BR-150
SERVICE MANUAL

Manufactured by PGO

of Motive Power Industry Co., Ltd

Content

PREFACE

This manual offers all service specialists with the technological procedures of maintenance, repairing for BR-150 show those whom may concern how to maintain in detail, repair, change parts, troubleshoot and reassemble, etc.

At every important section we illustrate by assembly, explosion diagrams and photographs, if necessary, please check the diagrams already shown.

Though we have tried our best, please kindly instruct us any faults found in this manual.

MOTIVE POWER INDUSTRY CO., LTD.

BUGXTER SPECIFICATION

Name	BR-150	FRAME	STEEL
TYPE	**BR-150**	SUSPENSION SYSTEM	
DIMENSION		FRONT	SINGLE A ARM
TOTAL LENGTH	2215 ㎜	REAR	SWING ARM
TOTAL WIDTH	1385 ㎜	TRANSMISSION	
TOTAL HEIGHT	1480 ㎜	RPIMARY RATIO	1
WHEELBASE	1510 ㎜	**SECONDARY RATIO**	**40/16*42/13**
DRY WEIGHT	**263 KG**	**CLUTCH**	**C.V.T.**
FRONT	109 KG	**TIRE**	
REAR	154 KG	**FRONT**	19 X7-8
TOTAL	263 KG	**REAR**	255/80-10
LOAD	**2 PERSONS(110KG)**	**BRAKE SYSTEM**	
VEHICLT PERFORMANCE		**FRONT**	**DISC BRAKE**
TOP SPEED	**70KM/H**	**REAR**	**DRUM BRAKE**
FUEL CONSUMPTION	25KM/L	**LIGHT**	
CLIMBING ABILITY	25°	**HEAD LIGHT(H/L)**	**12V-35W/35W*2**
		TAIL LIGHT	**12V-5W**
CYCLE	**4**	**BRAKING LIGHT**	**12V-21W**
FUEL	**UNLEADED**	**TURN LIGHT**	**12V-10W**
CYLINDER NUMBER	**1**		
ARRANGEMENT	**HORIZONTAL**		
DISPLACEMENT	**150.1 cc**		
BORE	**Φ57.5 mm**		
STROKE	**57.8 mm**		
COMPRESSION RATIO	**9.4 : 1**		
MAX. POWER/RPM	**7.5kw/7750rpm**		
AMX. TORQUE/RPM	**10.2N-M/6500rpm**		
IDLE RPM	**1700 ±100 RPM**		
IGNITION	**CDI**		
SPARK PLUG	**NGK CR7HSA**		
COOLING	**FORCE AIR & OIL**		
STARTER	**ELECTRIC**		
FUEL MIXING	**OIL PUMP**		
LUBRICATION	**SEPARATED**		

1.1 The operation notice:

1. Always replace gasket, O ring, cotter, pins and clip whenever reassembled.
2. When tighten screws or nuts, lock tightly as per specified locking torque, and in the sequence of cross direction.
3. Use PGO, or PGO Recommended parts.
4. After dismantling please wash all parts necessary for checking and grease all contact surface when reassembling.
5. Use grease recommended by P.G.O.
6. When removing battery, please dismantle the negative pole (-) first, when assembling please connect positive pole (+) first.
6. Before installing a new fuse, confirm the specification is correct or not.
7. After reassembling, please re-check that all connecting point, locking parts, circuits, polar characteristics are good, before selling out.

1.2 TORQUE VALUE

1. Engine:

NO	Locking location	Q'TY	Thread dia. (mm)	Locking torque (kg-m)	Remark
1	Cylinder head bolt A (intake)	2	6	0.9~1.1	
2	Cylinder head bolt B (Exhaust)	2	8	2.2	
3	Cap, oil filter graze	1	30	1.5~2.0	
4	Flange nut, cam shaft base	4	8	2.2	
5	Fixing nut, air valve adjustment	2	5	0.7	Greasing on thread
6	Guiding pin bolt, inner chain adjustment	1	6	0.9~1.1	
7	Oil bolt	1	8	1.7~2.0	
8	Fixing nut, clutch outer	1	12	5.0~6.0	
9	Nut, driven plate	1	12	5.0~6.0	
10	Nut, driving plate	1	12	5.0~6.0	
11	Spark plug	1	10	1.2~1.3	
12	Nut, drive clutch	1	22	9.0~10.0	Left thread
13	Screw, inner chain adjuster	1	6	0.4~0.6	

2.General parts please refer the following table:

NO	Item	Torque (kgf-m)
1	5mm bolt and nut	0.45-0.6
2	6mm bolt and nut	0.8-1.2
3	8mm bolt and nut	1.8-2.5
4	10mm bolt and nut	3.4-4.0
5	12mm bolt and nut	5.0-6.0
6	5mm screw	0.35-0.5
7	6mm screw	0.7-1.1
8	6mm flange bolt and screw	1.0-1.4
9	7mm flange bolt and screw	1.0-1.4
10	8mm flange bolt and screw	2.0-3.0
11	10mm flange bolt and screw	3.0-4.0

3.Locking Torque Standard (Chassis)

No	Locking location	Qty	Thread dia (mm)	Kg-m	Remark
1	Wheel nut	16	10	6.0	
2	Wheel axle nut	1	16	8.0	
3	Front absorber bolt	4	10	6.0	
4	Lower suspension arm bolt	2	10	6.0	
5	Steering handle bolt	6	3	0.5	
6	Seat belt fixture	5	8	3.0	
7	Upper suspension arm	2	8	3.0	
8	Tie rod nut	4	10	5.0	
9	Roll cage bar	6	8	4.0	
10	Rear swing arm, lower	2	12	6.0	
11	Engine hanger with frame	2	10	3.5~4.5	
12	Engine hanger with engine	1	10	3.5~4.5	
13	Rear absorber	4	10	3.5~4.5	
14	Connecting rod	4	8	3.0	
15	Chain adjusting bolt, upper	1	12	6.0	
16	Chain adjusting bolt, lower	1	12	6.0	
17	Brake caliper fixture	6	8	2.5~3.0	
18	Brake hose bolt	6	8	2.5~3.0	
19	Reverse gear shaft	1	16	11.0	
20	Rear sprocket	4	8	3.0	
21	Brake disk	8	8	3.0	

1.3 In order to achieve safe riding, good performance and reduce pollution, please execute the following recommended maintenance table base upon average driving condition. Driving in unusual dusty areas, require more frequent servicing.

Item	Checking Content	MONTHS/DISTANCE(IN KM)FOR CHECKING						
		1 or 300 km	3 or 3000k	6 or 5000k	9 or 8000k	12 or 10000k	15 or 13000k	18 or 15000k
Engine oil *	Replace (800cc, total 900cc)	R	Replace it per 1,000km					
Oil Filter *	Replace	R	Replace it per 5,000km					
Coarse oil filter* (on oil draining bolt)	Clean or replace it if necessary	C	Clean it per 3,000km or replace it if required					
Oil cooler	Clean or replace it if necessary	I		C		C		C
Air filter *	Replace it if required		Replace it per 1,000km					
Gear oil *	Replace (90cc, total 110 cc)	R		R		R		R
Brake performance	Leaking and function check	I	I	I	I	I	I	I
Brake oil, disk, pad, hose, master cylinder	Leaking and worn -out check or replace it if necessary	I	I	I	I	I	I	I
Clutch linings *	Check or replace it if necessary		I	I	I	I	I	I
Tires	Worn-out check or replace it if necessary		I	I	I	I	I	I
Wheel bearing *	Fasten tightly if loosen		I	I	I	I	I	I
Driving chain *	Lubricate & check the slack	I	I	C, A, L	I	C, A, L	I	C, A, L
Chassis suspension arm, spindle *	Check looseness. Add grease if required	I	I	C, A, L	I	C, A, L	I	C, A, L
Steering joint & rod *	Check looseness. Adjust it if required			I		I		I
Absorber *	Leaking and function check	I		I		I		I
Parking	Function check or replace it if required	I	I	I	I	I	I	I
Nuts, bolts, fasteners	Tighten it if required	I	I	I	I	I	I	I
Battery	Make sure that the voltage stayed over 12.8V. Recharge the battery it required. Clear the poles.	I	I	I	I	I	I	I
Valve gap *	Check and adjust when engine is cool (0.08mm for IN & EX)	Adjust it when necessary						
Spark plug *	Clear or replace if required		I	I	I	I	I	I
V belt *	Worn out check or replace if necessary.			P		P		P
Fuel feeding system *	Crack and blockage check. Replace it if necessary.			I		I		I
Engine idle speed *	1700±100 rpm	A	A	A	A	A	A	A
Carburetor idle A/F Adjustment *	Check and adjust referring to CO/HC Percentage.	A	A	A	A	A	A	A

A: adjust C: clean I: inspect, clean or replace if necessary L: lubricate R: replace

1. Items with "*" mark indicate our recommendation to have it done by PGO dealer.
2. "P" denotes that function check or replace it when the engine performance reduces significantly.

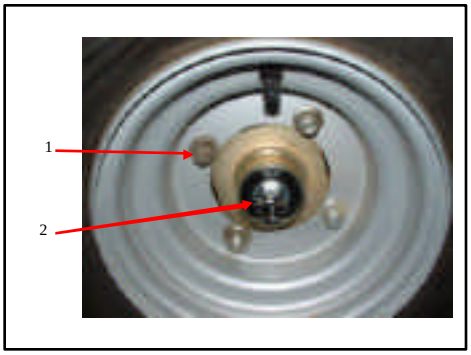
NOTE 1：

The engine oil shall be changed completely after run-in period 300 km or one month later. This can make sure the engine runs smoothly.

