PACKARD
Service Counselor
PARTS ★ ACCESSORIES ★ PRODUCT ★ PROFITS
INSTITUTIONAL PROMOTIONAL
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MECHANICAL SPECIFICATIONS AND ADJUSTMENTS
23rd SERIES

MODELS	EIGHT 2301	SUPER EIGHT 2302-2332	CUSTOM EIGHT 2306-2333
BRAKES			
Type	Hydraulic—2 Shoe	Hydraulic—2 Shoe	Hydraulic—2 Shoe
Effective Area	171.5 sq. in.	171.5 sq. in.	208.25 sq. in.
Effective Area Hand Brake	85.75 sq. in.	85.75 sq. in.	98 sq. in.
Drum Diameter—Front	12" Centrifuse	12" Centrifuse	12" Centrifuse
—Rear	12" Centrifuse	12" Centrifuse	12" Centrifuse
Lining Size and Material			
Primary—Marshall 4112			
Front	1¾" x 3/16" x 11½"	1¾" x 3/16" x 11½"	2¼" x 3/16" x 11½"
Rear	1¾" x 3/16" x 11½"	1¾" x 3/16" x 11½"	2" x 3/16" x 11½"
Secondary—Marshall 9051			
Front	1¾" x 3/16" x 13"	1¾" x 3/16" x 13"	2¼" x 3/16" x 13"
Rear	1¾" x 3/16" x 13"	1¾" x 3/16" x 13"	2" x 3/16" x 13"
Wheel Cylinder Size			
Front	1 1/16"	1 1/16"	1"
Rear	15/16"	15/16"	15/16"
CLUTCH			
Type	Single Dry Plate	Single Dry Plate	
Pedal Free Play	1¼" to 1½"	1¼" to 1½"	
Facing Material	U. S. Asbestos, Woven	U. S. Asbestos, Woven	
Size Facing	6¾" x 10" x .125"	7" x 10½" x .125"	
Throw-Out Bearing	Prelubricated Ball	Prelubricated Ball	
Clutch Spring Pressure	154 lb. at 1.566"	163 lb. at 1.562"	
Number of Springs	9	9	
Vibration Neutralizer	Yes	Yes	
COOLING SYSTEM			
Type	Pressure	Pressure	Pressure
Water Pump	Centrifugal—Self-Adjusting	Centrifugal—Self-Adjusting	Centrifugal—Self-Adjusting
Water Pump Drive	Fan Belt	Fan Belt	Fan Belt
Radiator Core	Tubular	Tubular	Tubular
Capacity of System	4½ gal.	4¾ gal.	4¾ gal.
Fan	4 Blade 17¼"	4 Blade 18"	5 Blade 18½"
Driving Pulley	On Crankshaft	On Crankshaft	On Crankshaft
Ratio	.963 to 1	.963 to 1	.973 to 1
Thermostat Starts to Open			
Standard	148°—156°	148°—156°	145°—150°
High Reading	157°—165° and 175°—184°	157°—165° and 175°—184°	160°—165°
Fan Belt	48.9" x ¾" x 40°	48.9" x ¾" x 40° 49.2 (2332)	52.9" x 1" x 42°
Radiator Hose—Inlet	Angle-Moulded	Angle-Moulded	Angle-Moulded
—Outlet Upper	3" x 1¾" ID	3" x 1¾" ID	3¾" x 1¾" ID
—Outlet Lower	3¾" x 1¾" ID	3¾" x 1¾" ID	3¾" x 1¾" ID
Heat Indicator	Electric	Electric	Electric
Fan Belt Adjustment	At Generator	At Generator	At Generator
Gravity Flow of Radiator	34-36½ Gal. per. min.	34-36½ Gal. per min.	34-36½ Gal. per min.
Radiator Cap	Pressure Type—(7 lb. per sq. in.)	Pressure Type—(7 lb. per sq. in.)	Pressure Type—(7 lb. per sq. in.)

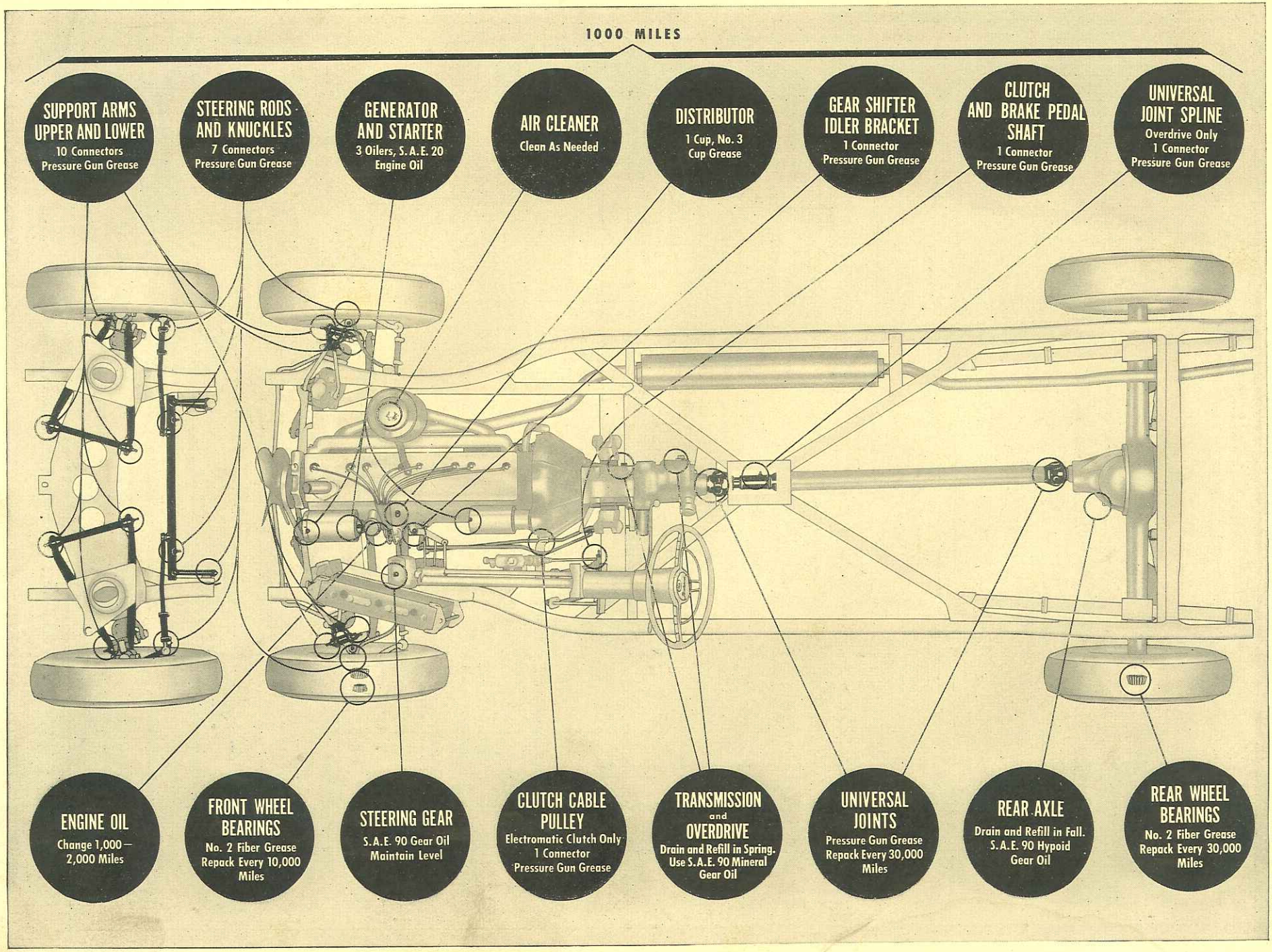
MODELS	EIGHT 2301	SUPER EIGHT 2302-2332	CUSTOM EIGHT 2306-2333
ELECTRICAL			
Battery Make	Willard-SW-1D-100 Auto-Lite PN-15-ZR	Willard-SW-1D-100 Auto-Lite PN-15-ZR	Auto-Lite PN-17-ZR
Capacity	100 hr.	100 hr.	120 hr.
