

# OWNER'S MANUAL

## **KOHLER** Courage HORIZONTAL CRANKSHAFT

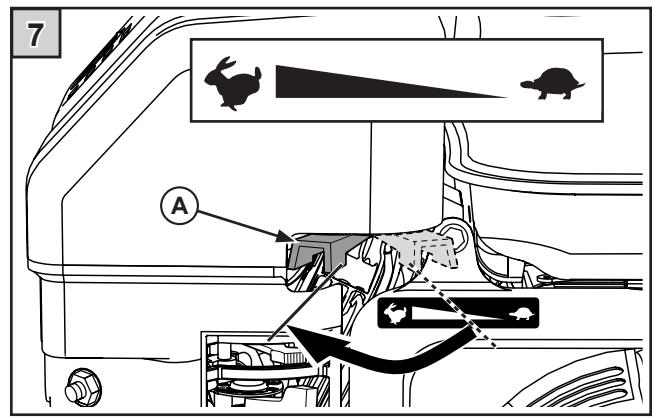
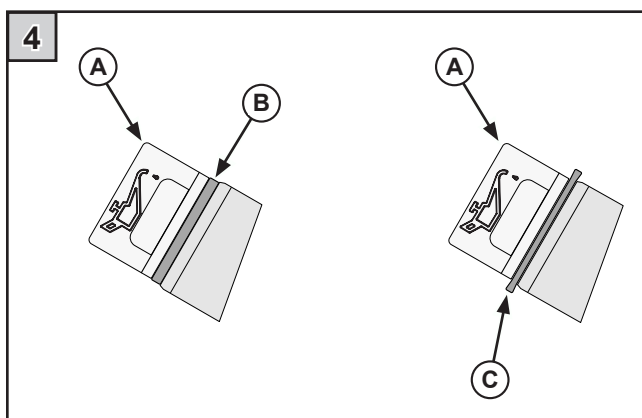
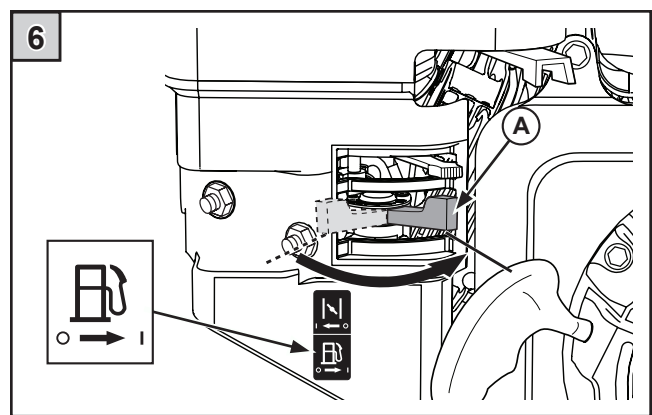
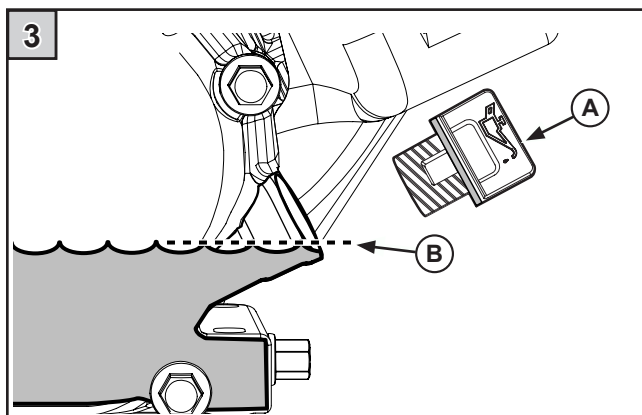
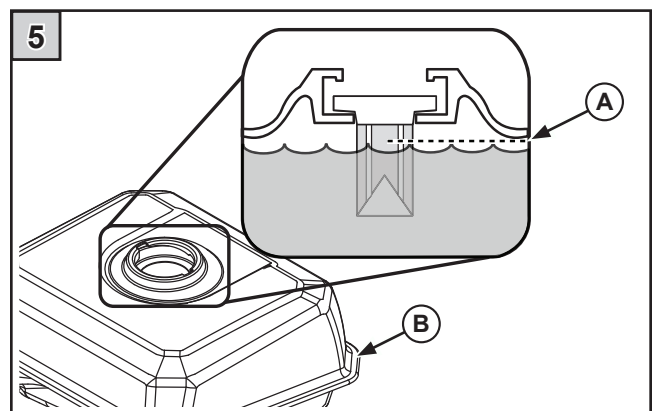
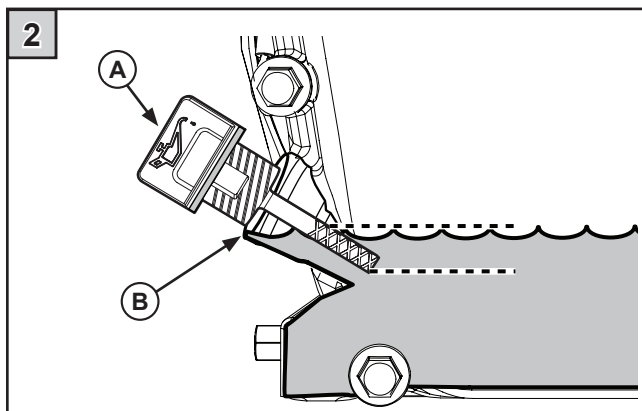
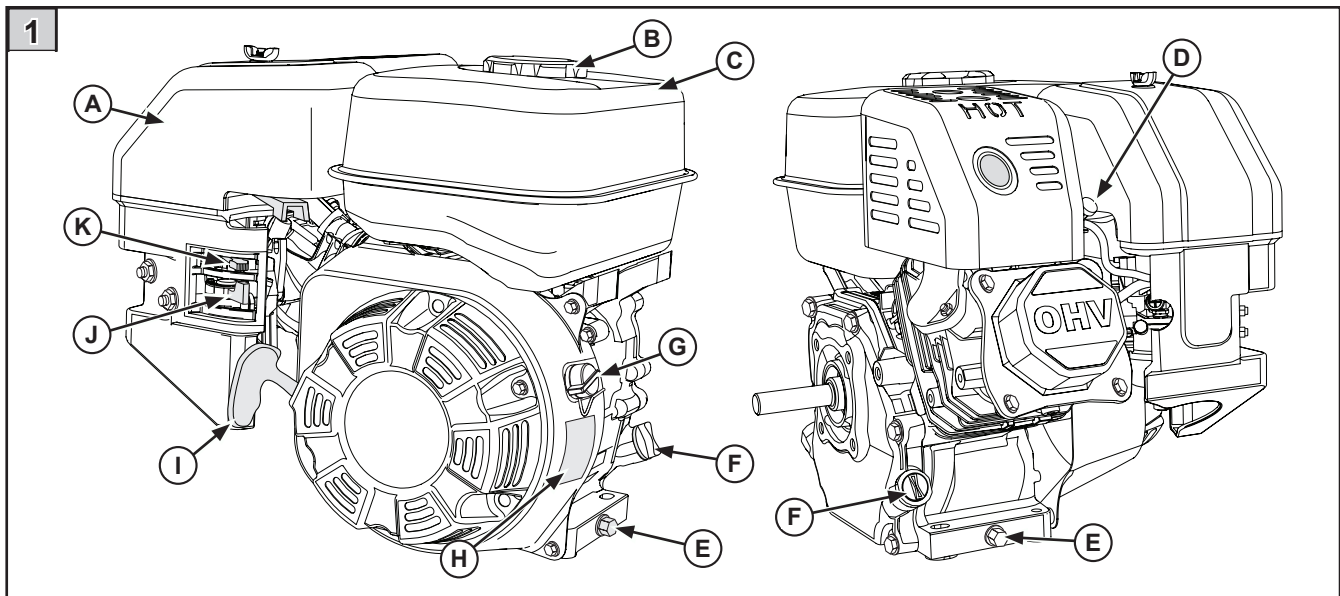