NOTE 2：

The exchange of brake fluid

1. After disassembling of brake main cylinder or caliper, do change the new fluid.
2. Check the fluid level often, refill if necessary.
3. Change the oil seal of main cylinder and caliper every two years.
4. Change the brake fluid hose every four years.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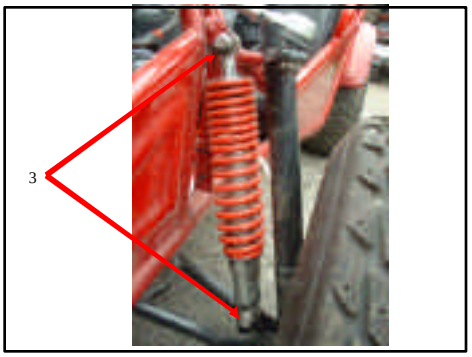
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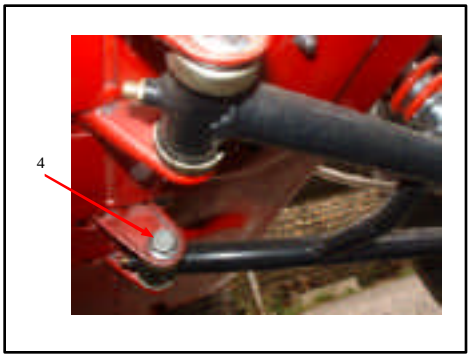
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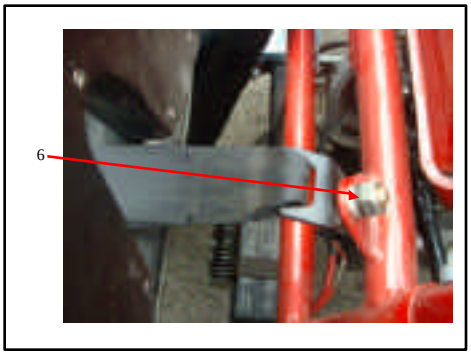
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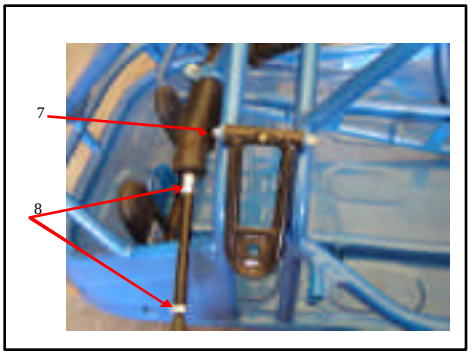
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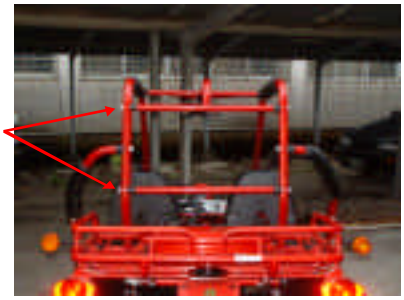

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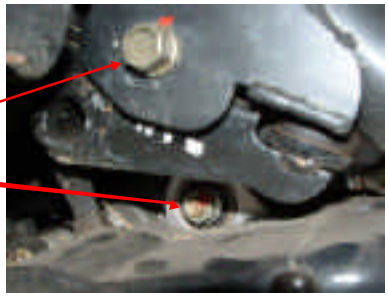

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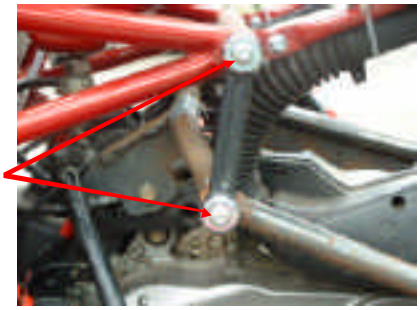

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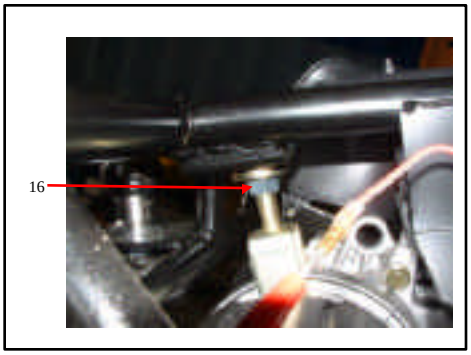
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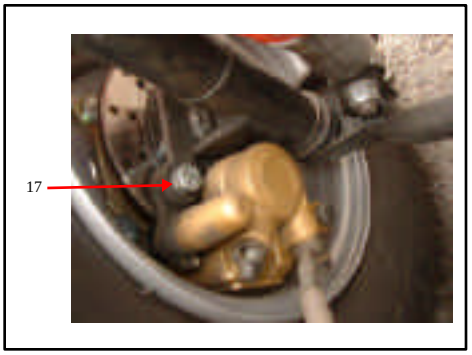
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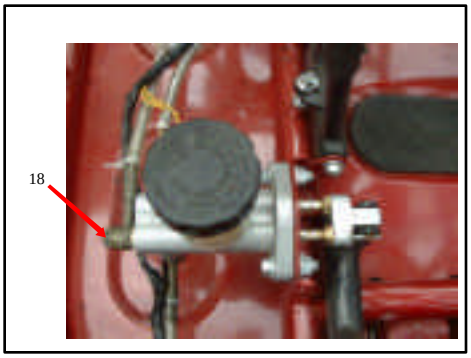
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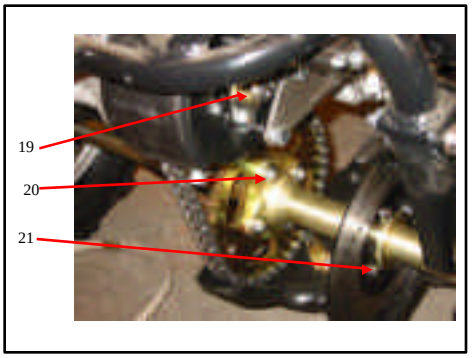
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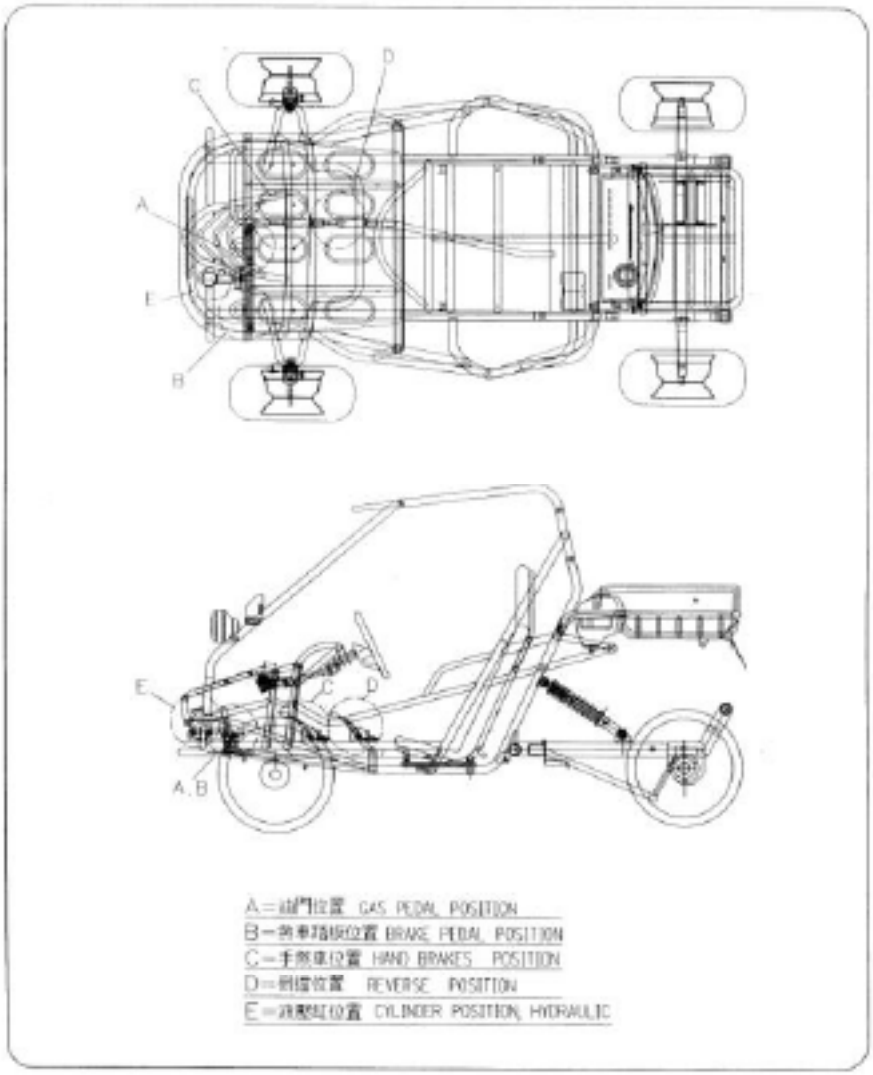
3.1 OPERATION

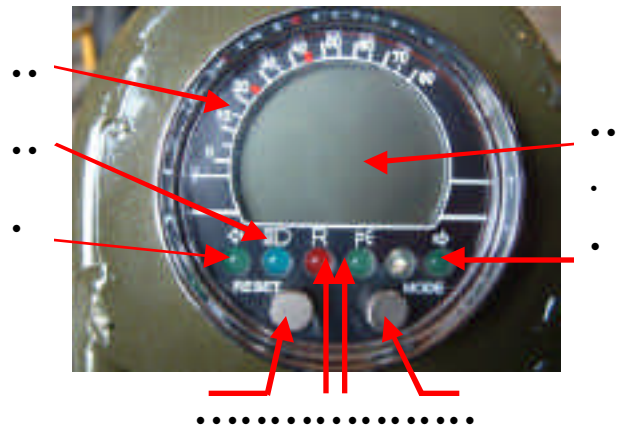
1.OPERATION LAYOUT



2.. Digital Speedometer

1.Symbol description

- speed indication
- high beam indicator
- signal lamp indicator
- reverse gear indicator
- parking indicator
- RESET button
- MODE button
- ••••••••••••



2.Setting: Press "**MODE + RESET**" 2 sec., then can get into the setting procedure.

- Unit: km/h or mile/h, switched by **MODE**, and **RESET** to confirm.
- Wheel circumstance: from 1 to 3999 mm, 4 digitals individually set by **RESET** to increase one by one, and **MODE** to next digital. Finally press **MODE** 2 sec. to escape setting.
- If without pressing any button during 20 sec., it will escape to main menu automatically.
- Button operation

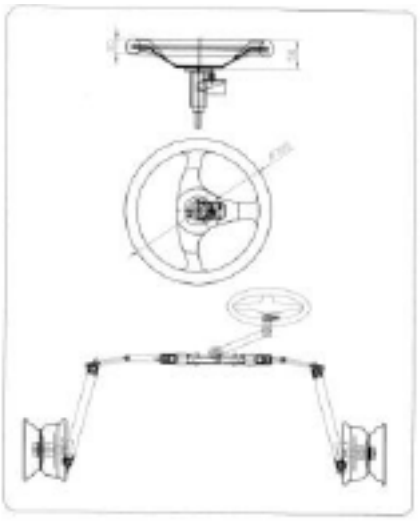
Situation Button	Setting	Main menu
MODE	: to next parameter 2: escape	: switch display
RESET	: digital + 1 2: no function	: no function 2: Reset RT, MAX, TRIP
MODE + RESET		2: setting parameter

  - • • means press button one time.
  - ò • • 2• means press button and hold 2 seconds.

- Display description: switched by **MODE** in main menu.

  - ò Sequence: SPD/TRIP → MAX/ODO → SPD/RT → SPD/TRIP
  - ò SPD: real time speed
  - ò TRIP: trip distance from last RESET, press RESET to zero again.
  - ò ODO: accumulated distance from this speedometer been used.
  - ò MAX: maximum speed, press RESET to zero again.
  - ò RT: operating time from last RESET, press RESET to zero again.

3.2 Steering Inspection & Adjustment



Dismantle

- Lock tight the bolts of steering handle.
- Torque:0.5 kg-m

Steering Inspection

- Inspect the coupling joint knuckle.

Maintenance

- Add grease into upper suspension arm per 10,000km from grease valve.

Inspection

- Inspect the absorber, function check and oil leakage check.

Inspection

- Lock tight the nut of tie rod with steering spindle support.
- Inspect the clearance of tie rod with the steering spindle support.

