

ISUZU
Bellett

INTRODUCTION

ENGINE SERIES

PART 1 INTRODUCTION

ISUZU MOTORS LIMITED

TOKYO, JAPAN

PART 1 INTRODUCTION

1-1 BELLETT ENGINE (GASOLINE)

The BELLETT engines model G150 with the cubic capacity of 1,471 c.c. and model G130 with the cubic capacity of 1,325 c.c. have prolonged service life and highest rate of operating economy. These are the high performance engines skillfully engineered to secure a stabilized torque and operating flexibility at any travel speed.

Both engines model G150 and G130 comprises major component parts which are in common and have similar appearances except the carburetors.

Gasoline engine model G130

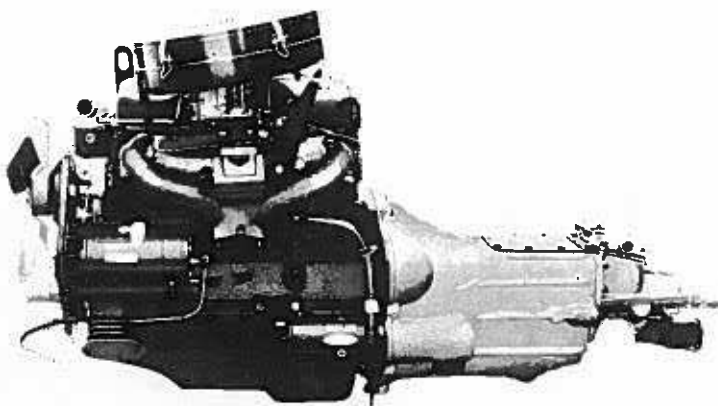


Fig. 1-1

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Gasoline engines model G150 and G150C

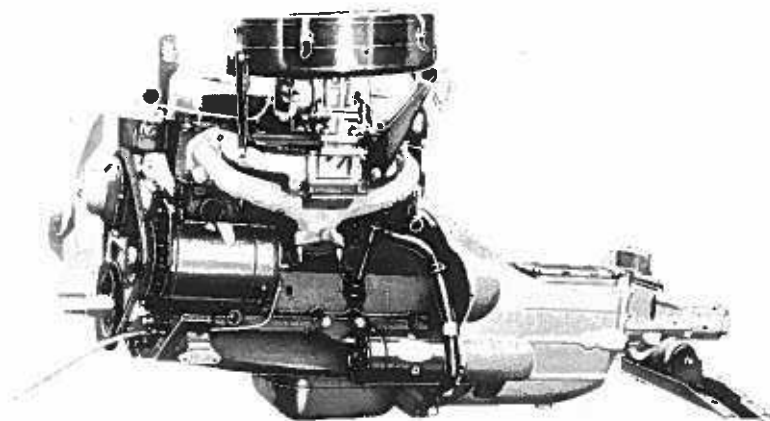


Fig. 1-2

The engines model G150 and G150C have the same appearances except the compression ratios are different

