

**OPERATION
AND
MAINTENANCE
MANUAL
WITH
PARTS LIST**

MODEL: C 4-32 and C 4-33
SERIAL No.: 94315 through 151285
MANUAL No.: MC-432-04
Ver: B 7/99

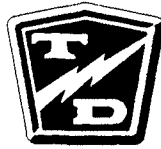
****IMPORTANT****

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

***TAYLOR-DUNN* MFG. CO.**

Commercial and Industrial Vehicles Since 1949

2114 W. Ball Rd., Anaheim, CA 92804 (714) 956-4040 (fax) (714) 956-0504
Mailing Address: P.O. Box 4240, Anaheim, California 92803



TAYLOR-DUNN[®]
Commercial and Industrial Vehicles Since 1949



**The Best Way To Go About
Your Business**

TABLE of CONTENTS

SECTION 1: INTRODUCTION	3
About This Manual	4
Notational Conventions	4
Vehicle Description	5
Standard Specification	6
Taking Delivery of Your Vehicle	7
SECTION 2: OPERATING GUIDELINES	9
Safety Rules and Guidelines	10
Driver Training Program	11
Vehicle Controls	12
Driving	14
Loading/Unloading	14
Parking	14
Towing	14
Storing/Returning The Car to Service	14
SECTION 3: SCHEDULED MAINTENANCE AND SERVICE PROCEDURES	17
Maintenance Guidelines	18
Maintenance Checklist	19
Lubrication Chart	20
Troubleshooting Guide	21
Maintenance Procedures	
Brake System	22
Accelerator System	26
Front Axle and Steering	28
Rear Drive and Differential	32
Drive motor	39
Batteries	41
Tires	43
Electrical System	44
Electrical Troubleshooting	46
Electrical Troubleshooting Flow Chart	51
Wiring Diagram	56
Charging System	57
Charger Troubleshooting	57
SECTION 4: ILLUSTRATED PARTS LIST	61
Front Axle	62
Front Tire	64
Front Fork	66
Steering	68
Park & Foot Brake Linkage	70
Accelerator Module	72
Chargers	74
Motors	78
Power Traction Drive	80
Rear Differential	82
Brake	84
Rear Axle	86

TABLE of CONTENTS

SECTION 4: ILLUSTRATED PARTS LIST (continued)

Rear Tires	88
Controller & Panel	90
Instrumentation	92
Batteries	94
Decals	96
Miscellaneous Parts	98
OPTIONAL PARTS	
Wheel Covers	100
Diamond Plate Deck Cover	100
Reverse Warning Beeper	100
No Headlight, No Taillight	100
Headlight & Taillight	100
Hitches	100
Bulkhead, Bolt On	100
Stake Sides & End Gate	102
Cab, Fiberglass	104
Doors, Naugahyde	104
Mirrors, Left or Right	106
Stop Light, Mechanical Brake	107

INTRODUCTION



SECTION 1

About This Manual

This manual provides you with information you need to safely operate and maintain this vehicle.

We assume that those who will perform maintenance or repair operations are trained vehicle service technicians capable of performing minor and major repairs and qualified to use the tools required.

We also assume that they have or will attend a training program designed to familiarize them with the safe operation and use of this particular vehicle.

This manual contains the following major sections:

Section 1: Introduction

Contains information about how to use this manual, a description of the vehicle, how to do an incoming inspection, and vehicle specifications.

Section 2: Vehicle Operation

Provides safety rules and guidelines describes the driver training program and explains the operation of each control on the vehicle.

Section 3: Maintenance and Service Procedures

Contains a scheduled maintenance checklist lubrication diagram troubleshooting guide recommended spare parts list, and detailed maintenance procedures.

Also contains service procedures in for each assembly found in the vehicle. Each major heading contains procedures organized in logical order.

Section 4: Illustrated Parts

Includes an illustration and parts list for each assembly that has replaceable parts for the vehicle.

Notational Conventions

The following types of notations are used throughout this manual:

▲WARNING

A warning indicates a potentially hazardous situation which, if not avoided, could result in serious injury or worse. Be sure you exercise special care and follow any instructions provided in a warning message.

▲CAUTION

A caution indicates a potentially hazardous situation which calls attention to unsafe practices, or if not avoided, may result in minor or moderate injury. Be sure you exercise special care and follow any instructions provided in a caution message.

NOTE

A note provides additional information about a subject.

Vehicle Description: C4-32/C4-33

This manual applies to vehicles with serial numbers starting at 94315.

The C4-32/C4-33 is designed to be driven on smooth surfaces in and around industrial plants, warehouses, hospitals, and schools, as well as many other applications. This vehicle is a combination burden carrier and tow tractor meant for indoor or outdoor use.

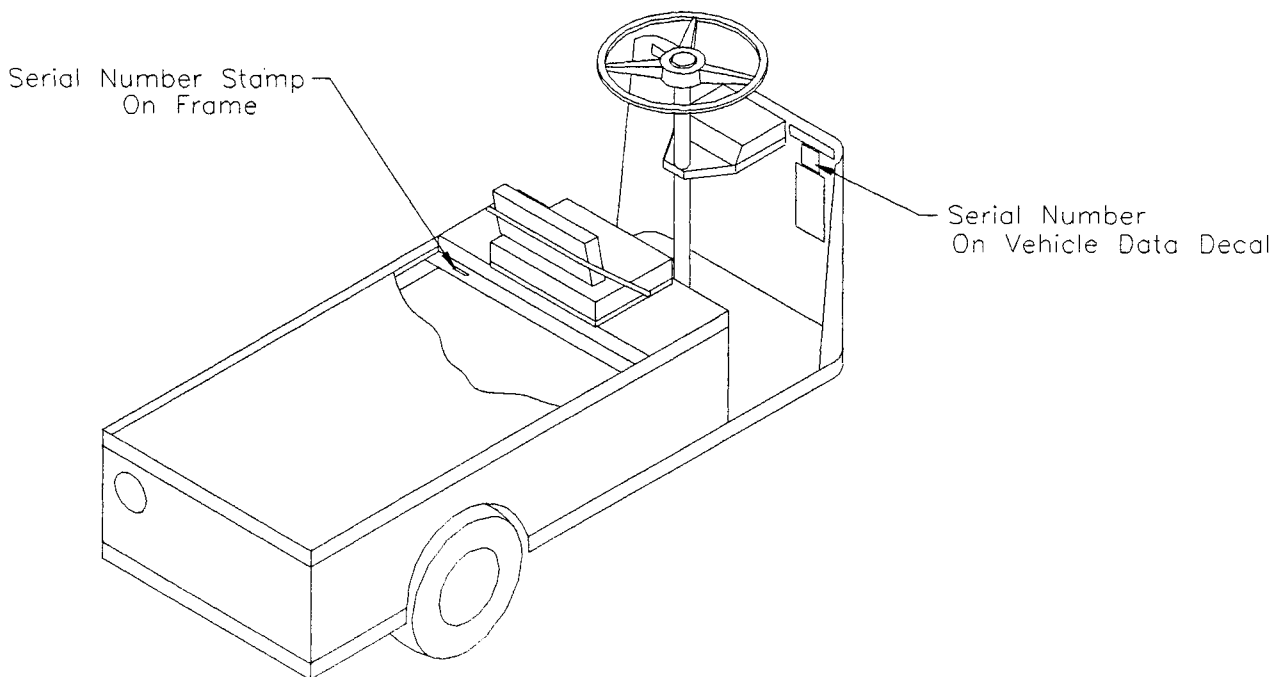
This vehicle is not designed to be driven on public highways. It is not designed to go in excess of 9 mph, whether on a level or a downhill surface. Driving at a speed higher than 9 mph may result in steering difficulty, motor damage, and/or loss of control. It is not designed to be towed in excess of 5 mph.

The C4-32 can handle a total payload (incl. cargo, optional equipment, and driver) of up to 1400 lbs. The C4-33 has a total payload of up to 1200 lbs. Various options are available to enable you to customize the vehicle to suit your particular needs. Consult your Taylor-Dunn® salesperson or representative for

current options.

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

The model and serial number for this vehicle are imprinted on a decal located on the inside of the front cowl. The serial number is stamped in the forward deck angle and can be seen by removing the deckboard.



Standard Specifications C4-32

ITEM	SPECIFICATION
Standard Dimensions	201L x 76.2W x 101.6H (centimeters)
	79L x 30W x 40H (inches)
	Bed Size: 46 x 29-1/2 (inches)
Unit Weight	416 kg (w/charger and batteries)
	918 lbs
Turning Radius	177.8 centimeters
	70 inches
Transmission	Power traction chain drive
Brakes	Drive shaft brake through differential
Motor	DC series wound 6.0 hp @ 1,200 rpm
Tires	Pneumatic 4.80 x 8 load range B
Tire Pressure	60 psi maximum
Maximum Load	1,400 lbs (including driver and optional equipment)
Batteries	6 volt, 220 amp hour, lead acid (6 ea)

Standard Specifications C4-33

ITEM	SPECIFICATION
Standard Dimensions	201L x 76.2W x 101.6H (centimeters)
	79L x 30W x 40H (inches)
	Bed Size: 46 x 29-1/2 (inches)
Dry Weight	364 kg (w/charger and batteries)
	802 lbs
Turning Radius	177.8 centimeters
	70 inches
Transmission	Power traction chain drive
Brakes	Drive shaft brake through differential
Motor	DC series wound 4.5 hp @ 935 rpm
Tires	Pneumatic 4.80 x 8 load range B
Tire Pressure	60 psi maximum
Maximum Load	1,200 lbs (including driver and optional equipment)
Batteries	6 volt, 220 amp hour, lead acid (4 ea)

Taking Delivery of Your Vehicle

THIS VEHICLE SHOULD BE INSPECTED IMMEDIATELY AFTER DELIVERY. Use the following guidelines to make sure there are no obvious problems.

Inspecting the Vehicle

Examine the contents of all packages and accessories that may have come in separate packages with this vehicle. Make sure everything listed on the packing slip is there. Nothing should look broken or damaged.

Examine any visible wiring for obvious signs of damage. Check that all connections are secure.

Check that battery connections are tight and all cells are filled.

Inspect the tires for obvious wear or damage. Check the tire pressure. Make sure that all wheel lugs are secure.

Check the body, seats, windshield, trim, and other external parts for obvious damage.

Checking the Controls

Operate each of the following controls before turning on the key switch:

- Accelerator Pedal
- Brake Pedal
- Forward/Reverse Selector Switch
- Parking Brake
- Steering Wheel
- Horn
- Lights

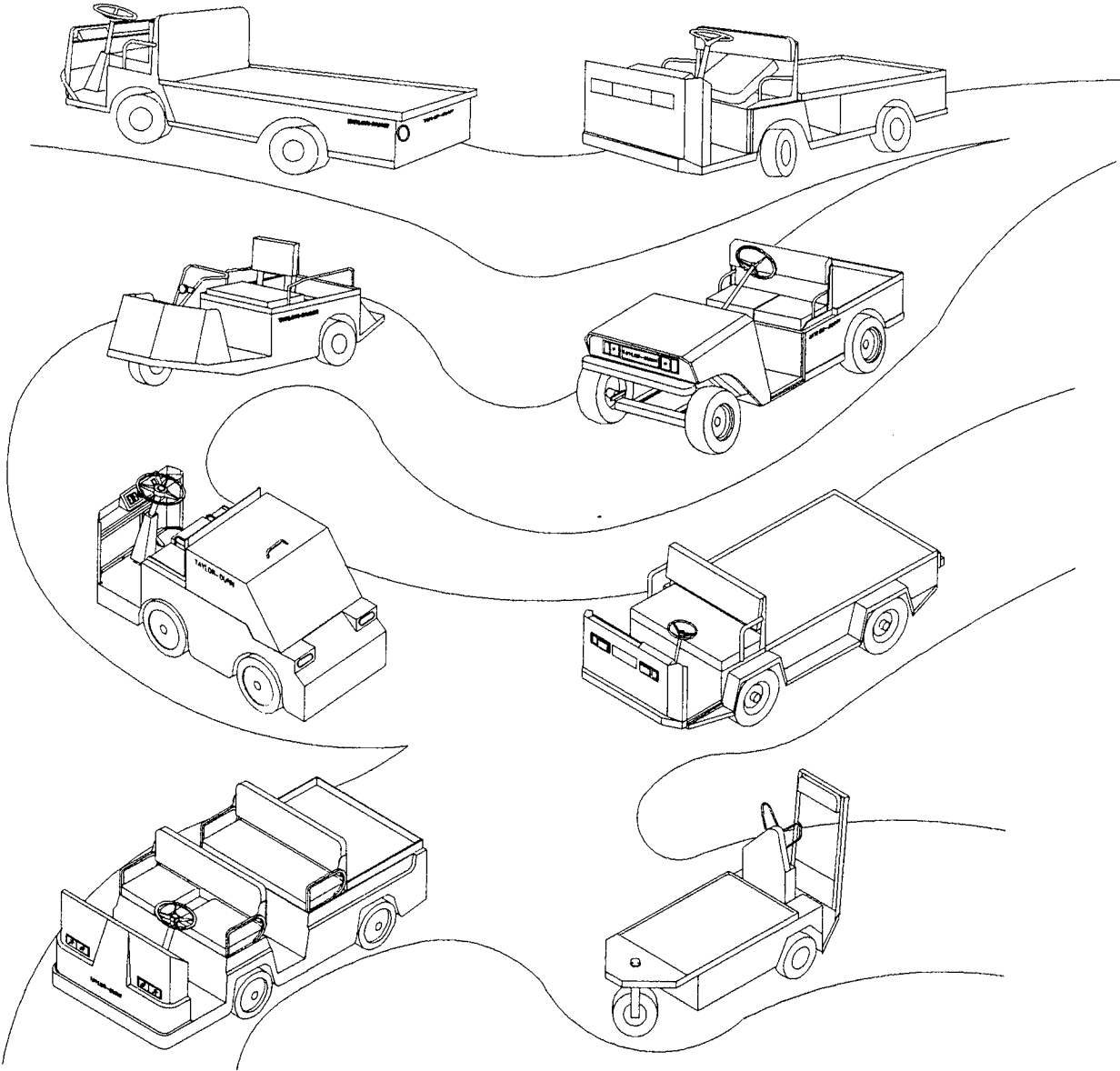
Each control should operate smoothly and easily without sticking or requiring undue effort.

What To Do If You Find A Problem

If you find a problem with this vehicle you must immediately file a claim with the carrier. The claim must be filed within 48 hours of receiving this vehicle. Forward a copy of the damage claim to your Taylor-Dunn® dealer.

▲ WARNING

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



**You're in great company
with Taylor-Dunn®**

OPERATING GUIDELINES



Safety Rules and Guidelines

▲WARNING

Do not weld, cut, or in any way modify the frame of this vehicle.

Modifications to the frame may compromise the integrity and strength of the original design. This may cause structural failure and/or loss of control, resulting in serious injury.

Modification of the frame structure of this vehicle is strictly prohibited without prior written authorization of Taylor-Dunn Mfg. Inc.

It is the responsibility of the owner of this vehicle to assure that the operator understands the various controls and operating characteristics of this vehicle and obeys the following safety rules and guidelines. (Extracted from the American National Standards Institute Personnel and Burden Carriers ANSI B56.8).

This vehicle is designed to be driven over smooth surfaces in and around places such as warehouses, nurseries, motels, parks, and resorts. Before you drive this vehicle, please observe the following safety rules and guidelines:

▲WARNING

This vehicle is not designed to be driven on public highways. The drive is built to order. It is available in speeds ranging from 4.5 mph to 9 mph. The vehicle travels on a level surface with no load at this speed. Do not exceed this speed. Exceeding this speed may result in steering difficulty, motor damage, and/or loss of control. The vehicle should not be towed at more than 5 mph.

▲WARNING

Always use TAYLOR-DUNN[®] replacement parts when repairing or replacing damaged parts. Incorrect or inferior parts may result in injury and cause the invalidation of your warranty.

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

Driver Training Program

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

The Operator Training program shall include the following:

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

Driver Qualifications

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

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

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

Vehicle Controls

The following describes the use of each control on this vehicle.



Some controls are optional equipment and may not be installed on this vehicle.

Key Switch

A key switch located on the right side of the dash panel starts the vehicle. Rotate the key clockwise to turn the vehicle on, counterclockwise to turn the vehicle off.

▲WARNING

The key switch should be in the off position and the key removed whenever the driver is off of the vehicle.

This switch is also designed to secure and disable the vehicle. You can remove the key **ONLY** when the key switch is in the OFF position.

Forward/Off/Reverse Switch

The forward/off/reverse rocker switch, located on the front right side of the dash panel, determines the direction of travel (forward or reverse) of the vehicle. Push the top of the switch to make the vehicle go forward. Push the bottom of the switch to go in reverse. Position the switch in the center for off.

▲CAUTION

DO NOT SHIFT from forward to reverse or vice-versa while the vehicle is in motion. Make sure the vehicle is completely stopped before shifting.

▲WARNING

The shift switch has a center off position. The shift switch should be in the off position with the brake set whenever the operator leaves the driver's seat.

Accelerator Pedal

The accelerator pedal, located in the driver's area, to the right of the brake pedal, controls the speed of the vehicle, and is designed for right foot operation. It operates the same way as the accelerator in an automobile. Depress the pedal to increase the vehicle's speed, release the pedal to stop increasing the speed.

Use the brake pedal to slow the vehicle on down grades.

▲WARNING

DO NOT use the accelerator to keep the vehicle from rolling on a grade. The brake should always be used to stop or hold the vehicle on a grade. Using the accelerator will result in motor damage.

Steering

The steering system is a multiple sprocket and chain configuration. Turn the steering wheel clockwise to turn to the right, and turn the steering wheel counterclockwise to turn to the left.

Foot Brake Pedal

The foot brake pedal, located to the right of the steering column, is for operation with the right foot only. Apply pressure to the brake pedal to slow the vehicle down. The brake pedal slows the vehicle according to the amount of pressure you apply. Removing your foot from the pedal releases the braking action.

Park Brake Lever

The park brake is actuated with a hand lever, which is located to the right of the steering column. To set the park brake, pull the lever up until it locks. To release the park brake, push the lever completely forward.

Horn button

The horn button is located on the dash tray, to the left of the steering column. Depress the button to sound the horn and release the button to turn it off.

Headlight switch (optional)

The headlight switch is located on the dash tray, directly in front of the steering column. Any accessory switches, are located inline and to the left of the headlight switch.

Hour Meter (optional)

The hour meter is located on the dash panel to the right of the battery status indicator. This tracks the number of hours the vehicle has been in operation.

Battery Status Indicator

The battery status indicator is located on the left side of the dash panel. The normal operating range is in the green zone. The vehicle needs charging if it is in the yellow zone to the left. If it is in the red zone to the left the vehicle should be taken out of service immediately to be charged.

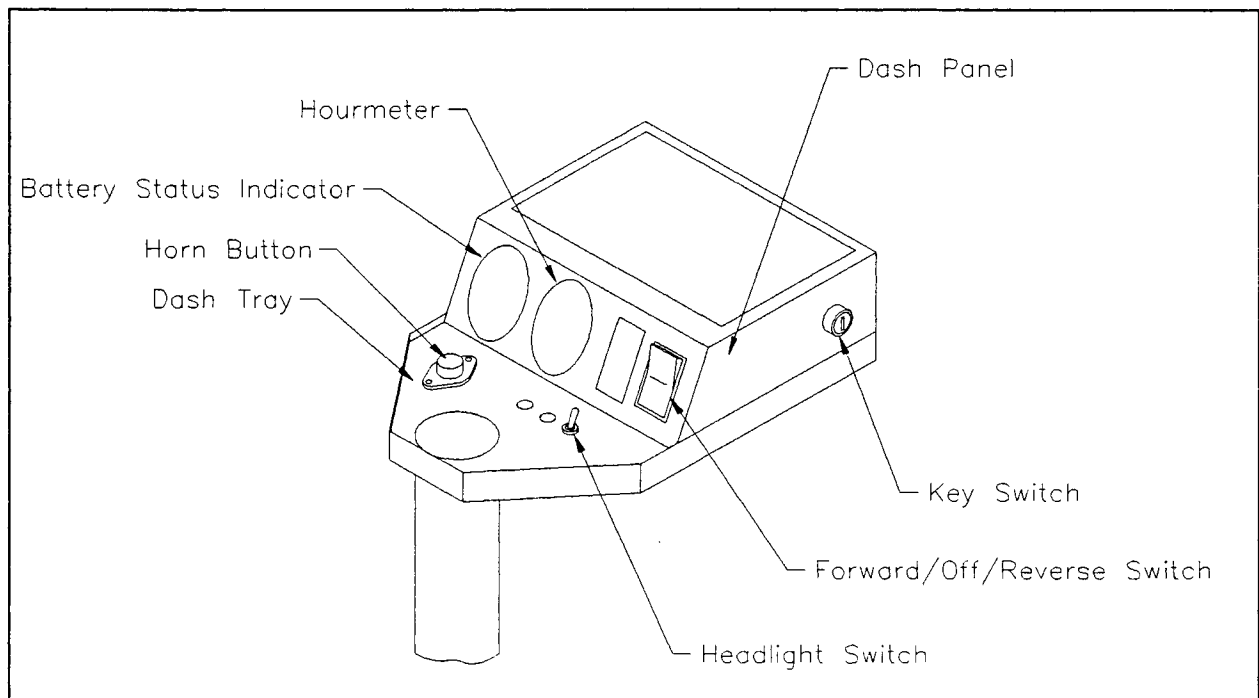


Figure 2-1

Driving

- Slow down and sound the horn when approaching a corner or other blind intersection.
- No horseplay or dangerous driving.
- Do not drive this vehicle in hazardous areas unless this vehicle is approved and labeled for such operation.
- Immediately report any accident or vehicle problem to your supervisor.

Loading and Unloading

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

Parking

- Set the parking brake and place the forward/off/reverse switch in the off position before leaving the vehicle.
- If you will be away from this vehicle, place the forward/off/reverse switch in the off position, turn off the key switch, remove the key and take the key with you.
- If you park this vehicle on an incline block the wheels.
- Do not block fire aisles, fire equipment or stairways.

Towing

- To tow this vehicle attach a tow strap to the front of the frame and place the forward/off/reverse shift lever in the off position.
- Use another driver to steer this vehicle while it is being towed; be sure the driver uses the brakes when the towing vehicle slows or stops.

▲WARNING

Do not exceed 5 MPH or carry any passengers while towing this vehicle.

Storing and Returning to Service

- Do not store batteries in a discharged condition. Fill, charge and clean batteries fully before putting in storage
- Lube all grease fittings.
- Spray all exposed metal surfaces with a light oil.
- Clean and dry all exposed electrical connections.
- Inflate tires to proper pressure and then block them off the ground.
- If stored for a prolonged period the batteries should be charged as follows:

Storage Temperature	Charge
Below 40°F	Every 6 months
40° - 60°F	Every 2 months
Above 60°F	Once a month

Returning to Service

- Check state of charge of batteries and charge if necessary.
- Perform **ALL** maintenance checks in the periodic check list in section 3.
- Test drive before putting into normal service.



The Best Way To Go About Your Business

**SCHEDULED MAINTENANCE
AND
SERVICE PROCEDURES**



SECTION 3

This section explains how to perform the scheduled maintenance procedures. Use the Maintenance Checklist to determine how often you should perform each procedure. Vehicle maintenance or repairs should only be performed by a qualified mechanic.

This section contains the following:

- Maintenance guidelines.
- Maintenance checklist.
- Lubrication chart.
- Troubleshooting guide.
- Recommended spare parts list.
- Detailed maintenance procedures.

Maintenance Guidelines

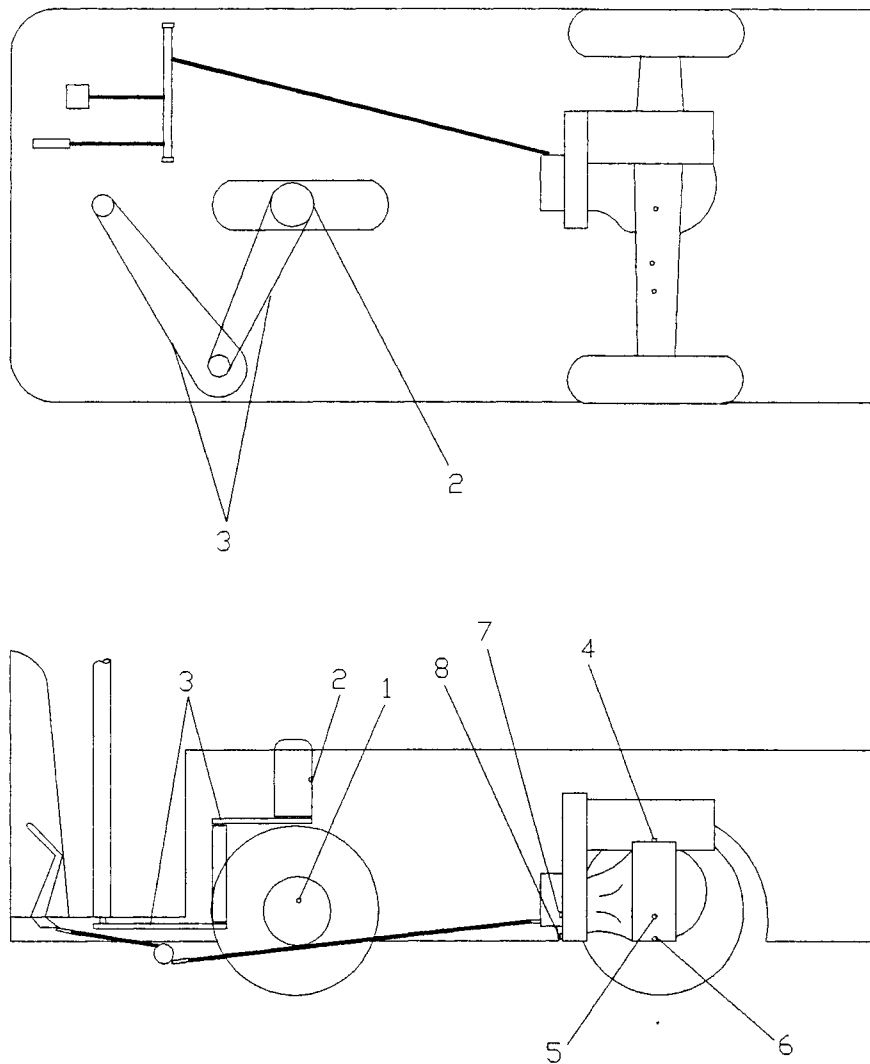
- Allow only qualified and authorized personnel to maintain, repair, adjust, and inspect the vehicle.
- Before starting any repairs or maintenance immobilize the vehicle by turning the key switch off, removing the key and setting the park brake.
- Disconnect both of the main battery leads before working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

▲ WARNING

Always use TAYLOR-DUNN[®] replacement parts when repairing or replacing damaged parts. Incorrect or inferior parts may result in injury and cause the invalidation of your warranty.

PERIODIC MAINTENANCE CHECKLIST					
Maintenance Item	Weekly (20 hrs)	Monthly (80 hrs)	Quarterly (250 hrs)	Semi-annually (500 hrs)	Annually (1000 hrs)
Check tire pressure	X				
Check and fill batteries (use distilled water only)	X				
Check foot brake system		X			
Check brake linkage		X			
Check steering shaft bushings, and front fork bearings for play		X			
Lubricate at all grease fittings			X		
Lubricate moving parts which do not have grease fittings (use all purpose oil)			X		
Clean and tighten all wire connections			X		
Wash batteries with water (use soda if necessary)			X		
Check brake lining for wear, adjust as needed				X	
Check front wheel bearings for play, replace as needed				X	
Check differential oil				X	
Change differential oil					X
Check nuts and bolts for looseness					X
Clean and re-grease front wheel bearings					X
Check motor brushes					X

Lubrication Chart



Item No.	Description	Locations	Lubricant Type
1	Front Wheel Bearings	1	General Purpose Grease
2	Front Spindle Bearings	1	General Purpose Grease
3	Steering Chains	2	General Purpose Oil-by hand
4	Differential Fill Plug	1	SAE 140 API GL-5 hypoid gear oil- 2-1/4 qts
5	Differential Level Plug	1	
6	Differential Drain Plug	1	
7	Chain Case Fill Plug	1	SAE 140 API GL-5 hypoid gear oil-1 pint
8	Chain Case Drain Plug	1	

Troubleshooting Guide

SYMPTOM	PROBABLE CAUSE*
Hard Steering	Steering Chains Too Tight
	Steering Wheel Bushings Binding
	Front Fork Bearings Too Tight
	Low Tire Pressure
Excessive Steering Play	Loose or Damaged Wheel Bearing
	Loose or Damaged Steering Chains
	Worn or Damaged Steering Sprockets
	Worn or Damaged Spindle Collar Bearings
Lack of Power or Slow Operation	Dragging Brake
	Tight Front Wheel Bearing
	Defective Speed Control
	Low Batteries
	Worn Drive Gears
Erratic Power or No Power	Worn Motor Brushes
	Loose Wire Connection
	Damaged or Defective Motor
	Batteries Discharged or Defective
Abnormal Noise	Worn Drive Gears or Bearings
	Worn Axle Bearing (front or rear)
	Worn Motor Bearings
	Drive Chain Out of Adjustment
	Loose Wheel Lug Nuts
Oil Leak in Rear Wheel Bearing Area	Wheel Bearing and/or Gasket Failed
	Drive Overfilled
Foot Brake Low or Slipping	Worn Brake Lining
	Oil on Brake Lining
	Linkage Out of Adjustment
No Brakes	Worn Brake Lining
	Linkage Out of Adjustment or Broken
	Brake Band Broken
No Park Brake	Linkage Out of Adjustment or Broken
	Brake Return Spring Damaged or Broken
*Probable causes are to be used as a guide only. Listed are some of the probable causes, but symptoms are not limited to these causes.	

Brake System

DRIVE LINE BRAKE

The drive line brake system consists of a drum, mounted on the differential drive shaft, and a circular brake band, which contracts and tightens around the brake drum.

The brake is controlled by the foot brake pedal through a mechanical linkage.

Brake Band Adjustment

If the foot brake pedal travel is close to or hitting the floorboard, the brake band must be adjusted.

To adjust the brake band:

- Place blocks under the wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Loosen the jam nut on the long 1/2" brake band bolt (see figure 3-1).
- Tighten the bolt until the brake band contacts the drum and produces a slight drag when the drum rotates.
- Tighten the jam nut on the 1/2" bolt.

Brake Drum Removal

If the brake drum is scored or damaged, remove it using the following procedure and refer to Figure 3-1.

