

ROYAL ALLOY

350/250 Sidecar
Operators Manual

GP350MS · GP250MS (the GP250MS is not for UK or EU markets)

Preface

Thank you for choosing a Royal Alloy **GP350MS or GP250MS** sidecar. Royal Alloy products combine advanced technology with reliability, and are designed using the many years of experience that RA Engineering Co., Ltd and its partners have in building scooters for travel, commuting, leisure and sport.

This manual explains the use, operation, basic inspection and maintenance of your scooter. If you have any further questions about operation or maintenance, please contact your dealer.

The scooter is designed to fully meet the exhaust emissions standards in force on its date of manufacture. To keep it compliant, please carry out the maintenance schedule and instructions in this manual together with your dealer.

Safety messages used in this manual

WARNING A procedure that must be followed to avoid injury to you or other people, or damage to the scooter.

CAUTION A procedure that must be followed; otherwise your personal safety may be put at risk.

NOTE A procedure that must be followed to avoid damaging the scooter.

WARNING Read this manual carefully before riding the scooter.

CAUTION This manual should be regarded as part of the scooter and should stay with it, even when the scooter is sold.

NOTE We are continually improving the design and quality of our products. This manual contains the latest product information at the time of printing, but your scooter may differ slightly. If you have any questions, please contact your dealer.

Version 1.0 · 2 April 2025

Contents

Preface 1

Chapter 1 Precautions for safe riding 3

Chapter 2 Serial numbers 4

Chapter 3 Controls and instruments 5

3.1 Instrument panel 5
3.2 Ignition switch 7
3.3 Left handlebar switches 7
3.4 Right handlebar switches 8
3.5 Stands 9
3.6 Fuel tank cap 9
3.7 Coolant tank cap 9
3.8 Seat lock (type 1) 10
3.9 Seat lock (type 2) 10
3.10 Front luggage box 11

Chapter 4 Fuel and oil recommendations 12

Chapter 5 Running-in 13

Chapter 6 Inspection before riding 14

Chapter 7 Riding 17

Chapter 8 Inspection and maintenance 19

8.2 Maintenance schedule 20
8.3 Frame bolts and nuts 21
8.4 Battery 21
8.5 Spark plug 21
8.7 Air filter 23
8.10 Brake fluid 24
8.11 Tyres 24
8.12 Fuses 25

Chapter 9 Troubleshooting 26

Chapter 10 Storage 27

Chapter 11 Specifications 28

Chapter 12 Warranty terms 30

CHAPTER 1

Precautions for safe riding

Obey all local traffic regulations and put safety first whenever you ride. Control your speed and stay within safe limits.

Practise before riding

Before riding in traffic, practise in a spacious, traffic-free area until you can ride safely and are familiar with the controls. Complete any training or government test required before riding on public roads.

Know your safe speed

A safe speed depends on the road, the weather and your riding skill. Be aware of local and national speed limits.

Take care in the wet

Riding on damp or wet roads is dangerous. Avoid high speeds and take extra care when turning. Braking distances in the rain can be twice those on a dry road.

Wear a helmet

Always wear a safety helmet and make sure the strap is securely fastened.

Wear suitable clothing

Bright, well-fitting clothing that lets your arms and legs move freely is recommended, together with clothing made of thick material and shoes with low heels.

Carry out essential inspections and maintenance

- Make safety checks before every journey.
- Have a thorough inspection every six months.
- Have a full service every year.
- Carry out the items in the maintenance schedule.

Hot surfaces

The silencer gets very hot and can cause burns. Park the scooter where people are unlikely to touch the silencer.

No modifications

Do not modify the scooter. Modifications may make it unsafe to ride.

CHAPTER 2

Serial numbers

Engine number

The engine number is stamped on the rear of the crankcase.

Chassis number

The chassis number is stamped on the right-hand frame rail.



Figure 1 Engine number location



Figure 2 Chassis number location

NOTE Keep a record of your engine number — you will need it to order the correct spare parts from your dealer.

Write your serial numbers here for future reference:

Chassis serial no.	
Engine serial no.	

CHAPTER 3

Controls and instruments

3.1 Instrument panel



Figure 3 Instrument panel

1 Temperature display

Shows the outside air temperature.

2 Heated grip display

Shown when the heated grips are on. This feature is not currently fitted.

3 Speedometer

Shows road speed in mph or km/h.

4 Bluetooth indicator and caller ID

Blue means Bluetooth is connected; grey means it is not. Caller ID is shown to the right of the Bluetooth indicator, directly above the LCD screen.

5 / 9 Time and date display

Long-press the left button to enter clock setting — the date and month digits flash. Short-press the right button to change a value and short-press the left button to move on, setting month, day, year, hour, minute and AM/PM in turn. Long-press the left button to save and exit. If no button is pressed for 15 seconds, the settings are saved automatically.

6 Engine speed (rpm) indicator

Shows engine speed.

