

OPERATION AND MAINTENANCE MANUAL WITH PARTS LIST

MODEL: R 3-74

SERIAL NUMBER: 74782 - 79000

YEAR: January, 1984 & UP

MANUAL NUMBER: MR-374-01

- IMPORTANT -

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



TAYLOR - DUNN
Commercial and Industrial Vehicles Since 1949

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Mailing Address: P.O. Box 4240, Anaheim, California 92803

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PRICE: \$25.00

TAYLOR-DUNN LIMITED 90 DAY WARRANTY

TAYLOR-DUNN MANUFACTURING COMPANY (TDMC), warrants each new Taylor-Dunn vehicle for ninety (90) days according to the following terms:

This warranty provides coverage for the original retail purchaser only and becomes effective on the date of the original retail purchase.

Any part of the Taylor-Dunn vehicle manufactured or supplied by TDMC and found in the reasonable judgment of TDMC to be defective in material or workmanship will be repaired and/or replaced at the business location of an authorized Taylor-Dunn distributor only without charge for parts and labor. The Taylor-Dunn vehicle (including any defective part) must be delivered to an authorized Taylor-Dunn distributor within the warranty period.

All costs of a service call regarding warranty-related repairs and/or replacements on the Taylor-Dunn vehicle at the owner's location, the labor performed by the distributor at the owner's location, all costs of delivering the Taylor-Dunn vehicle to the distributor for warranty work and the costs of returning the Taylor-Dunn vehicle back to the owner after repair or replacement will be paid for by the owner. Proof of purchase will be required by the authorized Taylor-Dunn distributor to substantiate any warranty claim. All warranty work must be performed by an authorized Taylor-Dunn distributor.

TDMC does not provide a warranty related to SCR's, tires, batteries, chargers, or other parts not of their manufacture as such parts are usually warranted separately by their respective manufacturers.

This warranty does not include service items subject to normal wear such as brake linings, seals, belts, light bulbs and fuses.

This warranty does not provide coverage for any Taylor-Dunn vehicle that has been subject to misuse, neglect, negligence, accident, or operated in any way contrary to the operating or maintenance instructions as specified in the TDMC operator's manual. The warranty does not apply to any Taylor-Dunn vehicle that has been altered or modified so as to adversely affect the vehicle's operation, performance or durability or that has been altered or modified so as to change its intended use. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which in the reasonable judgment of TDMC are either incompatible with the Taylor-Dunn vehicle or adversely affect its operation, performance or durability.

Repairs or replacements qualifying under this warranty will be performed by an authorized Taylor-Dunn distributor following delivery of the vehicle to the distributor's place of business. TDMC's responsibility in respect to claims is limited to making the required repairs or replacements. No claim of breach of warranty shall be cause for cancellation of the contract of sale of any Taylor-Dunn vehicle.

TDMC assumes no liability or responsibility for loss of use of the Taylor-Dunn vehicle, loss of time, inconvenience, or other damage, consequential or otherwise, including, but not limited to, all costs for delivering the Taylor-Dunn vehicle to the distributor and all costs of returning the vehicle back to the owner, mechanic's travel time, telephone or telegram charges, trailering or towing charges, rental of a like vehicle during the time warranty repairs are being performed, travel, lodging, loss or damage to personal property, or loss of revenue.

TDMC reserves the right to change or improve the design of any vehicle without assuming any obligation to modify any TDMC vehicle previously manufactured.

All implied warranties are limited in duration to the ninety (90) day warranty period. Accordingly, any such implied warranties

including merchantability, fitness for a particular purpose, or otherwise, are disclaimed in their entirety after the expiration of the ninety (90) day warranty period. TDMC's obligation under this warranty is absolutely and exclusively limited to the repair or replacement of defective parts, and TDMC does not assume, or does not authorize anyone to assume for them, any other obligation.

This warranty applies to all TDMC vehicles sold in the United States.

WARRANTY SERVICE

To make a claim under warranty, contact an authorized Taylor-Dunn distributor immediately upon realizing a problem exists. We recommend having the warranty work performed by the distributor who originally sold you the vehicle; however, warranty work can be obtained from any authorized Taylor-Dunn distributor. Remember, your Taylor-Dunn vehicle must be delivered to an authorized distributor within the warranty period, and all warranty work must be performed only by an authorized Taylor-Dunn distributor. Your proof of purchase will be required by the dealer to verify any warranty claim.

Examples of Items Not Covered by Warranty

Provisions of the warranty will not apply to:

Normal service requirements occurring during the warranty period, such as adjustment and cleaning or wear of a drive belt, drive chain, brake or rheostat.

Normal service work over and above the repair and replacement of defective parts. Vehicles subject to misuse, neglect, negligence, or accident.

Vehicles that have been altered or modified so as to adversely affect their operation, performance or durability or to change their intended use.

Repairs made necessary by the use of parts or accessories which are either incompatible with the vehicle or adversely affect its operation, performance or durability.

Vehicles not operated or maintained in accordance with the instructions in the Taylor-Dunn Operator's Manual.

Periodic checking, lubricating the vehicle or service check-up.

All costs of delivering the vehicle to the distributor and all costs of returning the vehicle back to the owner, mechanic's travel time, trailering or towing charges, or rental of a like vehicle during the time warranty repairs are being performed.

This warranty applies only to the original retail purchaser. Second-owner or subsequently owned vehicles are not covered under the warranty.

Owner's Obligation and Responsibility

Normal maintenance service and replacement of service items are the responsibility of the owner and as such are not considered defects in material or workmanship with the terms of this warranty. Individual operating habits and usage may contribute extensively to the need for maintenance service.

Consult with your authorized Taylor-Dunn distributor for advice on proper maintenance and care of your vehicle. Proper maintenance and care will be very helpful in keeping your overall operating costs at a minimum.

To assure warranty coverage, it is the owner's responsibility to maintain all components in proper adjustment and to service the vehicle as specified in the Taylor-Dunn Vehicle Operator's Manual. It is the owner's responsibility to provide proper lubrication for all components and provide correct recommended battery maintenance, to maintain the battery liquid level and charge as specified, as well as maintain the correct pressure in the tires of the vehicle.

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- 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. ANSI B56.8 applies to only those vehicles with Serial Numbers dated after July 31, 1982.

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.

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INSPECTION, SAFETY AND INTRODUCTION
ARRIVAL INSPECTION CHECKLIST

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 their being 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.

NOTE: Occasionally you may receive a "Power Traction" equipped vehicle with the oil level below the oil level point. This is a perfectly normal situation and is not harmful to the unit. It occurs during vehicle transit when oil drains from the chain case into the drive axle housing. A short period of normal operation will restore the chain case oil level to the proper point. To hurry the process, drive the vehicle in reverse for a few minutes then proceed with normal operation.

Upon completion of the visual inspection, an operational test should be made after reading the remainder of Section A and operating instructions contained in Section B.

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 by local authorities, and need also to be aware of the vehicle operating characteristics and safety recommendations of the manufacturer, to assist them in exercising the judgement necessary to prevent injury to themselves or to others.

IMPORTANT: 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 judgement to those processes.

STEERING: This vehicle has a very small minimum turning radius and high ratio steering gear. These are essential for low effort steering at slow speeds.

WARNING: These characteristics, so desirable 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 down-hill, and avoid traveling across the face of a ramp. Avoid sharp turns, even at slow speed, while on a ramp.

SPEED WARNING: This vehicle is designed to attain its maximum safe operating speed on a level surface. That speed can easily be exceeded when traveling down-hill. If this is allowed to occur, vehicle stability and braking performance become unpredictable. Do Not exceed, under any conditons, the vehicle maximum design speed of 14 MPH.

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 surface.

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 characteristics most closely related to vehicle operating safety are indicated in Sections D and E.

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 one or both battery leads to avoid unintentional starting of the motor during servicing and maintenance.
2. Batteries emit gases 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.

INSPECTION, SAFETY AND INTRODUCTION

SAFETY
(CONT)

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3. When performing maintenance on any part of the vehicle electrical system or when working in close proximity to EM Switch, batteries, etc., disconnect main battery leads, place Forward/Reverse switch in neutral and remove key from keylock in dash panel to prevent accidental movement of vehicle.

CAUTION:

1. Never replace a circuit 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 SHORTCIRCUIT. 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 Model R Pickup is designed to be driven on smooth surfaces in and around industrial plants, institutions, motels, mobile home parks and resorts. It is not designed to be driven on the public highways. It is not designed to go in excess of 14 MPH on level surfaces or downhill. Speeds in excess of this may result in difficulty in steering. It is not designed to be towed in excess of 14 M.P.H..

MODEL NUMBER

This manual covers Models R0-023-74 & R0-023-75 starting with units produced starting in May 1981.

SERIAL NUMBER

The Serial Number of your unit is stamped into the top of the left main frame tubing member, just below the deck board on the left side of the cart. The Model Number and Serial Number are on a nameplate attached to the kick panel below the passenger seat. In ordering parts or referring to your unit, please use these numbers. Replacement parts can be purchased directly from your local authorized Taylor-Dunn dealer.

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 after carefully reading the instructions contained in this manual.

STEERING

The steering system is of the automotive type. Turn the steering wheel to the right (or clockwise) for a right turn and left (or counterclockwise) for a left turn.

PARKING BRAKE

To engage parking brake, step firmly on park brake pedal. To release park brake pedal, pull brake pedal release knob and the park brake pedal will return to the full release or off position.

WARNING:

Never leave the vehicle on a hill or incline without applying the foot operated park brake.

SERVICE BRAKE

The brake pedal is designed and located for right foot operation. It is the pedal located to the left of the accelerator pedal. It functions the same as the brake pedal in your automobile. Depressing the pedal applies the braking action. The greater the effort applied to the pedal with your foot, the greater the braking action to your vehicle. Removing your foot from the pedal allows immediate release of the braking action.

FORWARD-REVERSE SWITCH

The forward-reverse switch is located to the right of, and below the drivers seat and can be operated only when the key is in the unlocked position. To place the handle in the FORWARD position, move it downward. To place the handle in the REVERSE position, move it upward.

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 vehicle and will eventually cause severe damage.

ACCELERATOR PEDAL

The accelerator pedal is located to the right of the brake pedal. It is designed for right foot operation similar to your automobile. Depressing the pedal turns the power on to the motor. It also controls the amount of power delivered to the motor. When driving your vehicle you will be able to feel the power, with full power when accelerator is fully depressed and minimum power when only partially depressed. You will have the same control of power in both directions of travel. Your forward/reverse switch determines the direction of travel and your accelerator pedal controls the speed.

HORN BUTTON {Optional}

The horn button is located on the switch panel to the left of the steering column. Depressing the button sounds horn. Releasing button will immediately silence horn.

LIGHT SWITCH {Optional}

The switch for operating headlights and tail lights is located on the switch panel to the left of the steering column. The ON - OFF positions are labeled.

BATTERY CHARGER

Refer to Section J8 for proper instructions to operate your battery charger.

SPECIAL ACCESSORIES

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

VEHICLE OWNER AND OPERATOR'S GUIDELINES

OPERATING YOUR VEHICLE

To put your vehicle into operation, unlock forward/reverse switch by turning keyed lock counter clockwise. Select direction you wish to travel by moving handle of forward/reverse switch into position. Release parking brake, slowly depress accelerator pedal until vehicle is moving at the desired speed. Steer vehicle as required utilizing the foot brake and accelerator to control your speed as desired.

CAUTION: DO NOT "hold vehicle at a standstill on a hill or incline using accelerator only. Continued "stalled" condition as described will damage motor and electrical controls. Use either your foot brake or hand brake to hold the vehicle on a hill safely.

CAUTION: When you leave your vehicle, it is best to always place forward/reverse switch in neutral position. Set parking brake to prevent vehicle from rolling free, and lock and remove key.

Drive safely and enjoy your Taylor-Dunn vehicle.

OPERATING RESPONSIBILITIES
AMERICAN NATIONAL STANDARD PERSONNEL AND BURDEN CARRIER'S
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.

OPERATING RESPONSIBILITIES
ANSI B56.8-1981

504 GENERAL continued

(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.

(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 platforms.

(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) Fire 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 regulations, 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.

OPERATING RESPONSIBILITIES
ANSI B56.8-1981

505 TRAVELING continued

(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.

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.

MAINTENANCE PRACTICES
ANSI B56.8-1981

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.

(j) Before starting to operate 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.

MAINTENANCE PRACTICES
ANSI B56.8-1981

602 MAINTENANCE PRECEDURES continued

(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 minimize 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, tags, 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.

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.

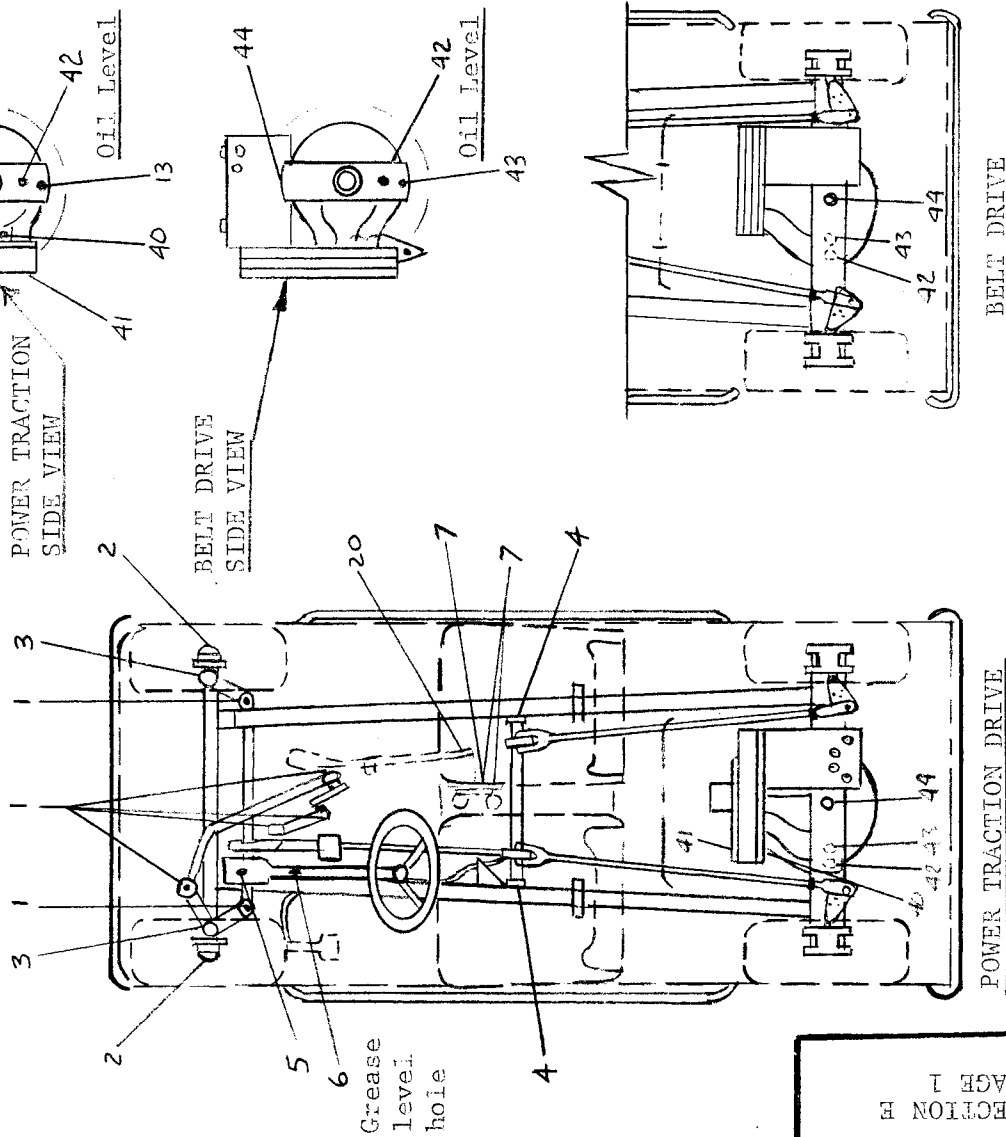
WARNING: When performing maintenance on any part of the electrical system, disconnect main battery leads, place Forward/Reverse switch in neutral, turn key to off position and remove from switch. Set Parking Brake.

MAINTENANCE SERVICE	REFER SECTION	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	EVERY YEAR
Check & record Sp. 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
* Apply lube to speed control sliding contact area with <u>electrically non-conductive applicator</u> . Use T-D Grease 94-421-00 or a quality hi-temp grease with a 500° min. drop point.	J6 & E	X	X	X	X
<div>NOTE: *Switch may require cleaning and lubrication more often than once a month depending on vehicle operating environment. See Sect. J6 for additional information.</div> <div>WARNING: <u>Never</u> use a substitute grease that contains graphite, metal particles or is electrically conductive.</div>					
* Check tire pressure (18-22PSI)	J1	X	X	X	X
Adjust belt tension	J2	X	X	X	X
Adjust motor mount & chain (See Chart, Section J2)	J2		X	X	X
* Lubricate steering linkage with grease (8 Zerk fittings)	E			X	X
* Lubricate front wheel bearings (2 Zerk fittings)	E			X	X
* Lubricate linkage pivot points and suspension points with 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 never tighten while batteries are charging.			X	X	X
* Items related to safety recommendations					

MAINTENANCE SERVICE	REFER SECTION	EVERY WEEK	EVERY MONTH	EVERY 3 MONTHS	EVERY YEAR
Check Disc brake pad linings for wear, adjust as necessary	J3			X	X
Drain differential and refill with SAE 30 oil (refer to lubrication diagram)	J2 & E				3 Years

MASTER CONTROL SWITCH

Lubricate Monthly. Apply lube to Speed Control 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 1
PAGE 1

A. PRESSURE GUN GREASE

	NO. OF PLACES	FREQUENCY
1. Ball Joints	6	3 Months
2. Front Wheel Hub	2	3 Months
3. Front Wheel	2	3 Months
4. Brake Linkage		
X-Shaft	2	3 Months
Steering Gear Box	1	1 year
Will to Grease Level Hole.		
B. T-D GREASE 94-421-00		
7. Master Control Switch	4	1 Month or sooner
C. ALL PURPOSE ENGINE OIL		
20 Linkage Pivot Points	6	3 Month
SAE 30 OIL-AXLE & DIFFERENTIAL		
42. Level Check	1	(See Below)
Change Oil - Power Traction		3 year
a. Remove Drain Plugs 41 & 43, Level Plugs 40 and 42, Fill Plug 44.		
b. Drain Oil, Replace 41 & 43.		
c. Add Oil by 44 to level of 42.		
d. Add oil by 40 to 1/2" below 40.		
e. Replace 40, 42, 44		
*** Change Oil - Belt Drive		3 year
a. Remove Drain Plug 43, Level Plug 42 and fill Plug 44		
b. Drain oil, replace 43		
c. Add oil by 44 to level of 42		
d. Replace 44		
** Check level whenever oil leakage is evident.		
*** Or after service work performed		
* Items related to safety recommendations.		
E. POWDERED GRAPHITE		
Key Lock	1	1 year

SECTION 1
PAGE 1

DO NOT SCALE

TOL: FRAC±

DEC±

ANG±

3-10-81 1-1-81

1 year



Taylor-Dunn
2114 WEST BALL ROAD
ANAHEIM, CALIFORNIA
92803

LUBRICATION DIAGRAM

SCALE: NONE

DWN BY: J.W.H.

CHKD BY:

FIGURE 1

SECTION E

SHEET 1 OF 1

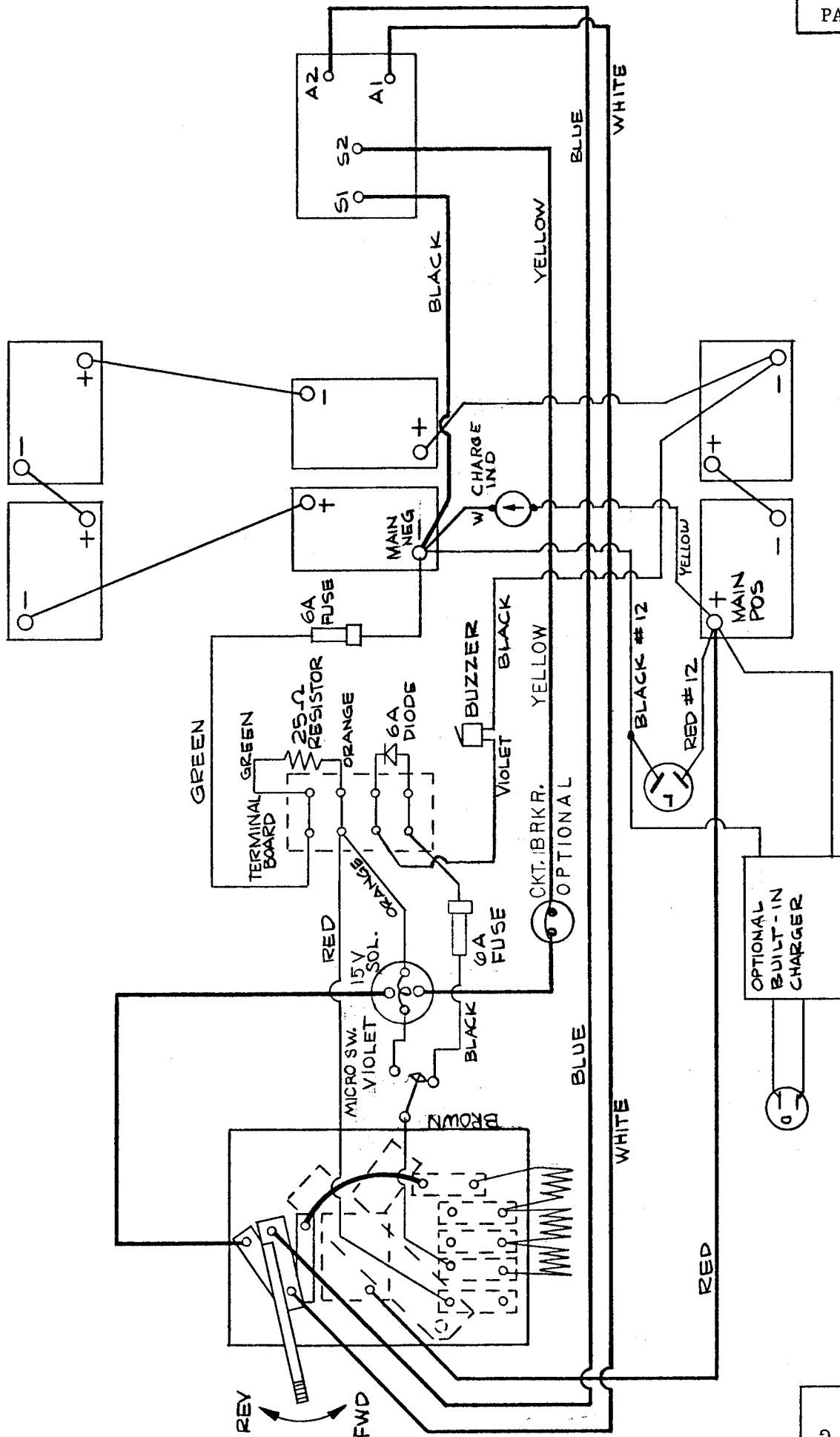
TROUBLE SHOOTING PROCEDURES

NOTE: SEE PWR-TRON SUPPLEMENT FOR PWR-TRON TROUBLE SHOOTING

SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
1. <u>STEERING</u>		
(SECTIONS E & J1)		
a. Pull in one direction	1. Unbalanced front tire. pressure 2. Bent or maladjusted tie rod 3. Bent axle or spindle	1. Check and adjust inflation pressures 2. Repair, replace or adjust tie rod 3. Repair or replace
b. Hard Steering	1. Low tire pressure 2. Dry pivot points in steering linkage 3. Bent or maladjusted king pin	1. Inflate to 16-20 lbs. 2. Lubricate - See Section E 3. Repair, replace, or adjust king pin
c. Sloppy or Loose	1. Loose wheel bearing 2. Loose or worn ball joints 3. Worn king pin bushings or king pins 4. Excess backlash in steering gear box 5. Worn idler arm bushings	1. Adjust 2. Tighten or replace ball joints - Section J1 3. Replace bushings or pins and bushings 4. Adjust backlash 5. Replace arm and bushings
2. <u>DRIVE AXLE</u>		
(SECTION J2)		
a. Erratic Operation	1. Faulty Power System 2. Badly worn drive sprockets or belts	1. See "Power System" 2. Replace sprockets or belts
b. Lack of Power Slow Operating	1. Faulty Power System 2. (Belt Drive only) Belt slipping or missing 3. Parking Brake not completely released 4. Incorrect brake adjustment, brake dragging 5. Defective or maladjusted wheel bearing 6. Bind or drag in primary drive or differential	1. See "Power System" 2. Adjust belt tension or replace belts 3. Release Parking Brake 4. Adjust brake system 5. Adjust or replace wheel bearing 6. Check and repair primary drive or differential
c. Abnormal Noise in drive train	1. Defective motor bearing 2. Loose motor mount 3. Worn or broken sprockets or pulleys 4. Worn gears or bearings in differential 5. Defective Axle Bearing 6. Worn or bent axle 7. Loose wheel lug nuts 8. Defective spring eye bushings	1. Replace motor bearing 2. Tighten motor mount 3. Replace sprockets or pulleys 4. Check and replace gears or bearings 5. Replace Bearing 6. Replace axle 7. Tighten lug nuts 8. Replace bushings

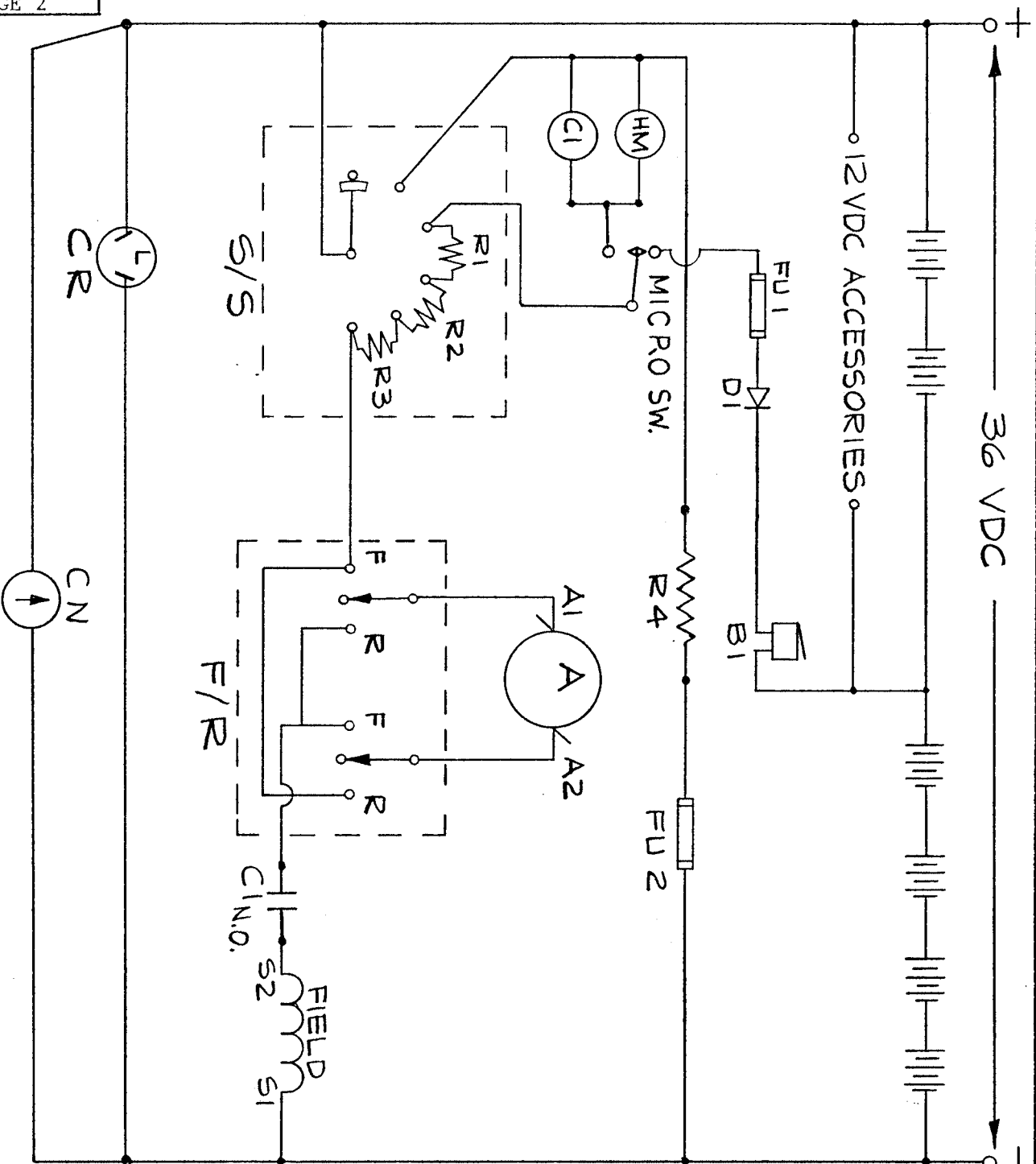
SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
2. DRIVE AXLE (CONTD) (SECTION J2)		
d. Oil Leaks in wheel bearing area	<ol style="list-style-type: none"> 1. Wheel bearing seal defective 2. Wheel bearing gasket defective. 3. Axle retainer plate not tightened 4. Drive axle filled above proper oil level 	<ol style="list-style-type: none"> 1. Replace seal 2. Replace gasket 3. Tighten axle retainer plate 4. Drain oil to proper level
f. Oil Leaks in gear case or motor area	<ol style="list-style-type: none"> 1. Defective gear case cover gasket 2. Motor Mount "O" Ring defective or missing 3. Defective motor bearing oil seal 	<ol style="list-style-type: none"> 1. Replace gasket 2. Install "O" ring seal 3. Replace oil seal
3. <u>BRAKES</u> (SECTION J3)		
a. Poor Brakes	<ol style="list-style-type: none"> 1. Worn Disc brake pads 2. Brake lining wet or oily 3. Bind in brake linkage 4. Incorrect linkage adjustment 	<ol style="list-style-type: none"> 1. Adjust for lining wear or replace if less than .020 thick 2. Clean & dry or replace if oily 3. Loosen, and readjust brake linkage 4. Adjust linkage
b. No Brakes: Pedal reaches floor board	<ol style="list-style-type: none"> 1. Incorrect linkage adjustment 2. Broken linkage 	<ol style="list-style-type: none"> 1. Adjust linkage 2. Repair or replace broken part
c. Excessive or grabbing brakes	<ol style="list-style-type: none"> 1. Small amount of oil on lining 2. Scored or rough brake Disc Rotor 3. Incorrect Linkage Adj. 	<ol style="list-style-type: none"> 1. Clean lining 2. Replace Disc Rotor (Axle Weldment) 3. Adjust linkage
4. <u>POWER SYSTEM</u> (SECTIONS J6,J8,G)		
a. No Power to Motor in forward or reverse	<ol style="list-style-type: none"> 1. Batteries discharged or defective 2. EM Master Control Switch 3. Forward-Reverse Switch maladjusted or worn 4. Motor Brushes not contacting armature 5. Loose or broken wire 6. Motor defective 	<ol style="list-style-type: none"> 1. Recharge or replace batteries 2. Adjust or repair switch, refer to Sect. J6 3. Adjust or repair forward/reverse contacts 4. Adjust or replace brushes 5. Tighten or replace wire. 6. Repair or replace motor

