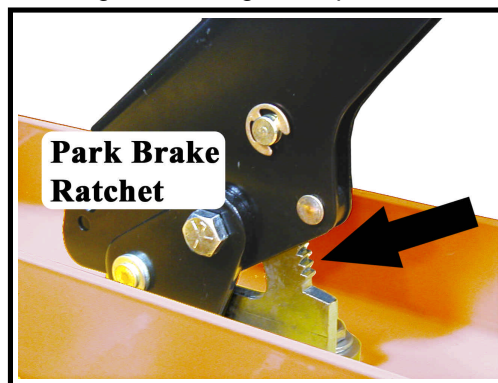


Park Brake

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Release the park brake.
7. Inspect the brake shoes. The parking brake shoes are the same as the service brake shoes. Refer to ***Inspect the Service Brake*** section to inspect the brake shoes.
8. Inspect all brake cables and linkages for any signs of damage or missing cotter pins.
9. Inspect the park brake ratchet for any signs of damage or wear.
10. Set the park brake.
11. Reconnect the main positive and negative cables at the batteries.
12. Remove the blocks from the wheels



⚠ WARNING

If any sign of damage or wear is found on the park brake ratchet, cables, or linkages then they must be repaired or replaced immediately. Failure to repair or replace any damaged component could result in failure of the park brake causing property damage and/or severe bodily injury.



ADJUST THE SERVICE BRAKES

Rear Drum Brakes

The mechanical and hydraulic brake assemblies are identical except for hydraulic fittings. The adjustment procedure is the same for both the mechanical and hydraulic brakes.

*NOTE: The brake adjustment is inside of the left and right brake. Do not adjust the brake by means of the brake cables as this will cause mis-operation of the brakes. If you hear a single "clunking" noise while braking it may be due to mis-adjustment of the brake cables or linkage. Refer to **Replace Brake Linkages/Cables** for information regarding proper adjustment of the cables and linkages.*

⚠ WARNING

Adjusting the brakes by means of the brake cables could cause a hard brake pedal with little or no braking power. This could cause loss of control of the vehicle resulting in property damage and/or severe bodily injury.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the wheel off of the ground and support 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 support devices of rated load capacity may result in severe bodily injury and/or property damage..

7. Release the park brake.
8. Remove the tire/wheel assembly.
*NOTE: Refer to **Tires and Wheels** section for information on removing the wheel.*
9. Align the adjusting access slot in the brake drum with the adjusting star wheel at the bottom of the brake.
10. While rotating the brake drum back and forth, rotate the brake adjuster star wheel until the brake is tight enough so that brake drum cannot be rotated.
11. Back off the star wheel just enough so that the brake drum rotates freely.



Brake drum shown with the access slot aligned with the adjusting star wheel .



12. Install the tire/wheel assembly.
13. Repeat this procedure for the opposite side brake.
14. Set the park brake.
15. Reconnect the main positive and negative cables at the batteries.
16. Remove blocks from behind the wheels.
17. Release the park brake and test drive the vehicle.

Adjust the Mechanical Brake Linkages

Do not use this procedure to adjust the brakes. This procedure should only be performed when replacing any of the mechanical brake linkages or it is found that the linkages have been adjusted incorrectly.

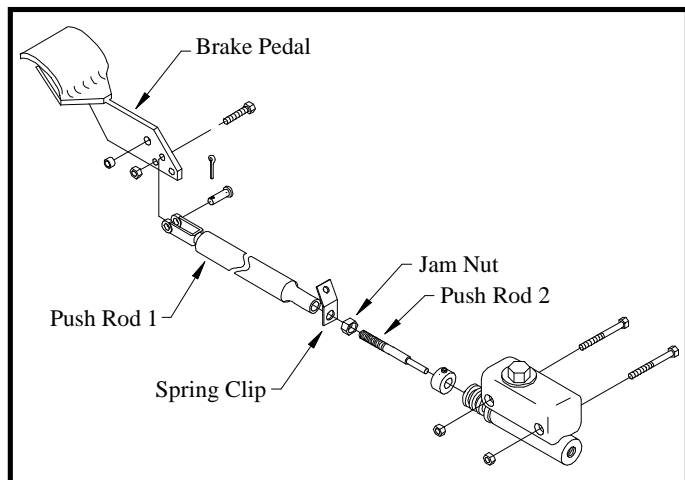
⚠ WARNING

Adjusting the brakes by means of the brake cables could cause a hard brake pedal with little or no braking power. This could cause loss of control of the vehicle resulting in severe bodily injury and/or property damage.

⚠ WARNING

- 1. Make sure the key-switch is in the "OFF" position, then remove the key.**
- 2. Place the Shift lever in the neutral position.**
- 3. Set the park brake.**
- 4. Place blocks under the front wheels to prevent vehicle movement.**
- 5. Disconnect the main positive and negative cables at the battery.**

6. Release the park brake.
7. Loosen the jam nut on the master cylinder push rod.
8. Remove the brake pedal return spring.
9. Adjust push rod 2 so that there is between 1/16" and 1/8" free play between the push rod and the master cylinder plunger.
10. Tighten the jam nuts on the master cylinder push rod.
11. Install the brake pedal return spring.
12. Set the park brake.
13. Reconnect the main positive and negative cables at the batteries.
14. Remove blocks from behind the wheels.
15. Release the park brake and test drive the vehicle.





ADJUST THE PARKING BRAKE

Park Brake Handle

*NOTE: The service brake must be properly adjusted before attempting to adjust the parking brake. Refer to **Adjust the Service Brakes** for information regarding adjusting the service brakes.*

The parking brake is adjusted by means of the knob on the end of the parking brake handle. Do not adjust the parking brake using the brake linkage. The brake linkage should only require adjustment when any part of the brake system is repaired or replaced.

⚠ WARNING

- 1. Make sure the key-switch is in the "OFF" position, then remove the key.**
- 2. Place the Shift lever in the neutral position.**
- 3. Set the park brake.**
- 4. Place blocks under the front wheels to prevent vehicle movement.**
- 5. Disconnect the main positive and negative cables at the battery.**

6. Release the park brake.
7. Rotate the knob on the end of the parking brake handle clockwise to tighten or counter clockwise to loosen the park brake.

NOTE: The park brake should hold firmly with no brake drag when released.

12. Set the park brake.
13. Reconnect the main positive and negative cables at the batteries.
14. Remove blocks from behind the wheels.
15. Release the park brake and test drive the vehicle.





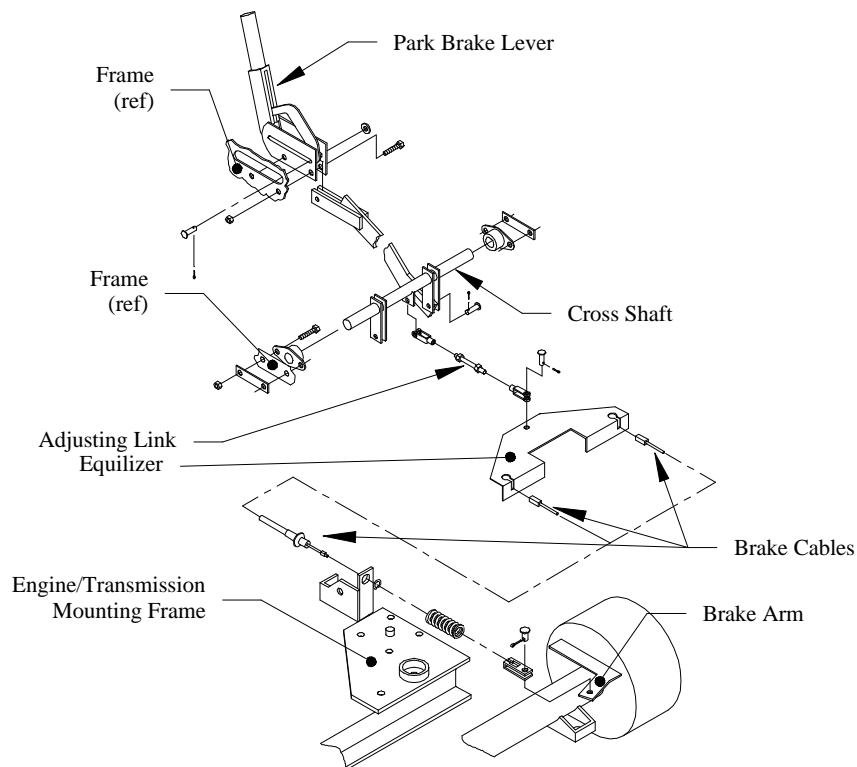
Park Brake Linkage

NOTE: Do not use this adjustment for routine adjustments to the parking brake. This adjustment should only be performed when any part of the brake system has been repaired or replaced.

⚠ WARNING

- 1. Make sure the key-switch is in the "OFF" position, then remove the key.**
- 2. Place the Shift lever in the neutral position.**
- 3. Set the park brake.**
- 4. Place blocks under the front wheels to prevent vehicle movement.**
- 5. Disconnect the main positive and negative cables at the battery.**

6. Release the park brake.
7. Loosen the jam nuts on the adjusting link.
8. Adjust the adjusting link so that all free play is removed from the brake cables without actuating the arms at the wheels.
9. Tighten the jam nuts on the adjusting link.
10. Set the park brake.
11. Reconnect the main positive and negative cables at the batteries.
12. Remove blocks from behind the wheels.
13. Release the park brake and test drive the vehicle.





CHECK MASTER CYLINDER FLUID

⚠ WARNING

Do not ingest brake fluid or allow contact with skin or eyes. Always wear protective clothing and a face shield when working with or around brake fluid.

SKIN CONTACT

Flush area immediately with water for several minutes. If a rash or skin irritation develops, get medical attention immediately.

EYE CONTACT

Immediately flush the eye with water for 15 minutes and call physician.

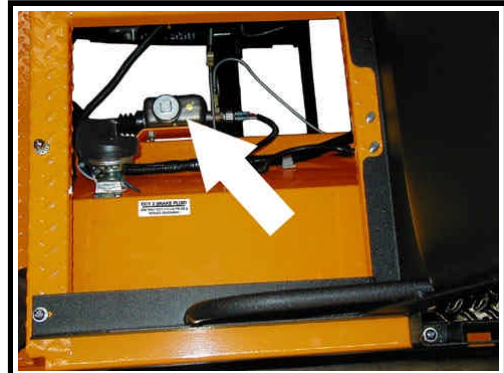
INGESTION

Get medical attention immediately.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the forward-reverse switch in the center "OFF" position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the batteries.

6. Thoroughly clean the area around the master cylinder cap.
7. Remove the master cylinder cap.
8. If the fluid in the master cylinder is contaminated then the entire brake system must be flushed. Refer to ***Bleed the Brakes*** for information regarding flushing the brake system.
9. Fill with brake fluid from a new sealed container to within 1/4-inch of the top of the master cylinder chamber and reinstall the cap.
10. Reconnect the main positive and negative cables at the batteries.
11. Remove blocks from behind the wheels.
12. Release the parking brake and test drive the vehicle.



⚠ WARNING

- Only use DOT 3 brake fluid from a new sealed container.
- DOT 3 brake fluid is corrosive and will damage paint finishes.
- Dispose of brake fluid in accordance with local state and federal regulations.
- Read and follow all warnings on the brake fluid container.

BLEED THE BRAKE SYSTEM

WARNING

Do not ingest brake fluid or allow contact with skin or eyes. Always wear protective clothing and a face shield when working with or around brake fluid.

SKIN CONTACT

Flush area immediately with water for several minutes. If a rash or skin irritation develops, get medical attention immediately.

EYE CONTACT

Immediately flush the eye with water for 15 minutes and call physician.

INGESTION

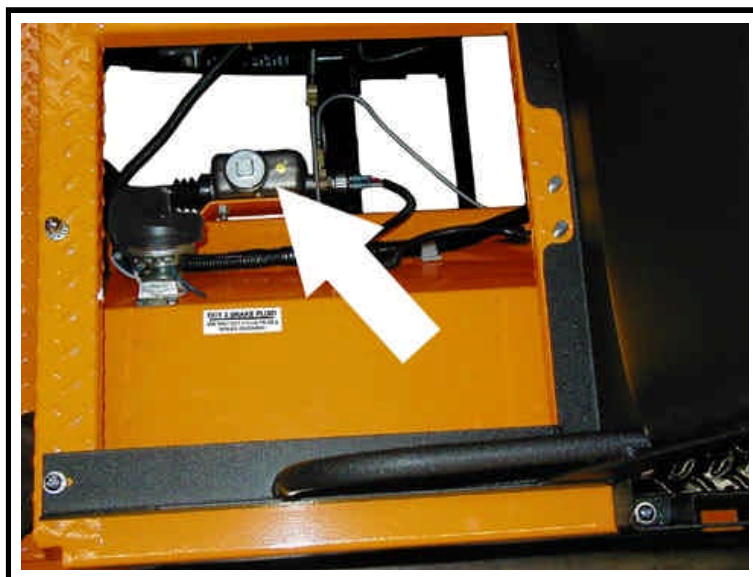
Get medical attention immediately.

NOTE: Start this procedure at the wheel furthest from the master cylinder, then work toward the wheel closest to the master cylinder.

WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Thoroughly clean the area around the master cylinder cap and remove the cap.





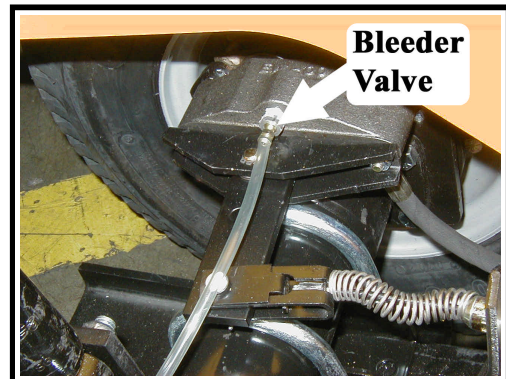
Maintenance, Service, and Repair

7. Add brake fluid from a new sealed container to the master cylinder. Fill to 1/4" from the top of the master cylinder chamber.

⚠ WARNING

- **Only use DOT 3 brake fluid from a new sealed container.**
- **DOT 3 brake fluid is corrosive and will damage paint finishes.**
- **Dispose of brake fluid in accordance with local state and federal regulations.**
- **Read and follow all warnings on the brake fluid container.**

8. The master cylinder fluid level will drop as the brakes are bled. Periodically check and fill the master cylinder during this procedure. Do not allow the fluid level in the master cylinder to drop too low as this will allow air into the brake lines.
9. Attach a clear hose to the bleeder valve on the brake cylinder that is to be bled. Route the hose into a clear container for waste brake fluid.
10. Pump the brake pedal a few times and then press and hold light pressure to the brake pedal.
11. Open the bleeder valve on the hydraulic brake body.
12. Depress the foot pedal to the floor and then close the bleeder valve. Do not release pressure on the brake pedal until the bleeder valve is closed.
13. Slowly release the foot pedal, allowing it to return to its released position.



Bleeder valve with hose attached

NOTE: Check and fill the master cylinder frequently during the bleeding process. Do not allow the fluid level in the master cylinder to drop low enough to allow air to enter the brake lines. If air enters the brake lines during the bleeding process, then you will have to start again from the beginning.

⚠ WARNING

Always use brake fluid from a new sealed container. Never reuse any brake fluid that has been removed from the brake system. Use of contaminated brake fluid will degrade the braking performance and may cause property damage or severe bodily injury.

14. Repeat the above steps until you are sure that all of the air is expelled from the brake line. Any air bubbles that can be seen in the clear hose attached to the bleeder is an indication that there is still air in the brake lines.
15. Repeat this process with each of the other wheels.

*NOTE: When finished, top off the master cylinder with fluid. See **Check Master Cylinder Fluid** for information on filling the master cylinder.*

16. Reconnect the main positive and negative cables at the batteries.
17. Remove the blocks from behind the wheels.
18. Release the park brake and test drive the vehicle.



FLUSH THE BRAKE SYSTEM

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the rear wheels off of the ground and support 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 support devices of rated load capacity may result in severe bodily injury.

7. If equipped with front brakes, raise the front wheels off of the ground and support with jack stands.
8. Release the park brake.
9. Remove both rear wheels and, if equipped with front brakes, the front wheels. Refer to **Tires and Wheels** section for information regarding removing the wheels.
10. Remove the wheel cylinders from each axle. Refer to **Replace the Wheel Cylinder** section for information regarding removing the wheel cylinder.
11. Attach a clear hose to the bleeder valve on each of the wheel cylinders and route the hoses into a container for waste brake fluid.
12. Position the wheel cylinders so that the bleeder screw is pointing to the ground and open all bleeder screws.
13. Pump the master cylinder until all fluid has been pumped from the brake lines and all wheel cylinders.
14. Close all bleeder screws.
15. Fill the master cylinder with fluid.
16. Open one of the bleeder screws and pump the master cylinder until all fluid has been pumped from the master cylinder and close the bleeder screw.
17. Repeat the above two steps for each wheel cylinder.
18. Reinstall the wheel cylinders and bleed the brakes. Refer to **Bleed the Brakes** for information regarding bleeding the brakes.
19. Set the park brake.
20. Install the wheels and lower the vehicle to the ground.
21. Reconnect the main positive and negative cables at the batteries.
22. Release the park brake and test drive the vehicle.



REPLACE FRONT DISC BRAKE PADS

NOTE: It is recommended that both the left and right brake pads be replaced as a set.

⚠ WARNING

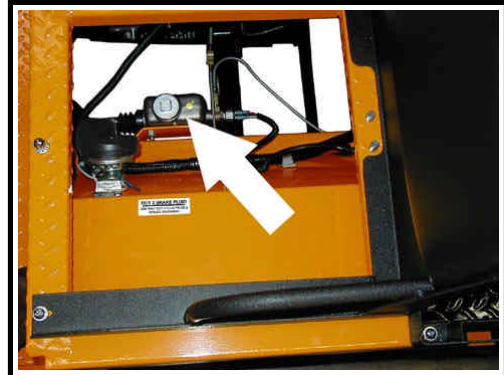
Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

NOTE: Installing new brake pads will raise the brake fluid level in the master cylinder.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Thoroughly clean the area around the master cylinder cap.
7. Remove fluid from the master cylinder until it is 1/2 full.

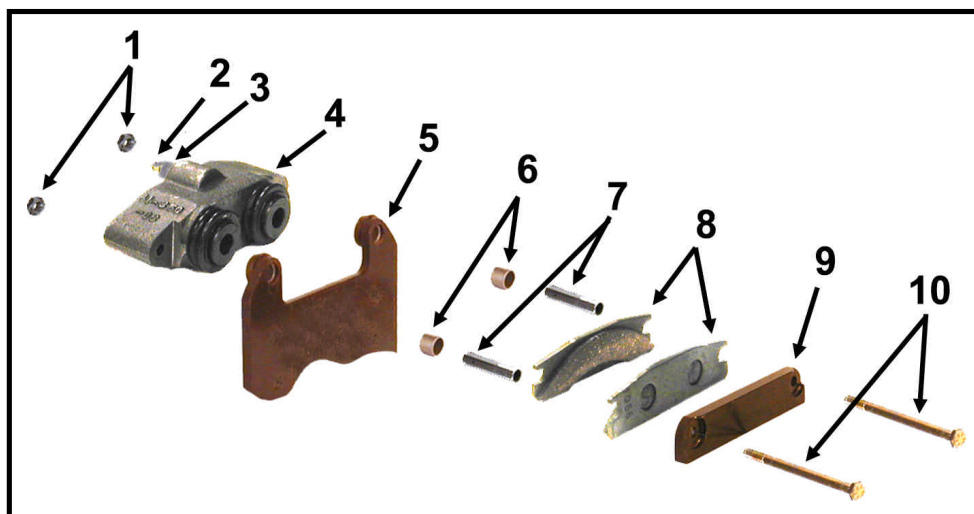


8. Raise the front of the vehicle and support with jack stands.

⚠ WARNING

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

9. Remove the tire/wheel assembly. Refer to **Tires and Wheels** section for information on removing the tire and wheel assembly.



NOTE: Refer to the illustration above for the following steps.