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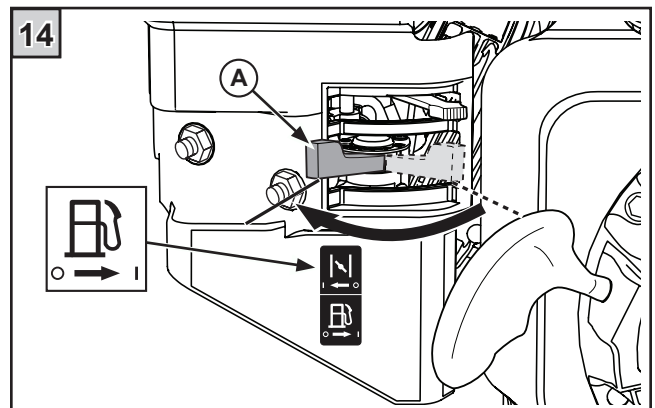
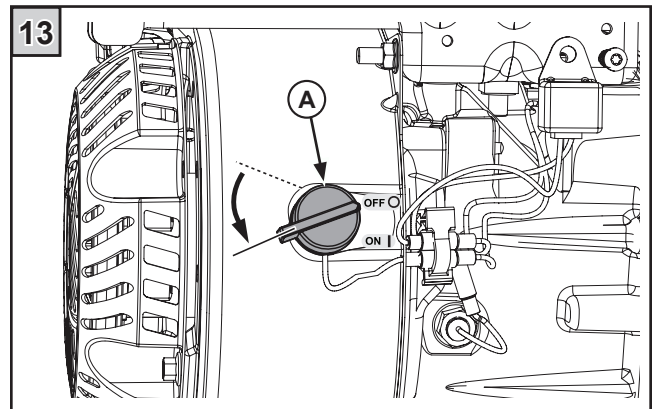
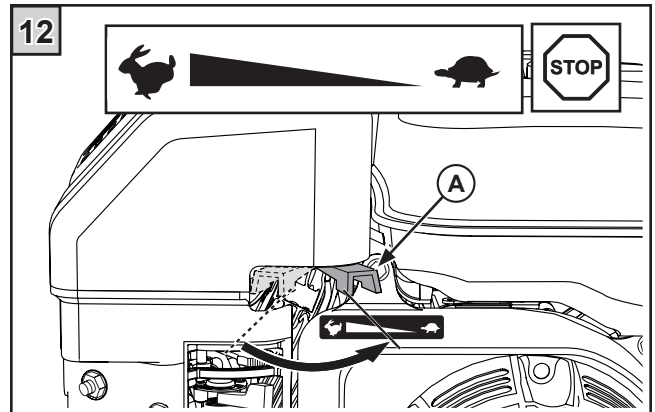
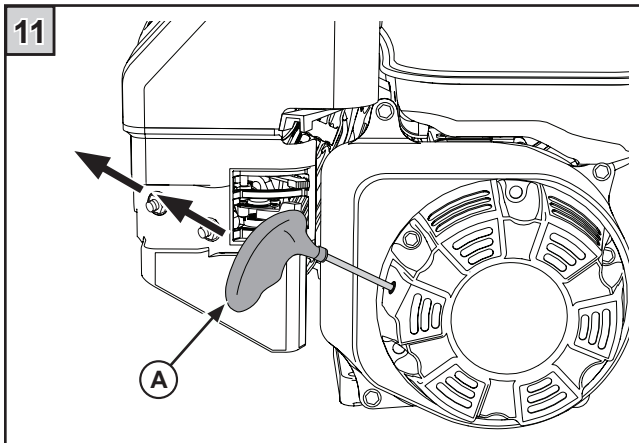
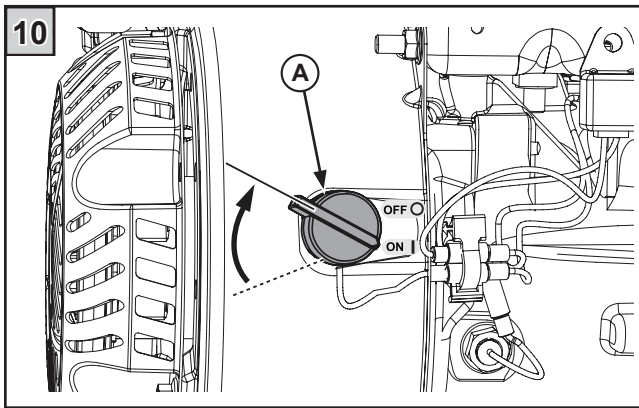
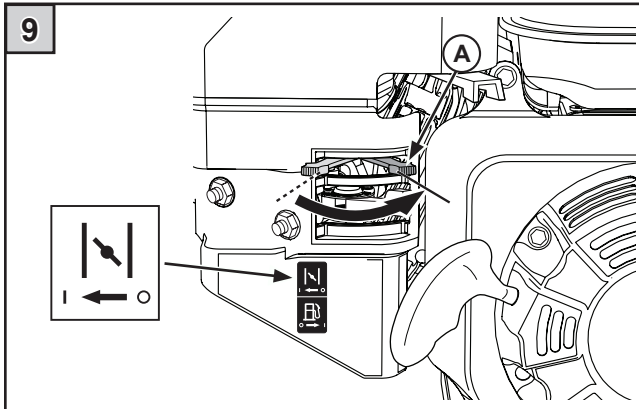
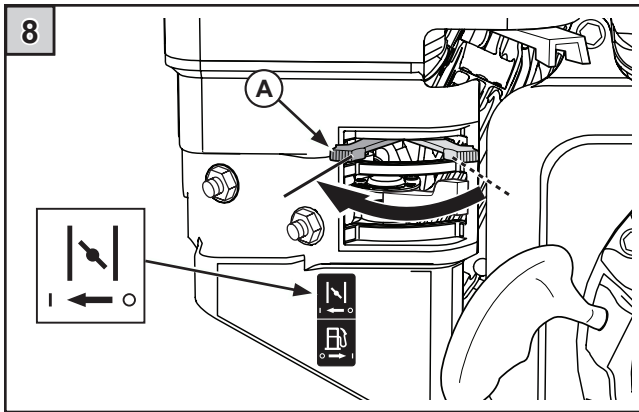


