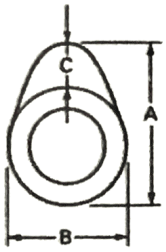
3.1 MAINTENANCE SPECIFICATIONS

3.1.1SPECIFICATIONS

Item		Standard	Limit
Cylinder head : Warp limit			0.03 mm
Cylinder: Bore size Out of round limit		80.000- 80.014 mm	80.025 mm 0.03 mm
Camshaft: Cam dimensions Intake "A" "B" "C" Exhaust "A" "B" "C" Camshaft runout limit		 36 .545- 36 .645 mm 30.021-30.121 mm 6.524 mm 36 .547- 36 .647 mm 30 .067- 30.167 mm 6.48 mm …..	 36 .45 mm 29.92 mm ... 36 .45 mm 29 .97 mm ... 0.03m m
Cam chain: Cam chain type/No. of links		DID SC.A-0404A SDH/108	...
Rocker arm /rocker armshaft: Rocker arm inside diameter Rocker shaft outside diameter Rocker arm - to- rocker arm shaft clearance		 12.000- 12.018 mm 11.981- 11.991 mm 0.009- 0.012 mm	 12 .03 mm 11.95 mm ...
Valve, Valve seat, Valve guide: Valve clearance (cold) Valve dimensions	IN EX	 0.08-0.12 mm 0.16-0.20 mm	 ... ...
Valve dimensions  Face Width Seat Width Margin Thickness			
"A" head diameter	IN EX	33.9-34.1mm 28.4-28.6mm	... ...
"B" face width	IN EX	3.394-3.960mm 3.394-3.960 mm	... ...
"C " seat width	IN EX	0.9-1.1mm 0.9-1.1 mm	... ...
"D" margin thickness	IN EX	0.8-1.2 mm 0.8-1.2 mm	...
Stem outside diameter	IN EX	5.975- 5.990 mm 5.960-5.975 mm	5.94 mm 5.92 mm
Guide inside diameter	IN EX	6.000- 6.012 mm 6.000- 6.012 mm	6.05 mm 6.05 mm

Item		Standard	Limit
Stem-to-guide clearance	IN	0.010- 0.037 mm	0.08 mm
	EX	0.025-0.052 mm	0.1 mm
Stem runout limit		...	0.01 mm
Valve seat width	IN	0.9-1.1 mm	1.6 mm
	EX	0.9-1.1 mm	1.6 mm
Valve spring :			
Free length (Inner)	IN/EX	38.1 mm	36.1 mm
(Outer)	IN/EX	36.93 mm	35.0 mm
Set length (valve closed) (Inner)	IN/EX	30.1 mm	...
(Outer)	IN/EX	31.6 mm	...
Com pressed pressure (Inner)	IN/EX	7.8- 9.0 kg	...
(Outer)	IN/EX	37.22-42.83 kg	...
Tilt limit (Inner)	IN/EX	...	2.5° /1.7mm
(Outer)	IN/EX	...	2.5° /1.7mm
Piston:			
Piston to cylinder clearance		0.02 - 0.049mm	0.15m m
Piston size "D"		79.965-79.980 mm	...
Measuring point "H"		5mm	...
Piston pin bore inside diameter		18.004-18.015 mm	18.045 mm
Piston pin outside diameter		17 .991-18 .000 mm	17 .975 mm
Piston rings :			
Top ring :			
Type		Barrel	...
End gap (installed)		0.2-0.35 mm	0.5 mm
Side clearance (installed)		0.03-0.065 mm	0.1 mm
2nd ring :			
Type		Taper	...
End gap (installed)		0.28-0.48 mm	0.73 mm
Side clearance		0.02-0.052 mm	0.1 mm
Oil ring :			
End gap (installed)		0. 15-0.4 mm	...
Crankshaft:			
Crank width "A"		59.95-60.00 mm	...
Runout limit "C "		0.03 mm	...
Big end side clearance "D"		0.35- 0.85 mm	...

