



**GROVE<sup>®</sup>**  
**CRANE**

A GROVE WORLDWIDE COMPANY

***OPERATOR'S AND  
SAFETY  
HANDBOOK***

***TMS250 Series  
Carrier***

S/N \_\_\_\_\_

REVISED: JUNE 1995

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## TABLE OF CONTENTS (continued)

	Page
ENGINE BLOCK HEATER .....	4-19
TIRE INFLATION KIT .....	4-19
OUTRIGGER STABILIZER SPIN-TYPE LOCKS .....	4-20
<b>Section 5 LUBRICATION .....</b>	<b>5-1</b>
GENERAL .....	5-1
LUBRICANTS .....	5-1
HYDRAULIC OIL RECOMMENDATIONS .....	5-5
Viscosity .....	5-6
Arctic Conditions (Below 0° F -18° C) .....	5-7
Antiwear Additives .....	5-7
LUBRICATION POINTS .....	5-7
Hook Block Swivel Bearings .....	5-9
Hook Shank and Hex Nut .....	5-9
Hook Block Sheaves .....	5-9
Lower Boom Nose Sheaves .....	5-9
Roster Sheave (Optional) .....	5-9
Upper Boom Nose Sheave .....	5-9
Cable Guide Sheaves .....	5-10
Non Adjustable Wear Pads .....	5-10
Telescope Cylinder Support Foot Wear Pads .....	5-10
Adjustable Wear Pads .....	5-10
Cable Sheave Pulley (Mid-Section Extension) .....	5-10
Cable Follower .....	5-11
Hoists .....	5-11
Swing Gear and Pinion .....	5-11
Boom Pivot Shaft .....	5-11
Lift Cylinder .....	5-12
Swing Gear Box .....	5-12
Swing Bearing .....	5-12
Swing Brake .....	5-12
Jig Sheave .....	5-13
Hydraulic Swivel .....	5-13
Control Levers .....	5-13
Hydraulic Reservoir .....	5-13
Hydraulic Reservoir Filter .....	5-13
Stabilizer Cylinder (Spin Lock Only) .....	5-13
Engine Oil Filter .....	5-16
Steering Gearbox .....	5-16
Drag Link .....	5-16



# DANGER

AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO DEATH OR SERIOUS INJURY. YOU MUST NOT OPERATE THIS MACHINE UNLESS:

- YOU HAVE BEEN TRAINED IN THE SAFE OPERATION OF THIS MACHINE;
- YOU READ, UNDERSTAND AND FOLLOW THE SAFETY AND OPERATING RECOMMENDATIONS CONTAINED IN THE MANUFACTURER'S MANUALS, YOUR EMPLOYER'S WORK RULES AND APPLICABLE GOVERNMENT REGULATIONS
- YOU ARE SURE THE MACHINE IS OPERATING PROPERLY AND HAS BEEN INSPECTED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S MANUAL;
- YOU ARE SURE THAT ALL SAFETY SIGNS, GUARDS AND OTHER SAFETY FEATURES ARE IN PLACE AND IN PROPER CONDITION.

AVOID ELECTROCUTION, TIPPING, TWO-BLOCKING AND OTHER OPERATIONAL HAZARDS.

7255

YOU MUST NOT OPERATE THIS MACHINE UNLESS:

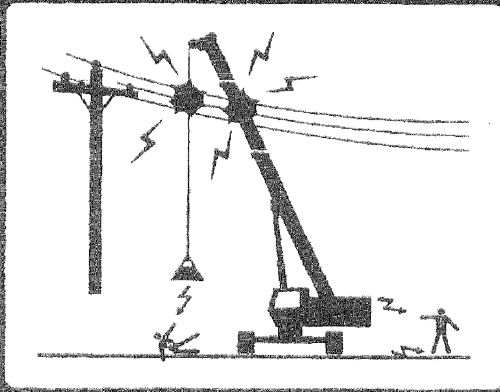
- You have been trained in the safe operation of this machine;
- You read, understand and follow the safety and operating recommendations contained in the manufacturer's manuals, your employer's work rules and applicable government regulations;
- You are sure the machine is operating properly and has been inspected and maintained in accordance with the manufacturer's manuals;
- You are sure that all safety signs, guards and other safety features are in place and in proper condition.

Do not attempt to operate the crane unless you are trained and thoroughly familiar with all operational functions. Controls and design may vary from crane to crane, therefore, it is important that you have specific training on the particular crane you will be operating.

Training is ESSENTIAL for proper crane operation. Never jeopardize your own well-being or that of others by attempting to operate a crane on which you have not been trained.

