Top-Kart Comer

Karting Engines

S60 K60 W60 S80 K80 W80

CPP K85 K100 K125 K98

Operation, mainteance and safety manual

Congratulations on your purchase of a precision manufactured Comer engine.

It is designed to give you long and dependable service. To obtain maximum performance and satisfaction from your Comer engine, it is important that you read and fully understand the operation, maintenance and safety instructions in this manual before using your engine. It is also important that you allow only persons who understand these instructions to operate the engine. Contact your Comer dealer if you do not understand any of the instructions in this manual.

SYMBOLS

Pay attention to the symbols used in this manual. It show you dangerous situations for you or for your new engine.

Danger personal injury

Danger mechanical injury

Watch out!

GENERAL INFORMATION

Important/Caution:
Start the engine only in a well-ventilated area. The exhaust emissions are hazardous to your health.
Always wear proper clothing when performing maintenance on your engine.
Use caution when handling fuel. Avoid skin contact and avoid inhaling fuel vapor.
Never touch moving parts when the engine is running. Do not touch the muffler. It is Hot! Do not touch the spark plug or cable. It could cause dangerous electrical shock!
Never pull the starter cord with the plastic cap in spark plug hole. The engine compression could cause the cap to blow out and cause injury.
Always use original Comer replacement parts and the proper tools when working on your Comer engine.
Proper fuel mix is necessary for optimum engine life and performance. See Technical Specification section for the proper fuel mix.

GENERAL TECHNICAL SPECIFICATIONS

Cylinder Displacement	
Cylinder Bore	
Piston Stroke	
Ignition System	
Ignition Type	
Ignition Timing	
Spark Plug Gap	
Fuel Mixture	20 to 1, gas to oil, (7 ounces of oil to 1 U.S. gallon of gas)
Engine Weight Torque Specifications	

SPECIAL TECHNICAL SPECIFICATIONS FOR HOMOLOGATED ENGINES

Refer to homologation sheet for your country.

BEFORE THE USE

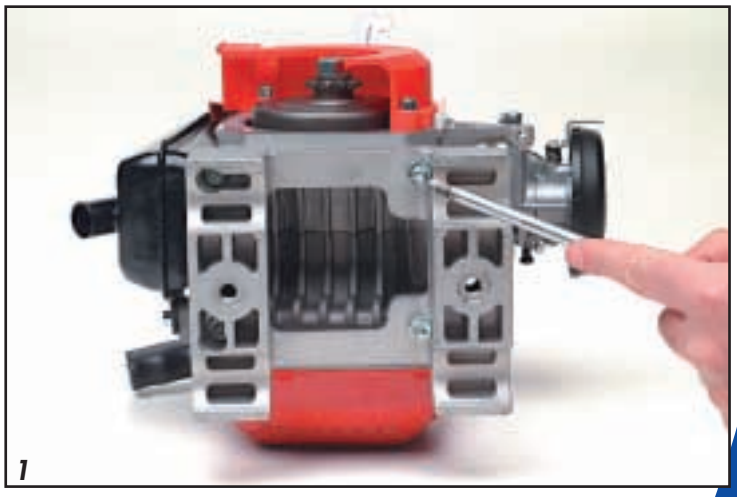
PACKAGING

Your engine will arrive in a box marked with the Comer model type and serial number on the outside. Inside will be the engine complete with carburetor, air filter, muffler and clutch. For models using the Veyvey muffler, only the exhaust header is included. The Veyvey muffler is packed separately.

