OPERATION

AND

MAINTENANCE MANUAL

WITH

PARTS LIST

MODEL:	**SC1-59,AN1-71**
SERIAL NO:	**81204-83805**
MANUAL NO:	**MA-159-02**

IMPORTANT

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

TAYLOR-DUNN®
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

- IMPORTANT INFORMATION -

This vehicle conforms to applicable portions of ANSI B56.8 (American National Standard Personnel and Burden Carriers). This manual is designed for use by Vehicle Operators and Service Personnel alike. Throughout the manual, there are various WARNINGS, CAUTIONS and NOTICES which must be carefully read to help reduce the possibility of personal injury. Maintenance personnel must understand that if a service procedure or method is used that is not recommended by Taylor-Dunn, it then becomes the personal responsibility of the person performing the work to first satisfy himself that neither his safety, the safety of others, or the safety of the vehicle will be endangered.

Definitions of the three terms are as follows:

WARNING - There is a potential for injury to yourself or others.

CAUTION - There is a potential for damage to the vehicle.

NOTE - Specific information clarifying or giving the reason for a particular maintenance or service procedure.

Before operating your Taylor-Dunn vehicle, it is your responsibility to read, understand and follow the safety and operating instructions contained in this manual to help ensure your safety and comfort. If this car is to be used for rental purposes, it is your responsibility to explain to the operator about the various controls and vehicle operating characteristics. Equally important is the operators need to know the basic rules required for safe operation of the vehicle in day to day usage. Sections 5 and 6 of ANSI B56.8 have been inserted in Section B, page 3 of this manual for your specific operating guidelines.

1. Vehicle is to be operated only by qualified persons and only in designated areas.

2. Vehicle will not be started until all occupants are seated.

3. Occupants must remain seated while vehicle is in motion.

4. Arms, legs and feet must be kept inside while vehicle is in motion.

5. Slow down when making a turn.

6. Drive slowly straight up and down inclines.

7. Set parking brake before leaving vehicle.

8. Forward/Reverse lever must be in the correct position for direction of travel desired.

WARNING: Failure to comply with above instructions could result in injury to the vehicle occupants, bystanders and to property.

TABLE OF CONTENTS

SECTION A
PAGE 1

INSPECTION, SAFETY, AND INTRODUCTION
ARRIVAL INSPECTION CHECK LIST

Visual Inspection should be made to determine that the truck has remained in good condition during transit. If any damage is found, the details should be noted on the delivery receipt immediately. After delivery the truck should be most carefully checked for HIDDEN DAMAGE. Any concealed damage not noted on the delivery receipt should be reported, in writing, to the delivering carrier within 48 hours.

The following checklist has been prepared to aid you during arrival and inspection of your vehicle.

A. Open all packages and examine any accessories which may be shipped detached from vehicle.

B. Examine wiring for visible evidence of damage. Check all connections to insure that none have loosened during transit.

C. Check all battery connections and electrolyte level in each cell.

D. Inspect battery charger in accordance with manufacturers installation instructions.

E. Check tires for damage and proper inflation. Check wheel lugs to insure they are tight.

F. If vehicle is equipped with hydraulic brakes, check hydraulic lines for evidence of damage.

G. Check brake fluid level in master cylinder.

H. Examine entire vehicle for damage such as dents or cracks.

I. Check operation of controls to see that they are working freely.

Upon completion of the Visual Inspection and review of the safety recommendations on Page 2 of SECTION A, an operational test should be made. Refer to operating instructions in SECTION B.

SECTION A
PAGE 2

INSPECTION, SAFETY AND INTRODUCTION
SAFETY

The safe and satisfactory use of any vehicle is a responsibility shared by many persons.
As the manufacturer, we feel that it is our responsibility to emphasize vehicle characteristics and make safety recommendations regarding those characteristics. That is the primary purpose of this portion of the manual.
Persons who operate this vehicle need to be aware of, and to observe, the safe driving rules established in their locality, and need also to be aware of the vehicle operating characteristics and safety recommendations of the manufacturer, to assist them in exercising the judgment necessary to prevent injury to themselves or to others.
Persons who service and maintain the vehicle need to be aware of how their activities relate to safe vehicle operation, and of potential hazards involved in the service and maintenance processes, to assist them in applying sensible judgment of those processes.

STEERING: This vehicle has a very small minimum turning radius, and low ratio steering leverage.
These characteristics, so desirable for manueverability at slow speeds, require that great care be exercised at high speeds to avoid turning so sharply that one or more wheels lose contact with the ground, or that the vehicle is caused to overturn. Be especially careful while traveling on an incline. Avoid sharp turns, even at slow speeds.

SPEED: This vehicle is designed to attain its maximum safe operating speed on level ground. That speed can easily be exceeded when traveling downhill. If this is allowed to occur, vehicle stability and braking performance become unpredictable. Do not exceed, under any conditions, the maximum speed the vehicle can obtain on level ground.

CONTROLS: Bring the vehicle to a complete standstill before operating the forward/reverse switch to change direction of travel. Operation of this control while the vehicle is in motion can result in complete loss of power and brakes. Do not use the accelerator to hold the vehicle at a standstill on an incline. This can cause complete power loss. Use only the brakes to hold the vehicle at rest while on a hill.

BRAKES: The brake system relies on contact of rear tires with the ground for effectiveness. As tire to ground contact is reduced, braking effect is reduced. While driving, the operator must consider terrain, speed, and steering maneuvers to prevent tires from losing contact with the ground, with consequent reduction of braking action.

MAINTENANCE: Many operating characteristics relate to maintenance in ways which are not readily obvious. Those maintenance characteristics most closely related to vehicle operating safety are indicated in SECTION E, PAGE 1, AND SECTION D, PAGE 1 AND PAGE 2.
Also to be considered is the safety of personnel who perform service and maintenance duties. Two characteristics need special emphasis.
1. This electric vehicle does not "idle" noisily, is never "out of gear", and is set into motion whenever the battery to motor circuit is closed, intentionally or otherwise. Whenever practical, disconnect battery leads to avoid unintentional starting of the motor during servicing or maintenance.
2. Batteries emit gasses which can be explosive, especially while they are being charged. Personnel who are involved with servicing vehicles, or maintaining vehicles, need to be made familiar with this hazard. A detailed explanation is contained on PAGES 1 and 3 of SECTION J8.

SECTION A
PAGE 3

INSPECTION, SAFETY, AND INTRODUCTION

SAFETY (CONT'D)

CAUTION:

1. When performing maintenance on any part of the electrical system, disconnect main battery leads, place Forward/Reverse Switch in neutral, turn key to off position and remove from switch. Set Parking Brake.

2. Never replace a circut fuse with one having a higher rating than the original equipment fuse. Fuses have been selected to provide full circuit protection for all operating conditions. A FUSE WILL ONLY BLOW DUE TO A SHORT-CIRCUIT. Therefore, always locate and correct the cause of short-circuit before replacing a blown fuse. Using a fuse of higher rating is an UNSAFE PRACTICE and could cause serious damage to equipment.

INTRODUCTION

The vehicle described in this manual is designed for use on smooth surfaces in and around industrial plants, warehouses, nurseries, and greenhouses. It is not designed to be driven on public highways. It is designed to travel at speeds not in excess of 10 M.P.H., whether on level surfaces or down-hill, and whether under power or being towed. Excessive speeds may result in difficulty in steering or vehicle stability, and may damage the motor windings even though the motor circuit is not closed.

MODEL NUMBER

The following Model Numbers are covered by this manual:

1159SC, 170 & 171 AN, beginning with Serial Number 22800

SERIAL NUMBER

The serial number is stamped on the upper surface of the angle frame member which supports the rear of the deck board, approximately six inches from the left side. The model and serial numbers are on a nameplate riveted to the console panel situated forward of the operator's platform.

Replacement parts can be purchased directly from your local authorized dealer.

SECTION B
PAGE 1

OPERATING INSTRUCTIONS

The controls on your Taylor-Dunn vehicle have been designed and located for convenience of operation and efficient performance. Before driving your vehicle for the first time, familiarize yourself with each of the controls. Read the following instructions and with power OFF, operate each control.

STEERING - WHEEL TYPE

The steering wheel and steering system are similar to automotive types. Turn the steering wheel to the right (or clockwise) for a right turn and left (or counterclockwise) for a left turn.

STEERING - TILLER TYPE

To turn right, move the tiller to the right, and to turn left, move the tiller to the left.

KEY LOCK

Your vehicle is equipped with a keyed lock located on the corner of forward reverse switch. It is designed to lock the switch in the neutral position only. The key will remove from the lock in the locked position (Neutral) only.

BRAKE AND ACCELERATOR

The foot treadle is a combination brake and accelerator control. It is pivoted near the center so that application of heel pressure to the rear of the treadle applies braking action, while application of toe pressure to the front of the treadle releases the brakes and controls the amount of power delivered to the motor. Full power is achieved when the front of the treadle is depressed as far as it is allowed to travel, and minimum power is achieved when the front of the treadle is partially depressed. Intermediate speeds occur between those two positions.

Spring pressure holds the treadle in the braked position when no foot pressure is applied. This provides automatic braking when the vehicle is parked and left unattended.

FORWARD-REVERSE SWITCH

The forward-reverse switch is located on the console, to the right of the driver. To travel forward, move the operating handle to the position marked "FORWARD". To travel rearward, move the operating handle to the position marked "REVERSE".

CAUTION: The forward-reverse switch serves the same purpose as the transmission in your automobile. Treat it with the same respect and care. DO NOT SHIFT from forward to reverse or vice-versa while the vehicle is in motion. Shifting while in motion, especially near top speed, causes great strain to your entire vehicle and will eventually cause severe damage.

SECTION B
PAGE 2

HORN BUTTON

The horn button is located to the right of the steering wheel on the Model SC, and on the console for Model An when so equipped. Depressing the button will cause the horn to sound, and releasing the button will immediately silence it.

LIGHT SWITCH

The light switch that controls headlamps and taillamps is located in the control console. It is labelled for On-Off positions.

BATTERY CHARGER

Refer to Section J-8 for proper instructions to operate your battery charger.

SPECIAL ACCESSORIES

Refer to the appropriate section of this manual for seperate operating instructions pertaining to any special feature or accessory your vehicle may have.

SECTION B
Page 3

OPERATING RESPONSIBILITIES
AMERICAN NATIONAL STANDARD PERSONNEL AND BURDEN CARRIERS
ANSI B 56.8-1981
SECTION 5
OPERATING RULES AND PRACTICES

501 OPERATOR QUALIFICATIONS

Only trained and authorized operators shall be permitted to operate a Personnel and Burden Carrier. Operators of Personnel and Burden Carriers shall be qualified as to visual, auditory, physical, and mental ability to safely operate the equipment according to Section 5 and all other applicable parts of this standard.

502 PERSONNEL AND BURDEN CARRIER OPERATORS' TRAINING

(a) The carrier owner, lessee, or employee of the carrier operator shall conduct an operators' training program for the carrier operators.
(b) Successful completion of the operators' training program shall be required by the owner, lessee, or employer of the carrier operator before operation of the Personnel and Burden Carrier by any operator.
(c) An effective operator's training program should center around user company's policies, operating conditions, and their Personnel and Burden Carrier by any operator.
(d) Information on operator training is available from several sources, including carrier manufacturers.
(e) The carrier owner, lessee, or employer of the carrier operator should include in the operators' training program the following:
(1) Careful selection of the operators, considering physical qualifications, job attitude and aptitude.
(2) Emphasis on safety of stock, equipment operator, and other employees.
(3) General safety rules contained in this standard and the additional specific rules determined by the carrier owner, lessee, or employer of the carrier operator in accordance with this standard, and why they were formulated.
(4) Introduction of equipment, control locations and functions, and explanation of how they work when used properly and when used improperly; and ground and floor conditions, grade, and other conditions of the environment in which the Personnel and Burden Carrier is to be operated.
(5) Operational performance tests and evaluations during, and at completion of the program.
(6) Rules of the employer and any applicable labor contract governing and dealing with discipline of employees for violation of employer's rules, and including safety rules.

503 OPERATOR RESPONSIBILITY

Operators of Personnel and Burden Carriers shall abide by the following safety rules and practices in 504, 505, 506, and 507.

504 GENERAL

(a) Safeguard the pedestrians at all times. Do not drive carrier in a manner that would endanger anyone.
(b) Riding on the carrier by persons other than the operator is authorized only when personnel seat(s) are provided. Do not put any part of the body outside the outer perimeter of the carrier.
(c) When a Personnel or Burden Carrier is left unattended, 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, remove the key if provided, and block the wheels if machine is on an incline.

SECTION B
Page 4

OPERATING RESPONSIBILITIES continued
ANSI B56.8-1981

504 GENERAL continued

(d) A Personnel and Burden Carrier is considered unattended when the operator is 25 ft. (7.6 m) or more from the carrier which remains in his view, or whenever the operator leaves the carrier and it is not within his view. When the operator of a Personnel and Burden Carrier is dismounted and within 25 ft. (7.6 m) of the carrier still in his view, he still must have controls neutralized, and brakes set to prevent movement.
(e) Maintain a safe distance from the edge of ramps and plataforms.
(f) Use only approved Personnel and Burden Carriers in hazardous locations.
(g) Report all accidents involving personnel, building structures, and equipment.
(h) Operators shall not add to, or modify, the Personnel or Burden Carrier.
(i) Five aisles, access to stairways, and fire equipment shall be kept clear.
(j) Operators and personnel shall be warned of the hazards of long hair and loose clothing.

505 TRAVELING

(a) Observe all traffic requlations, including authorized plant speed limit. Under normal traffic conditions keep to the right. Maintain a safe distance, based on speed of travel, from the carrier or vehicle ahead; and keep the Personnel and Burden Carrier under control at all times.
(b) Yield the right of way to pedestrians, ambulances, fire trucks, or other carriers or vehicles in emergency situations.
(c) Do not pass another carrier or vehicle traveling in the same direction at intersections, blind spots, or at other dangerous locations.
(d) Keep a clear view of the path of travel, observe other traffic and personnel, and maintain a safe clearance.
(e) Slow down and sound the audible warning device at cross aisles and other locations where visibility is obstructed.
(f) Ascend or descend grades slowly.
(g) Use extra caution when operating on grades. Never turn on any grade, ramp, or incline; always travel straight up and down.
(h) Under all travel conditions the carrier shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
(i) Make starts, stops, turns, or direction reversals in a smooth manner so as not to shift the load, overturn the carrier, or both.
(j) Do not indulge in stunt driving or horseplay.
(k) Slow down when approaching, or on, wet or slippery surfaces.
(l) Do not run carrier onto any elevator unless specifically authorized to do so. Approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off power, and set brakes. It is advisable that all other personnel leave the elevator before a carrier is allowed to enter or leave.
(m) Avoid running over loose objects on the roadway surface.
(n) Prior to negotiating turns, reduce speed to a safe level, turning hand steering wheel or tiller in a smooth, sweeping motion.

506 LOADING

(a) Handle only stable or safely arranged loads. When handling off-center loads which cannot be centered, operate with extra caution.
(b) Handle only loads within the capacity of the Personnel and Burden Carrier as specified on the nameplate.
(c) Handle loads exceeding the dimensions used to establish carrier capacity with extra caution. Stability and maneuverability may be adversely affected.

SECTION B
Page 5

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.

SECTION B
Page 6

MAINTENANCE PRACTICES continued
ANSI B56.8-1981

602 MAINTENANCE PROCEDURES continued

(j) Before starting to operte the carrier:
1) Have operator in the operating position.
2) Depress clutch (or brake pedal on automatic transmission and electric carriers).
3) Place directional controls in neutral.
4) Start engine or switch electric carrier to "on" position.
5) Check functioning of directional speed controls, steering, warning devices steering, warning devices, and brakes.

(k) 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 fuel, electrolyte, or coolant. Do not use open pans of fuel or flammable cleaning fluids for cleaning parts.

(l) Properly ventilate work area.

(m) Handle LP gas cylinders with care. Physical damage, such as dents, scrapes, or gauges, may dangerously weaken the tank and make it unsafe for use.

(n) Brakes, steering mechanisms, control mechanisms, warning devices, lights, governors, guards, and safety devices shall be inspected regularly and maintained in a safe operating condition.

(o) Special Personnel and Burden Carriers or devices designed and approved for hazardous area operation shall be inspected to ensure that maintenance preserves the original approved safe operating features.

(p) Fuel systems shall be checked for leaks and condition of parts. Action shall be taken to prevent the use of the carrier until the leak has been corrected.

(q) The Personnel and Burden Carrier manufacturer's capacity, operation and maintenance instruction plates, tags, or decals shall be maintained in legible condition.

(r) Batteries, motors, controllers, limit switches, protective devices, electrical conductors, and connections shall be inspected and maintained in conformance with good practice.

(s) Carriers shall be kept in a clean condition to minimuze fire hazards and facilitate detection of loose or defective parts.

(t) Modifications and additions which affect capacity and safe machine operation shall not be performed by the customer or user without manufacturer's prior written authorization; where authorized modifications have been made, the user shall ensure that capacity, operation, warning and maintenance instruction plates, tage, or decals are changed accordingly.

(u) Care shall be taken to assure that all replacement parts are interchangeable with the original parts and of a quality at least equal to that provided in the original equipment.

SECTION D
PAGE 1

MAINTENANCE GUIDE CHECKLIST

This checklist is provided for your convenience as a guide for servicing your vehicle. If followed you will enjoy a good running and trouble free unit. It has been set up for average normal use. More frequent service is recommended for extreme or heavy usage. If desired your Taylor-Dunn dealer will gladly perform these services for you as he has expert service men in the field for this purpose. Do not hesitate to call your Service Manager if any questions arise.

CAUTION: When performing maintenance on any part of the electrical system, disconnect main battery leads. Place Forward/Reverse Switch in neutral, turn key to off position & remove from switch.

MAINTENANCE SERVICE	REFER SECTION	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	EVERY YEAR
Check & record specific gravity & water level of each cell. Fill, as necessary, using distilled water. (See Chart in Section J8)	J8	X	X	X	X
* Examine battery terminal connections. Clean and tighten as necessary, but not while batteries are being charged.	J8	X	X	X	X
* Clean off all dirt and grease on and between power bars and J hook. Apply lube to sliding contact area with electrically non-conductive applicator. Use T-D Grease 94-421-00 or a quality Hi-Temp Grease with a 500°F. min. Drop Pt.	J6 & E	X	X	X	X
* Check Rheostat adjustment.	J6	X	X	X	X
* Check tire pressure.	J1	X	X	X	X
Adjust Motor Mount & Chain (Refer to Chart Section J2)	J2		X	X	X
* Lubricate all Zerk Fittings.	E		X	X	X
* Lubricate all moving parts without zerk fittings. Use all purpose engine oil.	E		X	X	X
Wash off batteries with water, (Use soda if necessary)	J8		X	X	X
* Check all wire connections. Be sure they are all clean and tight, but not while batteries are being charged.		X	X	X	
* Check brake lining for wear. Adjust or replace as necessary.	J2		X	X	X
Check drive axle oil level. (Refer to lubrication diagram).	J2 &E		X	X	X

* Items related to Safety Recommendation

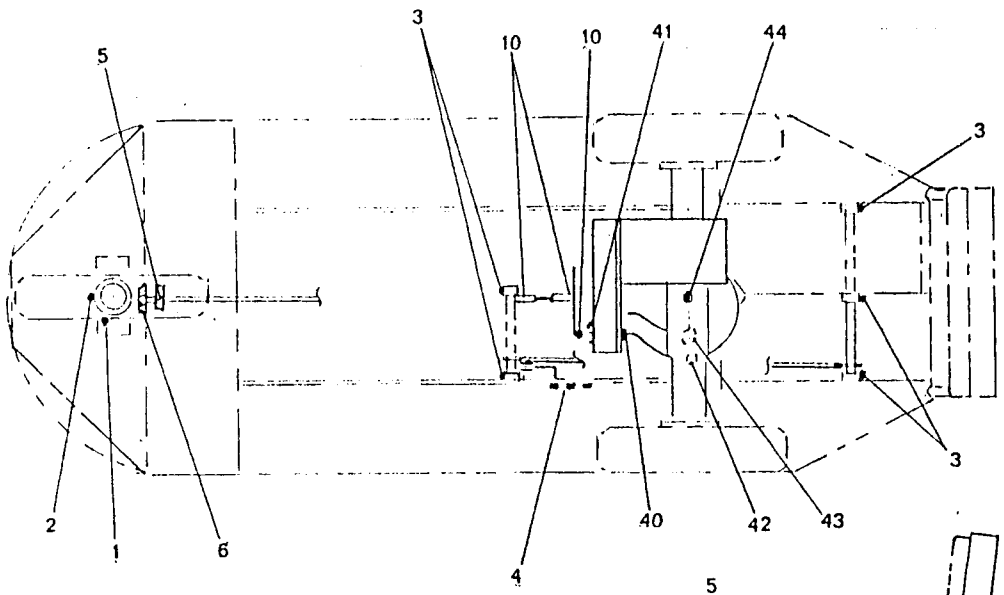
CAUTION: Never bend the brake band anchor bolt. Any bending of the bolt may result in unexpected failure of the bolt and complete loss of Drive Line braking Action.

SECTION D
PAGE 2

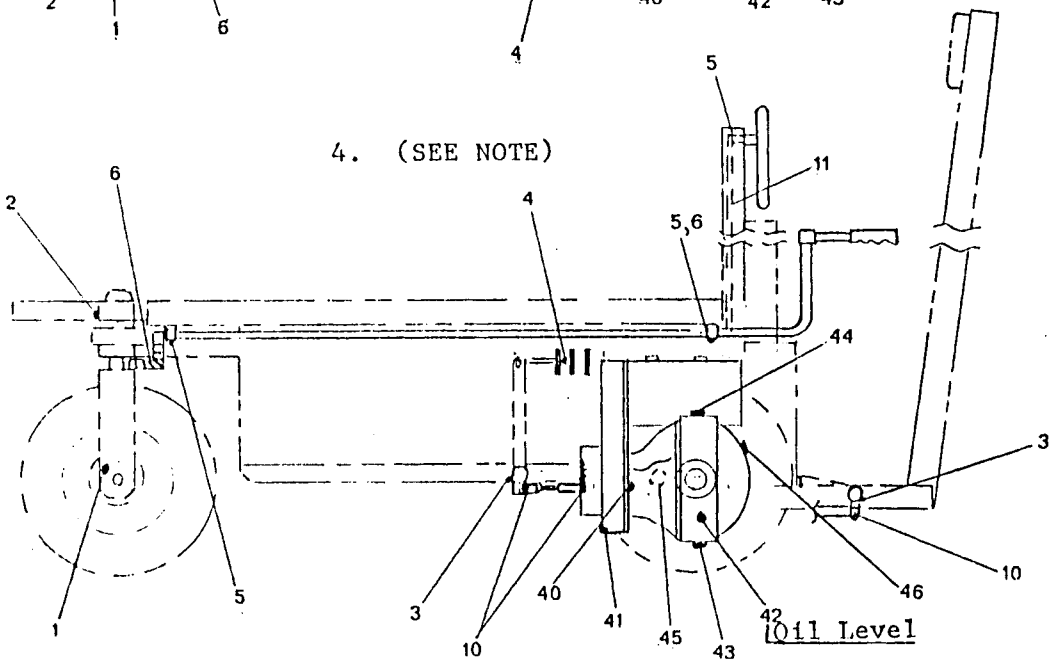
MAINTENANCE GUIDE CHECKLIST

MAINTENANCE SERVICE	REFER SECTION	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	EVERY YEAR
Check, clean, forward-reverse switch.	J5		X	X	X
Check motor brushes. Blow out carbon dust. (Replace if necessary.)	J2			X	X
* Check and adjust front wheel bearings and fork spindle bearings.	J1			X	X
Drain differential and refill with SAE 30 oil. (Refer to Lubrication Diagram).	J2 & E				3 YRS.
Repack front wheel bearings and fork spindle bearings. (Use wheel bearing grease).	J1 & E				X

* Items related to Safety Recommendations.



4. (SEE NOTE)



Oil Level

	No. of Grease Points.
A. PRESSURE GUN GREASE	
1. Front Wheel Hub	1
2. Front Wheel Spindle	1
3. Control Pivot Points	5
4. Rheostat Bar (See Note Below)	
5. Pillow Blocks (Steering)	2 or 3
6. Steering Gears (Lubricate by Hand)	1
B. LIGHT OIL	
10. Clevis Pins (Mechanical Linkage)	5
11. Chain - Steering	

C. "POWER TRACTION" USE SAE 30 OIL

Proper oil level check at Plug 42.

TO CHANGE OIL USE 2 QTS.

a. Remove Drain Plugs 41 & 43
b. Remove Level Plugs 40, 42 & Fill Plug 44.
c. Drain Oil & Replace 41 & 43
d. Add Oil by 44 to Level of 42
e. Add Oil by 40 to Level of 40
f. Replace Plugs

NOTE: 45 & 46 Not Used This Configuration.

NOTE: Plug 40 added for ease in refilling gear case to proper level. Gear case oil level is maintained by recirculation from differential during operation.

NOTE: Rheostat Bar. Apply lube to sliding contact area with electrically non-conductive applicator. Use T-D Grease 94-421-00 or a quality Hi-Temp Grease with a 500° F. Min. Drop point.

SECTION E
PAGE 1

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC.± DEC.±	
SCALE	NONE
DRAWN BY	REA
DATE	7-21-81

FIGURE 1
SECTION E

"POWER-TRACTION"
LUBRICATION DIAGRAM
MODELS SC, A, & AN

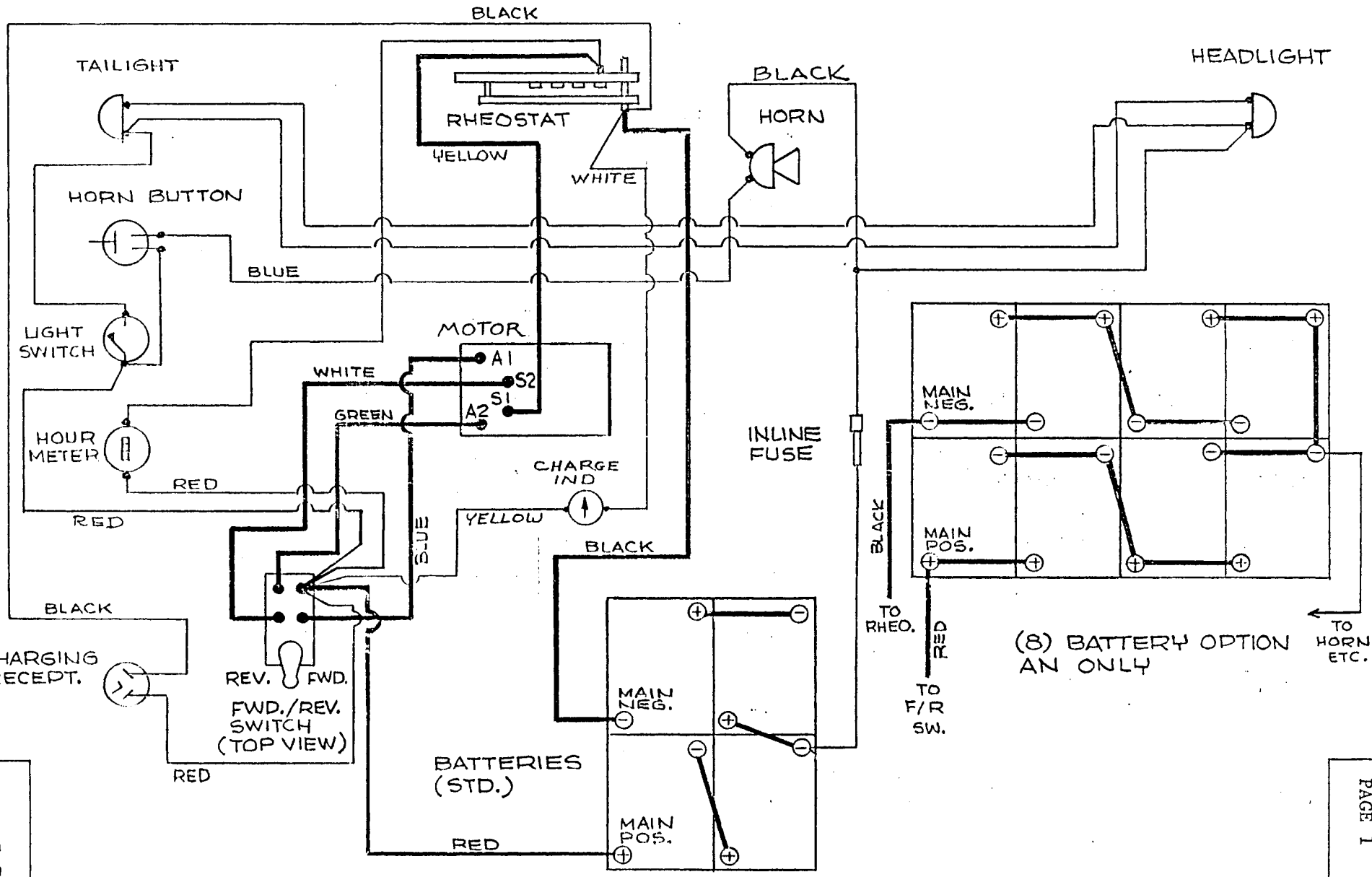
TAYLOR DUNN MFG. CO.
2114 West Ball Rd.
Anaheim, Calif.

TROUBLE SHOOTING PROCEDURES

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1. Steering:		
(a) Pull in one direction	1. Check for bent fork	Replace or straighten
(b) Hard Steering	1. Bad or frozen bearing in fork spindle collar.	Replace
	2. Low tire pressure	Inflate to recommended pressure.
(c) Sloppy or loose steering.	1. Loose spindle bearing	Adjust.
	2. Loose wheel bearing	Adjust.
2. Brakes:		
(a) Soft brakes	1. check for worn lining	Adjust or replace when 1/16 or less of lining left.
	2. Alignment of brake shoes	Realign.
	3. Oil on brake lining	Find oil source and correct, wash brake band.
	4. Dirt on brake lining	Clean
	5. Bind in linkage	Loosen or realign
	6. Weak spring	Replace
	7. Air in hydraulic brake lines.	Bleed brakes
	8. Bad seals in brake cylinders	Replace
(b) No brakes	1. Broken Shoe	Replace
	2. Broken connection in linkage	Replace
	3. Broken Axle	Replace
	4. Break in hydraulic line	Repair
	5. Seal failure in brake cylinder.	Replace
3. Drive Axle:		
(a) No power	1. Discharged batteries	Recharge or replace
	2. Check rheostat for contact	Adjust or replace bars
	3. Check motor brushes for contact	Clean or replace
	4. Poor contact on forward-reverse switch	Repair or replace.
	5. Check for loose wire	Tighten or replace
	6. Check continuity through motor	Repair or replace
(b) Erratic Operation	1. Rheostat making poor contact	Adjust or replace
	2. Motor brushes	Clean or replace
	3. Check motor commutator for burning or wear	Turn or replace
	4. Check for loose wiring	Tighten
	5. Badly worn drive sprockets or belts	Adjust or replace sprockets, chain and belts

SECTION F
PAGE 2

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
(c) Jerky Starting	1. Resistor coil burned open	Replace
	2. Resistor shorted together	Spread apart
	3. Poorly adjusted rheostat	Re-adjust
	4. Badly worn J-Hook	Replace J-Hook & bars
	5. Dirt between power bars causing shorts	
(d) Takes off in forward or reverse without accelerator depressed	1. Dirt shorting out neutral bar	Clean, re-adjust or replace bars
	2. Check rheostat adjustment	
	3. Short in wiring circuit	Correct
	4. Burned forward-reverse switch	Replace
(e) Lack of Power or slow operation	1. Dragging brake	Re-adjust
	2. Tight front wheel bearing	Re-adjust
	3. Rheostat not making contact on high speed bar	Re-adjust or replace bars
	4. Loose connection in wiring	Tighten
	5. Partially burned out motor or thrown lead	Replace or re-solder
	6. Weak batteries	Replace
	7. Bind or drag on differential	Repair
(f) Thump or grinding noise in drive axle	1. Motor bearing	Replace
	2. Loose motor on base	Tighten & adjust
	3. Worn Sprockets	Replace sprocket and chain
	4. Defective bearing in differential	Replace
	5. Deffective gears in differential	Replace
	6. Slack Drive Chain	Adjust (Refer Section J2)



SECTION G
PAGE 1

SECTION G
PAGE 1

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC.± DEC.±	FIGURE 2 SECTION G	WIRING DIAGRAM MODELS SC & AN 1973 & UP	TAYLOR DUNN MFG. CO. 2114 West Ball Rd. Anaheim, Calif.
SCALE NONE			
DRAWN BY E.D.B.			
DATE 8-18-80			

SECTION H
PAGE 1

PARTS ORDERING PROCEDURE

Parts may be purchased from your local authorized Taylor-Dunn Dealer. When ordering parts, be sure to specify the complete model number and serial number of this unit. Also specify the full Taylor-Dunn part number, description of part and quantity of parts required. You will find a complete listing of part numbers and descriptions in the following pages of this manual. When ordering parts for the drive motor, also include the specifications found on the motor name plate. Be sure to give complete shipping and billing address on all orders. Example:

1 - Part Number - 86-501-98 - Ball Joint (Left Hand Thread)

1 - Set of 4 - Part Number - 70-124-00 - Motor brushes for Baldor Motor, 3-1/2 H.P., 36 Volt, Specification No. 28-1408-11704

Above parts for model 1245B Truck, Serial Number 15039.

Parts ordered under warranty must be placed with your authorized Taylor-Dunn Dealer. Be sure to include original invoice number, date of shipment of vehicle, and vehicle serial number.

NOTE: On contracts with National Federal Government Agensies, Defence General Supply Agency, and United States Post Office Department, orders for all warranty parts must be placed directly with the Taylor-Dunn Factory in Anaheim, California.