Gasoline engine model G150D

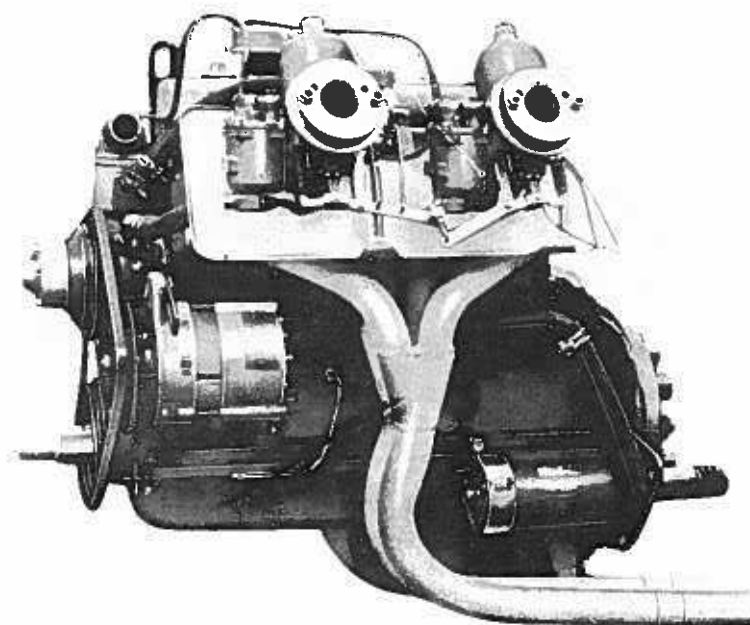
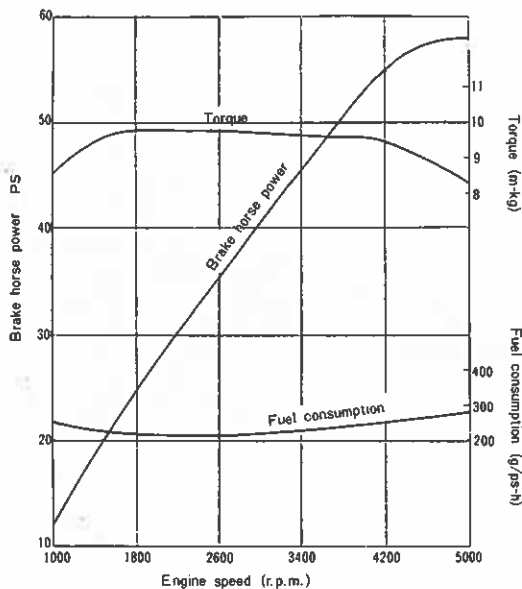


Fig. 1-3

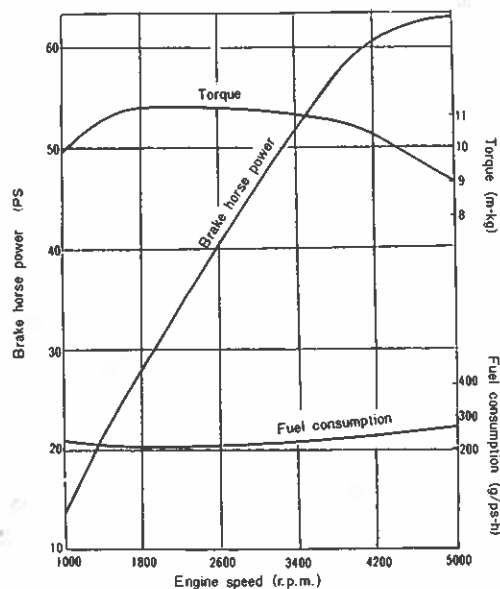
Engine performance curve for model G130
(gasoline engine)

Number of cylinder: 4
Bore of the cylinder and crankshaft stroke: 75mm × 75mm
Total cubic capacity: 1,325 ltr.
Compression ratio: 7.5 : 1
Maximum brake horse power: 58ps (at 5,000 r.p.m.)
Maximum torque: 9.8 m·kg (at 1,800 r.p.m.)
Minimum fuel consumption: 215g/ps-h (at 2,200 r.p.m.)



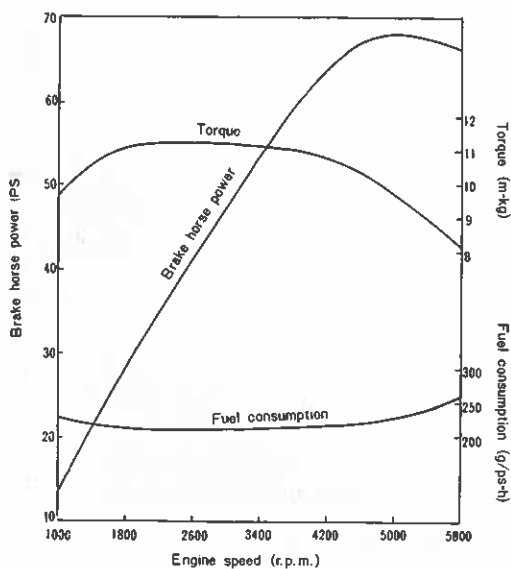
Engine performance curve for model G150
(gasoline engine)

Number of cylinder: 4
Bore of the cylinder and crankshaft stroke: 79mm × 75mm
Total cubic capacity: 1,471 ltr.
Compression ratio: 7.5 : 1
Maximum brake horse power: 63ps (at 5,000 r.p.m.)
Maximum torque: 11.2 m·kg (at 1,800 r.p.m.)
Minimum fuel consumption: 210g/ps-h (at 2,200 r.p.m.)