To remove the brake drum:

- Place blocks under the wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Disconnect the brake cable clevis from the brake actuating arm (see Figure 3-2).
- Slightly loosen the rear drive mounting bolts and remove the front drive mounting bolt.
- Remove the upper brake band alignment bracket.
- Raise the front of the vehicle just enough to position the brake drum below the battery box, which will allow it to be removed.
- Loosen the jam nut on the long 1/2" brake band bolt.
- Loosen the 1/2" brake band adjusting

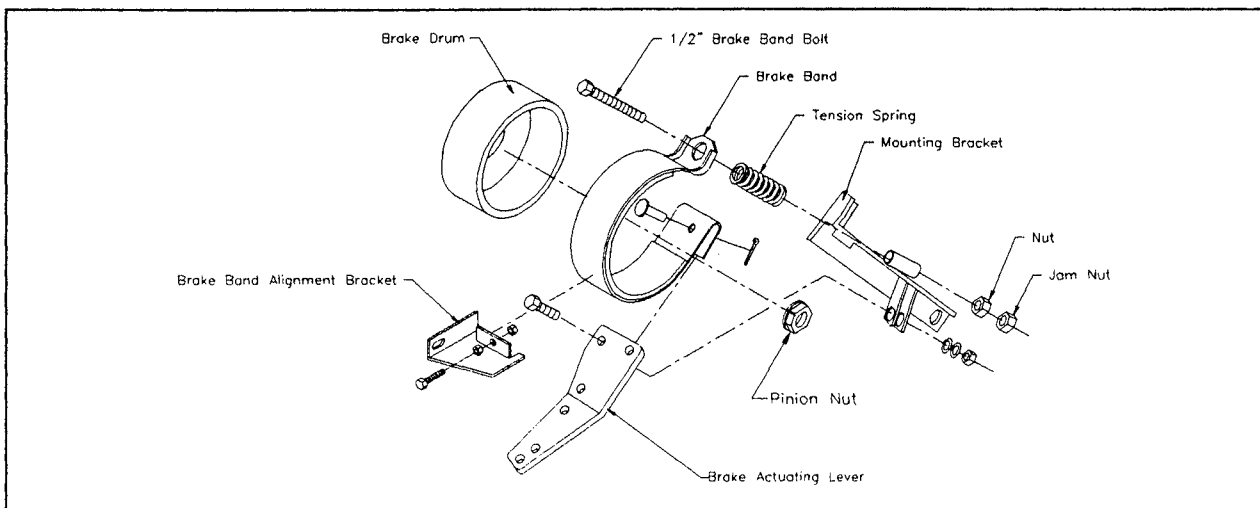


Figure 3-1

bolt so that the drum can be removed easily.

- Remove the pinion nut and discard.
- Pull the brake drum off of the splined drive shaft.
- Replace the brake drum as necessary.
- Install the drum onto the drive shaft.
- Install a new pinion nut.
- Lower the front of the vehicle and install the drive mounting bolt.
- Tighten both drive mounting bolts.
- Adjust the brake band as described in the previous procedure.

alignment brackets (see Figure 3-1).

- Remove the 1/2" brake band adjustment bolt.
- Remove the clevis pin holding the brake band to the brake actuating arm and remove the brake band.
- Install the new brake band by reversing the removal procedure.
- Tighten the 1/2" brake band bolt completely to form the new brake band to the brake drum.
- Adjust the brake band as described previously.

Brake Band Removal

To remove the brake band:

- Place blocks under the wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Remove the brake drum as described in the 'Brake Drum Removal' procedure.
- Loosen and remove the brake band

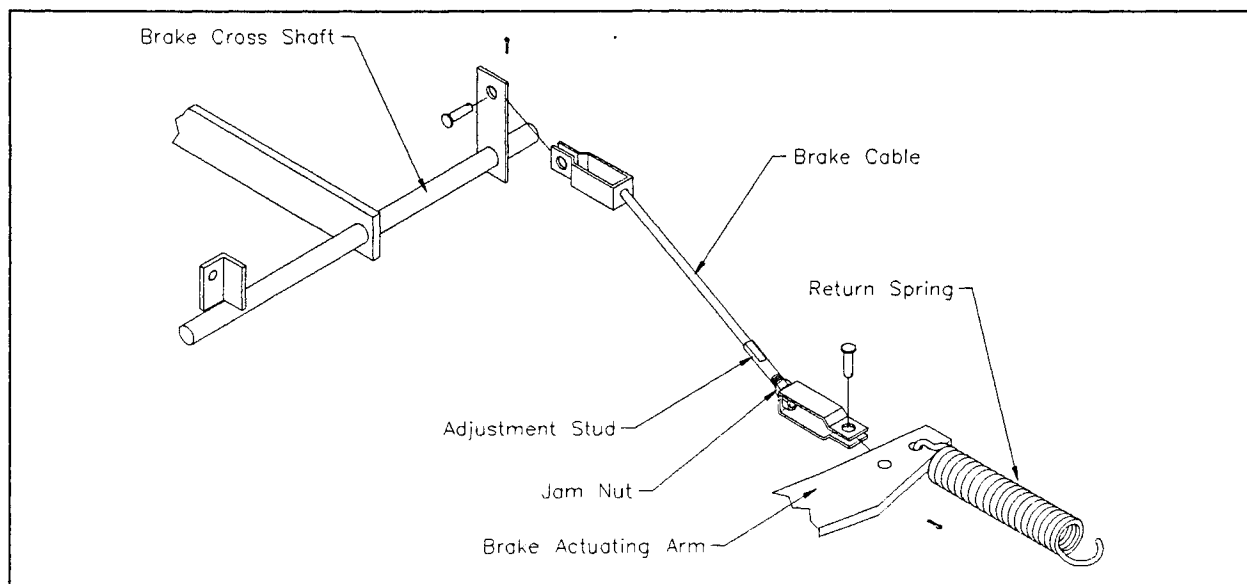


Figure 3-2

SECTION 3

MECHANICAL BRAKE LINKAGE

The mechanical brake linkage connects the park brake lever and foot brake pedal to the brake cross shaft, which in turn connects to the brake actuating arm on the drive line brake.

Should it become necessary to replace any components of the mechanical control linkage, use the following procedures. If you are unsure if the control linkage is setup and adjusted properly, contact a Taylor-Dunn® service representative.

Brake Cable and Pedal Adjustment

The brake linkage consists of a flexible steel cable with a clevis on either end. This cable connects the brake actuating arm and the brake cross shaft (see Figure 3-2).

A return spring is attached to the brake actuating arm to return the brake pedal to the up position, and to keep the brake band disengaged from the brake drum.

To adjust the brake cable:

- Place blocks under the wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Loosen the jam nut at the clevis attached to the brake actuating arm.
- Holding the nut inside the clevis, turn the stud and tighten the cable until the brake actuating arm is 1/4" from the chain case housing.
- Tighten the cable jam nut to the clevis.

To replace the brake cable or return spring:

- After supporting the brake pedal in the up position, remove the return spring from the brake actuating arm and replace if necessary.
- Loosen the jam nut at the clevis attached to the brake actuating arm.
- Holding the nut inside the clevis, loosen the stud until the clevis pin can be removed at either end of the cable.
- Replace the brake cable as necessary.
- Adjust the cable as described in 'Brake Cable and Pedal Adjustment'.

Park Brake Linkage Adjustment

The park brake linkage consists of a long bolt, with a clevis and a jam nut connected to the park brake lever (see Figure 3-3). When the park brake lever is pulled up and set, the brake cross shaft rotates, pulling the brake cable and the brake actuating arm, tightening the brake band to the brake drum.

The primary linkage adjustment is the knob on the end of the park brake lever.

To adjust the park brake:

- Place blocks under the wheels to prevent vehicle movement. Disconnect the main positive and negative at the batteries.
- If the park brake lever has no more adjustment left, the 1/2" bolt at the brake band must be adjusted tighter. See 'Brake Band Adjustment'.
- When the brake band is properly adjusted the park brake primary adjustment on the lever can be adjusted tighter or looser to allow proper engagement of the lever.

- Test the park brake by trying to push the vehicle while the park brake is set. If the vehicle rolls, the park brake must be adjusted tighter.

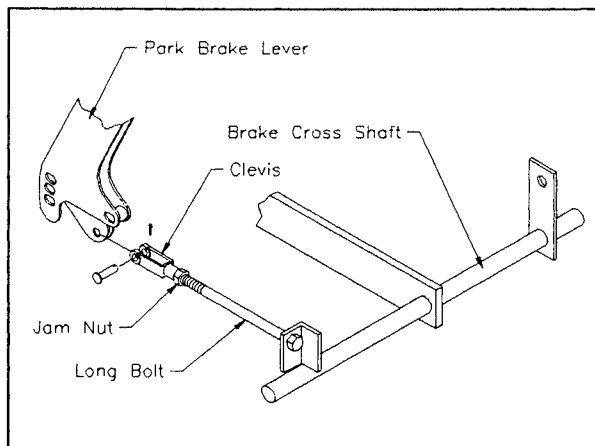


Figure 3-3

Accelerator System

The accelerator system consists of the accelerator pedal and accelerator module. The accelerator module connects to the main wire harness through an quick disconnect plug. For testing the acclerator module, refer to 'Electrical Troubleshooting' in the Electrical System section.

Accelerator Module Replacement

To remove or replace the accelerator pedal or accelerator module, use the following procedure and refer to Figure 3-4.

- Place blocks under the rear wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Remove the bolts holding the pedal mount to the accelerator module arm and replace the pedal or pedal mount if damaged or bent.
- Disconnect the plug in the wire harness from the module.
- Remove the bolts holding the accelerator module to the floorboard and module mounting plate.
- Repair or replace the accelerator module as necessary.
- Reinstall the module to the floorboard and mounting plate.
- Reinstall the pedal and pedal mount to the module.
- Reconnect the plug to the wire harness.
- Test drive the vehicle.

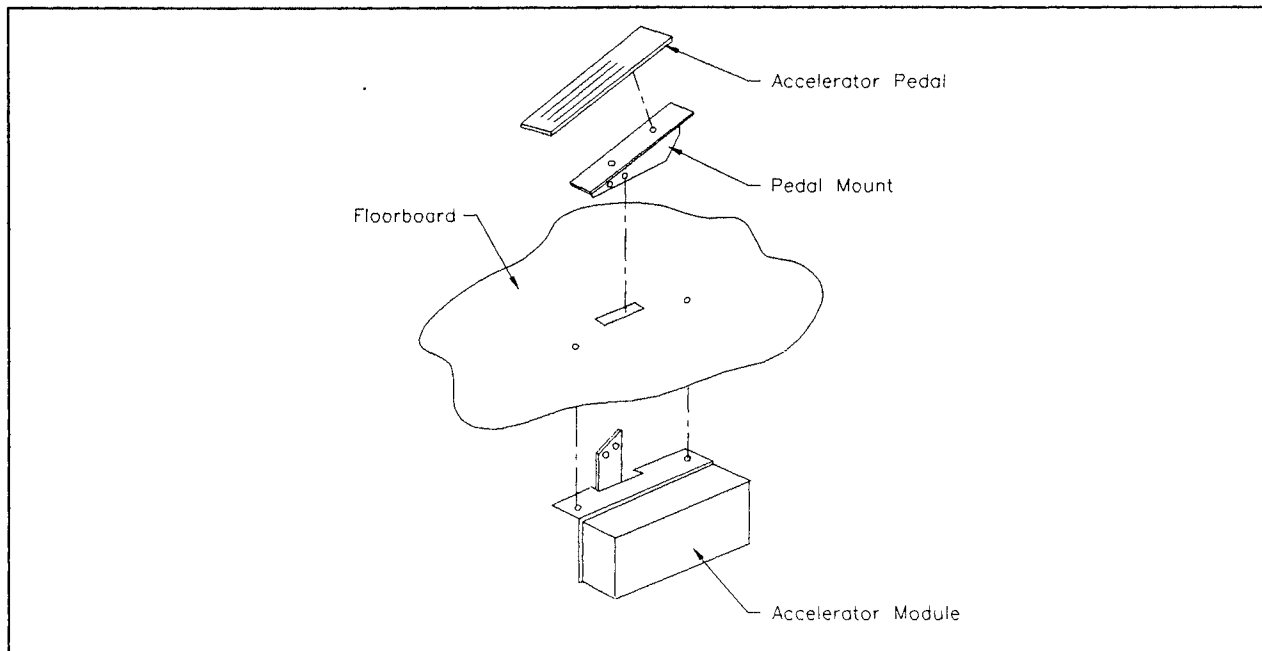


Figure 3-4

Accelerator Module Return Spring

The accelerator module lever arm is spring loaded to return the pedal to its original position. The return spring, located in the module around the lever arm shaft, is replaceable.

Use the following procedure to replace the lever return spring and refer to Figure 3-5.

- Remove the accelerator module as described in the 'Accelerator Module Replacement' procedure.
- Remove the accelerator module cover by removing the four screws.
- Remove the circlip holding the lever shaft to the module.
- Slide the shaft and spring out of the module as shown by arrow in Figure 3-5.
- Install new spring, placing the shorter spring end, through the washer, and into the module.
- Insert the lever shaft into the module, and insert the longer spring end into the lever.
- Rotate and push the lever into position. Tap the lever if necessary, to allow the circlip to be installed.
- Install the circlip and install the module cover.
- Reinstall the module into the vehicle as described in the 'Accelerator Module Replacement' procedure.

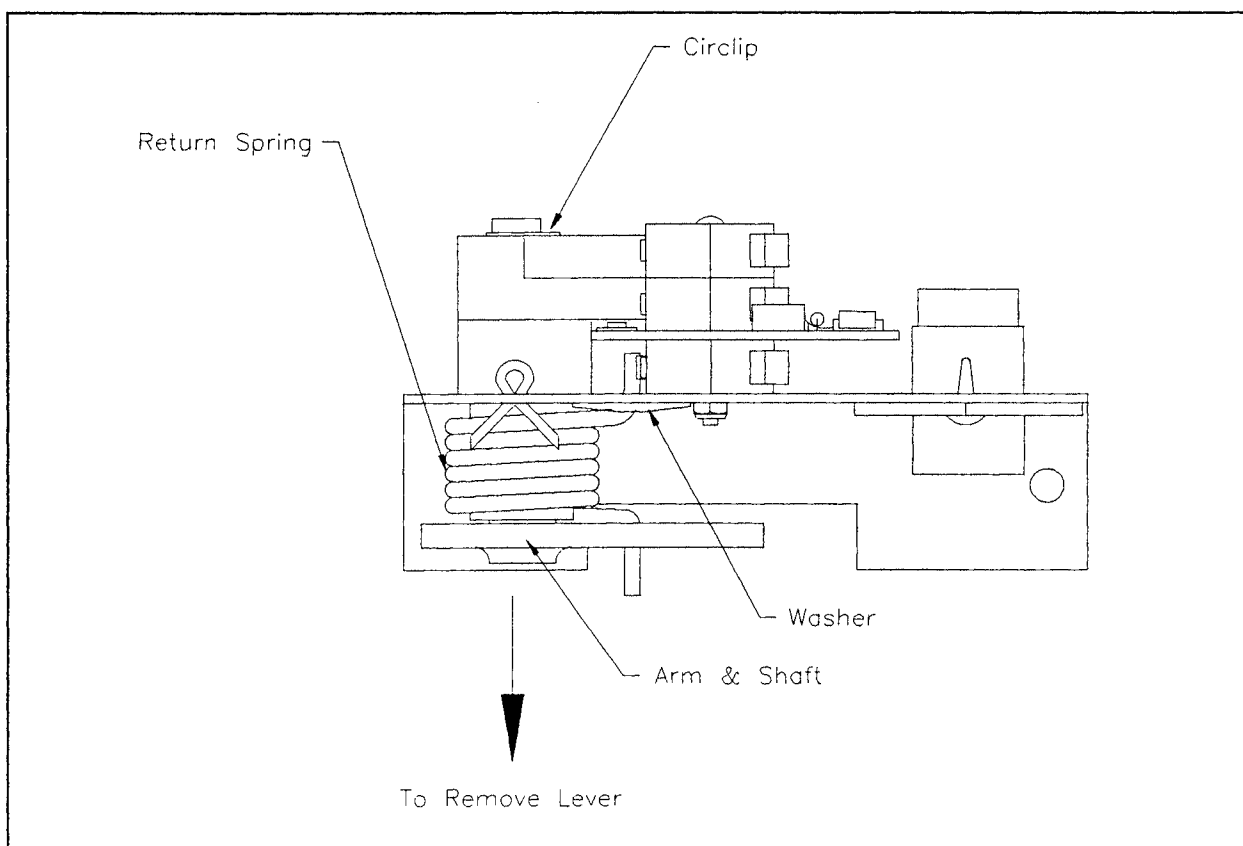


Figure 3-5

Front Axle and Steering

FRONT FORK AND AXLE

The standard front axle consists of a single front fork, and a 3/4" axle made for a single front tire and wheel assembly. The front fork is mounted through a fixed collar in the frame, which contains two tapered bearings.

Front Axle Replacement

If the bearings in the front wheel become damaged, or if the front axle becomes bent or damaged, the axle must be removed and the damaged parts replaced.

To remove the front axle:

- Place blocks under the rear wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Raise the front wheel off the ground and support the frame with jack stands.
- Remove one locknut from the axle (see Figure 3-6).
- Slide the axle out of the front fork and wheel. The front wheel may have to be supported to allow the axle to slide through. If the axle is too damaged to slide through, the axle may have to be cut.
- Replace any damaged wheel bearings, races, seals, and the front axle if it is damaged.
- Install the new front axle through the front fork, the wheel spacers, and the wheel hub. If necessary, use a hammer to lightly tap the axle into position. Be careful not to damage the axle threads.

- Be sure the wheel spacers are in position on either side of the wheel hub.
- Install the locknuts and washers on both sides of the front fork. Tighten the nuts so that the tire and wheel, when spun by hand, will have a slight drag and stop after approximately one revolution.

NOTE *Always use new locknuts to replace any locknuts removed from the vehicle. Locknuts can be used and removed only once. They become less effective when they are used more than one time.*

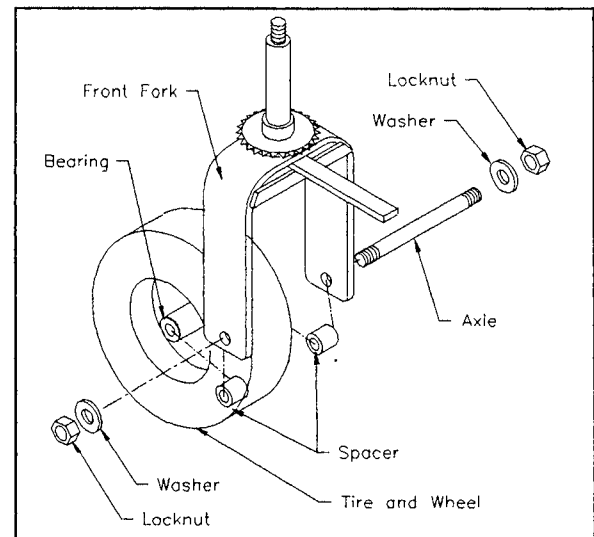


Figure 3-6

- Apply grease to the bearings and axle through the grease fittings on the wheel hub.

Front Fork Replacement

If the front fork is loose or has some play while mounted in the large collar fixed to the frame, the bearings located in the collar may be damaged. In the event that the bearings are damaged, or if the front fork is bent or damaged, it may be removed using the following procedure.

To remove the front fork:

- Place blocks under the rear wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Raise the front wheel off the ground and support with jack stands.
- The front axle, tire and wheel may be removed, but is not required to remove the front fork. Use the previous procedure for their removal.
- Remove the dust cap covering the top of the spindle (see Figure 3-7).

CAUTION

The front fork assembly will drop out of the collar suddenly when the nut is removed. If the front fork assembly is not supported properly, damage to the fork or personal injuries may occur.

- Loosen the upper steering chain by turning the turnbuckle, then move the chain off of the sprocket and rest it above the sprocket.
- Remove the 3/4" locknut and washer from the fork spindle.
- Remove the front fork from the vehicle. If it is bent or damaged replace it.

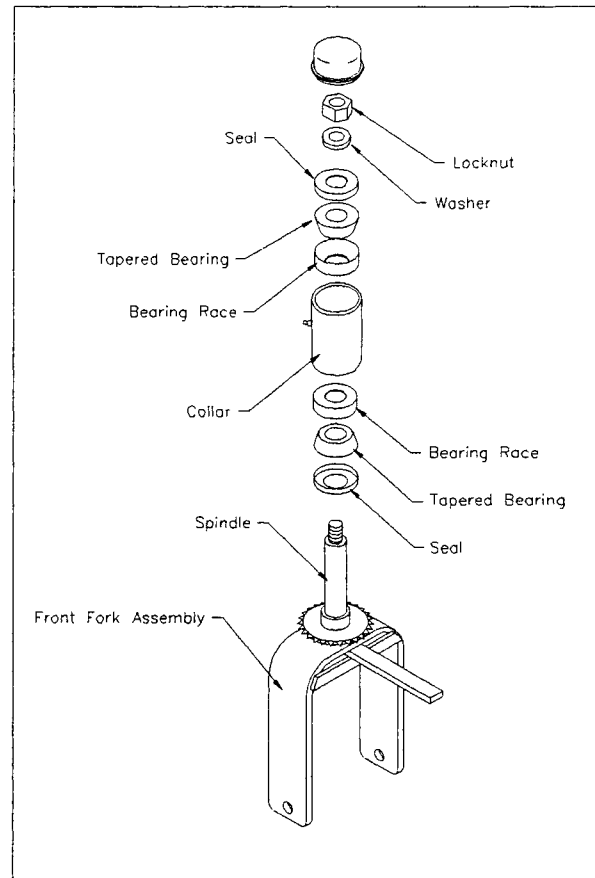


Figure 3-7

- If the bearings in the collar must be replaced, remove the damaged bearings, seals, and races from the collar.
- Install the new bearings, seals, and races into the collar.
- Install the front fork through the upper steering chain and into the collar.
- Install the locknut and washer onto the spindle. Tighten until a slight drag is felt when turning the fork, then loosen nut 1/4 turn so that fork turns freely. The fork should not have any play in the collar bearings.

SECTION 3

NOTE Always use new locknuts to replace any locknuts removed from the vehicle. Locknuts can be used and removed only once. They become less effective when they are used more than one time.

STEERING

The steering system consists of the front fork assembly, the steering shafts, the steering chains and sprockets, and the steering wheel.

To remove and replace any components of the system, use the following procedure.

Steering Chains and Sprockets

The steering chains connect the long primary steering shaft with the short secondary steering shaft, which is connected to the front fork (see Figure 3-8).

If the chains or sprockets become damaged use the following procedure to remove or replace these or other components of the steering system.

To remove the steering shaft:

- Place blocks under the rear wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Raise the front of the vehicle and support properly.

WARNING

Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle.

Failure to use lifting and support devices of rated load capacity may result in serious injury.

- Loosen the locknuts on the sprockets to be removed.
- Remove the locking wires from the turnbuckles.
- Remove the steering chains by loosening the chain turnbuckles until they are disconnected and remove the chains. Note the position of the turnbuckles between the sprockets for proper reassembly (see Figure 3-8).
- Remove the sprockets.
- Replace any damaged sprockets and reinstall to the shafts.

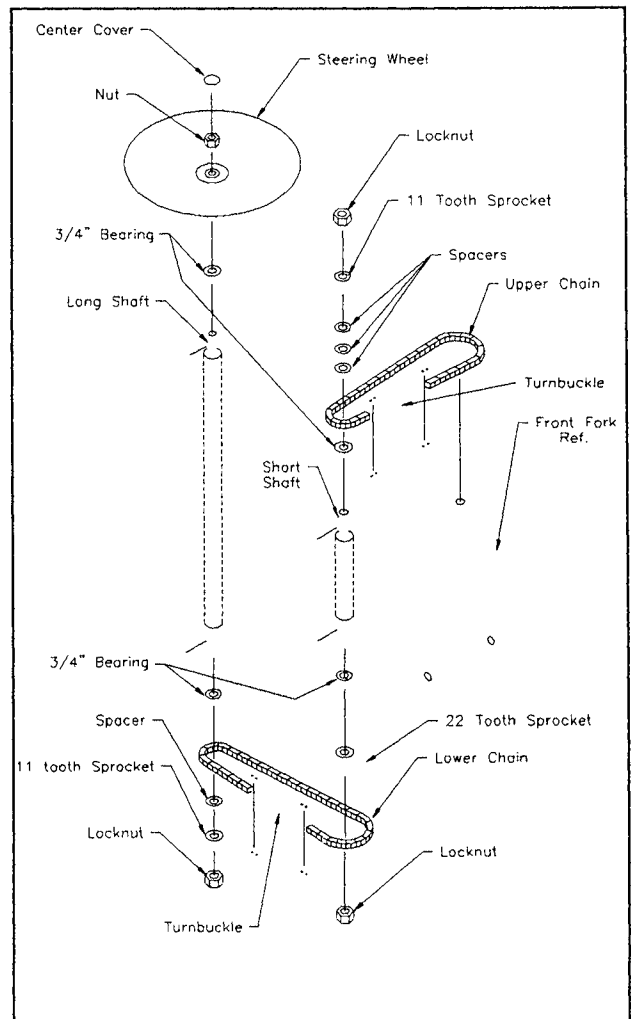


Figure 3-8

- Reinstall the steering chains to the sprockets. The steering chain should be tightened so that it is slightly taught and can be moved very little by hand.
- Turn the steering to both the right and left stops, making sure that the turnbuckles do not contact the sprockets.
- Install new locking wires into the turnbuckles.
- Lubricate the steering chain by hand using a general purpose oil.

Steering Wheel

The steering wheel can be removed by using the following procedure.

To remove the steering wheel:

- Place blocks under the rear wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Remove the steering wheel center cover and remove the nut.
- Remove the steering wheel from the steering shaft using a wheel puller.

To install the steering wheel:

- Install steering wheel onto the tapered long shaft.
- Tighten the nut down.

Rear Drive And Differential

POWER TRACTION DRIVE

The power traction direct drive system uses an automotive type differential which is driven by the fully sealed chain and sprockets. The drive chain is enclosed in the chain case and is lubricated by oil from within. The chain connects the motor to the differential with a small and a large sprocket of a specified size and ratio.

Drive Chain Adjustment

The drive chain will loosen during normal use and should be adjusted to ensure maximum performance. Use the following procedures for chain adjustment.

To adjust the drive chain:

- Place blocks under the rear wheels to prevent vehicle movement
- Disconnect the main positive and negative at the batteries.
- Place a drip pan under the chain case to catch any oil that may spill.
- Loosen the nuts on the motor mounting plate just enough to let the motor and plate move freely (see Figure 3-9).
- Loosen the chain adjusting screw jam nut.

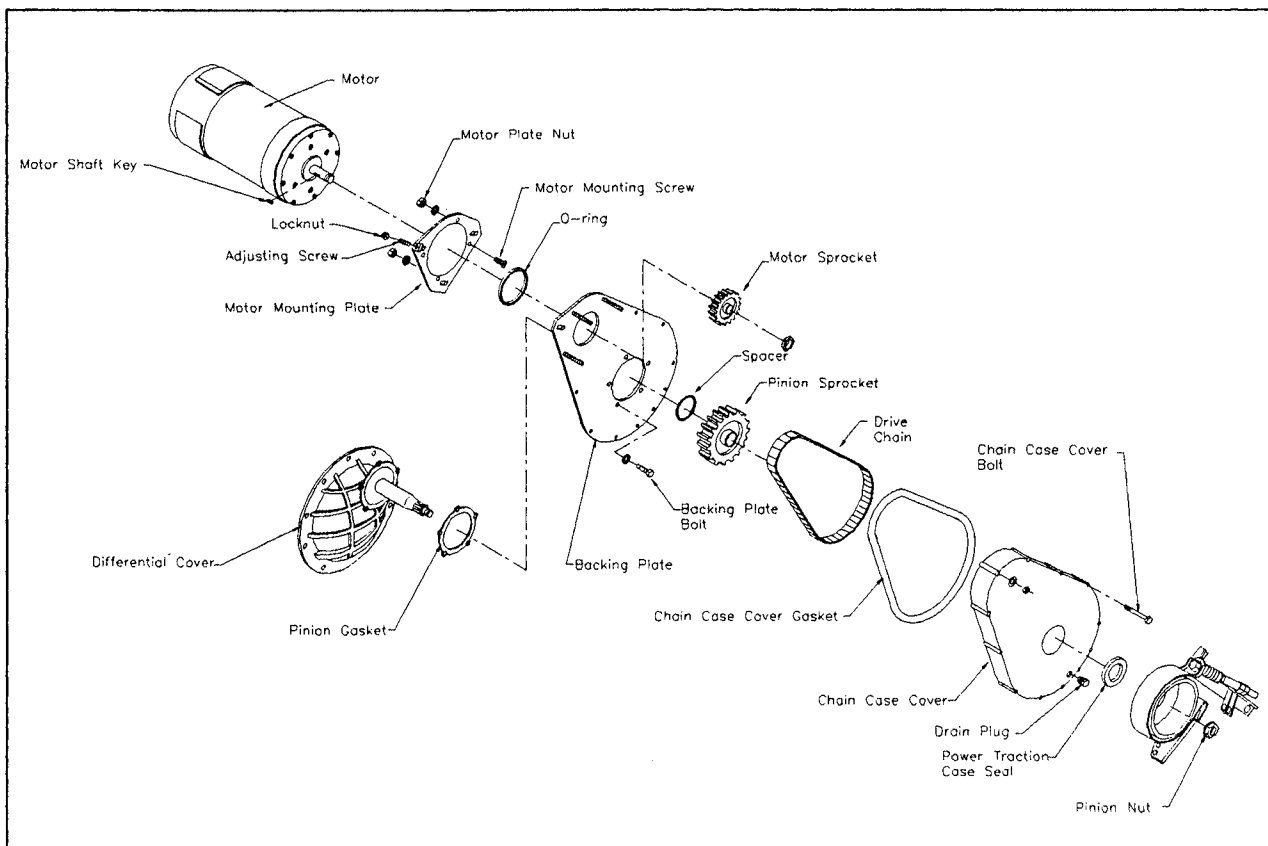


Figure 3-9

For vehicles using a motor in which the motor fan is visible through the motor side vents, use the following procedure:

- Turn the chain adjusting screw and tighten the chain so that the ends of the motor fan blades have 1/8" to 1/4" free play.
- Tighten the three motor mounting plate nuts.
- Tighten the chain adjusting screw locknut, while preventing the adjusting screw from turning.

NOTE *If the top of the adjusting screw is close to the jam nut (1/16"), it is time to replace the drive chain.*

Chain Adjustment Schedule	
Interval	Period
First	100 hours
Second	200 hours
Thereafter	Every 400 hours

For vehicles using a motor that does not have a motor fan, use the following procedure:

- Block the front wheel, front and rear.
- Raise the rear of the vehicle so that the rear tires are just off the ground.

▲WARNING

Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle.

Failure to use lifting and support devices of rated load capacity may result in serious injury.

- Connect the main battery leads.
- Press on the accelerator and run the drive at a constant, moderate speed.
- Turn the chain adjusting screw and tighten the chain until chain noise increases.
- For proper chain adjustment, loosen the adjusting screw until chain noise reduces.

Drive Chain and Sprocket Replacement

Should the drive chain or sprockets become worn or damaged, use the following procedures for replacing these parts.

To replace the drive chain or sprockets:

- Place blocks under the wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Depress the foot treadle forward to the full on position. Hold the foot pedal or the mechanical control linkage in this position to remove the brake drum and shoe.
- Loosen and remove the 1/2" bolt and the brake shoe assembly components (see Figure 3-9).
- Remove the pinion nut and brake drum.
- Remove the drain plug and drain the oil from the chain case housing.
- Remove the bolts holding the chain case cover to the backing plate, and remove the chain case cover.
- Loosen the nuts on the motor mounting plate just enough to let the motor and plate move freely.

SECTION 3

- Loosen the chain adjusting screw completely.
- Remove the drive chain, and if necessary the pinion sprocket and motor sprocket. Note the position and location of the spacers behind the pinion sprocket for proper reassembly.
- Install new sprockets and drive chain as needed.
- Use a new pinion seal and gaskets for the chain case cover.
- To properly center the pinion seal onto the pinion shaft, insert a centering tool (Taylor-Dunn® # 41-352-01) into the pinion seal on the chain case cover.

▲WARNING

If the chain case and pinion seal is not centered correctly, the seal will leak oil onto the brake band and drum.

