

TECHNICAL MANUAL

**OPERATOR, ORGANIZATIONAL
DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL**

**Including Repair Parts Information
and
Supplementary Operating, Maintenance
and Repair Parts Instructions**

FOR

ROLLER, VIBRATORY,

SELF-PROPELLED

(CCE) MODEL SP-848

NSN 3895-01-075-2823

HEADQUARTERS, DEPARTMENT OF THE ARMY

24 APRIL 1981

*This manual contains copyright material and is published with permission
of Rexnord Inc. and Detroit Diesel Allison, Division of General Motors Corporation.*

TM 5-3895-353-14&P

TECHNICAL MANUAL }
No 5-3895-353-14&P

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC 24 April 1981

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT
AND GENERAL SUPPORT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS INFORMATION AND
SUPPLEMENTAL MAINTENANCE AND REPAIR
PARTS INSTRUCTIONS)
FOR
**ROLLER, VIBRATORY, SELF PROPELLED
(CCE) MODEL SP-848
NSN 3895-01-075-2823**

REPORTING OF ERRORS

You can help improve this manual by calling attention to errors and by recommending improvements and by stating your reasons for the recommendations. Your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2 located in the back of this manual should be mailed directly to Commander, US Army Tank-Automotive Materiel Readiness Command, ATTN: DRSTA-MBS, Warren MI 48090. A reply will be furnished direct to you.

- SECTION
- I. OPERATION MAINTENANCE
 - II. REPAIR PARTS
 - III. REPAIR PARTS FOR ENGINE ASSEMBLY
 - IV. SUPPLEMENTAL OPERATING, MAINTENANCE AND REPAIR PARTS INSTRUCTIONS

AUTHENTICATION STATEMENT

This technical manual is an authentication of the manufacturers' commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

SECTION I
OPERATION MAINTENANCE
FOR
SELF-PROPELLED VIBRATORY ROLLERS
REGISTRATION NUMBERS UBOOFL TO UBOOHF
SP 848
NSN 3895-01-075-2823

INDEX

	Page
Application and Trouble Shooting (Also see pages 9 and 10)	11, 12
Cylinder, Steering	16
Cable Clips	40
Cooling System, Engine	75
Differential "No Spin"	69 thru 74
Drive Motor, Hyd	23 thru 29
Draining and Filling Hyd Oil System	75
End Yoke Installation	17, 18
Flange, Companion, Installation	17, 18
Frequency Meter, Trouble Shooting	37
Filtering System, Hyd Oil	63, 64
Hydraulic System, General	13, 14
Hoses, Hydraulic	40
Hydraulic Pumps and Motors (Sundstrand)	41 thru 60
Instruction Plates and Labels	4, 5
Information, General	6, 7
Isolator (Tire) Removal, Repair	30, 31
Lock Link, Steering	10
Lubrication	76
Machine Preparation	8
Operation (Also see pages 11 and 12)	9, 10
Parts Ordering	2
Pump, Steering	19, 20, 21, 22
Roll Removal, Repair	32, 33, 34, 35
Safety Rules	3
Start-Up Procedure, Transmission, Hyd	61, 62
Tire Pressures	75
Vibration Frequency Adjustment	15
Vibration Meter Trouble Shooting	36
Warranty	2
Wiring Diagram, Frequency Meter	65
Wiring Diagram, Horn	66
Wiring Diagram, Lighting System	67
Wiring Diagram, Machine	68

IMPORTANT

The instrument panel is provided with protective covers for use during periods of inactivity and shifted with eyelets for a locking device. The fuel tank filler cap is also fitted with eyelets. It is recommended that locks be used on these items, if deemed necessary, to prevent damage or vandalism.

SERVICE

When ordering repair parts or requesting service for the Vibratory Roller, always furnish the Machine Serial Number with your request.

Consult Milwaukee Service Department for instructions pertaining to the return of "Sundstrand" hydrostatic pumps and motors.

