

# ONE MORE Y-BLOCK

We would be the first to point out that, in this day and age of high-performance engines flowing from automotive machine shops and factories alike, you cannot build up an old Y-block Ford to be a world-beater. Nevertheless, thousands are still in service in trucks and passenger cars in this country, while in much of South America and Australia the Y-block Ford (or Mercury) is the engine for street and circle track, due to availability and low cost. This same availability and low cost makes the engine somewhat attractive to the Stateside budget rodder. For instance, in Los Angeles a ball-park price for a complete Y-block in running condition is \$25. Granted, this is little more than a core to rebuild from, but not bad.

We'll point out some combinations of parts, what to look for in wrecking yards, what can be had in speed equipment and some dos and don'ts on assembly, and then let you take it.

Stick with the 272, 292 or 312 block assembly. In 1954 (first year of the Y-block), Ford introduced the engine with 239 cubic inches. Camshaft bearings are of different sizes than the later blocks, and a number of other components won't interchange, so it is best to forget this engine and go directly to the larger block.

The charts included in the article show how the engine began life in a relative stage of untune, worked up the horsepower ladder to a peak in 1957, and then was detuned by the factory in subsequent years. This is your first clue to finding the road to low-cost performance. You're now looking for '57 Fords, right?

The assembly line Y-block Ford contains more meat than a prizewinning Hereford. The lower block skirt extends well below the centerline of the crankshaft to insure rigidity for the five main bearing saddles. The 272 block can be bored out to 292, the 292 goes out to

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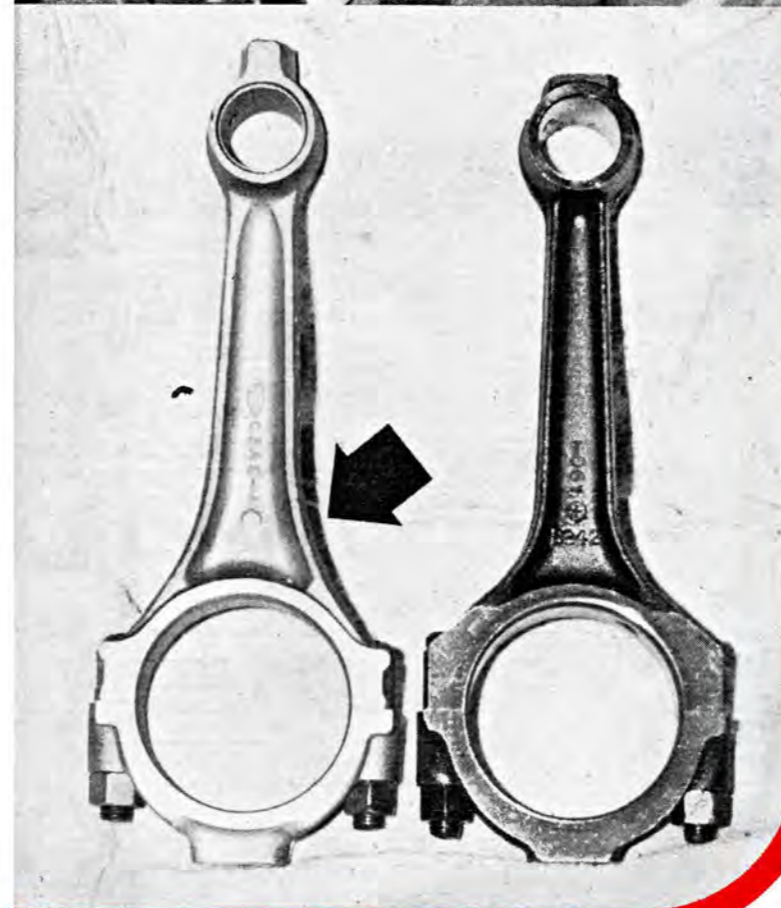
HRM's Technical Editor explores low-cost, dependable horsepower from Ford. Often overlooked, the Y-block is still around — and will be for some time

by John Thawley



photography:  
Steve Kelly and  
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LEFT — Triple two-barrel intake manifold is the all-time winner for the Y-block. Linkage may be constant or progressive. This manifold is still being produced or you might find one used. One of the great trouble-makers in a Ford block is the freeze plugs since they are available in 1/32-inch increments. The newer type which functions as a common toggle bolt is quick and easy — works fine if you don't leave out the O-ring. RIGHT — After making certain that oil pump clearances are up to specs, install the rubber sealing ring which presses into the inlet side of the pump. Without this seal the pump can never gain pressure. The rear main seal on the Y-block is the common "gun-wadding" type — works fine if the ends are trimmed flush with the block face, using a razor blade. One thread between block and cap could be the start of a leaking seal. The bottom of that block should be spotless before the lid is screwed on. Truck rods and crank are good investments if heavy usage is planned. Truck crank is forged; rods are beefier. Entire assembly should be balanced.



