



SPEED AND SCIENCE Billet Aluminum MIT Heads for Harley Davidson® “Twin Cam” engines (EFI or Carburetor)

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REVISIONS:	DESCRIPTION:	DATE:

DISCLAIMER:

SPEED AND SCIENCE (SNS) parts are designed and intended for closed course applications only. Our products must be installed by a mechanic experienced in American V-Twin engines and used by an experienced rider. Installation of SNS parts may affect or even void any other warranties if such apply to your motorcycle. Additionally, such installation may violate some federal, provincial, state and local laws, rules and ordinances. Always check federal, provincial, state and local laws prior to modifying your motorcycle. It is the sole and exclusive responsibility of the user to determine whether the product is correct for his/her use. The user shall assume all legal risks, liabilities, duties and obligations associated therewith.

Trademark Disclaimer: The words Harley-Davidson®, H-D®, Sportster®, Evolution® TwinCam® and all OEM part numbers and model designations are registered trademarks of H-D Michigan, LLC, and are used for reference only. Speed And Science is not associated with Harley-Davidson, Inc.

Not EPA Compliant, please check with your local Motor Vehicle Office for rules and regulations

INSTALLATION AND OPERATION SAFETY:

It is your responsibility to read and follow these instructions thoroughly and carefully prior to attempting any work on your motorcycle. Make sure you understand all procedures completely. Contact SNS with any questions you may have regarding an installation and/or operation of any SNS product. Please make safety your priority.

1. Motorcycle fuel is extremely flammable and explosive media, also toxic when breathed/ingested. Work only in well ventilated room equipped with appropriate fire extinguishing gear. Avoid any open flames or sparks, do not smoke.
2. Exhaust fumes are toxic and must not be breathed. Run your motorcycle in a well ventilated area; also never stay in the way of the exhaust fumes.
3. Motorcycle engine and certain accessories do get very hot after even a very short run. Always allow those to cool down before attempting any work.

4. Always disconnect the motorcycle battery prior to attempting any work. Secure the battery terminals and cables to prevent any accidental re-connect and/or short-circuit.
5. Consult an appropriate service manual[s] for other procedures that may be needed in order to facilitate an installation of the SNS part[s].
6. Never work on, or operate your motorcycle while under influence of alcohol or drugs. Fatigue will affect your proper judgement ability also. Please keep yourself and others safe.
7. Always check federal, provincial, state and local laws prior to modifying your motorcycle.

WARRANTY:

1. All SNS parts are guaranteed to the original purchaser to be free of manufacturing defects in materials and workmanship for a period of 6 (six) months from the date of purchase.
2. SNS must be notified immediately about any of our products that do not conform to the above. After a case review, an RMA number will be issued to the purchaser and the product[s] must be returned pre-paid to us within the 6 month warranty period or 10 business days thereafter and will be replaced or repaired at SNS's option.
3. The returning parts must be packaged properly as to prevent any shipping damage.
4. The shipment must include a copy of the original purchase receipt, Invoice, etc., also a detailed note outlining the nature of the problem.
5. Upon positive case review, a repair, replacement or refund will be granted.
6. The purchaser is solely responsible for proper installation of any SNS product, using proper tools and techniques as per commonly used shop procedures and manuals.
7. SNS shall not be responsible for any part defects being result of improper installation, improper/lack of maintenance, improper use and operation, or any other abnormal misuse or mistreatment of said part.
8. SNS shall be not liable for any consequential or incidental damages resulting from the failure of a SNS part, the breach of any warranties (written or implied), the failure to deliver, etc.

INSTALLATION GUIDANCE AND RECOMMENDATIONS

*****IMPORTANT – READ FIRST!!!*****

Anytime during assembly and/or while checking for clearances, under NO CIRCUMSTANCES the engine should be forced to rotate if ANY RESISTANCE is observed. Doing so, or failing to provide correct clearances may cause an engine damage and will not be covered by warranty.

1. SNS "MIT" Headset has been designed to fit all Harley Davidson "TwinCam" models. Please make sure you select correct design (101, 102, etc.) for the size of your engine. An utmost care has been exercised to ensure a direct fit and function, however due to the large variety of models manufactured and/or extensive customization afterwards, the installer may be required to perform some minor modifications as needed.
2. An oversized intake manifold (EFI or carb) with 1.810" diameter on the head side must be used.

3. Optional: Speed And Science Rocker Boxes (**Planned Release 2021**) are recommended for superior fit and function, but the heads can use stock rocker boxes as well.
4. The combustion chamber shape requires using flat-top shape piston. That provides the “squish” action necessary to create an extra turbulence during compression stroke. Those gaps (distance between the top of the piston and bottom of the combustion chamber) should be never less than .025” but no more than .035”. This is controlled by the thickness of the head gasket (in crushed condition) and/or the cylinder height. Be sure to use correct components and carefully measure everything. Using modeling clay is the most common method to verify such gaps.
5. If you have purchased fully assembled headset, please skip to #11
6. The SNS headsets have no hardware installed. The purchaser is responsible for procuring and proper installation thereof as per commonly used shop procedures and manuals. The optional AV&V hardware kit may be purchased for DIY installation, content listed below.
7. The valve guide holes are precision reamed to provide material-correct interference fit with the +.003” size (.5655”OD, 7MM ID) guides. Valve seat bores are specifically machined to provide material-correct interference fit with STD size (1.880”OD and 2.132”OD) AV&V valve seats. Pressing-in the valve guides and valve seats requires heating up the heads up to 400F and freezing the hardware (guides and seats). Proper installation equipment and technique is absolutely crucial to ensure satisfactory results. Best if done by an experienced mechanic.
8. Installed valve guides must be reamed/honed to size to ensure correct clearance for the valve stem, please refer to the service manual.
9. Installed valve seats must be cut/ground and lapped to provide correct seal. Please refer to service manual.
10. All other components (valves, springs, retainers, etc.) must be installed according to the service manual procedures.
11. Installation of Rocker Boxes should be done as per service manual. OEM shape gaskets must be used.
12. The intake manifold / Throttle Body needs to be attached to an engine after both heads are in place. Minute adjustment of the head positions (clocking) is recommended before final fastening the head bolts. In order to do that, remove the manifold seals/clamping flanges. Use the exposed openings of the manifold to “clock” the heads for best fit that provides small, uniform gaps between the manifold and both intake ports. Remove and put aside the manifold. Fasten the heads as per service manual.
13. Heads accept M12x1.25, ¾” reach spark plugs (please see Hardware List below).
14. Due to the advanced combustion chamber shape / fast ports and also depending on your bike model, riding style, area/elevation, available gasoline, etc, the engine may require less ignition advance in certain RPM range[s] compare to OEM. It’s up to your engine tuner to test and determine best timing map.
15. Similarly, tuning the engine for the best mixture ratio needs to be done by an experienced mechanic / dyno operator.
16. Due to the high-compression of this headset, proper camshaft selection is crucial for proper engine operation.
17. The break-in procedure, etc. must be done as per service manual.

OPTIONAL FOR PURCHASE (available on our website):

- VALVETRAIN HARDWARE KIT, AV&V brand (TC_VLVTRN_001)
- Intake Manifold cone seals

RECOMMENDED HARDWARE LIST (to be procured locally by the purchaser):

Qty. 2	12MM, ¾" reach Spark Plugs, e.g. NGK DCPR8E or DCPR7EIX
Qty. 1	Rocker Box Gasket set
Qty. 1	Head Gasket Set
Qty. 2	Intake seals
Qty. 2	Exhaust gaskets