10. Remove the brake body bolts (10) and discard the lock nuts (1) and brake pads (8).
11. Remove the spacer bushings (6) from the mounting bracket (5) and discard the bushings.
12. Inspect the brake rotor. See **Inspect the Service Brakes** section for information regarding inspecting the brake rotor.
13. Inspect the spacers (7) and replace if any wear or damage is found.
14. Install new spacer bushings in the mounting bracket.
15. Install new brake pads in reverse order. Torque the mounting bolts to 11 ft-lbs.
16. Repeat this procedure for the other wheel.
17. Install the tire/wheel assembly and lower the vehicle to the ground.
18. Fill the master cylinder to the proper level. Refer to **Check Master Cylinder Fluid** section for information on the proper master cylinder fluid level.
19. Reconnect the main positive and negative cables at the batteries.
20. Remove the blocks from behind the wheels.
21. Release the park brake and test drive the vehicle.



REPLACE REAR BRAKE SHOES

WARNING

Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

NOTE: It is recommended that both the left and right brake pads be replaced as a set.

WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Release the park brake.
7. Raise the rear wheels off of the ground and support 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 support devices of rated load capacity may result in severe bodily injury.

8. Remove the tire/wheel assembly. Refer to **Tires and Wheels** section for information on removing the wheel.
9. Remove and inspect the brake drum. Refer to **Inspect the Service Brake** section for information regarding inspecting the brake drum.

WARNING

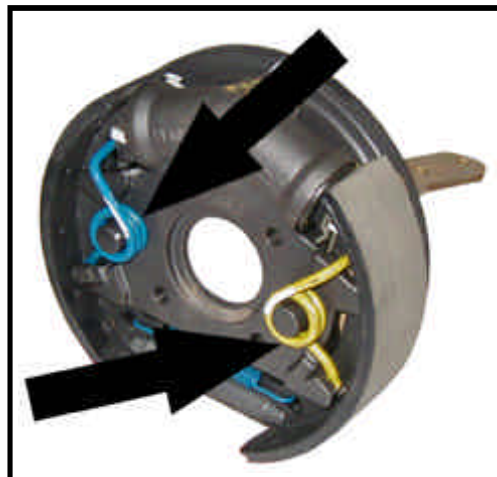
The hair pin clips are damaged when they are removed. Do not install the old hair pin clips. Reinstalling old hair pin clips could lead to brake failure, property damage and/or severe bodily injury.



10. Remove the retracting spring and torsion springs from the brake shoes.



Retracting spring

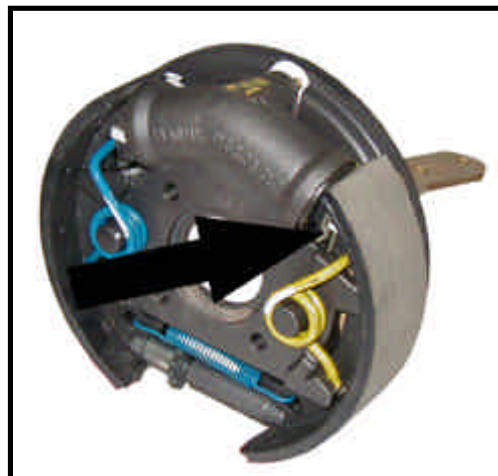


Torsion springs

11. Remove the hair pin clips from the actuating arms and discard.



Exploded brake adjuster assembly



12. Remove the brake shoes and brake adjuster assembly from the backing plate.
13. Thoroughly clean and inspect the adjuster assembly. Replace parts as required.
14. Apply a very light coating of high temperature grease to the adjuster screw threads.
15. Install in reverse order.
16. Repeat for the opposite side.
17. Adjust the brakes. See **Adjust the Service Brakes** section for information regarding adjusting the brakes.
18. Set the park brake.
19. Reconnect the main positive and negative at the batteries.
20. Lower the wheels to the ground.
21. Remove the blocks from behind the wheels.
22. Release the park brake and test drive the vehicle.



Brake Adjuster



REPLACE THE WHEEL CYLINDER

Disc Brake Body Assembly (front brakes)

⚠ WARNING

Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

⚠ WARNING

Do not ingest brake fluid or allow contact with skin or eyes. Always wear protective clothing and a face shield when working with or around brake fluid.

SKIN CONTACT

Flush area immediately with water for several minutes. If a rash or skin irritation develops, get medical attention immediately.

EYE CONTACT

Immediately flush the eye with water for 15 minutes and call physician.

INGESTION

Get medical attention immediately.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

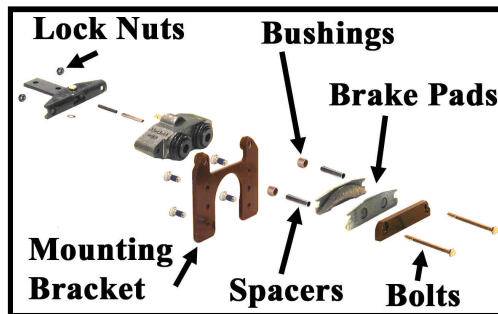
6. Release the park brake.
7. Raise the wheel off of the ground and support with jack stands.

⚠ WARNING

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



8. Remove the tire/wheel assembly. Refer to **Tires and Wheels** section for information on removing the tire and wheel assembly.
9. Thoroughly clean the area around the brake body.
10. Remove the brake body bolts and discard the lock nuts.
11. Inspect the brake rotor. Refer to **Inspect the Service Brake** section for information regarding inspecting the brake rotor.
12. Disconnect the brake hose from the brake body.
13. Install the new brake body assembly in reverse order.
 - Use teflon tape thread sealant on the brake hose fitting.
 - Torque the brake body bolts to 11 ft-lbs.
14. Bleed the brakes. Refer to **Bleed the Brakes** section for information regarding bleeding the brakes.
15. Set the park brake.
16. Reconnect the main positive and negative cables at the batteries.
17. Lower the wheel to the ground.
18. Remove the blocks from behind the wheels.
19. Release the park brake and test drive the vehicle.





Drum Brake Hydraulic Spider (rear brakes)

WARNING

Current Taylor-Dunn® brakes are asbestos free. However, there is the possibility that the original brakes were replaced with aftermarket parts containing asbestos. Since this possibility exists, all brake parts should be handled as if they contain asbestos. Refer to appendix C for recommended handling precautions.

WARNING

Do not ingest brake fluid or allow contact with skin or eyes. Always wear protective clothing and a face shield when working with or around brake fluid.

SKIN CONTACT

Flush area immediately with water for several minutes. If a rash or skin irritation develops, get medical attention immediately.

EYE CONTACT

Immediately flush the eye with water for 15 minutes and call physician.

INGESTION

Get medical attention immediately.

WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Release the park brake.
7. Raise the wheel off of the ground and support 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 support devices of rated load capacity may result in severe bodily injury.

8. Remove the tire/wheel assembly. Refer to *Tires and Wheels* section for information on removing the tire and wheel assembly.
9. Remove the brake drum.



10. Remove the brake shoes. Refer to **Replace Rear Brake Shoes** section for information regarding removing the brake shoes.
11. Remove the axle. Refer to the **Transmission Manual** for information regarding removing the axle.
12. Remove bearing and spider off of the axle and discard the bearing and race. Refer to the **Transmission Manual** for information regarding removing the bearing.
13. Install the new spider and axle bearing.
14. Reassemble in reverse order.
15. Bleed the brakes. Refer to **Bleed the Brakes** section for information regarding bleeding the brakes.
16. Set the park brake.
17. Reconnect the main positive and negative cables at the batteries.
18. Lower the wheel to the ground.
19. Remove the blocks from behind the wheels.
20. Release the park brake and test drive the vehicle.



Hydraulic spider shown in the brake assembly



REPAIR THE BRAKE BODY

⚠ WARNING

Hydraulic brake system components must be kept clean. Make sure your work area is free from dirt and debris and will contain any brake fluid spills. Any debris or contaminants left in the brake system could lead to brake failure and result in property damage and/or severe bodily injury.

⚠ WARNING

Do not ingest brake fluid or allow contact with skin or eyes. Always wear protective clothing and a face shield when working with or around brake fluid.

SKIN CONTACT

Flush area immediately with water for several minutes. If a rash or skin irritation develops, get medical attention immediately.

EYE CONTACT

Immediately flush the eye with water for 15 minutes and call physician.

INGESTION

Get medical attention immediately.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Remove the brake body from the vehicle.

*NOTE: Refer to **Replace the Brake Body Assembly (front or rear)** section for information on removing the brake body.*

7. Pull the pistons out of the brake body.

⚠ WARNING

The pistons are very fragile. If the piston is damaged it must be replaced. Failure to replace a damaged piston could lead to brake failure and result in property damage and/or severe bodily injury.

8. Remove the piston rubber boot.
9. Remove the piston o-ring from inside of the brake body.
10. Inspect and replace parts as required.



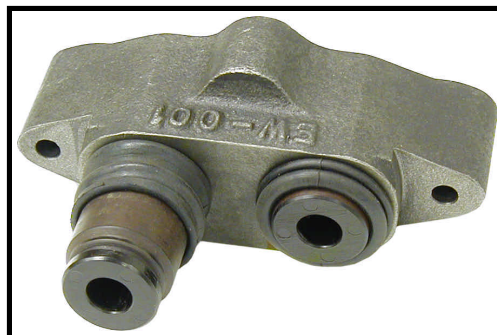
11. Lubricate the brake parts with clean brake fluid from a sealed container.
12. Install the o-rings into the brake body. Make sure that the o-rings are installed into the second groove and that they are not twisted.



13. Using tool #41-350-13, slide the rubber boots onto the pistons as shown. The boot should be hanging off of the end of the piston.



14. Insert the rubber boot/piston into the brake body making sure that the boot is properly seated in the groove.



15. Press the pistons all the way down into the brake body making sure that the boot seats properly into the upper groove on the piston.
16. Install any fittings or plugs that were removed from the brake body using teflon tape thread sealant.
17. If the brake body assembly is not to be immediately installed onto a vehicle, plug the brake hose fitting hole to prevent any contaminants from entering the brake body.





REPLACE THE MASTER CYLINDER

⚠ WARNING

Do not ingest brake fluid or allow contact with skin or eyes. Always wear protective clothing and a face shield when working with or around brake fluid.

SKIN CONTACT

Flush area immediately with water for several minutes. If a rash or skin irritation develops, get medical attention immediately.

EYE CONTACT

Immediately flush the eye with water for 15 minutes and call physician.

INGESTION

Get medical attention immediately.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

NOTE: Most vehicle configurations do not require lifting the vehicle to remove the master cylinder. Lifting the vehicle may not be required.

6. If required, raise the vehicle and support with jack stands.

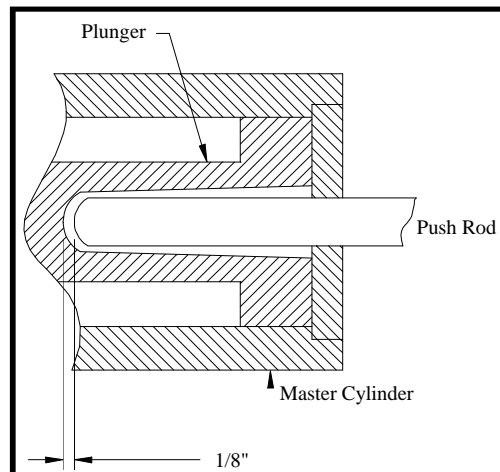
⚠ WARNING

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

7. Place a drain pan under the master cylinder.
8. Disconnect the brake line(s) to the master cylinder and pump out the fluid in the master cylinder by depressing the pedal several times.
9. Remove the master cylinder bolts and remove the master cylinder from the vehicle.



10. Install in reverse order.
11. Adjust the master cylinder push rod so that it is approximately 1/8 inch away from the master cylinder plunger when the brake pedal is up.
12. Fill the master cylinder with brake fluid from a sealed container.
13. Pump the brake pedal a short distance of one to two inches until no bubbles are seen coming from the inlet ports inside of the master cylinder chamber.
14. If the vehicle was raised, lower it to the ground.
15. Bleed the brakes. refer to **Bleed the Brakes** section for information regarding bleeding the brakes.
16. Reconnect the main positive and negative cables at the batteries.
17. Remove the blocks from behind the wheels.
18. Release the park brake and test drive the vehicle.



Cutaway of typical master cylinder showing the push rod clearance

⚠ WARNING

- Only use DOT 3 brake fluid from a new sealed container.
- DOT 3 brake fluid is corrosive and will damage paint finishes.
- Dispose of brake fluid in accordance with local state and federal regulations.
- Read and follow all warnings on the brake fluid container.



REPAIR THE MASTER CYLINDER

NOTE: Hydraulic brake system components must be kept clean. Make sure your work area is free from dirt and debris and will contain any brake fluid spills.

Remove the master cylinder from the vehicle. See ***Replace the Master Cylinder*** section .

Drain all fluid from the master cylinder and discard.

Remove the rubber boot.

Depress the plunger and remove the plunger spring clip retainer.

Pull the plunger and all seals out of the master cylinder bore.

Thoroughly clean, inspect and replace parts as required.

If any damage is found in the bore of the master cylinder then it must be replaced.

Lubricate all parts with clean brake fluid from a sealed container.

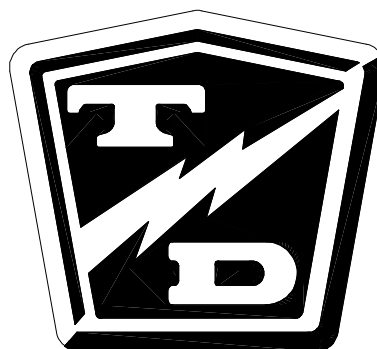
Reassemble in reverse order.

If the master cylinder is not to be immediately installed onto a vehicle, plug the brake line fitting hole to prevent any contaminants from entering the master cylinder.

Suspension

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REPLACE THE REAR SPRINGS

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Remove the lower shock bolt on the same side of the vehicle as the spring to be replaced.
7. Raise the side of the vehicle just enough so that the spring clears the upper spring guide and support with jack stands.

⚠ WARNING

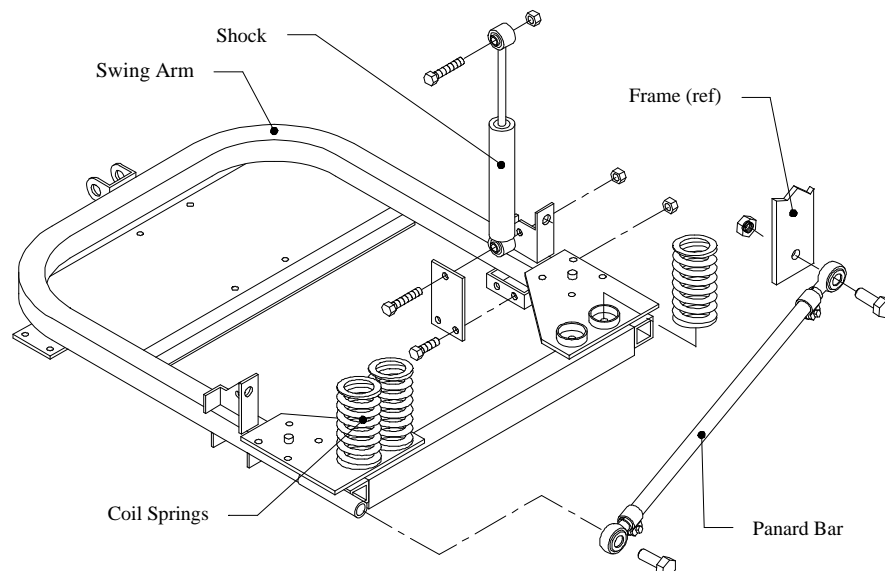
Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle. Failure to use lifting and support devices of rated load capacity may result in severe bodily injury.

8. Remove the spring.
9. Install the new spring in reverse order.

⚠ WARNING

Pinch point. Do not place any part of your body between the spring and the vehicles frame, spring mounts or between the spring coils. This could result in severe bodily injury.

10. Reconnect the main positive and negative cables at the batteries.
11. Remove the blocks from behind the wheels.
12. Release the parking brake and test drive the vehicle





REPLACE THE FRONT SPRINGS

If a spring has failed or is fatigued, then it is recommended that both front springs are replaced as a set.

HINT : In most vehicles it will be easier if the springs are replaced one at a time.

⚠ WARNING

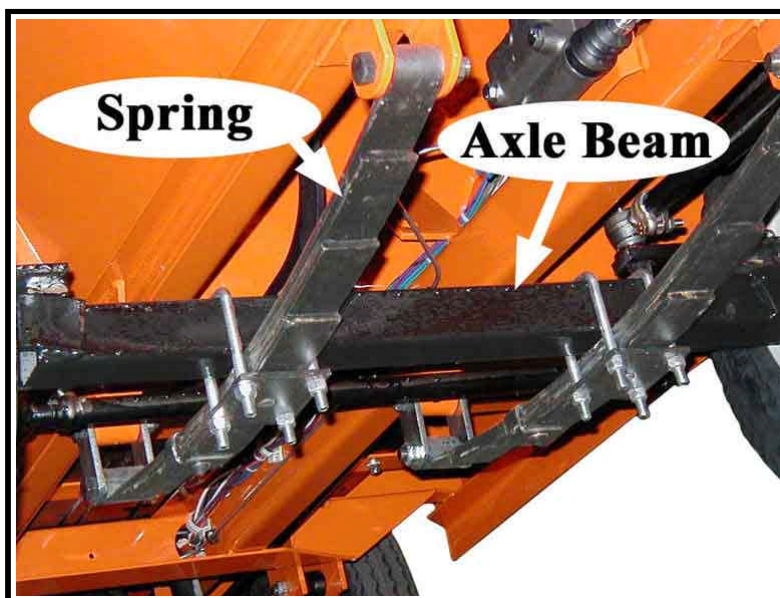
1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the rear wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front of the vehicle and support 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 support devices of rated load capacity may result in severe bodily injury.

7. Tie up or support the front axle so it cannot fall out of the vehicle.
8. Unbolt the spring from the front axle beam.
9. Support the spring so that it cannot fall out of the vehicle.
10. Remove the lower bolt from the spring hanger.
11. Remove the spring bolt from the other end of the spring and remove the spring from the vehicle.





Maintenance, Service, and Repair

12. Inspect the spring bolts and spring hangers for signs of wear or damage. If any wear or damage is found, then they must be replaced.

⚠ WARNING

Damaged or worn spring bolts or hangers could result in sudden failure of the suspension causing severe bodily injury or property damage.

13. Install the new spring in reverse order.
14. If the spring hanger bolts do not have a grease fitting, lube the spring bushings before installing the spring.
15. Torque the spring hanger bolts to 20 ft-lbs.
16. If the spring bolts are equipped with grease fittings, lube them at this time.
17. Lower the vehicle.
18. Reconnect the main positive and negative cables at the batteries.
19. Remove the blocks from behind the wheels.
20. Release the parking brake and test drive the vehicle.

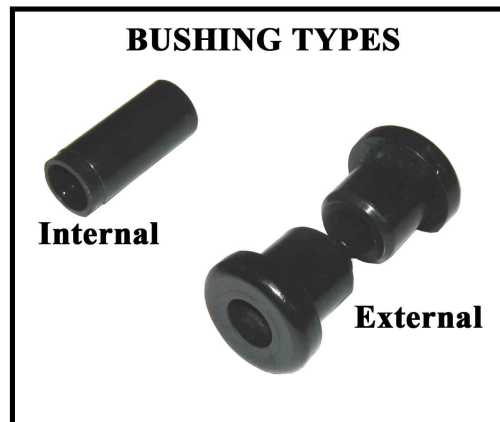


REPLACE THE SPRING BUSHINGS

It is recommended that all front spring bushings are replaced as a set.

Your vehicle will be equipped with one of two types of spring bushings, internal and external (see illustration to the right):

- The internal bushing is a plastic insert that is pressed into the spring eye. There are one of these bushings for each spring eye.
- The external bushing consists of two plastic bushings on each end of the spring eye.
- Refer to the parts list to identify the bushings used in your vehicle.



⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the front or rear of the vehicle depending on which spring is to be removed and support with jack stands.
7. Remove the spring from the vehicle.

