YAMAHA

DT250E
DT400E

Supplementary Service Manual

Includes DT250D/400D Service Manual changes and new material

LIT-11616-00-74

1M1-28197-11

FOREWORD

This Supplementary Service Manual for DT250E/400E has been published to supplement the Service Manual for the DT250D/400D P/No. (1MI-28197-10) and includes changes in specifications and addition to the data.
For complete information on service procedures, it is necessary to use this Supplementary Service Manual together with the Service Manual for the DT250D/400D (P/NO IMI-28197-10)

YAMAHA DT250E/400E
SUPPLEMENTARY SERVICE MANUAL
1st EDITION, April 1977
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MOTOR COMPANY LTD., JAPAN
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NOTICE

This manual has been written by Yamaha Motor Company for use by Authorized Yamaha Dealers and their qualified mechanics. In light of this purpose it has been assumed that certain basic mechanical precepts and procedures inherent to basic knowledge, repairs or service to this model may render the machine unsafe, and for this reason we must advise that all repairs and/or service by performed by an Authorized Yamaha Dealer who is in possession of the requisite basic product knowledge.
The Research, Engineering and overseas Service Department of Yamaha are continually striving to further improve all models manufactured by the company. Modifications are therefore inevitable and significant changes in specifications or procedures will be forwarded to all Authorized Yamaha Dealers and will, where applicable, appear in future editions of this manual.

Particularly important information is distinguished in this manual by the following notations:

NOTE: A NOTE provides key information to make procedures easier or clearer.

CAUTION: A CAUTION indicates special procedures that must be followed to avoid damage to the machine.

WARNING: A WARNING indicates special procedures that must be followed to avoid injury to a machine operator or person inspecting or repairing the machine.

SERVICE DEPT.
INTERNATIONAL DIVISION
YAMAHA MOTOR CO., LTD.

Page numbers shown in brackets correspond to page numbers of the DT250D/DT400D Service Manual.

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2-2 ENGINE

A. Carburetor

1. Idle mixture and idle speed adjustment

a. Fully warm up the engine and turn the pilot air screw in until lightly seated.
b. Back out pilot air acrew as specified.
c. Turn the idle speed adjust screw until idle is at desired rpm.
d. Turn the pilot air screw in or out until speed is at highest rpm.
e. Turn the idle speed adjust screw in or out until idle speed is at specified rpm.

	DT250E	DT400E
Pilot air screw (Turns out)	2.0	1½
Idle speed (rpm)	1200 - 1300	1300 - 1400

2. Throttle cable

d. The play in turning direction should be 5 – 8 mm (0.20 – 0.31 in) at grip flange. After adjusting, be sure to tighten the lock nut properly.

B. Air Filter

1. Cleaning method

Clean the element with solvent. After cleaning, remove the remaining solvent by squeezing the foam rubber and let dry. Then apply 30 wt motor oil. Foam should but not dripping. Coat the sealing edges with light grease.

2. The air filter element should be cleaned once a month or every 3,200 km (2,000 miles). It should be cleaned more often if the machine is operated in extremely dusty areas.

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C. Autolube pump

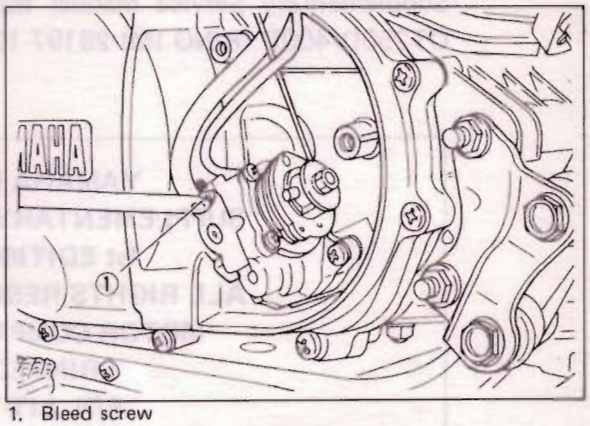
1. Air bleeding

The Autolube Pump and delivery lines must be bled on the following occasions:

- Setting up a new machine out of the crate.
- Whenever the Autolube tank has run dry.
- Whenever any portion of the Autolube system is disconnected.

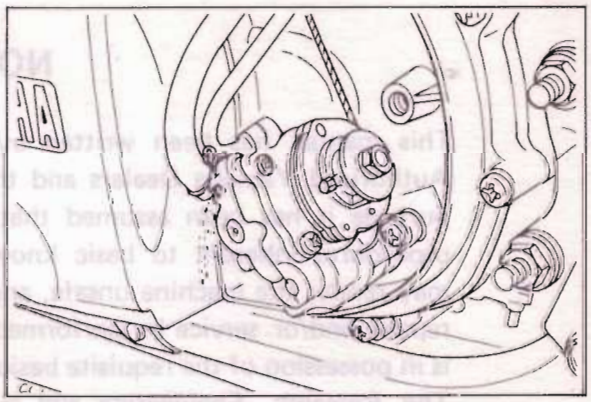
a. Bleeding the pump case and/or oil pipe

1) Remove the pump cover and remove the the bleed screw.



1. Bleed screw

2) Keep the oil running out until air bubbles disappear.

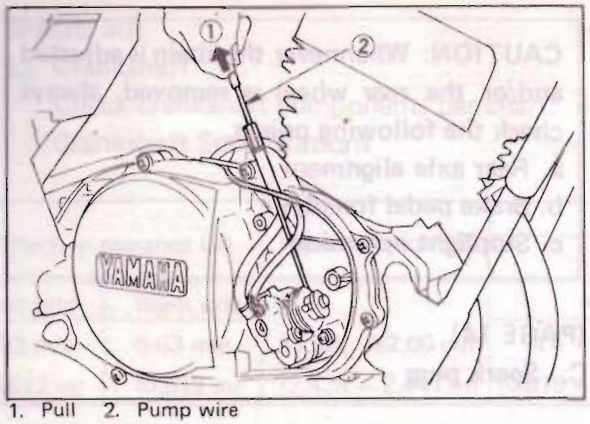


3) When air bubbles are expelled completely, tighten the bleed screw and install the pump cover.

