YAMAHA

SUPPLEMENTAL SERVICE MANUAL for 1974

MX SERIES & SC500A

INCLUDES

MX 100A
MX 125A
MX 175A
MX 250A
MX 360A
SC 500A

LIT 11614-27-00

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 our product are already known and understood by the reader.

Without such 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 be performed by an Authorized Yamaha Dealer who is in possession of the requisite basic product knowledge.

Other information is produced by the U.S. distributor, Yamaha International Corporation, and is necessary to provide total technical coverage regarding the product.

The Research, Engineering, and Service Department of Yamaha are continually striving to further improve all models manufactured by the company. Modifications are therefore inevitable and changes in specifications or procedures will be forwarded to all Authorized Yamaha Dealers and will, where applicable, appear in future editions of this manual.

YAMAHA
1974 MX SERIES & SC500A
SUPPLEMENTAL SERVICE MANUAL

1st Edition – JULY 1973
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3rd Printing – FEBRUARY 1977

LIT-11614-27-00

FOREWORD

This year Yamaha has five completely new motocrossers; MX100A, MX125A, MX175A, MX250A, MX360A, and the SC500A Scrambler. Each model incorporates Yamaha's latest technical refinements such as Torque Induction and seven-port cylinders. These features and others pertaining to the MX and SC models are covered within this Supplemental Service Manual.

For complete information on service procedures it is necessary to use this supplement together with the Service Manuals for models DT100A/125A/175A or DT250A/360A.

Service Department
YAMAHA MOTOR COMPANY LTD.

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I. GENERAL

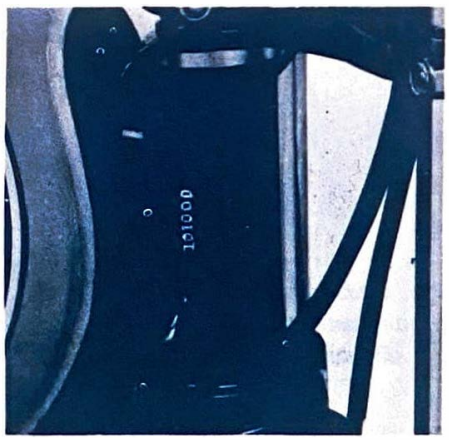
1–1 MACHINE IDENTIFICATION

The frame serial number is located on the right-hand side of the headstock assembly. The first three digits identify the model. This is followed by a dash. The remaining digits identify the production number of the unit. Yamaha production usually begins at . . . 101

The engine serial number is located on a raised boss on the upper rear, right-hand side of the engine. Engine identification follows the same code as frame identification.

Normally, both serial numbers are identical; however, on occasion they may be two or three numbers off.

STARTING SERIAL NUMBER	
MX100A	427 – 000101
MX125A	402 – 000101
MX175A	455 – 000101
MX250A	364 – 020101
MX360A	365 – 020101
SC 500A	363 – 020101



FRAME
SERIAL NUMBER

ENGINE
SERIAL NUMBER

1–2 SPECIFICATIONS

A. GENERAL SPECIFICATIONS

Model	MX100A
Dimensions:	
Overall length	74.0 in. (1,880 mm)
Overall width	34.1 in. (865 mm)
Overall height	42.5 in. (1,080 mm)
Wheelbase	49.6 in. (1,260 mm)
Ground clearance	8.3 in. (210 mm)
Weight (dry):	176 lbs.
Performance:	
Braking distance	50.5 ft. (15.4 m) 31 m.p.h. (50 km/h)
Min. turning radius	82.7 in. (2,100 mm)
Engine:	
Model	427
Type	Air cooled, 2-stroke, Torque Induction
Cylinders	Single cylinder
Displacement	5.92 cu.in. (97 cc)
Bore and stroke	2.047 x 1.795 in. (52 x 45.6 mm)
Starting	Kick starter (primary kick)
Ignition	Magneto ignition
Spark plug	NGK B-8EV
Transmission:	
Primary reduction	Gear, reduction ratio 74/19 = 3.894
Secondary reduction	Chain, reduction ratio 52/14 = 3.714
Clutch	Wet, multi-disc
Gear box	Constant mesh, 5 forward speeds
Gear ratio:	
Low	34/12 = 2.833
Second	30/16 = 1.875
Third	26/19 = 1.368
Fourth	24/22 = 1.090
Fifth	22/23 = 0.956
Chassis:	
Frame model	427
Frame	High tension steel pipe, double-cradle
Suspension (Front)	Telescopic (coil spring oil damper)
Suspension (Rear)	Swing arm (coil spring oil damper)
Steering:	
Caster	60°
Trail	4.1 in. (135 mm)
Tire size	2.75 - 19 - 4PR
Tire size	3.00 - 18 - 4PR
Gasoline tank capacity	1.6 gals. (6.0 liters)
Oil tank capacity	.5 qts.

Model	MX125A
Dimensions:	
Overall length	74.4 in. (1,965 mm)
Overall width	35.8 in. (910 mm)
Overall height	44.1 in. (1,120 mm)
Wheelbase	50.8 in. (1,290 mm)
Ground clearance	9.4 in. (240 mm)
Weight (dry):	202 lbs. (92 kg)
Peformance:	
Braking distance	50.5 ft. (15.4 m) 31 m.p.h. (50 km/h)
Min. turning radius	74.8 in. (1,900 mm)
Engine:	
Model	402
Type	Air cooled, 2-stroke, Torque Induction
Cylinder	Single cylinder
Displacement	7.51 cu.in. (123 cc)
Bore and stroke	2.205 x 1.969 in. (56 x 50 mm)
Starting	Kick starter (primary kick)
Ignition	Magneto ignition
Spark plug	NGK B-9EV
Transmission:	
Primary reduction	Gear, reduction ratio 74/19 = 3.894
Secondary reduction	Chain, reduction ratio 47/15 = 3.133
Clutch	Wet, multi-disc
Gear box	Constant mesh, 5 forward speeds
Gear ratio:	
Low	34/12 = 2.833
Second	30/16 = 1.875
Third	26/19 = 1.368
Fourth	24/22 = 1.091
Fifth	22/23 = 0.956
Chassis:	
Frame model	402
Frame	High tension steel pipe, double-cradle
Suspension (Front)	Telescopic (coil spring oil damper)
Suspension (Rear)	Swing arm (coil spring oil damper)
Steering:	
Caster	60° 30'
Trail	5.4 in. (137 mm)
Tire size	2.75 – 21 – 4PR
Tire size	3.50 – 18 – 4PR
Gasoline tank capacity	1.6
Oil tank capacity	.5 qts

Model	MX175A
Dimensions:	
Overall length	79.3 in. (2,015 mm)
Overall width	36.4 in. (925 mm)
Overall height	43.3 in. (1,100 mm)
Wheelbase	52.9 in. (1,345 mm)
Ground clearance	9.4 in. (260 mm)
Weight (dry):	179 lbs.
Performance:	
Braking distance	50.5 ft. (15.6 m) 31 m.p.h. (50 km/h)
Min. turning radius	74.8 in. (1,900 mm)
Engine:	
Model	455
Type	Air cooled, 2-stroke, Torque Induction
Cylinder	Single cylinder
Displacement	10.33 cu.in. (171 cc)
Bore and stroke	2.600 x 1.969 in. (66 x 50 mm)
Starting	Kick starter (primary kick)
Ignition	Capacitor Discharge Ignition
Spark plug	NGK B-8EV
Transmission:	
Primary reduction	Gear, reduction ratio 74/19 = 3.894
Secondary reduction	Chain, reduction ratio 47/14 = 3.357
Clutch	Wet, multi-disc
Gear box	Constant mesh, 5 forward speeds
Gear ratio:	
Low	30/16 = 1.875
Second	26/19 = 1.368
Third	24/22 = 1.091
Fourth	22/23 = 0.956
Fifth	
Chassis:	
Frame model	455
Frame	High tension steel pipe, double-cradle
Suspension (Front)	Telescopic (coil spring oil damper)
Suspension (Rear)	Swing arm (coil spring oil damper)
Steering:	
Caster	60° 30'
Trail	5.5 in. (140 mm)
Tire size	2.75 – 21 – 4PR
Tire size	3.50 – 18 – 4PR
Gasoline tank capacity	1.58 gals. (6.0 liters)
Oil tank capacity	.5 qts.

Model	MX250A
Dimensions:	
Overall length	83.1 in. (2,110 mm)
Overall width	37.4 in. (950 mm)
Overall height	44.5 in. (1,130 mm)
Wheelbase	55.9 in. (1,420 mm)
Ground clearance	8.9 in. (225 mm)
Weight (dry):	227 lbs. (103 kg)
Performance:	
Braking distance	50.5 ft. (15.4 m) 31 m.p.h. (50 km/h)
Min. turning radius	82.7 in. (2,100 mm)
Engine:	
Model	364
Type	Air cooled, 2-stroke, Torque induction
Cylinder	Single cylinder
Displacement	15.01 cu. in. (246 cc)
Bore and stroke	2.756 x 2.520 in. (70 x 64 mm)
Starting	Kick starter (primary kick)
Ignition	Capacitor Discharge Ignition
Spark plug	NGK B-BEV
Transmission:	
Primary reduction	Gear, reduction ratio 65/23 = 2.826
Secondary reduction	Chain, reduction ratio 51/14 = 3.642
Clutch	Wet, multi-disc
Gear box	Constant mesh, 5 forward speeds
Gear ratio:	
Low	36/16 = 2.250
Second	32/19 = 1.684
Third	29/23 = 1.260
Fourth	26/26 = 1.000
Fifth	23/29 = 0.793
Chassis:	
Frame model	364
Frame	High tension steel pipe, double-cradle
Suspension (Front)	Telescopic (coil spring oil damper)
Suspension (Rear)	Swing arm (coil spring oil damper)
Steering:	
Caster	60°
Trail	5.1 in. (129 mm)
Tire size	3.00 – 21 – 4PR
Tire size	4.00 – 18 – 4PR
Gasoline tank capacity	2.4 gals. (9.0 liters)
Oil tank capacity	0.6 qts. (0.5 liters)

Model	MX360A
Dimensions:	
Overall length	83.1 in. (2,110 mm)
Overall width	37.4 in. (950 mm)
Overall height	44.5 in. (1,130 mm)
Wheelbase	55.9 in. (1,420 mm)
Ground clearance	8.9 in. (225 mm)
Weight (dry):	234 lbs. (106 kg)
Performance:	
Braking distance	50.5 ft. (15.4 m) 31 m.p.h. (50 km/h)
Min. turning radius	82.7 in. (2,100 mm)
Engine:	
Model	365
Type	Air cooled, 2-stroke, gasoline, Torque induction
Cylinders	Single cylinder
Displacement	21.42 cu.in. (351 cc)
Bore and stroke	3.150 x 2.756 in. (80 x 70 mm)
Starting	Kick starter (primary kick)
Ignition	Capacitor Discharge Ignition
Spark plug	NGK B-8EV
Transmission:	
Primary reduction	Gear, reduction ratio 64/24 = 2.666
Secondary reduction	Chain, reduction ratio 51/14 = 3.642
Clutch	Wet, multi-disc
Gear box	Constant mesh 5 forward speeds
Gear ratio:	
Low	36/16 = 2.250
Second	32/19 = 1.684
Third	29/23 = 1.260
Fourth	26/26 = 1.000
Fifth	23/29 = 0.793
Chassis:	
Frame model	365
Frame	High tension steel pipe, double-cradle
Suspension (Front)	Telescopic (coil spring oil damper)
Suspension (Rear)	Swing arm (coil spring oil damper)
Steering:	
Caster	60°
Trail	5.1 in. (129 mm)
Tire size	3.00 – 21 – 4PR
Tire size	4.00 – 18 – 4PR
Gasoline tank capacity	2.4 gals. (9.0 liters)
Oil tank capacity	0.6 qts. (0.5 liters)

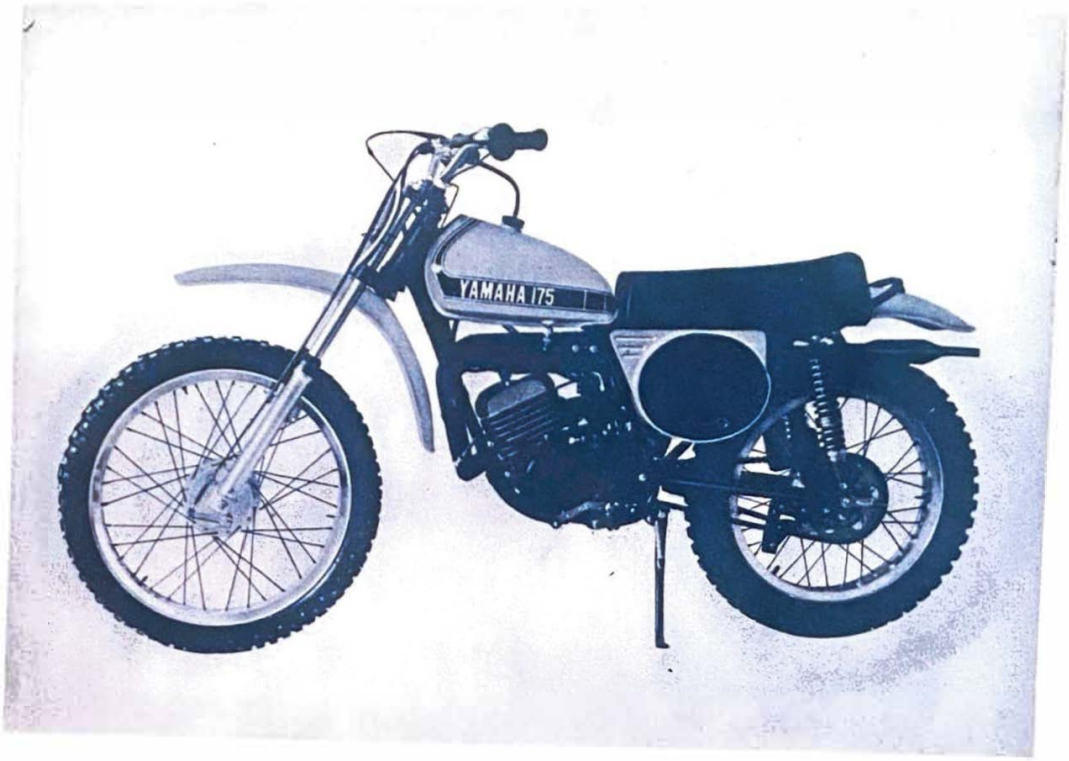
Model	SC500A
Dimensions:	
Overall length	83.1 in. (2,110 mm)
Overall width	37.4 in. (950 mm)
Overall height	44.5 in. (1,130 mm)
Wheelbase	55.9 in. (1,420 mm)
Ground clearance	8.9 in. (225 mm)
Weight (dry):	236 lbs. (107 kg)
Performance:	
Braking distance	50.5 ft. (15.4 m) 31 m.p.h. (50 km/h)
Min. turning radius	82.7 in. (2,100 mm)
Engine:	
Model	363
Type	Air cooled, 2-stroke, Torque Induction
Cylinders	Single cylinder
Displacement	30.27 cu.in. (496 cc)
Bore and stroke	3.740 x 2.756 in. (95 x 70 mm)
Starting	Kick starter (primary kick)
Ignition	Capacitor Discharge Ignition
Spark plug	NGK B-8EV
Transmission:	
Primary reduction	Gear, reduction ratio 64/24 = 2.666
Secondary reduction	Chain, reduction ratio 51/16 = 3.188
Clutch	Wet, multi-disc
Gear box	Constant mesh, 4 forward speeds
Gear ratio:	
Low	30/15 = 2.000
Second	27/20 = 1.350
Third	23/23 = 1.000
Fourth	21/26 = 0.807
Chassis:	
Frame model	363
Frame	High tension steel pipe, double-cradle
Suspension (Front)	Telescopic (coil spring oil damper)
Suspension (Rear)	Swing arm (coil spring oil damper)
Steering:	
Caster	60°
Trail	5.08 in. (129 mm)
Tire size	3.00 – 21 – 4PR
Tire size	4.60 – 18 – 4PR
Gasoline tank capacity	2.4 gals. (9.0 liters)
Oil tank capacity	0.6 qts. (0.5 liters)

B. EXTERNAL VIEWS

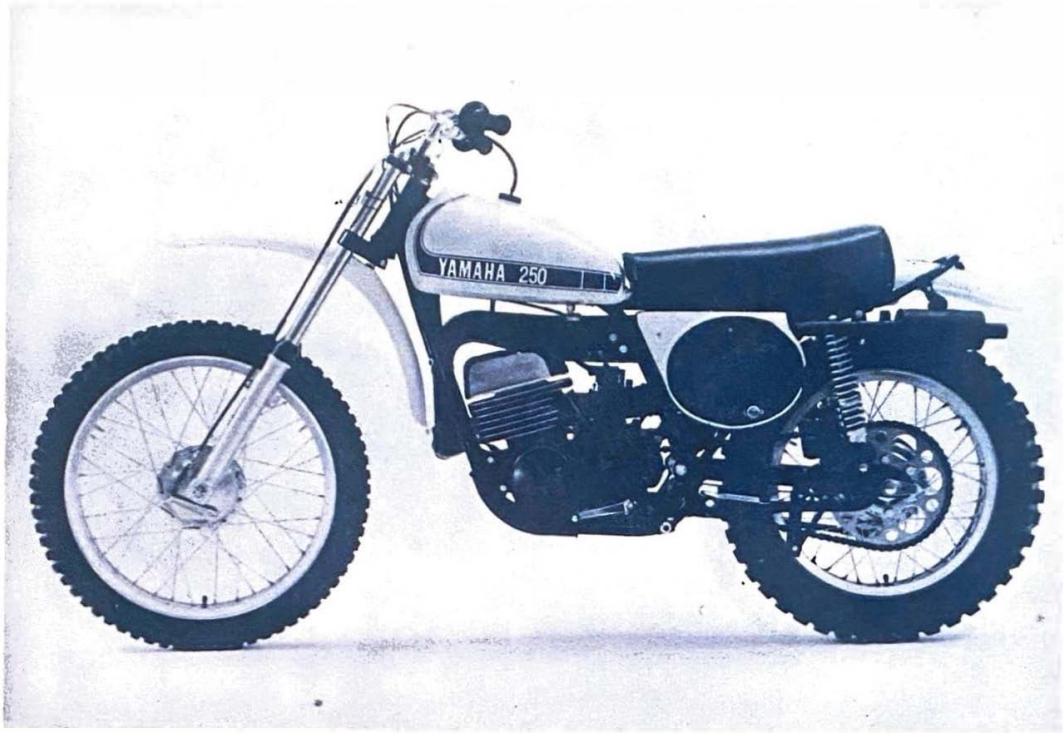
MX100A

MX125A

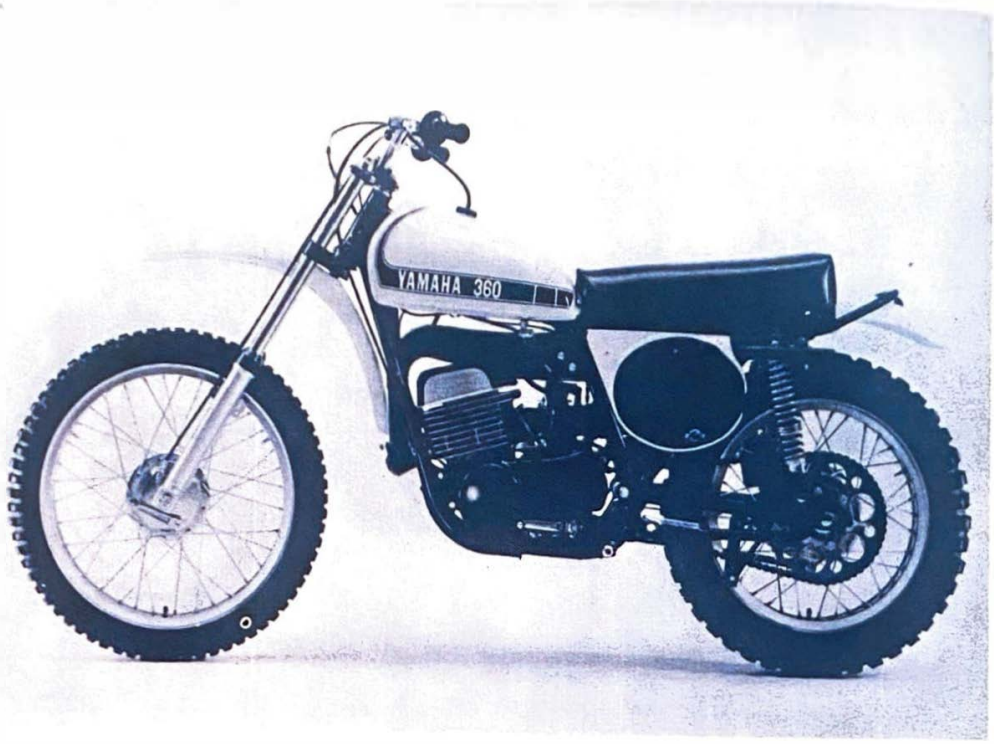
MX175A



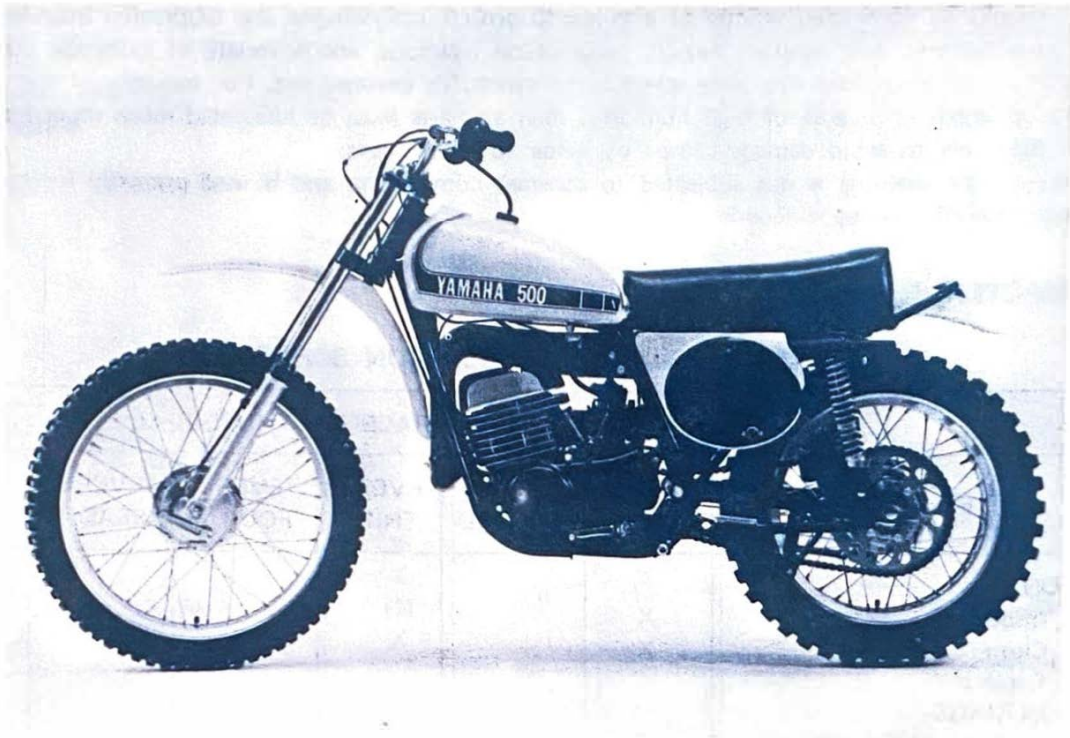
MX250A



MX360A



SC500A



1–3 MAINTENANCE SPECIFICATIONS

A. MAINTENANCE AND LUBRICATION INTERVALS

This chart should be considered strictly as a guide to general maintenance and lubrication intervlas. You must take into consideration that weather, terrain, geographical locations, and a variety of individual uses all tend to demand that each owner alter this time schedule to match his environment. For example, if the motorcycle is continually operated in an area of high humidity, then all parts must be lubricated much more frequently than shown on the chart to avoid damage caused by water to metal parts.
Additionally, if the machine is not subjected to constant competition and is used primarily for trail riding, the maintenance intervals can be extended.