This may cause the brake to fail and lead to serious injury.

- Install the chain case cover onto the pinion shaft.
- Install the brake band, brake band mounting bracket, and all chain case mounting bolts, but do not tighten.
- Install the old pinion nut and tighten to 100 ft-lbs.
- Tighten all chain case mounting bolts and remove old pinion nut.
- Install the brake drum and new pinion nut, and tighten to 175 ft-lbs.
- Add 1 pint of hypoid gear oil to the chain case at the fill plug. See the lubrication

chart at the beginning of this section for the specified oil type.

- Adjust the chain tension as described in the 'Drive Chain Adjustment' procedure.
- Adjust brakes as described in the 'Brake System' section.

Differential Service and Repair

If the internal components of the differential are determined to be worn and need to be replaced, use the following procedure.

To disassemble the differential:

- Block the front wheel, front and rear.
- Disconnect the main positive and negative at the batteries.
- Raise the rear of the vehicle so that the rear tires are just off the ground.

▲WARNING

Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle.

Failure to use lifting and support devices of rated load capacity may result in serious injury.

- Drain the oil from the chain case and remove the brake, chain case cover, chain, and sprockets, as described the 'Drive Chain and Sprocket Replacement' section.
- Carefully remove the motor from the chain case backing plate. Support the motor while removing the mounting nuts, as it is heavy and may damage the mounting studs, or drop suddenly.
- Remove the rear wheels.

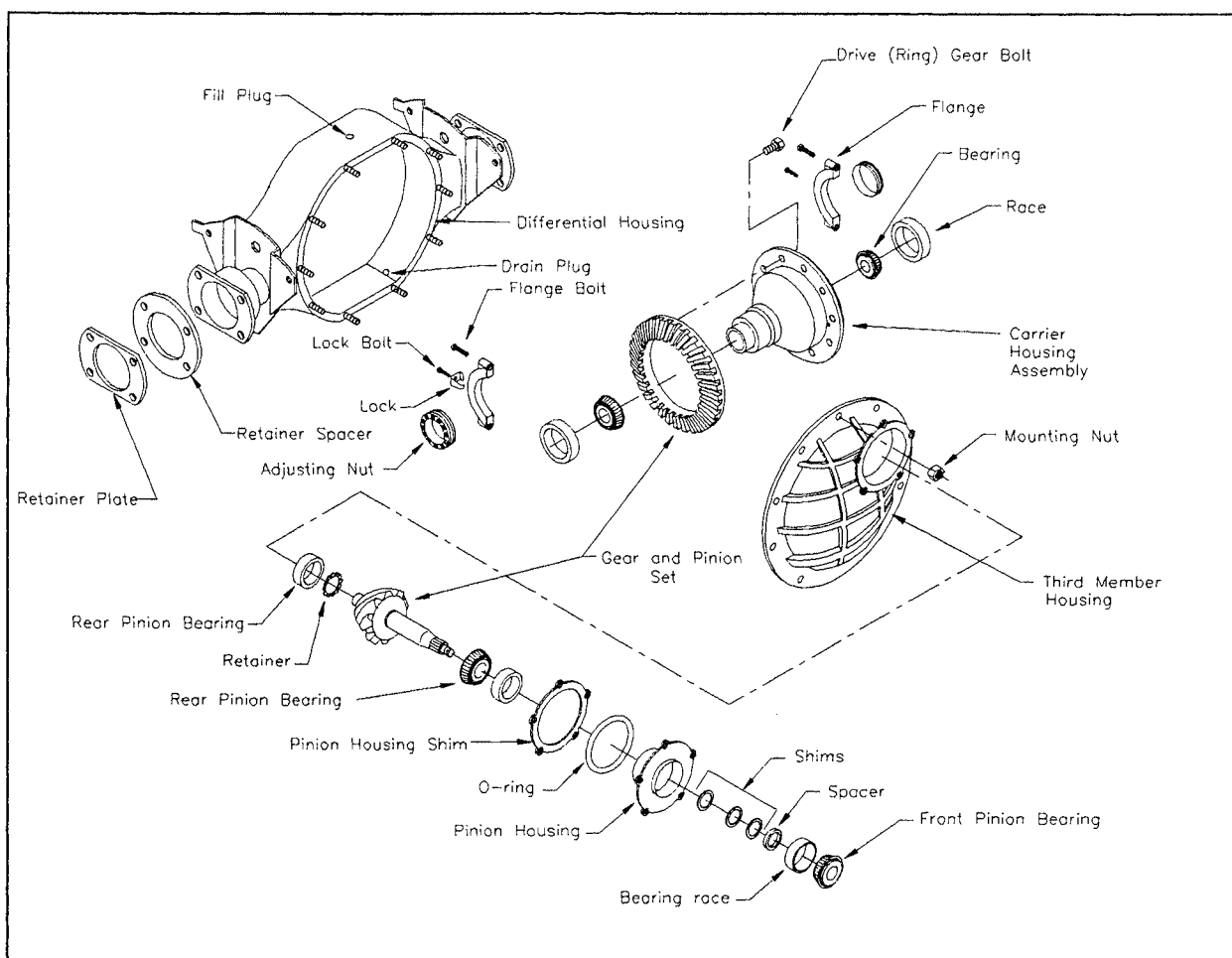


Figure 3-10

- Drain the oil from the differential by removing the drain plug.
- At this point the drive should be removed from the frame. The drive will be much easier to work on.
- Disconnect the accelerator linkage. Refer to 'Accelerator System' section.
- Lower the vehicle until the drive is just supported and remove the drive mounting bolts.
- Raise the rear of the vehicle and remove the drive from the vehicle.
- Using a slide hammer, remove the axles about 4" from the drive housing.
- Remove the third member housing by removing the mounting nuts from the drive (see Figure 3-10).
- Remove the carrier bearing flanges and the carrier assembly from the housing.
- Remove the pinion housing from the third member. Do not lose the shims from the pinion housing.
- Replace any worn or damaged bearings, races, or gears. Use new seals.

SECTION 3

- Lubricate all bearings and gears during assembly.
- If the ring gear is disassembled from the carrier housing, the ring gear mounting bolts should be tightened to 72 ft-lbs upon reassembly. Tighten the bolts in a diagonal pattern, not a circular pattern.
- If the pinion bearings or gears are replaced, the pinion housing must be re-shimmed. See the procedure-'Shimming The Pinion Housing'.

Shimming The Pinion Bearing

If a pinion bearing is replaced, the bearing shims that were originally installed with the bearings may or may not work with the new bearing(s). If more shims are needed, see the Illustrated Parts List section on the differential third member for shim part numbers.

To check the pinion bearings and shims:

- Lubricate the bearings with general purpose grease, or oil from the drive.

CAUTION

Always lubricate the internal moving parts of the drive. Failure to apply lubricant to newly replaced or otherwise unlubricated parts will cause damage to those parts, and may lead to a breakdown of the system.

- With the pinion housing removed from the differential third member, install the drive sprocket and brake drum, or an equivalent spacer, onto the pinion shaft. Tighten to 100 ft-lbs.

- The pinion gear should turn freely with zero radial play, or movement.
- Disassemble the pinion housing and add or remove shims as required.

Shimming The Pinion Housing

If the pinion gear is replaced, a new pinion housing shim may be required for the proper mesh, or seating of the pinion gear to the ring gear.

On the flat surface of the small shaft end of the pinion gear is located a number. This number designates a decimal number to be added or subtracted to the standard shim size (see Adjustment to Standard Shim table). The standard shim thickness is .015". Shims are available in thicknesses from .005" to .021", in increments of .001" (i.e. .006", .007" etc.).

Use the following table to match the number on the pinion gear and determine the shim thickness needed for that particular pinion gear. Example:

The number on the pinion gear shaft is +4.

$.015" + .004" = .019" = \text{shim thickness.}$

Adjustment Of Standard Shim	
If the number is:	Adjust standard by:
+0	No adjustment
+1	Add .001
+2	Add .002
+3	Add .003
+4	Add .004
+5	Add .005
-1	Subtract .001
-2	Subtract .002
-3	Subtract .003
-4	Subtract .004
-5	Subtract .005

Backlash Adjustment

The backlash is the amount of play of the ring gear when meshing with the pinion gear.

To adjust the backlash:

- Install the correctly shimmed pinion gear and housing to the third member housing.
- Temporarily install the drive sprocket and brake drum to the pinion shaft. Torque the old pinion nut to 100 ft-lbs.
- Install the carrier housing and ring gear assembly. Tighten the carrier bearing flange bolts to 15 ft-lbs.
- Move the carrier housing and ring gear tight to the pinion gear.
- Tighten the carrier bearing adjusting nuts to contact the bearings.
- Slightly loosen the adjusting nut on the ring gear side of the third member.
- Tighten the adjusting nut on the opposite side to eliminate backlash, but not so tight as to cause binding.
- Tighten the adjusting nut on the ring gear side so that the backlash is .008" to .012".
- Tighten the carrier bearing flange bolts to 40-55 ft-lbs.

To reassemble the differential and drive:

- Reverse the procedures used for disassembly.

Lubricate all bearings, gears, and moving parts upon reassembly.

- With the differential completely assembled and rear axles installed, add 2-1/4 qts of gear oil to the differential through the fill plug. See the 'Lubrication Chart' in this section for the oil specification.

Rear Axle or Bearing Replacement

If the rear axle or bearings need to be replaced, use the following procedure.

To replace the rear axle or axle bearing:

- Disconnect the main positive and negative at the batteries.
- Block the front wheel, front and rear.
- Raise the rear of the vehicle so that the rear tires are just off the ground.

▲WARNING

Always use a lifting strap, hoist, and jack stands, of adequate capacity to lift and support the vehicle.

Failure to use lifting and support devices of rated load capacity may result in serious injury.

- Remove the rear wheel on the axle to be removed.
- Remove the four bolts holding the axle retainer and axle to the housing.
- Using a slide hammer, remove the axle from the housing.
- Remove the bearing retainer and bearing from the axle shaft with a press.
- Press the new bearing and new bearing retainer onto the axle shaft. Be sure to place the axle retainer onto the shaft first.

▲ WARNING

Do not reuse the old bearing retainer. Failure to install a new retainer may cause the axle to slip out of the drive and lead to serious injury.

- Remove and replace the oil seal and gasket from the housing.
- Install the axle into the housing and install the four bolts through the axle retainer and housing.

NOTE *Always use new locknuts to replace any locknuts removed from the vehicle. Locknuts can be used and removed only once. They become less effective when they are used more than one time.*

Drive Motor

The drive motor requires very little maintenance. The brushes should be inspected every one or two years for wear.

Some motors may have brush inspection cover, which can be removed for easy inspection. Motors not having brush inspection covers have a hole in which a rod can be inserted to determine brush wear. If the distance the rod travels into the hole is 1-1/2" or more, the brushes must be replaced.

If the brushes wear too much, the commutator could become damaged. If the motor or components of the motor have become damaged or need replacement, use the following procedure.

Replacement of Motor Brushes

To remove the drive motor and motor brushes:

- Place blocks under the wheels to prevent vehicle movement.
- Disconnect the main positive and negative at the batteries.
- Depress the foot pedal forward to the full on position. Hold the foot pedal or the mechanical control linkage in this position to remove the brake drum and shoe.
- Loosen and remove the 1/2" bolt and the brake shoe assembly components.

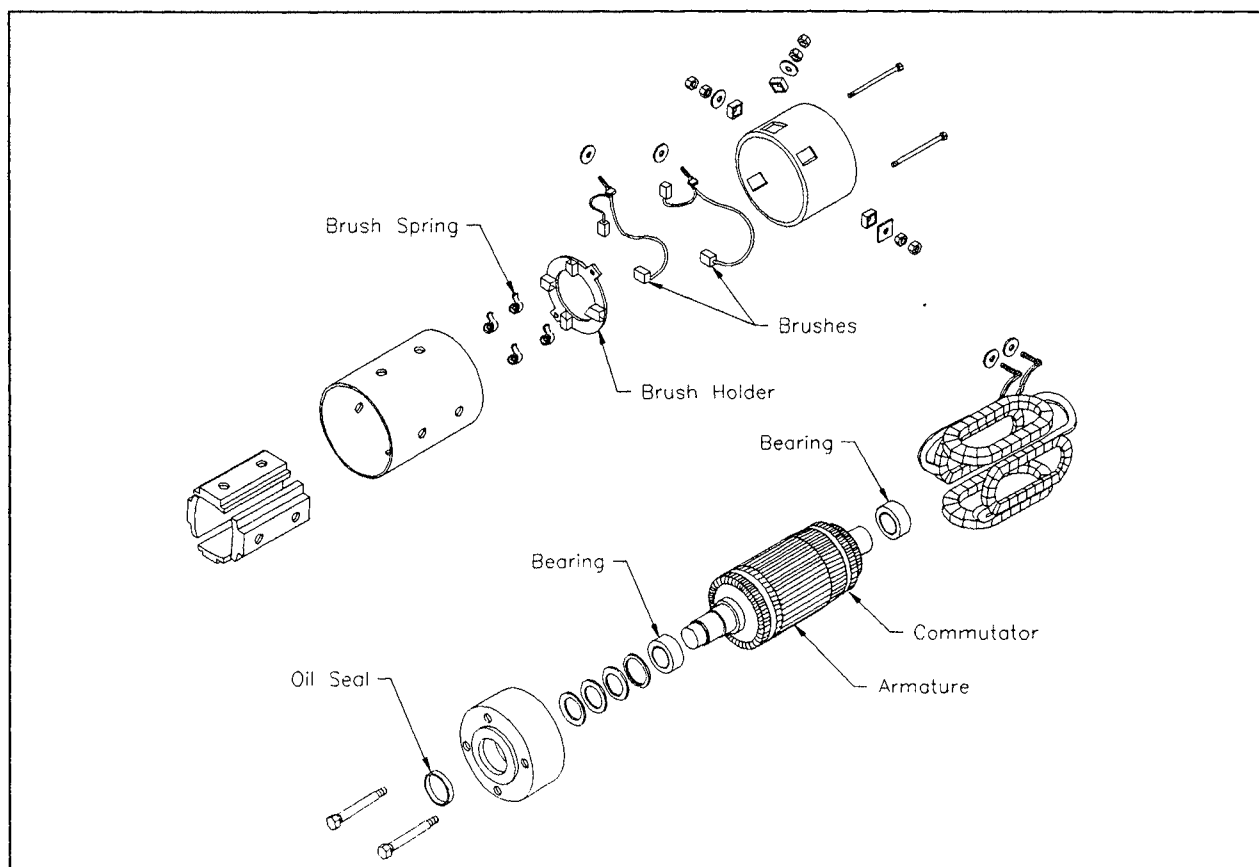


Figure 3-11 (70-049-00)

SECTION 3

- Remove the pinion nut and brake drum.
- Remove the drain plug and drain the oil from the chain case housing.
- Remove the bolts holding the chain case cover to the backing plate, and remove the chain case cover.
- Loosen the nuts on the motor mounting plate just enough to let the motor and plate move freely.
- Loosen the chain adjusting screw completely.
- Remove the drive chain and motor sprocket.
- Carefully remove the motor from the chain case backing plate. Support the motor while removing the mounting nuts, as it is heavy and may damage the mounting studs, or drop suddenly.
- Remove the motor end cover revealing the brush holder and brushes. Disassemble the brush studs from the end cover (see Figure 3-11).
- Remove the worn brushes and replace as required.

motor operation is 1/2". It is recommended that all the brushes be replaced at the same time.

Armature Inspection

The armature can be removed and inspected for signs of damage as follows:

- If any solder has been thrown from the armature, the motor must be replaced. Check the inside of the motor housing around the commutator for bits of solder.
- If the commutator is grooved, it must be cut on a lathe.
- Measure the undercut on the commutator. If it is less than .025", then the mica must be undercut (see Figure 3-12).
- Measure the commutator diameter. If it is less than the minimum operational diameter, then the armature is worn out and the motor must be replaced (see Figure 3-12).
- Spin the bearings by hand. If any vibration or roughness is felt, then they must be replaced. The bearings will need to be pressed out of the motor housing.

NOTE

The minimum length of the brushes required for proper

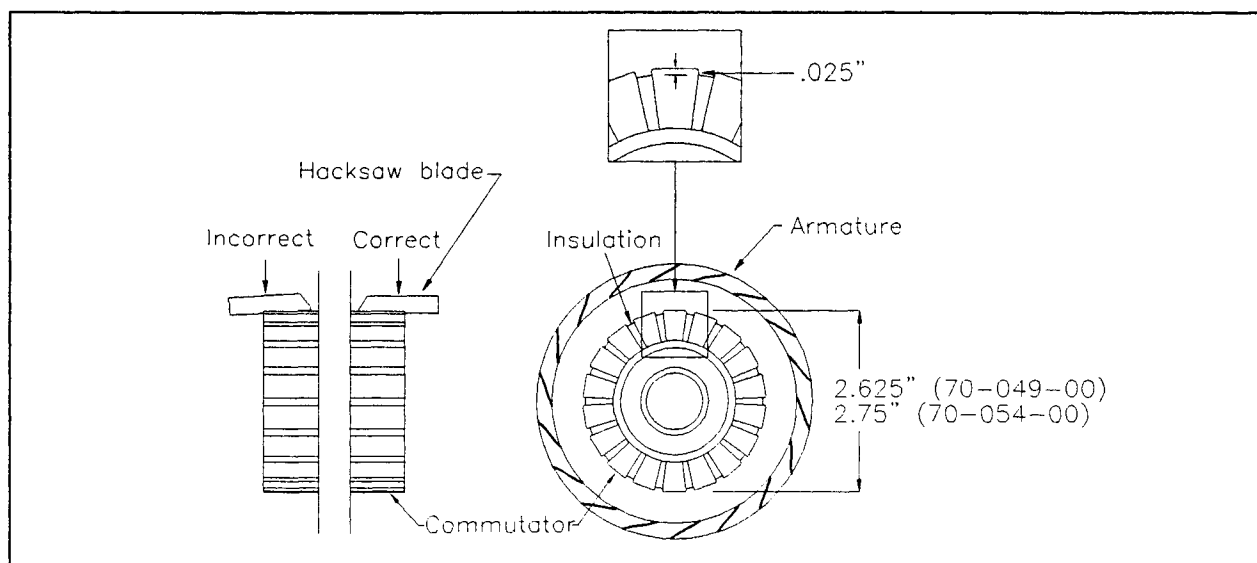


Figure 3-12

Batteries

The batteries should be kept dry and clean of electrolyte, and free of dirt. This will prevent corrosion to the battery terminals and wiring, as well as a safer operating environment.

⚠ WARNING

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

Cleaning

Dry dirt can be easily wiped or brushed off of the batteries. Wet dirt or wetness on the covers indicates the presence of battery acid.

To clean the batteries:

- Use nonmetallic brush with flexible bristles and a strong solution of water and baking soda (1 lb of soda to 1 gal. of water) to wash the top of the batteries.
- Continue until all bubbling stops, which indicates that the acid has been neutralized. *Do not get any of the soda solution in the battery cells.*
- Rinse thoroughly with clean water.

Servicing

To check the electrolyte level:

- Check the electrolyte in all of the batteries. If low, fill with distilled water to the correct level (see Figure 3-13).

⚠ CAUTION

Do not overfill the batteries. If the batteries are filled to full, they may leak electrolytic acid.

- Clean the batteries as described previously.
- Clean the cell caps, battery posts, and battery box area with water.

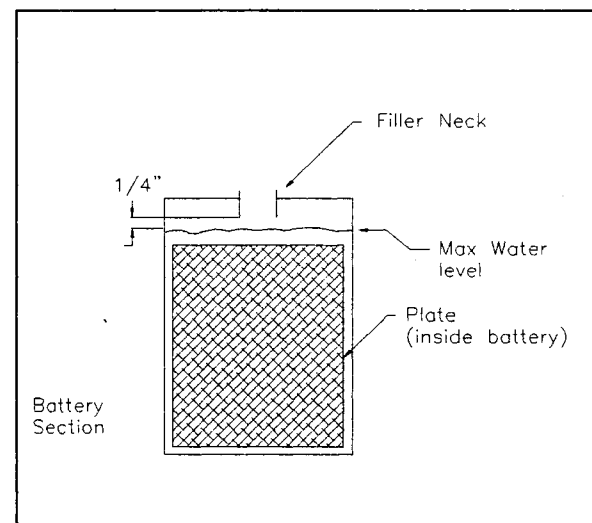


Figure 3-13

Charging

⚠ WARNING

Batteries produce an explosive gas when charging. DO NOT smoke, produce an open flame, or sparks when checking, servicing, or charging the batteries.

⚠ WARNING

Explosive mixtures of hydrogen gas are present within the battery cells at all times. Do not charge or work on the batteries in an area where open flames (including gas furnaces, or water heaters), sparks, cigarettes, or any other source of combustion are present.

Always provide ample ventilation in rooms where batteries are being charged.

To charge the batteries:

- Check the electrolyte in all of the batteries. If low, fill with distilled water to the correct level (see Figure 3-13).
- Park the vehicle in an approved area for charging, and plug the charger in.
- Allow the charger to cycle completely before unplugging.

Storage

The following pointers will help extend the life of the batteries when storing your vehicle for any reason.

- Clean and check the electrolyte and charge level of the batteries. Do not store a battery low in electrolyte or in a low state of charge.
- Recharge batteries not in use every 1 to 2 months.
- Store the vehicle in a cool dry place.
- If the batteries are removed from the vehicle, do not place them directly on the ground, concrete, or solid metal surface. Store the batteries on a wooden surface.

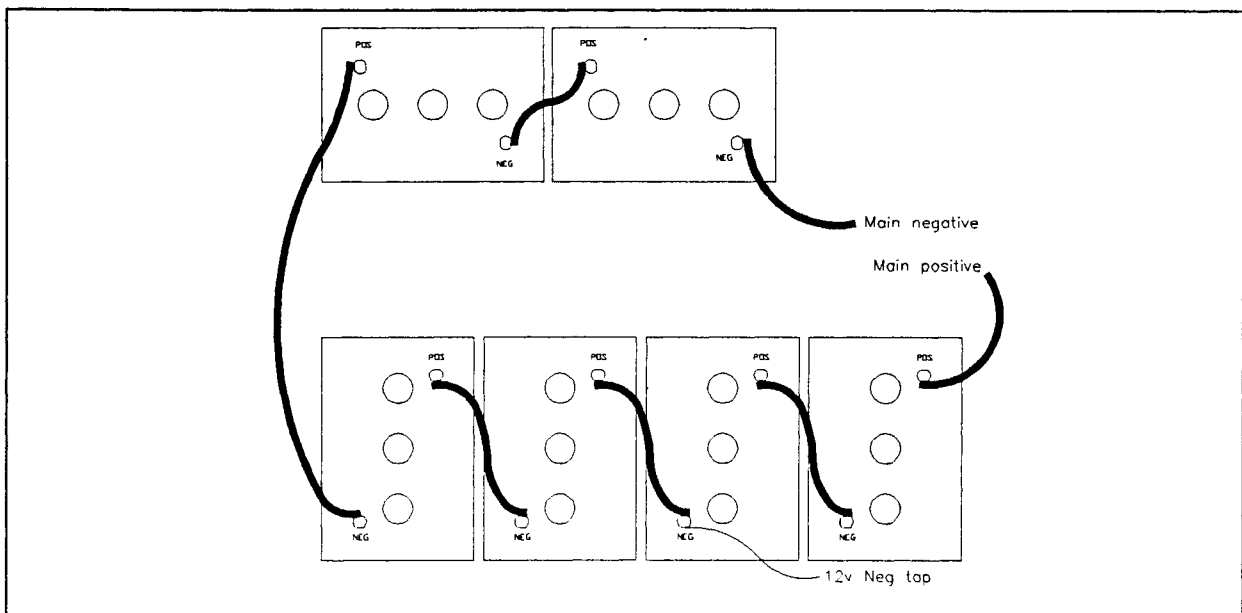


Figure 3-14 (C4-32 shown)

Tires

The model C4-32/33 is equipped with 4.80" x 8.00" pneumatic load range B tires as standard equipment. Maximum tire pressure for these tires is 60 psi.

⚠ WARNING

Avoid over inflating or under inflating the tires. Failure to keep the tires at the proper pressure will cause increased tire wear and could lead to tire failure. Over inflating could cause rim failure and explosion, resulting in serious or worse injuries.

For proper tire care:

- Check the tires for nicks or grooves and replace if necessary.
- Regularly check the tire pressure and inflate to the maximum pressure.
- When replacing the tire only, be sure that the tire is properly seated on the rim.

⚠ WARNING

When mounting a tire onto a rim, if the beads are not seated on the rim properly and the tire is being inflated, serious injury may occur.

⚠ CAUTION

Solid cushion tires and wheels are heavy. Use proper lifting and support devices when removing from the vehicle or transporting.

Split Rim Wheels

If your vehicle is equipped with split rim wheels, use the following procedure to disassemble the wheel.

- After the wheel is removed from the vehicle, deflate the tire by removing the valve stem core.

⚠ WARNING

Always completely deflate the tire before disassembling the split rim wheel, or removing the tire from the wheel.

Failure to deflate the tire may result in serious injury.

- Loosen and remove the bolts holding the wheel halves together.
- Replace wheel or tire as necessary.
- Reassemble wheel and tire. When assembling the wheel, be sure the tube does not get pinched between the wheel halves.
- Inflate tire to maximum pressure.

Electrical System

The model C4-32 runs on a 36 volt battery powered system, which includes a 12 volt accessory system. The model C4-33 runs on a 24 volt system, also with 12 volt accessories. The electrical system consists of the controls, accelerator module, motor, and batteries.

The controls consist of the speed controller, solenoids, circuit breakers, and wiring (see Figure 3-15). See the Illustrated Parts List for identification of these components.

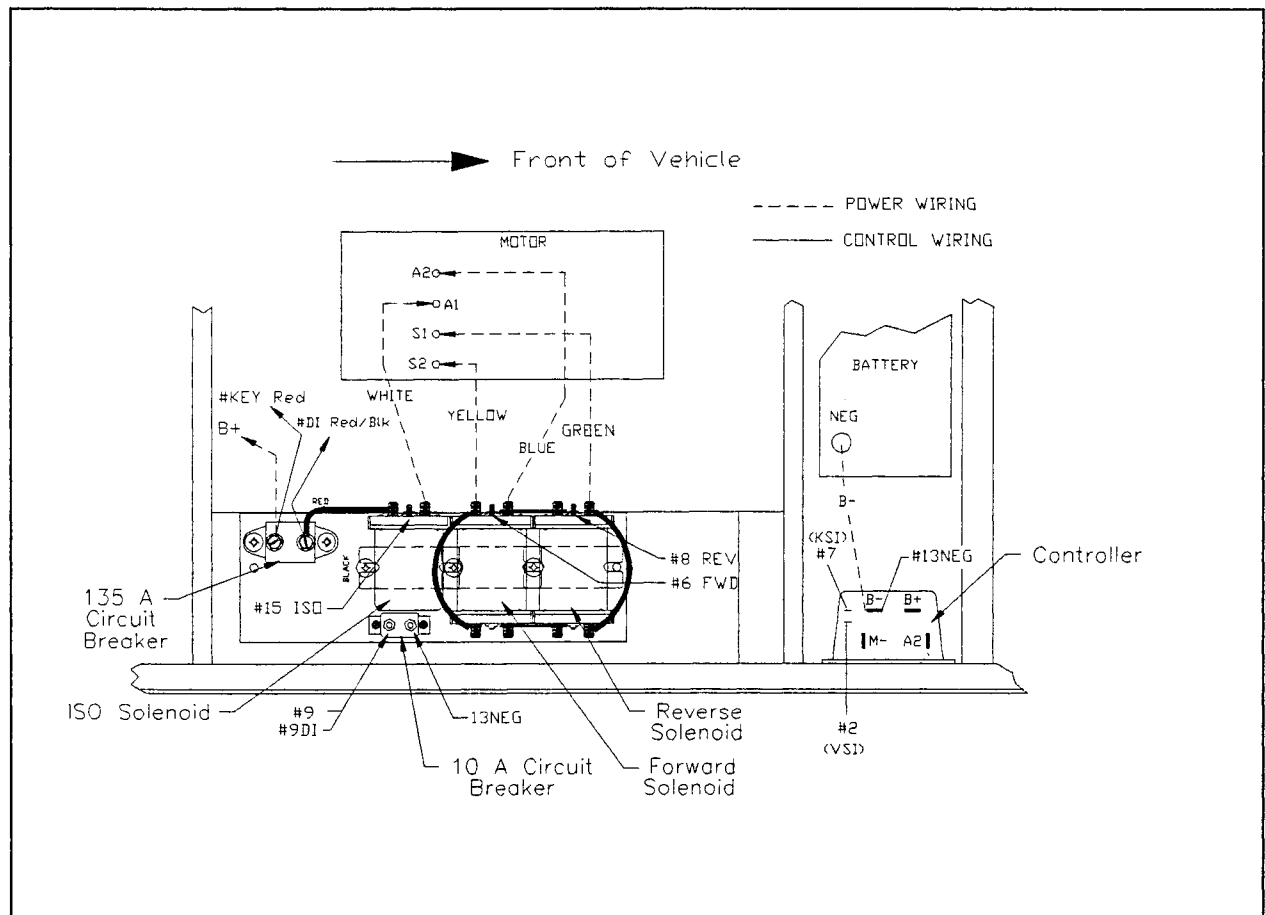


Figure 3-15

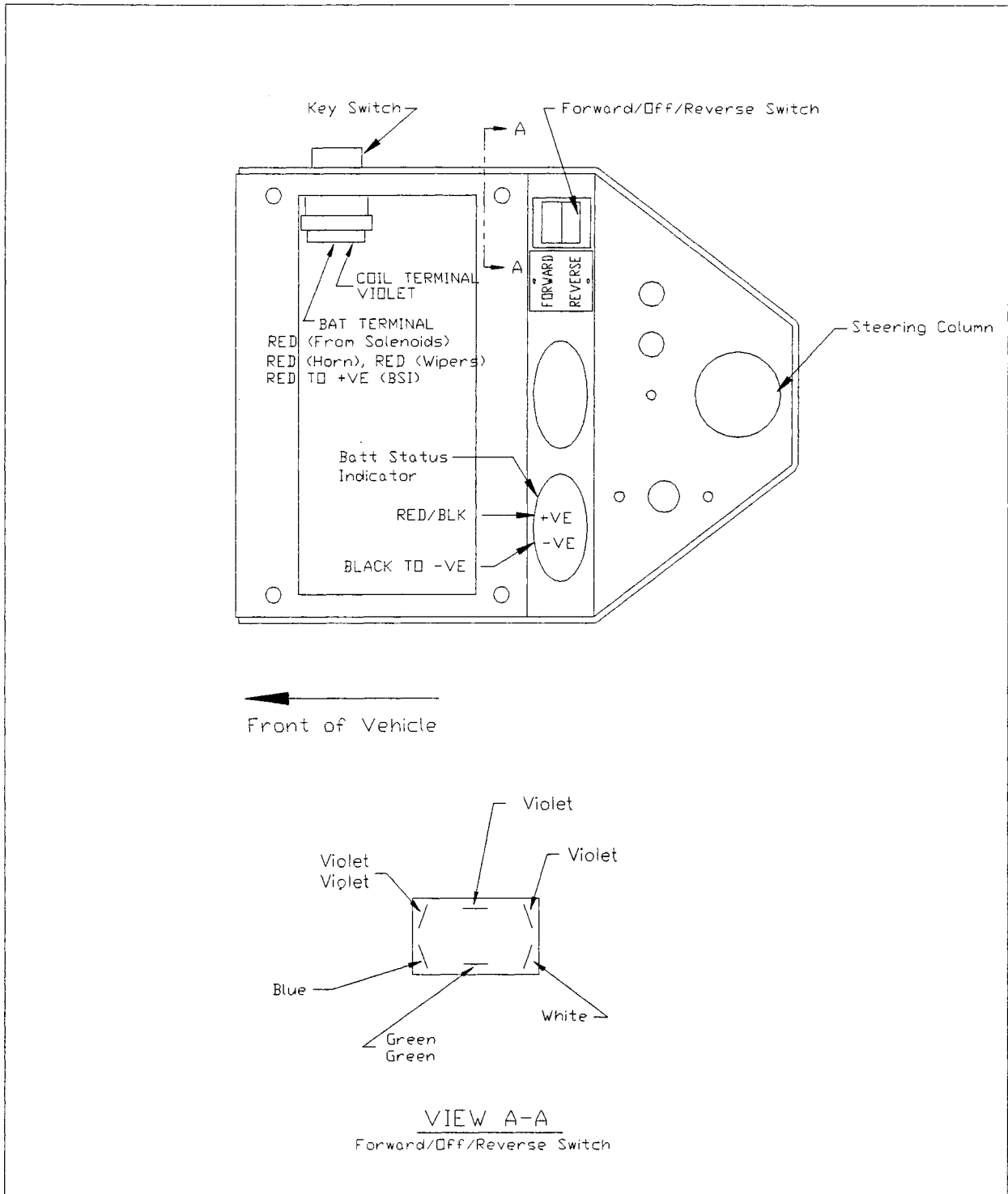


Figure 3-16 Dash Wiring

SECTION 3

ELECTRICAL TROUBLESHOOTING

If the vehicle has a problem which has been diagnosed as electrical, use the following guidelines and procedures to locate the problem.

