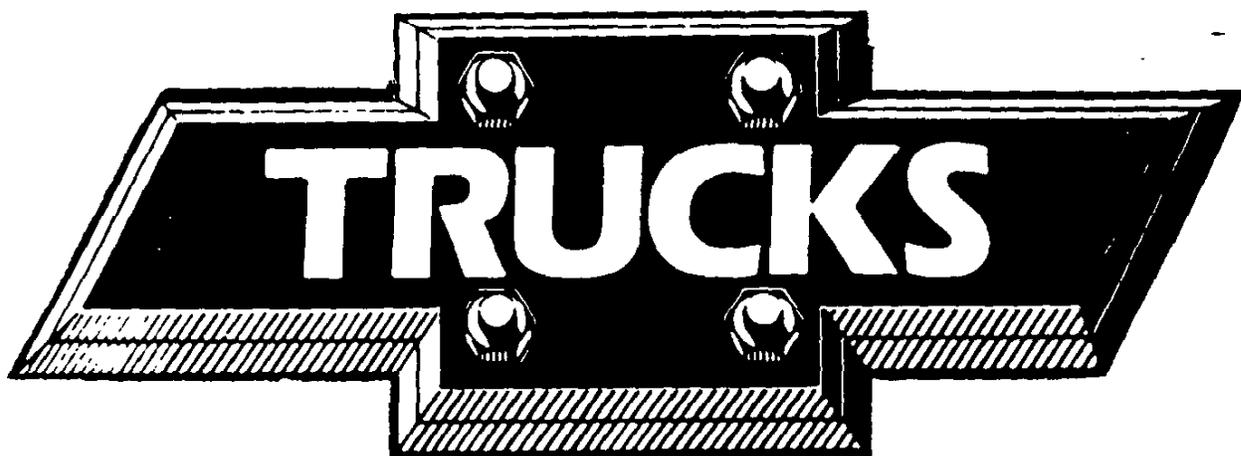
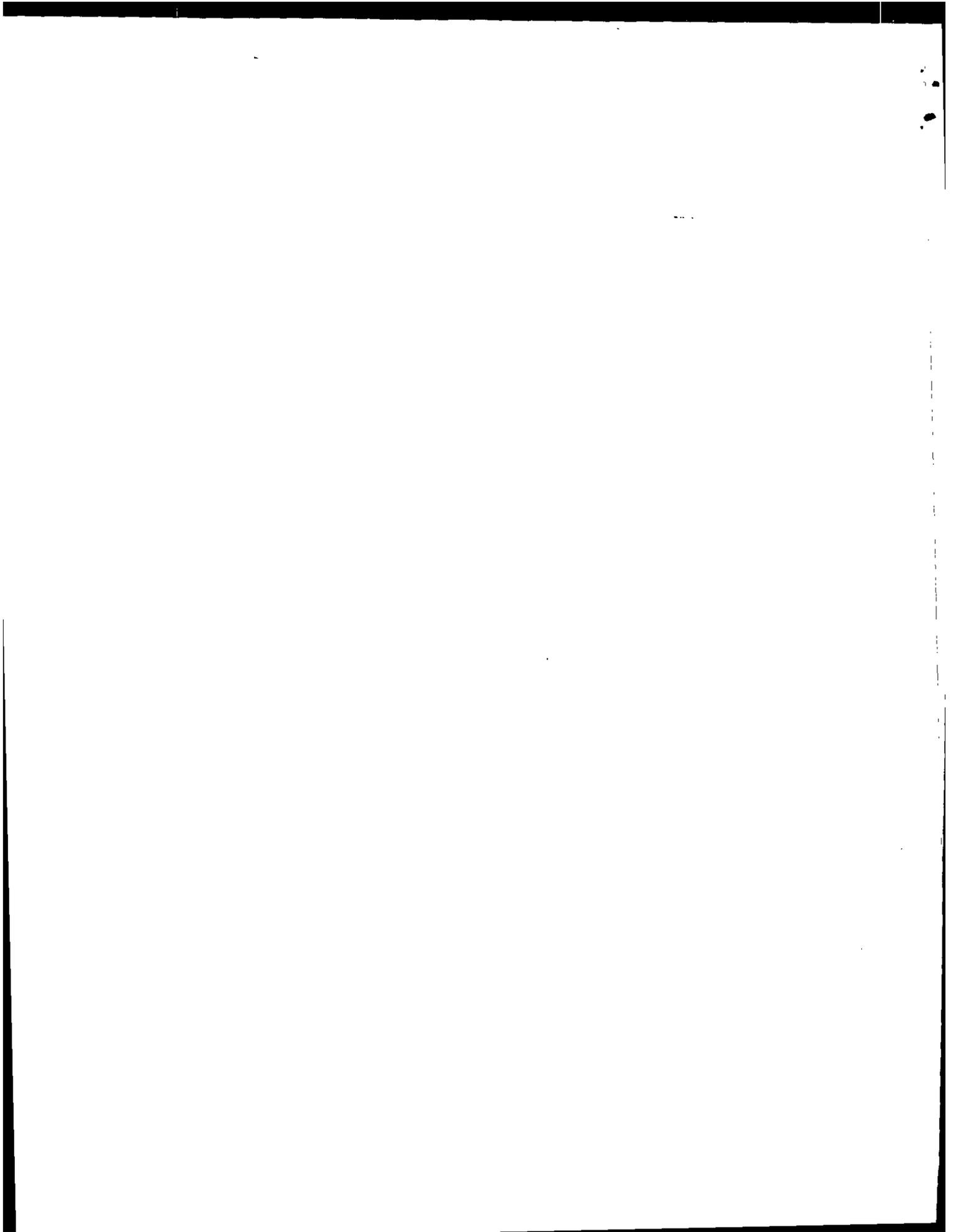


**CHEVROLET**



**1933**



**SPECIFICATIONS****1933****CHEVROLET MOTOR CO.****ENGINEERING DEPT.****EAGLE DATA SHEET****Passenger Models**

<u>Symbol</u>	<u>Type</u>	<u>PASS</u>	<u>Description</u>	<u>Series</u>	<u>W.B.</u>
Pha	Phaeton	5	Chevrolet Open Body	CA	110
PCh	Phaeton Chassis	-	Chassis Only	CA	110
SRoa	Sport Roadster	2-4	Chevrolet Open Body	CA	110
Sed	Sedan	5	Fisher Closed Body	CA	110
Coa	Coach	5	Fisher Closed Body	CA	110
Cpe2	Coupe 2	2	Fisher Closed Body	CA	110
SCpe	Sport Coupe	2-4	Fisher Closed Body	CA	110
Cbl	Cabriolet	2-4	Fisher Convertible Body	CA	110

**Commercial Models**

<u>Symbol</u>	<u>Type</u>	<u>Rating</u>	<u>Series</u>	<u>W.B.</u>
SD1	Sedan Delivery-3 Door Panel	800 Lbs.	CB	109
CCh	Commercial Chassis	1/2 Ton	CB	109
CCab	Commercial Chassis with Cab	1/2 Ton	CB	109
CCbx	Commercial Chassis with Cab and Pick-Up	1/2 Ton	CB	109
SCCh	Special Commercial Chassis	1/2 Ton	CB	109
CPan	Commercial Chassis with Panel Body	1/2 Ton	CB	109
SCPan	Special Commercial Chassis with Panel Body	1/2 Ton	CB	109

**Utility Models**

<u>Symbol</u>	<u>Type</u>	<u>Rating</u>	<u>Series</u>	<u>W.B.</u>
UCh	Utility Chassis-Single Rear Wheels	1-1/2 Ton	OA	131
UCab	Utility Chassis with Cab-Single Rear Wheels	1-1/2 Ton	OA	131
DCh	Utility Chassis-Dual Rear Wheels	1-1/2 Ton	OB	131
DCab	Utility Chassis with Cab-Dual Rear Wheels	1-1/2 Ton	OB	131
ULCh	Utility Long Chassis-Single Rear Wheels	1-1/2 Ton	OC	157
ULCa	Utility Long Chassis with Cab-Single Rear Wheels	1-1/2 Ton	OC	157
DLCh	Utility Long Chassis-Dual Rear Wheels	1-1/2 Ton	OD	157
DLCa	Utility Long Chassis with Cab-Dual Rear Wheels	1-1/2 Ton	OD	157

**Engine Serial Numbers**

Passenger: 3367317 and up      Commercial: K3367317 and up      Utility: T3367317 and up  
 Location: Stamped on Pad on Right Side of Engine just to rear of Fuel Pump.

**Vehicle Serial Numbers**

Passenger and Commercial: Numbered in numerical sequence starting with 1001, type distinguished by series letter.

Utility: Numbered in numerical sequence starting with 1001, type distinguished by series letter.

**CHANGES**

**SPECIFICATIONS****1933****CHEVROLET MOTOR CO.****ENGINEERING DEPT.**OIL-FUEL-WATER

Crankcase Capacity ..... 5-1/2 Qts.  
 For Refill ..... 5 Qts.  
 Approximately 1 Pint remains in system after draining Crankcase.

Motor Lubricant RecommendedSummerFor the First 500 Miles

S.A.E. #20 (Zero pour test)

After 2000 miles for cars subjected to prolonged high speed driving S.A.E. #30 is recommended.

After 500 Miles

S.A.E. #20 (For Moderate Speeds)

Winter

S.A.E. #20 (Zero pour test) for temperatures not lower than 10° Fahr. above zero.  
 For colder temperatures, Oil of S.A.E. #10 viscosity with zero or sub zero pour test is recommended.

If S.A.E. #10 Oil is not procurable, No. 20 Oil can be diluted with 10% Kerosene with satisfactory results.

Transmission Capacity

Passenger Commercial ..... 2-1/2 Pts.  
 Utility ..... 6-1/2 Pts.

Rear Axle Capacity

Passenger Commercial ..... 4-1/2 Pts.  
 Utility ..... 8-1/2 Pts.

Overrunning Clutch

Passenger ..... 3/4 Pt.

Short Propeller Shaft

ULCh ULCa DLCh DLCa ..... 1/3 Pt.

Transmission and Rear Axle Lubricant

Summer - S.A.E. #160 ..... Winter - S.A.E. #90

Gasoline Tank Capacity

Passenger Commercial ..... 14 Gals.  
 Utility ..... 15 Gals.

Cooling System Capacity

Passenger ..... 10 Qts. 1 Pt.  
 Commercial Utility ..... 12 Qts.

Chassis equipped with Alemite Fittings for high pressure lubrication.  
 Heavy Oil or S.A.E. #160 recommended.

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**SPECIFICATIONS**SHEET NO. 3  
DATE 11-21-32

1933

CHEVROLET MOTOR CO.

ENGINEERING DEPT.

FRAME

Material: G.M.C #1025 H. R. Pressed Steel (Channel Section Side &amp; Cross Members)

	<u>Passenger</u>	<u>Commercial</u>	<u>UCh UCab</u> <u>DCh DCab</u>	<u>ULCh ULCa</u> <u>DLCh DLCa</u>
Overall Frame length:	157-13/32	152-15/64	187-9/16	213-9/16
Width of Frame at rear:	# 43-61/64	# 43-63/64	36-31/32	37-1/32
Width of Frame at front:	# 26	# 25-63/64	# 26.33	# 26.33
Number of Cross Members:	5	5	* 5	* 6
Side Member Flange width:	2-1/4	2-1/4	2-3/8	2-3/8
Depth of Side Member:	5-1/4	5	6-1/2	7
Thickness of Side Member:	9/64	9/64	3/16	7/32
Amount of Frame kick up-Front:	3/8	-	-	-
Amount of Frame kick up-Rear:	5-5/8	4-7/8	2-11/32	2-3/8

# Between intersections of spring eye centerlines and outside of side members.

\* Front Bumper not counted.

SPRINGSFront

Material: Chrome Vanadium Steel Length: 36"  
 Type: Semi-elliptic Width: 1-3/4"  
 Number of Leaves: 7 Passenger SD1  
 8 CCh CCab CObx SCCh CPan UCh UCab DCh DCab  
 9 ULCh ULCa DLCh DLCa  
 Front Bushing Size: 9/16" Rear Bushing Size: None  
 Shackle Type: Self Adjusting Steel

Rear

Material: Chrome Vanadium Steel - Passenger Commercial  
 Silicon Manganese - Utility  
 Length: 54" Passenger Commercial 45" Utility  
 Width: 1-3/4" Passenger Commercial 2-1/2" Utility  
 Number of Leaves: 7 Cpe2  
 8 Pha PCh SRoa Sed Coa SCpe Cbl Commercial  
 10 Utility  
 Front Bushing Size: 9/16" Passenger Commercial 7/8" Utility  
 Rear Bushing Size: None Passenger Commercial 7/8" Utility  
 Spring Lubricant Recommended: Graphite Grease.

CHANGES

**SPECIFICATIONS**

1933

**CHEVROLET MOTOR CO.****ENGINEERING DEPT.**FRONT AXLE

Type: Reverse Elliott - Modified I Beam Section  
 Clearance for Jack: 9 Passenger Commercial 10 Utility  
 Road Clearance: 8-3/4 Passenger Commercial 10-1/2 Utility  
 King Pin Transverse Inclination: 7° 10' - Manufacturing Dimension  
 Spindle Transverse Inclination: 1° 30' - Manufacturing Dimension  
 Caster Angle: 2° 15' Passenger Commercial 3° 15' Utility  
 Toe In: 0° 13' 50" to 0° 17' 34" - Manufacturing Dimension  
 Tread: 57-9/16 Passenger Commercial 56-13/32 Utility (54" Standard)  
 Bearing: N.D. 909002 Inner N.D. 909001 Outer Passenger Commercial  
 N.D. 909024 Inner N.D. 909023 Outer Utility  
 King Pin Bushings: Split Bronze  
 King Pin Thrust Bearing: Special Ball  
 Diameter of King Pin: 3/4 Passenger Commercial  
 15/16 Utility

REAR AXLE

Type: Pressed Steel Housing - Semi Floating  
 Gear Ratio: 4.111 to 1 Passenger Commercial  
 5.428 to 1 or 6.166 to 1 Optional Utility  
 Final Drive Type: Spiral Bevel Gear  
 Distance between Spring Centers: 39-1/2 Passenger Commercial  
 42-1/4 Utility  
 Minimum Road Clearance: 8-3/8 Passenger Commercial  
 8-1/16 DCh DCab DLCh DLCa  
 8-11/16 UCh UCab  
 9-1/16 ULCh ULCa  
 Clearance for Jack: 7-1/2 Passenger Commercial  
 11 DCh DCab DLCh DLCa  
 11 UCh UCab  
 11 ULCh ULCa  
 Pinion Adjustment: Shims and Tapered Collar  
 Pinion Shaft Bearing: N.D. 905206 Front N.D. 901105 Rear Passenger Commercial  
 N.D. 905309 Front N.D. 901305 Rear Utility  
 Pinion Shaft Thrust: On Front Bearing  
 Differential Bearing: N.D. 902100 Passenger Commercial  
 N.D. 902101 Utility  
 Axle Shaft Bearing: Special Hyatt Passenger Commercial  
 N.D. 901101 Utility  
 Gear Back Lash: .006 - .010  
 Tread: 57-9/16 Passenger Commercial  
 56 UCh UCab  
 57 ULCh ULCa  
 63-1/2 (Mean) 7-1/2 Dual Centers - DCh DCab DLCh DLCa  
 Axle Shaft Thread Size: None Passenger Commercial  
 1-1/4-12 Utility

**SPECIFICATIONS**

1933

**CHEVROLET MOTOR CO.****ENGINEERING DEPT.**

Supersedes Sheet No. 5 Dated 11-21-32

BRAKESService

Type: Mechanical 4 Wheel Internal Expanding (Articulated Shoe Type)

Dia. of Front Brake: 12

Dia. of Rear Brake: 12 Passenger Commercial  
16 Utility

Width of Lining: 1-3/4 Front 1-3/4 Rear Passenger Commercial  
1-3/4 Front 2-1/2 Rear Utility

Thickness of Lining: .187-.180 Front and Rear Passenger Commercial  
.187-.180 Front .250-.243 Rear Utility

Length of Lining: 36-11/16 Front 36-11/16 Rear Passenger Commercial  
36-11/16 Front 47-7/8 Rear Utility

Total Effective Braking Area: 128.4 Sq. Ins. Passenger Commercial  
183.9 Sq. Ins. Utility

Lining Material: Special Moulded.

Emergency

Type: Mechanical, cut-in system, 4 Wheel Internal Expanding, Passenger Commercial  
Mechanical 2 Wheel Internal Expanding on Rear Wheels Utility

Dia. of Drum: 12 Front and Rear Passenger Commercial  
16 Utility

Width of Lining: 1-3/4 Front and Rear Passenger Commercial  
2-1/2 Utility

Thickness of Lining: .187-.180 Front and Rear Passenger Commercial  
.250-.243 Utility

Total Length of Lining: 73-3/8 Passenger Commercial  
25 Utility

Total Effective Braking Area: 128.4 Sq. Ins. Passenger Commercial  
62.5 Sq. Ins. Utility

Lining Material: Special Moulded.

ENGINE

Number of Cylinders: 6 Compression Ratio: 5.2 to 1

Cylinder Arrangement: In Line Max. Torque: 146 Ft.Lbs. @ 1000 to 1800

Bore: 3-5/16 Stroke: 4 R.P.M. Passenger

Piston Displacement: 206.8 Cu. Ins. 146 Ft.Lbs. @ 1000 R.P.M.

Rated Horse Power: 26.3 Commercial Utility

Max. Brake Horse Power:

65 @ 2800 R.P.M. Passenger

56 @ 2750 R.P.M. Commercial Utility

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# SPECIFICATIONS

SHEET NO. 6  
DATE 12-5-32

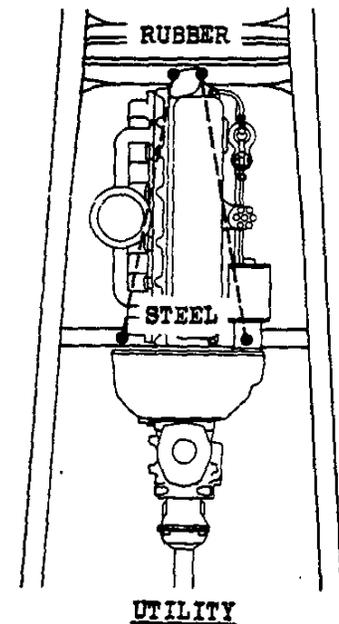
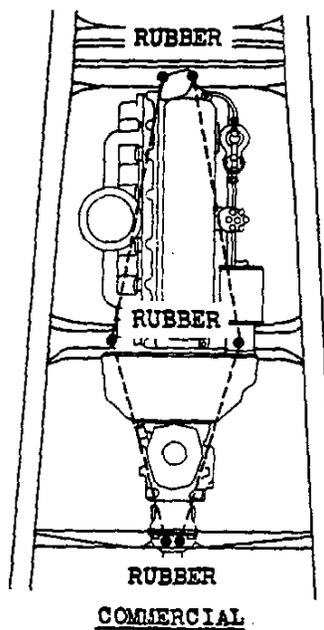
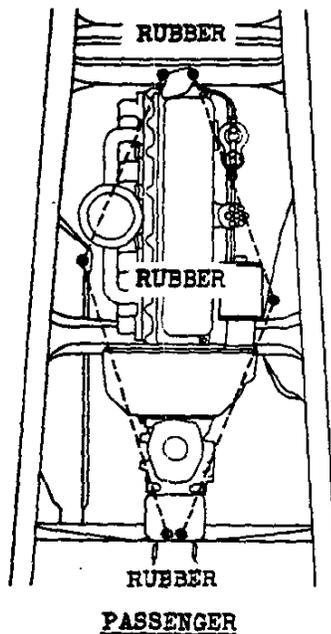
1933

CHEVROLET MOTOR CO.

ENGINEERING DEPT.

Replaces Sheet No. 6 Dated 11-21-32.

## POWER PLANT MOUNTINGS



## CAMSHAFT

Type of Drive: Gear  
 Gear Material: Bakelite and Fabric Composition - Mating Gear Steel  
 Camshaft Bearings: Front and Rear, Iron, in cylinder case, center, steel backed babbitt.  
 Bearing Clearance (on diameter): .002 - .0035  
 Camshaft End Play: .003  
 Bearing which takes thrust: Number One  
 Number of Bearings: 3

### Bearing Sizes

#1	#2	#3
Diameter: 1-13/16	Diameter: 1-25/32	Diameter: 1-5/8
Effective Length: 1-1/2	Effective Length: 1-3/16	Effective Length: 1-1/32
Total Length: 1-27/32	Total Length: 2-1/16	Total Length: 1-3/8

## PISTONS

Material: Cast Iron - Bronze Bushed  
 Length: 3-11/16  
 Pin Center to Top of Head: 1-7/8  
 Distance between Pin Bosses: 1-1/16

Clearance on Diameter, Top Land: .011 Cold  
 Second Land: .011 Cold  
 Third Land: .011 Cold  
 Skirt: .002-.003 Cold  
 Depth of Piston Ring Groove: .165

CHANGES Camshaft Bearing Sizes Revised.

**SPECIFICATIONS**

1933

CHEVROLET MOTOR CO.

ENGINEERING DEPT.

PISTON RINGS

Number of Rings used: 3  
 Material: Cast Iron  
 Number of Compression Rings: 2  
 Width:  $5/32$   
 Thickness:  $.140$

Number of Oil Control Rings: 1  
 Material: Cast Iron  
 Width:  $3/16$   
 Thickness:  $.140$   
 Gap Clearance:  $.004 - .014$   
 Ring Clearance in Piston Groove:  $.001 - .003$

PISTON PINS

Pin Bearing: In Piston  
 Diameter:  $.9900 - .9895$   
 Length:  $2-29/32$   
 Taper and Diameter Limits:  $.0003$

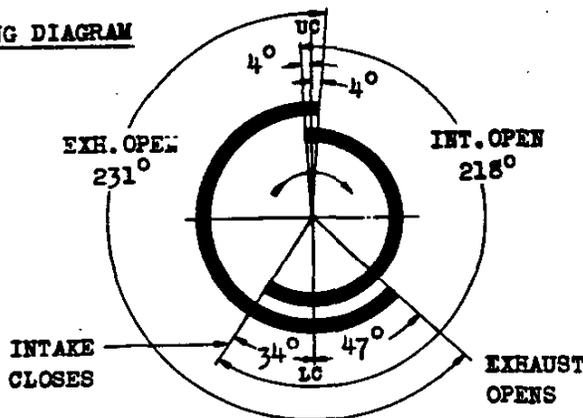
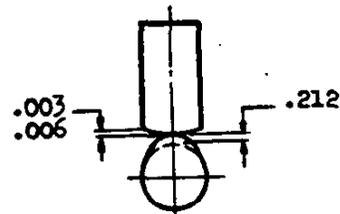
Pin Bushing:  
 Outside Diameter:  $1.128 - 1.126$   
 Inside Diameter:  $.979 - .981$   
 Length:  $15/16$   
 Material: Bronze

VALVESInlet Valve

Material: Extruded Steel  
 Head Diameter, Nominal:  $1-29/64$   
 Valve Length:  $4-15/16$   
 Stem Diameter:  $5/16$   
 Style of Stem End: Key  
 Tappet Clearance:  $.006$  Hot  
 Spring Pressure: 57 Lbs. Valve Closed  
 Spring Pressure: 95 Lbs. Valve Open  
 Valve Lift:  $.314$   
 Type of Stem Guide: Removable  
 Valve Stem & Guide Clearance:  $.001-.003$   
 Angle of Valve Face:  $45^\circ$

Exhaust Valve

Material: Extruded Steel  
 Head Diameter, Nominal:  $1-11/32$   
 Valve Length:  $4-15/16$   
 Stem Diameter:  $5/16$   
 Style of Stem End: Key  
 Tappet Clearance:  $.008$  Hot  
 Spring Pressure: 57 Lbs. Valve Closed  
 Spring Pressure: 95 Lbs. Valve Open  
 Valve Lift:  $.314$   
 Type of Stem Guide: Removable  
 Valve Stem & Guide Clearance:  $.002-.004$   
 Angle of Valve Face:  $45^\circ$

TIMING DIAGRAMVALVE TAPPET

Valve Rocker Arm Ratio-1.48 to 1  
 Camshaft Ramp:  $.010$

CHANGES

S-1762

# SPECIFICATIONS

SHEET NO. 8  
DATE 11-21-32

## 1933

### CHEVROLET MOTOR CO.

### ENGINEERING DEPT.

#### CRANKSHAFT

Number of Main Bearings: 3  
Main Bearing Clearance: .001-.003  
Main Bearing Material: Steel and Babbitt  
Crankshaft Pulley Diameter: 6-1/32  
Torsional Vibration Dampener used: Yes  
(Oscillating Type)

Clearance between Oil Thrower Groove in  
Crankshaft and Flange on Cylinder  
Block: .002-.032  
Bearing which takes Thrust: #2  
Amount of Crankshaft Offset: None  
Amount of End Play: .004-.007  
Weight of Crankshaft: 63-1/2 Lbs.

#### Bearing Sizes

#1	#2	#3
Diameter: 2-1/16	Diameter: 2-1/8	Diameter: 2-3/16
Length: 1-49/64	Length: 1-7/8	Length: 2-11/64
Projected Bearing Area: 12.34 Sq. Ins.		

#### CONNECTING RODS

Type: Pin clamped in Rod  
Material: Drop Forged Carbon Steel  
Length (Center to Center): 7-1/2  
Crankpin Diameter: 2-1/8  
Crankpin Length: 1-1/2  
Width at Piston Pin: 15/16

Lower End Bearing:  
Diameter: 2-1/8  
Length: 1-9/32  
Material: Babbitt  
Clearance (On Diameter): .0005-.002  
Type of Bearing: Centrifugally Cast  
Type of Shims: Steel or Brass - Solid

CHANGES

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# SPECIFICATIONS

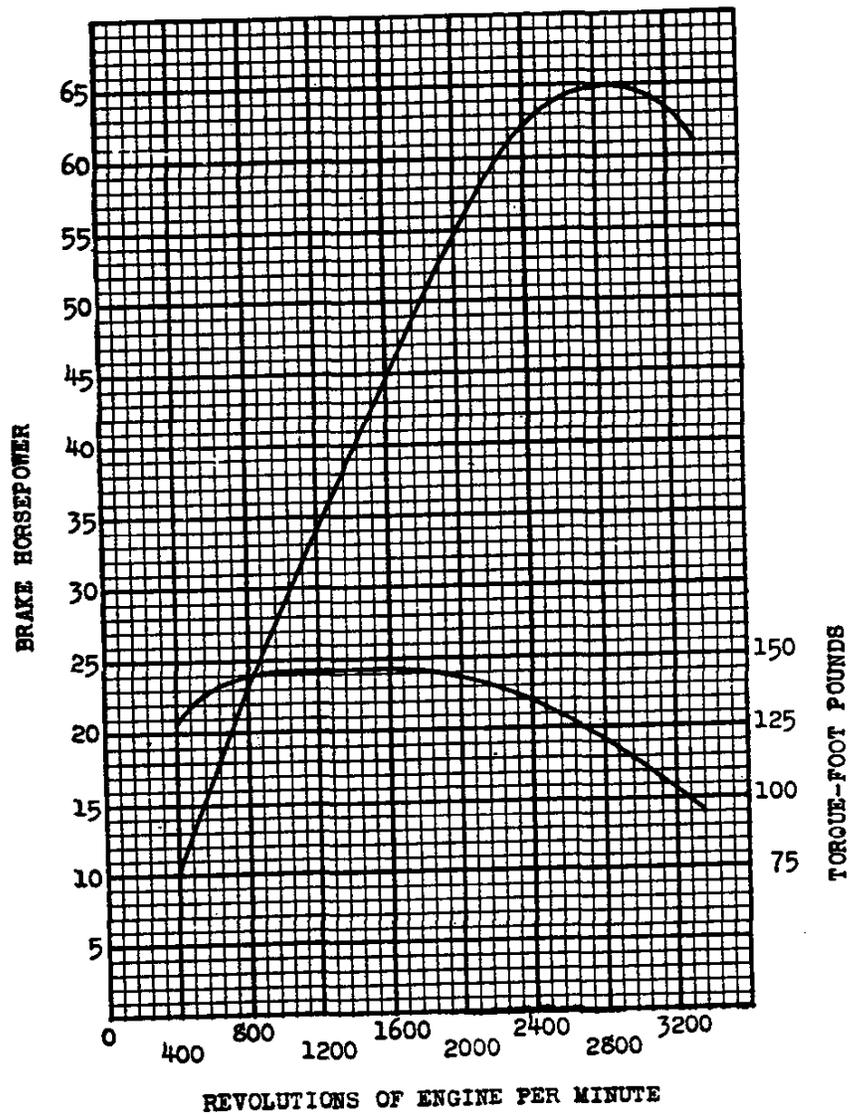
SHEET NO. 9  
DATE 11-21-32

## 1933

### CHEVROLET MOTOR CO.

### ENGINEERING DEPT.

POWER CURVES  
PASSENGER



CHANGES

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# SPECIFICATIONS

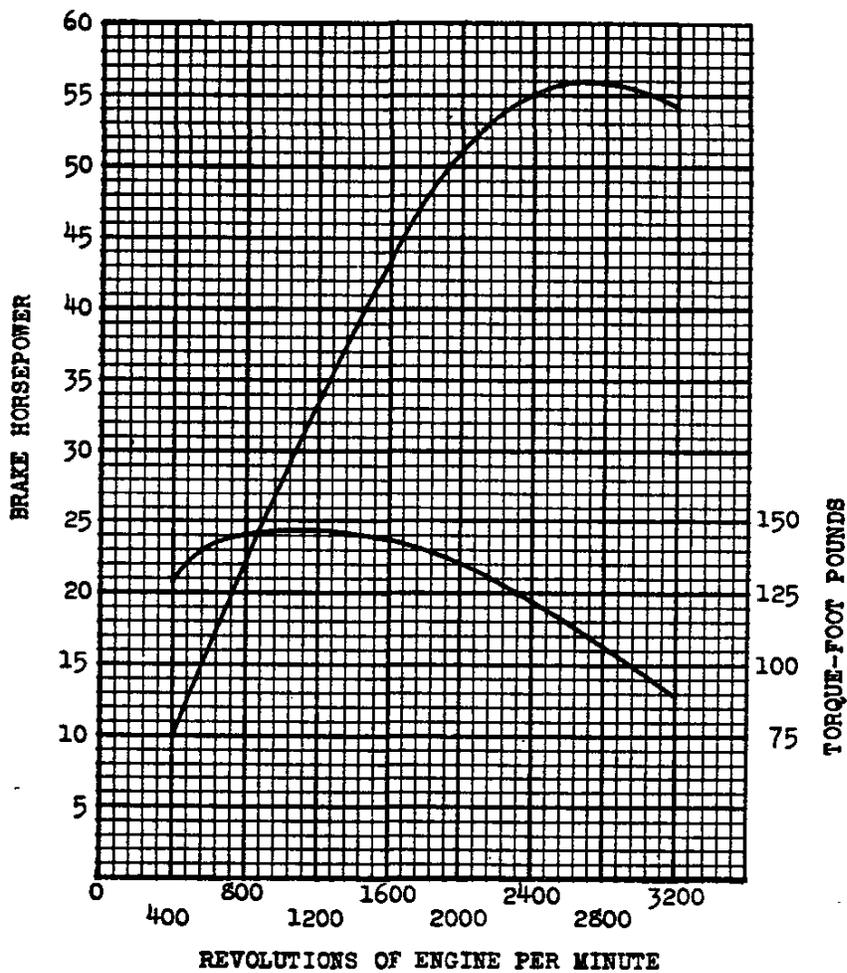
SHEET NO. 10  
DATE 11-21-32

## 1933

### CHEVROLET MOTOR CO.

### ENGINEERING DEPT.

POWER CURVES  
COMMERCIAL UTILITY



CHANGES

**SPECIFICATIONS**

1933

CHEVROLET MOTOR CO.

ENGINEERING DEPT.

COOLING SYSTEM

Water Circulation Type: Pump	Radiator Core Type: Ribbed Cellular
Pump Type: Centrifugal	Core Size: .25 x .40 x 2-1/8
Radiator Shell Material:	3/8 Hex. x 2-1/8
Brass Passenger SCCh SD1	34 Sections
Steel CCh CCab CChx Utility	5/16 Hex. x 2-1/8
Shell Finish: Front Chromium Plated,	36 Sections
Balance painted to match Hood, Passenger	Radiator Core Material: Brass
Chromium Plated SCCh SD1	All Copper Commercial
Black Enamel CCh CCab CChx Utility	Exposed Core Area: 365.7 Sq.In.
	396.3 Comm.

Number of Fan Blades: 4  
Diameter of Fan: 15-3/4  
Fan Pulley: "V" Type - Angle of "V" 28°  
Diameter of Pulley: 4-21/64  
Fan Belt Type: "V" - Angle of "V" 32°  
Fan Belt Material: Vulcanized Fabric (One Piece)  
Fan Belt Length: 39-1/16 Width: 21/32  
Fan Shaft Bearings: Front, Durex Composition - Rear, Bronze  
Radiator Hose Size: Upper, 1-1/4 x 9-1/8  
Lower, 1-1/4 x 3-1/2 (2 Pieces)

FUEL SYSTEM

<u>Carburetor</u>	Gasoline Filter: Yes (In Fuel Pump)
Make: Carter - Down Draft	Air Cleaner Type: Cleaner, Silencer & Flame Arrester
Model: W1-2518	Fuel Mixture Heated: Yes-Passes through Manifold Heat Chamber. Heat thermostatically controlled.
Size: 1-1/4"	
Type: Single Adjustment	

Fuel Feed

Type: Mechanical Pump - Camshaft Driven  
Make: AC - Series B  
Fuel Pump Arm Throw at Camshaft: 1/4  
Air Dome on Pump to regulate and provide even flow of fuel.

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# SPECIFICATIONS

SHEET NO. 12  
DATE 11-21-32

## 1933

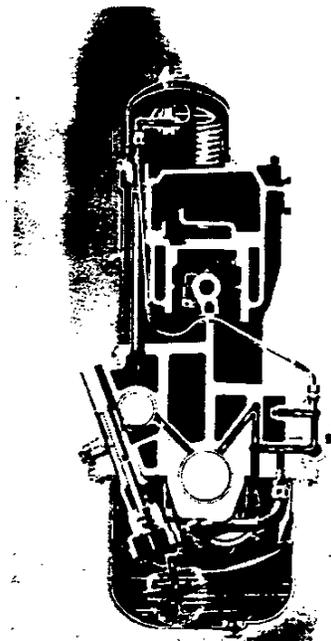
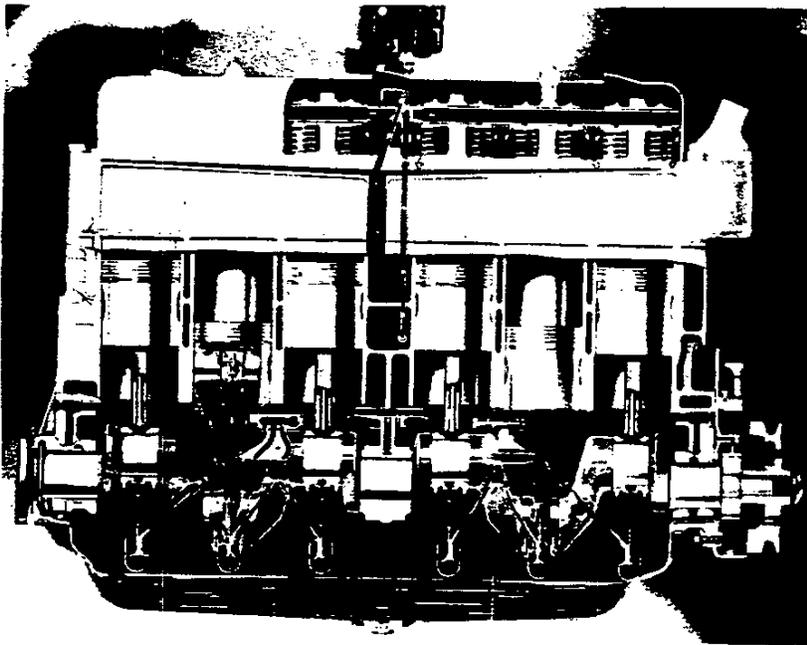
### CHEVROLET MOTOR CO.

### ENGINEERING DEPT.

#### EXHAUST SYSTEM

Exhaust Pipe Diameter: 2  
Muffler Type: Resonance  
Diameter: 5  
Length: 30

#### LUBRICATION SYSTEM



Type: Combination Pump and Splash  
Pressure Feed to Crankshaft Main Bearings, Camshaft Bearings and Valve Rocker Arms  
Oil Pump Type: Vane  
Oil Cleaner Type: Screen on Intake Side of Oil Pump  
Average Pressure, Pounds: 14 Lbs.  
Oil Pump Capacity: 5.3 Qts. per Min.  
Type of Oil Lever Gauge: Rod  
Type of Oil Drain: Plug  
Area of Oil Screens: 13-3/8 Sq. Ins.  
Connecting Rod Scoop Oil Dip: .1956 to .2628 below oil level in oil trough.

CHANGES

S-1762

# SPECIFICATIONS

SHEET NO. 13  
DATE 11-21-32

## 1933

### CHEVROLET MOTOR CO. ENGINEERING DEPT.

#### CLUTCH

Type: Single Plate Dry - Single Cushioned Plate Clutch  
Number of Driving Discs: One  
Number of Driven Discs: One  
Facing Material: Braided Moulded Passenger Commercial  
Moulded Asbestos Utility  
Type: Disc  
Inside Diameter: 6-1/4  
Outside Diameter: 9 Passenger Commercial  
10 Utility  
Area of Clutch Surface: 65.87 Sq.In. Passenger Commercial  
95.72 Sq.In. Utility  
Thickness: .122 - .128  
Number of Pieces: Two  
Total Clutch Spring Pressure: 1026 Lbs.  
Rated Torque Capacity of Clutch: 190 Ft.Lbs. Passenger Commercial  
220 Ft.Lbs. Utility

#### Bearings

Throwout: Carbon Composition #1 Mixture - I.D. 1-1/2 x O.D. 2-3/8 x 3/4  
Thrust: Cast Iron  
Clutch Pilot: New Departure Ball #907502

#### Lubrication

Oiler provided for Clutch Release Bearing - No other lubrication necessary.  
Clutch Adjustable: Yes  
Clutch Throwout Lever Mounted on Ball:

#### Flywheel

Diameter: 12-5/8  
Weight: 34-3/4 Lbs.  
Number of Teeth: 104  
Width of Teeth: 3/4

#### TRANSMISSION

Type: Selective Synchro-Mesh - Standard Shift Passenger Commercial  
Constant Mesh Gears: Helical  
Selective Conventional Utility  
Constant Mesh Gears: Spur  
Location: In unit with Engine  
Number of Speeds: 3 forward and 1 reverse Passenger Commercial  
4 forward and 1 reverse Utility  
Overrunning Clutch for Coasting: Passenger

CHANGES

**SPECIFICATIONS****1933****CHEVROLET MOTOR CO.  
ENGINEERING DEPT.**TRANSMISSION - ContinuedPower Take Off

The Revolutions Per Minute of the Gear that meshes with the gear of Power Take Off when motor is running at 1000 Revolutions Per Minute is 425.

	<u>Gear Ratios</u>		
	<u>Passenger</u>	<u>Commercial</u>	<u>Utility</u>
First Speed	3.02	3.02	7.22
Second Speed	1.70	1.70	3.47
Third Speed	Direct	Direct	1.71
Fourth Speed	-----	-----	Direct
Reverse	3.40	3.40	7.15

	<u>Total Gear Reductions</u>			
	<u>Passenger</u>	<u>Commercial</u>	<u>Utility</u> 5.428 Ratio	<u>Utility</u> 6.166 Ratio
First Speed	12.41	12.41	39.19	44.52
Second Speed	6.99	6.99	18.84	21.40
Third Speed	4.11	4.11	9.28	10.54
Fourth Speed	-----	-----	5.428	6.166
Reverse	13.97	13.97	38.81	44.09

	<u>Engine Torque of Gear Set</u>		
	<u>Passenger</u>	<u>Commercial</u>	<u>Utility</u>
First Speed	440.9 Ft. Lbs.	440.9 Ft. Lbs.	1054.0 Ft. Lbs.
Second Speed	248.2 Ft. Lbs.	248.2 Ft. Lbs.	506.6 Ft. Lbs.
Third Speed	146 Ft. Lbs.	146 Ft. Lbs.	249.7 Ft. Lbs.
Fourth Speed	-----	-----	146.0 Ft. Lbs.
Reverse	496.4 Ft. Lbs.	496.4 Ft. Lbs.	1043.9 Ft. Lbs.

	<u>Bearings</u>		
	<u>Passenger</u>	<u>Commercial</u>	<u>Utility</u>
Reverse Idler:	7/8 x 1 Bronze (2 used)		7/8 x 1-1/2 Bronze
Main Shaft-Front:	N.D. 903208		N.D. 903209
Main Shaft-Rear:	N.D. 907506		N.D. 903307
Countershaft-Front:	7/8 x 1-1/4 Bronze		Hyatt 142260
Countershaft-Rear:	7/8 x 1-3/8 Bronze		Hyatt 121856
Mainshaft Pilot:	Hyatt 142638		Hyatt 141854
Second Speed Gear Bushing:	1-5/16 x 1-5/8		
	Bronze	(2 used)	
Overrunning Clutch-Front:	Bronze 3/8 x 2		
Overrunning Clutch-Rear:	N.D. 907506		

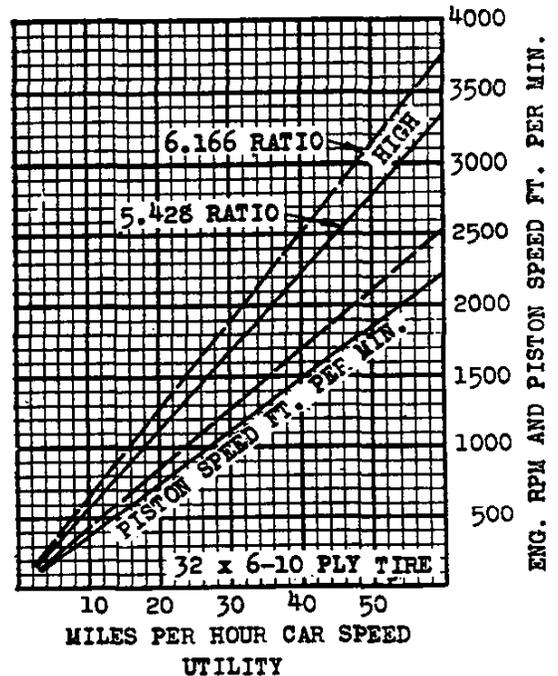
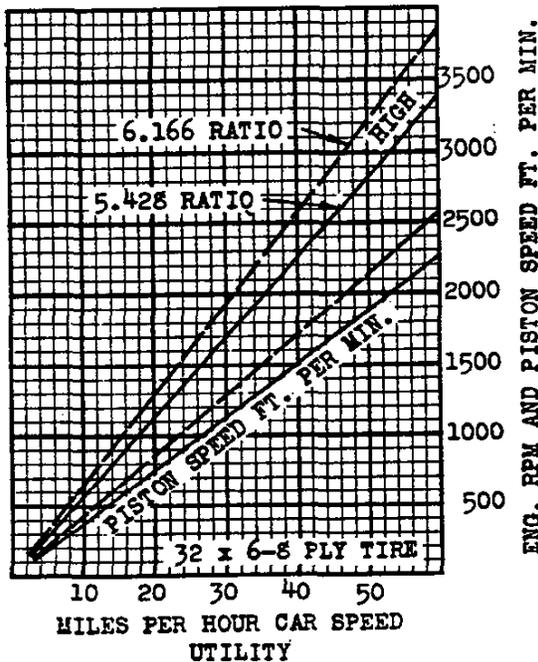
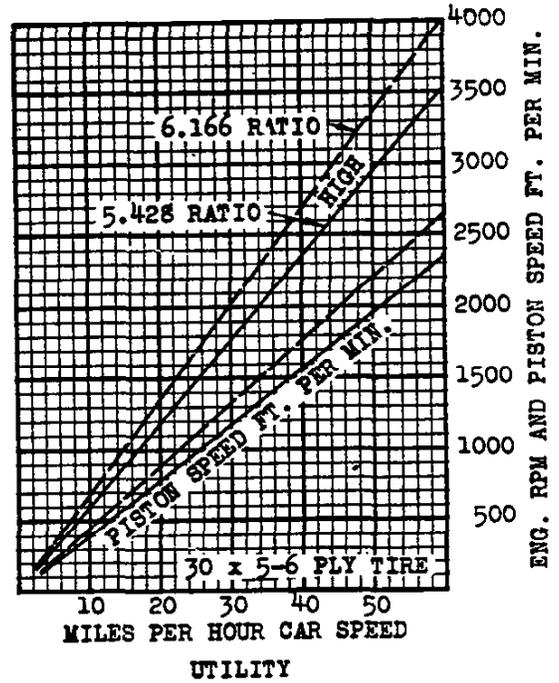
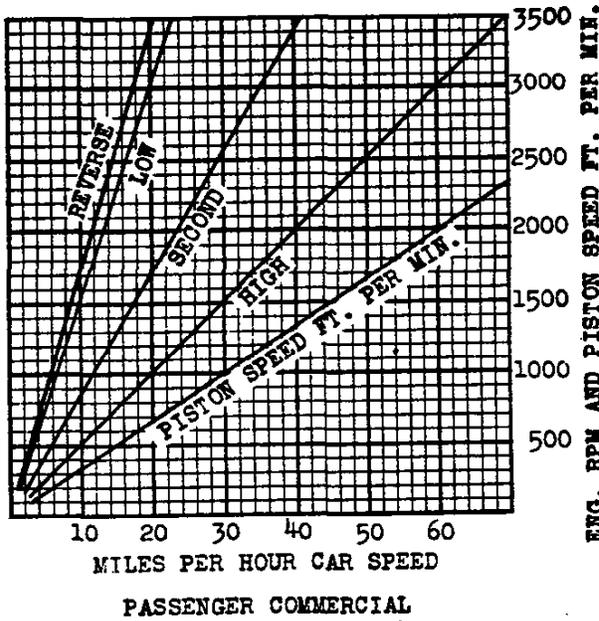
# SPECIFICATIONS

## 1933

### CHEVROLET MOTOR CO.

### ENGINEERING DEPT.

#### CAR SPEEDS AND PISTON TRAVEL



CHANGES

**SPECIFICATIONS****1933****CHEVROLET MOTOR CO.****ENGINEERING DEPT.**TRANSMISSION - Continued

Speedometer Gear Ratio: 2.8 to 1  
 Passenger Commercial 3.5 to 1 (6.166 Rear Axle Ratio)  
 Utility 4.0 to 1 (5.428 Rear Axle Ratio)

UNIVERSALS

Type: Steel Yoke  
 Material: Drop Forged Nickel Chromium Steel  
 Pin Diameter: 11/16 Passenger Commercial  
 13/16 Utility  
 Pin Bearing Length: 37/64  
 Number of Bearings: 4  
 Distance between Pin Bearing Centers: 2-3/4  
 Clearance (on Dia.) between Pin and Bearings: .002 - .005  
 Type of End (Transmission): Spline  
 Number of Splines: 6 Passenger Commercial  
 Inside Diameter of Splines: .992 Passenger Commercial  
 Outside Diameter of Splines: 1.182 Passenger Commercial  
 Number of Splines: 10 Utility  
 Inside Diameter of Splines: 1.185 Utility  
 Outside Diameter of Splines: 1.384 Utility  
 Type of End (Propeller Shaft): Spline  
 Number of Splines: 10  
 Inside Diameter of Splines: .911 Passenger Commercial  
 1.023 Utility  
 Outside Diameter of Splines: 1-1/16 Passenger Commercial  
 1.224 Utility  
 Auxiliary Propeller Shaft Universal Joint: ULCh ULCa DLCh DLCa  
 Type of End (Front): Square  
 Width across Corners: 1-3/32  
 Width across Flats: 7/8  
 Type of End (Rear) Spline  
 Inside Diameter of Splines: 1.022  
 Outside Diameter of Splines: 1.22  
 Number of Universal Joints: One Passenger Commercial UCh UCab DCh DCab  
 Two ULCh ULCa DLCh DLCa  
 Method of Lubrication: (Front) Self, from Transmission  
 (Rear) Self, from Auxiliary Propeller Shaft Housing

**CHANGES**

S-1762

**SPECIFICATIONS**SHEET NO. 17  
DATE 11-21-32**1933****CHEVROLET MOTOR CO.****ENGINEERING DEPT.**PROPELLER SHAFTS

Type: One piece splined ends (all except ULCh ULCa DLCh DLCa)  
Two pieces ULCh ULCa DLCh DLCa

Material: C. R. Nickel Chromium Steel

Length: 39-1/2 Passenger  
43-29/32 Commercial  
64-53/64 Utility

Number of Splines (Front): 10  
Number of Splines (Rear): 10

Propeller Shaft connected to Drive Pinion Shaft by Splined Sleeve.