Plates	15	15	17
Ignition Timing	6° BTDC	6° BTDC	6° BTDC
Breaker Point Gap	.0125"-.0175"	.0125"-.0175"	.0125"-.0175"
Breaker Arm Spring Tension	19-23 oz. Auto-Lite 17-21 oz. Delco	19-23 oz. Auto-Lite 17-21 oz. Delco	19-23 oz.
Spark Control	Full Automatic	Full Automatic	Full Automatic
Spark Advance Begins at	600 Engine rpm	600 Engine rpm	500 Engine rpm
Distributor (Vacuum Controlled)	Auto-Lite IGP-4502B Delco 1110811	Auto-Lite IGP-4502B Delco 1110811	Auto-Lite IGT-4203
Spark Plug—Size	10 mm.	10 mm.	10 mm.
Spark Plug—Make and Type	Auto-Lite P-4 or AC104 or Champion Y4A	Auto-Lite P-4 or AC104 or Champion Y4A	Auto-Lite P-4 or AC104 or Champion Y4A
Spark Plug Gap	.025"-.030"	.025"-.030"	.025"-.030"
Generator—Make and Type	Auto-Lite GGW-6001E Delco 1102715	Auto-Lite GGW-6001E Auto-Lite GGU-6001C (2332) Delco 1102715	Auto-Lite GGW-6001F Auto-Lite GGU-6001D (2333)
Generator Drive	Belt	Belt	Belt
Generator Cut-In Speed—Cold	920 rpm Auto-Lite 880 rpm Delco	920 rpm Auto-Lite 780 rpm Auto-Lite (2332) 880 rpm Delco	920 rpm Auto-Lite 780 rpm Auto-Lite (2333)
Generator Output—Maximum	40 Ampere	40 Ampere 45 Ampere (2332)	40 Ampere 45 Ampere (2333)
Generator Voltage—Maximum	7.4	7.4	7.4
Generator Voltage Regulator	Auto-Lite VRP-4402C Delco 1118360	Auto-Lite VRP-4402C Auto-Lite VAV-4401B (2332) Delco 1118360	Auto-Lite VRP-4402C Auto-Lite VAV-4401B (2333)
Generator Voltage to Close Cut-Out	6½—7	6½—7	6½—7
Starter Motor—Make and Type	Auto-Lite MCL-6003 Delco 1107943	Auto-Lite MCL-6003 Delco 1107943	Auto-Lite MAX-4052
Starter Drive	Bendix Shift	Bendix Shift	Solenoid Actuated
Number of Flywheel Teeth	140	140	140
Number of Teeth in Starter Pinion	9	9	9
Pinion Meshes	From Front	From Front	From Front
Head, Tail, & Stop Light Current Protection	Thermostatic Circuit Breaker	Thermostatic Circuit Breaker	Thermostatic Circuit Breaker
Body Current Protection	Thermostatic Circuit Breaker	Thermostatic Circuit Breaker	Thermostatic Circuit Breaker
Directional Signal	Standard Equipment	Standard Equipment	Standard Equipment
Clock Fuse	SFE 3 Ampere	SFE 3 Ampere	SFE 3 Ampere
Overdrive Fuse	SFE 30 Ampere	SFE 30 Ampere	
Directional Signal Fuse	SFE 9 Ampere	SFE 9 Ampere	SFE 9 Ampere
Heater Fuse	SFE 30 Ampere	SFE 30 Ampere	SFE 30 Ampere
Radio Fuse	SFE 14 Ampere	SFE 14 Ampere	SFE 14 Ampere
Headlight Bulb—Sealed Beam	45-35 Watt	45-35 Watt	45-35 Watt
Horn—Make	Sparks-Withington	Sparks-Withington	Sparks-Withington
Horn—Location	Radiator Cradle Support	Bet. Radiator Core and Grille	Radiator Cradle Support
Battery Terminal Grounded	Positive	Positive	Positive
Ampere Draw of Horns	22-25	22-25	22-25
Ampere Draw of Heater Motor	7.3 at 6 Volts @ 3000 rpm	7.3 at 6 Volts @ 3000 rpm	7.3 at 6 Volts @ 3000 rpm
Ampere Draw of Headlights (Each)	7—5.5	7—5.5	7—5.5
Ampere Draw of Coil—Idling Cold	2.75	2.75	2.75
Ampere Draw of Coil—Stopped Cold	4.5	4.5	4.5
Clock—Make and Type	Borg—Electric	Borg—Electric	Borg—Electric
Cigar Lighter	Automatic	Automatic	Automatic
Starter Stall Torque	Auto-Lite—25 ft.-lb.—4 Volts—875 Ampere Delco—16 ft.-lb.—3 Volts—600 Amp.	Auto-Lite—25 ft.-lb.—4 Volts—875 Ampere Delco—16 ft.-lb.—3 Volts—600 Amp.	Auto-Lite—45.9 ft.-lb.—4 Volts—906 Ampere
Ignition Coil—L.H.D.	Auto-Lite CE-4033 Delco 1115376	Auto-Lite CE-4033 Delco 1115376	Auto-Lite CE-4033
ENGINE			
GENERAL			
Make	Packard	Packard	Packard
Type	L-Head-Vertical En Bloc	L-Head-Vertical En Bloc	L-Head-Vertical En Bloc
A.M.A. Horsepower	39.2	39.2	39.2
Maximum Brake Horsepower	135 @ 3600 rpm	150 @ 3600 rpm	160 @ 3600 rpm
Suspension	Rubber Mounted	Rubber Mounted	Rubber Mounted
Firing Order	1-6-2-5-8-3-7-4	1-6-2-5-8-3-7-4	1-6-2-5-8-3-7-4
Torque	230 ft.-lb. @ 2000 rpm	270 ft.-lb @ 2000 rpm	282 ft.-lb. @ 2000 rpm
Bore	3½"	3½"	3½"
Stroke	3¾"	4¼"	4⅝"
Piston Displacement	288 cu. in.	327 cu. in.	356 cu. in.