Tools required:

Volt-Ohm meter
62-027-00 test light (voltage equal to MAX battery voltage)
9/16" comb. wrench
1/2" comb. wrench
62-027-31 test harness

- All voltage tests done are referenced to battery negative unless otherwise specified.*
- Battery volts = full voltage available from batteries at time of test.*
- In all tests the key switch is on. Safety switches (if equipped) are on.*
- This test procedure must be performed in the order it was written. If you start in the middle, or skip sections, you may not get the proper results.*

▲WARNING

DURING ALL TESTS, BOTH DRIVE WHEELS ARE JACKED UP OFF THE GROUND, SUPPORTED BY JACK STANDS, AND WITH THE FRONT WHEEL BLOCKED.

AFTER ANY REPAIRS ARE MADE COMPLETELY TEST VEHICLE BEFORE LOWERING TO GROUND

START: If the truck runs in one direction only, go to the 'SOLENOID' section.

Control Wires at PMC

1. With the accelerator pedal depressed to engage MS1 only (creep speed), and the directional switch in forward or reverse:
 - a) Test voltage at PIN #2 on the PMC (see Figure 3-16). If not 6-6.5 V, then go to 'ACCELERATOR MODULE' section.
 - b) Test voltage at PIN "KSI" on the PMC. If not battery voltage, then go to 'KSI' section.

2. With the accelerator pedal fully depressed.
 - a) Test voltage at PIN #2 on the PMC. If not 11-11.5 V, then go to 'ACCELERATOR MODULE' section.

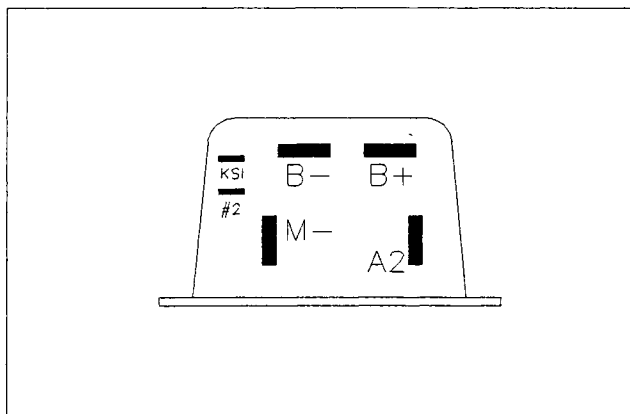


Figure 3-16

Power Wiring



All tests in this section are with the resistor at the ISO solenoid disconnected. Reconnect the resistor when done with this section.

1. With the accelerator pedal depressed to engage MS1 only (creep speed).
 - a) Test voltage from battery negative to "B+" on the PMC. If not battery voltage, then go to 'SOLENOIDS' section.
 - b) Test voltage from "B+" on the PMC to "B-" on the PMC. If not battery voltage, then check the wire and connections from battery negative to "B-" on the PMC. **>STOP**
 - c) Using the ohm meter (R x 10), check the ISO resistor. If not 250 ohms, replace the resistor.



A defective resistor causes intermittent operation of control.

2. Reconnect the resistor.
3. With the accelerator pedal depressed fully.
 - a) Test voltage from "M-" on the PMC to "B+" on the PMC. If not battery voltage, then the PMC is bad. **>STOP**
 - b) Connect the test light across MOTOR S1-S2 terminals. If the light is ON, then the field is open. **>STOP**
 - c) Connect the test light across MOTOR A1-A2 terminals. If the light is ON, then the armature is open. **>STOP**

GO TO SOLENOIDS

SECTION 3

Accelerator Module (magnetic or solid state only)

NOTE *These tests are done at the accelerator using the 62-027-31 test harness.*

1. With the accelerator pedal depressed to engage MS1 only (creep speed).
 - a) Test voltage at PIN #4. If not battery voltage, then go to 'KSI' section.
 - b) Test voltage from PIN #4(+) to PIN #9(-). If not battery voltage, then check the wire from PIN #9 to circuit breaker, and the circuit breaker. **>STOP**
 - c) Test voltage at PIN #2. If not 6-6.5 V, then the accelerator module is bad. **>STOP**
 - d) Test voltage at PIN #5. If not battery voltage, then the accelerator module is bad. **>STOP**

NOTE *A broken return spring will cause no output at PIN #5.*

1. With the accelerator pedal fully depressed.
 - a) Test voltage at PIN #2. If not 11-11.5 v. then the accelerator module may need adjusting or is bad. **>STOP**
 - b) If voltage at MODULE (PIN #2) are good but at PMC (PIN #2) are bad then check the wire in PIN #2 from the module to the PMC. **>STOP**

KSI

1. Check the key switch and/or safety interlock switches (if equipped) for continuity.
 - a) Check the forward/off/reverse switch.
 - b) Check control wiring. **>STOP**

Solenoids

1. Using an ohm meter (R x 10), check the ISO resistor. If not 250 ohms, replace the resistor.

NOTE *A defective resistor causes intermittent operation of control.*

1. If the vehicle travels forward only, then go to 'FORWARD ONLY'.
2. If the vehicle travels in reverse only, then go to 'REVERSE ONLY'.
3. Place the directional switch in the off position.
 - a) If the ISO solenoid clicks when the accelerator pedal is depressed, then go to 'ISO'.

4. Test voltage from battery positive to the ISO coil negative.
 - a) If not battery voltage, then check the negative control wiring and the circuit breaker. **>STOP**
5. With the accelerator pedal fully depressed.
 - a) Test voltage across the ISO coil. If not battery voltage, then check the wiring, MS1, safety switches, and key switch. **>STOP**
 - b) Test voltage across the ISO coil. If battery voltage, then the ISO coil is bad. **>STOP**

ISO

1. Connect the test light across the ISO power contacts and depress the accelerator pedal fully.
 - a) If the light is on, then the ISO solenoid is bad. **>STOP**
 - b) If the light is off, then check the power wiring to the batteries and to the PMC for opens. **>STOP**

FORWARD ONLY

1. Place the directional switch in neutral.
2. Depress the accelerator pedal. Move the directional switch to reverse.
 - a) If the reverse solenoid clicks, then go to 'REVERSE CONTACTS'.
 - b) If the reverse solenoid does not click, check voltage from battery positive to the negative coil terminal on the reverse solenoid. If not battery voltage, then check the solenoid coil bus bar connections. **>STOP**
 - c) Check the voltage across the reverse solenoid coil.
 - i) If battery voltage, then the reverse solenoid is bad. **>STOP**
 - ii) If not battery voltage, check the control wiring and directional switch. **>STOP**

REVERSE CONTACTS

1. Connect the test light across the normally closed contacts of the forward solenoid (see Figure 3-16).
2. Depress the accelerator pedal fully.
 - a) If the light is on, then the forward solenoid is bad. **>STOP**
3. Connect the test light across the normally open contacts of the reverse solenoid.
4. Depress the accelerator pedal fully.
 - a) If the light is on, then the reverse solenoid is bad. **>STOP**
5. If the light did not come on, then check all power wiring for opens. **>STOP**

SECTION 3

REVERSE ONLY

1. Place the directional switch in neutral.
2. Depress the accelerator pedal. Move the directional switch to forward.
 - a) If the forward solenoid clicks, then go to 'FORWARD CONTACTS'.
 - b) If the forward solenoid does not click, check voltage from battery positive to the negative coil terminal on the forward solenoid. If not battery voltage, then check the solenoid coil bus bar connections. **>STOP**
 - c) Check voltage across forward solenoid coil.
 - i) If battery voltage, then the forward solenoid is bad. **>STOP**
 - ii) If not battery voltage, then check the wiring and directional switch. **>STOP**

FORWARD CONTACTS

1. Connect the test light across the normally closed contacts of the reverse solenoid (see Figure 3-17).
2. Depress the accelerator pedal fully.
 - a) If the light is on then the reverse solenoid is bad. **>STOP**
3. Connect the test light across the normally open contacts of the forward solenoid.
4. Depress the accelerator pedal fully.
5. If the light is on then the forward solenoid is bad. **>STOP**
6. If light DID NOT come on then check all power wiring for opens. **>STOP**

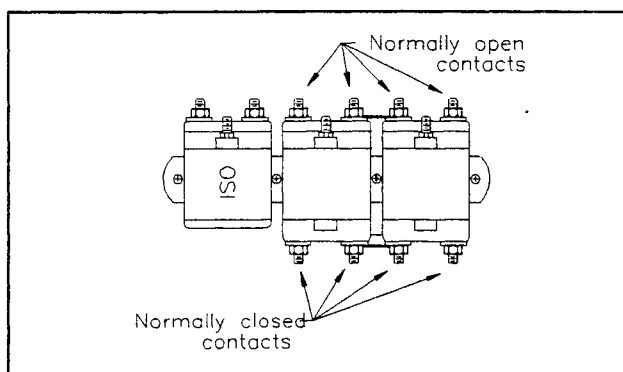
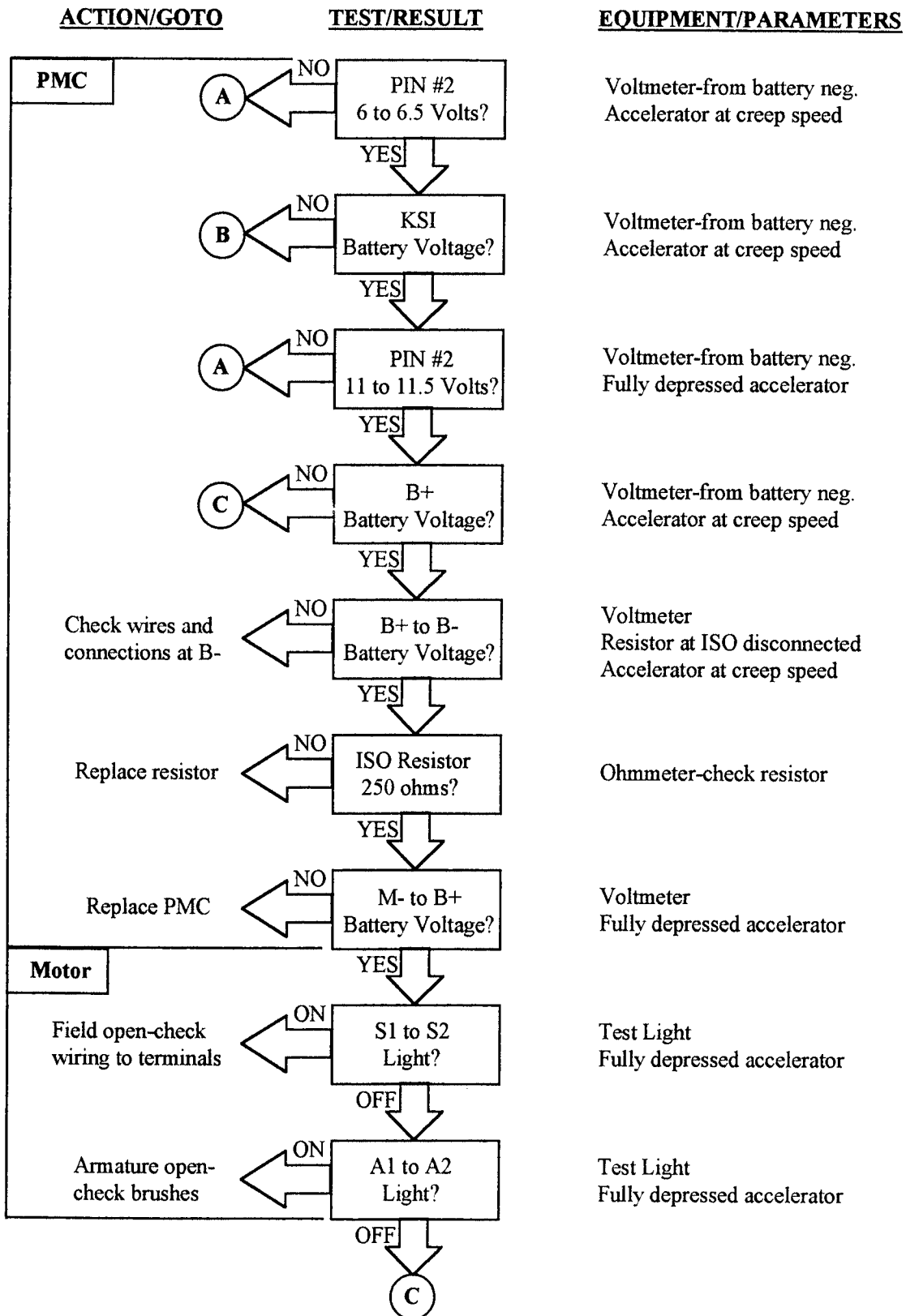


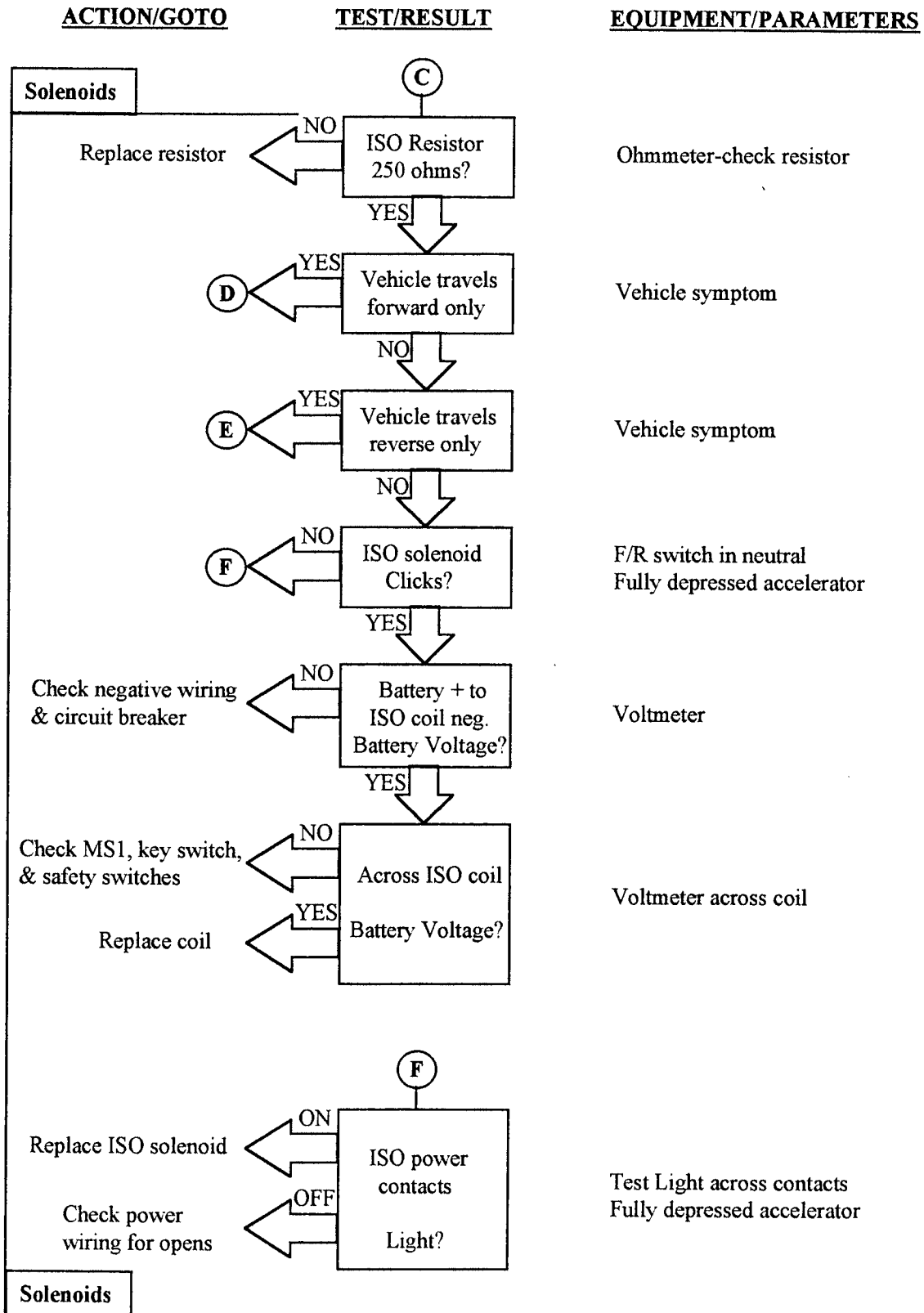
Figure 3-17

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

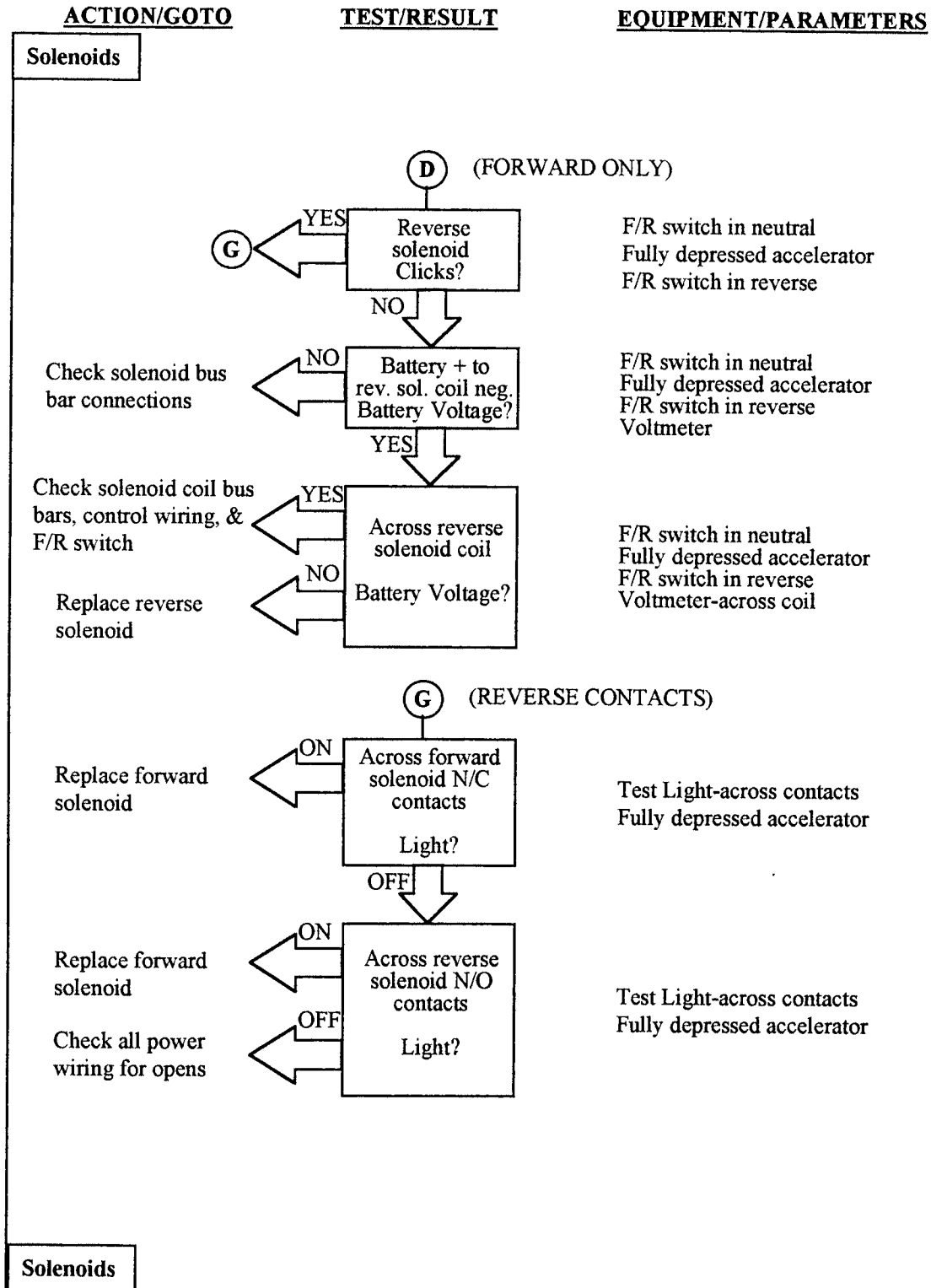
Electrical Troubleshooting Flow Chart



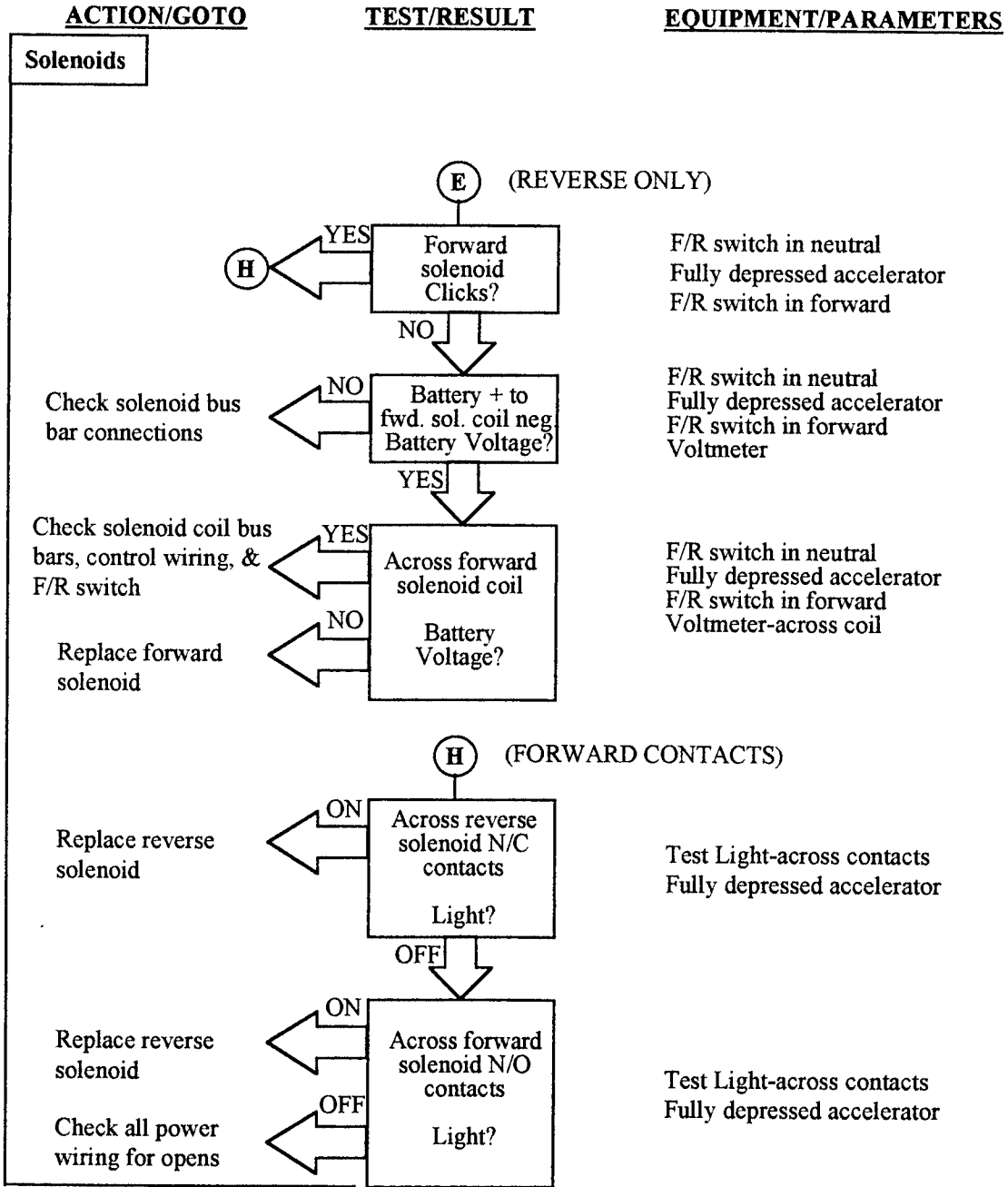
Electrical Troubleshooting Flow Chart



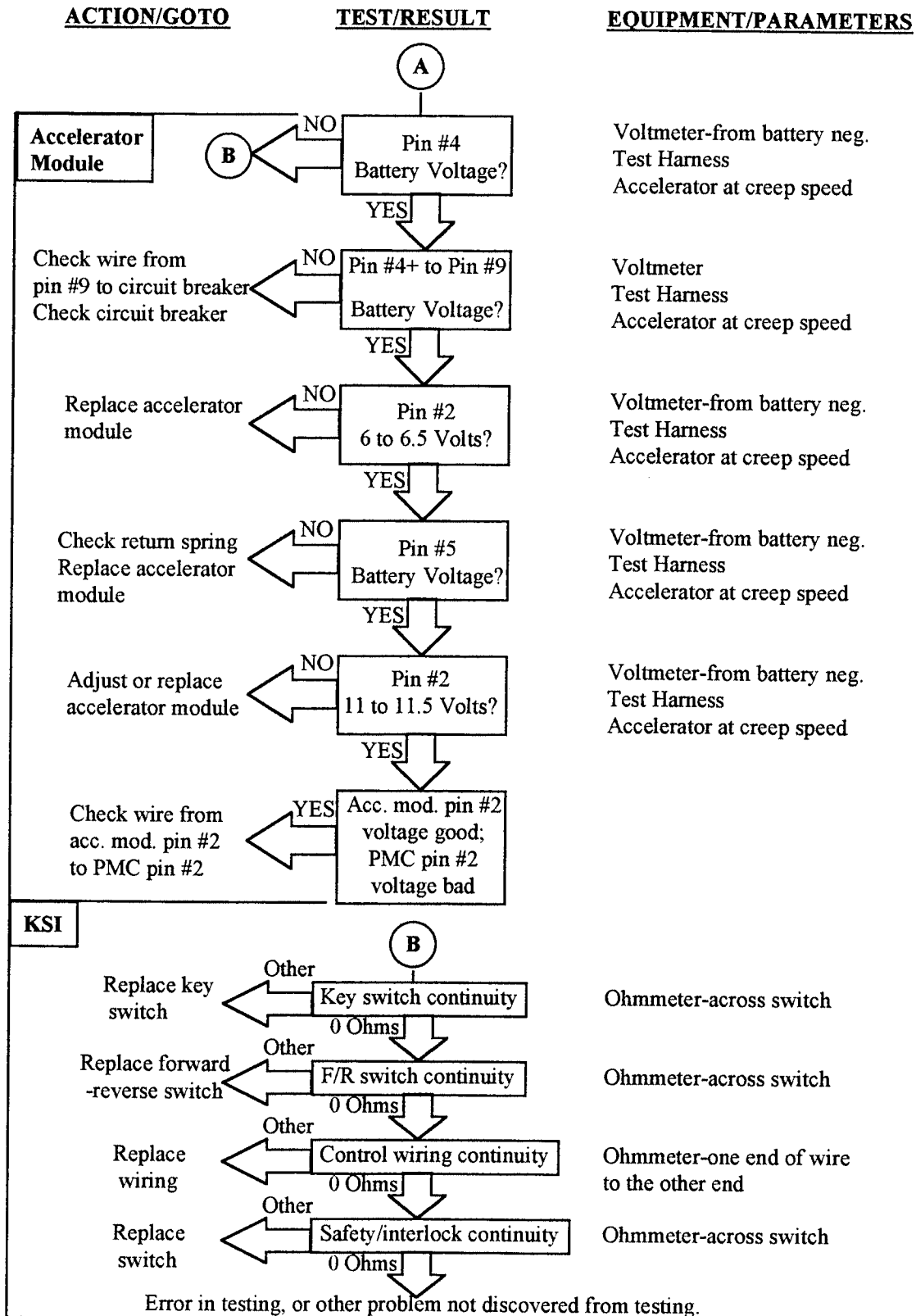
Electrical Troubleshooting Flow Chart

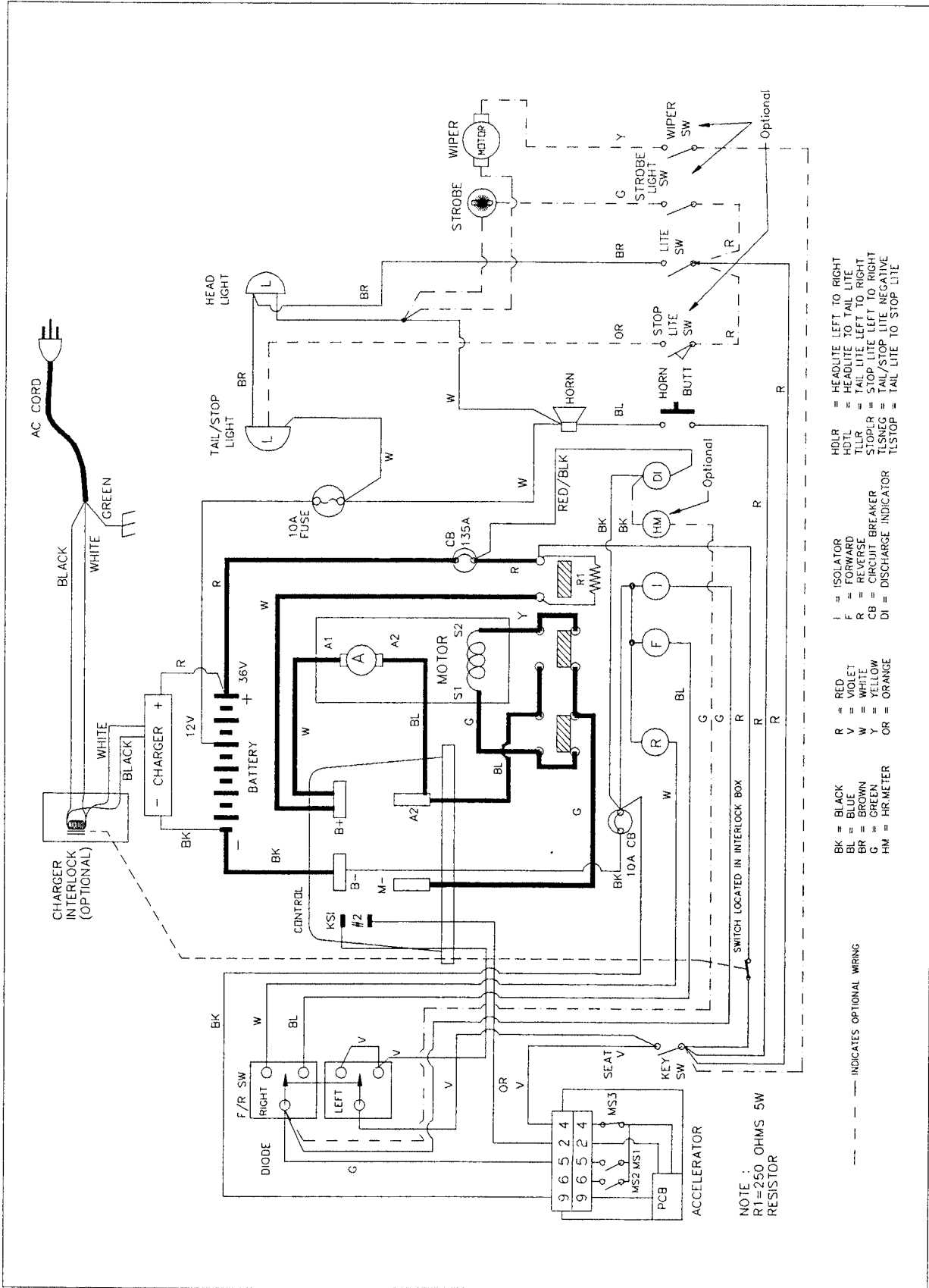


Electrical Troubleshooting Flow Chart



Electrical Troubleshooting Flow Chart





Charging System

The model C4-32/33 uses either a portable or a built-in 24/36 volt charger. See the Illustrated Parts List for replaceable parts and part numbers.

