

BAOTIAN ENGINE **BT139QMA**
BT139QMB

USER'S MANUAL

JIANGMEN SINO-HONGKONG BAOTIAN MOTORCYCLE INDUSTRIAL CO., LTD

CONTENTS

- I. NUMBER LOCATION**
- II. BASIC TECHNICAL SPECIFICATIONS**
- III. PRECAUTIONS IN DISASSEMBLING AND ASSEMBLING**
- IV. TIGHTENING TORQUE VALUE**
- V. MAINTENANCE INTERVAL**
- VI. STANDARD SPARE PARTS VALUE AND LIMIT OF USE**
- VII. SPARE PARTS INSPECTION ILLUSTRATION**
- VIII. ELECTRIC PARTS CONNECTION AND INSPECTION**
- IX. ENGINE OIL VOLUME INSPECTION**
- X. DIFFERENCES BETWEEN 25km/h AND 45km/h ENGINE**

PARTS FOR BT50QT、BT49QT MOTORCYCLE

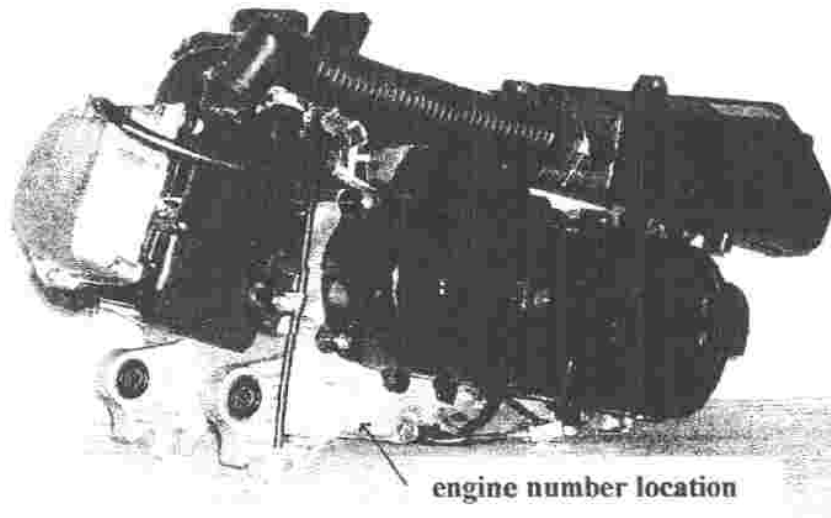
WORKING DIRECTIONS FOR BT139QMB ENGINE

BT139QMB oil engine is the power for BT50QT motorcycle. For your convenience to use it, we provide you with the following information of the engine:

CHAPTER ONE GENERAL INFORMATION

I. ENGINE NUMBER LOCATION

Engine number location is at the lower left front of left crankcase as illustrated in Figure 1:



(Figure 1)

II. BASIC TECHNICAL SPECIFICATIONS (See Table 1)

Table 1

Starting mode	Kick starting and electric starting
Type	Four strokes
Number of cylinders	Single
Type of combustion chamber	Hemispheric
Valve structure	O.H.C. chain transmission
Cylinder bore × travel (mm)	39×41.4
Total displacement (mL)	49
Compression ratio	10.5 : 1
Maximum power (Kw / r / win)	2.2 / 7500
Maximum torque Nim / r / min	2.9 / 7000

Valve on-off time	Intake (1mm) vertical	open	0° BTDC		
		closed	25° ABDC		
	Exhaust (1mm) vertical	open	33° ABDC		
		closed	2° BTDC		
Valve gap (Cold state) mm		intake	0.06		
		exhaust	0.08		
Idle speed (r/min)		1900			
Lubrication device	Lubrication mode		Both pressure and splash		
	Oil pump		Internal external rotors		
	Oil filter		strainer		
	Lubricant volume		Camshaft chamber	Volume	900ml
				Mark	SAE15W / 40
			Gear chamber	Volume	110ml
Mark				85W / 90	
Cooling mode		Forced air cooling			
Air filter		Sponge			
Carburetor	Type		Diaphragm carburetor		
	Plunger diameter(mm)		Φ 16		
	Venturi diameter(mm)		Φ 16.5		
	Throttle		Butterfly valve		
Ignition device	Type		CDI magneto ignition		
	Ignition time		13° (1700r / min) ~ 28° (3800r / min)		
	Breaker		Contactless		
	Spark plug		A7RTC, A7RC		
			CR7HSA (NGK)		
			CR6HSA (NGK)		
Spark plug gap		0.6 ~ 0.7			
Drive transmission	Clutch	type	Multiblock dry type		
	Transmission	type	Stepless		
		operation	Automatic centrifugal		
	Speed reducer	type	Two-stage reduction		
		Reduction ratio	First stage	3.25	
			Second stage	3.4	

