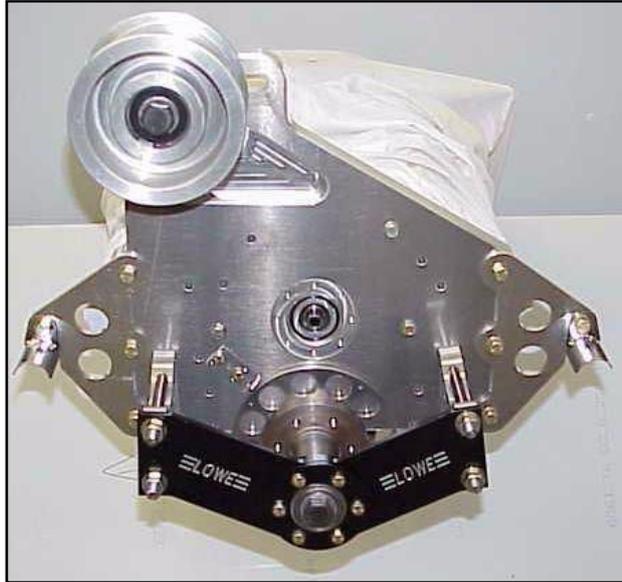


Front crank support installation instructions FORD SBF (Cleveland)

The photo depicts several separate components.

1. Crank Support Kit
2. Crank Support Mounting Plate
3. Timing pointer
4. Blower crank hub
5. Timing ring
6. Side engine mounts
7. Cam Drive
8. Mounting Bolt Kit
9. Behind the Crank Support Mounting plate

is a modified aluminum timing chain cover with oversize sea for large outside diameter blower crank hub.



Read these instructions completely before starting to assemble.

The photo above depicts many separate components. One is the crank support mounting plate (shown with optional engine mounts and idler pulley) and the crank support.

The LOWE Ford 351 Cleveland crank support mounting plate is not a bolt on accessory. Some modifications to the factory hardware may be necessary to fit the hardware together.

The LOWE Ford 351 Cleveland crank supports are designed for race only applications. We are not clairvoyant and cannot know what other hardware you may be using and as such it is your responsibility to know how the package is assembled and verify the hardware is compatible.

The LOWE Ford 351 Cleveland crank support mounting plate is drilled for water applications although it requires a remote electric water pump used to circulate the water.

The LOWE Ford 351 Cleveland crank support mounting plate is machined and drilled and tapped to suit a cam drive fuel pump. If mounting the pump here is what you want to do you will need a pump cam drive kit that mounts to the JESEL cam drive.

Mounting the LOWE Ford 351 Cleveland crank support mounting plate requires the use of a bolt kit.

The bolts necessary to mount the crankshaft support plate are available in our mounting kit or you can source the bolt hardware to hold the crankshaft support mounting plate to the engine from a local supplier.

4ea Bolt Fuel Pump mount 1/4" UNC x 1"

2ea Bolt Timing pointer mount 1/4" UNC x 1/2"

6ea Flat Washer (small OD) 1/4" x 1/2"

11ea Plate mounting bolts Socket Head Cap Screws 5/16" UNC x 1 1/2" – it is a good idea to chase the threads in the block to insure the threads are clean and are of adequate depth.

O-rings are necessary to seal the fuel pump to the plate and to seal the plate to the steel factory Cleveland timing cover.

All crank supports are designed to be compatible with standard blower drive hubs. There are no Top Fuel, Top Alcohol, Top Door car in the world that uses a harmonic balancer because any harmonic the engine might see is dampened by the blower belt.

