

Design for Manufacture

2. Petrol Lawnmower Specifications

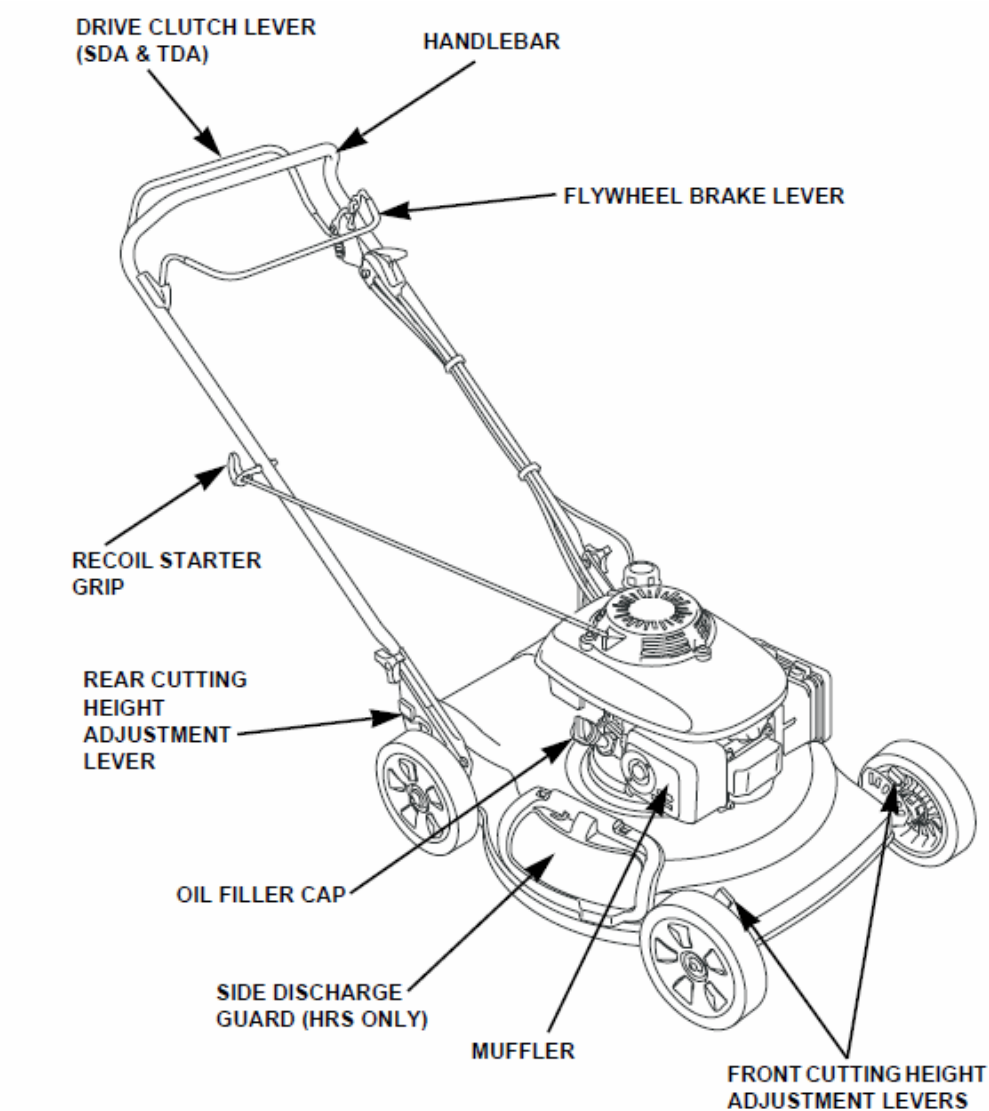
- A petrol lawnmower for medium to large gardens
 - 3-6 horsepower, 4 stroke petrol engine
 - 350-700 mm cutting width
 - 5-10 height adjustments
 - 30-100-litre collection bag

