NEW HOURS
812-944-1643

8am-6pm Weekdays

Sir:

Visa Mastercard
Accepted

Thanks for your recent parts purchase. Keep in mind that I have the largest inventory of new, reproduction and used parts for All Terrain Vehicles around. Most of my parts are for machines
that are equipped with Borg Warner T-20 or Argo transmissions.

I have a large inventory of Borg Warner T-20 parts. Most Clutchs in stock at all times. Wheel adapters, Wheels and Tires.

Have available the largest stock of new parts for the ATTEX machine

Check out my web site called ROUTE6x6 its address: www.route6x6.com
My phone number is 812-944-1643 afternoon calls are best.
My email address: richard@route6x6.com

Thanks Richard Clark 4846 Quarry Rd New Albany IN 47150 USA

Hustler DEALER BULLETIN

☐ SALES ☑ SERVICE ☑ PROMOTION

DATE:

HUSTLER ATV PRE-DELIVERY CHECK LIST

The following items listed are to be performed by the dealer before your customer takes delivery. Unless there is a major defect minor adjustments are the responsibility of the dealer. You may however, issue a claim on minor repairs should they accumulate into excess time. The ATV has no "built-in" price to provide a rebate for pre-delivery service. The ATV is considered completely ready for use once these items are performed. The items listed are not in priority order.

CHECK FOR:

1. Engine oil level (4-cycle) - transmission oil level
2. Chain tension - alignment
3. Braking control operation (both systems)
4. Engine idle
5. control cable routing
6. Electrical wiring defects and routing
7. Transmission shift operation system
8. Throttle operation - Govenor linkage restriction (4-cycle)
9. Battery position, tightness, and fluid level
10. Material position and travel
11. Excessive uncommon noises or vibration
12. Owner's Manual
13. Paint defects (touch-up as required)
14. General inspection for loose bolts
15. Fuel system leaks - vent open on cap

CLEAN AND WAX PLASTIC BODY PARTS AND TRIM ANY ROUGH EDGES INSTRUCT OWNER/OPERATOR

16. Go over with customer "Highlights" in owner's manual
17. Hustler Warranty
18. Your service responsibilities

SET:

[redacted]ual (see Maintenance & Adjustment Section)

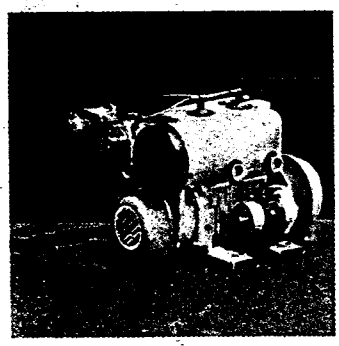
20. Tire pressure at [redacted]/2 lbs. p.s.i.
21. Sign and return this check list with owner's registration warranty card

SERIAL NUMBER SERVICE REPRESENTATIVE

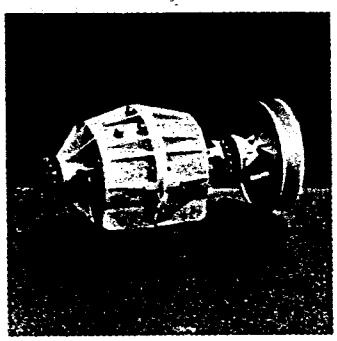
[redacted]

Hustler...the DEPENDABLE performer

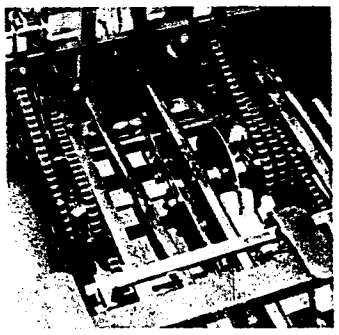
THE BODY: High-density polyethylene is the secret behind Hustler's toughness. Lightweight, yet rugged, it is unaffected by extreme temperatures and will take rough terrain like nothing else. It always looks good because it can't rust or corrode. It's virtually unbreakable and fully waterproof, too.



THE POWER: A full 40 horses, delivered by a 2-cycle, twin cylinder Kohler engine with a unique HUSTLER-ENGINEERED automotive-type carburetor — built strong to last and be trouble-free. With an engine like that going for you, there's no doubt about high performance. And with all 6 wheels driving, you go anywhere, anytime, through mud, water or snow.



THE TRANSMISSION: The Borg Warner "SKID STEER" — a new concept in ATV transmissions, transmitting power, steering and braking to wheels in both forward and reverse gears — all in one small, self-contained package. The "SKID STEER" is compact and lightweight for greater versatility and self-adjusting for vastly improved ATV transmission dependability. And with this control system the Hustler can turn in its own length.



THE DRIVE SYSTEM: The variable-speed, torque-sensitive converter provides smooth up- and down-shifting at all speeds. It automatically senses torque to maintain proper rpm as engine loads increase and decrease. The result is smooth transmission of power from engine to wheels. High-strength axles . . . Diamond high-strength chain . . . oversized, hobb-cut steel sprockets for 30% longer life — and all supported by a 10-gauge channel steel inner frame providing all the dependability and performance an ATV can offer.

DEPENDABILITY . . . environmental tests conducted by the Society of Automotive Engineering, Student Branch, Univ. of Cincinnati, proved the Hustler far superior to its leading competition in design and performance. Hustler is built to take all the punishment you can deliver and then some. When you are several miles into "no man's" land, you like to know you have a way home!

MANEUVERABILITY . . . the HUSTLER has positive all six wheel drive that guarantees easy handling on land and in water and its low-profile, low-pressure tires are more puncture resistant, more stable for better steering, superior in traction on ground and water, longer wearing due to increased non-skid depth.

CONVENIENCE . . . front and rear bench-type seats that accommodate FOUR ADULTS comfortably. ALL HAND-OPERATED CONTROLS for steering, throttle, parking & emergency brake and forward, neutral and reverse gear shift. An electric key start with back-up recoil start as standard equipment . . . easy access to engine compartment . . . all the convenience you'd want. Add some optional equipment and you have even more.

MOBILITY . . . Your Hustler mounts easily on the convenient tilt trailer. An easy one-man operation when loading and unloading. The Hustler also rides easily and safely in a pickup truck.

PRICE . . . investigate! You'll be pleasantly surprised to find that you can own a Hustler for a lot less than you would pay for other all terrain vehicles with half the features. Contact your nearest Hustler dealer or Hustler Corporation today and see!

SPECIFICATIONS

Length	94 inches
Width	54 inches
Height	39 inches
Weight	590 lbs.
Ground Clearance	6 inches
Land Speed	35 m.p.h.
Water Speed	3 to 4 m.p.h.
Gradeability	60% slope
Load Capacity	750 lbs. for maximum efficiency. Capable of handling loads up to 1,200 lbs.

HUSTLER Corporation

[redacted]

Your HUSTLER Dealer is:

[redacted]

NOTE: Read this manual carefully before operating your Hustler. The manual is designed to be continually updated as often as is practical.

The Model 945-HK Hustler utilizes many very fine components. Every item used to build this equipment is of top quality. Much of the design and component selection is the same as test units built for a 4,000 mile military test program. The heart of the Hustler is the (1) Engine, (2) Transmission. Read carefully the following which needs attention:

(1) The engine has a battery ignition. This is very good from a maintenance standpoint. However, since it is not a magneto, which produces it's own spark, the Kohler 4-cycle requires a battery to run. Make certain your battery is in good condition and is receiving a charge. The amp meter will indicate proper operation. Use the manual rope start system for emergency starting. The battery can be very low and still have enough power to fire the ignition. Make certain the ignition key is on.

(2) The transmission has excellent steering characteristics. It does, however, cause some owners difficulty in shifting from forward to reverse. It is very important to make sure the transmission is in gear fully before giving your Hustler throttle. Damage will occur to the shifting system if the unit is not in gear (forward or reverse) fully. Read more about the transmission shift procedure in the following pages.

The above two operational characteristics need to be understood for proper Hustler operation.

CAUTION: Do not operate at an excessive speed. The brakes are very sensitive. Sudden undue pressure on the laterals will cause the Hustler to stop very abruptly. A sudden stop may cause possible injury to driver and/or passengers. Hustler Corporation cautions operators not to use the horsepower for excessive speeds. THE ATV IS DESIGNED FOR OFF-THE-ROAD USE ONLY. DO NOT allow inexperienced operators to drive your Hustler without full knowledge of its operation. Injury to the driver and/or damage to the vehicle can result.

ENGINE: Kohler Model #K341QS

A manual prepared by Kohler is included with your Hustler operators manual. Read this to understand its operation. These are additions which are characteristic to the Hustler:

(1) [redacted] a hose attached to the rear inside body. Drain oil with the engine warm. The hose will fit through the water drain fitting.

(2) The govenor is set at Hustler Corporation to operate at 3800 R.P.M. @ no load. DO NOT tamper with this setting.

(3) A good ground is necessary for the engine to start properly. Check this if experiencing starting difficulty.

(4) Check your service directory for a Kohler dealer if your Hustler dealer can not correct an engine problem.

(5) Allow engine to warm-up properly.

(6) Carry a spare spark plug.

(7) Turn ignition switch off if engine stops.

FUEL TANK - Capacity: approximately 8 gallons.
Range: approximately 2 hours per gallon depending on load and terrain conditions.
Shut-Off Valve: located on bottom of tank.
Vent: located on fuel gauge. Always make certain it is kept open.

FUEL FILTER - Easily recleanable by disassembly. Before cleaning close fuel shut-off valve by turning valve clockwise. Start engine and allow to run until line and filter empty. This will prevent gasoline from spilling into engine compartment as you disassemble filter. Leave hoses connected at each end of filter. The element may then be cleaned with gasoline. Use caution in reassembly to be sure the glass tube is sealed against the ends.

REPLACING DRIVE BELT:

The drive belt should last 200 to 300 hours depending on load and terrain conditions. Belts gradually wear out. To replace, remove the old belt by "rolling" it off the transmission pulley. Put the new belt on the engine pulley and "roll" the new belt on the transmission pulley.

TRANSMISSION

Two laterals ("bulldozer" type levers) operate your Hustler with little effort. A firm push on the levers engages the planetary gear drive for forward. Pulling back disengages the gears and operates the brake band. This provides very effective steering. Again, use caution at high speed.

Shift Lever - The lever located between the laterals under the front seat provides forward and reverse to each side. NOTE: HISTORICALLY THE SHIFT SYSTEM HAS CAUSED MOST OF THE ATV BREAKDOWNS. Avoid shifting unless necessary. Attempt to locate your Huslter where shifting is not required. All ATV's have a problem in shifting. Hustler has incorporated an "automatic hunt" system which locates forward or reverse for you. Please maintain it. You will be disappointed if you don't. Properly maintained it works. Prepare to pay for damages if not. Hustler can not warrant damages on non-maintained equipment.

Remember the Following:

A. Shifts should be made a slow engine R.P.M.'s.

B. Partial engagement of the forward-reverse gear could cause loss of brakes. If this should occur, immediately apply parking brake to slow machine to a stop then re-engage. Always make certain the parking brake is in good working order. If properly engaged the transmission will not cause loss of brakes. Brakes DO NOT function with transmission in neutral.

C. When you feel the unit is not going fast enough, and you're sure the engine is properly tuned, try pushing harder on the levers. The forward gear bands may be slipping and could overheat the transmission, however, do not use brute excessive force. Many times the Hustler is performing well but the tires are spinning out, and working the levers harder will not correct this situation.

D. When attempting a steep hill that cannot be climbed, use the parking brake to stop your Hustler. The Skid Steer transmission will not brake in a normal manner while the vehicle is rolling backward. Pushing forward on the laterals will work as a brake to hold the vehicle and will stop the unit until the parking brake is applied. Use your parking brake if necessary to shift on a hill. However, make sure the brake will hold before shifting. If possible, avoid shifting on a hill.

E. Read your Skid-Steer Owner's Manual for further information.

TRANSMISSION SHIFTING PROCEDURES:

(1) Forward-Lever Down: The shift lever has a definite locking position for F-N-R. Pushing the black knob down will "unlock" the lever from these positions. Always make sure the lever is locked in place in insure proper gear engagement. This is a must. The system allows the operator to push the lever all the way down without regard to gears meshing in the transmission. By pushing down and locking the lever in place the linkage will become spring loaded and allow the gears to "hunt" mesh. This only occurs when there is not a proper gear alignment. The lever will resist movement if gears do not mesh. This is only natural and should be expected at times. Both sides being unmeshed will cause more resistance than one side only. The shifter will move very easily in gear if both sides are meshed. Once the machine starts to roll the unmeshed gears will align and "snap" into place. Excessive force on the shift system will not damage the transmission.

(2) Reverse-Lever Up: Follow same procedure as forward. Make certain it is locked in to insure a full shift.

(3) Steering: Refer to drawing illustration on lateral positions. Two laterals operate your Hustler with little effort. Both forward and brake positions are very sensitive and responsive . Get the "feel" of this type steering before high speed operation. The steering system is fairly foolproof and does not require frequent adjustment. The transmission can however, be failed by; (a) inadequate pressure on the laterals causing slippage, and (b) brute, excessive force which will snap a band.

(4) Maintenance: Periodically apply a lubricant (WD-40, chain lube, Dry Slide, etc.) under the shift diamond area where it goes into the housing. Rust may form here and bind up the shifter. Also inspect the transmission diamond shifter for freedom of movement while moving the front shift lever into various positions. Correct the problem if they are not operating properly. Excessive tight chains will cause the shifters to bind. Refer to transmission "Skid Steer" owner's manual for further information. The "automatic hunt" system will not work if (1) chains are too tight (2) linkage is contaminated (3) transmission excessively hot. Keep the spring-rod area lubricated with WD-40 or chain lube to prevent rust, mud build-up, etc. Check it's operation each time you use your Hustler

Periodically remove shift drums (diamonds) and check for pin wear. Pin wear is the result of incomplete shifts. Make certain your's is making complete shifts. CAUTION: Excessive pin wear will not locate the collar properly in it's mating parts. See Skid Steer Manual. The shift drums are very easy to remove by removing the top plated hold-down brackets. NOTE: Hustler has attempted to give you what not other ATV has. A system to automatically find forward or reverse. You have got to keep it working. It worked when it was built and properly maintained it will work for years.

BATTERY:

A 15 amp charging system is incorporated in your Hustler. Motor speed determines how much charge your Hustler is receiving. The higher the R.P.M., the more charge. Observe the amp gauge for proper charge rate. A voltage regualtor determines the rate of charge. The gauge should show some charge rate at all times when engine is running above 2,000 R.P.M.'s. A slight lowering rate will occur with the lights on. The gauge should show a higher rate as R.P.M.'s increase. A 20-amp circuit breaker protects the system from overloads.

PARKING/EMERGENCY BRAKE:

The secondary brake is used (1) for parking; (2) during transportation (3) emergency stopping; and (4) holding the machine on an incline. The brake is activated by pushing down on the lever to the right of the laterals. A certain amount of resistance to the lever will indicate adequate pressure. An adjustment knob is provided to apply more pressure. The adustment knob when "screwed" down will provide more pressure to the brake. Once this adjustment has "run-out" further adjustment can be made by adjusting the 5/16 jam cable nuts near the brake caliper. Adjustments other than with the handle should be made with the knob turned out to allow further use of this knob for brake pressure. DO NOT over-tighten the system enough to cause excessive brake caliper drag. NOTE: This system only brakes the R.H. side and the vehicle will veer to that side once applied if in motion.

AXLES:

The axle steel used is of the finest quality. Bending an axle is the result of abuse. Remove an axle by:

A. Remove bolt pinning axle to sprocket.
B. Remove tire.
C. Unbolt the outer bearing assembly.*
D. The axle is ready to pull out.

*The bearing used is self-aligning type using an eccentric locking collar. To remove the bearing, loosen the allen screw and, with a punch, knock the collar clockwise (flange facing you). Locate and lock a new bearing in the same location before installing in the machine.

BEARING MAINTENANCE:

The outside bearing is a relube type. During prolonged usage in wet conditions it is best to relube the bearing. However, this is your option. Do not over-grease. Too much grease will cause the seals to rupture. Stop greasing when lube is visibly coming out from the seals.

CHAINS:

A. Lubrication - Use of 90 wt. gear oil has proven to be a good general purpose lubricate. Do not over-lubricate. Excess oil should be wiped off the top of the chain to avoid slinging the lubicant on belts, discs, etc. A paint brush is good to apply the proper amount of oil. There are many excellent chain lubes on the market. Contact your dealer or local motorcycle shop for aerosol types.

B. Tension - Idlers are provided for chain take-up due to normal wear. Proper chain tension is much by "feel". Tension is not too critical. Idlers are manually pushed or pulled into place and it would be very hard to provide too much tension. The front and main idlers are adjusted by loosening the hex bolt to push down on the idler. The R.H. rear idler bracket can be moved after loosing the 1/2" hex bolt above the roller. All chains should be adjusted with the slack side next to the idler. The opposite side should be fairly free of slack. An excessive amount of slack will remain if the idlers are adjusted against the tighter side. Adequate torque should be provided to the hex bolt to lock the idlers in place. Each idler will roll after locking. The main drive (coming from transmission) will require more attention to chain slack.

NOTE: Front idlers are locked in place between the top and bottom strand of chain. After the first 1/2 tank of fuel, relocate these idlers above the top strand of chain and adjust as necessary.

TIRES:

The tires are over-inflated at the factory and should be operated for at least three hours in this condition. After three hours of running, adjust the pressure to 2 1/2 pounds for normal use and a smooth ride. For sand or snow operation, better traction is obtained by lowering the pressure. A special tire gauge for checking tire pressure is available from Hustler Corporation or your Hustler dealer.

TORQUE CONVERTER MAINTENANCE:

The transmission pulley should be lubricated with WD-40 under the spring area where the moveable face operates back and forth. This will help prevent rust from forming here. Applying WD-40 to the engine pulley through the holes in the "bell" covering will also extend it's life and operation.

THROTTLE CABLE MAINTENANCE:

Your throttle cable has been injected with 100% pure anti-freeze to prevent cold weather freeze ups. This should be done each season by your Hustler dealer. An injector is merely a pump oil can with a 1/4" hose attached. The hose is then placed over the disconnected engine end of the throttle cable to pump it full of anti-freeze.

LIMITED WARRANTY*

HUSTLER ALL-TERRAIN VEHICLE WARRANTY POLICY

Products manufactured by Hustler Corporation and sold by authorized dealers are backed up by a 90-day guarantee against defects in material and/or workmanship to the original purchaser. Our obligation under this warranty program is expressly limited to the replacement or the repair of defective parts that have not been modified or subjected to misuse. This warranty policy applies only to machines sold by authorized Hustler dealers. It does not apply to rental machines, machines used in competitive racing, or Hustler vehicles involved in accidents. In order to qualify for this warranty program the original owner must complete the owner's registration form and submit it to Hustler Corporation within ten days from the date of purchase.

NOTE: Defective parts covered by warranty are shipped to owner/dealer C.O.D. Credit will be issued to owner/dealer upon receipt and inspection of defective parts by Hustler Corporation.

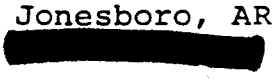
Hustler vehicles do require normal maintenance and periodic service checks. Hustler shall not be liable for consequential damage or contingent liabilities nor for the fitness of any Hustler. vehicle for any purpose. This is the only valid Hustler warranty program. We express no other implied or statutory warranty nor is anyone authorized to make warranty claims on our behalf.

Hustler reserves the right to change, improve, or discontinue any Hustler model or machine at any time without incurring any obligation to those manufactured previously. The warranties pertaining to engines, carburetors, batteries, drives, tires, and other equipment or accessories not manufactured by Hustler are the responsibility of the supplier carrying their individual warranty programs. Hustler assumes no responsibility for transportation costs.

TO GET THE BEST SERVICE OUT OF YOUR HUSTLER ALL-TERRAIN VEHICLE BE SURE TO READ AND FOLLOW THE SERVICE AND OPERATING INSTRUCTIONS OUTLINED IN YOUR OWNER'S MANUAL.

If you have specific questions about your vehicle's warranty, consult your dealer or write to Hustler Corporation.

