

# HUDSON

## MECHANICAL SPECIFICATIONS and ADJUSTMENTS

1942-1947 Models

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## 1942–1947 Hudson Mechanical Specifications and Adjustments

### MODEL IDENTIFICATION DATA

MODELS	SERIES		
	1942	1946	1947
Six	20T		
Six DeLuxe	20P		
Six Business Cars	20C		
Super Six	21	51	171
Commodore Six	22	52	172
Super Eight		53	172
Commodore Eight	24	54	174
Commodore Eight	25		
Commodore Eight	27		
Hudson Business Cars	28C		
3/4-Ton Commercial		58	178

### BODY TYPES AND WEIGHTS 1942 MODELS

TRAVELER SIX SERIES 20T. 116" Wheelbase – Serial Numbers 20–101 and upward.  
Engine – 6 cylinder, 3" bore, 4-1/8" stroke, 21.6 A.M.A. HP, 175 cubic inches displacement.

3–Passenger Coupe	2795 lbs.
6–Passenger Club Coupe	2845 lbs.
2–Door Club Sedan	2895 lbs.
4–Door Sedan	2940 lbs.

DELUXE SIX SERIES 20P. Wheelbase, Serial Numbers and Engine same as 20T.

3–Passenger Coupe	2845 lbs.
6–Passenger Club Coupe	2900 lbs.
2–Door Club Sedan	2935 lbs.
4–Door Sedan	2975 lbs.
Convertible Sedan	3140 lbs.

BUSINESS CARS SIX SERIES 20C, Wheelbase, Serial Numbers and Engine same as 20T.

Cab Pickup	2915 lbs.
Utility Coupe	2900 lbs.
Utility Coach	2905 lbs.

SUPER SIX SERIES 21, 121" Wheelbase – Serial Numbers 21–101 and upward.  
Engine – 6 Cylinder, 3" bore, 5" stroke, 21.6 A.M.A. HP, 212 cubic inches displacement.

### SUPER SIX SERIES 21 (Cont'd)

3–Passenger Coupe	2925 lbs.
6–Passenger Club Coupe	2895 lbs.
2–Door Club Sedan	3035 lbs.
4–Door Sedan	3080 lbs.
Convertible Sedan	3200 lbs.
Station Wagon	3315 lbs.

COMMODORE SIX SERIES 22, 121" Wheelbase–Serial Numbers 22–101 and upward. Engine same as Super Six 21.

3–Passenger Coupe	2995 lbs.
6–Passenger Club Coupe	3055 lbs.
2–Door Club Sedan	3100 lbs.
4–Door Sedan	3135 lbs.
Convertible Sedan	3280 lbs.

COMMODORE EIGHT SERIES 24, 121" Wheelbase–Serial Numbers 24–101 and upward.  
Engine – 8 cylinder, 3" bore, 4-1/2" stroke, 28.8 A.M.A. HP, 254 cubic inches displacement.

3–Passenger Coupe	3120 lbs.
6–Passenger Club Coupe	3205 lbs.
2–Door Club Sedan	3245 lbs.
4–Door Sedan	3280 lbs.
Convertible Sedan	3400 lbs.

COMMODORE EIGHT CUSTOM COUPE SERIES 25, 121" Wheelbase – Serial Numbers 25–101 and upward.  
Engine same as Commodore Eight 24.

6–Passenger Club Coupe	3235 lbs.
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COMMODORE EIGHT CUSTOM SEDAN SERIES 27, 128" Wheelbase – Serial Numbers 27–101 and upward.  
Engine same as Commodore Eight.

4–Door Sedan	3395 lbs.
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SIX BIG BOY SERIES 28C, 128" Wheelbase – Serial Numbers 28101 and upward. Engine same as Super Six 21.

Cab Pickup	3040 lbs.
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## BODY TYPES AND WEIGHTS

1946-1947 Models

SUPER SIX Series 51 and 171, 121" Wheelbase.  
Engine – 6 cylinder, 3" bore, 5" stroke, 21.6 A.M.A. HP,  
212 cubic inches displacement.

	1946	1947
4-Door Sedan	3085 lbs.	3110 lbs.
Brougham	3030 lbs.	3055 lbs.
3-Passenger Coupe	2950 lbs.	2975 lbs.
Club Coupe	3915 lbs.	3040 lbs.
Convertible Brougham	3195 lbs.	3220 lbs.

COMMODORE SIX Series 52 and 172, 121"  
Wheelbase, Engine same as Series 51 and 171.

4-Door Sedan	3150 lbs.	3175 lbs.
Club Coupe	3065 lbs.	3090 lbs.

3/4-TON COMMERCIAL Series 58 and 178, 128"  
wheelbase. Engine same as Series 51 and 171.

Cab Pickup	3080 lbs.	3110 lbs.
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SUPER EIGHT Series 53 and 173, 121" Wheelbase.  
Engine – 8 cylinder, 3" bore. 4-1/2" stroke, 28.8 A.M.A.  
HP, 254 cubic inches displacement.

4-Door Sedan	3235 lbs.	3260 lbs.
Club Coupe	3185 lbs.	3210 lbs.

COMMODORE EIGHT Series 54 and 174, 121"  
Wheelbase. Engine same as Series 52 and 173.

4-Door Sedan	3305 lbs.	3330 lbs.
Club Coupe	3235 lbs.	3260 lbs.
Convertible Brougham	3410 lbs.	3435 lbs.