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
4. <u>POWER SYSTEM (CONTD)</u> SECTIONS J6,J8,G)		
b. Erratic Operation	<ol style="list-style-type: none"> 1. Batteries discharged 2. EM Master Control Switch 3. Forward/Reverse Switch maladjusted or worn 4. Loose wire or wires 5. Motor brushes worn 	<ol style="list-style-type: none"> 1. Recharge batteries 2. Adjust or repair switch. Refer to Sect. J6 3. Adjust or repair Forward/Reverse contacts 4. Tighten 5. Replace brushes
c. Vehicle range	<ol style="list-style-type: none"> 1. Batteries not fully charged. 2. Batteries nearing end of normal life 3. Charger output not sufficient 4. Charger defective 	<ol style="list-style-type: none"> 1. Recharge batteries. Review charging practice 2. Replace batteries 3. Adjust transformer taps 4. Repair or replace charger
d. No power in one direction and full power in other direction without depressing accelerator	<ol style="list-style-type: none"> 1. Switching and motor circuit not properly connected 	<ol style="list-style-type: none"> 1. Correct power circuit wiring to diagrams in Section G.
e. Poor performance excessive heat	<ol style="list-style-type: none"> 1. Driving with park brake on 	<ol style="list-style-type: none"> 1. Fix or install foot park brake interlock



EM MASTER CONTROL SWITCH
WIRING DIAGRAM

FIGURE 2A
SECTION G

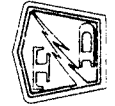


LEGEND

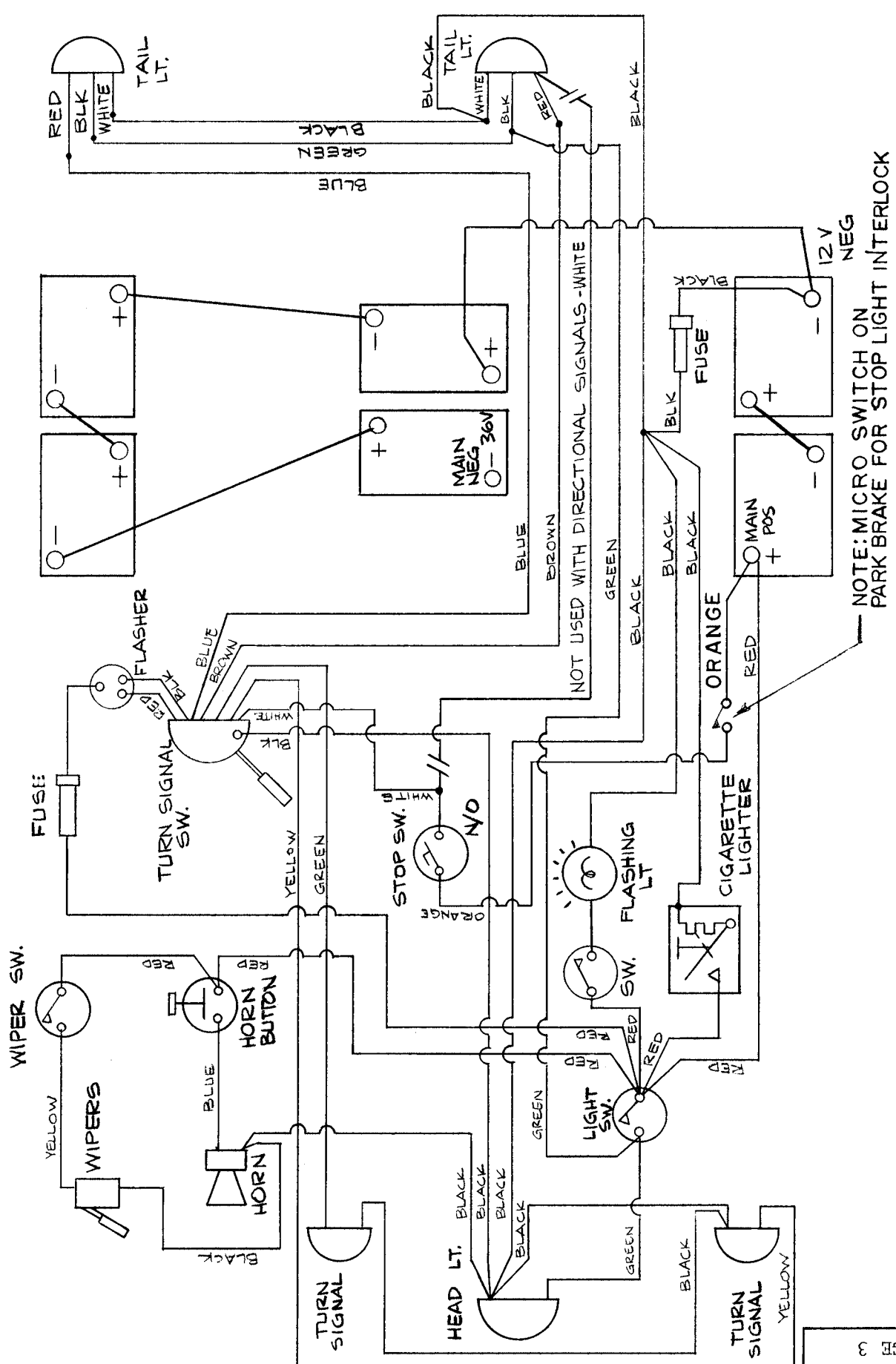
A	MOTOR ARMATURE
B1	BUZZER
C1	SOLENOID/CONTACTOR
D1	DIODE
FPBSW	FOOT PARK BRAKE SWITCH
FU1	FUSE, BUZZER
FU2	FUSE, SOLENOID
R1-R3	RESISTOR, POWER
R4	RESISTOR, SOLENOID
CR	CHARGER RECEPTACLE
HM	HOUR METER (OPTIONAL)
F/RS	FORWARD/REVERSE SWITCH
S/S	SPEED SWITCH
CN	CHARGE IND

* NOT USED WITH
 * PWR-TRON SPEED
 * CONTROL. SEE
 PWR-TRON SUPPLEMENT AT BACK
 OF BOOK.





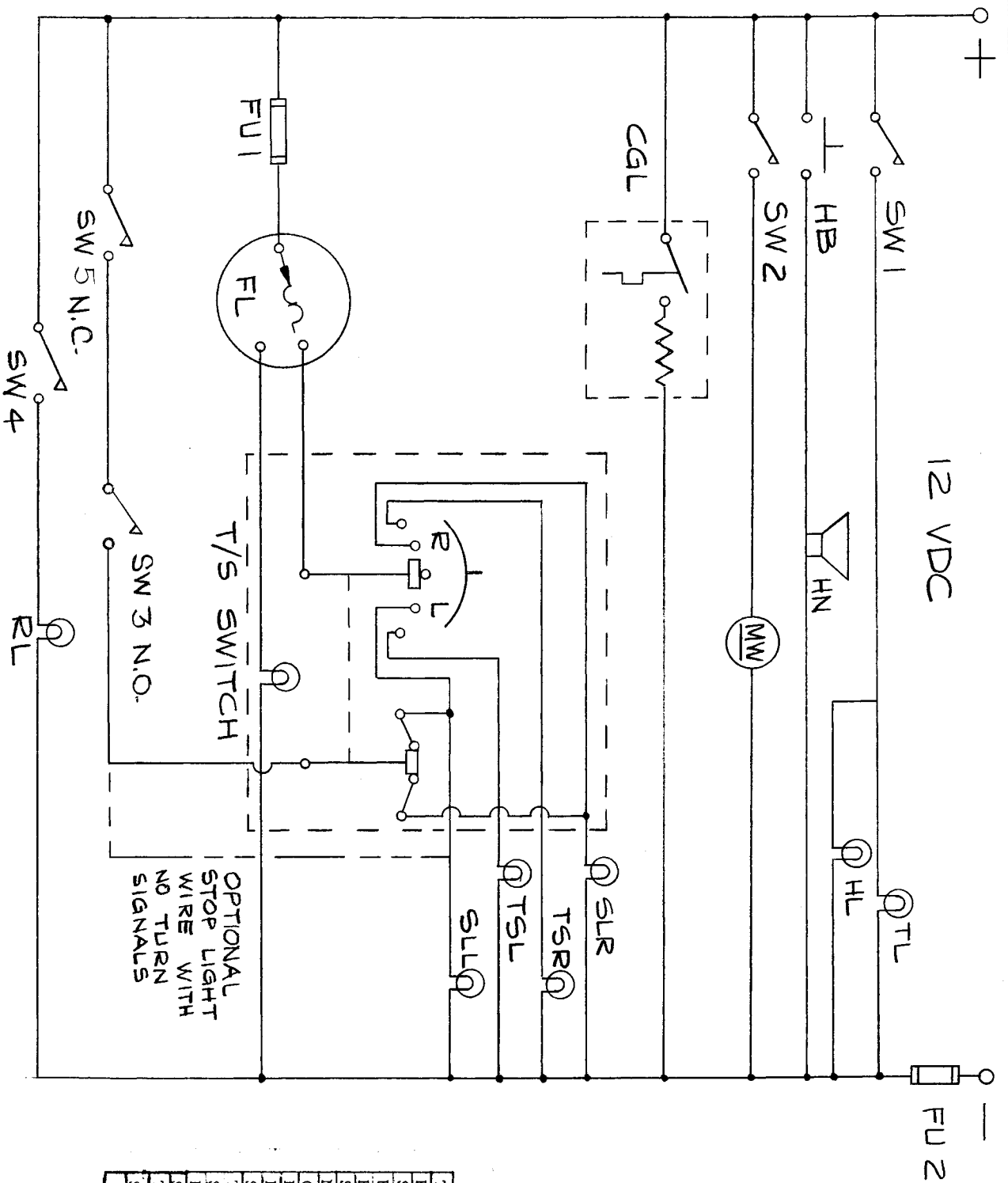
TAYLOR DUNN MFG. CO.
2114 West Ball Rd.
Anaheim, Calif.



REVISED 11-58

FIGURE 2C
SECTION G
ACCESSORY WIRING DIAGRAM

DRAWN BY J.M.
DATE 12-13-79



LEGEND

TL	TAIL LIGHT
HL	HEAD LIGHT
SW1	SWITCH (LIGHT)
HB	HORN BUTTON
HN	HORN
SW2	SWITCH (WINDSHIELD WIPER)
WV	MOTOR (WIPER)
CGL	CIGARETTE LIGHTER
FU1	FUSE (TURN SIGNALS)
FL	FLASHER
SLR/L	STOP LIGHTS, RIGHT & LEFT
TSR/L	TURN INDICATORS, RIGHT & LEFT
SW3	SWITCH (STOP LIGHTS)
RL	ROTATING LIGHT
SW4	SWITCH, (ROTATING LIGHT)
T/S	TURN SIGNAL SWITCH
SW5	SWITCH (STOP RIGHT) PK. BRK

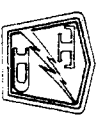
SECTION 6
PAGE 4

REVISED 11-5-81

SCALE
DRAWN BY J.M.
DATE 8-18-80

FIGURE 2D
SECTION G

ACCESSORY WIRING SCHEMATIC



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

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 the 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 nameplate. 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, 3½ H.P., 36 Volt, Specification Number 28-1408-11704

Above parts for Model 1248 B 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 and vehicle serial number.

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

SUGGESTED SPARE PARTS LIST

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QUANTITY FOR 1-20 VEHICLES
------------------	-----------------	-------------	-------------------------------

REFER TO FIGURE 4 - FRONT AXLE, WHEELS, AND STEERING

4-68	45-338-00	Oil Seal for 1" Bearing	1
4-75	13-734-00	Assy., Wheel and Tire, 480 x 8, Super Rib, Tubeless	1
4-75	13-739-00	Assy., Wheel, Tube, and Tire, 480 x 8, Steelguard	1
4-75	13-742-00	Assy., Wheel and Tire, 570 x 8, Super Rib, Tubeless	1
4-84	11-030-00	Tube for 480 x 8 Tire	1
4-84	11-040-00	Tube for 570 x 8 Tire	1
4-84	11-041-00	Tube for 18 x 850 x 8 Tire	1

REFER TO FIGURE 5 - POWER TRACTION REAR AXLE AND BRAKES

5-3	41-997-00	Plug, Fill, Drain and Level	3
5-71	80-703-00	O-Ring, Motor Mount Seal	1
5-59	45-002-00	Gasket, Chain Case Cover	1
5-62	30-508-20	Chain, 36" Long. Use with 81 Tooth Sprocket	1
5-62	30-507-20	Chain, 30-3/4" Long. Use with 59 Tooth Sprocket	1

REFER TO FIGURE 5M - ELECTRIC MOTORS

5M-6	70-101-00	Motor Brush	4
5M-9	45-506-00	Oil Seal	1

SUGGESTED SPARE PARTS LIST

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QUANTITY FOR 1-20 VEHICLES
------------------	-----------------	-------------	-------------------------------

REFER TO FIGURE 6 - MECHANICAL DISC BRAKES & LINKAGE

6-6	98-201-10	Rubber Pad, Park Brake Pedal	1
6-21	98-200-00	Rubber Pad, Service Brake Pedal	1
6-58	41-348-70	Pad, Disc Brake	4

REFER TO FIGURE 9 - EM MASTER CONTROL SWITCH & LINKAGE

9-0	61-845-45	Master Control Switch Assembly Complete	1
9-2	61-831-10	Power Bar w/Countersunk Holes	1
9-3	61-831-12	Power Bar w/Notch	1
9-4	61-831-13	Power Bar	3
9-6	61-831-20	Speed Contact Bar	1
9-7	61-840-00	Forward/Reverse Power Bar	1
9-9	61-846-50	Rotor Board	1
9-11	61-841-00	Handle	1
9-12	71-030-58	Contact Button	2
9-13	61-849-50	Contact Button	2
9-14	61-849-55	Rotor Arm	1
9-15	88-102-11	Neutral Button (3/8 x 1 Carriage Bolt)	1
9-18	78-212-63	Resistor Coil #5 Wire - 6 Turns	1
9-20	78-212-51	Resistor Coil #9 Wire - 10 Turns	1
9-23	97-170-00	Washer, Insulated	2
9-24	32-212-50	Plastic Bushing 1/4 I.D. x 1/4 Long	2
9-25	96-300-09	Bronze Bolt	1
9-32	78-212-62	Resistor Coil #8 Wire - 8 Turns	1
9-54	96-302-01	Screw, Bronze 5/16 N.C. x 1, Hex Head	1

MAINTENANCE PROCEDURES
FRONT AXLE, STEERING AND TIRES
REFER TO FIGURE 4

Axle

Your front axle and wheel assembly consist of an axle mounted on 2 leaf springs with automotive spindles, steering worm, and steering linkage. It has been designed for rugged dependable service with little maintenance requirements, other than lubrication and an occasional check of all nuts and bolts for tightness. Your wheels revolve on Timken Roller Bearings and the spindles are mounted with heavy kingpins.

The steering idler rotates on self lubricating bearings mounted on a corrosion resistant shaft. No lubrication is necessary. Should the bearings become worn, they can easily be replaced.

Zerk type grease fittings have been provided to insure proper amounts of lubricant reaching wear points.

It is recommended that you follow the maintenance guide and lubrication diagrams for normal maintenance of the assembly. They are located in Sections D and E of this manual.

The maintenance guide is set up for average use. If the vehicle is subject to long hours of running and heavy loads the frequency of lubrication and service should be increased accordingly.

Refer to the service and adjustment Section J1 of this manual for guidance when performing major repairs and adjustments.

Steering and Suspension

The steering worm gear box and steering linkage are similar to that used on autos. They require very little attention.

Refer to maintenance guide and lubrication diagrams (Sections D & E) for normal care.

If service and adjustments are required, refer to appropriate section of this manual.

When performing underbody front end maintenance, check spring shackle bolts and U-bolts, and tighten if necessary. This will assure good steering control and minimum wear.

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 tire pressure chart below assist you to determine the correct tire pressures for your needs. The higher range of pressures are recommended for heavy loads:

18 x 8.50 x 8	4 Ply	18 to 22 lbs.
18 x 9.50 x 8	4 Ply	18 to 22 lbs.
5.70 x 8	Pneumatic	Load Range B 60 psi
4.80 x 8		Load Range B 70 psi

CAUTION: Do not over inflate tires. This will promote increased wear. Under inflated tires on hard surfaces also promotes wear and should be avoided. Over inflation can be detected by observing the tread wear depth over a period of time and will show up as greater reduction of tread depth in center portion of tread when compared with tread depth near tire edge.

SERVICE AND ADJUSTMENT
FRONT AXLE, STEERING AND TIRES
REFER TO FIGURE 4

Remove and Install Wheel Hub: Adjust Bearings

1. Remove wheel cover.
2. Remove dust cap.
3. Remove cotter pin and unscrew spindle nut.
4. Remove outer washer and bearing.
5. Remove wheel, tire, and hub assembly.
6. Before re-assembly, thoroughly clean the bearings, spindle, and hub assembly. Inspect bearings for wear or damage. Examine inner seal. Replace damaged or worn parts.
7. Generously pack bearings with wheel bearing grease.
8. Reassemble in reverse order. Adjust wheel bearings before installing cotter pin.
9. Adjust wheel bearings by tightening spindle nut until bearing drag barely occurs, then back off spindle nut approximately 1/4 turn. Wheel should turn freely without noticeable bearing end play.
10. Install cotter pin, dust cap and wheel cover.
11. Wheel hub has one zerk fitting for periodic lubrication of bearings without disassembling hub. Refer to Lube Chart in Section E.

Remove and Install King Pin Bushings

1. Remove wheel and hub from spindle. See preceding subsection.
2. Remove ball joints from steering arms. Remove cotter pin and nut, rap stud sharply with soft hammer, or soft block and regular hammer, to loosen tapered stud from steering arm.
3. Remove 7/8 lock nut which retains spindle and steering arm assembly to kingpin.
4. Remove spindle and steering arm assembly from kingpin.
5. Press bushings from spindle and steering arm assembly.
6. Thoroughly clean bushing housing and kingpin before installing new bushings.
7. Press bushings into sleeve. It may be necessary to ream the bushings after they are installed in the sleeve, because of slight distortion which may occur during the process of pressing them into place. If proper press and reamer are not available, most automotive supply houses and repair shops have capacity to perform this service.
8. Reassemble in reverse order. Tighten ball joint clamps securely. Lubricate bushings and kingpin through grease fitting. Adjust wheel bearings as described in preceding subsection. Align front end as described in sub-section titled "Align Front End: Adjust Toe In".

Align Front End: Adjust Toe In

1. Caster and camber are set at the factory, and do not require adjustment. To adjust toe-in, raise front end of vehicle off the ground.
2. With a pencil, make a mark around center of tread of tire by holding pencil point against tire while turning wheel. Mark both front tires.
3. Lower vehicle to ground. Loosen tie-rod sleeve clamps at each end of tie-rod, so that adjusting sleeve can be turned.
4. With wheels in straight forward direction, measure the distance between pencil lines at the front of the tires, and at the rear of the tires.
5. Adjust the tie-rod sleeve until the distance from mark to mark across the front of the tires is the same as the distance from mark to mark across the rear of the tires.
6. Tighten the adjusting sleeve clamp nuts securely, taking care to avoid changing the position of the adjusting sleeve.

Replace Ball Joint:

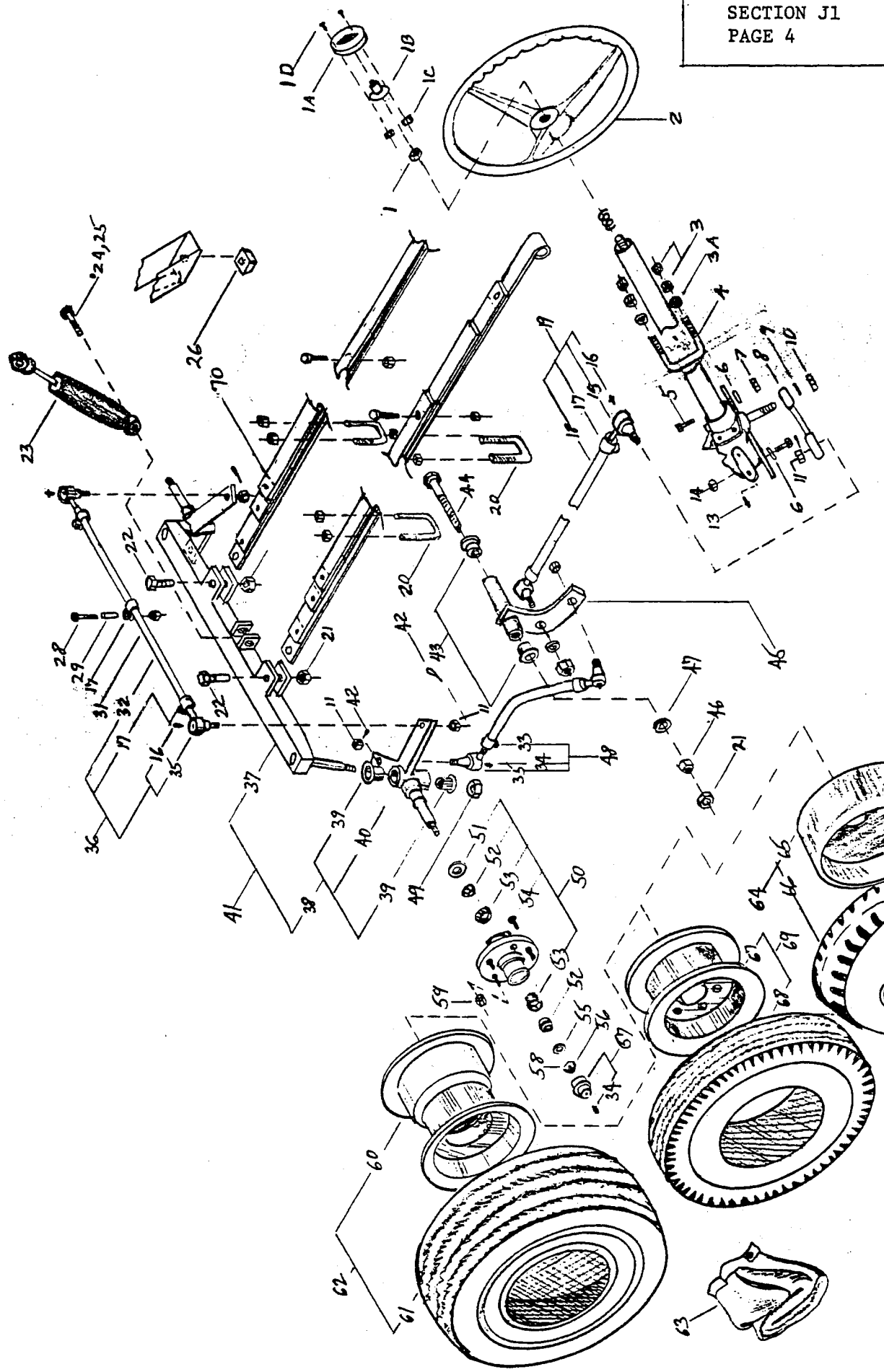
1. Remove cotter pin and nut.
2. Loosen sleeve clamp.
3. Rap ball joint stud sharply with soft hammer or soft block and regular hammer to loosen tapered stud from steering arm.
4. Either measure position of ball joint or count number of threads exposed from sleeve. Remove ball joint by unscrewing from sleeve. Note that one end will be left hand thread and the opposite ball joint will be right hand thread.
5. Install new ball joint and position same as the one removed.
6. Install tapered stud in steering arm or gear lever arm.
7. Replace nut, tighten securely and replace cotter pin.
8. If ball joint replaced is part of the tie rod, check toe-in, and adjust, if necessary, as described in sub-section titled "Align Front End".
9. If ball joint replaced is part of the linkage from gear lever arm to steering arm, check relative positions of steering wheel and road wheels. Steering wheel spoke should be in the six o'clock position when the road wheels are in the straight forward position. Adjust by rotating the adjusting sleeve until the desired relationship is obtained.
10. Tighten both sleeve clamps securely.
11. Lubricate ball joint through zerk fitting. Refer to Lube Chart in Section E.

Remove and Replace Steering Worm Assembly:

1. Remove two screws which retain score card pad, and remove score card pad. Pry cap from steering wheel hub, exposing locknut.
2. Remove steering wheel locknut, and with suitable puller, remove steering wheel from shaft.
3. Disconnect ball joint and sleeve assembly from steering gear lever arm. Remove cotter pin and nut, rap ball joint stud sharply with soft hammer, or soft block and regular hammer, to loosen tapered stud.
4. Remove steering column clamp.
5. Remove two bolts which retain steering worm housing to frame, and remove steering worm gear and steering column assembly from bottom of vehicle.
6. Should it be necessary to remove the gear lever arm from the shaft, note the position of the gear lever arm with respect to the indicating mark on the end of the shaft for proper positioning at assembly.
7. Install in reverse order. When assembling steering wheel to shaft, first position the front wheels in a straight forward direction, then install steering wheel with one of the spokes as close to the six o'clock position as the splines will allow. Final adjustment can be made by lengthening or shortening the ball joint and adjusting sleeve assembly. Tighten steering wheel lock nut, and tighten adjusting sleeve clamps if they were loosened in order to make adjustment.
8. Check steering to determine if wheels will turn an equal amount in either direction. If this is not the case, it will be necessary to re-position the gear lever arm on the steering worm output shaft. This may in turn require repositioning the steering wheel to obtain the desired six o'clock spoke condition.
9. Lubricate steering worm through the zerk fitting located on the steering worm housing. Refer to the Lube Chart in Section E.

Replacement of Steering Idler Bushings

1. Remove steering idler shaft lock nut.
2. Unscrew shaft from inner nut, and remove shaft bushings, washer, and inner nut.
3. Reassemble in reverse order with the shaft head and lock nut on the outboard sides of the chassis members which retain the assembly and with the washer between the inboard nut and the bushing.