III. PRECAUTIONS IN DISASSEMBLING AND ASSEMBLING

1. Paper pad, rubber seals such as O-ring, ring clip and elastic retainer must be replaced after disassembling.
2. When tightening bolts and nuts, tighten those of larger outside diameter before tightening those of smaller outside diameter; lock them in the order of diagonal lines at specified torques.
3. Use parts and greases produced by regular factories.
4. Special tools or universal tools must be used in disassembling or assembling.
5. After disassembling, parts must be inspected and cleaned and their friction faces lubricated before assembling.
6. The specified lubrication locations must be lubricated with specified lubricants.
7. After assembling parts, confirm the state of locking or movement.
8. When two people are at work, make sure that both are in safety in repair work.
9. When dismounting and mounting battery, the (-) terminal must be disconnected first.
10. When using an open end wrench, prevent slippage so as to prevent injury.
11. At the completion of work, confirm contacting points, fixing points and passages.
12. When connecting battery wires, connect the (+) terminal first.
13. At the completion of battery terminal connection, apply grease to both terminals.
14. When dismounting connectors, press down lock before pulling wire.
15. When pulling connectors, hold connectors in hand instead of pulling wires only.
16. Repair connectors when their terminals are bent, protruding or disconnected.
17. When connector terminals are rusty, rub off rust before connecting them.

IV. TIGHTENING TORQUE VALUE

STANDARD TORQUE VALUE

REFER TO STANDARD TORQUE VALUE. See Table 2.

Table 2

Designation	Tightening torque N.m
5mm bolt nut	4.5 ~ 6
6mm bolt nut	8 ~ 12
8mm bolt nut	18 ~ 20
10mm bolt nut	30 ~ 40
12mm bolt nut	40 ~ 50
5mm screw	3.5 ~ 5
6mm screw SH bolt	7 ~ 11
6mm flange bolt nut	11 ~ 14
8mm flange bolt nut	20 ~ 30
10mm flange bolt nut	35 ~ 45

TORQUE VALUES OF IMPORTANT PARTS OF ENGINE. See Table 3

Table 3

Serial number	Tightening part	Quantity	Screw diameter (mm)	Tightening torque N.m
1	Cylinder head bolt A	2	7	9
2	Cylinder head bolt B	2	7	9
3	Engine oil strainer cover	1	30	15
4	Exhaust pipe connector fixing bolt	2	6	9
5	Camshaft seat flange nut	4	7	16~18
6	Valve adjusting screw	2	5	9
7	Chain stretching plate bolt	1	6	10
8	Oil drain bolt	2	8	10~12
9	Clutch outer disc setscrew nut	1	10	40
10	Magneto rotor setscrew nut	1	10	40
11	Left crankshaft nut	1	12	55
12	Spark plug	1	10	12
13	Engine oil pump driven gear nut	1	6	10
14	Chain tensioner bolt: M 8 * 8	1	8	6
15	Rear transmission assembly bolt	7	8	20~22
16	Brake shoe fitting shaft nut	1	8	10
17	Cylinder head cover vent chamber cover screw	4	4	3~5

V. MAINTENANCE INTERVALS

Engine maintenance intervals are recorded in terms of mileage as is illustrated in Table 4.

I: Inspection: Effect cleaning, lubrication, replenishment, modification or replacement when necessary;

A: Adjustment; C: Cleaning; R: Replacement; T: Tightening

Table 4

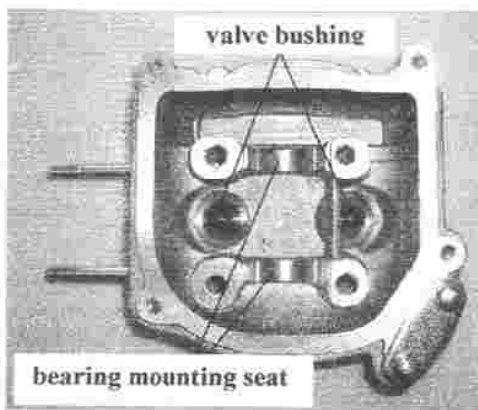
Items	Times Note	Mileage Km											
		1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
Engine Oil		New vehicle R300	R		R		R		R		R		R
Engine Oil filter					C				C				
Gear Oil	Note 3	New vehicle R300				R					R		
Valve gap			A		A				A				A
Carburetor					I				I				C
Air filter	Notes 2, 3	I				C(R)					C (R)		
Spark plug				C(R)			C(R)			C(R)			C(R)
Drive belt									I				
Bolts and nuts									I				
Notes	<ol style="list-style-type: none"> 1. Please repeat maintenance in case mileage exceeds the specified ranges in the table. 2. Inspection and replacement should be effected in advance in dusty or rainy conditions. 3. Please shorten replacement intervals in heavy-load, long riding or rainy conditions. 												

