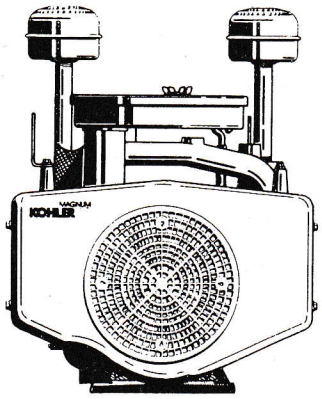
OWNER'S MANUAL

MAGNUM



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Prir

CONGRATULATIONS—You have selected the finest four-cycle, twin-cylinder, air-cooled engine that money can buy. Kohler designs and builds long-life strength and on-the-job durability into each engine . . . making a Kohler engine the most dependable engine available . . . dependability you can count on. Here are some reasons why:

- Parts subject to the most wear and tear (like the cylinders, crankshaft, and camshaft) are made from precision formulated cast iron. Because the cast iron cylinders can be rebored, these engines can last even longer.
- Dependable, maintenance-free electronic ignition system ensures fast, easy starts time after time.
- Kohler engines are easy to service. All routine service areas (like the dipstick and oil fill, air cleaner, spark plugs, and carburetor) are easily and quickly accessible.
- Every Kohler engine is backed by a worldwide network of over 10,000 distributors and dealers—so service support is just a phone call away.

To keep your engine in top operating condition, follow the simple maintenance procedures given in this manual.

KOHLER engines

ENGINE DIVISION, KOHLER CO., KOHLER, WISCONSIN 53044

FORM NO: 43311 (1-87) **PART NO: 41787** **PRINTED IN USA**

FUEL

For best results, use only clean, fresh, regular grade unleaded gasoline with a pump sticker octane rating of 87 or higher. In countries using the Research method, it should be 90 octane minimum.

Unleaded is recommended since it leaves less combustion chamber deposits. Regular grade leaded gasoline may also be used; however, be aware that the combustion chamber and cylinder head will require more frequent service. See "Required Maintenance" on page 4.

Always use fresh gasoline. Fresh gasoline is blended for the season and reduces gum deposits which could clog the fuel system. Do not use gasoline left over from the previous season.

Do not add oil to the gasoline.

Do not overfill the fuel tank. Leave room for the fuel to expand.

⚠WARNING: Explosive Fuel
Gasoline is extremely flammable, and its vapors can explode if ignited. Store gasoline only in approved containers, in unoccupied buildings, away from sparks or flames. Do not add gasoline while the engine is hot or running, or start the engine near spilled gasoline. Never use gasoline as a cleaning agent.

OIL

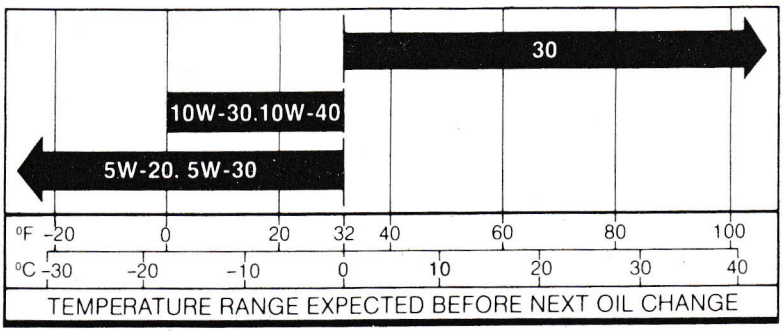
Using the proper type and weight crankcase oil is extremely important as is checking oil daily and changing oil and filter regularly. (See "Required Maintenance" on page 4.) Failure to use the correct oil or using dirty oil causes premature engine wear and failure.

Before each start, make sure the crankcase is filled with proper type and quantity of oil.

Oil Type

Use high-quality detergent oil of API (American Petroleum Institute) service class SF. Select the viscosity based on the air temperature at the time of operation as shown in the table.