B. COMPETITION

MAINTENANCE/LUBRICATION SCHEDULE

	RACE MEET INTERVAL					
ITEM	EVERY MEET	EVERY SECOND	EVERY THIRD	EVERY FOURTH	EVERY SEASON	AS REQUIRED
PISTON						
Inspect	X					
Clean	X					
Replace						X
PISTON RINGS						
Replace	X					
CYLINDER						
Inspect (Compression Check)	X					
Clean	X					
Replace						X
Check head bolt torque	(2)					
CLUTCH						
Adjust	X					
Replace (Plates)						X
TRANSMISSION						
Change oil		X				
Inspect gears					X	
Replace bearings					X	
Inspect shift forks					X	
ENGINE MAIN BEARINGS						
Replace					X	
CONNECTING ROD						
Check bearings	X					
Replace big end bearing					X	
Replace small end bearing						X
CARBURETOR						
Check/Adjust/Tighten	X					
Clean & Inspect	X					
PISTON PIN						
Inspect	X					
Replace						X
EXHAUST SYSTEM						
Inspect	X					
FLYWHEEL NUT						
Torque to	X					

ITEM	RACE MEET INTERVAL					
	EVERY MEET	EVERY SECOND	EVERY THIRD	EVERY FOURTH	EVERY SEASON	AS REQUIRED
KICK STARTER						
Inspect idler gear					X	
Replace						X
FRAME						
Clean & Inspect	X					
SWING ARM						
Check	X					
Lubricate			X			
CONTROLS & CABLES						
Check & Adjust	X					
Lubricate	X					
BRAKES						
Clean/Check/Adjust	X					
Replace						X
WHEELS AND TIRES						
Check pressure	X					
Check runout	X					
Check spoke tension	(1)					
Check bearings	X					
Replace bearing						X
STEERING HEAD						
Check	X					
Clean and repack			X			
CDI WIRING						
Check connections	X					
AIR FILTER						
Clean and oil	X					
Replace						X
SPARK PLUG						
Replace	(2)					
DRIVE CHAIN						
Clean & lubricate	(2)					
Check tension and alignment	(2)					
Replace						X
FITTINGS AND FASTENERS						
Tighten	X					
FUEL TANK						
Clean/Flush	X					
Clean petcock filter	X					
SHOCK ABSORBERS						
Drain & refill				X		
FRONT FORKS						
Drain & refill			X			
Replace seals						X

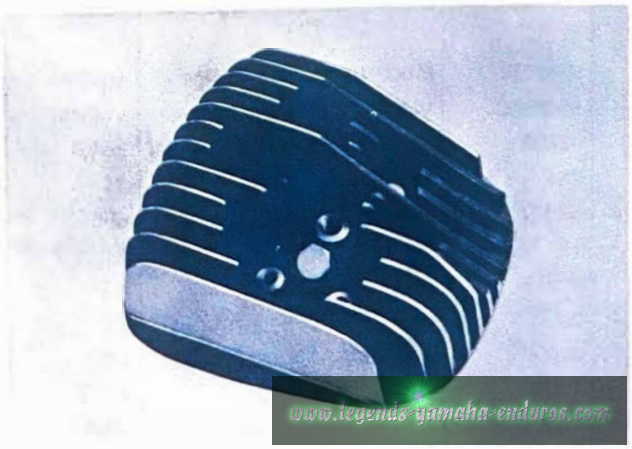
(1) Check spoke tension after each heat (moto)

(2) Every heat (moto)

ITEM / MODEL	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
ENGINE – Top End						
Cylinder head Volume (cc)	9.1±0.2	11.3±0.15	18.8±0.3	27±0.5	36.6±0.5	55±0.5
Cylinder Taper Limit (mm)	0.05	0.05	0.05	0.05	0.05	0.065
Cylinder Out-of-Round Limit (mm)	0.01	0.01	0.01	0.01	0.01	0.01
Ring End Gap, FREE APPROX. (mm)	8	7	Top 8.5 Second 7.5	9.5	15.5	13
Ring End Gap, INSTALLED (mm)	0.4~0.5	0.4~0.5	Top 0.3~0.5 Second 0.3~0.5	0.4~0.5	0.4~0.5	0.3~0.5
Ring Groove Clearance (mm)	0.03~0.07	0.03~0.07	Top 0.03~0.05 Second 0.03~0.05	0.03~0.07	0.03~0.07	0.03~0.07
Piston Clearance, Nominal (mm)	0.040~0.045	0.045~0.050	0.045~0.050	0.040~0.050	0.040~0.050	0.050~0.060
Piston Maximum Wear Limit (mm)	0.1	0.1	0.1	0.1	0.1	0.1
ENGINE – Crankshaft						
Small End Play, Nominal (mm)	0.8~1.0	0.8~1.0	0.8~1.0	0.8~1.0	0.8~1.0	0.8~1.0
Small End Play, Wear Limit (mm)	2.0	2.0	2.0	2.0	2.0	2.0
Large End Clearance, Nominal (mm)	0.4~0.5	0.4~0.5	0.4~0.5	0.4~0.5	0.4~0.5	0.4~0.5
Large End Clearance, Wear Limit (mm)	0.6	0.6	0.6	0.6	0.6	0.6
Runout, Clutch Side (mm)	0.03	0.03	0.03	0.03	0.03	0.03
Runout, Ignition Side (mm)	0.03	0.03	0.03	0.03	0.03	0.03
Flywheel Width (mm)	$50^{+0.05}_{-0.10}$	$56^{+0.05}_{-0.10}$	$56^{+0.05}_{-0.10}$	$64^{+0}_{-0.05}$	$64^{+0}_{-0.05}$	$64^{+0}_{-0.05}$
ENGINE – Clutch						
Friction Plate Thick., Nom. (mm)	4.0	4.0	4.0	3.0	3.0	3.0
Friction Plate Wear Limit (mm)	3.7	3.7	3.7	2.7	2.7	2.7
Clutch Plate Warp Allowance (mm)	0.05	0.05	0.05	0.05	0.05	0.05
Spring Free Length, Nominal (mm)	34.0	34.0	34.0	36.0	36.0	36.0
Spring Free Length, Wear Limit (mm)	33.0	33.0	33.0	35.0	35.0	35.0
AUTOLUBE						
Plump Plunger Diameter (mm)	4.0	5.5	5.5	5.5	5.5	5.5
Pump Overall Drive Ratio	58.95	81.05	81.05	55.0	32.0	32.0
Pump Stroke at Idle, Max. (mm)	0.25	0.25	0.25	0.65	0.65	0.65
Pump Stroke at Idle, Min. (mm)	0.20	0.20	0.20	0.60	0.20	0.60
Stroke at Full Throttle, Max.	2.05	2.05	2.05	2.05	2.05	2.05
Stroke at Full Throttle, Min.	1.85	1.85	1.85	1.85	1.85	1.85
IGNITION						
Minimum Spark Gap/rpm (mm/rpm)	10/500	10/500	7/500	7/500	7/500	7/300
Ignition Coil Primary Res. (Ω/%C)	0.61±10/20	0.61±10/20	0.61±10/20	0.61±10/20	0.61±10/20	0.61±10/20
Ignition Coil Secondary Res. (KΩ/%°C)	6.0±20/20	6.0±20/20	6.0±20/20	6.0±20/20	6.0±20/20	6.0±20/20
Source Coil Resistance (Ω/%)	0.9±10	0.9±10	—	—	—	
Pulser Coil Resistance (CDI) (Ω/%)	—	—	55±10	54±10	54±10	88±10
Condenser Capacity (μF)	0.30	0.30	—	—	—	—
Ignition Point Gap (mm)	0.30~0.40	0.30~0.40	—	—	—	—
Spark Plug Manufacturer	NGK	NGK	NGK	NGK	NGK	NGK
Spark Plug Type	B-8EV	B-9EV	B-8EV	B-8EV	B-8EV	B-8EV
Ignition Timing	2.0±0.16	2.0±0.15	2.0±0.16	2.3±0.15	2.5±0.15	2.7±0.15

ITEM / MODEL	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
CARBURETION						
Manufacturer	MIKUNI	MIKUNI	MIKUNI	MIKUNI	MIKUNI	MIKUNI
Model Number	VM26SC	VM28SC	VM28SC	VM34SC	VM34SC	VM38SC
I.D. Number	42760	40260	45560	36461	36562	36361
Venturi Size (mm)	26	28	28	34	34	38
Jet Needle/Clip Position	5F3 - 3	5F3 - 2	5F3 - 3	6F5 - 2	6F15 - 2	6F16 - 2
Cut Away	1.0	2.5	2.5	3.0	3.0	3.5
Pilot Jet	#50	#60	#60	#50	#50	#80
Air Jet	0.5	1.5	1.5	2.0	2.0	2.0
Starter Jet	#100	#40	#40	#80	#80	#80
Air Screw (turns out)	1 1/2	1.0	1.0	1 1/2	1.0	1 1/2
Float Level	15.8	15.8	15.8	23.4	23.4	17.8
CHASSIS						
Front Wheel						
Tire Manufacturer	YOKOHAMA	YOKOHAMA	YOKOHAMA	DUNLOP	DUNLOP	DUNLOP
Tire Tread Type	KNOBBY	KNOBBY	KNOBBY	KNOBBY	KNOBBY	KNOBBY
Tire Size	2.75-19-4PR	2.75-21-4PR	2.75-21-4PR	3.00-21-4PR	3.00-21-4PR	3.00-21-4PR
Tire Nominal Pressure (lbs/in²)	14	14	14	13	13	13
Brake Shoe Diameter, Nom. (mm)	110	110	110	130	130	130
Brake Shoe Wear Limit (mm)	105	105	105	125	125	125
Rim Runout Limits, Vertical (mm)	2	2	2	2	2	2
Rim Runout Limits, Lateral (mm)	2	2	2	2	2	2
Rear Wheel						
Tire Manufacturer	YOKOHAMA	YOKOHAMA	YOKOHAMA	YOKOHAMA	YOKOHAMA	YOKOHAMA
Tire Tread Type	KNOBBY	KNOBBY	KNOBBY	KNOBBY	KNOBBY	KNOBBY
Tire Size	3.00-18-4PR	3.50-18-4PR	3.50-18-4PR	4.00-18-4PR	4.00-18-4PR	4.60-18-4PR
Tire Nominal Pressure (lbs/in²)	17	17	17	15	15	15
Brake Shoe Diameter, Nom. (mm)	130	130	130	150	150	150
Brake Shoe Wear Limit (mm)	2	2	2	2	2	2
Rim Runout Limits, Vertical (mm)	2	2	2	2	2	2
Rim Runout Limits, Lateral (mm)	2	2	2	2	2	2
Front Fork Travel (mm)	145	145	160	193.5	193.5	193.5
Front Spring Free Length (mm)	421	433.5	433.5	499	499	499
Rear Cushion Travel (mm)	90	105	105	105	105	105
Drive Chain Type/Size	DK428	DK428	DK428	DK520	DK520	DK520
Drive Chain Number of Links	110L	112L	112L	104L	104L	104L
VOLUMES/CAPACITIES/GRADES						
Fork Capacity (each Leg) (cc)	187	130	134	194	194	194
Oil Grade	SAE10W/30	SAE10W/30	SAE10W/30	SAE10W/30	SAE10W/30	SAE10W/30
Gasoline Tank Capacity (ℓ)	6.0	6.0	6.0	9.0	9.0	9.0
Fuel Grade (min. octane)	90+	90+	90+	90+	90+	90+
Autolube Tank Capacity (ℓ)	0.45	0.45	0.45	0.6	0.6	0.6
Lubricant Grade						
Transmission Capacity (cc)	650±50	650±50	650±50	1000±50	1200±50	1200±50
Lubricant Grade	Motor oil SAE 10W/30 Type SE	Motor oil SAE 10W/30 Type SE	Motor oil SAE 10W/30 Type SE	Motor oil SAE 10W/30 Type SE	Motor oil SAE 10W/30 Type SE	Motor oil SAE 10W/30 Type SE

2. ENGINE MAINTENANCE



2–1 CYLINDER HEAD

A. Removal

Remove bolts securing cylinder head to cylinder.
Remove cylinder head and gasket.

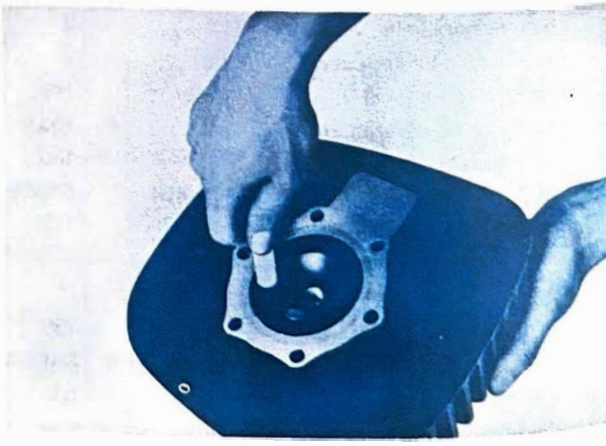
NOTE:
Break each nut loose (1/4 turn) prior to removing any one nut.

CYLINDER	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
HEAD COMBUSTION CHAMBER VOLUME (cc)	9.1 ± 0.2	11.3 ± 0.15	18.8 ± 0.3	2.7±0.5	36.6 ± 0.5	55 ± 0.5

B. Maintenance - Cylinder Head

1. Remove spark plug.

2. Using a rounded scraper, remove carbon deposits from a combustion chamber. Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.



3. Place head on a surface plate. There should be no warpage. Correct by re-surfacing. (Place 400-600 grit wet sandpaper on surface plate and re-surface head using a figure-eight sanding pattern. Rotate head several times to avoid removing too much material from one side).

4. Clean spark plug gasket mating surface thoroughly.

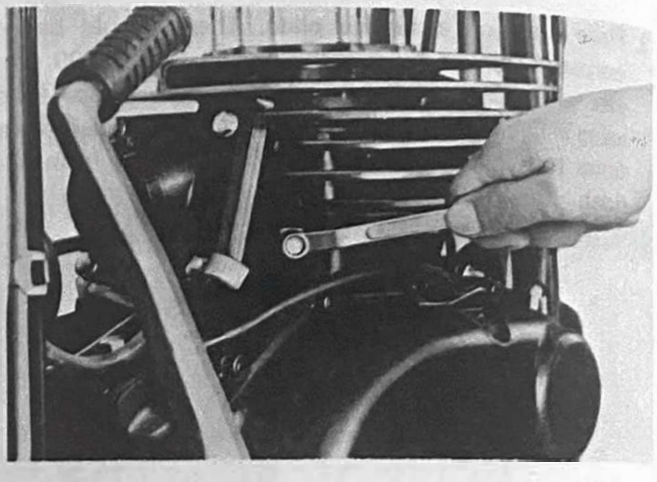
5. Wash head in solvent and wipe dry.

6. Install new cylinder head gasket during reassembly.

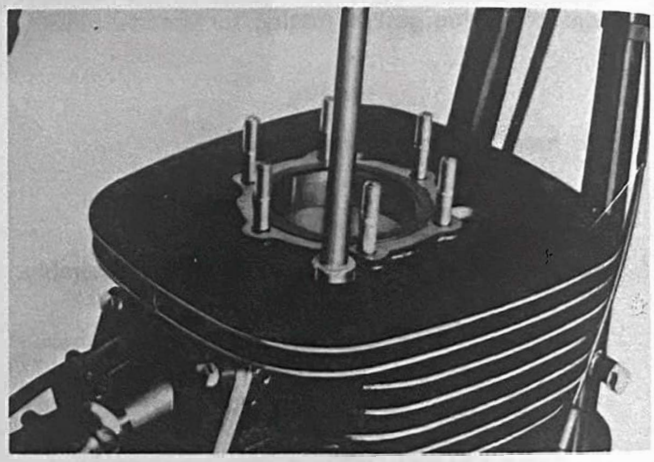
			MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
CYLINDER HEAD BOLT TORQUE (ENGINE COLD)	(8mm)	kg-m	2.0	2.0	2.0	2.0	2.0	2.0
		Lbs-ft	14.5	14.5	14.5	14.5	14.5	14.5
	(10mm)	kg-m	—	—	—	3.5	3.5	3.5
		Lbs-ft				25.0	25.0	25.0

A. Removing Cylinder

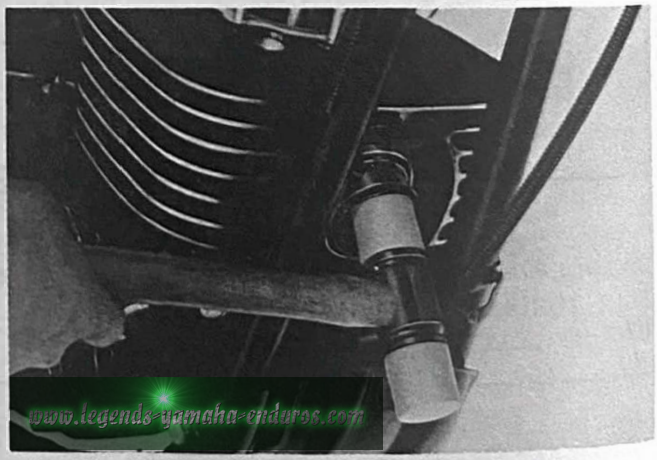
1. Remove banjo bolt securing oil pump delivery line to cylinder.



2. Remove cap bolts securing cylinder to crankcase. (MX250/360, SC500)
   NOTE:
   Break each bolt loose (1/4 turn) prior to removing any one bolt.



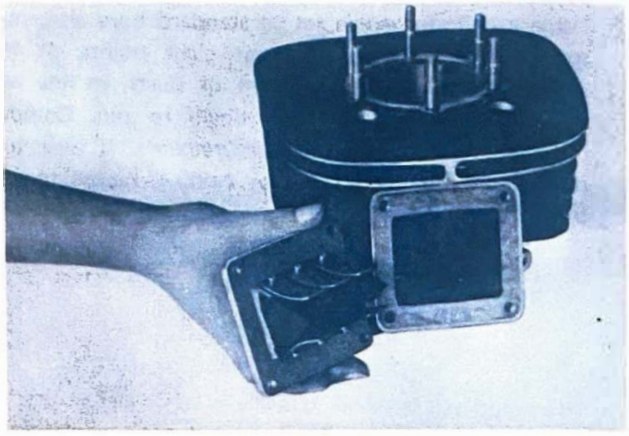
3. If necessary, loosen the cylinder by striking it lightly with a rubber or rawhide hammer.



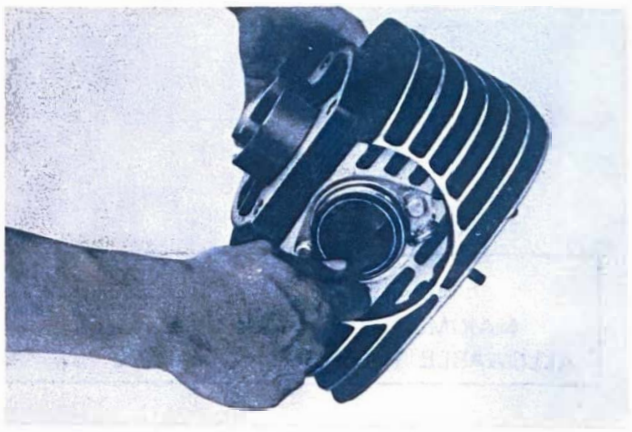
4. With piston at Top Dead Center, raise cylinder until cylinder skirts clear crankcase. Stuff a clean shop rag into crankcase cavity, around rod, to prevent dirt and other foreign particles from entering. Remove cylinder.

B. Maintenance - Cylinder

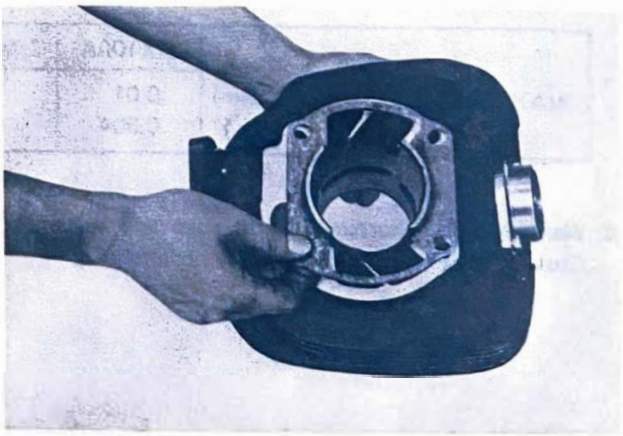
1. Remove reed valve assembly.



2. Using a rounded scraper, remove carbon deposits from exhaust port.

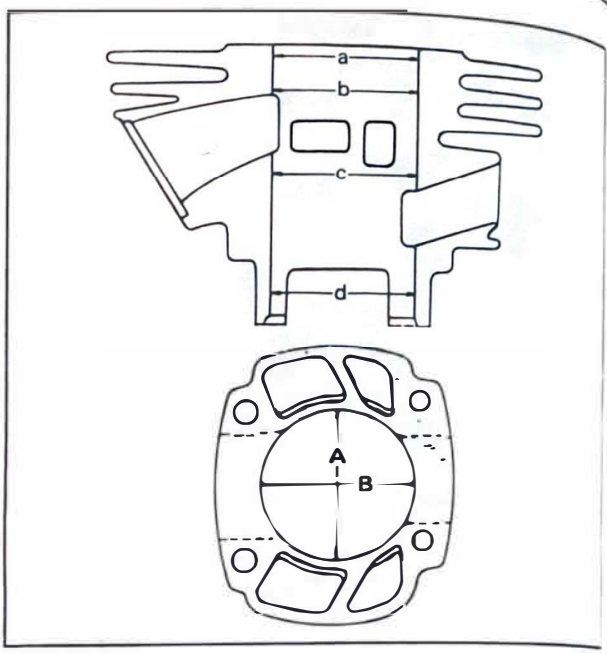


3. Remove cylinder base gasket and clean gasket seat on cylinder and crankcase thoroughly.



4. Check cylinder bore. Using a cylinder hone or a wet sandpaper, remove any scoring. Hone lightly, using smooth stones or 400~600 grit wet sandpapers. Hone no more than required to avoid excess piston clearance.