## CHASSIS DIMENSIONS

### Over-All Length – Incl. Bumpers

20	195-1/4"
21, 22, 24, 25	200-1/4"
27	203-1/4"
51, 52, 53, 54, 171, 172, 173, 174	207"
58, 78	214"

### Over-All Height

20T, 20P	68"
21, 22, 24, 25, 27	
51, 52, 53, 54	68-3/4"
171, 172, 173, 174	
20C, 28C, Cab Pickup	81"
20C	90-3/4"

### Over-All Width – Incl. Fenders

All 1942, 1946, 1947	FRONT	REAR	
	71"	72-3/4"	
Tread			
All Models, 1942, 1946, 1947	56-1/4"	59-1/2"	
Turning Radius			
20T, 20P, 20C	20' 8"		
21, 22, 24, 25, 51, 52, 53, 54	21' 1"		
27, 28C, 58, 171, 172, 173, 174, 178	21' 10"		

### Road Clearance

	FRONT	REAR
20T	9-1/4"	8"
20P, 21	9-5/8"	8-3/8"
22, 24	9-3/4"	8-1/2"
25, 27	9-5/8"	8-7/8"
51, 53, 171, 173	9-5/8"	8-3/8"
52, 54, 58, 172, 174, 178	9-3/4"	8-1/2"

## PROPELLER SHAFT

MODEL	LENGTH C. TO C. OF JOINT	LENGTH OF SHAFT ONLY
20, 21, 22, 24, 25, 51, 52, 53, 54, 181, 172, 173, 174 – without overdrive	58-7/16"	55-23/32"
20, 21, 22, 24, 25, 51, 52, 53, 54, 181, 172, 173, 174 – with overdrive	51-1/8"	48-13/32"
27, 28, 58 CM – 78 CM with overdrive	58-1/16"	55-11/32"

## WHEELS AND TIRE SPECIFICATIONS

MODEL	WHEEL SIZE	TIRE SIZE
20T	16 x 3.50 – Standard	6.40 x 16
20P	16 x 4.00 – Standard	6.00 or 6.50 x 16
20P, 21, 22, 24 51, 53, 171, 173	16 x 4.50 – Standard	6.00 or 6.25 x 16
20C, 28, 58, 78	16 x 4.50 – Standard	6.00 or 6.25 X 16
20T, Utility Coupe, Utility Coach, 58, 178	16 x 4.50 – Optional	6.00 or 6.50 x 16 – Truck Air Wheel
25, 27, 52, 54, 172, 174	15 x 5.00 – Standard	6.50 or 7.00 x 15 -- Pass. or Truck Air Wheel
21, 22, 24, 28, 51, 53, 171, 173	15 x 5.00 – Optional	6.50 or 7.00 x 15 – Pass. or Truck Air Wheel

## TIRE PRESSURES

TIRE SIZE	FRONT (LBS)		REAR (LBS)	
	COLD	HOT	COLD	HOT
5.50 x 16	32	35	32	35
6.00 x 16	26	29	30	33
6.00 x 16 Truck Air Wheel (Opt.)	26	29	40	44
6.00 x 16 Truck Air Wheel (Opt.)	26	29	40	44
6.25 x 16	26	29	30	33
6.50 x 16 (Opt.)	26	29	30	33
6.50 x 15	26	29	30	33
7.00 x 15	26	29	30	33

## ENGINE SPECIFICATIONS

### Mounting and General Information

Mounting Type	Rubber - 3 Points	Displacement:	
Bore	3"	3" x 4-1/8" (6 Cylinder)	175 Cubic Inches
Stroke - Series 20	4-1/8"	3" x 5" (6 Cylinder)	212 Cubic Inches
- Series 21, 22, 51, 52, 171, 172 and 178	5"	3" x 4-1/2" (8 Cylinder)	254 Cubic Inches
- All Eight Cylinder	4-1/2"		

### CAMSHAFT

Gear Material	Phenolic (1942) Aluminum (1946)	Timing Gear Lash	.002" to .004"
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### CAMSHAFT BEARINGS

Type	Steel backed, Bermax lined	Radial Clearance	.002" to .0025"
	<u>Diameter and Length</u>		
	6 Cylinder		8 Cylinder
No. 1	2.000" x 1-1/4"	No. 1	2.029" x 1-3/8"
No. 2	1.968" x 1-1/16"	No. 2	1.998" x 1-1/16"
No. 3	1.5625" x 11/16"	No. 3	1.966" x 1-1/4"
		No. 4	1.9355" x 1-1/16"
		No. 5	1.498" x 1-5/16"

### CONNECTING RODS

Material	Forging Steel	Lower End Bearing (cont'd)	
Weight		Radial Clearance	.001"
3" x 4-1/8" engine	30-3/4 oz.	End Play	.007" to .013"
All Other Models	30 oz.	Material	Bearing Alloy
Length - Center to Center		Upper End Bearing	
3" x 4-1/8" engine	8-5/8"	Inside Diameter	3/4"
All Other Models	8-3/16"	Length	15/16"
Lower End Bearing		Clearance on Pin	.0003"
Inside Diameter	1.937	Material	Bronze
Length	1.375		

### SPARK PLUG

Champion J9 (Hudson 14 M.M.)

