OPERATION

AND

MAINTENANCE MANUAL

WITH

PARTS LIST

MODEL:	C 4-25
SERIAL #:	119429 and up
MANUAL #	MC-425-00

IMPORTANT

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

TAYLOR-DUNN ®
Commercial and Industrial Vehicles Since 1949

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

SAFETY RULES AND GUIDELINES

It is the responsibility of the owner of this vehicle to assure that the operator understands the various controls and operating characteristics of this vehicle and obeys the following safety rules and guidelines (extracted from the American National Standards Institute Operator Controlled Industrial Tow Tractors ANSI B56.9).

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

⚠WARNING

This vehicle is not designed to be driven on public highways. The drive is built to order. It is available in speeds ranging from 7 mph to 15 mph. This is the speed at which the truck travels on a level surface with no load. Do not exceed this speed. Exceeding this speed may result in steering difficulty, motor damage, and/or loss of control. It is not designed to be towed more than 5 mph.

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


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8. Depress and turn the tilt spring retainer about 30° and remove the retainer, tilt spring, and the spring guide.
9. Thread an 8-32 machine screw into the pivot pins and pull them out. You may need a small slide hammer.
10. Install the tilt lever and pull up to release the tilt housing from the column.
11. Remove the upper shaft inner race and bearing #2.
12. Remove the steering shaft.
13. Rotate the upper shaft 90 degrees and separate it from the lower shaft.
14. Rotate the plastic CV bushings 30° and remove them from the upper shaft. Catch the spring clip inside the bushings.
15. If replacing the bearings, remove the inner race from the steering shaft. It should tap off with a small punch.
16. If replacing the bearings remove the outer races from the tilt housing.
17. Remove the roll pin from the lower bushing and the lower bushing from the column.

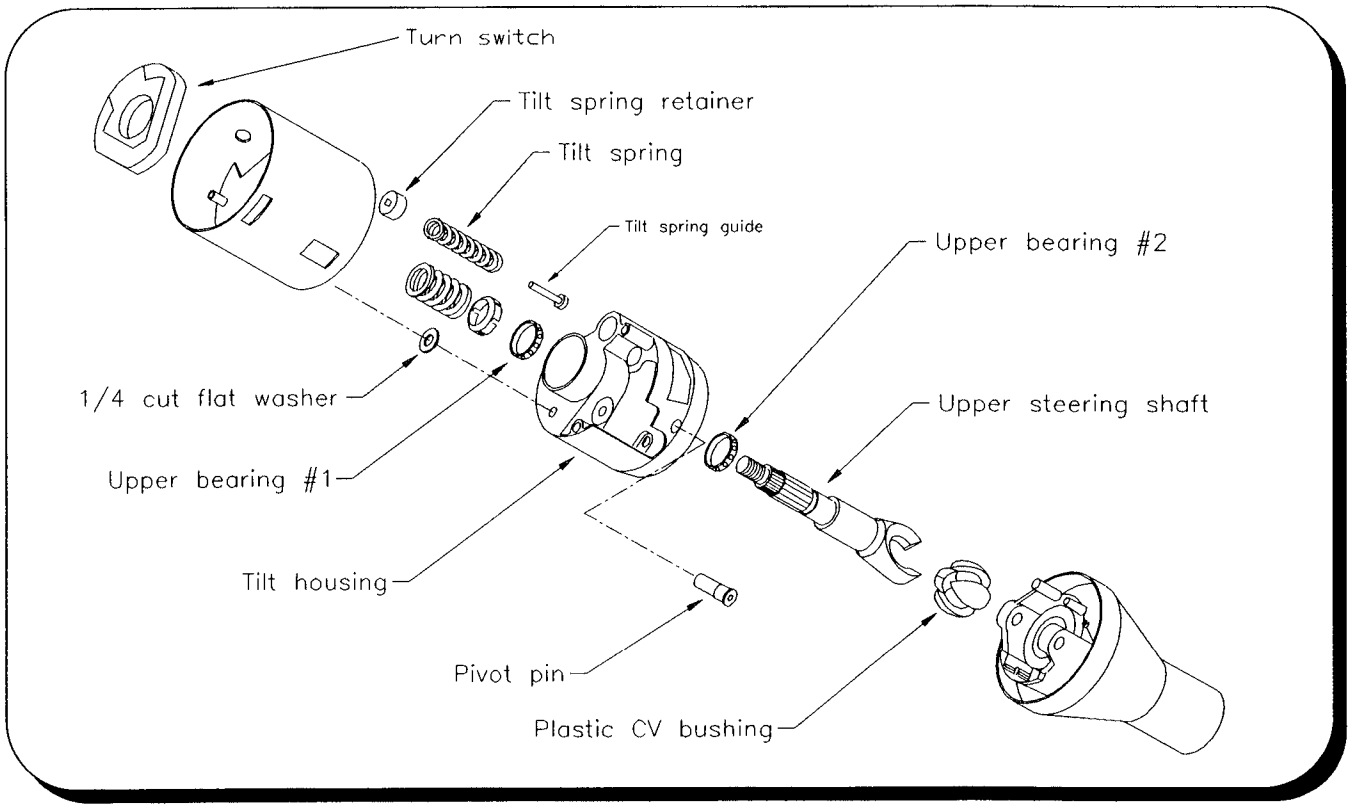
Reassembly

1. Replace worn or damaged parts as necessary.
2. Assemble in reverse order.
   - **A)** Pack the upper steering shaft bearings with grease.
   - **B)** Apply grease on the plastic CV bushings.
   - **C)** Lightly grease the pivot pins and pivot spring guide pivot point.

⚠CAUTION

Use a soft hammer to install the pivot pins. DO NOT USE A STEEL HAMMER!

   - **D)** Lightly grease the turn switch contacts..
   - **E)** Use locktite on lower U-Joint set screws..



Battery

⚠WARNING

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

Batteries produce an explosive gas when charging. DO NOT SMOKE, produce an open flame or spark while checking or servicing a battery.

Cleaning

1. Dry dirt can be readily blown off with low pressure air or brushed off.
2. Wetness or wet dirt on top of the battery indicates battery acid. Using a nonmetallic brush with flexible bristles wash it off with a strong solution of baking soda and hot water (1 lb. of soda to gallon of water). Continue until all fizzling stops which indicates that the acid has been neutralized. Then rinse thoroughly with clear water. DO NOT get any of the solution into the battery cells.

Servicing

1. Check the electrolyte level in all cells. If low fill with distilled water up to the correct level (see diagram).

⚠CAUTION

Do not overfill the battery. An overfilled battery may leak acid.

