

# **PART TWO**

## **ENGINE AND ELECTRICAL**

**ENGINES**

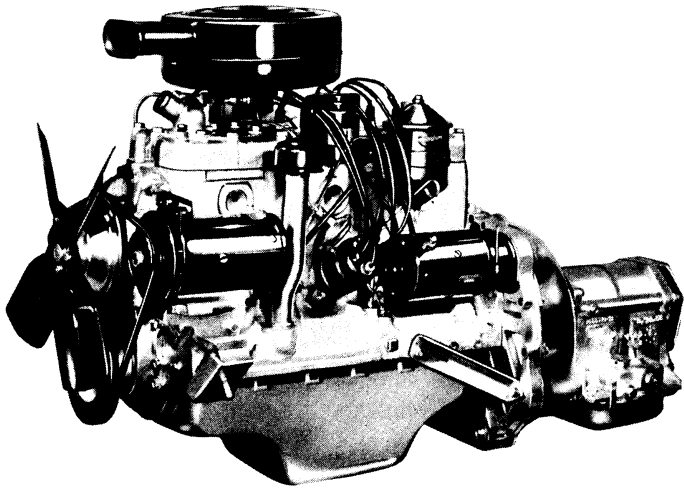
**IGNITION SYSTEM**

**STARTING SYSTEM**

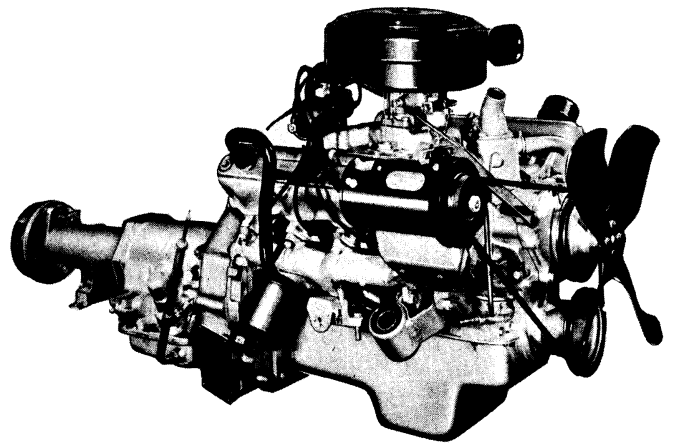
**GENERATING SYSTEM**

**COOLING SYSTEM**

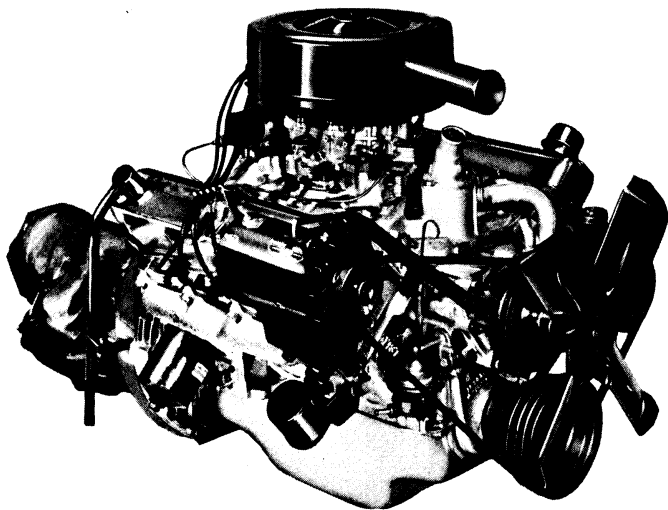
**FUEL AND EXHAUST SYSTEM**



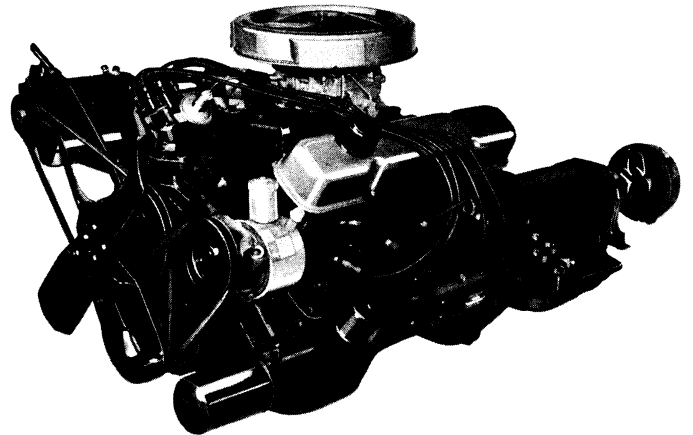
**POWERFLOW 6**



**FURY V-800**



**FURY V-8 WITH SUPERPAK**



**GOLDEN COMMANDO**

# PART TWO—ENGINE AND ELECTRICAL

## SECTION I—ENGINES

### 1. ENGINES

Three V-8 engines and a 6-Cyl. engine will be used in 1959 models. The 230 cu. in. Powerflow six engine is available on Savoy, Belvedere, Deluxe Suburban and Custom Suburban models. The 318 cu. in. Fury V-800 engine is available in Savoy, Belvedere, Fury models and all Suburban models. The 318 cu. in. Fury V-800 with Super Pak (4 barrel carburetor) is standard for Sport Fury models and is optional on the other models. The 361 cu. in. Golden Commando V-8 engine is optional on all models.

New engine features, data and service procedures are covered in this Supplement. For detailed service procedures of engine components, refer to the 1957-58 *Plymouth Service Manual*.

### 2. CRANKSHAFT BEARINGS

#### REPLACEMENT BEARINGS

All V-8 and 6-Cyl. engines use grooveless lower main bearing inserts without an oil feed hole. Since the inserts do not have an oil feed hole caution must be exercised so that they are not mistakenly installed as an upper insert. Figure 1 shows typical grooveless lower main bearing inserts.