TAYLOR-DUNN MANUFACTURING COMPANY
2114 West Ball Road
Anaheim, California 92804

Phone: 714-956-4040
Telex: 65-5393

SECTION I
PAGE 1

SUGGESTED SPARE PARTS LIST

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QUANTITY FOR 1-20 VEHICLES
REFER TO FIGURE 3 - FRONT FORK, WHEELS, & STEERING			
3-8	30-400-00	Master Link for #40 Chain (Model SC Only)	2
3-9	96-900-00	Turnbuckle, Steering Chain (Model SC Only)	2
3-11	45-307-00	Seal for 1-1/4" Bearings	1
3-12	45-308-00	Seal for 3/4" Bearings	2
3-18	88-229-81	3/4 N.C. Locknut	3
3-22	80-015-00	3/4 I.D. Roller Bearing	2
----	11-030-00	Tube for 4.80 x 8 Tire (Optional)	1
----	11-040-00	Tube for 5.70 x 8 or 16 x 6.50 x 8 Tire (Optional)	1
3-28	13-576-00	Tire, Wheel Hub & Bearings, 4.80 x 8, Load Range B Tubeless Super Rib. (For other wheels & tires See Section J1).	1
REFER TO FIGURE 5 - REAR AXLE AND BRAKES			
5-3	41-997-00	Drain & Level Plug (1/8" Pipe)	1
5-11	41-163-11	Axle Assembly with Axle, Retainer Ring, Retainer Plate, & Bearing (14-1/8" Long) Left Side	1
5-11	41-162-11	Axle Assembly with Axle, Retainer Ring, Retainer Plate, & Bearing (11-5/8" Long) Right Side	1
5-13	45-042-00	Gasket (Housing to Differential Carrier)	1
5-42	80-702-00	"O" Ring - Drive Pinion Bearing Retainer	1
5-45	41-998-00	Plug - (Level) 1/2" with Recessed Top	1
5-50	45-021-00	Gasket, Ring Gear Bearing Flange to Chain Case Backing Plate	1
5-57	45-989-00	Plug (Filler Level & Drain) 1/4" N.P.T.	1
5-63	45-331-00	Oil Seal, Chain Case Cover to Pinion Shaft	2
5-64	41-532-00	Brake Drum (Splined)	1
5-66	41-660-00	Brake Band for 6" Drum	2
5-73	85-060-00	Compression Spring 5/8" O.D. x 2-1/2" Long	1
5-83	45-002-00	Gasket, Chain Case Cover	1
5-91	13-734-00	Demountable Tire & Wheel, 4.80 x 8, Tubeless, Super Rib. (For other wheels & tires See Section J2)	2
5-106	45-044-00	Gasket, Axle Bearing to Drive Axle Housing Assy.	2
5-122	80-703-00	"O" Ring Motor Mount Plate Seal	1
5-124	88-087-11	Socket Screw 5/16" N.C. x 1"	1
REFER TO FIGURE 7 - MECHANICAL CONTROL LINKAGE			
7-1	85-280-00	Extension Spring, 1-3/8 O.D. x 7-3/4 Long	2
7-2	88-517-11	3/32 x 1 Steel Cotter Pin	4
7-3	96-772-00	Clevis Pin 3/8 x 1"	2
7-4	50-028-00	3/8 N.F. Threaded Rod, 1-1/2" Long	2
7-5	96-762-00	Cast Clevis 3/8	1

SECTION I
PAGE 2

SUGGESTED SPARE PARTS LIST (CONT'D.)

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QUANTITY FOR 1-20 VEHICLES
REFER TO FIGURE 8 - FORWARD/REVERSE SWITCH			
8-1	71-040-60	Switch Finger - Silver Plated with 1/4" Hole	4
8-5	71-040-71	Bolt-Finger Mounting (1/4" NF x 7/8" Spec.)	4
8-11	71-040-62	Switch Handle - Metal (Red Color)	1
8-19	71-040-54	Spring - Cam	1
8-28	71-040-52	Rotor Assembly	1
REFER TO FIGURE 9 - SPEED CONTROL RHEOSTAT			
9-2	61-834-00	Insulating Board for J-Hook 2 Hole Pattern	1
9-5	61-832-00	Sliding J-Hook Bar	1
9-9	78-212-55	Resistor Coil (#9 Wire - 10 Turns)	1
9-10	78-212-56	Resistor Coil (#6 Wire - 9 Turns)	2
9-13	61-836-00	Pressure Bar	1
9-14	61-831-00	Power Bar	4
9-17	85-034-00	Spring - Compression 7/16" O.D. x 2" Long	1
9-21	78-212-57	Resistor Coil (#5 Wire - 6 Turns)	1
REFER TO GENERAL ELECTRICAL - SECTION J7			
	71-100-00	Light Switch	1
	72-072-00	4" Sealed Beam Headlight Bulb (12 Volt)	1
	72-022-00	Stop & Taillight Fixture, 4" Rubber Mount(12 Volt)	2
	71-501-00	Horn Button	1
	75-231-00	Jumper Cable - 10-1/2" Long	4
	78-010-00	Secondary Fuse & Holder (Inline Type)	1
	79-823-00	Fuse - Buss Type, 20 AMP	5
REFER TO BATTERIES & CHARGER - SECTION J8			
	76-012-00	Charging Receptacle, 30 AMP, 3 Prong	1
	77-200-00	Hydrometer	1
	77-201-00	Battery Filler	1
	79-819-00	Fuse, 30 AMP - Screw Type	6

SECTION J1
PAGE 1

MAINTENANCE PROCEDURES
FRONT AXLE, FORK, STEERING, AND TIRES
REFER TO FIGURE 3

Your front wheel assembly consists of a ruggedly designed fork mounted with 2 Timken Roller Bearings. The front wheel is mounted on a 3/4" axle and turns on 2 Timken Roller Bearings. Grease fittings are provided at bearing points for proper lubrication.

The steering linkage consists of a steering wheel, or tiller, and bearing mounted shaft, in combination with half-gears permanently fixed to the fork and steering shaft. Steering wheel equipped vehicles use a roller chain and sprockets to gain mechanical advantage for smooth easy steering. Occasional adjustment of chain tension will be required for steering-wheel vehicles, as outlined in this Section of the manual.

Periodic lubrication of the steering system is essential, as described in sections D & E, for reliable and trouble-free steering.

TIRE CARE

Tire pressure is governed by how you want your vehicle to ride and the terrain upon which it is most commonly used.

Slightly lower pressure will assist traction on soft terrain without undue wear.

The chart listed below will assist you to determine the correct tire pressure for your needs. The higher range of pressure is recommended for heavy loads.

4.80 x 8	Load Range - B	65 Lbs.
4.80 x 8	6 Ply Tires (Steel Guard)	80 to 100 Lbs.
5.70 x 8	Load Range - B	55 Lbs.
16 x 6.50 x 8	Load Range - B	15 - 25 Lbs.

Caution: Do not overinflate tires. This will promote increased wear. Underinflated tires on hard surfaces also promotes undue wear and should be avoided.

SECTION J1
PAGE 2

SERVICE AND ADJUSTMENT
FRONT AXLE, FORK, STEERING AND TIRES
REFER TO FIGURE 3

Adjustment of Wheel Bearings

1. Adjust wheel bearings by holding 1 axle nut and tightening the other until a drag is felt on wheel. Then back off nut approximately 1/4 turn. Wheel should turn free but not have excess play in bearings.

Removal of Wheel & Axle Assembly

1. Remove 1 axle nut by holding nut on one end of axle and unscrewing nut on opposite end.
2. Slide axle from fork & wheel, being careful to catch spacers and wheel as they come free.
3. Wheel bearings may be flushed, cleaned and repacked without removing from hub, unless, severely damaged or embedded with foreign material.
4. To remove wheel bearings and seals:
   A. Pull seals from hub.
   B. Remove taper roller bearings.
   C. If necessary, press bearing races from hub with suitable press or with flat punch by hitting back and forth one side to other.

Re-Assembly of Wheel & Axle

1. Press bearing races into hub with suitable press, taking care that they are seated against stops within the hub.
2. Generously lubricate wheel bearings with wheel bearing grease and insert into bearing races.
3. Press or tap seals into place. (Proper position is when face of seal is flush with end of hub) Note: It is recommended that new seals be installed whenever bearings are removed from wheel hub, or whenever seals are worn or damaged. Worn or damaged seals allow dirt and foreign matter to enter wheel bearings, shortening bearing life.
4. Install wheel & hub assembly into fork by starting axle through one side of fork, inserting 1 spacer then sliding axle through wheel bearings. Insert other spacer and slide axle through remainder of fork assembly.
5. Install locknut.
6. Adjust wheel bearings as outlined above.
7. Wheel hub has 1 zerk fitting for grease lubrication.

Adjustment of Fork Spindle Bearings

1. Adjust by tightening nut until drag is felt on spindle bearings. Loosen about 1/4 turn or until spindle rotates free but does not have any play in bearings. Note: Any excessive play in spindle bearings can lead to bearing failure due to shock effect when vehicle encounters bumps or uneven terrain.

SECTION J1
PAGE 3

Removal of Fork and Spindle

1. Using a hoist or suitable jack, elevate the front of the vehicle.
2. Remove dust cap.
3. Remove lock nut and washer from spindle.
4. Slide fork and spindle out of housing.
5. Remove bearings, dust seals, and spacers.
6. A puller is required to remove bearing races from housing.

Re-Assembly of Fork and Spindle

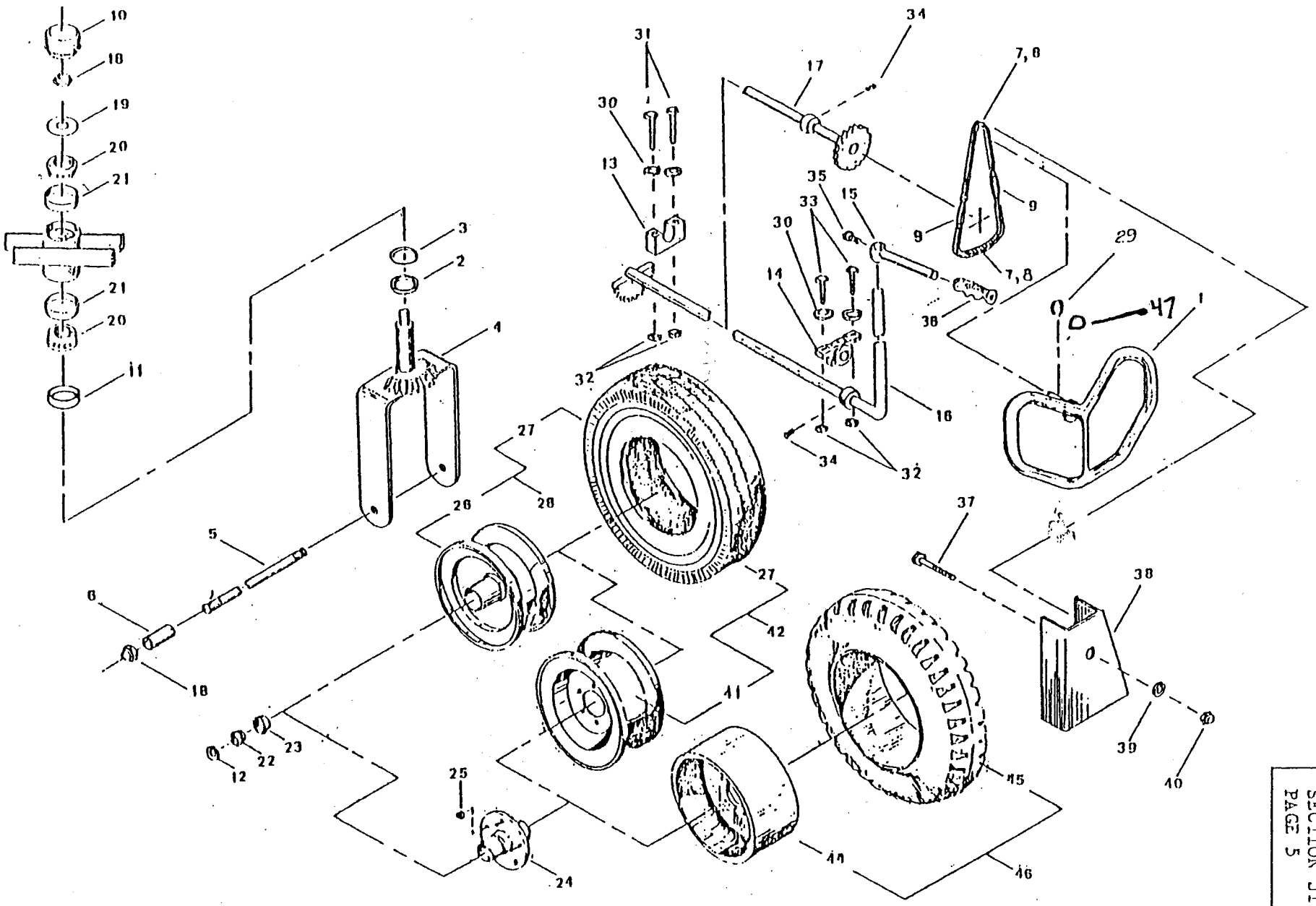
1. Bearing races may be pressed into position by using a 1/2" X 6" bolt. Place a disc or bar of suitable size over bolt, then one bearing race, pass this assembly through housing. Place other bearing race, a suitable disc or bar and then the nut. Tightening the nut and bolt will draw the two bearing races into position without damage.
2. Generously pack bearings with wheel bearing grease. Assemble one dust seal and bearing in lower part of housing. Refer to Figure 3 for proper location.
3. Place spacers on spindle, and slide spindle through bearing housing, engaging gear teeth on fork with teeth on steering shaft.
4. Install washer and nut to spindle, and adjust bearing tension as described in preceding subsection.
5. Install dust cap.

Adjustment of Steering Chain Tension

1. Remove steering chain cover.
2. Remove locking wire from chain tightener.
3. With wrench turn center of turnbuckle type tightener drawing the chain taut with slight tension. DO NOT apply excessive tension to chain as undue bearing and chain wear will result.
4. Replace locking wire on tightener, and replace chain cover.

Remove and Replace Steering Chain and Steering Wheel

1. Remove steering chain cover.
2. Remove locking wire from turnbuckle, and relieve chain tension by turning center of turnbuckle.
3. Remove chain master link, and remove chain from sprockets. Note relative position of turnbuckle to sprocket for proper reassembly.
4. Pry retaining ring from groove on forward end of steering wheel shaft, and remove ring from shaft.
5. Remove steering wheel and sprocket assembly.
6. Replace in reverse order of removal. When assembling turnbuckle, road wheel and steering wheel should be in straight ahead position, and turnbuckle approximately mid-way between upper and lower sprocket.
7. Adjust steering chain tension as described in preceding subsection.



SECTION J1
PAGE 5

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC. ±	DEC. ±
SCALE	NONE
DRAWN BY	.D.B.
DATE	1-1-75

FIGURE 3
SECTION J1

FRONT FORK, WHEELS &
ST RING, MODELS SC & AN

TAYLOR DUNN MFG. CO.
2114 West Ball Rd.
An Im, Calif.

SECTION J1
PAGE 5

SECTION J1
PAGE 6

FRONT FORK, WHEELS AND STEERING
REFER TO FIGURE NO. 3

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
3-1	19-008-00	Cloverleaf Steering Wheel, Shaft & Sprocket Assy.	1 or 0
3-2	16-400-00	Spacer, Front Fork - .125 Thick	1
3-3	16-410-00	Spacer, Front Fork - .020 Thick	1
3-4	14-030-10	Front Fork, Single	1
3-4	14-032-10	Front Fork, Dual	1
3-5	88-220-32	Bolt, 3/4-]0 NC X 8-]/2 Long Hex Head Cap, GR. 5	1
3-5	15-011-00	Front Axle, 3/4 Dia. x 16-1/4" Long (Dual)	1
3-6	16-010-00	Wheel Spacer, 3/4 I.D. x 1-1/4 Long	4 or 2
3-7	30-223-00	Chain, #40 Single Strand Roller 39 Pitch Long	2 or 0
3-8	30-400-00	Link Master for #40 Chain	4 or 0
3-9	96-900-00	Turnbuckle, Steering Chain	2 or 0
3-10	92-105-00	Dust Cap	1
3-11	45-307-00	Oil Seal - for 1-1/4" Bearings	1
3-12	45-308-00	Oil Seal - for 3/4" Bearings	2
3-13	84-020-00	Pillow Block, 3/4" Steel FRONT	1
3-14	84-001-00	Pillow Block, 3/4" Split with Fitting	1
3-15	95-500-00	Handle - for Tiller Steering	1 or 0
3-16	20-026-10	Shaft, Steering Tiller	1 or 0
3-17	20-051-10	Shaft, Vertical Steering - 40" Bed	1 or 0
3-17	20-053-10	Shaft, Vertical Steering - 48" Bed	1 or 0
3-17	20-054-10	Shaft, Vertical Steering - 54" Bed	1 or 0
3-18	88-229-81	3/4 N.C. Locknut	2
3-19	88-228-60	3/4 Cut Washer	1
3-20	80-011-00	1-1/4 I.D. Tapered Roller Bearing	2
3-21	80-102-00	Tapered Bearing Race for 1-1/4 I.D. Bearing	2
3-22	80-015-00	3/4 I.D. Tapered Roller Bearing	2
3-23	80-105-00	Tapered Bearing Race for 3/4 I.D. Bearing	2
3-24	12-120-00	Wheel Hub with 3/4" Roller Bearing and Oil Seals, 4" Long, With Five Holes on 4-1/2" Bolt Circle	0 or 1
3-25	97-236-00	Lug Nut, 1/2" Tapered	0 or 5
3-26	10-075-00	Tire, 480 x 8, Load Range - B, Super Rib Tubeless	0 or 1
3-27	10-078-00	Tire, 4.80 x 8, 6 Ply, Steel Guard, Tube Type	0 or 1
3-27	10-082-00	Tire, 5.70 x 8, Load Range--B, Extra Grip, Tube Type	0 or 1
3-27	10-089-00	Tire, 16 x 6.50 x 8, Load Range - B, Terra Tire, Traction, Tubeless Type	0 or 1
----	11-030-00	Tube for 4.80 x 8 Tire	0 or 1
----	11-040-00	Tube for 5.70 x 8 Tire or 16 x 6.50 x 8 Tire	0 or 1

SECTION J1
PAGE 7

FRONT FORK, WHEELS AND STEERING
REFER TO FIGURE NO. 3

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
3-28	13-576-00	Tire, Wheel, and 4" Hub, with 4.80 x 8 Load Range - B, Tubeless Super Rib Tire, and 3/4" Tapered Roller Bearing	0 or 1
3-28	13-595-00	Tire, Tube, Wheel, and 4" Hub, with 16 x 6.50 x 8 Load Range - B, Traction Tire, and 3/4" Tapered Roller Bearings.	0 or 1
3-29	88-840-09	External Snap Ring for 3/4" Shaft	0 or 1
3-30	88-088-60	5/16 Washer	4
3-31	88-080-15	5/16 x 2 N.C. Hex Head Cap Screw	2
3-32	88-089-81	5/16 N.C. Locknut	4
3-33	88-080-13	5/16 x 1-1/4 N.C. Hex Head Cap Screw	2
3-34	88-067-06	1/4 x 1/2 N.C. Socket Set Screw	1
3-35	88-087-09	5/16 x 3/4 Square Head Set Screw	1 or 0
3-36	98-350-00	Hand Grip	1 or 0
3-37	88-060-20	1/4 x 3 N.C. Hex Head Cap Screw	1 or 0
3-38	30-702-00	Chain Guard - Steering	1 or 0
3-39	88-068-62	1/4 N.C. Lock Washer	1 or 0
3-40	88-069-83	1/4 N.C. Brass Acorn Nut	1 or 0
3-41	12-012-00	Wheel, Demountable, for 4.80 x 8 or 5.70 x 8 Tubeless Tire, Five 1/2" Holes on 4-1/2" Bolt Circle.	0 or 1
3-42	13-734-00	Tire and Demountable Wheel, 4.80 x 8, Tubeless Super Rib, Five 1/2" Holes on 4-12" Bolt Circle	0 or 1
3-42	13-734-10	Tire and Demountable Wheel, 4.80 x 8, Foam Filled, Super Rib, Five 1/2" Holes on 4-1/2" Bolt Circle.	0 or 1
3-42	13-735-00	Tire and Demountable Wheel, 4.80 x 8, Tubeless, Knobby, Five 1/2" Holes on 4-1/2" Bolt Circle.	0 or 1
3-42	13-739-00	Tire, Tube and Demountable Split Rim Wheel, 4.80 x 8, 6 Ply Steel Guard Tire with Five 1/2" Holes on 4-1/2" Bolt Circle.	0 or 1
3-42	13-742-00	Tire and Demountable Wheel 5.70 x 8, Tubeless Super Rib with Five 1/2" Holes on 4-1/2" Bolt Circle	0 or 1
3-42	13-742-10	Tire and Demountable Wheel, 5.70 x 8, Foam Filled, Super Rib with Five 1/2" Holes on 4-1/2" Bolt Circle.	0 or 1
3-42	13-744-00	Tire, Tube and Demountable Wheel, 5.70 x 8, Extra Grip Tire with Five 1/2" Holes on 4-1/2" Bolt Circle.	0 or 1
3-42	13-748-00	Tire and Demountable Wheel, 16 x 6.50 x 8, Terra Tire, Traction with Five 1/2" Holes on 4-1/2" Bolt Circle.	0 or 1

SECTION J1
PAGE 8

FRONT FORK, WHEELS AND STEERING
REFER TO FIGURE NO. 3

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
3-44	12-050-00	Wheel for 16 x 4 x 12-1/8 and 18 x 5 x 12-1/8, Solid Cushion, Demountable, Cast Iron, Five 1/2 1/2" Holes on 4-1/2" Bolt Circle	0 or 1
3-44	12-054-00	Wheel for 15 x 3-1/2 x 11-1/4 and 16-1/4 x 4 x 11-1/4, Solid Cushion, Demountable, Cast Iron Five 1/2" Holes on 4-1/2" Bolt Circle	0 or 1
3-45	10-250-00	Tire, Solid Cushion, Smooth, 16 x 4 x 12-1/8	0 or 1
3-45	10-261-00	Tire, Solid Extra Cushion, All Service, 16-1/4 x 4 x 11-1/4	0 or 1
3-46	13-952-10	Tire and Demountable Cast Iron Wheel #12-050-00, with 16 x 4 x 12-1/8 Solid Cushion Smooth Tire and Five 1/2" Holes on 4-1/2" Bolt Circle	0 or 1
3-46	13-594-10	Tire and Demountable Cast Iron Wheel #12-054-00, with 16-1/4 x 4 x 11-1/4 Solid Extra Cushion All Service Tire and Five 1/2" Holes on 4-1/2" Bolt Circle	0 or 1
3-47	88-048-63	Washer, steel	1
3-48	32-032-10	Bushing, 3/4, Oil Impreg	1

SECTION J2
PAGE 1

MAINTENENANCE PROCEDURES
"POWER TRACTION" REAR AXLE, MOTOR AND BRAKES
REFER TO FIGURE 5

Your "Power Traction" direct drive assembly is a highly efficient unit. Great care was taken in its design to promote long life with a minimum of maintenance. It employs an automotive type differential unit which operates within an enclosed housing. The gears, bearings etc. are lubricated from within by oil which when maintained at its proper level insures complete coverage of all moving parts. This oil level should be checked on a regular basis as outlined in the Maintenance Guide (Section D) and Lubrication Diagrams (Section E) of this manual. If the oil level is allowed to drop below normal limits serious damage to the differential and drive unit will result.

An adjustable motor mount has been provided to extend normal chain life. Refer to Section J2 Page 3 for proper adjustment procedures. It is important to adhere to the adjustment schedule included on Page 4. Failure to do so will seriously affect normal chain life.

The electric motor will provide many hours of trouble free service. It is provided with sealed ball bearings which are pre-lubricated for their lifetime.

Periodically, the motor brushes should be inspected and cleaned. The carbon dust and dirt should be blown out of motor. When brushes are worn they should be replaced. Approximately 3000 hours operating life may be expected from a new set of brushes. To determine when to replace worn brushes, proceed as follows:

1. For motors equipped with brushes having end pigtails & side hooks, replace brush when hook is within 1/16" from bottom of hook slot.

2. For motors equipped with brushes having side pigtails only, replace brush when pigtail is within 1/6" from bottom of pigtail slot.

   NOTE: When one brush is replaced in a motor, it is considered good maintenance practice to replace all brushes.

Inspect commutator for roughness or undue wear as arcing and shortened brush life will result from this condition.

Check wiring terminals for cleanliness and tightness. A loose connection will cause burning of the respective terminal and can induce motor failure. DO NOT PERFORM THIS MAINTENANCE WHILE BATTERIES ARE BEING CHARGED.

Refer to Maintenance Guide (Section D) and Service and Adjustment (Section J2) for further recommendations on motor care.

The mechanical brake assembly located on the differential pinion shaft will require a periodic inspection for lining wear and consequently periodic adjustment. Refer to Service and Adjustment Section J2 of this manual for proper procedures.

A few drops of oil on the clevis pin and pivot pins of the mechanical linkage is recommended on a montly basis. Great care must be taken that no oil is allowed to contact the brake band or drum as it will seriously impair the braking ability. If the braking surfaces become oily or contaminated for any reason it will be necessary to remove the brake band and clean all parts thoroughly. Refer to the appropriate section of this manual for the correct procedure to follow.

A periodic tightening of all bolts and nuts, especially those which fasten the drive to the chassis, should be made, BUT NOT WHILE BATTERIES ARE BEING CHARGED.

SECTION J2
PAGE 2

SERVICE AND ADJUSTMENTS
REFER TO FIGURE 5 - REAR AXLE, MOTOR, AND BRAKES
REFER TO FIGURE 7 - MECHANICAL CONTROL LINKAGE

CAUTION: Before performing Service and Adjustments, Disconnect Battery Leads from main positive and main negative terminals.

Adjustment of Brake Band to Compensate for Normal Lining Wear

Important Note: Observe position of Speed Control J-Hook and brake lever arm when treadle is depressed to "Full-On" position. The J-Hook must be centered on the high speed power bar within plus or minus 1/8 inch, and simutaneously the brake lever arm must contact the gear case cover, preventing further, forward travel of the J-Hook. If this condition does not exist, then it will be necessary to adjust the brake rod as described in the next subsection.

If J-Hook and brake lever arm are positioned as described, it will not be necessary to change brake rod adjustment.

1. Tighten nut or brake band anchor bolt sufficiently so that full vehicle braking force is applied when the rear edge of the J-Hook is 1/4 to 1/2 inch forward of the rear edge of the neutral bar.
2. Check brake release. Operate the treadle through its full stroke several times, then position the treadle so that the J-Hook is just starting to make contact with the first speed power bar. In this position the brake band should not contact the brake drum. Should drag occur, loosen the brake band anchor bolt nut sufficiently until drag is just eliminated as the J-Hook starts to contact the first speed power bar.
3. Adjust brake band centering screw to bring band as close to drum as possible without causing brake drag. If band is too far from drum, brake will grab in the forward direction.

CAUTION: Never bend the brake band anchor bolt. Any bending of the bolt may result in unexpected failure of the bolt and complete loss of Drive Line braking Action.

Adjustment of Brake Rod and J-Hook Travel (Refer to Figures 5 & 7)

1. Loosen nut or threaded rod which joins clevises attached to brake lever arm and to brake arm of mechanical control linkage.
2. Remove clevis pin from brake lever arm.
3. Remove mechanical control linkage return spring.
4. Position and hold J-Hook in alignment with high speed power bar, and position and hold brake lever arm against gear case cover.
5. With J-Hook and brake lever arm in position described in Step 4, adjust threaded brake rod in clevises so that clevis holes line up with proper hole in brake lever arm, and install clevis pin and cotter pin.
6. Tighten nut on threaded rod against clevis.
7. Reassemble mechanical linkage return spring.
8. Adjust brake band as outlined in preceding subsection.

SECTION J2
PAGE 3

Adjustment of Brake Rod and J-Hook Travel (Cont'd.)

9. With power disconnected, or with forward-reverse switch in "OFF" position, operate the treadle through its full stroke several times, and observe the action of the J-Hook and brake band. Readjust, if necessary, the brake rod and/or brake band to accomodate to the slack in mechanical control linkage, until speed control and braking action are as described in the preceding Subsection.

Remove and Replace Brake Assembly and Drum

1. Disconnect main negative and positive battery leads to prevent accidental engagement of power while servicing vehicle.
2. Remove mechanical linkage return spring.
3. Remove cotter pin and clevis pin which secure brake rod to brake lever arm.
4. Remove four bolts holding brake mounting assembly, and remove brake band centering screw bracket. Slide brake assembly off drum.
5. Band and drum may now be cleaned, inspected, and if necessary parts may be replaced as needed.
6. Brake band lining is bonded to the band for long dependable service. When it wears to approximately 1/16" thickness the band should be replaced.
7. If the brake drum is scored, it should be removed and turned. It is recommended that a brake drum that has been severely scored or damaged should be replaced with a new drum. To remove drum, remove pinion shaft nut and washer. Slide drum from pinion shaft.
8. Inspect seal in gear case cover. If worn or damaged, replace with new one. It is recommended that new seal be pre-soaked in light oil for several hours before installation. Use small amount of oil reistant sealer on seal opening in cover when pressing seal into place.
9. Re-assemble drum and spacer on pinion shaft. Tighten to 100 lb. ft. torque.
10. Replace brake assembly in the reverse order from which it was removed.
11. Replace mechanical linkage return spring.
12. Adjust brake band as outlined on Page 2.

Adjustment of Drive Chain Tension

1. Disconnect main negative and positive battery leads to prevent accidental engagement of power while servicing vehicle.
2. Tighten three motor mount nuts.
3. Loosen and unscrew each nut exactly one full turn.

   Note: This procedure is very important for if the nuts are too loose or too tight an error will result in the final adjustment which will seriously reduce life of th chain.
4. Loosen adjusting set screw locknut. Using standard socket set screw wrench turn set screw clockwise until tight. (If torque wrench is available tighten to 80 inch lb. torque). Without a torque wrench bear in mind that a standard socket set screw wrench is approximately 4" long. An average person will only be able to develop the required torque necessary if he tightens it as far as possible with his hands and does not use any extended handle on the wrench.

SECTION J2
PAGE 4

Adjustment of Drive Chain Tension (Cont'd.)

5. After developing the required torque, unscrew the adjusting screw exactly 2-1/2 turns. It is also very important to be exact on this adjustment.
6. Tighten locknut. DO NOT allow adjusting screw to move while tightening locknut.
7. Be certain that motor has moved all the way back and adjusting screw is in contact with back plate. If necessary tap motor lightly to assure this condition.
8. Tighten three motor mount nuts securely.

Perform this adjustment procedure regularly as listed below to assure long and trouble free life from your "Power Traction" drive.

Scheduled Adjustment	After	Comments
1st Adjustment	1 Month	New unit or after installing new chain
2nd Adjustment	3 Months	Normal running conditions
3rd Adjustment	6 Months	Normal running conditions
Thereafter	Every 6 Mo.	Normal running conditions

Remove Motor

1. Disconnect main negative and positive battery leads to prevent accidental engagement of power while servicing unit.
2. Drain oil from gear case by removing drain plug.
3. Identify motor leads for proper connection when reassembling. Remove motor leads.
4. Remove mechanical linkage return spring.
5. Remove brake rod clevis from brake lever arm.
6. Operate brake lever arm to lock pinion shaft while loosening pinion shaft nut.
7. Remove brake band centering bracket, brake assembly brackets, and brake band from gear case cover.
8. Remove pinion shaft nut and washer, and slide brake drum from pinion shaft.
9. Remove remaining bolts and nuts from front of gear case cover. Remove gear case cover.
10. Remove the three nuts and washers which fasten motor to backplate. Disengage chain from motor sprocket. Remove motor, motor mounting plate, and sprocket assembly. Remove "O" ring.
11. For information on maintenance of motor, refer to Subsections titled "Motor Maintenance" and "Motor Disassembly and Reassembly".
12. If a new motor is to be installed in place of the old motor, remove motor mounting plate from old motor. Also remove shaft nut, washer, sprocket, key and spacers. Note location of motor terminals relative to mounting plate to assure proper positioning of mounting plate when assembling it to new motor.

SECTION J2
PAGE 5

Install Motor

1. If installing new motor, clean motor surface and install motor mounting plate to motor with four flat-head cap screws. Tighten screws to 30 ft. lb. torque, and stake head in place with center punch.
2. If installing new motor, or if motor sprocket has been removed in order to repair motor assemble spacers, key, sprocket, washer, and shaft nut to motor shaft. Tighten shaft nut to 75 ft. lb torque.
3. Place "O" ring in motor mounting plate opening, and attach motor and mounting plate assembly to back plate with three nuts and washers. Engage chain with sprocket and tighten nuts.
   NOTE: Chain tension Adjustment is covered in a later step.
4. If seal in gear case cover is worn or damaged, install a new seal. It is recommended that the new seal be pre-soaked in light oil for several hours before installation. When pressing new seal into cover, use a small amount of oil resistant sealer on seal opening in cover.
5. Install gear case cover to backplate and pinion shaft. Assemble, but do not tighten retaining bolts and nuts.
6. Place centering tool 41-532-50, (for centering pinion shaft seal to brake drum hub) on pinion shaft and into seal retainer.
   NOTE: If centering tool is not available, slide brake drum onto pinion shaft and into seal. Install pinion shaft washer and nut and tighten to 100 ft. lb. torque. Position gear case cover so that seal pressure is uniform around hub of brake drum. Tighten gear case cover retaining bolts and nuts. Omit Steps 7 through 10.
7. Install pinion shaft washer and nut, and tighten to 100 ft. torque.
8. Tighten gear case cover retaining bolts and nuts.
9. Remove pinion shaft nut and washer, and remove centering tool.
10. Install brake drum, washer, and pinion shaft nut. Tighten nut to 100 ft. lb. torque.
11. Install brake band, brake assembly brackets, and brake band centering bracket to gear case cover, and tighten retaining bolts.
12. Adjust drive chain tension as described in preceding Subsection.
13 Reconnect brake rod and brake lever arm with clevis pin and cotter pin.
14. Install mechanical linkage return spring.
15. Adjust brake band as described on Page 2 of this Section of Manual.
16. Fill gear case with oil. Refer to Lube Diagram in Section E.
17. Connect motor leads.as follows: (IMPORTANT !!)
    a) Check that each motor terminal stud nut is tightened securly but not over-tightened as this could bend or twist the terminal post and cause an electrical short within the motor.
    b) Install motor leads on correct motor terminals post.
    c) Install a second nut on each terminal post & finger tighten.
    d) To avoid bending, twisting or breaking-off a terminal post, use a thin pattern 9/16" wrench to hold the bottom nut from moving while tightening the top nut. Carefully tighten the top nut so as to make a good connection between the terminal post and motor lead.
18. Connect battery leads.