Hustler Corporation
P.O. Box 1283
Jonesboro, AR 72401



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*In compliance with 1975 Consumer Product Warranties Law

GENERAL HUSTLER VEHICLE SAFETY GUIDE

1. Read your owner's manual and know your machine.
2. Check throttle and brake controls before starting the engine. Frozen controls can cause serious injury.
3. Know how to make an emergency stop.
4. Know all state, provincial, federal, and local laws concerning Hustlers. Respect private property.
5. Never add fuel while smoking or when engine is running. *Under no conditions should you operate the Hustler with any fuel in the bottom half of the ATV body.
6. Never allow anyone to operate your Hustler without proper instruction.
7. Take along sufficient tools and spare parts for emergency field repairs.
8. Do not overload your Hustler.
9. Never attempt to repair your machine while the engine is running.
10. Check all machine components and hardware frequently.
*11. Know the Hustler's limitations in water. Maximum safety capacity is 400 lbs. in front seat only. Check for possible leaks immediately upon entering water.
12. Know how to stop on an incline. Avoid if possible.
*13. Most bodies of water are easy to enter. Make sure you can get back out. A soft muddy bank is very difficult to get sufficient traction in order to pull out of water.
14. Extra horsepower is provided for off-the-road terrain. Do not use this horsepower for excessive speed. A maximum safe speed is 25 MPH, and should be attempted ONLY by an experienced operator.
*15. Periodically check the shifting system for proper operation. Remember you have no lateral braking while in neutral.
16. Periodically check chain condition. A broken chain can cause loss of control.
17. The brakes are sensitive. Do not attempt sudden stops or turns at high speed.
18. Keep headlights free of mud and never ride at night without lights.
19. Test drive your Hustler during first 1/2 tank fuel close to your home or farm. Any unknown manufacturing defects should show up then. This will also allow you to familiarize yourself with the Hustler's characteristics before taking long or rugged trips across rough terrain.
20. Check emergency brake operation frequently. Adjust or repair as necessary to provide safe emergency stopping if ever required.
21. Do not panic if throttle sticks. Push engine stop switch on ATC or pull back on laterals on ATV. Pull "tether" on certain model Hustler equipped vehicles (and always use it).
22. Do not operate your Hustler without factory installed safety shields.
23. Lack of knowledge of the mentioned safety tips may cause serious injury or death.
24. Remember that the best safeguard against accidents is the use of common sense.
25. Refer to Kohler "Safety" insert.
26. Review this section often to remind yourself to PLAY IT SAFE!

*Pertains to 6-wheel ATV ONLY!

H U S T L E R C O R P O R A T I O N

P.O. Box 1283, Jonesboro, Arkansas 72401, [redacted]

NOTE: Read this manual carefully before operating your Hustler. The manual is designed to be continually updated as often as is practical.

The Model 950-H Hustler utilizes many very fine components. Every item used to build this equipment is of top quality. Much of the design and component selection is the same as test units built for a 4,000 mile military test program. The heart of the Hustler is the (1) Engine, (2) Transmission. Read carefully the following which needs attention:

(1) All air cooled engines of the Briggs type rely on proper maintenance-meaning a clean proper oil at the right level and clean air. Change your oil at prescribed intervals, check oil dip stick before each day's use and inspect air filter element often. You will find, however, the paper element portion will remain very clean for a long time. The Briggs engine has a tendency to sometimes backfire after stopping the motor. This is a charasteristic and normal. Use rope back-up starter in case of battery failure. Make certain the key is on.

(2) The transmission has excellent brakes. The brakes, however, have to rely on roller chain to make the connection to the axles. A chain failure can cause loss of brake(s). Hustler uses a special high strength chain from the transmission to the middle axle. We've never heard of one breaking and doubt that it can, if properly maintained. Keep slack to a minimum and keep them lubed. Inspect often for possible master link damage and spring lock side cover security. Only use this quality chain for replacement and for sure avoid 1/2 links.

The above two operational characteristics need to be understood for proper Hustler operation.

CAUTION: Do not operate at an excessive speed. The brakes are very sensitive. Sudden undue pressure on the laterals will cause the Hustler to stop very abruptly. A sudden stop may cause possible injury to driver and/or passengers. Hustler Corporation cautions operators not to use the horsepower for excessive speeds. THE ATV IS DESIGNED FOR OFF-THE-ROAD USE ONLY. DO NOT allow inexperienced operators to drive your Hustler without full knowledge of its operation. Injury to the driver and/or damage to the vehicle can result.

ENGINE: Briggs & Stratton Model #422437 Type 0137-01

A manual prepared by Briggs is included with your Hustler operators manual. Read this to understand its operation. These [redacted]ons which are characteristic to the Hustler:

(1) Oil capacity is three (3) pints which is drained via a hose attached to the front of engine. Drain oil with the engine warm. The hose will fit through the water drain fitting.

(2) The govenor is set at Hustler Corporation to operate at 4000 R.P.M. @ no load. DO NOT tamper with this setting.

(3) A good ground is necessary for the engine to start properly. Check this if experiencing starting difficulty.

(4) Check your service directory for a Briggs dealer if your Hustler dealer can not correct an engine problem.

(5) Allow engine to warm-up properly.

(6) A rope is included in the tool pouch to use for back-up rope starter. Key must be on.

FUEL TANK - Capacity: approximately 8 gallons.
Range: approximately 2 hours per gallon depending on load and terrain conditions.
Shut-Off Valve: located on bottom of tank.
Vent: located on fuel gauge. Always make certain it is kept open.

FUEL FILTER - Easily recleanable by disassembly. Before cleaning close fuel shut-off valve by turning valve clockwise. Start engine and allow to run until line and filter empty. This will prevent gasoline from spilling into engine compartment as you disassemble filter. Leave hoses connected at each end of filter. The element may then be cleaned with gasoline. Use caution in reassembly to be sure the glass tube is sealed against the ends.

REPLACING DRIVE BELT:

The drive belt should last 200 to 300 hours depending on load and terrain conditions. Belts gradually wear out. To replace, remove the old belt by "rolling" it off the transmission pulley. Put the new belt on the engine pulley and "roll" the new belt on the transmission pulley.

TRANSMISSION

Two laterals ("bulldozer" type levers) operate your Hustler with little effort. A firm push on the levers engages the planetary gear drive for forward. Pulling back disengages the gears and operates the brake band. This provides very effective steering. Again, use caution at high speed.

Shift Lever - The lever located between the laterals under the front seat provides forward and reverse to each side. This lever operates either both sides simultaneously or each individual side separately. To achieve "counter rotation" (one side only in reverse), an additional small lever is located near the reverse lever to disengage the right shifter. The right hand shifter can be left in forward or reverse by throwing this lever to the left. Once disengaged from the main shift system the remaining left hand shifter can be actuated. This allows the Hustler to counterrotate in a zero turn. Both sides can also be put in reverse. It will take practice to understand when to use this Hustler exclusive feature of being able to "spin-on-a-dime". (See "Steering and Braking Procedures")

Remember the Following:

A. Shifts should be made at slow engine R.P.M.'s.

B. Partial engagement of the forward-reverse gear could cause loss of brakes. If this should occur, immediately apply parking brake to slow machine to a stop then re-engage. Always make certain the parking brake is in good working order. If properly engaged the transmission will not cause loss of brakes. Brakes DO NOT function with transmission in neutral.

C. When you feel the unit is not going fast enough, and you're sure the engine is properly tuned, try pushing harder on the levers. The forward gear bands may be slipping and could overheat the transmission, however, do not use brute excessive force. Many times the Hustler is performing well but the tires are spinning out, and working the levers harder will not correct this situation.

D. When attempting a steep hill that cannot be climbed, use the parking brake to stop your Hustler. The Skid Steer transmission will not brake in a normal manner while the vehicle is rolling backward. Pushing forward on the laterals will work as a brake to hold the vehicle and will stop the unit until the parking brake is applied. Use your parking brake if necessary to shift on a hill. However, make sure the brake will hold before shifting. If possible, avoid shifting on a hill.

E. Read your Skid-Steer Owner's Manual for further information.

TRANSMISSION SHIFTING PROCEDURES:

(1) Forward-Lever Down: The shift lever has a definite locking position for F-N-R. Pushing the black knob down will "unlock" the lever from these positions. Always make sure the lever is locked in place to insure proper gear engagement. This is a must. The system allows the operator to push the lever all the way down without regard to gears meshing in the transmission. By pushing down and locking the lever in place the linkage will become spring loaded and allow the gears to "hunt" mesh. This only occurs when there is not a proper gear alignment. The lever will resist movement if gears do not mesh. This is only natural and should be expected at times. Both sides being unmeshed will cause more resistance than one side only. The shifter will move very easily in gear if both sides are meshed. Once the machine starts to roll the unmeshed gears will align and "snap" into place. Excessive force on the shift system will not damage the transmission.

(2) Reverse-Lever Up: Follow same procedure as forward. Make certain it is locked in to insure a full shift.

(3) Counter Rotation Lever: This lever when pushed over center to the extreme left will lock in place to disconnect the right hand shift linkage. This feature will allow you to leave this side in forward while you shift the left hand side in reverse. If the R.H. needs to be put into reverse while the L.H. is in forward you can shift both sides in reverse, disconnect the R.H. side and shift the L.H. side back in forward. This should be uncommon as you can do most any maneuver by counterrotating in counterclockwise motion instead of clockwise. By pushing the lever to the right (to unlock it) the R.H. linkage will automatically lock back to the front shift lever. To make shifting easier you may want to leave the R.H. side locked out in order to leave it in forward gear. Most of the time shifting only one side in reverse will maneuver the Hustler adequately.

(4) Steering: Refer to drawing illustration on lateral positions. Two laterals operated your Hustler with little effort. Both forward and brake positions are very sensitive and responsive. Get the "feel" of this type steering before high speed operation. The steering system is fairly foolproof and does not require frequent adjustment. The transmission can however, be failed by; (a) inadequate pressure on the laterals causing slippage, and (b) brute, excessive force which will snap a band.

(5) Maintenance: Periodically apply a lubricant (WD-40, chain lube, Dry Slide, etc.) under the shift diamond area where it goes into the housing. Rust may form here and bind up the shifter. Also inspect the transmission diamond shifter for freedom of movement while moving the front shift lever into various positions. Correct the problem if they are not operating properly. Excessive tight chains will cause the shifters to bind. Refer to transmission "Skid Steer" owner's manual for further information.

BATTERY:

A 13 amp charging system is incorporated in your Hustler. Motor speed determines how much charge your Hustler is receiving. The higher the R.P.M., the more charge. Observe the amp gauge for proper charge rate. A voltage regualtor determines the rate of charge. The gauge should show some charge rate at all times when engine is running above 2,000 R.P.M.'s. A slight lowering rate will occur with the lights on. The gauge should show a higher rate as R.P.M.'s increase. A 20-amp circuit breaker protects the system from overloads.

PARKING/EMERGENCY BRAKE:

The secondary brake is used (1) for parking; (2) during transportation (3) emergency stopping; and (4) holding the machine on an incline. The brake is activated by pushing down on the lever to the right of the laterals. A certain amount of resistance to the lever will indicate adequate pressure. An adjustment knob is provided to apply more pressure. The adustment knob when "screwed" down will provide more pressure to the brake. Once this adjustment has "run-out" further adjustment can be made by adjusting the 5/16 jam cable nuts near the brake caliper. Adjustments other than with the handle should be made with the knob turned out to allow further use of this knob for brake pressure. DO NOT over-tighten the system enough to cause excessive brake caliper drag. NOTE: This system only brakes the R.H. side and the vehicle will veer to that side once applied if in motion.

AXLES:

The axle steel used is of the finest quality. Bending an axle is the result of abuse. Remove an axle by:

A. Remove bolt pinning axle to sprocket.
B. Remove tire.
C. Unbolt the outer bearing assembly.*
D. The axle is ready to pull out.

*The bearing used is self-aligning type using an eccentric locking collar. To remove the bearing, loosen the allen screw and, with a punch, knock the collar clockwise (flange facing you). Locate and lock a new bearing in the same location before installing in the machine.

BEARING MAINTENANCE:

The outside bearing is a relube type. During prolonged usage in wet conditions it is best to relube the bearing. However, this is your option. Do not over-grease. Too much grease will cause the seals to rupture. Stop greasing when lube is visibly coming out from the seals.

CHAINS:

A. Lubrication - Use of 90 wt. gear oil has proven to be a good general purpose lubricate. Do not over-lubricate. Excess oil should be wiped off the top of the chain to avoid slinging the lubicant on belts, discs, etc. A paint brush is good to apply the proper amount of oil. There are many excellent chain lubes on the market. Contact your dealer or local motorcycle shop for aerosol types.

B. Tension - Idlers are provided for chain take-up due to normal wear. Proper chain tension is much by "feel". Tension is not too critical. Idlers are manually pushed or pulled into place and it would be very hard to provide too much tension. The front and main idlers are adjusted by loosening the hex bolt to push down on the idler. The R.H. rear idler bracket can be moved after loosing the 1/2" hex bolt above the roller. All chains should be adjusted with the slack side next to the idler. The opposite side should be fairly free of slack. An excessive amount of slack will remain if the idlers are adjusted against the tighter side. Adequate torque should be provided to the hex bolt to lock the idlers in place. Each idler will roll after locking. The main drive (coming from transmission) will require more attention to chain slack.

NOTE: Front idlers are locked in place between the top and bottom strand of chain. After the first 1/2 tank of fuel, relocate these idlers above the top strand of chain and adjust as necessary.

TIRES:

The tires are over-inflated at the factory and should be operated for at least three hours in this condition. After three hours of running, adjust the pressure to 2 1/2 pounds for normal use and a smooth ride. For sand or snow operation, better traction is obtained by lowering the pressure. A special tire gauge for checking tire pressure is available from Hustler Corporation or your Hustler dealer.

TORQUE CONVERTER MAINTENANCE:

The transmission pulley should be lubricated with WD-40 under the spring area where the moveable face operates back and forth. This will help prevent rust from forming here. Applying WD-40 to the engine pulley through the holes in the "bell" covering will also extend it's life and operation.

HUSTLER CORPORATION

P.O. Box 1283, Jonesboro, Arkansas 72401 / Phone [redacted]

NOTE: Read this manual carefully before operating your Hustler. The manual is designed to be continually updated as often as is practical.

The transmission has excellent steering characteristics. It does, however, cause some owners difficulty in shifting from forward to reverse. It is very important to make sure the transmission is in gear fully before giving your Hustler throttle. Damage will occur to the shifting system if the unit is not in gear (forward or reverse) fully. Read more about the transmission shift procedure in the following pages.

CAUTION: Do not operate at an excessive speed. The brakes are very sensitive. Sudden undue pressure on the laterals will cause the Hustler to stop very abruptly. A sudden stop may cause possible injury to driver and/or passengers. Hustler Corporation cautions operators not to use the horsepower for excessive speeds. THE ATV IS DESIGNED FOR OFF-THE-ROAD USE ONLY. DO NOT allow inexperienced operators to drive your Hustler without full knowledge of its operation. Injury to the driver and/or damage to the vehicle can result.

ENGINE: Kohler Model #440-2AMS

FUEL MIXTURE - Use only 2-cycle oil designed for air-cooled engines. When possible, use only 40 to 1 type oil (1 can to 5 gal. gas). 20 to 1 type oil would also mix 1 can to 5 gal. gas. Motorcycle shops are an excellent source for recommended oil. Follow instructions on each oil can label. DO NOT USE OUT-BOARD MOTOR OIL. Hustler Corporation has an excellent recommended oil, which has proven very effective for the proper lubrication of the engine. In northern states use readily available snowmobile oil.

Fuel Tank - Capacity: approximately 8 gallons.
Range: approximately 150 miles per tank or 45 minutes to 1 hour per gallon depending on load and terrain condition.
Shut-off valve: attached near bottom of tank.

Fuel Filter - Easily re-cleanable by disassembly (see illustration A). Before cleaning close fuel shut-off valve by turning valve clockwise. Start engine and allow to run until line and filter empty. This will prevent gasoline from spilling into engine compartment as you disassemble filter. Leave hoses connected at each end of filter. The element may then be cleaned with gasoline. Use caution in reassembly to be sure the glass tube is sealed against the ends.

[redacted] The Hustler utilizes an automotive float-type carburetor. Two adjustments are required, low and high speed. The low speed jet is located on top near the mounting flange. The high speed jet is located under the air filter box at the float bowl area.

Initial settings are as follows:

Low Speed (0-1/3 throttle) - 1 1/2 turn out

High Speed (1/3-open throttle) - at least 3/4 turn out

HIGH SPEED AND/OR HEAVY LOAD

If your Hustler engine does not attain maximum R.P.M.'s and has a tendency to "smother out" or lose power when operating under extreme conditions, the following are the two major trouble areas. Use the trouble shooting chart for additional suggestions.

1. Check for a fouled spark plug. Your engine will run on one cylinder and many times this is your engine problem. A new spark plug can foul or go bad as easily as an old one. Hustler Corporation recommends an NGK (brand name) B8EV found at most motorcycle shops. Always carry a spark plug. Symptoms of a fouled plug:

   A. Hard to start
   B. Loss of power
   C. Oil leaking from exhaust system
   D. Oil blowing out of muffler

2. Adjust the high speed jet to a lower setting. CAUTION: Do not adjust to a too lean of a mixture. An exact setting on the jet cannot be recommended because of varying conditions. Hot weather operation usually requires a richer mixture. Spark plug "readings" are your best answer. Let your dealer make the adjustment or do it yourself depending on your mechanical ability. At 20-cycle motorcycle mechanic is excellent to "read" the plugs.

   A. Initially set 3/4 turn out.
   B. Run your Hustler 3/4 to full throttle for approximately 100 yards.
   C. Immediately stop the engine and remove the spark plugs.
   D. The color of the electrode should be a light brown. If black, the mixture is too rich, causing loss of power. If white, the misture is too lean, causing the engine to over heat.
   E. Make the necessary adjustments and repeat the above procedure to obtain a proper spark plug electrode reading.

Symptons of a lean mixture under a heavy load:

1. Back fires
2. Quits by running out of gas
3. Knocks or pings

Do not operate the Hustler when these conditions arise. Your Kohler engine is not warranted from damage due to over-heating. Symptoms of a rich mixture:

1. Loss of power under a heavy load.
2. Spark plug fouling.

An engine shop service manual may be purchased from Hustler for $5.00.

Idle - Finer tuning from the intital settings may be necessary. Adjust the idle screw to a high idle and let engine run for approximately 1 minute. Adjust the low speed jet until engine runs at its highest RPM then lower idle with the adjust screw in the linkage. The top jet is out of adjustment when your engine will not accept the throttle at low speed.

Before storage, close the fuel shut-off valve and start engine. Run engine at idle until it stops. This uses up all fuel in the carburetor, therefore preventing varnish buildup.

Choking - Do not operate choke and throttle at same time. The choking system is ineffective if throttle is used simultaneously.

Air Filter - The K & N brand element Hustler uses should last forever. Recleaning it is described on the card located under the front seat. It must be re-oiled after cleaning to function properly. Your Kohler engine cannot be re-bored so clean air is essential. The cylinders are chrome plated to last very long. However, dirty air will severly shorten the life of your engine and costly repairs will result. The access clearance in this area is very close and the filter is not easy to service. However, the element can be extremely dirty without affecting performance. Clean the element when experiencing loss of power (running rich) or fouling spark plugs. Remove the rear screen for easy access. The filter oil does not lose its effectiveness with age. Periodically check the wing nut that holds the cover on.

Ignition - Your Kohler 440-2AMS utilizes a breakerless C.D.I. system. There are no service parts to replace. Trouble shooting this ignition has to be done by a trained mechanic. Contact Hustler Corporation for any assitance in ignition related problems. Use Champion N-3 or NGK B8EV spark plugs. A "hotter" plug will damage engine.

Starter - Periodically lubricate the starter bendix. Use only "Dry-Slide" lubricant. This special oil does not attract dust and dirt. Do not oil if "Dry-Slide" cannot be used. This oil can be obtained at sporting goods stores, cycle shops and Hustler Corporation. Component parts are available to rebuild starters.

Replacing Belt - The drive belt should last 200 to 300 hours depending on load and terrain conditions. Belts gradually wear out. To replace, remove the old belt by "rolling" it off the transmission pulley. (Illustration C). Put the new belt on the engine pulley and "roll" the new belt on.

