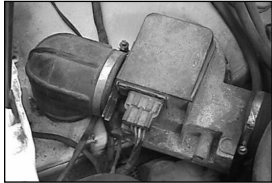




Shadetree tip

Easy cool-air intake

Getting cool air to the engine is a way to easy horsepower. Here's a solution by master mechanic Dave Planakis.



Disconnect Vane Air Meter from the stock air cleaner. Remove and disassemble the air cleaner. Cut the hard rubber inlet hose as shown in the photo above.

Cut a 3.25" hole in the body work beside the radiator. Install VAM to the now customized hard-rubber hose. Push the end of the hose through the hole. From beneath, install a K&N or similar cone filter to the hose.

Voila! More horsepower.

What would you like to see more of in your newsletter?

This is a new format for the quarterly newsletter. We'd like the focus on Merkur owners, their cars, modifications, what works and what doesn't, and tips that will make Merkur ownership easier and more enjoyable.

Send us your Merkur photos — individual cars or Gatherings around the U.S. — along with descriptions and stories. Don't worry about your literary skills; we'll rewrite and polish as necessary.

We welcome all submissions. Please send to:

Richard Curtis
MCA Newsletter
6032 Makely Drive
Fairfax Station, Va. 22039
or by e-mail to:
lakehouse@aol.com

MCA Happenings 2002

January 2002

www.merkurclub.com

Pre-register for Carlisle 2002

May 31-June 1-2 are the dates, Carlisle Fairgrounds, Pa. is the place. Club pre-registration rate is \$25 for two adults/one car. Second car is just \$20, \$15 for a third car. This is 38% savings over regular registration fees. Download and mail a registration form before Feb. 28 at:

<http://www.merkurclub.com/registration.jpg>
and mail to Carlisle Productions

1000 Bryn Mawr Road, Carlisle, Pa. 17013



Photos by Richard Curtis

Field of dreams: 119 Merkurs were registered under MCA banner for Carlisle 2001, winning the club award.

Carlisle 2001 - A grand slam for Merkurs

For the fourth consecutive year In June 2001 Merkurs won the title as largest club at the All-Ford Nationals at Carlisle. Under the MCA banner 119 Merkurs were registered; the Fairlane Club had 117 cars. This is the closest victory during the four year period.

There were new people and a rising standard in Merkur appearance. Atla Nyiradi's citrus yellow XR4ti and Stokely Dickenson's silver XR4 with blue-tinted windows and custom front valence raised the stakes even higher.

The replica WRC-winning green-and-white Sierra created by Simon Matthews was outstanding. The choice of engines was wide ranging: Jim Duberry's V-8, Hal Clarke's V-6 Taurus SHO engine, Scott Miller's Turbo Coupe V-6, and all types of variations for the trusty 2.3 liter four. Dimitri Wittal's Scorpio had a 2.3 turbo.

The number of modifications was truly amazing. To attend Carlisle is a priceless experience.



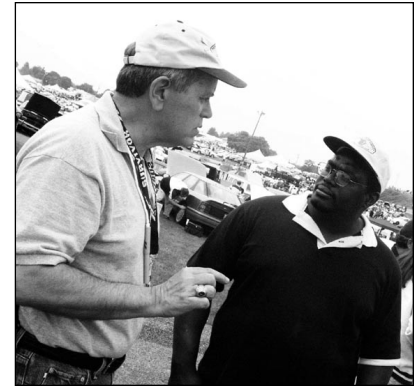
Custom front end of Brooklyn, N.Y.'s Stokely Dickenson's 88 XR featured custom lights, Cossie grille, blindingly beautiful silver paint and blue-tinted windows.



"No one can own just one" is what Craig Madsen's T-shirt reads. Craig should know. Right, Atla Nyiradi's highly modified, citrus yellow XR featuring Cossie grille and bumper, Euro lights, detailed engine bay and interior took 3rd in High Modified XRs.



Super-nice 89XR: Virginia's Larry Wayne Davis has done a world of work on his red 89XR: from a C3 transmission to an A4LD to a T-9; Scorpio rear disks, ported and polished everything, custom hood scoop, custom grille, Euro lights, relocated battery, water-to-air IC, 17" custom wheels, and SDS EM-3F computer.