2. Clean the battery (see above).
3. Clean the cell posts connectors and battery box with water.

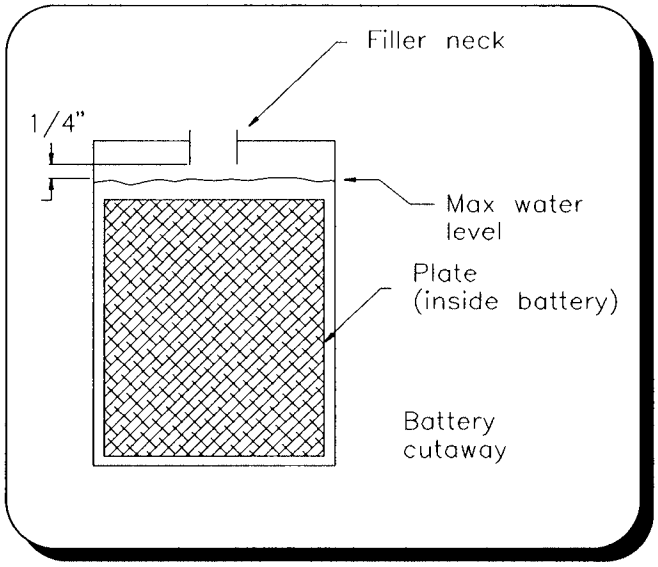
Charging

⚠WARNING

Explosive mixtures of hydrogen gas are present within battery cells at all times. Do not work with or charge battery in an area where open flames (including gas furnace or water heater pilots), sparks, cigarettes or any other source of combustion are present. Always provide ample ventilation in rooms where batteries are being charged.

To charge the battery do the following:

1. Check the electrolyte level. If low, fill with distilled water up to the correct level (see diagram).
2. Park the vehicle in an approved area for charging and plug the charger in.
3. Allow the charger to cycle completely before unplugging.



- **Sequencing delay**

The Sequencing Delay is a debounce timer for the seat switch. It prevents the control from going into SRO or HPD should the driver bounce on the seat momentarily opening the seat switch.

- **SRO**

"Static Return to Off." Prevents the truck from being started when in gear.
Type 1: When the driver sits in the seat the direction switch must be returned to neutral before the truck will start. Factory setting.
Type 2: Do not use.
Type 3: Do not use.

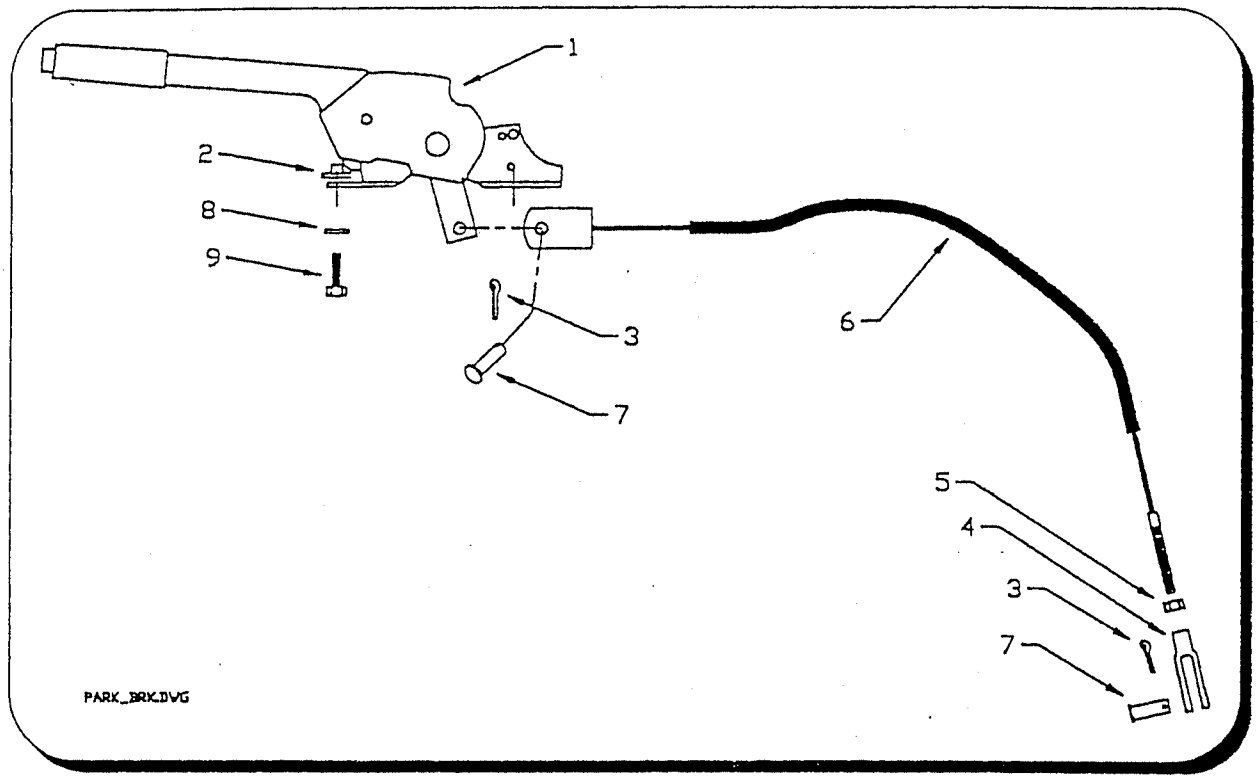
- **Throttle map**

Provides a non-linear response to the accelerator pedal. A setting at 50 corresponds to a linear response. A higher setting means that more that 50% power would be supplied at 50% of accelerator pedal travel.

