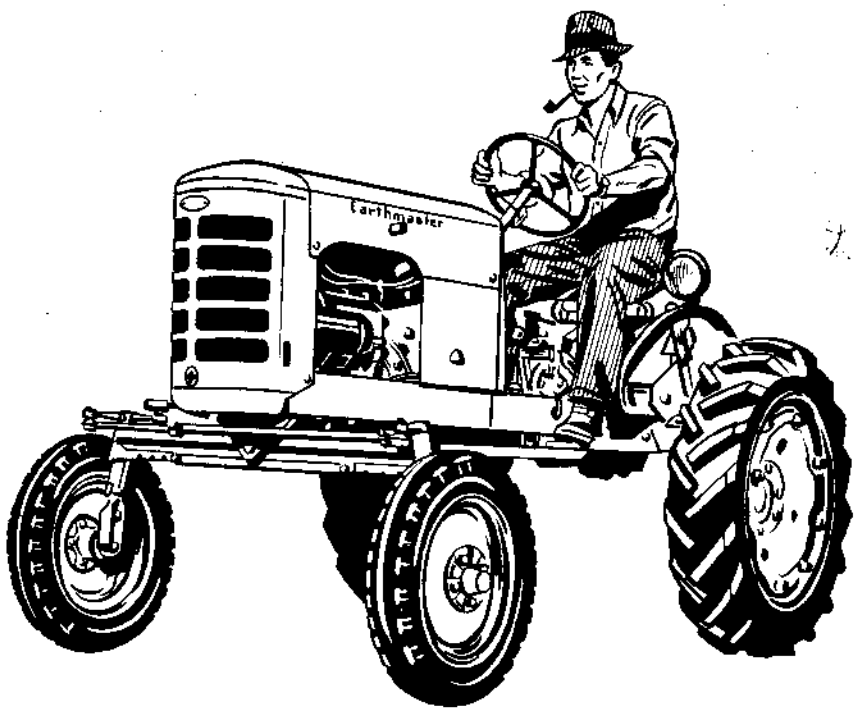
# OPERATORS
# INSTRUCTION MANUAL
## For the Care and Operation of




# Earthmaster C and D series Tractors
## General Specifications

ENGINE:

| | |
|---|---|
| Make . . . . . | Continental |
| Model . . . . . | N62 |
| No. Cylinders . . . . . | 4 |
| Bore . . . . . | 2 3/8-in. |
| Stroke . . . . . | 3½-in. |
| Max. Torque at . . . . . 1600 R.P.M. . | 37 ft. lbs. |
| Displacement . . . | 62 cu. in. |
| Carburetor: | Updraft |

Type: Vertical in line "L" head-cylinder cast integral with block.
Cooling: Thermo-Syphon 14-in. fan; Pressurized Radiator, 1½ gal. cap.
Oiling System: Pressure, Gear Type Pump, 4-qt. C.C. Capacity
Governor: Centrifugal

(Specifications continued next page)

**EARTHMASTER FARM EQUIPMENT**
6777 Van Owen Street, Burbank, California

CALIF.

General Specifications continued:

TRANSMISSION AND FINAL DRIVE:
Three speeds forward - one reverse -

TRACTOR SPEEDS (Miles per hour)

| GEAR | TOTAL RED. | Speed Miles Per Hour | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | MODEL C, CN, & D TRACTORS | | | | | | MODEL CH,DH, & CNH | | |
| | | 8-24 Tires | | | 9-24 Tires | | | 7-30 Tires | | |
| Engine RPM | | 1800 | 2000 | 2200 | 1800 | 2000 | 2200 | 1800 | 2000 | 2200 |
| Low | 85.63/1 | 2.27 | 2.52 | 2.77 | 2.40 | 2.67 | 2.93 | 2.54 | 2.82 | 3.10 |
| Intermediate | 59.39/1 | 3.24 | 3.59 | 3.96 | 3.43 | 3.81 | 4.19 | 3.64 | 4.04 | 4.45 |
| High | 37.15/1 | 5.18 | 5.75 | 6.33 | 5.48 | 6.09 | 6.70 | 5.81 | 6.46 | 7.10 |
| Reverse | 71.34/1 | 2.72 | 3.02 | 3.32 | 2.85 | 3.17 | 3.48 | 3.03 | 3.37 | 3.70 |