Auxiliary Propeller Shaft used on ULCh ULCa DLCh DLCa

Type of end: Front, Square - Rear, Spline

Length: 24-7/32

STEERING GEAR

Type: Semi-Reversible - Worm and Sector

Ratio: 14 to 1

Steering Wheel turns locked to locked position of wheels: 3.03

Type of Steering: Fore and Aft

Diameter of Steering Post: 1-1/2

Diameter of Steering Wheel: 17-1/4

Steering Gear Mast Jacket Bushing: I.D. - 3/4 x O.D. 1.412 x 1-9/64

Steering Gear Cross Shaft Bushing: 2 Reqd. I.D. .997 x O.D. 1.128 x 1-1/8

Minimum Turning Diameter

	<u>R.H.</u>	<u>L.H.</u>
Passenger Commercial	42-1/2	42-3/4
UCh UCab DCh DCab	51	50-3/4
ULCh ULCa DLCh DLCa	59	59-1/2

WHEELS

Type: Drop Center Wire Passenger Commercial  
Pierced Type Disc Utility

Revolutions of Rear Wheels per mile: 728 Passenger Commercial (5.25-18 4 Ply Tires)

Revolutions of Rear Wheels per mile: 649 Utility (30 x 5 6 Ply Tires)

Revolutions of Rear Wheels per mile: 626 Utility (32 x 6 8 Ply Tires)

Revolutions of Rear Wheels per mile: 609 Utility (32 x 6 10 Ply Tires)

Revolutions of Rear Wheels per mile: 640 Utility (6.00-20 6 Ply Tires)

Revolutions of Rear Wheels per mile: 617 Utility (6.50-20 6 Ply Tires)

Revolutions of Rear Wheels per mile: 606 Utility (7.00-20 8 Ply Tires)

**CHANGES**

**SPECIFICATIONS****1933****CHEVROLET MOTOR CO.****ENGINEERING DEPT.**RIMS

Type: Drop Center, Integral with Wheel - 3 Base Passenger Commercial  
 Integral with Wheel, Separate Lock Ring - 5 Base UCh UCab DCh DCab DLCh DLCa  
 Integral with Wheel, Separate Lock Ring - 6 Base ULCh ULCa

TIRES

5.25-18 4 Ply Front and Rear Passenger Commercial  
 30 x 5 6 Ply Pneumatic Front and Rear DCh DCab DLCh DLCa  
 30 x 5 6 Ply Front and 32 x 6 8 Ply Rear UCh UCab  
 30 x 5 6 Ply Front and 32 x 6 10 Ply Rear ULCh ULCa  
 Note: 6.00-20 6 Ply Balloons optional for Utility at no extra cost.  
 6.50-20 6 Ply and 7.00-20 8 Ply Balloons are available for  
 Utility at additional cost.

Note: When 6.50-20 6 Ply or 7.00-20 8 Ply Balloon Tires are used on Rear  
 Wheels a special Wheel Spacer is required.

## Pressure recommended:

5.25-18 Balloons 32 Lbs. Front and Rear Passenger  
 5.25-18 Balloons 35 Lbs. Front, 38 Lbs. Rear Commercial  
 30 x 5 6 Ply 70 Lbs. Front Utility  
 30 x 5 6 Ply (Dual) 80 Lbs. Rear DCh DCab DLCh DLCa  
 32 x 6 8 Ply 90 Lbs. Rear UCh UCab  
 32 x 6 10 Ply 90 Lbs. Rear ULCh ULCa

Manufacturer of Tires: U. S. Rubber Company - Goodrich

Note: 32 x 6 10 Ply Tires available for use on Rear Wheels on UCh UCab at  
 additional cost. When 32 x 6 10 Ply Tires are used it is necessary  
 to use Wheels with 6" Rim Base.

HUBS

## Thread Size:

Front - None - Passenger Commercial  
 Rear - None - Passenger Commercial  
  
 Front - 2-3/8-16 - Internal Utility  
 Rear - 2-3/4-16 - Utility

S-1762

# SPECIFICATIONS

SHEET NO. 19  
DATE 11-21-32

## 1933

### CHEVROLET MOTOR CO.

#### ENGINEERING DEPT.

#### GENERATOR

Model: 943-J

Maximum charging rate, Hot: 12 Amps.

Voltage: 7.7

R.P.M. at Max. Hot charging rate: 1800

Car Speed: Passenger Commercial - 20-1/2 M.P.H.

UCh UCab - 17-1/2 M.P.H.

DLCh DLCa DCh DCab - 16-1/2 M.P.H.

ULCh ULCa - 18 M.P.H.

Maximum charging rate, Cold: 17 Amps.

Voltage: 8.2

R.P.M. at Max. cold charging rate: 1700

Car Speed: Passenger Commercial - 19 M.P.H.

UCh UCab - 15-1/2 M.P.H.

DCh DCab DLCh DLCa - 14-1/2 M.P.H.

ULCh ULCa - 16 M.P.H.

Thermostat: No

Field Fuse: No

Voltage regulation: Third Brush

Rated Voltage: 8.2

Brush Tension: 14-18 Oz.

Rotation (Drive End): C.W.

Bearings:

Commutator End: Bronze Bushing

Drive End: Ball Bearing

Output

Voltage to close: 7.2

Armature Speed: 660

Car Speed: Passenger Commercial - 7 M.P.H.

UCh UCab - 6 M.P.H.

DCh DCab DLCh DLCa - 5-1/2 M.P.H.

ULCh ULCa - 6-1/2 M.P.H.

Amperes to Open: 1 to discharge.

Generator Pulley: "V" Type - Cast Iron

Angle of "V" 28°

Diameter: 3-11/32

#### BATTERY

Make: U.S.L. Delco Remy

Model: XY-13-C 133 CU

Length: 8-15/16 8-15/16

Width: 6-7/8 6-7/8

Height: 8 8

Volts: 6 6

Amp. hours capacity: 90 on all

Cell arrangement: Side to side

Shipped wet or dry: Drive away wet-All others dry

Charging rate, start: 4-1/2 Amp.

Charging rate, finish: 4-1/2 Amp.

Which terminal is grounded: Neg.

Where is battery mounted: Frame - Right Side

CHANGES

S-1762

# SPECIFICATIONS

SHEET NO. 20  
DATE 11-21-32

## 1933

CHEVROLET MOTOR CO.  
ENGINEERING DEPT.

### IGNITION SYSTEM

Type: Separate units high tension distributor ground return system.  
Make: Delco-Remy  
Model Number: 644D  
Current Source: Generator  
Spark Control Type: Full Automatic  
Vacuum Retard: 12°  
Automatic Advance: 36°  
Firing Order: 1-5-3-6-2-4  
Timing, Spark advanced: 10° B.T.D.C.  
Distributor interrupter point openings: .018  
Distributor upper bearing type: Cast Iron  
Distributor lower bearing type: Cast Iron  
Condenser make: Delco-Remy  
Coil  
Amps. drawn, Engine stopped: 4  
Amps. drawn, Engine running: 1.9 to 40 M.P.H.  
Spark Plug make: A.C. K-9 metric  
Recommended gap: .032

### STARTING MOTOR

Model: 714-L  
Drive Type: Bendix  
Normal Amp.: 70  
Normal Speed: 2000 R.P.M.  
Normal Torque: 2 Ft.Lbs. @ 2000 R.P.M.  
Lock Torque: 14 Ft.Lbs.  
Voltage: 3.75  
Amps.: 420  
No. Load Bench Test R.P.M.  
Voltage: 5-3/4  
Amps.: 75  
Rotation (Commutator end): C.C.W.  
Bearing Type:  
Commutator end: Cast Iron  
Drive end: Graphite Bushing  
Outboard: Yes  
Overrunning Clutch: No  
Pinion: Meshes on Front of Flywheel  
Starting Motor turns Engine approximately 160 times per minute.  
BENDIX DRIVE  
Number of Teeth: 10  
Ratio of Bendix Drive Gear to Flywheel Gear: 10.4 - 1

CHANGES

S-1762

# SPECIFICATIONS

SHEET NO. 21  
DATE 11-21-32

## 1933

### CHEVROLET MOTOR CO.

### ENGINEERING DEPT.

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#### LIGHTING SYSTEM

Type: Two Beam (Parabolic Reflector)  
Head Lamp Lens: Twilite Monogram  
Diameter: 9-7/16  
Inside Diameter of Rim: 9-1/16  
Head Light Bulb: Tungsol T1110  
Candle Power: 21 - 21  
Two Filament Bulb: Yes  
How are Head Lights dimmed: Depressed Beam  
Cowl Lights: No  
Bulb: Tungsol - T-63  
Candle Power: 3  
Tail Light Bulb: Yes  
Tungsol: T-63  
Candle Power: 3  
Dash Light Bulb: Yes  
Tungsol: T-63  
Candle Power: 3  
Are Bulbs single or double contact: Single  
Tail and Dash Light in series: No  
Stop Lamp Bulb: Tungsol - T-63  
Candle Power: 3  
Dome Lamp: Sed SSed6 Coa Ope5 SCpe2  
Bulb: Tungsol - T-63  
Candle Power: 3  
Fuse: Type - 3AG  
Volts: 6  
Amperes: 15

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CHANGES

# SPECIFICATIONS



1933 STANDARD

ENGINEERING DEPT.

DATA SHEET

<u>Symbol</u>	<u>Type</u>	<u>PASS</u>	<u>Description</u>	<u>Series</u>	<u>W.F.</u>
POh	Phaeton Chassis	-	Chassis Only	CC	107
Coa	Coach	5	Fisher Closed Body	CC	107
Cpe2	Coupe 2	2	Fisher Closed Body	CC	107
SCpe	Sport Coupe	2-4	Fisher Closed Body	CC	107

Engine Serial Number: M 1001 and up.

Location: Stamped on Pad on Right Side of Engine just to rear of Fuel Pump.

Vehicle Serial Number: Numbered in numerical sequence starting with 1001.

OIL-FUEL-WATER

Crankcase Capacity . . . . . 5 Qts.  
 For Refill . . . . . 4-1/2 Qts.  
 Approximately 1 Pint remains in system after draining Crankcase.

Transmission Capacity . . . . . 1-1/2 Pts.

Rear Axle Capacity . . . . . 3-1/2 Pts.

Gasoline Tank Capacity . . . . . 11 Gals.

Cooling System Capacity . . . . . 10 Qts.

Motor Lubricant Recommended

Summer

For the First 500 Miles

S.A.E. #20 (Zero pour test)

After 2000 miles for cars subjected to prolonged high speed driving S.A.E. #30 is recommended.

After 500 Miles

S.A.E. #20 (For Moderate Speeds)

Winter

S.A.E. #20 (Zero pour test) for temperatures not lower than 10° Fahr. above zero. For colder temperatures, Oil of S.A.E. #10 viscosity with zero or sub zero pour test is recommended.

If S.A.E. #10 Oil is not procurable, No. 20 Oil can be diluted with 10% Kerosene with satisfactory results.

Transmission and Rear Axle Lubricant

Summer - S.A.E. #160 . . . . . Winter - S.A.E. #90

Chassis equipped with Alemite Fittings for high pressure lubrication.  
 Heavy Oil or S.A.E. #160 recommended.

# SPECIFICATIONS



1933 STANDARD

ENGINEERING DEPT.

## FRAME

Material: G.M.C. #1025 H. R. Pressed Steel (Channel Section Side and Cross Members)

Overall Frame Length:	152-53/64
Width of Frame at rear:	# 43-5/16
Width of Frame at front:	# 24-35/64
Number of Cross Members:	5
Side Member Flange width:	1-3/4
Depth of Side Member:	5-5/16
Thickness of Side Member:	1/8
Amount of Frame Kick Up - Front:	1-11/16
Amount of Frame Kick Up - Rear:	5-11/16

# Between intersections of spring eye centerlines and outside of side members.

## SPRINGS

### Front

Material:	Chrome Vanadium Steel	Length:	33
Type:	Semi-elliptic	Width:	1-3/4
Number of Leaves:	6		
Rear Bushing Size:	9/16	Front Bushing Size:	None
Shackle Type:	Self Adjusting Steel (Located in Front)		

### Rear

Material:	Chrome Vanadium Steel	Length:	54
Number of Leaves:	6	Width:	1-3/4
Front Bushing Size:	9/16		
Rear Bushing Size:	None		
Shackle Type:	Self Adjusting Steel (Located in Rear)		

Spring Lubricant Recommended: Graphite Grease.

## FRONT AXLE

Type: Reverse Elliott - Modified I Beam Section

Clearance for Jack:	11-1/16
Road Clearance:	8-5/16
King Pin Transverse Inclination:	7° 10' - Manufacturing Dimension
Spindle Transverse Inclination:	1° 30' - Manufacturing Dimension
Caster Angle:	2° 15'
Toe In:	0° 13' 50" to 0° 17' 34" - Manufacturing Dimension
Tread:	54
Bearing:	N.D. 909022 Inner    N.D. 909021 Outer
King Pin Bushings:	Split Bronze
King Pin Thrust Bearing:	Special Ball
Diameter of King Pin:	47/64

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

Supersedes Sheet No. 3 Dated 3-15-33

REAR AXLE

Type: Pressed Steel Housing - Semi Floating  
 Gear Ratio: 4.111 to 1  
 Final Drive Type: Spiral Bevel Gear  
 Distance between Spring Centers: 41-7/8  
 Minimum Road Clearance: 8-1/32  
 Clearance for Jack: 11-7/8  
 Pinion Adjustment: Shims and Tapered Collar  
 Pinion Shaft Bearing: H.D. 905113 Front H.D. 901106 Rear  
 Pinion Shaft Thrust: On Front Bearing  
 Differential Bearing: H.D. 902103  
 Axle Shaft Bearing: Hyatt 111103  
 Gear Back Lash: .006 - .010  
 Tread: 56  
 Axle Shaft Thread Size: None

BRAKESService

Type: Mechanical 4 Wheel Internal Expanding (Articulated Shoe Type)  
 Dia. of Brakes: 10  
 Width of Linings: 1-1/2  
 Thickness of Linings: .187 - .180  
 Length of Lining: 30-1/2 Front 30-1/2 Rear  
 Total Effective Braking Area: 91-1/2 Sq.Ins.  
 Lining Material: Special Moulded

Emergency

Type: Mechanical, out-in system, 4 Wheel Internal Expanding  
 Dia. of Drums: 10  
 Width of Linings: 1-1/2  
 Thickness of Lining: .187 - .180  
 Total Length of Lining: 61  
 Total Effective Braking Area: 91-1/2 Sq.Ins.  
 Lining Material: Special Moulded

ENGINE

Number of Cylinders:	6	Compression Ratio:	5.2 to 1
Cylinder Arrangement:	In Line	Max. Torque:	125 Ft.Lbs. @ 1200 to 2000 Revs. per Min.
Bore:	3-5/16 Stroke:		
	3-1/2		
Piston Displacement:	151 Cu. Ins.		
Rated Horse Power:	26.3		
Max. Brake Horse Power:	60 @ 3000 Revs. Per Min.		

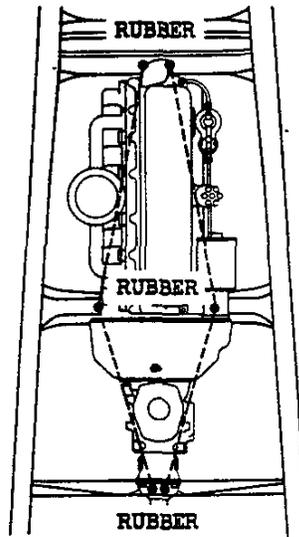
CHANGES Piston Displacement changed.

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

POWER PLANT MOUNTINGSCAMSHAFT

Type of Drive: Gear  
 Gear Material: Bakelite and Fabric Composition - Mating Gear Steel  
 Camshaft Bearings: Front and Rear, Iron, in cylinder case, center, steel backed babbitt  
 Bearing Clearance (on diameter): .002 - .0035  
 Camshaft End Play: .003  
 Bearing which takes thrust: Number One  
 Number of Bearings: 3

Bearing Sizes

#1	#2	#3
Diameter: 1-13/16	Diameter: 1-25/32	Diameter: 1-5/8
Effective Length: 1-1/2	Effective Length: 1-3/16	Effective Length: 1-1/32
Total Length: 1-27/32	Total Length: 2-1/16	Total Length: 1-3/8

PISTONS

Material: Cast Iron - Bronze Bushed  
 Length: 3-11/16  
 Pin Center to Top of Head: 1-7/8  
 Distance between Pin Bosses: 1-1/16

Clearance on Diameter, Top Land: .011 Cold  
 Second Land: .011 Cold  
 Third Land: .011 Cold  
 Skirt .002 - .003 Cold  
 Depth of Piston Ring Groove: .165

# SPECIFICATIONS

## CHEVROLET

### 1933 STANDARD

ENGINEERING DEPT.

PISTON RINGS

Number of Rings used: 3  
Material: Cast Iron  
Number of Compression Rings: 2  
Width: 5/32  
Thickness: .140

Number of Oil Control Rings: 1  
Material: Cast Iron  
Width: 3/16  
Thickness: .140  
Gap Clearance: .004 - .014  
Ring Clearance in Piston Groove: .001-.003

PISTON PINS

Pin Bearing: In Piston  
Diameter: .9900 - .9895  
Length: 2-29/32  
Taper and Diameter Limits: .0003

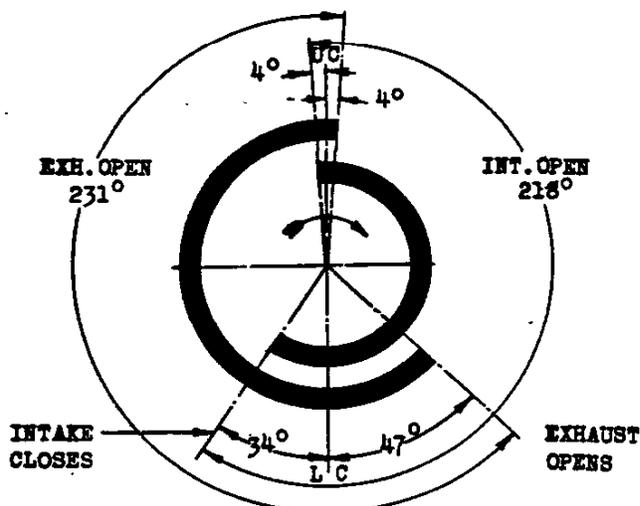
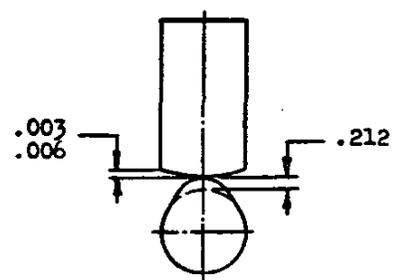
Pin Bushing:  
Outside Diameter: 1.128 - 1.126  
Inside Diameter: .979 - .981  
Length: 15/16  
Material: Bronze

VALVESInlet Valve

Material: Extruded Steel  
Head Diameter, Nominal: 1-29/64  
Valve Length: 4-15/16  
Stem Diameter: 5/16  
Style of Stem End: Key  
Tappet Clearance: .006 Hot  
Spring Pressure: 57 Lbs. Valve Closed  
Spring Pressure: 95 Lbs. Valve Open  
Valve Lift: .314  
Type of Stem Guide: Removable  
Valve Stem & Guide Clearance: .001-.003  
Angle of Valve Face: 45°

Exhaust Valve

Material: Extruded Steel  
Head Diameter, Nominal: 1-11/32  
Valve Length: 4-15/16  
Stem Diameter: 5/16  
Style of Stem End: Key  
Tappet Clearance: .008 Hot  
Spring Pressure: 57 Lbs. Valve Closed  
Spring Pressure: 95 Lbs. Valve Open  
Valve Lift: .314  
Type of Stem Guide: Removable  
Valve Stem & Guide Clearance: .002-.004  
Angle of Valve Face: 45°

TIMING DIAGRAMVALVE TAPPET

Valve Rocker Arm Ratio: 1.48 to 1  
Camshaft Ramp: .010

CHANGES

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

CRANKSHAFT

Number of Main Bearings: 3  
 Main Bearing Clearance: .001-.003  
 Main Bearing Material: Steel & Babbitt  
 Crankshaft Pulley Diameter: 6-1/32  
 Torsional Vibration Dampener used: No

Clearance between Oil Thrower Groove in  
 Crankshaft and Flange on Cylinder  
 Block: .002-.032  
 Bearing which takes thrust: #2  
 Amount of Crankshaft Offset: None  
 Amount of End Play: .004-.007  
 Weight of Crankshaft: 57 Lbs.

Bearing Sizes

#1	#2	#3
Diameter: 2-1/16	Diameter: 2-1/8	Diameter: 2-3/16
Length: 1-49/64	Length: 1-7/8	Length: 2-11/64
Projected Bearing Area: 12.34 Sq. Ins.		

CONNECTING RODS

Type: Pin clamped in Rod  
 Material: Drop Forged Carbon Steel  
 Length (Center to Center): 6-17/32  
 Crankpin Diameter: 2-1/8  
 Crankpin Length: 1-1/2  
 Width at Piston Pin: 15/16

Lower End Bearing:  
 Diameter: 2-1/8  
 Length: 1-9/32  
 Material: Babbitt  
 Clearance (On Diameter): .0005-.0015  
 Type of Bearing: Centrifugally Cast  
 Type of Shims: Steel or Brass - Solid

COOLING SYSTEM

Water Circulation Type: Pump (Located  
 in Head)

Radiator Core Type: Ribbed Cellular  
 Core Size: .25 x .40 x 2-1/8  
 Radiator Core Material: Brass  
 Exposed Core Area: 305 Sq. Ins.

Pump Type: Centrifugal

Radiator Shell Material: Steel

Shell Finish: Front Chromium Plated,  
 Balance painted to match Hood.

Number of Fan Blades: 4

Diameter of Fan: 15-3/4

Fan Pulley:

"V" Type - Angle of "V" 28°

Diameter of Pulley: 4-21/64

Fan Belt Type:

"V" - Angle of "V" 32°

Fan Belt Material:

Vulcanized Fabric (One Piece)

Fan Belt Length:

43-1/2 Width: 21/32

Fan Shaft Bearings:

Front, Durex Composition - Rear, Bronze

Radiator Hose Size:

Upper, 1-1/4 x 10-3/4 (Inlet)

Lower, 1-1/4 x 9-5/16 (Outlet)

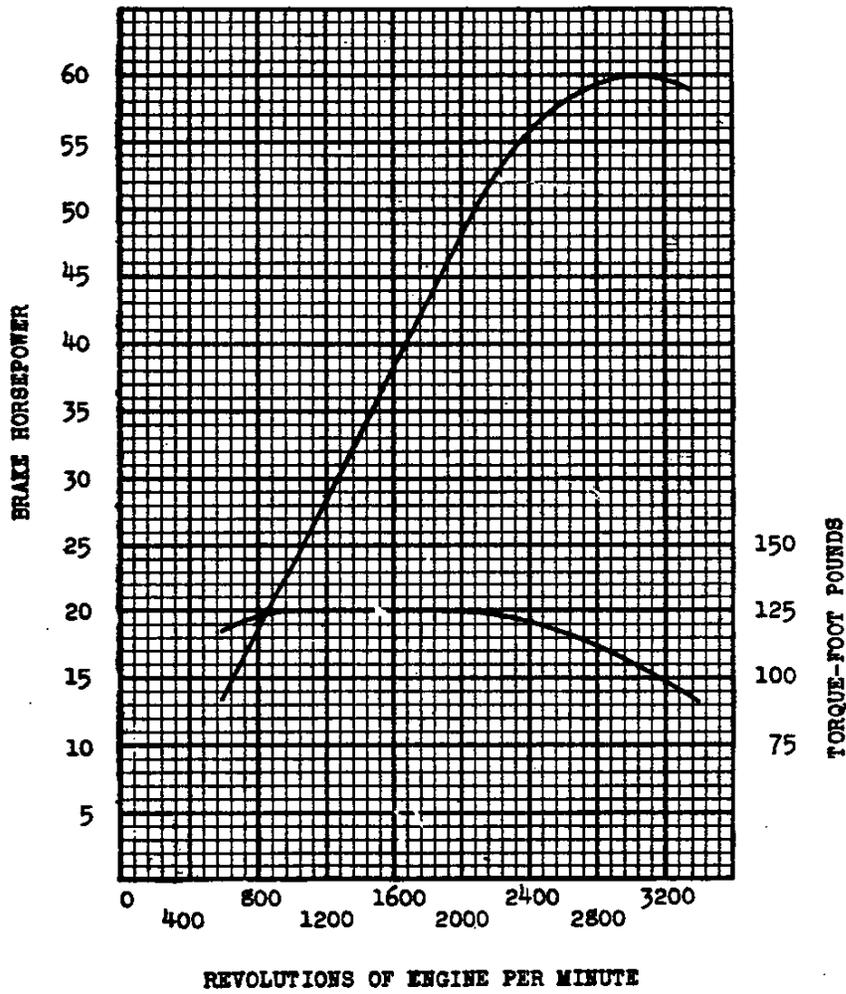
# SPECIFICATIONS



1933 STANDARD

ENGINEERING DEPT.

## POWER CURVES

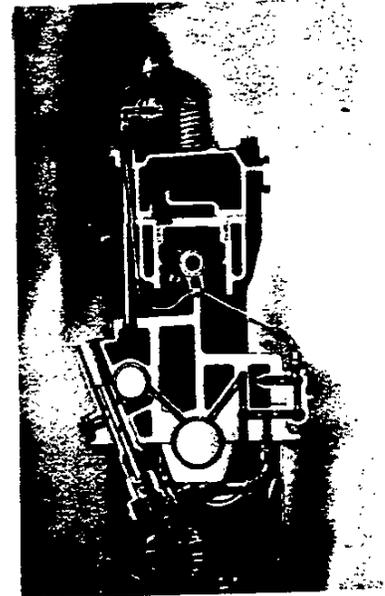
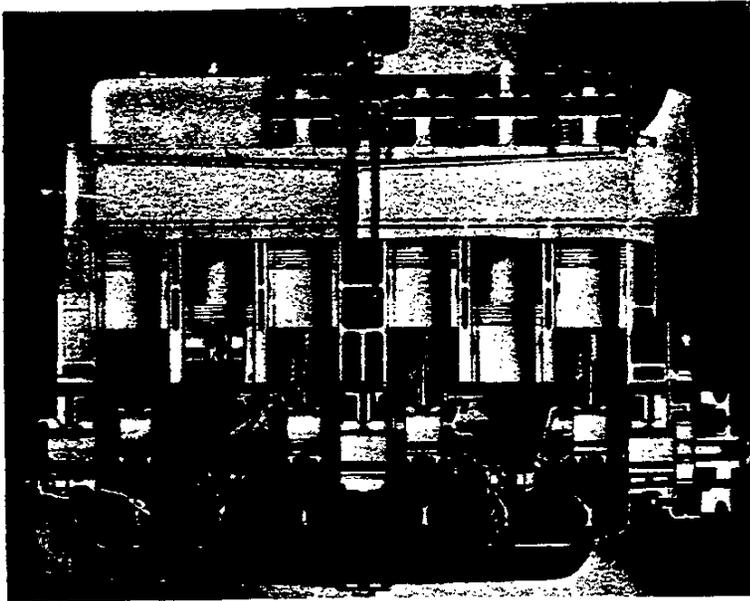


# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

LUBRICATION SYSTEM

Type: Combination Pump and Splash  
 Pressure Feed to Crankshaft Main Bearings, Camshaft Bearings and Valve Rocker Arms  
 Oil Pump Type: Vane  
 Oil Cleaner Type: Screen on Intake Side of Oil Pump  
 Average Pressure, Pounds: 14 Lbs.  
 Oil Pump Capacity: 5.3 Qts. per Min.  
 Type of Oil Level Gauge: Rod  
 Type of Oil Drain: Plug  
 Area of Oil Screen: 13-3/8 Sq. Ins.  
 Connecting Rod Scoop Oil Dip: .1113 to .2378 below oil level in oil trough.

EXHAUST SYSTEM

Exhaust Pipe Diameter: 2  
 Muffler Diameter: 5  
 Length: 20-1/2  
 By Pass: 3-1/2 Dia. x 16-1/8 Long

# SPECIFICATIONS

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1933 STANDARD

ENGINEERING DEPT.

FUEL SYSTEMCarburetor

Make: Carter - Down Draft  
 Model: W1-260-S  
 Size: 1-1/4  
 Type: Single Adjustment

Gasoline Filter: Yes (In Fuel Pump)  
 Air Cleaner Type: Cleaner, Silencer & Flame Arrester  
 Fuel Mixture Heater: Yes-Passes through Manifold Heat Chamber, controlled by Lever on Manifold.

Fuel Feed

Type: Mechanical Pump - Camshaft Driven  
 Make: AC - Series B  
 Fuel Pump Arm Throw at Camshaft: 1/4  
 Air Dome on Pump to regulate and provide even flow of fuel.

CLUTCH

Type: Single Plate Dry - Single Cushioned Plate Clutch  
 Number of Driving Discs: One  
 Number of Driven Discs: One  
 Facing Material: Moulded Asbestos  
 Type: Disc  
 Inside Diameter: 6-1/4  
 Outside Diameter: 9  
 Area of Clutch Surface: 65.87 Sq. Ins.  
 Thickness: .122 - .128  
 Number of Pieces: Two  
 Total Clutch Spring Pressure: 1017 Lbs.  
 Rated Torque Capacity of Clutch: 188 Ft.Lbs.

Bearings

Throwout: Carbon Composition #1 Mixture - I.D. 1-1/2 x O.D. 2-3/8 x 3/4  
 Thrust: Cast Iron  
 Clutch Pilot: Hyatt 99004

Lubrication

Oiler provided for Clutch Release Bearing - No other lubrication necessary.  
 Clutch Adjustable: Yes  
 Clutch Throwout Lever Mounted on Ball:

Flywheel

Diameter: 12-3/8  
 Weight: 30 Lbs.  
 Number of Teeth: 104  
 Width of Teeth: 3/4

TRANSMISSION

Type: Selective Conventional - Standard Shift  
 Constant Mesh Gears: Helical  
 Location: In unit with Engine  
 Number of Speeds: 3 forward and 1 reverse

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

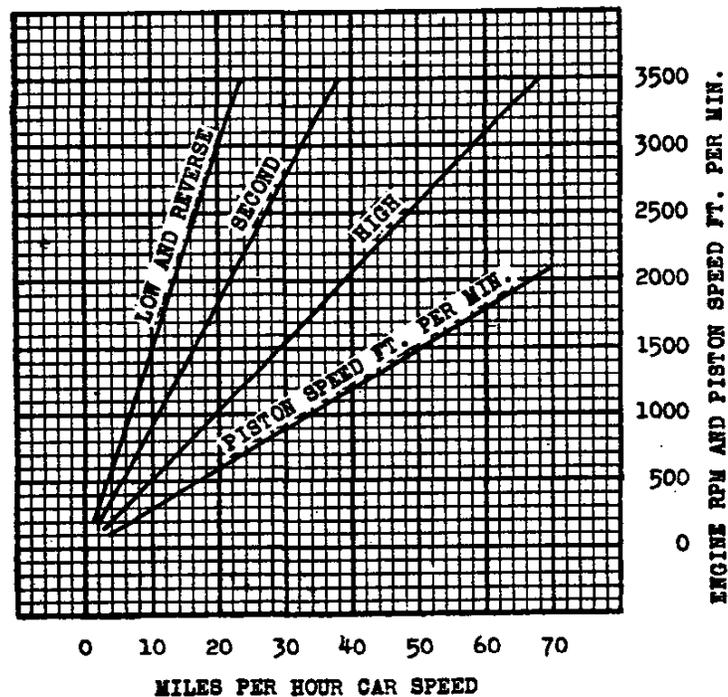
ENGINEERING DEPT.

TRANSMISSION - Continued

	<u>Gear Ratios</u>	<u>Total Reductions</u>	<u>Torque</u>
First Speed	2.802	11.52	350.3 Ft. Lbs.
Second Speed	1.708	7.02	213.5 Ft. Lbs.
Third Speed	Direct	4.111	125 Ft. Lbs.
Reverse	2.802	11.52	350.3 Ft. Lbs.

Bearings

Reverse Idler:	7/8 x 1 Brass (2 used)
Main Shaft - Front:	N.D. 954111
Main Shaft - Rear:	N.D. 903205
Countershaft - Front:	7/8 x 1-1/4 Bronze
Countershaft - Rear:	7/8 x 1-3/8 Bronze
Mainshaft Pilot:	Hyatt 136312

CAR SPEEDS AND PISTON TRAVEL

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

UNIVERSAL

Type: Steel Yoke  
 Material: Drop Forged Nickel Chromium Steel  
 Pin Diameter: 11/16  
 Pin Bearing Length: 31/64  
 Number of Bearings: 4  
 Distance between Pin Bearing Centers: 2-15/32  
 Clearance (on Dia.) between Pin and Bearings: .002 - .005  
 Type of End (Transmission): Spline  
 Number of Splines: 10  
 Inside Diameter of Splines: .853  
 Outside Diameter of Splines: .989  
 Type of End (Propeller Shaft): Spline  
 Number of Splines: 10  
 Inside Diameter of Splines: .875  
 Outside Diameter of Splines: 1-1/32  
 Number of Universal Joints: One  
 Method of Lubrication: Self, from Transmission

PROPELLER SHAFT

Type: Tubular with Welded Ends (Ends Splined)  
 Material: C. R. Nickel Chromium Steel  
 Length: 47-1/16  
 Number of Splines (Front): 10  
 Number of Splines (Rear): 10  
 Propeller Shaft Spline coupled to Drive Pinion Shaft and secured by Rivet.

STEERING GEAR

Type: Semi-Reversible - Worm and Sector  
 Ratio: 14 to 1  
 Steering Wheel turns locked to locked position of wheels: 3.13  
 Type of Steering: Fore and Aft  
 Diameter of Steering Post: 1-5/16  
 Diameter of Steering Wheel: 16  
 Steering Gear Mast Jacket Bushing: I.D. 5.8 x O.D. 1.225 x 1-1/8  
 Steering Gear Cross Shaft Bushing: 2 Reqd. I.D. 7/8 x O.D. 1 x 7/8

Minimum Turning Diameter: 37 Feet

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

WHEELS

Type: Drop Center Wire  
 Revolutions of Rear Wheels per mile: 750 (U.S.) - 759 (Goodrich)  
 Rims: Drop Center, Integral with Wheel - 3 Base  
 Tires: 5.25-17 4 Ply  
 Pressure recommended: 32 Lbs.  
 Manufacturer of Tires - U. S. Rubber Company - Goodrich

GENERATOR

Model: 943-J  
 Maximum charging rate, Hot: 12 Amps.  
 Voltage: 7.7  
 R.P.M. at Max. Hot charging rate: 2100  
 Car Speed: 20-1/2 M.P.H.  
 Maximum charging rate, Cold: 17 Amps.  
 Voltage: 5.2  
 R.P.M. at Max. cold charging rate: 2000  
 Car Speed: 19 M.P.H.

Thermostat: No  
 Field Fuse: No  
 Voltage regulation: Third Brush  
 Rated Voltage: 5.2  
 Brush Tension: 14-16 Oz.  
 Rotation (Drive End): C.W.  
 Bearings:

Commutator End: Bronze Bushing  
 Drive End: Ball Bearing

Cutout

Voltage to close: 7.2  
 Armature Speed: 660  
 Car Speed: 7 M.P.H.  
 Amperes to Open: 1 to discharge  
 Generator Pulley: "V" Type - Cast Iron  
 Angle of "V" 28°  
 Diameter: 3-11/32

BATTERY

Make: Delco-Remy	Amp. hours capacity: 90
Model: 133 OU	Cell arrangement: Side to Side
Length: 8-15/16	Shipped wet or dry: Drive away wet-Others optional
Width: 6-7/8	Charging Rate, Start: 4-1/2 Amp.
Height: 8	Charging Rate, Finish: 4-1/2 Amp.
Volts: 6	Which Terminal is grounded: Neg.
	Where is Battery mounted: Frame - Right Side

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

IGNITION SYSTEM

Type: Separate units high tension distributor ground return system.  
 Make: Delco-Remy  
 Model Number: 622 L  
 Current Source: Generator  
 Spark Control Type: Full Automatic  
     Vacuum Retard: 12°  
     Automatic Advance: 36°  
 Firing Order: 1-5-3-6-2-4  
 Timing, Spark advanced: 10° B.T.D.C.  
 Distributor Interrupter Point Openings: .016  
 Distributor Upper Bearing Type: Cast Iron  
 Distributor Lower Bearing Type: Cast Iron  
 Condenser make: Delco-Remy  
Coil  
 Amps. drawn, Engine stopped: 4  
 Amps. drawn, Engine running: 1.9 at 40 M.P.H.  
 Spark Plug make: A.C. K-9 Metric  
     Recommended gap: .032

STARTING MOTOR

Model: 714 L  
 Drive Type: Bendix  
 Normal Amp: 70  
 Normal Speed: 2000 R.P.M.  
 Normal Torque: 2 Ft.Lbs. @ 2000 R.P.M.  
 Lock Torque: 14 Ft.Lbs.  
     Voltage: 3.75  
     Amps.: 420  
 No Load Bench Test R.P.M.  
     Voltage: 5-3/4  
     Amps.: 75  
 Rotation (Commutator End): C.C.W.  
 Bearing Type:  
     Commutator End: Cast Iron  
     Drive End: Graphite Bushing  
     Outboard: Yes  
 Overrunning Clutch: No  
 Pinion: Meshes on Front of Flywheel  
 Starting Motor turns Engine approximately 160 times per minute.  
BENDIX DRIVE  
     Number of Teeth: 10  
     Ratio of Bendix Drive Gear to Flywheel Gear: 10.4 - 1

# SPECIFICATIONS

**CHEVROLET**

1933 STANDARD

ENGINEERING DEPT.

LIGHTING SYSTEM

Type: Two Beam (Parabolic Reflector)  
Head Lamp Lens: Twillite  
Diameter: 9-1/8  
Inside Diameter of Rim: 8-5/16  
Head Light Bulb: Tungsol T 1110  
Candle Power: 21 - 21  
Two Filament Bulb: Yes  
How are Head Lights dimmed: Depressed Beam  
Cowl Lights: No  
Tail Light Bulb: Yes  
Tungsol: T-63  
Candle Power: 3  
Dash Light Bulb: Yes  
Tungsol: T-63  
Candle Power: 3  
Are Bulbs single or double contact: Single  
Tail and Dash Light in series: No  
Stop Lamp Bulb: Tungsol - T-63  
Candle Power: 3  
Dome Lamp: Coa-Ope-SCpe  
Bulb: Tungsol - T-81  
Candle Power: 6  
Fuse: Type - 3AG  
Volts: 6  
Amperes: 15

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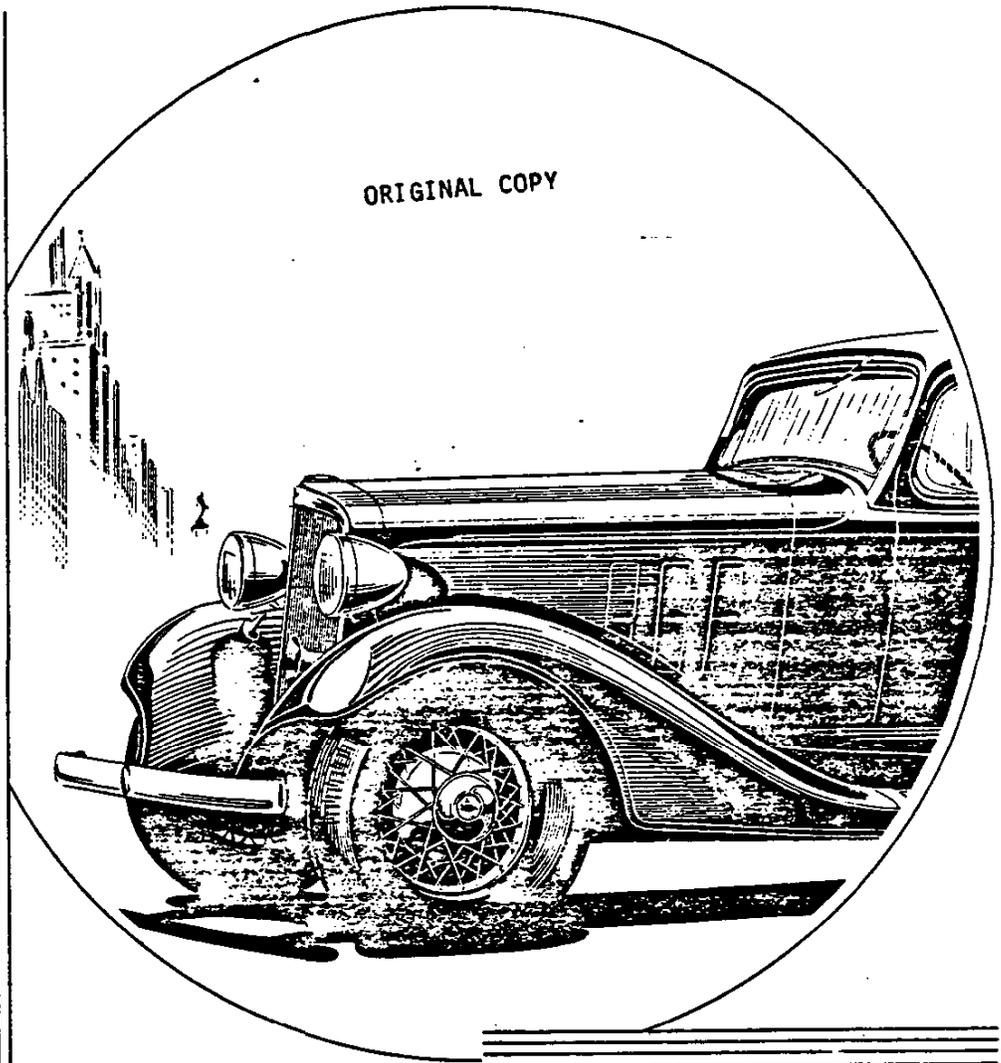
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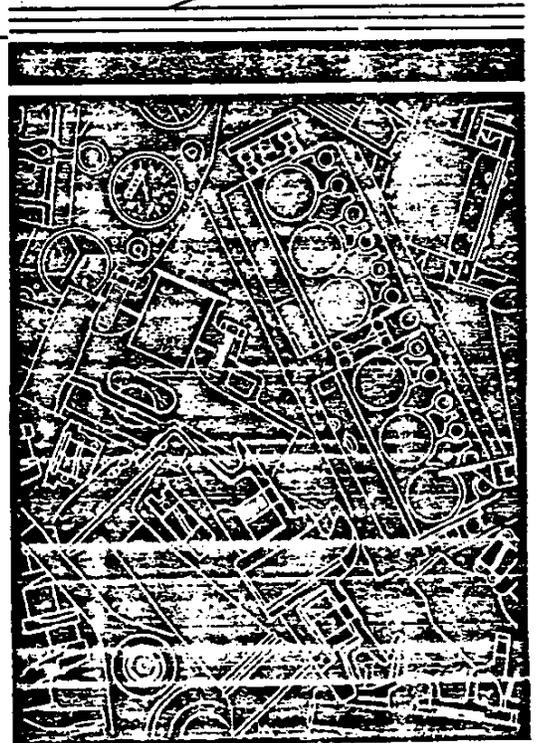
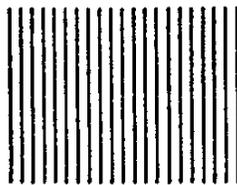
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CHEVROLET  
1933  
PASSENGER  
CAR  
ENGINEERING  
FEATURES



## INTRODUCTION

The beauty, performance, smoothness and economy of the new 1933 Chevrolet line again reflects the ingenuity of the Chevrolet engineering organization and the efficiency of the Chevrolet production facilities. This outstanding product, like its predecessors, is the result of many months of development to which the entire Chevrolet organization has contributed freely. The many facilities of the General Motors organization have also been utilized.

