

Model A Engine Installation Instructions

Inspect the flywheel housing for cracks before installing. If you find any cracks in your flywheel housing, you will either need to purchase a new one or find a good original that is crack free.

When installing the flywheel housing bolts, use permatex on the bolt threads.

Use permatex RTV high temp ultra black silicone maker on the flywheel housing to block gasket around the rear cam bearing to prevent oil leaks out the rear cam bearing.

Dial indicate the flywheel housing {see attached pages 2-22 to 2-23 from the Model A Mechanics Handbook, Vol. 1. Les Andrews)

Engine oil must be added to your newly rebuilt engine. The Model A has a 5 quart capacity. To begin the break-in of the engine, **put 2 quarts of 15-40W detergent oil in the crankcase. Add the other 3 quarts through the distributor hole in the head.** This allows the mains to have oil before the oil pump can feed the mains. Also, at this time, make sure your radiator is topped off with coolant.

Note: A rebuilt motor is going to be tight and consequently run hotter than your old motor did until it gets broken in. ***IT IS VERY IMPORTANT THAT YOU DO NOT OVERHEAT THE MOTOR!*** Make sure you have a properly functioning water pump, a good radiator, and that your vehicle is properly timed. These motors have heat indicating tabs attached to the back of the cylinder head, and the front of the block. **Warranty will be void if the heat indicating tabs have been removed or if the tabs indicate that the motor was overheated.**

Note: Ignition/Carburation. It is important that the distributor and carburetor are also rebuilt or in good working order to ensure that your newly rebuilt engine will run and perform as Henry meant them to. Time your distributor and adjust your carburetor according to Ford specifications.

Note: To ensure proper fuel mixture and no exhaust leak, the manifold should be checked for straightness. If they are warped, the manifold can be resurfaced as a matched pair, intake and exhaust. Having this done also lessens the chance of a cracked manifold. since the manifold will not be stressed when bolted to the engine.

CAUTION: Do not at any time place heavy strain on the engine during the break in period. If you follow the break in instructions, you can expect long engine life.

Starting the engine for break-in: Run the engine for a period of ten to fifteen minutes, just above idle with the spark half advanced. After ten to fifteen minutes of running/ allow the engine to cool down. Repeat this process for a total of two hours of running time. Blue smoke may appear at the tailpipe. This is because the piston rings are not seated. The piston rings can take up to 1000 miles to seat to the cylinder wall.

For the third hour of stationary engine running, increase the period of running to 20-30 minutes. (Again, just above idle with the spark half advanced.) Engine acceleration during this period is acceptable with momentary bursts only, then returning to just above idle.

After the three hours of running time, retorque the head to 50 foot lbs. See the attached sheet for the proper torque sequence. The head gaskets tend to compress during the engine warm-up. An oil change is also suggested at this time. {15-40W detergent oil).

Now you are ready for the road! If the initial three hours of running time is completed without the engine stopping and/or excessive heat/ you are definitely ready for the road.

After 200 miles have been put on the engine, not exceeding 35 MPH/ an oil change is necessary. (15-40W detergent oil)

Note: Full break-in may not occur until 500 miles have been put on the engine, depending on driving conditions. During this time, keep your speed at or below 35 MPH.

Note: Oil changes should be made every 500 miles or every driving season, whichever comes first. Remember to use 15-40 W detergent oil.

DO NOT USE E85 GAS!

WARRANTY: These motors carry a 6-month warranty. We rarely have a problem, but should a problem arise/ notify us immediately. Freight and labor for removing or installing a motor are not covered under warranty. We do not warrant motors shipped out of the United States.

FLYWHEEL HOUSING VARIATION

FLYWHEEL HOUSING VARIATION MEASUREMENT

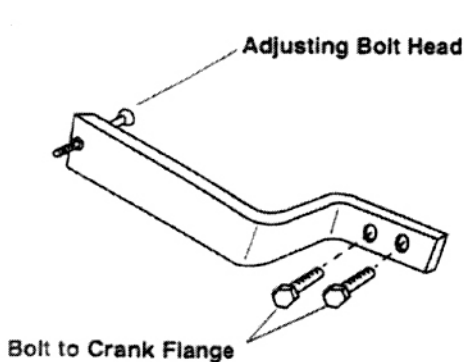
This measurement checks the alignment of the crankshaft end flange and the flywheel with the rear face of the flywheel housing. Misalignment of the flywheel housing creates a misalignment of the clutch housing (bell housing), which in turn causes a misalignment of the transmission drive gear with respect to the flywheel, clutch plate, and clutch pressure plate. This measurement can be made with a dial gauge or a crankshaft-to-housing gauge and a flywheel-to-housing gauge. The crankshaft end flange must be square with the flywheel housing rear face to within .006" maximum variation.

