

Replacement of Timing Gear in 4 Cylinder Fieros

Two possible ways of replacing the timing gear without removing the engine:

- [Pivot rear cradle, remove camshaft](#)
- [Use special tool to remove and install gear](#)

The information below is believed to be correct at time of creation, however the Michigan Fiero Club does not guarantee this information to be correct, nor are they responsible for damages caused by attempting this repair. The information provided is for reference only, so as to help you determine if this repair is within your abilities to perform. If you are not comfortable with doing this repair, have a qualified shop complete the needed repairs.

Pivot rear cradle, remove camshaft (reprinted from the Online Service Guide)

I have an '87 Sport Coupe with the 2.5L "Iron Duke". This past July, with 126,000 miles on the engine, the timing gear sheared off about 30% of its teeth and stopped the engine dead. At the time all of this happened I was living in an apartment complex which did not allow any mechanical work in the driveways. A check with local mechanics indicated anywhere from \$500 to \$800 to replace the timing gear. Much to the dismay of my 17 year old son, the car was parked until we could get into our new house in September and get the garage/shop put together and do the work ourselves. A question put to the net in August on any possible shortcuts for replacing the timing gear (the manual said REMOVE the engine) brought a response from Frank Martin. Frank said to remove the intake manifold, lifters, struts, exhaust and swing the engine cradle down on the front bolts. I liked this idea since I didn't have to disconnect the cooling hoses, AC, wiring connectors, cables, etc.

A little over two weeks ago we started the job. I ordered all the parts from NAPA, which included a new cam timing gear, intake gasket and valve cover gasket. We followed Frank's procedure, with a "few" (-; additional steps, and had the cam out of the car in a little less than 4 hours. A quick trip to NAPA to get the new gear pressed on and by dinner time we had the engine reassembled and ready for "the test". It didn't want to start. A shot of starting fluid brought it to life, but the tach quickly soared to 4,000 rpm at idle. I asked Lee if he was sure he had everything back together the way it came apart. He assured me he did. Fearing I had the wrong cam gear (two different ones were listed for the car) and perhaps incorrect cam timing I began to go over everything I could think of that might possibly cause a problem.... TPS switch, vacuum leaks, grounding, right plug wires to proper places. Everything "seemed" to check out. Finally, tired and disgusted - we quit.

It was several days before we could get back to the car. Again, I asked Lee the same questions. "Is there a chance you didn't get the intake manifold on right?" "You know, a vacuum leak can cause these symptoms!" He assured me it was on correctly. Finally, we began to work backwards, disassembling the engine. When Lee took the intake manifold off he hollered "hey, I think I found the problem." The gasket was the WRONG gasket (correct part number - wrong gasket) and was mismatched enough to cause massive vacuum leakage. We picked up the RIGHT gasket, bolted it all together again and VIOLA. It purred like a kitten. At 126,000 miles this little engine doesn't burn any oil, keeps a clean white plug and now it really sounds good. We don't have that noisy thrashing from the timing gear (but I know it will return) and Lee is once more zipping around in his beloved little '87 SC. He did most of the work himself, with my oversight - and is very proud. Thanks, Frank Martin, for the help on reducing our time and effort. Wonder why Pontiac didn't think of that?

The following is a listing of what we had to remove and/or disconnect (in our order). I don't think I left anything out - but it is possible I may have omitted a step.

Support car on jackstands placed under FRAME, just in front of the front cradle bolts. Four 50# bags of fertilizer laying in the garage floor and placed in the front trunk helped to keep the nose down when the jack was removed from the back of the cradle. The jackstands are at sort of a fulcrum point and the extra weight in the front gets rid of the "rocking".