VI. STANDARD SPARE PARTS VALUE AND LIMIT OF USE

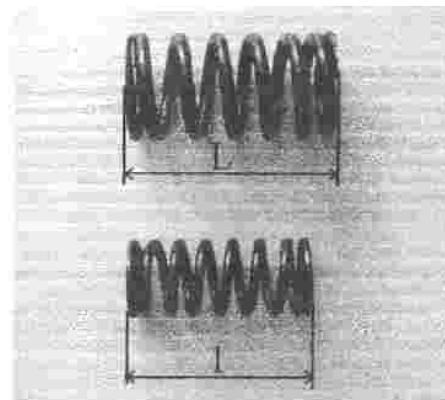
Items Serial No.	Name of spare parts	Standard value (mm)	Limit of use (mm)	Measuring tool or equipment
1	Cylinder head valve tube inner hole	5.0 ~ 5.012	5.03	Air gauge or outside micrometer
2	Intake valve diameter	4.975 ~ 4.99	4.92	Outside micrometer
3	Exhaust valve diameter	4.955 ~ 4.97	4.90	Outside micrometer
4	Swing arm shaft hole	10.0 ~ 10.022	10.1	Inside micrometer
5	Swing arm shaft	9.987 ~ 9.972	9.91	Inside micrometer
6	Cam height			
6.1	Intake	25.745 ± 0.03	25.345	Outside micrometer
6.2	Exhaust	25.55 ± 0.03	25.15	Outside micrometer
7	Height of inner valve spring	30.5 ± 0.2	28.5	Square calliper
8	Height of outer valve spring	34.1 ± 0.2	32	Squar calliper
9	Intake valve gap	0.06		Clearance gauge
10	Exhaust valve gap	0.08		Clearance gauge
11	Spark plug gap	0.6 ~ 0.7		Clearance gauge
12	Cylinder inside diameter	39.0 ~ 39.01	39.1	Air gauge or outside micrometer
13	Piston skirt	38.99 ~ 38.97	38.93	Outside micrometer
14	Piston pin hole	13.002 ~ 13.008	13.04	Inside micrometer
15	Outside diameter of piston pin	12.992 ~ 12.998	12.97	Outside micrometer
16	First piston ring gap	0.08 ~ 0.20	0.5	Clearance gauge
17	Second piston ring gap	0.05 ~ 0.20	0.5	Clearance gauge
18	Outside diameter of centrifugal roller	16 ± 0.08	15.5	Outside micrometer
19	Hole diameter of right part of driven gear	20.009 ~ 20.027	20.06	Inside micrometer

20	Outside diameter of driven gear bush	19.995 ~ 19.98	19.94	Outside micrometer
21	Driver belt face		notch 0.4	Depth square calliper
22	Inner diameter of outer clutch assy	107 ~ 107.2	107.5	Square calliper
23	Thickness of friction disk of centrifugal block		2	Square calliper
24	Friction face of driven gear belt		notch 0.4	Depth square calliper
25	V-belt width	18 (17.5)	16	Square calliper

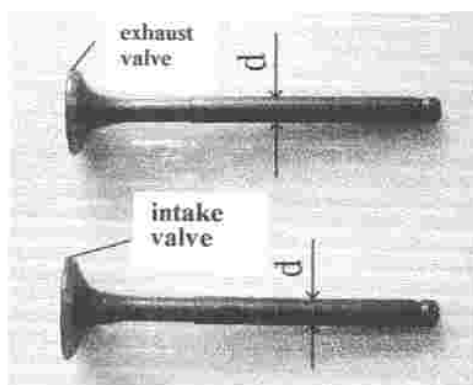
VII. SAPRE PARTS INSPECTION ILLUSTRATION