TRANSMISSION

Two laterals ("bulldozer" type levers) operate your Hustler with little effort. A firm push on the levers engages the planetary gear drive for forward. Pulling back disengages the gears and operates the brake band. This provides very effective steering. Again, use caution at high speed.

Shift Lever - The lever located between the laterals under the front seat provides forward and reverse to each side. This lever operates either both sides simultaneously or each individual side separately. To achieve "counter rotation" (one side only in reverse), an additional small lever is located near the reverse lever to disengage the right shifter. The right hand shifter can be left in forward or reverse by throwing this lever to the left. Once disengaged from the main shift system the remaining left hand shifter can be actuated. This allows the Hustler to counterrotate in a zero turn. Both sides can also be put in reverse. It will take practice to understand when to use this Hustler exclusive feature of being able to "spin-on-a-dime". (See "Steering and Braking Procedures")

Remember the Following:

A. Shifts should be made a slow engine R.P.M.'s.

B. Partial engagement of the forward-reverse gear could cause loss of brakes. If this should occur, immediately apply parking brake to slow machine to a stop then re-engage. Always make certain the parking brake is in good working order. If properly engaged the transmission will not cause loss of brakes. Brakes DO NOT function with transmission in neutral.

C. When you feel the unit is not going fast enough, and you're sure the engine is properly tuned, try pushing harder on the levers. The forward gear bands may be slipping and could overheat the transmission, however, do not use brute excessive force. Many times the Hustler is performing well but the tires are spinning out, and working the levers harder will not correct this situation.

D. When attempting a steep hill that cannot be climbed, use the parking brake to stop your Hustler. The Skid Steer transmission will not brake in a normal manner while the vehicle is rolling backward. Pushing forward on the laterals will work as a brake to hold the vehicle and will stop the unit until the parking brake is applied. Use your parking brake if necessary to shift on a hill. However, make sure the brake will hold before shifting. If possible, avoid shifting on a hill.

E. Read your Skid-Steer Owner's Manual for further information.

TRANSMISSION SHIFTING PROCEDURES:

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The axle steel used is of the finest quality. Bending an axle is the result of abuse. Remove an axle by:

A. Remove bolt pinning axle to sprocket.
B. Remove tire.
C. Unbolt the outer bearing assembly.*
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The tires are over-inflated at the factory and should be operated for at least three hours in this condition. After three hours of running, adjust the pressure to 2 1/2 pounds for normal use and a smooth ride. For sand or snow operation, better traction is obtained by lowering the pressure. A special tire gauge for checking tire pressure is available from Hustler Corporation or your Hustler dealer.

TORQUE CONVERTER MAINTENANCE:

The transmission pulley should be lubricated with WD-40 under the spring area where the moveable face operates back and forth. This will help prevent rust from forming here. Applying WD-40 to the engine pulley through the holes in the "bell" covering will also extend it's life and operation.

THROTTLE CABLE MAINTENANCE:

Your throttle cable has been injected with 100% pure anti-freeze to prevent cold weather freeze ups. This should be done each season by your Hustler dealer. An injector is merely a pump oil can with a 1/4" hose attached. The hose is then placed over the disconnected engine end of the throttle cable to pump it full of anti-freeze.

KOHLER ENGINE

OWNER'S MANUAL

MODELS:

K295-2AX K340-2AS
K340-2AX K440-2AS
K340-2FA K250-2FA
K440-2LC

TWO CYLINDER

AXIAL FLOW, FREE AIR, AND STANDARD LIQUID COOLED TWO CYCLE ENGINES

KOHLER OF CANADA LTD.

Congratulations!

YOU HAVE JUST PURCHASED EQUIPMENT POWERED BY THE FINEST TWO-CYCLE ENGINE AVAILABLE. PLEASE TAKE A FEW MOMENTS TO REVIEW THIS MANUAL TO FAMILIARIZE YOURSELF WITH THE ENGINE AND ITS OPERATION. TO OBTAIN MAXIMUM PERFORMANCE AND LIFE, CAREFULLY FOLLOW FUEL, OIL AND MAINTENANCE RECOMMENDATIONS. THE MANUAL SERVES THIS PURPOSE WITH ILLUSTRATIONS, AND EASY-TO-FOLLOW INSTRUCTIONS.

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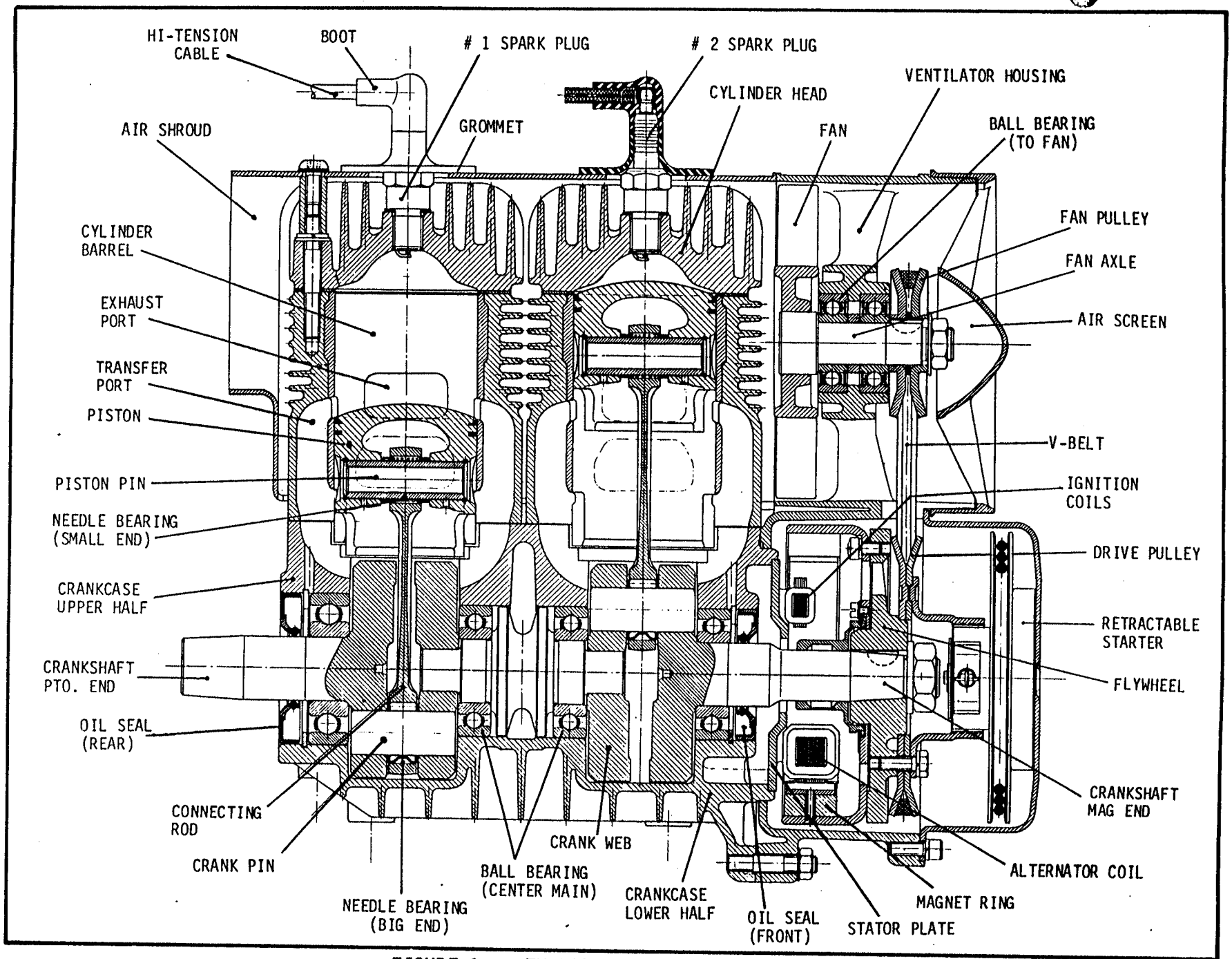
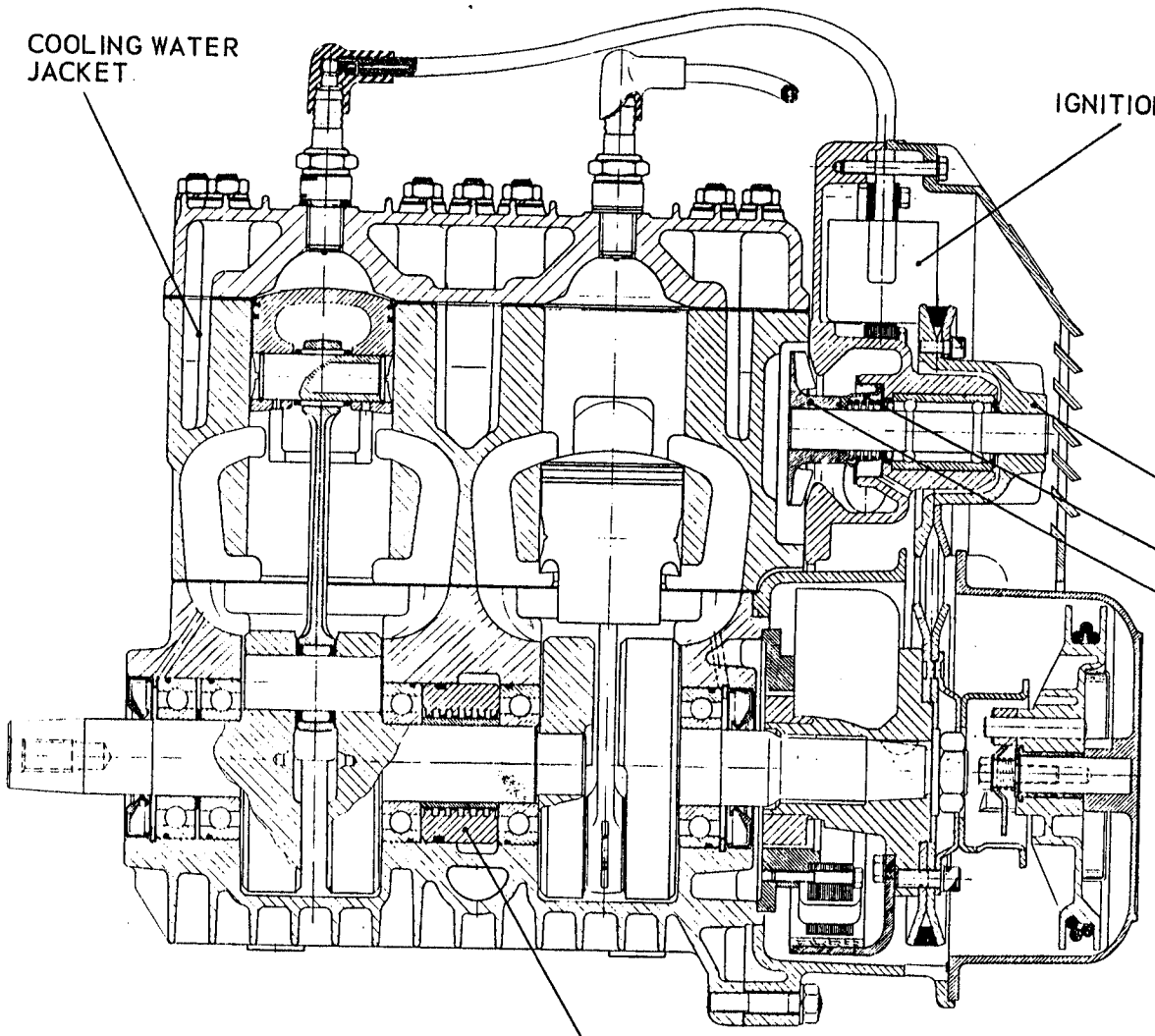
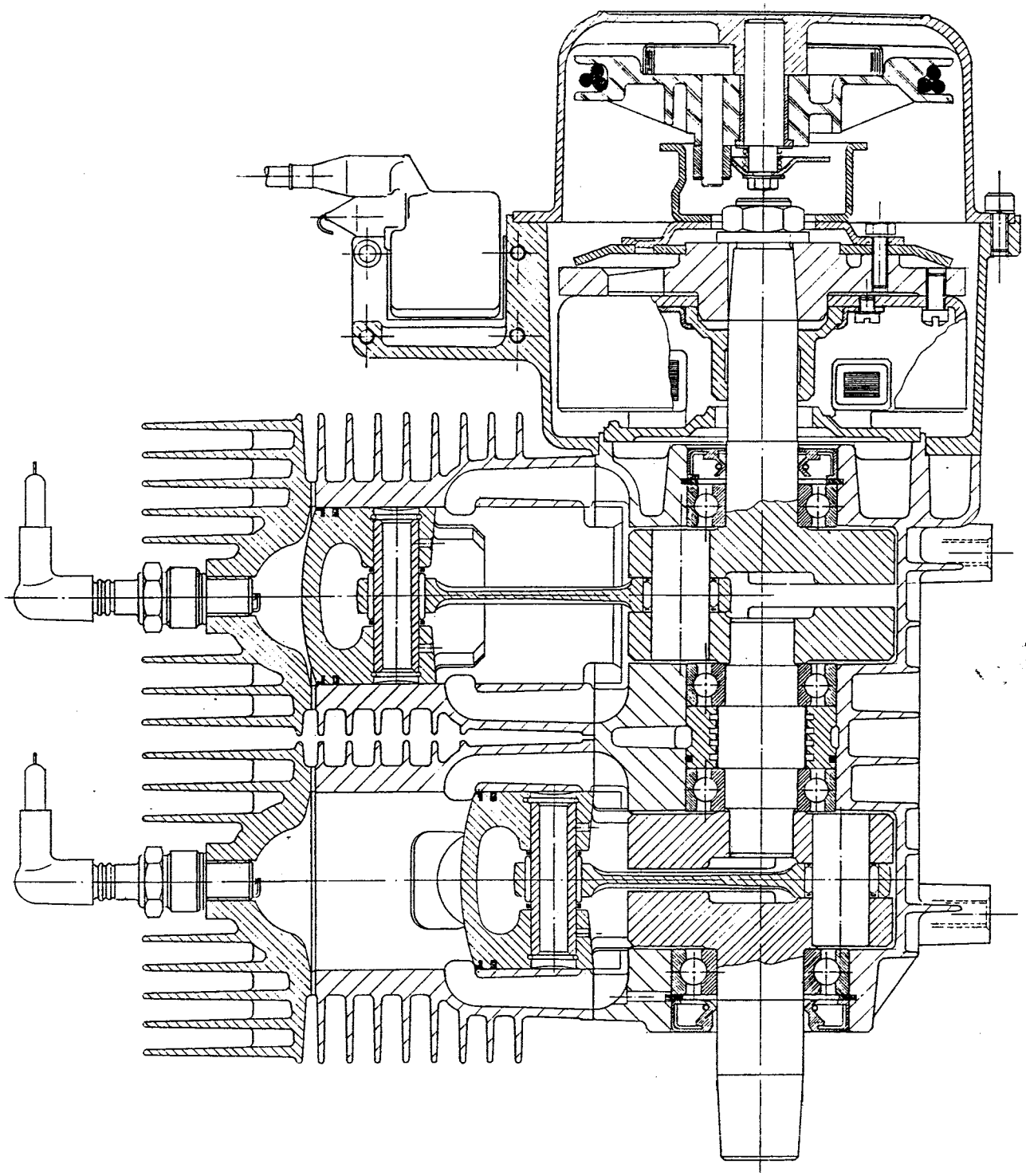


FIGURE 1 -- TYPICAL AXIAL FLOW 2-CYCLE ENGINE



TWO CYCLE ENGINE
LIQUID COOLED
STARTING BY RECOIL STARTER



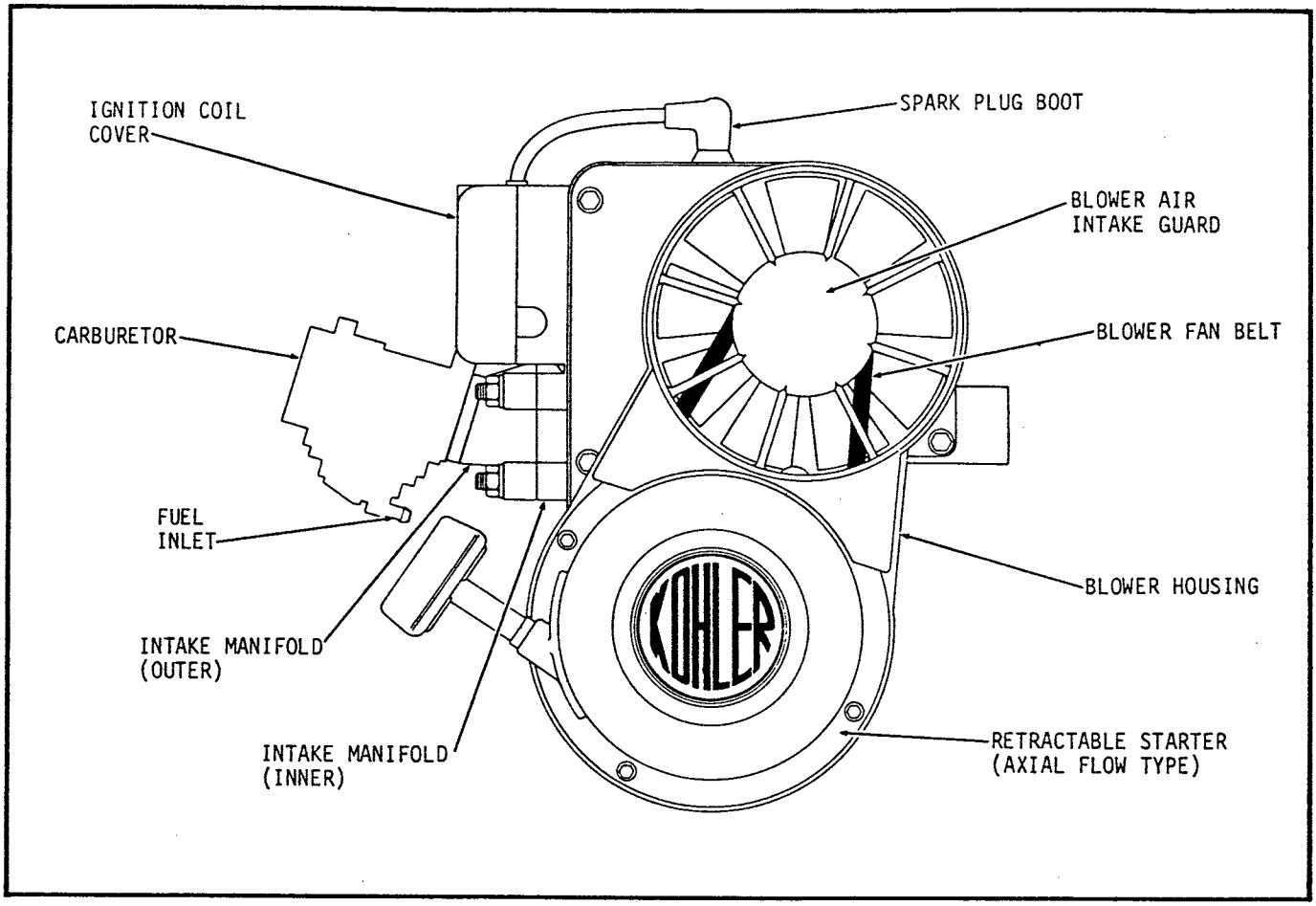


FIGURE 2 TYPICAL AXIAL FLOW 2-CYCLE ENGINE

OPERATING INSTRUCTIONS

GENERAL

This manual covers AX, AS, FA and LC models of the Kohler 2-Cycle, Two Cylinder Engines. Given the correct fuel and a reasonable amount of care, your engine will continue to give top performance throughout a long, trouble-free service life. The importance of using the right fuel mixture cannot be over-emphasized as this is the source of lubrication for your engine -- make careful note of the fuel mixture directions below. Other important hints for keeping your engine in top condition are stated elsewhere in this manual -- take a few minutes to review the material before opering your engine and save this manual for future reference. Some of the general specifications for each engine model are found in the chart below.

