OPERATION
AND
MAINTENANCE MANUAL
WITH
PARTS LIST

MODEL:	SC 1-59, AN 1-70/1-71
SERIAL NO. :	78167 - 81204
YEAR:	03/85 - 11/85
MANUAL NO. :	MA-159-01

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

- IMPORTANT INFORMATION -

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

Definitions of the three terms are as follows:

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

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

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

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

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

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

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

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

5. Slow down when making a turn.

6. Drive slowly straight up and down inclines.

7. Set parking brake before leaving vehicle.

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

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

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INSPECTION, SAFETY, AND INTRODUCTION
ARRIVAL INSPECTION CHECK LIST

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

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

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

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

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

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

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

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

G. Check brake fluid level in master cylinder.

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

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

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

SECTION A
PAGE 2

INSPECTION, SAFETY AND INTRODUCTION
SAFETY

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

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

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

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

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

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

SECTION A
PAGE 3

INSPECTION, SAFETY, AND INTRODUCTION

SAFETY (CONT'D)

CAUTION:

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

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

INTRODUCTION

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

MODEL NUMBER

The following Model Numbers are covered by this manual:

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

SERIAL NUMBER

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

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

SECTION B
PAGE 1

OPERATING INSTRUCTIONS

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

STEERING - WHEEL TYPE

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

STEERING - TILLER TYPE

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

KEY LOCK

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

BRAKE AND ACCELERATOR

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

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

FORWARD-REVERSE SWITCH

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

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

SECTION B
PAGE 2

HORN BUTTON

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

LIGHT SWITCH

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

BATTERY CHARGER

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

SPECIAL ACCESSORIES

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

SECTION D
PAGE 1

MAINTENANCE GUIDE CHECKLIST

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

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

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

* Items related to Safety Recommendation

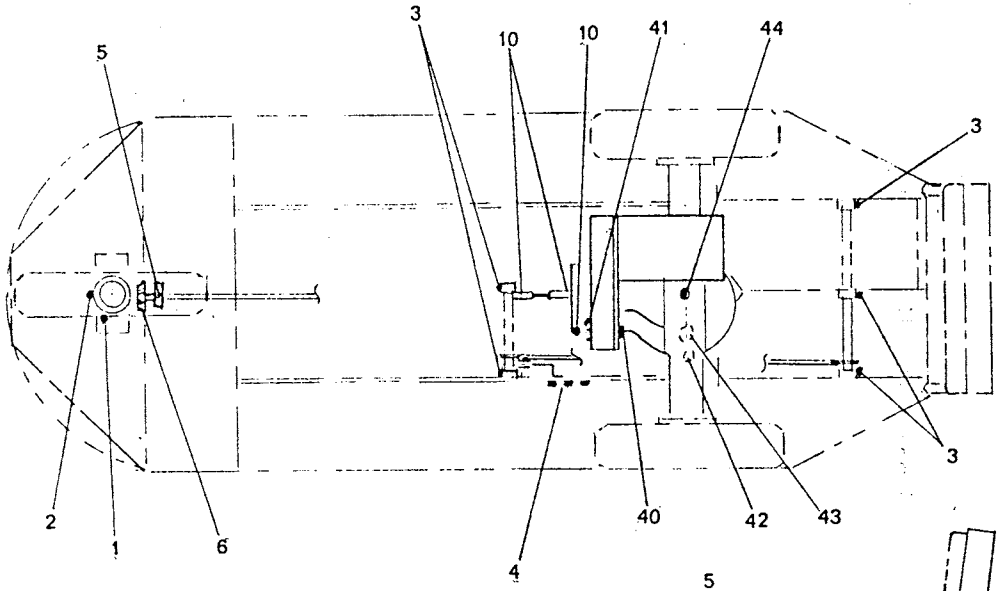
CAUTION: Never bend the brake band anchor bolt. Any bending of the bolt may result in unexpected failure of the bolt and complete loss of Drive Line braking Action.

SECTION D
PAGE 2

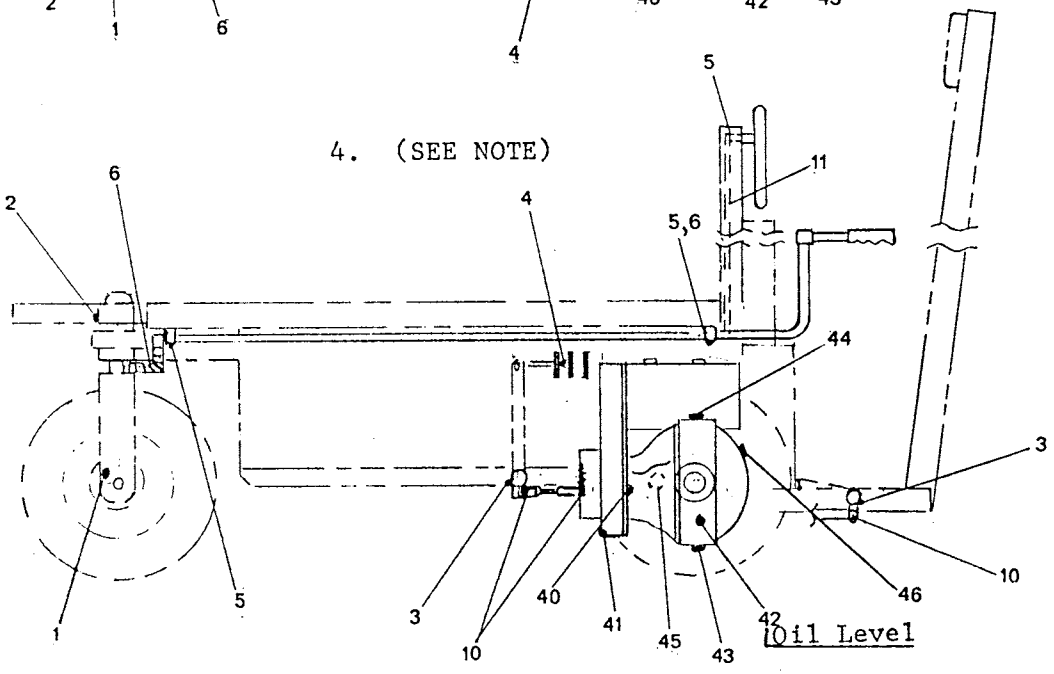
MAINTENANCE GUIDE CHECKLIST

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

* Items related to Safety Recommendations.



4. (SEE NOTE)



Oil Level

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

C. "POWER TRACTION" USE SAE 30 OIL

Proper oil level check at Plug 42.

TO CHANGE OIL USE 2 QTS.

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

NOTE: 45 & 46 Not Used This Configuration.

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

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

SECTION E PAGE 1

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

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

FIGURE 1
SECTION E

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

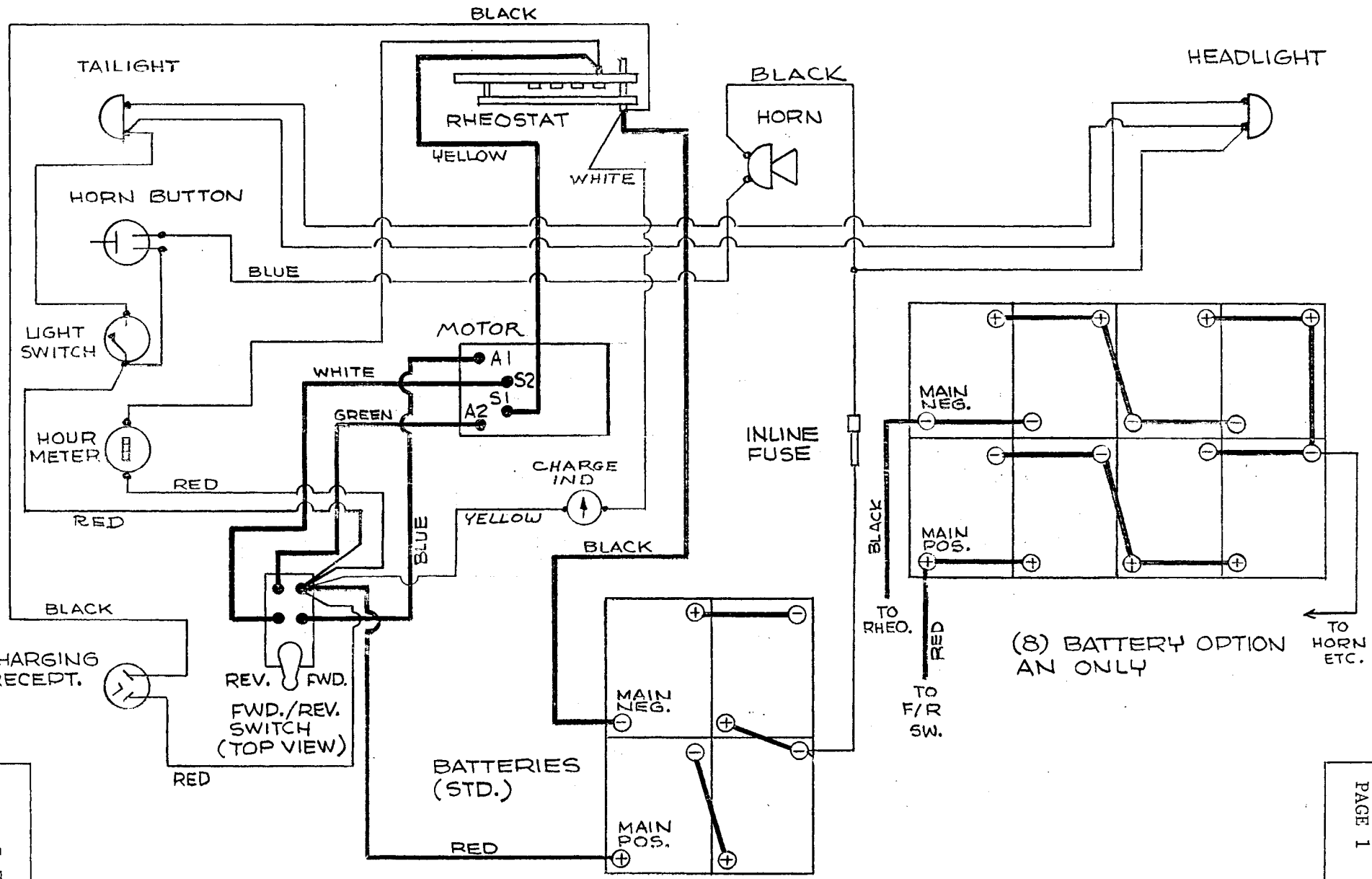
TAYLOR DUNN MFG. CO.
2114 West Ball Rd.
Anaheim, Calif.

TROUBLE SHOOTING PROCEDURES

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

SECTION F
PAGE 2

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



SECTION G
PAGE 1

SECTION G
PAGE 1

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

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

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PARTS ORDERING PROCEDURE

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

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

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

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

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

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

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

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

SECTION I
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SUGGESTED SPARE PARTS LIST

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

SUGGESTED SPARE PARTS LIST (CONT'D.)

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

SECTION J1
PAGE 1

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

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

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

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

TIRE CARE

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

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

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

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

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

SECTION J1
PAGE 2

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

Adjustment of Wheel Bearings

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

Removal of Wheel & Axle Assembly

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

Re-Assembly of Wheel & Axle

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

Adjustment of Fork Spindle Bearings

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

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PAGE 3

Removal of Fork and Spindle

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

Re-Assembly of Fork and Spindle

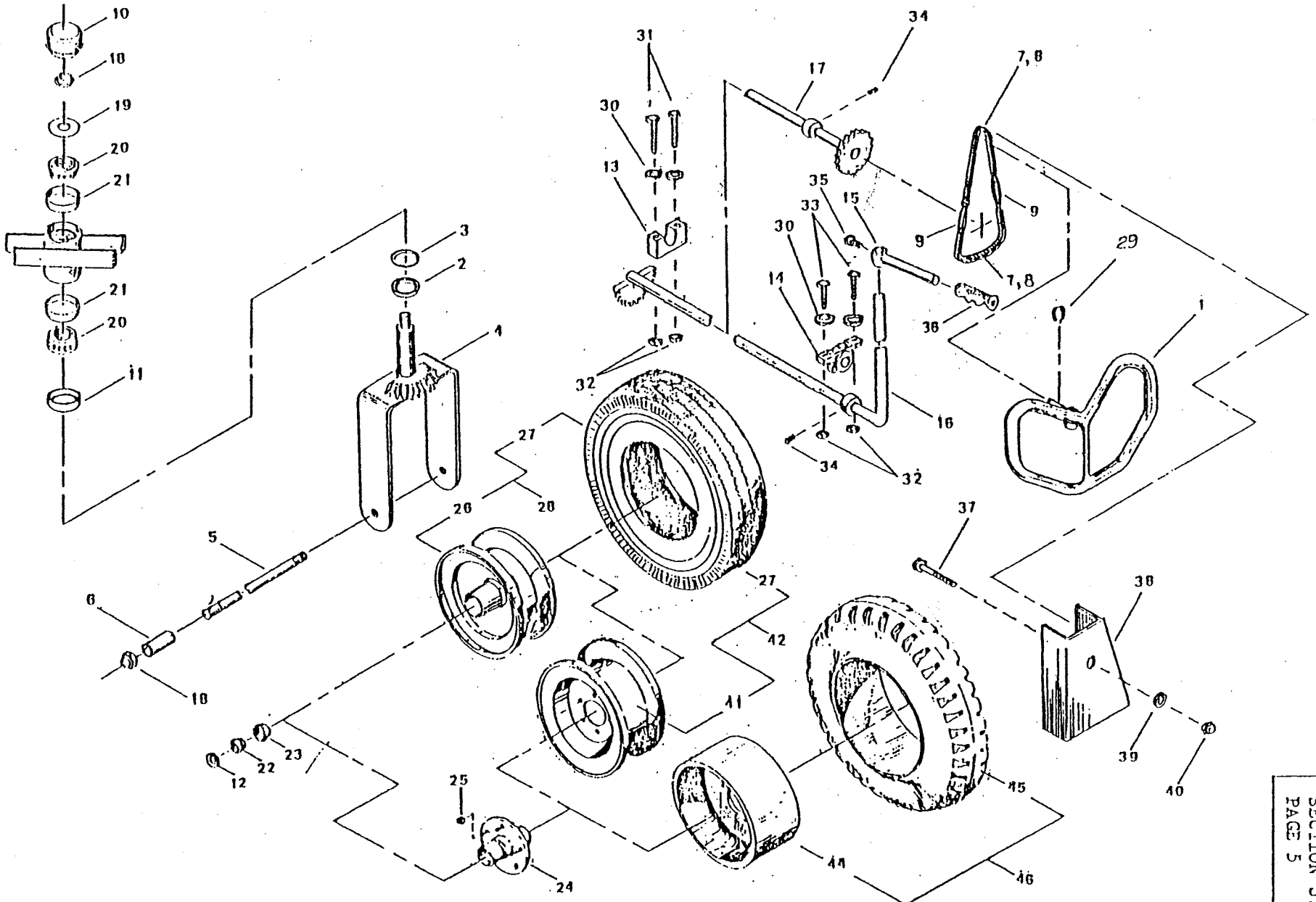
1. Bearing races may be pressed into position by using a 1/2" X 6" bolt. Place a disc or bar of suitable size over bolt, then one bearing race, pass this assembly through housing. Place other bearing race, a suitable disc or bar and then the nut. Tightening the nut and bolt will draw the two bearing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

Adjustment of Steering Chain Tension

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

Remove and Replace Steering Chain and Steering Wheel

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



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PAGE 5

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC. ± DEC. ±
SCALE NONE
DRAWN BY E.D.B.

FIGURE 3
SECTION J1

FRONT FORK, WHEELS &
S ERING, MODELS SC & AN

TAYLOR DUNN MFG. CO
2114 West Ball Rd.
A elm, Calif.

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PAGE 6

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

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

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PAGE 7

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

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

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

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

SECTION J2
PAGE 1

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SECTION J2
PAGE 2

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

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

Adjustment of Brake Band to Compensate for Normal Lining Wear

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

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

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

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

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

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

SECTION J2
PAGE 3

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

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

Remove and Replace Brake Assembly and Drum

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

Adjustment of Drive Chain Tension

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

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

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PAGE 4

Adjustment of Drive Chain Tension (Cont'd.)

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

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

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

Remove Motor

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

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PAGE 5

Install Motor

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

Motor Maintenance-General

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

NOTE: SEE SECTION J2M FOR MOTOR DISASSEMBLY & PARTS

SECTION J2
PAGE 6

Disassemble and Reassemble Primary Drive

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

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

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

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

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

Remove and Install Rear Wheel Bearings

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

2. Remove wheel and tire assembly.

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

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

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

6. Install new gasket over bearing retainer ring.

7. Install axle into axle housing and differential assembly.

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

9. Install wheel and tire assembly.

10. Reconnect battery lead.

Remove and Install Rear Axle and Drive Assembly

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

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

3. Remove motor leads.

4. Remove mechanical control linkage return spring.

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

SECTION J2
Page 7

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

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

7. Remove axle and drive assembly from chassis.

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

Disassembly of Rear Axle and Differential Assembly

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

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

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

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

5. Remove drive gear from differential case.

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

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

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

9. If the drive pinion bearing is to be replaced, drive the pilot end and bearing retainer out at the same time. When installing, drive the bearing in until it bottoms. Install a new retainer with concave side up.

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

11. Remove pinion bearing cone.

12. Do not remove pinion bearing cups from retainer unless they are worn or damaged. The flange and pilot are machined by locating on these cups after they are installed in the bores. If new cups are to be installed, make sure they are seated in the retainer by trying to insert a .0015" feeler gauge between cup and bottom of bore.

Reassembly of Rear Axle and Differential Assembly

1. Differential Case: Place a side gear and thrust washer in the differential case bore. LUBRICATE ALL PARTS LIBERALLY WITH AXLE LUBRICANT DURING ASSEMBLY. With a soft faced hammer, drive pinion shaft into case only far enough to retain a pinion thrust washer and pinion gear. Place the second pinion and thrust washer in position. Drive the pinion shaft into place. Be careful to line up pinion shaft retainer holes. Place second side gear and thrust washer in position and install differential case cover. Install retainer. A pinion or axle shaft spline can be inserted in side gear spline to check for free rotation of differential gears.

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PAGE 8

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

1. (Cont'd) Insert two 7/16" x 2" bolts through differential flange and thread them three or four turns into the drive gear as a guide in aligning the drive bolt holes. Press or tap the drive gear into position. Install and tighten the drive gear bolts evenly and alternately across the gear to 60-65 lb. ft. torque.

2. If the differential bearings have been removed, use a suitable press to install them.

3. Install pinion rear bearing cone on the pinion shaft. Install spacer with shims on the shaft. Place the bearing retainer on the pinion shaft, and install the front bearing cone. Lubricate both bearings with differential oil.

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

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

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

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

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PAGE 9

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

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

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

9. Install nut locks.

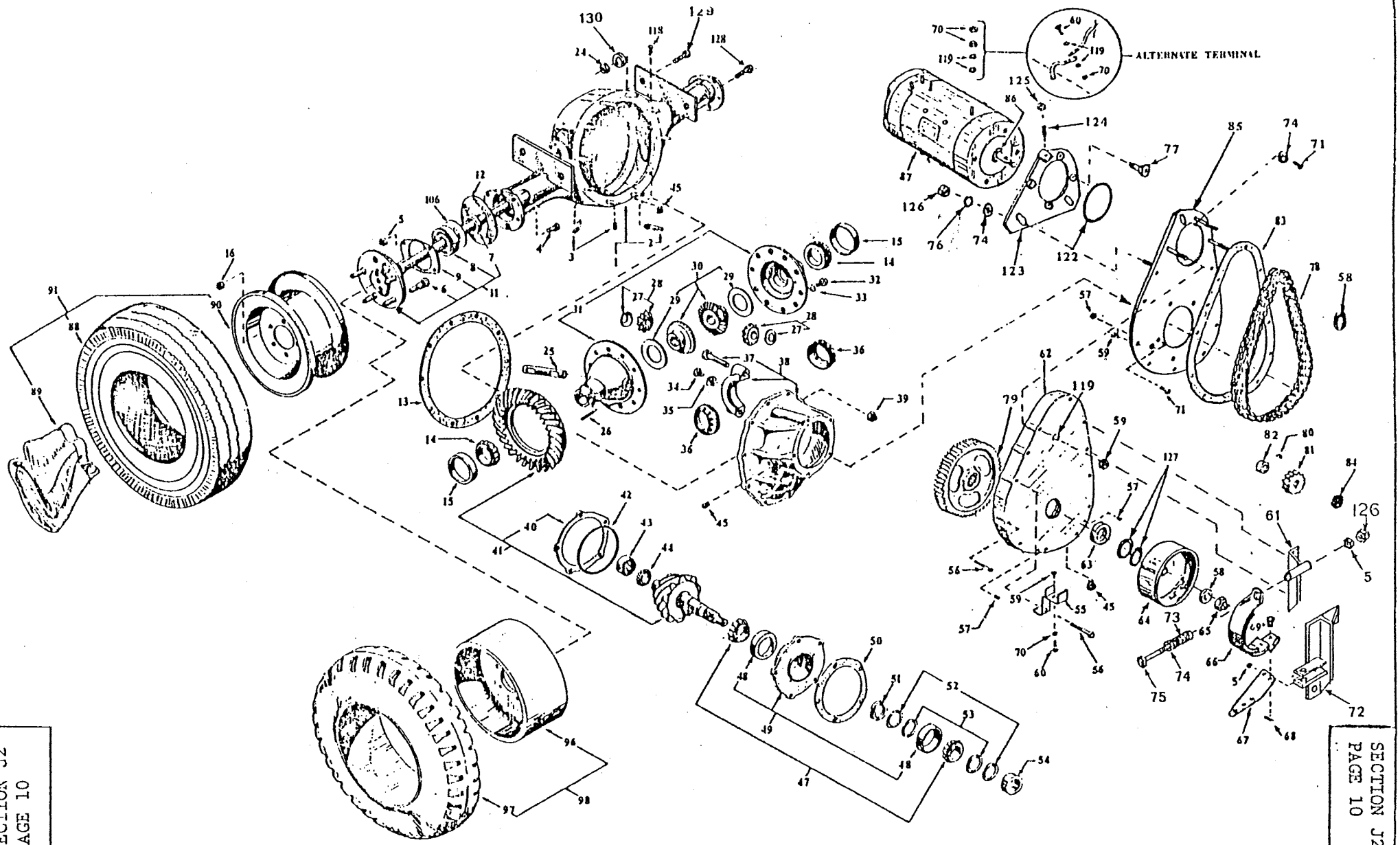
10. Install differential carrier assembly in axle housing using new gasket and gasket sealer.