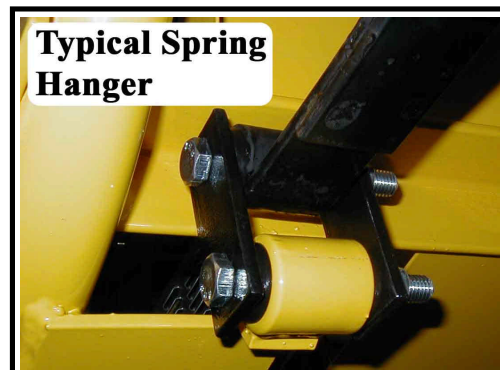
⚠ WARNING

Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle. Failure to use lifting and support devices of rated load capacity may result in severe bodily

*NOTE: Refer to **Replace the Front Springs** section for information regarding removing the front springs.*

8. If the vehicle is equipped with spring hangers, remove the spring hanger bolt from the vehicles frame.
9. Remove the spring bushing(s):
 - For internal bushing, press the spring bushings out of the two spring eyes and from the mounting eye on the vehicles frame.
 - For external bushing, Remove the bushings from the spring eye.
10. Install the new bushings in reverse order.

HINT: Apply a light coating of grease to the bushing before pressing into the spring





REPLACE THE SHOCKS

It is recommended to replace both front shocks as a set.

*NOTE: On some vehicles it may be required to remove the front wheel to gain access to the shock mounting bolts. Refer to **Tires and Wheels** section for information regarding removing the front wheels.*

⚠ WARNING

- 1. Make sure the key-switch is in the "OFF" position, then remove the key.**
- 2. Place the Shift lever in the neutral position.**
- 3. Set the park brake.**
- 4. Place blocks under the front wheels to prevent vehicle movement.**
- 5. Disconnect the main positive and negative cables at the battery.**

6. Some vehicles may require that the wheels be lifted off of the ground and supported with jack stands to replace the shocks.

⚠ WARNING

Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle. Failure to use lifting and support devices of rated load capacity may result in severe bodily

7. Remove the upper and lower shock bolts.
8. Remove the shock from the vehicle.

NOTE: If the shock that was removed is to be reinstalled:

- A. *Inspect the shaft where it enters the shock body for any signs of leakage. If any sign of leakage is seen, then the shock must be replaced.*
- B. *Inspect the upper and lower shock bushings. If any signs of damage or wear are seen, then the shock must be replaced.*

9. Install the shock in reverse order.
10. Lower the vehicle.
11. Reconnect the main positive and negative cables at the batteries.
12. Remove the blocks from behind the wheels.
13. Release the parking brake and test drive the vehicle.



Tires and Wheels

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Replace the Tire (pneumatic) 5





TIRE INFLATION

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

There are many tire options available with varying tire pressures. Refer to the side wall of your tire for information regarding the tire pressure for your tires.

The illustration to the right is an example of the side wall information on a tire.

Tire pressures must be checked when the tire is cold.



TIRE INSPECTION

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Check the tire pressure. Refer to ***Tire Inflation*** section for information on checking the tire pressure.
7. Inspect the tire tread depth. Minimum recommended tread depth is 1/16-inch. There are a series of tread depth wear indicators around the circumference of the tire. They will appear as 1/2-inch bands across the tread as the tire approaches its wear limit (see illustration to the right). Replace the tire if any tread depth indicator can be seen or any part of the tread depth is 1/16-inch or less. Refer to ***Replace the Tire*** section for information regarding replacing the tire.





8. Inspect for uneven tire wear on the front tires. Uneven tire wear could be a result of an improperly inflated tire or a misaligned or damaged front end.

*NOTE: Refer to **Tire Inflation** section or **Steering Component Service** section for information on proper tire inflation or front end wheel alignment.*

9. Inspect the inner and outer side walls for cracks. If any cracks are seen, then the tire should be replaced. Refer to **Replace the Tire** section for information regarding replacing the tire.
10. Inspect the valve stem for cracks. If any cracks are seen, then the valve stem should be replaced. It is also recommended that the valve stem be replaced whenever the tire is replaced.

*NOTE: Refer to **Replace the Tire** section for information regarding replacing the valve stem.*

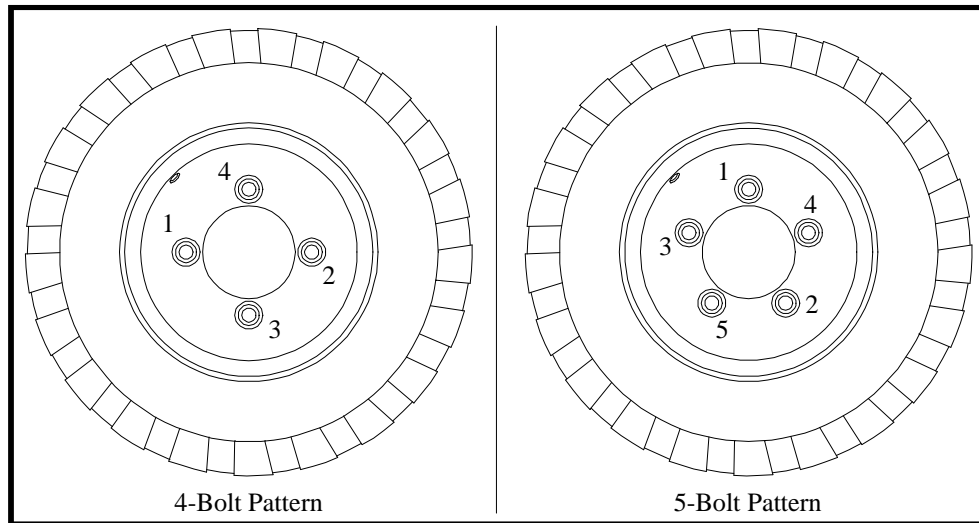
11. Inspect the tread and side walls for debris in the rubber that could lead to a puncture. If any debris is found it should be removed and the tire inspected for a leak.

REPLACE THE TIRE/WHEEL

WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Raise the wheel to be replaced off of the ground and support with jack stands.
7. Remove the 4 or 5 wheel nuts and remove the wheel.
8. Install in reverse order.
9. Following the pattern shown on the following page, cross tighten the wheel nuts in two stages as follows:
 - 1st stage to approximately 20 ft-lbs.
 - 2nd stage to 80-90 ft-lbs.
10. Reconnect the main positive and negative cables at the batteries.
11. Lower the wheel to the ground.
12. Remove the blocks from behind the wheels.
13. Release the parking brake and test drive the vehicle.



Pattern for tightening the wheel nuts

⚠ WARNING

Re-torque all wheel nuts to their final value after 1-week (20-hours) of operation. Failure to re-torque the wheel nuts may result in the wheel coming off of the vehicle causing severe bodily injury and/or property damage.

REPAIR THE TIRE (PNEUMATIC)

⚠ WARNING

Do not attempt to repair a tire with a damaged side wall or a slice in the tread. This type of repair could fail prematurely resulting in severe bodily injury and/or property damage.

*NOTE: To properly repair a puncture, the tire must be removed from the wheel. Refer to **Replace the Tire** section for information on removing the tire from the wheel.*

It is recommended to repair a tire with a combination vulcanized plug and internal patch.

Tire repairs should only be performed by personnel trained in tire repair.

The tire repair procedure will be unique to the type of repair equipment or repair components used. Refer to the instructions provided with your equipment or repair components.



REPLACE THE TIRE (PNEUMATIC)

*NOTE: To replace the tire, the tire/wheel assembly must be removed from the vehicle. Refer to **Replace the Tire/Wheel** section for information on removing the tire/wheel assembly.*

⚠ WARNING

Explosion Hazard. Fully deflate the tire before attempting to remove the tire from the wheel. Do not over inflate the tire when seating the bead. Failure to deflate the tire or over inflating the tire to seat the bead may cause explosive failure of the tire resulting in severe bodily injury or death.

Tire replacement should only be performed by personnel trained in tire replacement.

The tire replacement procedure will be unique to the type of replacement equipment being used. Refer to the instructions provided with your equipment.

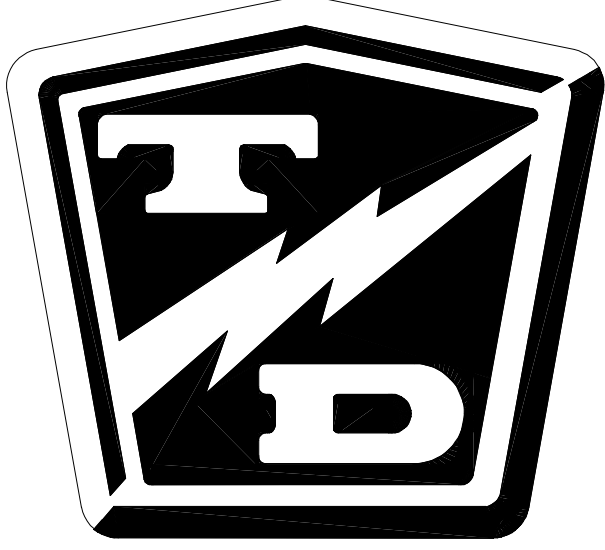
Always use a new valve stem when replacing a tire.

1. Remove the tire from the wheel.
2. Cut the old valve stem off of the wheel.
3. Remove the valve stem cap from the new valve stem.
4. Lubricate the valve stem with liquid soap.
5. Install a new valve stem using a valve stem tool.

NOTE: The valve stem tool is available at most auto repair shops.

6. Install the tire onto the wheel following the instructions provided with your tire replacement equipment.
7. Inflate the tire to the proper pressure and check for leaks.
8. Install the valve stem cap.

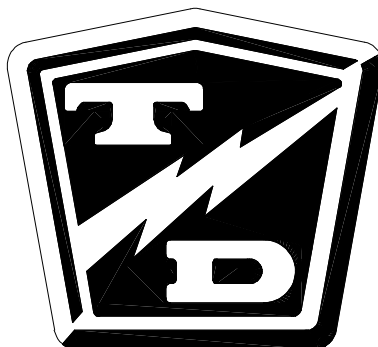
TAYLOR - DUNN



Battery Service

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Storage	6
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CLEANING

⚠ 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. Failure to do so may result in severe bodily injury and/or property damage.

⚠ 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!** This may result in severe bodily injury.

⚠ WARNING

A battery is a live electrical source. It cannot be disconnected or neutralized. Do not drop any tool or conductive object onto the battery. A conductive object that comes in contact with the battery terminals will initiate a short circuit of the battery. This could cause the battery to explode resulting in severe bodily injury and/or property damage.

⚠ CAUTION

Battery electrolyte will stain and corrode most surfaces. Immediately and thoroughly clean any surface outside of the battery that the battery electrolyte comes in contact with. Failure to clean may result in property damage.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

6. Dry dirt can be readily blown off with low-pressure air or brushed off.
7. Wetness or wet dirt on the battery indicates battery acid. Using a nonmetallic brush with flexible bristles, wash the battery off with a strong solution of baking soda and hot water (1 lb. of soda to a gallon of water). Continue until all fizzing 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.
8. Reconnect the battery, remove the blocks from the wheels and test drive.



TESTING (NON-MAINTENANCE FREE)

NOTE: A combination of the Load Test and Specific Gravity Test should be used to accurately determine the condition of the battery.

⚠ 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. Failure to do so may result in severe bodily injury and/or property damage.

⚠ 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!** This may result in severe bodily injury.

⚠ WARNING

A battery is a live electrical source. It cannot be disconnected or neutralized. Do not drop any tool or conductive object onto the battery. A conductive object that comes in contact with the battery terminals will initiate a short circuit of the battery. This could cause the battery to explode resulting in severe bodily injury and/or property damage.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the Shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

Load Test

NOTE: The battery must be fully charged before performing this test.

1. Clean the battery. Refer to **Cleaning** section for information on cleaning the battery.
2. Load test the battery using a battery load test meter (available at most auto parts distributors). Follow the instructions provided with the test meter.
 - If the battery fails the load test, then it should be replaced.
 - If all battery fails the test you should check the charging system before replacing the batteries. Refer to the **engine manual** for information on checking the charging system.



Specific Gravity Test

NOTE: The battery must be fully charged before performing this test.

The specific gravity of a cell is an indication of the actual state of charge of the cell. A fully charged cell should have a reading of 1275 to 1300 (see the illustration to the right). A discharged battery will read 1100. Ideally, all cells in a battery pack will have the same reading. Any cells in a battery pack that vary by more than 30-points may be an indication of a bad cell.

Clean the battery. Refer to **Cleaning** section for information on cleaning the battery.

Using part number **77-200-00** hydrometer, check and record the specific gravity of each cell in the battery.

If, after charging, none of the cells exceed a hydrometer reading of 1250 then there may be a fault in the charging system. If the charging system checks OK then the battery is no longer accepting a charge and should be replaced.

*NOTE: Refer to the **engine manual** for information on checking the charging system.*

The highest reading will be the cell that is accepting the most charge. This reading will be used to gauge all other cells.

Compare the specific gravity readings to the highest reading, if the difference between any of the cells is more than 30-points, then that battery should be replaced.

Reconnect the battery, remove the blocks from the wheels and test drive.



Typical Hydrometer Float

TESTING (MAINTENANCE FREE)

Testing maintenance free batteries requires special equipment. If your battery requires testing, remove the battery and take it to an qualified automotive repair facility for testing.

WATERING (NON-MAINTENANCE FREE)

⚠ 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. Failure to do so may result in severe bodily injury and/or property damage.

⚠ 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!** This may result in severe bodily injury.

⚠ WARNING

A battery is a live electrical source. It cannot be disconnected or neutralized. Do not drop any tool or conductive object onto the battery. A conductive object that comes in contact with the battery terminals will initiate a short circuit of the battery. This could cause the battery to explode resulting in severe bodily injury and/or property damage.

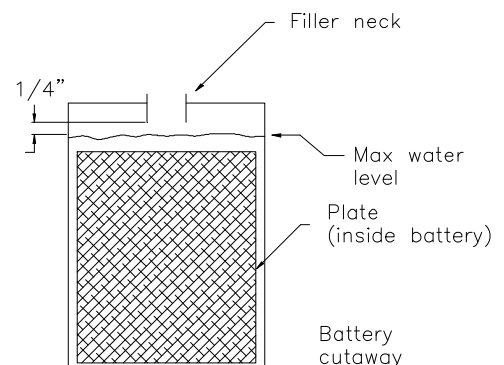
⚠ WARNING

Do not overfill the batteries. Over filling the batteries may cause the batteries to boil over and result in severe bodily injury or property damage.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the forward-reverse switch in the center "OFF" position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the batteries.

6. Clean the battery. Refer to **Cleaning** section for information on cleaning the battery.
7. Check the electrolyte level in all battery cells. If low, fill to the correct level with distilled water using part number **77-201-00** battery filler, never add additional battery electrolyte to a battery.
8. Reconnect the battery, remove the blocks from the wheels and test drive.





STORAGE AND RETURNING TO SERVICE

Storage

⚠ CAUTION

If the battery is removed from the vehicle, do not place it directly on the ground, concrete or solid metal surface. It is recommended to store them on a wooden pallet or equivalent. Storing on the ground, concrete or solid metal surface will cause the battery to discharge and may result in premature failure of the battery.

Thoroughly clean the battery and battery compartment. Refer to **Cleaning** in this section for information regarding cleaning the battery.

Check the electrolyte level and charge the battery. Refer to **Watering** in this section for information regarding checking the electrolyte level.

Store the vehicle or battery in a cool, dry, well ventilated area.

If storing for more than one month, the battery should be charged as follows:

Storage Temperature (F)	Charging Interval (months)
Over 60	1
Between 40 and 60	2
Below 40	6

Returning to Service

⚠ 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. Failure to do so may result in severe property damage and or serious

⚠ 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!** This may result in serious bodily injury.

⚠ WARNING

A battery is a live electrical source. It cannot be disconnected or neutralized. Do not drop any tool or conductive object onto the battery. A conductive object that comes in contact with the battery terminals will initiate a short circuit of the battery. This could cause the battery to explode resulting in property damage and/or bodily injury.

⚠ WARNING

1. Make sure the key-switch is in the "OFF" position, then remove the key.
2. Place the shift lever in the neutral position.
3. Set the park brake.
4. Place blocks under the front wheels to prevent vehicle movement.
5. Disconnect the main positive and negative cables at the battery.

⚠ CAUTION

Battery electrolyte will stain and corrode most surfaces. Immediately and thoroughly clean any surface outside of the battery that the battery electrolyte comes in contact with. Failure to clean may result in property damage.

6. Thoroughly clean the battery and battery compartment. Refer to **Cleaning** in this section for information regarding cleaning the battery.
7. Check the electrolyte level and charge the battery. Refer to **Watering** in this section for information regarding checking the electrolyte level.
8. Test the battery. Refer to **Testing** section for information on testing the battery.
9. The battery is now ready to be put back into service.

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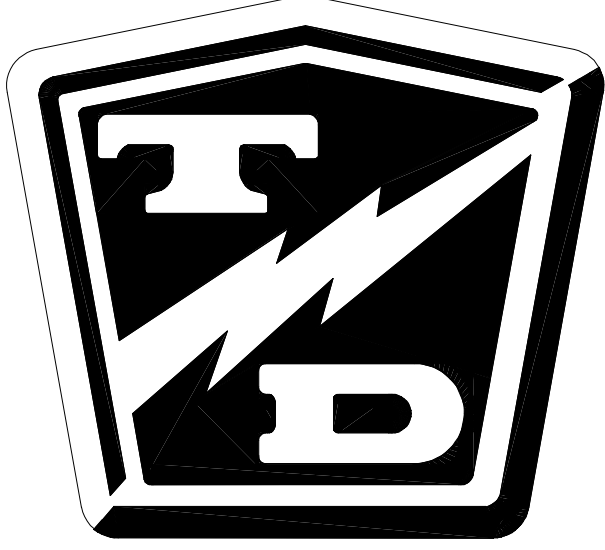


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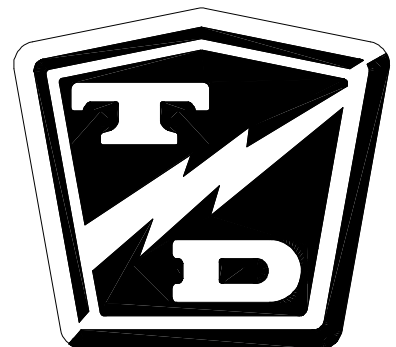
Full size diagrams (22 x 17) are included on the CD in PDF format. You can access the diagrams from a button on the CD menu.

The diagram #'s are:

SCH-00016 - Serial number 157990 through 173347 and serial number 173451.