SPECIFICATION	K295-2AX	K340-2AX	▲K340-2AS	▲K440-2AS	▲K440-2LC	K340-2FA	K250-2FA
BORE	2.26"	2.44"	2.36"	2.68"	2.68"	2.44"	2.09"
STROKE	2.21"	2.21"	2.36"	2.36"	2.36"	2.21"	2.21"
DISPLACEMENT (CC)	290	338	338	436	436	3.38"	247
FUEL RATIO (GASOLINE TO OIL)	40-1	40-1	40-1	40-1	40-1	40-1	40-1
SPARK PLUG SIZE	14mm	14mm	14mm	14mm	14mm	14mm	14mm
SPARK GAP* (MAGNETO IGNITION)	.020"	.020"	▲.020"	▲.020"	▲.020"	.020"	.020"
ENGINE TIMING (BTDC)**	.090"	.090"	.090"	.090"	.090"	.090"	.090"
BREAKER POINT GAP**	.016"	.016"	▲.016"	▲.016"	▲.016"	.016"	.016"
WEIGHT (APPROX. LBS.)	54	54	64	64	64	51	51

**See spark plug recommendations.* ***These items should be set by 2-cycle engine specialists using special timing procedures and tools – settings provided for reference only.*

▲C. D. I. ignition systems use surface gap plugs

SAFETY PRECAUTIONS

- Do not add fuel while engine is running. Stop engine and, if possible, allow cooling period to prevent spilled fuel from igniting on contact with hot engine parts.
- Make sure ignition switch is in "OFF" position and spark plug disconnected before working on engine.
- Make sure all safety guards on engine and driven equipment are in proper position and secure.
- Make sure hands, feet and clothing are at a safe distance from any movable parts prior to starting.
- Do not operate engine in closed building unless exhaust is piped safely outside.

PRE-START INSTRUCTIONS

COOLING: Make sure baffles and cooling shrouds are in place and tight. Air intake openings must be kept clean and unrestricted at all times.

Make sure the radiator hose clamps are in place and tight on L. C. models.

RUN-IN (NEW ENGINE): FOR THE FIRST TANK ONLY, USE 20 TO 1 OIL MIX. During the first hour, run for short periods of time at varying speeds up to 3/4 throttle. Avoid operation at low and continuous speeds as this causes build-up of heat during warm weather or heavy load conditions. After first hour, operate normally to full throttle. No further "Babying" of the engine is necessary. Subsequent mixture, use 40:1 rated oil - see chart below.

BATTERY: If battery has been removed or disconnected for any reason, make sure that the negative (-) terminal is connected to ground when battery is reinstalled.

FUEL MIXTURE: Mix gasoline (92 octane minimum) with SAE 30 or SAE 40 two-cycle (air-cooled type) engine oil* rated at 40 to 1 mix. The Premium grade gasoline may be especially desirable for the LC, FA and Axial Flow models. To insure the proper mixture, pre-mix fuel thoroughly in separate container before adding to vehicle fuel tank. When pre-mixing, pour about 1 gallon into the container first then add the oil and agitate thoroughly before pouring in the rest of the gasoline. Agitate the fuel again after final quantity of gasoline is added. Refer to the chart below for mixing fuel in the correct ratio with some common size containers.

40 TO 1 Ratio	GASOLINE CONTAINER CAPACITY					
(GAS TO OIL)	1 GALLON	2 GALLONS	3 GALLONS	4 GALLONS	5 GALLONS	6 GALLONS
OIL AMOUNT	4 ounces	8 ounces	12 ounces	16 ounces	20 ounces	24 ounces

**The new non-or-low leaded gasolines have not been approved for 2-cycle engines.*

STARTING PROCEDURE

If engine has been out in snow, make sure air intake or baffle is cleared before attempting to start.

CAUTION: Throttle must move freely to prevent accidental sticking in running position during start-up. Check for freedom of movement.

1. CHOKE: Pull choke full on in cold weather. Little or no choking required with warm engine. After engine starts, open choke.
2. PRIME: If vehicle has primer button, press button several times before attempting to start (when cold) Choking not normally required with primer.
3. THROTTLE: Hold throttle slightly off idle when cranking engine.
4. CRANK ENGINE: (A) RETRACTABLE START MODELS: Turn ignition switch ON, pull starting rope in quick, steady motion. Do not allow handle to snap back.

   (B) ELECTRIC START MODELS: Move switch to START position -- release as soon as engine starts (switch will remain in "ON" position). Do not continue cranking if engine fails to start after 20 seconds. Allow starter to cool off before making another attempt. Use retractable starter if battery is low or dead.

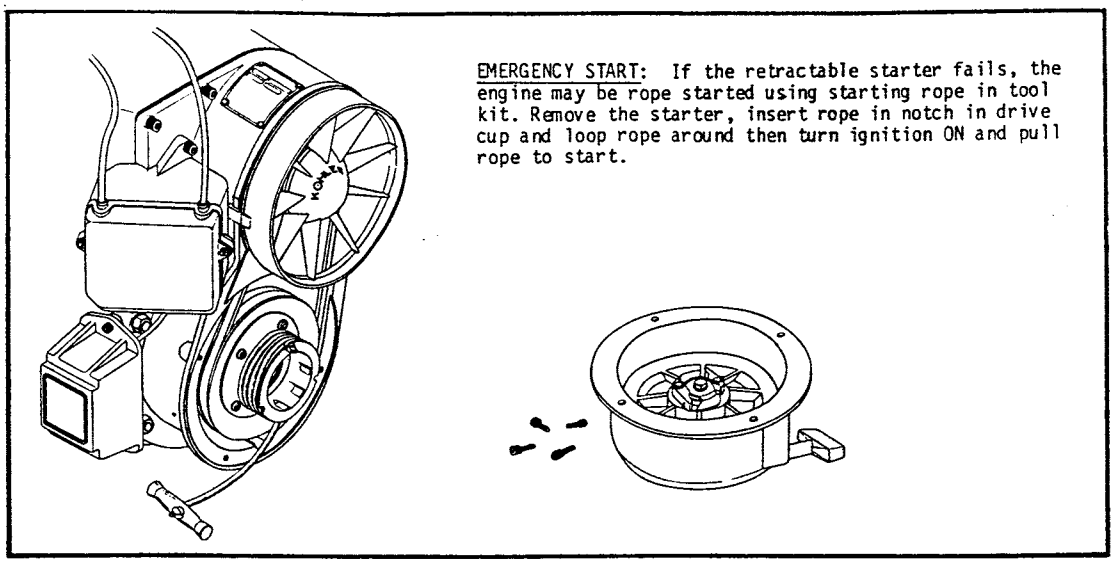


FIGURE 3 REMOVE RETRACTABLE STARTER TO ALLOW EMERGENCY ROPE START

STOPPING PROCEDURE

1. THROTTLE: Release throttle and allow engine to idle for a few moments under no load.

2. IGNITION SWITCH: Move switch to OFF position.

EMERGENCY STOPPING: After operating under heavy load in warmer weather, engine may be hot enough to continue running after ignition is turned off. To stop the engine under this condition, pull full choke and open throttle to shut off air and stall engine.

OPERATION

WARM-UP: Allow gradual warm-up by operating at moderate speed and load for the first few minutes after starting. DO NOT attempt to race or place engine under heavy load immediately -- performance is best after engine is thoroughly warmed.

IDLING: Avoid idling or slow speed operation for prolonged periods as this can result in crankcase flooding, carbon accumulation in head, and spark plug fouling.

MARINE APPLICATION: DO NOT operate engine without flame arrestor properly installed on top of carburetor.

SERVICE

ENGINE — GENERAL SERVICES

CYLINDER HEAD: Poor performance may be caused by carbon buildup inside cylinder head. If spark plug is badly fouled, have head removed and cleaned at the first opportunity. This service should be performed only at an authorized service center for serious damage can result if done improperly.

DRAIN CRANKCASE: Crankcase should be drained occasionally since accumulation of fuel and oil in crankcase may throw the fuel-air ratio off and cause erratic operation. Remove hex.-head screw at low point on crankcase just below the carburetor. After draining fuel, reinstall and tighten screw.

COOLING SYSTEM

Axial Flow models are cooled by a belt driven blower. Never operate your engine with missing or loose air shroud covers or blower fan. Keep air intake openings on vehicle and engine clean and unobstructed at all times to prevent overheating. Proper belt tension must be maintained on Axial Flow models for proper cooling. Don't operate Axial Flow engines with broken or badly frayed belts.

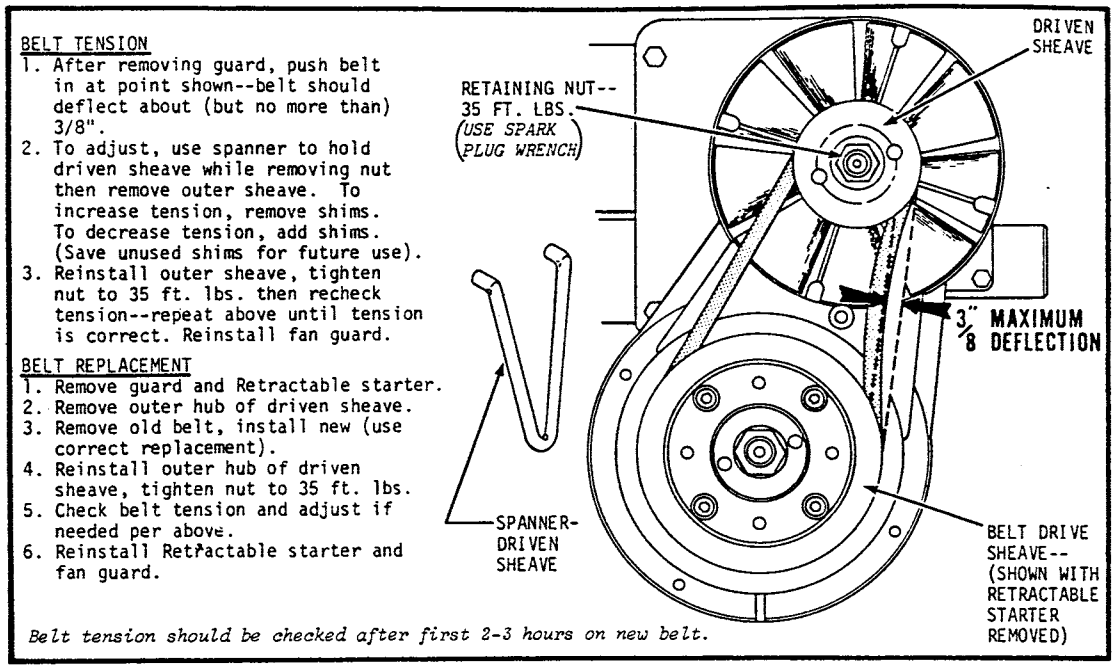


FIGURE 4 BELT TENSION, REPLACEMENT – AXIAL FLOW MODELS

L. C. models are cooled by a belt driven water pump with radiator and/or heat exchanger. Never operate your engine without cooling liquid in engine. Keep air inlet to radiator clean and unobstructed at all times to prevent overheating. Proper belt tension must be maintained on water pump for proper cooling. Do not use frayed belts.

BELT TENSION:

1. After removing guard, push belt in at point shown -- belt should deflect about (but no more) 3/8".

2. To adjust, hold driven sheave while removing screws then remove outer sheave. To increase tension, remove shims. To decrease tension, add shims. (Save unused shims for future use.)

3. Reinstall outer sheave, tighten screw to 50 in. lbs., then recheck tension -- repeat above until tension is correct. Reinstall pulley guard.

BELT REPLACEMENT:

1. Remove guard and retractable starter.

2. Remove outer hub of driven sheave.

3. Remove old belt, install new one (use correct replacement).

4. Reinstall outer hub of driven sheave, tighten screw to 50 in. lbs.

5. Check belt tension and adjust if needed as explained above.

6. Reinstall retractable starter and guard.

FUEL SYSTEM

Since a 2-cycle engine must rely on the fuel it receives as its sole source of lubrication, make sure the fuel meets specifications and is properly mixed and also that the fuel system is in accordance to deliver the correct amount of fuel. Any restriction to flow of fuel must be avoided as engine damage will result from lack of lubrication -- watch out for pinched or kinked fuel lines, clogged fuel filters, blocked air cleaner or silencers, cracked or loose impulse tube or fittings, plugged vent hole in filler cap on tank.

Even the exhaust system influences fuel flow on 2-cycle engines. Make sure mufflers, straight pipes, megaphone, etc. are suitable for use on your engine. The wrong design can cause restrictions or excessive back pressures. The exhaust system must be "tuned" to help draw the fuel charges in and at the same time eject burned gases without overscavenging.

CARBURETOR: Don't change carburetor settings as this affects the amount of lubrication your engine receives. Since the optimum setting varies with each application due to differences in carburetors, mufflers, power requirements, etc., the settings are not published in this manual. Please see EQUIPMENT MANUFACTURERS' OWNER'S MANUAL.

IGNITION SYSTEM

With the exception of the spark plug, service, repair, replacement or adjustment of ignition system components should be done only by a qualified engine specialist since most such work usually requires a rather complicated retiming procedure with special precision timing tools.

*SPARK PLUG HEAT RANGE: The heat range is determined by how fast a plug transfers heat away from its electrodes. A cold type plug generally has a relatively short insulator nose which allows rapid transfer of heat, while a hot plug has a longer nose which protrudes further into the combustion chamber so that it runs hotter and conducts heat away less rapidly. A plug must get hot enough to burn off combustion deposits, but at the same time cool enough so that its heat does not pre-ignite the fuel mixture. Use of a plug which is too hot may cause very high combustion chamber temperatures, resulting in burned pistons or other engine damage. Use of a too cold plug will result in spark plug fouling and call for continued changing of the plugs. It may be advantageous, when operating under varying conditions, to carry several sets of plugs and periodically change from a hot plug to a cold plug.

SPARK PLUG SELECTION: Observe color of electrodes when removing plug as this often gives a good indication of operating conditions. Take the necessary corrective action if other than normal operation is indicated -- the indicators are:

BLACK	TAN	WHITE
CARBON FOULING	NORMAL	OVERHEATING

Replace plug if carbon fouled or if porcelain is cracked. Do not sandblast, scrape or otherwise attempt to service a plug that is in poor condition -- best results are obtained with a new plug. Use plugs selected from the accompanying chart only.

***SPARK GAP . . . . . .020"**
TIGHTENING TORQUE — 14MM . . . . . 18 FT.LBS.

*Does not apply to surface gap plugs.

RETRACTABLE STARTERS

Two types of retractable starters are used. Service is not normally required on either type. Rope replacement procedure varies on the two types -- use the appropriate procedure for the type on your engine in the event the rope breaks. If the rewind spring breaks, have this replaced at an authorized service center -- don't attempt to disassemble and repair starter.

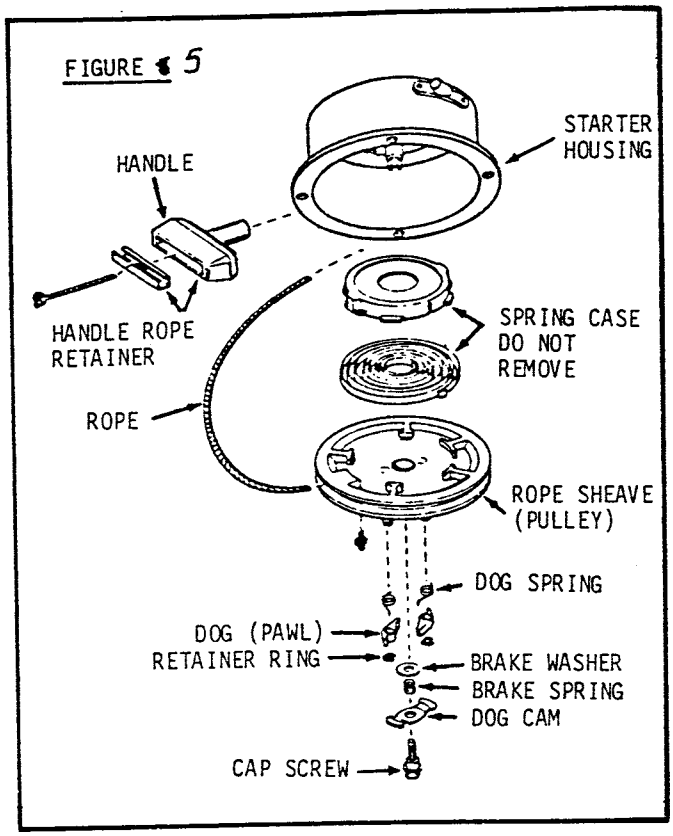


FIGURE 5 RETRACTABLE STARTER – DISASSEMBLED FOR ROPE REPLACEMENT

ROPE REPLACEMENT - Figure 5: Partial disassembly of this type starter is required for replacing the rope. Refer to the accompanying illustration and use the following procedure to replace the rope on this type starter.

STEP 1: Remove any pieces of the broken rope from the starter pulley and handle. Fuse both ends of the new rope.

STEP 2: Install one end of new rope to handle.

STEP 3: To pre-tension the pulley, rotate it in counterclockwise direction about 3-1/2 to 4 turns then hold the pulley and thread the rope end thru the rope guide and through hole in rope sheave (pulley). As the tension is held in stall, knot end of rope, pull tight and let knot go into recess in pulley. Let tension off by letting rope rewind.

CAUTION: Do not attempt to disassemble this starter as rewind spring can unwind violently if improperly handled. Have starter repaired at authorized service centers only.

ENGINE MOUNTS

Check engine mounting at frequent intervals to make sure these are tight. This is especially important after running over rough terrain. If mounting bolts work loose, the resulting vibration may loosen and weaken other parts and cause serious damage. Check the vehicle drive too -- vibration caused by loose pulleys, unevenly worn belts, etc., may be transmitted back to the engine.

PREPARATION FOR STORAGE

Use the following procedure to prepare engine for off-season storage.

1. Remove fuel line at carburetor, start and run engine at idle until it stops. This uses up fuel in carburetor.
2. Drain fuel from tank to prevent gumming and use of stale fuel at the start of the next season.
3. Remove spark plug, add 1 tablespoon of SAE 30 weight oil to cylinder.
4. Turn engine over several times by hand to coat cylinder with oil then replace spark plug.
5. Clean up spark plug boot, cable and outside of engine.
6. Close choke and cover air intake to prevent dust and dirt from entering.
7. Plug or cover exhaust pipe.

TROUBLE ANALYSIS

The pre-requisites for easy starting and top performance are: proper fuel, good ignition and good compression. Problems which may occur during normal usage are listed below along with probable causes. The remedy is, in most cases, obvious. If the problem is major or if it persists after simple corrective steps are taken, return engine to the nearest service center for repair.

HARD STARTING OR WON'T START

LACK OF FUEL

1. Tank empty.
2. Line pinched or disconnected.
3. Plugged vent hole in filler cap.
4. Fuel filter plugged.
5. Impulse tube loose or pinched.

POOR OR NO IGNITION SPARK

1. Ignition not turned on.
2. Spark plug wet or carbon fouled.
3. Spark electrodes broken or improperly gapped.
4. High tension lead loose or broken.
5. Breaker points damp, pitted
6. Ignition switch faulty.
7. Ignition coil faulty.
8. Condenser faulty.

INCORRECT FUEL - AIR MIXTURE

1. Engine flooded, overchoking.
2. Fuel stale, doesn't vaporize properly.
3. Water in fuel.
4. Dirt or gum forming to restrict fuel
5. Carburetor loose -- too much air.

POOR COMPRESSION

1. Spark plug loose.
2. Cylinder head loose.
3. Cylinder head gasket "blown".
4. Piston rings broken.
5. Piston and cylinder badly worn.

RUNNING TROUBLES

LACKS POWER

1. Poor quality or improperly mixed fuel.
2. Water in fuel.
3. Air inlet restricted.
4. Exhaust port and/or muffler plugged.
5. Loose or improperly adjusted carburetor.
6. Ignition timing wrong.
7. Poor compression.

RUNS UNEVENLY

1. Spark plug in poor condition.
2. Wrong spark plug.
3. High tension lead loose.
4. Breaker points pitted.
5. Fuel bubbles in carburetor from overheating.

POOR ACCELERATION (ENGINE "FOURSTROKES")

1. Choke closed.
2. Carburetor improperly adjusted
3. Dirt on carburetor inlet needle.
4. Exhaust port heavily coated with carbon.

WILL NOT ACCELERATE

1. Carburetor idle mixture too lean.
2. Carburetor diaphragm coverplate loose.
3. Carburetor diaphragm gasket leaking.
4. Carburetor and/or manifold loose and leaking.
5. Carburetor malfunctioning.