11. Install axles, bearing retainers, and gaskets.

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

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

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



SECTION J2
PAGE 10

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC.± DEC.±	
SCALE NONE	
DRAWN BY RCA	
DATE 10-22-79	

FIGURE 5
SECTION J2

REAR AXLE, MOTOR & BRAKES
MODELS A, AN, SC, 1973 & UP

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

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PAGE 10

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PAGE 11

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
5-1	41-290-00	Housing, Drive with studs for 1.281 ID x 2.834 OD Drive Axle Ball Bearing 80-505-00. Used through Serial No. 62499. Do Not use after May 1980.	1
5-1	41-290-13	Housing, Drive with studs for 1.530 ID x 3.150 OD Drive Axle Ball Bearing 80-503-00. Use Serial No. 62500 and Up beginning June 1980 and Up.	1
5-2	96-330-00	Bolt-Differential Carrier to Housing	10
5-3	41-997-00	Drain and Level Plug (1/8" Pipe)	2
5-4	88-100-11	Screw, Hex Head Cap 3/8 x 1 N.C. Use with 41-290-00 Drive Housing	0 or 8
5-4	88-120-11	Screw, Hex Head Cap 7/16 x 1 N.C. Use with 41-290-13 Drive Housing	0 or 8
5-5	88-109-81	Nut, Lock 3/8 N.C. Use with 41-290-00 Drive Housing	0 or 10
5-6	96-331-00	Bolt 1/2" N.F. (Special) Rear Hub	10
5-7	32-509-00	Ring, Retainer for 80-505-00 Drive Axle Ball Bearing	2
5-7	32-515-00	Ring Retainer for 80-503-00 Drive Axle Ball Bearing	2
5-8	80-505-00	Bearing, Ball, Drive Axle 1.281 I.D. x 2.834 OD for 41-290-00 Drive Housing	2
5-8	80-503-00	Bearing, Ball, Drive Axle 1.530 ID x 3.150 OD for 41-290-13 Drive Housing	2
5-9	32-511-00	Plate, Retainer,for use with Drive Axle Ball Bearing	2
5-9	32-514-00	Plate, Retainer, for use with Drive Axle Ball Bearing	2
5-11	41-163-11	Assembly, Axle Shaft 13-1/8 Long, Axle Flange Face to Splined End, 28 Teeth on Spline, with 80-505-00 Bearing, 32-511-00 Retainer Plate, 32-509-00 Retainer Ring, 45-044-00 Gasket and Lug Nuts. Use with 41-290-00 Drive Housing	0 or 1
5-11	41-162-11	Assembly, Axle Shaft 10-11/16 Long, Axle Flange Fact to Splined End, 28 teeth on Spline, with 80-505-00 Bearing, 32-511-00 Retainer Plate, 32-509-00 Retainer Ring, 45-044-00 Gasket and Lug Nuts. Use with 41-290-00 Drive Housing	0 or 1
5-11	41-163-21	Assembly Axle Shaft 13-1/4 Long, Axle Flange Face to Splined End, 28 Teeth on Spline, with 80-503-00 Bearing, 32-515-00 Retainer Plate, 32-515-00 Retainer Ring, 45-045-00 Gasket, 45-301-00 Oil Seal and Lug Nuts. Use with 41-290-13 Drive Housing	0 or 1
5-11	41-162-21	Assembly, Axle Shaft 10-13/16 Long, Axle Flange Face to Splined End, 28 Teeth on Spline with 80-503-00 Bearing, 32-514-00 Retainer Plate, 32-515-00 Retainer Ring, 45-045-00 Gasket, 45-301-00 Oil Seal and Lug Nuts. Use with 41-290-13 Drive Housing	0 or 1

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PAGE 12

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
(NOT SHOWN)	45-301-00	Seal, Oil. Used With 41-163-21 and 41-162-21 Axles ONLY.	0 or 1
5-12	32-512-00	Retainer Spacer (Used Only Without Hydraulic Brakes)	2
5-13	45-042-00	Gasket (Housing to Differential Carrier)	1
5-14	80-511-00	Tapered Roller Bearing Carrier (Small 1.628 ID)	2
5-14	80-512-00	Tapered Roller Bearing Carrier (Large 1.784 ID)	2
5-15	80-127-00	Tapered Bearing Race- Carrier for 80-511-00 Bearing	2
5-15	80-128-00	Tapered Bearing Race - Carrier for 80-512-00 Bearing	2
5-16	97-236-00	Nut, Lub, Tapered, 1/2"	10
5-24	88-149-81	Lock Nut 1/2" N.C.((Hex)	3 or 4
5-25	41-700-00	Differential Pinion Shaft	1
5-26	41-701-00	Pin	1
5-27	41-702-00	Thrust Washer - Differential Pinion Shaft	2
5-28	41-703-00	Differential Shaft Pinion Kit (Two Differential Gears & Two Thrust Washers)	1
5-29	41-704-00	Thrust Washer - Differential Side Gear	2
5-30	41-705-00	Differential Side Gear Kit (Two Differential Gears and Two Thrust Washers)	1
5-31	41-712-00	Differential Gear Case Assembly with Differential Gears less Carrier Bearings & Ring Gear for Small Carrier Bearings 1.628" ID	1
5-31	41-713-00	Differential Gear Case Assembly with Differential Gears less Carrier Bearings & Ring Gear for Large Carrier Bearings 1.784" ID	1
5-32	96-243-00	Hex Head Cap Screw 7/16" x 7/8" N.F., Heat Treated	10
5-33	97-163-00	Washer 7/16" ID x 3/4" OD 1/32"	10
5-34		Hex Head Cap Screw 5/16" x 3/8" NC	2
5-35	41-706-00	Differential Bearing Adjustment Nut Lock with 30° Angle Tab	2
5-36	41-707-00	Nut-Differ ntial Bearing Adjustment, 2-15/16" OD, Oblong Locking Holes, Small Carrier Bearing 1.628" ID	2
5-36	41-708-00	Nut-Differential Bearing Adjustment, 3-1/8" OD, Oblong Locking Holes, Large Carrier Bearing 1.784" ID	2
5-38	41-709-00	Carrier, Differential, Less Differential Gear Case Assembly, Bearings, Ring & Pinion Gears for Small Carrier Bearings 1.628" ID	1
5-38	41-710-00	Carrier, Differential, Less Differential Gear Case Assembly, Bearings, Ring & Pinion Gears for Large Carrier Bearings 1.784" ID	1
5-39	88-119-80	Nut - 3/8" N.F. (Hex)	14

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PAGE 13

FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
5-40	41-711-00	Shim - Drive Pinion Bearing, .005" Thick	1 to 3
5-41	31-235-00	Ring and Pinion Gear Set 2.75 Ratio	1
5-41	31-236-00	Ring and Pinion Gear Set 3.10 Ratio	1
5-41	31-237-00	Ring and Pinion Gear Set 3.25 Ratio	1
5-41	31-238-00	Ring and Pinion Gear Set 3.50 Ratio	1
5-41	31-239-00	Ring and Pinion Gear Set .43 Ratio	1
5-42	80-702-00	"O" Ring - Drive Pinion Bearing Retainer	1
5-43	80-555-00	Ball Bearing, Pinion Pilot	1
5-44	41-714-00	Retainer, Drive Pinion Pilot Bearing	1
5-45	41-998-00	Plug - (Level) 1/2" with Square Top	1 or 3
5-47	80-554-00	Tapered Roller Bearing - Front & Rear Pinion Shaft	2
5-48	80-125-00	Tapered Bearing Race - Front & Rear Pinion Shaft	2
5-49	44-340-90	Flange, Ring Gear Pinion Bearing, with Bearing Races, Less Bearings	1
5-50	45-021-00	Gasket, Ring Gear Bearing Flange to Chain Case Backing Plate	1
5-51	16-415-00	Spacer Pinion Shaft (.440" Thick)	1
5-52	16-410-00	Spacer Pinion Shaft (.020" Thick)	2 to 6
5-53	16-411-00	Spacer Pinion Shaft (.005" Thick)	2 to 6
5-54	16-414-00	Spacer Pinion Shaft (.500" Thick)	1
5-54	16-417-00	Spacer Pinion Shaft (.340" Thick)	1
5-55	41-371-00	Brake Alignment Bracket	1
5-56	88-080-20	Hex Head Cap Screw 5/16" x 3" N.C.	9
5-57	41-989-00	Plug (Filler Level and Drain) 1/4" N.P.T.	2
5-58	88-228-61	Washer 3/4" S.A.E.	2
5-59	88-089-81	Lock Nut 5/16" N.C. (Hex)	14
5-60	88-080-11	Hex Head Cap Screw 5/16" x 1 N.C.	2
5-61	41-375-00	Brake Anchor Bracket	1
5-62	43-201-11	Cover, Chain Case with Oil Seal	1
5-63	45-331-00	Oil Seal - Chain Case Cover to Pinion Shaft	1
5-64	41-532-00	Brake Drum (Splined)	1
5-65	97-250-00	Nut - Pinion 3/4" - 20 Extra Fine Thread	1
5-66	41-660-00	Brake Band (1/2 Band) for Drive Shaft Brake	1
5-67	50-656-00	Brake Lever Arm	1
5-68	88-517-11	Cotter Pin 3/32" x 1"	1
5-69	96-771-00	Clevis Pin 3/8" x 3/4" Face to Hole	1
5-70	88-089-80	Nut - 5/16" N.C. (Hex)	10
5-71	88-100-13	Hex Head Cap Screw 3/8" x 1-1/4" N.C.	7
5-72	41-377-00	Brake Mounting Bracket, Half Band Brake	1
5-73	85-060-00	Compression Spring 5/8" OD x 2-1/2" Long	1
5-74	88-108-60	Washer 3/8" Flat Cut	4
5-75	96-245-00	Hex Head Cap Screw 3/8 x 5/8" NC Grade 5 (3" Thread Length)	1

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FIG. I.D. NO.	T-D PART NO.	DESCRIPTION	QTY. REQ.
5-76	88-108-62	Lockwasher 3/8"	7
5-77	88-103-09	Flat Head Socket Cap Screw 3/8" x 3/4" N.C.	
5-78	30-506-00	Chain, 22 Pitches, 27" Long (For 42 Tooth Sprocket)	1
5-78	30-507-00	Chain, 82 Pitches, 30-3/4" Long (For 59 Tooth Sprocket)	1
5-78	30-508-00	Chain, 96 Pitches, 36" Long (For 81 Tooth Sprocket)	1
5-79	30-091-00	Sprocket - 42 Tooth w/Splined Hub	1
5-79	30-092-00	Sprocket - 59 Tooth w/Splined Hub	1
5-79	30-093-00	Sprocket - 81 Tooth w/Splined Hub	1
5-80	97-100-00	Woodruff Key - 3/16"	1
5-81	30-080-00	Sprocket - 15 Tooth x 3/4" Bore	1
5-82	17-110-10	Shaft Collar - 3/4" w/Keyway	1
5-83	45-002-00	Gasket - Chain Case Cover, 17-3/4" Long	1
5-84	88-239-82	Jam Nut - 3/4" N.F. (Hex)	1
5-85	44-352-53	Gear Case Back Plate (Angle Motor Mount) Adjustable	1
5-86	(SEE SECTION J2M MOTOR PARTS)		
5-87	(SEE SECTION J2M MOTOR PARTS)		
	NOTE: SEE SECTION J1 FOR TIRES & TUBES		
5-90	12-012-00	Wheel for 4.80 x 8 and 5.70 x 8 Tubeless Tire, Demountable	2
5-90	12-045-00	Wheel for 16 x 6.50 x 8 Tubeless Tire, Demountable	2
5-90	13-734-00	Tire and Demountable Wheel 4.70 x 8, Super Rib	2
5-91	13-739-00	Tire, Tube and Demountable Wheel, 4.80 x 8, 6 Ply Steelguard Tire	2
5-91	13-744-00	Tire, Tube and Demountable Wheel, 5.70 x 8, Extra Grip Tire	2
5-91	13-748-00	Tire and Demountable Wheel 16 x 6.50 x 8, Tubeless Terra Tire	2
5-96	12-050-00	Wheel, Cast Iron, for 16 x 4 x 12-1/8", Solid Cushion, Demontable	2
5-96	12-054-00	Wheel, Cast Iron, for 16-1/4 x 4 x 11-1/4, Solid Cushion, Demountable	2
5-97	10-250-00	Tire, Solid Cushion, Smooth, 16 x 4 x 12-1/8	2
5-97	10-261-00	Tire, Solid Extra Cushion, 16-1/4 x 4 x 11-1/4	2
5-106	45-044-00	Gasket, Shaft Bearing. Use with 41-290-00 Drive Housing	0 or 2
5-106	45-045-00	Gasket, Shaft Bearing, Use with 41-290-13 Drive Housing	0 or 2
5-118	88-527-11	Cotter Pin 1/8" x 1" (Axle Vent)	1
5-119	88-088-61	Washer 5/16" SAE	11
5-122	80-703-00	"O" Ring Motor Mount Plate Seal	1

SECTION J2M
PAGE 1

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

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

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

MOTOR MAINTENANCE - BRUSH INSPECTION AND REPLACEMENT

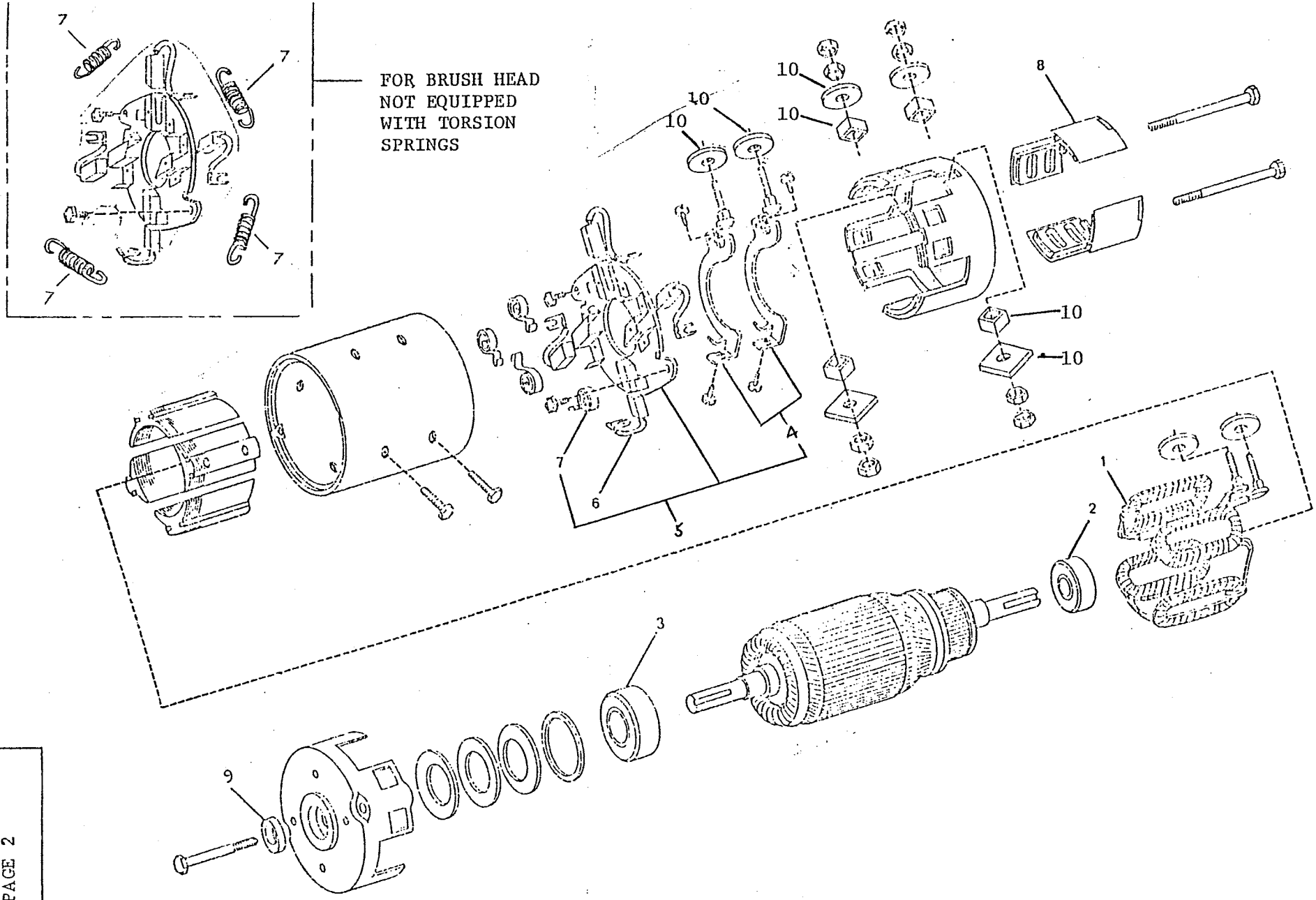
1. Remove cover, exposing brush assemblies. Lift brush from holder for inspection.
2. If brushes are worn, remove, install new brushes. Use fine sandpaper to "seat in" new brushes to commutator. To determine when to replace worn brushes, proceed as follows:
   a. For motors equipped with brushes having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

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

MOTOR DISASSEMBLY AND REASSEMBLY

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

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



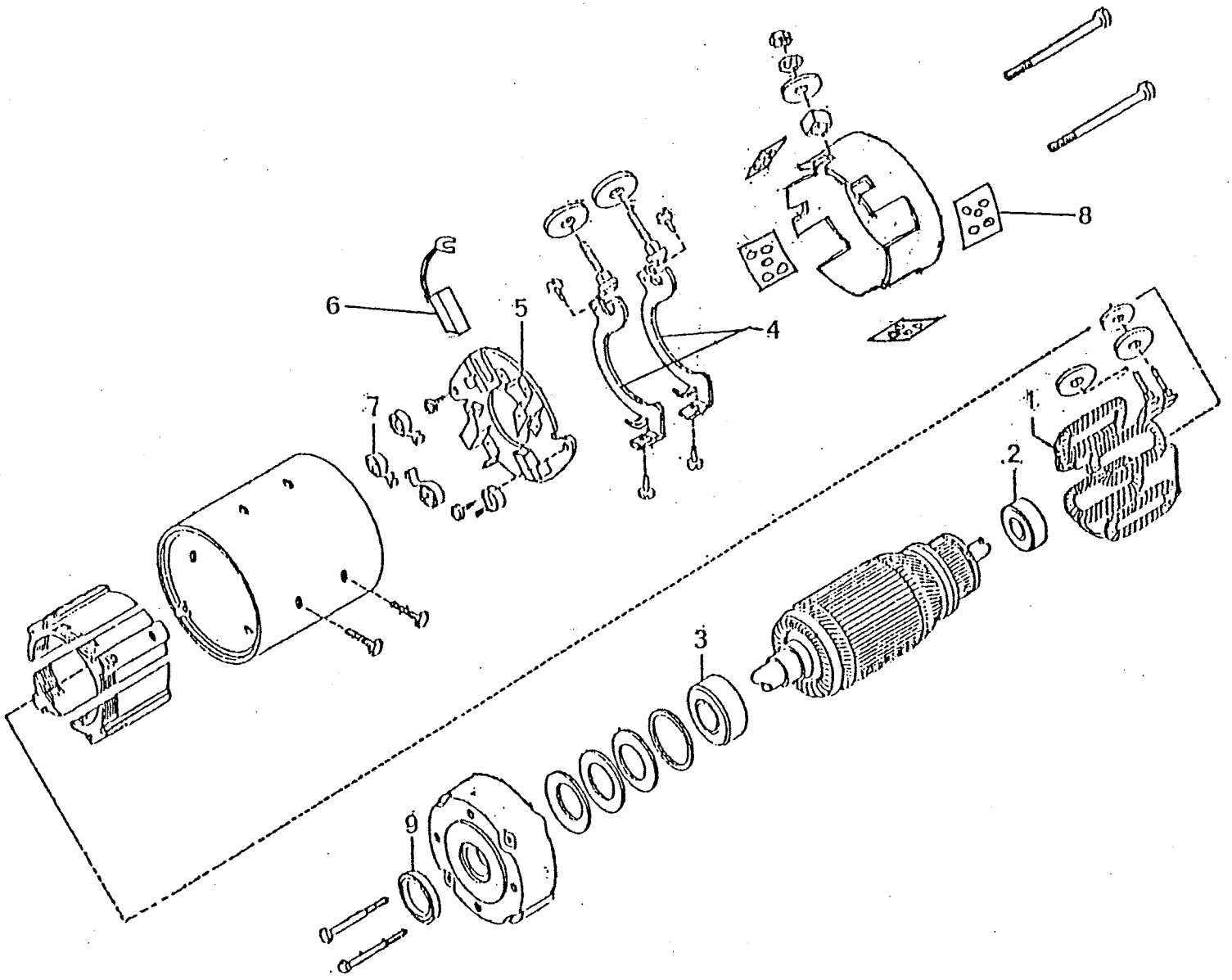
SECTION J2M
PAGE 2

DRAWN BY B.B.
DATE 4-1-80

FIGURE 5M
SECTION J2M

MOTOR PARTS - G.E. MOTORS

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



SECTION J2M
PAGE 2A

DO NOT SCALE

TOL: FRAC± DEC± ANG±

4-29-82

Taylor-Dunn
2114 WEST BALL ROAD
ANAHEIM, CALIFORNIA
92804

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

SCALE: NONE
DWN BY: BB
CHKD BY:

FIGURE 5M
SECTION J2M

SECTION J2M
Page 3

ELECTRIC MOTORS
REFER TO FIGURE 5M

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

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

Brush Measurement Procedure For 726 Motor

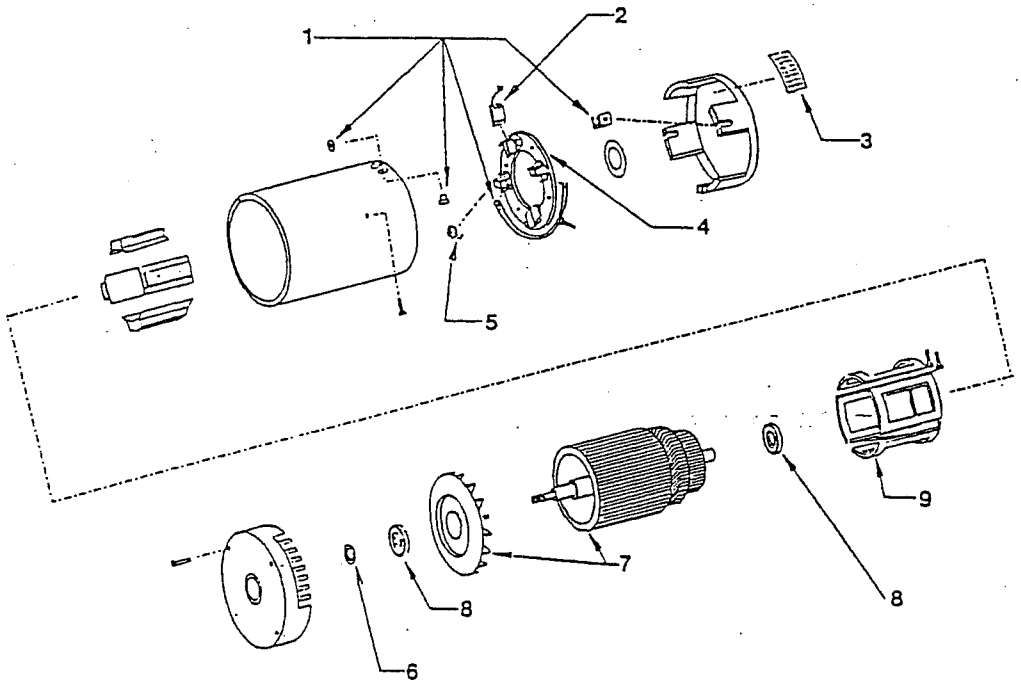
With new brushes, A 1/16" drill rod can be inserted approximately .76" into brush measurement holes. Brushes should be replaced when rod can be inserted 1.56" into hole. This leaves approx. 1/8" allowable wear remaining.

