

RT100

RT180

SERVICE GUIDE

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**YAMAHA**

**technical training**

# FOREWORD

This service guide provides new and important service information about the RT180/RT100.

For detailed procedures, you can refer to the respective service manual. This guide describes predelivery, gives service notes and serves as a guide for initial inspection steps. It is our sincere hope and belief that this guide will help enhance your technical knowledge and service ability.

**TECHNICAL PUBLICATIONS  
SERVICE DIVISION  
MOTORCYCLE GROUP  
YAMAHA MOTOR CORPORATION, U.S.A.**

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1989  
RT180/RT100 Service Guide

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*Specifications, features and options are subject  
to change without notice.*

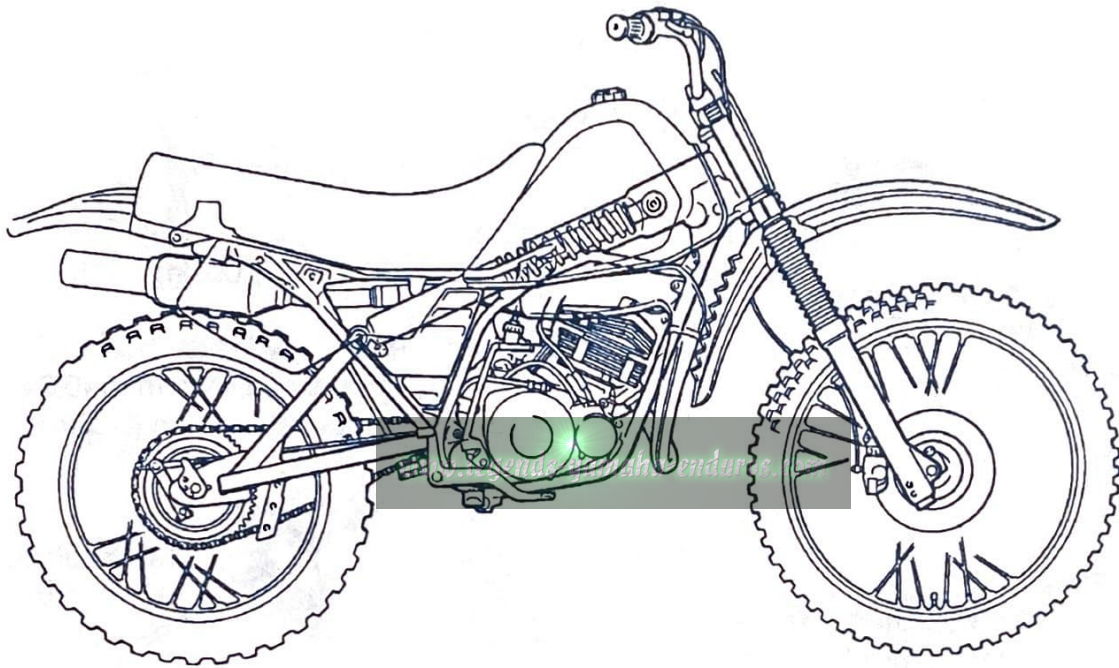
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# OUTLINE OF RT180



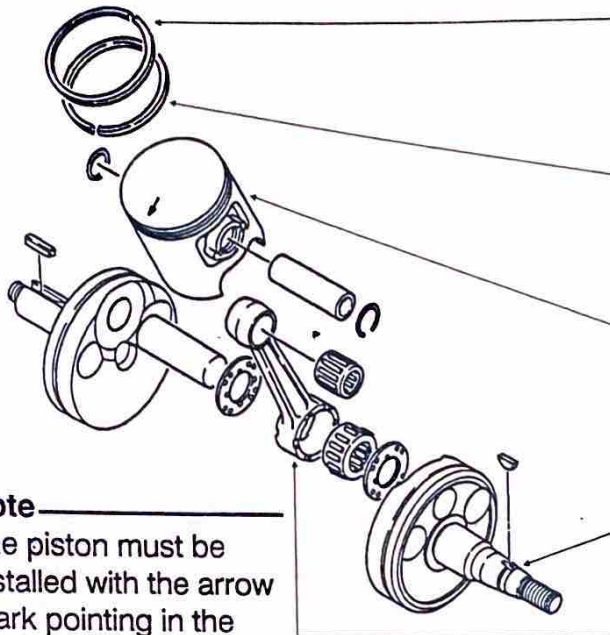
## SPECIFICATIONS

Displacement: 176cc  
Bore x Stroke: 64.5x54.0mm (2.54x2.13cu.in)  
Compression Ratio: 6.5:1  
Spark Plug Type: NGK B8ES  
Spark Plug Gap: 0.6~0.7mm (0.024~0.028in)  
Piston Clearance: 0.035~0.040mm (0.0014~0.0016in)  
Carburetor: VM24SS/1 MIKUNI  
Transmission: 6-Speed  
Ignition: C.D.I.



# ENGINE

## CRANKSHAFT, CONNECTING ROD, PISTON



**Top Ring (Chrome Plated)-**  
Side Clearance: 0.03~0.05mm(0.001~0.002in)  
End Gap: 0.3~0.5mm(0.012~0.020in)

**2nd Ring (Chrome Plated)-**  
Side Clearance: 0.03~0.05mm(0.001~0.002in)  
End Gap: 0.3~0.5mm(0.012~0.020in)

**Piston Clearance-**  
0.035~0.040mm (0.0014~0.0016in)  
Oversize 1st: 64.75mm (2.55in)  
Oversize 2nd: 65mm (2.56in)

**Crankshaft-**  
Runout Limit: 0.03mm (0.001in)

**Connecting Rod-**  
Big End Side Clearance Limit: 1mm (0.04in)  
Small End Free Play Limit: 2mm (0.08in)

**Note**  
The piston must be installed with the arrow mark pointing in the forward direction.

## CLUTCH



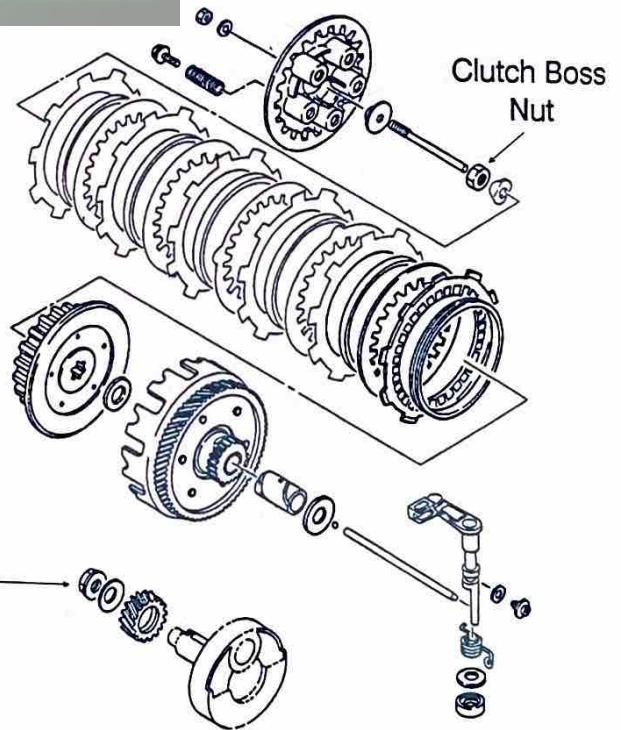
**Friction Plate-**  
Thickness: 2.92~3.08mm (0.115~0.121in)  
Wear Limit: 2.7mm (0.106in)