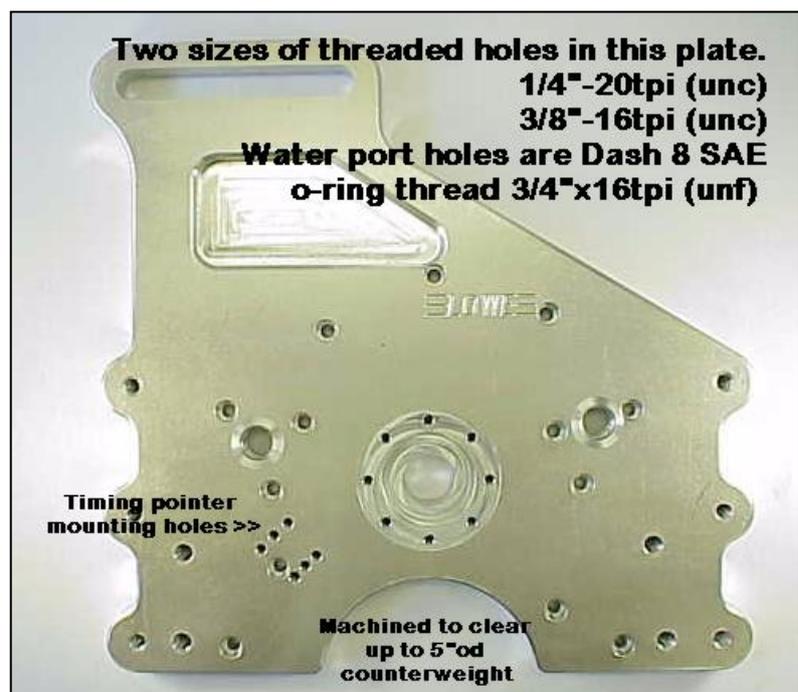
Still there are some customers elect to use a harmonic balancer as a blower drive hub which moves the blower pulley further away from the front main bearing increasing the load on the crankshaft from the blower belt. This makes the crank support much longer and therefore a non standard item.

We build each crank support as the customer places the order and as such all custom built hardware is non returnable.

The Ken Lowe Race Cars Ford 351 Cleveland crank support mounts to the four lower front holes on the crank support mounting plate.

To insure you get a product that fits and works during our quality control every thread and dimension has been checked. Every crank support kit has been assembled on an engine before it was boxed. We have made every effort to insure that you get a high quality product but if you have any problems be sure to call us and let us know.

The **left and the right** side supports are different hole centres and as such must be mounted on the correct side of the crank support mounting plate. The sides are **NOT** interchangeable. As you are sitting in the drivers seat of the vehicle the left side of the engine is on your left-(not as you are facing the engine). **Each side plate is marked L or R** to designate which side of the engine it mounts on.



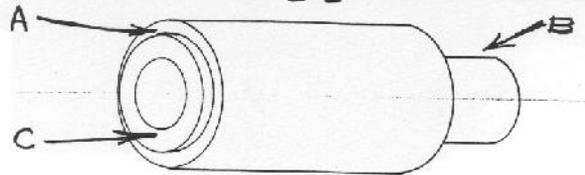
Preparation:

Assemble the clamp rings on the front crankshaft support plate. The clamp ring with the through holes goes on the front of the front support plate with the 1/4" unc x 1" bolts passing through the clamp ring and

through the front support plate and into the threaded clamp ring. It is a good idea to use anti seize on these threads into the aluminum clamp rings. It is a good idea to use anti seize on any threads into aluminum.

KEN LOWE RACE CARS

Crankshaft Support Installation



Installation:

1. Please refer to the attached drawing. Install surface "A" against the outside of the crankshaft blower hub. Be certain surface "C" clears the end of the crankshaft.
 2. Insert the bearing over the diameter "B" and install grade 8 unf center bolt . Use red locktite and torque to correct setting.
 3. Using a dial indicator check the "runout" on the bearing while rotating the crankshaft. If the runout exceeds .005" then tap lightly to correct a few thousandths; if the spindle bearing still has runout , then check surface "A" to see that it is seated on the blower drive hub. Check hub to insure the mating surface is smooth and true. Check that surface is not hitting the crankshaft.
- Surface "A" is turned between centre's in one set up with the bearing surface on the opposite end. If the bearing still runs out it is probably that the crank hub is marred on its face, causing misalignment or that surface "C" is hitting the crankshaft. **SURFACE "C" SHOULD NOT HIT THE CRANKSHAFT !**. This can be a problem with "home made" hubs that are not made to the correct length.
4. After the bearing is trued, install the four 7/16" studs in the crank support mounting plate. Use blue locktight (262) or equivalent to hold the studs in place. Install the studs by hand until they bottom out and then back them out 1/4" turn.
 5. Put the side plates on the studs installing the **left side** plate on the **left side** of the engine (odd cylinder side) and the **right side** plate on the **right side**(even cylinder side).
 6. Put the front plate on the studs with the logo facing out and install the 7/16" flat washers provided. Install the 7/16 unf nuts provided torque them to 45 foot pounds

