

# **770/870 TRACTOR**

## **Operators Manual**

9-2412





***This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about your safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.***

SB001

IF THIS MACHINE IS USED BY AN EMPLOYEE, IS LOANED, OR IS RENTED, MAKE SURE THAT THE OPERATOR UNDERSTANDS THE TWO INSTRUCTIONS BELOW.

BEFORE THE OPERATOR STARTS THE ENGINE:

1. GIVE INSTRUCTIONS TO THE OPERATOR ON SAFE AND CORRECT USE OF THE MACHINE.
2. MAKE SURE THE OPERATOR READS AND UNDERSTANDS THE OPERATOR'S MANUAL FOR THIS MACHINE.



**IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH.**

BEFORE STARTING THE ENGINE, DO THE FOLLOWING:

1. READ THE OPERATOR'S MANUAL.
2. READ ALL SAFETY DECALS ON THE MACHINE.
3. CLEAR THE AREA OF OTHER PERSONS.

LEARN AND PRACTICE SAFE USE OF MACHINE CONTROLS IN A SAFE, CLEAR AREA BEFORE YOU OPERATE THIS MACHINE ON A JOB SITE.

It is your responsibility to observe pertinent laws and regulations and to follow manufacturer's instructions on machine operation and maintenance.

See your Authorized Case dealer for additional operator's manuals, parts catalogs, and service manuals.

## **TO THE PURCHASER OF A CASE TRACTOR**

The care you give your Case Tractor will greatly determine the satisfaction and service life you will obtain from it. Use this manual as your guide. By observing the instructions and suggestions in this manual, your Case Tractor will serve you well for many years.

As an Authorized Case Dealer, we stock Genuine Case Parts, which are manufactured with the same precision and skill as the original equipment. Our factory trained staff is kept well informed on the best methods of servicing Case equipment and is ready and able to help you.

Should you require additional aid or information, contact us.

*Your Authorized Case Dealer*



**LOOK FOR THIS SYMBOL TO POINT  
OUT IMPORTANT SAFETY PRECAUTIONS**

**TO INSURE EFFICIENT AND PROMPT SERVICE, PLEASE  
FURNISH US WITH THE MODEL, SERIAL, ENGINE AND  
TRANSMISSION SERIAL NUMBERS OF YOUR TRACTOR  
IN ALL CORRESPONDENCE OR CONTACTS**