5. Using a cylinder gauge set to standard bore size, measure the cylinder. Measure at eight points; at top, center, and 1/2" from bottom of skirts, in line with the wrist pin and at right angle to pin. Compare minimum and maximum measurements. If over tolerance, and not correctable by honing, rebore to next over-size.



	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
MAXIMUM (mm)	0.05	0.05	0.05	0.05	0.05	0.065
ALLOWABLE TAPER (in.)	0.002	0.002	0.002	0.002	0.002	0.003

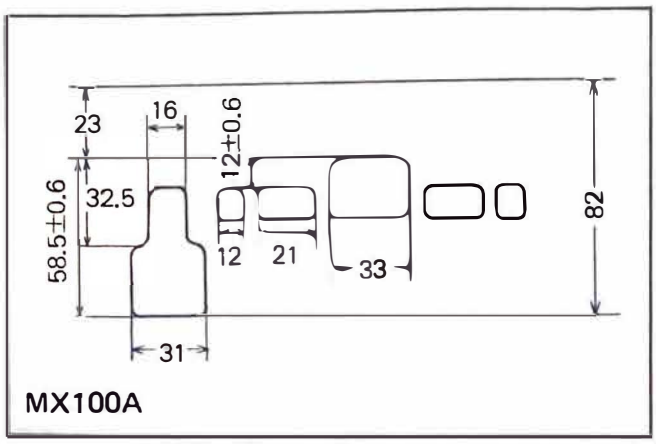
	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
MAXIMUM ALLOWABLE (mm)	0.01	0.01	0.01	0.01	0.01	0.01
OUT-OF-ROUND (in.)	0.004	0.004	0.004	0.004	0.004	0.004

6. Wash cylinder thoroughly with soap and water. Dry. Coat walls with light oil film immediately.

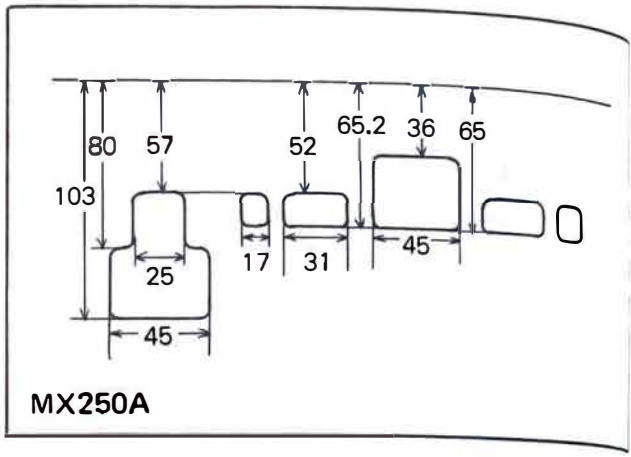
7. During re-assembly, always use a new cylinder base gasket and torque cylinder bolts to specification.

	MX250A	MX360A	SC500A
CYLINDER BOLT TORQUE (Kg-m)	3.5~4.0	3.5~4.0	3.5~4.0
(Lbs-ft)	25~29	25~29	25~29

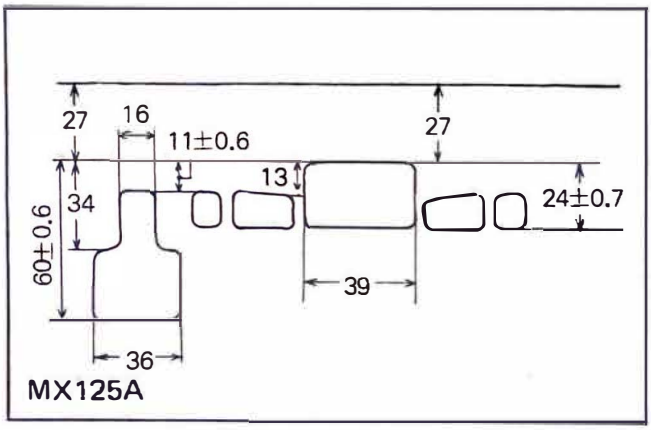
C. Port Timing Diagrams



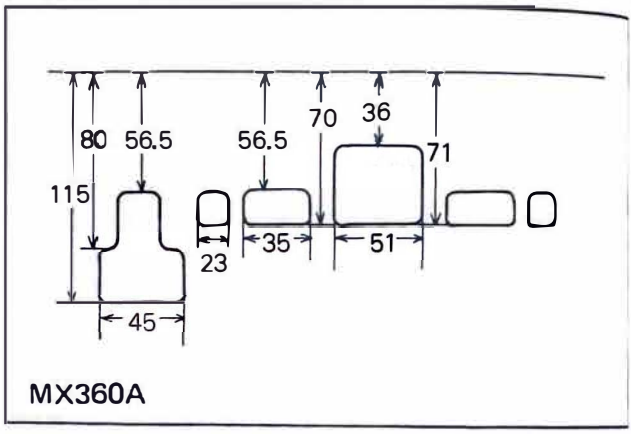
MX100A



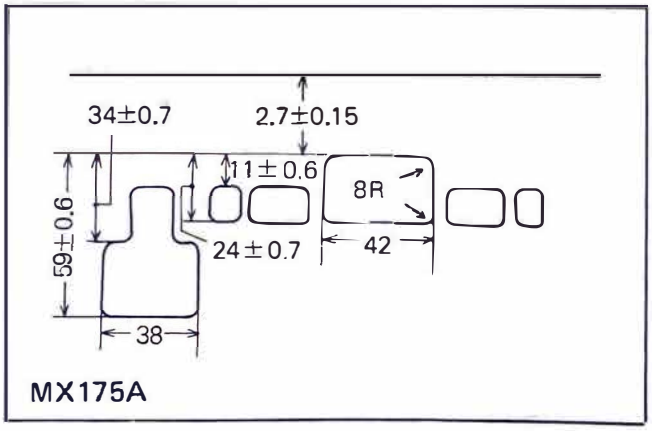
MX250A



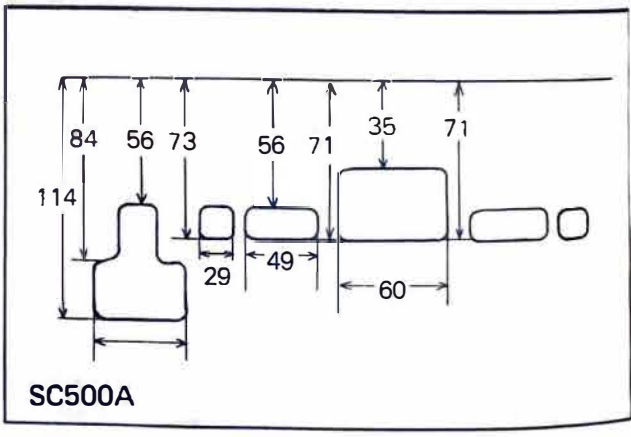
MX125A



MX360A



MX175A



SC500A

2–3 PISTON PIN

A. Piston Pin Removal

Remove piston pin clip (1) from piston. Push piston pin out from opposite side. Remove piston.

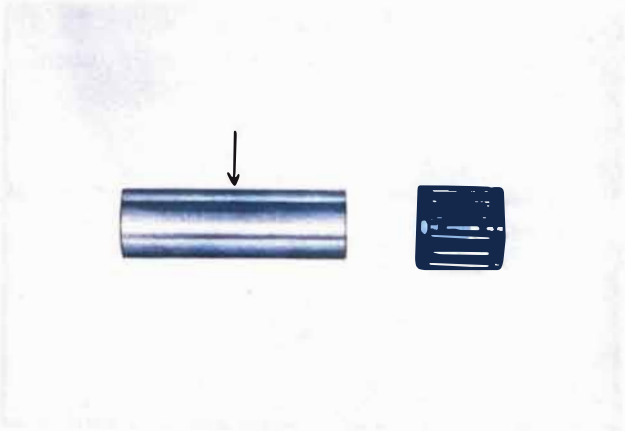
NOTE:

Before removing the piston pin clips, cover the crankcase with a clean rag, so you will not accidentally drop the clip into the crankcase.

B. Maintenance - Piston Pin and Bearing

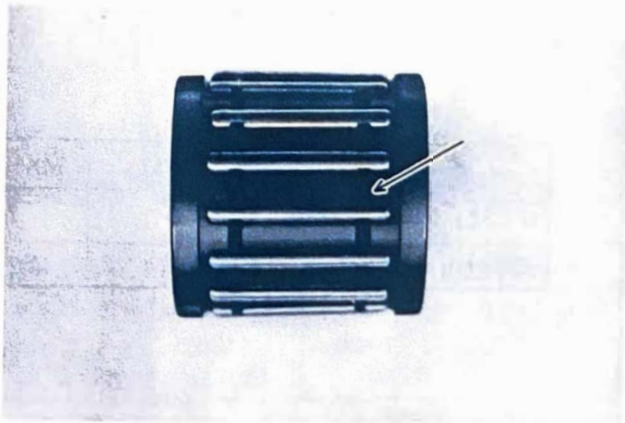
1. Check the pin for signs of wear. If any wear is evident, replace pin and bearing.

2. Check the pin and bearing for signs of heat discoloration. If excessive (heavily blued), replace both.



3. Check the bearing cage for excessive wear. Check the rollers for signs of flat spots. If found, replace pin and and bearing.

4. Apply a light film of oil to pin and bearing surfaces. Install in connecting rod small end. Check for play. There should be no noticeable vertical play. If play exists, check connecting rod small end diameter and wear. Replace pin and bearing or all as required.

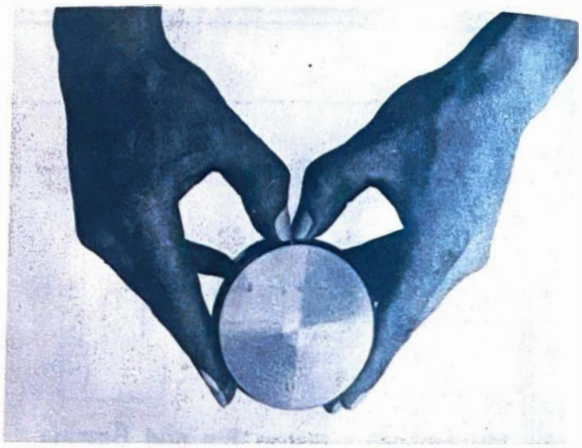


5. The piston pin should fit snugly in its bore so that it drags a little as you turn it. If the piston is loose replace the pin and/or the piston.

2–4 PISTON RINGS

A. Removal

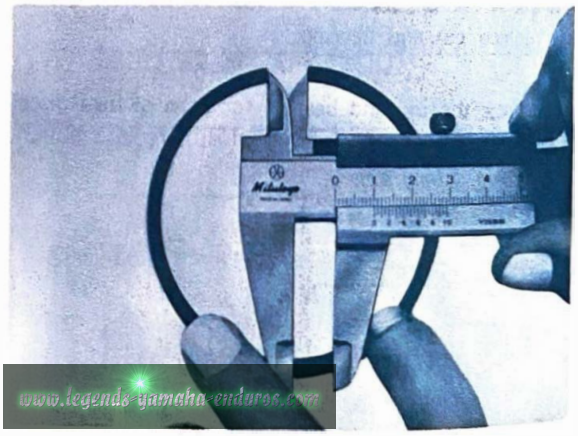
Put your thumb at each end of the piston ring and pull the piston ring ends apart. Remove the ring by moving the ring off the piston at the side opposite the ring ends.



B. Maintenance - Piston Rings

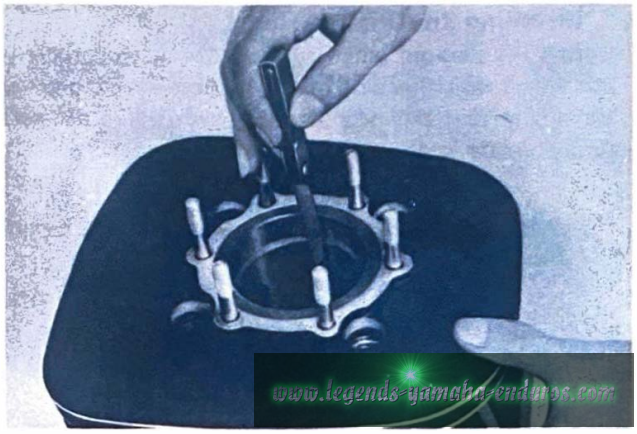
1. Check rings for scoring. If any severe scratches are noticed, replace.

2. Measure ring end gap in free position. If beyond tolerance, replace.



PISTON RING END GAP	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
(FREE) (mm)	8	7	TOP 8.5	9.5	15.5	13
APPROX. (in.)	0.314	0.275	SEC. 7.5 / 0.298	0.374	0.610	0.512

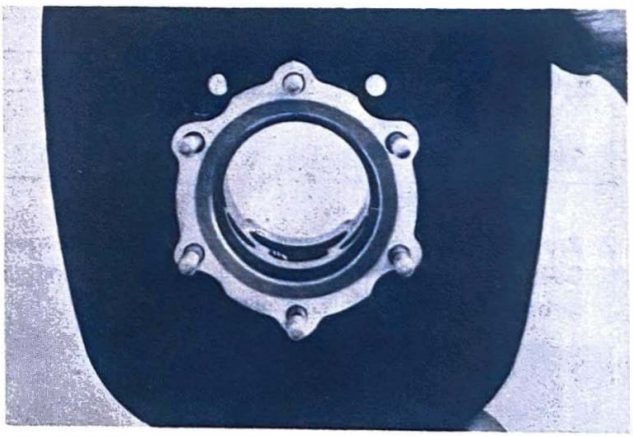
3. Insert ring into cylinder. Push down approximately ¾" using piston crown to maintain right-angle to bore. Measure installed end gap. If beyond tolerance, replace set.



	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
RING END GAP INSTALLED (mm)	0.4 ~ 0.5	0.4 ~ 0.5	TOP 0.3~0.5	0.4 ~ 0.5	0.4 ~ 0.5	0.3 ~ 0.5
(in.)	0.0157 ~ 0.0197	0.0157 ~ 0.0197	SEC. 0.0118 ~ 0.0197	0.0157 ~ 0.0197	0.0157 ~ 0.0197	0.0118 0.0197

4. Holding cylinder towards light, check for full seating of ring around bore. If not fully seated, check cylinder. If cylinder not out-of-round, replace ring.

5. Check ring expander. If worn excessively, or broken, replace set.



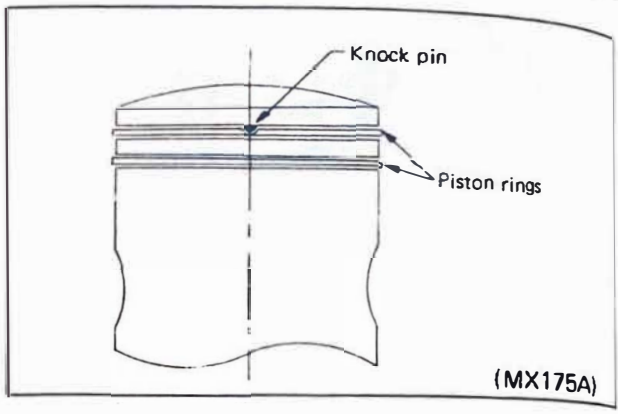
6. With ring installed in groove, insert feeler gauge between ring side and groove. If beyond tolerance, replace ring and/or piston as required.

	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
RING GROOVE CLEARANCE (mm)	0.03 ~ 0.07	0.03 ~ 0.07	TOP 0.03~0.05	0.03 ~ 0.07	0.03 ~ 0.07	0.03 ~ 0.07
(in.)	0.0012 ~ 0.0028	0.0012 ~ 0.0028	SEC 0.0012 ~ 0.0020	0.0012 ~ 0.0028	0.0012 ~ 0.0028	0.0012 ~ 0.0028

C. Installing the Piston Ring

1. During installation, amke sure ring ends are properly positioned on either side of locating pin in ring groove. Make sure ring expander is positioned in like manner. Apply liberal coating of two-stroke oil to ring.

2. New rings require break-in. Follow new machine break-in procedure.



2–5 PISTON

A. Maintenance - Piston

1. Using a rounded scraper, remove carbon deposits from piston crown.

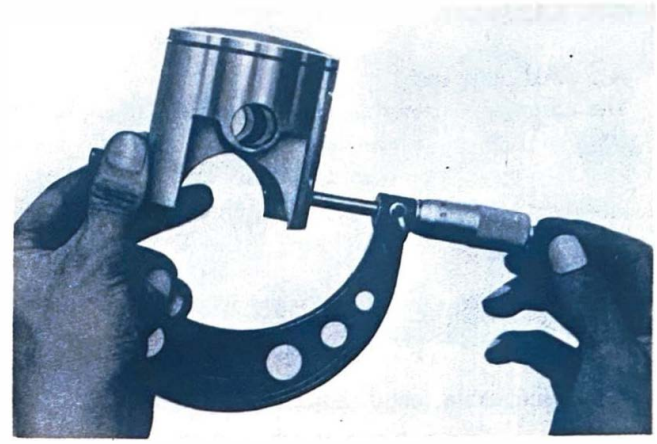
2. Break a used piston ring in two. File end square. De-burr edges to avoid scratching ring groove and clean carbon deposits from ring grooves.

3. Using 400-600 grit wet sandpaper, lightly sand score marks and lacquer deposits from sides of piston. Sand in cross-hatch pattern. Do not sand excessively.

4. Wash piston in solvent and wipe dry.

5. Using an outside micrometer, measure piston diameter. The piston is cam-ground and tapered. The only measuring point is at right-angles to the piston pin holes about ½" from bottom of piston.
Compare piston diameter to cylinder bore measurements.

Piston maximum diameter subtracted from minimum cylinder diameter gives piston clearance. If beyond tolerance, hone cylinder and refit new piston, or rebore to next over-size and fit new piston.



		MX100A	MX125	MX175	MX250A	MX360A	SC500A
PISTON CLEARANCE (NEW) (MIN.)	(in.)	0.0016	0.0018	0.0018	0.0016	0.0016	0.0020
	(mm)	0.040	0.405	0.045	0.040	0.040	0.050
(INSTALLATION) MAX.	(in.)	0.0018	0.0020	0.0020	0.0020	0.0020	0.0024
	(mm)	0.035	0.050	0.050	0.050	0.050	0.060

		MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
MAXIMUM PISTON CLEARANCE (USED)	(mm)	0.1	0.1	0.1	0.1	0.1	0.1
	(in.)	0.039	0.039	0.039	0.039	0.039	0.039

B. Installation - Piston

1. During re-assembly, coat the piston skirt areas liberally with two-stroke oil.

2. Install new piston pin circlips and make sure they are fully seated within their grooves.

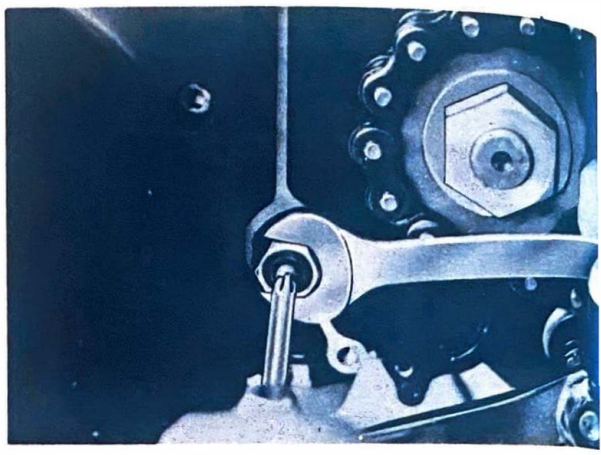
3. Take care during installation to avoid damaging the piston skirts against the crankcase as the cylinder is installed. Note the two induction holes in the piston skirt. These must be to the rear during installation.

4. Make sure the ring is properly positioned as the cylinder is installed.

2–6 CLUTCH

A. Adjustment

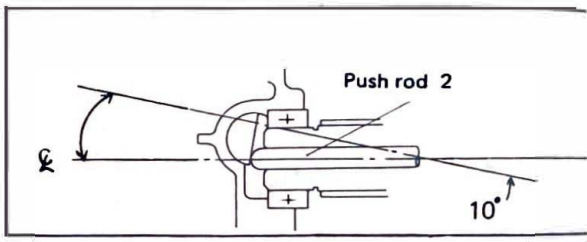
The clutch push lever is so designed that it is positioned 10° behind the push lever axle before it is operated and 10 ahead after it is operated. Therefore, if the clutch push lever does not move as specified, adjustment is necessary.



Proper clutch adjustment requires two separate procedures.

1. Loosen cable length adjust screw locknut.
2. Turn clutch cable adjustor (at lever) all the way into the lever.

NOTE:
The above procedure provides for maximum cable freeplay to allow for proper clutch actuating mechanism adjustment.

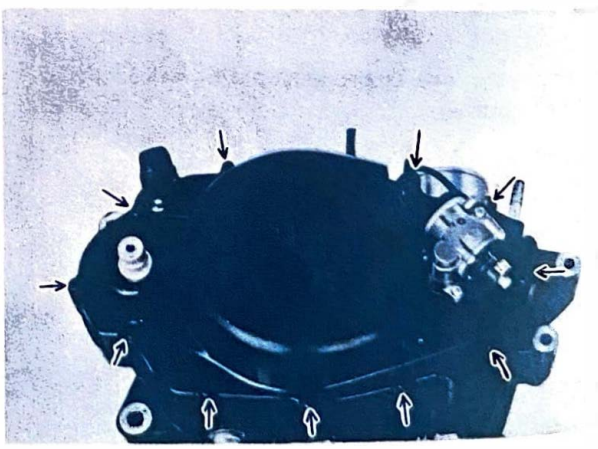


3. Remove left crankcase side cover. If necessary, remove shifter lever.
4. Loosen adjustor locknut. Using a Phillips screwdriver, turn adjust screw in or out until clutch arm is 10° behind the main axle centerline.
5. Tighten locknut.
6. At clutch lever assembly, left handlebar, turn cable length adjustor in or out until freeplay at lever pivot equals 2 ~ 3mm.
7. Tighten adjusting bolt locknut.
8. Re-install side cover.
9. Re-install shifter lever.

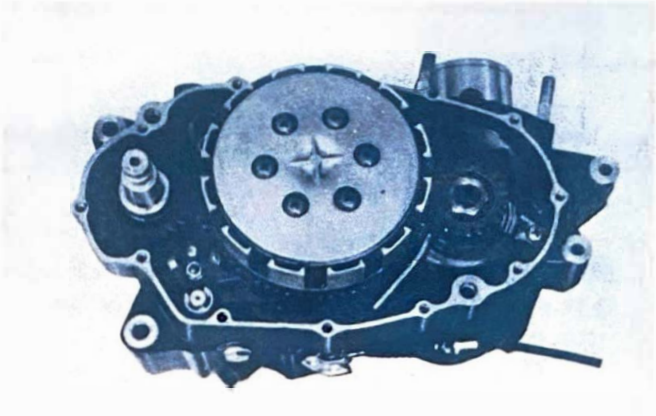
Removal

1. Remove Allen screws securing right crankcase cover.
2. Remove cover.
   The cover can be removed with oil pump attached.

