OPERATION
AND
MAINTENANCE MANUAL
WITH
PARTS LIST

MODEL	:	**C 4-10**
SERIAL NUMBER	:	**86757 - 91988**
YEAR	:	**1988 - 1991**
MANUAL NUMBER:		**MC-410-00**

- IMPORTANT -

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

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SECTION 3
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OPERATING RESPONSIBILITIES continued
ANSI B56.8-1981

507 OPERATOR CARE OF MACHINE

(a) At the beginning of each shift during which the Personnel and Burden Carrier will be used, the operator shall check the carrier condition and inspect the tires, warning devices, lights, battery, controller, brakes, and steering mechanism. If the carrier is found to be in need of repair, or in any way unsafe, or contributes to an unsafe condition, the matter shall be reported immediately to the designated authority, and the carrier shall not be operated until it has been restored to safe operating condition.

(b) If, during operating the carrier becomes unsafe in any way, the matter shall be reported immediately to the designated authority, and carrier shall not be operated until it has been restored to safe operating condition.

(c) Do not make repairs or adjustments unless specifically authorized to do so.

(d) The engine shall be stopped and the operator shall leave the carrier while refueling.

(e) Spillage of oil or fuel shall be carefully and completely absorbed or evaporated and fuel tank cap replaced before starting engine.

(f) Do not operate a carrier with a leak in the fuel system or battery.

(g) Do not use open flames for checking electrolyte level in storage batteries or liquid level in fuel tanks.

SECTION 6
MAINTENANCE PRACTICES

601 INTRODUCTION

Personnel and Burden Carriers may become hazardous if maintenance is neglected. Therefore, maintenance facilities, trained personnel, and procedures shall be provided.

602 MAINTENANCE PROCEDURES

(a) Maintenance and inspection of all Personnel and Burden Carriers shall be performed in conformance with the manufacturer's recommendations and the following practices.

(b) A scheduled preventive maintenance, lubrication, and inspection system shall be followed.

(c) Only qualified and authorized personnel shall be permitted to maintain, repair, adjust, and inspect Personnel and Burden Carriers.

(d) Before leaving the Personnel and Burden Carrier, stop carrier, place directional controls in neutral, apply the parking brake, stop the engine or turn off power, turn off the control or ignition circuit, and block the wheels if carrier is on an incline.

(e) Before undertaking maintenance or repair on carrier, raise drive wheels free of floor or disconnect battery, and use chocks or other positive carrier positioning devices.

(f) Block chassis before working under it.

(g) Before disconnecting any part of the engine fuel system of a gasoline or diesel powered carrier with gravity feed fuel systems, be sure shutoff valve is closed, and run engine until fuel system is depleted and engine stops running.

(h) Before disconnecting any part of the engine fuel system of LP gas powered carriers, close the LP gas cylinder valve and run the engine until fuel in the system is depleted and the engine stops running.

(i) Operation to check performance of the Personnel and Burden Carrier shall be conducted in an authorized area where safe clearance exists.