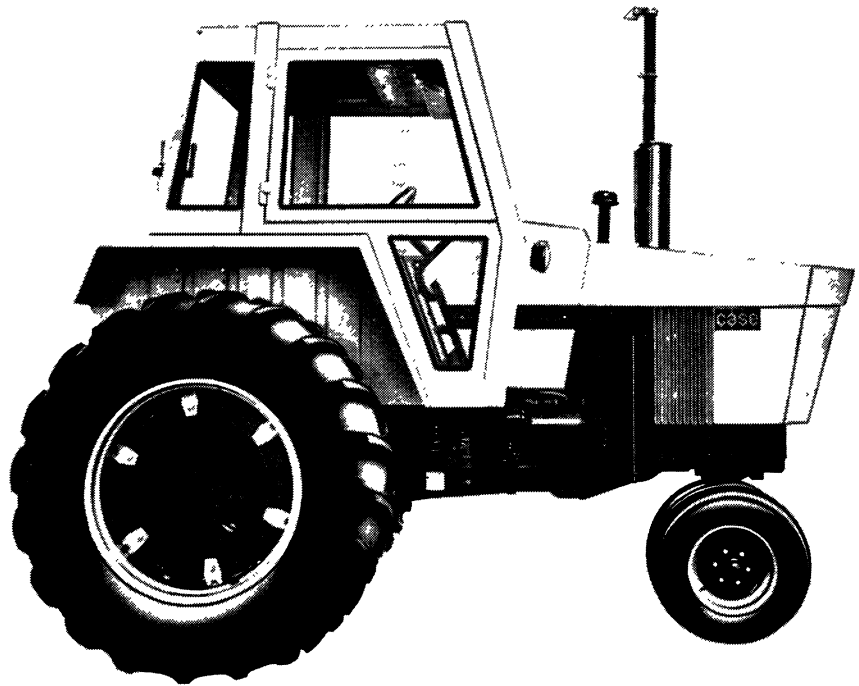


Figure 1 770 Tractor With Cab

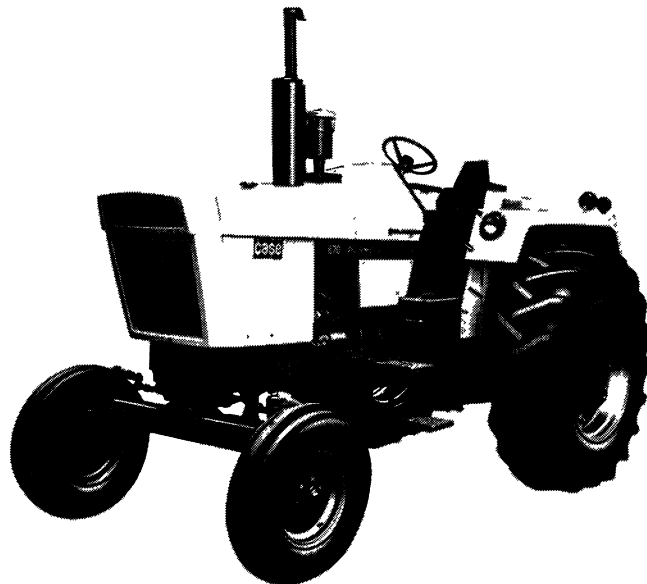


Figure 2 870 Tractor

## SERIAL NUMBER

When ordering parts from your Authorized Case Dealer and in all contacts or correspondence with your dealer, relative to the Tractor always specify the Model, Serial, Engine and Transmission Serial Numbers of your Tractor.

The Model and Serial Numbers are stamped on the number plate located outside and lower left hand side of the fire wall assembly, Figure 3. The Engine Number is stamped on a plate fastened to the rear right hand side of the engine block, Figure 4. The Transmission Serial Number is stamped on a plate and fastened to the right hand side and to the front of the axle on the transmission housing, Figure 5.

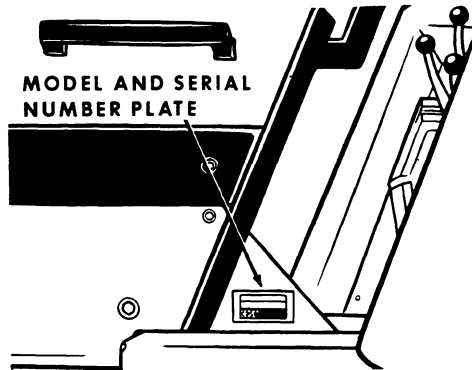


Figure 3

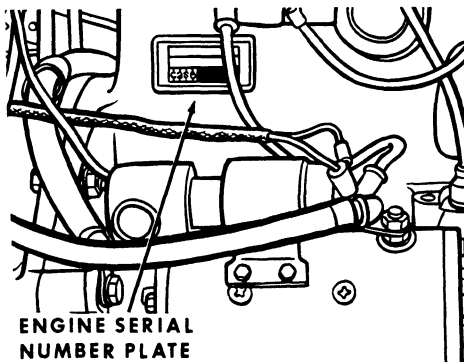


Figure 4

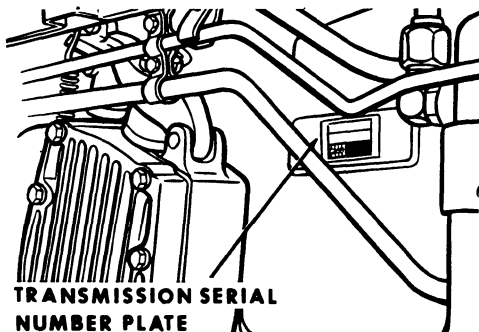


Figure 5

**NOTE** The terms "Right Hand" and "Left Hand" whenever used in this manual, apply to the tractor when facing in the direction the tractor will move in forward operation.

For reference, fill in the Serial Numbers of your Tractor in the spaces provided below.