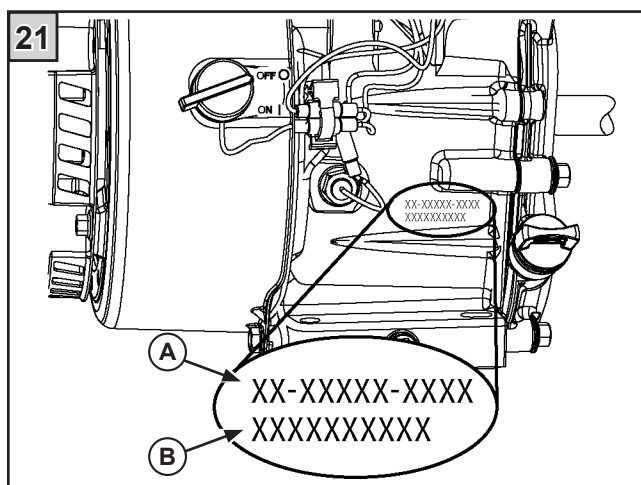
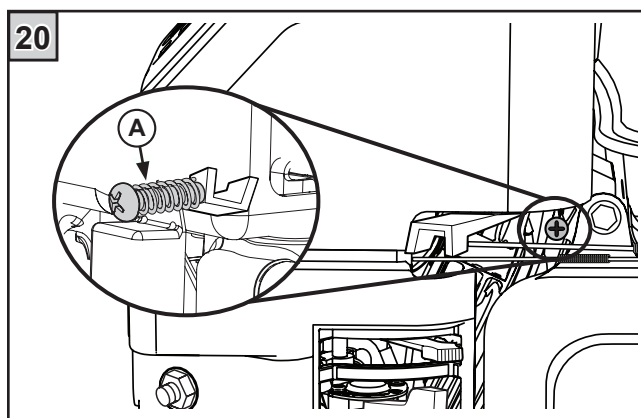
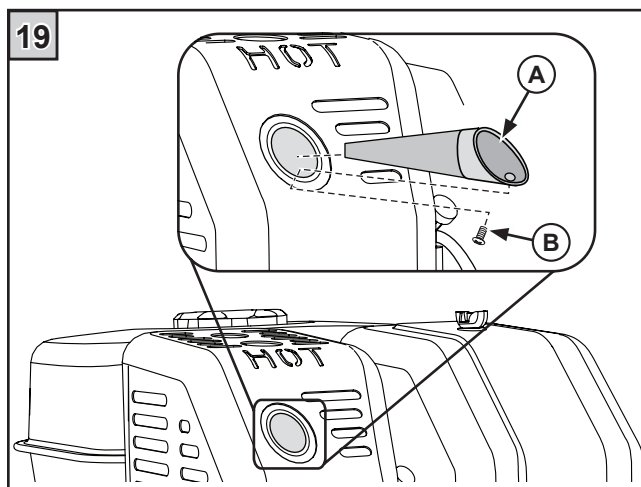
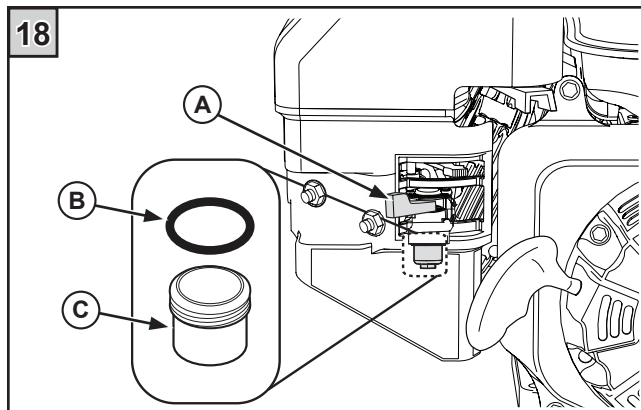
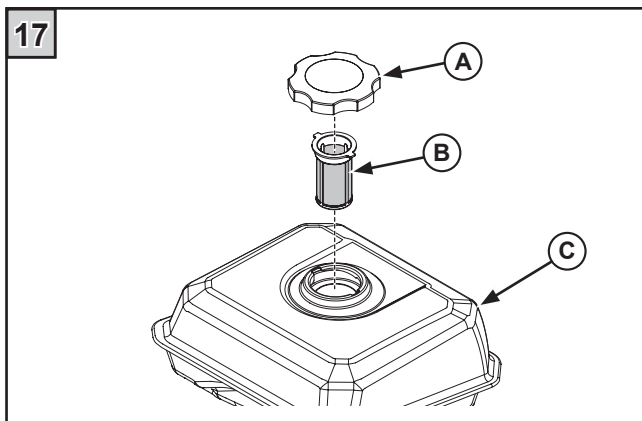
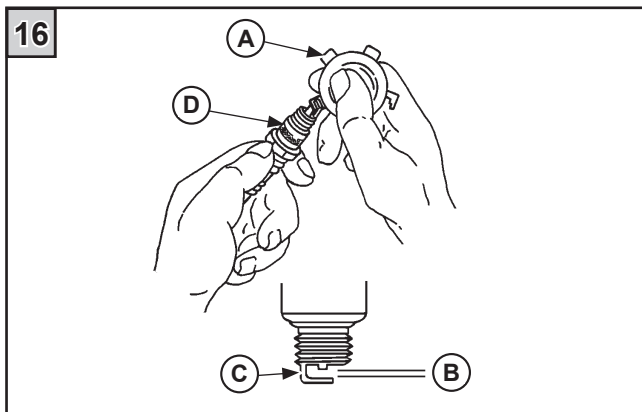
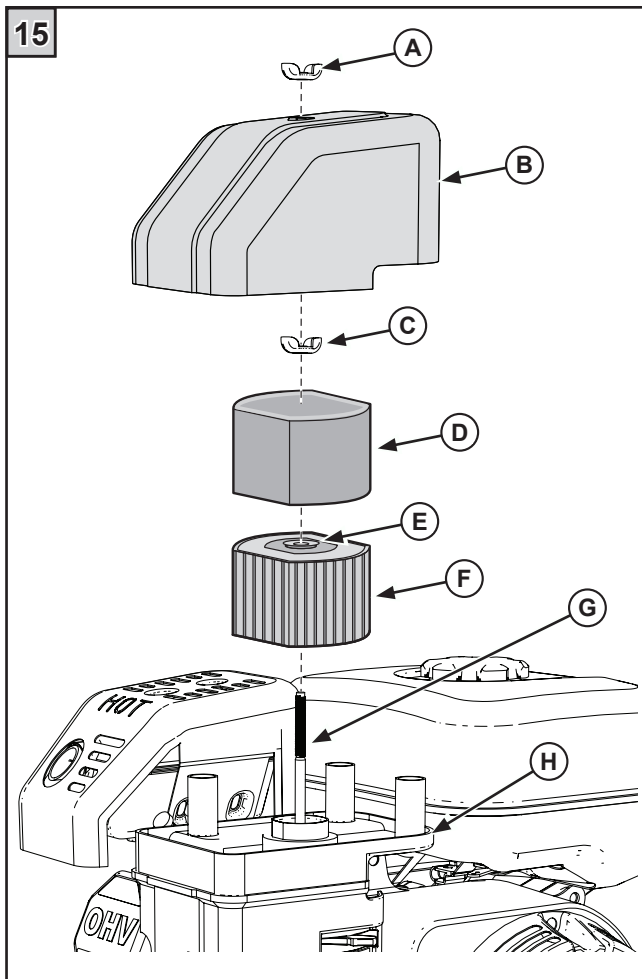
**KOHLER**  
ENGINES