ENGINE MOUNTING/CHASSIS ASSEMBLY

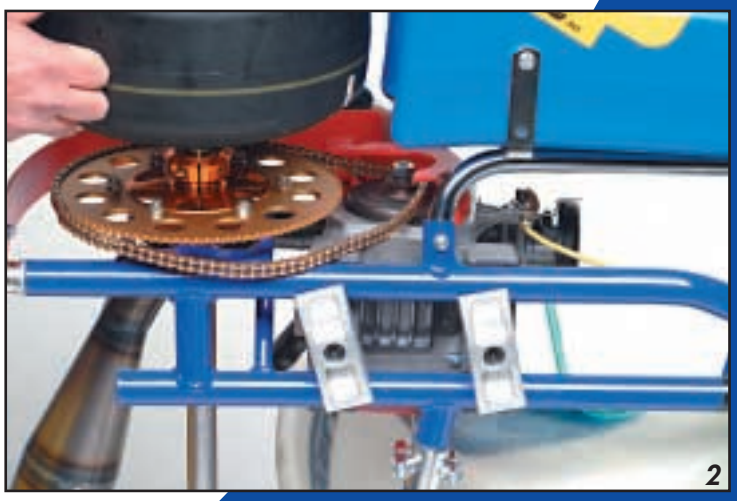
Please these read instructions carefully before beginning to mount engine on chassis.

-Unpack the engine. Remove any packaging material remaining on the engine. Place the engine on its side on a clean, flat surface. Clean surfaces of the engine base and mounting plate. Attach the plate to the engine base with four 8 mm Allen screws using a 6mm Allen key. ***See Figure 1.***



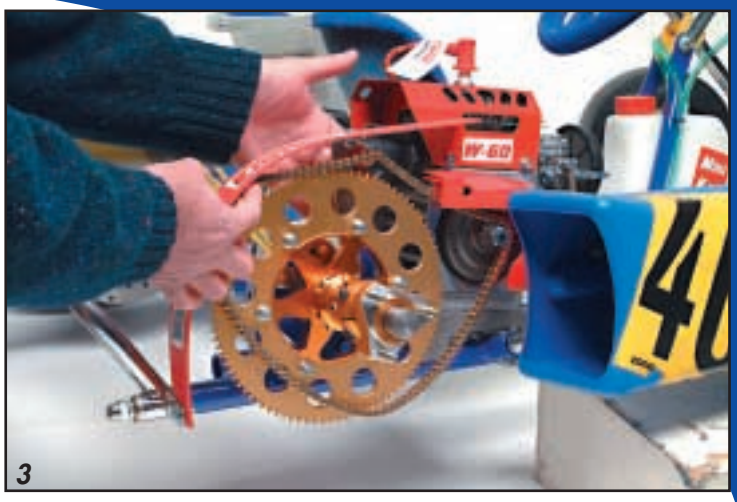
1

-Rest the engine, with mount, on the chassis. Tighten the engine mount clamps enough to hold the engine in position. Do not tighten completely. ***See Figure 2.***



2

-Align the axle sprocket with the engine sprocket. Install chain of proper length (length varies with type of kart and gear size). ***See Figure 3.***

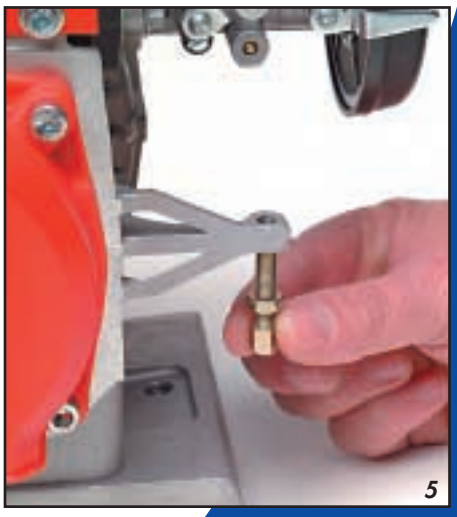


3

-To adjust chain tension, move the engine ahead until the proper tension is reached. Proper tension allows 1 cm. of movement. Tighten mount clamps completely. Re-check chain tension. ***See Figure 4.***


4

-Place the outer throttle cable housing into the proper fitting on the engine. ***See Figure 5.***


5

-Insert the throttle cable into the throttle lever of the carburetor. Pass the cable through the spring and spacer. Then run the cable through the throttle cable housing. ***See Figure 6.***


6

-Pull the cable through until it stops at the throttle lever of the carburetor. ***See Figure 7.***


7

-Pass the free end of the throttle cable to the throttle stop near throttle pedal. Make sure that there is a clamp installed on the throttle cable.