7 Fuel gauge

Shows the fuel remaining. When the tank is full, all 6 segments are lit and the pointer is at “F”. When the level falls to segment 2, the segment turns red to show that you need to refuel. When the level falls further, segment 1 flashes — refuel as soon as possible. If all segments (1–6) flash, the fuel gauge connector is disconnected.

8 Trip distance

Shows the distance travelled on the current trip. Long-press the right button to reset the trip distance and trip time.

10 / 20 Left and right turn indicators

Flash when the turn signal switch is pushed to the left or right.

11 High beam indicator

Lights when the headlamp high beam is on.

12 / 18 SET (left) and MODE (right) buttons

- Short-press the left button to switch between metric and imperial units.
- Long-press the right button to reset the trip distance and trip time.
- Long-press the left button to set the date and clock.

Password menu. Within 15 seconds of switching on, press and hold both buttons to open the password screen, which shows 000. Short-press the right button to increase the current digit and the left button to move to the next digit (the active digit is shown in blue). After the last digit, short-press the left button to continue:

1. **Password 111 — parameter settings.** Short-press the left button to move between items and the right button to adjust them. After the last item, short-press the left button to save and exit.
2. **Password 378 — customer reset.** Resets the odometer and adds 1 to the reset count. Only possible when the reset count is less than 5 and the total distance does not exceed 200 km.

13 Water temperature warning

When the coolant temperature exceeds 115 °C, all 6 segments flash and the temperature warning light turns red.

14 ABS indicator

Not used on this model.

15 Engine fault warning light

Lights if a fault is detected in the electronic fuel injection system.

WARNING If this warning light comes on while riding, consult your dealer.

19 Heated seat display

Depending on the vehicle’s equipment. Shown when the heated seat is on. This feature is not currently set up.

21 Odometer

Shows the total distance travelled. Short-press the left button to switch display.

22 Trip time

Shows the time for the current trip.

23 Water temperature gauge

Shows engine coolant temperature. When it exceeds 112 °C, all 6 segments flash and the temperature warning light turns red. If the sensor circuit is disconnected, no segments are shown.

3.2 Ignition switch



Figure 4 Ignition switch

ON	The engine can be started and the scooter ridden. The key cannot be removed.
OFF	The engine is stopped and cannot be started. The key can be inserted or removed.
LOCK	The steering is locked. The key can be inserted or removed.

Turn the key to switch the power on or off. When you leave the scooter, lock the steering to help prevent theft:

1. Turn the handlebars to the left.
2. Insert the key at OFF, push it in and turn it anticlockwise to LOCK.
3. Remove the key.

To unlock, insert the key at LOCK and turn it clockwise to OFF without pushing it in.

> **NOTE** Move the handlebars to check that the steering is unlocked.
> If the key will not turn, move the handlebars slightly to the right and try again.

3.3 Left handlebar switches

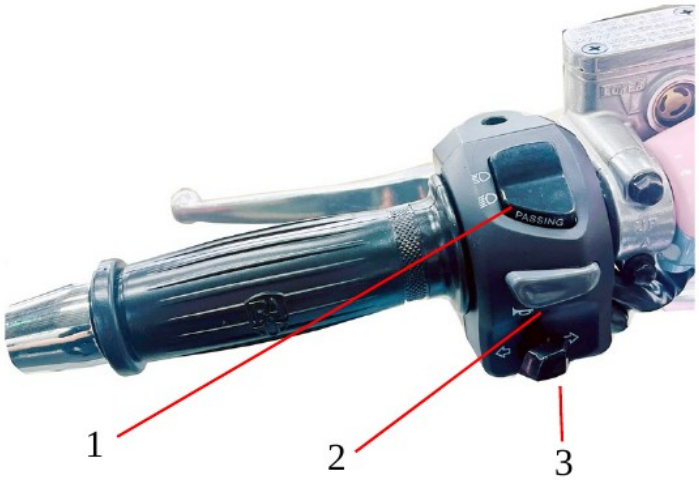


Figure 5 Left handlebar switches

1 Dip switch

Changes the headlamp beam.

HIGH	High beam on.
LOW	Low beam on (for normal riding).

2 Horn button

Press to sound the horn.

3 Turn signal switch

Signals to other road users that you intend to turn left or right.

Left	The left indicators flash.
Right	The right indicators flash.
Centre (push in)	Cancels the indicators.

Cancel the indicators when they are no longer needed so you do not confuse other road users.