Honda Petrol Lawnmowers

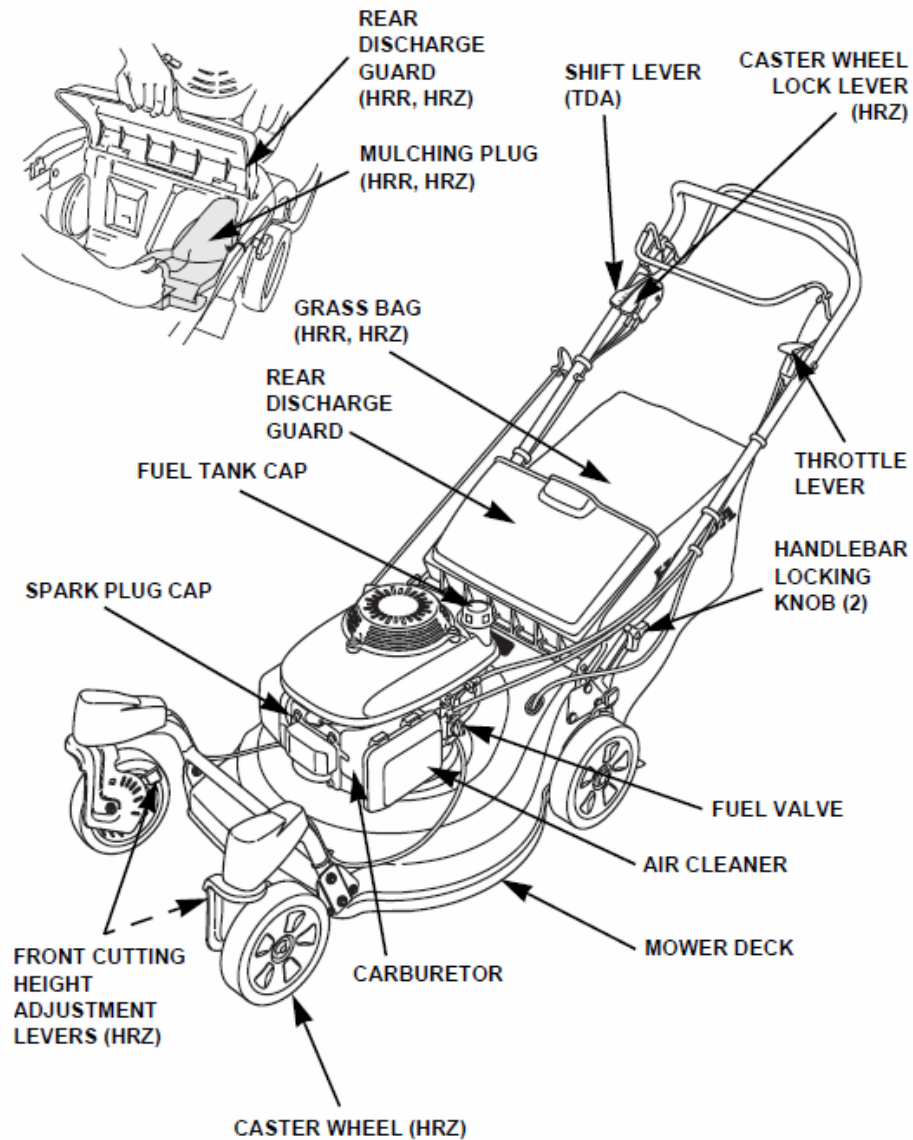
HRS216PDA • HRS216SDA
HRR216PDA • HRR216SDA
HRR216TDA • HRZ216TDA