Dozens of ideas were developed, tested and discarded before the new product was adopted for production. Many of the units were under development for more than two years before they were considered sufficiently perfect for production release. When this new and outstanding product is delivered to the public it will have had the benefit of many hundred thousand miles of testing under unusually severe conditions. For months the production organization has been studying the product and has developed the best possible methods to produce it most efficiently at the lowest possible cost consistent with high quality. All the advantages of a large organization, modern equipment and unusual test facilities are passed on to the motoring public in this latest and most outstanding Chevrolet product.

In both appearance and performance the 1933 Chevrolet is fast and snappy. The novel streamline treatment gives the speedy appearance which is ably backed up by the powerful engine. The lines are smooth and the mechanical units are equally smooth. The sensation obtained from the driver's seat is one of effortless power and eagerness to respond

to the driver's will. The trend of the times is also reflected in the small amount of fuel which is consumed in driving this expensive-looking product.

While Chevrolet cars have never been classed as large, heavy vehicles, the longer wheelbase in the 1933 models provides plenty of space to insure a comfortable ride for both front and rear seat passengers. The weight is moderate for its size, but sufficient to insure durability.

In the discussion of Chevrolet features, safety is seldom stressed because it is always in the minds of Chevrolet engineers; and regardless of how clever, efficient or economical a design may be, it is never given consideration unless it is safe. This engineering attitude backed up by rigid tests insures Chevrolet customers of a product in which they may ride with perfect assurance of their safety insofar as it is possible to design and build safety into an automobile.

This book of Chevrolet engineering features is compiled for the purpose of providing authorized persons in the Chevrolet organization with advance information concerning the 1933 models. This information is strictly confidential and is not intended for publication. Only those features which are new for 1933, or were added to the 1932 model late in the season, are described in detail. The following data were collected somewhat in advance of production and are up-to-date as of November 1, 1932. No revisions will be made in this book to cover subsequent changes. Complete specifications will be available later in different form.

This book No. 41 is issued to

Mr. D. S. Taylor

and is intended for his use only

CHEVROLET MOTOR COMPANY

ENGINEERING DEPARTMENT

November  
Fifteenth  
1932

NEW FEATURES IN THE 1933 MODELS

FRAME

1. Longer wheelbase.
2. Stronger, more rigid frame structure.
3. Deeper side rails.
4. Side rails panelled at rear kickup.
5. Kickup over front axle.
6. Sub-frames added.
7. Reduced cross shaft deflection due to improved bracing.
8. Stronger outer flanges on transmission support.
9. Improved rear cross member.
10. Forged rear spring rear hangers.
11. Stronger step hangers.
12. Battery guard added.
13. Body brackets added.
14. Rear fender brace brackets added.

EXHAUST SYSTEM

15. Larger resonance-type exhaust silencer.
16. Integral exhaust pipe packing flange with separate pilot.
17. Heavier gauge exhaust pipe.
18. Spring-mounted exhaust pipe.
19. Rubber-mounted exhaust silencer
20. Rubber-mounted tail pipe.
21. Larger diameter tail pipe.
22. Increased road clearance under exhaust silencer.

SPRINGS

23. Improved ride due to increased rear spring rate.
24. Rounded edges at spring leaf ends.
25. Thrust washers added at front end of rear springs.

SHOCK ABSORBERS

26. Serrated actuating lever.

FRONT AXLE

27. Heavier I beam.
28. Lower spring pads.
29. Press type inner hub cap.
30. Angle lubrication fittings.

REAR AXLE

31. Larger axle housing with integral reinforcements.
32. Pressed steel axle housing flanges.
33. Stronger, one-piece differential case.
34. Increased differential pinion bearing.
35. Increased gear ratio.
36. More quiet drive gear and pinion.
37. More rivets to attach ring gear.
38. Integral pinion bearing spacer.
39. Wheel hub forged integral on shaft.
40. Ryatt wheel bearing.
41. Wheel bearing closer to center of wheel.
42. Leather oil seal.

BRAKES AND CONNECTIONS

43. Larger brakes - front and rear.
44. Longer and wider linings.
45. Ribbed brake drums.
46. Longer cam bearings.
47. Heavier brake shoe webs.
48. Increased bearing at fulcrum points.
49. Improved shoe alignment.
50. Spring-loaded shoe guides.
51. "Cut-in" parking brake linkage.
52. Increased hand brake operating range.
53. Larger service brake cross shaft.
54. Rubber anti-rattle spacer at hand brake lever grip.

ENGINE

55. Increased piston displacement.
56. Increased power.
57. Improved performance.
58. Smoother operation.
59. Better fuel economy.
60. Heavier crankshaft balanced to closer limits in one plane.
61. Larger diameter crank pins.
62. Larger counterweights.
63. Heavier, more sensitive harmonic balancer.
64. Improved flywheel mounting.
65. Heavier flywheel web.
66. Improved connecting rods.
67. Wider oil control piston rings.
68. Better oil control on cylinder walls.
69. Stronger cylinder head.



## CHEVROLET 1933 PASSENGER CAR ENGINEERING FEATURES



- 70. Smaller spark plugs with gap in more efficient position.
- 71. Hollow copper spark plug gaskets.
- 72. Heavier valve springs.
- 73. Reduced side thrust on valve stems.
- 74. Better control of overhead lubrication.
- 75. Spark advance controlled by suction.
- 76. Graduated manual "Octane Selector".
- 77. Steel-backed, babbitt center camshaft bearing.
- 78. Ribbed oil pan flanges.
- 79. Thicker oil pan gaskets and seals.
- 80. More secure clamp on oil filler tube.
- 81. More accessible oil level gauge.
- 82. Reserve oil for the front water pump bushing.
- 83. Quiet, staggered four-bladed fan.
- 84. Improved carburetor.
- 85. Improved intake and exhaust manifolds.
- 86. Thermostatic heat control.
- 87. "Sta-Namic" Balance.

### CLUTCH

- 88. Increased torque capacity.
- 89. Braided-moulded friction rings.
- 90. Smoother operation.
- 91. Stamped clutch fork.
- 92. Heavier clutch fork ball retainer and spring.

### TRANSMISSION

- 93. Helical constant-mesh gears.
- 94. Improved reduction ratios.
- 95. Single pocket free wheeling unit.

### FUEL SYSTEM

- 96. Larger fuel tank.
- 97. More accessible filler.
- 98. T-bolt strap mounting.

### STEERING GEAR

- 99. Increased gear ratio.
- 100. More stable steering gear mounting.
- 101. Improved insulation at instrument panel.

### CONTROLS

- 102. Clutch and brake pedals mounted on frame.
- 103. Larger pedal bushings.
- 104. Rubber pedal pads.
- 105. Rubber-covered, pedal-type accelerator control.
- 106. Starter control operated by accelerator pedal.
- 107. Rubber floor board seal at transmission cover.

### WHEELS AND TIRES

- 108. Beautiful, new, tri-form hub caps.

### SHEET METAL

#### Front Fenders

- 109. Streamline design.
- 110. Deeper crown.
- 111. Longer nose.
- 112. Braced full outer skirt.
- 113. Wider beading.

#### Running Boards

- 114. Integral with apron.
- 115. Curved upward at front.
- 116. Moulded rubber mat on steel base.
- 117. Easily replaceable mat.

#### Rear Fenders

- 118. Streamline design.
- 119. Deeper crown.
- 120. Longer tail piece.
- 121. Full outer skirt braced to frame.
- 122. Concealed front license bracket mounted on spring horn.
- 123. Flaring, streamlined rear deck cover.
- 124. Improved sloping hood with three doors at each side.
- 125. Continuous hinge at hood top.
- 126. Reinforced hood side panels.
- 127. Improved conical engine underpans.

### ELECTRICAL EQUIPMENT AND INSTRUMENTS

- 128. Improved tail and stop lamp with reflex glass lens.
- 129. Bayonet tail and stop lamp connectors.



## CHEVROLET 1933 PASSENGER CAR ENGINEERING FEATURES

- 130. License tag mounted above tail lamp.
- 131. Improved rubber insulated tail lamp bracket.
- 132. Lower-powered stop lamp bulb.
- 133. Separate fuse in stop lamp circuit.
- 134. Improved headlamp appearance and mounting.
- 135. Improved cowl lamp appearance.
- 136. Rubber horn terminal cover added.
- 137. Improved instrument arrangement.
- 138. Airplane type instruments.
- 139. Two instrument panel bulbs.
- 140. Improved convex lenses on all instruments.
- 141. Definite alignment of control buttons.
- 142. Provision for electrical accessory.
- 143. Ignition lock connected to coil.

### RADIATOR

- 144. Sloping "V" radiator.
- 145. Improved, sloping radiator shell.
- 146. Two-tone shell finish.
- 147. Integral, chrome-plated "V" grille.
- 148. Improved core.
- 149. Ornamental radiator cap.

### WHEEL CARRIER

- 150. Heater, more rigid wheel carrier.

### OPEN BODIES

- 151. Streamline design.
- 152. Improved moulding treatment.
- 153. Increased leg room.
- 154. Larger doors.
- 155. More comfortable seats.
- 156. Increased windshield slope.
- 157. Increased top overhang.
- 158. Natural wood top bows.

- 159. Improved seat cushion construction.
- 160. Larger cowl ventilator.
- 161. Built-in ventilator screen.
- 162. Depressed instrument panel.

### CLOSED BODIES

- 163. Streamline design.
- 164. Increased length and width.
- 165. Longer, lower windows.
- 166. Stronger pillar construction.
- 167. Improved door hinge mounting.
- 168. C.V. draft deflectors.
- 169. Improved hardware.
- 170. Free-turning door handles.
- 171. Larger cowl ventilator.
- 172. Built-in ventilator screen.
- 173. Larger sun visor.
- 174. Increased windshield slope.
- 175. Shatterproof glass in windshield and draft deflectors.
- 176. Depressed instrument panel.
- 177. Finger-tip seat adjustment in Coach.
- 178. Wider doors.
- 179. Draft protection at bottom of doors.

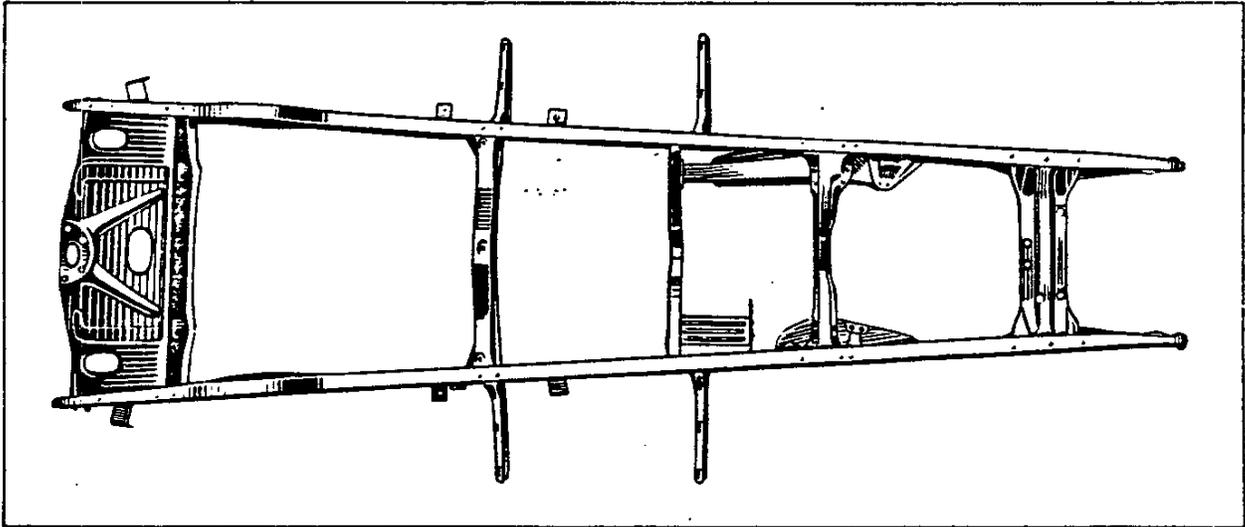
### SPECIAL EQUIPMENT

- 180. Six-tube super hetrodyne radio.
- 181. Improved bumpers.
- 182. Rubber tire cover.
- 183. Improved metal tire cover.
- 184. Metal tire cover plate.
- 185. Windshield defroster.
- 186. Wireless cigarette lighter.
- 187. License plate frame unit.
- 188. Eagle radiator cap of new design.
- 189. Rear view mirror glare shield.
- 190. Spring covers.
- 191. Improved trunk rack.
- 192. Improved luggage carriers.

## DETAILS OF THE 1933 FEATURES FRAME

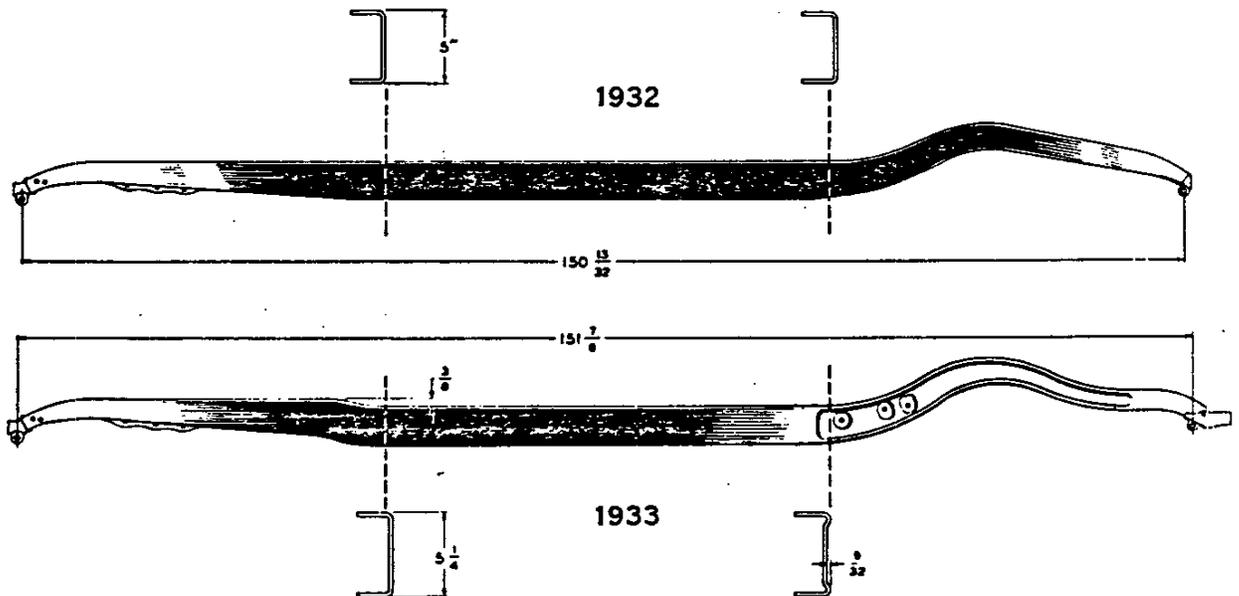
The frame in the 1933 passenger line is entirely new. It is lengthened to provide for the  $1\frac{7}{16}$ " increase in wheelbase, and all cross members and brackets are redesigned

provides an ideal mounting for the engine. The frame side rails are much stronger due to an increase in their depth at the middle. The rear kickup is increased and the

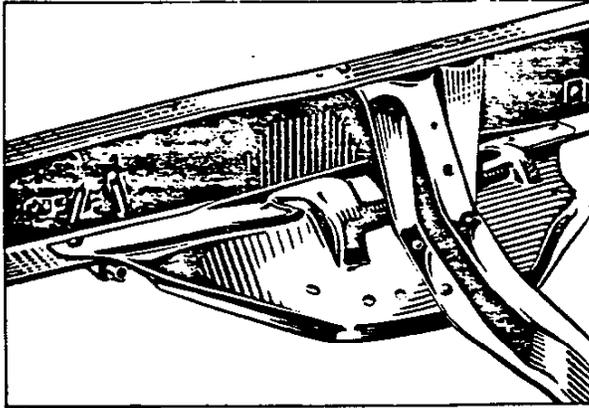


and relocated accordingly. A kickup at the front end of the frame permits lowering the entire job. The addition of sub-frame members on each side, near the dash, increases the strength and rigidity of the frame and

strength at this point is also increased by the addition of a depressed panel in the web of the side rails. This depression provides a double rib effect along the edges of each rail. Pads are raised from the panel to



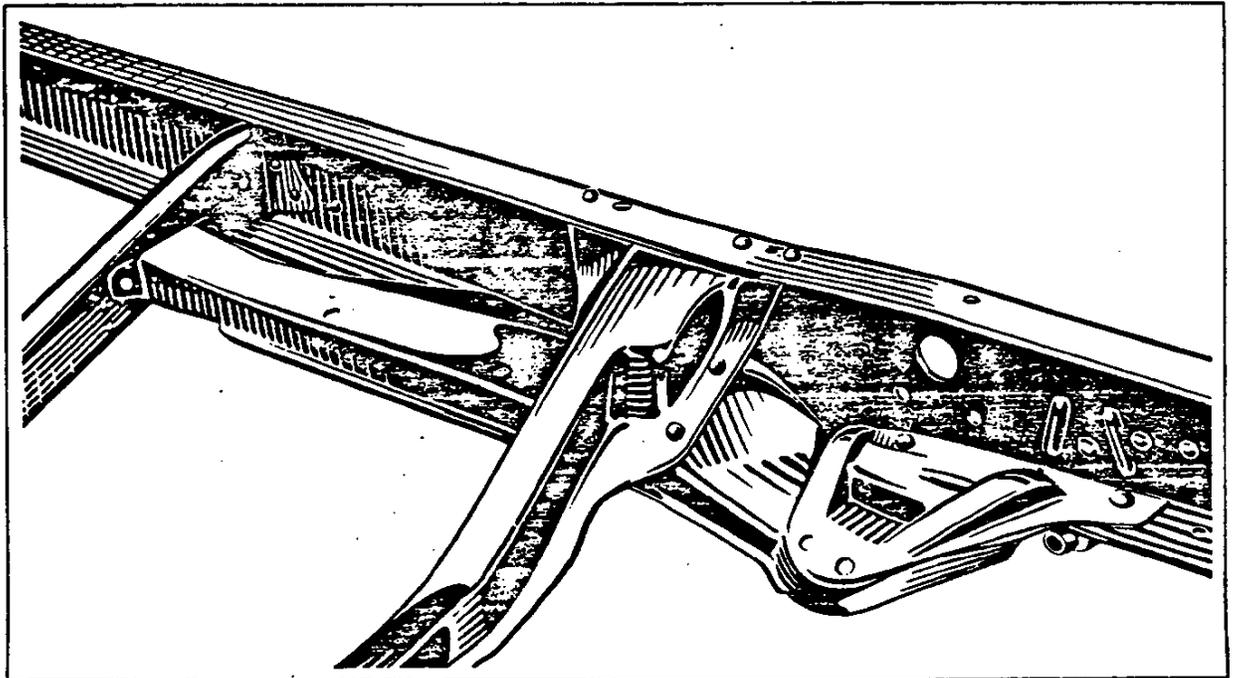
provide for the attachment of the rear shock absorbers. The width of the top flange at the front end is increased by the elimination of the cut-out which was provided for manufacturing purposes. The depressed ribs at the front spring rear hangers are also retained for their stiffening and strengthening effect.



Sturdy sub-frame members are added at each side in the vicinity of the dash. On the right hand side the sub-frame takes the form of a pair of gussets extending forward and rearward from the supporting cross member for an overall distance of 24 inches.

The sub-frame is  $\frac{7}{64}$  thick and about 6  $\frac{1}{2}$  inches wide at its point of attachment to the cross member. It is deeply ribbed and has a vertical flange extending along its inner and outer edges. A flat depression is provided for attachment of the engine mounting. Additional stiffness is provided at this point by a wide, tapering stamped rib. Another raised rib extends upward into the channel of the supporting cross member further increasing the rigidity at this point. Seven rivets secure this strong sub-frame to the lower flange of the right hand side member, while attachment to the supporting cross member is made by four rivets thru its flanges.

The left hand sub-frame has an overall length of approximately 35 inches and is of the same general design at its front end. Toward the rear it extends to the transmission support cross member which it braces, preventing excess deflection in the brake cross shaft attached to that member. Six rivets secure this sub-frame to the side rail and four attach it to the flanges of the supporting cross member. Toward its rear end the section blends into a channel shape with the open side downward. Two ears are bent over at the extreme rear end where two rivets



secure the sub-frame to the vertical web of the transmission support member.

#### SUB-FRAME SUPPORT

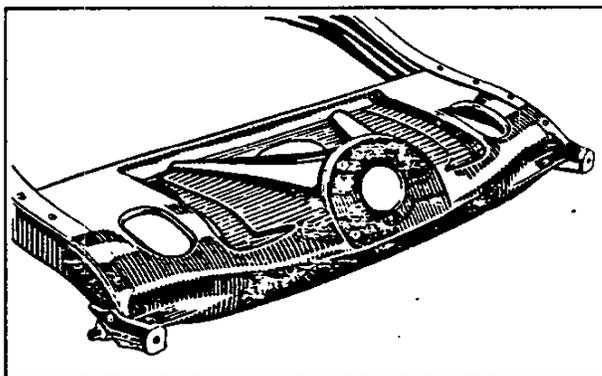
The sub-frame support cross member is designed to co-operate with the new sub-frame structure. It is attached to the upper flanges of the side rails by five rivets, and to the sub-frames by eight rivets. The front body bolts also pass thru its flanges. At the left side it extends farther forward than at the right side affording better support for the sub-frame and increasing the rigidity of the frame.

#### TRANSMISSION SUPPORT

The upper flange of the transmission support cross member is wider, and its flanges for attachment to the webs of the side rails are blended into the top flange of the cross member. This increases the rigidity at the points of attachment.

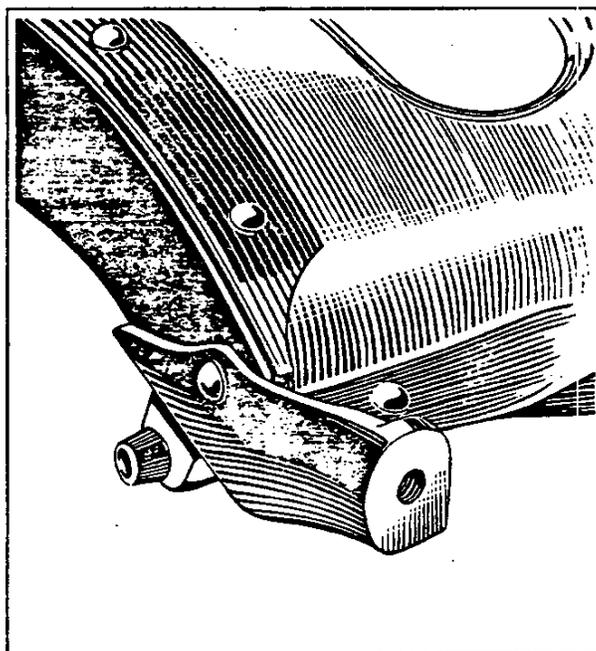
#### REAR CROSS MEMBER

The rear cross member is completely redesigned to conform to the new shape of the frame, to provide for the larger gasoline tank and for the improved spare wheel carrier. It is much wider and is attached to the upper flanges of the side rails by six rivets, while eight rivets secure it to their



lower flanges. The center portion is raised considerably above the end surfaces. It is strengthened by two raised ribs which extend forward with a considerable spread. Four anchor nuts are provided for the at-

tachment of the wheel carrier. These are permanently riveted in place for easy assembly. The depressed ribs against which the gasoline tank seats have considerable stiffening effect. The opening for the gasoline tank filler neck is punched at the bottom of a depression which gives the effect of a continuous rib around its periphery. The nuts for the two rear body bolts are staked into elongated slots in the rear cross member in such a way as to prevent their dislodgement, but permitting them to slide fore and aft to insure alignment during assembly.



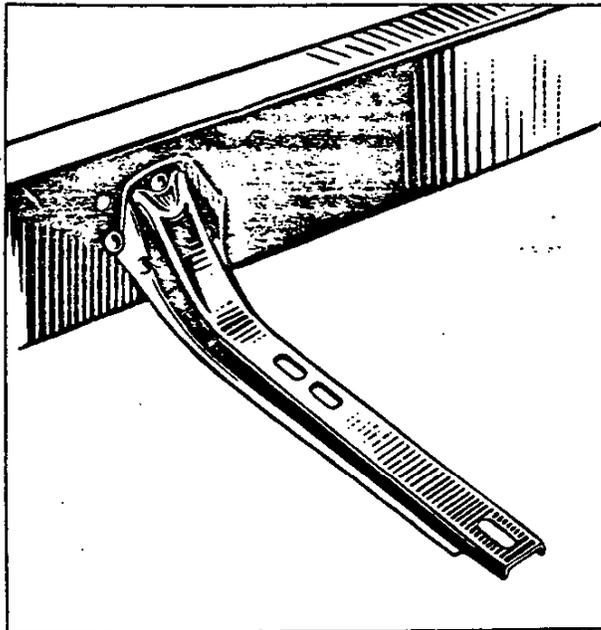
The rear hangers for the rear springs are completely redesigned. They are made from steel drop forgings, and are attached to the outside of the side rail by two rivets thru the lower flange and one rivet thru the web on each side. This new and improved design permits the spring to be hung directly under the end of the side rail instead of being overhung from its end as heretofore. It also provides better support for the bumper which is mounted considerably farther toward the rear from the spring shackle bolt.

#### STEP HANGERS

The step hangers are redesigned to accommodate the new running boards and to eliminate

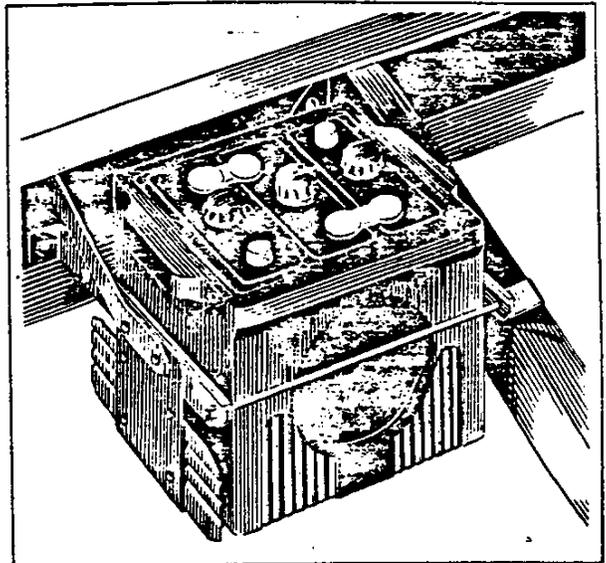
CHEVROLET 1933 PASSENGER CAR ENGINEERING FEATURES

local weaknesses. They are much more rigid because of the increased depth of the channel section and the addition of stiffening ribs at the lower ends of the channel extending



the full length of the hangers and blending into the attaching pad. The new design and position of the running boards permits a reduction in the drop of the hangers which also contributes to their increased strength.

A guard has been added at the front of the battery hanger to protect the battery case



from flying stones. The guard is of sheet steel corrugated for increased strength and rigidity. Larger rivets secure the hanger strap to the transmission support.

**BODY BRACKETS**

Body brackets are added to each side of the frame directly in front of the rear step hangers to provide two additional points of attachment for the body.

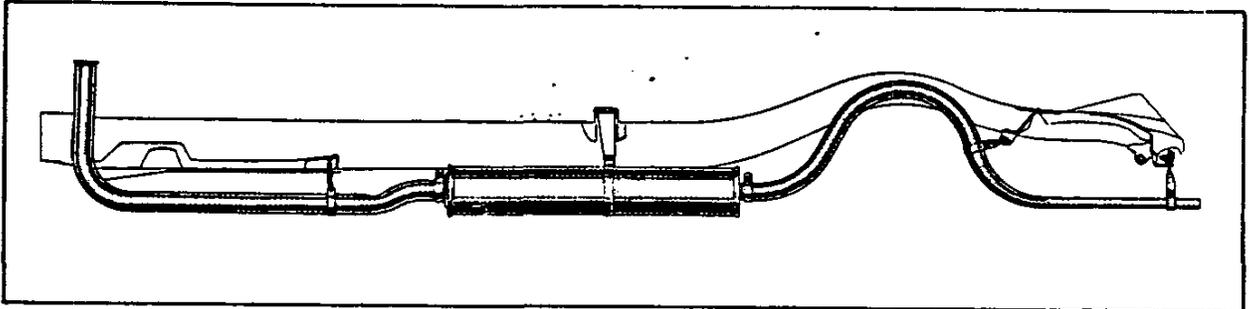
**COMPARATIVE SPECIFICATIONS**

	1932	1933
Wheelbase (actual) .....	108 9/16 .....	110
Kickup over front axle .....	None .....	3/8
Side rail depth at middle .....	5 .....	5 1/4
Kickup over rear axle .....	4 7/8 .....	5 5/8
Side rail panels over rear kickup .....	None .....	9/32 deep
Right hand sub-frame thickness .....	None .....	7/64
Left hand sub-frame thickness .....	None .....	7/64
Transmission support outer flange tie .....	To web .....	To web and upper flange
Rear spring rear hanger material .....	Malleable iron .....	Forged steel
Attachment of hanger to side rail .....	Inside by 2 rivets .....	Outside by 3 rivets
Stap hanger section .....	Channel .....	Flanged channel
Battery guard .....	None .....	Corrugated steel
Battery hanger rivet diameter .....	1/4 .....	5/16
Number of body brackets .....	2 .....	4

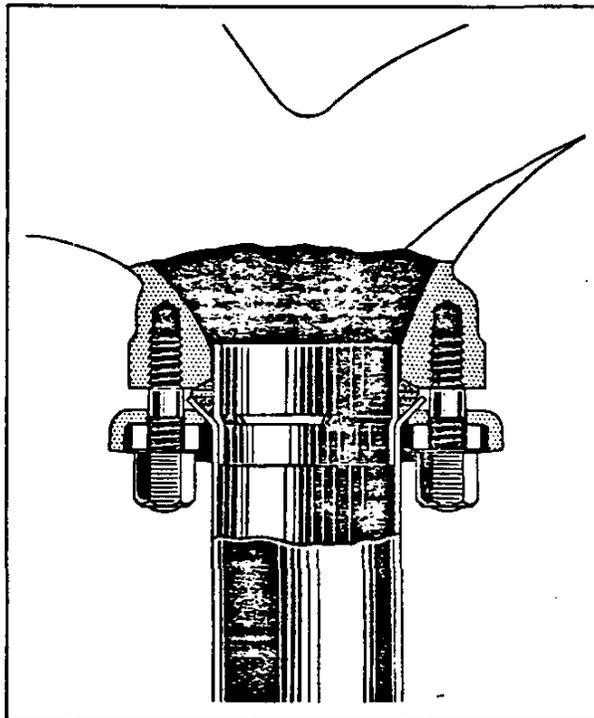
EXHAUST SYSTEM

The design and mounting of the new 1933 exhaust silencer and its connecting pipes were developed in connection with the more powerful motor and its balanced resistance mountings. The new exhaust system silences the exhaust noise and provides sufficient flexibility to relieve the joints and brackets of undue strain.

from the juncture of the two parts. The exhaust pipe terminates at the forward end of the silencer, where it is securely clamped inside a pilot. It is resiliently suspended from the sub-frame by means of a coil spring. This flexible mounting relieves the exhaust system of strains due to distortion caused by constant heating and



During the 1932 season the method of attaching the exhaust pipe to the manifold flange was improved. With this new attachment the conical seat is integral with the pipe while



the cylindrical pilot is formed from a separate piece and welded to the pipe. This forms a more durable, leak-proof joint by removing the points of strain and leakage

cooling.

The exhaust pipe is made of heavier gauge metal which has less tendency to resonate due to vibration.

The exhaust silencer is of the resonance type, based on the same harmonic principle as the intake silencer, which has given such universal satisfaction in the past year. The purpose of a muffler or exhaust silencer is to release the exhaust gases from the engine to the outer atmosphere with the least possible difference in temperature and pressure. The new 1933 exhaust silencer accomplishes this purpose most effectively, eliminating the rumbles and metallic noises which are present in some exhaust systems. The sound emanating from the tail pipe is a smooth continuous purr which is pleasing to the ear. The exhaust gases enter the first expansion chamber of the silencer under high pressure and at a high temperature, and pass successively into four expansion chambers thru a multiplicity of very small holes in each. The area of the holes in each chamber is smaller than those in the preceding chamber. The small size and large number of these holes, as well as their graduated area from chamber to chamber, break and re-break the exhaust gases into an infinite number of small streams which dissipate much of their heat and pressure by contact with the relatively cool walls of the expansion chambers. As the exhaust gases and noises leave the

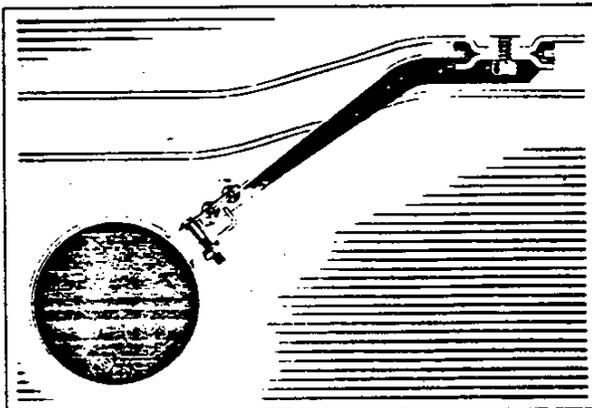
last expansion chamber they separate. This separation is made possible by the fact that gas has a body and can be propelled in a

silencing is a product of scientific proportioning of the various chambers, shells and orifices according to harmonic principles.



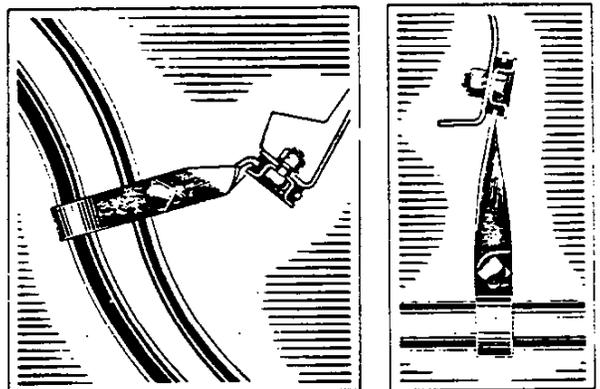
certain direction by pressure, while noise has no body and tends to go in all directions, restrained only by the walls within which it is confined.

In the large tube leading into the tail pipe where the noise separates from the gases, four large holes with smoothly rounded edges open into the tuning chambers where the noises are absorbed. A long tuning shell, supported at its forward end, reverberates with the vibratory noises, setting up a series of vibrations pitched to a different key. A shorter tuning shell, supported on the rear head of the silencer, sets up another series of vibrations in its own key. These two separate vibratory pitches counteract each other, silencing the objectionable noises. Any gases which may enter the tuning chamber pass to a large chamber outside the tuning shells,



from which they may reach the atmosphere thru a small vent hole. The overall effect of pressure reduction and

The silencer is supported by a bracket mounted at the center of the third cross member with rubber insulation. This type of



mounting permits the silencer to oscillate with the engine about a neutral point.

The tail pipe is enlarged in diameter to further silence the exhaust. It is securely clamped over a pilot at the rear end of the silencer. At its rear end the tail pipe is flattened to insure further silencing and ample road clearance. The tail pipe is supported from the rear cross member by two brackets, both of which are insulated by rubber at their points of attachment to the cross member.

The road clearance of the exhaust silencer is increased and the entire system is moved closer to the center of the chassis where it is farther from adjacent parts which might be damaged by its heat. A better circulation of air around the system itself is afforded with a consequent increase in silencing due to reduced temperature and pressure.



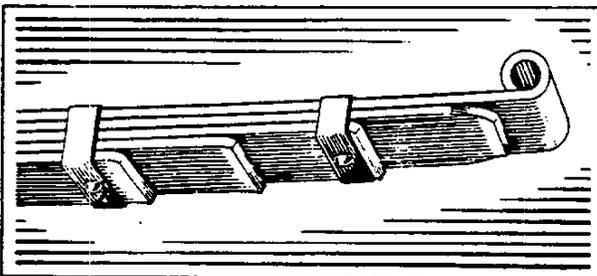
COMPARATIVE SPECIFICATIONS

	1932	1933
Exhaust silencer type .....	Baffle .....	Resonance
Exhaust silencer length .....	20 1/2 .....	30
Exhaust silencer mounting .....	Metal to metal .....	Rubber insulated
Exhaust pipe flange .....	Separate .....	Integral
Exhaust pipe mounting .....	Rigid .....	Spring
Exhaust pipe gauge .....	.0375 .....	.0438
Tail pipe outside diameter .....	1 1/2 .....	1 3/4
Tail pipe mounting .....	Metal to metal .....	Rubber insulated
Minimum road clearance under exhaust silencer	9 1/2 .....	10 5/8

SPRINGS

Both the front and rear springs on all 1933 models are improved by the addition of a rounded edge at the ends of each leaf. This is accomplished by forming the ends of the leaves downward presenting a generous radius at the point of contact with the longer leaf above. Thus undue wear of the leaves caused by constant rubbing of the sharp edges, is eliminated preventing the possibility of breakage due to reduction in sectional area. The riding qualities of all models are improved by the selection of a rear spring having the requisite rate and deflection characteristics to suit the weight distribution of each body type.

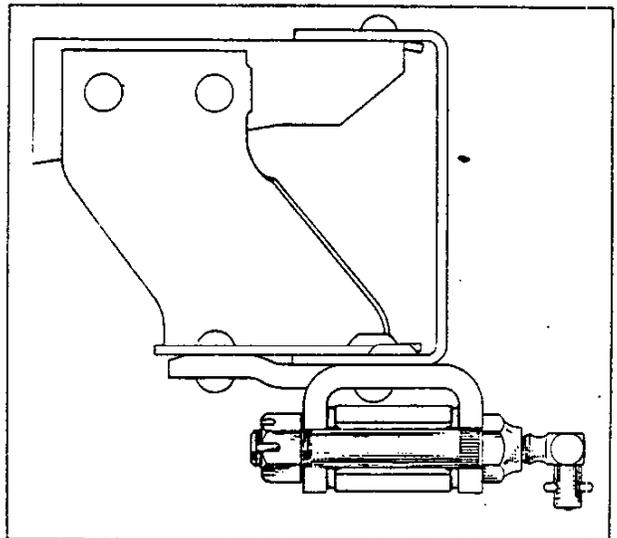
The Alemite lubrication fittings at all of the spring shackle bolts have been carefully considered and the fittings are redesigned



to insure free passage of the lubricant and easy accessibility.

Proper fit of the rear springs in their front hangers is insured by the provision of thrust

washers of varying thickness at each side of the springs. When the springs are assembled thrust washers of the proper thickness are selected. This permits the springs to be assembled snugly, eliminating excessive side



motion with the resulting wear and noise. With this proper fitting of the springs at assembly quiet operation for a longer period is assured and the means for easy replacement of worn washers in service is provided. This eliminates the bending of the lugs on the spring hanger and the possibility of excessive clearance or misalignment.

COMPARATIVE SPECIFICATIONS

	1932	1933
Spring leaf ends .....	Sharp .....	Rounded
Rear spring front thrust washers .....	None .....	Selected
Front spring rear shackle lubrication elbow.	65° .....	90°
Sport Roadster rear spring rate .....	98# .....	105#
Sedan rear spring rate .....	105# .....	130#
Coach rear spring rate .....	105# .....	130#



**SHOCK ABSORBERS**

In the improved 1933 shock absorbers the inside actuating lever is attached to the shaft by the engagement of serrations. This eliminates the necessity for a set screw and the possibility of breakage due to local weakness. The mounting pad at the shaft end of the housing is enlarged to present greater

bearing area at its point of attachment to the frame. The thickness of the rubber at the upper end of the links is increased to provide more effective insulation and cushioning. The length of the rear links is reduced to compensate for the lower position of the frame.

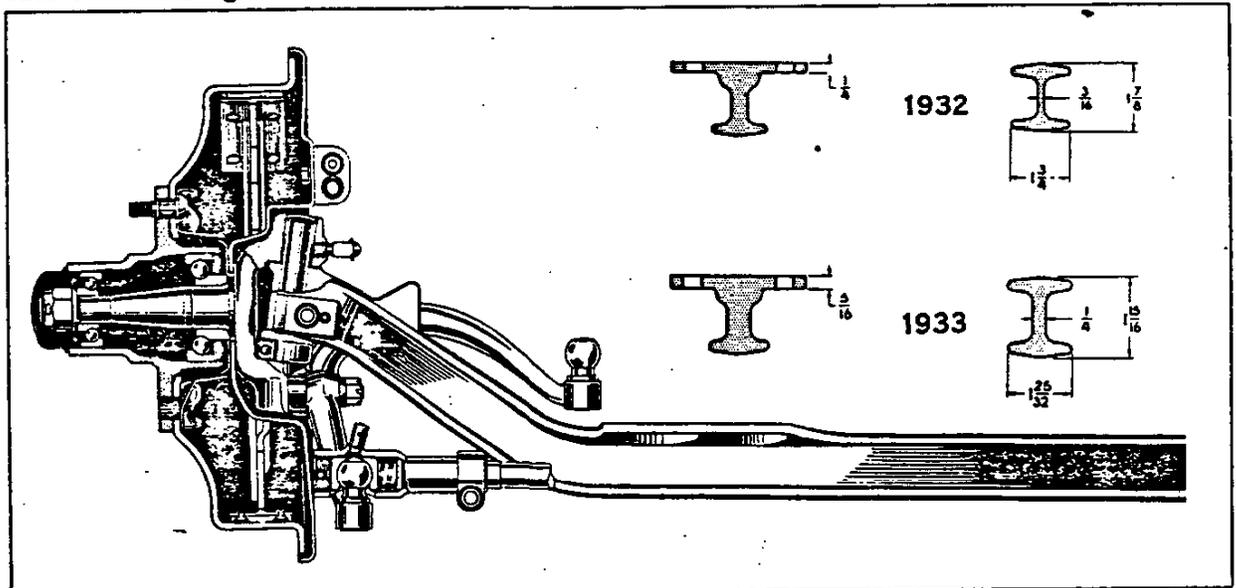
**COMPARATIVE SPECIFICATIONS**

Shock absorber lever attachment .....	1932	1933
Thickness of rubber flange .....	Set screw .....	Serrations
Length of rear links .....	1/8 .....	5/32
	5 1/2 .....	5

**FRONT AXLE**

During the 1932 season, the I beam of the front axle was made heavier and stronger. The depth of the I section, the width of the flanges and the thickness of the web were increased. The thicker spring pads are 3/8" lower in relation to the spindle. This, in combination with the double drop frame, permits the body sills to set 3/4" closer to the ground. The offset of the

steering arms is increased a corresponding amount to maintain the position of the tie rod back of the I beam. Lubrication of the front axle bearings is facilitated by a plain cap pressed into the outer end of the hub, and by the use of angle lubrication fittings, which make the points of lubrication more accessible. The spindle washers are cyanide hardened to improve their wearing qualities.