### CRANKSHAFT

Type	Fully compensated	Bearing Material	Bearing alloy
Bearings		End play taken by	Center bearing
6 Cylinder	3	Radial clearance	.001"
8 Cylinder	5		
	<u>Bearing Diameter and Length</u>		
	<u>6 Cylinder</u>		<u>8 Cylinder</u>
No. 1	2.343 x 1.625	No. 1	2.281 x 1.625
No. 2	2.375 x 1.750	No. 2	2.312 x 1.375
No. 3	2.406 x 2.375	No. 3	2.343 x 1.875
		No. 4	2.375 x 1.375
		No. 5	2.406 x 2.000
Bearing End Play	.006" - .012"	Adjustment Type	None

### PISTONS

Type	Cam ground	Clearance:	
Material	Lo-Ex aluminum alloy	Skirt	.001" to .002"
Weight	10.5 oz.	Top of Piston	.016"
Length	3-3/16"	Depth of Grooves	5/32"
Pin Center to Top	1-11/16"	Piston Pin Hole-Size	.750"

### PISTON PIN

Type	Floating	Length	2-7/16"
Method of Locking	snap rings	Fit in Piston (At 200° .)	.0003"
Diameter	.750"	Fit in rod	.0003"

### PISTON RINGS

Material	Cast iron	Oil Rings	
Joint Type	Straight cut and pinned	Number Used	2
Compression Rings:		Width – Upper	.3/16"
Number Used	2	Width – Lower 3" x 5":	
Width	3/32"	6 Cylinder, 8 Cylinder	5/32"
		Width – Lower 3" x 4-1/8" 6 Cyl.	3/16"

### VALVE LOCATIONS

(From the Front)

6 Cylinder Intake	2-4-5-8-9-11	8 Cylinder Intake	2-3-6-7-10-11-14-15
6 Cylinder Exhaust	1-3-6-7-10-12	8 Cylinder Exhaust	1-4-5-8-9-12-13-16

### VALVE TIMING and TAPPETS

1942 Models 21, 22, 28 Six – 3" x 5".

1942 Model 20 – Six Cylinder – 3" x 4-1/8" (With Unmarked Valve Cover Plates.)

1942, 1946, 1947 – All Eight Cylinder Models.

Tappet Clearance, Inlet	.006"	Tappet Clearance, Exhaust	.008"
Intake Opens	10° 40' B.U.D.C.	Exhaust Opens	50° BLDC
Intake Closes	60° A.L.D.C.	Exhaust Closes	18° 44' AUDC

1942 Model 20, 3" x 4-1/8" with Valve Covers Marked .010" and .012".

1946 and 1947 All Six Cylinder Models 51, 52, 58, 171, 172, and 178.

Tappet Clearance, Inlet	.010"	Tappet Clearance, Exhaust	.012"
Intake Opens	27° 30' BUDC	Exhaust Opens	51° 50' BLDC
Intake Closes	68° 10' ALDC	Exhaust Closes	32° 10' AUDC
Tappet in Guide	.0002" to .0018"		

### VALVE STEM GUIDE

6 Cyl. Sets 1-1/16" below top of cylinder block.

8 Cyl. Sets 1-5/16" below top of cylinder block.

Length – 2-9/16"

### COMPRESSION RATIO

3" x 4-1/8" 6 Cylinder	7-1/4 to 1	All Other Models	6-1/2 to 1
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### INLET VALVE

Material	Silicon steel	Overall Length	
Head Diameter Overall		6 Cylinder	5-11/32"
6 Cylinder	1-3/8"	8 Cylinder	5-3/32"
8 Cylinder	1-1/2"	Stem Diameter	.341"
Lift	.343"	Stem Clearance	.0015" to .003"

### EXHAUST VALVE

Material	XB Silichrome steel
Head Diameter	1-3/8"
Lift ..	.343"
Overall Length	
6 Cylinder	5-11/32"
8 Cylinder	5-3/32"
Stem Diameter	.339"
Stem Clearance	.003" to .005"

### VALVE SPRING PRESSURE

At 2"	34 to 40 lbs.
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### LUBRICATION SYSTEM

Type	Duo-Flo Automatic
Pump Type	Oscillating plunger
Pump Drive	Worm on Camshaft
Oil Filter Screen	40 mesh

### TORQUE SPECIFICATIONS – ENGINE (Ft. Lbs.)

Connecting Rod Bolt	40-45	Water Jacket Cover Bolt	20-30
Cylinder Head Studs		Oil Pan	15-20
6 Cylinder	40-45	Timing Gear Cover	15-20
8 Cylinder	45-50	Camshaft Gear Bolt	20-30
Main Bearing Bolts	70-80	Cylinder Support Plate	20-30
Flywheel to Crankshaft Bolts	40-45	Intake Manifold	15-20
Front Engine Support Bolts	40-45	Exhaust Manifold	20-30
Spark Plugs	25-30	Cylinder Head Water Outlet	20-30

### TORQUE SPECIFICATIONS

#### Chassis

	FT. LBS.		FT. LBS.		FT. LBS.
Propeller Shaft	20	Front engine support bolt	40	Steering center arm bolt nut	60
Clutch and brake pedal rod nuts	20	Clutch cover to flywheel bolts	20	Water jacket cover bolt	12
Brake anchor pin nuts	80	Steering wheel nuts	20	Oil pan	15
Clutch finger fulcrum nuts	40	Wheel nut	60	Timing gear cover	15
Connecting rod bolt nuts	40	Rear axle shaft nut	90	Camshaft gear bolt	20
Cylinder head studs – 6 cylinder	40	Rear spring clip nuts	55	Cylinder support plate	20
Cylinder head studs – 8 cylinder	45	Spark Plugs	28	Intake manifold	15
Main bearing bolts	75	Steering arm nut	100	Exhaust manifold	20
Flywheel to crankshaft bolts	40	Differential carrier nuts	35	Cylinder head water outlet	20
				Steering spindle support arm (lower)	
				pivot to frame bolt	60