You must be mentally and physically fit to operate a crane. Never attempt to operate a crane while under the influence of medication, narcotics or alcohol. Any type of drug could impair physical, visual and mental reactions and capabilities.

This machine is NOT INSULATED. Always consider all parts of the load and the crane, including the wire rope, hoist cable, pendant cables and tag lines, as conductors.



**! DANGER**

**ELECTROCUTION HAZARD**

- TO AVOID DEATH OR SERIOUS INJURY, KEEP ALL PARTS OF THIS MACHINE, THE RIGGING, AND MATERIALS BEING LIFTED AT LEAST 20 FEET AWAY FROM ALL ELECTRICAL POWER LINES AND EQUIPMENT.
- KEEP AWAY FROM THIS MACHINE IF IT IS BEING OPERATED NEAR ELECTRICAL POWER LINES OR EQUIPMENT.
- BEFORE OPERATING THIS CRANE IN THE VICINITY OF POWER LINES OR EQUIPMENT, NOTIFY THE POWER UTILITY COMPANY. HAVE POWER TURNED OFF.
- FOLLOW INSTRUCTIONS IN OPERATOR'S AND SAFETY HANDBOOK.

**THIS MACHINE IS NOT INSULATED.**

6707

Most overhead power lines ARE NOT insulated. Treat all overhead power lines as being energized unless you have reliable information to the contrary from the utility company or owner.

The rules in this handbook must be followed at all times, even if the electrical power lines or equipment have been de-energized.

Crane operation is dangerous when close to an energized electrical power source. Exercise extreme caution and prudent judgement. Operate slowly and cautiously when in the vicinity of power lines.

If the load, wire rope, crane boom or any portion of the crane contacts or comes too close to an electrical power source, everyone in, on, and around the crane can be seriously injured or killed.

The safest way to avoid electrocution is to stay away from electrical power lines and electrical power sources.

You, the operator, are responsible for alerting all personnel of dangers associated with electrical power lines and equipment. The crane is not insulated. Do not allow unnecessary personnel in the vicinity of the crane while operating. Permit no one to lean against or touch the crane. Permit no one including riggers and load handlers to hold the load, load lines, tag lines or rigging gear.

handbook and the Service Manual for this machine. All replacement parts must be Grove approved.

Any modification, alteration or change to a crane which affects its original design and is not authorized and approved by Grove Worldwide is STRICTLY PROHIBITED. Such action invalidates all warranties and makes the owner/user liable for any resultant accidents.

Before performing any maintenance, service or repairs on the crane:

- The boom should be fully retracted and lowered and the load placed on the ground.
- Stop the engine and disconnect the battery.
- Controls should be properly tagged. Never operate the crane if it is TAGGED-OUT nor attempt to do so until it is restored to proper operating condition and all tags have been removed by the person(s) who installed them.

Recognize and avoid pinch-points while performing maintenance. Stay clear of sheave wheels, holes, and lattice work in crane booms.

After maintenance or repairs:

- Replace all guards and covers that had been removed.
- Remove all tags, connect the battery and perform a function check of all operating controls.
- Load tests must be performed when a structural or lifting member is involved in a repair.

## LUBRICATION

The crane must be lubricated according to the factory recommendations for lubrication points, time intervals and types. Lubricate at more frequent intervals when working under severe conditions.

Exercise care when servicing the hydraulic system of the crane, as pressurized hydraulic oil can cause serious injury. The following precautions must be taken when servicing the hydraulic system:

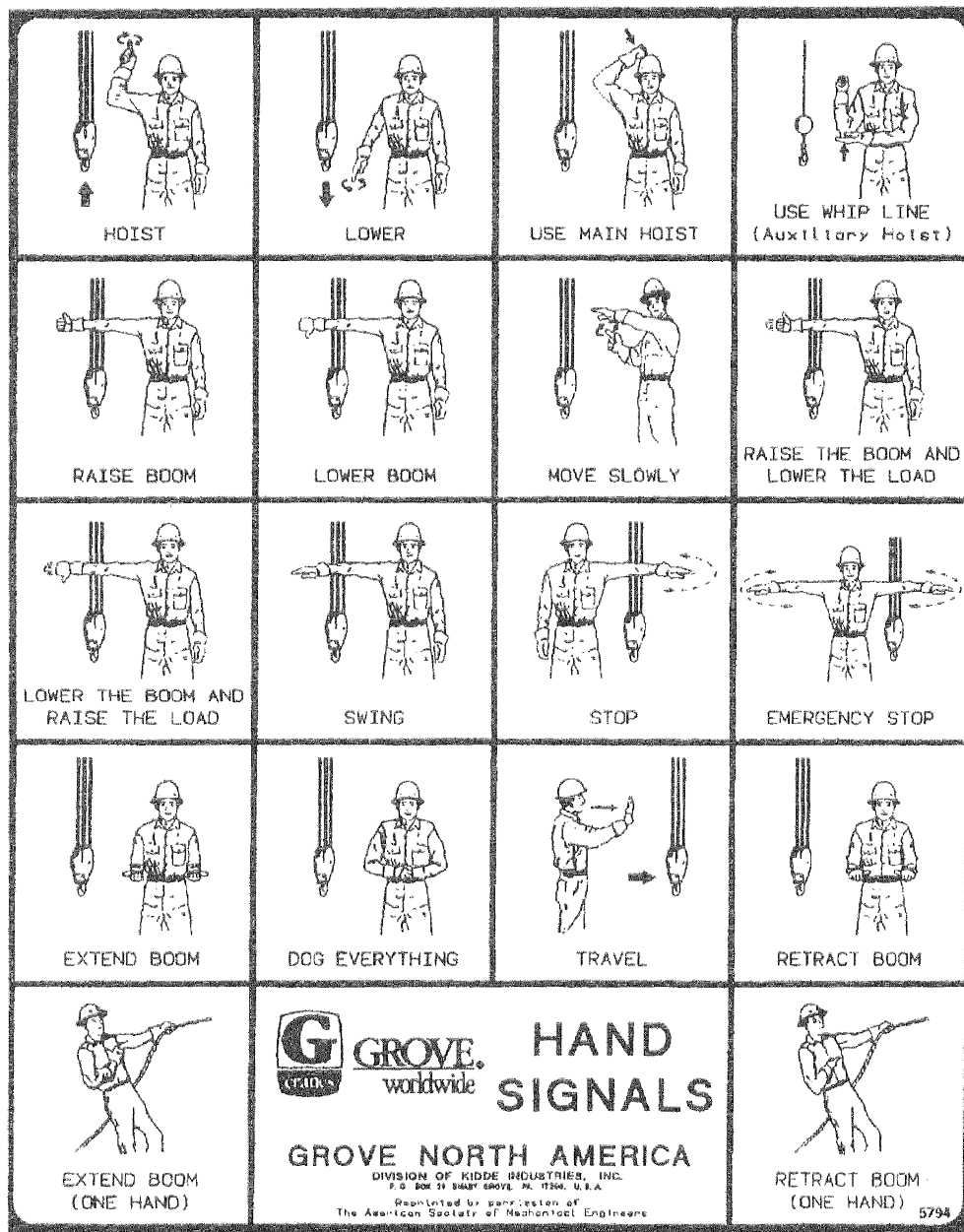
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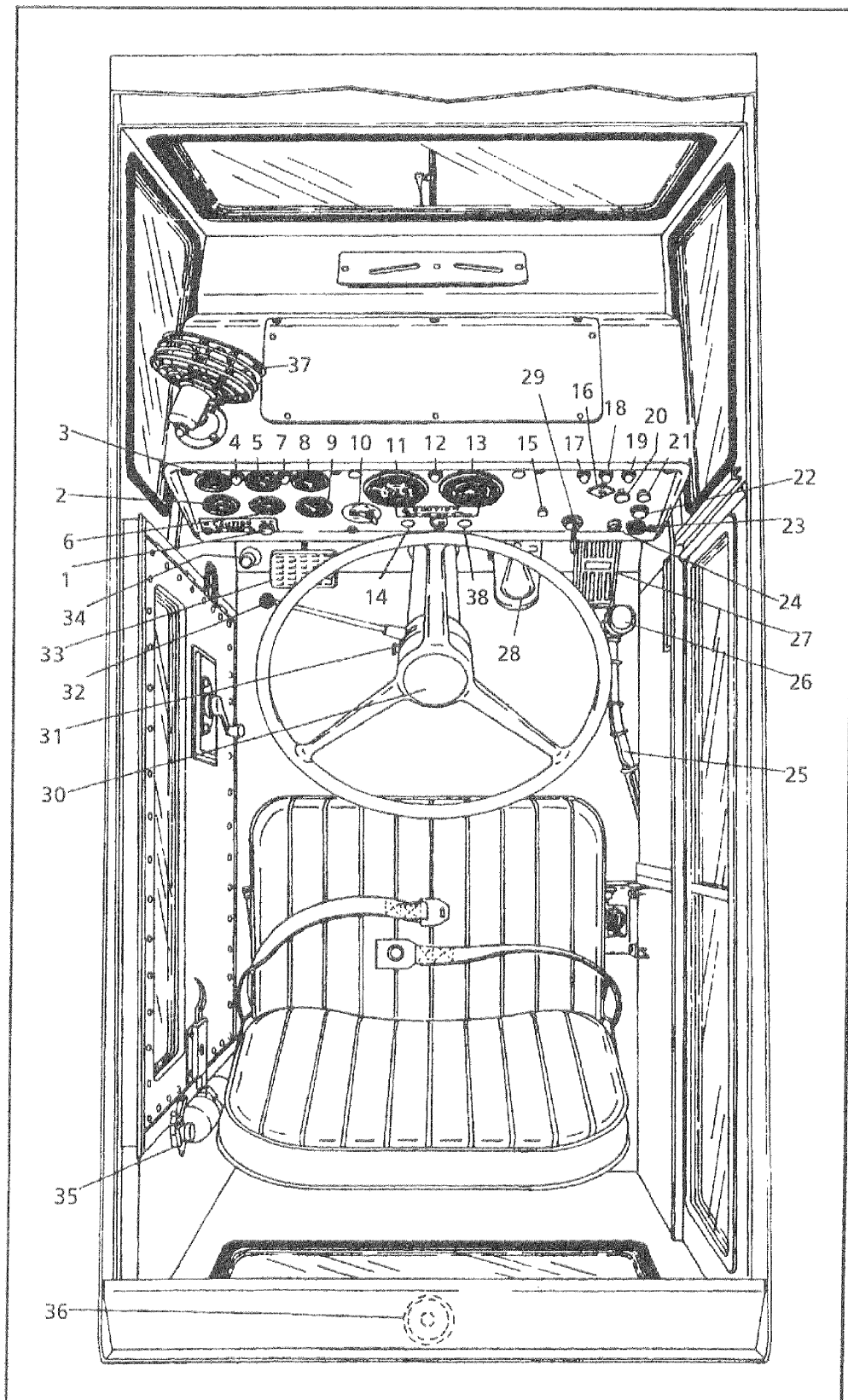
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## TRANSPORTING THE CRANE