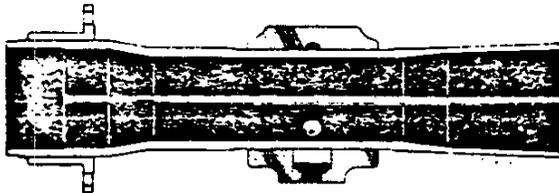


**COMPARATIVE SPECIFICATIONS**

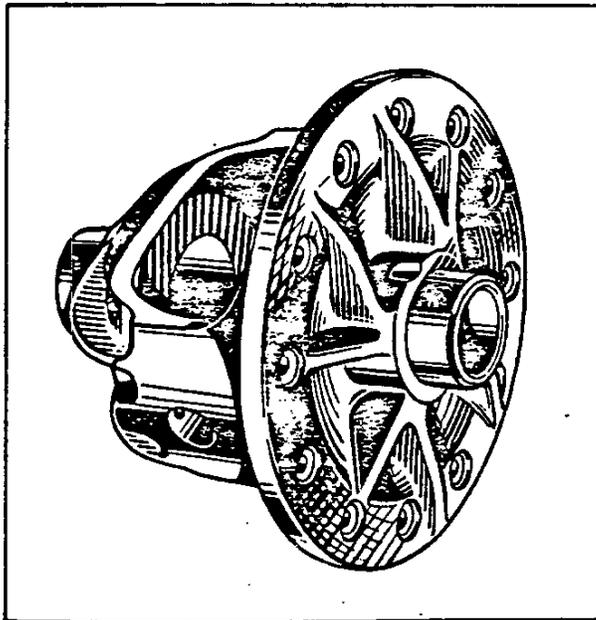
I beam depth .....	1932	1933
I beam width .....	1 7/8 .....	1 15/16
I beam web thickness .....	1 3/4 .....	1 25/32
Distance from spindle center to spring pads.	3/16 .....	1/4
Steering arm offset .....	2 3/4 .....	3 1/8
Inner hub cap .....	2 23/32 .....	3 3/32
Lubrication fittings .....	Threaded .....	Press type
Spindle washer material .....	Straight .....	Angle
	Soft steel .....	Steel, cyanide hardened

REAR AXLE

The 1933 rear axle is completely redesigned. The axle housing is larger and stronger. The banjo portion at the center is enlarged to take the new differential unit. It is flattened at the top, and also at the bottom, to



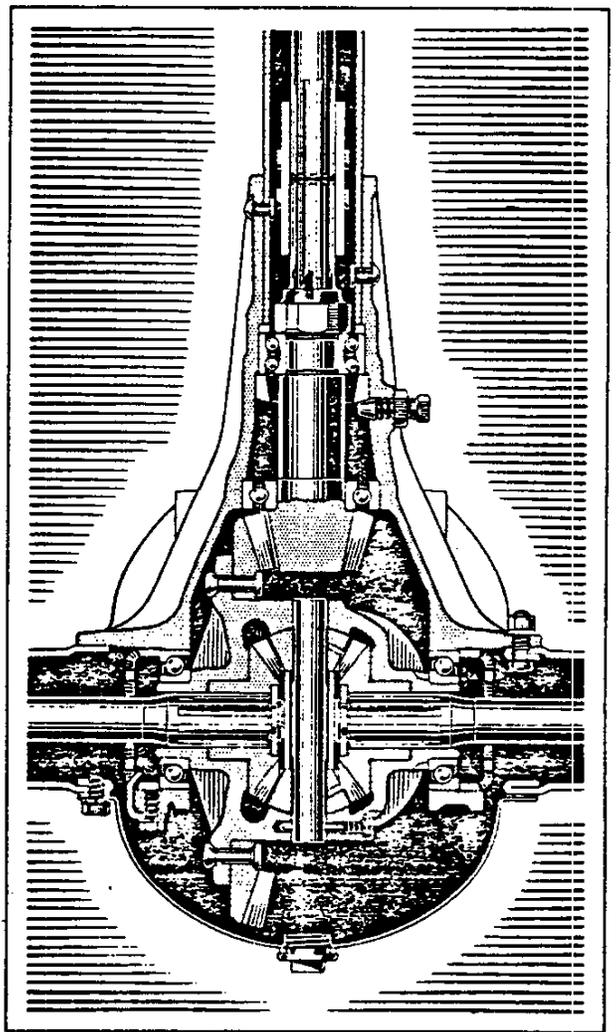
maintain the road clearance. The reinforcement around the inner edge of the banjo opening is integral with the housing. This gives the housing greater strength at this point because of the increased thickness of the reinforcement and because it is integral with the housing metal. The metal thickness at the outer ends of the housing is increased by swaging before forming. In their final form the ends of the housing are about  $\frac{3}{8}$ " larger in diameter than the tubular portion



just inboard of the bell-mouth. A stamped steel flange is pressed on each end of the housing and securely arc-welded around its entire circumference.

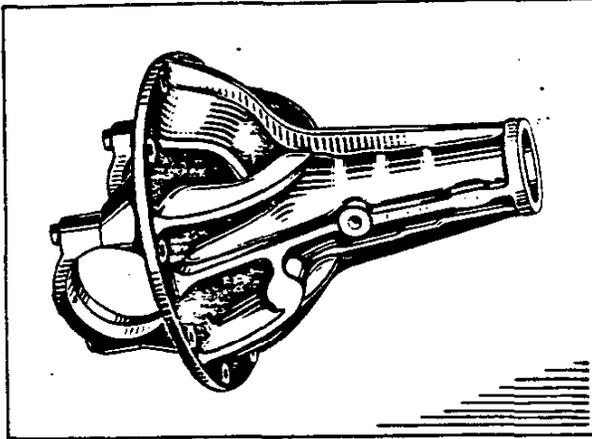
The new differential unit is housed in a one piece malleable iron case, insuring greater strength and more perfect alignment. The bearings have a greater span and the flange for the ring gear is larger in diameter. The walls of the case are increased in thickness and four lateral ribs of greater depth are added to the four shorter radial ribs to increase the rigidity. Two sides of the case are open and therefore more accessible for assembling operations.

The differential side gears are splined and



retained on the axle shaft by "C" washers which seat in the counterbores of the gears. Three oil holes are drilled between the teeth of each differential pinion to insure proper

lubrication. These pinions also have greater bearing lengths. Rotation and endwise movement of the differential pinion shaft is prevented by a screw having a long plain end which passes entirely thru the shaft and engages the case beyond the shaft. The differential carrier is enlarged and strengthened. The attaching bolts are located on a



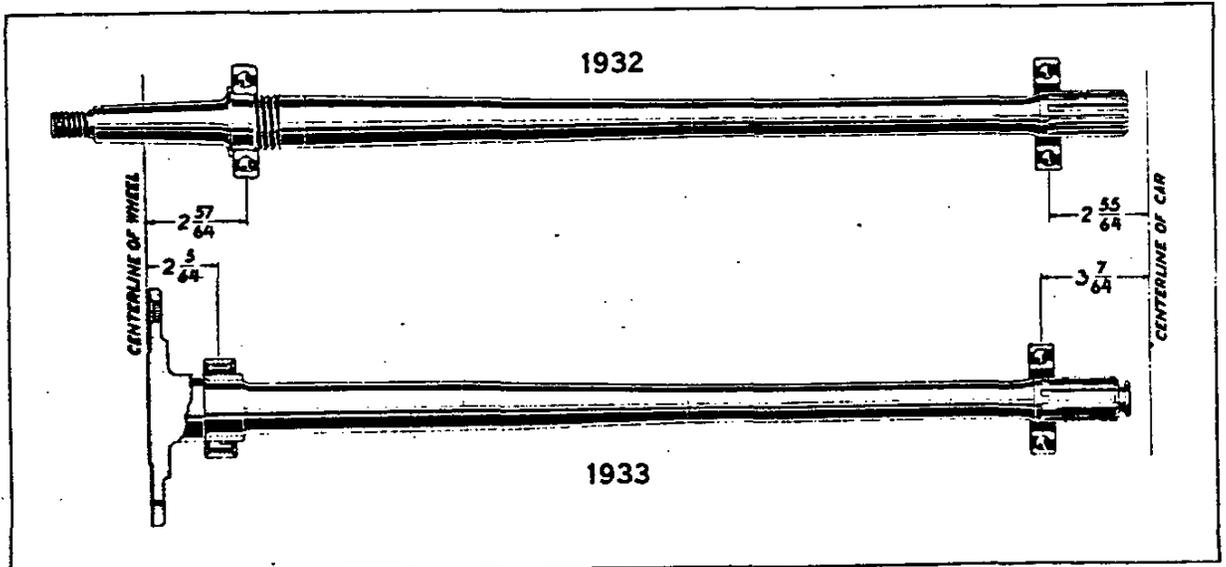
larger circle and the flange is increased in diameter. The shape of the carrier walls is improved to give greater strength which is still further increased by the improved ribbing.

The teeth of the new ring gear and drive pinion are redesigned for more quiet operation. The pinion has nine teeth and the gear thirty seven as compared with ten and forty

one. This reapportionment slightly increases the gear ratio, and as the lesser numbers of teeth are disposed on the same pitch diameters, the teeth are wider and therefore stronger.

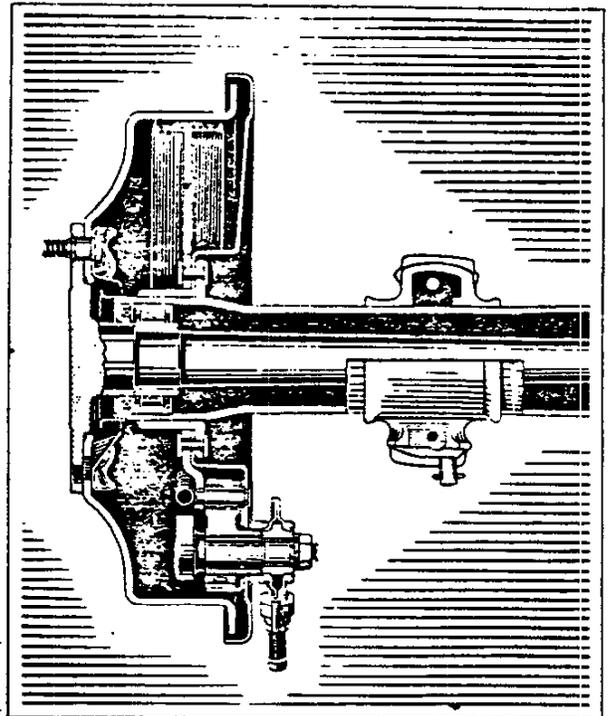
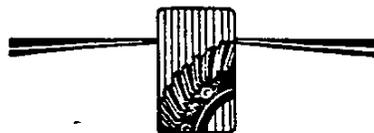
The ring gear is attached to the differential case by twelve rivets spaced on a larger circle. The rear pinion bearing is redesigned to reduce deflection between the ring gear and pinion. It has a larger bore and a greater number of smaller diameter balls. The increased bore permits a like increase in the stem diameter of the drive pinion. This increased diameter extends forward to the front bearing, forming an integral spacer between the two bearings.

The axle shaft rigidity is increased by the use of a double taper construction. Its wheel hub is forged integral at its outer end. This results in a stronger, more rigid structure and eliminates the necessity for the long tapered spindle on which the separate hub was formerly mounted. The outer end of the shaft is mounted in a Hyatt roller bearing having sixteen rollers  $9/32$  in diameter and  $5/8$  long. This wheel bearing is moved outward over one inch so that the load is applied closer to the center of the wheel. An oil deflector in combination with a leather seal insures against oil leakage at the outer end. The leather seal is kept in contact with the shaft by a coil spring which is wrapped about the leather exerting a con-





stant inward pressure. With this new construction the axle shaft and wheel may be easily taken out as a unit. This is accomplished by removing the inspection cover from the axle housing and removing the differential pinion and spacer thru the large opening in the side of the differential case. With these parts out of the way the axle shaft may be pushed inward until the "C" washer is clear of the counterbore and can be removed. The shaft then slides easily out of the splines in the side gear.



**COMPARATIVE SPECIFICATIONS**

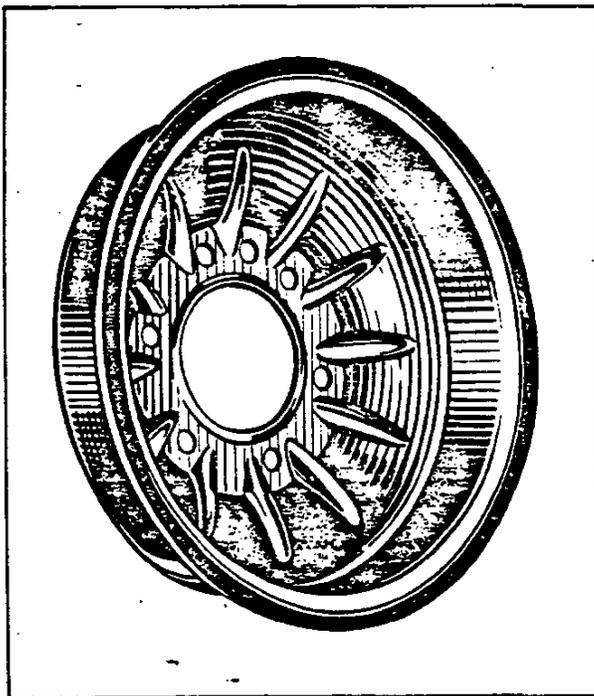
	1932	1933
Axle housing overall length .....	49 1/2	55 5/16
Banjo outside diameter .....	11 1/16	11 5/16
Banjo reinforcement .....	1/8 separate	5/32 integral
Brake flange .....	Malleable iron	Pressed steel
Differential case .....	2 piece	1 piece
Differential bearing span .....	5 23/32	6 7/32
Differential case flange diameter .....	7 1/4	7 7/16
Differential case ribbing .....	4 radial	4 radial, 4 lateral
Differential pinion pitch diameter .....	2.100	2.216
Differential gear bearing length .....	.910	.965
Differential gear pitch diameter .....	3.360	3.545
Differential carrier bolt circle .....	9 11/16	9 13/16
Differential carrier flange diameter .....	10 7/16	10 3/4
Differential carrier ribbing .....	4 radial	8 warped radial and lateral
Ring gear and pinion diametral pitch .....	4.373	3.947
Teeth in gear .....	41	37
Teeth in pinion .....	10	9
Gear ratio .....	4.100 : 1	4.111 : 1
Rear pinion bearing type .....	Radial	Pre-loaded radial
Bore .....	1.378	1.574
Number and diameter of balls .....	11 - 17/32 diameter	14 - 7/16 diameter
Pinion bearing spacer .....	Loose	Integral
Ring gear rivet circle .....	6 1/16	6 5/32
Number of ring gear rivets .....	10	12
Axle shaft design .....	Tapered spindle	Hub forged integral
Wheel bearing .....	New Departure Ball	Hyatt Roller
Wheel bearing oil seal .....	Felt	Leather with oil spring





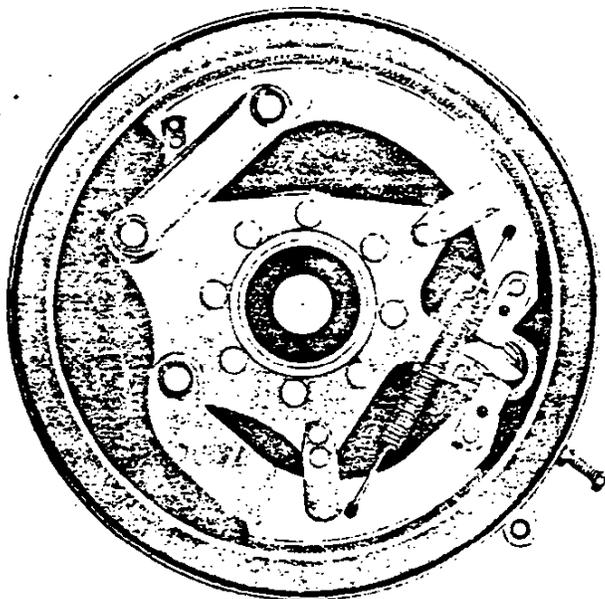
## BRAKES

The 1933 front and rear brakes are enlarged and repropotioned to provide deceleration in line with the increased performance of the engine. The same principles on which the highly efficient brakes of the past three years were based also form the basis for the new, larger brakes. The drums have an inside diameter of 12 inches and are wider to provide ample contact area for the new, wider linings. The increased diameter acts as a longer and more efficient lever arm at the end of which the frictional load is applied to the drum. The linings are wider and longer, the additional material being so disposed as to make the brakes more effective and to prolong the lining life. The rigidity of the drums is increased by the



addition of twelve radial reinforcing ribs. While the actuating cam retains the same contour, its integral shaft is lengthened to provide a greater bearing length. The webs of all brake shoes as well as the bearing plates on the long shoes are thicker. This provides increased area at the fulcrum points, reducing wear to a minimum. The anchor links are strengthened by the addition of flanges turned up along their sides.

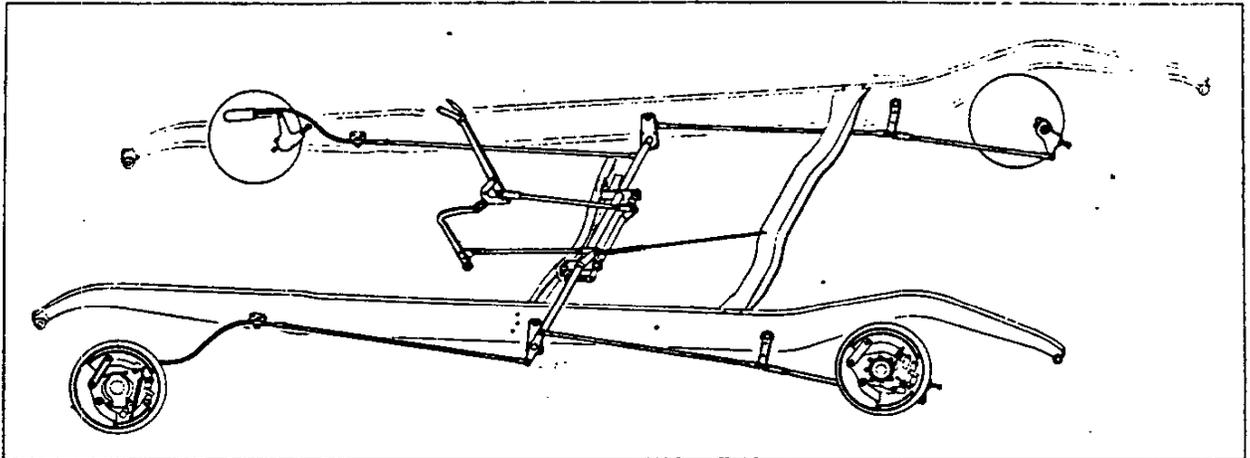
Cocking of the shoes and the resultant noise are eliminated by the use of springs which exert a direct pull and by guides of heavier gauge. A single leaf spring inserted between each long shoe and its outer guide exerts pressure against the shoe to insure its



smooth movement between the guides. This eliminates squealing which might be caused by looseness at these points.

With the new brake design the separate parking brake shoes on the rear axle are eliminated. By means of a "cut-in" system of linkage, both the front and rear brakes may be operated by either the foot pedal or the hand brake lever by the same type of action. This linkage is designed to conform to the "Hoover Code", and it is so arranged that no part which is subject to failure is common to both means of operation. The service brake cross shaft is larger in diameter at the middle and is flexibly mounted on the frame as heretofore. An additional forged lever is permanently pinned to the service brake cross shaft to provide the interconnection for operation of the service brakes by the hand brake lever. A separate cross shaft for the hand brake connections is mounted on the transmission support cross member. It is located just back of the ser-





vice brake shaft. The hand brake cross shaft is  $7/8$  in diameter and has the lever which connects to the hand lever securely butt welded to it, while the forged interconnecting lever is permanently pinned thru the shaft. The interconnection between the levers on the two shafts is effected by means of two sturdy stamped links, one on each side of the levers. A slot is provided in each link at the rear where the lever on the hand brake shaft engages. This permits the application of the brakes by the foot pedal without causing movement of the hand lever. Springs on the clevis pins upon which these links turn, prevent rattling. The clevis which connects to the foot pedal has an elongated slot to permit further application of the brakes by the hand lever beyond any point at which the pedal may

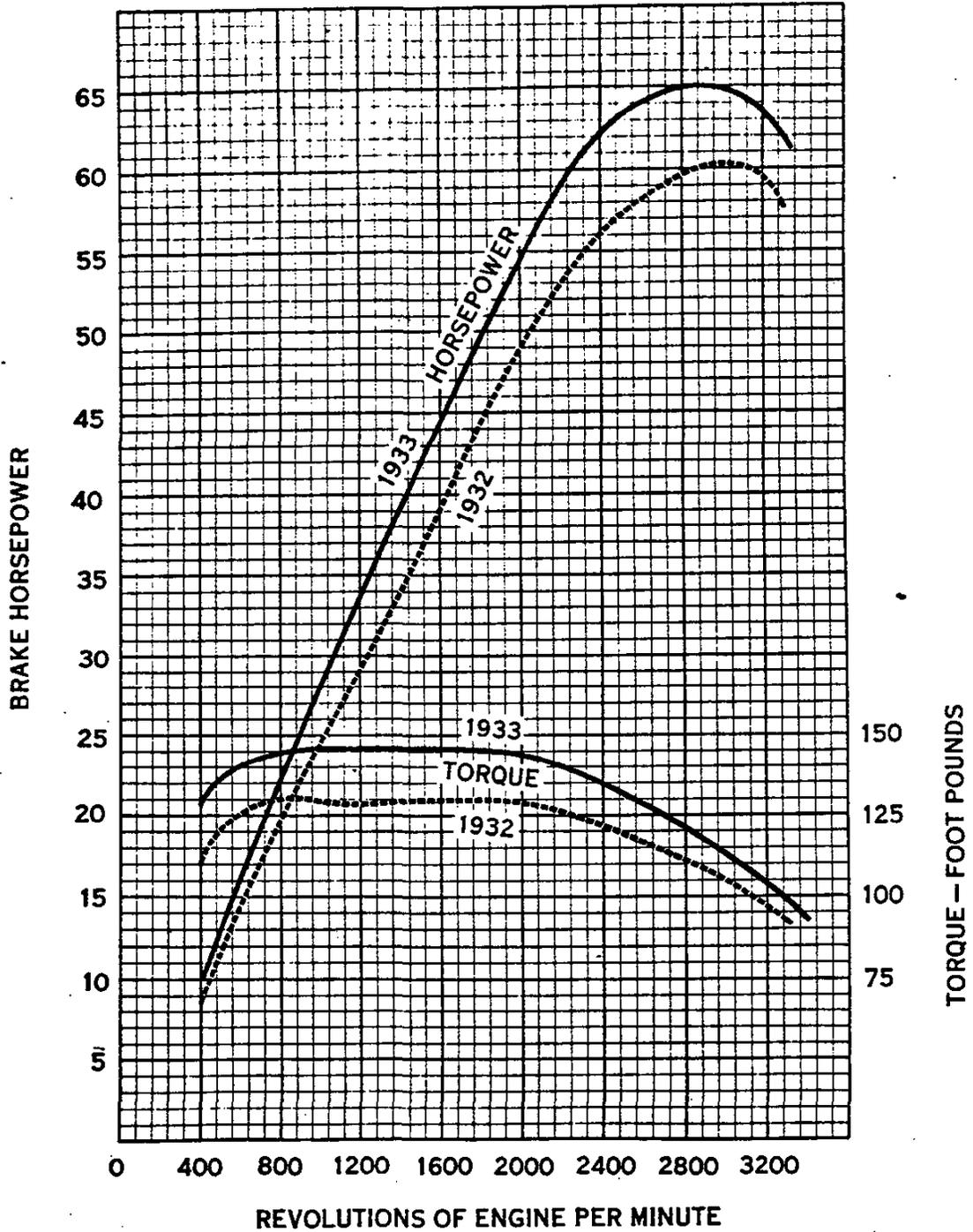
be set. The hand brake sector is provided with an additional notch to permit this increased travel. With this arrangement, additional braking beyond the range of pedal movement is always available.

The hand brake lever is improved by the addition of a rubber spacer between the handle on the brake lever and the ratchet grip. This spacer exerts pressure at this point, placing the lever, grip and spring under sufficient pressure to prevent rattles and squeaks.

Greased wicks are held between the two halves of the stamped braces to provide lubrication for the hand brake cross shaft. The outer operating lever which transmits power to the brakes is stiffened at the lower end which connects the front brakes.

**COMPARATIVE SPECIFICATIONS**

	1932	1933
Brake drum inside diameter .....	11 1/2	12
Brake drum flange diameter .....	13 5/16	13 13/16
Brake lining width .....	1 1/2	1 3/4
Overall length of short linings .....	5 29/32	6 3/16
Overall length of long linings .....	11 21/32	12 5/32
Service brake lining area per brake .....	26.35 sq.in.	32.10 sq.in.
Total service brake lining area .....	105.4 sq.in.	128.4 sq.in.
Parking brakes .....	Separate	Cut-in
Brake shoe web thickness .....	1/8	3/16
Bearing plate thickness .....	3/32	5/32
Anchor link section .....	Flat	Channel
Brake shoe guide thickness .....	5/32	3/16
Service brake cross shaft diameter .....	15/16	1 1/8
Number of hand brake cross shafts .....	3	1
Hand brake lever anti-rattle spacer .....	None	Rubber
Notches in hand brake sector .....	6	7

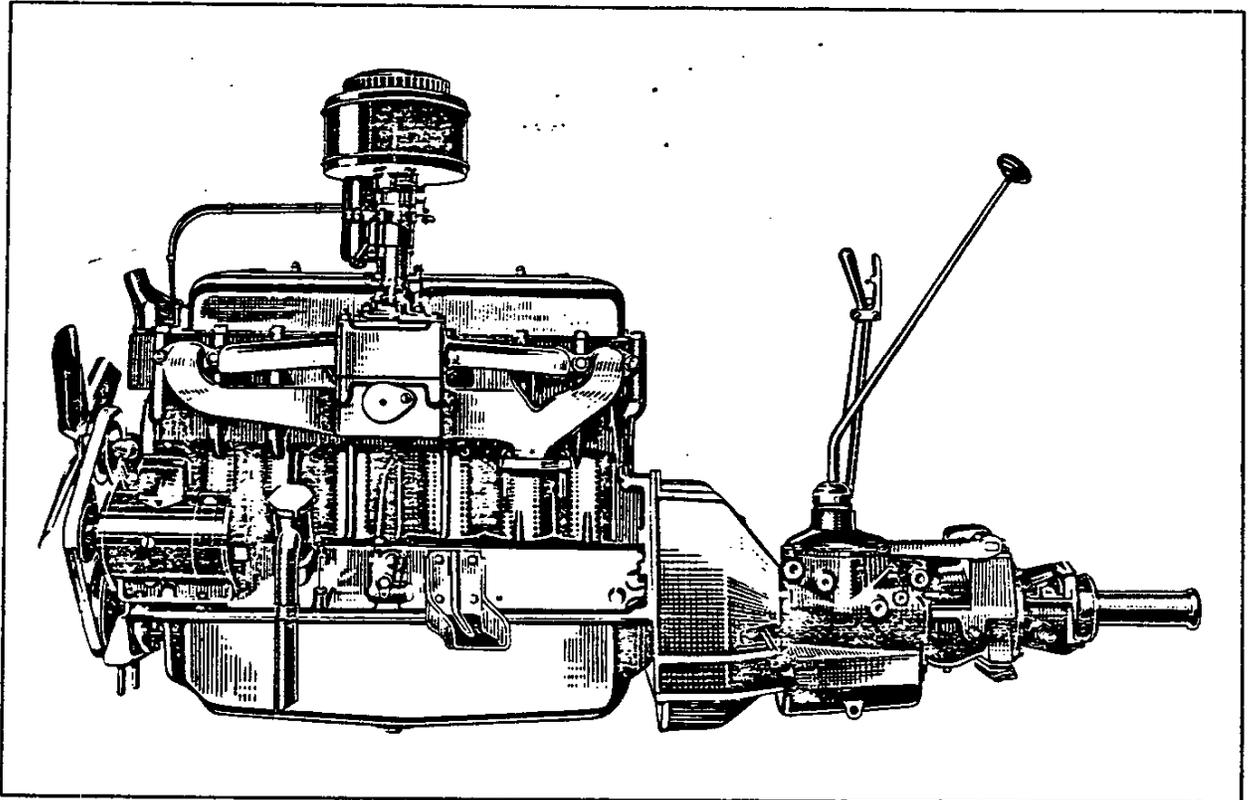


COMPARISON OF POWER AND TORQUE

ENGINE

The 1933 Chevrolet engine is more powerful and operates with greater smoothness and economy. These important improvements are the result of careful research and development extending over a period of more than two years. Each detail which contributes to the engine's improved operation and perform-

is also increased thruout the speed range, reaching a maximum of 146 foot-pounds at 1000 R.P.M. This increase in power improves the car performance at top speed, in acceleration and in hill-climbing ability. While the power characteristics of this engine are remarkable, more outstanding fea-

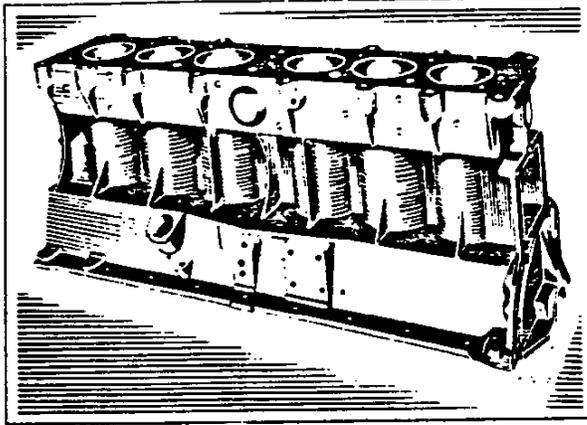


ance is proved by thousands of miles of road test and by hundreds of hours of work in the laboratory. This remarkable unit is not new, but is a further refinement of the sturdy Chevrolet six-cylinder engine which has given more than three million owners perfect satisfaction for many thousands of miles. The  $3 \frac{5}{16}$  bore is retained while the stroke is stepped up to 4 inches, an increase of  $\frac{1}{4}$  inch. This increases the piston displacement to 206.8 cubic inches. The horsepower thruout the speed range is increased by more than 10 percent, the maximum of 65 horsepower being developed at 2800 revolutions per minute. At 1000 R.P.M. 28 horsepower is delivered, increasing to 55 horsepower at 2000 R.P.M. The torque, of course,

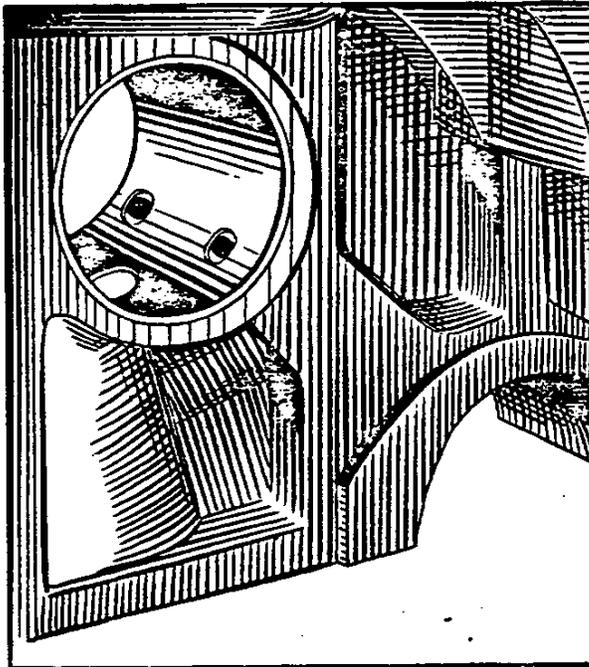
tures are its smoothness, quietness and low fuel consumption.

CYLINDER AND CRANKCASE

The cylinder and crankcase is higher and wider to accommodate the increased stroke. The increase in height amounts to  $\frac{5}{8}$ , although the crank stroke is only  $\frac{1}{4}$  longer. The additional height is utilized to provide ample clearances, and to provide for longer connecting rods which contribute to smoother operation. The right side wall of the crankcase is increased in thickness  $\frac{1}{32}$  with an additional  $\frac{1}{16}$  of thickness for a distance each side of the distributor boss. The left side wall is moved outward  $\frac{1}{8}$  at

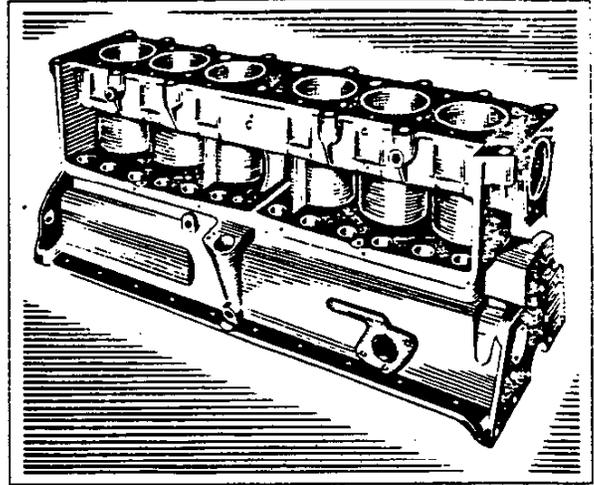


the bottom to provide crank clearance. The camshaft is raised to clear the crankshaft and connecting rods. This, of course, increases the timing gear center distance. A steel-backed, babbitt-lined bushing is provided for the center camshaft bearing. It is cylindrical in form with a single split. It is pressed into the crankcase and staked into a slot provided to prevent rotation and endwise movement. It is carefully reamed, and is provided with slots register-



ing with the oil leads which provide lubrication under pressure from the main bearings.

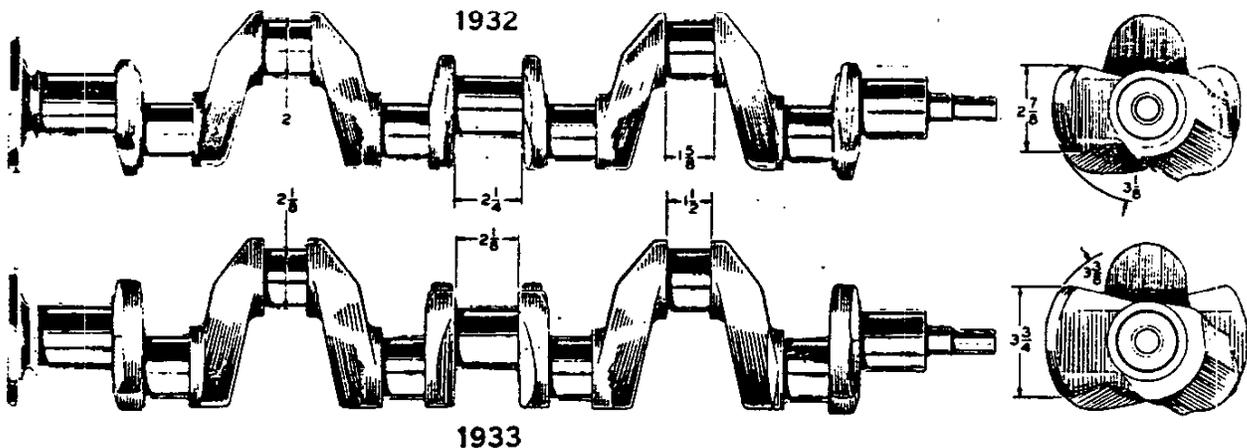
In addition to these improvements in design and construction, many minor changes, incidental to the adoption of other features, are incorporated in the cylinder and crankcase.



CRANKSHAFT

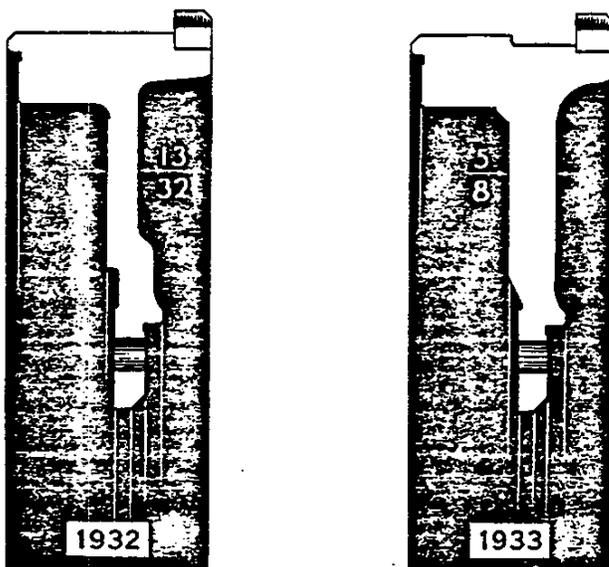
The heavier, stiffer crankshaft contributes largely to the increased smoothness of the engine. The counterweights are heavier because of their increased thickness, width and outside radius. Their moment arms are much more effective in counteracting the unbalanced centrifugal forces set up in the engine, because nearly all of the additional weight is located at a greater distance from the center. The long and short crank arms are also increased in width and thickness. The necessary space for this additional metal is obtained by a reduction of  $1/8$  in the width of the center main bearing and crank pins. The diameter of the crank pins is increased by  $1/8$ . The finished shaft weighs  $63\ 1/2$  pounds. The additional weight, the heavier arms, and the larger diameter of the pins combine to produce a crankshaft which is very rigid and subject to very small deflections under load, insuring long bearing life and exceptionally smooth operation. By the exercise of greater care in balancing, the maximum static out-of-balance of each end of the crankshaft is maintained below  $1/2$  ounce inch. Furthermore, the dynamic unbalance of the crankshaft is entirely eliminated. This is accomplished by main-

CHEVROLET 1933 PASSENGER CAR ENGINEERING FEATURES

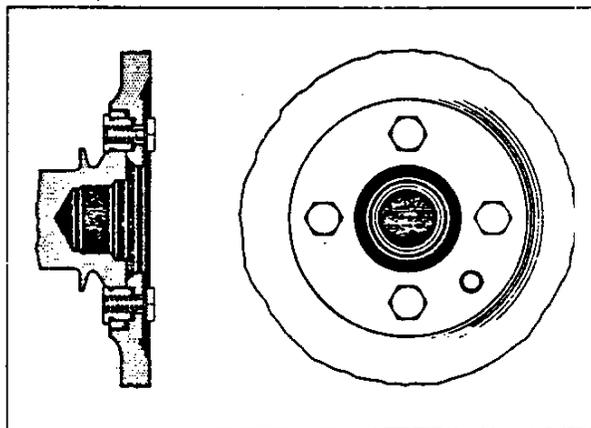


taining the static unbalance of each end in the same plane, which eliminates the multiplication of the forces thru the leverage of the crankshaft length.

transferred rapidly into the rim section where it is quickly dissipated into the surrounding air. This relieves the flywheel of strains due to heat, and prevents breakage. The diameter of the rim is reduced slightly to compensate for the increased weight in the web, maintaining the same flywheel effect.



In addition to the single plain dowel which locates and drives the flywheel, the four cylindrical nuts are lengthened to engage corresponding counterbored holes in the flywheel. This provides a five dowel drive instead of the previous design in which the

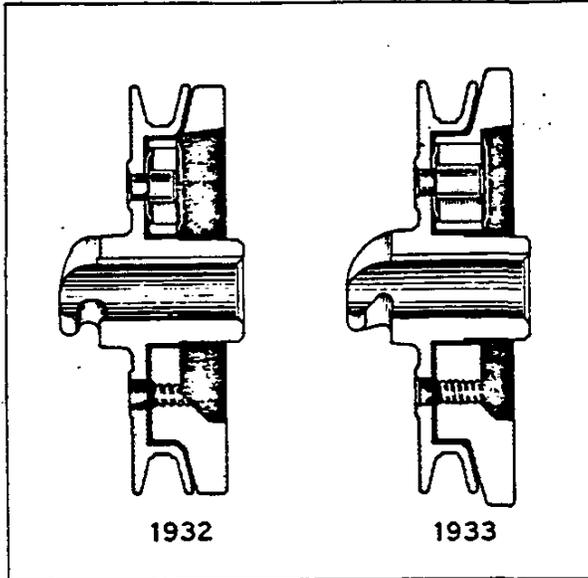


During the 1932 season the flywheel and its method of attachment to the crankshaft have been improved. The flywheel web was increased in thickness  $7/32$ . It is now blended more gradually into the greater volume of the rim section and the thinner center portion. This more gradual blending provides an adequate section thru which heat, that may be generated by clutch friction, is

drive was taken by a single dowel and four bolts. The bolt heads are enlarged to provide adequate bearing surface. The flywheel is balanced to much closer limits, the total permissible out-of-balance being  $1/2$  inch ounce.

**HARMONIC BALANCER**

Another important factor which contributes largely to the smooth operation of the engine is the heavier harmonic balancer. The fly weight is larger in diameter and considerably heavier. A greater number of leaf springs of lighter gauge and greater width give adequate resistance to the movement of

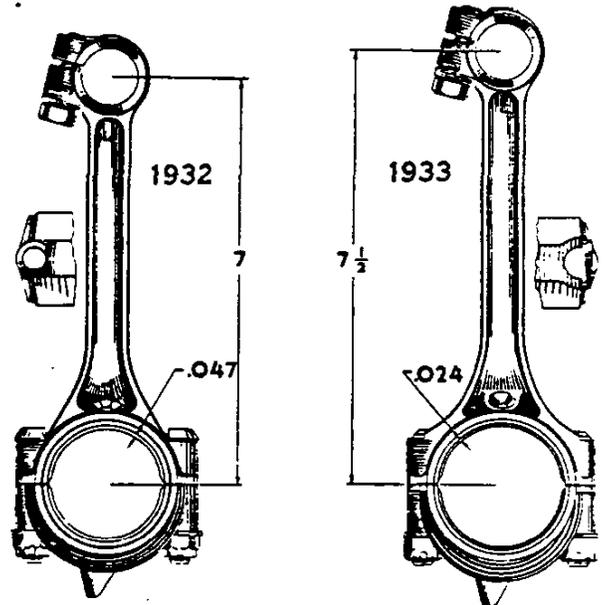


the heavier weight. The increase in the size of these parts allows more advantageous disposal of the metal in the weight, permitting it to be made of cast iron instead of malleable iron as heretofore. The harmonic balancer unit is tuned to 135 - 150 cycles per second to reduce the amplitude of the natural frequency of the crankshaft.

**CONNECTING ROD**

The connecting rod length is increased to 7 1/2 inches to provide for the longer stroke and to maintain smooth operation. The metal at the base of the rod is disposed more advantageously to provide a gradual blending from the I section to the heavy portion of the rod surrounding the upper half of the bearing. This is made possible by a new design of bolt which permits milling the flat on the connecting rod at a greater distance from the center. With the new bolt design, the rod is counterbored to clear the head, producing a local spot at which the rod sec-

tion is reduced instead of a continuous reduced section as heretofore. The bolt head is sheared to a double cylindrical diameter with short flats between, providing two points of engagement at a considerable distance from the center, to prevent rotation of the bolt. This improved design relieves any possible strains and deflections of the rod, which might cause cracks in the bearing. The connecting rod bearings are larger in diameter and slightly narrower. They are of



high grade babbitt, centrifugally cast, and bored to close limits. The babbitt is thinner to insure more efficient conduction of heat from the bearing surfaces.

The entire machining line-up of the connecting rod is such as to eliminate any straightening operations between the boring operations. The effect of this improvement in manufacture is to produce rods which will retain their original alignment for a considerably longer time.

**PISTON**

The piston is redesigned to provide more adequate oil control on the cylinder walls and to permit the equalization of the weight of all pistons. The improved oil control is effected by an increase in the number of oil return holes from 5 to 12. A ring is pro-



vided at the bottom of the piston in which excess stock is left for a machining operation which equalizes the weight of all pistons within 1/8 ounce.

The width of the oil control piston ring is increased to 3/16, increasing the life of the ring by providing a greater width of lands where they contact the cylinder bore. The increased width also renders the oil control rings less susceptible to breakage in handling.

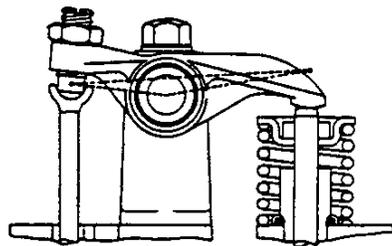
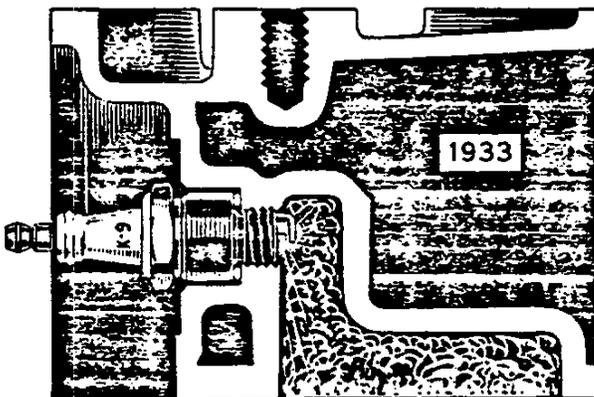
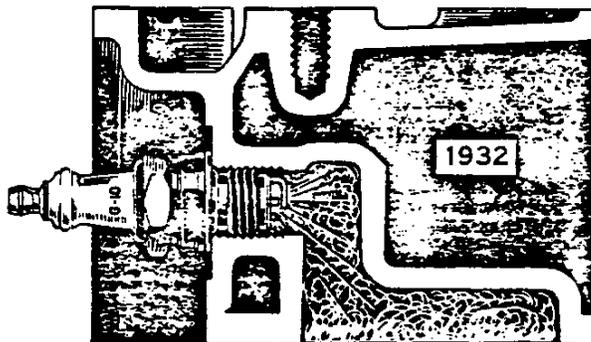
CYLINDER HEAD

The cylinder head is redesigned to provide a larger combustion chamber to maintain the compression ratio of 5.20 with the larger displacement. This necessitates an increase in height with which are combined many pattern changes to facilitate casting of this part. Ribs are added between the rocker shaft support bosses and the bosses surrounding the push rod holes to increase the

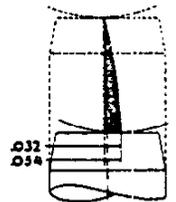
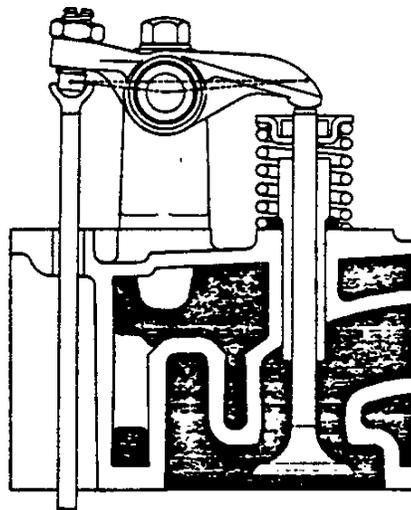
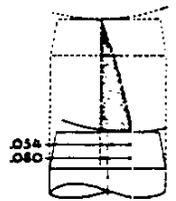
strength and rigidity of the cylinder head roof, and to prevent excessive deflection due to pressure imposed by the rocker arm action. This change tends to maintain valve adjustment for a longer period.

The width of the valve seats is reduced. This reduction results in a small seat surface with a correspondingly higher unit pressure, insuring a better seal and longer intervals between valve grindings.

The spark plug is reduced in size and is repositioned so that the electrodes are at the edge of the combustion chamber. This prevents the trapping of dead exhaust gas around the electrodes, and results in smoother combustion and reduced fuel consumption. The spark gap is increased to a minimum of .030 to insure smooth idle performance and smooth operation under leaner road load driving conditions. A hollow copper gasket under the spark plug body assures a more leak-proof joint and better heat conductivity.



