

HONDA SFX 50



INTRODUCTION

I hope you find this CD useful. Within the contents I have given information which I hope will help you to maintain your scooter and assist you in the question of how to increase performance. Some may question why one would wish to increase performance of a moped. The easy answer to that is to ask the questioner whether they would like to ride your moped along the nearest dual carriageway or dark country lane. It seems to me that mopeds were designed for a mainly urban environment, which is fine. However, with the almost total loss of public transport in rural areas and the raising of the age where one can drive a car the small moped or motorcycle is the only way young people can get from village to town for social or work reasons. In the past it was normal for tuning to take place. That demonstrates a market requirement. Now we have legislation, which requires mopeds to be restricted. There is still the opportunity but to tune but it is 'for off road purposes'!

Stephen Redpath – Bergman

DIMENSIONS & SPECIFICATIONS AND GENERAL TIPS

Length 1723mm

Width 636mm

Height 1064mm

Wheelbase 1215mm

Ground clearance 116mm

Dry weight 71kg

Bore and stroke 39mm x 41.4 mm = 49cc

Compression ratio 7-1

Engine idle speed 1,800 rpm

Brake fluid Dot 4

Transmission oil capacity 0.1 litres

Transmission oil type 80-90 gear oil

Tyres 90/90 10 50J Dunlop K825 Tubeless

Front tyre pressure 18 psi

Rear tyre pressure 29 psi

Spark plug

Standard NGK BPR6HAS

Cold ambient temperature below 5 Celsius BR4HAS

Fast running or hot ambient temperature BPR7HAS

Spark plug gap 0.6 – 0.7 mm

Air cleaner washable foam

Standard needle jet position of carburettor is centre (of five positions)

Fuses

15a main, 10a sub fuse, plus two spares carried. The SFX50 uses blade type fuses. These come in three sizes, Mini-blade, Standard-blade and Maxi-blade. The SFX50 uses the Mini-blade type. The type most cars use is the Standard-blade and you can see them compared in the picture below. The colour denotes fuse rating. RED – 10amp, BLUE – 15 amp, YELLOW – 20 amp and GREEN – 30 amp. Whilst you may be tempted to fit a higher rating fuse ‘to get you home’ you must be aware that although fuses can get ‘tired’ and blow it may also be an electrical fault and that fitting a higher rating or silver paper may cause damage to a component or even a fire.



Generator 100w/5000rpm

Battery 12v 2.3amp YTR4A-BS 12v - Standard charge 0.3 amperes for 5 – 10 hours



The battery is the sealed for life type and cannot be topped up. The only maintenance is to ensure contacts are clean and charge battery if the bike has been stood for a month without use.



Headlight bulb 25/25w

Indicators bulbs 10w

Rear lamp/stop bulbs 6/21w

Fuel tank capacity is 6 litres. When fuel gauge reaches beginning of red area there is 1.5 litres left in fuel tank

Use unleaded 91 octane fuel or higher

Oil tank capacity 1.2 litres. When low level warning oil light comes on there is 0.2 litre left in oil tank.
Use good quality two-stroke oil where possible.