3.4 Right handlebar switches

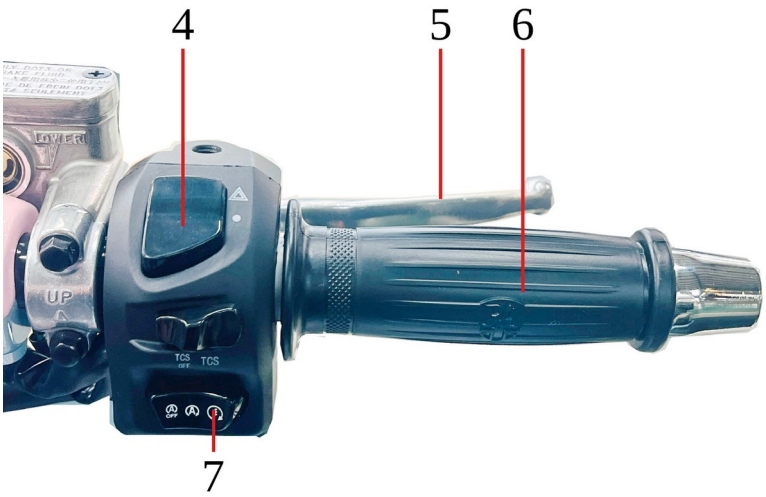


Figure 6 Right handlebar switches

4 Hazard warning switch

Makes all four indicators flash together.

5 Brake levers

Squeeze the lever gently towards the grip to slow or stop the scooter. The brake light comes on when a lever is squeezed.

6 Throttle grip

Controls engine speed. Turn it towards you to increase speed and away from you to decrease it.

7 Starter button

Starts the engine. Turn the ignition to ON, squeeze brake lever (5) and press button (7).

3.5 Stands



Figure 7 Side stand and main stand

10 Side stand

Push down the end of the stand until it swings forward and stops. The engine will not start unless the side stand is fully retracted.

11 Main stand

Push the stand down with your foot and pull the scooter backwards using the rear rack until the stand is securely in place and the rear wheel is off the ground.

3.6 Fuel tank cap

The fuel cap is accessed by opening the seat. To open the cap, insert the ignition key and turn the cap tab clockwise. Close it the same way. An operation notice decal is located next to the fuel cap.



Figure 8 Fuel cap



Figure 9 Operation notice decal

> **NOTE** Do not use the key itself to turn the cap — turning the key and the lock cover together can break the key.

3.7 Coolant tank cap

The coolant tank cap is on the left-hand side of the scooter.



Figure 10 Coolant tank cap

WARNING Never open the coolant tank cap when the scooter is hot.
Hot coolant can cause burns and serious injury.

3.8 Seat lock (type 1)



Figure 11 Seat lock, type 1

To open: carefully lift the rear of the front seat by hand and the seat will open.

To close: push down firmly on the rear of the seat. The latch (1) secures the seat to the centre section (2).

3.9 Seat lock (type 2)



Figure 12 Seat release button



Figure 13 Seat locking pin

1. The seat release button is on the left-hand side at the rear of the seat. Push it in and the seat will open.
2. To close, lower the seat gently onto the locking pin.

3.10 Front luggage box



Figure 14 Front luggage box

CAUTION Do not keep breakable or valuable items in the luggage box.
Do not keep fuel or oil in the luggage box.
Only store waterproof items in the luggage box.

CHAPTER 4

Fuel and oil recommendations

4.1 Fuel

Use unleaded fuel with an octane rating of 95 (Euro 95) or higher. Unleaded fuel extends spark plug and exhaust component life. We recommend using the highest-octane fuel available.

4.2 Engine oil

A high-quality four-stroke engine oil will extend engine life. Use API grade SN or SJ oil with a viscosity of SAE 10W-40. If this is not available, choose a substitute from the chart below according to the local temperature.

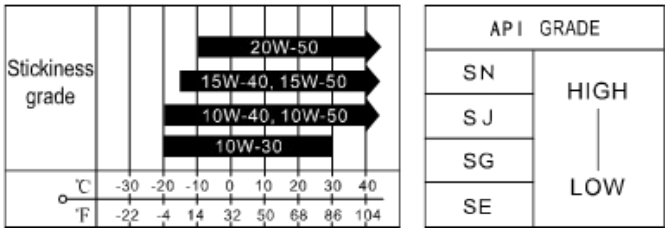


Figure 15 Engine oil viscosity by ambient temperature

4.3 Transmission oil

Use a good-quality SAE 75W-80 synthetic gear oil to API GL-4 or GL-5 specification.

CHAPTER 5

Running-in

The first 600 miles (1,000 km) are the most important in the life of your scooter. Running it in correctly during this period helps ensure maximum life and performance. The parts are made from high-quality materials and machined to close tolerances; correct running-in lets the machined surfaces bed in smoothly together. The internal parts free up after about 60 hours of running, and performance improves as the engine loosens.

Maximum throttle during running-in

First 100 miles (160 km)	Less than ½ throttle
First 250 miles (400 km)	Less than ¾ throttle

Vary the engine speed

Vary the engine speed rather than holding it constant. This loads the parts and then unloads them, letting them cool, which helps them bed in. Some load on the engine is needed during running-in, but avoid heavy loads.

Avoid constant low speed

Running the engine constantly at low speed is not beneficial. Let the engine accelerate freely within the limits above, but do not use full throttle for more than 10 minutes at a time during the first 1,000 miles (1,600 km).

Let the oil circulate before riding

After starting the engine, warm or cold, let it idle long enough for oil to reach all critical components before revving it or riding off.