### 3. CONNECTING ROD BEARINGS

The Powerflow six engine and Fury V-800 (318 cu. in.) engines use a copper bronze connecting rod bear-

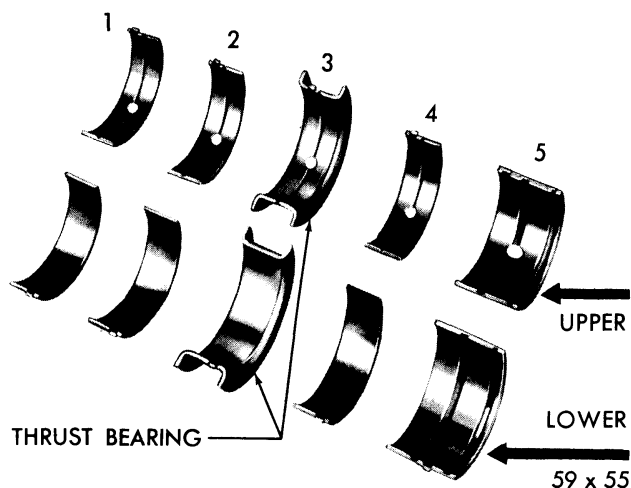


Figure 1—Upper and lower bearing inserts—Fury V-800 engine

ing. The appearance of this bearing when new is a dull finish as compared to the shiny surface of the babbitt type bearing. The dull finish is an extremely thin lead plating for run-in purposes.

After the bronze bearing has been run in, it takes on a dull reddish brown color, and in some instances the surface is copper speckled. This is a normal condition and should not be mistaken for a worn bearing.

### 4. PISTON PIN

A new guide (SP-3096) on the main screw of C-3624, Piston Pin Removing and Installing Fixture is used to remove and install the piston pin on 1959, 361 cu. in. Golden Commando engines. The new guide has a smaller o.d. to pilot properly in the smaller i.d. of the wrist pin used on 1959 engines, Figure 2.

### 5. TIMING CHAIN AND SPROCKETS

V-8 Engine—318 cu. in.—Lubrication of the timing chain, camshaft sprocket and crankshaft sprocket is provided for by oil flow from the number one main bearing. The lower half of the insert is chamfered on the left parting line edge providing a path for the oil to the crankshaft sprocket. Some additional lubrication is provided by seepage from the number one camshaft bearing.