Steering Inspection & Adjustment

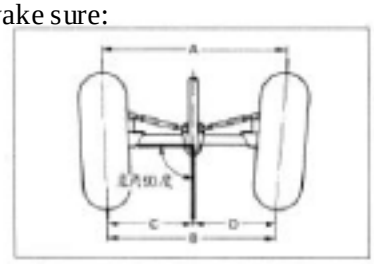
Steering Inspection & Adjustment

- Lock tight the bolt
- Add grease into lower suspension arm per 10,000km.

Steering Inspection & Adjustment

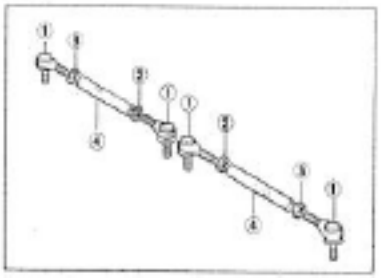
- When checking the alignment of front wheel.
- Keep the vehicle at flat surface
- From the top view,wake sure:
- C=D,and
- A-B=1/8~1/4

Front



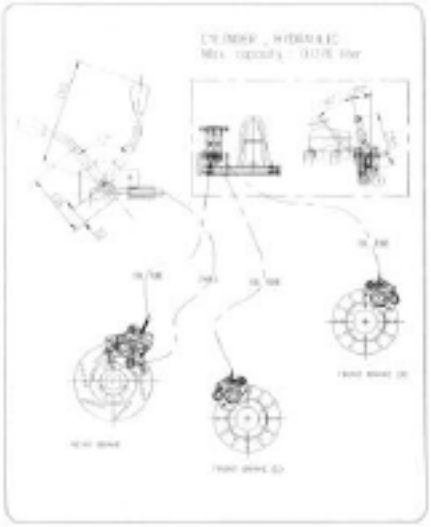
Steering Inspection & Adjustment

- Adjusting the toe-in
- Loosen unit#2 and #3
- Rotating #4 to adjusting the toe-in



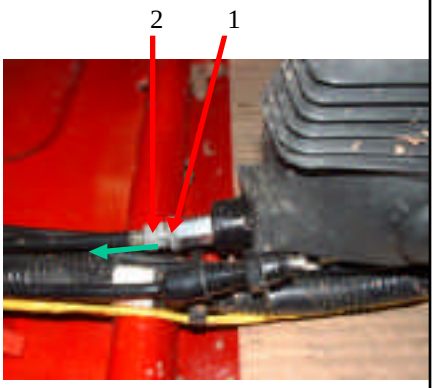
3.3 Brake inspection and adjustment

- Brake system
- Brake cylinder
- Adjust the hand brake (to rear brake disk) cable if necessary



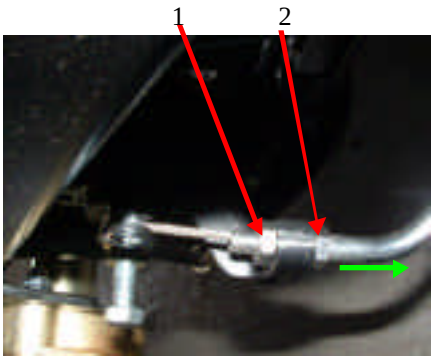
Brake adjustment

- Hand Park (Front end)
- Loosen nut#1
- Adjust bolt#2 out to increase park power.
- Lock tight nut#1.



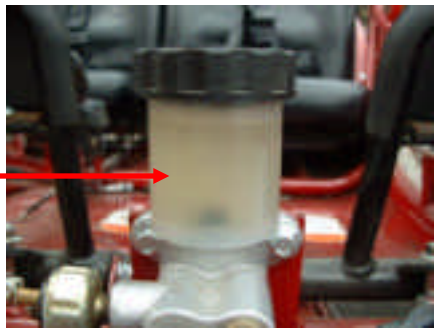
Brake adjustment

- Hand Park (Caliper end)
- Loosen nut#1
- Adjust the cable to front to increase hand brake power.
- Lock tight nut#2.



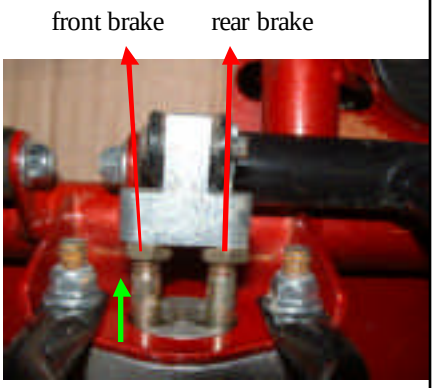
Brake inspection

- Check the brake fluid level, add it when below “MIN” level.



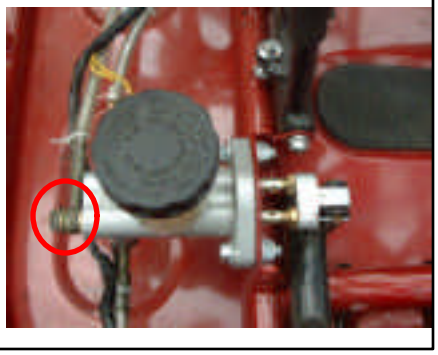
Brake inspection and adjustment

- Adjusting braking power.
- Loosen nut
- Adjust the length of bolt, screw it in can get bigger brake power.
- Lock the nut.



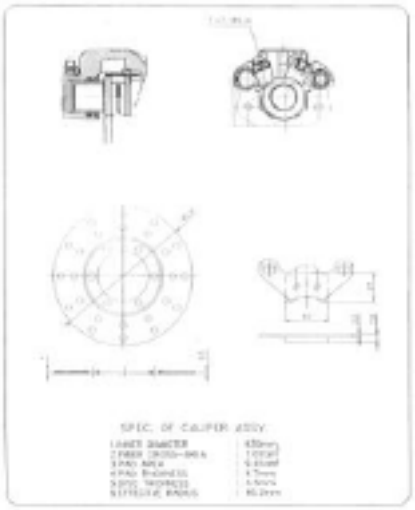
Brake inspection and adjustment

- Make sure there is not any fluid leakage from the bolt.



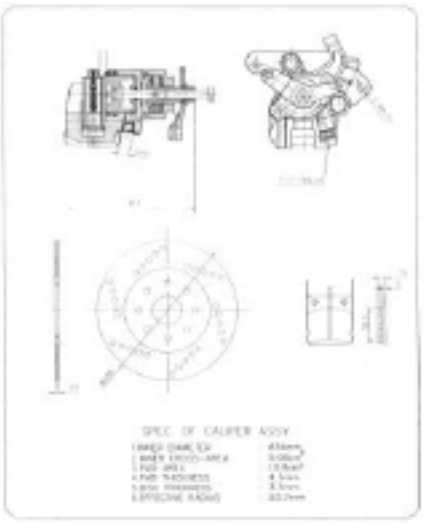
Brake inspection and adjustment

- Specification of front brake caliper
- Replace the pad of disk if necessary.



Brake inspection and adjustment

- Specification of rear brake caliper
- Replace the pad of disk if necessary.



Wheel dismantle (1)

- Withdraw the cap
- Dismantle the 4 nuts

Wheel dismantle (2)

- You don't need to dismantle the wheel nut

Wheel dismantle (3)

- Withdraw the wheel

Wheel dismantle (4)

- Withdraw the cotter pin
- Dismantle the nut
- Withdraw the hub

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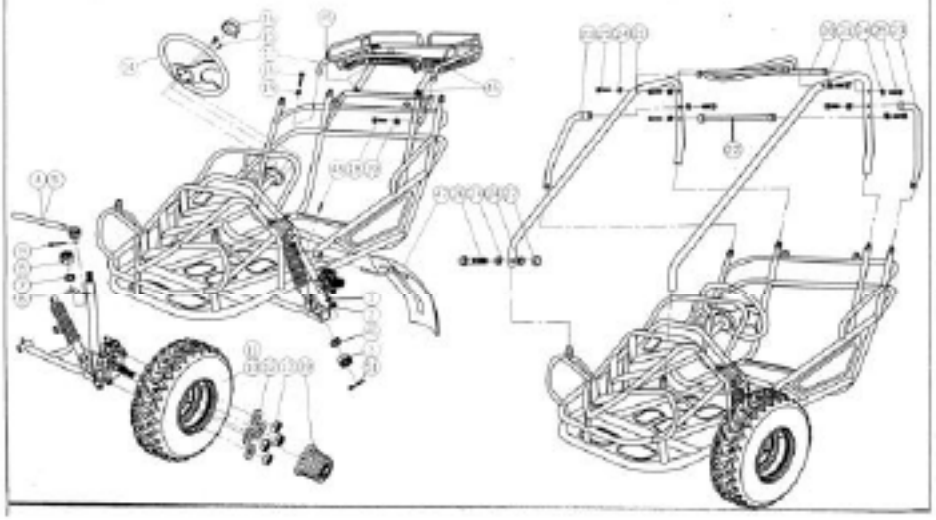
Bugxter (BR-150) INSTALL INSTRUCTION VERSION2.0



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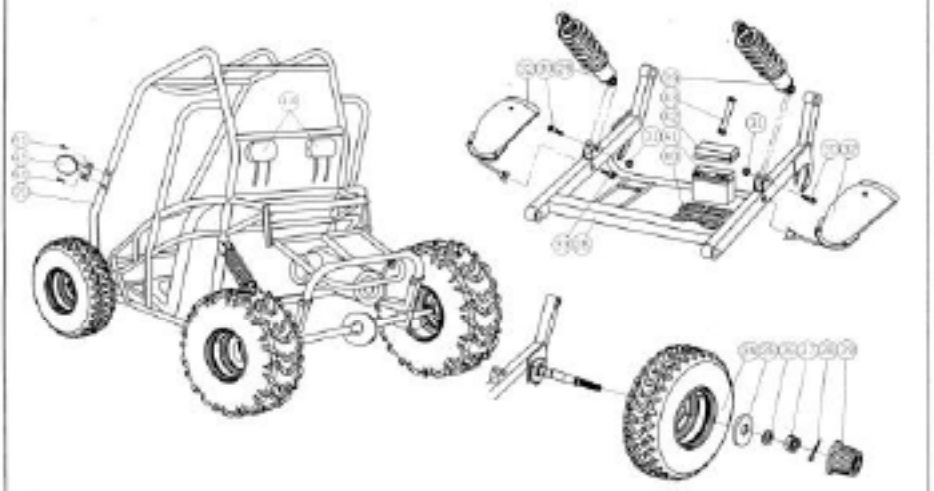
Bugxter (BR-150) INSTALL INSTRUCTION VERSION2.0



Bugxter 150 INSTALL INSTRUCTION VERSION: 2.0

1-1 AERATE ALL THE FOUR TIRES,(STANDARD PRESSURE ON-ROAD F. 0.5Kg/cm² R. 0.8Kg/cm², OFF-ROAD F. 0.25Kg/cm² R. 0.25Kg/cm²)

2-1 TO PUT PART 1 +PART 2 INTO THE FIXED POSITION OF RH/LH SUPPORTING AXLE

2-2 THEN, TO PASS THE LOWER END OF SUPPORTING AXLE THRU THE DEFINED HOLE OF LH/RH LOWER SUSPENSION SECURED BY PART3+46 (T=5 kg-m)

2-3 THEN, TO PASS PART51 THRU THE DEFINED HOLE OF SUPPORT STRUT AND SPINDLE AND MAKE THE PASSING OUTSIDE END OF PART 51

3-1 TO PASS R/L SIDE ROD OF PART 4/5 THRU THE DEFINED HOLE OF RH/LH SUPPORTING ROD FIXED BY PART 6+7+8 (T= 5 kg-m) IN ORDER

3-2 THEN, TO PASS PART 9 THRU THE DEFINED HOLE OF PART 4+5 AND MAKE THE PASSING OUTSIDE END OF PART 9

4-1 TO SECURE PART 10+11 VIA PART 12+13 (T= 6 kg-m) AT THE FIXED POSITION OF HUB. TO PUT PART 39 INTO THE FIXED POSITION OF PART 10/11.