### COOLING SYSTEM

Water Circulation	Centrifugal pump	Pump Capacity	30 gpm at 50 mph
Water Capacity – Complete System		Radiator	Cellular
6 Cylinder	13 Quarts	Thermostat Location	Cyl. head water outlet
8 Cylinder	18 Quarts	Thermostat Used Model 25, 27,	
		54, 174	By-pass type
Water Pump Drive	V Belt	Thermostat Used All Others	Choke type
Fan Drive	Pump shaft	Thermostat Begins to Open	150° to 155°



Torque Specs – Chassis (Cont'd)

Belt Adjustment	Generator mounting	Thermostat Fully Open	185°
Water Pump Bearings	Bronze	Temperature Gauge	Electric Type
Pump Lubrication	Grease fitting	Water Pump Impeller	6 blade

**FUEL SYSTEM**

Carburetor Make	Carter	Mechanical Pump Driven	
Carburetor Type	Down draft	from Camshaft By	Cam
Manifold Heat Control		Air Cleaner and Silencer	
Models 20, 28	Manual	Oil wetted – Standard	A C
All Others	Automatic	Oil Bath – Optional	United
Choke Control	Automatic	Gasoline Tank Capacity	
Fuel Delivery	Mech. or elec. pump	Models 20T, 20P, 20 Utility	
		Coach, 20 Utility Coupe	12–1/2 gallons
		All Others	16–1/2 gallons

**CARBURETOR SPECIFICATIONS**

**Carter WA1–454S**

(Models 40, 48, 10, 18, 20, 28 w/175 CID Motor)

Dimensions	1–1/4" Single, SAE flange. Primary venturi – 11/32" I.D. Secondary venturi – 11/16" I. D. Main venturi – 1–1/4" I. D.
Float Height	Distance from seam on float at free end to tip on lower edge of float chamber cover to be 3/8" when needle is seated.
Outside Vent	No. 10 drill. No inside vent.
Gasoline Intake	Square vertical needle No. 48 drill in needle seat.
Gasoline Line Connection	5/16" Weatherhead nipple.
Low Speed Jet Tubes	Jet No. 70 drill size. By-pass in body No. 53 drill size. Economizer in body .0755" – .0765" diameter.
Idle Port	Idle bleed No. 50 drill size.
Idle Port Opening	Length 0.165" – Width 0.032".
Idle Screw Beat	0.122" above valve with valve closed tightly.
Set Idle Adjustment Screw	No. 46 drill.
600	1/2 to 1–1/2 turns open. For richer mixture turn screw out. Do not idle engine below rpm which is equivalent to 6 to 8 mph in high gear.
Main Nozzles	In primary venturi, angle 45° closed tip. Inside diameter No. 30 drill. Upper hole No. 75 drill on 45° angle. Lower hole No. 48 drill on 45° angle.

Metering Rod Specifications (454S Single Carburetor)	Type	Economy Step – Middle Step			Power Step		
		Diam.	Tapers from	Length of Taper	Diam.	Length of Taper	Length of Step
	Standard	.072	.072 to .064	1/8	.044	1/32	21/64
	1 <sup>st</sup> Leaner	.074	.074 to .066	1/8	.046	1/32	21/64
	2 <sup>nd</sup> Leaner	.076	.076 to .068	1/8	.048	1/32	21/64
	3 <sup>rd</sup> Leaner	.078	.078 to .070	1/8	.050	1/32	21/64

Metering Rod Jet	0.096" diameter drill.
Metering Rod Setting	Use gauge No. J–1265 (2.468").
Accelerating Pump	Low pressure type with adjustable stroke. Discharge jet No. 70 drill size. Intake ball check No. 62 drill size. Discharge ball check No. 45 drill size. Relief passage (to outside) No. 42 drill.

Carburetor – WA1-454S (Cont'd)

Pump Adjustment 3/16" plunger travel in short stroke.  
 Vacuum Spark Port 0.039" to 0.041" diameter. Bottom of port 0.021" to 0.0291" above valve.

*Next 3 items are based on viewing carburetor with flange down and float chamber at the right.*

Throttle Lever At left. Length 1–1/4", in center of travel. Points toward you.  
 Choke Carter Climatic Control, on left side. Set at center index.  
 Fast Idle and Unloader On left side.

**Carter WDO 501S**

(1941 Ser. No. 2150 up; 1942–1947 all six 3" x 5" engines)

Dimensions 1" Dual–4 bolt flange—Primary venturi 11/32" I.D. Secondary venturi 21/32" I.D. Main venturi 1–1/16" I.D.  
 Float Level Distance from float to bowl cover to be 1/8" when needle is seated.  
 Outside Vent No. 10 Drill size 4 holes. No inside vent.  
 Gasoline Intake S quare vertical needle. No. 38 drill hole in needle seat.  
 Gasoline Connection 5/16" Weatherhead nipple.  
 Low Speed Jet Tubes Jet size No. 71 drill. By–pass (plug) No. 51 drill. Economizer in body No. 56 drill.  
 Idle Bleed No. 54 drill.  
 Idle Port Length 0.150". Width 0.030".  
 Idle Port Opening 0.108" to 0.112" above valve with valve tightly closed.  
 Lower Port (For Idle Adj. screw) 0.0615" to 0.0655" diameter.  
 Set Idle Adjustment Screw. 1/2 to 1–1/2 turns open. For richer mixture turn screw out. Do not idle engine below 600 rpm which is the equivalent of 6 to 8 mph in high gear.  
 Main Nozzle In primary venturi, angle 45°. Closed tip. Inside diameter No. 30 drill. Top hole No. 70 drill on 45° angle.