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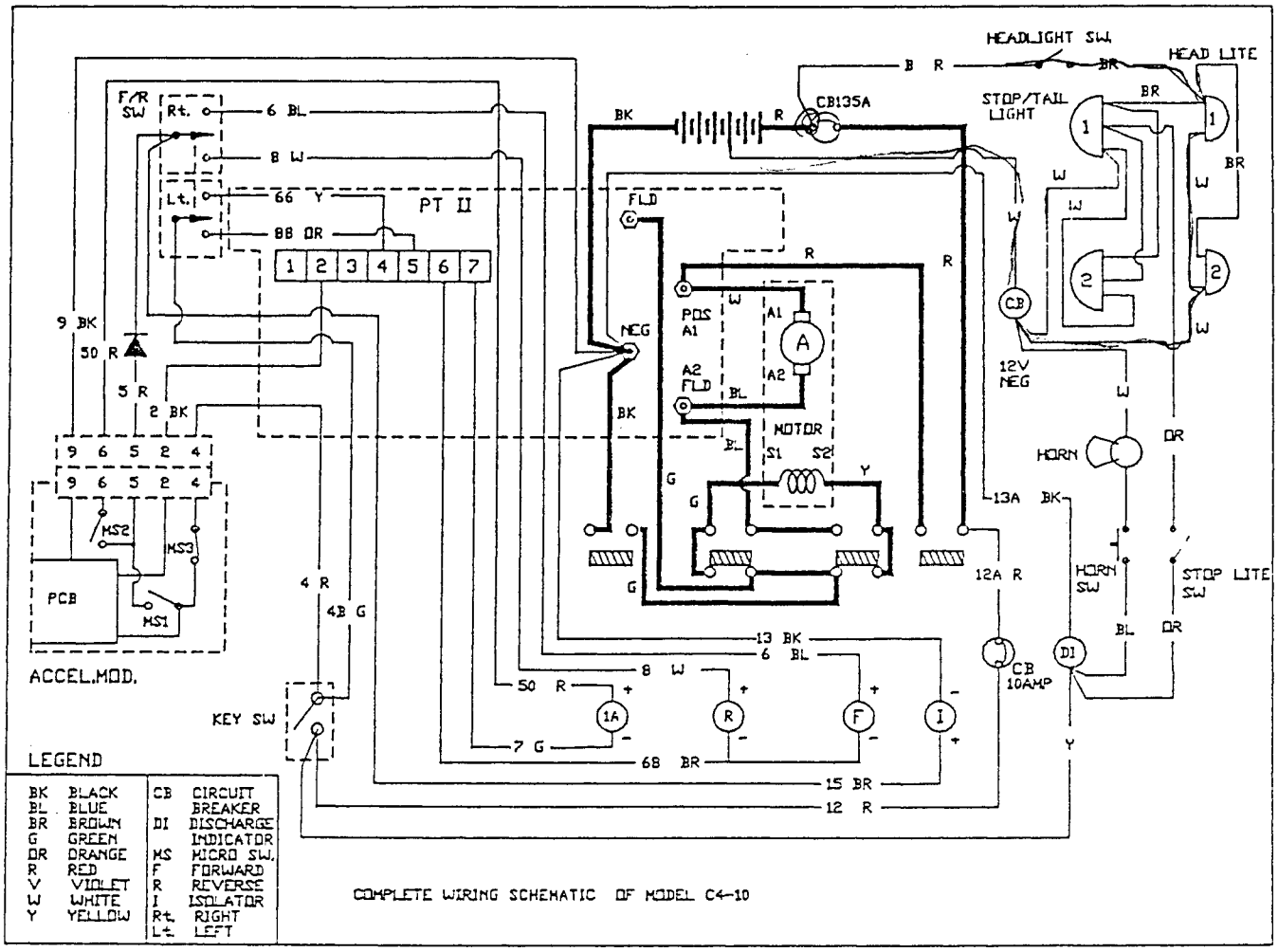
Figure 2



COMPLETE WIRING SCHEMATIC OF MODEL C4-10

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MAINTENANCE, SERVICE AND PARTS continued

Disassembly of "Power Traction" Rear Axle

1. Remove unit from chassis (As previously outlined).
2. Remove wheels and drain oil from housing.
3. Remove nuts and bolts, and remove drive case cover.
4. Remove 3 nuts and washers and remove motor and mount plate. (If motor requires further service, refer to appropriate Section 11 of this manual).
5. Remove chain and pinion sprocket. Observe location of spacers on shaft. Refer to Figure 5 for their correct location.
6. Remove five bolts holdig back plate and remove from carrier housing.
7. Disconnect hydraulic line.
8. Remove four bolts on each end holding axle retainer / brake holding plate and pull both axles.
9. Remove nuts around differential carrier housing and remove carrier from axle housing. (Note positon of clip for proper reassembly of brake spring.)
10. Mark one differential bearing cap and bearing support to ensure proper assembly. Remove adjusting nut locks, bearing caps, and adjusting nuts.
11. Remove drive gear from differential case.
12. Drive out differential pinion shaft retainer and separate the differential pinion shaft and remove gears and thrust washers.
13. Remove drive pinion retainer from carrier, Remove O-ring from retainer.
14. Remove pinion locating shim. Measure shim thickness with micrometer.
15. If the drive pinion pilot bearing is to be replaced, drive the pilot end and bearing retainer out at the same time. When installing, drive the bearing in until it bottoms. Install a new retainer with the concave side up.
16. Remove drive pinion retainer from carrier. Remove O-ring from retainer.
17. Press the pinion shaft out of front bearing cone and remove spacer.
18. Remove pinion bearing cone.
19. Do not remove pinion bearing cups from retainer unless they are worn or damaged. The flange and pilot are machined by locating on these cups after they are installed in the bores. If new cups are to be installed, make sure they are seated in the retainer by trying to insert a .0015" feeler gauge between cup and bottom of bore.