- Disconnect battery
- Deck lid (could have stayed on - easier to work on car with it off)
- Air cleaner assembly
- EGR valve (blocks valve cover bolt)
- Valve cover (may need special puller/tool)
- Fuel lines
- Throttle plate & linkage
- TPS & MAP connectors
- Vacuum hoses & spark plugs
- Intake manifold (left on coolant hose, just hung manifold over into trunk. Watch out for some lost coolant on floor)
- Loosen rocker nuts, swing rockers to side. Pull out push rods, note where they came from so they can go back in same location.
- Side cover on engine where lifters are.
- lifter retainer clips
- lifters - put in numbered 3oz. Dixie cups so they stay clean and can go back in same location.
- Oil pump gear
- (Pre 87 cars - remove distributor ?)
- Braided ground strap (we broke ours because we didn't see it)
- Starter
- Exhaust system
- Both rear wheels
- Both rear calipers & Emergency brake cable (do not disconnect calipers from lines)
- Inner wheel well lining on Right side
- Left strut at top (3 bolts)
- Remove Right strut completely (mark position on knuckle so you don't have to go to an alignment shop)
- Put floor jack under cradle, remove two rear bolts, lower cradle.
- Fan belt
- Crankshaft pulley (may need puller)
- Timing cover (DO NOT need to remove motor mount or support engine)
- Camshaft thrust plate retaining bolts
- Carefully pull out camshaft - have old gear pressed off & new on. Align timing marks and work backwards.
- Change engine oil
- Make sure you have the correct intake gasket!

Special tools needed:

- Valve cover removal tool - maybe could have done it with a tap by a rubber hammer. DO NOT pry cover off or you will bend flange.
- Had to fabricate a puller for flywheel pulley. Used two 1/4" butterfly toggle bolts about 3" long and a piece of oak flooring. Drilled holes so toggle bolts could slip inside holes in front of pulley. Placed a socket on the shaft end and tightened screws to butterflys. Pulley came off without bending or messing up groves.
- Very small 10 mm socket to fit in cam gear holes and remove thrust plate nuts. Ended up slightly grinding down a 1/4" drive socket to fit - one with thin walls would have done it as-is. Good collection of metric sockets, extensions, universal joint, and wrenches in at least 3/8" drive - 1/2" and 1/4" helpful. I have air tools that really made the job easier. Think the biggest nuts are on the Struts at the lower knuckle - was it a 7/8" SAE that worked OK on my impact wrench?

Hope you don't have to repeat the job on your car - it is a b***h. But, it can be done at home and save a bundle!

From: Randy T. Agee

Use special tool to remove and install gear

This process describes how to lower the engine slightly and then use a tool sold by Jeremy Hodge to remove the old gear and install the new.

Cam gears:

You have two replacement choices.

- Original fiber (aftermarket and OEM)
- Aluminum (Melling (www.melling.com) number 2524 for cam gear or 2538S for cam and crank gear - please double check with your auto parts store or with Melling, for the correct number)

If you choose the Aluminum gear (2524 or the set 2538S), Melling doesn't show it as available for the 87-88 Fiero 4 cyls

Our parts catalog reflects the data from G.M. as to which part fits what year vehicle. We have to follow O.E. recommendations for these listings to provide proper warranty protection for the parts we sell. It may be true that the 2542S will work on a 1987 engine, but G.M. doesn't say so, and we can not warranty any parts used on different years than what our catalog lists.

*Regards,
Mark Richardson
Catalog Mgr.
Melling Engine Parts*

Tools:

- Normal hand tools, metric
- Drill
- Engine lift
- Jackstands
- Cam Gear Replacement Tool by Jeremy Hodge <http://www.hands-on.org/PFKB/incoming.cfm?GATE=ProductsServices/ProdServ.htm>

Steps for cam replacement:

- Buy a shop manual, Helms, Haynes, Chiltons, etc.
- Remove battery
- Remove battery shield
- Remove belt (turn the tensioner bolt to the right on 87-88 Fieros to loosen belt)
- Remove dogbone
- Remove "L" bracket connecting alternator to intake (87-88 Fieros)
- Remove top alternator bolt
- Put rear of car on jackstands
- Drain oil
- Remove oil filter
- Put engine lift in position so as you can connect a chain to the engine at the dogbone bracket and the loop above the water pump.
- Lift engine to lessen the weight on the mounts
- Remove passenger side wheel
- Remove rubber splash shield