Rear brake lever should have 10 – 20 mm of slack

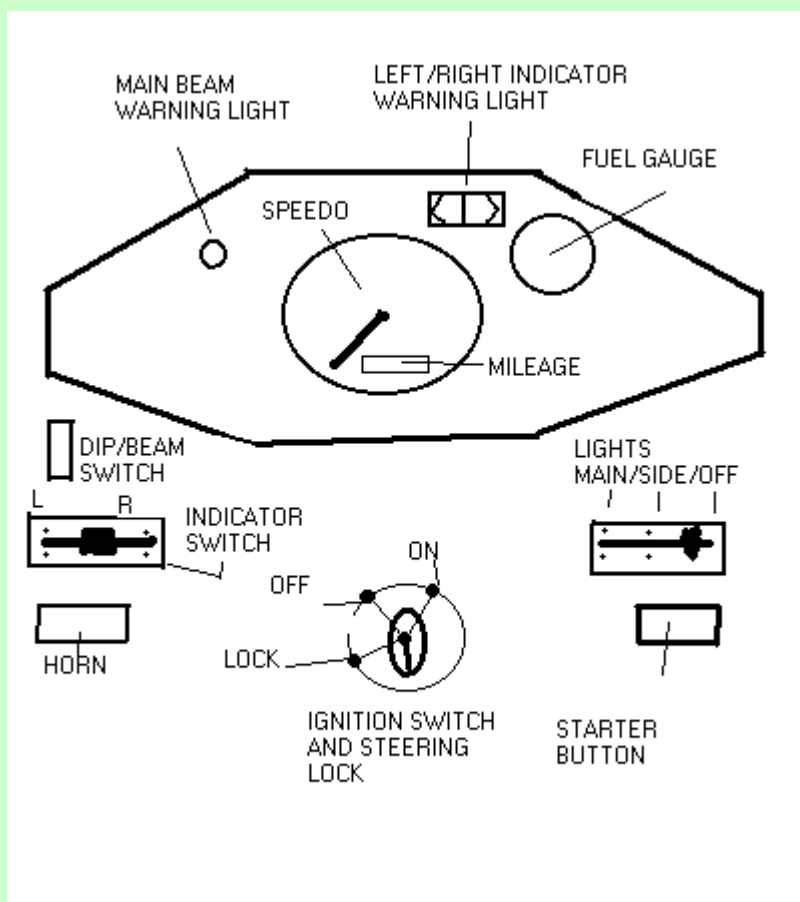


Maximum weight carry 95kg

Not designed to carry passenger

Helmet or luggage hook 1.5kg

Luggage box 10kg (items in luggage box may be subject to heat from engine)