NOTE:
Check the bleed screw gasket, and if damaged, replace with a new one.

b. Bleeding the pump distributor and/or delivery pipe

1) Start the engine.
2) Pull the pump wire all the way out to set the pump stroke to a maximum.



1. Pull 2. Pump wire

NOTE:

It is difficult to bleed the distributor completely with the pump stroke at a minimum, and therefore the pump stroke should be set to a maximum.

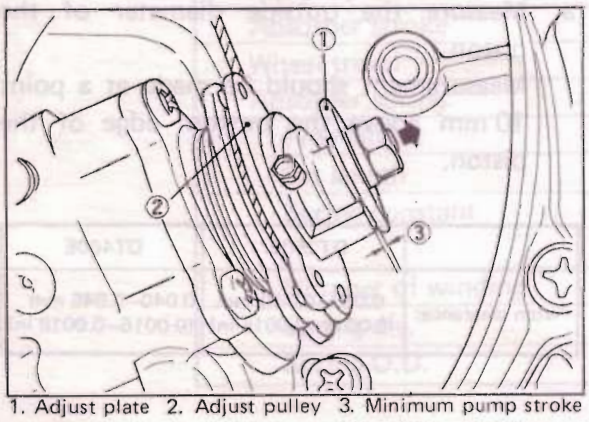
3) Keep the engine running at about 2,000 rpm for two minutes or so, and both distributor and delivery pipe can be completely bled.

2. Minimum pump stroke check and adjustment

Normally the checking and adjustment of the pump stroke *are not required, but if any* sign of trouble resulting from an incorrect minimum pump stroke is noticed (e.g., excessive engine oil consumption or engine seizure), proceed as follows:

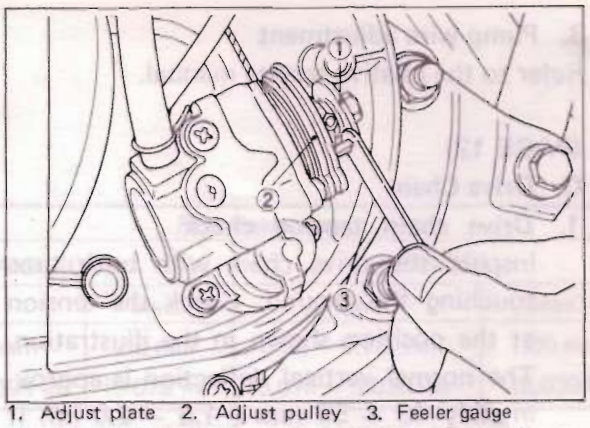
a. Remove the pump cover and start the engine.

b. While running the engine idle, observe the pump adjust plate carefully, and stop the engine the moment that the adjust plate moves out to the limit.



1. Adjust plate 2. Adjust pulley 3. Minimum pump stroke

c. Measure the gap with the thickness gauge between the raised boss on the pump adjust pulley and the adjust plate.



1. Adjust plate 2. Adjust pulley 3. Feeler gauge

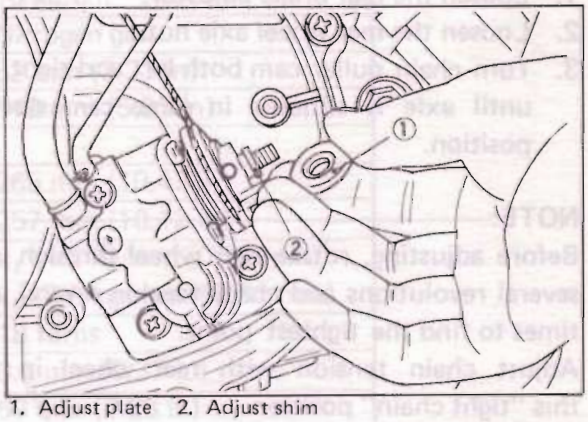
d. Repeat steps b and c above a few times. When the gap measured is the largest, the pump stroke is considered to be a minimum.

NOTE:

When inserting the thickness gauge between the adjusting plate and the adjusting pulley, be careful so that either the plate or the pulley is not moved. In other words,do not force the thickness gauge into the gap.

Minimum pump stroke: 0.25-0.30 mm (0.010-0.012 in)
Maximum pump stroke: 1.85-2.05 mm (0.073-0.081 in)

e. If clearance is not correct, remove the adjust plate lock nut and the adjust plate.



1. Adjust plate 2. Adjust shim

f. Remove or add an adjust shim as required.

g. Reinstall adjust plate and lock nut. Tighten the lock nut. Re-measure gap. Repeat procedure as required.

3. **Pump wire adjustment**

Refer to the relative service manual.

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C. **Drive Chain**

1. **Drive chain tension check**

Inspect the drive chain with both tires touching the ground. Check the tension at the position shown in the illustration. The normal vertical deflection is approximately 40 – 50 mm (1.6 – 2.0 in). If the deflection exceeds 50 mm (2.0 in) adjust the chain tension.

NOTE:

Tension inspection and adjustment should be made with the tensioner in the relaxed position.



2. **Drive chain tension adjustment**

1. Loosen the rear brake adjustor.
2. Loosen the rear wheel axle nut.
3. Turn chain puller cam both left and right, until axle is situated in same cam slot position.

NOTE:

Before adjusting, rotate rear wheel through several revolutions and check tension several times to find the tightest point.

Adjust chain tension with rear wheel in this "tight chain" position.

