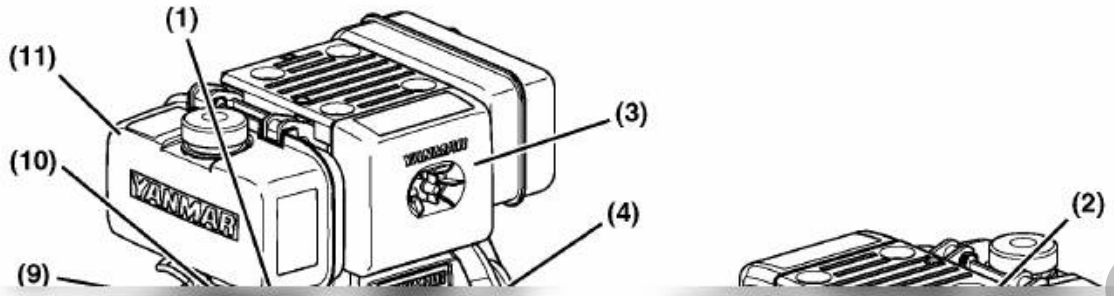
COMPONENT IDENTIFICATION

Figure 1 shows where major engine components are located.



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TROUBLESHOOTING

If a problem occurs, stop the engine immediately. Refer to the SYMPTOM column in the Troubleshooting Chart to identify the problem.

NOTICE

If any indicator fails to illuminate when the key switch is in the ON position, see your authorized Yanmar industrial engine dealer or distributor for service before operating the engine.

If any indicator illuminates during engine operation stop the engine immediately. Determine the cause and repair the problem before you continue to operate the engine.

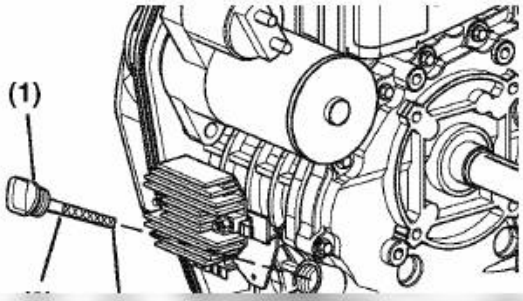
TROUBLESHOOTING CHART

SYMPTOM	PROBABLE CAUSE	ACTION	REFER TO
Indicator Turns On - Engine Running			
Engine oil pressure indicator (If equipped)	• Low level of engine oil • Too high an oil level	• Check and adjust oil level as necessary	*Checking Engine Oil on page 23*
	• Clogged engine oil filter	• Replace engine oil filter element	*Replace Engine Oil on page 48*
Battery Indicator	• Battery failure	• Check battery condition	*Check Indicators on page 25*
	• Faulty dynamo	• See authorized Yanmar industrial engine dealer or distributor	—
Indicator Does Not Turn On - Key Switch is Turned to ON (OFF → ON)			
	• Faulty electrical wiring or faulty indicator	• See authorized Yanmar industrial engine dealer or distributor	—

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5. Fully reinsert oil cap / dipstick **(Figure 3, (1))** and hand tighten. Over-tightening the oil cap / dipstick will damage it.



Engine Oil Capacity (Typical)

The following are the engine oil capacities for various Yanmar L-N Series engines.

Engine Model	Dipstick Upper Limit/ Lower Limit
L48N	0.85 / 0.58 qt (0.80 / 0.55 L)
L70N	1.11 / 0.69 qt (1.05 / 0.65 L)
L100N	1.7 / 1.06 qt (1.6 / 1.0 L)

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○: Check ◇: Replace ●: Contact your authorized Yanmar industrial engine dealer or distributor for these maintenance services.

System	Check Item	Daily	Periodic Maintenance Interval					
			Every 50 hours	Every 200 hours	Every 400 hours	Every 1000 hours	Every 1500 hours	Every 2000 hours
Air Intake	Clean or Replace Air Cleaner Element - May Need More Frequent Service in Dusty Conditions			○ 100hours	◇ 500hours			
Cylinder Head	Adjust Intake / Exhaust Valve Clearance		○ 1st time		●			
	Check Compression					●		
Electrical Equipment	Check Battery & Add Water as Necessary	○ before operation						
	Check Battery Indicator (If Equipped) and Other Driven Machine Indicators (If Equipped)	○ when engine is started						
Fuel Injector	Inspect, Clean & Test Fuel Injection Nozzle						●	
Engine Oil	Check Engine Oil Level & Add Engine Oil As Necessary	○ before operation						
	Drain and Refill Engine Oil		◇ 1st time	◇ 2nd & after				
	Clean Engine Oil Filter - Replace If Damaged May Need More Frequent Service in Dusty Conditions				◇ 2nd & after			
	Check for Engine Oil Leakage	○ before & after operation						
Engine Speed Control	Check for Proper Operation Verify Adjustment	○ 1st time		○ 2nd & after				
Exhaust System	Check Spark Arrestor for Clogging	○ before operation						
Fuel	Check Fuel Tank Level & Add Fuel As Necessary	○ before operation						
	Drain & Clean Fuel Tank			○				
	Clean Inlet Fuel Screen		○					
	Replace Outlet Fuel Filter			○	◇			
	Check for Fuel Leakage	○ before & after operation						
Hoses	Replace Fuel System Hose(s)							● or every 2 yrs. whichever comes first

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AIR COOLED ENGINE

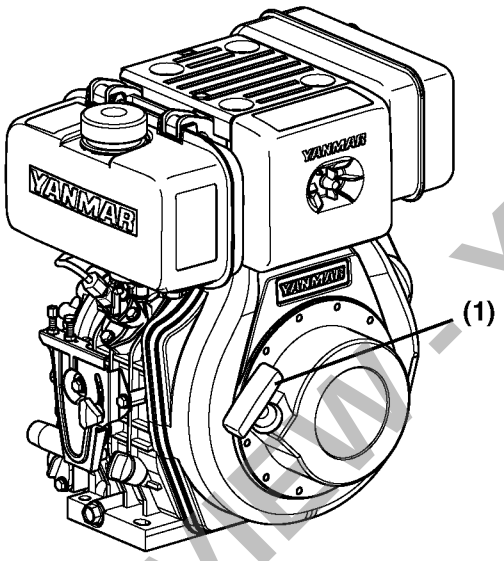
The L-N engine is air-cooled by means of a cooling fan. The cooling system consists of a fan attached to the flywheel.

