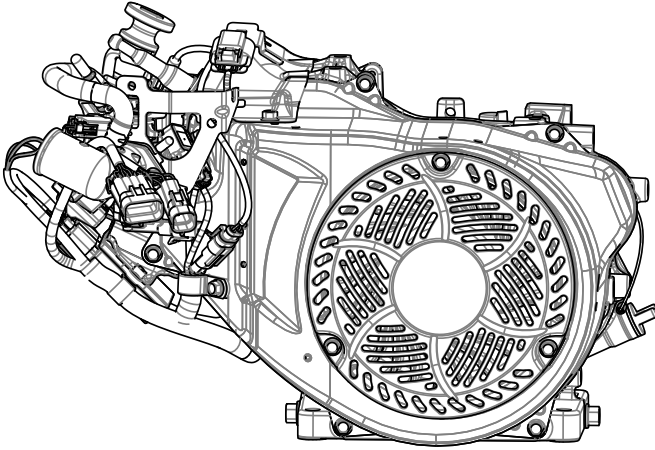


Command PRO

ECH440 for CLUB CAR

Owners Manual



Record engine information to reference when ordering parts or obtaining warranty coverage.

Engine Model _____

Specification _____

Serial Number _____

Purchase Date _____

IMPORTANT:

Read all safety precautions and instructions carefully before operating equipment. Refer to operating instruction of equipment that this engine powers.

Ensure engine is stopped and level before performing any maintenance or service.

Warranty coverage as outlined in the warranty card and on Engines.rehlko.com. Please review carefully as it provides your specific rights and obligations.

To maintain compliance with applicable emission regulations, exhaust system backpressure may not exceed limits which can be found on Engines.rehlko.com. Search by Model No., then select Specs tab.


Rehiko Engines has published CO₂ values on Engines.rehlko.com website.

Safety Precautions


⚠ WARNING: A hazard that could result in death, serious injury, or substantial property damage.

⚠ CAUTION: A hazard that could result in minor personal injury or property damage.


NOTE: is used to notify people of important installation, operation, or maintenance information.

| | |
|--|--|
|  | ⚠ WARNING Explosive Fuel can cause fires and severe burns. |
| | Do not fill fuel tank while 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. Spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Never use gasoline as a cleaning agent.

| | |
|---|---|
|  | ⚠ WARNING Carbon Monoxide can cause severe nausea, fainting or death. |
| | Avoid inhaling exhaust fumes. Never run engine indoors or in enclosed spaces. |


Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled.

| | |
|---|---|
|  | ⚠ WARNING Accidental Starts can cause severe injury or death. |
| | Disconnect and ground spark plug lead(s) before servicing. |

Before working on engine or equipment, disable engine as follows: 1) Disconnect spark plug lead(s). 2) Disconnect negative (-) battery cable from battery.

| | |
|--|---|
|  | ⚠ WARNING Rotating Parts can cause severe injury. |
| | Stay away while engine is in operation. |


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

| | |
|---|--|
|  | ⚠ WARNING High Pressure Fluids can puncture skin and cause severe injury or death. |
| | Do not work on fuel system without proper training or safety equipment. |

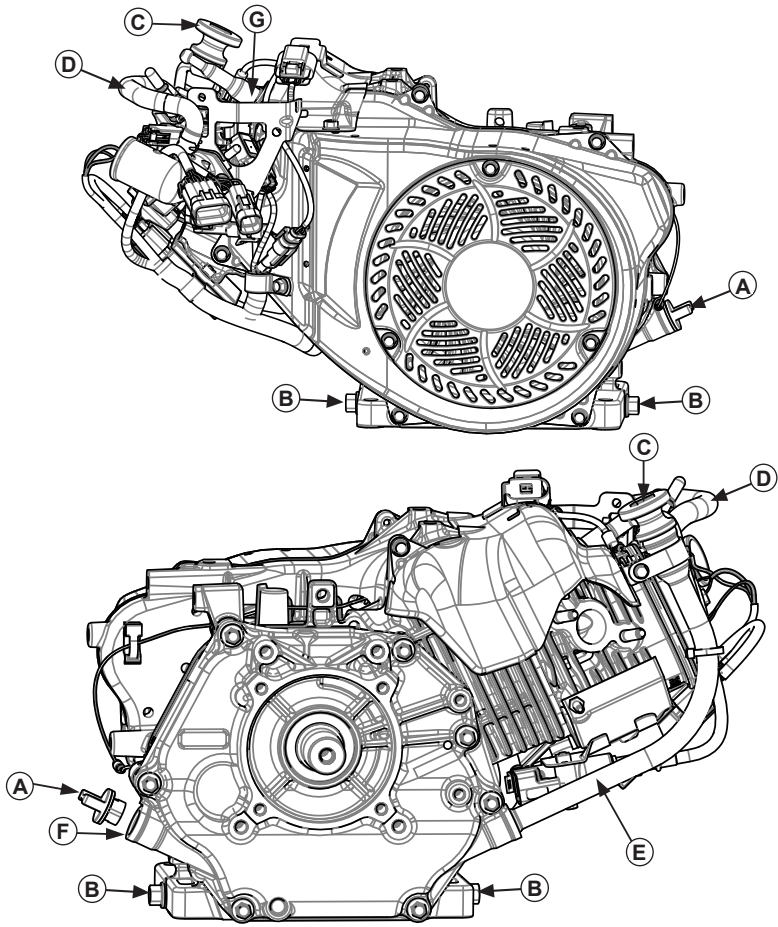
Fluid puncture injuries are highly toxic and hazardous. If an injury occurs, seek immediate medical attention.