Cylinders	8 In-Line	8 In-Line	8 In-Line
Compression Ratio—Standard	7.00 to 1	7.00 to 1	7.00 to 1
Weight with Clutch and Transmission	845 lb.	850 lb.	
Weight with Overdrive	890 lb.	895 lb.	
Weight with Ultramatic Drive			1080
Cylinder Head Material	Cast Iron	Cast Iron	Cast Iron
Engine Rev. per Mile—Std. Ratio	2824	2824 (2302) 2756 (2332)	2488

MODELS	EIGHT 2301	SUPER EIGHT 2302-2332	CUSTOM EIGHT 2306-2333
CONNECTING ROD			
Weight	2 lb. 3.8 oz.	2 lb. 3.4 oz.	2 lb. 6.8 oz.
Material	Steel Forging	Steel Forging	Steel Forging
Bearing Type	Detachable Shell	Detachable Shell	Detachable Shell
Center to Center Length	$7\frac{15}{16}$"	$7\frac{11}{16}$"	$9\frac{1}{4}$"
Length of Crankpin	$1\frac{5}{16}$"	$1\frac{5}{16}$"	$1\frac{3}{8}$"
Clearance Bearing to Crankpin	.0005"-.0025"	.0005"-.0025"	.0005"-.003"
End Play on Crankshaft	.003"-.011"	.003"-.011"	.004"-.012"
Oil Lead to Piston Pin	Rifle Drilled	Rifle Drilled	Rifle Drilled
Bearing Material	Special Composite Construction	Special Composite Construction	Special Composite Construction
Assembled in Engine	Oil Hole toward Camshaft	Oil Hole toward Camshaft	Oil Hole toward Camshaft
Bearing Adjustment	Replace Bearing Shells	Replace Bearing Shells	Replace Bearing Shells
CRANKSHAFT			
Type	Counterbalanced	Counterbalanced	Counterbalanced
Material	Steel Forging	Steel Forging	Steel Forging
Number of Counterweights	8 Forged Integral	8 Forged Integral	8 Bolted
Number of Main Bearings	5	5	9
Main Bearing Journal Diameter	2.7465"	2.7465"	2.7465"
Connecting Rod Journal Diameter	2.250"	2.250"	2.250"
Main Bearing Length No. 1	$1\frac{7}{32}$"	$1\frac{7}{32}$"	$1\frac{11}{32}$"
Main Bearing Length No. 2	$1\frac{1}{16}$"	$1\frac{1}{16}$"	$1\frac{3}{16}$"
Main Bearing Length No. 3	$1\frac{19}{32}$"	$1\frac{19}{32}$"	$1\frac{3}{16}$"
Main Bearing Length No. 4	$1\frac{1}{16}$"	$1\frac{1}{16}$"	$1\frac{3}{16}$"
Main Bearing Length No. 5	$2\frac{1}{16}$"	$2\frac{1}{16}$"	$1\frac{11}{16}$"
Main Bearing Length No. 6	None	None	$1\frac{3}{16}$"
Main Bearing Length No. 7	None	None	$1\frac{3}{16}$"
Main Bearing Length No. 8	None	None	$1\frac{3}{16}$"
Main Bearing Length No. 9	None	None	$2\frac{3}{32}$"
Projected Main Bearing Area	19.3 sq. in.	19.3 sq. in.	33.7 sq. in.
Thrust Taken On	Center	Center	Center
Vibration Damper	Fluid Suspension	Rubber Friction Disc	Rubber Friction Disc
Weight	95 lb.	103½ lb.	104 lb.
End Play	.0035"-.0085"	.0035"-.0085"	.003"-.008"
Main Bearing Material	Special Composite Construction	Special Composite Construction	Special Composite Construction
Clearance—All Main Bearings	.001"-.003"	.001"-.003"	.001"-.003"
Crankshaft Sprocket—Material and Size	Steel—21 Teeth	Steel—21 Teeth	Steel—21 Teeth
Bearing Adjustment	Replace Bearing Shells	Replace Bearing Shells	Replace Bearing Shells
FRONT END			
Gear Cover	Steel Stamping	Steel Stamping	Steel Stamping
Camshaft Drive	Silent Chain	Silent Chain	Silent Chain
Make of Chain	Morse	Morse	Morse
Length, Width, and Pitch of Chain	58 Links, 1¼", .375"	58 Links, 1¼", .375"	62 Links, 1¼", .375"
Number of Camshaft Bearings	5	5	8
Clearance of Camshaft Bearings	.001"-.003"	.001"-.003"	.001"-.003"
Camshaft End Play	.004"-.006"	.004"-.006"	.004"-.006"
Camshaft Sprocket—Material and Size	Cast Iron—42 Teeth, Hardened	Cast Iron—42 Teeth, Hardened	Cast Iron—42 Teeth, Hardened
OILING SYSTEM			
Type	Full Pressure	Full Pressure	Full Pressure
Oil Pump Type	Gear	Gear	Gear
Crankcase Capacity	7 qt.	7 qt.	7 qt.
Oil Filler Location	Left Side	Left Side	Left Side
Oil Filter Location	Special Equipment	Special Equipment	Left Side
Oil Measuring Stick	Left Crankcase	Left Crankcase	Left Crankcase
Oil Pump Intake	Floating Screen	Floating Screen	Floating Screen
Crankcase Ventilator	Yes	Yes	Yes
Oil Pressure—Normal Driving	40 lb.	40 lb.	50 lb.
Oil Drain	Hex. Head Flange Plug—⅝"-18	Hex. Head Flange Plug—⅝"-18	Hex. Head Flange Plug—⅝"-18
PISTON			
Type and Material	Auto-Thermic Aluminum Alloy	Auto-Thermic Aluminum Alloy	Auto-Thermic Aluminum Alloy
Weight	19½ oz.	19½ oz.	19½ oz.
Weight with Rings, Pin and Locks	25½ oz.	25½ oz.	25½ oz.