7. Now you can tighten the clamp ring bolts to 120 inch pounds. With the spindle installed with no runout the clamp rings will now be locked on the crankshaft centre line. To remove the crankshaft support for engine service just loosen and remove the 7/16" mounting nuts and remove the front plate. You do not have to reset the clamp ring each time. This is the extra value in a KLRC crank support as it does the job of supporting the front of the crankshaft and removes easily for servicing and reinstalls quickly not requiring resetting.. If you bore the tunnel of the engine block all you have to do is reset the spindle and reset the clamp rings. It is just that easy !

NOTE: It is a good idea to check the torque on the studs and the centre bolt after every pass until you are sure nothing is moving. Then it is still a good idea to check it at least after every race

Torque Settings:

3/4" Main centre bolt 100 foot pounds – less for smaller bolts

7/16" Mount bolts 45 foot pounds

1/4" Clamp bolts 120 inch pounds

Blower drive hubs

KLRC blower hubs are machined from tough 4140 steel and honed for a correct fit. The keyways cut correctly and comes with instructions for fitting the key so the key and the hub will fit properly



36335-01100 Blower drive crankshaft hub 4140 steel SBC

36335-01200 Blower drive crankshaft hub 4140 steel BBC

36335-01201 Blower drive crankshaft hub 4140 steel BBC counterweighted

36335-01300 Blower drive crankshaft hub 4140 steel 392, 426

36335-01500 Blower drive crankshaft hub 4140 steel 351CWF

36335-99900 Blower drive crankshaft hub 4140 steel blank

36600-63750 **Timing ring** 6.375 DIA (not installed) fits on blower hub so you can mark for the TDC and other marks. It makes the diameter large enough so your timing can be accurate.. Comes with lightning holes and pilot holes for magnets for computer pick ups if you need them. Installed free if you order one when you order your blower drive hub

Blower stud set of 8 studs and nuts (anodized aluminum) pn 36720-10437 Hex top for easy installation. Includes washers.



Burst Panels & kits

36525-19000 Burst panel complete kit with burst plate

36525-19010 Burst panel replacement

36525-19020 Burst panel clamp ring

36525-19030 Burst panel weld ring

36525-19040 Burst panel inner plate

36525-19100 Burst panel deflector plate kit

36525-19110 Burst panel deflector plate stands 5/16x.058 cmoly x.75.



LOWE FUEL INJECTION SYSTEMS

99253-00001

Phone 0411-699 535

Why flow my fuel system ?

Save parts carnage, get on top of the tune up quicker, start with a tunable fuel system are only a few of the reasons why to flow your fuel system. Five different fuel pumps of the same brand and size will all flow slightly different volume and lose different amounts of volume when the pressure in the system gets up high. An accurate flow bench will tell you exactly how much fuel you are giving your engine. If

your car is running in top form then you need to know what amount of fuel your engine is getting throughout the entire rpm range. Should your fuel pump decide to wear out (they do) and you put a new one on is it better or worse than what you