BELT PULLEY AND POWER TAKE OFF: Power Take Off Unit or Power Take Off with Belt Pulley Unit available as extra equipment.

| | | |
|---|---|---|
| Power Take Off<br>Shaft 1 1/8-in. dia.<br>6 SAE Spline | 1800 Eng. RPM<br>2000 Eng. RPM<br>2200 Eng. RPM | 490 PTO Shaft RPM<br>545 PTO Shaft RPM<br>600 PTO Shaft RPM |
| Belt Pulley<br>7-in. dia. 5-in. face | 2200 Eng. RPM | 1540 Pulley RPM<br>Belt Speed, 2830 ft. per min. |

TIRE EQUIPMENT AND SHIPPING WEIGHTS:

| Model | Tire Size Rear Standard | Tire Size Front Standard | Tractor Weight Lbs. | Tire Size Rear | Tractor Weight with Optional Tires |
|---|---|---|---|---|---|
| C | 8.24 Std. | 4.00-15 | 1520 | 9.24 Opt. | 1535 |
| CH | 7.30 | 4.00-15 | 1545 | | |
| CN | 8.24 Std. | 4.00-15 | 1505 | 9.24 Opt. | 1520 |
| CNH | 7.30 | 4.00-15 | 1530 | | |
| D | 9.24 | 4.00-15 | 1600 | | |
| DH | 7.30 | 4.00-15 | 1610 | | |

Note: Above weights are with tractor equipped with Starter, Lights, Fenders, Muffler, Drawbar and Hydraulic Lift.

General Specifications continued:

| Model | C | CH | CN | CNH | D | DH |
|---|---|---|---|---|---|---|
| Length Overall | 98" | 100" | 98" | 100" | 98" | 100" |
| Width Overall | 51" | 51" | 46" | 46" | 71" | 71" |
| Height Overall | 61" | 64" | 61" | 64" | 61" | 64" |
| Wheel Base | 66" | 66" | 66" | 66" | 66" | 66" |
| Tread Width-Rear 4-in. Increments | 36" to 64" | 36" to 64" | 38" to 58" | 38" to 58" | 56" to 84" | 56" to 84" |
| Clearance | 20' | 24½ | 20" | 24½ | 20 | 24½ |
| Turning-Radius (Outside) | 7' | 7' | 7' | 7' | 9' | 9' |

## OPERATING INSTRUCTIONS - MODEL C & D SERIES TRACTORS

**TIRES:**

Rear - The Model "C" Series Tractors are regularly equipped with 8-24 wide base type tires. 9-24 optional. Model "D" has 9-24 tires as standard equipment.

The Model CH, CNH and DH Tractors are equipped with 7-30 wide base type tires.

Front - The Model C & D Series Tractors are equipped with 4.00-15 tires.

Proper inflation and maximum load are shown in the following Table:

| Tractor Model Series | Tire Size | Location | Inflation - lbs. | Max. Load per Tire - lbs. |
|---|---|---|---|---|
| C | 8-24 | Rear | 12 | 965 |
| C & D | 9-24 | Rear | 12 | 1215 |
| CH, CNH & DH | 7-30 | Rear | 12 | 875 |
| C & D Series | 4.00-15 | Front | 28 | 475 |

COOLING SYSTEM:

The capacity of the cooling system is approximately 1-1/2 gallons.

See that the drain plug, located on the left side of the engine on the lower side of the inlet elbow casting, is closed tightly.

Fill the radiator with clean, soft water.

When the tractor is operated in freezing temperature (32° F. or lower) anti-freeze solutions must be used.

The radiator is equipped with a pressurized type cap which prevents excessive water consumption under atmospheric temperature operation. The engine is cooled by the thermo-syphon system. It is important that the water level in the radiator never falls below the intake where it enters the radiator from the engine, for if this happens the continuity of the water flow is broken and the water fails to circulate, resulting in overheating and possible damage to the engine.