Recommended SAE Oil Viscosity Grades



Straight 30-weight oil is recommended. If multiviscosity oil is used in temperatures above 32°F (0°C), be aware of the following:

- Increased oil consumption and a corresponding increase in combustion deposits requiring more frequent cylinder head service.
- More frequent oil changes are required.

(See "Changing Oil", "Oil Filter", and "Required Maintenance" on pages 2, 3, and 4.)

CAUTION: Using other than service class SF oil or extending oil change intervals longer than recommended could cause engine damage which is not covered by the engine warranty.

A logo or symbol on oil containers identifies the API service class and SAE viscosity grade.

Checking Oil

Check oil BEFORE EACH USE as follows:

1. Make sure the engine is stopped and resting on a level surface. Also make sure the engine is cool and the oil has had time to drain into the sump.
2. Before removing the oil fill cap or dipstick, clean the area around these parts to keep dirt and debris out of the engine.
3. Remove the dipstick and wipe oil off. Reinsert the dipstick and push it all the way down into tube. Remove the dipstick and check the level.
4. Add the proper type of oil if the level is low. Bring the level up to, but not over, the "F" mark on the dipstick. Always check the level on the dipstick before adding more oil.

CAUTION: Do not operate the engine with the oil level below "L" mark or over "F" mark.

Oil Sentry™

Some engines are equipped with optional Oil Sentry oil pressure monitor. If the oil pressure gets low, Oil Sentry will either shut down the engine or trigger a warning signal, depending on the application.

CAUTION: Make sure the oil level is checked BEFORE EACH USE and maintained up to the "F" mark on dipstick. This includes engines equipped with Oil Sentry.

Changing Oil

For a new engine, change oil after the first 5 hours of operation, and then as shown in the "Oil Change Intervals" table.

Oil Change Intervals

Temperature	Oil Type	Engine Type	Interval
ABOVE 32° F (0° C)	SAE 30	With Filter	50 hours*
		Without Filter	25 hours
	Multiviscosity	With Filter	25 hours
		Without Filter	25 hours
BELOW 32° F (0° C)	Multiviscosity	With Filter	50 hours
		Without Filter	25 hours

*25 hours for continuous and/or heavy duty operation.

Drain oil while the engine is warm from operation. The oil will flow freely and carry away more impurities. Drain oil as follows:

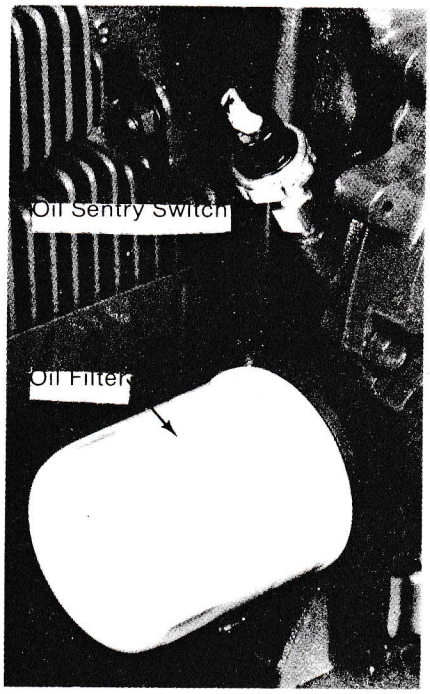
1. Remove the oil drain plug and oil fill cap. Tilt the engine slightly towards the oil drain to obtain better drainage.
2. Reinstall the drain plug. Make sure it is tightened securely.
3. Fill with new oil of the proper type to the "F" mark on the dipstick. Always check the level on the dipstick before adding more oil.
4. Reinstall the oil fill cap. Make sure it is tightened securely.

Make sure the engine is level when filling and checking oil.

Oil Filter

Some engines are equipped with an oil filter. Replace the oil filter *every other* oil change, in accordance with the "Oil Change Intervals" table on page 2. Always use a genuine Kohler oil filter and replace as follows:

1. Drain crankcase oil, then remove old filter.
2. Before installing replacement filter, apply a thin coating of oil on the surface of the rubber seal.
3. Turn filter clockwise until rubber seal contacts the filter adapter, then tighten filter an additional 2/3 to 3/4 turn.
4. Add an additional 1/2 pint of oil for the filter capacity. See "SPECIFICATIONS" on page 8.
5. Start the engine and check for oil leakage.



