Hios CL, SS, Alpha, BL and ASG TL Series Electric Screwdriver General Maintenance Information

GENERAL MAINTENANCE INSTRUCTIONS

Following these general maintenance instructions will extend the operating life of the HIOS CL, Alpha and SS series low voltage tools as well as the ASG TL series tools. This maintenance can be performed with minimal disassembly. Most of these instructions can also be applied to the BL series tools.

The maintenance listed below should be performed after about 1000 hours of operation. If you allow for an average of 21 working days per month at 8 hours a day, this would mean that the inspection interval would be every 6 months. If the tools were being used for 2 shifts then the inspection interval would drop to every 3 months. Tools used for 3 shifts a day would be inspected every 45 days. After several maintenance cycles on the tools you will have sufficient experience with them to determine what will work best for your particular operations. Depending on the wear observed a decision could be made to increase or decrease the time between maintenance and inspection cycles.

When attaching or removing any accessories take note of any different parts or screws used to secure the item. Store any parts or screws removed in a safe place. If that accessory is removed at a later date take care to replace any original parts and screws before operating the tool again. Please note that all screws and threads are metric.

Proper operation of the tool requires that the motor be stopped before switching it into reverse, or switching it into forward when running in reverse.

The most important maintenance step is preventative. The most common problem encountered with the tools is damage due to dropping or other impact on the tools. This damage can have several obvious results but also some not so obvious results. Broken or cracked plastic parts are one of the obvious signs that the tool has been dropped. Another obvious sign is the run out in the bit. If the bit has excessive run out the tool has been dropped. If the tool has been dropped sharply the motor magnet may fracture. Broken pieces of the magnet can jam the armature. A cracked magnet can also cause the tool to overheat.

If the tools are not attached to tool balancers then a tether or tool holster should be used. The tether should be attached to the tool cord to prevent the tool from reaching the floor when it falls from the work surface. If the tool is placed into a “pocket”, “holster” or other type of tool holder, make sure that the edges of this device cannot inflict damage upon the operating parts of the tool as it is placed into the device.

1. Cord precautions and care.

   The cord should be kept clean and free of kinks. The cord should be kept away from sharp edges and objects. The cord should not be stretched. When deploying the cord between the power supply and the driver insure that there is sufficient slack to allow the driver to be used without pulling the cord tight. The locking ring on the cord should be snug to insure proper connection and proper grounding and prevent unintentional disconnection.

   The cord should be inspected periodically for cuts or abrasions in the outer cover. Minor cuts or scrapes may safely repaired with electrical tape. If the cut is deep enough to damage the interior wires then the cord should be replaced. If this cut is close to the end of the cord a replacement plug is available. This is less costly than replacing the cord. If cuts are found, the path between the power supply and the tool should be carefully inspected for sharp edges. Having the cord laying loosely on the work surface should be avoided since objects or equipment placed on the bench top may damage the cord.

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2. Overall inspection.

The tools should be inspected periodically for cracked plastic parts, loose screws or loose brush caps. Cracked or broken plastic parts indicate that the tool has been dropped. Cracked plastic parts should be replaced. On CL & SS- 2000,3000, 4000, Alpha 4500, 5000 and TL-3000 & 6500 tools and the brushless tools the screw retaining the trigger should be checked, to be sure it is snug.

The tools should be periodically removed from the line and run in a quiet environment. At this time it will be possible to determine, from the sounds of the tool, if there is excessive wear or other problems with that particular tool. A tool with several thousand hours of use should not be expected to sound like a new tool. However it will be noticeable if the tool has problems with the motor bearings or the reduction gears are heavily worn.

During this inspection take note of the feel of the tool when it is run then allowed to shut off, by releasing the trigger. The tool should shut off sharply; similar to the way the tool shuts off when the clutch activates. If there is coasting after the switch is released it can indicate poor contact between the brushes and the commutator or degradation of the motor magnet. This can indicate a worn tool. It can also reveal a tool that has been overheated or damaged by dropping.

After the tool has been in service for some time it can be normal for the tool to sound a little differently when it is run in reverse than forward. However a great difference in the sound or performance could indicate possible problems.

3. Brush care and replacement. (Not applicable to brushless series tools.)

Most of the brushes have a mark on them to indicate when they should be replaced. If the brush does not have the mark a good rule of thumb is to replace the brush when it has worn down to the point where the length of the brush is equal to the cross section of the brush, or the thickness is the same as the length. When the brushes are replaced they should be replaced in pairs. Allowing the brushes to wear down too far can cause damage to the commutator if the embedded wire is reached. As the brush length becomes shorter it is also more likely to stick and loose contact with the commutator.

When inspecting the brushes for wear, both brush caps and brushes should be removed at the same time. With the brushes removed compressed air should be blown through the brush holders to remove the carbon worn off of the brushes. This carbon dust has no other outlet. If it is allowed to build up inside the tool it can lead to motor bearing failure or overheating.

With the brushes removed inspect the portion of the commutator visible at the bottom of the brush holder cavity. The commutator should be a copper color. If the commutator is dark it could require cleaning which could be expected on older tools where the brushes have been replaced several times. On a newer tool, a darkened commutator could indicate a problem in the motor.

When replacing brushes make sure the brush moves freely in the brush holder. If the brush seems to stick, wipe the brush with a clean cloth, or clean the inside of the brush holder with a swab.

Before replacing the brush cap make sure the metal retainer at the top of the brush spring conforms to the flattened sides of the brush holder. This will also prevent the metal from interfering with replacement of the brush cap.

When replacing brushes the curved face on the bottom of the brush should be properly aligned to contact the commutator. If the curved face is matched to the curve of the tool housing it will be properly aligned when installed. Do not over tighten the brush caps.