## LUBRICATION - Engine

The crankcase capacity is 4 quarts.

To assure adequate distribution of oil to the closely-fit surfaces of a new engine during the first 20 hours of operation, a light-bodied oil should be used. For this run-in period we recommend the use of a high grade oil, SAE #20W, for temperatures above 32° Fahrenheit. For temperature below 32° Fahrenheit, use a high grade SAE #10W. See chart below for correct weight of oil to use after engine is "broken in".

Caution: Tractors are shipped from the factory without oil in the crankcase. Fill crankcase to proper level (4 quarts) with a high grade of engine oil before starting engine.

Before starting a new engine, remove the spark plugs and pour a small quantity of light oil into each cylinder. This will insure lubrication of the upper cylinder, rings, and valves and prevent possible seizing when the tractor is started. This procedure is necessary on a new engine, or on an engine that has been idle for some time (over one month), since oil drains from the interior parts. It is also desirable to add one pint of a good grade oil to each 5 gallons of fuel during the first 50 hours' operation of a new tractor. After this period of run-in, discontinue the use of oil in the fuel.

Caution: Never test the oil level with the engine running.

Never start a tractor even for a short time, such as unloading, before filling the crankcase to the proper level with a good grade engine oil and the cooling system to capacity.

Immediately after starting, check the oil pressure gauge to be sure there is proper oil pressure. The oil pressure gauge should register between 15 and 20 lbs., which is normal. If due to extreme cold operating temperatures, the oil pressure tends to go above 20 lbs., oil should be changed to one having lighter body. Also, if due to extreme hot operating temperatures, the oil pressure tends to drop below 10 lbs., oil should be changed to one having heavier body.

Caution: Do not overfill the Crankcase. An excess of oil does not improve lubrication. It causes high oil consumption, smoking, and carbon deposit. Fill to the proper level, never letting it come below the low mark on Bayonet Gauge.

After the engine is broken in, the following engine oils are recommended:

| Body of Oil | Atmospheric Temperature | Type Service |
|---|---|---|
| SAE 30 | 32° F & Higher | Consistently above $\frac{1}{2}$ rated h.p. |
| SAE 20 | 32° F & Higher | Consistently less than $\frac{1}{2}$ rated h.p. |
| SAE 20 or 20W | 10° F to 32° F | |
| SAE 10 or 10W | For temperatures consistently below 0° F | |

Reconditioned engines (engines having the cylinders re-machined and possibly new crankshaft bearings) should be broken in and treated the same as a new engine.

A very important factor in reducing wear and maintaining engine efficiency is the frequent and regular draining of the crankcase oil. The crankcase should be drained and refilled every fifty hours of operation.

LUBRICATION - Transmission & Drop Housings (Cont'd)

Tractors are shipped from the factory with oil in the transmission and final drive housings. BEFORE STARTING TRACTOR, remove oil filler and test plug from the transmission and from both final drive housings, and check oil level. If oil is not level with the hole in each unit, fill with good transmission oil (not grease) of the proper grade.

GRADE OF TRANSMISSION OIL

| Grade of Oil | Atmospheric Temp. |
|---|---|
| SAE 140 | 32° F and Up |
| SAE 90 | Below 32° F * |

Capacity of Trans. 5 pints

Capacity of Each Final Drive Hsg. 1 Qt.

* At atmospheric temperatures below 10° F, drain one quart of SAE 90 oil from the transmission case and replace with one quart SAE 10W motor oil of a good grade. The thin oil will dilute the SAE 90 sufficiently to maintain fluid oil in cold weather and thereby prevent channeling of the gears in the lubricant.

LUBRICATION - STEERING GEAR

The Earthmaster Model C & D Series Tractors are equipped with an automotive worm and cam type steering gear with anti-friction bearings to provide positive and effortless steering. The steering gear should be checked at regular lubrication periods and filled to the top of the fill plug hole with the same grade and type transmission oil used in the transmission and final drive housings.

GENERAL LUBRICATION

Fan - Lubricate fan approximately every six months with engine oil, by removing plug on hub. Drain excess oil by rotating fan with opening in down position.