Item		Standard	Limit
Automatic centrifugal clutch:			
Clutch shoe thickness		3.0 mm	2.0 mm
Clutch hosing inside diameter		135 mm	135.5 mm
Clutch shoe spring free length		28.1 mm	...
W eight outside diameter		20 mm	19 .5 mm
Clutch- in revolution		2 ,100- 2,700 r/m in	...
V-belt:			
V-belt width		22.6 mm	21.0 mm
Carburetor:			
Type		CVK	
I.D. mark		CVK32	
Ventuly outside diameter		Φ47	
Main jet	(M .J)	# 138	...
Jet needle	(M .A.J)	NPCA	...
Throttle valve size	(J.N)	Φ31	...
Pilot air jet	(Th .V)	11°	...
Needle jet	(P.A.J.1)	Φ2.6	...
Pilot outlet	(N.J)	Φ3.4	...
Pilot jet	(P.O)	#140	...
Bypass	(B.P)	Φ0.7X4	...
Pilot screw	(P.S)	1*7/8	...
Valve seat size	(V.S)	Φ1.2	...
Starter jet 1	(G.S.1)	#140	...
Float height	(F.H)	17	...
Engine idle speed		1,350-1,650 r/m	...
Intake vacuum		30kPa	...
			...
Oil pump:			
Type		Trochoid type	
Tip clearance		0.1- 0.34 mm	0 .4 mm
Side clearance		0.013- 0.036 mm	0.15 mm
Housing and rotor clearance		0 .04- 0.09 mm	0.15 mm

Item	Standard	Limit
Radiator:		
Type	Cooling fin with electric fan	...
Width/height/thickness	360/246/68 mm	...
Radiator cap opening pressure	110-140kPa (1.1-1.4kg/cm^2, 1.1-1.4bar)	...
Radiator capacity	2 L	...
Reservoir tank capacity	0.35 L	...
Thermostatic valve:		
Valve opening temperature	70- 74℃	
Valve full open temperature	83 ℃	
Valve full open lift	4 mm	

3.1.2TIGHTENING TORQUES

Part to be tightened	Part name	Thread size	Q'ty	Tightening Torque N.m	Tightening Torque m.kg	Remarks
Oil check bolt	–	M 6	1	7	0.7	
Exhaust pipe stud bolt	–	M 8	2	13	1.3	
Spark plug	–	M12	1	18	1.8	
Cam sprocket cover	Bolt	M 6	2	10	1.0	
Cylinder head and cylinder	Nut	M 8	4	22	2 .2	
Cylinder head and cylinder (Cam chain side)	Bolt	M 6	2	10	1.0	
Valve cover	Bolt	M 6	5	10	1.0	
Rotor	Nut	M16	1	80	8.0	
Valve adjuster locknut	Nut	M 6	2	14	1.4	
Cam shaft bearing stopper	Bolt	M 6	2	8	0 .8	
Cam sprocket	Bolt	M10	1	60	6.0	
Cam chain tensioner						
(Body)	Bolt	M 6	2	10	1.0	
(Plug)	Bolt	M8	1	8	0.8	
Guide stopper 2	Bolt	M 6	1	10	1.0	
Water pump housing cover	Bolt	M 6	3	10	1.0	
Hose joint	–	M 6	2	7	0.7	
Thermostatic valve cover	Bolt	M 6	2	10	1.0	
Filer neck supporting	Bolt	M 5	1	5	0 .5	
Oil pump	Screw	M 6	2	7	0.7	
Oil pump cover	Bolt	M 3	1	1	0.1	
Drain plug	Bolt	M 35	1	32	3 .2	
Carburetor joint	Bolt	M 6	2	10	1.0	
Carburetor joint and carburetor	Nut	M 6	2	10	1.0	
Fuel pump	–	M6	2	10	1.0	
Exhaust pipe assembly	Nut	M8	2	20	2.0	
Crankcase (left and right)	Bolt	M 6	9	10	1.0	
Drain bolt	Bolt	M 8	1	22	2 .2	
Oil filer	Bolt	M 14	1	3	0 .3	
Crankcase cover (left)	Bolt	M 6	10	10	1.0	
Magnet cover	–	M 6	10	10	1.0	