Model Designation \_\_\_\_\_

Tractor Serial Number \_\_\_\_\_

Engine Serial Number \_\_\_\_\_

Transmission Serial Number \_\_\_\_\_

# Diesel Engine

## SPECIFICATIONS

### General

Type -----	4 Cylinder, 4 Stroke Cycle, Valve-in-Head.
Firing Order -----	1-3-4-2
Bore (770 Series) -----	4-1/8 Inches
(870 Series) -----	4-5/8 Inches
Stroke -----	5 Inches
Piston Displacement (770 Series) -----	267 Cubic Inches
(870 Series) -----	336 Cubic Inches
Compression Ratio -----	16.5 to 1
Cylinder Sleeves -----	Removable Wet Type
No Load Governed Speed -----	2060 RPM
Rated Engine Speed -----	1900 RPM
Engine Idling Speed -----	725 RPM
*Valve Tappet Clearance (Exhaust) -----	(Hot) .020 Inch (Cold) .025 Inch
(Intake) -----	(Hot and Cold) .015 Inch

\*Hot Settings Are Made After The Engine Has Operated At Thermostat Controlled Temperature For At Least Fifteen Minutes.

### Piston and Connecting Rods

Rings per Piston -----	3
Number of Compression Rings -----	2
Number of Oil Rings -----	1
Type Pins -----	Full Floating Type
Type Bearing -----	Replaceable Precision, Steel Back, Copper-Lead Alloy Liners.

### Main Bearings

Number of Bearings -----	5
Type Bearings -----	Replaceable Precision Steel Back, Copper-Lead Alloy Liners.

## **Engine Lubricating System**

Oil Pressure ----- 45 to 55 Pounds with Engine Warm and Operating at Rated Engine Speed.

Type System ----- Pressure and Spray Circulation

Oil Pump ----- Gear Type

Oil Filter ----- Full Flow Spin on Type

## **Fuel System**

Fuel Injection Pump ----- Robert Bosch, Type PES (Multiple Plunger).

Pump Timing ----- 29 Degrees Before Top Dead Center (Port Closing).

Fuel Injectors ----- Pencil Type (Opening Pressure 2800 PSI).

Fuel Transfer Pump ----- Plunger Type, Integral Part of Injection Pump.

Governor ----- Variable Speed, Fly-Weight Centrifugal Type; Integral Part of Injection pump.

1st Stage fuel filter ----- Full Flow Spin on Type

2nd Stage fuel filter ----- Full Flow Spin on Type

Fuel Tank Water Trap and Drain ----- Located in Base of Fuel Tank

Fuel Tank Capacity ----- 50 U. S. Gallons

Fuel Level Gauge ----- Electric, Located on Instrument Panel.

# *spark ignition engines*

## **SPECIFICATIONS**

### **General**

Type ----- 4 Cylinder, 4 Stroke Cycle,  
Valve-in-Head.  
Firing Order ----- 1-3-4-2  
Bore (770 Series) ----- 4 Inches  
(870 Series) ----- 4-3/8 Inches  
Stroke ----- 5 Inches  
Compression Ratio ----- 7.5 to 1  
Piston Displacement (770 Series) ----- 251 Cubic Inches  
(870 Series) ----- 301 Cubic Inches  
  
No Load Governed Speed ----- 2060 RPM  
Rated Engine Speed ----- 1900 RPM  
Engine Idling Speed ----- 600 RPM  
\*Valve Tappet Clearance (Intake) ----- (Hot and Cold) .015 Inches  
(Exhaust) ----- (Hot) .020 Inches  
(Cold) .025 Inches  
Exhaust Valve Rotators ----- Positive Type

\*Hot Settings Are Made After The Engine Has Operated At Ther-  
mostat Controlled Temperature For At Least Fifteen Minutes.

### **Piston and Connecting Rods**

Rings per Piston ----- 4  
Number of Compression Rings ----- 3  
Number of Oil Rings ----- 1  
Type Pin ----- Full Floating Type  
Type Bearings ----- Replaceable, Precision Steel  
Back, Copper Lead Alloy Liners.

### **Main Bearings**

Number of Bearings ----- 5  
Type Bearings ----- Replaceable, Precision Steel  
Back, Copper Lead Alloy Liners.



## Engine Lubricating System

Oil Pressure ----- 45 to 55 Pounds with  
Engine Warm and Operating at  
Rated Engine Speed.

Type System ----- Pressure Spray Circulation  
Type System ----- Pressure Spray Circulation

Oil Pump ----- Gear Type

Oil Filter ----- Full Flow, Spin on Type

## Fuel System

Fuel Tank Capacity ----- 50 U.S. Gallons

Carburetor (Zenith)(w/solenoid shut-off) 1-1/4 Inch SAE Flange

Fuel Pump and Screen ----- A.C. Vacuum Type, Camshaft  
Actuated.