1932



1933

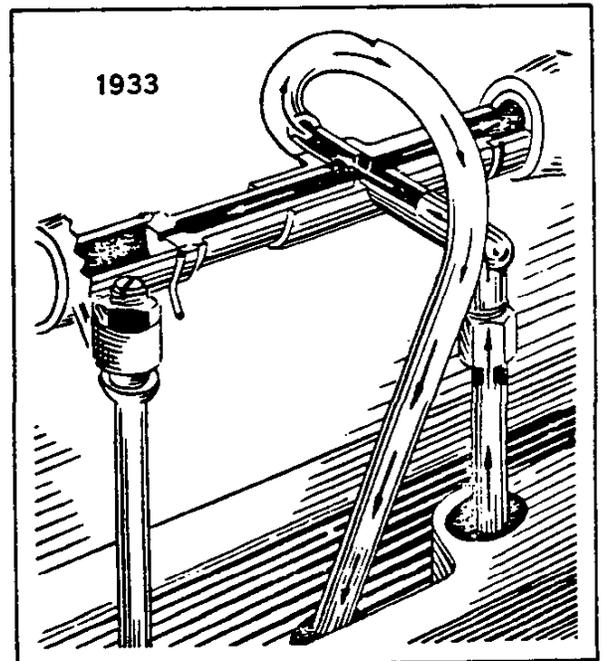
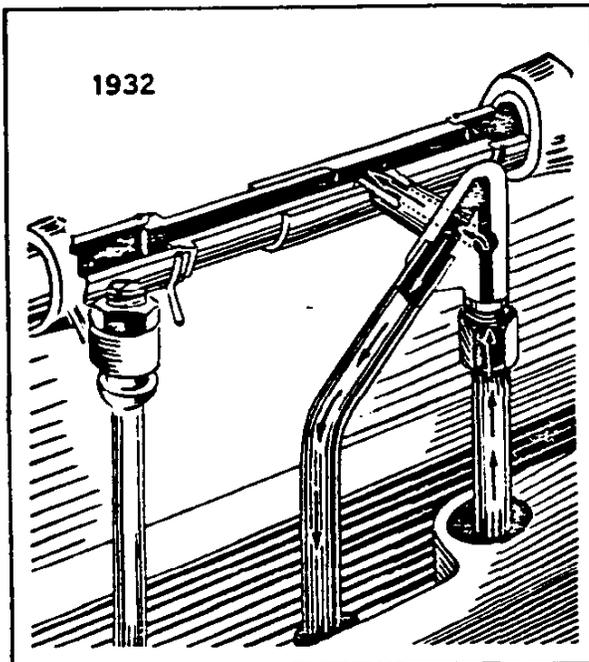
The operation of the valve mechanism is improved by a revision of the rocker arm geometry. By the introduction of slight changes



in the dimensions of the rocker arm, the contact area between the end of the valve stem and the cylindrical foot on the rocker arm is concentrated considerably closer to the center of the stem. The reduction in the cylindrical radius on the end of the arm also contributes to this improvement. This reduces the side thrust of the valve stem in its guide, reducing wear to a minimum.

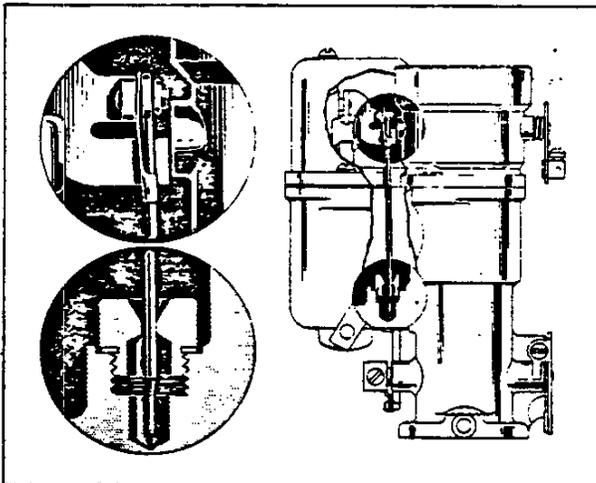
The ribbing of the rocker arm is redesigned to increase its stiffness and to insure adequate clearance over the valve spring cup. The rocker arm bushing is changed from a split hard rolled bronze bushing to a solid cast bronze bushing. The depth of the groove is increased to insure adequate lubrication. The valve spring is of the same anti-vibration design of previous models with an increase in pressure consistent with the increase in car speed. It is highly desirable to keep the weight of the reciprocating valve parts as low as possible. To this end, the weight of the valve tappets is reduced by a decrease in the thickness of their walls. To insure proper lubrication of the overhead valve mechanism, it is necessary that the oil be distributed uniformly to the front and rear rocker shafts and that a proper feed be provided from the shaft to the rocker arms.

Also, it is essential that a supply of oil be available to the operating parts at relatively low engine speeds, and that a proper control be provided to prevent over-oiling at high engine speeds. Provisions to adequately meet these requirements are made in the 1933 engine. The restriction in the sleeve leading to the rear rocker shaft prevents over-oiling caused by the inclination of the engine in the chassis. The metering oil groove in the rocker arm bushing insures an adequate supply to each arm. The overflow pipe is an overhead loop with a vent hole near its highest point. This construction prevents oil from being returned to the crankcase before an adequate head is built up to supply the shafts. The vent hole prevents the siphoning of oil from the shafts. With this arrangement, the two hollow rocker shafts remain full of oil when the engine stops, and since this oil cannot flow out without overcoming the head of the overflow pipe, there is always a supply of oil available to the rocker arms when the engine starts. The looped overflow pipe also functions to prevent over-oiling at high engine speeds. This system is designed to give initial pressure at low engine speeds and a limited pressure at high engine speeds.

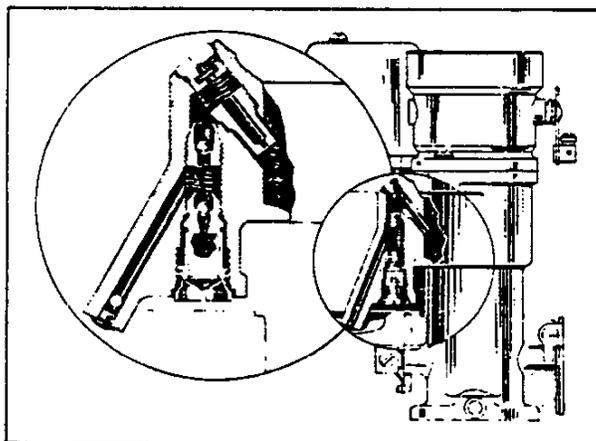


CARBURETOR AND MANIFOLDS

The entire fuel induction system is refined to insure smoother engine operation and better economy by improved distribution, heat control and carburetion. A more uniform fuel mixture ratio is maintained because of the improvements in the metering rod and its mounting. A light spring is added at the

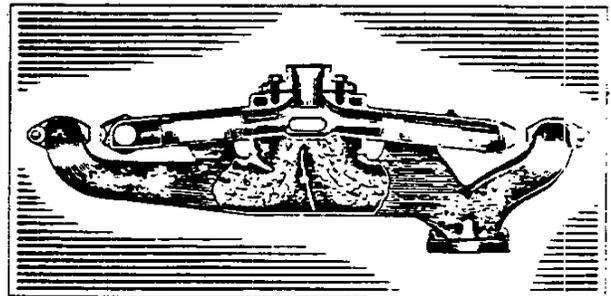


upper end of the metering rod at its point of attachment to the accelerating pump lever to restrict vibration of the rod and to hold it gently against the side of the jet orifice. This action stabilizes the mixture delivered to the engine and results in increased overall fuel economy. The lower end of the metering rod is redesigned to incorporate three steps or sizes. The largest

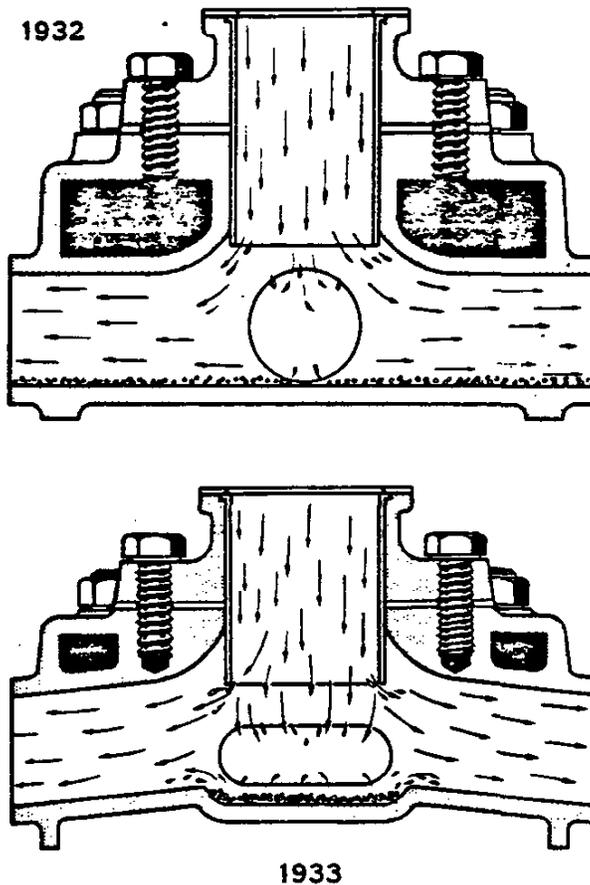


diameter controls the mixture at low speeds; the intermediate diameter controls the mixture at medium speeds; and the small diameter controls the full throttle mixture at all car speeds where maximum power is required. In this manner the mixture is more accurately controlled, under all conditions, with a further increase in fuel economy.

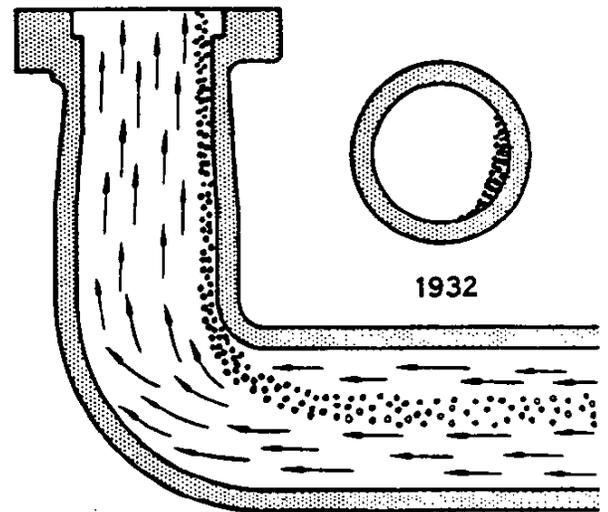
The accelerating pump stroke is altered to meet the improved manifold conditions, which permit the elimination of the pump discharge beyond half throttle, thereby saving fuel. The accelerating pump now delivers fuel only when the accelerator pedal is suddenly depressed. This provides for maximum acceleration and is accomplished by the addition of a small air bleed in the top of the float chamber. This air passage is automatically closed by a small check valve whenever the accelerating pump is operated, but it is opened as soon as the accelerator becomes stationary, thus stopping the flow of fuel.



The intake manifold arms are inclined, to prevent wet gas from flowing to the rear cylinders because of the inclination of the engine in the chassis and the additional slant when climbing hills. A flat area is provided at the center of the manifold to collect the wet particles of gas which may leave the air stream and flow down the walls. This area is surrounded by a wall sufficiently high to prevent the liquid from running down the inclined arms. The splashing caused by the motion of the car, and the passage of the air stream over this "pan" picks up the wet particles and returns them into the air stream. The center port is flattened to provide for equal distribution of fuel to all ports. Each arm is of "D" section for its major length, with the flat on the bottom. This section is maintained

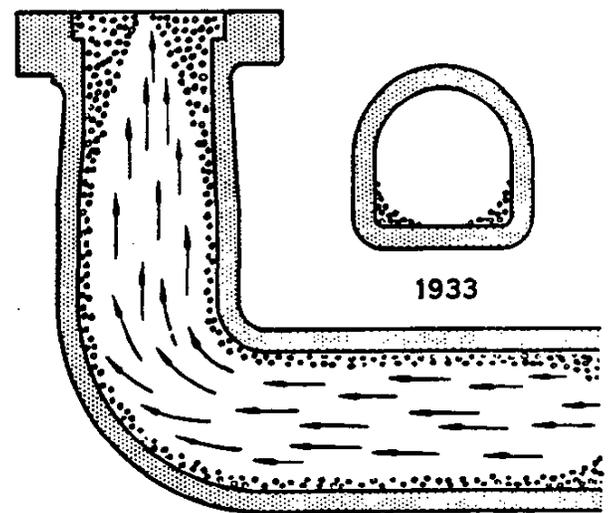


and by making the bends into it more gradual. This construction also permits more definite division of the arms leading from the fifth and sixth cylinders. Warpage is prevented by the addition of two sturdy ribs cast on the outside surface of the inner wall of the manifold. This elimination of warpage, in combination with the larger, steel-faced gaskets, insures more permanent leak-proof joints. The heat control valve is provided with thermostatic operation. The movement of the valve is reversed so that the exhaust

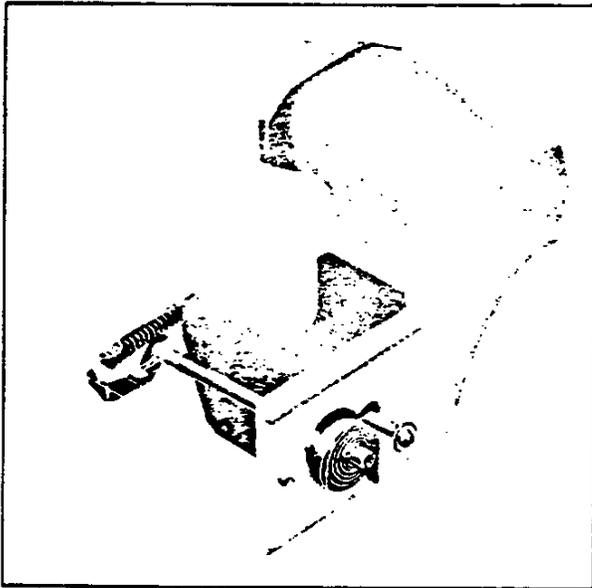


from the center of the manifold to a point just beyond the elbow where the arm bends to join the cylinder head end port. At this point the "D" section blends into a round section which is continued to the termination of the arm. The flat portions of the arms, like the flat "pan" in the center of the manifold, collect any wet particles of gas which may leave the air stream, and, due to the inclination of the arms, distribute them equally to the end ports. The sleeve in the riser is in such relation to the arms and center ports as to provide proper distribution for maximum power with minimum fuel consumption.

The exhaust manifold is redesigned to insure free flow of the exhaust gases at their entrance to the exhaust pipe, to prevent warpage due to heat, and to insure automatic heating of the explosive mixture. Free flow is provided by slightly lowering the flange



gas pressure tends to close off the passage to the intake manifold. The outer end of the heat valve shaft is slotted to receive a flat spiral thermostatic coil which holds the valve open until the temperature is sufficiently high to contract the coil. When this high temperature is attained, the return spring at the inner end of the shaft, assisted by the pressure of the exhaust gases, returns the valve to its horizontal, or closed position. When in this position, the exhaust gases are excluded from the passage to the intake manifold, and pass straight thru the exhaust manifold to the pipe. The thermostatic coil is housed in a stamped cover with large slots to permit the free passage of air over the coil. A steel disc is pressed on the shaft between the outer wall of the mani-

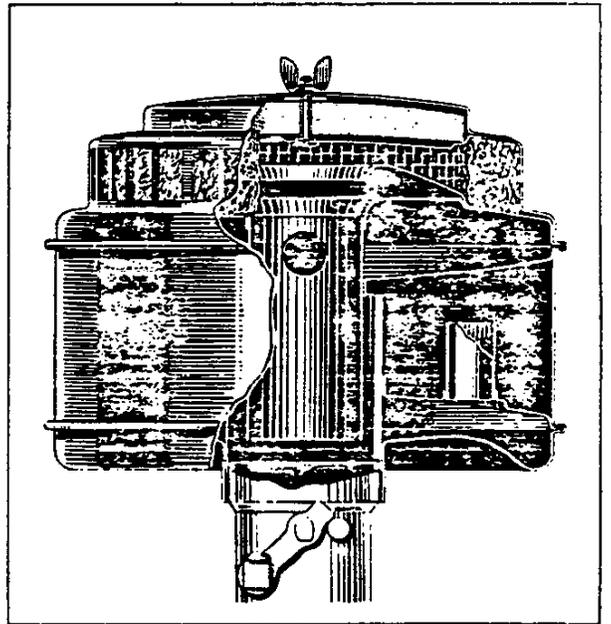


fold and the thermostatic coil to prevent the flow of excessive heat directly from the manifold to the coil. A turned-over end on the coil engages the edge of one slot where it is anchored by the initial deflection of the coil. The spring on the inner end of the shaft hooks into a stamped lever with its other end anchored in such a position that it holds the valve in the "heat off" position unless the thermostat, which opposes the spring, cools, and puts heat on. This thermostatic control insures proper adjustment of the heat valve at all times in rela-

tion to engine temperature. With thermostatic heat control, the manual operations required of the driver are reduced, leaving him free to give his entire attention to the operation of the remaining controls. He is relieved of the necessity of guessing whether his engine is at the proper temperature to warrant closing the valve. The proper operating temperature of the explosive mixture, which is always insured by this thermostatic control, has a marked effect on fuel economy and smoothness of engine operation.

#### AIR CLEANER AND INTAKE SILENCER

The new, combined air cleaner, intake silencer and flame arrester is designed on the same general harmonic principle as that previously used. It is larger, stronger and more efficient to accommodate the requirements of the increased engine horsepower. It silences both the hiss of the incoming air and the roar caused by oscillation of the air column in the intake manifold. The filter element is composed of a greater amount of copper gauze upon which dust, dirt and grit are deposited, thus insuring cleaner air in the intake system. This greater amount of gauze



also provides greater flame arresting qualities. The resonance qualities are improved by a general redesign of the unit upon a larger scale, and by the addition of two expansion chambers, the walls of which also provide extra strength to the entire structure. One of these added chambers is located at the base of the induction chamber with an annular opening of the same diameter as the passage to the carburetor. The other is located at the top of the main body with three openings to the passage tube. The great speed at which air is drawn to the carburetor causes a hissing sound. The waves of this sound are partially absorbed by the fire-proofed felt at the top of the silencer and are fully silenced by neutralizing waves set up by the vibration of the air in these two chambers.

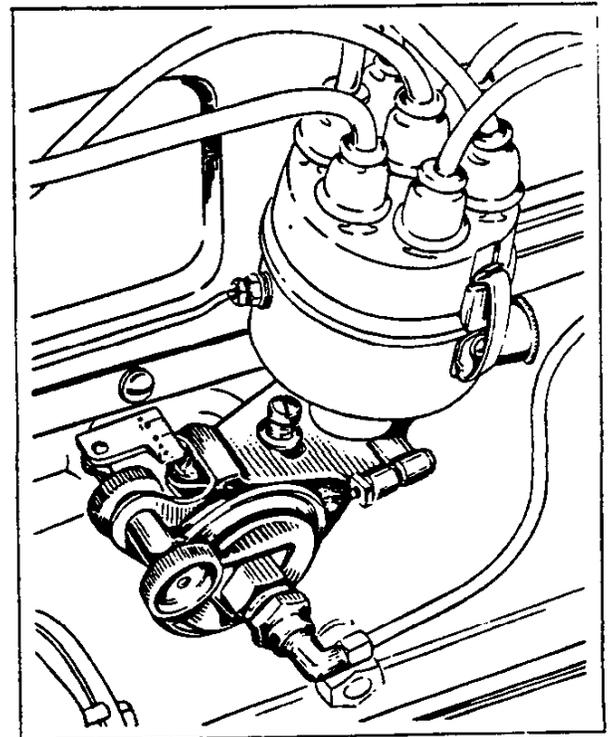
The repeated explosions of the engine cause oscillation of the air column in the intake manifold with a resultant roar which would be extremely disagreeable were it allowed to reach the atmosphere. This noise is eliminated. Its sound waves pass between the walls of the passage tube and a tube which surrounds the passage tube to enter a large resonance chamber similar to that used in the previous model. In this chamber and in an interconnecting chamber located directly under it, counteracting sound waves are set up which completely neutralize those of the roaring noise. The volume and construction of all expansion chambers are scientifically developed to produce maximum efficiency.

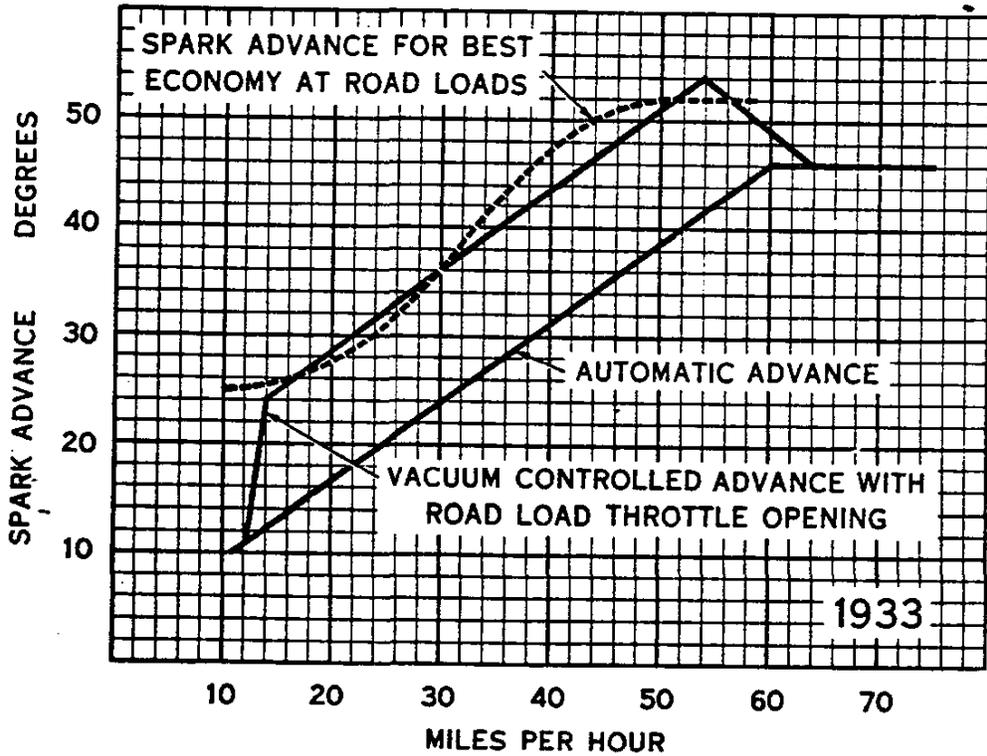
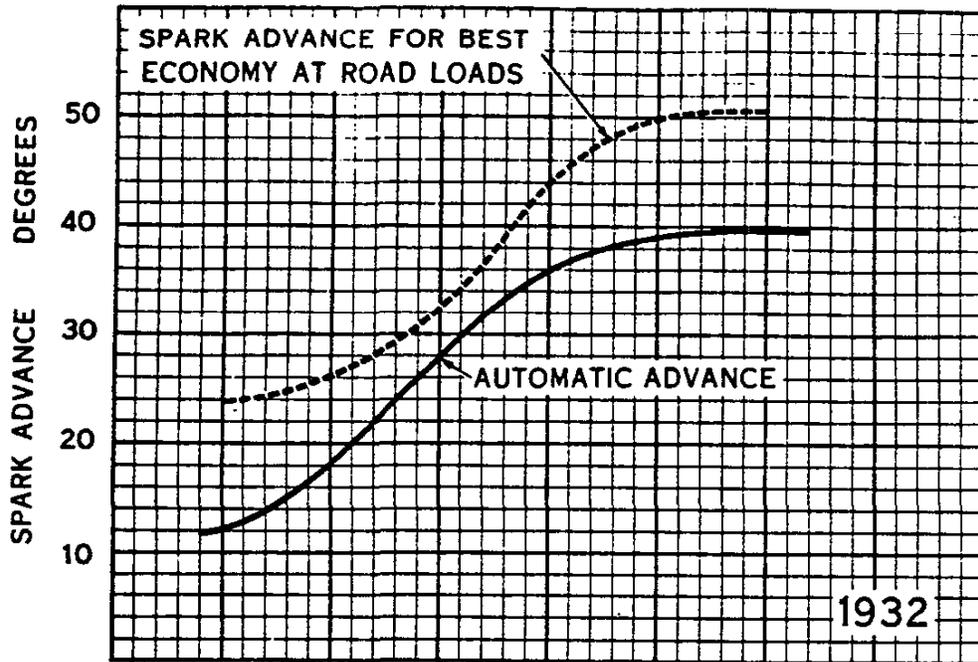
#### VACUUM SPARK CONTROL

In addition to the automatic spark control, which is actuated by centrifugal weights in the distributor body, an additional advance control is provided. This is actuated by the vacuum in the induction system. The automatic spark advance control responds to variations in engine speed regardless of load conditions. The vacuum control, however, operates only when road load conditions are such that the throttle valve is just partly open. Thus two separate automatic controls are provided to insure nearly perfect spark advance whether the engine is operating under full throttle or part throttle conditions. With this arrangement the manual

control of the spark from the driver's seat becomes unnecessary.

It will be noted from the accompanying comparative diagrams that while the automatic advance provided by the speed control mechanism is nearly ideal for full throttle operation, it falls far short of providing maximum economy at part throttle. Under this condition, as the diagrams show, the vacuum control provides additional spark advance which very nearly coincides with that required for the best economy. Thus, the two controls in combination provide the proper spark advance under all conditions of operation and insure maximum fuel economy and most satisfactory engine operation by insuring more complete combustion. The operation of the vacuum control and its manual adjustment is as follows: The advance arm, which is clamped to the distributor body, is actuated by a diaphragm to which it is connected by a rigid link. The diaphragm is rigidly mounted in relation to the crankcase. A small suction pipe connects the diaphragm chamber with the throat of the carburetor body through a small hole just above the edge of the throttle valve. Through this connection intake suc-





SPARK ADVANCE CURVE

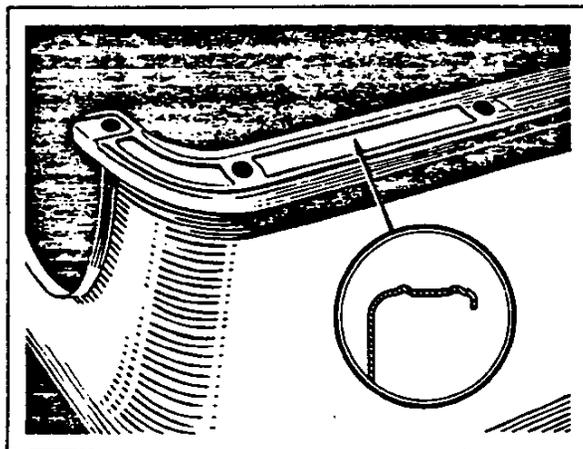
tion is applied to the diaphragm causing the distributor to advance in relation to the suction.

The distributor body is larger in diameter to provide increased spark range and to allow more space for the weight and spring mechanism inside. The terminals are also located on a larger circle. The automatic centrifugal advance control has a greater range of action, the variation of which is maintained within closer limits.

#### OCTANE SELECTOR



An Octane Selector is provided at the ignition distributor to permit the manual adjustment of the advance arm. With the wide variety of motor fuels which are now available to motorists, it is necessary to provide means by which the spark timing may be easily adjusted to suit the octane rating of the particular fuel in use. With the Octane Selector adjusted to the proper setting, satisfactory performance from a knock standpoint can be obtained, even when the cheapest fuel is used. Adjustment of the Octane Selector is effected by means of a large, knurled nut and check nut. As these are screwed inward or outward the position of the distributor advance arm in relation to the mounting bracket is changed, advancing or retarding the ignition spark ten degrees. The stationary bracket is graduated in degrees of flywheel rotation.



The pointer moves with the advance arm and vacuum control diaphragm. While the graduations permit definite adjustment when tuning the engine, the intention is to keep the pointer at zero when servicing the car, thus leaving a full ten degree range of spark adjustment in either direction. These graduations also provide for resetting the adjustment to any previous position, if desired. In addition to compensating for fuels of different octane ratings, the Octane Selector also provides adjustment of the spark timing to suit varying conditions of the engine and varying climatic conditions.

#### OIL PAN

The oil pan and all its seals are improved to prevent oil leakage. The entire flange surface is made much more rigid by the addition of narrow embossed beads which blend with bosses at each of the bolt holes. At the front bolts a narrow dam is embossed so as to stiffen the corner of the pan and exert extreme pressure. This flange structure increases the unit pressure on the gaskets insuring a tighter and more leak-proof double joint. The increased width and thickness of the gaskets also tend to reduce the possibility of leakage. The cork seals at the front and rear bearing caps are also increased in thickness; and the grooves in the caps are of such depth as to insure a tight leak-proof seal.

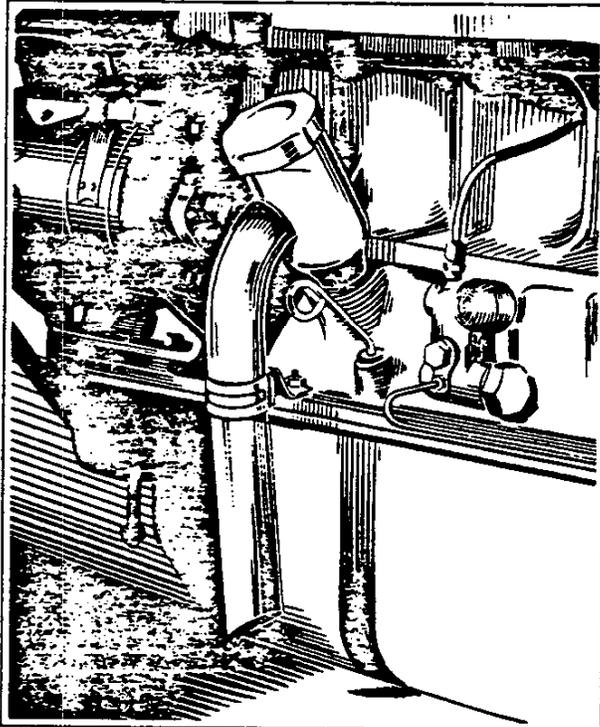
#### OIL PUMP

The tendency of oil to leak from the crankcase at the upper end of the distributor boss is eliminated by an enlargement of the milled flat on the side of the oil pump body which acts as an oil return passage. This permits the free flow of oil back to the oil pan before it can be forced along the distributor body to the point of leakage.

#### OIL FILLER TUBE CLAMP

The clamp which secures the oil filler and ventilator tube to the crankcase is redesigned to provide a more secure mounting. The clamp bolt and nut are replaced by an integral tongue and slot connection. The clamp

is squeezed tightly around the tube, being slightly pressed into the tube metal except where a relief is provided by a long slot in its body. A tongue at the clamp end is clinched after passing thru a slot in the bracket portion. The clamp is tightly drawn before the clinching. This method of clamping prevents rotation and endwise movement of the tube in the clamp.

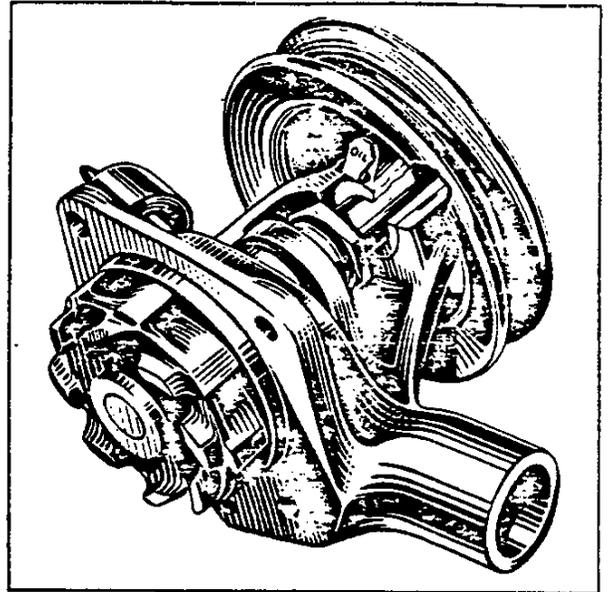


OIL LEVEL GAUGE

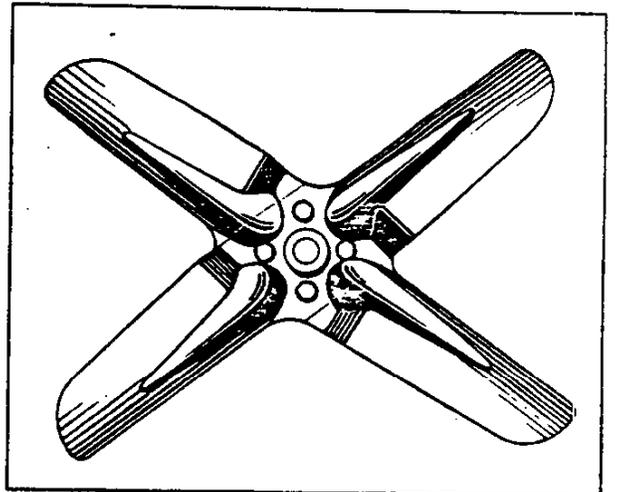
Another engine refinement is an improved oil level gauge rod. This is made from round steel wire, for greater rigidity, and has a looped handle which extends farther from the crankcase, for greater accessibility.

WATER PUMP

The lubrication of the front Durex bushing in the water pump is improved by the addition of an annular groove and an oil cup. With the addition of these two features a larger volume of oil is held in reserve to supply the needs of the porous bushing. In the previous design oil was fed directly to



the bushing from above thru an unprotected hole. Thus the bushing received only as much lubricant as it could absorb at the time of filling plus a small amount which might lie on top of the bushing until it was splashed out by the movement of the car. In the new design the walls of the bushing are still permitted to soak up as much oil as they can hold at the time of filling, and, in addition, the annulus around the entire periphery of the bushing as well as the feed hole and oil cup are filled. The cup insures retention of the oil until it is absorbed by the bushing. This improvement increases the life of the bushing and shaft.



FAN

The harmonic principle on which the 1932 fan construction was based is applied again, in another form, to the design of the new and improved 1933 fan. While all four blades are of the same width and have the same pitch, they are staggered angularly 15 degrees from equal spacing to break up the frequency of the fan vibrations. This fan operates with astonishing quietness and efficiency, delivering a large volume of air for the adequate cooling of the more powerful engine.

ENGINE MOUNTINGS

The powerful 1933 engine is mounted on the frame according to an entirely new principle known as "Sta-Namic Balance". This principle takes its name from the two outstanding causes of undesirable engine sensation, the effect of which it eliminates. These causes are residue static and dynamic forces, and they are present in all engines whether they have sixteen cylinders or only four cylinders. These residual forces are at a minimum in engines which are inherently in balance, and they are definitely eliminated in engines mounted according to the "Sta-Namic Balance" principle. With this mounting, which was evolved by Chevrolet, the undesirable engine sensations are eliminated, leaving only the sensation of horsepower being delivered to the wheels quietly and smoothly, very much like the sensation of a clipper ship gliding



thru the water under the tremendous power of a high wind pushing the giant sails before it - smoothly and quietly. In the past it has been common practice to eliminate engine sensation by the application of very soft rubber to the engine supports. This permitted an objectionable amount of engine movement. This movement of the engine is undesirable, not only from a standpoint of durability, but also because the excessive movement of the controls in the driver's compartment is a constant reminder of instability, which has a dangerous, disturbing effect on both the driver and his passengers. In an endeavor to eliminate objectionable

engine sensations of all kinds, General Motors has pioneered the scientific investigation of engine movement and its causes. From its investigations on the dynamometer, in the laboratory and on Proving Ground roads and hills, certain facts were established. In order to deliver power to the rear wheels of an automobile, the power plant must be fastened to the frame in such a manner that it will not turn over backwards, itself, instead of driving the wheels. A very soft and flexible power plant mounting has this tendency with an effect similar to that of a man trying to push a heavy load with his feet on ice. He can push only to the extent that his feet will hold. When they slip, he



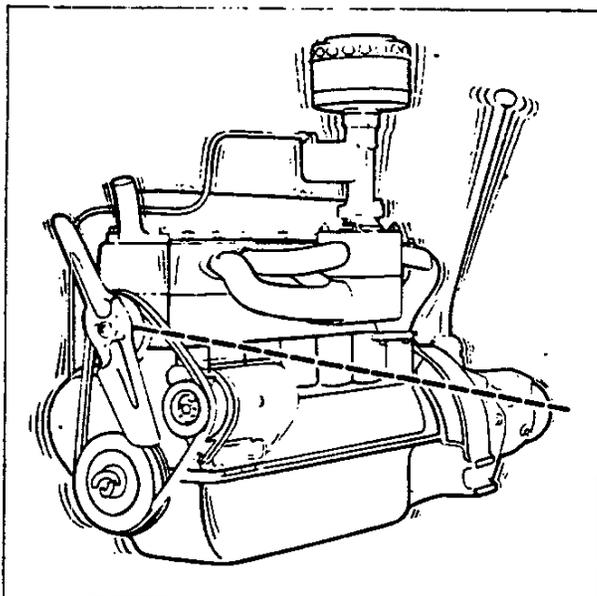
is powerless. To deliver full power, an engine must not give or "slip" in the frame. Therefore, it must be securely anchored to the frame.

Resistance to engine "slippage" must be built into the chassis. In meeting this resistance, the two sources of disturbing sensations - static residue and dynamic residue - must be considered.

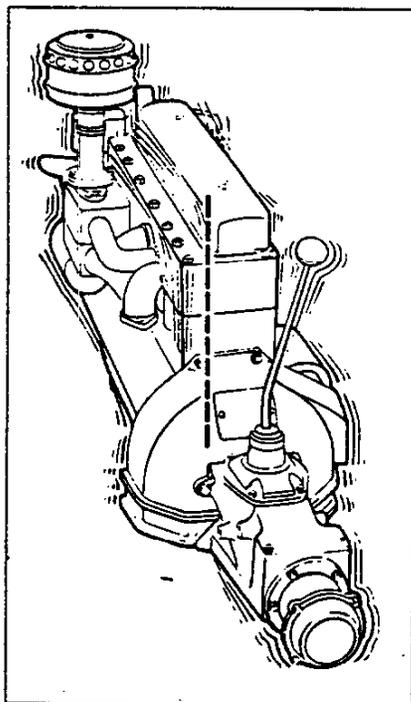
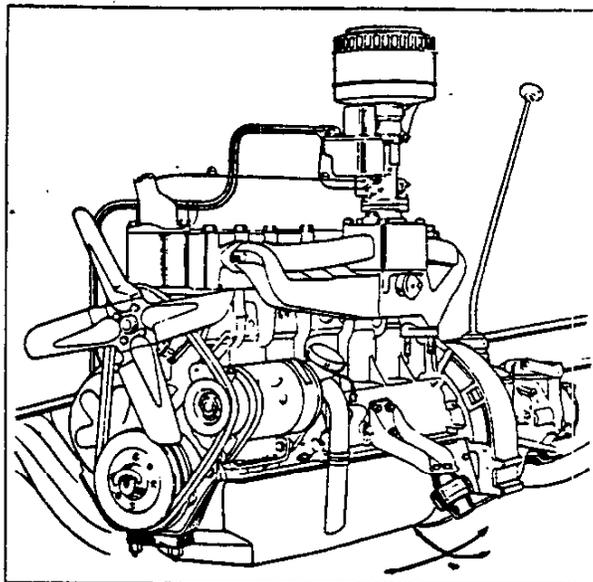
It is a recognized fact that when the power plant is anchored to the frame by the ordinary rigid, metallic mountings, objectionable engine sensations are set up in the car. These sensations which are present in all automobiles, are much more disturbing with engines which are not inherently balanced as is a six-cylinder engine.

Investigation pointed to the need of supporting the engine on the frame in such a manner that the resistance to the engine delivering its full power would be so located and designed as to nullify the disturbing effect of static residue and dynamic residue. With the cause determined and the direction of its effect established, the principle of "Sta-Namic Balance" was evolved.

The effect of static residue is a rocking motion. Provision against this effect has been made heretofore. However for the first time,



smoothness, without instability as indicated by excessive rocking, is obtained by the application of the principle of "Sta-Namic Balance".

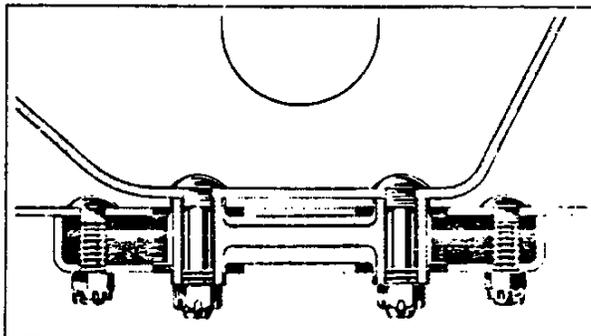


and only with "Sta - Namic Balance", effective provision has been made for the objectionable sensation due to dynamic residue, which tends to rotate the engine about itself. Heretofore, when the static residue alone has been considered, an excess of softness at the mounting points was necessary to

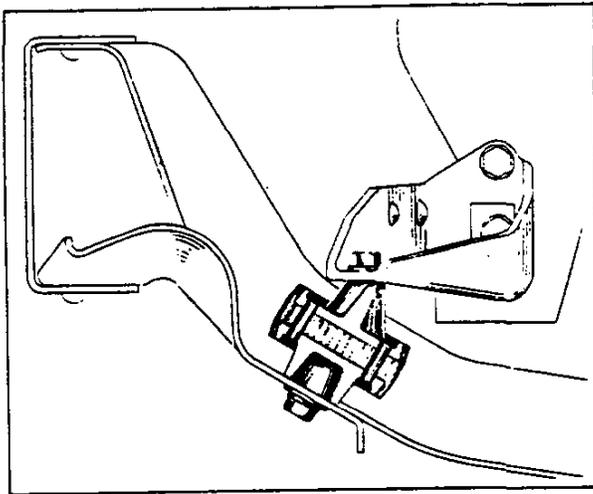
In the development of the 1933 engine mountings an extensive study of rubber was made. As a result many misconceptions concerning the properties of rubber were corrected, and many new methods of testing and inspecting rubber were evolved.

The front mounting consists of a malleable iron casting around which relatively soft rubber is moulded and vulcanized into a stamped steel retainer. This mounting differs from the 1932 mounting in that the casting through which the engine mounting bolts pass is in one piece, the two bosses being connected by an inverted "T" section web. The rubber is moulded so as to entirely cover the casting

obtain reasonable smoothness. However, the result was an objectionable rocking of the engine with its undesirable effect on the driver and passengers. When dynamic residue as well as static residue is considered, the engine may be mounted with relative rigidity. Thus, in the 1933 Chevrolet, quiet, durable

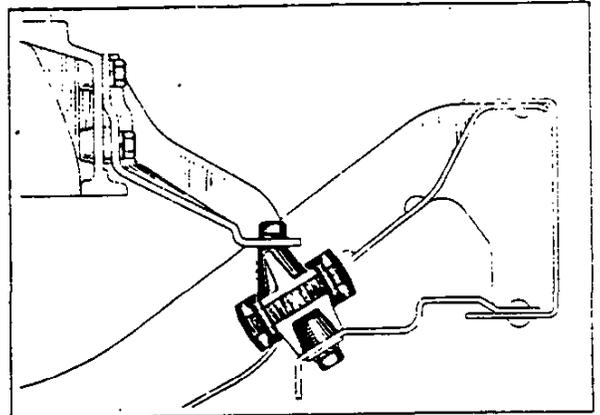


except on the faces of the two bosses. The rubber extends only a slight distance beyond the bosses. It is vulcanized to the retainers which has elongated slots providing generous clearance for the protruding rubber-coated bosses. In assembly the rubber is not compressed as in the previous design, permitting greater freedom for side movement. The two side mounting cushion units are identical. Each consists of two malleable iron castings, each of which has two tapped holes for attachment to the mounting brackets. They are separated by 1/2 inch of rubber which is securely vulcanized to each casting not only



at their adjacent flat faces, but around their entire periphery. The area and position of the vulcanized faces provide such a secure joint that a pair of mountings is capable of supporting, in tension, a weight equal to that of the entire car. The outer ring of rubber performs a dual function, affording additional security of the vulcanizing, and protecting the main body of the rubber from heat, oil and water. At the right side, one of these mounting cushions supports the engine on the sub-frame. It is attached to the front face of the clutch housing by two bolts and to a pad on the side of the clutch housing by two bolts, while two more bolts secure the cushion from below to the sub-frame. The bracket thru which this support is effected consists of two sturdy channel section stampings riveted together. Some-

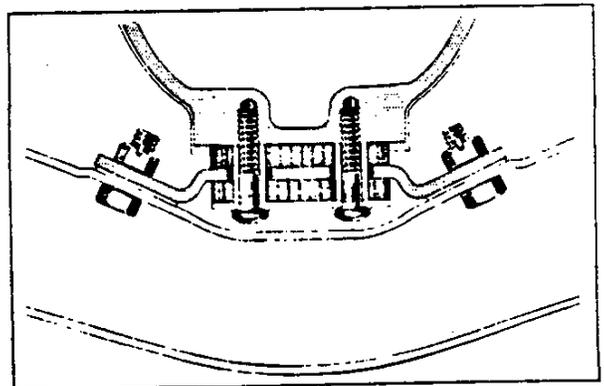
what farther forward, on the left side of the engine, the other mounting cushion supports the engine from a large pad by another sturdy, ribbed, channel-section bracket which is attached to the crankcase by four bolts. In this case also, the attachment



to the left-hand sub-frame is by two bolts inserted from below.

As in the 1932 models, the rubber mounting unit at the rear end of the over-running clutch housing is strictly an insulator which is not intended to carry any static load. In design and method of attachment this unit is much the same as its predecessor. The rubber member, however, is shorter and thicker, and the holes in the support stamping are larger permitting greater freedom for side movement.

These four simple but highly scientific mounting units, properly located, provide the "Sta-Namic Balance" which insures the smooth, quiet operation of the powerful engine.