Part to be tightened	Part name	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m.kg	
Cover (oil pump)	Bolt	M 6	2	12	1.2	
Timing check plug	P lug	M16	1	8	0 .8	
One way clutch	_	M 8	3	30	3.0	
Clutch housing	Bolt	M14	1	60	6.0	
Grease stopper (Primary sheave)	_	M 4	4	3	0 .3	
Primary fixed sheave	_	M14	1	60	6.0	
Clutch carrier assembly	_	M36	1	90	9.0	
Stator	_	M 5	3	7	0.7	
Pick up coil	_	M 5	2	7	0.7	
Starter motor	Bolt	M 6	2	10	1.0	
Thermo switch	_	M16	1	23	2 .3	
Thermo unit	_	P t1/8	1	8	0 .8	

3.2 PARTS INSPECTION AND SERVICE

3.2.1VALVE CLEARANCE ADJUSTMENT

NOTE:

Valve clearance adjustment should be made with the engine cool, at room temperature.
When the valve clearance is to be measured or adjusted, the piston must be at Top Dead Center (T.D.C.) on the compression.

1. Remove :
- Crankcase cover

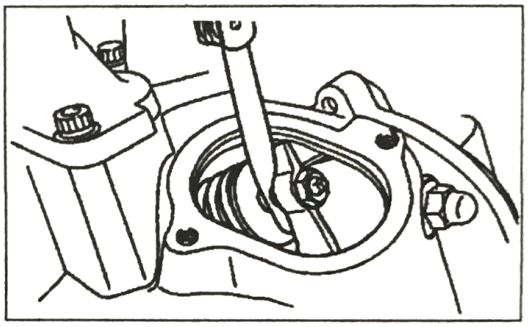
2. Remove :
- Spark plug
- Valve cover (intake side)
- Valve cover (exhaust side)

3. Remove:
- Timing check plug

4.Measure:
- Valve clearance

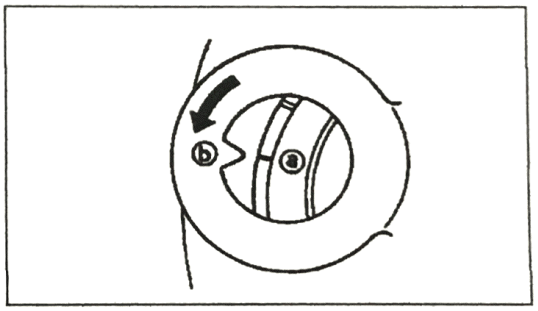
Out of specification → Adjust.

Valve clearance (cold):
Intake valve 0.08- 0.12m m
Exhaust valve 0.13- 0.16mm



Measurement steps:

- Rotate the primary fixed sheave counterclockwise to align the slit a on the rotor with the stationary pointer b on the crankcover 1 when the piston is Top Dead Center (TDC).
- Measure the valve clearance by using a feeler gauge.



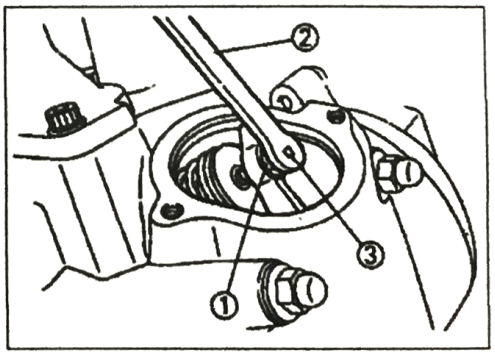
6. Adjust
- Valve clearance

Adjustment steps:

- Loosen the locknut ①
- Turn the adjuster ③ in or out with the valve adjusting tool ② until specified clearance is obtained .

