

Workshop manual M105-97F M125-97FH

English

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SAFETY INSTRUCTIONS

General Instructions

This workshop manual is written for personnel with a general knowledge of repairing and servicing ride-on mowers.

The workshop where the ride-on mower is to be repaired must be equipped with safety devices in accordance with local bylaws.

No one may repair the ride-on mower without first reading and understanding the content of this workshop manual.

The machine is tested and approved only with the equipment originally provided or recommended by the manufacturer.

This workshop manual contains the following warning boxes in relevant places.



WARNING! The warning box warns of the risk of personal injury if the instructions are not followed.

IMPORTANT!

This box warns of material damage if the instructions are not followed.

Special Instructions

The fuel used in the ride-on mower has the following hazardous properties:

- The fluid and its vapor are toxic.
- · Can cause eye and skin irritation.
- Can cause breathing problems.
- Is highly flammable.

When using compressed air, do not direct the jet toward your body. Air can penetrate into the blood circulation, which can be fatal.

Use eye protection when working with tensioned springs.

Use hearing protection during testing.

During testing, do not touch the muffler before it has cooled down. Risk of burns. This is especially true if the ride-on mower is equipped with a catalytic converter. The coatings on and in the catalytic converter element are hazardous to ingest. Use protective gloves when working with the converter/muffler.

The blades are sharp and can cause cuts and gashes. Use protective gloves when handling the blades.

Use eye protection when working with the cutting unit. The belt tensioning spring can break, fly off and could cause personal injury.

Use eye protection when working with the battery with the plugs removed. Be especially careful when handling battery acid. Acid on the skin can cause serious corrosive injuries. In the event of spillage on the skin, wash immediately with water. Acid in the eyes can cause blindness; contact a doctor immediately.

Be careful when servicing the battery. Explosive gases form in the battery. Never perform maintenance on the battery while smoking or in the vicinity of open flames or sparks. This can cause the battery to explode and cause serious injuries.

IMPORTANT!

Waste oil and used oil filters shall be handled as environmentally hazardous waste.

Technical Data

	M105-97F	M125-97FH		
Dimensions				
Length without cutting deck, mm/ft	1446 / 4.74	1446/4.74		
Length with cutting deck, mm/ft	2057.5/6.75	2057.5/6.75		
Width without cutting deck, mm/ft	805/2.56	805/2.56		
Width with cutting deck, mm/ft	1029 / 3.38	1029/3.38		
Height, mm/ft	1065 / 3.49	1065/3.49		
Operating weight with cutting deck, kg/lb	190/419	190/419		
Wheelbase, mm/ft	799 / 2.62	799/2.62		
Tire size, front	16 x 6.00 - 10	16 x 6.00 - 10		
Tire size, back	13 x 5.00 - 8	13 x 5.00 - 8		
Air pressure front - rear, kPa/bar/PSI	100 / 1.0 /14.5	100/1.0/14.5		
Engine				
Brand/Model	Briggs & Stratton/3105	Briggs & Stratton/3125		
Nominal engine output, kW (see note 1)	6.6	6.5		
Stroke, cm ³ /cu.in	344 / 21	21 344/21		
Max. engine speed, rpm	2900 ± 100	2900 ± 100		
Fuel, minimum octane rating unleaded	85	85		
Fuel tank capacity, liters	3.3	3.3		
	SAE 5W/30 or SAE	SAE 5W/30 or SAE		
OII, grade SJ-CF	10W/30	10W/30		
Oil tank capacity, liters/USqt	1.4 / 1.5	1.4/1.5		
Start	Electric starter	Electric starter		
Electrical System				
Туре	12 V, negative grounded	12 V, negative grounded		
Battery	12 V, 18 Ah	12 V, 18 Ah		
Spark plug	Champion QC12YC	Champion QC12YC		
Electrode gap, mm/inch	0.75 / 0.030	0.75/0.030		
Main fuse	Flat pin, 15 A.	Flat pin, 15 A.		
Noise Emissions and Cutting Width (see note 2)				
Sound power level, measured dB(A)	98	99		
Sound power level, guaranteed dB(A)	99	99		
Cutting width, cm/inch	97 / 38	97/38 97/38		
Noise Levels (see note 3)				
Noise pressure level at the operator's ear, dB(A)	84	85		
Vibration Levels (see note 4)				
Vibration level in steering wheel, m/s ² .	4.8	4.8		
Vibration level in seat, m/s ²	0.7	0.7		
Transmission				
Manufacturer	Topec T7000	Tuff Torq T36N		
Oil, grade SF-CC	SAE 80W/90	SAE 10W/30		
Number of forward gears	3	-		
Number of reverse gears	1	-		
Forward speed, km/h	0-8	0-7.5		
Reverse speed, km/h	0-4	0-7.5		
Cutting Deck				
Туре	Mulching unit	Mulching unit		
Cutting heights, 5 positions, mm/inch	25-70 / 0.98-2.76	25-70/0.98-2.76		
Blade diameter, mm/inch	491 / 19.33	491 / 19.33		