**Clutch Plate-**  
Thickness: 1.1~1.3mm (0.043~0.051in)  
Warp Limit: 0.05mm (0.002in)

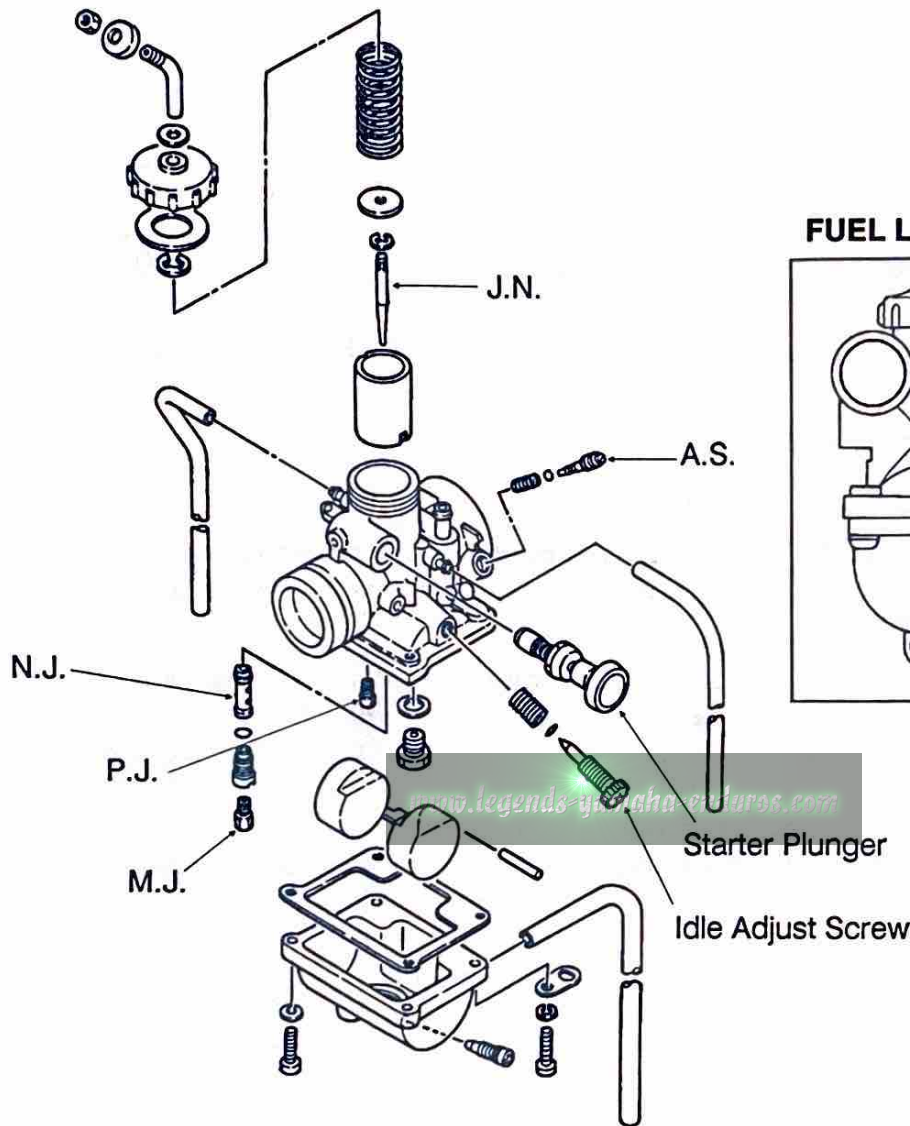
**Clutch Spring-**  
Free length: 33mm (1.3in)  
Minimum Length: 32mm (1.26mm)

Tightening Torque:  
6.0 m·kg (43 ft·lb)

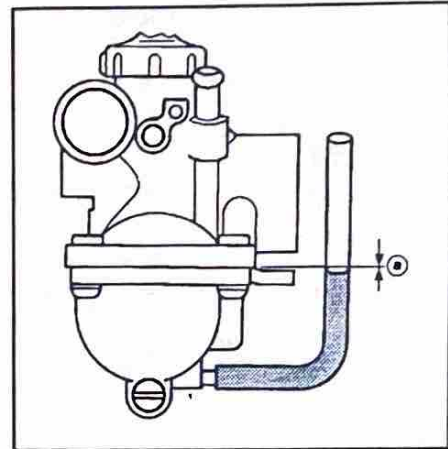
Tightening Torque: Clutch Boss Nut  
5.0 m·kg (36 ft·lb)



# CARBURETOR



## FUEL LEVEL ADJUSTMENT



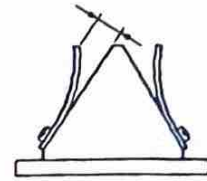
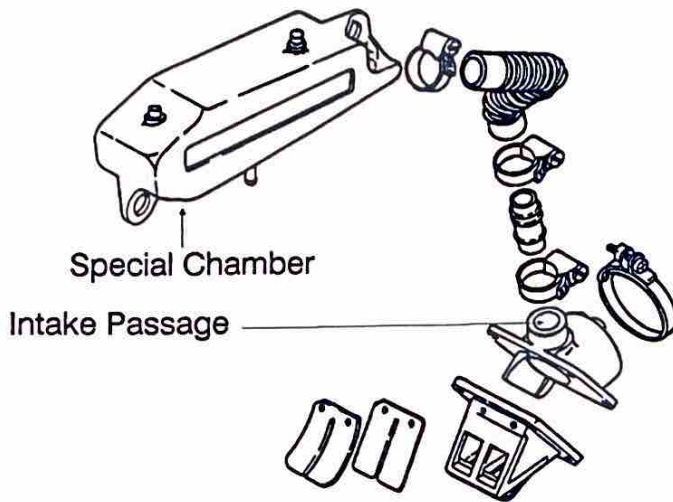
### SPECIFICATIONS

MIKUNI VM24SS	
Main Jet (M.J.)	#130
Pilot Jet (P.J.)	#27.5
Needle Jet (N.J.)	P-2
Jet Needle (J.N.)	5JP27-2
Air Screw (A.S.)	1-1/2 turns out
Engine Idle Speed:	1450~1550 RPM
Fuel Level <sup>(a)</sup> :	0.0±0.5mm (0.0±0.02in)
Float Level:	20~22mm (0.79~0.87in)

**NOTE:** \_\_\_\_\_  
 Fuel level and fuel level are measured from gasket mating surface of the carburetor body.



## REED VALVE (YEIS)



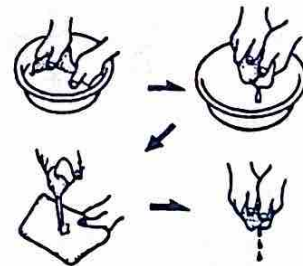
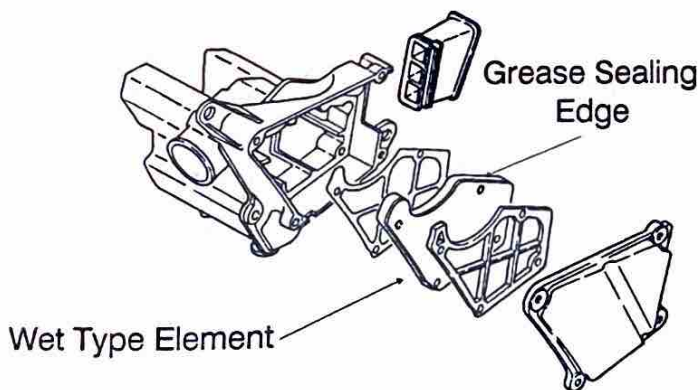
Stopper Height:  
8.7~9.3mm  
(0.34~0.37in)

The YAMAHA ENERGY INDUCTION SYSTEM (YEIS) is constructed by connecting a pipe from the intake passage to a special chamber. This system allows air/fuel mixture to flow through the intake passage smoothly and continuously.

As the piston moves down, the air/fuel mixture in the crankcase is compressed to close the reed valve. A part of the mixture is then induced from the intake passage to the special chamber. When the piston moves up and the reed valve opens, a negative pressure is produced in the intake passage. The special chamber then releases the air/fuel mixture into the intake passage. This intake stream joins the stream coming through the throttle valve and enters the cylinder.

This results in increased intake efficiency with an "evened out" fuel supply from the carburetor.

## AIR FILTER



The air filter element should be cleaned every 20~40 hours. It should be cleaned and lubricated more often if the machine is operated in extremely dusty areas.

• Wash the element in solvent.