Have the first service done

The 600-mile (1,000 km) service is the most important service your scooter will receive. By then, the engine components have bedded in and other parts have settled. All adjustments are reset, all fasteners are tightened and the old oil is replaced. Having this service done on time ensures the best service life and performance.

> **CAUTION** The 600-mile (1,000 km) service should be carried out as described in Chapter 8, Inspection and maintenance. Pay attention to the cautions and warnings in that chapter.

CHAPTER 6

Inspection before riding

Check the following items every time before you ride. Never underestimate the importance of these checks.

WARNING Make sure the battery is fully charged and securely mounted, and that the terminals and connectors are tight. Loose battery connections can damage electrical components, including the ECU.

What to check	Check for
Steering	Smooth movement · no restriction · no play or excessive movement
Brakes	Correct lever free play · nothing obstructing braking
Tyres	Correct pressure · adequate tread depth · no cracks or cuts
Fuel	Enough fuel for the planned journey
Lights	Headlamp, side lamp, tail lamp, brake lamp and turn indicators all working
Indicators	Oil level indicator (if fitted) and turn indicators
Horn	Working correctly
Engine oil	Correct level
Throttle	Correct cable free play · smooth operation · grip returns fully to closed when released

6.1 Brake lever free play

Squeeze each brake lever until you feel resistance and measure how far the end of the lever has moved. It should be **10–20 mm**.

6.2 Front brake and anti-dive linkage

Twist the anti-dive link bar from side to side to check that it moves freely. If there is excessive up-and-down play, remove it and inspect or replace as required.

6.3 Tyres

Pressure. Look at the tyres and judge their pressure. If it looks wrong, check with a tyre pressure gauge and adjust to the correct value.

Cold tyre pressures — UK and Europe (may differ in warmer climates):

Front	32 psi
Rear	34 psi
Sidecar	34 psi

Condition. Check for cracks, damage, foreign objects and abnormal wear.

6.4 Fuel level

Make sure there is enough fuel to reach your destination. Turn the ignition to ON; if the fuel gauge is in the red zone, refuel as soon as possible.

6.5 Engine oil level

> **CAUTION** Keep the oil level at the upper mark (B) on the dipstick. Never let it go above the upper mark or below the lower mark (C) — this will cause severe engine damage.



Figure 16 Oil filler cap / dipstick



Figure 17 Dipstick marks B (upper) and C (lower)

1. Hold the scooter upright on level ground.
2. Start the engine, let it idle for a few minutes, then switch it off.
3. Wait at least 5 minutes for the oil to drain back into the crankcase.
4. Unscrew and remove the filler cap/dipstick.
5. Wipe the dipstick clean and insert it again **without screwing it in** — screwing it in gives a false reading, which may lead to engine damage. Remove it and check that the level is between marks B and C.
6. If necessary, top up to mark B. Do not exceed mark B.
7. Refit the dipstick securely.

6.6 Transmission oil level

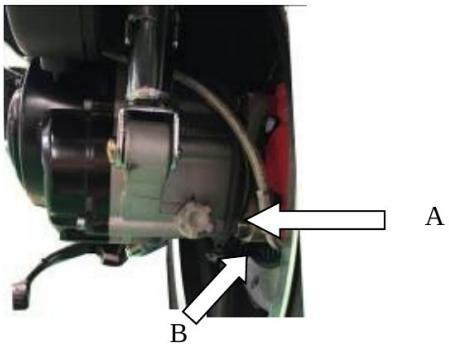


Figure 18 Transmission oil filler screw (A) and drain plug (B)

1. Stop the warmed-up engine and wait about 5 minutes.
2. Put the scooter on its main stand.
3. Remove the oil filler screw (A) and check whether the oil level is below the filler opening.
4. If required, top up with SAE 80W-90 hypoid gear oil through the filler opening.

5. To change the oil, remove the drain plug (B) and let all the oil drain out. Refit and tighten the drain plug (B), then fill with new oil through the filler opening.
6. Refit and tighten the oil filler screw (A).

6.7 Lights and signals

- Start the engine and check that the headlamp and rear lights are on.
- Operate the front and rear brakes separately and check that the brake light comes on each time.
- Operate the turn signal switch and check that the indicators work normally.

6.8 Mirrors

Sitting in your normal riding position, check that you can see clearly behind and to both sides. Check that the mirrors are clean and undamaged, and that their handlebar mountings are tight.

6.9 Reflectors and number plate

Check that the reflectors and number plate are clean and undamaged, that the number plate is securely fixed, and that the registration number is clearly visible.

CHAPTER 7
Riding

CAUTION Before starting the engine:
1. Check the fuel and engine oil levels.
2. Put the scooter on its main stand.
3. Make sure the scooter is on flat, firm ground.
4. Apply the brakes.

7.1 Starting the engine

Insert the key in the ignition switch and turn it to ON.

Cold engine

- Squeeze the front or rear brake lever and keep the throttle closed.
- Press the starter button.
- Once the engine starts, open the throttle slightly and let the engine warm up.