Metering Rod Specifications (501 Duplex Carburetor)	Type	Economy Step – Middle Step			Power Step		
		Diam.	Tapers from	Length of Taper	Diam.	Length of Taper	Length of Step
	Standard	.0615	.0615-.057	3/16	.047	1/64	.147
	1 <sup>st</sup> Leaner	.0625	.0625-.058	3/16	.048	1/64	.147
	2 <sup>nd</sup> Leaner	.0635	.0635-.059	3/16	.049	1/64	.147
	3 <sup>rd</sup> Leaner	.0645	.0645-.060	3/16	.050	1/64	.147

Lower hole No. 52 drill on 60° angle on early production units, No. 51 drill on late production units.  
 Metering Rod Jet 0.082".  
 Metering Rod Setting Use gauge J–1305 (2.280").  
 Accelerating Pump High pressure type–spring operated lever, with adjustable pump stroke. Discharge jets No. 74 drill. Intake ball check No. 40 drill. Discharge needle seat No. 50 drill. Relief passage (to outside) thru slots in air horn.  
 Pump Adjustment 9/32" plunger travel–in long stroke.  
 Vacuum Spark Port 0.039" to 0.041" Top of port 0.029" to 0.033" above valve.  
 Choke Valves In air horn. Offset butterfly type.

*Next 4 items are based on viewing carburetor with flange down and float chamber in rear.*

Throttle Lever Adjusting, on right side. Length 3/4".  
 Choke Climatic control on left side. Set one point lean.  
 Choke Heat Suction Holes Location, in body. Size No. 34 drill.  
 Fast Idle and Unloader On right side.

Carburetor Specs (Cont'd)

**Carter WDO 502S**  
(Used On 8 Cylinder Engines)

Dimensions 1-1/4" Dual-4 bolt flange—Primary venturi 1 1/32" I.D.—  
Secondary venturi 19/32" I.D.—Main venturi 1-37/16" I.D.

Float Level Distance from float to bowl cover to be 1/8" when needle is seated.

Outside Vent No. 10 drill size. 4 holes. No Inside vent.

Gasoline Intake Square vertical needle. No. 38 drill hole In needle seat.

Gas Line Connection 5/16" Weatherhead nipple.

Low Speed Jet Tube Jet size No. 69 drill. By-pass (plug) No. 51 drill. Economizer In body No. 56 drill.

Idle bleed No. 54 drill.

Idle Port Length 0.175" – Width 0.030".

Idle Port Opening 0.133" to 0.137" above upper edge of valve with valve tightly closed.

Lower Port (For Idle Adj. Screw) 0.0615" to 0.0655" diameter.

Idle Screw Seat No. 52 drill.

Set Idle Adjustment Screw. 1/2 to 1-1/2 turns open. For richer mixture, turn screw out. Do not idle engine below 600 rpm or 6 to 8 miles per hour in high gear.

Main Nozzle In primary venturi, angle 45°. Closed tip. Inside diameter No. 30 drill. Top hole No. 70 drill on 45° angle.

Lower hole No. 52 drill on 60° angle.

Metering Rod Specifications (502S Duplex 8 Carburetor)	Type	Economy Step – Middle Step			Power Step		
		Diam.	Tapers from	Length of Taper	Diam.	Length of Taper	Length of Step
	Standard	.061	.061 – .055	.141	.044	1/64	.162
	1 <sup>st</sup> Leaner	.062	.062 – .056	.141	.045	1/64	.162
	2 <sup>nd</sup> Leaner	.063	.063 – .057	.141	.046	1/64	.162
	3 <sup>rd</sup> Leaner	.064	.064 – .058	.141	.047	1/64	.162

Metering Rod Jet 0.086" drill.

Metering Rod Setting Use gauge J-1305 (2.280").

Accelerating Pump High pressure type (spring operated lever) with adjustable pump stroke. Discharge jets No. 74 drill. Intake ball check No. 40 drill. Discharge needle seat No. 50 drill. Relief passage (to outside) thru slots In air horn.

Pump Adjustment 9/32" plunger travel (In long stroke).

Vacuum Spark Port None.

Choke Heat Suction Hole Location, in body. Size No. 34 drill.

Choke Valve In air horn. Offset butterfly type.

*Next 3 items are based on viewing carburetor with flange down and float chamber in the rear.*

Throttle Lever Adjusting, on right side. Length 1-1/4", in center of travel. Points up.

Choke Climatic control on left side. Set one point lean.

Fast Idle and Unloader On right side.

**EXHAUST SYSTEM**

Muffler – Six Cylinder  
     Inlet 2"  
     Outlet 1-1/2"  
 Muffler – Eight Cylinder  
     Inlet 2"  
     Outlet 1-7/8"