If the brush caps are cracked or broken replace them. It is not necessary to replace the brush caps in pairs unless both are damaged.

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4. Checking Torque repeatability.

It is expected that the tools be checked periodically to insure that the torque has not changed. Each user should determine this testing period. Some users will choose to check the tools prior to each shift, while others may determine that monthly testing or longer intervals are sufficient.

To determine the proper test interval, test the tools more often after the initial installation. As some history is developed the frequency of this testing can be reduced until a comfort level is reached. It is also important to note that the same device used to set the torque should be used to check the tools. If this is not possible then a similar model should be used in testing. This is due to the variety of different types of torque meters available on the market. Tools will perform differently on these devices depending on their design.

Many times apparent erratic torque output is due to the type of meter used or the procedure followed to actually test the tool. The torque meter should be a unit designed for testing power tools. Using a meter primarily designed to test hand tools can lead to showing readings that are lower than the actual torque output of the tool. The tool should be tested with an adapter on the meter that allows the shaft to rotate simulating the insertion of a fastener. This adapter must be reversed after each run. Testing the tool on a meter that has an input shaft that does not rotate may provide inaccurate readings. The adaptor must also be sized properly for the torque range being tested. Trying to achieve a torque lower than the adaptor is designed for can also lead to readings that are lower than the actual torque output of the tool.

The clutch in the tool is a very sturdy robust mechanism. The clutch parts are designed for many thousands of hours of use without degrading. As long as the tool shuts off properly it is delivering the preset torque. If the tool ratchets when the screw is tightened it is not operating properly and needs to be repaired. If the tool seems to experiencing “stalling” then the torque output may be erratic. This condition is usually caused when the torque-adjusting nut is tightened fully in an effort to achieve a higher torque that the tool can provide. This condition can also be experienced when the joint type and conditions cause a drop in the speed of the tool. This causes the overall torque available from the particular motor/gear combination to be reduced. In either case the tool selected for that application may be the improper tool or an incorrect torque spring may be fitted in the tool. Refer to the tool manual, the ASG catalog or contact ASG to determine the proper torque spring for a particular tool.

When the tool is taken offline for brush maintenance the condition and operation of the clutch can also be checked. Remove the torque-adjusting nut and remove the torque spring. The torque spring should slip freely in and out of the torque-adjusting bolt without binding anywhere. With the torque spring held in place by hand, under light tension, rotate the bit through 360 degrees. You should be able to feel the operation of the clutch by the push felt in the torque spring. The rotation should be smooth with no binding noticed. The spring should be inspected to make sure it is not misshapen. The length of the spring should be checked against an unused spring to determine whether the spring has been compressed.

5. Inspection and operation of the chuck or joint shaft

The joint shaft or chuck holds the screwdriver bit in place in the tool. On most tools the collar is moved back in the direction of the tool to insert or remove a bit.* The collar must return to the same position when released or the bit will not be locked. Inspect the front of the collar for dents or cracks. The collar should move smoothly and not bind or stick. If the front of the collar is damaged it should be replaced. If cracks are seen in the hex portion of the shaft itself then it will need to be replaced. This is usually associated with the tool being dropped and landing on the bit as it hits the floor.

Tools using ¼” hex bits are designed to use “power bits”. These bits have a relief groove about ¼” from the end of the bit that fits into the tool. The bit must fit into the joint shaft far enough to allow the internal locking ball to engage the groove.

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If a 1/4" hex bit does not fit into the recess far enough to allow the ball to engage, the bit may fall out of the tool during use. This may be caused by foreign matter or debris in the bottom of the cavity, or the bit may have to have some material removed from the back end.

Some tools will use 4mm or 5mm round Asian standard bits. The locking collar functions the same way on those tools. If a 4MM or 5MM round bit will not stay locked compare it to a bit which does lock properly to see if there are any differences in the ball groove or the two drive tabs on either side of the bit.

*NOTE In the case of the BL series tools the collar moves forward to insert or remove the bit.

6. Lubrication

The tools themselves do not require any periodic lubrication. The motor bearings are permanently lubricated and sealed. If the motor bearings fail they should be replaced. The reduction gears are coated with high temperature molybdenum grease that will not migrate off during operation. If the gears are replaced or serviced for any reason, replace the grease with a suitable substitute. If any of the gears are replaced due to wear then all of the gears should be replaced as a complete set.

It is normal to see some of the lubrication from the gears to seep out around the drive shaft and get on the torque spring. A thin film of grease or a drop of light applied to both ends of the torque spring will prevent possible binding when the torque nut is adjusted but any excessive lubrication should be removed.

7. Inspection and maintenance of power supplies

The various power supplies are protected with a fuse on the AC input side and a circuit breaker on the DC output side. The only user serviceable parts in the power supplies are the switches, the tool connector, the fuse and in some units the circuit breaker. If there is a problem with the transformer coil, or the printed circuit board they must be replaced.

Make sure the power cord is not damaged or frayed. As with the tool cord the power cord should be inspected periodically for cuts or abrasions in the outer cover. Minor cuts or scrapes may safely repaired with electrical tape. If the cut is deep enough to damage the interior wires then the cord should be replaced.

If the tool stalls rather than shutting off when torque is reached, the circuit breaker may activate. Should this happen repeatedly, discontinue using the tool and determine whether there is a problem with the tool or whether the tool is not sized properly for the application. Continuing to allow a tool to stall can damage the shut off circuit in the power supply. This may be more critical in the power supplies used for the BL series tools.

Note that some of the ASG PS series power supplies can be externally switched between 110/115 VAC input and 210/220 VAC input. Make sure the switch is set for the proper voltage in use in your facility.

Please contact ASG with any questions relating to the maintenance instructions, or for proper parts lists, repair parts or specific repair instructions.

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