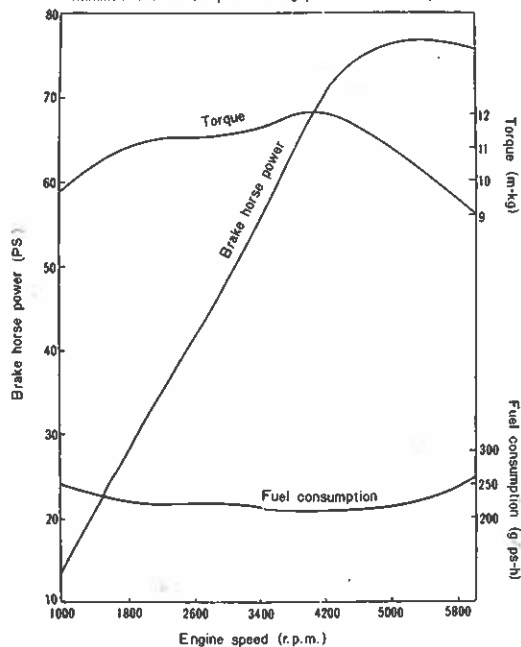
Engine performance curve for model G150C
(gasoline engine)

Bore of the cylinder and crankshaft stroke: 79mm × 75mm
Total cubic capacity: 1,471 ltr.
Compression ratio: 8.5 : 1
Maximum brake horse power: 68ps (at 5,000 r.p.m.)
Maximum torque: 11.3 m·kg (at 2,200 r.p.m.)
Minimum fuel consumption: 210g/ps-h (at 2,200 r.p.m.)



Engine performance curve for model G150D
(gasoline engine)

Number of cylinder: 4
Bore of the cylinder and crankshaft stroke: 79mm × 75mm
Total cubic capacity: 1,471 ltr.
Compression ratio: 8.5 : 1
Maximum brake horse power: 77ps (at 5,400 r.p.m.)
Maximum torque: 12.0 m·kg (at 4,200 r.p.m.)
Minimum fuel consumption: 210g/ps-h (at 3,800 r.p.m.)



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1-2 SPECIFICATIONS OF BELLETT ENGINE (GASOLINE)