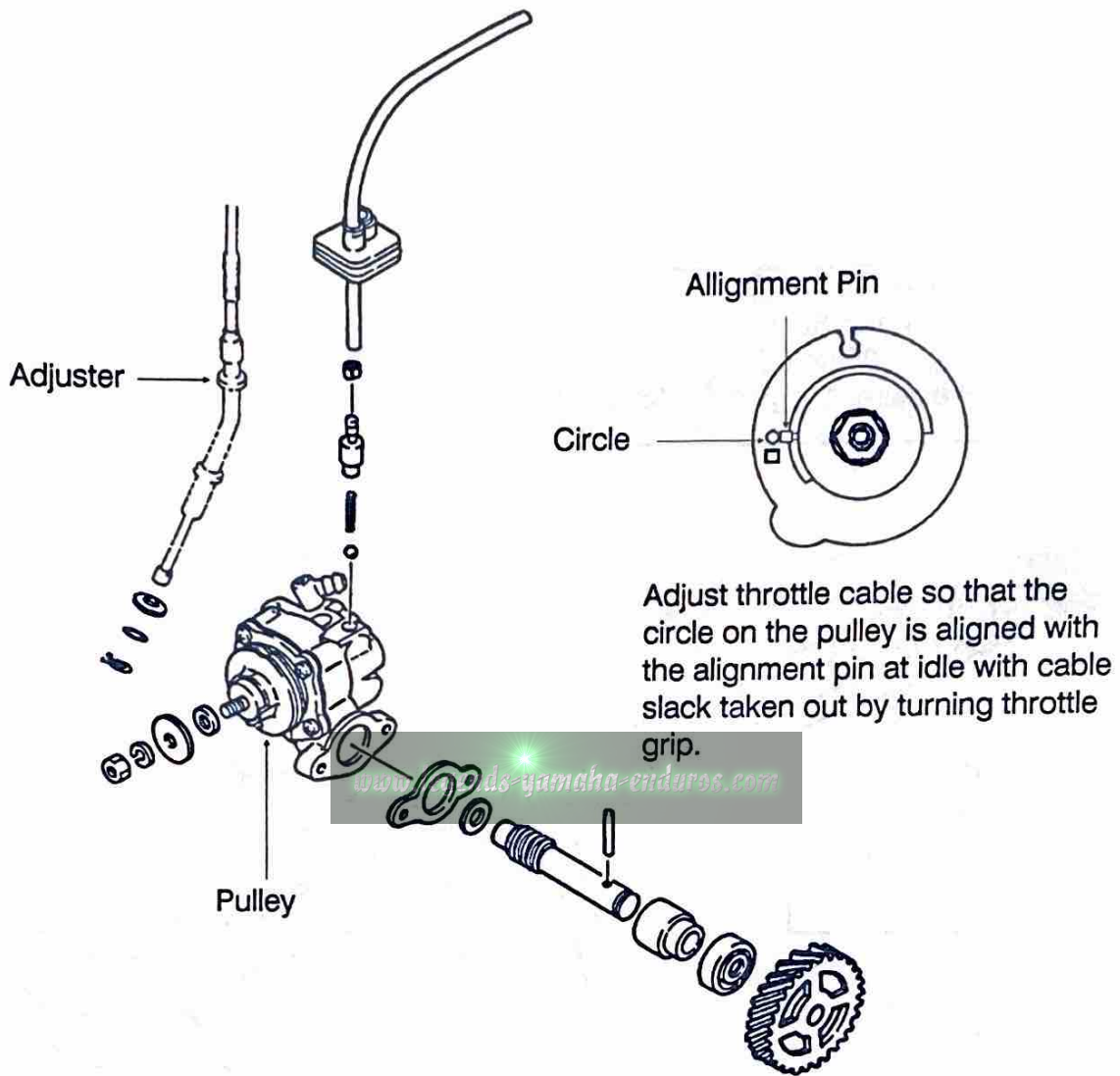
### NOTE

Never use low flash point solvents.

- Allow the element to dry and apply a light coat of Yamaha Foam Air Filter Oil.
- Squeeze out excess oil.
- Grease the entire sealing edge of the element with soap base, lithium grease.



# LUBRICATION AUTOLUBE PUMP



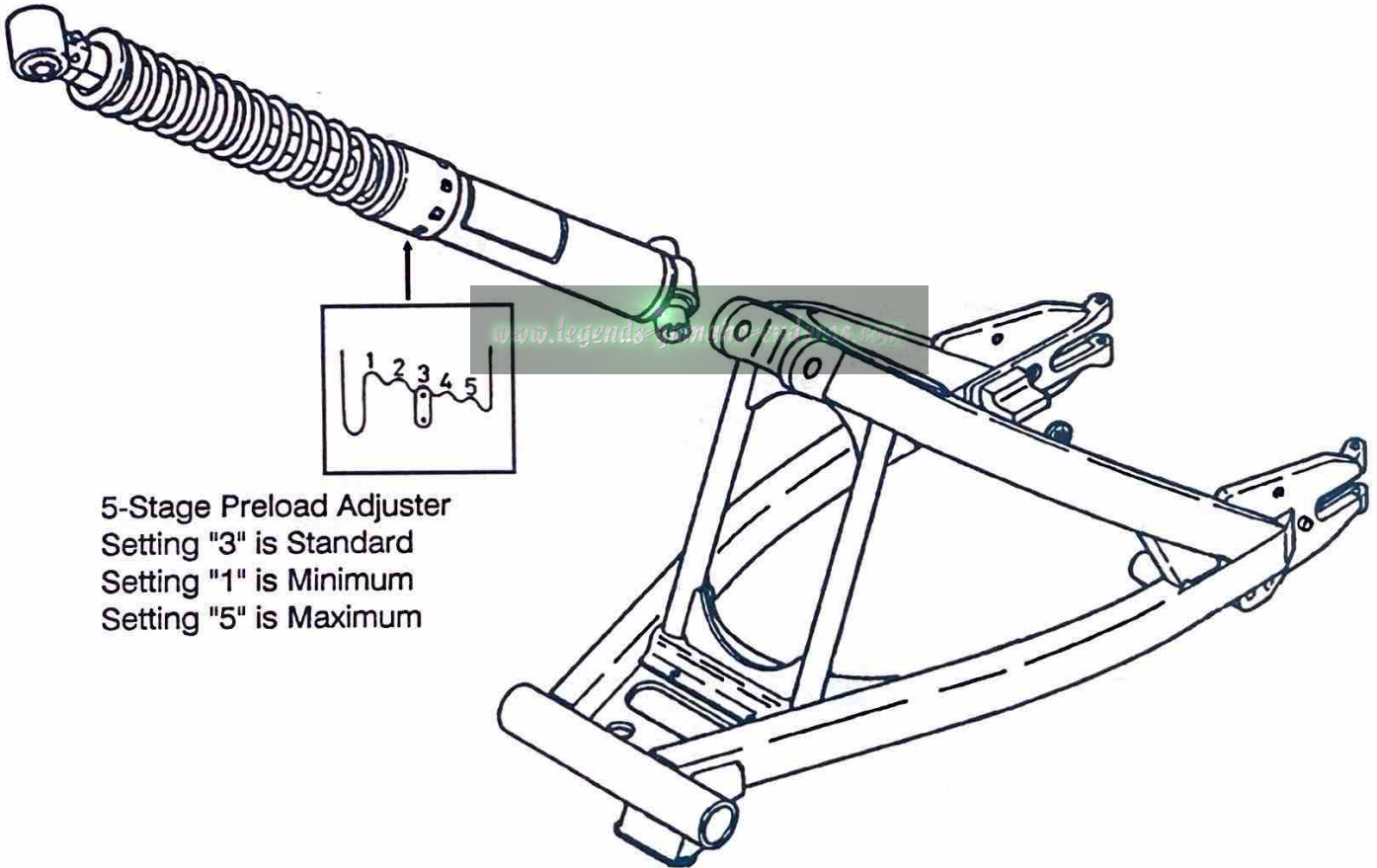
## SPECIFICATIONS

Plunger Diameter: 5.5mm (0.22in)
Color Code: Blue
Minimum Stroke: 0.20~0.25mm (0.008~0.010in)
Maximum Stroke: 1.85~2.05mm (0.073~0.081in)
Minimum Output/200 Stroke: 0.48~0.59cc (0.016~0.019US.oz)
Maximum Output/200 Stroke: 4.40~4.87cc (0.149~0.165US.oz)
Pulley Adjusting Mark: At Idle with cable slack eliminated

# CHASSIS

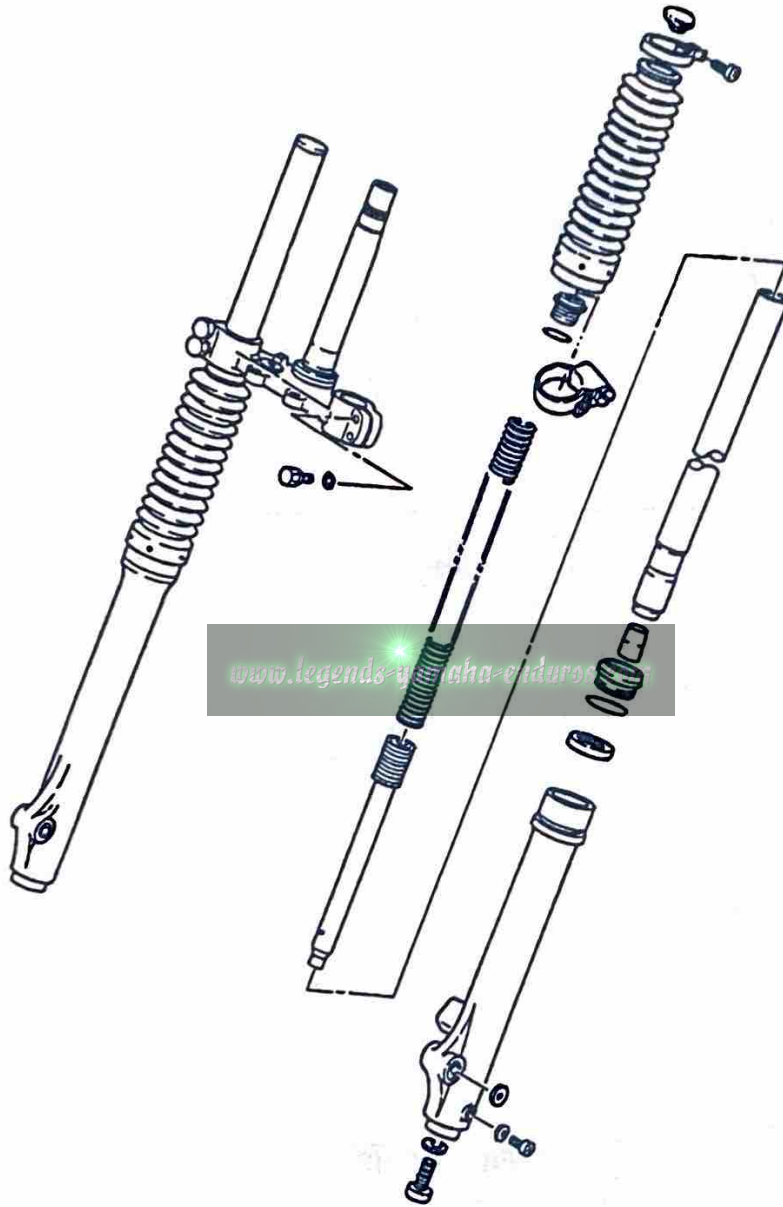
## SHOCK ABSORBER / SWINGARM

SPECIFICATIONS
Shock Absorber Travel: 82mm (3.23in)
Spring Free Length: 258mm (10.2in)
Enclosed Air Pressure: 15kg/cm <sup>2</sup> (213psi)