BACK FIRES THRU CARBURETOR

1. Insufficient fuel.
2. Spark plug "too hot".
3. Water in carburetor.
4. Air leakage from faulty gaskets or oil seals.

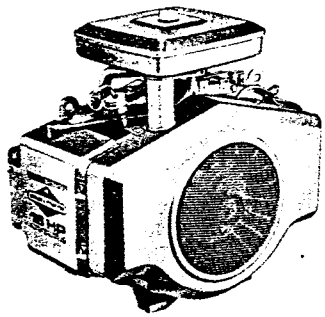
PINGS UNDER HEAVY LOAD, FULL THROTTLE

1. Ignition timing too early.
2. Spark plug wrong heat range.
3. Carburetor main fuel set too lean.
4. Combustion chamber coated with carbon.

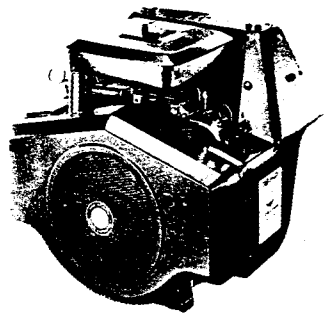
ENGINE STOPS

1. Fuel tank empty.
2. Vapor locks.
3. Ignition inadvertently turned off.
4. Exhaust pipe plugged.
5. Stalls from overload.
6. Clogged, restricted cooling system.
7. Cooling shrouds not in place or fan damaged.
8. Insufficient oil content in fuel.
9. Fuel line between tank and pump plugged
10. Impulse tube plugged, kinked or loose.
11. Carburetor inlet screen or passages clogged.

*Not applicable to C. D. I. ignition systems with surface gap plugs.



Briggs & Stratton
OPERATING AND MAINTENANCE INSTRUCTIONS
MODELS
401400 to 402499
421400 to 422499



IN THE INTEREST OF SAFETY

DO NOT RUN ENGINE AT EXCESSIVE SPEEDS. Operating an engine at excessive speeds increases the hazard of personal injury. DO NOT TAMPER WITH PARTS WHICH MAY INCREASE THE GOVERNED SPEED.

For rotary lawnmower safety, A.N.S.I. Standard Safety Specifications for Power Lawn Mowers specify a maximum blade tip speed of 19,000 feet per minute (96.5 meters per second), primarily to reduce the hazard from thrown objects.

Rotary lawnmower manufacturers select the governed top speed of the engine based on the length and design of the cutter blade and design of other mower parts.

All rotary lawnmowers should be checked for conformance to the A.N.S.I. Standard Safety Specifications for Power Lawn Mowers on blade tip speed, if the engine is repaired or replaced, or if mower parts are changed.

DANGER: GASOLINE VAPOR IS HIGHLY FLAMMABLE. Refuel outdoors preferably, or only in well ventilated areas.

DO NOT STORE, SPILL OR USE GASOLINE NEAR AN OPEN FLAME or devices such as a stove, furnace, water heater which utilize a pilot light, or devices that can create a spark.

If gasoline is accidentally spilled, move machine away from area of spill and avoid creating any source of ignition until gasoline vapors have dissipated.

DO NOT REFUEL GASOLINE TANK WHILE ENGINE IS RUNNING.

DO NOT RUN THE ENGINE IN AN ENCLOSED AREA. Exhaust gases contain carbon monoxide, an odorless and deadly poison.

TO PREVENT ACCIDENTAL STARTING always remove the spark plugs from the engine, before working on the engine or equipment driven by the engine.

Except for adjustment; DO NOT operate engine if air cleaner or cover directly over carburetor air intake is removed. Removal of such part could create a fire hazard.

DO NOT OPERATE WITHOUT A MUFFLER OR TAMPER WITH THE EXHAUST SYSTEM. Damaged mufflers or spark arresters could create a fire hazard. Inspect periodically and replace if necessary.

DO NOT STRIKE FLYWHEEL with a hard object or metal tool as this may cause flywheel to shatter in operation, causing personal injury or property damage. Use Briggs & Stratton approved tools only, and if in doubt, contact your Authorized Briggs & Stratton Service Center.

ALWAYS KEEP HANDS AND FEET CLEAR OF ROTATING PARTS.

IN THE INTEREST OF ENVIRONMENT

A muffler which leaks because of rust or damage can permit an increased exhaust noise level. Therefore, examine the muffler periodically to be sure it is functioning effectively. To purchase a new muffler, see SERVICE AND REPAIR INFORMATION.

WARNING: If this engine is not equipped with a spark arrester and is to be used on any forest covered, brush covered, or grass covered unimproved land, before using on such land a spark arrester must be added to the muffler. The arrester must be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. See your Authorized Briggs & Stratton Service Center for spark arrester muffler options.

SERVICE & REPAIR INFORMATION

If service or repair is needed, contact an Authorized Briggs & Stratton Service Center. To serve you promptly and efficiently, the Service Center will need the model, type and code number on your engine.

Each Authorized Service Center carries a stock of original Briggs & Stratton repair parts and is equipped with special service tools. Trained mechanics assure expert repair service on all Briggs & Stratton engines.

Major engine repairs should not be attempted unless you have the proper tools and a thorough knowledge of internal combustion engine repair procedure.

yellow pages

Your nearest service center is listed in the "Yellow Pages" under "Engines, Gasoline" or "Gasoline Engines." He is one of over 25,000 authorized dealers available to serve you.

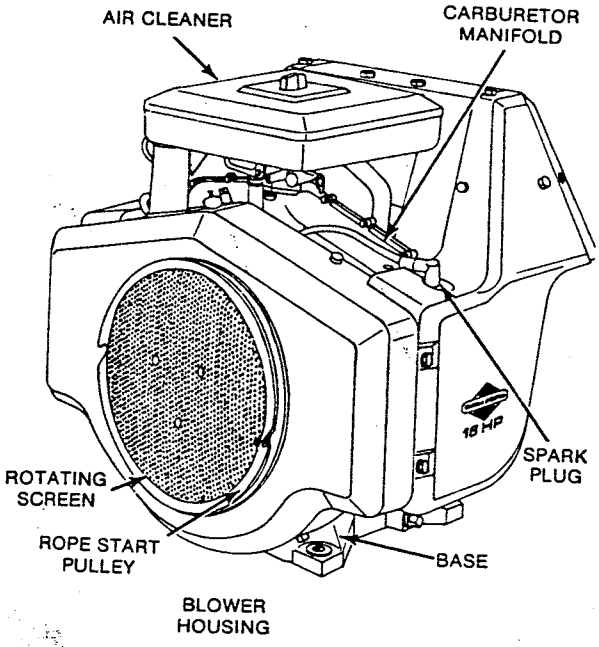
This illustrated book includes common specifications, and detailed information covering the adjustment, tune-up and repair procedures for Twin Cylinder models. It is available from any Authorized Briggs & Stratton Service Center. Order as Part Number 271172.

4 CYCLE ENGINE
BRIGGS & STRATTON
MILWAUKEE WISCONSIN U.S.A.

FORM NO. 271123-8 60
PRINTED IN U.S.A.

BRIGGS & STRATTON CORP.
Milwaukee, Wisconsin 53201

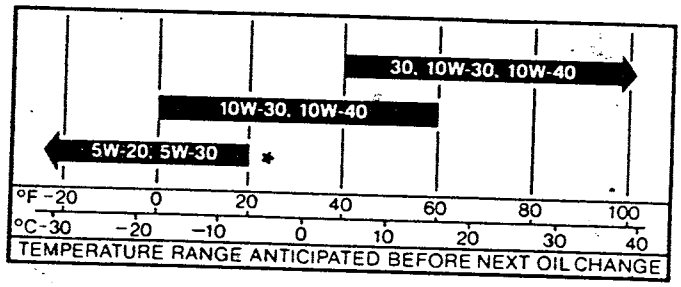
BEFORE STARTING



READ THE OPERATING INSTRUCTIONS OF THE EQUIPMENT THIS ENGINE POWERS

Use a high quality detergent oil classified "For Service SC, SD, SE or MS." Detergent oils keep the engine cleaner and retard the formation of gum and varnish deposits. Nothing should be added to the recommended oil.

RECOMMENDED SAE VISCOSITY GRADES

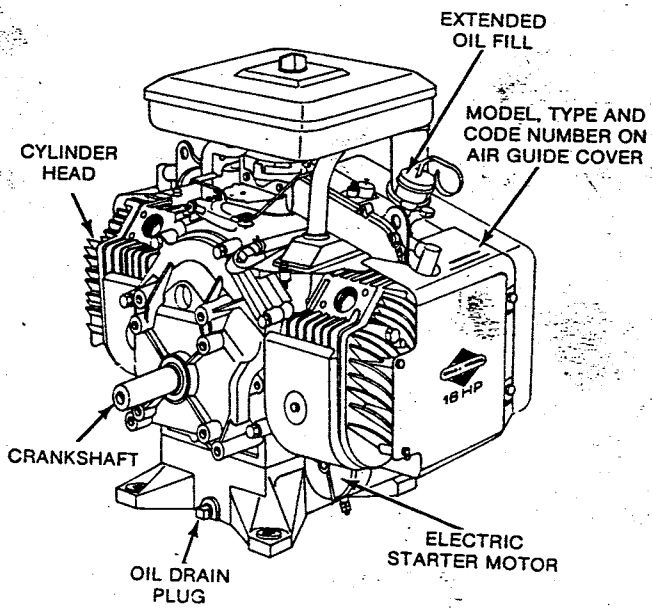


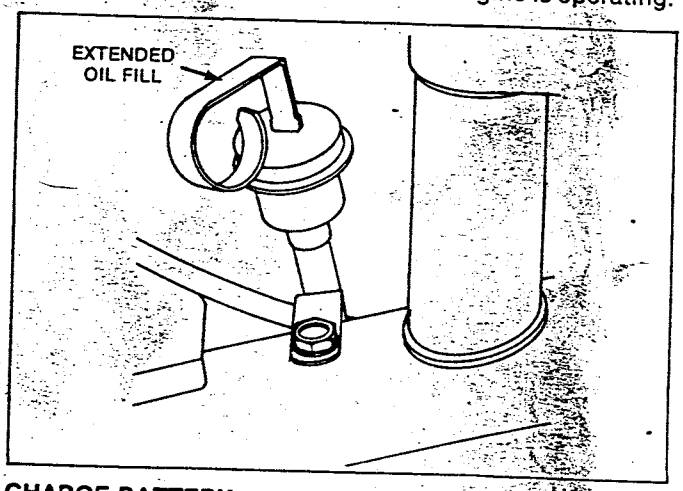
*If not available, a synthetic oil may be used having 5W-20, 5W-30 or 5W-40 viscosity.

FILL CRANKCASE WITH OIL

Place engine level. Clean area around oil fill before removing dipstick.

EXTENDED OIL FILL. Remove cap and dipstick. **FILL TO FULL MARK** on dipstick, POUR SLOWLY. Capacity 3 pints (1.42 liters). When checking oil level, push dipstick assembly firmly but slowly until cap bottom on tube. **DO NOT OVERFILL.** Dipstick assembly must be securely assembled into tube at all times when engine is operating.





CHARGE BATTERY

Charge battery before use on engines equipped with (OPTIONAL) 12 volt electric starter motor. See equipment manufacturers' recommendations.

FILL FUEL TANK

Use clean, fresh, "regular grade leaded or low-lead" gasoline. DO NOT MIX OIL WITH GASOLINE.

NOTE: The use of "lead-free" gasoline produces fewer combustion deposits, but may shorten valve life if carburetor adjustment is too lean.

3M NO. 271123-8/80
NTED IN U.S.A.

ADJUSTMENTS

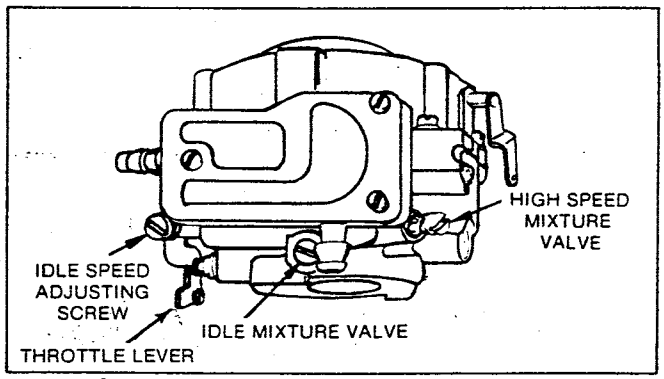
CARBURETOR ADJUSTMENTS

Minor carburetor adjustment may be required to compensate for differences in fuel, temperature, altitude or load.

THE TWIN CYLINDER ENGINE CARBURETOR FUEL MIXTURE ADJUSTMENT PROCEDURE IS UNIQUE. ADJUST CARBURETOR FUEL MIXTURE IN THE ORDER STATED AS FOLLOWS.

Turn the high speed mixture valve clockwise until it just closes. CAUTION: Valves may be damaged by turning them in too far. Open needle valve 1-1/2 turns counterclockwise. Close the idle mixture valve in the same manner, and open it 1-1/2 turns. This initial adjustment will permit the engine to be started, and warmed up prior to final adjustment.

NOTE: All carburetor adjustments must be made with air cleaner on engine.



Start engine and place equipment speed control lever in idle position. Hold carburetor throttle lever against idle stop, and adjust idle speed screw to obtain approximately 1400 RPM. Turn idle mixture valve slowly clockwise (lean mixture) until engine misses or speed drops. Then turn idle mixture valve 1/2 turn counterclockwise. Place equipment speed control lever in fast position. Turn high speed mixture valve slowly clockwise (lean mixture) until engine misses or speed drops. Then turn high speed mixture valve 1/2 turn counterclockwise.

If the engine does not accelerate properly, re-adjust high speed mixture valve approximately 1/8 turn counterclockwise (rich).

CONTROL ADJUSTMENTS

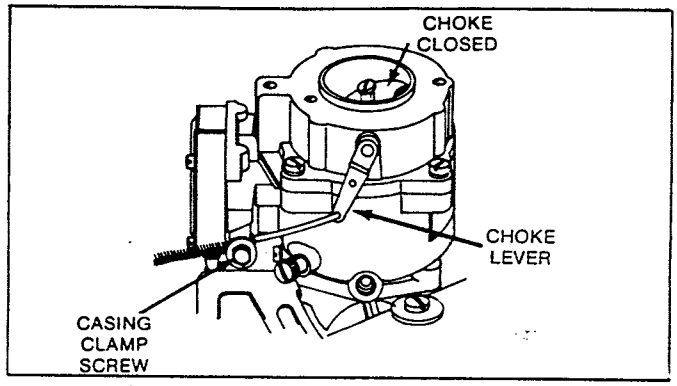
Proper choke and speed control operation is dependent upon proper adjustment of remote controls on the powered equipment.

TO CHECK OPERATION OF CHOKE CONTROLS:

Move remote control lever to "choke" position. The carburetor choke should be closed.

TO ADJUST CHOKE:

Place remote control lever on equipment in "CHOKE" position. Loosen control casing clamp screw. Move control casing and wire until choke is completely closed. Tighten casing clamp screw.

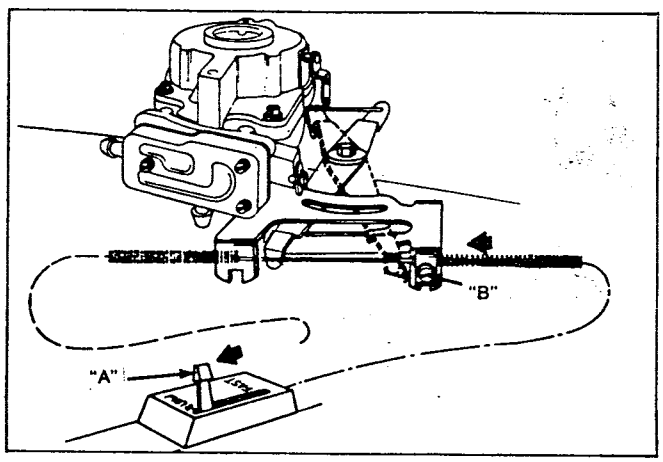


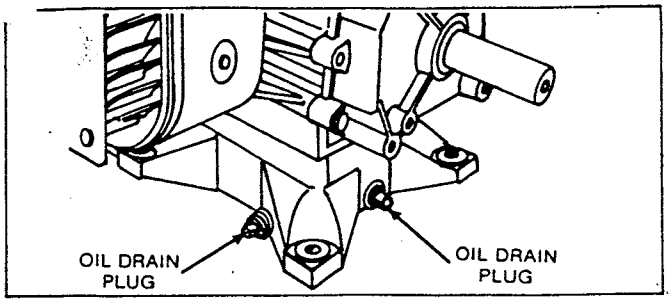
GOVERNOR SPEED CONTROL ADJUSTMENT

The acceptable operating speed range is 1800 to 3600 RPM. Idle speed is 1400 RPM. The manufacturer of the equipment on which the engine is used, specifies the top governed no load speed at which the engine may be operated. DO NOT EXCEED this speed.

Engine speed is controlled by movement of the control lever. Move control lever on equipment, "A", to slowest engine speed possible. Throttle lever on carburetor should touch idle speed adjusting screw. To adjust, loosen control casing clamp screw "B." Move control casing and wire in direction shown by arrow until throttle lever touches idle speed adjusting screw on carburetor. Retighten casing clamp screw "B."

CAUTION: Throttle lever on carburetor MUST touch idle speed adjusting screw when equipment control lever is in slowest position.



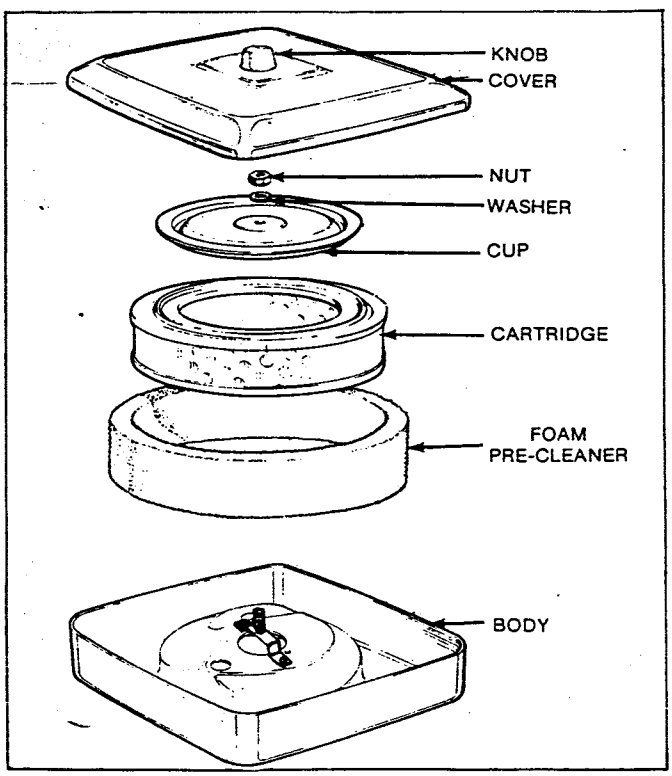


TO SERVICE DUAL ELEMENT AIR CLEANER

Clean and re-oil foam pre-cleaner at three month intervals or every 25 hours, whichever occurs first.

NOTE: Service air cleaner more often under dusty conditions.

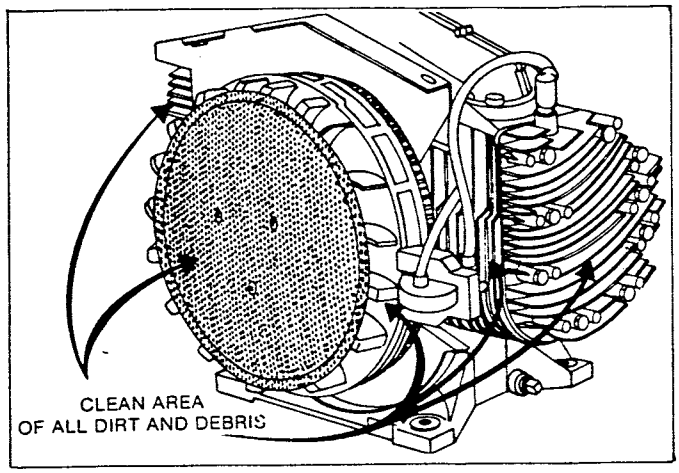
1. Remove knob and cover.
2. Remove foam pre-cleaner by sliding it off the paper cartridge.
3. a. Wash foam pre-cleaner in kerosene or liquid detergent and water.
   b. Wrap foam pre-cleaner in cloth and squeeze dry.
   c. Saturate foam pre-cleaner in engine oil. Squeeze to remove excess oil.
4. Install foam pre-cleaner over paper cartridge. Reassemble cover and screw down tight.