## Distributor Ignition

Contact Point Gap ----- .020 Inch

Dwell Angle ----- 70°

Spark Plugs ----- Prestolite 18 8

Plug Gap ----- .025 Inches

Thread ----- 18 MM

Shank Length ----- 1/2 Inch

## Engine Timing

Static Timing ----- 5° ATDC

Running Timing ----- Engine running at Rated  
Engine Speed: 28° BTDC

# *general specifications*

## **Cooling System**

Capacity ----- 28 U.S. Quarts  
Type of System ----- Pressurized, Thermostat Controlled  
By-Pass Type: Forced Circulation, (Impeller Type Pump).  
Radiator ----- Heavy Duty Fin and Tube Type  
Thermostat ----- Starts to Open at Approximately 195°F.  
Fully Open at 202°F.  
Pressure Cap Required ----- (w/o cab) 7 PSI  
Pressure Cap Required ----- (w/cab) 14 PSI  
When using a proper operating pressure cap, the engine temperature can safely rise to 230°F.

## **Electrical System**

Type of System (Diesel) ----- 12 Volt Negative Ground  
Type of System (Spark Ignition) ----- 12 Volt Negative Ground  
Batteries (Diesel) ----- (2) 12 Volt Batteries Connected  
in parallel.  
(Spark Ignition) ----- (1) 12 Volt Battery  
(770 Series) Group Size 27H, Rated at 1.255 to 1.265  
Specific Gravity, Discharge Rate 300 Amps  
at 0° F., Voltage drops to 8.7 after 10 seconds,  
Voltage drops to 1.0 volt per cell after  
3-1/2 minutes.  
(870 Series) - Group Size 30H, Rated at 1.255 to 1.265  
Specific Gravity. Discharge Rate 300 Amps  
at 0° F. Voltage drops to 9.2 after 10 seconds.  
Voltage drops 1.0 Volt per cell after 4 min.  
Alternator ----- 12 Volt 55 Amp Output  
Voltage Regulator ----- 12 Volt, Solid State,  
Mounted on Alternator.  
Starter Motor ----- 12 Volt with Solenoid Switch  
Head Lights (2) ----- 12 Volt 35 Watt, Sealed Beam  
Flood Lights (2) ----- 12 Volt, 35 Watt, Sealed Beam  
Amber Warning Light ----- 12 Volt, Double Face, Flasher Type  
Rear Tail Light ----- 12 Volt, 60 Watt Sealed Beam  
Combination Tail and Flood Lamp.  
Circuit Breaker System over load check - 12 Volt Twin 40 Amp  
Breakers connected in parallel, 80 Amp Rating-  
60 Amp. Min. Continuous capacity.  
Lights Circuit Breaker ----- 30 Amp., Located on Light Switch  
Parking Brake Warning Light ----- 12 Volt, Red Flasher Type

## **Parking Brake**

Type----- Cable Actuated by Or-  
chlin Type Handle - Adjustable  
from Operator's Seat.

## **Hydraulic Brakes**

Type ----- Hydraulic Actuated, Self-  
Adjusting Disc Type Differential  
Brakes.

## **Hydraulic Power Assist Brakes**

Type ----- Hydraulic, Power Assisted,  
Self-Adjusting Disc Type Diff-  
erential Brakes.

## **Mechanical Transmission**

Type ----- 2 Speed Gear Range With  
a 4 Speed Spur Gear Section.

Gear Selection ----- 8 Speeds Forward - 2 Speeds  
Reverse.

Shifting ----- Mechanical With Plunger Type  
Locks and Tube Type Interlocks.

## **Power Shift Transmission**

Type ----- 3 Speed Compound Planetary  
With Hydraulically Actuated  
Clutches and a 4 Speed Gear  
Range Section.

Gear Selection ----- 12 Speeds Forward and 4 Speeds  
Reverse

Shifting ----- Hydraulic Power Shifting Con-  
trolled By a Lever On Operators  
Console. 4 Speed Range Con-  
trolled By a Mechanical Shifter  
from a Lever On Operator's  
Console.

## **Hydrostatic Power Steering**

Pump ----- Large Volume, Spur Gear, Continuous Running.

Hand Pump Type ----- Gerotor Bi-Directional, Driven By the Steering Wheel.

Actuating Cylinders ----- 2 Way Cylinders Are Integral Part of Steering Gear Mechanism.

## **Remote Hydraulic System**

Pump ----- Large Volume, Spur Gear, Continuous Running.

Type Valve ----- Dual Valve - Individual Hand Lever Control.