1. Thoroughly clean the mating surfaces of the flywheel housing and block. Place a paper gasket between the flywheel housing and the block. Securely bolt the housing to the block with four (4) attaching bolts (7/16-14 X 1-1/16" drilled hex head). Torque the bolts to 55 ft.lbs. Do not safety wire at this time.
2. Bolt the crank-to-flywheel housing gauge to the crankshaft flange using two of the flywheel attaching bolts (7/16-20 X 13/16 drilled head). Add spacers if necessary to allow the gauge to be absolutely tight against the crankshaft flange.

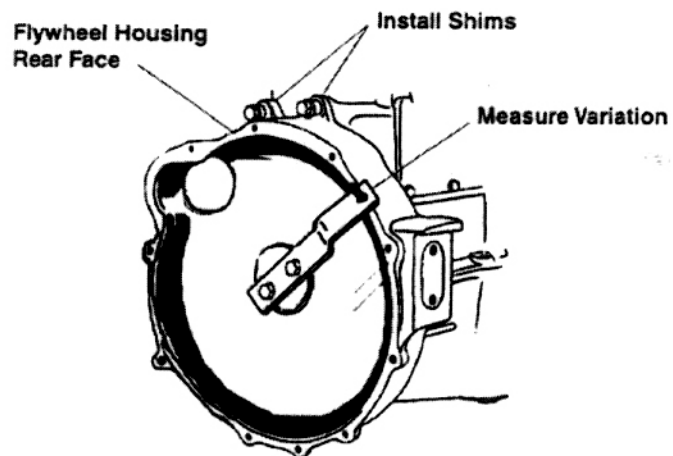
CAUTION

Do not allow the attaching bolts to extend more than 1/16" beyond the front side of the flange, causing possible damage to the rear main oil slinger.

3. Attach the throttle control bracket to the top of the flywheel housing at the two ears (7/16-14 X 1-3/4" hex head bolts and lock washers). Before tightening the two bolts, insert a horseshoe shaped shim (about .010" thick) under each ear, over the bolt shaft, and then securely tighten.
4. Set the adjusting bolt head on the gauge for .030" clearance from the flywheel housing rear face.
5. At about every 30°, check the clearance between the gauge adjusting bolt and the housing rear face. A maximum variation of .006" is allowable. Excessive variation can usually be adjusted out by varying the thickness of the horseshoe shims under the two ears for the throttle bracket. The flywheel housing should be replaced if the variation is greater than .006" around the housing rear face, usually caused by a warped housing.



Crank-To-Flywheel Housing Gauge



Crank-To-Flywheel Housing Variation Check

6. After completing the crank-to-flywheel housing check, remove the gauge and safety wire the flywheel housing bolt heads.
7. Screw two short manifold studs into two adjacent holes in the crankshaft flange to use as guides when putting the flywheel in place on the crankshaft flange.

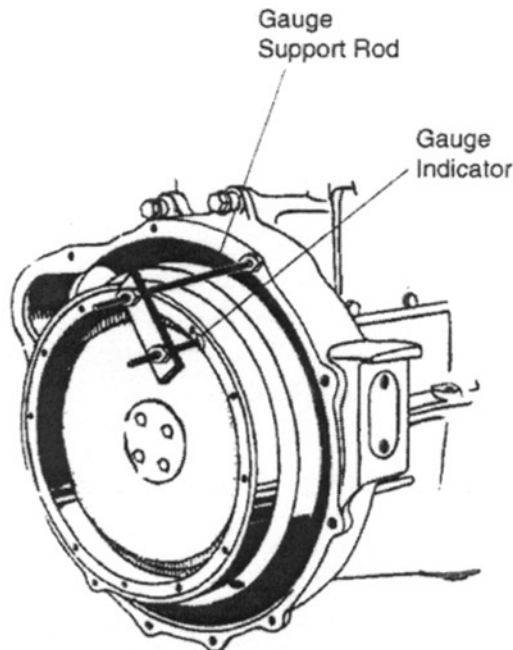
NOTE

The flywheel pilot bearing should be replaced before installing the flywheel (p/n GMN6203 DV).

8. Set the flywheel in place on the crankshaft flange. With the flywheel firmly seated over the dowels and against the crank flange, remove the two manifold studs and place the dowel retaining plate in the center of the flywheel. Insert the four (4) mounting bolts (7/16-20 X 13/16" with drilled hex head) and torque to 55 ft.lbs. Safety wire the bolt heads.