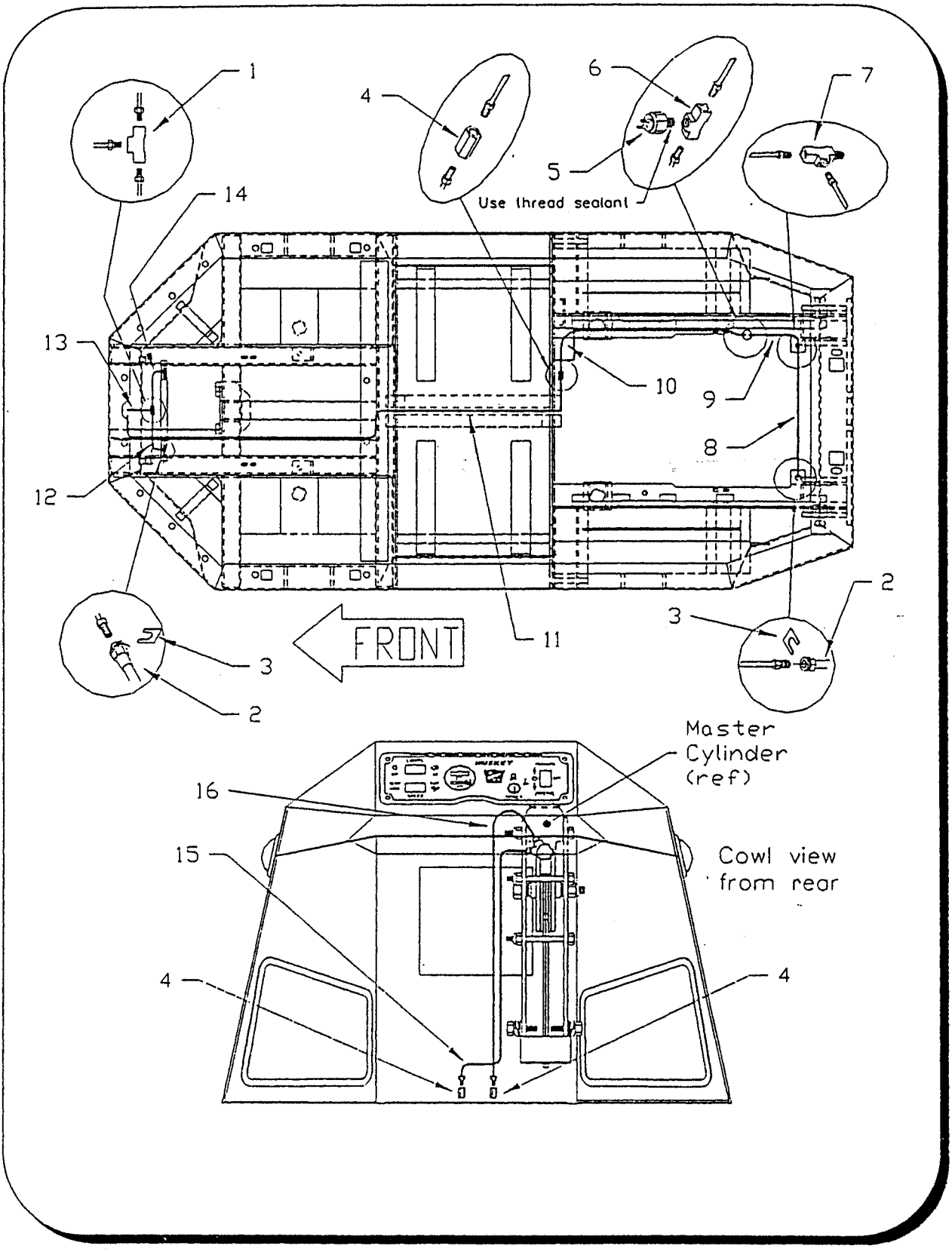
- **Throttle-variable plug braking**

Provides for a fixed plug current (off, factory setting) or variable plug braking (on) depending on accelerator pedal position.

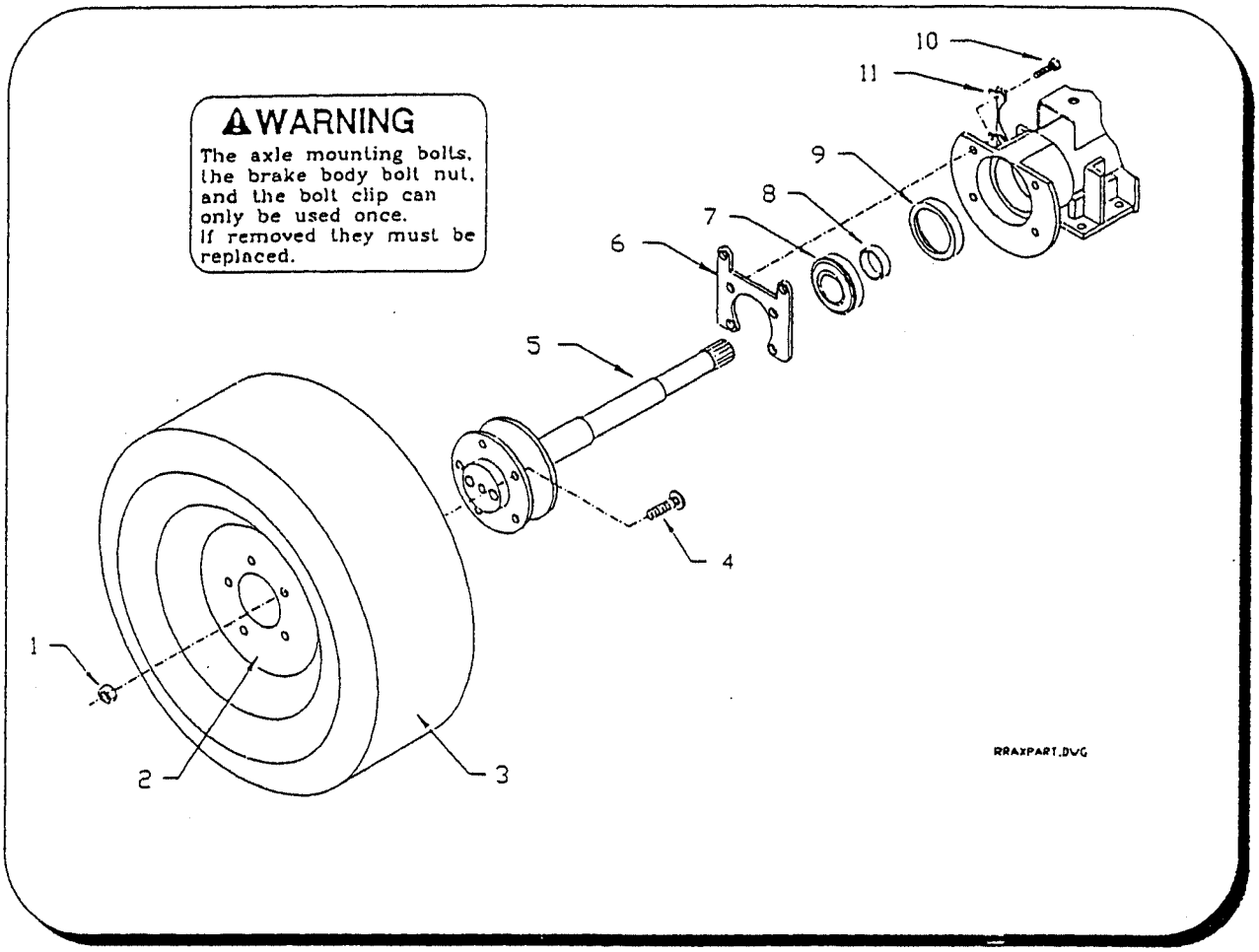
Parking brake linkage



Brake Lines and Hoses



Rear Axle


WARNING
The axle mounting bolts, the brake body bolt nut, and the bolt clip can only be used once.
If removed they must be replaced.
10
11
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RRAXPART.DVG

TAYLOR-DUNN

MANUAL MC-425-01

OPERATORS and MAINTENANCE MANUAL

This Manual Covers Serial Numbers: 119429 & up

MODELS:

C4-25

2114 W. Ball Rd., Anaheim, CA 92804
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Visit our Website: www.taylor-dunn.com

VER: A

5/98

VEHICLE DESCRIPTION

This manual applies to vehicles with serial numbers starting at 128406.

The Huskey is designed to be driven on smooth surfaces in and around industrial plants, nurseries, institutions, motels, mobile home parks and resorts. It is not to be driven on public highways.

The Huskey is available in speeds ranging approximately from 7 m.p.h. to 15 m.p.h.. These are the speeds at which the truck can travel on a level surface with no load. Exceeding these speeds may result in steering difficulty, motor damage, and/or loss of control. It is equally important that the vehicle not be towed faster than 5 m.p.h..

The Huskey is a tow truck that can tow up to 15,000 pounds. Various options are available to enable you to customize the vehicle to suit your particular needs (consult your Taylor-Dunn® salesperson or representative for current options).

This vehicle conforms to requirements for Type E vehicles as described in O.S.H.A. Standard Section 1910.178 (Powered Industrial Trucks) and with all applicable portions of the American National Standard for Operator Controlled Industrial Tow Tractors (ANSI B56.9).