SCH-00015 - Serial number 173365 through 999999 except for serial number 173451

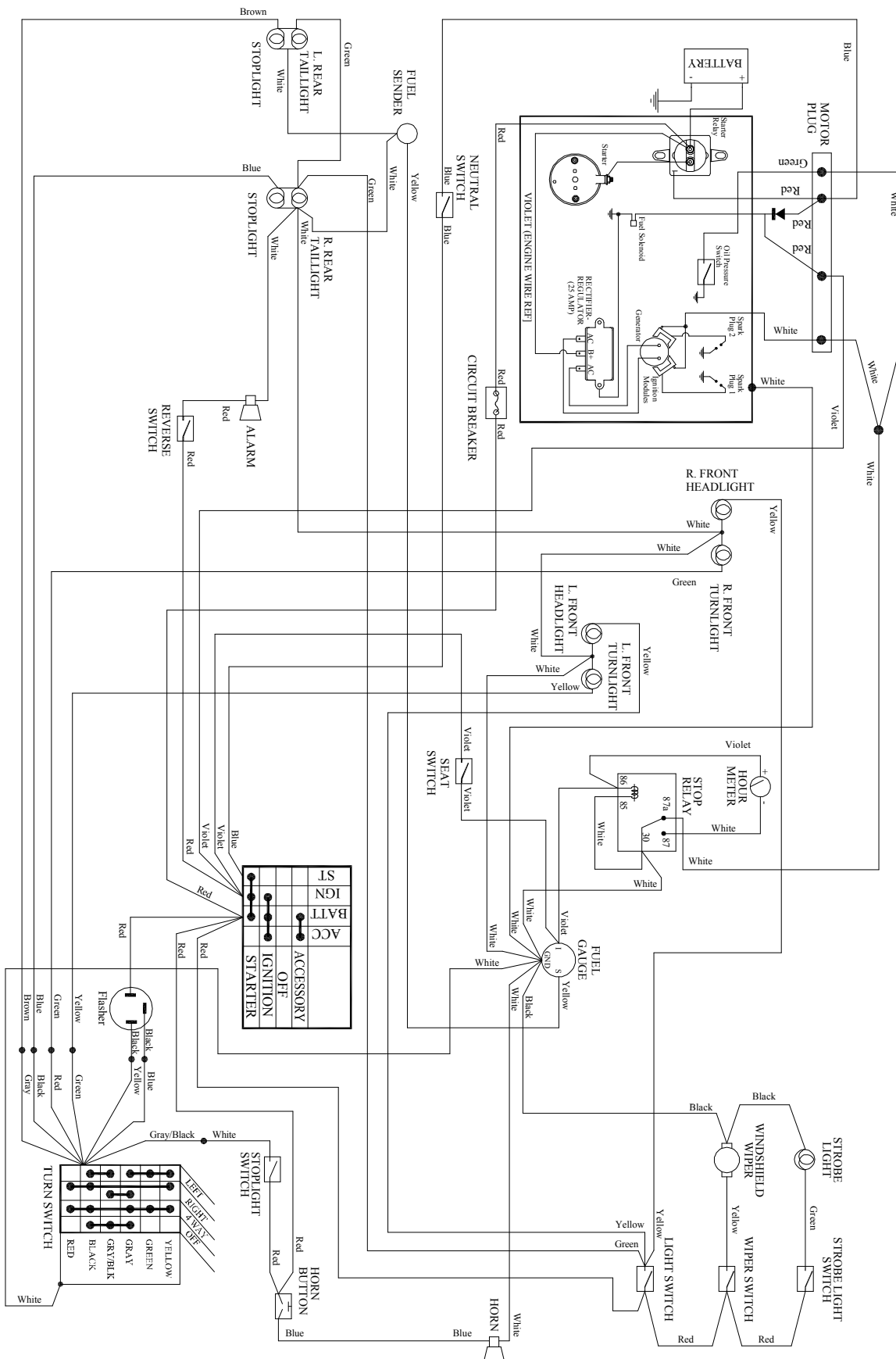
Wire Diagrams





SERIAL NUMBER 157990 TO 173347

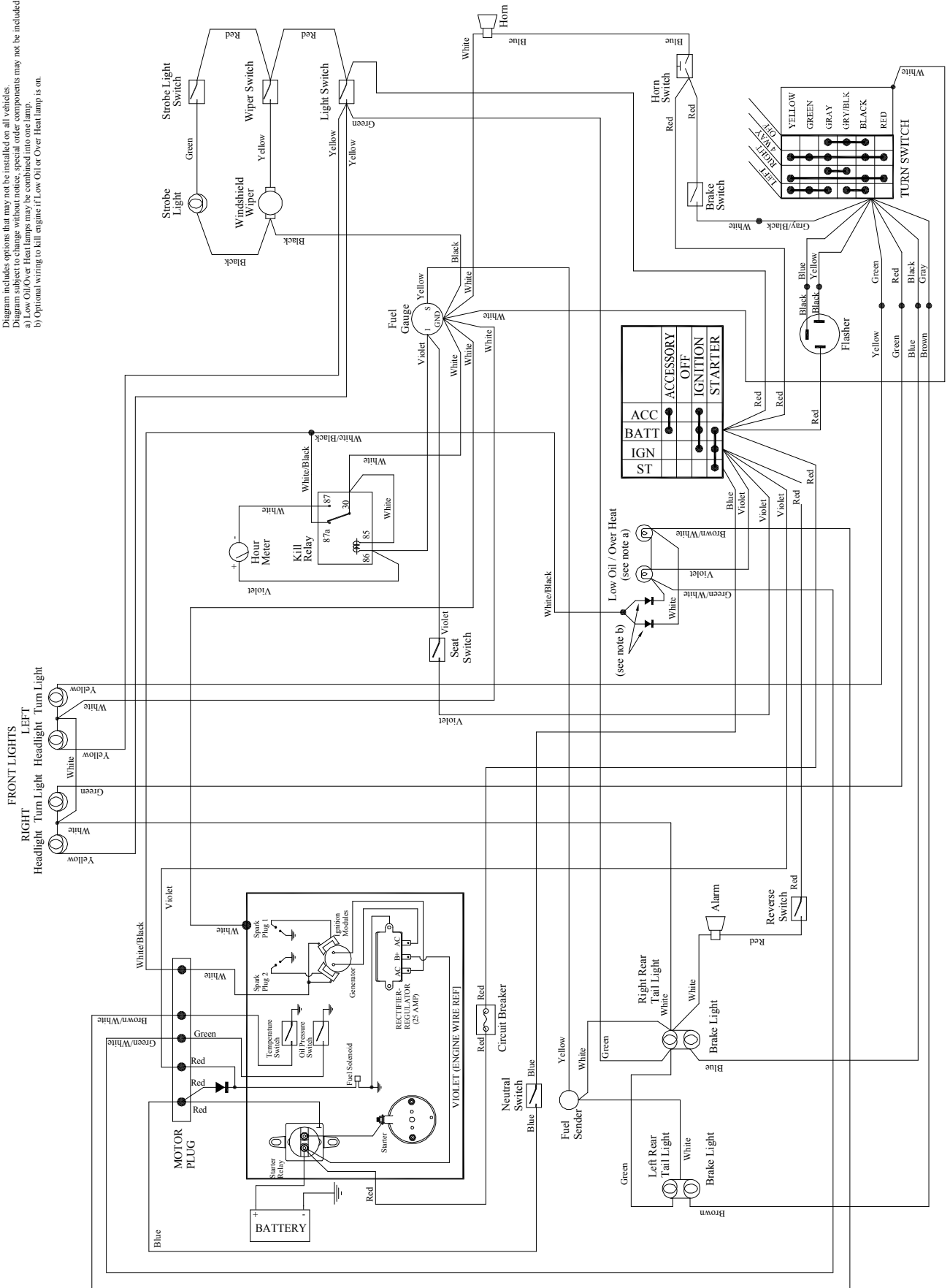
SCH-00016, 3/23/2007 Revision B



NOTES:
Diagram includes options that may not be installed on all vehicles.
Diagram subject to change without notice; special order components may not be included.

SERIAL NUMBER 173365 TO 999999

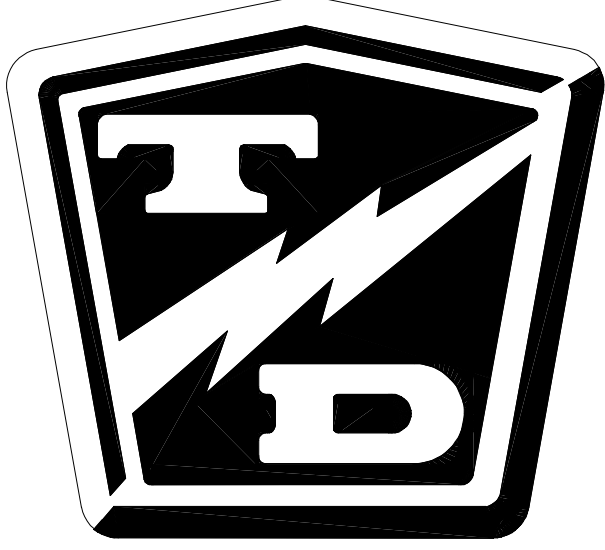
NOTES:
Diagram includes options that may not be installed on all vehicles.
Diagram subject to change without notice, special order components may not be included.
a) Low Oil / Over Heat lamps may be combined into one lamp.
b) Optional wiring to kill engine if Low Oil or Over Heat lamp is on.



Model BG-150 with Kohler CH18 Engine - Serial number 173365 through 999999 except for serial number 173451

SC1-0001.5, 10/8/2007, Revision A

TAYLOR - DUNN



Illustrated Parts List

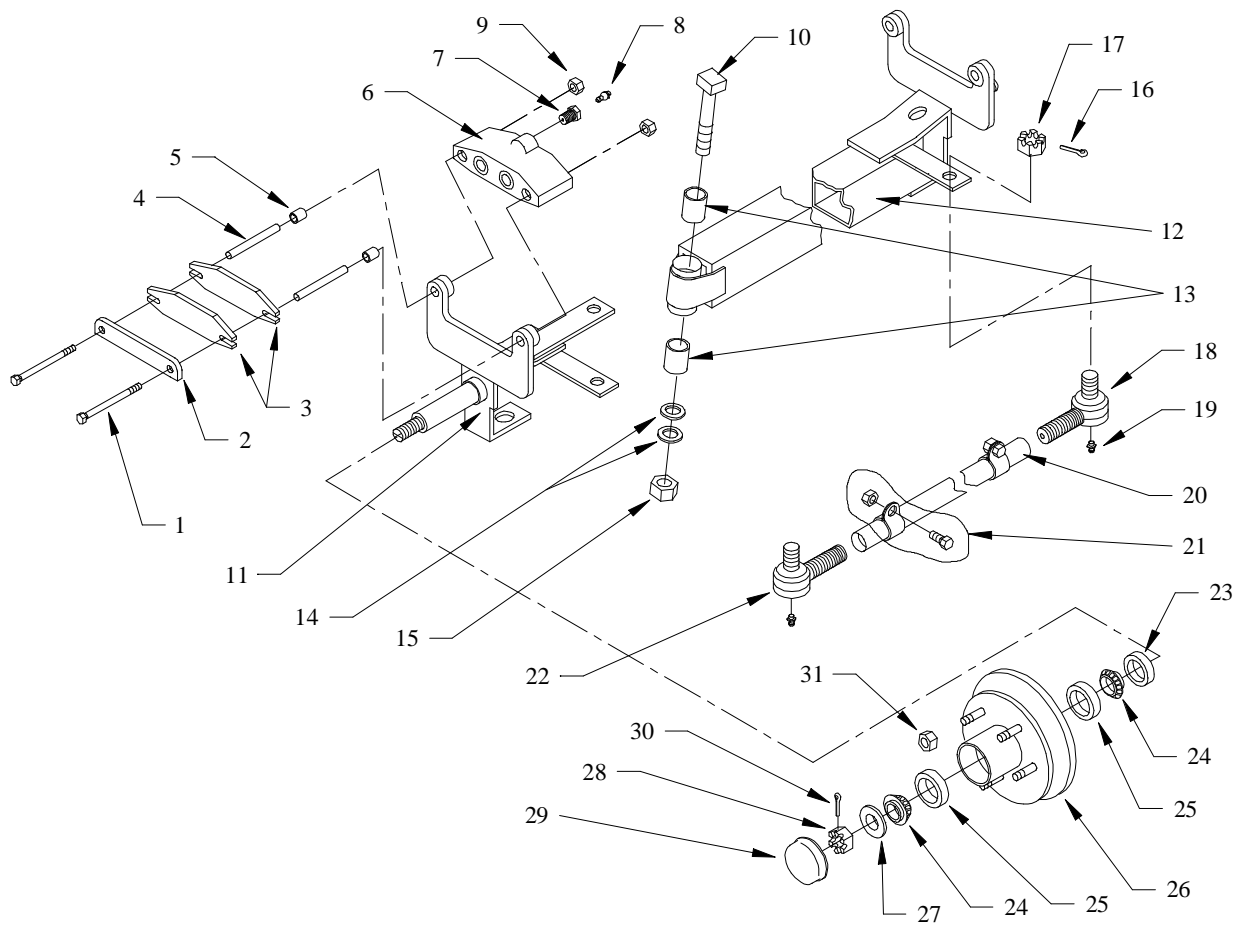
FRONT AXLE & BRAKES	2
FRONT AXLE & BRAKES (CONT'D)	4
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Section 4

FRONT AXLE & BRAKES



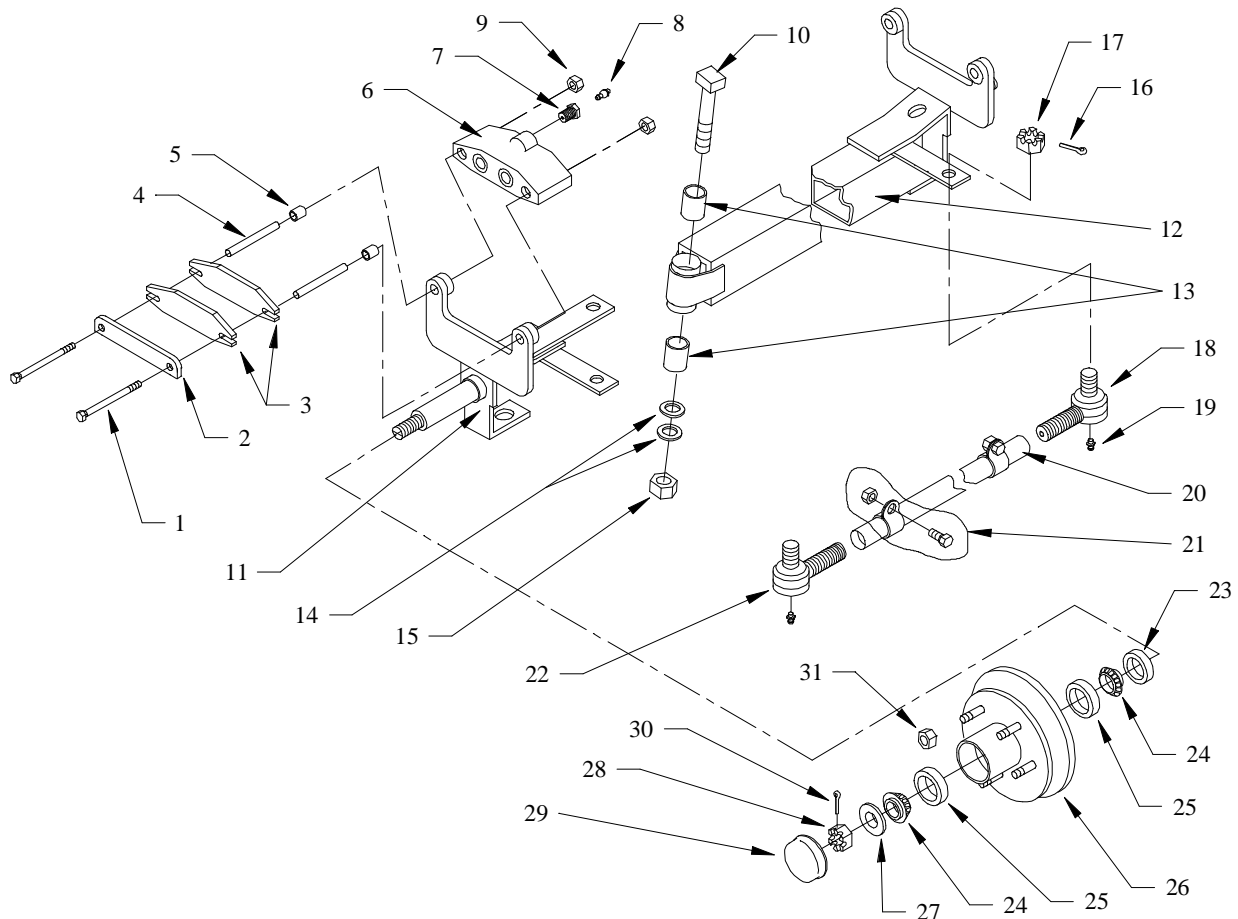
Front Axle & Brakes

Item #	Part #	Description	QTY
1	88-067-21	Brake Body Bolt (grade 8)	4
2	41-350-51	Brake Pad Backing Plate	2
3	41-348-70	Brake Pad	4
4	41-348-52	Spacer	4
5	32-240-40	Bushing	4
6	41-350-70	Brake Body (Rebuild kit 41-350-66)	2
7	99-588-01	Brake Bleeder Fitting	2
8	88-069-82	Brake Body nut (grade 8,) DO NOT REUSE!	4
9	99-588-00	Brake Bleeder Valve	2
10	21-020-15	King Pin	2
11	14-210-88	Left (driver) Side Steering Yoke	1
11	14-210-89	Right (passenger) Side Steering Yoke	1
12	15-210-00	Front Axle Weldment	1
13	32-240-55	Upper/Lower King Pin Bushing	2
14	97-180-55	Thrust Washer	4

Front Axle Continued on Next Page

Section 4

FRONT AXLE & BRAKES (CONT'D)

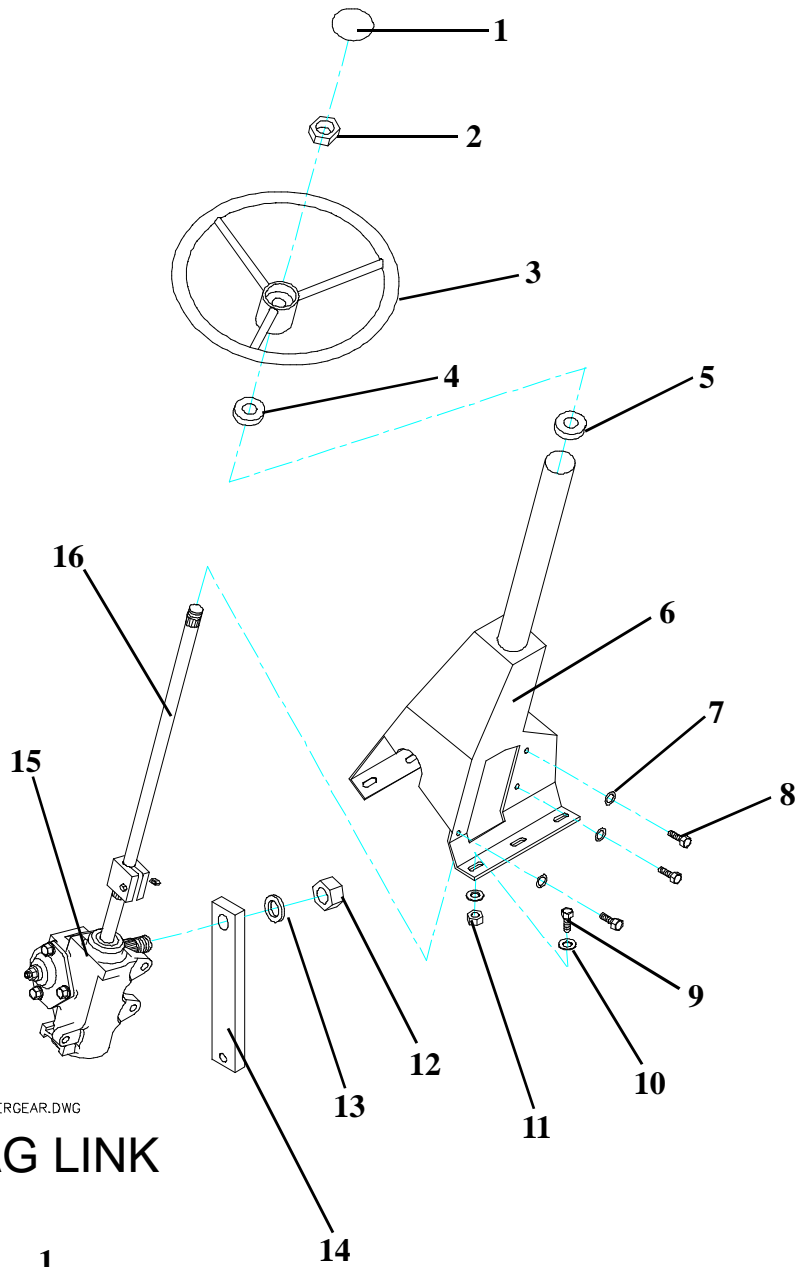


Front Axle & Brakes (Cont'd)

Item#	Part#	Description	QTY
15	88-189-81	King Pin Nut	2
16	88-527-11	1/8" x 1" Cotter Pin	2
17	88-159-85	Ball Joint Nut	2
18	86-501-99	Ball Joint (right thread)	1
19	87-074-00	Grease Fitting	2
20	18-041-00	Tie Rod	1
21	86-510-00	Ball Joint Clamp w/Nut and Bolt	2
22	86-501-98	Ball Joint (left thread)	1
23	45-338-00	Grease Seal	2
24	80-017-00	Inner/Outer Wheel Bearing	4
25	80-103-00	Inner/Outer Race	4
26	12-158-10	Front Hub (w/Rotor), Note: Rotor N/A separately	2
27	88-228-61	3/4" SAE Flat Washer	2
28	88-239-85	Wheel Bearing Nut	2
29	92-104-00	Wheel Bearing Cap	2
30	88-527-11	Cotter Pin	2
31	97-236-00	Wheel Nut	10