#### **California Proposition 65 Warning**

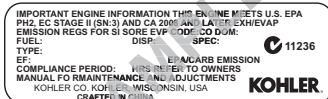
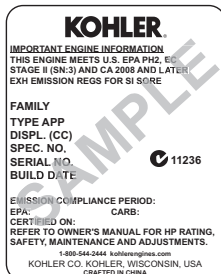
*Engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.*







22



## Symbols Associated with This Product

23



Alert

Read  
Manual

On



Off



Oil



Choke



Start



Stop



Slow



Fast



Fuel

## Safety Precautions

To ensure safe operation, please read the following statements and understand their meaning. Also refer to your equipment manufacturer's manual for other important safety information. This manual contains safety precautions which are explained below. Please read carefully.



### WARNING

Warning is used to indicate the presence of a hazard that *can* cause *severe* personal injury, death, or substantial property damage if the warning is ignored.



### CAUTION

Caution is used to indicate the presence of a hazard that *will* or *can* cause *minor* personal injury or property damage if the caution is ignored.

### NOTE

Note is used to notify people of installation, operation, or maintenance information that is important but not hazard-related.

## For Your Safety!

These precautions should be followed at all times. Failure to follow these precautions could result in injury to yourself and others.

	<p><b>WARNING</b></p> <p><b>Explosive Fuel can cause fires and severe burns.</b> Do not fill the fuel tank while the engine is hot or running.</p>
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### Explosive Fuel!

Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use gasoline as a cleaning agent.

	<p><b>WARNING</b></p> <p><b>Accidental Starts can cause severe injury or death.</b> Disconnect and ground spark plug lead(s) before servicing.</p>
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### Accidental Starts!

Disabling engine. Accidental starting can cause severe injury or death. Before working on the engine or equipment, disable the engine as follows: 1) Disconnect the spark plug lead(s). 2) Disconnect negative (-) battery cable from battery.

	<p><b>WARNING</b></p> <p><b>Hot Parts can cause severe burns.</b> Do not touch engine while operating or just after stopping.</p>
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### Hot Parts!


Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running, or immediately after it is turned off. Never operate the engine with heat shields or guards removed.

	<p><b>WARNING</b></p> <p><b>Carbon Monoxide can cause severe nausea, fainting or death.</b> Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.</p>
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### Lethal Exhaust Gases!


Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.



	<b>⚠ WARNING</b>
	Rotating Parts can cause severe injury. Stay away while engine is in operation.

### Rotating Parts!

Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate the engine with covers, shrouds, or guards removed.

	<b>⚠ CAUTION</b>
	Electrical Shock can cause injury. Do not touch wires while engine is running.

### Electrical Shock!

Never touch electrical wires or components while the engine is running. They can be sources of electrical shock.

**Congratulations on your purchase of a Kohler Engine.** Every part, every component, every system on a Kohler engine is guided by our exclusive Performance Engineering philosophy:

- To operate on the leading edge of innovation
- To push the boundaries of cleaner, more efficient engines
- To manufacture the highest performing, most reliable engines on the market

You can rest assured that your Kohler Engine will provide maximum power and reliability in all operating conditions. Also, Kohler engines are backed by a worldwide network of over 10,000 distributors and dealers. For more information on Kohler Engines or to find a Kohler Service Center, visit [KohlerEngines.com](http://KohlerEngines.com).

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

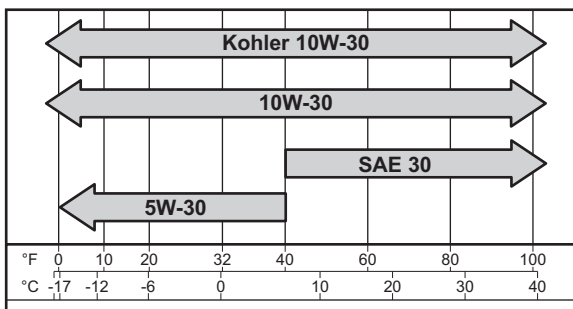
## Oil Recommendations

Using the proper type and weight of oil in the engine is extremely important, as is daily checking of oil level and changing oil regularly. Failure to use the correct oil, or using dirty oil, will cause premature engine wear and failure.

### Oil Type


Use high-quality oil that ranks at or above the American Petroleum Institute's (API) SJ service class. Select the oil's viscosity based on air temperature at the time of operation, as shown in the viscosity grades table.

### Recommended SAE Viscosity Grades



Use service class SJ rated oil or higher. Do not extend the oil change intervals longer than recommended, as this can cause engine damage and may void the warranty. An API symbol on the oil container identifies the service class and SAE viscosity grade.

## Fuel Recommendations

	<b>⚠ WARNING</b>
	Explosive Fuel can cause fires and severe burns. Do not fill the fuel tank while the engine is hot or running.

Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use gasoline as a cleaning agent.

## General Fuel Recommendations

See Figure 1

Purchase gasoline in small quantities and store in clean, approved containers. A container with a capacity of 2 gallons or less with a pouring spout is recommended. Such a container is easier to handle and helps eliminate spillage during refueling.

To minimize gum deposits in your fuel system and to ensure easy starting, do not use gasoline left over from the previous season.

Do not add oil to the gasoline.

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

### Fuel Type

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

Unleaded gasoline is recommended as it leaves less combustion chamber deposits and reduces harmful exhaust emissions. Leaded gasoline is not recommended.

### Gasoline/Alcohol Blends

Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is approved as a fuel for Kohler engines. Other gasoline/alcohol blends, including E20 and E85, should not be used. Failures resulting from use of these fuels will not be warranted.

### Gasoline/Ether Blends

Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blends (up to a maximum of 15% MTBE by volume) are approved as a fuel for Kohler engines. Other gasoline/ether blends are not approved.

### Fuel Line

These engines use Low Permeation SAE 30 R7 rated fuel lines, certified to meet emission requirements. Standard fuel lines may not be used. Order replacement hose through a Kohler Service Center.

### Operating Instructions

*Also read the operating instructions of equipment this engine powers.*

### Check Oil Level

See Figures **1**, **2**, **3**, and **4**

The importance of checking and maintaining the proper oil level in the crankcase cannot be overemphasized.

Check oil **BEFORE EACH USE** as follows:

1. Make sure the engine is stopped, level, and cool so the oil has had time to drain into the sump.
2. Clean the area around and beneath the dipstick or the oil fill plug (F) before removing it. This will help keep dirt, debris, and other foreign matter out of the engine. See Figure 1.

NOTE: The engine may be equipped with two dipsticks or an oil fill plug and a dipstick. These can be placed in either hole.

3. **Checking oil level with a dipstick (A):** Unscrew and remove the dipstick; wipe off oil. Reinsert the dipstick into the oil fill tube and rest the dipstick on the oil fill neck (B). Turn it counterclockwise until the oil fill cap drops down to the lowest point of the thread leads. **Do not** thread the dipstick cap onto the tube. See Figure 2.

**Checking oil level with an oil fill plug:** Unscrew and remove the oil fill plug (A). The level should be up to, but not over, the point of overflowing the filler neck (B). See Figure 3.



4. If the level is low, add oil of the proper type and to the correct level. (Refer to **Oil Type**.) Always check the level before adding more oil.
5. Reinstall the dipstick/oil fill plug (A) and gasket (B), and tighten securely. See Figure 4.

NOTE: Over tightening the dipstick/oil fill plug (A) will distort the gasket (C) and may cause oil weeping. See Figure 4.

NOTE: To prevent extensive engine wear or damage, always maintain the proper oil level in the crankcase. Never operate the engine with the oil level above the correct level.

### Add Fuel

See Figures **1** and **5**

	<div> <b>WARNING</b></div> <div><b>Explosive Fuel can cause fires and severe burns.</b> Do not fill the fuel tank while the engine is hot or running.</div>
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1. Make sure the engine is **OFF**, level, and is cool.
2. Clean the area around the fuel cap (B). See Figure 1.
3. Remove the fuel cap. Fill to the base of the filler neck (A). Do not overfill the fuel tank (B). Leave room for the fuel to expand. See Figure 5.
4. Reinstall the fuel cap (B) and tighten securely. See Figure 1.

### Check Cooling Areas

To ensure proper cooling, make sure the recoil starter screen, cooling fins, and other external surfaces of the engine are kept clean **at all times**.

NOTE: Operating the engine with a blocked screen, dirty or plugged cooling fins, and/or cooling shrouds removed, will cause engine damage due to over heating.

### Check Air Cleaner

See Figure **1**

This engine is equipped with either a replaceable, high-density paper air cleaner element. In addition, an optional foam precleaner may also be included.

Check the air cleaner (A) for a buildup of dirt and debris daily or before starting the engine. Keep the area in and around the air cleaner clean. Also check for loose or damaged components. Replace all worn or damaged air cleaner components.