**ELECTRICAL SYSTEM  
SPECIFICATIONS**

<b>Generator</b>		<b>Regulator</b>	
Make	Auto-Lite	Ground Polarity	Positive
Volts	6		
Models, Standard	GDS-4801A	Model Used With -	
	GEC-4801A	Generator GDS-4801A	VRR-4001A
Models, Optional	GEA-4803B	Generator GZA-4803B	VRP-4008B
	GEB-48023B	Generator GEB-4802B-2	VRP-4008D
	GEG-4801 A	Generator GEC-4801A	VRR-4001A
		Generator GEG-4801A	VRP-4008A
Number of Brushes		Voltage Regulator Setting	
Models GDS, GEC	3	@ 110 Amperes Rate, 110° F	7.1-7.4 volts
Models GEA, GEB, GEG	2	Current Regulator Setting	
Number of Poles	2	VRP-4008A	39-41 amperes
Ground Polarity	Positive	VRP-4008B	34-36 amperes
Rotation, Viewed Drive End	Clockwise	VRP-4008D	34-36 amperes
Drive	Fan belt	Carbon Resistors On Base,	
Current Control, Standard Generator	3rd Brush	Total Resistance	
Voltage Control, Standard Generator	Vibrating regulator	VRP-4008A	75 ohms
Current And Voltage Control,		VRP-4008B	45 ohms
Optional Generator	Vibrating regulator	VRP-4008D	75 ohms
Fuse	None	VRR-4001A	30 ohms
Bearing, Drive End	Ball		
Bearing, Commutator End			
Models GEB, GEG	Ball		
Models GDS, GEA, GEC	Absorbent bronze		
Bearing Clearance	0.001 - 0.0025	<b>Starting Motor</b>	
Bushing Bore, Installed	0.626 - 0.627	Make	Auto—Lite
Armature End Play	0.003 - 0.010	Volts	6
Brush Spring Load, Ounces		Models	MAB-4100
Models GEB, GEG	64 - 68		MZ-4092
Models GDS, GEA, GEC	35 - 53	Poles	4
Field Draw Total, @ 6 Volts		Brushes	4
GDS-4801 A	1.65 - 1.82	Brush Spring Load, Ounces	42-53
GEA-4803B	1.57 - 1.75	Bearings	Absorbent bronze
GEB, GEC, GEG	1.60 - 1.78	Maximum End Play	1/16"
Motorizing Draw @6 Volts		Transmission, (Drive)	Bendix inboard
(Field Terminal Grounded to Frame)		No Load Draw, Minus Switch	
GDS-4801A	5.10 - 5.45	MAB-4100 @ ,5.5 Volts, 3700 RPM, 60 amperes	
GEA-4803B	4.45 - 4.90	MZ-4092 @ 5.5 Volts, 4300 RPM, 70 amperes	
GEB-4802B	4.00 - 4.50	Stall Torque, Minus Switch	
GEC-4801A	4.85 - 5.40	MAB-4100 @ 3 Volts, 580 Amps. 15.8 f t. lbs	
GEG-4801A	4.70 - 5.20	MZ-4092 @ 3 Volts, 420 Amps. 7.8 ft. lbs	
Maximum Output @ 8 Volts			
GDS-4801A @ 1250 rpm	34	<b>Starting Switch Solenoid</b>	
GEA-4803B @ 1600 rpm	35	Contacts Close	3-4 volts
GEB-4802B-2 @ 1300 rpm	35	Contacts Open	0.5-1.025 volts
GEC-4801A @ 1290	43	Voltage Drop Per 100 Amps.	0.40 volts
GEG-4801A @ 1550 rpm	40		

### Distributor

Make	Auto-Lite	Distributor (Cont'd)	
Volts	6	Vacuum Advance Curve Stated	
Models – 6 Cylinder	IGW-4203A	in Distributor Degrees and Hg. Abs.	
Models – 8 Cylinder	IGP-4008A	IGW-4203A	
Rotation Viewed From Top		6-3/4 Hg. Abs.	0°
IGP-4008A, B	Clockwise	7-5/8" Hg. Abs.	2°
IGW-4203A	Counter-clockwise	8-1/2 Hg. Abs.	4°
Type Automatic Control		9-3/8 Hg. Abs.	6°
IGP-4008A, B	Centrifugal	10 Hg. Abs.	7.5°
IGW-4203A	Centrifugal and vacuum	Breaker Arm Spring	17-20 oz.
Governor Advance Curve Stated		Cam Dwell, Degrees	
In Distributor Degrees and RPM		IGP-4008A, B,	27.5
IGP-4008A, B		IGW-4203A	35
300 RPM		Rotor Shaft Side Play	.005"
400 RPM	0°	Rotor Shaft End Play	.003"-.010"
850 RPM	3°	Contact Gap	
1300 RPM	8°	IGP-4008A, B	.017"
1700 RPM	9°	IGW-4203A	.020"
IGP-4203A		Flywheel Teeth	
400 RPM	0°	Degrees to a Tooth	2-2/3
700 RPM	3°		
1000 RPM	6°		
1300 RPM	9°		
1570 RPM	11.75°		

### Ignition Coil

Make	Auto-Lite	Lock Cylinder Location	End of coil cable
Location	Engine side of dash	Lock Cylinder Removal	Spring type retainer
Model – 6 Cylinder	IG-4098	Lock Key Series	H601 to H1100
Model – 8 Cylinder	CE-4029	Lock Blank Cylinders	Tumblers cut to match key
Amperage Draw			
Engine Stopped	4.5		
Engine Idling	2.5		

### Spark Plugs

Make	Champion	Thread	14 mm
Model	J-9 or J-7	Gap	.032"

### Battery

Make	National	Dimensions – 6 Cylinder	
Number of Plates		Length	10-1/2"
6 Cylinder	51	Width	7-1/8"
8 Cylinder	57	Height	7-13/16"
Terminal Grounded	Positive	Dimensions – 8 Cylinder	
Water Level Above Plates	3/8"	Length	11-3/4"
		Width	7-1/4"
		Height	7-13/16"