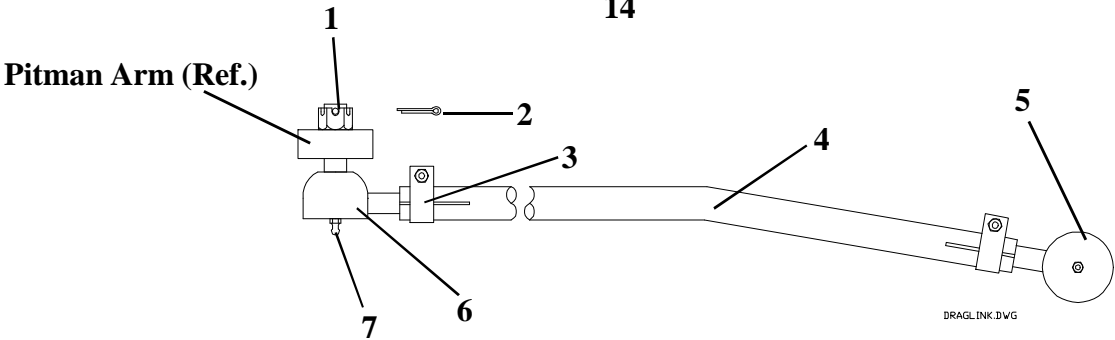
Section 4

STEERING GEAR



STERGEAR.DWG

DRAG LINK



DRAGLINK.DWG

STEERING GEAR

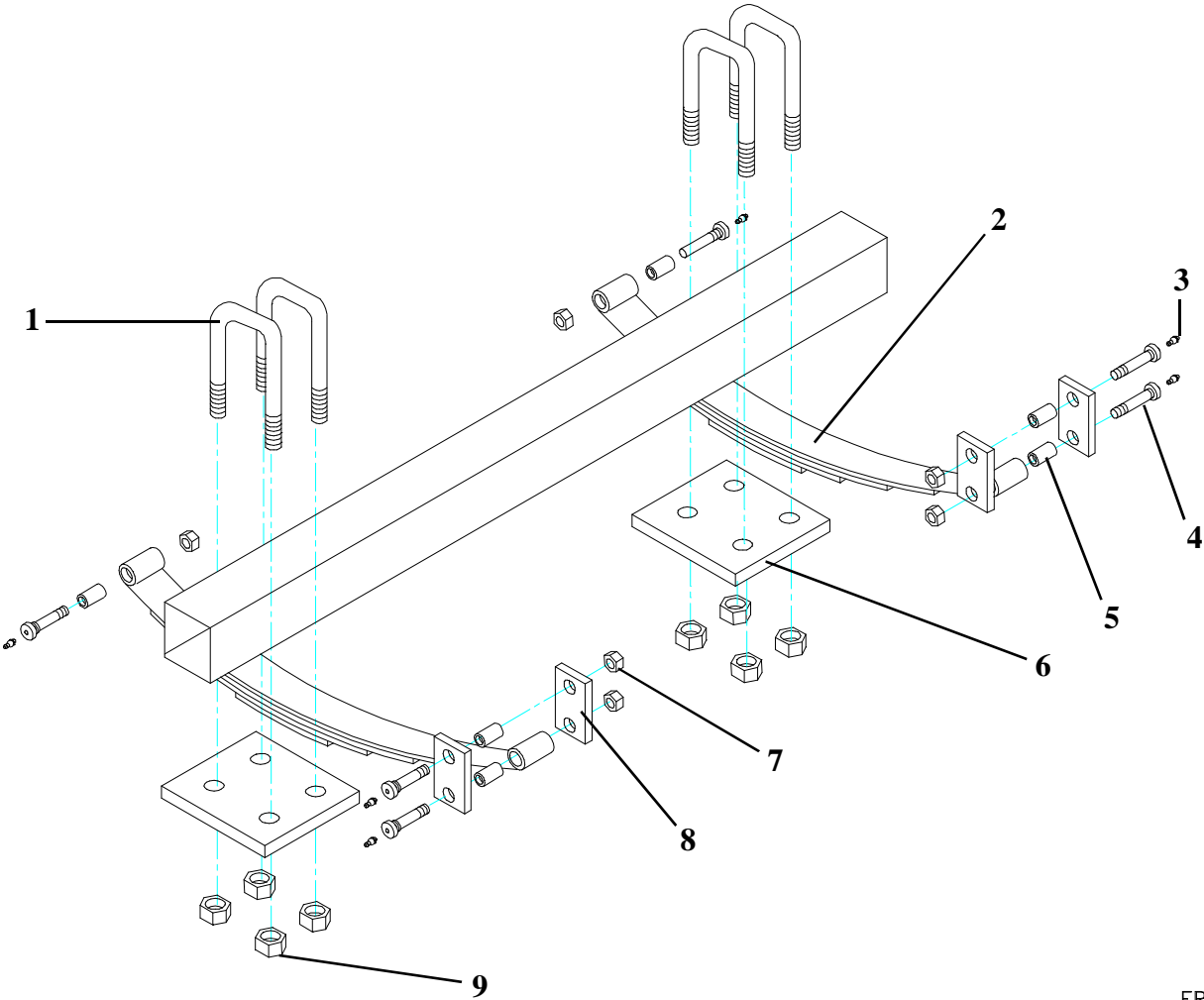
ITEM #	PART #	DESCRIPTION	QTY
1	19-011-25	Steering Wheel Cap	1
2	88-159-82	1/2" NF Jam Nut	1
3	19-011-20	Steering Wheel	1
4	97-200-00	Dust Washer	1
5	80-400-10	Bearing	1
6	00-210-17	Steering Column	1
7	88-108-61	3/8" SAE Flat Washer	12
8	88-100-11	3/8" x 1" NC hex bolt	6
9	88-109-81	3/8" NC Lock Nut	6
10	88-128-62	7/16" Split Lock Washer	3
11	88-120-11	7/16" x 1" NC hex bolt	3
12	88-279-82	7/8" NF Jam Nut	1
13	88-268-62	7/8" Split Lock Washer	1
14	18-111-30	Pitman Arm	1
15	18-308-21	Steering Gear	1
16	20-031-43	Steering Shaft	1

Drag Link

1	88-159-85	Castle Nut	2
2	88-527-11	Cotter Pin	2
3	86-510-00	Ball Joint Clamp	2
4	18-057-10	Drag Link	1
5	86-501-99	Ball Joint w/Grease Fitting (RH)	1
6	86-501-98	Ball Joint w/Grease Fitting (LH)	1
7	87-074-00	Grease Fitting	2

Section 4

FRONT SUSPENSION



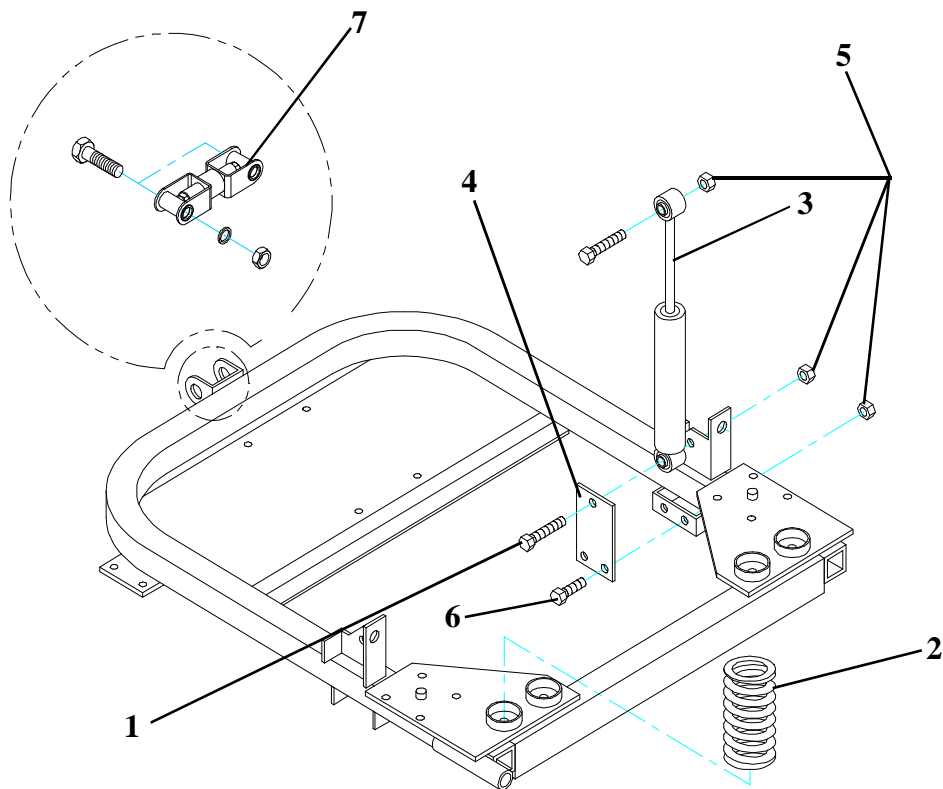
FRNTSUSP.DWG

Front Suspension

Item #	Part #	Description	QTY
1	96-123-02	U-Bolt	4
2	85-512-10	Leaf Spring	2
3	87-074-00	Grease Fitting	6
4	96-248-01	Shackle Bolt	6
5	32-213-00	Nylon Bushing	6
6	16-865-02	Spring Plate	2
7	88-169-82	9/16" NF Lock Nut	6
8	16-870-10	Spring Shackle	4
9	88-109-81	3/8" NC Lock Nut	8

Section 4

REAR SUSPENSION

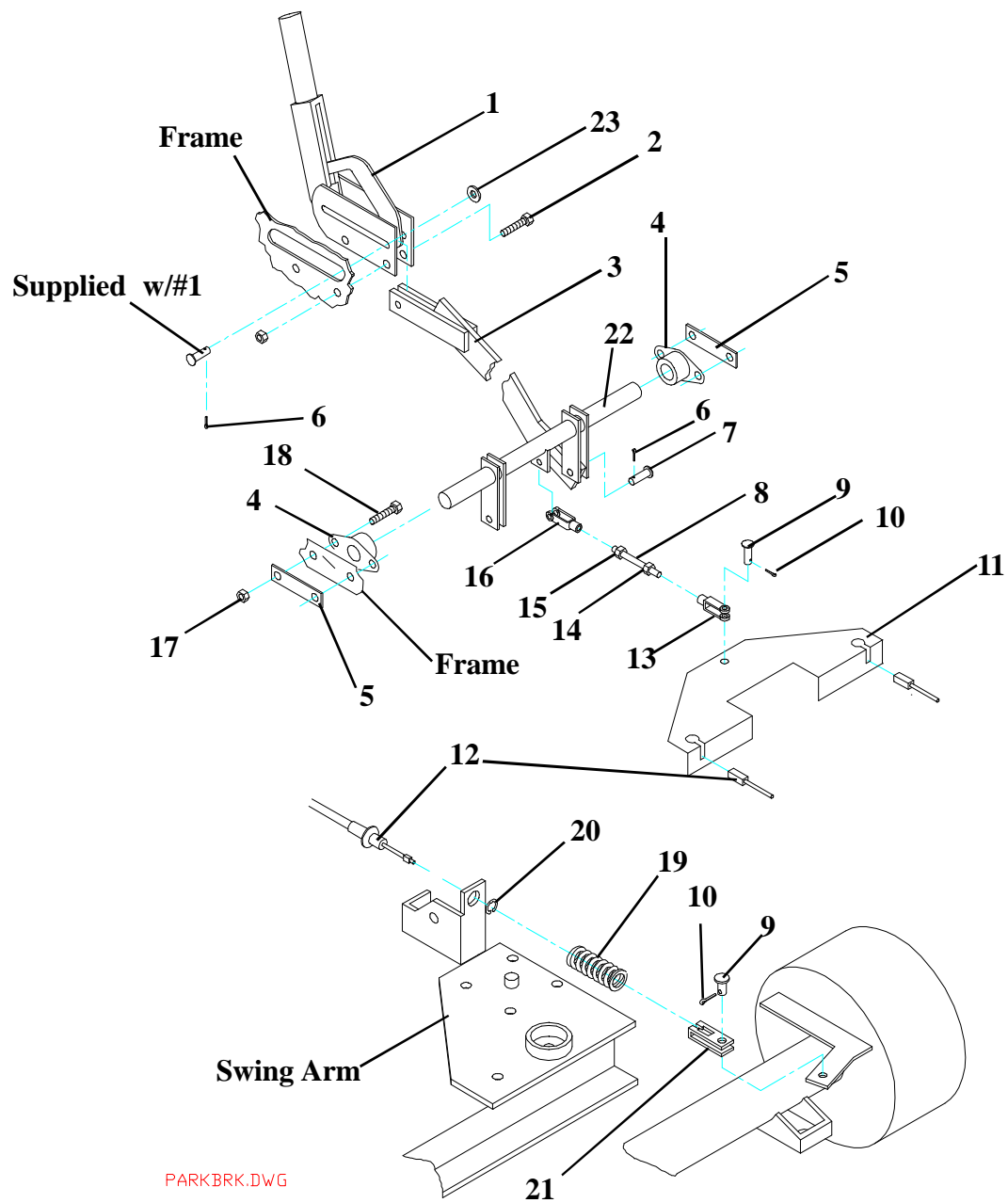


REAR SUSPENSION

ITEM #	PART #	DESCRIPTION	QTY
1	88-120-17	7/16" x 2-1/4" Hex Bolt	4
2	85-142-00	Spring	4
3	86-602-00	Shock	2
4	41-403-00	Shock Bracket	2
5	88-129-81	7/16" Lock Nut	8
6	88-120-11	7/16" x 1" Hex Bolt	4
7	XX-XXX-XX	See Engine Mount	1

Section 4

PARKING BRAKE LINKAGE

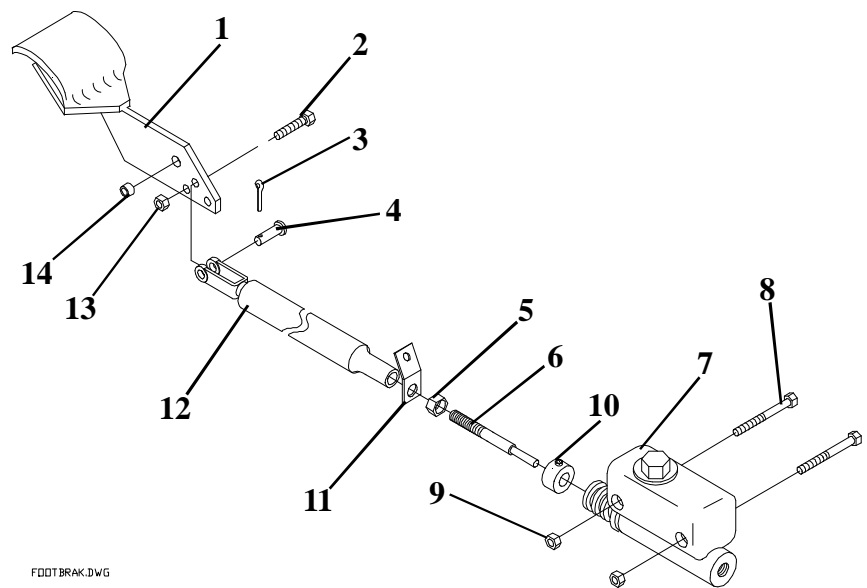


Parking Brake Linkage

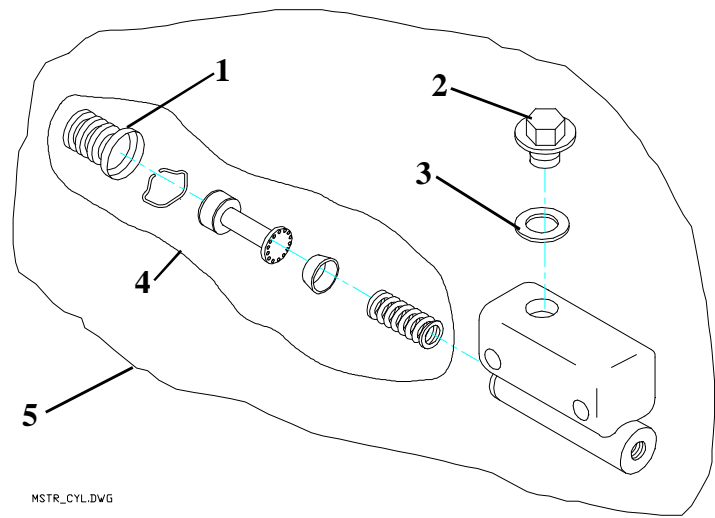
ITEM #	PART #	DESCRIPTION	QTY
1	51-340-30	Parking Brake Lever	1
2	88-100-15	3/8" x 1-3/4" NC hex bolt	2
3	00-610-20	Parking Brake Linkage Weldment	1
4	80-410-20	Flanged Bearing	2
5	02-610-25	Bearing Cover Plate	2
6	88-517-09	3/32" x 3/4" Cotter Pin	4
7	96-772-00	3/8" x 1" Clevis Pin	2
8	96-343-00	Adjusting Link	1
9	96-773-00	5/16" x 1" Clevis Pin	4
10	88-527-11	1/8" x 1" Cotter Pin	3
11	02-610-16	Equalizer	1
12	96-826-12	Parking Brake Cable	2
13	96-763-00	5/16" Clevis	1
14	88-099-80	5/16" NF Hex Nut	1
15	88-099-81	5/16" NF Hex Nut (left thread)	1
16	96-765-00	5/16" Clevis (left thread)	1
17	88-109-81	3/8" NC Lock Nut	4
18	88-100-09	3/8" x 3/4" NC Hex Bolt	1
19	85-126-00	Spring	2
20	88-847-08	Retainer Ring	2
21	96-762-00	Brake Cable Clevis	2
22	00-610-15	Cross Shaft	1
23	88-088-61	5/16" SAE Flat Washer	1

Section 4

FOOT BRAKE LINKAGE



MASTER CYLINDER



Foot Brake Linkage

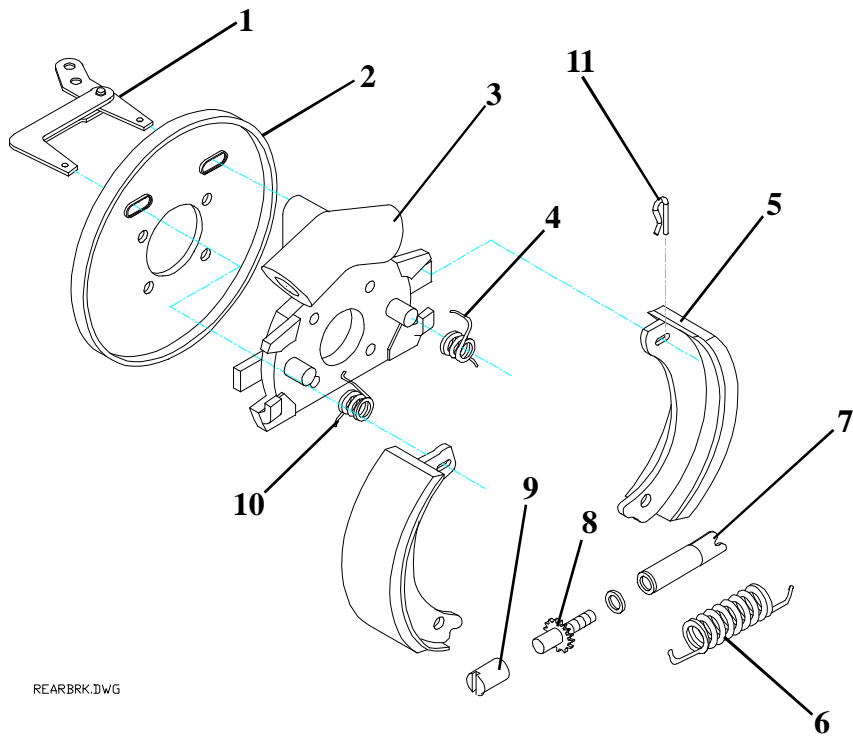
ITEM #	PART #	DESCRIPTION	QTY
1	05-210-97	Brake Pedal	1
2	88-100-11	3/8" X 1" NC Hex Bolt	1
3	85-517-09	Cotter Pin	1
4	96-772-00	Clevis Pin	1
5	88-119-80	3/8" NF Hex Nut	1
6	50-009-00	Push Rod	1
7	99-510-02	Master Cylinder Assembly	1
8	88-101-20	3/8" X 3" Grade 5 Hex Bolt	2
9	88-109-81	3/8" NC Locknut	2
10	17-104-00	Collar	1
11	06-210-03	Return Spring Mounting Clip	1
12	00-210-08	Push Rod	1
13	88-109-81	3/8" NC Locknut	1
14	32-240-40	Bushing	1