OPERATING INSTRUCTIONS

ALSO READ THE OPERATING INSTRUCTIONS OF THE EQUIPMENT THIS ENGINE POWERS.

PRE-START CHECKLIST

- ☐ Check oil level. Add oil if low.
- ☐ Check fuel level. Add fuel if low.
- ☐ Check cooling air intake areas and external surfaces of engine. Make sure they are clean and unobstructed.
- ☐ Check that the air cleaner components and all shrouds, equipment covers, and guards are in place and securely fastened.
- ☐ Check that any clutches or transmissions are disengaged or placed in neutral. This is especially important on equipment with hydrostatic drive. The shift lever must be exactly in neutral to prevent resistance which could keep the engine from starting.

⚠WARNING: Lethal Exhaust Gases

Engine exhaust gases contain poisonous carbon monoxide. Avoid inhaling fumes, and never run the engine in a closed building or confined area.

STARTING

1. Move the throttle control lever midway between the SLOW and FAST positions.
2. Move the choke control into the FULL CHOKE position.
3. Activate the starter switch. Release the switch as soon as the engine starts.

CAUTION: Do not crank the engine continuously for more than 10 seconds at a time. If the engine does not start, allow a 60-second cool-down period between starting attempts. Failure to follow these guidelines can burn out the starter motor.

CAUTION: If the engine develops sufficient speed to disengage the starter but does not keep running (a "false start"), the engine rotation must be allowed to come to a complete stop before attempting to restart the engine. If the starter is engaged while the flywheel is rotating, the starter pinion and flywheel ring gear may clash, resulting in damage to the starter.

If the starter does not turn the engine over, shut off starter immediately. Do not make further attempts to start the engine until the condition is corrected. Do not jump start using another battery (refer to "BATTERY" below.) See your Kohler Engine Service Dealer for trouble analysis.

4. Gradually return the choke control to the OFF position after the engine starts and warms up.

BATTERY

A 12-volt battery with a rating of approximately 32-amp hours is normally used. Refer to the operating instructions of the equipment this engine powers for specific information.

If the battery charge is not sufficient to turn over the engine, recharge the battery.

CAUTION: Do not attempt to jump start the engine with another battery. Starting with batteries larger than those recommended can burn out the starter motor.

Also see "BATTERY CHARGING" on page 5.

OPERATING

Optional spark arrestor mufflers are available from your Kohler Engine Service Dealer. Check your local laws and statutes regarding engine spark arrestor muffler requirements.

CAUTION: Do not operate the engine continuously at angles exceeding 30° in any direction. Engine damage may result from lack of lubrication. Also refer to the operating instructions of the equipment this engine powers. It may have more stringent guidelines as to angle of operation due to equipment design.

CAUTION: If debris builds up on air intake screen and other intake areas, STOP the engine immediately and clean. Obstructed air intake areas cause engine damage due to overheating.

⚠WARNING: Hot, Moving Parts

The engine and exhaust system get extremely hot from operation. Do not operate the equipment with covers, shrouds, or guards removed. Keep hands, feet, clothing, and hair away from all moving parts. Do not allow the equipment to run unattended.

CAUTION: Do not tamper with the governor setting to increase the maximum engine speed. Overspeed is hazardous and will void the warranty.

⚠WARNING: Rope Starting Pulley Is Not a Drive Pulley

Do not use backup rope starting pulley as a drive pulley. Using starting pulley as a drive could loosen flywheel fastener, resulting in bodily harm.

STOPPING

Turn the starter switch or keyswitch to the STOP or OFF position.

MAINTENANCE INSTRUCTIONS

These required maintenance procedures should be performed at the frequency stated in the table. They should also be included as part of any seasonal tune-up.