Re-Assembly of Power Traction Rear Axle

1. Differential Case: Place a side gear and thrust washer in the differential case bore. LUBRICATE ALL PARTS LIBERALLY WITH AXLE LUBRICANT DURING ASSEMBLY. With a soft faced hammer, drive pinion shaft into case only far enough to retain a pinion thrust washer and pinion gear. Place the second pinion and thrust washer in position. Drive the pinion shaft into place. Be careful to line up pinion shaft retainer holes. Place second side gear and thrust washer in position and instll differential case cover. Install retainer. A pinion or axle shaft spline can be inserted inside gear spline to check for free rotation of differential gears. Insert two 7/16" x 2" bolts through differential flange and thread them three or four turns into the drive gear as a guide in aligning the drive gear bolt holes. Press or tap the drive gear into positon. Install and tighten the drive gear bolt holes. Press or tap the drive gear into position. Install and tighten the drive gear bolts evenly and alternately across the gear to 60-65 lb. ft. torque.
2. If the differential bearings have been removed, use a suitable press to install them.
3. Pinion and Retainer: Install pinion rear bearing cone on the pinion shaft. Install spacer with shims on shaft. Place the bearing retainer on the pinion shaft, and install the front bearing cone.

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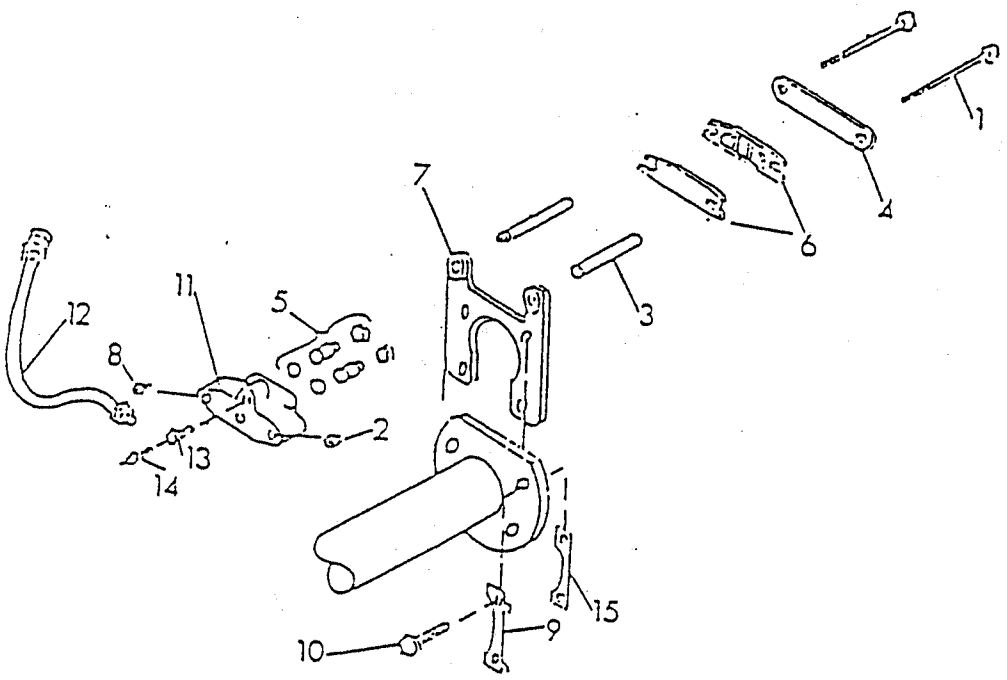
HYDRAULIC DISC BRAKES
FIGURE NO. 7