DO NOT SCALE	TOL: FRAC±	DEC±	ANG±
<p>Taylor-Dunn 2114 WEST BALL ROAD ANAHEIM, CALIFORNIA 92803</p>	<p>FRONT AXLE, TIRES STEERING & SUSPENSION Models R0-023-74 & R0-023-75</p>		
3-30-81	5-18-81	10-16-81	
SCALE: NONE			FIGURE 4
DWN BY: JWH			SHEET
CHKD BY:			OF

FRONT AXLE, WHEELS, AND STEERING
REFER TO FIGURE NO. 4

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
NOTE: REFER TO SECTION J1A FOR STEERING WORM ASSEMBLY INFORMATION AND PARTS LISTINGS			
4-1	88-259-82	Hex Head 13/16 NF	1
4-1A	19-004-10	Cap, Steering Wheel with Horn Button Hole	1
4-1B	71-501-00	Button, Horn	1
4-1C	88-029-86	Nut, Flexlock, 8-32	2
4-1D	88-025-08	Screw, Truss Head, Machine, 8-32 X 5/8	2
4-2	19-003-20	Wheel, Steering, Deluxe Splined Hub, Black	1
4-3	88-099-80	Nut, Hex Head 5/16 NF	4
4-3A	88-088-62	Washer, Lock 5/16	4
4-4	96-099-00	U-Bolt, 5/16 NF	1
4-5	88-130-14	Screw, Hex Head, 7/16 X 1-1/2 NF	2
4-6	88-128-60	Washer, 7/16	3
4-7	88-130-86	Nut, Hex Lock Fiber Insert, 7/16 NF	2
4-8	18-107-00	Lever, Steering Splined, 7-1/2 Long	1
4-9	88-268-62	Washer, Lock, 7/8	1
4-10	88-279-82	Nut, Hex Head, 7/8 NF	1
4-11	88-159-85	Nut, Slotted Hex, 1/2-20 NF	6
4-13	87-073-00	Fitting, Grease, 45 , 3/16 Drive Type	1
4-15	86-501-99	Ball-Joint, 1/2 Thread on Tapered End, Rt. Hand	3
4-16	87-074-00	Fitting, Grease, 1/4-28 NF, Straight	8
4-17	86-510-00	Clamp, Ball Joint	7
4-18	18-035-00	Sleeve, Steering Adjustment, 11" Long	1
4-19	18-035-10	Assembly, Steering Adjustment Sleeve with Ball Joints and Clamps, 11" Sleeve	1
4-20	96-120-00	U-Bolt, 1/2 NC, 1-7/8 ID X 2 Long	4
4-21	88-149-81	Nut, Lock 1/2 NC	10
4-22	96-316-00	Bolt, 1/2 NC X 3, All Thread	2
4-23	86-003-00	Shock Absorber with Rubber Cushion Stop	1
4-24	88-120-17	Screw, Hex Head, 7/16 NC X 2-1/4 Long	1
4-25	88-129-81	Nut, Lock 7/16 NC	1
4-26	98-753-00	Cushion, Rubber, Frame to Spring	1
4-28	88-080-18	Screw, Hex Head, 5/16 X 2-1/2 NC	1
4-29	16-801-00	Spacer, Towing, 1/4 X 1 1/4 Long	1
4-31	88-089-81	Nut, Hex Lock, 5/16	1
4-32	18-047-00	Sleeve, Steering Adjustment, 18" Long	1
4-35	86-501-98	Ball-Joint, 1/2" Thread on Tapered End, L. Hand	3
4-36	18-047-10	Assembly, Steering Adjustment Sleeve with Ball Joints and Clamps, 18" Sleeve	1

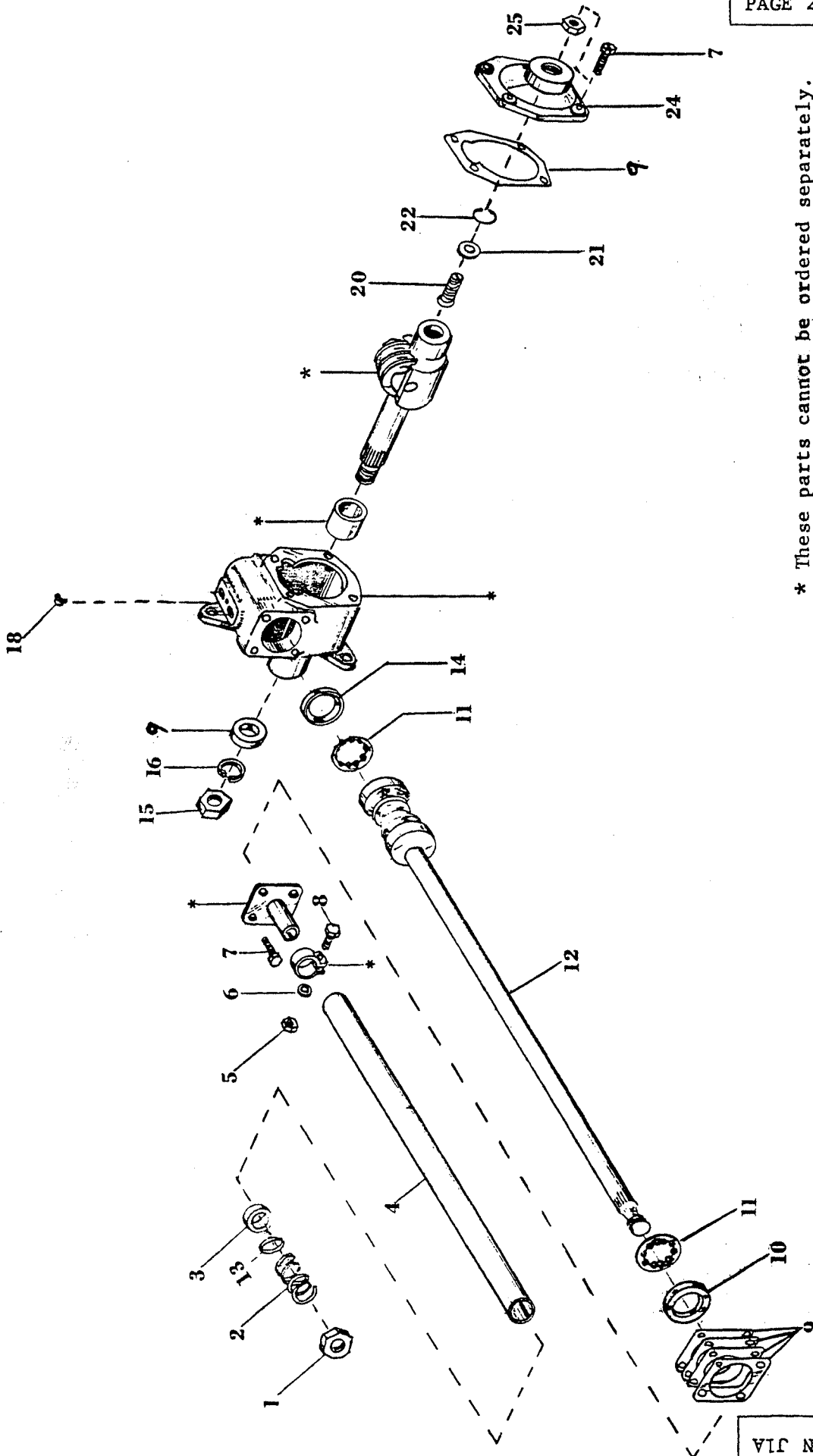
FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
4-37	15-066-00	Axle, with King Pins <u>less</u> Spindles, Hubs and Tie Rod	1
4-38	14-157-98	Assembly Spindle, Left Front	1
4-38	14-157-99	Assembly, Spindle, Right Front	1
4-39	32-200-00	Bushing, Bronze, Oil Impregnated with Flange, 7/8 ID X 10D for Spindles	4
4-40	87-071-00	Fitting, Grease; 3/16 Drive Type	2
4-41	15-066-10	Assembly, Front Axle with King Pins, Spindles, Hubs and Tie Rod	1
4-42	88-527-11	Pin, Cotter 1/8 X 1	6
4-43	32-215-00	Bearing Plastic Flanged	2
4-44	50-004-00	Shaft, 1/2 X 8 Threaded Each End, Stainless Steel	1
4-45	00-371-15	Arm, Idler, Steering	1
4-46	88-149-80	Nut, Hex Head, 1/2 NC	1
4-47	88-148-61	Washer, SAE, 1/2	11
4-48	18-029-11	Assembly, Steering Adjustment Sleeve with Ball joints and Clamps, 13" with 40 Bend	1
4-49	88-279-81	Nut, Lock, 7/8 NC	
4-50	12-124-00	Hub, Wheel, 2 3/4" Long, Five 1/2" Studs on 4-1/2" Bolt Circle with Two 1" Bearing Races, one bearing and one Oil Seal	2
4-51	45-338-00	Seal, Oil for 1" Bearing	2
4-52	80-017-00	Bearing, Tapered Roller, 1" ID	4
4-53	80-103-00	Race, Tapered Bearing for 1" Bearing	4
4-54	96-329-00	Bolt, Lug, 1/2 NF	10
4-55	88-228-60	Washer, 3/4 SAE	2
4-56	88-527-14	Pin, Cotter 1/8 X 1-1/2	2
4-57	92-104-00	Cap, Dust with Grease Fitting	2
4-58	88-239-85	Nut, Slotted Hex, 3/4 NF	2
4-59	97-236-00	Nut, Lug, Tapered, 1/8 NF	10
4-60	12-020-00	Wheel, Demountable for 18 X 850 X 8 Tire	2
4-61	10-093-00	Tire, 18X850 X 8, 4 Ply, Terra Power Rib, Tubeless Goodyear	2
4-61	10-094-00	Tire, 18X850X8, 4 Ply, Terra Rib, Tubeless, Goodyear	2
4-62	13-746-00	Assembly, Tire & Demountable Wheel 18 X 850 X 8, 4 Ply Terra Power Rib, Tubeless, Armstrong	2
4-62	13-746-10	Assembly, Tire & Demountable Wheel 18 X 850 X 8, 4 Ply Terra Power Rib, Tubeless, Goodyear	2
4-63	11-041-00	Tube, Optional for 18 X 850 X 8 or 18X 950 X 8 Tire.	2

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
4-64	13-954-10	Assembly, Wheel & Tire, 16- $\frac{1}{4}$ X 4 X 11- $\frac{1}{4}$ Solid X-tra Cushion Tire on Cast Iron Wheel	2
4-65	12-054-00	Wheel, Cast Iron, Five $\frac{1}{2}$ " Holes on 4- $\frac{1}{2}$ " Bolt Circle, for Press On, Cushion tire	2
4-66	10-261-00	Tire, Solid X-tra Cushion, 16- $\frac{1}{4}$ X 4 X 11- $\frac{1}{4}$	2
4-67	12-042-00	Wheel, Split Disc, Five $\frac{1}{2}$ " Holes on 4- $\frac{1}{2}$ " Bolt Circle, for Steelguard Tires	2
4-67	12-012-00	Wheel, Drop Center, Five $\frac{1}{2}$ " Holes on 4- $\frac{1}{2}$ " Bolt Circle, for 4.80 X 8 & 5.70 X 8 Tubeless Tires	2
4-68	10-075-00	Tire, 4.80 X 8, Super Rib, Tubeless	2
4-68	10-078-00	Tire, 4.80 X 8, 6 Ply, Steelguard, Tube Type	2
4-68	10-081-00	Tire, 5.70 X 8, 4 Ply, Super Rib, Tubeless	2
4-69	13-734-00	Ass'y., Wheel & Tire, 4.80 X 8, Super Rib, Tubeless	2
4-69	13-739-00	Ass'y, Wheel Tube & Tire, 4.80 X 8, Super Rib, Tubeless	2
4-69	13-742-00	Ass'y, Wheel & Tire, 5.70 X 8, Super Rib, Tubeless	2
4-70	85-501-00	Spring, 4 Leaf, 60-5/8" Eye to Hole	2

SERVICE AND ADJUSTMENT
STEERING WORM ASSEMBLY
REFER TO FIGURE 4A

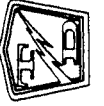
DISASSEMBLE AND REASSEMBLE STEERING WORM

1. Remove 4 bolts from cover and slide steering arm shaft assembly and cover from housing.
2. Mark position of steering column jacket tube clamp for proper reassembly.
3. Loosen steering column jacket tube clamp, and slide jacket tube off of housing and steering column shaft.
4. Remove 4 bolts from housing worm bearing cap and remove steering column worm and shaft assembly.
5. Clean all parts and flush out housing with suitable degreasing solvent. Lightly oil all parts for reassembly.
NOTE: If installing new steering column shaft and worm assembly, worm bearings, or worm bearing cups, it will be necessary to check the worm bearing preload.
6. To check worm bearing preload, install the steering column worm and shaft assembly, bearings, bearing cups, bearing cap and original shims.
7. Tighten 4 bolts to 18-22 ft. lbs. torque.
8. Shaft and worm must not have any bearing looseness or "play" and should not rotate with less than 1-1/4" lbs. torque nor require more than 4-1/2" lbs. of torque.
9. Add or take away shims as needed to produce the desired bearing preload.
10. Inspect steering arm shaft seal and cover gasket. Replace if worn or damaged.
11. Install steering arm shaft and cover assembly. Tighten four cover bolts to 18-22 ft. lbs. torque. NOTE: With steering arm shaft positioned at the center of its travel, there must be no backlash with mating worm and roller. Total preload for assembled unit must be no less than 5-3/4" lbs. torque measured at steering worm shaft not more than 11-1/4" lbs.
12. Adjust total preload to proper limits by loosening locknut on backlash adjusting screw located in cover and turning adjusting screw clockwise to increase preload and counterclockwise to decrease preload. Retighten lock nut securely.
13. Replace steering column jacket tube and clamp in original position.



* These parts cannot be ordered separately.
Order as part of the entire steering unit
assembly, part # 18-307-14

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



STEERING WORM ASSEMBLY

FIGURE 4A
SECTION J1A

DRAWN BY *JM*
DATE *4-77*

STEERING WORM ASSEMBLY
REFER TO FIGURE 4A

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
4A-0	18-307-14	Steering Gear - this part number no longer valid - see BUL-98-09-011	
4A-1	88-259-82	Nut, Jam 13/16 Hex Head, NF	1
4A-2	85-122-00	Spring, Compression 1-1/8 OD x 1	1
4A-3	18-307-54	Spacer, Jacket Bearing	1
4A-4	18-307-52	Jacket, Steering Column	1
4A-5	88-099-80	Nut, 5/16 NF	1
4A-6	88-088-62	Washer, Lock	1
4A-7	88-080-09	5/16 x 3/4 NC Hex Hd Cap Screw	8
4A-8	(Not Available)	5/16 x 2 NF Hex Hd Cap Screw	1
4A-9	18-307-42	Gasket, Seal & Shim Kit for Steering Worm	1
4A-10	18-307-57	Worm Adjustment Bearing Cup, Inner (Requires 18-307-42)	1
4A-11	18-307-53	Worm Bearing Assembly (Requires 18-307-42)	2
4A-12	18-307-51	Steering Column Shaft & Worm Assembly (Requires 18-307-42)	1
4A-13	18-307-55	Spacer, Jacket Bearing	1
4A-14	18-307-56	Worm Bearing Cup, outer (Requires 18-307-42)	1
4A-15	88-279-82	Nut, Jam 7/8 NF Hex	1
4A-16	88-268-62	Lockwasher, 7/8	1
4A-17	18-307-59	Seal, Steering Arm Shaft	1
4A-18	87-073-00	Fitting, Gear 45 degree, 3/16 drive	1
4A-20	18-307-64	Screw, adjusting	1
4A-21	18-307-65	Washer, Thrust	1
4A-22	18-307-66	Snap Ring	1
4A-24	18-307-67	Shaft Cover	1
4A-25	88-159-82	Nut, Jam 1/2" NF	1

MAINTENANCE, SERVICE AND PARTS
POWER TRACTION
REFER TO FIGURE 5

Adjustment of Drive Chain Tension - Power Traction

1. WARNING: Disconnect both main battery leads to prevent accidental engagement or power while servicing vehicle.
2. Tighten three motor mounts.
3. Loosen and unscrew each nut exactly one full turn.
WARNING 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 the lift of the chain.
4. Loosen adjusting set screw lock nut. Using standard socket set screw wrench, turn set screw clockwise until tight. (If a torque wrench is available, tighten to 80 in lbs 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.
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	100 Hours	New unit or after installing new chain
2nd Adjustment	Next 150 Hours	Normal running conditions
3rd Adjustment	Next 250 Hours	Normal running conditions
Thereafter	Every 400 Hours	Normal running conditions

"Quick" Motor Removal Procedure - Power Traction

NOTE: This procedure is a quick method of removing the motor without removing the chain case cover. If removal of the chain case becomes necessary, refer to Sub-Section titled "Disassembly and Reassembly Power Traction Drive Assembly".

1. WARNING: Disconnect both main 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 from proper connection when reassembling. Remove motor leads.
4. Loosen 3 motor mount nuts and the adjusting set screw lock nut.
5. Back-off adjusting screw sufficiently so as to allow motor mounting adjustment plate to be fully bottomed. This will allow for easy removal of motor.
6. Remove the 3 motor mounting nuts and washers. Carefully ease motor out of opening after removing chain from motor sprocket.

"Quick" Motor Installation Procedure - Power Traction

1. If installing new motor, clean motor and motor mounting plate surfaces. Install motor mounting plate to motor (take care to position motor on plate properly) with 4 flat-head cap screws previously removed. Tighten screws to 30 ft. lb. torque and stake head in place with center punch.
2. If installing new motor, or if sprocket has been removed to repair motor, assemble spacers, key, sprocket, washer and shaft nut to motor shaft in the same manner as previously removed. Tighten shaft nut to 75 ft. lb. torque.
3. Place "O" ring in motor mounting plate opening.
4. Using a piece of wire (coathanger, etc), reach through the opening in the chain case backing plate and lift the chain above the opening. Secure the chain in this position by attaching the wire to the top mounting bolt, etc.
5. Remove a motor brush inspection cover so that the armature is plainly visible.
6. Rotate the motor slightly in the direction of the passengers seat so that the motor mounting plate clears the studs attached to the Chain case backing plate.
7. Carefully ship the motor sprocket in the hole and under the drive chain.
8. In this position move the vehicle slightly forward and backwards while observing the correct movement of the motor armature through the brush inspection opening.
9. Now, carefully reposition the motor onto the studs and install washers, lockwashers and nuts. DO NOT TIGHTEN NUTS. FINGER TIGHT ONLY.
10. Move the vehicle slightly forward and back and re-check the armature movement to insure chain has not shipped off sprocket. CAUTION: If chain is not properly positioned on sprocket, sever damage could occur to the Power Traction Component parts.
11. Adjust chain tension as described in Sub-section titled "Adjustment of Drive Chain Tension".

Disassembly and Reassembly of Power Traction Drive Assembly

1. Perform steps 1,2 and 3 in Sub-section titled "Quick Motor Removal Procedure-Power Traction".
2. Remove remaining bolts and nuts from front of chain case cover. Remove chain case cover.
3. Remove the three nuts and washers which fasten motor to motor mounting plate. Disengage chain from motor sprocket. Remove motor, motor mounting plate and sprocket from chain case backing plate.
4. Remove "O" ring from motor mounting plate.
5. Remove chain, pinion sprocket and spacers from pinion shaft.
NOTE: Spacer location for proper reassembly.
6. If axle or differential maintenance requiring further disassembly is necessary, remove chain case backing plate and gasket by removing the 5 bolts which retain the backing plate to the differential carrier. Refer to Sub-sections which cover axle and differential disassembly and reassembly.
7. To reassemble, install chain case backing plate and gasket to differential carrier with 5 bolts previously removed. Use gasket sealer. Tighten bolts to 50 ft. lbs. torque. Install chain on pinion sprocket.
8. Install "O" ring in motor mounting plate and attach motor and motor mounting plate to chain case backing plate.
9. Engage chain with motor sprocket and secure motor mounting plate to chain backing plate with 3 nuts and washers previously removed.

NOTE: Chain adjustment procedure is covered in Sub-section titled "Adjustment of Drive Chain Tension - Power Traction".

10. Install chain case cover and gasket to chain case backing plate. Replace gasket if damaged. Tighten gear case cover retaining bolts and nuts.
11. Fill gear case with oil. Refer to lube chart in Section "E".
12. Connect motor leads.
- * 13. Connect battery main leads.

Remove and Install Rear Wheel Bearings, Power Traction & Belt Drive

1. WARNING: Disconnect both main battery leads to prevent accidental engagement of power while servicing vehicle.
2. Remove wheel and tire assembly.
3. Remove four (4) bolts attaching disc brake mounting bracket to Drive Axle Housing after first bending clip locking tabs out of the way (2 clips, 4 tabs).
4. Remove two (2) bolts and nuts attaching the caliper actuating lever to the caliper three hole position lever.
5. Remove caliper assembly from axle.
6. Remove axle from housing.
CAUTION: If axle is difficult to remove from housing, use an axle puller that is designed for that purpose. Never use a hammer or other metal object to help drive the axle from the housing. Damage to the disc rotor could occur resulting in severe damage to the brake system and/ or loss of brakes on one side.
7. Pull bearing retainer ring and bearing from axle shaft.
8. Press new bearing to shoulder on axle shaft. Press new bearing retainer ring into position on axle shaft.
9. Check condition of oil seal and replace if necessary.

- * CAUTION: See statement on P.8 concerning correct procedure for connecting motor leads.

Remove and Install Rear Wheel Bearings, Power Traction & Belt Drive (continued)

10. Carefully install axle into axle housing and differential assembly.
11. Attach brake caliper, assemble to housing. Secure with four (4) bolts and two (2) double tab clips. Tighten bolts to 35 ft lb torque. Now bend locking tabs up against their respective bolts.
WARNING: Failure to bend locking tabs up properly against bolts could eventually result in loss of braking action due to bolts becoming loose.

Remove and Install Rear Axle Drive Assembly from and to Vehicle - Power Traction and Belt Drive

1. WARNING: Disconnect both main battery leads to prevent accidental engagement of power while servicing vehicle.
2. Mark motor leads to insure their proper location when re-assembling.
3. Remove motor leads.
4. Release parking brake (if applied).

NOTE: Refer to Section J3, Sub-section titled "Brake Adjustment Procedure for when all Brake adjustment screw travel has been Used-up" before continuing with Step 5.

5. Loosen adjusting screw jam nut.
6. Turn adjusting screw back to a point where approximately 0 to 2 threads of the screw are visible. (See fig on J3 page 2)
7. Remove clevis pins holding rear brake connecting rods to cross-shaft.
8. Remove lower bolts from shock absorbers.
9. Remove top bolt from torque arm at drive.
10. Remove 2 bolts and nuts which attach axle housing to main leaf spring each side.
11. Remove drive axle assembly from vehicle.
12. Before re-installing drive axle assembly back in vehicle, examine rubber bushings in leaf springs and replace if worn or damaged.
13. Install drive axle assembly in reverse order of removal.
14. Re-connect torque arm, shocks, and brake linkage in reverse order of removal.
15. Check and adjust (if necessary) brake system according to procedures in Section J3.
16. Connect main battery cables.

Disassembly of Rear Axle and Differential Assembly - Power Traction & Belt Drive

1. Remove drive axle assembly from chassis, remove motor and chain drive assembly as described in appropriate Sub-sections.
2. Remove both axles. Refer to Sub-section "Remove and Install Rear Wheel Bearings"
3. Remove nuts around differential carrier housing and remove carrier from axle housing.

Disassembly of Rear Axle & Differential Assembly - Power Traction & Belt Drive
(CONT'D)

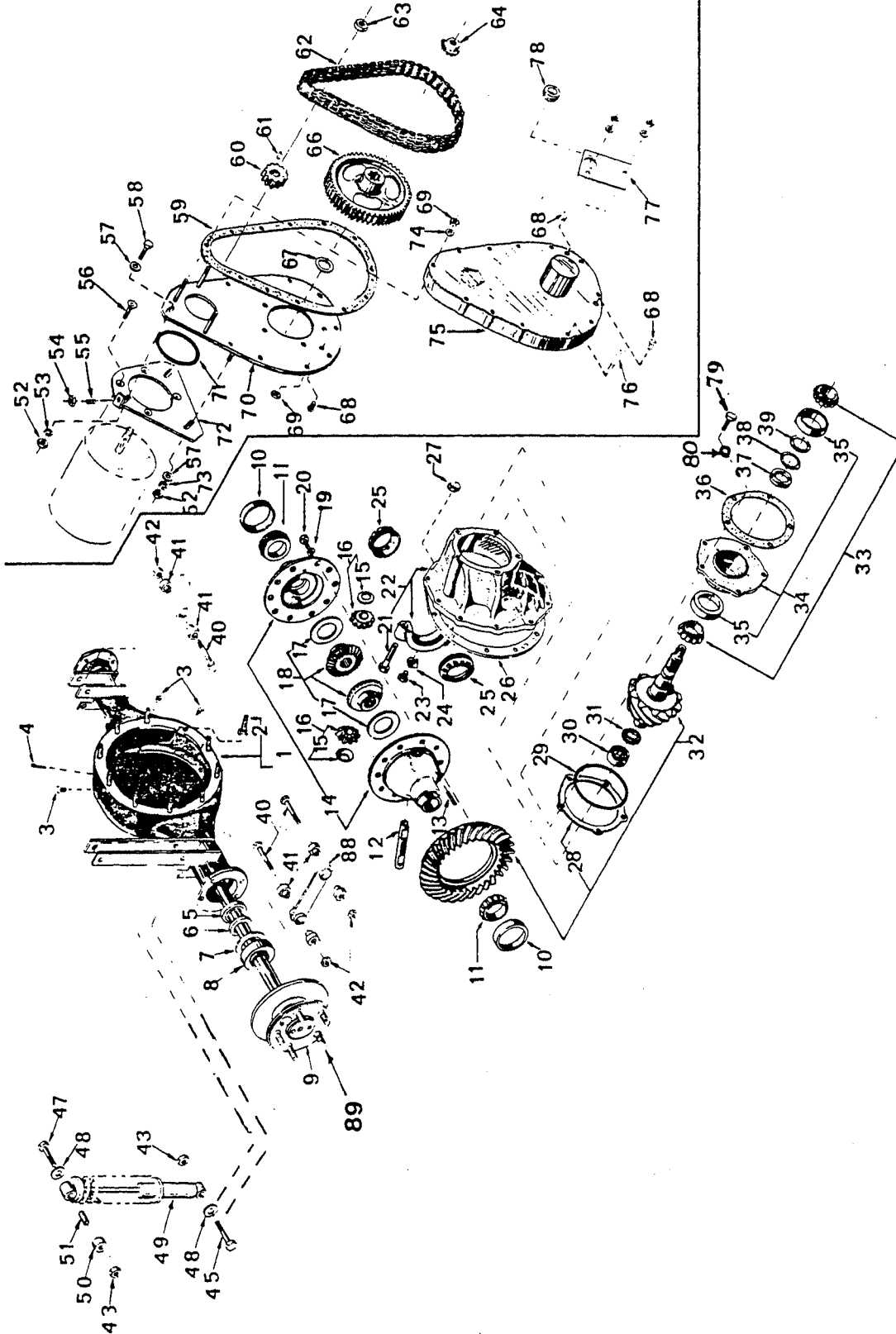
4. Mark one differential bearing cap and bearing support to insure proper assembly. Remove adjusting nut locks, bearing caps, and adjusting nuts. Lift differential out of carrier.
5. Remove ring gear pinion from differential case.
6. Drive out differential pinion shaft retainer and separate the differential pinion shaft and remove gears and thrust washers.
7. Remove ring gear pinion retainer from carrier. Remove O-Ring from retainer.
8. Remove pinion locating shim. Measure shim thickness with micrometer
9. If the ring gear pinion pilot bearing is to be replaced, drive the pilot end and bearing retainer out at the same time. When installing, drive the bearing in until it bottoms. Install a new retainer with the concave side up.
10. Press the ring gear pinion shaft out of front bearing cone and remove spacer.
11. Remove ring gear pinion bearing cone.
12. Do not remove ring gear pinion bearing cups from retainer unless they are worn or damaged. The ring gear pinion bearing 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 - All Vehicles


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 lineup 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.
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. Power Traction: Place spacers and sprocket on pinion shaft spline. Install washer and shaft nut and tighten to 100 ft. lb. torque.
Belt Drive: Place spacers and pulley on pinion shaft spline. Install 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 removing or adding spacers.
Refer to Figure 5, I.D. Nos. 52 and 53.

5. Shim Selection: Manufacturing tolerances in the pinion bore dimensions and in the best operation position of the gears make an adjustment shim necessary. This shim is placed between the pinion retainer and the carrier, Fig. 5. An increase in the thickness of the shim moves the pinion away from the drive gears. 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" thickness in steps of .001". Pinions and drive gears are marked, when matched, with the same number. Following the numbers on the pinion is a (-) 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.