4. Tighten the rear axle nut.

CAUTION: Whennever the chain is adjusted and/or the rear wheel is removed, always check the following points.

a. Rear axle alignment

b. Brake pedal freeplay

c. Stoplight operation

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C. **Spark plug**

Spark plug type:
NGK B-8ES, or Champion N-2

Plug gap:
0.7-0.8 mm (0.028-0.0031 in)

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E. **Headlight**

2. Replacing the headlight bulb

Delete the photo in this section.

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B. **Cylinder/E. Piston**

	DT250E	DT400E
Cylinder bore	70.00–70.02 mm	85.00–85.02 mm
Max.	70.1 mm	85.1 mm
Cylinder taper Max.	0.08 mm	0.08 mm

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E. **Piston**

5. Wash piston in solvent and wipe dry.

a. Measure the outside diameter of the piston.

Measurement should be made at a point 10 mm above the bottom edge of the piston.

	DT250E	DT400E
Piston clearance:	0.035–0.040 mm (0.0014–0.0016 in)	0.040–0.045 mm (0.0016–0.0018 in)

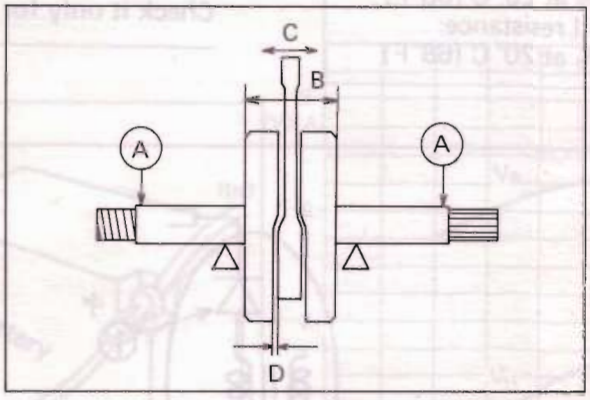
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L. Crankshaft

Check crankshaft components per chart.

Crankshaft Specifications

Deflection toerance (A)		Flywheel width(B)	Rod clearance			
			Axial (C)		Side (D)	
Left side	Right side		New	Max.	New	Max.
0.03 mm (0.012 in)	0.03 mm (0.012 in)	61.95 – 62.00 mm (2.439 – 2.441 in)	0.4 – 1.0 mm (0.016 – 0.0394 in)	2.0 mm (0.079 in)	0.25 – 0.75 mm (0.010 – 0.030 in)	1.00 mm (0.0394)



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G. Cylinder

2. Tighten cylinder holding nuts.

Tightening torque:
10 mm nut
4.0 m-kg (29 ft-lb)

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4-3. REED VALVE ASSEMBLY

Delete the photo in this section.

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E. REAR SHOCK ABSORBER Service Data:

Gas pressure	15 kg/cm^2
Gas properties	Nitrogen gas
Absorber stroke	82 mm (3.23 in)
Wheel travel	140 mm (5.51 in)
Absorber spring:	
Free length	265 mm (10.43 in)
Set length	257 mm (10.12 in)
Spring constant	k_1 =4.5 kg/mm (0-62 mm) k_2 =7.5 kg/mm (62-82 mm)
Number of winding	18 turns
Spring dia.	9.5 mm (0.37 in)
Spring O.D.	58 mm (2.28 in)

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6-1. IGNITION SYSTEM

C. Direct Current Resistance Test

a. DT400E

Use a pocket tester or equivalent ohmmeter to determine resistance and continuity of primary and secondary coil windings.

Standard values:
Primary coil resistance:
1.0Ω ± 10% at 20° C (68°F)
Secondary coil resistance:
5.9Ω ± 20% at 20° C (68°F)

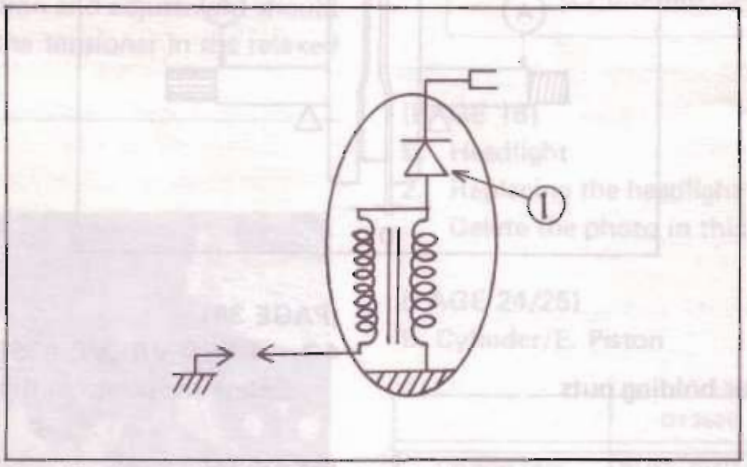
b. DT250E

Determine resistance and continuity of secondary coil windings.

5.9 KΩ ± 20 % at 20° C (68° F)

NOTE:

The primary coil circuit has a rectifiifier built in it for prevention of reverse revolution, and its DC resistance value cannot be specified.
Check it only for continuity.



1. Rectifier for prevention of reverse revolution

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6-2. CHARGING SYSTEM

A. Charging Output Test

1. Voltage test

a. Remove left sidecover and locate red battery wire connection.

b. Connect DC voltmeter (or Yamaha Pocket Tester) as shown.