Front or rear brake must be actuated to enable use of electric start





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SERVICING

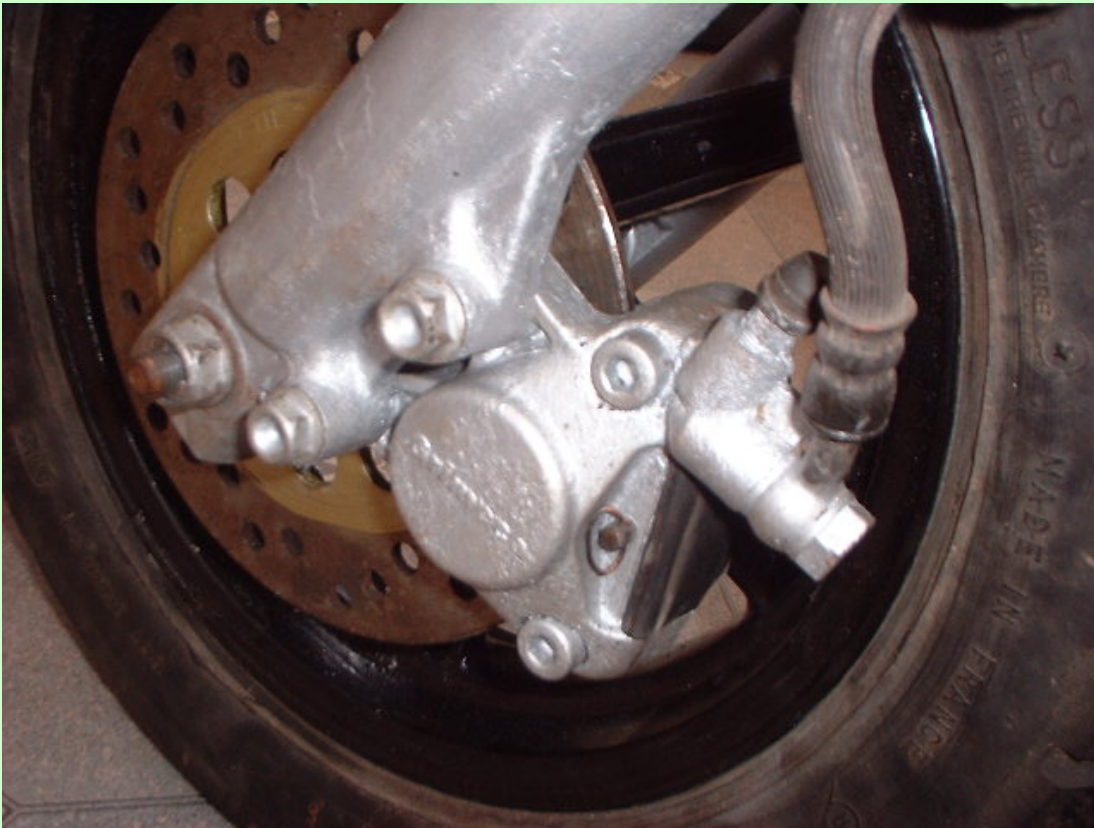
	WEEKLY	MONTHLY or 500 miles	6 MONTHS or 1,000 miles	Yearly or 2,500 miles
TYRES	CHECK	CHECK	CHECK	CHECK
FRONT BRAKE	CHECK	CHECK	CHECK	CHECK
REAR BRAKE	CHECK	CHECK	CHECK	CHECK
BRAKE LIGHT	CHECK	CHECK	CHECK	CHECK
REAR LIGHT	CHECK	CHECK	CHECK	CHECK
HEADLIGHT	CHECK	CHECK	CHECK	CHECK
INDICATORS	CHECK	CHECK	CHECK	CHECK
HOOTER	CHECK	CHECK	CHECK	CHECK
CENTRE STAND		OIL	OIL	OIL
KICKSTART		OIL	OIL	OIL
FRONT BRAKE LEVER		OIL	OIL	OIL
REAR BRAKE LEVER		OIL	OIL	OIL
SPARK PLUG			CLEAN & ADJUST	CLEAN & ADJUST
BRAKE SHOES/PADS			ADJUST	ADJUST
BRAKE FLUID			CHECK	CHECK
FUEL LINES				CHECK
OIL LINES				CHECK
WHEEL BEARINGS				CHECK
STEERING BEARINGS				CHECK
DE-COKE				CARRY OUT

Tyres should be checked each week. Look carefully around each tyre for cuts and foreign objects, which may have become embedded. Although mopeds only require a visible tread, for safety replace tyres before tread depth gets too low. Tyres operate better in rain with sufficient tread to clear water away. Over a period of time, age or sunlight may cause a tyre to harden and you may see small crazing or cracks appear. The affected tyre should be replaced. Check the tyre pressure is correct. Tyre pressures are usually checked while the tyre is cold. If it is easier for you to check them warm then make two checks, one cold then later again while they are warm. This will give you the tyre warm pressure under the conditions you are operating under.

When replacing tyres always try to replace them with tubeless type. These react much slower when punctured and instant puncture repair foam can be carried and used to get you home. Various size tyres are available and the characteristics of the ride and handling can be changed by choosing a different tyre size. For example, a larger width with the same aspect ratio will increase gearing. This means that as long as the power is available the vehicle will go faster for the same engine rpm. You should talk to a reputable motorcycle dealer or tyre specialist. Always fit the best tyre you can afford. If you make a note on your service record of mileage this will enable you to budget for tyres in the future.

The action of brakes and should be checked each week. They should be adjusted as required. In addition the shoes or pads should be examined for wear and replaced as required. When fitting new rear brake shoes, chamfer the leading edge slightly to give the brake better feel. Ensure the actuation arm and rod is free and lubricated with waterproof grease such as copperslip. Stiff or sticking rear brake usually indicates these components are rusted or glued up with old grease and brake dust. A binding front brake is indicative of jammed brake pads and should be addressed urgently. It is not unknown for sticking brake callipers to overheat the front disc – it will turn blue – which may lead to warping.