When loading or unloading the crane on a trailer or railroad car, use a ramp capable of supporting the weight of the crane.

Ensure the crane is adequately secured to the transporting vehicle.



Cab Controls and Indicators (Sheet 2 of 2)

## NOTE

Check the Tire Inflation Decal on the crane for tire inflation pressures.

### WHEELS

Maintain proper torque on wheel lugs and check for proper wheel mounting.

### SAFETY EQUIPMENT

Check all lights, windshield wipers, washers, washer liquid supply, horn, instruments, signaling devices, etc.

### DAILY LUBRICATION

Make sure all components requiring daily lubrication have been serviced. (Refer to Section 5 Lubrication.)

## ENGINE OPERATION

### STARTING PROCEDURE

Starting and shutdown procedures for most diesel engines generally follow the same pattern. Therefore, the following procedures can be applied, except where specific differences are noted. (Refer to the applicable engine manufacturer's manual for detailed procedures.)

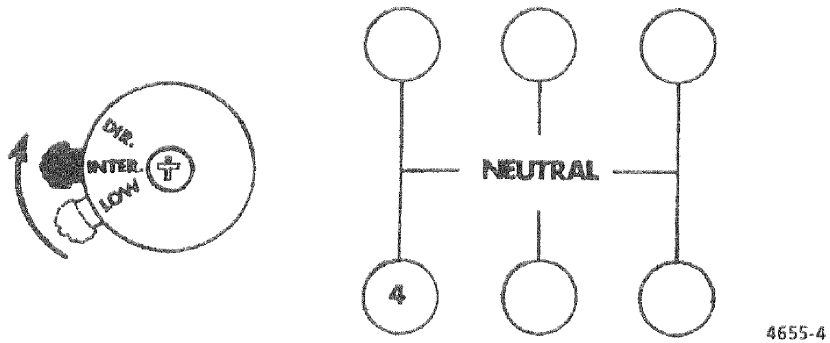
#### DANGER

BEFORE STARTING THE ENGINE, MAKE SURE THE TRANSMISSION IS IN NEUTRAL, THE PARKING BRAKE APPLIED, AND SWING LOCK ENGAGED.