GENERAL SAFETY RULES

Read this manual before operation. Your safety and the safety of those around you depends upon your using care and good judgment in the operation and maintenance of this machine. Know the positions and functions of all controls before attempting to operate.

All equipment has limitations. Understand the speed, hydrodynamic braking, steering, stability, and characteristics of the machine in a safe area before starting to work. The following are general safety comments that apply to this equipment. Review them.

Avoid loose clothing, particularly cuffs and scarfs.

Know what safety equipment is required and use it. A hard hat, safety glasses, reflector type vest, and respirators are the types of equipment you may need.

Know any hand signals that may be used and who is responsible for signaling

If you are roading the machine, know what warnings must be placed on the machine and if you will have an escort

Warn all personnel who may be servicing or in the path of the machine.

Correct or report any apparent machine defects.

Check to see that any guards, etc. are secure and in place.

Note any hazards or obstructions that may be encountered such as ditches, overhead wires, blocks, etc.

Keep deck floor clean, which otherwise may become cluttered or slippery. Keep steps and grab handles free of oil and grease.

Insure proper ventilation if starting indoors.

Be particularly careful if this is not the machine you would normally operate.

Never leave machine unattended with engine running.

Park in a clear authorized area and set parking brake before dismounting. Use and lock protective operating counsel covers.

Secure all caps and filler plugs for fuel, oil, hydraulic fluid, battery covers and radiator.

Know levels for engine coolant, lubricating oil, and fuel tank.

Secure and lock seat Use safety belt, if required.

Always place controls in neutral and lock parking brake before starting.

Test steering, right and left, while moving slowly.

Test hydrodynamic braking while moving slowly.

Listen to engine and transmission while moving slowly to determine any unusual noises.

Report any defect in machine noted during operation.

Observe instruments and gauges frequently.

Do not permit riders on machine.

Know and observe any traffic flow patterns on your job and obey flagman, road signs or signals.

Do not adjust machine with engine running.

Do not open any hydraulic lines that are under pressure or too hot to touch.

Do not smoke while in the process of refueling.

Lock steering lock link when working on machine.

