

V-Twin Mfg.
Sifton Hydraulic Pushrod/Lifter Kit
For 1966-1984 BT Shovelhead Engines
VT Part No. 11-0028

This is a custom application and rider safety depends on proper installation. This product should only be installed by a knowledgeable and trained motorcycle technician. V-Twin Mfg. accepts no responsibility for improper installation.

Installation Instructions - These instructions are designed to assist in the installation of Sifton hydraulic lifters in 1966-84 BT Shovelhead models. We highly recommend that you have the service manual for your model for reference.

REMOVING THE OLD TAPPETS

1. Disconnect the battery. Secure the motorcycle on a suitable stand with the rear wheel off the ground. Remove any components necessary for easy access to pushrod covers and gear case cover. Remove the spark plugs to make rotation of the engine by hand easier.
2. Remove the push rod cover keepers and lift the covers to expose the pushrod adjusters. Rotate engine until both front cylinder tappets are in their lowest position. (Top of compression stroke.) Loosen the pushrod lock nuts and shorten the pushrods until they can be lifted out. You may find it helpful to put a wooden clothespin on the pushrod to hold up the cover during this step.
3. Repeat step 2 on the rear cylinder.
4. To insure correct realignment to tappet blocks on late 1977 and later engines, we highly recommend the use of Tappet Block Alignment Tool. Otherwise, scribe a line on two sides of the case, next to the tappet block to aid in alignment during re-assembly. Earlier engines are equipped with counter bored tappet block bolt holes to aid in alignment.
5. Remove the tappet guide block bolts and remove the tappet guide blocks and their tappets as an assembly. Use care to make sure that the tappets do not drop out of the block and down into the case. Clean the tappet blocks making sure the oil passages are free of deposits and dirt.
6. Shorten the pushrods by turning the lock nuts and the adjusters until no threads are left exposed. The short pushrods are for the intakes and the long ones are for the exhausts.

INSTALLING THE NEW TAPPETS

1. Before installing the Sifton Maxi-Axle Tappets, the tappets must be soaked in oil and be fully pumped up prior to the installation of the Sifton Hydraulic Pushrod Set VT No. 11-9523 Sifton Hydraulic Steel Pushrod Set or OEM 17904-66 equivalent for Shovelhead models or VT No. 7515-4 Stock Hydraulic Pushrod for Panhead models.
2. When installed in OEM tappet blocks the lifters should have a running clearance of .0007-.0012.
3. When installing the lifters in the tappet blocks be sure the oil hole on the tappets are facing each other in the tappet blocks.
4. Assemble the tappet block gasket dry, and insert the entire assembly into the case. Make sure that the tappets do not slide out of the block and into the case. Also, make sure that the hole in the gasket matches the oil hole in the case and the tappet block.
5. To align the tappet blocks on 1977 and newer engines, we recommend the use of Tappet Block Alignment Tool. Otherwise, align the blocks to within .0005" of the scribed lines as described in step 4 under removal of old tappets.
6. Hold the tappet guide assembly by hand and insert the tappet guide bolts. Hand tighten the bolts.

Note: Earlier engines use counter bored bolt holes for tappet block alignment.

7. With tappet block properly aligned, torque the tappet block bolts to 90-120 inch/pounds.
8. With the Sifton Maxi-Axle Tappet installed, start with the front tappet at the lowest point on the cam and extend the pushrod to zero lash. There should be no up and down play at this point. This will not move the hydraulic unit from snap ring down.
9. For pushrods with 32 TPI extend the pushrod adjuster 18 wrench flats and tighten lock nuts. Both Sifton Pushrods and OEM pushrods have 32 TPI.

Note: 15 wrench flats if your pushrods have 24 TPI, 17 wrench flats if pushrods have 28 TPI, 24 wrench flats if pushrods have 40 TPI, and 30 wrench flats if your pushrods have 52 TPI.

10. This adjustment will make the pushrod tight, which will bleed the hydraulic lifter. It will take each lifter approximately 10-15 minutes to bleed off. It is very important that the engine is not rotated while pushrods are tight. The pushrod should spin with your fingers after it they have bled off properly.
11. Be Sure to recheck the lock nut.
12. Install pushrod rod top clips.
13. Repeat exact procedure on the remaining three lifters.

Note: Be sure to clean tappet screen before starting motorcycle. Sifton recommends the use of a 20-50w motorcycle oil for best results. You may use with 50w or 60w oil however you may have a slight ticking noise on cold starts. This is normal and will subside as the engine is brought up to operating temperature.

Note: On certain factory tappet guide blocks, the oil feed passage hole may be drilled too high up in the bore, allowing oil to escape above the roller tappet body. This situation becomes worse if the camshaft used has a small base circle, which high lift cams commonly have. This lowers the tappet further in the guide block when the valve is closed. If you have this problem, the pushrod cover will fill with pressurized oil. The problem can be detected by opening the pushrod cover while the engine is running and watching for pressurized oil escaping. To cure the problem, the guide blocks must be replaced with ones with the oil feed passage correctly drilled.

Note: The following is sometimes mistaken for noisy tappets:

1. Rocker arm end play should be between .004" to .010".
2. Oil pressure at normal operating temperature @ around 2000 RPM should be between 12- 35 PSI.
3. The clearance between cam gears and pinion gear, also known as gear lash.
 - a. You may have a slight whine when the engine is cold if you did not change the cams at the time of installing the new tappets and had no gear lash.
4. Be sure to check valve to guide clearance is within OEM specifications.

Tech Tip: The Shovelhead BT engine grows with temperature and the valve lash will increase as the temperature increases. This lash can create noise and begin to shock the valve train if the lash is incorrectly adjusted. The valve lash should always be adjusted when the motor is cold. Hydraulic tappets compensate for the growth of the motor when they are adjusted properly. Mechanical tappets have the ability to rev higher than hydraulic tappets in most cases due to the fact that they are lighter and are not affected by lifter pump up.