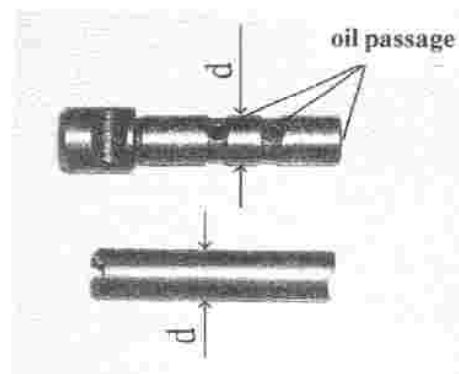
VALVE BUSHING



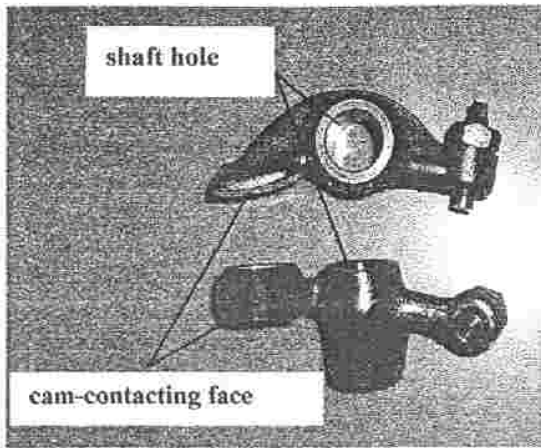
**VALVE OUTER SPRING (UPPER)
VALVE INNER SPRING (LOWER)**