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

Never operate engine with heat shields or guards removed.

| | |
|--|--|
|  | ⚠ CAUTION Electrical Shock can cause injury. |
| | Do not touch wires while engine is running. |

⚠ WARNING: This product can expose you to chemicals including carbon monoxide and benzene, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.




| | | | | | | | |
|----------|---------------|----------|----------------|----------|------------|----------|---------------|
| A | Oil Fill Plug | B | Oil Drain Plug | C | Dipstick | D | Breather Tube |
| E | Dipstick Tube | F | Filler Neck | G | Spark Plug | | |


Visit Engines.rehlko.com for service parts information and purchasing options.

Pre-Start Checklist

1. Check oil level. Add oil if low. Do not overfill.
2. Check fuel level. Add fuel if low. Check fuel system components and lines for leaks.
3. Check and clean cooling areas, air intake areas and external surfaces of engine (particularly after storage).
4. Check that air cleaner components and all shrouds, equipment covers, and guards are in place and securely fastened.
5. Check spark arrestor (if equipped).

Starting

| | |
|---|--|
|  | ! WARNING |
| | Carbon Monoxide can cause severe nausea, fainting or death. Avoid inhaling exhaust fumes. Never run engine indoors or in enclosed spaces. |
| Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled. | |

| | |
|--|--|
|  | ! WARNING |
| | Rotating Parts can cause severe injury. Stay away while engine is in operation. |
| Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate engine with covers, shrouds, or guards removed. | |

Refer to operating instructions of equipment this engine powers for specific starting instructions.

Cold Weather Starting Hints

1. Use proper oil for temperature expected.
2. Pedal/throttle input will aid in starting when temperatures are below 40°F (4°C).
3. Use fresh winter grade fuel. Winter grade fuel has higher volatility to improve starting.

Stopping

Refer to operating instructions of equipment this engine powers for specific stopping instructions.

Angle of Operation

Refer to operating instructions of equipment this engine powers. Do not operate this engine exceeding maximum angle of operation; see specification table. Engine damage could result from insufficient lubrication.

Engine Speed



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

Engine Overheat (if equipped)

Some engines have an ECU that features temperature overheat protection. This provides an alert (flashing MIL light) to operator when engine is near or above recommended temperature limit.

If temperature limit is exceeded, MIL may become solid or engine performance may become compromised. Operator can stop and inspect engine for cause, like clearing debris from fan inlet, or if equipped, opening louver. Refer to engine service manual for detailed information on operating parameters.

Maintenance Instructions

| | | |
|--|---|--|
|  |  WARNING | Before working on engine or equipment, disable engine as follows: 1) Disconnect spark plug lead(s). 2) Disconnect negative (-) battery cable from battery. |
| | Accidental Starts can cause severe injury or death. Disconnect and ground spark plug lead(s) before servicing. | |

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 Rehlko authorized dealer found at Engines.rehlko.com or 1-800-544-2444 (U.S. and Canada).

Maintenance Schedule

After first 100 Hours³

- Change oil.

Every 100 Hours¹

- Check air cleaner element; replace as necessary (OEM supplied air cleaner).

Every 100 Hours or Annually¹

- Clean cooling areas.

Every 200 Hours³

- Change oil.

Every 300 Hours

- Check fuel filters (tank outlet filter and in-line filter) and clean or replace if needed (OEM supplied if equipped).