Motor Maintenance-General

Maintenance of electric motors should be referred to personnel with appropriate experience and equipment. Procedures covering maintenance of brushes, bearings, and commutator are covered in the following Sections. Should it be necessary to order replacement parts, include complete motor name plate data with order.

NOTE: SEE SECTION J2M FOR MOTOR DISASSEMBLY & PARTS

SECTION J2
PAGE 6

Disassemble and Reassemble Primary Drive

1. Perform Steps 1 through 10 in Subsection titles "Remove Motor".

2. Remove chain, pinion sprocket, and spacers from pinion shaft. Note spacer locations for proper reassembly.

3. If axle or differential maintenance requiring further disassembly is required, remove back plate and gasket by removing the five bolts which retain back plate to differential carrier. Refer to Subsection which covers axle and differential disassembly and reassembly.

4. To reassemble, intall back plate and gasket to differential carrier with five bolts. Use gasket sealer. Tighten bolts to 50 ft. lb. torque.

5. Perform Steps 3 through 18 in Subsection Titles "Install Motor".

Remove and Install Rear Wheel Bearings

1. Disconnect main negative and main positive battery leads to prevent accidental engagement of power while servicing vehicle.

2. Remove wheel and tire assembly.

3. Remove four bolts which attach axle retainer plate and spacer. Pull axle from housing.

4. Remove bearing gasket. Pull bearing retainer ring and bearing from axle shaft. Leave axle retainer plat and spacer on axle shaft.

5. Press new bearing to shoulder on axle shaft. Press bearing retainer ring into position on axle shaft.

6. Install new gasket over bearing retainer ring.

7. Install axle into axle housing and differential assembly.

8. Install axle retainer plate and spacer to axle housing with four bolts. Tighten locknuts.

9. Install wheel and tire assembly.

10. Reconnect battery lead.

Remove and Install Rear Axle and Drive Assembly

1. Disconnect main positive and main negative battery leads to prevent accidental engagement of power while servicing vehicle.

2. Clearly mark motor leads to insure their proper location when re-assembling.

3. Remove motor leads.

4. Remove mechanical control linkage return spring.

5. Remove clevis pin which connects brake rod to brake lever arm.

SECTION J2
Page 7

Remove and Install Rear Axle and Drive Assembly (Cont'd)

6. Remove four bolts and nuts which attach axle housing to chassis.

7. Remove axle and drive assembly from chassis.

8. Install axle and drive assembly in reverse order of removal. Adjust brakes as outlined on Page 2 before reconnecting battery leads.

Disassembly of Rear Axle and Differential Assembly

1. Remove rear axle and drive assembly from chassis, and remove primary drive and brake components, as described in appropriate Subsections.

2. Remove bolts on each end holding axle retainer and pull both axles.

3. Remove nuts around differential carrier housing and remove carrier from axle housing.

4. Mark one differential bearing cap and bearing support to insure proper assembly. Remove adjusting nut locks, bearing caps, and adjusting nuts. Lift differential out of carrier.

5. Remove drive gear from differential case.

6. Drive out differential pinion shaft retainer and separate the differential pinion shaft and remove gears and thrust washer.

7. Remove drive pinion retainer from carrier. Remove O-Ring from retainer.

8. Remove pinion locating shim. Measure shim thickness with micrometer.

9. If the drive pinion 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 concave side up.

10. Press the pinion shaft out of front bearing cone and remove spacer.

11. Remove pinion bearing cone.

12. 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.

Reassembly of Rear Axle and Differential Assembly

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 install differential case cover. Install retainer. A pinion or axle shaft spline can be inserted in side gear spline to check for free rotation of differential gears.

SECTION J2
PAGE 8

Reassembly of Rear Axle and Differential Aseembly (Cont'd)

1. (Cont'd) 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 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. Install pinion rear bearing cone on the pinion shaft. Install spacer with shims on the shaft. Place the bearing retainer on the pinion shaft, and install the front bearing cone. Lubricate both bearings with differential oil.

4. Place spacers, sprocket, and brake drum on pinion shaft spline. Assemble washer and shaft nut, and tighten to 100 ft. lb. torque.
   NOTE: The bearing should spin freely without end play. If it is too tight or too loose, adjust by using shims.

5. Shim Selection: Manufacturing tolerances in the pinion bore dimensions and in the best operating position of the gears make an adjustment shim necessary. This shim is placed between the pinion retainer and the carrier, Figure 5. An increase in the thickness of the shim moves the pinion away from the drive gear. Manufacturing objectives are to make axles requiring a .0015" shim and if a new assembly is being built, a .0015" shim should be used for a tentative build-up. Shims are available in .010" to .021" thicknesses in steps of .001". Pinions and drive gears are marked, when matched, with the same number. Following the number on the pinion is a minus (-) or (+) followed by a number. If the pinion is marked "-1" it indicates that a shim .001" thinner than a standard shim for this carrier is required. A minus number means the pinion should be moved closer to the drive gear and a thinner shim is required. A plus number means the pinion should be moved farther from tne drive gear and a thicker shim is required. A pinion marked zero (0) is a standard pinion. To select a shim, measure the original shim with a micrometer. Note the dimensional mark on the new pinion to determine how the original shim should be modified. For example, if the original shim is .015" and the original pinion is marked "-1" the new pinion requires a +1 shim. Therefore, the new pinion requires a .002" thicker shim, and a .017" shim should be used. If the new pinion is marked the same as the old pinion, no shim change is required.

6. After the proper selection of shims, insert "O" Ring seal and pinion retainer assembly into differential carrier. Tighten 5 retainer bolts to 50 lb. ft. torque.
   NOTE: The retainer bolts will have to be removed later for installation of primary drive and brake components.

7. Install differential case, bearing cups, adjusting nuts, and bearing caps being sure that each cap is located in the same position from which it was removed. (Use marks as guide).

SECTION J2
PAGE 9

Reassembly of Rear Axle and Differential Assembly (Cont'd)

8. ADJUST Bearing nuts so that differential case will be free to revolve. It is very important that there will be no bearing play or looseness, as this will inevitably lead to gear noise and wear. Gear backlash must be set at the same time to a tolerance of .005" to .009".

   NOTE: It will be necessary to release some of the cap bolt tension in order to allow the bearing to move while making the adjustments. If the caps are too loose an error will result when trying to set backlash and bearing clearance. Therefore, double check your setting after the cap bolts have been tightened. If necessary make corrections in your settings until specified tolerances are maintained after the cap bolts have been tightented.

9. Install nut locks.

10. Install differential carrier assembly in axle housing using new gasket and gasket sealer.

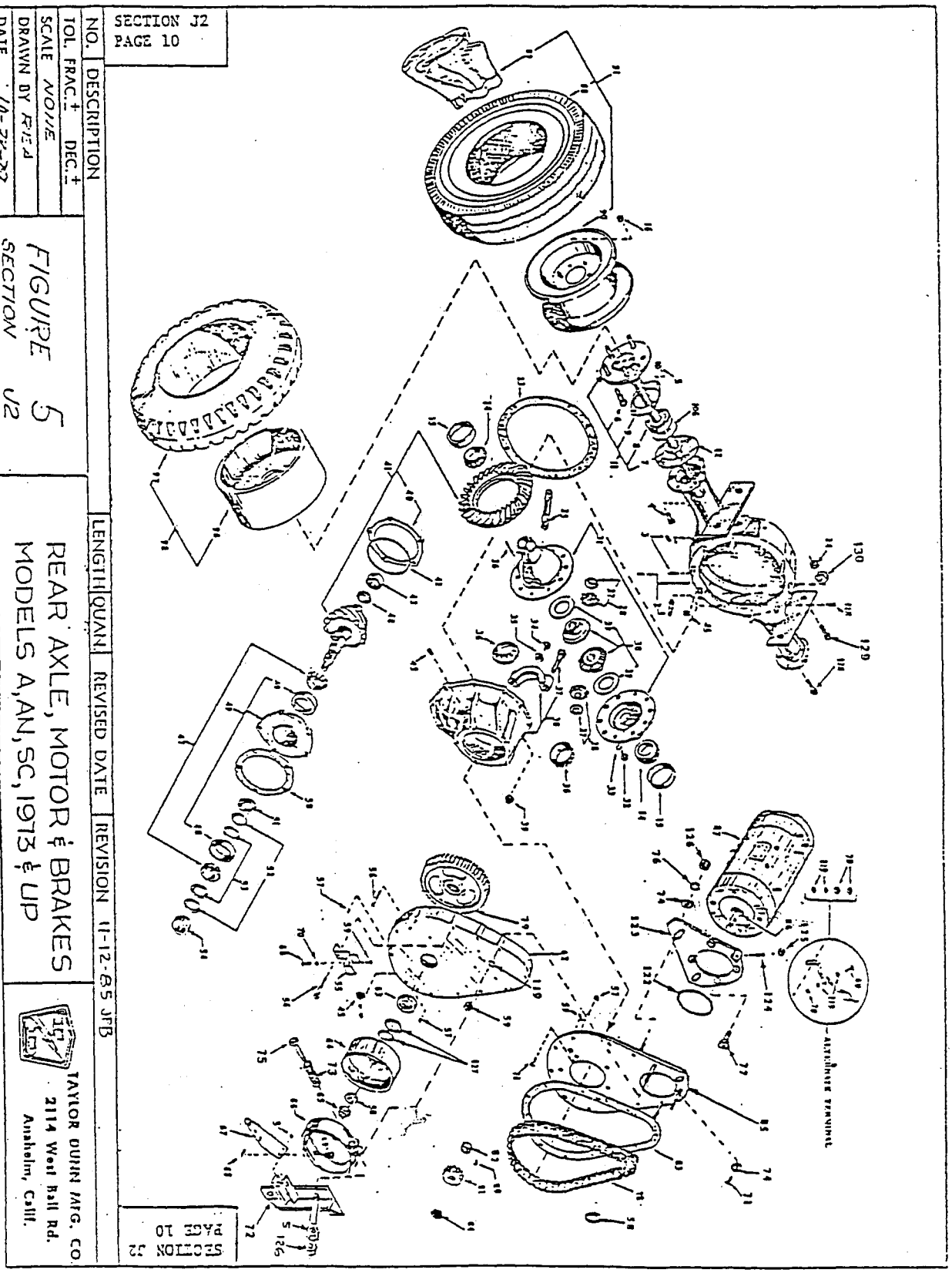
11. Install axles, bearing retainers, and gaskets.

    NOTE: Axles are equipped with special sealed bearings. Should there be evidence of seal leakage, it is recommended that the bearing be replaced. It is also recommended that gasket located between bearing and bearing seat in axle housing be replaced at the same time. Refer to Figure 5.

12. Remove pinion shaft nut, washer, spacers, brake drum, and sprockets. Remove five bolts from pinion bearing retainer. Install primary drive components as described in Subsection titles "Disassemble and Reassemble Primary Drive".

13. Fill housing with oil. Refer to Section E, Figure 1.

SECTION J2
Page 10



SECTION J2
Page 11

REAR AXLE AND BRAKES
FIGURE 5

FIG. I.D.	T-D PART	DESCRIPTION	QTY.
5-1	41-290-13	Housing, Drive with studs for 1.530 ID x 3.150 OD Drive Axle Ball Bearing 80-503-00	1
5-2	96-330-00	Bolt Differential Carrier to Housing	10
5-3	41-997-00	Drain and Level Plug (1/8" Pipe)	2
5-4	88-120-11	Screw, Head Cap 7/16 x 1 N.C.	0 or 8
5-5	88-159-84	Nut, Lock 1/2 - 20 NF	1
5-6	96-331-00	Bolt 1/2" N.F. (special) Rear Hub	10
5-7	32-515-00	Ring Retainer	2
5-8	80-503-00	Bearing, Ball, Drive Axle 1.530 ID x 3.150 OD	2
5-9	32-514-00	Plate, Retainer, for use with Drive Axle Ball Bearing	2
5-11	41-163-21	Assembly, Axle Shaft 13-1/4 Long, Axle Flange Face to Splined End, 28 Teeth on Spline.	0 or 1
5-11	41-162-00	Assembly, Axle Shaft 10-13/16 Long, Axle Flange Face to Splined End, 28 Teeth on Spline	0 or 1
Not Shown	45-301-00	Seal, Oil. Used with 41-163-21 and 41-162-21 Axles.	0 or 1
5-12	32-512-00	Retainer Spacer (Used Only Without Hydraulic Brakes)	2
5-13	45-042-00	Gasket (Housing to Differential Carrier)	1
5-14	80-512-00	Tapered Roller Bearing Carrier (Large 1.784 ID)	2
5-15	80-128-00	Tapered Bearing Race	2
5-16	97-236-00	Nut, Lub, Tapered, 1/2 "	10
5-24	88-149-81	Lock Nut 1/2" N.C. (Hex)	3 or 4
5-25	41-700-00	Differential Pinion Shaft	1
5-26	41-701-00	Pin	1
5-27	41-402-00	Thrust Washer - Differential Pinion Shaft	2
5-28	41-703-00	Differential Shaft Pinion Kit (Two Differential Gears and Two Thrust Washers)	1 1
5-29	41-704-00	Thrush Washer - Differential Side Gear	2
5-30	41-705-00	Differential Side Gear Kit (Two Differential Gears and Two Thrust Washers)	1
5-31	41-713-00	Differential Gear Case Assembly with Differential Gears less Carrier Bearings and Right Gear for Large Carrier Bearings 1.784" ID	1
5-32	96-243-00	Hex Head Cap Screw 7/16" x 7/8" NF, Heat Treated	10
5-33	97-163-00	Washer 7/16" ID x 3/4" OD 1/32"	10
5-34	88-080-04	5/16 x 38 NC	2
5-35	41-706-00	Differential Bearing Adjustment Nut Lock with 30 Degree angle Tab	2
5-36	41-708-00	Nut-Differential Bearing Adjustment, 3-1/8" OD Oblong Locking Holes, Large Carrier Bearing 1.784" ID	2
5-38	41-710-00	Carrier, Differential, Less Differential Gear Case Assembly, Bearings, Ring and Pinion Gears for Large Carrier Bearings 1.784" ID	1
5-39	88-119-80	Nut, 3/8" NF (Hex)	14
5-40	41-711-00	Shim - Drive Pinion Bearing, .005" Thick	1 to 3
5-41	31-235-00	Ring and Pinion Gear Set 2.75 Ratio	1
5-41	31-236-00	Ring and Pinion Gear Set 3.10 Ratio	1
5-41	31-237-00	Ring and Pinion Gear Set 3.25 Ratio	1
5-41	31-328-00	Ring and Pinion Gear Set 3.50 Ratio	1
5-41	31-329-00	Ring and Pinion Gear Set .43 Ratio	1

SECTION J2
Page 12

REAR AXLE AND BRAKES FIGURE 5 Continued

FIG. I.D.	PART NO.	DESCRIPTION	QTY.
5-42	80-702-00	"O" Ring - Drive Pinion Bearing Retainer	1
5-43	~~80-855-00~~	Ball Bearing, Pinion Pilot 80-555-00	1
5-44	41-714-00	Retainer, Drive Pinion Pilot Bearing	1
5-45	41-998-00	Plug - (Level) 1/2" with Square Top	1 or 3
5-47	80-554-00	Tapered Roller Bearing - Front and Rear Pinion Shaft	2
5-48	80-125-00	Tapered Bearing Race - Front and Rear Pinion Shaft	2
5-49	44-340-90	Flange, Ring Gear Pinion Bearing, with Bearing Races, Less Bearings	1
5-50	45-021-00	Gasket, Ring Gear Bearing Flange to Chain Case Backing Plate	1
5-51	16-415-00	Spacer Pinion Shaft (.440" Thick)	1
5-52	16-410-00	Spacer Pinion Shaft (.020" Thick)	2 to 6
5-53	16-411-00	Spacer Pinion Shaft (.005" Thick)	2 to 6
5-54	16-414-00	Spacer Pinion Shaft (.500" Thick)	1
5-54	16-417-00	Spacer Pinion Shaft (.340" Thick)	1
5-55	41-371-00	Brake Alignment Bracket	1
5-56	88-080-20	Hex Head Cap Screw 5/16" x 3 NC	9
5-57	41-989-00	Plug (Filler Level and Drain) 1/4 " N.P.T	2
5-58	88-228-61	Washer 3/4" S.A.E.	2
5-59	88-089-81	Lock Nut 5/16" NC (Hex)	14
5-60	88-080-11	Hex Head Cap Screw 5/16" x 1 NC	2
5-62	43-201-11	Cover, Chain Case with Oil Seal	1
5-63	45-331-00	Oil Seal - Chain Case Cover to Pinion Shaft	1
5-64	~~41-352-00~~	Brake Drum (Splined) 41-532-00	1
5-65	97-250-00	Nut - Pinion 3/4" - 20 Extra Fine Thread	1
5-66	41-661-00	Band Brake (Full) for Drive Shaft Brake	1
5-67	50-656-00	Brake Lever Arm	1
5-68	88-517-11	Cotter Pin 3/32" x 1	1
5-69	96-771-00	Clevis Pin 3/8" x 3/4 " Face to Hole	1
5-70	88-089-80	Nut - 5/16" NC (Hex)	10
5-71	88-100-13	Hex Head Cap Screw 3/8" x 1-1/4" NC	7
5-72	41-372-10	Brake Mounting Bracket Full Band Brake	1
5-73	85-060-10	Compression Spring 5/8" OD x 2-1/2 " Long	1
5-75	96-245-10	Bolt, 1/2 -20 x 5	1
5-76	88-108-62	Lockwasher 3/8"	7
5-77	88-103-09	Flat Head Socket Cap Screw 3/8" x 3/4" NC	7
5-78	30-506-00	Chain, 22 Pitches, 27" Long (for 42 Tooth Sprocket)	1
5-78	30-507-00	Chain, 82 Pitches, 30-3/4" Long (for 59 Tooth Sprocket	1
5-78	30-508-00	Chain, 96 Pitches, 36" Long (for 81 Tooth Sprocket)	1
5-79	30-091-00	Sprocket, 42 Tooth w/Splined Hub	1
5-79	30-092-00	Sprocket, 59 Tooth w/Splined Hub	1
5-79	30-093-00	Sprocket, 81 Tooth w/Splined Hub	1
5-80	97-100-00	Woodruff Key - 3/16"	1
5-81	30-080-00	Sprocket, 15 Tooth x 3/4" Bore	1
5-82	17-110-10	Shaft Collar - 3/4 " w/Keyway	1
5-83	45-002-00	Gasket - Chain Case Cover, 17-3/4 " Long	1
5-84	88-239-82	Jam Nut - 3/4" NF (Hex)	1
5-85	44-352-53	Gear Case Back Plate (Angel Motor Mount) Adjustable (SEE SECTION J2M MOTOR PARTS)	1

SECTION J2
Page 13

REAR AXLE AND BRAKES FIGURE 5 Continued

FIG. I.D.	T-D PART NO.	DESCRIPTION	QTY.
5-87	(SEE SECTION J2M MOTOR PARTS)		
	NOTE: SEE SECTION J1 FOR TIRES AND TUBES		
5-90	12-012-00	Wheel for 4.80 x 8 and 5.70 x 8 Tubeless tire, Demountable	2
5-90	12-045-00	Wheel for 16 x 6.50 x 8 Tubeless Tire, Demountable	2
5-90	13-734-00	Tire and Demountable Wheel 4.70 x 8, Super Rib	2
5-91	13-739-00	Tire, Tube and Demountable Wheel, 4.80 x 8, 6 Ply Steelguard Tire	2
5-91	13-744-00	Tire, Tube and Demountable Wheel, 5.70 x 8, Extra Grip Tire	2
5-91	13-748-00	Tire and Demountable Wheel 16 x 6.50 x 8, Tubeless Terra Tire	2
5-96	12-050-00	Wheel, Cast Iron, for 16 x 4 x 12-1/8" Solid Cushion, Demountable	2
5-96	12-054-00	Wheel, Cast Iron, for 16-1/4 x 4 x 11-1/4, Solid Cushion, Demountable	2
5-97	10-250-00	Tire, Solid Cushion, Smooth, 16 x 4 x 12-1/8	2
5-97	10-261-00	Tire, Solid Extra Cushion, 16-1/4 x 4 x 11-1/4	2
5-106	45-045-00	Gasket, Shaft Bearing, Use with 41-290-13 Drive Housing	0 or 2
5-118	88-527-11	Cotter Pin 1/8" x 1" (Axle Vent)	1
5-119	88-088-61	Washer 5/16" SAE	11
5-122	80-703-00	"O" Ring Motor Mount Plate Seal	1
5-123	70-454-00	Motor Mount Plate	1
5-124	88-087-11	Socket Set Screw, 5/16" NC x 1"	1
5-125	88-069-80	Nut, 1/4" NC (Hex)	1
5-126	88-159-82	Nut, 1/2 -NF Jam	1
5-127	16-400-00	Spacer 1-1/4" ID x .125" Thick	0 - 1 or 2
5-128	88-140-14	Hex Head Cap Screw 1/2" x 1-1/2" NC	2
5-129	96-316-00	Bolt, All Threaded, 1/2 x 3 NC	2
5-130	88-148-62	1/2" Lockwash	4

SECTION J2M
PAGE 1

MOTOR MAINTENANCE, SERVICE AND ADJUSTMENT
ELECTRIC MOTORS
REFER TO FIGURE 5H

Detailed service procedures covering maintenance of bearing brushes and commutator are covered in this section. DO NOT PERFORM THIS PROCEDURE WHILE BATTERIES ARE BEING CHARGED.

Maintenance of electric motors should be referred to personnel with experience and equipment. Should it be necessary for you to order replacement parts for your motor, IT IS NECESSARY TO INCLUDE COMPLETE NAMEPLATE DATA WITH ORDER.

MOTOR MAINTENANCE - BRUSH INSPECTION AND REPLACEMENT

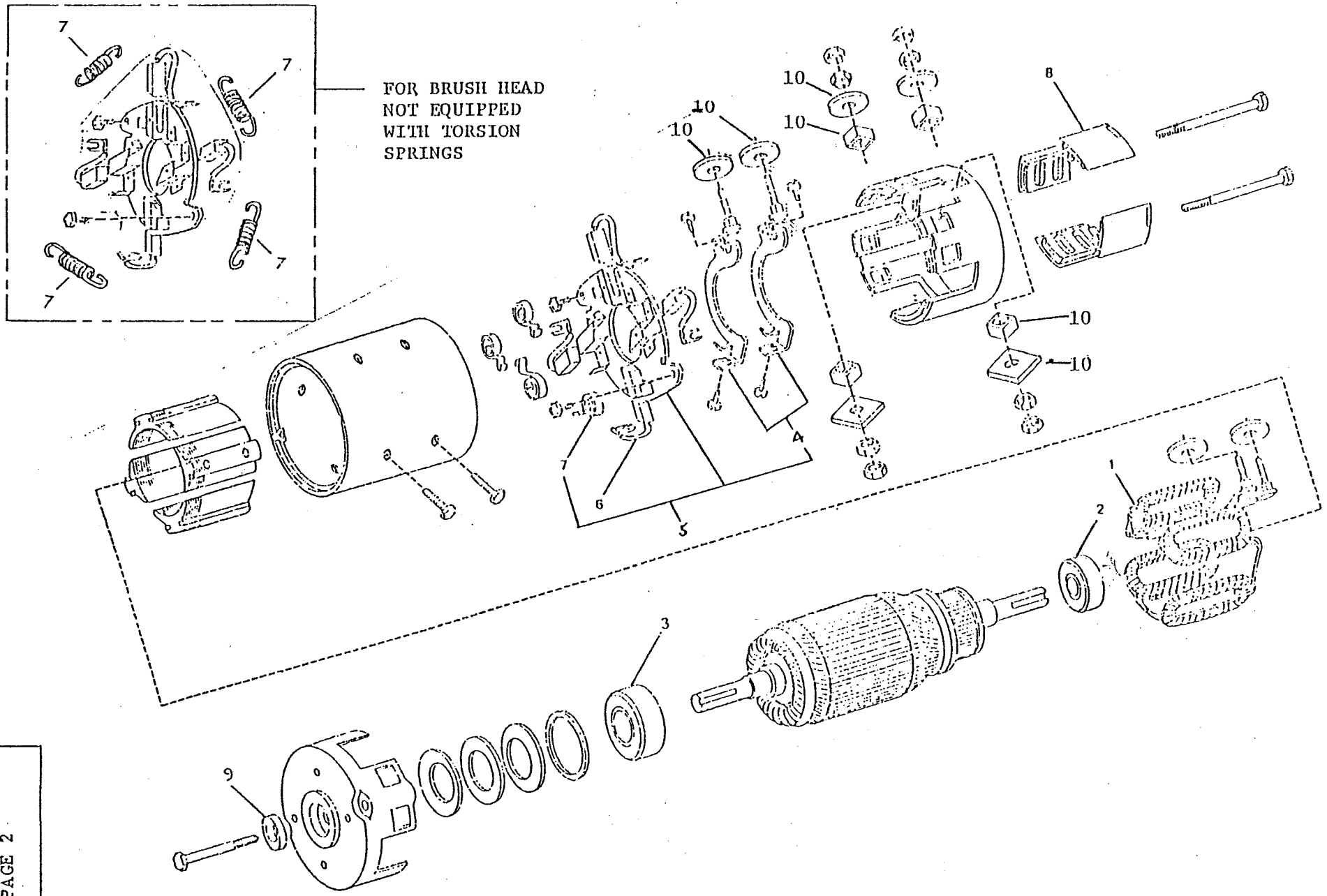
1. Remove cover, exposing brush assemblies. Lift brush from holder for inspection.
2. If brushes are worn, remove, install new brushes. Use fine sandpaper to "seat in" new brushes to commutator. To determine when to replace worn brushes, proceed as follows:
   a. For motors equipped with brushes having end pigtails and side hooks, replace brush when hook is within 1/16" from bottom of hook slot.
   b. For motors equipped with brushes having side pigtails only, replace brush when pigtail is within 1/16" from bottom of pigtail slot.

   NOTE: When one brush is replaced in a motor, it is considered good maintenance practice to replace all brushes.
3. Check operation of each brush to assure that brush slides freely and does not bind in holder.
4. Replace Cover.

MOTOR DISASSEMBLY AND REASSEMBLY

1. Remove motor from vehicle as described in section J2.
2. Determine if witness marks on end bell and stator housing are present. If not, mark end bell and housing to assure proper relation of brushes and commutator when reassembling.
3. Remove cover, exposing brush assemblies. Lift brushes from brush holder.
4. Remove bolts holding end bells and remove end bell and rotor. (Pull from shaft extension end). Take care not to damage any coils or armature wires when handling motor parts.
5. Press or pull old bearings off by using bearing press or bearing puller. Do not damage shaft while removing bearings.
6. Install new bearings onto shaft by gentle pressure or tapping with proper tool on inner race only. Bearing will be damaged if pressed or driven by outer race or seals.
7. If the commutator is worn or "burned" it should be turned, the mica undercut and the commutator polished.
8. Oil bearing housing lightly to aid in reassembly.
9. Reassemble motor taking care that all parts are kept clean.
10. Install brushes and "seat in" with fine sandpaper.
11. Check operation of each brush to assure that brush slides freely in holder.
12. Replace cover.
13. Reassemble to vehicle as described in preceding subsection.

NOTE: If motor terminal studs were removed for inspection, refer to Section J2, P. 5, item 17 for correct procedure to avoid damaging studs.



SECTION J2M
PAGE 2

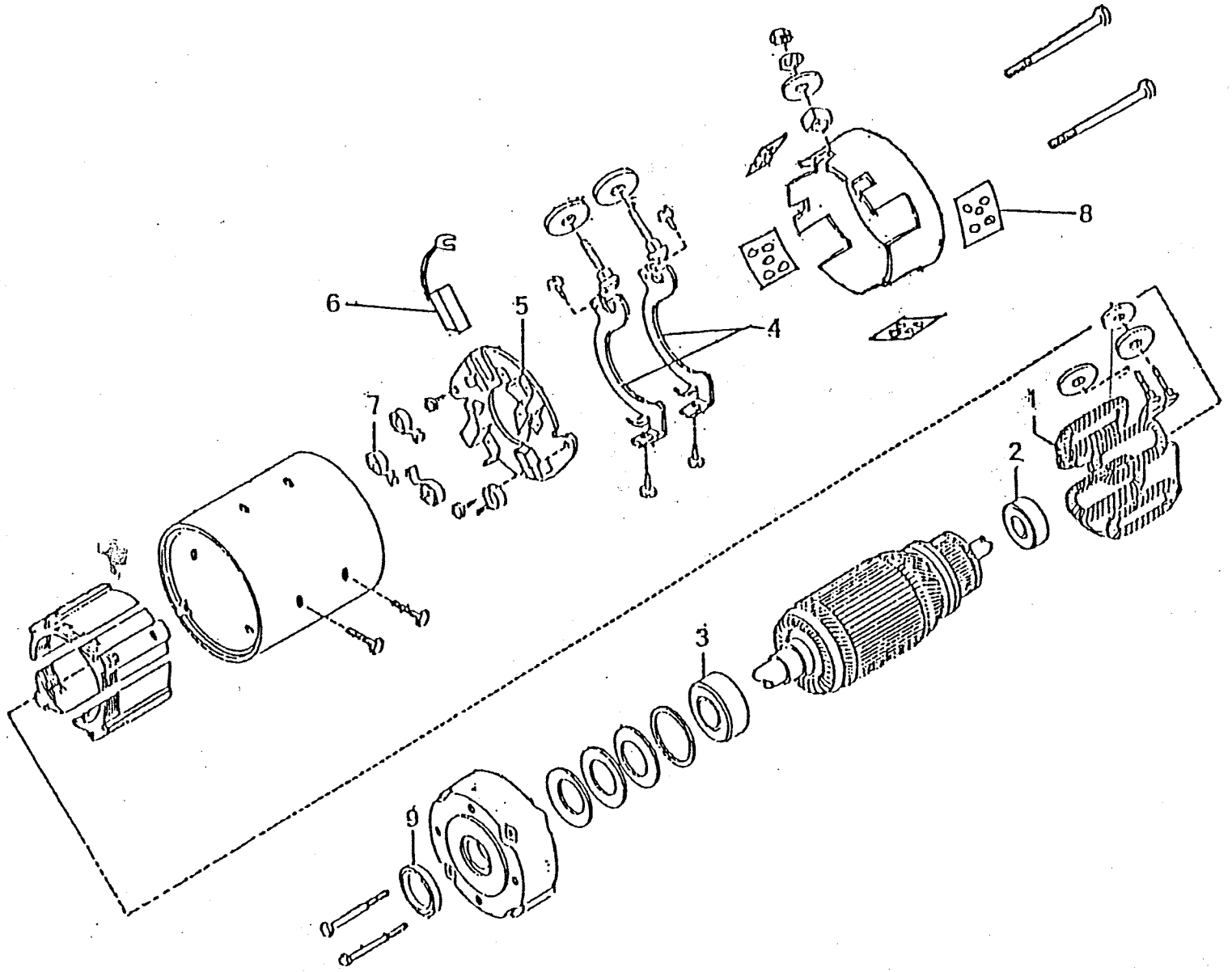
SECTION J2M
PAGE 2

DRAWN BY B.B.
DATE 4 -80

FIGURE 5M
SECTION J2M

MOTOR PARTS - G.E. MOTORS

TAYLOR DUNN MFG. C
2114 West Ball Rd.
Anaheim, Calif.



DO NOT SCALE

TOL: FRAC± DEC± ANG±

4-29-87

Taylor-Dunn
2114 WEST BALL ROAD
ANAHEIM, CALIFORNIA
92804

MOTOR PARTS-GE
2.25 TO 3.5 H.P. 5BC49JB399

SCALE: NONE
DWN BY: BB
CHKD BY:

FIGURE 5M
SECTION J2

SECTION J2M
Page 3

ELECTRIC MOTORS
REFER TO FIGURE 5M

For D.C. Motor replacement parts, IT IS NECESSARY TO INCLUDE COMPLETE MOTOR NAME PLATE DATA WITH THE ORDER.