Section J2
Page 7

DO NOT SCALE	TOL: FRAC±	DEC±	ANG±	4-81	2-19-82
DRIVE AXLE ASSEMBLY					
MODELS R0-023-74 & R0-75					
<div>  Taylor-Dunn 2114 WEST BALL ROAD TAYLOR, MISSOURI 63092 </div>					
SCALE: DWN BY: <i>K.H.</i> CHECK BY: <i>T.P.</i>					
FIGURE 7 OF 7					

POWER TRACTION & BELT DRIVE
REFER TO FIGURE 5

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
5-1	41-301-00	Housing, Drive Axle, Power Traction	1
5-2	96-330-00	Bolt, Differential Carrier to Housing	10
5-3	41-997-00	Plug, Fill, Drain and Level	3
5-4	88-527-11	Pin, Steel Cotter, 1/8 x 1	1
5-5	45-297-00	Seal, Oil, 1.375 Shaft x 2.564 OD	0 or 2
5-5	45-298-00	Seal, Oil, 1.375 Shaft x 2.088 OD	0 or 2
5-5	45-299-00	Seal, Oil, 1.375 Shaft x 2.265 OD	0 or 2
5-6	32-516-00	Retainer - Ring, Rear Axle Bearing	2
5-7	45-044-00	Gasket, Axle Bearing to Drive Axle Housing	2
5-8	80-491-00	Bearing, Ball, Rear Axle	2
5-9	41-151-10	Assembly, Rear Axle with Bearing and Gasket less Oil Seal	2
5-10	80-127-00	Race, Tapered Bearing O.D. 2.891, LM 501310	2
5-11	80-511-00	Bearing, Tapered Roller I.D. 1.628, LM 501349	2
5-12	41-700-00	Shaft, Differential Pinion	1
5-13	41-701-00	Pin, Tension	1
5-14	41-725-00	Case, Differential Gear	1
5-15	41-702-00	Washer, Thrust, Differential Pinion Shaft	2
5-16	41-703-00	Kit, Differential Pinion Gear, Includes 2 Differential Pinion Gears & 2 Thrust Washers	1 Kit
5-17	41-704-00	Washer, Thrust, Differential Side Gear	2
5-18	41-705-00	Kit, Differential Side Gear, Includes 2 Differential Side Gears & 2 Thrust Washers	1 Kit
5-19	97-163-00	Washer, Ring Gear Bolt, 7/16 I.D. x 3/4 O.D. x 1/32 Thick	10
5-20	96-243-00	Screw, Hex Head Cap, 7/16 x 7/8 N.F., Grade 5	10
5-21	88-140-16	Screw, Hex Head Cap, 1/2 x 2	2
5-22	41-726-00	Carrier, Differential, Less Differential Gear Case Assy., Bearings & Ring and Pinion Gears	1
5-23	88-080-09	Screw, Hex Head Cap, 5/16 x 3/4 N.C.	2
5-24	41-706-00	Lock, Differential Bearing Adjustment Nut	2
5-25	41-707-00	Nut, Differential Bearing Adjustment, 2-15/16 OD	2
5-26	45-051-00	Gasket, Carrier to Axle Housing	1
5-27	88-119-80	Nut, Hex 3/8 N.F.	14
5-28	41-720-00	Shim, Drive Pinion Bearing, .005" Thick	1 to 3
5-29	80-703-00	O-Ring	1
5-30	80-557-00	Bearing, Roller, Pinion Rear	1
5-31	41-721-00	Retainer, Drive Pinion Bearing	1
5-32	31-260-00	Set, Gear, 2.75 Ratio, 8" Ring with Pinion	0 or 1
5-32	31-261-00	Set, Gear, 3.00 Ratio, 8" Ring with Pinion	0 or 1
5-32	31-262-00	Set, Gear, 3.25 Ratio, 8" Ring with Pinion	0 or 1

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
5-32	31-263-00	Set, Gear, 3.56 Ratio, 8" Ring with Pinion	0 or 1
5-33	80-556-00	Bearing, Tapered Roller, Pinion Shaft, Front and Rear	2
5-34	44-341-90	Flange, Ring Gear Pinion Bearing, with Bearing Races less Bearings, Power Traction	1
5-34	44-341-91	Flange, Ring Gear Pinion Bearing, with Bearing Races less Bearings, Belt Drive	1
5-35	80-139-00	Race, Tapered Roller Bearing, Pinion Shaft, Front and Rear	2
5-36	45-050-00	Gasket Ring Gear Pinion Bearing Flange to Chain Case Backing Plate	2
5-37	16-422-00	Spacer, Pinion Shaft, .440 Thick	2
5-38	16-440-00	Spacer, Pinion Shaft, .002 Thick	2 to 6
5-38	16-441-00	Spacer, Pinion Shaft, .005 Thick	2 to 6
5-39	16-442-00	Spacer, Pinion Shaft, .010 Thick	0 to 2
5-40	96-240-00	Bolt, Hex Head Cap with Pointed End, 1/2 x 4	4
5-41	98-601-00	Grommet, Rubber, 1/2 I.D.	8
5-42	88-149-81	Nut, Hex Lock, 1/2 N.C.	4
5-43	88-129-81	Nut, Hex Lock, 7/16 N.C.	4
5-45	88-120-17	Bolt, Hex Head Cap, 7/16 x 2-1/4 N.C.	2
5-46	(BLANK)		
5-47	88-121-19	Bolt, Hex Head Cap, 7/16 x 2-3/4 N.C., Grade 5	2
5-48	88-128-60	Washer, 7/16	2
5-49	86-004-00	Shock-Absorber, Spring Loaded Less Mounting Sleeve	2
	86-004-50		
5-50	17-106-00	Collar, 1/2 Shaft, Shock Absorber	2
5-51	86-004-50	Sleeve, Shock Absorber, 7/16 I.D. x 1-1/4 Long	2
5-52	88-109-80	Nut, Hex 3/8 N.C.	3
5-53	88-108-62	Washer, Lock 3/8	3
5-54	88-089-80	Nut, Hex 5/16 N.C.	1
5-55	88-087-11	Screw, Socket Set, 5/16 NC x 1	1
5-56	88-103-09	Screw, Cap, Flat Head Socket, 3/8 x 3/4 N.C.	4
5-57	88-108-60	Washer, Flat Cut, 3/8	4
5-58	88-100-13	Screw, Hex Head Cap, 3/8 x 1-1/4 N.C.	6
5-59	45-002-00	Gasket, Chain Case Cover	1
5-60	30-080-00	Sprocket, Silent Chain, 15 Tooth x 17/32 Face Width with 3/4 Bore	1
5-61	97-100-00	Key, Woodruff 1/8 x 5/8	1
5-62	30-508-20	Chain, Silent, Single Side Guide, 96 Pitches, 13/16 Wide x 36" Long, Used with 81 Tooth Sprocket	1
5-62	30-507-20	Chain, Silent, Single Side Guide, 82 Pitches, 13/16 Wide x 30-3/4" Long, Used with 59 Tooth Sprocket	1
5-63	88-239-82	Nut, Hex Jam 3/4 N.F.	1

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY
5-64	97-250-00	Nut, Pinion 3/4, 20 Extra Fine Thread w/int. washer	1
5-66	30-094-00	Sprocket, Silent Chain, 81 Tooth X 17/32 Face Width With 3/4 Bore	1
5-67	16-400-00	Spacer, .125 Thick, 1-1/4 I.D. X 1-1/2 O.D.	1
5-68	41-989-00	Plug, Level and Drain	3
5-69	88-089-81	Nut, Hex Lock 5/16 N.C.	12
5-70	44-353-00	Plate, Chain Case Backing, Adjustable, Motor Mount	1
5-71	80-703-00	"O" Ring Motor Mount Seal	1
5-72	70-454-00	Plate, Motor Mount and Adjusting	1
5-73	88-108-62	Washer, Lock 3/8	3
5-74	88-088-61	Washer, SAE, 5/16	11
5-75	43-201-30	Cover, Chain Case	1
5-76	88-080-20	Bolt, Hex Head Cap 5/16 X 3	12
5-77	75-501-51	Support, Wire Harness	1
5-78	98-624-00	Grommet, Rubber	1
5-79	88-101-13	Bolt, Hex Head 3/8 N.C. X 1-1/4, Grade 5	5
5-80	88-103-63	Lockwasher, 3/8 Internal Tooth	5
5-88	50-669-00	Torque Arm	1
5-89	96-340-10	Stud, Wheel Axle w/Rotor	10

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

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.

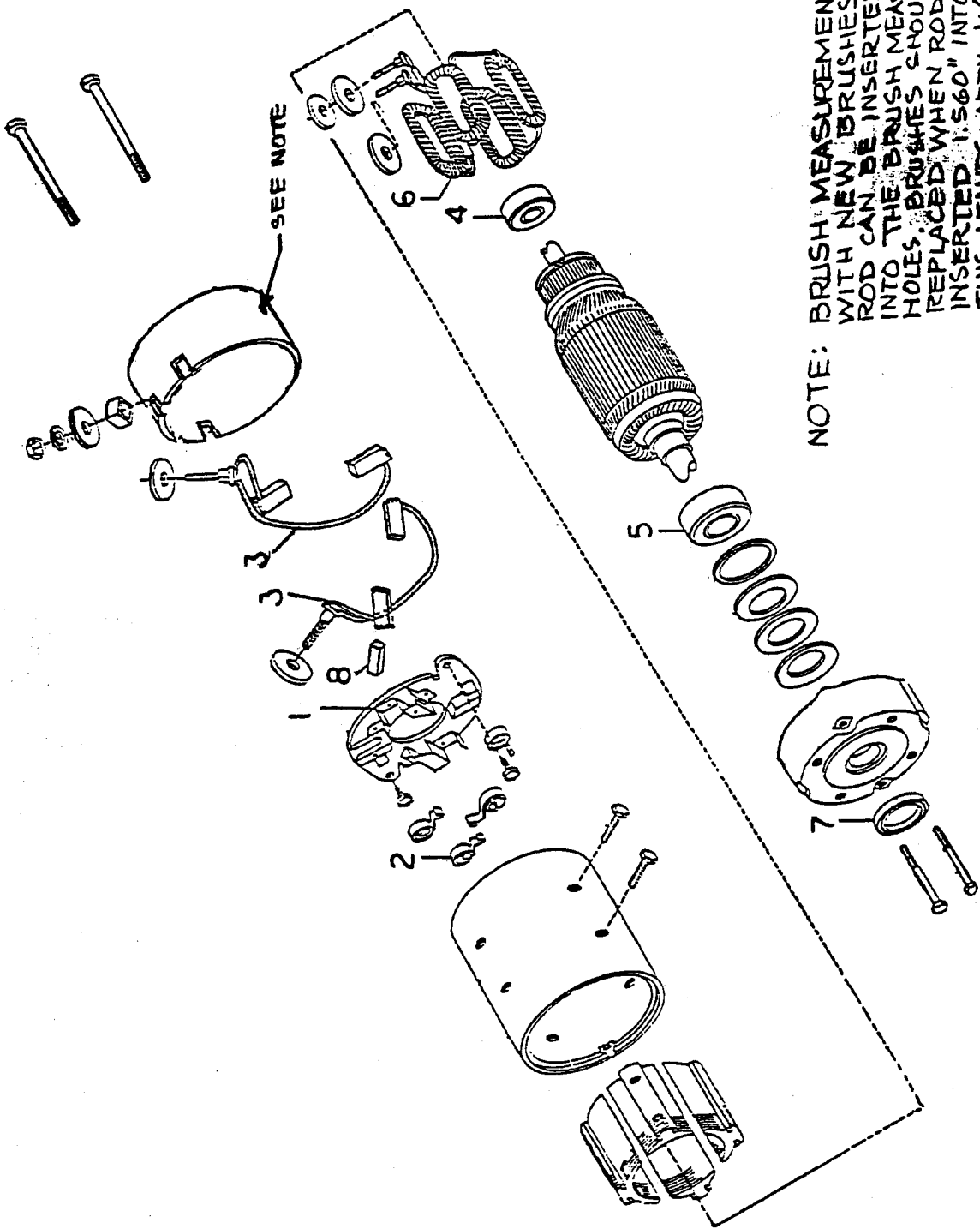
NOTE: When one brush is replaced in a motor, it is considered good maintenance practice to replace all brushes.

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.

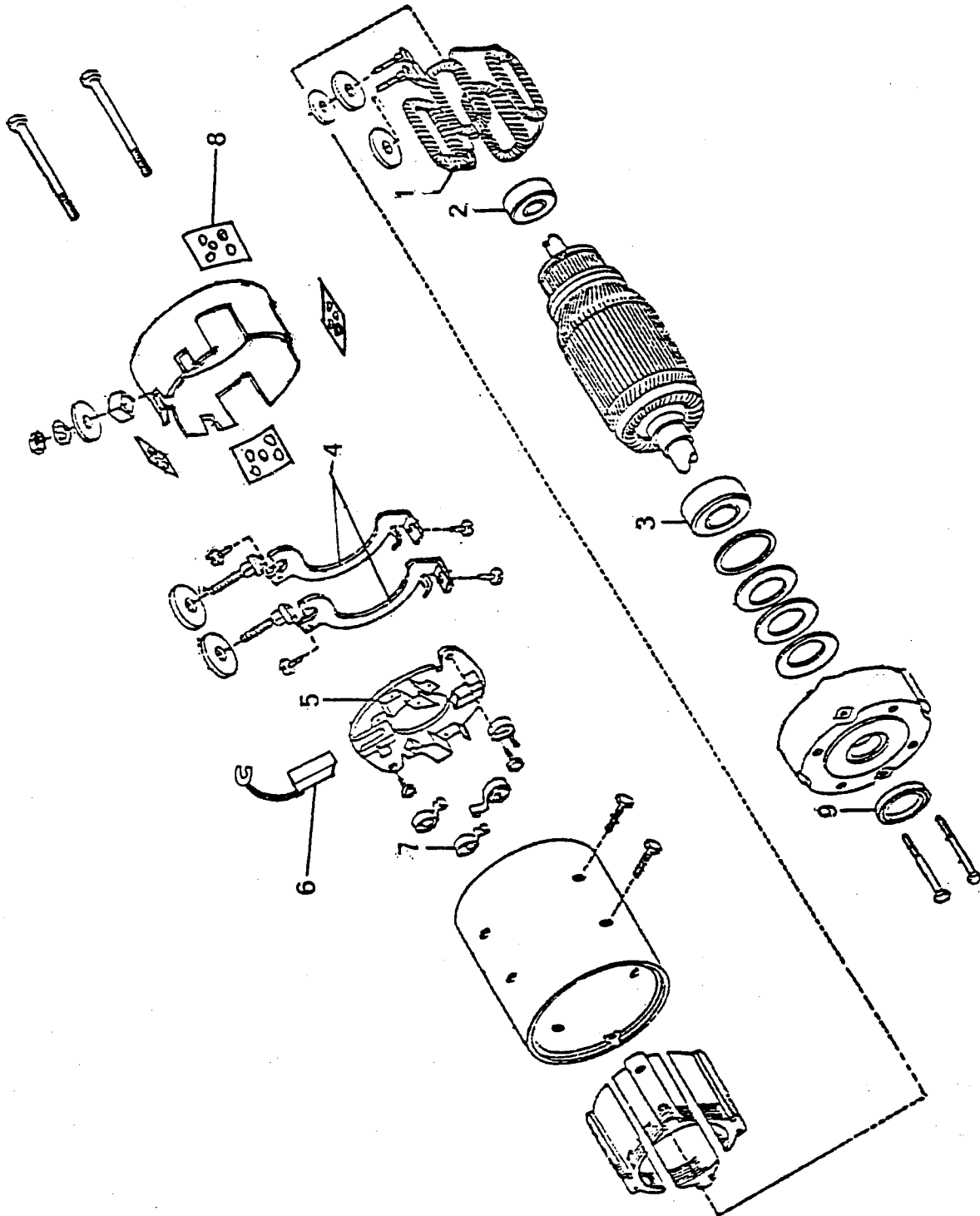
NOTE: If motor terminal studs were removed for inspection, refer to Section J2, p.8 for correct procedure to avoid damaging studs.



NOTE: BRUSH MEASUREMENT HOLES (2) WITH NEW BRUSHES A $\frac{1}{16}$ " DRILL ROD CAN BE INSERTED APPX. .780" INTO THE BRUSH MEASUREMENT HOLES. BRUSHES SHOULD BE REPLACED WHEN ROD CAN BE INSERTED 1.560" INTO HOLE THIS LEAVES APPX. $\frac{1}{8}$ " WEAR REMAINING

SECTION J2M
PAGE 2

<p>DO NOT SCALE</p> <p>Taylor-Dunn 2114 WEST BALL ROAD ANAHEIM, CALIFORNIA 92803</p>	<p>TOL: FRAC±</p> <p>DEC±</p> <p>ANG±</p> <p>MOTOR PARTS-GE 1.5 TO 2.0 H.P. 5BC48JB754</p>	<p>4-28-82</p> <p>SCALE: NONE DWN BY: Y.W. CHKD BY:</p> <p>FIGURE 5M1 SECTION J2M</p>
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4-28-82

ANG†

DEC†

TOL: FRAC†

DO NOT SCALE

SCALE: NONE
DWN BY: BB
CHKD BY:

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

FIGURE 5M
SECTION J2M

Taylor-Dunn
2114 WEST BALL ROAD
ANAHEIM, CALIFORNIA
92801



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, <u>not used</u> 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, <u>used only</u> 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. <u>Used only</u> 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. <u>Not used</u> 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 5BC48JB726

5M-1	70-204-00	Field Coil Set	1
5M-2	80-209-00	Ball Bearing, Commutator End	1
5M-3	80-504-00	Ball Bearing, Pulley End	1
5M-5	70-172-00	Brush Holder Assy. <u>With</u> Brush Springs But <u>Without</u> Brushes	1
5M-7	85-412-00	Spring, Brush	4
5M-4	70-104-00	Armature Terminal & Brush Pair Connector	2
5M-9	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.

* NOTE: This part replaces strap type 3 HP armature terminal and is 2-way interchangeable on 2 HP motors only.

FIG. I.D.

NO.	T-D PART NO.	DESCRIPTION	QTY.
Replacement Parts for G.E. Motor 5BC48JB67B & 5BC48JB114			
5M-2	80-205-00	Ball Bearing, Commutator End	1
5M-3	80-204-00	Ball Bearing, Pulley End	1
5M-6	70-100-00	Motor Brush Assy	4
5M-7	80-401-00	Brush Spring, Extension	4
Replacement Parts for T.D. Motor 388P3816 & Baldor 45-39W03, 45 39W16, 45-39W19			
5M-2	80-200-00	Ball Bearing, Commutator End	1
5M-3	80-504-00	Ball Bearing, Pulley End	1
5M-5	70-187-00	Brush Head Assy, Complete with Brushes	1
5M-6	70-101-00	Motor Brush	4
5M-8	30-803-00	Brush Inspection Cover	4
5M-9	45-506-00	Oil Seal	1
Replacement Parts for G.E. Motor 5BCG56EA17			
5M-2	80-201-00	Ball Bearing, Commutator End	1
5M-3	80-504-00	Ball Bearing, Pulley End	1
5M-5	70-189-00	Brush Holder Assy	1
5M-6	70-101-00	Motor Brush Assy	4
5M-7	85-412-00	Brush Torsion Spring	4
Replacement Parts for G.E. Motor 5BC49JB122			
5M-2	80-200-00	Ball Bearing, Commutator End	1
5M-3	80-504-00	Ball Bearing, Pulley End	1
5M-4	70-185-00	Brush Holder	1
5M-6	70-100-00	Motor Brush	4
5M-7	85-401-00	Brush Extension Spring	4
5M-9	45-506-00	Oil Seal	1
Replacement Parts for G.E. Motor 5BC49JB305 and *5BC49JB399			
5M-1	70-203-00	Field Coil Set	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	Armature Terminal to Brush	2
5M-5	70-188-00	Brush Holder assembly	1
** 5M-6	70-101-00	Motor Brush	4
5M-7	85-412-00	Brush Extension Spring	4
5M-8	30-802-00	Brush Inspection Cover	4
* 5M-9	45-506-00	Oil Seal	1
5M-10	70-210-62	Motor Terminals Insulator Kit	1
* NOTE:	45-508-00	Oil Seal for 5BC49JB399 only	1
**	70-105-00	Motor Brush (for 5BC49JB399)	4

MODEL R
PWR-TRON 240 & 350

* CIRCUITS AND OPERATION

There 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, micro-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 to 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 forward.

Reverse operation. Turn key switch to "ON" position and forward-reverse switch to reverse position, MS-1 is closed providing a current path to the reverse solenoid coil and closing the reverse contact on the forward-reverse switch. As the accelerator is depressed, the potentiometer, R1, will increase the voltage, 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 the PT240 and PT350.

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, Shaft End	1
5M-5	*70-187-00	Brush Head Assy. Complete with Brushes *Not supplied as original equipment on <u>A</u> series motor but must be used as replacement part.	1
5M-6	*70-102-00	Motor Brush with Wire Hook *Replacement part for original <u>A</u> series motor <u>NOT</u> converted to new brush head assy. 70-187-00	4
5M-6	70-101-00	Motor Brush for <u>A</u> series motor converted to new brush head 70-187-00.	4
5M-7	*85-413-00	Brush Torsion Spring *Replacement part for original <u>A</u> series motor <u>Not</u> 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
Replacement Parts for G.E. Motor 5BT1326A96			
5M-2	80-504-00	Ball Bearing, Commutator End	1
5M-3	80-206-00	Ball Bearing, Shaft End	1
5M-5	70-170-00	Brush Holder Assembly	1
5M-6	70-112-00	Dual Motor Brush, One Terminal	4
5M-7	85-398-00	Brush Spring	8
5M-9	45-507-00	Oil Seal	1
Replacement Parts for G.E. Motor 5BT1326B96			
5M-2	80-504-00	Ball Bearing Commutator End	1
5M-3	80-206-00	Ball Bearing, Shaft End	1
5M-5	70-171-00	Brush Holder Assembly	1
5M-6	70-112-00	Dual Motor Brush, One Terminal	4
5M-7	85-398-00	Brush Spring	8
5M-9	45-507-00	Oil Seal	1
Replacement Parts for G.E. Motor 5BC48JB254			
5M-2	80-504-00	Ball Bearing, Pulley End	1
5M-3	80-200-00	Ball Bearing, Brush End	1
5M-5	70-186-00	Brush Head Assy., without Brushes	1
5M-6	70-111-00	Motor Brush, 1/2, X 1-1/4	4
5M-7	86-402-00	Brush Spring	4
Replacement Parts for G.E. Motor 5BC48JB754 (1.5 to 2.0 H.P. motor)			
Taylor-Dunn P/N 70-Q49-00			
5M1-1	70-172-10	Brush Holder Assembly (without brushes)	1
5M1-2	85-412-00	Spring, Brush Extension	4
5M1-3	70-005-00	Brush Assembly	2
5M1-4	80-209-00	Ball Bearing, Commutator End	1
5M1-5	80-504-00	Ball Bearing, Pulley End	1
5M1-6	70-205-00	Field Coil Set	1
5M1-7	45-506-00	Oil Seal	1
5M1-8	70-250-00	Gasket, Terminal	4

MAINTENANCE PROCEDURES
MECHANICAL DISC BRAKE SYSTEM
REFER TO FIGURE - 6

GENERAL:

An all-new mechanically actuated Disc Brake system has been specifically designed into your "Tee-Bird" golf car to provide excellent control of braking capability at all times. The entire system is built for dependable service, long life and minimum maintenance. A major feature of the Taylor-Dunn system is a single point of adjustment for the service brake system and a single adjustment point for the parking brake.

The service brake system consist of a brake pedal, linkage and "Floating Caliper" disc brake assemblies. The parking brake system consist of a separate brake pedal and cable that joins the service brake linkage at the brake linkage x-shaft.

An outstanding feature of disc brakes is that they provide braking action directly proportional to the pressure applied to the brake pedal. This proportional braking is superior to that of drum brakes which are not proportional and tend to "grab" or lock-up more readily. When the vehicle operator depresses the service brake pedal, the braking action is distributed equally to each rear wheel brake system resulting in excellent control of the vehicle during all braking actions. The harder the pedal is depressed, the greater the stopping power of the brakes. When the brake pedal is released, braking action to both wheels ceases equally and positively resulting in minimum brake drag and improved battery energy conservation characteristics.

MAINTENANCE:

The only maintenance required is periodic inspection and adjustment for brake lining wear. Only lubrication required ~~is~~ pressure gun grease at two (2) points on the brake linkage x-shaft.

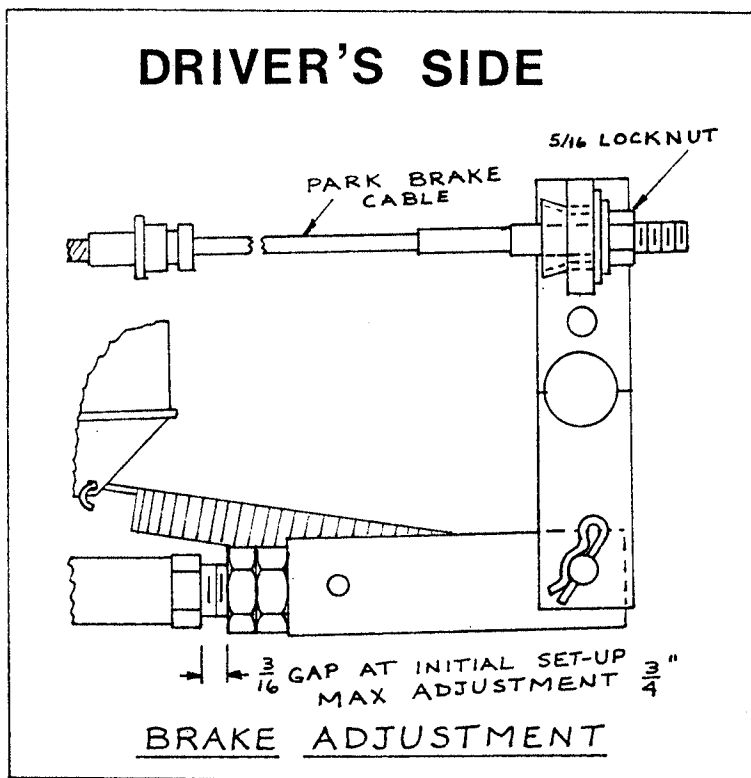
NOTE: Normally the only time the Taylor-Dunn mechanically actuated disc brake system needs adjustment is when pressure is applied to the service brake pedal and the pedal touches the vehicle floorboard without locking-up the wheels. In other words, the wheels cannot be locked through full brake application. Naturally, wheel lock-up is not a normal braking requirement and is only referred to as an example of when brake adjustment is required.

MAINTENANCE PROCEDURES
MECHANICAL DISC BRAKE SYSTEM
REFER TO FIGURE - 6

BRAKE ADJUSTMENT PROCEDURE (DETAIL A)

1. Place car on a level work surface, release parking brake, block front wheels, raise and lock seats in UP position and remove deckboard to provide access to brake linkage.

- WARNING:
- a) Before beginning work, place FWD/REV switch in NEUTRAL, turn key to OFF position and disconnect both main battery leads.
 - b) Exercise care to prevent the possibility of severe burns when working in close vicinity to EM Switch resistor coils, i.e., car recently driven at low speeds.

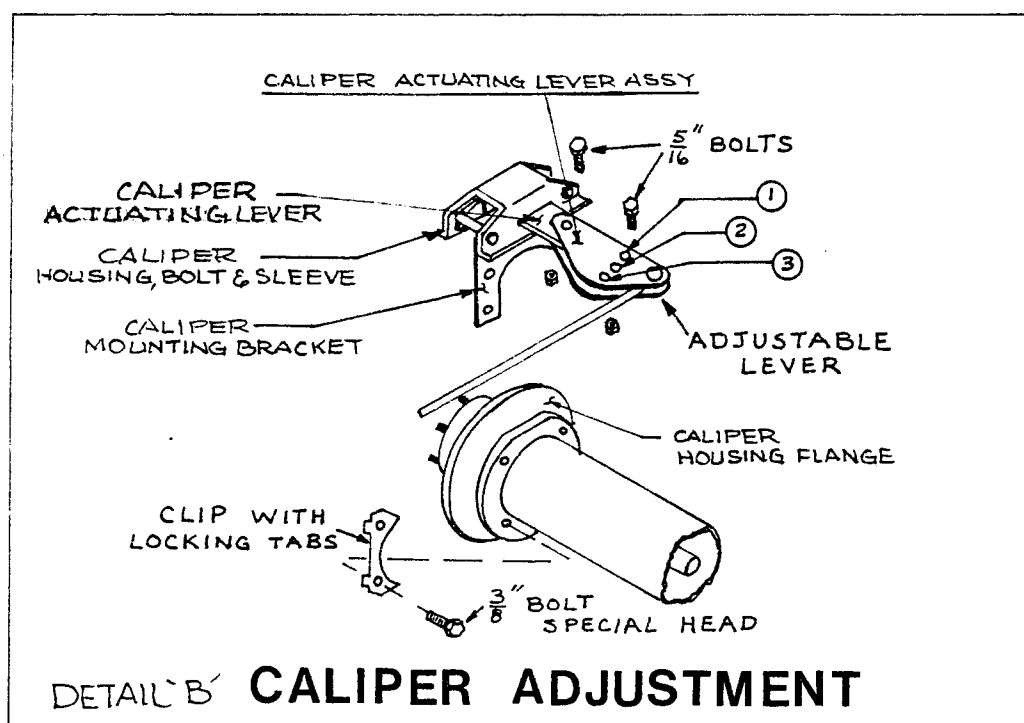


2. Locate brake adjustment screw on drivers side of the car in the area close-by the EM Switch resistor coils. NOTE: The adjusting screw can best be reached from under the car on the driver's side.
3. Loosen adjusting screw jam nut. Now turn adjusting screw counterclockwise until all slack (play) is gone from the linkage.
4. Depress service brake pedal and observe that pedal free travel is no more than 1/3 of total available pedal travel to floorboard. Correct free travel should be somewhere between 1/4 and 1/3 total available travel. Tighten locknut.