NOTE: Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine, causing premature wear and failure.

### Pre-Start Checklist

1. Check oil level; if low, add oil. Do not overfill. (Refer to **Check Oil Level**.)

NOTE: Engines are shipped without oil. Do not start engine with low or no oil. This will cause damage to the engine and will not be covered under warranty.

2. Check fuel level; if low, add fuel. Do not overfill.
3. Check cooling areas, air intake areas, and external surfaces of engine. Make sure they are clean and unobstructed.
4. Check that the air cleaner components and all shrouds, equipment covers, and guards are in place and securely fastened.
5. 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 that could keep the engine from starting.

## Cold Weather Starting Hints


1. Be sure to use the proper oil for the temperature expected. (Refer to **Oil Recommendations**.)
2. Declutch all possible external loads.
3. Use fresh winter grade fuel.

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

4. **Electric Start Models:** Be sure the battery is in good condition. A warm battery has much more starting capacity than a cold battery.

## Starting

See Figures **6**, **7**, **8**, **9**, **10**, and **11**

	<b>WARNING</b> <b>Carbon Monoxide can cause severe nausea, fainting or death.</b> Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.
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*Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.*

1. Turn the fuel shut-off valve (A) to the **ON** position. See Figure 6.
2. For a **Cold Engine** – Place the throttle control (A) midway between the **SLOW** and **FAST** positions. See Figure 7. Place the choke control (A) into the **ON** position. See Figure 8.

For a **Warm Engine (Normal Operating Temperatures)** – Place the throttle control (A) midway between the **SLOW** and **FAST** positions. A warm engine usually does not require the choke on. See Figure 7.

NOTE: The choke position for starting may vary depending upon temperature and other factors. Once engine is running and warm, turn choke to **OFF** position (A). See Figure 9.

3. Start the engine as follows:

For **Retractable Start Engine** – Turn engine On/Off switch (A) to the **ON** position. See Figure 10.

**SLOWLY** pull the starter handle (A) until just past compression – **STOP!** Return starter handle, and pull firmly with a smooth, steady motion to start. Pull the handle straight out to avoid excessive rope wear from the starter rope guide. See Figure 11.

NOTE: Extend the starting rope periodically and check its condition. If the rope is frayed, have it replaced immediately by your Kohler Engine Service Center.

4. Gradually return the choke control to the **OFF** position (A) after the engine starts and warms up. See Figure 9.

The engine/equipment may be operated during the warm-up period, but it may be necessary to leave the choke partially on until the engine warms up.

## Stopping

See Figures **12**, **13**, and **14**

1. If possible, remove the load.
2. Move the throttle control (A) to the **SLOW** or **LOW** idle position. Allow the engine to run at idle for 30–60 seconds. See Figure 12.
3. Turn On/Off switch or key switch (A) to the **OFF** position. Move throttle to the **STOP** position if equipped. See Figure 13.
4. Close the fuel shut-off valve (A). See Figure 14.

## Operating

### Angle of Operation


Continuous operation at angles up to 25° with 1/2-full fuel tank. Before operation check oil level to ensure crankcase oil level is correct. (Refer to **Check Oil Level**.)

Intermittent operation, up to one minute at angles up to 30° with 1/2-full fuel tank. Check oil level to ensure crankcase oil level is correct. (Refer to **Check Oil Level**.)

Refer to the operating instructions of the equipment this engine powers. Because of equipment design or application, there may be more stringent restrictions regarding the angle of operation.

NOTE: Do not operate this engine continuously at angles exceeding 25° in any direction, because engine damage could result from insufficient lubrication.

## Cooling

	<b>WARNING</b> <b>Hot Parts can cause severe burns.</b> Do not touch engine while operating or just after stopping.
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*Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running, or immediately after it is turned off. Never operate the engine with heat shields or guards removed.*

NOTE: If debris builds up on the recoil starter screen or other cooling areas, stop the engine immediately and clean. Operating the engine with blocked or dirty air intake and cooling areas can cause extensive damage due to overheating. (Refer to **Clean Air Intake/Cooling Areas**.)

To ensure proper cooling, make sure the recoil starter screen, cooling fins, and other external surfaces of the engine are kept clean **at all times**.

Before each season of operation, clean the cooling fins and external surfaces as necessary. Reinstall the blower housing and other cooling shrouds.



## Engine Speed

NOTE: Do not tamper with the governor setting to increase the maximum engine speed. Overspeed is hazardous and will void the engine warranty. The maximum allowable high-idle speed for these engines is 3850 ± 100 RPM, no load.

## Carburetor

The carburetor is designed to deliver the correct fuel-to-air mixture to the engine under all operating conditions. It has been calibrated at the factory and is not adjustable.

NOTE: To ensure correct engine operation at altitudes above 1525 meters (5000 ft.), it may be necessary to have a Kohler Engine Service Center install a high-altitude jet kit. If a high-altitude kit has been installed, the engine must be reconverted to the original jet size before it is operated at lower altitudes, or overheating and engine damage may result.


If engine troubles appear to be fuel-system related, check the following areas before seeking service from a Kohler Engine Service Center.

- Ensure the fuel tank is filled with clean, fresh gasoline.
- Ensure the air cleaner and precleaner are clean and securely fastened.
- Ensure that the fuel tank cap vent is not blocked and that it is operating properly.
- Ensure the in-line fuel filter, if equipped, is clean and unobstructed. Replace if necessary.

If after checking these items the engine is still hard to start, runs roughly, or stalls at low-idle speed, it may be necessary to have the carburetor serviced by a Kohler Engine Service Center.

## Maintenance Instructions

Maintenance, repair, or replacement of the emission control devices and systems, which are being done at the customer's expense, may be performed by any non-road engine repair establishment or individual. Warranty repairs must be performed by a Kohler Engine Service Center.

	<b>WARNING</b> Accidental Starts can cause severe injury or death. Disconnect and ground spark plug lead(s) before servicing.
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*Disabling engine. Accidental starting can cause severe injury or death. Before working on the engine or equipment, disable the engine as follows: 1) Disconnect the spark plug lead(s). 2) Disconnect negative (–) battery cable from battery.*

## Maintenance Schedule

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

Frequency	Maintenance Required
Daily or Before Starting Engine	Check oil level.
	Fill fuel tank.
	Check air intake and cooling areas; clean as necessary. <sup>1</sup>
	Check fuel screen.
	Check air cleaner element and precleaner (if equipped).
	Check spark arrestor (if equipped); clean as necessary. <sup>1</sup>
Yearly or Every 50 Hours	Clean or replace precleaner (if equipped). <sup>1</sup>
Yearly or Every 100 Hours	Replace air cleaner element.
	Change oil (after first 5 hours, then yearly or 100 hours.)
	Clean cooling areas.
	Clean spark arrestor (if equipped).
	Clean or replace spark plug, and set gap.
	Clean fuel valve cup.
	Replace fuel filter (if equipped).
	Check and adjust valve clearance when engine is cold. <sup>2</sup>
	Service starter motor drive (if equipped). <sup>2</sup>
	Have combustion chamber decarbonized. <sup>2</sup>
Every 200 Hours or as Necessary	Replace fuel line.

<sup>1</sup> Perform these maintenance procedures more frequently under extremely dusty, dirty conditions.  
<sup>2</sup> These procedures should be performed by a Kohler Engine Service Center.

## Oil Disposal

Protect and respect the environment. Dispose of oil at your local recycling center or municipal collection location in accordance with local ordinances.

## Change Oil

See Figures **1**, **2**, **3**, and **4**

For a new engine, change oil after the first **5 hours** of operation. Thereafter, change oil after every **100 hours** of operation.