Yearly or every 100 hours, whichever occurs first, remove paper cartridge. Clean by tapping gently on flat surface. If very dirty, replace cartridge, or wash in a low or non-sudsing detergent and warm water solution. Rinse thoroughly with flowing water from inside out, until water is clear. Cartridge must be allowed to stand and air dry thoroughly before using. Service more often if necessary.

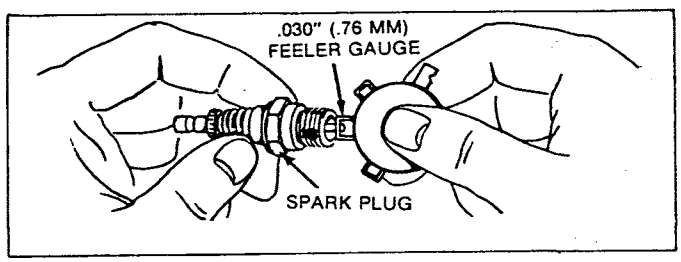
CAUTION: Petroleum solvents, such as kerosene, are not to be used to clean cartridge. They may cause deterioration of the cartridge. DO NOT OIL CARTRIDGE. DO NOT USE PRESSURIZED AIR TO CLEAN OR DRY CARTRIDGE.

CLEAN COOLING SYSTEM — Grass, chaff or dirt may clog the rotating screen and the air cooling system, especially after prolonged service in cutting tall dry grasses. Yearly or every 100 hours, whichever occurs first, remove the blower housing and clean the areas shown to avoid overspeeding, overheating and engine damage. Clean more often if necessary.



DANGER: Periodically clean muffler area to remove all grass, dirt and combustible debris.

SPARK PLUGS — Clean and reset gap at .030" every 100 hours of operation.



CAUTION: Do not blast clean spark plugs. Spark plug should be cleaned by scraping or wire brushing and washing with a commercial solvent.

Sparking can occur if wire terminals do not fit firmly on spark plugs. Reform terminals if necessary.

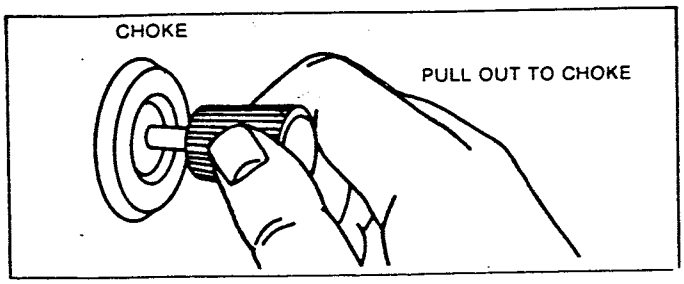
REMOVE COMBUSTION DEPOSITS every 100-300 hours of operation. Remove cylinder heads and cylinder head shields. Scrape and wire brush the combustion deposits from cylinder, cylinder heads, top of pistons and around valves. Use a soft brush to remove deposits. Re-assemble gaskets, cylinder heads and cylinder head shields. Turn screws down finger tight, with the three longer screws around the exhaust valve, if so equipped. Torque cylinder head screws in a staggered sequence to 165 inch pounds (18.65 Nm).

SPARK ARRESTER EQUIPPED MUFFLER — If engine muffler is equipped with spark arrester screen assembly, remove every 50 hours for cleaning and inspection. Replace if damaged.

STARTING

OPEN FUEL VALVE on engines so equipped.

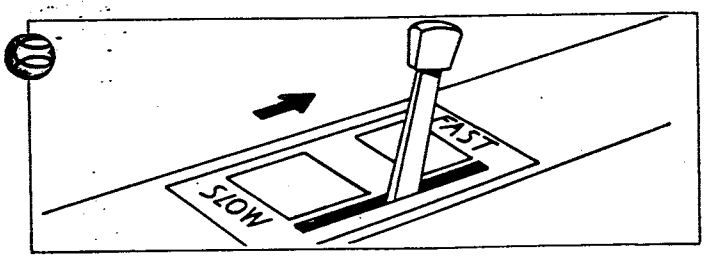
CHOKE ENGINE: Move equipment control lever to "CHOKE" position.



NOTE: This should fully close choke on carburetor. If it does not, remote control must be re-adjusted. See ADJUSTMENT section.

NOTE: A warm engine requires less choking than a cold engine.

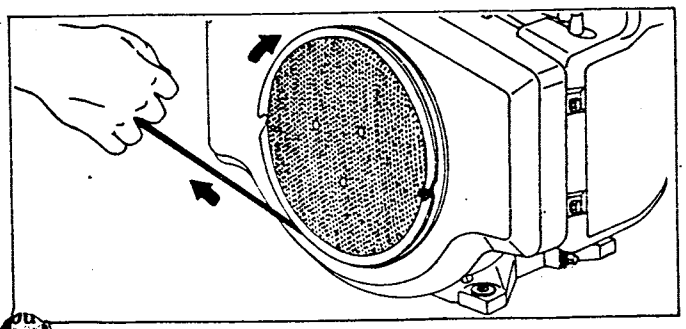
GOVERNOR SPEED CONTROL LEVER: Move governor speed control lever to "RUN," "FAST" or "START" position if so equipped.



TO START ENGINE

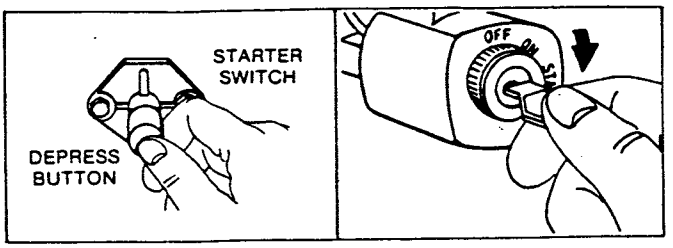
DANGER: ALWAYS KEEP HANDS AND FEET CLEAR OF MOWER BLADE OR OTHER ROTATING MACHINERY.

Rope Starter: Wind the starter rope around the pulley in direction shown by arrow. Pull the rope with a quick full arm stroke to overcome compression and prevent kickback. Repeat if necessary with choke opened slightly. When engine starts open choke gradually.



CAUTION: When using rope starter to crank engine, use caution so knotted end of rope does not strike persons standing nearby.

Electric Starter. Turn key to "Start" position and/or press starter button on powered equipment. When engine starts open choke gradually.



When equipment is not in operation, provide protection from direct exposure to weather.

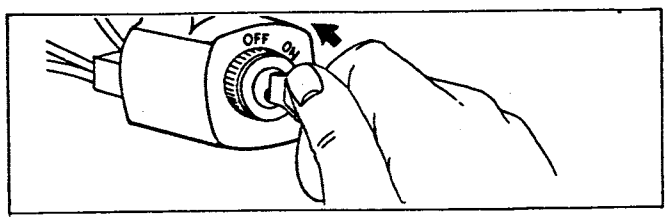
COLD WEATHER STARTING HINTS

1. Be sure to use the proper oil for the temperature expected.
2. Declutch all possible external loads.
3. Set throttle at part-throttle position.
4. A slightly richer fuel mixture, obtained by turning carburetor needle valve 1/8 turn counterclockwise, will usually improve cold starting.
5. A warm battery has much more starting capacity than a cold battery.
6. Use fresh winter grade fuel.

NOTE: Winter grade gasoline has higher volatility to improve starting. Do not use gasoline left over from summer.

TO STOP ENGINE

Turn key to "OFF" position.



CAUTION: Always remove key from switch when leaving equipment unattended or when equipment is not in use.

MAINTENANCE

CHECK OIL LEVEL regularly — after each five hours of operation. BE SURE OIL LEVEL IS MAINTAINED.

CHANGE OIL after first five hours of operation. Thereafter change oil every 25 hours of operation. Remove oil drain plug and drain oil while engine is warm. Replace drain plug. Remove dipstick and refill with new oil of proper grade. Replace dipstick.

GENERAL INFORMATION

These engines are two-cylinder L-head, air-cooled type.

MODEL SERIES 401400 to 402499

Bore ..... 3-7/16" (87.31 mm)
Stroke ..... 2-5/32" (54.77 mm)
Displacement ..... 40.00 cu. in. (656.0 cc)
Horsepower ..... 16 HP Max. @ 3600 RPM
Torque (Ft.-Lbs.) ..... 25.8 Max. @ 2700 RPM

MODEL SERIES 421400 to 422499

Bore ..... 3-7/16" (87.31 mm)
Stroke ..... 2-9/32" (57.94 mm)
Displacement ..... 42.33 cu. in. (694.0 cc)
Horsepower ..... 18 HP @ 3600 RPM
Torque (Ft.-Lbs.) ..... 28.6 @ 2600 RPM

The horsepower ratings listed above are established in accordance with the Society of Automotive Engineers Test Code - J607. For practical operation, the horsepower loading should not exceed 85% of this rating. Engine power will decrease 3½% for each 1,000 feet (304.8 m) above sea level and 1% for each 10° above 60° F (16° C).

In some areas, local law requires the use of a resistor spark plug so as to suppress ignition signals. If an engine was originally equipped with resistor spark plugs, be sure to use the same type of spark plugs for replacement.

TUNE-UP SPECIFICATIONS

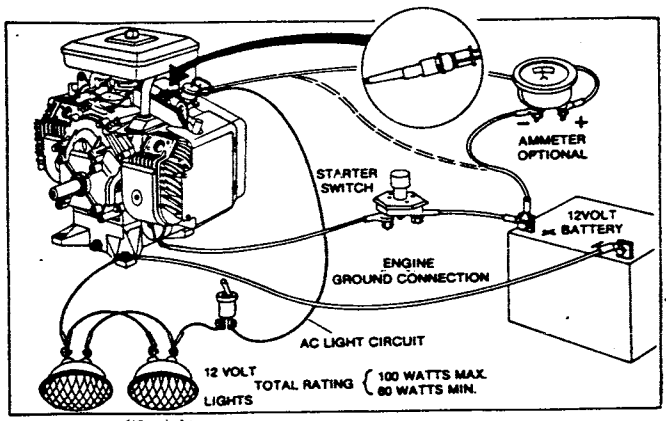
Spark Plug Type	Champion	AC	Autolite
Resistor Long Plug	RJ-12	R-46	308

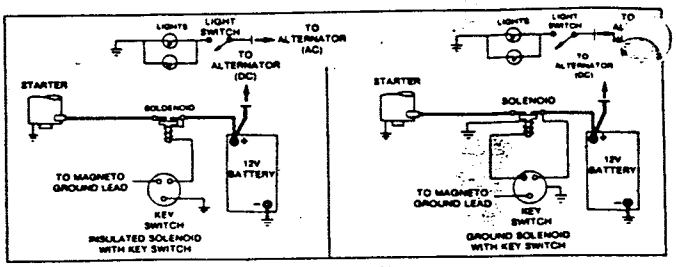
Spark Plug Gap ..... .030" (.76 mm)
Ignition Point Gap ..... .020" (.51 mm)
Intake Valve Clearance** ..... .004" - .006" (.10 - .15 mm)
Exhaust Valve Clearance** ..... .007" - .009" (.18 - .23 mm)

**with valve spring installed.

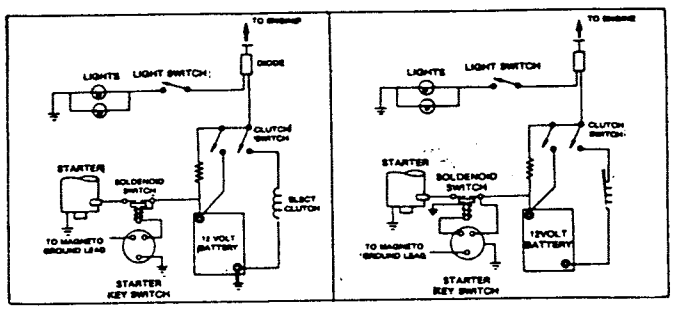
WARNING: For electrical safety always remove cable from negative (-) side of the battery before attempting any repairs or maintenance.

TYPICAL WIRING DIAGRAMS





Dual Circuit



Tri-Circuit

STORAGE INSTRUCTIONS

Engines to be stored over 30 days should be completely drained of fuel to prevent gum deposits forming on essential carburetor parts, fuel filter and tank.

NOTE: The use of a fuel additive, such as STA-BIL, or equivalent, will minimize the formation of fuel gum deposits during storage. Such an additive may be added to the gasoline in the fuel tank of the engine, or to the gasoline in a storage container.

a. All fuel should be removed from the tank. Run the engine until it stops from lack of fuel. The small amount of fuel that remains in the sump of the tank should be removed by absorbing it with a clean, dry cloth.
b. While engine is still warm, drain oil from crankcase. Refill with fresh oil.
c. Remove spark plugs, pour one ounce (29.6 cc) of engine oil into each cylinder and crank slowly to distribute oil. Replace spark plugs.
d. Clean dirt and chaff from cylinders, cylinder head fins, blower housing, rotating screen and muffler areas.
e. Store in a clean and dry area.

KOHLER

MODEL
K341
K341A

ENGINE OWNER'S MANUAL

CONTENTS

Introduction

This manual covers the Kohler air-cooled, 4-cycle model K341 and K341A gasoline engines with standard equipment. Please take a few moments to review this material then carefully follow all service recommendations to keep your engine in top condition. Some general specifications are listed below--refer to the appropriate service section for specific details. In addition to the routine services covered here, there are other important preventative maintenance steps that should be performed at authorized service centers at periodic intervals--the benefits will not only be noted immediately in improved performance but, most important, in continued satisfactory operation during a long, trouble-free service life.

GENERAL SPECIFICATIONS

SPECIFICATION	K341	K341A
Bore	3-3/4"	3-3/4"
Stroke	3-1/4"	3-1/4"
Displacement (Cubic Inches)	35.89	35.89
Horsepower (At 3600 RPM)	16	16
Weight (Approximate Lbs.)	123	123
Oil Capacity (U.S. Std. Quart)	2	1
Spark Plug Gap (Std. H-10 Plug)	.025"	.025"
Breaker Point Gap	.020"	.020"

KOHLER CO., KOHLER, WIS. 53044

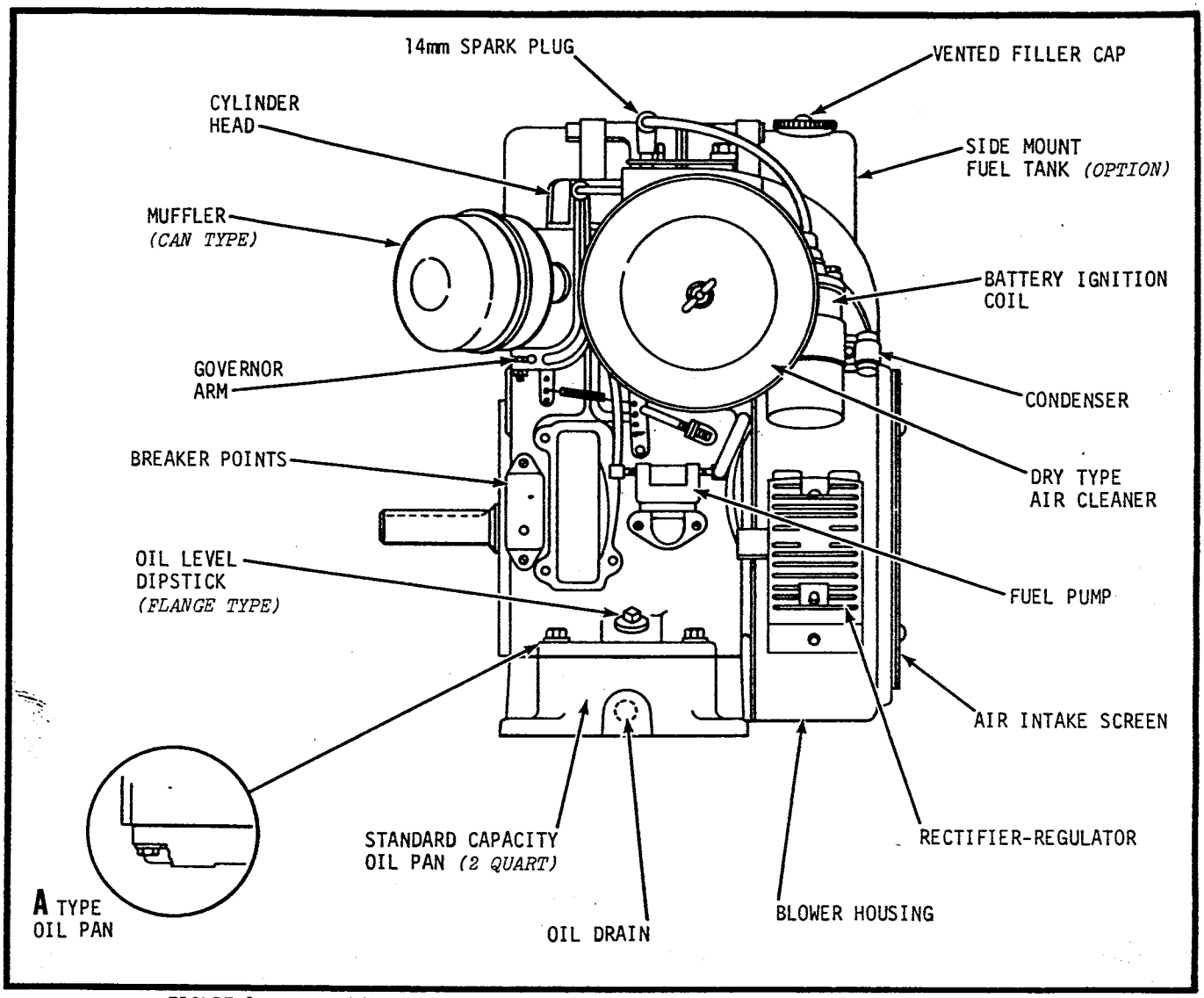


FIGURE 1 -- GENERAL LOCATION OF COMPONENTS ON A TYPICAL SINGLE CYLINDER MODEL

SAFETY PRECAUTIONS

Power mowers, garden tractors, snowblowers, and other machines powered by air-cooled engines have become so commonplace that we may forget the potential dangers involved in servicing and operation of such equipment. In the interest of safety, some general precautions are presented below as safety reminders. Remember that the best safeguard against accidents is the use of good common sense!

- **WARNING — LETHAL EXHAUST GAS!** An engine discharges carbon monoxide when operating, which causes death if inhaled for even a short period of time — operate only where deadly exhaust gases can be safely dissipated.
- **WARNING — DANGEROUS FUELS!** Use extreme caution when storing, handling and using fuels — they are highly volatile and explosive in vapor state. Store only in approved containers in well ventilated area away from spark or flame producing equipment. Never add fuel to tank while engine is running — stop engine and allow it to cool thoroughly to prevent fuel from igniting on contact with hot parts or ignition spark. Don't store gasoline inside occupied building.
- **WARNING — MOVING, HOT PARTS!** Imprudent operation of power equipment creates hazards to life and limb — never operate with safety guards removed, keep hands, feet, clothing away from moving and hot parts. Remember that an engine gets hot while running, and exhaust system components get extremely hot. Know how to make emergency stops — don't allow inexperienced persons to operate your equipment. Always disconnect or remove spark plug to prevent unintentional starting while working on equipment. Never tamper with governor setting to gain more power — the governor establishes safe operating limits. Overspeed not only shortens engine life but can be extremely hazardous. Keep people safely away from the operating area and be especially watchful for children. Stop the engine whenever you leave the equipment — don't allow it to idle unattended.
- **WARNING — GENERAL PRECAUTIONS!** Handle starting batteries carefully — they are filled with acid which can eat thru clothing, burn skin, and cause blindness. Keep in mind that a battery gives off highly flammable hydrogen gas while being charged — charge only in well ventilated area. While electrical energy produced in an engine ignition system may not be strong enough to cause injury, reaction to shock produced could cause you to pull away and into contact with hot or moving parts — keep away from ignition system while operating. Never operate without adequate muffler or with faulty exhaust system — exposure to excessive noise is not only tiring but can lead to impairment of hearing.