The model and serial number for this vehicle are imprinted on a decal located on the inner left side of the front cowl. The vehicle serial number is stamped in the frame, either to the right of the battery connector mount or in the left rear corner next to the battery.

PARK BRAKE LEVER

The park brake is actuated with a hand lever located to the right of the seat. To set the park brake pull the lever back until it locks. To release the park brake depress the button on the end of the handle.

⚠CAUTION *Do not operate the vehicle with the parking brake applied. Severe motor/control damage will result.*

HORN BUTTON

The horn button is located in the center of the steering wheel. Depress the button to sound the horn, release it to turn it off.

INSTRUMENT PANEL

The headlight switch is located at the left side top of the instrument panel.

BATTERY STATUS/HOUR METER

The battery status/hour meter is located in the center of the instrument panel. This tracks the number of hours the vehicle has been in operation and also monitors the state of charge on the batteries.

When fully charged the far right LED (green) is on. As the battery discharges the LED moves to the left (green to yellow). When one LED (red) on the left side is flashing the battery is at energy reserve. When the two left LED's (red) are flashing the battery is empty.

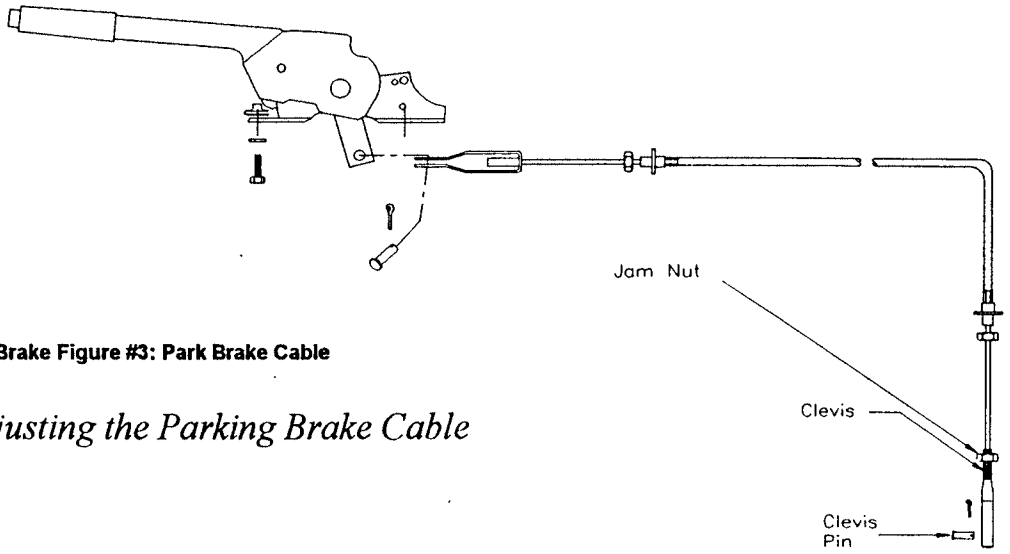
HIGH/LOW SWITCH

The high/low switch is located under the light switch.


Indicates slow (low power) speed.


Indicates fast (high power) speed.

NOTES



Brake Figure #3: Park Brake Cable

Adjusting the Parking Brake Cable

In order to adjust the park brake cable follow the procedure below:

NOTE

DO NOT USE THE PARK BRAKE CALBE TO ADJUST THE PARKING BRAKE. THE PARK BRAKE CABLE SHOULD BE ADJUSTED ONLY WHEN INSTALLED IN THE VEHICLE. IT SHOULD NOT REQUIRE ANY FURTHER ADJUSTMENTS.

1. Trun the key off and place blocks under the wheels to prevent movement.
2. Visually inspect the cable for signs of wear or damage.
3. Loosen the jam nut on the clevis.
4. Measure the distance between the brake arm and the chain case. It should be approximately 1/4" from the chain case. (See Figure #4 on the next page.)
5. Remove the clevis from the brake arm to adjust the distance between the chain case and the brake arm.

   Rotate the clevis clockwise to increase the distance or counterclockwise to decrease the distance between the brake arm and the chain case.
6. Reconnect the clevis to the brake arm and check the measurment again. If the distance is not correct, remove the clevis again and continue to adjust until the 1/4" gap is achieved.

Ball Joints

NOTE IT IS RECOMMENDED TO REPLACE ALL THE BALL JOINTS AS A SET.

1. Loosen the ball joint clamp. Note its position on the sleeve.
2. Remove the ball joint nut, and then remove the ball joint using a pickle fork.
3. Count the number of turns while removing the ball joint from the drag link or tie rod.
4. Lightly lubricate the threads on the new ball joint and install into the drag link or tie rod counting the same number of turns as when removed.
5. Install the ball joint into the steering arm and tighten nut to 40-45 ft lbs. Use a NEW cotter pin.
6. Lube the new ball joint.
7. Realign the front wheels.
8. Tighten the ball joint clamps securely.

⚠CAUTION *Make sure the clamps are in their original position noted in step 1. Turn the steering all the way from left to right to make sure there is no interference.*

10. Read the following list of things to remember while reassembling the differential and then reassemble it in reverse order.

    a.) Pre-lube all bearings and gears during reassembly.

    b.) Cross tighten ring gear bolts to 72 ft-lbs.

    c.) If pinion bearing or gears are replaced, the drive must be reshimmed.(See Re-Shiminng the Pinion Bearings, below.)

    d.) Use new seals.

Adjust the Backlash

1. Install the correctly shimmed pinion gear and pinion gear housing. (See page 3-35.)
2. Temporarily install the drive sprocket and brake drum. Torque the pinion nut to 100 ft-lbs.
3. Tighten the carrier bearing cap bolts to 15 ft-lbs.
4. Position the carrier assembly against the pinion gear and turn the adjusting nuts to contact the carrier bearings.
5. Loosen the adjusting nut on the toothed side of the ring gear slightly.
6. Tighten the other nut so that there is no gear backlash, but so tight to cause binding.
7. Tighten the adjusting nut on the toothed side of the ring gear so that there is .008 ot .012 backlash.
8. Tighten the carrier bearing cap bolts to 40-55 ft-lbs.

Re-Shimming the Pinion Bearings

1. Remove the pinion housing from the third member.
2. Install the drive gear and brake drum (or equivalent spacer,) on to the pinion shaft and tighten to 100 ft-lbs.
3. The pinion gear should turn freely with zero radial play.

NOTE DO NOT ROTATE BEARINGS WHEN DRY, THEY MUST HAVE A LUBRICANT, OR THEY WILL BE DAMAGED.