For an overhauled engine, use Kohler 10W-30 service class SJ or higher oil for the first **5 hours** of operation. Change the oil after this initial run-in period. Refill with service class SJ or higher oil as specified in **Oil Type**.

Change the oil while the engine is still warm. The oil will flow freely and carry away more impurities. Make sure the engine is level when filling, checking, or changing the oil.

Change the oil as follows:

1. To keep dirt, debris, etc., out of the engine, clean the area around the dipstick/oil fill plug (F) before removing it. See Figure 1.
2. Remove the oil drain plug (E) and the dipstick/oil fill plug (F). Allow ample time for complete drainage. See Figure 1.
3. Reinstall the drain plug (E) and tighten to **17.6 N·m (13 ft. lb.)**. See Figure 1.
4. Fill the crankcase with new oil of the proper type, up to the point of overflowing the filler neck. (Refer to **Oil Type**). Always check the level before adding more oil.
5. Reinstall the dipstick/oil fill plug (A) and gasket (B), and tighten securely. See Figures 2 and 3.

NOTE: Over-tightening the dipstick/oil fill plug (A) will distort the gasket (C) and may cause oil weeping. See Figure 4.

## Oil Sentry™

Some engines are equipped with an optional Oil Sentry™ switch. This switch is designed to prevent the engine from being started in a low-oil or no-oil condition. The Oil Sentry™ may not shut down a running engine before damage occurs. In some applications this switch may activate a warning signal.

NOTE: Check the oil level **BEFORE EACH USE** and maintain to the correct level. This includes engines equipped with Oil Sentry™.

## Service Precleaner and Air Cleaner Element

See Figure **15**

These engines are equipped with a replaceable, high-density paper air cleaner element (F). Some engines are also equipped with a pre-oiled, foam precleaner (D), which surrounds the paper element.

Check the air cleaner daily or before starting the engine. Check for a buildup of dirt and debris around the air

cleaner system. Keep this area clean. Also check for loose or damaged components. Replace all bent or damaged air cleaner components.

NOTE: Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine, causing premature wear and failure.

## Service Precleaner (If Equipped)

See Figure **15**

Wash or replace the precleaner every **50 hours** of operation (more often under extremely dusty or dirty conditions).

1. Remove the top wing nut (A) and air cleaner cover (B).
2. Remove the wing nut (C) (some models) and special washer (E).
3. Remove the precleaner (D) from the paper element (F).
4. Wash the precleaner (D) in warm water with detergent. Rinse the precleaner thoroughly until all traces of detergent are eliminated. Squeeze out excess water (do not wring). Allow the precleaner to air dry. Do not oil precleaner.
5. Reinstall the precleaner (D) over the paper element (F).
6. Slide the precleaner (D) and paper element (F) onto the air cleaner stud (G). Secure with special washer (E) and wing nut (C) (some models).
7. Reinstall the air cleaner cover (B) and secure with wing nut (A).

## Service Air Cleaner Element

See Figure **15**

**Yearly or 100 hours** (which ever comes first) of operation (more often under extremely dusty or dirty conditions), replace the paper element.

1. Remove the top wing nut (A) and air cleaner cover (B). Remove the wing nut (C) (some models) and special washer (E).
2. Separate the precleaner (D) from the element (F) and service as outlined in **Service Precleaner**.

NOTE: Do not wash the paper element (F) 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 the sealing surfaces are bent or damaged.

3. When servicing the air cleaner, check the air cleaner base (H). Make sure it is secured and not bent or damaged. Check the air cleaner cover/housing (B) for damage or improper fit. Replace all bent or damaged air cleaner components.
4. Slide the precleaner (D) and paper element (F) onto the air cleaner stud (G). Secure with special washer (E) and wing nut (C) (some models).

- Reinstall the air cleaner cover (B) and secure with wing nut (A).

## Ignition

This engine is equipped with a dependable maintenance-free ignition system. Other than periodically checking/replacing the spark plug, no adjustments are necessary or possible with this system.

In the event starting problems should occur that are not corrected by replacing the spark plug, see your Kohler Engine Service Center.

NOTE: Some engines may be equipped with components that comply with RFI regulations.

## Spark Plug

See Figures **1** and **16**


Yearly or every **100 hours** of operation, remove the spark plug, check its condition, and reset the gap or replace with a new plug as necessary. The original spark plug is a Champion® RC12YC; the Kohler equivalent is **Kohler Part No. 12 132 02-S** or for RFI **Kohler Part No. 25 132 14-S**. Equivalent alternate brand plugs can also be used.

- Before removing the spark plug (D), clean the area around the base of the plug to keep dirt and debris out of the engine. See Figure 1.
- Remove the plug (D) and check its condition. Replace the plug if worn or if reuse is questionable. See Figure 16.
- Check the gap (B) using a feeler gauge (A). See Figure 16.

NOTE: Do not clean the spark plug in a machine using abrasive grit. Some grit could remain in the spark plug and enter the engine, causing extensive wear and damage.

- Adjust the gap (B) by carefully bending the ground electrode (C). Gap spark plug to **0.76 mm (0.030 in.)**. See Figure 16.
- Reinstall the spark plug into the cylinder head. Torque the plug to **20 N·m (14 ft. lb.)**.

## Fuel Filter (If Equipped)


	<p><b>WARNING</b></p> <p>Explosive Fuel can cause fires and severe burns. Do not fill the fuel tank while the engine is hot or running.</p>
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Replace with a Kohler fuel filter yearly or every **50 hours** of operation. Removing the air filter cover will allow easy access to the fuel filter for servicing.

## Fuel Tank Screen

See Figure **17**

A serviceable fuel tank screen is located under the fuel tank cap, in the filler neck.

	<p><b>WARNING</b></p> <p>Explosive Fuel can cause fires and severe burns. Do not fill the fuel tank while the engine is hot or running.</p>
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Daily, or as required, clean screen of any accumulation as follows:


- Remove the fuel tank cap (A) and screen (B).
- Clean the screen (B) with solvent. Replace if damaged.
- Wipe the screen (B) and insert it into the filler neck (C).
- Tighten the tank cap (A) securely.

## Fuel Valve

See Figure **18**

Engines are equipped with a fuel valve and integral screen filter located at the inlet of the carburetor. It controls and filters fuel flow from the tank to the carburetor.

Every **100 hours** of operation clean fuel valve cup of any accumulated debris. If the screen becomes clogged or damaged, replace it.

	<p><b>WARNING</b></p> <p>Explosive Fuel can cause fires and severe burns. Do not fill the fuel tank while the engine is hot or running.</p>
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- Stop the engine.
- Turn the fuel valve lever (A) to the **OFF** position.
- Remove the fuel valve cup (C).
- Clean the fuel valve cup (C) with solvent and wipe it off.
- Check the O-ring (B). Replace if damaged.
- Place the O-ring (B) on the fuel valve cup (C). Rotate the fuel valve cup until it is finger tight. Turn with a wrench 1/2 to 3/4 full turn.
- Turn the fuel valve (A) to the **ON** position and check for leaks. If fuel valve cup leaks repeat steps 5 and 6.
- Tighten the tank cap securely.


## Spark Arrestor

See Figure **19**

Engines are equipped with a spark arrestor for operational and environmental safety.

Every **100 hours** of operation, remove and clean or replace the spark arrestor following the instructions below.





## WARNING

Hot Parts can cause severe burns.  
Do not touch engine while operating  
or just after stopping.

1. Remove the securing hardware (B) and the spark arrestor (A).
2. Clean the carbon deposits out of the screen using a wire brush.
3. Check the spark arrestor (A). Replace if damaged.
4. Reinstall the spark arrestor (A), securing with the hardware (B) previously removed.