Generator - Add approximately five drops of oil to the oil cups on each end of the generator every 60 hours of operation. Do not use more than the above five drops of oil.

Distributor - Add approximately five drops of engine oil to the oil cup in the side of the distributor, by sliding back the cap which covers the oil hole. Oil approximately every 60 hours of operation. Remove distributor cap and rotor every six months and oil felt oiler with not over five drops of light engine oil.

Pressure Fittings - The Model C & D Series Tractors are equipped with pressure fittings at points where automatic lubrication cannot be provided. A good grade of semi-fluid pressure gun lubricant should be used in warm weather. In cold weather a lighter grade lubricant is desirable.

Front Wheel Bearings - Clean and repack the front wheel bearings on each front wheel every 250 hours of operation with a good grade of wheel bearing grease.

The following points should be lubricated every 10 hours of operation.

| | |
|---|---|
| Radius Rod Pivot Pin | - 2 strokes of gun |
| Front Axle Pivot Pin | - 2 strokes of gun |
| Spindles - right & left | - 5 strokes each of gun |
| Tie Rod - Each end | - 3 strokes each of gun |
| Drag Link - Each end | - 3 strokes each of gun |

GENERAL SERVICE SUGGESTIONS:

Air Cleaner - The Model C & D Series Tractors are equipped with an oil bath air cleaner, located inside the front grill, to assure the engine breathing clean air, free from dust. To Clean: Remove the cup at the bottom of the air cleaner daily or every 10 hours of operation, clean, and fill to mark with light engine oil.

Battery - Check the plates in battery to see that they are covered with liquid. Add distilled water to each cell to maintain this level.

The full charge specific gravity is between 1.270 and 1.285 at 80° F when checked with a hydrometer. In service the specific gravity should be between 1.240 and full charge specific gravity.

Hydraulic Lift - On tractors equipped with Hydraulic Lift, the reservoir should be filled (with the cylinder, or cylinders, in the closed position) to within 1/2-in. of the filler plug hole in reservoir with a good grade of SAE #10 engine oil.

When one cylinder is used, the cylinder hoses should be connected to the two outlets on the left side of the valve, the lower cylinder hose to the upper valve outlet and the upper cylinder hose to the lower valve outlet. When two cylinders are used, the above cylinder should be on the right hand side and connected to the Lift Shaft Assembly. The left-hand cylinder should be connected to the two outlets on the front of the valve, the lower cylinder hose connected to the upper valve outlet and the upper cylinder hose connected to the lower valve outlet.

To operate the right-hand cylinder, the small lever located on the side of the hydraulic valve is rotated until it points ahead. To operate the left-hand cylinder, the lever is rotated until it points left (or towards the tractor seat). To operate both cylinders at once, the handle is rotated until it points to the rear. To raise the cylinder piston, pull upward on the long lever located at the top of the valve. To lower the cylinder piston, press the lever downward. To hold cylinder piston at any fixed position, release the lever which will return to its neutral position. To allow the cylinder piston to have free up and down motion or float position, press the lever down until it snaps into the detent position.