Warm engine

- Squeeze the front or rear brake lever.
- Open the throttle ⅛ to ¼.
- Press the starter button.

CAUTION Release the starter button as soon as the engine starts, otherwise the starter motor and gears may be damaged.
If the engine does not start after several attempts, open the throttle ⅛ to ¼ and try again. Release the throttle as soon as the engine starts.

7.2 Moving off

Take the scooter off its stand and get on

Holding the handlebars with both hands, push the scooter off its main stand. With both brakes applied, get on from the left-hand side and sit on the seat, supporting yourself with your left foot.

CAUTION Do not turn the throttle until you are ready to move off.

Check that it is safe to move off

Switch on the appropriate indicator and look around to make sure it is safe to move off. Keep the rear brake lever squeezed until you are ready.

CAUTION Pay particular attention to traffic approaching from behind.

Move off

Release the rear brake and gradually turn the throttle towards you to accelerate smoothly.

CAUTION Turning the throttle too far can cause sudden, dangerous acceleration.

7.3 Controlling speed

Turn the throttle towards you (anticlockwise) to speed up and away from you (clockwise) to slow down. Turn it gradually.

7.4 Braking

Use both brakes together. Close the throttle fully and squeeze both brake levers at the same time. Slow down by applying the brakes progressively.

> **CAUTION** Braking with only the front or only the rear wheel can cause a sideways skid.
> Harsh braking and sharp turns are among the main causes of loss of grip and crashes, and should be avoided.

7.5 Wet and wintry conditions

Damp or wet roads give less grip. Avoid sharp turns while accelerating and keep a safe distance from the vehicle in front — braking distances in the rain can be twice those on a dry road. Skids can happen on wet or slippery roads, so concentrate and be ready to brake gently at any time.

7.6 After washing or riding through water

The brakes may be less effective after washing the scooter or riding through standing water. If so, ride slowly and brake gently until the brakes return to normal.

7.7 Parking

> **CAUTION** To stop the scooter falling off its main stand, never park facing downhill or on loose or soft ground.
> Always park on firm, level ground or facing uphill.

When you park, lock the steering to help protect your scooter from theft.

CHAPTER 8

Inspection and maintenance

The maintenance schedule shows the intervals between services in kilometres. At the end of each interval, inspect, check, lubricate and service as shown. If the scooter is used under heavy load — for example, continuous full throttle — or in dusty conditions, some services should be done more often. Your dealer can advise you.

Steering, suspension and wheel components are key safety items that need careful, specialist servicing. For maximum safety, have them inspected and serviced by your dealer or a qualified mechanic.

8.1 First service

The first service at 600 miles (1,000 km) is the most important. During running-in, the engine parts bed in against each other and other parts settle. At this service, all parts are readjusted, all fasteners retightened, and the contaminated engine oil and filters replaced. To ensure a long engine life and good performance, have this service done as soon as it is due.

> **CAUTION** Use genuine spare parts. Have the scheduled maintenance carried out by an authorised dealer or qualified specialist workshop. You can carry out the checks and simple tasks described in this chapter yourself.

8.2 Maintenance schedule

Key: **I** = inspect and clean, adjust if necessary · **C** = clean · **R** = replace · **A** = adjust · **L** = lubricate

Interval (× 1,000 km)	1	5	10	15	20	25	30	35	40	45	50
Bolts and nuts — retighten if necessary	I		I		I		I		I		I
Variator cover plastic sliders			R		R		R		R		R
Clutch bell		C	C	C	C	C	C	C	C	C	C
Spark plug			R		R		R		R		R
Drive belt			R		R		R		R		R
Throttle cable	A		A		A		A		A		A
Air filter		C	C	C	C	C	C	C	C	C	C
Variator cover filter			I		I		I		I		I
Oil filter	R		R		R		R		R		R
Valve clearance			A		A		A		A		A
Brake system	I	I	I	I	I	I	I	I	I	I	I
Electrics and battery	I		I		I		I		I		I
Brake fluid **	I		I		I		I		I		I
Coolant **	I		I		I		I		I		I
Transmission oil *	R		I		R		I		R		I
Engine oil *	R	I	R	I	R	I	R	I	R	I	R
Headlamp alignment			A		A		A		A		A
Variator rollers			R		R		R		R		R
Road test	I		I		I		I		I		I
Variator pulley			I		I		I		I		I
Radiator	I/C	I/C	I/C	I/C	I/C	I/C	I/C	I/C	I/C	I/C	I/C
Wheels and tyres	I	I	I	I	I	I	I	I	I	I	I
Suspension			I		I		I		I		I
Steering	I		I		I		I		I		I
Fuel line ***	I		I		I		I		I		I
Anti-dive bearing	I	I	I	I	R	I	I	I	I	R	I

* Check level every 3,000 km (1,800 miles).

** Replace every 2 years.

*** Replace every 4 years.

When riding on gravel or sandy roads, or in heavily polluted conditions, clean or replace the air filter element more often.