had. A common situation is that some one will start racing and have a slightly rich fuel curve because everyone should start "safe" and find their tune up. Over the period of many races they sneak up on the tune up slowly and safely and get the car running real well. What has happened is while they were sneaking up on the main jet (taking some fuel away) the pump was wearing slightly as well taking some fuel away as well. Eventually the fuel pump fails and you have to put a new one on. If you just put a new fuel pump on the engine at this stage the car would slow down and would be difficult to find out why. Would in be better to know exactly how much fuel you were putting in the engine at each RPM step so you could duplicate this any time that you want? If your car is not running in top form a flow bench can give you a place to start your "tune up". Either way you have solid numbers with which to make future changes or a base line to start with. Are you afraid someone will steal your top performing "tune up" if you send the system to LOWE Fuel Injection Systems? We pledge confidentiality, but that aside when we get your fuel system to run we take all your components, set them up on the bench and perform a series of tests. Usually the top teams will tell you what tests to perform in detail. We don't know which test they are actually using on a particular run. Besides we have found that the same fuel system on two different cars will result in two different performances due to other conditions such as clutch, tire, gear and launch rpm, to name a few. If a team is just getting started or has never had their system on a flow bench then we can help with a series of practical tests. For example we will base line the fuel system as they are running it now providing fuel volume numbers up and down the range then try a series of jets for the base line, then move the high speed pressures up and down to show exactly what changes effect the system and provide precise fuel volume numbers, so when you make a change at the race track you KNOW what your engine is getting .. it can surprise you. Some changes you make you will think you are making big changes and it changes very little if any at all. This is information that you must have to find your way quickly to a fast tune up.

Who is KEN LOWE FUEL SYSTEMS ?

I have built 5 fuel flow benches in the last 30 years. The first fuel flow bench was not very accurate and what it demonstrated to me was how very important good data was. You cannot cut corners on the instruments, bad data is worse than no data at all. It is like building an engine with a tape measure and not a micrometer. You must know exactly how much fuel volume you are flowing at each step of the curve. Anything else is just not good enough. . I have spent over \$10,000.00 dollars on having the best most accurate instrument quality laboratory grade measuring devices that will read the flow information but do not affect the flow or pressure in the system. This will represent exactly what you will have on the car while it is racing. Some flow benches only use dead weight poppet type flow meters. These may be accurate (or not) but they are analogue and do not have a digital read out. More significantly the poppet that floats on the stream of fluid passing by it causes internal system pressure that is not present on the race car during a race and

therefore creates an artificial environment in the fuel system altering the flow and pressure numbers from the actual race configuration. The can alter the system pressure by as much as 30 psi and this is 30 psi restriction that does not exist in your race car while it is racing. The second and third were constant upgrades of hardware and more accurate data collection. The fourth flow bench was the best one I had ever built. It had the best, most accurate data collection and could perform repeatable tests throughout a long test day. This flow bench was tested and compared to Walt Austin's flow bench in the USA. I took a fuel pump and ran it on their bench then took the same fuel pump and ran it on our bench and got identical results. Now, when I say 13.35 gpm that is what it is. No more no less. As another point of reference we have compared our flow bench flow and pressure numbers to a Racepack on board computer flow and pressure numbers and got a match there as well. The reason I sold that bench hardware is that it wouldn't run up to speed with the 50 cycle over here and I had some ideas for re-con figuring the hardware to make the bench easier to operate. This is important when you spend days in front of it. I brought all the data collection instruments from bench #4 with me so I still have all the same instruments here that I had over there. I have compared the flow numbers of the electronic flow metres to some of my old standard float flow meters to ensure the accuracy over here as well as to flow one of my fuel pumps (good old #2) on the bench here to compare with the flow numbers I got on the electronic digital flow meters in the USA. This ensures continuity of the data. Recently I did a piggy back test using our instruments and a new Racepack on board computer. After the test a comparison of the results were done and the data was perfect in almost every point of comparison and in the variances were less than .01 of a gallon per minute !! We have purchased an electronic computerized jet program to model new fuel flow curves simulations. This is very handy to "rough in" new ideas although we have found the mathematical presumptions inside the software don't always reflect real conditions and unless actually flowed to find the real volume and pressure numbers you will be operating with incorrect information. One example us by moving a poppet and jet (high speed) from the top of the pump to the back side of the barrel valve **will** change the fuel curve and software cannot calculate this, only a high accuracy wet flow bench can show you this difference. There are other conditions only a wet flow bench can show you as well.

If you have the most accurate flow bench possible how do you make it better?