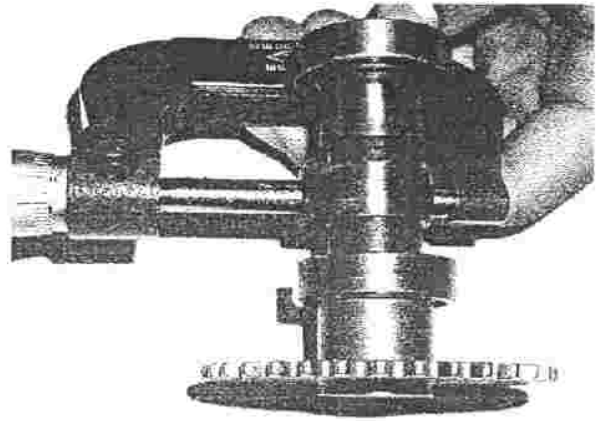
EXHAUST VALVE, INTAKE VALVE



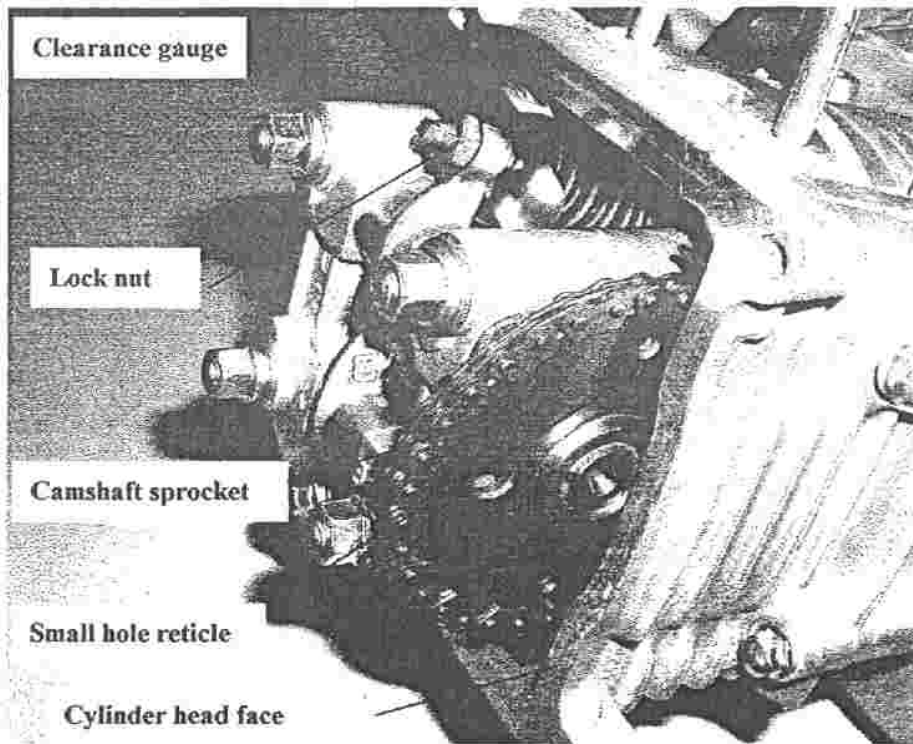
SWING ARM SHAFT



SWING ARM



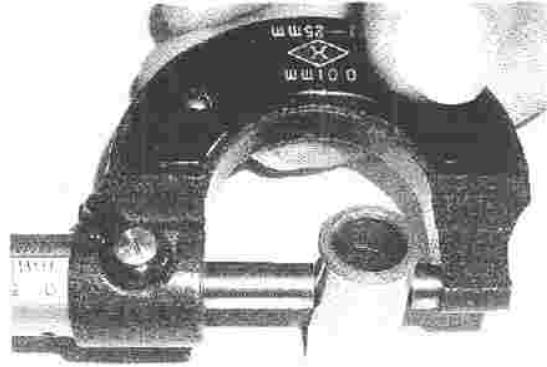
CAMSHAFT ASSY



CHECK VALVE GAP WITH CLEARANCE GAUGE



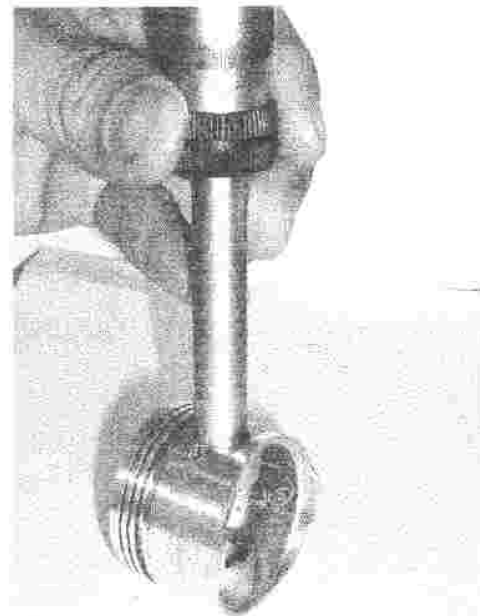
PISTON SKIRT



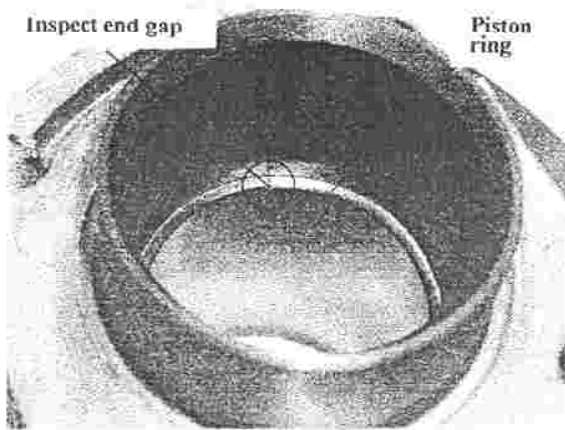
PISTON PIN



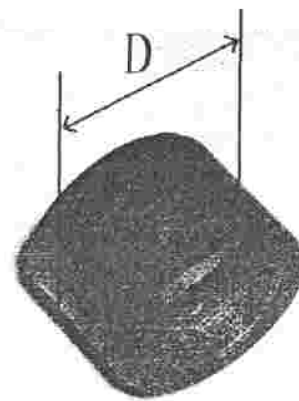
CYLINDER INSIDE DIAMETER



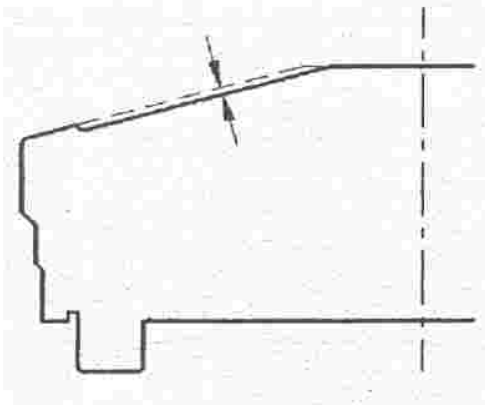
PISTON PIN HOLE



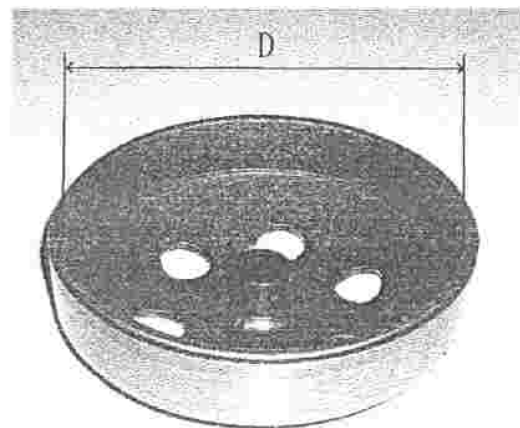
PISTON RING END GAP



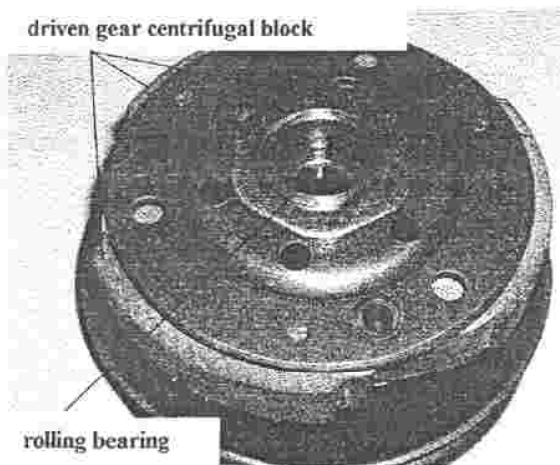
CENTRIFUGAL ROLLER



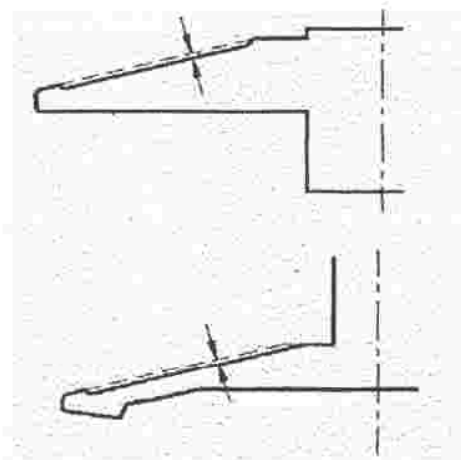
**RIGHT PART OF DRIVEN GEAR
(NOTCH)**



OUTER CLUTCH ASSY