5-Stage Preload Adjuster  
Setting "3" is Standard  
Setting "1" is Minimum  
Setting "5" is Maximum

SPECIFICATIONS
Swingarm Free Play Limit (end): 1mm (0.39in)
Swingarm Free Play Limit (side): 1mm (0.39in)

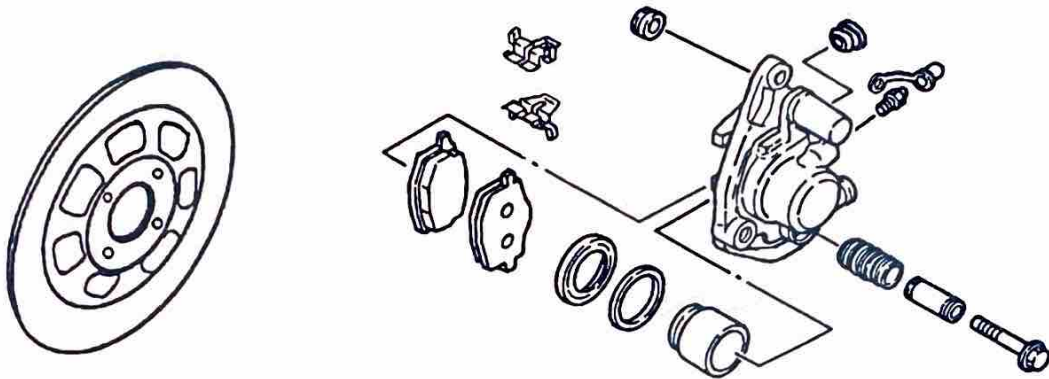


### SPECIFICATIONS

Front Fork Travel: 200mm (7.87in)  
Fork Spring Free Length: 535mm (21.1in)  
Oil Capacity: 280cc (9.47 US. oz)  
Oil Grade: Fork Oil 10W



## FRONT CALIPER / BRAKE DISC



### SPECIFICATIONS

Inner/Outer Pad Thickness: 6.8mm (0.27in)  
Inner/Outer Pad Limit: 0.8mm (0.03in)  
Brake Disc Diameter: 245mm (9.65in)  
Brake Disc Thickness: 4mm (0.16in.)  
Brake Fluid Type: DOT No.3 or No.4

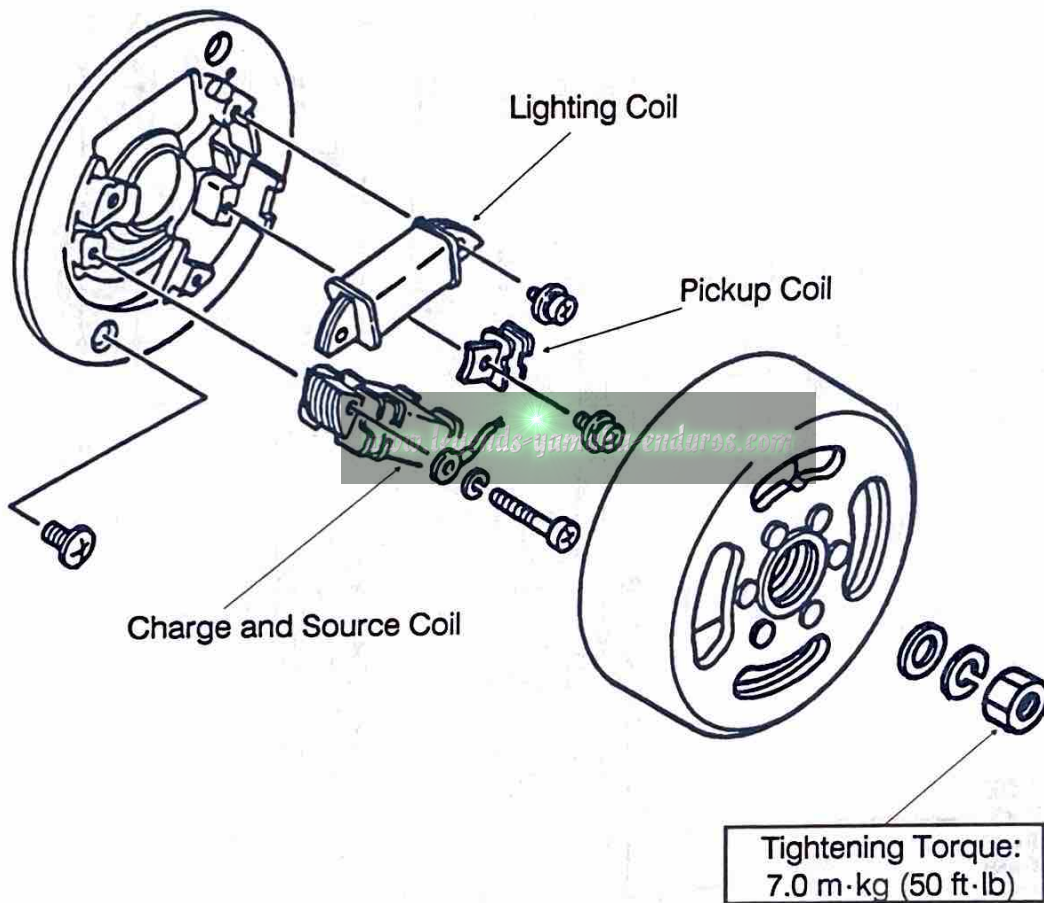
## REAR BRAKE

LEADING TYPE DRUM BRAKE

### SPECIFICATIONS

Brake Drum Inside Diameter: 130mm (5.12in)  
Limit: 131mm (5.16in)  
Lining Thickness: 4mm (0.16in)  
Limit: 2mm (0.08in)  
Shoe Spring Free Length: 36.5mm (1.44in)

