OPERATION AND MAINTENANCE MANUAL WITH **PARTS LIST**

MODEL

: ET 1-50 72 Volts

SERIAL NUMBER: 104500 & UP

YEAR

: 1993 & UP

MANUAL NUMBER: MZ-150-02

- IMPORTANT -

READ AND FOLLOW INSTRUCTIONS GIVEN IN SAFETY & OPERATIONS AND THOSE SECTIONS RELATED TO YOUR SERVICE AND REPAIR RESPONSIBILITIES



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EEC 86.663 OF DEC. 1986 PARA. 9.7.3.5.5 FAULT SAFETY CIRCUIT CHECK PROCEDURE

EEC-certified vehicles are equipped with a safety system which will terminate any uncontrolled power-on condition due to a fault in the electronic circuit.

This fault safety circuit should be checked during scheduled periodic maintenance inspections by authorized service personnel.

PROCEDURE

Jack up the rear axle of the vehicle until the rear wheels spin free (see "Lift and Support Points," Safety and General Information Section).

Disconnect the main traction battery cables.

WARNING!

The key switch must be turned off and battery cables disconnected. Be sure that the rear wheels are clear of any foreign objects.

Place a 6-gauge jumper wire between the B- terminal and M- terminal of the PMC controller.

Reconnect the main traction battery cables.

Turn on the key switch and place the vehicle in the forward drive position.

Depress the accelerator pedal down approximately half of the distance to the floor.

WARNING!

Do not exceed 80% of the accelerator travel.

If the rear wheels turn, the PMC fault safety circuit is defective and the PMC controller must be replaced.

If the rear wheels do not turn, then the fault safety circuit is functioning correctly.

Turn off the key switch.

Disconnect the main traction battery cables.

Remove the jumper wire between the B- and M- terminals.

Reconnect the main traction battery cables and lower the vehicle.



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SAFETY/ GENERAL INFORMATION

TAYLOR-DUNN ET 1-50 SAFETY - 1



WARNING!

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SEVERE PERSONAL INJURY OR DEATH.

- **A HIGH VOLTAGE PRESENT! CAREFULLY DISCONNECT BATTERIES BEFORE SERVICING**
- △ BATTERY GASES ARE EXPLOSIVE! KEEP SPARKS, FLAMES AND LIGHTED CIGARETTES AWAY FROM BATTERIES.
- A KEEP THE VEHICLE AND BATTERIES IN A WELL-VENTILATED AREA WHEN CHARGING.
- **A THIS VEHICLE SHOULD BE OPERATED ONLY BY AUTHORIZED TRAINED PERSONNEL**
- A THIS VEHICLE IS RESTRICTED TO TWO OCCUPANTS.
- Δ DO NOT START THE VEHICLE UNTIL BOTH OCCUPANTS ARE SEATED AND SEAT BELTS ARE FASTENED.
- Δ ALL OCCUPANTS MUST KEEP THEIR ENTIRE BODIES AND ALL EXTREMITIES INSIDE THE VEHICLE AT ALL TIMES.
- Δ DO NOT EXCEED 32 MPH (50 KPH) UNDER ANY CIRCUMSTANCES; DRIVE SLOWLY IN TURNS AND UP AND DOWN SLOPES.
- Δ BRING THE VEHICLE TO A COMPLETE STOP BEFORE REVERSING DIRECTION.
- △ BEFORE LEAVING THIS VEHICLE, ALWAYS SET FORWARD-REVERSE SELECTOR IN THE CENTER "OFF' POSITION, SET PARKING BRAKE SECURELY, TURN KEYSWITCH TO OFF AND REMOVE THE KEY.
- A DO NOT ALTER OR ADD TO THIS VEHICLE WITHOUT TAYLOR-DUNN'S WRITTEN AUTHORIZATION.

WARNING: APPLY PARKING BRAKE!
PARKING BRAKE NOT AUTOMATICALLY APPLIED.



NOTICE!

THIS VEHICLE HAS NOT BEEN CERTIFIED BY THE UNITED STATES NATIONAL HIGHWAY TRAFFIC SAFETY ASSOCIATION IN ACCORDANCE WITH THE U.S. NATIONAL TRAFFIC MOTOR VEHICLE SAFETY ACT FOR USE ON STREETS AND HIGHWAYS.

2 - SAFETY TAYLOR-DUNN: ET 1-50



GENERAL SAFETY

WARNING!

Disconnect the main battery leads and remove the key before working on any part of the vehicle, EXCEPT when conducting tests on the electrical components.

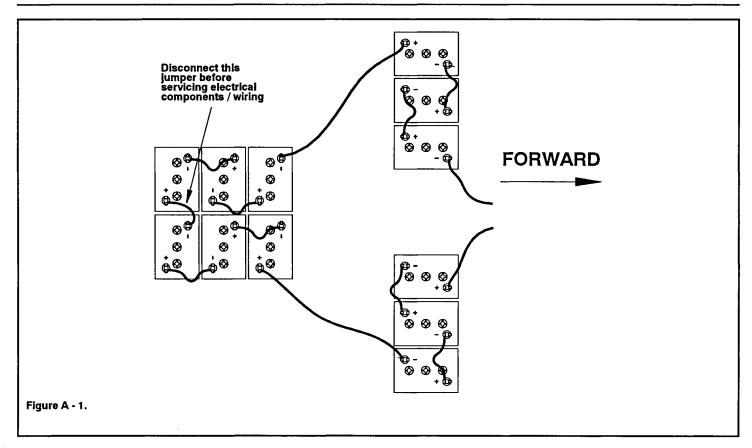
When conducting tests on the electrical components, always raise and securely support the rear wheels to prevent runaways.

Always use jack stands of adequate capacity when supporting the vehicle.

Caution!

As a safety precaution, after raising the vehicle, place a piece of wood or the tire that was removed, under the frame. This will prevent a hand or a foot from being injured if the vehicle falls off the jack stands.

When servicing electrical components, disconnect the rear battery jumper as shown. This cuts the battery pack voltage in half to 36 volts, a much safer level. Reconnect the jumper after servicing.



Note: If a hoist is not available to raise the vehicle, jack one side of the vehicle and support it, then jack the other side and support it also.

TAYLOR-DUNN ET 1-50 SAFETY - 3



General Information

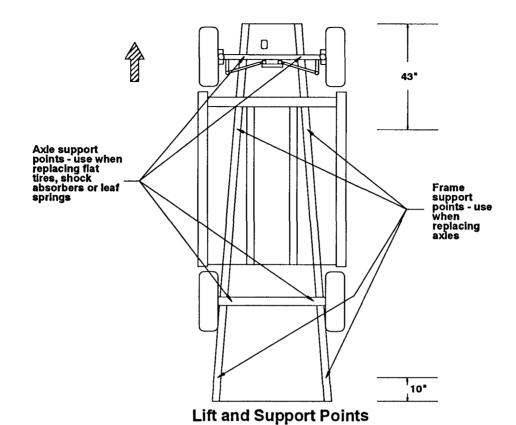


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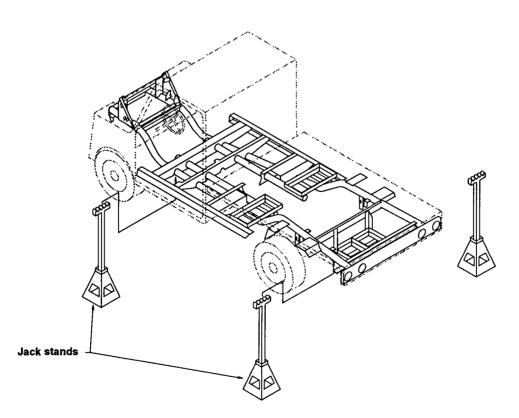


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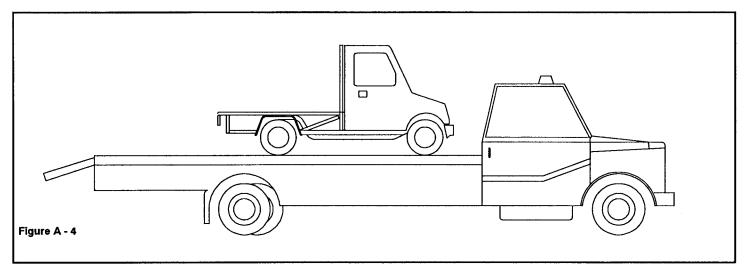
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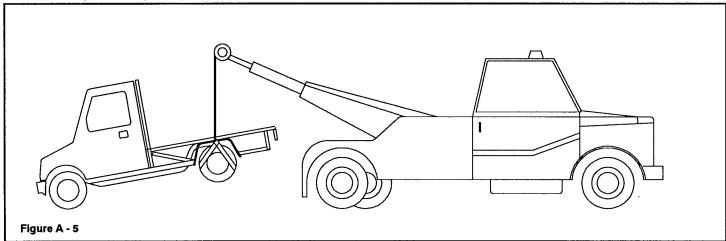
Towing

If towing is necessary, contact a professional towing service.

Check local towing regulations.



The best way of transporting the vehicle is on a flat bed truck, where the entire vehicle rides on the flat bed.



If the vehicle must be towed with a wheel lift type, tow with the rear wheels off the ground.

WARNING!

Towing with the rear wheels on the ground will cause severe damage to the differential and motor.

NEVER use tow chains or ropes to tow a vehicle. You might not be able to safely control the vehicle.

- ♦ Place the forward/reverse shift lever in the neutral position.
- ♦ Attach tow straps to each of the rear wheels.
- Firmly secure the steering wheel with the front wheels pointing straight forward.

WARNING!

Do not exceed 25 MPH or carry any passengers while towing this vehicle.

TAYLOR-DUNN ET 1-50 SAFETY - 5



Batteries

WARNING!

Batteries give off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging or using the battery in an enclosed space.

The battery contains sulfuric acid as electrolyte. Contact with skin or eyes may cause severe burns and/or blindness. Wear protective clothing and a face shield.

If electrolyte (battery acid) gets on your skin, flush with water immediately.

If electrolyte gets in your eyes, flush with water immediately for 15 minutes and call a physician right away.

Electroyte is poisonous. If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.

KEEP OUT OF REACH OF CHILDREN!

Battery Charging

CAUTION

The batteries in this truck must be fully-charged prior to its initial use.

Before charging, make sure the voltage indicated on the charger identification plate complies with the line voltage in your locality. If not, contact Taylor-Dunn or your local Taylor-Dunn dealer.

To charge the truck, open the charger cord box and plug the cord to a 1-phase electrical outlet. The charger voltage/draw is 230 volts/13 amperes (See "Vehicle Specifications," Section 3, for charger specificaions).

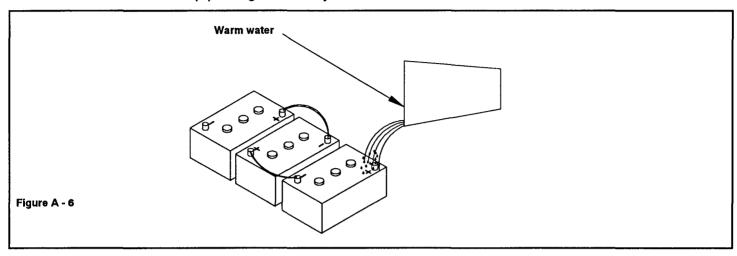
The batteries are fully charged when the ammeter on the charger reads zero.

6 - SAFETY TAYLOR-DUNN: ET 1-50



Battery Maintenance

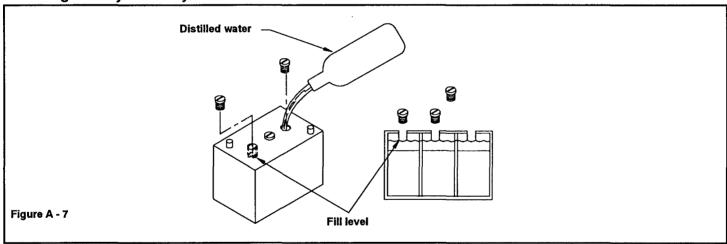
Routine maintenance will help prolong the life of your batteries.



Acids usually form around the terminals under normal use, corroding the terminals, brackets and mounting bolts and nuts. Wash the terminals with warm water to dilute the acids, preferably once a week. Dry the terminals with a clean cloth after washing.

Any corrosion around the positive and negative battery terminals should also be washed off with warm water.

Checking Battery Electrolyte Level



To check electrolyte level for each battery:

- Remove each cell cover.
- Visually inspect electrolyte level. It should be $\frac{1}{2}$ " to 1" below the battery top.
- If too low, fill to the proper level with distilled water from a NON-METALLIC container (plastic or glass).

Note: Remember to perform Steps 1 - 3 for all cells.

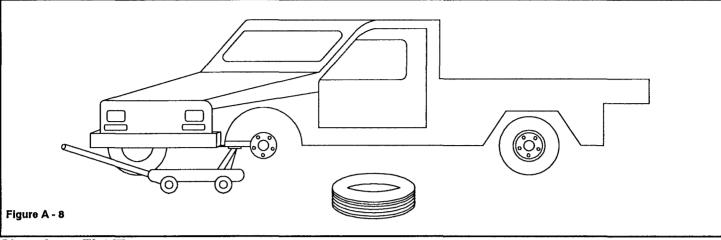
Caution

Do not overfill the batteries. If the top of the batteries appears wet before you fill or wash it, it is probably due to leaky or loose cell covers. Tighten or replace covers.

TAYLOR-DUNN ET 1-50 SAFETY - 7



Tires



Changing a Flat Tire

WARNING!

Do not attempt to change a tire unless the truck is on firm, level surface and well out of the flow of traffic.

- Park the truck on a firm, level surface. Apply the parking brake and turn on the hazard warning lights.
- Turn off the keyswitch and push the emergency disconnect switch down.
- Place blocks in front and back of the wheel diagonally opposite the tire you are changing.
- Use a lug wrench to loosen the wheel lug nuts counterclockwise one-half turn.

WARNING

Follow the tire changing procedures carefully to minimize the possibility of injury. A jack is designed for changing tires only. STAND CLEAR, DO NOT GET UNDER the truck and DO NOT run the motor when the truck is supported only by the jack.

Place a jack under the axle on the side nearest the wheel you are removing.

WARNING!

Always jack the vehicle from under the axle. Misplacement of the jack can cause severe damage to the vehicle.

- Raise the vehicle until the tire to be replaced clears the ground.
- 7 Support the vehicle with jack stands.

WARNING

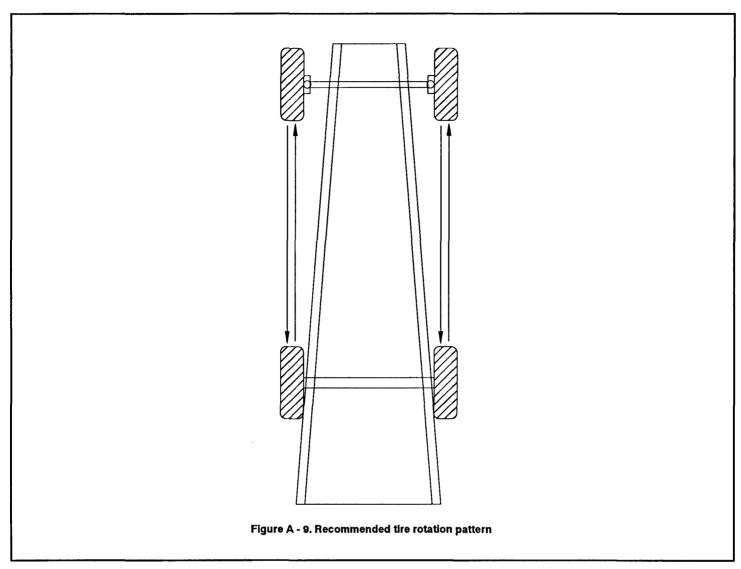
Always use jack stands of adequate capacity. Never work on a raised vehicle supported only by the jack.

- 8 Remove all lug nuts.
- 9 Carefully pull the tire out from the hub.
- Mount the new tire and tighten the lug nuts alternately in a criss- cross pattern.
- 111 Remove the jack stands, and lower the jack slowly.
- 12 Clear away the jack, jack stands, lug wrench, and the wheel blocks.

8 - SAFETY TAYLOR-DUNN: ET 1-50



Tire Rotation



Tires may wear unevenly when used for a long time at the same position on the vehicle. To avoid this, rotate the tires every 3,000 miles (5,000 km).

Caution!

Do not mix radial and bias ply tires on the same truck.

Tire Traction

Driving on worn-out or under-inflated tires is very hazardous, and will reduce braking effectiveness, steering accuracy and traction.

WARNING!

WORN TIRES or slippery road surfaces can reduce driving, cornering and braking traction. Slow down when the road gets slippery, replace worn tires and KEEP TIRES PROPERLY INFLATED.

Check tire pressure when the tires are cold, i.e., after the truck has been parked for more than three (3) hours or driven less than 1 mile / 1.6 km.

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10 - SAFETY TAYLOR-DUNN: ET 1-50

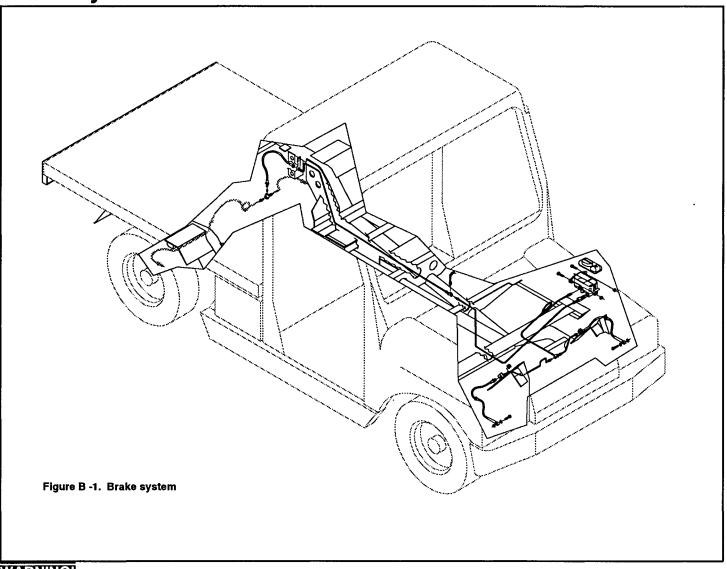


BRAKE SYSTEM

TAYLOR-DUNN: ET 1-50 BRAKES - 1



Brake System



WARNING!

Please refer to Section 1, "SAFETY / GENERAL INFORMATION" before performing any repairs / maintenance on this vehicle.

It is dangerous to drive the truck with a problem in the brake system. Check the brake system if you suspect brake trouble.

Do not ride the brakes - do not put your foot on the brake pedal unless you intend to brake. This causes overheating, which leads to excessive brake wear and damage to or loss of brakes. It will also turn on your brake lights, and might confuse drivers behind you.

Driving through deep water may affect the brakes. Check by pressing the brake pedal gently. If the vehicle does not slow down at the normal rate, continue gently applying the brakes while maintaining a safe speed, until they dry out and normal braking returns.

The brake system consists of front hydraulic disc brakes, rear hyraulic drum brakes and mechanical park brakes. The master cylinder has dual chambers, the forward one controlling the rear brakes and the rear chamber controlling the front brakes. The brake light switch is pressure actuated.

2 - BRAKES TAYLOR-DUNN: ET 1-50



Brake Wear

Both front and rear brakes should be inspected for wear at the intervals shown in the "Required Maintenance" table, Maintenance Section.

When brake parts require replacement, use only genuine Taylor-Dunn replacement parts.

Brake Fluid

WARNING!

Brake fluid is poisonous. Contact with skin or eyes may cause severe burns and/or blindness. Wear protective clothing and a face shield.

If brake fluid gets on your skin, flush with water immediately.

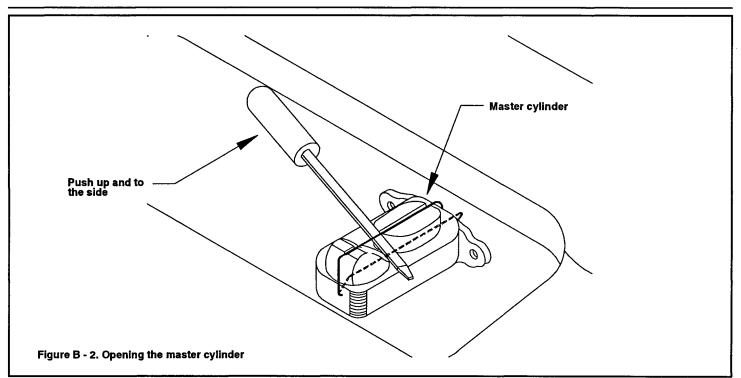
If brake fluid gets in your eyes, flush with water immediately for 15 minutes and call a physician right away.

If somebody swallows brake fluid, let him drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.

KEEP OUT OF REACH OF CHILDREN!

CAUTION

Brake fluid is corrosive and can damage paint finish. Avoid spilling brake fluid on any surface.

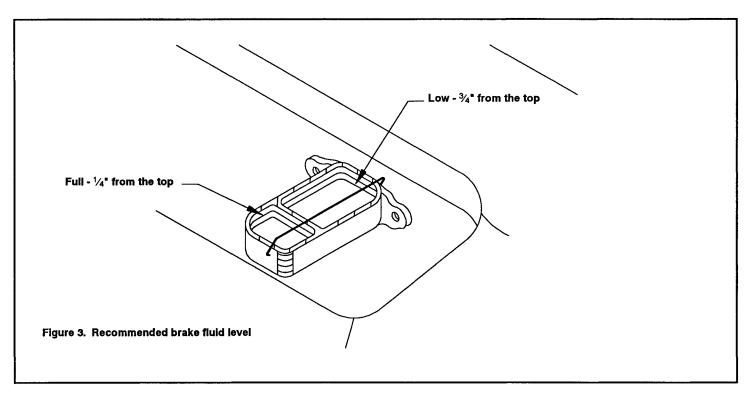


Checking Brake Fluid Level

Open the hood. Clean up the cover and exterior of the master cylinder and the surrounding area. Place a screwdriver under the wire clamp on the master cylinder cover, and push the clamp over the side of the cover. Remove the cover.

TAYLOR-DUNN: ET 1-50 BRAKES - 3





The master cylinder has two chambers, one each for the front and rear brake lines.

Check the fluid level in each chamber; it should be between $\frac{1}{4}$ and $\frac{3}{4}$ from the top.

NOTE: Low brake fluid level may be an indication of brake pad wear or of brake fluid leakage. Check for these items if the brake fluid level is low before refilling it.

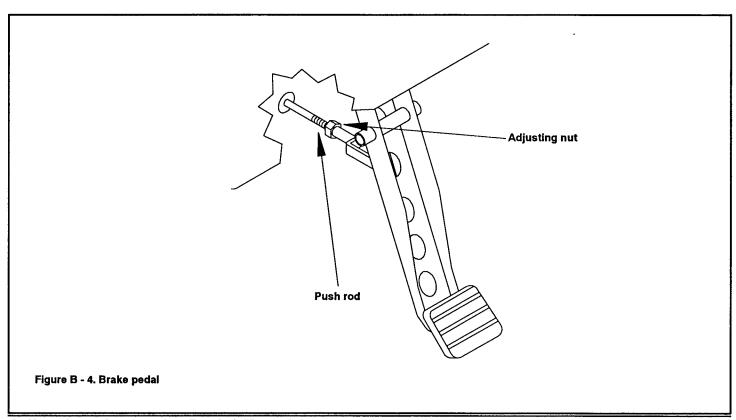
If the fluid needs refilling, add DOT 3 brake fluid from a sealed container. Fill up to 1/4" from the top of reservoir.

Place the cover back on the master cylinder.

Pull the wire clamp back on the groove in the center of the master cylinder cover.

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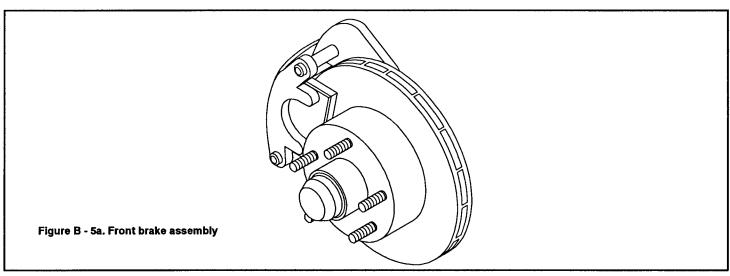


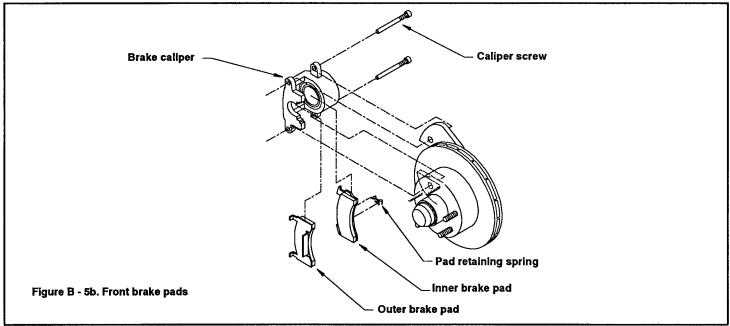
Adjusting the Brake Pedal Free Play

Loosen the adjusting nut. Turn the push rod counter clockwise to reduce free play, clockwise to increase free play. Tighten the adjusting nut.

TAYLOR-DUNN: ET 1-50 BRAKES - 5







Replacing the Front Brake Pads

Siphon part of the brake fluid from the rear master cylinder chamber to avoid fluid overflow. Discard the fluid properly.

Jack up and support the vehicle on the front axle (see "General Safety" and "Support Points" at the beginning of this manual.

Remove one front wheel (see "Replacing Tires").

Remove two caliper screws with a 3/8" Allen screwdriver.

Slide the caliper off the brake assembly.

Remove inner and outer brake pads. Place the caliper back on the rotor for support.

Caution:

Do not let the caliper hang by the brake hose, as the hose might get stretched or twisted.

6 - BRAKES TAYLOR-DUNN: ET 1-50



Remove the retaining spring from the inner pad. Dispose of old pads properly.

Clean all parts.

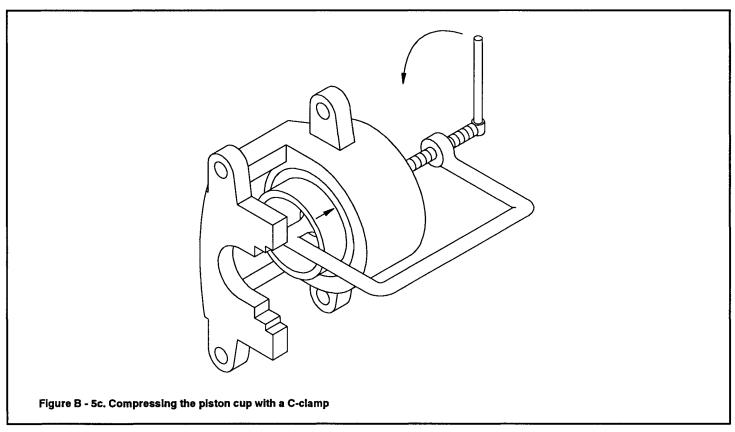
WARNING!

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

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

Clean your hands thoroughly.

Install the retaining spring onto the new inner pad.



Use a C-clamp as shown to compress the piston cup to its fully-recessed position. This will provide clearance for the new pads.

Install the inner and outer brake pads.

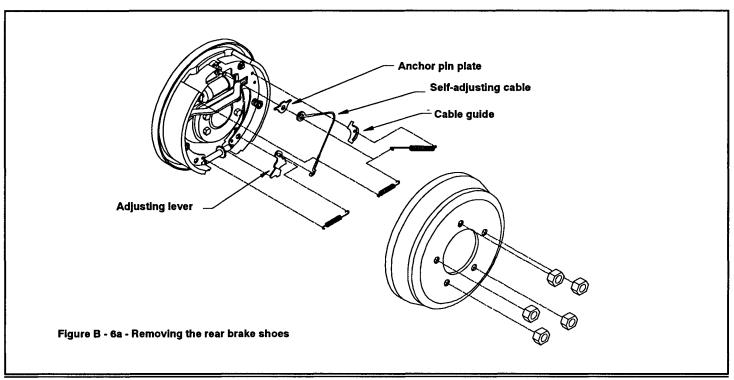
Slide the caliper back into position in the brake assembly.

Install and tighten two caliper screws removed earlier.

Repeat the entire procedure for the other front wheel.

Check brake fluid level in the master cylinder.

TAYLOR-DUNN: ET 1-50 BRAKES - 7



Replacing the Rear Brake Shoes

Jack up and support the vehicle on the front axle (see "General Safety" at the beginning of this section).

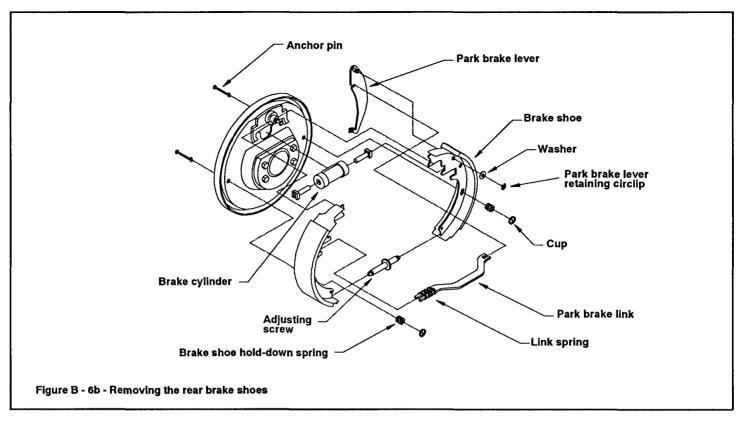
Remove one rear wheel.

Remove the brake drum.

Remove the three brake springs.

Remove the adjusting lever, self-adjusting cable, cable guide and anchor pin plate.





Remove brake shoe hold-down springs by pushing down and rotating the cups 1/4 turn. Remove hold-down pins from the back of the plate.

Remove the brake shoes, adjusting screw, park brake link and link spring.

Disengage park brake cable from the park brake lever.

Remove the circlip to disengage park brake lever from the secondary shoe.

Installation

See "Replacing Brake Pads," previous section, for cleaning all brake parts.

Clean your hands thoroughly.

Check the new linings for any defects. For bonded linings, check for and remove any bonding cement along the edges.

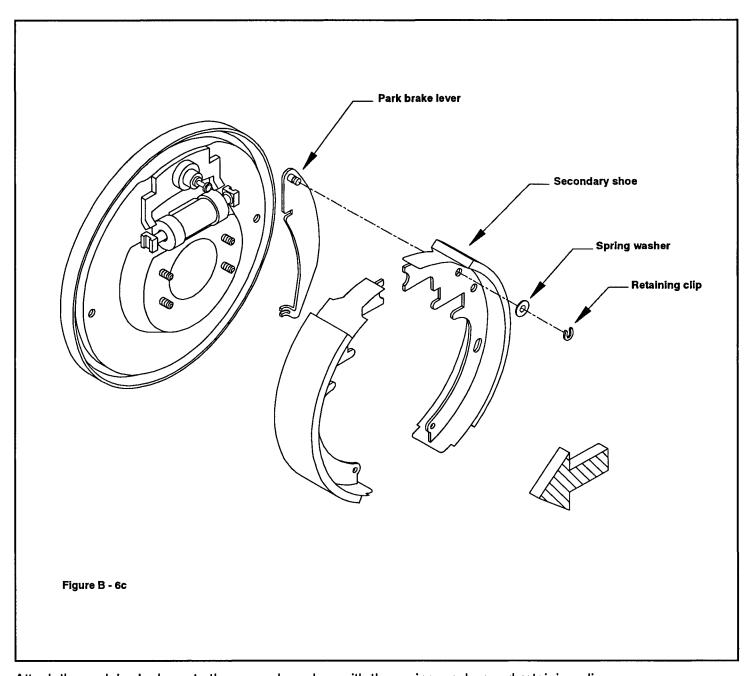
Use brake lubricant to lubricate the following items:

- a. Park brake cable
- b. Fulcrum end of park brake lever
- c. Adjusting screw
- d. Shoe contact points on the backing plate

TAYLOR-DUNN: ET 1-50

BRAKES - 9

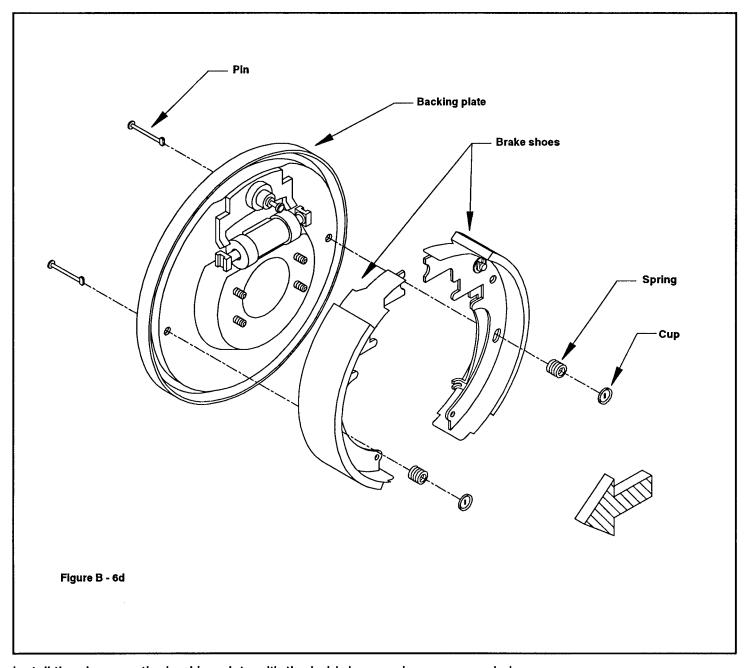




Attach the park brake lever to the secondary shoe with the spring washer and retaining clip.