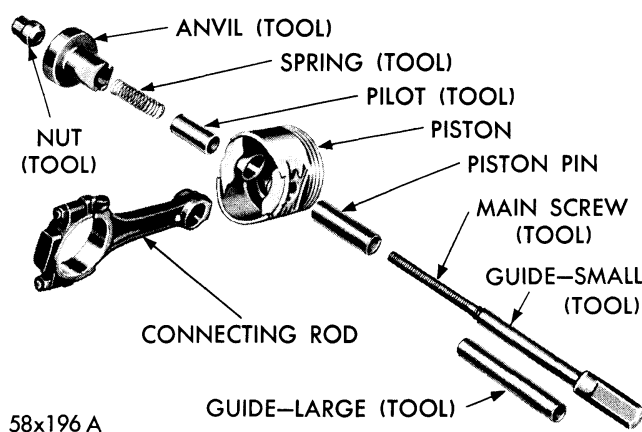


Figure 2—Tool arrangement for installation of piston pin—361 cu. in. engine

**ENGINE  
DATA AND SPECIFICATIONS**

Model	M-1	M-2		
	6-Cyl.	Fury V-800		Golden Commando
Number of Cylinders	6	V-8		
Taxable Horsepower	25.3	48.9	54.3	
Piston Displacement (cu. in.)	230	318	361	
Bore	3.25	3.91	4.12	
Stroke	4.62	3.31	3.38	
Compression Ratio	8.0 to 1	9.0 to 1		10.0 to 1
Maximum Brake Horsepower (At specified engine r.p.m.)	132 @ 3600	230 @ 4400	*260 @ 4400	305 @ 4600
Maximum Torque (Ft. Lbs.) (At specified engine r.p.m.)	205 @ 1200	340 @ 2400	*345 @ 2800	395 @ 3000
Compression Pressure at min. cranking speed of 150 RPM, plugs removed, and wide open throttle	120-150 p.s.i.	125-165 p.s.i.		150-180 p.s.i.
Maximum Variation Between Cylinders	10 p.s.i.	15 p.s.i.		25 p.s.i.
Cylinder Numbering (From Front of Engine)	1-2-3-4-5-6	Left Bank—1-3-5-7 Right Bank—2-4-6-8		
Firing Order	1-5-3-6-2-4	1-8-4-3-6-5-7-2		
Connecting Rod Bearings	Type	Bi-Metal Grid—Replaceable		Lead-Base Babbit— Replaceable
	Length	1.0 in.	.843 in.	.927 in.
	Clearance Desired	.0005—.0015 in.		
	Side Clearance	.006—.011 in.	.006—.014 in.	.009—.017 in.
Main Bearings	Type	Replaceable—Steel-Backed Babbit		
	Number of Bearings	4	5	
	Clearance Desired	.0005—.0015 in.		
	Overall Length			
	No. 1—	1.24 in.	.84 in.	.91 in.
	No. 2—	1.03 in.	.84 in.	.91 in.
No. 3—	1.03 in.	.87 in.	.94 in.	
No. 4—	1.87 in.	.84 in.	.91 in.	
No. 5—	—	1.53 in.	.91 in.	