-Pass the cable through the welded ring on the throttle pedal. Then loop it around and attach it to the throttle clamp by running it through the hole in the clamp.
See Figure 8.


8

-Adjust the throttle cable by using throttle clamp and the pedal stop on the chassis so that the pedal stops at the point where the throttle is fully open. Do not stress the throttle lever.

-Insert the fuel line into the top cap of the carburetor.

-Remove the plastic cap from the spark plug hole. Lightly oil the spark plug threads. Finger-tighten the spark plug in the hole.

-Next tighten and loosen the plug two or three times to allow the gasket on the plug to seat. Then tighten the plug securely. Then cover the spark plug with the spark plug cap.

For engines with a Veyvey muffler, the following additional steps are required:

-Install the header pipe into the engine with two studs or Allen screws. In some models, the header pipe has already been installed.

-Insert the flex into the header pipe. Then insert the muffler on the other end of the flex. Place the muffler in the exhaust cradle that is assembled on the chassis.

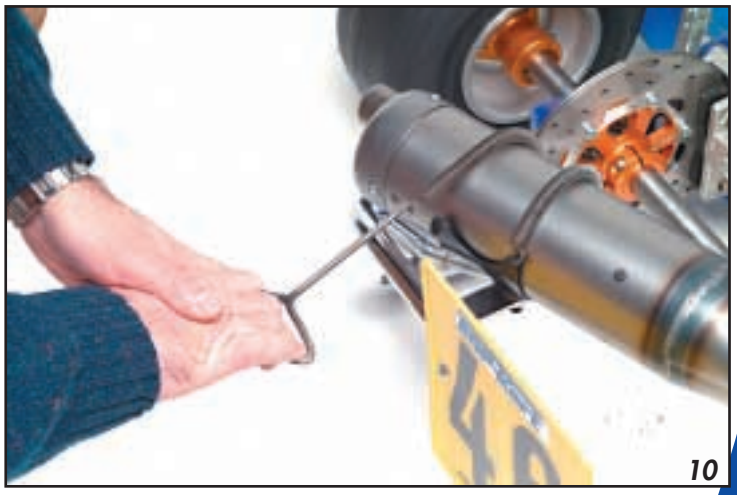
-Fasten the muffler and header pipe using two or three springs (the number of springs needed depends on the model). Use a spring tool to insert one end of a spring in one hole of the exhaust flange. Using the spring tool, pull the other end of the spring through one of the hole on the exhaust flange on the muffler. ***See Figure 9.***

9

-Repeat this process with the remaining spring(s).

-Use a spring tool to fasten the muffler on the cradle assembly with the two springs provided.
See Figure 10.

Important/Caution:
To prevent injury, protect your hands and eyes with appropriate gloves and safety glasses when installing the muffler.


10

STARTING AND BREAK-IN

GENERAL INFORMATION:

-We're sure you are excited about getting your kart out on the track. But we would like to remind you that only a proper break-in will insure the best performance of your engine in the future and guarantee its long and trouble-free operation.

-Break-in is required when an engine is new or has undergone a major service of the engine's main parts (pistons, rings, cylinder or crankshaft). Not all Comer engines required the same break-in time. There is a tag on the engine next to the spark plug cap that will provide break-in times for your engine.

Fuel Preparation:

-Prepare fuel by mixing one U.S. gallon of gasoline with 7 ounces of oil. The Comer engines use unleaded commercial gasoline (pump gas). Shake the can thoroughly to mix the fuel. Then fill the gas tank.



Important/Caution:
-Follow these rules to prevent personal injury. Gasoline is flammable and explosive. When working with fuel, never smoke or use it near fire. Work in a well-ventilated area or outside. Do not inhale gas vapors and avoid contact with your skin.
-Follow these rules to prevent damage to your engine. Be precise in the oil to gas ratio when mixing fuel. A mistake in measurements could result in engine failure.

Carburetor Adjustment:

-For the initial start, set both low-speed and high-speed jets on the carburetor at one turn out.