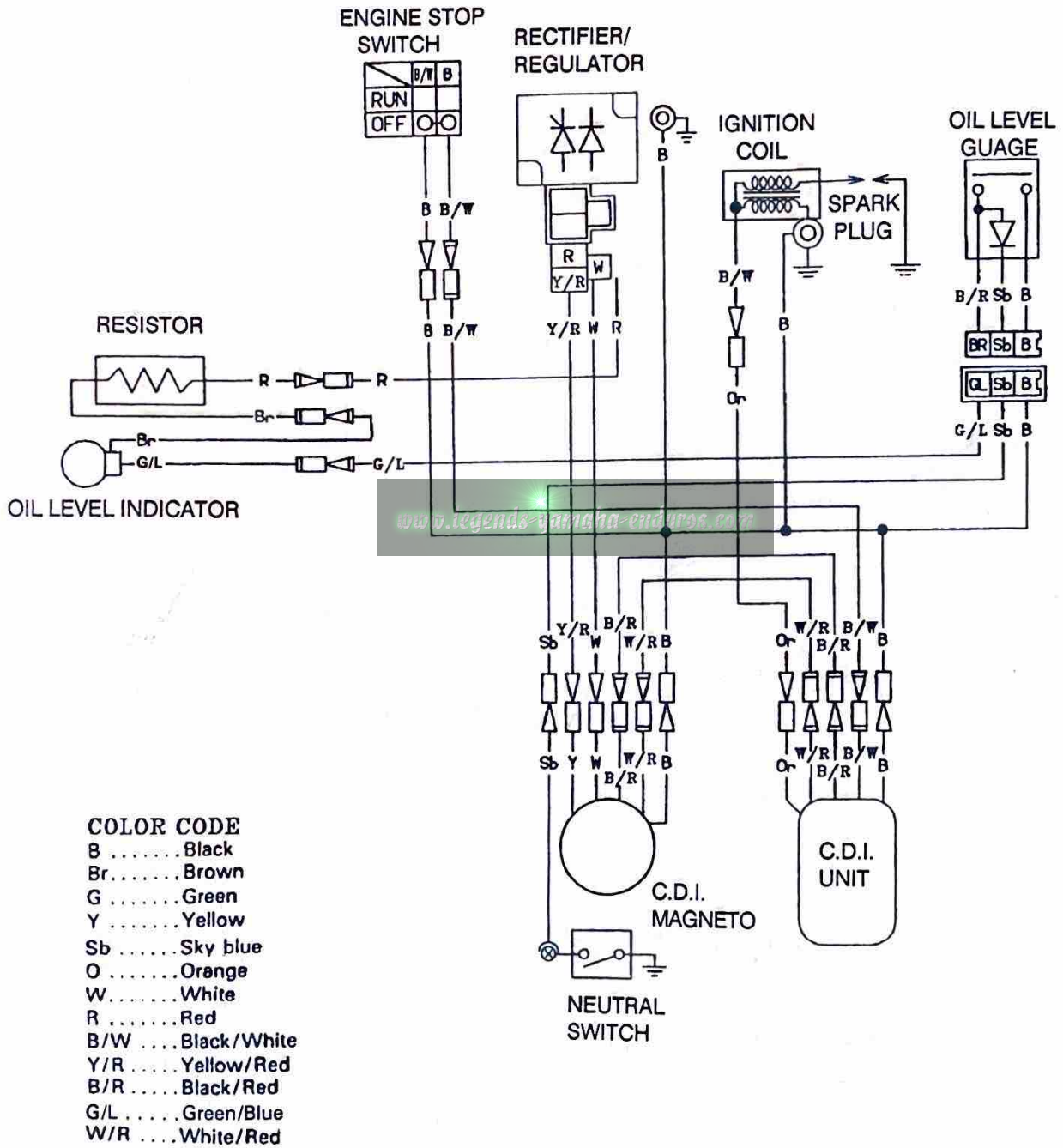
# ELECTRICAL FLYWHEEL MAGNETO



## SPECIFICATIONS

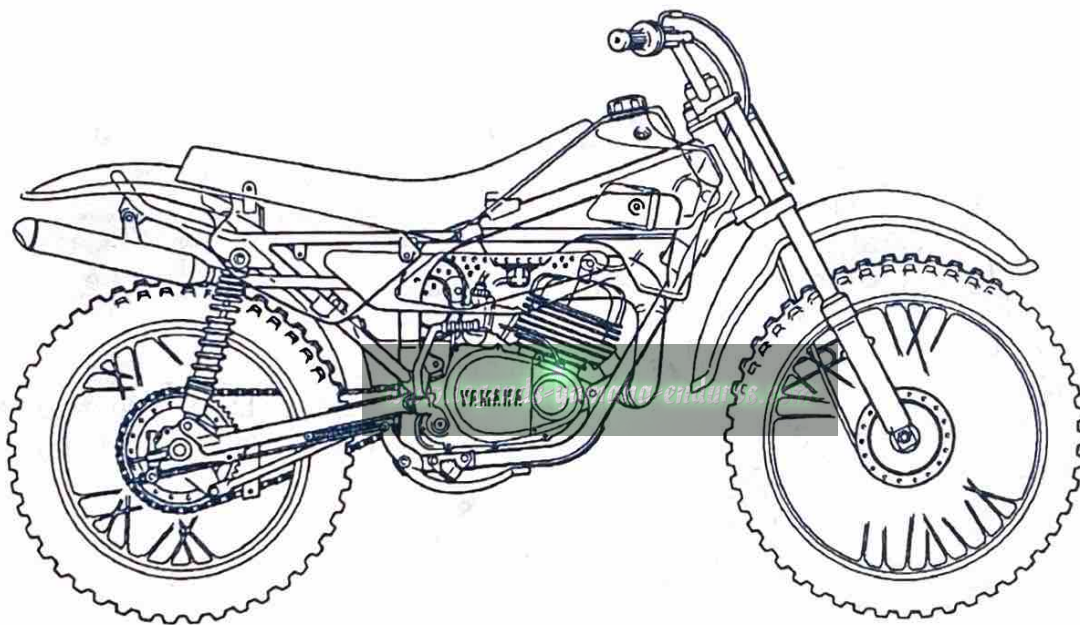
Charge Coil Resistance:  $0.31\Omega \pm 10\%$  B-W  
Lighting Coil Resistance:  $0.47\Omega \pm 10\%$  B-Y  
Pickup Coil Resistance:  $100\Omega \pm 10\%$  W/R-B  
Source Coil Resistance:  $300\Omega \pm 10\%$  B/R-B

# CIRCUIT DIAGRAM





# OUTLINE OF RT100

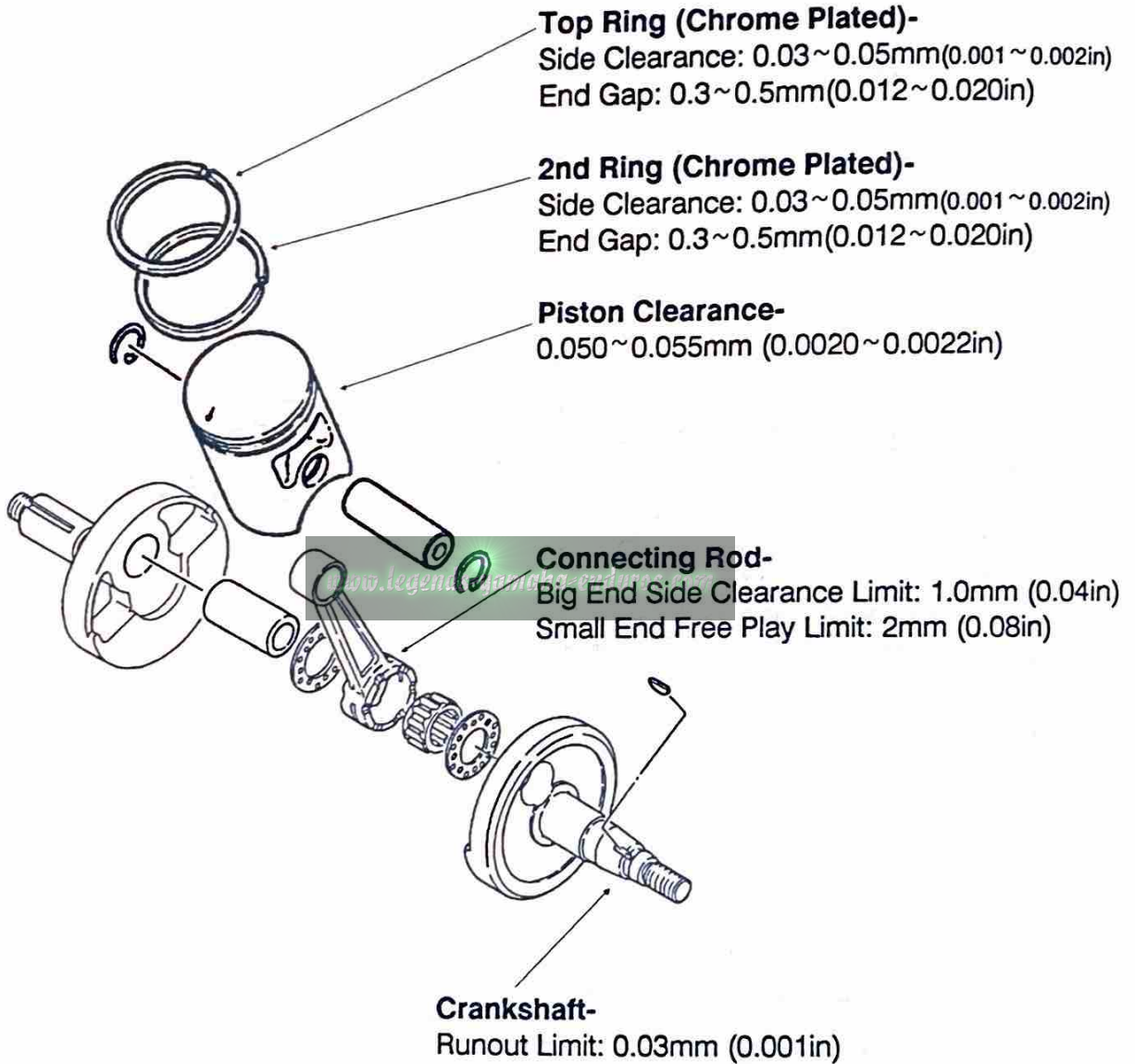


## SPECIFICATIONS

Displacement: 97cc (5.92cu.in)  
Bore x Stroke: 52.0x45.6mm (2.05x1.80in)  
Compression Ratio: 6.7:1  
Spark Plug Type: NGK B7ES  
Spark Plug Gap: 0.5~0.6mm (0.020~0.024)  
Carburetor: VM22SS/1 MIKUNI  
Transmission: 5-Speed  
Ignition: C.D.I.