We create devices that help us represent the actual operation environment the fuel system has to operate in. Example: If you have 100 psi fuel pressure spraying into a intake manifold and the manifold has 45 psi supercharger boost pressure then the fuel flow is based on fuel pressure of 55 psi not 100 psi, because the boost pressure is pushing against the fuel coming out the nozzle and this affects the flow to the engine but not the fuel pressure in the fuel system. We have a device on our flow

bench that allows us to duplicate the intake manifold pressure in the fuel system and accurately represent the fuel flow that your engine really gets.

We continually push ourselves to get better. We want to keep the technical lead that we have. Our flow bench now gives us very accurate information and now we are computerizing the data acquisition on the flow bench to give us a larger volume of information. Once the flow bench data acquisition is operational we can give the customer (you) more different combinations of main jets, pump sizers, high speed jets and nozzles. With this you can change your system at the track and know what you are flowing to the engine just by reviewing what main jet and high speed combination you have. Another feature of the computerization is we can ask the flow bench to make a run for us by setting the starting rpm at one point and the finish rpm at another point and setting the ramp time from point to point. The flow bench will make the run starting at one rpm and finishing at the end rpm and do it within a specified amount of time. Example we can set the start rpm at 3000 rpm and the end rpm at 8500 rpm and set the ramp time at 2.2 seconds or 6.8 seconds, what ever amount of time we want to set the test for and the flow bench will make the test with those parameters. Why do you want to do this? We feel that the acceleration of the fuel in the system (especially high volume applications) can and will change the flow rates that the engine actually gets. Another benefit will be the ability to pick any 5 tests and graph them to a computer monitor review the curve and then load this information to a color printer so you can visualize the difference from one curve to the next. There is no other flow bench in the world that has this capability.

What do you need to test the fuel system ?

On supercharged cars all I need is the hat with the nozzles, lines and barrel valve, the port nozzle lines, the pump and inlet fitting and the lines connecting the pump to the hat. The more you send me the more I can help if I see something that can be a problem. I do not need the blower manifold on a supercharged car. Although the blower manifold design can cause some problems as well, usually I can tell you how to test it at home. You won't believe how many "factory made" manifolds are not very good. On non-supercharged stack type fuel injection I do need the manifold as on these the barrel valve is connected to this manifold and I need it all to be able to adjust it here. How long does it take to do ? Usually I can turn it around in a week but most time just before a big race we do get backed up some so please don't wait until then to get it done. Please call us though as we might be able to squeeze you in with a little overtime work here.

How do I ship it ?

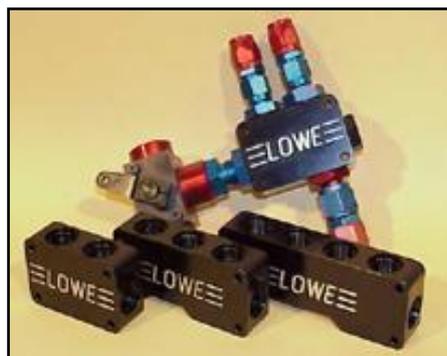
Completely drain the fuel out! Take air and blow the system dry, as no shipping company likes to deal with soggy boxes. Soggy boxes can fall apart and possibly lose some of your valuable fuel system. Wrap each item with bubble wrap and some clear tape. Once each item is wrapped find a box big enough for all the items to be

packed in. I do **not** recommend using Styrofoam as a packing material as it flakes off and gets in EVERY fitting, hose and poppet and must be thoroughly cleaned before we can flow it. Pack the box TIGHTLY as you do not want the parts shifting around inside the box. Be sure to wrap the barrel valve in something soft to protect it and the linkage. Use large plastic bags, or trash bags to wrap the injector and components in to help keep them clean. The cavity or the inside of the injector hat is not a good place to ship the pump as it can move around and damage the nozzle holders. Be sure the parts can't move inside the box because if they can they will damage each other. Please include as much data about your car as possible as this helps us get your base line closer. If you need a flowed fuel injection data sheet call us and we will fax one to you. Note: Be sure to insure the shipment as things do get lost or damaged sometimes. Call us and tell us you are shipping it to us so we can expect it.