Master Cylinder (99-510-02)

1	99-510-51	Boot	1
2	99-510-52	Cap	1
3	99-510-53	Gasket	1
4	99-510-61	Rebuild Kit	1
5	99-510-01	Master Cylinder Assembly	1

Section 4

REAR BRAKES

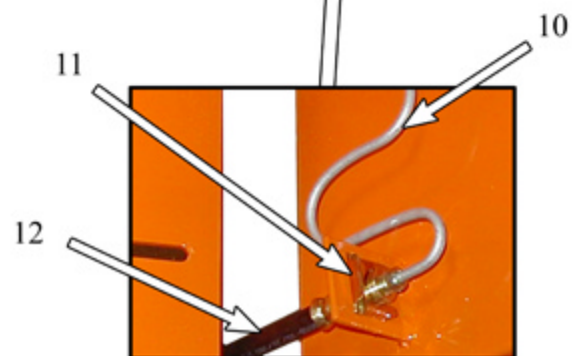
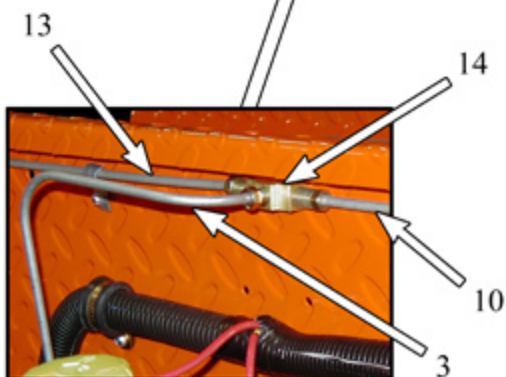
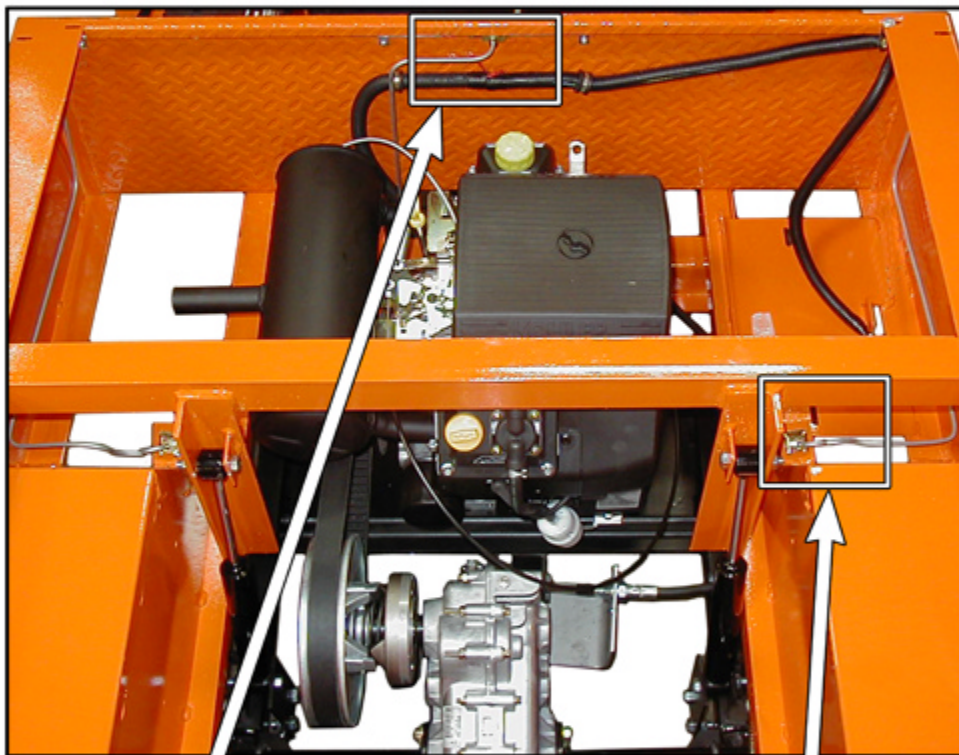
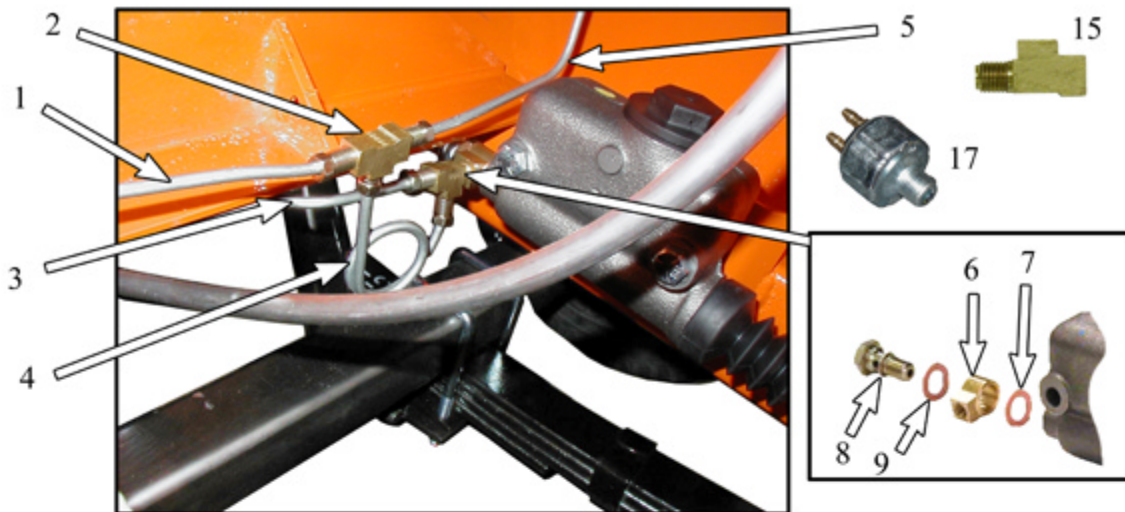


Rear Brakes

ITEM #	PART #	DESCRIPTION	QTY
1	41-347-15	Parking Brake Actuator	2
2	41-347-00	Backing Plate	2
3	41-347-27	Spider, w/Wheel Cylinder	2
4	85-411-10	Torsion Spring (green)	2
5	41-635-00	Brake Shoes	2
6	85-215-00	Spring	2
7	41-347-33	Adjustment Body	2
8	41-347-31	Star Wheel Adjuster	2
9	41-347-30	Socket	2
10	85-411-15	Torsion Spring (red)	2
11	41-347-34	Parking Brake Actuator-Retaining Clip. DO NOT REUSE!	4
Not Shown	K5N-600-10	Spring clip (behind brake shoe)	4

Section 4

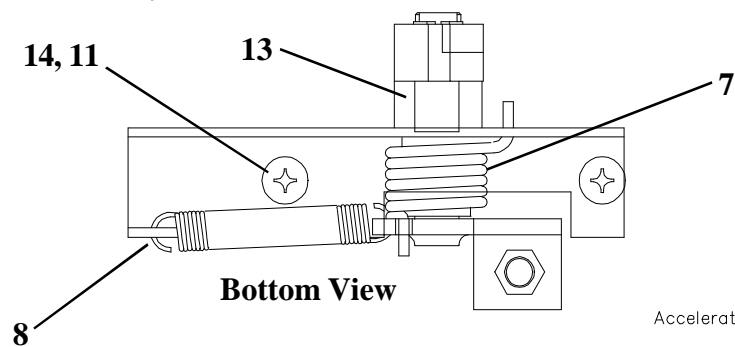
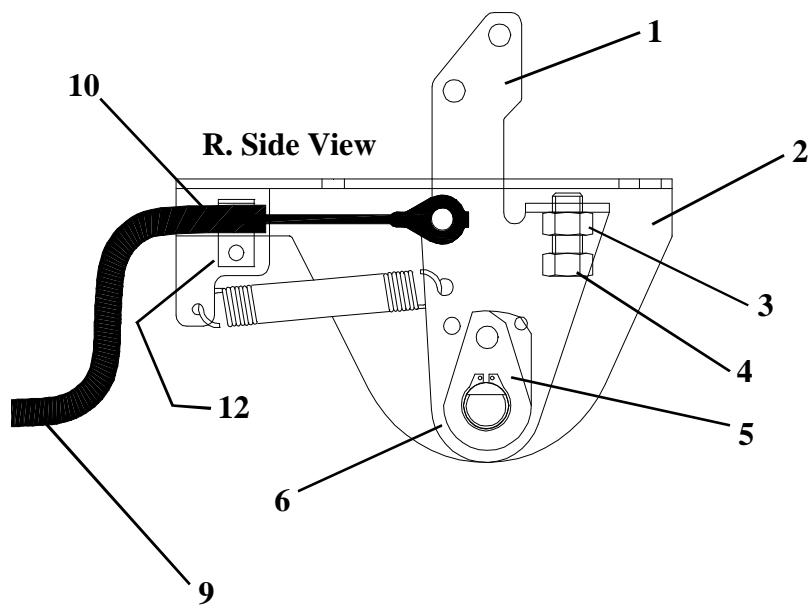
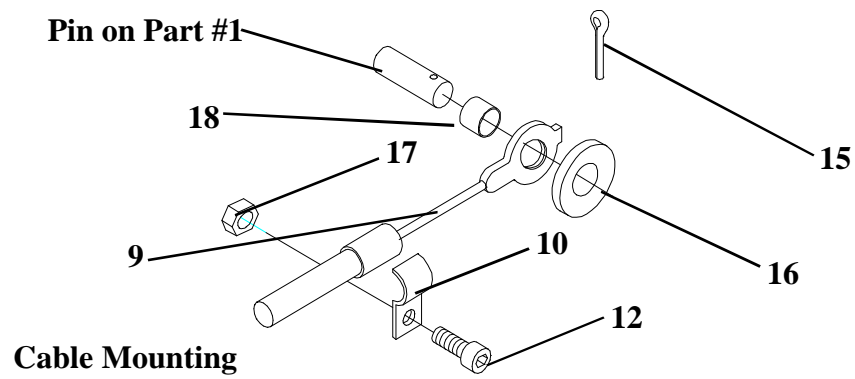
BRAKE LINES AND HOSES



Brake Lines and Hoses

ITEM #	PART #	DESCRIPTION	QTY
1	99-603-53	Brake line, right front	1
2	99-564-00	T-Fitting	1
3	99-607-65	Brake line, rear	1
4	99-603-54	Brake line, front	1
5	99-603-53	Brake line, front left	1
6	99-566-00	Banjo Fitting	1
7	99-571-00	Washer, Copper 0.50 ID	1
8	99-578-00	Fillting, Master Cylinder Bolt	1
9	99-572-00	Washer, Copper 0.594 ID	1
10	99-605-66	Brake Line, Right	1
11	99-576-00	Hose Clip	4
12	99-580-10	Brake Hose, Rear	2
13	99-605-65	Brake Line, Left	1
14	99-564-00	T-Fitting	1
15	99-559-00	T-Union	1
16	-	-	-
17	71-110-00	Brake Light Switch (mounted to front of #8)	1
Not Shown	99-580-20	Brake hose, Front	2

ACCELERATOR PEDAL LINKAGE



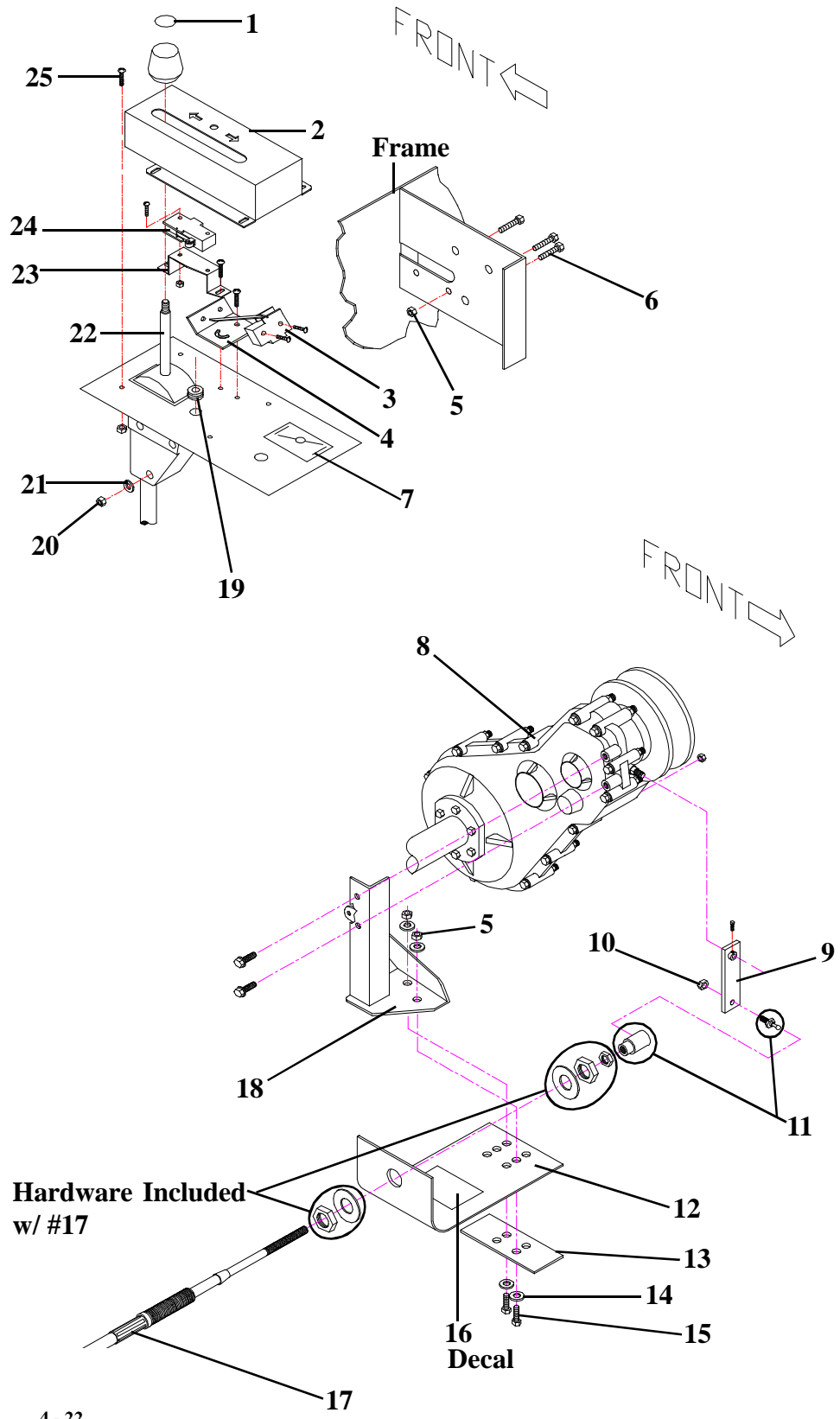
Accelerator Cable Link.DWG

ACCELERATOR PEDAL LINKAGE

ITEM #	PART #	DESCRIPTION	QTY
1	62-037-03	Rotor	1
2	62-033-16	Backing Plate Assembly	1
3	88-119-80	3/8" NF Hex Nut	1
4	88-110-09	3/8" x 3/4" NF Hex Bolt (gr. 5)	1
5	88-840-08	Circlip	1
6	62-033-06	Cam	1
7	85-352-38	Return Spring (torsion)	1
8	85-209-09	Return Spring (extension)	1
9	96-872-07	Throttle Cable	1
10	96-871-01	Clamp	1
11	88-069-81	1/4" NC Lock Nut (not pictured)	2
12	88-025-05	8-32 Socket Head Machine Screw	1
13	32-215-50	Bushing	2
14	88-065-06	1/4" x 1/2" Truss Head Screw	2
15	88-517-11	Cotter Pin	1
16	88-068-61	1/4" SAE Flat Washer	1
17	88-029-86	8-32 Lock Nut	1
18	32-212-20	3/16"ID Plastic Bushing	1
NOT SHOWN	98-254-10	Accel. Pedal	1
	88-065-09	Accel. Pedal Mounting Bolts	2
	88-069-81	Accel. Pedal Mounting Nuts	2
	62-037-02	Complete Accelerator Assembly (less cable and hardware)	1
	85-352-60	Accelerator Spring Kit	1

Section 4

SHIFTING LINKAGE

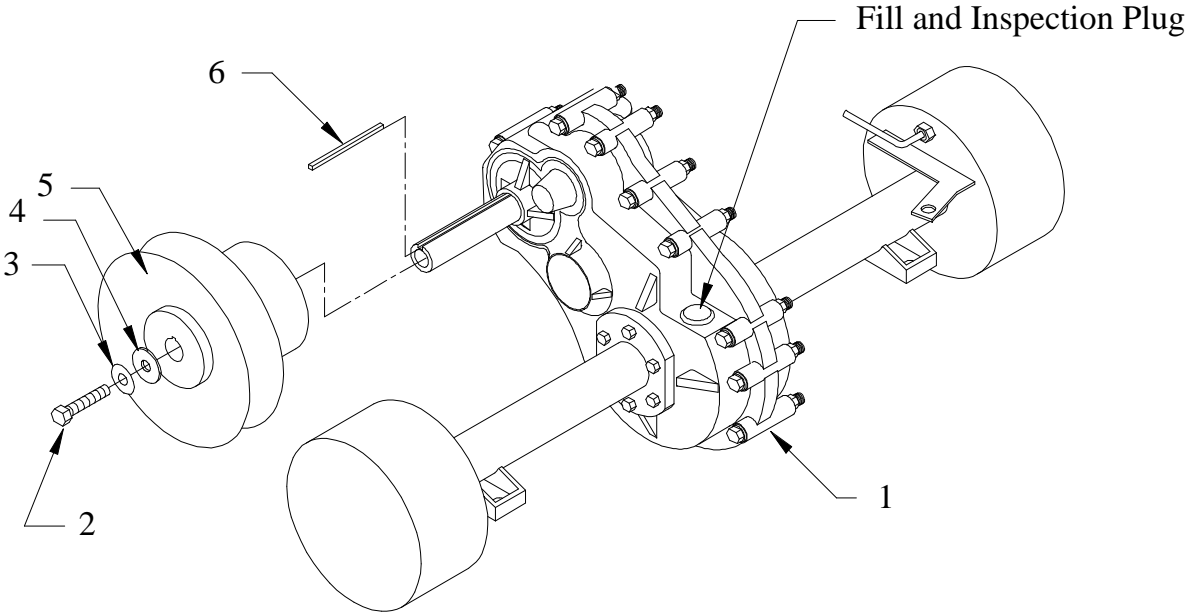


SHIFTING LINKAGE

ITEM #	PART #	DESCRIPTION	QTY
1	94-306-07	"Push to Shift" Decal	1
2	00-610-37	Shift Cover	1
3	71-135-01	Micro-Switch (Optional)	1
4	00-610-36	Bracket for #3 (Optional)	1
5	88-089-81	5/16" Lock Nut	1
6	88-080-18	5/16" x 2-1/2" Hex Bolt	3
7	96-306-12	Choke Decal	1
8	Refer to Dana Drive		1
9	00-610-80	Shift Lever	1
10	88-079-85	1/4"NF Lock Nut	1
11	96-852-00	Shift Cable Ball Joint	1
12	00-610-25	Mounting Bracket	1
13	00-610-83	Plate, Shift Cable Mount	1
14	88-108-61	3/8" SAE Washer	4
15	88-100-11	3/8" X 1" NC Hex Head Screw	2
16	94-306-08	Spring Steel Decal	1
17	96-851-00	Shift Cable	1
18	02-610-84	Shift Cable Mount Weldment	1
19	98-603-00	Rubber Grommet, 3/8" ID	1
20	89-089-81	5/16" NC Lock Nut	1
21	88-088-61	5/16" SAE Washer	3
22	96-853-10	Shift Quadrant	1
23	00-610-35	Neutral Switch Bracket	1
24	71-130-01	Neutral Start Switch	1
25	88-025-06	8-32 X 1/2" Truss Head Machine Screw	8