5-1 TO SECURE PART 29 VIA PART 30 (T= 6 kg-m) + 31 AT THE FIXED POSITION OF PART 28

6-1 TO SECURE PART 35+36+37 (T= 8 kg-m) VIA PART 34 AT THE FIXED POSITIN OF RR AXLE

6-2 THEN , TO PASS PART 38 THRU THE DEFINED HOLE OF RR AXLE AND MAKE THE PASSING OUTSIDE END OF PART 38 AND TO SECURE PART 39 AT THE THE FIXED POSITION OF 34

7-1 TO PUT PART 32 VIA PART 30 (T= 3 kg-m) SECURED AT THE FIXED POSITION OF PART 28

8-1 TO SECURE PART 14 VIA PART 15 (T= 0.3 kg-m) AT THE DEFINED POSITION OF FIXING SOCKET

8-2 THEN, TO PRESS PART 16 INTO THE FIXED POSITION OF PART 14 TO BE SECURED

9-1 UNTIGHT PART 45,THEN MOVE PART 17 TO THE STANDARD POSITION, AT LAST , FIX PART 17 BY PART 18 (T= 4 kg-m)+19+45 (T= 4 kg-m)

10-1 TO PUT PART 21 AT THE LH/RH FIXED POSITION OF FRAME SEPARARELY

10-2 TO PASS PART 26 (T= 4 kg-m) THRU PART 24+21+27 SECURED TOGETHER, BUT NOT FASTEN TIGHTLY

11-1 TO SECURE PART 20+22 VIA PART 24+25 (T= 4 kg-m) AT THE LH/RH BOTH SIDE OF FIXED POSITION OF PART 21, BUT NOT FASTEN TIGHTLY

12-1 TO SECURE PART 23 VIA PART 24+25 (T= 4 kg-m) +26 (T= 4 kg-m) +27 AT THE FIXED POSITION BETWEEN PART 21 WITH FRAME

12-2 THE, TO SECURE ALL OF THE BOLTS BY SORTING

13-1 TO PUT PART 44 INTO THE DEFINED HOLE OF SEAT

14-1 TO PUT PART 40+41 INTO THE FIXED POSITION OF PART 28

14-2 TO SECURE THE POWER CORD OF MAIN WIRE HARNESS WITH PART 41 ,THEN TO COVER PART 42 ON THE UPPER OF PART41

14-3 TO CLIP PART 43 SECURELY

15-1 TO SECURE PART 47 VIA PART 48 (T= 2 kg-m) AT THE FIXED POSITION OF HUB.

16-1 TO SECURE PART 49 VIA PART 50 (T= 0.5 kg-m) AT THE FIXED POSITION OF PART 21.

ERING

Bugxter (BR-150) PART INSTALL LIST version:2.0

NO	CHINESE NAME	ENGLISH NAME	QTY
1	隔套球	SPACER BALL	2
2	防尘油封	DUST SEAL BALL	2
3	城堡螺帽 M10	NUT CASTLE M10	2
4	右转向拉杆总成	STEERING TIE-ROD ASSEMBLY (R)	1
5	右转向拉杆总成	STEERING TIE-ROD ASSEMBLY (L)	1
6	平垫圈	WASHER FLAT	2
7	弹簧垫圈	SPRING WASHER	2
8	城堡螺帽 M10	NUT CASTLE M10	2
9	開口銷	PIN COTTER	2
10	左前輪總成	FR.WHEEL ASSY L	1
11	右前輪總成	FR.WHEEL ASSY R	1
12	平墊圈	WASHER FLAT	8
13	凸緣防松螺帽 M10	NUT FLANGE LOCK M10	8
14	操向輪	STEERING WHEEL	1
15	螺栓 M6X12	BOLT M6X12	3
16	指向螺栓蓋	COVER STEERING BOLT	1
17	後貨物架	REAR CARGO RACK	1
18	螺栓 M8X1.25X55	BOLT M8X1.25X55	2
19	R銷墊圈	R-WASHER	2
20	前滾桿	ROLL CAGE CROSS BAR FR.	1
21	左、右滾桿	ROLL CAGE BAR LH. RH.	2
22	後滾桿	ROLL CAGE CROSS BAR. RR.	1
23	左、右邊護桿	ROLL CAGE RAB L. R. SIDE	2
24	R銷墊	R-WASHER	20
25	支撐螺栓 M8X1.25X55	BOLT STRAP M8X1.25X55	8
26	六角帶墊圈螺栓 M8X1.25X55	BOLT-WASHER M8X1.25X55	6
27	凸緣防松螺帽	NUT FLANGE LOCK	6
28	後搖臂組合	RR. SWING ARM COMP. UNDER	1
29	後緩衝器總成	CUSHION ASSY RR.	2
30	帶墊圈六角螺栓 M10X1.25X40	BOLT-WASHER M10X1.25X40	2
31	凸緣防松螺帽	NUT FLANGE LOCK M10	2
32	左、右後土除固定	FENDER RR.	2
33	帶墊圈六角螺栓 M8X1.25X45	BOLT-WASHER M8X1.25X45	2
34	後輪組合	REAR WHEEL ASSY	2
35	後軸固定板	HOLDER RR COVER	2
36	後輪隔片	SPACER RR WHEEL	2
37	城堡螺帽 M16	NUT CASTLE M16	2
38	開口銷	PIN COTTER	2
39	後輪蓋	COVER RR HUB	4
40	電瓶護墊	CUSHION BATTERY UNDER	1
41	電瓶	BATTERY	1
42	電瓶蓋	COVER BATTERY	1
43	電瓶束帶	BAND BATTERY	1
44	頭枕	HEAD-REST	2
45	帶墊圈六角螺栓 M8X1.25X20	BOLT-WASHER M8X1.25X20	4
46	彈簧墊圈	SPRING WASHER	2
47	左、右前土除組合	FENDER FR	2
48	螺栓	BOLT M6X40	2
49	左、右後視鏡總成	REAR VIEW MIRROR	2
50	螺絲	SCREW M6X16	2
51	開口銷	PIN COTTER	2

ERING

Bugxter (BR-150) SEAT BELT INSTALL INSTRUCTION

VERSION:2.0

SEAT BELT INSTALL INSTRUCTION
1. TO SECURE PART A VIA PART B+C+D (T= 5 kg-m) AT THE FIXED POSITION OF HUB

NO	NAME	Q'TY
D	NUT	5
C	BOLT	5
B	WASHER	5
A	SEAT BELT	1

Bugxter (BR-150) TOW BALL INSTALL INSTRUCTION

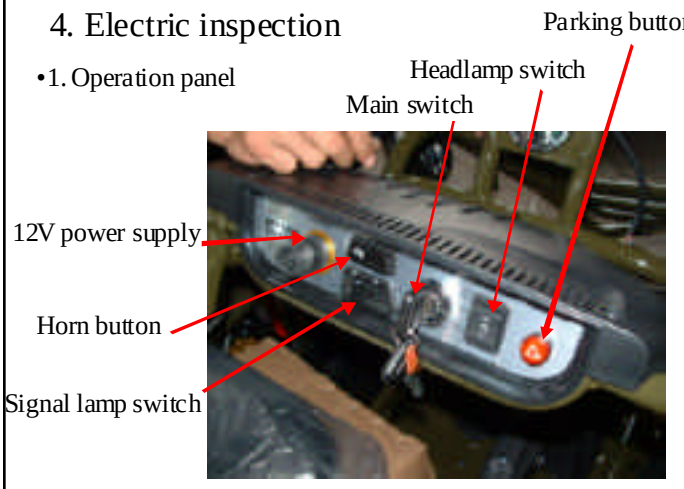
VERSION:2.0

TOW BALL INSTALL INSTRUCTION
1. TO SECURE PART A VIA PART B+C+D (T= 10 kg-m) AT THE FIXED POSITION OF REAR SWING ARM ASSY.

NO	NAME	Q'TY
D	NUT	1
C	SPRING WASHER	1
B	WASHER	1
A	TOW BALL	1

4. Electric inspection

- 1. Operation panel

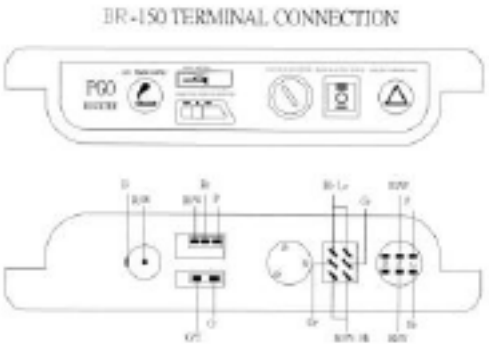


Panel terminal wiring

- Panel back photo

Panel terminal wiring

- Panel back

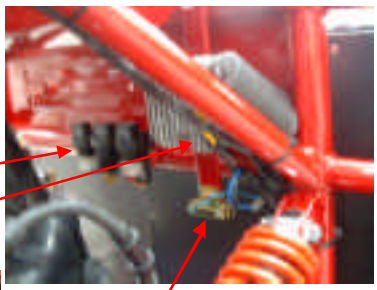


2. Parts location

speedometer

Signal lamp

2. Parts location



Relay
regulator

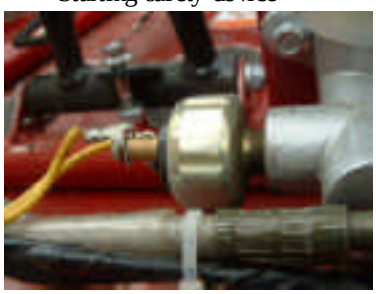
resistor

Ignition coil

2. Parts location

battery

Starting safety device



2. Parts location

CDI

Head lamp

Optional device

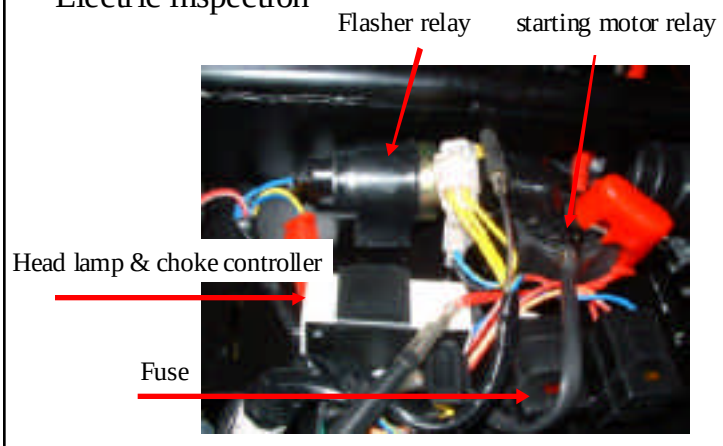
Reverse shifting safety device

Parking sensor

Electric inspection

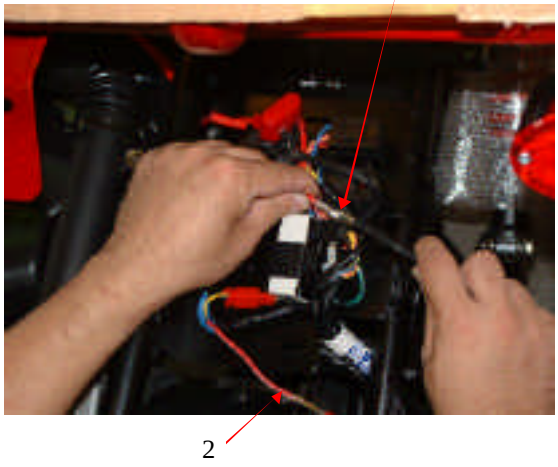
- Check the coupling, prevent losing connection of the terminals.
- Spray some anti-dust wax if necessary.