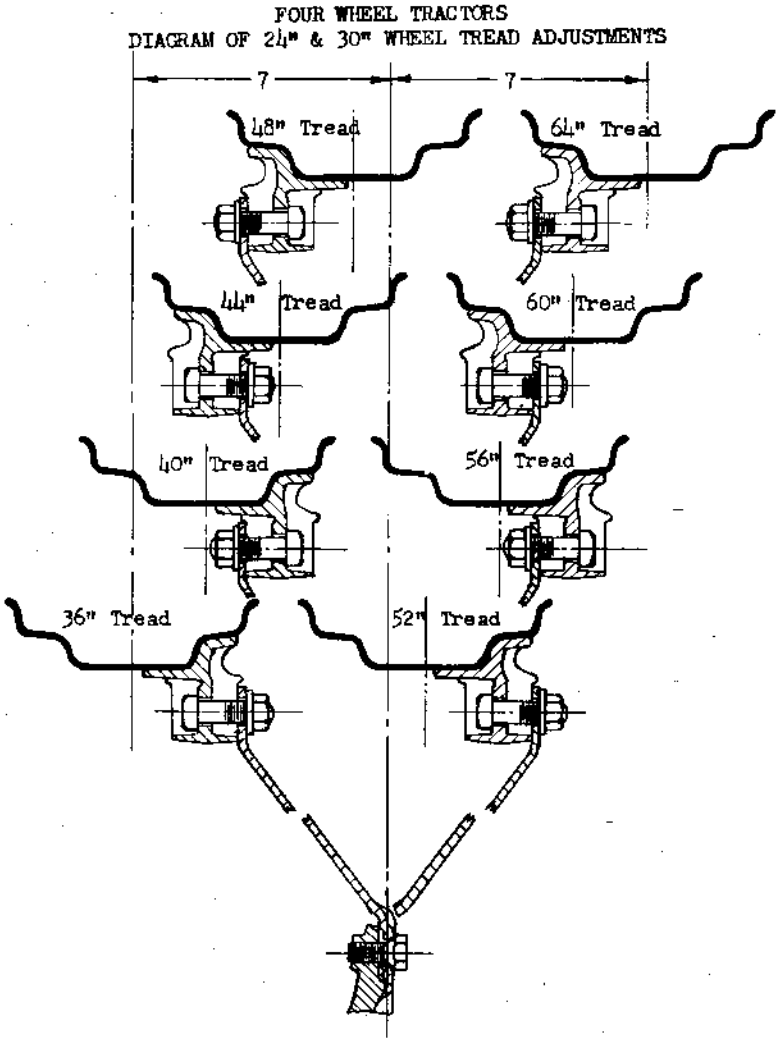
Care should be taken in installing or removing hydraulic units that all connections are free from dirt. Note: The hydraulic system used on your Earthmaster tractor requires no bleeding of air from the lines upon installation.

On tractors equipped with hydraulics, when operation is such that the hydraulics will not be required, the pump may be disengaged by pushing the pump drive coupling away from driving stud and toward the pump. It may likewise be engaged by pushing it back until it engages the driving studs on the engine crankshaft pulley. The coupling is provided with detents to maintain the two positions.

Fuel System - The fuel tank holds approximately 7 gallons and is equipped with a fuel filter at the outlet from the tank. The filter glass should be removed and cleaned at regular service periods.

Brakes - Double disc type brakes are provided on the Model C & D Series Tractors providing four wearing surfaces on each brake and will therefore seldom require adjustment. Adjustment is made by loosening and removing the pin on the rod end yoke on each side, loosening the lock nut and turning the yoke to shorten the pull rod sufficiently to tighten the brakes and bring the brake pedal to a position approximately 15° ahead of the vertical position. Individual brakes are operated by the two pedals on the right side; the right pedal operates the right brake and the left pedal operates the left brake for short turns. CAUTION: Do not apply individual turning brakes at high speeds!!

## ADJUSTING WHEELS TO DESIRED TREAD:



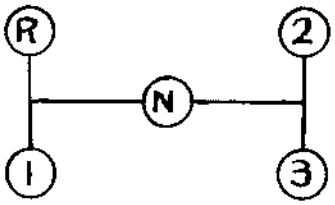

This Variable Tread Chart shows all the tread positions possible for 24-in. and 30-in. wheels. These wheels have a 14-in. variable tread in total increments of 4-in. and the tread may be increased a maximum of 28-in. overall. Discs are reversible.

In order to change the rim from one position to another it is unnecessary to remove the wheel disc since the slots in the outer edge of the disc have suitable clearance to allow the rim lugs to pass through. However, some attention must be paid to keeping the tire tread in the proper direction for correct traction when the rims are reversed.

One wrench #56011, fits all positions; rim bolt nut, wheel weight bolt nut and wheel hub bolt.

Settings illustrated in chart applied to Models D & DH provide 20-in. wider treads from 56-in. to 84-in.

Gear Shift - Shifting of gears is accomplished by the lever on the right-hand side of the tractor to the rear of the brake pedals. The shift is standard three speeds forward and reverse, as shown in figure to right.