Gabbing at Carlisle 2001: MCA's Dave Weiner, left, and Phil Marshall, of PM Motorsports, spend some time together on the Carlisle show field. Merkurs were the largest club (again!) at Carlisle, as they have been in previous years.



Saul Rivkin's 1st place Scorpio, above: Won first place for Scorpios in the MCA judging. Saul later used this car to demonstrate detailing and show-preparation procedures.



Water-to-air intercooler highlights Stuart Matthews' highly modified XR engine bay, a WRC replica XR, painted green and white. Exterior photo on back page.

Mark Mandragonas 2nd place Scorpio, below: Judges agreed the Scorpio competition was tough.



Show field-as-garage: Dimitri Wittal 2.3 liter, Turbo Scorpio experienced a top end problem, which he fixed while the car was sitting on the show field Saturday. Tip: Always carry tools!

Photos provided by the author

IMSA racer: Peter Cipolla's XR4ti was built by Bill Topping of Maryland and later Georgia for racing in IMSA's International Sedan racing series. The car was campaigned competitively for four years, 1988-1991. Cipolla, from Kansas City, has renovated the car completely and races regularly in local club events.



How I got an XR for track racing

By Peter Cipolla

For those interested in high performance Merkur XR4Ti's:

First a little history on my '85 XR4Ti IMSA-IS car.

My hobby has always been cars, and finally in the early 1980s I showed up at a Shelby club track event at Willow Springs road course in California just to see what it was all about.

I got a wild ride around the 2.5-mile road course in Alan Bolte's '65 Shelby 5R-101. If any of you are familiar with Shelybs then you know that would have been one of the original Shelby race cars.

Needless to say, at the next event I was on the track with my '65 Mustang fast-back and have been to lots of track events since.

I have liked Merkurs since Day One and finally bought an '88 XR4Ti street car in '91. I was considering building an XR for track racing, when I saw an ad for one in Atlanta in November

1996.

The car was in excellent running condition.

I left a deposit and flew home to Kansas City. I showed up two weeks later with a 24-ft. rental truck, loaded three crates of parts, spare motor, spare body parts, two spare sets of wheels, the car I'd never even sat in, and drove home.

The car was built and raced by Bill Topping of Maryland (and later Georgia). He started construction in 1986 and completed it in 1988. He ran it full time in IMSA's International Sedan series from 1988-'91.

The car is in some of the photos in the IMSA year-books for those years. All of the entry/tech stickers are on the A-pillar rollcage.

The car ran in the top half of the pack at all the top tracks in the eastern half of the country and as far west as Topeka.

I started a complete ground-up restoration, stripping and prepped every inch inside and out, full roll cage,



Stickers: Note the entry and tech-inspection stickers still on the A-pillar roll cage brace. Cipolla's race car weighs in at 2,550 lbs.

brakes and safety stuff but the engine was supposed to be stock.

Now that I've run the car for some time and have rebuilt all necessary parts, my plan is to add horsepower and lower my lap times. The club stuff I do is not really competitive racing, but, hey, you still want to keep-up with or pass whoever is in front of you at least!

Really, I'm an XR4ti nut. I still just love these cars.

gauges, Accusump, fuel cell, Tilton/JFZ racing-brake system, custom shock-tower camber plates, adjustable coilovers, custom sway bars,

Heim joints, intercooler, oil cooler, and lots of trick pieces. Weight is 2,550 lbs.

The rules were that you could do all the suspension,

How to rebuild an XR engine in your own garage

By Richard Curtis

I started this project on June 10, 2001 with the purchase of an 1989 XR, 5-speed, with 121,878 showing on the odometer. The car was running, but obviously not on all cylinders.

It also had a severe exhaust leak; the TPS voltage was out of range; the spark plugs — all the wrong plugs (and they weren't even the same kind of plug!), were the wrong size and were not screwed in all the way.

The coil was barely delivering a spark. The fuel injectors were the wrong ones (green-top injectors at 30 lbs./hour instead of the correct brown-top injectors at 36 lb./hr).

After doing a compression test (150, 150, 0, 150), we knew the head had to come off.

Given the mileage and the fact that this was a learning experience, we decided to remove the engine and rebuild everything.

Preparation

You'll need a fairly complete set of tools or else borrow or rent. I'd advise a fairly complete set of metric sockets (including deep sockets), extensions, ratchets, pliers, screwdrivers, magnets-on-a-stick and combination wrenches.