8.3 Frame bolts and nuts

Tighten the frame bolts and nuts to the specified torque after the first 1,000 km (600 miles) or 3 months, and then every 5,000 km (3,125 miles) or 24 months.

No.	Item	N·m	kgf·m
1	Front axle nut	53	5.3
2	Handlebar mounting bolt	49	4.9
3	Steering stem lock nut	30	3.0
4	Handlebar locating bolt	25	2.5
5	Front fork mounting bolt	45	4.5
6	Brake master cylinder mounting bolt	10	1.0
7	Brake hose union bolt	23	2.3
8	Brake caliper mounting bolt	26	2.6
9	Brake bleed valve	7.5	0.75
10	Front panel bolt	23	2.3
11	Rear axle nut	100	10.0
12	Rear shock absorber bolt	40	4.0
13	Rear brake lever nut	11	1.1
14	Engine bracket mounting bolt/nut	98	9.8
15	Engine mounting bolt/nut	80	8.0
16	Anti-dive lever assembly	26	2.6

8.4 Battery

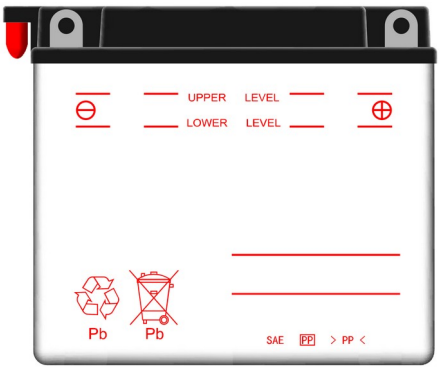


Figure 19 Battery

The battery is behind the removable cover in the body section beneath the front of the seat. It is a sealed, maintenance-free type — there is no need to check the electrolyte level or specific gravity.

8.5 Spark plug

> **CAUTION** Before starting this work, let the engine and silencer cool to ambient temperature to avoid burns.

Removal

Remove the three screws and take off the left-hand side panel to reach the spark plug.



Figure 20 Spark plug access



Figure 21 Suppressor cap (1)

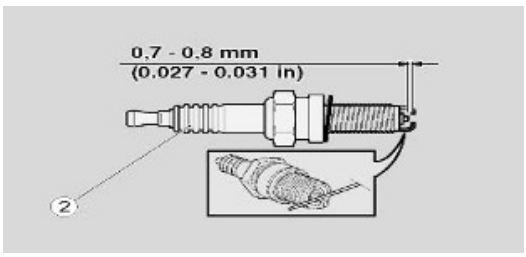


Figure 22 Spark plug (2) and electrode gap

1. Pull the suppressor cap (1) off the spark plug (2).
2. Blow any dirt away from the base of the spark plug with compressed air. Unscrew the plug with the spanner from the tool kit, taking care not to let dust or anything else enter the cylinder.
3. Check the electrodes and centre insulator for carbon deposits or corrosion. If necessary, clean with a spark plug cleaner, wire or metal brush, then blow clean with compressed air so that no dirt gets into the engine. Replace the plug if the insulator is cracked, the electrodes are corroded or there are heavy deposits.
4. Check the electrode gap with a feeler gauge. It should be **0.7–0.8 mm**; adjust if necessary by carefully bending the side electrode.
5. Check that the washer is in good condition. With the washer fitted, screw the plug in by hand, taking care not to damage the thread.
6. Tighten with the spanner from the tool kit: once the plug is seated, turn it a further ½ turn to compress the washer.
7. Make sure the suppressor cap is pushed on firmly so that engine vibration cannot shake it off.

CAUTION Tighten the spark plug correctly — otherwise the engine may overheat and be damaged. Use only the recommended spark plug; other types may reduce engine life and performance.

Standard spark plug	NGK CR8EKB
Electrode gap	0.7–0.8 mm
Tightening torque	10 N·m (7.38 lb·ft)

8.6 Fuel hoses

Replace the fuel hoses every four years.

8.7 Air filter

The air filter element is made of polyurethane foam. A filter clogged with dust increases intake resistance, reducing power and increasing fuel consumption because the mixture becomes richer. Check and clean the element as follows.

Removal

1. Remove the screws.
2. Slide the two retaining clips rearwards to remove them.
3. Remove the air filter cover.
4. Remove the filter element.

Cleaning

1. Fill a suitable container with non-flammable, water-soluble cleaning solvent. Immerse the element and wash it clean.
2. Squeeze the solvent out by pressing the element between your palms. Do not twist or wring it, or it may tear.
3. Rinse under warm running water and dry with compressed air or a warm-air dryer.
4. Soak the element in clean engine oil, then squeeze out the excess so that it is only slightly oily.
5. Refit the element in the reverse order of removal. Make sure it is securely in position and sealing properly.