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PWR-TRON II

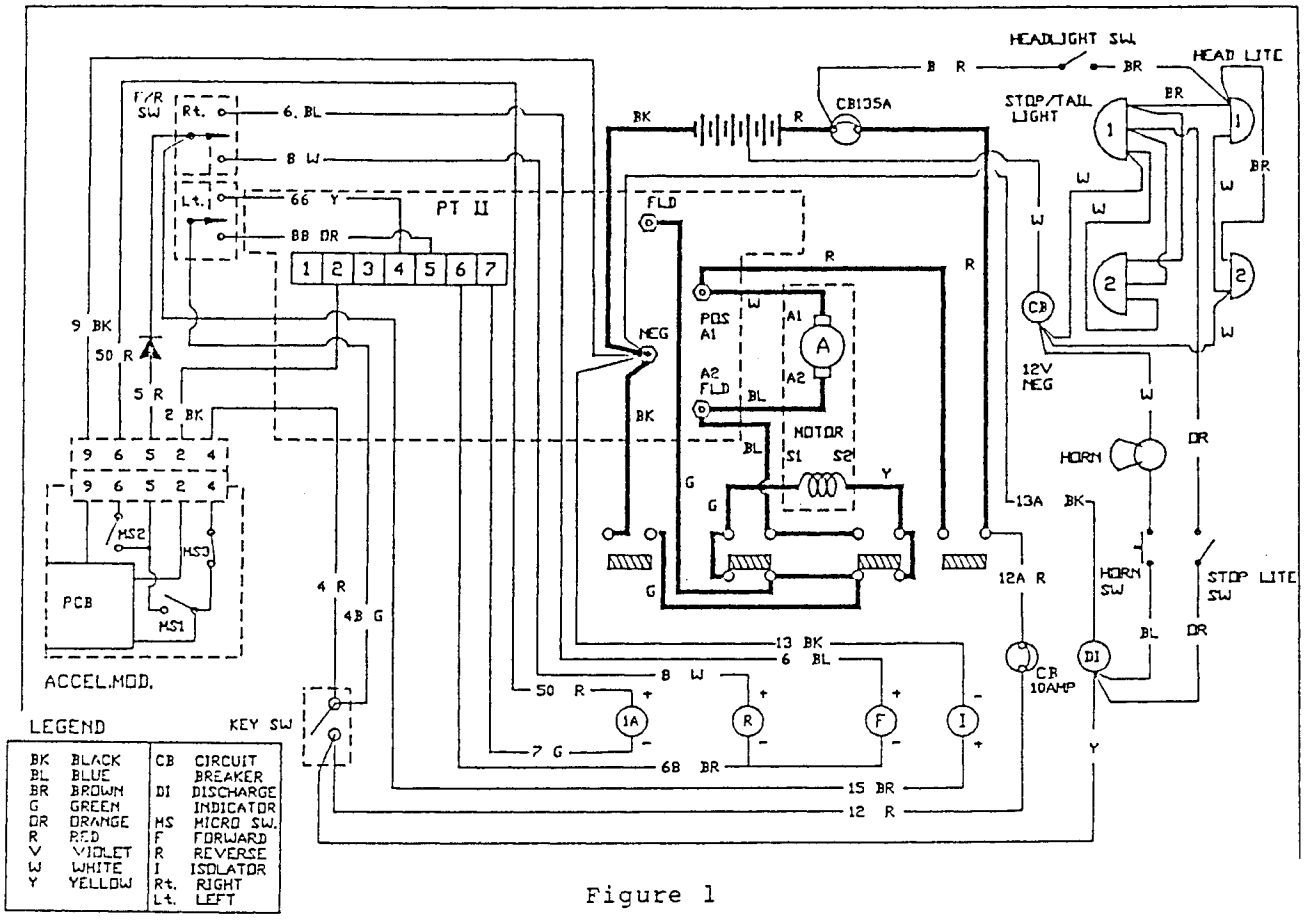

Figure 1

CIRCUITRY AND OPERATION

There are two circuits included in the operation of the PWR-TRON II, the control circuit and the power circuit.

The control circuit (light gauge wire) includes: key switch, seat switch, MS-1; activated by the accelerator module, the PWR-TRON solid state controller, forward-reverse switch and solenoid panel.

The power circuit (heavy gauge wire) includes the batteries, forward reverse switch and motor.

CONTROL CIRCUIT (See Figure 1, Shown in light lines) Control Harness 75-146-22. 75-146-32 is the control harness for tractor model C 4-10.

Forward Operation. 1) Turn key to "ON" position and move forward-reverse switch to forward position. 2) As the accelerator is depressed, a cam, MS1 closes providing a current path to the forward solenoid coil and closing forward contact on the forward-reverse switch. 3) The magnetic sensor on the PCB board will increase the PWR-TRON signal voltage moving vehicle forward reverse operation. As the accelerator is depressed, a cam on the PCB board will increase the voltage, moving the vehicle forward.

