

How to Operate the Machine

Preparing The Machine For Use

BEFORE using any type of powered equipment, proper safety dictates you should visually inspect it.

1. Adjust the HANDLE to a comfortable height and tighten the bolts to 30-50- ft/lbs.
2. BONNET FILTER - Make sure the bonnet air filter atop the engine is clean. It should be changed hourly and thoroughly cleaned before reuse.
3. Check the engine OIL LEVEL. Make sure the machine is in a level position.
**KAWASAKI - DO NOT screw the dipstick in to get reading.
4. Fill the tank following the instructions as given under the previous heading: "Refilling And Storing Propane Tanks." In addition, if your buffer came with an "80% Safety Fill Tank" then it should ONLY be filled through the threaded valve with the larger diameter that is covered by a yellow cap to ensure a "Full" level that is safe.
5. PAD AND PAD HOLDER - Inspect the condition of the pad and pad holder. Is there a pad? Is it properly attached? What is its condition? Ensure the pad is clean and has at least a thickness of 1/3 inch. ALWAYS turn off the engine to clean or replace pad.
6. TANK and FUEL LINES - The tank has already been covered but do the fuel lines show any sign of wear and tear, such as cracks or any corrosion? Screw the brass fuel line fitting onto the tank service valve hand tight only. This connection MUST be secure because the service valve has a safety valve inside it which will only open if the brass fuel line fitting is COMPLETELY seated into the service valve.

Starting the Engine

1. Plug in 110 volt starter cord on models so equipped.
2. **KAWASAKI - The KAWASAKI twin cylinder engines are designed to be started in the IDLE throttle position. This creates a vacuum necessary to open the lock-off valve inside the regulator. Actuation of the throttle lever will keep the lock-off valve from opening and the engine from getting fuel so the engine will not start. Proper maintenance will insure easy starting.
3. Open (counterclockwise) the service valve on the propane tank about one and a half turns.
4. Ensure the buffer is tilted back so that the pad is off the floor on all machines without a clutch.
5. Engage starter for a MAXIMUM of 5 to 6 seconds or until the engine fires. Serious starter damage will result if this is exceeded and the warranty may not apply.
6. Operate the engine at half throttle for approximately two minutes for proper warm-up. Then advance to full throttle for best results.

NOTE: If the engine refuses to start, see the Trouble Shooting Guide.

Stopping The Engine

1. Close (clockwise) the service valve on the propane tank.
2. ALWAYS allow the engine to run until it stops from lack of fuel and then turn off the key switch. ** ONLY IN AN EMERGENCY should the "kill switch" be used.
3. Disconnect the fuel line from the tank.
4. REMEMBER, when you are finished with the machine, store the propane tank outside the building, in a safe place away from heat or direct sunlight.

Maintenance And Adjustments

Emission Control Information

To protect the environment in which we will live, the manufacturer has incorporated crankcase emission (1) and exhaust emission (2) control systems (EM) in compliance with applicable regulations of the United States Environmental Protection Agency and California Air Resources Board.

1. **Crankcase Emission Control System.** A sealed-type crankcase emission control system is used to eliminate blow-by gases. The blow-by gases are led to the breather chamber through the crankcase. Then, it is led to the air cleaner. Oil is separated from the gases while passing through the inside of the breather chamber from the crankcase, and then returned back to the bottom of crankcase.
2. **Exhaust Emission Control System.** The exhaust emission control system applied to this engine consists of a carburetor and an ignition system having optimum ignition timing characteristics. The carburetor has been calibrated to provide lean air/fuel mixture characteristics and optimum fuel economy with a suitable air cleaner and exhaust system.

Tampering w/Emission Control System Prohibited

Federal law and California State law prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new engine for the purpose of emission control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the engine after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below:

Do not tamper with the original emission related part.

- >Carburetor and internal parts
- >Spark plugs
- >Magneto or electronic ignition system
- >Fuel filter element
- >Air cleaner elements
- >Crankcase
- >Cylinder heads
- >Breather chamber and internal parts
- >Intake pipe and tube

General Maintenance and Adjustments

1. **Fuel control system.** To ensure personal safety, adjustments should ONLY be made by a qualified LPG system technician or an authorized service center, using an exhaust gas analyzer. Do not operate the machine if carbon monoxide levels exceed OSHA standards.
2. **Pad replacement.** Tilt the machine back on its rear caster to reach the pad centering device. Turn the outer ring counterclockwise to remove it. Remove the old pad. Install the new pad by carefully centering it against the "harpoon hook" plastic gripper. Replace the center locking ring. Check rotation of the pad driver. Eccentricity of the pad should not exceed 1/4 of an inch.