10 - BRAKES TAYLOR-DUNN: ET 1-50

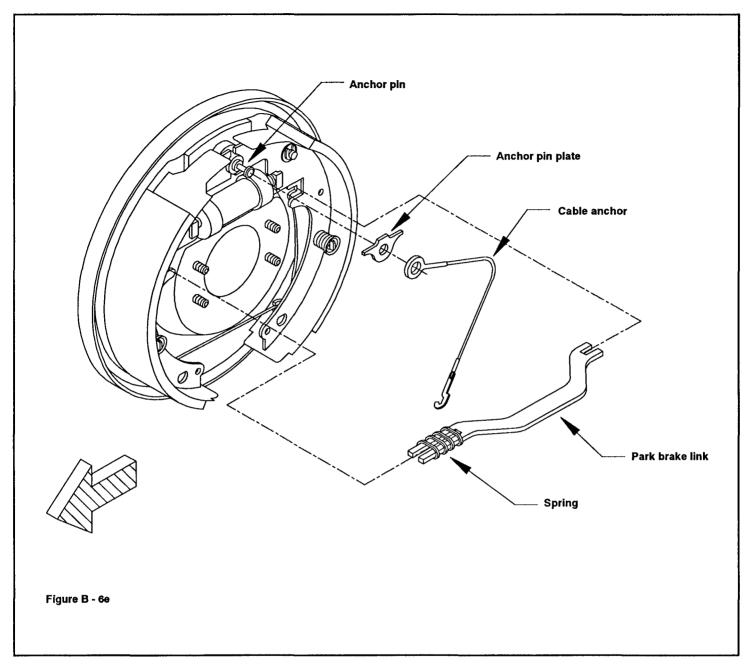




Install the shoes on the backing plate with the hold-down springs, cups and pins.

TAYLOR-DUNN: ET 1-50 BRAKES - 11

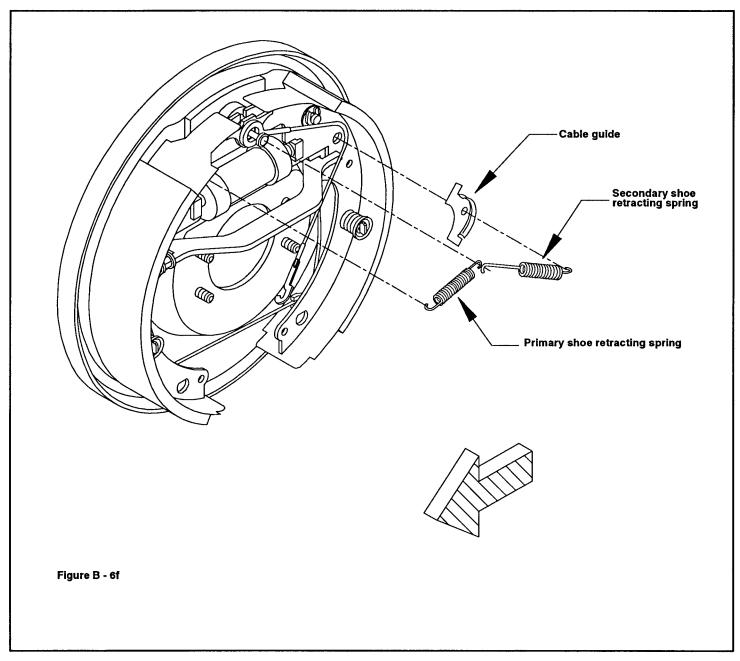




Install the park brake link, spring and washer and connect the brake cable to the rear brake lever. Install the anchor pin plate and attach the cable anchor to the pin with the crimped side of the cable collar toward the backing plate.

12 - BRAKES TAYLOR-DUNN: ET 1-50





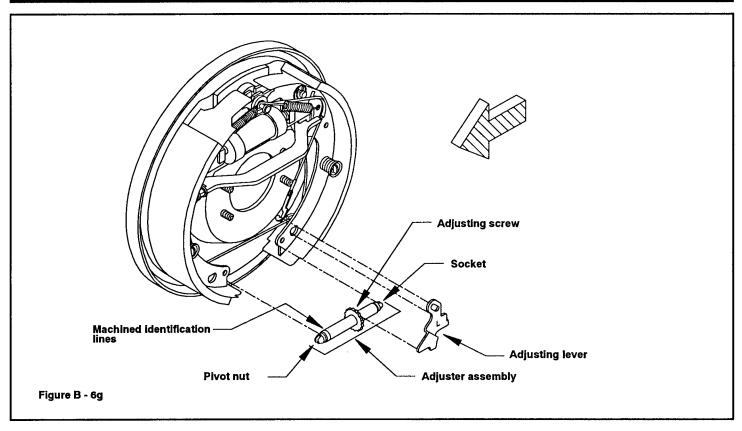
Connect the primary shoe retracting spring to the anchor pin. Install the cable guide in the secondary shoe. Route the cable around the guide, making sure it is in the groove and not between the guide and shoe.

Connect the secondary shoe retracting spring to the anchor pin.

Note: Make sure that the anchor pin plate, cable anchor, and the hooks on the primary and secondary shoe retracting springs are all stacked flat on the anchor pin.

TAYLOR-DUNN: ET 1-50 BRAKES - 13





Assemble the adjuster, making sure it is the correct one for the assembly you are working on.

WARNING!

Installing the adjuster onto the wrong assembly will cause loss of brakes when the automatic adjuster operates.

Note: The adjusting screw and lever are stamped either "R" or "L" for right or left. The right pivot nut has 2 machined identification lines, the left nut one.

Screw the adjusting screw all the way into the pivot nut, then back it off $\frac{1}{2}$ turn. Install the socket on the end of the screw. Install adjuster between shoes with screw toward secondary shoe.

Attach the cable to the adjusting lever, and engage the hook on the lever in the hole in the secondary shoe.

Connect the adjuster spring.

Checking the adjuster action

Pull the cable (between the guide and the adjuster lever) toward the secondary shoe far enough to lift the adjuster out of engagement with the notches in the adjuster screw.

Release the cable. The adjuster lever should engage the next notch in the screw, and the adjuster spring should pull the lever down to its original position, turning the screw one notch.

Checking the Rear Brake Drum

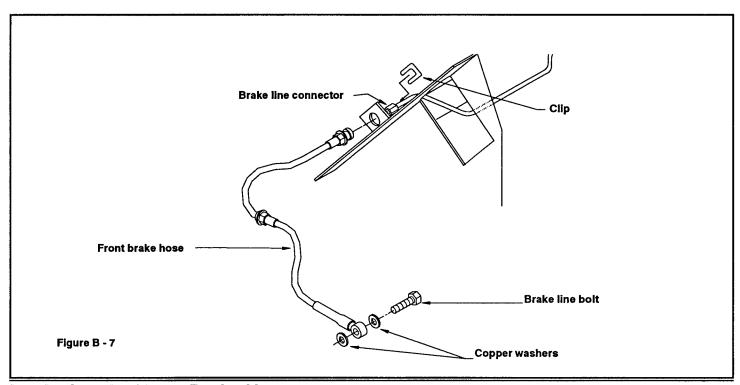
Check the rear brake drum for pitting, damage, or out-of-round condition. If necessary, have the drum turned.

WARNING!

When the brake drum inner diameter reaches the maximum allowable (11.09"), replace the brake drum to avoid loss of braking action!

14 - BRAKES TAYLOR-DUNN: ET 1-50





Replacing the Front Brake Hoses

Make provisions to catch brake fluid that may spill from the hoses.

Remove brake line bolt from the caliper. Unscrew front connector from brake line to hose. Remove clip. Dispose of old brake hose properly.

Place new copper washer, insert new hose end and another copper washer on brake line bolt and screw into brake caliper. Mount the other end to the frame with the clip. Screw brake line connector into hose thread.

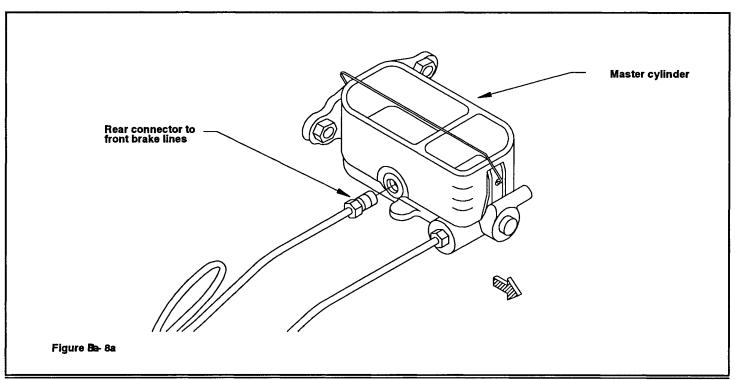
Bleed front brake on the side of the new hose. Check for leaks.

If necessary, repeat the procedure for the other front hose.

Fill the master cylinder with fresh DOT 3 brake fluid to $\frac{1}{4}$ " from the top.

TAYLOR-DUNN: ET 1-50 BRAKES - 15

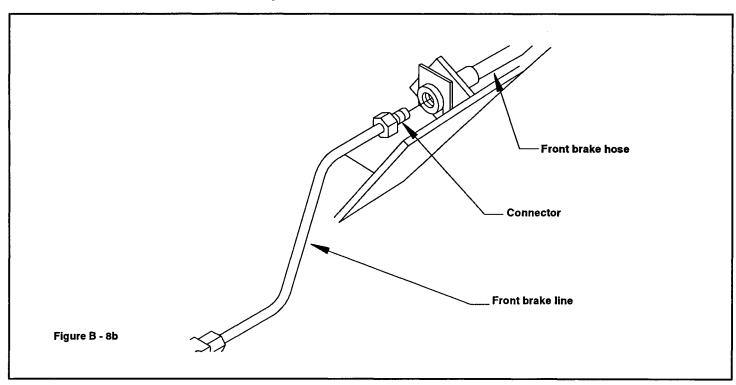




Replacing the Front Brake Lines

Make provisions to catch brake fluid that may spill from the fittings.

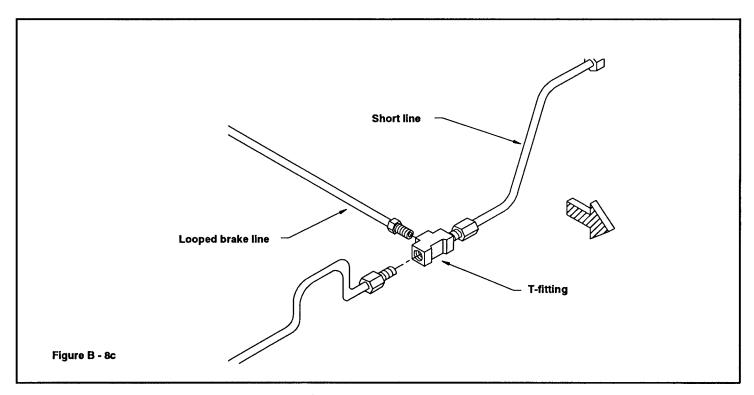
Unscrew REAR connector from master cylinder.



Unscrew connectors joining front brake lines and front brake hoses. Discard old front brake lines and T-fitting properly.

16 - BRAKES TAYLOR-DUNN: ET 1-50





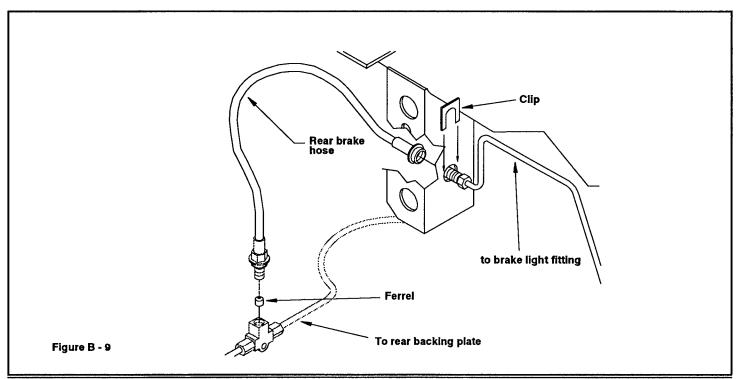
Screw the looped line into the middle thread of the new T-fitting. The short line goes on the driver's side hole and the remaining long line for the remaining hole on the T-fitting.

Screw the connector at the other end of the looped line onto the master cylinder, the short line onto the driver's side brake hose and the remaining one into the right side brake hose. Bleed front brakes. Check for leaks.

Fill the master cylinder with fresh DOT 3 brake fluid to $\frac{1}{4}$ " from the top.

TAYLOR-DUNN: ET 1-50 BRAKES - 17





Replacing the Rear Brake Hose

Make provisions to catch brake fluid that may spill from the hose.

Unscrew the brake line connector from the front end of the rear brake hose. Remove the clip. Unscrew the rear brake hose from T-fitting, taking care not to drop the ferrel from inside the fitting. Discard the old brake hose properly.

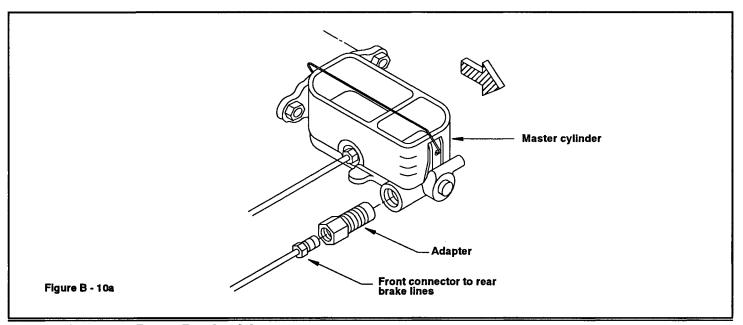
Center the ferrel in the T-fitting and screw the hose end in. Mount the hose on the frame with the clip, and screw the brake line connector into it.

Bleed the right and then the left rear brakes. Check for leaks.

Fill the master cylinder with fresh DOT 3 brake fluid to $\frac{1}{4}$ " from the top.

18 - BRAKES TAYLOR-DUNN: ET 1-50

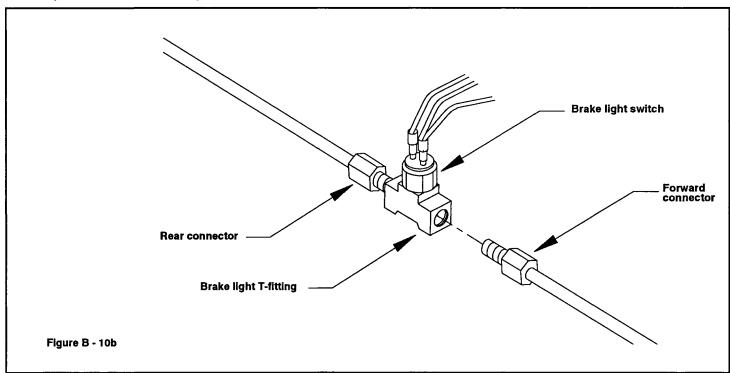




Replacing the Rear Brake Lines

Make provisions to catch brake fluid that may spill from the fittings.

Unscrew the FRONT connector from the adapter on master cylinder. If the adapter also needs replacing, unscrew the adapter from the master cylinder.

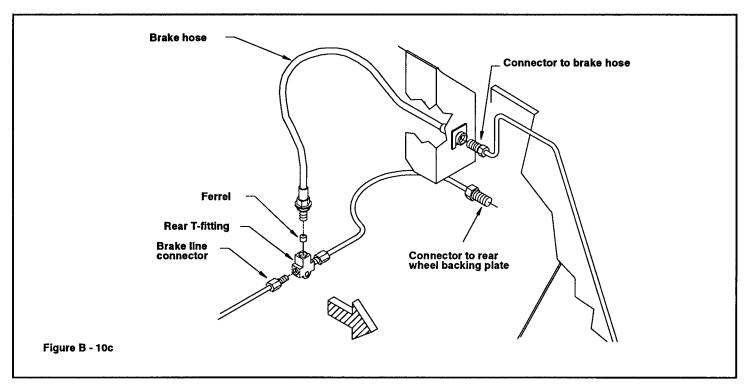


Lift up driver's seat and unscrew forward connector from the brake light T- fitting. Pull the old brake line out. Insert the new one in. Screw the respective connectors into the master cylinder and T-fitting.

Unscrew rear connector from the T-fitting.

TAYLOR-DUNN: ET 1-50 BRAKES - 19





Unscrew the rear brake line from the rear brake hose.

Unscrew brake line connectors to rear wheels. Remove the two rear wheel brake lines.

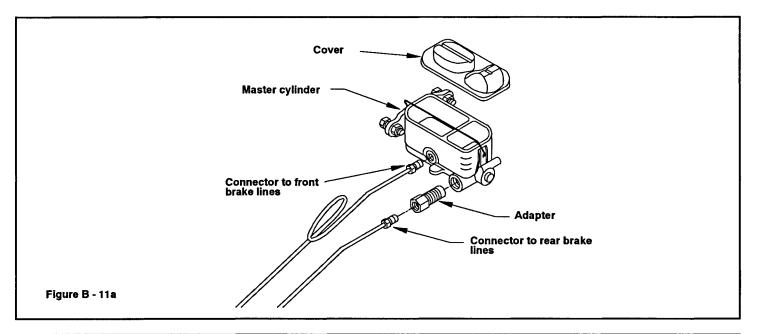
Install new rear wheel brake lines and T-fitting as shown.

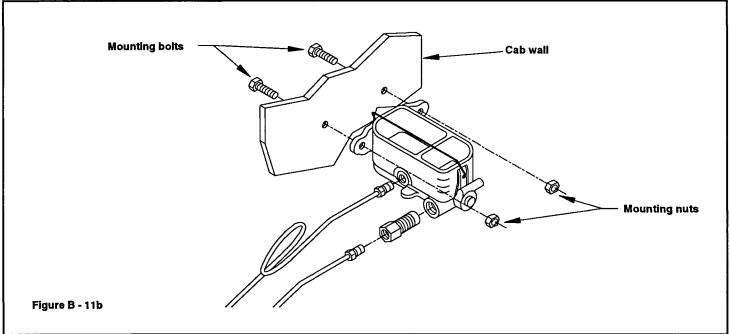
Install new brake lines in reverse order.

Bleed the right rear brakes, then the left. Check for leaks. Fill the master cylinder with fresh DOT 3 brake fluid to $\frac{1}{4}$ " from the top.

Dispose of the old brake lines properly.

20 - BRAKES TAYLOR-DUNN: ET 1-50





Replacing the Master Cylinder

Pump out and dry the master cylinder.

Remove the front brake line connector, and the adapter for the rear connector. If the adapter also needs replacing, unscrew the connector from the adapter.

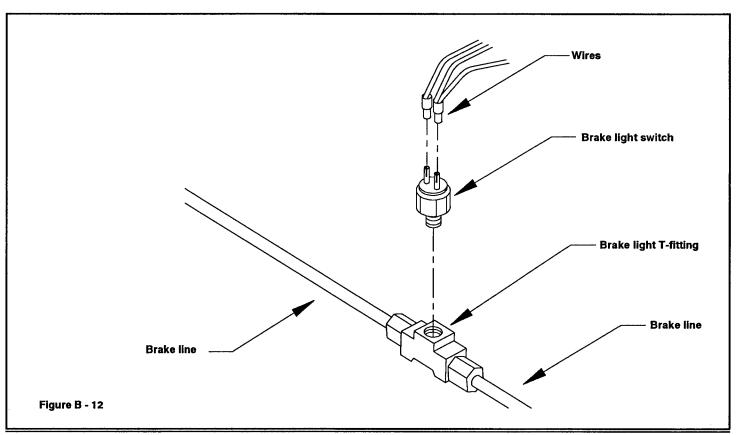
Have somebody hold the master cylinder to prevent it from falling. From inside the cab, remove the two bolts holding the master cylinder to the cab wall. Discard the old master cylinder properly.

To install the new one, reverse procedures. Fill with fresh DOT 3 brake fluid to $\frac{1}{4}$ " from the top. Bleed all brakes. Refill with fresh DOT 3 brake fluid to $\frac{1}{4}$ " from the top.

Adjust the brake pedal free play (see "Adjusting the Brake Pedal Free Play," this section).

TAYLOR-DUNN: ET 1-50 BRAKES - 21





Replacing the Brake Light Switch

Open the driver's seat access. Disconnect two wires and unscrew brake light switch. Disconnect two wires and discard old switch properly.

Coat the threads of the new switch with teflon tape. Screw new brake light switch on and connect two wires disconnected earlier. Test by stepping on the brake pedal a few times.

Bleed the rear brakes.

22 - BRAKES TAYLOR-DUNN: ET 1-50

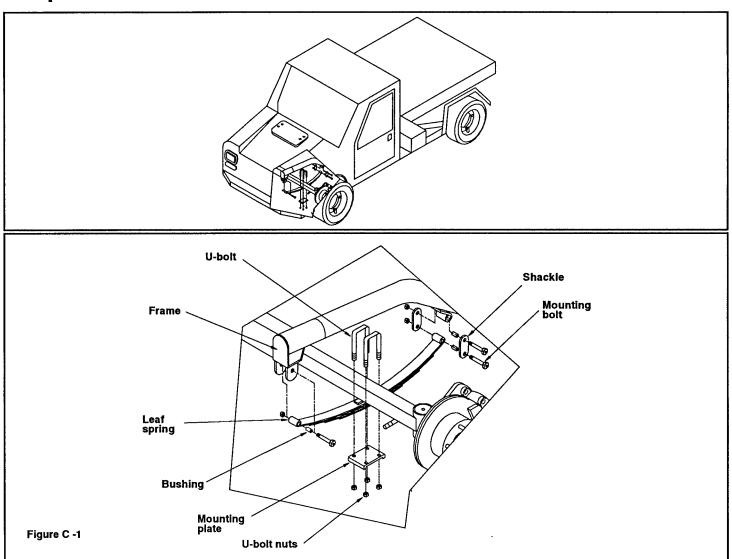


SUSPENSION

TAYLOR-DUNN: ET 1-50 SUSPENSION - 1



Suspension



WARNING!

Please refer to Section 1, "SAFETY / GENERAL INFORMATION" before performing any repairs / maintenance on this vehicle.

Replacing the Front Axle Suspension Springs

Jack up and support the truck on the front frame support points. Support the front axle (see "Safety / General Information").

Remove front axle u-bolts and spring mounting plates. Remove front and rear mounting bolts, nuts. shackles and bushings. Dispose of the old springs properly.

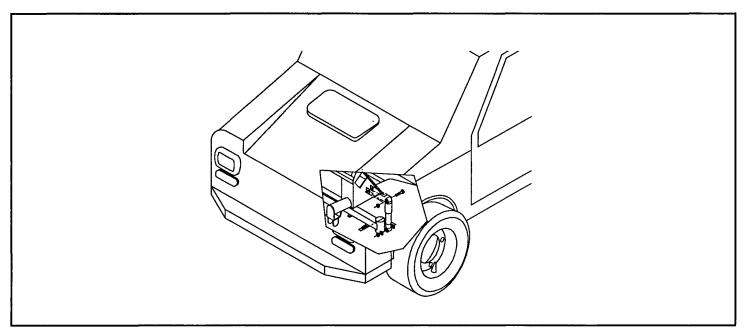
Place new bushings inside new suspension springs. Install as shown. Tighten nuts securely, then back them out $\frac{1}{2}$ turn. Repeat for the other side if necessary.

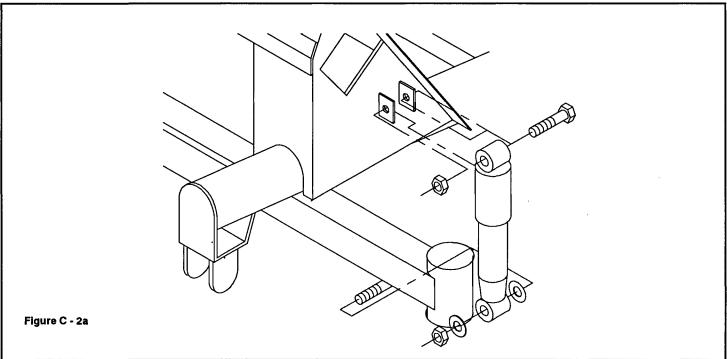
Lubricate all front axle grease fittings with multi-purpose grease using a grease pump.

Note: It is recommended that both springs be replaced at the same time.









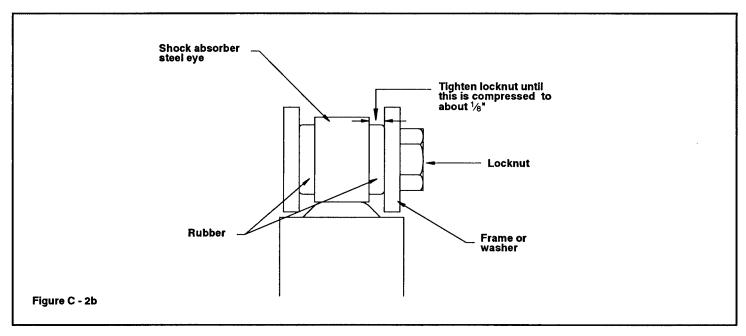
Replacing the Front Shock Absorbers

Remove lower nut and washer. Remove upper nut, and remove upper mounting bolt. Rotate the upper part to free the shock absorber and pull it out of the lower stud. Replace the remaining washers with new ones on the bottom side.

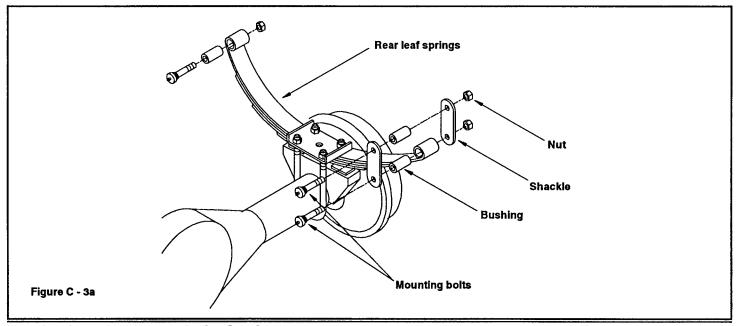
Place a washer on the axle stud, then the lower eye of the new shock absorber, washer and new locknut. Tighten the nut until washers touch shocks' rubber w/out squeezing them. Align the top eye hole with the top mounting holes. Insert the mounting bolt, and insert new locknut. Tighten nuts securely, but allow the shock absorbers free play.

TAYLOR-DUNN: ET 1-50 SUSPENSION - 3





Tighten the locknut until the rubber bushings are compressed to about $\frac{1}{6}$ " on either side, as shown.

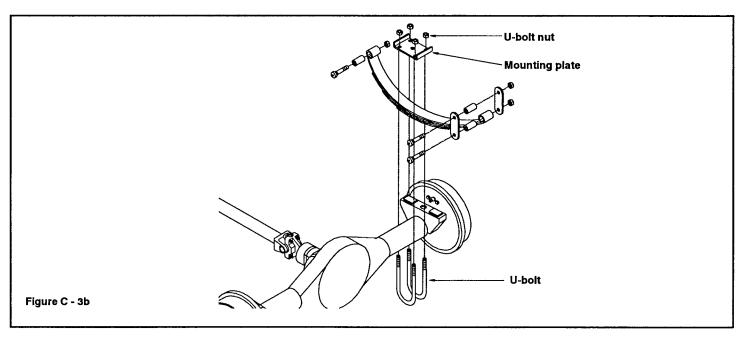


Replacing the Rear Axle Springs

Jack up and support the truck on the rear of the frame (See "Lift and Support Points" at the beginning of this section.

Remove three spring mounting bolts from the rear axle springs.





Remove 4 u- bolts. Dispose of the old springs properly.

To install new leaf springs, insert new bushings in the springs' eyes. Install in reverse order. Mount suspension on the frame with the mounting bolts as shown. Tighten each nut securely, then back out $\frac{1}{2}$ turn.

Repeat the entire procedure for the other side.

Note: It is recommended that both springs be replaced at the same time.

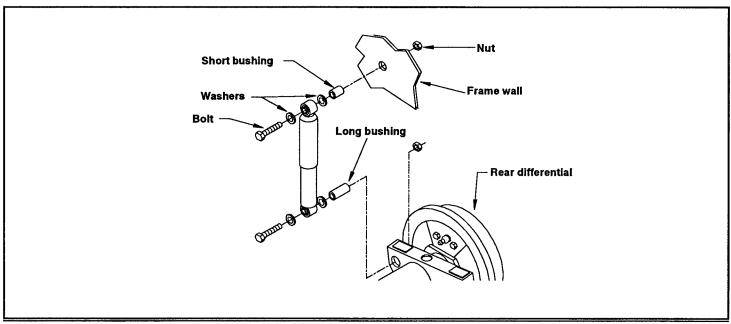
Note: When installing, leaf spring clamps are supposed to be on the rear, and grease fittings facing inside.

Lubricate all fittings with multi-purpose grease using a grease pump.



TAYLOR-DUNN: ET 1-50 SUSPENSION - 5





Replacing the Rear Shock Absorbers

Remove upper and lower nuts, bolts, washers and spacers. Dispose of old shock absorbers properly.

Install the new ones in the following order:

Top Mount - Bolt, washer, shocks, washer, short bushing, frame, nut.

Bottom Mount - Bolt, washer, shocks, washer, long bushing, differential, nut.

Tighten the locknut until the rubber bushings are compressed to about $\frac{1}{8}$ " on either side (see "Replacing the Front Shock Absorbers," this section).

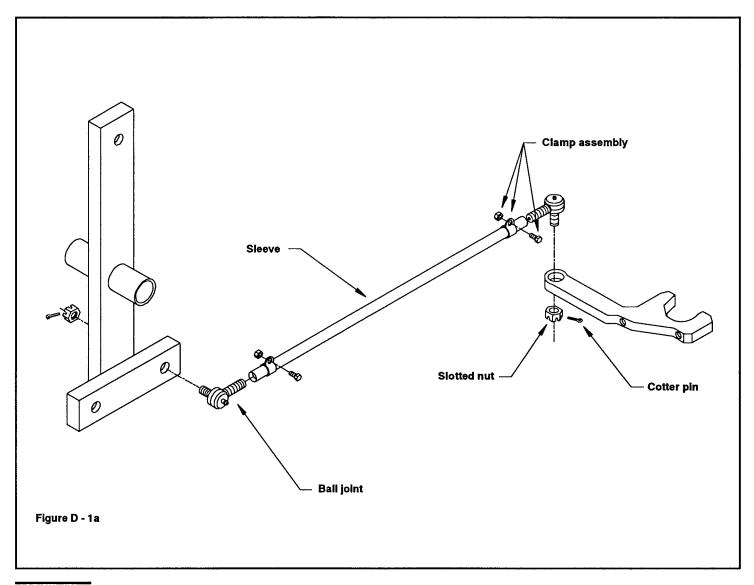


STEERING

TAYLOR-DUNN: ET 1-50 STEERING - 1



Steering



WARNING!

Please refer to Section 1, "SAFETY / GENERAL INFORMATION" before performing any repairs / maintenance on this vehicle.

Steering Linkages

Replacing the Ball Joints

Remove cotter pins. Unscrew and remove the slotted nuts from both ball joints.

