SM-615
ECG 20-32
Genesis Series Truck



CLARK Technical Publications Lexington, KY 40508

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CLARK Material Handling Company

Truck Models Covered by This Manual

This manual consists of a "base" module that pertains to ECG 20-30 models and other modules that pertain only to specific models. Manuals shipped with the truck contain the base module and the module specific to the purchased truck.

You may, however, purchase specific modules and expand your manual to fully cover multiple models. To do so, order the desired modules as you would any other Clark part.

Arrangement and Use of This Manual

Clark arranges parts and service procedures by standardized *Groups*. In this manual, Groups are similar to "chapters." Groups are listed in the indexes on the next page.

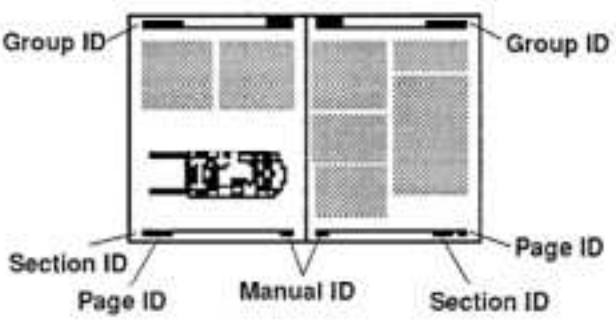
Each Group begins with a table of contents that shows the *Sections* contained within the Group. Lengthy Sections also begin with a table of contents.

Each Group and Section has an identifying name and number, or "ID."

Each page also has a unique ID. The page ID consists of three numbers separated by hyphens. The three numbers represent the Group number, the Section number, and the page number. For Example, "00-1-2" on the lower corner of the page indicates Group 00, Section 1, Page 2.

The Group number sometimes has a letter or letters added to it in parentheses if one or more variations of the Group exist. For example, if the truck has a standard transaxle, Group 06 is expressed as "06(S);" if the truck has a hydrostatic transmission, Group 06 is expressed as "06(H)."

You can quickly locate a specific point in the manual by using the headers and footers that appear on every Section page. The following illustration points out these areas.



IMPORTANT

This manual is intended for the use of trained service personnel. Please read Group SA, "Safe Maintenance" and the *Operator's Manual* before working on or operating the truck.

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Section 1

Wiring Diagrams

Standard Wiring Diagram 3

Standard Wiring Diagram with Pump Control 4

High Performance Wiring Diagram 5

High Performance Wiring Diagram with Pump Control 6

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CONTROL PANEL TROUBLESHOOTING

When diagnosing and correcting the cause of trouble with an electrical control, **do not begin** by disassembling components.

Start by analyzing the complaint and symptoms. Make a preliminary investigation of trouble. Then systematically determine the probable cause.

The following points are fundamental to trouble-shooting an electrical system.

- Never start your troubleshooting until you get facts. Talk with truck operator and review work order.
- Operate the truck to observe fault and then determine what corrective action should be. Determine where to start.
- Perform the basic checks. Check battery and test for grounds and shorts. Do not take short cuts by assuming these checks do not have to be made.
- Useless work can be avoided by diagnosing trouble accurately on basis of preliminary investigation and correct use of information in the trouble-shooting guide. Take necessary time for sufficient preliminary investigation.
- Use explanations for status codes indicated to properly diagnose misoperations. You may also want to use the Sequence of Operation section of this manual as a diagnostic tool.
- Locate the trouble by a process of elimination. The cause is usually simple, rather than mysterious and complicated.
- MOST IMPORTANT, USE THE ELECTRICAL SCHEMATIC DIAGRAM FOR THE TRUCK YOU ARE WORKING ON. YOU MUST BE ABLE TO TRACE THE:

** **POWER CIRCUITS** which consist of heavy cables and main power components of truck.

** **SPEED CIRCUITS** which control speed, time delay, controlled plugging and Regenerative braking.

** **DIRECTIONAL CIRCUITS** which control forward and reverse contactors.

** **ACCESSORY CIRCUITS** which control components, including horn, pump contactor and dash display.

ALL TESTING SHOULD BE DONE WITH DRIVE WHEEL RAISED OFF THE FLOOR.

TROUBLE-SHOOTING NOTES

Trouble-shooting is based on using a digital voltmeter to determine if correct voltages are available to permit the control to operate correctly.

The pulsing of the Transistor is too fast for conventional instruments to measure. When the control is functioning properly, a high pitch hum can be heard.

Before proceeding with any testing, visually check for loose wiring, signs of overheating of components, condition of battery and battery receptacle, etc.

WARNING

BEFORE TROUBLE-SHOOTING OR TESTING, THE DRIVE WHEEL MUST BE RAISED OFF THE FLOOR, THE BATTERY DISCONNECTED AND THE CAPACITOR DISCHARGED.

BREAKING THIS RULE CAN CAUSE SERIOUS INJURY TO YOURSELF

To discharge the capacitors:

1. **Turn key switch OFF and unplug the battery.**
2. **Turn the key switch ON, the line contactor should energize and**

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Specifications

General Specifications

- Speeds: Infinitely variable, forward and reverse.
- Ring and Pinion Gear Type: Spiral bevel.
- Differential Type: 4 pinion
- Fluid Capacity: 3.97 L (4.2 qts).
- Drive Axle Fluid: Transmission Fluid, Clark Part Number 2776236.