Air-powered tools, of course, make everything easier and much faster. We had to use a cut-off tool at one point to remove an exhaust bolt. I found that a set of ratcheting wrenches was particularly helpful (on sale for \$9 at Home Depot!)

I did have to buy some sockets not normally found in most collections: a 22mm, 21mm socket, 6mm and 8mm 12-point sockets and a 5.5mm 6-point socket (for separating the TPS from the throttle body.) I also bought a cylinder ball hone, a cylinder-ring compressor, a pack of Sawzall blades, and a carbide burr. I was fortunate enough to be able to borrow a Sawzall, a valve-spring compressor, engine hoist and engine stand.

Shopping list

Taps for chasing threads

8m x 12.5
10m x 15
6m x 10
8m x 12.5
10m x 10

Ford list prices:

Ranger head bolts	\$28.00
Timing belt	13.48
Tensioner	44.78
Plug wires	32.62
Front crank seal	7.71
Rear crank seal	7.29
PCV valve	6.00
BAP sensor	118.30
TFI	109.58
Rod bearings	32.00
Main bearings	40.00

Non-Ford parts

Thermostat/gasket	7.00
Clutch kit	195.00
Temp sender	28.45
Fan sensor	50.00
Ignition coil	37.00
Paint	5.00
Rings, bearings, gasket set	175
Felpro head gasket	50
Cam kit	289
Turbo bolts, gasket	7.00
Valve job	288.00
Cutting flywheel	40.00
Injectors (4)	200.00
Ignition parts	14.00
O2 sensor	33.36
Spark plugs	4.00
Misc.	233.00

In addition to the normal liquids/aerosols you'll have around such as WD40, brake clean, engine oil, etc., you'll need some gasket sealer.

- An engine hoist is strongly recommended for removing the engine. You could rent one of these for just the couple of hours it takes to remove the engine and then move the engine to an engine stand, then rent the hoist again when it's time to replace the engine. The engine spends little time on the hoist.

- You will also need an engine stand. Luckily, I was able to borrow both the hoist and the engine stand. You can buy an adequate engine stand for about \$40 + shipping from various mail-



The famous Dave Compton: was invaluable with help and advice. If you've never rebuilt an engine, you'll need a pathfinder like Dave.

order/online sources. Renting an engine stand isn't really an option since the engine could wind up on the engine stand — as mine did — for up to several weeks.

- Get a box of self-seal plastic food bags and a marking pen. As you disassemble things, if you cannot put the screws/bolts/nuts back into the holes they came from (recommended), put them into these bags and mark where they came from, i.e., pressure plate-to-flywheel, flywheel-to-crankshaft, timing belt cover, lower intake manifold, etc. This will make reassembling much, much easier. Trust me on this.

- Use masking tape and a marker pen to label various connections so you'll remember correctly when you reinstall the engine (vacuum lines, electrical connections, etc.)

- You should keep large assemblies in separate places or in separate boxes (things such as turbo-exhaust manifold assembly; break it down later into smaller parts; the upper and lower intakes; injector rail with the injectors, etc.). Again this is to speed reassembly and make finding related parts much easier and quicker.

- A good, clean, well lighted place to work. Of course, I know that not all of us are blessed with a big garage. But the better place you have to work, the easier this will be. Provide as much work space around the car and/or engine as possible.

- You'll need at least one work light on a long extension cord and a flashlight or two comes in handy also.

Since the condition of the car was largely unknown to me (despite \$13,000 worth of repair receipts from the previous owner), we

replaced all the sensors and ignition system, belt, etc.

- Put the beer in the refrigerator for afterwards, pick up the phone and call several of your closest Merkur friends to help.

Getting started

On the first day, I spent five hours alone disconnecting and removing various subassemblies. I needed Dave Compton's experienced help when it actually came to removing the engine and to tearing it down and putting it back together. But a lot of the prep work can be done easily by one person. I tried not to waste his time.

Before starting, give serious consideration to washing the engine compartment, both top AND bottom. Remove as much grease/goop/old stuff as possible. If not, eventually you will remove it with your hands and your clothes. Several pairs of disposable gloves come in handy, plus a lot of hand cleaner, a big supply of shop rags, and several rolls of paper towels.

The Smart Merkur Owner will follow the shop manual, but here's what I did:

- Block the rear wheels. Set the hand brake. Put the car on jackstands as high as possible (you're going to be beneath the car a lot). Disconnect the battery.