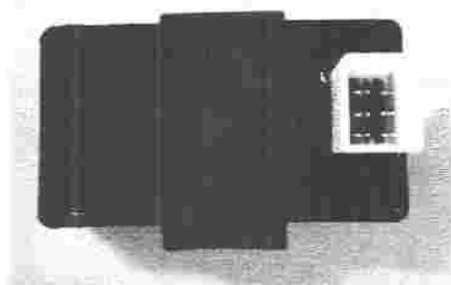


DRIVEN GEAR CENTRIFUGAL FRICTION PAD



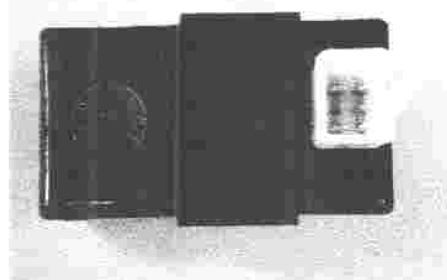
**DRIVEN PULLEY
(NOTCH)**

VIII. ELECTRIC PARTS CONNECTION AND INSPECTION



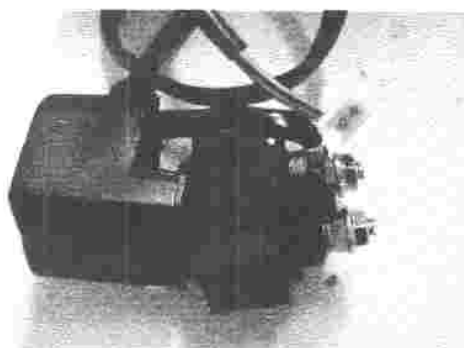
(25 km/h IGNITER)

Igniter		
Colour of wires		
blue/white	black/yellow	black/white
green	green	black/red
Minimum continuous ignition rotational speed	$\leq 380\text{r/min}$	
Range of speed of rotation	380 ~ 11000r/min	
Initial rotational speed of angle increase	$1700 \pm 200\text{r/min}$ $13^{\circ} \pm 0^{\circ}$	
Terminal rotational speed of angle increase	$3600 \pm 200\text{r/min}$ $26^{\circ} \pm 2^{\circ}$	



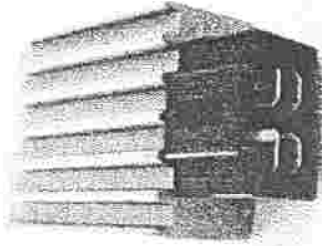
(45km/h IGNITER)