Reverse Operation. 1) Turn key to "ON" position and move forward-reverse switch to reverse position. 2) As the accelerator is depressed, a cam, MS1 closes providing a current path to the reverse solenoid coil and closing reverse contact on the forward-reverse switch. 3) The magnetic sensor on the PCB board will increase th PWR-TRON signal voltage moving vehicle forward reverse operation. As the accelerator is depressed, a cam on the PCB board will increase the voltage, moving the vehicle in reverse.

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PWR-TRON II
TROUBLE SHOOTING

	SYMPTOM	POSSIBLE CAUSE
1.	Vehicle will not reach full speed	Check that the accelerator is set up correctly and the voltage swing at logic pin 2 is correct (6.3 volts to 11 volts) Check acceleration setting on PWR-TRON II.
2.	Vibration or roughness when braking	Incorrectly adjusted BRAKE TRIMPOT. See Trimpot Adjust in this section.
3.	Weak and uneven braking forward and reverse.	Incorrectly adjusted BRAKE TRIMPOT. See Trimpot Adjust in this section.
4.	Very strong braking	Incorrectly adjusted BRAKE TRIMPOT. See Trimpot Adjust in this section. Armature and Field connections interchanged. Armature and Field cables not independently routed back to controller.
5.	Strong braking on freshly charged battery	BRAKE TRIMPOT set too high.
6.	Delay between operation of accelerator and motion of vehicle	CREEP TRIMPOT not set properly.
7.	Vehicle accelerates when key switch is on. No accelerator movement is necessary	CREEP TRIMPOT not set properly. Accelerator stop rest (mono directional) /center off rest position (Bi-directional) or linkages not correctly set up. Microswitch in accelerator not adjusted correctly.

SECTION 4: SERVICE PROCEDURES (continued)

SECTION 5: ILLUSTRATED PARTS BREAKOUT 65

LIST OF FIGURES

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 the 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 (optional), trim and other external parts for obvious damage.

Checking the Controls

Try each of the following controls before turning on the keyswitch:

- accelerator pedal
- brake pedal
- forward - reverse switch
- parking brake
- steering wheel
- horn
- lights

Each control should move 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.

Caution!

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.

MAINTENANCE CHECKLIST

WARNING!

To prevent uncontrolled starts, disconnect the main battery leads and remove the ignition key before performing maintenance on the vehicle.

PERIODIC MAINTENANCE CHECKLIST					
Maintenance Item	Weekly (30 hrs)	Monthly (120 hrs)	Quarterly (360 hrs)	Semi-yearly (720 hrs)	Yearly (1440 hrs)
*Check and adjust brake system .	-	✔	-	-	-
*Lubricate front wheel bearings (2 zerk fittings)	-	-	-	✔	-
*Check brake lining for wear.	-	-	✔	-	-
*Adjust front bearings.	-	-	✔	-	-
*Lubricate steering gear box.	-	-	-	✔	-
Check and fill batteries (use distilled water only).	✔	-	-	-	-
Wash batteries with water (use soda if necessary)	-	-	✔	-	-
Check motor brushes	-	-	-	-	✔
Check tire pressure	✔	-	-	-	-
Check front end alignment	-	-	✔	-	-
Lubricate all Zerk fittings.	-	✔	-	-	-
Lubricate all moving parts without Zerk fittings (use all-purpose oil).	-	-	✔	-	-
Clean and tighten all wire connections.	-	-	✔	-	-
Drain rear axle differential ; refill with SAE 30 oil. (DO NOT USE HYPOID 90W)	-	-	✔	-	-
Clean and repack front wheel bearings (use wheel bearing grease)	-	-	-	✔	-
NOTE: Items with an asterisk (*) are related to safety.					

Brake Troubleshooting (continued)

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Clunking noise when brakes are applied	Loose mounting bolts	tighten mounting bolts
	Worn spacers and bushings	Replace
	Loose mounting bolts	tighten
Scrapping or grinding noise when brakes are applied	Worn brake pads	Replace pads and disc
	Loose mounting bolts	tighten
Noise when brakes are applied	Discs and pads worn or scored. Note: Brakes generate noise and heat to dissipate energy and stop the vehicle. As a result, an occasional squeal is normal. This squeal can be aggravated by severe environmental conditions such as cold, heat, snow, salt, mud, etc. This occasional squeal is not a functional problem and does not indicate any loss of brake effectiveness.	Discs and pads worn or scored
	Disc brakes burred or rusted calipers	Clean or deburr
	Dirty, Greased, contaminated or glazed brake pads	Replace pads
	Bent axle and disc	Replace axle and disc
	Loose brake body bolts	Tighten
Chirping or squeaking noise when brakes are not applied	Bent axle and disc	Replace
	Misadjustment of master cylinder push rod	Adjust
	Weak or broken pedal return spring	Replace
	Worn spacers and bushings	Replace
	Worn or misadjusted wheel bearings	Adjust or Replace
	Brake mounting plate bent	Replace