5. In an approved level, dry, test area, drive car at full speed, release accelerator and apply brakes with steadily increasing pressure to a point where brakes lock-up. At this moment, the service brake pedal should be no more than $\frac{1}{2}$ the distance to the floorboard. If the pedal travel is not satisfactory, return the car to the work area and repeat adjustment procedure.
6. After satisfactory results have been attained, tighten adjusting screw jam nut.
7. To adjust parking brake, loosen outer jam nut and tighten inner nut so that all slack in the parking brake cable is taken-up. Now tighten outer jam nut securely. Test parking brake for satisfactory operation.

BRAKE ADJUSTMENT PROCEDURE WHEN ALL BRAKE ADJUSTMENT
SCREW TRAVEL HAS BEEN USED UP (DETAIL B)

1. Follow same procedures as in "Brake Adjustment Procedures" through step #4.
2. Turn brake adjusting screw clockwise all the way, loosening the system.



3. Remove the outer 5/16" X 1" bolt from the caliper adjustable lever (both caliper adjustable levers). Loosen inner 5/16" bolts so that the caliper adjustable lever assembly can be moved to line up the #2 hole with outer hole in caliper actuating lever. Install 5/16" bolt and nut. Tighten both nuts securely. Repeat procedure on other caliper.
4. Now, return to "Brake Adjustment Procedure," step #3 and proceed with adjustment procedure.

NOTE: As a matter of good maintenance practice, it is good practice to remove the brake pads for inspection prior to using hole #3 in the caliper adjustable lever. Pads should be thoroughly checked for unusual wear, etc. If inspection indicates less than 1/32" of lining material remaining, then all 4 pads must be replaced. (See next procedure for replacing disc pads).

CAUTION: Never mix or cross pads from one wheel to another as accelerated wear-out of pad linings will occur. In addition, uneven braking action and damage to the rotor disc is probable.

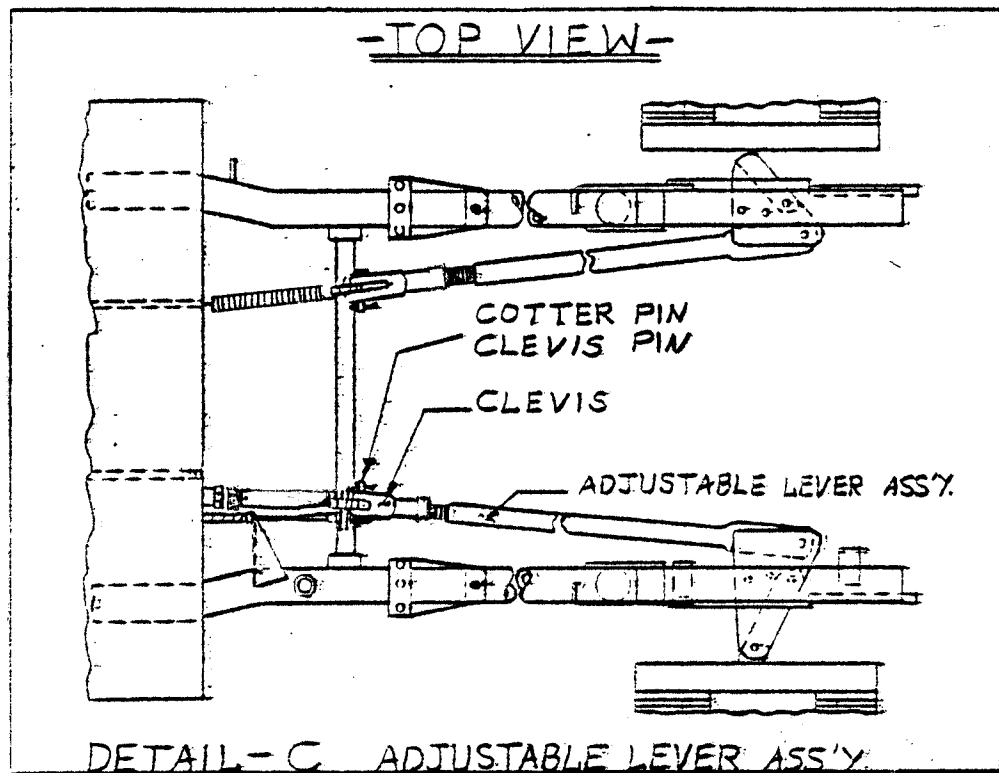
PROCEDURE FOR INSPECTING AND/OR REPLACING DISC BRAKE PADS (Detail B)

1. Release park brake and block front wheels. Insure FWD/REV Switch is in Neutral and key turned to OFF.
2. Raise rear of vehicle and remove rear wheels (use safety stands).
3. Remove one (1) caliper bolt and sleeve from caliper body.
4. Carefully slide out disc pads.
NOTE: Pads must be returned to original position in caliper. Note position before removal.
5. Examine pads for overall condition and wear. All pads must be replaced if any one pad lining is worn to 1/32".
6. Reinstall original pads if inspection is satisfactory.
7. If inspection required replacement of pads, proceed to "New Pad Installation Procedure".
8. While holding both pads in proper position, re-insert bolt sleeve in caliper body and slide bolt through caliper body and sleeve. Tighten nut to 10 ft. lbs. of torque.
9. Perform same procedures on opposite caliper.
10. Replace wheels on vehicle.
11. Complete brake adjustment per "Brake Adjustment Procedures".

NEW BRAKE PAD INSTALLATION PROCEDURE (Detail A)

1. Turn the brake adjusting screw clockwise so as to position the screw at minimum setting which will allow the brake linkage to become slack.
2. Remove the outer 5/16 bolt from the caliper adjustable lever Assy. and loosen the inner bolt.

3. Now, move the caliper adjustable lever ass'y. so that the #1 hole lines up with the outer hole in the caliper actuating lever.
4. Tighten both 5/16 bolts.
5. Repeat procedure for other side.
6. Return to step #8, "Procedure for Inspecting and/or Replacing Disc Brake Pads".



PROCEDURE FOR CORRECTING UNEVEN BRAKING ACTION (DETAIL -C)

Very occasionally, uneven braking action may occur. Usually the cause can be traced to brake pad contamination, etc.

1. Follow " Procedure for Inspecting and/or Replacing Disc Brake Pads" to insure satisfactory condition of brake pads.
2. If pads are oily or damaged, replace all pads.
3. Take car to test area that is dry and level. Accelerate to full speed, release accelerator pedal, apply steadily increasing brake pressure while noting direction car pulls.

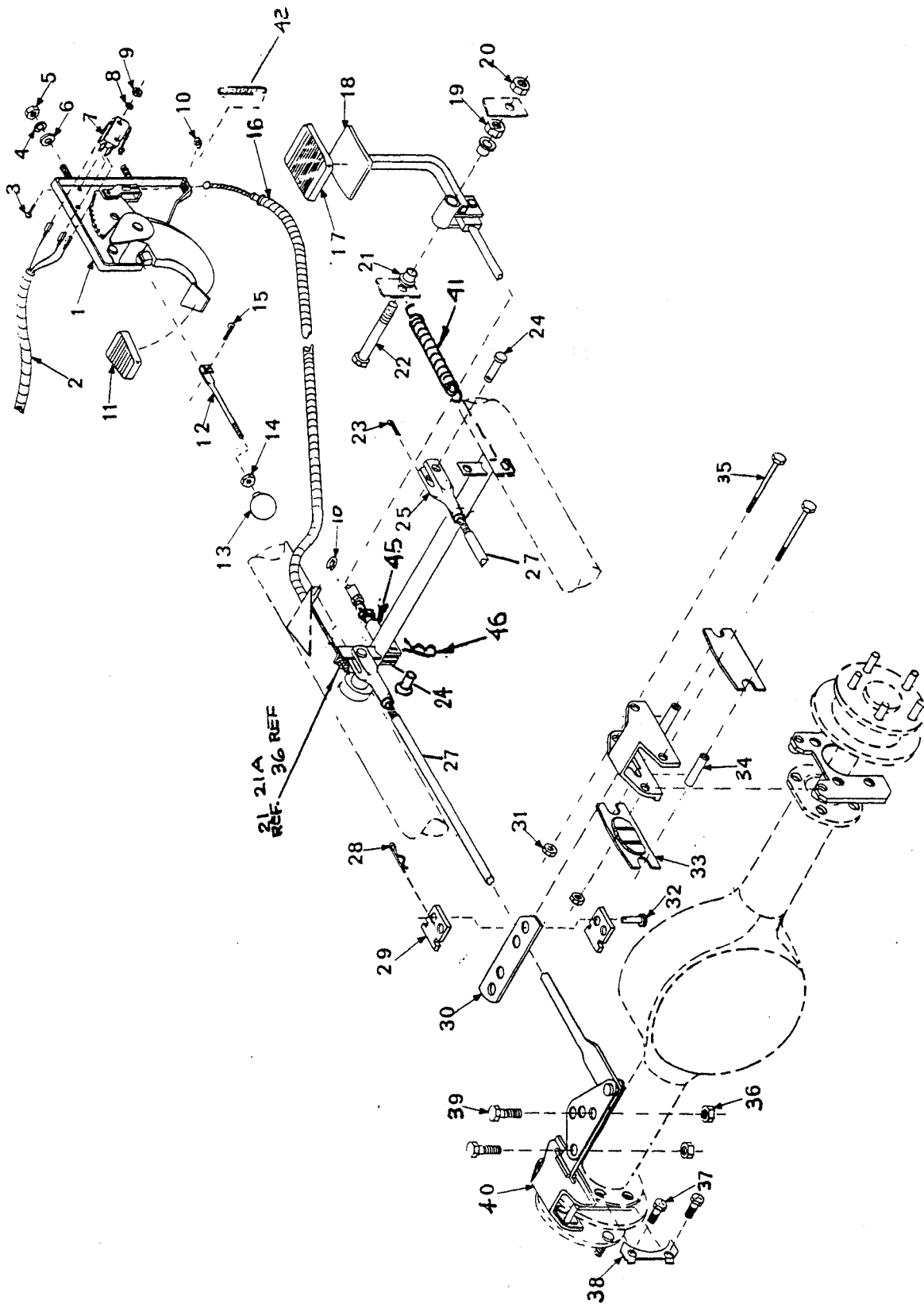
NOTE: Be careful to distinguish between a mechanical problem and loose gravel under one wheel which could give the impression of uneven braking action.

4. When direction of pull has been determined, return car to work area. Place FWD/REV Switch in NEUTRAL, turn key to OFF position.
5. Remove deckboard and observe the two caliper adjustable lever assemblies (one for each caliper) connecting the brake linkage x-shaft to the disc brake caliper actuating lever.
6. If the car pulled left (for example) remove the cotter pin and clevis pin from the adjustable lever assy. clevis on the passenger side. Loosen the jam nut and turn clevis one turn to shorten the linkage over-all length. Re-install clevis pin and cotter pin back in clevis (no need to tighten jam nut).
7. Test drive car for proper braking action. If problem still exist, return car to work area and repeat procedure until satisfactory results are obtained.
8. When braking action is satisfactory, tighten affected jam nut.

CALIPER ASSEMBLY REPLACEMENT PROCEDURE (DETAIL B)

Special Notes:

1. Follow step #1 in "Brake Adjustment Procedure" before proceeding.
2. Be sure to install NEW clips with locking tabs (2) prior to securing caliper mounting bracket to caliper housing flange. Tighten mounting bolts (4) to 10 ft. lbs. torque and insure clip locking tabs are bent up securely against the bolt heads.
3. Always install new brake pads in opposite caliper to prevent uneven breaking action and accelerated wear.



21 21A
REF. 36 REF

DO NOT SCALE	TOL: FRAC±	ANG±	DEC±	4-1-81	5-26-81	9-15-81	1-15-82
Taylor-Dunn 2114 WEST BALL ROAD ANAHEIM, CALIFORNIA 92803	MECHANICAL DISC BRAKE SYSTEM	SCALE: NONE DWN BY: K.W. CHKD BY: J.B.	FIGURE 6	SHEET 1			

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
6-1	51-342-20	Assembly, Foot Park Brake with Limit Switch & Release Rod. Order Rubber Pedal Pad Separately	1
6-2	75-006-00	Harness, Buzzer and Interlock	1
6-3	88-005-11	Screw, Truss Hd. Mach, 4-40 X 1-1/4	2
6-4	88-088-62	Washer, Lock 5/16	1
6-5	88-089-80	Nut, Hex, 5/16 N.C.	1
6-6	88-088-60	Washer, 5/16 Cut	1
6-7	71-127-20	Switch, Interlock, Wide Blade	1
6-8	88-008-60	Washer, #4 Flat, Plated	1
6-9	88-009-81	Nut, Lock, 4-40	1
6-10	88-847-06	Retainer, E-Ring, 1/2	2
6-11	98-201-10	Pad, Rubber, Park Brake Pedal	1
6-12	50-131-00	Rod, Foot Park Brake Release	1
6-13	95-910-00	Knob, Red	1
6-14	88-069-80	Nut, Hex 1/2 N.C.	1
6-15	88-527-06	Pin, Cotter, 1/8 X 1/2	1
6-16	41-348-71	Assembly, Park Brake Cable	1
6-17	98-200-00	Pad, Rubber, Brake Pedal	1
6-18	00-371-17	Assembly, Brake Pedal	1
6-19	88-149-80	Nut, Hex, 1/2 N.C.	1
6-20	88-149-81	Nut, Hex Lock, 1/2 N.C.	2
6-21	32-215-00	Bushing, Plastic with Flange	2
6-22	88-140-22	Bolt, Hex Cap, 1/2 X 3-1/2 N.C.	1
6-23	88-517-11	Pin, Cotter, 3/32 X 1	1
6-24	96-773-00	Pin, Clevis 5/16	2
6-25	96-763-00	Clevis, 7/16	2
6-27	50-668-00	Assembly, Adjustable Lever	2
6-28	41-348-56	Pin, Hitch	2
6-29	41-348-54	Plate, Pivot	4
6-30	41-348-51	Lever, Actuating	2
6-31	41-348-58	Nut, Hex 1/2, Heat Treated	4
6-32	41-348-55	Pin, Clevis	2
6-33	41-348-70	Pad, Disc Brake	4
6-34	41-348-52	Spacer	4
6-35	41-348-57	Screw, Hex Head 1/2 X 2 1/2, Grade 5	4
6-36	88-089-81	Nut, Hex Lock 5/16	5
6-37	96-328-00	Bolt, Special Hd., 3/8 X 5/8, Gd.5	8
6-38	41-348-59	Clip, W/ Double Locking Tabs	4
6-39	88-081-11	Screw, Hex Hd, 5/16 X 1 NC, GD 5	8
6-40	41-348-98	Assembly Brake, Mech. Caliper, L.H.	1
	41-348-99	Assembly, Brake, Mech. Caliper, R.H.	1
6-41	85-233-00	Spring	1
6-42	85-204-00	Spring, Park Brake Pedal Return, 3/8 O.D.	1
6-45	00-371-19	Adjustor, Screw and Fitting	1
6-46	97-300-10	Hair Pin, Cotter, 5/16 Stainless Steel	1

MAINTENANCE, SERVICE AND PARTS
EM MASTER CONTROL SWITCH 61-845-45
REFER TO FIGURE 9

GENERAL:

The Em Master Control Switch is located below the seat, and is readily accessible when the seat is raised. The left side, operated by the hand lever which projects into the passenger compartment, controls direction of travel. The right side, operated by the accelerator pedal, controls the vehicle speed by regulating the voltage applied to the motor, using coils of nichrome resistance wire.

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 at the connection.

The nuts which secure the wire terminals to the contact buttons on the forward/reverse rotor must NOT be used to tighten the contact buttons to the rotor board. The contact buttons must be free to rotate in order to avoid wire breakage.

MAINTENANCE:

WARNING: Before working on EM Master Control Switch or any part of the vehicle electrical system, disconnect both main battery leads, place Forward/Reverse Switch in NEUTRAL, turn key OFF and remove from switch. Set Parking Brake.

On a Monthly Basis:

Cleaning Procedure:

Clean grease and contaminants off Contact Plate and Power Bar area with a rag or by power wash (steam) cleaning. CAUTION: Make certain that Forward/Reverse switch is in NEUTRAL before cleaning and DO NOT use a flammable agent to clean switch component parts or any electrical part of the vehicle. Clean the areas between the Power Bars with an electrically non-conductive device such as a wooden stick, piece of plastic, ear swab, etc. Contaminated grease and foreign matter lodged between the Power Bars can cause shorting across the Power Bars and result in faulty vehicle operation.

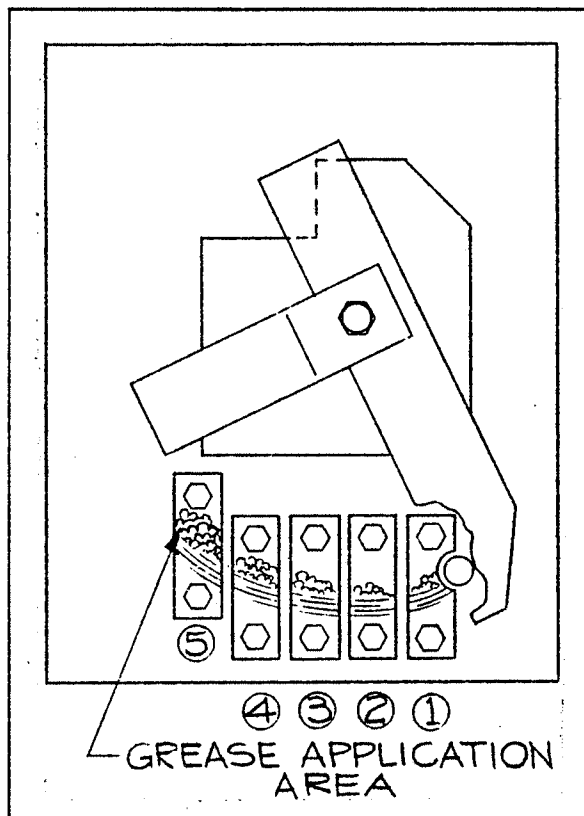
NOTICE: Driving with park brake on can cause excessive heat build-up at motor and switch. Grease run-off, no grease, is sign of excessive heat. Make necessary repairs to park brake interlock to prevent damage to control.

Lubricating Procedure (61-845-45 EM Switch only):

CAUTION: Do Not use this lubricating procedure on earlier model switches without solenoid.

Apply a small quantity (between 1/3 and 1/2 oz.) of Taylor-Dunn Grease 94-421-00 to the Power Bars and Speed Control Plate. A medium-soft, non-metallic paint brush (no metal band) makes an ideal grease applicator. WARNING: Do Not apply grease to switch with any object that contains metal or is electrically conductive.

Apply a very small portion of the grease to and slightly above the path wiped by the Lower Contact Button as it passes over the Power Bars. To achieve maximum lubricating results, concentrate a greater amount of the grease on Power Bars 4 and 5. (See illustration below).



NOTE: 1) Overall, EM Switch 61-845-45 runs cooler than its predecessors due to design improvements. Power Bars 1,2 and 3 operate at a relatively cool temperature. This was achieved by reducing electrical arcing to an absolute minimum at switch turn ON/OFF plus low heat build-up design. Power Bars 4 and 5 (full speed) generate relatively more heat than Bars 1,2 and 3. The net result is that grease on Power Bars 1,2 and 3 does not tend to flow and spread evenly. Conversely, grease on Power Bars 4 and 5 tends to melt sufficiently so that the lower Power Button can spread it evenly across the entire contact area. In summary, grease properly applied will result in better lubrication and longer switch life.

NOTE: (CONT'D)

- 2) Taylor-Dunn grease, Part No. 94-421-00, is highly recommended as the best lubricant for Taylor-Dunn Master Control Switches. This grease possesses superior lubricating characteristics coupled with a very high drop point of 500° F. It will not burn or melt as readily as other commercial greases and tends to maintain its consistency for a longer period of time.

Routine Maintenance:

While cleaning and lubricating the switch, make a careful check for loose nuts and bolts, particularly in the area of the power resistors. Loose connections at the power resistors can result in corrosion and burning of the resistors. The only two (2) wires that should be free to turn are the Forward/Reverse Switch leads. Another important check is the wire connections on top of the solenoid. Loose connections can cause failure of the solenoid due to overheating, corrosion, etc. Over-tightened connections can result in cracked or broken cases causing eventual failure of the solenoid. To insure the wire connections are properly connected to the solenoid, carefully apply 90 inch pounds of torque to the 5/16" stud nuts and 50 inch pounds of torque to the 3/16" stud nuts. Connections should be snug with lock washers fully compressed. Remember, excessive torque is just as bad as having a loose connection.

CAUTION: Before repairing or adjusting this switch, always disconnect both the positive and negative battery leads.

This is also an ideal time to check other key vehicle components such as batteries, tires, drive belts, chains, etc. Be sure to consult Section D for maintenance guide information.

On a Weekly Basis:

Check switch contact path on plate and power bars for lubricant presence. If required, apply more lubricant (No. 94-421-00). Also check for contaminants. Heavy concentrations of dirt, grass, sand or the like should be cleaned out as outlined in monthly maintenance.

Clean and check batteries as outlined in the maintenance manual. Look for loose wire connections and corrosion at terminals.

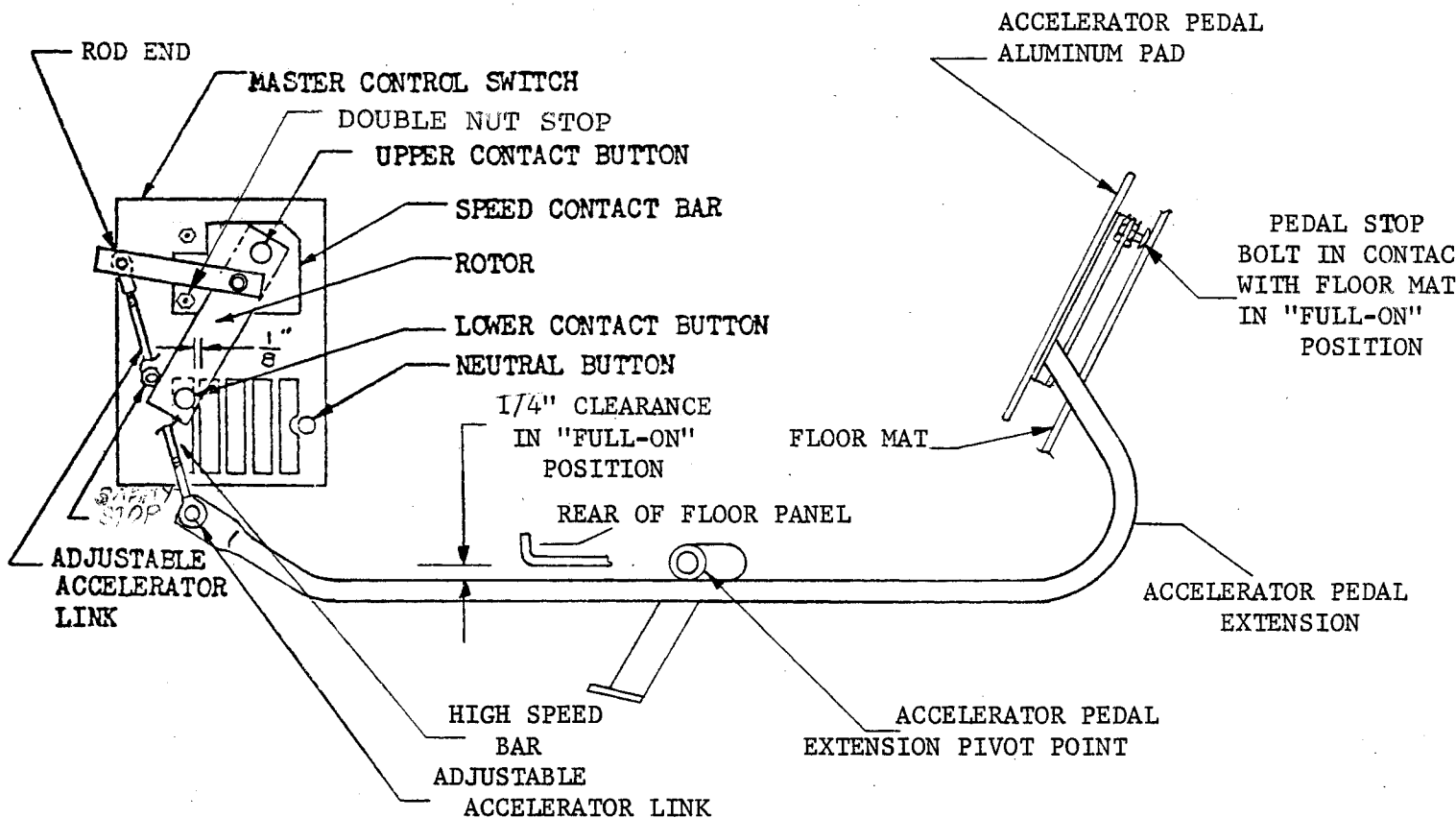
Adjustment of Speed Rotor Travel - EM Switch (Refer to Diagram B):

NOTE: Rotor travel adjustment is set at the factory and will require adjustment only if the vehicle is subjected to severe damage or if a new switch assembly is installed.

1. Adjust pedal stop bolt so that when the bolt head contacts the floor mat there is $\frac{1}{4}$ " clearance between the accelerator pedal extension and the rear of the floor panel. (See Diagram B)
2. Block accelerator pedal in full ON position with pedal stop bolt in contact with floor mat.
3. Adjust the "rod end" of the Adjustable Accelerator Link so that the lower contact button clears the 4th speed bar by $\frac{1}{8}$ ". This will insure approximately 95% of the contact button is toughing the high speed bar.

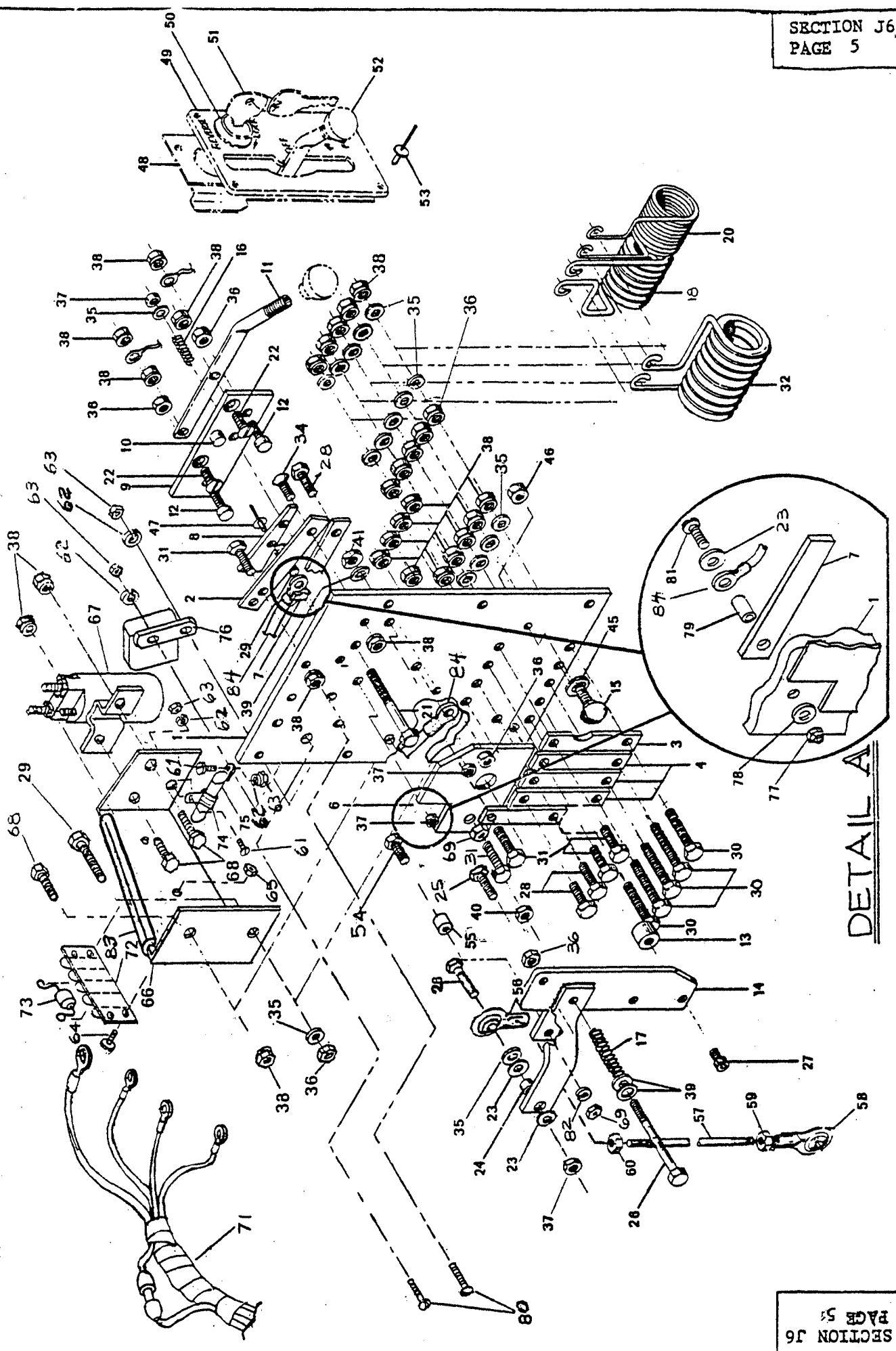
Adjustment of Speed Rotor Travel - EM Switch (Con't)

4. Remove blocking and operate accelerator pedal several times, using normal force. Re-check position of the lower contact button with pedal fully depressed. If it fails to clear the 4th speed bar by $\frac{1}{8}$ ", re-adjust the rod end position accordingly and re-check the clearance again after operating the pedal. Continue re-adjusting as necessary until the desired condition is obtained and remains constant. NOTE: The lower contact button should not travel beyond the 5th speed power bar.
5. With the pedal in neutral position, the lower contact button must clear the 1st speed bar by a minimum of $\frac{1}{8}$ " and rest on the neutral button. This condition should automatically occur when the high speed adjustment is properly set.