Electric inspection



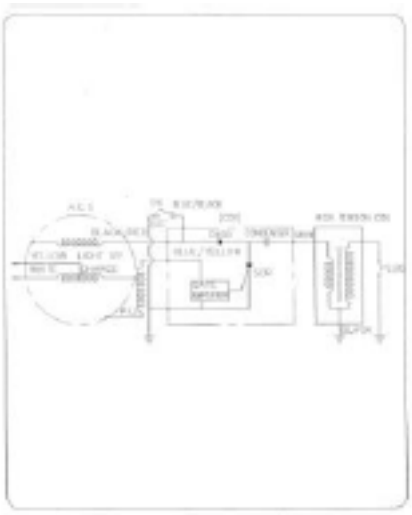
2. Charging Adjustment of BR150

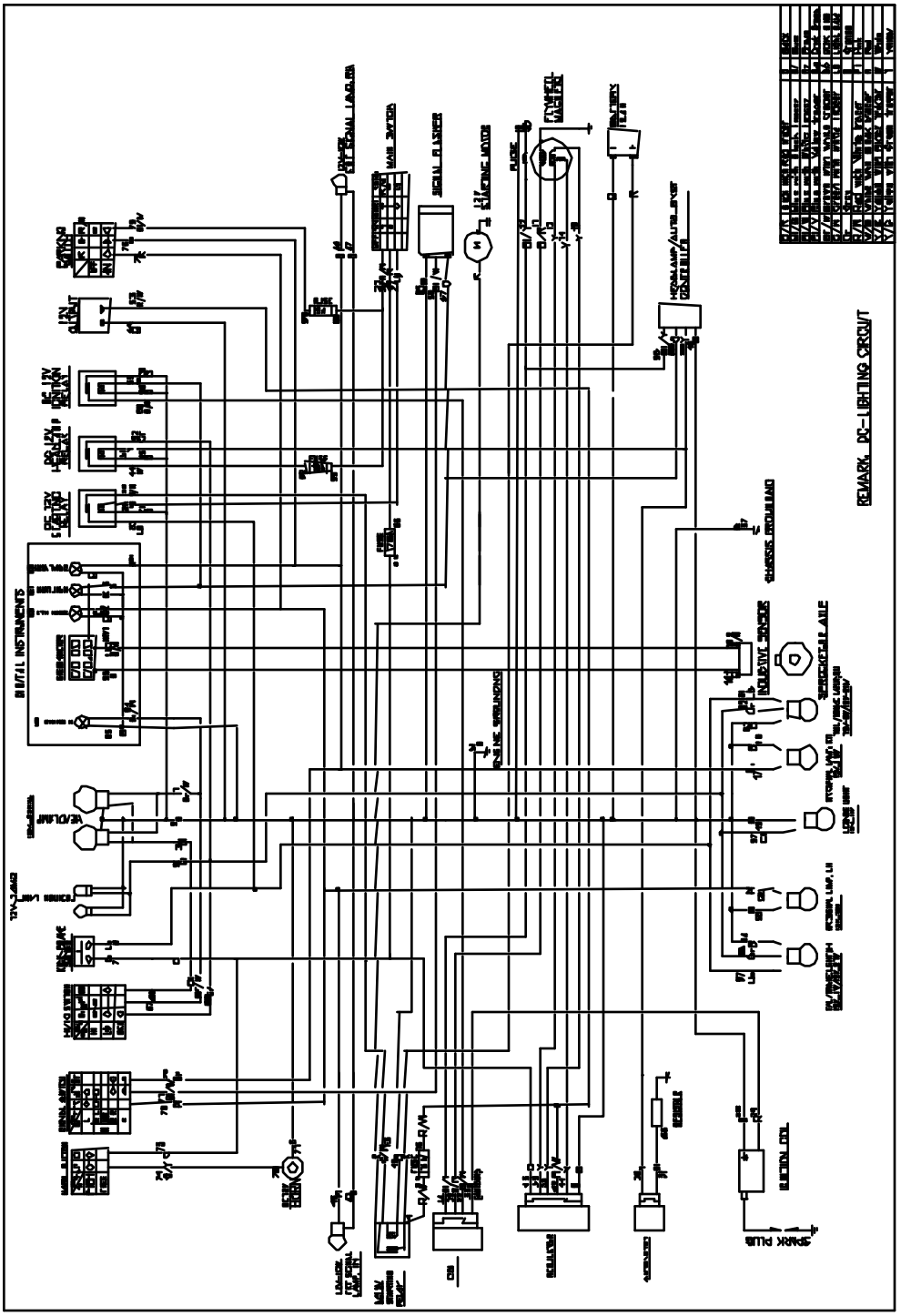
- Start the engine, keep in idle speed, turn on the headlamp.
- Disconnect the red/white wire .
- Use the pocket tester to measure the charging current as photo shown:
  1.Black (to battery).
  2.Red (to wire harness).
- Adjust the idle speed to 1600 to 1800 rpm, then the charging current shall be positive.



3. Ignition

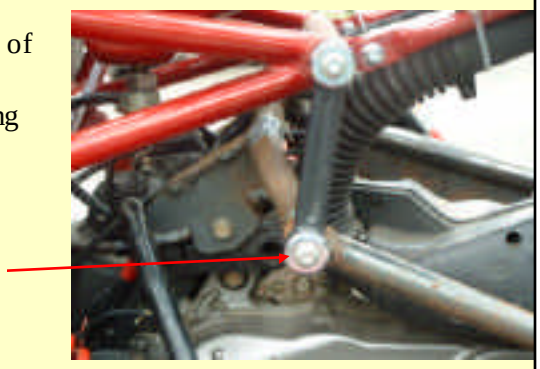
- Ignition wiring
- For CDI unit, you don’ t have to adjust the ignition timing




REMARK: DC-LIGHTING CIRCUIT

Engine Dismantle

- Loosen the bolt of connecting rod with upper swing arm.



Engine Dismantle

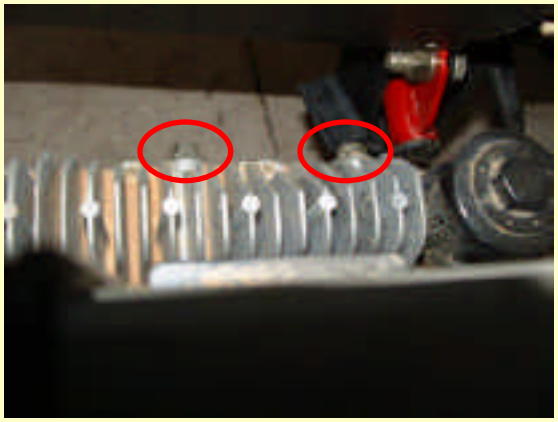
- Dismantle the nut
- Withdraw the engine from the upper swing arm.

Engine Dismantle

- Loosen the bolt of upper swing arm with the lower swing arm rear.

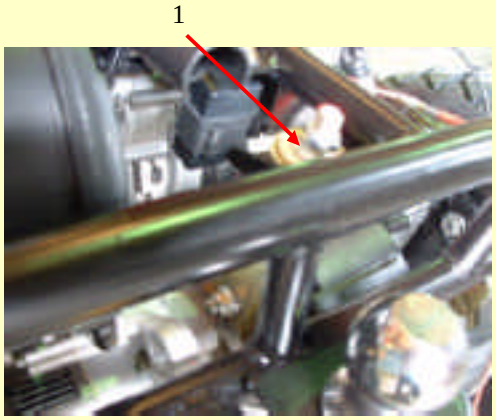
Engine Dismantle

- Loosen 2 bolts of oil cooler



OP of Replacing Rear Engine Hanger Collar for BR150

1. Loosen the lock nut.



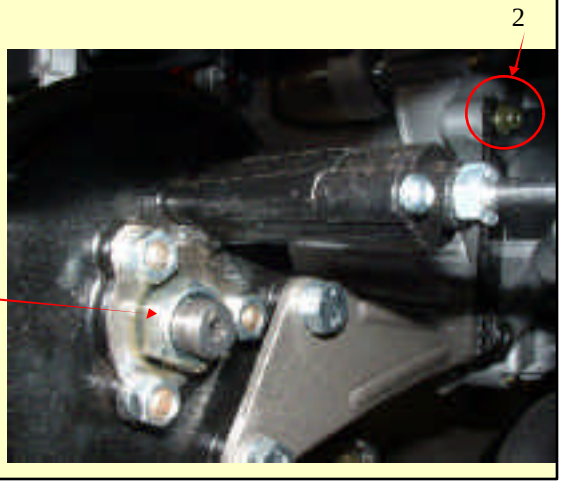
OP of Replacing Rear Engine Hanger Bush for BR150

2.Dismantle the bolt

3.Loosen the nut.