Section 4

DANA DRIVE

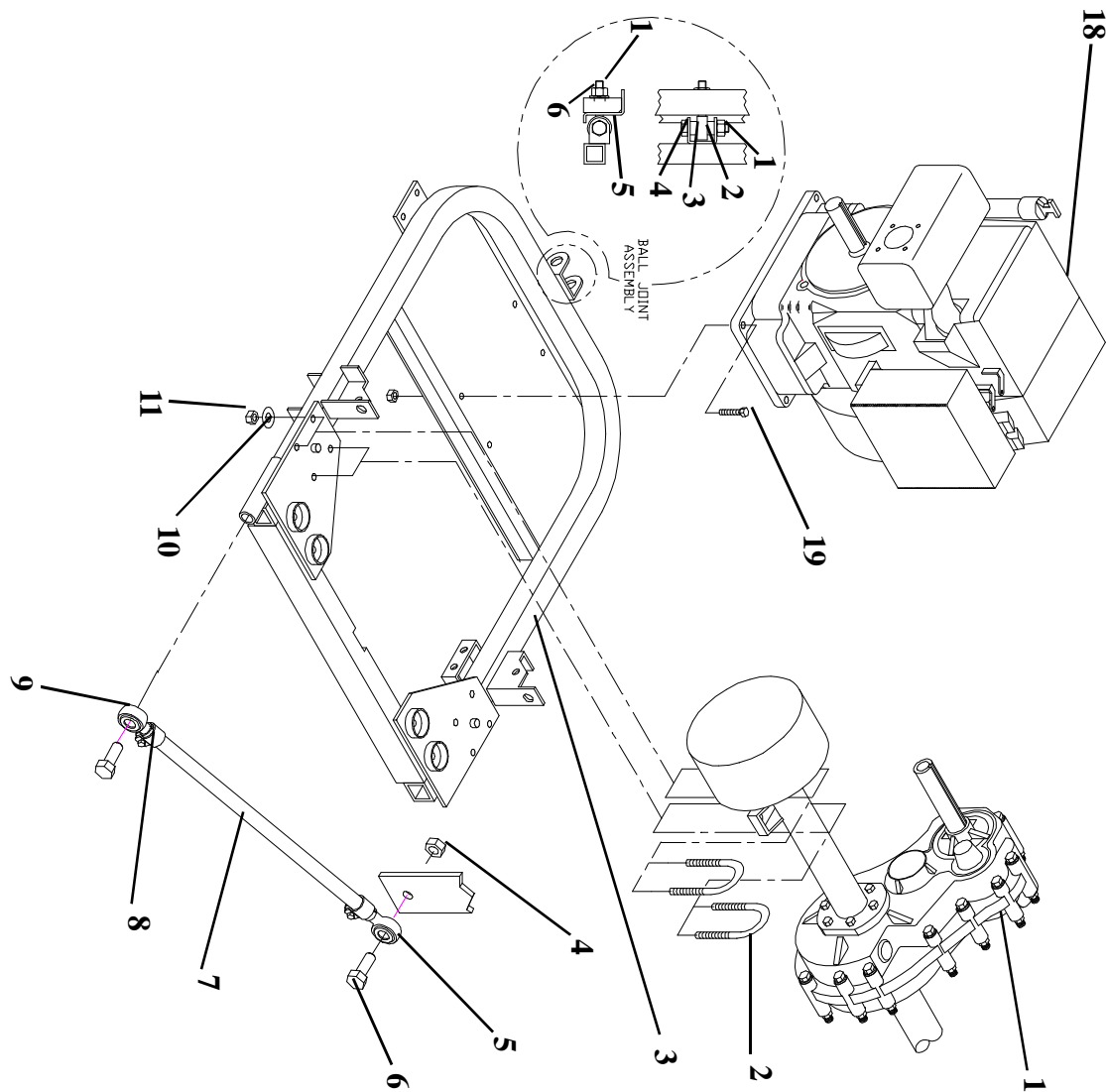


Dana Drive

ITEM #	PART #	DESCRIPTION	QTY
1	4C-610-40	Transmission assembly with brakes (spec # 012AJ281-3)	1
2	89-112-30	M12 X 1.25 X 50MM Hex Screw	1
3	88-148-62	1/2 in. Lock Washer	1
4	98-601-57	Washer, 1/2" ID Mount	1
5	30-182-00	Pulley Assembly, Driven, Long Life	1
6	97-030-10	Key, 3/16" X 3/16" X 3"	1
Not Shown	30-682-00	Drive Belt	1

Section 4

ENGINE AND MOUNT



Engine Mount

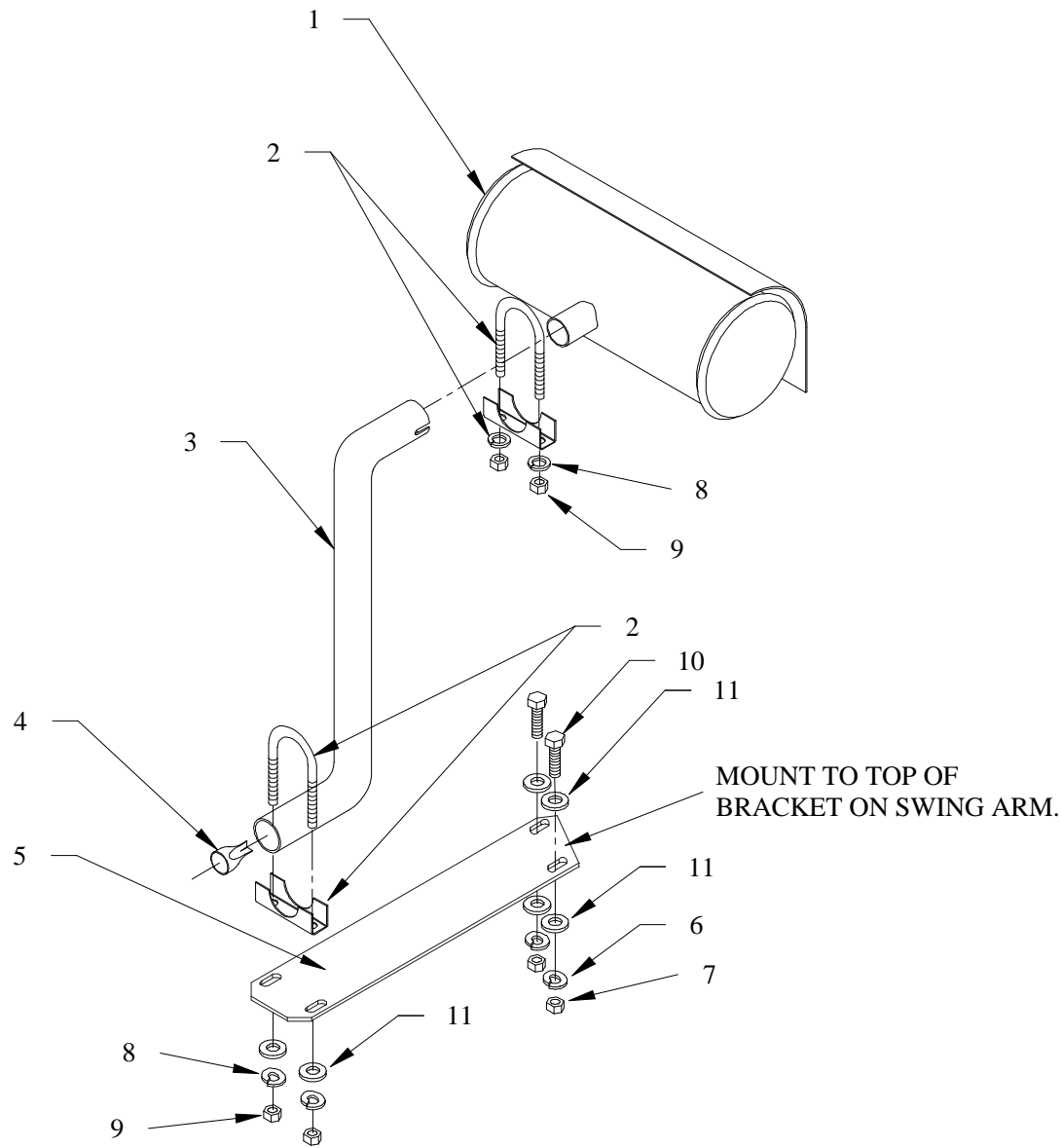
ITEM #	PART #	DESCRIPTION	QTY
1	Refer to Dana Drive		1
2	96-123-50	U-Bolt	4
3	00-610-54	Swing Arm	1
4	88-189-81	5/8" NC Lock Nut	1
5	86-521-99	Rod End (RH)	1
6	88-180-15	5/8" X 1-3/4" Hex Head Bolt	2
7	41-402-00	Traction Bar	1
8	86-510-00	Clamp	2
9	86-521-98	Rod End (LH)	1
10	88-109-81	3/8"NC Lock Nut	14
11	88-108-62	3/8" Lock Washer	8
12			
13			
14			
15			
16			
17			
18	67-000-53	Engine Assembly	1
19	88-101-13	3/8" X 1-1/4" Hex Head Screw	4

Ball Joint Assembly

1	88-229-81	3/4" NC Lock Nut	1
2	86-523-99	Front Engine Mount	1
3	16-406-00	7/16" Spacer	2
4	88-220-22	3/4" X 3-1/2" Hex Bolt	1
5	88-229-62	3/4" Split Washer	1
6	88-239-80	3/4" NF Hex Nut	1

Section 4

EXHAUST



Exhaust

ITEM #	PART #	DESCRIPTION	QTY
1	66-400-05	Muffler	1
2	KLR-4723704	U-bolt assembly	2
3	00-610-95	Tail pipe	1
4	66-400-25	Spark arrestor	1
5	66-400-06	Tail pipe mounting bracket	1
6	88-088-62	5/16 Split lock washer	2
7	88-089-80	5/16NC Hex nut	2
8	88-088-62	5/16 Split lock washer	4
9	88-089-80	5/16NC Hex nut	4
10	88-080-11	5/16NC x 1 Hex bolt	2
11	88-088-61	5/16 SAE Flat washer	6

Section 4

ENGINE SERVICE PARTS

ILLUSTRATION IS NOT AVAILABLE

Engine Service Parts (CH18 spec #62643)

ITEM #	PART #	DESCRIPTION	QTY
	KLR-4708303S	Air filter, paper element	1
	KLR-2408302S	Air filter, foam cover	1
	KLR-1205001S	Oil filter	1
	KLR-1213202S	Spark plug	2
	KLR-2405010S	Fuel filter	1

Only routine maintenance items are included here. Contact your Taylor-Dunn® or Kohler® parts distributor for other engine components. The Kohler® engine model number, specification number and serial number will be required. They can be found on the engine specification plate. Refer to the Introduction section for the location of the specification plate.

Section 4

FUEL TANK AND LINES

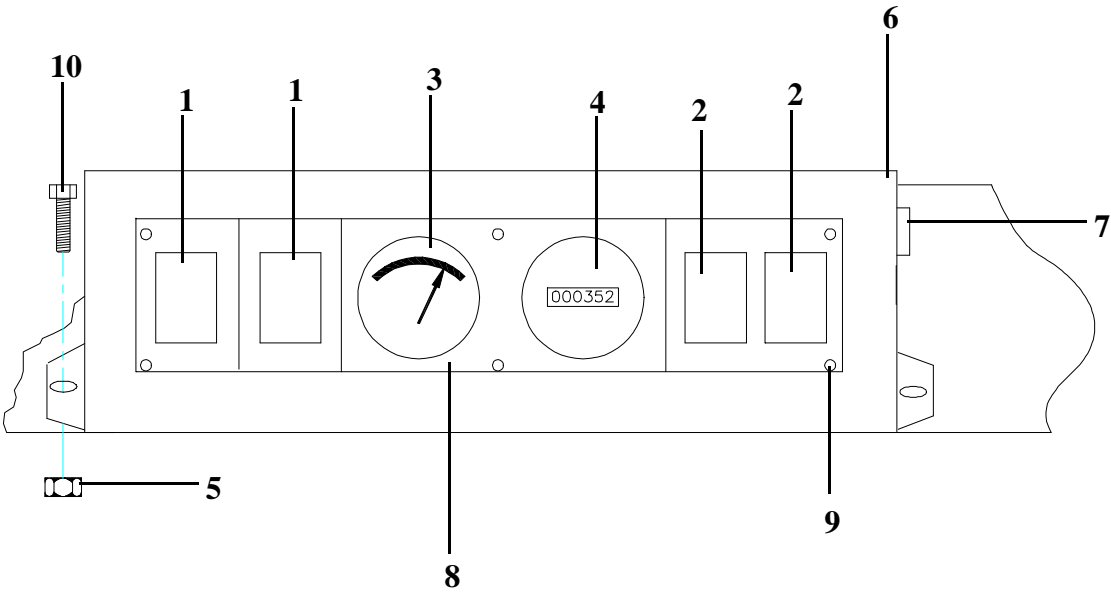
ILLUSTRATION IS NOT AVAILABLE

FUEL TANK AND LINES

ITEM #	PART #	DESCRIPTION	QTY
	96-608-05	Hose clamp	2
	98-512-00	Fuel Line	3.3'
	05-211-00	Fuel Tank	1
	05-211-01	Mounting Strap	2
	77-022-51	Rubber Gasket on Frame (around filler tube opening)	1

Section 4

INSTRUMENT PANEL

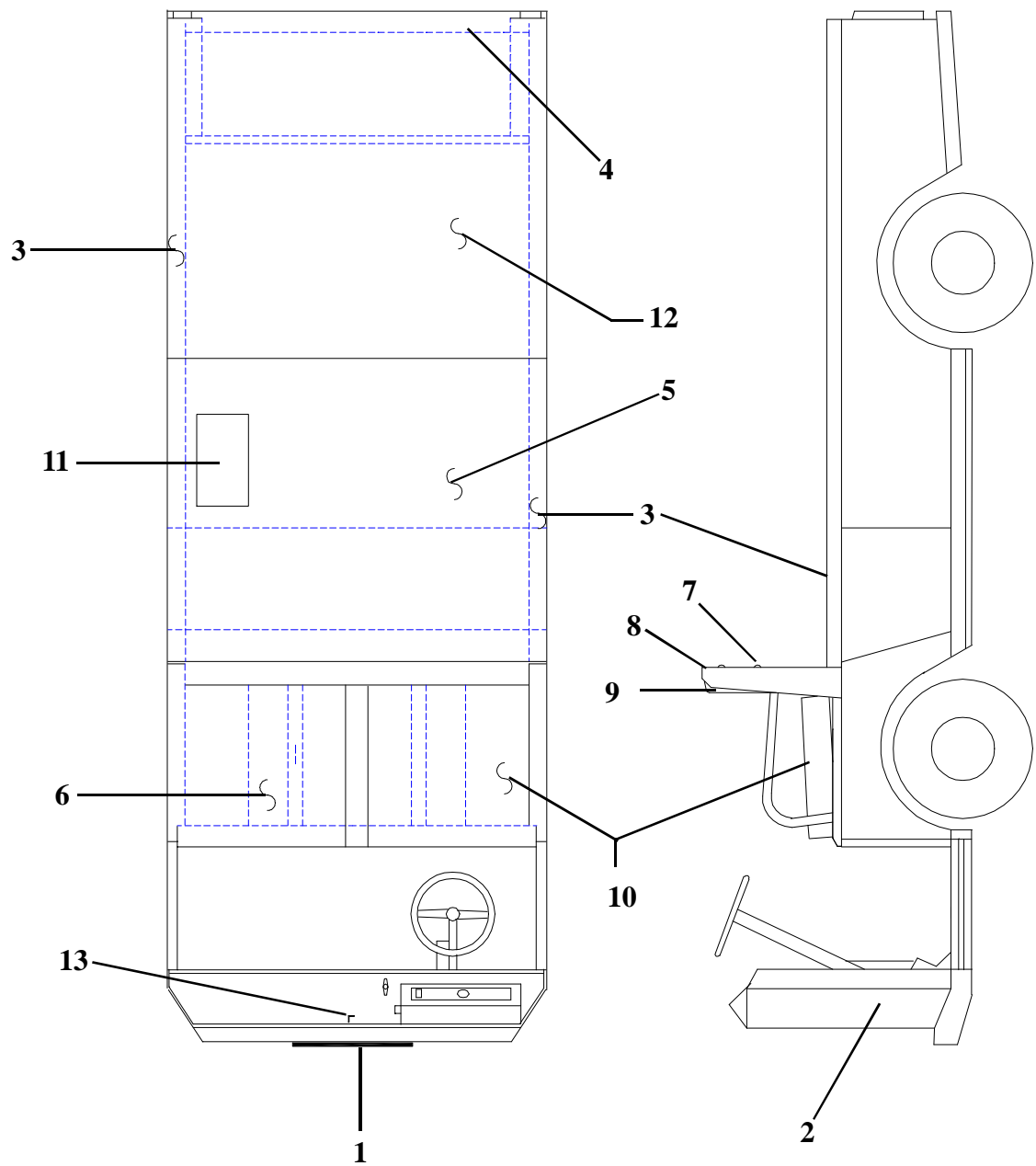


Instrument Panel

ITEM #	PART #	DESCRIPTION	QTY
1	71-039-10	Switch	2
2	71-039-20	Hole Plug (positions may contain optional switches)	3
3	74-009-20	Fuel Gauge	1
4	74-000-00	Hour Meter	1
5	88-069-81	1/4" Nut	2
6	00-610-01	Console	1
7	71-120-01	Key Switch	1
8	94-304-18	Instrument Panel	1
9	88-817-07	Sheet Metal Screw	6
10	88-065-08	1/4" x 5/8" Phillips Head Bolt	2

