CRANE Cams®

TECH BULLETIN

Cam & Lifter Recommendations

Advising a customer on what the optimum camshaft is for their particular application is a critical function. The wrong cam profile can negate the efficiency of other aftermarket components used in the engine, such as the intake and exhaust systems, pistons, cylinder heads and so forth. There's a delicate balance between "too much cam" for what the engine is equipped with, and "not enough cam" to take full advantage of power-adders.

Also of importance are factors like vehicle weight, emission controls, gearing, transmission type, tires—and even the altitude that the engine will operate in. There are literally dozens of data points that can affect cam and lifter selection.

That said, the primary task is finding out what the customer wants. Here are some baseline points to consider:

1. ***Usage. Is it for to be used for towing, cruising, racing, etc.?***
2. ***Idle characteristic (ranging from smooth to rough and nasty-sounding)***
3. ***RPM range (this will be a 3000-4000 RPM "window" where most time is spent). Consider RPM at 60 mph***
4. ***Is the vehicle emission-controlled or not?***
5. ***What kind of lifters does the engine have? What is preferred?***
6. ***What is the static compression ratio? Are power-adders employed?***
7. ***Standard or automatic transmission? What stall speed torque converter does the car have?***

Armed with this information it is possible to use the Crane Cams catalog "cam facts" with each part number description and determine which camshaft comes closest to meeting the customer's requirements. As for lifters, the primary concern will be upgrading from a standard hydraulic lifter to a hydraulic roller, or using a mechanical roller for high horsepower/RPM street and racing applications.

Of course, there are other factors that will influence camshaft selection. Most of these are covered in detail in the "Advanced Tips To Choose The Proper Camshaft" section of the new Crane Cams catalog. Here are some of the prevailing "rules of thumb."

- ***A smaller displacement engine will usually require a shorter duration camshaft.***
- ***The higher the engine compression, the more camshaft duration it can handle.***
- ***Aluminum cylinder heads dissipate heat more readily than cast iron and milder cams can be used.***
- ***High compression combined with too mild a camshaft will cause detonation.***
- ***Dual plane intake manifolds favor cams with improved low-end and mid-range power.***
- ***Single plane manifolds favor mid and upper-range power, however if the vehicle is primarily street driven a milder cam will pick up the bottom-end torque.***
- ***Power-adders affect cam selection. Supercharged engines favor milder profiles with wide lobe separation. Turbocharged engines favor milder cams with minimized overlap. Nitrous oxide-boosted engines require cams with longer exhaust duration and wide lobe separation.***
- ***Engines operated a higher altitude require a milder cam than employed at sea level.***
- ***For a radical idle go with a higher duration, narrow lobe separation cam profile.***
- ***For a smooth idle and lots of low end torque use a shorter duration/wider lobe separation cam.***

Above all, understand that the camshaft is the one critical component that controls the functions of the engine. However, care must be taken to select the proper components with an eye on the overall picture. Too much intake system/cylinder head flow for a given compression engine cannot be totally compensated for by camshaft selection. Likewise, too much camshaft for a milder engine combination can have disastrous results. The idea is to make the most of what you have.

Also be aware that the Tech Department at Crane Cams stands ready to provide any needed assistance. Our reps have on average 15 years experience at Crane, and have extensive experience in selecting the optimum camshaft and valve train combinations.