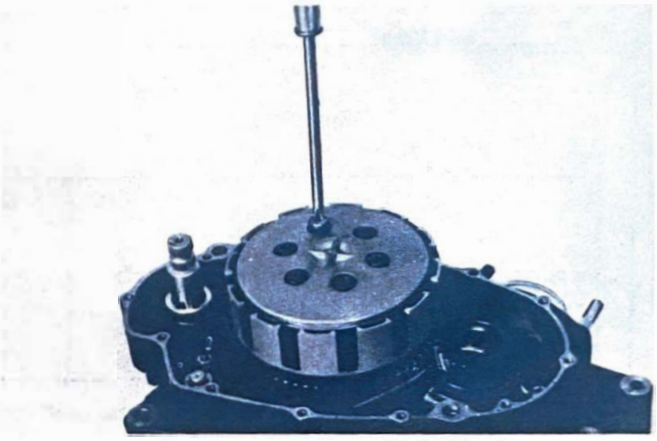
NOTE:
If cylinder in place, remove banjo bolt securing oil delivery line.



3. Remove crankcase cover gasket.
   Replace during re-assembly.



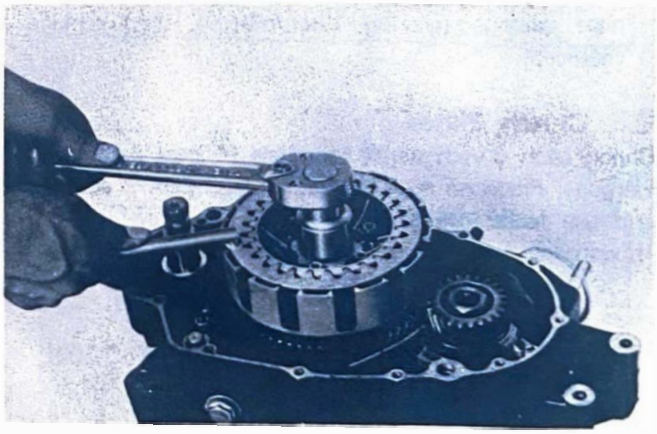
4. Remove clutch spring holding screws pressure plate, and push rod.



5. Install clutch holding tool on clutch boss.

6. Remove lock nut, washer, and clutch boss in that order.

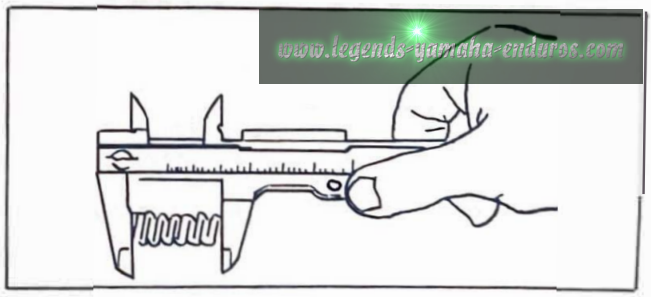
7. If the clutch housing spacer remains on the transmission main shaft remove it.
   Remove the thrust plate and thrust plate spacers.

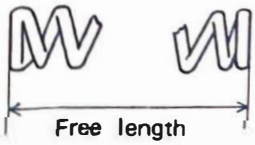


C. Clutch Springs

Measure each clutch spring. If beyond tolerance, replace.

NOTE:
For optimum clutch operation it is advisable to replace the clutch springs as a set if one or more are faulty.

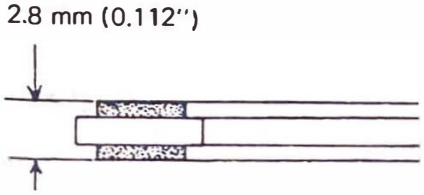


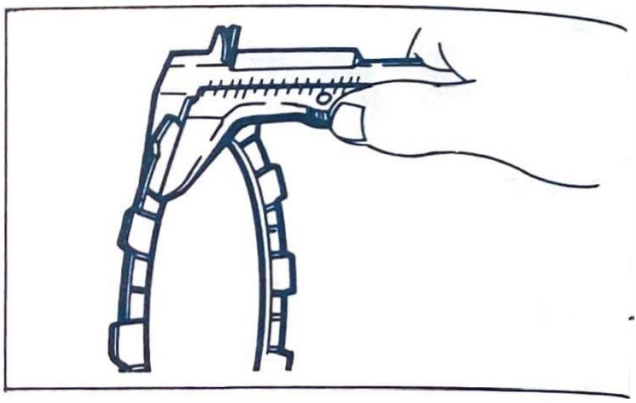


	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
CLUTCH SPRING (mm)	34.0	34.0	34.0	36.0	36.0	36.0
FREE LENGTH (in.)	1.34	1.34	1.34	1.42	1.42	1.42

D. Clutch Friction Plates

1. Measure the friction plates at three or four points. If their minimum thickness exceeds tolerance, replace.





		MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
FRICTION PLATE THICKNESS	NEW: (mm)	4.0	4.0	4.0	3.0	3.0	3.0
	(in.)	0.157	0.157	0.157	0.118	0.118	0.118
	WEAR (mm)	3.7	3.7	3.7	2.7	2.7	2.7
	LIMIT: (in.)	0.146	0.146	0.146	0.106	0.106	0.106

2. Check the friction plates for signs of warpage and heat damage (glazing, discoloration, etc.) replace as required.

E. Clutch Plates

Check each clutch plate for signs of heat damage and warpage. Place on surface plate (plate glass is acceptable) and use feeler gauge as illustrated.
If warpage exceeds tolerance, replace.

	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
CLUTCH PLATE WARP ALLOWANCE (mm)	0.05	0.05	0.05	0.05	0.05	0.05
(in.)	0.002	0.002	0.002	0.002	0.002	0.002

NOTE:
For optimum performance, if any plate requires replacement, it is advisable to replace the entire set.

F. Installation

During installation of the clutch assembly, take care that the thickest clutch plate is installed on the clutch boss first.

Take care that the thrust plates and thrust bearings do not slip out of position as the housing and clutch boss are installed. Install all parts with a heavy coat of 10W-30 motor oil on their mating surfaces.

	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
CLUTCH SECURING NUT TORQUE (Kg-m)	4.0~4.5	5.8~7.0	5.8~7.0	5.8~7.0	5.8~7.0	5.8~7.0
(Lbs-ft)	29 ~ 33	42 ~ 51	42 ~ 51	42 ~ 51	42 ~ 51	42 ~ 51

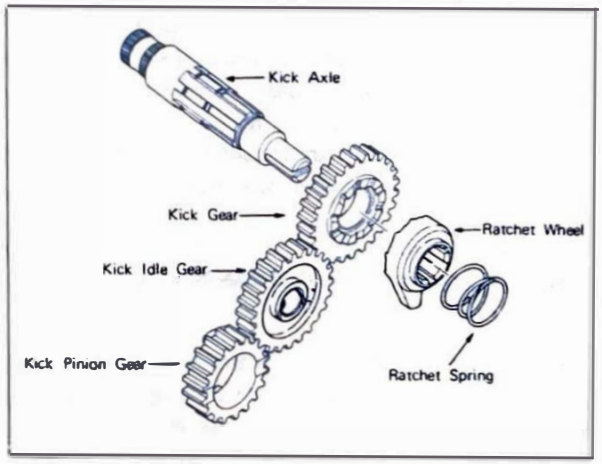
2–7 KICK STARTER MECHANISMS

A. Rachet Type Kick Starter (MX250A, MX360A, SC500A)

1. The kick starter employs a ratcheting mechanism wherein the kick gear is in constant mesh with the kick idler gear.

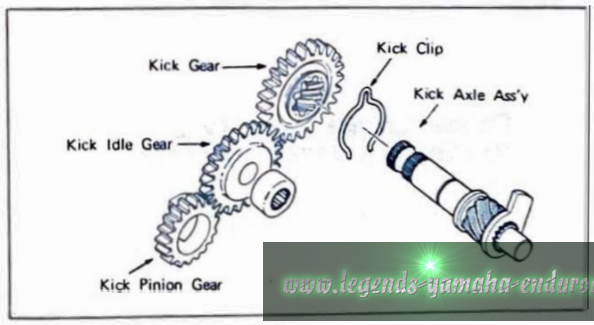
2. The engine can be started in any gear with the clutch engaged, or in neutral with clutch dis-engaged.

3. As the kick crank is depressed, the kick axle rotates freeing the ratchet wheel from its detent. The ratchet is pushed out by the ratchet wheel spring and engages the kick gear.



B. Kick - Mesh Type Starter (MX100A, MX125A, MX175A)

The primary coupled kick-starter system is employed with a "non-constant-mesh" mechanism instead of the constant mesh kick gear type, such as the ratchet and roller-lock systems.
That is, the kick gear meshes with the idler gear only when the kick starter pedal is kicked. After the engine has started, the kick gear and the idler gear disengage.



2–8 SHIFT MECHANISMS

A. Racheting Type Shifter (MX250A, MX360A, SC500A)

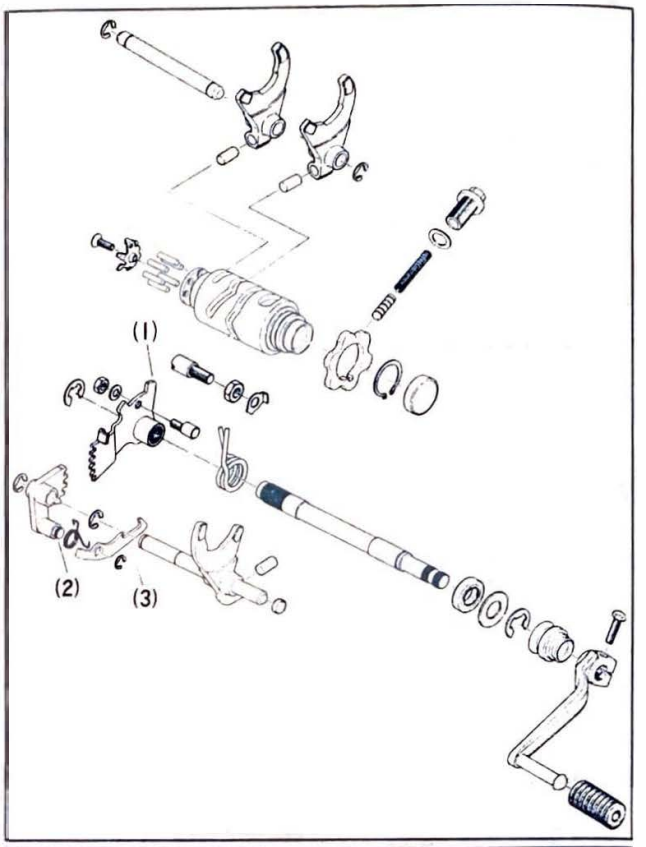
1. The shift mechanism is the ratcheting type with first gear located at the bottom of the shift pattern. Neutral is situated halfway between first and second gears.

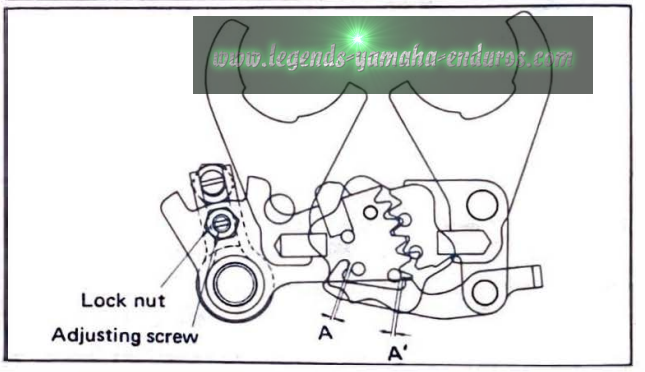
2. When the pedal is raised or depressed, the movement is transferred to change lever number one (1). Change lever number one (1) is linked to change lever number two (2) via the gear teeth on the levers. Change lever number three (3) is attached to lever two (2).

3. As the change shaft rotates, and the levers in their turn move, the ratchet arm on change lever three (3) pushes or pulls one of the gear shift pins attached to the gear shift drum; turning it.
   A total of five pins are installed on the drum, providing a total of five positive gear positions.

NOTE:
SC500A has four SPEED TRANSMISSIONS.

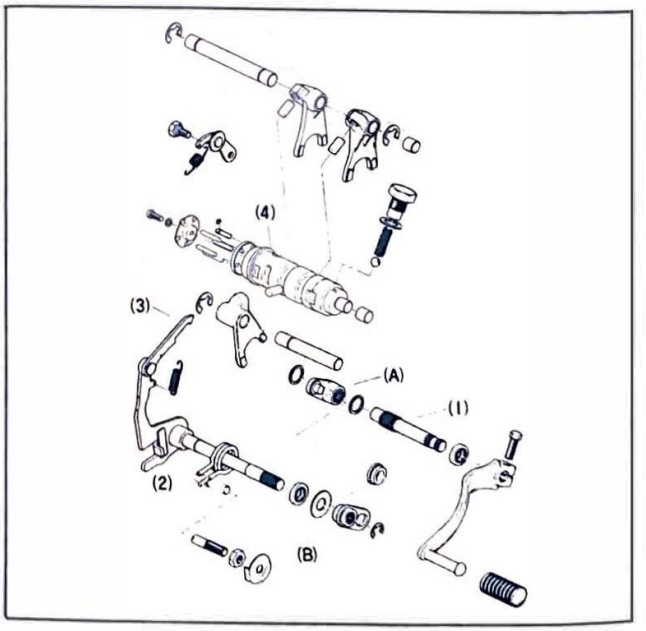
4. Adjusting or correcting the travel of the gear shift arm to prevent improper shifting progression (excess feed or insufficient feed of the gear shift arm) is accomplished by turning the gear shift return spring stop screw (eccentric bolt) in or out. Adjust the eccentric bolt until distance A and A' are equal.



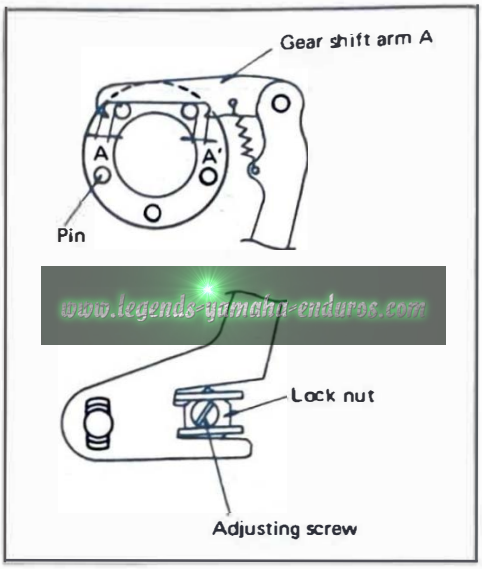


B. Double Change Shaft Type (MX100A, MX125A, MX175A)

1. Description
   As the change pedal is raised or depressed, change shaft (1) and lever (A) move lever (B) and change shaft (2). The arm (3) on change shaft (2) pushes or pulls on one of the gear shift pins attached to the gear shift drum (4). A total of five gear shift pins are attached to the drum, and therefore, each time the change pedal is depressed the drum rotates 1/5 of a revolution. As the drum turns, the shift forks slide back and forth in the slotted guides. Movement of the shift forks result in shifting transmission gears to the desired position.



2. Adjustment
   Adjusting or correcting the travel of the gear shift arm to prevent improper shifting progression (excess feed or insufficient feed of the gear shift arm) is accomplished by turning the gear shift return spring stop screw (eccentric bolt) in or out. Adjust the eccentric bolt until distance A and A' are equal. Adjust in 2nd, 3rd, or 4th gear.



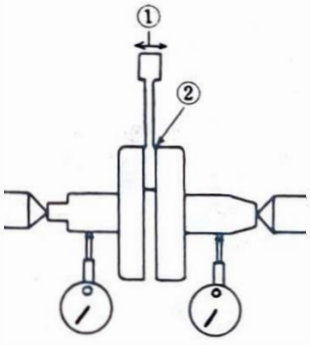
2–9 CRANKSHAFT

A. Removal and Installation

Refer to engine overhaul chapter of DT100A/125A/175A or DT250A/360A Service Manual for detailed procedures for removal and installation of crankshaft assembly.

B. Checking the Crankshaft Components

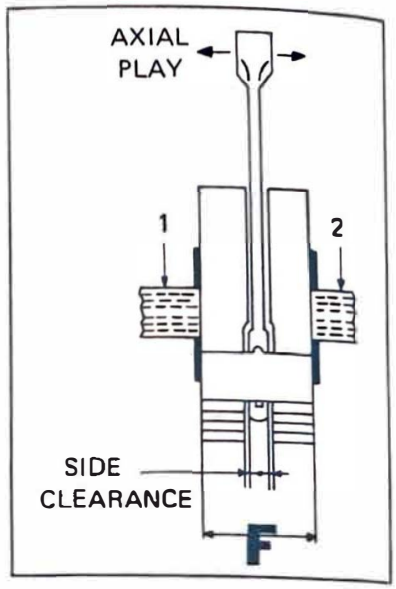
1. Check connecting rod axial play at samll end (to determine the amount of wear of crank pin and bearing at large end).
   Small end deflection 1 should not exceed 2 mm. If measured more than 2 mm, disassemble the crankshaft, and check connecting rod, crank pin and bearing. Replace as required. After reassembly, samll end deflection 1 should be within 0.8 ~ 1.0 mm.



2. Check connecting rod for axial play at large end.
   Move connecting rod to one side and insert a feeler gauge. Large end axial play 2 should be within 0.4 ~0.5 mm.
   If excessive axial play 2 is present, disassemble the crankshaft and replace worn parts.

3. Check crankshaft for accuracy of assembling.
   (Check crankshaft for alignment.)
   Dial gauge readings at indicated positions should be 0.03mm, or less.
   Correct by tapping the flywheel with a brass hammer or by using a wedge.

CRANKSHAFT SPECIFICATIONS							
MODEL	DEFLECTION TOLERANCE		FLYWHEEL WIDTH	ROD CLEARANCE			
				AXIAL		SIDE	
	1	2	F	New	Max	Min	Max
MX100A (mm)	0.03	0.03	$50^{+0.05}_{-0.10}$	0.8 ~ 1.0	2.0	0.4	0.5
(in.)	0.0012	0.0012	1.969	0.032 ~ 0.039	0.074	0.016	0.020
MX125A (mm)	0.03	0.03	$58^{+0.05}_{-0.10}$	0.8 ~ 1.0	2.0	0.4	0.5
(in.)	0.0012	0.0012	2.205	0.032 ~ 0.039	0.074	0.016	0.020
MX175A (mm)	0.03	0.03	$56^{+0.05}_{-0.10}$	0.8 ~ 1.0	2.0	0.4	0.5
(in.)	0.0012	0.0012	2.205	0.032 ~ 0.039	0.074	0.016	0.020
MX250A (mm)	0.03	0.03	$64^{+0}_{-0.05}$	0.8 ~ 1.0	2.0	0.4	0.5
(in.)	0.0012	0.0012	2.520	0.032 ~ 0.039	0.074	0.016	0.020
MX360A (mm)	0.03	0.03	$64^{+0}_{-0.05}$	0.8 ~ 1.0	2.0	0.4	0.5
(in.)	0.0012	0.0012	2.520	0.032 ~ 0.039	0.074	0.016	0.020
SC500A (mm)	0.03	0.03	$64^{+0}_{-0.05}$	0.8 ~ 1.0	2.0	0.4	0.5
(in.)	0.0012	0.0012	2.520	0.032 ~ 0.039	0.074	0.016	0.020



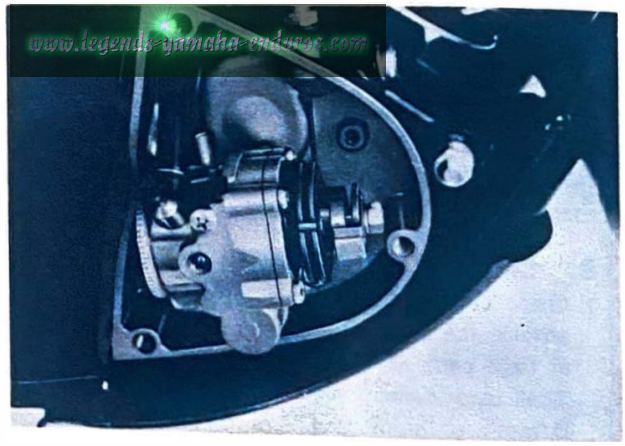
2–10 ENGINE – AUTOLUBE

A. Cable Adjustment

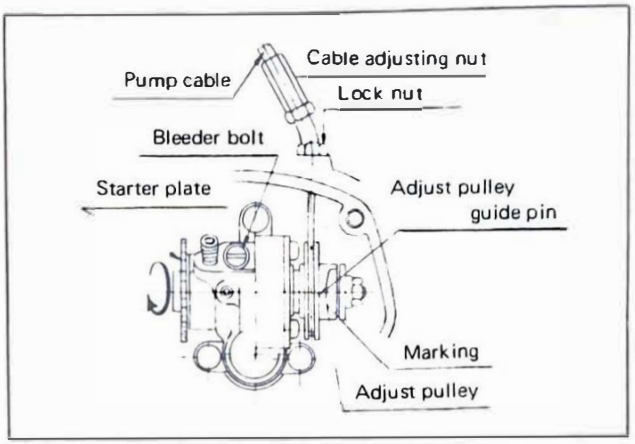
1. Remove Autolube pump cover, which is located on forward portion of the right-hand crankcase cover.

2. Rotate throttle until all slack is removed from all cables. Hold this position.

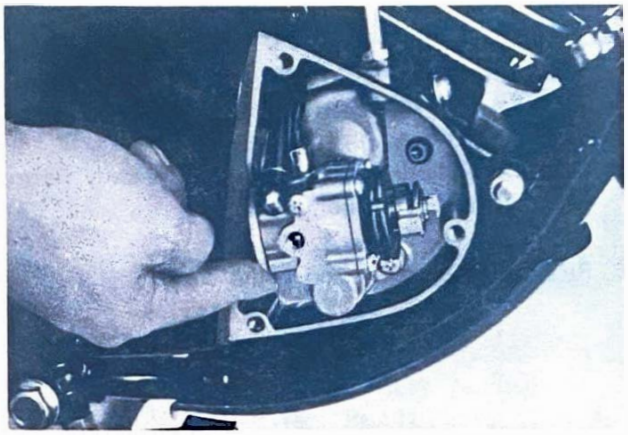
3. Check to see that Autolube pump plunger pin is aligned with the mark on the Autolube pump pulley.



4. If the mark and pin are not in alignment, loosen cable length adjustor lock nut on upper edge of crankcase cover and adjust cable length until alignment is achieved. Tighten adjustor locknut.
   Next, rotate throttle grip to full open position. Check pin. Pin should not strike boss on pump pulley at full throttle or idle. Adjust cable length as required to correct.