Igniter		
Colour of wires		
blue/yellow	black/green	black/white
green		black/red
Minimum continuous ignition rotational speed	$\leq 380\text{r/min}$	
Range of speed of rotation	380 ~ 11000r/min	
Initial rotational speed of angle increase	$1700 \pm 200\text{r/min}$ $13^{\circ} \pm 0^{\circ}$	
Terminal rotational speed of angle increase	$3600 \pm 200\text{r/min}$ $26^{\circ} \pm 2^{\circ}$	



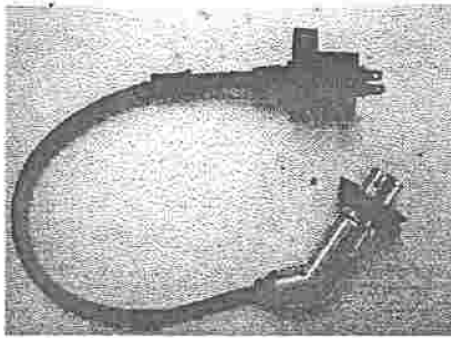
STARTING RELAY

Starting Relay	
Colour of wires	
green/yellow	yellow/red
Working Voltage	DC 12V
Load current	$\geq 100\text{A}$
Sealing voltage	$\leq 8\text{A}$
Release voltage	$\leq 4\text{A}$



RECTIFIER

Rectifier		
Colour of wires		
pink	black	green
red		yellow
Performance of electric parts	Charging voltage: $14.5 \pm 0.5V$; with 47W load voltage, tested output voltage: $13.0 \pm 0.5V$, insulation resistance of input voltage terminal against cover: $\geq 10M\Omega$ (DC250V earthometer)	

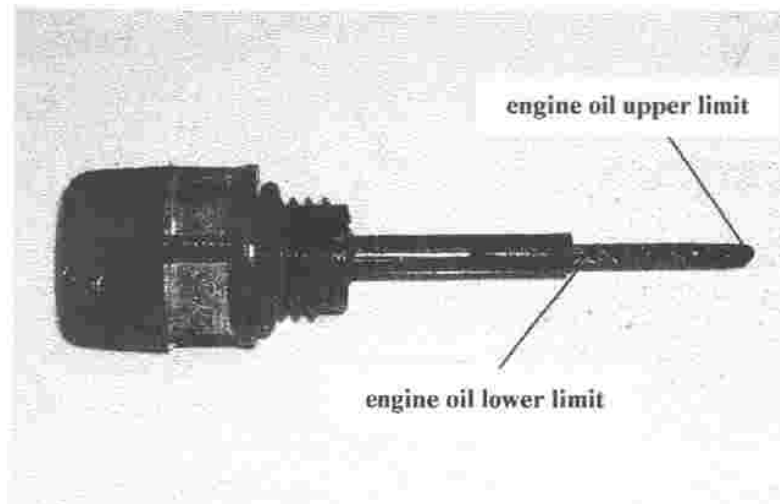


HIGH VOLTAGE CAPACITOR

High Voltage Capacitor	
Colour of wires	
black	green
Minimum continuous ignition rotational speed	Distance of three needles: 6mm; Running time $\geq 20s$, $\leq 380r/min$
Minimum to maximum continuous ignition rotational speed	Distance of three needles: 6mm; Running time $\geq 20s$, 380 ~ 10000r / min

IX. ENGINE OIL QUANTITY INSPECTION

The oil engine must be added with a certain amount of specified engine oil and the oil must be replaced periodically. When inspecting engine oil quantity, motorcycle must be placed on a level ground. Inspect engine quantity when engine has run for 2-3 minutes and motorcycle has run for 2-3 minutes. Measure engine oil quantity with oil depth gage. When oil level is below the lower limit position, add specified oil to bring oil level to the upper. (Figure)



X. DIFFERENCES BETWEEN 25km/h AND 45km/h ENGINE PARTS FOR BT50QT, BT49QT MOTORCYCLE

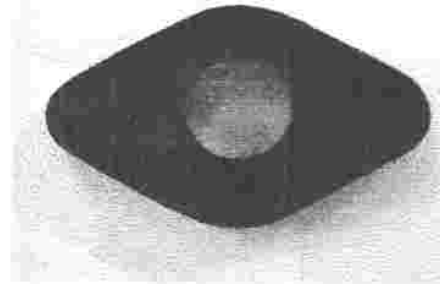
The structure and principle of 25km/h and 45km/h engine for BT50QT and BT49QT are of the same, with only the following five different parts:

1. Carburetor heat-protecting pad;
2. Inlet tube in air cleaner;
3. Electronic igniter;
4. Carburetor;
5. Bushing ring between the left and right part of the driven gear.