Starting the Engine:

-The starter has an inertial type cord assembly that retracts automatically. To start the engine, follow these steps:

-Turn the "ON/OFF" switch, which is located on the engine cover, to the "ON" position.

-Pull firmly on the starter handle. At the same time, close the choke lever on the carburetor. ***See Figure 11.***


11

-When the engine starts, release the choke lever. Run the engine and accelerate intermittently to higher RPMs. Do not accelerate to full throttle.

-After a few minutes of warm up, proceed onto the track. Run the engine by alternating a few seconds on the throttle and off the throttle. Continue this way for 5-6 laps.

-Increase the duration and extent of acceleration for another 15-20 minutes.

-Continue for the time indicated on the run-in table attached to the spark plug wire. Intermittently open the accelerator completely for a few seconds and then release it.

Important/Caution:
Do not initiate the break-in on a chassis stand. Do not hold the throttle at a constant speed.

MAINTENANCE INSTRUCTIONS

When to Perform Maintenance:

Follow the schedule shown below:

Carburetor	Service after	6 hours
Diaphragm	Change after	18 hours
Spark Plug	Change after	10 hours
Muffler	Internal cleaning after	10 hours
Clutch	Change after	10 hours
Complete Piston Assembly (Piston, rings, pin & circlips)	Change after	15 hours
Chain	Change after	20 hours
Throttle Cable	Change after	30 hours
Cylinder	Change after	60 hours
Rod	Change after	60 hours

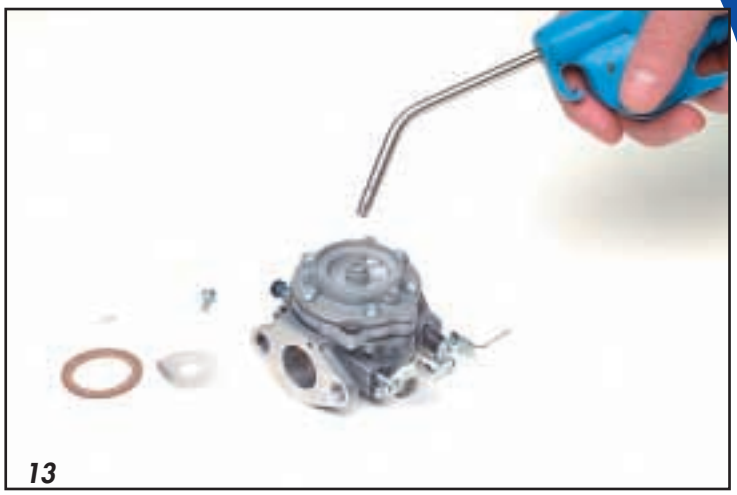
How to perform the maintenance:

Carburetor/Diaphragm:

-Disconnect the throttle cable from the carburetor. Unscrew the carburetor with a 10mm wrench. Remove the air filter and the cover. Clean them with gasoline or cleaning solvent. ***See Figure 12.***


12

-Unscrew the fuel filter cap. Clean the filter and its seat with compressed air. Check the cork gasket and replace if necessary. ***See Figure 13.***


13

-Remove the 6 screws of the carburetor body with a 2mm Thorsen key. Clean the parts, openings and passages with compressed air or cleaning solvent. Change the gasket and diaphragm, making sure that no residues are left on either the carburetor plates or the main body. ***See Figure 14.***


14

-Remove the screw supporting the fulcrum arm pin. Check to assure fulcrum arm is working freely. Remove the valve seat with an 8mm socket. Clean the inside of the valve with compressed air before you reassemble it. ***See Figure 15.***


15

-To reassemble the carburetor, follow the above steps in reverse order.
Comer recommends removing any remaining gasoline from the carburetor at the end of each practice session or race in order to avoid damage to the gasket or diaphragm.

Important/Caution:
Follow these rules to prevent personal injury. Gasoline is flammable and explosive. When working with fuel, never smoke or use it near fire. Work in a well-ventilated area or outside. Do not inhale gas vapors and avoid contact with your skin.