SECTION J2M
PAGE 5

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

SECTION J2M
Page 6

D.C. MOTOR



D.C. MOTOR

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

SECTION J4
PAGE 1

MAINTENANCE PROCEDURES

REFER TO FIGURE 7

MECHANICAL CONTROL LINKAGE

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

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

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

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

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

Section J2 - Adjustment of Brake Rod and J-Hook

Section J6 - Adjustment of Speed Control J-Hook Pressure

SECTION J4
PAGE 2

SERVICE AND ADJUSTMENTS

REFER TO FIGURE 7 - MECHANICAL CONTROL LINKAGE

Replace Treadle to Control Arm Connecting Bar

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

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

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

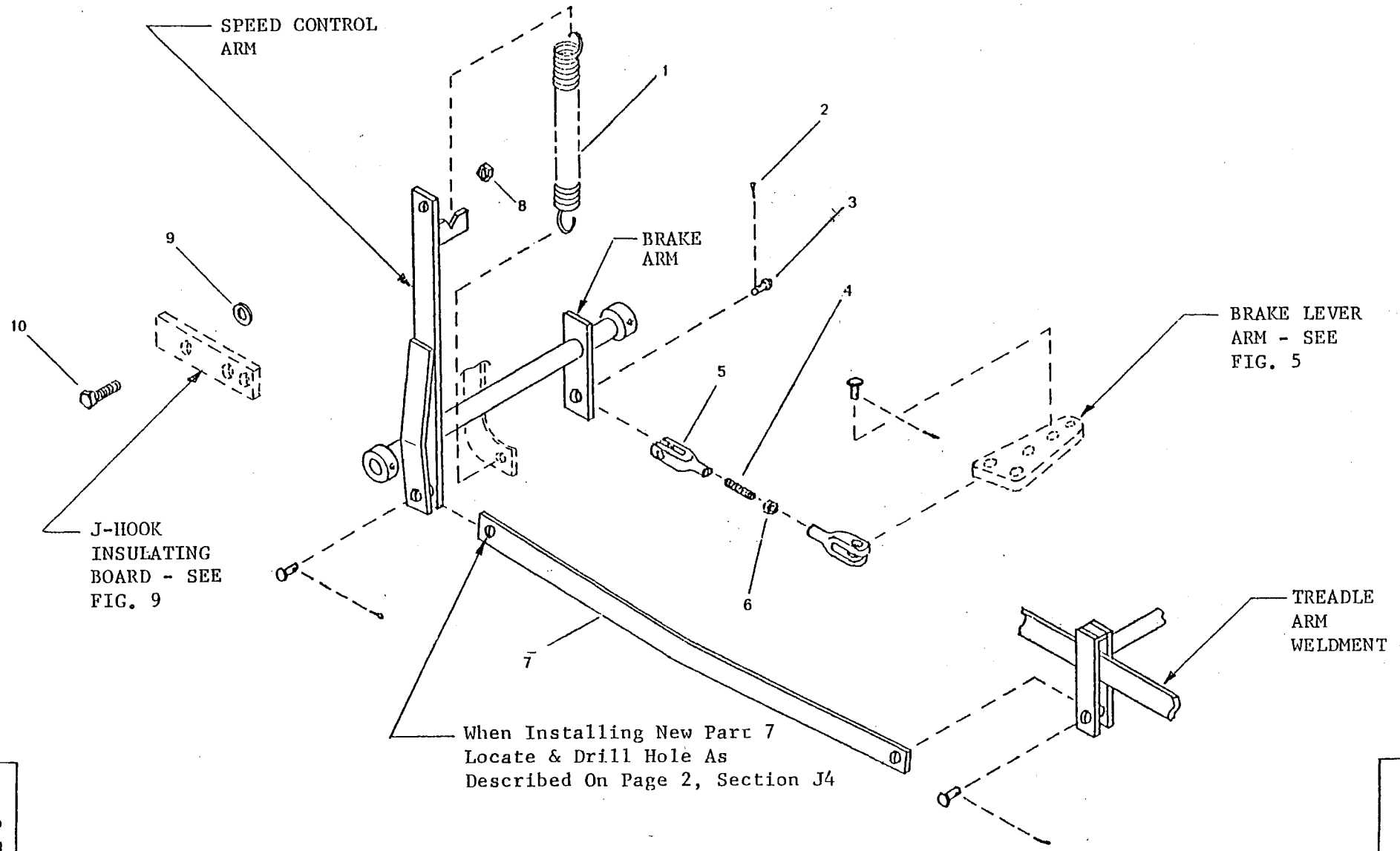
3. Position and hold the speed control arm so that the speed control J-Hook is in full contact with the high speed power bar.

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

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

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

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



SECTION J4
PAGE 3

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC.± DEC.±	FIGURE 7	MECHANICAL CONTROL LINKAGE	TAYLOR DUNN MFG. CO.
SCALE NONE	SECTION J4		2114 West Ball Rd.
DRAWN BY E.D.B.			Anaheim, Calif.
DATE 1-2-75			

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PAGE 4

MECHANICAL CONTROL LINKAGE
REFER TO FIGURE NO. 7

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

MAINTENANCE PROCEDURES
REFER TO FIGURE 8
FORWARD-REVERSE SWITCH

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

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

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

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

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

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

SECTION J5
PAGE 2

SERVICE AND ADJUSTMENT
FORWARD/REVERSE SWITCH
REFER TO FIGURE 8

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

REMOVAL, DIS-ASSEMBLY AND RE-ASSEMBLY OF SWITCH

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

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

3. Remove cover.

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

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

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

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

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

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

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

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

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

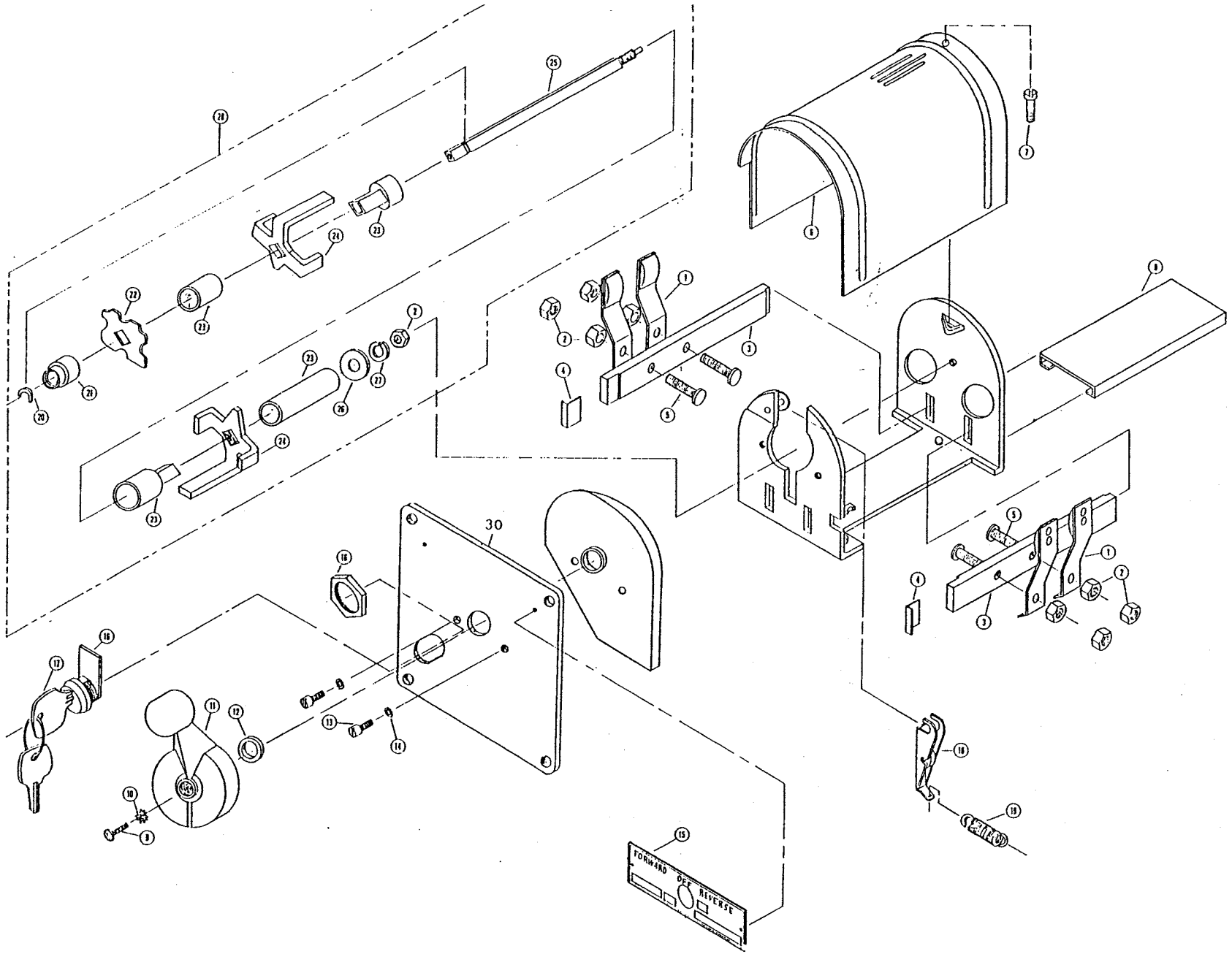
13. Install rotor assembly into frame moving cam follower enough to allow cam to set in position.
    NOTE: It will ease the rotor installation if you will place it in neutral position. I.E., the contacts will be free from finger contacts and the low side of cam will engage cam follower.

SECTION J5
PAGE 3

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

REPLACEMENT OF CONTACT FINGERS ONLY

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



NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

TOL. FRAC.± DEC.±
SCALE NONE
DRAWN BY REA
DATE 9-13-69

FIGURE 8
SECTION J5

FORWARD - REVERSE SW.
PART NO. 71-040-00

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

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PAGE 5

FORWARD AND REVERSE SWITCH

REFER TO FIGURE NO. 8

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

SWITCH EXTENSION HANDLE PARTS

8-9	71-040-80	Extension Rod - 8-32 x 6½" Long	1
8-9	71-040-78	Extension Tube - 11/16 OD x 5½" Long	1
8-11	71-040-77	Switch Position Indicator	1
	71-040-79	Bracket - Extension Support	1
	88-029-80	Nut 8-32 (Hex)	1

SECTION J6
PAGE 1

MAINTENANCE PROCEDURES

REFER TO FIGURE 9

RHEOSTAT SPEED CONTROL

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

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

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

Refer to Lubrication Diagram Section E for proper lubrication.

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

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

CAUTION:

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

SECTION J6
PAGE 2

SERVICE AND ADJUSTMENT

RHEOSTAT SPEED CONTROL

REFER TO FIGURE 9

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

Adjustment of J-Hook Pressure Bar

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

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

Replacement of J-Hook

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

Replacement of Rheostat Switch

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

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PAGE 3

Replacement of Power Bars

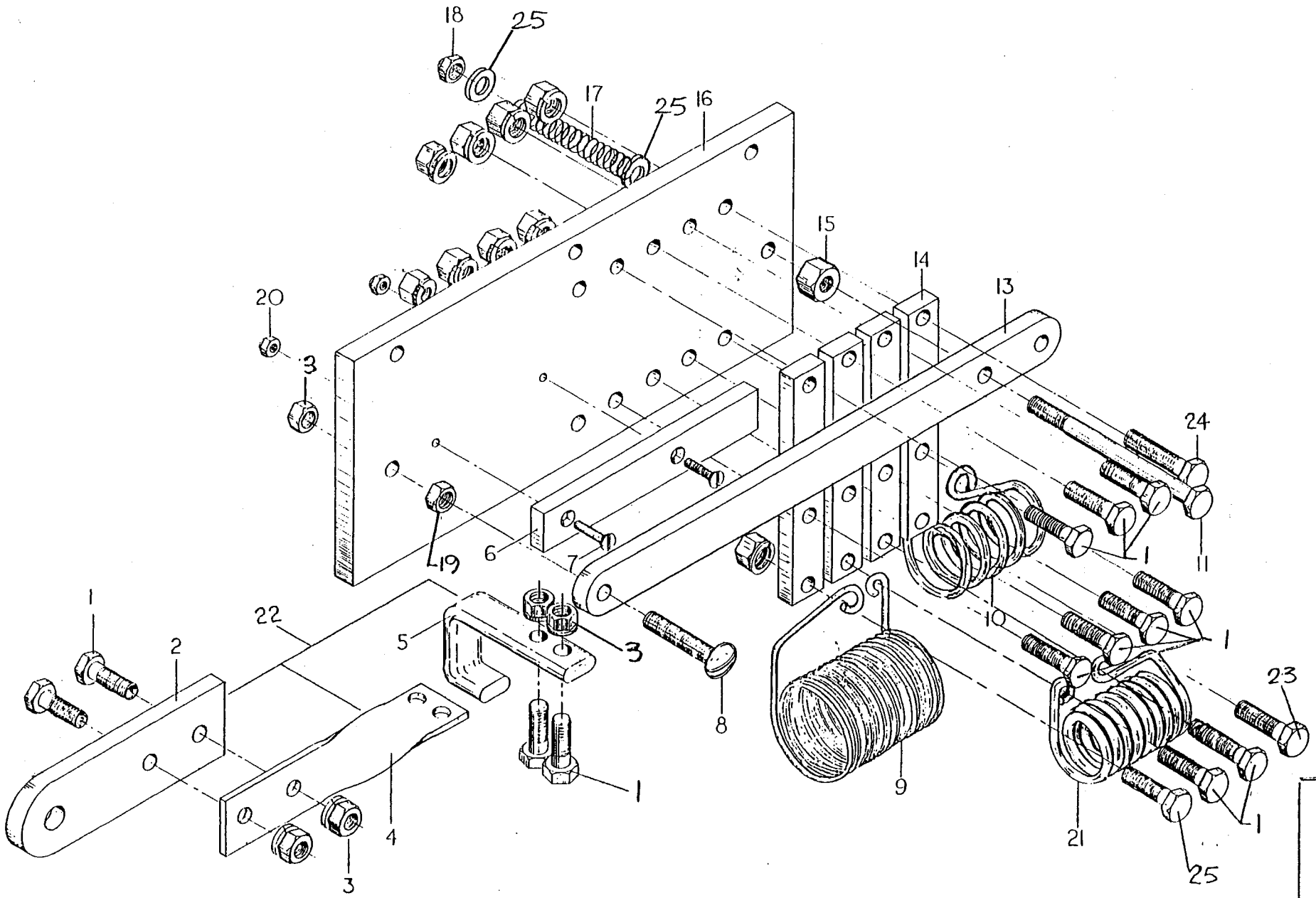
1. With power disconnected, remove terminal bolt and holding bolts.
2. Slide bar out of rheostat.
3. Clean switch thoroughly and install new bar.

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

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

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

4. Follow adjustment procedures previously outlined.



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PAGE 4-

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

TOL. FRAC.± DEC.±	FIGURE 9	SPEED CONTROL RHEOSTAT	TAYLOR DUNN MFG. C
SCALE	SECTION J6	FOUR SPEED	2114 West Ball Rd.
DRAWN BY BB			Anaheim, Calif.
DATE 1-11-75			

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PAGE 5

SPEED CONTROL RHEOSTAT - FOUR SPEED
REFER TO FIGURE 9

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

SECTION J7
PAGE 1

MAINTENANCE PROCEDURES

GENERAL ELECTRICAL SYSTEMS

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

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

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

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

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

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

SECTION J7
PAGE 2

GENERAL ELECTRICAL PARTS

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

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PAGE 4

BATTERIES AND CHARGER

T-D PART NO.	DESCRIPTION	QTY. REQ.
75-077-10	Harness, Wiring, Battery Box Charging with SB-175 Connectors For Lift-Out Battery Box	1
75-077-12	Adaptor, Charging, with SB-175 Connector for use with Two Lift-Out Boxes	1
77-031-00	Battery, 6 Volt, 190 A.H.	4
77-042-00	Battery, 6 Volt, 217 A.H.	4
77-047-00	Battery, 6 Volt 244 A.H.	4
77-048-00	Battery, 6 Volt, 250 A.H.	4
77-200-00	Hydrometer	1
77-201-00	Battery Filler	1
77-975-00	Box, Battery, Lift-Out, For two Batteries, 170 A.H. or 217 A.H,, Box Only	2
* 79-227-00	Charger, 24 Volt, 25 AMP, Line Compensated, Built In, with Separate Control and Harness, 115 Volt, 2425 LB.	
79-228-00	Charger, 24 Volt 25 AMP, Line Compensated Portable, 115 Volt, 2425Lb	
79-245-00	Charger, 24 Volt, 45 AMP, 115 Volt	
76-012-00	Receptacle, Charging, 30 AMP, 3 Prong	1

FOR CHARGER COMPONENTS SEE PAGES 13 & 14

* NOTE: ALL VEHICLES SOLD AFTER 1982 ARE EQUIPPED WITH LESTER CHARGERS. REFER TO ENCLOSED RED "TAYLOR-DUNN LESTER-MATIC BATTERY CHARGER" SUPPLEMENT FOR CORRESPONDING CHARGER.

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PAGE 5

SERVICE AND ADJUSTMENTS
BATTERY CHARGER

INTRODUCTION

This section describes the operation, trouble-shooting and repair of the CHRISTIE Series A and T Battery Chargers. They are designed for safe and efficient daily charging of batteries. Chargers may be furnished as a portable cabinet or of a type built-into the vehicle.

SPECIFICATIONS

"A" SERIES

MODEL Portable	Built-In	A-C Volts	A-C Amps	Batt Amp Hrs*	D-C Volts	D-C Amps
2420A	2420A-C/2420A-SS/2420AB	115	5	130/170	24	20
3620A	3620A-C/3620AB	115	9	130/170	36	20
	2410A	115	2.5	90	24	10

"T" SERIES

2420T	2420T-C	115	5	130/220	24	20
2430T	2430T-C/2430TB	115	7	170/250	24	30
3620T/T3620T	T3620TG/T3620T-C T3620TB	115	9	130/220	36	20
3630T/T3630T	T3630TG/T3630T-C T3630TB	115	10	170/250	36	30
4820T		115	10	130/220	48	20

*Higher capacity batteries may be charged if longer than 12 hours recharge time is available.

CHARGING CHARACTERISTICS

Series A - This charger uses a constant potential method of recharging. This means the charger output voltage is held relatively constant through the charge cycle. Since the rate of chage is a function of the difference between charger output voltage and battery voltage, the charger output current is reduced by the increased voltage of the battery as it recharges. On a discharged battery the charger sould start charging at near its rated output and as the battery recharges the charge rate will be reduced until it reaches a final charge rate of approximately 2 to 3 amps on a fully charged battery. The charging time is controlled by a timer which terminates the charge at the end of a preset time. Recommended minimum charging times are shown on the CHARGING TIME CHART.

Series T - This charger also uses a constant potential method for recharging, however, it is equipped with a voltage sensing device that activates the timer when the battery reaches 80% of full charge. The timer then times out the balance of the charge, normally 4 hours. The time required for the battery to reach the 80% level will vary with the capacity and state of charge of the rated output and it will reduce its charging rate as the battery is recharged.

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PAGE 6

The final charge rate on a charged battery will be approximately 6 to 10 amperes depending on the rating of the charger. A shorter recharge time is achieved by using this method. Protection from overcharging is provided by the voltage sensing device.

