

GENERAC[®]
POWER SYSTEMS, INC.

13.3 LITER

Hino
GAS
ENGINE

SERVICE
MANUAL

FOREWORD

This manual has been published by GENERAC® POWER SYSTEMS, INC. to aid our dealers' mechanics, company service personnel and general consumers when servicing the products described herein.

It is assumed that these personnel are familiar with the servicing procedures for these products, or like or similar products, manufactured and marketed by GENERAC® POWER SYSTEMS, INC. It is also assumed that they have been trained in the recommended servicing procedures for these products, which includes the use of mechanics hand tools and any special tools that might be required.

Proper service and repair is important to the safe, economical and reliable operation of the products described herein. The troubleshooting, testing, service and repair procedures recommended by GENERAC® POWER SYSTEMS, INC. and described in this manual are effective methods of performing such operations. Some of these operations or procedures may require the use of specialized equipment. Such equipment should be used when and as recommended.

We could not possibly know of and advise the service trade of all conceivable procedures or methods by which a service might be performed, nor of any possible hazards and/or results of each procedure or method. We have not undertaken any such wide evaluation. Therefore, anyone who uses a procedure or method not recommended by the manufacturer must first satisfy himself that neither his safety, nor the product's safety, will be endangered by the service or operating procedure selected.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication. However, GENERAC® POWER SYSTEMS, INC. reserves the right to change, alter or otherwise improve the product at any time without prior notice.

Some components or assemblies of the product described in this manual may not be considered repairable. Disassembly, repair and reassembly of such components may not be included in this manual.

The engines described herein may be used to power a wide variety of products. Service and repair instructions relating to any such products are not covered in this manual. For information pertaining to use of these engines with other products, refer to any owner's or service manuals pertaining to said products.

FOREWORD

This engine workshop manual has been prepared to provide information covering the repair procedures on the 13.3L Hino Marine Engine.

Applicable Engine Model: EK130-T

When making any repair on this engine, be careful not to be injured through improper procedures.

As for maintenance items, refer to the Operation Hand Book.

All information and specifications in this manual are based upon the latest product information available at the time of printing.

Hino Motors reserves the right to make changes at any time without prior notice.

The service part number information listed in this publication is for cross-reference use only. Contact your approved dealership service parts distributor and parts analyst for actual service part number information.

The 13.3L Gas Engine has been engineered for use in Generac Power Systems products. The contents of this manual have been reprinted from the original manufacturer's service and repair manual. The exploded view section at the front of this manual is for reference only.



WORKSHOP MANUAL

INDEX: ENGINE GROUP

**GENERAL
INTRODUCTION**

ENGINE

**ELECTRICAL
EQUIPMENT**

TURBOCHARGER

**INJECTION
PUMP**

**INJECTION PUMP
GOVERNOR**

GENERATOR

STARTER

**INJECTION PUMP
CALIBRATION**

HINO MOTORS, LTD.

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CHAPTER GI

GENERAL INTRODUCTION

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GENERAL PRECAUTIONS

Some recommended and standard maintenance services for your engine are mentioned in this section.

When performing maintenance on your engine be careful not to get injured by improper work.

Improper or incomplete work can cause a malfunction of the engine which may result in personal injury and/or property damage.

WARNING

When working on your engine, observe the following general precautions to prevent personal injury and/or property damage in addition to the particular NOTES or WARNINGS.

Most threaded fasteners are metric.

Be careful not to mix with threaded fasteners using the inch system.

- Always wear safety glasses or goggles to protect your eyes.
- Remove rings, watches, ties, loose hanging jewelry and loose clothing before starting work on the engine.
- Bind long hair securely behind the head.
- To avoid serious burns, keep yourself away from hot metal parts such as the engine, exhaust manifold, radiator, muffler, exhaust pipe and tail pipe.
- Keep yourself, your clothing and your tools away from moving parts such as the cooling fan and V-belts when the engine is running.
- Always stop the engine by pulling out the engine stop knob. Leave the knob pulled out as long as the engine is stopped. And turn off the starter switch, unless the operation requires the engine running. Removing the key from the switch is recommended.
- Run the engine only in a well-ventilated area to avoid inhaling of carbon monoxide.
- Do not smoke while working on the engine since fuel and gases from the battery are flammable.
- Take utmost care when working on the battery. It contains corrosive sulfuric acid.
- Large electric current flows through the battery cable and starter cable. Be careful not to cause a short which can result in personal injury and/or property damage.
- Be careful not to leave any tool in the engine compartment. The tool may be hit by moving parts and can cause personal injury.