Section 4

FRAME

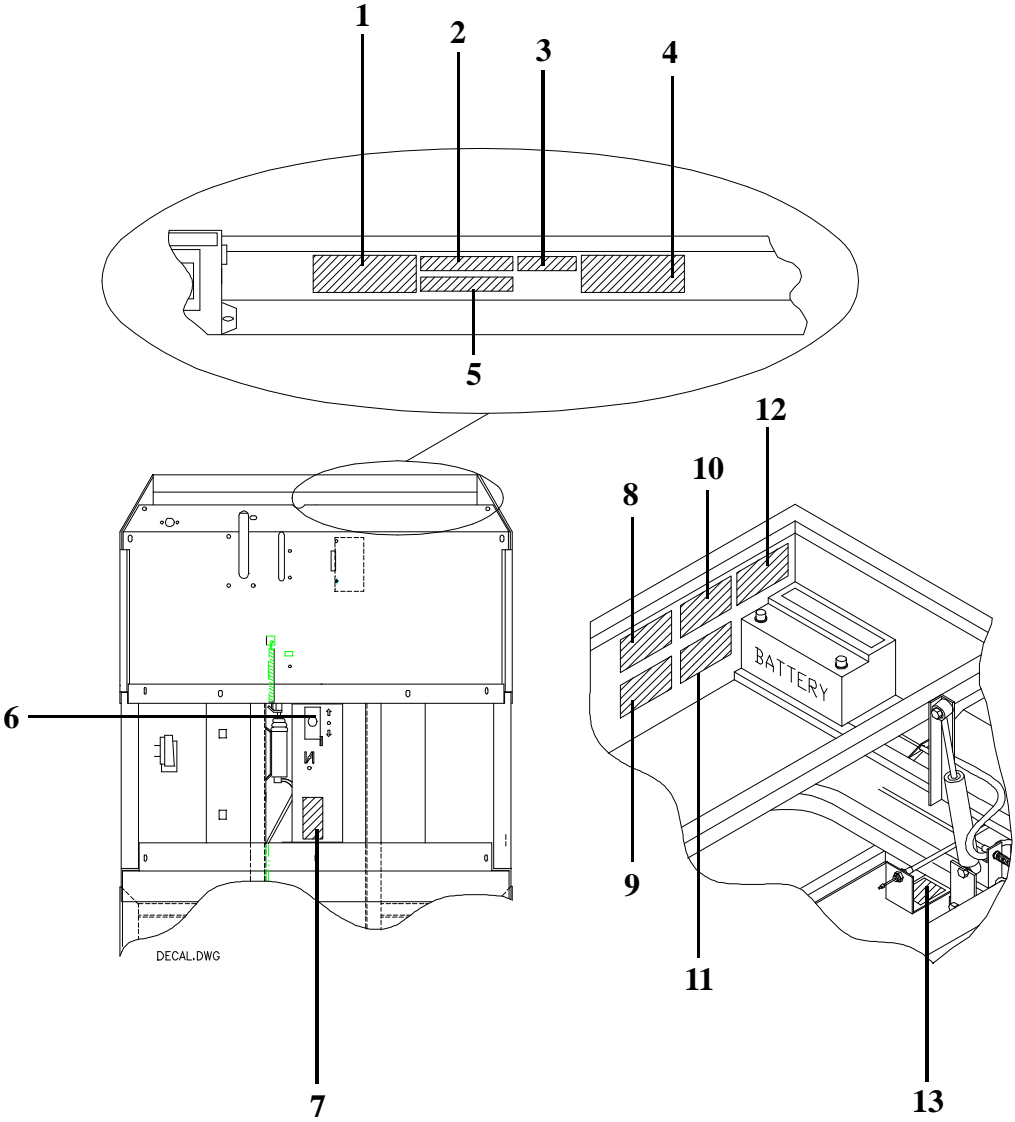


FRAME

ITEM #	PART #	DESCRIPTION	QTY
1	94-201-10	TAYLOR-DUNN Name Plate	1
2	00-610-08	Front Cowl Weldment (Not Painted)	1
3	00-210-14	Side Deck Angle	2
4	00-210-18	Rear Deck Angle	1
5	90-444-30	Deckboard, Front	1
6	90-174-00	Passenger Seat Cushion	1
7	88-837-09	Seat Back Screws	6
8	00-210-04	Seat Back Weldment	1
9	90-179-00	Seat Back Cushion	1
10	90-174-00	Driver Seat Cushion	1
11	77-054-10	Battery (Standard)	1
12	90-444-20	Deckboard Rear	1
13	02-210-25	Wire Harness Cover	1
NOT SHOWN	90-199-10	Seat Belt (1 set)	2
	88-817-07	Name Plate Screw	6
	94-201-11	Name Plate Fastener (plastic)	2
	50-243-10	Battery Hold Down Rod	2
	88-837-06	Sheet Metal Screws	12
	90-440-61	Deckboard Cover, Rear	1
	05-210-91	Heat shield for Deckboard	1
	88-607-09	Rivets	16

Section 4

DECALS/WARNING LABELS



DECALS/WARNING LABELS

ITEM #	PART #	DESCRIPTION	QTY
1	94-306-00	Operator Warning	1
2	94-384-01	"Not a Motor Vehicle"	1
3	94-306-01	Fuel /Oil Check	1
4	94-306-02	Speed Warning	1
5	94-373-05	Data Plate	1
6	94-306-07	"Push to Shift"	1
7	94-306-09	Do Not Shift While Moving	1
8	94-306-03	Heat Warning	1
9	94-306-04	Rotating Parts Warning	1
10	94-306-05	Oil Type	1
11	94-306-06	Dipstick Warning	1
12	94-313-00	Battery Warning	1
13	94-306-08	Do Not Drill (Spring Steel)	1

Section 4

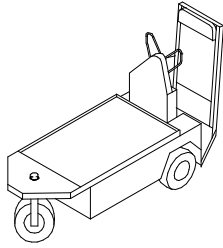
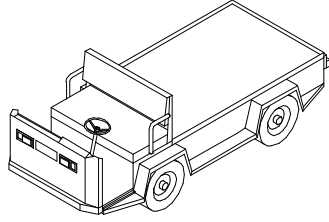
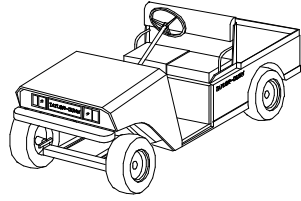
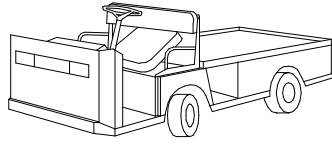
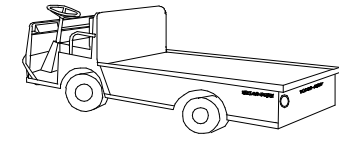
ELECTRICAL SYSTEM

Illustration not available

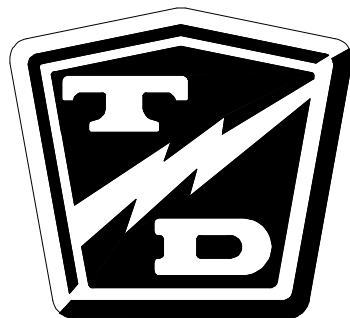
ELECTRICAL SYSTEM

PART #	DESCRIPTION	QTY
71-120-01	Key Switch	1
71-130-01	Neutral Start Switch	1
71-110-00	Brake Light Switch	1
71-135-01	Reverse light switch	1
71-141-20	Turn Signal Switch	1
71-039-10	Light Switch	1
73-004-20	Horn	1
71-102-10	Seat Switch	1
71-122-20	Horn Button	1
71-303-01	Engine Kill Relay (behind dash panel)	1
71-900-05	Signal Flasher	1
72-082-01	Headlight Bulb	2
72-082-10	Front Turn Signal Bulb	2
72-082-20	Turn Signal Bulb Socket	2
72-025-00	Tail/Stop Light (w/rubber gasket and pigtail)	2
75-146-85	Harness	1
79-840-20	20 Amp Circuit Breaker, Auto Reset	1
77-054-10	Battery	1

TAYLOR-DUNN MFG.



APPENDIX A-Special Tools



Special Tools

DESCRIPTION	PURPOSE	PART NUMBER
Pinion Seal Installation Tool	Used to install the pinion seal on all chain drive trucks with the band style brake or the speed sensor on the chain case cover.	43-201-50
Chain Case Centering Tool	Used to center the chain case on the pinion shaft on all chain drive trucks with the band style brake or the speed sensor on the chain case cover. Includes instructions.	41-532-50
Test Light	Used for testing electrical circuits. Powered by the truck batteries, switchable for 12, 24, 36, and 48 volts.	62-027-00
Accelerator Test Harness	Used to test the solid state accelerator module part number series 62-033-XX.	62-027-31
PMC Test Kit	Includes 62-027-00, 62-027-31, and supplementary troubleshooting manual M3-001-06. For controllers equipped with pins labeled KSI and #2 only.	62-027-60
Curtis PMC Handheld Programmer	Used to test and program the 62-215-00 PMC speed control used on early model C4-25 Huskey.	62-027-10
GE EV1 Analyzer	Used to test the GE EV1 speed control.	62-027-20
Disc Brake Boot Installation Tool	Used to install the rubber boot on all disc brake bodies.	41-350-13
Pin Removing Tool	Used to remove pins and sockets from AMP connectors.	75-440-55
Pin Removing Tool	Used to remove pins and sockets from MOLEX connectors.	75-442-55
Hydrometer	Used to check the specific gravity of battery electrolyte.	77-200-00
Battery Filler	Used to safely add water to batteries.	77-201-00
Retaining Plate Depressor	Used to hold down the retaining plate when disassembling the steering gear on trucks equipped with the tilt steering.	96-500-39
Fork Collar Weld Jig	Used when replacing the fork collar on models MX-600 and SS5-36.	96-500-40
Secondary Sheave Holder	Used to hold the secondary sheave (pulley) from turning on models R6-80 and B6-10 with the Yamaha drive.	96-500-14
Solder Kit For Field Stud	Used to solder the aluminum field wire to the field stud. For use on motors with soldered connections only.	70-210-63
Pinion Gear Holding Tool	Used to align the Pinion Gear and Case during assembly and disassembly.	96-500-42

Appendix B: Standard Hardware Suggested Torque Limits

TABLE OF CONTENTS

Hardware Identification 2

Standard Head Markings 2

Hex Bolts 2

Other Bolts 2

Hex Nuts 3

Hex Lock Nuts (stover) 3

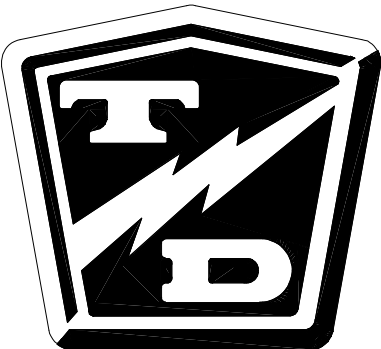
Other Nuts 3

Suggested Torque Values

(non-critical hardware) 4

Suggested Torque Values

(critical hardware) 5





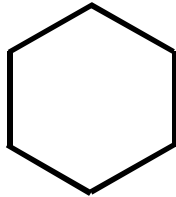
HARDWARE IDENTIFICATION

Standard Head Markings

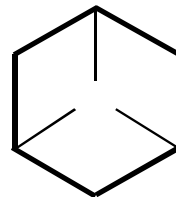
NOTE: Torque value used should be for lowest grade of hardware used. If a grade 2 nut is used on a grade 8 bolt, use grade 2 torque value.

NOTE: Torque values specified are for clean dry threads.

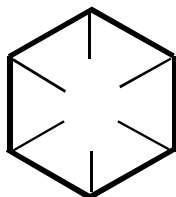
Hex Bolts



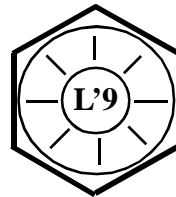
S.A.E. Grade 2



S.A.E. Grade 5



S.A.E. Grade 8



L'9

Other Bolts



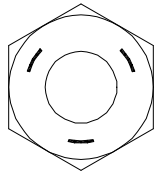
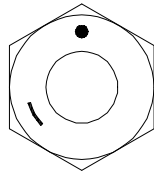
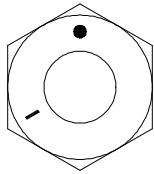
Truss Head, grade 2



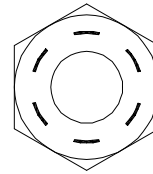
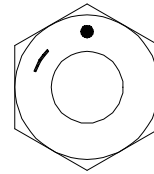
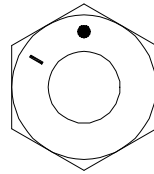
*Carriage Bolt, grade 2
(unless marked as above)*

Hex Nuts

Nuts with no markings are to be treated as S.A.E. Grade 2



S.A.E. Grade 5

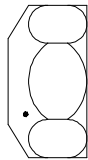
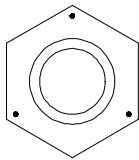


S.A.E. Grade 8

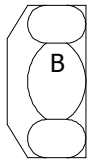
Hex Lock Nuts (stover)

Lock nuts use a letter to indicate the grade of the nut. Grade 'A' locknuts would be the equivalent of Grade '2' hex nuts, Grade 'B' as Grade '5' and Grade 'C' as Grade '8'.

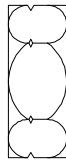
NOTE: Nuts with no markings are to be treated as S.A.E. Grade A



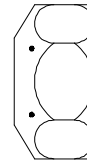
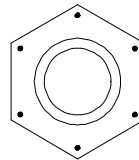
or,



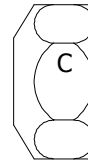
or,



S.A.E. Grade B



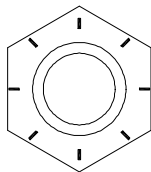
or,



or,



S.A.E. Grade C



Grade L'9

Other Nuts

Other nuts used by Taylor-Dunn® should be treated as S.A.E. grade A

***SUGGESTED TORQUE VALUES (non-critical hardware)***

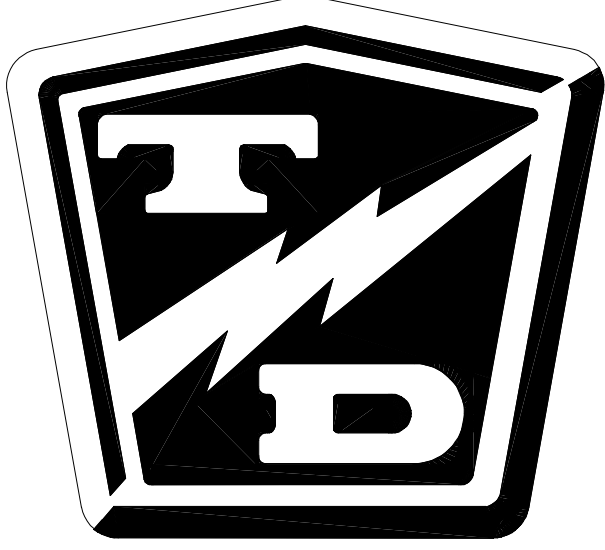
Diameter and TPI	Grade 2 Tightening Torque (ft-lb)	Grade 5 Tightening Torque (ft-lb)	Grade 8 Tightening Torque (ft-lb)	L'9 Tightening Torque (ft-lb)
1/4-20	4-7	7-10	10-14	11
1/4-28	5-8	8-12	11-16	12
5/16-18	9-14	14-21	20-29	22
5/16-24	10-15	15-23	22-33	25
3/8-16	16-24	25-37	35-52	40
3/8-24	18-27	28-42	40-59	45
7/16-14	26-38	40-59	56-84	65
7/16-20	29-43	44-66	62-93	70
1/2-13	39-59	60-90	85-128	95
1/2-20	44-66	68-102	96-144	110
9/16-12	56-84	87-131	123-184	140
9/16-18	63-94	97-146	137-206	160
5/8-11	78-117	120-180	170-254	195
5/8-18	88-132	136-204	192-288	225
3/4-10	138-207	213-319	301-451	350
3/4-16	154-231	238-357	336-504	390
7/8-9	222-334	344-515	485-728	565
7/8-14	245-367	379-568	534-802	625
1-8	333-500	515-773	727-1091	850
1-14	373-560	577-866	815-1222	930
1.125-7	472-708	635-953	1030-1545	1700
1.125-12	530-794	713-1069	1156-1733	1850
1.25-7	666-999	896-1344	1454-2180	2950
1.25-12	738-1107	993-1489	1610-2414	3330

SUGGESTED TORQUE VALUES (critical hardware)

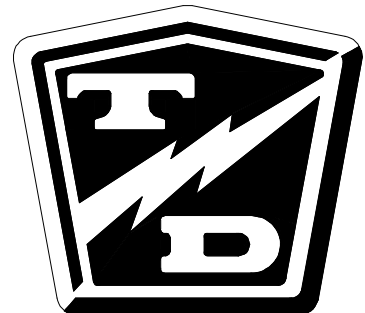
Torque Table

		Torque Range		
Group	Description	Ft-Lbs	In-Lbs	Nm
Brakes - - - - -				
	Brake bolt (disc brake body)	11 - 11	132 - 132	15 - 15
	Brake line tube nut fittings	12 - 13	144 - 156	16.3 - 17.7
	Brake spider bolts (Dana 160mm hyd brakes)	25 - 35	300 - 420	34 - 47.6
	Brake spider bolts (Dana 160mm mech brakes)	15 - 19	180 - 228	20.4 - 25.8
	Brake spider bolts (Dana 7x1-3/4 brakes)	16 - 20	192 - 240	21.8 - 27.2
Electrical - - - - -				
	Battery terminals	8 - 9	96 - 108	10.9 - 12.2
Front Axle - - - - -				
	Front spindle nut	-	-	-
	Note: Refer to maintenance section in the service manual			
	King pin	-	-	-
	Note: Refer to maintenance section in the service manual			
Rear Axle/Transmission - - - - -				
	3rd member Gear case cover (GT drive)	45 - 50	540 - 600	61.2 - 68
	Axle bolt (GT drive)	275 - 275	3300 - 3300	374 - 374
	Axle hub nut (Dana)	95 - 115	1140 - 1380	129.2 - 156.4
	Axle tube to center section (Dana F-N-R)	25 - 35	300 - 420	34 - 47.6
	Carrier cap bolts (Dana)	100 - 120	1200 - 1440	136 - 163.2
	Differential Cover plate (Dana H12)	18 - 25	216 - 300	24.5 - 34
	Drain plug (Dana H12)	25 - 40	300 - 480	34 - 54.4
	Drain plug (GT drive)	21 - 25	252 - 300	28.6 - 34
	Gear case to 3rd member (GT drive)	18 - 20	216 - 240	24.5 - 27.2
	Motor mounting (GT/Dana)	6.5 - 7	78 - 84	8.8 - 9.5
	Pinion nut (F2/F3)	175 - 175	2100 - 2100	238 - 238
	Pinion nut (GT drive)	154 - 169	1848 - 2028	209.4 - 229.8
	Ring gear (Dana)	35 - 45	420 - 540	47.6 - 61.2
	Wheel lug nut	75 - 90	900 - 1080	102 - 122.4
Steering - - - - -				
	Ball joint clamp	28 - 32	336 - 384	38.1 - 43.5
	Ball joint nut	40 - 45	480 - 540	54.4 - 61.2
	Pitman nut (18-308-21 steering gear)	75 - 100	900 - 1200	102 - 136
	Pitman nut (18-308-25 steering gear)	181 - 217	2172 - 2604	246.2 - 295.1
	Rod end nut	20 - 25	240 - 300	27.2 - 34
	Steering shaft pinch bolt	24 - 26	288 - 312	32.6 - 35.4
	Steering wheel nut (18-308-21 steering gear)	28 - 32	336 - 384	38.1 - 43.5
	Steering wheel nut (18-308-25 steering gear)	72 - 86	864 - 1032	97.9 - 117
Suspension - - - - -				
	Leaf spring hangers	-	-	-
	Note: Refer to maintenance section in the service manual			

TAYLOR - DUNN



Appendix C





BRAKE LINING HANDLING PRECAUTIONS

⚠ WARNING

Taylor-Dunn does not currently supply asbestos fiber-brake pads/shoes with any vehicle. However, there is the possibility that the original brake pads/shoes were replaced with aftermarket pads/shoes containing asbestos. Since this possibility does exist, the brake pads/shoes should be handled as if they do contain asbestos.

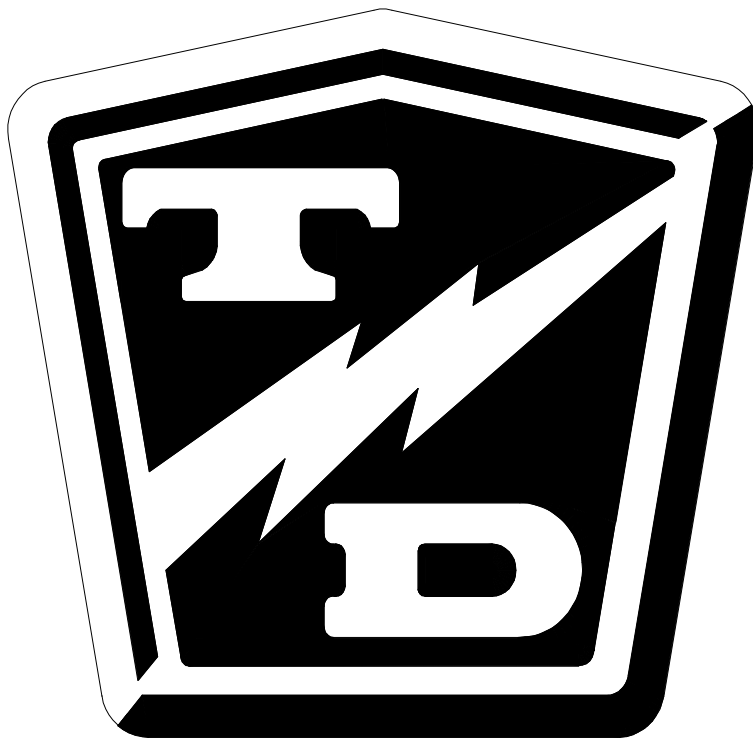
Never use compressed air or dry brush to clean the brake assemblies. Use an OSHA approved vacuum cleaner or any alternate method approved by OSHA to minimize the hazard caused by airborne asbestos fibers and brake dust.

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

Always wear protective clothing and a respirator when working on the brake pads/shoes or their associated components.

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.



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