Turning in → Valve clearance is decreased
Turning out → Valve clearance is increased

- Hold the adjuster to prevent it from moving and tighten the locknut.



14Nm(1.4m·kg)

●Measure the valve clearance.
●If the clearance is incorrect, repeat above steps until specified clearance is obtained.

7. Install:

●Valve cover (intake side) ① 10Nm(10m·kg)

●O-ring②

8 . Install:

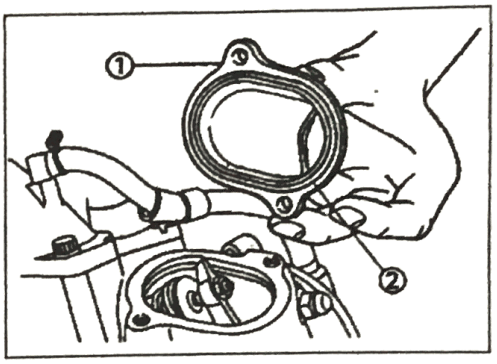
●Valve cover(exhaust side) 10Nm(1.0m·kg)

●O-ring

●Spark plug 18Nm(1.8m·kg)

●Timing check window screw

●Crankcase cover 10Nm(1.0m·kg)



3.2.2 IDLING SPEED ADJUSTMENT

1. Start the engine and let it warm up for several minutes.

2 . Attach :

● Inductive tachometer to the spark plug lead.

3. Check:

●Engine idling speed

	Out of specification → Adjust. **Engine idling speed:** **1,350-1,650 r/min**

4. Adjust:

● Engine idle speed

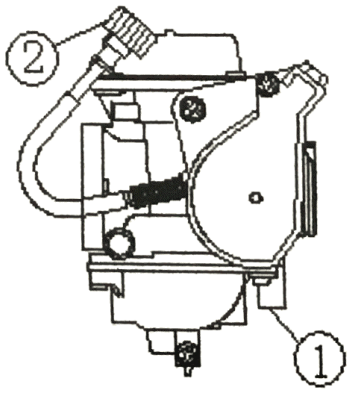
Adjustment steps:

●Turn the pilot screw ① until it is lightly seated.

●Turn the pilot screw out by the specified number of turns.

	Pilot screw: **1 3/8 turn out**

● Turn the throttle stop screw ② in or out until the specified idling speed is obtained.



Turning in → Idling speed is increased.
Turning out → Idling speed is decreased.

3.2.3SPARK PLUG INSPECTION

1.Remove :
- Spark plug cap
- Spark plug

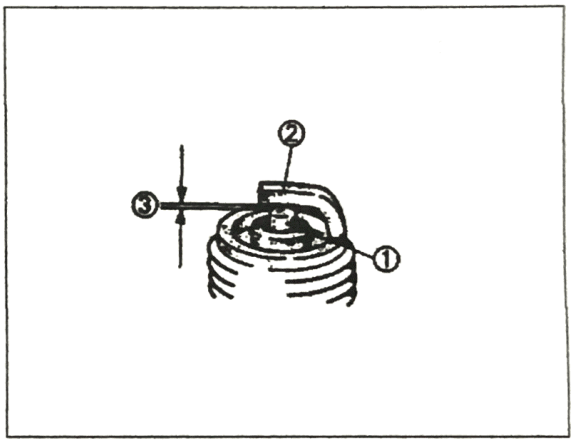
CAUTION:

Before removing the spark plug, use compressed air to blow away any dirt accumulated in the spark plug wells to prevent it from falling into the cylinder.

1. Check:
●Spark plug type
Incorrect →Replace.

	Standard spark plug: **DR8EA (NGK)**

2.Inspect:
●Electrode ①
Wear/ damage →Replace.
●Insulator ②
Abnormal color→Replace.
Normal color is a medium - to- light tan color.