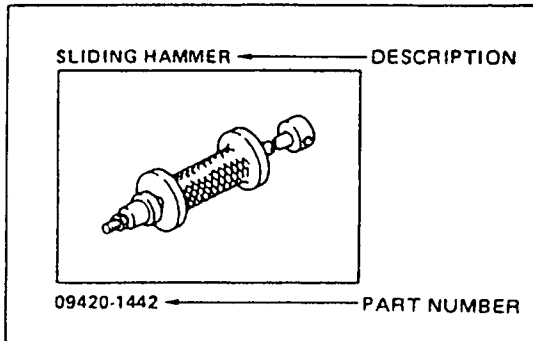
HOW TO USE THIS WORKSHOP MANUAL.

This workshop manual is designed as a guide for servicing engine.

An INDEX is provided on the first page of each chapter.

TROUBLESHOOTING is dealt with each chapter.

When beginning operations, refer to the sections on for guide to appropriate diagnoses.



SPECIAL TOOLS are dealt with in each chapter.

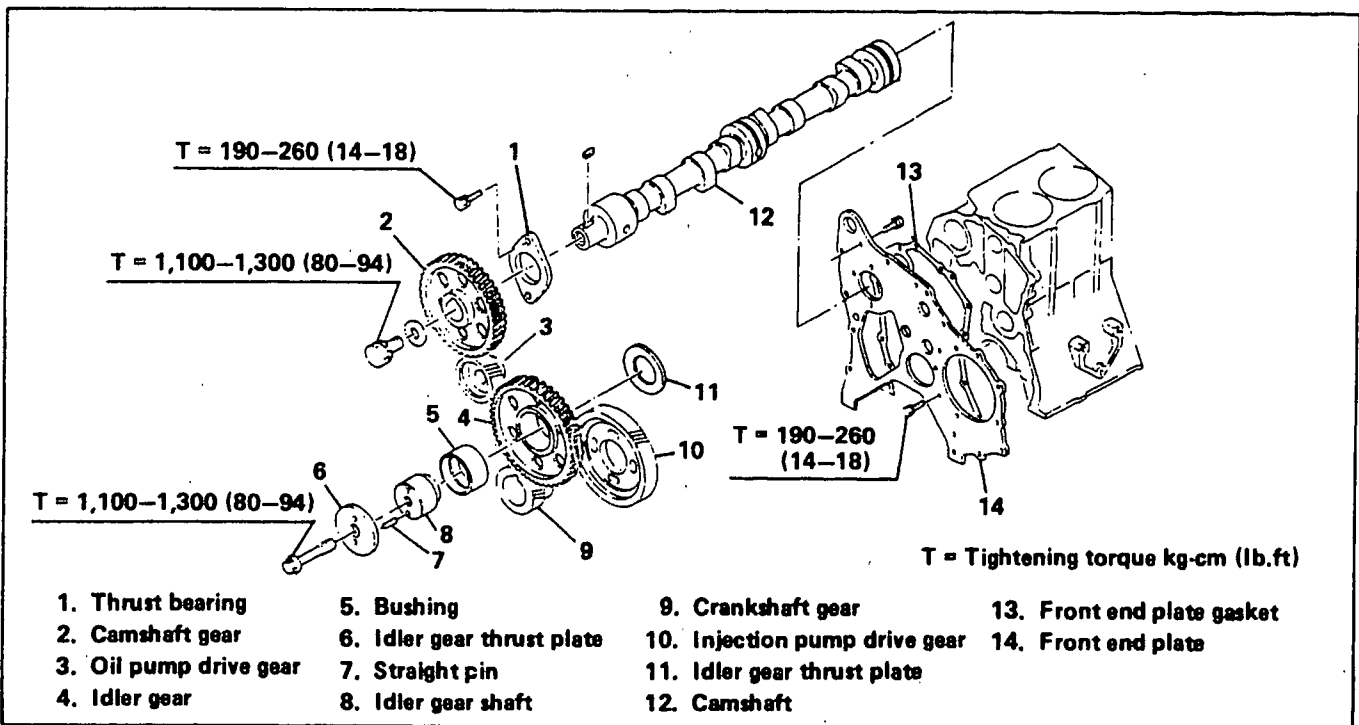
When ordering a special tool, make sure that the parts number is correct.

REPAIR PROCEDURES

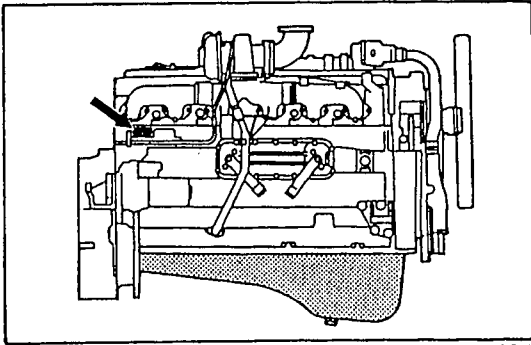
Repair procedures which are self-explanatory such as simple installation and removal of parts have been omitted. Illustrations such as the one below have been provided to make such simple procedures clear. Only essential procedures requiring directions have been dealt with explicitly.