If the charger is not properly charging the batteries, use the following guidelines and procedures to determine the cause of the failure.

LESTER CHARGER TROUBLESHOOTING

Standard:

Model C4-32 built-in charger:	79-305-05-model 07460 type 36LC25-8ET
Model C4-33 built-in charger:	79-301-05-model 10505 type 24LC25-8ET

Optional:

Model C4-32 built-in charger:	79-306-25-model 13745 type 36LC40-8ET
Model C4-33 built-in charger, w/interlock:	79-306-11-model 10505-99 type 24LC25-8ET
Model C4-32 portable charger:	79-305-20-model 7710-32 type 36LC25-8ET
Model C4-33 portable charger:	79-301-10-model 13110-02 type 24LC25-8ET
Model C4-33 built-in charger:	79-302-15-model 13760 type 24LC40-8ET
Model C4-32 portable charger:	79-306-20-model 09475-31 type 36LC40-8ET
Model C4-32 built-in export charger:	79-304-65-model 11860 type 36LC25-8ET
Model C4-33 built-in export charger:	79-300-55-model 12750 type 24LC25-8ET
Model C4-32 portable export charger:	79-304-60-model 7030-01 type 36LC25-8ET
Model C4-33 portable export charger:	79-300-50-model 7105-01 type 24LC25-8ET
Model C4-32 portable export charger:	79-306-90-model 12315-31 type 36LC40-8ET
Model C4-33 portable export charger:	79-302-50-model 14400-31 type 24LC40-8ET

⚠ WARNING

HIGH VOLTAGE and HIGH DC CURRENT. If you do not understand any part of these tests, refer testing to a qualified electrical mechanic.

⚠ WARNING

Prevent the truck from moving. Before performing maintenance on any vehicle, disconnect the batteries, set the parking brake, and block the wheels

SECTION 3

START:

1. Disconnect the charger from the AC and DC source.
2. If this is a built in charger then remove the charger from the truck.
3. Remove the charger cover.

⚠ WARNING

High voltage may be stored in the capacitor. Discharge the capacitor with an insulated screwdriver before proceeding. Do not touch the screwdriver blade while discharging the capacitor.

1. Inspect all internal wiring and repair as necessary.
2. Inspect the fuse link and replace if bad.
3. Test the diodes.
 - a) Use a VOM set at R x 100 ohms scale.
 - b) Remove one lead from one diode (see Figure 3-18).
 - c) Connect the test leads across one diode. The meter should either deflect to the right side of scale or not at all.
 - d) Reverse the polarity on the diode test leads. You should get the opposite reading of the previous test.
 - e) If you get the same reading in both polarities, then the diode is bad.
 - f) Repeat the test on the other diode.
 - g) Reconnect the lead removed in step 6B to the diode.

NOTE

It is recommended to replace the diodes as a set.

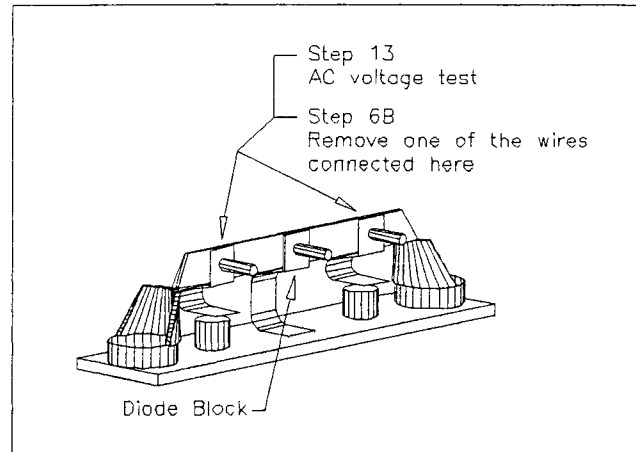


Figure 3-18

7. Test the capacitor.

- a) Use an analog VOM set at its highest ohms scale. Preferably R x 10,000.

⚠ WARNING

High voltage may be stored in the capacitor. Discharge the capacitor with an insulated screwdriver. Do not touch screwdriver blade while discharging capacitor.

- b) Disconnect one lead from the capacitor.
- c) Connect the test leads across the capacitor. The needle should deflect to low ohms reading and then slowly return to infinity (left side of scale). If the needle stays on low ohms reading or does not deflect at all, then the capacitor is bad.

NOTE *Check the capacitor in both polarities*

- d) Reconnect the lead removed in step 7B.
8. Reconnect the DC source only.
9. Measure DC voltage from the diode block (+) to the fuse assembly (-).
- a) If you do not get battery voltage, then the wiring to the battery is bad.
10. If the charger is equipped with an ammeter, then check the continuity across the meter.
- a) If you do not get 0 ohms, then the meter is bad.

⚠ WARNING

Electrical shock hazard! After next step there will be un-insulated high voltage in the charger.

⚠ WARNING

The charger must be grounded! The green wire from the AC cord must be electrically attached to the charger cabinet.

11. Reconnect the AC source.

- a) Measure AC input voltage at 1/4" spade connectors on timer (see figure 3-19, terminals 1 and 2).
- b) If not at approximate charger AC voltage listed on the charger spec. plate, then AC input is bad.

Possible AC input problems:

- Wiring to AC cord.
- AC cord or plug.
- House wiring or circuit breaker. To test, plug a known to be good light into the wall receptacle.

12. Measure AC output voltage at timer (see figure 3-19, terminals 2 and 3).

- a) If it is not the same as the input voltage, then the timer is bad.

13. Measure AC voltage at diodes (see figure 3-18).

- a) If not 50-60 VAC (on 24 volt,25 amp chargers only), then the transformer is bad.
If not 75-90 VAC (on 36 volt,25 amp chargers only), then the transformer is bad.
If not xx-xx VAC (on 24 volt,40 amp chargers only), then the transformer is bad.
If not xx-xx VAC (on 36 volt,40 amp chargers only), then the transformer is bad.

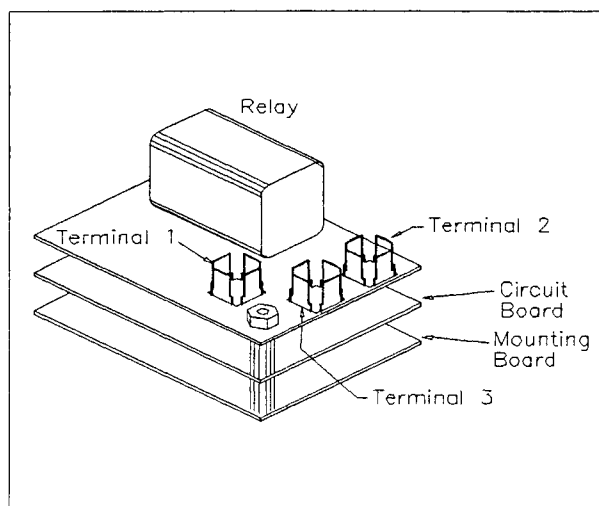


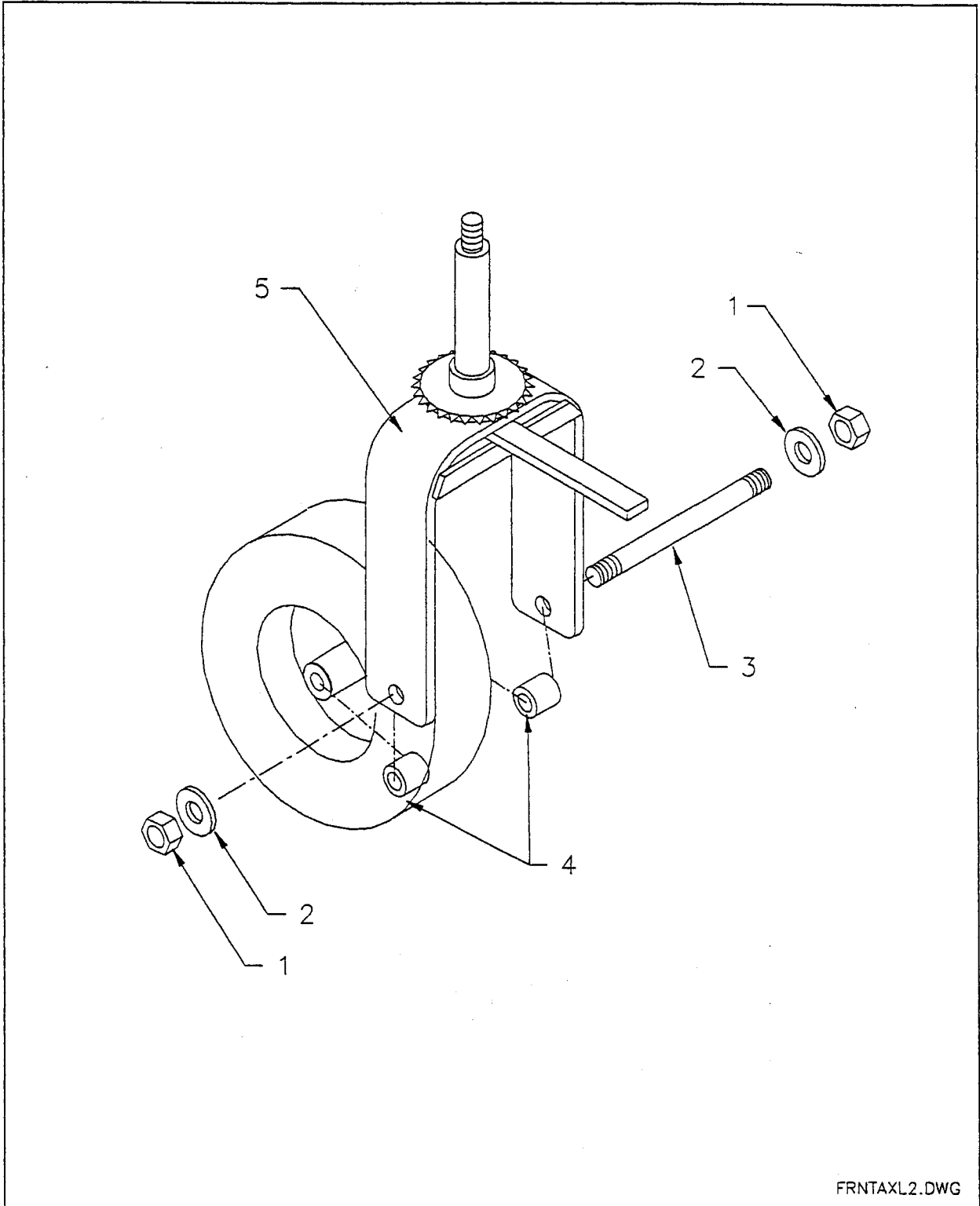
Figure 3-21

ILLUSTRATED PARTS LIST



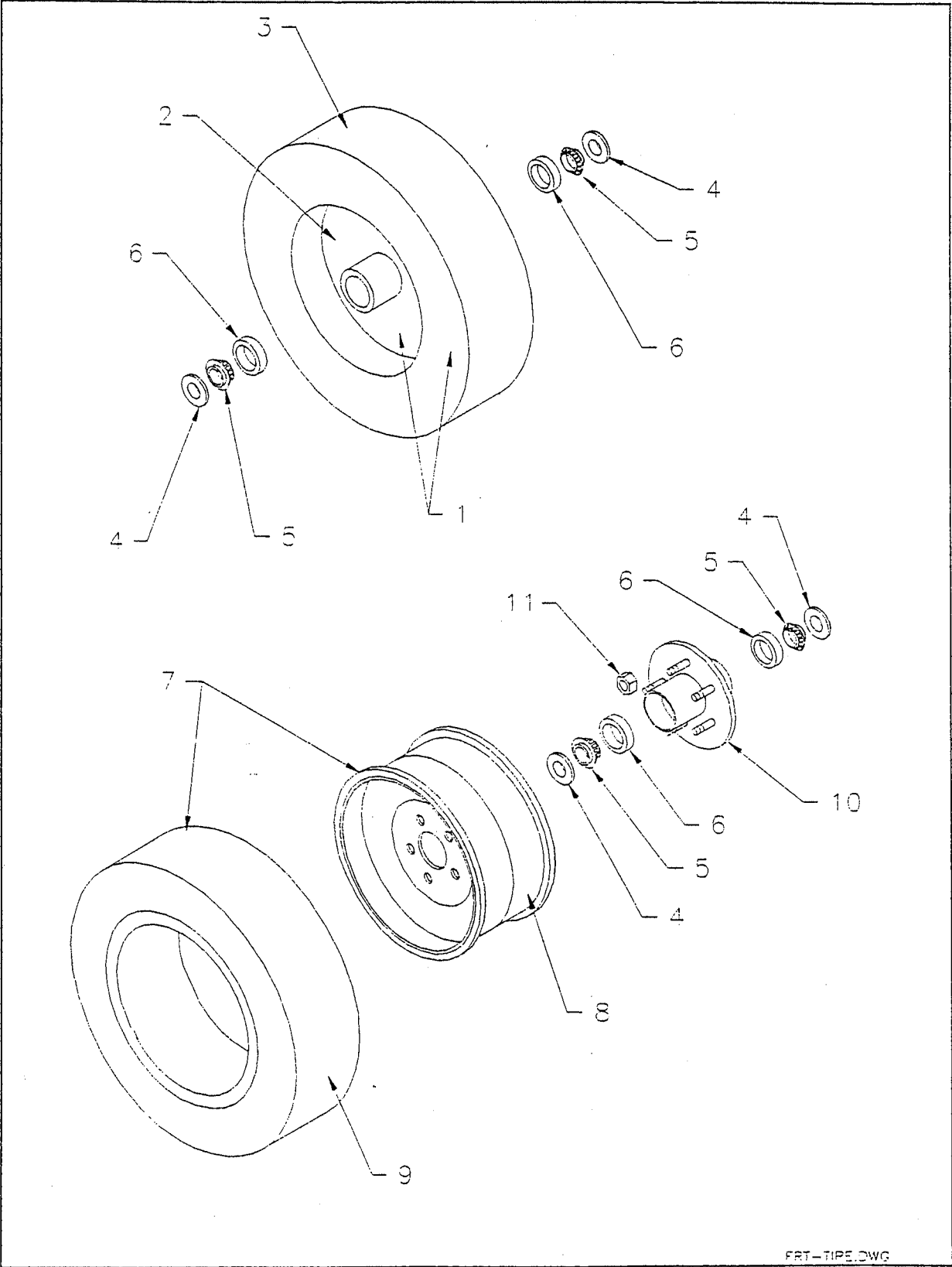
SECTION 4

FRONT AXLE



FRONT AXLE			
Item No.	Part No.	Description	Qty
1	88-229-81	Locknut, 3/4NC	2
2	88-228-60	Washer, 3/4" Cut	2
3	15-010-00	Front Axle	1
4	16-010-00	Spacer	4
5	14-082-10	Front Fork Assembly	1

FRONT TIRE



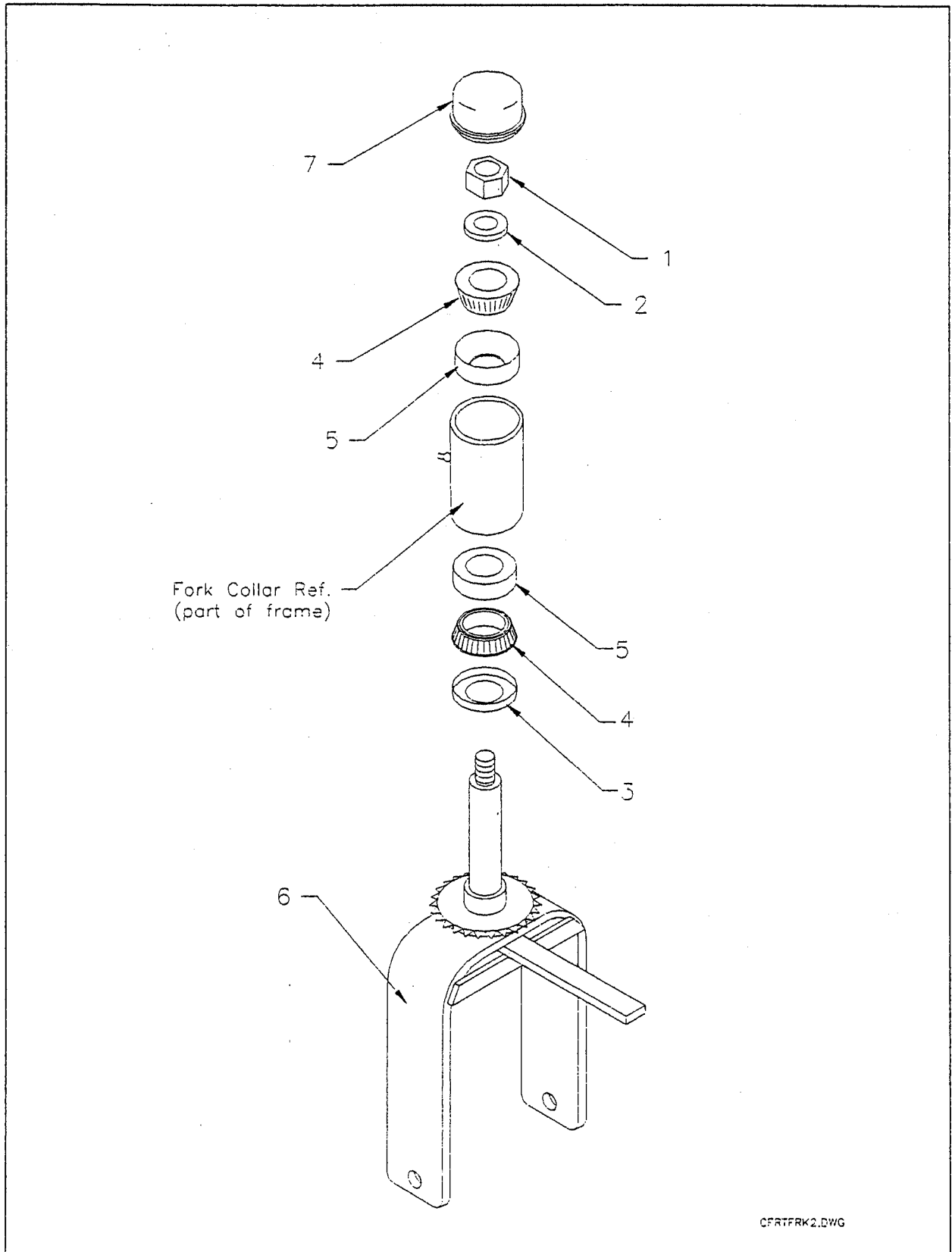
FRT-TIRE.DWG

FRONT TIRE			
Item No.	Part No.	Description	Qty
1	13-576-10	Tire & Wheel Assy, 4.80 x 8, 3/4" Bearing (standard)	1
2	13-001-00	Wheel, 4.80 x 8, 3/4" Bearing	1
3	10-075-00	Tire, 4.80 x 8, Load Range B	1
4	45-308-00	Oil Seal	2
5	80-015-00	Bearing, 3/4" Tapered	2
6	80-105-00	Bearing Race	2
7	13-734-11	Tire & Wheel Assy, 4.80 x 8, Split Rim	1
8	12-042-00	Wheel, 3.75", 5 hole, Split Rim	1
9	10-075-00	Tire, 4.80 x 8, LR B, Tubeless	1
*	11-030-00	Tube, 4.80 x 8	1
7	13-734-15	Tire & Wheel Assy, 4.80 x 8, Split Rim	1
8	12-041-00	Wheel, 2.50", 5 hole, Split Rim	1
9	10-075-00	Tire, 4.80 x 8, LR B	1
*	11-030-00	Tube, 4.80 x 8	1
7	13-734-40	Tire & Wheel Assy, 4.80 x 8, Split Rim, Man-Toter, Soft-Solid	1
8	12-042-00	Wheel, 3.75", 5 hole, Split Rim	1
9	10-074-00	Tire, 4.80 x 8, Man-Toter, Soft-Solid	1
7	13-734-41	Tire & Wheel Assy, 4.80 x 8, Split Rim, Non-Marking	1
8	12-042-00	Wheel, 3.75", 5 hole, Split Rim	1
9	10-074-10	Tire, 4.80 x 8, non-marking	1
7	13-954-10	Tire & Wheel Assy, 16-1/4" x 4" x 11-1/4", Solid Cushion	1
8	12-054-00	Wheel, Iron, 11-1/4" OD	1
9	10-261-00	Tire, Solid Cushion, 16-1/4" x 4" x 11-1/4"	1
10	12-120-00	Wheel Hub, 5 Stud, 3/4" Bearing	1
11	97-236-00	Wheel Lug Nut	5

* Not Shown

SECTION 4

FRONT FORK

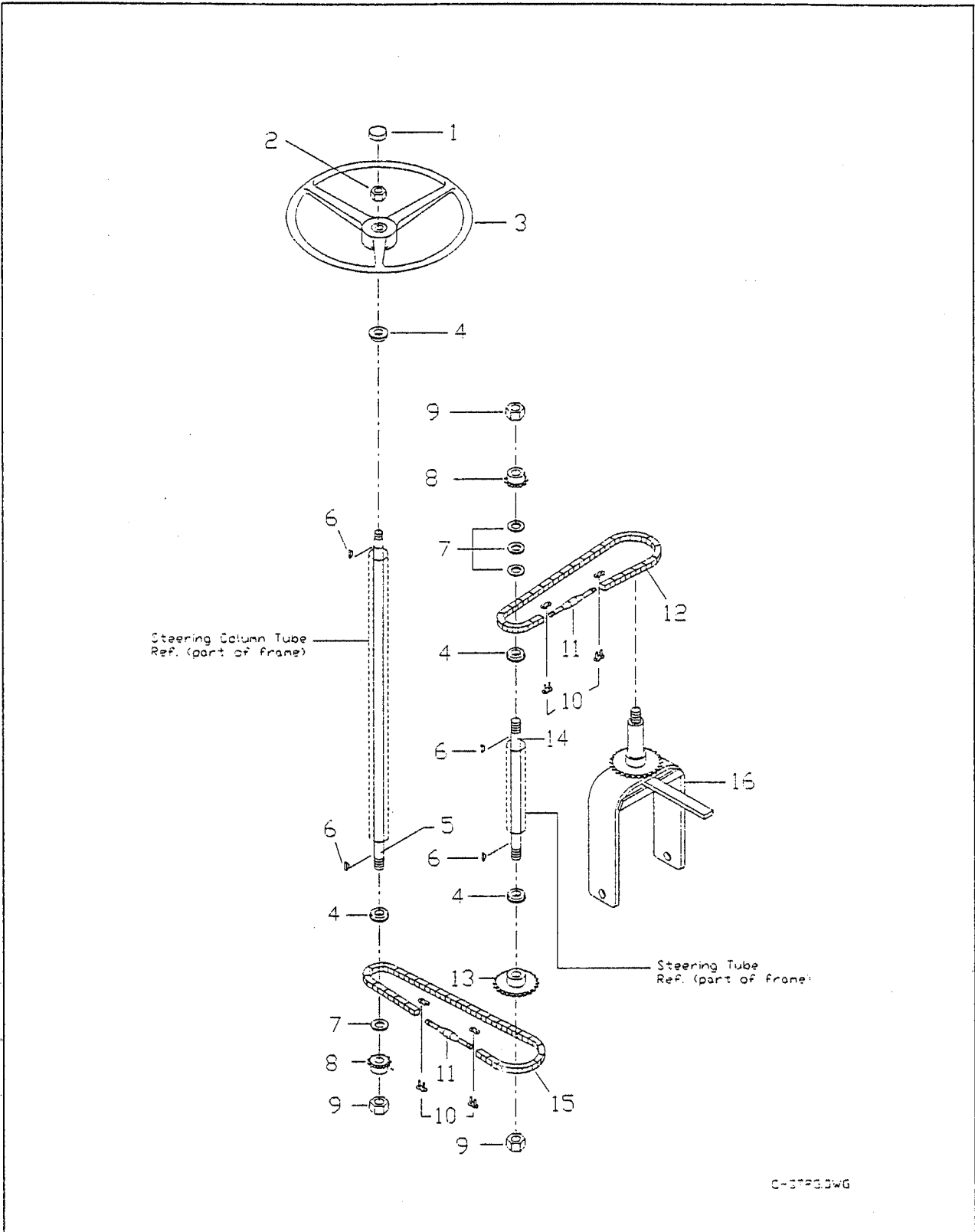


CFRFRK2.DWG

FRONT FORK			
Item No.	Part No.	Description	Qty
1	88-229-81	Locknut, 3/4NC	1
2	88-228-60	Washer, 3/4" Cut	1
3	45-307-00	Oil Seal, 1-1/2" ID	1
4	80-011-00	Bearing, Tapered Roller, 1-1/4" ID	2
5	80-102-00	Bearing Race	2
6	14-082-10	Front Fork Assembly	1
7	92-105-00	Dust Cap	1

SECTION 4

STEERING

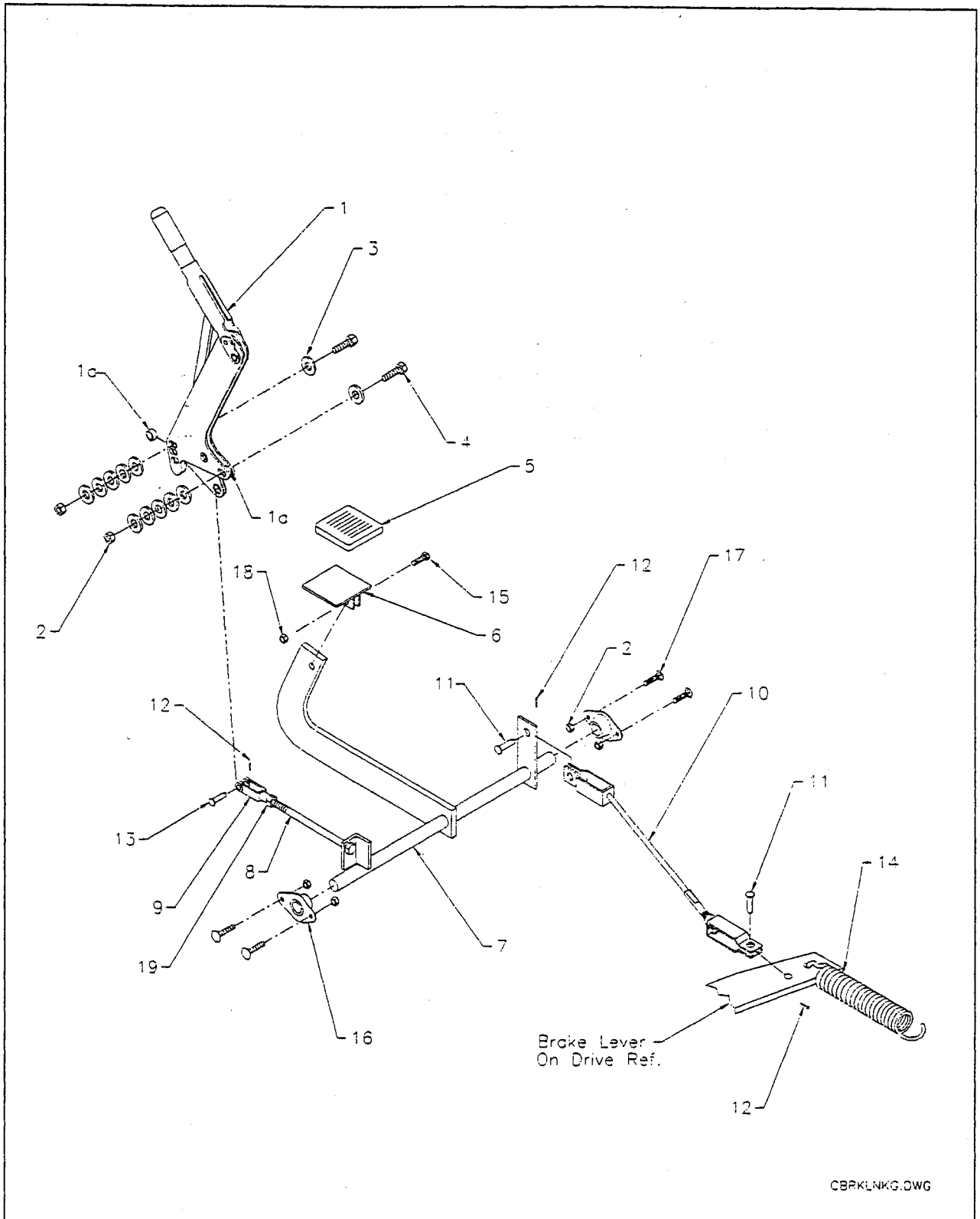


C-3793.DWG

STEERING			
Item No.	Part No.	Description	Qty
1	95-915-20	Steering Wheel Cap	1
2	88-199-82	Nut, 5/8NF Jam	1
3	19-007-20	Steering Wheel	1
4	80-400-10	Ball Bearing, Sealed, 3/4"	4
5	20-010-00	Shaft, Steering Column	1
6	97-100-00	Woodruff Key, 3/16"	4
7	16-405-00	Spacer, 3/4" ID x 1/8" Thick	4
8	30-002-00	Sprocket, 11 Tooth, #40 Chain, 3/4" Bore	2
9	88-229-81	Locknut, 3/4NC	3
10	30-400-00	Master Link, #40 Chain	4
11	96-900-00	Turnbuckle, Steering Chain	2
12	30-241-00	Chain, #40, 29-1/2" Long	1
13	30-005-00	Sprocket, 22 Tooth, #40 Chain, 3/4" Bore	1
14	20-144-00	Shaft, Steering, 13-1/4" Long	1
15	30-248-00	Chain, #40, 36-1/2" Long	1
16	14-082-10	Front Fork Assembly	1