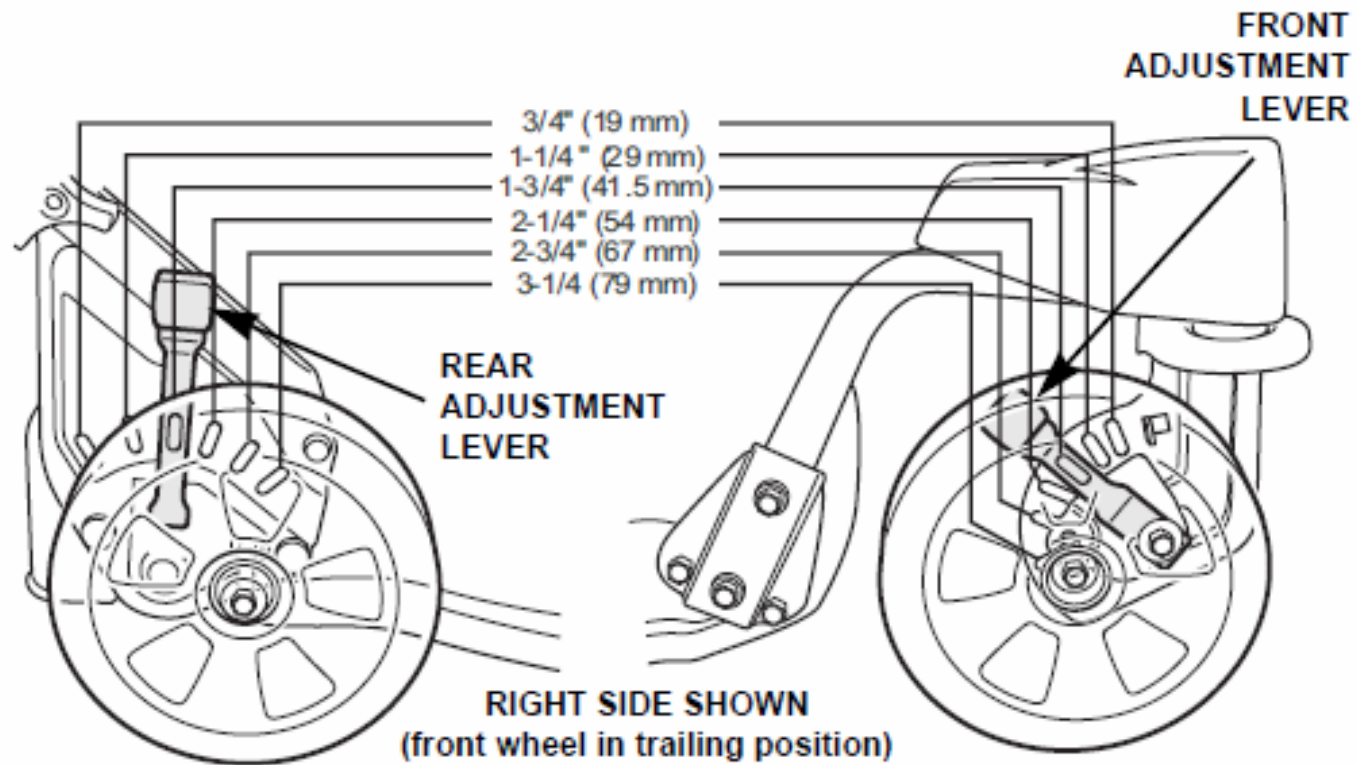
Honda Petrol Lawnmowers Control Parts



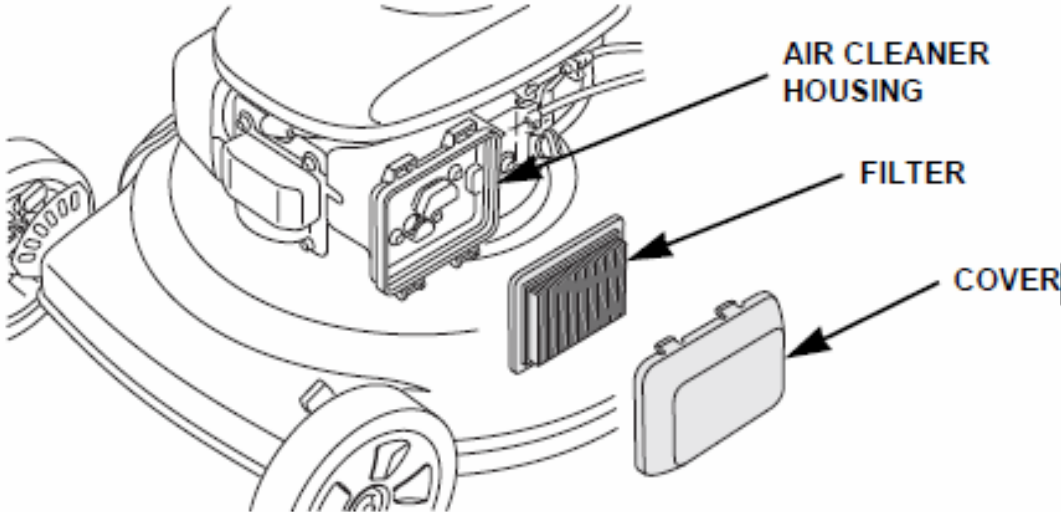
Honda Petrol Lawnmowers Parts



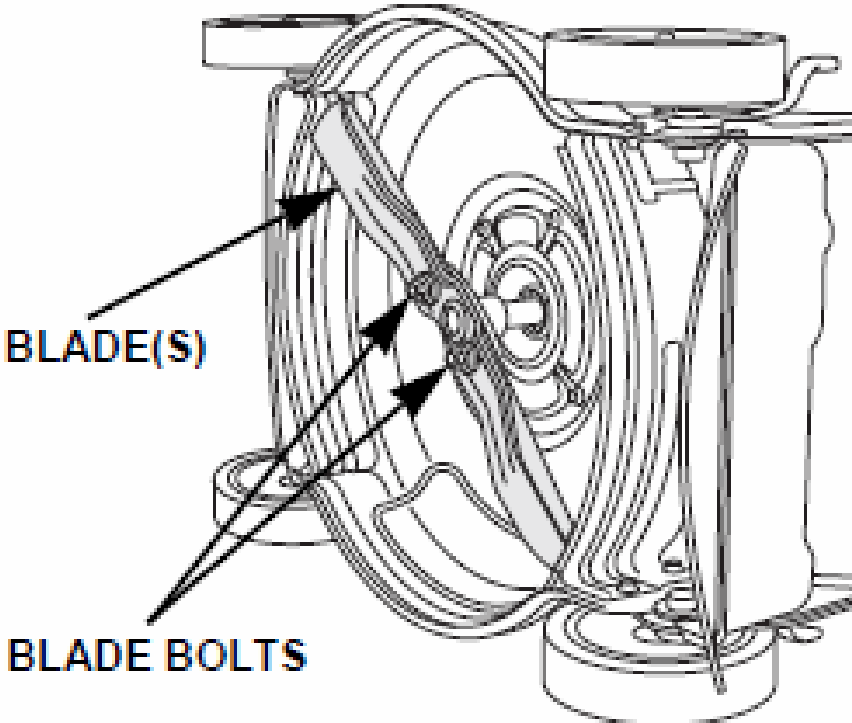
Cutting Height Adjustment Levers



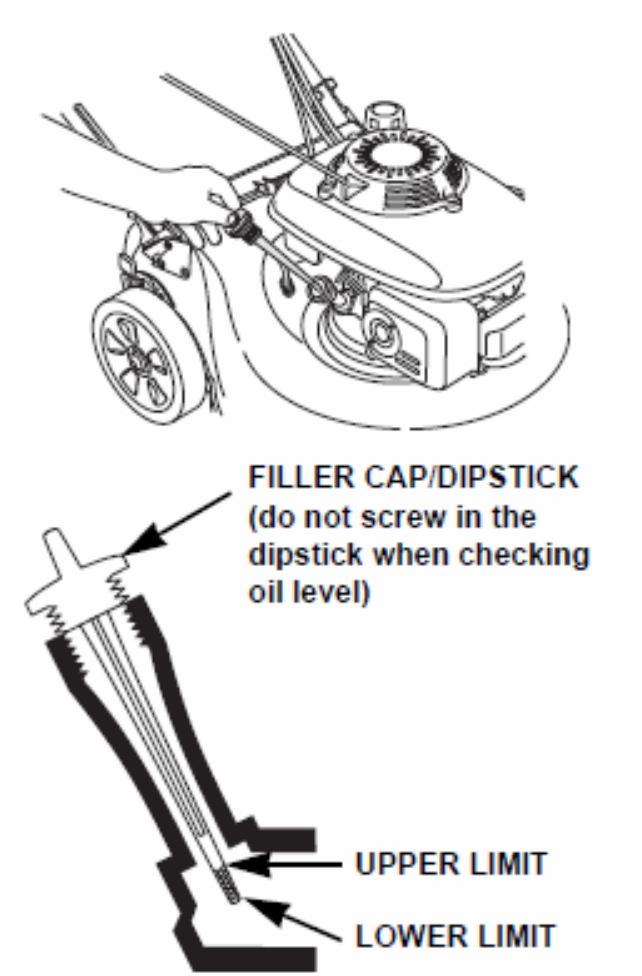
Air Filter



Blades



Engine Lubrication



Honda Engine Specifications

ENGINE

Model	GCV160
Engine type	4-stroke, overhead-cam, single-cylinder, air-cooled
Displacement	9.8 cu in (160 cc)
Bore and stroke	2.52 x 1.97 in (64 x 50 mm)
Compression ratio	8.5:1
Ignition system	Transistorized magneto
Maximum horsepower	5.5 bhp (4.1 kW) @ 3,600 rpm
Maximum torque	8.4 ft-lb (11.4 N•m) @ 2,500 rpm

Quantum Power Engine Specifications