## Horns

### Twin Electric Air Type

Used on	All Passenger Cars	Air Gap – Low Pitch	.023”-.031”
High Pitch	Short Horn	Relay Points Close	3 – 4 volts
Low Pitch	Long Horn	Relay Points Open	2 volts
Diaphragm Thickness		Relay Coil Resistance	
High Pitch	.0195”	@ 70° F	7.3 – 8.9 ohms
Low Pitch	.015”	Fuse Location On Dash	Under Hood
Air Gap – High Pitch	.025”-.027”	Fuse Size	30 Ampers

### Single Vibrator Type

Used On	Commercial Cars	Adjustment Screw Located	Outer edge of cover
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## Light Bulbs (6 Volt)

	<u>Mazda No.</u>	<u>Candlepower</u>
Headlamp, Domestic	40/30 watts	Sealed Beam
Headlamp, Export	54/20 watts	Sealed Beam
Hood Side Panel	55	2
Hood Ornament	55	2
Ignition Lock	55	2
Speedometer, Cars with Inst. Light, Rheostat	55	2
Speedometer, No Rheostat	51	1
Clock	55	2
Fuel Gauge, Cars with Inst. Light, Rheostat	55	2
Fuel Gauge, No Rheostat	51	1
Glove Compartment Accessory	55	2
Generator and Oil Telltale	51	1
Direction Indicator Telltale	51	1
Light Beam Indicator	51	1
Fender Lamp with Turn Indicator	1158	21-3
Fender Lamp without Turn Indicator	63	3
License Plate Lamp	63	3
Radio	51	1
Courtesy and Dome – All Models	88	15
Fog Lamp, Accessory	4015A	Sealed Beams
Spot Lamp, Accessory	1209S	32
Tail and Stop Lamp – All Passenger Cars	1154	21-3
Tail and Stop Lamp – All Commercial Cars	1158	21-3

## CLUTCH

### General

Pedal to Floorboard – Clearance	1-1/2”	Number of Corks (Cont’d)	
Type	Wet	10” Clutch	108
Fluid Used	Hudsonite	Type of Pilot Bearing	Ball
Number of Driving Plates	One	Type of Throwout Bearing	Ball
Plate Facing	Corks	Number Engaging Fingers	3
Number of Corks		Plate Diameter	9” and 10”
9” Clutch	90		

Clutch (Cont'd)

**Plate Size and Engaging Springs**

Series With Standard Drive		With Drive Master, Overdrive or Vacumotive Drive	
20 with 3" x 4-1/8" Engine, 9 Plate	3 inner 9 outer	20, 21, 51, 53, 54, 173, 174 – 10" Plate	0 inner 12 outer
20 with 3" x 5" Engine – 21, 51, 52, 171, 172 – 9" Plate	6 inner 9 outer	Engaging Spring Tension Lbs.	
All 22, 28, 58, 178 – also Police and Taxi Opt'l. Also approx 2500 51, 52 10" Plate	0 inner 12 outer	Inner All @ 1-5/8" (Spring 155224)	135-145
24, 25, 27, 53, 54, 173, 174 – 10" Plate	3 inner 12 outer	Outer 9" Plate @ 1-3/4" (Spring 45148 or 166250)	165-175
		Outer 10" Plate @ 1-5/8" (Spring 45149 166251)	180-190

**Torque Specifications, Ft. Lbs.**

Throwout Finger Retainer Nuts	40-45	Housing Screws and Bolts	40-45
Cover Cap Screws	20-25	Flywheel Flange Bolts	20-25
Cover Driving Lug Nuts	40-45		

**TRANSMISSION**

1942 thru 1947

**Gear Ratios**

2.88 to 1	Low
1.82 to 1	Second
1 to 1	High
3.5 to 1	Reverse

**End Play (Cont'd)**

Mainshaft Intermediate Gear and Synchronizer Shift Sleeve	.003" to .016"
Reverse Idler Gear	.003" to .010"

Speedometer Drive Gear 10 Teeth

**Teeth**

Reverse Idler	18 Teeth
Main Drive Gear	
2.88 to 1 Ratio	17 Teeth
2.61 to 1 Ratio	17 Teeth
Countershaft Gear Cluster	
2.88 to 1 Ratio	26 Teeth
	21 Teeth
	17 Teeth
	14 Teeth

**Speedometer Pinions**

Axle Ratio	Tire Sizes	Teeth
4-1/9 All		15
4-5/9	6.25x15, 6.50x16, 7.0x15	16
4-5/9	5.50x16, 6.00x16, 6.50x15	17
4-7/8	6.50x16, 7.00x15	17
4-7/8	5.50x16, 6.00x16, 6.25x16, 6.50x16	18

**Governor Pinion**

Mainshaft – Low and Reverse	32 Teeth External	4-1/9 Axle Ratio – All Tire Sizes	15 Teeth
	Spline – 24 Teeth Internal	4-5/9 or 4-7/8 –Axle Ratio – All Tire Sizes	17 Teeth

Mainshaft – Intermediate Helical – 25 Teeth  
Clutch – 30 Teeth

**Bearings and Bushings**

Mainshaft Drive Gear	Ball
Mainshaft Pilot	Needle Roller
Mainshaft Rear	Ball
Reverse Idler Gear	Steel Back Babbitt
Countershaft Gear Cluster	Steel Back Babbitt

**End Play**

Countershaft .006" to .016"

## REAR AXLE Specifications

Type	Semi-Floating	Wheel Bearings (Cont'd)	
Gear Type	Helical Bevel	Adjustment	Shim
<b>Pinion Bearings</b>		End Play	.002"-.004
Type	Taper Roller	<b>Pinion and Gear (Matched Gears)</b>	
Adjustment	Shim	(Ratio stamped on outside of differential carrier and cap assy. Right hand side at bolt circle.)	
End Play	.002"-.004"	Adjustment	Shim
<b>Differential Bearings</b>		Lash in gears	.0005"-.0035"
Type	Taper Roller	<b>Lubrication</b>	
Adjustment	Adjustment Nut	Type – Summer and winter	S.A.E. 90 EP
<b>Wheel Bearings</b>		Capacity in pounds	2-3/4 lbs.
Type	Taper Roller		