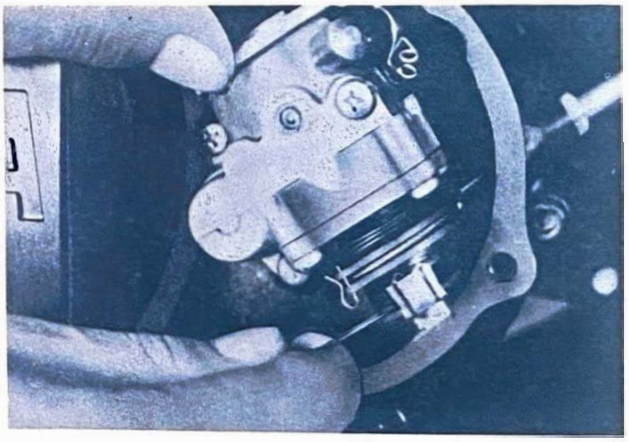
5. Rotate plastic bleed wheel until the pump plunger moves fully out and away from the pump body to its outermost limit.



B. Pump Stroke Adjustment

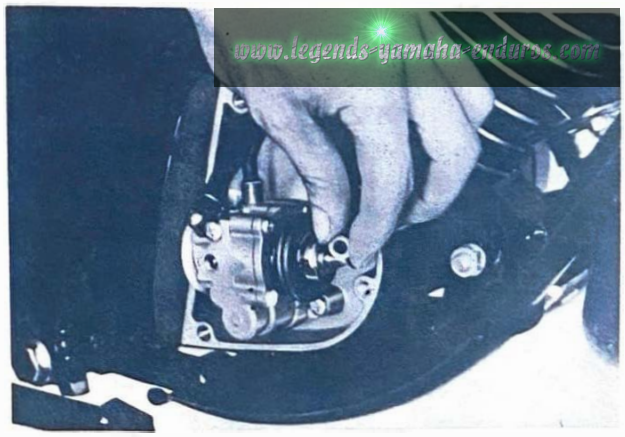
1. Measure gap between raised boss on pump cable pulley and pump stopper plate. If clearance is incorrect, remove adjust plate locknut and adjust plate.

Minimum Pump Stroke:	
100A, 125A, 175A	0.20 ~ 0.25mm (.008 ~ .010in.)
250A, 360A, 500A	0.60 ~ 0.65mm (0.024 - 0.026 in.)



2. Remove or add an adjustment shim as required.

3. Reinstall adjust plate and locknut. Tighten the locknut. Re-measure gap. Repeat procedure as required.

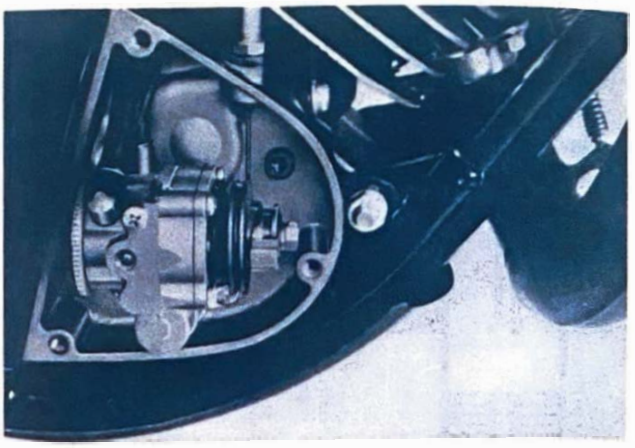


C. Bleeding the Pump

1. The Autolube pump and delivery lines must be bled on any of the following occasions:

   a. A new machine out of the crate.
   b. Whenever any portion of the Autolube system is disconnected.
   c. Whenever the Autolube reservoir tank has run dry.

2. Remove the pump cover.

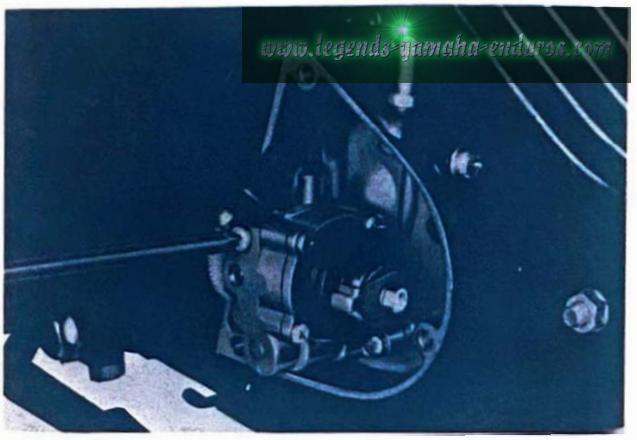


3. Remove the pump bleed screw.

4. Turn the throttle to the full open position.

5. Rotate the plastic bleed wheel until a steady flow of oil, with no air bubbles, comes out.

6. Reinstall bleed screw and pump cover.

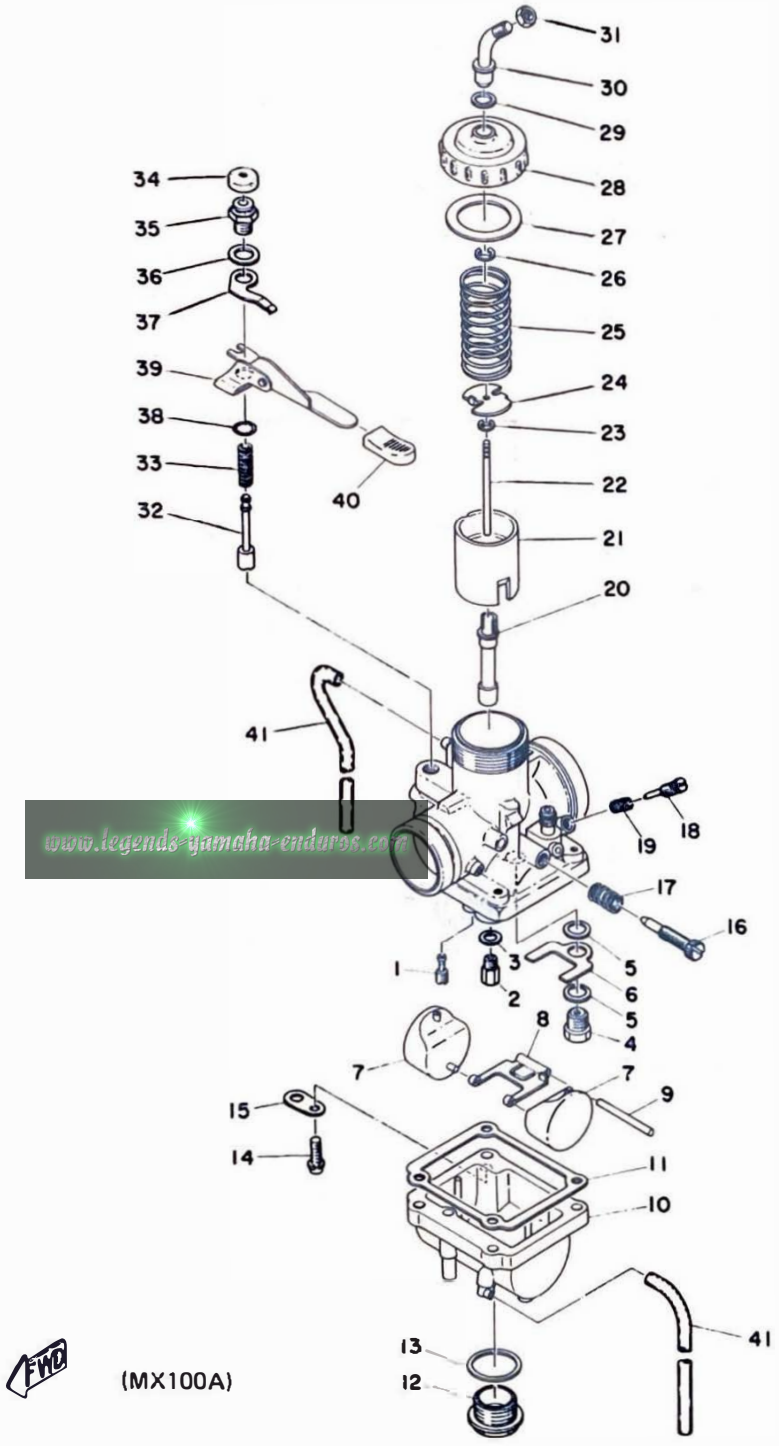


3. CARBURETOR

3–1 CARBURETOR SETTINGS

A. Description

The carburetor is of primary concern to proper engine operation. Considerable care should be taken during disassembly, inspection, and maintenance to see that all circuits are working correctly and that all adjustments are properly made.



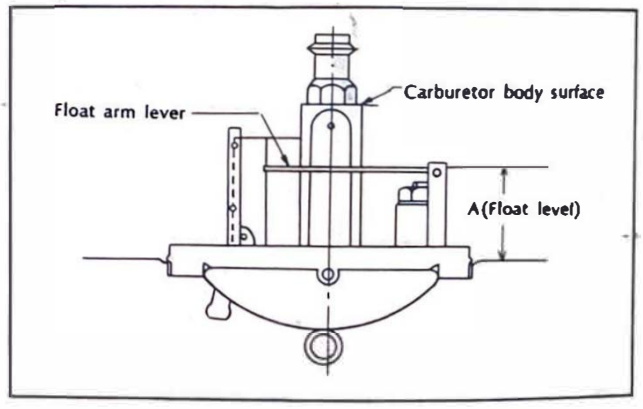
(MX100A)

1. JET, pilot
2. JET, main
3. WASHER, main jet
4. VALVE SEAT ASS'Y
5. WASHER, valve seat
6. PLATE
7. FLOAT
8. ARM, float
9. PIN, float
10. BODY, float chamber
11. GASKET, float chamber
12. PLUG, screw
13. WASHER, screw plug
14. SCREW, panhead
15. PLATE
16. SCREW, throttle
17. SPRING, throttle stop
18. SCREW, air adjusting
19. SPRING, air adjusting
20. NOZZLE, main
21. VALVE, throttle
22. NEEDLE
23. CLIP
24. SEAT, spring
25. SPRING, throttle valve
26. CLIP
27. PACKING
28. TOP, mixing chamber
29. PACKING
30. TUBE, guide wire
31. NUT
32. PLUNGER, starter
33. SPRING, plunger
34. COVER, plunger cap
35. CAP, plunger
36. WASHER, starter lever
37. PLATE, starter lever
38. O-RING
39. LEVER, starter
40. CAP
41. PIPE, air vent

ITEM	ABBREV.	MODEL					
		MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
MANUFACTURER		MIKUNI	MIKUNI	MIKUNI	MIKUNI	MIKUNI	MIKUNI
MODEL		VM26SC	VM28SC	VM28SC	VM34SC	VM34SC	VM38SC
I. D. NUMBER		42760	40260	45560	36461	36563	36361
MAIN JET.	M.J.	130	170	180	270	300	400
NEEDLE JET	N.J.	0.4	N-8	N-8	P-8	P-8	O-8
JET NEEDLE/CLIP POSITION	J.N.	5F3-3	5F-3-2	5F3-3	6F5-2	6F15-2	6F16-2
COUT AWAY	C.A.	1.0	2.5	2.5	3.0	3.0	3.5
PILOT JET	P.J.	50	60	60	50	50	80
AIR JET	A.J.	0.5	1.5	1.5	2.0	2.0	2.0
STARTER JET	S.J.	100	40	40	80	80	80
AIR SCREW (TURNS OUT)	A.S.	1½	1.0	1.0	1½	1.0	1.½
FLOAT LEVEL	F.L.	15.8±2.5	15.8±2.5	15.8±2.5	23.4±2.5	23.4 ±2.5	17.8±2.5

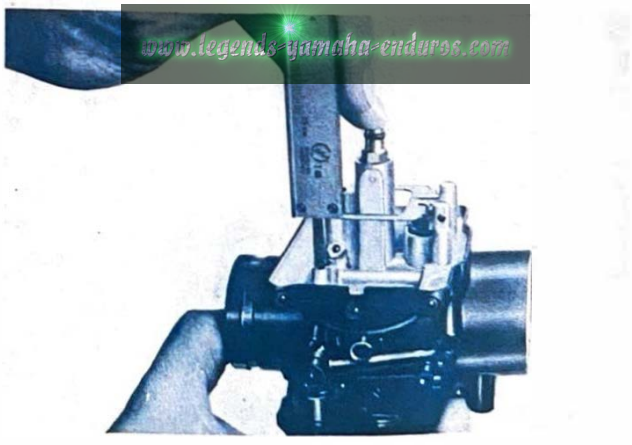
B. Adjusting Float Level

1. Float level is set according to the design of the carburetor and float bowl chamber. Under no circumstances should float level be altered in an attempt to correct a performance problem. Look for the problem in other, related components or carburetor circuits.



2. Using a vernier caliper, measure distance of the float arm from the top of the float chamber gasket sheet (gasket removed) to the float arm.

NOTE:
The float arm should be just resting on, but not depressing, the spring loaded inlet needle.



3. To correct float arm height, remove the arm and bend the tang a slight amount as required.
Both the right and left sides of the float arm should measure identically. Correct as required.

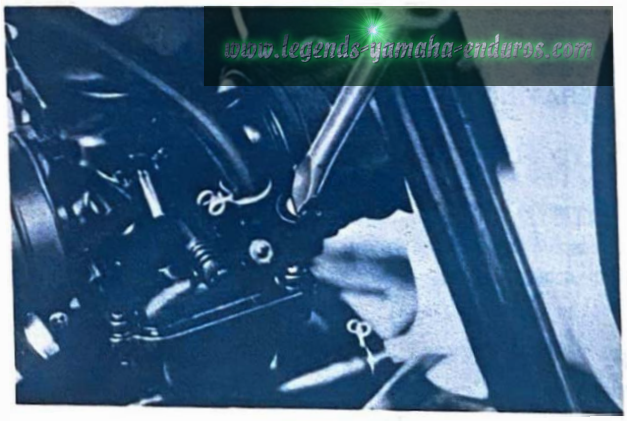
3–2 TUNING FOR COMPETITION

Cylinder porting, combustion chamber compression, ignition timing, muffler design, and carburetor size and component selection are all balanced to achieve optimum performance. However, variations in temperature, humidity and altitude, to name a few, will affect carburetion and consequently, engine performance.

The following list gives each of the major components of the carburetor that can be readily changed in order to modify carburetor performance if required.

A. Idle Air Mixture Screw

Controls the ratio of air to fuel in the idle circuit. Turning the screw in decreases the air supply giving a richer mixture.

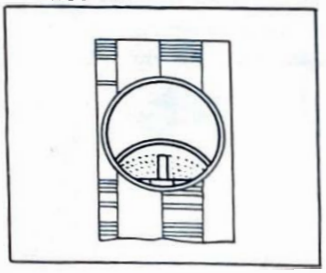


B. Pilot Jet

Controls the ratio of fuel to air in the idle circuit. Changing the jet to one with a higher number supplies more fuel to the circuit giving a richer mixture.

OPERATING RANGE MOST AFFECTED BY THE PILOT JET:
ZERO TO 1/8 THROTTLE

Up To 1/8 Open
Pilot Jet



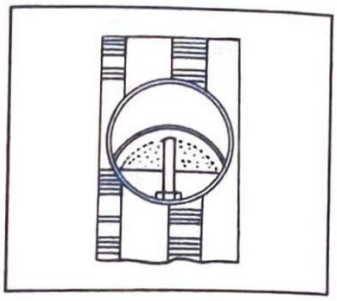
C. Throttle Vlave (Slide):

The throttle valve (slide) has a portion of the base cut away to control air flowing over the main nozzle. A A wider angle (more "cutaway") will create a leaner mixture. Throttle valves are numbered according to the angle of the cutaway. The higher the number, the more cutaway, the leaner the mixture.

OPERATING RANGE MOST AFFECTED BY THE THROTTLE VALVE:

1/8 TO 1/4 THROTTLE.

From 1/8 to 1/4 Open
Cut Away



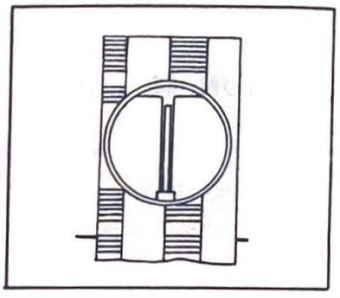
D. Jet Needle

The jet needle is fitted within the throttle valve. The tapered end of the needle fits into the main nozzle outlet. Raising the needle allows more fuel to flow out of the nozzle outlet giving a richer mixture. There are five circlip grooves at the top of the needle. Moving the needle clip from the first, or top groove, through the fifth, or bottom groove, will give a correspondignly richer mixture.

OPERATING RANGE MOST AFFECTED BY THE JET NEEDLE:

1/4 TO 3/4 (+) THROTTLE.

1/4 to 3/4 Open
Jet
Needle Position



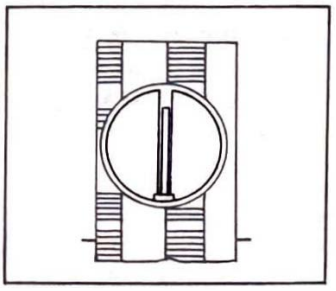
E. Main Jet

The main jet controls overall fuel flow through the main nozzle. Changing the jet to one with a higher number supplies more fuel to the main nozzle giving a richer mixture.

OPERATING RANGE MOST AFFECTED BY THE MAIN JET:

3/4 TO FULL THROTTLE.

3/4 To Full Open
Main Jet Size



NOTE:

Excessive changes in main jet size can affect overall performance.

F.

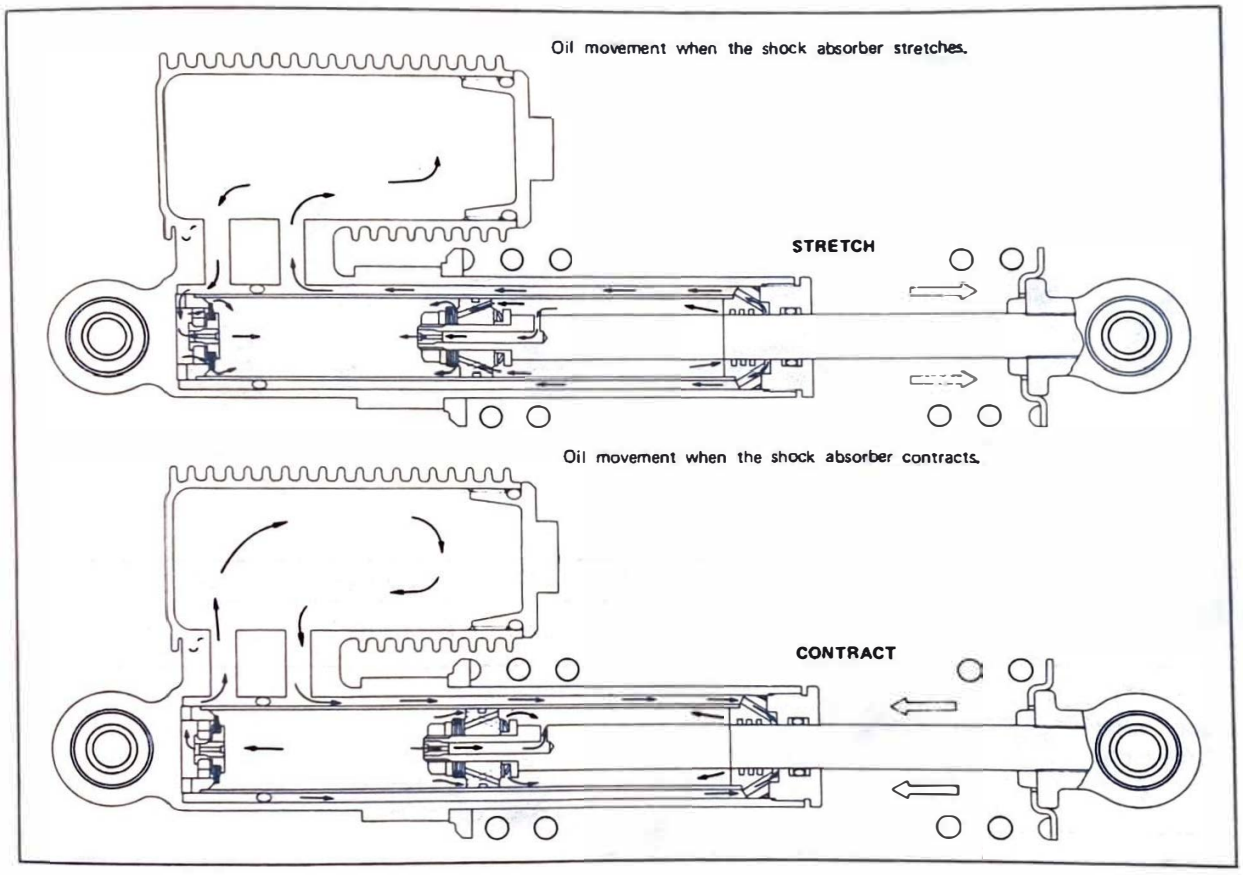
MX and SC engines are tuned for high performance. Changes to components should be done gradually, one change at a time. After each change make a thorough spark plug test reading at all operating ranges and loads. This will assure that a change will not affect performance at some other operating range nor cause a lean condition with resultant over-heating.

4. CHASSIS

4–1 THERMAL FLOWS SHOCK ABSORBERS

A. Rear shock absorbers used on MX series are of the "Thermal Flow" type utilizing a separate oil reservoir. The separate reservoir permits use of a larger quantity of oil. Additionally, the oil tank also acts as a heat sink. This allows the oil to dissipate heat and retain its normal viscosity.

B. Operation

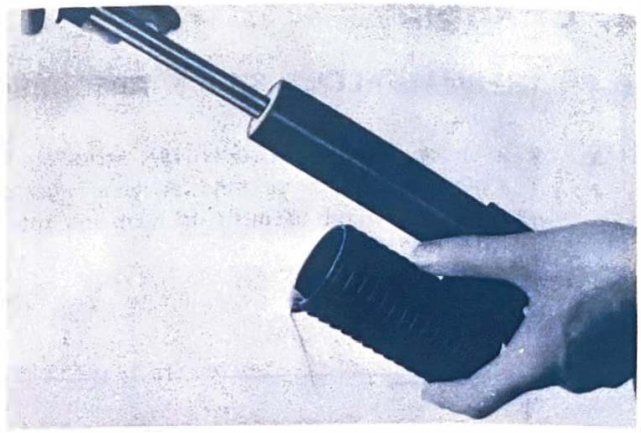


C. Shock Absorber Oil Change

1. Remove the shock absorber from the machine and remove the springs and the cap from reservoir.

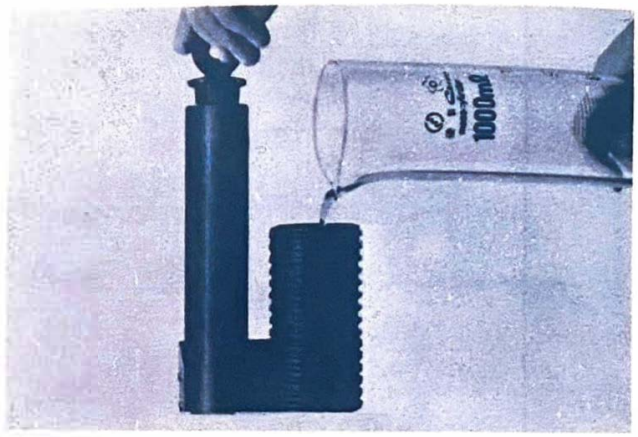
2. Pour oil out of reservoir. Pump the shock absorber shaft to remove all oil from the damping cylinder.