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312 with no trouble and, since replacement pistons for the 312 are sold in .40-inch oversize, that route may be taken for increased displacement. All of this is safe and presents no problem. Unless one encounters a core shift problem, much more can be done with a boring bar. We currently have a Y-block running on the street which began life as a 272 and is now .030-inch over the 312 bore of 3.800. This is not uncommon. So if your desire is displacement, don't shy away from the boring bar. Anything over 3.875 is asking for trouble.

A check of the chart shows the same stroke for the 272 and 292 versions. The two-year offering of the 312 produced a longer stroke (by .140-inch). What the chart doesn't show is that the 312 crank turned on 1/8-inch-larger-diameter main journals. To use this crank in the 272-292 block, the main journals must be machined down to the smaller size. If this is done, the 312 connecting rods must be used. Depending on what bore you've decided on, the 272, 292 or 312 pistons may be used. If the 272 or 292 pistons are used in this configuration, the entire assembly should be balanced, since the 312 pistons were 2 ounces heavier than the late 292 pistons.

Block preparation past boring and honing to fit the pistons should include hot tanking. Before boiling out, the baffle plate bolted to the block at the oil filter boss should be removed, since sludge collects here and is hidden from view. After hot tanking and machining, scrub the block with brushes and hot soapy water.

In the crankshaft department, the forged steel truck unit is worth searching for, since it was designed to withstand more loading than the cast units. The parts number on this item is listed as C1TE6303F. The number to look for on the crank is the same except for a B which replaced the F at the end of the parts number. If you plan to spend the better (or worse) part

of a Saturday in a wrecking yard pulling a crank from a truck, make a deal for the rods also. The truck rod (parts No. C1TE6200C) is somewhat beefier and better-designed than the passenger car counterpart.

The rods should not be mixed in the assembly; that is, use all truck rods or all passenger car rods, not three of one kind and five of another. Also, you'll be miles ahead of the game if the piston, rod and crank assembly is balanced after you've decided what you want.

There are at least 17 different head casting marks from 1955 to '62. Compression ratio varies, since in several cases a particular type head was used on the 272-, 292- and 312-inch engines produced in a given year. The expeditious route out of this dilemma is a set of '57 heads. Check the chart for casting numbers, parts numbers and compression ratio per given displacement. Note also that the '57 heads carried the large 1.925-inch intake valve and a rocker ratio of 1.54.

Any of the heads can be helped to some extent by some judicious grinding in the combustion chamber, where the high lip shrouds the valve and thus disrupts the flow. With machinists' bluing, a head gasket and a scribe, mark off how far outward you may grind before botching up a set of heads. Enlarging the intake and exhaust ports with a grinder will help flow characteristics somewhat.

A good valve job (not a \$12.95 special) with a close check for excessive clearances in the guides—and the lower portion of the heads is taken care of.

One of the chronic problems with the Y-block is a lack of lubrication in the upper valve train assembly. There are a number of ways to help overcome this malady; none are sure cures. Enlarge the oil entrance hole in the head (check the photos). Make certain that the rocker shafts exhibit no trace of scoring; if they do, replace them. There are several oil holes in the side of the rocker shafts. *These must line up with the holes in the rocker shaft support brackets.*



Before the block is boiled out, remove the oil filter baffle plate. Sludge and grit have a way of sticking here and not working out until a fresh load of oil is added and the engine fired. To insure adequate oil to the rocker arms, the small oil passage hole in the head may be reamed out slightly. Also be sure that rocker shafts are not scored or plugged.