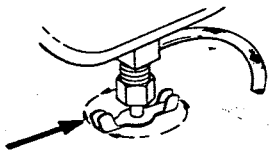
OPERATING INSTRUCTIONS

PRE-START CHECK LIST

- **OIL LEVEL:** Add oil as needed to keep level in safe range between L and F marks on the dipstick. See Page 4 for oil recommendations.
- **FUEL:** Fill fuel tank with clean, fresh REGULAR grade of gasoline. Use leaded or non-leaded type but make sure octane rating is at least 85. Don't mix oil with gasoline. If engine has a fuel filter, clean sediment bowl if needed.
- **COOLING:** Check air intake screens and cooling fins--keep them clean and unrestricted.
- **AIR CLEANER:** Make sure cleaner and intake parts are tight and properly installed to prevent unfiltered air from entering the engine.
- **BATTERY (ELECTRIC START):** Keep battery surface clean to prevent self-discharge. Check electrolyte level. Connections must be tight and negative (-) terminal must be the ground terminal.

STARTING PROCEDURE

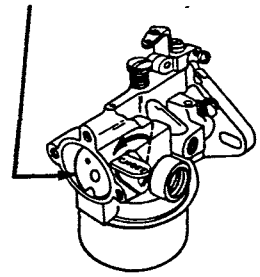
TURN FUEL ON



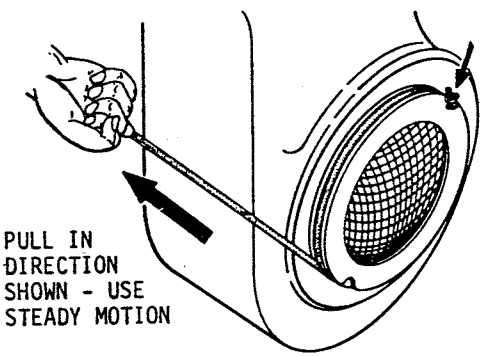
TURN FUEL VALVE TO ON POSITION

CLOSE CHOKE

MOVE CHOKE TO CLOSED POSITION

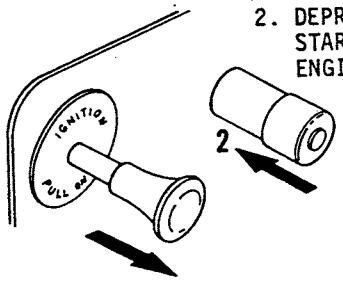


MANUAL START MODELS



PULL IN DIRECTION SHOWN - USE STEADY MOTION

ELECTRIC START

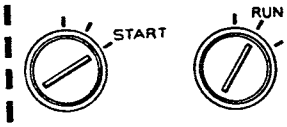


2. DEPRESS AND HOLD START BUTTON UNTIL ENGINE STARTS

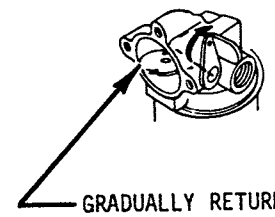
1. PULL IGNITION KNOB OUT*

*OR MOVE TOGGLE SWITCH TO "ON" POSITION

KEYSTART - MOVE KEY TO START POSITION, *RELEASE WHEN ENGINE STARTS (SWITCH AUTOMATICALLY RETURNS TO RUN)



OPEN CHOKE



GRADUALLY RETURN CHOKE TO OPEN POSITION AFTER ENGINE STARTS

STOPPING PROCEDURE

DISENGAGE DRIVE ● TURN IGNITION OFF ● TURN FUEL OFF

EMERGENCY STOP: IF ENGINE CONTINUES RUNNING WHEN IGNITION IS TURNED OFF, CLOSE CHOKE AND OPEN THROTTLE TO STALL ENGINE--DON'T PULL IGNITION LEADS TO STOP.

SERVICE - ADJUSTMENT

SERVICE SCHEDULE

PERFORM SERVICE AT INTERVALS INDICATED (X)	EACH DAY	EVERY 25 HOURS	EVERY 50 HOURS	EVERY 100 HOURS	EVERY 500 HOURS
CHECK OIL LEVEL (maintain in safe operating range)	X				
CLEAN AIR INTAKE SCREEN (plus other external surfaces)	X				
REPLENISH FUEL SUPPLY (Use clean, fresh fuel)	X				
CHANGE OIL (Use API Service SC of proper weight)		X			
CHECK AIR CLEANER ELEMENT (dry type only)			X		
SERVICE SPARK PLUG (gap .025" for gasoline)				X	
SERVICE BREAKER POINTS (gap .020")					X

NOTE: Intervals stated are for good, clean operating conditions--perform services more frequently if dusty or dirty conditions prevail.

LUBRICATION

OIL LEVEL: With the splash system, the oil level must be maintained on the "Safe" operating range at all times--this is between the F (full) and L (low) mark on the dipstick. Check the level daily and add oil as needed. DO NOT OVERFILL--oil level must not exceed F mark.

On engines with the threaded type plug-dipstick, turn the plug all the way out of crankcase, wipe oil off dipstick then re-insert--do not turn plug in to check oil--shoulder plug on top of hole then remove to observe level. After checking oil, turn plug all the way into crankcase. With the extended oil fill tube and dipstick, push dipstick all the way down on tube then take reading. Engine must be level for accurate reading.

MODEL	OIL CAPACITY (U.S. STANDARD MEASURE)
K341	2 QUARTS
K341A	1 QUART

OIL TYPE: Oils meeting the requirements of the American Petroleum Institute's (API) Service classification SC* are suitable for use in Kohler Air Cooled Engines. Service SC oils are detergent type oils. Oil viscosity (weight) is selected according to the anticipated ambient temperatures. The temperature-viscosity recommendations are:

AIR TEMPERATURE	OIL VISCOSITY
Above 30° F.	SAE 30
30° F. to 0° F.	SAE 10 W - 30
Below 0° F.	SAE 5 W - 20

**API Service CC (MIL-2104B) and SD class oils may also be used.*

OIL CHANGE: On new or rebuilt engines, the oil should be changed after the first five hours of operation--thereafter each 25 hours of operation under normal conditions. If extremely dusty or dirty conditions prevail, change oil more frequently. If possible, run engine just prior to changing oil--the oil will flow more freely and carry away a greater amount of contamination when it is hot.

AIR CLEANERS

Dirt induced through improperly installed, poorly serviced or inadequate air cleaner elements wears out more engines than does long hours of operation. Even a small amount of dirt will wear out a set of piston rings in a few hours. Also, a clogged element causes a richer fuel mixture which may lead to formation of harmful sludge deposits. Always cover carburetor or air horn when air cleaner is removed. Service dry type air cleaners as follows:

SERVICE - REPLACEMENT: Dry type elements should be replaced after 100 to 200 hours if engine is operated under good clean air conditions--service and replace element more frequently under extremely dusty or dirty conditions. Dry elements should be cleaned after about each 50 hours of operation--remove element and tap lightly on a flat surface to remove loose surface dirt. Replace element if dirt does not drop off easily. Do not wash dry elements in any liquid or attempt to blow dirt off with air hose as this will puncture filter element. When replacing element, use only genuine Kohler elements. Carefully handle new element--do not use if gasket surfaces bent or twisted. Check the following when installing new or serviced element:

1. Back plate must be securely tightened to carburetor. Replace back plate if bent or cracked.
2. Gasket surfaces of element must be flat against back plate and cover to seal effectively.
3. Wing nut must be finger tight--don't overtighten.

PRECLEANERS: Precleaners are available for use with dry type air cleaners. The precleaner traps much of the dirt, preventing it from entering the dry element thereby extending its life. No modification is needed--the precleaner slips right over the dry element. Servicing of the precleaner is accomplished by washing it in soap and water then, after rinsing and squeezing out excess water, allowing it to air dry (whenever possible), then reinstall it over element. DO NOT oil this type precleaner.

COOLING & EXTERNAL SURFACES

Air is drawn into the cooling shroud by fins provided on the flywheel. The rotating air screen and the cooling fins on the block and cylinder head must be kept clean and unobstructed at all times. Never operate engine with blower housing or cooling shrouds removed. These direct air flow past cooling fins. Removal results in improper air circulation and overheating. External surfaces must be in clean condition free of any oil and dirt accumulation.

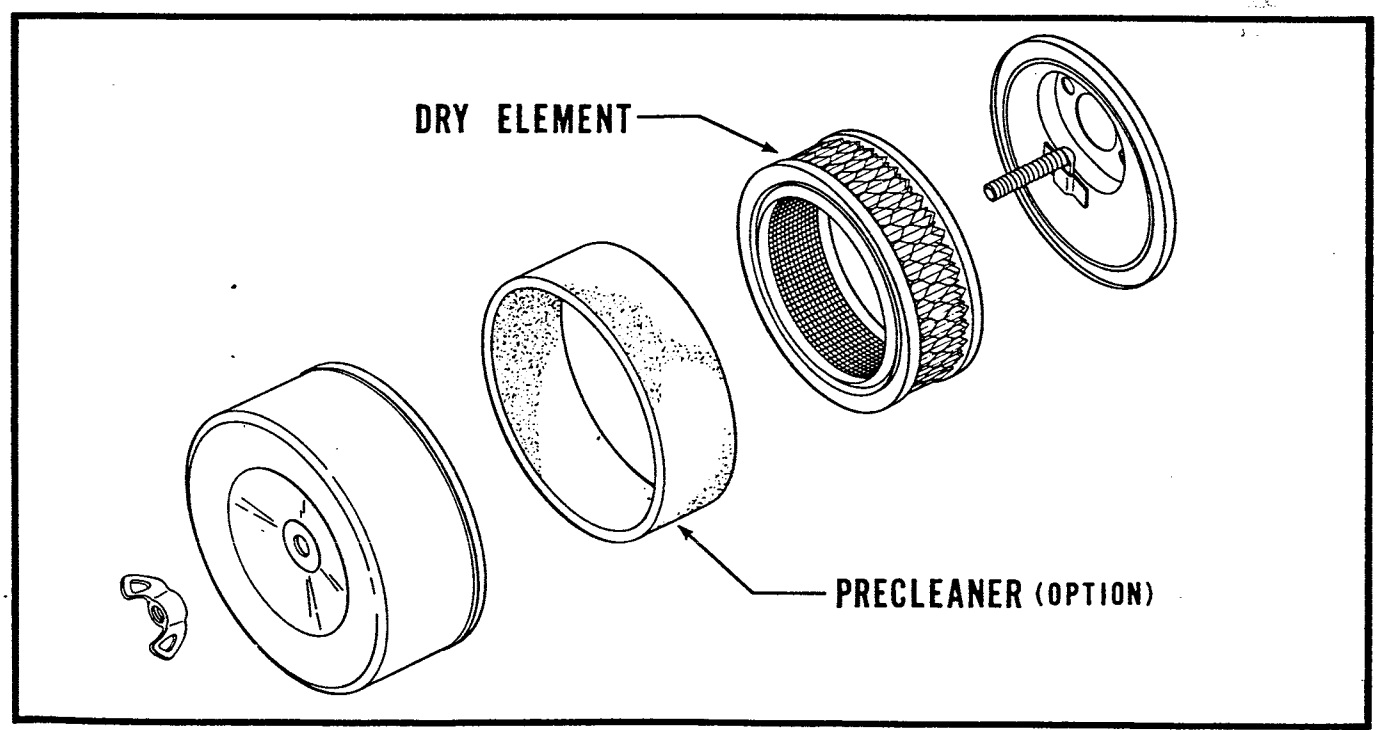


FIGURE 2 -- DRY TYPE AIR CLEANER WITH SERVICEABLE PRE-CLEANER OPTION

FUEL, FUEL SYSTEMS

With the gasoline fuel system, use clean fresh REGULAR grade of leaded or non-leaded gasoline with octane rating of at least 85. The non-leaded (or low lead) fuels offer the advantage of reducing the amount of deposits which build up in the combustion chamber. Do not add oil to the gasoline on these 4-cycle engines. Use name brand gasoline purchased from popular stations to prevent use of stale gasoline or fuel not adjusted to seasonal changes. Gasoline becomes "stale" after about 6 months and tends to form gum deposits which clog the fuel system especially small passages in the carburetor. When placing an engine in storage, completely drain fuel lines, tanks and carburetor bowl or use a fuel stabilizer which prevents formation of gum in the gasoline. On gravity feed systems, turn the fuel valve off whenever the engine is to be out of service for any length of time--this will prevent seepage of gasoline into the engine. Keep the vent hole in the gas filler cap open--if it becomes plugged, flow of fuel will be impaired.

CARBURETOR

Lack of power accompanied by black, sooty exhaust smoke usually indicates that fuel mixture is too rich. An "overrich" mixture may also be caused by a clogged air cleaner--check this before readjusting carburetor. Main Fuel may be set too lean if engine "skips" or backfires at high speed. The following procedure applies to the standard gasoline carburetor--refer to the Popular Option section for adjustment of gas fuel system if your engine is so equipped.

MAIN FUEL ADJUSTMENT: For preliminary setting, turn MAIN FUEL screw in clockwise direction until it bottoms lightly (do not force) then back out 2 turns. With engine thoroughly warmed up and running at full throttle and full load (when possible), turn MAIN FUEL screw in until engine slows down (lean setting) then turn screw back out until engine regains speed and then starts to slow down again (overrich setting)--turn screw back in until it is positioned halfway between lean and overrich settings--when properly adjusted, engine will accelerate smoothly and operate with steady governor action.

IDLE ADJUSTMENT: Rough idle is usually caused by the idle speed being set too low. Turn IDLE SPEED screw in (clockwise direction) to increase speed.* If engine still idles poorly after speed is increased, stop engine and turn IDLE FUEL screw all the way in (clockwise) until it bottoms lightly (do not force screw) then back out 1-1/4 turns. Restart engine and check idle--turn needle in or out (1/4 turn at a time) until smoothest idle is achieved.

**Idle speed normally set at 1450-1500 RPM when engine is in equipment.*

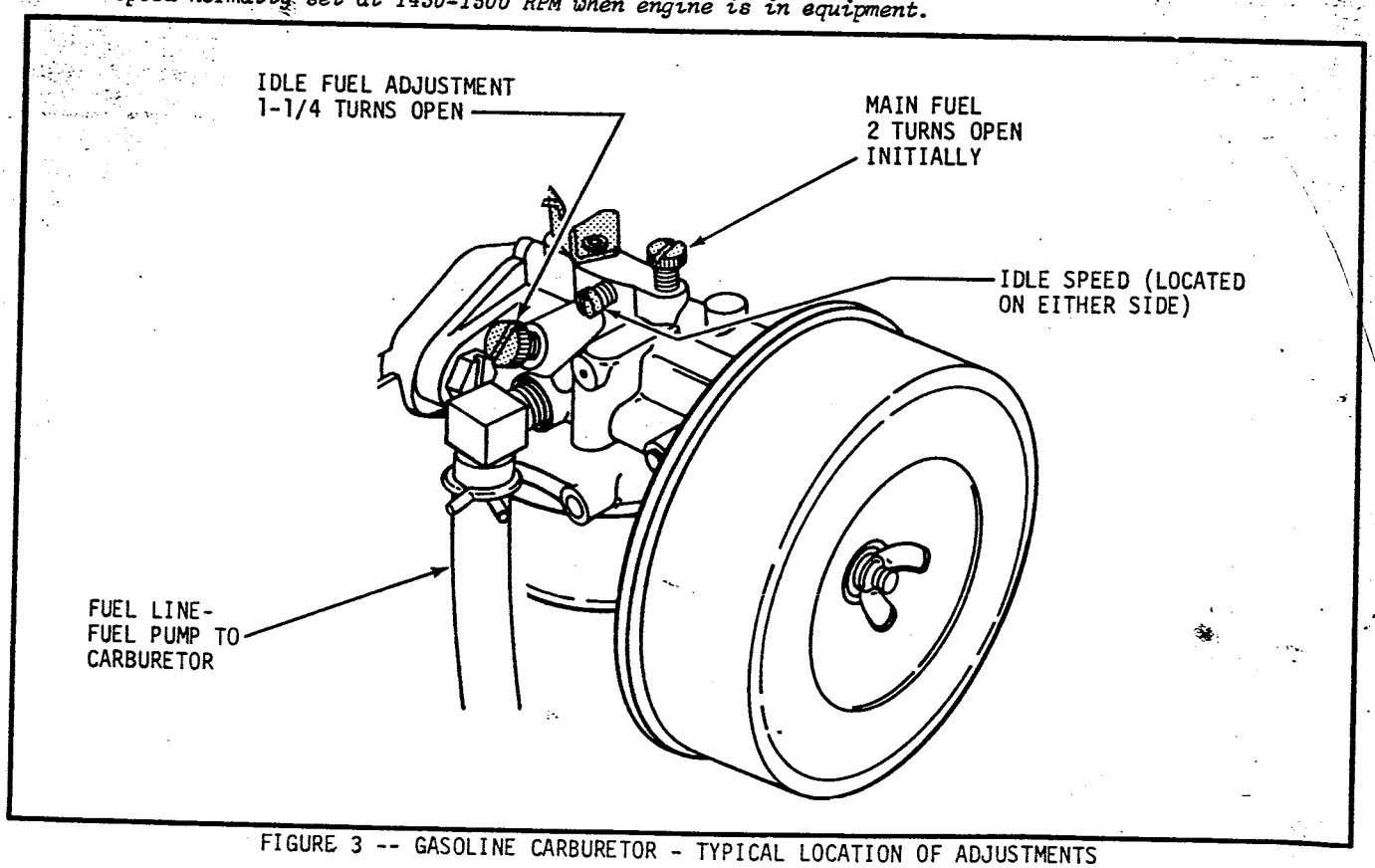


FIGURE 3 -- GASOLINE CARBURETOR - TYPICAL LOCATION OF ADJUSTMENTS

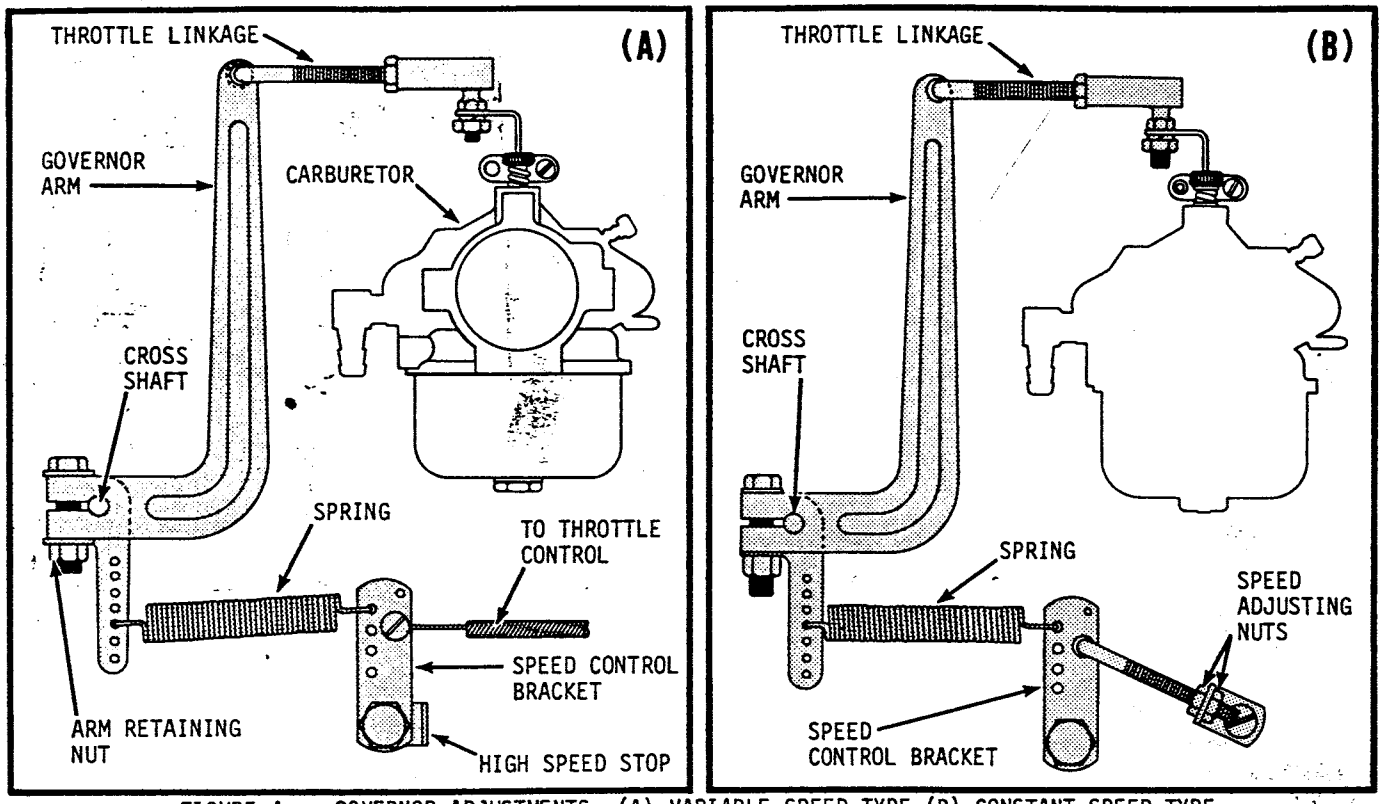


FIGURE 4 -- GOVERNOR ADJUSTMENTS: (A) VARIABLE SPEED TYPE (B) CONSTANT SPEED TYPE

GOVERNOR

The governor functions to maintain engine speed under changing load conditions and also acts as a speed limiting device. Governors are set in the factory and further adjustment should not be required unless linkage works loose or becomes disconnected. Readjustment should be made if engine surges with changing load or if speed drops considerably when a normal load is applied. Two types of governor arrangements are shown above--adjust per instructions for the type used on your engine.