MASTER CONTROL SWITCH WITH SOLENOID
AND FOOT PARK BRAKE BUZZER

FIGURE 9
SECTION J6



MASTER CONTROL SWITCH - WITH SOLENOID & BUZZER
REFER TO FIGURE 9

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
9-0	61-845-55	Master Control Sw. W/Solenoid & Ft Park Brake Buzzer	1
9-1	61-845-01	Mounting Board, EM Master Control Switch	1
9-2	61-831-10	Power Bar With Countersunk Hole	1
9-3	61-831-12	Power Bar With Notch	1
9-4	61-831-13	Power Bar	4
9-6	61-831-20	Speed Contact Plate	1
9-7	61-840-00	Forward/Reverse Power Bar	1
9-8	61-839-51	Neutral Board	1
9-9	61-846-50	Rotor Board	1
9-10	61-846-51	Stabilizer Button	1
9-11	61-841-00	Handle	1
9-12	71-030-58	Contact Button	2
9-13	61-849-50	Contact Button	1
9-14	61-849-55	Rotor Arm for Switch 61-845-45	1
9-15	88-102-11	Neutral Button (3/8 x 1 Carriage Bolt)	1
9-16	85-034-00	Spring 7/16 x 2	1
9-17	85-060-00	Spring 5/8 x 2-1/2	1
9-18	78-212-63	Resistor Coil #5 Wire - 6 Turns	1
9-20	78-212-51	Resistor Coil #9 Wire - 10 Turns	1
9-21	88-060-20	1/4 NC x 3 Hex Head Cap Screw	1
9-22	88-066-09	1/4 NC x 3/4 Flat Head Machine Screw	2
9-23	97-170-00	Washer, Insulated	3
9-24	32-212-50	Plastic Bushing, 1/4 ID x 1/4 Long	1
9-25	96-300-09	Bronze Bolt	1
9-26	88-081-22	5/16 NC x 3-1/2 Hex Head Cap Screw	1
9-27	88-047-06	10-32 x 1/2 Socket Head Cap Screw	1
9-28	88-060-11	1/4 NC x 1 Hex Head Cap Screw	4
9-29	88-060-13	1/4 NC x 1-1/4 Hex Head Cap Screw	2
9-30	88-067-20	1/4 NC x 3 Hex Head Tap Bolt	4
9-31	88-060-14	1/4 NC x 1-1/2 Hex Head Cap Screw	5
9-32	78-212-62	Resistor Coil #8 - 8 Turns	1
9-34	88-066-11	1/4 NC x 1 FH Machine Screw	1
9-35	88-068-61	1/4 SAE Washer	7
9-36	88-069-80	1/4 NC Hex Nut	3
9-37	88-069-81	1/4 NC Hex Lock Nut	2
9-38	88-069-87	1/4 NC Fastite Nut	33
9-39	88-088-60	5/16 Flat Washer	3
9-40	88-089-91	5/16 NC Hex Head Jam Nut	1
9-41	88-089-81	5/16 Hex Lock Nut	1
9-45	97-173-00	Washer, Aluminum	1
9-46	88-109-87	3/8 NC Fastite Nut	1

MASTER CONTROL SWITCH - WITH SOLENOID & BUZZER
REFER TO FIGURE 9

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
9-47	88-737-11	Aluminum Rivet, 3/16 Dia. x 1" Long	1
9-48	97-314-10	Lock Plate & Lock Cylinder Assy.	1
9-49	94-307-00	Forward/Reverse Switch Plate	1
9-50	71-040-55	Lock Assy. with Two Keys	1
9-51	71-040-74	Key Only (Give Lock No. or Vehicle Serial No.)	1
9-52	95-907-00	Plastic Knob	1
9-53	88-727-06	Aluminum Rivet 5/32 Dia. x 1/2 Long	4
9-54	96-302-01	Screw, Bronze 5/16 NC x 1 Hex Head	1
9-55	61-849-51	Spacer, Rotor Contactor	1
9-56	86-503-99	Rod End, Spherical Bearing - Right Hand Thread	1
9-57	50-002-00	Rod, Accelerator Adjusting, 5-1/8 Long	1
9-58	86-503-98	Rod End, Spherical Bearing - Left Hand Thread	1
9-59	97-211-00	Nut, 1/4 NF Left Hand Thread	1
9-60	88-079-80	1/4-28 NF Hex Nut	1
9-61	88-025-06	Screw, Machine, Truss Head, 8-32 x 1/2	3
9-62	88-028-62	Washer, Lock, #8	5
9-63	88-029-80	Nut, Hex, 8-32	5
9-64	88-014-08	Screw, Machine, Round Head, 6-32 NC x 5/8	2
9-65	88-019-86	6-32 NC Hex Nut	2
9-66	72-555-00	Bracket - Solenoid Mount	1
9-67	72-501-10	Solenoid	1
9-68	88-060-09	1/4 x 3/4 NC Hex Head Cap Screw	3
9-69	88-089-80	5/16 Hex Nut	2
9-70	75-231-00	Battery Jumper	1
9-71	75-130-00	Harness, Wiring	1
9-72	79-865-00	Terminal Strip, 4 Place	1
9-73	79-730-00	Diodes, 6 AMP	1
9-74	96-630-00	Clamp, 5/8 I.D.	1
9-75	78-301-00	Resistor, 25 OHM, 50 Watt	1
9-76	73-006-00	Buzzer	1
9-77	88-049-86	10-32 Flexlock Nut	1
9-78	88-048-61	#10 SAE Washer	1
9-79	32-209-00	Bushing, Teflon 1/4" OD x .031 Wall x 3/4" Long	1
9-80	88-025-09	Screw, Machine, Truss Head, 8-32 x 3/4	2
9-81	88-045-11	10-32 x 1 Truss Head Machine Screw	1
9-82	88-088-62	Washer, Lock, 5/16	1
9-83	94-035-11	Strip, Plastic Trim, 3-1/2 Long	1
9-84	75-206-50	Wire, Jumper, 4-1/2 Long	1
(Not Shown)	96-603-00	Clamp, Cable Tie, 14"	1
(Not Shown)	75-234-00	Jumper, Battery	1

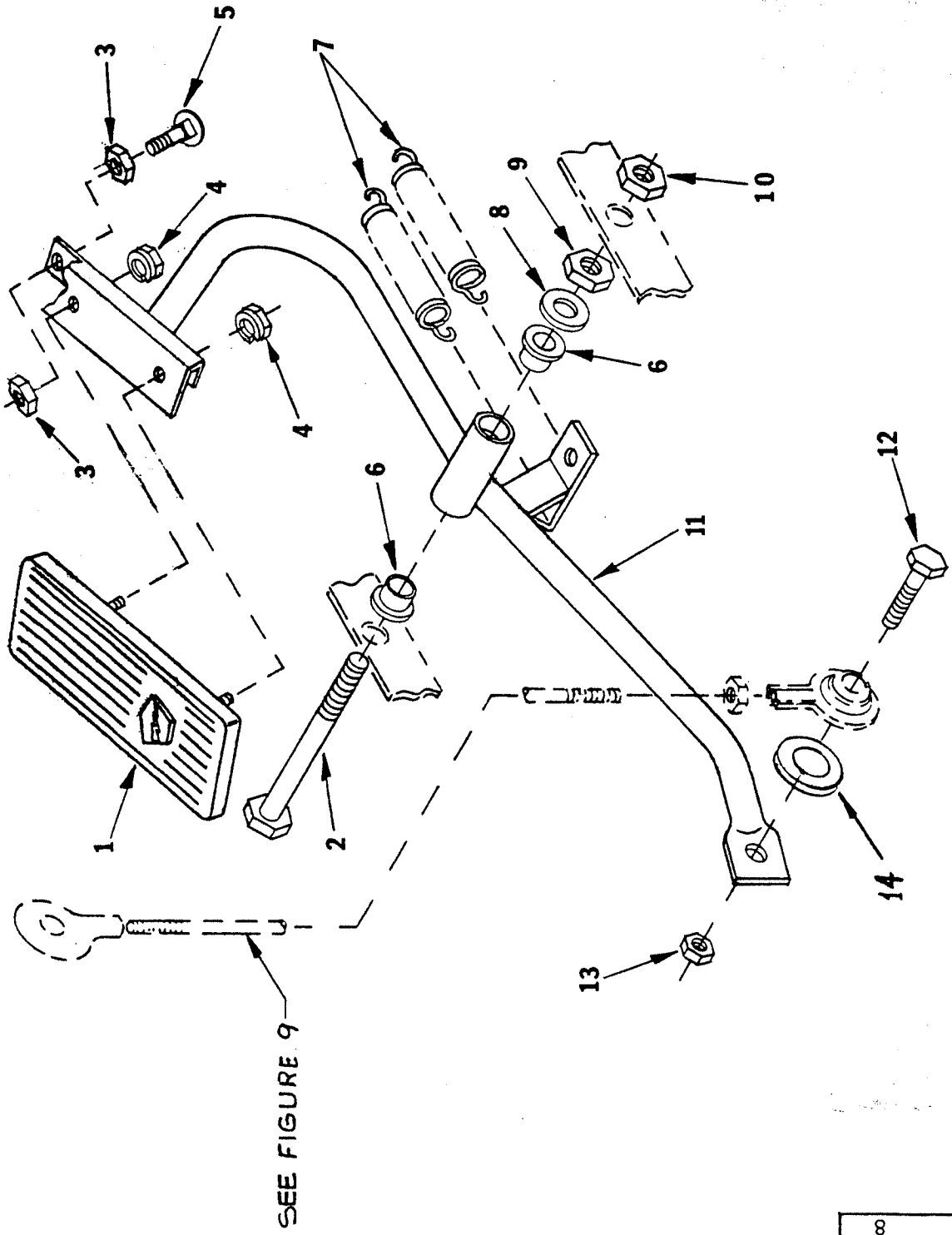
6-4-80

FIGURE 9A
SECTION J6

DWN BY: J.M.
CHKD BY: J.B.

ACCELERATOR LINKAGE

Taylor-Dunn
2114 WEST BALL ROAD
ANAHEIM, CALIFORNIA
92803



SEE FIGURE 9

ACCELERATOR LINKAGE
REFER TO FIGURE 9A

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY.
9A-1	98-254-00	Pad, Aluminum Accelerator Pedal	1
9A-2	88-147-24	Bolt, Hex Head Cap 1/2 x 4 N.C., Stainless Steel	1
9A-3	88-089-80	Nut, Hex 5/16 N.C.	2
9A-4	88-069-87	Nut, Fastite 1/4 N.C.	2
9A-5	88-082-13	Bolt, Carriage 5/16 x 1-1/4 N.C.	1
9A-6	32-215-00	Bushing, Plastic with Flange	2
9A-7	85-233-00	Spring, Accelerator Return	2
9A-8	88-148-61	Washer, 1/2 SAE	1
9A-9	88-149-80	Nut, Hex 1/2 N.C.	1
9A-10	88-149-81	Nut, Lock 1/2 N.C.	1
9A-11	88-109-81	Nut, Lock 3/8 N.C.	1
9A-12	88-060-13	Screw, Hex Head Cap 1/4 x 1-1/4 N.C.	1
9A-13	88-069-81	Nut, Hex Lock 1/4 N.C.	1
9A-14	88-068-61	Washer, 1/4 SAE	1

MAINTENANCE PROCEDURES
GENERAL ELECTRICAL SYSTEM

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 damage 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, flasher, 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 J2M - Motor
- Section J6 - Speed Control and Main Power Switching
- Section J8 - Batteries and Charger

Refer to the following page for a listing of electrical parts.

ELECTRICAL PARTS

<u>T-D PART NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
71-100-00	Light Switch	1
71-111-00	Brake Light Switch (Mechanical Operation)	1
71-130-00	Micro Switch	1
72-005-00	Chrome Headlight Fixture with 4" Sealed Beam Bulb	1
72-407-00	Headlight Mounting Bracket	1
72-072-00	4" Sealed Beam Headlight Bulb	1
73-004-00	Horn, 12 Volt	1
72-022-00	Taillight or Tail/Stop Light Fixture, 4" Rubber Mount	1
75-082-00	Accessory Wiring Harness (Horn & Lights)	1
75-081-00	Power Wiring Harness	1
77-200-00	Hydrometer	1
77-201-00	Battery Filler	1
78-010-00	Secondary Fuse and Holder - Inline Type	1
79-823-00	20 Amp Fuse to Fit Fuse Holder	1
75-231-00	Battery Jumper - #6 Wire - 10-1/4 Long with Terminals	5
75-234-00	Battery Jumper - #6 Wire - 18-1/4 Long with Terminals (One Used to Connect Battery Positive to F/R Switch)	2
79-844-00	Circuit Breaker	1
76-012-00	Charging Receptacle	1
76-002-00	Charging Plug	1
74-007-00	Cigarette Lighter	1
50-225-00	Wiring Harness Support Rod - 1/4" Dia.	1

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 7½ 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 Service and Adjustment, Section J8, for proper methods to determine charge condition.

2. DISCHARGING - CAPACITY

Batteries are commonly rated in ampere hours at the six hour discharge rate to a 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.

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 battery 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.

MAINTENANCE PROCEDURES
BATTERIES

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 readily 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. of 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 conditions 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 climate conditions the electrolyte will freeze at a much higher temperature. For example, a fully charged battery will not freeze at temperatures near 60° below zero. Yet a battery in a very low state of charge may freeze at temperatures around 10° to 15° 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.

MAINTENANCE PROCEDURES
BATTERIES

6. Winter Storage

- a. Before storing your vehicles in a sheltered area for the Winter Season, clean and check the charge level of the batteries according to the information contained in paragraphs 4 and 5 this section.

CAUTION: Before service personnel service the batteries, disconnect both main battery leads, place the Forward/Reverse Switch in Neutral, turn the key OFF and remove from switch. Set the parking brake. Service personnel should wear proper clothing and eye protection

- b. Although not required, the following information is provided as a good maintenance practice to be followed when and where practical to perform.
1. Remove the batteries from the vehicles for cleaning.
 2. Clean batteries according to instructions in Para. 4.
 3. Clean heavy corrosion from ~~each~~ battery post and cable terminal with a wire brush.
 4. Using baking soda and hot water solution, neutralize all battery acid corrosion in battery compartment. If necessary, use a wire brush on severe corrosion areas.
 5. Flush battery compartment area with fresh water and dry compartment ara thoroughly.
 6. Paint or apply light film of petroleum jelly to exposed metal surfaces.
 7. After battery compartment has been properly treated reinstall batteries while taking special care to properly connect battery cables.

DANGER: Improper connection could cause a battery explosion and possibly result in personal injury and/or damage to the vehicle.

8. Check battery charge state according to information contained in Paragraph 5 this section.

BATTERY MAINTENANCE RECORD

VEHICLE NO.

Battery No.	Cell No.	Date			Date			Date			Date		
		Water	OK or	Gravity	Water	OK or	Gravity	Water	OK or	Gravity	Water	OK or	Gravity
1	1	Low	Charge	After	1	Low	Charge	After	1	Low	Charge	After	1
	2												
	3												
2	1				2				2				2
	2												
	3												
3	1				3				3				3
	2												
	3												
4	1				4				4				4
	2												
	3												
5	1				5				5				5
	2												
	3												
6	1				6				6				6
	2												
	3												

1. CAUTION: Batteries emit explosive gases. During normal operation the concentration of these gases is rarely sufficient to be considered dangerous unless flame or sparks occur in the battery compartment close to the vent holes in the battery caps. It is important that this not be allowed to occur at anytime. 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.
2. Do not fill an uncharged battery. Bring water level up to just cover the plates, and complete filling after battery is fully charged. Use distilled water. Fill only to level indicated on battery.
3. Batteries which require unusually frequent watering may indicate overcharging. Review charging practices and/or adjustment of transformer taps in charger.
4. Gravity should be kept between 1175 (30% charged) and 1260 (100% charged), and gravity readings of all cells should be within 10 point range. When they are not, an equalizing charge should be applied. Refer to information under "Charging Time Chart" in Charger Handbook.
5. Periodically check for loose terminal posts or loose connections to terminal posts, but not while batteries are being charged.
6. Keep tops of batteries clean, and free of moisture, grease, and acid films. Any of these can cause current leakage.
7. Keep weekly (or oftener) record as shown in above sample chart, for a new vehicle or when charging results seem unsatisfactory, until satisfactory charging continues for a four week period, then keep record on a monthly basis.

BATTERIES AND CHARGER

T-D PART NO	DESCRIPTION	QTY.
75-231-00	Battery Jumper #6 Wire, 10-1/4" Long	3
75-234-00	Battery Jumper #6 Wire, 18-1/4" Long	3
76-013-00	Charging Receptacle	1
77-031-00	6 Volt, 190 A.H. Battery	6
77-042-00	6 Volt, 217 A.H. Battery	6
74-005-00	Charge Indicator, 36 Volt	1
77-047-00	6 Volt, 244 A.H. Battery	6
77-200-00	Hydrometer	1
77-201-00	Battery Filler	1
79-304-00	Portable Charger, 36 Volt, 25 AMP Line Compensated	1
79-305-00	Portable Charger, 36 Volt, 25 AMP Automatic	1
79-304-05	Built-In Charger, 36 Volt, 25 AMP Line Compensated	1
	The following chargers are for export vehicles only and can only be used with a 230 Volt AC 50 HZ power source.	
79-304-90	Portable Charger, 36 Volt, 25 AMP, Line Compensated	1
79-304-95	Built-in Charger, 36 Volt, 25 AMP, Line Compensated	1
79-599-10	Cabinet, Console for Built-in Chargers, no components	1

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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 $\pm 10\%$ from 117 volts = $\pm 1\%$ maximum battery voltage variation, decreasing to $\pm 1/2\%$ 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.

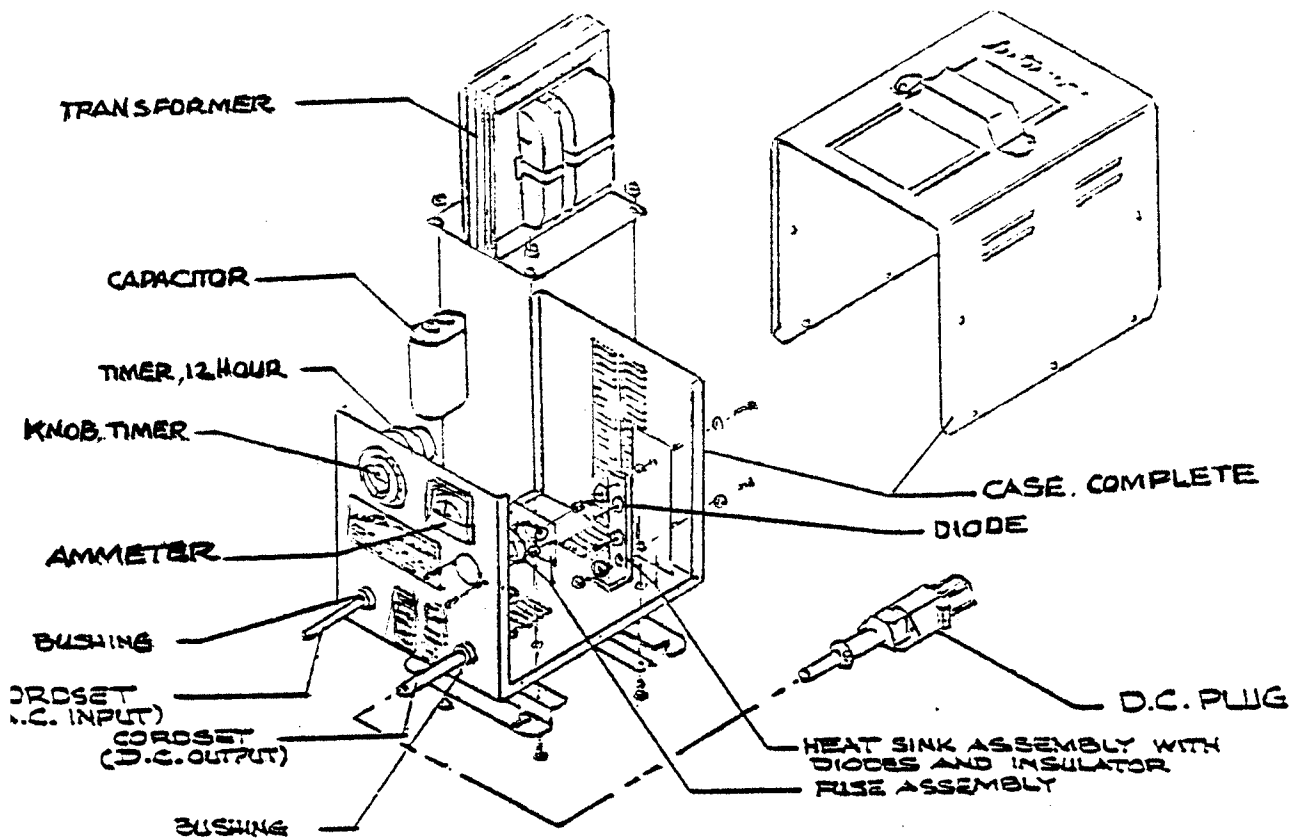
Silicon diodes with inherent surge protection operated at a conservative percentage of their rating.

Convection cooled design for maximum reliability and minimum maintenance.

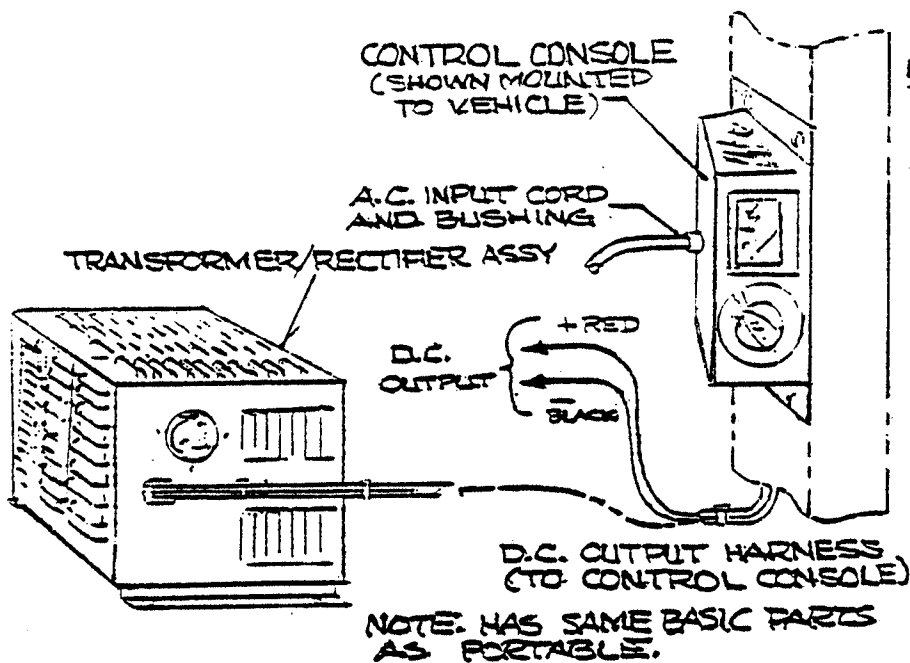
LESTRONIC II BATTERY CHARGERS

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.



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

OPERATION OF "LESTER-MATIC" BATTERY CHARGERS

INTRODUCTION

The Lester-Matic battery charger is a highly reliable, line compensating 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 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 cell 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 gravity 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.

<u>CHARGING TIME CHART</u>	
GOLF CAR USE	CHARGING TIME
9 Holes or Less	7 Hours
18 Holes or More	12 Hours
COMMERCIAL USE	
Less than 1 Hour	7 Hours
More than 1 Hour	12 Hours

If a golf car is used only occasionally, it is recommended that a several hour refresher charge be given prior to using the car.

Commercial cars, not used in golf course operation, 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 insure 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.

CAUTION

THIS CHARGER IS FOR USE ONLY ON 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 day's 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 60 F, give them an extra 12 hour charge once a week. The ampere-hours of energy that batteries can deliver and their charge acceptance varies directly with 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.
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 charge rate in amperes and resultant higher water use rates.

VERIFY BATTERIES ARE CHARGED

1. Turn on the timer 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 truly 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 addition of 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° F, batteries charged in unheated areas should be placed on charge as soon after use as possible. Under such conditions 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 COMPARTMENT 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.

MALFUNCTION 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 TRANSFORMER 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 outlet. 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.

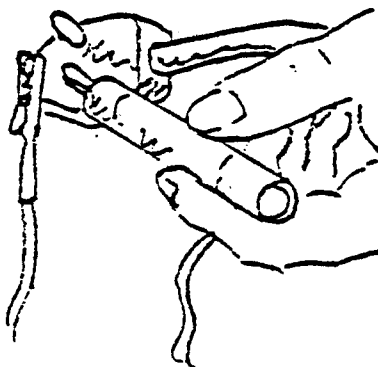


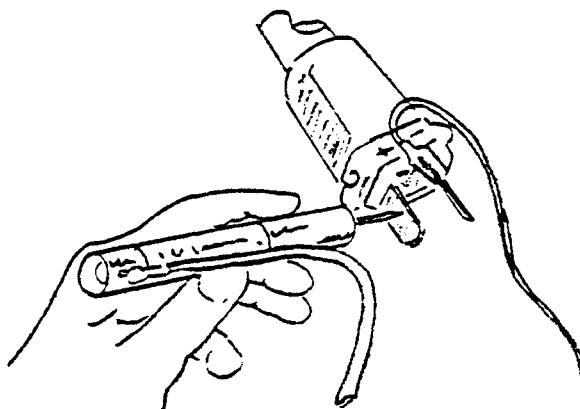
FIGURE 1

TRANSFORMER HUMS BUT NO AMMETER INDICATION

Inspect the DC plug connection to the vehicle receptacle and also check to insure 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 A.C. and *D.C. plugs. Perform the following tests, using a low voltage tester, to check the continuity of the DC circuit.

- * For built-ins, disconnect A.C. plug and D.C. 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 D.C. output.



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 light 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.

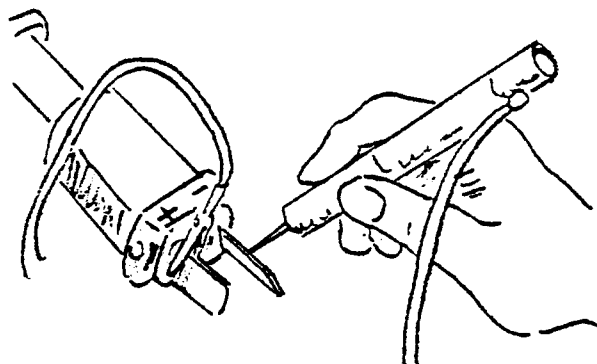


FIGURE 3
D.C. PLUG CHECK FOR PORTABLE CHARGERS ONLY

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 may be 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 both 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 that it does not extend beyond the rear surface of the heat-sink plate.