- Drain oil and coolant. Remove oil filter.

- If possible, get someone to help you remove the hood (two bolts on each side; disconnect the underhood light and ground). Be sure to scribe the bolt locations for replacing and realigning the hood.

- Disconnect all coolant hoses. Remove radiator fan after remembering to disconnect the electrical connection. Remove radiator.

- Remove the turbo hose, throttle body, throttle linkage and upper intake. Disconnect Idle Air Control harness. Disconnect coil wire. Disconnect wiring connector to TFI. Disconnect ECT harness.

- Disconnect fuel lines from fuel rail (they are held

in place by small plastic clips that can be removed using a screwdriver). Remove Fuel Pulse Damper.

- Disconnect EGR vacuum line.
- Disconnect alternator wiring. Remove alternator. Remove alternator bracket.
- Remove power-steering pump. Remove power-steering pump bracket. Don't forget the ground wire that attaches beneath the power steering pump bracket.
- Unbolt air conditioning compressor and safety wire out of the way as far as the a/c line will allow you. I found out later that removing the entire VAM/air cleaner assembly will provide even more room.
- Remove air conditioning compressor bracket.
- Disconnect wiring and remove starter.
- Disconnect turbo-elbow-to-downpipe (2 nuts/studs) (upon reinstallation, be sure to reconnect this before installing starter. This will give you lots more working room.)
- While under the car, remove ALL the engine-to-bellhousing bolts. All of these bolts save two are visible and relatively easy to access. The two top-most bellhousing-to-engine bolts, however are neither easily seen nor easily accessed. There might be an easier way to do these but . . .

Dave Compton suggests an 24" socket-wrench extension from behind and over the transmission with a universal joint on its end. He says it works for him. We couldn't make it work on this car.

We used a 13mm combination wrench one-eighth of a turn at a time. Whew! You might be advised to disconnect the transmission at the driveshaft and tilt the engine-transmission downward just to get to these bolts. One alternative would be to remove engine-bellhousing-transmission as a unit, if that's possible or if you're going to remove the transmission anyhow. Reinstalling these two top bolts are even more of a pain. Eventually, I even removed the heater control valve for just a bit more

Instructions

These are the instructions that came with my rebuilt head:

- Consult a reputable repair manual.
- Clean thoroughly and check all mating surfaces for warpage.
- Check all bolt, studs, holes and threads — clean and replace as necessary.
- Check all freeze plugs, cover plates, temp senders, etc. — replace as necessary.
- Overhead cam engines — set cam timing before installing unit to avoid bending or damaging valves.
- Torque all heads, manifolds, etc. to specs, using proper sequence in three stages. Retorque after warm-up, if necessary.

Crankshaft install procedures:

- Clean shaft, oil passages in shaft, block and all engine components.
- Compare tag shaft size with bearing sizes stamped on back side of bearings.
- Check main bearing saddle bores & connecting rod bores for size, roundness and misalignment. Align bore if necessary.
- Examine all journals for nicks & burrs.
- Check front pulley & compare with crankshaft pulley hub. Compare crankshaft flange with flywheel and/or pilot shaft to determine correct match (on exchange units).
- Install main bearings. Observe proper oil hole & locking lip location.
- Prelubricate all bearings, install shaft, torque bolts to specs & check end thrust.
- Check oil clearance. Crankshaft must rotate freely.
- Install bearings in connecting rods. Do not strike crankshaft journals with connecting rod bolts.
- Check oil clearance. Rotate engine & check con rods for free side clearance.
- Oil prime engine before starting.
- Check flywheel and flywheel housing installation for proper alignment.
- Replace oil cooler element if engine has had a metal failure.

room.

- Disconnect vacuum lines from boost control solenoid.
- Disconnect hose from VAM to turbo.
- Remove all coolant hoses/lines.
- Removing the air filter housing will provide more working room.
- Remove engine mount top nuts.
- Support engine with floor jack or hook up to engine hoist.
- Support transmission with a jack or jackstand.
- Hook up engine hoist. We hooked one hook into the bottom of the downpipe elbow and the other to the engine hoist point on the cylinder head near the timing belt.
- Remove three bolts on each side that connect the

engine mounts to the engine mount brackets on each side of the engine block.