Note. 1: The power rating of the engine is the average net output (at the specified rpm) of a typical production engine of the model, measured to SAE standard J1349/ ISO1585. Mass production engines may differ from this value. Actual power output for the engine installed on the final machine will depend on the operating speed, environmental conditions and other values.

Note. 2: Noise emissions in the environment measured as noise power (L_{wA}) in conformity with EC directive 2000/14/EC.

Note. 3: Noise pressure level according to EN 836. Reported data for the noise pressure level has a typical dispersion (standard deviation) of 1.2 dB(A).

Note 4: Vibration level according to EN 836. Reported data for the vibration level has a typical dispersion (standard deviation) of 0.2 m/s² (steering wheel) and 0.8 m/s² (seat).

MAINTENANCE

Maintenance Schedule

The following is a list of maintenance procedures that must be performed on the ride-on mower. For points not described in this workshop manual, refer to the operator's manual.

Maintenance	Daily maintenance before starting	At least once a year	Maintenance interval in hours			
			25	50	100	200
Cleaning	•					
Check engine oil level	•					
Check the engine cooling air intake	•					
Check the steering wires	•					
Check the brakes	•					
Check the battery	•					
Lubricate the drive chain, M105-97F	•					
Check the safety system	•					
Check nuts and screws	0					
Check for fuel and oil leakages	0					
Clean around the muffler	0					
Change engine oil 1)						
Change the air filter ²)			•			
Check the cutting deck			•			
Check the air pressure in the tires			•			
Lubricate joints and shafts ³)			•			
Check the V-belts						
Check and adjust the throttle cable						
Change the fuel filter					0	
Change the spark plug					•	
Check the fuel hose. Change if necessary 4)		0				

¹)First change after 8 hours. When operating with a heavy load or at high ambient temperatures, change every 25 hours. ²) Maintenance and changes are required more often in dusty conditions. ³)The ride-on mower should be lubricated twice a week when used on a daily basis. ⁴)Performed by an authorized servicing dealer.

- E = Described in this workshop manual
- \mathbf{O} = Not described in this workshop manual
- \blacklozenge = Described in the operator's manual

WARNING! Service procedures must not be conducted on the engine or cutting deck unless:

The engine has been stopped.

The ignition key has been removed.

The ignition cable has been removed from the spark plug.

The parking brake is engaged.

The cutting deck is disengaged.

DESIGN AND FUNCTION

General

McCulloch is a ride-on mower offering a very high capacity.

This manual covers the McCulloch M105-97F and M125-97FH mowers. They have front-mounted cutting decks for controlled mowing and the best possible cutting results.

The McCulloch M105-97F and M125-97FH both have mulching units with side discharge option.

McCulloch M105-97F and M125-97FH can also be equipped with various accessories such as a lawn rake and spreader.

McCulloch M105-97F is delivered with a manual gearbox. M125-97FH is only delivered with hydrostatic transmission.



Serial Number

The machine's serial number can be found on the printed plate attached to the right side under the seat. Stated on the plate, from the top, are:

- The machine's type designation.
- Manufacturer's product number.
- The machine's serial number.

Please provide the type designation and serial number when ordering spare parts.

The engine's serial number is given on a bar code decal. This is placed on the left side of the crankcase, in front of the starter.

The text states:

- Model.
- Type.
- Code.

Please provide these when ordering parts.

The transmission's serial number on hydrostatic machines is stated on the bar code decal located on the front of the housing for the left-hand drive shaft:

- The type designation is stated above the bar code and starts with the letter "K".
- The serial number is stated above the bar code and has the prefix "s/n".
- The manufacturer's type number is stated under the bar code and has the prefix "p/n".