Every 300 Hours¹

- Replace unique Electronic Fuel Injection (EFI) fuel filter (OEM supplied if equipped).

Every 300 Hours²

- Check and adjust valve clearance when engine is cold.

Every 500 Hours or Annually¹

- Replace spark plug and set gap.

¹ Perform these procedures more frequently under severe, dusty, dirty conditions.

² Have a Rehlko authorized dealer perform this service.

³ Refer to Winter Lubrication details below.

Winter Lubrication

If engine is frequently used for short periods of time in ambient temperatures below 40°F (4°C), reduce oil change intervals to every 25 hours.

A rise in oil level during cold weather operation can indicate contaminants collecting in crankcase. If oil level begins to rise:

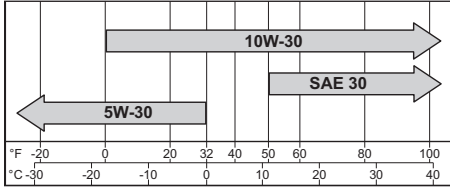
1. Run vehicle longer to bring engine up to operating temperature before shutting it off. Continuous running for a time period of 30 minutes will stabilize engine temperatures.
2. Change oil if oil level begins to rise over full mark on dipstick.
3. Monitor oil level, and if it continues to rise, discontinue use and contact your dealer.

NOTE: As ambient weather temperatures decrease below 40°F (4°C), more frequent oil changes may be required. Water vapor is a normal by-product of combustion in any engine. During cold weather operation, some water vapor condenses into liquid form on cool metal surfaces inside engine. In cold weather, this water will accumulate and become mixed with engine oil. In addition to water vapor in cold conditions, liquid fuel can pass by piston rings and accumulate in engine oil. Emulsified fluids in oil can give the oil a cloudy or milky appearance.

If engine is run at normal operating temperatures, most of this water and fuel will become vapor and will be passed through breather.

Oil Recommendations

We recommend use of Rehlko oils for best performance. Other high-quality detergent oils (including synthetic) of API (American Petroleum Institute) service class SJ or higher are acceptable. Select viscosity based on air temperature at time of operation as shown in table below.



Check Oil Level

NOTE: To prevent extensive engine wear or damage, never run engine with oil level below or above operating range indicator on dipstick.

Ensure engine is cool and level. Clean oil fill/dipstick areas of any debris.

1. Check oil level using dipstick or oil fill plug.
 - a. Push-on cap dipstick: Remove dipstick; wipe oil off. Reinsert dipstick into tube; press down completely. Remove dipstick; check oil level. Level should be at top of indicator on dipstick.

or

- b. Remove oil fill plug. Level should be up to point of overflowing filler neck.
2. If oil is low, add oil up to top of indicator mark on dipstick or to point of overflowing filler neck.
3. Reinstall and secure dipstick or oil fill plug.

Change Oil

Change oil while engine is warm.

1. Clean area around oil fill cap/dipstick and drain plug.
2. Remove drain plug and oil fill cap/dipstick. Drain oil completely.
3. Reinstall drain plug. Torque to 13 ft. lb. (17.6 N-m).
4. Fill crankcase with new oil, up to top of indicator mark on dipstick or to point of overflowing filler neck.
5. Reinstall and secure oil fill cap/dipstick.
6. Dispose of used oil in accordance with local ordinances.

Oil Sentry™ (if equipped)

This switch is designed to prevent engine from starting in a low oil or no oil condition. Oil Sentry™ may not shut down a running engine before damage occurs. In some applications this switch may activate a warning signal. Read your equipment manuals for more information.

Fuel Recommendations



! WARNING

Explosive Fuel can cause fires and severe burns.

Do not fill fuel tank while 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. Spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Never use gasoline as a cleaning agent.

NOTE: E15, E20 and E85 are NOT approved and should NOT be used; effects of old, stale or contaminated fuel are not warrantable.

Fuel must meet these requirements:

- Clean, fresh, unleaded gasoline.
- Octane rating of 87 (R+M)/2 or higher.
- Research Octane Number (RON) 90 octane minimum.
- Gasoline up to 10% ethyl alcohol, 90% unleaded is acceptable.
- Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blend (max 15% MTBE by volume) are approved.
- Do not add oil to gasoline.
- Do not overfill fuel tank.
- Do not use gasoline older than 30 days.

Fuel Line (OEM Supplied)

Refer to operating instructions of equipment this engine powers for specific fuel line information.