CONTROLS - RECOIL STARTER

The L-N Series engines are equipped with a recoil or electric starter. This section explains the controls available with the recoil starter.

Recoil Starter

A recoil starter allows you to manually start an engine by pulling on the recoil starter handle **(Figure 3, (1))**. When you pull on the handle you set the flywheel and crankshaft in motion. The recoil starter is spring loaded so the handle and attached cable automatically return to the recoil starter assembly.

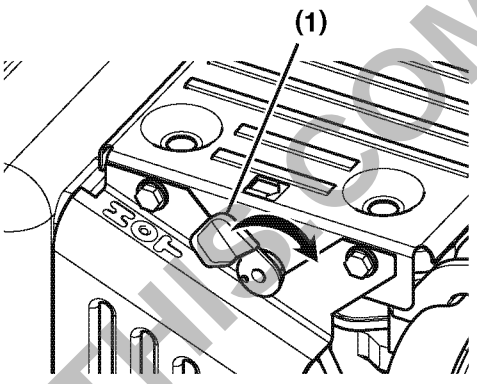


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Figure 3

Decompression Lever

The decompression lever **(Figure 4, (1))** helps you start the engine by reducing the effort needed to pull the recoil starter handle. The decompression lever will automatically return to the original position when the engine starts. Refer to the specific instructions for your driven machine.



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Figure 4

INDICATORS AND CONTROLS – ELECTRIC STARTER

If an L-N series engine is ordered with an electric starter it could come with a key switch and may also have indicators to monitor engine functions.

NOTICE

The illustrations and descriptions of optional equipment in this manual, such as the operator's console, are for a typical engine installation. Refer to the documentation supplied by the optional equipment manufacturer for specific operation and maintenance instructions.

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Indicators

Battery - (Figure 5, (1)) - Your driven machine may have a battery indicator that comes on if there is a problem in the charging system. This indicator does not indicate whether the battery is discharged. *See Troubleshooting Chart on page 57.*

Heat - If your engine has an inlet air heater, it may have a heat indicator that lights when the inlet air heater is activated. Follow the instructions provided by the driven machine manufacturer for the operation of this indicator.

Controls

Key Switch

If your engine is equipped with electric start it may have a three position key switch - OFF, ON, and START. See **Figure 5** for an illustration of a typical key switch.

NOTICE

For maximum engine life, Yanmar recommends that when shutting the engine down, you allow the engine to idle, without load, for 5 minutes. This will allow the engine components that operate at high temperatures, such as exhaust system, to cool slightly before the engine itself is shut down.

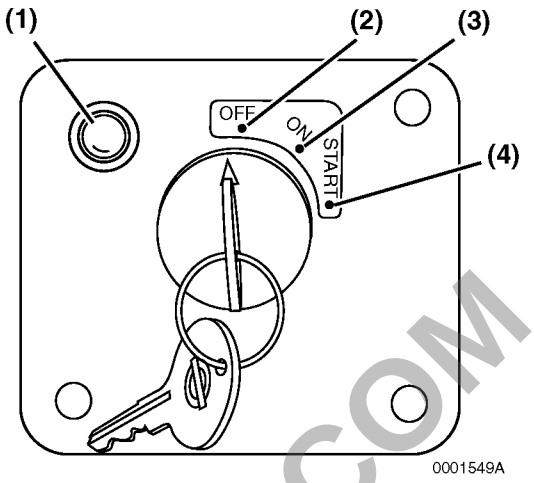


Figure 5

OFF (key straight up and down) **(Figure 5, (2))** - When you turn the key to this position the engine shuts down. Electric current to the battery indicator and other electric devices is shut off. You can insert and remove the key in this position.

ON **(Figure 5, (3))** - This is the position the key will be in when the engine is running. When the engine is not running, use this position to energize the optional devices such as indicators or electric fuel pump.

NOTICE

Only hold the key in the START position for 15 seconds or the starter motor will overheat.

If the starter attempt is not successful within the 15 seconds period, allow the starter motor to cool down for at least 2 minutes before to retry.

START **(Figure 5, (4))** - Turn the key to this position to start the engine. As soon as the engine starts, release the key and it will automatically return to the ON position. Some key switches may be equipped with a feature that prevents you from turning the key to the START position while the engine is running. In these configurations, you cannot turn the key to the START position without first returning the key to the OFF position.

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PRINCIPAL ENGINE SPECIFICATIONS

Engine Specifications

Engine Model		L48N		L70N		L100N	
Type		4-stroke, Vertical Cylinder, Air-Cooled Diesel Engine					
No. of Cylinders		1					
Bore × Stroke		70 × 57 mm		78 × 67 mm		86 × 75 mm	
Displacement		0.219 L		0.320 L		0.435 L	
Continuous Rated Output	rpm (min^{-1})	3600	3000	3600	3000	3600	3000

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