# CHEVROLET 1933 PASSENGER CAR ENGINEERING FEATURES



## COMPARATIVE SPECIFICATIONS

	1932	1933
Stroke .....	3 3/4 .....	4
Piston displacement .....	194 cu.in. ....	206.8 cu.in.
Maximum horsepower .....	60 .....	65
Engine R.P.M. at maximum horsepower .....	3000 .....	2800
Horsepower at 1000 R.P.M. ....	24.5 .....	28
Horsepower at 2000 R.P.M. ....	49 .....	55
Maximum torque - foot pounds .....	130 .....	146
Engine R.P.M. at maximum torque .....	800 to 2000 .....	1000 to 1800
<b>CRANKSHAFT</b>		
Weight .....	53# .....	63 1/2#
Counterweight radius .....	3 1/8 .....	3 3/8
Crank pin diameter .....	2 .....	2 1/8
Crank pin length (effective) .....	1 25/64 .....	1 17/64
Center main bearing length (effective) .....	2 .....	1 7/8
Thickness of short arms .....	27/32 .....	31/32
Thickness of long arms .....	1 1/4 .....	1 3/8
Static balance limits .....	1 oz.in. ....	1/2 oz.in. in one plane
Permissible dynamic unbalance .....	1 oz.in. ....	None
<b>HARMONIC BALANCER</b>		
Outside diameter of weight .....	6 1/32 .....	6 1/2
Width of springs .....	3/8 .....	5/8
Number of springs .....	48 .....	80
Tuning - cycles per second .....	145 - 165 .....	135 - 150
<b>FLYWHEEL</b>		
Drive .....	1 dowel- 4 bolts .....	5 dowels
Web thickness .....	13/32 .....	5/8
Dynamic balance limits .....	1 oz.in. ....	1/2 oz.in.
<b>CONNECTING ROD</b>		
Length .....	7 .....	7 1/2
Bolt centers .....	2 9/16 .....	2 11/16
Projected bearing area - sq.in. ....	2.8 .....	2.7
Babbitt thickness .....	.047 .....	.024
Bolt head diameter .....	5/8 .....	13/16
<b>PISTON</b>		
Number of oil return holes .....	8 .....	12
Size of oil return holes .....	7/64 .....	9/64
Width of oil control rings .....	5/32 .....	3/16
<b>SPARK PLUG</b>		
Type .....	G-10 .....	K-9
Thread diameter .....	18 m/m .....	14 m/m
Position of electrodes .....	In pocket .....	At edge of chamber
Gasket .....	Copper and asbestos .....	Hollow copper
<b>VALVE MECHANISM</b>		
Width of valve seats .....	.045-.065 .....	.030-.050
Rocker arm center distance .....	3 3/16 .....	3 5/32
Radius of rocker arm contact surface .....	1/2 .....	3/8
Rocker arm bushing .....	Split, rolled bronze .....	Solid, cast bronze
Valve spring pressure with valve closed .....	44# .....	57#
Valve spring pressure with valve open .....	80# .....	95#
Camshaft center bearing .....	Cast iron (in case) ...	Steel-backed babbitt

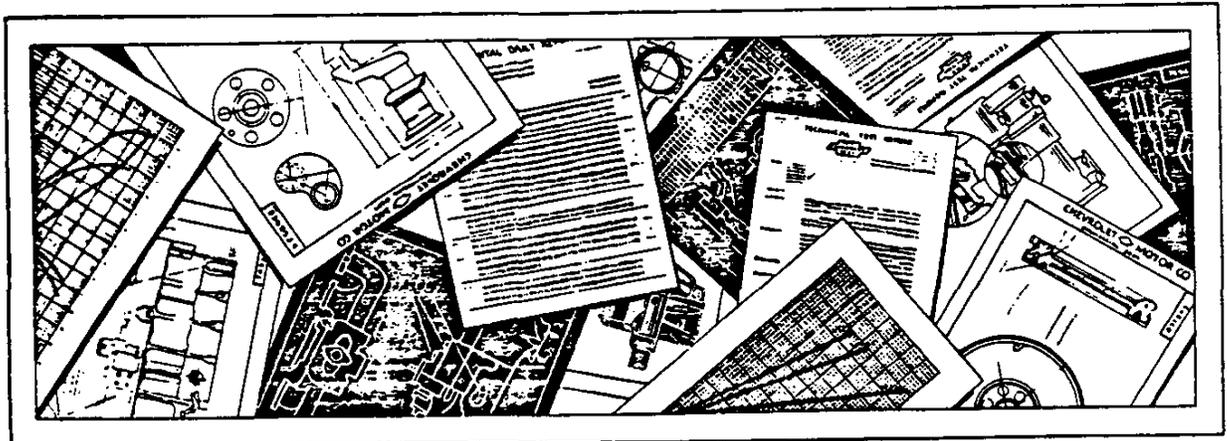




CHEVROLET 1933 PASSENGER CAR ENGINEERING FEATURES

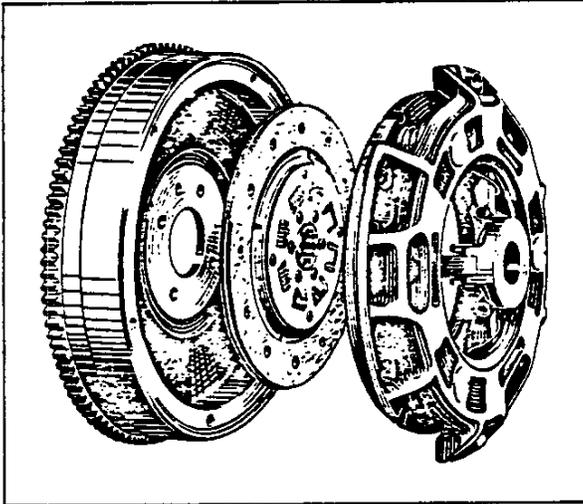


	1932	1933
Spark advance control .....	Centrifugal & manual ..	Centrifugal & vacuum
Maximum automatic spark advance .....	38° .....	46°
Additional advance by vacuum control .....	None .....	12°
Octane Selector .....	None .....	Manual
Distributor body diameter .....	2 19/32 .....	3 9/32
Depth of flat on oil pump body .....	3/64 .....	5/64
Oil pan flange design .....	Plain .....	Ribbed
Oil pan gasket thickness .....	1/16 .....	3/32
Oil pan gasket width .....	13/16 .....	1
Oil pan seal thickness .....	3/16 .....	7/32
Oil filler tube clamp .....	Bolted .....	Crimped
Offset of oil level gauge .....	None .....	1 1/2
Water pump front bushing lubrication .....	Oil hole .....	Oil cup and annulus
Fan blade angle .....	90° .....	75°-105°
Carburetor metering rod .....	2 steps, no spring .....	3 steps with spring
<b>INLET MANIFOLD</b>		
Center port section .....	Round .....	Flat
End port section .....	Round .....	"D" section
Arm position .....	Horizontal .....	Inclined
Heat valve control .....	Manual .....	Thermostatic
<b>AIR CLEANER</b>		
Outside diameter .....	6 17/32 .....	7 9/16
Number of expansion chambers .....	3 .....	5
<b>ENGINE MOUNTINGS</b>		
Type .....	"Diamond" .....	"Sta-Namic Balance"
Front rubber attachment .....	Pressure .....	Vulcanized
Rubber thickness in side mountings .....	11/64 .....	1/2
Size of rubber in rear mounting .....	1 1/4 x 3 1/4 x 1/4 .....	1 1/2 x 2 3/4 x 3/8

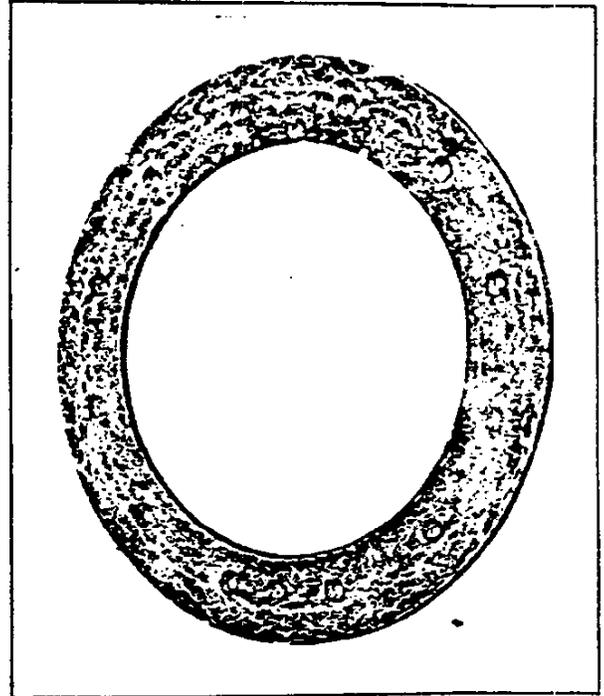


CLUTCH

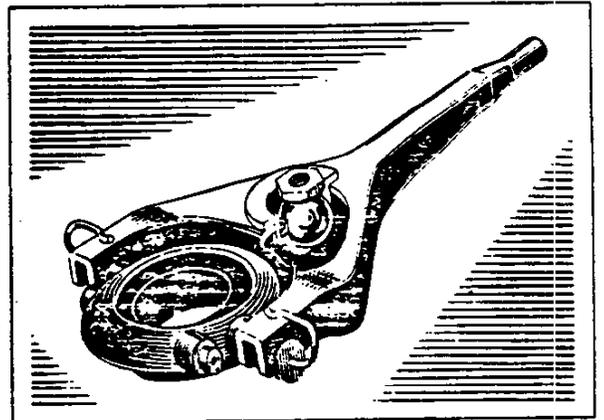
The nine-inch, three-finger clutch which has performed so satisfactorily during the 1932 season is improved and refined to insure even smoother operation in transmitting the increased torque of the larger engine. During the 1932 season the clutch spring pressure was increased approximately ten percent. This was accomplished by introducing more coils of a slightly smaller wire. The pressure builds up at a lower rate, maintaining more nearly the same spring pressure as the facing wears. The clutch disc facings are designed with a higher coefficient of friction to transmit the increased torque of the engine. Their



braided-moulded construction insures longer life and more uniform performance over a wider temperature range. In combination with a slight increase in the warpage of the steel clutch disc they provide smoother clutch action even when transmitting greater torque. The durability of the disc is increased by an increase in the diameter of the spring retainer, and objectionable vibration is eliminated by an increase in the pressure exerted by the eight springs which drive the disc. The forged clutch fork is replaced by an ingenious stamped design which is lighter, stronger and more uniform. The seat for the



ball stud is a separate stamping, flanged and welded to the fork. The stamped retainer is of heavier gauge stock. Contact between the fork and ball stud is now maintained by a corrugated circular spring of rectangular section which exerts greater pressure and prevents the fork from floating.





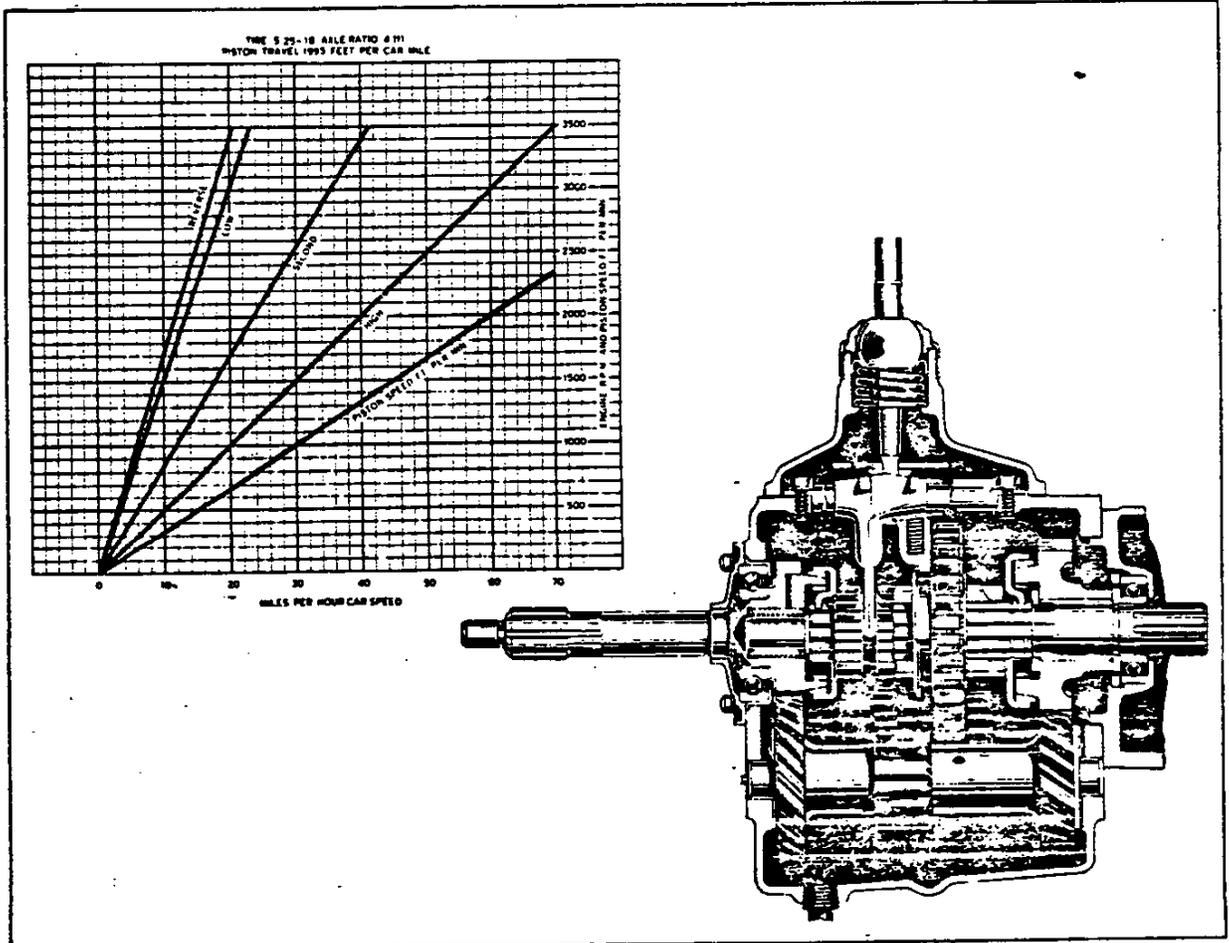
COMPARATIVE SPECIFICATIONS

	1932	1933
Pressure exerted by each clutch spring .....	104#	114#
Total clutch spring pressure .....	936#	1026#
Clutch disc warpage .....	.025-.045	.035-.060
Clutch friction rings .....	Moulded	Braided-Moulded
Spring retainer diameter .....	4 3/4	4 7/8
Clutch disc spring pressure .....	65#	85#
Clutch fork .....	Forged	Stamped
Clutch fork ball retainer thickness .....	.050	.062
Clutch fork ball spring .....	Round wire	Rectangular wire corrugated

TRANSMISSION

During the latter part of the 1932 season helical constant-mesh gears were adopted. Due to the greater area of the contact surfaces and to the larger number of teeth

which are always in mesh, the transmission is exceptionally quiet in operation, particularly in second gear. The reduction ratios in first and second speed, and in reverse,





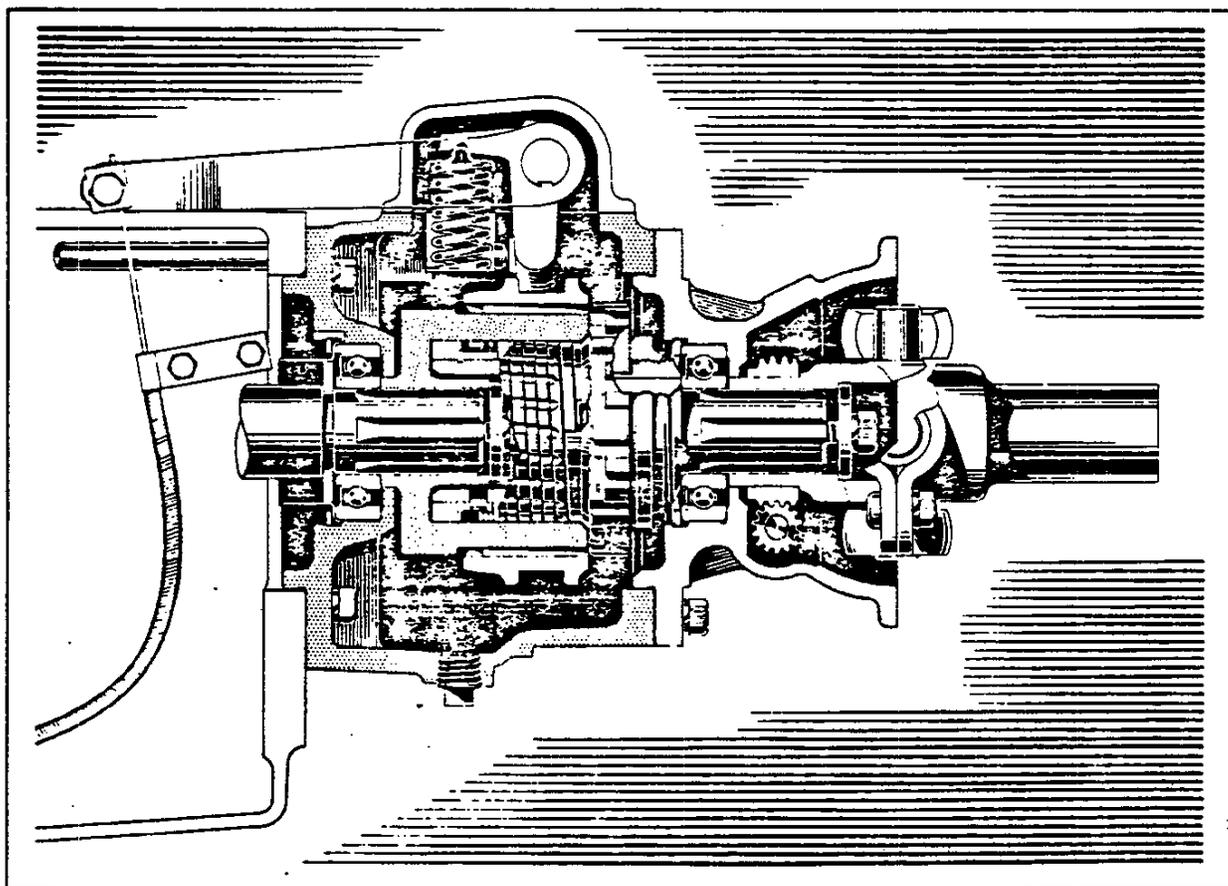
are changed to give the best performance with quiet operation and maximum durability. The synchronizing mechanism is improved and refined in many detail ways which facilitate manufacture, thus insuring smoother operation without undue production difficulties. The synchronizing cones are made of high grade alloy bronze having a considerably thinner wall which also permits a reduction in the diameter of the synchronizing drums.

The resulting reduction in the weight of the synchronizers reduces their inertia to quite an appreciable extent, increasing the life of both the synchronizers and their contacting parts considerably. The strength of the second and third speed clutch is increased by the addition of metal at the bottom of the engaging slots and in the fork groove. The heat treatment is also improved to insure greater strength.

COMPARATIVE SPECIFICATIONS

	1932	1933
Type of constant-mesh gears .....	Spur .....	Helical
First speed gear ratio .....	3.17 : 1 .....	3.02 : 1
Second speed gear ratio .....	1.52 : 1 .....	1.70 : 1
Reverse gear ratio .....	3.57 : 1 .....	3.40 : 1
Outside diameter of rear synchronizing cone.	3.86 .....	3.70
Outside diameter of front synchronizing cone	3.00 .....	2.84

OVER-RUNNING CLUTCH



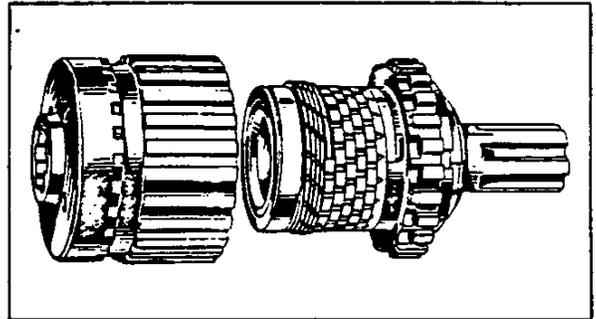


While the over-running clutch or free-wheeling unit still employs the expanding spring principle, it is improved and simplified. The outstanding difference between the new design and that of 1932 is the single pocket feature. This provides for the anchoring of the expanding spring on the outside of the lock ring held to the driven shaft, permitting it to expand only in the pocket formed by the driving sleeve, insuring more definite alignment and spring contact. It will be remembered that in the previous design both the driving and driven members were hollow and that the spring expanded in both.

In the 1933 design as in the 1932, the driving sleeve is splined to the transmission main shaft. It is of high grade alloy steel carefully hardened and ground. Splines on the outside of the sleeve permit engagement with the lock sleeve for conventional operation. The driven shaft, which is solid except for the main shaft clearance hole in its front end, is splined at the rear to provide attachment for the universal joint. This shaft and its lock ring are also of hardened and ground alloy steel. The lock ring is pressed on the driven shaft with a broached key in the ring engaging a milled keyway in the shaft. It is locked in position by a large nut which in turn is locked to the shaft by a portion of its hub which is depressed into the keyway.

This ring is splined around its circumference to provide engagement for the lock sleeve when in conventional drive. The front hub of this ring has a helical face against which the first coil of the expanding spring is assembled. The helix begins and ends in the opposite sides of a wide milled slot. The spring end butts against the high side of this slot, taking the direct force of the

drive when not in free wheeling. At this point, the turned-up end of a lug riveted in two places to the side of the coil a slight distance from the spring end thrusts against the low side of the slot, holding the spring in position on the driven shaft. The expanding spring consists of two parts, a main spring of 6 tempered rectangular spring wire coils to the forward end of which an auxiliary spring of 3 1/2 turns of lighter, flat,



round-edge wire is attached. To provide adequate support for the auxiliary spring, a split ring is inserted between it and the driven shaft. The rear end of this ring is shaped to follow the helical lead of the main spring. A portion of the ring depressed into a drilled hole in the shaft maintains its relation to the spring. A bearing of high grade bronze at the front end of the driven shaft maintains alignment between it and the drive sleeve. This bearing is grooved on its outside diameter to insure adequate lubrication, and is held in position by a snap ring which fits into a groove in the shaft at the rear end of the bearing.

The outstanding advantages of this simplified single-pocket free wheeling unit are its smooth, quiet operation and its durability.

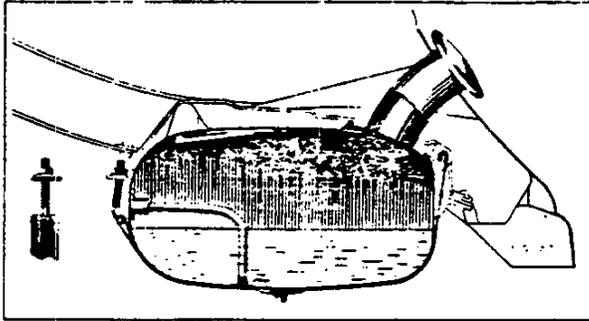
COMPARATIVE SPECIFICATIONS

	1932	1933
Type .....	Double pocket	Single pocket
Spring drive contact .....	Bent lug	End of coil
Bearing .....	Ryatt	Bronze
Main spring length .....	2 7/32	1 1/8
Auxiliary spring support .....	None	Steel ring



FUEL SYSTEM

The gasoline tank and its mounting parts are completely redesigned. The tank has a capacity of fourteen gallons and is broad and



shallow to conform to the rear cross member shape and to maintain its road clearance. The filler flange is considerably longer than heretofore, extending outward beyond the width

occupied by trunk racks which may be mounted at the rear, thus increasing its accessibility. The filler cap lies close to the sheet metal cover over the rear cross member. The new shape of the tank and the improved position of the filler permit complete filling of the tank without the use of a vent tube to prevent air lock. The increase in fuel tank capacity combined with the decreased fuel consumption of the engine considerably increases the distance which can be traversed between refuelings. The mounting of the fuel tank is also improved. A "T" bolt at the end of each strap permits natural alignment, relieving both the strap and bolt of undue strains. The electric gasoline gauge with a single float, isolated from the main body of the fuel by a baffle plate, is located at the right side of the tank.

COMPARATIVE SPECIFICATIONS

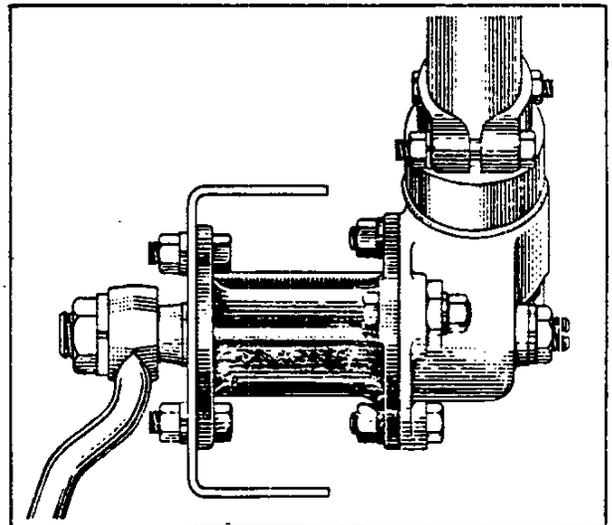
	1932	1933
Fuel tank capacity .....	10 1/2 gallons	14 gallons
Fuel tank width .....	10 15/16	13 7/8
Fuel tank depth .....	7 1/4	7 1/2
Fuel tank strap mounting .....	Riveted bolt	"T" bolt

STEERING

The effort required to steer the 1933 Chevrolet is even less than in previous models. This ease of control is effected by an increase in the gear ratio and an improved method of mounting the steering gear at the frame. The gear ratio is increased by an increase in the number of teeth in the sector circle from twelve teeth to fourteen. The teeth on the steering worm are reshaped to provide for this change. Any tendency to bind the pitman arm shaft is eliminated by the new design of mounting at the frame. The housing is flanged at both ends and is strengthened by four ribs. It is bolted to the gear case at its inner end while the outer flange bolts to the inside of the frame side rail. This mounting is considerably more stable and less likely to become loose. The mast jacket is secured in place by a stamped clamp. The steel-reinforced rubber grommet at the toe board is redesigned to insure a more effective closure by holding down the edges of the toe board mat more securely.

At its point of support to the instrument panel the steering mast is completely insu-

lated by a flanged cylindrical rubber grommet. The clamp members are steel stampings formed so as to entirely conceal the flattened "U" bolt. The mounting is clean-cut in appearance and provides just enough resiliency to permit necessary movement without noise.





CONTROLS

The accelerator control is improved by the addition of a hinged pedal which is long and narrow with a gracefully rounded upper end. The pedal is a drawn steel stamping to which a thick pad of corrugated rubber is vulcanized. The edge of the pedal is bound with a polished aluminum rim which adds to its attractive appearance. Rubber is also vulcanized to the pedal at its hinge point and at the socket in which the spherical ended rod seats. This heavy rubber covering has sufficient area to support the driver's foot comfortably and sufficient thickness to provide a cushion against shocks and insulation from vibration. The corrugations prevent slippage of the foot, insuring greater comfort. The accelerator rod is guided in a rubber grommet

which is screwed to the toe board. In this grommet, a graphite bushing is moulded in the hole thru which the rod passes to insure easy frictionless movement and proper alignment. A vacuum-controlled diaphragm connects the starter mechanism with the accelerator rod when the engine is not operating and there is no suction in the intake manifold. This permits operation of the starter by depressing the accelerator pedal. When the engine is operating, manifold suction is created and the control diaphragm is deflected, disconnecting the starter control and permitting the accelerator pedal to operate only the throttle valve.

A rubber seal is provided to insulate the transmission cover thru the floor board.

COMPARATIVE SPECIFICATIONS

Location of pedal mounting .....

Pedal bearing material .....

Pedal hub length .....

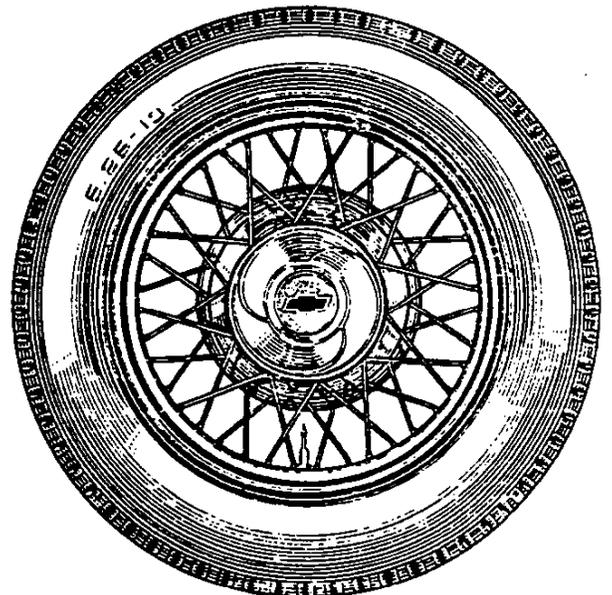
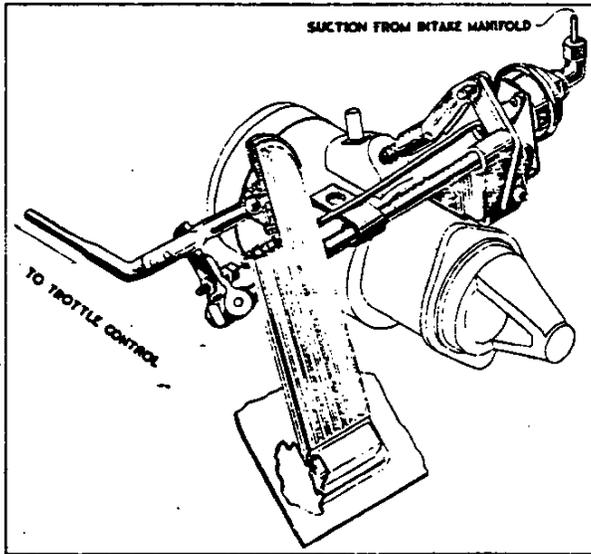
Clutch pedal arm offset .....

Pedal pad surface .....

Accelerator control .....

Starter control .....

1932  
Clutch housing ..... Frame  
Brass ..... Bronze  
1 5/16 ..... 1 7/16  
2 3/8 ..... 2 3/2  
Forged steel ..... Moulded rubber  
Metal button ..... Rubber covered pedal  
Separate ..... Connected with  
switch button ..... accelerator control



WHEELS

The 1933 hub caps are larger in diameter and more attractive. They are brilliantly chrome plated. The Chevrolet emblem at the center is filled with "Chevrolet blue" enamel bor-

dered by a raised bead. The emblem is set on a hammered background which has a bright, raised outer ring. From this ring it slopes



COMPARATIVE SPECIFICATIONS

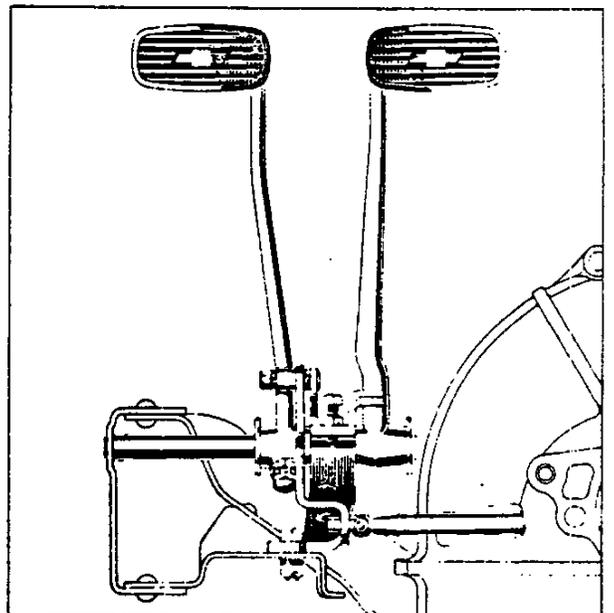
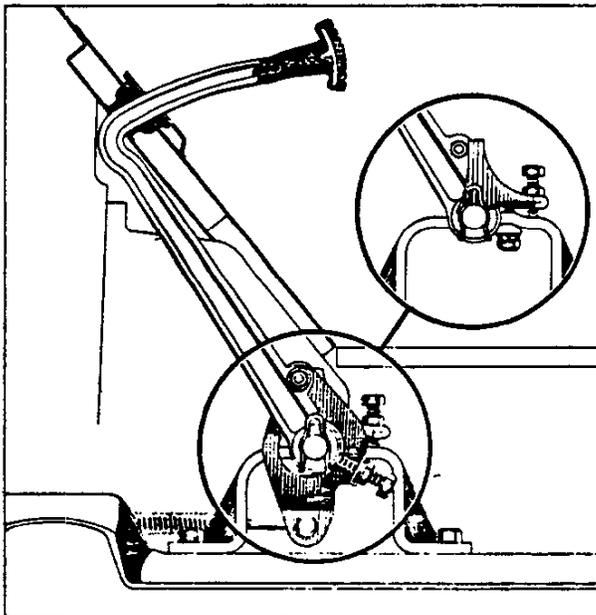
	1932	1933
Steering gear ratio .....	12 : 1 .....	14 : 1
Mounting on frame .....	Clamp .....	Bolted flange
Insulation at instrument panel .....	Rubber saddle ...	Cylindrical rubber grommet
"U" bolt section .....	Round .....	Flat

PEDAL MOUNTING

The clutch and brake pedals on the 1933 model are mounted on the sub-frame member independently of the power plant. This location insures a more definite and stable mounting and prevents the transfer of engine movement to the pedals. The outer end of the pedal shaft is piloted in the web of the frame side rail and its inner end is securely clamped on a sturdy bracket made of strap steel 5/16 thick, and 1-5/16 wide. This bracket is twisted at its points of support for greater stiffness and is bolted securely to the sub-frame. The heavy, stamped clamp does double duty, holding the pedal shaft securely in place and serving as a stop for both pedals in their rearward position. Adjustment of the stop position is obtained by the two bolts which are threaded into the

clamp, one from above to form the adjustable reaction point, and the other from below to clamp the shaft in place. A special adjusting washer provides a perfect seat for the clamping bolt. The pad on the brake pedal which contacts the stop is machined for accuracy. The clutch pedal stops against its adjusting bolt. The pedal bearings are made of better material and are of greater length. These improvements with a reduction in the clutch pedal offset insure against undue wear and bell-mouthing.

Each foot pad is covered with a rubber cushion having a bead around its edge and corrugations moulded in its surface. These insure greater comfort and safety, preventing fatigue and providing a more secure grip for the feet when operating the pedals.



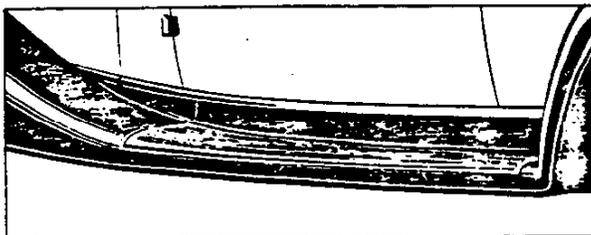
section stamping anchored at the bottom of the fender well. Toward their rear ends the front fenders merge gracefully into the running boards. The front fenders have all of their corners well rounded and their edges attractively beaded.

#### RADIATOR SPLASH GUARD

The space between the front fenders and below the radiator is filled by a beautiful radiator splash guard. This stamping harmonizes in appearance with its surrounding parts, curving gracefully to meet the inner skirts of the fenders. It is extended behind the radiator shell and grille up to the bottom of the core, hiding the front motor support and starting crank bracket. It also prevents loss of air thru the bottom of the radiator shell, thus increasing the radiator cooling efficiency. It is reinforced at the upper corners.

#### RUNNING BOARDS

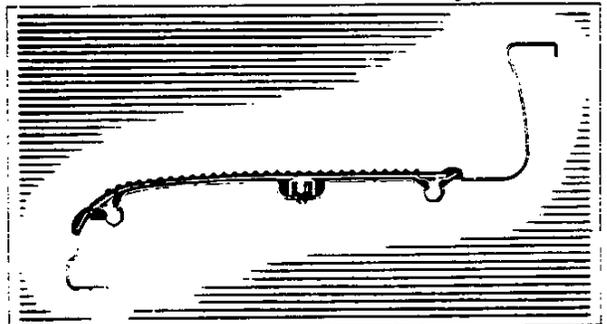
Each running board and its apron is stamped in a single piece, eliminating the joint between the two separate stampings with the possibility of rust formation and dirt collection. The possibility of squeaks, which might be caused by the two metal parts rubbing together, is also eliminated. The front fender curvature is carried into the front end of each running board, presenting the



appearance of a longer more graceful sweep and avoiding the appearance of a sharp break at the end of the fender. Each running board is also curved gradually downward toward its outer edge. The running board stamping is deeply ribbed along its outer edge and has a deep channel rib running along its middle. These, with the two depressed channel ribs at the points of attachment to the step

hangers, add greatly to the strength and rigidity of the running board. Welded reinforcements at the front and rear ends further increase the rigidity. The center reinforcement extends to the outer edge, bracing and increasing the rigidity of the bead, to protect the car from injury caused by side swipes.

The surface of the running board is entirely covered by a soft, black rubber mat vulcanized on a steel plate to which metal fasteners are permanently attached. The rubber mat has narrow longitudinal corrugations with wide rounded beads at its inner and outer edges. Due to this construction the mat is very easily cleaned. The mat is secured to the running board by fourteen "T" shaped clips which engage depressed slots in the stamped board. The metal surrounding the slots is formed to a cam surface which pulls the mat and its steel backing plate down tightly on the running board when the clips are twisted into place. Alignment of



the mat is maintained by an inverted channel reinforcement which is welded to the steel backing plate and extends the entire length of the mat, setting down into the depressed channel in the board. This reinforcement greatly increases the stability of the mat, so that the weight of passengers entering or leaving the car is well supported. Along the channel, three nuts are welded to receive attaching bolts which enter from the bottom of the board to clamp the mat securely in place. Anti-squeak material is clamped between the running board stamping and the backing plate of the mat to prevent any noise which might be caused by the metal to metal contact. Cord-welt anti-squeak is inserted between the front end of the running board and the fender.



outward, blending into a graceful, crowned, spiral tri-form. This in turn is surrounded by a narrow depressed rim. Whether station-

ary or in motion these caps lend a beautiful, lively appearance to the wheels, suggesting a restless eagerness to snap into motion.

COMPARATIVE SPECIFICATIONS

	1932	1933
Hub cap diameter .....	6 1/2 .....	6 3/4
Hub cap design .....	Concentric circles .....	Tri-form

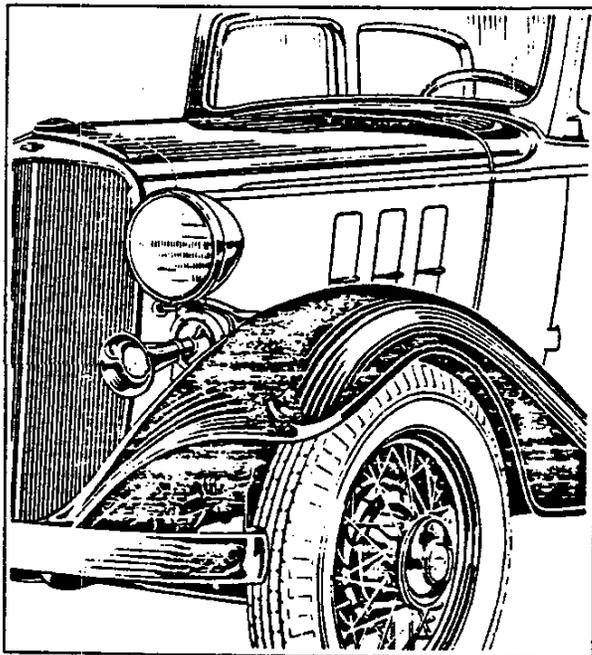
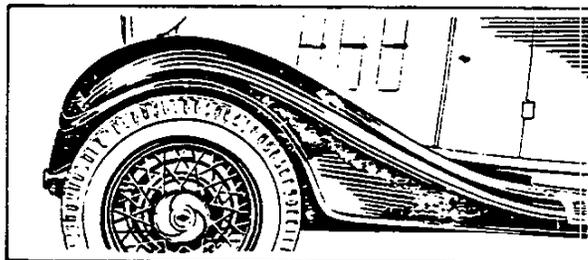
SHEET METAL

In the 1933 passenger line the sheet metal appearance parts are designed as a unit. They harmonize in shape and appearance with each other and with adjacent parts. The general impression gained from the sheet metal is one of continuity of line and surface. The usual appearance of separation at the points where one sheet metal part ends and another begins is entirely lacking. They blend into each other smoothly and gracefully with a marked increase in streamline effect.

support unit supports the front fenders, radiator and headlamps at a neutral point in the center of the frame front cross member. This center-point mounting permits frame flexibility without any of the resulting movement being transferred to the fenders, headlamps or radiator. Since all of the front end sheet metal parts move in unison with each other and with the body, the driver has a visual sense of stability.

STABILIZED FENDER MOUNTING

The unique center-point mounting of the sheet metal at the front of the car, which proved so effective during the past year, is retained in the 1933 models. The single fender



FRONT FENDERS

The front fenders have deeper crowns and extend farther over the tires at the front. The beaded edge of each side flange is wider and snugly follows the tire outline, hiding the spring, steering connections and the underside of the fenders. Skirts under the fender edge at the frame line hide the frame and protect the engine compartment from splashing. The outer flanges of the fenders are braced at their deepest points by rigid pressed steel braces of double-flanged "U" section. They are attached to the ledge below the skirt and at the bottom of the overhanging flange by two rivets at each point. On those models which have fender wells, the extended flange most effectively hides the usual offensive appearance of the underside of the well. On these models the fender outer flange is braced by a shorter double channel

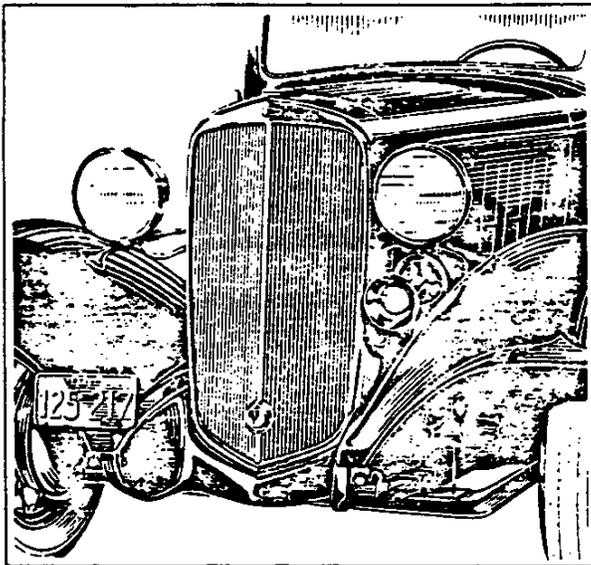


ternal mouldings which extend along the lower edges of each side panel, improving the appearance. Rubber bumpers at each end of these mouldings provide insulation against hood rattles. The upper hinge consists of two continuous stamped members, one of which rotates within the other. The outer member is attractively chrome plated and presents the appearance of a continuous bead. Both hinge members are invisibly riveted to down-turned flanges at the edges of the hood top panels. This design of hinge seals the joint at the top of the hood, preventing the entrance of rain into the engine compartment. The internal hood catch is of

the same general design that proved so satisfactory on the previous model.

**FRONT LICENSE TAG BRACKET**

During the 1932 season a new front license tag bracket was added. This bracket is also furnished on the 1933 models. It attaches to the right front spring horn by the same bolt which attaches the bumper. It consists of an upright strap to which a cross bar is riveted. The license tag hides the bracket entirely, presenting a neat appearance which does not detract from the frontal appearance of the car.



**ENGINE UNDERPANS**

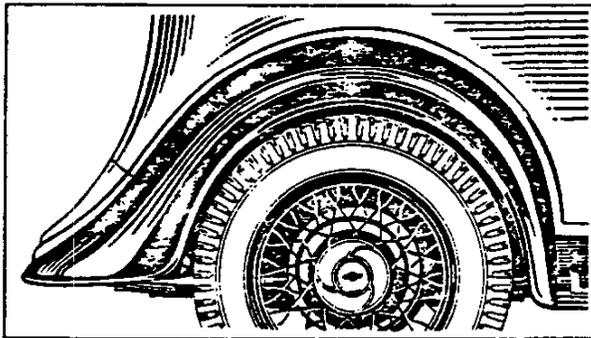
The underpans which fill the space between the crankcase and the frame side rails are redesigned to provide for the new sub-frame structure. In each, a cone-shaped valley extends along the inner edge sloping downward toward the rear and blends into a sloping plane along the outer edge. The underpan on the left side is rigidly reinforced by a cross rib near its center and by up-turned gussets at each end. The right side underpan is likewise reinforced by an up-turned gusset at its front end, by a cross rib near its rear end, and by a down-turned gusset at its rear end. Holes on each side of the cross ribs provide drainage. The underpans are bolted to the sub-frames, side rails and front cross member.

**COMPARATIVE SPECIFICATIONS**

	1932	1933
Front fender crown depth .....	4 1/4 .....	5
Front fender moulding width .....	9/16 .....	3/4
Running board and apron construction .....	Separate .....	Integral
Running board mat attachment .....	Moulded .....	Clips and bolts
Rear fender crown depth .....	4 1/16 .....	5 3/8
Rear fender moulding width .....	9/16 .....	3/4
Hood top hinge type .....	Piano .....	Continuous
Engine underpans .....	Flat, beaded .....	Conical
Front license mounting .....	Headlamp tie bar .....	Front bumper bolt

REAR FENDER

The rear fenders are gracefully streamlined and have deeper crowns. The edge of each fender snugly follows the contour of the tire to the bottom of the tail end which extends lower, presenting an attractive clean-cut appearance, and hiding the under side of the fender. At the rear the flowing tail surface blends into the rear deck cover. The bead at the fender edge is wider. The deep outer flange at the rear is braced by a stamping of double-channel section. This is riveted to the outer flange and is spot welded to the inner one. This reinforcement also adds rigidity to the stop and tail lamp bracket as one of the bracket bolts



passes thru the reinforcement. At the frame side the reinforcement is rigidly bolted to a sturdy brace extending from the frame. An elongated slot at this point permits the proper alignment of the fender during assembly. A single piece of cord-welt anti-squeak separates the fender from its adjacent parts. It is inserted between the fender and running board, at the inner edge of which it is turned to follow the contour of the fender, between the fender and the body, and between the fender and the rear deck cover at the end of which it is terminated. Thus, it provides an attractive beading between the fender and its adjacent parts at the same time serving a utilitarian purpose.