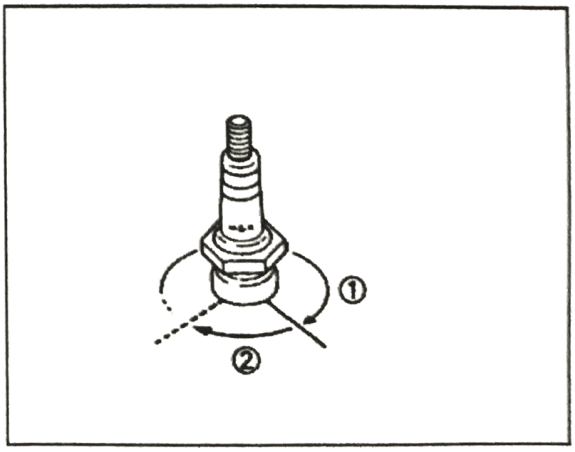
3.Clean:
●Spark plug
(with spark plug cleaner or w ire brush)
4.Measure:
●Spark plug gap ③
(with a wire gauge)
Out of specification →Adjust gap.

	Spark plug gap : 0.6-0.7 mm

6. Install:

●Spark plug 18Nm(1.8m·kg)

NOTE:
Before installing a spark plug, clean the Gasket surface and plug surface.



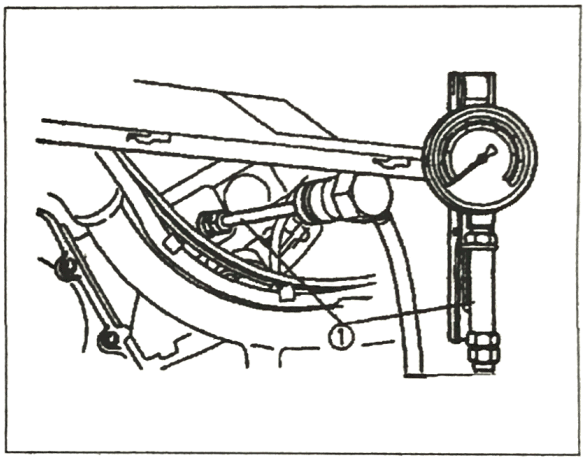
3.2.4COMPRESSION PRESSURE MEASUREMENT

NOTE :

Insufficient compression pressure will result in performance loss.

1. Check:
●Valve clearance
Out of specification →Adjust.
Refer to "CALCE CLEARANCE ADJUSTMENT" section.
2. Start the engine and let it warm up for several minutes.
3. Turn off the engine.
4. Remove:
●Spark plug

Before removing the spark plug, use com pressed air to blow away any dirt accumulated in the spark plug well to prevent it from falling into the cylinder.



5. Attach:
●Compression gauge①
6. Measure:
●Compression pressure
If it exceeds the maximum pressure allowed→ Inspect the cylinder head, valve surfaces and piston crown for carbon deposits.

If it is below the minimum pressure →
Squirt a few drops of oil into the affected cylinder and measure again. Follow the table below.

Compression pressure (With oil applied into cylinder)	
Reading	Diagnosis
Higher than without oil	Worn or damaged pistons
Same as without oil	Possible defective ring (s), valves, cylinder head gasket or Piston →Repair.

Compression pressure(at sea level):

Standard: 1,400 kPa (14Kg/cm^2, 14 bar) Minimum : 1,120 kP a (11.2 kg /cm ^{2}, 11.2 bar)

Measurement steps :
●Crank the engine with the throttle wide open until reading on the compression gauge stabilizes.

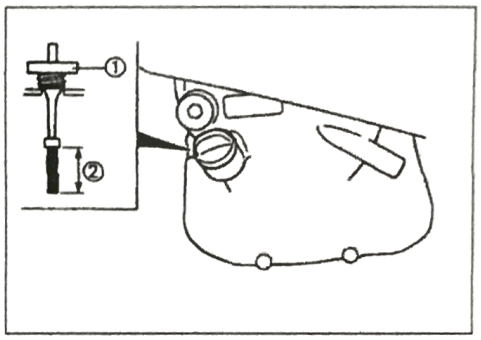
WARNING :
Before cranking the engine, ground all spark plug leads to prevent sparking.