Engine model	G130	G150	G150C	G150D	G160
Type	Water cooled 4-cylinder in line (gasoline engine)	Same as left	Same as left	Same as left	Same as left
Bore and stroke	75mmx75mm	79mmx75mm	"	"	83mmx73mm
Total cubic capacity	1325cc	1471cc	"	"	1579cc
Compression ratio	7.5	7.5	8.5	8.5	9.3
Maximum brake horse power	58ps/5000r.p.m.	63ps/5000r.p.m.	68ps/5000r.p.m.	77ps/5400r.p.m.	88ps/5400r.p.m.
Maximum torque	9.8 kg-m /1800r.p.m.	11.2 kg-m /1800r.p.m.	11.3 kg-m /2200r.p.m.	12.0 kg-m /4200r.p.m.	12.5 kg-m /4200r.p.m.
Minimum fuel consumption	215 g/psh /2200r.p.m.	210 g/psh /2200r.p.m.	Same as left	210 g/psh /3800r.p.m.	210 g/psh /3800r.p.m.
Maximum mean effective pressure	9.3 kg/cm ² /1800r.p.m.	9.6kg/cm ² /1800r.p.m.	9.7 kg/cm ² /2200r.p.m.	10.3 kg/cm ² /4200r.p.m.	9.95 kg/cm ² /4200r.p.m.
Compression	11 kg/cm ²	11 kg/cm ²	12 kg/cm ²	Same as left	13.5 kg/cm ²
Weight of the engine unit (dry)	130 kg	Same as left	Same as left	"	139 kg
Piston type	T-slot type	"	"	"	Same as left
Number of piston ring	Compression ring 2 and oil control ring 1	"	"	"	"
Firing order	1—3—4—2	"	"	"	"
Intake valve opening	40° B.T.D.C.	"	38° B.T.D.C.	"	"
Intake valve closing	74° A.B.D.C.	"	82° A.B.D.C.	"	"
Exhaust valve opening	70°30' A.B.D.C.	"	73° A.B.D.C.	"	"
Exhaust valve closing	23°30' A.T.D.C.	"	35° A.T.D.C.	"	"
Intake valve clearance	0.3mm (cold)	"	Same as left	"	"
Exhaust valve clearance	0.35mm (cold)	"	"	"	"
Ignition timing	14° B.T.D.C. /600 650 rpm	"	12~14°B.T.D.C. /600~650rpm	"	12° /600~650rpm
Ignition timing governor	Combination of centrifugal and vacuum type	"	Same as left	"	Same as left
Spark plug gap	0.7 0.8mm	"	"	"	"
Carburetor	Hitachi DAB 308-5 (single) Solex type	Nihon Kikaki (single) Strongburgh type	" "	Hitachi HJD38W (twin) SU type	" "
Fuel pump	Nihon Kikaki PD-56Q (diaphragm type)	Same as left (")	" (")	Same as left (")	" (")

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Engine model	G130	G150	G150C	G150D	G160
Fuel tank capacity	40 ltr	Same as left	Same as left	Same as left	Same as left
Oil feed pump	Forced circulation (Trochoid type)	"	"	"	"
Oil pan capacity	2.6 ltr	3.2 ltr	"	"	"
Cooling method	Pressurized and forced circulation	Same as left	"	"	"
Type of radiator	Flat water tube in 2-row	"	"	"	"
Water pump	Impeller type	"	"	"	"
Type of thermostat	Bellows type for model '64 and Wax pellet type for model '65	Bellows type	Wax pellet type	Same as left	Same as left
Capacity of the cooling system	6 ltr	"	"	"	"
Air cleaner	Paper element	"	"	"	"
Oil filter	Paper filter type	"	"	"	"
Battery	N-40 (12V-40AH)	"	NS-40 (12V-40AH)	"	NS-40 (12V-40AH)
Ground electrode	(-) Negative electrode connected to ground	"	Same as left	"	Same as left
Generator	Hitachi GT123-08 (12V-300W)	"	Hitachi LT123-16 (AC 12V-300W)	"	"
Starter	Hitachi S114-54 (12V-1KW)	"	Same as left	"	"

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1-3 PERIODICAL INSPECTION AND LUBRICATION (FOR GASOLINE ENGINE AND ITS ASSOCIATED PARTS)

To maintain the automobile always in top operating condition, routine service, periodical inspection and lubrication should be carried out according to the following table.

REFERENCE TABLE FOR DAILY CHECK-UPS

Check spot	C h e c k u p
Engine	<ol style="list-style-type: none">1. Cooling water level and leakage2. Engine oil level and leakage3. Fuel level and leakage4. Check oil level in the fuel injection pump5. Tension and wear of the fan belt6. Easiness of starting and operating noise7. Unreasonable exhaust smoke
Steering wheel	<ol style="list-style-type: none">1. Check for excessive play and loosened parts2. Free from undue vibration, swerving or restricted operation
Brake	<ol style="list-style-type: none">1. Check for reasonable travel stroke of the foot brake pedal and response of the brakes2. Check for effective travel stroke of the lever and its response to assure safety of driving
Tires	<ol style="list-style-type: none">1. Check for proper tire pressure, abnormal wear and scores or serious damage detrimental to operation
Chassis spring	<ol style="list-style-type: none">1. Chassis spring for breakage
Battery	<ol style="list-style-type: none">1. Battery electrolyte level and leakage
Horn, flasher and windshield wiper for normal operation	<ol style="list-style-type: none">1. Check these parts for operating failure
Meters	<ol style="list-style-type: none">1. Check flasher for operating failure, fouling and damage
Rear view mirror	<ol style="list-style-type: none">1. Check for proper function
Reflector and license plate	<ol style="list-style-type: none">1. Check for fouling and damage
Any trouble or operating failure detected during automobile is in operation	<ol style="list-style-type: none">1. Check pertinent parts for operating failure