REQUIRED MAINTENANCE	FREQUENCY*
Clean Air Intake Screen	**DAILY***
Check Oil Level	**DAILY**
Fill Fuel Tank	**As Required**
Check/Replace Fuel Filter	**As Required**
Change Oil and Filter	**As Specified on Pages 2 and 3**
Service Foam Precleaner	**25 Hrs.***
Clean Cooling Fins and External Surfaces	**50 Hrs.**
Check Paper Air Cleaner Element	**100 Hrs.***
Check Spark Plugs	**100 Hrs.**
Have Valve-Tappet Clearance Checked**	**500 Hrs.**
Have Cylinder Heads Serviced**	**500 Hrs.†**
Have Starter Motor Drive Serviced**	**500 Hrs.**

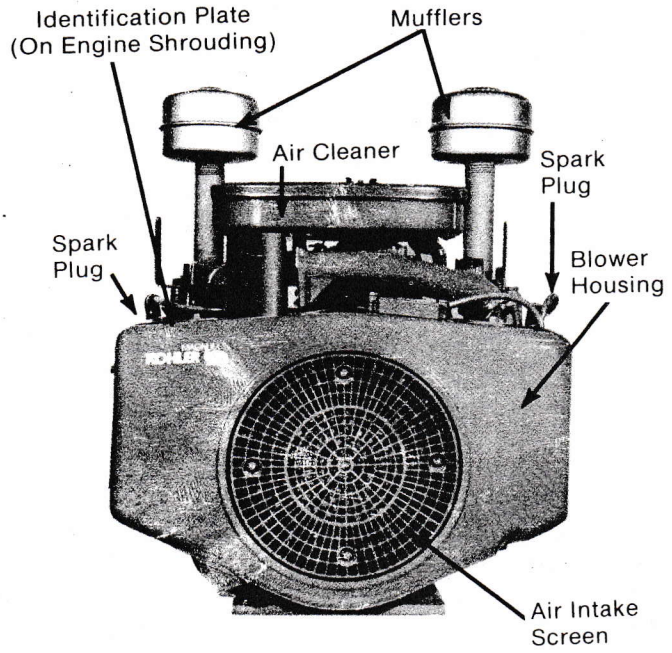
⚠WARNING: Accidental Starts

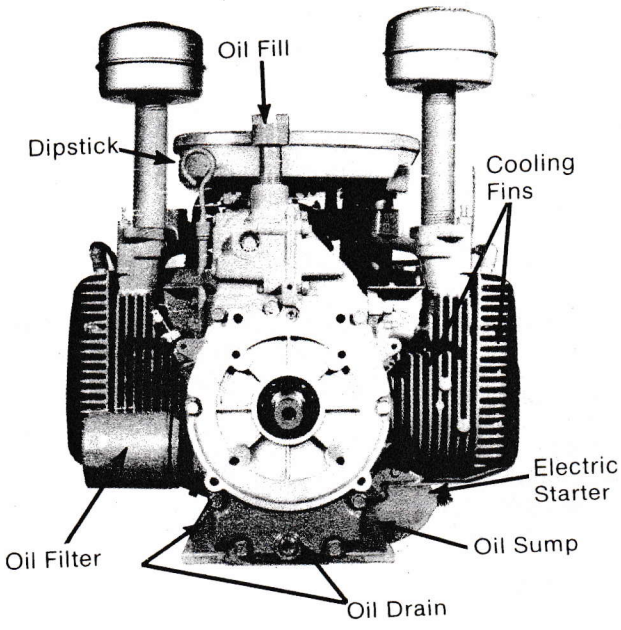
Before servicing the engine or equipment, always remove the spark plug leads to prevent the engine from starting accidentally. Ground the leads to prevent sparks that could cause fires.

*Perform these maintenance procedures more frequently when the engine is operated under extremely dusty and dirty conditions.

**Have a Kohler Engine Service Dealer perform these services.

†250 hours when leaded gasoline and/or multiviscosity oil is used.