# ENGINE

## CRANKSHAFT, CONNECTING ROD, PISTON



**Note**

The piston must be installed with the arrow mark pointing in the forward direction.

# CLUTCH

## Friction Plate-

Thickness: 2.9~3.1mm (0.114~0.122in)  
Wear Limit: 2.7mm (0.106in)

## Clutch Plate-

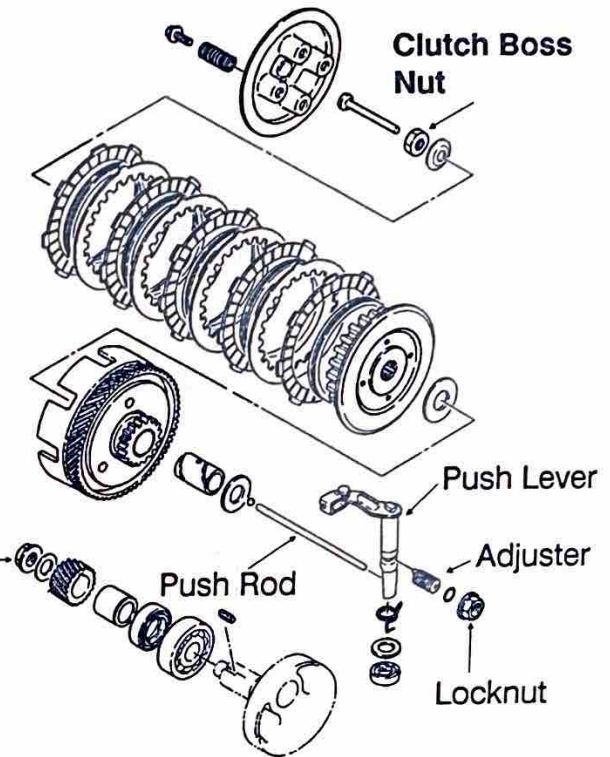
Thickness: 1.1~1.3mm (0.043~0.051in)  
Warp Limit: 0.05mm (0.002in)

## Clutch Spring:

Freelength: 31.5mm (1.24in)  
Minimum Length: 30.5mm (1.2mm)

Tightening Torque:  
6.0 m·kg (43 ft·lb)

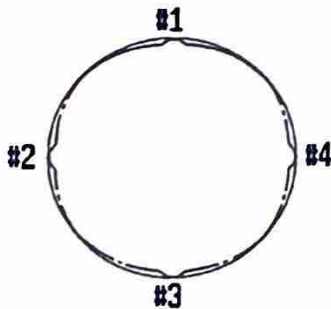
Tightening Torque: Clutch Boss Nut  
4.5 m·kg (32 ft·lb)



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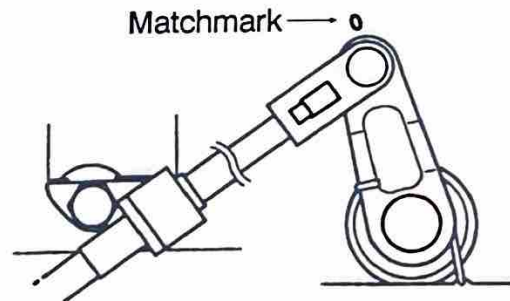
## NOTE

Install the push rod so that its rounded end faces the push lever.



## NOTE

Install the clutch plates with their projections offset approximately 90° from the previous plate's projection as shown above.



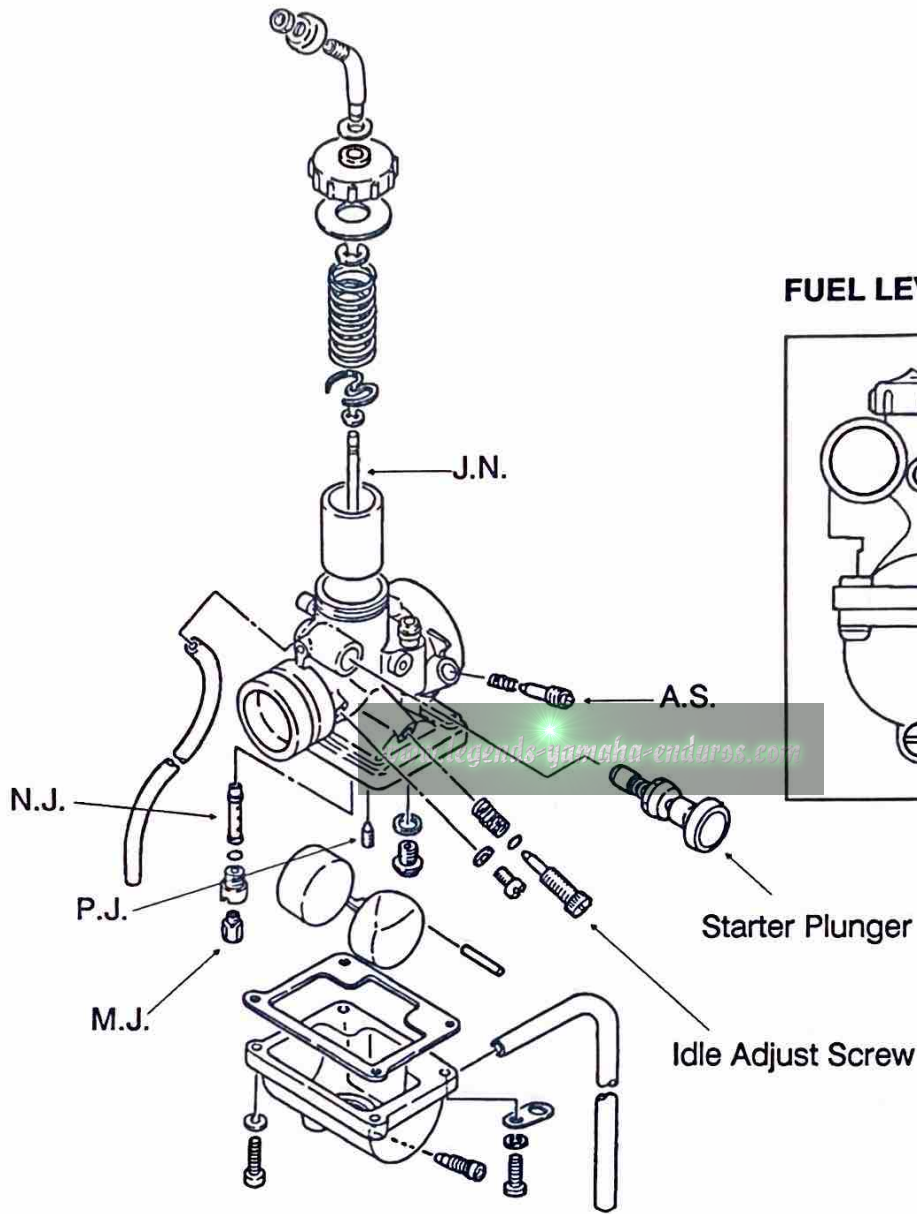
## NOTE

### Clutch Adjustment Steps

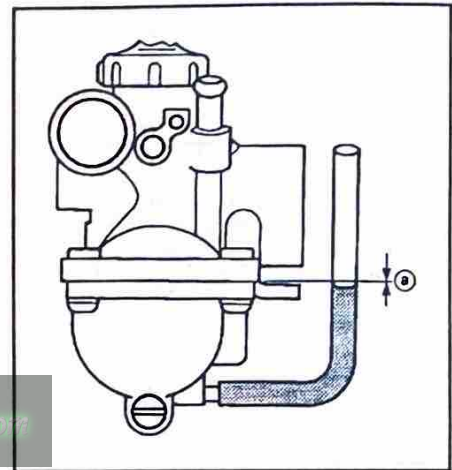
1. Remove the clutch cable end.
2. Loosen the locknut.
3. Turn the adjuster counterclockwise until it stops.
4. Push the push lever forward until it stops.
5. With the push lever in this position, loosen the adjuster until the push lever is aligned with the matchmark on the crankcase.
6. Tighten the locknut
7. Reattach the clutch cable end.