8. Install:

● Spark plug 18Nm(1.8m·kg)

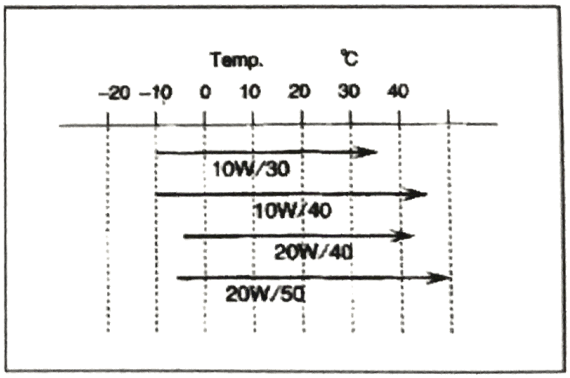
3.2.5ENGINE OIL LEVEL INSPECTION

1. Start the engine and let it warm up for a few minutes .
2. Turn off the engine.
3. Inspect: (Do not thread dipstick in)
●Engine oil level
Oil level should be between maximum ①and minimum ①marks .
Oil level is below the minimum mark Add oil up to the proper lever.



RECOMMENDED ENGINE OIL
Refer to the chart for selection of the oils suited to the atmospheric temperature.

	API STANDARD: **API SE or higher grade**



CAUTION:
●Do not put in any chemical additives or use oils with a grade of CD or higher.
●Be sure not to use oils labeled "ENERGY CONSERVING I" or higher. Engine oil also lubricates the clutch and additives could cause clutch slippage.
●Be sure no foreign material enters the crankcase.

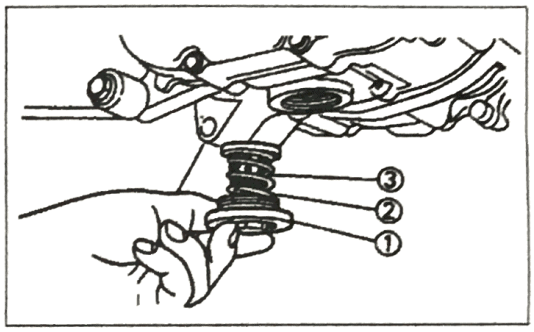
4. Start the engine and let it warm up for a few

minutes.
5. Turn off the engine.

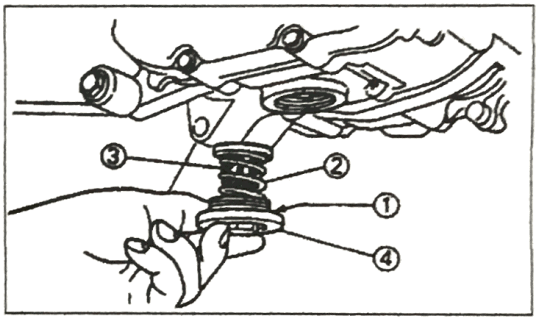
NOTE:
Wait a few minutes until the oil settles before inspecting the oil level.

ENGINE OIL REPLACEMENT

1. Start the engine and let it warm up for several minutes .
2. Turn off the engine and place an oil pan under the engine.
3. Remove :
- Oil filer plug
- Drain plug ① 32Nm(3.2m·kg)
- Compression spring ②
- Oil strainer ③
- O-ring
- Drain the crankcase of its oil.



4. Install:
- O-ring ① NEW
- Compression spring ②
- Oil strainer ③
- Drain plug ④
- Oil filer plug



NOTE :
Check the drain plug O-ring. If damaged, replace it with a new one.