Maintenance And Adjustments

3. **Belt replacement.** Tilt the machine on its side (observing the following precautions) and block securely.

**KAWASAKI twin cylinder - Do not tilt the machine on its nose as this is where the carburetor is located. It is okay to turn this model on either its left or right side.

- Remove pad.
- Use a suitable wrench to secure the top of the shaft and spin off the pad driver and remove it from the machine.
- Remove old belt carefully and completely.
- Install new belt and adjust the pressure of the Lovejoy tensioner.
- Reinstall pad driver.

Recommended 20 Hour Maintenance Items -

- >Change engine oil.
- >Check pad driver for loose parts.
- >Check belt for wear or slippage.
- >Check engine pulley for tightness.
- >Check wheel bolts.
- >Check engine mount bolts.
- >Check handle bolts.
- >Check for leakage of engine oil at the various seals.

Recommended Oil Change Intervals

Do not exceed the 20 hour oil change interval. Oil changes more frequent than 20 hours will give even longer engine life. In any case, always use 30HD or 10W30 engine oil with all of the following ratings: SF, SG, CC. The various engines have different oil sump capacities. Make sure the oil level is maintained at the "FULL" level.

Recommended 200 Hour Maintenance

Return machine to authorized service center for overall checkup.

Trouble Shooting

When troubles occur, be sure to check the simple causes which at first, may seem too obvious to be considered. For example, a starting problem could be caused by fuel starvation due to an empty propane cylinder or an unopened service valve. If you don't check for this, starter burnout could result.

- KAWASAKI - "SURGING IDLE"** - To smooth out the engines' idle characteristics, adjustment is provided by an idle screw on the lower left side of the carburetor as viewed from the operator's position. The screw is bright steel and 1/4" in diameter with a Phillips head on it. Rotating the screw clockwise will increase the idle speed and this should cure the "surging idle". IF IT DOES NOT, contact your sales or service representative.
- EXCESSIVE VIBRATION** - Look for the following possibilities:
 - Pad is off center. Remove and reinstall.
 - Pad Driver is bent or cracked. (Possibly from striking a curb or bolt in the floor.) Replace immediately with a new part only.
 - Bearings in Front End Assembly are worn. Place machine on its side where the muffler is mounted. Grip Pad Driver and move up, down and from side to side to check for slack in the bearings. If this is the case, then to effect a proper repair, the bearings should be replaced and possibly the shaft.
 - Check to see if the bolts on shaft housing are tight. Look to see if the nuts, bolts and spacers on the Flex Coupler Assembly are all in place and tight.
- ENGINE STARTS AND IDLES, BUT WILL QUIT AS THE THROTTLE IS ADVANCED** - It is possible that the propane tank's service valve is faulty. To check for this, close the valve completely and then reopen very slowly while you listen for a "click" when the gas begins to travel through the valve. If you hear this very slight noise, then what is happening is the valve is only partially opening. This allows enough gas through to start and idle the engine, but not enough for full throttle operation. As the throttle is increased, allowing more air to enter the intake, the engine will quit from fuel starvation. Call your dealer for instructions on where to have the service valve replaced. Meanwhile, to get by, you can continue to open the service valve until you don't hear a "click" and then the engine will run normally. IF IT DOES NOT, contact your sales or service representative.
- THE BUFFER SEEMS TO RUN WELL BUT DIES DOWN WHEN THE PAD IS PLACED ON THE FLOOR OR SOON THEREAFTER** - Check for the same problem as in #3.
- EXCESSIVE NOISE FROM UNDER BUFFER** - If this problem has developed after use of the machine from new, then the first place to check is the Lovejoy Tensioner. As a new belt wears in, it naturally stretches a bit and the tensioner will begin to rattle. Place the buffer on its side (with the muffler down) and reset by taking up the slack in the belt and tighten the Lovejoy Tensioner.
- STARTER WILL HARDLY TURN THE ENGINE OVER or THE SOLENOID JUST CLICKS ON 12 VOLT OPTION MODELS** - The battery is likely low in charge. This can be remedied by recharging the battery using a 12 volt battery charger at 4-12 amperes. The battery is located under the frame at the rear of the buffer. The positive post is the one with the RED cable attached to it. Follow the instructions that came with the battery charger. REMINDER: this will continue to happen unless the buffer's engine is run for sufficient time between starts to recharge the battery.
- KAWASAKI V-TWIN - ENGINE BACKFIRES LOUDLY AND REGULARLY SUDDENLY** - Check the sparkplug boots. One of them is likely cracked, possibly due to contacting a corner of a shelf or a door frame. Remove the sparkplug lead from the sparkplug and replace the boot with a new one. The engine should now run normally. IF IT DOES NOT contact your sales or service representative.