Portable Cylinder Coupling ----- Case Quick Detachable Break-away Type.

Pump Capacity at 1900 Engine RPM ----- 16 GPM

Relief Valve Pressure ----- 1350 to 1550 PSI

Portable Cylinders ----- Available

## **Draft-O-Matic System**

Type of Sensing ----- Lower Link

Type Control ----- Hand Lever

Type Valve ----- 3 Positions - Raise - Hold - Lower

Type Draft Arms ----- Swinging, with Manual Float Adjustment

Type Hitch ----- 3 Point Category II

## Power Take-Off

Type Clutch ----- Hydraulically Operated

Rotation ----- Clockwise

Spline Size ----- 540 RPM ----- 6 Splines ----- 1-3/8 Dia.  
1000 RPM ----- 21 Splines ----- 1-3/8 Dia.

Engine Speed 1900 RPM ----- 540 or 1000 RPM Shaft Speed

## Belt Pulley

Method of Engagement ----- PTO Control Lever

Pulley Diameter ----- 10.5 Inches

Pulley Face Width ----- 7.25 Inches

Ratio Engine RPM:

(540 PTO) ----- 1.716 to 1

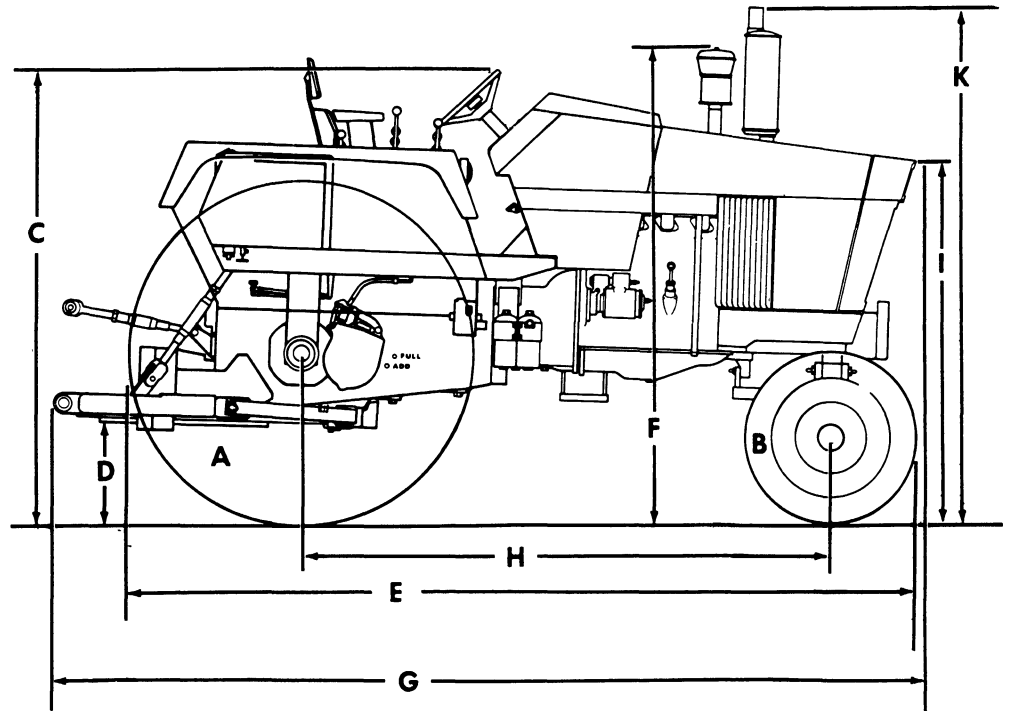
(1000 PTO) ----- 1.722 to 1

1 RPM of Belt Pulley ----- 2.75 Feet Per Minute Belt  
Travel.

## Drawbars

Standard or Yoke Type ----- Full Swinging Roller Mounted. Will  
Accommodate a 1-1/4" Inch Dia. Pin.

## APPROXIMATE OVERALL MEASUREMENTS



Model	A	B	C	D	E	F	G	H	I	K
Adjustable	15.5-38R1	7.50-16 F2	81	15	148	87	153	101	67	100
Dual	18.4-34R1	7.50-15F2	83	18	140	88	153	94	69	101

A and B Tire Sizes

C thru K Dimensions in Inches

### APPROXIMATE WEIGHT

870 Tractor ----- 8100 Pounds

770 Tractor ----- 7900 Pounds

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