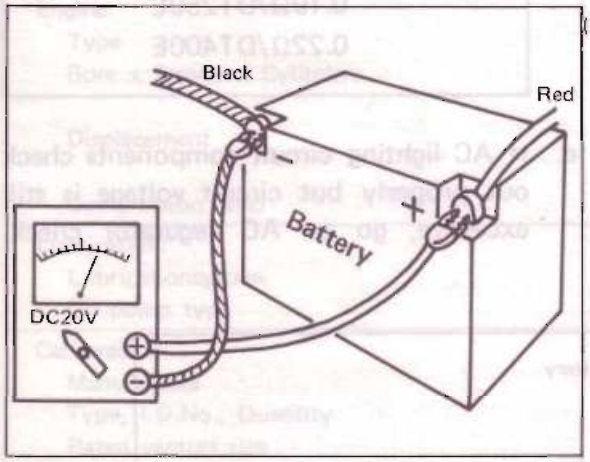
c. Start engine and note voltage readings.

2. Amperage test

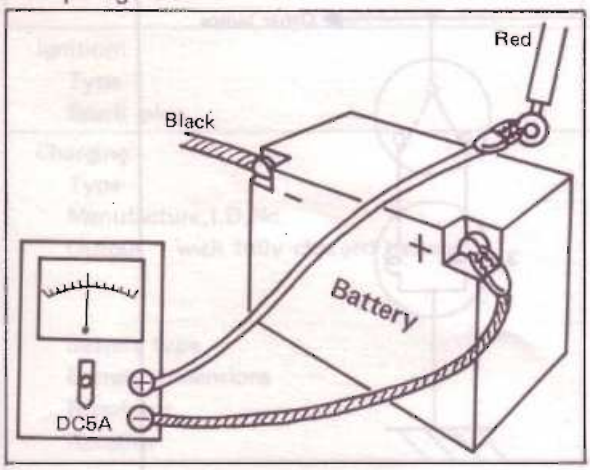
a. Connect DC amperemeter as shown.

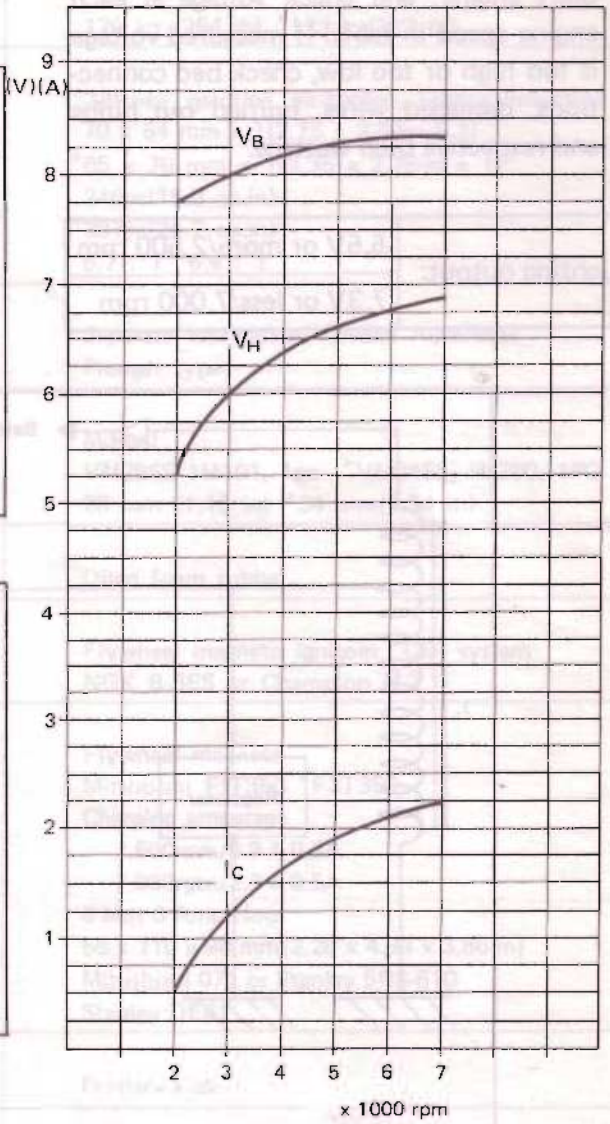
b. Start engine and note amperage readings.

Voltage test



Amperage test





V_B = BATTERY VOLTAGE
V_H = HEADLIGHT VOLTAGE
I_C = CHARGING AMPERAGE

NOTE:

These curves are an example when the battery is fully charged.

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C. Lighting Tests and Checks (A. C. circuit)

1. A.C. circuit output test
   With all A.C. lights in operation the circuit will be balanced and the voltage will be the same at all points at a given rpm.

a. Switch Pocket Tester to "AC 20V" position.

b. Connect positive (+) test lead to yellow connection and negative (−) test lead to a good ground.

c. Start engine, and check voltage at each engine speed in table. If measured voltage is too high or too low, check bad connections, damaged wires, burned out bulbs and respective bulb wattage.