### Rear Axle Usage with 10" Brakes

#### Small Rear Wheel Bearings

Series 10TR, 10PA, 10DL, 20T, (exc. Utility Coach, Utility Coupe,) 20DL, 20P, exc. 3x5 engine and 11" brakes

#### Larger Rear Wheel Bearings

Series 10CM, 11, 12, 18, 20C (exc. with 3x5 engine), 20P with 3x5 engine, 20T, Utility Coach, Utility Coupe, 21, 22, 28C, 28P and with 11" brake all models thru 1947 with 10" brake.

#### Rear Axle Usage with 11" Brakes

Series 14, 15, 17, 20P, 24, 25, 27, 28P and all models thru 1947 with 11" brake.

## BRAKES

Type used (all models)	4 wheel Bendix hydraulic	Lining Area In Square Inches	
Drum Type	Centrifuse	10" brake	155 sq. in
Drum Diameter	10"	11" brake	167-1/2 sq. in
Series 20P, 20T, 20DL, 20C (exc. with 3x5 engine), 21, 22, 23, 28C, 51, 52, 171 and 172.		<b>Adjustments</b>	
Drum Diameter	11"	Anchor Pin – Radially	Single
Series 24, 25, 27, 28P, 53, 54, 58 174 and 178.		Anchor Pin Nut – Torsion Wrench	Tighten to 80 Ft. Lbs.
Length per Wheel		Lining clearance	.0075"
10" brake	22-1/8"	Mechanical follow-up	1-7/16"
11" brake	23-15/16"	Pedal to floor board clearance	1/4"

## FRONT SUSPENSION

		Front	Rear
Caster	1/2° to 1-1/2° at Curb Height –	4-7/16"	4-13/16"
Camber	1/2° to 1-1/2° at Curb Height –	4-7/16"	4-13/16"
Max. variation between right and left wheel caster or camber	1/2°		
Toe-in	0 to 1/16" measured at wheel rim		
Pivot Pin Inclination	4° 36'		
Toe-Out Variation	+/- 30' between wheels		
Spindle Pivot Pin Thrust Bearing	Ball		
Wheel Bearing Type	Taper Roller		



Front Suspension (Cont'd)

Wheel Bearing End Play	.001" to .003"
Tie Rod End Type	Plain Bearing
Tie Rod Adjustment	Turn rod to right or left
Tie Rod Adjustment – To Increase	Turn in direction of forward wheel travel
Tie Rod Adjustment – To Decrease	Turn in opposite direction
Steering center arm bolt nut	Tighten to 60 foot pounds
Steering arm nut – torque	100 Ft. Lbs.

**SHOCK ABSORBERS**

**1942 Models**

<u>SERIES</u>	<u>BODY TYPE</u>	<u>FRONT</u>	<u>REAR</u>	<u>MFR.</u>	<u>SCALE</u>
20T, 20P, 21	Exc. Coupes and Station Wagon	164786	164787	Monroe	Light
20, 21	3-P. Coupe, Club Coupe	164545	164546	Monroe	Light
22	Exc. 3-P. Coupe, Club Coupe, 27	162032	160110	Delco	Light
24	Exc. 3-P. Coupe, Club Coupe, 27	162032	160110	Delco	Light
22, 24	3-P. Coupe, Club Coupe, 25	164547	164548	Monroe	Light
28	All – 1942	160106		Delco	Heavy

Note: Part number 160106 shock absorber assembly front, used with optional heavy scale springs on all 1942 cars. Part number 160110 shock absorber assembly rear, used with optional heavy scale springs on all 1942 cars exc. Cab, Cab Pickup

**1946 Models**

<u>SERIES</u>	<u>BODY TYPE</u>	<u>FRONT</u>	<u>REAR</u>	<u>MFR.</u>	<u>SCALE</u>
51	Exc. 3-P. Coupes, Club Coupe	16754	165755	Monroe	Light
51	3-P. Coupe, Club Coupe	165750	165751	Monroe	Light
52, 53, 54	Exc. 3-P. Coupe, Club Coupe	165875	165871	Delco	Light
52, 53, 54	3-P. Coupe, Club Coupe	165873	165871	Delco	Light
58	All	165874		Delco	Heavy

Note: Part number 165874 shock absorber assembly front, used with optional heavy scale front and rear springs. Part number 165871 shock absorber rear, used with optional heavy scale front and rear springs.

**1947 Models**

<u>SERIES</u>	<u>BODY TYPE</u>	<u>FRONT</u>	<u>REAR</u>	<u>MFR.</u>	<u>SCALE</u>
171S, 171P, 171SP	3-P. and 4-P. Coupe	166572	166573	Monroe	Light
171, 171P, 171SP	Exc. 3-P. and 4-P. Coupe	166574	166575	Monroe	Light
172, 173, 174	3-P. and 4-P. Coupe	165873	165870	Delco	Light
172, 173, 174	Exc. 3-P. and 4-P. Coupe	165875	165871	Delco	Light
170CM, 171CM, 178CM		165874		Delco	Heavy

Note: Monroe shock absorbers bearing numbers 166572, 166573, 166574 and 166575 are permanently sealed type and cannot be serviced except as an assembly.