3. Wash the entire unit in mild solvent and pump out all solvent afterward.



4. Measure the correct amount of Yamaha Shock Oil or another specialty shock oil and refill the unit. As you pour the oil in, slowly pump the damper to distribute the oil and eliminate any air bubbles.

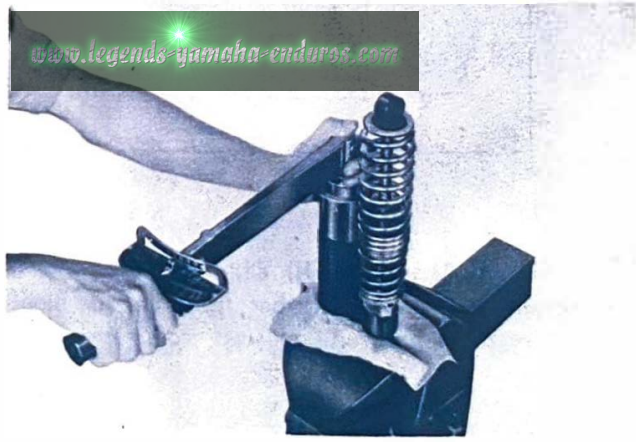
NOTE:
Choose the weight oil that will suit rider preference and local conditions.



	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
REAR SHOCK OIL CAPACITY (cc)	181	182.5	182.5	182.5	182.5	182.5

5. Replace reservoir cap and springs and re-install the shock absorber.

RESERVOIR CAP TORQUE: 2.0~2.3 kg-m / 14.5~16.7 Lbx-ft

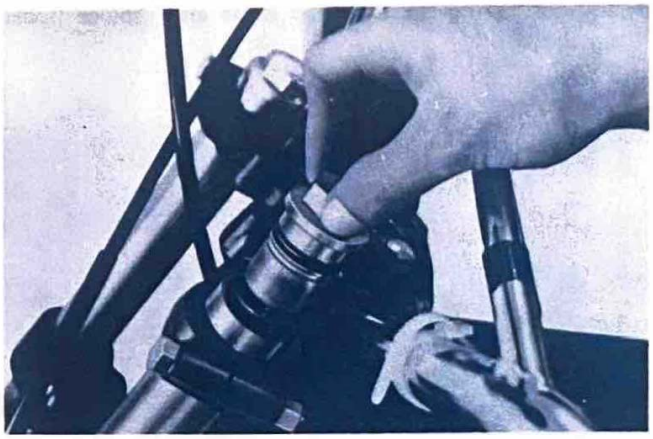


4–2 FRONT FORKS

A. Replacing Fork Oil

1. With the front wheel removed or raised off the floor with a suitable frame stand, loosen pinch bolt at the top of each inner fork tube.

2. Remove cap bolts on inner fork tubes.

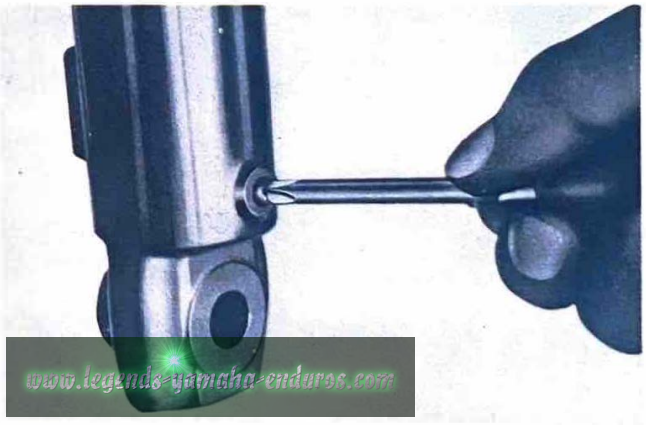


3. Remove drain screw from each outer tube with open container under each drain hole.

4. After most of oil has drained, slowly raise and lower outer tubes to pump out remaining oil.

5. Replace drain screws.

NOTE:
Check gasket, replace if damaged.



6. Pour specified amount of oil into the inner tube through the upper end opening. Use 10W/30 "SE" motor oil.

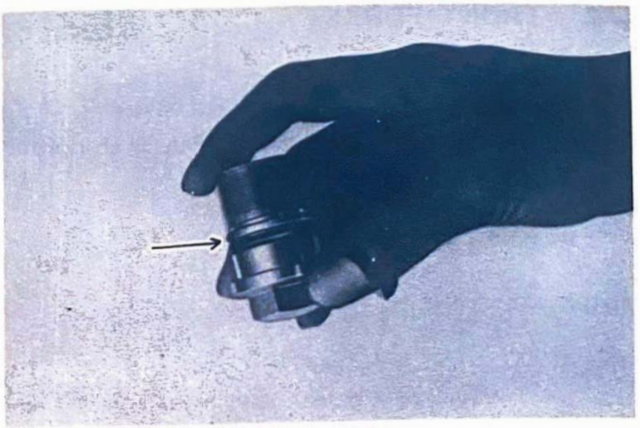
NOTE:
Specialty type fork oils of quality manufacture may be used.

Select the weight oil that suits local conditions and your preference (lighter for less damping; heavier for more damping).

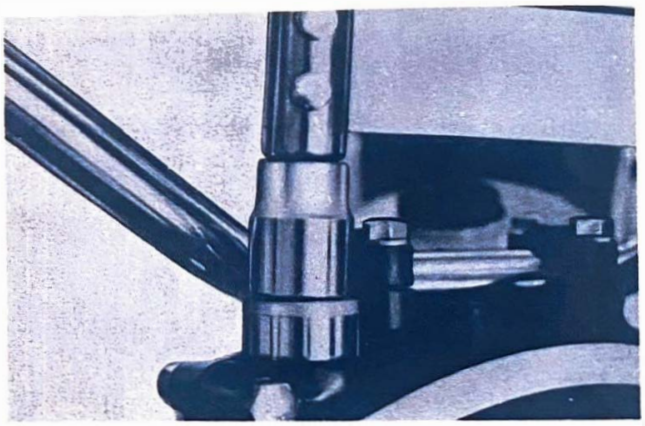
FRONT FORK OIL CAPACITY (cc) (Qty. Per Tube)	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
	187	130	134	194	194	194

7. After filling, slowly pump the outer tubes up and down to distribute the oil.

8. Inspect O-ring on fork cap bolts and replace if damaged.

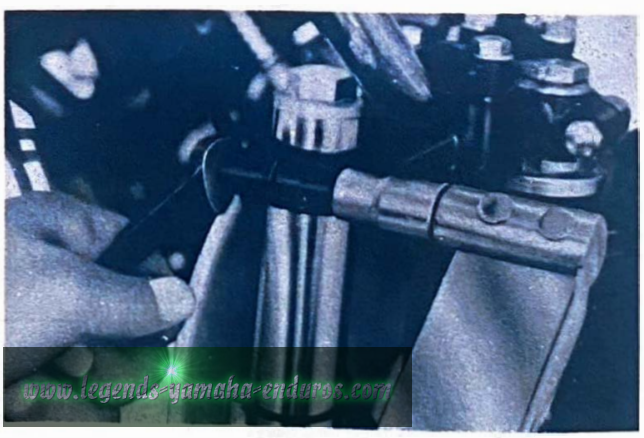


9. Replace fork cap bolts and troque to specification.



	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
FORK CAP BOLT TORQUE (kg-m)	3~4	3~4	3~4	3~4	3~4	3~4
FORK CAP BOLT TORQUE (Lbs-ft)	21.7~29.0	21.7~29.0	21.7~29.0	21.7~29.0	21.0~29.0	21.0~29.0

10. Tighten pinch bolts at fork crown and torque to specification.

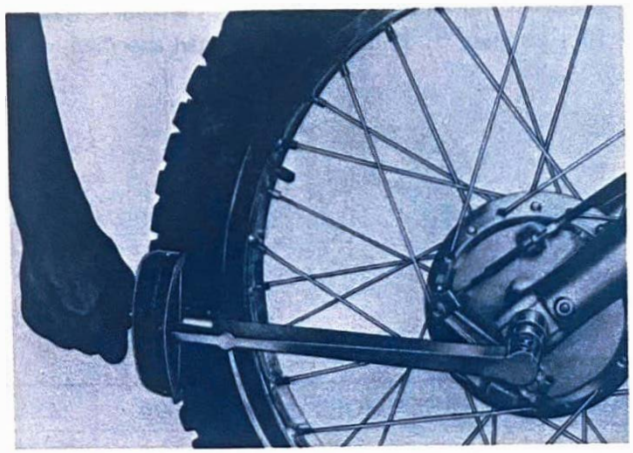


	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
FORK CROWN PINCH BOLT TORQUE (kg-m)	2.0~2.5	0.8~1.2	2.0~2.5	2.0~2.5	2.0~2.5	2.0~2.5
FORK CROWN PINCH BOLT TORQUE (Lbs-ft)	14.5~18.1	14.5~18.1	14.5~18.1	14.5~18.1	14.5~18.1	14.5~18.1

B. Installing Front Wheel

– CAUTION –

1. After replacing wheel and axle, tighten axle nut FIRST and install a new cotter pin.

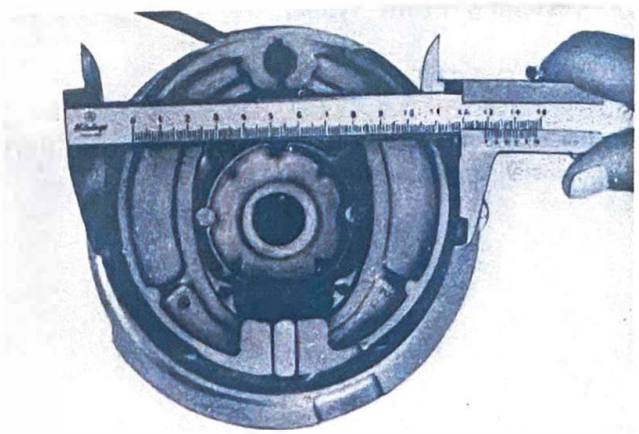


	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
FRONT WHEEL AXLE NUT TORQUE (Lbs-ft)	5.8~7.0 42~51	5.8~7.0 42~ 51	5.8~7.0 42~51	5.8~ 7.0 42~51	5.8~7.0 42~51	5.8~ 7.0 42~51

2. THEN tighten the axle pinch cap nuts.

	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
FRONT AXLE (kg-m) CAP NUT TORQUE (Lbs-ft)	2 14	2 14	2 14	2 14	2 14	2 14

4–3 CHECKING BRAKE SHOE WEAR



A. Front Brake Shoes

Measure the outside diameter at the brake shoe with slide calipers. If it measures less than specified, replace.

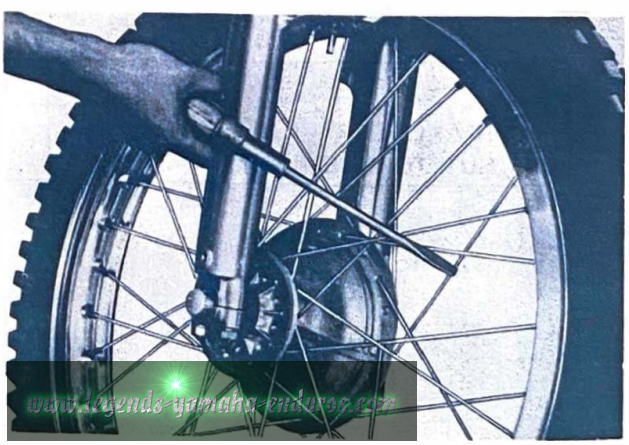
FRONT BRAKE SHOES		MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
NOMINAL DIAMETER	(in.)	43.31	43.31	43.31	51.18	51.18	51.18
	(mm)	110	110	110	130	130	130
REPLACEMENT LIMIT	(in.)	41.34	41.34	41.61	49.21	49.21	49.21
	(mm)	105	105	106	125	125	125

B. Rear Brake Shoes

Measure the outside diameter at the brake shoe with slide calipers. If it measures less than specified, replace.

REAR BRAKE SHOES		MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
NOMINAL DIAMETER	(in.)	51.18	51.18	51.18	59.06	59.06	59.06
	(mm)	130	130	130	150	150	150
REPLACEMENT LIMIT	(in.)	49.21	49.21	49.21	57.09	57.09	57.09
	(mm)	125	125	126	145	145	145

4–4 RIMS AND SPOKES (Front & Rear Wheels)



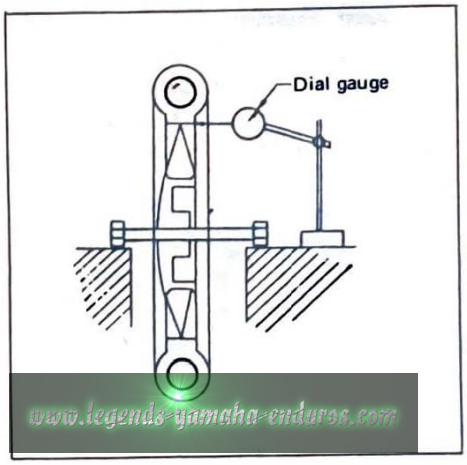
A. Checking for loose spokes

Loose spokes can be checked by bracing the machine off the ground so that the wheel can spin free.
Slowly revolve the wheel and at the same time let the metal shaft of a fairly heavy screwdriver bounce off each spoke. If all the spokes are tightened approximately the same then the sound given off by the screwdriver hitting the spokes should sound the same. If one spoke makes a dull flat sound, then check it for looseness.

B. Checking rim "run-out"

While you have the wheel elevated, you should check that it does not have too much run-out.
"Run-out" is the amount the wheel deviates from a straight line as it spins. Spin the wheel, and solidly anchor some sort of a pointer about 1/8" away from the side of the rim. As the wheel spins, the distance between the pointer and the rim should not change more than 1/16" total. Any greater fluctuation should be eliminated by properly adjusting the spokes.

RUN-OUT LIMITS:	2mm 0.07" (1/16") LATERAL
RUN-OUT LIMITS:	2mm 0.07" (1/16") VERTICAL



4–5 TIRES AND TUBES

A. Removal

1. Remove valve cap, valve core, and valve stem lock nut.

2. When all air is out of tube, separate tire bead from rim (both sides) by stepping on tire with your foot.

3. Use Two tire removal irons (with rounded edges) and begin to work the tire bead over the edge of the rim, starting 180° opposite the tube stem.
   Take care to avoid pinching the tube as you do this.

4. After you have worked one side of the tire completely off the rim, then you can slip the tube out. Be very careful not to damage the stem while pushing it back out of the rim hole.

NOTE:
If you are changing the tire itself, then finish the removal by working the tire off the same rim edge just previously mentioned.

B. Installing Tire & Tube

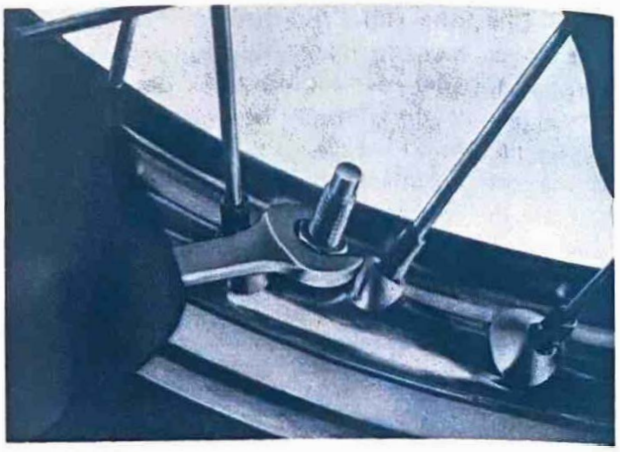
Reinstalling the tire and tube can be accomplished by reversing the disassembly procedure. The only difference in procedure would be right after the tube has been installed, but before the tire has been completely slipped onto the rim, inflate the tube. This removes any creases that might exist. Release the air and continue with reassembly. Also, right after the tire has been completely slipped onto the rim, check to make sure that the stem comes out of the hole in the rim at a right angle to the rim.

		MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
TIRE PRESSURE:	FRONT (kg/cm^2) (lb/in^2)	0.98 14	0.98 14	0.98 14	0.91 13	0.91 13	0.91 13
	REAR (kg/cm^2) (lb/in^2)	1.20 17	1.20 17	1.20 17	1.05 15	1.05 15	1.05 15

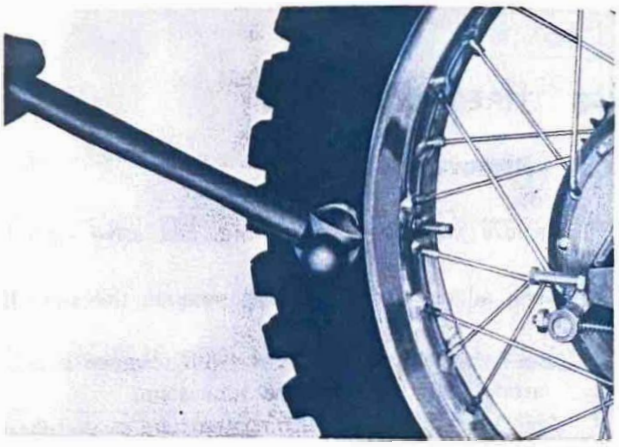
C. Bead Spacers

A motocrosser has lower tire pressures and is usually driven at high power over a rough, tortuous terrain. Therefore, the tire and tube tends to slip around the wheel rim. To prevent this, a bead spacer is used. If the tire valve is tilted, it should be corrected in the following manner:

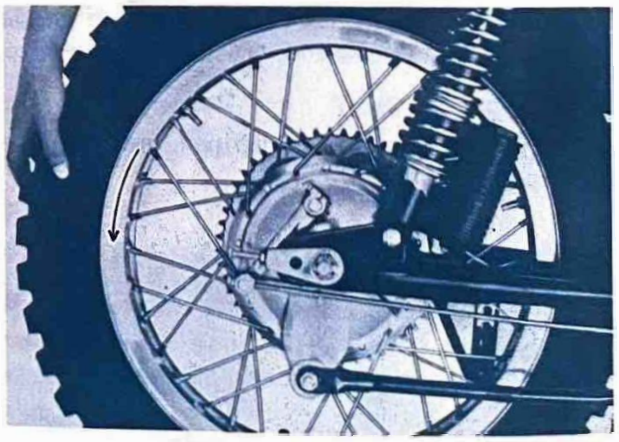
1. Deflate the tire, and loosen the tire valve lock nut and bead spacer lock nut(s).

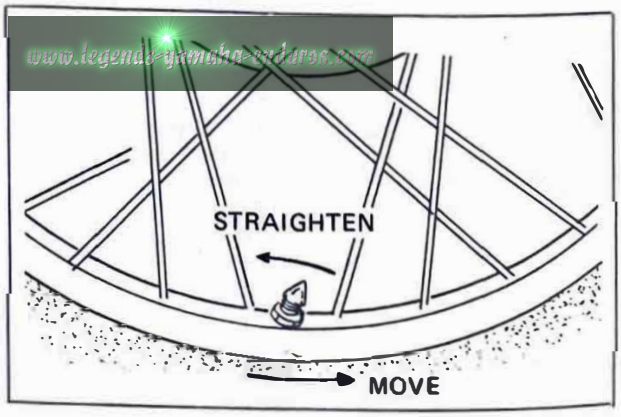


2. Lightly strike the tire wall with a hammer until both beads have broken free of the rim.



3. Turn the tire in the reverse direction as shown in the figure, and apply quick brake. By using the inertia of the turning tire, the fault can be corrected.





4–6. CHAIN AND SPROCKETS

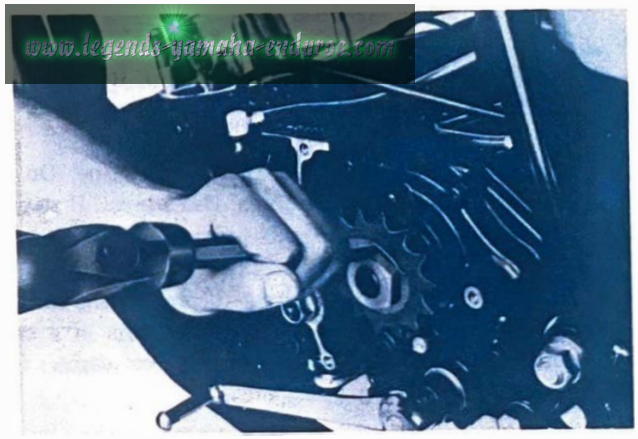
NOTE:
Please refer to Maintenance Intervals and Lubrication charts for additional information.

A. Drive Sprocket

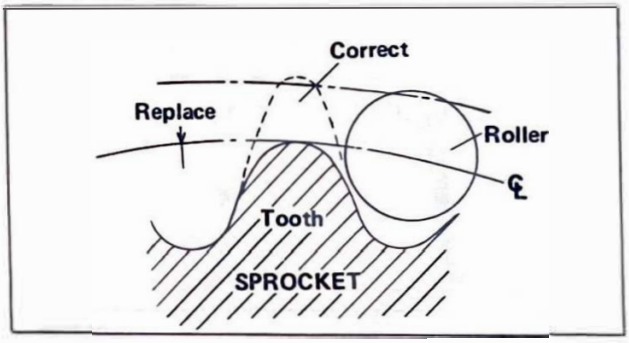
With the left crankcase cover removed, proceed as follows:

1. Using a blunt chisel, flatten the drive sprocket lock washer tab.

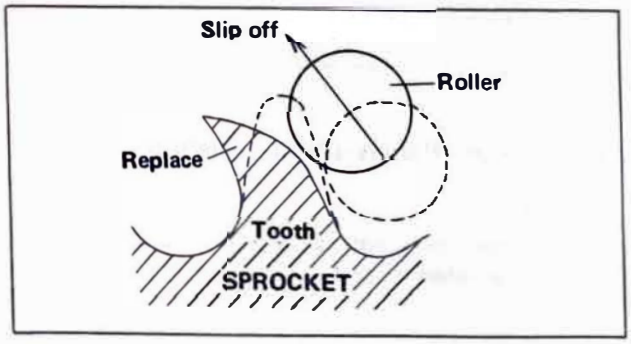
2. With the drive chain in place, transmission in gear, firmly apply the rear brake. Remove the sprocket securing nut. Remove the sprocket.



3. Check sprocket wear. Replace if wear decreases tooth height to a point approaching the roller center line.



4. Replace if tooth wear shows a pattern such as that in the illustration, or as precaution and common sense dictate.



5. During reassembly, make sure the lock washer splines are properly seated on the drive shaft splines. Tighten securing nut thoroughly to specified torque value. Bend lock washer tab fully against securing nut flats.