Overall Height	3⅞"	3⅞"	3⅞"
Height Centerline of Pin to Top	2⅛"	2⅛"	2⅛"
Skirt Clearance	.0005"-.001"	.0005"-.001"	.0005"-.001"
Assemble Slot toward	Camshaft	Camshaft	Camshaft
Piston Pin—Size	$3\frac{1}{64}$" x ⅞"	$3\frac{1}{64}$" x ⅞"	$3\frac{1}{64}$" x ⅞"
Type	Floating	Floating	Floating
Lubrication of Pin	Pressure	Pressure	Pressure
Piston Pin Fit in Piston	Palm Push at 160° F in Water	Palm Push at 160° F in Water	Palm Push in 160° F in Water
Piston Pin Fit in Rod	Finger Push	Finger Push	Finger Push

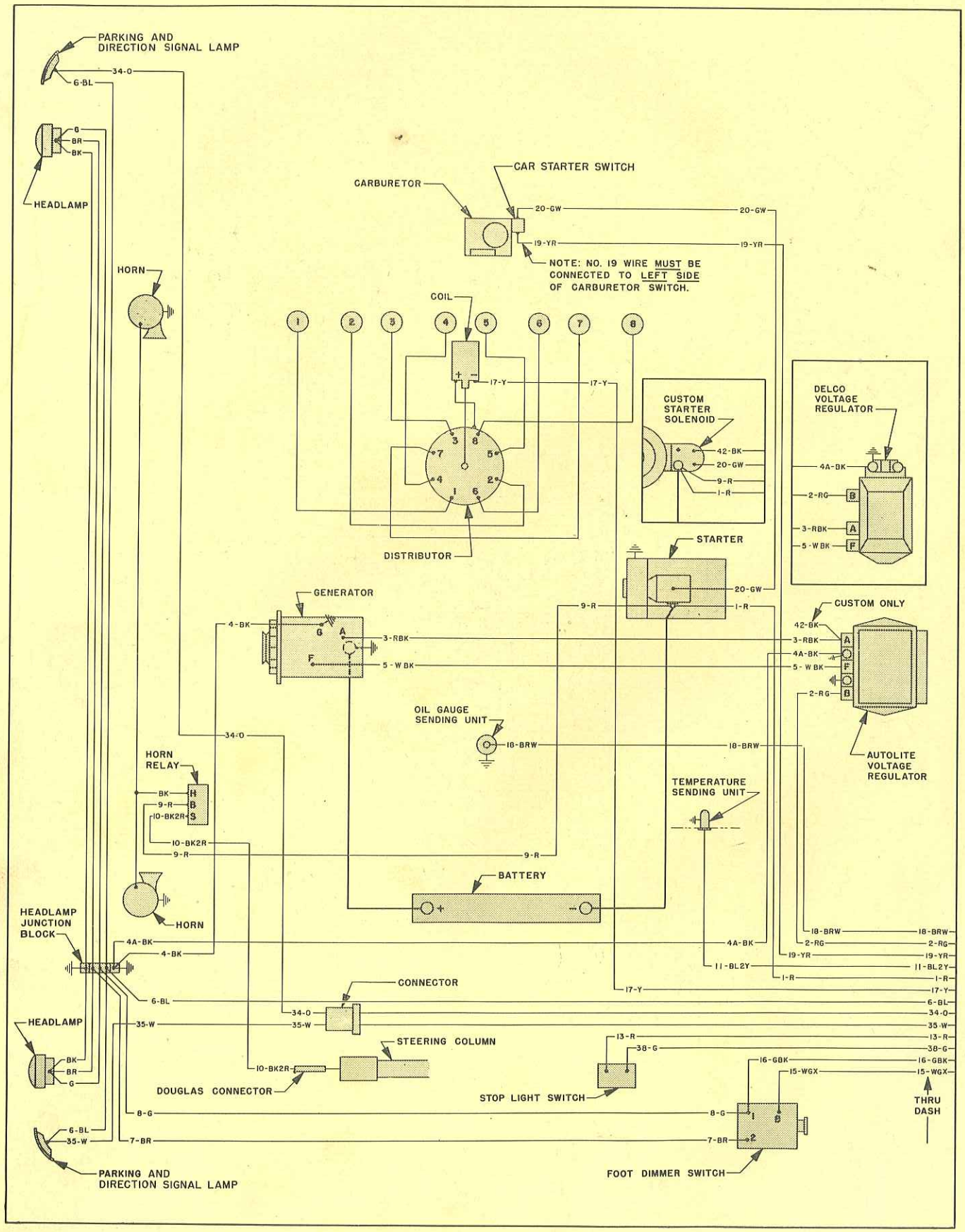
MODELS	EIGHT 2301	SUPER EIGHT 2302-2332	CUSTOM EIGHT 2306-2333
PISTON—Continued			
Piston Pin Oversizes	.003"-.006"	.003"-.006"	.003"-.006"
Number of Rings per Piston	3	3	3
Number of Oil Rings per Piston	1	1	1
Type of Compression Rings			
Top Groove	No. 200	No. 200	No. 200
Second Groove	No. 200	No. 200	No. 200
Type of Oil Ring	No. 85	No. 85	No. 85
Width of Compression Rings	.0930"-.0935"	.0930"-.0935"	.0930"-.0935"
Width of Oil Rings	.186"-.1865"	.186"-.1865"	.186"-.1865"
Piston Ring Gap—Compression	.0054"-.0233"	.0054"-.0233"	.0054"-.0233"
Piston Ring Gap—Oil	.0054"-.0213"	.0054"-.0213"	.0054"-.0213"
Location of Rings	Above Pin	Above Pin	Above Pin
Piston Oil Drain Holes	12—$\frac{5}{32}$"	12—$\frac{5}{32}$"	12—$\frac{5}{32}$"
Piston Oversizes	.005", .020", .030", .040"	.005", .020", .030", .040"	.005", .020", .030", .040"
VALVES			
Valve Lift—Intake	.342"	.342"	.342"
—Exhaust	.342"	.342"	.342"
Valve Arrangement	L Head	L Head	L Head
Valve Head Diameter—Inlet	1$\frac{43}{64}$"	1$\frac{43}{64}$"	1$\frac{43}{64}$"
—Exhaust	1$\frac{7}{16}$"	1$\frac{7}{16}$"	1$\frac{7}{16}$"
Valve Stem Diameter—Inlet	.3417"	.3417"	.3417"
—Exhaust	.3398"	.3398"	.3398"
Valve Over-All Length	5⅞"	5⅞"	6$\frac{7}{32}$"
Valve Material—Inlet	Chrome Nickel	Chrome Nickel	Chrome Nickel
—Exhaust	Austenitic	Austenitic	Austenitic
Valve Spring—Keeper Type	Split Cone	Split Cone	Split Cone
Valve Stem Clearance—Inlet	.002"	.002"	.002"
—Exhaust	.004"	.004"	.004"
Valve Tappet Clearance Inlet—Warm	.007"	.007"	Automatic Take-Up
Valve Tappet Clearance Exhaust—Warm	.010"	.010"	Automatic Take-Up
Inlet Valve Opens	15° BTDC	15° BTDC	4° BTDC
Inlet Valve Closes	45° ALDC	45° ALDC	51° ALDC
Exhaust Valve Opens	50° BLDC	50° BLDC	49° BLDC
Exhaust Valve Closes	9° ATDC	9° ATDC	10° ATDC
Tappet Clearance for Timing Inlet	.01267"	.01267"	Not Used
Tappet Clearance for Timing Exhaust	.015"	.015"	Not Used
Valve Seat Angle—Inlet	30°	30°	30°
—Exhaust	45°	45°	45°
Valve Spring	Single	Single	Single
Valve Spring Load—Valve Closed	60-66 lb. (1¾")	60-66 lb. (1¾")	60-66 lb. (1¾")
—Valve Open	135-145 lb. (1$\frac{13}{32}$")	135-145 lb. (1$\frac{13}{32}$")	135-145 lb. (1$\frac{13}{32}$")
Exhaust Pipe Diameter	2¼"	2¼"	2½"
Muffler Size	5$\frac{9}{16}$" x 37⅜"	5$\frac{9}{16}$" x 37⅜"	6$\frac{1}{16}$" x 39⅞"
FRAME			
Type	Taper Pressed Steel Double Drop Side Rail Box Sectioned at Front and Rear	Taper Pressed Steel Double Drop Side Rail Box Sectioned at Front and Rear	Taper Pressed Steel Double Drop Side Rail Box Sectioned at Front and Rear
Thickness	⅛"	⅛"	$\frac{9}{64}$"
Cross Members	Five Channel X-Type in Center	Five Channel X-Type in Center 2332 Specially Reinforced	Five Channel X-Type in Center 2333 Specially Reinforced
FRONT SUSPENSION			
Make	Packard Safe-T-Flex	Packard Safe-T-Flex	Packard Safe-T-Flex
Type	Independent Parallelogram	Independent Parallelogram	Independent Parallelogram
Steering Knuckle	Reverse Elliot	Reverse Elliot	Reverse Elliot
Steering Knuckle Pin Bearings			
Lower	.866" x 1.187" Long x 1.189" OD	866" x 1.187" Long x 1.189" OD	.866" x 1.187" Long x 1.189" OD
Upper	Needle Bearing	Needle Bearing	Needle Bearing