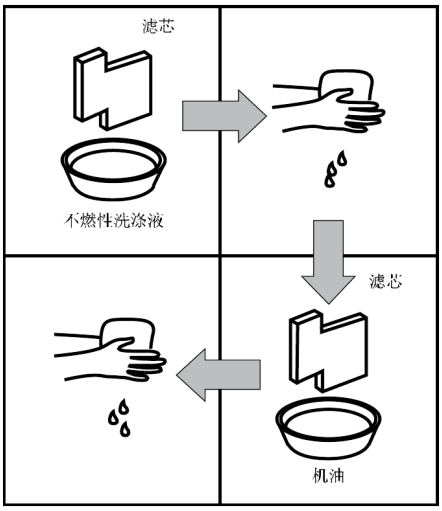


Figure 23 Air filter cleaning: wash in non-flammable solvent, squeeze out, soak in engine oil, squeeze out excess

> **CAUTION** Before and during cleaning, check the element carefully for tears. A torn element must be replaced.
> Clean the element more often if you ride in dusty conditions.
> Never run the engine without the filter element — this increases engine wear.
> Always keep the filter element in excellent condition. Engine life depends heavily on it.

8.8 Idle speed

Start the engine and let it warm up. Turn the throttle stop screw in or out until the engine idles at **1,500–1,800 rpm**. Always adjust the idle speed with the engine warm, using a tachometer if you have one.

8.9 Throttle cable

1. Loosen the lock nut.
2. Turn the adjuster in or out to give **0.5–1.0 mm** of cable free play.
3. Retighten the lock nut.

8.10 Brake fluid

Front and rear disc brakes — grade: **DOT 4.1**.

> **NOTE** Use only DOT 4.1 glycol-based brake fluid.
> Do not mix it with silicone-based or mineral oil-based fluid — this will damage the hydraulic brake system.
> Do not use fluid left over in a container opened at a previous service; it absorbs moisture from the air.
> Do not overfill, and do not spill brake fluid on paintwork or other surfaces.

8.11 Tyres

Check the tyre pressures and tread regularly for maximum safety and tyre life — especially before long journeys or when carrying a passenger.

Tyre pressure

Under-inflated tyres wear faster, seriously affect stability and make smooth cornering difficult. Over-inflated tyres reduce the contact area with the road, which can lead to skids and loss of control. Always keep the pressures within the specified limits, and only adjust them when the tyres are cold.

Cold tyre pressures — UK and Europe (may differ in warmer climates):

Front	32 psi
Rear	34 psi
Sidecar	34 psi

> **CAUTION** Correct tyre pressures and good tyre condition are essential for the scooter to perform safely. Check your tyres frequently for wear and correct pressure.

Tread condition

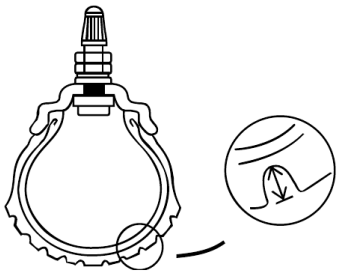


Figure 24 Measuring tread depth

Riding on badly worn tyres reduces stability and may cause loss of control. Replace a tyre when the remaining tread depth is **1.6 mm or less**.

> **CAUTION** The standard tyres are 110/70-12 front, 120/70-12 rear and 120/70-12 on the sidecar. Fitting larger tyres may cause clearance problems.

8.12 Fuses

The fuses are under the left-hand side panel. If there is an electrical fault, check the fuses first. A 10 A spare fuse is provided.

> **CAUTION** Always replace a blown fuse with one of the correct rating. Never use a substitute such as aluminium foil or wire. If the new fuse blows again shortly afterwards, there may be a serious electrical fault — consult your dealer or a qualified mechanic immediately.

CHAPTER 9

Troubleshooting

9.1 Engine will not start

Carry out the following checks to find the cause:

1. Check that the side stand is fully retracted.
2. Check that the battery has enough charge to start the engine.
3. Check that there is enough fuel in the tank.

> **CAUTION** Do not spill fuel. Do not let fuel come into contact with the hot engine, exhaust or ignition system. Keep away from smoking materials and any other source of fire or heat.

Spark check

1. Remove the spark plug and reconnect it to the spark plug lead.
2. Hold the spark plug firmly against the engine and crank the engine with the ignition ON. If the ignition system is working, a blue spark will jump across the gap. If there is no spark, consult your dealer.

> **WARNING** Do not hold the spark plug near the open spark plug hole — fuel vapour in the cylinder could ignite and cause a fire.
> To reduce the risk of electric shock, hold the plug's outer steel shell against an unpainted metal part of the engine. Anyone with a heart condition or pacemaker should not carry out this check.

9.2 Engine stalls

- Check the fuel level in the tank.
- Check the engine idle speed.
- Check the ignition system for an intermittent spark.

> **CAUTION** It is best to consult your dealer before trying to fix any problem. If the scooter is still under warranty, always consult your dealer before attempting repairs — work you carry out yourself may affect your warranty.

CHAPTER 10

Storage

If the scooter is to be left unused for a long period — over winter, for example — it needs special servicing that requires suitable materials, equipment and skills. We therefore recommend that you ask your dealer to do this. If you prepare the scooter for storage yourself, follow these general guidelines.