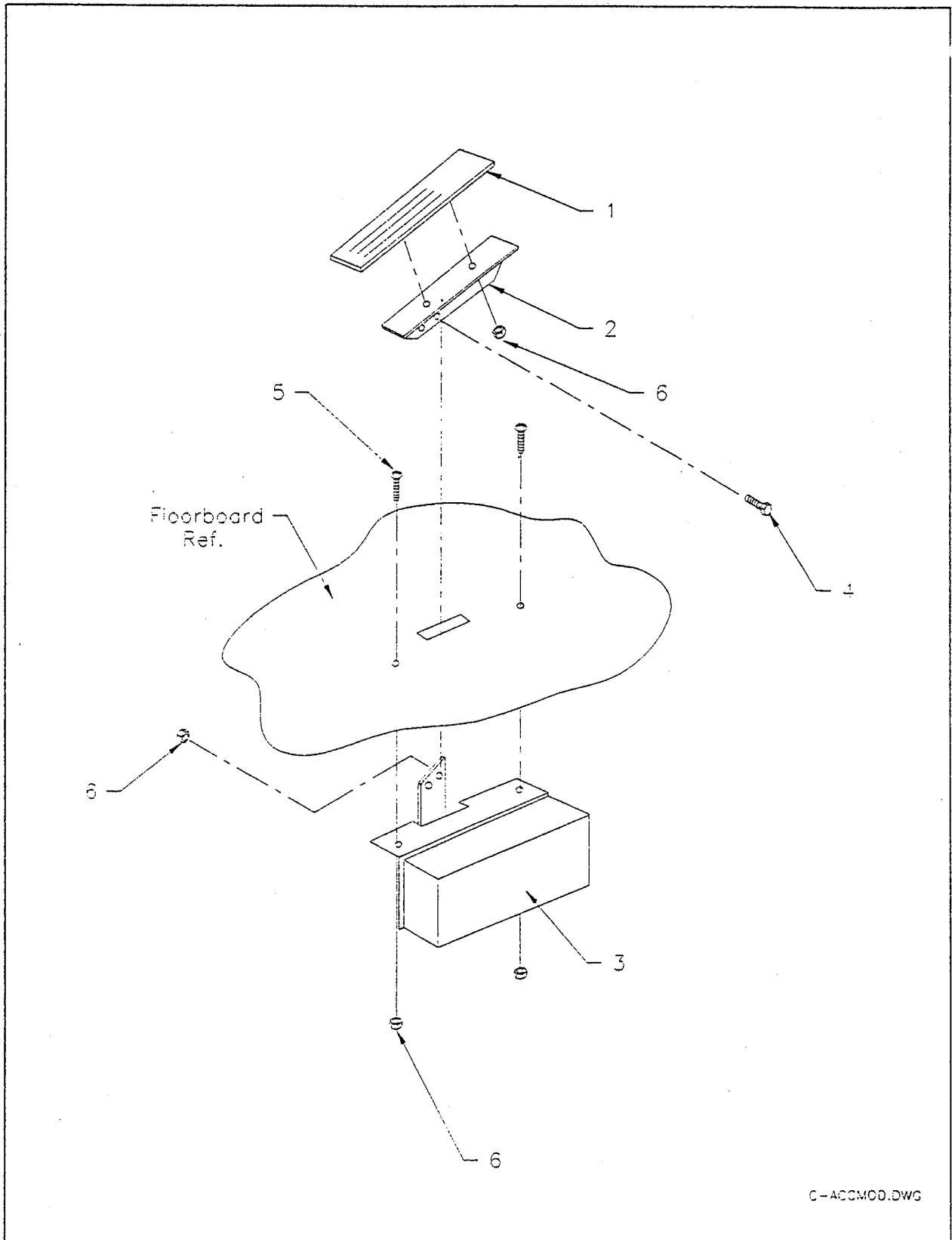
SECTION 4

PARK & FOOT BRAKE LINKAGE



PARK & FOOT BRAKE LINKAGE			
Item No.	Part No.	Description	Qty
1	51-340-00	Park Brake Lever	1
1a	n/a	Spacer-included with lever	2
2	88-109-81	Locknut, 3/8NC	6
3	88-108-60	Washer, 3/8 SAE	12
4	88-101-16	Bolt, 3/8NC x 2" Hex Hd.	2
5	98-200-00	Brake Pedal Pad, Rubber	1
6	01-432-98	Brake Pedal Bracket (painted black)	1
7	01-432-70	Brake Shaft Weldment (painted black)	1
8	88-111-32	Bolt, 3/8NF x 8" Hex Hd., Grade 5	1
9	96-762-00	Clevis, 3/8"	1
10	96-813-00	Cable Assy, Adjustable	1
11	96-771-00	Clevis Pin, 3/4"	2
12	88-517-09	Cotter Pin, 3/32" x 3/4"	3
13	96-772-00	Clevis Pin, 1"	1
14	85-270-00	Brake Return Spring	1
15	88-080-11	Bolt, 5/16NC x 1" Hex Hd.	1
16	80-410-20	Flanged Bearing, 3/4" ID	2
17	88-102-11	Bolt, 3/8"NC x 1" Carriage	4
18	88-089-81	Locknut, 5/16NC	1
19	88-119-80	Nut, 3/8NF	1

ACCELERATOR MODULE

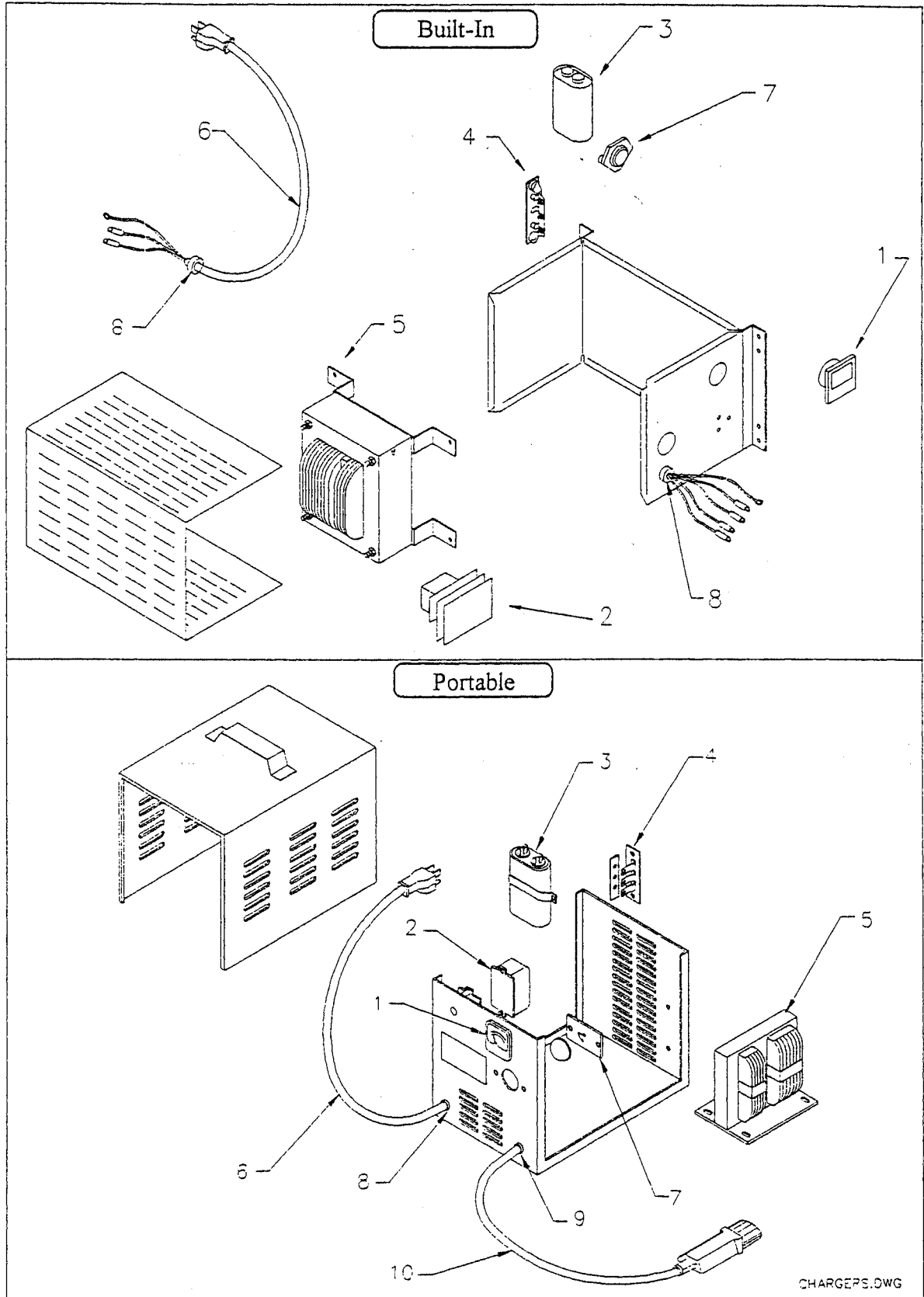


C-ACCMOD.DWG

ACCELERATOR MODULE			
Item No.	Part No.	Description	Qty
1	98-254-00	Accelerator Pedal, Aluminum	1
2	98-254-15	Mount, Accelerator Pedal (painted black)	1
3	62-033-00	Accelerator Module	1
4	88-060-09	Bolt, 1/4NC x 3/4" Hex Hd.	2
5	88-065-08	Screw, 1/4NC x 5/8" Truss Hd.	2
6	88-069-81	Locknut, 1/4NC	6

SECTION 4

CHARGERS



CHARGERS- Built-In, 25A				
Item No.	Description	C4-32 (36V)	C4-33 (24V)	Qty
	Charger, 25A, Built-In, Complete	79-305-05	79-301-05	1
	Charger Manufacturer I.D. No.:	07460	10505	
1	Ammeter	79-851-10	79-851-10	1
2	Timer	79-805-67	79-805-66	1
3	Capacitor	79-902-00	79-902-00	1
4	Heat Sink Assembly with Diodes	79-749-13	79-749-13	1
5	Transformer	79-644-31	79-644-29	1
6	Cordset, AC, w/Plug	79-575-30	79-575-10	1
7	Fuse Assembly	79-831-00	79-831-00	1
8	Bushing, for AC Cordset	79-530-00	79-530-00	1
Not Shown	Harness, Charger	75-122-02	75-122-05	-
Built-In, 40A				
	Charger, 40A, Built-In, Complete	79-306-25	79-302-15	1
	Charger Manufacturer I.D. No.:	13745	13760	
1	Ammeter	79-851-10	79-851-10	1
2	Timer	79-805-67	79-805-66	1
3	Capacitor	79-902-00	79-902-00	1
4	Heat Sink Assembly with Diodes	79-749-10	79-749-10	1
5	Transformer	79-644-29	79-644-29	1
6	Cordset, AC, w/Plug	79-575-30	79-575-30	1
7	Fuse Assembly	79-831-11	79-831-11	1
8	Bushing, for AC Cordset	79-530-00	79-530-00	1
Not Shown	Harness, Portable Charger	75-122-11	75-122-05	1
Portable, 25A				
	Charger, 25A, Portable, Complete	79-305-20	79-301-10	1
	Charger Manufacturer I.D. No.:	7710-32	13110-02	
1	Ammeter	79-851-10	79-851-10	1
2	Timer	79-805-63	79-805-64	1
3	Capacitor	79-902-00	79-902-00	1
4	Heat Sink Assembly with Diodes	79-749-13	79-749-13	1
5	Transformer	79-644-27	n/a	1
6	Cordset, AC, w/Plug	79-575-10	79-575-10	1
7	Fuse Assembly	79-831-00	79-831-00	1
8	Bushing, for AC Cordset	79-530-00	79-530-00	1
9	Bushing, for DC Cordset	79-530-00	79-530-00	1
10	DC Cord w/Shielded Plug	79-566-10	79-566-10	1
10a	DC Cord w/Unshielded Plug	79-566-11	79-566-11	1
Not Shown	Harness, Charger	75-107-00	75-107-00	1

SECTION 4

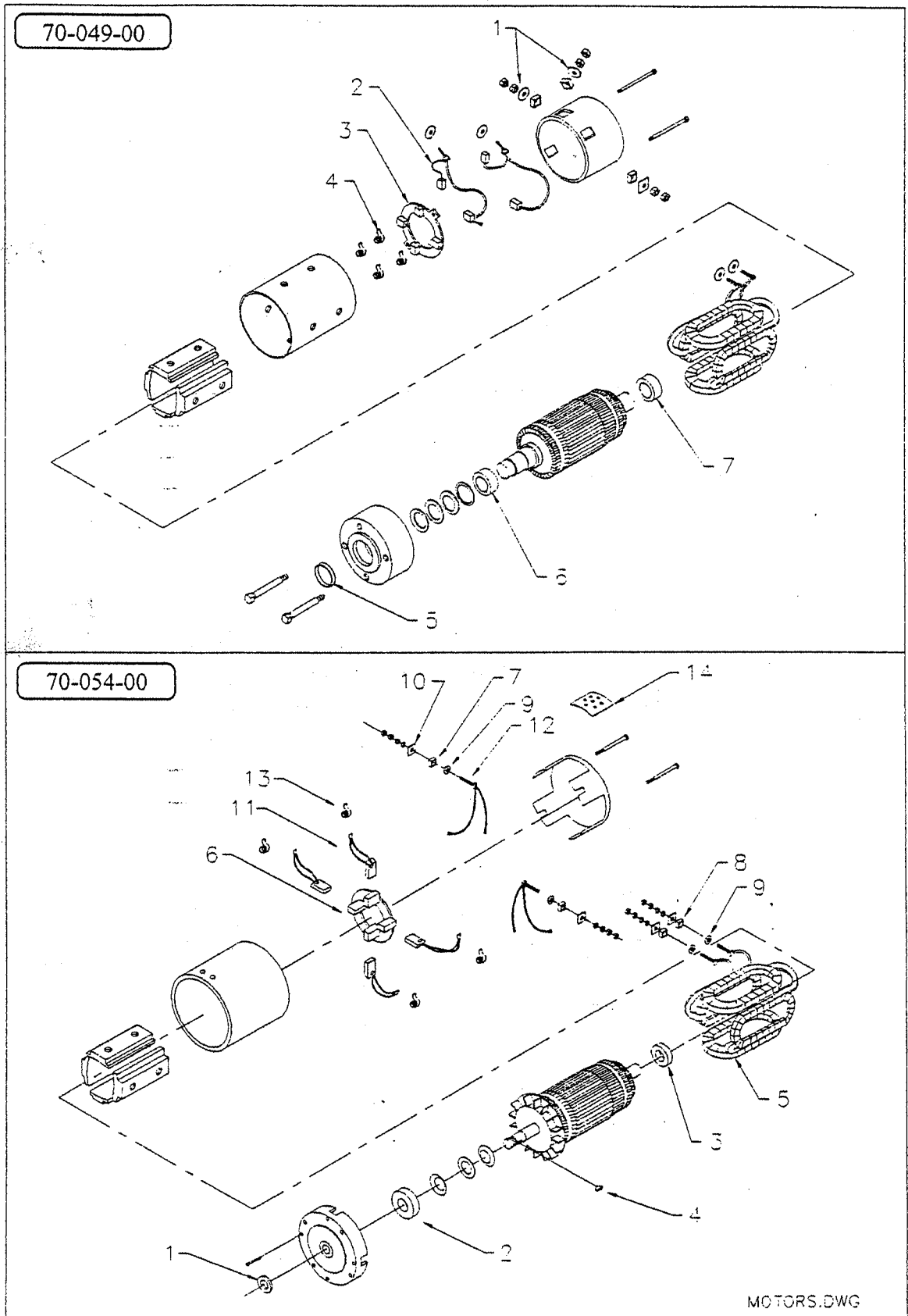
Portable, 40A				
Item No.	Description	C4-32 (36V)	C4-33 (24V)	Qty
	Charger, 40A, Portable, Complete	79-306-20	n/a	1
	Charger Manufacturer I.D. No.:	7710-32	n/a	
1	Ammeter	79-851-10	n/a	1
2	Timer	79-805-63	n/a	1
3	Capacitor	79-902-00	n/a	1
4	Heat Sink Assembly with Diodes	79-749-13	n/a	1
5	Transformer	79-644-27	n/a	1
6	Cordset, AC, w/Plug	79-575-10	n/a	1
7	Fuse Assembly	79-831-00	n/a	1
8	Bushing, for AC Cordset	79-530-00	n/a	1
9	Bushing, for DC Cordset	79-530-00	n/a	1
10	DC Cord w/Shielded Plug	79-566-10	n/a	1
10a	DC Cord w/Unshielded Plug	79-566-11	n/a	1
Not Shown	Harness, Portable Charger	75-107-00	n/a	1
Built-In, w/Interlock				
	Charger, Built-In, w/Interlock, Complete	79-306-25 40A	79-306-11 25A	1
	Charger Manufacturer I.D. No.:	13745	10505-99	
1	Ammeter	79-851-10	79-851-10	1
2	Timer	79-805-67	79-805-66	1
3	Capacitor	79-902-00	79-902-00	1
4	Heat Sink Assembly with Diodes	79-749-10	79-749-13	1
5	Transformer	79-644-29	79-644-29	1
6	Cordset, AC, w/Plug	79-575-30	79-575-10	1
7	Fuse Assembly	79-831-11	79-831-00	1
8	Bushing, for AC Cordset	79-530-00	79-530-00	1
Not Shown	Harness, Charger	75-122-02	75-122-01	
Not Shown	Interlock Module	79-306-12	n/a	1

Additional Parts Not Shown			
Chgr Type	Part No.	Description	Qty
Built-in	79-512-20	Panel, Charger Mount	1
Portable	76-013-00	Receptacle, Charging	1

EXPORT CHARGERS				
Built-In, 25A				
Item No.	Description	C4-32 (36V)	C4-33 (24V)	Qty
	Charger, Built-In, Export, Complete	79-304-65	79-300-55	1
	Charger Manufacturer I.D. No.:	11860	12750	
1	Ammeter	79-851-10	79-852-00	1
2	Timer	79-805-67	79-805-64	1
3	Capacitor	79-902-00	79-902-00	1
4	Heat Sink Assembly with Diodes	79-749-13	79-749-10	1
5	Transformer	79-644-31	79-644-30	1
6	Cordset, AC, w/Plug	79-575-30	79-575-10	1
7	Fuse Assembly	79-831-00	79-831-00	1
8	Bushing, for AC Cordset	79-530-00	79-530-00	1
Not Shown	Harness, Charger	75-122-03	75-122-04	1
Portable, 25A				
	Charger, Portable, Export, Complete	79-304-60	79-300-50	1
	Charger Manufacturer I.D. No.:	7030-01	7105-01	
1	Ammeter	79-851-10	79-851-10	1
2	Timer	79-805-67	79-805-66	1
3	Capacitor	79-902-00	79-902-00	1
4	Heat Sink Assembly with Diodes	79-749-13	79-749-13	1
5	Transformer	79-644-31	79-644-29	1
6	Cordset, AC, w/Plug	79-575-30	79-575-30	1
7	Fuse Assembly	79-831-00	79-831-00	1
8	Bushing, for AC Cordset	79-530-00	79-530-00	1
9	Bushing, for DC Cordset	79-530-00	79-530-00	1
10	DC Cord w/Shielded Plug	79-566-10	79-566-10	1
10a	DC Cord w/Unshielded Plug	79-566-11	79-566-11	1
Not Shown	Harness, Portable Charger	75-107-00	75-107-00	1
Portable, 40A				
	Charger, Portable, Export, Complete	79-306-90	79-302-50	1
	Charger Manufacturer I.D. No.:	12315-31	14400-31	
1	Ammeter	79-852-00	79-851-10	1
2	Timer	79-805-63	79-805-64	1
3	Capacitor	79-902-00	79-902-00	1
4	Heat Sink Assembly with Diodes	79-749-10	79-749-13	1
5	Transformer	n/a	79-644-30	1
6	Cordset, AC, w/Plug	79-575-10	79-575-10	1
7	Fuse Assembly	79-831-11	79-831-11	1
8	Bushing, for AC Cordset	79-530-00	79-530-00	1
9	Bushing, for DC Cordset	79-531-00	79-530-00	1
10/10a	DC Cord w/ Plug	79-567-10	79-566-10,11	1
Not Shown	Harness, Portable Charger	75-107-00	75-107-00	1

SECTION 4

MOTORS



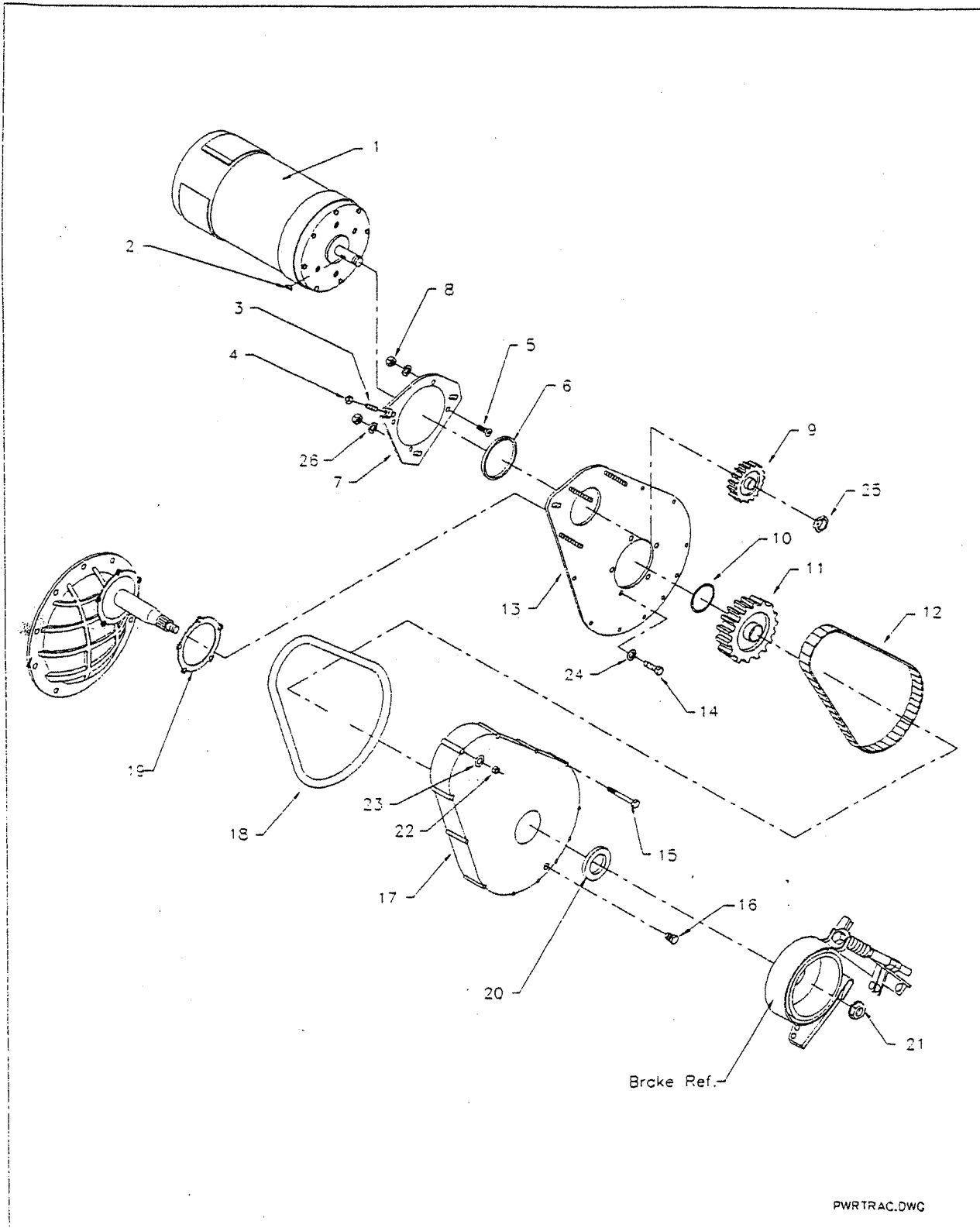
MOTORS.DWG

SECTION 4

MOTORS			
Item No.	Part No.	Description	Qty
	70-049-00	Motor-Complete; G.E. #5BC58JBS6110	1
1	70-210-62	Kit, Insulators, Motor Terminals	1
2	70-104-00	Brush Assembly, w/Stud	2
3	70-172-00	Brush Holder Assembly	1
4	85-412-00	Brush Spring	4
5	45-506-00	Oil Seal	1
6	80-504-00	Ball Bearing	1
7	80-209-00	Ball Bearing	1
	70-054-00	Motor-Complete; G.E. #5BC49JB399	1
1	45-508-00	Oil Seal	1
2	80-504-00	Ball Bearing	1
3	80-200-00	Ball Bearing	1
4	97-100-00	Woddruff Key	1
5	70-203-10	Field Coil Set	1
6	70-104-10	Brush Holder, w/Springs (includes: 12,13)	1
	70-210-62	Kit, Insulators, Motor Terminals (includes: 7,8,9,10)	2
7	98-622-00	Insulator Bushing	2
8	98-623-00	Insulator Bushing	2
9	97-178-00	Fiber Washer	4
10	97-179-00	Fiber Washer	2
11	70-105-00	Brush	4
12	n/a	Crossover, w/Terminal	2
13	85-412-00	Brush Spring	4
14	30-802-00	Brush Cover	4

SECTION 4

POWER TRACTION DRIVE

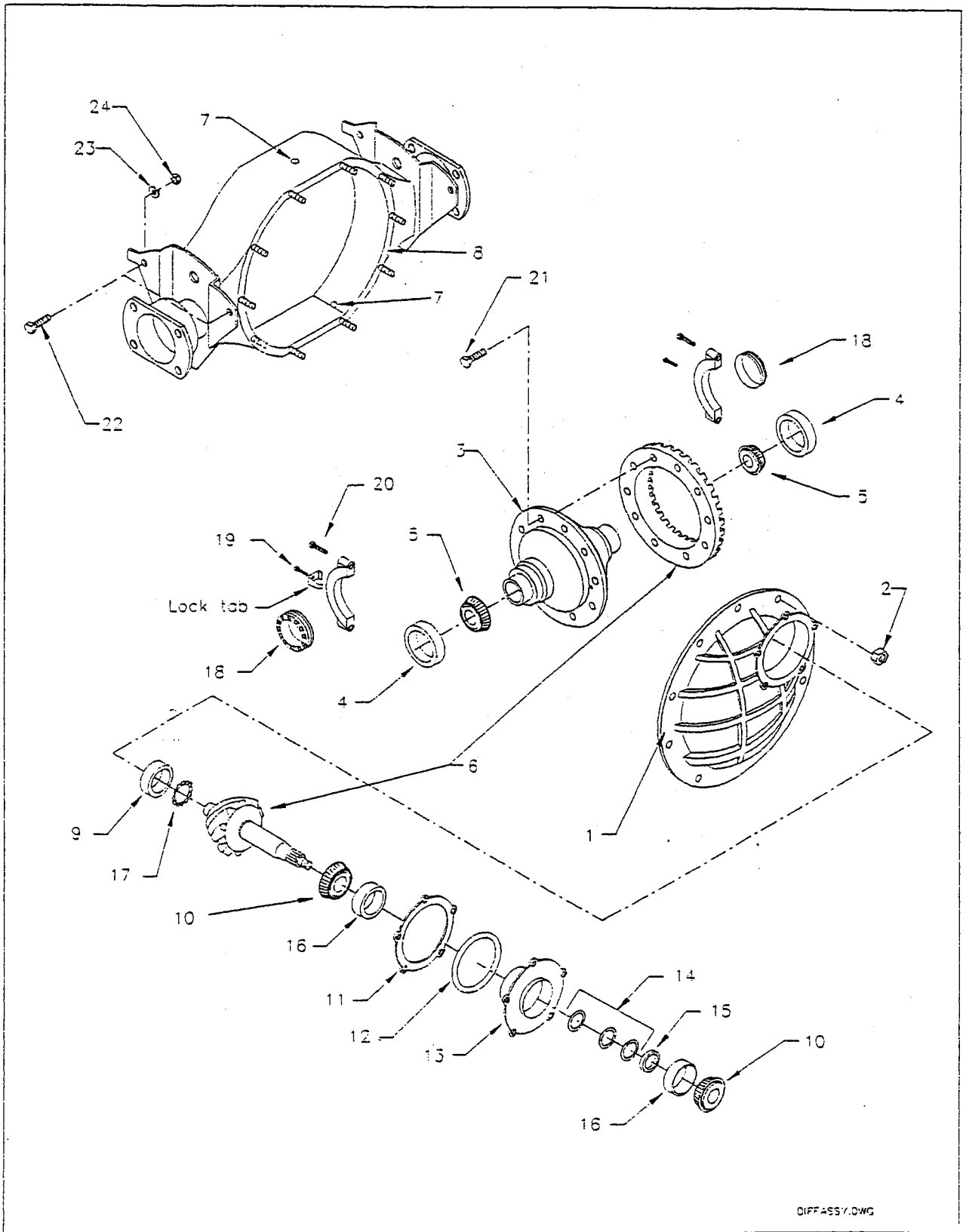


POWER TRACTION DRIVE			
Item No.	Part No.	Description	Qty
1	70-049-00	Motor, DC, 4.5/6.0 hp	1
1a	70-054-00	Motor, DC, 6.7/10.0 hp	1
2	97-100-00	Woodruff Key	1
3	88-087-11	Chain Adjusting Screw	1
4	88-069-80	Nut, 5/16NC	1
5	88-103-09	Motor Mounting Screw	4
6	80-703-00	O-Ring	1
7	70-454-00	Motor Mounting Plate	1
8	88-109-87	Nut. Keps, 3/8NC	3
9	30-080-00	Motor Sprocket	1
9a	30-081-00	Motor Sprocket	1
10	16-415-00	Spacer	1
11	30-093-00	Pinion Sprocket	1
12	30-508-20	Drive Chain	1
13	44-352-53	Backing Plate	1
14	88-101-13	Bolt, 3/8NC x 1-1/4" Hex Hd	5
15	88-080-19	Bolt, 5/16NC x 2-3/4" Hex Hd	9
16	41-989-00	Drain and Fill Plugs	2
17	43-201-20	Chain Cover	1
18*	45-002-00	Chain Case Gasket	1
19*	45-021-00	Backing Plate Gasket	1
20	45-331-00	Pinion Seal	1
21	97-250-00	Pinion Nut	1
22	88-089-81	Locknut, 5/16NC	12
23	88-088-61	Washer, 5/16 SAE	3
24	88-108-63	Lockwasher, Internal Tooth	5
25	88-239-82	Motor Nut	1
26	88-108-60	Washer, 3/8 Cut	3

* NOTE: We recommend using 94-430-03 silicone gasket compound in place of these gaskets. This compound provides a better seal, and is less likely to leak.