Lock torque is:

11.0 kg-m



Muffler DISASSEMBLY(1)

- Loosen 2 bolts of muffler with cylinder head

Muffler DISASSEMBLY(2)

- Loosen 1 hexagon bolt of muffler with LH cover
- Remove muffler

Air cleaner removal (1)

- Loosen 9 hexagon flange screws of LH cover
- Remove engine LH cover

Air cleaner removal (2)

- Outside end is sponge, clean it if necessary
- Inside end is paper element, replace it if necessary

MAGNETO DISASSEMBLY(1)

- Loosen 2 hexagon screws and 2 C-R recess pan hd. tapping screws
- Remove fan cover

MAGNETO DISASSEMBLY(2)

- Loosen 4 hexagon screws of cooling fan
- Remove cooling fan

MAGNETO DISASSEMBLY(3)

- Loosen nut of magneto
- When installing, tighten lock torque is 5.5 kg-m

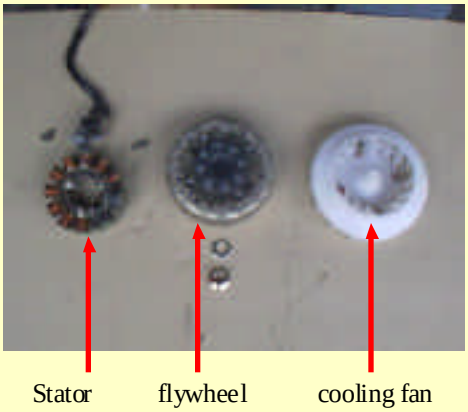
MAGNETO DISASSEMBLY(4)

- Pull out the magneto with special tool
- part no: **S620402G01A**

☆tool should be tighten lock

MAGNETO DISASSEMBLY(5)

- Loosen 3 hexagon screws of stator
- Remove stator



CYLINDER AND HEAD DISASSEMBLY(1)

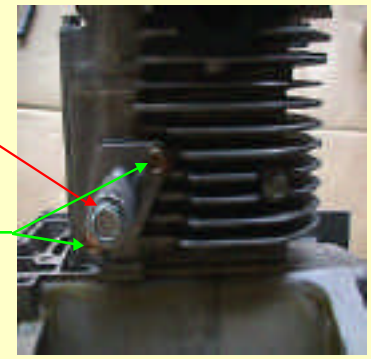
- Loosen 1 hexagon screw and 2 tapping screws of cooling cowl(2)
- Remove cooling cowl(2)

CYLINDER AND HEAD DISASSEMBLY(3)

- Loosen 4 hexagon screws of cylinder head cover
- Remove cylinder head cover assy.

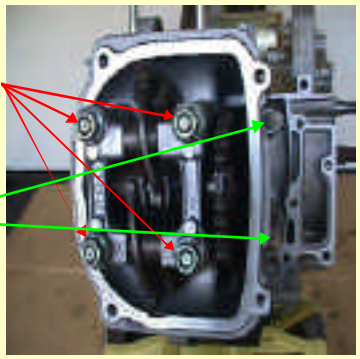
CYLINDER AND HEAD DISASSEMBLY(4)

- Loosen 1 hexagon screw of chain adjuster
- Loosen 2 hexagon screws fixed in cylinder
- Remove chain adjuster comp.



CYLINDER AND HEAD DISASSEMBLY(5)

- Loosen 4 nuts of camshaft holder
- Loosen 2 hexagon screw of cylinder head
- Remove camshaft holder、camshaft and cylinder head

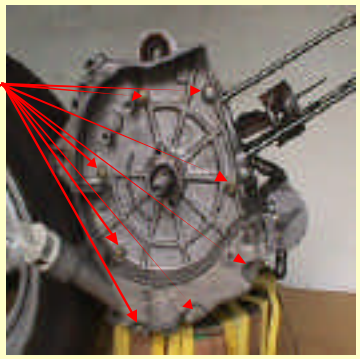


CYLINDER AND HEAD DISASSEMBLY(6)

- Remove cam chain guide comp.
- Remove cylinder and piston rings

ONE WAY CLUTCH DISASSEMBLY(1)

- Loosen 8 hexagon screws of RH crankcase cover
- Remove RH crankcase cover



CYLINDER AND HEAD DISASSEMBLY(2)

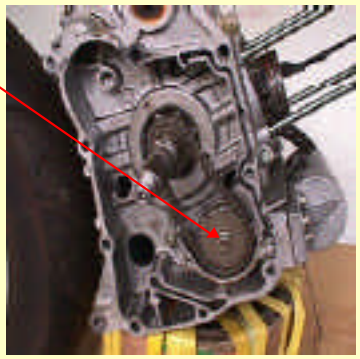
- Loosen nut of one way clutch with special tool (part no: S620401G015)
- Remove one way clutch comp and starting idle gear
- The nut is LH thread

OIL PUMP DISASSEMBLY(1)

- Loosen 2 C-R recess screws of oil separator
- Remove oil separator

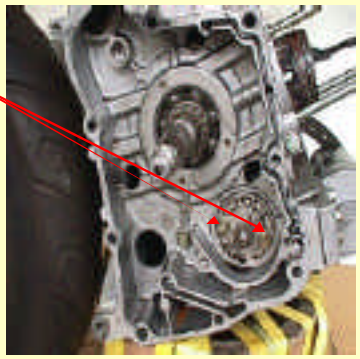
OIL PUMP DISASSEMBLY(2)

- Loosen nut of oil pump driving gear
- Remove oil pump driving gear and chain



OIL PUMP DISASSEMBLY(3)

- Loosen 2 hexagon screws of oil pump
- Remove oil pump



CRANKSHAFT DISASSEMBLY(1)

- Loosen 2 hexagon screws of RH crankcase
- Remove RH crankcase with plastic hammer

CRANKSHAFT DISASSEMBLY(2)

- Pull out crankshaft from LH crankcase
- Remove camshaft chain

CRANKSHAFT INSTALLATION(1)

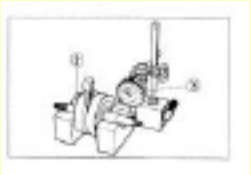
- Put camshaft chain in LH crankcase

CRANKSHAFT INSTALLATION(2)

- Assemble crankshaft in LH crankcase

Crankshaft inspection data:

ITEM	Standard value(mm)	Limit of use.(mm)
Clearance of connecting rod big end axle direction	0.10~0.35	0.55
Clearance of connecting rod big end vertical direction	-----	0.04
Swingness of the crank shaft journal.	0.03	0.10



CRANKSHAFT INSTALLATION(3)

- Assemble RH crankcase into crankshaft
- Tight 2 hexagon screws
- (torque is1.0kg-m)
- Replace the oil seal and packing.

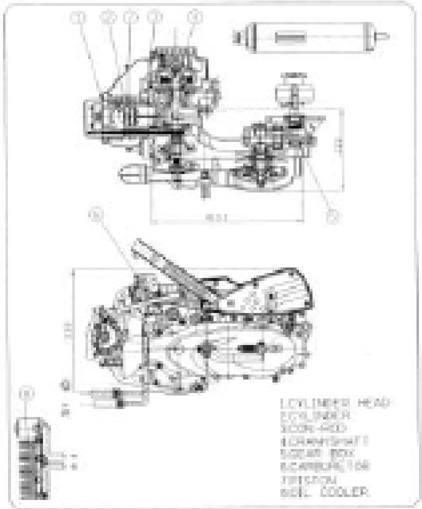
CRANKSHAFT INSTALLATION(4)

- To avoid the oil seal detected, shall assemble the oil seal after crankshaft is fixed in crankcase

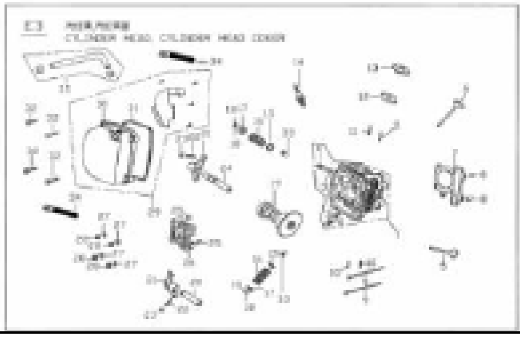
ERING

Engine inspection

- Engine layout



- Cylinder head & cover



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[illegible]	[illegible]	35 TUBE CYL. COMP.
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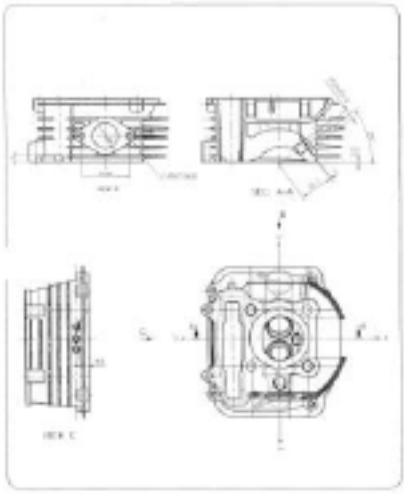
Engine inspection

- Cylinder head inspection
- Different view of cylinder head

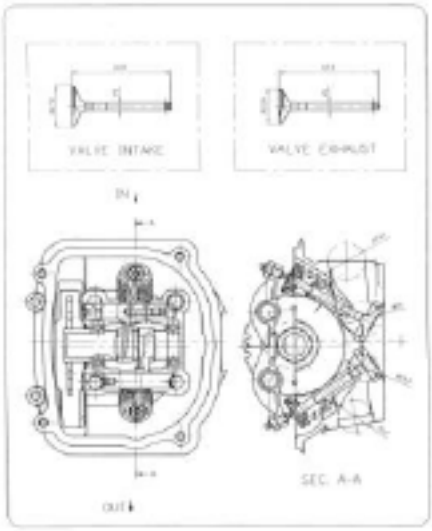


Cylinder head data:

Description	IN/EX	Standard (mm)	Limit use (mm)
Valve Clearance (Before warm up)	IN	0.08	–
	EX	0.08	
Compression pressure		11kg/700rpm	(BR150)
Height of the cam's convex part	IN	26.625	26.23
	EX	26.53	26.13
Inner diameter of rocker arm shaft	IN	10.00~10.015	10.10
	EX	10.00~10.015	10.10
Outer diameter of rocker arm shaft	IN	9.972~9.987	9.91
	EX	9.972~9.987	9.91
Valve base angle	IN&EX	1.0	1.8
Outer diameter of valve stem	IN	4.975~4.900	4.90
	EX	4.955~4.970	4.90
Inner diameter of valve guide	IN	5.000~5.012	5.30
	EX	5.000~5.012	5.30
Clearance between valve stem and Valve guide	IN	0.010~0.037	0.08

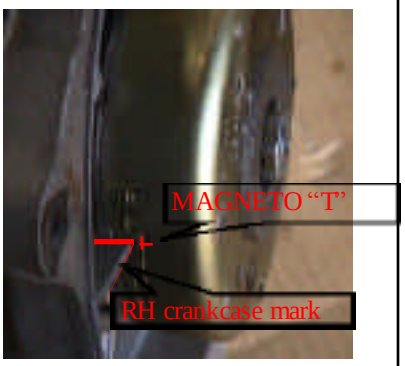
Engine inspection

- Valve train
- Valve clearance
- IN:0.08mm
- EX:0.08mm



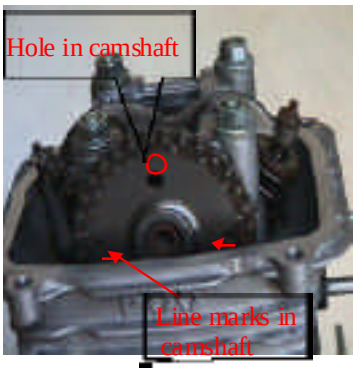
CYLINDER & CYLINDER HEAD INSTALLATION

- Installing camshaft, the valve timing shall be adjusted
- Rotate the magneto "T" make to RH crankcase allied position