### Clean Air Intake/Cooling Areas

To ensure proper cooling, make sure the recoil starter screen, cooling fins, and other external surfaces of the engine are kept clean **at all times**. Check daily.

Every **100 hours** of operation (more often under extremely dusty, dirty conditions), remove the blower housing and other cooling shrouds. Clean the cooling fins and external surfaces as necessary. Make sure the cooling shrouds are reinstalled.

**NOTE:** Operating the engine with a blocked grass screen, dirty or plugged cooling fins, and/or cooling shrouds removed, will cause engine damage due to overheating.

### Carburetor Troubleshooting and Adjustments

See Figure 20

**NOTE:** Carburetor adjustments should be made only after the engine is at operating temperature.

The carburetor is designed to deliver the correct fuel-to-air mixture to the engine under all operating conditions. The idle mixture is set at the factory and normally does not require adjustment.

If the engine is hard to start, runs roughly, or stalls at low idle speed, it may be necessary to adjust or service the carburetor. Engine must not exceed **3850 ± 100 RPM** if the high speed screw (A) is adjusted.

If engine troubles are experienced that appear to be fuel system related, check the following areas before adjusting the carburetor:

- Make sure the fuel tank is filled with clean, fresh gasoline.
- Make sure that the fuel tank cap vent is not blocked and that it is operating properly.
- Make sure the fuel shut-off valve is fully open.
- Make sure fuel shut-off valve strainer and in-line fuel filter (if used) are clean and unobstructed. Clean or replace as necessary.
- Make sure fuel is reaching the carburetor. This includes checking the fuel lines and components for restrictions or problems. Replace as necessary.
- Make sure On/Off switch is functioning properly.
- Make sure the air cleaner element is clean and all air cleaner components are fastened securely.

If, after checking the items listed above, the engine is hard to start, runs roughly, or stalls at low-idle speed, it may be necessary to adjust or service the carburetor.

### Troubleshooting

When problems occur, first check for simple reasons for a problem: for example, an empty fuel tank or the fuel shut-off valve is turned off. Additional troubleshooting tips can be found in the troubleshooting table.

**NOTE:** Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. This work should be performed by a Kohler Engine Service Center.

Problem	Possible Cause								
	No Fuel	Fuel Valve Closed/Off	Improper Fuel	Dirt In Fuel Line	Dirty Debris Screen	Incorrect Oil Level	Engine Overloaded	Dirty Air Cleaner	Faulty Spark Plug
Will Not Start	●	●	●	●		●	●	●	●
Hard Starting	●		●	●		●	●	●	●
Stops Suddenly	●	●		●	●	●	●	●	
Lacks Power			●	●	●	●	●	●	●
Operates Erratically			●	●	●	●	●	●	●
Knocks or Pings			●		●		●		●
Skips or Misfires			●	●	●			●	●
Backfires				●			●	●	●
Overheats				●	●	●	●	●	
High Fuel Consumption							●	●	●
Smokes			●			●			●



## Storage

See Figures **1** and **6**

If the engine will be out of service for two months or more, follow these storage procedures:

1. Clean the exterior surfaces of the engine.
2. Change the oil while the engine is still warm from operation. (Refer to **Change Oil**.)
3. The engine must be run until the fuel tank is completely emptied, or the gasoline must be treated with a stabilizer to prevent deterioration. If a stabilizer is used, follow the manufacturer's instructions. Fill the tank with fresh gasoline and run the engine for 2–3 minutes to ensure stabilized fuel has entered the carburetor.

To empty the system, run the engine until the tank and system are empty.

4. Before transporting the engine, ensure the fuel valve (A) is in the **OFF** position to prevent fuel spillage. See Figure 6.
5. Remove the spark plug (D). Add one tablespoon of engine oil into the spark plug hole. Reinstall the plug, but do not connect the plug lead. Turn the crank to rotate the engine two to three revolutions. See Figure 1.
6. Remove the spark plug (D). Cover the spark plug hole with your thumb and turn the engine over until the piston is at the top of its stroke (pressure against the thumb is greatest). Reinstall the spark plug, but do not connect the spark plug lead. See Figure 1.
7. Store the engine on a level surface in a clean, dry place. Never store the unit where there is an open flame, spark, or pilot light such as on a water heater or other appliances.

## Transport

1. Turn the fuel valve to the **OFF** position.
2. Tighten the fuel cap.
3. Read and follow the transport guidelines provided by equipment manufacturer.

## Repairs

Repair information is available in Kohler Engine service manuals, which are available at KohlerEngines.com, or at Kohler Engine Service Centers. Major repairs generally require the services of a trained mechanic and the use of specialized tools and equipment. Kohler Engine Service Centers have the facilities, training, and genuine Kohler replacement parts necessary to perform these services.

For the nearest sales and service location, visit our Web site at KohlerEngines.com, or in the U.S. and Canada call 1-800-544-2444.

## Parts Ordering

The engine model, specification, and serial numbers are required when ordering replacement parts from your Kohler Engine Service Center. These numbers are found on the identification plate, which is affixed to the engine shrouding. Include letter suffixes if there are any. (Refer to **Engine Identification Numbers**.)

Always insist on genuine Kohler replacement parts, as they adhere to strict standards for fit, reliability, and performance. Visit KohlerEngines.com or your Kohler Engine Service Center.

## Engine Identification Numbers

See Figures **1** and **22**

Engine identification numbers will appear on one of several variations of labels affixed to the engine (Figure 22). See Figure 1 for Engine Identification Label location (H).

When ordering parts, or in any communication concerning this engine, always give the model name, specification number, and serial number — including any letter suffixes.

Record all engine ID numbers for future reference.

## Serial Number and Spec Number

See Figures **21** and **22**

The spec number (A) and serial number (B) is etched into the engine block, directly below the fuel tank. When ordering parts, or in any communication, always provide model, specification number (A), and serial number (B). Record these numbers for future reference. See Figure 21.

Additional engine identification numbers can be found on the engine ID labels. See Figure 22.

## Emission Compliance

See Figure **22**

The Emission Compliance Period referred to on the Emission Control or Air Index label indicates the number of operating hours for which the engine has been shown to meet Federal and CARB emission requirements. The following table provides the Engine Compliance Period (in hours) associated with the category descriptor found on the certification label.

Emission Compliance Period	
EPA	Category C
Below 225 cc	125 hours

Refer to certification label for engine displacement. Exhaust Emission Control System for model SH265 is EM for U.S. EPA and Europe.

<b>Engine Specifications*</b>	
<b>Model</b>	<b>SH265</b>
Bore	68 mm (2.7 in.)
Stroke	54 mm (2.1 in.)
Displacement	196 cc (12 cu. in.)
Gross Power @ 3600 RPM**	4.9 kW (6.5 HP)
Net Power @ 3600 RPM**	4.1 kW (5.5 HP)
Net Peak Torque @ 2800 RPM	11.5 N·m (8.5 ft. lb.)
Compression Ratio	8.5:1
Weight (Recoil Start)	16 kg (35.3 lb.)
Oil Capacity	.60 L (.63 qt.)
Fuel Capacity	3.6 L (3.8 qt.)
Exhaust Emission Control System	EM for U.S. EPA and Europe
<p><i>*Kohler Co. reserves the right to change product specifications, designs, and equipment without notice and without incurring obligation.</i></p> <p><i>**Horsepower ratings exceed Society of Automotive Engineers Small Engine Test Code J1940. Actual engine horsepower is lower and affected by, but not limited to, accessories (air cleaner, exhaust, charging, cooling, fuel pump, etc.), application, engine speed, and ambient operating conditions (temperature, humidity, and altitude).</i></p>	

## **COURAGE® ENGINE LIMITED WARRANTY**

Kohler Co. warrants to the original retail consumer that each new COURAGE® engine sold by Kohler Co. will be free from manufacturing defects in materials or workmanship in normal residential homeowner 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. If used commercially the COURAGE® engine is covered by a 90-day<sup>1</sup> limited warranty.