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
Replacement parts for G.E. Motor 5BC48JB503, 5BC48JB531, 5BC48JB550 and 5BC48JB582			
5M-1	70-201-00	Field Coil Set (not used on G.E. Motor 5BC48JB582)	1
5M-1	70-202-00	Field Coil Set (For G.E. Motor 5BC48JB582)	1
5M-2	80-200-00	Ball Bearing - Commutator End	1
5M-3	80-504-00	Ball Bearing - Pulley End	1
5M-4	70-195-00	Set of two armature terminal & brush pair connectors, not used on motor 5BC48JB550 with suffix letter "C" or "D". Two required per motor. (included in 70-188-00)	2
5M-4	70-196-00	Armature terminal & brush pair connector, used only with motor 5BC48JB550 with suffix letter "C" or "D". Two required per motor. (included in 70-184-00).	2
5M-5	70-184-00	Brush holder, without brushes, including brush springs, armature terminal & brush pair connectors. Used only on motor 5BC48JB550 with suffix letter "C" or "D".	1
5M-5	70-188-00	Brush holder, without brushes, including brush springs, armature terminal & brush pair connectors. Not used on motor 5BC48JB550 with suffix letter "C" or "D".	1
5M-6	70-101-00	Motor Brush	4
5M-7	85-412-00	Brush Spring, Torsion	4
5M-8	30-801-00	Brush Inspection Cover	4
5M-9	45-506-00	Oil Seal	1
5M-10	70-210-62	Motor Terminals Insulator Kit	1
Replacement parts for G.E. Motors 5BC48JB251 & 5BC48JB265			
5M-2	80-200-00	Ball Bearing, Commutator End	1
5M-3	80-504-00	Ball Bearing, Pulley End	1
5M-5	70-185-00	Brush Holder Assy.	1
5M-6	70-100-00	Motor Brush	4
5M-7	85-401-00	Brush Spring, Extension	4
5M-9	45-506-00	Oil Seal	1
Replacement Parts For G.E. Motor 5B6A8JB726			
	70-204-00	Field Coil Set	1
	80-209-00	Ball Bearing, Commutator End	1
	80-504-00	Ball Bearing, Pulley End	1
	70-172-00	Brush Holder Assy. With Brush Springs But Without Brushes	1
	85-412-00	Spring, Brush	4
	70-104-00	Armature Terminal & Brush Pair Connector	2
	45-506-00	Oil Seal	1

Brush Measurement Procedure For 726 Motor

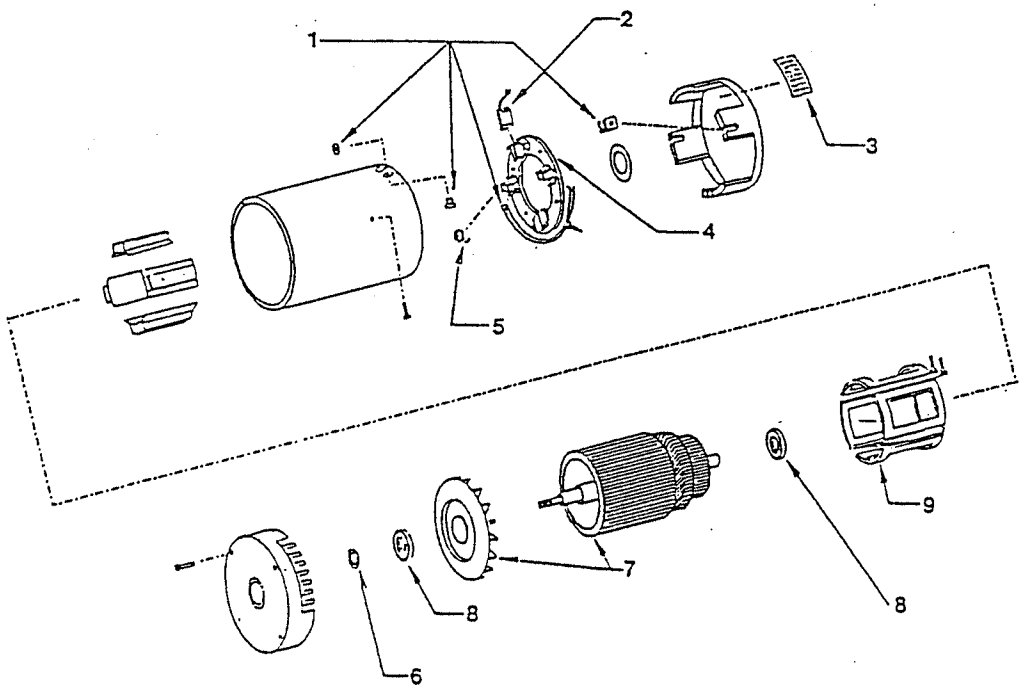
With new brushes, A 1/16" drill rod can be inserted approximately .76" into brush measurement holes. Brushes should be replaced when rod can be inserted 1.56" into hole. This leaves approx. 1/8" allowable wear remaining.

SECTION J2M
PAGE 5

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
Replacement Parts for Taylor-Dunn Motor 388P381A			
5M-2	80-204-00	Ball Bearing, Commutator End	1
5M-3	80-205-00	Ball Bearing, Pulley End	1
5M-5	*70-187-00	Brush Head Assy. Complete with Brushes *Not supplied as original equipment on A series motor but must be used as replacement part.	1
5M-6	*70-102-00	Motor Brush with Wire Hook *Replacement part for original A series motor NOT converted to new brush head assy. 70-187-00.	4
5M-6	70-101-00	Motor Brush for A series motor converted to new brush head 70-187-00.	4
5M-7	*85-413-00	Brush Torsion Springl *Replacement part for original A series motor Not converted to new brush head assy. 70-187-00.	4
5M-9	45-506-00	Oil Seal	1
5M-8	30-802-00	Brush Inspection Cover	1

SECTION J2M
Page 6

D.C. MOTOR



D.C. MOTOR

ITEM NO.	T-D PART NO.	DESCRIPTION	QTY.
	70-054-30	D.C. Motor 10 HP Prestolite MVB4001	
1	70-210-65	Kit Term Stud	4
2	70-105-10	Brush 10 HP Prestolite	4
3	30-802-20	Cover, Brush Inspection	4
4	70-188-10	Assembly, Brush Holder w/o Brushes or Springs	1
5	85-412-10	Spring, Brush 10 HP Prestolite	4
6	45-508-20	Seal, 10 HP Prestolite	1
7	70-054-31	Armature, w/Fan, 10 HP Prestolite	1
8	80-504-20	Bearing, Ball Commutator and Pulley	2
9	70-203-20	Field Coils (set)	1

SECTION J4
PAGE 1

MAINTENANCE PROCEDURES

REFER TO FIGURE 7

MECHANICAL CONTROL LINKAGE

The mechanical control linkage operates the various controls and mechanisms located throughout your vehicle.

The speed control and braking systems are inter-connected, both being operated by movement of the treadle, which transmits motion to brake and speed control systems by means of a rigid strap, causing rotation of the speed control arm and brake arm. Connections of the moving parts are made with clevis pins.

The system is returned to a "brake on - speed control off" position by means of a spring which is anchored to the frame at one end, and to the speed control arm at its other end.

All wear points should be lubricated as outlined in Sections D and E, Maintenance Guide and Lubrication Diagram. Proper attention in this area will assure trouble free operation and minimal maintenance expense.

For service and adjustments of the systems operated by the control linkage refer to this Section and also to the following Sections:

Section J2 - Adjustment of Brake Rod and J-Hook

Section J6 - Adjustment of Speed Control J-Hook Pressure

SECTION J4
PAGE 2

SERVICE AND ADJUSTMENTS

REFER TO FIGURE 7 - MECHANICAL CONTROL LINKAGE

Replace Treadle to Control Arm Connecting Bar

Note: The treadle to control arm connecting bar will not normally require replacement during the life of the vehicle. However, should it become excessively worn through lack of lubrication at wear points, or become accidentally damaged or destroyed, replacement could become necessary. The replacement part supplied by the factory will have a hole at one end only, and will require that the hole at the other end be drilled at time of installation to the vehicle. The position of the drilled hole must be carefully located in accordance with the following instructions.

1. Disconnect main positive and negative battery terminals to prevent accidental power engagement during servicing.

2. Install new connecting bar to treadle arm with clevis pin and cotter pin, leaving it free at the forward end.

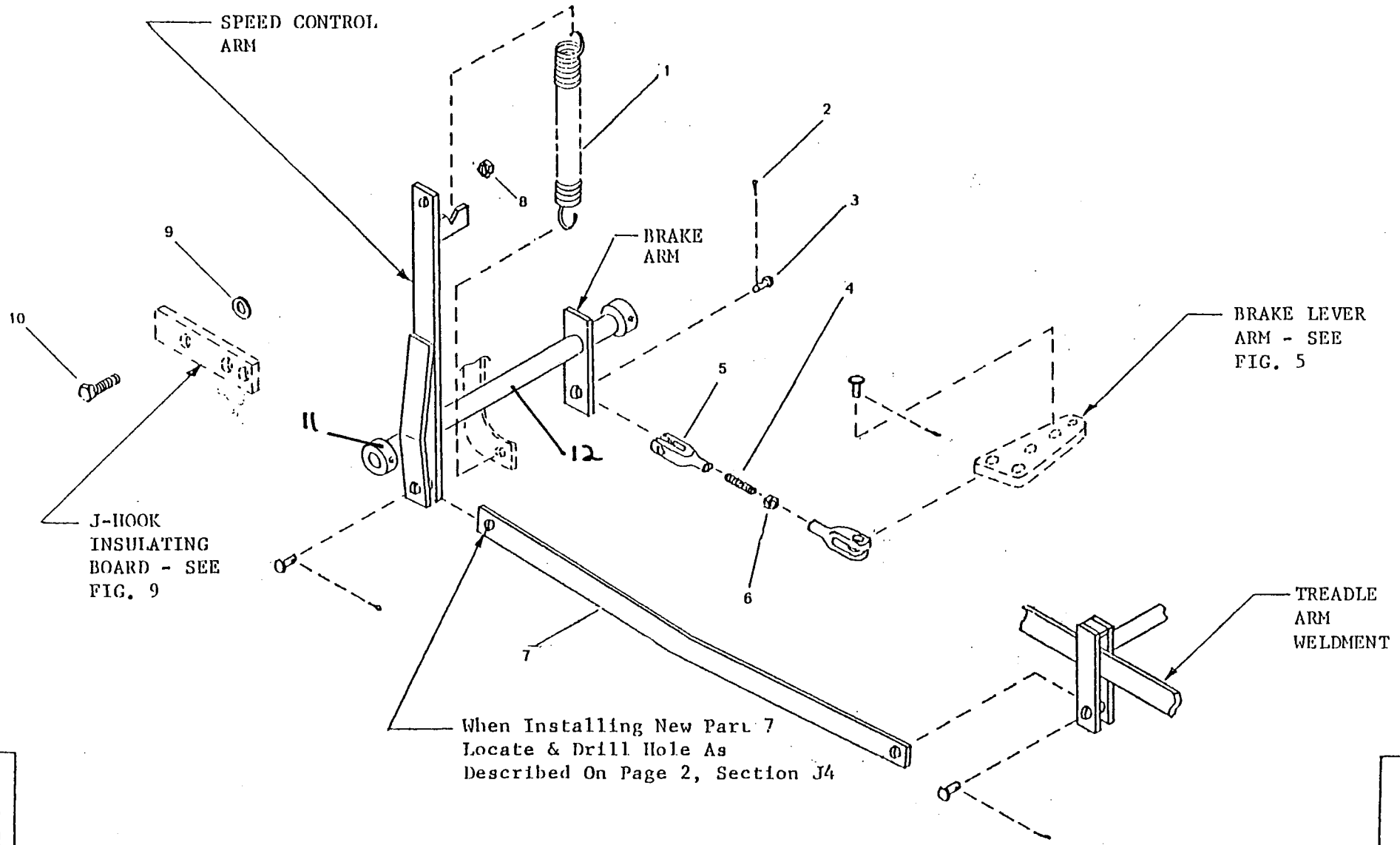
3. Position and hold the speed control arm so that the speed control J-Hook is in full contact with the high speed power bar.

4. Position and hold the treadle so that it is horizontal or pitched slightly forward of horizontal.

5. With the speed control J-Hook and treadle positioned as indicated in Steps 3 & 4, place the front end of the bar in proper relation to the speed control arm, and match drill a 3/8 diameter hole in the connecting bar to mate with the holes at the bottom of the speed control arm.

6. Install front end of connecting bar to speed control arm, using a clevis pin and cotter pin.

7. Lubricate clevis pins at both ends of connecting bar.



SECTION J4
PAGE 3

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC.± DEC.±
SCALE NONE
DRAWN BY E.D.B.
DATE 1-2-75

FIGURE 7
SECTION J4

MECHANICAL CONTROL LINKAGE

TAYLOR DUNN MFG. CO.
2114 West Ball Rd.
Anaheim, Calif.

SECTION J4
PAGE 4

MECHANICAL CONTROL LINKAGE
REFER TO FIGURE NO. 7

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
7-1	85-280-00	Spring Extension - 1-3/8 O.D. x 7-3/4 Long	1
7-2	88-517-11	3/32 x 1 Steel Cotter Pin	4
7-3	96-772-00	Pin, Clevis, 3/8 x 1	4
7-4	50-028-00	Rod, 3/8 N.F. Thread 1-1/2" Long	1
7-5	96-762-00	Clevis, Cast, 3/8	2
7-6	88-119-80	3/8 N.F. Hex Head Nut	1
7-7	50-429-00	Strap, Connecting, 1/4 x 1 x 30-1/2 w/Bend	1
7-8	88-109-81	3/8 N.C. Locknut	1
7-9	88-108-61	3/8 SAE Washer	1
7-10	88-100-13	3/8 x 1-1/4 N.C. Hex Head Screw	1
11	32-033-00	Collar	
12	00-150-04	Control Linkage	

MAINTENANCE PROCEDURES
REFER TO FIGURE 8
FORWARD-REVERSE SWITCH

The forward-reverse switch on your vehicle serves the same purpose as does the transmission in your automobile. It should be treated with the same respect, for abusive treatment will not only shorten its life, but will seriously effect the life of the motor, drive gears and differential.

DO NOT SHIFT POSITION OF SWITCH FROM FORWARD TO REVERSE OR VICE-VERSA WHILE VEHICLE IS IN MOTION.

It will require very little maintenance if properly used. Every month check contact fingers and rotor contacts for cleanliness and to insure that they are making snug and even contact. If they show evidence of abnormal pitting or burning they should be replaced.

Refer to Service and Adjustment Section J5 of this manual for replacement procedures.

It is recommended that an occasional small quantity of lubricant be placed on the cam and cam follower of the switch. Refer to Figure 8.

An occasional application of powdered graphite or similar key lock lubricant will keep your key and lock in good working order.

SECTION J5
PAGE 2

SERVICE AND ADJUSTMENT
FORWARD/REVERSE SWITCH
REFER TO FIGURE 8

CAUTION: Whenever service work is to be conducted on the switch or any part of your vehicle wiring system, disconnect both leads at the main battery or unplug power leads on vehicles so equipped.

REMOVAL, DIS-ASSEMBLY AND RE-ASSEMBLY OF SWITCH

1. Remove handle screw in center of handle and then remove handle and spacer.

2. Remove 2 screws in center of face plate, this will release switch unit from frame. Then lift switch unit clear of frame noting that the end plate will be free to lift off of switch.

3. Remove cover.

4. If you wish to remove contact fingers or finger-boards at this time, then it will be necessary to follow steps 5-6-8 & 9. If you will only be servicing the rotor assembly it will not be necessary to remove wires.

5. Note position of wires and mark their respective locations to insure that they will be properly placed on re-assembly.

6. Remove 4 wires from switch terminals and slide out of switch housing.

7. Pull cam follower away from cam on rotor and lift rotor assembly from switch housing.

8. If you wish to replace finger-boards at this time, tap them out of their slots in the direction of the handle end of switch taking care to catch the wedges into place to lock finger boards to frame.

9. Install new finger board in the reverse manner outlined in Step 8, noting that the long notch on end of board is located on handle end of switch. Tap wedges into place to lock finger boards to frame.

10. Inspect cam and spring. If necessary replace with new parts.

11. Remove nut on end of rotor shaft and dis-assemble spacers and rotor contacts. Note: It is very important to observe the position of each part as you remove it from rotor shaft to insure its proper re-assembly. The rotor contacts look similar but are actually a pair consisting of a left and right contact.

12. Re-assemble rotor parts on rotor shaft in their proper order and lock into place by tightening 1/4" nut at end of shaft. Use care in tightening nut as undue strain could shear the locking ring on opposite end of shaft.

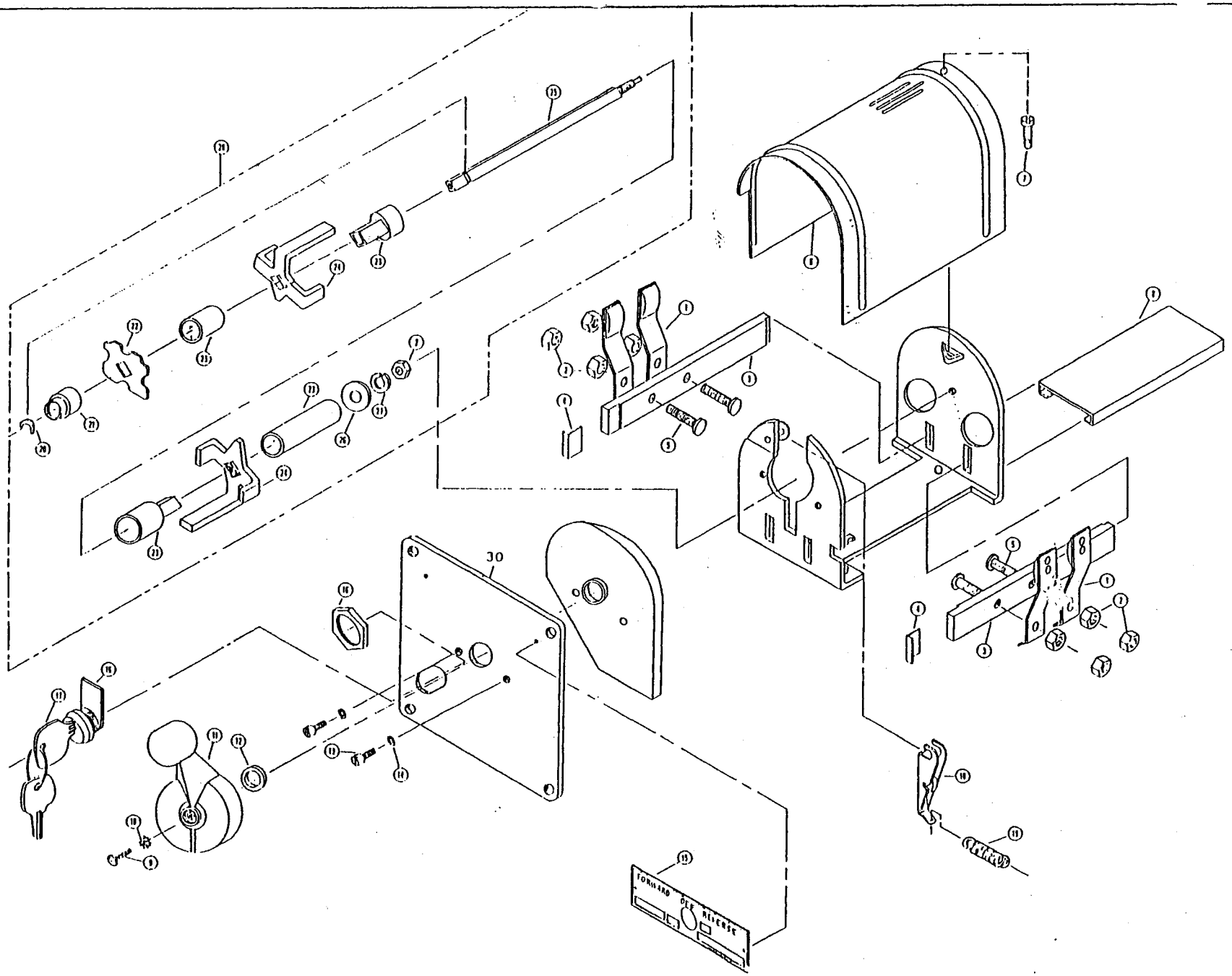
13. Install rotor assembly into frame moving cam follower enough to allow cam to set in position.
    NOTE: It will ease the rotor installation if you will place it in neutral position. I.E., the contacts will be free from finger contacts and the low side of cam will engage cam follower.

SECTION J5
PAGE 3

14. Install wires onto their respective terminals and tighten securely.
15. Replace cover.
16. Replace end plate and slide switch unit back into place against face plate.
17. Replace 2 screws. It may be necessary to exert sufficient pressure and joggle switch unit into alignment with screw holes as cam spring tends to hold the switch out of position. A simple method to align the face plate and switch frame together, is to slip a medium size nail or ice pick into one hole through both pieces. Align second hole, insert screw, and tighten. Remove nail or ice pick from first hole and install screw and tighten.
18. Replace spacer and handle and tighten into position with center screw.

REPLACEMENT OF CONTACT FINGERS ONLY

1. Remove cover. (Note: on some vehicles it will be necessary to remove switch from mounting plate to gain access to cover.)
2. If you will be removing more than one finger at a time, it is recommended that you note the position of the wires and mark their respective locations.
3. Remove terminal nut and wire.
4. Remove nut holding finger to finger-board and remove finger.
5. Install new finger and replace nuts and wires in the reverse order to which they were removed.



SECTION 55
PAGE 4

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC. ± DEC. ±
SCALE NONE
DRAWN DEA

FIGURE 8

FORWARD - REVERSE SW.

TAYLOR DUNN MFG. C
2114 West Ball Rd.

SECTION 55
PAGE 4

PAGE 5

FORWARD AND REVERSE SWITCH

REFER TO FIGURE NO. 8

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
8-0	71-040-00	Forward & Reverse Switch Complete (4 Fingers)	1
8-1	71-040-60	Switch Finger - Silver Plated w/¼" Hole	4
8-2	88-079-80	Nut ¼" NF (Hex)	9
8-3	71-040-61	Finger Board w/¼" Holes	2
8-4	71-040-69	Finger Board Wedge	2
8-5	71-040-71	Bolt-Finger Mounting (1/4" NF x 7/8" Spec)	4
8-6	71-040-65	Switch Cover	1
8-7	71-040-73	Cover Screw (10-32 x 1/2" Filister Head)	1
8-8	71-040-70	Rubber Insulator Strip	1
8-9	88-025-06	Screw 8-32 x 1/2" Truss Head	1
8-10		Washer 8-32 (External Star Lock)	1
8-11	71-040-62	Switch Handle - Metal (Red Color)	1
8-12	71-040-59	Spacer Washer	1
8-13	71-040-72	Face Stop Bolt (10-32 x 3/8 Spec.)	2
8-14	88-048-62	Lock Washer 10-32	2
8-15	94-305-00	Forward-Reverse Switchplate	1
8-16	71-040-55	Lock Assembly with 2 Keys	1
8-16	71-040-81	Tubular Lock Assembly with 2 Keys	1
8-17	71-040-74	Key Only (Give No. of Lock or Vehicle Ser. No.)	2
8-18	71-040-53	Cam	1
8-19	71-040-54	Spring (Cam)	1
8-20	71-040-75	Snap Ring - 1/4"	1
8-21	71-040-68	Bushing	1
8-22	71-040-67	Cam Index	1
8-23	71-040-66	Plastic Spacer Set (Sold Only As set of 4 PCS)	1 Set
8-24	71-040-58	Rotor Contacts (Set of 2-1 Right & 1 Left)	1 Set
8-25	71-040-64	Rotor Shaft (Only)	1
8-26	88-068-61	Washer SAE	1
8-27	88-068-62	Lock Washer 1/4"	1
8-28	71-040-52	Rotor Assembly	1
8-30	71-040-82	Face Plate	
	71-040-20	Kit-Conversion to Six Finger Switch	1

SWITCH EXTENSION HANDLE PARTS

8-9	71-040-80	Extension Rod - 8-32 x 6¼" Long	1
8-9	71-040-78	Extension Tube - 11/16 OD x 5¼" Long	1
8-11	71-040-77	Switch Position Indicator	1
	71-040-79	Bracket - Extension Support	1
	88-029-80	Nut 8-32 (Hex)	1

SECTION J6
PAGE 1

MAINTENANCE PROCEDURES

REFER TO FIGURE 9

RHEOSTAT SPEED CONTROL

The rheostat controls the speed of your vehicle through the use of coils of nichrome resistance wire. With this type of resistance control, you use approximately the same amount of power from batteries in low speed as you do in high speed. The flat copper bars and a movable J-Hook are the major parts in the rheostat. With proper adjustment and lubrication the rheostat will give many months of trouble free use. It doesn't take much grease to do the job, but it should be done weekly. Monthly the space between bars should be cleaned with a piece of wood or plastic or steam cleaned if possible. When J-Hook is worn to 1/8" thickness, replace J-Hook and power bars.

It is recommended that all terminal connections be checked and tightened at least once a month. If a terminal bolt or wire becomes loose, sufficient heat will be generated to cause permanent damage to the connection. Care should also be taken at each inspection to insure that proper contact is maintained between J-Hook and power bars.

J-Hook and accelerator linkage should work freely, allowing return spring to always return J-Hook to neutral bar when accelerator is released.

Refer to Lubrication Diagram Section E for proper lubrication.

The speed control and braking systems are both operated from a single treadle, and must be closely coordinated in their operating adjustments.

Refer to Section J2, Page 2, for adjustment of J-Hook travel and brake rod length. Other adjustments to the rheostat are outlinged in this Section of the manual.

CAUTION:

1. Whenever service work is to be performed on the rheostat speed control switch, disconnect the battery by unplugging or disconnecting the main battery leads. Place the Forward/Reverse switch in Neutral and remove key.
2. Never use a flammable cleaning agent when cleaning the speed control switch or any electrical component of the vehicle.
3. Never use a metalic object, of any kind, to clean between power bars or to apply grease to switch sliding contact area.

SECTION J6
PAGE 2

SERVICE AND ADJUSTMENT

RHEOSTAT SPEED CONTROL

REFER TO FIGURE 9

Caution: Whenever service work is to be performed on the electrical system, disconnect the battery by unplugging or disconnecting main battery leads. Place Forward/Reverse Switch in Neutral and remove key.

Adjustment of J-Hook Pressure Bar

1. Disconnect J-Hook insulating board from speed control arm and slide J-Hook near the anchor bolt at neutral bar end. Anchor bolt is held in position by 2 nuts. Loosen 1 nut and adjust the other until J-Hook may be moved with a minimum of effort but not allowed to "jiggle" freely. At the opposite end of the pressure bar, adjust the spring pressure to maintain snug contact between J-Hook and power bars. Too much spring pressure will tend to make the J-Hook bind and stick. Too little pressure will promote poor contact, causing burning and pitting to occur. Re-connect insulating board to speed control arm and check operation of switch. J-Hook should slide smoothly with very little noise. If noticeable clicking noises occur as J-Hook passes over power bars, it is usually indicative of poor J-Hook alignment. If necessary, bend or twist connecting strap until J-Hook contacts power bars in a flat and smooth manner.

Caution: Every time adjustments are made to rheostat switch, always check the operation of the treadle. The J-Hook MUST return completely to neutral bar when treadle is released from any position. Lubricate as outlined in Section E.

Replacement of J-Hook

1. With power disconnected, remove 2 bolts attaching J-Hook to connecting strap.
2. Slide J-Hook to full position and open pressure bar by pulling against spring pressure.
3. Roll J-Hook out from between pressure bar and power bars.
4. Replace J-Hook following reverse procedure.

Replacement of Rheostat Switch

1. Note location of wires connected to switch and mark accordingly, to insure their return to original location on re-assembly.
2. Remove wires at respective terminals.
3. Remove bolts connecting J-Hook insulator to operating link.
4. Remove 3 bolts holding switch to bracket and remove switch.
5. Replace switch in the reverse manner to which it was removed.
6. Check and adjust J-Hook pressure bar as outlined above; check and adjust J-Hook travel and brake rod length as outlined on Page 2, Section J2.

SECTION J6
PAGE 3

Replacement of Power Bars

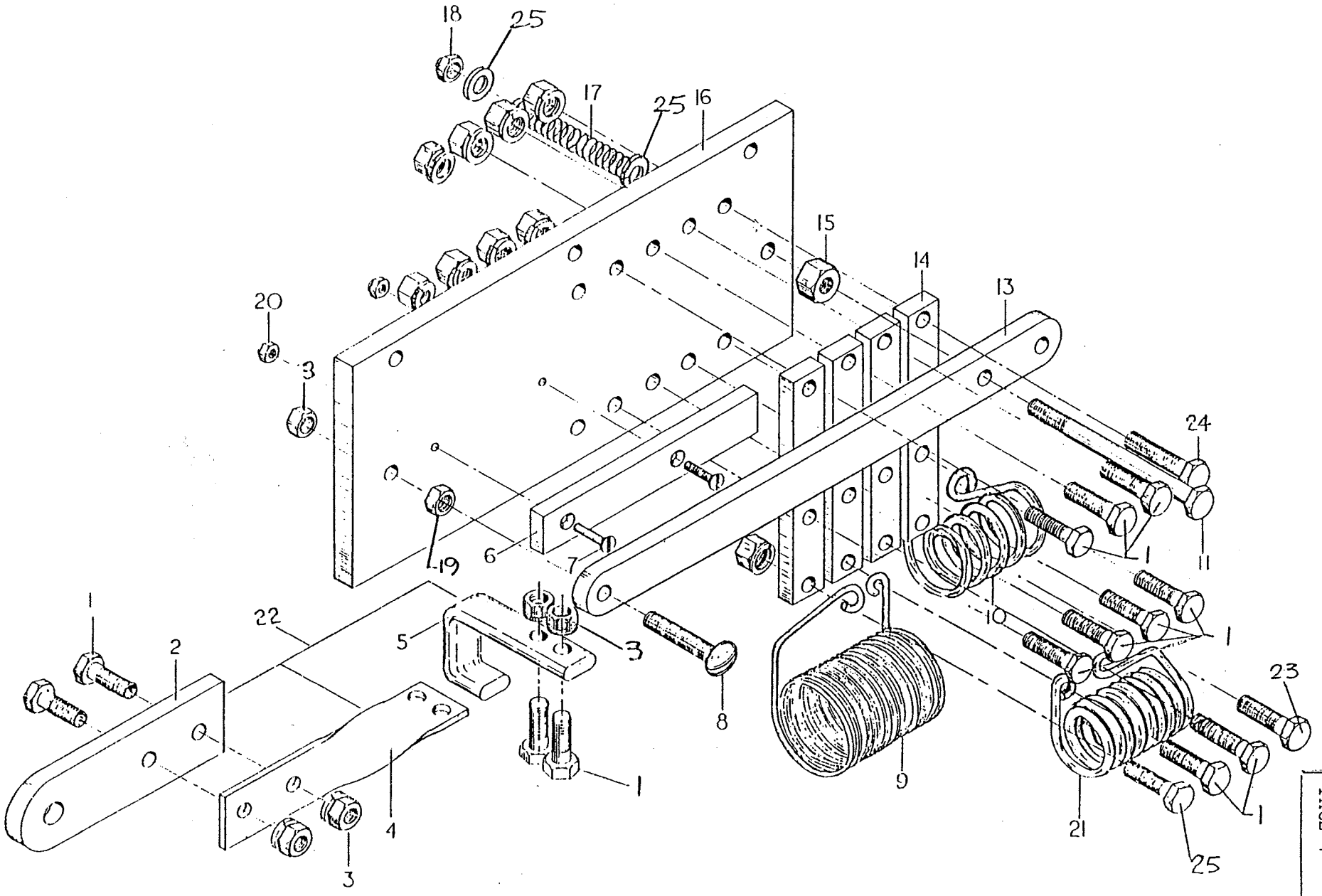
1. With power disconnected, remove terminal bolt and holding bolts.
2. Slide bar out of rheostat.
3. Clean switch thoroughly and install new bar.

Note: Power bars tend to wear at the same rate, except when 1 bar may become excessively burned because of poor contact. When replacing with new power bars, it is important that all bars be of the same thickness. Binding and sticking will occur when bars are not of uniform thickness.

It is recommended that power bars be replaced as a set rather than individually to avoid the above condition.

Minor high points may be removed with a file to produce smooth switching action.

4. Follow adjustment procedures previously outlined.



SECTION J6
PAGE 4

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION 3-26-82

TOL. FRAC.± DEC.±	FIGURE 9	SPEED CONTROL RHEOSTAT
SCALE	SECTION J6	FOUR SPEED
DRAWN BY DB		
DATE 1-11-75		

TAYLOR DUNN MFG. CO
2114 West Ball Rd.
Anaheim, Calif.

SECTION J6
PAGE 4

SECTION J6
PAGE 5

SPEED CONTROL RHEOSTAT - FOUR SPEED
REFER TO FIGURE 9

FIG. I.D. #	T-D PART #	DESCRIPTION	QTY
9-0	61-837-25	Four speed rheostat assy not incl. J-hook	1
9-1	88-060-11	1/4 x 1 NC bolt	13
9-2	61-834-00	Insulating board	1
9-3	88-069-81	1/4 Nut, Keps	17
9-4	61-833-00	J-Hook twisted strap	1
9-5	61-832-00	J-Hook	1
9-6	61-835-14	Neutral bar	1
9-7	88-026-10	Truss head screw 8-32 x 7/8	2
9-8	88-065-13	Truss head screw, 1/4 x 1-1/4	1
9-9	78-212-55	Resistor coil, #9 wire	1
9-10	78-212-57	Resistor coil, #5 wire	1
9-11	88-060-22	1/4 x 3-1/2 bolt	1
9-13	61-836-00	Pressure bar	1
9-14	61-831-00	Power bar	4
9-15	88-109-80	3/8 nut	1
9-16	61-837-00	Mounting board	1
9-17	85-034-00	Spring	1
9-18	88-069-81	1/4 NC lock nut	1
9-19	88-069-80	1/4 NC nut	1
9-20	88-029-86	8-32 lock nut	2
9-21	78-212-56	Resistor coil, #6 wire	1
9-22	61-832-10	J-Hook assy. Incl parts 9-5, 9-4, 9-2	
9-23	88-060-09	1/4 x 3/4 bolt	2
9-24	88-060-14	1/4 x 1-1/2 NC bolt	1
9-25	88-068-60	1/4 Cut flat washer	2

SECTION J7
PAGE 1

MAINTENANCE PROCEDURES

GENERAL ELECTRICAL SYSTEMS

Your electrical system has been installed with care, utilizing quality materials for safe trouble free service. Proper fuses have been located where necessary to prevent unsafe overloads and protect the wiring from being damaged from short circuits.

Little care will be required, except for an occasional visual inspection for loose connections or some unusual condition causing the insulation to be rubbed off on a wire.

Normal replacement parts such as light bulbs, fuses, flashers, etc. have been arranged for simple changing by plug in devices or conveniently located terminals.

Caution: A blown fuse is usually indicative of a short circuit or faulty device. Care should be exercised to remove the faulty condition before replacing fuse. Do not place larger capacity fuses or "jumpers" to overcome the condition - as serious wiring damage can occur.