CYLINDER & CYLINDER HEAD INSTALLATION

- Ensure 2 line marks of camshaft parallel to cylinder head （refer to photo）
- And the hole shall be in the top position （refer to photo）

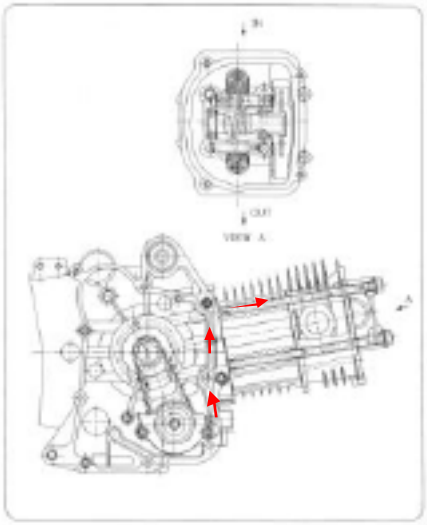


CYLINDER & CYLINDER HEAD INSTALLATION

- Installing camshaft holder，“EX” mark shall face to exhaust valve
- Tighten 4 nuts crossly, lock torque is 2.0 kg-m

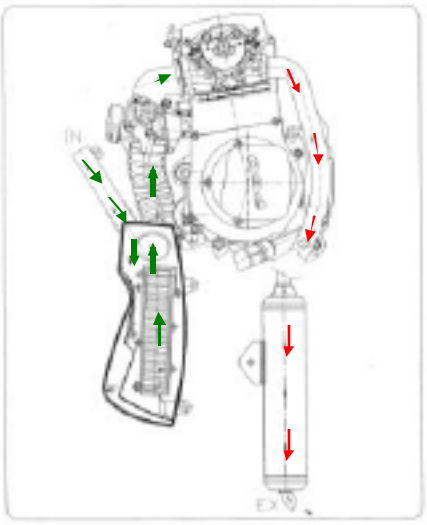
Engine inspection

- Oil lubricated System (by pump & splash)
- Make sure the oil path is through & clean.



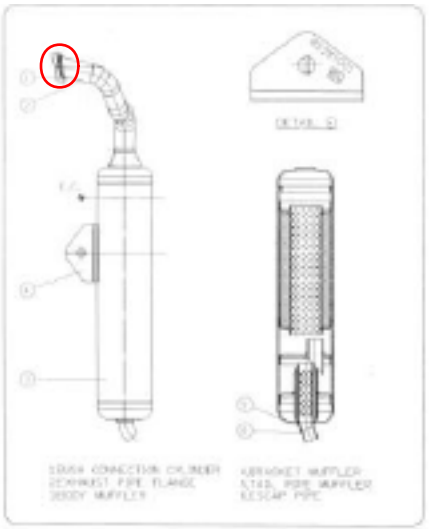
Engine inspection

- Intake & Exhaust system
- Inspect element per 1,000km, replace it if necessary.
- If the vehicle is often used in dusty area, decrease the inspection interval.



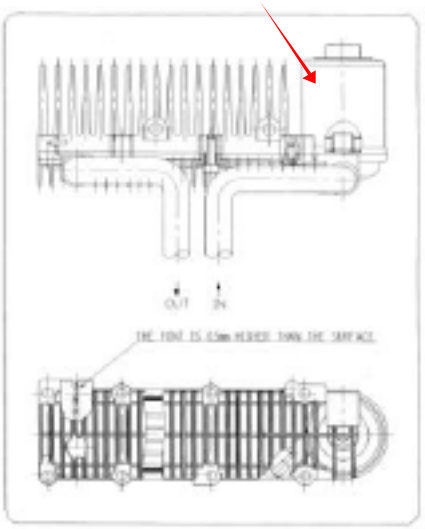
Engine inspection

- Exhaust muffler
- Make sure the flange #1 is well locked with the cylinder head to avoid leakage.
- Lock muffler at #4 with engine LH cover.



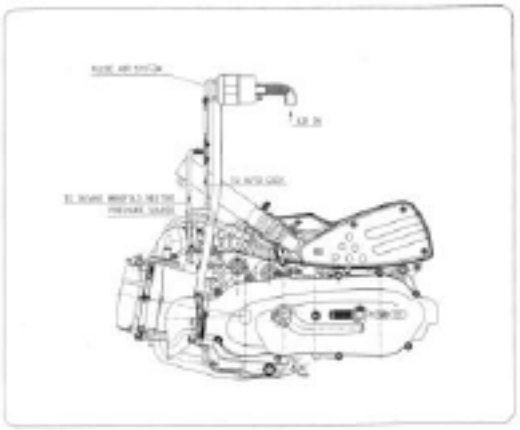
Engine inspection

- Engine oil cooler
- Always clean the cooling fin to increase the cooling efficiency.
- Replace the oil filter per 5,000 kms.
- Lock torque: 10 N-m
- Inspect the oil leakage.



Engine inspection

- Pulse air system
- Keep the air-in path clean.
- Keep the vacuum pipe well connected to intake manifold,
- Never jam the vacuum pipe.



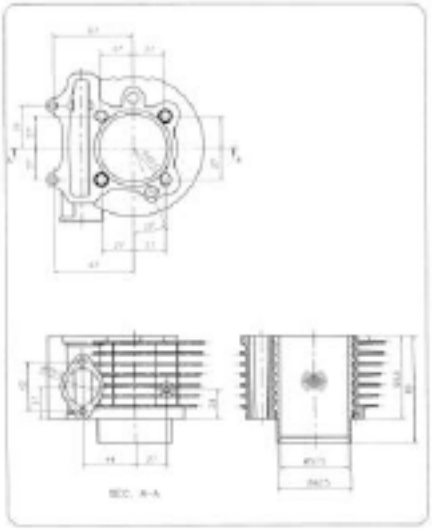
Cylinder & piston inspection data:

Part name /description			Standard (mm)	Limit (mm)
Cylinder thread	**flatness**			
Cylinder	**Bore**		57.490~57.510	57.600
	Curve		-	0.05
	Cylindrility		-	0.05
	Roundness		-	0.05
Piston/ Piston ring	**Clearance b/w Piston and** Piston ring	1st ring	0.10	
		2nd ring	0.10	
	Clearance of cutting section	1st ring	0.50	
		2nd ring	0.50	

	Piston outer diameter		57.475~57.490	57.400
	Measuring location of piston outer dia.		5mm from the lower end of skirt	
	Clearance b/w piston and cylinder		0.025~0.035	0.10
	Piston pin hole inner dia		15.006~15.012	15.030
Piston pin hole inner diameter			14.990~14.992	12.96
Piston pin outer diameter			0.020~0.017	0.025
Clearance between piston and piston pin			15.010~15.028	15.060
Connecting rod small end inner dia				

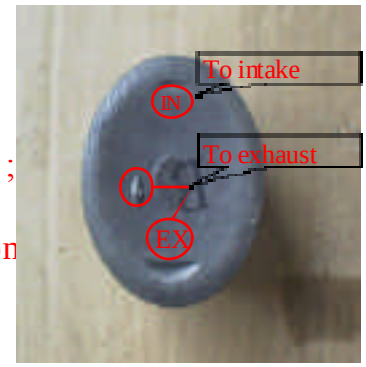
Engine inspection

- Cylinder



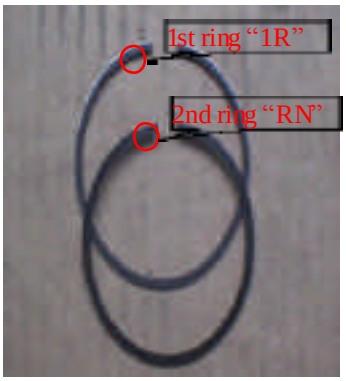
CYLINDER & CYLINDER HEAD INSTALLATION

- Notice the marks upon piston
- "IN" mark shall in the intake direction ; "EX" mark shall in the exhaust direction



CYLINDER & CYLINDER HEAD INSTALLATION

- Piston rings shall be installed according to marks
- 1st ring is marked "1R" ; 2nd ring is marked "RN"
- The marks shall face to piston head



CYLINDER & CYLINDER HEAD INSTALLATION

- The opening end of piston rings shall face to intake valve and allied to 120 degree
- And shall not allied to the piston pin

CVT TRANSMISSION DISASSEMBLY(1)

- Loosen 9 hexagon flange screws of LH cover
- Remove engine LH cover

CVT TRANSMISSION DISASSEMBLY(2)

- Loosen nuts of driving pulley and clutch outer
- When installing nuts, tighten torque is 5.5 kg-m

CVT TRANSMISSION DISASSEMBLY(3)

- Remove drive face, driving pulley assy., driven pulley assy., V-belt

CVT inspection data

Item	Standard value (mm)	Limit of use (mm)
The inner dia. Of slide driving plate	24.011~24.052	24.10
The outer dia. Of boss, movable Driving plate	23.960~23.974	23.940
Belt width	20.0~21.0	19.0
Clutch lining thickness	3	1.5
Clutch outer inner diameter	125.0~125.2	125.5
Driven plate spring, free length	151	127
The outer diameter of driven Plate sets	33.965~34.025	33.95
The inner diameter of slide Driven plate	34.000~34.025	34.06
The outer diameter of weight Roller set	17.920~18.080	17.40

CVT inspection data

Belt width

Roller dia.

Frt pulley dia

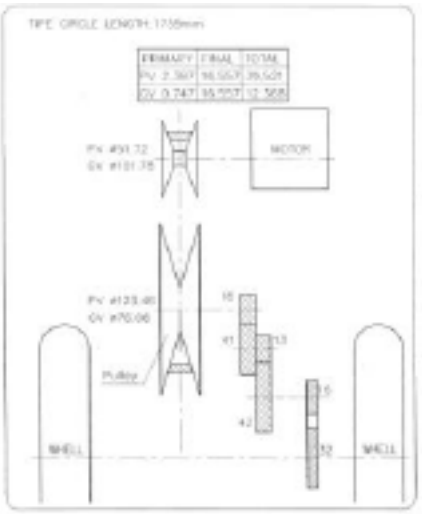
Lining thickness

Outer dia

Spring length

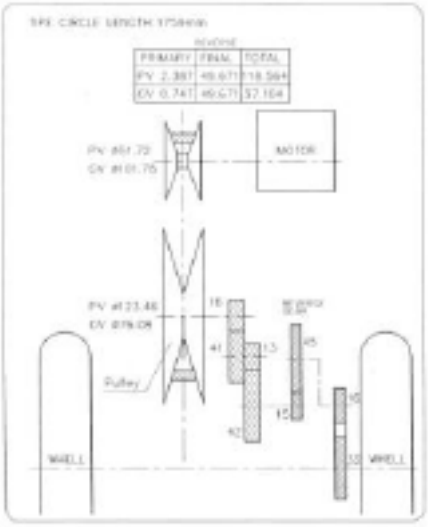
Engine inspection

- Transmission System
- Primary:CVT
- Final:reduction gear
- PV:CVT clutch-in
- GV:CVT top speed



Engine inspection

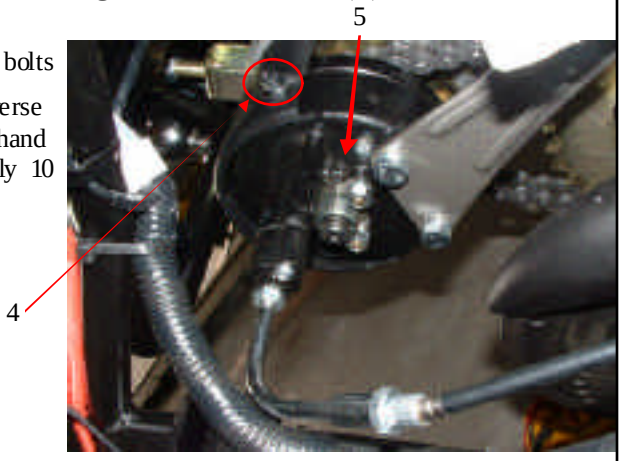
- Transmission System
- Reverse gear is engaged



Driving chain dismantle (1)

4.Dismantle 2 bolts

5.Push the reverse box to right hand approximately 10 mm.