Please provide the type designation and serial number when ordering spare parts.

Engine

These McCulloch ride-on mowers have single cylinder, air-cooled engines from Briggs & Stratton.

Major engine repairs are not described in this workshop manual. This information can be found in Briggs & Stratton's own manuals, which include detailed information about engine adjustments and repairs. These manuals can be ordered from an authorized servicing dealer.

It is important that only original spare parts are used to repair the engines. If other parts are used, the guarantee is invalidated.

Steering

The ride-on mowers have rear-wheel steering. Steering forces from the steering wheel are transferred to the rear wheel via a wire.



Drive Unit

McCulloch M105-97F has a manual gearbox with three forward gears, neutral and one reverse gear.



DESIGN AND FUNCTION

McCulloch M125-97FH is equipped with a hydrostatic transmission. The speed is controlled variably using the pedals forward or reverse.



Cutting Deck

The McCulloch M105-97F and M125-97FH both have mulching units with a side discharge option.



The cutting deck is raised and lowered with the lifting pedal.

Depressing the pedal will lift the cutting deck to the transport position.



In order to activate the transport position, the lock button on the steering column is then pressed and held in while the lift pedal is released.

If the lift pedal is released without pressing the lock button, the cutting deck will be lowered (cutting position).

To activate the cutting position, press the pedal and then release it.



The cutting height is adjusted using the lever, which has a catch for each cutting height position.



Dismantling the Engine

Pull up the lever for engaging the blades.



IMPORTANT!

Hold the battery cable screws in place so that the electrodes are not strained.

Loosen the battery strap and detach the cable connections. Remove the cable connecting the starter relay to the starter. Separate the connector.



Remove the side plates.

Loosen the screws. Twist out the back of the plate 45°. Remove the front edge of the plate.



Loosen the cable bracket from the engine.



Remove the fuel tank, see "Fuel Tank".

Remove the clip holding the throttle and choke cables. Release the cable from its mounting.



Remove the plate over the engine by loosening the four screws in the frame, two on each side. The engine can be removed without lifting off the plate.



Remove the seat switch.

Remove the lower belt from the engine belt pulley.

Remove the belt guide by the engine belt pulley.

Remove the engine mounting screws.

Note where the battery's negative cable is connected. Disconnect it from the engine if necessary.

Lift the engine away from the machine.

Assembling the Engine

Assemble in reverse order.

Fuel Tank

Dismantling

WARNING! Petrol is highly flammable and environmentally hazardous. Exercise caution to avoid fire and spillage.

Use a suitable vessel to collect the petrol.

Empty the petrol tank by removing the hose from the connector under the tank. If you do not wish to empty the tank, you can pinch the hose with lockable welding pliers and then remove the hose and hose clip from the fuel filter's lower connector. You must then be sure to keep the hose opening higher than the fuel level in the tank.

Remove the screw holding the tank on the bracket. Lower the tank and pull out the hose through the frame of the machine (if it has been loosened by the fuel filter).

Assembling

It is easier to work if you empty the tank before assembly. Put the hose in position. Connect it to the fuel filter with the hose clip. Make sure the hose does not chafe.

Fit the fuel hose and the hose clip to the connector under the tank as required. Fill with petrol and check that there are no leaks.

Screw on the fuel tank.

Changing the Engine Oil

The engine oil should be changed for the first time after running for 8 hours; see Service Schedule. It should then be changed after every 50 running hours.

WARNING! Engine oil can be very hot if it is drained directly after stopping the engine. Allow the engine to cool down first.

IMPORTANT!

Used engine oil is a health hazard and must not be disposed of on the ground or in the environment; it should always be disposed of at an appropriate disposal site.

Avoid contact with skin. Wash with soap and water in case of spills.

Place a container under the engine drain plug on the left side of the engine.

Remove the dipstick and drain plug. Let the oil run out into the container.

Fit the drain plug and tighten it.

Fill with oil up to the top mark on the dipstick. Oil is filled using the same hole as the dipstick. Use the type of engine oil specified in "Specifications".

Warm the engine. Then check that there is no leakage from the oil plug.

Checking and Adjusting the Steering Cable

Check the tension by squeezing the cables together (at the arrows). Without applying too much force, it should be possible to move the wires ± 5 mm from center position.