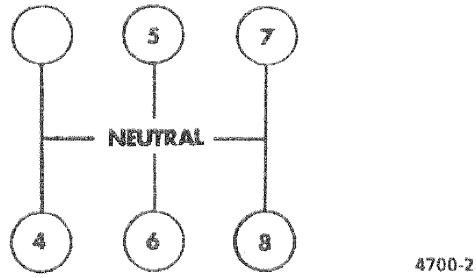
#### CAUTION

NEVER CRANK THE ENGINE FOR MORE THAN 30 SECONDS DURING AN ATTEMPTED START. IF THE ENGINE FAILS TO START AFTER 30 SECONDS, ALLOW THE STARTER MOTOR TO COOL FOR APPROXIMATELY TWO MINUTES BEFORE ATTEMPTING ANOTHER START

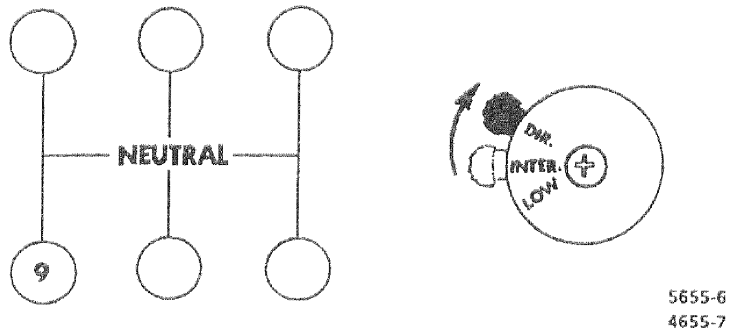
6. First move the range selector button to the INTERMEDIATE range then move the gear shift lever to the 4th gear position.



7. Shift from 4th through 5th, 6th, and 7th to the 8th gear position.



8. First move the range selector button to the DIRECT range then move the gear shift lever to the 9th gear position.



and the separating effects of centrifugal action. It shall not contain corrosive or abrasive materials and shall inhibit corrosion. NLGI Grade No. 2 is recommended where not otherwise specified.

RGL Regular Gear Lubricant. A straight-mineral gear oil of relatively high viscosity for the lubrication of spiral-bevel and worm gear rear axes and most manual transmission operating under low unit pressures and sliding velocities. API-GL-1 service classification. Unless otherwise specified, the following viscosity characteristics are recommended.

Viscosity Index 85 minimum  
 Summer Operation SAE 90  
 Winter Operation SAE 80

EPGL Extreme Pressure Multipurpose Gear Lubricant. A gear lubricant compounded to achieve high load carrying capacity and meet the requirements of either API-GL-5 or MIL-L-2105C. Unless otherwise specified, SAE 80W-90 viscosity may be used for year-round service. Low temperature usage is restricted as follows:

SAE Viscosity Number	Minimum Ambient Temperature - °F (°C)
75W	-40 ( -40)
80W	-15 ( -26)
85W	+ 10( -12)
90	+ 20 ( - 7)
140	+ 140 ( + 5)
250	+ 50 ( + 10)

EPGL (SCL) Extreme Pressure Gear Lubricant, Sulpho-Chloro-Lead. A special gear lube formulated with EP additives of the sulfur-chlorine-lead types. Usage is restricted to those component parts for which the manufacturer specifies a lubricant of this composition. (Refer to Clark MS-8-Specification.)

**20. Jib Sheave.**

Lube Type - EP-MPG  
Lube Interval - 50 hours  
Lube Amount- Until grease extrudes  
Application - 1 fitting at top of swivel

**21. Hydraulic Swivel.**

Lube Type - Water Pump Grease  
Lube Interval - 100 Hours minimum; 150 hours maximum.  
Lube Amount- Approximately 1oz (28 grams) maximum  
Application - 1 fitting at top of swivel

**22. Control Levers.**

Lube Type - EO  
Lube Interval - Monthly  
Lube Amount- A few drops  
Application - Apply to control lever pivot points.

**23. Hydraulic Reservoir.**

Lube Type - HYDO  
Lube Interval - Check daily. Drain as necessary  
Lube Amount- Capacity 86 gallons (325.5 L)  
Application - Fill through the cap on top of the tank.  
When tank is drained, clean the magnetic pipe plug.

**24. Hydraulic Reservoir Filter.**

Lube Type - HYDO  
Lube Interval - Change the filter when the flag is red  
Lube Amount - N/A  
Application - N/A

**25. Stabilizer Cylinder (Spin Lock Only).**

Lube Type - EP- MPG  
Lube Interval - Weekly  
Lube Amount - Until grease extrudes  
Lube Amount - 1 grease fitting per cylinder

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