Driving chain dismantle (2)

6.Dismantle the bolt(#16) & nut.(#10)

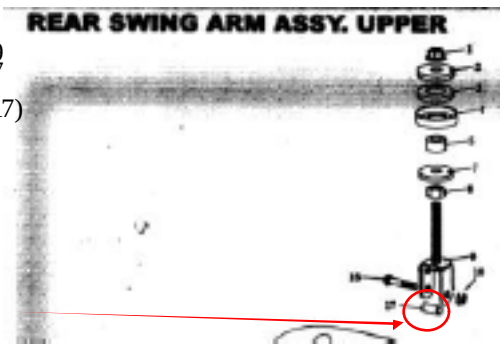
Lock torque is:

2.5 to 3.0 kg-m

And make sure part #9 can rotate in pivot #17

7.Replace the collar (#17)

8.Assemble the engine mount link by reverse step 1 to 6.

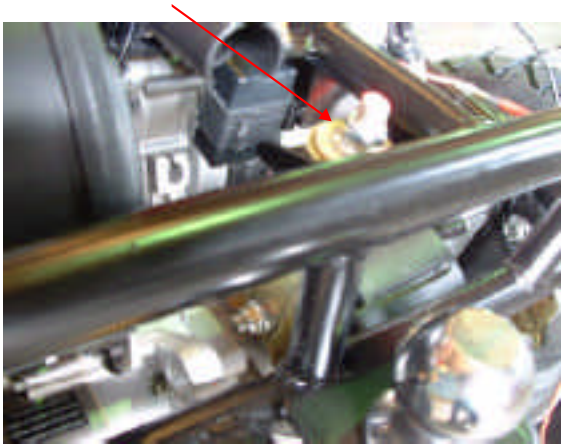


Driving chain dismantle (3)

And make sure part #9 can rotate in pivot #17

Driving chain dismantle (4)

9.Adjust the chain slack by this nut.



Driving chain dismantle (5)

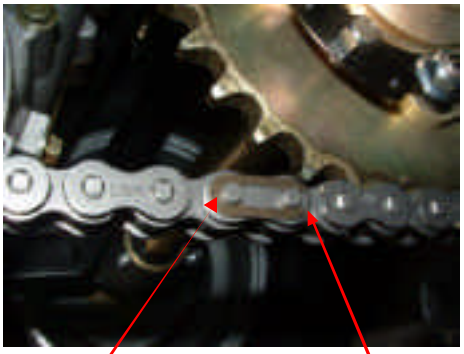
10

10. Lock the lower nuts by :

5.0 to 6.0 kg-m

Driving chain dismantle (6)

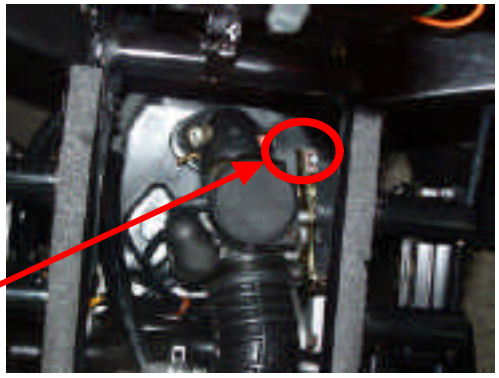
- When installing the lock pin of driving, keep the close end forward the Drive direction.



2.4 Carburetor dismantle & inspection:

1. dismantle

- Remove:- carburetor assembly, pipes, cables and wires
- Remove:- high-tension wire



2. adjustment

there are two screws might be adjusted to tuning the engine intake mixture.

- 1st is the stop screw: to adjust the engine idle speed, recommended idle speed is 1600 to 1800 rpm.

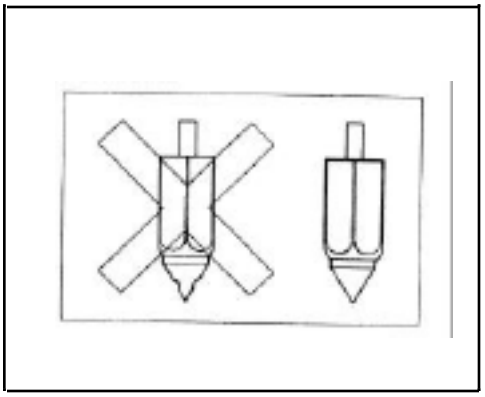
- 2nd is the air screw to adjust the air/fuel ratio.

3.Auto by-start function check

the carburetor is equipped with auto by-start to improve the engine cold start, it shall be warm after the engine has been starting for 5 minutes.

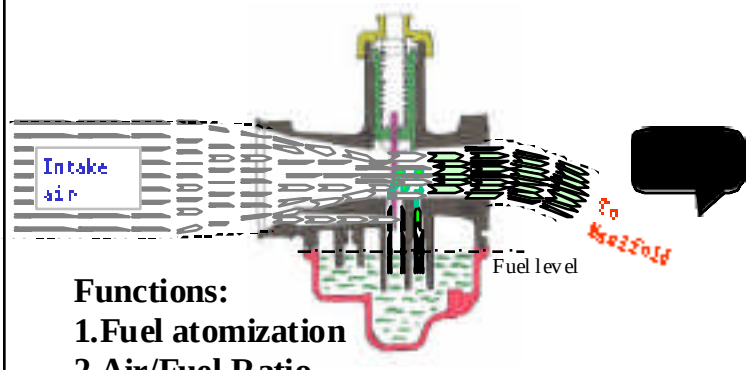
4. Float chamber function check

fuel level is controlled by float assembly, and stopped by valve set. Whenever there is any flooded fuel leaks, check if there is any dirty element or valve set is worn out.



5. Whenever the carburetor is exploded, be careful to install all the parts properly to the original sequence.

CARBURETOR PRINCIPLE



Functions:

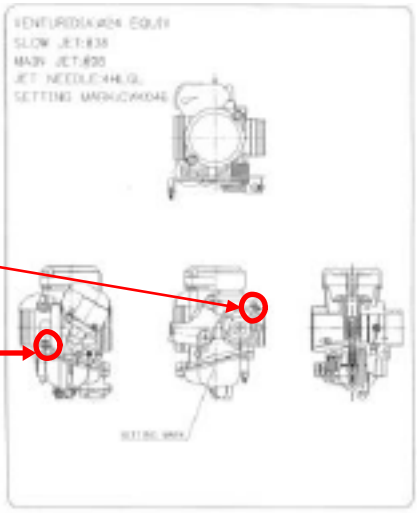
1.Fuel atomization

2.Air/Fuel Ratio

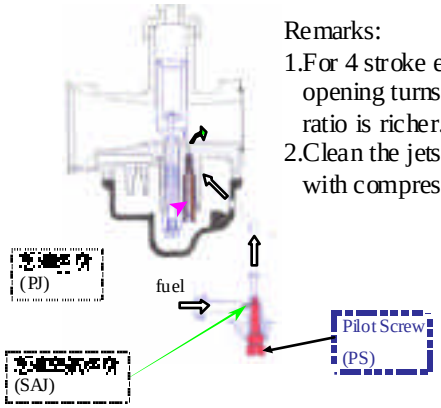
3.Engine Output

Engine inspection

- Carburetor Assembly
- Idle adjustment(stop screw) 1700±100rpm
- Pilot screw

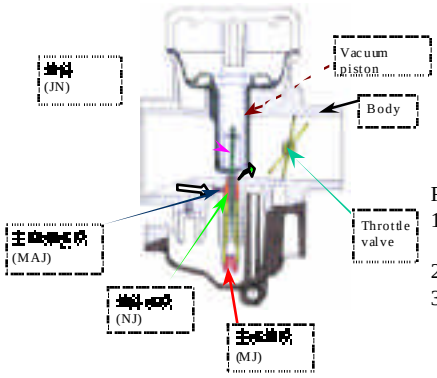


IDLE ADJUSTMENT

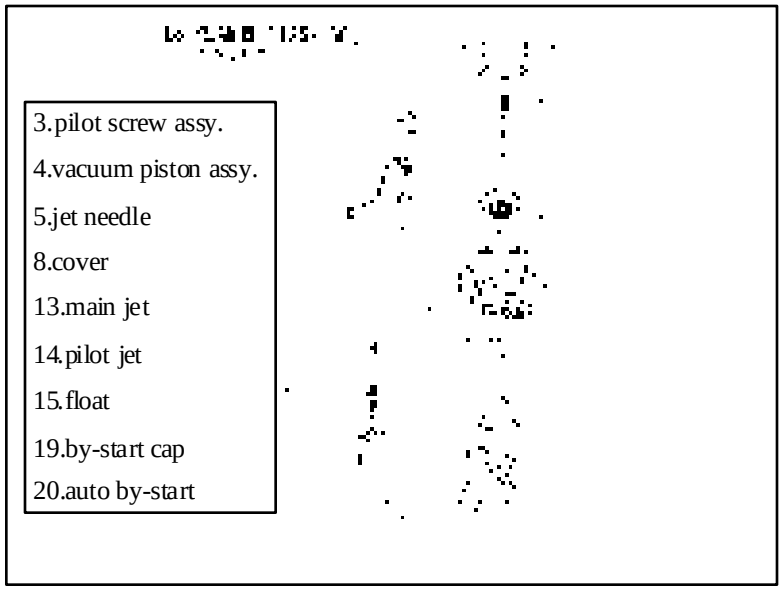


Remarks:
1.For 4 stroke engine,more opening turns of PS, A/F ratio is richer.
2.Clean the jets and body with compressed air.

MAIN SYSTEM



Remarks:
1.No leakage of vacuum piston comp with body.
2.Keep jets and paths clean.
3.Don't miss small parts like O-ring, spacer ..etc.


3.pilot screw assy.
4.vacuum piston assy.
5.jet needle
8.cover
13.main jet
14.pilot jet
15.float
19.by-start cap
20.auto by-start