Tension the cables by tightening the adjuster nuts (one on each side of the ride-on mower). Adjust both cables equally so that the steering wheel position does not change.

Check the wire tension after adjusting by pinching together the wires, see earlier in this section.

Replacing the Steering Cable

Dismantling

Loosen both ends of the steering cable from the rear steering disc by loosening the outer nuts (M8).

Remove the retaining rings and lift off the plastic sprockets and the washer between them from the two pulley brackets.

Remove the plastic cover over the steering column.

If the cable is intact, note how it is wound around the steering column. Also note how the cable is routed before pulling it out of the machine.

Assembling

Attach the cable by first turning the steering wheel so that the hole in the steering column guide roller points forward on the machine.

Place the center nipple of the cable in the hole with the marked part of the cable to the right in the direction of travel.

Wind the right end of the cable one turn clockwise under the nipple and turn the left end counterclockwise above the nipple so that both ends point towards the rear.

The cable is correctly fitted if it exits at the top on the left side and the bottom on the right side.

At this stage, the cable can be fixed in position with a cable tie or tape, for example.

Pull back the ends of the cable and place in the correct tensioner. Do not forget to screw a nut (M8) onto each tensioner that is used to secure the cable.

The marked (right) side of the cable is placed at the bottom of both pulley brackets and connected to the rear steering disc on the right side of the machine.

Note that the wire must be placed in the groove in the plastic sprocket before it is all run back to the top of the shaft. If the machine has hydrostatic transmission (M125-97FH), the right cable must be routed under the parking brake arm on the hydrostatic box and the left cable must be routed over the parking brake arm.

Place the washers between the pulleys and lay the left end of the wire at the top and connect it to the left attachment of the steering disc.

Stretch the ends of both cables equally so that the steering wheel position does not change. Hold the cable with pliers or a wrench so that it does not twist. Secure the wire with the inner nuts (M8).

Assembling the Steering Shaft

Fit the steering wheel/control rod on the control rod shaft and knock the tension pin in all the way through the steering rod.

Dismantling/Assembling the Cable Pulley

See "Replacing the Steering Cable".

Checking and Adjusting the Brake

Check that the brakes are correctly adjusted by placing the ride-on mower on a slight downhill slope with the clutch disengaged and activating the brake.

McCulloch M105-97F

Adjust the brake by lightly tightening the adjustment screw. Check the brake and repeat if necessary. Tightening the adjustment screw too much will prevent the machine from moving.

WARNING! A poorly adjusted brake can result in reduced braking ability.

McCulloch M125-97FH

Check that the brakes are correctly adjusted by placing the ride-on mower on a slight downhill slope with the clutch disengaged and activating the brake.

Adjusting the Throttle Cable

The throttle cable may need to be adjusted, if the engine does not respond as it should when accelerating, i.e. if it produces black smoke or maximum revs are not reached.

Remove the left side cover.

Loosen the clamping screw for the cable's outer casing and move the choke control to the full choke position.

Pull the choke cable's outer casing as far to the right as possible and tighten the clamping screw.

Pull back the throttle to the full throttle position and check that the choke is no longer actuated.

Dismantling the Swing Axle

Remove the cables from the battery terminals and remove the battery.

Remove the battery shelf.

Remove the fastening bolts and control rods for the axle. Remove the swing axle.

Dismantling/Assembling the Drive Chain

McCulloch M105-97F

Remove the foot plate.

Cut the drive chain.

Fit a new drive chain with a master link.

Adjusting the Drive Chain

Loosen the four screws and slide the plate forward by hand to tighten the chain.

Tighten the chain.

Dismantling the Gearbox

McCulloch M105-97F

Remove the steering column, see "Assembling the Steering Shaft".

Remove the plastic cover over the control rod.

Remove the side plates.

Loosen the tank and move it out of the way.

Loosen the split pin, unhook the connection rod and pry the belt from the gearbox pulley.

Dismantle the drive chain, see "Dismantling/Assembling the Drive Chain".

Loosen the plate to which the gearbox is fastened.

Loosen the gearbox retaining screws.

The screw must be tightened 10 \pm 2 Nm when changing the shift lever.

Dismantling/Assembling the Hydrostatic Transmission

McCulloch M125-97FH

Loosen the cutting deck belt.

Loosen the idler spring. Pry off the drive belt.

Remove the lock washer and unhook the throttle stay. Remove the five screws holding the hydrostatic transmission.

