

9 JANUARY 1984

(Supersedes LO 5-3895-342-12, -1 and -2,30 OCTOBER 1973)

**MIXER, CONCRETE, 4-WHEEL, TRAILER MOUNTED,  
GASOLINE ENGINE DRIVEN, NON TILT, 16 CU FT  
(T.L. SMITH CO., MODEL 499A) (NSN 3895-00-441-1531)**

Reference: TM 5-3895-342-12 and FEDERAL SUPPLY CATALOG C9100-IL.

Hard time intervals and the related man hour times are based on normal operation. The man-hour time specified is the time you need to do all the services prescribed for a particular interval. Change the hard time interval if your lubricants are contaminated or if you are operating the equipment under adverse operating conditions, including longer than usual operating hours. The hard time Interval may be extended during periods of low activity. If extended, adequate preservation precautions must be taken.

**WARNING**

Dry cleaning fluid is flammable. Do not use near a flame or excessive heat. Use only with adequate ventilation. Avoid prolonged breathing of vapors and minimize skin contact.

Clean parts or fittings with dry cleaning solvent (SD), Type II or equivalent. Dry before lubricating. Dotted arrow shafts indicate lubrication on both sides of equipment. A dotted circle indicates a drain below. Relubricate all items found contaminated after fording or washing.

The lowest level of maintenance authorized to lubricate a point is indicated by one of the following symbols as appropriate: Operator/Crew (C); and Organizational Maintenance (O).

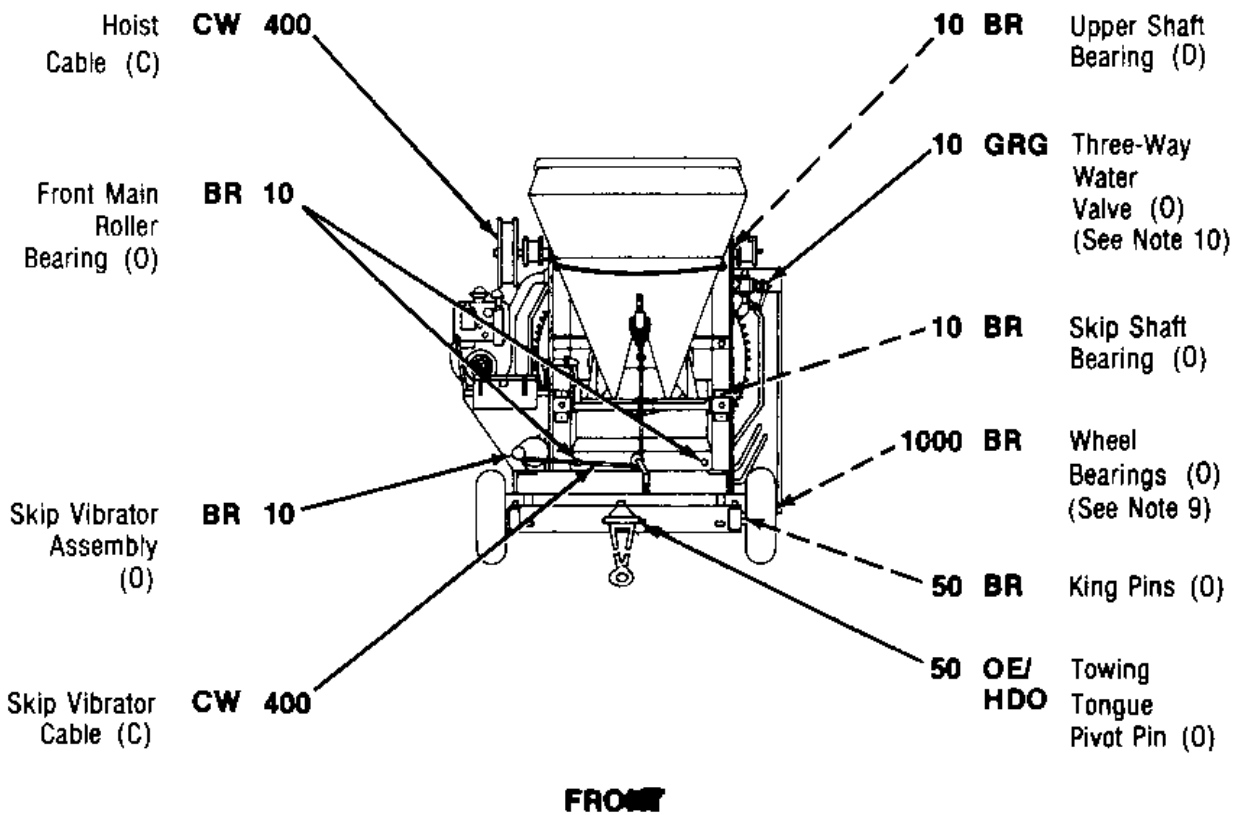
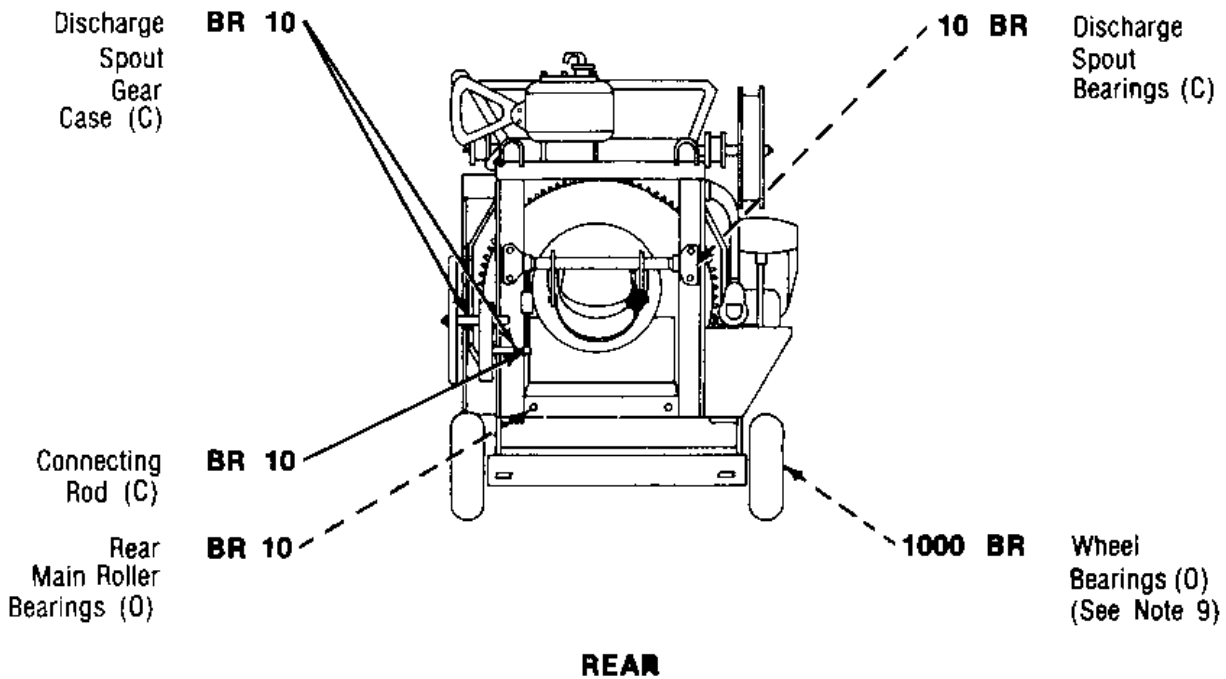
**Reporting errors and recommending improvements.** You can help improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Tank-Automotive Command, ATTN: DRSTA-MB, Warren, MI 48090. A reply will be furnished to you.