# CARBURETOR



## FUEL LEVEL ADJUSTMENT

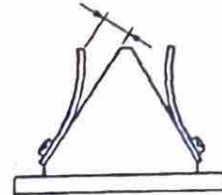
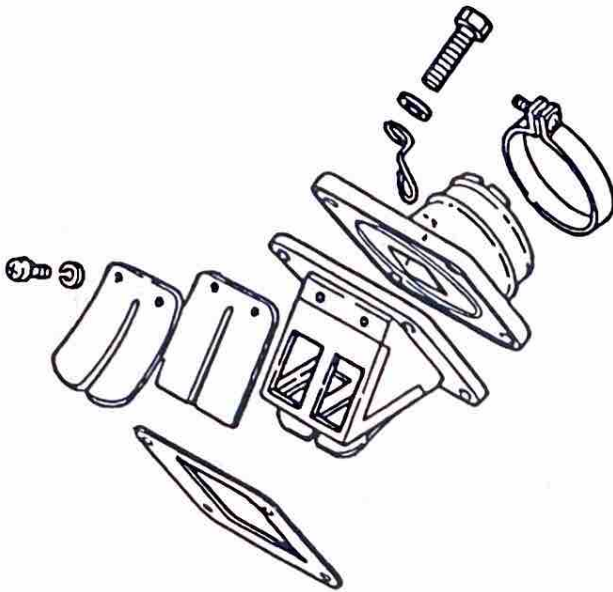


SPECIFICATIONS	
MIKUNI VM22SS	
Main Jet (M.J.)	#140
Pilot Jet (P.J.)	#17.5
Needle Jet (N.J.)	0-6
Jet Needle (J.N.)	4L6-3
Air Screw (A.S.)	1-1/2 turns out
Engine Idle Speed:	1300~1450 RPM
Fuel Level <sup>(a)</sup> :	0.0 ±0.5mm (0.0±0.02in)
Float Level:	20~22mm (0.79~0.87)

**Note** \_\_\_\_\_  
 Float level and fuel level are measured from gasket mating surface of carburetor body.



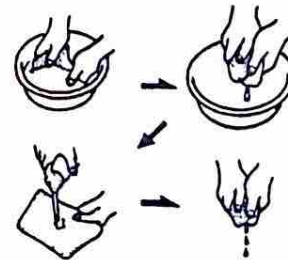
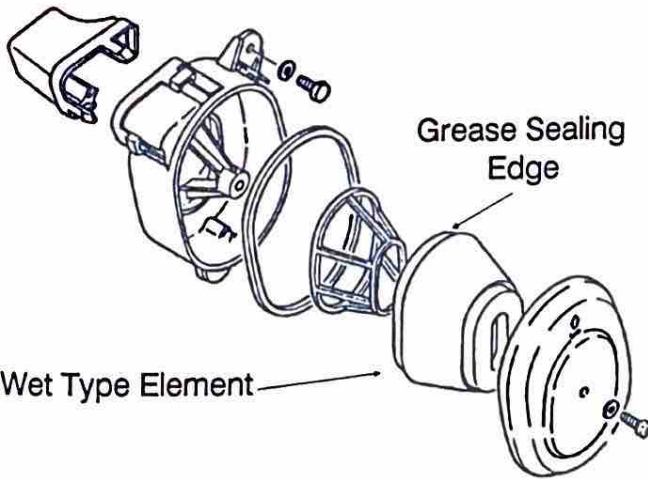
## REED VALVE



Stopper Height:  
7.0mm (0.28in)

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## AIR FILTER



The air filter element should be cleaned every 20~40 hours. It should be cleaned and lubricated more often if the machine is operated in extremely dusty areas.

· Wash the element in solvent.

### NOTE

Never use low flash point solvents.

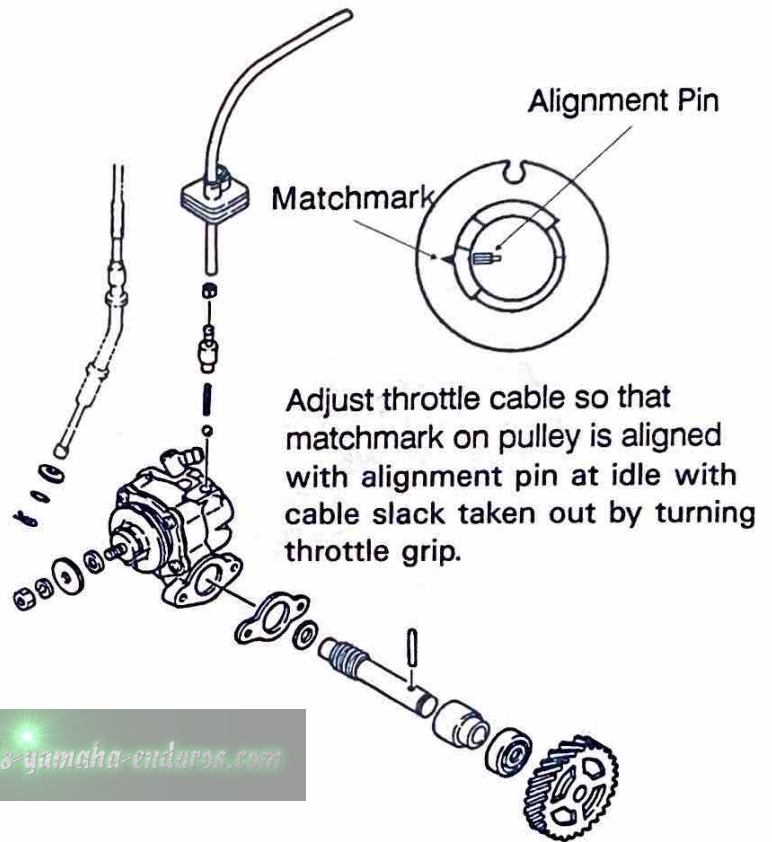
· Allow the element to dry and apply a light coat of Yamaha Foam Air Filter Oil.

· Squeeze out excess oil.

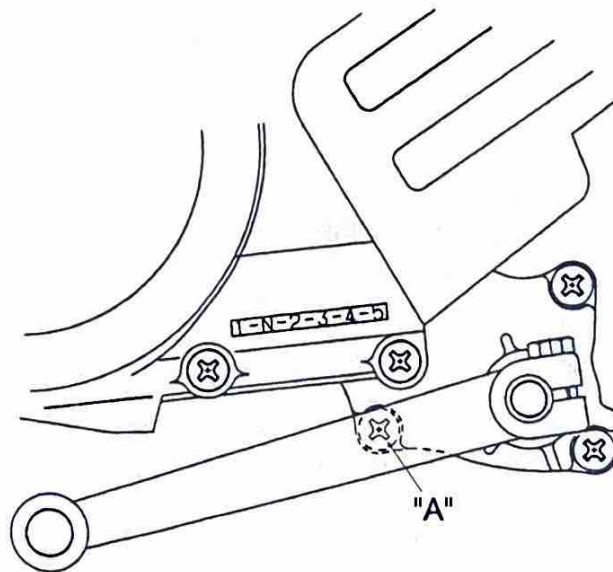
· Grease the entire sealing edge of the element with soap base, lithium grease.

## AUTOLUBE PUMP

SPECIFICATIONS
Plunger Diameter: 4mm (0.16in)
Color Code: Green
Minimum Stroke: 0.20~0.25mm (0.008~0.010in)
Maximum Stroke: 1.85~2.05mm (0.073~0.081in)
Minimum Output/200 Stroke: 0.50~0.62cc (0.017~0.028US.oz)
Maximum Output/200 Stroke: 4.65~5.15cc (0.157~0.174US.oz)
Pulley Adjusting Mark: At Idle With cable slack eliminated.



## CHANGE PEDAL

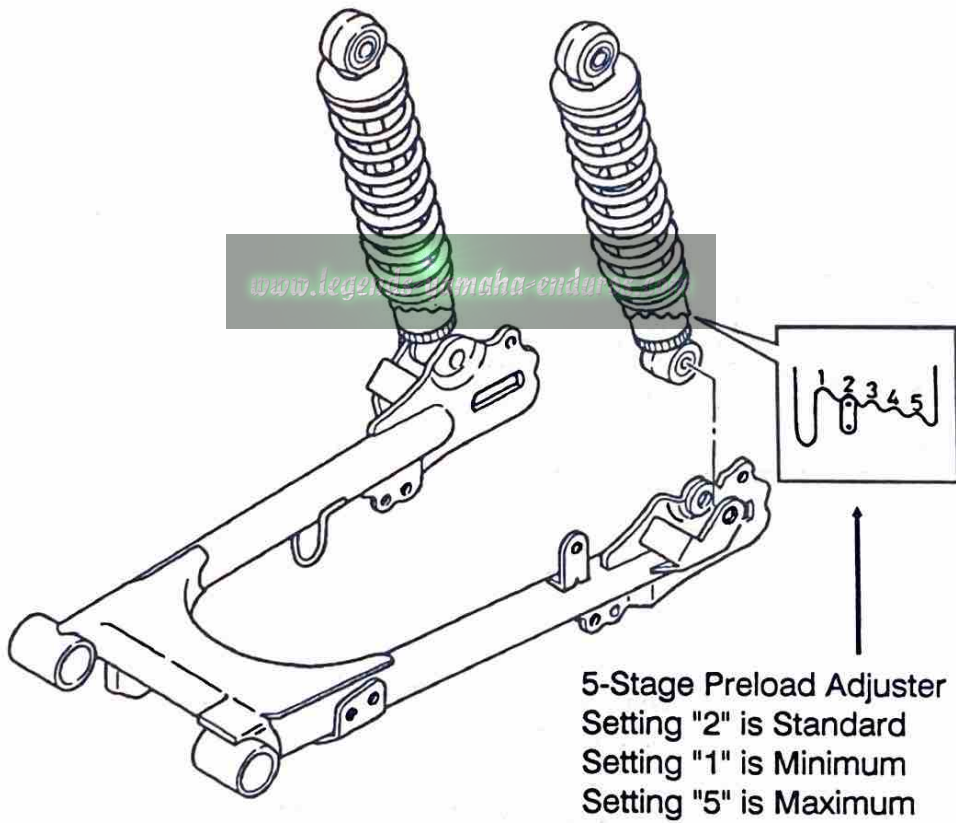


The Change Pedal should be adjusted so that the upper surface is even with the top of screw "A".