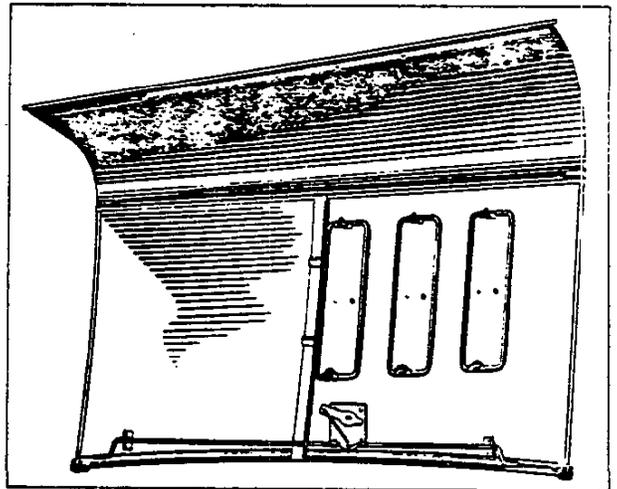
REAR DECK COVER

The rear deck cover forms a continuation of the rear body panel, completing its graceful downward sweep and blending smoothly into the fender contours at the sides. Contrary

to previous designs it follows the contour of the body and fenders rather than the contour of the frame. At the spring horns the cover is embossed to provide flat bearing points for the attachment of the bumper. The joint between the rear deck cover and the body rear panel is concealed by an attractive beaded anti-squeak which also prevents noises and wear.

HOOD

In the 1933 models the hood slopes gracefully from the radiator to the cowl, blending with the distinctive shape of each. The double body moulding continues along the side of the hood terminating in two, blending, tapering points at the front. The three ventilator doors at each side are longer and narrower. They are manually operated by individual chrome plated handles. The ventilator doors are located toward the rear of the hood and slope in harmony with the body and radiator lines. They swing on internal hinges which are stamped integral with the hood and with the doors. The hinge members



have stamped depressions, the engagement of which holds the doors in their open or closed position. Stamped, spring steel snap fasteners operating in smooth, grommeted holes form the hinge points. The side panels of the hood are strengthened by internal, vertical, angle section reinforcements which prevent vibration of the hood. Further reinforcing is afforded by wide ex-

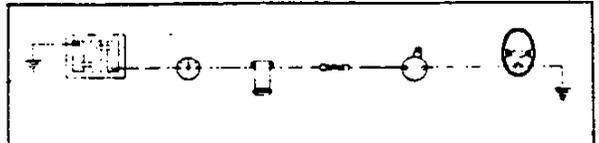
fender and its two compartments are reversed. The upper portion functions as a tail lamp, while the lower is the stop lamp. The lens is of ruby glass moulded with reflex prisms on the inner surface of the upper or tail lamp portion, and with vertical corrugations in the lower portion. At the central portion the lens is depressed to form a panel in which the word "Chevrolet" is inlaid with aluminum. The reflex prisms in the upper half of the lens afford additional protection against collision in the darkness, even when the lights are switched off, by reflecting the rays from approaching headlights, giving the same sort of warning as reflex road markers. The lens is very thick and well reinforced by ribs on the inside. The prisms moulded on the inside of the lens and the proximity of the bulb to the lens, permit the use of a lower powered bulb in the stop lamp, which reduces the drain on the battery. The signals command attention because of their increased brilliance. The upper bulb projects thru the wall of the lamp body to illuminate the license tag which is mounted above the lamp. It bears against a resilient rubber grommet. In this position it is less likely to be damaged.

The tail and stop lamp is mounted on a short, rigid stamped bracket of elliptical section. The terminals which connect the wires to the tail and stop lamp are of the bayonet lock type arranged so that only the correct wire may be connected at each terminal point. The wires are concealed within the bracket. At its point of attachment to the fender a rubber pad insulates the bracket from the fender, absorbing vibration and shocks and eliminating noise.

#### STOP LAMP WIRING

The stop lamp derives its current from the ignition circuit and is operative only when the ignition switch is turned on. This is done to prevent excessive operation of the stop lamp and the consequent drain on the battery when parking with the brake set. With the new cut-in parking brake system the stop lamp switch is operated by both the foot pedal and the hand lever. With the stop lamp connected to the lighting circuit as heretofore

the stop lamp would be illuminated whenever the car was parked with the brake set. This improved arrangement of the wiring leaves the stop lamp circuit unprotected by the lighting circuit fuse. Therefore, a separate fuse is introduced in the stop lamp wiring. It is identical with the lighting fuse which is mounted on the lighting switch,



and is encased in a metal cartridge made in two pieces which are held together by a bayonet lock. This fuse is located under the cowl in the wire leading from the ignition switch to the stop lamp switch. It insures greater protection against fires in case of a short circuit in the stop lamp wiring.

#### HORN

The chromium plated, trumpet type horn is mounted on an attractive stamped bracket attached under the headlamp support. The protective screen in the bell-mouth of the horn is concave instead of convex to insure more permanent attachment.

A moulded rubber cover fits over the wire ends and the terminal screws on the horn to protect them from the elements and prevent short circuits.

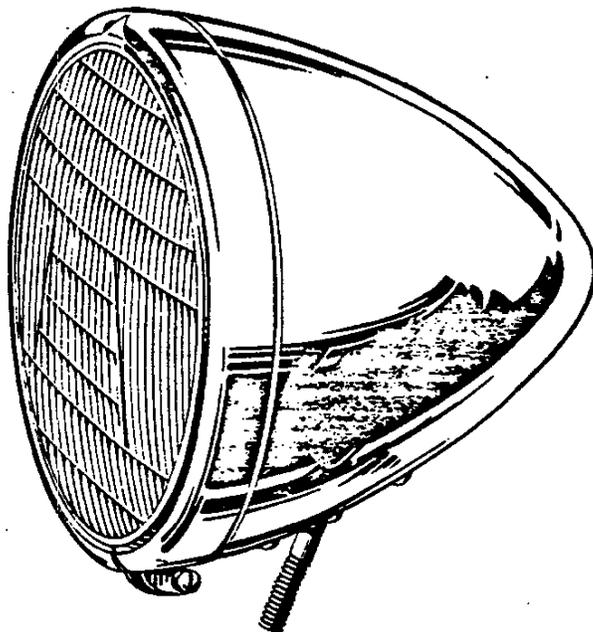
#### IGNITION LOCK

With the adoption of the vacuum spark control it is necessary that the ignition distributor be permitted to move freely with very little effort. This requires the elimination of the stiff, heavy armored lock cable from the distributor because of the restriction to motion which it imposed. In the 1933 model the ignition wiring and units are therefore revised to permit the locking of the coil lead instead of the distributor lead. With this new arrangement the heavily armored cable from the ignition switch connects to the ignition coil, which is mounted on the engine side of the dash. When the ignition switch is locked the coil circuit is

ELECTRICAL EQUIPMENT AND INSTRUMENTS

HEADLAMPS

The headlamps are of the same general shape as on the 1932 models. Their frontal appearance, however, is improved by the addition of a bead at the inner edge of the rim. This bead terminates in a sharp, pointed raised panel at the top. The headlamps are mounted on short, sturdy supports attached to the fenders and extending to the side of the radiator shell. Each support is a die casting moulded over a steel forging. At its inner end the headlamp support attaches to the radiator tie bar on the inside of the radiator shell. At the outer end it flares gracefully into an elliptical flange which seats snugly on the curvature of the fender. It is tapped to receive a bolt from below which attaches it securely to the front fender support.



Insulating fiber washers are provided at each end of the supports to preserve the finish of the fenders and the radiator. On each support, a boss having a spherical seat extends forward to support its headlamp. The headlamps have concave spherical depressions at the bolts to engage the bosses and provide universal adjustment. A sturdy bolt,

built into each headlamp, holds it securely in place.

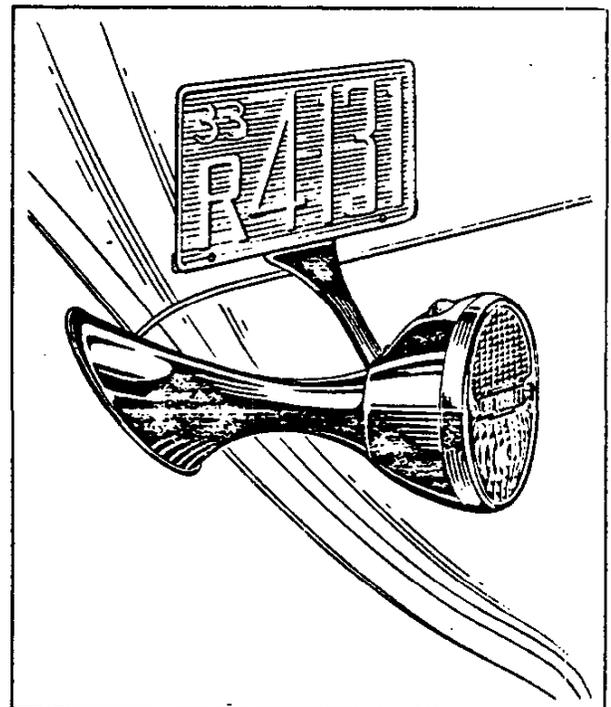
COWL LAMPS



The appearance of the cowl lamps on the sport models is improved to match the headlamps. They too have an embossed bead at the inside edge of the rim which terminates in a sharp point.

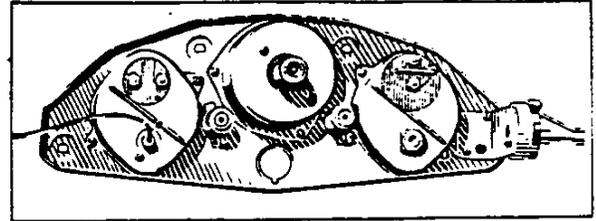
TAIL AND STOP LAMP

The new combination tail and stop lamp is more attractive, safer and more durable. It is elliptical in shape, with a black enameled body and chromium plated rim and upper bulb shield. The rim has an additional bead at its inner edge which terminates in a point at the top. The lamp sets much lower on the



erably easier to read than rotating cylinders and other forms of indication in which the graduations and figures move in relation to a fixed pointer. The motorist very quickly becomes accustomed to the fixed position of the graduations and is able to read the gauges and meters at a glance by the position of the needle or pointer. Thus his eyes are off the road for shorter periods and he naturally drives in greater safety. The dials of all the instruments are black with white graduations, figures and pointers. They are framed by bright chromium plated rings which protrude thru the striped finish panel. The spherical bezels which protect the dials of the instruments have a slight curvature to prevent reflections and insure easy legibility. Two bulbs are provided on the underside of the panel to insure adequate illumination of all the instruments. The speedometer is located at the center of the panel with the combined oil and gasoline gauge at the left and the combined ammeter and water temperature indicator at the right. The flexible speedometer drive shaft attaches to the speedometer head by means of a nut identical with that used at the lower

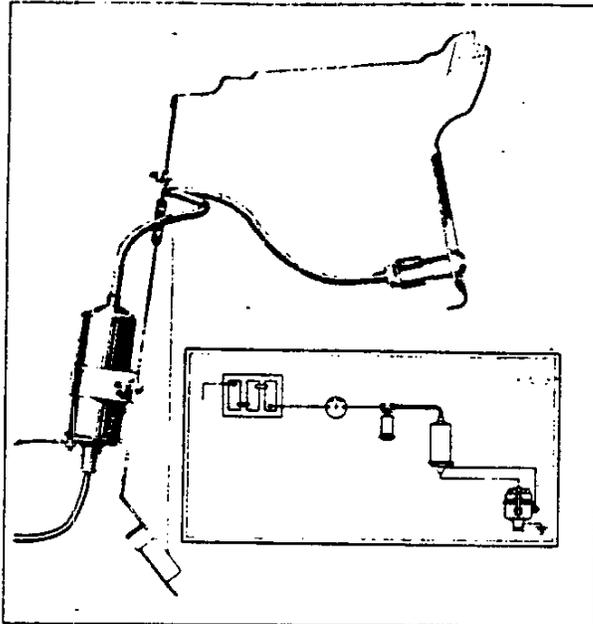
end. The holes in which the control units assemble are punched with a flat at the bottom. The control rod housings each have a similar flat to prevent rotation and insure proper alignment of the lettering on the control buttons. The choke button is located above and between the speedometer and the oil and gas gauge. The throttle control but-



ton is located at the right, above and between the speedometer and the ammeter, while the lighting switch is located in the lower left hand corner of the panel. At a similar point on the right hand side a dummy button is provided for the installation of any electrical accessory which may be installed. The free-wheeling control button is located to the left of the instrument panel as heretofore.

COMPARATIVE SPECIFICATIONS

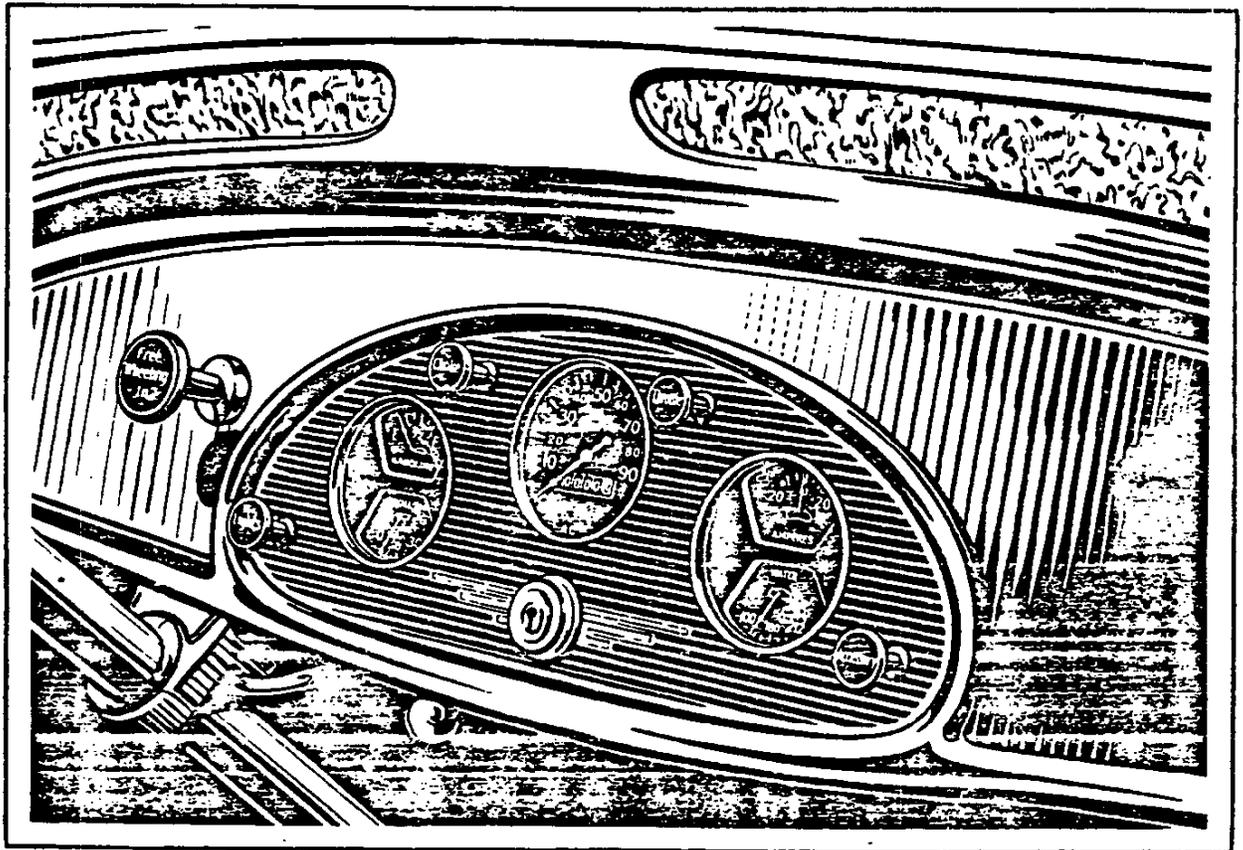
	1932	1933
Tail and stop lamp lens .....	Celluloid .....	Reflex glass
Tail and stop lamp wire connections .....	Screw .....	Bayonet
Tail lamp position in relation to stop lamp.	Below .....	Above
Stop lamp candle power .....	15 .....	3
Stop lamp circuit fuse .....	General lighting system .....	Separate
Headlamp lens rim .....	Plain .....	Beaded
Cowl lamp lens rim .....	Plain .....	Beaded
Instrument panel finish .....	Plain .....	Striped chrome
Speedometer indicator .....	Stationary .....	Rotating
Speedometer shaft attachment .....	Clamp plate .....	Nut
Oil and gasoline gauge arrangement .....	Separate .....	Combined
Instrument bezel radius .....	6 1/8 .....	10
Provision for electrical accessory .....	None .....	Dummy button
Horn terminal cover .....	None .....	Rubber
Ignition lock connection .....	Distributor .....	Coil
Tail lamp bracket mounting .....	Metal to metal .....	Rubber insulated



grounded and the flow of current to the coil is prevented. The terminal for the switch connection is of the permanent snap type which prevents disconnecting from the outside of the coil when locked. To defeat this lock is a very laborious operation requiring considerable time and the partial destruction of parts of the ignition system.

#### INSTRUMENTS

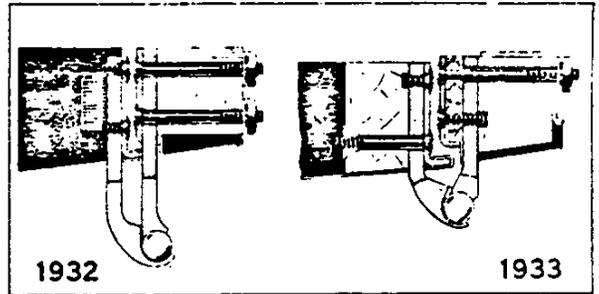
The entire instrument panel is redesigned and improved in appearance. Due to the adoption of the thermostatic heat control and vacuum spark control these buttons are omitted. The panel is semi-elliptical in shape with the border and narrow horizontal stripes chromium plated on a dull black background. Three wider stripes of bright vermilion enamel extend for a short distance each side of the ignition lock. All of the instruments give their indication by means of a moving needle. This type of indication is consid-



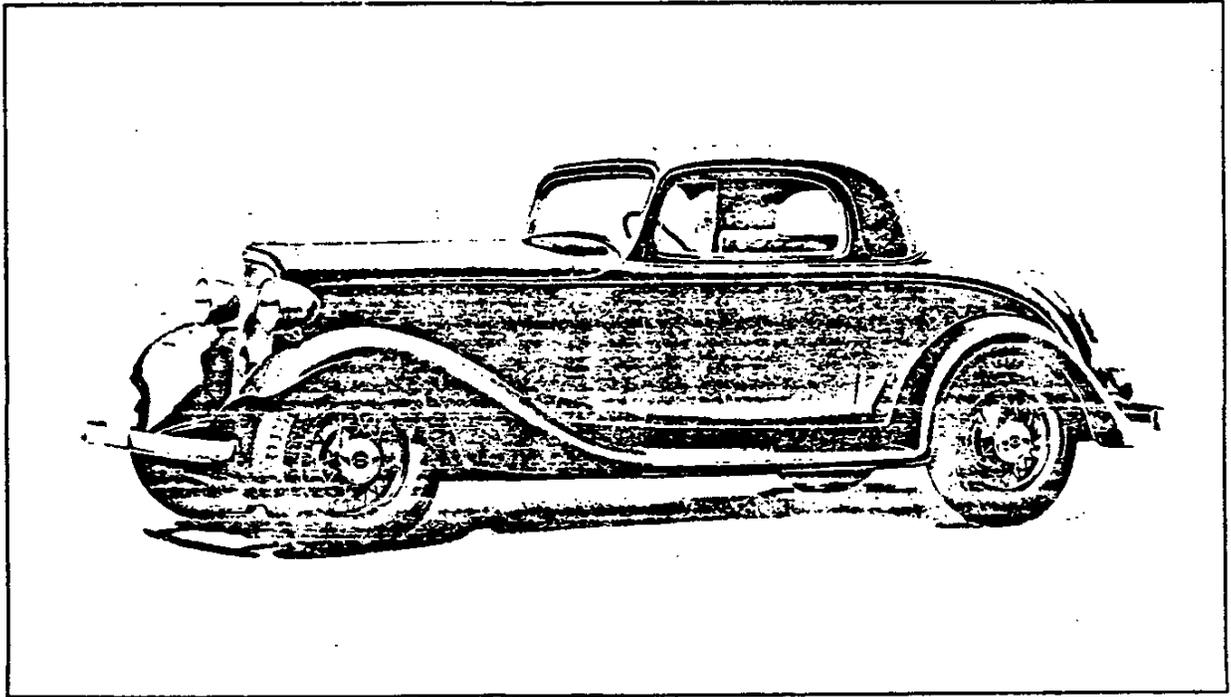
BODIES

The 1933 bodies are entirely new in design, appearance, and construction. They are longer, lower, wider and more roomy. Each of the body types is gracefully streamlined to give a more pleasing appearance, and all provide greater driving comfort. All body lines are smoothly developed, sloping at the front and flowing at the rear.

In the closed models the slant of the windshield is increased. This slant is also incorporated in the upper portion of the hinge pillars and the forward edge of the front doors. The front and rear roof lines are more smoothly rounded while the rear panel sweeps downward and outward to meet the rear deck cover, and to harmonize with the rear fenders. All windows are lower and longer and have more gradually curved corners which conform with the increased curvature of the general body lines. Narrow chrome plated beads frame the glass and add to the smart appearance. The doors extend to the moulding at the bottom of the body and are provided with insulation against drafts, while drain channels in the top of the doors prevent the entrance of rain. The strength and rigidity of the hinge pillars are in-



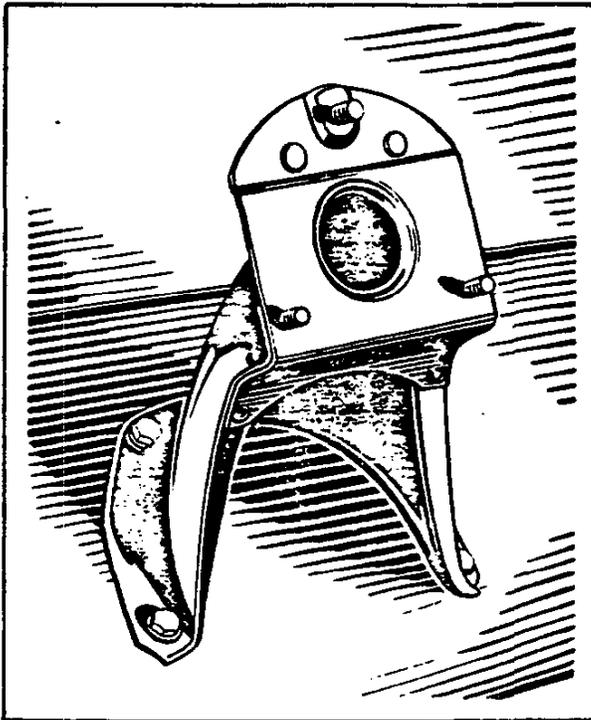
creased by an improvement in the hinge mounting. The stationary half of the hinge is set deeper into the wood pillar, removing the necessity of notches in the steel reinforcement. The continuous vertical flange adds greatly to the pillar strength. The hinge mounting also is improved by the use of bolts instead of screws at the points of maximum strain. The rigidity of the doors is increased by the very secure welding of the door panel to the heavy steel door flange. The assembly of all the closed bodies to the chassis is more stable due to the use of ten instead of eight body bolts, two of which engage the added frame brackets.



**COMPARATIVE SPECIFICATIONS**

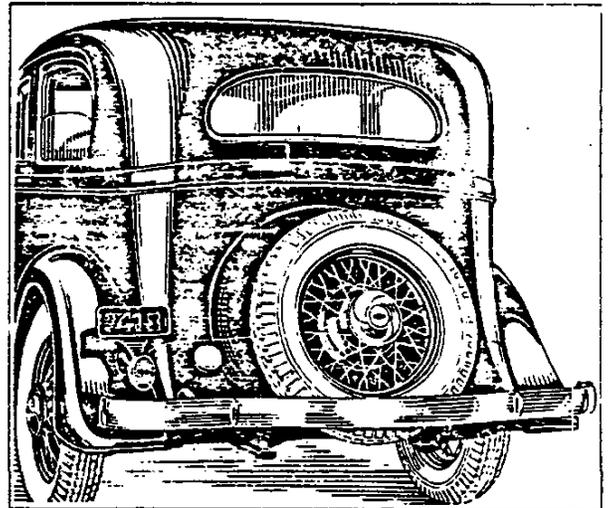
	1932	1933
Radiator design .....	Conventional .....	Sloping "V"
Radiator shell finish .....	Chrome plated .....	Composite
Grille center bead .....	None .....	Chrome plated
Radiator cap .....	Round .....	Streamlined
Radiator core construction .....	Hexagon cellular .....	Ribbed cellular

**WHEEL CARRIER**



The new carrier for the spare wheel and tire on the rear deck is simpler and more rigid. It consists of an extremely stiff stamping of modified channel section having stiffening flanges at its edges. The wide base flange is reinforced by raised bosses at its four attaching points to the rear cross member. The carrier stamping curves gracefully upward and terminates in a flange to which

a reinforcing bracket is secured by four rivets, the lower two passing thru the stiffening flanges of the carrier. Three bolts to attach the spare wheel are permanently anchored in the mounting flange of the carrier. The raised reinforcing ribs which are stamped in the frame rear cross member act as braces for the spare wheel carrier, spreading the load over a large area. They combine with the sturdy carrier to make an extremely rigid mounting which is neat and clean-cut in appearance, carrying the wheel and tire at a greater angle to harmonize with the streamlining of the body. Due to its smooth surfaces and simple construction the carrier is very easily cleaned.

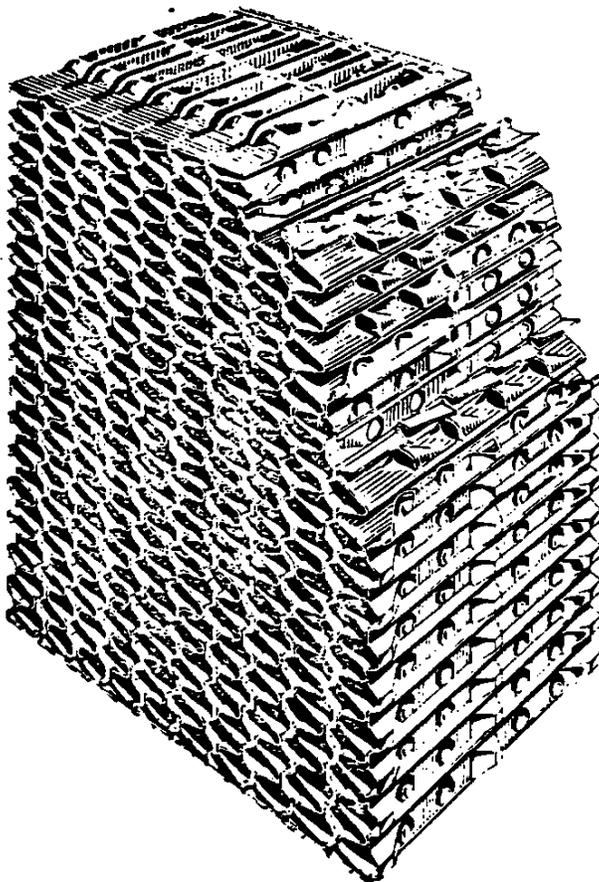


**COMPARATIVE SPECIFICATIONS**

	1932	1933
Wheel carrier structure .....	One stamping .....	Two stampings
Thickness of carrier .....	1/8 .....	9/64
Thickness of brace .....	1/8 .....	None

RADIATOR CORE

The new radiator core is scientifically designed to provide better cooling at all speeds, economically combining mechanical excellence with high thermal efficiency. It is greatly strengthened, yet retains the usual flexibility of the cellular types. This unusual strength is provided by the use of rib forms in both tubes and spacers and by the introduction of "knees" spaced at short intervals in the tube walls to support



the walls and to maintain the tube area. The tube spacers are firmly located at definite intervals along the tube walls, and both tubes and spacers are provided with broad contact areas, securely soldered the entire depth of the core for maximum strength. These soldered contacts also allow the heat to flow from the tubes to the spacers with high

thermal efficiency.

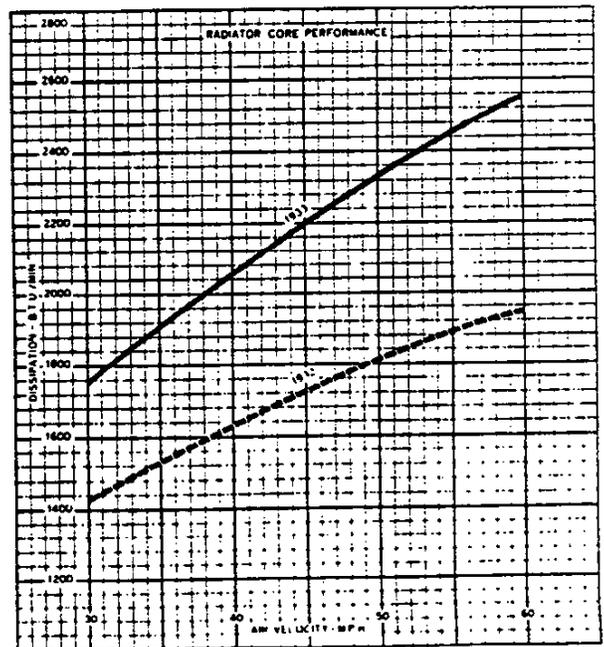
This construction provides an exposed surface per square foot of radiator front which is 18% greater than that in the previous hexagonal core.

Efficient turbulence is created in the air passages by the deflecting action and the vortex producing edges of the louvres. This is evidenced by the unusually high temperature rise of the air as it passes thru the core.

The water passages are of adequate size, being designed with great care to provide sufficient area and to insure a free flow of water to the pump. This free flow is greatly assisted by the rolling contours of the passage walls and by the supporting "knees" which maintain the tube areas.

The possibility of leaks caused by strained metal is greatly reduced by the use of especially processed core stock and by the elimination of sharp bends or angles in the tube walls.

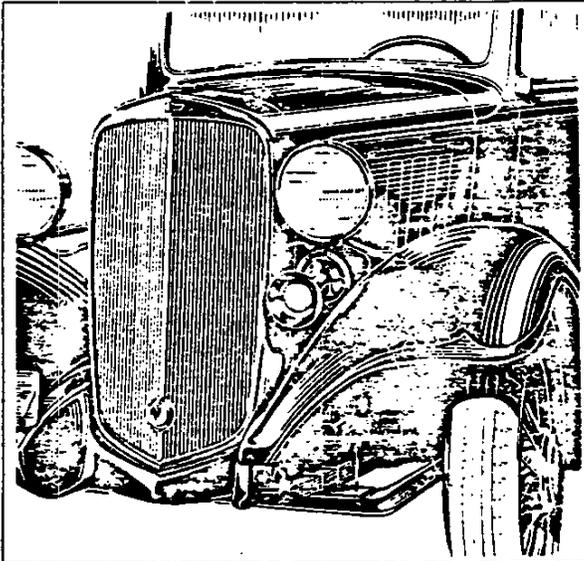
It is thoroughly proved by laboratory tests and by tests under actual operating conditions that this new core dissipates a much greater amount of heat per pound of metal and per square foot of frontal area at all air speeds than the hexagon type of core used in the previous model.



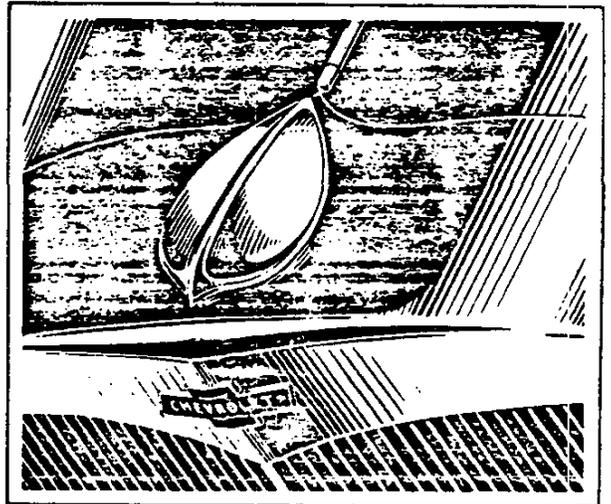
RADIATOR

The 1933 radiator is entirely new in design, appearance and construction. It is of the popular sloping "V" type, giving an effect of speed which is increased by the general streamlined design of the rest of the car. Its shell is painted the same color as the body, accentuating the hood length without any pronounced line of demarcation at its juncture with the hood. A brightly chrome plated bead on the grille at the apex of the "V" accentuates the "V" formation, and with the chrome plated vertical ribs of the grille accentuates the height of the radiator. The front surface of the shell is broad at the shoulders and curves inward toward the pointed bottom. Its narrow, beaded front

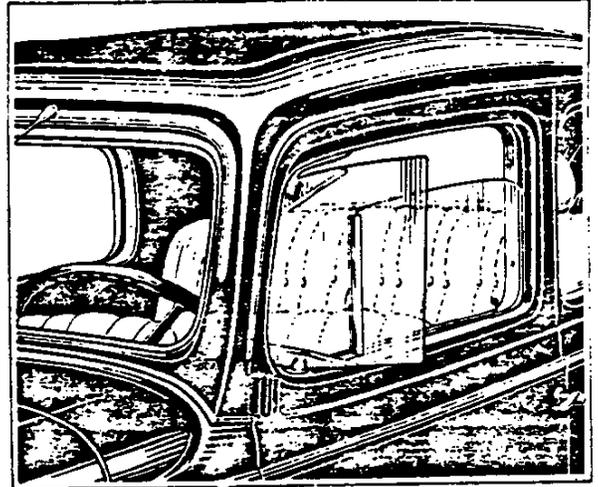
bead which extends the entire height of the grille. The grille is integral with the radiator as in the previous model. It is stamped from a single piece of steel in which the many narrow vertical ribs are pressed. In the deeply relieved valleys between the ribs, many holes with curved sides are pierced. The small but strong cross bars caused by this piercing tie the grille together at hundreds of points, also hiding the core from sight while they, themselves, are scarcely visible because of their depth in the grille. This stamped grille is not only more beautiful than grilles of composite structure, but is also proof against rattles and squeaks which might be caused by the loosening of the component parts of the built-up variety. Binder strips extend around its entire periphery, strengthening its edges and providing means for secure attachment to the shell. A "U" section reinforcement at its horizontal center further adds to its rigidity. The radiator shell is reinforced by a construction similar to that used in the previous model. Rigid "U" braces support the shell at the top and bottom, while a brace at the horizontal center behind the core connects the two headlamp supports. The streamlined radiator cap lies close to the radiator top to form an unobtrusive covering for the filler. It is a chromium plated die casting with a bead around its edge and one thru its center. These beads are wide at the front, gradually decreasing in width and terminating at the pointed rear end.



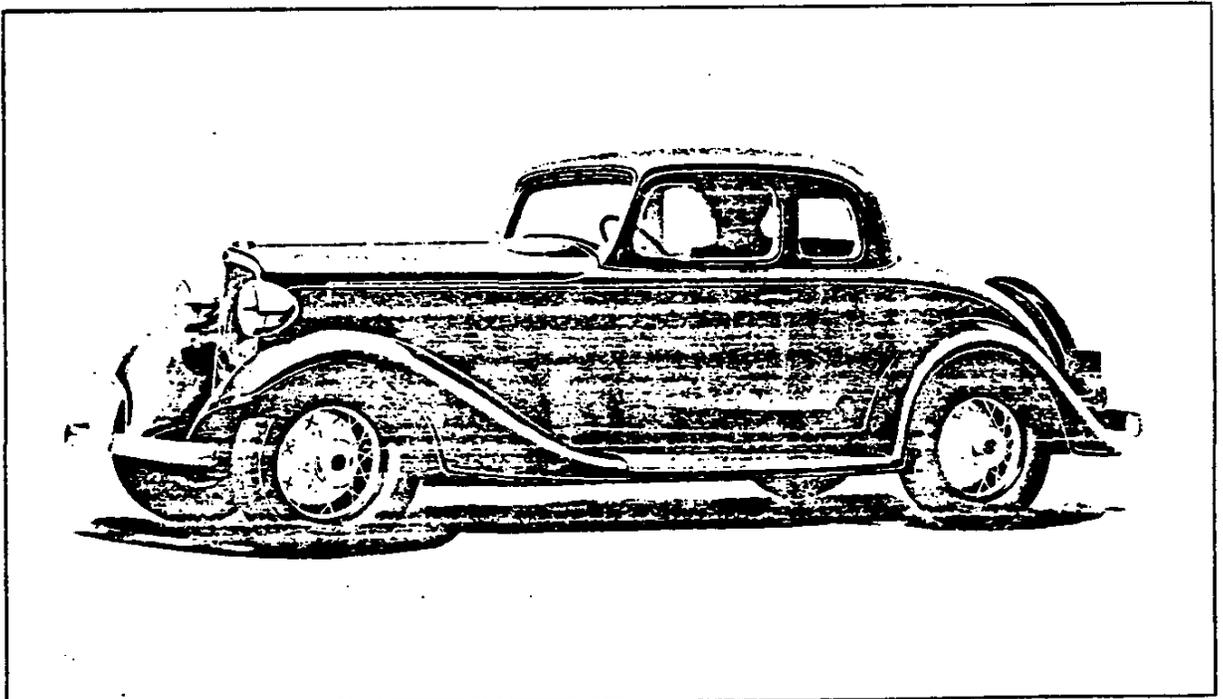
face is brightly chrome plated to form an attractive frame for the grille. The side and top sections of the shell are curved, and are sharply relieved from the front surface by exceptionally sharp embossing and by the contrast supplied by the plating of the face and the painting of the rest of the shell. The Chevrolet emblem in bright blue and silver colors is placed on the "V" apex of the slightly crowned upper front panel. The chrome plated starting crank hole cover is round and shaped to the "V" of the grille. It consists of two embossed steps superimposed on a third step formed by the frame of the hole in the grille. This frame is incorporated in the center



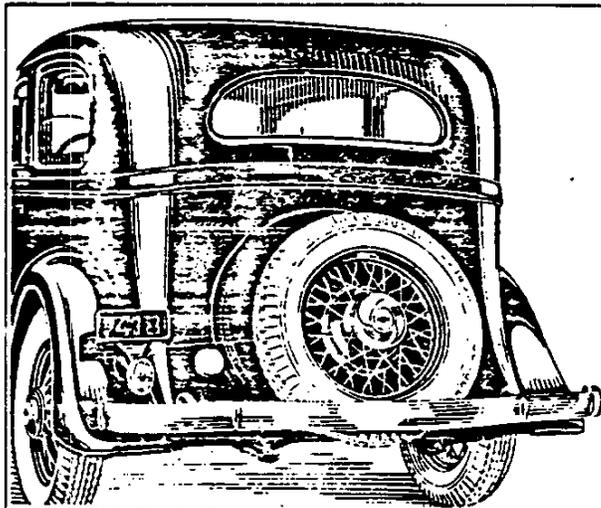
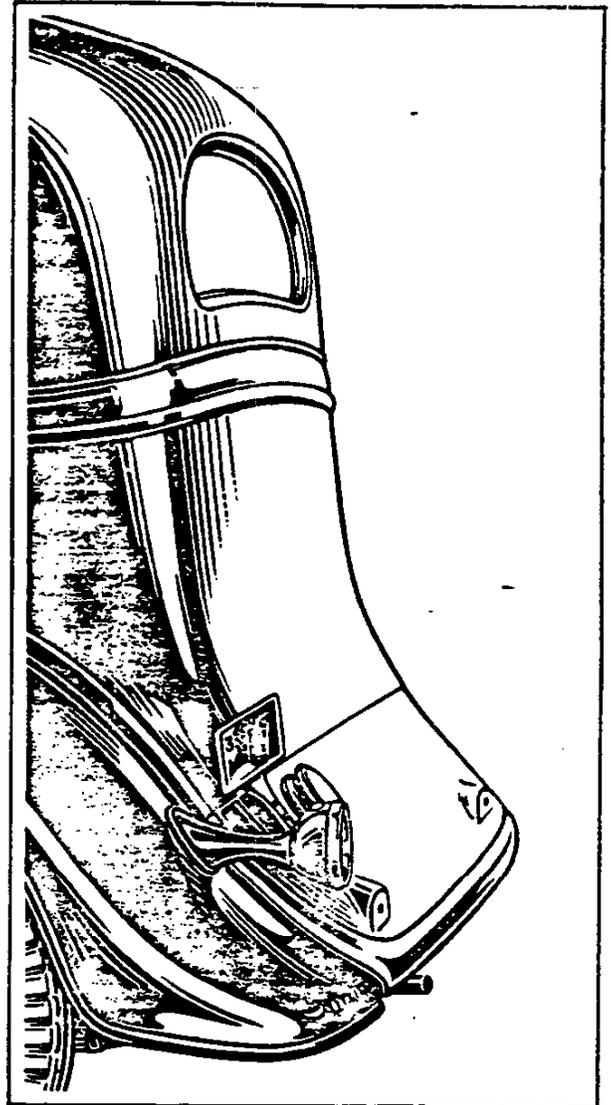
The ventilation system is entirely changed and improved by the introduction of built-in draft deflectors in the front door windows of all closed models and in the rear quarter windows of the sedan. The forward portion of each of these windows is hinged vertically to form a draft deflector. These draft deflectors may be adjusted individually in any direction to provide ventilation without unnecessary drafts to suit the desires of all passengers. They may be operated in inclement weather without danger of snow or rain entering the car. The rear portion of each front window is vertically adjustable as heretofore while the rear portion of each rear quarter window is fixed. In each of these windows, a narrow rubber-lined, chrome plated moulding conceals the joint between the two portions preventing leakage of air and rain when the window is entirely closed. The use of this type of ventilation obviates the necessity of an adjustable windshield. For this reason, and to prevent the entrance of direct drafts, rain and snow, and to eliminate the rattling of operating mechanism, the windshield is permanently mounted in its



frame. Its increased slope more effectively deflects the glare from approaching or following cars. Shatter-proof glass is used in both front deflectors and in the windshield to insure the safety of the passengers. This glass is so constructed that under impact it may be broken, but cannot be shattered to form sharp points or edges.



The operating handle of the larger cowl ventilator is located closer to the driver and therefore is more accessible. A screen of fine-mesh wire is mounted on the ventilator door to protect the occupants of the car from insects. It moves up and down as the ventilator is opened or closed, covering the entire opening. The windshield wiper motor is invisibly mounted in the header bar in front of the driver, with provision made in the bar for the easy installation of a second wiper for the front seat passenger. The wiper blade sweeps thru a larger area and parks at the right when not in operation. The sun visor is larger and may be adjusted to any angle from horizontal to vertical to provide proper protection for the driver's eyes. It is supported at both ends to eliminate vibration, and being pivoted at the left front corner of the roof it may be swung either to the front along the windshield header or along the side just above the left front door. Provision is made for the anchoring of the swinging end in the header and above the door. The instrument panel is depressed at an angle to provide a better view of the instruments. It is gracefully curved and attractively panelled and beaded to form a fitting background for the new instrument arrangement. It is painted in the body color with two embossed panels in the upper bar finished to simulate wood. This simulation of wood is also used in the garnish mouldings, all of which



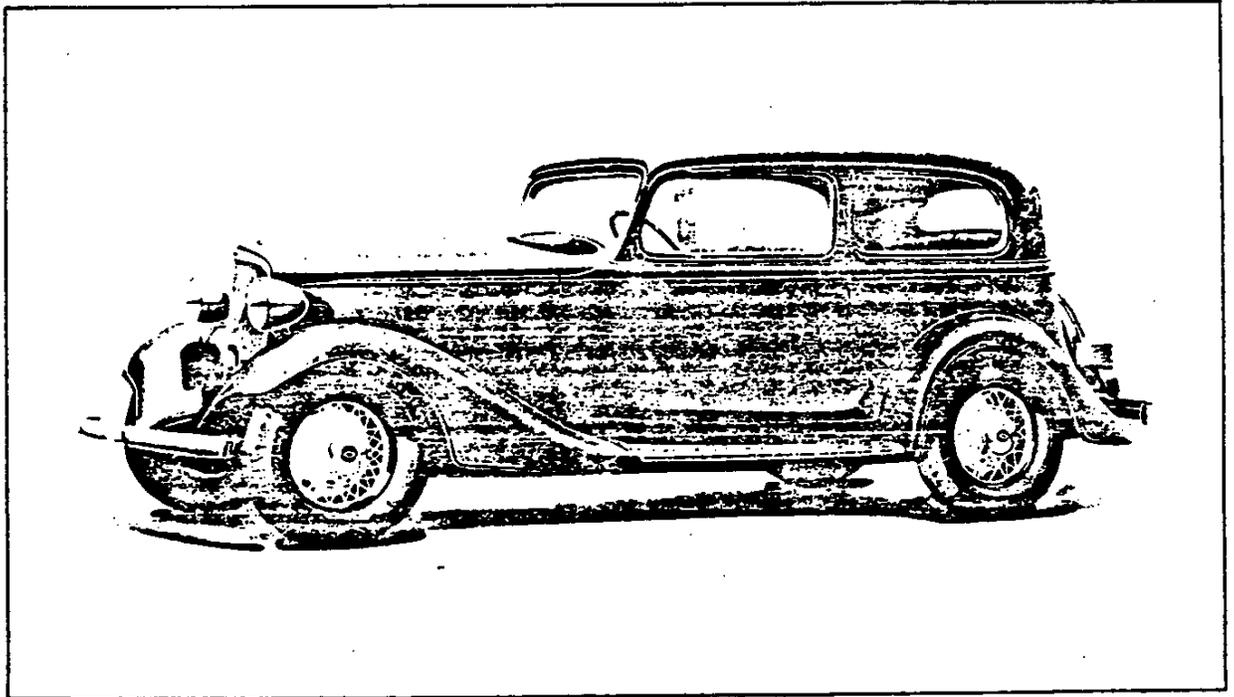
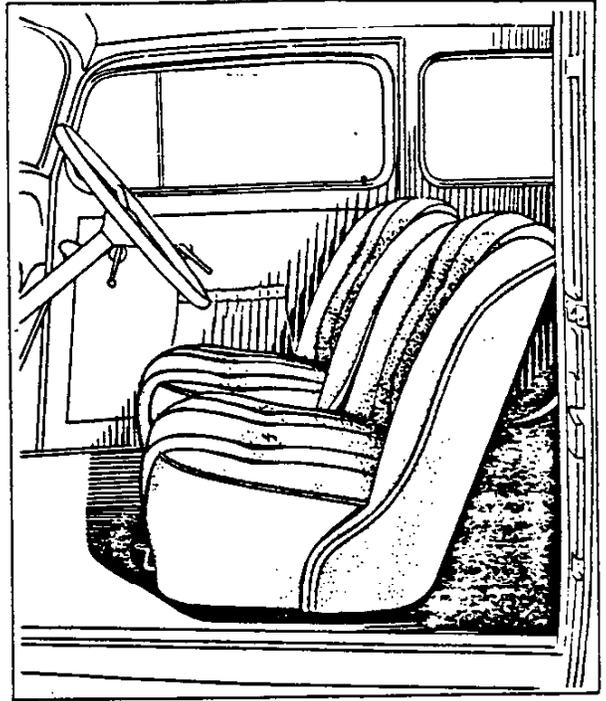
are one piece steel stampings. Each door is locked individually from the inside of the car by means of a small button mounted in the lower garnish moulding above the lock. The lock functions when the button is depressed and unlocks when it is raised. These buttons are very accessible because of their location. The door locks are of the free-turning type. When the lock functions, the outer handles may be turned without effect, returning automatically to their normal horizontal position when released. All body hardware is chrome plated. The window regulators and the inside remote

## CHEVROLET 1933 PASSENGER CAR ENGINEERING FEATURES

door lock handles are of a new plain design with the omission of all unnecessary projections upon which the clothing of passengers might be caught.