Refer to the following sections for more detailed information on the main power and electrical components:

Section G - Wiring Diagram
Section J2 - Motor
Section J5 - Forward/Reverse Switch
Section J6 - Speed Control & Main Power Switching
Section J8 - Batteries and Charger

SECTION J7
PAGE 2

GENERAL ELECTRICAL PARTS

T-D PART NO.	DESCRIPTION	QTY. REQ.
71-100-00	Switch Light, Single Pole, Single Throw	1
71-501-00	Button, Horn, Standard	1
72-005-00	Headlight, Chrome Unit with 4" Sealed Beam Bulb, 12 Volt	1
72-022-00	Light, Stop & Taillight Fixture, 4" Rubber Mount, 12 Volt with Pigtail	1
72-051-00	Light,Turn,Amber, 4" Rubber Mount, 12 Volt With Pigtail	2
72-072-00	Bulb, Headlight, 4" Sealed Beam, 12 Volt	1
73-004-00	Horn, 12 Volt	1
74-000-00	Meter, Horn, with Damper	1
74-005-00	Indicator, Charge, 12 Volt	1
75-031-00	Harness, Wiring, for 71-040-00 Fwd/Rev. Switch	1
75-218-00	Wire #16 Per Foot	
75-231-00	Jumper, Battery, #6 Wire, 10-1/4" Long	
75-404-53	Terminal Lug #4 Wire 1/4" Hole	
75-404-54	Terminal Lug #4 Wire 5/16" Hole	
75-408-52	Terminal Lug #8 Wire 3/16" Hole	
75-408-53	Terminal Lug #8 Wire 1/4" Hole	
75-418-51	Terminal Lug #16/18 Wire #6 Hole	
75-418-52	Terminal Lug #16/18 Wire 3/16" Hole	
75-418-53	Terminal Lug #16/18 Wire 1/4" Hole	
78-010-00	Fuse Holder with Secondary Fuse, Inline Type	
79-823-00	Fuse, Buss Type,20 AMP	
79-819-00	Fuse, 30 AMP, Screw Type, Heavy Duty	
74-009-10	Charge Indicator (24V)	1

SECTION J8
Page 1

IMPORTANT FACTS ON BATTERIES AND CHARGERS

To determine whether or not a battery is properly charged, a measuring device known as hydrometer is used. A hydrometer measures the specific gravity of a liquid and a battery hydrometer is graduated to measure the specific gravity of battery electrolyte. The electrolyte in your battery becomes heavier as it is charged, therefore, a higher specific gravity reading indicates a higher charge condition of your battery. The specific gravity reading will range from 1100 for a completely discharged battery to 1260 for a fully charged battery. No amount of overcharging will raise the specific gravity above 1260 on the electric vehicle type of battery. Both overcharging and undercharging can cause a premature failure of a battery. Overcharging destroys the positive plates. Consistent undercharging causes a buckling of the plates.

Do not discard a good battery as being defective because its specific gravity does not show an increase immediately upon applying a charge. Many good batteries require a charging period as long as three hours before they show any increase in the specific gravity. Do not charge a battery if the electrolyte temperature could rise above 120 degrees F. This could damage both battery and charger. As a rule of thumb, the electrolyte temperature during normal charging will rise about 25 degrees above the temperature in the charging area.

Failure to keep the battery electrolyte to the proper level will result in a crumbling (abnormal sulfation) of the plates and cause failure of the battery. Distilled water must be added to the battery regularly to make up for the loss due to evaporation. Prior to charging, the electrolyte level should cover the battery plates. Fill the battery to the proper level only after it has been fully charged.

BATTERIES, INSPECTION

WARNING - HAZARD OF EXPLOSIVE GAS MIXTURE

Batteries being charged or discharged will give off hydrogen gas. If this gas is concentrated it can cause an explosion. Concentrations of gas may remain for several hours if ventilation is not provided. DO NOT have any fire in the vicinity and do not tamper with circuits that might cause sparking while charging or discharging batteries.

INSPECTION OF BATTERIES AND ASSOCIATED CIRCUITS

An inspection of batteries and associated circuits is required to assure that the batteries are being properly charged. For this inspection we recommend the use of a hydrometer and a continuity tester.

1. Verify that all connections within the unit to be charged are clean and right.

2. Check each battery for loose terminal posts.

3. Test for continuity between all battery terminals and the charging receptacle.

4. Verify that the top of each battery is free of moisture, grease and acid film, which may cause terminal corrosion and current leakage.

5. After the battery has been recharged, test each individual cell in each battery with the hydrometer to verify that all specific gravity readings are within 10 points of each other.

SECTION J8
Page 2

INPORTANT FACTS ON BATTERIES AND CHARGERS continued

BATTERIES, INSPECTION continued

6. Using the hydrometer, pull out acid from a cell and then vigorously expel the acid back into the cell to cause a violent stirring action. Immediately draw out another sample of acid and visually inspect it to see if it contains a brownish sedimednt (indicates positive plates are deteriorated).

7. When testing battery condition with hydrometer, alwasys return electrolyte solution to the same cell from which it was removed. DO NOT MIX electrolyte from one cell to another.

MAINTENANCE PROCEDURES
BATTERIES

WARNING: Lead acid batteries continuously emit highly explosive gases. Flame or sparks must be kept away from the batteries at all times.

This emission is greatly increased during the charging process. Any area in which charging batteries are confined must be well ventilated, and flame or sparks must be kept out of the charging area and away from ventilator openings. DO NOT disturb battery connections while batteries are being charged.

The lead acid battery (or batteries) will furnish all power required by your vehicle. Two types are generally employed. The electric vehicle type battery pack, commonly used, can be expected to have a life of approximately 2 years, or 350 to 400 cycles. One cycle is the discharging and charging of the battery within proper limits. The heavy duty industrial type of battery has a life of approximately 7-1/2 years, or 1800 cycles, with appropriate use and care.

It cannot be over emphasized how important good maintenance procedures and careful care of your batteries will affect their useful life. It is therefore recommended that a comprehensive maintenance program be established and adhered to throughout the life of your vehicle. A 5 point program is outlined below to assist you in understanding and establishing good battery care.

1. CORRECT CHARGING

Poor charging practices are responsible for more short battery life than any one other item. The charging equipment must be properly maintained and adjusted to give a charge which the battery will accept with maximum efficiency. Two things are involved in correct charging. These are the charging rate in amperes and the termination of the charge at the correct time. No amount of overcharging will increase the battery capacity or raise the specific gravity above its full charged condition.

Overcharging will reduce battery life. Undercharging will cause poor vehicle performance, and shorten the life of all electrical components, including the batteries. Refer to Section 8 for proper methods to determine charge condition.

2. DISCHARGING - CAPACITY

Batteries are commonly rated in ampere hours at the six hour discharge rate to final voltage of 1.75 per cell. They will deliver additional capacity in an emergency, but should not be required to do so regularly. The best way to avoid discharging is to prepare a rigid schedule for charging batteries which will insure against their being discharged beyond the limits of their capability.

SECTION J8
Page 3

MAINTENANCE PROCEDURES, BATTERIES, continued

3. WATERING

Water must be replaced from time to time. The frequency and quantity depends upon the watering space above the plates and the amount of gassing which the batterty does on charge. Only approved or distilled water should be added to the battery. Water should be added after hydrometer or voltmeter readings have been taken. The liquid level within the battery raises as the gassing occurs. Thus filling after charging minimizes over-filling. However, the water level should cover the plates prior to charging.

4. CLEANING

Batteries pick up various kinds of dirt and dust, depending on their surroundings and the type of service they are subject to. This is usually dry dirt, which can be blown off with low pressure air or brushed off. However, if cells are overfilled and electrolyte collects on the covers, the top of the battery becomes wet and stays wet, since the acid in the electrolyte does not evaporate. This moist surface in combination with certain kinds of dirt becomes electrically conductive and permits stray currents to flow externally over the top of the battery. These currents cause corrosion of cell posts, nuts, connectors and steel trays, which eventually become troublesome and expensive to repair.

When wet dirt accumulates on top of the battery, remove it by washing the battery with a strong solution of baking soda and hot water (1 lb. soda to 1/2 gallon of water). A convenient brush to use is one having flexible bristles like an old paint brush. Continue the application of the soda solution until all fizzing stops, which indicates that the acid has been neutralized. Then rinse thoroughly with clear water.

Wet covers can be indication of overfilling, leaky seals at posts and covers or of excessive gassing during charge. When observed the cause should be determined and the abusive conditons corrected.

5. RECORDS

A battery record system is recommended for all vehicles. It is considered essential for large operations, and where minimum battery operating cost is desired. A properly supervised record system can be made to detect and call attention to such operating irregularities as:

a. Overcharging, b. Undercharging, c. Overdischarging, d. Excessive Water Consumption, e. Cleanliness, f. Worn Out Batteries, g. Excessive Current Consumption on Trucks

It is not advisable to allow a battery to stand for a long period of time in a low state of charge. Doing so subjects the battery to excessive plate erosion and in cold conditions the battery will freeze at a much higher temperature. For example, a fully charged battery will not freeze at temperatures near 60 degrees below zero. Yet a battery in a very low state of charge may freeze at temperatures around 10 to 15 degrees above zero.

A battery not in use maintains small amounts of chemical action which slowly tends to dissipate the charged condition. It is wise to re-charge a battery not in use every 1 to 2 months. If possible, store the battery in a cool place as the self discharge rate is increased with warmer temperatures.

SECTION J8
Page 4

BATTERIES AND CHARGER

T-D PART NO.	DESCRIPTION	QTY. REQ.
74-009-00	CHARGE INDICATOR (36 VOLT)	1
75-235-08	BATTERY JUMPER #6 WIRE (10-1/4 IN LONG)	5
76-003-00	CHARGING PLUG, 2 PRONG (OPTIONAL)	1
76-013-00	CHARGING RECEPTACLE, 2 PRONG (OPTIONAL)	1
77-031-00	6 VOLT, 190 A.H. BATTERY	6
77-042-00	6 VOLT, 217 A.H. BATTERY	6
77-047-00	6 VOLT, 244 A.H. BATTERY	6
77-048-00	6 VOLT, 250 A.H. BATTERY	6
77-200-00	HYDROMETER	1
77-201-00	BATTERY FILLER	1
50-243-00	HOLD DOWN	2
50-250-00	BATTERY, BAT-LOK	2
79-304-05	CHARGER, 36 VOLT, 25 AMP LINE COMP. 115V/60 HZ, BI	1

SECTION J8
Page 5

CHARGER MAINTENANCE, SERVICE AND ADJUSTMENT

TAYLOR-DUNN / LESTER-MATIC BATTERY CHARGER

Line voltage compensation achieved by flux oscillator circuit applied to battery chargers by Lester in 1962 for high reliability "Minute Man" missile standby applications. Compensates automatically for AC supply voltage variations 105-128 volts. Supply voltage variation + 10% from 117 volts = + 1% maximum battery voltage variation, decreasing to ± 1/2% at finish rate with constant electrolyte temperature. No taps or rate controls to set.

Automatic taper of charge rate for superior battery life through good equalization of cells and low water use rate.

Silicon diodes with inherent surge protection operated at a conservative percentage of their rating.

Convection cooled design for maximum reliability and minimum maintenance.

LESTRONIC II BATTERY CHARGERS

The all new automatic Lestronic chargers eliminate over and undercharging for new, old or defective batteries, whether hot or cold. Precise charging is achieved by patented Electronic Timer, utilizing state of the art integrated circuits.

Charger turns on automatically by simply connecting D.C. cord to batteries. The ammeter indicates charge rate. The charge rate tapers gradually to a finish rate of 5 to 10 amps. The Electronic Timer monitors the rate of voltage change during the charge period. When this rate levels off, the charger automatically shuts off.

OPERATION OF "LESTER MATIC" BATTERY CHARGERS

INTRODUCTION

The Lester-Matic battery charger is a highly reliable, line conpensating unit. When used according to instructions, the Lester-Matic will tend to lengthen battery life with less frequent additions of water.

INITIAL INSTALLATION:

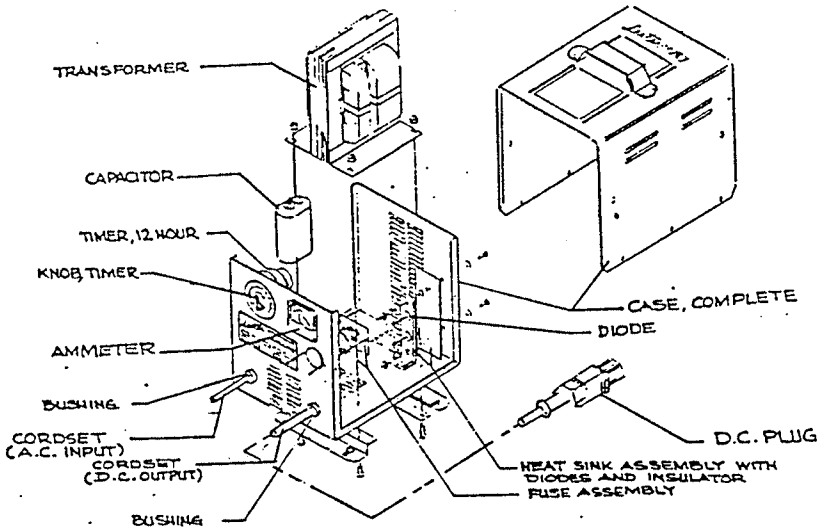
Circuit breaker or fuse protection in the AC line to which the charger is to be plugged should allow at least 15 amps per charger. When it is necessary to use an AC extension cord to the charger, use a three conductor No. 12 AWG cord with ground, and keep as short as possible. Instructions printed on the cover of the charger are for daily reference.

NORMAL OPERATION

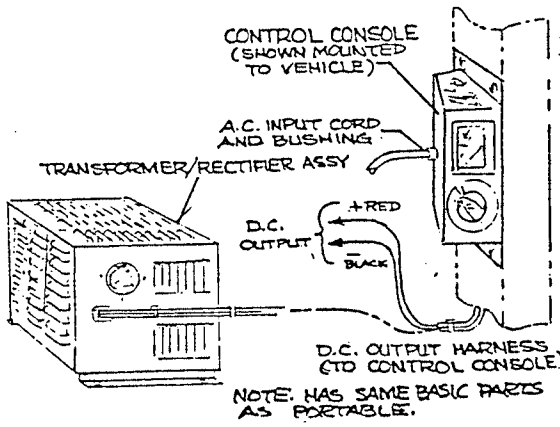
The state of discharge of the batteries will be slightly different every time they are put on charge, but the Lester-Matic varies automatically the initial charge rates, and taper of charge rate over the charge period. Thus momentary initial charge rate will vary from 18-30 amps, dropping quickly to a lower value, and then tapering gradually over the charge period to a finish rate of 1-4 amps (in the green shaded area of the ammeter dial) for the last 1-3 hours. When batteries are slightly discharged, the ammeter needle will be in the green shaded area for 7-8 hours, but the specific gravity will not rise to full charge until the cells have been equalized. The normal charging with the ammeter needle in the green shaded area is important to achieve equalization of all battery cells, every time the batteries are charged. Since the taper of the charging rate (in amps, as indicated by the ammeter needle) is controlled

SECTION J8
Page 6

LESTER PORTABLE AND BUILT IN CHARGERS



PORTABLE LESTER CHARGER
(TYPICAL) FOR COMPONENT IDENTIFICATION
SEE PARTS LIST FOR PORTABLE CHARGERS



NOTE: CONTROL CONSOLE CONSISTS OF: A.C. CORD AND BUSHING, AMMETER, 12-HOUR TIMER AND TIMER KNOB

THE TRANSFORMER RECTIFIER ASSY CONSISTS OF: FUSE ASSY, HEAT SINK ASSY WITH DIODES AND INSULATOR, D.C. HARNESS AND BUSHING, CAPACITOR AND TRANSFORMER

BUILT-IN LESTER CHARGER
(TYPICAL) FOR COMPONENT IDENTIFICATION
SEE PARTS LIST FOR BUILT-IN CHARGERS

SECTION J8
Page 7

OPERATION OF "LESTER-MATIC" BATTERY CHARGERS continued

NORMAL OPERATION continued

by the rising voltage of the batteries being charged, proper performance of the charger and resulting good battery life is dependent upon the following factors:

1. An adequate AC line to handle the power required (see "Initial Installation").
2. All cells of the batteries must be good, rising to approximately 2.5 DC volts per cell while still on charge or near the end of a 12-hour charging period. When in doubt, check each cell with a single voltmeter while still on charge. If a low reading is obtained; check the low cells with a temperature corrected hydrometer. NOTE: Hydrometer float must be thoroughly clean to obtain accurate specific readings.
3. All electrical connections of the vehicle must be clean and tight.
4. Batteries should be charged just enough to bring them to full charge because overcharging is harmful. The state of charge can be tested accurately in each cell with a hydrometer or cell tester (voltmeter), but to simplify maintaining a fleet of cars, which normally require charging at least once a day, the following "CHARGING TIME CHARTS" can be used for daily charging. Set timer knob to desired charging time shown in chart. Charger shuts off automatically at end of set period.

CHARGING TIME CHART

COMMERCIAL USE	
Less than 1 Hour	7 Hours
More than 1 Hour	12 Hours

Commercial cars should be charged after use each day, or as charge becomes low as indicated by hydrometer or voltmeter test.

The necessity of adding water more frequently than two or three weeks, and/or hot battery cases at the end of the charging cycle, indicates the finish rate is too high, due to one or both of the following:

1. One or more bad cells in the batteries.
2. Batteries are starting to age to a point where hours of charge should be reduced gradually to obtain prolonged battery life.

STORAGE

Charger may be left connected to the batteries and should be turned on for the 12-hour period once a month. In extremely cold conditions it may be necessary to charge more frequently. Check with your battery manufacturer. After each charge cycle the charger should be checked to ensure that it has turned off. Severe overcharging and possible damage to the batteries could result if the charger remains on for prolonged periods of time.

SECTION J8
Page 8

OPERATION OF "LESTER-MATIC" BATTERY CHARGERS continued

CAUTION

THIS CHARGER IS FOR USE ONLY ON A BATTERY SYSTEMS OF THE TYPE AND CAPACITY SPECIFIED ON THE CHARGER NAMEPLATE. USE OTHERWISE WILL DAMAGE CHARGER AND/OR BATTERIES.

Due to the electrical characteristics of this charger, it is possible to improperly hook up batteries and not blow the fuses when charging. When installing batteries, be sure polarity is correct. With a DC voltmeter, check terminal voltage and polarity at the car receptacle.

CAUTION

When working near capacitor terminals be sure charger is turned off. With charger "on" transformer capacitor voltage is approximately 640 volts. Use care. Before performing service, disconnect AC and DC leads. Discharge capacitor before servicing.

STEP BY STEP OPERATING PROCEDURES

1. Provide adequate ventilation for both batteries and charger. The convection-cooled Lester-Matic requires an unobstructed flow of cooling air for proper operation.

2. Connect DC plug (portable unit) to vehicle receptacle.

3. Turn timer to "ON" for well discharged batteries or to 7" for lightly discharged batteries. Charger shuts off automatically at end of set period.

4. To determine approximate full charge at start of days use, turn timer knob to 1". Drop of ammeter needle to 1-4 amps in 15 minutes or less indicates full charge.

5. ALWAYS TURN TIMER TO "OFF" BEFORE DISCONNECTING CHARGER FROM BATTERIES.

PROPER CARE OF MOTIVE POWER BATTERIES

NEW BATTERIES

1. Brand new batteries should be given a 12 hour charge before their first use, because it is difficult to know how long vehicle batteries have been in storage without a charge since new.

2. Limit use of brand new batteries between charges for first 5 cycles. New batteries and older batteries which have been in storage are not capable of their rated output until they have been discharged and charged a number of times.

3. During the first month of new batteries, particularly when night-time temperatures are below 60F, give them an extra 12 hour charge once a week. The ampere-hours of energy that batteries can deliver and their charge acceptance varies direct battery temperature.

4. All batteries that still taper down into the 1-4 amps area of the ammeter toward end of charge should be given the full 12 hours of charge. All cells in a set of batteries do not react identically to the same discharge and charge current. In a normal 12 hours charge the last 3 to 5 hours at low finish charge rate equalize the cells for better battery life.

SECTION J8
Page 9

PROPER CARE OF MOTOVE POWER BATTERIES continued

NEW BATTERIES continued

5. When batteries age to the point where charge rate no longer tapers into the 1-4 amps area of the ammeter, reduce the hours of charge progressively to 10 hours, 8 hours, and finally down to 6 hours near the end of useful life. As batteries age, their on-charge voltage at end of charge period drops progressively, thereby causing a high finish period charge rate in amperes and resultant haigher water use rates.

VERIFY BATTERIES ARE CHARGED

1. Turn on the time first thing in the morning and check to see if charger ammeter needle jumps smartly to 15 amps or more and then tapers into the 1-4 amps area within 15 minutes. This will provide a very simple means of verifying that the batteries were truely charged the night before. It also shows aging batteries whose finish charge rate will not taper into the ammeter 1-4 amps area.

2. Add water carefully to proper level in cells as required after they have been fully charged. Do not fill them so high that they bubble over while charging. New batteries require very little additional water, whereas very old batteries may need additional water two or three times a week. Water (electrolyte) level in battery cells settles when batteries are discharged and rises during charge. The probability of overfilling can be reduced by adding water when batteries are fully charged.

PREVENTIVE MAINTENANCE

1. When night air temperatures fall below 65 degrees F, batteries charged in unheated areas should be placed on charge as soon after use as possible. Under such condition a 4 hour equalize charge once a week in the early afternoon will improve state of charge and battery life.

2. Keep tops of batteries and battery hold-downs clean and dry. Tops of batteries and battery hold-downs must be kept clean at all times to prevent voltage leakage and flow of current between the batteries and the vehicle frame.

WARNING

LEAD ACID BATTERIES CONTINUOUSLY EMIT HIGHLY EXPLOSIVE GASES. DURING NORMAL VEHICLE OPERATION THE CONCENTRATION OF THESE GASES IS A POTENTIAL HAZARD TO BE CONSIDERED DANGEROUS WHEN FLAME OR SPARKS OCCUR IN THE BATTERY COMPARTEMNENT CLOSE TO THE VENT HOLES IN THE BATTERY CAPS. IT IS IMPORTANT THAT THIS NOT BE ALLOWED TO OCCUR AT ANY TIME. LIGHTED CIGARETTES MUST NOT BE BROUGHT CLOSE TO THE BATTERY COMPARTMENT.

DURING THE CHARGING PROCESS, EMISSIONS ARE GREATLY INCREASED.

ANY AREA IN WHICH CHARGING BATTERIES ARE CONFINED MUST BE WELL VENTILATED, AND FLAME, SPARKS, OR LIGHTED CIGARETTES MUST BE KEPT OUT OF THE CHARGING AREA AND AWAY FROM VENTILATOR OPENINGS ASSOCIATED WITH THE CHARGING AREA. BATTERY CONNECTIONS MUST NOT BE DISTURBED WHILE BATTERIES ARE BEING CHARGED.

NOTE: Please refer to your Taylor-Dunn vehicle maintenance manual for a more detailed description on battery maintenance.

SECTION J8
Page 10

MALFUNCTIONS SYMPTOMS AND THEIR REMEDIES

1. The Lester-Matic charger is designed with as few parts as possible. Since each component can be tested individually, trouble shooting is a simple task. The following is a list of symptoms with their associated test procedures and remedies.

NO TRANSFER HUM AND AMMETER DOES NOT REGISTER

In the event no hum is detected from the transformer, check the AC cord to be sure it is securely plugged into a live AC oulet. When three-prong to two-prong adapters are used, they tend to work loose giving a poor connection. If the cord connection is secure and still no hum is noticed, a continuity test of the AC circuit is necessary. Turn the timer to "ON" and, with a suitable continuity tester, check circuit across the AC plug prongs (Figure 1). CIRCUIT SHOULD BE COMPLETE. If not complete, individually check the AC cord, timer, primary transformer coil, and all connections.

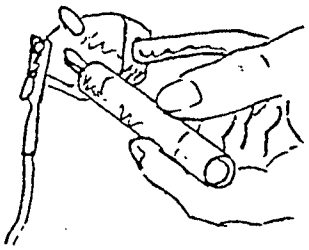


FIGURE 1

TRANSFORMER HUMS BUT NO AMMETER INDICATION

Inspect the DC plug connection to the vehicle receptacle and also check to ensure that the batteries are connected properly to the receptacle. If there is still no ammeter indication, a continuity test of the charger DC circuit must be performed. Turn the timer to "OFF" and disconnect the AC and *DC plugs. Perform the following tests, using a low voltage tester, to check the continuity of the DC circuit.

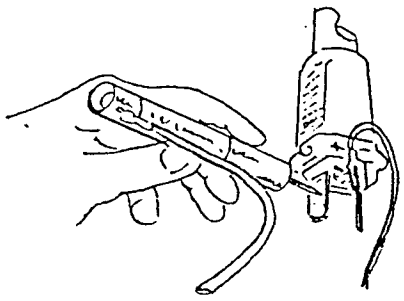
* For built-ins, disconnect AC plug and DC leads to battery to isolate charger.

(a) Connect tester clip to negative (-) blade and probe to positive (+) blade (Figure 2). CIRCUIT SHOULD BE COMPLETE. If not complete, first check the DC fuse link. If one or both fuses have blown, the link will be broken and usually the clear plastic fuse cover will be discolored. Refer to "Fuse Link Blowing" for test procedures. If fuses are good, individually check the fuse connections, DC cord, and diode connections (each may be checked with the continuity test light).

NOTE: On built-in charger the red lead is (+) and black lead is (-) on DC output.

SECTION J8
Page 11

MALFUNCTION SYMPTOMS AND THEIR REMEDIES continued



Typical plug. Check same polarity on other plugs.

FIGURE 2
D.C. PLUG CHECK FOR PORTABLE CHARGERS ONLY

(b) If the circuit in Figure 2 is complete, reverse test tight leads as shown in Figure 3. CIRCUIT SHOULD NOT BE COMPLETE. If circuit is complete, check DC cord for a "short" between the two wires. More probably, one or both diodes have "shorted". Refer to "Fuse Link Blowing" part (b) for continuity test of diodes.

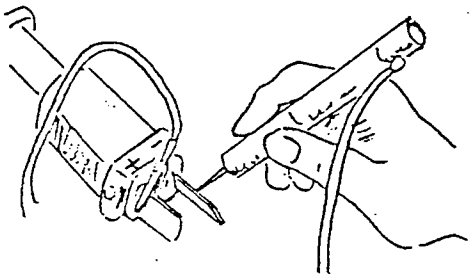


FIGURE 3
D.C. PLUG CHECK FOR PORTABLE CHARGERS ONLY

CAUTION: Discharge capacitor before proceeding with (c).

(c) If (a) Figure 2 and (b) Figure 3 check good, assume the capacitor is shorted. Remove one wire from a capacitor terminal and place continuity tester clip to one terminal and probe to other. If circuit is complete, capacitor is "shorted" and must be replaced.

CHARGER DC FUSE LINK(S) BLOWS
This condition is caused by:

(a) Reverse polarity between charger and batteries, such as incorrect installation of batteries, wiring of DC receptacle or charger plug.

(b) A short circuit failure of one or both diodes. First disconnect one diode. Using a low voltage continuity tester check each diode as shown in Figure 4. Then reverse the tester leads and check each diode again. If the diode conducts current in <u>both</u> directions the diode is shorted and must be replaced. Replace either the entire heat-sink assembly or the defective diode. When replacing a single diode be sure the new diode is pressed squarely into the hole and does not extend beyond the rear surface of the heat-sink plate.

SECTION J8
Page 12

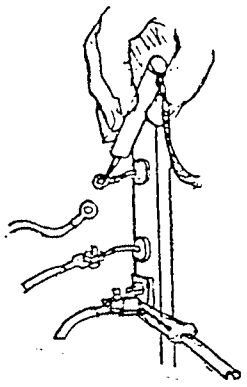


FIGURE 4

(c) If (a) and (b) fail to reveal the malfunction, check wiring of both charger and vehicle against their respective wiring diagrams.

CHARGER OUTPUT IS LOW

The most probable cause is one diode shorting and blowing one fuse. Refer to "Fuse Link Blowing" part (b) to check the diodes. If a diode is shorted both the heat sink and fuse assemblies must be replaced.

CHARGER DOES NOT TURN OFF

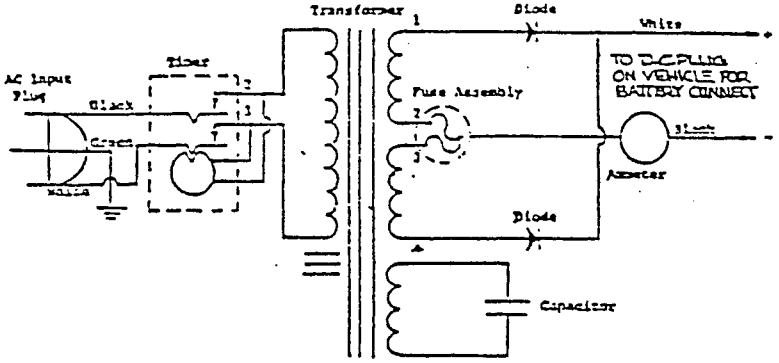
In models equipped with timers, this is due to an inoperative timer. In this case replace timer assembly.

AC LINE FUSE OR CIRCUIT BREAKER BLOWS

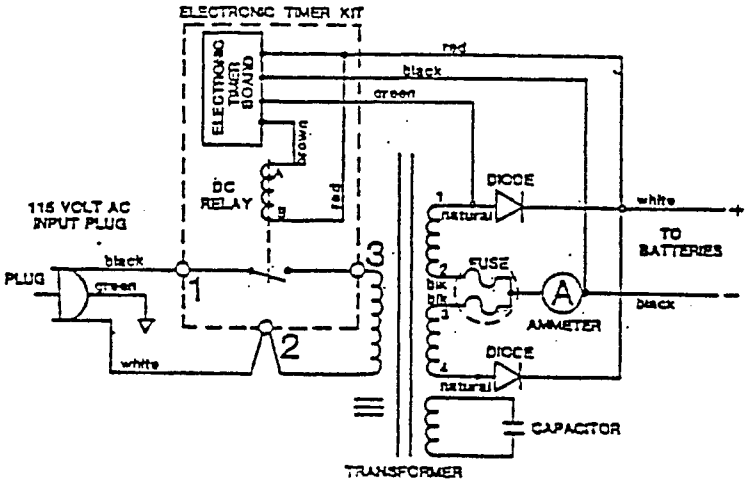
If this occurs when charger is turned on without being plugged into the vehicle, the AC cord, timer motor coil, or the transformer may be shorted. To check the AC cord, ensure that the timer is "OFF" and connect the continuity tester across the AC plug prongs. If circuit is complete the AC cord is shorted and must be replaced. To check the time motor coil, disconnect the white timer motor wire and connect continuity tester to the motor coil leads. If the lamp glows, the coil is shorted. To test the transformer, disconnect secondary leads #1 and #4. If the AC fuse or breaker still blows, the transformer is shorted internally and must be replaced.