- Separate engine from the bellhousing. This will involve a lot of hoisting, tugging, shoving, pulling, etc., until the engine is free of the bellhousing.
- Gently hoist the engine up and out of the engine bay. Be careful of the a/c compressor, other wires, vacuum lines, etc. This is where several friends come in REAL handy.
- Once clear, separate the clutch/pressure plate from the flywheel. Then remove the flywheel. Remove all these bolts in the same pattern that you will use to retorque them upon reinstallation, especially the pressure plate bolts if you plan to reuse the pressure plate/clutch.

Clutch instructions

- For reference, the new clutch friction surface was 0.322" thick; the old friction surface was 0.287".
- The notice that came with the clutch offered this: "Ford has used an aluminum bearing retainer on many passenger car applications. The aluminum bearing retainer is prone to severe wear and will result in erratic clutch action including hard pedal, no release and chatter at take off. Ford recommends that the bearing retainer be replaced at the same time the clutch is replaced. Failure to change the bearing retainer may void your warranty."

Cylinder-head bolt instructions

—These instructions came with Ford's with cylinder-head bolts: "Install cylinder-head bolts in sequence per shop manual. Tighten in sequence to 70 N-m (51 lb-ft). Retighten in sequence to 70 N-m (51 lb-ft). Turn all cylinder bolts an additional 90-100 degrees in sequence."

Be sure to keep these bolts separate from all others; put them in a clearly labeled bag, one for the flywheel and one for the pressure plate.

- You can now bolt the engine to the engine stand.

Removing major subassemblies:

- Remove the lower intake (6 bolts). If you're going to replace the injectors, first remove the two 10mm bolts that secure the fuel rail to the lower intake manifold. You simply pull the injectors out; they're held in by O-rings. If your injectors are leaking, it's most likely from bad O-rings.
- Remove exhaust manifold/turbo support bracket. Remove exhaust manifold/turbo (8 bolts). Be sure to label all parts/bolts.
- Remove oil-filter adaptor and oil cooler. Keep parts together in a baggie.
- Remove crank pulley, timing belt cover, tensioner, timing belt, inner timing belt cover. See shop manual for instructions. Keep all these parts together (even better, put all bolts back into the holes they came out of) (later, you'll want to chase all bolt holes with a tap to clean them out).
- Remove valve cover and inspect the gasket to determine if you can reuse it. A new one comes with a Detroit Gasket engine-gasket set; so does a new cylinder head gasket. I, however, used a FelPro cylinder head gasket.

Remove cylinder head (you'll need a 12-pt. 13mm socket for this). Remove them in the proper sequence.

- Check for damage to valves, valve train, cylinders. We found two burned valves but no cracks.

At this point, we could have fixed the valve problem and reinstalled everything. Actually, we could've removed the cylinder head without removing the engine.

- Remove oil pan. Remove oil pump (you'll need the 6mm 12-pt. socket for this). It's the only place on the engine that you'll need this socket but nothing else will do. Trust me on this.
- Remove pistons by removing rod bolts/nuts. Be careful not to touch the crank journals with the rod bolts. In fact, place a piece of rubber or vinyl tubing on the rod bolts to prevent this.
- Check condition of rings (we replaced all rings; it's cheap at this point). Pistons were still tight in their bores.
- Remove main bearing caps. Inspect main bearings/journals for damage or signs of heat/friction. Mine had very little sign of wear outside of what might be considered normal. Luckily, we found the cylinders to be in excellent condition (no ridge at top of cylinders, some slight hone marks still evident, no blueing anywhere, no signs of excessive heat, no excessive wear noted on the bearings). Now remove the crank and inspect it closely.

Several knowledgeable mechanics told me that Merkur XRs have stout bottom ends and rarely need work beyond just replacing bearings, if that.

Cylinder head work:

The head we removed had several problems. One burned intake valve, one burned exhaust valve. The machine shop checked for cracks then did a three-angle valve job, replaced the valve seats, seals and guides. They also replaced the two burned valves and installed new cam bearings and cam seals.

- We installed Dave Compton's Hot Street II cam along with dual springs and new followers. Follow the directions that come with the cam and be careful not to nick the new bearings.