REFERENCE TABLE FOR PERIODICAL INSPECTION AND LUBRICATION
(BELLETT GASOLINE ENGINE)

● Marking denotes "Replacement"

Equip- ment	Inspection period and interval	When initial 1,000 km covered		After every 3,000 km of travel or 2-month intervals		After every 9,000 km of travel or 6-month intervals		After every 18,000 km of travel or 6-month intervals		After every 36,000 km of travel or 6- month inter- vals	
	Personal and business use (classification)	Per- sonal	Busi- ness	Per- sonal	Busi- ness	Per- sonal	Busi- ness	Per- sonal	Busi- ness	Per- sonal	Busi- ness
S E R V I C E	Check-up										
	Tension and wear of fan belt	○	○	○	○						
	Easiness of starting and operating noise			○	○						
	Draining the engine lubricant through the oil filter's drain plug	○	○	○	○						
	Check all the parts for oil leakage	○	○	○	○						
	Check for fuel leakage through the entire fuel system	○	○	○	○						
	Check for water leakage through the entire cooling system	○	○	○	○						
	Check for leakage in the air intake system	○	○	○	○						
	Tightness of cylinder head and manifolds mounting	○	○			○	○				
	Valve clearances	○	○			○	○				
	Muffler and exhaust pipes for loosened mounting or wear	○	○	○	○						
	Engine mountings for tightness	○	○			○	○				
	Air cleaner element for clogging or wear			○	○						
	Engine performance at low speed and accelerated speed			○	○						
	Cleaning of air breather system			○	○						
	Check exhaust smoke for normal condition			○	○						
	Check insulated electrode of the spark plug for fouling and wear			○	○						
	Check contact breaker points of distributor for wear and fouling			○	○						
	Ignition timing adjustment			○	○						
	Automatic ignition timing control for normal operation			○	○						
	Cleaning the internal part of oil pan and oil pump strainer										○
	Measuring the cylinder compression										○
	Cleaning the internal part of the fuel tank										○

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Equipment	Inspection period and mileage interval	When initial 1,000 km covered		After every 3,000 km of travel or 2-month intervals		After every 9,000 km of travel or 6-month intervals		After every 18,000 km of travel or 12-month intervals		After every 36,000 km of travel or 6-month intervals
		Personal	Business	Personal	Business	Personal	Business	Personal	Business	
Check-up		Personal and business use (classification)		Personal	Business	Personal	Business	Personal	Business	Business
Engine	Draining and refilling with recommended oil	●	●	●	●					
	Replacing the cooling water							●		●
	Draining and refilling with recommended oil			●	●					
	Replacing the oil filter element					●	●			
	Replacing the fuel filter element							●	●	
	Replacing the air cleaner element							●	●	
	Lubricating the diaphragm in the fuel injection pump					○	○			
	Lubricating the engine control linkage			○	○					
Electrical system	Check all the wiring for loosened connection and damage			○	○					
	Check meters and pilot lamps for operating failure			○	○					
	Check battery hold down bolts and terminals for loosening	○	○	○	○					
	Check generator for charging operation failure			○	○					
	Check battery electrolyte level			○	○					
	Measuring the specific gravity of the battery electrolyte					○	○			
	Check carbon brush in the starter and commutator surface for wear or fouling							○		○
	Check generator and voltage regulator for operating failure						○	○		
	Check contacting point of the change-over switch for wear or fouling						○	○		
	Check starter pinion for proper engagement						○	○		
	Check starter mounting for loosening						○	○		
	Lubricating the center and rear bearings of the starter					○	○			
	Lubricating the front bearing of the starter									○
	Grease the generator bearing as recommended									●