SECTION J8
Page 13

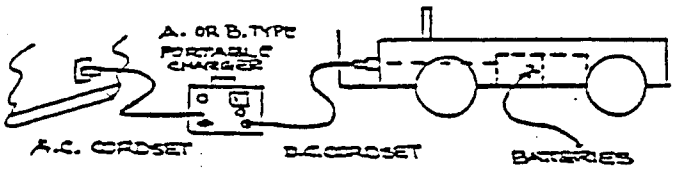
LESTER CHARGER SCHEMATIC



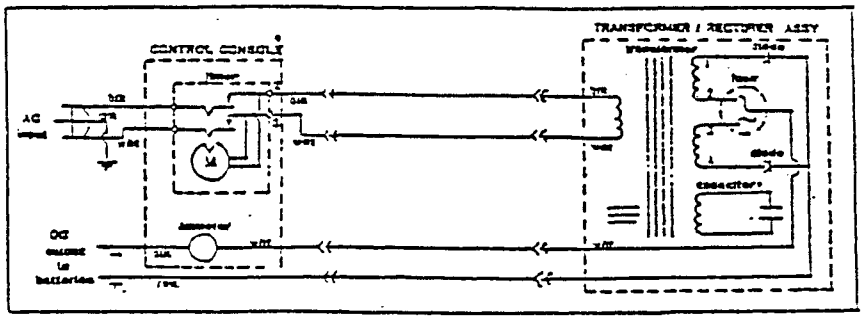
A. TYPICAL PORTABLE CHARGER



B. TYPICAL PORTABLE ELECTRONIC TIMER CHARGER (LESTRONIC II)



TYPICAL DIAGRAM DURING CHARGING



SCHEMATIC, LESTER CHARGER
TYPICAL FOR ALL BUILT-IN CHARGERS

SECTION J8
Page 14

PARTS LIST, BUILT-INS

RECOMMENDED REPLACEMENT PARTS

Taylor-Dunn Part No.	79-300-95	79-300-05	79-306-95	79-306-05	79-304-95
Lester Model No.	24LC25-3T12 230/50 7670	24LC25-3T12 115/60 7675	36LC40-4T12 230/50 7640	36LC40-4T12 115/60 7650	36LC25-3T12 230/50 7655
TRANSFORMER/RECTIFIER ASSEMBLY, COMPLETE					
Transformer	79-644-13	79-644-11	79-644-22	79-644-20	79-644-18
Capacitor	79-902-00	79-902-00	79-902-00	79-902-00	79-902-00
Heat Sink Assy. with diodes	79-749-11	79-749-11	79-749-10	79-749-10	79-749-11
Diode Replacement	79-745-10	79-745-10	79-745-11	79-745-11	79-745-10
Fuse Assembly	79-831-00	79-831-00	79-831-11	79-831-11	79-831-00
CONTROL CONSOLE ASSEMBLY					
Bushing, for Cordsets	79-530-00	79-530-00	79-530-00	79-530-00	79-530-00
Housing	79-599-10	79-599-10	79-599-10	79-599-10	79-599-10
Timer	79-805-11	79-805-00	79-805-11	79-805-00	79-805-11
Knob, Timer	79-806-00	79-806-00	79-806-00	79-806-00	79-806-00
Ammeter	79-851-10	79-851-10	79-852-00	79-852-00	79-851-10
Cordset, A.C.	79-575-20	79-575-10	79-575-20	79-575-10	79-575-20

SECTION J8
Page 15

PARTS LIST, BUILT-INS

RECOMMENDED REPLACEMENT PARTS

Taylor-Dunn Part No.	79-304-05	79-308-95	79-308-05	PORTABLE 79-305-00 *79-305-05	PORTABLE 79-301-00 *79-301-05
Lester Model No.	36LC25-3T12 115/60 7660	48LC40-4T12 230/60 7625	48LC25-3T12 115/60 7635	PORTABLE LESTRONIC II 36LC25-8ET 115/60 *BUILT-IN	PORTABLE LESTRONIC II 24LC25 115/60 *BUILT-IN
TRANSFORMER/RECTIFIER ASSEMBLY					
Transformer	79-644-16	79-644-26	79-644-24	79-644-27	
Capacitor	79-902-00	79-902-00	79-902-00	PORT & BLT IN 79-902-00	PORT & BLT IN 79-902-00
Heat Sink Assy. with Diodes	79-749-11	79-749-10	79-749-10	79-749-10 79-749-13	79-749-00 79-749-11
Diode Replacement	79-745-10	79-745-11	79-745-10	PORT & BLT IN 79-749-10	PORT & BLT IN 79-745-10
Fuse Assembly	79-831-00	79-831-11	79-831-00	PORT & BLT IN 79-831-00	PORT & BLT IN 79-831-00
CONTROL CONSOLE ASSEMBLY					
Bushing, for Cordsets	79-530-00	79-530-00	79-530-00	79-530-00	79-530-00
Housing	79-599-10	79-599-10	79-599-10		
Timer	79-805-00	79-805-10	79-805-00	79-805-63 *79-805-67	79-805-64 *79-805-66
Knob, Timer	79-806-00	79-806-00	79-806-00		
Ammeter	79-851-10	79-852-00	79-851-10	79-851-10	79-851-10
Cordset, A.C.	79-575-10	79-575-20	79-575-10	79-575-10	79-575-10

SECTION J8
Page 16

PARTS LIST, PORTABLE

RECOMMENDED REPLACEMENT PARTS

Taylor-Dunn Part No.	79-302-90	79-302-00	79-300-00	79-300-90	79-306-90
Lester Model No.	24LC40-4T12 230/50 7665	24LC40-4T12 115/60 8781	24LC25T12 115/60 8824	24LC25T12 230/50 8875	36LC40-4T12 230/50 7645
Case					
Transformer	79-644-15	79-644-14	79-644-10	79-644-12	79-644-21
Capacitor	79-902-00	79-902-00	79-902-00	79-902-10	79-902-00
Ammeter	79-852-00	79-852-00	79-851-10	79-851-10	79-852-00
Timer	79-805-11	79-805-11	79-805-00	79-805-11	79-805-11
Knob, Timer	79-806-00	79-806-00	79-806-00	79-806-00	79-806-00
Heat Sink Assy. with Diodes	79-749-10	79-749-00	74-749-10	79-749-00	79-749-10
Diode Replacement	79-745-11	79-745-10	79-745-10	79-745-10	79-745-11
Fuse Assembly	79-831-10	79-831-10	79-831-10	79-831-10	79-831-10
Cordset, A.C.	79-575-20	79-575-10	79-575-10	79-575-20	79-575-20
Cordset, D.C.	79-567-10	79-567-10	79-566-10	79-566-10	79-567-10
Bushing for Cordsets, A.C.	79-530-00	79-530-00	79-530-00	79-530-00	79-530-00
Bushing for Cordsets, D.C.	79-531-00	79-531-00	79-530-00	79-530-00	79-531-00

SECTION J8
Page 17

PARTS LIST, PORTABLE

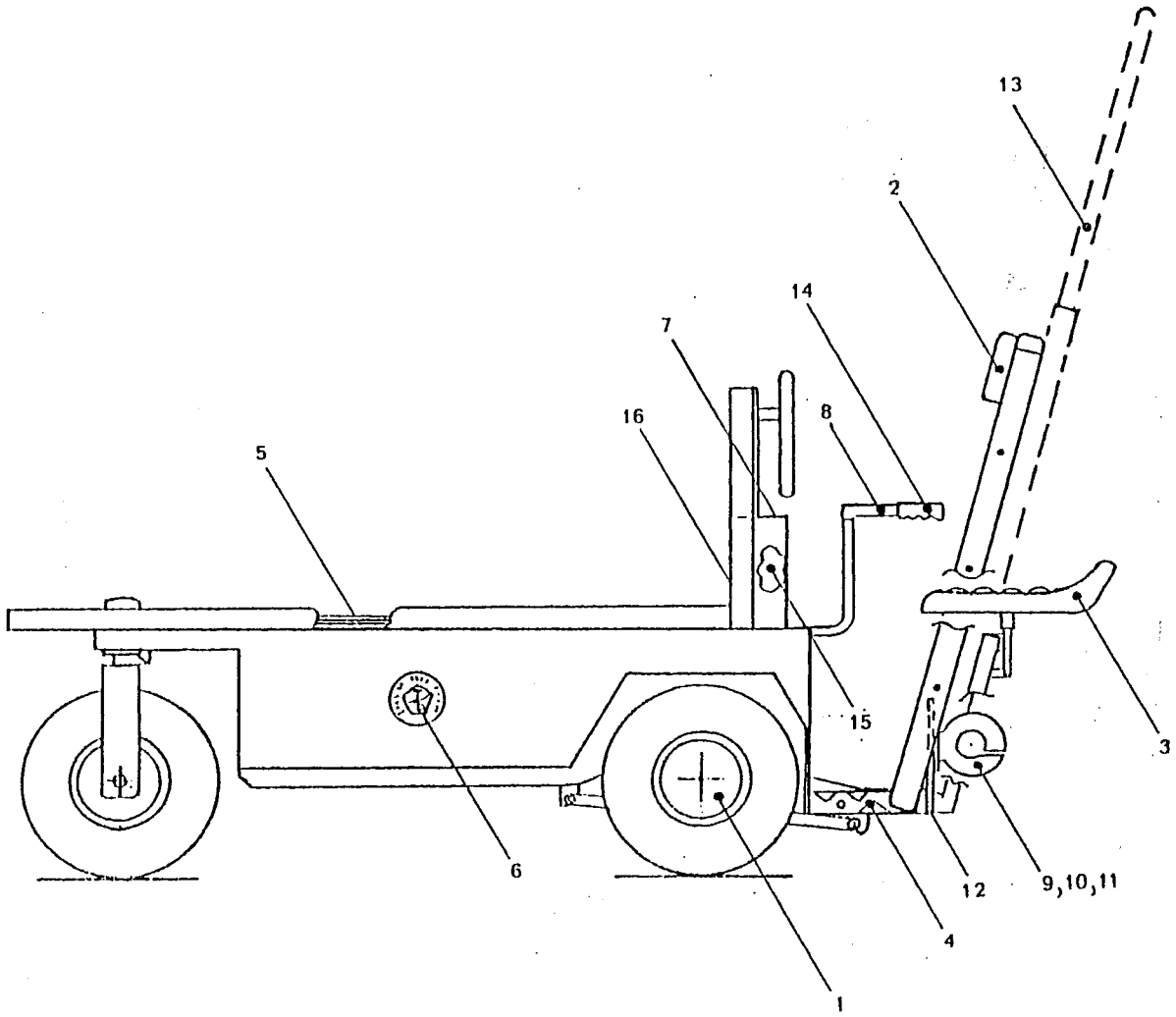
RECOMMENDED REPLACEMENT PARTS

Taylor-Dunn Part No.	79-304-00	79-304-90	79-306-00	79-308-90	79-308-00 *79-309-00
Lester Model No.	36LC25T12 115/60 8714 and *9611	36LC25T12 230/50 8876	36LC40-4T12 115/60 9080	48LC40-4T12 230/60 7630	48LC25T12 115/60 8882 *Lestronic II 9695
Case					
Transformer	79-644-00 *79-644-28	79-644-17	79-644-19	79-644-25	79-644-23
Capacitor	79-902-00	79-902-10	79-902-00	79-902-00	79-902-00
Ammeter	79-851-10	79-851-10	79-852-00	79-852-00	79-851-10
Timer	79-805-00	79-805-11	79-805-00	79-805-10	79-805-00 *79-805-65
Knob, Timer	79-806-00	79-806-00	79-806-00	79-806-00	79-806-00
Heat Sink Assy. with Diodes	79-749-00 *79-749-13	79-749-00	74-749-10	79-749-10	79-749-00
Diode Replacement	79-745-10	79-745-10	79-745-11	79-745-11	79-745-10
Fuse Assembly	79-831-00	79-831-00	79-831-10	79-831-10	79-831-00
Cordset, A.C.	79-575-10	79-575-20	79-575-10	79-575-20	79-575-10
Cordset, D.C.	79-566-10	79-566-10	79-566-10	79-567-10	79-566-10
Bushing for Cordsets, A.C.	79-530-00	79-530-00	79-530-00	79-530-00	79-530-00
Bushing for Cordsets, D.C.	79-530-00	79-530-00	79-531-00	79-531-00	79-530-00

SECTION J8
Page 18

RECOMMENDED SPARE PARTS

COMPONENTS	SPARES FOR VEHICLES	
	1 - 20	20 or MORE
TRANSFORMERS	1	2
CAPACITORS	1	2
AMMETERS	1	2
TIMERS	1	2
KNOB - TIMER	2	5
HEAT SINK ASSEMBLY	1	2
DIODES	2	4
FUSE ASSEMBLY	2	4
CORDSET A.C.	2	4
CORDSET D.C.	2	4
PLUG D. C.	2	4
HOUSING, CONTROL CONSOLE	1	2
TIMER, BOARD ELECTRONIC	1	2



NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC.± DEC.±
SCALE NONE
DRAWN BY REA
DATE 1-10-75

FIGURE 11
SECTION J9

BODY AND TRIM PARTS - MODELS
LL59 SC, 170 & 171AN

TAYLOR DUNN MFG. CO
2114 West Ball Rd.
Anaheim, Calif.

SECTION J9
PAGE 2

SECTION 39
PAGE 3

BODY & TRIM PARTS

REFER TO FIGURE 11

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
11-1	92-000-00	Wheel Cover - Chrome	2
11-2	90-000-00	Backrest - 6 x 16-3/4 (Black), Model SC Only	1
11-3	90-160-00	Cushioned Tractor Seat & Shaft, Model AN Only	1
11-4	90-210-00	Seat Holder (Tractor Seat Bolt-On), Model 170 AN ONLY	1
11-5	90-403-00	Deck Board with instructions - 1/2 Plywood 28-3/4 x 47-1/4	1
11-5	90-406-00	Deck Board with instructions - 1/2 Plywood 30-3/4 x 53-1/4	1
11-6	94-301-00	Taylor-Dunn Decal	1
11-7	94-305-00	Forward/Reverse Switch Plate	1
11-8	95-500-00	Handle, Tiller Steering without Hand Grip	1
11-9	97-804-00	Hitch, Pintle Type, Painted	1
11-10	97-808-00	Hitch, Automatic Coupling	1
11-11	97-811-00	Hitch, 1-7/8" Ball only	1
11-12	97-812-00	Mounting Bracket for Pintle Hitch, Model 170AN Only	1
11-13	97-813-00	Detachable 4 Step Ladder, Model SC Only	1
11-14	98-350-00	Hand Grip, 3/4" I.D. x 4-1/2 Long	1
11-15	30-702-00	Chain Guard, Model SC Only	1
11-16	71-599-00	Switch Console Cover, Model SC Only	1
11-16	71-608-00	Switch Cover, Model AN Only	1

BODY & TRIM PARTS

NOT ILLUSTRATED

94-313-00	Decal, Battery Warning	1
94-373-00	Data Plate, Vehicle	1
94-378-00	Data Plate, Battery Box	1
95-952-00	Paint (1) Quart Can, Specify Color	1
95-953-00	Paint (1) Gallon Can, Specify Color	1
95-954-00	Paint Spray Can, Standard Colors (16 Oz.)	1

SECTION J9
PAGE 4

BODY & TRIM PARTS

NOT ILLUSTRATED
(Cont'd)

T-D PART NO.	DESCRIPTION	QTY.
77-864-00	Strap, Battery Hold Down - 14-1/8 Long	2
77-865-00	Strap, Battery Hold Down - 22-1/2 Long	2
77-866-00	Strap, Battery Hold Down - 28-1/2 Long	2
77-975-00	Lift-Out Battery Box for 2 Batteries (170AH & 217AH Box Only)	1
50-235-00	1/4" Battery Rod - 21-3/4 Long, With Bend	2
50-236-00	1/4" Battery Rod - 8 Long, With Bend	2
50-237-00	1/4" Battery Rod - 24-1/2 Long, With Bend	2
79-511-00	Cord Holder for Built In Charger	

ATTACHING HARDWARE

USED WITH I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
11-7	88-727-06	5/32 Dia. x 1/2 Aluminum Pop Rivet	4
11-8	88-067-07	1/4 x 1/2 N.C. Square Head Set Screw	1
11-16,2	88-837-09	#14 x 3/4 Phillips Pan Head Screw	2,4
11-9,10,11	88-140-13	1/2 x 1-1/4 N.C. Hex Head Cap Screw	4
11-9,10,11	88-148-62	1/2 Lock Washer	4
11-9,10,11	88-149-80	1/2 N.C. Hex Head Nut	4
11-13	88-082-11	5/16 x 1 Carriage Bolt	8
11-13	88-088-62	5/16 Lock Washer	8
11-13	88-089-80	5/16 N.C. Hex Head Nut	8

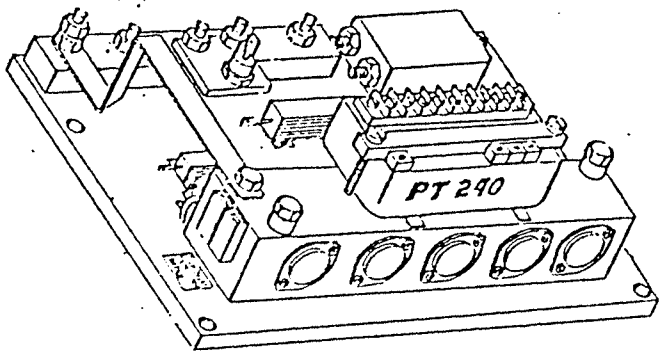
PWR-TRON 240, 350 & 480

TABLE OF CONTENTS

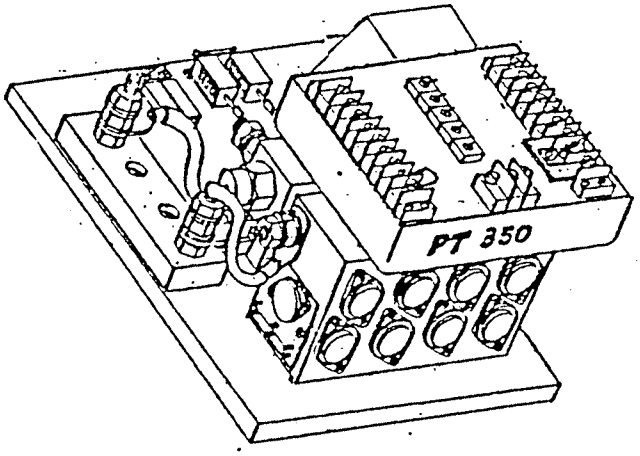
PAGE 1

INTRODUCTION

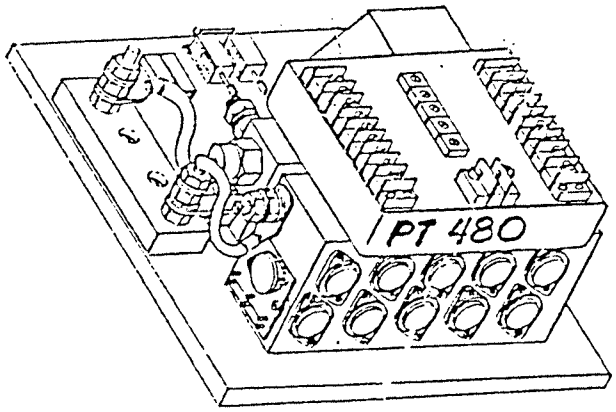
This supplement has been prepared for the purpose of familiarizing the owner with the operational features of the Taylor-Dunn PWR-TRON solid state speed controls. The PWR-TRON 240, 350 and 480 is developed and available only from Taylor-Dunn and is warranted for one full year. Modifications to the control unit, drive or power system will void the warranty.



24 OR 36 VOLTS RECOMMENDED FOR USE UP TO 6 HP MOTORS (INTERMITTENT)



24 OR 36 VOLTS RECOMMENDED FOR USE UP TO 10 HP MOTORS (INTERMITTENT)



48 VOLTS ONLY

PAGE 2

PWR-TRON 240, 350 AND 480

GENERAL

The PWR-TRON unit is readily accessible when the seat on Model R's is raised, or in other models, under the deck board. The PWR-TRON unit performs two functions; forward-reverse and acceleration via mechanical linkage to the foot pedal. You will notice the PWR-TRON unit is a transistorized supply that regulates the voltage fed from the battery through the accelerator module to provide the necessary signal to the motor. This gives the operator full control of the vehicle at all speeds and braking under all conditions.

FEATURES

Some of the inherent advantages over conventional (resistor type) speed controls are:

1. Increased range; 30% (mileage may vary).
2. Positive current limit; increases motor and battery life.
3. No maintenance to PWR-TRON required.
4. Power matched to motor; providing maximum power output during towing or hauling.
5. Thermal protection from incorrect battery hookup.
6. Unit is protected from incorrect battery hookup.
7. "Low" battery protection; prevents run away currents and high temperatures, should a motor short occur.
8. "built-in" motor short protection; prevents run away currents and high temperatures, should a motor short occur.
9. Controlled acceleration for smooth starting; no more jack rabbit starts.
10. Plug braking; while accelerator is fully depressed, reverse direction switch, vehicle will automatically slow down, then accelerate in reversed direction. Note, letting up on the accelerator then re-accelerating, smoother control will be achieved.
11. Modular construction provides simplicity in trouble shooting, parts replacement and servicing in the field.
12. Each unit has a thermocouple that shuts off power at 160 degrees F which is the operational limit of the PWR-TRON. The unit automatically resets when it has cooled to approximately 130 degrees F.

PAGE 3

PWR-TRON 240, 350 & 480

*CIRCUITS AND OPERATION

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

The control circuit (light gauge wire) includes key switch, micre-switch, MS-1, potentiometer; R1, activated by the accelerator arm on back of 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.

The two circuits operate as follows: (refer to Fig. 1)

CONTROL CIRCUIT (see Fig. 2)

Forward operation. Turn key switch to "ON" position and forward-reverse switch to forward position, MS-1 is closed providing a current path on the forward solenoid coil and closing forward contact on the forward-reverse switch. As the accelerator is depressed, the potentiometer, R1, will increase the current, moving the vehicle in reverse.

POWER CIRCUIT (see Fig. 3)

Forward operation. When the control circuit is energized and the solenoid contacts are closed, the current flow is then channeled through the PWR-TRON and then to the power wiring. Motor speed is controlled by voltage output from the PWR-TRON. The PWR-TRON is varied by the potentiometer, R1, in the control circuit.

Reverse operation. The same circuit is used as forward operation except the forward-reverse switch is moved to reverse current flow through the motor.

* Circuits of Figures 1, 2 and 3 are the same for PT240, PT350 and PT480.

PAGE 4

OPERATING YOUR PWR-TRON 240, 350 AND 480 EQUIPPED VEHICLE

To put your vehicle into operation, turn ignition key to "ON". Select direction you wish to travel by moving forward/reverse switch to desired position. Release parking brake, slowly depress accelerator pedal until vehicle is moving at desired speed.

You will notice your vehicle has a smooth transistion from start to high speed operation. This is a built-in characteristic of the PWR-TRON speed control, avoiding "jack-rabbit" starts.

"Plug braking" is an additional feature of the PWR-TRON. It is not necessary to come to a complete stop before reversing the vehicle. It is only necessary to reverse the vehicle while it is in motion and accelerator is fully depressed. The vehicle will automatically slow to an immediate stop and reverse itself to full acceleration. "Plug braking" should be done in an obstruction free area until the operator gets the feel for this maneuver. This maneuver does not damage the PWR-TRON. It is recommended when starting the vehicle to be sure to always turn ignition key on first then select direction of travel with the forward reverse switch, before depressing the accelerator pedal.

PAGE 5

WARNING

BEFORE WORKING ON THE PWR-TRON UNITS OR ANY SYSTEM, DISCONNECT BOTH THE MAIN POSITIVE AND NEGATIVE BATTERY LEADS. PLACE THE FORWARD/REVERSE LEVER IN NEUTRAL, TURN OFF AND REMOVE. ALWAYS SET PARKING BRAKE.

No regular maintenance is required.

Be sure ignition key is on before depressing accelerator pedal. DO NOT depress pedal then turn on key. This is unsafe operation.

CAUTION

Do not steam clean or spray with water.

Make sure all wire connections are secure.

There are three modules as part of this system, solenoid panel, accelerator module and PWR-TRON module. These are all easily removable for replacement and service.

Only qualified service personnel should perform any replacement, adjustments or servicing of the PWR-TRON module, solenoid panel or the accelerator module. This will avoid the possibility of voiding your warranty on the PWR-TRON 240, 350 or 480.

When returning vehicle to pre-serviceconfiguration make certain batteries are properly connected to avoid damage.

PAGE 6

ACCELERATOR MODULES
PT24Ø, 35Ø AND 48Ø

GENERAL FEATURES

MECHANICAL ACCELERATOR MODULES (standard on all vehicles except B 2-1Ø and R 3-8Ø). Parts list are identical for all vehicles except for the rotor. This difference is noted on the following drawings and parts list. The orientation of the accelerator is shown mounted in the "OFF" position for all vehicles. All parts lists figures are identified in order of assembly. Whenever a re-assembly is necessary a potentiometer check is required before adding pulleys and belts.

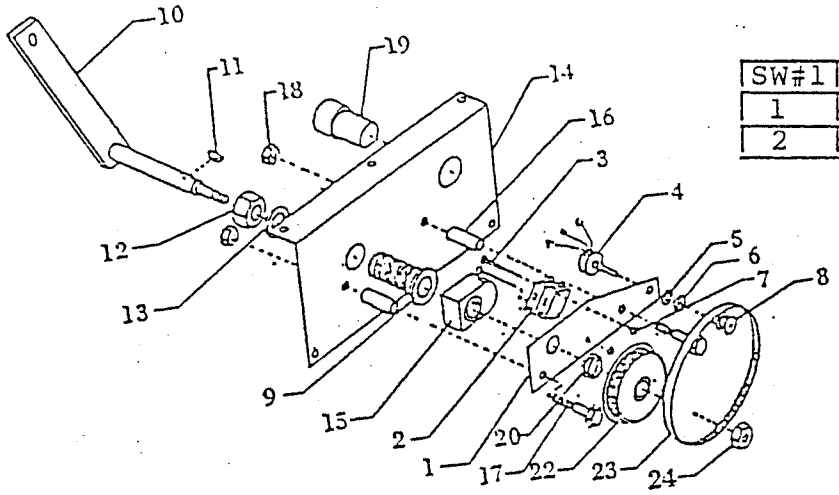
MAGNETIC ACCELERATOR MODULES Parts lists are identical for all vehicles except for the rotor, PCB, spring and backing plate. This difference is noted on the following drawings and parts list. The orientation of the accelerator rotor is shown in the "OFF" position for all vehicles. Whenever a re-assembly is necessary, a functional check is required.

This unit is directly interchangeable with the mechanical accelerator, mounting in the same manner to the existing linkage. A transducer is mounted in the printed ciarcuit board acting as a sensing device when a magnet (mounted in the pulley) passes over the transducer. This feature provides smoother acceleration in forward and reverse.

Kits may be ordered for your specific vehicle to convert from mechanical to magnetic accelerator.

MICRO-SWITCH CHECK

Using a VOM, with micro-switch in "ON" position. Red wires should read Zero OHMS and OFF position will read infinity.



PAGE 7

MICRO SWITCH WIRE DIAGRAM

SW#1	NO	NC	COM
1		blue#7	blue#6
2	red#5		red #4

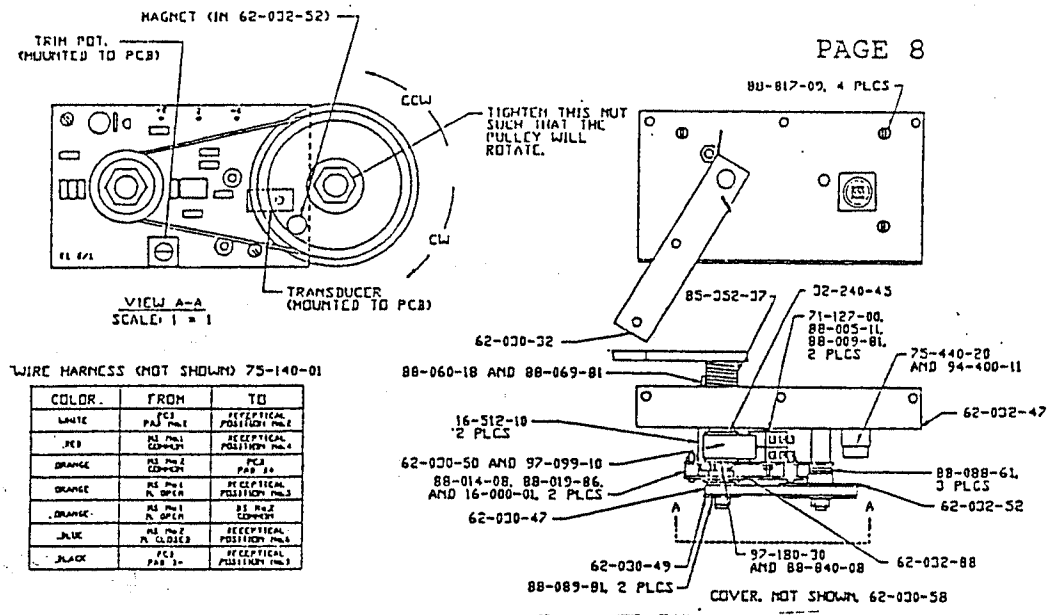
POT.PIN	WIRE #
A	YELLOW #1
B	BLACK #2
C	GREEN #3

ACCELERATOR MODULE (COVER NOT SHOWN 62-030-12 (TYPICAL) MODEL B 2-48, ITEM 10 CHANGES FROM VEHICLE VEHICLE

FIG NO.	PART NO.	DESCRIPTION	QTY.
1	62-861-55	Plate, Pot. Mtg. Accel Module	1
2	71-127-00	Switch, Micro	2
3	88-055-11	Screw,4-40 x 1-1/4 Truss Head	2
4	78-350-55	Potentiometer	1
5	97-190-00	Washer, Potentiometer	1
6	97-202-00	Nut, Potentiometer	1
7	88-009-81	Washer, 4-40 Lock	2
8	62-030-61	Sprocket, 18T .0800	1
9	32-220-10	Bushing, 1/2 ID, Brass	1
* 10	62-030-32	Rotor, Accelerator Module (1248B)	1
11	97-099-10	Key, Woodruff	1
12	88-239-80	Nut, 3/4 NF Hex Head Nut	1
13	88-229-62	Washer, 3/4 Lock	1
14	62-861-50	Plate, Backing, Accelerator Module	1
15	62-030-50	Cam, Micro Switch 1 Inch Radius	1
16	16-512-10	Spacer, 1/4 ID x 29/32 St. Tubing	2
17	88-060-14	Screw, 1/4 x 1-1/2	2
18	88-069-81	Nut, 1/4 Lock	2
19	75-140-00	Harness, Accelerator Module	1
20	97-180-30	Washer, 1/2 Inch ID x 1/32 Thick	1
21	88-840-08	Ring, Snap 1/2 Ext. Fleet Pk.	1
22	62-030-51	Sprocket, 80T .0800	1
23	62-030-53	Belt, .0800 12 Inch 150 T	1
24	88-088-62	Nut, 5/16 NC, Lock	1
*	62-030-58	Cover (not shown)	1
*	62-030-34	Rotor, Accelerator Module Model C	1
*	62-030-35	Rotor, Accelerator Module Model E	1
*	62-030-31	Rotor, Accelerator Module Model R 3-74	1
*	62-030-44	Rotor, Accelerator Module Model R 3-80	1
*	62-030-33	Rotor, Accelerator Module Model B 2-10	1
*	62-030-36	Rotor, Accelerator Module Model SS 5-34	1
*	62-030-37	Rotor, Accelerator Module Model SC 1-59	1

NOTE: FOR ACCELERATOR MODULES SEE SPARE PARTS LIST IN THIS SECTION

PAGE 8



MAGNETIC ACCELERATOR MODULE (COVER NOT SHOWN) 62-030-58
(TYPICAL) MODEL B 2-48 SHOWN

62-032-88 PCB, MAGNETIC ACCELERATOR W COMPONENTS B 2-10, R 3-80, C AND SC
62-032-58 PCB, MAGNETIC ACCELERATOR W/COMPONENTS B 2-48, E, SS
62-032-47 ASSEMBLY, BACKING PLATE, R 3-80, C, B 2-10, B 2-48, AND SC
62-032-50 ASSEMBLY, BACKING PLATE, E, SS, AND R

PART NO.	DESCRIPTION	QTY.
71-127-00	Switch, Micro	2
88-005-11	4-40 x 1-1/4 Truss Head Screw	2
88-009-81	4-40 Locknut	2
75-440-20	Receptacle, Sq. Flange 9 Pos.	1
75-140-01	Wire Harness (not shown)	1
94-400-11	Adhesive, Instant Gap Fill	1
62-030-32 *	Rotor, Accelerator Module (B 2-48)	1
85-352-36	Spring, Torsion .840 ID Left;B 2-10 C, E, R 3-74	1
85-352-37	Spring, Torsion .840 ID Right;B 2-48, R 3-80, SS and SC	1
32-240-45	Bushing, 1/2 ID x 7/8	1
16-512-10	Spacer, .255 ID x .405 OD x 906	2
62-030-50	Cam, 1 Inch Rod 2 Micro Switch	1
97-099-10	Key, Woodruff 1/8 x 1/2	1
16-000-01	Spacer, 5/32 ID x .295 Long	2
62-030-47	Belt, 126 Tooth, .080 Pitch	1
62-030-49	Pulley, 32 Tooth, .080 Pitch	1
97-180-30	Washer, Nylon 1/2 ID x .031 Thick	1
88-088-61	Washer, 5/16 SAE	3
88-840-08	Ring, Snap 1/2 Inch External	1
88-089-81	Locknut, 5/16	2
88-014-08	Screw, 6-32 x 5/8 Round Head Machine	2
88-019-86	Locknut, 6-32, Fibre Insert	2
88-060-18	Screw, 1/4 x 2-1/2 NC Hex Head Cap	1
88-069-81	Locknut, 1/4 NC	1

* ROTORS ARE IDENTICAL AS SHOWN ON PAGE 7.

NOTE: FOR MAGNETIC ACCELERATORS SEE SPARE PARTS LIST IN THIS SECTION

PAGE 9

MAGNETIC ACCELERATOR
FUNCTIONAL TEST
(Required When Components Are Replaced
ie, Pulley, Belt, Micro Sw. etc.)

1. Loosen the 5/16 hex nut on the small pulley (62-Ø3Ø-49). Do not install the cover.

2. Adjust the trimpot to 1/2 of the full travel.

3. Rotate the lever (62-Ø3Ø-31) to the full CCW position. Hold the lever in this position.

4. Simulate voltage, 24, 36 or 48 V.D.C. to pins 9 - and 4+ read output at 9 and 2. Rotate the small pulley CW to the point that the output voltage just starts to drop after it has reached a peak. Tighten the nut on the small pulley without moving the pulleys.

5. Adjust the trimpot to read an output voltage of 1Ø.9Ø to 11.ØØ.

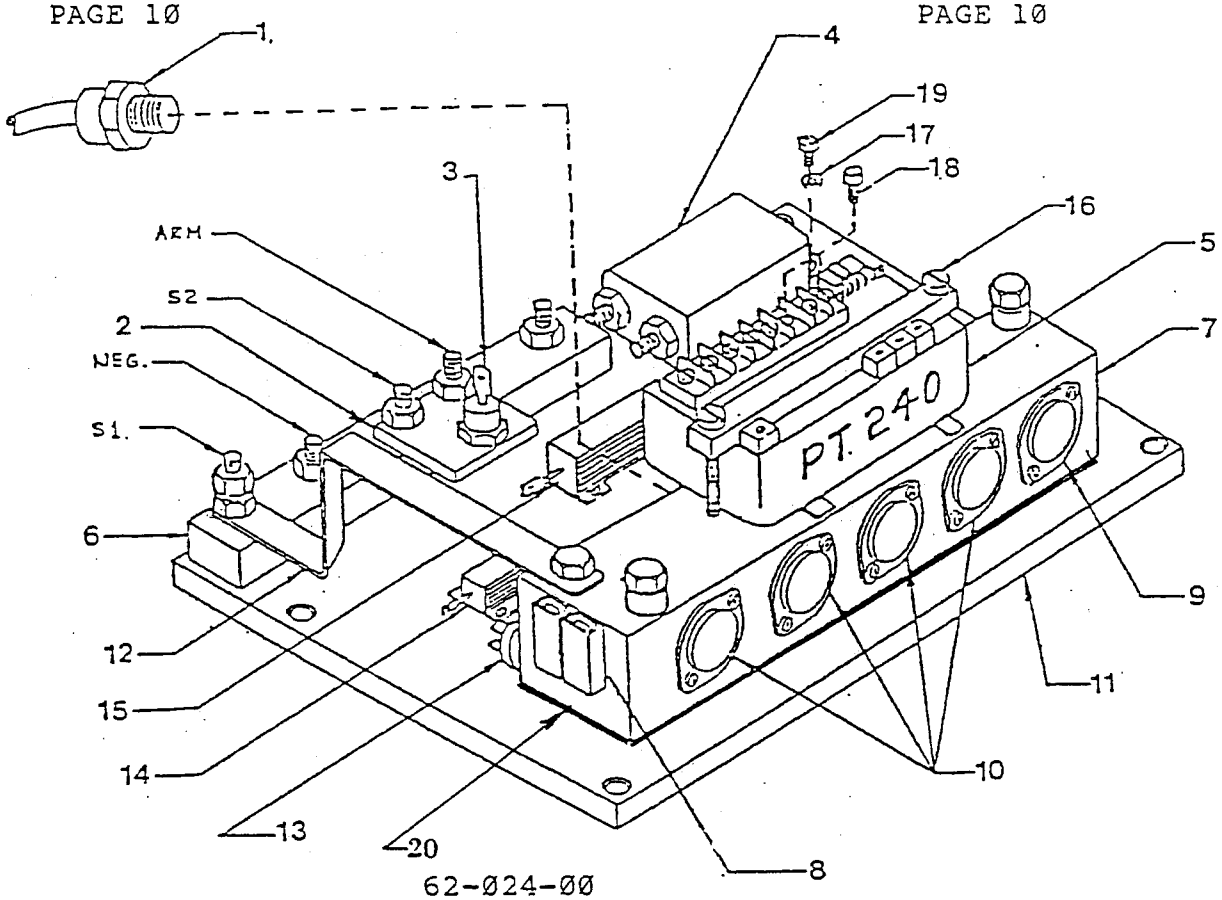
6. To check the low speed, return the lever CW to where microswitch one is just in the ON position. The output voltage should read 6.ØØ to 6.3Ø.