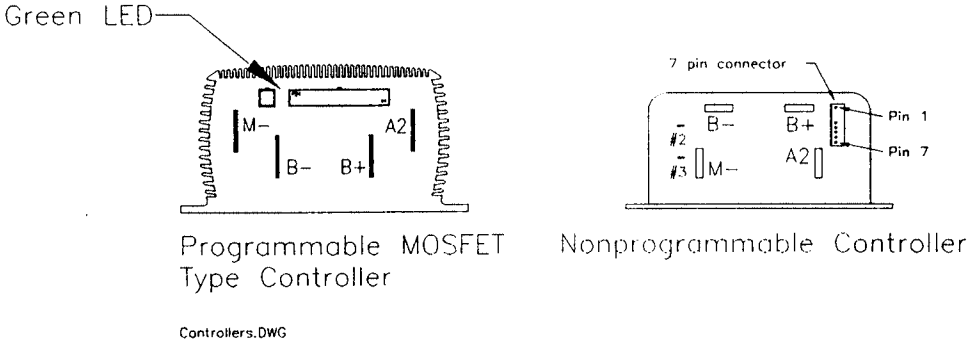
4. Add or remove shims as necessary.

Electrical System

Introducton

You Huskey is equipped with either a programmable MOSFET type speed control or a nonprogrammable speed control. The easiest way to tell which speed control is in your vehicle is by the serial number. If your vehicle has a serial number of 128260 or higher then you have the new nonprogrammable speed control. All vehicles with a serial number lower than 128260 should have the programmable MOSFET type speed control.

However it is possible that a nonprogrammable controller has been installed in an older vehicle. So you may also identify you controller by visual inspection of the terminal end of the controller. The programmable controller has a green LED located on the terminal end of the controller, which flashes when the controller is connected. If you are still not sure refer to the figure below to help locate the LED.



Electrical System Figure 1: Controllers

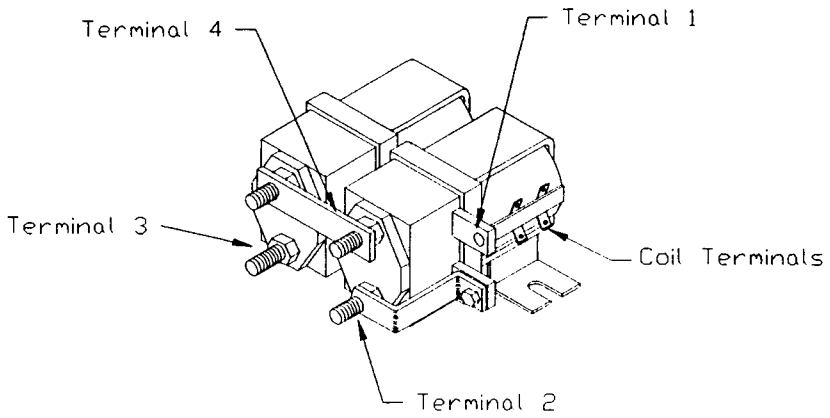
In this section we will describe how to troubleshoot and care for both of these controllers and how to use the optional hand held programmer. First we will cover the programable controller and the operation and use of the optional hand held programmer. Then we will discuss the nonprogrammable controller. So before you continue be sure to properly identify the controller that is installed in your vehicle. If for some reason you cannot identify your controller call our Technical Support at 714-956-4040 ext. #205, with as much information as possible. You will also notice that at the end of each sub-section for the programmable and nonprogrammable controllers there are a set of schematics. These schematics are unique to the vehicle depending on the controller installed in it. So, before using one of the schematics to help troubleshoot or repair your vehicle read the note at the bottom of the schematic to be sure you are using the correct one.

Programming Terms

The following is a list of terms used in the program menu and their meanings.

1. **Acceleration Rate:** The acceleration rate is the time in seconds it takes the controller to increase from 0% to 100% duty cycle.
2. **Creep:** Is the term used to indicate the speed the truck travels when the contactors first close.
3. **High Speed:** Setting to control the percent of power available when the accelerator pedal is depressed in the fast mode.
4. **HPD:** "High Pedal Disable," prevents the truck from being started while the accelerator pedal is depressed.
5. **Low Speed:** Setting to control the percent of power available when the accelerator pedal is depressed in the slow mode.
6. **Low Speed Current Limit:** Maximum current allowed while in the slow mode.
7. **Main Current Limit:** Maximum current allowed while in the fast mode.
8. **Plugging:** The term used when describing the use of the motor as a brake.
9. **PWM:** Pulse Width Modulation, The duty cycle the motor is being operated at. The duty cycle varies with the accelerator position. 100% PWM is full power, pedal fully depressed.
10. **Quick Start Factor:** Momentarily overrides setting of acceleration rate for ease of starting up inclines.
11. **Ramp Start Current Limit:** Overrides plug brake current for starting up ramps. Ramp start current limit is selected when the seat switch closes and a direction is selected. If the direction is changed, ramp start current limit is canceled. To re-select ramp start current limit, select a direction for 1 second, return to neutral then return to the original direction selected.

2. Tape off wires to prevent shorts.
3. Reconnect batteries.
4. Place directional switch in neutral.
5. Test continuity from terminal 4 to terminal 2.
   a.) If it is shorted then the contactor is bad. >>END
6. Test continuity from terminal 4 to terminal 1.
   a.) If it is shorted then the contactor is bad. >>END