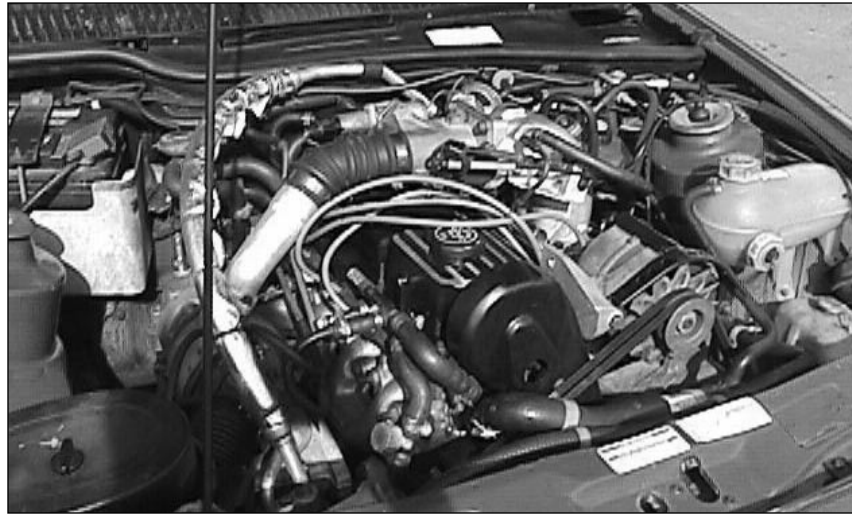
Porting

- Compton ported my exhaust manifold. I had never done any work like that but in watching him, I think I could do it myself next time. He spent a lot of time on the No. 4 exhaust port and the difference is visible and remarkable. You need several carbide burrs, at least one of them with a long shank. This took about 90 minutes.

I gutted the upper intake using a Sawzall with a long blade to cut away the webbing (about 20 minutes), then smoothing off the remaining ridges with a carbide burr (several hours). Tip: Keep a saucer of dishwashing detergent-water mix nearby and dip the burr into it for lubrication and to prevent the burr from clogging. I also knife-edged the lower intake.

Clean the exhaust/intake manifolds thoroughly after all the porting; you don't want any metal particles inside your new engine.

We also honed the cylinders, following advice by master mechanic Dave Planakis. I bought a "dingleberry" hone for \$65. Using Marvel Mystery Oil in a spray bottle (you can use other lubricants), I coated the hone with the oil and using a 18v portable drill and turning the hone at a fair clip, I rapidly went up and down each cylinder with



Reinstalled and running: Rebuild took about 80 hours of time and cost about \$1,600 not counting almost all the labor. Exhaust and intake manifolds were ported. Next: an intercooler, big VAM, LA3 computer and 3" downpipe.

the hone. Planakis says you must go quickly (the up-and-down part) in order to achieve a 45-degree hatch-mark pattern.

While the engine is torn down is a good time to repaint items. It only takes a few minutes and a couple of bucks for spray paint. The result is that the engine looks like new.

Reassembly

Now is not the time to get lazy. Don't leave out any steps. Bolt up everything correctly.

Buy the requisite taps and dies and clean all the threads, especially the cylinder-head bolt threads. This will yield more accurate torque readings and, ultimately, a stronger engine.

Then either take the block to a machine shop and have it cleaned professionally, or take it outside with a bucket of hot, sudsy water, a collection of brushes including bottle brushes, and clean everything thoroughly. Then do it again. And again. After you're convinced that the block is clean enough to eat off of, blow it off with compressed air and then coat it immediately with WD40 to inhibit rust.

On reassembling the engine, follow the shop manual; it will be difficult to go wrong.

Thoroughly oil the bores, pistons, rings, bearings, etc. before reassembly. Follow the shop manual's specifications.

When reinstalling the

exhaust manifold, be sure to start all the bolts before tightening them. You will swear the exhaust manifold has shrunk and that the holes won't line up. But they will. Install turbo, etc.

Now is a good time to clean the EGR valve pintle and passageways in the upper intake manifold. Mine was clogged solidly. Do not take the EGR valve itself off its mount (those three little screws are tempting); those little screws are almost impossible to get back in.

Install a new PCV valve.

Be careful in reassembling the fuel rail. Moisten the O-rings on the injectors before reassembly.

After the engine is completed, and before you remove it from the hoist (duh!), bolt on your newly resurfaced flywheel (be sure to use the right bolts), and then using the clutch tool that came with your new clutch kit, bolt on the clutch and pressure plate (again using the correct bolts).

Don't forget to install a new pilot bearing in the end of the crankshaft and a new clutch release bearing in the bellhousing.