INSTALLATION

Portable models may be set on any suitable working surface so that there is access to the control panel. There should be at least six inches of clearance on each side and two inches on the top to allow free flow of air for cooling. Do not expose the charger to rain or other adverse weather conditions. There must be a separately fused, three-wire, single phase, 115 volt, 15 ampere power receptacle within reach of the A-C input cord of the charger. If the A-C input voltage at your location varies from the nominal 115 volts, it will be necessary to adjust the charger for proper operation. A Low-Med-High switch on the charger is designed to make the necessary adjustment convenient. This switch is located on the front panel of all portable models and on the built-in models with separate control console.

The "Med." setting is designed for those locations where the voltage is between 113 and 120 volts. If your input voltage is between 121 and 128 volts, set the switch in the "Low" position. This will reduce the output voltage to compensate for the high input voltage. If the input voltage at your location is between 105 and 112 volts, set the switch in the "High" position. This will raise the output voltage to compensate for low input voltage. For greater accuracy, the input voltage should be measured during the time of day when the battery chargers are normally in use.

If the output current as shown on the meter exceeds the rated output of the charger, set the switch to the next lowest position to avoid damage. Once set, it should not be necessary to change the switch position as long as the charger is used at the same location.

OPERATING INSTRUCTIONS

1. Verify that the output fuses are fully tightened.
2. Connect the D-C plug to the battery receptacle. Portable chargers are furnished with a polarized D-C plug that mates with a corresponding polarized receptacle in the vehicle to prevent improper connections to the battery. Built-in models are permanently connected to the batteries.
3. Connect the A-C plug to a suitable, grounded receptacle.
   A Series - Determine the minimum charging time (see CHARGING TIME CHART). Turn the charger on by setting the timer knob to the desired charging time.
   T Series - Turn the charger on by setting the timer knob to "START" position (4 hours). The voltage sensing unit will automatically start the timer when the battery reaches 80% of full charge.
4. Verify that the output meter indicates a charging current. If there is no charging current, see TROUBLE SHOOTING section. Never let the charger charge higher than its rated output. If the charger is charging too high, check the batteries to be sure thate are no defective cells or short circuits. See the instructions, concerning tap switch setting under INSTALLATION section.

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PAGE 7

5. The timer control will turn off the charger (positive turn off feature) at the completion of the charge.
6. Disconnect the battery from the charger. On built-in models, disconnect the A-C cord.
7. Using a hydrometer, verify that the battery is properly charged.

CHARGING TIME CHART (A SERIES)

The following chart provides useful information for determining the minimum charging time needed to restore a battery to a full charge condiction. In addition to normal charging, the cells of the batteries should be equalized twice each month. This is done by charging the batteries an additional seven (7) hours after a normal charge cycle. The current indications of the ammeter must be low during cell equalization.

Specific Gravity Reading	Condition of Battery	Hours Needed to Charge
1100	fully discharged	12
1125	10% charged	10
1150	20% charged	8
1175	30% charged	7
1200	60% charged	4
1225	75% charged	2
1250	95% charged	1/2
1260	fully charged	0

TROUBLE SHOOTING & REPAIR INSTRUCTIONS

LOW OR NO CHARGING CURRENT

1. Using a voltmeter, verify that the battery being charged has no open or dead cells. Check jumper cables between batteries for tight and clean connections, and also verify that the battery is not already fully charged.
2. Check the output fuses of the charger to make sure they are not loose or "blown".
3. Verify that the A-C receptacle has power by plugging in an electrical appliance. Using a voltmeter, check A-C input voltage at the receptacle. Taps are provided inside back panel of charger to adjust for input voltages from 105 to 125. Verify that charger is connected for correct voltage.
4. Turn the charger ON and verify that the transformer hums. If no hum is heard, proceed with step 4.1. If a hum exists, go to step 5.
   - 4.1 Remove A-C plug from power source.
   - 4.2 Remove the cabinet cover (1) to gain access to the interior of the charger.
   - 4.3 With the timer switch OFF, check for continuity between the two primary input leads of the transformer. If no continuity is found, replace the transformer. If continuity is found, proceed as follows:
   - 4.4 With the timer switch ON, check for continuity across the switch. On "T" Series chargers there are two switches - check both. If switch is open with the timer ON, replace the timer assembly.
   - 4.5 If all of the above checks indicate continuity, but the transformer does not hum, check for loose or broken leads between the A-C plug, the timer assembly and the tap switch or terminal board.

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PAGE 8

5. If the transformer hums, proceed as follows:
   5.1 Remove A-C plug from power source.
   5.2 Check the two output fuses to insure they are good. Inspect the fuse holders for damage or a blackened appearance. (If the fuse holder is blackened, it indicates oxidation and should be replaced.)
   5.3 Remove both output fuses. Check for continuity from the output side of both fuse holders to the positive side of the D-C plug, connecting continuity indicator first in one direction and then the other of each. The indicator should show an open in one direction and continuity in the other. Continuity in both directions or no continuity in either direction indicates a bad diode. Replace the diode connected to that fuse holder.
   5.4 Check for continuity between the input side of one fuse holder and the input side of the other. If no continuity exists, the transformer secondary is open. Replace transformer.
   5.5 Check for continuity across the two terminals of the meter. If no continuity exists, the meter is open. Replace meter.
   5.6 If all indications to this point are normal, test the entire D-C output circuitry for continuity by progressing from the positive D-C output prong to the negative D-C output prong in incremental test sections, checking each connection for open circuits and poor connections.

A-C LINE FUSES BLOW

6. With unit unplugged and timer turned ON, check for continuity between each input prong of the A-C plug and the ground prong. If continuity is found between either input prong and ground, a short circuit exists and must be found and removed. If all indications are open and the A-C fuses are of sufficient rating for the charger, a shorted transformer is the most probable cause of this problem. Replace transformer.

OUTPUT FUSES BLOW

7. Verify that the circuit under charge is not shorted by disconnecting the charger and operating it disconnected.
8. If output fuses continue to blow, test the charger as per steps 5.1 through 5.6.

TIMER DOES NOT TURN UNIT OFF

9. Unplug charger. Check continuity of timer motor. If open, replace timer. If not, check timer switch contacts. If timer assembly is not defective, adjust Voltage Sensing Unit as per instructions in next paragraph ("T" Series only).

VOLTAGE SENSING UNIT ADJUSTMENT PROCEDURE ("T" Series)

NOTE: A D-C voltmeter with the appropriate voltage range is required to perform the following adjustment.

10. The unit is assembled on a small panel inside the charger cabinet (see item 23, exploded diagram). Each unit has been carefully adjusted at the factory.

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PAGE 9

to actuate at the proper voltage; however, if it is desired to change the actuation voltage point, the following procedure should be followed:

10.1 Connect the charger to a battery which is known to be fully charged.

10.2 Observing polarity, connect the voltmeter across the battery terminals.

10.3 Turn the charger ON. The voltage across the battery, as indicated by the voltmeter, will rise slowly. When the proper voltage (dependent upon the number of cells) is reached, the small relay in the voltage sensing unit will actuate. This can be detected since it generates an audible click.
NOTE: The Voltage Sensing Unit should be set for 2.37 volts per cell. On a 24 Volt system, the Voltage Sensing Unit should actuate at 28.4 volts. On a 36 volt system, the unit should actuate at 42.7 volts.

10.4 Turn the adjustment shaft on the Voltage Sensing Unit clockwise to raise the actuating voltage and counter-clockwise to lower the actuating voltage.

10.5 Turn the charger ON and OFF, as necessary, to raise and lower battery voltage, while repeating steps 10.3 and 10.4 until the desired actuation point is achieved.

IMPORTANT FACTS ON BATTERIES AND CHARGERS

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

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

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

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PAGE 10

WARNING - HAZARD OF EXPLOSIVE GAS MIXTURE

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

INSPECTION OF BATTERIES AND ASSOCIATED CIRCUITS

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

1. Verify that all connections within the unit to be charged are clean and right.
2. Check each battery for loose terminal posts.
3. Test for continuity between all battery terminals and the charging receptacle.
4. Verify that the top of each battery is free of moisture, grease and acid film, which may cause terminal corrosion and current leakage.
5. After the battery has been recharged, test each individual cell in each battery with the hydrometer to verify that all specific gravity readings are within 10 points of each other.
6. Using the hydrometer, pull out acid from a cell and then vigorously expel the acid back into the cell to cause a violent stirring action. Immediately draw out another sample of acid and visually inspect it to see it it contains a brownish sediment (indicates positive plates are deteriorated).
7. When testing battery condition with hydrometer, always return electrolyte solution to the same cell from which it was removed. DO NOT MIX electrolyte from one cell to another.

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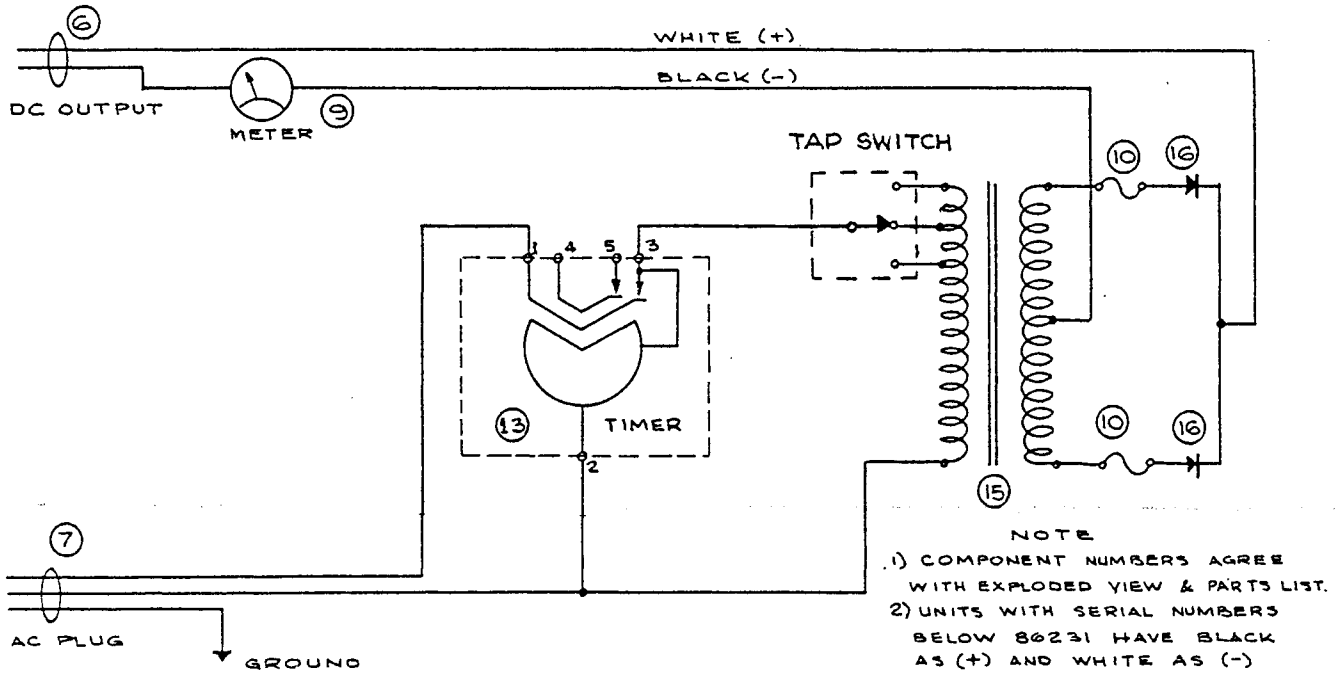
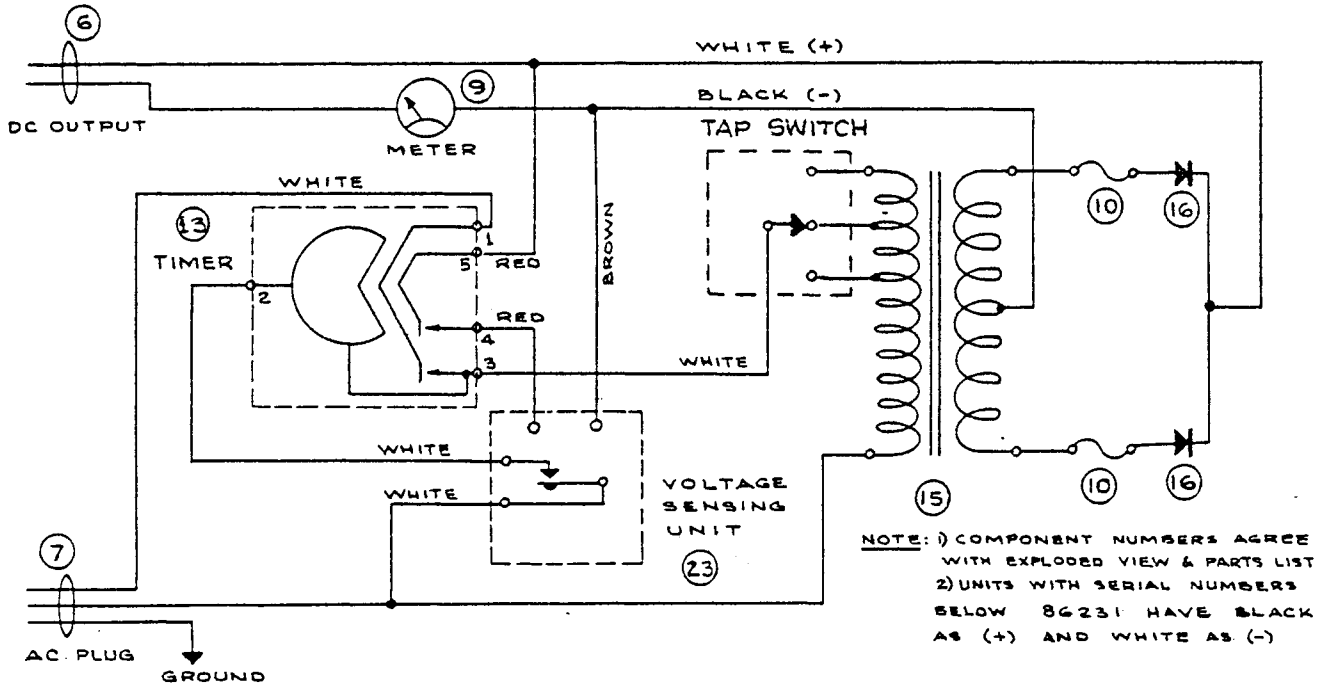
PAGE 11

CIRCUIT DIAGRAMS

SERIES "A" & "T" CHARGERS



CHRISTIE SERIES "A" BATTERY CHARGERS



CHRISTIE SERIES "T" BATTERY CHARGERS

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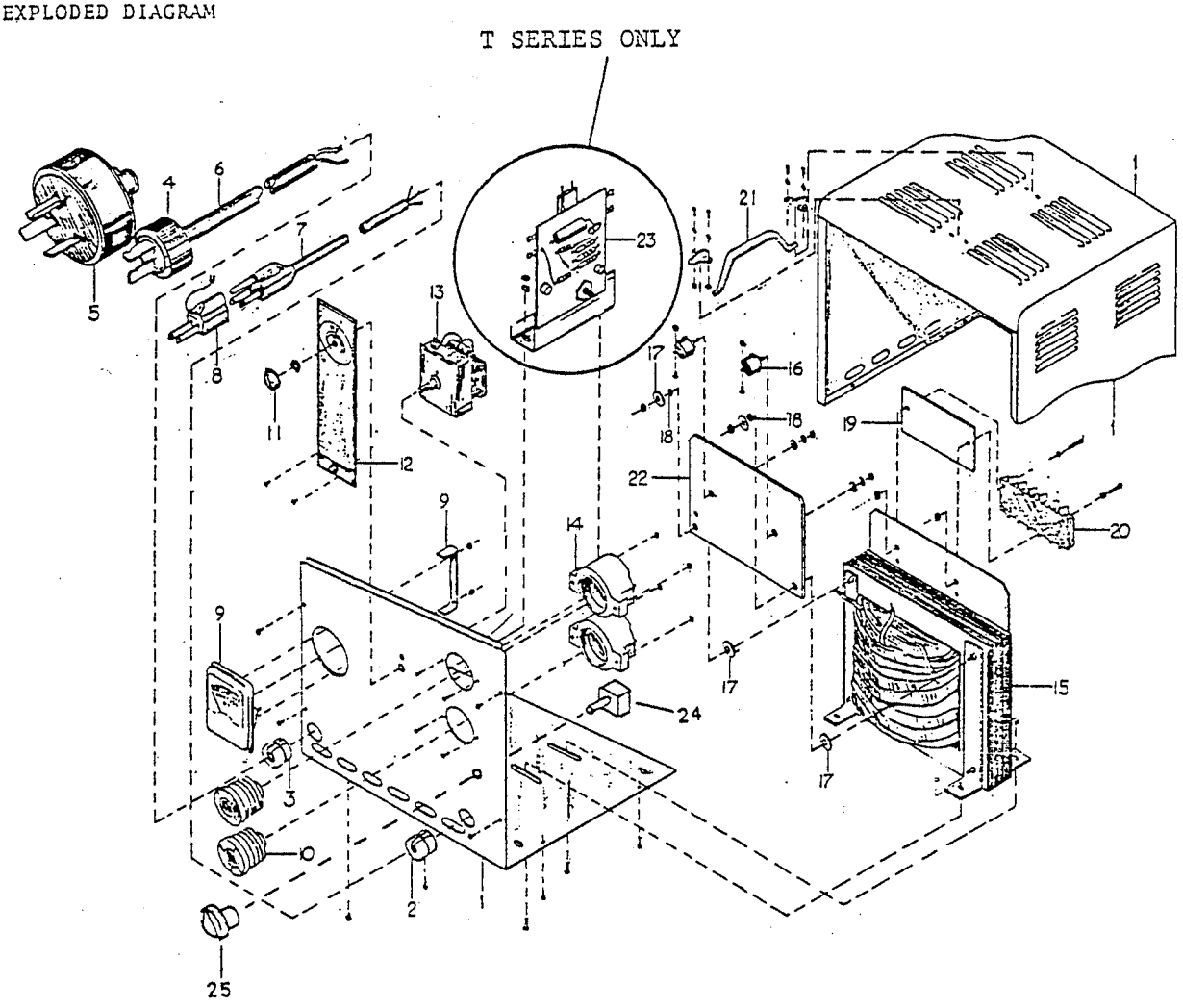
PART IDENTIFICATION

SERIES "A" & "T" CHARGERS

EXPLODED DIAGRAM



Portable Cabinet Shown.

I.D. Numbers of Internal Components are Identical for Portable and Built In Charger.

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PARTS LIST

ITEM	TAYLOR-DUNN PART NO.
1 Cabinet	
2 Bushing (A-C)	79-530-00
3 Bushing (D-C)	79-531-00
4 D-C Plug (2 Prongs)	76-001-00
5 D-C Plug (3 Prongs)	76-002-00
6 Output Cord (no plug)	79-560-00
Output Cord w/molded plug	
7 A-C Cord and Plug (portable model)	79-570-00
Molded A-C Assembly (built-in model)	79-575-00
Recessed Male Plug (built-in model)	75-251-00
8 NOT AVAILABLE	
9 Ammeter (0-30 amp)	79-851-00
10 Fuse (30 amp),Screw type	79-819-00
11 Control Knob,Plastic	79-803-00
12 NOT AVAILABLE	
13 Timer Assembly, 12 Hr. ("T" Series)	79-800-00
Timer Assembly, 24 Hr. ("A" Series)	79-801-00
14 Fuse Holder, 30 AMP, Screw Type	79-830-00
15 Transformer, 24V/20A ("T" Series)	79-630-00
Transformer, 24V/20A ("A" Series)	79-606-00
Transformer, 24V/30A ("T" Series)	79-607-00
Transformer, 36V/20A ("T" Series)	79-613-00
Transformer, 36V/20A ("A" Series)	79-612-00
Transformer, 36V/30A ("T" Series)	79-614-00
Transformer, 48V/20A ("T" Series)	79-620-00
16 Diode, 24/36V, with Mounting Hardware	79-720-00
Diode, 48V, with Mounting Hardware	79-724-00
17 Washer, Insulated, 3/4" OD	97-170-00
18 Washer, Insulated, 3/8" OD	97-171-00
19 NOT AVAILABLE	
20 Terminal Strip	79-860-00
21 Handle Assembly	79-509-00
22 NOT AVAILABLE	
23 Voltage Sensing Unit, 24V ("T" Series)	79-810-00
Voltage Sensing Unit, 36V ("T" Series)	79-811-00½
Voltage Sensing Unit, 48V ("T" Series)	79-812-00
24 Tap Switch (Low-Med-High)	79-895-00
25 Knob, (Low-Med-High)	79-896-00

When ordering parts, please specify both serial number and model of charger.

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MODELS 2445 AND 3645
OPERATING AND SERVICING DATA SHEET

INSPECTION AND INSTALLATION

Inspect the exterior of the shipping container for signs of rough handling during shipment.

Remove charger from the shipping container and inspect it for damage (cracked knob, etc.) CLAIMS FOR SHIPPING DAMAGE SHOULD IMMEDIATELY BE FILED WITH THE CARRIER.

The charger may be installed on any suitable working surface (bench or floor). Insure that there is clearance above and around the charger so as to allow free flow of air for cooling.

Remove the panel on back of cabinet to gain access to the terminal panel.

WARNING: Voltages hazardous to life exist at terminal panel when charger is turned on. Turn OFF the charger before making any of the following adjustments.

The adjustment for a charging voltage of 2.50 volts per cell should be made at this time. This is done by monitoring the DC output voltage with a voltmeter (0 to 50 volts) and setting the AC tap lead to the transformer terminal which gives the desired DC output voltage as indicated below. Move the tap connection to the right to increase the DC output voltage. Move the tap connection to the left to decrease the DC output voltage.

DC OUTPUT VOLTAGE SETTING CHART

MODEL	DC OUTPUT VOLTS
2445	30.0
3645	45.0

If a DC output plug is not furnished with the charger, attach a suitable polarized plug of adequate current capacity to the DC output leads (See NOTE in Step 2 below).