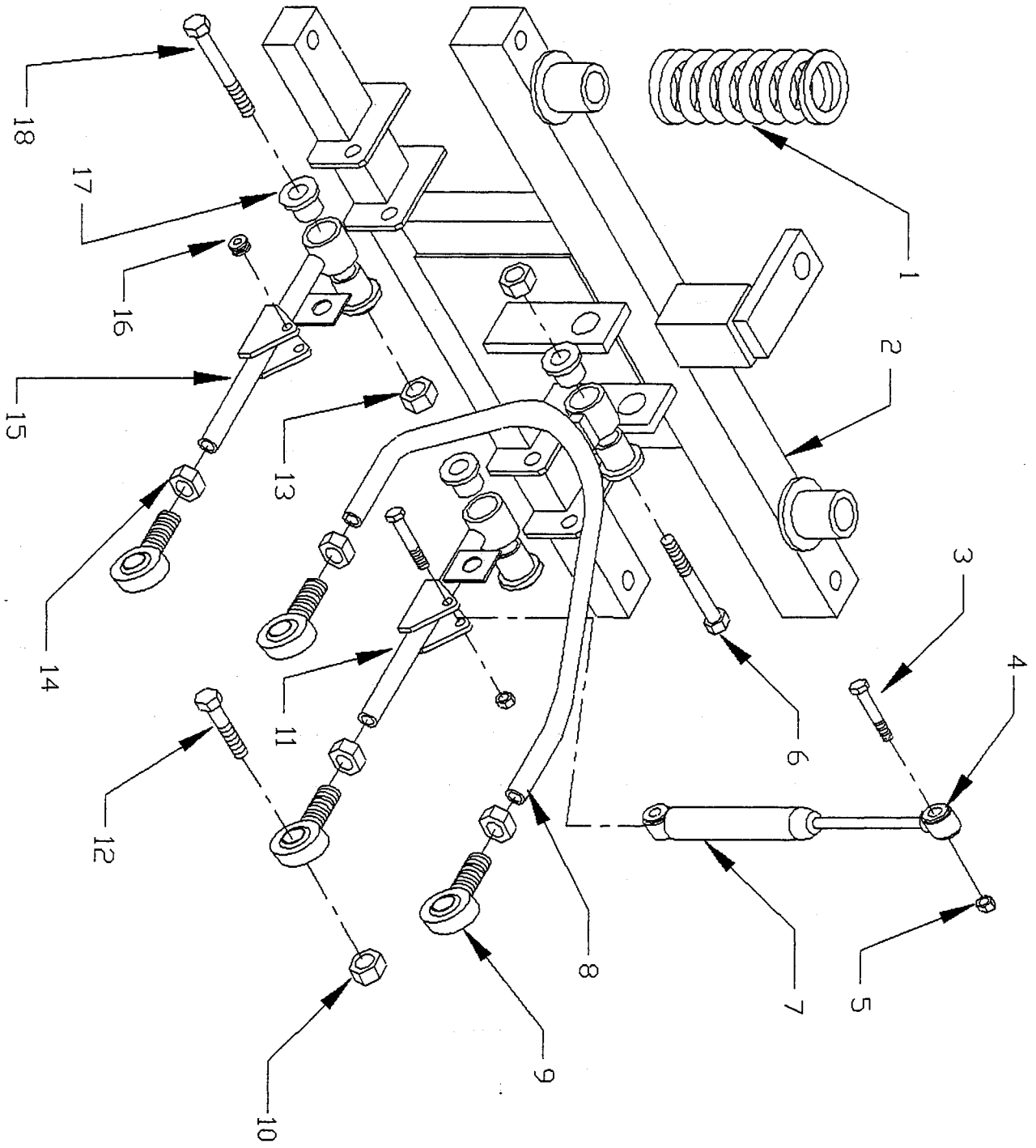


Forward and Reverse Contactors.DWG

7. Directional switch in FORWARD, depress accelerator pedal.
8. Test continuity from terminal 1 to terminal 3.
   a.) If it is shorted then the contactor is bad. >>END
9. Directional switch in REVERSE, depress accelerator pedal.
10. Test continuity from test terminal 1 to terminal 2.
    a.) If it is shorted then the contactor is bad. >>END
11. Reconnect motor and PMC wires.
12. Reconnect battery.