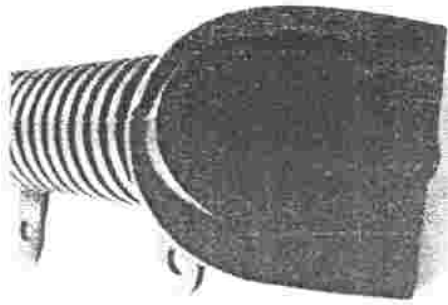
Figures:



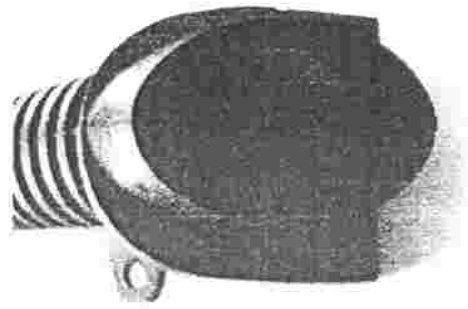
(25km/h heat-protection pad)



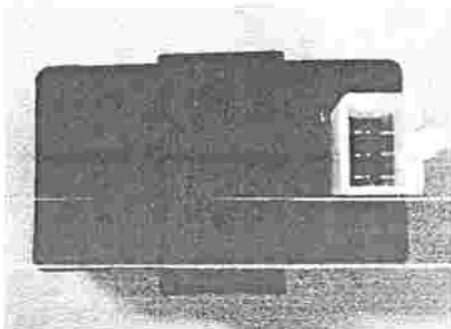
(45km/h heat-protection pad)



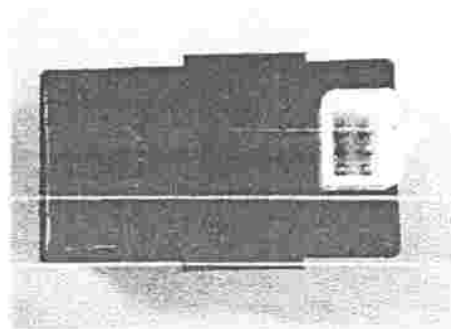
(25km/h inlet tube)



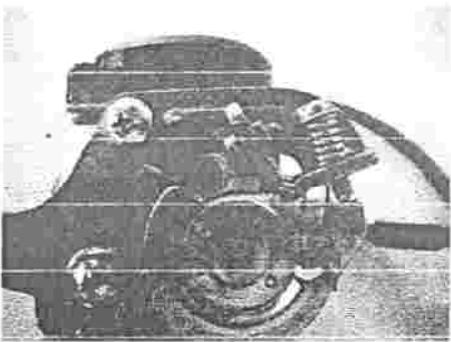
(45km/h inlet tube)



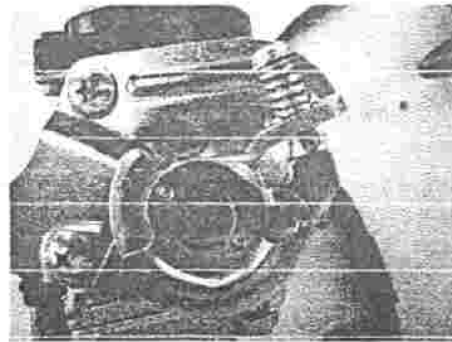
(25km/h igniter)



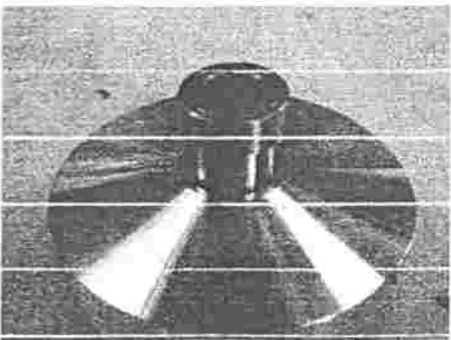
(45km/h igniter)



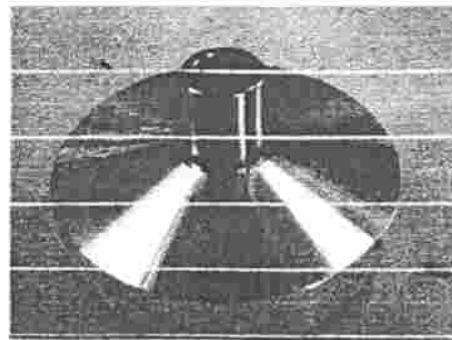
(25km/h carburetor)



(45km/h carburetor)



(25km/h left part of driven gear)



(45km/h left part of driven gear)