Lighting output:	5.5V or more/2,500 rpm
	7.3V or less/7,000 rpm

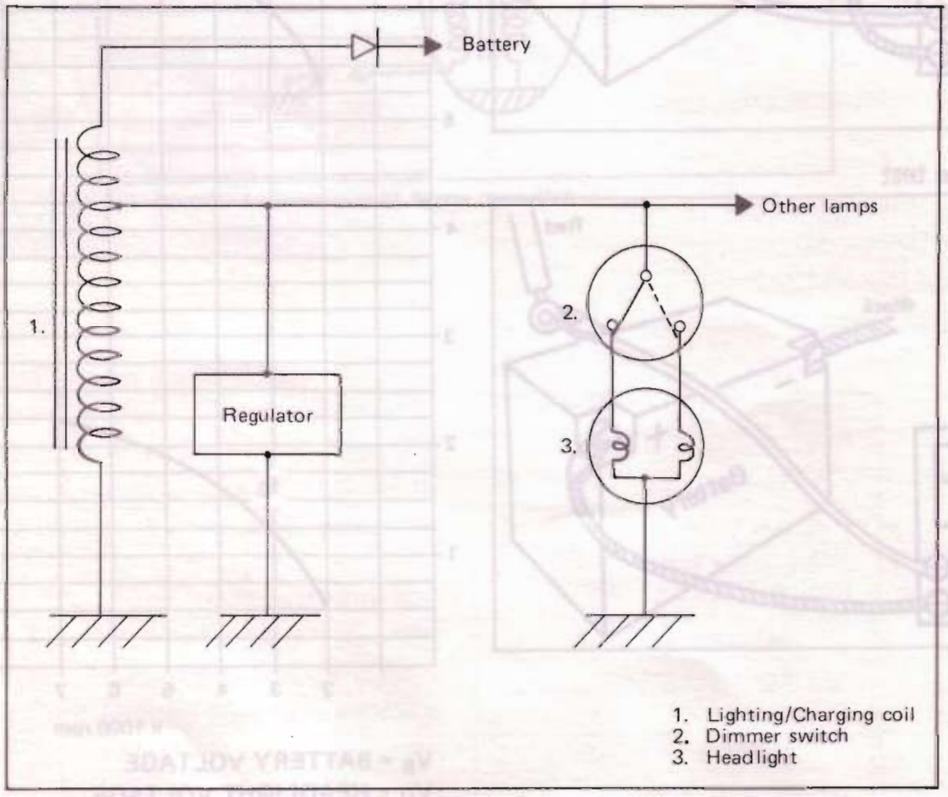
2. Lighting coil resistance check
   If voltage is incorrect in AC lighting circuit, check the resistance of the yellow wire windings of the lighting coil

a. Switch Pocket Tester "Ω X 1" position and zero meter.

b. Connect positive (+) test lead to yellow wire from magneto and negative (−) test lead to a good ground on engine. Read the resistance on ohms scale.

Lighting coil resistance:
Yellow-Ground:
0.19Ω/DT250E
0.22Ω/DT400E

c. If AC lighting circuit components check out properly but circuit voltage is still excessive, go to AC regurator check.



7-1. SPECIFICATIONS

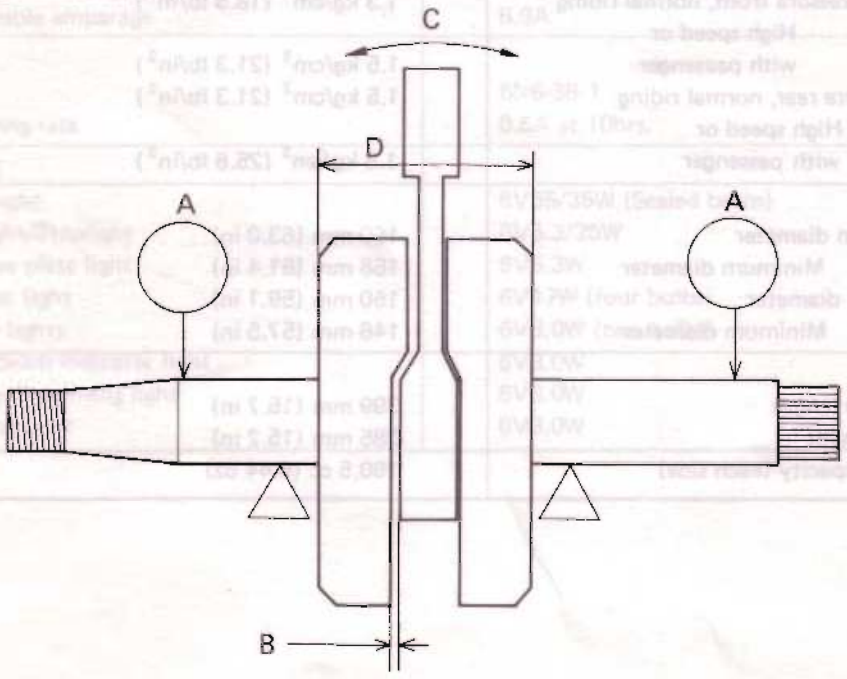
A. General Specifications

Model	DT250E *DT400E
Dimensions:	
Overall length	2,185 mm(86.0 in)
Overall width	870 mm(34.3 in)
Overall hight	1,165 mm(45.9 in)
Seat hight	855 mm (33.7 in)
Wheelbase	1,420 mm(55.9 in) *1,415 mm(55.7 in)
Minimum ground clearance	255 mm(10.0 in)
Caster	60°
Trail	135 mm(5.3 in)
Weight:	
Net	129 kg (284 lb) *133 kg(293 lb)
Engine:	
Type	2-stroke, gasoline, air-cooled, Torque induction
Bore x Stroke x Cylinders	70 x 64 mm x 1(2.76 x 2.52in x 1) *85 x 70 mm x 1(3.35 x 2.76in x 1)
Displacement	246cc(15.0 cu.in) *397cc(24.2 cu.in)
Compression ratio	6.7 : 1 *6.4 : 1
Lubrication:	
Lubricationsystem	Separate lubrication(Yamaha Autolube)
Oil pump type	Plunger type
Carburetion:	
Manufacture	Mikuni
Type, I.D.No., Quantity	VM28SS 1M101, 1pc *VM34SS, IM200, 1PC
Rated venturi size	28 mm (1.10 in) *34 mm(1.34 in)
Air filter:	Oiled foam rubber
Ignition:	
Type	Flywheel magneto ignitoin *CDI system
Spark plug	NGK B-8ES or Champion N-2
Charging:	
Type	Flywheel magneto
Manufacture,I.D.No.	Mitsubishi FIT350 *F3T350
Output with fully charged battery	Charging amperage 2,500rpm/0.9 ± 0.3A 7,000rpm/2.3 ± 0.5A
Battery type	6 bolt 6 Amp-Hour
Battery dimensions	56 x 110 x 98 mm(2.20 x 4.33 x 3.86 in)
Regurator	Mitusbishi 071 or Stanley SRS-610
Rectifier	Stanley DE41
Starting:	Primary kick
Primary drive:	
Type	Helical gear
Teeth, ratio	65/23 2.826

