



# Empire Tractor Owners Club

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## EMPIRE TRACTOR MODEL 90 SPECIFICATIONS

Model 90 Tractors: The Model 90 tractor used Willys Overland civilian engines and the T-90 Warner Gear transmission with Spicer transfer case and single lever PTO control. Overall appearance of the tractor remained similar to the Model 88, but many minor changes made the Model 90 a better overall tractor.

Tractor Type: General purpose, light farm, two 14" bottom plow capacity

Model 90 Production: 3,663 Serial #3001 - #6801 (estimated)

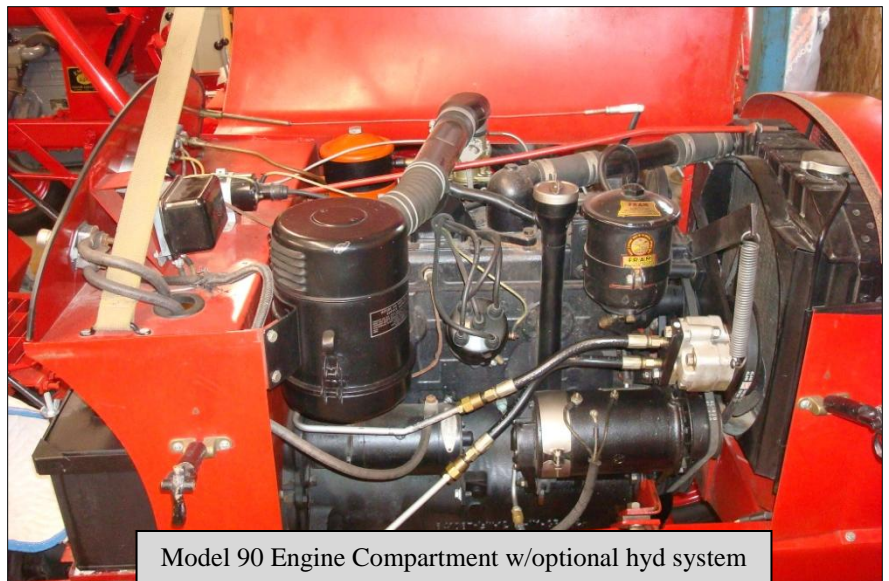
The brass data ID tag is located on the dash above the steering column. This tag provided serial number, manufacture date, model number and engine number. Many of these tags have both 88 and 90 stamped on them and it is believed the factory used up left over model "88" ID tags by embossing the "90" on them when the model 90 tractor was introduced. The brass company logo tag was located on the left side of the tractor above the steering box. This tag provided the Empire company name, location and logo. The engine serial number on the brass data tag should match the serial number on the engine if the original motor is still in the tractor. This engine serial number is located on the top front the engine block above the water pump.

Production Dates: September 1947 through November 1947 after which time major production ended.

Several tractors were assembled from parts in stock in 1948 and a very small number in 1949. (Dates are estimated.)

### Model 90 Empire Tractor

Color: Red was the color as they came from the factory, although a small number of Model 90 (88-90) tractors have been found that were yellow or green. Each of these tractors had been painted over the original red and we are quite sure this was done at the factory. All Model 90 (88-90) tractor engines and transmissions were painted tractor color (red or yellow or green over red).



Original Equipment: Toolbox, front headlights, one rear fender light, rear belt pulley, shock absorber seat, Equa-Pull drawbar, amp gauge, temperature gauge, oil pressure gauge, governor, oil filter.

Frame: Fabricated and welded channel iron with cross supports and heavy steel cross plate used to support rear end and chain reduction units.

Deck: Steel grating with 1-3/16" x 4" opening using 1" x 1/8" thick steel. Sides were reinforced with 1" x 1" x 1/8" angle welded to grating. It's believed this grating was left over war surplus decking as used on Navy ships.

Drawbar: Patent pending *Equa-Pull* drawbar attached to a 2-1/2" x 2-1/2" x 1/4" thick square tube running across width, under the center of the tractor. This tube was held in place by "V" braces welded to each side of the main frame. The bar is adjustable to left and right and is 18-1/2" above ground. The bar is 2 1/2" wide x 5/8" thick x 71" long with a 1" diameter hole in each end. The drawbar has a safety anti-lift bar welded to the underside at the back of the tractor.

Optional Equipment: Rear wheel weights.

Three-point hitch (made by Love Co., Eau Claire, MI). This 3-point hitch has been found on tractors with serial numbers above 4500 although very few have been located to date.