### FORD Y-V8's

YEAR	MODEL & TRANSMISSION	BORE & STROKE	DISPLACEMENT	COMP. RATIO	CARBURETION	HP @ RPM	TORQUE @ RPM
1954	A	3.500 x 3.100	239	7.2	2-bbl.	130 @ 4200	214 @ 1800
1955	A	3.625 x 3.300	272	7.6	2-bbl.	162 @ 4400	258 @ 2200
	A Special	3.625 x 3.300	272	8.5	4-bbl.	182 @ 4400	268 @ 2600
	S (S/T)	3.750 x 3.300	292	8.1	4-bbl.	193 @ 4400	280 @ 2600
	S (F/M)	3.750 x 3.300	292	8.5	4-bbl.	198 @ 4400	286 @ 2500
1956	A (S/T & O/D)	3.625 x 3.300	272	8.0	2-bbl.	173 @ 4400	260 @ 2400
	A (F/M)	3.625 x 3.300	272	8.4	2-bbl.	176 @ 4400	264 @ 2400
	A (S/T & O/D)	3.750 x 3.300	292	8.0	4-bbl.	200 @ 4600	285 @ 2600
	A (F/M), S (S/T)	3.750 x 3.300	292	8.4	4-bbl.	202 @ 4600	289 @ 2600
	A, S (O/D)	3.800 x 3.440	312	8.4	4-bbl.	215 @ 4600	317 @ 2600
	A, S (F/M)	3.800 x 3.440	312	9.0	4-bbl.	225 @ 4600	324 @ 2600
	A, S (S/T & O/D)	3.800 x 3.440	312	9.7	Dual 4-bbl.	265 @ 4800	336 @ 3400
1957	A	3.625 x 3.300	272	8.6	2-bbl.	190 @ 4500	270 @ 2700
	A	3.750 x 3.300	292	9.0	2-bbl.	212 @ 4500	297 @ 2700
	S (S/T & O/D)	3.750 x 3.300	292	9.0	2-bbl.	206 @ 4500	297 @ 2700
	A, S (F/M)	3.800 x 3.440	312	9.7	4-bbl.	245 @ 4500	332 @ 3200
	A, S (S/T & O/D)	3.800 x 3.440	312	9.7	Dual 4-bbl.	265 @ 4800	336 @ 3400
	A, S (S/T & O/D)	3.800 x 3.440	312	8.3	4-bbl. Supercharged	300	
1958	A	3.750 x 3.300	292	8.8	2-bbl.	205 @ 4500	295 @ 2400
1959	A	3.750 x 3.300	292	8.8	2-bbl.	200 @ 4400	285 @ 2200
1960	A	3.750 x 3.300	292	8.8	2-bbl.	185 @ 4200	292 @ 2200
1961	A	3.750 x 3.300	292	8.8	2-bbl.	175 @ 4200	279 @ 2200
1962	A	3.750 x 3.300	292	8.8	2-bbl.	170 @ 4200	279 @ 2200

Models: A, Passenger cars; S, Thunderbird. Transmissions: S/T, Standard; O/D, Overdrive; F/M, Fordomatic.

### FORD Y-V8 CAMSHAFTS

YEAR	ENGINE	PART NUMBER	VALVE TIMING				EC	DURATION	LIFT		LASH (HOT)	VALVE SIZE		ROCKER RATIO
			IO	IC	EO	IC			INT.	EX.		INTAKE	EXHAUST	
1954	Early 239	B4A 6250-A	8°	44°	47°	5°	232°	.345	.345	.019	1.647	1.510	1.43	
	Late 239	B5A 6250-C	12°	54°	58°	8°	246°	.360	.360	.019	1.647	1.510	1.43	
1955	272, 292	B5A 6250-C	12°	54°	58°	8°	246°	.360	.319	.019	1.780	1.510	1.43	
1956	272, 292, 312	B6A 6250-B	12°	54°	58°	8°	246°	.386	.384	.019	1.780	1.510	1.54	
1957	272, 292, 312	B7A 6250-B	18°	58°	66°	10°	256°	.400	.420	.019	1.925	1.510	1.54	
	312 Superch'd	B7A 6250-C	32°	78°	78°	32°	290°	—	—	—	1.925	1.510	1.54	
1958-59	292	B8A 6250-C	12°	54°	58°	8°	246°	.360	.360	.019	1.925	1.510	1.43	
1960-62	292	B8A 6250-C	12°	54°	58°	8°	246°	.360	.360	.018	1.647	1.510	1.43	

Note: Camshaft B8A 6250-C supersedes B6A 6250-B and B7A 6250-B when replacement is needed.

Change oil and filters often in these engines to slow down the formation of sludge.

The '57 cam produces more lift and slightly longer duration than any other FoMoCo cam except the unit designated for use with the supercharger. This cam is all but impossible to locate. The enthusiast who wants this much camshaft would be time (and probably money) ahead to go to any number of the racing cam grinders—such as Isky, Crower or Crane—who still offer such grinds for the Y-block. For street use, shoot for a cam with relatively short duration but higher-than-stock lift. This configuration tends to retain bottom end torque, and a cam of less than 270 degrees duration seems to work quite well with any of the intake manifold/carb combinations.