Clutch:	Wet, multiple disc
Transmission:	
Type	Constantmesh, 5-speed, drum shifter
Teeth, ratio, overall 1st	33/13 2.538 7.172
2nd	34/19 1.789 5.056
3rd	26/20 1.300 3.674
4th	23/23 1.000 2.826
5th	20/26 0.769 2.173
*1st	38/14 2.714 7.669
2nd	34/19 1.789 5.056
3rd	26/20 1.300 3.674
4th	23/23 1.000 2.826
5th	20/26 0.769 2.173
Secondary drive:	
Type	Roller chain, 104 link (includes chain join) *102
Size, Manufacture	DK520DS, Daido
Reduction ratio	47/14 3.357 *43/16 2.687
Chassis:	
Frame	Tubler, double cradle
Suspension:	
Front (type, travel)	Telescopic fork, 195 mm (7.6 in)
Rear (type, travel)	Swing arm (Monocross suspension), 140 mm (5.5 in) 82 mm (Absorber travel) (3.23 in)
Tires:	
Front	3.00 - 21 4PR Dunlop
Rear	4.00 - 18 4PR Dunlop
Brakes:	
Front	Drum brake
Rear	Drum brake
Rims:	
Front	1.60 - 21 Aluminum
Rear	1.85 - 18 Aluminum

B. Maintenance Specifications

1. Engine	
Engine oil capacity:	
Dry	1,200 ± 50 cc (1.27 ± 0.05 qt)
Oil change	1,100 ± 50 cc (1.16 ± 0.05 qt)
Recomended lublicant:	
If temperature does not go below 5°C (40°F)	YAMALUBE 4-cycle or SAE 20W40 SE motor oil
If temperature does not go above15°C (60°F)	YAMALUBE 4-cycle or SAE 10W30 SE motor oil
Piston clearance:	0.035 - 0.040 mm (0.0014 - 0.0016 in) *0.040 - 0.045 mm (0.0016 - 0.0018 in)
Ring end gap (installed), Top	0.2 - 0.4 mm (0.0079 - 0.0157 in) *0.3 - 0.5 mm (0.012 - 0.020 in)
2nd	0.2 - 0.4 mm (0.0079 - 0.0157 in) *0.3 - 0.5 mm (0.012 - 0.020 in)
Standard bore size/standard	70.00 - 70.02 mm (2.756 - 2.757 in) *85.00 - 85.02 mm (3.347 - 3.349 in)
Maximum	70.1 mm (2.760 in) *85.1 mm (3.350 in)
Cylinder taper limit	0.08 mm (0.0031 in)
Cylinder out of limit	0.05 mm (0.0020 in)
Piston ring side clearance	0.03 - 0.05 mm (0.0012 - 0.0020 in)
Maximum	0.08 mm (0.0031 in)
Crankshaft:	
Defrection tolerance (A)	0.03 mm (0.0012 in)
Rod side clearance (B)	0.25 - 0.75 mm (0.0098 - 0.030 in) (Max. 1.00mm),
Rod axial clearance (C)	0.4 - 1.0 mm (0.016 - 0.039 in) (Max. 2.0 mm), 0.079 (Max. 2.0 mm), (0.079 in)
Fly wheel width (D)	$62\ ^{0}_{-0.05}$ mm ($2.441\ ^{0}_{-0.0020}$ in)



Oil pump:	
Color code	Red *Yellow
Min. stroke	0.25 - 0.30 mm (0.0098 - 0.012 in)
Max. Stroke	1.85 - 2.05 mm (0.073 - 0.081 in)
Total reduction ratio	18/23 x 55/1 = 43.0 *18/23 x 32/1 = 25.0
Oil discharge (Minimum stroke)	0.50 - 0.63 cc (0.017 - 0.021 oz)
(Maximum stroke)	4.65 - 5.15 cc (0.157 - 0.174 oz)
Pump adjustmentmark	(at full throttle)
Clutch:	
Friction plate thickness standard Q'ty	3.0 mm, (0.12 in) 7 pcs
Minimum	2.7 mm (0.11 in)
Clutch plate warp. limit	0.05 mm (0.002 in)
Clutch spring length standard	34.9 mm, (1.374 in) 6 pcs
Minimum	33.9 mm (1.335 in)
Clutch push rod run-out maximum	0.2 mm (0.008 in)
2. Carburetion	
Manufacturer	MIKUNI
Model, I.D.No.	VM28SS, 1M101 *VM34SS, 1M200
Main jet	#150 *#190
Needle jet	N-8 *0-2
Pilot jet	#50 *#80
Starter jet	#60
Jet needle § clip position	5DP33-3 *6F9-3
Float level	15.8 mm (0.62 in) *22.9 mm (0.90iin)
Pilot air acrew (turns out)	2.0 *1-½
Air jet	ϕ 2.5 mm (0.098 in)
Engine idle speed	1,200 - 1,300 rpm *1,300 - 1,400 rpm
3. Chassis	
Wheels and tires:	
Rim run-out vertival (front)	1.0 mm (0.039 in)
(rear)	0.5 mm (0.020 in)
holizontal (front)	0.5 mm (0.020 in)
(rear)	0.5 mm (0.020 in)
Tire pressure front, normal riding	1.3 kg/cm^2 (18.5 lb/in^2)
High speed or with paasenger	1.5 kg/cm^2 (21.3 lb/in^2)
Tire pressure rear, normal riding	1.5 kg/cm^2 (21.3 lb/in^2)
High speed or with passenger	1.8 kg/cm^2 (25.6 lb/in^2)
Brakes:	
Front drum diameter	160 mm (63.0 in)
Minimum diameter	156 mm (61.4 in)
Rear drum diameter	150 mm (59.1 in)
Minimum diameter	146 mm (57.5 in)
Front forks:	
Spring free length	399 mm (15.7 in)
Preload length	385 mm (15.2 in)
Fork oil capacity (each side)	190.5 cc (6.44 oz)