Running a racecar without flowing you fuel system is like walking through the forest in the dark with your eyes shut. You might get through without bumping into a tree but your chances aren't real good and it is painful if you do bump a tree. We are in the business of pain prevention first or pain relief last

We can supply you with a complete fuel system, flowed or non-flowed assembly, components or just advise. I guess the best reason to buy you fuel system from us is when you do, you get the correct parts. If you purchase used components from someone you need to know the parts are in good condition and the correct size or configuration for your application. For additional info call Ken.

Call us for a complete range of fittings, brackets and cable connections.





Chevy 3.2" offset mag drives available to give you room for your mag and your

blower on top of your engine.



The 8.2 FPMD (Fuel Pump Magneto Drive) is universal for all types of engines and moves the mag completely off the top of the engine. With the 2.5" fuel pump extension it will sit inside the blower belt drive but with the 5" extension (shown)



it will sit outside the belt drive and allow you to rotate the offset drive clockwise or counter clockwise to give you the placement of the magneto that you want.



Twist lock valve cover breather tubes, available in the old standard 2 bolt mount or the new 3 bolt mounting (shown).

Remote starter hardware available as well..



LOWE Fuel Systems

Do you have a Fuel System instruction book? Our 31 Chapter, 200 page guide to tuning and maintaining your fuel system can be previewed on our web site at http://www.kenlowe.com.au/LFS_book_intro.htm or you may enter through the front page at <http://www.kenlowe.com.au> and click on the **LOWE Fuel Injection** logo on the top left of the front page. We have had dozens of customer who have said that the introduction to the book we have on the web site has more information than they have been able to get from any other source. Naturally, they ordered the book too.

For only \$99.95 AUD you will have a fuel injection instruction book that has been hailed by racers **around the world** as the best FI book in print at this time.

You can call us at 0411-699535 or email us at ken@kenlowe.com.au with your credit card details. We **do** ship COD Australia Post inside Australia. Australia Post will add the COD charges.

I want to order the LOWE Fuel Injection book for \$99.95 AUD plus shipping. Please send it to the following address. (Please print)



LOWE Fuel System book table of contents.

LOWE Fuel Systems Phone 0411-699 535

January 2005

<http://www.kenlowe.com.au>

Prologue

Chapter 1 Introduction to basic fuel systems -----	Page 1
Chapter 2 Fuel pumps -----	Page 10
Chapter 3 Barrel valves -----	Page 14
Chapter 4 Jets (fuel back to the tank) -----	Page 18
Chapter 5 Nozzles (fuel to the engine) -----	Page 21
Chapter 6 Poppets -----	Page 26
Chapter 7 Other valves -----	Page 36
Chapter 8 Setting idle fuel volume -----	Page 38
Chapter 9 Setting stage fuel volume -----	Page 40
Chapter 10 Tuning – non supercharged -----	Page 41
Chapter 11 Tuning – supercharged -----	Page 48
Chapter 12 Fuel tanks and fuel information -----	Page 56
Chapter 13 Leak checkers -----	Page 62
Chapter 14 Data logger -----	Page 68
Chapter 15 Fuel pump magneto drive -----	Page 70
Chapter 16 Fuel pump cam drives, belt drives and extensions -	Page 73
Chapter 17 Fuel filters -----	Page 82
Chapter 18 Fuel shut off valves -----	Page 84
Chapter 19 Hoses – Fittings -----	Page 85
Chapter 20 Frequently asked questions -----	Page 95
Chapter 21 Trouble shooting your fuel system -----	Page 108
Chapter 22 Crank supports -----	Page 113
Chapter 23 Enderle dimensions and information -----	Page 117
Chapter 24 Math -----	Page 118
Chapter 25 Weather -----	Page 126
Chapter 26 Engine design -----	Page 129
Chapter 27 Tools -----	Page 131
Chapter 28 Parts -----	Page 143
Chapter 29 Plumbing schematics -----	Page 190
Chapter 30 Glossary of terms -----	Page 192
Chapter 31 Blower overdrive -----	Page 194

Topics

Setting the butterflies on stack injection	Chapter 10
Setting the port nozzle check valve	Chapter 6
Setting the high speed check valve	Chapter 6
First pass on new fuel system	Chapter 20
Thread size chart	Chapter 19
Air density gauge	Chapter 25 and 27