7. If the reading is too high, the pulleys will need to be rotated a small amount CW and the trimpot readjusted to read the 1Ø.9Ø to 11.ØØ volts at full CCW. Check the low speed output (step 6).

8. If the reading is too low, the pulleys will need to be rotated a small amount CCW and the trimpot readjusted to read the 1Ø.9Ø to 11.ØØ volts at full CCW. Check the low speed output (step 6).

9. After the module is adjusted, apply a small amount of silicone sealer to the trimpot. Install the cover and mount in vehicle.

PAGE 10

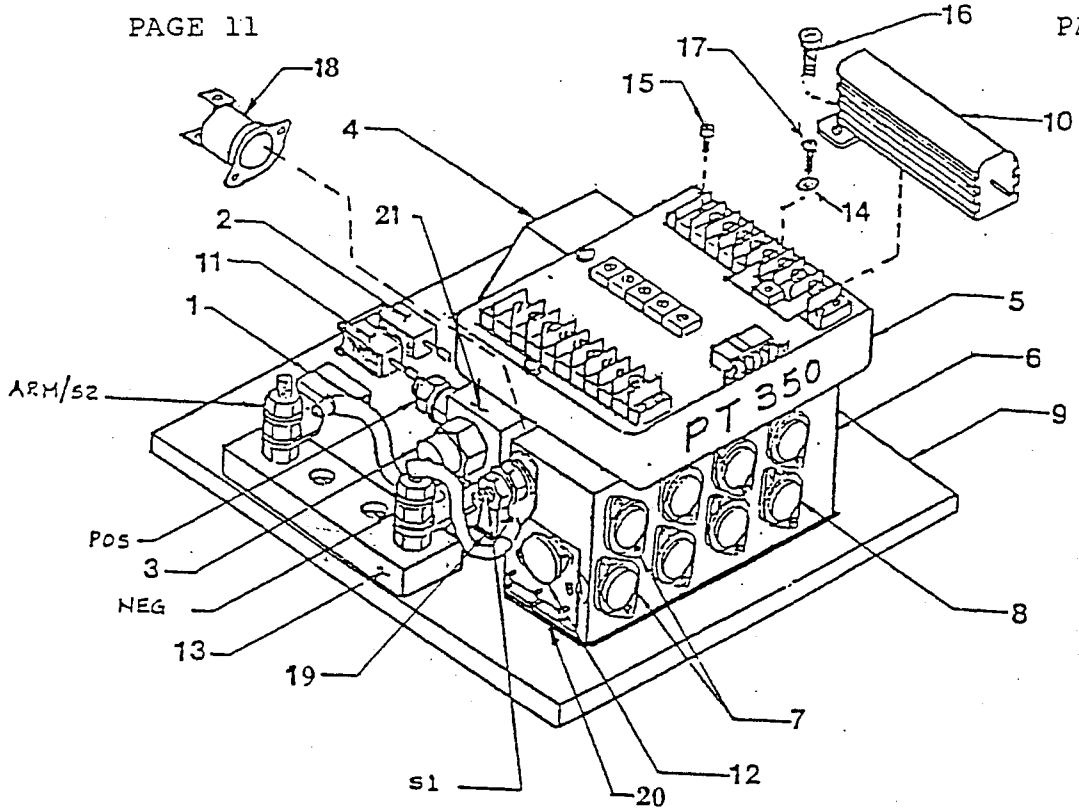


62-024-00

PT240 SPEED CONTROLLER AND PARTS LIST
(PT240 TYPICAL FOR ALL 24 & 36 VOLT VEHICLES)

ITEM NO NO.	PART NO.	DESCRIPTION	QTY. REQ.
1.	62-024-21	Diode, Flywheel	1
2.	62-024-22	Heat Sink, Diode, Plugging	1
3.	62-024-23	Diode, Plugging	1
4.	62-024-24	Capacitor	1
5.	62-024-25	Logic Unit	1
6.	62-024-26	Block, Terminal	1
7.	62-024-28	Transistor Block	1
8.	62-024-29	Switch, Key (24 & 36 V)	1
9.	62-024-31	Transistor Driver	1
10.	62-024-32	Transistor Power	(set) 4
11.	62-024-33	Base, 240	1
12.	62-024-34	Bar, Buss	1
13.	62-024-35	Switch, Thermal	1
14.	62-024-36	Resistor, 70 OHM	1
15.	62-024-37	Resistor, 1/2 OHM	1
16.	62-024-60	Kit, Logic Bar & 2 Screws	2
17.	88-048-61	Washer, #10 SAE	7
18.	89-030-08	Screw, 3MM x 8MM	10
19.	89-030-12	Screw, 3MM x 12MM	7
20.	62-024-27	Insulator, Transistor Block	1

PAGE 11



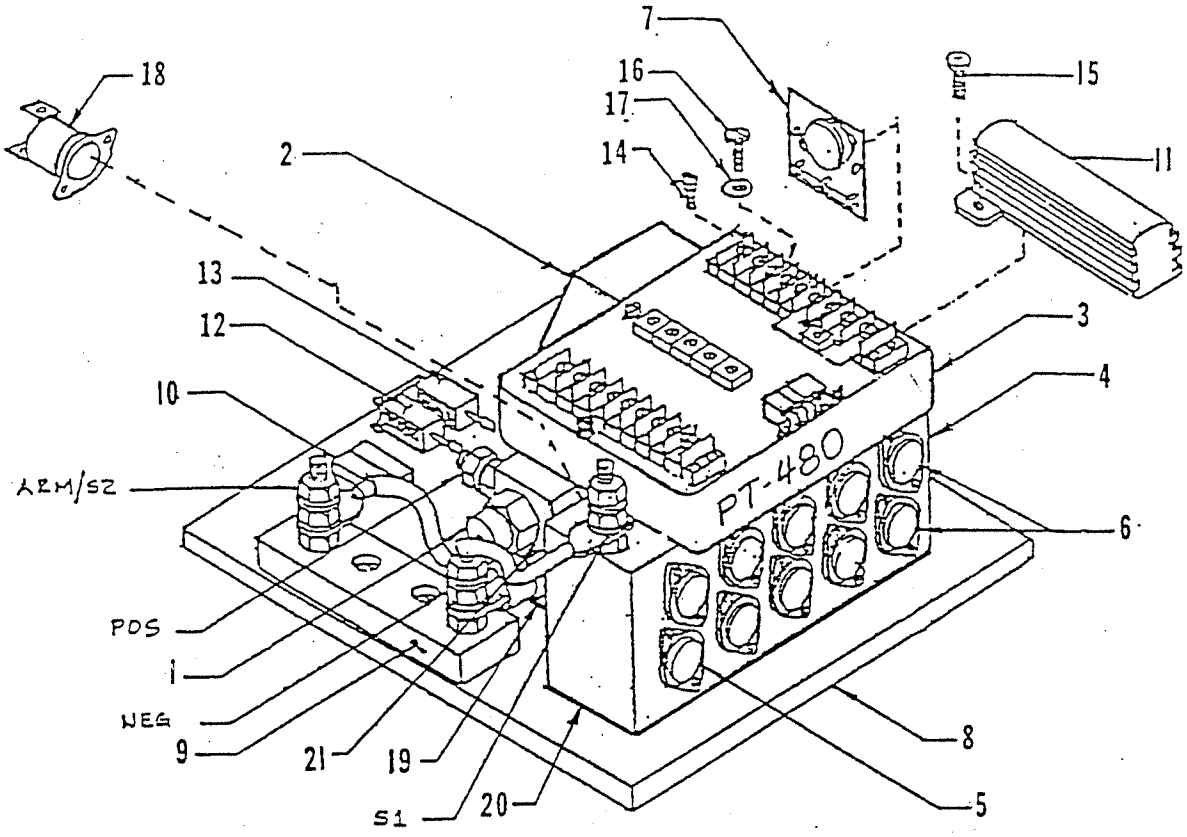
62-Ø35-ØØ

PWR-TRON 35Ø SPEED CONTROLLER, 24/36 VOLTS

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1.	62-Ø24-29	Key Switch	1
2.	62-Ø24-36	Resistor, 1Ø W 7Ø OHM	1
3.	62-Ø35-21	Diode, Flywheel	1
	62-Ø35-21	Diode, Plugging	1
4.	62-Ø35-22	Capacitor	1
5.	62-Ø35-25	Logic Unit	1
6.	62-Ø35-28	Block, Transistor	1
7.	62-Ø35-31	Transistors, Driver	2
8.	62-Ø35-32	Transistors, Power (set of 6)	1
9.	62-Ø35-33	Base Plate	1
1Ø.	62-Ø35-36	Resistor, 5Ø W .5 OHM	1
11.	62-Ø24-37	Resistor, 1Ø W 18 OHM	1
12.	62-Ø35-38	Transistor Assembly, Driver, Driver	1
13.	62-Ø48-23	Block Terminal	1
14.	88-Ø48-61	Washer, #1Ø SAE	3
15	89-Ø3Ø-Ø8	Screw, 3 MM x 8 MM	25
16.	88-Ø3Ø-12	Screw, 3 MM x 12 MM	1Ø
17.	89-Ø3Ø-3Ø	Screw, 3 MM x 3Ø MM	3
18.	62-Ø24-35	Switch, Thermal	1
19.	62-Ø35-29	Insulator, Diode Block	1
2Ø.	62-Ø35-27	Insulator, Transistor Block	1
21.	62-Ø35-35	Heatsink, Diode	1
	62-Ø35-11	* Logic Unit for Model E, 12 Volt 35Ø, 62-Ø35-12	1

*(all other detail parts are the same as 24/36 PT35Ø)

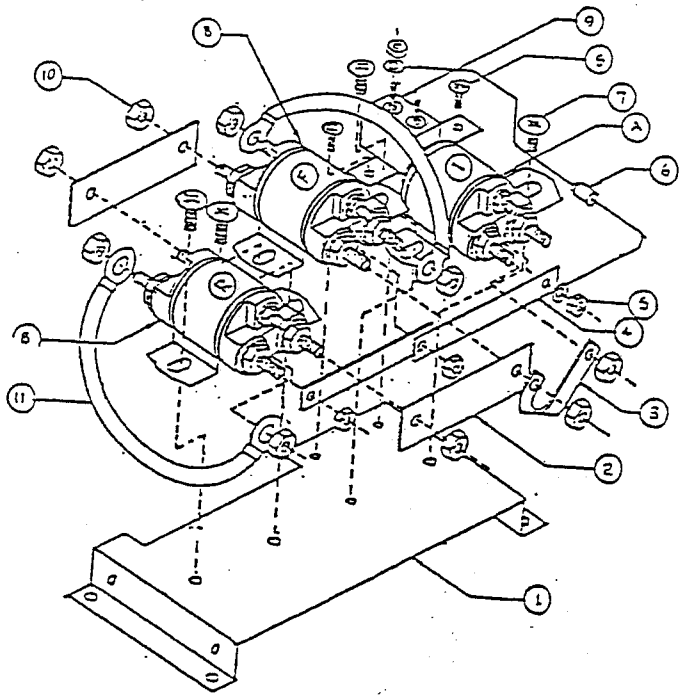
PAGE 12



62-Ø48-ØØ
PWR-TRON 48Ø SPEED CONTROLLER, 48 VOLTS

	PART NO.	PT48Ø DESCRIPTION	QTY.
1.	62-Ø35-21	Diode, Flywheel	1
	62-Ø35-21	Diode, Plugging	1
2.	62-Ø35-22	Capacitor, Filter with Nuts	1
3.	62-Ø48-25	Logic Unit	1
4.	62-Ø48-28	Block, Transistor	1
5.	62-Ø48-32	Transistor, Power (set of 8)	1
6.	62-Ø35-31	Transistor, Driver	2
7.	62-Ø35-38	Transistor Assembly Driver/Driver	1
8.	62-Ø35-33	Plate, Base	1
9.	62-Ø48-23	Block, Terminal	1
1Ø.	62-Ø49-29	Input, Key Switch	1
11.	62-Ø35-36	Resistor, 5Ø W .5 OHM	1
12.	62-Ø48-36	Resistor, 1Ø W 15Ø OHM	1
13.	62-Ø48-37	Resistor, 1Ø W 1K5 OHM	1
14.	89-Ø3Ø-Ø8	Screw, 3 MM x 8 MM	25
15.	88-Ø3Ø-12	Screw, 3 MM x 12 MM	1Ø
16.	89-Ø3Ø-3Ø	Screw, 3 MM x 3Ø MM	3
17.	88-Ø48-61	Washer #1Ø SAE	3
18.	62-Ø24-35	Switch, Thermal	1
19.	62-Ø35-29	Insulator, Diode Block	1
2Ø.	62-Ø48-27	Insulator, Transistor Block	1
21.	62-Ø35-23	Heatsink, Diode	1

PAGE 13



*SOLENOID PANEL ASSEMBLIES

72-560-12, 12V PANEL ASSY

A) 72-501-12 SOLENOID, SPST 12V
B) 72-501-13 SOLENOID, DPST 12V

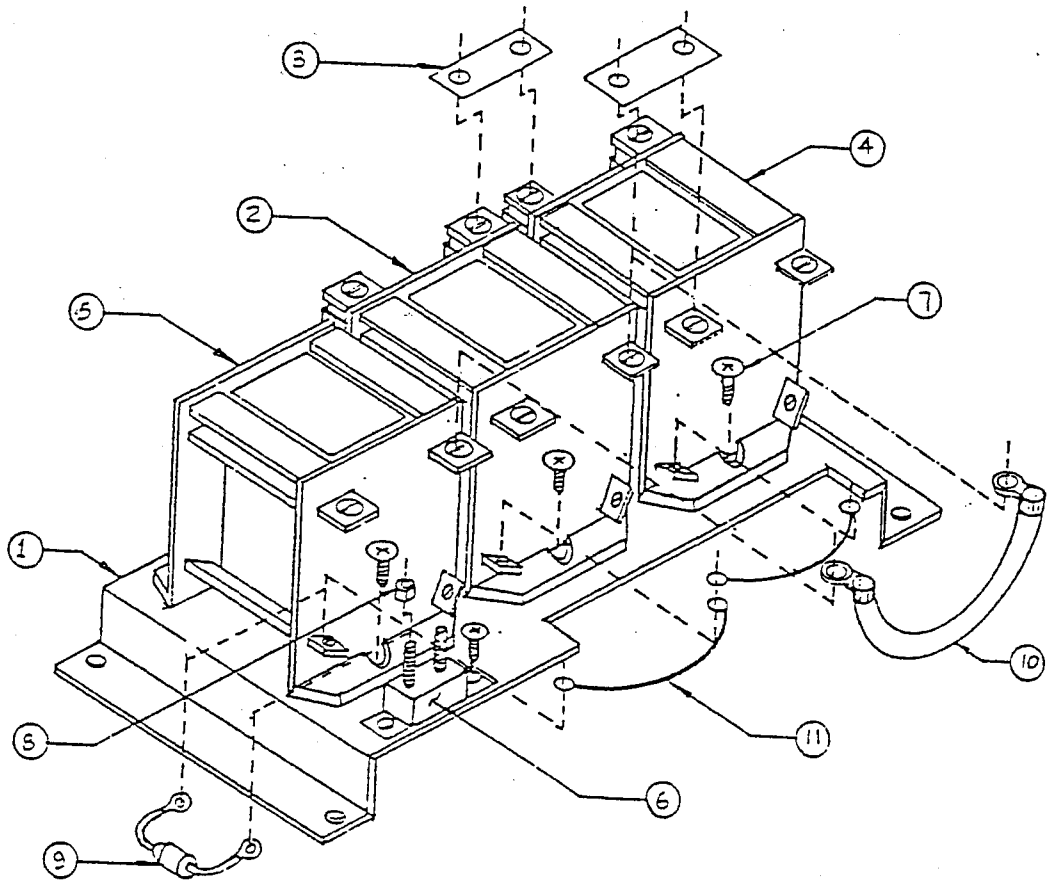
72-560-00,24V PANEL ASS'Y	72-560-10,36V PANEL ASS'Y
A) 72-501-24 SOLENOID,SPST 24V	A) 72-501-36 SOLENOID,SPST 36V
B) 72-501-25 SOLENOID,SPDT 24V	B) 72-501-37 SOLENOID,SPDT 36V

*THE SOLENOID PANEL ASSY IS TYPICAL FOR PT240 AND PT350 AND ARE INTERCHANGEABLE DEPENDING ON VOLTAGE REQUIREMENTS

FIG. NO.	PART NO.	DESCRIPTION	QTY.
1	72-506-50	Panel, Solenoid Mtg	1
2	61-838-51	Bar, Buss 2 x 5/8 CU	2
3	61-838-20	Buss, Curved	1
4	61-838-50	Bar, Buss 3 x 3/8	2
5	88-048-62	Nut	4
6	75-224-10	Jumper, 5-1/4 IN, 18G, W/Diode	1
7	88-838-06	Screw, #14 x 1/2 Pan Head Sheet Metal	4
8	88-818-06	Screw, #8 x 1/2 Pan Head Sheet Metal	2
9	79-840-00	Circuit Breaker, 10 AMP	1
10	88-089-91	Nut, Hex Jam, 5/16 NC, Thin	9
11	75-235-20	Jumper, Red, 4-1/4, 4 Ga	2
	72-506-51	Cover, Solenoid Panel (Not Shown)	1

PAGE 14

PAGE 14

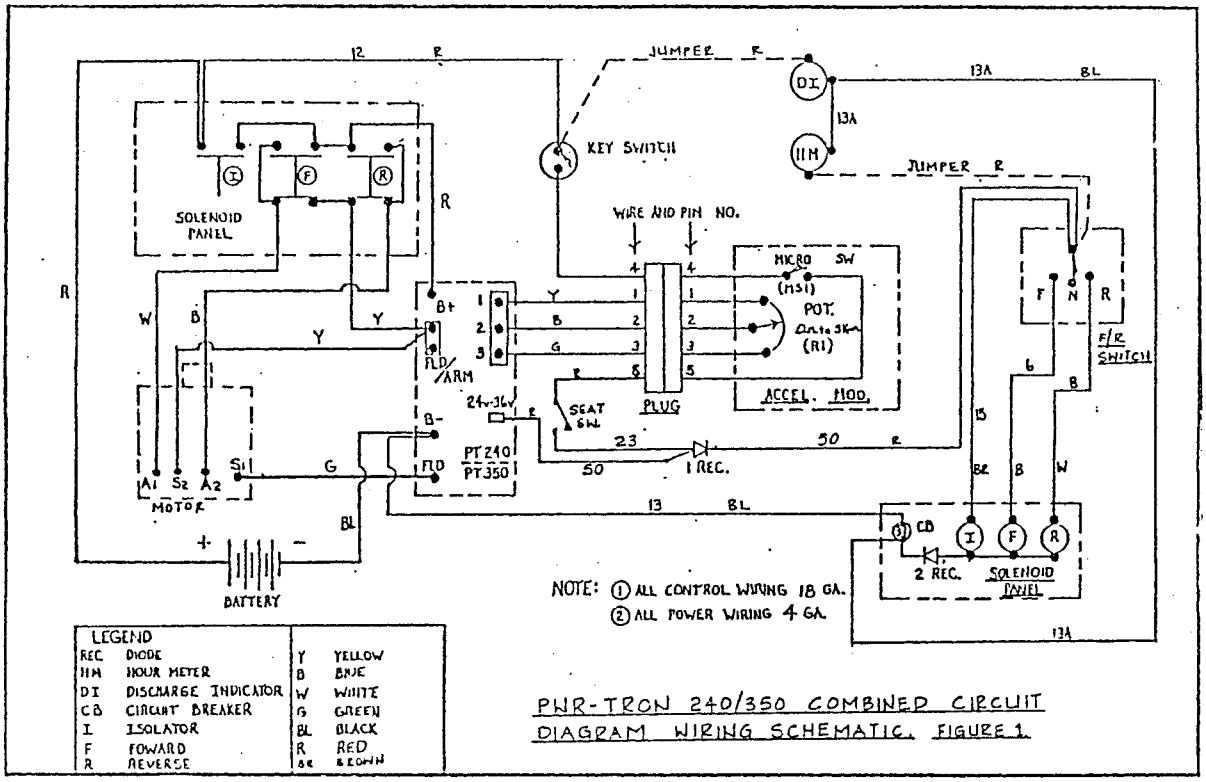


CONTACTOR PANEL ASSEMBLY 48V (72-560-20)
(FOR USE WITH PT 480 ONLY)

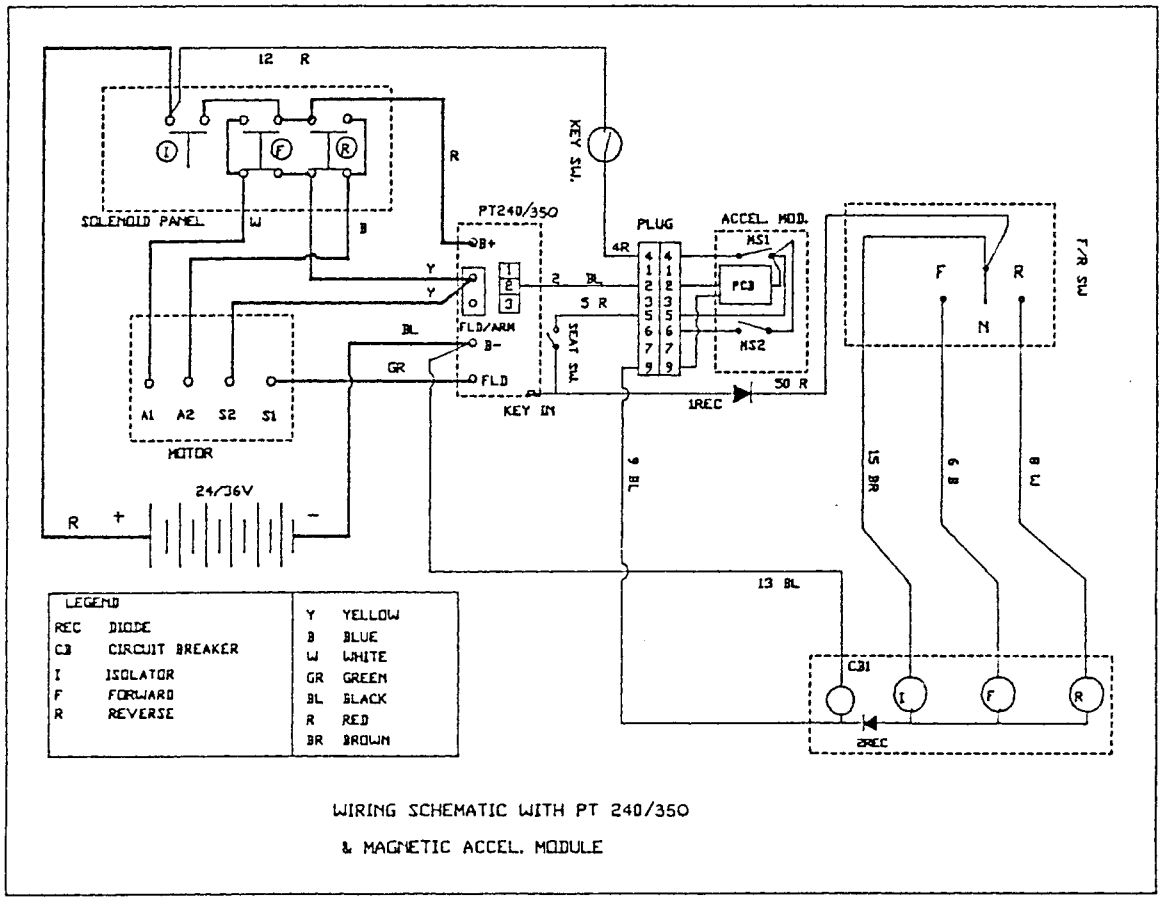
FIG.NO.	PART NO.	DESCRIPTION	QTY.
1	72-560-52	Panel, Contactor Mtg.	1
2	71-360-71	Contactor, Rev. 75 AMP 48V SPDT	1
3	61-838-52	Buss Bar, Copper, 1/2 x 1	2
4	71-306-70	Contactor, FWD. 75 AMP 48V DPST	1
5	71-306-72	Contactor, ISO. 75 AMP 48V SPST	1
6	79-840-00	Circuit Breaker, 10 AMP Auto	1
7	88-818-06	Screw, 8 x 1/2 Pan Hd. Type B Thd.	8
8	88-049-80	Nut, 10-32 Hex	2
9	75-224-15	Jumper, With Diode	1
10	75-235-11	Jumper, 4 Ga. 4-1/2 In. Long	1
11	75-224-20	Jumper, 3 Inch 18 Ga. Black	2