ELECTRICAL SYSTEM

The vehicle's electrical system consists of the following:

- batteries
- electrical wiring
- emergency power shut off switch
- accelerator module
- speed control module

Service procedures for each item can be found as indicated.

WARNING!

Disconnect the main battery leads and remove the ignition key before working on any part of the vehicle's electrical system.

Batteries

Batteries will provide many years of operation if properly cared for. The following suggestions should be adhered to in order to obtain the maximum life from the batteries:

- New batteries should be given a full charge prior to use.
- All cells in the battery must be good. One or more defective cells will greatly reduce the operating capacity of the battery and can shorten the life of the remaining good cells. Check the voltage across each cell after charging to insure that they are all good. Cells can also be checked using a hydrometer.
- Vehicles should be charged everyday after use or when a low indication is seen on the charge status indicator.
- Batteries should not be left in a discharged state for extended periods of time.
- Batteries which are stored over extended periods of time should be charged every month.
- Avoid running batteries down to the point where the vehicle will not operate properly.
- Ambient storage and operating temperatures affect the capacity and life of batteries. Cold temperatures reduce capacity and high temperatures reduce battery life.
- Maintain the electrolyte at the proper level. The fluid should be replaced with distilled water.
- Water consumption increases with the age of the battery.
- Keep batteries and electrical connections clean.

FRONT AXLE

The front axle is designed for rugged, dependable service when properly maintained and lubricated (see Lubrication Chart in Section 3).

The steering worm gear box and steering arm are similar to those used in automobiles and require minimum maintenance.