5. Fill:
- Crankcase

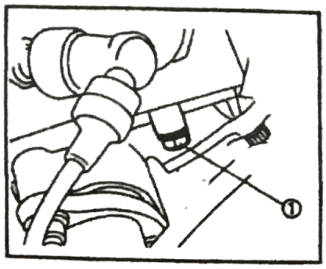
	Oil quantity: 1.4L

6. Check:
- Engine oil level

Refer to "ENGINE OIL LEVEL INSPECTION" section

ENGINE OIL PRESSURE INSPECTION

Inspection steps:
- Slightly loosen the oil check bolt ①
- Start the engine and keep it idling until the oil begins to seep from the oil check bolt. If no oil comes out after one minute, turn the engine off so it will not seize.
- Check oil passages and oil pump for dam age



or leakage.

●Start the engine after solving the problem (s), and recheck the oil pressure.

●Tighten the oil check bolt to specification.

10Nm(1.0m·kg)

CAUTION:

●Start the engine and check the oil pressure with the oil check bolt loosened.

●Do not apply at high speeds more than specified when checking the pressure.

NOTE:

Wipe any spilled oil off the engine.

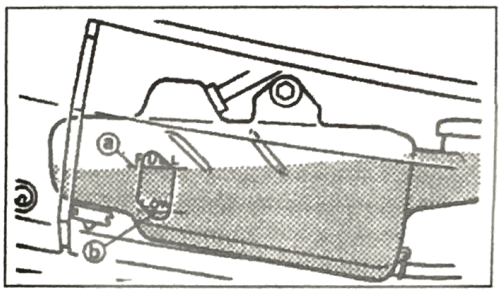
3.2.6COOLANT LEVEL INSPECTION

Inspect:

●Coolant level

Coolant level should be between the maximum ⓐ and minimum ⓑ marks.

Coolant level is below the "LOWER " level line Add soft water (tap water) up to the proper level.



CAUTION:

Hard water or salt water is harmful to engine parts. Use only distilled water if soft water is not available. If you use tap water, make sure it is soft water.

1. Start the engine and let it warm up for several minutes.
2. Turn off the engine and inspect the coolant level again.

NOTE:

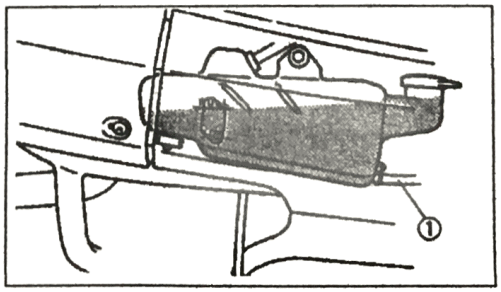
Wait a few minutes until the coolant settles before inspecting the coolant level.

COOLANTRE PLACE MENT

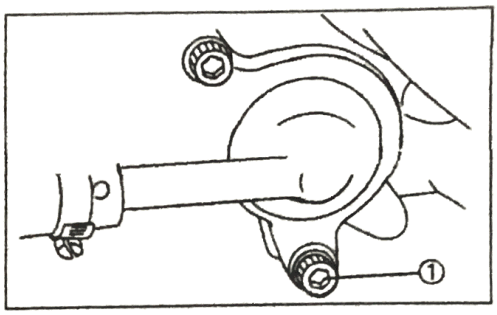
1. Remove:

●Front cover of ATV plastic body work.

●Seat.



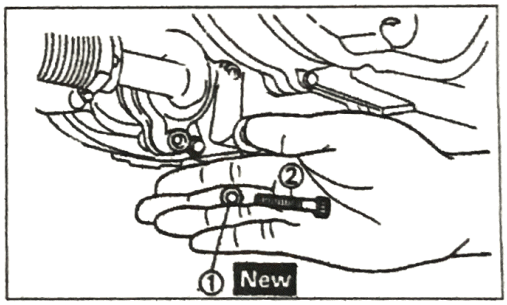
2. Remove:
●Hose ① (reservoir tank)
Drain the reservoir tank of its coolant.
3. Remove:
●Drain bolt ①
●Radiator cap