Thrust Bearings	Steel Ball Bearing	Steel Ball Bearing	Steel Ball Bearing
Riding Height for Checking—			
Front—Center of Front Leg of Wheel Support Arm to Bottom of Frame	3½"	3½"	3½"
Rear—Top of Rear Axle Housing to Bottom of Frame	5"	5"	5"
Camber	0° Plus or Minus ¼°	0° Plus or Minus ¼°	0° Plus or Minus ¼°
Caster	Neg. 1° Plus or Minus ½°	Neg. 1° Plus or Minus ½°	Neg. 2° Plus or Minus ½°
Front Wheel Toe-In	0 Plus $\frac{1}{16}$ Minus 0	0 Plus $\frac{1}{16}$ Minus 0	0 Plus $\frac{1}{16}$ Minus 0
Knuckle Pin Angle	5° 50′	5° 50′	5° 50′
Wheel Bearings—Inner and Outer	Tapered Roller	Tapered Roller	Tapered Roller
Wheel Bearing Adjustment	Tighten Nut and Back Off 1 Slot and Lock	Tighten Nut and Back Off 1 Slot and Lock	Tighten Nut and Back Off 3 to 4 Holes and Lock
Tread	59$\frac{19}{32}$"	59$\frac{19}{32}$" 60$\frac{3}{32}$" (2332)	60$\frac{3}{32}$"

MODELS	EIGHT 2301	SUPER EIGHT 2302-2332	CUSTOM EIGHT 2306-2333
GASOLINE SYSTEM			
Carburetor—Make and Type	Carter WDO-644-SA Downdraft 1¼" Duplex	Carter WDO-643-SA Downdraft 1¼" Duplex	Carter WDO-531-SA Downdraft 1¼" Duplex
Gasoline Feed	Mechanical Pump	Mechanical Pump	Mechanical Pump
Pump Drive	Off Camshaft	Off Camshaft	Off Camshaft
Gasoline Filter	Incorporated in Fuel Pump	Incorporated in Fuel Pump	Incorporated in Fue]Pump
Gasoline Gauge	Electric	Electric	Electric
Gasoline Tank Capacity	17 gal.	20 gal.	20 gal.
Air Cleaner and Silencer	Oil Coated Mesh Standard Oil Bath Special Equipment	Oil Coated Mesh Standard Oil Bath Special Equipment	Oil Bath Standard Equipment
Carburetor Heat Control	Thermostatic	Thermostatic	Thermostatic
Automatic Choke	Thermostatically Controlled	Thermostatically Controlled	Thermostatically Controlled
Carburetor Fuel Level	$\frac{5}{32}$" Below Top of Bowl	$\frac{5}{32}$" Below Top of Bowl	$\frac{5}{32}$" Below Top of Bowl
LUBRICATION			
CHASSIS			
Every 1000 to 2000 Miles			
Knuckle Pins—Pressure Gun Grease	2 Lub. Connectors	2 Lub. Connectors	2 Lub. Connectors
Steering Connecting Rod—Pressure Gun Grease	2 Lub. Connectors	2 Lub. Connectors	2 Lub. Connectors
Steering Tie Rods—Pressure Gun Grease	2 Lub. Connectors	2 Lub. Connectors	2 Lub. Connectors
Universal Joint Spline (Overdrive Only) —Gun Grease	1 Lub. Connector	1 Lub. Connector	
Generator—20W	2 Oilers	2 Oilers	2 Oilers
Starter Motor—20W	1 Oiler	1 Oiler	2 Oilers
Distributor—No. 3 Cup Grease	1 Cup	1 Cup	1 Cup
Clutch and Brake Pedal—Pressure Gun Grease	1 Lub. Connector	1 Lub. Connector	1 Lub. Connector
Clutch Cable Pulley (Electromatic Only) —Gun Grease	1 Lub. Connector	1 Lub. Connector	
Gear Shift Idler Levers Bracket—Gun Grease	1 Lub. Connector	1 Lub. Connector	1 Lub. Connector
Steering Idler Lever—Gun Grease	1 Lub. Connector	1 Lub. Connector	1 Lub. Connector
Support Arm Pin, Inner—Gun Grease	4 Lub. Connectors	4 Lub. Connectors	4 Lub. Connectors
Support Arm Pin, Outer—Gun Grease	2 Lub. Connectors	2 Lub. Connectors	2 Lub. Connectors
Wheel Support Pin Upper—Gun Grease	4 Lub. Connectors	4 Lub. Connectors	4 Lub. Connectors
Every 10,000 Miles			
Front Wheel Bearing—Fiber Grease	Repack 2 oz. per Wheel	Repack 2 oz. per Wheel	Repack 2 oz. per Wheel
Every 30,000 Miles			
Rear Wheel Bearing—Fiber Grease	Repack 2 oz. per Wheel	Repack 2 oz. per Wheel	Repack 2 oz. per Wheel
Universal Joints—Gun Grease	Repack	Repack	Repack
ENGINE			
Every 1000 to 2000 Miles			
Crankcase Capacity	7 qt.	7 qt.	7 qt.
Not lower than 32°F above zero—S.A.E. 20 or 20W			
As low as 10°F above zero—20W			
As low as 10°F below zero—10W			
Below 10°F below zero—10W Plus 10% kerosene			
If average daylight temperature is above 90°F—S.A.E. 30			
SEASONAL			
Rear Axle—			
S.A.E. 90 Hypoid Gear Oil	Drain and Refill—4 pt.	Drain and Refill—4 pt.	Drain and Refill—6 pt.