OPERATING INSTRUCTIONS

1. Connect the AC input to the proper power source.
2. Connect the DC output plug to the batteries to be charged.
   NOTE: Check the output plug for the correct polarity.
3. Turn on the charger by setting the timer control knob to the desired charging time.
4. Verify that the pilot light illuminates and that the output ammeter indicates a charging current.
5. The timer control will turn off the charger at the completion of the charge cycle
6. Disconnect the charger DC plug from the batteries after the charger is turned off.
7. Using a hydrometer, verify that the batteries are properly charged.

PARTS LIST

79-531-00 Bushing, Ac		79-714-00 Choke,36V
79-530-00 Bushing, DC	72-095-00 Pilot Light	79-641-00 Transformer 24V
79-567-00 Cord, DC	79-720-00 Diode	79-642-00 Transformer 36V
79-573-00 Cord, AC	79-852-00 Ammeter, 0-50 AMP	79-862-00 Terminal Panel
79-801-00 Timer, 24 HR	97-170-00 Insulator Washer (3/4")	79-826-00 Fuse (Link)
79-803-00 Control Knob	97-171-00 Insulator Washer (3/8")	71-304-00 Relay, 115V (3645 Only)
	79-713-00 Choke, 24V	

When ordering replacement parts, give model and serial number of charger. Specify wire size number of wires required when ordering cords.

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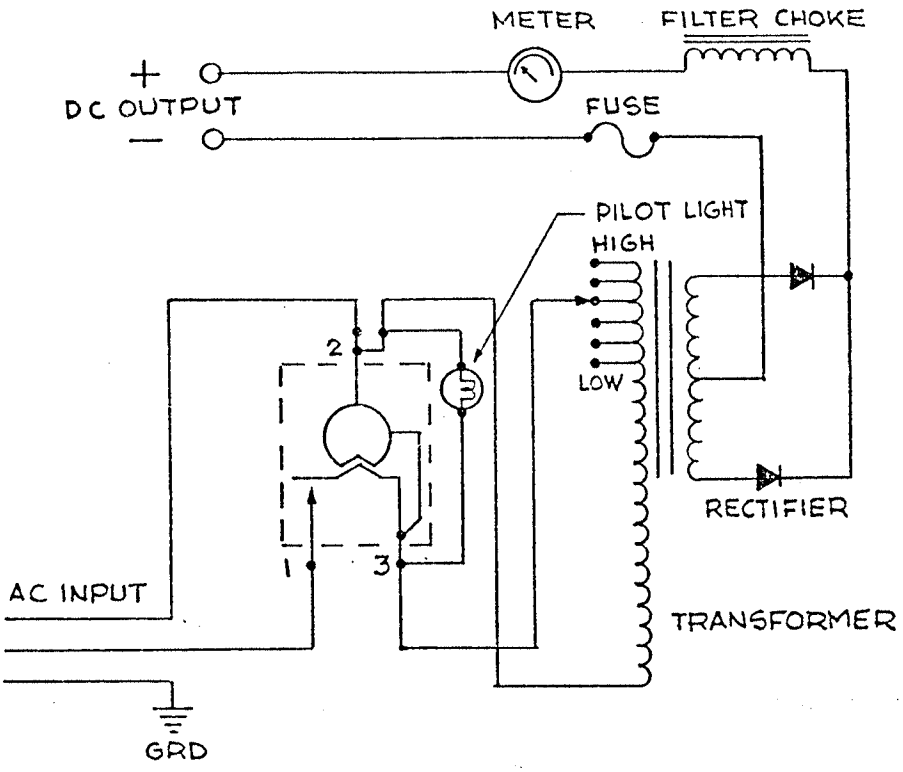
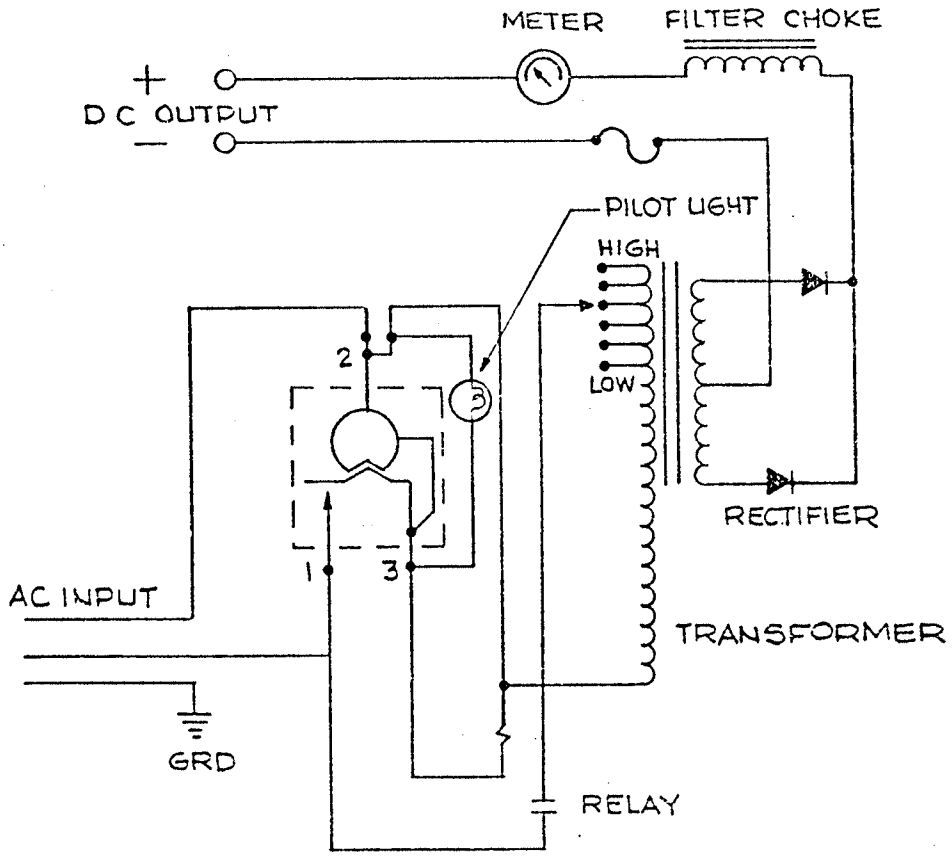
CIRCUIT DIAGRAM

MODELS 2445 & 3645 CHARGERS



MODEL 2445



MODEL 3645

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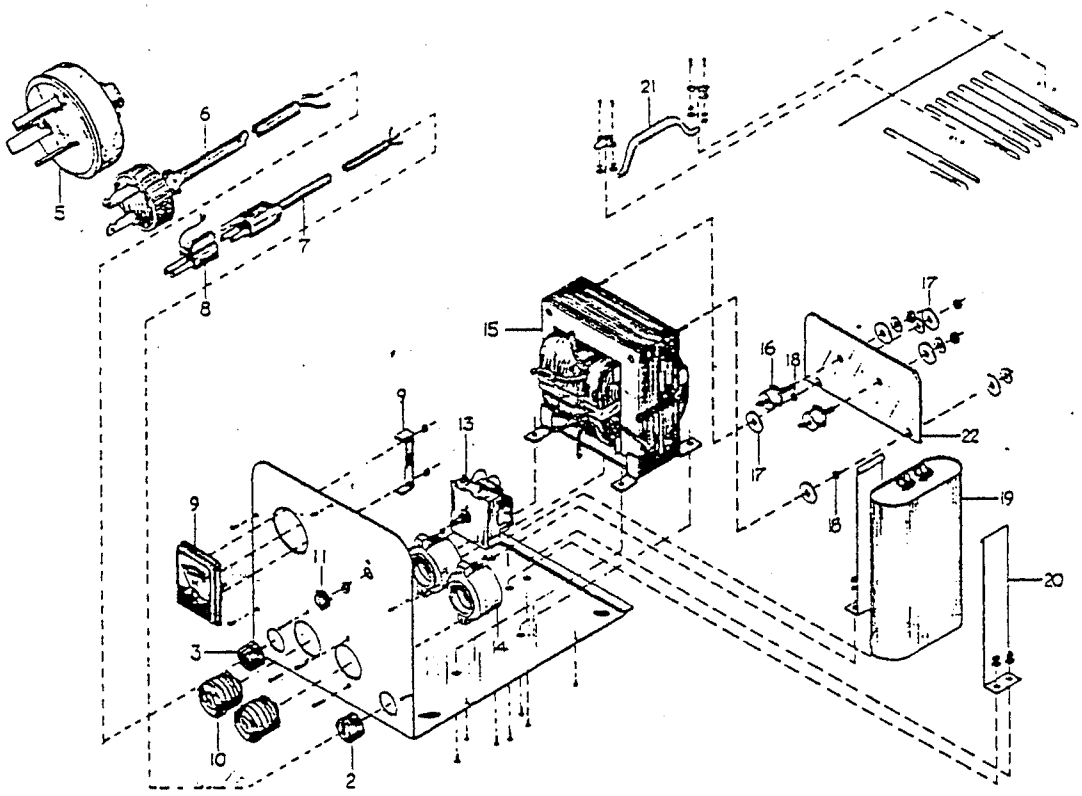
SERIES "L" CHARGER



PARTS LIST

	ITEM	TAYLOR-DUNN PART NO.
2	Bushing (A-C) (HEYCO #6N3-4)	
3	Bushing (D-C) Portable (HEYCO #9P-1)	
3A	Bushing, Built-In (HEYCO #SB-500-6)	
5	D-C Plug, 3-Prong (Portable)	79-002-00
6	Output Cord with Plug (Portable	79-566-00
7	A-C Cord and Plug	79-570-00
9	Ammeter	79-851-00
10	Fuse, D-C (Portable & Built-In) S/N A4229 and Below	79-819-00
10A	Fuse, D-C (Built-In) S/N A4230 and Up	79-825-10
10B	Fuse, A-C (Built-In) S/N A4230 and Up	79-813-00
11	Timer Control Knob	79-803-00
13	Timer Assembly, 12-Hour	79-800-00
14	Fuse Holder (Portable & Built-In) S/N A4229 and below	79-830-00
14A	Fuse Holder, A-C & D-C (Built-In) S/N A4230 and Up	79-515-00
15	Transformer	79-631-00
16	Diode	79-720-00
17	Washer Assembly (3/4")	97-170-00
18	Washer Assembly (3/8")	97-171-00
19	Capacitor	79-900-00
20	Bracket For Capacitor, Portable & Built-in, S/N A3485 & below	79-514-00
21	Handle Assembly (Portable)	79-509-00
22	Heat Sink	79-745-00

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011134

CHARGER MAINTENANCE, SERVICE AND ADJUSTMENT

TAYLOR-DUNN / LESTER-MATIC BATTERY CHARGER

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

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

Silicon diodes with inherent surge protection operated at a consevative 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 are 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.

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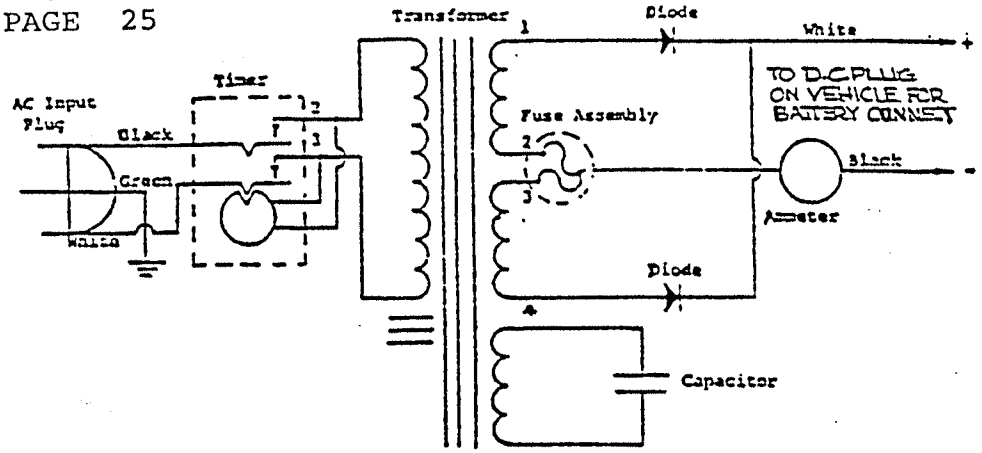
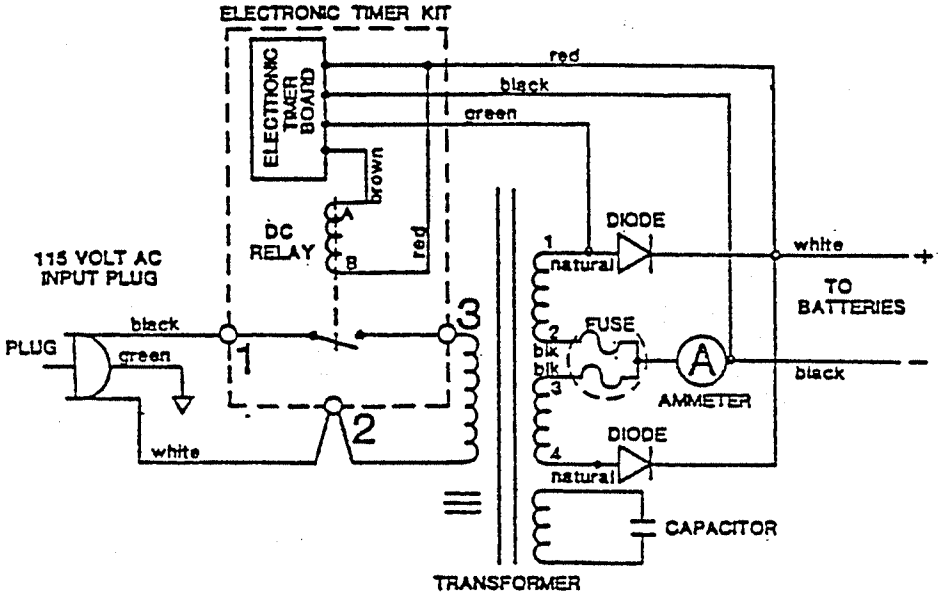
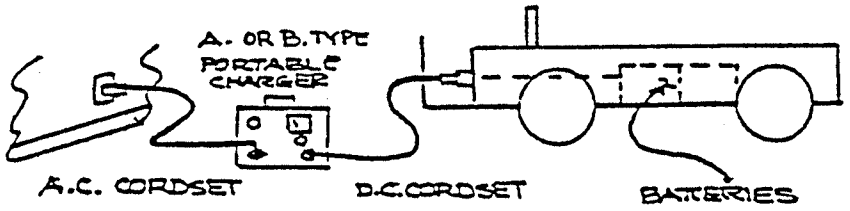


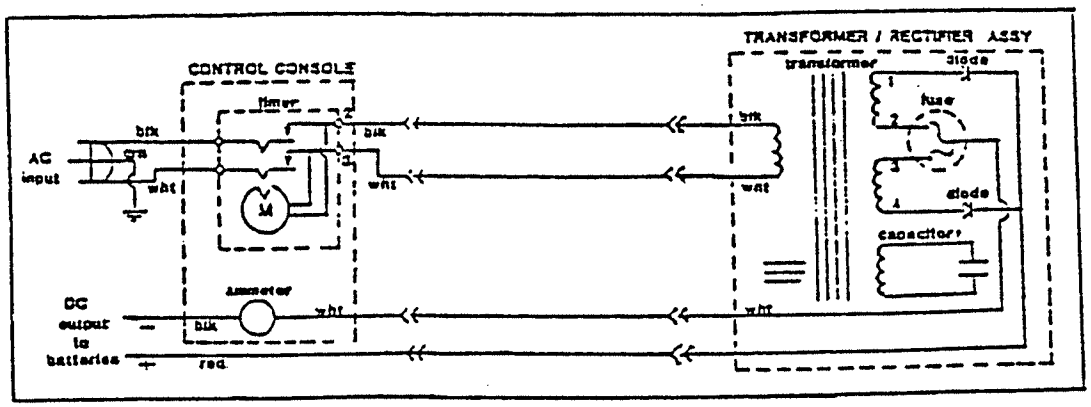
A. TYPICAL PORTABLE CHARGER



B. TYPICAL PORTABLE ELECTRONIC TIMER CHARGER (LESTRONIC II)



TYPICAL DIAGRAM DURING CHARGING



SCHEMATIC, LESTER CHARGER
TYPICAL FOR ALL BUILT-IN CHARGERS

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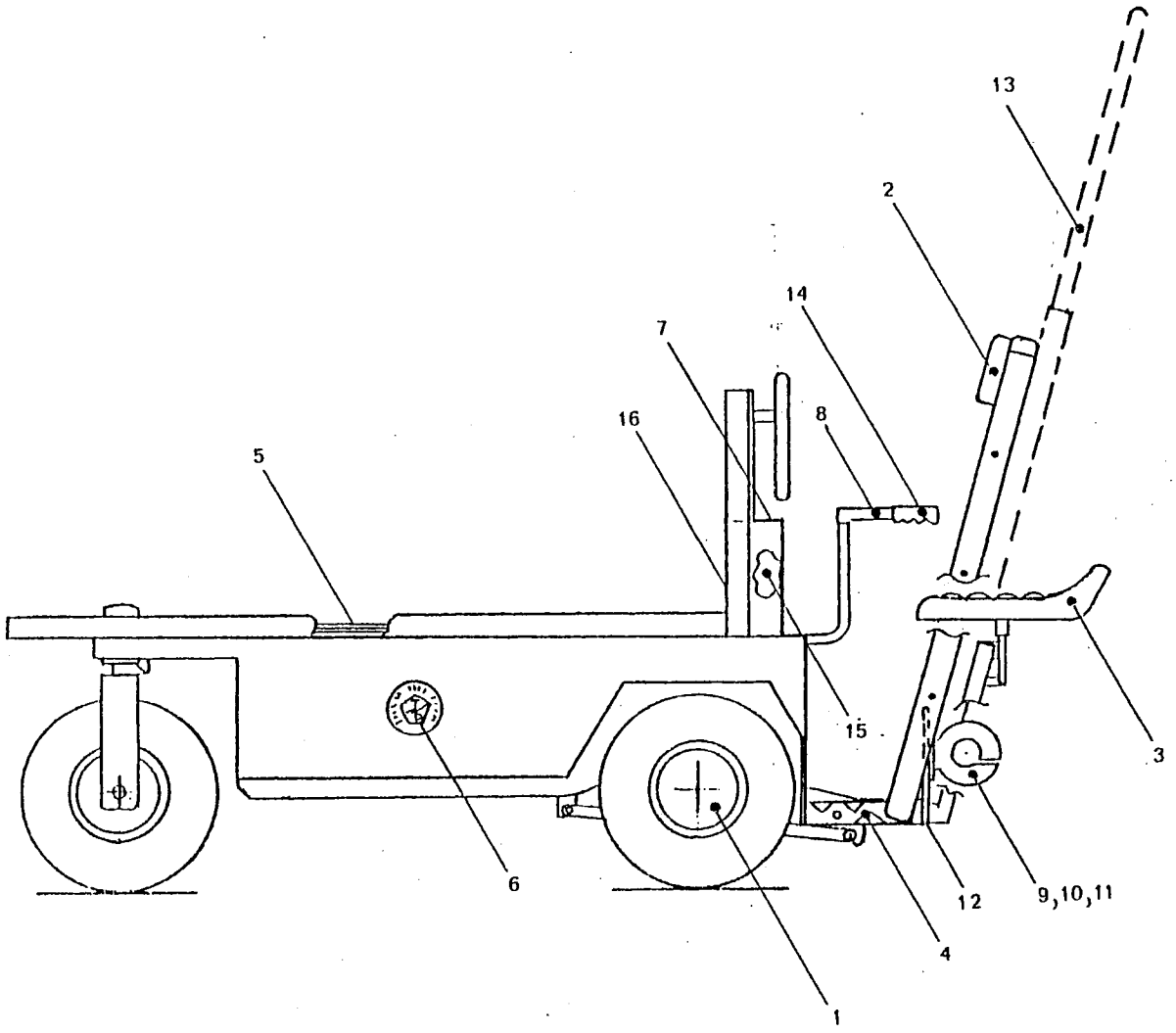
RECOMMENDED REPLACEMENT PARTS

Taylor-Dunn Part No.	PORTABLE 79-300-00	BUILT-IN 79-300-05	PORTABLE 79-301-00	BUILT-IN 79-301-05
Lester Model No.	24LC25T12 115/60 8824	24LC25-3T12 115/60 7675	PORTABLE LESTRONIC II 9510 24LC25 115/60	LESTRONIC II 24LC25 115/60 7210
Transformer/Rectifier Assembly, Complete				
Transformer	79-644-10	79-644-10	79-644-11	
Capacitor	79-902-00	79-902-00	79-902-00	79-902-00
Ammeter	79-851-10	79-851-10		
Timer	79-805-00	79-805-11	79-805-64	79-805-64
Knob, Timer	79-806-00	79-806-00		
Heat Sink Assy. w/Diodes	79-749-10	79-749-11	N/A	N/A
Diode Replacement	79-745-10	79-745-10	79-745-10	79-745-10
Fuse Assembly	79-831-00	79-831-00	79-831-00	79-831-00
Cordset, A.C.	79-575-10	79-575-10		
Cordset, D.C.	79-566-10			
Bushing for Cordset A.C.	79-530-00	79-530-00		
Bushing for Cordset D.C.	79-530-00	79-530-00		
Plug, D.c. Replacement	76-003-00			



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PAGE 2

NO.	DESCRIPTION	LENGTH	QUAN.	REVISED DATE	REVISION

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

FIGURE 11
SECTION J9

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

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

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PAGE 3

BODY & TRIM PARTS

REFER TO FIGURE 11

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

BODY & TRIM PARTS

NOT ILLUSTRATED

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

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BODY & TRIM PARTS

NOT ILLUSTRATED
(Cont'd)