Engine: Willys-Overland , civilian Jeep - 4 cylinder  
 Bore & Stroke: 3-1/8 x 4-3/8  
 Displacement: 134.6 cu. in.  
 Governed Speed: 2000 RPM  
 Oil filter: Replaceable cartridge type  
 Ignition: Direct driven distributor, automatic spark advance  
 Generator: Autolite Belt drive, 6 volt, 35 amp with regulator  
 Starter: Autolite Conventional type, 6 volt  
 Battery: 6 Volt, 100-amp hour capacity  
 Cooling: 16-quart capacity, 4-blade 16" fan belt driven  
 Carburetor: Carter W-O down draft  
 Air Cleaner: Oil bath with removable dust receptacle. Made by Houde and located under hood, right rear of engine and mounted to tractor firewall. Flex hose connects cleaner to engine air tube.

Capacities: Cooling system: 11 US quarts  
 Transmission: 3 US pints SAE #90  
 Transfer Case: 3 US pints SAE #90  
 Differential: 2 -3/4 US pints SAE #90  
 Engine: 4 US quarts SAE #20 or #30  
 Fuel tank: 7-1/8 US gallons. Rectangular galvanized tank located under the steel deck in back of the seat.  
 Crank Case & Final drive: 4 US quarts SAE #20 or #30  
 Final drive chain case: 3 US pints SAE #140  
 Air cleaner: 1-1/4 pints  
 Steering Gear: 6 ounces SAE #140

Governor: Variable speed, Novi. Mechanically operated centrifugal type. Regulation from 400 to 2000 RPM.

Horsepower: 40 maximum belt @ 2000 RPM, 25 Drawbar HP

Transmission: Warner Gear T-90 3 speed forward, 1 reverse

Transfer case: Spicer Model 18. 2:46 to 1 low range & 1 to 1 high range

Differential: Spicer Model 25, conventional hypoid auto type, 5.38:1 ratio

Clutch: Single dry disc plate, 8-1/2"

Fuel tank: Rectangular galvanized steel located under the deck in back of seat. 10-3/4 x 14-1/2 x 9-1/2 high with 2-3/8" cap.

Muffler: Willys #WO-A9090A Reverse O flow type. Oval shape 18" long, 3-1/8" deep, 6" wide with 1-5/8" ID intake. Willys #WO-A6118 was also used.

Final Drive: Roller chain in sealed case, oil bath lubrication, small gear - 9 teeth, large gear - 24 teeth, chain - 30 links #80 single H roller. (2.67:1 reduction)

Steering: Solid axle-type with center pivot, drag link and tie rods. Willys-Overland Jeep gear box

Power Take-off: Single lever control for rear belt pulley

Belt Pulley: Steel 6" wide x 7-1/2" diameter with 1" diameter keyed bore. Split type pulleys were also used.

Brakes: Individual clutch type with tie latch. Disc pads are 3/16" thick x 6" OD x 3-1/8" ID with 12 rivets.

Wheels: Rear: 24" x 8" rim with 1/2" steel plate welded in center, 8 bolt on 6" C/L  
Front: 16" x 4" riveted in place center, 6 bolt on 5" C/L

Tires: Rear: 9:24 farm tractor type  
Front: 5:50-16 3 rib farm tractor type

Dimensions: Wheel base: 76-1/2" Ground clearance: 23"  
Height above ground: 65" Shipping weight: 2,450 lbs  
Maximum tread: 58" Minimum tread: 50"  
Overall length: 123" Width: 61"

Draw Bar: Steel bar, 2-1/2" wide x 5/8" thick x 71" long overall with a 1" diameter hole in each end. The draw bar has an anti-lift bar welded to underside 8-1/2" back from the end and extending back another 7-1/2". The gap between the bars is 3/4".

Travel Speeds: Low range @ 1200 RPM 1<sup>st</sup>-1.52 MPH, 2<sup>nd</sup>-2.75 MPH, 3<sup>rd</sup>-4.29 MPH, Rev.-1.12 MPH  
High range @ 1200 RPM 1<sup>st</sup>-3.75 MPH, 2<sup>nd</sup>-6.75 MPH, 3<sup>rd</sup>-10.45 MPH, Rev.-2.75 MPH  
Highway speeds to 19.5 MPH @ 2200 RPM could be attained

Electrical: Battery: 6 Volt, 100 amp. located under the dash on right side  
Ground cable: Negative ground, braided strap type or rubber covered round cable. Length is 16.5" with straight or right angle battery connector from bolt on side of transmission to battery.  
Positive cable: Battery to starter switch, 19" long, cloth covered round cable. Eyelet & right angle connectors.  
Starter cable: Starter to starter switch, 32" long, cloth covered round cable. Eyelet connector on both ends.

Tool Box: Fabricated steel 24" long x 12" wide x 10" high with hinged cover and latch

Seat: The Monroe E-Z Ride was most commonly used although other brands were substituted from time to time depending on availability.

***NOTE:** To the best of our knowledge, the above specifications were correct at time of publication. (August 2014) Since then new information may have surfaced which may make certain information listed above incorrect. We would welcome any new information, additions or corrections.*