# CHASSIS

## SHOCK ABSORBER / SWINGARM

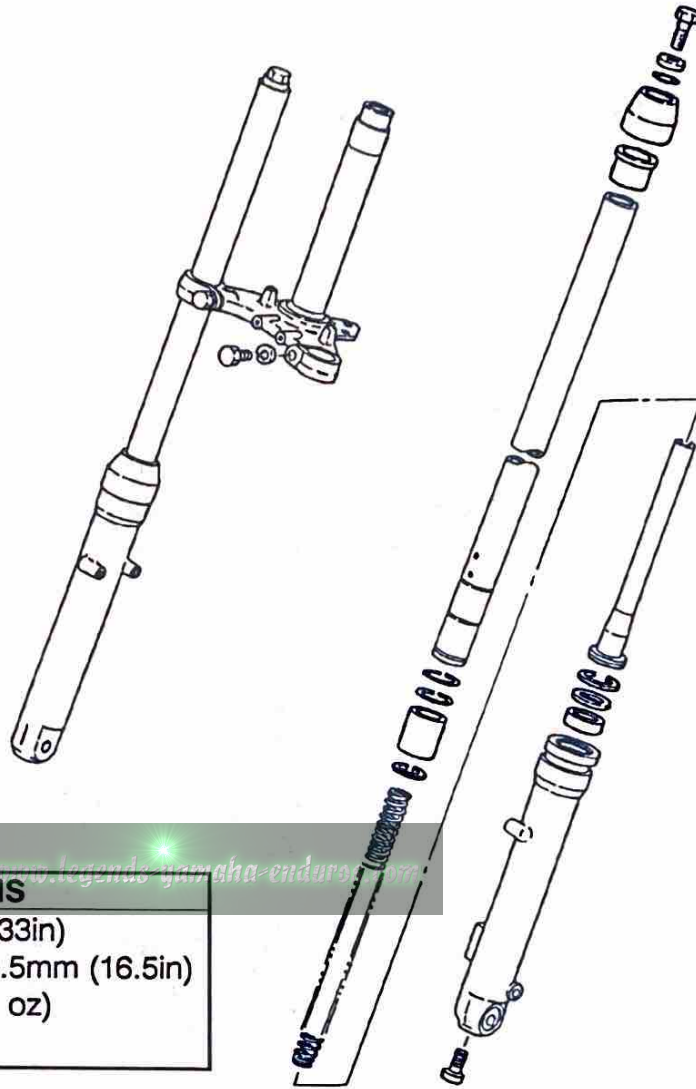
SPECIFICATIONS
Shock Absorber Travel: 75mm (2.95in)
Spring Free Length: 205.6mm (8.09in)



SPECIFICATIONS
Swingarm Free Play Limit (end): 1mm (0.39in)
Swingarm Free Play Limit (side): 0.5mm (0.20in)



## FRONT FORK



### SPECIFICATIONS

Front Fork Travel: 110mm (4.33in)  
Fork Spring Free Length: 418.5mm (16.5in)  
Oil Capacity: 110cc (3.72 US. oz)  
Oil Grade: Fork Oil 10WT

## FRONT / REAR BRAKE

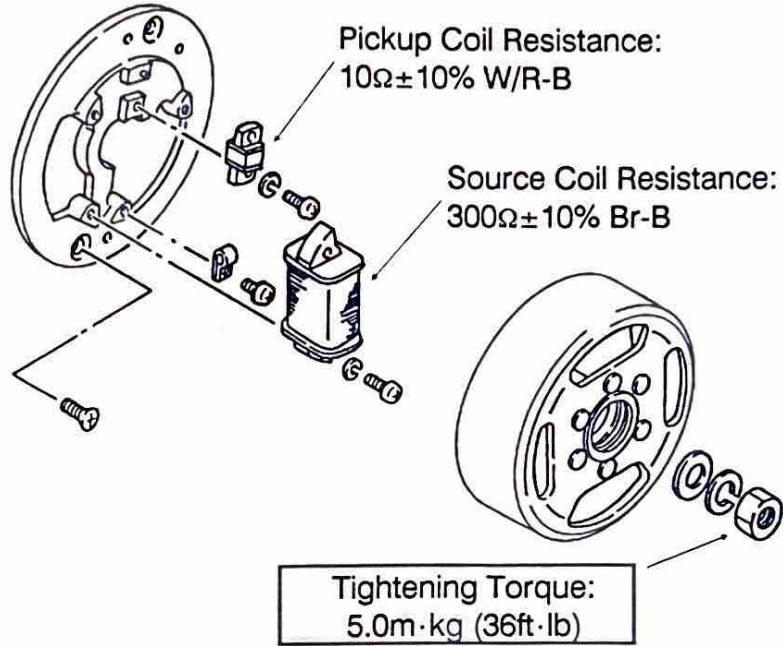
FRONT AND REAR BRAKE:  
LEADING TYPE DRUM BRAKE

### SPECIFICATIONS

Brake Drum Inside Diameter: 110mm (4.33in)  
Limit: 111mm (4.37in)  
Lining Thickness: 4mm (0.16in)  
Limit: 2mm (0.08in)  
Shoe Spring Free Length: 34.5mm (1.36in)

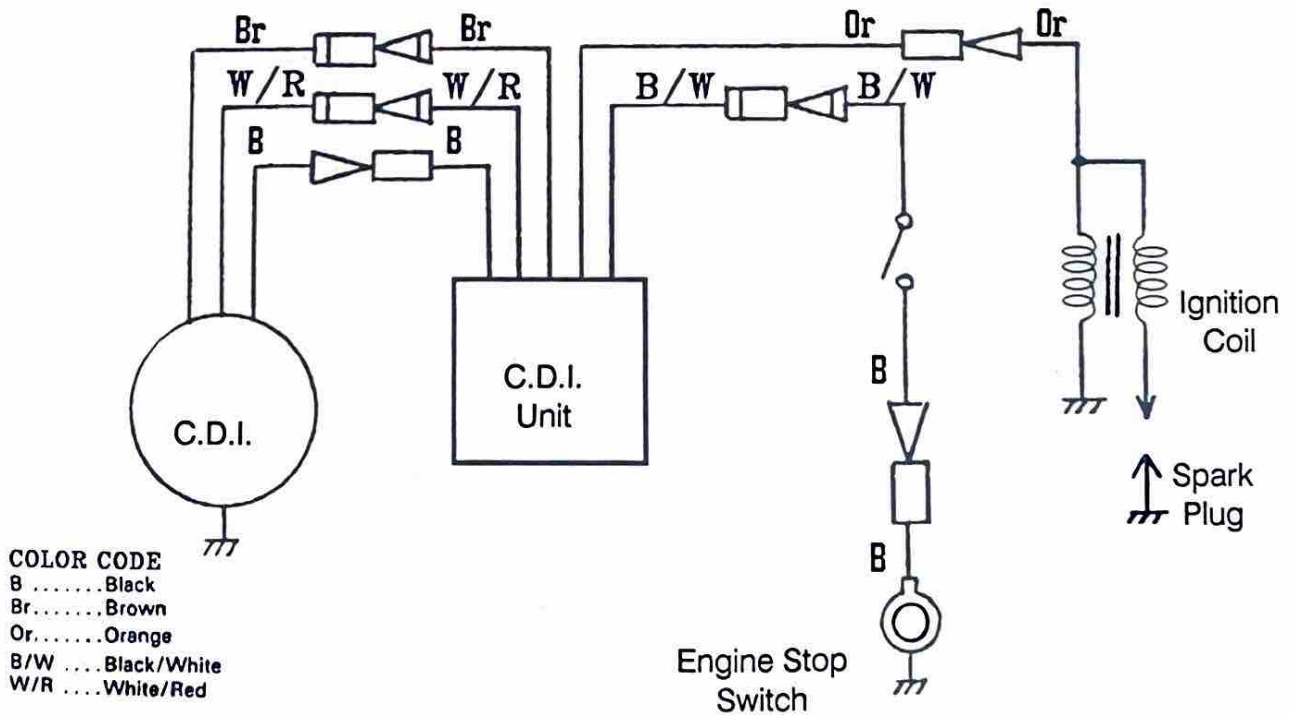
# ELECTRICAL

## FLYWHEEL MAGNETO



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## WIRING DIAGRAM



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