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

ATTACHING HARDWARE

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

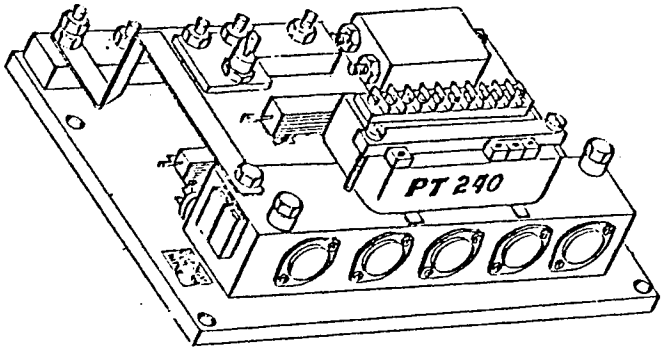
PWR-TRON 240, 350 & 480

TABLE OF CONTENTS

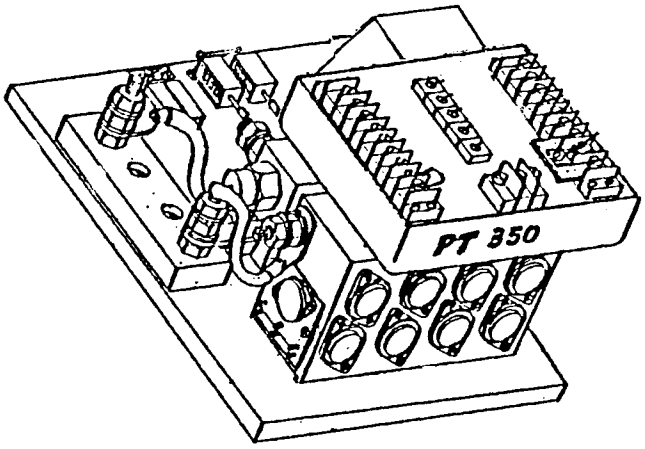
PAGE 1

INTRODUCTION

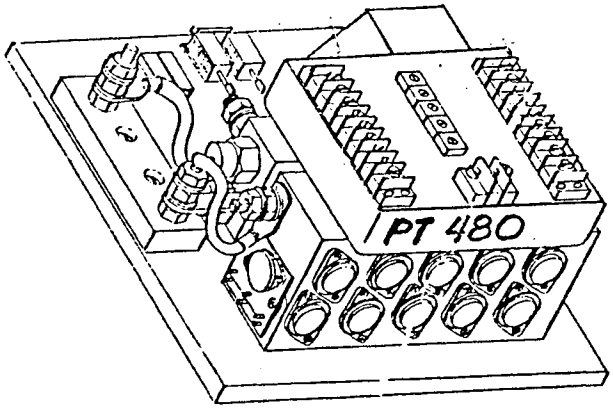
This supplement has been prepared for the purpose of familiarizing the owner with the operational features of the Taylor-Dunn PWR-TRON solid state speed controls. The PWR-TRON 240, 350 and 480 is developed and available only from Taylor-Dunn and is warranted for one full year. Modifications to the control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



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



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



48 VOLTS ONLY

PWR-TRON 240, 350 AND 480

GENERAL

The PWR-TRON unit is readily accessible when the seat on Model R's is raised, or in other models, under the deck board. The PWR-TRON unit performs two functions; forward-reverse and acceleration via mechanical linkage to the foot pedal. You will notice the PWT-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 in trouble shooting, parts replacement and servicing in the field.
12. Each unit has a thermocouple that shuts off power at 160 degrees F which is the operational limit of the PWR-TRON. The unit automatically resets when it has cooled to approximately 130 degrees F.

PWR-TRON 240, 350 & 480

* 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 revere 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 PT240, PT350 and PT480.

PAGE 4

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

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

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

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

PAGE 5

PWR-TRON 240, 350 & 480 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, 350 or 480.

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

PAGE 6

ACCELERATOR MODULES
PT240, 350 AND 480

GENERAL FEATURES

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

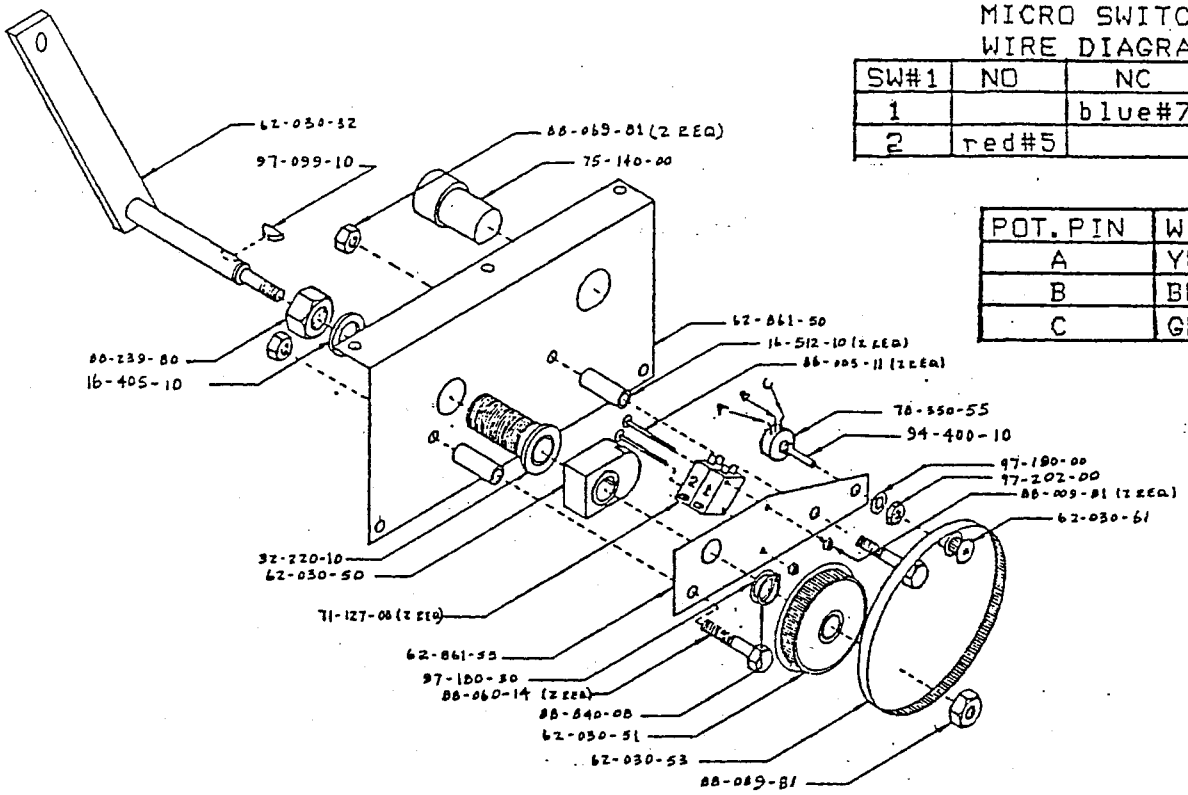
MICRO-SWITCH CHECK

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

MICRO SWITCH
WIRE DIAGRAM

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

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



ACCELERATOR MODULE (COVER NOT SHOWN) 62-030-12
(TYPICAL) MODEL 1248B, ITEM 10 CHANGES
FROM VEHICLE TO VEHICLE

FIG. NO.	PART NO.	DESCRIPTION	QTY.
1	62-861-55	Plate, Pot. Mtg. Accel Module	1
2	71-127-00	Switch, Micro	2
3	88-055-11	Screw, 4-40 X 1-1/4 Truss 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	62-030-32	Rotor, Accel. Module (1248B)	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
	62-030-58	Cover (Not Shown)	1
*	62-030-34	Rotor, Accel. Module (Model C)	1
*	62-030-35	Rotor, Accel. Module (Model E)	1
*	62-030-31	Rotor, Accel. Module (374 R)	1
*	62-030-44	Rotor, Accel. Module (R 3-80)	1
*	62-030-33	Rotor, Accel. Module (B 2-10	1
*	62-030-36	Rotor, Accel. Module (SS 5-34)	1
*	62-030-37	Rotor, Accel. Module (Model SC)	1

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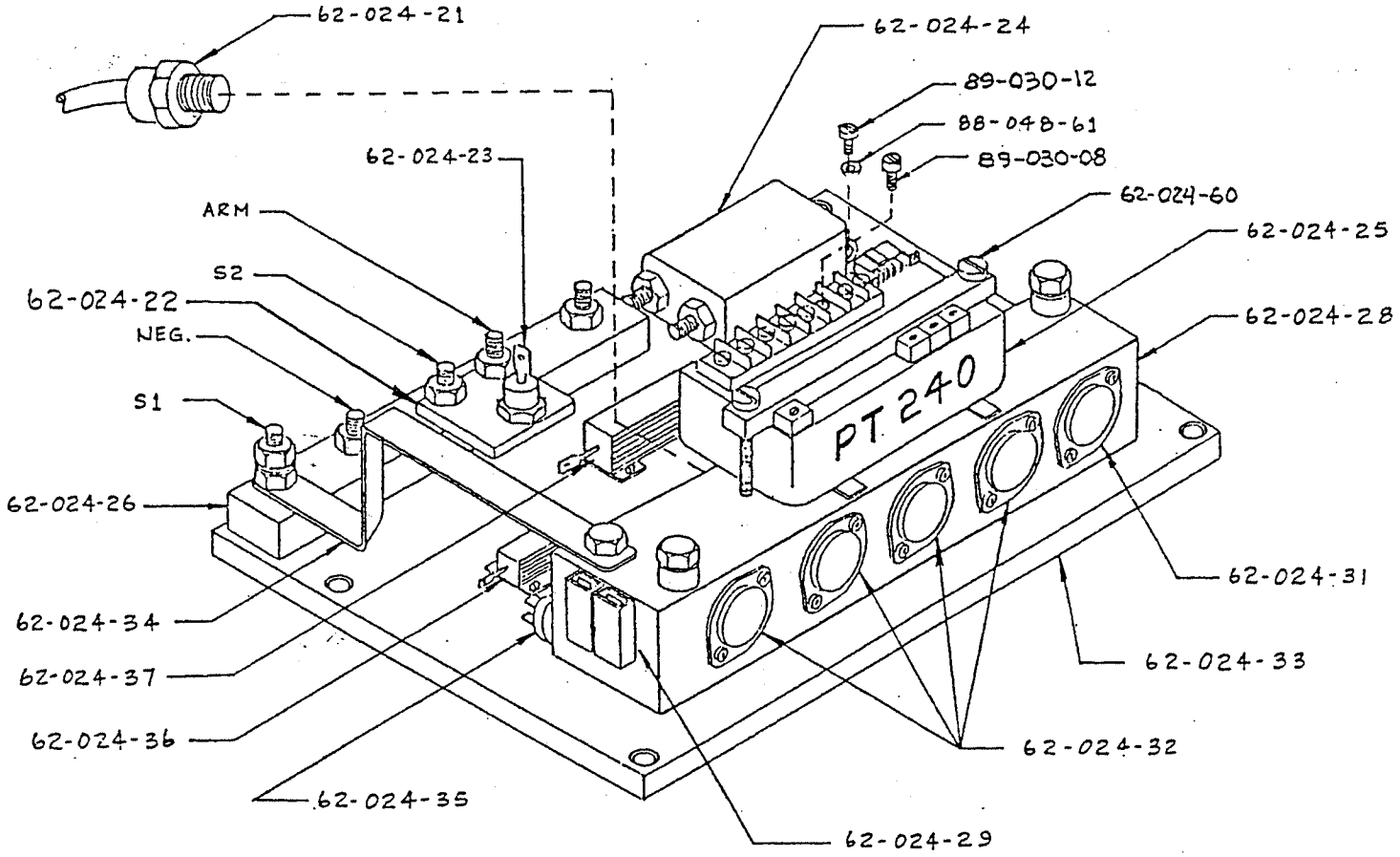

PT240 SPEED CONTROLLER AND PARTS LIST
(PT240 TYPICAL FOR ALL 24 & 36 VOLT VEHICLES)

PART NO.	DESCRIPTION	QTY.
62-024-21	Diode, Flywheel	1
62-024-22	Heat Sink, Diode, Plugging	1
62-024-23	Diode, Plugging	1
62-024-24	Capacitor	1
62-024-25	Logic Unit	1
62-024-28	Transistor Block	1
62-024-31	Transistor Driver	1
62-024-32	Transistor Power	(set) 4
62-024-33	Base, PT240	1
62-024-29	Switch Key (24V & 36V)	1
62-024-35	Switch, Thermal	1
62-024-36	Resistor, 70 OHM	1
62-024-37	Resistor, 1/2 OHM	1
62-024-34	Bar, Buss	1
62-024-26	Block, Terminal	1
89-030-12	Screw, 3 MM x 12 MM	7
89-030-08	Screw, 3 MM x 8 MM	10
62-024-60	Kit, Logic Bar & 2 Screws	2
88-048-61	Washer, # 10 SAE	7

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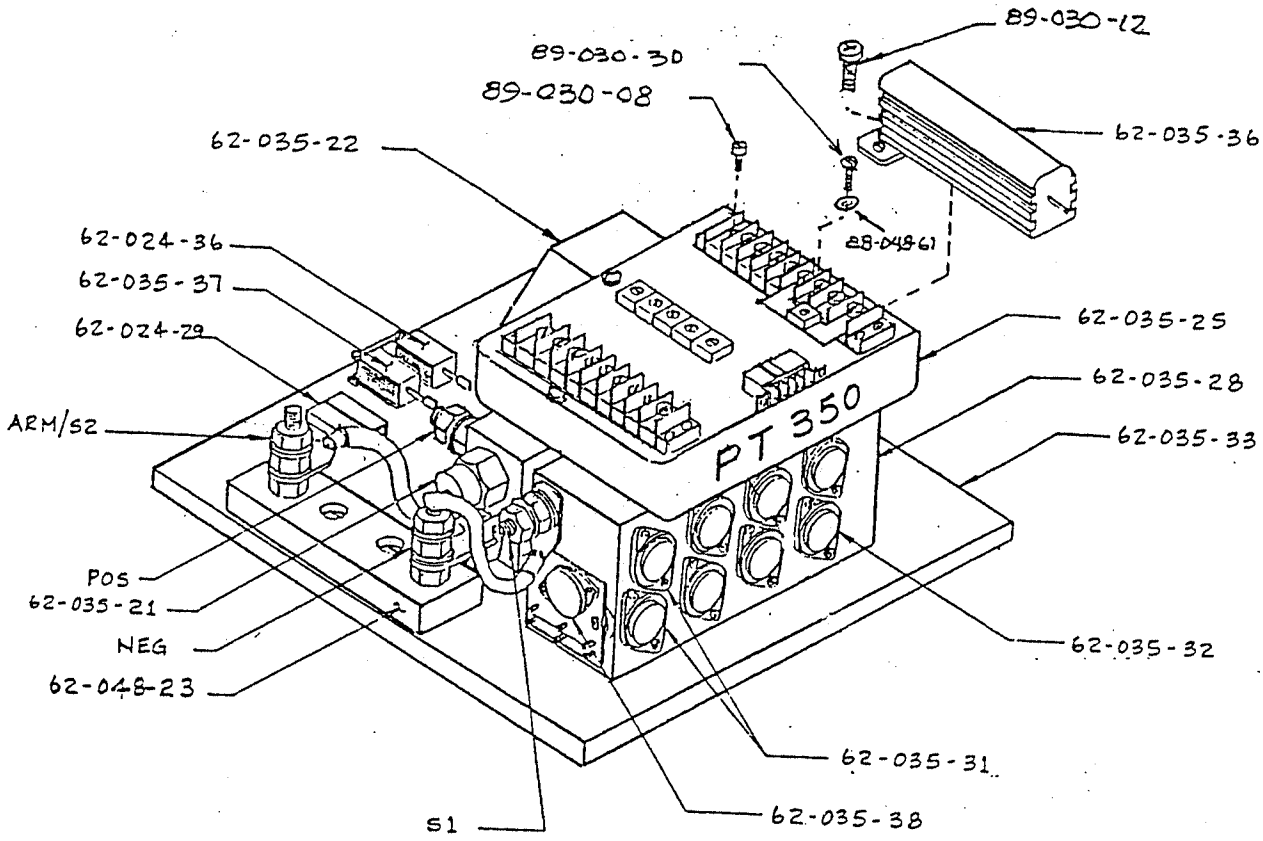

PWR-TRON 350 SPEED CONTROLLER, 24/36 VOLTS

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 of 6)	1
62-035-31	Transistors, Driver	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
89-030-08	Screw, 3 MM x 8 MM	25
89-030-12	Screw, 3 MM x 12 MM	10
88-048-61	Washer, # 10 SAE	3
89-030-30	Screw, 3 MM x 30 MM	3

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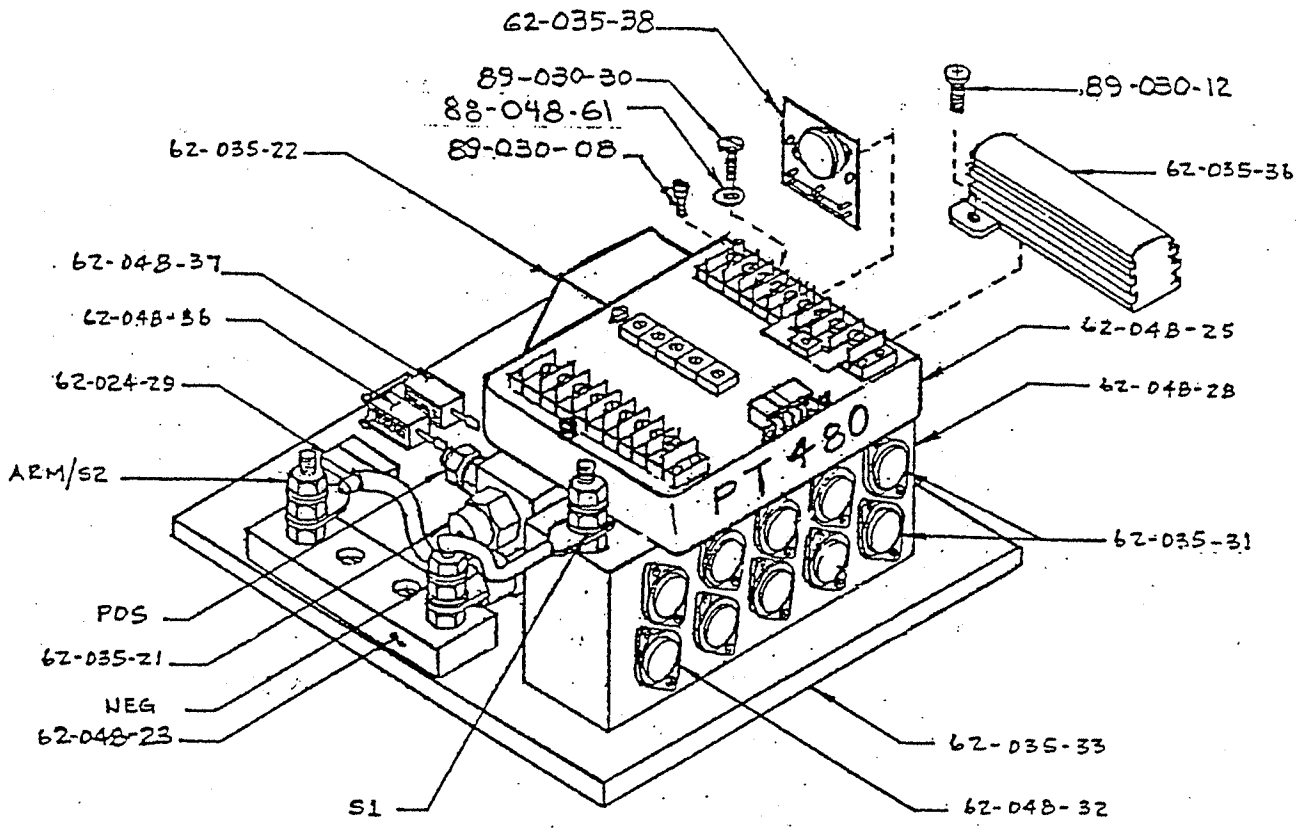
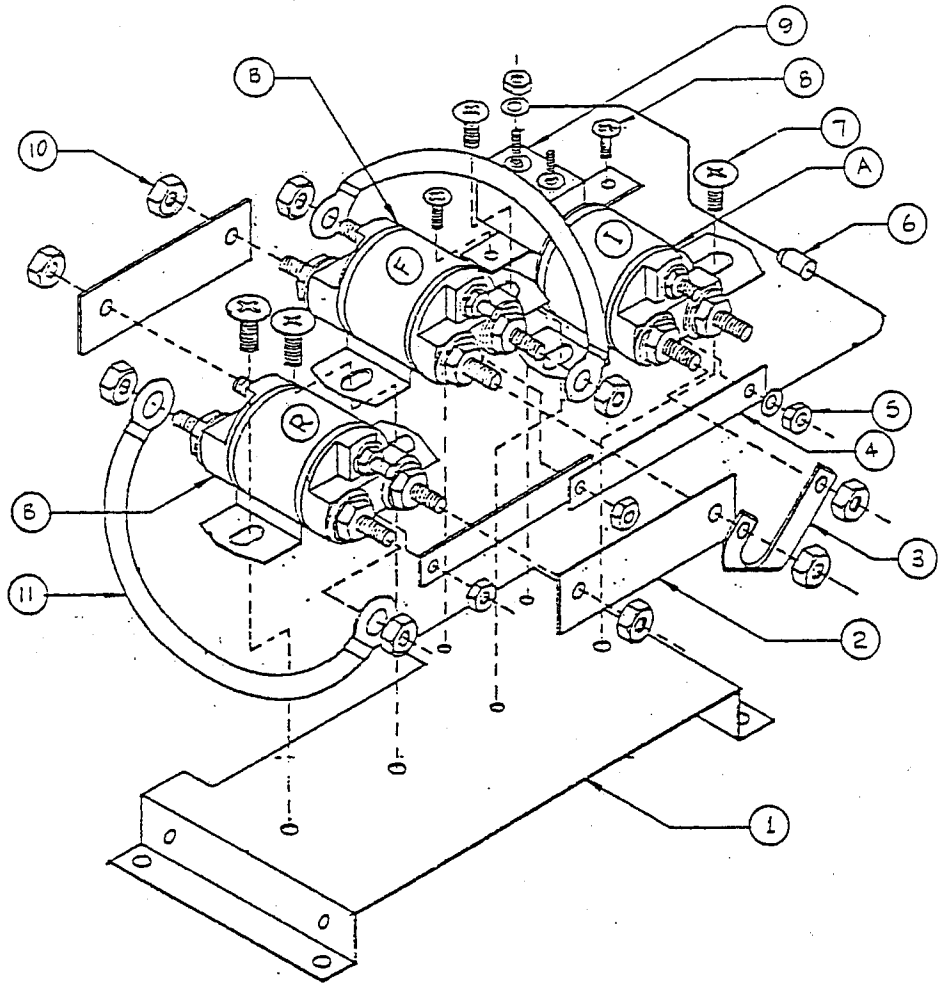