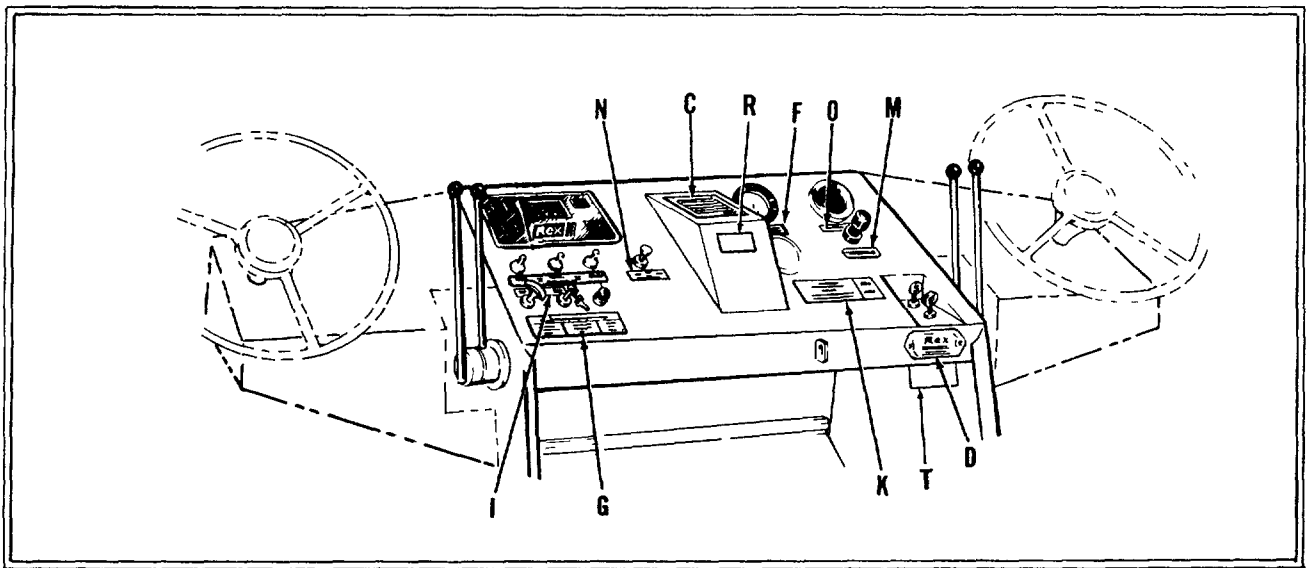
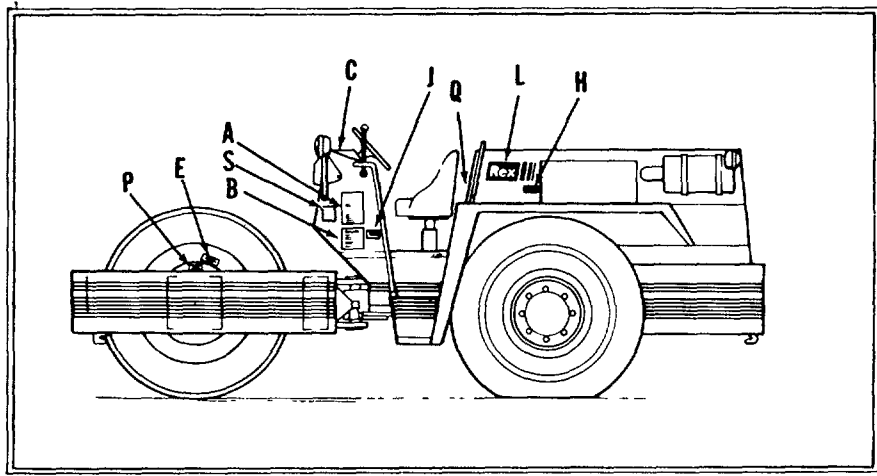


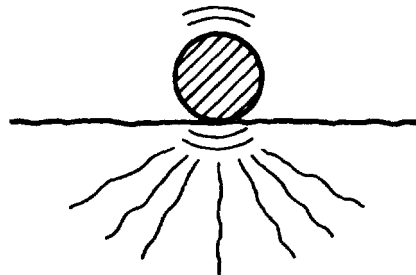
FIGURE 1

GENERAL:

Vibratory compaction is the art of densifying or increasing the unit weight of a material mass through the application of dynamic forces, with the expulsion of air and in some cases moisture. The extent to which a material can be compacted depends on the characteristics of the particular material, the amount of force used to compact it, and the moisture content of that particular material.

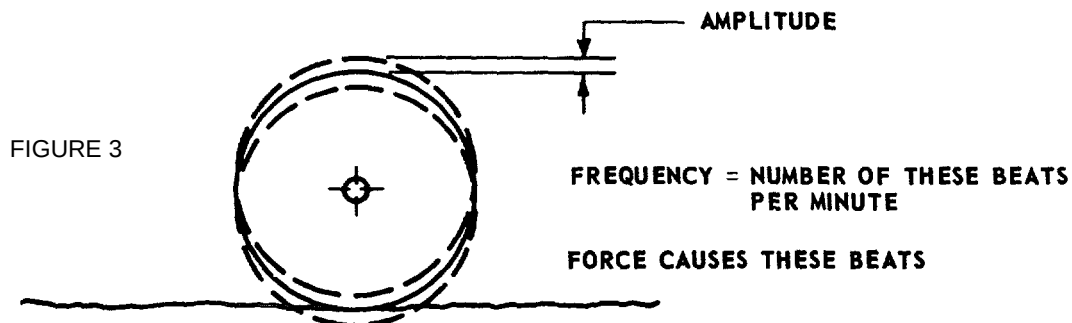
Compaction is necessary in order to form a stable foundation for any structure in which a future decrease in volume of the material will be detrimental. This covers highways, buildings, and other structures. However, there are actually two purposes to compaction, one is to consolidate material to avoid future settlement, while the other is to build strength into the material.