		MA100A	MX125A	MX175A	MX250A	MX360A	SC500A
DRIVE SPROCKET NUT TORQUE	(Kg-m)	4.5 ~ 5.0	4.5 ~ 5.0	4.5 ~ 5.0	5.8 ~ 7.0	5.8 ~ 7.0	5.8 ~ 7.0
	(Lbs-ft)	32 ~ 36	32 ~ 36	32 ~ 36	42 ~ 51	42 ~ 51	42 ~ 51

B. Driven Sprocket

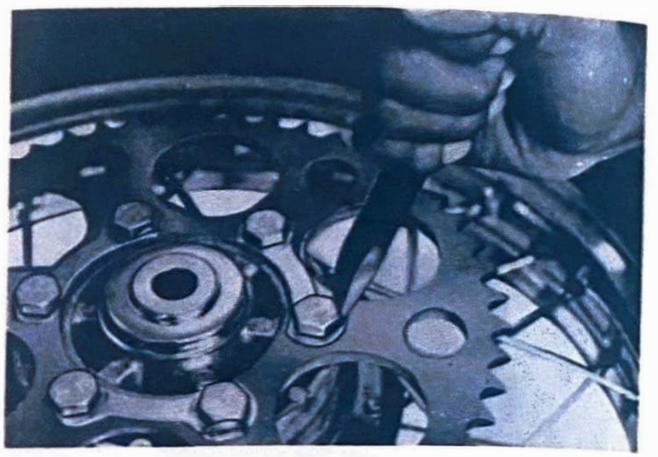
With the rear wheel removed, proceed as follows:

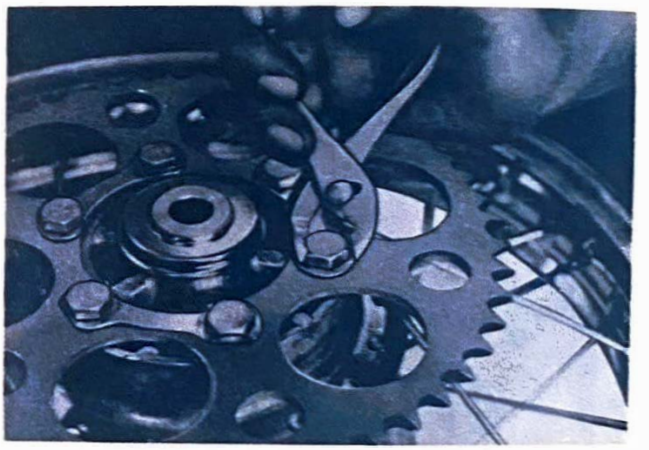
1. Using a blunt chisel, flatten the securing bolt lock washer tabs. Remove the securing bolts (6). Remove the lock washers and sprocket.

2. Check sprocket wear per procedures for the drive sprocket.

3. Check the sprocket to see that it runs true. Do not heat and hammer to straighten. Use a press. If severely bent, replace.

4. During reassembly, make sure that sprocket and sprocket seat are clean. Tighten the securing bolts in a cross-hatch pattern. Bend the tabs of the lock washers fully against the securing bolt flats.





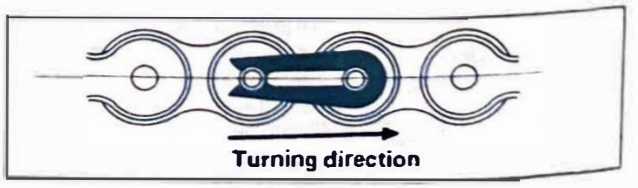
	MX100A	MX125A	MX175A	MX250A	MX360	SC500A
DRIVEN SPROCKET (Kg-m)	2 - 2.6	2 - 2.6	2 - 2.6	3.5 - 4	3.5 - 4	3.5 - 4
SECURING BOLT TOR (Lbs-ft)	14 - 19	14 - 19	14 - 19	25 - 29	25 - 29	25 - 29

C. Chain Removal and Installation

NOTE:
Please refer to Maintenance and Lubrication charts for additional information.

1. Using a blunt-nosed pliers, remove the master link clip and side plate.
   Remove the chain.

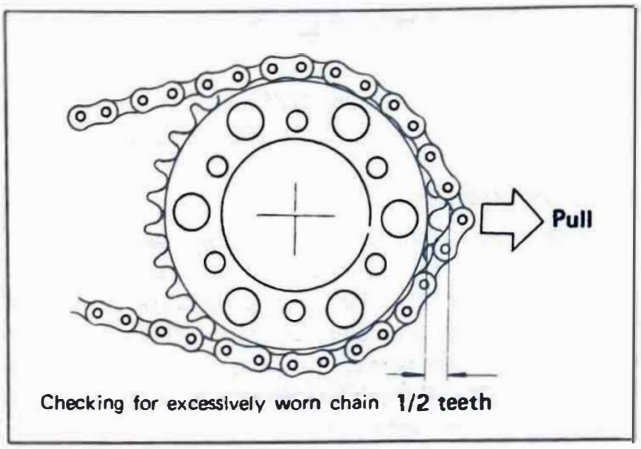
2. During reassembly, the master link clip must be installed with rounded end facing the direction of travel



D. Chain Inspection

1. With the chain installed on the machine, excessive wear may be roughly determined by attempting to pull the chain away from the rear sprocket. If the chain will lift away more than one-half the length of the sprocket teeth, remove and inspect.

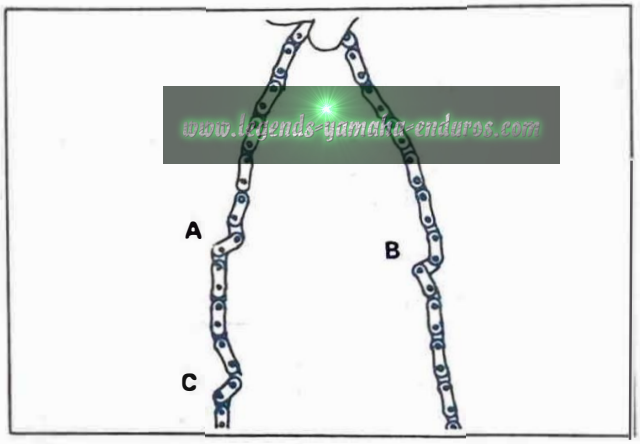
   If any portion of the chain shows signs of damage, or if either sprocket shows signs of excessive wear, remove and inspect.



Checking for excessively worn chain 1/2 teeth

2. Check the chain for stiffness. Hold as illustrated. If stiff, soak in solvent solution, clean with medium bristle brush, dry with high pressure air. Oil chain thoroughly and attempt to work out kinks. If stiff, replace.

3. Check the side plates for visible wear. Check to see if excessive play exists in pins and rollers. Check for damaged rollers. Replace as required.



E. Chain Maintenance

The chain should be lubricated per the recommendations given in the Maintenance and Lubrication chart. More often often if possible. Preferably after every use.

1. Wipe off dirt with shop rag. If accumulation is severe, use soft bristle brush, then rag.
2. Apply lubricant between roller and side plates on both inside and outside of chain. Don't skip a portion as this will cause uneven wear. Apply thoroughly. Wipe off excess.

   NOTE:
   Chain and lubricant should be at room temperature to assure penetration of lubricant into rollers.
   Choice of lubricant is determined by use and terrain. SAE 20wt. or 30wt. may be used, but several specialty types by accessory manufacturers offer more penetration corrosion resistance and shear strength for roller protection.
   In certain areas, semi-drying lubricants are preferrable. These will resist picking up ands particles, dust, etc.

3. Periodically, remove the chain. Wipe and/or brush excess dirt off. Blow off with high pressure air.
4. Soak chain in solvent, brushing off remaining dirt. Dry with high pressure air. Lubricate thoroughly while off mabhine. Work each roller thoroughly to make sure lubricant penetrates. Wipe off excess. Re-install.

5. ELECTRICAL SYSTEM

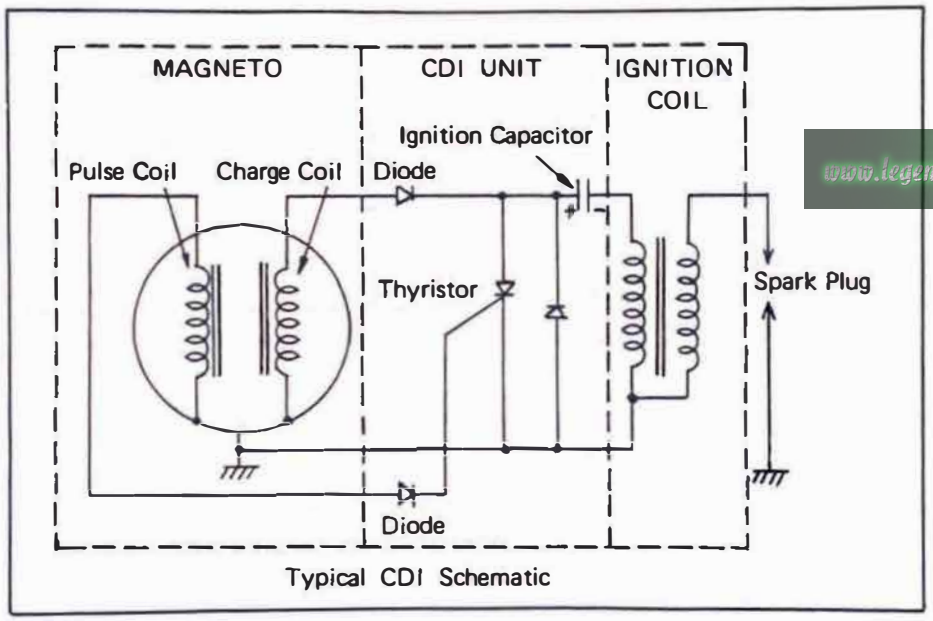
5–1. CDI IGNITION SYSTEM (175cc - 500cc Engines)

A. Description

The capacitor discharge ignition (CDI) system used on the 175cc-500cc engines eliminates the need for a mechanical conatct breaker and its inherent disadvantages. A simple electronic circuit using a large storage capacitor and a Thyristor (Silicon Control Rectifier) provides a correctly-timed, high-intensity voltage to the spark plug.

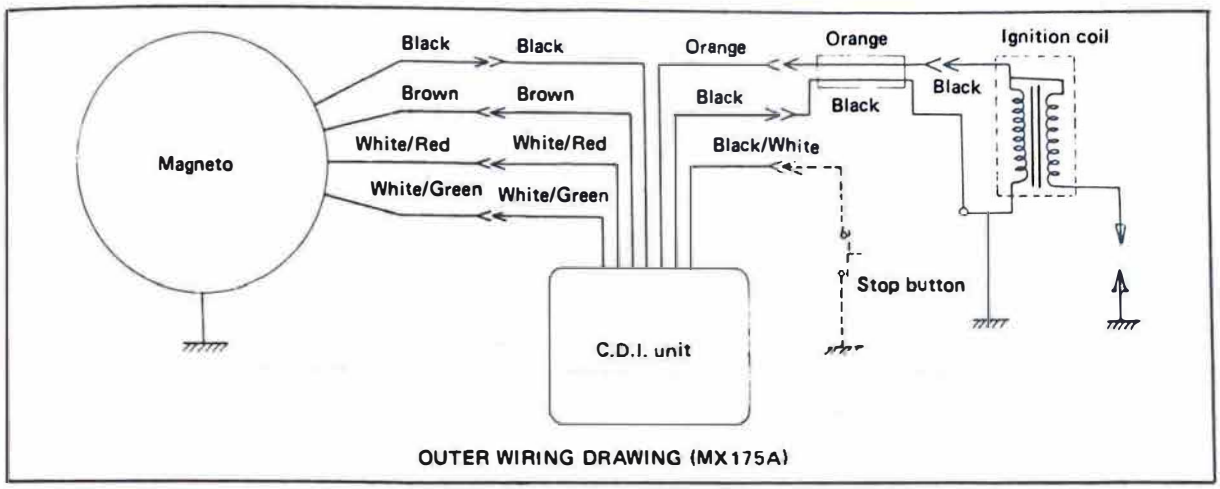
The CDI system has many advantages. There is no contact breaker to wear out, become misaligned, or lose its efficiency because of pitted points, increased gap, or contamination. There is no mechniacal adjustment required for the contact gap because there are no electrical contacts (points). Only a screwdriver and dial guage are required to set the timing. There is no mechanical spark advance system to maintain, either. An electronic circuit automatically provides the correct spark advance at all engine speed.

B. Schematic

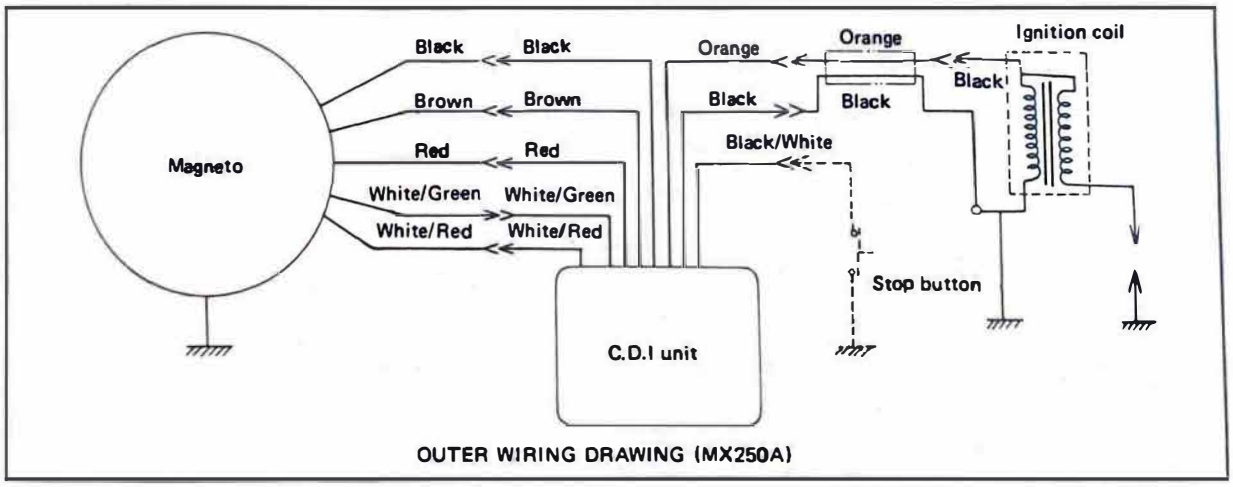


Typical CDI Schematic

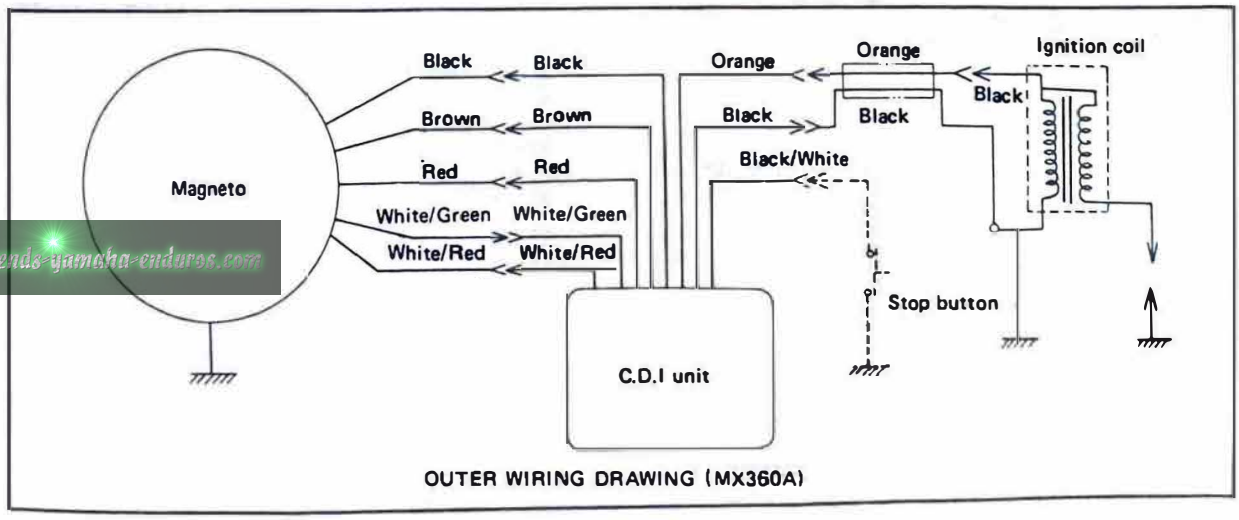
C. Connection Diagrams



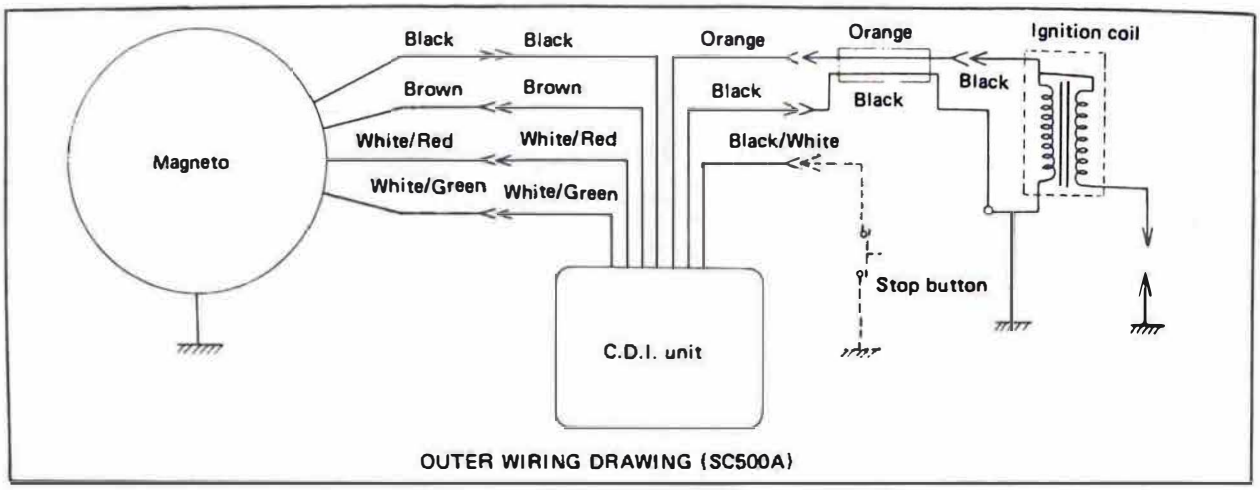
OUTER WIRING DRAWING (MX175A)



OUTER WIRING DRAWING (MX250A)



OUTER WIRING DRAWING (MX360A)



OUTER WIRING DRAWING (SC500A)

D. Specification

Model		455	364	365	363
Magneto - Model		F-140-50	M100-13	M100-13	F145-03
C.D.I. - Model		TIA01-10	TIA01-06	TIA01-06	TIA01-08
Ignition coil - Model		CM61-20M	CM61-20M	CM61-20M	CM61-20M
Magneto	Turning direction (facing toward the engine)	Left	Left	Left	Left
	Outside dia. x Length (mm)	120 x 53	130 x 60	130 x 60	130 x 62
	Movement of inertia of rotor (Kg/cm^2)	22.5	2.2	2.2	42.5
	Weight (kg)	1.1	1.3	1.3	2.3
Unit	Length x Width x Height (mm)	70x54x35	70x54x35	70x54x35	70x54x35
	Weight (kg)	0.24	0.24	0.24	0.24
Coil	Length x Width x Height (mm)	66x57.5x40	66x57.5x40	66x57.5x40	66x57.5x40
	Weight (kg)	0.45	0.45	0.45	0.45
Performance	Spark length measured by tester (mm/r.p.m.)	7/500 13/5,000	7/500 13/10,000	7/500 13/10.000	7/300 13/7,000

E. C.D.I. Ignition Timing

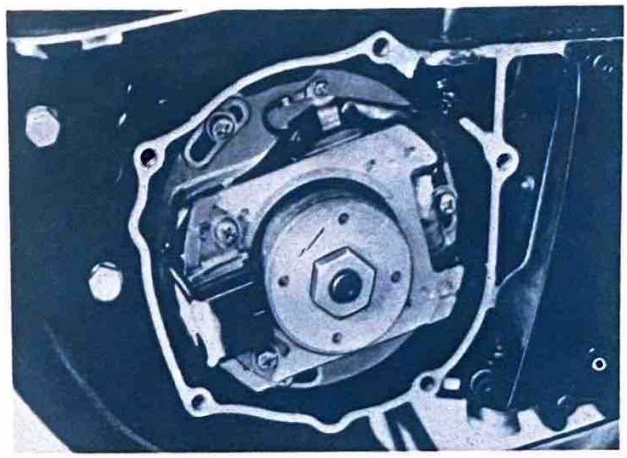
Ignition timing must be set with a dial indicator to determine exact piston position. Proceed as follows:

1. Remove spark plug and screw Dial Gauge Stand into spark plug hole.

2. Insert Dial Gauge Assembly into stand.

3. Remove left engine crankcase cover.

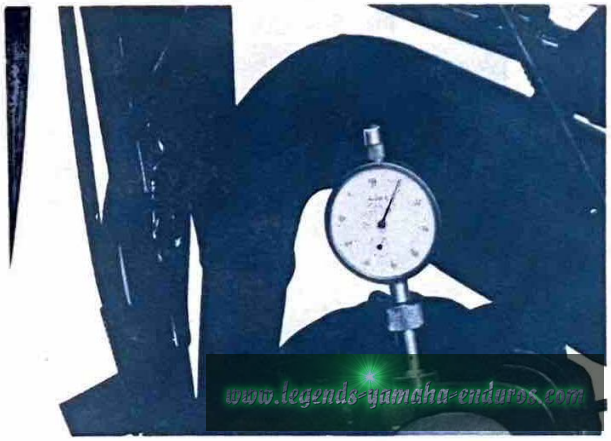
4. Rotate magneto flywheel until piston is at top-dead-center. Set the zero on dial indicator face to line up exactly with needle. Tighten set screw. Rotate flywheel back and forth to be sure that needle does not go past zero.

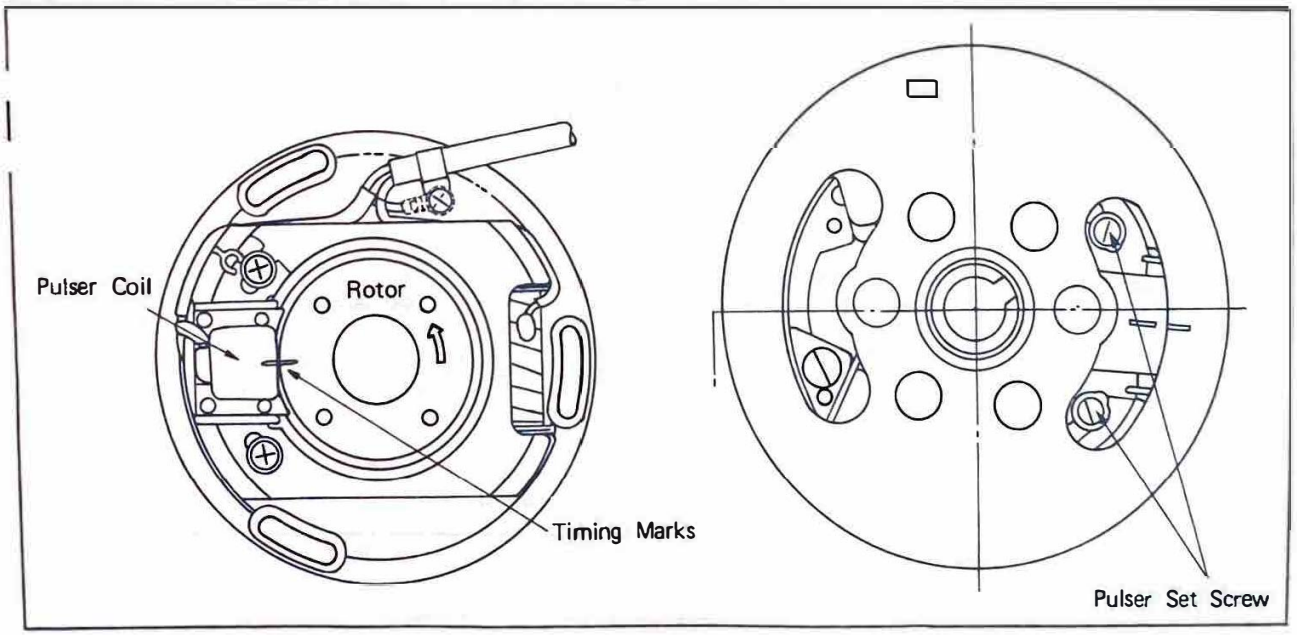


5. Starting at T.D.C., rotate flywheel clockwise until dial indicator reads approximately 2.0 mm (M x 175) before-top-dead-center.