Power Take-Off - On tractors equipped with belt pulley and power take-off assembly or with power take-off assembly only - these units may be engaged by de-clutching the engine, pull forward on the small lever located on the front of power take-off assemblies and re-engaging the clutch.

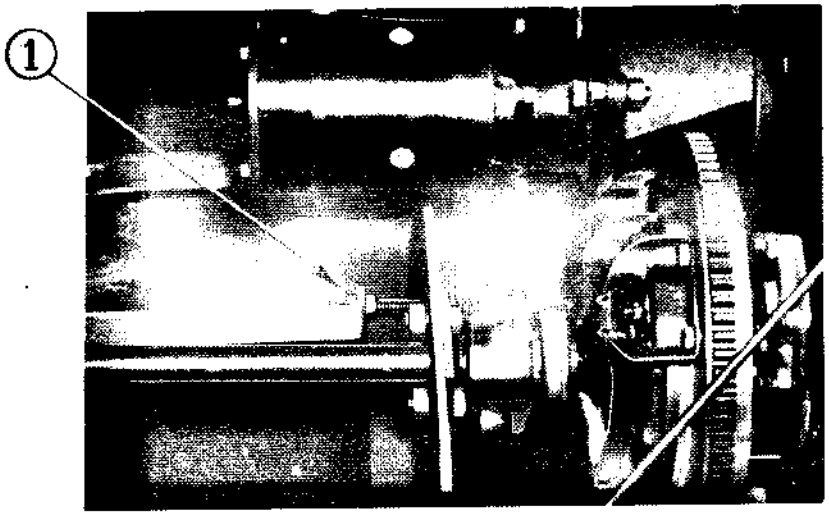
Lights: Convenient switch, located on cowl, controls lights.

Note: Light switch also serves as generator charging rate regulator. When button is completely in, generator supplies sufficient current to carry ignition requirements only and battery is protected against overcharge. Ammeter shows balance or slight charge. If battery is low, and faster recharge is desired, pull switch out one notch. Normal rate in this position is approximately 6 amperes or the first line on charging side of ammeter.

Starting The Engine: Make sure the gear shift lever is in the neutral position, open the throttle approximately 1/2-in, pull out the ignition switch and press the starter button. Pull out the choke about half if engine is cold, and return to closed position after the engine starts and warms up.

Clutch: The clutch pedal is located on the left hand side of the tractor. Pressing the clutch pedal downward approximately 2½-in. to 3-in. releases the clutch mechanism, further pressure downward applies the brakes on both rear wheels simultaneously for quick stop.

## MAINTAIN CORRECT CLUTCH ADJUSTMENT




MAINTAIN CORRECT ADJUSTMENT:

There is only one adjustment necessary to keep the clutch functioning properly. The pedal must have 1½-in. of "Free Travel" before actual disengagement of clutch begins. On tractors having serial numbers below 1500 this "Free Pedal Travel" should be 7/8-in. This adjustment maintains correct clearance between throw-out bearing and clutch release fingers preventing unnecessary wear of these parts. As facings wear, this clearance decreases. Backing off hex. nuts indicated "No. 1" in illustration increases "Free Pedal Travel". When adjustment is completed, lock by tightening both nuts securely. Operators should be warned not to "ride" the clutch as this also causes unnecessary wear of throw-out bearings and "fingers".

## IMPROVE PERFORMANCE WITH WHEEL WEIGHTS OR CALCIUM CLORIDE SOLUTION

To obtain maximum performance in most soil conditions, it will be necessary to add weight to the tractor. This may be done with wheel weights, or by adding water or calcium chloride solution to the tires. A calcium chloride solution of 3.5# per gallon of water will provide maximum weight and protection against freezing down to -30° F. To prepare this solution, follow this table:

| | | Water Gallons/TIRE | Calcium Chloride - lbs. | Weight Added |
|---|---|---|---|---|
| Front Tires | 4.00 x 15 | 2.2 | 7 | 25 lbs. |
| Rear Tires | 8-24 | 13 | 46 | 160 lbs. |
| | 9-24 | 17 | 60 | 210 lbs. |
| | 7-30 | 10.5 | 36 | 125 lbs. |

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4-49 3M