EXAMPLE:

TIMING GEAR AND CAMSHAFT



In some cases, illustrations may be of parts which differ in some nonessential way from the parts found on your particular engine. In such cases, however, the principle or procedure being illustrated applies regardless of such non-essential differences.



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IDENTIFICATION INFORMATION

ENGINE SERIAL NUMBERS

Please quote these numbers when ordering spare parts or reporting technical matter as they will give you prompt service attention.

The engine serial number is engraved on the engine cylinder block.

Code No. 4687-E0

SPECIFICATIONS

DIESEL ENGINE FOR INDUSTRIAL USE

HINO EK130-T

13.267 liters, 4-cycle,
6-cyl., water-cooled
turbocharged

● PERFORMANCE (STD. specs.)

GENERAL USE (SAE J1349 Gross)				GENERATOR USE (SAE J1349 Gross)			
Output, intermittent rating kW (HP) at rpm	Output, continuous rating kW (HP) at rpm	Max. torque Nm (lbf-ft) at rpm	Min. fuel consumption g/kWh (lb/HPh) at rpm	Stand-by Power		Prime Power	
				Output at 1,500 rpm kW (HP)	Output at 1,800 rpm kW (HP)	Output at 1,500 rpm kW (HP)	Output at 1,800 rpm kW (HP)
193 (260) at 2,000	173 (232) at 2,000	1,050 (774) at 1,400	218 (0.358) at 1,400	171 (230)	193 (260)	162 (217)	183 (246)

Ambient conditions:	SAE	DIN
Intake air temperature	25°C	20°C
Barometric pressure	100 kPa	736 mmHg
Water vapour pressure	1.0 kPa	10.5 mmHg

● ENGINE DESCRIPTION

1. Type Diesel, 4-cycle, 6-cyl., in-line, over-head valve, water-cooled Turbocharged
2. Combustion chamber Direct injection type
3. Cylinder
Bore x Stroke 137 x 150 mm (5.39 x 5.91 in)
4. Piston displacement 13.267 liters (809.6 cu.in)
5. Compression ratio 16.5
6. Direction of rotation Counter-clockwise viewed from flywheel
7. Dimensions without marine gear 1,544 x 885 x 1,213 mm (60.8 x 34.8 x 47.8 in)
(L x W x H)
8. Dry weight 1,050 kg (2,362 lb)

● FEATURES

1. Cylinder block Mono block cast iron with replaceable wet liner
2. Cylinder head In two blocks, each one for three cylinder, cast iron
3. Crankshaft Induction-hardened, die forged special steel with counter weights
4. Piston and rings Heat-resistance aluminium alloy
Three compression rings, chrome plated
One oil ring, chrome plated with coil expander
5. Camshaft Induction hardened carbon steel
4. Valves Heat resistance steel

● STANDARD EQUIPMENT

1. Flywheel housing	HINO own (SAE No. 1 type)
2. Flywheel	HINO own (SAE 14 in. type)
3. Fuel injection pump	BOSCH "P" type
4. Governor	Mechanical, all speed control type
5. Fuel injection nozzle	BOSCH hole type
6. Fuel filter	Paper element type
7. Water separator	
8. Cooling system	Forced-circulation by volute pump
9. Lubricating system	Full forced pressure feed by gear pump
10. Oil filter	Paper element type (Full flow & By-pass flow)
11. Intake manifold	Inlet position at rear
12. Exhaust manifold with flange plate	Upward exhaust
13. Generator	Alternator with integral regulator 24V, 20A
14. Starter	24V, 7kW
15. Safety relay	
16. Connectors of electrical equipments	

● OPTIONAL EQUIPMENT

1. Cooling fan (suction or blowout)
2. Main switch
3. Battery switch
4. Battery relay
5. Starter switch with key
6. Ammeter
7. Fuse box
8. Engine shut off solenoid
9. Emergency relay
10. Coolant temperature switch
11. Coolant temperature gauge sender
12. Coolant temperature gauge
13. Oil pressure switch
14. Oil pressure gauge sender
15. Oil pressure gauge
16. Intake heater
17. Intake heater relay
18. Intake heater indicator
19. Tachometer with hourmeter
20. Tachometer cable
21. Muffler
22. Air cleaner
23. Air cleaner cap
24. Radiator with cooling fan shroud