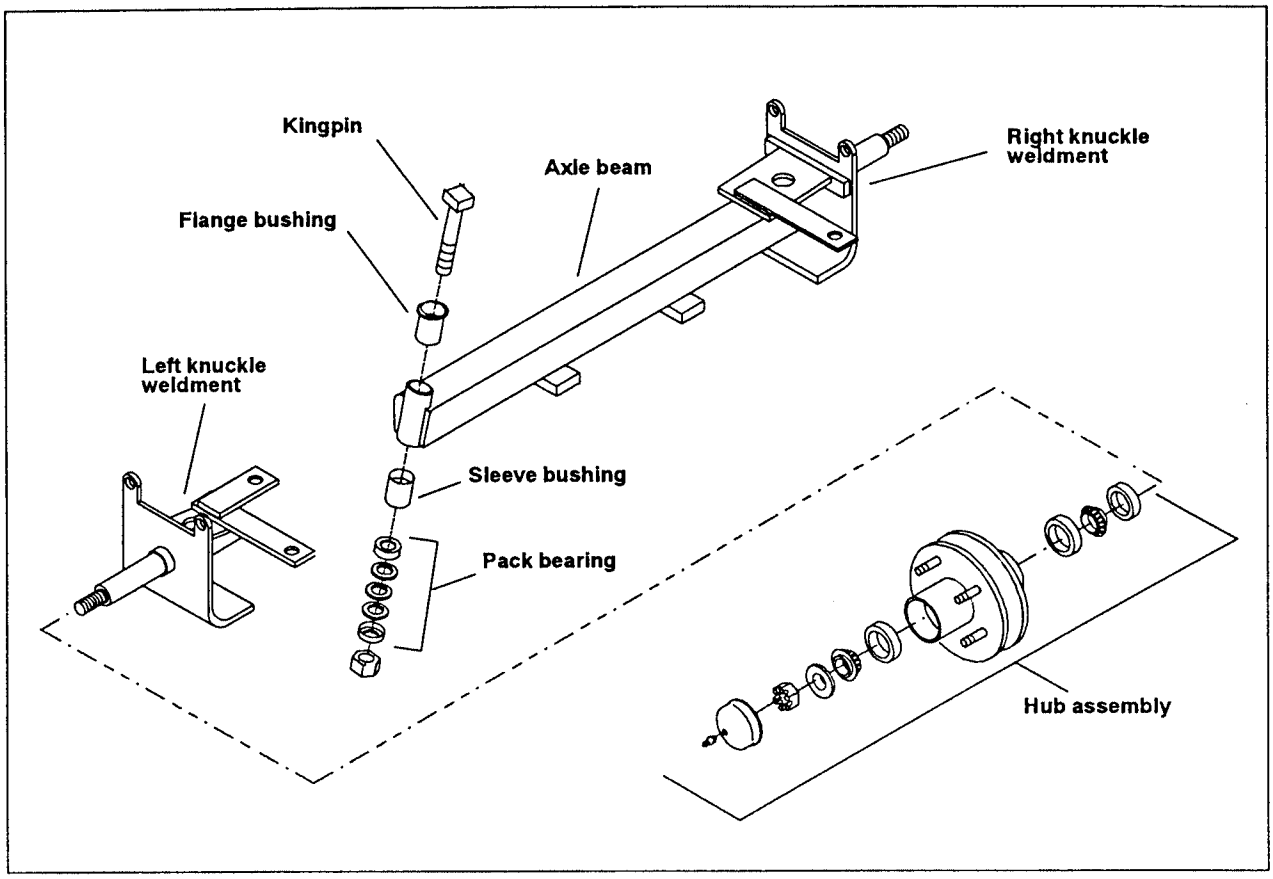

Figure 11 - Front axle

11 Engage chain onto motor sprocket and secure motor mounting plate to chain case backing plate with three nuts and washers previously removed.

12 Adjust drive chain as described in Section titled "Adjusting Drive Chain".

13 Install chain case cover and gasket (replace if damaged) to chain case backing plate. Install parking brake hardware. Tighten cover retaining bolts and nuts. Install parking brake drum, stake pinion nut.

