Flathead V8 Identification

Early Engines: **1939-41 (21A's); 1942-48** (**59A**'s); **Late Engines**: **1949-1953** (**8BA**'s)

Component/Feature	Applicable Year(s)										Model	Comments
	38	39	40	41	42	44	45	46	47	48		
Block											Ford & Merc	Integral bellhousing. Later series engines had a separate bellhousing.
Block											Mercury	Casting mark "99" on passenger (right) side front; indicates a 239 c.i. block. Mercs were designated Model 99a. Has a hole at the bottom of the shallow depression adjacent to the passenger side water pump – indicates a Canadian block*. Connecting rod caps are ID'd as 99A as well.
Intake deck											Mercury	Had a raised intake deck in '41 & '42 (not the case on my block).
Combustion Chamber											Mercury	Factory relieved between valves & bore to reduce compression and detonation in trucks. Evident.
Block Colour												Appears to have been grey (military?).
Water Jacket Holes											Mercury	Three openings between centre cylinder bores: top triangular, middle round, bottom trapezoidal. Indicates '39 or later Merc (95 HP).
Core Plugs in Pan Rail											Ford & Merc	Four 3/4" Expansion Plugs (John Deere part # 30H9) indicated by 'bumpouts' at bottom of block; eliminated in 1941.
Pencil Test											Ford & Merc	With all pre-war ('38-42) blocks you can rest a pencil on the block behind the top of the timing cover. Pass.
Bore											Merc	3-3/16" (3.186", i.e. bigger bore). Mercurys had this bore from '39 on (designated 99A); Ford only from '46 - 48 (they had 3-1/16" bores up 'til then).

Pistons											Ford & Merc	4-rings, two compression, one third oil control ring and a bottom (4th) oil control ring below pin ; nominally from June ‘43 on.
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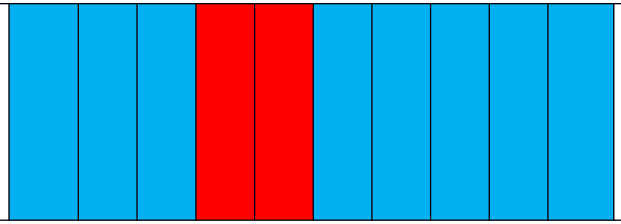
	38	39	40	41	42	44	45	46	47	48		
Connecting Rods											Mercury	Big end diameter 2.360”, characteristic of larger bore engine (the 221 c.i. engine had smaller 2.220” big ends). Marked ‘**29A6205**’ which were installed in ’42-’46 Fords; ***drop forged*** vanadium steel; 490 grams avg, used with full floating bearings on large journal crankshafts (2.138”-2.139”); 7” ctr-ctr, no brg tang/tab notches; hole near end of studs for safety wiring nuts (3/8” NF). Caps are marked **99A**. Note that though these are 29A/99A rods they have big end reinforcement typical of earlier 21A/91A rods (which are the favoured rod among builders).
Rod Bearings											Ford & Merc	Full floating (both rods on common bearing); Individual rod bearings introduced in 1949 (8BA).
Crankshaft											Mercury	Mercury crank has dimple on front crank counterweight (?). Two oil slingers w/ single oil hole on rod journals? Single oil slinger but with 2 oil holes on rod journals? (ref. Davidson, p.53). Engine fan was mounted on the end of the crank from ’39 – ’41. This meant the crank was longer.
Main Journal Dia											Ford & Merc	2.499”
Main Caps											Ford & Merc	Use studs; typical of earlier blocks.
Crankpin Dia											Mercury	2.139”, characteristic of larger bore engine. The 221 c.i. Ford engine had 1.99” crankpins.
Oil Pump											Ford & Merc	Long body pump (w/ spur gears) installed; 30 psi Max output. Markings: “Ford CAN”, “16”, “18-6616”, “EP”.

												Side play: .004” (spec .005”) End Play: .002” (spec .017”). Upgrade to Mellon style for later engines.
Oil Pan											Mercury	Truck pan installed; has removable lower rear section for easier clutch access. The Merc engine was optional in trucks.
Cylinder Heads											Ford & Merc	Casting marks indicate C81A; Canadian head *, nominally put on ’38-42 engines but may also have been put on any 59A (or 59B, truck) from ’46-48.
Distributor											Ford & Merc	2- bolt “Crab” style fitted w/ separate coil (introduced in 1942). Consistent with 2-bolt timing cover and shallow nose camshaft, also fitted.
Timing Cover											Ford & Merc	Cast iron, 2-bolt; uses “pancake” or “crab” style distributor (latter fitted).
Water Pumps											Ford & Merc	

		Appear to be ’37-41 truck pumps, marked 78-8506 (LH) & 78-8505 (RH); pulleys are marked 78C-8509. Inlets are unconventional however. Instead of elongated ‘spigot’ to attach rad hose there is a shallow (~ 1/4”) land to which a separate, solid bronze fitting attaches with a longer (but no-longer) ‘hidden bolt’.

*There has been a lot of conjecture about certain Canadian (or Military) blocks having either thicker walls or more nickel in the castings.

1946 - 48 Ford and Mercury engines are identical. This is the start of the 59 series motors. All engines feature 3 3/16 bore by 3 ¾ stroke for 239 cubic inches. The blocks have a 59 cast on the top of the bell housing, if someone hasn't ground it off. The front of the block now slopes from the intake rail down to the timing cover so the pencil test fails. The intake rail is back to flat. The water holes in the bottom center and middle center of the cylinder head deck are round. Now has pressurized cooling! The cast in bell housing still has holes for the engine steady rods. Main bearings are 2.500 inches and rod bearings are 2.140 inches.

NOTE: Sometime during the war, Ford changed the angle between the valves. Pre-war blocks have 101.5 degrees between the valve centerlines and postwar blocks have 100 degrees between valve centerlines. This means the valves are about 0.090 inches further away from the bore on postwar blocks. This was done to reduce cracking between the valve ports and the bore. This also affects the cam timing a bit, so be careful that the cam you use is for the series motor you are using it in.

1949 Ford and Mercury blocks are identical with 3 3/16 inch diameter bore. There is no cast on bell housing. These motors featured revised cooling passages, most notably at the top of the water pumps and at the rear of the cylinder head deck. Engine oil passages are revised slightly to eliminate the pressure relief valve at the front of the valley. The crankcase ventilation system is revised, with the crankcase breather and road draft tube coming off the intake manifold. Main and connecting rods continue with the same diameter as before, but the connecting rod bearings are not floating and are individual per rod. The crankshafts now have two oil holes per crank throw instead of one. Distributors are now post style in front of the passenger side head. The fan belts and pulleys are moved forward to make room for the new distributor (this can cause problems when trying to put an 8BA into a 1932, 1933, or 1934 Ford). Ford engine continue with 239 cubic inches, but Mercury goes to a 4 inch stroke to get 255 cubic inches.

Watch for:

- Copy of the “Ford Motor Company of Canada Master Repair Manual” # SE 348-B
- Copy of “How to Build Ford Flathead V8 Horsepower” 2005 by George McNicholl

    - http://www.amazon.ca/How-Build-Ford-Flathead-Horsepower/dp/0760322902/ref=sr_1_7?ie=UTF8&qid=1439674756&sr=8-7&keywords=George+McNicholl
- Copy of “How to Build a Flathead Ford V8” 2003 by George McNicholl
    - http://www.amazon.ca/How-Build-Flathead-Ford-V-8/dp/0760314934/ref=sr_1_5?ie=UTF8&qid=1439674756&sr=8-5&keywords=George+McNicholl