Spark Plug



CAUTION

Electrical Shock can cause injury.
Do not touch wires while engine is running.

Clean out spark plug recess. Remove plug and replace.

1. Check gap using wire feeler gauge. Adjust gap, see specification table for adjustment.
2. Install plug into cylinder head.
3. Torque plug to 20 ft. lb. (27 N·m).

Jump Starting

Follow all safety guidelines and procedures provided by battery manufacturer and/or original equipment manufacturer (OEM). Failure to follow proper procedures may result in serious personal injury and/or non-warrantable damage to engine's EFI components.

Electronic Fuel Injection (EFI) System

EFI is an electronically-controlled fuel management system which is monitored by an Electronic Control Unit (ECU). If equipped with a Malfunction Indicator Light (MIL), this light will illuminate if problems or faults are detected. Servicing by a Rehlko authorized dealer is necessary.

Fuel System Components

Refer to operating instructions of equipment this engine powers for specific fuel system component instructions. If engines are equipped with a special EFI fuel filter it is OEM supplied. See Maintenance Schedule.

Fuse Replacement

This engine has two (2) blade type automotive fuses. Replacement fuses must have same rating as blown fuse. Use fuse chart below to determine correct fuse.

| Wire Color | Fuse Rating |
|--|-------------|
| 2 Solid Red Wires | 10-amp Fuse |
| 1 Red Wire with Black Stripe 1 Red Wire with White Stripe | 10-amp Fuse |

Air Cleaner (OEM Supplied)

NOTE: Operating engine with loose or damaged air cleaner components could cause premature wear and failure. Replace all bent or damaged components.

NOTE: Paper element cannot be blown out with compressed air.

Refer to operating instructions of equipment this engine powers for specific air cleaner instructions.

Breather Tube

Ensure both ends of breather tube are properly connected.

Air Cooling



WARNING

Hot Parts can cause severe burns.

Do not touch engine while operating or just after stopping.

Never operate engine with heat shields or guards removed.

Proper cooling is essential. To prevent overheating, clean screens, cooling fins, and other external surfaces of engine. Avoid spraying water at wiring harness or any electrical components. See Maintenance Schedule.

Repairs/Service Parts

We recommend that you use a Rehlko authorized dealer for all maintenance, service, and replacement parts for engine. To find a Rehlko authorized dealer visit Engines.rehlko.com or call 1-800-544-2444 (U.S. and Canada).

Storage

If engine will be out of service for 2 months or more follow procedure below.

1. Add Rehlko PRO Series fuel treatment or equivalent to fuel tank. Run engine 2-3 minutes to get stabilized fuel into fuel system (failures due to untreated fuel are not warrantable).
2. Change oil while engine is still warm from operation. Remove spark plug(s) and pour about 1 oz. of engine oil into cylinder(s). Replace spark plug(s) and crank engine slowly to distribute oil.
3. Disconnect negative (-) battery cable.
4. Store engine in a clean, dry place.

Troubleshooting

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 Rehlko authorized dealer.

| Problem | Possible Cause | | | | | | | | |
|-----------------------|----------------|---------------|-------------------|---------------------|---------------------|---------------------|-------------------|-------------------|-------------------|
| | No Fuel | Improper Fuel | Dirt In Fuel Line | Broken Fusible Link | 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 | | | | | | | • | • | • |

Engine Specifications

| Model | Bore | Stroke | Displacement | Oil Capacity (Refill) | Spark Plug Gap | Maximum Angle of Operation (@ full oil level)* |
|--------|--------------------|--------------------|--------------------------|--------------------------|------------------------|--|
| ECH440 | 3.5 in. (89 mm) | 2.7 in. (69 mm) | 26.2 cu. in. (429 cc) | 1.16 U.S. qt. (1.1 L) | 0.044 in. (1.11 mm) | 25° |

*Exceeding maximum angle of operation may cause engine damage from insufficient lubrication.

Additional specification information can be found in service manual at Engines.rehlko.com.

Any and all horsepower (hp) references by Rehlko are Certified Power Ratings and per SAE J1940 & J1995 hp standards. Details on Certified Power Ratings can be found at Engines.rehlko.com.

Emission Control System

Exhaust Emission Control System for model ECH440 is EM, O2S, ECM, TBI for U.S. EPA, California, and Europe.

NOTE: Tampering with the engine and its emission control system voids the EPA Certificate of Conformity, ARB Executive Order, and EU type-approval.