The engine should now be ready to drop in.

Installing the engine was a lot easier than taking it out, but still no walk in the park. It took a couple of tries to get the engine to mate up with the bellhousing.

While the engine is still on the hoist but in the engine compartment married

to the bellhousing, you'll need to attach the engine mount "ears" and bolt them to the block. Install the motor mounts but don't tighten them all the way (leave the top nut only a little tight). (After cam breakin, drive the car around the block a couple of times — lefts and rights — and let the engine find its natural center on the mounts. Then torque down the nuts.)

But first, let's bolt in the engine. Be sure you've replaced all the bellhousing-to-block bolts, and attached the engine brace that hangs beneath the oil filter. I would save replacing the oil filter for almost last. It gets in the way of a couple of bellhousing bolts, and it's easier to hook up the engine-fan temp sensor with the filter not in the way. The two top-most bellhousing bolts are simply difficult.

Now it's just a matter of hooking up everything . . . Again, follow directions in the shop manual.

Here's one tip: Be sure to install the turbo-elbow-to-downpipe bolts BEFORE bolting on the starter. The bolts will be more accessible.

Recognizing that my XR had at least 121,000 miles on it, I'm sure I saved a lot of trouble later by replacing all the sensors and filters. A new TPS, ECT, purple-ring sensor, engine cooling-fan sensor, PCV valve, O2 sensor, Barometric Air Pressure sensor, plus a thorough cleaning of the EGR valve, the Idle Air

Control valve and the throttle body. I also installed a new thermostat, air and fuel filters plus a new coil. The coolant hoses were almost new as was the radiator. I also flushed and refilled the power steering fluid, brake fluid and transmission fluid.

Startup

First fill the oil filter and install it. Then fill the engine with 4 quarts of petroleum-based oil. Synthetic oil is NOT advised for breakin.

Before cranking the engine, remove the distributor, and using a long extension with an 8mm socket on the end and a power drill on the other end, spin the oil pump until oil shoots out the hole and gets all over everything. Actually, you should just spin it a few revolutions until the oil pump is primed and oil is distributed throughout.

Reinstall the distributor and rotate it enough until the rotor is pointing roughly at Number One (roughly 4 p.m. as you look at the top of the distributor). Leave the distributor hold-down bolt about finger tight; you'll be setting the timing eventually and you can tighten it down then.

Before cranking the car, check the TPS voltage (set it between 0.90-1.0 volts).

Once cranked, unless you've installed a roller cam, you need to get the rpms to 2,000 quickly and run the engine for 20 minutes. Be prepared for a lot — repeat, a LOT — of smoke as you burn off various liquids, oil, manifold dressings, etc. After 20 minutes, change the oil and filter. This will clean the engine of any grit and other bad things you might have left in the engine.

Drive the car gently for the first 600 miles varying the speed. Keep rpms below 3,000 during this first 600 miles. Then change oil and filter again. Retorque the bolts you can reach and the head bolts.

Check all nuts and bolts, hose connections, belt tensions, engine mounts, fluid levels, etc., often during the break-in period.

My new engine runs great. Hope this helps you.

XR owner interview: Ryan Mattson

An MCA interview with Ryan Mattson.

What did you hope to achieve with the "dyno run" at Carlisle in 2001?

I decided it was time I put my car up on the dyno. I had debated doing it every year I've gone. This year I had more mods than I've ever had. On the way to Carlisle though the car felt wrong, it's felt off all year. I had an oil leak begin on the drive to Carlisle, 4th gear power (high rpms) felt WAY low the whole drive.

Saturday morning I signed up for the dyno. I aimed low with my power expectations. I was hoping to make somewhere around 220 hp and 260 lb.-ft. of torque.

As we put the car on the rollers the guy that runs the dyno test asked me what I thought it would make and all I said was "It better make more than that last guy." The previous car was a late '70s V8 Mustang that made 195 hp. I had a pretty bad feeling about how things were going to go. Even with my low expectations my first run showed only 200 hp and 130 lb.-ft. of torque. The next two runs were both worse.

Looking at the power and air/fuel curves I could see that power peaked about 3200 rpm and was level until 4000 then it fell off. The air-fuel ratio started real lean and then fell just slightly where the power is made, then gets richer and richer as the power drops.

What caused your problems?