Spark Plug:

-Replace the old spark plug with a new one of the same type. Lightly oil the spark plug threads. Finger-tighten the spark plug in the hole. Next tighten and loosen the plug two or three times to allow the gasket on the plug to seat. Then tighten the plug securely.


16

Muffler:

-Remove the muffler from the engine by removing the 2 central support screws and the lower screw to the left. ***See Figure 16.***

Warm up the muffler with a heat source and remove any carbon. ***See Figure 17.***

Important/Caution:
To avoid personal injury, protect your hands and eyes with gloves and safety glasses during the entire cleaning process.


17

Clutch:

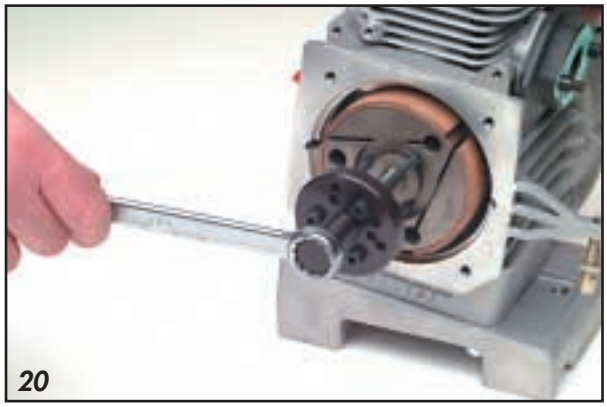
-Remove the spark plug and insert the piston pin stop (Comer part number KACC126). Remove the starter cover. Manually turn the engine until the piston stops. ***See Figure 18.***


18

-Unscrew the nut on the clutch drum by turning it to the right. Remove the washer, clutch drum, roller bearing and spacer. ***See Figure 19.***


19

-Remove the clutch and/or hub using a clutch extractor tool (Comer part number KACC125). Screw the 3 screws of the clutch extractor evenly into the clutch and/or hub. Then tighten the center screw until it frees the clutch or hub. ***See Figure 20.***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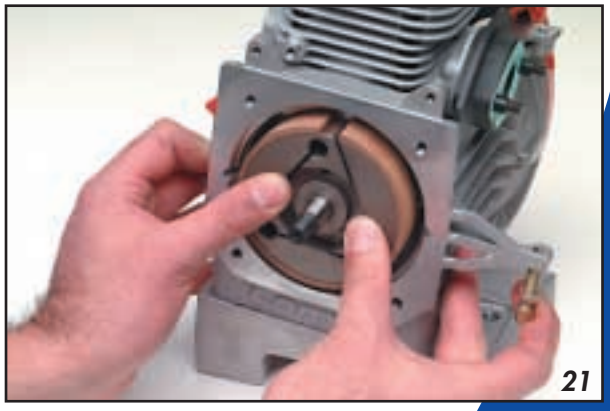
-Before assembling the new clutch, we recommend that you clean the clutch area with a solvent.

-Install the new clutch on the crankshaft by pushing lightly with your fingers. Install the spacer and roller bearing. Grease the bearing completely. ***See Figure 21.***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-Replace the clutch drum, the washer and the nut. Tighten the nut by turning it to the left. Remove the piston pin stop and replace the spark plug. Replace starter cover.

Important/Caution:
To avoid personal injury, protect your hands and eyes with gloves and safety glasses during the entire cleaning process.

Complete Piston Assembly:

-Remove the 4 screws that support the engine cover. Release the cable from the "ON/OFF" switch that is located on the cylinder cover. Remove muffler (see "Muffler").

Remove cylinder or head. We recommend using a special tool designed for this purpose (Comer part number KACC128).

-On engine models that have a separate cylinder and head, remove the 4 screws that support the head. Remove the head by pulling it up carefully.