IGNITION SYSTEM

This engine is equipped with a dependable electronic ignition system. Other than periodically checking/replacing the spark plugs, no maintenance, timing, or adjustments are necessary or possible with this system. In the event starting problems should occur which are not corrected by replacing the spark plugs, see your Kohler Engine Service Dealer for trouble analysis.

CAUTION: Do not apply 12-V DC to kill terminal of ignition module as module will burn out.

See wiring diagram on page 7.

COOLING SYSTEM

Every 50 operating hours (more often under extremely dusty or dirty conditions) remove cooling shrouds and clean cooling fins. Also clean dust, dirt, and oil from external surfaces of engine which can cause improper cooling. Make sure cooling shrouds are reinstalled. Operating the engine without cooling shrouds will cause engine damage due to overheating.

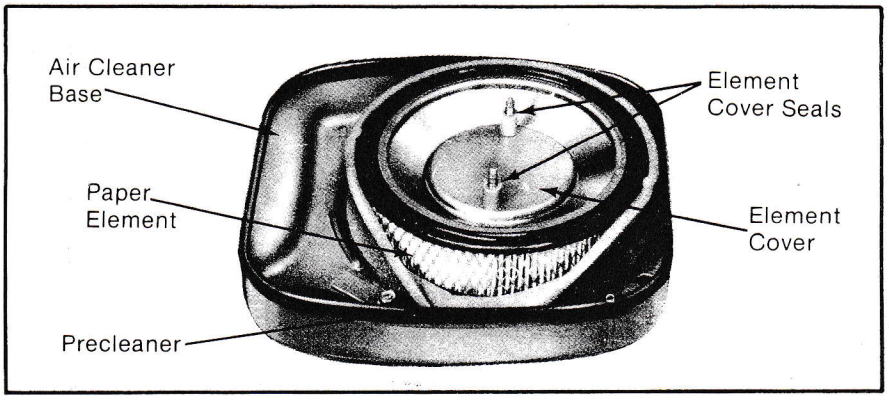
AIR CLEANER

This engine is equipped with a high-density paper air cleaner element. Some specifications are also equipped with an optional oiled foam precleaner which surrounds the paper element.

Precleaner

If so equipped, wash and reoil the precleaner every 25 operating hours (more often under extremely dusty or dirty conditions).

1. Remove wing nuts, air cleaner cover, element cover seals, and element cover.
2. Remove precleaner from paper element. Wash the precleaner in warm water with detergent.
3. Rinse the precleaner thoroughly until all traces of detergent are eliminated. Squeeze out excess water (do not wring). Air dry.
4. Saturate precleaner in clean, fresh engine oil and squeeze out excess oil.
5. Reinstall precleaner over paper element.



Paper Element

Every 100 operating hours (more often under extremely dusty or dirty conditions) check the paper element. Clean or replace the element as necessary.

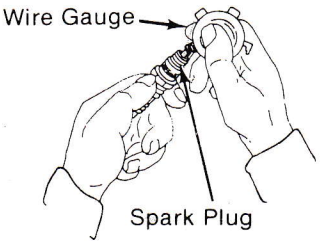
1. Remove the precleaner (if so equipped) from paper element.
2. Gently tap the flat side of paper element to dislodge dirt. Do not wash the paper element or use pressurized air as this will damage the element. Replace a dirty, bent, or damaged element with a genuine Kohler element. Handle new elements carefully. Do not use if sealing surfaces are bent or damaged.
3. With air cleaner disassembled, check the base. Make sure it is secured and not bent or damaged. Also check the element cover, seals, and breather tube for damage or improper fit. Replace all damaged components.

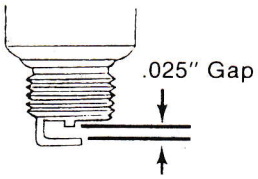
   CAUTION: Damaged or loose components could allow unfiltered air into the engine causing premature wear and failure.
4. Reinstall the paper element, precleaner, element cover, element cover seals, air cleaner cover, and wing nuts. Tighten wing nuts 1/2 to 1 full turn after nuts contact cover. Do not overtighten.