Torque Specifications

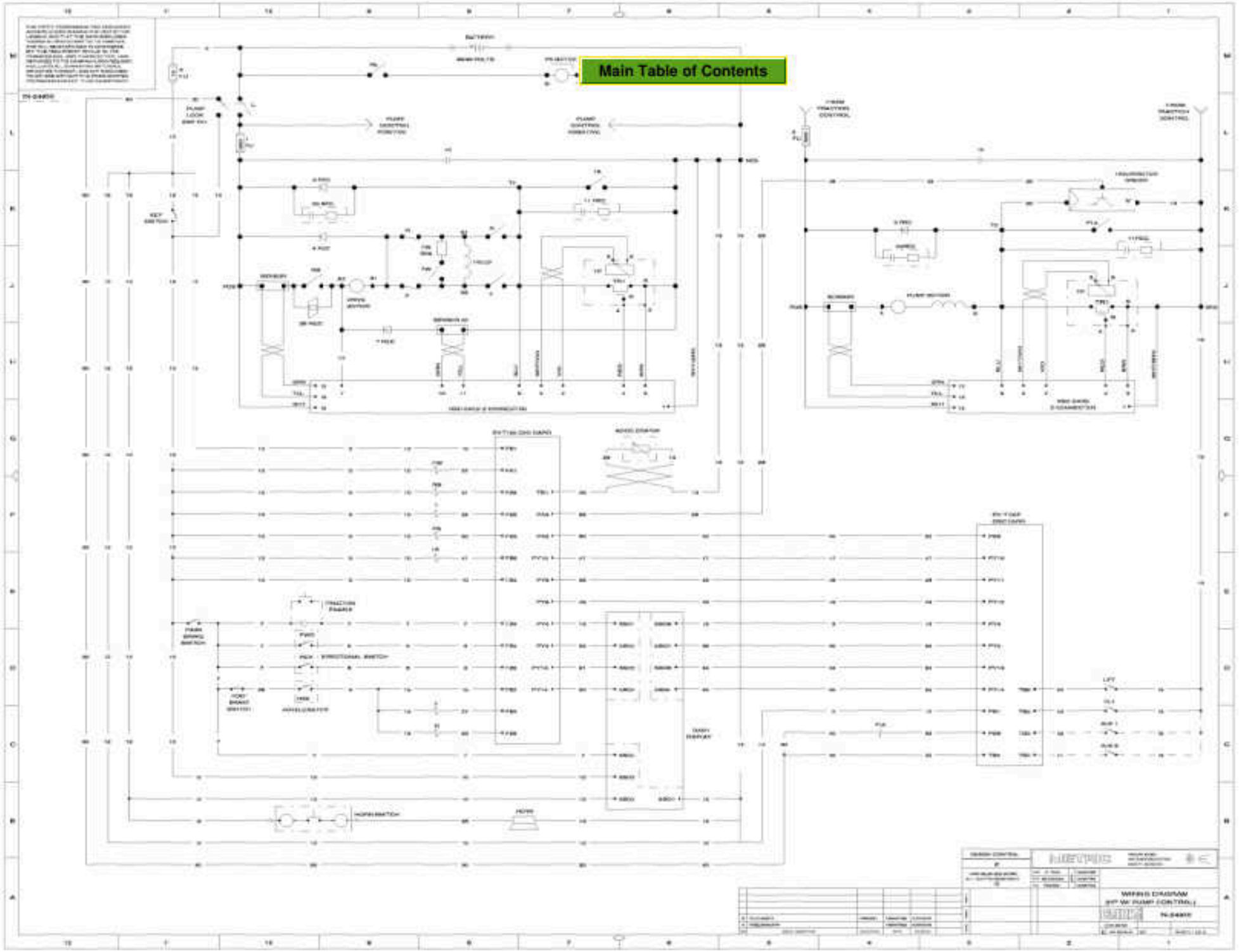
- Drive Motor-to-Adaptor and Differential Housing Fasteners: Apply Loctite 242 to clean degreased fastener threads and sequence tighten every fifth fastener around circle until all eight fasteners are tightened to 70-80 N•m (52-59 lb-ft).
- Axle End Assembly-to-Differential Housing Bolts 90-110 N•m (66-81 lb-ft).
- Ring Gear-to-Diff Case Fasteners: 205-250 N•m (151-185 lb-ft).
- Adaptor to Diff Case: 60-65 N•m (44-48 lb-ft).
- Hub Bearing Retaining Nut: Tighten until bearings bind slightly in rotation. Back off nut 1/8 turn and install locking washer and lock nut.
- Pinion Shaft Nut: 270-340 N•m (200-250 lb-ft)
- Differential Case to Axle Housing Fasteners: 49-60 N•m (36-44 lb-ft)
- Axle Mounting Bracket-to-Frame Fasteners: 450–500 N•m (332-369 lb-ft).
- Front Wheel-to-Axle Fasteners: 300-370 N•m (225–275 lb-ft).

Service Intervals

- Replace drive axle oil every 2000 operating hours.

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