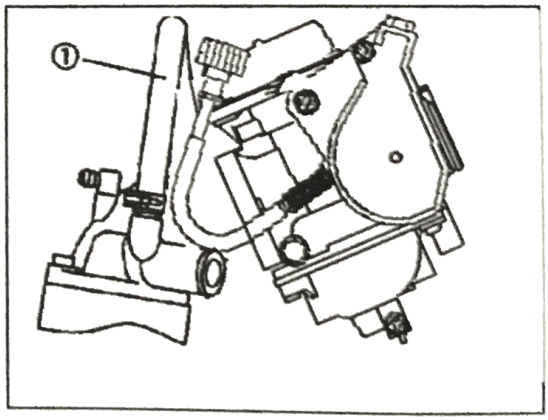
WARNING:
Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:
Place a thick rag or a towel over the radiator cap. Slowly rotate the cap counterclockwise toward the detent. This allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

NOTE:
●Remove the radiator cap after removing the drain bolt.

4. Clean:
●Radiator
Fill soft water into the filer neck support ① (reservoir tank).
5. Install:
●Gasket ① NEW
●Drain bolt② 10Nm(1.0m·kg)



6. Loosen:
●Hose①

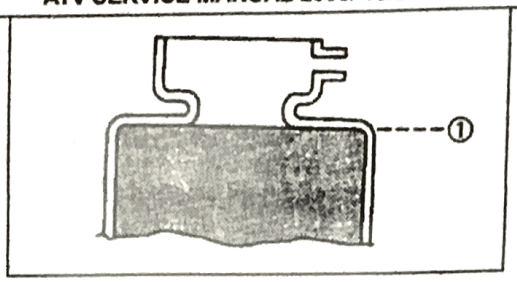


7. Connect:
●Hose (reservoir tank)
8. Fill:
●Radiator
(to specified level①)

Fill the coolant slowly, until the coolant comes out from the head hose.

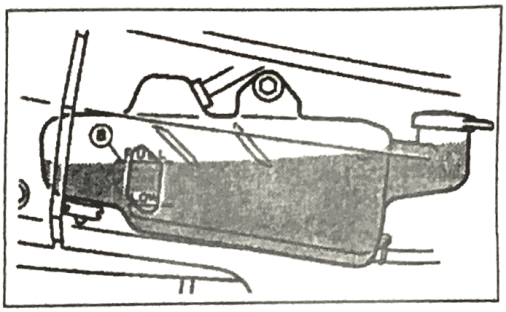
●Reservoir tank

(to maximum level ⓐ)



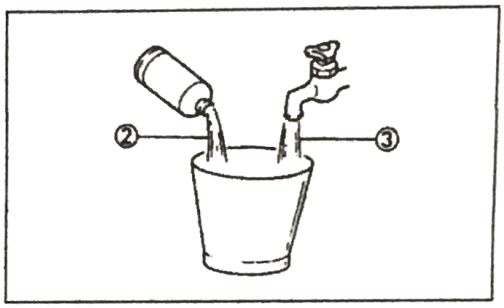
	Recommended coolant: High quality ethylene glycol anti-freeze containing corrosion inhibitors for aluminum engine.

	Coolant ② and water ③ (soft water) : Mixed ratio: min50% /max50% follow the instruction of the coolant Total amount: 2L Reservoir tank capacity: 0.35L



Handling notes for coolant:

Coolant is potentially harmful and should be handled with special care.



WARNING:

splashes in your eyes:

Thoroughly wash your eyes with water and consult a doctor.

If coolant splashes on your clothes:

●Quickly wash it away with water and then with soap and water.

If coolant is swallowed:

Vomit immediately and see a physician.

CAUTION:

●Hard water or salt water is harmful to engine parts. Use only distilled water if soft water is not available.

●If you use tap water, make sure it is soft water.

●Do not use water containing impurities or oil.

●Take care that no coolant splashes onto painted surfaces. If it does, wash them immediately with water.

●Do not mix different types of ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines.

9. Tighten:

●Hose