SPARK PLUGS

Every 100 operating hours remove the spark plugs, check condition and reset gaps, or replace with new plugs as follows:

1. Before removing spark plugs, clean the area around base of plugs to keep dirt and debris out of engine.
2. Remove plugs and check condition. Incorrect spark plugs, worn or fouled plugs, cracked porcelain, or improper spark gaps can cause hard starting or engine misfire.
3. Do not clean the spark plugs in a machine using abrasive grit. Replace plugs when dirty or if reuse is questionable. See "SPECIFICATIONS" on page 8 for plug type.
4. Check gaps (0.025") using a wire feeler gauge. Adjust the gaps as necessary by carefully bending the ground electrode. Install the plugs and torque to 10-15 ft. lb.





BATTERY CHARGING

⚠WARNING: Dangerous Acid, Explosive Gases

Batteries contain sulphuric acid. Avoid contact with skin, eyes, and clothing. Batteries produce explosive hydrogen gas while being charged. Ventilate the area when charging the battery. Keep cigarettes, sparks, open flame, and other sources of ignition away from battery at all times. Keep batteries and acid out of the reach of children. Remove all jewelry when working on battery.

CAUTION: Do not apply 12-V DC to kill terminal of ignition module as module will burn out.

See wiring diagram on page 7.

CARBURETOR ADJUSTMENTS

Carburetor adjustments should be made only after the engine has warmed up.

The carburetor is designed to deliver the correct fuel-air mixture to the engine under all operating conditions. Carburetors are set at the factory and normally do not need adjustment. If the engine exhibits conditions like those found in the table, it may be necessary to adjust the carburetor.

Turning the adjusting needles in (clockwise) decreases the supply of fuel to the carburetor. This gives a leaner fuel-air mixture. Turning the adjusting needles out (counterclockwise) increases the supply of fuel to the carburetor. This gives a richer fuel-air mixture.

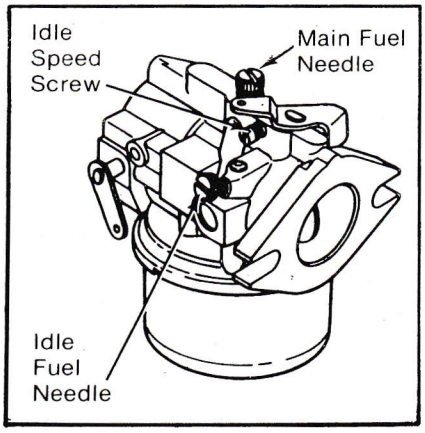
An incorrect setting can cause a fouled spark plug, overheating, excessive valve wear, and other problems. See your Kohler Engine Service Dealer for assistance.

Condition	Possible Cause/Probable Solution
1. Black sooty exhaust smoke*, engine sluggish.	1. Main fuel mixture too rich. Turn main fuel adjusting needle clockwise.
2. Engine misses and backfires at high speed.	2. Main fuel mixture too lean. Turn main fuel adjusting needle counterclockwise.
3. Engine starts and then stops under cold weather conditions.	3. Main fuel mixture too lean. Turn main fuel adjusting needle counterclockwise.
4. Engine runs roughly or stalls at idle speed.	4. Idle speed too low or improper idle fuel mixture. Turn idle speed adjusting screw, then idle fuel adjusting needle.

**If black exhaust smoke is noted, check the air cleaner first. An apparent "overrich" mixture can actually be due to a clogged air cleaner element. If, after element is replaced, black smoke or other problems continue, adjust the carburetor immediately.*

To Adjust Carburetor

1. Stop the engine. Turn the main fuel and idle fuel adjusting needles clockwise until they bottom *lightly*.



CAUTION: The ends of the main fuel and idle fuel adjusting needles are tapered to critical dimensions. Damage to needles and seats will result if the needles are forced.