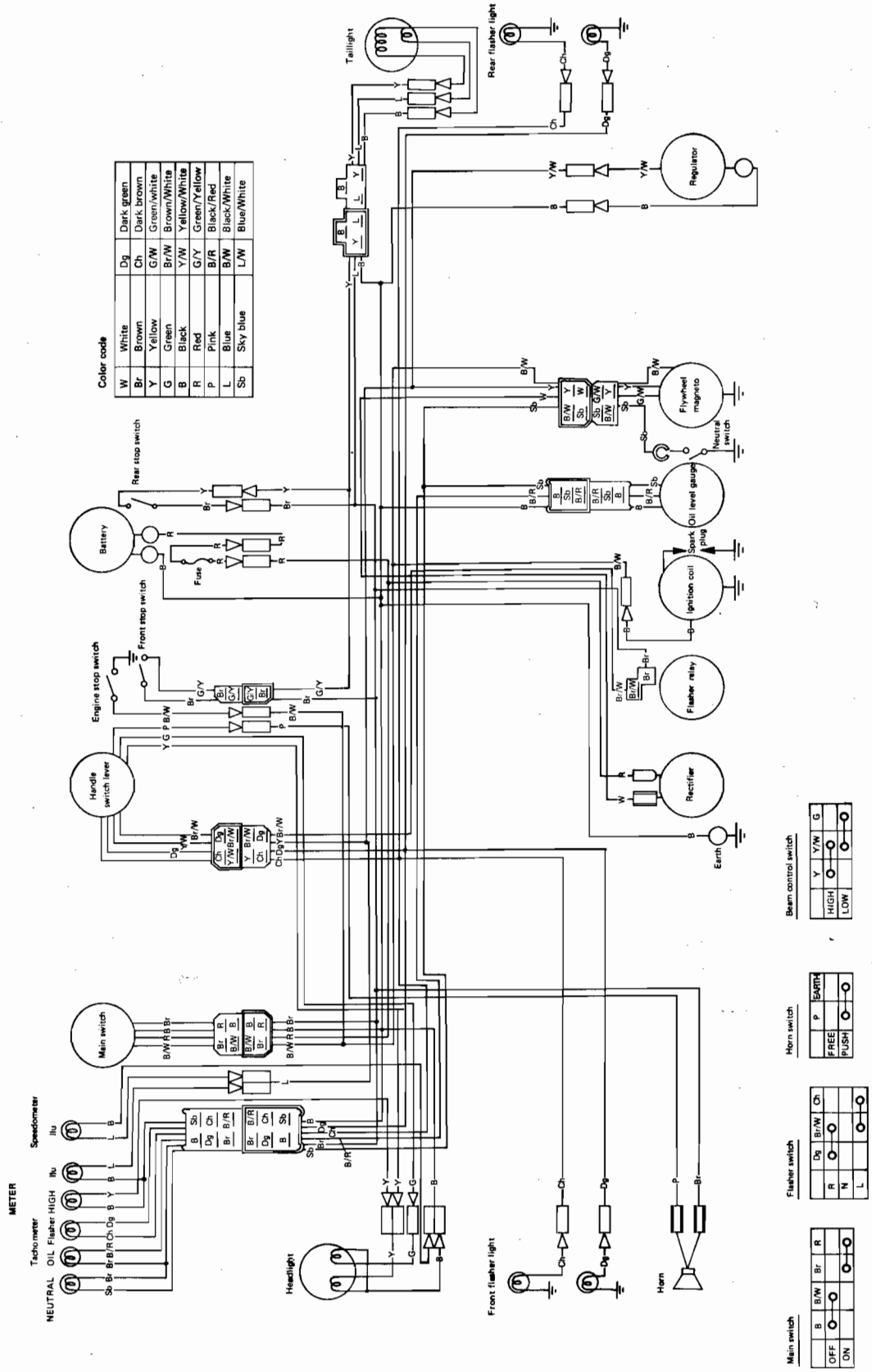
Rear shock absorber:	
Gas pressure	15 kg/cm^2 (213 lb/in^2)
Absorber stroke	82 mm (3.23 in)
Spring free length	265 mm (10.43 in)
Preload lenght	257 mm (10.12 in)
Spring constant	K_1=4.5 kg/mm (0-62 mm) K_2=7.5 kg/mm (62-82 mm)
4. Electrical	
Ignition timing	3.2 ± 0.15 mm (0.126 ± 0.006 in) BTDC *2.9 ± 0.15 mm (0.114 ± 0.006 in) BTDC
Point gap	0.3 - 0.4 mm (0.012 - 0.016 in)
Condenser capacity	0.25μF
Insulation resistance	50MΩ or more
Ignition coil:	
Type	Mitsubishi F6T412 *F6T411
Minimum spark gap	6 mm (0.24 in)
*Primary resistance	1.0Ω ± 10% (20°C, 68°F)
Secondary resistance	5.9 KΩ ± 20% (20°C, 68°F)
*CDI Unit:	
Type	Mitsubishi 8T00371
Flywheel magneto:	
Type	Mitsubishi F1T350 *F3T350
Sourse coil resistance	1.65Ω ± 10% (20°C, 68°F)
Coil resistance	166Ω ± 10%
Flasher relay	
Type	Condenser
Manufacturer	NIPPONDEDSO
Model	061300-5010
Charge coil resistance	0.33Ω ± 10% *0.38Ω ± 10% 20°C, 68°F
Lighting coil resistance	0.19Ω ± 10% *0.22Ω ± 10%
Regurator:	
Regurated voltage	7.0V (Mitsubishi), 7.2V (Stanley)
Allowable amparage	8.0A
Battery:	
Type	6N6-3B-1
Charging rate	0.6A at 10hrs.
Lighting:	
Headlight	6V35/35W (Sealed beam)
Taillight/Stoplight	6V5.3/25W
License plate light	6V5.3W
Flasher light	6V17W (four bulbs)
Meter lights	6V3.0W (two bulbs)
High beam indicator light	6V3.0W
Oil levell worning light	6V3.0W
Neutral light	6V3.0W