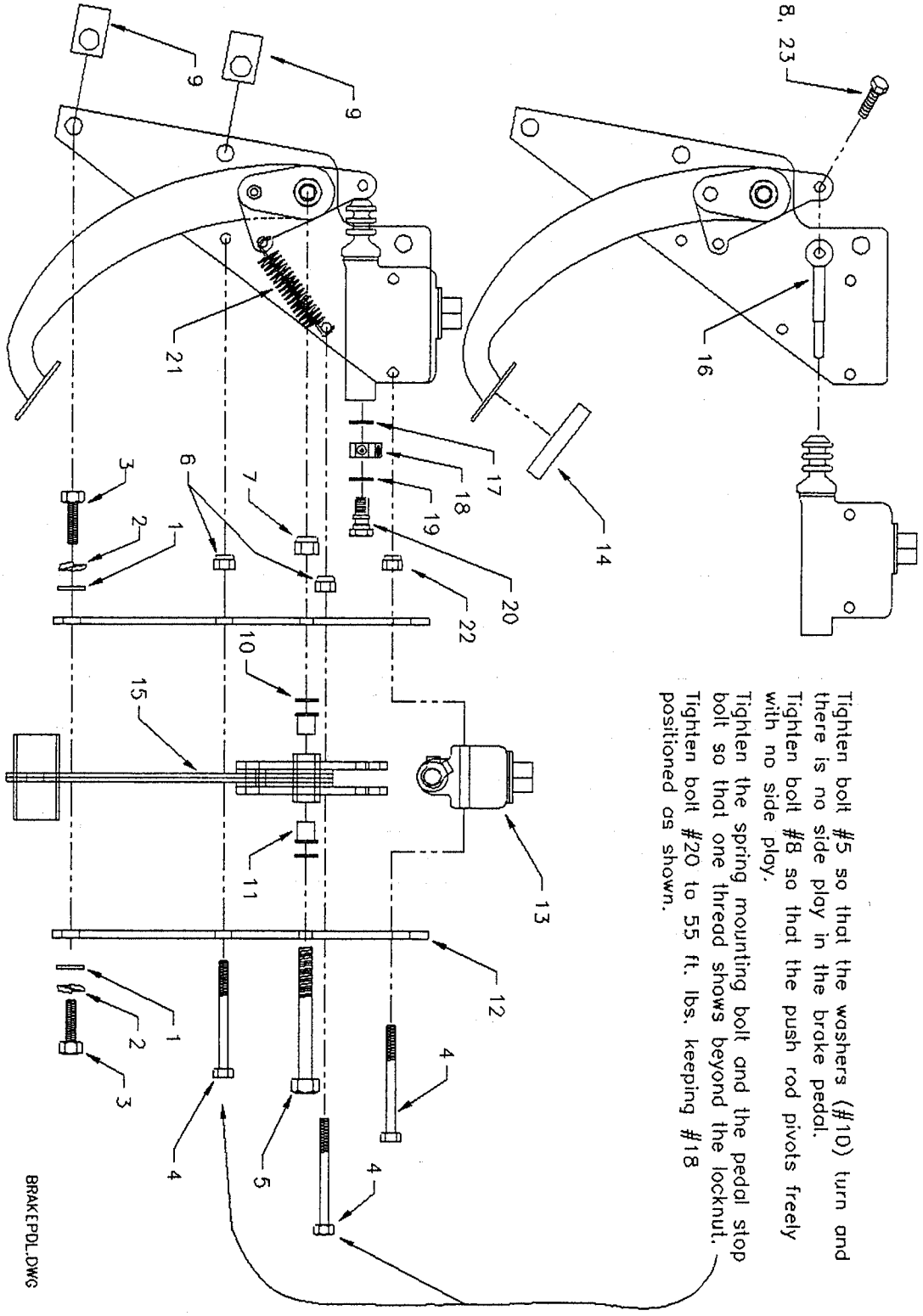
Section 4

FRONT SUSPENSION



Section 4

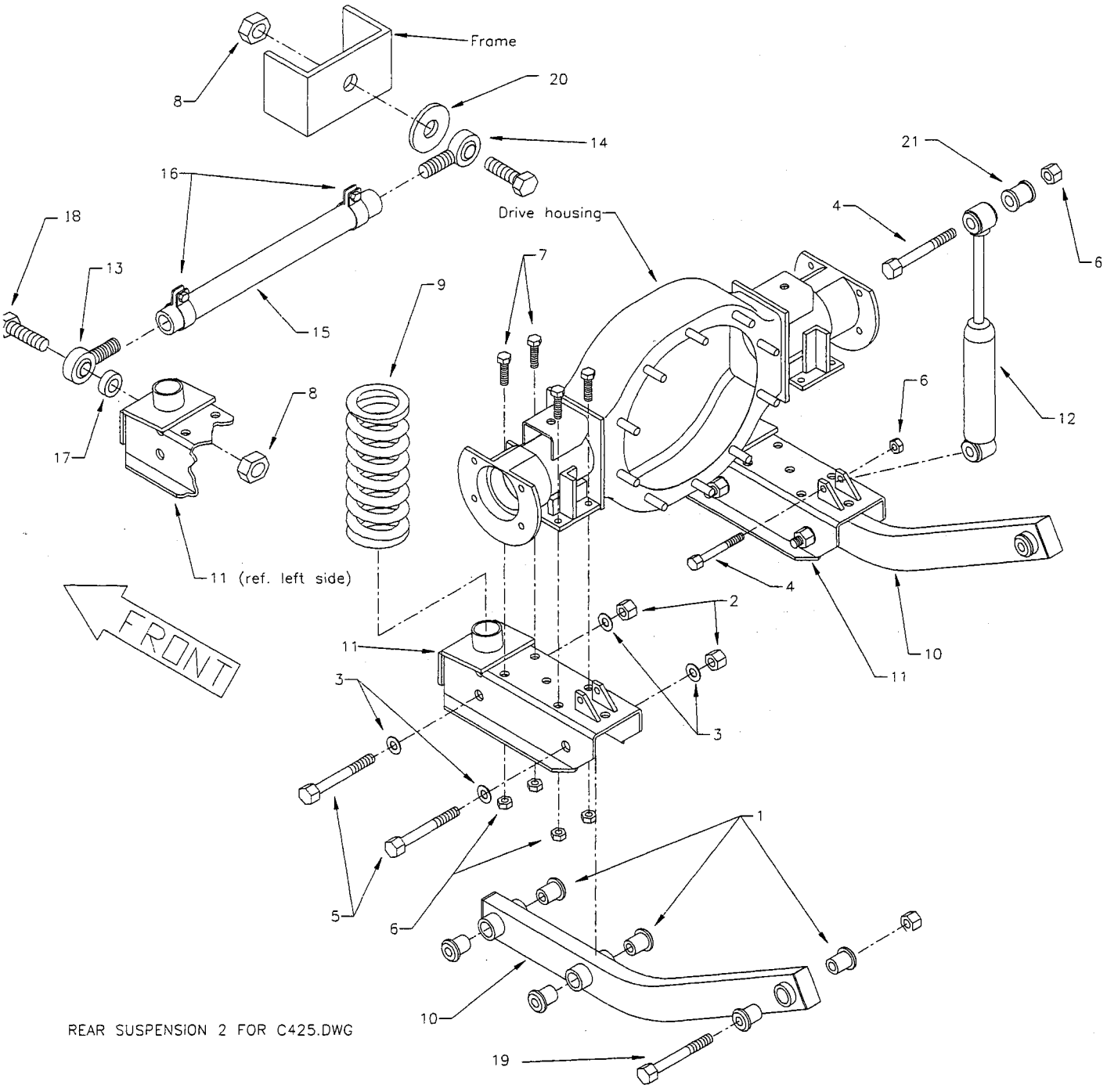
FOOT BRAKE LINKAGE



Tighten bolt #5 so that the washers (#10) turn and there is no side play in the brake pedal.
Tighten bolt #8 so that the push rod pivots freely with no side play.
Tighten the spring mounting bolt and the pedal stop bolt so that one thread shows beyond the locknut.
Tighten bolt #20 to 55 ft. lbs. keeping #18 positioned as shown.