\*Super-Pak

## ENGINE DATA AND SPECIFICATIONS (Continued)

Model		M-1	M-2	
		6-Cyl.	Fury V-800	Golden Commando
Crankshaft	Type	Drop-Forged Steel		
	End Thrust Taken By	No. 4 Rear Main Bearing	No. 3 Rear Main Bearing	
	End Play	.002—.007 in.		
	Main Bearing Journal Dia.	2.50 in.	2.50 in.	2.63 in.
	Crankpin Journal Dia.	2.06 in.	2.125 in.	2.375 in.
Camshaft and Bearings	Drive	Silent Chain		
	Bearing Type	Replaceable—Lead-Base Babbitt on Steel		
	Number of Bearings	3	5	
	Thrust Taken By	Thrust Plate		—
	End Play	.002—.006 in.		
	Bearing Clearance	.001—.003 in.		
	Diameter	No. 1— and No. 2— Length No. 3— No. 4— No. 5—	2 in. x 1 <sup>3</sup> / <sub>32</sub> in. 1 <sup>3</sup> / <sub>32</sub> in. x 7/8 in. 1 <sup>15</sup> / <sub>16</sub> in. x 7/8 in. Bored in Block —	2 in. x 7/8 in. 1 <sup>63</sup> / <sub>64</sub> in. x 3/4 in. 1 <sup>3</sup> / <sub>32</sub> in. x 3/4 in. 1 <sup>61</sup> / <sub>64</sub> in. x 3/4 in. 1 <sup>7</sup> / <sub>16</sub> in. x 1 <sup>5</sup> / <sub>16</sub> in.
Chain	Adjustment	None		
	Number of Links	48	68	50
	Width	1.02 in.	.875 in.	
Intake Valves	Stem Diameter	.34 in.	.372 in.	
	Head Diameter	1.53 in.	1.84 in.	2.08 in.
	Length	4.84 in.	4.60 in.	4.87 in.
	Stem to Guide Clearance	.001—.003 in.	.002 in.	
	Face Angle	45°		
Exhaust Valves	Stem Diameter	.34 in.	.371—.372 in.	
	Head Diameter	1.41 in.	1.56 in.	1.74 in.
	Length	4.89 in.	4.58 in.	4.88 in.
	Stem to Guide Clearance	.003—.005 in.	.002 in.	.003 in.
	Face Angle	45°		
Valve Springs	Number	12	16	
	Free Length	2 in.	1 <sup>15</sup> / <sub>16</sub> in.	2 <sup>5</sup> / <sub>16</sub> in.
	Pressure (Valve Open)	107-115 lbs. @ 1 <sup>3</sup> / <sub>8</sub> in.	160-172 lbs. @ 1 <sup>5</sup> / <sub>16</sub> in.	179-187 lbs. @ 1 <sup>15</sup> / <sub>32</sub> in.
	Pressure (Valve Closed)	40- 45 lbs. @ 1 <sup>3</sup> / <sub>4</sub> in.	68- 76 lbs. @ 1 <sup>1</sup> / <sub>16</sub> in.	75- 85 lbs. @ 1 <sup>55</sup> / <sub>64</sub> in.

## ENGINE DATA AND SPECIFICATIONS (Continued)

Model		M-1	M-2			
		6-Cyl.	Fury V-800		Golden Commando	
Valve Seat Width (Intake) (Exhaust)		$\frac{5}{64}$ in.	.060—.085 in. .040—.060 in.			
Valve Guides		Replaceable	Reamed in Cylinder Heads			
Tappets	Type	Mechanical—Self-Locking Adjusting Screw		Hydraulic		
	Body Diameter	.625 in.	.9040—.9045 in. (Std.)			
	Radial Clearance	.0002—.001 in.	.0005—.0015 in.			
Valve Timing	Timing Marks	Chain Case Cover				
	Intake Opens (°B.T.C.)	12	17	13	20	
	Exhaust Closes (°A.T.C.)	6	9	17	22	
	Exhaust Opens (°B.B.C.)	50	55	51	58	
	Intake Closes (°A.B.C.)	44	47	55	60	
	Running Clearance (Intake) (Exhaust)	.010 in. (hot) .010 in. (hot)	.010 in. (hot) .018 in. (hot)		— —	
Pistons	Type	U-Slot, Cam Ground	Horizontal Slot, Cam Ground, Steel Belt		Slipper Type, Cam Ground, Steel Strut	
	Material	Aluminum Alloy				
	Clearance	.0002—.0012 in.	.00075—.00125 in.		.0005—.001 in.	
	Weight (ounces)	15.8	21		25.6	
	Ring Groove Depth	1, 2, 3, 4—.17 in.	1, 2—.21 in., 3—.20 in.			
Piston Pins	Type	Floating		Press Fit in Rod		
	Length	2.75 in.	3.00 in.		1.093 in.	
	Diameter	.859 in.	.984 in.		1.093 in.	
	Fit in Piston	.0000—.0005 in.		.00015—.00065 in.		
	Fit in Rod	.0001—.0002 in.	.0001—.0004 in.		.0007—.0012 in. Interference	
Piston Rings	Compression Rings	2				
	Oil Rings	2	1			
	Width—Compression	.093 in.	.0780 in.		.0780	
	—Oil	.155 in.	.186 in.		.188 in.	
	Piston Ring Gap	.010—.020 in.			.013—.025 in.	
	Side Clear- ance	No. 1 Comp. No. 2 Comp. Oil Ring	.0025—.004 in. .002 —.0035 in. .001 —.0025 in.	.0015—.003 in. .001 —.0025 in. .001 —.003 in.		.002 —.0035 in. .002 —.0035 in. .0012—.0025 in.

## 6. VALVES

### VALVE STEM OIL SHIELD

V-8 Engine Golden Commando (361 cu. in.)—A valve stem oil shield is used on the exhaust valve stem as well as on the intake valves to provide increased oil economy. When servicing valves, always install new shields.