PWR-TRON 480 SPEED CONTROLLER, 48 VOLTS

PART NO.	PT480 DESCRIPTION	QTY.
62-035-21	Diode, Flywheel	1
62-035-21	Diode, Plugging	1
62-035-22	Capicitor, Filter with Nuts	1
62-048-25	Logic Unit	1
62-048-28	Block, Transistor	1
62-048-32	Transistor, Power (set of 8)	1
62-035-31	Transistor, Driver	2
62-035-38	Transistor Assembly Driver/Driver	1
62-035-33	Plate, Base	1
62-048-23	Block, Terminal	1
62-049-29	Input, Key Switch	1
62-035-36	Resistor, 50 W .5 OHM	1
62-048-36	Resistor, 10 W 150 OHM	1
62-048-37	Resistor, 10 W 1K5 OHM	1
89-030-08	Screw, 3 MM x 8 MM	25
88-030-12	Screw, 3 MM x 12 MM	10
89-030-30	Screw, 3 MM x 30 MM	3
88-048-61	Washer #10 SAE	3



*SOLENOID PANEL ASSEMBLIES

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

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

FIG NO.	PART NO.	DESCRIPTION	QTY.
1.	72-560-50	Panel, Solenoid Mtg	1
2.	61-838-51	Bar, Buss 2 X 5/8 CU	2
3.	61-838-20	Buss, Curved	1
4.	61-838-50	Bar, Buss 3 X 3/8 CU	2
5.	88-048-62	Nut	4
6.	75-224-10	Jumper, 5-1/4 IN, 18GA, 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, 5/16NC, Thin	9
11.	75-235-20	Jumper, Red, 4-1/4, 4 GA	2
	72-560-51	Cover, Solenoid Panel (Not Shown)	1

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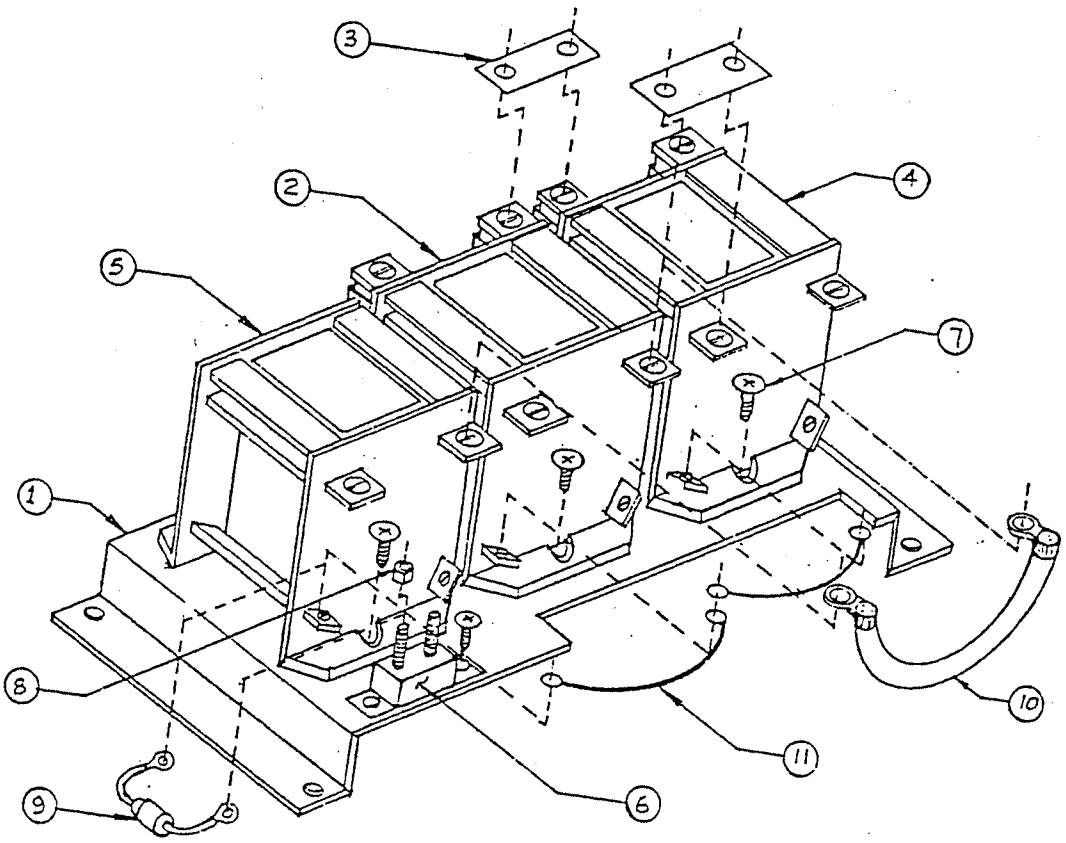
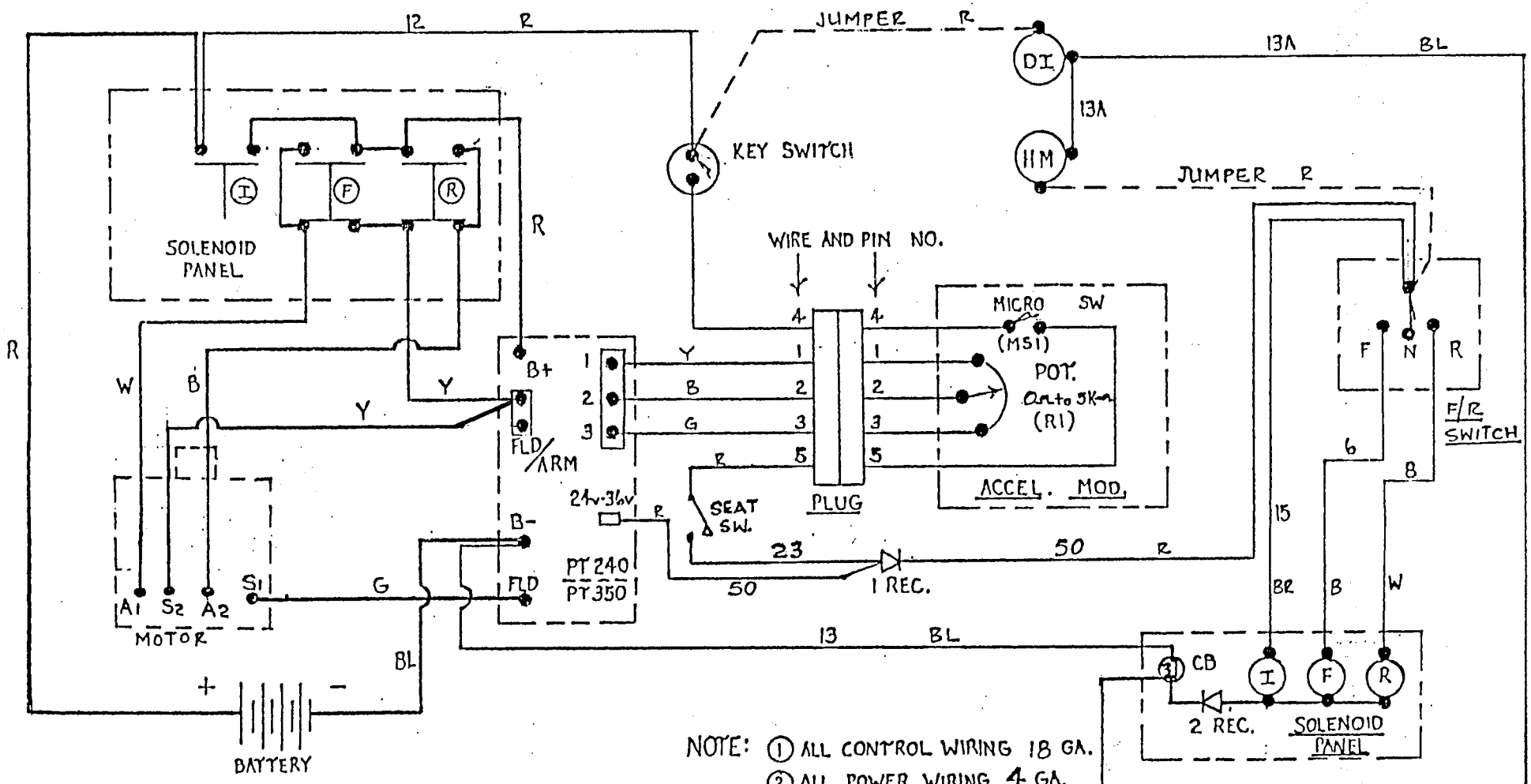


CONTACTOR PANEL ASSEMBLY 48V (72-560-20)
(FOR USE WITH PT 480 ONLY)

FIG. NO.	PART NO.	DESCRIPTION	QTY.
1	72-560-52	Panel, Contactor Mtg.	1
2	71-306-71	Contactor, Rev. 75 AMP 48V SPDT	1
3	61-838-52	Buss Bar, Copper, 1/2 X 1	2
4	71-306-70	Contactor, FWD. 75 AMP 48V DPST	1
5	71-306-72	Contactor, ISO. 75 AMP 48V SPST	1
6	79-840-00	Circuit Breaker, 10 AMP Auto	1
7	88-818-06	Screw, 8 X1/2 Pan Hd. Type B Thd.	8
8	88-049-80	Nut, 10-32 Hex	2
9	75-224-15	Jumper, With Diode	1
10	75-235-11	Jumper, 4 Ga. 2-1/2 In. Long	1
11	75-224-20	Jumper, 3 Inch 18 Ga. Black	2



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

LEGEND			
REC	DIODE	Y	YELLOW
HM	HOUR METER	B	BLUE
DI	DISCHARGE INDICATOR	W	WHITE
CB	CIRCUIT BREAKER	G	GREEN
I	ISOLATOR	BL	BLACK
F	FOWARD	R	RED
R	REVERSE	BR	BROWN

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

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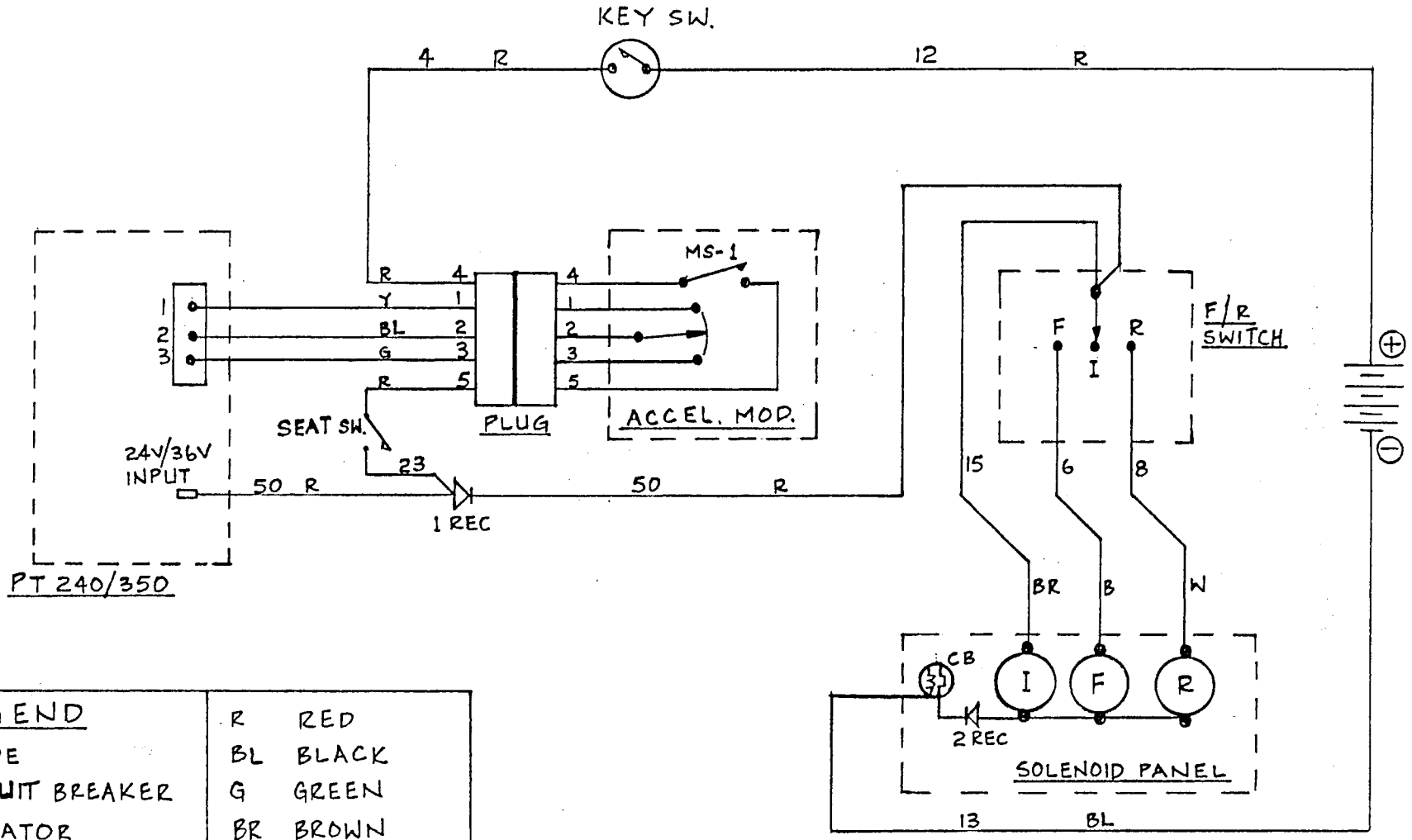

LEGEND			
REC	DIODE	R	RED
CB	CIRCUIT BREAKER	BL	BLACK
I	ISOLATOR	G	GREEN
F	FORWARD	BR	BROWN
R	REVERSE	Y	YELLOW
		W	WHITE

PWR-TRON 240/350 CONTROL SCHEMATIC FIG. 2

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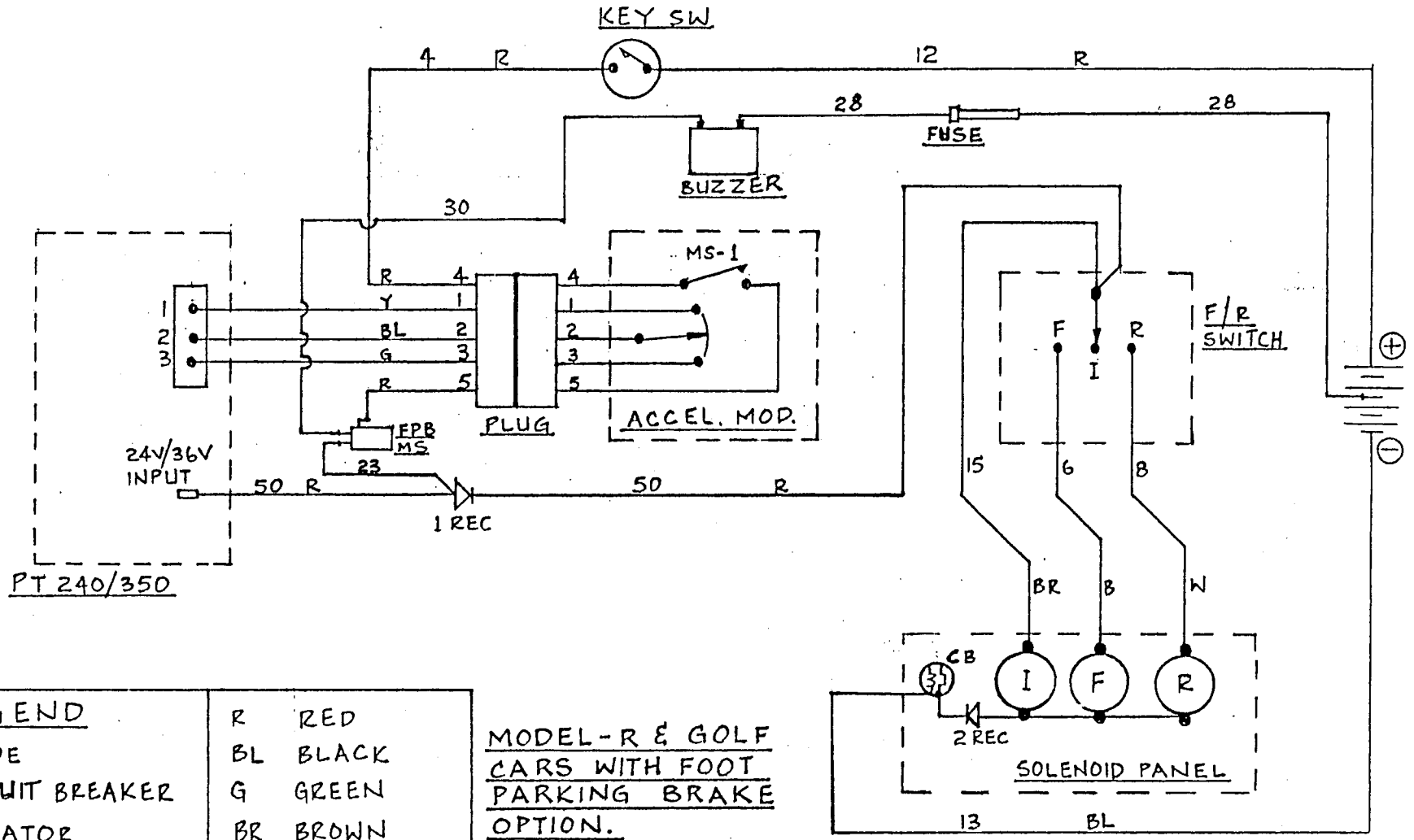

LEGEND			
REC	DIODE	R	RED
CB	CIRCUIT BREAKER	BL	BLACK
I	ISOLATOR	G	GREEN
F	FORWARD	BR	BROWN
R	REVERSE	Y	YELLOW
		W	WHITE

MODEL-R & GOLF CARS WITH FOOT PARKING BRAKE OPTION.