\*The time specified is the time required to perform all services at the particular interval.

*TOTAL MAN-HOURS		*TOTAL MAN-HOURS	
INTERVAL	MAN-HOURS	INTERVAL	MAN-HOURS
10	0.8	500	0.2
50	1.4	1000	4.0
400	1.0		

**LUBRICANT • INTERVAL**

**INTERVAL • LUBRICANT**



TA 220209

**LUBRICANT • INTERVAL**

**INTERVAL • LUBRICANT**

Clutch Housing  
Fill Plate (O) **OE/  
HDO**

Clutch Housing  
Level Plug (C)  
(Check level) **50**

Clutch Housing  
Drain Plug (O)  
(Drain & refill) **500**

Gear Reduction  
Fill Plug (O) **GO**

Gear Reduction  
Drain Plug (O)  
(Drain & refill)  
(See Note 8) **C/MR**

**400 CW** Ring Gear (O)

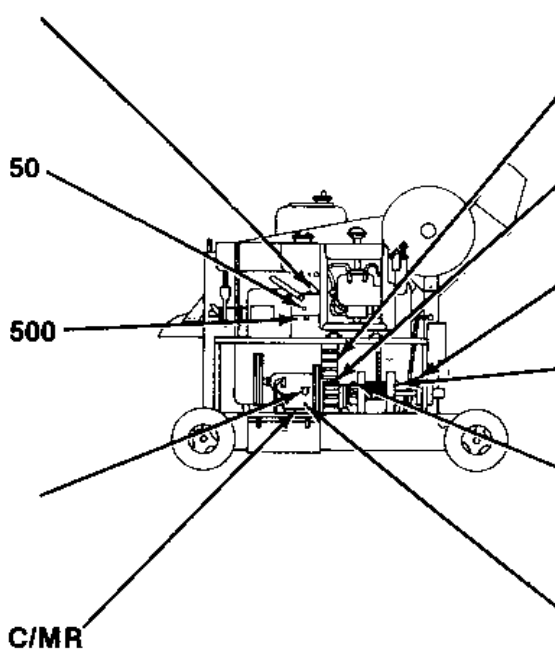
**400 CW** Drive Gear (O)