Check the operation of all lights weekly. Incorrect rating for indicator bulbs will result in a changed flash rate. The rate of flash should be 60 – 120 times a minute. Headlamp bulb should not be changed for a higher output to obtain a brighter light. The battery and generator system will not sustain higher than standard. Most moped/motorcycle hooters are very weak. The fitting of a car one will greatly improve the output. Car hooters mostly come with two or one terminals. Replace with a type that has two terminals this can be done as a direct replacement. The cheapest place to find a replacement is a car scrap dealer.



Standard Honda hooter

Regularly oil parts such as centre stand and kick-start to prevent rusting and seizure.

Air filter is a foam rubber type, which can be washed out using non- – flammable solvent or detergent. If detergent is used filter must be thoroughly rinsed and allowed to dry. After, oil filter using heavy oil such as 80/90 grade squeezing out excess.



Spark plug should be kept clean and with the correct gap. Remember that you are screwing a steel spark plug into an aluminium thread and take care not to over-tighten. When refitting the plug ensure threads are clean and use a pencil (they are made of graphite which is an excellent dry lubricant – do not use oil as it will clog the threads) on the thread before refitting. The grade of spark plug can be changed to suit ambient temperatures and use. If permanent cold conditions apply then use a 'hotter running' plug. If high speed is the norm then perhaps a 'colder running' plug is required. Consult your dealer.

The regular user will notice that after a time, dependant on traffic conditions, the performance will decrease. This may be as a result of the build up of carbon within the combustion area and exhaust. A decoke will entail removal of the seat/luggage section but not side panels. Remove exhaust. Remove engine cowls and spark plug. Remove four cylinder bolts. Use a Hexagon shaped socket not multi point as they may slip and damage bolt heads. Remove cylinder head. Carefully push piston down to lowest position. If the cylinder barrel is firm and has not loosened then you can clean cylinder exhaust port and piston head in situ. If it is loose it means the gasket on the base of the cylinder is disturbed and will have to be replaced. After removing barrel place soft cloth around piston to prevent debris from entering crank area.

Remove carbon deposits from piston top, inside cylinder head and exhaust port. New gaskets may be required for base of barrel, cylinder head and exhaust. If in doubt replace them.



Used cylinder head gasket. Made from sheet aluminium Note lugs which match lugs on cylinder head to denote location.

In addition the exhaust may be gummed up. There is no easy way of dealing with this. You may prefer to avoid it, replace it and see if there is a problem. The easiest way round it is to replace it with an after market type which will improve looks and perhaps performance. If you want to try cleaning the standard exhaust then caustic soda or setting fire to it may work! The usual warnings apply to personal safety.....

When replacing barrel you must make sure the piston rings are properly in place. There is locating pins for the piston ring gap. Ease the barrel down – if it doesn't go down easy then something is wrong. Stop and check the piston rings are in place before trying again. Tighten exhaust bolts and head bolts carefully – they are easily overtightened. If you have the use of a torque wrench then the tightness is 6.5 to 9.5 lbs-ft. IN any case the cylinder head bolts should be tightened across from each other – top left, lower right, top right then lower left a bit at a time.

In the picture below you can see on the left hand piston the small pins which locate the ends of the piston rings and prevent them from turning. Notice the piston rings gummed up in that piston and the scores on the side of the piston compared to the used but serviceable right hand piston.



The picture below shows the circlip used to keep the gudgeon pin in place. Note the tang is in the up/down position to minimise the danger of loosening.



SERVICE RECORD

HONDA				
SFX50	SERVICE			
	WEEKLY	MONTHLY or 500 miles	6 MONTHS or 1,000 miles	Yearly or 2,500 miles
TYRES				
FRONT BRAKE				
REAR BRAKE				
BRAKE LIGHT				
REAR LIGHT				
HEADLIGHT				
INDICATORS				
HOOTER				
CENTRE STAND				
KICKSTART				
FRONT BRAKE LEVER				
REAR BRAKE LEVER				
SPARK PLUG				
BRAKE SHOES/PADS				
BRAKE FLUID				
FUEL LINES				
OIL LINES				
WHEEL BEARINGS				
STEERING BEARINGS				
DE-COKE				

TUNING GENERALLY

It has been many years since mopeds, which automatic scooters are a type, have been restricted to 30 mph. Previously it was normal for 'sports mopeds' to achieve 50 – 55 mph. However, it must be born in mind that most scooters may not be able to remain as reliable if tuned. Most scooters are produced down to a price and some designs are already a little suspect. If it proves to be that tuning affects the reliability then it must be decided if that level of unreliability is acceptable – although in some cases greater reliability can come as part of a modification. An example of this is the manner in which the main bearings are lubricated on the SFX50.