The power problems on the dyno and driving to Carlisle were all due to my own under-education with the EEC Tuner. Probably the most crucial part of using the Tuner is knowing how to load files/modifications correctly. Now with the Tuner loaded correctly I have an ever-nagging pinging/ detonation problem. I've had this problem for the last year and a half. I "band-aided" it last year by just backing off the timing.

When the problem began



Back in the hotel parking lot: Ryan Mattson's XR after his three runs on the Carlisle Fairgrounds show field dyno.

still eludes me. I've gone over and over it. Next to everything is new on the motor as far as electrical stuff goes.

My current plans to fix the pinging is to get new higher-flow injectors. My mod list by all means should not require injectors but these injectors are stock and are also a mix and match from different parts cars. I won't know if it works till next spring.

Since Carlisle I have driven the car twice. I parked it as soon as I got home because of the oil leak. The front main seal was SHOT and at the same time it looked like the oil pan was leaking so I replaced that.

Took it for a drive about two weeks later and then the oil pan was leaking at the back and my oil pressure was suddenly lower.

I parked the car again and decided it was a good time to do a block rebuild. So until recently the engine was out

and totally apart.

The current plan to completion is a new lightened and knife-edged crank, new bearings and new rings.

The block has zero ring wear so nothing major is needed. I also plan to put in a new oil pump and pickup, as well as seals and gaskets.

I have a Race Engineering round-tooth timing belt to install as well. Then as I said new injectors.

What intercooler do you run?

I originally purchased a Modern Performance intercooler kit. I wasn't all that fond of the configuration of that kit though, so after a little over a year I decided to convert it to my own setup.

About the only thing I kept was the core and bypass valve. I went to a local radiator shop with my stock radiator and the intercooler and told them what I wanted was

a radiator the same width as stock but short by the size of the intercooler.

They recommended using brass over aluminum and going with four rows approximately 1/2" thicker.

Total cost was (eep!) \$500 but now my intercooler is up out of the way, RS500 style (mounted above the radiator).

Initially we were not certain that this little radiator would be able to keep the system cool but actually it's doing at least as good a job as the stock unit; temps are usually steady at 190°.

Do you run the stock computer?

At present I have a PK1 EEC in the car with the EEC Tuner installed in it. Installing the tuner into the EEC is a piece of cake when you use the PK1. Just pop some screws, remove the shielding, drop the board in and connect the

ribbon cable. Then reinstall the shield and screws. Expect to learn a few things when getting familiar with the tuner.

Suspension modifications?

My XR has ARE Spyder wheels with Yokohama Parada 205/45-16 tires., Sachs/Boge turbo gas shocks and Spax 25mm springs, and Cosworth 28mm front and 16mm rear sway bars with Powerflex bushings everywhere. I made upper stiffening braces.

How long have you owned your XR?

My XR is the first car I've owned. I've had it for almost eight years now.

I went out looking for new cars with my dad who was looking for an Escort. We spotted the XR4Ti on the side of the road actually thinking it WAS an Escort or the old EXP.

Once we got up next to it we had to drive it. The XR had this strange attraction with the bi-wing and three windows down each side.

Coincidentally, a few months ago I had a guy pull up next to me in the drive-through at the bank. He wanted to know if I wanted a spare XR engine.

We pulled over to the side and talked a little about this engine he had and he gave me his card. That's when I realized that this is the guy we originally bought the car from. I said "Hey, recognize this car? I bought it from you." He was amazed at the changes it had undergone.

Personal data

I'm, 23 and live in Rothschild, Wisc. I own three Merkurs. I owned another XR that I bought, fixed, drove for a winter and then sold so that I could purchase a Scorpio. I plan to drop in a 5.0 V8 and, very likely, twin turbos.

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WRC replica (above) by Stuart Matthews (see engine photo on Page 2), featuring Euro headlights, Cossie grille, hood vents, distinctive paint scheme.



Stripped interior (right) in Mohammed Saoik's XR. Note extra gauges, white gauge faces, matching red custom steering wheel, four-point seatbelt harnesses.



Four round headlights are another option for improved lighting. Note the custom-made Cossie-style grille on Brad Anesi's XR.



Screaming yellow paint is an attention grabber, as are clear taillight lenses and a huge 3" exhaust plus the RS500 rear wing. Both the fairgrounds and the hotel parking lot were great places to see custom Merkurs up close and personal.



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