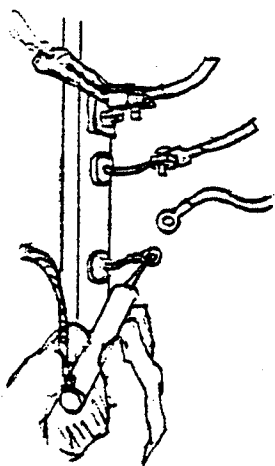


FIGURE 4

- (c) If (a) and (b) fail to reveal the malfunction, check wiring of both charger and vehicle against their respective wiring diagrams, on page 10.

CHARGER OUTPUT IS LOW

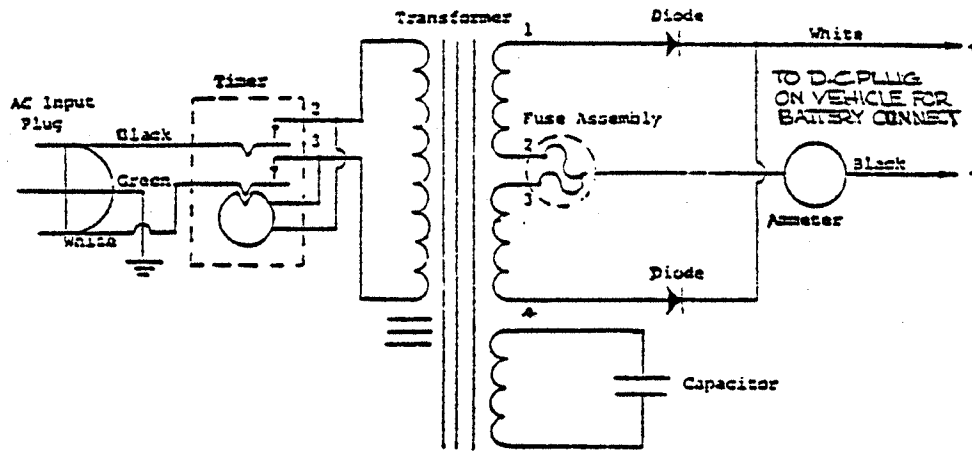
The most probable cause is one diode shorting and blowing one fuse. Refer to "Fuse Link Blowing" part (b) to check the diodes. If a diode is shorted both the heat sink and fuse assemblies must be replaced.

CHARGER DOES NOT TURN OFF

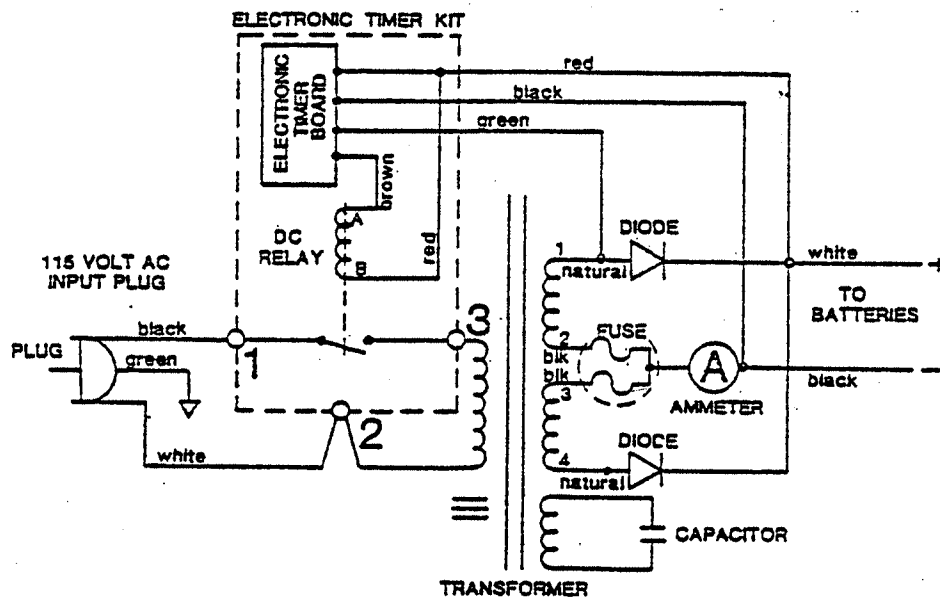
In models equipped with timers, this is due to an inoperative timer. In this case replace timer assembly.

AC LINE FUSE OR CIRCUIT BREAKER BLOWS

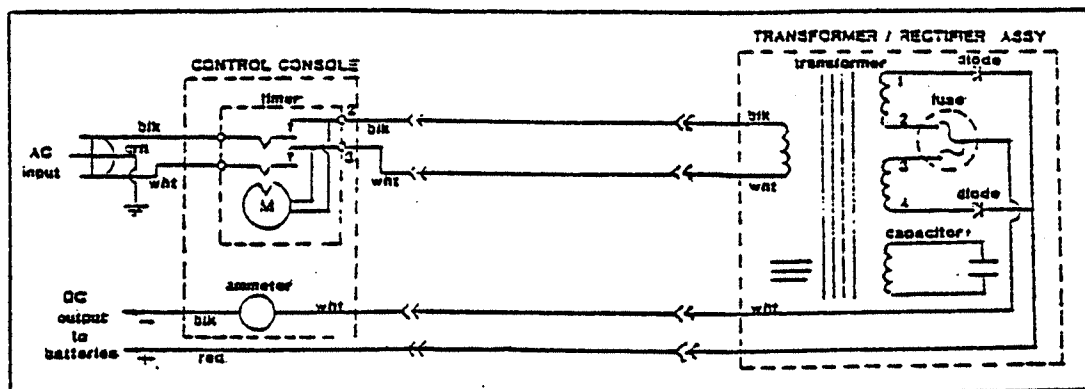
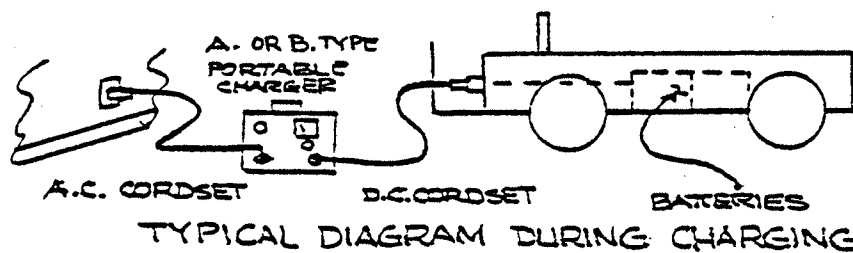
If this occurs when charger is turned on without being plugged into the vehicle, the AC cord, timer motor coil, or the transformer may be shorted. To check the AC cord, insure that the timer is "OFF" and connect the continuity tester across the AC plug prongs. If circuit is complete the AC cord is shorted and must be replaced. To check the timer 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.



A. TYPICAL PORTABLE CHARGER



B. TYPICAL PORTABLE ELECTRONIC TIMER CHARGER (ELECTRONIC II)

SCHEMATIC, LESTER CHARGER
TYPICAL FOR ALL BUILT-IN CHARGERS

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	79-851-00	79-851-00	79-852-00	79-852-00	79-851-00
Cordset, A.C.	79-575-20	79-575-10	79-575-20	79-575-10	79-575-20

PARTS LIST, BUILT-INS
RECOMMENDED REPLACEMENT PARTS

Taylor-Dunn Part No.	79-304-05	79-308-95	79-308-05	PORTABLE 79-305-00	PORTABLE 79-301-00
Lester Model No.	36LC25-3T12 115/60 7660	48LC40-4T12 230/60 7625	48LC25-3T12 115/60 7635	PORTABLE LESTRONIC II 36LC25-BET 115/60 7850	PORTABLE LESTRONIC II 24LC25 115/60
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	79-902-00	
Heat Sink Assy. with Diodes	79-749-11	79-749-10	79-749-10	79-749-13	
Diode Replacement	79-745-10	79-745-11	79-745-10	79-749-10	
Fuse Assembly	79-831-00	79-831-11	79-831-00	79-831-00	
CONTROL CONSOLE ASSEMBLY				N/A	N/A
Bushing, for Cordsets	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	ELECTRONIC TIMER 79-805-21	79-805-21
Knob, Timer	79-806-00	79-806-00	79-806-00		
Ammeter	79-851-00	79-852-00	79-851-00	79-851-00	
Cordset, A.C.	79-575-10	79-575-20	79-575-10	79-575-10	

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	79-851-00	79-851-00	79-852-00
Timer	79-805-11	79-805-00	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	79-749-10	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	79-831-00	79-831-00	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
Plug, D.C. Replacement	76-003-00	76-003-00	76-003-00	76-003-00	76-003-00

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 * LestronicII (electronic timer)
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	79-851-00	79-851-00	79-852-00	79-852-00	79-851-00
Timer	79-805-00	79-805-11	79-805-00	79-805-10	79-805-00 *79-805-21
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	79-749-10	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	79-567-10	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
Plug, D.C. Replacement	76-003-00	76-003-00	76-003-00	76-003-00	76-003-00

RECOMMENDED SPARE PARTS

<u>COMPONENTS</u>	<u>SPARES FOR VEHICLES</u>	
	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	2	1
TIMER, BOARD ELECTRONIC	1	2

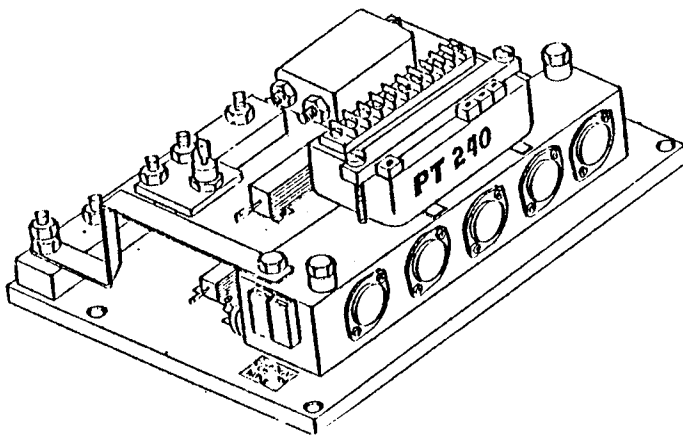
SUPPLEMENT
MODEL R
PWR-TRON 240 & 350

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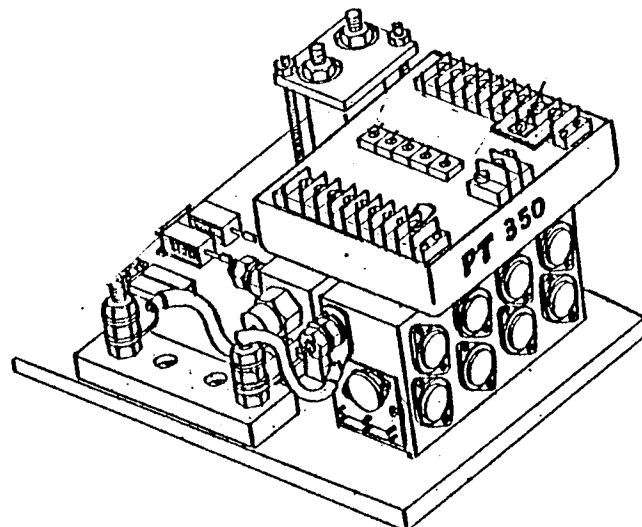
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INTRODUCTION

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, and 350 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 H.P. MOTORS
(INTERMITTENT)



24 or 36 VOLTS
RECOMMENDED FOR
USE UP TO 10
H. P. MOTORS
(INTERMITTENT)

MODEL R

PWR-TRON 240 AND 350

GENERAL

The PWR-TRON unit is readily accessible when the seat on the Model R is raised. 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 to prevent over heating and damage to PWR-TRON.
6. Unit is protected from incorrect battery hookup.
7. "Low" battery protection through solenoid drop out.
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, by letting up on the accelerator then re-accelerating, a smoother control will be achieved.
11. Modular construction provides simplicity to 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.

MODEL R

OPERATING YOUR PWR-TRON 240 & 350 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 transition 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.

MODEL R

PWR-TRON 240 & 350 PREVENTIVE MAINTENANCE

WARNING:

BEFORE WORKING ON THE PWR-TRON UNITS OR ANY PART OF THE VEHICLE ELECTRICAL 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 or 350.

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

MODEL R

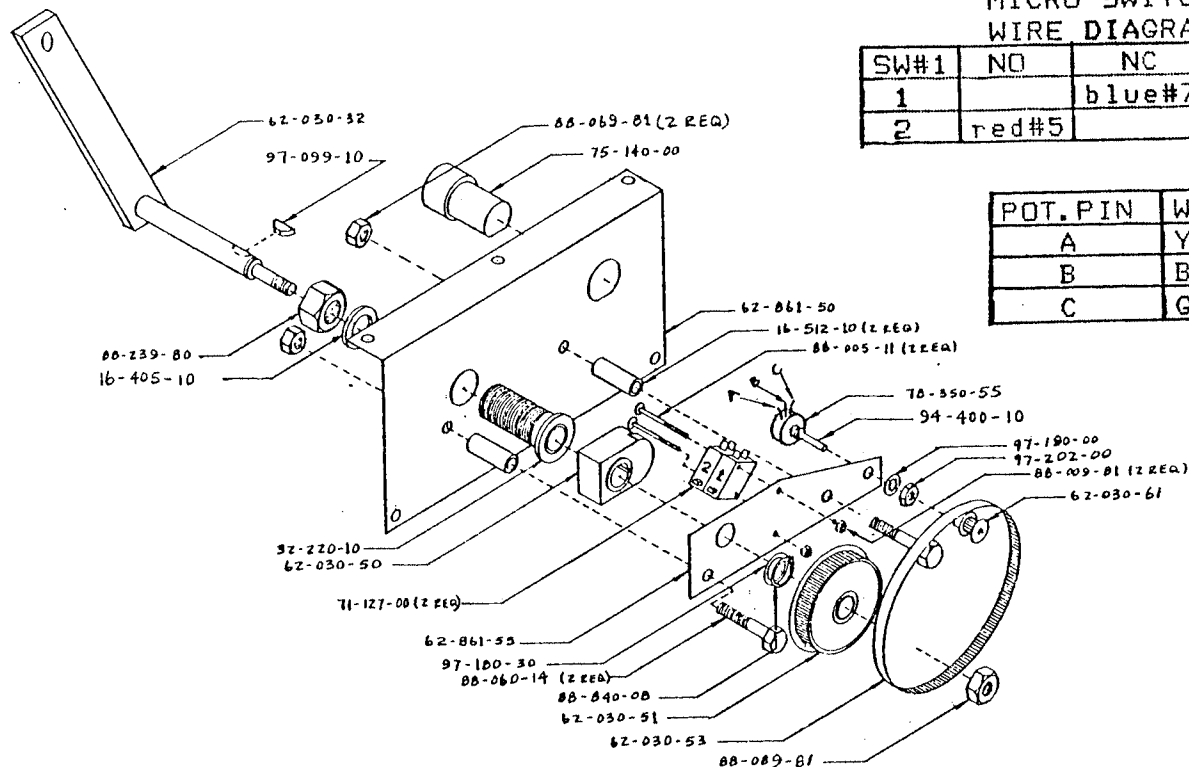
ACCELERATOR MODULES
PT240 & 350

GENERAL FEATURES

All accelerator module 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 are shown mounted in the "OFF" position for all vehicles. All parts list figures are identified in order of assembly. Whenever a re-assembly is necessary a potentiometer check is required ore adding pulleys and belts.

MICRO-SWITCH CHECK

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



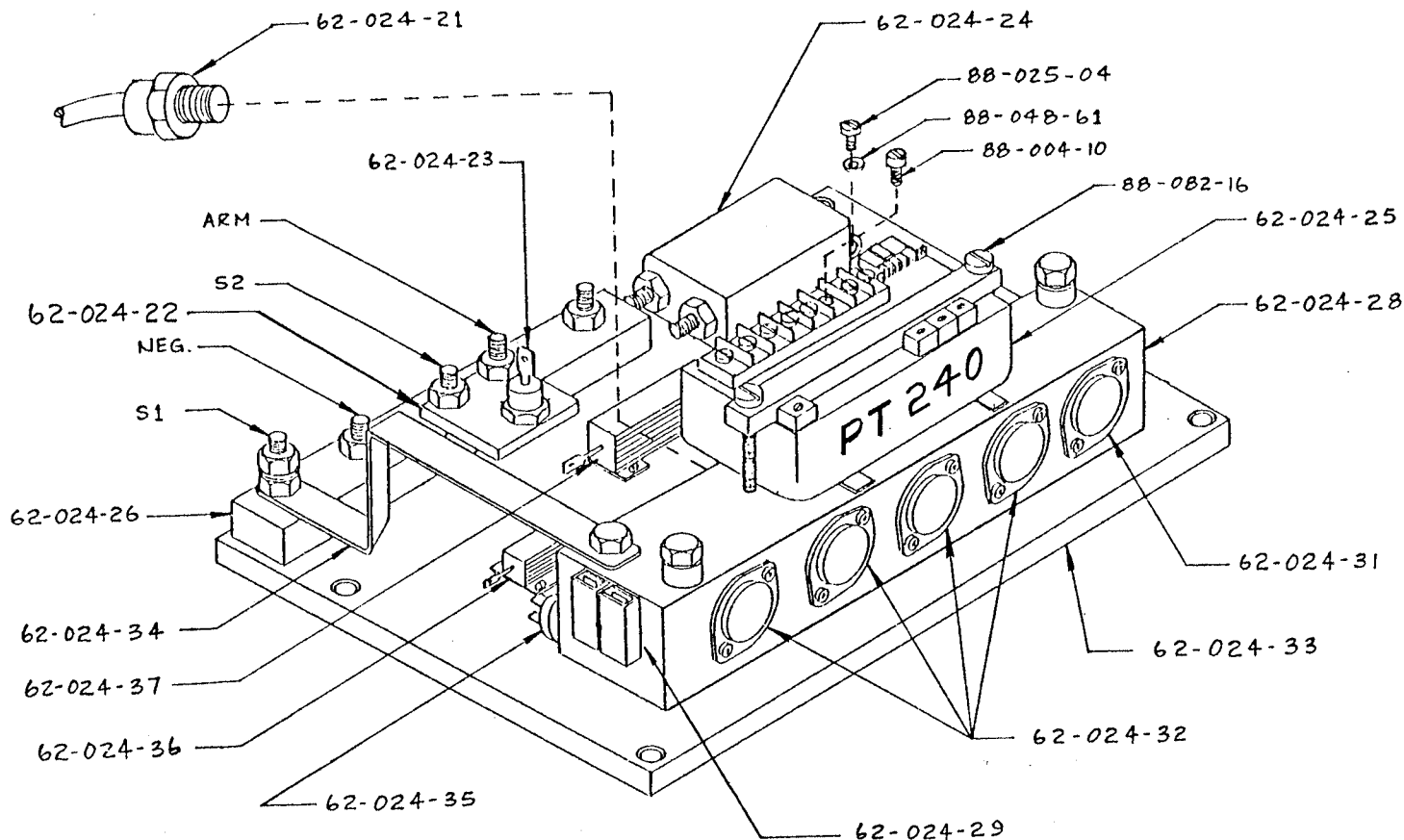
PAGE 7
MICRO SWITCH
WIRE DIAGRAM

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

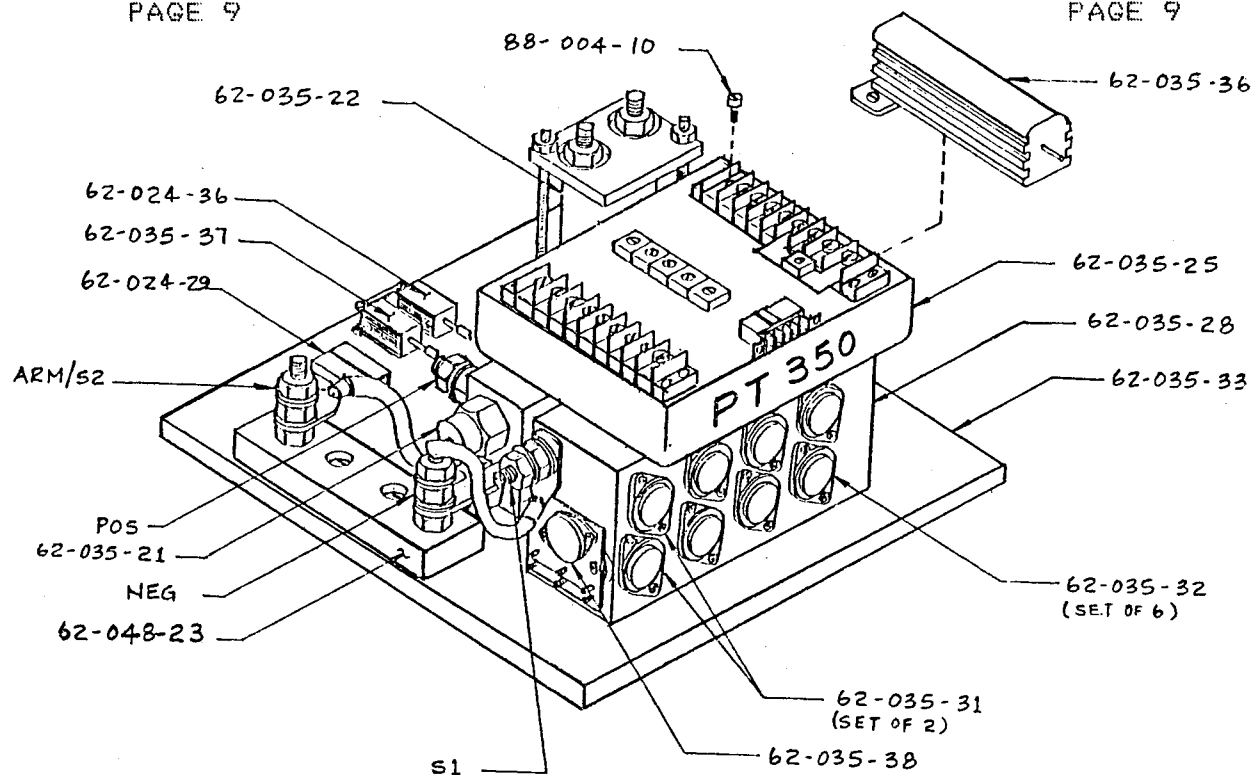
ACCELERATOR MODULE (COVER NOT SHOWN) 62-030-12

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 Hd.	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	62-030-31	Rotor, Accel. Module	1
11	97-099-10	Key, Woodruff	1
12	88-239-80	Nut, 3/4 NF Hx. Hd. Nut	1
13	88-229-62	Washer, 3/4 Lock	1
14	62-861-50	Plate, Backing, Accel. Module	1
15	62-030-50	Cam, Micro Sw. 1 In. Rad.	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, Accel. Module	1
20	97-180-30	Washer, 1/2 In. ID x 1/32 Thk.	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 In. 150 T	1
24	88-088-62	Nut, 5/16 NC, Lock	1



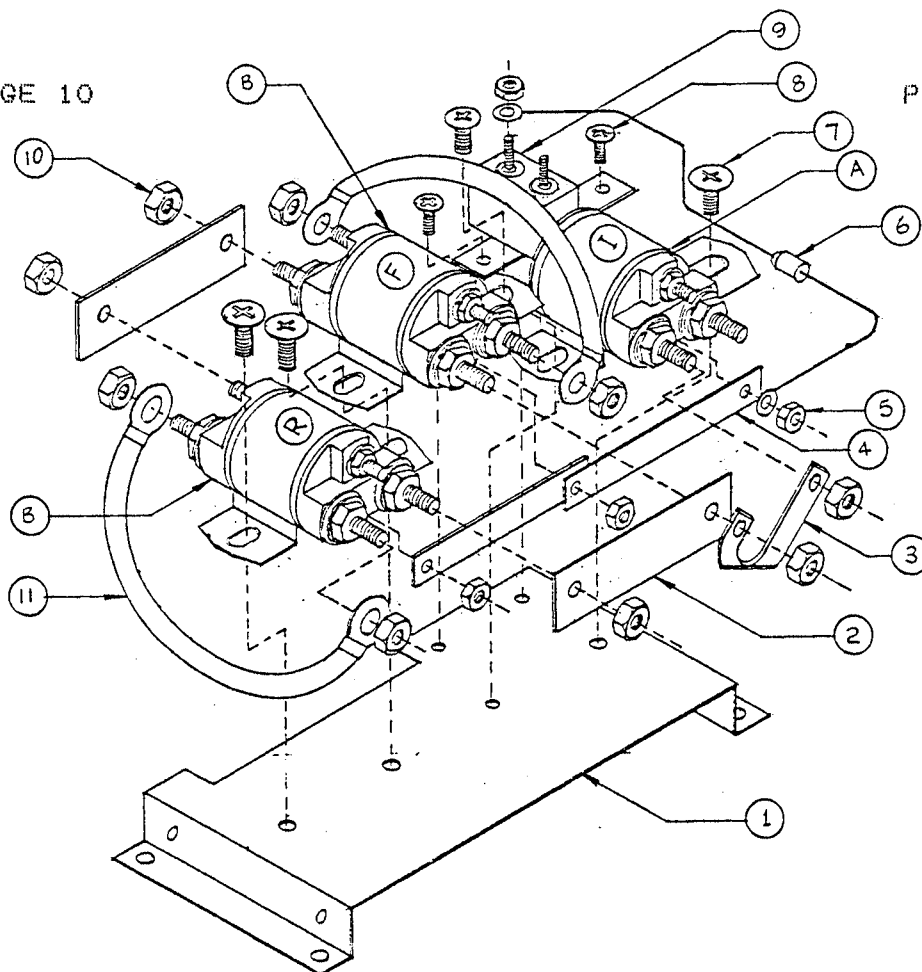
PT240 SPEED CONTROLLER AND PARTS LIST
(PT240 TYPICAL FOR ALL 24 & 36 VOLT VEHICLES)

FIG. NO.	PART NUMBER	DESCRIPTION	QTY.
1	62-024-21	Diode, Flywheel	1
2	62-024-23	Diode, Plugging	1
3	62-024-24	Caacitor	1
4	62-024-25	Logic Unit	1
5	62-024-28	Transistor Block	1
6	62-024-31	Transistor Driver	1
7	62-024-32	Transistor Power	(SET) 4
8	62-024-33	Base, PT240	1
9	62-024-29	Switch, Key (24 & 36V)	1
10	62-024-35	Switch, Thermal	1
11	62-024-36	Resistor, 70 OHM	1
12	62-024-37	Resistor, 1/2 OHM	1
13	62-024-34	Bar, Buss	1
14	62-024-26	Block, Terminal	1
15	88-025-04	Screw, 3MM x 1/2	17 ea.
		& 88-048-61 Washer	
16	88-004-10	Screw, 3MM x 5/16	10
17	88-082-16	Screw, Logic Mount	2



PWR-TRON 350 SPEED CONTROLLER, 24/36 VOLTS

PART NO.	PT350 DESCRIPTION	QTY.
62-035-21	Diode, Flywheel	1
62-035-21	Diode, Plugging	1
62-035-22	Capacitor	1
62-035-25	Logic Unit	1
62-035-28	Block, Transistor	1
62-035-33	Base Plate	1
62-035-32	Transistors, Power	(set) 6
62-035-31	Transistors, Driver	(set) 2
62-035-38	Transistor Assy, Driver, Driver	1
62-048-23	Block Terminal	1
62-024-29	Key Switch	1
62-024-36	Resistor, 10 W 70 OHM	1
62-035-36	Resistor, 50 W .5 OHM	1
62-035-37	Resistor, 10 W 18 OHM	1
96-340-20	Stud, Brass 4 MM x 5-1/2	2
88-004-82	Nut, 4MM, 88-068-67 Washer	(each) 2
88-004-10	Screw, 3MM x 5/16	21
88-025-04	Screw, 3MM x 1/2	25