SECTION 4

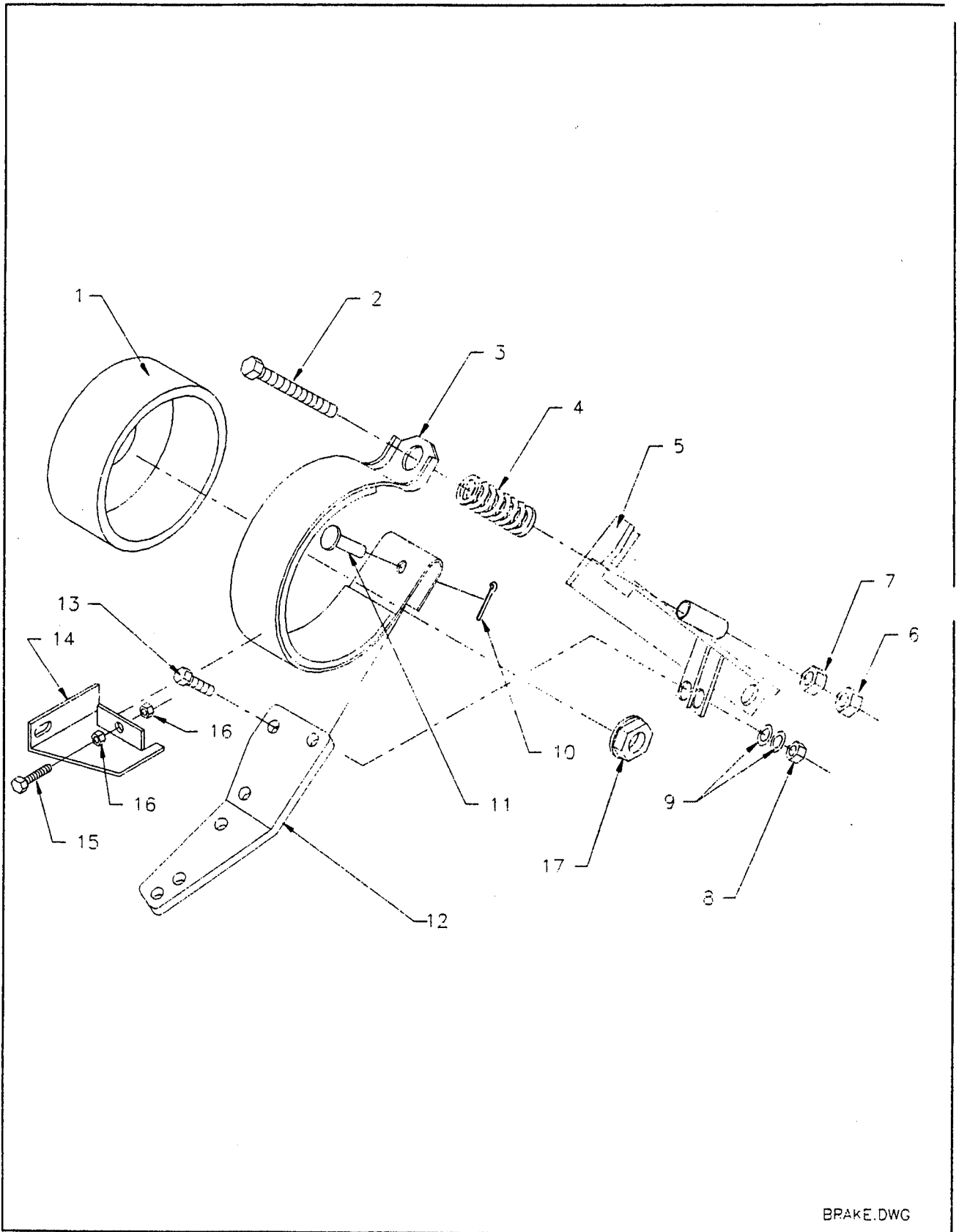
REAR DIFFERENTIAL



REAR DIFFERENTIAL			
Item No.	Part No.	Description	Qty
	44-340-09	3rd Member, 2.47/2.50-Complete	1
	44-340-10	3rd Member, 2.69/2.70/2.75-Complete	1
1	41-709-00	3rd Member Housing (small carrier bearing, 1.628"ID)	1
1a	41-710-00	3rd Member Housing (large carrier bearing, 1.784"ID)	1
2	88-119-80	Nut, 3/8NF	14
3	41-712-00	Carrier Assembly (small bearing)	1
3a	41-713-00	Carrier Assembly (large bearing)	1
4	80-127-00	Carrier Bearing Race (80-511-00 bearing)	2
4a	80-128-00	Carrier Bearing Race (80-512-00 bearing)	2
4b	80-129-00	Carrier Bearing Race (80-513-00 bearing)	2
5	80-511-00	Carrier Bearing, 1.628"ID (small)	2
5a	80-512-00	Carrier Bearing, 1.784"ID (large)	2
5b	80-513-00	Carrier Bearing, 1.7812"ID	2
6	31-235-00	Ring and Pinion Gear Set (2.75)	1
6a	31-239-00	Ring and Pinion Gear Set (5.43)	1
7	41-997-00	Oil Plugs	2
8	41-290-13	Differential Housing	1
9	80-555-00	Rear Pinion Bearing	1
10	80-554-00	Front Pinion Bearings	2
11	41-711-00	Pinion Housing Shim	1
12	80-702-00	O-Ring	1
13	44-340-90	Pinion Housing, w/Races	1
14	16-419-00	Shim, .002	as req'd
14a	16-420-00	Shim, .010	as req'd
14b	16-411-00	Shim, .005	as req'd
15	16-415-00	Spacer	1
16	80-125-00	Pinion Bearing Race	2
17	41-714-00	Pinion Bearing Retainer	1
18	41-707-00	Bearing Adjusting Nut (80-511-00 bearing)	2
18a	41-707-50	Bearing Adjusting Nut (80-512-00 bearing)	2
18b	41-708-50	Bearing Adjusting Nut (80-513-00 bearing)	2
19	88-080-04	Bolt, 5/16NC x 3/8" Hex Hd	2
20	88-140-16	Bolt, 1/2NC x 2" Hex Hd	2
21	96-243-00	Bolt, 7/16NC x 7/8" Hex Hd (locking)	10
22	88-140-14	Bolt, 1/2NC x 1-1/2" Hex Hd	4
23	88-148-62	Washer, 1/2"	4
24	88-149-80	Nut, 1/2NC	4

SECTION 4

BRAKE

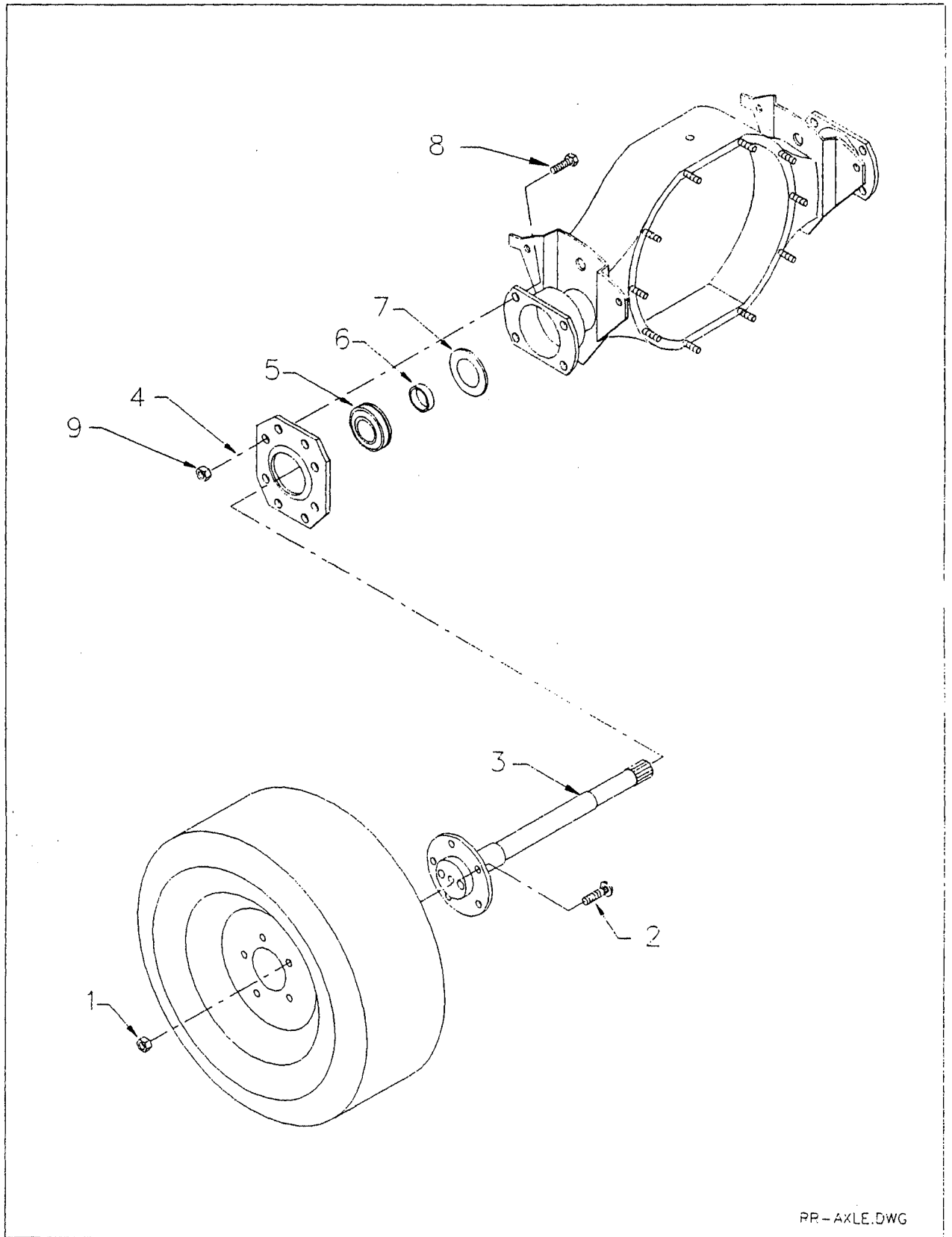


BRAKE.DWG

BRAKE			
Item No.	Part No.	Description	Qty
1	41-532-00	Brake Drum	1
2	96-245-10	Bolt, Brake Adjusting, 1/2NF	1
3	41-661-00	Full Brake Band	1
	41-661-60	Kit, Full Brake Band (includes: 2, 3, 4, 6, 7, 10, 11, 17)	1
4	85-060-20	Spring	1
5	41-372-10	Bracket, Brake Mounting	1
6	88-159-82	Nut, 1/2NF Jam	1
7	88-159-84	Locknut, 1/2NF	1
8	88-109-81	Locknut, 3/8NC	1
9	88-108-61	Washer, 3/8"	2
10	88-517-11	Cotter Pin	1
11	96-771-00	Clevis Pin	1
12	50-656-01	Brake Arm	1
13	88-101-13	Bolt, 3/8NC Hex Hd, Grade 5	1
14	41-371-10	Bracket, Brake Alignment	2
15	88-080-13	Bolt, 5/16NC x 1-1/4" Hex Hd	2
16	88-089-91	Nut, 5/16NC Jam	4
17	97-250-00	Pinion Nut	1

SECTION 4

REAR AXLE

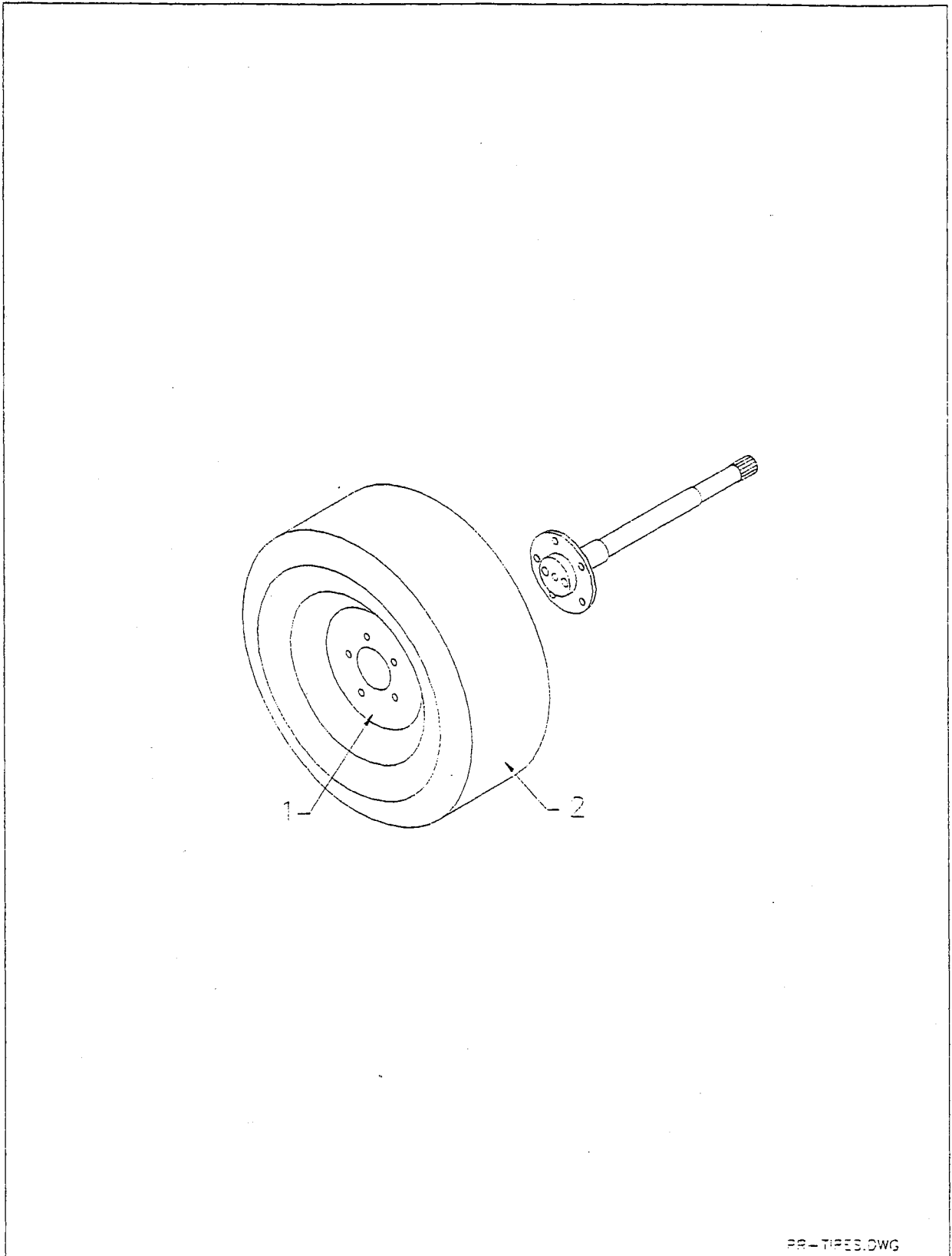


PR-AXLE.DWG

REAR AXLE			
Item No.	Part No.	Description	Qty
1	97-236-00	Wheel Lug Nut	10
2	96-329-10	Wheel Bolt	10
3	41-162-05	Axle, 10-13/16", Large Bearing, Right	1
3	41-163-05	Axle, 13-1/4", Large Bearing, Left (not shown)	1
4	32-514-00	Plate, Axle Retainer	2
5	80-503-00	Axle Bearing, Ball Type	2
6	32-515-00	Bearing Retainer	2
7	45-045-00	Gasket, Axle Bearing	2
8	96-330-20	Bolt, 3/8NF x 1-3/16" T Type	8
9	88-119-81	Locknut, 3/8NF	8

SECTION 4

REAR TIRES



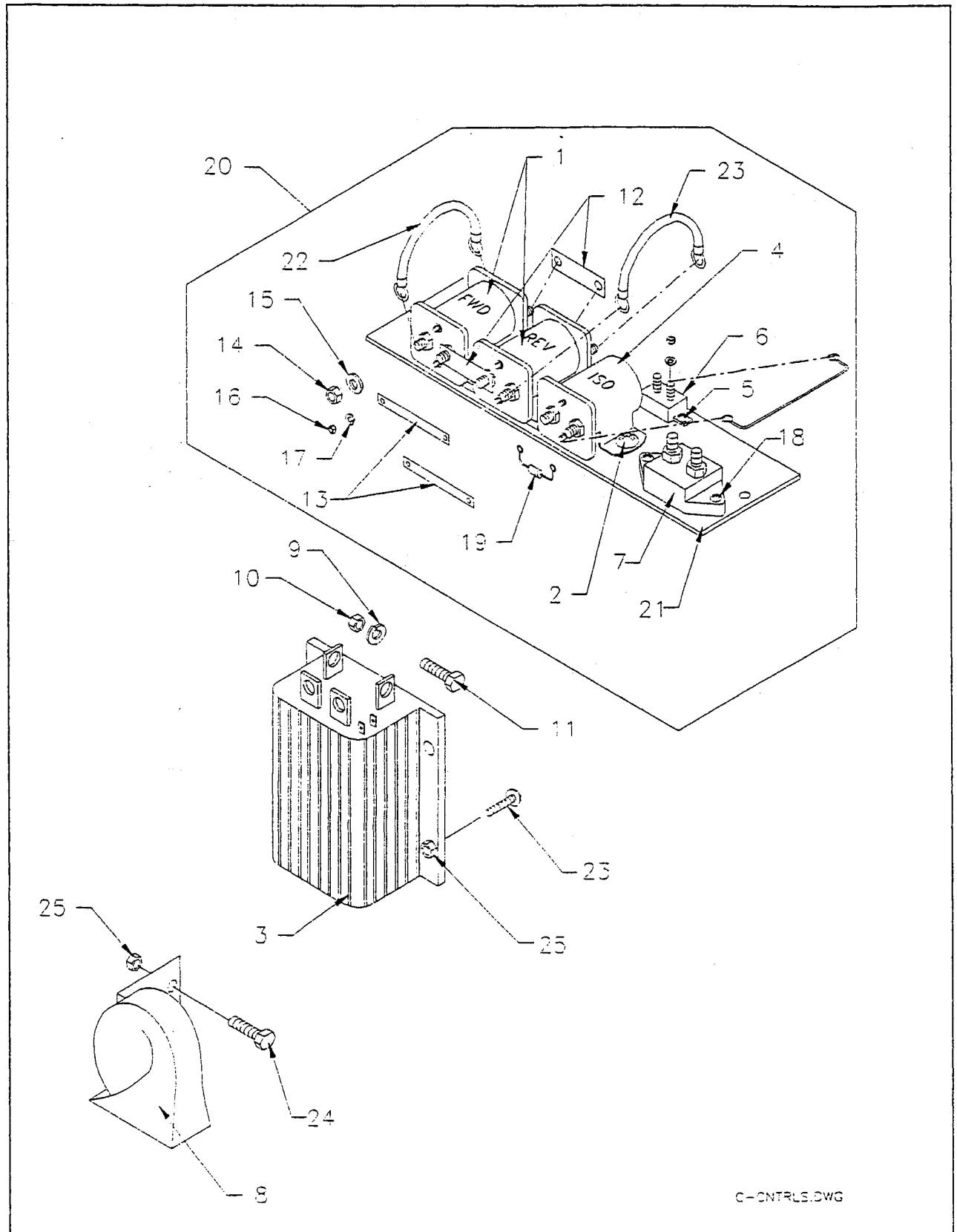
RR-TIRES.DWG

REAR TIRES			
Item No.	Description	Part No.	Qty
Std	Tire & Wheel Assy, 4.80 x 8	13-734-00	2
1	Wheel, 3.75", 5 hole	12-012-00	2
2	Tire, 4.80 x 8, Load Range B	10-075-00	2
Opt.	Tire & Wheel Assy, 4.80 x 8, Split Rim	13-734-11	2
1	Wheel, 3.75", 5 hole, Split Rim	12-042-00	2
2	Tire, 4.80 x 8, LR B	10-075-00	2
*	Tube, 4.80 x 8	11-030-00	2
Opt.	Tire & Wheel Assy, 4.80 x 8, Split Rim	13-734-15	2
1	Wheel, 2.50", 5 hole, Split Rim	12-041-00	2
2	Tire, 4.80 x 8, LR B	10-075-00	2
*	Tube, 4.80 x 8	11-030-00	2
Opt.	Tire & Wheel Assy, 4.80 x 8, Split Rim, Man-Toter	13-734-40	2
1	Wheel, 3.75", 5 hole, Split Rim	12-042-00	2
2	Tire, 4.80 x 8, Man-Toter	10-074-00	2
Opt.	Tire & Wheel Assy, 4.80 x 8, Split Rim, non-marking	13-734-41	2
1	Wheel, 3.75", 5 hole, Split Rim	12-042-00	2
2	Tire, 4.80 x 8, non-marking	10-074-10	2
Opt.	Tire & Wheel Assy, 16-1/4" x 4" x 11-1/4"	13-954-10	2
1	Wheel, Iron, 11-1/4" OD	12-054-00	2
2	Tire, Solid Cushion, 16-1/4" x 4" x 11-1/4"	10-261-00	2

* Not Shown

SECTION 4

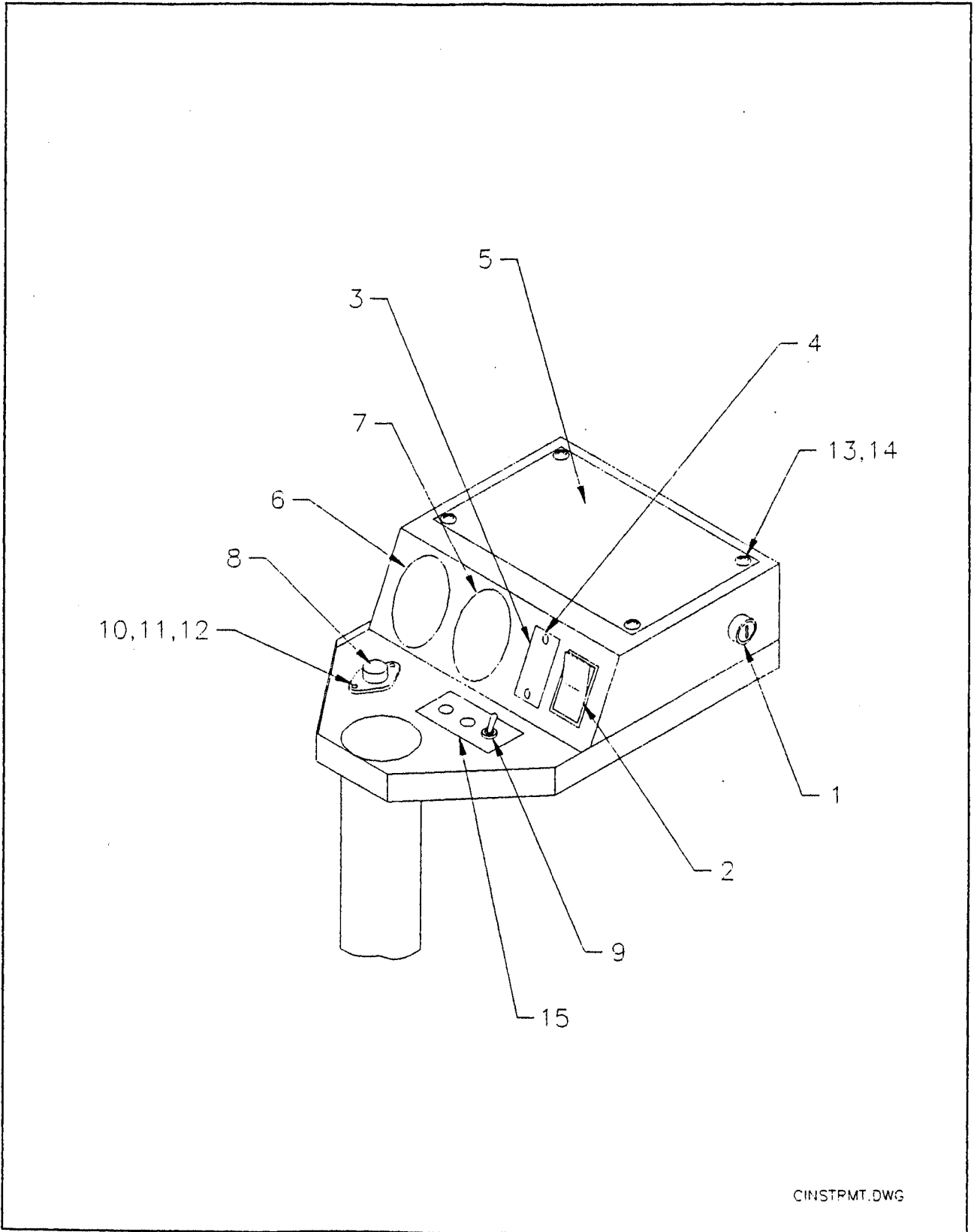
CONTROLLER & PANEL



C-CTRLS.DWG

CONTROLLER & PANEL			
Item No.	Part No.	Description	Qty
1	72-501-42	Forward or Reverse Solenoid, 24V, 200A (C4-33)	2
1a	72-501-39	Forward or Reverse Solenoid, 36V, 200A (C4-32)	2
2	88-838-06	Sheet Metal Screw, #14 x 1/2"	4
3	62-205-00	Speed Controller, 400A	1
4	72-501-43	ISO Solenoid, 24V, 200A (C4-33)	1
4a	72-501-38	ISO Solenoid, 36V, 200A (C4-32)	1
5	88-818-06	Sheet Metal Screw, #8 x 1/2"	2
6	79-840-00	Circuit Breaker, 10 amp	1
7	79-844-00	Circuit Breaker, 135 amp	1
8	73-004-10	Horn, 12 V	1
9	88-089-80	Nut, 5/16NC	4
10	88-088-63	Lockwasher, 5/16	4
11	88-080-11	Bolt, 5/16NC x 1" Hex Hd	4
12	61-838-41	Bus Bar, 5/8" x 1-1/2" Hole Centers	2
13	61-838-42	Bus Bar, 3/8" x 2-5/8" Hole Centers	2
14	88-099-91	Nut, 5/16NF Thin Pattern	10
15	88-088-63	Lockwasher, 5/16" Internal Tooth	10
16	88-049-80	Nut, #10-32	5
17	88-048-62	Lockwasher, #10	5
18	88-045-11	Screw, #10-32 x 1" Truss Hd	2
19	78-302-50	Resistor, 250 ohm, 5 watt	1
20	62-021-00	Solenoid Panel Assembly, 24V (C4-33)	1
20a	62-023-00	Solenoid Panel Assembly, 36V (C4-32)	1
21	01-432-26	Panel, Solenoid Mounting (painted black)	1
22	75-235-26	Jumper, 4 Ga., 6" Long	2
23	88-065-09	Bolt, 1/4NC x 3/4" Truss Hd	4
24	88-060-09	Bolt, 1/4NC x 3/4" Hex Hd	2
25	88-069-81	Locknut, 1/4NC	6
Not Shown	75-149-28	Harness, Power, Control Assembly	1
	75-148-23	Harness, Control, Vehicle	1

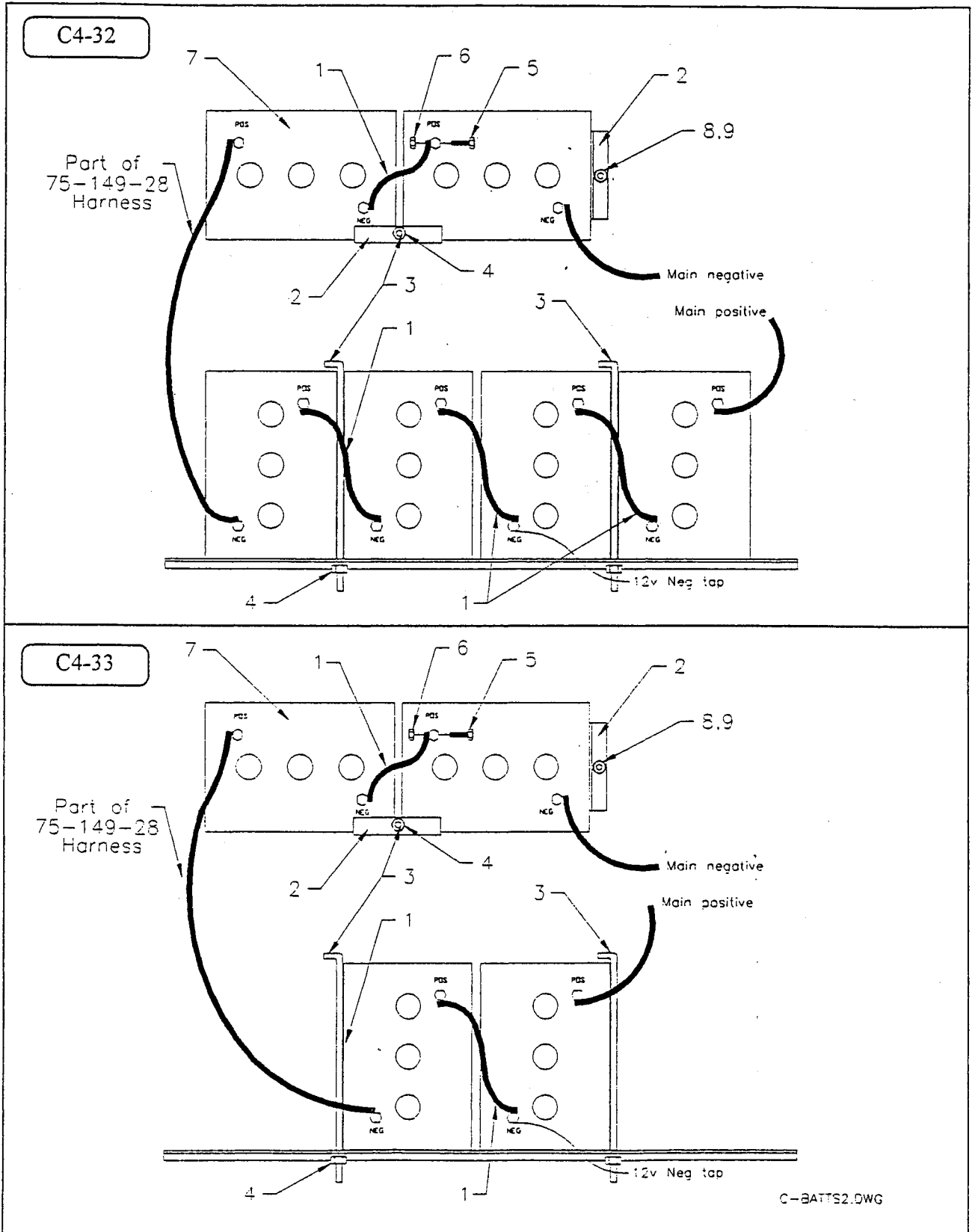
INSTRUMENTATION



CINSTPMT.DWG

INSTRUMENTATION			
Item No.	Part No.	Description	Qty
1	71-120-00	Ignition Switch, Keyed Alike	1
1	71-121-00	Ignition Switch, Keyed Unalike (optional)	1
2	71-039-00	Switch, Forward/Off/Reverse	1
3	94-312-00	Label, Forward/Off/Reverse	1
4	88-727-06	Pop Rivet, 5/32" x 1/2"	2
5	00-432-29	Cover Plate, Dash	1
6	74-009-10	Charge Indicator, 24 Volt	1
6	74-009-00	Charge Indicator, 36 Volt	1
7	74-000-00	Hourmeter, 12-48 Volts (optional)	1
8	71-501-00	Horn Button	1
9	71-100-00	Toggle Switch (with optional light)	1
10	88-025-06	Screw, #8-32 x 1/2" Truss Hd	2
11	88-028-62	Lockwasher, #8	2
12	88-029-80	Nut, #8-32	2
13	88-065-06	Screw, 1/4NC x 1/2 Truss Hd	4
14	88-069-81	Locknut, 1/4NC	4
15	94-304-00	Label, Console Switches	1