Steering Gear—			
S.A.E. 90 Mineral Gear Oil	Drain and Refill—11 oz.	Drain and Refill—11 oz.	Drain and Refill—11 oz.
Transmission			
S.A.E. 90 Mineral Gear Oil	Drain and Refill—2 pt.	Drain and Refill—2 pt.	
Transmission Overdrive Case			
S.A.E. 90 Mineral Gear Oil	Drain and Refill—1¼ pt.	Drain and Refill—1¼ pt.	
Ultramatic Drive—			
Packard Ultramatic Drive Fluid			Drain and Refill—12 qt. 10,000 Miles

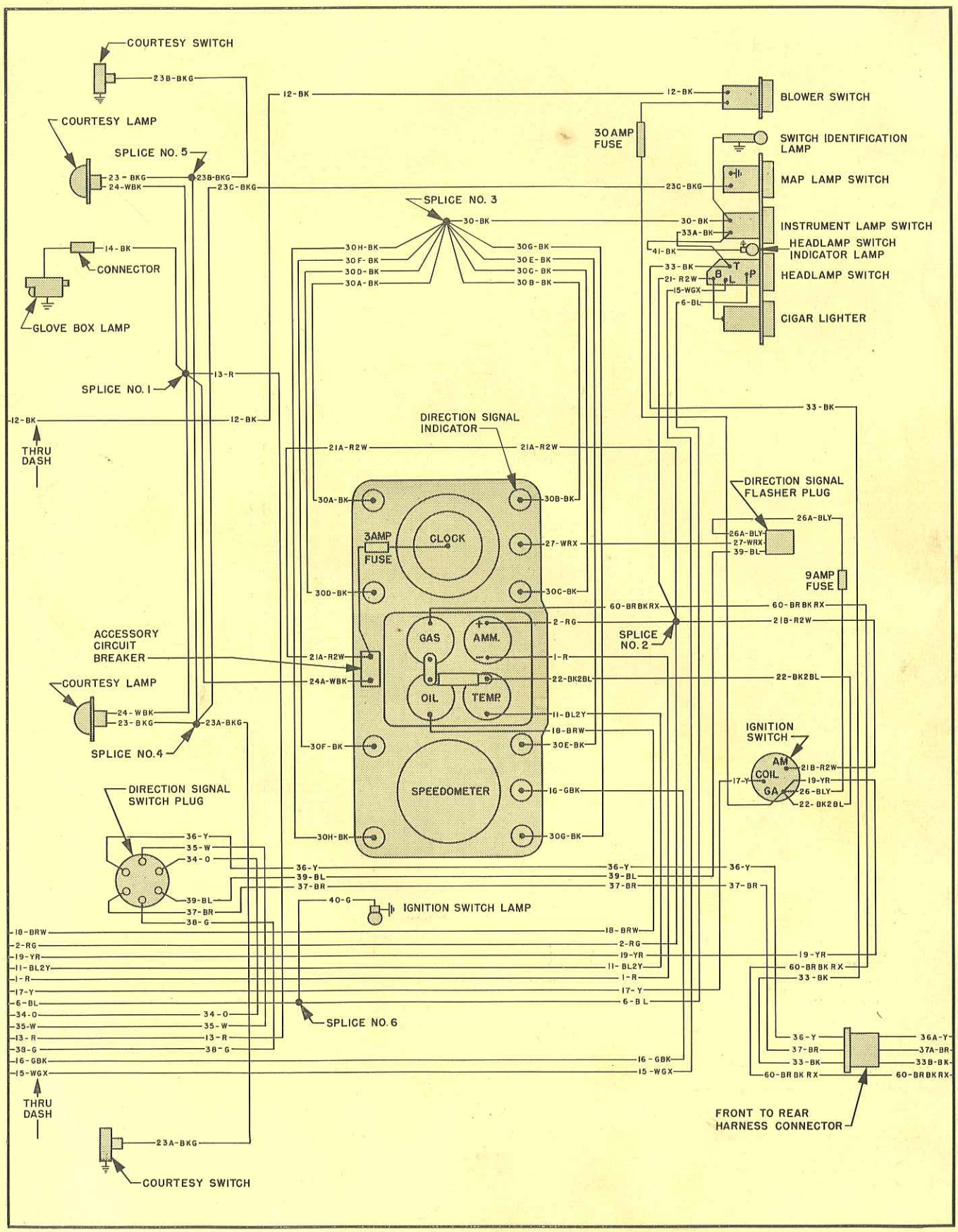
MODELS	EIGHT 2301		SUPER EIGHT 2302-2332		CUSTOM EIGHT 2306-2333
REAR AXLE					
Type	Semi-Floating		Semi-Floating		Semi-Floating
Make	Packard		Packard		Packard
Final Drive	Hypoid Gears		Hypoid Gears		Hypoid Gears
Propulsion	Through Rear Springs		Through Rear Springs		Through Rear Springs
Axle Housing	Swedged Tube Banjo Type		Swedged Tube Banjo Type		Pressed Steel Banjo Type
Oil Capacity	4 pt.		4 pt.		6 pt.
Wheel Bearings	Tapered Roller		Tapered Roller		Tapered Roller
Tread	60 $\frac{23}{32}$"		60 $\frac{23}{32}$"		60 $\frac{23}{32}$"
Standard Gear Ratio	3.9 to 1		3.9 to 1		3.54 to 1
Pinion Backlash	.003"-.005"		.003"-.005"		.003"-.005"
Number Teeth—Gear and Pinion	39-10		39-10		39-11
Oil Drain Plugs	½"-14 Pipe		½"-14 Pipe		½"-14 Pipe
Universal Joints	"Mechanics" Roller Bearing Type		"Mechanics" Roller Bearing Type		"Mechanics" Roller Bearing Type
Number Required	2		2		2
SPRINGS					
Front Size	5.65" OD, 4.25" ID		5.65" OD, 4.25" ID		5.68" OD, 4.25" ID
Rear Length and Width	54⅛" x 2"		54⅜" x 2"		54⅜" x 2"
Shackles	Rubber Mounted		Rubber Mounted		Rubber Mounted
Shock Absorbers—Front	Hydraulic Two-Way		Hydraulic Two-Way		Hydraulic Two-Way
—Rear	Hydraulic Direct-Acting		Hydraulic Direct-Acting		Hydraulic Direct-Acting
Stabilizer—Front	Torsional		Torsional		Torsional
—Rear	Hydraulic Direct-Acting		Hydraulic Direct-Acting		Hydraulic Direct-Acting
Spring Material—Front and Rear	Silico-Manganese		Silico-Manganese		Silico-Manganese
STEERING GEAR					
Make	Packard—Gemmer		Packard—Gemmer		Packard—Gemmer
Type	Worm and 3-Tooth Roller		Worm and 3-Tooth Roller		Worm and 3-Tooth Roller
Ratio—Overall	26.2 to 1		26.2 to 1		26.2 to 1
Steering Wheel	18"—2 Spokes		18"—2 Spokes		18"—2 Spokes
Minimum Turning Radius	22 ft.		22½ ft.		22½ ft.