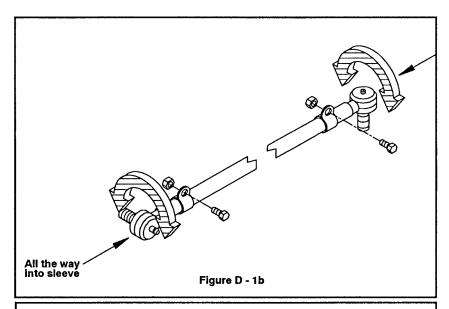
Note position of clamps. Unscrew linkage clamps.

Note: Half the ball joints have right-hand and half have left-hand threads. For the next step, visually check whether turning the ball joint clockwise will back it out of the sleeve.

Unscrew and remove the ball joints from the sleeve.

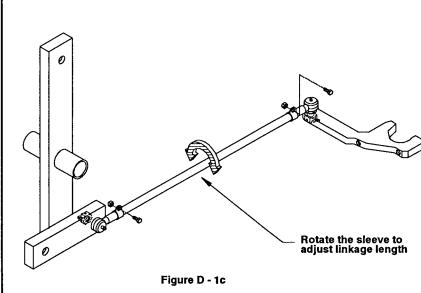
2 - STEERING TAYLOR-DUNN: ET 1-50

Screw the the new ball joints all the way into the sleeve.



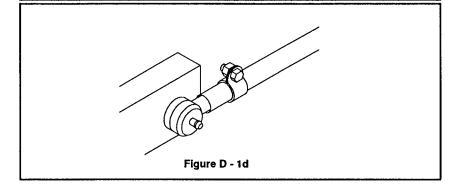
Insert one ball joint into one of the linkage mounting holes. Align the other ball joint with the other linkage mounting hole. Rotate the *sleeve*, not the ball joints, if necessary to adjust the linkage length. Engage the slotted nuts onto the ball joints and tighten securely.

Insert a cotter pin into one ball joint hole and bend one end outwards around the ball joint. Repeat for the other end.



Tighten all clamp screws securely.

Align the front end for toe-in (see Aligning the Front End," this section).



Replacing the Steering Sleeves

To replacing a steering sleeve, perform the same procedure as "Replacing the Ball Joints", above, but use a new sleeve.

TAYLOR-DUNN: ET 1-50 STEERING - 3



Aligning the Front End

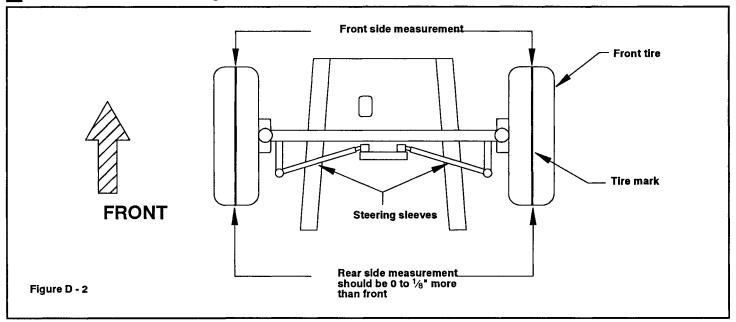
To align the front end for toe-in, perform the following:

Note: The caster and camber are set at the factory and are not adjustable.

- Raise the front end of the vehicle until the front wheels clear the ground, and support it (see "Lift and SupportPoints," Safety / General Information Section).
- 2 Mark all around the center of each front tire.

Tip: Hold a white chalk or other marker against the tire tread at its center and rotate the tire.

- 3 Lower the front end.
- 4 Position front wheels straight ahead.



- Measure the distance between the marks on the rear side of the front tires.
- Measure the distance between marks on the front side of the front tires.

The rear measurement should be between 0 and $\frac{1}{8}$ greater than the front measurement. If not, continue with the remaining steps.

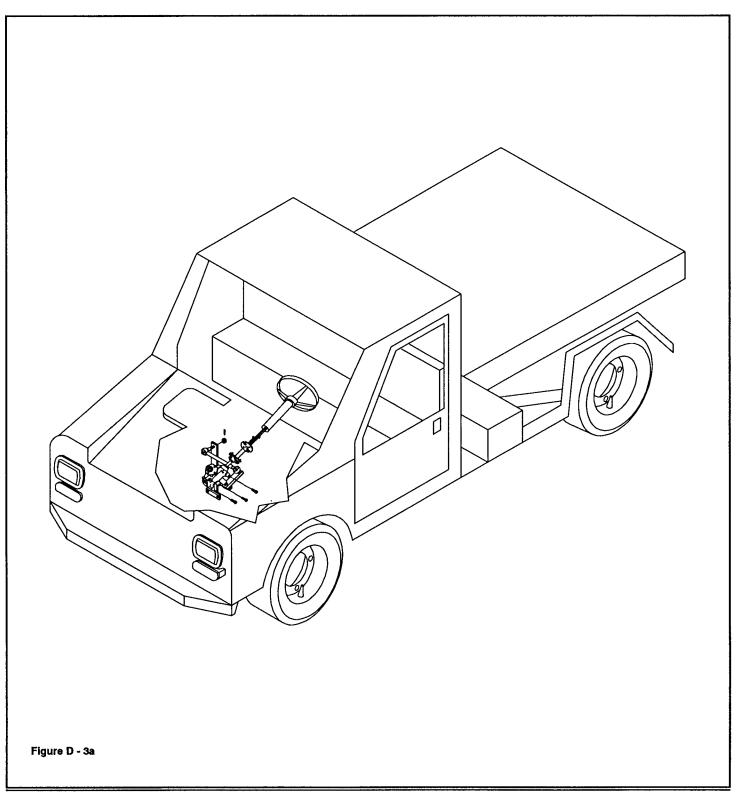
- Loosen the clamp nuts on the tie-rods until the tie rod sleeves can be turned.
- Turn both the tie-rod sleeves **evenly** until the distance between the rear marks on the tires is between $\pm \frac{1}{8}$ and 0 greater than the front.
- 9 Tighten each tie-rod clamp nut.

Note: Be careful not to change the position of the tie rod while tightening clamp nuts.

Note: The tie rods should be near equal in length.

4 - STEERING TAYLOR-DUNN: ET 1-50





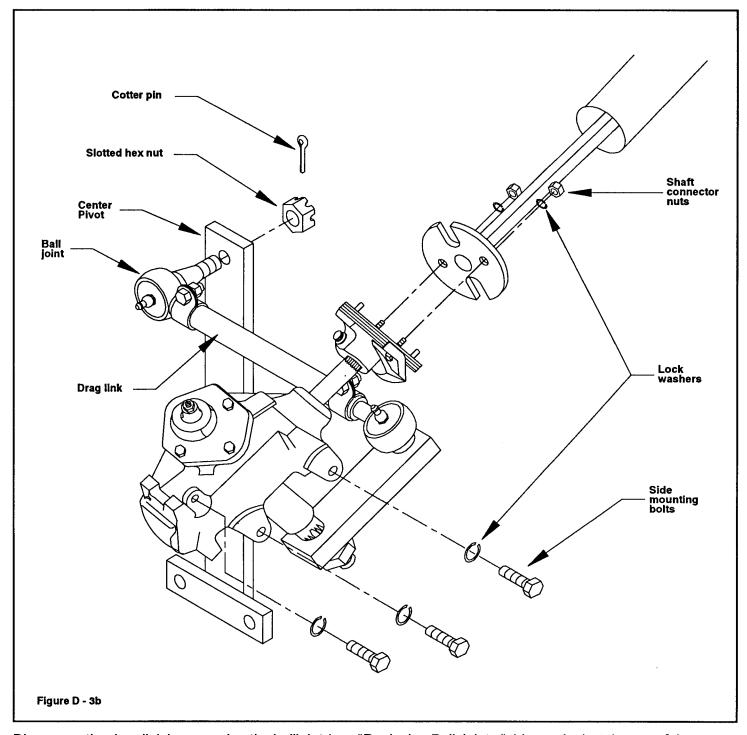
Replacing the Steering Gearbox

Removing the Steering Gearbox

Jack up the truck and remove the left front wheel (see "Changing a Flat Tire," Accessories section).

TAYLOR-DUNN: ET 1-50 STEERING - 5





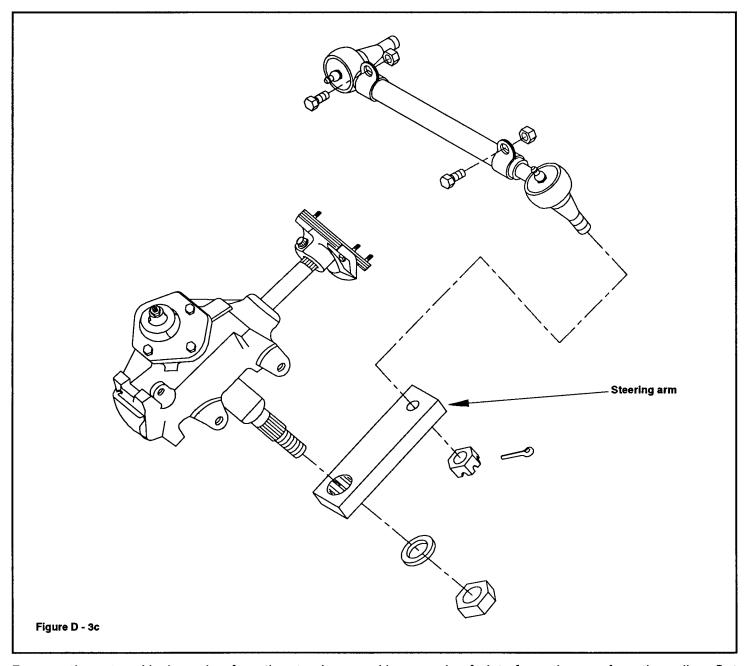
Disengage the drag link by removing the balljoint (see "Replacing Ball Joints," this section) at the top of the center pivot.

Remove the steering wheel shaft connector nuts, one $\frac{1}{2}$ " and one $\frac{9}{16}$ ", and lock washers.

Reach from under the wheel well to remove 3 gearbox mounting bolts and lock washers.

Slowly and carefully pull out the gearbox, steering arm and linkage through the hood opening.

6 - STEERING TAYLOR-DUNN: ET 1-50

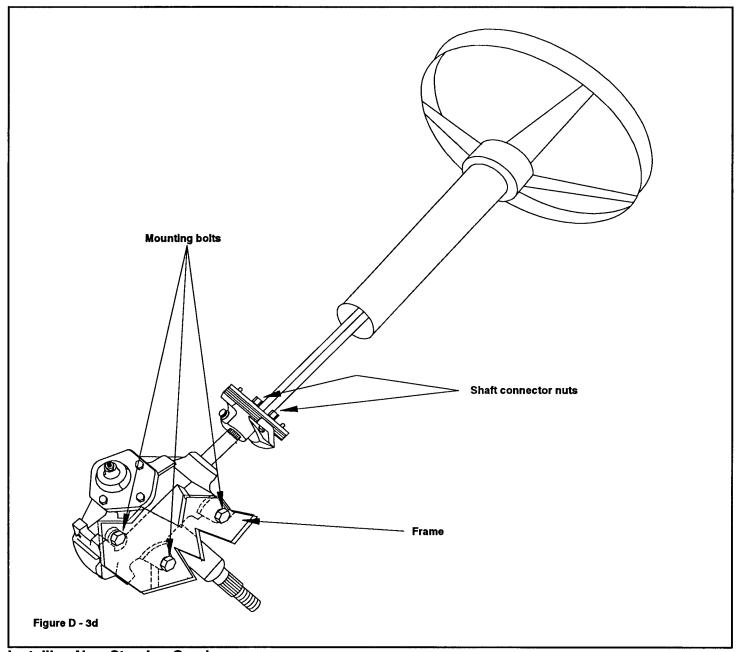


Remove the nut and lock washer from the steering arm. Use a wedge fork to force the arm from the spline. Set the old gearbox aside.

Remove the cotter pin and unscrew the slotted nut to disengage the balljoint from the steering arm.

TAYLOR-DUNN: ET 1-50 STEERING - 7

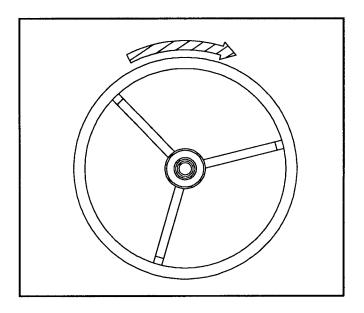




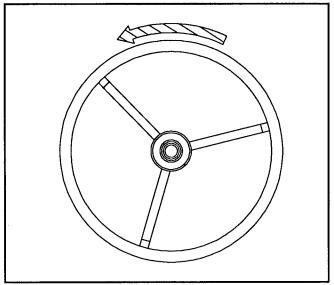
Installing New Steering Gearbox

Install the gearbox on the frame with the three mounting bolts. Attach it to the steering shaft with the connector nuts and lock washers removed earlier.

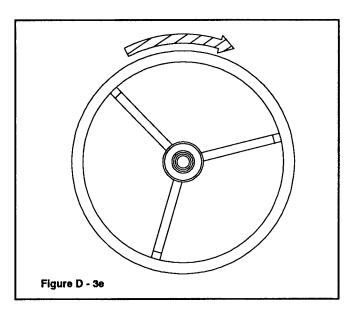
8 - STEERING TAYLOR-DUNN: ET 1-50



Turn the steering wheel all the way to the right.



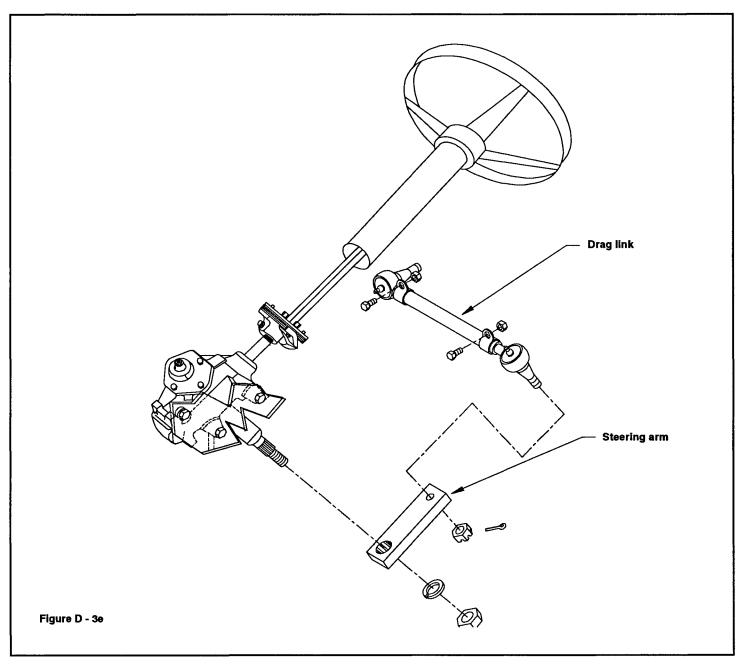
Turn it back all the way to the left, counting the number of turns.



Turn it back half the counted number of turns (approximately $3\frac{1}{2}$ turns).

TAYLOR-DUNN: ET 1-50 STEERING - 9





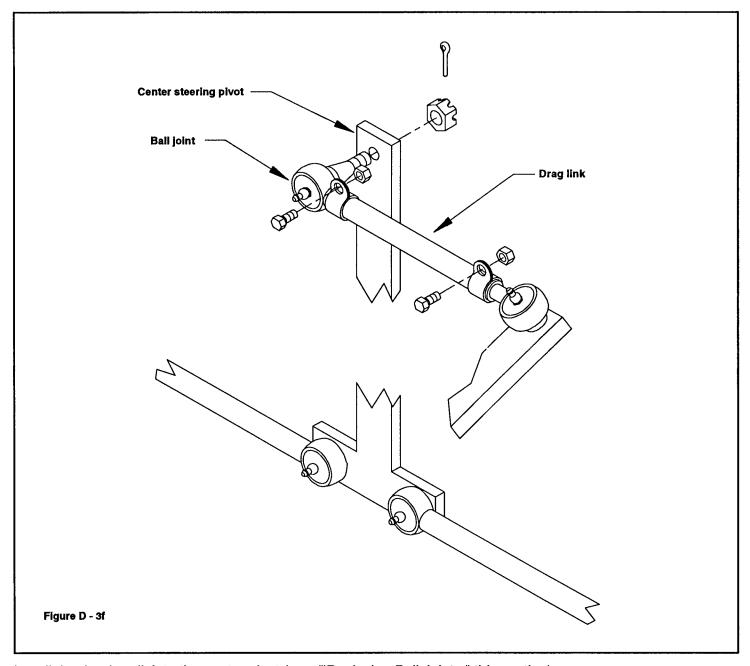
Engage the spline on the new gearbox into the steering arm hole, keeping the arm parallel to the gearbox body.

Note: Spline can only go into the arm one way.

Engage lock washer and nut on the spline. Tighten the nut securely.

10 - STEERING TAYLOR-DUNN: ET 1-50





Install the the drag link to the center pivot (see ("Replacing Ball Joints," this section).

Place the clamps as close to the edge of the sleeve as possible. Make sure clamp nuts are facing forward and up for easy servicing.

Tighten clamp nuts.

Test the steering.

TAYLOR-DUNN: ET 1-50 STEERING - 11



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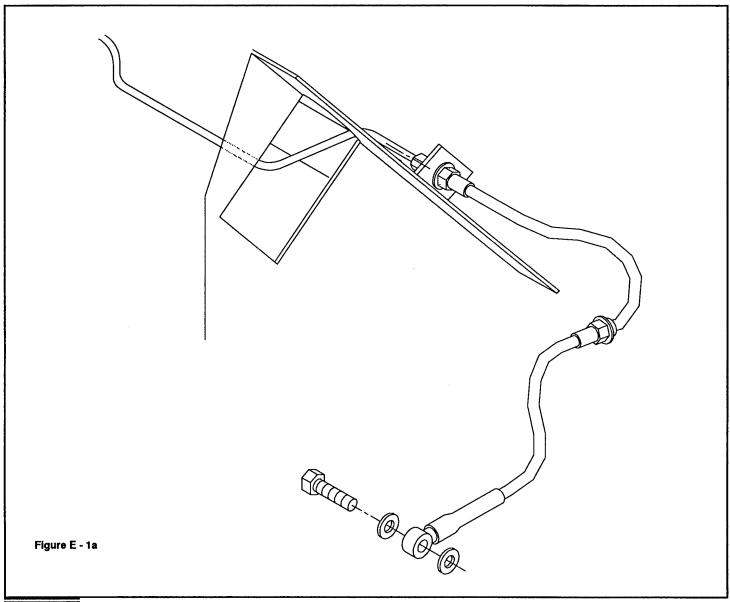


FRONT AXLE

TAYLOR-DUNN: ET 1-50 FRONT AXLE - 1



Front Axle



WARNING!

Please refer to Section 1, "SAFETY / GENERAL INFORMATION" before performing any repairs / maintenance on this vehicle.

Replacing the Front Axle Assembly

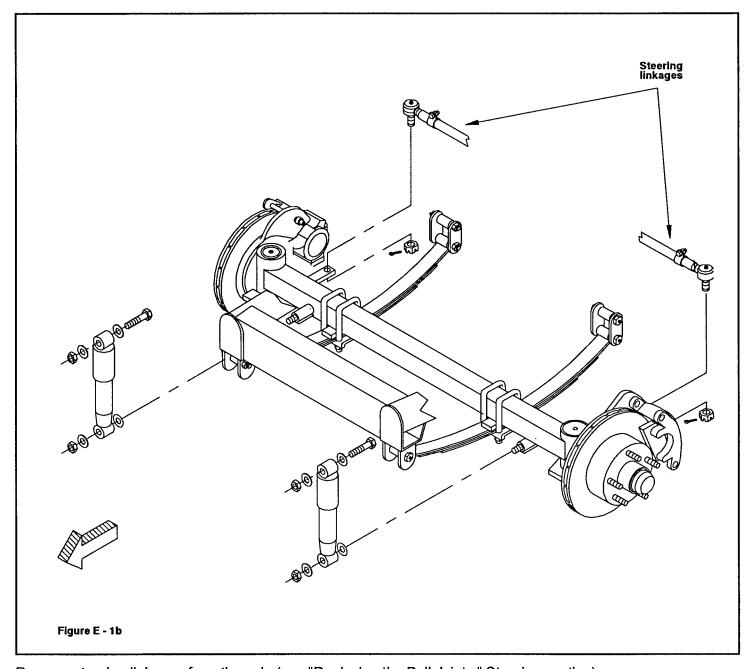
Lift the truck up and support the forward side of the frame. Support the front axle (See "Lift and Support Points," Safety / General Information Section).

Remove both front wheels (See "Replacing a Tire," Accessories Section).

Remove front brake line bolts (see "Replacing the Front Brake Hoses," Brake section).

2 - FRONT AXLE TAYLOR-DUNN: ET 1-50



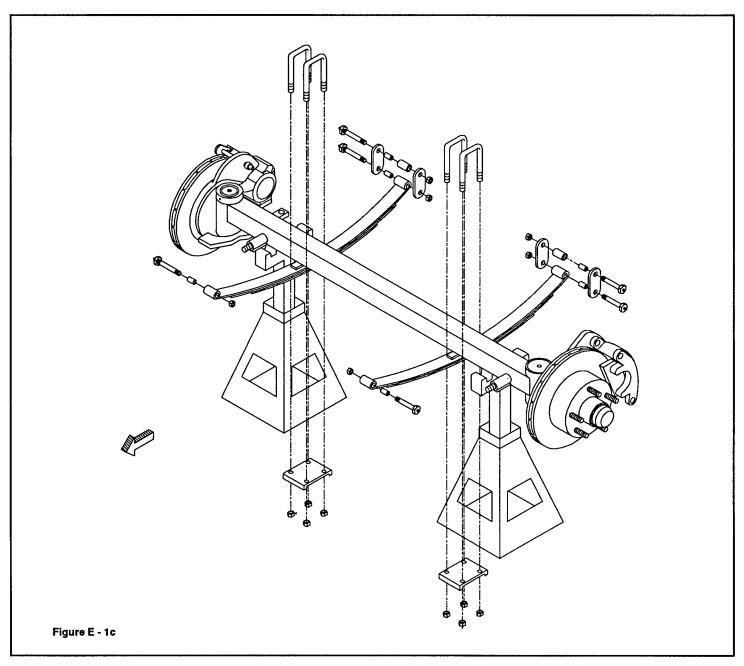


Remove steering linkages from the axle (see "Replacing the Ball Joints," Steering section).

Remove front shock absorbers (see "Replacing the Front Shock Absorbers," Suspension section).

TAYLOR-DUNN: ET 1-50 FRONT AXLE - 3





Remove suspension springs (see "Replacing the Front Axle Suspension Springs," Suspension section)

Remove the axle.

Install the new one in reverse order.

Bleed both front brakes.

4 - FRONT AXLE TAYLOR-DUNN: ET 1-50

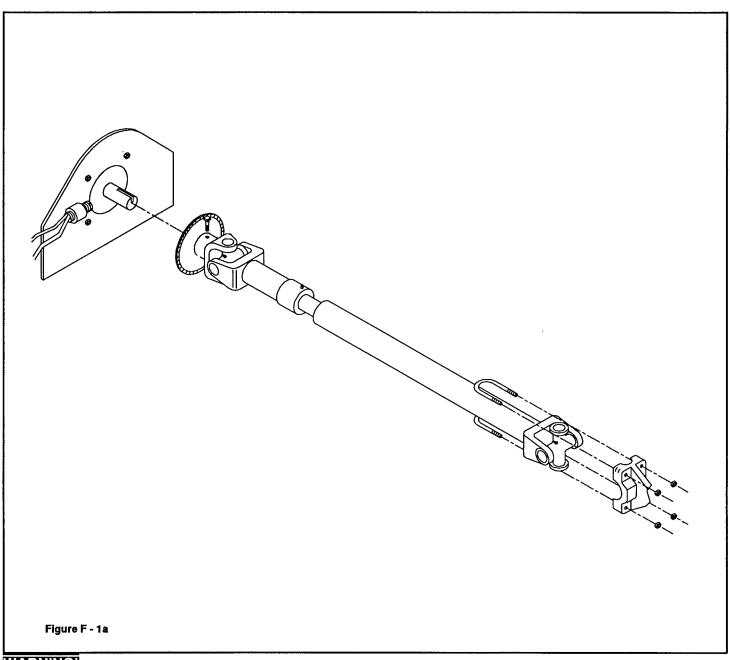


POWER TRAIN

TAYLOR-DUNN: ET 1-50 POWER TRAIN - 1



Power train

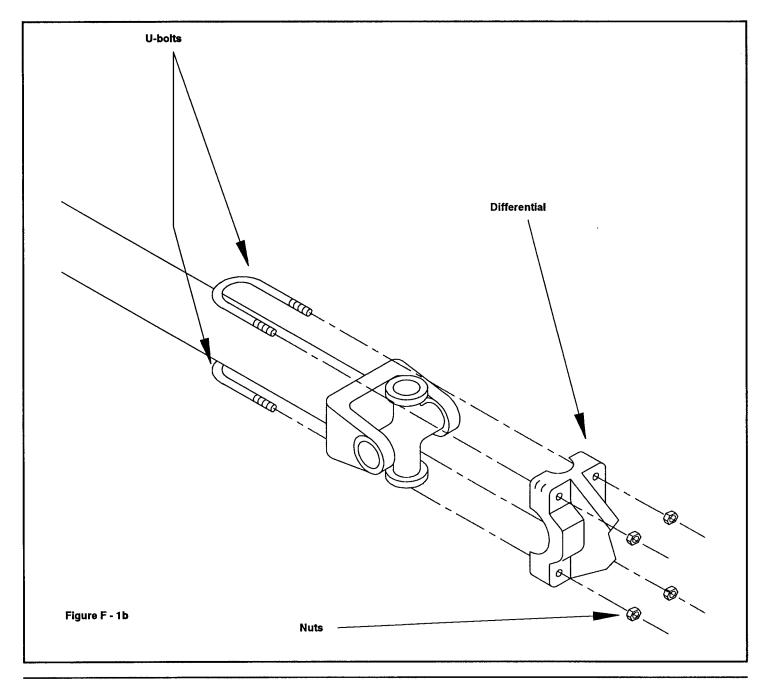


WARNING!

Please refer to Section 1, "SAFETY / GENERAL INFORMATION" before performing any repairs / maintenance on this vehicle.

2 - POWER TRAIN TAYLOR-DUNN: ET 1-50





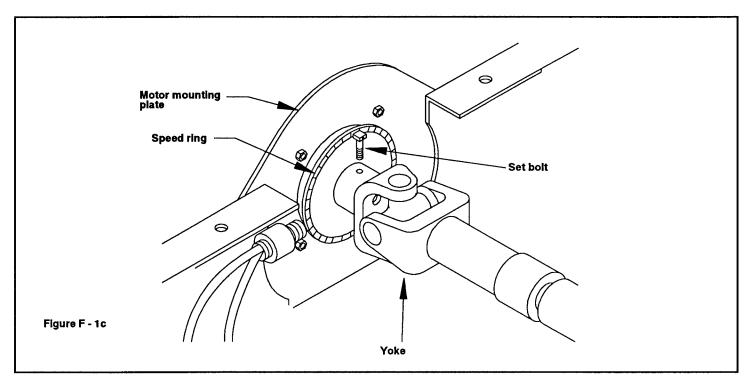
Replacing the Drive Shaft

Disengaging the Drive Shaft from the Differential

Disengage 2 u-bolts from the rear u-joint. Pull the rear portion of the shaft forward and lower it slowly to the ground.

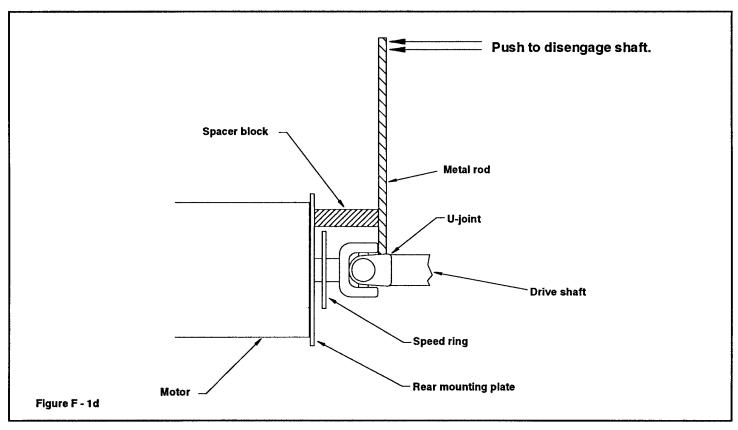
TAYLOR-DUNN: ET 1-50 POWER TRAIN - 3





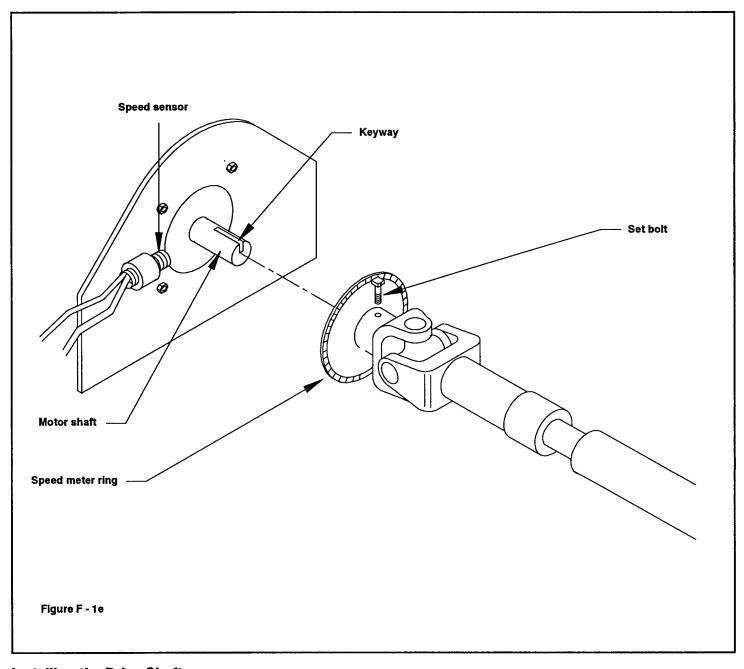
Disengaging the Drive Shaft from the Motor

Snip safety wire from the set bolt. Remove the set bolt.



Hold a spacer block against the mounting plate as shown. Insert a metal rod in the U-joint. Disengage the yoke from the motor shaft by slowly but firmly pushing the rod against the spacer block.



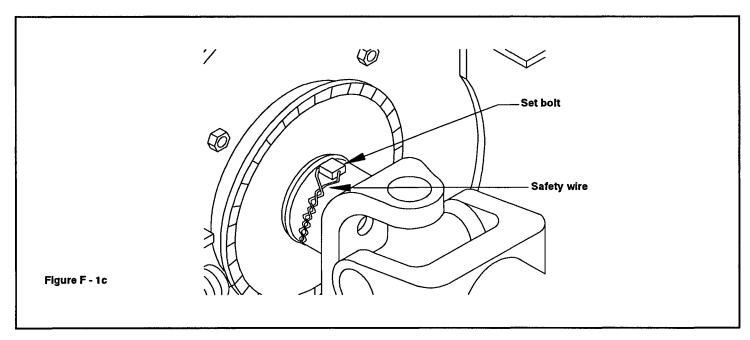


Installing the Drive Shaft

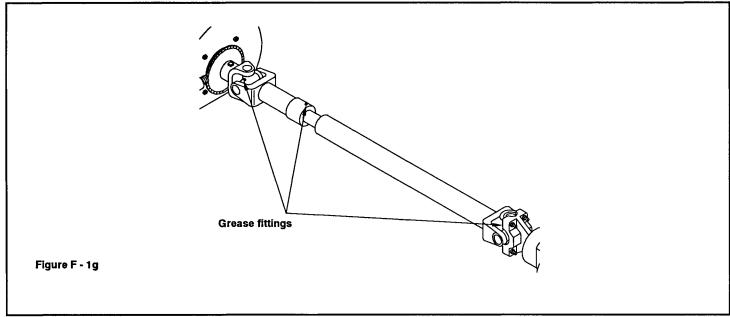
To install new one, engage 2 u-bolts from rear u-joint. Line up the motor shaft keyway. Tap the drive shaft into position with a soft hammer until speedmeter ring aligns with the center of the speed sensor.