PAGE 15

PWR-TRON 240/350 COMBINED CIRCUIT
DIAGRAM WIRING SCHEMATIC FIGURE 1



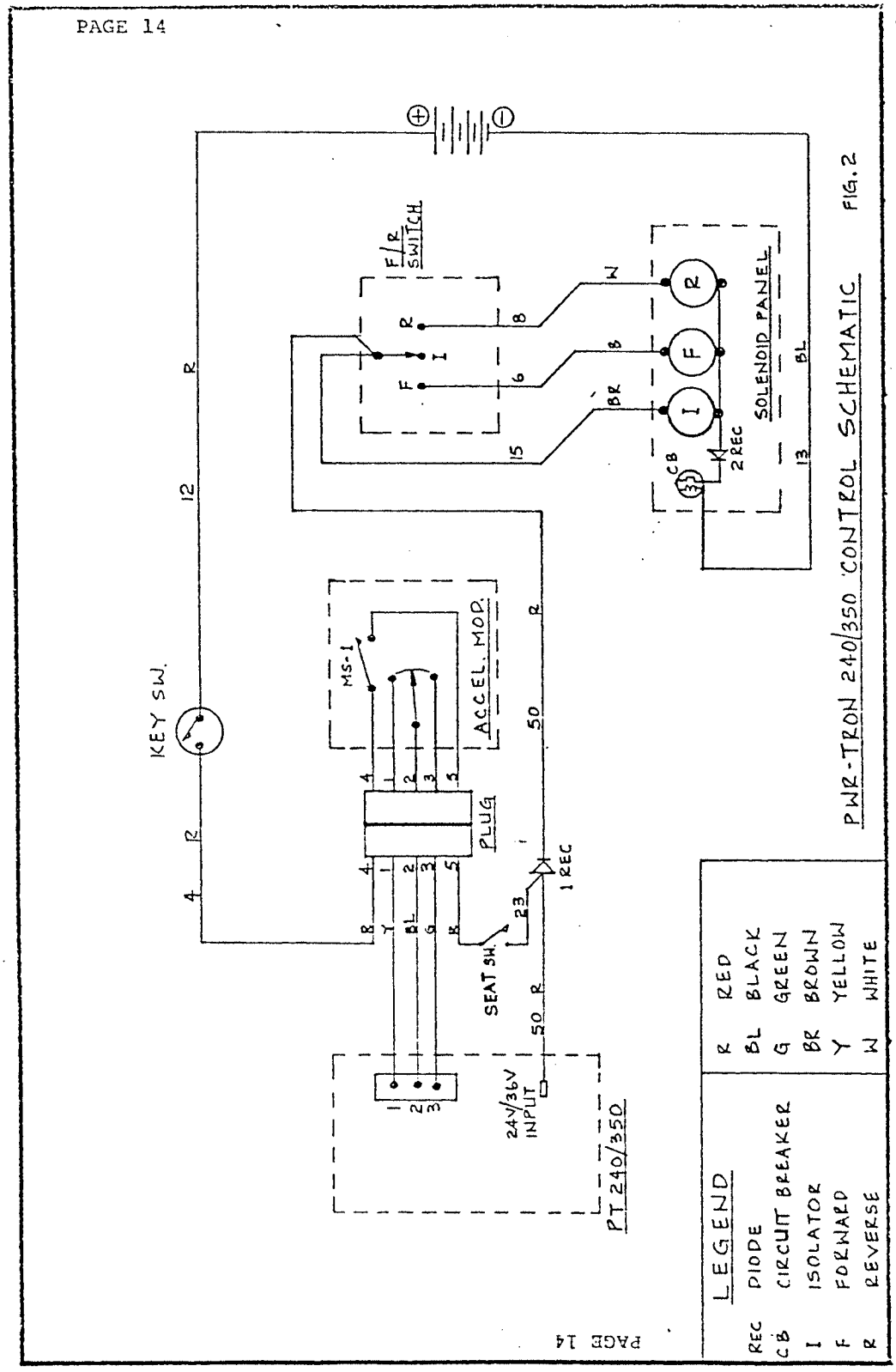
PWR-TRON 240/350 COMBINED CIRCUIT
DIAGRAM WIRING SCHEMATIC. FIGURE 1



WIRING SCHEMATIC WITH PT 240/350
& MAGNETIC ACCEL. MODULE

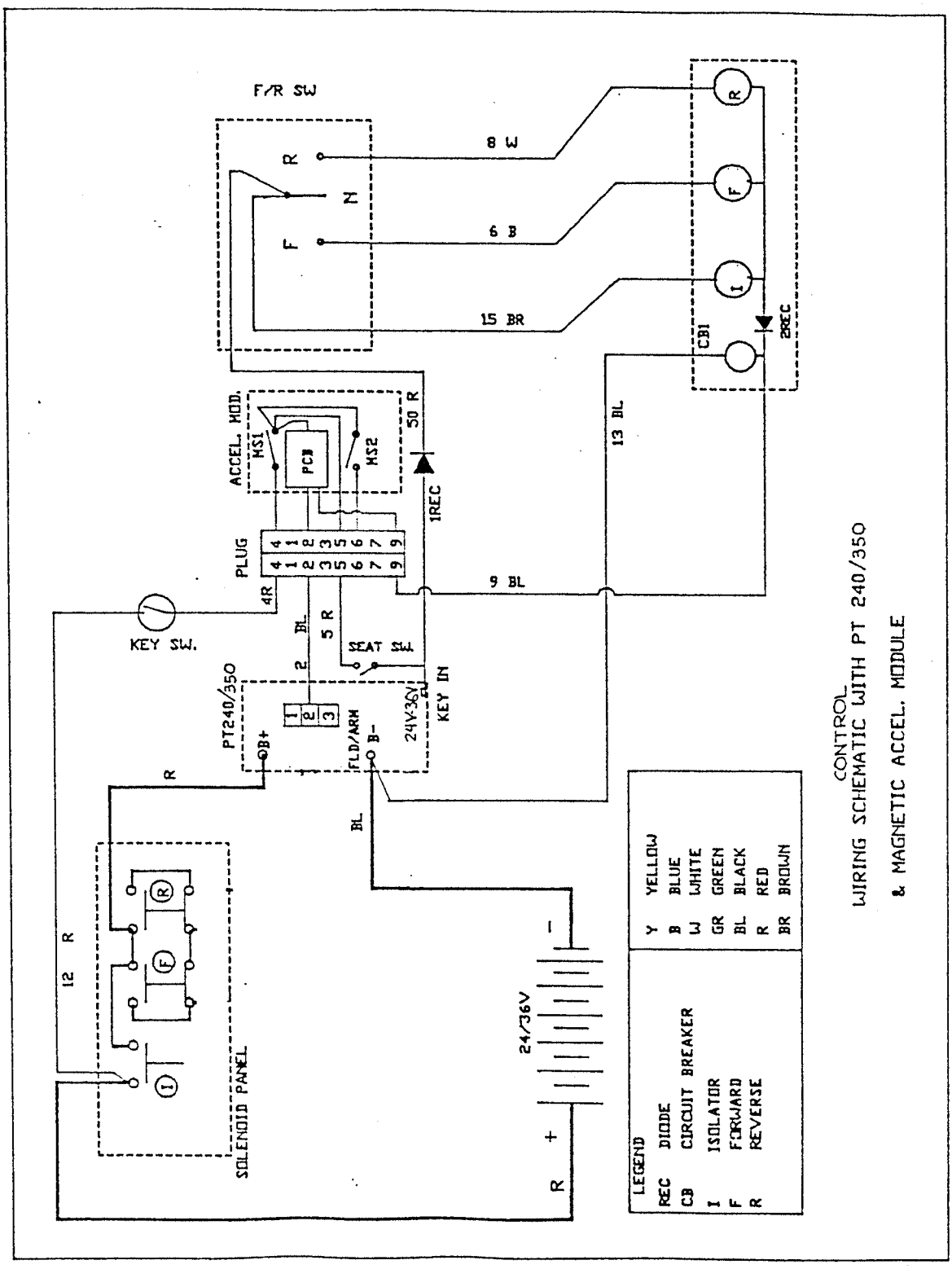
PAGE 16

PWR-TRON 240/350 CONTROL SCHEMATIC
FIGURE 2



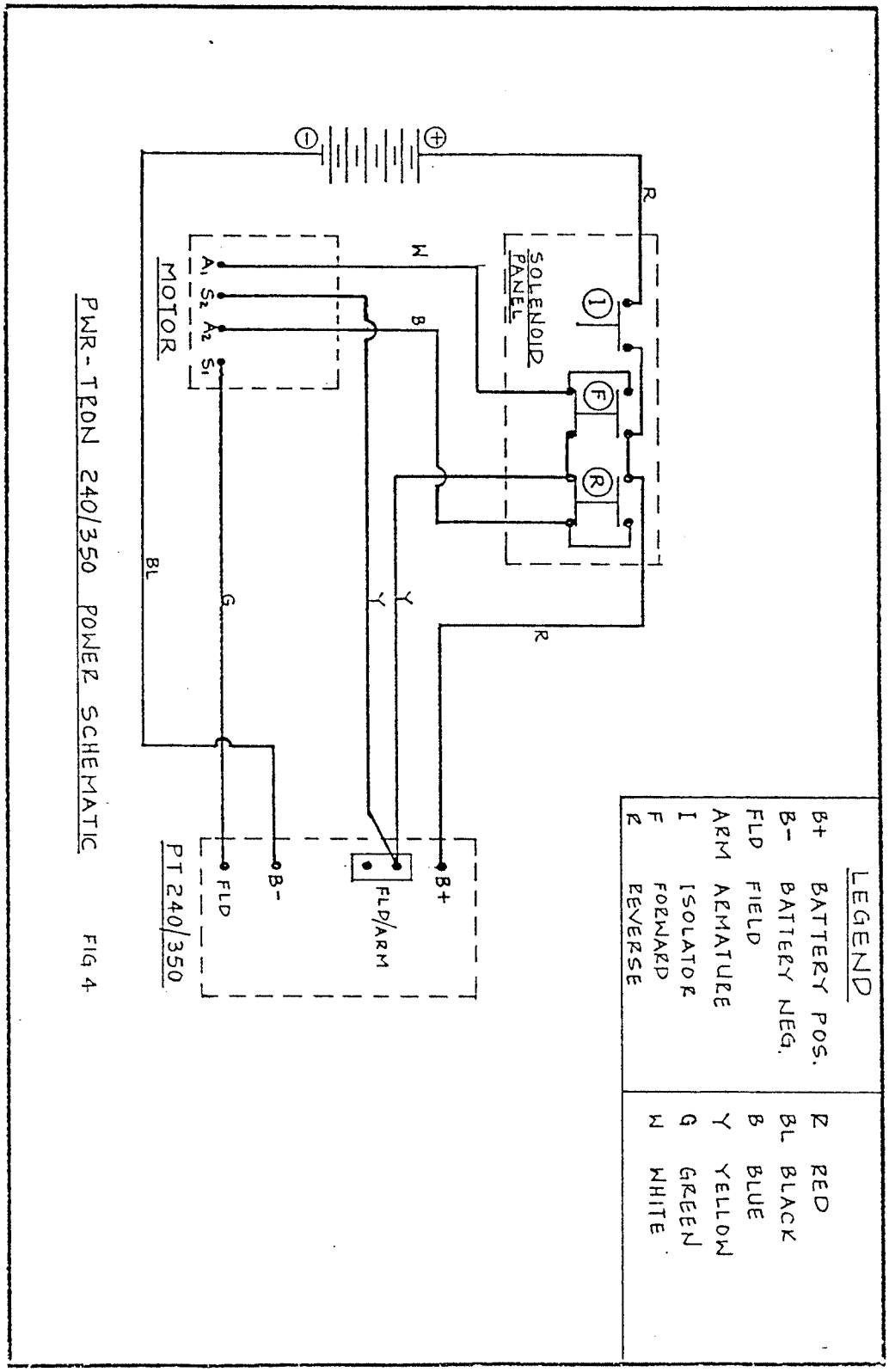
PAGE 17

PWR-TRON 240/350 CONTROL SCHEMATIC
MAGNETIC ACCELERATOR
FIGURE 3

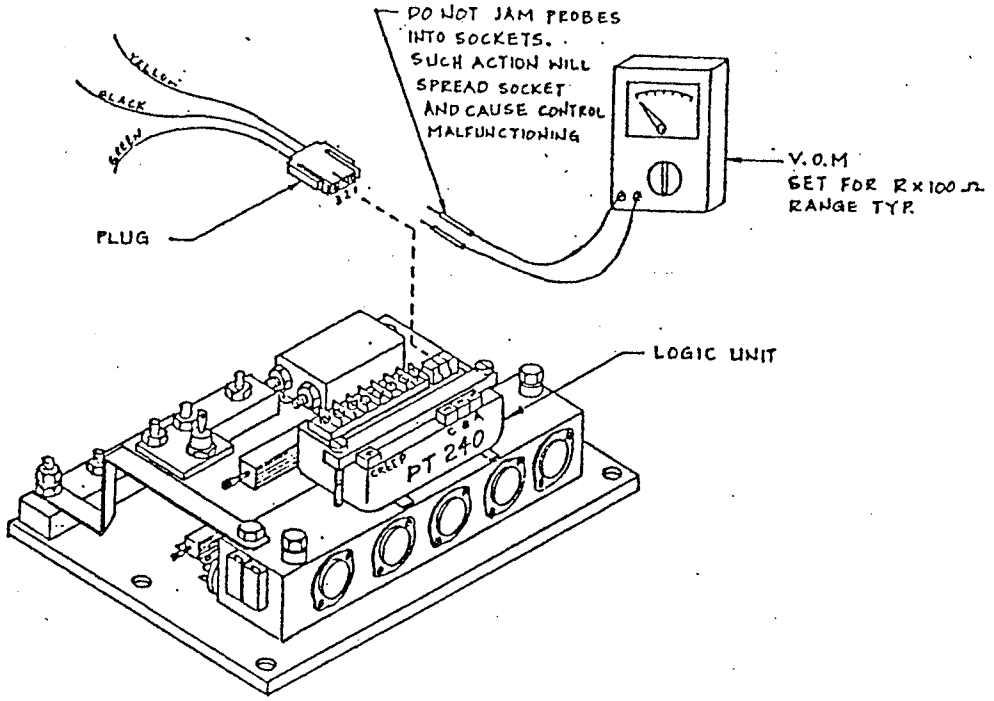


PAGE 18

PWR-TRON 240/350 POWER SCHEMATIC
FIGURE 4



PAGE 19



PWR-TRON 240Ø 24/36 VOLTS

POTENTIOMETER CHECK & ACCELERATOR LINKAGE ADJUSTMENT

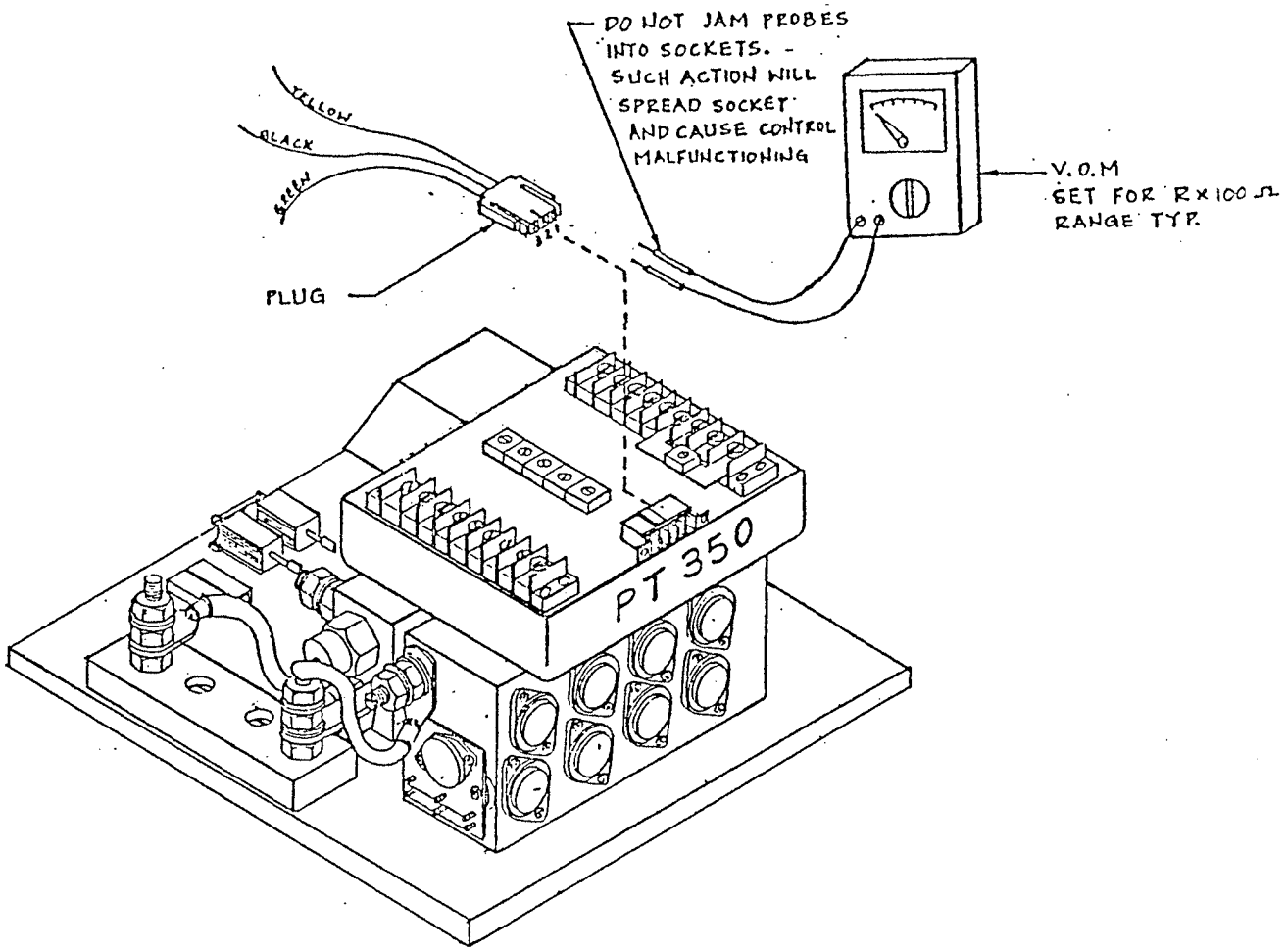
1. Disconnect plug (with yellow, black and green wires) at PWR-TRON logic.

2. Read 5K OHM on V.O.M. between sockets 1 and 2 (yellow and black wires) with accelerator pedal in off position.

3. With accelerator pedal fully depressed, read Ø - 1ØØ OHM on V.O.M. between sockets 1 and 2 (yellow and black wires). Adjust the accelerator pedal stop and/or accelerator linkage to achieve the above readings.
   * DO NOT rely on stops inside the accelerator module. They are only a safety feature, not designed for constant foot/pedal return pounding.

4. Reconnect plug to PWR-TRON 240 logic unit.

PAGE 20



PWR-TRON 350 24/36 VOLTS

POTENTIOMETER CHECK & ACCELERATOR LINKAGE ADJUSTMENT

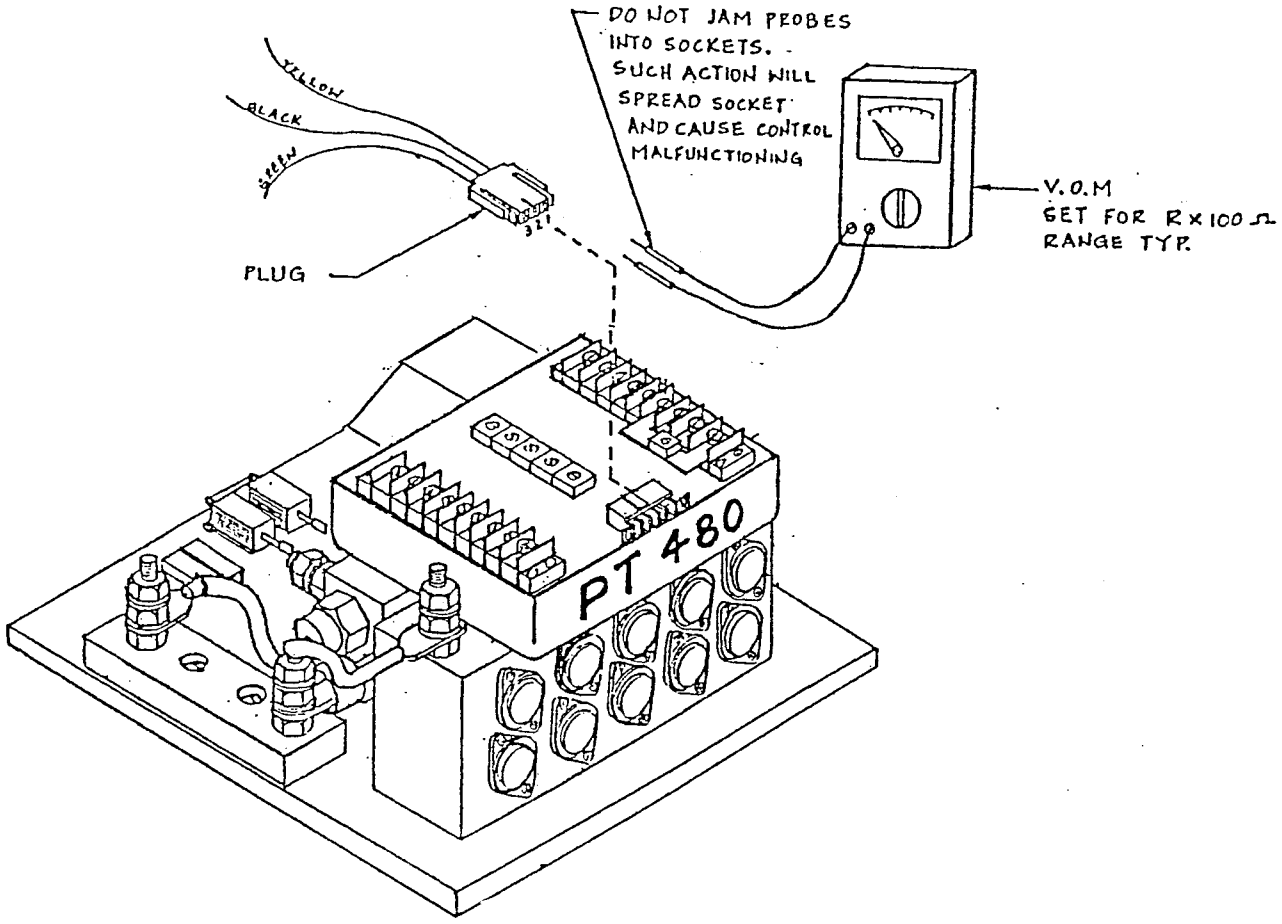
1. Disconnect plug (with yellow, black and green wires) at PWR-TRON logic unit.

2. Read 4K to 5K ohm on V.O.M. between sockets 1 and 2 (yellow and black wires) with accelerator pedal in off position.

3. With accelerator pedal fully depressed, read 0 - 300 ohm on V.O.M. between sockets 1 and 2 (yellow and black wires). Adjust the accelerator pedal stop and/or accelerator linkage to achieve the above readings.
   * Do not rely on return stop inside the accelerator module. It is only a safety feature, not designed for constant foot/pedal return pounding.

4. Reconnect plug to PWR-TRON 350 logic unit.

PAGE 21



PWR-TRON 480 48 VOLTS

POTENTIOMETER CHECK & ACCELERATOR LINKAGE ADJUSTMENT

1. Disconnect plug (with yellow, black and green wires) at PWR-TRON logic unit.

2. Read 4K to 5K ohm on V.O.M. between sockets 1 and 2 (yellow and black wires) with accelerator pedal in off position.

3. With accelerator pedal fully depressed, read Ø - 3ØØ ohm on V.O.M. between sockets 1 and 2 (yellow and black wires). Adjust the accelerator pedal stop and/or accelerator linkage to achieve the above readings.
   * DO NOT rely on return stop inside the accelerator module. It is only a safety feature, not designed for constant foot/pedal return pounding.

4. Reconnect plug to PWR-TRON 48Ø logic unit.

PAGE 22

CONTINUITY AND POWER CHECK

NOTE: VEHICLE DRIVE WHEELS MUST BE JACKED UP OFF FLOOR FOR FOLLOWING TEST.

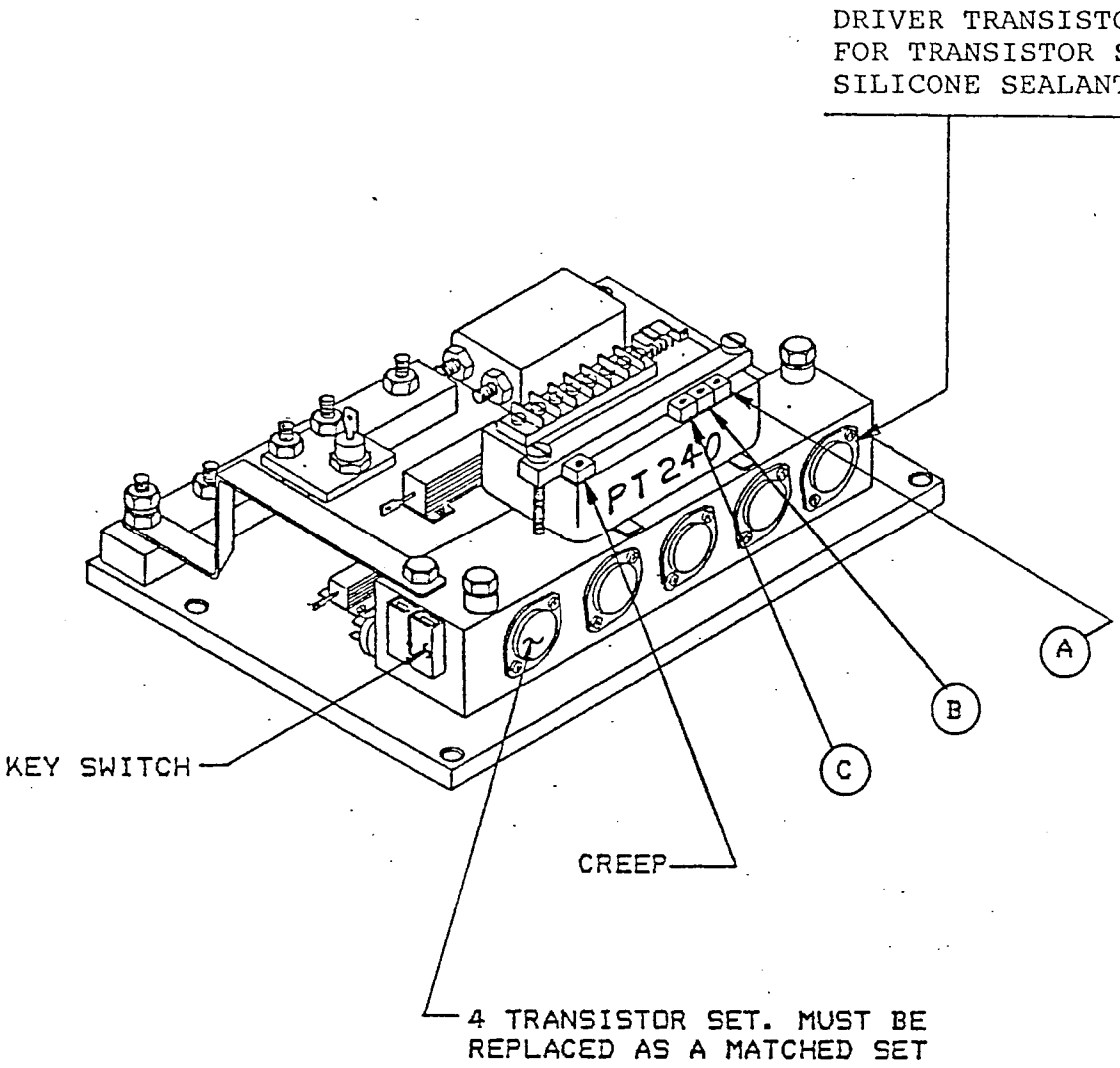
CAUTION: THIS IS A FACTORY CHECKOUT PROCEDURE AND SHOULD ONLY BE MADE BY A QUALIFIED MECHANIC.

After the PWR-TRON system has been installed, a preliminary power check is required, prior to fine tuning of the PWR-TRON. The vehicle should be ready for basic operation at this time.

Lift green lead at S1 (refer to combined circuit diagram) and place a light (24, 36 or 48V) in series with S1 and field pole on PWR-TRON. Place forward/reverse switch in forward. Initiate accelerator slowly, light should come up to maximum brilliance at full acceleration. Repeat same step for reverse. If problems are encountered, see "Trouble Shooting" section. Also check acceleration rate by quickly depressing accelerator full. Light should come to full brilliance in 3 seconds. **(CAUTION: DO NOT PERFORM PLUGGING WITH LIGHT ATTACHED.)**

When both steps are completed satisfactorily, place vehicle on floor, prepared for operation and fine tuning of the PWR-TRON unit. Proceed to page on "Trimpot Adjustment".

PAGE 23



PWR-TRON 240 TRIMPOT ADJUSTMENTS

PERFORM ALL TRIMPOT ADJUSTMENTS IN ORDER SHOWN

A. ACCELERATOR - Turn full direction of arrow

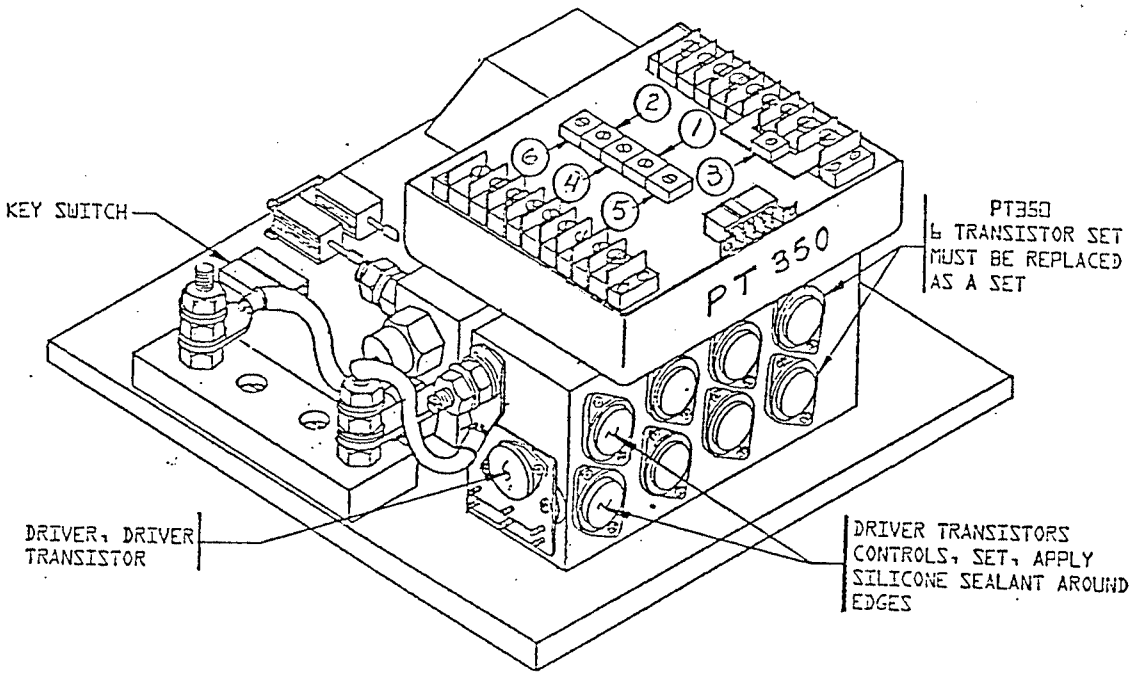
B. Plugging - Turn full opposite direction of arrow to start. Turn up 1/8 in direction of arrow.

C. CURRENT LIMITER - Turn full direction of arrow

CREEP - Adjust trimpot so motor whines but does not turn when accelerator switch is first closed.

AFTER ALL POTS HAVE BEEN FINAL ADJUSTED, COAT POTS WITH WHITE SILICONE SEALANT

PAGE 24



PT 350/480 TRIMPOT ADJUSTMENTS
PT480 IS 48V ONLY

Perform all trimpot adjustments in the order shown. All braking is done last.

1. CURRENT LIMITER - Turn full direction of arrow

2. ACCELERATOR - Turn full direction of arrow

3. MAX BRAKE - Turn full opposite direction of arrow to start.

4. BRAKE - Turn full opposite direction of arrow to start.

5. VOLTS ADJ. - Adjust trimpot so "solenoid clicks" on and motor whines when accelerator switch is first closed

6. LOW SPEED MAX - Option feature, no adjustment required

AFTER ALL POTS HAVE BEEN ADJUSTED, COAT POTS WITH WHITE SILICONE SEALANT.

PAGE 25

TROUBLE SHOOTING
(USE COMBINED CIRCUIT FOR CORRECTIVE ACTION)

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1.	Vehicle goes forward does not move in reverse or vice versa	Motor to solenoid wired wrong or bad solenoid. Battery voltage too low, wire disconnected at solenoid, coil shorts on on solenoid, causes circuit breaker to trip: Solenoid will not function	(See Combined circuit) B neg from CB may be wired to field on PWR-TRON. Wire to B neg. if required, replace reverse solenoid.
2.	Vehicle goes Rev/Fwd instead of Fwd/Rev Vehicle goes in one direction only also moves in neutral.	Wires reversed at Fwd/Rev switch. Solenoid welded shut in one position.	Route white wire from Fwd switch to motor. A1 and blue wire from reverse switch to motor, A2
3.	Vehicle does not accelerate properly, full on, when checked with light	Solenoid GND connected to field input (green)	(see combined circuit) move to B neg. (same action as item no. 1
4.	Catastrophic transistor failure during plugging	Motor/bat. lead to pos. (B+) on control omitted or mis-connected	(see combined circuit) * Replace transistor re-wire B+
5.	Vehicle operates then stops. Motor whine present. WARNING: Do not operate. Release accelerator immediately Continued operation could cause logic damage.	Plugging diode failure; 1. Yellow leads not properly connected. 2. Motor leads over 5' long 3. Incorrect-diode	Route yellow leads to field terminal on PWR-TRON unit. Check plugging diode. Replace if necessary
6.	Vehicle does not give smooth acceleration when viewed with test light.	Check accelerator module Potentiometer wired incorrectly. (yellow, black green)	Reroute rellow, black, and green wires per combined circuit diagram.
7.	Test light indicates acceleration but turns off at full speed.	Cam reversed on accelerator module	Remove accelerator module. Remove acceler ator arm/shaft, reinstall cam. correctly

PAGE 26

TROUBLE SHOOTING (continued)
(USE COMBINED CIRCUIT FOR CORRECTIVE ACTION)

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
8.	No output from control	Batteries not connected or improperly connected Key switch input not connected/key-off micro switch not connected (no solenoids on)	First, check key is on. Make certain trim-pot has not been turned too far. (into "overtravel" area)
9.	No apparent output motor whines.	Grade or load is too great. Motor armature or field short.	See item 1. One direction missing, same action as item no. 1.
10.	Vehicle "growls" during acceleration	PWR-TRON B+ to reverse solenoid (red lead) wired wrong.	(See combined circuit) Red lead from B+ tied to outside post. Rewire red lead to reverse terminal post as on reverse solenoid.
11.	Vehicle shudders and shakes	Battery voltage too low	Check batteries re-charge as necessary
12.	Vehicle stalls, sits and whines	Bad accelerator pot or due to pulley turning free on pot shaft.	Apply "Super Glue" to pulley. If pot is O.K. and pulley is not loose on shaft, then adjust plugging pot 1/4 turn.

* Transistors must be replaced as matched sets: See respective page for speed controller.

Page 27

SUGGESTED SPARE PARTS LIST
PWR-TRON SPEED CONTROLLER SYSTEM

T-D PART NO.	DESCRIPTION	NUMBER OF CARTS 1-20 QTY. REQ.	21-50 QTY. REQ.	50-UP QTY. REQ.
61-838-20	Buss, Curved	1	1	2
62-024-00	PT-240 Speed Controller	1	1	2
62-024-10	Cover PT-240	1	2	4
62-024-21	Flywheel Diode	1	2	4
62-024-23	Plugging Diode	1	2	4
62-024-24	Capacitor	1	1	2
62-024-31	Drive Transistor	1	2	4
62-024-32	Power Transistor	1	2	4
62-024-35	Thermal Switch	1	1	2
62-024-36	Resistor, 70 OHM 10W	1	1	2
62-024-37	Resistor, 1/2 OHM 25W	1	1	2
62-030-11	Accel. Module Pot. R 3-74	1	1	2
62-030-12	Accel. Module Pot. B 2-48	1	1	2
62-030-13	Accel. Module Pot. B 2-10	1	1	2
62-030-14	Accel. Module Pot. R 3-80	1	1	2
62-030-15	Accel. Module Pot. C	1	1	2
62-030-16	Accel. Module Pot. E	1	1	2
62-030-17	Accel. Module Pot. SS	1	1	2
62-030-18	Accel. Module Pot. SC	1	1	2
62-030-31	Rotor, Accel Module R 3-74	1	1	2
62-030-32	Rotor, Accel Module B 2-48	1	1	2
62-030-33	Rotor, Magnetic Accel. B 2-10	1	1	2
62-030-34	Rotor, Accel Module C	1	1	2
62-030-35	Rotor, Accel Module E	1	1	2
62-030-36	Rotor, Magnetic Accel. SS	1	1	2
62-030-37	Rotor, Magnetic Accel. SC	1	1	2
62-030-58	Cover, Accel Module	1	2	4
62-032-12	Accelerator, Magnetic B 2-48	1	1	2
62-032-13	Accelerator, Magnetic B 2-10	1	1	2
62-032-14	Accelerator, Magnetic R 3-80	1	1	2
62-032-15	Accelerator, Magnetic C	1	1	2
62-032-16	Accelerator, Magnetic E	1	1	2
62-032-17	Accelerator, Magnetic SS	1	1	2
62-032-18	Accelerator, Magnetic SC	1	1	2
62-032-34	Rotor, Magnetic Accelerator C	1	1	2
62-032-35	Rotor, Magnetic Accelerator E	1	1	2
62-032-44	Rotor, Magnetic Accel. R 3-80	1	1	2

PAGE 28

SUGGESTED SPARE PARTS LIST
PWR-TRON SPEED CONTROLLER SYSTEM

T-D PART NO.	DESCRIPTION	NUMBER OF CARTS 1-20 QTY. REQ.	21-50 QTY. REQ.	50-UP QTY. REQ.
62-035-00	PT350 Speed Controller	1	1	2
62-035-10	Cover, PT350	1	2	4
62-035-21	Flywheel Diode	1	2	4
62-035-21	Plugging Diode	1	2	4
62-035-24	Capacitor	1	1	2
62-035-31	Driver Transistors	1	2	4
62-035-32	Power Transistors	1 (set)	2	4
62-035-38	Driver, Driver Transistor	1	2	4
62-048-00	PT480 Speed Controller	1	1	2
62-048-31	Driver Transistors	1	2	4
62-048-32	Power Transistors	1	2	4
62-048-36	Resistor 150 OHM 10W	1	1	2
62-048-37	Resistor 1.5K OHM 10W	1	1	2
62-048-38	Driver, Driver Transistor	1	2	4
71-306-70	Contactor, Fwd. 75A 48V DPST	1	1	2
71-306-71	Contactor, Rev. 75A 48V SPDT	1	1	2
71-306-72	Contactor, Iso. 75A 48V SPST	1	1	2
72-235-10	Jumper, 2 In x 4 Ga. Red.	1	1	2
72-235-20	Jumper, 4-1/4 In x 4 Ga. Red	2	2	4
72-501-24	Solenoid SPST 24V	1	1	2
72-501-25	Solenoid SPDT 24V	2	2	4
72-501-36	Solenoid SPST 36V	1	1	2
72-501-37	Solenoid SPDT 36V	2	2	4
72-560-20	Contactor Panel Assembly	1	1	2
75-224-10	Jumper, 18 Ga w/diode	1	2	4
75-560-51	Cover, Solenoid Panel	1	2	4
79-840-00	Circuit Breaker	1	1	2

N O T I C E O F C H A N G E

WE WANT OUR MANUALS TO BE USEFUL AND CORRECT. IF YOU DISCOVER AN ERROR OR WISH TO SUGGEST CHANGES, PLEASE FILL OUT THIS SHEET AND MAIL IT TO TAYLOR-DUNN.

MANUAL NO. _____ **SERIAL NO.** _____ **DATE:** _____

* AN ERROR(S) EXISTS ON THE FOLLOWING SECTION(S) AND PAGE(S) NO.

SECTION _____ PAGE NO. _____ LINE OR ITEM _____

_____

_____

_____

* **EXAMPLE:** Section 13, Page 5, Item 5.
PART NO. 41-350-55 KIT, CYLINDER REPAIR SHOULD BE PART NO. 41-350-66.

MAIL TO: TAYLOR-DUNN
ATTN: ENGINEERING
2114 W. BALL ROAD
ANAHEIM, CA 92804

==========

N O T I C E O F C H A N G E

WE WANT OUR MANUALS TO BE USEFUL AND CORRECT. IF YOU DISCOVER AN ERROR OR WISH TO SUGGEST CHANGES, PLEASE FILL OUT THIS SHEET AND MAIL IT TO TAYLOR-DUNN.

MANUAL NO. _____ **SERIAL NO.** _____ **DATE:** _____

* AN ERROR(S) EXISTS ON THE FOLLOWING SECTION(S) AND PAGE(S) NO.

SECTION _____ PAGE NO. _____ LINE OR ITEM _____

_____

_____

_____

* **EXAMPLE:** Section 13, Page 5, Item 5.
PART NO. 41-350-55 KIT, CYLINDER REPAIR SHOULD BE PART NO. 41-350-66.

MAIL TO: TAYLOR-DUNN
ATTN: ENGINEERING
2114 W. BALL ROAD
ANAHEIM, CA 92804