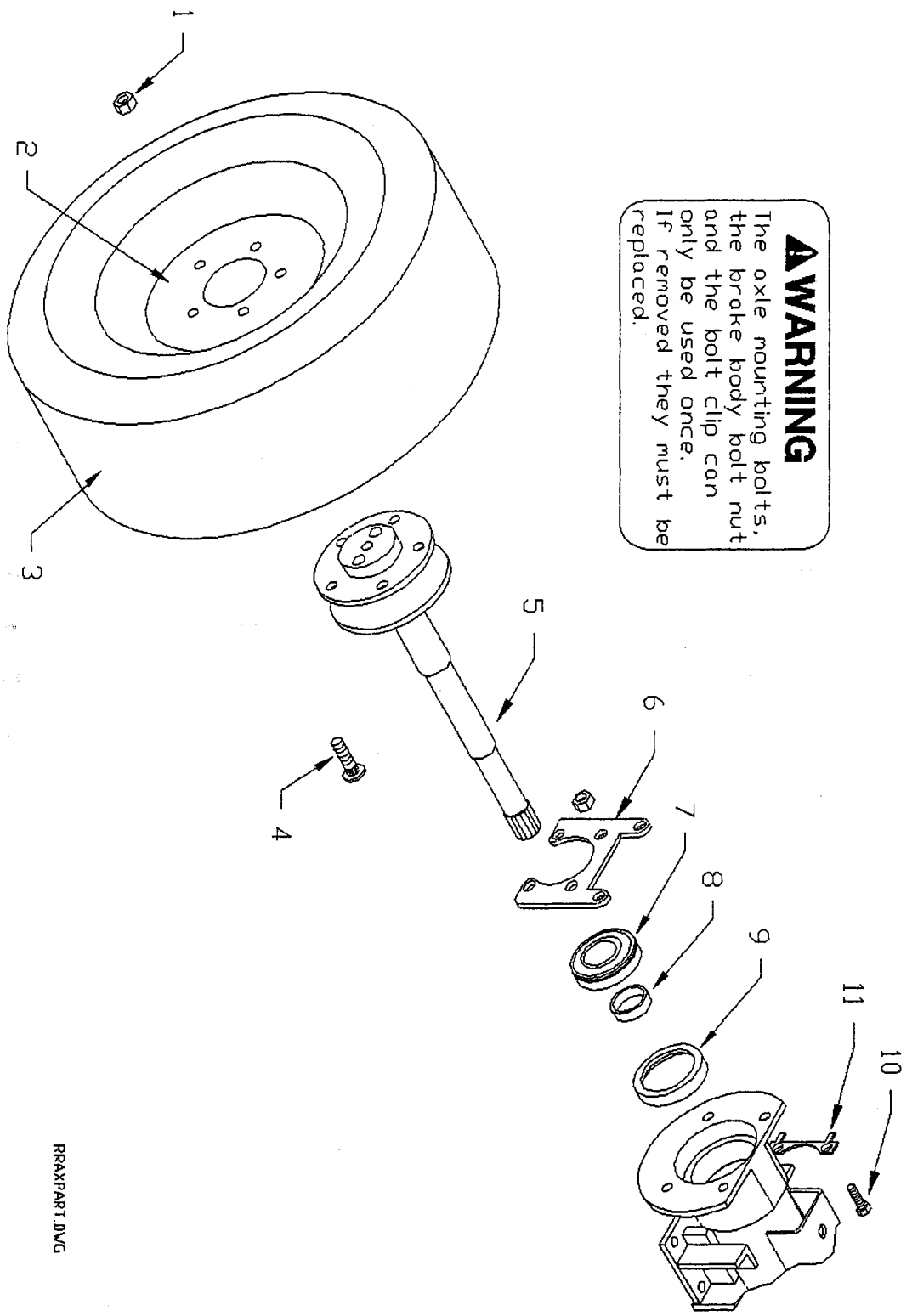
Section 4

B2-48 REAR SUSPENSION



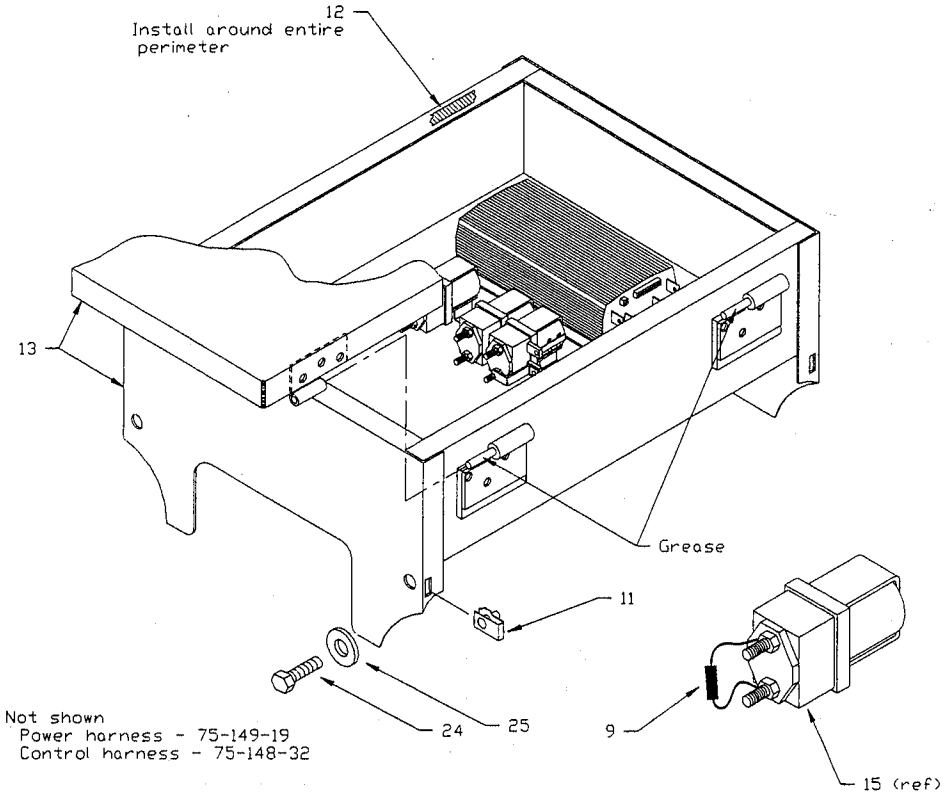
Section 4

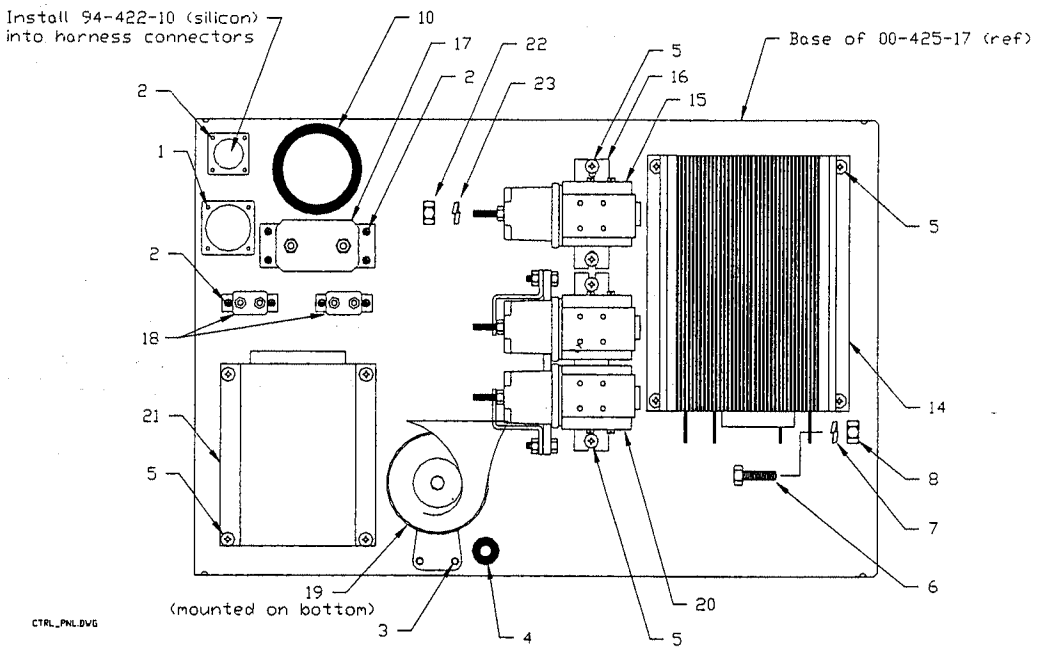
REAR AXLE B2-48



Section 4

CONTROL PANEL





BATTERIES			
Item #	Part Number	Description	Qty
1	77-047-00	6V 244AH,145M, TROJAN BATTERY	16
2	50-250-00	CLAMP, BATTERY BAT-LOK W/WASHER AND LOCKNUT	3
3	88-081-12	5/16 X 1 NC SQ HD,TIN-LEAD	32
4	88-089-80	5/16NC HEX NUT,TIN-LEAD	32

Illustrated Parts Table 1: Batteries

*NOT SHOWN

Front Axle			
Item #	Part Number	Description	Qty
1	99-580-30	Brake Hose (RT)	1
2	15-255-11	Steering Fork (RT)	1
3	86-501-99	Ball Joint, Right W/ Zerk Fitting	2
4	86-510-00	Ball Joint Clamp	4
5	15-255-19	Tie Rod 32"	1
6	99-603-66	Brake Line, Front Right	1
7	99-580-00	Brake Hose	1
8	99-563-00	T-Fitting W/ Hardware	1
9	99-603-65	Brake Line, Front Left	1
10	86-501-98	Ball Joint, Left W/Zerk Fitting	2
11	15-255-10	Steering Fork, Left	1
12	18-104-06	Pitman Arm	1
13	18-057-30	Drag Link	1
14	99-580-30	Brake Hose (LT)	1
15	15-255-01	Front Axle	1

Illustrated Parts Table 6: Front Axle Parts List

Steering			
Item #	Part Number	Description	Qty
1	18-305-15	Steering Gear	1
2	86-501-98	Left Ball Joint W/Zerk Fitting	1
3	18-057-30	Drag Link	1
4	86-501-99	Right Ball Joint W/Zerk Fitting	1
5	86-510-00	Ball Joint Clamp	2
6	18-104-06	Pitman Arm	1
7	88-128-62	7/16 Lock Washer	3
8	88-120-15	7/16 X 1-1/2 HEX HD	3

Illustrated Parts Table 11: Steering Parts List

DASH ASSEMBLY KZ-D20-10			
Item #	Part Number	Description	Qty
1	72-028-25	Light, Rectangular, Green, 12V	3
2	74-020-00	Speedometer	1
3	72-025-10	Light, Rectangular, Red, 12V	1
4	71-120-00 71-121-00	Switch, Key, (Keyed Alike) Switch, Key, (Keyed Unalike, Optional)	1
5	71-039-12	Switch, Double Throw, (for FWD/OFF/REVS)	1
6	74-009-96	Hour Meter	1
7	74-009-96	Gauge, Fuel	1
8	71-039-11	Switch, Accessories & Light	3
9	*	Switch, High-Low	1

Illustrated Parts Table 16: Dash Panel Assembly Parts List

* Not Available at time of printing.