TRANSMISSION					
Type	Selective—Silent—Synchronized		Selective—Silent—Synchronized		Ultramatic Drive
Number of Forward Speeds	3		3		
Engine to Rear Wheel Ratio	Std. Transmission	O.D.	Std. Transmission	O.D.	
Overdrive		2.96		2.96	
Direct	3.9	4.1	3.9	4.1	
Second	5.96	6.27	5.96	6.27	
First	9.47	9.96	9.47	9.96	
Reverse	12.34	12.97	12.34	12.97	
Oil Capacity	2 pt.		2 pt.		12 qt.
Oil Capacity—O.D. Unit	1¼ pt.		1¼ pt.		
Oil Level Plugs	½"-14 Pipe		½"-14 Pipe		
Gear Teeth	Helical		Helical		
Oil Level Indicator					Dip Stick on Filler Cap—Left Side of Case
WHEELS					
Type	Demountable Disc		Demountable Disc		Demountable Disc
Size of Tire	15 x 7.60—4 Ply 15 x 7.00—4 Ply for Station Sedan		15 x 7.60—4 Ply (2302) 15 x 8.20—4 Ply (2332) 15 x 8.00—4 Ply (Deluxe)		15 x 8.20—4 Ply
Recommended Tire Pressure (Cold) Front and Rear	24 lb.		24 lb.		24 lb.