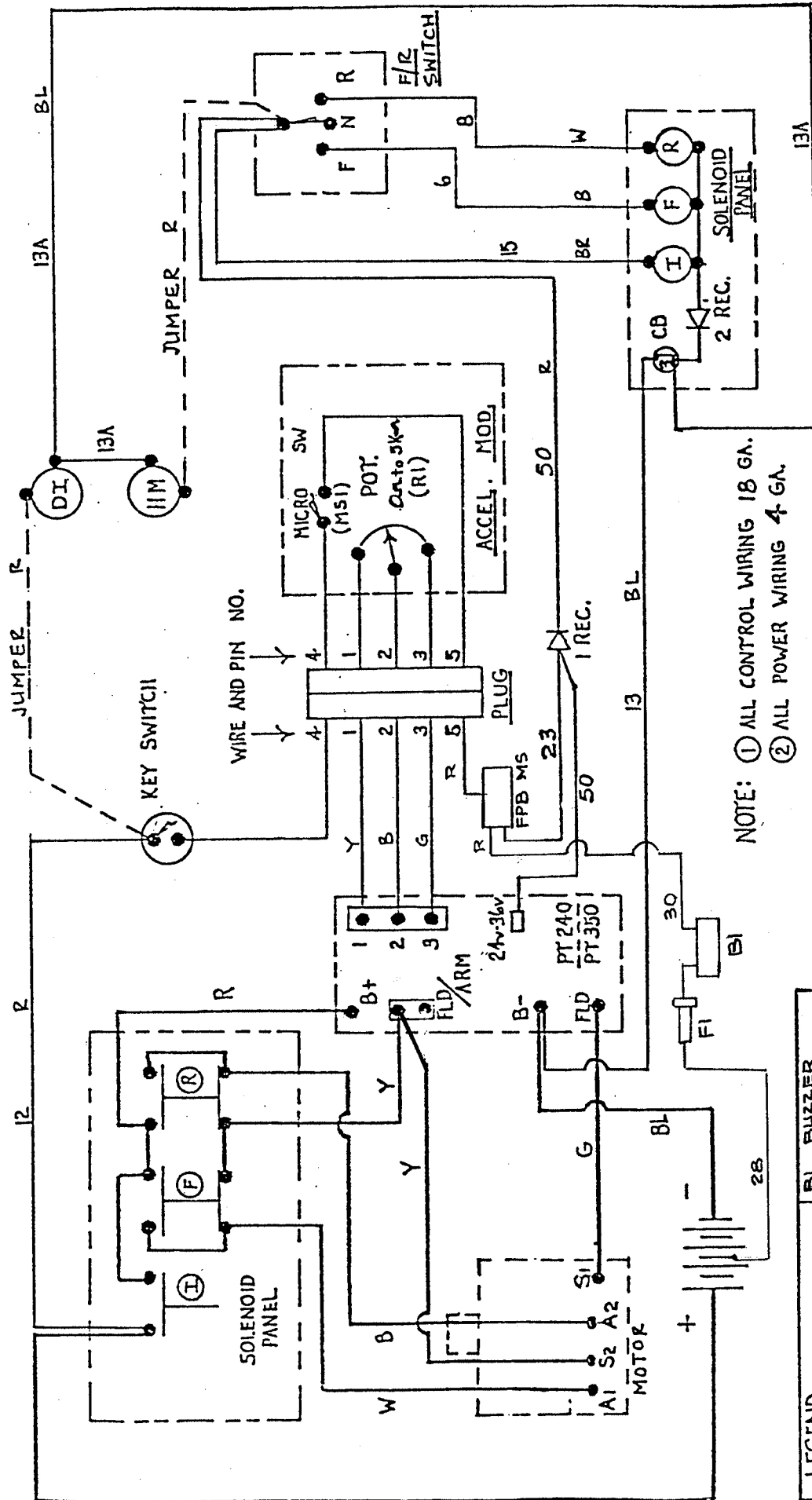


* SOLENOID PANEL ASSEMBLIES

72-560-00, 24V PANEL ASS'Y	1	72-560-10, 36V PANEL ASS'Y	
A) 72-501-24 SOLENOID, SPST 24V	1	A) 72-501-36 SOLENOID, SPST 36V	
B) 72-501-25 SOLENOID, SPDT 24V	1	B) 72-501-37 SOLENOID, SPDT 36V	

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

FIG. NO.	PART NO.	DESCRIPTION	QTY.
1	72-560-50	Panel, Solenoid Mtg.	1
2	62-838-51	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 CU	2
5	88-048-62	Nut	4
6	75-224-10	Jumper, 5-1/4 In., 18 Ga., 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
	72-560-51	Cover, Solenoid Panel (not shown)	1

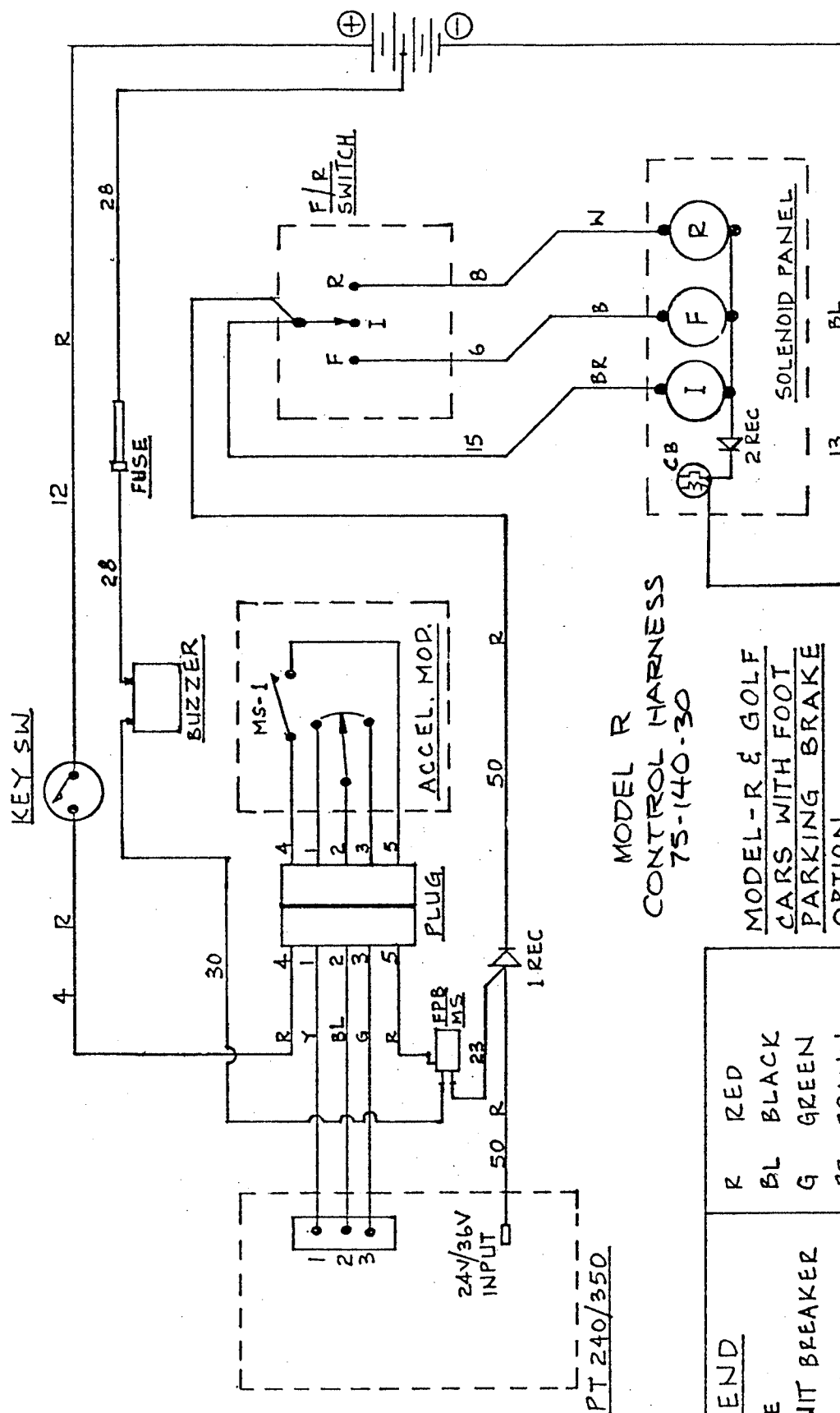


NOTE: ① ALL CONTROL WIRING 18 GA.
② ALL POWER WIRING 4 GA.

MODEL R WITH FOOT PARKBRAKE
PWR-TRON 240/350 COMBINED CIRCUIT
DIAGRAM WIRING SCHEMATIC. FIGURE 1.

CHG 4-19-85 JAB

LEGEND		Buzzer
REC	DIODE, M'S MICRO SW.	FUSE
HM	HOUR METER	YELLOW
DI	DISCHARGE INDICATOR	BLUE
CB	CIRCUIT BREAKER	WHITE
I	ISOLATOR	GREEN
F	FORWARD	BLACK
R	REVERSE	RED
		BROWN

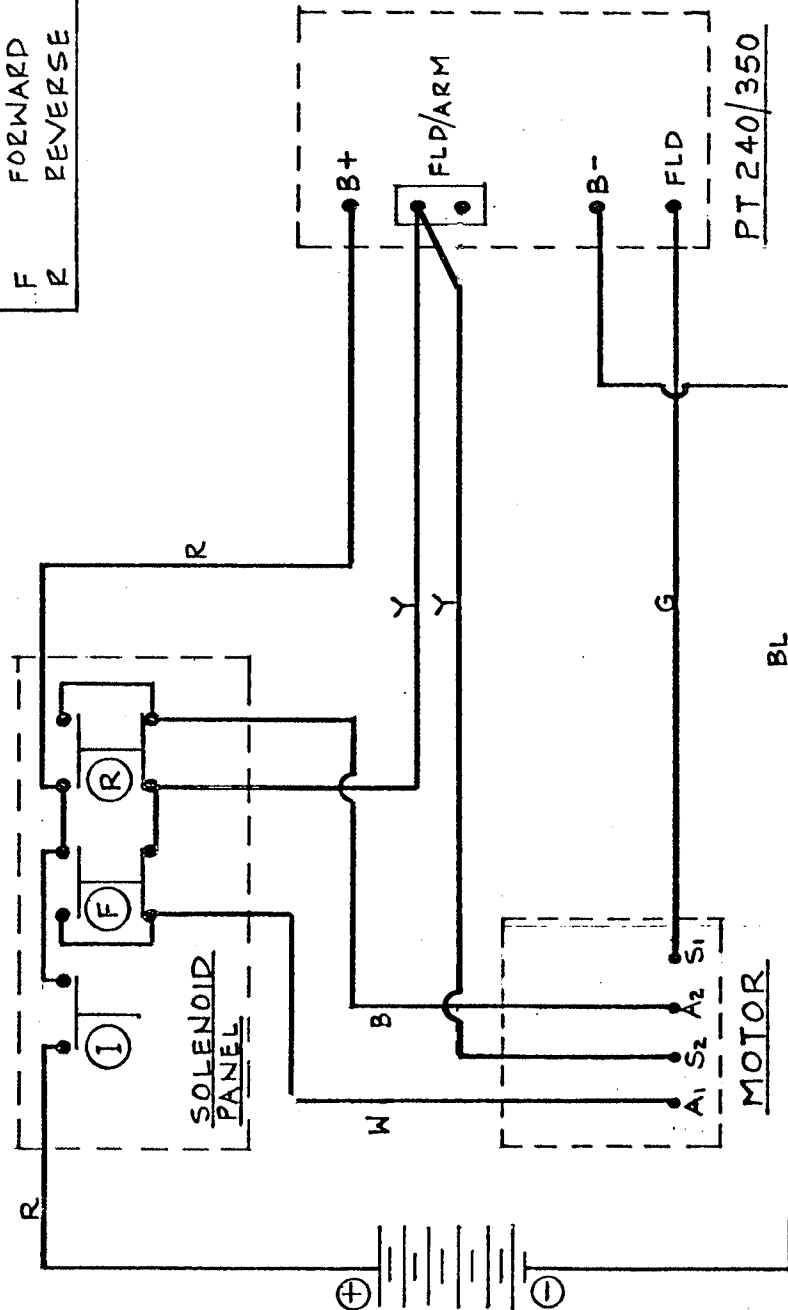


PWR-TRON 240/350 CONTROL SCHEMATIC

<u>LEGEND</u>	
REC	DIODE
CB	CIRCUIT BREAKER
I	ISOLATOR
F	FORWARD
R	REVERSE
R	RED
BL	BLACK
G	GREEN
BR	BROWN
Y	YELLOW
W	WHITE

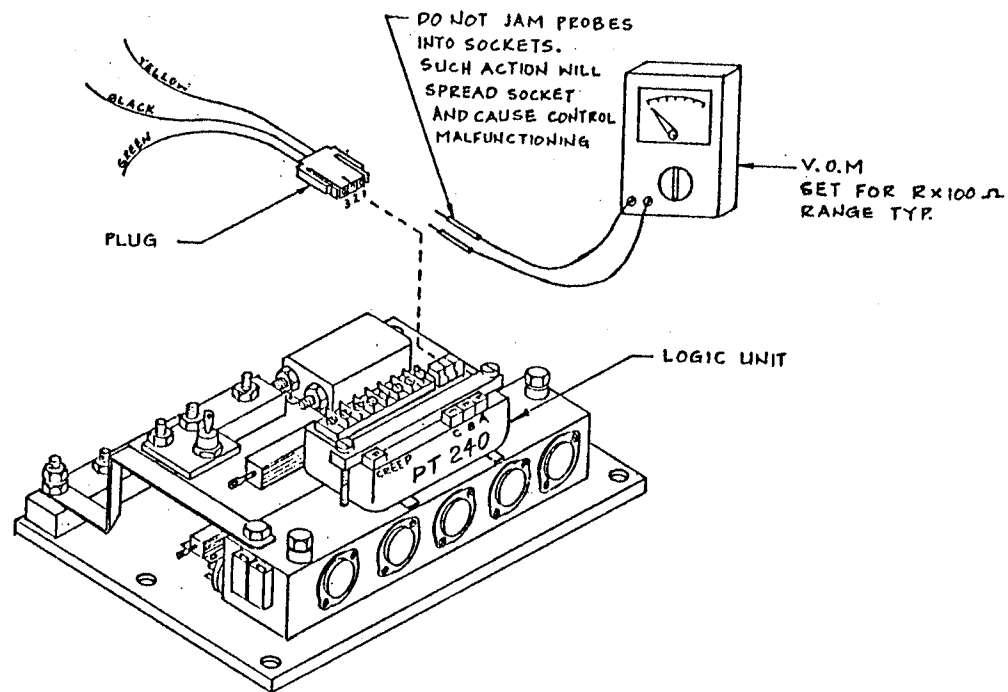
LEGEND

B+	BATTERY POS.	R	RED
B-	BATTERY NEG.	BL	BLACK
FLD	FIELD	B	BLUE
ARM	ARMATURE	Y	YELLOW
I	ISOLATOR	G	GREEN
F	FORWARD	W	WHITE
R	REVERSE		



PWR-TRON 240/350 POWER SCHEMATIC FIG 3

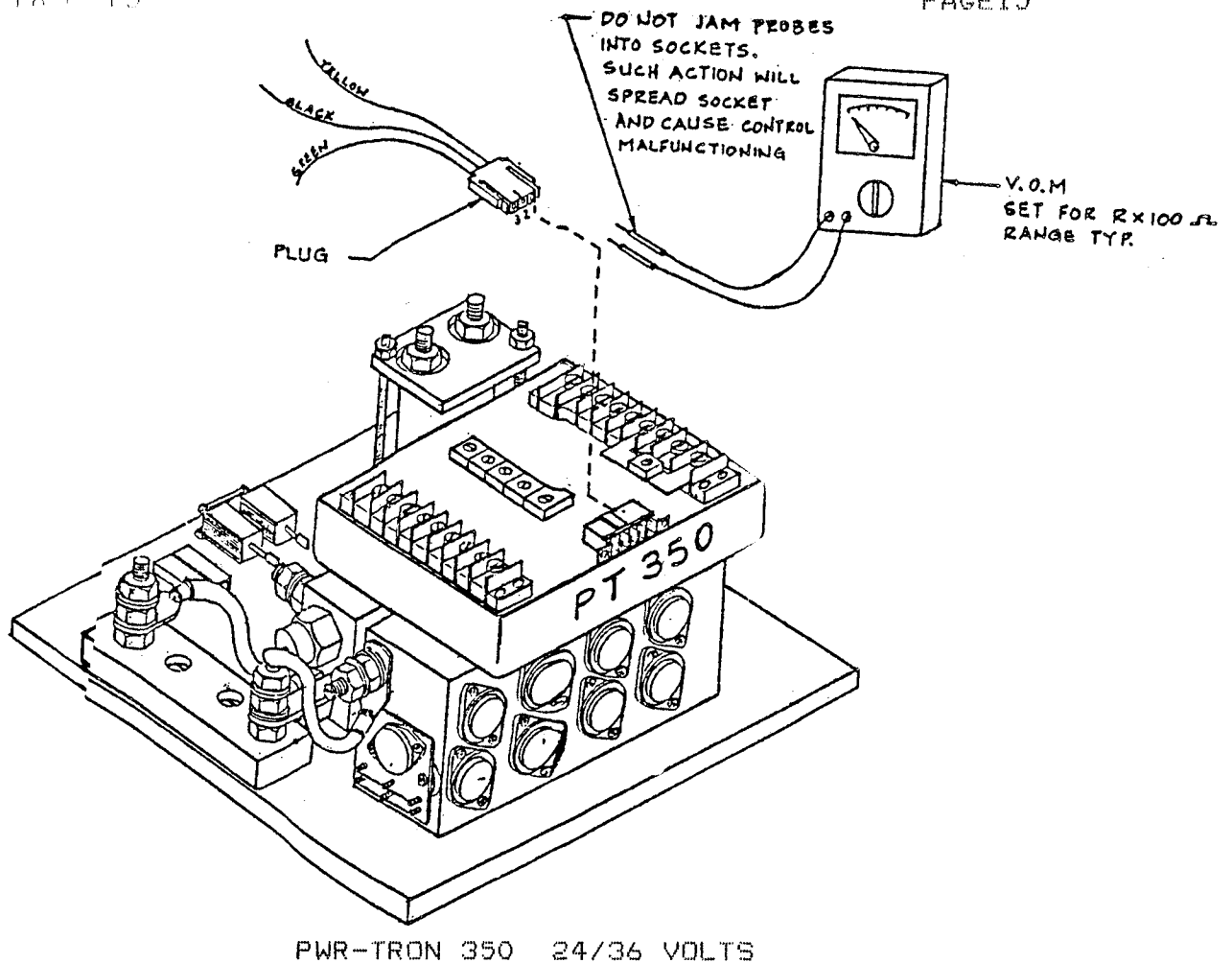
MODEL R POWER HARNESS
75-141-30



PWR-TRON 240 24/36 VOLTS

POTENTIOMETER CHECK & ACCELERATOR LINKAGE ADJUSTMENT

1. Disconnect plug (with yellow, black and green wires) at PWR-TRON logic.
 2. Read 4K-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 - 100 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 floor/pedal return pounding.
4. Reconnect plug to PWR-TRON 240 logic unit.



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-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 floor/pedal return pounding.
4. Reconnect plug to PWR-TRON 350 logic unit.

CONTINUITY AND POWER CHECK

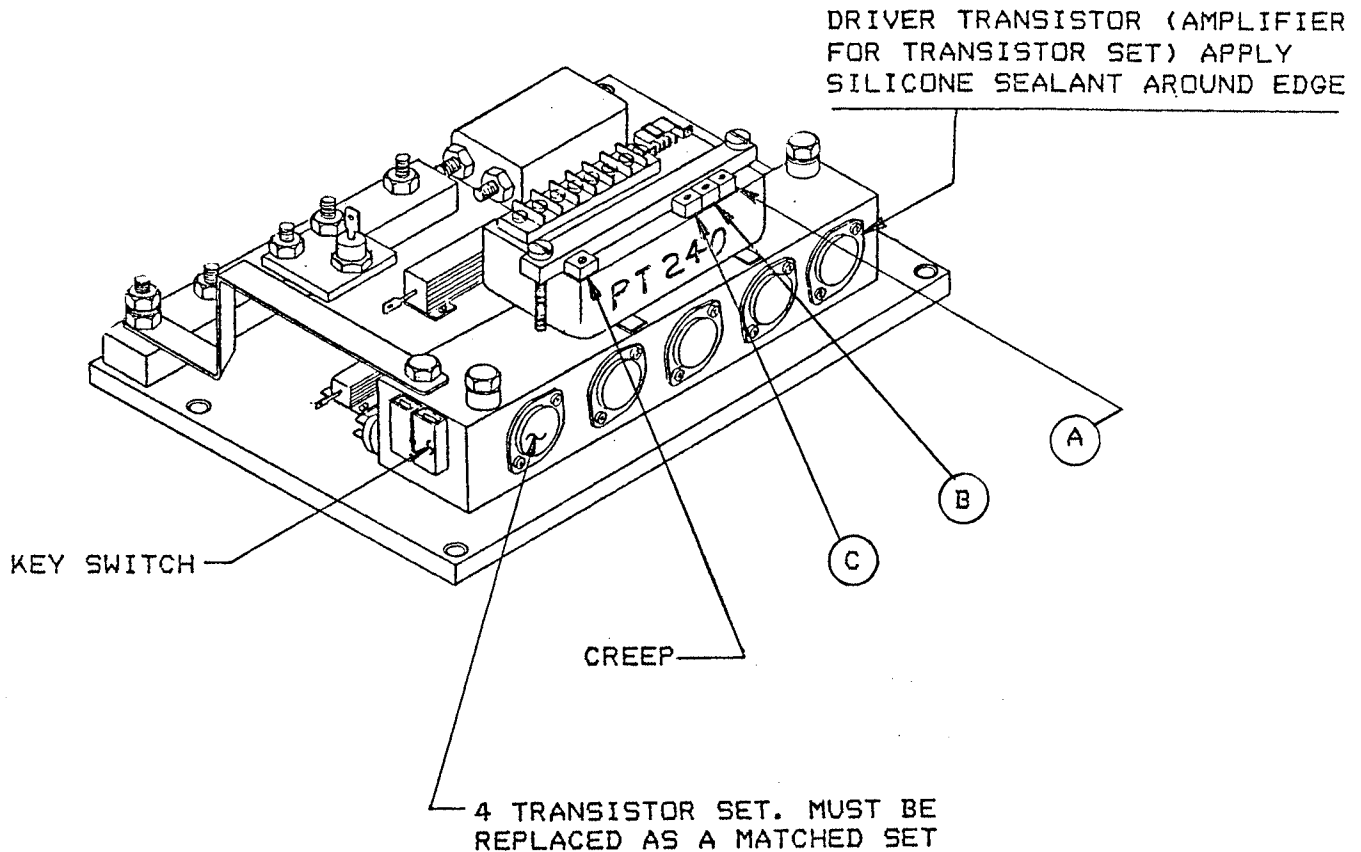
NOTE: VEHICLE DRIVE WHEELS MUST BE JACKED UP OFF FLOOR FOR FOLLOWING TEST.

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, 36V 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. (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 with trimpot adjustment.



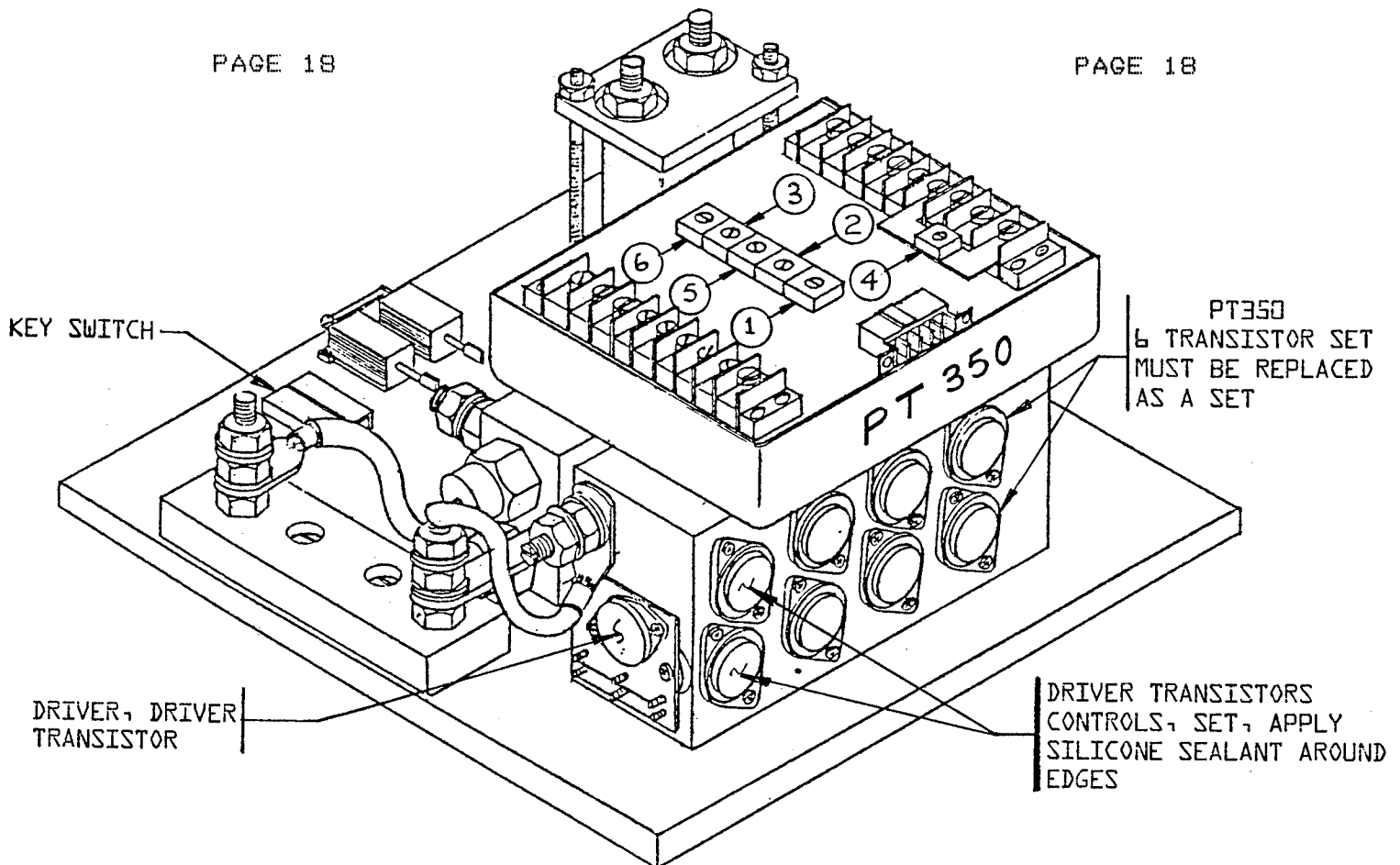
PWR-TRON 240 TRIMPOT ADJUSTMENTS

PERFORM ALL TRIMPOT ADJUSTMENTS IN ORDER SHOWN

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

- A. ACCELERATOR - Turn full direction of arrow
- B. PLUGGING - Turn full opposite direction of arrow to start.
Turn up 1/8 inch direction of arrow.
- C. CURRENT LIMITER - Turn full direction of arrow.

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



PT350 TRIMPOT ADJUSTMENTS

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

1. VOLTS ADJ. - Adjust trimpot so motor whines but does not turn when accelerator switch is first closed.
2. CURRENT LIMITER - Turn full direction of arrow.
3. ACCELERATOR - Turn full direction of arrow.
4. MAX BRAKE - Turn full opposite direction of arrow.
5. BRAKE - Turn full opposite direction of arrow to start.
Turn up 1/8 in direction of arrow.
6. LOW SPEED MAX - Option feature, no adjustment required.

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

TROUBLE SHOOTING
(USE COMBINED CIRCUIT FOR CORRECTIVE ACTION)

<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>CORRECTIVE ACTION</u>
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 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. <u>WARNING: Do not operate. Release accelerator immediately.</u> 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 in-correctly. (yellow, black green)	Reroute yellow, 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 accelerator arm/shaft, re-install cam. correctly
8. No output from control	Batteries <u>not</u> 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)

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

<u>SYMPTOM</u>	<u>PROBABLE CAUSE</u>	<u>CORRECTIVE ACTION</u>
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. Vehicles "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.

MODEL R SUGGESTED SPARE PARTS LIST
PWR-TRON SPEED CONTROLLER SYSTEM

T-D PART NO.	DESCRIPTION	QTY.	NO. OF CARTS		
			REQ. 1-20	21-50	50-UP
62-024-00	PT-240 Speed Controller	1		1	2
62-024-21	Flywheel Diode	1		2	4
62-024-23	Plugging Diode	1		2	4
62-024-31	Driver Transistor	1		2	4
62-024-32	Power Transistor	1(set)		2	4
62-024-40	Capacitor	1		1	2
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
62-024-10	Cover PT-240	1		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
79-840-00	Circuit Breaker	1		1	2
61-838-20	Buss, Curved	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
75-224-10	Jumper, 18 Ga. W/Diode	1		2	4
75-560-51	Cover, Solenoid Panel	1		2	4
62-030-11	Accel Module (R 3-74)	1		1	2
62-030-14	Accel Module (R 3-80)	1		1	2
62-030-31	Rotor, Accel Module (R 3-74)	1		1	2
62-030-44	Rotor, Accel Module (R 3-80)	1		1	2
62-030-58	Cover, Accel Module	1		2	4
62-035-00	PT350 Speed Controller	1		1	2
62-035-21	Flywheel Diode	1		2	4
62-035-21	Plugging Diode	1		2	4
62-035-31	Driver Transistors	1		2	4
62-035-32	Power Transistors	1 (set)		2	4
62-035-24	Capacitor	1		1	2
62-035-10	Cover, PT350	1		2	4
62-035-38	Driver, Driver Transistor	1		2	4