10.1 Preparing for storage

Scooter	Put the scooter on its main stand and clean it thoroughly.
Fuel	Drain the fuel tank.
Battery	Remove the battery. Clean the outside with mild detergent and remove any corrosion from the terminals and wiring connectors. Store it in a room above freezing and connect a suitable trickle charger/conditioner.
Tyres	Inflate the tyres to the normal pressures (see section 8.11).
Exterior	Spray all vinyl and rubber parts with rubber preservative. Spray unpainted surfaces with a rust preventative such as WD-40. Coat painted surfaces with a good-quality vehicle wax.

NOTE We suggest you protect the exterior in this way as soon as you buy your new Royal Alloy scooter, as part of its regular care.

10.2 Returning to service

1. Clean the entire scooter.
2. Refuel with normal unleaded fuel.
3. Refit the fully charged battery.
4. Set the tyre pressures (see section 8.11).
5. Lubricate all points as described in this manual.
6. Carry out the inspection before riding (Chapter 6).

CHAPTER 11

Specifications

Model	GP350MS	GP250MS (not for UK/EU)
Dimensions and weights		
Overall size, L × W × H (mm)	1845 × 1560 × 1115	
Wheelbase (mm)	1395	
Track width (mm)	1150	
Net weight (kg)	238	152
Maximum loaded weight (kg)	470	
Fuel tank capacity (L)	10.5	
Engine		
Engine model	1P75MN	1P72MM
Engine type	Single-cylinder, horizontal, four-valve, liquid-cooled, with secondary air intake	
Bore × stroke (mm)	75 × 70	72 × 60
Displacement (mL)	309	244
Compression ratio	11 : 1	
Maximum net power	19.3 kW at 8,250 rpm	18 kW at 8,500 rpm
Maximum net torque	27.5 N·m at 6,000 rpm	22.5 N·m at 6,500 rpm
Idle speed	1,700 ± 100 rpm	
Starting	Electric	
Lubrication	Pressure and splash	
Engine oil	SAE 10W-40, 1,200 mL	
Transmission oil	SAE 75W-80, 200 mL	
Fuel	Unleaded, octane rating 95 or higher	
Spark plug	NGK CR8EKB	
Chassis		
Front tyre	110/70-12	
Rear tyre	120/70-12	
Sidecar tyre	120/70-12	
Tyre pressure (cold)	Front 32 psi · Rear 34 psi · Sidecar 34 psi	
Front brake	Disc	
Rear brake	Disc	
Electrical		

Model	GP350MS	GP250MS (not for UK/EU)
Headlamp	12 V 35/35 W or LED	
Turn indicators	12 V LED	
Tail / brake lamp	12 V LED	
Instrument lights	12 V LED	
Battery	12 V 9 Ah	
Horn	12 V 1.5 A, 90–100 dB(A)	
Maximum noise	≤ 82 dB(A) at 7 m	

CHAPTER 12

Warranty terms

12.1 Royal Alloy warranty

Engine and frame	24 months from the date of sale or 20,000 km, whichever comes first.
Main wiring harness, silencer, front and rear shock absorbers, front and rear wheels, ECU (electronic fuel injection)	1 year or 10,000 km, whichever comes first.

We recommend using the specified oils and genuine Royal Alloy parts, which are of the same quality as the parts originally fitted. Genuine parts are available from authorised Royal Alloy dealers and service centres.

Regular maintenance in line with this manual is a condition of the warranty and of any warranty claim. It also extends the life of the scooter and keeps it safe to ride. Warranty claims require verifiable maintenance records; records from any authorised dealer or service centre are equally valid. Royal Alloy may decline to accept warranty claims for faults or additional damage caused by non-standard work carried out by unauthorised third parties.

Before handing over a scooter, the authorised dealer is responsible for carrying out the pre-delivery inspection according to the checklist, explaining how to use and inspect the scooter, and explaining the importance of regular maintenance, the warranty conditions and limitations, and safe operation.

12.2 Exclusions

The warranty does not apply in the following cases:

- Damage caused by an accident.
- Damage caused by improper use, by failing to use, maintain or care for the scooter as described in this manual, by ignoring important instructions in this manual, or by failing to respond properly to vehicle warnings.
- Use of non-genuine parts or accessories.
- Use in competitions or extreme events.
- Improper maintenance or dismantling of major components — such as the body, transmission or engine — by unauthorised third parties.
- Unauthorised alteration of the chassis number or engine number.
- Subjective effects that do not affect mechanical performance, such as heat, vibration or noise.
- Damage caused by abnormal use, natural or man-made disasters, or other force majeure.

12.3 Consumable parts

The following consumable parts are not covered by the warranty: bulbs, fuses, tyres, seat covers, batteries, brake discs and pads, rubber parts, stickers, filter elements, oils and fluids, lubricants and greases, washers, drive sprockets and chains (normal wear), spark plugs, bearings, hoses, and rust within the normal range.

Notes



ROYAL ALLOY

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