The warranty period begins on the date of purchase by the original retail consumer or commercial end user. "Residential homeowner service" means residential use by a retail consumer. "Commercial use" means all other uses, including use for commercial, or rental purposes. Once in commercial use, the engine will thereafter be considered a commercial use engine for the purposes of this warranty.

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 parts as inspection shall disclose to have been defective.

### **EXCLUSIONS:**

Mufflers on engines used commercially (non-residential) are warranted for 90 days from date of purchase. 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.

Kohler Co. AND/OR THE SELLER 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 repair or replacement of defective parts.

IMPLIED OR STATUTORY WARRANTIES, INCLUDING WARRANTIES 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 any one authorized to make any on 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. To locate the nearest facility, visit our Web site, [www.KohlerEngines.com](http://www.KohlerEngines.com), consult your local telephone directory or telephone 1-800-544-2444.

ENGINE DIVISION, KOHLER CO., KOHLER, WISCONSIN 53044

<sup>1</sup> With the exception of countries governed by the European Union (EU), where a one (1) year warranty is required for commercial/professional use.

**KOHLER CO.**  
**FEDERAL AND CALIFORNIA EMISSION CONTROL SYSTEMS**  
**LIMITED WARRANTY SMALL OFF-ROAD ENGINES**

The U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and Kohler Co. are pleased to explain the Federal and California Emission Control Systems Warranty on your small off-road equipment engine. In California beginning in 2006, "emissions" means both exhaust and evaporative emissions. For California, engines produced in 2006 and later must be designed, built and equipped to meet the state's stringent anti-smog standards. In other states, 1997 and later model year engines must be designed, built and equipped, to meet the U.S. EPA regulations for small non-road engines. The engine must be free from defects in materials and workmanship which cause it to fail to conform with U.S. EPA standards for the first two years of engine use from the date of sale to the ultimate purchaser. Kohler Co. must warrant the emission control system on the engine for the period of time listed above, provided there has been no abuse, neglect or improper maintenance.

The emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included are the hoses, belts and connectors and other emission related assemblies.

Where a warrantable condition exists, Kohler Co. will repair the engine at no cost, including diagnosis (if the diagnostic work is performed at an authorized dealer), parts and labor.

**MANUFACTURER'S WARRANTY COVERAGE**

Engines produced in 2006 or later are warranted for two years in California. In other states, 1997 and later model year engines are warranted for two years. If any emission related part on the engine is defective, the part will be repaired or replaced by Kohler Co. free of charge.

**OWNER'S WARRANTY RESPONSIBILITIES**

- (a) The engine owner is responsible for the performance of the required maintenance listed in the owner's manual. Kohler Co. recommends that you retain all receipts covering maintenance on the engine, but Kohler Co. cannot deny warranty solely for the lack of receipts or for your failure to assure that all scheduled maintenance was performed.
- (b) Be aware, however, that Kohler Co. may deny warranty coverage if the engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.
- (c) For warranty repairs, the engine must be presented to a Kohler Co. service center as soon as a problem exists. Call 1-800-544-2444 or access our web site at: [www.KohlerEngines.com](http://www.KohlerEngines.com), for the names of the nearest service centers. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding warranty rights and responsibilities, you should contact Kohler Co. at 1-920-457-4441 and ask for an engine service representative.

**COVERAGE**

Kohler Co. warrants to the ultimate purchaser and each subsequent purchaser that the engine will be designed, built and equipped, at the time of sale, to meet all applicable regulations. Kohler Co. also warrants to the initial purchaser and each subsequent purchaser, that the engine is free from defects in materials and workmanship which cause the engine to fail to conform with applicable regulations for a period of two years.

Engines produced in 2006 or later are warranted for two years in California. For 1997 and later model years, EPA requires manufacturers to warrant engines for two years in all other states. These warranty periods will begin on the date the engine is purchased by the initial purchaser. If any emission related part on the engine is defective, the part will be replaced by Kohler Co. at no cost to the owner. Kohler Co. is liable for damages to other engine components caused by the failure of a warranted part still under warranty.

Kohler Co. shall remedy warranty defects at any authorized Kohler Co. engine dealer or warranty station. Warranty repair work done at an authorized dealer or warranty station shall be free of charge to the owner if such work determines that a warranted part is defective.

Listed below are the parts covered by the Federal and California Emission Control Systems Warranty. Some parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part. The warranted parts include the following if they were present in the engine purchased:

*Continued on the next page.*

- Oxygen sensor (if equipped)
- Intake manifold (if equipped)
- Exhaust manifold (if equipped)
- Catalytic muffler (if equipped)
- Thermal reactor muffler (if equipped)
- Spark advance module (if equipped)
- Air filter, fuel filter, and spark plugs (only to first scheduled replacement point)
- Crankcase breather
- Ignition module(s) with high tension lead
- Gaseous fuel regulator (if equipped)
- Electronic control unit (if equipped)
- Carburetor or fuel injection system (if equipped)
- Fuel lines, fuel line fittings and clamps (if equipped)
- Fuel metering valve (if equipped)
- Air injection system (if equipped)
  - Air pump or pulse valve assembly (if equipped)
  - Control/distribution valve (if equipped)
  - Distribution manifold (if equipped)
  - Air hoses (if equipped)
  - Vacuum lines (if equipped)
- Evaporative system (if equipped)
  - Canister (if equipped)
  - Canister filter (if equipped)
  - Vapor hose (if equipped)
  - Orifice connector (if equipped)
  - Fuel tank (if equipped)
  - Fuel cap (if equipped)
  - Primer bulb canister (if equipped)

## LIMITATIONS

This Emission Control System Warranty shall not cover any of the following:

- Repair or replacement required because of misuse or neglect, improper maintenance, improper repairs, or replacements not conforming to Kohler Co. specifications that adversely affect performance and/or durability and alterations or modifications not recommended or approved in writing by Kohler Co.,
- Replacement of parts and other services and adjustments necessary for required maintenance at and after the first scheduled replacement point,
- Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.,
- Diagnosis and inspection fees that do not result in eligible warranty service being performed, and
- Any add-on or modified part, or malfunction of authorized parts due to the use of add-on or modified parts.

## MAINTENANCE AND REPAIR REQUIREMENTS

The owner is responsible for the proper use and maintenance of the engine. Kohler Co. recommends that all receipts and records covering the performance of regular maintenance be retained in case questions arise. If the engine is resold during the warranty period, the maintenance records should be transferred to each subsequent owner. Kohler Co. reserves the right to deny warranty coverage if the engine has not been properly maintained; however, Kohler Co. may not deny warranty repairs solely because of the lack of repair maintenance or failure to keep maintenance records.

Normal maintenance, replacement or repair of emission control devices and systems may be performed by any repair establishment or individual; however, **warranty repairs must be performed by a Kohler Authorized Service Center**. Any replacement part or service that is equivalent in performance and durability may be used in non-warranty maintenance or repairs, and shall not reduce the warranty obligations of the engine manufacturer.

# KOHLER<sup>®</sup>

# ENGINES

FOR SALES AND SERVICE INFORMATION  
IN U.S. AND CANADA, CALL **1-800-544-2444**

KohlerEngines.com

ENGINE DIVISION, KOHLER CO., KOHLER, WISCONSIN 53044

FORM NO.: 18 590 01
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