14 Fill chain case with appropriate oil.

15 Connect the motor power leads.

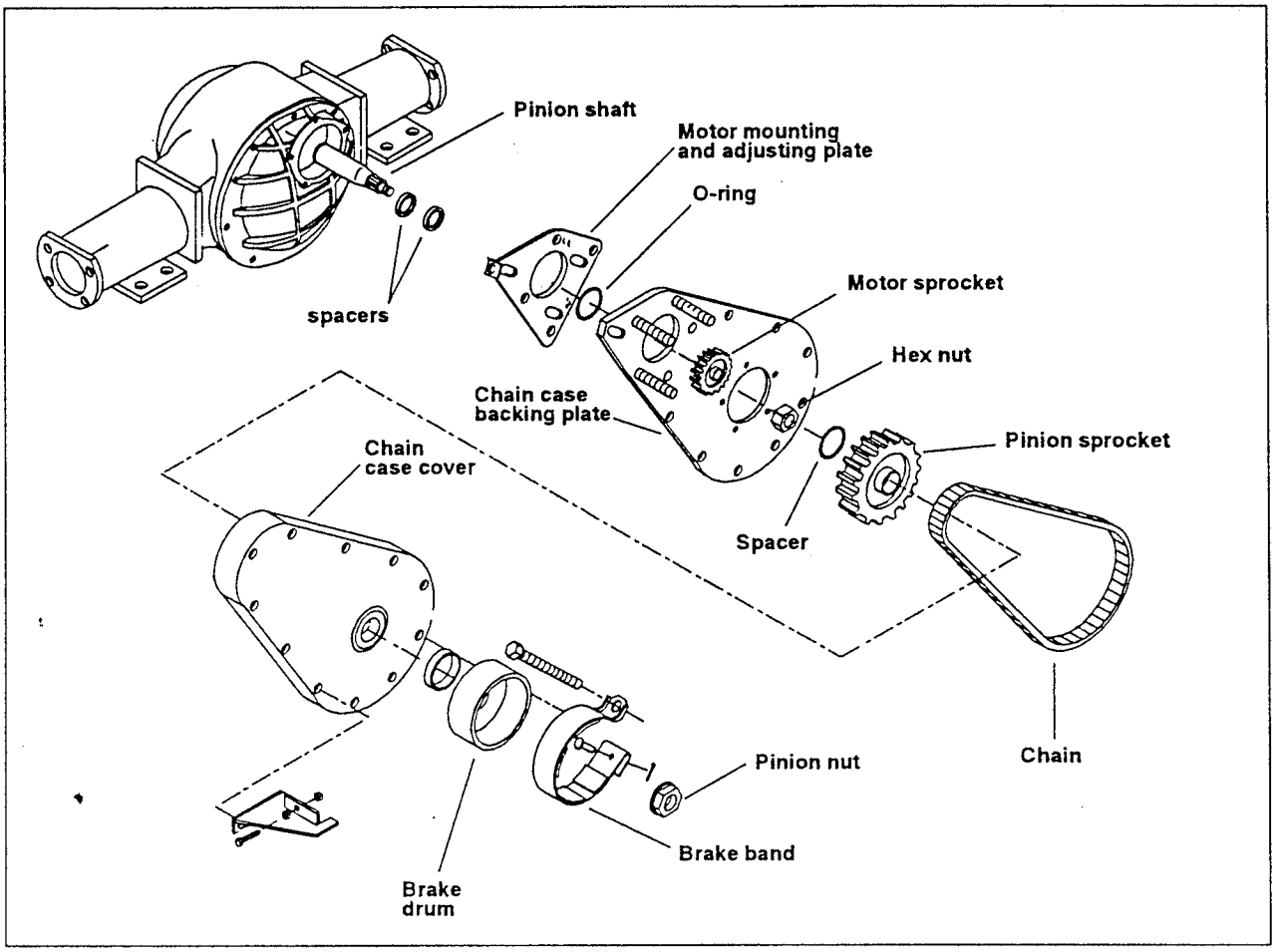

Figure 17 - Disassembling and Reassembling the Power Traction Assembly

ACCELERATOR, BRAKE PEDAL LINKAGE			
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	98-254-00	Pedal Pad, Accelerator, Aluminum	1
2	98-254-25	Pedal Mount, Accelerator	1
3	62-033-00	Accelerator Module, Solid State	1
4	98-200-00	Pedal Pad, Brake, Rubber	1
5	01-432-98	Weldment, Brake Pedal	1
6	00-410-17	Weldment, Brake Arm	1
7	80-410-20	Bearing, Flange	1
8	88-517-11	Pin, Cotter	1
9	96-771-00	Pin, Clevis	1
10	96-763-00	Clevis	1
11	88-119-80	Hex Head Nut, 3/8 NF	1
12	17-104-00	Collar, 3/8" Shaft	1
13	50-009-00	Rod, Master Cylinder	1
14	99-510-01	Master Cylinder	1
15	01-410-67	Mount, Brake Arm and Master Cylinder	1

FRONT BRAKE LINES			
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	99-571-00	Gasket, Copper	1
2	99-565-00	Fitting, Master Cylinder	1
3	99-600-54	Brake Line, Master Cylinder to Front	1
4	99-564-00	T-Fitting, Wagner	1
5	99-572-00	Gasket, Copper	1
6	99-578-00	Bolt, Hydraulic Swivel Fitting, Hex Head	1
7	71-110-00	Switch, Brake Light, Hydraulic	1
8	99-600-53	Brake Line, Formed	2

REAR AXLE DIFFERENTIAL			
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	44-340-28	Assembly, Differential, 5.43 Ratio, F2 (includes items 2 - 20 except 5)	1
2	88-140-16	Screw, Cap, Hex Head	2
3	41-707-00	Adjusting Nut, Differential Bearing	2
4	41-712-00	Differential, Small Carrier Bearing, 1.628" ID	1
4A	41-713-00	Differential, Large Carrier Bearing, 1.784" ID	1
5	45-042-00	Gasket, Differential Housing	1
6	41-710-05	Cover, Differential Housing	1
7	80-129-00	Race, Bearing, Tapered	2
8	80-513-00	Bearing, Roller	2
9	31-239-00	Gear Set, Ring and Pinion	1
10	41-711-00	Shim, Pinion	1
11	80-555-00	Bearing, Ball Pinion	1
12	41-714-00	Retainer, Bearing	1
13	80-554-00	Roller Bearing, Tapered	2
14	80-125-00	Race, Bearing, Pinion	1
15	80-702-00	O-ring, Pinion	1
16	44-340-91	Flange, Pinion	1
17	16-419-00	Spacer, .002"	2-6
18	16-411-00	Spacer, .005"	2-6
19	16-420-00	Spacer, .010"	2-6
20	97-250-00	Nut, Pinion	1