**10 BR** Drive Shaft  
Bearing (O)

**10 BR** Hoist Drum  
Bearing (O)

**10 BR** Shifter Collar  
(O)  
(2 fittings)

**50** Gear Reduction  
Level Plug (C)  
(Check level)



**GEAR TRAINS**

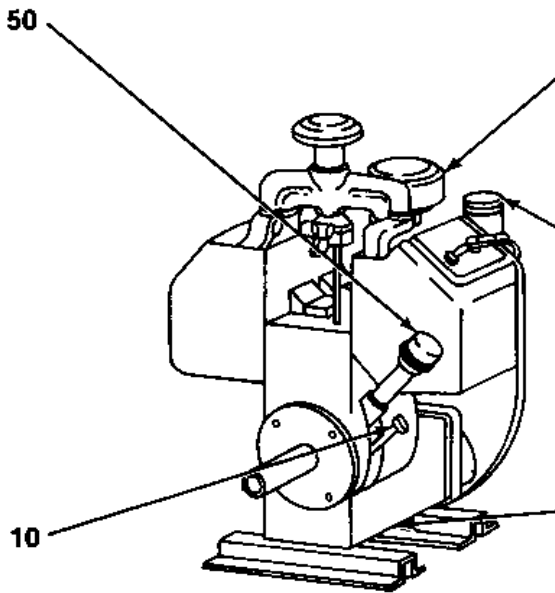
Crankcase  
Breather  
and Fill Cap (C)  
(Clean and reoil)  
(See Key) **OE/ 50  
HDO**

Crankcase  
Oil Level  
Bayonet  
Gage (C)  
(Check level)  
(See Note 3) **10**

**10 OE/  
HDO** Air Cleaner (C)  
(See Key)  
(See Note 7)

**50** Oil Filter (O)  
(Replace  
element)  
(See Note 5)

**50** Crankcase Drain  
Plug (O)  
(Drain and refill)  
(See Note 4)



**ENGINE  
(WISCONSIN MODEL MVF4D)**

TA 220210

\* KEY -

LUBRICANTS	CAPACITY	EXPECTED TEMPERATURES			INTERVALS
		Above +15°F (Above -9°C)	+40° to -15°F (+4° to -26°C)	+40° to -65°F (+4° to -54°C)	
<b>OE/ HDO</b> - Lubricating Oil, Internal Combustion Engine, Tactical Service  <b>OEA</b> - Lubricating Oil, Internal Combustion, Arctic - Crankcase and Filter - Oil Can Points (See Note 2) - Clutch Housing - Air Cleaner	5 qts. (4.73 L)  1 pt. (0.473 L)  1 pt. (0.473 L)	OE/HDO 30	OE/HDO 10	OEA (See Note 1)	C/MR - Condition Monitor  Intervals given are in hours of normal operation.
<b>GO</b> - Lubricating Oil, Gear, Multipurpose - Gear Reduction Housing	1 qt. (0.946 L)	GO 80W/90	GO 80W/90	GO 75W	
<b>BR</b> - Grease, Ball and Roller Bearing		ALL TEMPERATURES			
<b>CW</b> - Lubricating Oil, Chain, Wire Rope, Exposed Gear		CW II B	CW II A	CW II A	
<b>GRG</b> - Grease, Plug Valve, Gasoline and Oil Resistant		ALL TEMPERATURES (TYPE I)			

For Arctic operation refer to FM 9-207

\*See Note 11 for lubricant specification number.

NOTES:

1. FOR OPERATION OF EQUIPMENT IN PROTRACTED COLD TEMPERATURES BELOW -15°F (-26°C). Remove lubricants prescribed in Key for temperatures above -15°F (-26 °C). Relubricate with lubricants specified in Key for temperatures below -15°F (-26 °C). If OEA lubricant is required to meet the temperature ranges prescribed in the Key, OEA lubricant is to be used in place of OE/HDO-10 lubricant for all temperature ranges where OE/HDO-10 is specified in the Key.