ENGINE SPECIFICATIONS

MODEL SERIES	121702, 122702, 124702
ENGINE TYPE	SINGLE CYLINDER, L-HEAD, AIR COOLED
Bore	68.26 mm (2-11/16 in.)
Stroke	51.99 mm (2-3/64 in.)
Displacement	189.6 cc (11.57 cubic inches)
Horsepower	
121702	2.6 Kilowatts (3.5 Horsepower)
122702	3.0 Kilowatts (4.0 Horsepower)
124702	3.75 Kilowatts (5.0 Horsepower)
Max. torque	
121702	5.4 (ft. lbs.) @ 2500 RPM
122702	6.1 (ft. lbs.) @ 2400 RPM
124702	6.7 (ft. lbs.) @ 2500 RPM
Cooling	Forced air
Ignition	Transistor magneto
Fuel Capacity	0.9 Litres for 121702 Model 1.4 Litres for 122702 or 124702 Model
Oil Capacity	0.6 Litre (600 cc's)
Air Cleaner	Paper Element
Governor	Mechanical
Weight	10.89 Kilograms (11 kg - 124702 Model)
Dimensions	Length - 334 mm Width - 311 mm Height - 239 mm

Quantum Power Engine Specifications

FRAME

Model	HRS216K2		HRR216K2			HRZ216
Type	PDA	SDA	PDA	SDA	TDA	TDA
Length	61 1/8 in (1554 mm)	63 7/8 in (1621 mm)	61 5/8 in (1566 mm)	64 1/2 in (1637 mm)		70 5/16 in (1785 mm)
Width	23.0 in (585 mm)					
Overall height	37-3/8 in (948 mm)		38 1/4 in (970 mm)			
Dry weight	62.2 lb (28.2 kg)	69.4 lb (31.5 kg)	75.0 lb (34.0 kg)	80.5 lb (36.5 kg)	83.1 lb (37.7 kg)	92.4 lb (41.9 kg)
Cutting width	21.0 in (530 mm)					
Cutting heights	1 ~ 3 1/2 in (25 ~ 87 mm)		3/4 ~ 3 1/4 in (19 ~ 79 mm)			
Fuel tank capacity	0.29 US gal (1.1ℓ)					
Engine oil capacity	0.58 US qt (0.55ℓ)					