TAYLOR-DUNN: ET 1-50 POWER TRAIN - 5





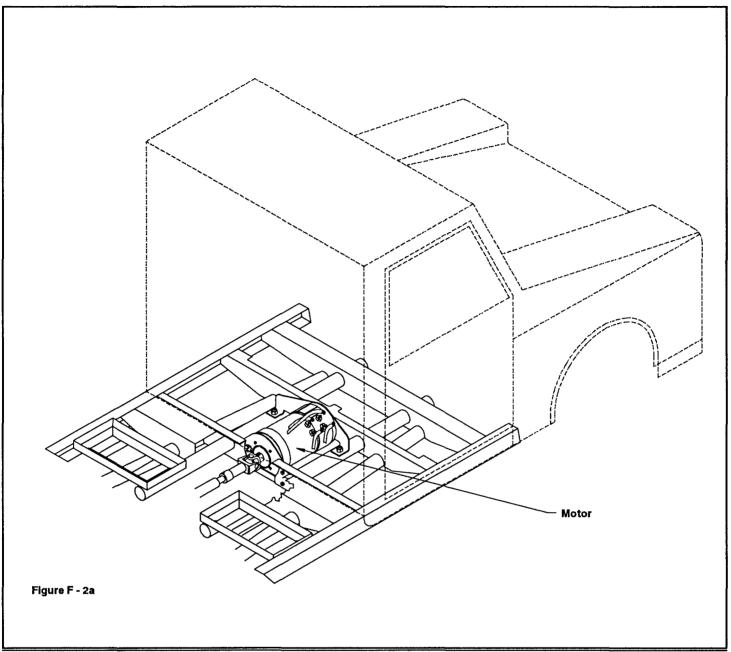
Use loctite. Tighten set screw. Replace safety wire.



Lubricate all grease fittings with multi-purpose grease using a grease gun.







Replacing the Motor

Removing the Motor

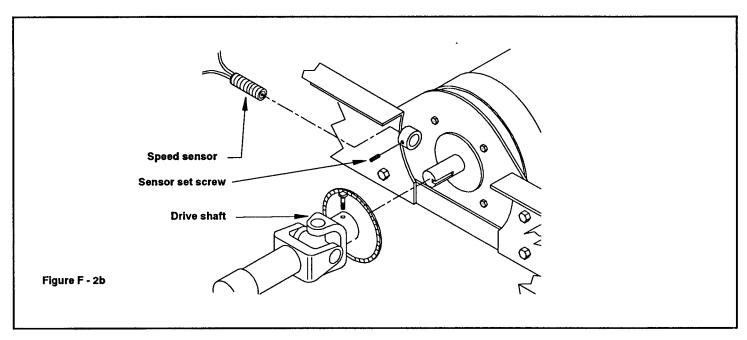
Support the motor from below.

Caution:

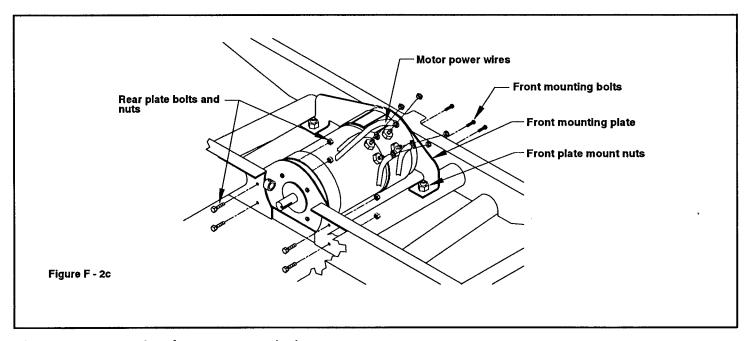
The motor weighs approximately 180 lbs., and tends to roll. Make sure the support will prevent it from rolling and is strong enough to bear the weight.

TAYLOR-DUNN: ET 1-50 POWER TRAIN - 7





Disengage the drive shaft from the motor(see "Disengaging the Drive Shaft from the Motor," this section). Loosen speed sensor set screw. Remove speed sensor.



Disconnect power wires from motor terminals.

Loosen two front plate mount nuts to provide play for the front mounting plate.

Remove four rear mounting plate bolts and nuts.

Remove three front mounting bolts.

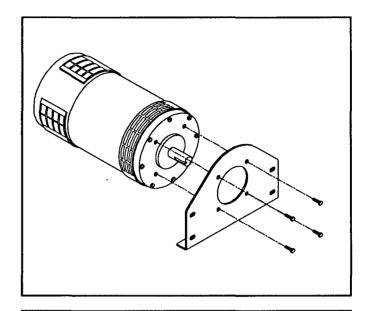
Note: Note washers and spacers' position.

Lower the motor and rear mounting plate safely.

Note: The front mounting plate will remain in the truck.

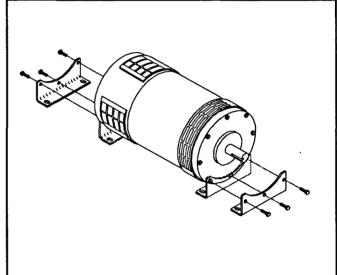


Remove four remaining bolts and remove rear plate from the motor. Set the old motor aside.



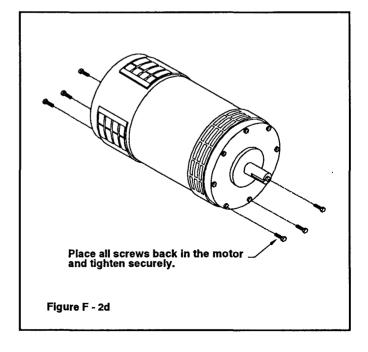
Installing the New Motor

Remove the screws that mount the original brackets to the new motor. Dispose of the brackets properly.



Install the screws back in position and tighten securely.

Install the new motor in reverse order.



TAYLOR-DUNN: ET 1-50 POWER TRAIN - 9



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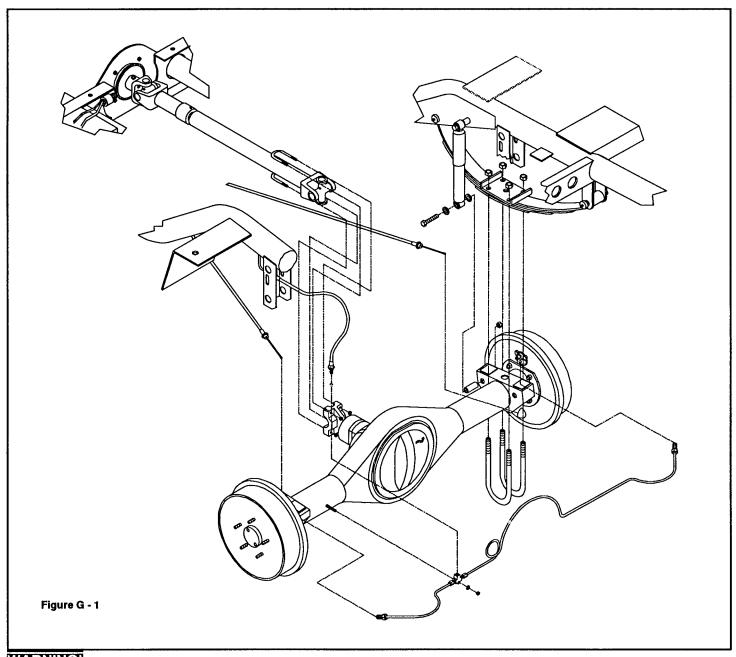


DIFFERENTIAL / REAR AXLE

TAYLOR-DUNN: ET 1-50 DIFFERENTIAL - 1



Differential / Rear Axle



WARNING!

Please refer to Section 1, "SAFETY / GENERAL INFORMATION" before performing any repairs / maintenance on this vehicle.

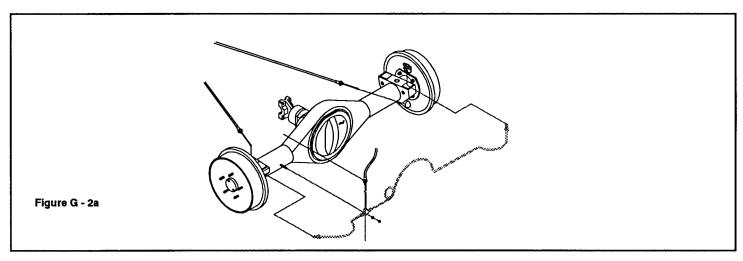
Replacing the Differential

Support the truck from the rear frame support points until the rear wheels clear the ground (see "Support Points," Safety / General Information section at the beginning of this manual).

Support the rear axle. Remove the rear wheels.

2 - DIFFERENTIAL TAYLOR-DUNN: ET 1-50

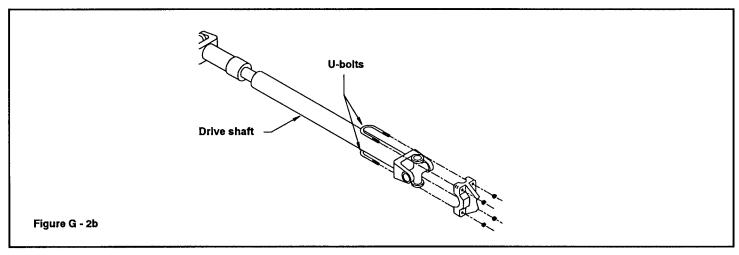




Remove brake drums. Disengage and remove the park brake cable from the park brake lever (see "Replacing the Rear Brake Shoes," Brake System section).

Remove brake lines from rear wheel backing plates. Unclamp right rear brake line from differential housing. Tie the brake lines out of the way.

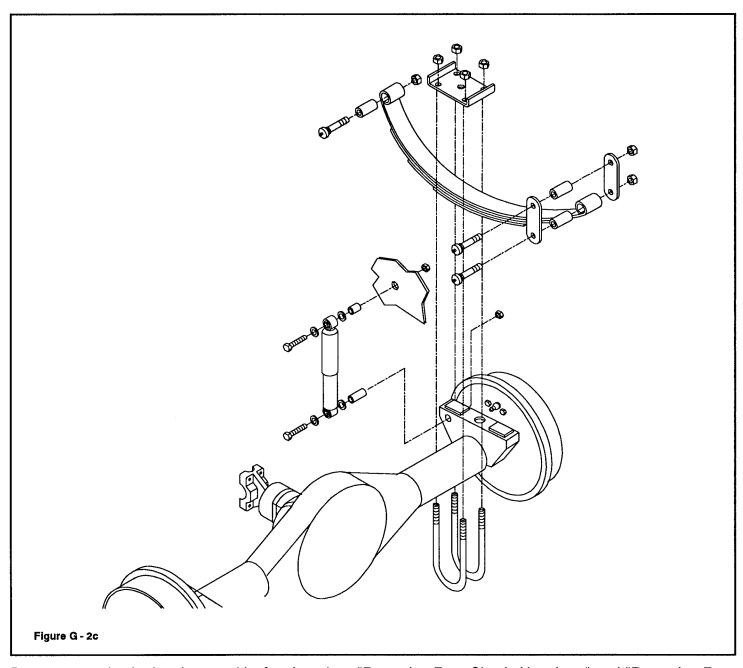
Note: Do not kink the brake lines.



Disengage the drive shaft from the differential (see "Disengaging the Drive Shaft from the Differential," Power Train section).

TAYLOR-DUNN: ET 1-50 DIFFERENTIAL - 3





Remove rear shock absorbers and leaf springs (see "Removing Rear Shock Absorbers" and "Removing Rear Leaf Springs," Suspension section).

Set the old differential aside.

Install the new differential in reverse order.

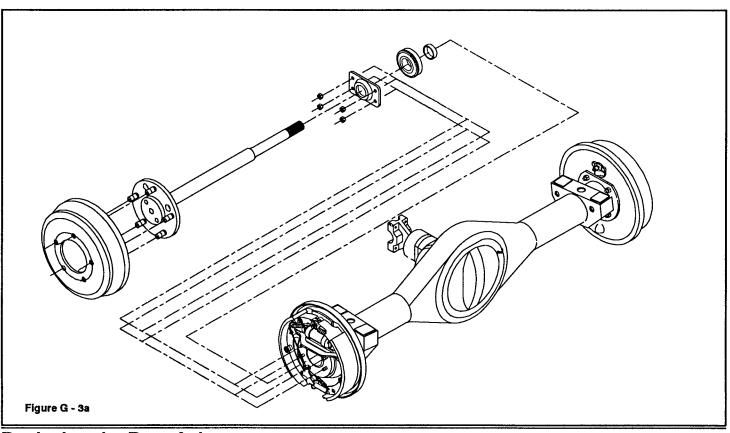
Adding Oil to the Differential

Remove differential filler plug with a socket wrench. Pump oil into differential until it starts to overflow.

Disengage oil pump and wipe off any overspill. Replace the filler plug.

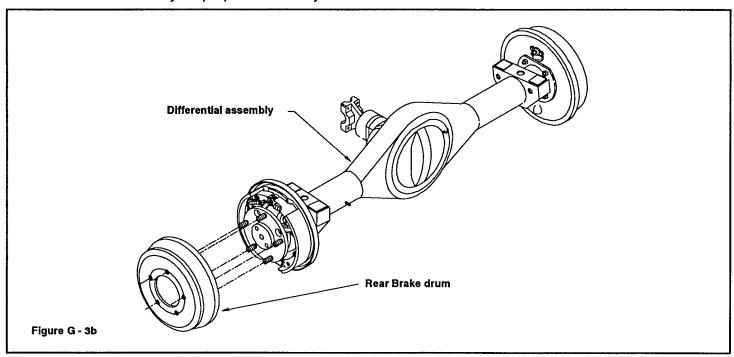
4 - DIFFERENTIAL TAYLOR-DUNN: ET 1-50





Replacing the Rear Axle

Note: The differential need not be removed to replace the rear axles. The differential is shown by itself in these illustrations solely for purposes of clarity.

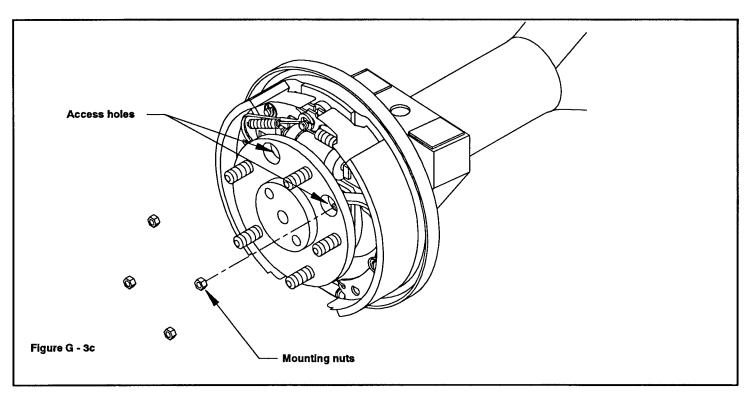


Remove the rear wheel (see "Changing a Flat Tire," Safety and General Information Section),

Remove the rear brake drum from the differential assembly.

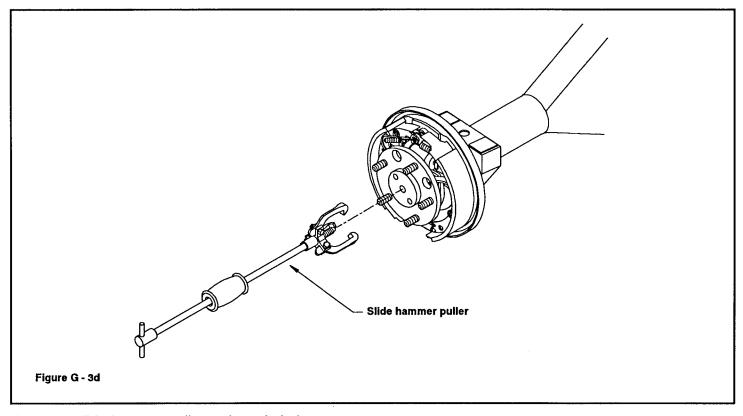
TAYLOR-DUNN: ET 1-50 DIFFERENTIAL - 5





Disengage the four axle mounting nuts, as shown.

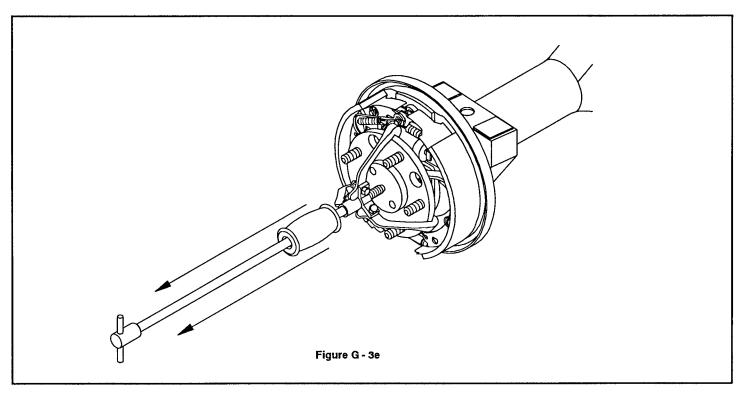
Note: Rotate the axle hub to align the access holes with each nut in turn.



Engage a slide-hammer puller to the axle hub.

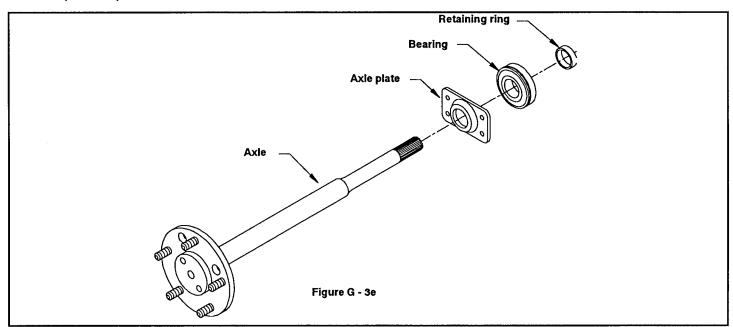
6 - DIFFERENTIAL





Pull the axle out of the housing by impact-loading with the hammer puller, as shown.

Note: Have someone hold the axle backing plate during this procedure, to prevent it from falling and damaging the brake lines. After the axle assembly comes off, replace two axle nuts on the studs to hold the backing plate in place.



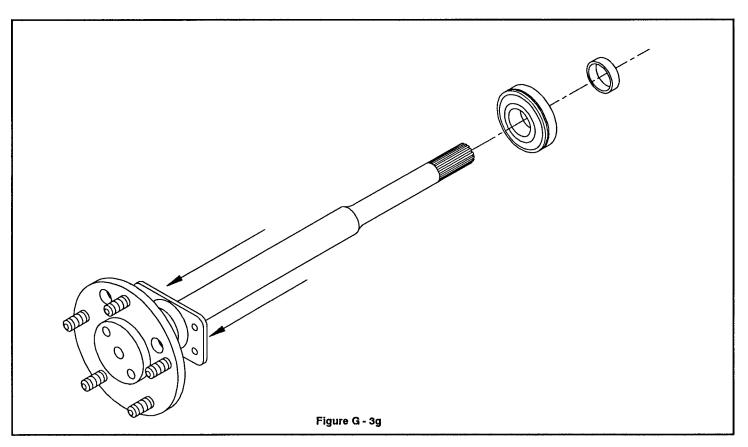
Replace the axle, bearing and retaining ring with new ones. Replace the axle plate if necessary.

WARNING!

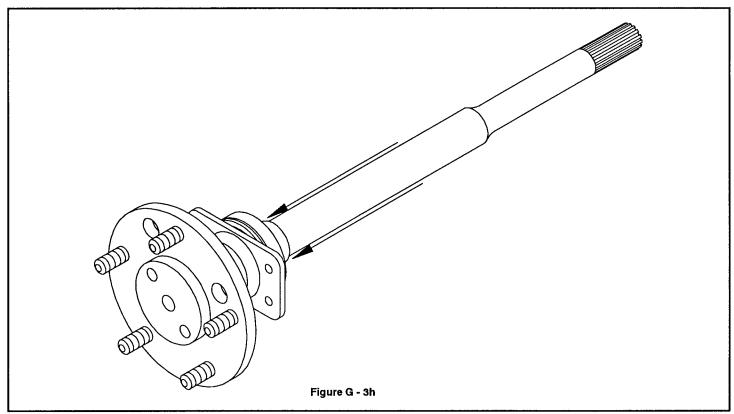
Always use a new retaining ring.

TAYLOR-DUNN: ET 1-50 DIFFERENTIAL - 7





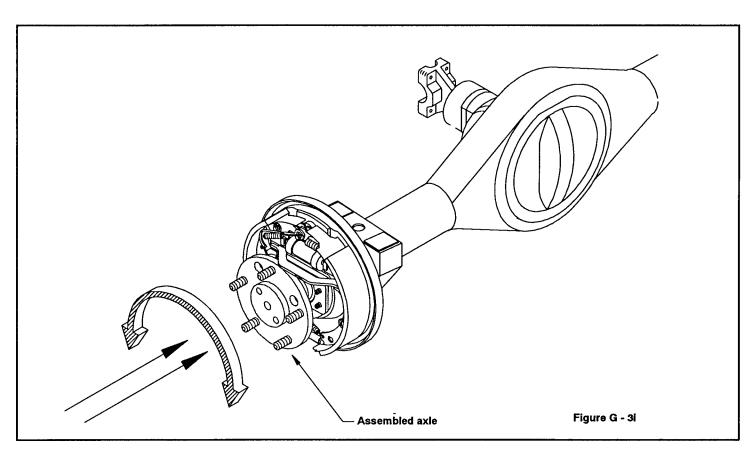
Assemble the axle plate into the axle.



Press fit the bearing and new retaining ring onto the axle.

8 - DIFFERENTIAL TAYLOR-DUNN: ET 1-50





Have somebody hold the rear brake backing plate, then remove the axle nuts that hold them in place.

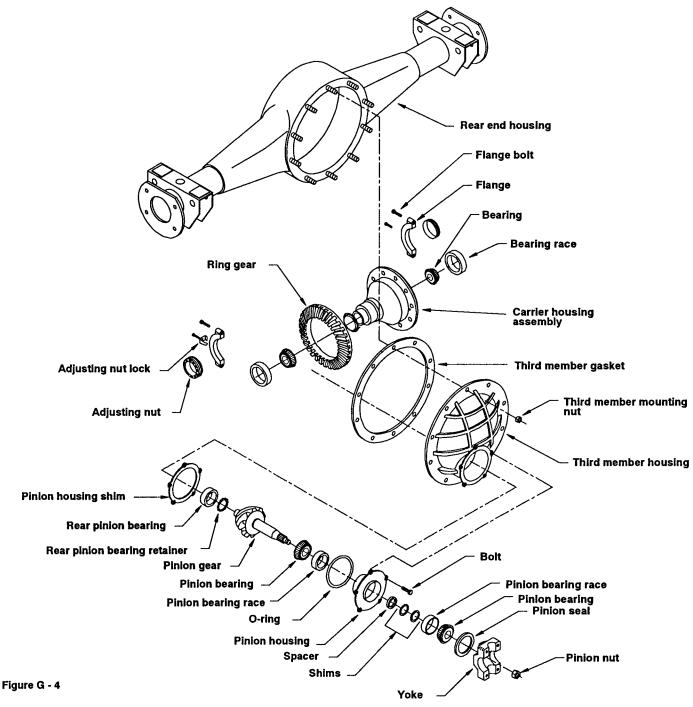
Insert the axle into the differential housing. Seat it properly by rotating it by hand, then push it all the way in. Tap it with a heavy hammer until the bearing is seated.

Install and tighten the four axle nuts.

TAYLOR-DUNN: ET 1-50 DIFFERENTIAL - 9



Repairing the Differential



Note: It is not necessary to remove the entire rear end housing from the vehicle to perform this procedure. Neither is it necessary to pull the axles and backing plates out of the rear end housing. The rear end housing is shown bare only for purposes of brevity.

- Jack up and support the vehicle from the rear of the frame (see "Lift and Support Points," Safety/General Information Section).
- Remove the drive shaft (see "Removing the Drive Shaft," Power Train Section).
- 3 Remove the pinion nut.



- Remove the rear wheels and brake drums (see "Replacing the Rear Brake Shoes," Brake System section).
- Remove eight rear axle mounting nuts, four on each side (see "Replacing the Rear Axle," this section).

Tip: Place oil pans under both ends of the differential, to catch the oil that might leak out at the next step.

Pull out each axle about 4", to disengage them from the differential drive gears.

Caution!

Do not pull the axles out all the way, as the backing plate might fall and damage the park brake lines.

- Place another oil pan under the third member, to catch the oil that will leak out at the next step.
- 8 Remove the third member mounting nuts.
- 9 Pull out the third member from the housing.
- 10 Remove both carrier bearing flanges and remove carrier assembly from housing.

Note: Do not disassemble the carrier housing assembly. There are no individually replaceable parts inside. If necessary, replace the entire carrier housing assembly.

- Remove the pinion housing assembly from the third member.
- Remove the O-ring from the pinion housing assembly.
- 13 Remove pinion housing shim.
- 14 Remove pinion gear.
- If the rear pinion bearing must be replaced due to wear or damage, remove the pinion bearing and retainer at the same time.
- Press the pinion gear shaft from the bearings.
- Remove bearings, races and spacers from the pinion housing assembly.
- Inspect and replace as necessary all bearings, races, seals, gears, and O-rings.
- 19 Lubricate all parts liberally using axle lubricant.
- Temporarily thread two $\frac{7}{16}$ x 2" bolts (not supplied) through the flange until they meet the ring gear, then rotate the bolts another three or four turns.

Note: This serves as a guide when aligning the ring gear bolt holes.

- Press (or tap with a soft hammer) the ring gear into position.
- Remove one $\frac{7}{16}$ x 2" bolt and replace it with a ring gear bolt. Repeat the procedure with the other $\frac{7}{16}$ x 2" bolt.

TAYLOR-DUNN: ET 1-50 DIFFERENTIAL - 11



Alternately tighten each drive gear bolt across the gear by hand, then torque each bolt to 62 ft-lbs.

Note: If you must replace the drive bearings and races, be sure to install the concave side of the new bearing race face-up.

Tip: Use a suitable press to install the bearings and races.

25 Install front pinion bearings and race onto the pinion gear.

26 Install spacers and shim onto the pinion gear shaft.

Note: If the shim must be replaced, refer to Selecting Shims (immediately following these procedures) before proceeding. If pinion bearings and races were replaced, the shim must also be replaced.

Place the pinion shaft retainer onto the pinion gear and install the pinion bearing.

Lubricate both bearings using differential oil.

29 Install new pinion seal.

Place yoke onto the spline of the pinion gear.

Install pinion nut and tighten to 100 ft-lbs. of torque.

Note: The pinion gear must spin freely without any play. If it is too tight or too loose, adjust the fit with a new shim.

Install the pinion housing assembly and pinion gear into the housing cover.

Insert housing cover bolts and tighten to 50 ft-lbs. of torque.

Install the carrier housing, bearings, races and adjusting nuts into the differential housing.

Position the ring gear next to the pinion gear, and turn adjusting nuts in to contact bearings.

Note: Tighten adjusting nuts to allow the carrier housing to revolve freely.

CAUTION

Do not allow any bearing play or looseness. This causes gear noise and leads to unnecessary wear on the gears.

Adjust the pinion gear such that its backlash is between 0.005" and 0.009".

Tip: Release some of the drive gear bolt tension to allow the bearing to move while making the adjustment, then retighten the bolt to 62 ft-lbs. of torque.

Note: If the flange bolts are set too loose, you will not be able to set the backlash and bearing clearance correctly.

Install the adjusting nut and lock.

Install the housing carrier and pinion case assembly into the differential housing.

Install the new differential housing gasket (use gasket sealer).



- Install the differential housing bolts and tighten to 50 ft-lbs. of torque.
- Install the axles, brake assemblies, and gaskets.
- Install the drive shaft (see "Replacing the Drive Shaft," Power Train Section).
- Add 90 weight differential oil. See "Lubrication Chart," Maintenance section.

Selecting Drive Pinion Shims

Shims are available in 0.005" to 0.021" thicknessin steps of 0.001" to correctly position the drive gear.

A standard shim is 0.015" thick. Inserting a thicker shim between the pinion retainer and the carrier moves the pinion away from the drive gear.

Note: Matched pinions and drive gears use the same number.

A "+" or a "-" indicates whether to add or subtract the indicated amount from a standard shim.

The following numbering system is used on pinions to indicate the amount you must add to or subtract from the standard shim:

PINION NUMBERING SYSTEM	
If number is	Adjust standard shim as follows:
0	standard shim (no adjustment)
+1	add 0.001"
+2	add 0.002"
+3	add 0.003"
+4	add 0.004"
+5	add 0.005"
-1	subtract 0.001"
-2	subtract 0.002"
-3	subtract 0.003"
-4	subtract 0.004"
-5	subtract 0.005"

DIFFERENTIAL - 13



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ELECTRICAL SYSTEM

WARNING!

- Δ <u>HIGH VOLTAGE PRESENT!</u> CAREFULLY DISCONNECT BATTERIES BEFORE SERVICING
- Δ BATTERY GASES ARE EXPLOSIVE! KEEP SPARKS, FLAMES AND LIGHTED CIGARETTES AWAY FROM BATTERIES.
- Δ KEEP THE VEHICLE AND BATTERIES IN A WELL-VENTILATED AREA WHEN CHARGING.



WIRING DIAGRAM

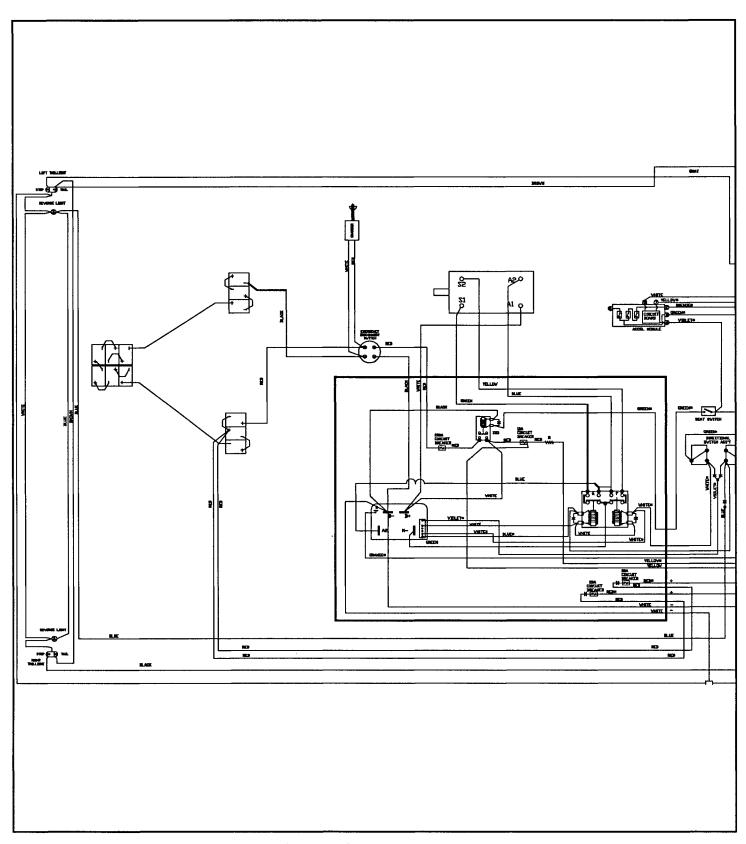


Figure H - 1a. Electruck Wiring Diagram - Sheet 1 of 2

2 - ELECTRICAL TAYLOR-DUNN: ET 1-50

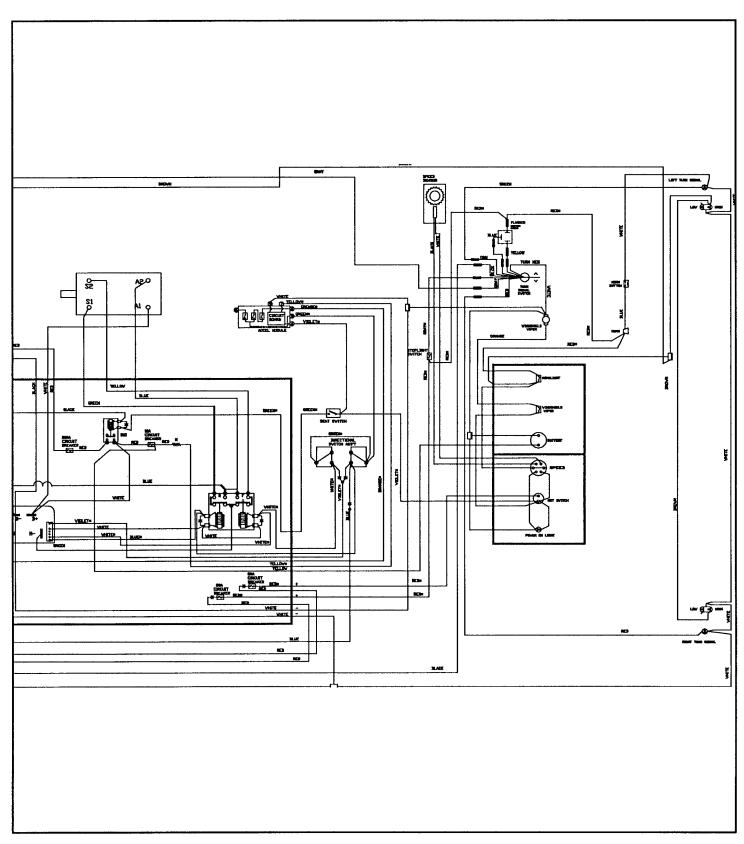
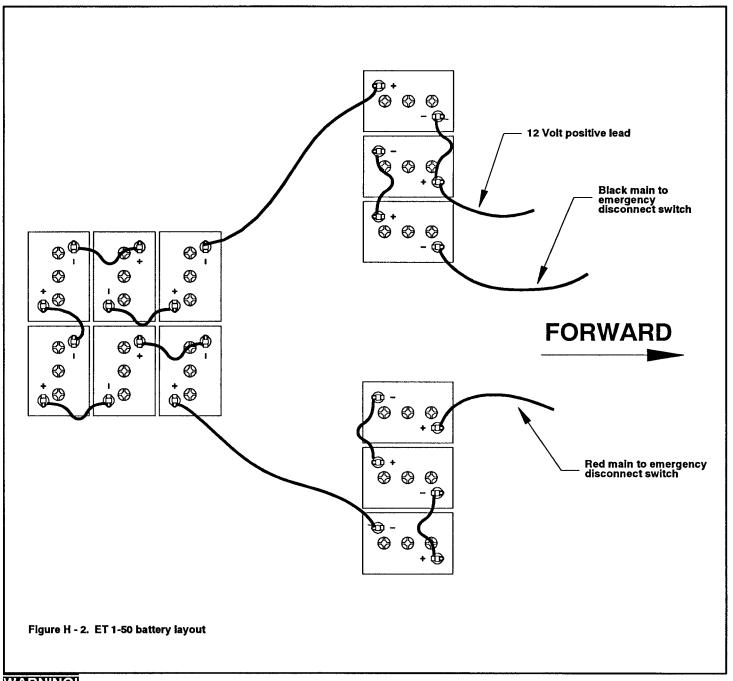


Figure H - 1b. Electruck Wiring Diagram - Sheet 2 of 2



BATTERY LAYOUT



WARNING!