FIGURE 2



The theories advanced on vibratory compaction are numerous; and in many cases varied. However, it appears that the most efficient compaction by vibration occurs at or near the material resonance point. These resonance points vary among material types with the range of 1200 to 1800 vibrations per minute covering most of the materials in which vibratory rollers are effective. Functionally, vibratory compaction is the inter-relationship of three factors: frequency, amplitude, and force. Frequency is the number of vibrations per minute while amplitude indicates the vertical distance the vibrating roll travels from a theoretical center to its maximum distance from this center. Total vertical movement is technically double-amplitude, although in some cases may be referred to simply as amplitude. Amplitude is greatest when the roll is vibrating at material resonance.

Vibratory force is usually generated by a rotating eccentric weight. Although this centrifugal force acts radially in all directions from the center of the roll, only the vertical or near vertical components are used to compact.



Vibratory compaction is suited to granular type soils and in these materials will give excellent compaction results. Vibratory rollers are basically a deep type of compactor in soil, that is, they can compact deep lifts. Smooth roll may, however, leave the top inch of the surface loose in granular soils. This is generally attributed to the horizontal vibrations traveling along the soil surface. This uncompacted surface can be readily compacted with the roll in a non-vibrating condition.

The density requirement for the material to be compacted is predetermined by the engineers in the soil laboratory. From these lab tests a given density standard for this material will result. Field tests will insure compaction to this standard.

For trouble shooting, refer to pages 11

The normal method of operation is in a "back and forth" pattern. On short runs, the shuttle method is used without turning around. On long passes, the turn-around method may be used.

Field testing the compacted area will determine the number of passes and selection of frequency required.

The frequency range is listed below. Always compact in low range - 0 to 5 MPH. High range, approximately 12 to 16 MPH, is used for travel only to a different site over smooth surfaces. Always stop machine and set parking brake before changing transmission speed range because hydrodynamic braking is inoperative when transmission is in neutral. NOTE: For ease of shifting, jog travel lever, with engine at low idle.

For the first passes, use lower frequency - 1200-1500 vibrations per minute. For "tender" type soils or weak foundations, use lower frequency also - 1200-1300 vibrations per minute on first passes.

Frequency (VPM) can be read on the Vibration Frequency Gauge affixed to the instrument panel. To change frequency, move the Vibration Control Lever. The further the lever is moved away from "neutral", the higher the frequency, either forward or reverse travel.

REX VIBRATION METER

The vibration meter measures the amplitude of roll vibration and this amplitude is indicated on the Vibration Meter Gauge. The higher the meter reading, the greater the amplitude. Popular theory indicates that the maximum amplitude occurs at or near the point of soil resonance; and at this point of soil resonance, compaction is most efficient.

Soil resonant frequency can vary with the type of soil, inherent soil moisture, and degree of compaction. Thus the soil resonant frequency can change with successive passes of the compactor.

To utilize the Rex vibration meter, the operator adjusts the frequency at the beginning of the pass to maximum amplitude by reading the highest meter indication. This will serve as a guide to obtain the most efficient operation. The vibration meter is especially valuable as a guide where high densities are difficult to obtain.

***FREQUENCY RANGES**

SP848 1200-1800 VPM

CAUTION

REXNORD assumes no liability for any damage due to vibrations transmitted by REX Vibratory Rollers.

This is an area that is unpredictable unless all soil and subsoil conditions are known. The manufacturer of this equipment can only alert the equipment operator that good judgment has to be exercised when compacting close to structures. Any vibration propagation may have to be checked before proceeding.