- Remove crankshaft pulley.
- Remove alternator and lower alternator bracket... set alternator aside or remove from car
- Remove metal shield from frame of car, under the a/c compressor
- Remove wiring from A/C compressor
- Unbolt AC compressor and AC brackets (front and rear), set A/C compressor off to the side.
- Unbolt the exhaust from the exhaust manifold, remove 4 springs that hold exhaust to frame, near catalytic converter. Let exhaust hang... you may want to wrap the exhaust tips with cloth to protect the paint
- Unbolt the engine mount
- Lift engine a few inches
- Remove engine mount
- Unbolt the engine mount bracket
- Remove engine mount bracket
- Lower engine so as the axle is resting/almost resting on the subframe AND so as the oil pan is NOT supporting the engine! IMPORTANT! Do not damage the oil pan.
- Remove timing cover. Be careful of prying it off. You may want to purchase a new timing cover, which will come with a front main seal installed (from GM). Do not remove oil pan
- Remove crank gear, should slide off easily.
- Use Jeremy Hodge's timing gear remover tool
- If gear breaks, use a cutoff wheel to remove the gear from the camshaft Take it slow and when you are almost through the metal ring of the gear, pry it apart. DO NOT grind into the camshaft or the thrust plate behind the gear. If you do, you will have to replace the camshaft! A few nicks in the camshaft won't hurt.
- Clean everything up, straighten any bent parts on the oil pan.
- Flush oil pan with kerosene, to remove old gear pieces. Drain oil pan. Do NOT put kerosene into the oil fill at the top of the engine. Just pour kerosene into oil pan at the opening made by the removal of the timing cover
- Install new timing gear using Jeremy's Tool.
 - I would recommend you have the aluminum gear honed or buy the fiber gear kit from Jeremy. The Aluminum gear will be difficult to put on, because normally the gears are pressed on, Why not bolted?? I don't know, they just were designed that way. Heat the gear in oil and mount it. Use Jeremy's tool to get the gear started. Use a hammer and block of wood to tap the gear on as you use the gear tool. I.E. turn the gear tool with wrench, tap on the gear, turn the tool, tap the gear ... by tapping on the gear you are jarring it so as it will move because of the pressure put on it by the gear tool. DO NOT tap too hard . If you do, the cam may move and push out the plug in back of the engine. To fix this you need to remove the engine! There is nothing holding the cam in place. So be careful. Just tap lightly. A honed gear will slide on easier because you have removed some of the metal from the inside of the gear. Jeremy can explain this more.
- Install crank gear and align timing marks on gears
- Install front main seal into timing cover (if using old cover)
- Test fit timing cover, especially the area between the timing cover and the oil pan.
- Double check timing gears for alignment of marks, IMPORTANT!
- Put RTV on timing cover, put cover on, do not bolt it yet.
- Raise engine
- Put crank pulley on so as to center front main seal on crank pulley, do not install crank bolt.
- Bolt timing cover in place
- Remove crank pulley, continue bolting cover on (may need to lower engine)
- With timing cover in place, raise engine. Install engine mount bracket, bolt into place
- Install engine mount, bolt into place
- Lower engine
- Remove engine lift
- Install A/C brackets and A/C compressor
- Install Alternator, connect L-bracket in back (87-88 Fieros)
- Install Crank Pulley
- Install metal shield under A/C compressor

- Install belt
- Install battery/shield
- Wait overnight for RTV to cure (or longer)
- Install new oil filter
- Install oil
- Crank engine over and hope all went well.
- If all works, install splash shield and tire.
- Test drive Fiero.

Comments:

My aluminum timing gear set made some knocking sounds when I first fired up the engine, but that went away after about a minute. I have driven about 1000 miles on it so far and all is well again, and quiet. If your engine hasn't been worked on since new, then you can expect the timing cover and oil pan to be "glued" in place with RTV. Be careful when prying them apart. I would suggest you buy a new timing cover from GM. For \$30, it is worth the price and it comes with front main seal installed.

Special Thanks to:

[Jeremy Hodge](#)
[Frank Martin](#)
[Randy Agee](#)
[Ed Parks \(Fiero Factory\)](#)
[And the Fiero Mailing List](#) & [Fiero Technet](#)

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