6. Slowly turn flywheel counter-clockwise until dial indicator reads ignition advance setting listed in Specifications Table. At this time, the mark on the flywheel should line up with the mark on the pulser coil assembly.

7. If the marks are not in alignment, loosen the pulser set screws (2) and rotate the pulser until alignment is achieved. Tighten set screws thoroughly. Repeat steps 5 and 6 as a final check.





		MX175A	MX250A	MX360A	SC500A
CDI IGNITION TIMING (mm BTDC)	(mm)	2.0±0.15	2.3±0.15	2.5±0.15	2.7±0.15
	(in)	0.787	0.906	0.984	1.063

F. Checking CDI Magneto Charge Coil and Pulser Coil

The resistance of the magneto ignition coil windings is as specified below. To locate the cause of trouble (broken coil, short-circuit, etc.), measure the resistance across each lead as shown in chart.

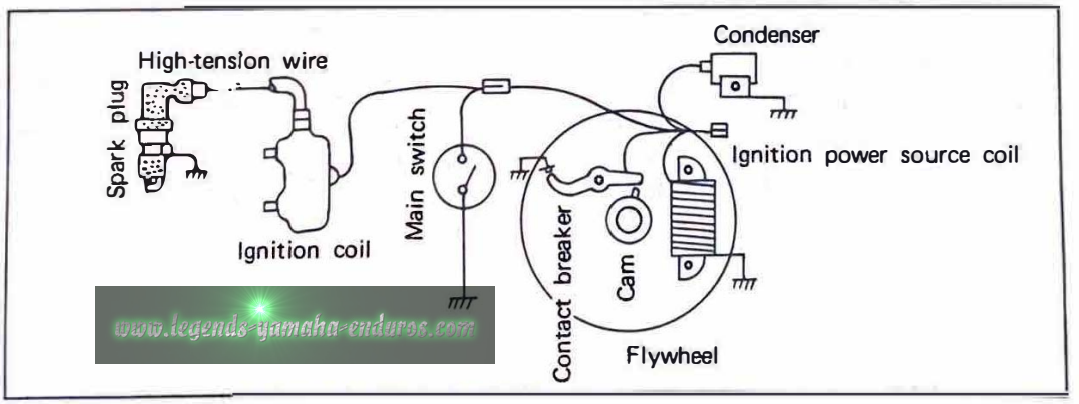
CHARGING COIL		MX175A	MX250A		MX360A		SC500A	
WIRE COLORS:	FROM:	Brown	Brown	Red	Brown	Red	Brown	White/Red
	TO:	Black	Black	Black	Black	Black	Black	White/Green
RESISTANCE (ohms)		170Ω ± 10%	790Ω ± 10%	84Ω ± 10%	790Ω ± 10%	84Ω ± 10%	204Ω ± 10%	85Ω ± 10%

PULSER COIL		MX175A	MX250A	MX360A	SC500A
WIRE COLORS:	FROM:	White/Red	White/Red	White/Red	White/Red
	TO:	White/Green	White/Green	White/Green	White/Green
RESISTANCE (ohms)		55Ω ±10%	54Ω±10%	54Ω±10%	88Ω±10%

5–2. CONTACT BREAKER IGNITION SYSTEM (MX100A & MX125A)

A. Description of Operation

The ignition system consists of the components as shown below. As the flywheel rotates, the contact breaker points open and close. This make-and-break operation develops an electromotive force in the ignition power source coil, and produces a voltage in the ingition coil primary windings. The ignition coil is a kind of transformer, with a 1:50 turns ratio of the primary to the secondary winding. The voltage (150-300V) wihch is produced in the primary coil, is stepped up to 12,000-14,000V by mutualinduction and the electric spar vjumps across the spark plug electrodes.

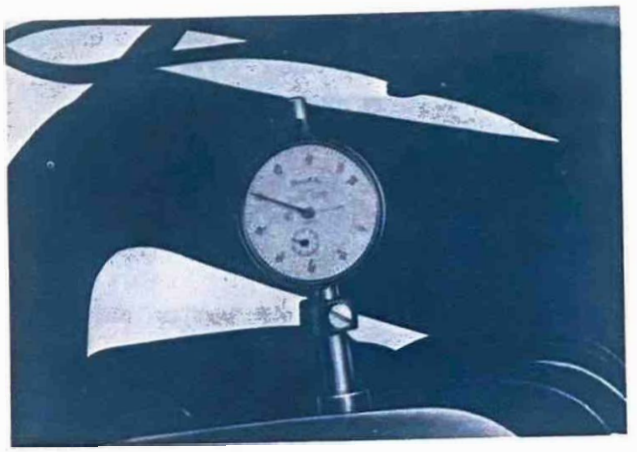


B. Component Parts

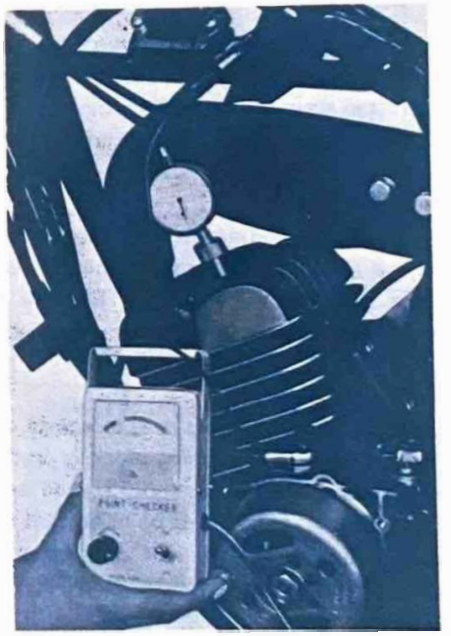
PART NAME	MANUFACTURER		MODEL/TYPE	
	MX100A	MX125A	MX100A	MX125A
Flywheel Magneto	Hitachi	Hitachi	F140-03	F140-03
Ignition Coil	"	"	CM61-20H	CM61-20H
Contact Breaker Ass'y	"	"	—	—
Condenser	"	"	—	—

C. Ignition Timing

Ignition timing must be set with a dial indicator (to determine piston position) and a low-range ohmmeter (to determine exactly when contact breaker points begin to open). Proceed as follows:



1. Remove spark plug and screw Dial Gauge Stand into spark plug hole.
2. Insert Dial Gauge Assembly into stand.
3. Remove left engine crankcase cover.
4. Check point checker for full scale deflection. Connect red lead of Point Checker to black wire in wire harness coming from magneto.
5. Connect black lead of Point Checker to unpainted surface of cylinder fin or unpainted crankcase bolt or screw.
6. Rotate flywheel until maximum point opening occurs. Measure. If beyond tolerance, loosen magneto backing plate screws (3) and rotate backing plate until within tolerance. Tighten securing screws thoroughly.



7. Rotate magneto flywheel until piston is at top-dead-center. Set the zero on dial indicator face to line up exactly with dial indicator needle. Tighten set screw on spark plug stand to secure dial gauge assembly. Rotate flywheel back and forth to be sure that indicator needle does not go past zero.

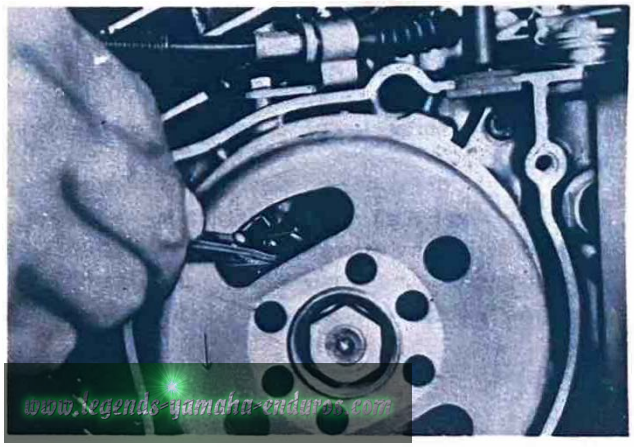
8. Starting at T.D.C. rotate flywheel clockwise until dial indicator reads approximately 2.0 mm (0.078") before-top-dead-center (B.T.D.C.).

9. Slowly turn flywheel counterclockwise until dial indicator reads ignition advance setting listed in Specifications. Table. At this time, the point checker needle should swing from "CLOSED" to "OPEN" position, indicating the contact breaker (ignition points) have just begun to open.

10. Repeat steps 8 and 9 to verify point opening position. If points do not open within specified tolerance, they must be adjusted.

11. Adjust ignition points by barely loosening Pan-head screw and carefully rotating contact breaker assembly with a slotted screwdriver. Make minor adjustment and retighten Pan-head screw before rechecking timing. Recheck timing by repeating steps 7 - 9.

12. When correct ignition timing has been accomplished, check maximum point gap by turning flywheel until maximum point opening occurs. Measure point gap with thickness gauge. See Specification Table.



NOTE:
If the maximum point gap is over tolerance and cannot be corrected, the point rubbing block is probably worn and the contact breaker assembly should be replaced. Do not attempt to bend fixed point bracket to decrease maximum point gap. This will only result in point misalignment, difficulty in setting timing and premature point failure.

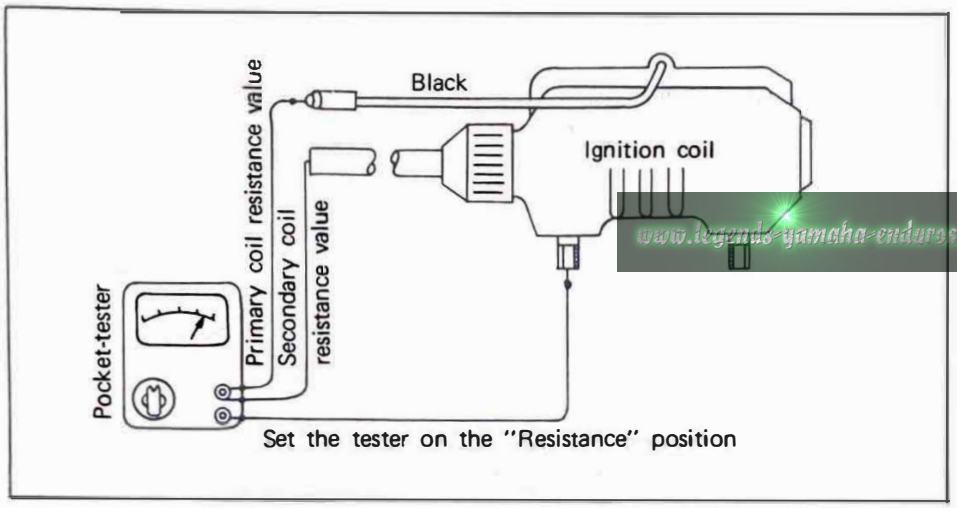
IGNITION TIMING SPECIFICATIONS

MODEL	POINT GAP			TIMING (B.T.D.C.)
	NOMINAL	MINIMUM	MAXIMUM	
MX100A	0.35 mm 0.014 in.	0.30 mm 0.012 in.	0.40 mm 0.016 in.	2.0 ± 0.15
MX125A	0.35 mm 0.014 in.	0.30 mm 0.012 in.	0.40 mm 0.016 in.	2.0 ± 0.15

5–3. IGNITION COIL (All Models)

A. Direct Current Resistance Testing

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



	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
Primary Coil Resistance	0.61Ω ±10%	0.61Ω ±10%	0.61Ω ±10%	0.61Ω ±10%	0.61Ω ±10%	0.61 Ω ±10%
Secondary Coil Resistance	6.0KΩ ±20%	6.0KΩ ±20%	6.0KΩ ±20%	6.0KΩ ±20%	6.0KΩ ±20%	6.0KΩ ±20%

5–4. SPARK PLUG (All Models)

The spark plug indicates how the engine is operating. If the engine is operating correctly, and the machine is being ridden correctly, then the tip of the white insulator around the positive electrode of the spark plug will be a medium to light tan color. If the porcelain "donut" around the positive electrode is a very dark brown or black color, than a plug with a hotter heat range might be required. This situation is quite common during theeengine breakin period.

If the insulator tip shows a very light tan or white color is actually pure white or if electrodes show signs of melting, then a spark plug with a colder heat range is required.

Remember, the insulator area surrounding the positive electrode of the spark plug must be a medium-to-light tan color. If it is not, check carburetion, timing and ignition adjustments.

The spark plug must be removed and checked prior to using the machine. Check electrode wear, insulator color, and negative to positive electrode gap.

	MX100A	MX125A	MX175A	MX250A	MX360A	SC500A
SPARK PLUG TYPE	B-8EV	B-9EV	B-8EV	B-8EV	B-8EV	B-8EV
SPARK PLUG GAP (mm) (in.)	0.4 0.016	0.4 0.016	0.4 0.016	0.4 0.016	0.4 0.016	0.5 - 0.6 0.020-0.024

Engine conditions will cause any spark plug to slowly break down and erode. If erosion begins to increase, or if the electrodes finally become too worn, or if for any reason you believe the spark plug is not functioning correctly, replace it.

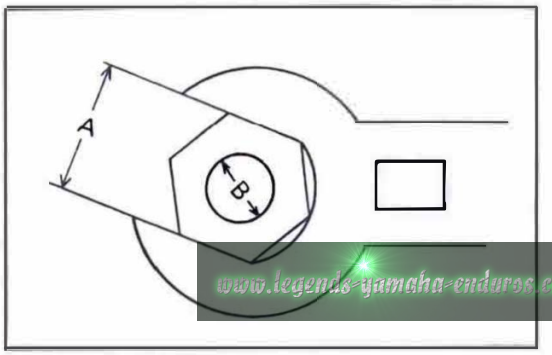
When installing the plug, always clean the gasket surface, use a new gasket, wipe off any grime that might be present on the surface of the spark plug, torque the spark plug properly.

Spark Plug Tightening Torque:	2.5 - 3.0 kg-m 18 - 22 lbs-ft

A. Torque Specifications

The list at right covers those stud/bolt sizes with standard I.S.O. pitch threads. Torque specifications for components with thread pitches other than standard are given within the applicable chapter.

Torque specifications call for dry, clean threads. Components such as the cylinder or cylinder head should be at room temperature prior to torquing. A cylinder head or any other item with several fasteners should be sucessive stages until torque specification is reached. The method is similar to installing an automobile wheel and will avoid warping the component.



A (NUT)	B (BOLT)	TORQUE SPECIFICATION		
		Kg-m	Lbs-Ft	Lbs-In
10mm	6mm	1.0	7.2	85
13mm	8mm	2.0	15	175
14mm	8mm	2.0	15	175
17mm	10mm	3.5 - 4.0	25 - 29	300 - 350
19mm	12mm	4.0 - 4.5	29 - 33	350 - 400
22mm	14mm	4.5 - 5.0	33 - 36	400 - 440
26mm	17mm	5.8 - 7.0	42 - 50	500 - 600
27mm	18mm	5.8 - 7.0	42 - 50	500 - 600
30mm	20mm	7.0 - 8.3	50 - 60	600 - 700
SPARK PLUG		2.5 - 3.0	18 - 22	230 - 250

TORQUE VALUES

(Also see Torque Chart-page 7.)

	MX100, 125, 175	MX250, 360, SC500
CYLINDER HEAD BOLT (8mm)	2 Kg-m (14.5 Ft-lbs)	2 Kg-m (14.5 Ft-lbs)
CYLINDER HEAD BOLT (10mm)		3.5 Kg-m (25 Ft-lbs)
FORK TUBE PINCH BOLT	2 Kg-m (14.5 Ft-lbs)	2 Kg-m (14.5 Ft-lbs)
STEM PINCH BOLT	2 Kg-m (14.5 Ft-lbs)	2 Kg-m (14.5 Ft-lbs)
STEM BOLT		
REAR AXLE SECURING NUT	4.6-5.1 Kg-m (33-37 Ft-lbs)	5.5-6.9 Kg-m (40-50 Ft-lbs)
DRIVE SPROCKET SECURING NUT	4.5-5 Kg-m (32-36 Ft-lbs)	5.8-7 Kg-m (42-51 Ft-lbs)
DRIVEN SPROCKET SECURING BOLT	2 Kg-m (14.5 Ft-lbs)	2 Kg-m (14.5 Ft-lbs)
SPARK PLUG	2.7-2.9 Kg-m (230-250 Ft-lbs)	2.7-2.9 Kg-m (230-250 Ft-lbs)

B. Conversion Tables

MILLIMETERS to Inches

	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0		0.0039	0.0079	0.0118	0.0157	0.0197	0.0236	0.2760	0.0315	0.0354
1	0.0394	0.0433	0.0472	0.0512	0.0551	0.0591	0.0630	0.0669	0.0709	0.0748
2	0.7890	0.0827	0.0866	0.0906	0.0945	0.0984	0.1024	0.1063	0.1102	0.1142
3	0.1181	0.1200	0.1260	0.1299	0.1339	0.1378	0.1417	0.1457	0.1496	0.1535
4	0.1575	0.1614	0.1654	0.1693	0.1732	0.1772	0.1811	0.1850	0.1890	0.1929
5	0.1969	0.2000	0.2047	0.2087	0.2126	0.2165	0.2205	0.2244	0.2283	0.2323
6	0.2362	0.2402	0.2441	0.2480	0.2520	0.2559	0.2598	0.2638	0.2677	0.2717
7	0.2756	0.2795	0.2835	0.2874	0.2913	0.2953	0.2992	0.3031	0.3071	0.3110
8	0.3150	0.3189	0.3228	0.3268	0.3307	0.3346	0.3386	0.3425	0.3465	0.3504
9	0.3543	0.3583	0.3622	0.3661	0.3701	0.3740	0.3780	0.3819	0.3858	0.3898
10	0.3937	0.3976	0.4016	0.4055	0.4094	0.4134	0.4173	0.4213	0.4252	0.4291

0.01mm=0.0004" 0.03mm=0.0012" 0.05mm=0.0020" 0.07mm=0.0028" 0.09mm=0.0035"
0.02mm=0.0008" 0.04mm=0.0016" 0.06mm=0.0024" 0.08mm=0.0031" 0.10mm=0.0039"

Inches to Millimeters

	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0		0.254	0.508	0.762	1.016	1.270	1.524	1.778	2.032	2.286
0.1	2.540	2.794	3.048	3.302	3.556	3.810	4.064	4.318	4.572	4.826
0.2	5.080	5.334	5.588	5.842	6.096	6.350	6.604	6.858	7.112	7.366
0.3	7.620	7.874	8.128	8.382	8.636	8.890	9.144	9.398	9.652	9.906
0.4	10.160	10.414	10.668	10.922	11.176	11.430	11.684	11.938	12.192	12.446
0.5	12.700	12.954	13.208	13.462	13.716	13.970	14.224	14.478	14.732	14.986
0.6	15.240	15.494	15.748	16.002	16.256	16.510	16.764	17.018	17.272	17.526
0.7	17.780	18.034	18.288	18.542	18.796	19.050	19.304	19.558	19.812	20.066
0.8	20.320	20.574	20.828	21.082	21.336	21.590	21.844	22.098	22.352	22.606
0.9	22.860	23.114	23.368	23.622	23.876	24.130	24.384	24.638	24.892	25.146
1.0	25.400	25.654	25.098	26.162	26.416	26.670	26.924	27.178	27.432	27.686

0.001"=0.0254mm 0.003"=0.0762mm 0.005"=0.1270mm 0.007"=0.1778mm 0.009"=0.2286mm
0.002"=0.0508mm 0.004"=0.1016mm 0.006"=0.1524mm 0.008"=0.2032mm 0.010"=0.254 mm

Metric to Inch System

	KNOWN	MULTIPLIER (Rounded off)	RESULT
TORQUE	m-kg	7.233	ft-lbs
	m-kg	86.80	in-lbs
	cm-kg	0.0723	ft-lbs
	cm-kg	0.8680	in-lbs
WT.	kg	2.205	lb
	g	0.03527	oz
FLOW/DISTANCE	km/l	2.352	mpg
	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
VOL./CAPACITY	cc (cm^3)	0.03382	oz (U.S. liq.)
	cc (cm^3)	0.06102	cu. in.
	l (liter)	2.1134	pt (U.S. liq.)
	l (liter)	1.057	qt (U.S. liq.)
	l (liter)	0.2642	gal (U.S. liq.)
MISC.	kg/mm	56.007	lb/in
	kg/cm^2	14.2234	psi (lb/in^2)
	Centigrade(°C)	9/5(°C)+32	Fahrenheit(°F)

Inch to Metric System

	KNOWN	MULTIPLIER (Rounded off)	RESULT
TORQUE	ft-lbs	0.13826	m-kg
	in-lbs	0.01152	m-kg
	ft-lbs	13.831	cm-kg
	in-lbs	1.1521	cm-kg
WT.	lb	0.4535	kg
	oz	28.352	g
FLOW/DISTANCE	mpg	0.4252	km/l
	mph	1.609	km/hr
	mi	1.609	km
	ft	0.3048	m
	yd	0.9141	m
	in	2.54	cm
	in	25.4	mm
VOL./CAPACITY	oz (U.S. liq.)	29.57	cc (cm^3)
	cu. in.	16.387	cc (cm^3)
	pt (U.S. liq.)	0.4732	l (liter)
	qt (U.S. liq.)	0.9461	l (liter
	gal (U.S. liq.)	3.785	l (liter)
MISC.	lb/in	0.017855	kg/mm
	psi (lb/in^2)	0.07031	kg/cm^2
	Fahrenheit(°F)	5/9(°F -32)	Centigrade(°C)

DEFINITION OF TERMS:

m-kg = Meter-kilograms: Usually torque.

g = Gram(s).

kg = Kilogram(s): 1,000 grams.

km = Kilometer(s).

l = Liter(s).

km/l = Kilometer(s) per liter: Mileage.

cc = Cubic centimeter(s) (cm^3): Volume or capacity.

kg/mm = Kilogram(s) per millimeter: Usually spring compression rate.

kg/cm^2 = Kilogram(s) per square centimeter: Pressure.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