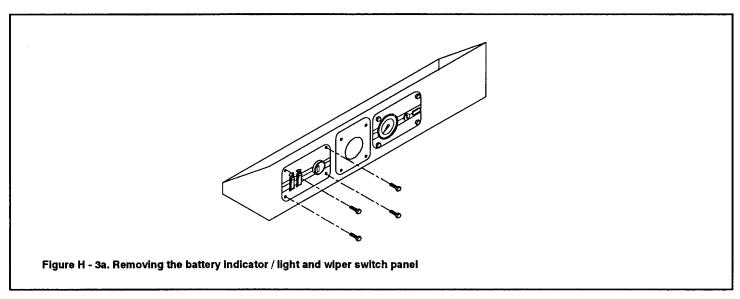
Please refer to Section 1, "SAFETY / GENERAL INFORMATION" before performing any repairs / maintenance on this vehicle.

4 - ELECTRICAL TAYLOR-DUNN: ET 1-50

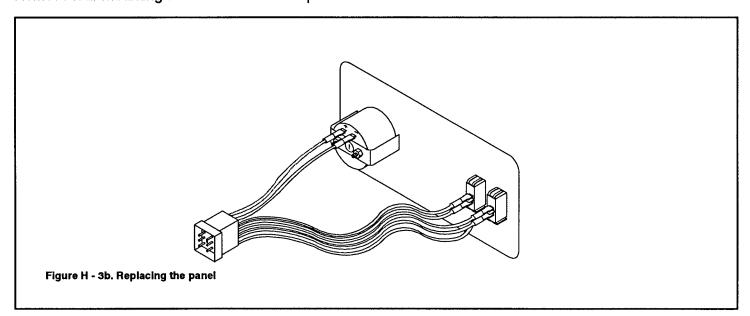


INSTRUMENT PANEL

Replacing the Battery Indicator / Light and Wiper Switch Panel



Remove four mounting screws from the front panel.

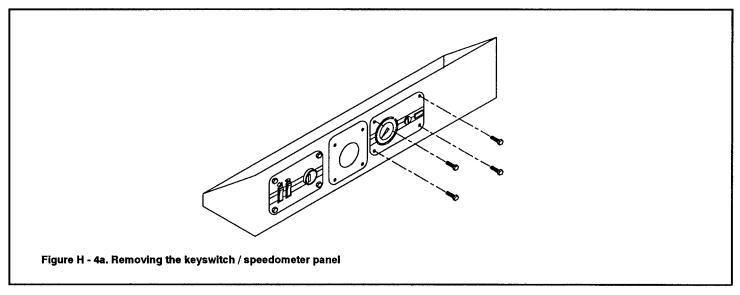


Disengage the wire harness coupling from the panel.

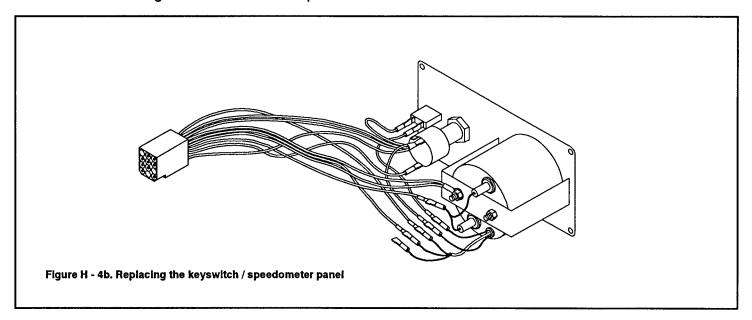
Install the new one in reverse order.



Replacing the Keyswitch / Speedometer Panel



Remove four mounting screws from the front panel.

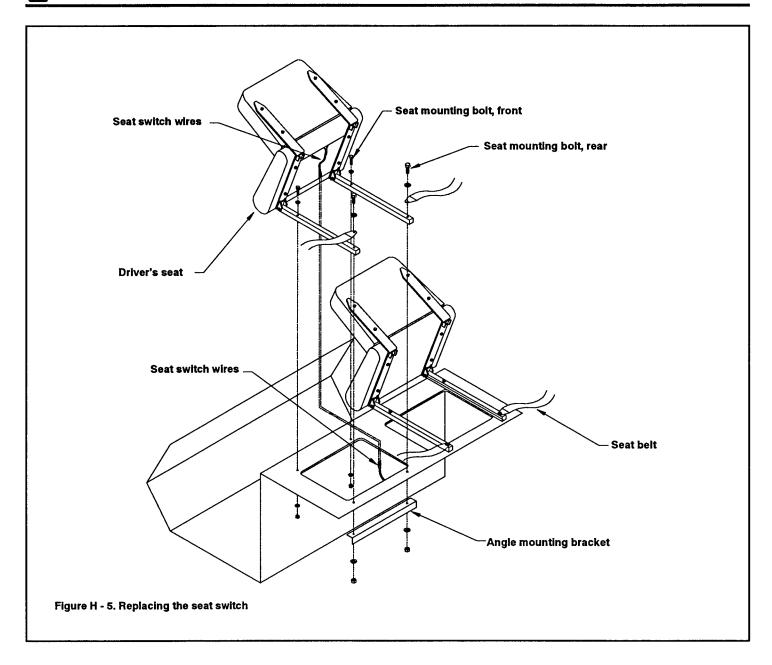


Disengage the wire harness coupling from the panel.

Install the new one in reverse order.

6 - ELECTRICAL TAYLOR-DUNN: ET 1-50





SEAT SWITCH

Replacing the Seat Switch

To replace the seat switch, the driver' seat must be replaced.

Lift up the driver's seat. Remove the four mounting bolts and angle mounting bracket.

Note: The seat belts will come off.

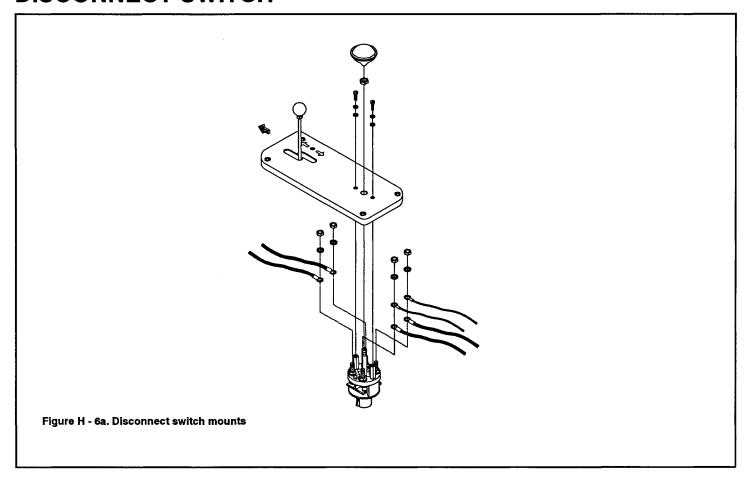
Cut the two wires from the seat switch.

Install the seat belts and new seat with the four mounting bolts and angle mounting bracket removed earlier.

Connect and crimp the new seat switch wires to the wires cut earlier.



DISCONNECT SWITCH



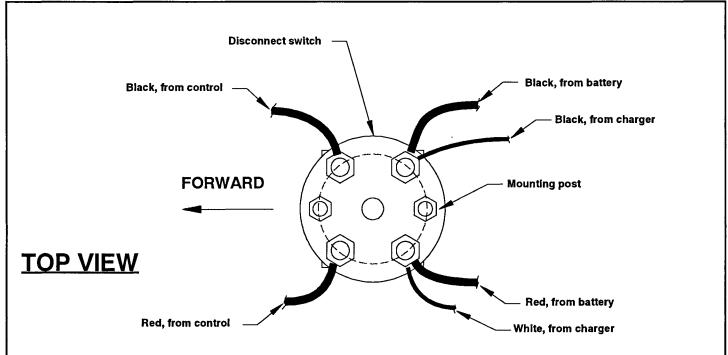
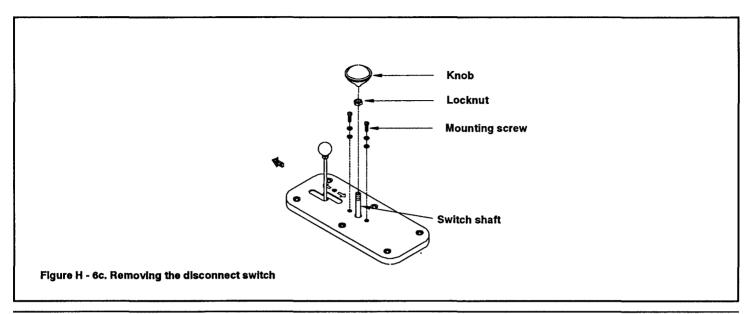


Figure H - 6b. Disconnect switch wiring layout

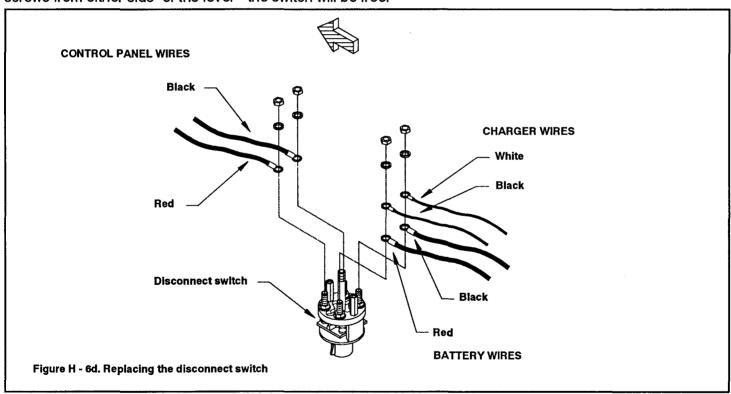
8 - ELECTRICAL TAYLOR-DUNN: ET 1-50





Replacing the Emergency Disconnect Switch

Unscrew knob and locknut from disconnect switch lever. Support the switch from under, and remove 2 mounting screws from either side of the lever - the switch will be free.



Note wire positions. Battery and charger wires are on the rear studs, the control panel wires on the front studs.

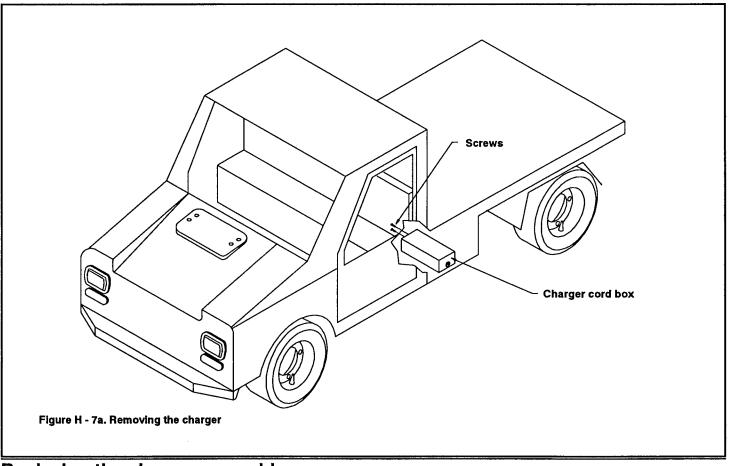
Remove battery and charger wires and install them on new switch. Remove control panel wires and install on new switch. Tighten nuts securely. Pull rubber caps over terminals.

Install in reverse order.

Note: The white charger lead goes with the red battery lead.



CHARGER



Replacing the charger assembly

Removing the Charger

Remove the emergency disconnect switch (see "Replacing the Emergency Disconnect Switch," this section).

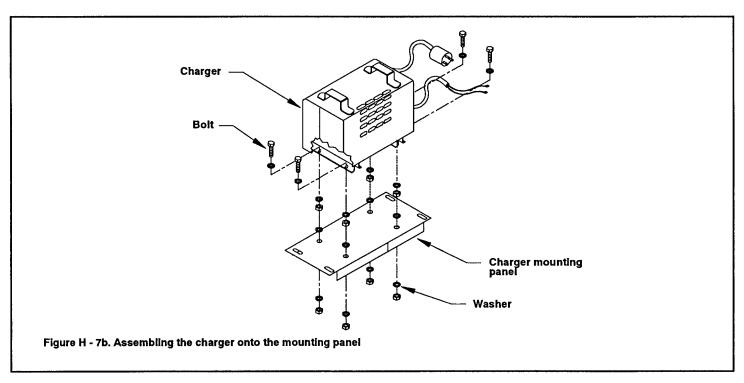
Unscrew rear terminal nuts and remove charger terminals.

Remove two cord stopper screws from behind the charger cord box. Remove the plug from the end of the cord. Pull out the charger cord.

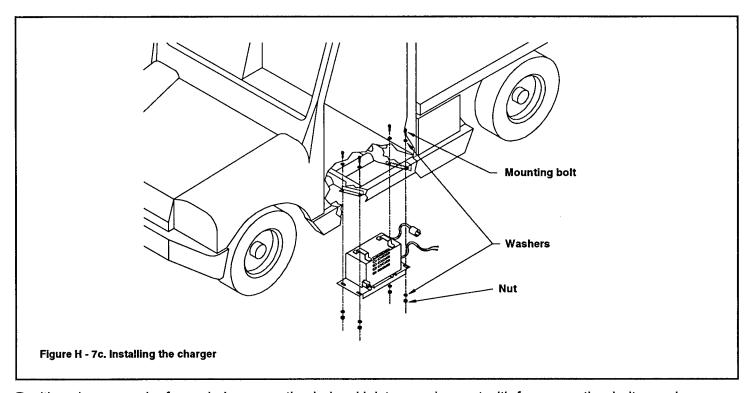
Support charger from below. Remove four bolts at the bottom of the mounting plate. Lower charger and mounting plate.

Disengage charger from the mounting plate by removing four nuts at the bottom. Remove remaining nuts, washers and bolts from the bottom of the charger. Set the old charger aside.

10 - ELECTRICAL TAYLOR-DUNN: ET 1-50



Install four mounting bolts through the holes on the new charger's mounting brackets with washers and locknuts as shown. Tighten securely. Secure to mounting panel through the panel holes with another washer and locknut for each bolt.



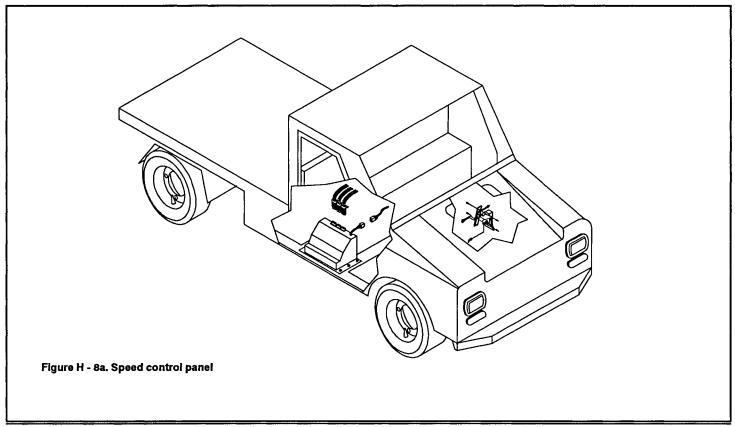
Position charger under frame below mounting holes. Hoist up and mount with four mounting bolts as shown.

Connect charger wires to the disconnect switch.

Place the cord in the charger cord box and install cord stopper with the two screws removed earlier. Install the plug.

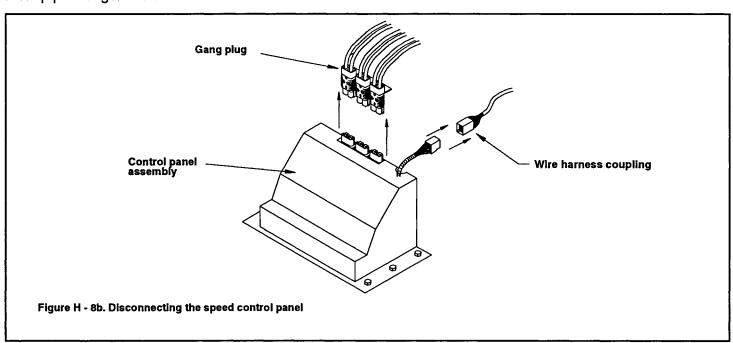


Speed Control



Replacing the Speed Control Panel

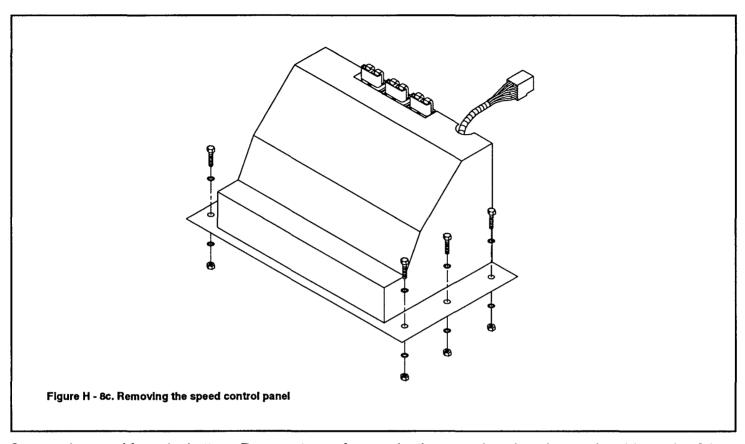
Pull up passenger seat.



Pull off the gang plug connecting the control panel wires to the motor and disconnect switch. Disengage the wire harness coupling.

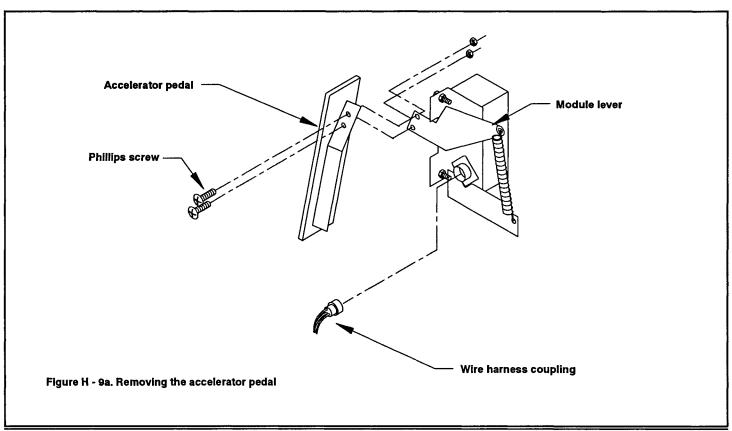
12 - ELECTRICAL TAYLOR-DUNN: ET 1-50





Support the panel from the bottom. Remove 6 nuts from under the mounting plate. Lower the old panel safely. Pull the new control panel up from below the frame. Install in reverse order.

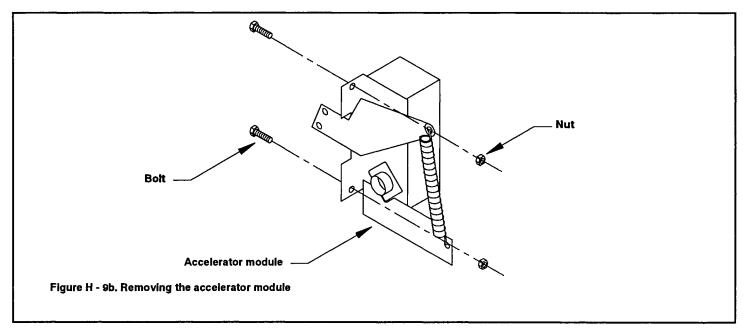




Replacing the Accelerator Module

From inside the cab, remove two phillips screws that hold the accelerator pedal to the module.

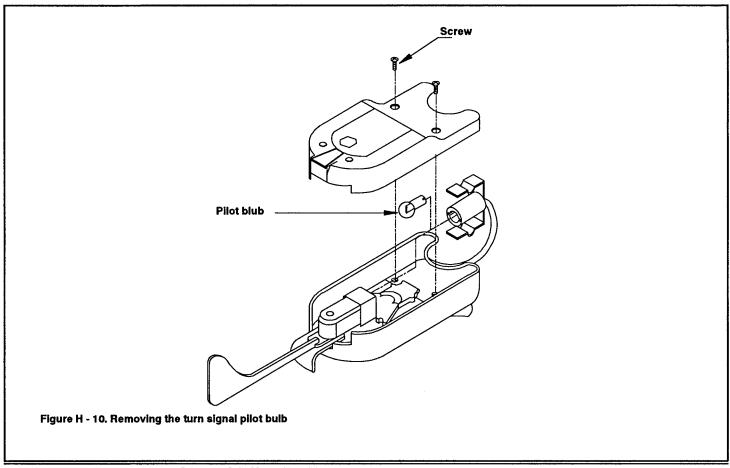
From under the hood, disengage the wire harness coupling from the module.



Remove two nuts from bolts that mount the module to the cab. Dispose of the old module properly. Install the new module in reverse order.



Turn Signal



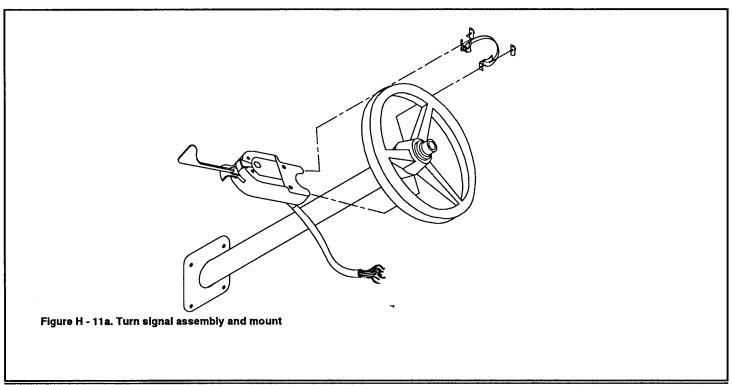
Replacing the Turn Signal Pilot Bulb

Remove the two screws on the top cover of the turn signal assembly. Remove top cover.

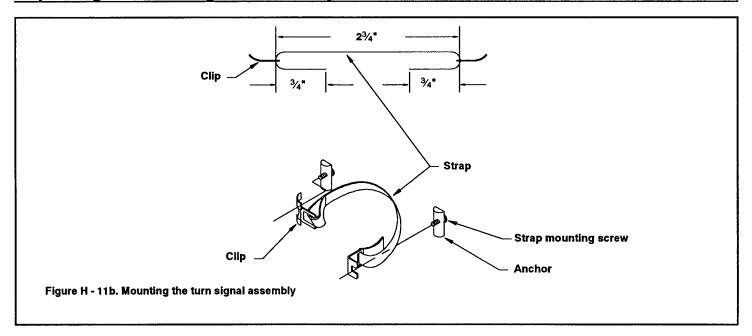
Pull the spring clip away from the handle. Unscrew the old bulb. Screw the new bulb in.

Reassemble in reverse order.





Replacing the Turn Signal Assembly



Remove strap mounting screws from turn signal assembly. Disengage ground wire (white) and remove strap. Clean the area on thesteering column where the assembly was removed.

Separate the ground wire from the rest of the signal wires. Dispose of the old assembly properly.

Take the new turn signal assembly. Engage the ground wire to one screw, and insert new screws into anchors. Insert assembled anchors and screws into slots in clip. Do not tighten.

Bend approximately $\frac{3}{4}$ " of one strap end through and around one clip. Measure $2\frac{3}{4}$ " from the bend of the strap, and make another bend. Measure another $\frac{3}{4}$ " from the second bend, and cut the rest of the strap off.

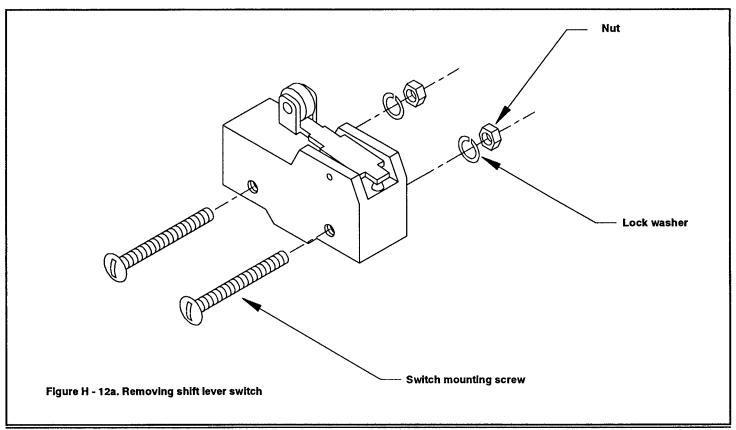


Engage one clip between anchor and assembly. Hold assembly in place against steering column where the old assembly was removed from. Bend the strap around the column.

Engage the other clip between anchor and assembly. This will hold the assembly fast to the steering column.

Cut the new wires, leaving them enough length to reach under the dash panel, for aesthetic purposes.

Cut one old wire, strip off the end and fasten it to the new wire of the same color. Repeat the procedure for all the wires.



Replacing Shift Lever Switches

Pull up passenger seat.

Unscrew two nuts and remove switch mounting screws. Remove wires from terminals, and install wires on new switch/es.

The next page shows the proper wiring connection for the shift lever switches.

Mount the switch with the two mounting screws removed earlier.



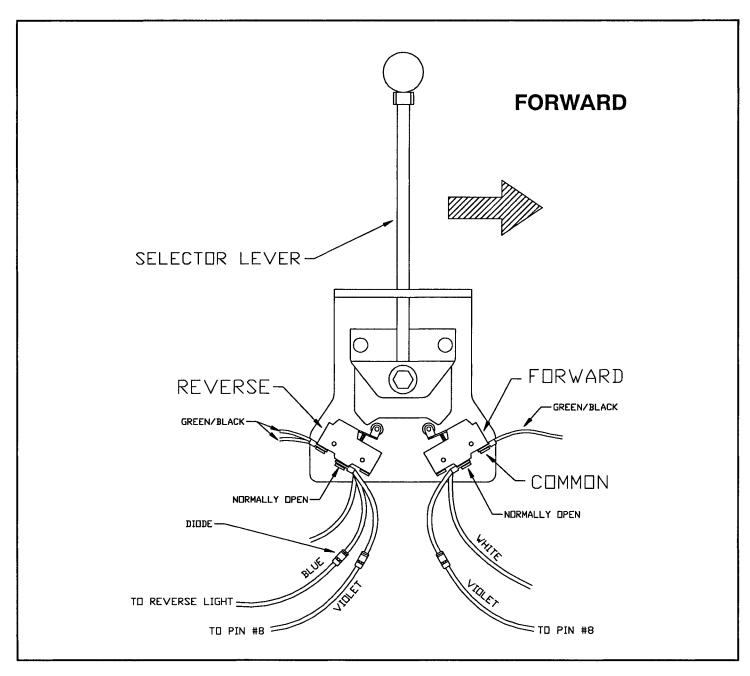


Figure H - 12b. Wiring connection for the shift lever switches

18 - ELECTRICAL TAYLOR-DUNN: ET 1-50



ELECTRICAL TROUBLESHOOTING

WARNING!

Please refer to Section 1, "SAFETY / GENERAL INFORMATION," but DO NOT disconnect the rear battery jumper, before performing the following steps on this vehicle.

The following repairs should only be performed by a qualified electrical mechanic.

Following are the steps to be taken in the event of an electrical failure.

Testing the Main Power Output

For all of the following steps, use a volt-ohmmeter (V.O.M.) to check voltage.

Note: Actual readings may vary ± 10% from voltages indicated.

If truck runs in only one direction, i.e., forward but not reverse or vice versa, go to Forward / Reverse Switches.

Close the seat switch.

Connect negative (-) volt-ohmmeter (V.O.M.) lead with the battery negative (-) terminal (black cable)

TAYLOR-DUNN: ET 1-50 ELECTRICAL - 19

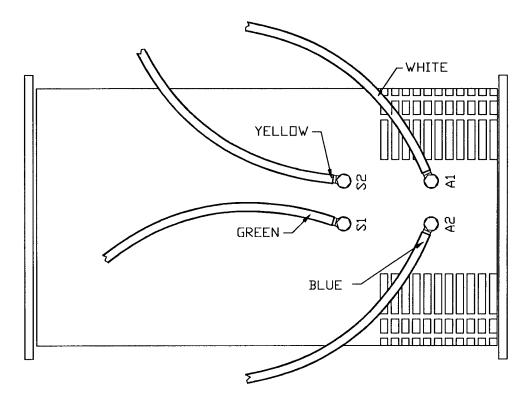


Figure H - 13 - Motor and motor terminals

Turn the key switch on. Depress the accelerator pedal.

Connect the positive (+) V.O.M. lead to the motor A1 terminal (see Figure H - 13). The V.O.M. should read positive (+) battery voltage.

If reading is lower than battery voltage, go to "Testing Main Power Input."

Connect the positive (+) V.O.M. lead to the motor A2 terminal. The V.O.M. should read positive (+) battery voltage.

If the A1 reading is good and A2 reading is lower than battery voltage, the motor armature or brushes are bad. Repair or replace armature and/or brushes (see "Repairing the Motor," this section).

Connect positive (+) V.O.M. lead to the motor A1 terminal.

Put Forward/Reverse Selector Lever (henceforth referred to as selector lever) in forward.

If the forward contactor does not click, go to "Testing Main Power Input."

If the forward contactor clicks, depress the accelerator pedal.

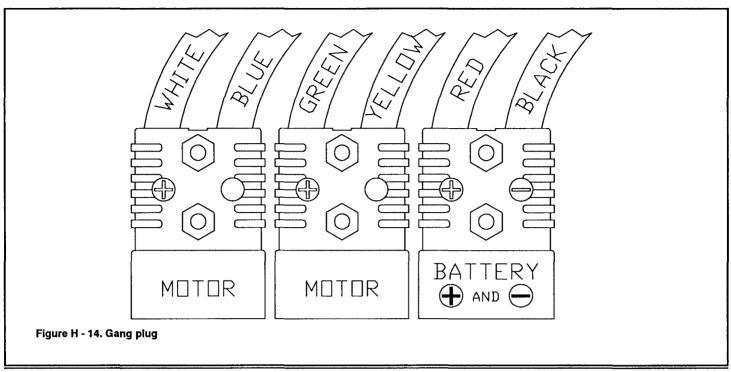
Test the voltages at the motor S1 and S2 terminals. Both should read between 0 and 72 volts, depending on accelerator pedal position.