An oil pump meters the amount of two-stroke oil delivered to the engine. But this is only introduced into the inlet manifold and the main bearings have to take their chances along with the other components in the hope that the fuel/air/oil mixture will reach them. Changing this would be relatively easy. Drillings into the area surrounding the main bearings can introduce oil direct to the bearings. Oil would bleed into the fuel/air mixture thereafter. The extra capacity left in the intake system can be used to increase fuel/air mixture.

The manner in which the scooter is restricted can be one or all of the following.

The ignition unit may be designed, or modified, to restrict the amount an engine can rev to.

Standard 'black box' ignition unit or ECU



There may be a restriction on the automatic transmission to prevent speed.

There may be restrictions in the inlet and/or exhaust system.

It should be ascertained in which manner the scooter is restricted before deciding on which way the performance is enhanced and which order they are introduced.



TUNING THE HONDA SFX50

The Honda SFX 50 is restricted a washer in the exhaust system, a limiter in the ignition unit and a restricted variator.

The washer in the exhaust is quite easily removed by filing or grinding the spot welds off.

The ignition, or CDI unit, has two engine revolution limiters inside. There is one at 7,500 rpm which equates to the UK moped speed limit and another at 9,250 rpm. The difference is just over 25%. However, although that may mean additional power one has to remember that the standard set up means the engine is running out of steam by 9,250 rpm. There are aftermarket ignition units available, and sometimes, you may find someone with the knowledge to convert the standard unit.

Having the front pulley movement restricted restricts the automatic gearbox or variator. Aftermarket kits are available.

Aftermarket expansion chambers will help power output and also 70 cc kits are available which will increase available power although a carburettor kit would help. It should be possible, without compromising reliability too much to see 55 mph.

A rather sorry looking standard exhaust



With or without the above changes you can at least give the engine a fighting chance by ensuring correct gas flow. If the engine were apart you would see that where the transfer ports on the barrel fit to the crankcase they don't match! By filing or grinding them to match you ease the flow of gases to maximise engine efficiency. Any parts should be finished reasonably smooth.

On the matter of dismantling the engine there are special pullers, which are needed to remove various parts from the crankshaft. Generally these are not cheap to buy. However the careful use of general pullers or homemade pullers can be used. You should be aware that some of the steel parts are easily distorted and damaged making refitting impossible. Unless you are experienced the dismantling is probably best done by a motorcycle dealers mechanic.

PULLERS CAN COME IN ALL SHAPES AND SIZES – ASWELL AS PRICES!



Crankshaft showing ‘small end bearing’.



Close up showing 'main bearing' Close inspection will reveal damaged cage in bearing.



There are quite a few companies who can advise and/or sell you the bits you will need for your scooter. The easiest way to find them is a search on the internet. If you haven't got the equipment at home drop in to your local library. The company I use is,



TEKMOTIVE

Kennel Works

Welham Manor

Welham Green

Hertfordshire AL9 7EL

01707 265000 & 01707 265555

e-mail tek4gb@yahoo.co.uk

www.tekmotive.co.uk

END

CHANGING PERFORMANCE CHARACTERISTICS ON A VEHICLE REGISTERED AS A MOPED MAY BE ILLEGAL. IT MAY INVALIDATE YOUR INSURANCE. YOU MAY NOT HAVE A VALID LISCENSE TO RIDE. YOU GET CAUGHT IT'S DOWN TO YOU!!