Quantum Power Engine Specifications

MAINTENANCE

Fuel	Unleaded gasoline with a pump octane rating of 86 or higher
Engine oil	SAE 10W-30
Transmission lubricant (SDA, TDA)	Grease (NLGI #2)
Spark plug type (Resistor plugs reduce interference with radio and television reception.)	Regular: NGK - BP6ES DENSO - W20EP-U Resistor: NGK - BPR6ES DENSO - W20EPR-U
Maximum governed speed	2,950 ~ 3,100 rpm
Throttle cable	Adjust for proper choke operation and maximum governed speed.
Blade bolt torque	36 ~ 43 ft-lb (5.0 ~ 6.0 kg-m, 49 ~ 59 N•m)

Quantum Power Engine Specifications

TRANSMISSION

Type	SDA	TDA
Transmission type	Single speed	3-speed
Ground speeds	2.5 mph (4.0 km/h)	1st: 1.7 mph (2.8 km/h) 2nd: 2.6 mph (4.2 km/h) 3rd: 3.2 mph (5.2 km/h)

TUNEUP

Spark plug gap	0.028 ~ 0.031 in (0.7 ~ 0.8 mm)
Idle speed	1,700 ± 150 rpm
Valve clearance (cold)	Intake: 0.15 ± 0.02 mm Exhaust: 0.20 ± 0.02 mm

- Safety issues:
 - Rotary mowers can throw out debris with extreme force.
 - Blades of self-powered push mowers can injure a careless or inattentive operator, so equipped with a dead man's switch to immediately stop the blade rotation when it is not being operated.
 - In the US, over 12,000 people per year are hospitalized due to mower accidents. The vast majority of injuries can be prevented by wearing protective footwear.
 - The American Academy of Pediatrics recommends that children be at least 11 years allowed to mow.

- Environmental impact
 - A 2001 study showed that some mowers produce the same amount of pollution (emissions other than carbon dioxide) in one hour as driving a 1992 model vehicle for 1,050 km. Another estimate puts the amount of pollution at four times the amount from a car, per hour.
 - United States Environmental Protection Agency has set standards for lawn equipment emissions and expects a reduction of at least 35 percent (2011).
- Mowers also create significant noise pollution and could cause hearing loss if used without hearing protection.

Poisoning by lawnmower

- 1 hour's cutting grass with a petrol lawnmower generates the same air pollution as 100-650 miles car journey, more pollution if a mower is old. Users could be breathing in cancer-causing chemicals along with the smell of freshly-mown grass.
- In US alone, every weekend during mowing season 54 million Americans with petrol mowers spend an hour on average cutting their lawns, using 800 million gallons of unleaded fuel every year and produces 1.2 million tons of air pollution at the hottest months, aggravating breathing disorders or heart diseases.
- It is recommends that all petrol mowers are fitted with catalytic converters, which can cut emissions of carcinogenic polycyclic aromatic hydrocarbons (PAHs) by up to 80% and make significant reductions in the other emissions.

- In 2000, the European Union proposed a Directive governing air pollution from non-road mobile equipment such as lawnmowers, chain saws and strimmers, regulations were set up.
- EU regulations prevent the use of 2-stroke engines on petrol lawn mowers due to their higher emission levels.

Product standards

Noise emission in the environment by equipment for use outdoors

Guidance notes on the UK Regulations

First edition

June 2001



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Lawnmowers, lawn trimmers/lawn edge trimmers	$L \leq 50$	96	94 ⁽²⁾
	$50 < L \leq 70$	100	98
	$70 < L \leq 120$	100	98 ⁽²⁾
	$L > 120$	105	103 ⁽²⁾