INITIAL ADJUSTMENT: With engine stopped, loosen (do not remove) hex nut securing governor arm to governor cross shaft. Grasp end of cross shaft with pliers and turn shaft as far as possible in counterclockwise direction--tab on shaft will stop internally against governor gear mechanism. Hold shaft in this position, pull governor arm all the way away from carburetor then retighten governor arm nut to complete initial adjustment.

THROTTLE WIRE INSTALLATION: Note hole position of throttle wire on old engine and install in same holes on Service Engine. Install wire as follows: Move throttle control handle to full throttle position (F or Open mark) then bend end of wire into a small hook and insert open end into handle lever hole located inside control cover.

SPEED ADJUSTMENT: Maximum allowable speed for most engines is 3600 RPM. This speed must not be exceeded. If overspeed condition is suspected, check RPM's with hand tachometer and readjust as follows:

1. With constant speed arrangement loosen speed adjusting nut to decrease speed or tighten to increase speed.
2. With variable speed type arrangement as shown, loosen capscrew and move high speed stop bracket until desired maximum speed is attained--retighten capscrew to lock bracket in new position.

SENSITIVITY ADJUSTMENT: If speed drops considerably when a normal load is applied, governor should be set for greater sensitivity. If set too sensitive, speed surging will occur with changing load. Governor sensitivity is adjusted by repositioning governor spring in holes provided on arm and speed control brackets. Increase tension in spring (and sensitivity) by moving spring hooks into holes spaced further apart--conversely, decrease sensitivity by reducing tension on spring.

IGNITION SYSTEM SERVICE

Your engine may have flywheel-magneto, battery or breakerless type ignition. Battery and breakerless systems can be identified by shape of ignition coil which is mounted on the outside of the engine--refer to the illustration below. With flywheel-magneto ignition, the coil is not visible since it is assembled to the bearing plate inside the flywheel.

Engine skip, hard starting, poor performance is most often due to incorrect plug gap or breaker point gap. These symptoms may also appear when the plug is fouled or in poor condition or when the points are burned or pitted. The following service recommendations apply to all systems except, of course, the breakerless system which does not have breaker point or condenser as discussed.

SPARK PLUG: Check condition and reset gap at about 100-hour intervals. The gap gradually widens as the electrodes wear under normal conditions. Always clean area around plug before removing to prevent dirt from falling into the head as the plug is removed. Carefully check condition of electrodes after removing the plug as this usually offers a good indication of operating conditions. If the plug has a light coating of gray or tan, this usually indicates normal conditions. A dead white blistered coating may indicate overheating while black coating usually comes from operating with overrich fuel mixture which can be caused by clogged air cleaner or carburetor out of adjustment.

Do not sandblast, wire brush, scrape or otherwise attempt to service a plug that is badly fouled or in poor condition--best results are obtained with a new plug. Before installing plug, set gap at .025" for gasoline operation, then tighten the spark plug with a torque wrench to 22 foot pounds.

SPARK PLUG	SIZE	STANDARD GASOLINE	SPARK GAP	TORQUE
	14MM	H10 OR EQUIVALENT	.025"	22 FT. LBS.

BREAKER POINTS: Every 500 hours breaker points should be inspected and serviced. If oxidized, dirty or oily, lean with coarse cloth--do not use emery cloth or sandpaper. Slightly pitted points can be dressed with point file--replace badly pitted or burned points. The gap must be adjusted whenever points are serviced or replaced since this setting establishes ignition timing. To adjust, turn crankshaft until points are wide open or at maximum separation then check with feeler gauge. If gap is not .020", loosen adjusting screw and shift movable plate until correct gap of .020" is obtained. After retightening screw, check to make sure gap is still properly set as this sometimes alters the setting slightly.

BREAKER POINT GAP - - .020"

CONDENSER: If the condenser shorts out, the coil will be unable to function at all. If it opens and decreases in capacitance, the output voltage will be greatly reduced and the ignition points will burn excessively. If condenser has too little capacitance, metal will transfer from the stationary contact to the movable contact. If capacitance is too great, the metal will build up on the stationary contact. Make sure the condenser is the correct one for your engine.

IGNITION COIL: These coils do not require servicing on a regular basis; however, they should be kept in clean condition and the terminals and connections must be tight to provide good electrical contact. The rubber nipple on the high tension terminal must be in good condition to prevent leakage of current across exposed surfaces.

ELECTRIC START MODELS

STARTING-MOTOR SYSTEM: These starters are pre-lubricated during assembly and do not require further lubrication or service under normal conditions. Starter service should be performed only at authorized repair shops.

Precautions: In the event of a "false start"; that is, if the engine gets up sufficient speed to disengage the starter but then fails to continue running, the engine must be allowed to come to a complete halt before a restart attempt is made. If the flywheel is still rotating when the starter is engaged, the pinion and ring gear may clash and damage the teeth. Continuous cranking time should be limited to 60 seconds. If an engine fails to start after this length of time, it may be out of fuel, flooded, have poor ignition or there is some other condition preventing it from starting. Make sure the special shouldered capscrews (and lock washers) are used when installing starter. These special capscrews properly align the pinion

Model [illegible] Spec. 7/2229
Serial 9274021

to the ring gear on the engine--use of ordinary capscrews will allow the starter to shift and result in clashing of the gears. Keep these mounting capscrews tight.

Rectifier-Regulator: The rectifier-regulator unit used with the starting motor system is a solid-state device and is non-serviceable. This unit will be damaged if the engine is operated for any length of time without the battery in the system--also, to protect this unit, disconnect the leads before doing any welding on equipment in common ground with it.

BATTERY: Use 12 volt negative battery (- terminal ground) with amp hour rating of at least 32 for best results. When battery is in good condition, each cell contributes approximately 1.95 to 2.08 volts. If the charge is low and less than 0.05 volt difference is noted between the cells having the highest and lowest readings, the battery should be recharged. If the difference is more than .05 volts, this could indicate a cracked plate or other damage which could call for replacement of the battery.

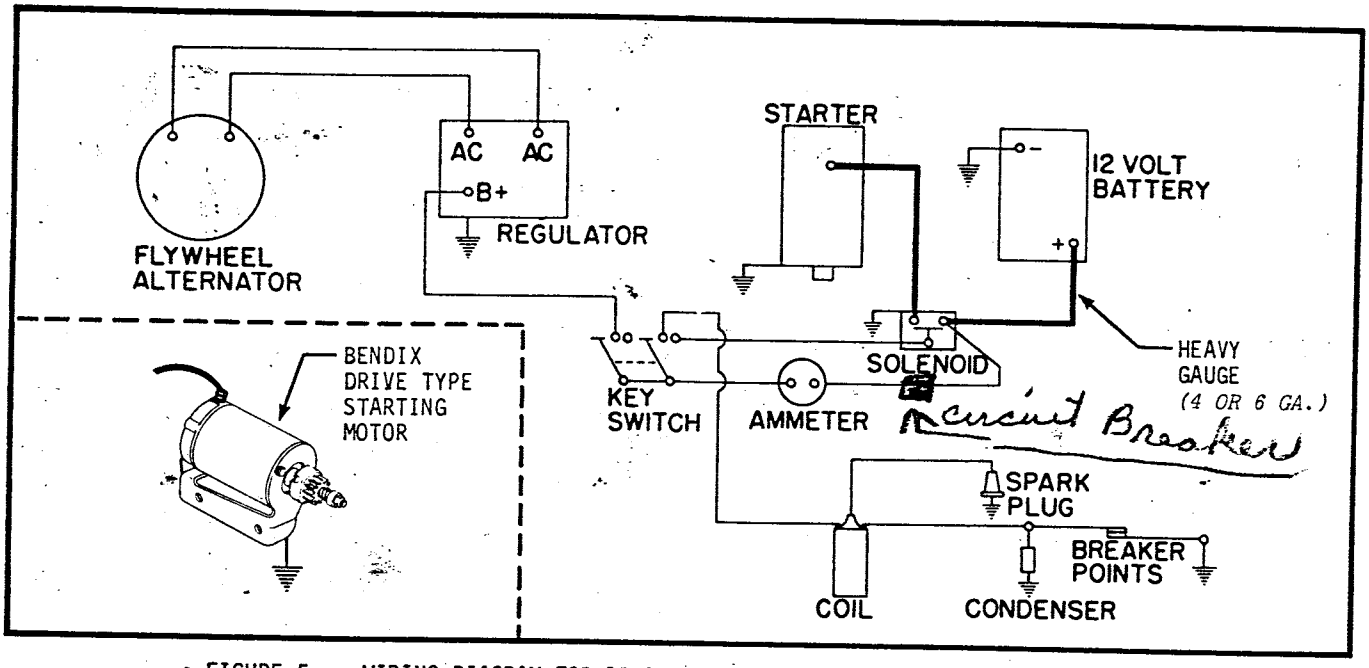


FIGURE 5 -- WIRING DIAGRAM FOR 15 AMP ALTERNATOR - BATTERY IGNITION SYSTEM

As a battery discharges, sulfuric acid is chemically withdrawn from the electrolyte and lead sulfate deposits continue to build up on the plates. This results in a diminishing specific gravity of the electrolyte. If the specific gravity drops below 1.240, the battery should be recharged. In fully charged condition, the specific gravity will be in the 1.260 - 1.280 range. (Note: In tropical areas where the temperature stays well above freezing, an electrolyte with lower specific gravity may be used--full charge specific gravity of this is 1.225.)

A regulator may be blamed for an undercharged or repeatedly discharged battery when the fault is actually self-discharge caused by a build-up of corrosive acid across the top of the battery. Even a light coating of this grayish-white substance can complete a circuit to drain and exhaust the energy in the battery--this can be especially bad when moisture is present. Service as indicated in the following.

To maintain a battery in top condition, check and perform the following services at frequent intervals:

1. Regularly check level of electrolyte--add water as necessary to maintain level above plates --do not overfill as this can cause poor performance or early failure due to loss of electrolyte.

2. Keep terminals and top of battery clean. Wash with baking soda and rinse with clear water. Do not allow soda solution to enter cells as this will destroy the electrolyte.

RETRACTABLE STARTER

While retractable starters do not require servicing, they should be checked occasionally to make sure they are secure and also that the rope is in good condition. If the rope is frayed, replace it immediately. It's a relatively simple job to replace the rope before it breaks, but if it does break, the pulley is free to unwind violently which can result in a broken spring or other damage calling for rebuilding of the starter. After removing starter from engine, replace the rope as follows--make sure starter is realigned with the drive cup when it is reinstalled on the engine.

ROPE REPLACEMENT: If the rope has not broken, simply pull the rope to its full extended position, secure the pulley in this position (block it to prevent it from rewinding), cut the knot off and remove the old rope. Install the handle on a rope, slip the other end in thru the bushing in housing and the hole in the pulley, install the rope retainer washer, then tie a knot in rope--carefully burn end slightly to fuse it, making it a permanent knot. Slowly release the pulley--brake it so that the rope winds slowly around the pulley until it is fully retracted. Realign starter to drive cup per the instructions below. If rope was broken, it will be necessary to return the starter unit to an authorized service center for repair--don't attempt to disassemble these starters as the rewind spring can unwind violently if improperly handled.

ALIGNMENT: Whenever retractable starter has been removed or has worked loose on engine, it must be realigned. If this is not done, teeth in drive cup will be damaged. Use the following procedure to align starter.

1. Attach starter to engine with retaining capscrews but do not tighten capscrews all the way.
2. Pull starter handle out about 8" so that starter centers as dogs engage in the drive cup then hold rope in this position while tightening starter mounting capscrews to complete installation.

STORAGE INSTRUCTIONS

Use the following procedure to preserve engine before placing in storage. Drain oil from crankcase (while hot) then flush with clean light oil. Refill crankcase after flushing. Drain fuel from tank, sediment bowl and carburetor. Clean exterior of engine then spread light film of oil over surfaces subject to corrosion (unpainted metal surfaces). Pour tablespoon of oil into spark plug hole, turn engine over several times by hand then reinstall plug. Cover engine and store in dry place.

TROUBLE SHOOTING

If trouble occurs, don't overlook causes that seem too obvious to be considered such as an empty fuel tank--check for the simplest causes first. To operate, an engine must have fuel, a good ignition spark and, of course, good compression--keep this in mind when trying to pinpoint the cause of a problem. The following is offered as a guide for correcting some of the problems that are possible with a 4 stroke cycle engine.

TROUBLE SHOOTING GUIDE

HARD STARTING OR LOSS OF POWER
- a. Faulty ignition.
  - 1. Leads grounded or loose.
  - 2. Breaker points faulty or improperly gapped.
  - 3. Spark plug faulty or improperly gapped.
  - 4. Coil or condenser defective.
- b. Faulty carburetion.
  - 1. Fuel line clogged (dirt-gum)
  - 2. Fuel pump faulty.
  - 3. Carburetor dirty or improperly adjusted.
- c. Poor compression.
  - 1. Head loose or gasket leaking.
  - 2. Valves sticking or leaking.
  - 3. Piston rings worn.

OPERATING ERRATICALLY
- a. Clogged fuel line.
- b. Water in fuel.
- c. Vent in gas cap plugged.
- d. Faulty fuel pump.
- e. Gasket leaking (carb.-manifold)
- f. Governor improperly set.
- g. Carburetor improperly adjusted.

KNOCKING
- a. Fuel octane too low.
- b. Ignition timing wrong
- c. Carbon build-up in combustion chamber.
- d. Engine overheated.

OCCASIONAL "SKIP" AT HIGH SPEED
- a. Spark plug fouled, faulty or gap too wide.
- b. Ignition timing wrong
- c. Carburetor improperly adjusted.

OVERHEATING
- a. Air intake screen or fins clogged.
- b. Oil level too high (or low).
- c. Fuel mixture too lean
- d. Ignition timing wrong
- e. Engine overloaded.
- f. Tappet clearance too close.

IDLES POORLY
- a. Idle Speed too low.
- b. Idle Fuel improperly adjusted.
- c. Gasket leaking (carb.-manifold)
- d. Spark plug gap too close.

BACKFIRING
- a. Carburetor set too lean (Main Fuel).
- b. Breaker points improperly gapped (timing).
- c. Valve sticking.

Motor won't start if idle is set too high

PARTS ORDERING INSTRUCTIONS

In any correspondence regarding your engine or when ordering replacement parts, please report the MODEL, SERIAL, and SPECIFICATION numbers as found on the nameplate of your engine. The nameplate is located on the blower housing. This information will enable the Kohler Engine Dealer to supply the right part for your particular engine version. Part numbers are not listed in this manual due to variation in engines in this series--use the exploded view below to identify parts. Do not attempt to replace major items or items that call for special adjustment procedures--have this work done only by qualified engine specialist. Check the yellow pages of your telephone directory for the nearest Kohler Dealer.

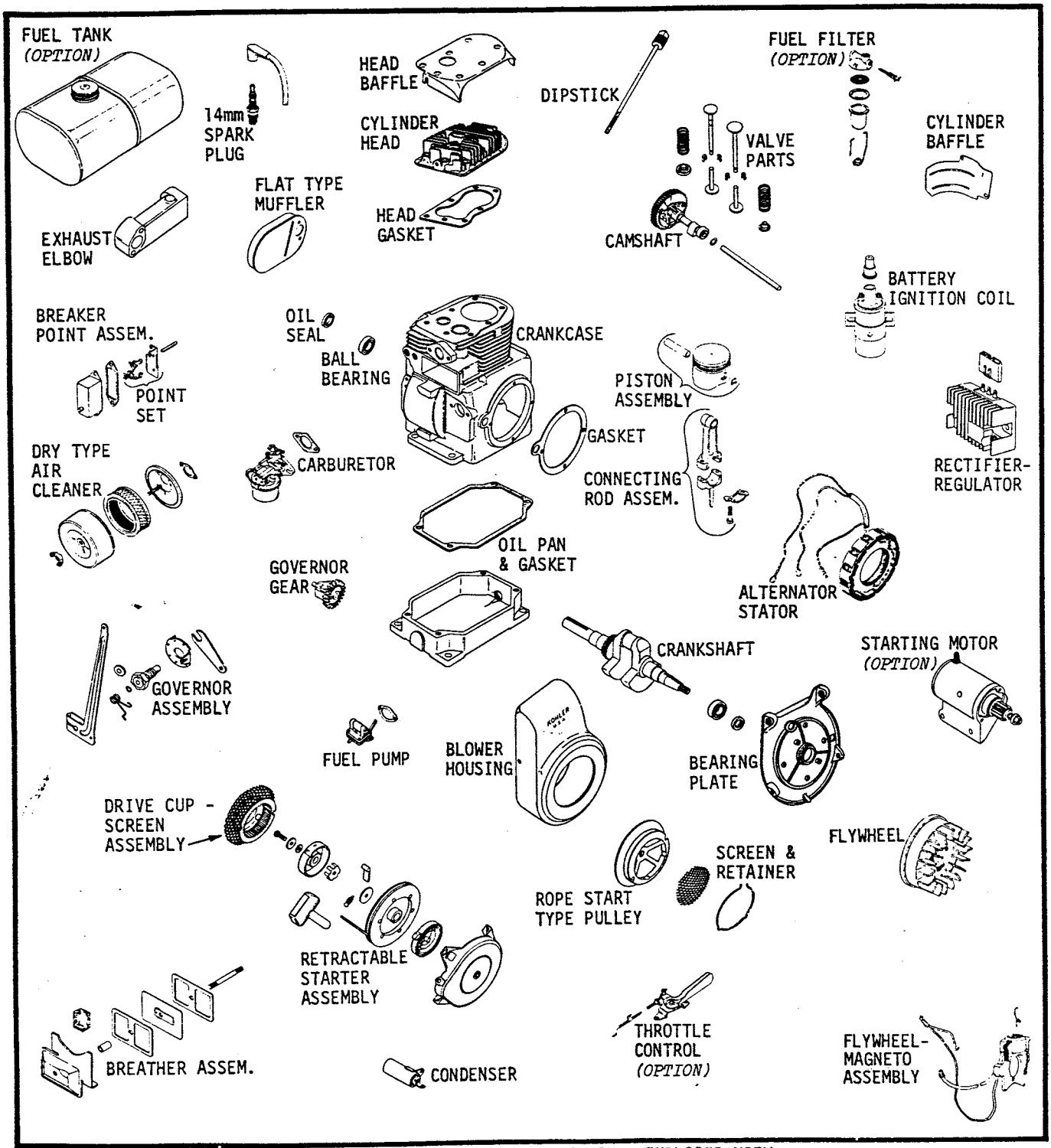


FIGURE 6 -- PARTS IDENTIFICATION - EXPLODED VIEW