## 7. TORQUE CONVERTER AND HOUSING

V-8 Engines—The housing on V-8 engines is doweled and bolted directly to the engine. On 318 cu. in. V-8 engines, removal of the torque converter without removing the housing is made possible by a removable shield and cover on the lower half of the housing. To drain the torque converter remove the shield and cover in order to gain access to the torque converter drain plug.

On 361 cu. in. V-8 engine the housing must be removed when replacement of the torque converter is necessary. An access cover plate is provided when draining of the unit is required.

6-Cyl. Engine—In order to remove the torque converter on early built cars, it is necessary to remove the housing from the adapter plate.

Later production cars use a housing which is doweled and bolted directly to the engine. On these units, it is possible to replace the torque converter without removing the housing, by first removing the shield and cover on the lower half of the housing. In order to drain the torque converter, remove shield and cover from housing to gain access to the torque converter drain plug.

### TORQUE CONVERTERS

All torque converters are cooled by means of an oil cooler which is connected in the lower radiator tank. For complete servicing of the cooler, refer to Section 5—Cooling System.

## ENGINE OILING SYSTEM DATA AND SPECIFICATIONS

Model		6-Cyl. 230 cu. in.	Fury V-800 318 cu. in. V-8	Golden Commando 361 cu. in. V-8
Type of Lubrication	Main Bearings	Pressure		
	Connecting Rods	Pressure		
	Piston Pins	Metered Jet Spray		Splash
	Camshaft Bearings	Pressure		
	Cylinder Walls	Metered Jet Spray		
	Timing Chain	Metered Flow		
	Tappets	Jet Spray	Pressure	
Oil Pump Type		Rotary		
Oil Pump Driven By		Camshaft		
Oil Pressure (p.s.i.)		40-50 @ 1500 rpm	45-65 @ 2000 rpm	
Type of Oil Intake		Floating	Stationary	
Engine Oil Refill		5 Qts.		
Capacity		(6 Qts. with Filter)		
Oil Filter System		By-Pass	Shunt	Full Flow
Oil Pressure Relief Valve Location		Left Side Of Block	Oil Pump Body	
Oil Pump Location		Right Side Center Exterior Of Block	Rear In Crankcase	Lower Left Front Exterior of Block
Oil Pressure Sending Unit		Electrical		

**DISTRIBUTOR DATA AND SPECIFICATIONS**

Models	M1 Powerflow 6	M2	
		Fury V-800	Golden Commando
Type	Automatic Advance, Speed and Vacuum Control		
Location	Left side of Engine	Rear of Engine	Front of Engine
Drive	Camshaft Gear		
Bushings	2 Bronze	2 Bronze in Distributor 1 Bronze in Cylinder Block	
Number of Breakers	1	1	2
Number of Lobes on Cam	6	8	
Cam Angle (Dwell)	36°-42°	27°-32°	27°-32° (one set) 36°-42° (both sets)
Distributor Point Gap	.018-.022 in.	.015-.018 in.	
Breaker Arm Tension	17-20 Oz.		
Firing Order	1-5-3-6-2-4	1-8-4-3-6-5-7-2	
Timing Marks	Located on Chaincase Cover		

**COIL**

Models		M1	M2
Ohms Resistance at 70°-80°F	Primary Secondary Ballast	4.19-4.55 6500-7600 None	1.65-1.79 8000-9200 .665-.735

**CONDENSER**

Capacity (microfarads)	.25-.285
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**SPARK PLUGS**

Models	M1	M2	
	Powerflow 6	Fury V-800	Golden Commando
Type	AR 51	AR 42	A 32
Size	14mm.		
Gap	.035 in.		

**DISTRIBUTOR TIMING**

Model	Displacement (cu. in.)	Comp. Ratio	Chrysler Part No.	Autolite Part No.	Basic Setting
M1, Powerflow 6	230	8.0-1	1689323	1BR 4001	2.5° B.T.C.
M2, Fury V-800	318	9.0-1	1842607	1BP 4003F	10° B.T.C.
M2, Fury V-800 with Superpak	318	9.0-1	1842812	1BP 4003H	10° B.T.C.
M2, Golden Commando	361	10.0-1	1842810	1BS 4006C	7.5° B.T.C.