Replacing the Belts

Starting position for removing the belt:

- No unit is attached to the machine.
- The front part of the belt is loose.

Loosen the belt tensioner. Pry off the belts downward.

Change the belts after 2 years or 100 hours running time.

Checking and Adjusting the Cutting Deck Ground Pressure

Check the tire pressure, 1 bar.

Place bathroom scales under the cutting deck frame (on the front edge) so that the cutting deck rests on the scales.

Adjust the cutting deck ground pressure with the adjuster nut located inside the ride-on mower front wheel. Ground pressure should be between 12 and 15 kg / 26.5-33 lb.

Removing the Cutting Deck

The cutting deck can be removed in order to facilitate cleaning and servicing.

To remove the cutting deck proceed as follows:

- Position the machine on flat ground.
- Apply and secure the parking brake.

McCulloch M105-97F:

- Depress the parking brake pedal (1).
- Press in the lock button (2) on the steering column.

• Release the brake pedal while keeping the button pressed in

McCulloch M125-97FH:

- Slide the parking brake lever forward.
- Hook the lever in place.

Place the cutting deck in the mowing position.

Check that the adjustment lever for the cutting height is in the S position.

Loosen the screws and lift off the front covers.

Loosen the spring for the drive belt tensioning wheel.

Lift off the drive belt. Release the adjustment screw.

Loosen the split pin from the equipment frame. Grasp the upper pipe construction of the deck and pull it out.

ELECTRICAL SYSTEM

Checking the Safety System

The ride-on mower is equipped with a safety system that prevents starting or driving in the following conditions.

It must only be possible to start the engine when the following conditions are met:

- Blades shut off, blade drive not engaged.
- · Parking brake applied.

The driver does not need to be seated in the driver's seat.

Check daily to ensure that the safety system works by attempting to start the engine when one of the conditions is not met. Change the conditions and try again.

Check that the engine stops if you temporarily move out of the driver's seat while the mower blades are engaged.

Seat Microswitch

Disconnect the cable connections from the microswitch.

Press in the fasteners and remove the microswitch from the holder.

Blades Microswitch

Loosen the left side cover.

Disconnect the connector from the microswitch.

Parking Brake Microswitch

Remove the right side cover.

Disconnect the connector from the microswitch. There are two microswitches, one on each side.

Pedal Microswitch

Disconnect the connector from the microswitch.

Main Fuse

The main fuse is placed in a detachable holder by the battery under the engine cover.

Type: Flat pin, 15 A.

Do not use any other type of fuse when replacing.

A blown fuse is indicated by a burnt link. Pull the fuse from the holder when replacing it.

The fuse is there to protect the electrical system. If it blows again shortly after replacement, it is due to a short circuit, which must be fixed before the machine can be put into operation again.

TROUBLESHOOTING CHART

Troubleshooting Schedule

Problem	Cause
Engine will not start	See the "Checking the Safety System" section if the controls are in the wrong position There is no fuel in the fuel tank Spark plug defective Dirt in the carburetor or fuel line
	Starter does not turn over the engine Bad or old fuel in the fuel tank
	incorrect ruei in the ruei tank
Starter does not turn over the engine	Battery flat
	Main fuse blown. The fuse is found in front of the battery, under the engine cover Bad contact between the cable and battery terminal
	Ignition lock faulty Faulty starter
Engine does not run smoothly	Throttle in the choke position
	Clogged air filter
	Fuel tank vent blocked
	Faulty spark plug
	Dirt in the carburetor or fuel line
	Carburetor incorrectly set
	Incorrect ignition setting
Engine lacks power	Throttle in the choke position
	Clogged air filter
	Faulty spark plug
	Dirt in the carburetor or fuel line
	Carburetor incorrectly set
Engine overheats	Engine overloaded
	Air intake or cooling fins clogged
	Fan damaged
	Too little or no oil in the engine
	Faulty spark plug
Battery does not charge	One or more battery cells faulty
	Poor contact on the battery terminal cable connectors
The ride-on mower vibrates	Blades are loose
	One or more blades unbalanced, caused by damage or poor balancing after sharpening
Uneven mowing	Blades blunt
	Tall or wet grass
	Grass build-up under the cover
	Different tire pressures on right and left sides
	Driving speed too high
	Engine speed too low
	Cutting deck rear drive belt slips

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