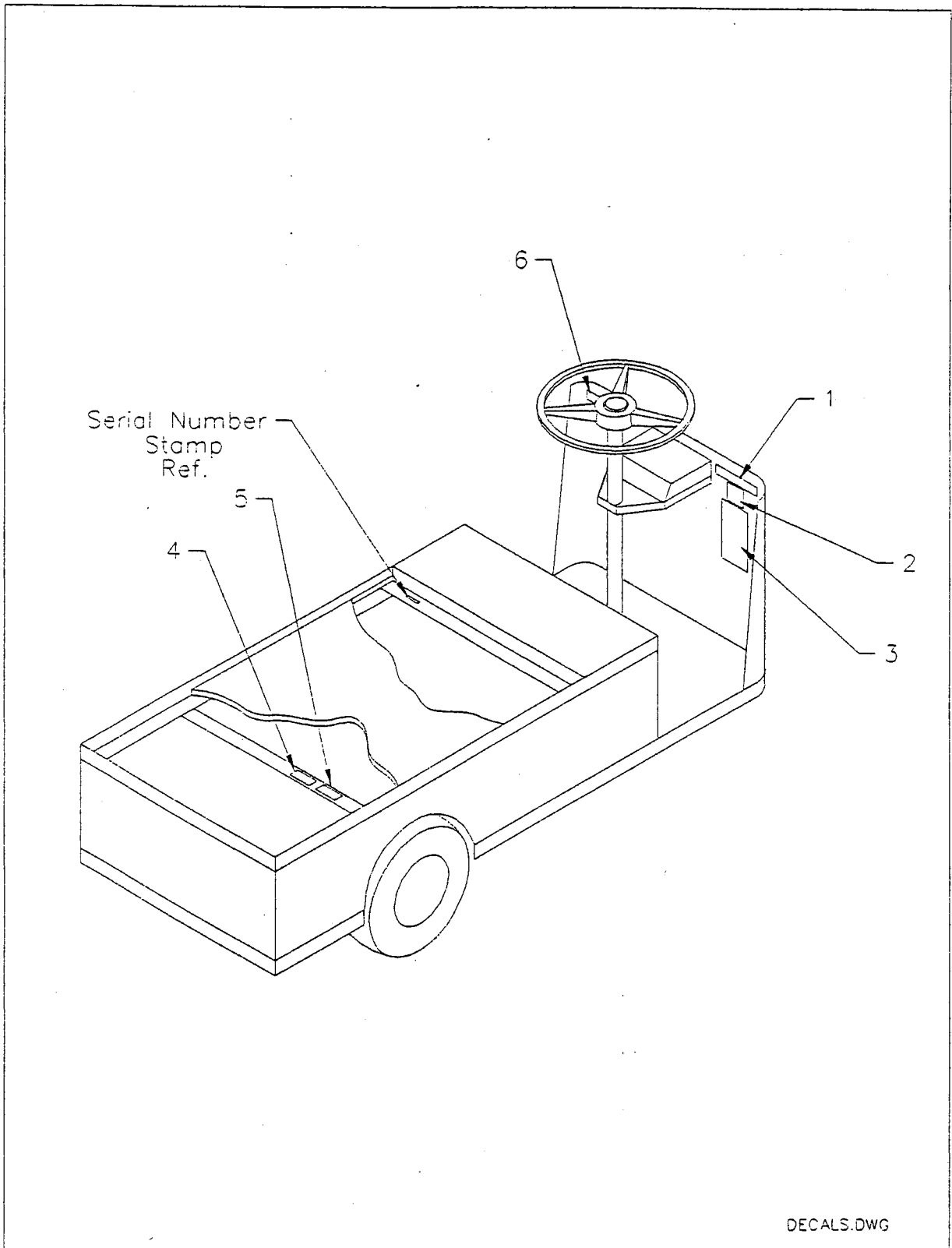
BATTERIES



BATTERIES			
Item No.	Part No.	Description	Qty
1	75-231-00	Jumper, Battery, 10-1/4" long	3
2	01-432-49	Angle, Battery Hold	2
3	50-227-00	Battery Rod	3
4	88-069-81	Locknut, 1/4NC	3
5	88-081-12	Bolt, 5/16NC Square Hd, Tin-Lead	8 or 12
6	88-089-80	Nut, 5/16NC, Tin-Lead	8 or 12
7	77-042-00	Battery, 6 Volt, 217 amp hour (standard)	4 or 6
7a	77-044-00	Battery, 6 Volt, 230 amp hour (optional)	4 or 6
7b	77-047-00	Battery, 6 Volt, 244 amp hour (optional)	4 or 6
7c	77-042-80	Battery, 6 Volt, 217 amp hour (optional, export)	4 or 6
7d	77-047-80	Battery, 6 Volt, 244 amp hour (optional, export)	4 or 6
8	88-100-09	Bolt, 3/8NC x 3/4" Hex Hd	1
9	88-109-87	Nut, 3/8NC Keps	1

SECTION 4

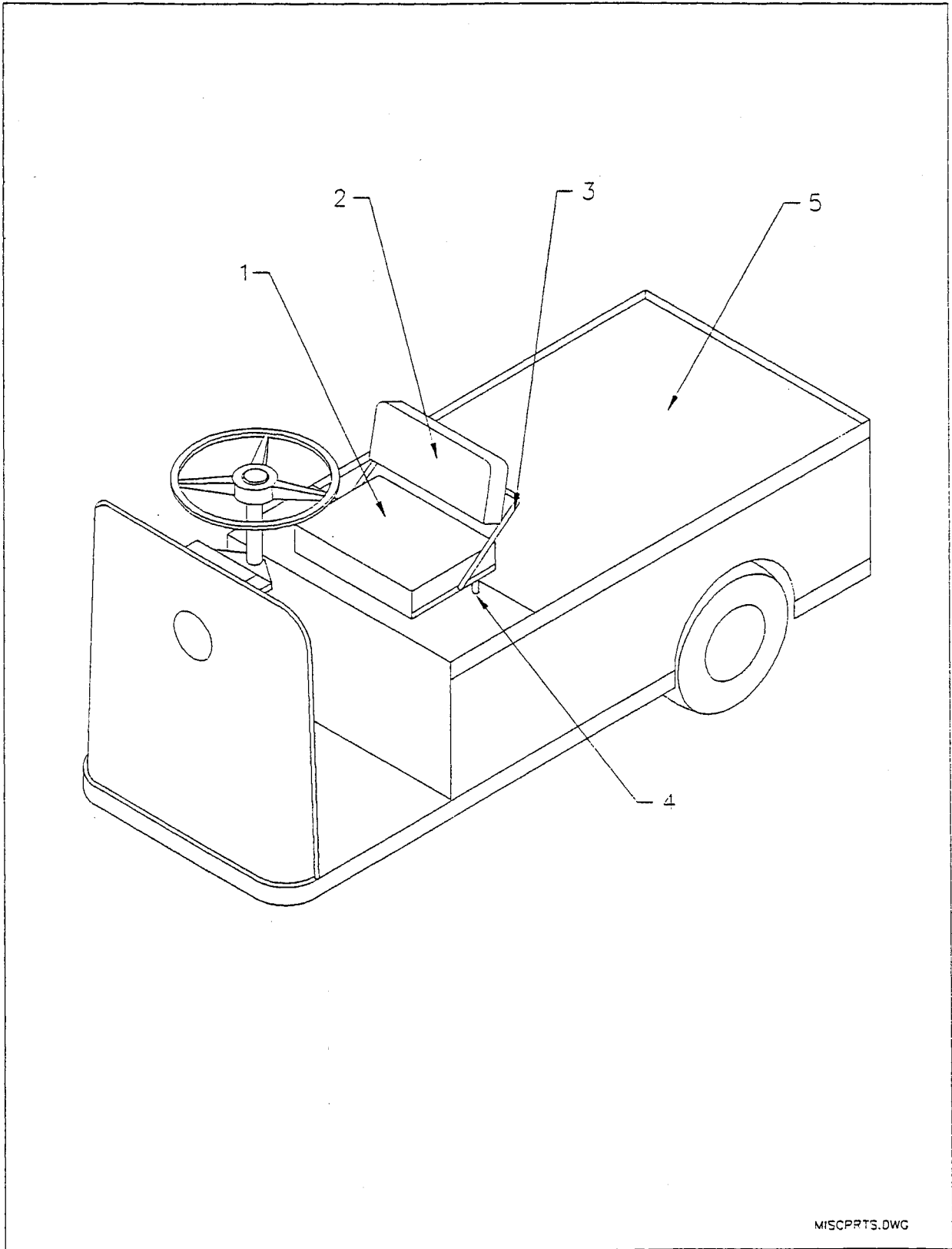
DECALS



DECALS			
Item No.	Part No.	Description	Qty
1	94-309-00	Decal Brake Warning	1
2	94-373-10	Decal, Vehicle Data	1
3	94-313-20	Decal, Safety Warning	1
4	94-319-00	Decal, Battery Disconnect	1
5	94-313-00	Decal, Battery Warning	1
6	94-384-01	Decal, Not Motor Vehicle	1
Not Shown	94-201-00*	Taylor-Dunn® Emblem	1
Not Shown	88-567-91	Fastener, Push On	3

* Located on the front cowl.

MISCELLANEOUS PARTS



MISCPRTS.DWG

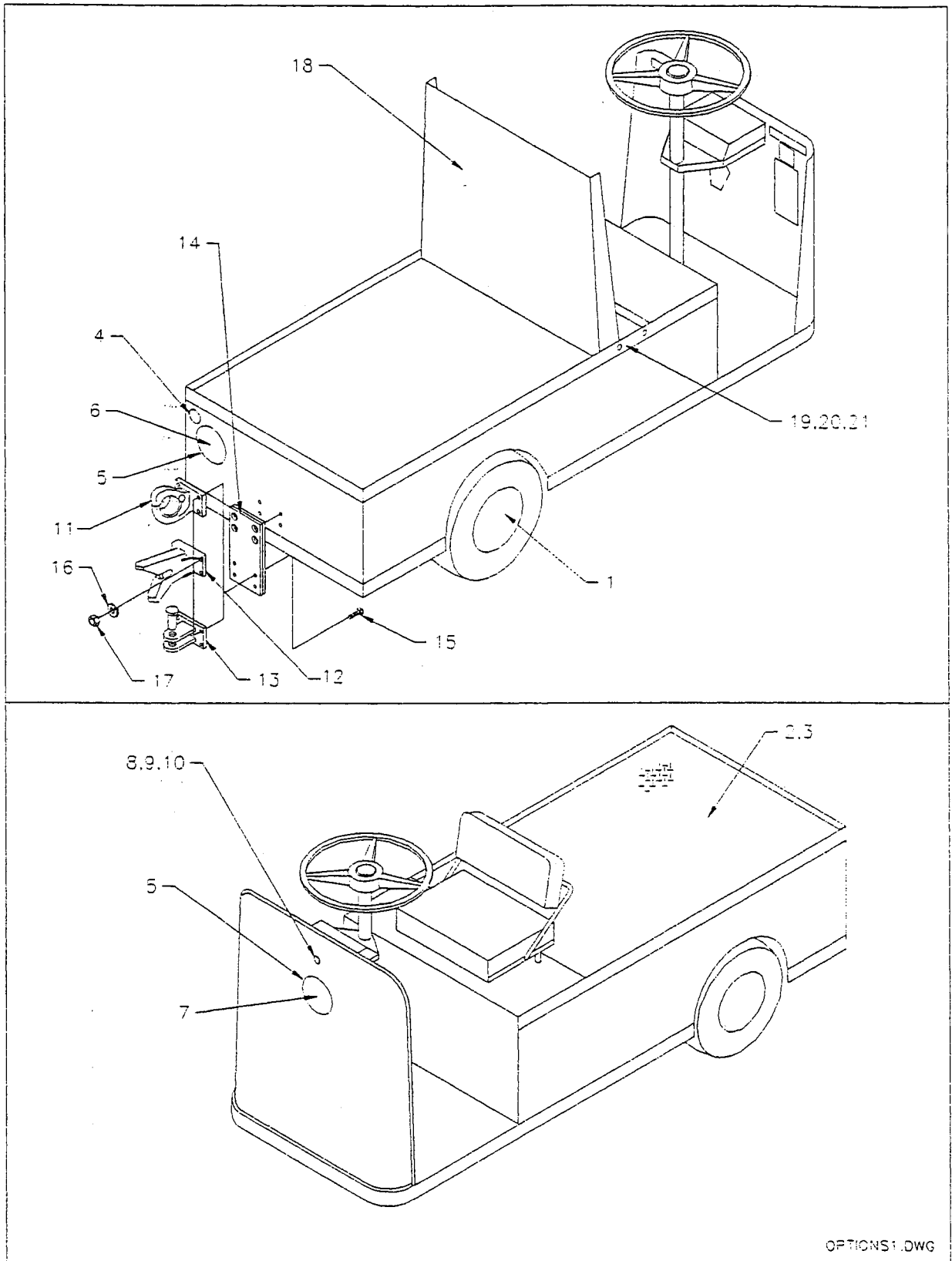
MISCELLANEOUS PARTS			
Item No.	Part No.	Description	Qty
1	90-001-00	Seat Cushion	1
2	90-000-00	Backrest	1
3	90-100-00	Seat Frame	1
4	90-100-51	Support Rod	2
5	90-420-00	Deckboard, 29-1/8" x 48"	1
Not Shown	88-837-11*	Screw, #14 x 1" Phillips Metal	8
Not Shown	88-107-09**	Screw, 3/8NC x 3/4" Square Hd Set	6

* These screws are used to mount seat cushion and backrest to the seat frame.

** These are used to tighten the seat frame to the support rods.

SECTION 4

OPTIONAL PARTS



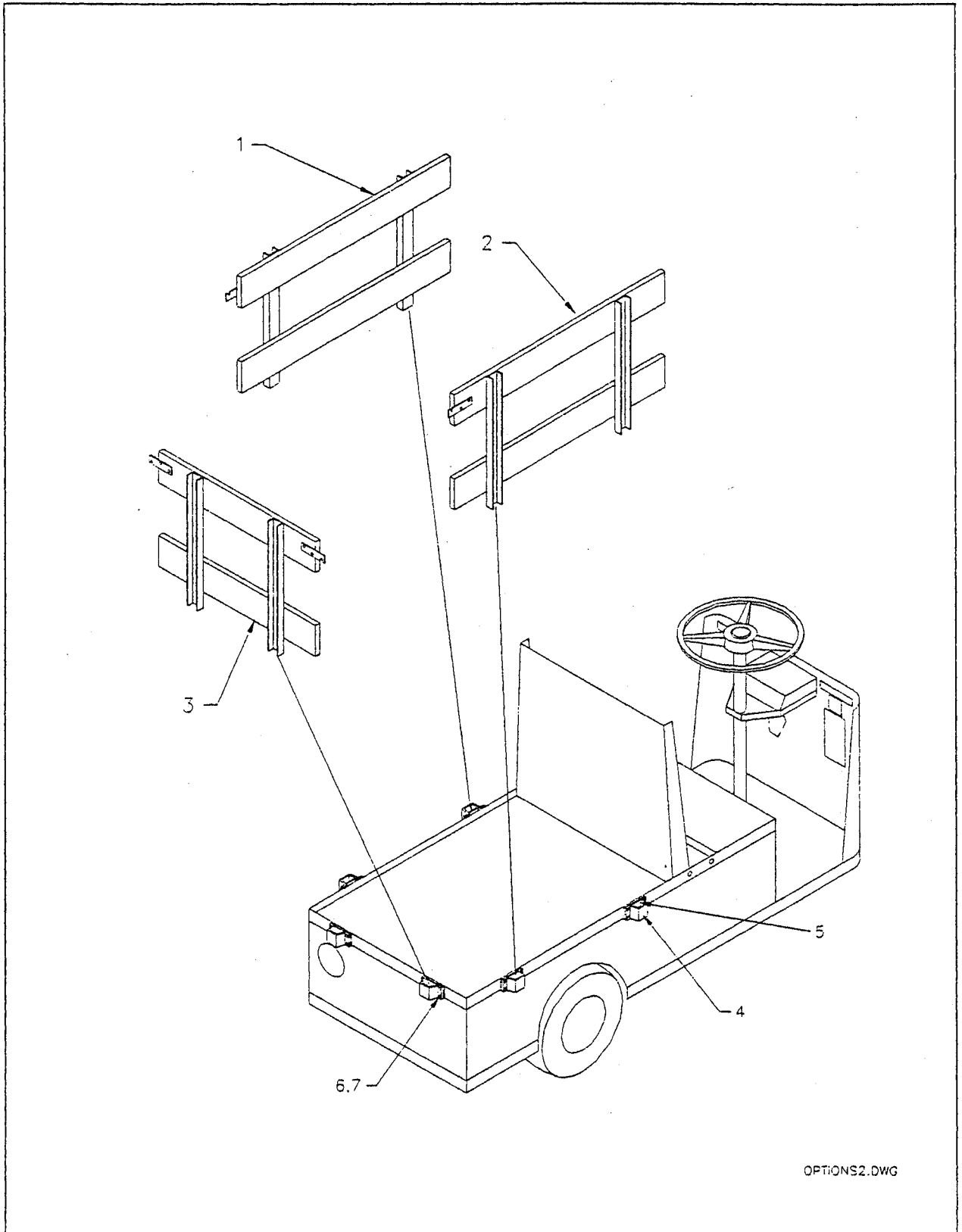
OPTIONS1.DWG

OPTIONAL PARTS			
Wheel Covers			
Item No.	Part No.	Description	Qty
1	92-000-00	Chrome Wheel Cover, 8"	2
1a	92-001-00	Chrome Wheel Cover, 6"	2
Diamond Plate Deck Cover			
2	90-420-40	Deck, Diamond Plate, 29-1/8" x 48", Black	1
3	88-607-09	Rivet, 1/4" x 1/2" Starpin	6
	90-420-60	Kit, Diamond Deck Cover, Black	1
Reverse Warning Beeper			
4	73-005-05	Alarm, Pulsating, 10V to 48V	1
No Headlight, No Taillight			
5	72-022-51	Mounting Ring, Rubber	2
6	30-805-00	Plate, Hole Cover	2
Headlight & Taillight			
6	72-022-00	Taillight Assembly, 12V	1
7	72-005-00	Headlight Assembly, 12V	1
Not Shown	72-005-05	Headlight Mount	1
8	88-102-11	Bolt, 3/8NC x 1" Carriage	1
9	88-108-60	Washer, 3/8" Cut	1
10	88-109-81	Locknut, 3/8NC	1
Hitches			
11	97-804-01	Hitch, Pintle Type	1
12	97-808-00	Hitch, Automatic Coupling	1
13	97-806-10	Hitch, Pin and Clevis	1
14	02-432-00	Plate, Hitch Mounting, Lowered	1
15*	88-140-14	Bolt, 1/2NC x 1-1/2" Hex Hd	4 or 8
16*	88-148-62	Lockwasher, 1/2"	4 or 8
17*	88-149-80	Nut, 1/2NC	4 or 8
Bulkhead, Bolt On			
18	01-432-90	Bulkhead (unpainted)	1
19	88-065-09	Screw, 1/4NC x 3/4" Phillips Truss Hd	4
20	88-068-62	Lockwasher, 1/4"	4
21	88-069-80	Nut, 1/4NC	4

* These quantities double when the drop hitch plate (#14) is used.

SECTION 4

OPTIONAL PARTS-cont'd

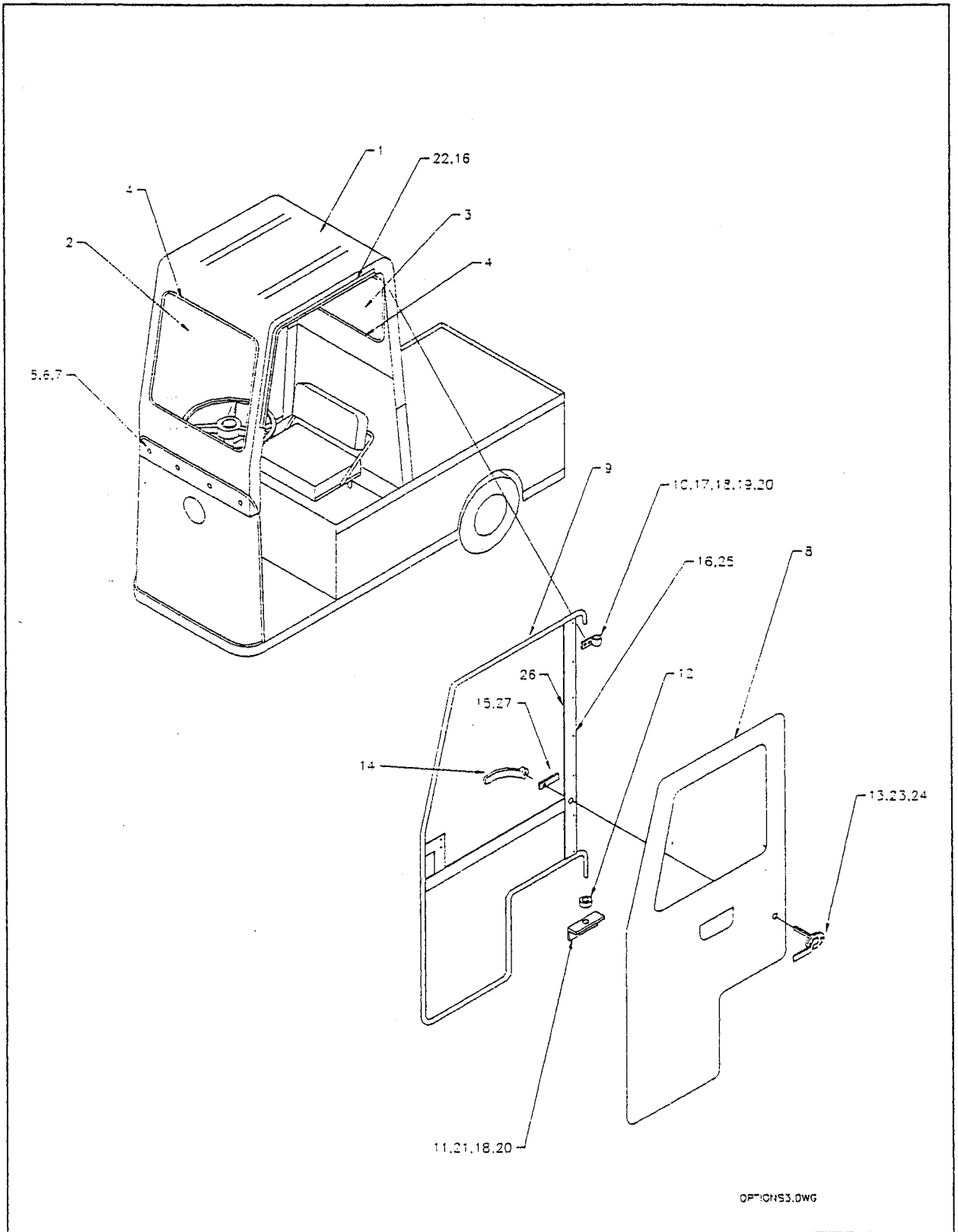


OPTIONAL PARTS-cont'd			
Stake Sides & End Gate*			
Item No.	Part No.	Description	Qty
1	90-550-03	Side Gate, Left	1
2	90-550-02	Side Gate, Right	1
3	90-550-01	End Gate	1
4	90-544-00	Stake Pocket, Outer (painted black)	6
5	90-544-10	Stake Pocket, Inner (painted black)	6
6	88-065-11	Screw, 1/4NC x 1" Phillips Truss Hd	24
7	88-069-81	Locknut, 1/4NC	24
	90-550-10	Kit, Stake Sides & End Gate (includes: 1,2,3,4,5,6,7)	1

* Requires the bolt on bulkhead option.

SECTION 4

OPTIONAL PARTS-cont'd



OPTIONAL PARTS-cont'd			
Cab, Fiberglass, w/Safety Glass***			
Item No.	Part No.	Description	Qty
1	91-005-00	Cab, Fiberglass	1
2	90-811-00	Windshield, Front	1
3	90-851-00	Rear Window	1
4	98-310-10	Window Channel, Rubber	13 ft
5	88-065-08	Screw, 1/4NC x 5/8" Phillips Truss Hd	8
6	88-068-62	Lockwasher, 1/4"	8
7	88-069-83	Acorn Nut, 1/4NC	8
	91-005-10	Kit, Fiberglass Cab	1
Doors, Naugahyde			
8	90-903-98	Side Curtain, Left	1
8a**	90-903-99	Side Curtain, Right	1
9	90-913-98	Frame, Side Curtain, Left	1
9a**	90-913-99	Frame, Side Curtain, Right	1
10	91-809-10	Hinge, Door Frame	1*
11	91-810-01	Angle, Lower Hinge	1*
12	17-104-00	Collar, 3/8"	1*
13	97-315-53	Handle, Door, Outer	1*
14	97-315-54	Handle, Door, Inner	1*
15	97-315-51	Latch, Door Handle	1*
16	88-727-06	Rivit, 5/32" x 1/2"	16*
17	88-065-08	Screw, 1/4NC x 5/8" Phillips Truss Hd	2*
18	88-068-61	Washer, 1/4" SAE	2*
19	88-068-62	Lockwasher, 1/4"	4*
20	88-069-83	Acorn Nut, 1/4NC	4*
21	88-065-06	Screw, 1/4NC x 1/2" Phillips Truss Hd	2*
22	94-011-00	Rail, Trim/Drip	1*
23	88-025-08	Screw, 8-32 x 5/8" Truss Hd Machine	2*
24	88-029-86	Locknut, 8-32	2*
25	97-304-50	Snap Fastener	6*
26	98-451-00	Tape, Weather Strip	3 ft*
27	88-027-03	Screw, 8-32 x 5/16" Set	1*
	90-903-60	Kit, Side Curtain, Left	1
	90-903-61	Kit, Side Curtain, Right	1

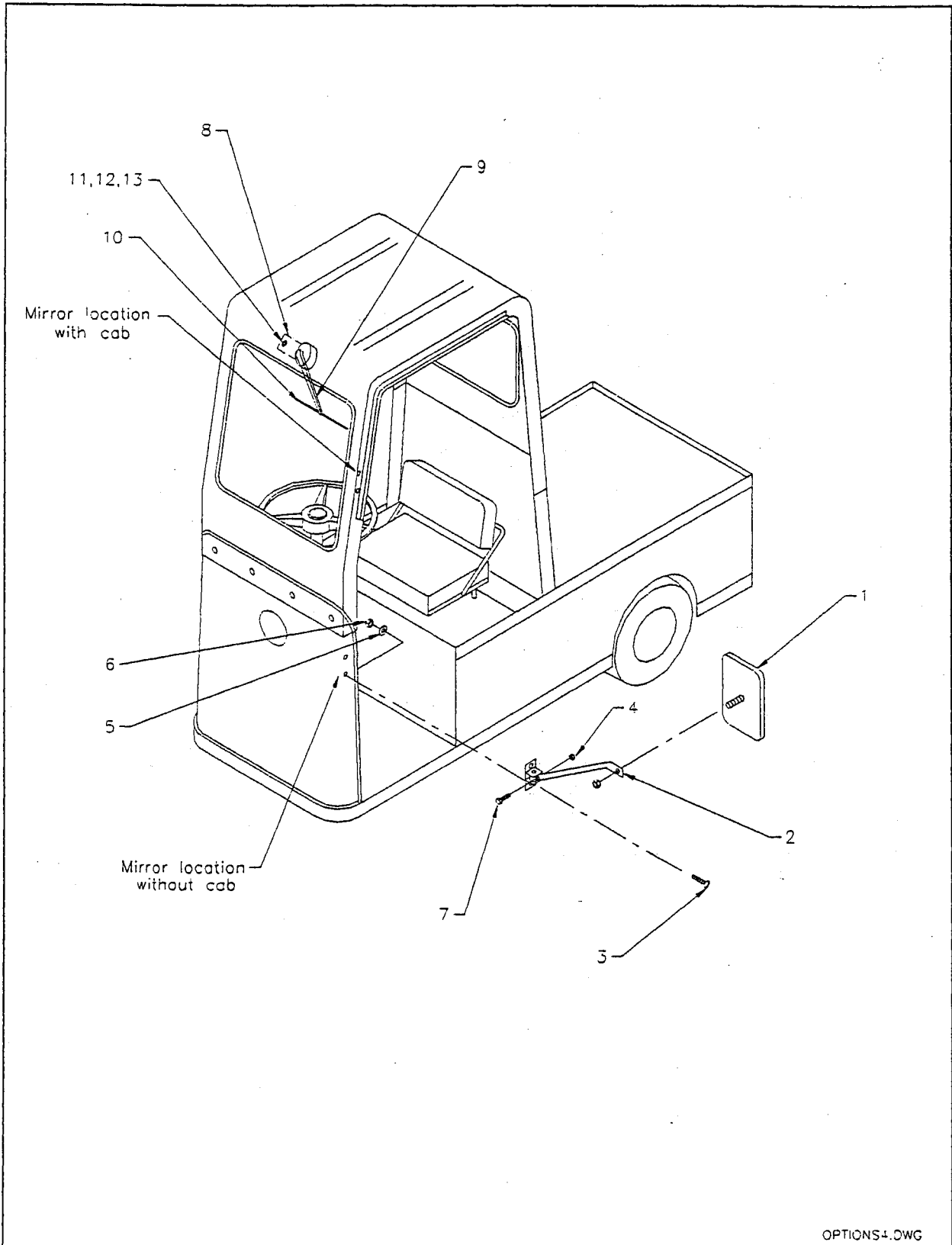
* Quantities are for one door only.

** Not shown in illustration.

*** Requires the bolt on bulkhead option.

SECTION 4

OPTIONAL PARTS-cont'd



OPTIONAL PARTS-cont'd			
Mirrors, Left or Right			
Item No.	Part No.	Description	Qty
1	92-201-00	Mirror, 4-1/2" x 8-1/2"	1*
2	92-202-00	Bracket, Mirror Mounting	1*
3	88-065-08	Screw, 1/4NC x 5/8" Phillips Truss Hd	2*
4	88-069-81	Locknut, 1/4NC	1*
5	88-068-62	Lockwasher, 1/4"	2*
6	88-069-83	Acorn Nut, 1/4NC	2*
7	88-060-09	Bolt, 1/4NC x 3/4" Hex Hd	1*
Windshield Wipers			
8	74-050-00	Windshield Wiper Motor	1
9	74-051-00	Arm, Windshield Wiper	1
10	74-052-00	Blade, Windshield Wiper	1
11	88-065-08	Screw, 1/4NC x 5/8" Phillips Truss Hd	1
12	88-069-87	Nut, 1/4NC Keps	1
13	88-069-83	Acorn Nut, 1/4NC	1
**	75-114-15	Harness, Wiper & Light	1
**	71-100-00	Switch, Toggle (located on the dash tray)	1
Stop Light, Mechanical Brake**			
	01-432-99	Support, Park Brake Switch	1
	17-104-00	Collar, 3/8"	2
	71-111-00	Switch, Brake Light, Mechanical	1
	71-135-00	Switch, Micro, w/Formed Lever	1
	75-007-02	Harness, Mechanical Stop Light	1
	88-014-13	Screw, 6-32 x 1-1/4" Round Hd	2
	88-019-80	Nut, 6-32	2
	88-045-06	Screw, 10-32 x 1/2" Truss Hd Machine	2
	88-048-62	Lockwasher, #10	4
	88-101-18	Bolt, 3/8NC x 2-1/2" Hex Hd, Grade 5	2
	88-108-60	Washer, 3/8" Cut	1

* Not shown in the illustration.

** No illustration for this option.



TAYLOR-DUNN®
Commercial and Industrial Vehicles Since 1949



**The Best Way To Go About
Your Business**