

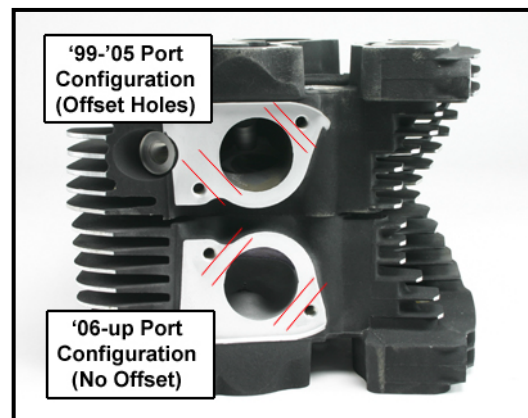


Early and Late Cylinder Head, Throttle Body / Manifold and Manifold Flange Information

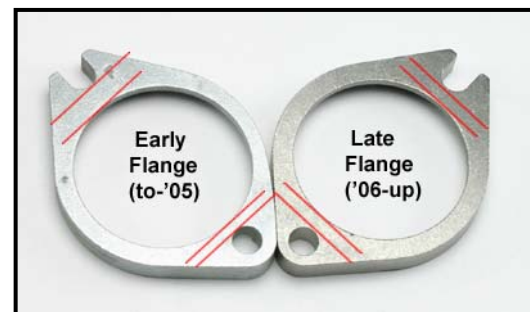
Harley-Davidson® changed the intake port configuration, intake manifold mounting flange bolt pattern and throttle body in 2006, which has led to some confusion when adding some factory racing and/or aftermarket performance parts to a given year engine. We'll attempt to explain what we've found when fitting multi-year parts to an engine of a different year.

Cylinder Heads – Stayed the same from 1999 to 2004. In 2005, a change was made to the valves, guides, springs and seals. The valves and guides went from 5/16" stems to a smaller 7mm, with beehive springs replacing the standard dual coil springs used from '99-'04. A different valve seal/spring seat was used; the initial seals tended to trap oil in the cavity between the seal and spring seat, causing oil to be pumped into the combustion chamber by the valve movement. A lot of early 2005 models had oiling problems, later corrected by an improved seal.

2006 brought a change to the intake bolt pattern from the original design used from 1984 to 2005 (since the Evolution® engine). On the original '99-'05 heads, the intake flange mounting bolts were not on-center to the port opening, requiring intake flanges with front and rear specific offsets and markings identifying same. In 2006, the port and flange bolt holes were changed to on-center configuration, resulting in identical intake mounting flanges for front and rear use. This has stayed the same through 2009 models, with the only exception being a change to the machining of the front head on 2008-up Touring models to accommodate a newly designed top engine-to-frame mount.



This is where you must be careful when changing parts. Heads designed with 2006-up intake pattern must be used with the flanges designed for same, or the intake manifold will not align properly (not even close). Where this gets tricky is that not all head manufacturers offer both styles of heads, for example H-D® manufactures most of the Screamin' Eagle® heads with the late

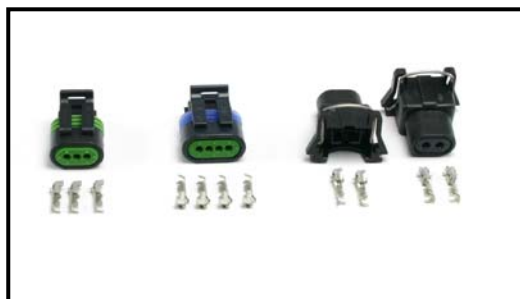




pattern. S&S and others in the aftermarket still use the early configuration. While you can use late heads on an earlier engine by using late flanges to match the heads and vice-versa, the head-to-head alignment is not exactly the same between early and late heads. Careful alignment of the manifold is required to avoid an intake leak. When using an early manifold assembly with late heads, the manifold width may need trimming to fit properly, while a late manifold on early heads usually results in a gap between the manifold and the head, which creates an easy spot for a leak to develop. Before the intake flanges are fully tightened, the air cleaner of choice should be mounted to assure proper alignment (in some cases of miss-matched year components, shimming of the air cleaner mounting points should be performed to prevent binding of the manifold at the seal).

Intake Manifolds and Throttle Bodies – At the same time H-D® made the pattern change, EFI bikes changed to a one-piece throttle body/manifold unit from the original two-piece assembly used from 2001-2005. Again, these parts can be fitted to un-matched year engines, with careful alignment and mounting flange selection. Why would you do this? Certain size performance throttle bodies are available only in one configuration or the other; the engine builder's preference may dictate the use of an early-style unit on a late engine or vice-versa. Zipper's offers intake manifolds and throttle bodies in various widths to allow the builder to custom-fit the intake tract to the engine. Please see our web site for applications.

Important note: The wiring connectors used between early and late throttle body components are not the same, and are not wired the same at the terminals! The harness wire terminals and wire orientation must be changed to match the throttle body configuration when mixing components. We offer harness terminal kits for this conversion with instructions to simplify this process.



117-124 Harness Conversion, Early ('01-'05) TB on Late (2006-up) Bike



117-125 Harness Conversion, Late (2006-up) TB on Early ('01-'05) Bike

Please Note: Changing of parts mentioned above is legal in California only for racing vehicles which may never be used upon a highway.