If S1 reading is lower than battery voltage, go to "Testing Main Power Input."

If the S1 reading is good and S2 reading is lower than battery voltage, the motor field is open. Repair or replace the motor.

Repeat this procedure with the selector lever in reverse.





Testing Main Power Input

A. Check voltage at the battery connector positive (+) and negative (-) terminals of the gang plug (red and black cables, Fig H - 14). If not equal to battery voltage, check main power disconnect and battery connections for opens.

Close the seat switch. Turn the key switch ON and depress the accelerator.

Re-check voltage at the battery connector positive (+) and negative (-) terminals of the gang plug (red and black cables, Figure H - 14). If not equal to battery voltage, check main power disconnect and battery connections for poor contacts.

Note: For all of the following steps, when checking voltage, the negative (-) lead of the V.O.M. should be in contact with the battery negative (-) terminal (black cable) unless specified.

B. With seat switch closed, turn the key switch ON.

If the ISOLATOR contactor clicks, skip to step C.

Check voltage at Pin 7 of the control module plug (see Fig. H - 15).

If at positive (+) 12V, go to CONTROL MODULE.

If pin 7 is not at (+) 12V, check the key switch and seat switch for opens. STOP

Keep the seat switch closed. Leave the key switch ON. Put selector lever in FORWARD.

If forward contactor clicks, go to CONTROL MODULE.

If forward contactor does not click, check voltage at Pin 6 of the control module plug.

If at positive (+) 12V, go to CONTROL MODULE. Otherwise go to Forward / Reverse Switches.

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C. Keep the seat switch closed. Leave the key switch ON.

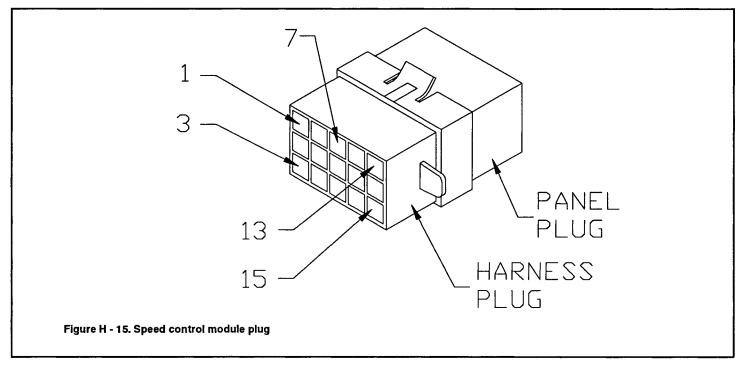
Check voltage at Pin 8 of the control module plug.

If post positive (+) 12V go to CONTROL MODULE.

If not positive (+) 12V go to FORWARD/REVERSE SWITCHES.

D. Keep the seat switch closed. Leave the key switch ON. DEPRESS the accelerator.

Check voltage at Pin 10. It should be between 6.0 - 11.5 volts, depending on pedal position. If not, go to ACCELERATOR.



TESTING INPUT TO THE SPEED CONTROL MODULE

Disconnect main battery positive (+) and negative (-) wires.

WARNING:

Failure to disconnect main battery wires can cause electric shock for the following procedures.

Remove speed control panel from the truck (see "Replacing the Speed Control Panel," this section).

Discharge the speed controller capacitors by shorting the B+ and B- terminals on the controller.

WARNING!

DO NOT make physical contact with the terminals when shorting them - you will get a severe electrical shock!

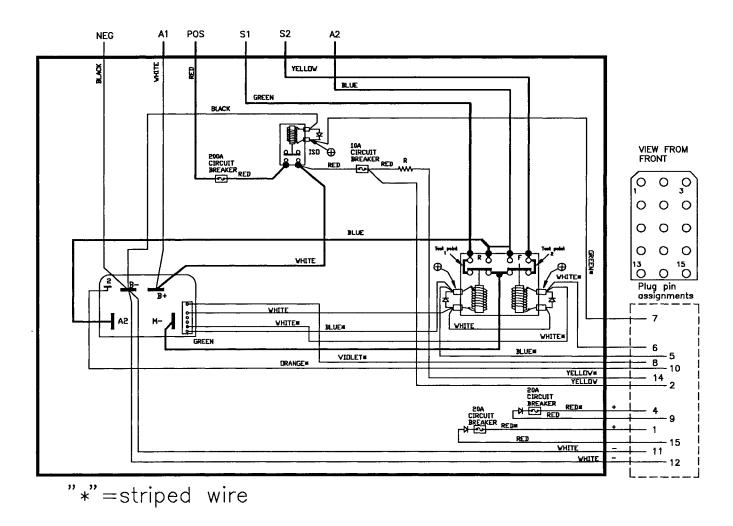


Figure H - 16. Speed control module wiring diagram

Inspect all wiring for loose or bad connections.

Cautioni

Refer to Figure H - 17 for correct polarities. Incorrect polarity will damage diodes.

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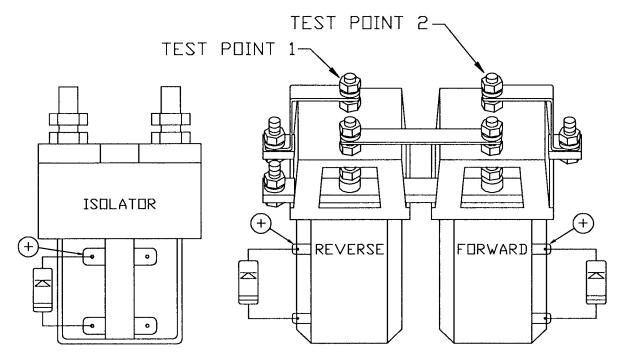


Figure H - 17. Contactor assembly

Testing Contactors

Place the voltmeter dial on R X 10. Observing correct polarity, connect the 12v source across the ISOLATOR coil.

If resistance across contacts is not 0 ohms, ISOLATOR is bad. STOP.

If resistance across test points 1 and 2 (Figure H - 17) is not 0 ohms then the forward/reverse contactor is bad. STOP

Observing correct polarity, connect 12v source across both reverse and forward solenoid coils.

Using R x10, if resistance across test points 1 and 2 (Fig H-17) is not 0 ohms then F&R contactor is bad. STOP

NOTE: Diodes on contactors are for voltage surge protection. Failure of these diodes will not prevent operation of control. Test all 3 diodes for continued protection.

Using R x 10, test all 4 circuit breakers for 0 ohms.

Using R x 5K, test resistor for 2000 ohms.

Test diodes on 20A circuit breakers.

If all component and input voltages are correct, then the PMC controller is bad and must be replaced.

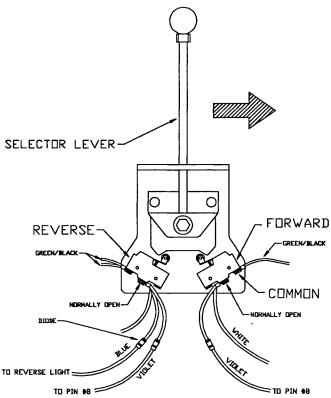


Figure H - 18. Forward / Reverse Switches

Forward / Reverse Switches:

Keep the seat switch closed and turn the key switch on. Depress the accelerator.

Check voltage at common on forward / reverse switches (Figure H - 18). If not positive (+) 12V go to ACCELERATOR.

Place selector lever in FORWARD.

If voltage at the forward switch normally open (Figure H - 18) is not positive (+) 12V then switch is bad. STOP.

If voltage at Pin 8 on the control module plug (Figure H - 15) is not positive (+) 12V then F&R diode/s (Figure H - 18) are bad. STOP

Place selector lever in REVERSE.

If voltage at the reverse switch normally-open (Figure H - 18) is not (+) 12V then switch is bad. STOP If voltage at Pin 8 on the control module plug (Figure H - 15) is not positive (+) 12V then F&R diode/s (Figure H - 18) are bad. STOP

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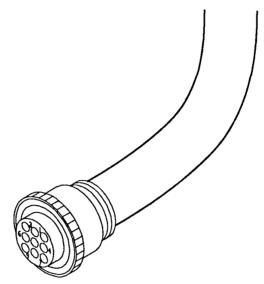


Figure H - 19. Accelerator module test harness, female end

NOTE: Connection for the reverse light is made through a diode to the reverse switch.

Testing the Accelerator Module

Unplug the accelerator pigtail from the accelerator.

Use accelerator module test harness (75-089-00). Connect the male connector to the accelerator pigtail, and the companion female connector to the accelerator, leaving the other end (female connector) free.

Close the seat switch and turn the key switch ON.

Test the voltages on the test harness female connector pins.

If Pin 4 on the connector is not positive (+) 12 - 15V, check the key switch. STOP

If Pin 7 is not approximately 36V, go to CONTROL MODULE.

Connect the V.O.M. positive (+) lead to the battery positive (+).

If Pin 9 is not negative (-) battery voltage, check wiring. STOP

Reconnect the V.O.M. negative (-) lead to the battery negative (+).

Depress the accelerator.

If Pin 5 is not positive (+) 12 - 15V, the accelerator module is bad. STOP As pedal is depressed voltage at Pin 2 should start at 6V at slow speed and increase to approximately 11 - 11.5V at full speed. If not, the accelerator module is bad. STOP

Note: The truck <u>SHOULD NOT RUN</u> while the test harness is installed. If the truck runs under this condition, the wiring may be shorted or there is a controller failure.



TABLE 1

Note: For all of the following tables, seat switch must be closed, and the keyswitch must be on.

All readings may vary ± 10% from this table.

Selector Lever Position	Accelerator Pedal Position	Pin Number	Correct Voltage	Corrective Action
Neutral ("OFF")	Up	1	12 to 15 Volts	
Neutral ("OFF")	Up	2	Battery Voltage (B.V.)	See Note #1
Neutral ("OFF")	Up	4	12 to 15 Volts	See Note #1
Neutral ("OFF")	Up	5	0 Volts	Go to Forward / Reverse Switches
Neutral ("OFF")	Up	6	0 Volts	Go to F/R Switches
Neutral ("OFF")	Up	7	12 to 15 Volts	Check key / seat switches
Neutral ("OFF")	Up	8	0 Volts	Check Wiring
Neutral ("OFF")	Up	9	12 to 15 Volts	See Note #2
Neutral ("OFF")	Up	10	0 Volts	Go to Accelerator
Neutral ("OFF")	Up	11	- (B.V.)	See Note #3
Neutral ("OFF")	Up	12	- (B.V.)	See Note #3
Neutral ("OFF")	Up	15	12 to 15 Volts	See Note #2
Neutral ("OFF")	Depressed fully	1	12 to 15 Volts	See Note #1
Neutral ("OFF")	Depressed fully	2	(B.V.)	Check Circuit Breakers
Neutral ("OFF")	Depressed fully	4	12 to 15 Volts	See Note #1
Neutral ("OFF")	Depressed fully	5	0 Volts	Go to F/R Switches
Neutral ("OFF")	Depressed fully	6	0 Volts	Go to F / R Switches
Neutral ("OFF")	Depressed fully	7	12 to 15 Volts	Check key / seat switches
Neutral ("OFF")	Depressed fully	8	0 Volts	Check Wiring
Neutral ("OFF")	Depressed fully	9	12 to 15 Volts	See Note #2
Neutral ("OFF")	Depressed fully	10	11 Volts	Go to Accelerator
Neutral ("OFF")	Depressed fully	11	- (B.V.)	See Note #3
Neutral ("OFF")	Depressed fully	12	- (B.V.)	See Note #3
Neutral ("OFF")	Depressed fully	15	12 Volts	See Note #2

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TABLE 1 (continued)

Selector Lever Position	Accelerator Pedal Position	Pin Number	Correct Voltage	Corrective Action
Forward	Depressed fully	1	12 Volts	See Note #1
Forward	Depressed fully	2	B. V.	See Note #1
Forward	Depressed fully	4	12 Volts	See Note #1
Forward	Depressed fully	5	0 Volts	Go to F / R Switches
Forward	Depressed fully	6	12 Volts	Go to F / R Switches
Forward	Depressed fully	7	12 Volts	Check key / seat switches
Forward	Depressed fully	8	12 Volts	Go to F / R Switches
Forward	Depressed fully	9	12 Volts	See Note #2
Forward	Depressed fully	10	11.5 Volts	Go to Accelerator
Forward	Depressed fully	11	- (B.V.)	See Note #3
Forward	Depressed fully	12	- (B.V.)	See Note #3
Forward	Depressed fully	15	12 Volts	See Note #2
Reverse	Depressed fully	1	12 Volts	See Note #1
Reverse	Depressed fully	2	(B.V.)	Check circuit breakers
Reverse	Depressed fully	4	12 Volts	See Note #1
Reverse	Depressed fully	5	12 Volts	Go to F / R Switches
Reverse	Depressed fully	6	0 Volts	Go to F / R Switches
Reverse	Depressed fully	7	12 Volts	Check key / seat switches
Reverse	Depressed fully	8	12 Volts	Go to F/ R Switches
Reverse	Depressed fully	9	12 Volts	See Note #2
Reverse	Depressed fully	10	11.5 Volts	Go to Accelerator
Reverse	Depressed fully	11	- (B.V.)	See Note #3
Reverse	Depressed fully	12	- (B.V.)	See Note #3
Reverse	Depressed fully	15	12 Volts	See Note #2

^{#1 -} Check Pins 9 and 15 each for 12 - 15 volts. If good, circuit breaker on panel might be bad.

^{#2 -} Check wires to battery (12 volt tap).

^{#3 -} Check Main Power Input.



REPAIRING THE CHARGER

WARNING!

Even if the charger is unplugged / disconnected from all AC and DC sources, high voltage may still be present in the charger components! DO NOT touch charger components, including capacitors, until the capacitors are discharged!

When discharging capacitors, make sure your hands and tools are dry, wear an electrically insulated glove and use a tool with an electrically insulated handle!

Disconnect the rear battery jumper (see "General Safety," Safety / General Information section at the beginning of this manual). Disconnect the charger from the AC (plug) and DC (batteries) sources.

If the charger is built-in, remove the charger from the vehicle (see "Replacing the Charger," this section).

Remove the charger cover.

Discharge the capacitors by shorting across the capacitor terminals.

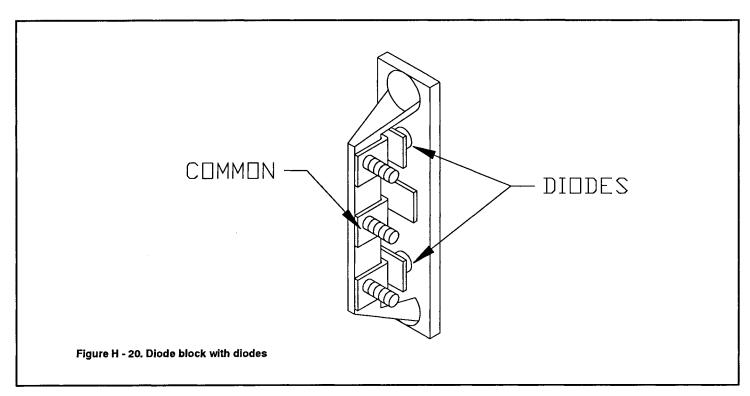
Inspect all internal wiring. Repair or replace if necessary.

Inspect the fuse. Replace if necessary.

WARNING!

High voltage will be present in the charger after the next step.

Reconnect batteries to charger.



Measure DC voltage from diode block common (see Figure H - 20) to fuse assembly. If not equal to battery voltage, the wires to the batteries are bad.

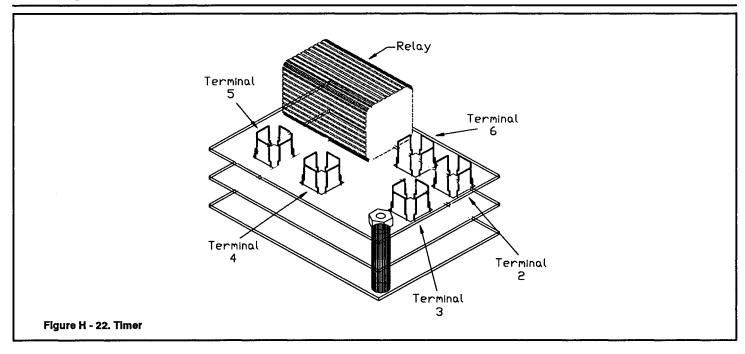
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Reconnect the AC source.

WARNING!

The charger must be GROUNDED, else high voltage may be present in the charger cover.



Testing the Timer

Measure AC input voltage on timer terminals 4 and 5 (see Figure H - 22).

If not at rated charger AC voltage, AC input is bad.

WARNING!

If AC input is bad, repairs should be made by a qualified electrician.

The possible problems are:

Wiring to AC cord

AC cord or plug

House wiring or circuit breaker

Measure AC output voltage at timer AC output terminals 2 and 3 ((see Figure H - 22).

If not the same as input voltage, timer is bad.

Measure AC voltage at the diodes.

If not 150 to 170 \pm 10% volts AC, the transformer is bad.

Disconnect the charger from AC and DC sources

Discharge the charger capacitors.

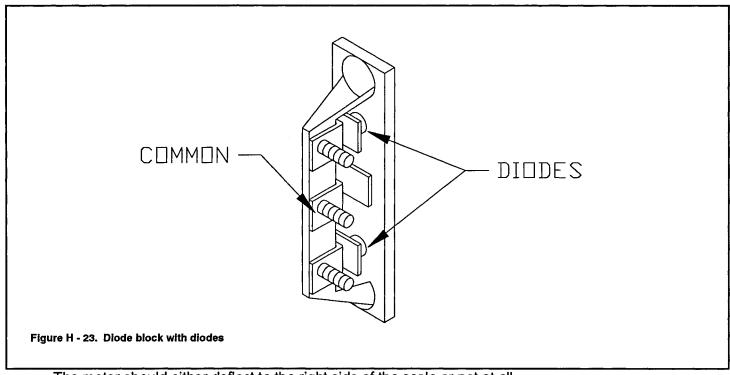


Testing the Diodes

Set V.O.M. at R X 100 ohms.

Disconnect the lead from one diode (see Figure H - 23).

Connect test leads across the disconnected diode (i.e., to the diode lead and the block common).



The meter should either deflect to the right side of the scale or not at all.

Reverse polarity on the diode test leads. You should get the opposite readings from the previous step.

If the readings are the same for both steps, the diode is bad and needs to be replaced.

Reconnect the diode lead.

Repeat the previous steps for the other diode.

Note: It is recommended to replace the diodes as a set.



Testing the Charger Capacitors

WARNING!

High voltage may still be present in the components if the capacitors have not been discharged!

If not yet done, discharge the charger capacitors.

Set the V.O.M. at the highest ohm scale, preferably at R X 10000.

Disconnect the wire joining the capacitors.

Connect test leads across one capacitor. The needle should deflect to low ohms reading and slowly return to infinity (left side of scale).

If needle stays on low ohms reading or does not deflect at all, the capacitor is bad and needs to be replaced.

Repeat previous step for the other capacitor.

Note: Check capacitors in both polarities.

Reconnect the wire joining the capacitors.

If the charger is equipped with an ammeter, use R X 10 on the V.O.M. to check continuity across the meter. If resistance is not 0 ohms, the meter is bad.

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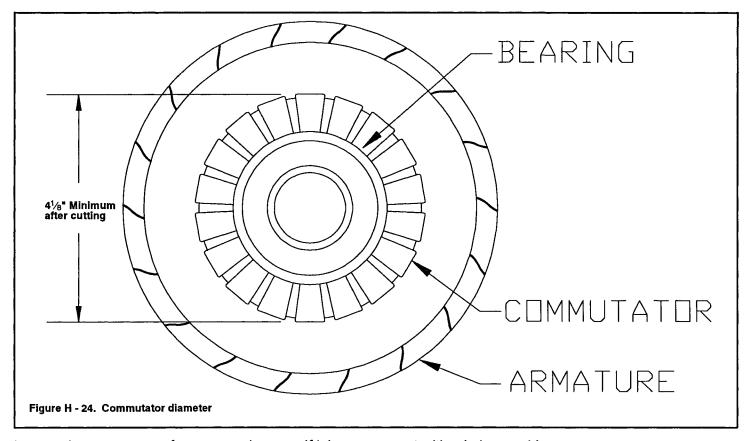
REPAIRING THE MOTOR

Remove the motor from the vehicle (See "Replacing the Motor," Power Train Section). Remove the motor mounts.

Remove the motor cover and separate the motor components (refer to "Motor," Parts List Section).

Test the bearings by hand. If they do not operate smoothly, replace them with new ones.

Measure the length of the brushes. If they are less than 0.8", replace them with new ones.



Inspect the commutator for wear or damage. If it is uneven, cut with a lathe machine.

Measure the commutator diameter. If it is less than 41/8", replace the armature.

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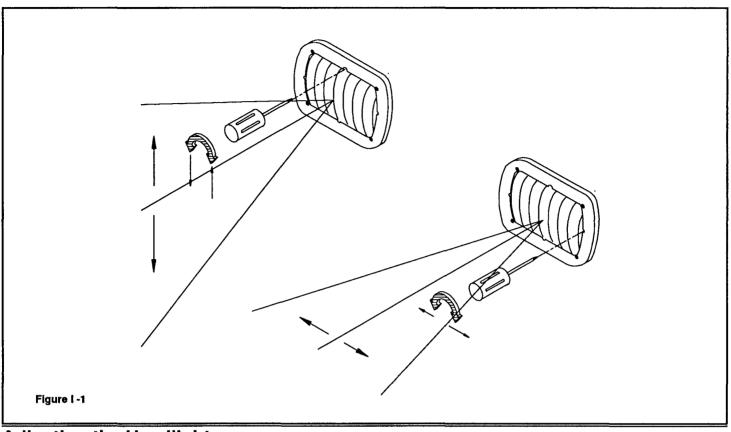


ACCESSORIES

TAYLOR-DUNN: ET 1-50 ACCESSORIES - 1



Lights



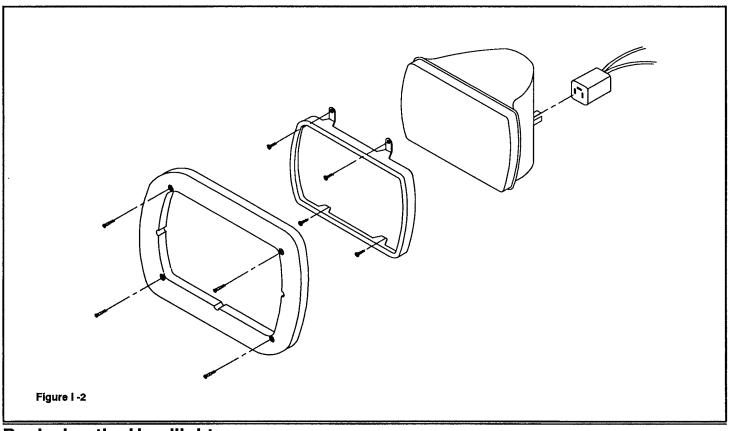
Adjusting the Headlights

Use a phillips screwdriver to adjust the horizontal (left-right) or vertical (up-down) direction of the headlight beam.

To adjust the beam direction to the left, turn the horizontal adjusting screw clockwise (inward) with the phillips screwdriver. To adjust it to the right, turn the adjusting screw counter-clockwise (outward).

To adjust the beam direction upward, turn the vertical adjusting screw clockwise (inward). To adjust it downward, turn theadjusting screw counter-clockwise (outward).



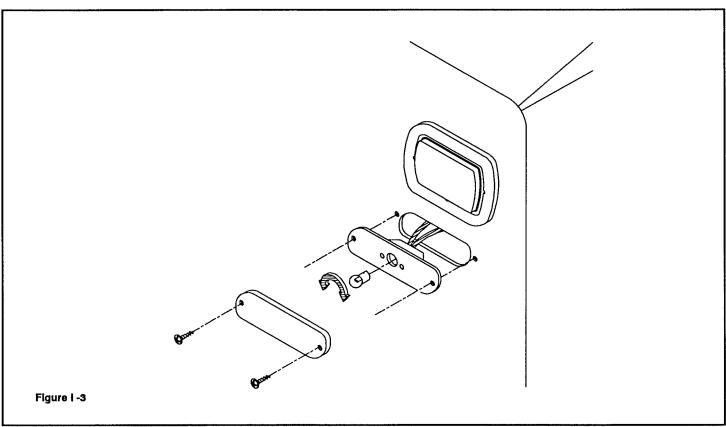


Replacing the Headlights

- 1 Remove the four phillips screws from the headlight lens frame.
- Remove four short phillips screws from the headlight mounting bracket.
- The headlight is now free to move. Reach behind it and disengage the electrical coupling.
- Engage the electrical coupling on the new headlight.
- Install the headlight mounting bracket with four short phillips screws.
- Install the headlight lens frame with the four remaining phillips screws.

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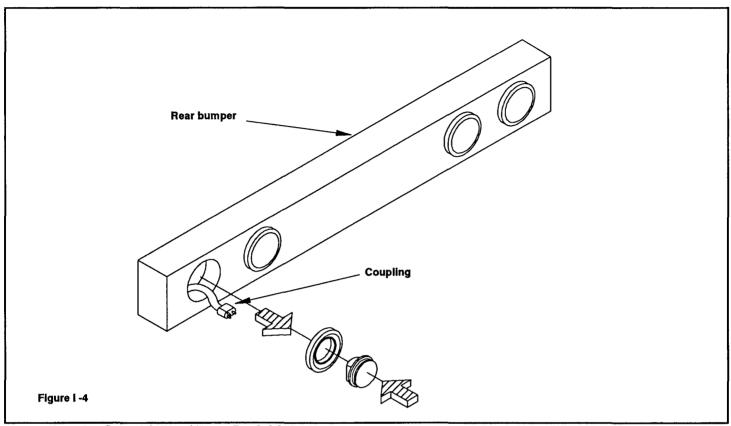




Replacing the Front Park Lights

- 1 Remove the two front park light lens mounting screws.
- 2 Remove the park light lens, exposing the bulb.
- 3 Unscrew the bulb.
- 4 Screw the new bulb in.
- 5 Mount the lens with the two screws removed earlier.



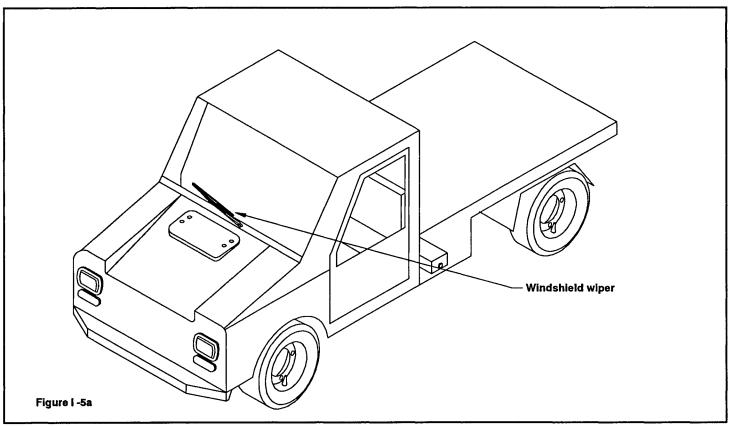


Replacing the Stop Lights / Rear Park Lights

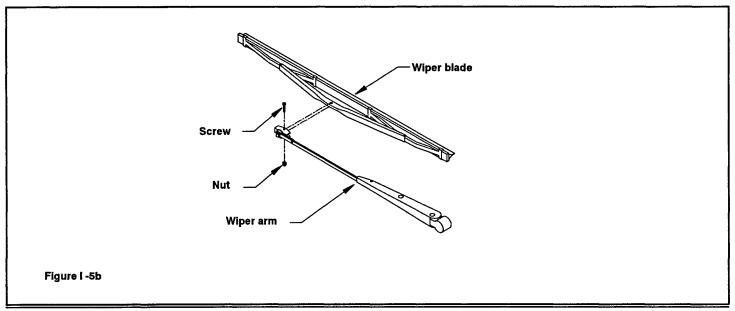
- Reach under the bumper, behind the bulb to be replaced, and disengage the electrical coupling from the old bulb.
- Push the bulb towards the rear out of the rubber grommet.
- 3 Push the new bulb from the rear into the rubber grommet.
- 4 Engage the electrical coupling on the new bulb.

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Windshield Wiper

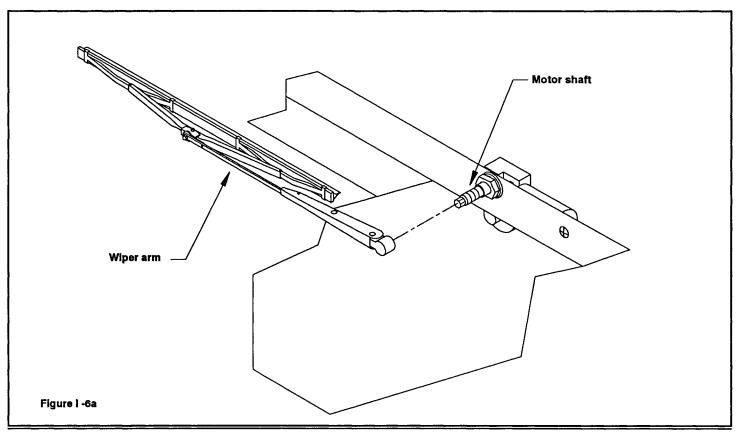


Replacing Worn-out Wiper Blades

For maximum visibility, replace worn or cracked wiper blades when you notice they do not wipe the windshield cleanly or smoothly.

Remove the screw and nut from the blade mounting bracket and remove the wiper blade.

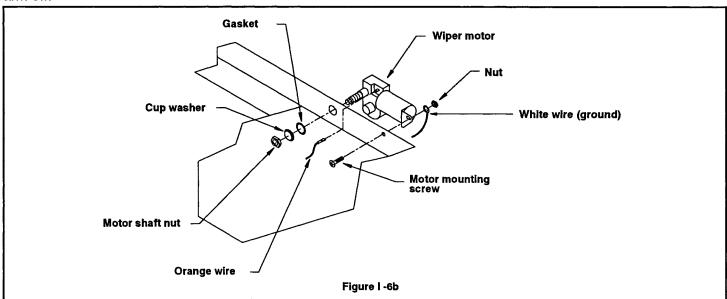
Insert the new blade in the blade bracket, and attach with the mounting screw and nut.



Replacing the Wiper Motor

Removing the Wiper Arm

Use a small flat screw driver to pry up the spring clamp that mounts the wiper arm to the motor shaft, then pull the arm off.



Remove the nut from the motor mounting screw as shown. Remove the ground (white) wire.

Remove the motor shaft nut, as shown. Remove the orange wire from the motor terminal and dispose of the old motor properly.

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Scrape the paint off where the ground (white) wire comes in contact with the new motor. Make sure there is metal-to-metal contact between the wire terminal and motor when the nut is tightened.

Align the motor shaft and mounting hole and install on the frame. Tighten the nut to the mounting screw.

Install the gasket, cup washer and nut on the motor shaft as shown in previous page. Tighten the nut securely.

Installing the Wiper Arm

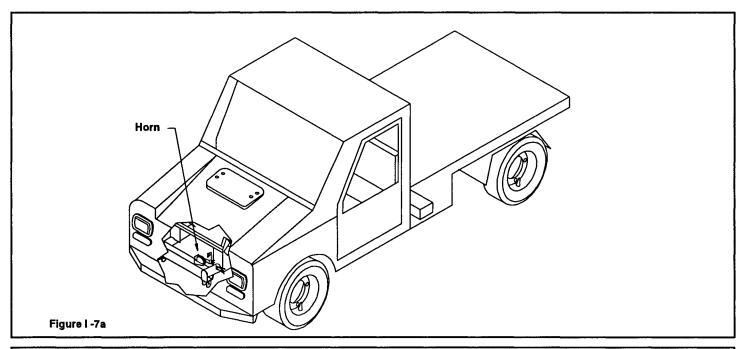
Turn the wiper on. The motor shaft will turn one way, then stop and turn the other way. Turn the motor off when the shaft is all the way to the passenger side.