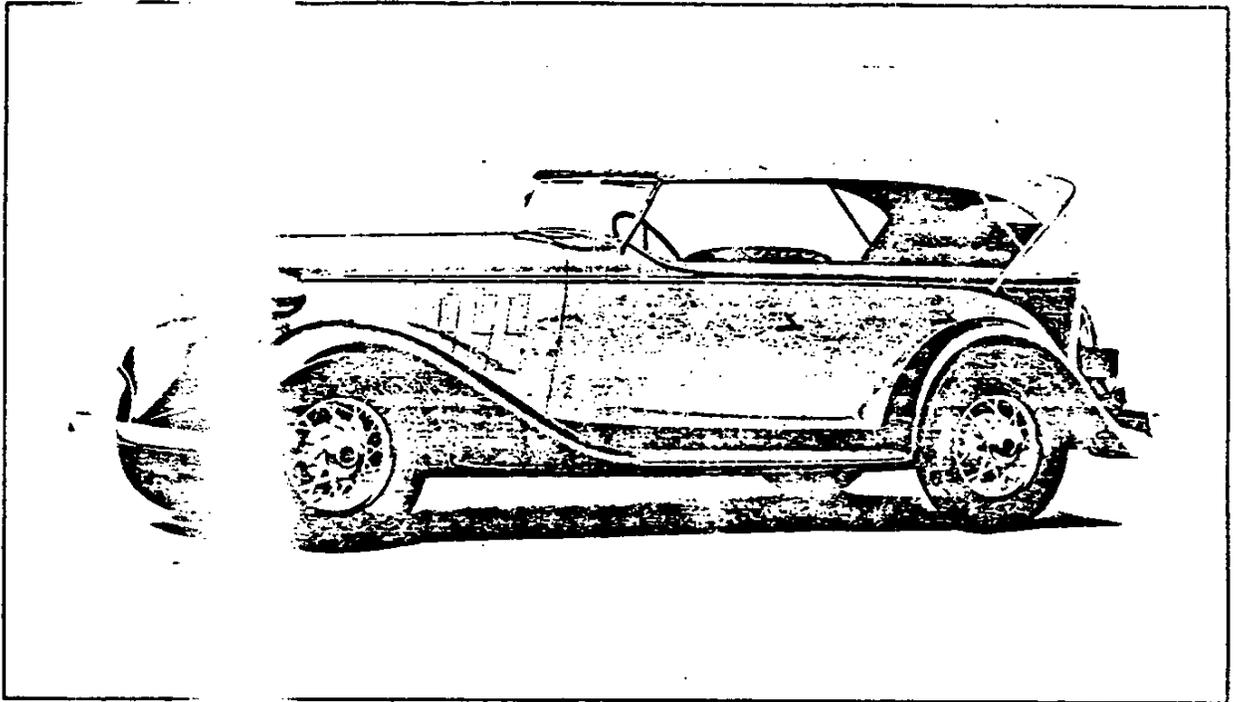
Arm rests are provided at each side of the rear seat in both coach and sedan. Assist cords are also provided at the right hand door of the coach and at both rear doors in the sedan. In the sedan, ash receivers, finished to match the garnish mouldings, are located at each side of the rear seat while roller curtains are supplied for the rear quarter windows as well as the rear window. This model is also equipped with a robe rail of the same finish as the garnish mouldings, and with a carpet covered foot rest.

The seat trimming in all closed models is of better material and of distinctive design. In the coach body the front seats are of the bucket type with the backs curved to fit the body. They support the backs of the driver and front seat passenger comfortably, preventing fatigue even on long trips when the same position is maintained for extended periods. The popular finger tip control is now added to the driver's seat in this mod-





VOLET 1933 PASSENGER CAR ENGINEERING FEATURES



el, allowing backward or forward movement. The increased width provides more space for the seat. The rear of the body is interior trim with vertical ribs to allow the pedal resistance as needed.

The open mode of the closed lined and hatched. In the phaeton downward into distinctive and width of fort because which is also near by the seats are are cushioned with more The cushions due to the

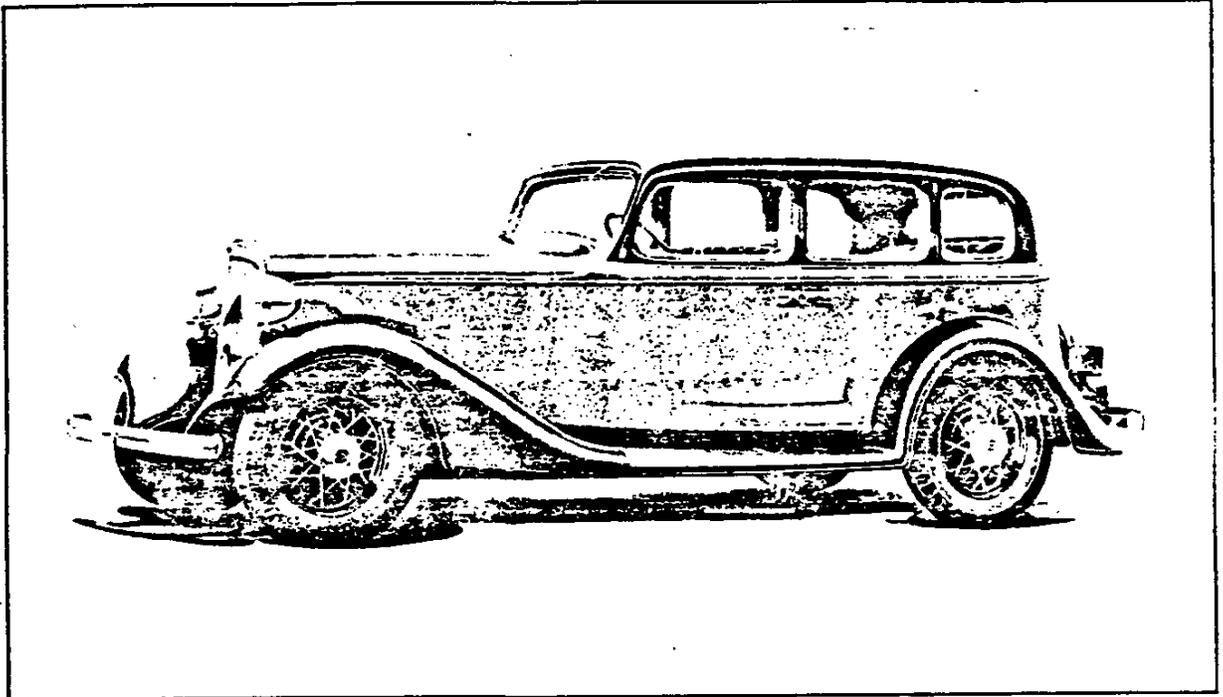
seat to be slid easily as in other models. The the coach doors provides fingers to enter the rear floor mat in the front of to harmonize with the A heel pad of raised incorporated in the mat to provide additional wear point where it is most

share the improvements line. They are streamline flowing back panel. felt moulding line flows back panel, giving a very e. The increased length as provide greater comfort provide more leg room, ed in the phaeton ton-lower steel floor.

at a greater angle and their seats and backs be spring construction. neater in appearance of the steel cushion

retainers. The new cushions are constructed so that they extend over the edges of the framing, resting on sturdy ribbed cross bars which are built into the cushion structure, eliminating the usual seat trap. They are neatly trimmed in imitation leather. The rubber floor mat is colored to harmonize with the trimming and incorporates the same type of heel pad used in the closed bodies. The larger cowl ventilator is equipped with the same type of screen used in the closed bodies. The windshield of shatter-proof glass slopes at a greater angle to afford even more protection against glare. The distinctive instrument panel is designed upon lines similar to those in the closed bodies. The top extends over the sides of the body, providing a greater amount of protection against rain and snow. The top bows are finished in their natural wood color and the rear curtain window is framed in rubber. It is stitched to the back curtain in such a way as to prevent glass breakage and tearing of the curtain. The visibility thru the side curtains is improved as the windows are closer to the windshield stanchions. All doors are sealed at the bottom to prevent drafts.

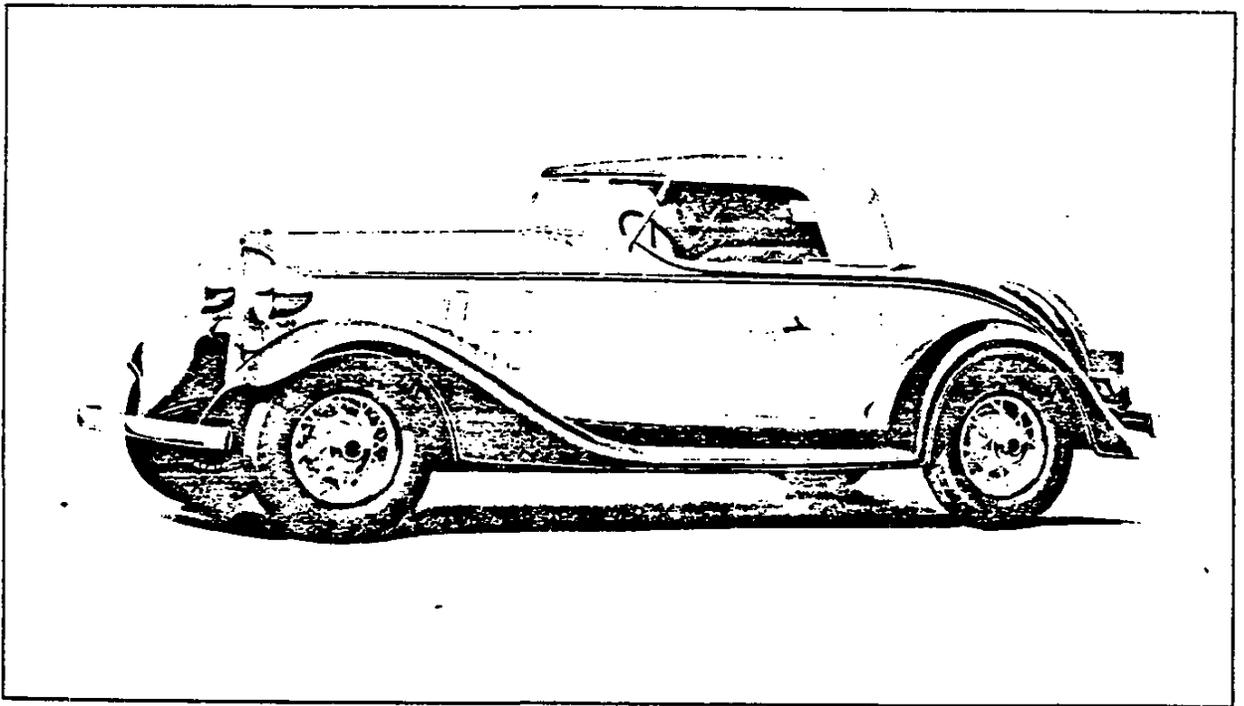
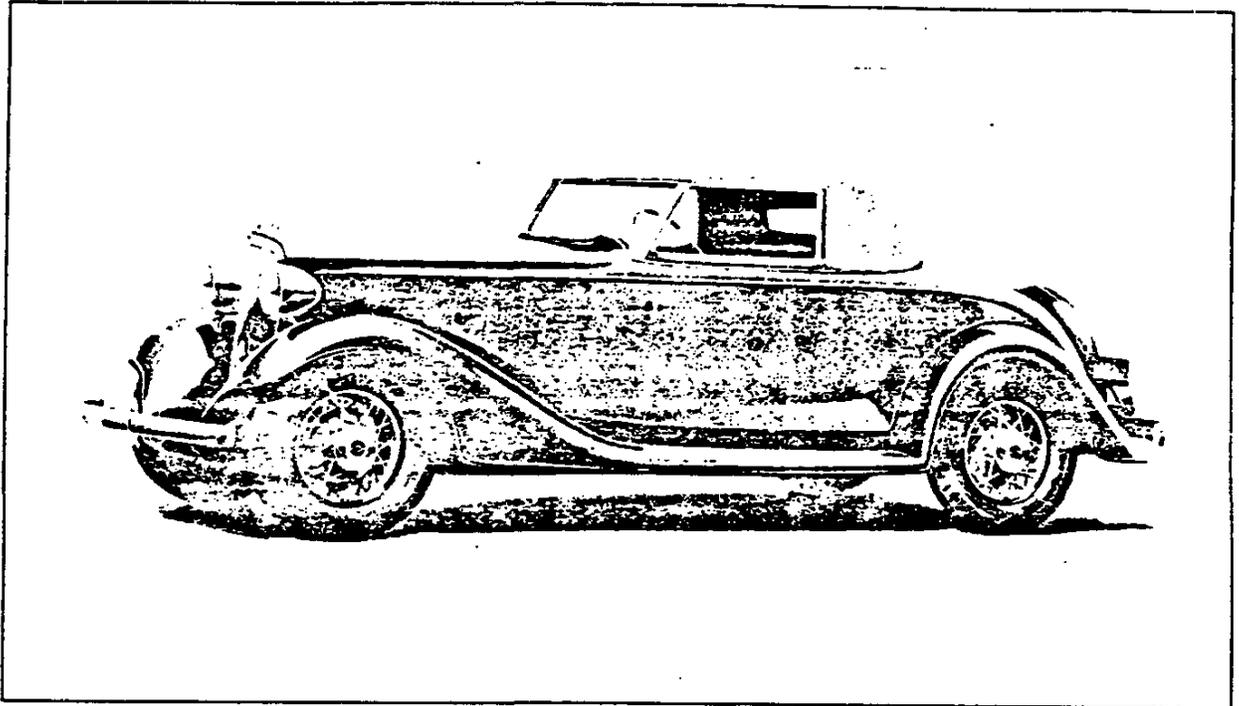




COMPARATIVE SPECIFICATIONS

	1932	1933
<b>CLOSED BODIES</b>		
Body bolts .....	8 .....	10
Door hinge attachment .....	Screws .....	Bolts and screws
Ventilation .....	V.V. windshield .....	C.V. Draft deflectors
Windshield slope .....	10° .....	19°
Windshield glass .....	Plate .....	Shatter-proof
Cowl ventilator length .....	14 3/4 .....	17 5/8
Protection against insects .....	None .....	Built-in screen
Windshield wiper movement .....	117° .....	124°
Windshield wiper motor .....	Visible .....	Concealed
Door handle locking .....	Rigid .....	Free turning
Internal door locking device .....	Remote handle .....	Individual button
Coach seat adjustment .....	Screw .....	Finger tip control
Sun shade support .....	Center .....	Both ends
<b>OPEN BODIES</b>		
Windshield slope .....	18° .....	25°
Windshield glass .....	Plate .....	Shatter-proof
Cowl ventilator length .....	14 3/4 .....	17 5/8
Protection against insects .....	None .....	Built-in screen





SPECIAL EQUIPMENT

The following new accessories are available for the motorist who wishes to express his individuality in the 1933 Chevrolet. Each accessory conforms to the same high standards of design, material and workmanship which are evidenced in the beautiful new Chevrolet.

RADIO

An excellent Chevrolet radio set of the six-tube super-hetrodyne type is available. The receiver in a compact assembly is easily installed behind the instrument panel to the left of the steering column where it is hidden from sight except for the small control panel which extends slightly beyond the instrument panel for greater accessibility. The radio is locked with the same type of lock used on the ignition and doors. It is equipped with a dynamic speaker which is easily installed at the center of the dash. This speaker has a tone control. A single conduit from the receiver is connected to the speaker and from there to the battery. A screen type aerial is located in the front part of the top. All motor noises are eliminated by the use of suppressors and condensers. The receiver, speaker aerial and all connections are supplied as a unit.

BUMPERS

The bumpers are improved in design and appearance. In the front bumper the distance between the front and rear bars is increased to provide more movement for flexion. The front bar is reshaped for both appearance and flexibility. Its curve at the center is more gradual while those at the ends are more abrupt. The rear bumper is redesigned to conform to the new car design. The rear bar is shaped at the center to clear the new position of the spare tire, affording it greater protection. At the ends, the curves are abrupt. The rear bar is supported at each end by a separate front bar which is bent back upon itself at its attachment to the rear bar. These bars provide greater protection where it is most needed. They support the rear bar by means of medallion covered attachments at their inner ends and by bolts at the outer.

METAL TIRE COVER

This beautifully enameled unit consists of two steel stampings fitting on each side of the spare tire. The inner extends from the center of the tire to cover part of the unexposed tire wall while the outer extends from the tire center to cover the entire exposed side wall of the tire. A wide stainless steel moulding, integral with the outer stamping, covers the joint of the two stampings around the periphery of the tire. Another decorative stainless steel moulding, located at the center of the cover exposed wall, follows the contour of the tire to improve the appearance. Three stainless steel clamps equally spaced on the top of the inner stamping, clamp the two parts together.

METAL TIRE COVER PLATE

This circular disc is used with the metal tire cover to provide maximum protection for the tire and wheel and also to conform to the present trend. It covers the entire exposed portion of the wheel, being invisibly fastened by hooks on its outer edge to the tire cover inner edge. Its inner edge rests on the wheel hub and is covered by the hub cap. It is beautifully enameled in black.

RUBBER TIRE COVER

This cover is designed to give the appearance of a metal tire cover. It is made of thick rubber with sufficient flexibility to insure its easy removal and replacement. It extends around the entire periphery of the spare tire covering the top and the exposed side wall. It is beautifully black enameled with two ornamental white enameled beads on the side wall.

TRUNK RACK

The trunk rack is of sturdy construction. It serves both to carry a trunk and to improve the rear appearance when not in use. It consists of a beautifully enameled one piece plate form of stamped steel supported by a bracket

and a brace at each end. This platform is stamped with two rows of four long horizontal slots. Five chrome plated horizontal mouldings extend the entire width of the platform separating each pair of slots. When not in use the platform with the moulding side outward fits against the rear of the body.

#### FENDER TIRE WELLS

Front fenders with tire wells and the tire attaching equipment are available for those who wish extreme smartness in their cars.

#### SPRING COVERS

Two of these covers are used with each spring. Each extends from the spring eye to the "U" bolts. They are made of black waterproofed imitation leather similar to that used in the car top, and are carefully shaped to the spring to which they are clipped. The side which contacts the base of the spring is lined with felt which is saturated with lubricant at the point of manufacture. This feature with the covering insures constant protection and lubrication of the spring, providing a stable riding condition.

#### WINDSHIELD DEFROSTER

This electrical radiant heater adequately maintains clear vision thru the windshield during inclement weather. Its cup shaped reflector body is universally adjustable. Its bracket base is screwed to the windshield header. An arm swiveling in this bracket is connected to the cup body by means of a ball and socket joint. The control switch is conveniently located in the bracket base. With the exception of the reflector the entire unit is chrome plated and is very attractive in appearance.

#### WIRELESS CIGARETTE LIGHTER

This convenient and attractive lighter is easily installed on the instrument panel. The exposed parts consist of a cadmium plated ring which retains the hollow knob in which the lighter filament is contained. This knob is beautifully designed and is made of

an onyx-like material thru which the glow of the filament is visible. A slight pressure of the knob in its base causes the filament to glow, after which the knob may be removed for use as no attaching wires restrict its movement.

#### LICENSE TAG FRAME

This attractive chrome plated frame fits any license tag improving its appearance. It consists of eight pieces of telescopic tubing, grooved on their inner edges for the insertion of the tag. Rust-proof bracket bolts, nuts and washers are furnished with the frame for attaching the tags to the car.

#### SUN VISOR

A sun visor identical with that furnished as standard equipment at the driver's side of the car is available for the use of the front seat passenger.

#### NON-GLARE SHIELD

This shield is a simple device used with the rear view mirror to protect the driver's eyes from the headlamp glare of cars approaching from his rear. It consists of an amber, black, or green colored celluloid cover which is held to the mirror by a spring clamp hidden behind the mirror. The celluloid swivels on the upper end of the clamp to a position above the mirror when not in use.

#### EAGLE RADIATOR CAP

The special Eagle radiator cap which lends extra smartness to the car is redesigned to conform to the streamlining of the car.

#### TAIL AND STOP LAMP

A tail and stop lamp for use on right rear fenders is available for those who wish the additional safety furnished by an extra lamp. This is identical with the standard lefthand lamp. The lamp bracket conforms in design to that on the left fender, but has no license tag bracket, and is shaped at the base to fit the right fender.

# National Automobile Chamber of Commerce

1933

## Specifications Sheets

Make of Car **CHEVROLET** Model **EAGLE 1933**  
 Name of Maker **CHEVROLET MOTOR COMPANY** Address **DETROIT**  
 Date .....

NOTE—Only standard equipment included in F.O.B. price should be included in this questionnaire

### ENGINE

No. of cylinders **6**  
 Valve arrangement **In Head**  
 Bore **3-5/16** Stroke **4**  
 Engine mounted on -  
 Springs **No**  
 Bolts through rubber **Front and Rear**  
 Vulcanized rubber, no bolts **On both sides**  
 Rubber mounting used at  
 front, rear, or both  
 No. of points of suspension **4 Stanamic**  
 Engine -  
 Make **Own**  
 Model **Eagle**  
 Cylinder arrangement **In Line**  
 Piston displacement **206.8**  
 Taxable horsepower **26.3**  
 Maximum brake horsepower at R.P.M. **65 • 2800**  
 Compression Ratio -  
 Standard **5.2-1**  
 Optional  
 Standard compression pressure -  
 Pounds at what R.P.M. **128 • 2200**  
 At cranking speed **Not available now.**

### PISTONS and RINGS

Piston  
 Make **Own**  
 Material **Cast Iron**  
 Features, *split skirt, taper strut, etc.*  
 Weight, ounces *without rings, pin or bushing*  
 Weight, ounces *with rings, pin, and bushings, if any*  
 Length **3-11/16**  
 Clearance -  
 Top **.011 Cold**  
 Bottom **.002-.003 Cold**  
 Piston ring groove depth -  
 Oil **.150**  
 Compression **.150**

Is lower groove drilled radially **Yes**  
 No. of oil rings used per piston **One**  
 Width of oil rings **3/16**  
 Width of oil ring gap **.004-.014**  
 No. of compression rings used per piston **Two**  
 Width of compression rings **5/32**  
 Width of compression ring gap **.004-.014**  
 Maximum wall thickness of oil rings **.140**  
 Maximum wall thickness of compression rings **.140**

### ROD and PINS

Wristpin -  
 Length **2-29/32**  
 Diameter **.9900-.9895**  
 Locked in rod, piston or floating **Locked in Rod**  
 Clearance **Slip fit.**  
 Hole finish - *ream, diamond bore, broach or ground* **Reamed**

### Connecting rod -

Length - center to center **7-1/2**  
 Material **Drop Forged Carbon Steel**  
 Weight, ounces  
 Bearing -  
 Material **Centrifugally Cast Babbitt**  
 Make **Own**

### Crankpin journal -

Diameter **2-1/8**  
 Length **1-17/64**

### Connecting rod bearing -

Clearance **.0005-.002**  
 End Play  
 Shim - *solid, laminated or none* **Solid**  
 Poured, spun or separate **See above**

Rods and pistons removed from above or below **Above**

### CRANKSHAFT

Front flywheel used **No**  
 Vibration dampener used - *yes or no* **Yes**  
 Type **Oscillating**

**SPECIFICATIONS**

Make of Car **CHEVROLET** Model **EAGLE 1933** Date

**CRANKSHAFT (cont'd)**

Crankshaft counterweights used, number of **4**

Which main bearing takes thrust **Center**

Crankshaft end play **.004-.007**

Main bearing -

Material **Steel Backed Babbitt**

Clearance **.001-.003**

Shim - solid, laminated or none **Solid**

No. of main bearings **3**

Main bearing journal diameter X length -

No. 1 **2-1/16 x 1-3/4**

No. 2 **2-1/8 x 1-7/8**

No. 3 **2-3/16 x 2-3/16**

No. 4

No. 5

No. 6

No. 7

No. 8

No. 9

Crankshaft gear -

Make **Own**

Material **Steel**

**CAMSHAFT**

Camshaft gear -

Make **Own**

Material **Bakelite and Fabric**

Generator gear - )

Make ) **None**

Material )

Timing chain - )

Make )

Model )

Length, inches ) **None**

Number of links )

Width )

Pitch )

Adjustment - none, automatic or manual )

**VALVES**

Intake valve -

Make **Own**

Head - **One Piece**

Material **Extruded Steel**

Actual overall diameter **1-29/64**

Angle of seat **45°**

Stem -

Material

Valve Length **4-15/16**

Diameter **5/16**

Stem to guide clearance **.001-.003**

Lift **.314**

Intake valve - (cont'd)

Spring pressure and length -

With valve closed **57# @ 1-3/4**

With valve open **95# @ 1-7/16**

Exhaust valve -

Make **Own**

Head - **One Piece**

Material **Extruded Steel**

Actual overall diameter **1-11/32**

Angle of seat **45°**

Stem -

Material

Valve Length **4-15/16**

Diameter **5/16**

Stem to guide clearance **.002-.004**

Lift **.314**

Spring pressure and length -

With valve closed **57# @ 1-3/4**

With valve open **95# @ 1-7/16**

Operating tappet clearance - intake **.006 Hot**

Tappet clearance for valve timing - intake **.010**

Operating tappet clearance - exhaust **.008 Hot**

Tappet clearance for valve timing - exhaust **.010**

Valve timing -

Intake opens **4° BTDC**

Intake closes **34° ALDC**

Exhaust opens **47° BLDC**

Exhaust closes **4° ATDC**

**LUBRICATION**

Overhead valve, lubrication method **Pressure**

Lubricating system type - pressure or splash **Comb-Pump & Splash**

Oil pressure to -

Main bearings - yes or no **Yes**

Connecting rods - yes or no **No**

Wristpins - yes or no **No**

Camshaft bearings - yes or no **Yes**

Timing gear lubrication - positive or splash **Positive**

Oil pump type **Vane**

Oil grade recommended - SAE viscosity

Summer **30** Winter **20**

Normal oil pressure - lbs. at N.P.R. **14 at 30 Mi./hr.**

Pressure at which relief valve opens

Capacity of oil reservoir - quarts **5**

Oil pressure gauge make **AC**

Drain oil, miles **Variable**

Type of oil drain **Plug**

Oil reservoir gauge type **Rod**

External oil filter make **None**

Oil rectifier make **None**

Oil cooler make **None**

**SPECIFICATIONS**

Make of Car..... **CHEVROLET** Model..... **EAGLE 1933** Date.....

**LUBRICATION (cont'd)**

Chassis lubrication -  
 Type **High Pressure**  
 Make **Alemite**  
 Crankcase ventilating system - yes or no **Yes**

**FUEL**

Gasoline tank -  
 Make **Own**  
 Capacity **14 Gals.**  
 Fuel feed -  
 Type - vacuum tank, electric pump, vacuum **Diaphragm**  
 pump or camshaft pump **Pump-Camshaft Driven**  
 Make  
 Gasoline filter make  
 Carburetor -  
 Make **Carter**  
 Model **W1-251S**  
 Size **1-1/4**  
 Type - **Single Adjustment**  
 Up or down draft **Down Draft**  
 Single or dual **Single**  
 Heat adjustment - manual, automatic or none **Automatic**  
 Electric mixture heating - yes or no **No**  
 Air cleaner make **AC**  
 Intake silencer make **AC**  
 Exhaust pipe diameter **2**  
 Muffler make **Own**

**COOLING**

Cooling circulation, type of  
 Water pump -  
 Type **Impellor**  
 Drive **Driven by Fan Belt**  
 Water circulation thermostat make **None**  
 Radiator shutter - **None**  
 Make  
 Control - manual or automatic **None**  
 Radiator core -  
 Type **Ribbed Cellular**  
 Make **Harrison**  
 Cooling system capacity, gallons **10 Qts. 1 Pint**  
 Lower radiator hose -  
 Inside diameter **1-1/4**  
 Length **3-1/2 - 2 pieces - total 7**  
 Upper radiator hose -  
 Inside diameter **1-1/4**  
 Length **9-1/8**  
 Fan belt -  
 Type - flat, round, vee (give angle of vee) **vee 32°**  
 Make **Own**  
 Length, outside **Effective 39-1/16**  
 Width, maximum **21/32**  
 Fan make **Own**

**IGNITION**

Ignition unit -  
 Make **Delco-Remy**  
 Manual advance, degrees **None**  
 Automatic advance, " **36°**  
 Vacuum advance, " **Vacuum Retard 12°**  
 Breaker gap **.018**  
 Timing - degrees or piston travel in inches with  
 spark retarded, half advanced or full  
 advanced **10° advance**  
 Firing order **1-5-3-6-2-4**  
 Ignition coil make **Delco-Remy**  
 Amperage draw of coil -  
 With engine stopped **4**  
 With engine idling **1.9 at 40 Mi./hr.**  
 Ballast resistance fitted - yes or no **No**  
 Ignition switch make **Delco-Remy**  
 Spark plug -  
 Thread - 7/8 standard, metric or pipe **Metric**  
 Model **K-9**  
 Make **AC**  
 Gap **.032**  
 Ignition cable make **Delco-Remy**

**BATTERY**

Make **U.S.L. - Delco**  
 Standard number **XY-13-C - 133 CU**  
 Shipped - wet or dry **Drive away wet - others dry**  
 Capacity, ampere hours **90**  
 Bench charging rate -  
 Start **4-1/2 Amps.**  
 Finish **4-1/2 Amps.**  
 Which battery terminal is grounded **Neg.**

**STARTING MOTOR**

Starting motor make **Delco-Remy**  
 Normal engine cranking speed **160**  
 Normal speed of starting motor armature **2000 R.P.M.**  
 Normal amperage draw of starting motor **70**  
 Normal running amperage and torque of starting  
 motor **2 ft. lbs. @ 2000 R.P.M.**  
 Starting motor -  
 Lock torque **14 ft. lbs.**  
 Lock amperage **420**  
 Lock voltage **3.75**  
 Type of drive - Bendix, manual gear, Bendix  
 overrunning clutch or chain  
 Automatic starting device fitted to starting  
 motor, make **Delco-Remy**  
 Starting motor pinion meshes front or rear **Front**  
 No. of teeth in flywheel **104**  
 Face width of flywheel teeth **1/2**

**SPECIFICATIONS**

Make of Car..... **CHEVROLET** Model..... **EAGLE 1933** Date.....

**STARTING MOTOR (cont'd)**

Flywheel teeth integral or steel ring **Steel Ring**  
 Gear ratio between starter armature and flywheel **10.4 to 1**

**GENERATOR**

Generator -  
 Make **Delco-Remy**  
 Driven by **Belt**  
 Voltage regulation, type of **Third Brush**  
 Field fuse capacity **None**  
 Thermostat opening temperature **None**  
 Cutout relay make **Delco-Remy**  
 Generator armature speed at cutout closing **660**  
 Voltage at cutout closing **7.2**  
 Car speed at cutout closing **7 Mi./hr.**  
 Amperes to open cutout **1 to discharge**  
 Generator maximum normal charging rate -  
     Hot **12 Amps.**  
     Cold **17 Amps.**  
 Generator armature speed for maximum normal charging **2100**  
 Car speed for maximum normal charging **21 Mi./hr.**  
 Voltage at maximum normal charging **7.35**  
 Ammeter make **AC**

**LAMPS**

Lighting switch make **AC**  
 Are double filament bulbs used **Yes**  
 How are headlights dimmed -  
     By depressed beam **Yes**  
     By resistance  
     By separate dimmer bulbs  
 Are tail and dash lights in series **No**  
 Headlight -  
     Make **Guide Lamp Co.**  
     Reflector type **Parabolic**  
     Cover glass - **Monogram**  
         Make **Monogram**  
         Diameter **9-7/16**  
 Parking light make **In head lamp**  
 Tail light make **Guide**  
 Horn type - vibrator or motor **Vibrator**  
 Horn make **Delco-Remy**  
 Amperage draw of horn **5 Amps.**

**CLUTCH**

Clutch -  
 Make **OWN**  
 Power operated unit, make **OWN**  
 Vibration insulation or neutralizer - fabric, rubber blocks or springs **Springs**  
 No. of clutch driving discs **One**  
 No. of clutch driven discs **One**

**Clutch - (cont'd)**

Clutch facing -  
 Material - woven or moulded asbestos **Woven Moulded Asbestos**  
 Inside diameter **6-1/4**  
 Outside diameter **9**  
 Thickness **1/8**  
 No. required **2**

**TRANSMISSION**

Transmission -  
 Make **OWN**  
 Location **In unit with engine**  
 No. of forward speeds **3**  
 Gear ratio in high - standard 5-passenger 4-door sedan **4.11**  
 Transmission ratio -  
     In third, if four-speed transmission  
     In second **1.70**  
     In low **3.02**  
     In reverse **3.40**  
 Constant mesh spur, helical, herringbone or Helical  
     internal gears on second - third if  
     four-speed transmission **Yes**  
 Synchronous meshing second and third gears third  
     and fourth if four-speed transmission  
 Transmission oil -  
     Capacity - pounds or quarts **2-1/2 Pints**  
     Grade recommended - S.A.E. viscosity **160 Summer-90 Winter**  
 Free wheel unit -  
     Make **OWN**  
     Location - in transmission or separate **Separate**  
     Acts on second (third if four speed transmission)  
     and high or on all forward speeds **Yes**  
     -locked out by button in shift lever,  
     separate lever or button on dash  
     Oil capacity - pounds or quarts **3/4 Pint**  
     Oil grade recommended - S.A.E. viscosity **160 Summer-90 Winter**  
 Front universal -  
     Make **OWN**  
     Model **1933**  
     Type - metal, fabric, rubber or anti-friction **Metal bearing**  
 Rear universal -  
     Make **None**  
     Model  
     Type - metal, fabric, rubber or anti-friction bearing  
 Universal joints lubricated **from Transmission**  
 Drive taken through springs, torque tube or radius rods **Springs**  
 Torque taken through springs, torque arm, torque tube or radius rods **Torque Tube**

**SPECIFICATIONS**

Make of Car **CHEVROLET** Model **EAGLE 1933** Date \_\_\_\_\_

**REAR AXLE**

Rear axle - **4.11**  
 Make **Own**  
 Type - *semi, full or three-quarter floating* **Semi**  
 Minimum road clearance under center of rear axle - *tires inflated* **8-3/8**  
 Differential gear make **Own**  
 Rear axle oil -  
 Capacity - lbs. or qts. **4-1/2 Pints** **160 Summer**  
 Grade recommended - *S.A.S. viscosity* **90 Winter**  
 Type of final gearing **Bevel**  
 Gear ratio - *standard 5-passenger 4-door sedan*  
 Note: If optional gear ratios are used, attach list to this page.

**Number of teeth -**

In ring gear **37**  
 In pinion **9**  
 How is pinion adjusted - *screw or shims*  
 How is pinion bearing adjusted - *screw or shims*  
 Are pinion bearings in sleeve  
 Backlash between pinion and ring gear

**TIRES and WHEELS**

Tires -  
 Make **-U.S. - Goodrich**  
 Size **5.25-18 - 4 Ply**  
 If low pressure balloon tires are optional, state size - **No**  
 No. of piles -  
 Inflation pressure -  
 Front **32 Lbs.**  
 Rear **32 Lbs.**

Wheels fitted with demountable rims **No**

**Rim -**

Make ) **Drop Center Rim**  
 Diameter ) **integral with wheel**  
 Width )

Axle clearance for jack - *tires inflated*

Front **9**  
 Rear **7-1/2**

**Wheels -**

Type **Wire**  
 Make **Own**

**SPRINGS**

**Front spring -**

Type **Semi-Elliptic**  
 Make **Own**  
 Material **Chrome Vanadium Steel**  
 Length **36**  
 Width **1-3/4**  
 Number of leaves - *5-passenger, 4-door sedan* **7**  
 Shackled front or rear **Rear**

**Springs (cont'd)**

**Rear Spring -**

Type **Semi-Elliptic**  
 Make **Own**  
 Material **Chrome Vanadium Steel**  
 Length **54**  
 Width **1-3/4**  
 Number of leaves - *5-passenger, 4-door sedan* **8**  
 Spring leaves lubricated with  
 Spring shackles -  
 Type **Self-adjusting**  
 Make **Own**  
 Vertical distance on front springs from chassis side-rail to spring pad

**STEERING**

**Steering gear -**

Type **Worm and Sector**  
 Make **Own**  
 Number of turns of steering wheel for, full left to right swing of wheels **3.03**  
 Car turning radius - *feet right or left or both* **21-1/4**  
 Castor degrees **2°15'**  
 Camber - **1°30'** inches  
 Toe-in **0°13'15" to 0°17'34"**  
 Crosswise inclination of kingpin, degrees **7°10'**  
 Steering wheel make **Own**  
 Front axle -  
 Make **Own**  
 Section type - *I-beam or tubular* **I-Beam**  
 End type - *Elliott or reverse Elliott* **Reverse Elliott**

**BRAKES**

Number of complete brakes - *four, five or six* **4**

**Foot brakes -**

Make **Own**  
 Type of mechanism, *hydraulic or mechanical* **Mechanical**  
 If vacuum booster is standard, state make **None**  
 Brake lining moulded or woven **Moulded**

**Rear brake -**

Drum -  
 Material **1025 Special Carbon**  
 Diameter **12**  
 Internal or external **Internal**  
 Lining -  
 Length per wheel **18-11/32**  
 Width **1-3/4**  
 Thickness **1/4**  
 Clearance, toe heel **Set to rub slightly at assembly**  
 Front brake -  
 Drum -  
 Diameter **12**  
 Material **1025 Special Carbon**

**SPECIFICATIONS**

Make of Car.....**CHEVROLET**..... Model.....**EAGLE 1933**..... Date.....

**BRAKES (cont'd)**

Front brake - (cont'd)  
 Internal or external **Internal**  
 Lining - **Moulded**  
 Length per wheel **18-11/32**  
 Width **1-3/4**  
 Thickness **1/4**  
 Clearance, toe **heel Set to rub slightly**  
 Total foot braking area **128.4 at assembly**  
 Percent braking power on rear wheels **50%**  
 Hand brake location **Rear Wheels**  
 Hand lever operates on - *transmission, separate*  
*rear brakes, rear service brakes or*  
*all four service brakes* **All 4 Service Brakes**  
 Hand brake -  
 Internal or external **Internal**  
 Drum diameter **12**  
 Lining - **Moulded**  
 Length per drum **18-11/32**  
 Width **1-3/4**  
 Thickness **1/4**  
 Clearance **Set to rub slightly at assembly.**

**FRAME**

Frame -  
 Make **A.O. Smith**  
 Depth, maximum **5-1/4**  
 Thickness, maximum **9/64**  
 Flange width, maximum **2-1/4**  
 Wheelbase **110**  
 Tread -  
 Front **57-9/16**  
 Rear **57-9/16**  
 Shipping weight of standard 5-passenger, four-door sedan  
 Price of standard 5-passenger 4-door sedan  
 First serial number, this series **3367317**  
 Serial number location **Name Plate in Right Front Seat Ex**  
 Overall length of car without bumpers **or Sil**

## BEARINGS

NOTE - In giving bearing dimensions, kindly use the following order: inside diameter, outside diameter and width. Where cup and cone bearings are used, give both cup and cone numbers.

Starting motor commutator end bearing -  
 Make or type  
 Size or number

Starting motor drive end bearing -  
 Make or type  
 Size or number

Starting motor outboard bearing -  
 Make or type  
 Size or number

Generator commutator end bearing -  
 Make or type  
 Size or number

Generator drive end bearing -  
 Make or type  
 Size or number

Clutch throwout bearing -  
 Make or type **Own-Carbon Composition #1 Mixture**  
 Size or number **1-1/2 x 2-3/8 x 3/4**

Clutch pilot bearing -  
 Make or type **New Departure**  
 Size or number **907502**

Transmission pocket or spigot bearing -  
 Make or type **Hyatt**  
 Size or number **142638**

Transmission reverse idler bearing -  
 Make or type **Bronze Bushing**  
 Size or number **7/8 x 1**

Transmission main shaft front bearing -  
 Make or type **New Departure**  
 Size or number **903208**

Transmission main shaft rear bearing -  
 Make or type **New Departure**  
 Size or number **907506**

Transmission countershaft front bearing -  
 Make or type **Bronze Bushing**  
 Size or number **7/8 x 1-1/4**

Transmission countershaft rear bearing -  
 Make or type **Bronze Bushing**  
 Size or number **7/8 x 1-3/8**

Free wheel unit rear bearing -  
 Make or type **New Departure**  
 Size or number **907506**

Rear axle pinion or worm shaft front bearing -  
 Make or type **New Departure**  
 Number **905206**

Rear axle pinion or worm shaft rear bearing -  
 Make or type **New Departure**  
 Number **901105**

Differential right bearing -  
 Make or type **New Departure**  
 Number **902100**

Differential left bearing -  
 Make or type **New Departure**  
 Number **902100**

**Axle Shaft Bearing -**  
 Make or type **Special Hyatt**  
 Size or number **1.53 x 2.78 x 1-1/8**

Rear wheel outer bearing - )  
 Make or type ) **None. See Axle Shaft**  
 Size or number ) **Bearing.**

Front wheel inner bearing -  
 Make or type **New Departure**  
 Size or number **909002**

Front wheel outer bearing -  
 Make or type **New Departure**  
 Size or number **909001**

Kingpin upper bearing -  
 Make or type **Split Bronze Bushing**  
 Size or number **.724 x .859 x 1-17/64**

Kingpin lower bearing -  
 Make or type **Split Bronze Bushing**  
 Size or number **.724 x .859 x 1-17/64**

Kingpin thrust bearing -  
 Make or type **Special Ball**  
 Size or number **.740 x 1-9/16 x 9/16**

Front spring -  
 Front bushing size **9/16 x 3/4 x 1-3/4**  
 Rear bushing size - **None**  
 Shackles - )  
 Upper end ) **No Bushings**  
 Lower end )

Rear spring -  
 Front bushing size **9/16 x 3/4 x 1-3/4**  
 Rear bushing size - **None**  
 Shackle - )  
 Upper end ) **No Bushings**  
 Lower end )



# Body Details

Body Frame Work Material	Body Panel Material	Rear and Quarter Panel Material	Number of Color Options	Lacquer Make	Hardware Make	Width of Left Front Pillar on the Diagonal, normally as flight as Apply to Driver's Value	Top Frame Type (Wire Mesh, Longitudinal Slats, Etc.)	In Steering Column Adjuster (Give Range in inches)	In Front Seat Adjuster (Give Range in inches)	A B C D E F G H I J K										Head Room Seat Cushion to Ceiling	Head Room Floor to Ceiling	Overall Height Road to Roof					
										No	No	Width of Front Seat	Width of Rear Seat	Distance from Back of Front Seat to Front of Rear Seat	Distance from Steering Wheel to Top of Edge of Cushion	Height of Front of Cushion	Depth of Front Seat	Depth of Rear Seat	Distance from Edge of Seat to Outch Pedal				Width of Front Door	Width of Rear Door			
Steel	Steel	Steel	3	DuPont	Permat	2	2	2	2	2	42	42	6-5/8	17 3/4	-	36 1/2	-	-	-	-	-	-	-	-	-	-	-
			1			2	2	2	2	2	42	42	6-5/8	17 3/4	-	36 1/2	-	-	-	-	-	-	-	-	-	-	-
			4			2-5/8	2-5/8	2-5/8	2-5/8	2-5/8	42 1/2	43 3/4	6 5/8	12 3/8	17 3/4	16 5/8	30 1/2	-	-	-	-	-	-	-	-	-	-
			3			2-5/8	2-5/8	2-5/8	2-5/8	2-5/8	42	44 1/8	6 1/2	11 1/2	18 1/2	18 9/16	30 1/2	-	-	-	-	-	-	-	-	-	-
			4			2-5/8	2-5/8	2-5/8	2-5/8	2-5/8	42	44 1/8	6 1/2	11 1/2	18 1/2	18 9/16	30 1/2	-	-	-	-	-	-	-	-	-	-
			3			1-3/4	1-3/4	1-3/4	1-3/4	1-3/4	42	44 1/8	6 1/2	11 1/2	18 1/2	18 9/16	30 1/2	-	-	-	-	-	-	-	-	-	-

See Body Dimension Diagram







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100

