

WHATS NEW #1 - TWIN-CAM CONVERSIONS

Most of our Twin-Cam heads are at least 33 years old and in need of work. Any local automotive machine shop can do a 'Valve Job' but, the Lotus Twin-Cam head is different from most modern cylinder heads, and this difference can lead to some costly mistakes if not dealt with properly. John McCoy, of Omnitech Engineering, is a manufacturing engineer that among many other activities specialize in successful Twin-Cam work. The Omnitech operation incorporates a tool and die machine shop in Bellingham, Washington, that has been successful in finding special markets and products. John is a 'tool and die' maker by trade. Past notable automotive projects have been the development of a 5-valve head for a major manufacture, as well as building and maintaining customer Twin-Cams, Cosworth, Rover and Buick V8's, other aluminum race engines. All this, as well as racing his own Lotus Cortina and Twin Cam Escort.

Through John's racing activity, the need for a flatter torque curve race motor, one faster off the turns than the traditional Twin-Cam was derived. Thus, extensive modern engine development by John yielded the Stromberg-Weber conversion we know today. Instead of welding the intake runners on as was done in the past, the Stromberg runners are cut off and a 'CNC' (computer numerical control) is used to machine the head before the new Weber head is bolted on. According to John, the Stromberg casting is superior to the Weber, and the good news is, the conversion, has the potential to make more power and run more efficiently than a Weber head!

Most Weber heads are older than the Stromberg heads, most have been around the track and are worn out. With the Stromberg to Weber conversion, you get a newer head, with less wear, stronger with greater potential. John has a CNC program and special tools that can reconfigure the ports and combustion chamber if necessary, this modified head will out perform the Weber head were it counts, volumetric efficiency (a measurement of an engine's 'cylinder filling' capability, comparing ideal cylinder air capacity to actual air capacity).

The Weber head is not left out, he also has a program to 'CNC' the Weber head similar to the Stromberg to Weber conversion. Through 'dyno' time and real world testing, John has developed Twin-Cam combinations that work. When we put together a Twin-Cam most of us have, have no track time, computer simulations or 'dyno' development. John has done the development for us. Instead of telling him what camshaft and valve size to use, it might be best for you as a customer to explain to him what you intend to use the motor for, John has several developed stages that will likely satisfy your needs.

John has his own camshaft profiles, matching the volumetric efficiency and has sourced spring packs that have endured his own racing and testing standards, valve sizes, seats and combustion chamber shapes, as well as his 'porting' and reshaping of intake and exhaust ports. So with his 'CNC' programs, one head will be the same as the next, it eliminates the variables (guess work) that typically happens in hand porting.

More mundane but important machine work can be done by OmniTech to the Twin-Cam head. The first work done on any TC head serviced by Omnitech is a check is done on the 'hardness' of the head. A soft head (old, overheated many times or welded improperly), that means the head has lost its heat treatment. Soft heads can be used on the street with the proper head bolts but not on the race track. Lifter sleeves can be removed and replaced. The concern with new lifter bores is the sizing, honing aluminum can embed



particles which can lead to quick failure as the lifter begins to rub on the lifter walls. The OmniTech solution is to ream and then burnish the new lifter bore to size, which leaves no particles to wear against the moving lifter. Valve guides with seals have also been developed. The advantage of a valve seal is that oil is not sucked between the valve stem and guide (the familiar blue tailpipe smoke and oil fouled plugs) resulting in the burning of much oil. Synthetic engine oil remains thin when cold, so as the engine sits gravity moves the oil down the guide into the port and when starting up, blue tailpipe smoke is actually increased. Seals prevent this from happening, for years Twin Cam engine builders have been trying to put valve seals in, Omnitech can do it and still use a high lift camshaft profile. They can remove and install valve seats, and of course do any size big valve conversions. They can also weld the aluminum head if needed, and have developed the tools to line hone/bore the Twin-Cam head properly.

Omnitech can also build engines. They have experience on the Cosworth BDA series of four cylinder engines and have even developed a 'wet sump' baffled pan that can be used in road racing with no pivoting pickup, amazing!

When I first started talking to Omnitech/John McCoy it was about their Stromberg to Weber conversion and 'porting' work, I had no idea they had developed the Twin Cam head service to this extent. This is an important service to those of us with the classic Twin Cam head/engine, we can keep them running well.

I am going to break my rule on price on this article, after talking to John about the services he offers, there are many variables that affect the price of head work so it's really not possible to give any prices, it would be best to contact them with your needs.

If there is a product or service that is new or even little known let us know. If it is a service, describe what the service is. If it is a part, include a picture if you can. Of course price and availability is important. Is it in stock? Or are you set up to do the service? Is there a back order? Also include contact information for you or the supplier. Phone, e-mail etc. We do not want the part for a test drive, we are going to take the word of the contact person. We are even interested in little known parts and services.

If you have any questions, you can contact me by phone at, 520-378-4665, e-mail elanmarcos@msn.com. I am looking forward to another interesting part or service. Thanks to John McCoy at Omnitech Engineering for the information and help with the writing.

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