NOTES- CONTINUED:

2. OIL CAN POINTS. Each 50 hours lubricate throttle and governor linkage, yoke pins, pivot pins, door hinges, fasteners, control linkage, clevises and all exposed adjusting threads with OE/HDO. Each 250 hours clean and coat tachometer drive cable with OE/HDO.
3. ENGINE OIL LEVEL HOT OR COLD CHECK. Cold engine, oil level should be at high mark on dipstick. Hot engine, oil level must be between high and low marks on dipstick (allow to set 5 minutes before checking).
4. ENGINE. Oil is to be changed each 50 hours. Drain when lubricant is warm.
5. ENGINE OIL FILTER. Each 50 hours, remove filter element, clean housing and install new filter element. After installing new filter element, fill crankcase, operate engine for 5 minutes, check housing for leaks, check crankcase oil level and bring to "FULL" mark. In extremely dusty conditions, change filter element each time the oil is changed.
6. STARTING MOTOR. Starting motor has sealed bearings. No lubrication is required.
7. AIR CLEANER. Each 10 hours, refill reservoir to level mark. Each 50 hours disassemble entire unit, clean, re-oil and assemble. In extremely dusty conditions, clean and re-oil each 10 operating hours.
8. GEAR REDUCTION Check level each 50 hours. Change gear lubricant only when required by maintenance repair action, contamination by water, or other foreign material. After refill, operate for five minutes, check for leaks and bring oil level to level plug opening.
9. WHEEL BEARINGS. Each 100 hours, remove wheels, clean and inspect all parts, replace damaged or worn parts, repack bearings, and assemble.
10. THREE-WAY WATER VALVE. Each 10 hours tighten button type fitting with wrench to force lubricant into valve. When grease is exhausted, remove fit" sing, inspect stick lubricant, replace fit" ting and tighten.
11. LUBRICANTS. The following is a list of lubricants with military symbols and applicable specification numbers.

OE/HDO	MIL-L-2104
GO	MIL-L-2105
OEA	M-1-L-L-46167
(SD), Type II	P-D-680
GRG	MIL-G-6032
CW	FED-VV-L-751
BR	MIL-G-18709

Copy of this Lubrication Order will remain with the equipment at all times, instructions contained herein are mandatory.

By order of the Secretary of the Army:

JOHN A. WICKHAM, JR.  
General, United States Army  
Chief of Staff

OFFICIAL:

ROBERT M. JOYCE  
Major General, United States Army  
The Adjutant General

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# THE METRIC SYSTEM AND EQUIVALENTS

## WEIGHT MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches  
 1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches  
 1 Kilometer = 1000 Meters = 0.621 Miles

## WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces  
 1 Kilogram = 1000 Grams = 2.2 lb.  
 1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

## LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces  
 1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

## SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches  
 1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet  
 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

## CUBIC MEASURE

1 Cu. Centimeter = 1000 Cu. Millimeters = 0.06 Cu. Inches  
 1 Cu. Meter = 1,000,000 Cu. Centimeters = 35.31 Cu. Feet

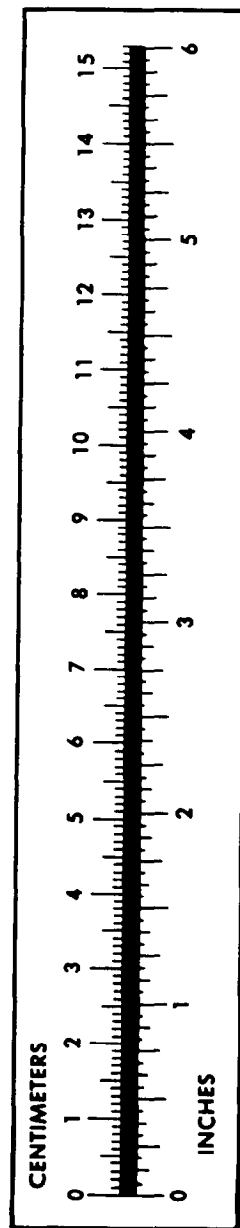
## TEMPERATURE

$5/9(^{\circ}\text{F} - 32) = ^{\circ}\text{C}$   
 212° Fahrenheit is equivalent to 100° Celsius  
 90° Fahrenheit is equivalent to 32.2° Celsius  
 32° Fahrenheit is equivalent to 0° Celsius  
 $9/5^{\circ}\text{C} + 32 = ^{\circ}\text{F}$

## APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
its	Liters	0.473
arts	Liters	0.946
allons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
ers	Gallons	0.264
ms	Ounces	0.035
ograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pounds-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
ometers per Liter	Miles per Gallon	2.354
ometers per Hour	Miles per Hour	0.621



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