C. Torque Specifications

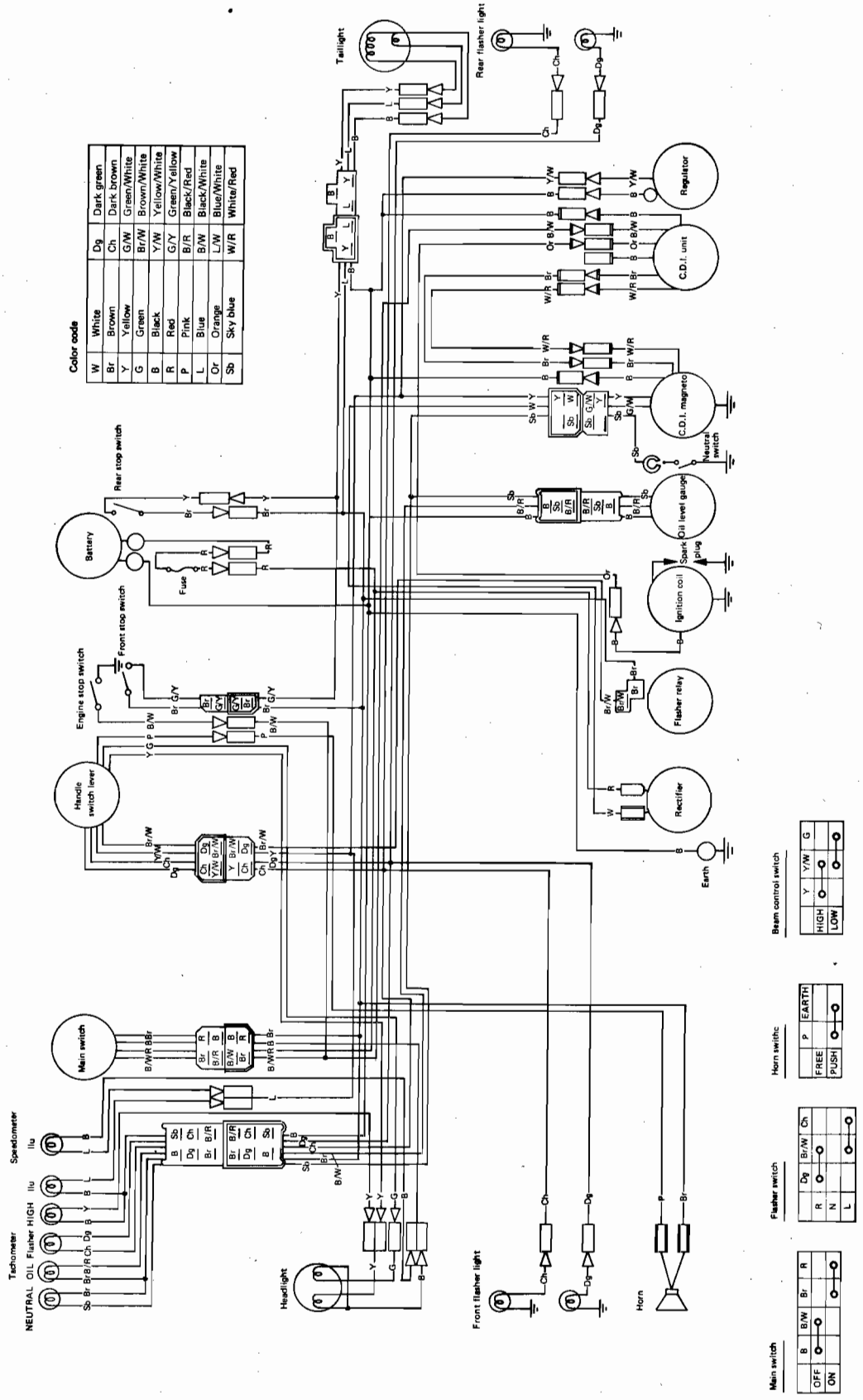
Unit: m-kg (ft-lb)

1. Engine	
Cylinder head nut	2.0 (14)
bolt	2.5 (18)
Spark plug	2 (14)
Cylinder nut	4.0 (29)
bolt	4.5 (33)
Primary drive gear	7.5 (54)
Clutch boss	7.5 (54)
Clutch spring	1.0 (7)
Drive sprocket	7.5 (54)
Kick crank	2.5 (18)
Reed valve	0.1 (0.7)
Rotor nut	7.0 (51)
Srater	1.0 (7)
Clutch plessure plate	2.5 (18)
2. Chassis	
Engine mount front upper	2.5 (18)
front lower	2.5 (18)
rear upper	2.5 (18)
rear lower	5.0 (36)
Rivot shaft nut	6.5 (47)
Rear shock absorber front	5.0 (36)
rear	2.5 (18)
Handle crown pinch bolt	1.5 (11) *2.5 (18)
Fitting bolt	5.5 (40)
Handle upper bracket	1.5 (11)
Under bracket pinch bolt	1.5 (18) *1.9 (14)
Front axle bracket	1.0 (7)
Front axle nut	8.5 (61)
Rear axle nut	11.0 (80)
Driven sprocket nut	4.0 (29) *3.0 (22)
Footrest nut	6.0 (43)

DT250E CIRCUIT DIAGRAM



DT400E CIRCUIT DIAGRAM



SINCE 1887

YAMAHA MOTOR CO.,LTD.

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