2. **Preliminary Settings:** Turn the main fuel and idle fuel adjusting needles out from lightly bottomed as follows:

   Main Fuel: 2-1/2 turns

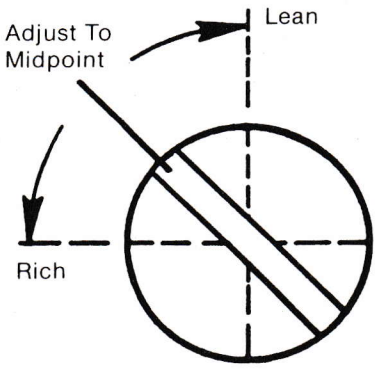
   Idle Fuel: 1 turn

3. Start the engine and run at half-throttle for 5-10 minutes to warm up. Engine must be warm before making final settings (steps 4-6).

4. **Final Setting - Main Fuel:** Place throttle in wide open position; and if possible, place engine under load. Turn main fuel adjusting needle out from preliminary setting until the engine speed decreases (rich). Note the position of the needle.

   Now turn the adjusting needle in. The engine speed may increase, then it will decrease as the needle is turned in (lean). Note the position of the needle.

   Set the adjusting needle midway between the rich and lean settings noted.



5. **Final Setting - Idle Fuel:** Place throttle into idle or slow position. Set idle fuel adjusting needle using the same procedure as in step 4.

   NOTE: To ensure best results when setting idle fuel mixture, the idle speed must not exceed 1500 RPM. Typical idle speed is 1200* RPM. See step 6.

6. **Idle Speed Setting:** Place throttle into idle or slow position. Set idle speed to 1200* RPM (± 75 RPM) by turning the idle speed adjusting screw in or out.

   See your Kohler Engine Service Dealer for assistance with carburetor and idle speed adjustments.

   *Refer to equipment manufacturer's instructions for specific idle speed settings.

FUEL FILTER

Some engines are equipped with an in-line fuel filter. Visually inspect the filter periodically and replace when dirty with a genuine Kohler filter.

TROUBLESHOOTING

When a problem occurs, do not overlook the simple causes. For example, starting problems could be caused by an empty fuel tank. The table lists some common causes of troubles.

Do not attempt to service or replace major items or any items that call for special timing or adjustment procedures (governor, valves, etc.). Have this work done by your Kohler Engine Service Dealer.

Problem	No Fuel	Improper Fuel	Dirt In Fuel Line	Dirty Air Screen	Incorrect Oil Level	Engine Over-Loaded	Dirty Filter Element	Faulty Spark Plugs
Will not start	X		X			X	X	X
Hard Starting	X	X	X			X	X	X
Stops suddenly	X		X	X	X	X	X	
Lacks power		X	X	X	X	X	X	X
Operates erratically		X	X	X		X	X	X
Knocks or pings		X		X		X		X
Skips or misfires		X	X	X			X	X
Backfires			X			X	X	X
Overheats			X	X	X	X	X	
High fuel consumption							X	X

STORAGE

If the engine will be out of service for approximately two months or more, use the following storage procedure:

1. Change oil and filter when engine is still warm from operation. See "Changing Oil" and "Oil Filter" on pages 2 and 3.
2. Drain fuel tank and fuel system (or run engine until fuel tank and fuel system are empty.)
3. Remove the spark plugs. Add one tablespoon of engine oil into each spark plug hole. Install plugs but do not connect plug leads. Crank the engine two or three revolutions.
4. Clean exterior surfaces of the engine. Spread a light film of oil over any exposed metal surfaces of engine to prevent rust.
5. Store the engine in a clean dry place.

PARTS ORDERING

The engine Specification, Model, and Serial numbers are required when ordering replacement parts from your Kohler Engine Service Dealer. These numbers are found on the identification plate which is affixed to the engine shrouding. Include letter suffixes if there are any.

Record your engine identification numbers on the identification plate illustration for future reference.

MAJOR REPAIR

Major repair information is available in Kohler Engine Service Manuals. However, major repair generally requires the attention of a trained mechanic and the use of special tools and equipment. Your Kohler Engine Service Dealer has the facilities, training, and genuine Kohler replacement parts necessary to perform the service. Check the Yellow Pages under ENGINES, GASOLINE.