CAR DIMENSIONS					
Wheelbase	120"		127"		127"
Overall Length—Bumper to Bumper	204 $\frac{11}{16}$"		211 $\frac{11}{16}$"		213¼"
Overall Height Loaded	64 $\frac{1}{16}$"—6-Pass. Sedan 64 $\frac{5}{16}$"—Club Sedan 64 $\frac{3}{32}$"—Station Sedan		64 $\frac{1}{16}$"—6-Pass. Sedan 64 $\frac{5}{16}$"—Club Sedan 64"—Convertible		64 $\frac{3}{32}$"—6-Pass. Sedan 64"—Convertible
Overall Width	77 $\frac{15}{32}$"		77 $\frac{15}{32}$"		77 $\frac{15}{32}$"



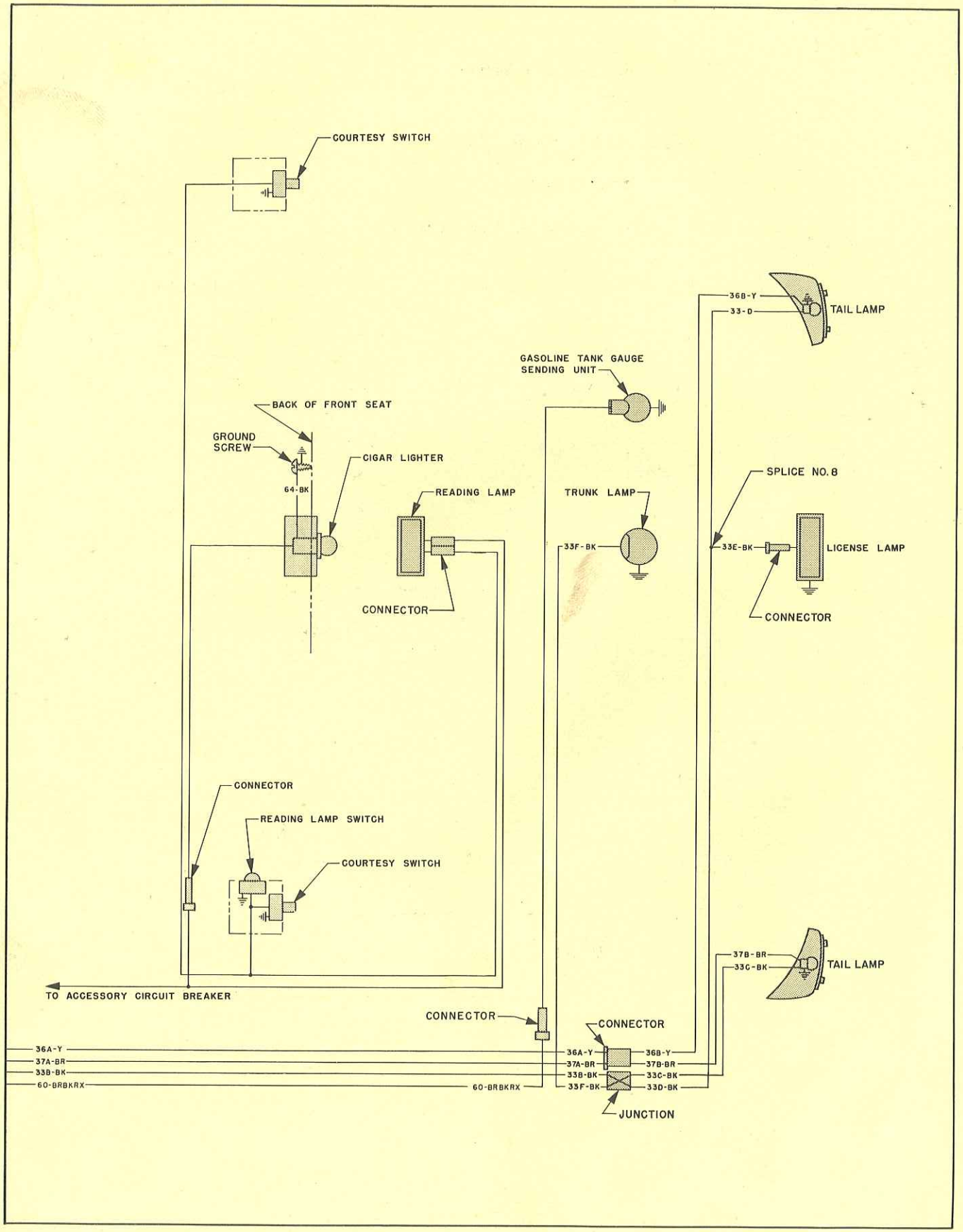
Lubrication Chart



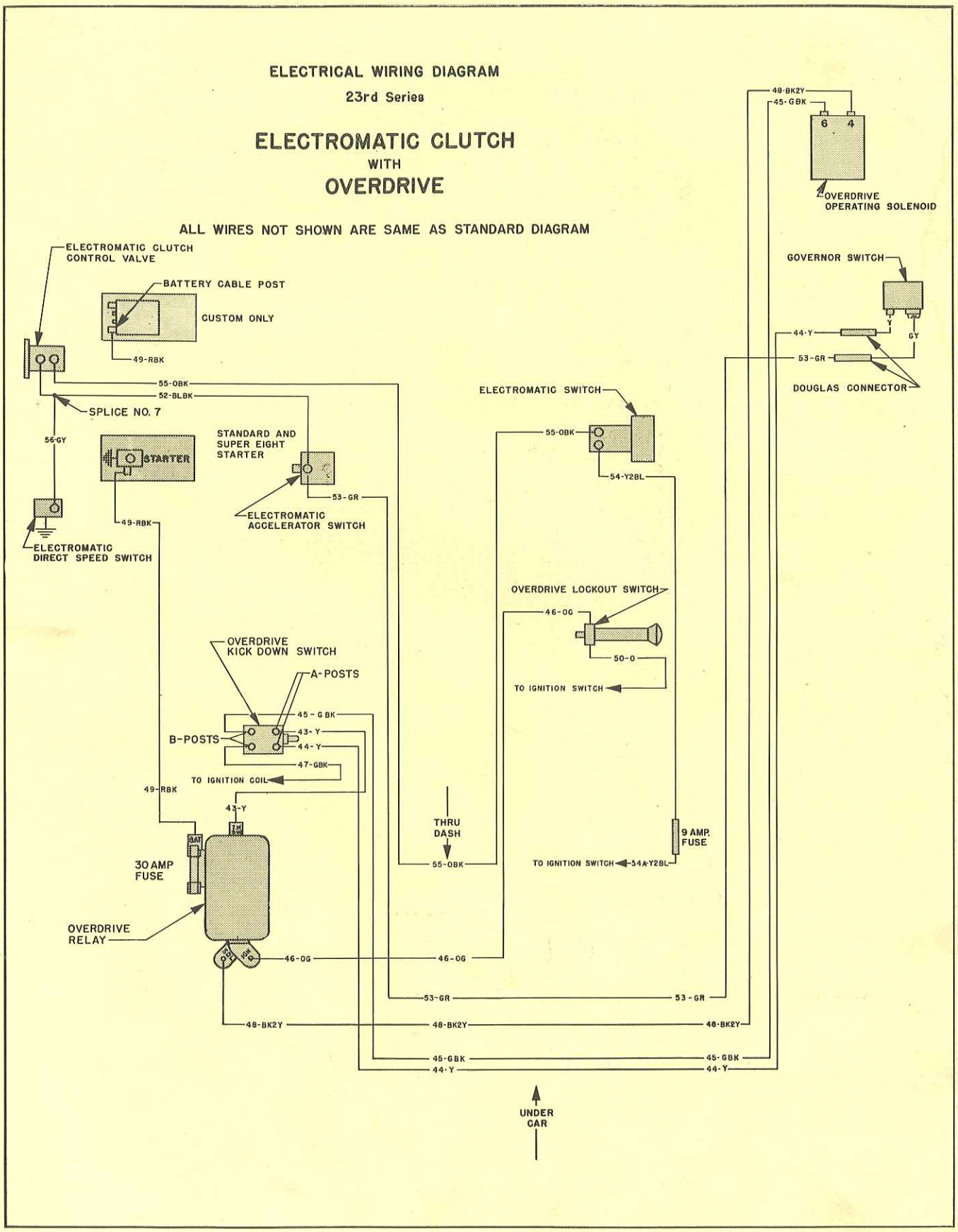
23rd Series Engine Compartment Wiring Diagram



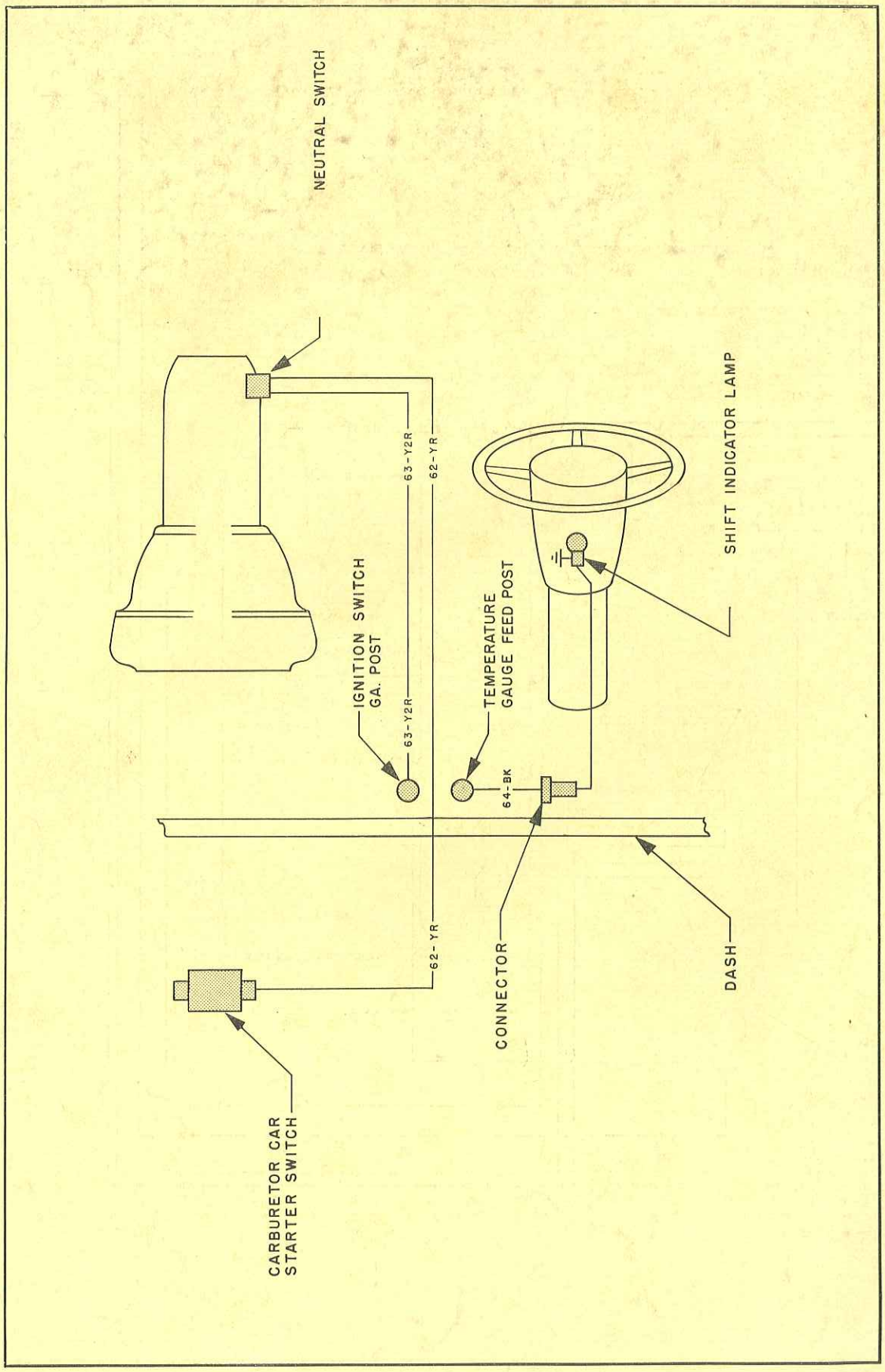
23rd Series Driver's Compartment Wiring Diagram



23rd Series Rear Chassis and Body Wiring Diagram



Wiring Diagram—Electromatic Clutch and Overdrive



Wiring Diagram—Ultramatic Drive