CAUTION

Do not allow the flywheel mounting bolts to extend more than 1/16" beyond the front side of the flange, causing possible damage to the rear main oil slinger.



FLYWHEEL WOBBLE TEST

1. Install the *Flywheel Wobble Gauge by screwing the long threaded support rod into any one of the flywheel housing bolt holes. Lock in place with the attached locking nut.
2. Position the top bar over the top edge of the flywheel and lock in place with the locking nuts.
3. While rotating the flywheel, set the adjusting carriage bolt head (Gauge Indicator) so that it is about .20" above the top edge of the flywheel. Lock the adjusting bolt in place with the top and bottom locking nuts.
4. Slowly rotate the flywheel 360 degrees. Using a feeler gauge, measure the gap between the indicator bolt head and the flywheel top surface. If more than .005" variation is detected, there is too much flywheel wobble and will cause engine vibrations. Because of dirt or foreign matter, the flywheel may not be seated squarely on the crank flange. Reset the flywheel on the crank flange and retest. Check for warped flywheel.

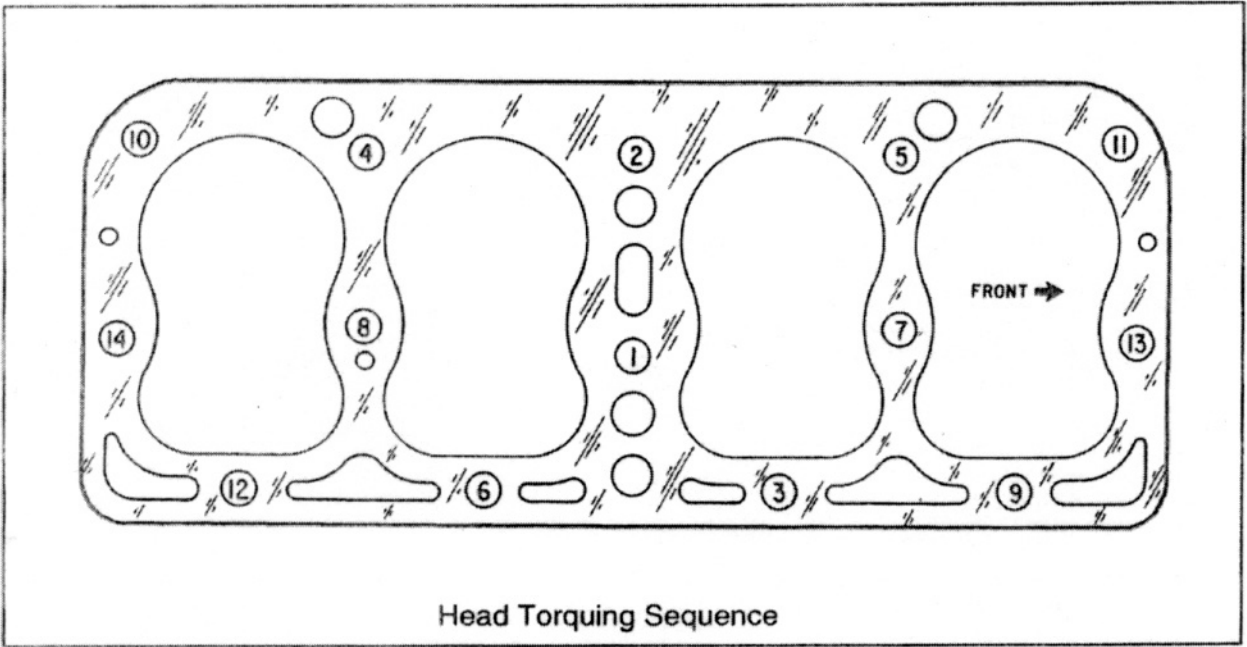
NOTE

A Dial Indicator may be used in place of the carriage bolt indicator. Attach the Dial Indicator support rod (supplied) on the gauge plate in place of the carriage bolt indicator. Attach a Dial Indicator to the support rod.

5. If the variation is more than .005", there will be too much wobble and the flywheel should be remachined or replaced.
6. After completing the flywheel wobble variation check, remove the flywheel wobble gauge and install the clutch and pressure plate, using twelve (12) bolts and lock washers (5/16-18 X 3/4" hex head). Torque to 20 ft.lbs.

NOTE: A dial indicator can be used for the wobble test with more accuracy than the Wobble Gauge.

* *Crank-To-Flywheel Housing and Flywheel Wobble Gauge Set Made by Auto Care & Restoration 3824 Alma Ave., Redding, Ca. 96002 (1-800-452-1027)*



Head Torquing Sequence