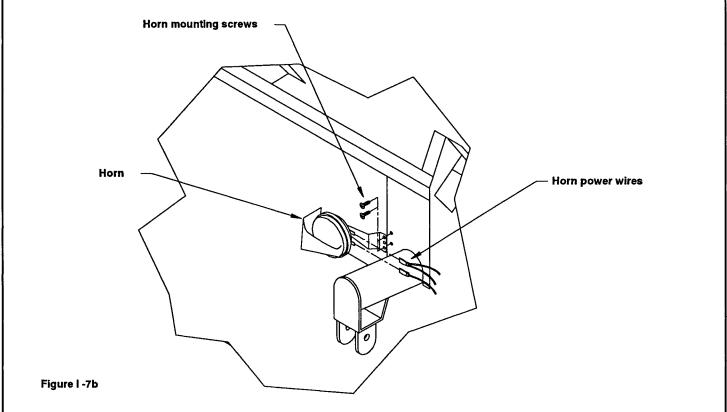
Push the wiper arm base down on the motor shaft until the spring clamp clicks into position.

Test the wiper to make sure it is operating properly - the blade should not hit the windshield frame.

Note: Spray water on the windshield while testing the wiper. This will prevent the wiper motor from overheating.







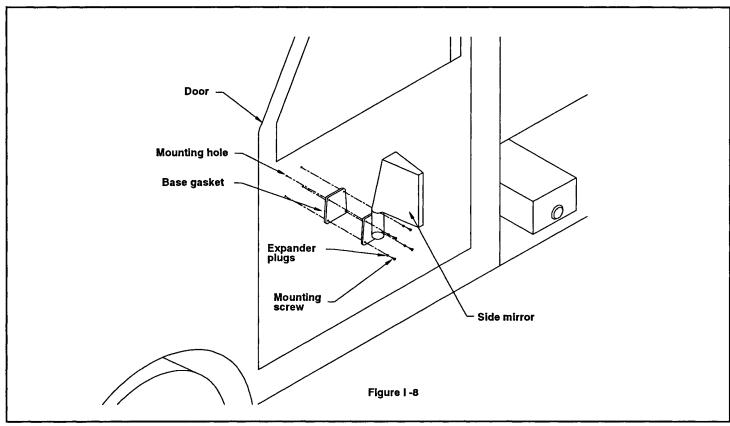
Replacing the Horn

Disengage the wire terminals from the horn.

Remove the two mounting screws.

Install in reverse order.

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Side Mirrors

Replacing Side Mirrors

To remove a side mirror, unscrew four mounting screws. The side mirror will come off. Remove expander plugs from mounting holes.

To install a new one, place new expander plugs in mounting holes. Align gasket holes and mirror base holes to plugs. Install mirror with four mounting screws.



MAINTENANCE

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MAINTENANCE

This truck must be properly maintained to ensure that it is in peak operating condition.

The following instructions and maintenance procedures are based on the assumption that your vehicle will be used exclusively for the purpose for which it was designed:

- ♦ To carry passenger and cargo within the specified load limits of the vehicle.
- To be driven on reasonable road surfaces within legal limits, at speeds not exceeding 32 miles per hour (50 Kmph).
- ◆ To be driven daily over a distance of several miles.

NOTE: Failures which occur due to lack of maintenance will not be covered under warranty.

The required maintenance schedule specifies all maintenance required to keep your vehicle in peak operating condition. Work should be done by an authorized Taylor-Dunn dealer, but may be done by any qualified service facility.

Note: All warranty work must be done by an authorized Taylor-Dunn dealer.

Brakes

Brakes should be maintained according to the "PERIODIC MAINTENANCE INSPECTION CHECKLIST," this section. For more detail on brake servicing, repair and maintenance, see the "BRAKES" Section.

Batteries

Batteries should be maintained according to the "PERIODIC MAINTENANCE INSPECTION CHECKLIST," this section. For more detail on battery charging, cleaning and maintenance, see the "SAFETY / GENERAL INFORMATION SECTION" at the beginning of this manual.

Appearance Care

Interior Trim

Remove dust and loose dirt with a vacuum cleaner. Wipe the vinyl with a clean, damp cloth or sponge. Stains can be removed with a commercially available vinyl cleaner.

Cautions

Do not use thinner, gasoline, kerosene, naphtha or other solvents on the interior or exterior. They are toxic, flammable and hazardous and could damage the material you're cleaning.

Windows

A 10 to 1 mix of water and white vinegar, or a commercially available glass cleaner, may be used to clean windows.



SCHEDULED MAINTENANCE

	PERIODIC MAIN	TENANCE INSPECT	TION CHECKLIST	
Maintenance Item	Monthly (1,000 mi / 1,600 km)	Quarterly (3,000 mi / 4,800 km)	Semi-yearly (6,000 mi / 10,000 km)	Yearly (12,000 mi / 20,000 km)
** Rear brake drums, wheel cylinders and brake linings		I		
** Brake fluid level. Refill with DOT 3 brake fluid if neces- sary.	I			
Parking brake	l			
** Front brake pads		l		
** Brake lines and fittings		l		
** Steering operation, tie rod ends, steering gear box and boots		1		
Front wheel bearings and ball joint fittings. Lubricate if necessary. (use wheel bearing grease)		1		
Front end alignment and rod ends			I	
Suspension mounting bolts	l l			
Check and fill batteries (use distilled water only).	l			
** Wash batteries with water (DON'T use baking soda)	l			
** Wash heat sink with water	ı			
** Check tire pres- sure. Inspect for cuts and uneven or exces- sive wear.	I			
Rotate tires.		l		
Check windshield wiper.		I		

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SCHEDULED MAINTENANCE (cont'd)

	PERIODIC MAIN			
Maintenance Item	Monthly (1,000 mi / 1,600 km)	Quarterly (3,000 mi / 4,800 km)	Semi-yearly (6,000 mi / 10,000 km)	Yearly (12,000 mi / 20,000 km)
Check seatbelt fabric and buckles, and operation of restraint mechanism.			ı	
Lubricate all lubrication points (See "Lubrication Chart", this section.)			R	
Tighten all wire connections.	109		I	
** Suspension U-bolt torque. Tighten if necessary. Front = 28 to 32 ft-lbs., Rear = 65 to 80 ft-lbs.			1	
**Rear axle differential; refill with SAE 90 oil				ı
** Check motor brushes				I
Repack front wheel bearings (use wheel bearing grease)				1
**Tighten all nuts and bolts				1
R = Replace / Relubri- cate				

I = Inspect - clean, adjust, refill, repair or replace as necessary

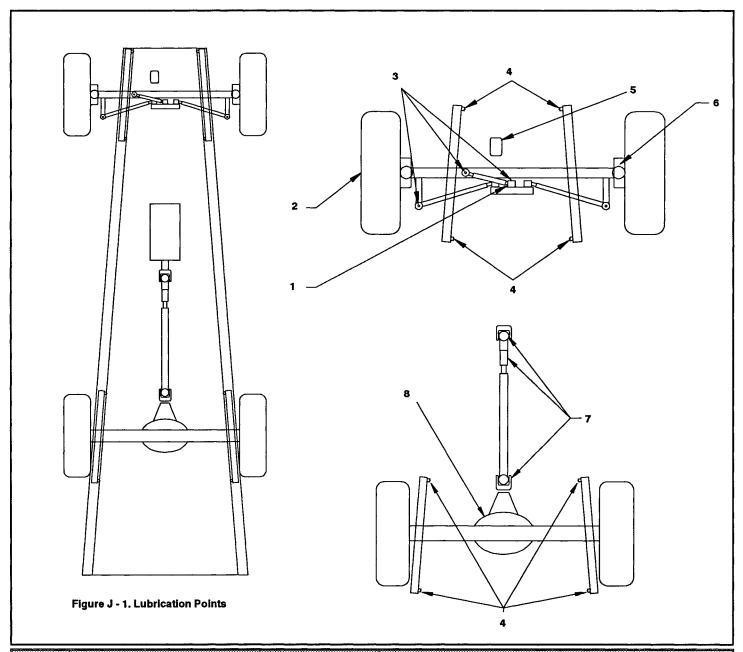
Severe driving conditions include:

- ♦ Repeated short-distance driving.
- Driving in dusty conditions.
- Driving in severe cold weather.
- Driving on rough and/or muddy roads.
- Driving in areas using road salt or other corrosive materials.

^{**} Perform these checks twice as frequently on vehicles normally used under severe driving conditions.



Lubrication Chart



Item	Description	# of Locations	Lubricant	
1	Steering Pivot	1	Multi-purpose Grease	
2	Front Wheel Bearings	6	Wheel Bearing Grease	
3	Steering Ball Joints	12	MP (Multi-Purpose) Grease	
4	Suspension Bolts	1	Wir (Multi-rulpose) Grease	
5	Master Cylinder	4	DOT #3 Brake Fluid	
6	Kingpin Boss	2	MD (Multi Durness) Creess	
7	Drive Shaft	2	MP (Multi-Purpose) Grease	
8	Rear Axle Filler Plug	1	SAE 90 Gear Oil	

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TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION	
	Loose wheel bearing	Adjust wheel bearing	
Steering	Low tire pressure	Inflate tires to correct pressure	
pulls in one	Loose rod end bolts	Tighten bolts	
direction	Worn rod ends	Replace rod ends	
	Loose front axle mounting	Tighten mounting bolts	
	Loose wheel bearing	Adjust wheel bearing	
	Low tire pressure	Inflate tires to correct pressure	
	Worn ball joints	Replace ball joints	
Hard to	Worn king pin bushings	Replace king pin bushings	
steer	Tight neutral axis bolt	Adjust neutral axis bolt	
	Unlubricated neutral axis bolt	Lubricate neutral axis bolt	
	Unlubricated steering gear	Lubricate steering gear	
	Misadjusted steering gear	Adjust steering gear	
	Unlubricated king pin bushings	Lubricate king pin bushings	
	Air in brake lines	Fill master cylinder and bleed brake lines	
	Bad seals in master cylinder	Rebuild or replace master cylinder	
Brakes	Oil on brake pad lining	Find oil source and correct; replace brake pads	
feel soft	Dirt on brake pad lining	Clean brake pad lining	
	Bind in linkage	Loosen or realign brake linkage	
	Weak pedal return spring	Replace pedal return spring	
	Bad seals in wheel cylinder	Replace wheel cylinder	
	Bad seals in master cylinder	Rebuild or replace master cylinder	
No brakes	Air in brake lines	Bleed brake system	
	Low or no brake fluid	Fill and bleed brake system	
	Broken connection in linkage	Replace linkage	
	Damaged/broken brake line or hose	Replace brake line or hose	



TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION	
	Dragging brake	Re-adjust brakes	
	Tight front wheel bearing	Re-adjust wheel bearing	
	Defective rear axle bearing	Replace bearings	
_	Bind or drag on differential	Repair differential	
Lack of power	Corroded battery connections	Clean or replace	
or slow	Defective or worn motor brushes	Clean or replace	
operation	Low battery voltage	Fill and charge battery or replace battery	
	Loose wire connections	Check wires and connections	
	Defective Controller	Replace controller	
	Defective accelerator module	Replace accelerator module	
	Loose accelerator pedal mount	Tighten pedal mount screws	
	Motor or solenoids	Check motor and solenoids	
Motor	Dead battery	Replace or recharge battery	
does	Loose wire connections	Check wires and connections	
not run	Defective accelerator module	Replace accelerator module	
	No continuity through motor	Repair or replace motor	
	Loose wire connections	Check wires and connections	
Controller	No accelerator output	Replace accelerator	
does not	Defective seat switch	Replace seat switch	
operate	Defective keyswitch	Replace keyswitch	
	Low battery voltage	Charge battery	
	Motor bearing	Replace motor bearing	
Thump or	Loose motor on base	Tighten and adjust motor	
grinding noise in	Defective gears in differential	Replace gears	
drive axle	Defective bearing in driveshaft	Replace bearing	
	Defective bearing in differential	Replace bearing	

TAYLOR-DUNN: ET 1-50 MAINTENANCE - 7



Recommended Spare Parts List

	RECOMMENDED SPARE PARTS LIST				
ITEM #	PART NUMBER	DESCRIPTION	QTY		
1	62-033-56	Accelerator Module	1		
2	71-141-20	Turn Indicator Control	1		
3	71-121-10	Key Switch, Keyed Unalike	1		
4	74-020-00	Speedometer	1		
5	72-028-25	Power-on Light	1		
6	71-038-10	Light / Windshield Wiper Switch	1		
7	71-505-55	Horn Button	1		
8	73-004-20	Horn	1		
9	72-076-00	Headlight	1		
10	72-050-00	Front Turn Indicator Lights	1		
11	72-022-00	Taillight	1		
12	72-035-00	Back-up Light	1		
13	96-826-14	Brake Cable Assembly	1		
14	90-160-50	Bucket Seat (Driver)	1		
15	74-052-10	Windshield Wiper Blade	1		
16	13-770-00	Spare Tire and Wheel Assembly	1		
16	76-002-01	Plug, Charger	1		
18	71-110-00	Brake Light Switch	1		
19	71-900-05	Flasher, 12V, 3-terminal	1		



Vehicle Specifications

ITEM	SPECIFICATION *
Dimensions	417 X 157.5 X 193 cm
(Length x Width x Height)	164 X 62 X 76 in
Bed dimensions	223.5 X 157.5 cm
(Length x Width)	88 X 62 in
Wheelbase	259 cm (102 in)
Weight	1,045 Kg (2,300 lbs) with Charger and Batteries
Load Capacity	682 kg (1,500) lbs including driver, passengers and accessories
Turning Radius	534 cm (210 in)
Speed	32 mph (50 kmph) empty
Cab	Fiberglass with front windows and optional rear windows; front windshield wiper, left and right mirrors, optional rear view mirror
Motor	NEMA rated 72 volt, 28.6 hp
Steering	Steering wheel, automotive steering gear unit
Drive Axle	Direct drive automotive differential
Frame	All-steel tubular independent frame
Bumper	Heavy-duty steel

TAYLOR-DUNN: ET 1-50 MAINTENANCE - 9



Vehicle Specifications (continued)

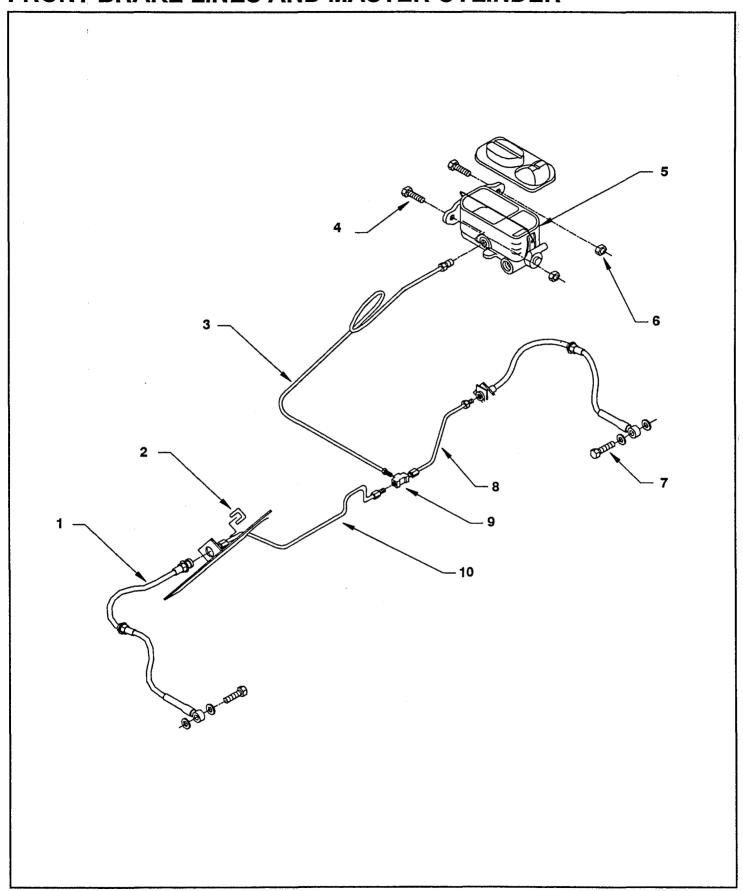
ITEM	SPECIFICATION *
Suspension	Heavy-duty leaf springs front and rear, with automotive shock absorbers.
Speed Controller	Digital proportional FET solid state, with modular magnetic pickup accelerator
Charger	25 amp output, 220 volt input 15 amp output, 115 volt input, built-in
Battery	Twelve, 6 volt 220 AH (105 min. rating)
Wiring	Motor power wire # 0 insulated cable; Interlock driver's seat switch; emergency power-off button
Brakes	Front: 11" hydraulic disc brakes Rear : 11" hydraulic drum brakes
Tires and Wheels	14" Highway radial tread pneumatic; all wheels demountable from hubs
Lights, Horns, Indicators	Dual rectangular headlights, dual taillights, dual stoplights, electric horn, battery charge indicator, speedometer, directional signals, power-on light
Seats	Black vinyl upholstery, driver and passenger seat belts

^{*} These are standard specifications. Individual vehicle specifications may vary depending on the options installed at the time of manufacture.



PARTS LIST

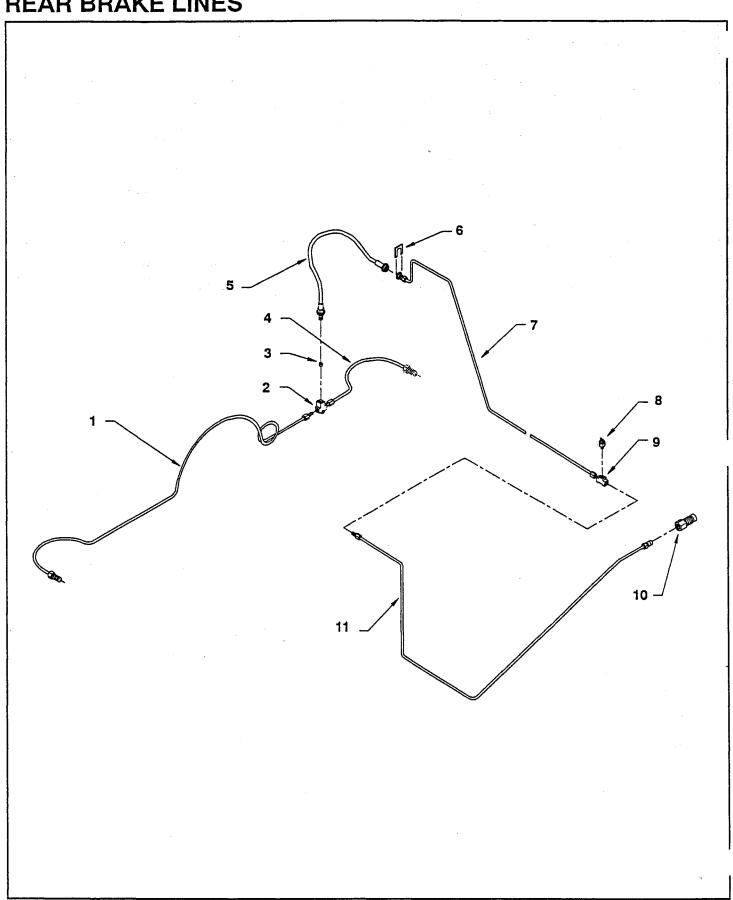
FRONT BRAKE LINES AND MASTER CYLINDER





FRONT BRAKE LINES AND MASTER CYLINDER			
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	99-580-30	Hose, Brake, with Banjo	2
2	99-576-00	Clip, Wagner	2
3	99-605-72	Brake Line, Front to Master Cylinder	1
4	88-100-15	3/8 x 13/4" NC Hex Head Screw	2
5	99-511-50	Master Cylinder	1
6	88-109-81	3/8" NC Locknut	2
7	99-580-31	Bolt, Brake, 10 mm	2
8	99-600-55	Brake Line, Formed, Front Left	. 1
9	99-581-00	Branch Tee	1
10	99-605-71	Brake Line, Formed, Front Right	. 1

REAR BRAKE LINES

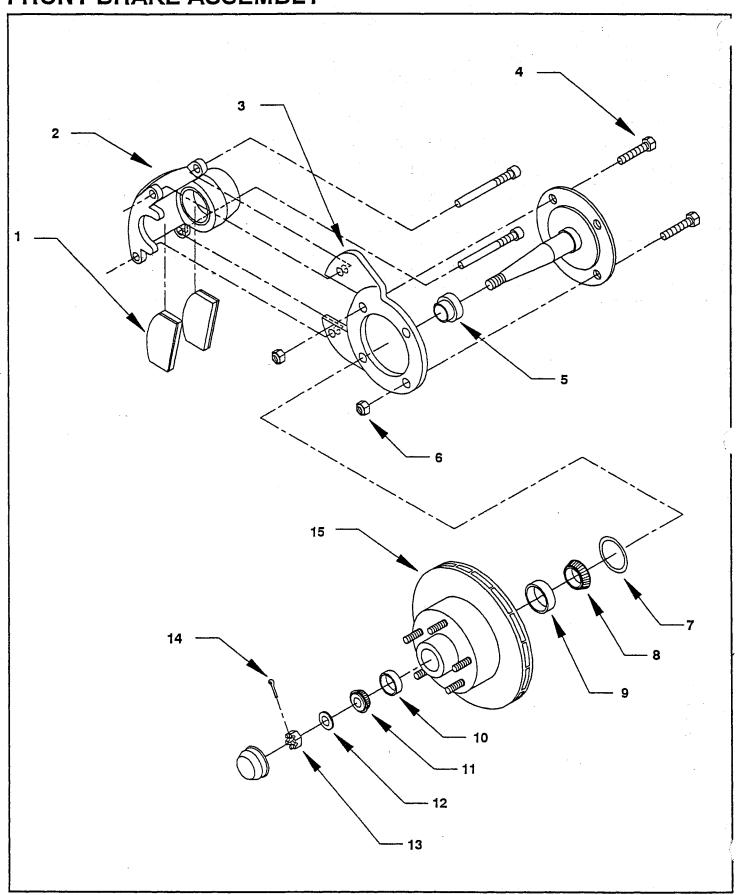




		REAR BRAKE LINES	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	99-607-56	Brake Line, Formed, Rear Right	1
2	99-563-00	T-fitting with Mounting Hole	1
3	99-574-00	Washer	1
4	99-603-59	Brake Line, Formed, Rear Left	1
5	99-580-00	Hose, Brake, with 3/8-24M and 3/16 TF	1
6	99-576-00	Clip	1
7	99-609-56	Brake Line, Formed, Rear Axle to Switch	1
8	71-110-00	Brake Light Switch, Hydraulic	. 1
9	99-591 - 00	Female Branch Tee	1
10	99-575-20	Adapter, Master Cylinder	1
11	99-607-57	Brake Line, Switch to Master Cylinder	. 1



FRONT BRAKE ASSEMBLY



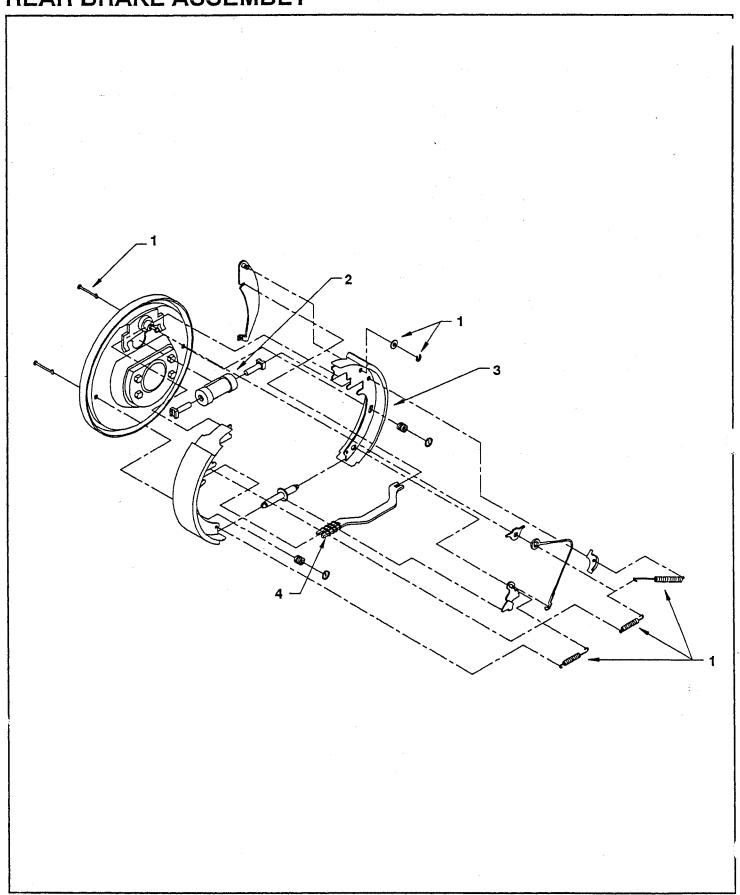


		FRONT BRAKE ASSEMBLY	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	*41-349-15	Brake Pads set of 4 (need 2)	1
2	*	Caliper	1
3	*	Caliper Bracket, Left	1
	*	Caliper Bracket, Right	1
4	*	Caliper Bracket Bolts	4
5	*	Bearing Adaptor	1
6	*	Caliper Bracket Nuts	4
7	*	Grease Seal	1
8	*	Inner Bearing	1
9	*	Inner Bearing Race	1
10	*	Outer Bearing Race	1
11	*	Outer Bearing	1
12	*	Spindle Washer	1
13	*	Spindle Nut	1
14	*	Cotter Pin	1
15	*	Rotor	1

^{* -} Available from Manufacturer at time of printing. Contact Taylor-Dunn or your local Taylor-Dunn dealer for more information.



REAR BRAKE ASSEMBLY

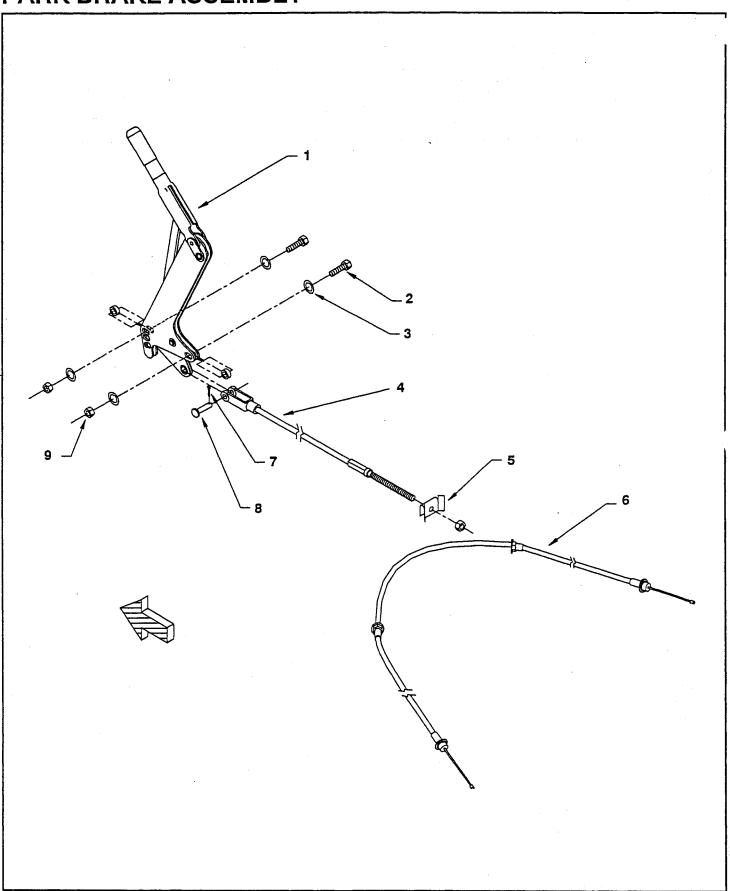




REAR BRAKE ASSEMBLY			
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	85-205-61	Spring Kit	1
2	99-504-00	Cylinder, Wheel	2
3	41-632-00	Brake Shoes, 11" (Set of four)	1
4	85-000-02	Park Brake Link Spring	2



PARK BRAKE ASSEMBLY

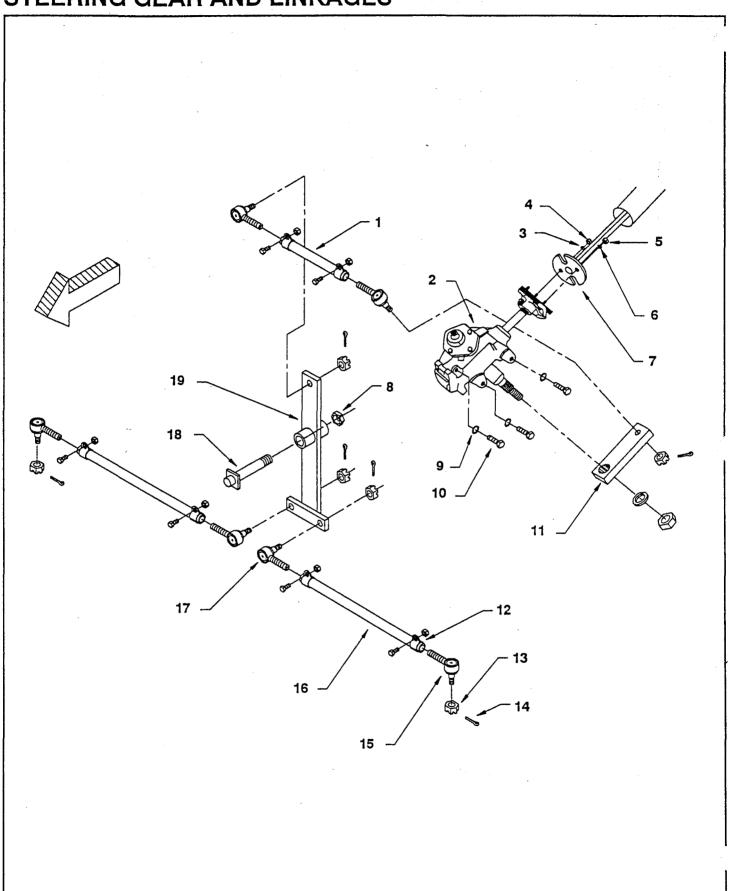




		PARK BRAKE ASSEMBLY	
ITEM #	PART NUMBER	DESCRIPTION	QTY
. 1	51-340-00	Hand Park Brake Lever	. 1
2	88-100-15	3/8 x 13/4" Hexagonal Head Screw	2
3	88-108-60	3/8" Washer	4
4	96-820-01	Cable Assembly, Adjustable	. 1
5	41-311-20	Equalizer, Loop Brake Cable	1
6	96-826-14	Cable, Park Brake	1
7	88-527-14	1/8 x 1/2" Steel Cotter Pin	1
8	96-773-00	Pin, Clevis, 3/8 x 1"	1
9	88-109-81	3/8 NC Locknut	2



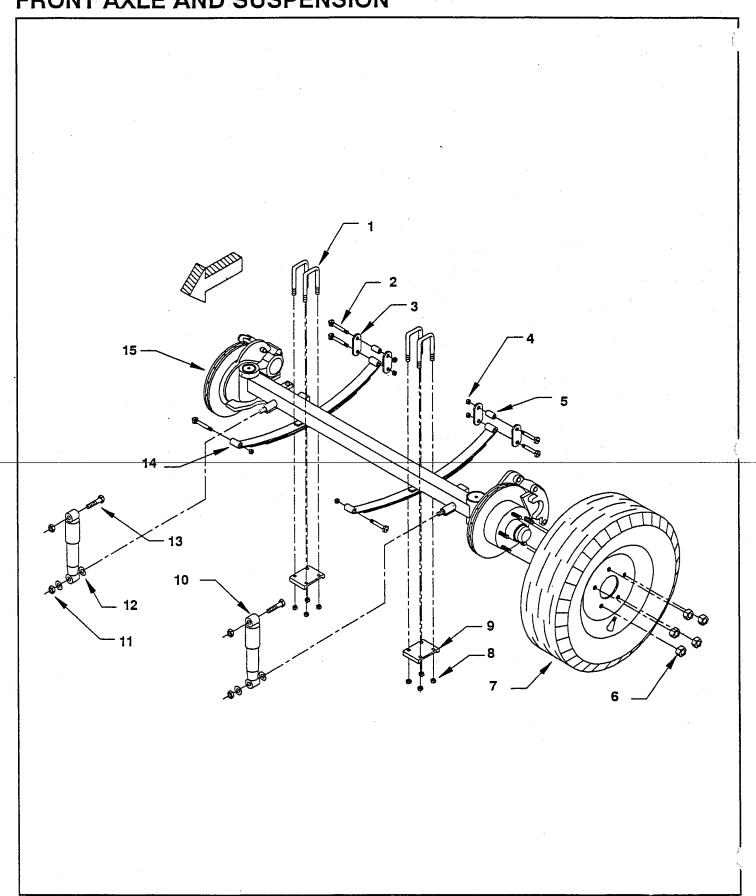
STEERING GEAR AND LINKAGES





		STEERING GEARBOX AND LINKAGES	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	18-040-07	Sleeve, Steering, 81/4"	1
2	18-308-20	Steering Gear	1
3	88-088-62	5/16" Lock Washer	1
4	88-099-80	5/16" NF Hex Head Nut	1
5	88-119-80	3/6" NF Hex Head Nut	1
6	88-108-62	3/8" Lock Washer	1
7	20-031-55	Steering Shaft	1
8	88-289-81	7/8" NF Thin Hex Locknut	1
9	88-128-62	7∕₁6" Lock Washer	3
10	88-120-11	7∕₁6" x 1 NC Hex Head Cap Screw	3
11	18-104-10	Lever, Steering, Splined	1
12	86-510-00	Clamp Assembly, Ball Joint	6
13	88-159-85	1/2-20 NF Hex Slotted Nut	6
14	88-527-14	1/8 x 11/2" Steel Cotter Pin	6
15	86-501-98	Ball Joint, F1 and P2, Left	3
16	18-045-00	Sleeve, Steering, Adjustable, 153/4"	2
17	86-501-99	Ball Joint, F1 and P2, Right	3
18	21-009-15	Kingpin	1
19	18-104-31	Steering Pivot	1

FRONT AXLE AND SUSPENSION



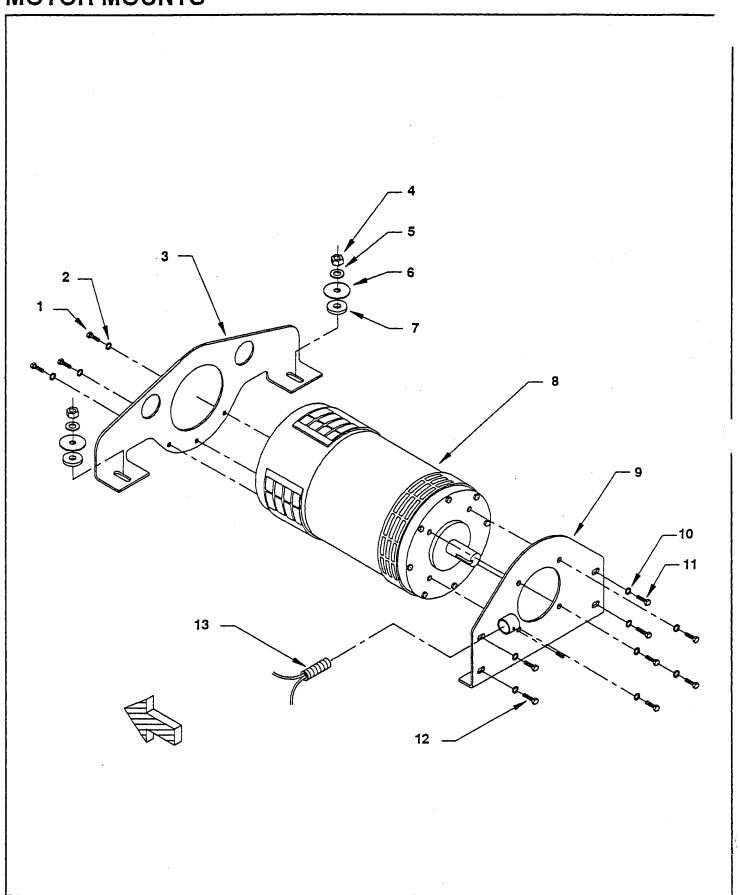


		FRONT AXLE AND SUSPENSION	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	96-123-02	U-bolt, 3/8 NC x 2 x 43/4" Long	4
2	96-248-01	Bolt, Spring, with Grease Fitting	6
3	16-870-10	Link Plate, 21/4", Zinc Plated	6
4	88-169-82	Locknut, 9/16" NF, Grade C	6
5	32-213-00	Bushing, 3/4 OD x 0.6 ID x 1.65	2
6	97-236-00	¹½" Tapered Lug Nuts	10
7	13-770-00	Wheel	2
8	88-109-81	Locknut, 3/8" NC Locknut	8
9	16-856-03	Plate, Spring	2
10	86-015-00	Shock Absorber	2
11	88-189-81	5/8" NC Nylock Hex Nut	4
12	88-188-66	Washer, 5/8" SAE Plain	4
13	88-180-18	5/8 x 21/2" NC Hex Head Screw	3
14	85-512-20	Spring, 4-leaf	2
15	15-150-10	Axle, Front, with Hydraulic Disc Brakes	1

Replacement kit available for the king pins is now available. The part number is 21-012-20. This should be added to the front axle parts drawing. The kit includes two king pins, king pin bushings, thrust bearings felt and cap washers, hardware. Bushings must be reamed to 0.8135/0.8125 after installation.