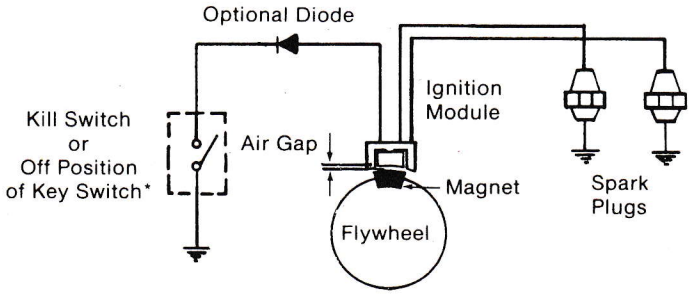
MODEL DESIGNATION

Model M16S for example: M indicates MAGNUM engine. 16 indicates the horsepower. A letter suffix designates a specific version as follows:

Suffix	Designates
S	Electric Start
G	Tapered Crankshaft (Generator Application)
Q	Quiet Model

CAUTION: DO NOT CONNECT 12 V. TO IGNITION SYSTEM OR TO ANY WIRE CONNECTED TO IGNITION MODULE. The ignition system operates independently of the battery, starting, charging, and other auxiliary electrical systems. Connecting 12 V. to ignition module will cause damage which is not covered by the engine warranty.

*A Break-before-make type key switch is required to prevent damage to ignition module. Use Kohler key switch no. 25 099 02 or equivalent.



SPECIFICATIONS

Power Rating @ 3600 RPM	hp	16
	kw	13.4
Displacement	cu. in.	42.18
	cc	691.3
Bore	in.	3.12
	mm	79.2
Stroke	in.	2.75
	mm	69.85
Compression Ratio		6.0:1
Approx. Weight	lb.	130
	kg	59.0
Oil Capacity*	U.S. Quarts	1.5
	L	1.4
Spark Plug Type	Champion®or Equiv.	RV15YC
Spark Plug Gap	in.	0.025
	mm	0.65
Spark Plug Torque	ft. lb.	10-15
	Nm	14-20
Ignition Module Air Gap	in.	0.008-0.012 (.010 Nominal)
	mm	0.200-0.300 (.250 Nominal)

*For best results, fill to "F" mark on dipstick as opposed to adding a given quantity of oil. Always check level on dipstick before adding more oil.

For engines equipped with oil filter—an additional 1/2 U.S. pint (.24 L) of oil is required when oil filter is replaced.

LIMITED 2 YEAR MAGNUM ENGINE WARRANTY

We warrant to the original consumer that each new MAGNUM engine sold by us will be free from manufacturing defects in materials or workmanship in normal service for a period of two (2) years from date of purchase, provided it is operated and maintained in accordance with Kohler Co.'s instructions and manuals.

Our obligation under this warranty is expressly limited, at our option, to the replacement or repair at Kohler Co., Kohler, Wisconsin, 53044, or at a service facility designated by us, of such part or parts as inspection shall disclose to have been defective.

EXCLUSIONS:
This warranty does not apply to defects caused by casualty or unreasonable use, including faulty repairs by others and failure to provide reasonable and necessary maintenance.

The following items are not covered by this warranty:

Engine accessories, such as fuel tanks, clutches, transmissions, power drive assemblies, and batteries, unless supplied or installed by Kohler Co.These are subject to the warranties, if any, of their manufacturers.

WE SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND, including but not limited to labor costs or transportation charges in connection with the replacement or repair of defective parts.

ANY IMPLIED OR STATUTORY WARRANTIES, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. We make no other express warranty, nor is anyone authorized to make any in our behalf.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

TO OBTAIN WARRANTY SERVICE:

Purchaser must bring the engine to an authorized Kohler service facility. For the facility nearest you, consult your Yellow Pages or write Kohler Co., Attn: Engine Warranty Service Dept., Kohler, Wisconsin 53044.

ENGINE DIVISION, KOHLER CO., KOHLER, WISCONSIN 53044

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