PWR-TRON 240/350 CONTROL SCHEMATIC FIG. 3

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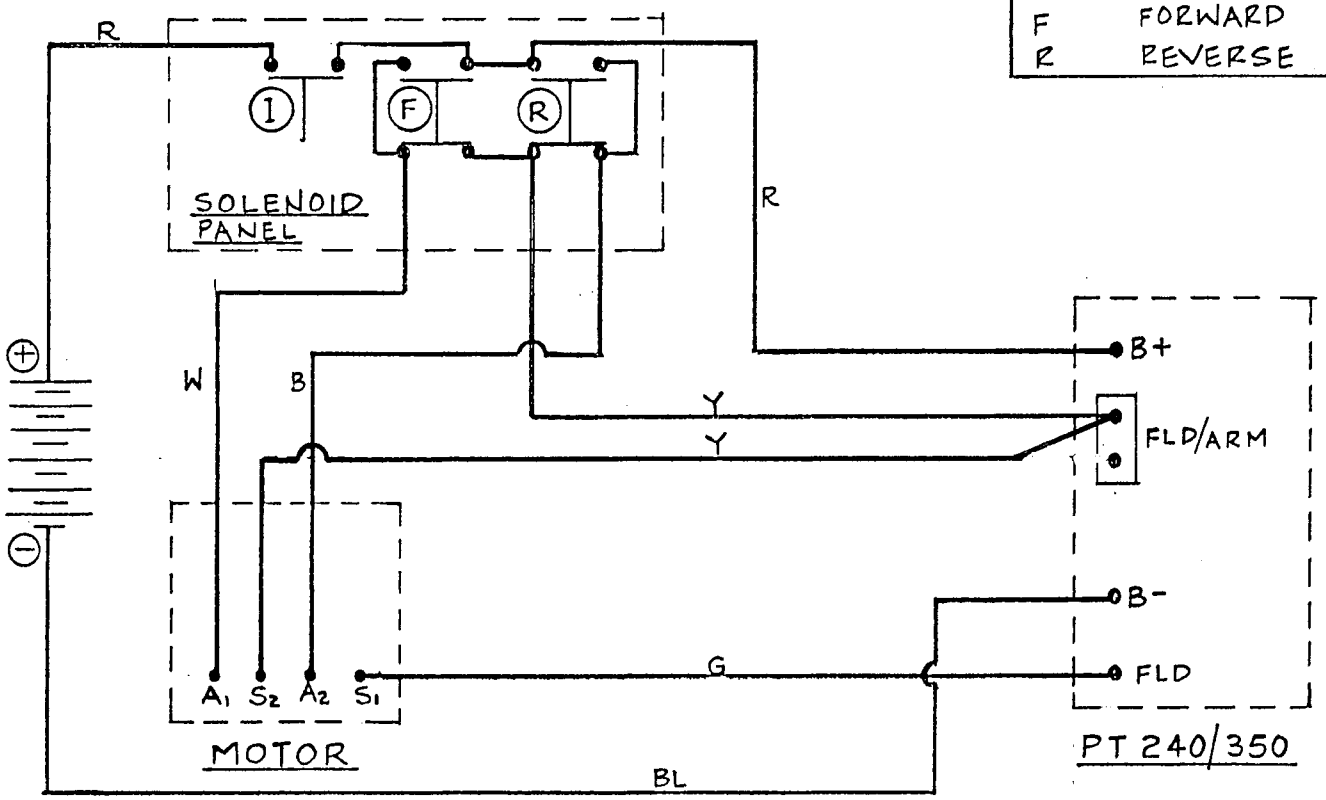
LEGEND

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 4

CHG 4-19-85 JPB

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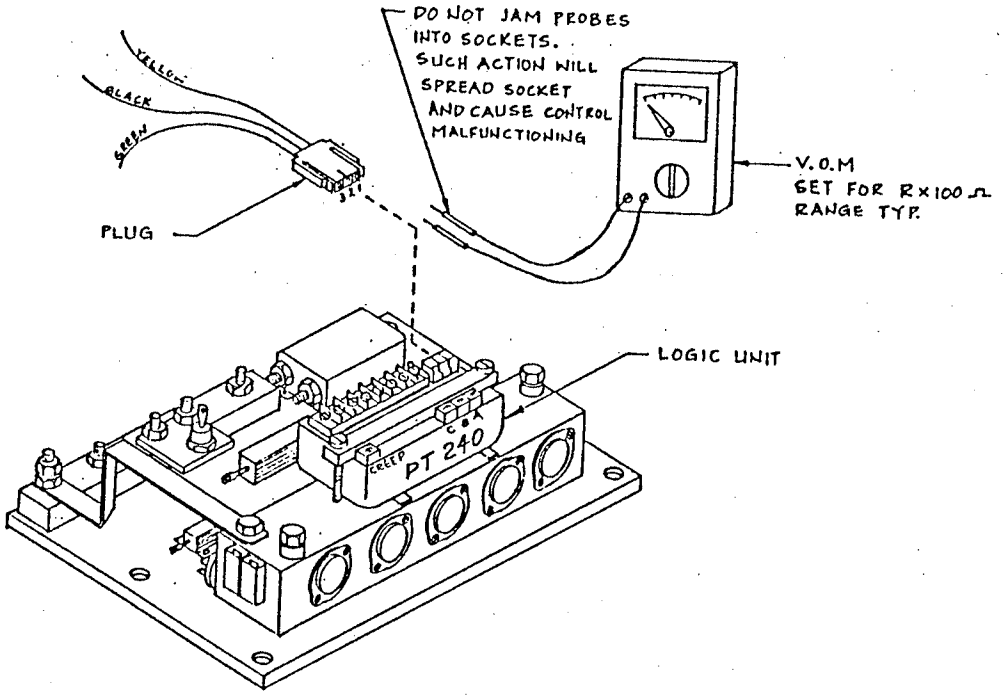

PWR-TRON 240 24/36 VOLTS

POTENTIOMETER CHECK & ACCELERATOR LINKAGE ADJUSTMENT

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

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

3. With accelerator pedal full 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 foor/pedal return pounding.

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

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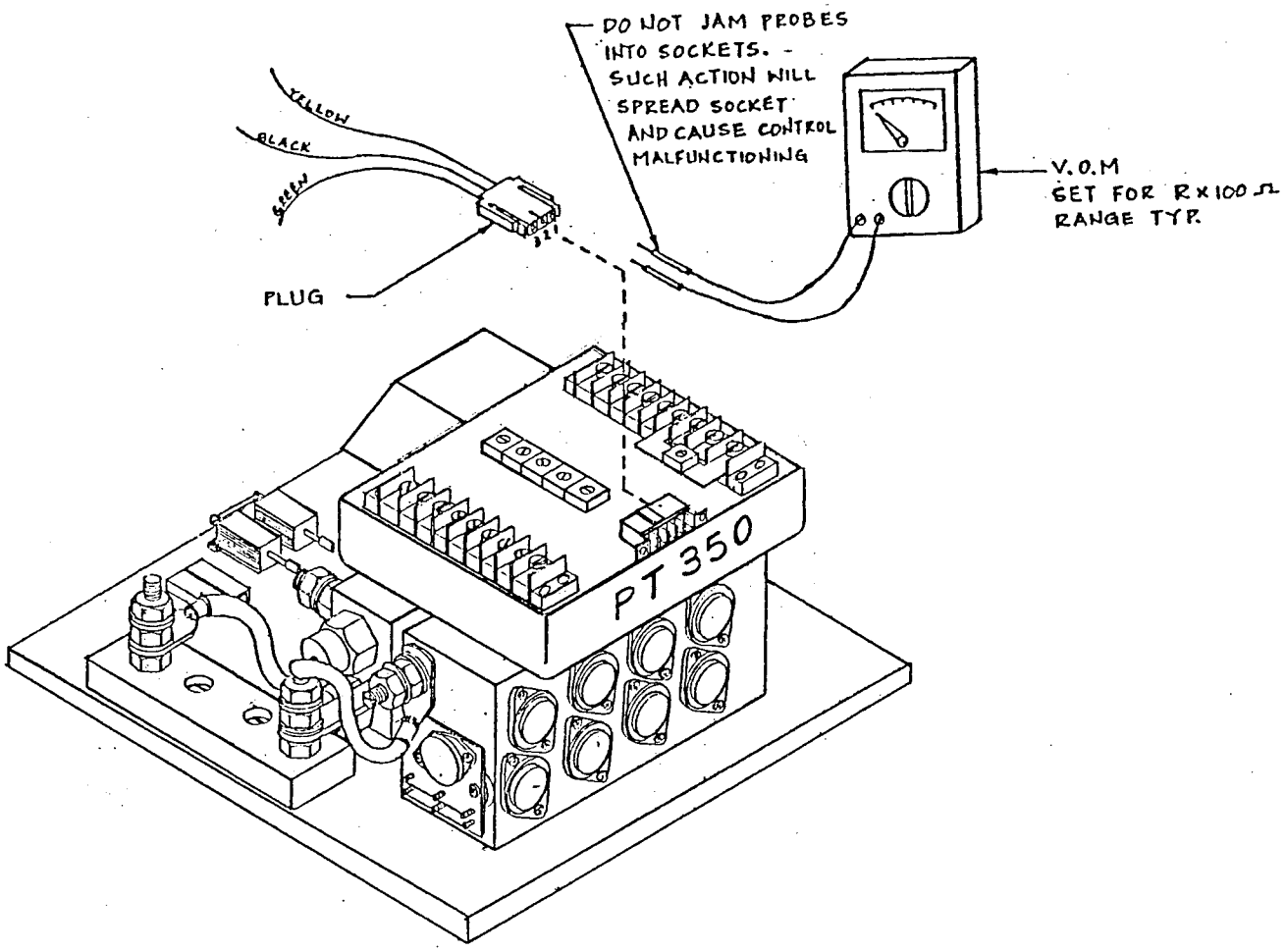

PWR-TRON 350 24/36 VOLTS

POTENTIOMETER CHECK & ACCELERATOR LINKAGE ADJUSTMENT

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

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

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

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

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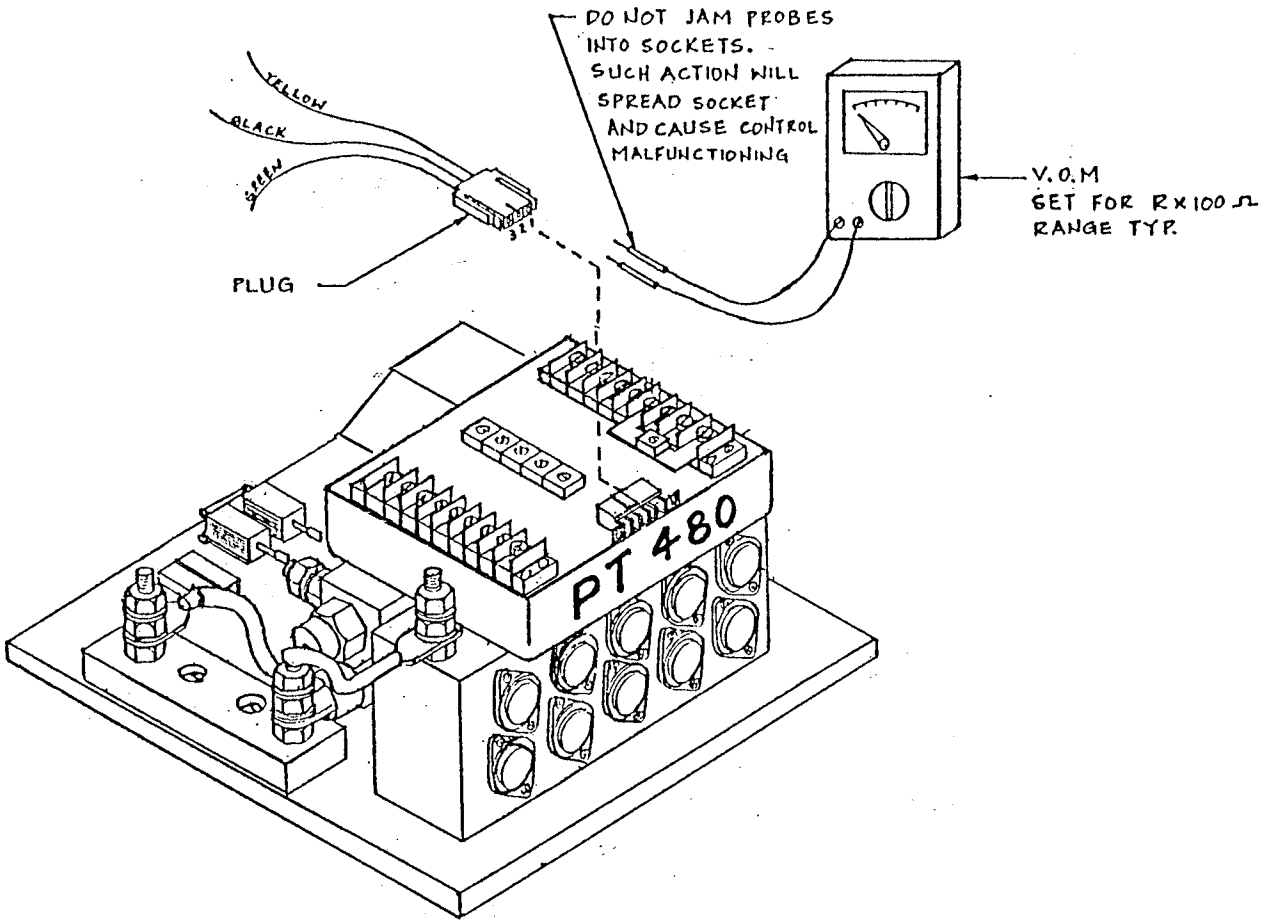

PWR-TRON 480 48 VOLTS

POTENTIOMETER CHECK & ACCELERATOR LINKAGE ADJUSTMENT

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

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

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

4. Reconnect plug to PWR-TRON 480 logic unit.

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CONTINUITY AND POWER CHECK

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

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

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

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

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

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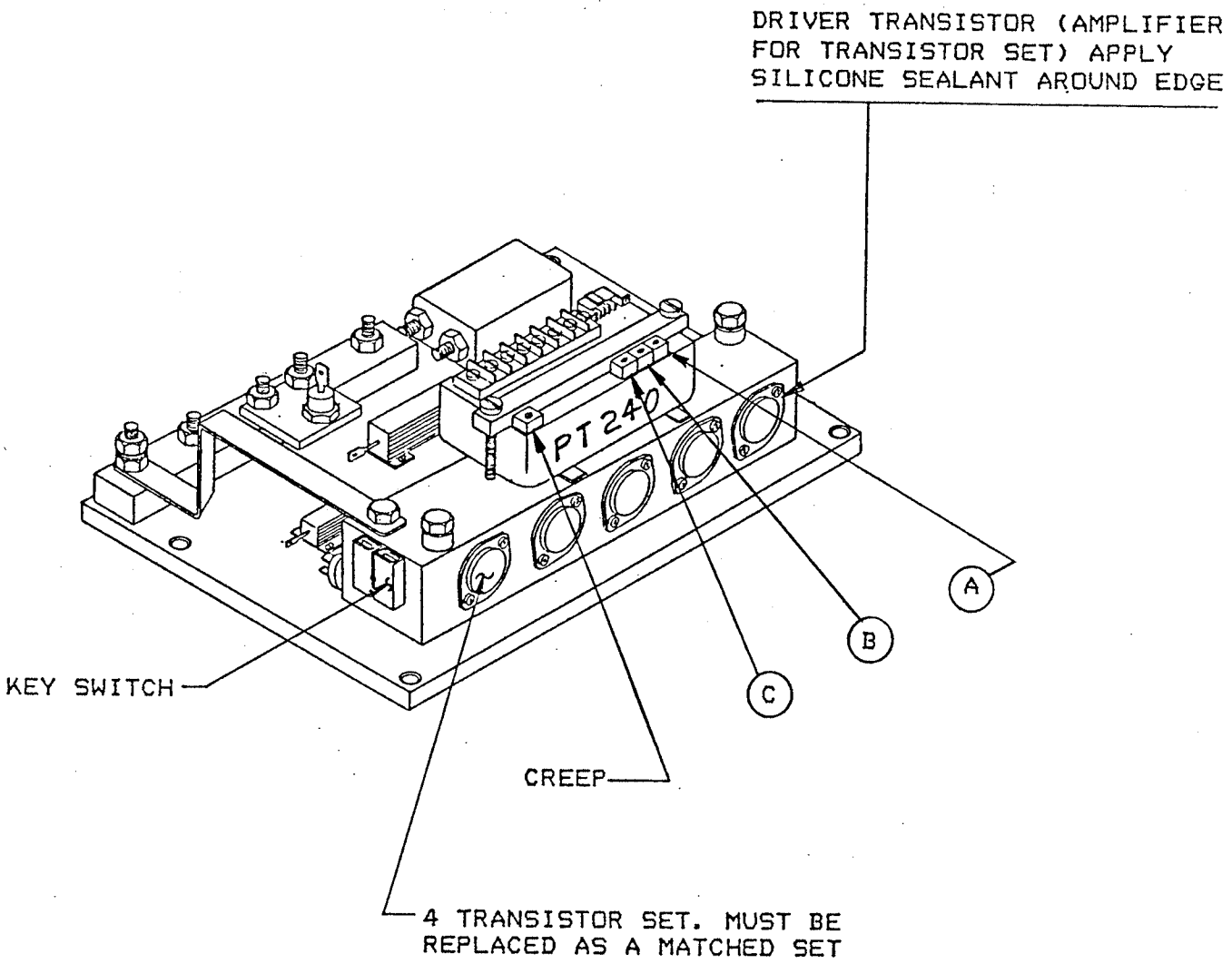


PWR-TRON 240 TRIMPOT ADJUSTMENTS

PERFORM ALL TRIMPOT ADJUSTMENTS IN ORDER SHOWN

A. ACCELERATOR - Turn full direction of arrow

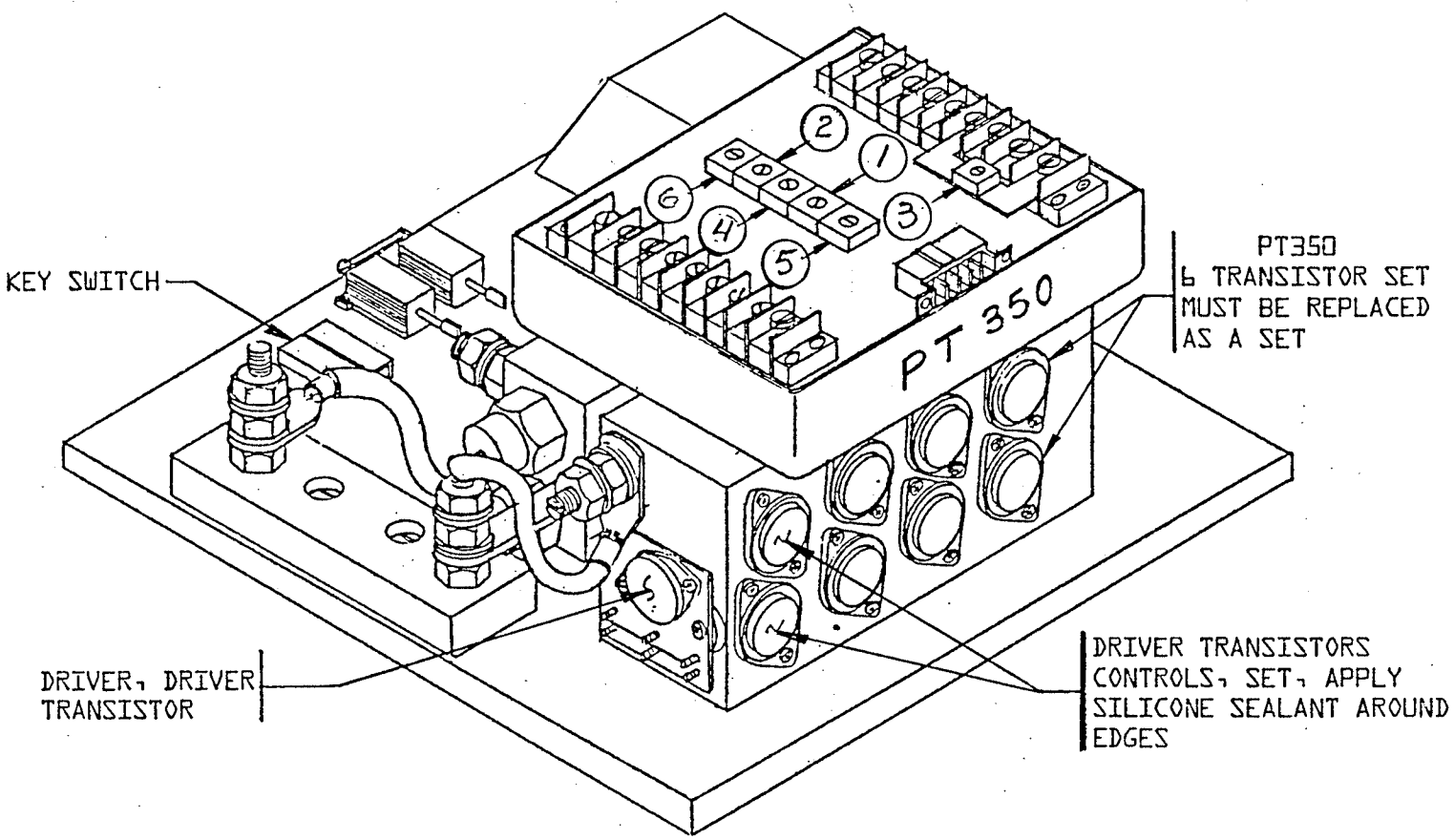
B. Plugging - Turn full opposite direction of arrow to start. Turn up 1/8 in direction of arrow

C. CURRENT LIMITER - Turn full direction of arrow

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

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

PAGE 21



PT 350/480 TRIMPOT ADJUSTMENTS
PT480 IS 48V ONLY

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

1. CURRENT LIMITER - Turn full direction of arrow

2. ACCELERATOR - Turn full direction of arrow

3. MAX BRAKE - Turn full opposite direction of arrow

4. BRAKE - Turn full opposite direction of arrow to start. Turn up 1/8 in direction of arrow

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

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

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

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TROUBLE SHOOTING
(USE COMBINED CIRCUIT FOR CORRECTIVE ACTION)

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1.	Vehicle goes forward does not move in reverse	Motor to solenoid wired wrong or bad solenoid	(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	Wires reversed at Fwd/Rev switch	Route white wire from Fwd switch to motor. A1 and blue wire from reverse switch to motor, A2
3.	Vehicle does not accelerate properly, full on, when checked with light	Solenoid GND connected to field input (green)	(see combined circuit) move to B neg. (same action as item no. 1
4.	Catastrophic transistor failure during plugging	Motor/bat. lead to pos. (B+) on control omitted or mis-connected	(see combined circuit) * Replace transistor re-wire B+
5.	Vehicle operates then stops. Motor whine present. WARNING: Do not operate. Release accelerator immediately. Continued operation could cause logic damage.	Plugging diode failure; 1. Yellow leads not properly connected. 2. Motor leads over 5' long 3. Incorrect diode	Route yellow leads to field terminal on PWR-TRON unit. Check plugging diode. Replace if necessary
6.	Vehicle does not give smooth acceleration when viewed with test light.	Check accelerator module Potentiometer wired incorrectly. (yellow, black green)	Reroute 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, reinstall cam. correctly
8.	No output from control	Batteries not connected or improperly connected Key switch input not connected/key-off micro switch not connected (no solenoids on)	First, check key is on. Make certain trim-pot has not been turned too far. (into "overtravel" area)

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

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
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. Re-wire 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.

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SUGGESTED SPARE PARTS LIST
PWR-TRON SPEED CONTROLLER SYSTEM

T-D PART NO.	DESCRIPTION	QTY. REQ.	NO. OF CARTS 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	Drive Transistor	1		2	4
62-024-32	Power Transistor	1(set)		2	4
62-024-22	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
75-235-11	Jumper, 2 In x 4 Ga. Red.	1		1	2
75-235-20	Jumper,4-1/4 In X 4 Ga. Red	2		2	4
75-224-10	Jumper, 18 Ga w/diode	1		2	4
72-560-51	Cover, Solenoid Panel	1		2	4
62-030-11	Accel Module (R 3-74)	1		1	2
62-030-12	Accel Module (1248 B)	1		1	2
62-030-13	Accel Module (B 2-10)	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
62-030-32	Rotor, Accel Module (1248B)	1		1	2
62-030-33	Rotor, Accel Module (B 2-10)	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
62-048-00	PT480 Speed Controller	1		1	2
62-048-31	Driver Transistors	1		2	4
62-048-32	Power Transistors	1		2	4
62-048-36	Resistor 150 OHM 10W	1		1	2
62-048-37	Resistor 1K5 OHM 10W	1		1	2
62-048-38	Driver, Drivr Transistor	1		2	4
72-560-20	Contactor Panel Assembly	1		1	2
71-306-70	Contactor, Fwd. 75A 48V DPST	1		1	2
71-306-71	Contactor, Rev. 75A 48V SPDT	1		1	2
71-306-72	Contactor, Iso. 75A 48V SPST	1		1	2

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

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