Spending the time necessary to come up with a set of '57-'59 heads will pay off in the manifold department, since the single four-barrel and the two-barrel manifold of these years have larger runners which match up with the '57-'59 heads. Later heads and intake manifolds exhibited ports of smaller size. For a brief period of time Ford offered a dual four-barrel intake manifold, as did a number of speed equipment makers. Even if the item can be located, this is still not the manifold to have for all-around performance. A somewhat archaic-appearing three two-barrel manifold by Edelbrock has proven time and again that it offers the response, flow and flexibility desired for street flogging or highway cruising. The manifold is most often set up with Holley two-barrels pirated from boneyard '56 Fords. After the three two-barrel manifold and carb combination, the next best unit is probably the stock four-barrel manifold mounted with a late Holley or Autolite carb. Depending on carb used, the intake manifold may have to be touched with a grinder to allow the larger throttle plates to open into the manifold throat.

The dual exhaust manifolds offered on the '57 312 engine were the best factory-produced items for this engine. They'll bolt to all of the Y-blocks. At one time, a lot of header systems were available. Currently, Hedman is probably the only manufacturer to produce a header system in any volume for the Y-block.

Carefully rebuilt to factory clearances with quality parts (our own engine went together with TRW bearings and pistons, Grant rings, etc.), the Y-block will offer countless miles of service. This may not be the most powerful engine available to the low-budget rodder, but it is one of the most forgiving and one of the lowest in cost—both important features to one just getting started with engines. ■ ■

The Y-block Ford heads are cursed with relatively poor combustion chamber design since the intake valve is severely shrouded. Larger valves may be installed but serves mainly to increase breathing problems. Best solution is to make a vertical cut as shown in the area of the intake valve shrouding. Polishing not needed.



### FORD Y-V8 CRANKSHAFT ASSEMBLY

YEAR	ENGINE	BORE & STROKE	JOURNALS MAINS	RODS	ROD LENGTH		PISTON WT.	PIN LGTH.
					CENTER	WT.		
1954	239	3.500x3.100	2.498	2.188	6.324	24.06	—	2.982
1955	272	3.625x3.300	2.498	2.188	6.324	24.06	18.70	3.023
	292	3.750x3.300	2.498	2.188	6.324	24.06	18.70	3.023
1956	272	3.625x3.300	2.498	2.188	6.324	24.06	18.70	3.023
	292	3.750x3.300	2.498	2.188	6.324	24.06	18.70	3.023
	312	3.800x3.440	2.623	2.188	6.252	23.04	20.70	3.023
1957	272	3.625x3.300	2.498	2.188	6.324	24.06	18.70	3.023
	292	3.750x3.300	2.498	2.188	6.324	24.06	19.60	3.023
	312	3.800x3.440	2.623	2.188	6.252	23.04	20.70	3.023
1958-1962	292	3.750x3.300	2.498	2.188	6.324	24.06	19.60	3.023

### FORD Y-V8 CYLINDER HEADS

YEAR	ENGINE	HORSE-POWER	MODEL & TRANSMISSION	PART NUMBER	CASTING MARK
	272	162	A, S (S/T & O/D)	B5A 6049-D	ECL-A
	292	193		B5A 6049-H	ECG-B
				B5A 6049-D	ECG-D
1955	272	182	A (F/M)	B5A 6049-G	ECG-A
				B5A 6049-L	ECG-C
	292	198	S (F/M)	B5S 6049-A	ECL-B
				B5S 6049-B	ECL-C
	272	173	A (S/T & O/D)	B6A 6049-M	ECZ-C, ECG-T
	292	202			
	312	225			
1956	272	176	A (F/M)	B6A 6049-N	ECG-H, ECG-R
	292	200	A (S/T & O/D)	B6A 6049-P	ECZ-B, EDB-B
	312	215			
	272	190	A, S (S/T & O/D)	B7A 6049-A	ECZ-E, 5752113
	292	206, 212			
	312	245, 265			
1957			A, S	B7A 6049-D	ECZ-F
	312	300	A, S Superch'd	B7A 6049-E	EDB-D, EDB-E
1958	292	205	A	B7A 6049-A	ECZ-E, 5752113
1959	292	200	A	B7A 6049-A	ECZ-E, 5752113
1960	292	185	A	C0AZ 6049-A	
1961	292	175	A	C0AZ 6049-A	
1962	292	170	A	C1AZ 6049-A	

Models: A, Passenger car; S, Thunderbird. Transmissions: S/T, Standard; O/D, Overdrive; F/M, Fordomatic.