-On engine models that have a one-piece cylinder/head, remove the 4 screws that support it. ***See Figure 22.***

22

-Remove the cylinder with one hand. Use the other hand to hold the rod to avoid contact with the crankcase. ***See Figure 23.***


23

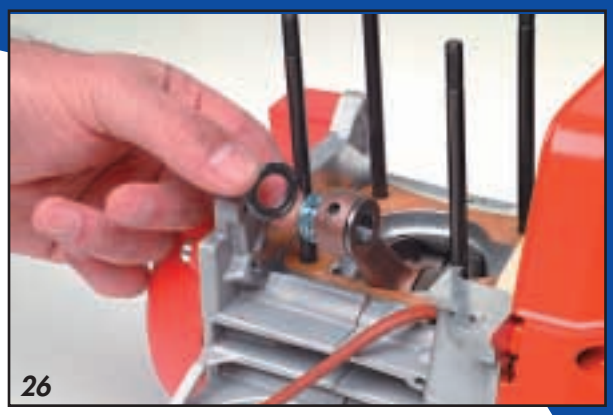
-Remove the 2 piston pin circlips by squeezing the ends together with needle-nose pliers. ***See Figure 24.***


24

-Push the piston pin out of the piston using the proper tool. Support the piston with one hand to avoid damaging the rod. ***See Figure 25.***


25

-Before installing the new piston, place the roller bearing in the rod opening. On the 80cc engine, position the thrust washers using grease. ***See Figure 26.***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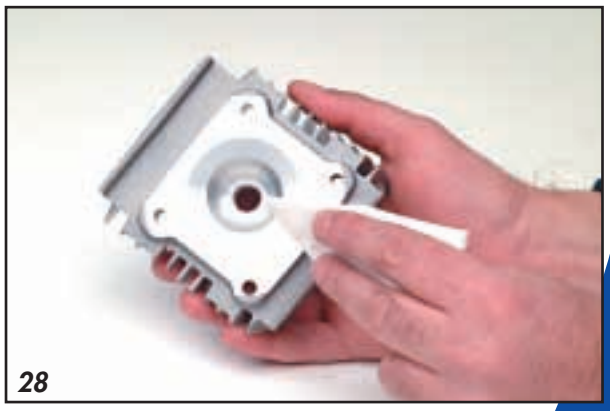
-Place the piston on the rod with the arrow facing the exhaust. Insert the piston pin and hold everything with the circlips.
See Figure 27.


27

Clean the combustion chamber using a rag moistened with gasoline or solvent.
See Figure 28.


28

Whenever you change the piston or disassemble the cylinder, we recommend that you replace the cylinder gasket.
After changing the piston, the engine must go through another break-in period. ***See "Starting and Break-in".***

Important/Caution:
To avoid personal injury, protect your hands and eyes with gloves and safety glasses during the entire cleaning process.

Chain:
-Lube the chain by spraying chain lube on the chain while manually rotating the back tire. ***See Figure 29.***


29

-To replace the chain, loosen the engine and slide it back to release the old chain from the sprocket. Reverse the procedure after installing new chain.

Important/Caution:
To avoid personal injury, do not work on the chain when the engine is running.

Throttle Cable:

-Lubricate the throttle cable each time the engine is run. Also check, and adjust the cable as needed, to assure that the throttle position is correct and that the throttle returns properly. If the cable frays, it should be replaced.

Starter:

-To change the spring or starter cord, consult your authorized dealer for assistance.

Cylinder:

-Follow the same steps as you did to replace the piston. After you remove the cylinder from the engine, remove the carburetor and then the manifold from the cylinder.
See Figure 31.


31

Whenever you change the cylinder, we advise you to also change the piston. Check the tolerance between the piston and the cylinder. Comer cylinders and pistons are marked with letters indicating the type (A-B-C-D). To assure proper tolerance, you should assemble only cylinders and pistons with the same letter designations.

-To insert the piston in a new cylinder, use special tools (Comer part number KACC128). ***See Figure 32.***

-Change the cylinder gasket, carburetor gasket and manifold gasket every time you change the cylinder. After changing the piston, the engine must go through another break-in period.
See "Starting and Break-in".

Rod:

To change the rod, consult your authorized dealer for assistance.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