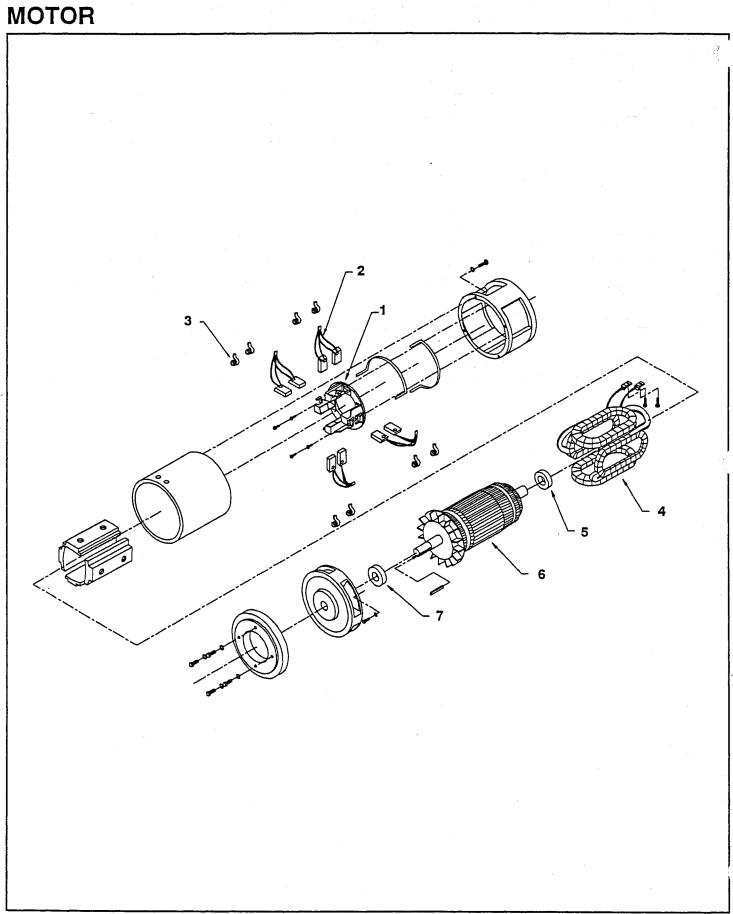
MOTOR MOUNTS





	MOTOR MOUNTS		
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	88-080-10	5/ ₁₆ x ⁷ / ₈ " Hex Head Screw	3
2	88-088-62	5/16" Lock Washer	3
3	02-155-03	Motor Mount, Front	1
4	88-149-81	1/2" NC Locknut	2
5	88-148-61	1/2" SAE Washer	2
6	98-601-51	1/2" ID Washer, Mount	2
7	98-603-10	Rubber Grommet, 9/16" ID	2
8	70-072-00	Motor, 72V, 9"	1
9	02-155-02	Motor Mount, Rear	1
10	88-109-81	3/8" NC Locknut	6
11	88-100-11	3/8 x 1" NC Hex Screw	6
12	88-101-13	3/8 x 11/4" Hex Head Screw Grade 5	2
13	74-020-01	Speedo Sender	1



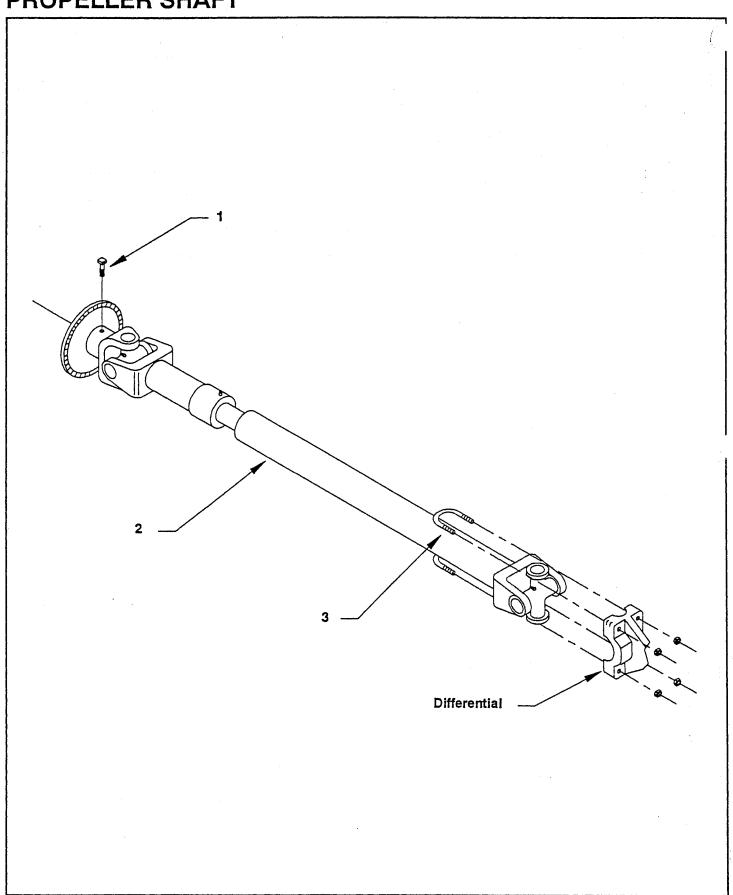




	MOTOR (70-072-00)			
ITEM #	PART NUMBER	DESCRIPTION	QTY	
1	70-175-00	Brush Holder	1	
2	70-127-00	Brushes, With Terminal	4	
3	85-402-00	Brush Spring	8	
4	70-208-00	Field Coil	1	
5	80-210-00	Ball Bearing, CE	1	
6	70-072-10	Armature	1	
7	80-211-00	Ball Bearing, DE	1	

^{* -} Available from Manufacturer at time of printing. Contact Taylor-Dunn or your local Taylor-Dunn dealer for more information.

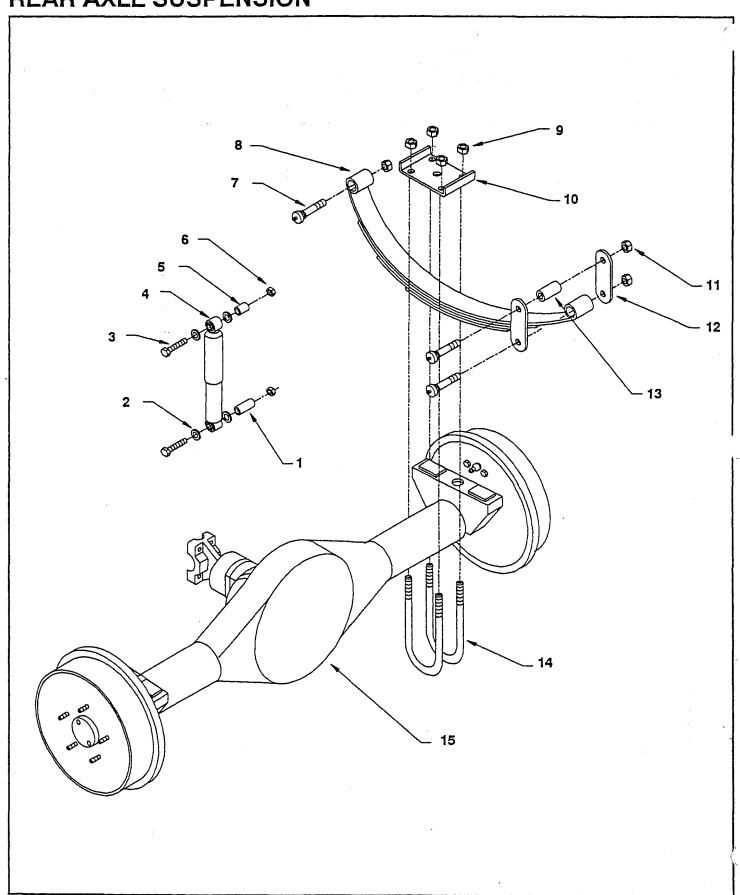
PROPELLER SHAFT





PROPELLER SHAFT				
ITEM #	PART NUMBER	DESCRIPTION	QTY	
1	88-107-10	3/8 x 3/4" NC Square Head Screw, Drilled	3	
2	86-557-31	Drive Shaft with Speedo Gear	1	
3	86-554-30	U-bolt and Nut, U-joint	2	

REAR AXLE SUSPENSION

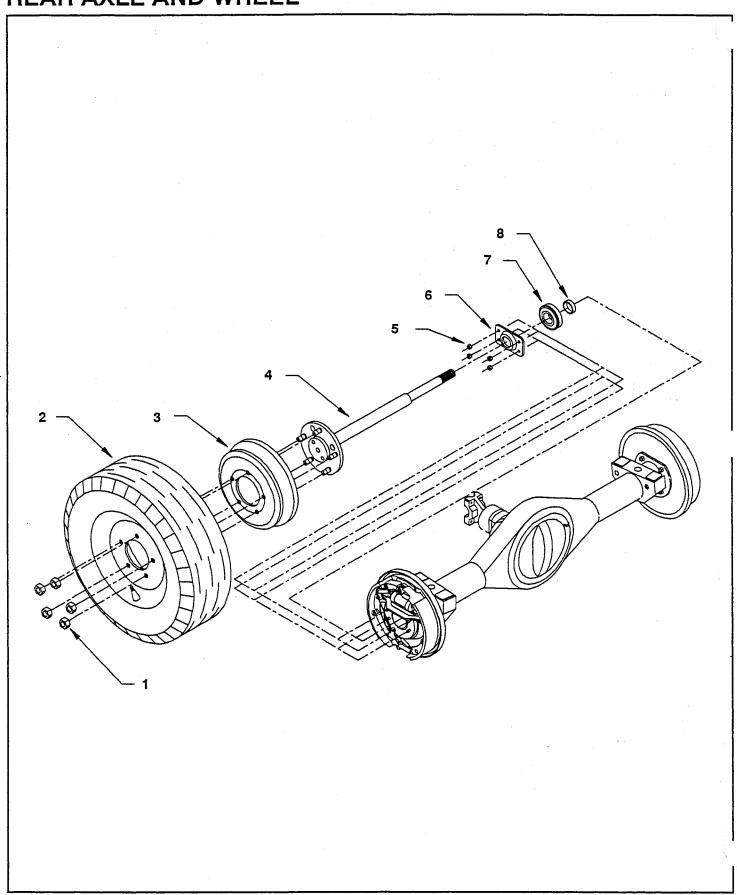




		REAR AXLE SUSPENSION	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	16-514-17	Spacer, 13/4"	2
2	88-188-66	Washer, 5∕8" SAE Plain	8
3	88-180-30	5/8 x 51/2" NC Hex Head Screw	4
4	86-015-00	Shock Absorber	2
5	16-514-10	Spacer, 1"	2
6	88-189-81	5/8" NC Nylock Hex Nut	4
7	96-248-01	Bolt, Spring, with Grease Fitting	6
8	85-513-20	Spring, 4-leaf	2
9	88-159-84	¹/₂-20 Locknut	8
10	16-867-02	Plate, Spring, Formed, 3" Axle	2
11	88-169-82	Locknut, %16" NF, Grade C	6
12	16-871-02	Strap, Shackle, 3½" Centers	4
13	32-213-00	Bushing	2
14	96-123-02	U-bolt, 3/8 NC x 2 x 43/4" Long	4
15	4Z-009-99	Drive, with 11" Drums	1



REAR AXLE AND WHEEL



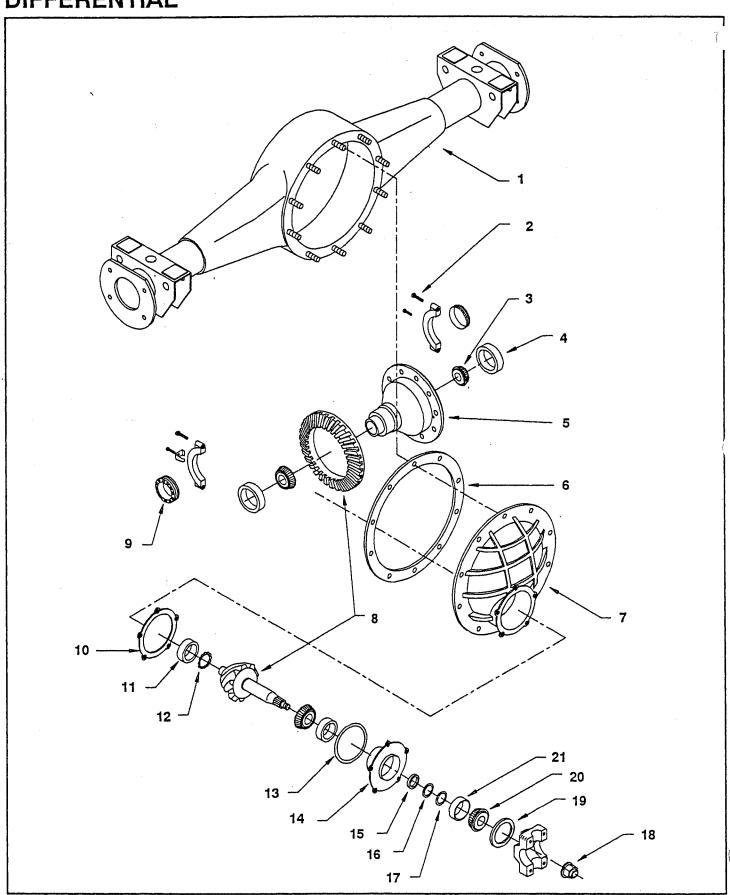
24 - PARTS LIST TAYLOR-DUNN: ET 1-50



		REAR AXLE	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	97-236-00	1/2" Tapered Lug nuts	10
2	13-770-00	Wheel	2
3	41-533-02	Drum, Brake, 11" ID, 5 x 5½"	2
4	41-168-20	Axle, Rear, 26", with Short Stud and Bearing	2
5	88-159-84	Locknut, ½" NF	8
6	32-514-02	Plate, Retainer, Rear Axle	2
7	80-503-00	Ball Bearing, Rear Axle	2
8	32-515-00	Ring, Retainer, Rear Axle	2



DIFFERENTIAL



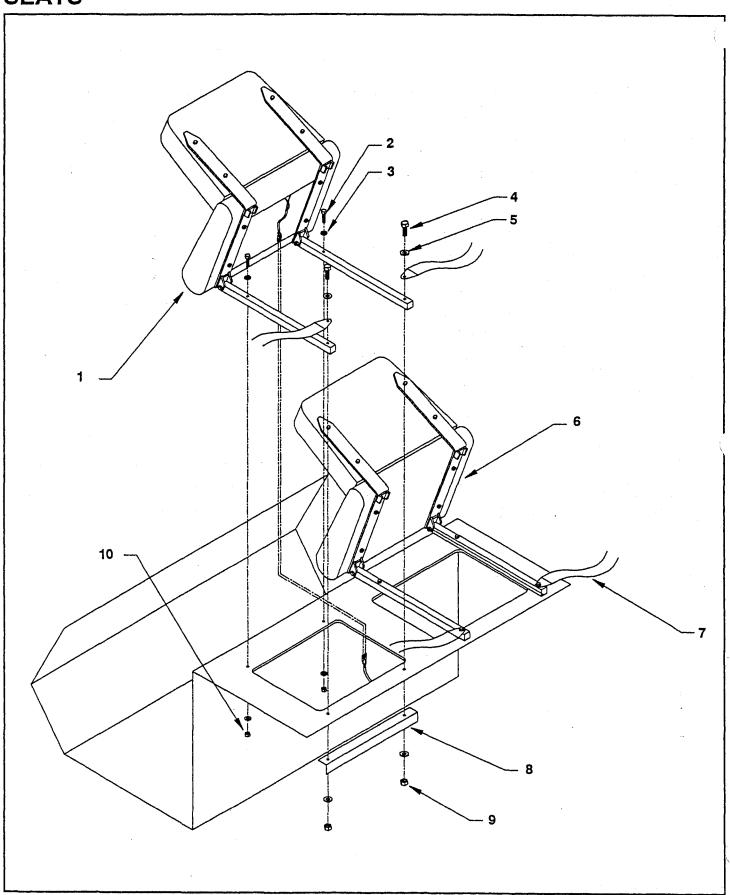


		DIFFERENTIAL/REAR END (4Z-009-99)	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	41-292-20	Housing, Differential, F2, 48.5", Top Spring	1
2	88-140-16	Screw, Hex Head Cap, NC, 1/2 x 2"	2
3	80-513-00	Bearing, Roller	2
4	80-129-00	Bearing Race, Tapered	2
5	41-713-00	Differential Gear Base Assembly	1
6	45-042-00	Gasket, Differential Housing	1
7	41-710-05	Cover, Differential Housing	1
8	31-239-50	Ring and Pinion gear set, 6.50 ratio	1
9	41-707-00	Adjusting Nut, Differential Bearing	2
10	41-711-00	Shim, Pinion	1 - 3
11	80-555-00	Bearing, Ball Pinion	1
12	41-714-00	Retainer, Bearing	1
13	80-702-00	O-ring, Pinion	1
14	44-340-91	Flange, Ring Gear, Pinion Bearing	1
15	16-419-00	Spacer, .002*	2 - 6
16	16-411-00	Spacer, .005"	2 - 6
17	16-420-00	Spacer, 010"	2 - 6
18	97-250-00	Pinion Nut	1
19	45-339-00	Oil Seal, Drive Plnion Shaft	1
20	80-554-00	Pinion bearing	2
21	80-125-00	Bearing Race, Tapered	2
22	44-340-80	Differential assembly, with 6.5 ring and pinion ratio and 1330 U-joint yoke, F2 (includes items 2 - 5, 7 - 21)	1

^{* -} Available from Manufacturer at time of printing. Contact Taylor-Dunn or your local Taylor-Dunn dealer for more information.



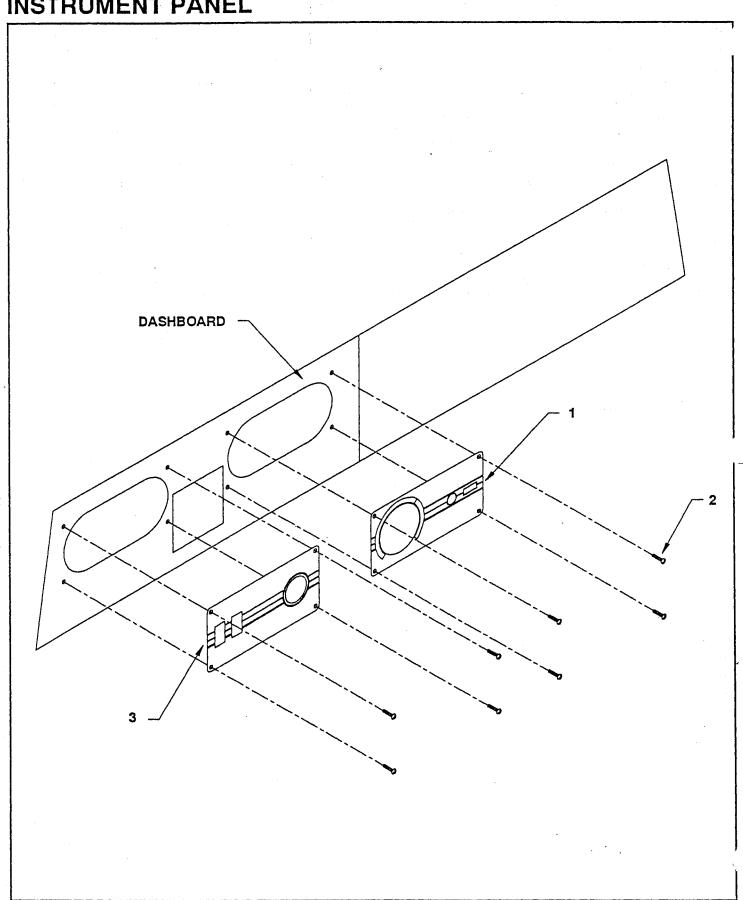
SEATS





		SEATS	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	90-160-50	Seat and Back with Switch	1.
2	88-101-16	3/8 x 2" NC Hex Head Cap Screw Grade 5	4
3	88-108-61	Washer, 3/8" SAE Plain	8
4	88-140-14	½ x 1½" NC Hex Head Screw	4
5	88-148-61	Washer, 1/2* SAE Plain	8
6	90-199-10	Seat Belt	2
7	90-160-51	Seat and Back	1
8	88-149-81	1/2" NC Locknut	4
9	02-155-79	Angle, Seat Mount	2
10	88-109-87	3/8" NC Keps Nut	4

INSTRUMENT PANEL

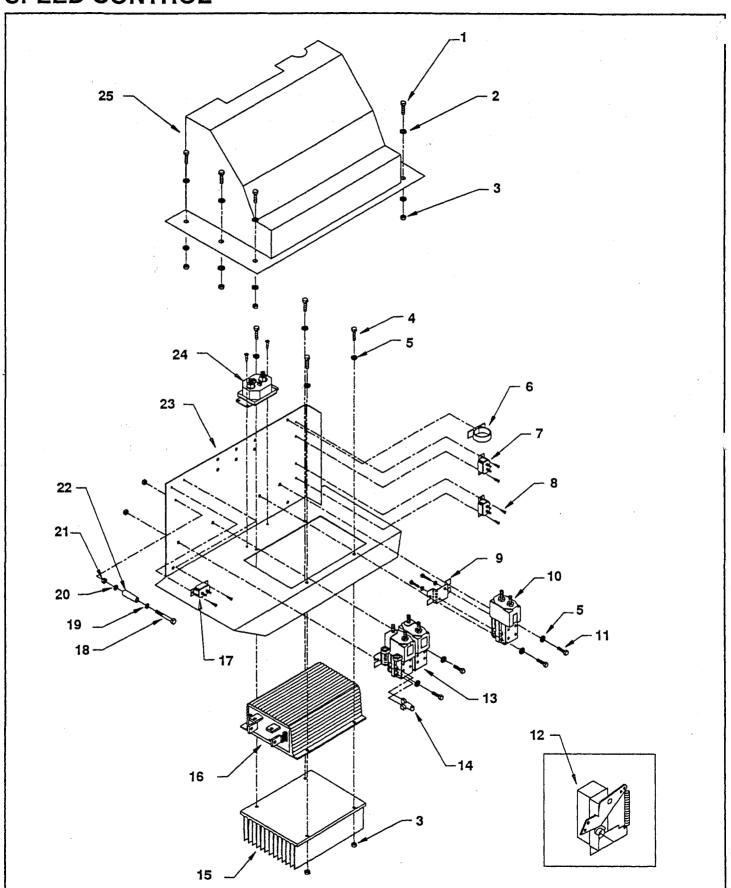




INSTRUMENT PANEL			
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	94-303-12	Assembly, Dash, with Speedometer and Keyswitch	1
2	88-818-06	#8 x ½ Pan Head Screw Type B, Threaded	8
3	94-303-11	Assembly, Dash, with Battery Status Indicator and Switches	1



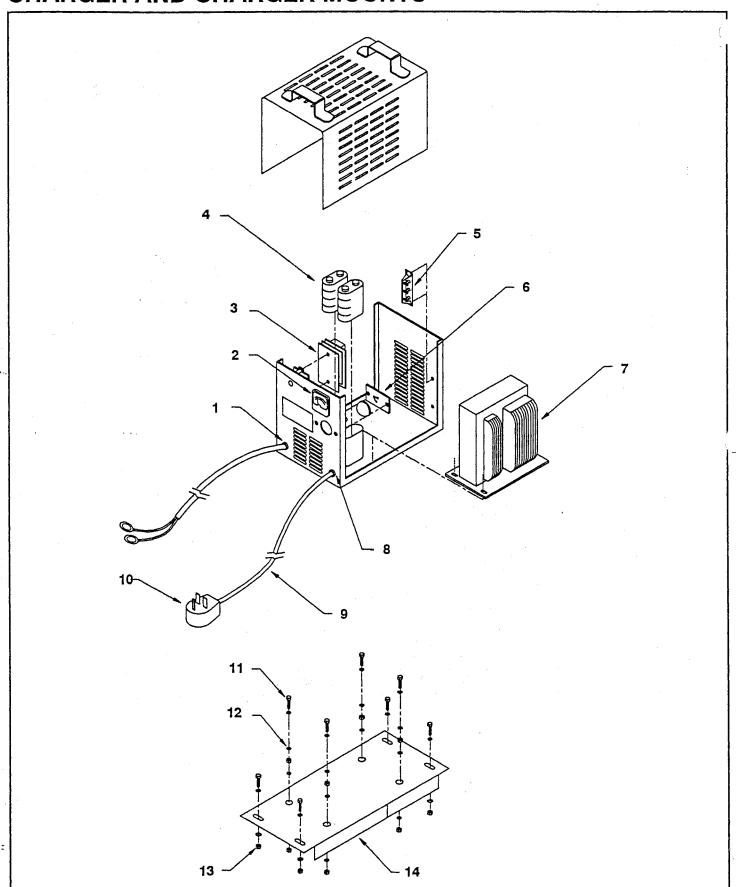
SPEED CONTROL





		SPEED CONTROL	
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	88-060-12	1/4 x 11/8" NC Hex Bolt	6
2	88-068-60	1/4" Cut Washer	6
3	88-069-81	1/4" NC Nylon Insert Lock Nut	15
4	88-067-12	1/4 x 1" NC Hex Bolt	4
5	88-068-62	1/4" Lock Washer	8
6	96-642-00	Clamp, 3/4 Wire, Push Mount	2
7	79-840-20	Circuit Breaker, 20A, Auto-reset	2
8	88-818-06	#8 x ½" Pan Head Screw, Type B Threaded	8
9	71-300-01	Bracket, Mounting	1
10	71-300-00	Contactor, Isolator	1
11	88-060-09	1/4 x 3/4" NC Hex Bolt	4
12	62-033-56	Assembly, Accelerator Module, 72 Volts	1
13	71-300-10	Contactor, Forward-Reverse	2
14	79-730-05	Diode Assembly with Terminals	3
15	62-209-71	Heatsink, 1209-Type Control	1
16	62-209-70	Controller, 400A, 48 - 72 Volts, EEC	1
17	79-840-00	Circuit Breaker, 10A, Auto-reset	1
18	88-060-18	1/4 x 21/2" NC Hex Head Screw	1
19	88-088-61	5/ ₁₆ " SAE Washer	1
20	97-126-10	³ ⁄ ₈ " Washer, Wavy	1
21	88-069-87	1/4" NC Hex Keps Nut	1
22	78-308-22	Resistor, 2,000 Ω, 25 W	1
23	01-155-79	Panel, Control	1
24	79-844-20	Circuit Breaker, 200A, Auto-reset	1
25	62-209-73	Cover, Control Panel	1
26	75-148-91	Control Harness, Control Panel (Not Shown; Includes Item #22)	1
27	75-149-91	Power Harness, Control Panel (Not Shown)	1

CHARGER AND CHARGER MOUNTS





		CHARGER AND CHARGER MOUNTS	
ITEM #	PART NUMBER	DESCRIPTION	QTY
	79-315-00	Charger, 72V, 25A, 230V ac, 1-Phase	1
1	79-531-00	Bushing, Insulator for DC Cord	1
2	79-849-00	Ammeter	1
3	79-802-00	Timer Assembly	1
4	79-902-00	Capacitor, 6.0 mfd, 660 VAC	2
5	79-749-13	Heat Sink Assembly with Diodes	1
6	79-831-00	Fuse Assembly	1
7	79-603-00	Transformer	1
8	79-531-00	Bushing, Insulator for AC Cord	1
9	79-576-00	Cordset, AC, 230/15, with Plug	1
10	76-002-01	Plug, 230/30	1
11	88-060-11	1/4 x 1" NC Hex Head Cap Screw	8
12	88-068-60	1/4" Cut Washer	24
13	88-069-81	1/4" NC Nylon Insert Lock Nut	12
14	01-155-57	Mount, Charger	1

^{* -} Available from Manufacturer at time of printing. Contact Taylor-Dunn or your local Taylor-Dunn dealer for more information.



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