SUZUKI 250CC MODELS

MODEL	TS 250 TS 250 II	TS 250 R TS 250 J TS 250 K	TM 250 J TM 250 K
Displacement-cc	246	246	246
Bore-MM	70	70	70
Stroke-MM	64	64	64
Oil-Fuel ratio	Oil Injection	Oil Injection	Oil Injection
Spark plug—			
NGK	B-7E	B-7ES	B-8ES
Electrode gap-MM	0.6-0.7	0.7-0.8	0.6-0.7
Inch	0.024-0.028	0.028-0.030	0.024-0.028
Ignition—			
Point gap-MM	0.3-0.4	N A*	N A*
Inch	0.012-0.016	N A*	N A*
Timing-Degrees BTDC	21	24 @ 6000	21.5 @ 6000
Electrical system voltage	6	6	....
Battery terminal grounded	Negative	Negative	....
Tire size-Front	3.25 x 19	3.25 x 19	3.00 x 21
Rear	4.00 x 18	4.00 x 18	4.00 x 18
Tire pressure—			
Front-kg/cm²	1.2	1.5	1.0
Psi	17	21	14
Rear-kg/cm²	1.4	1.8	1.0
Psi	20	26	14
Rear chain free play-MM	15-20	15-20	15-20
Inch	⅝-¾	⅝-¾	⅝-¾
Rear chain size	#525	#525	#525
Number of speeds	5	5	5
Weight (approx.)-kg	127	111	100
Pounds	280	245	220

*A breakerless electronic ignition system is used.

Illustrations courtesy U.S. Suzuki Motor Corporation

MAINTENANCE

SPARK PLUG. Recommended spark plug for normal use in models with contact breaker point ignition is NGK type B-7E or equivalent with an electrode gap of 0.6-0.7MM (0.024-0.028 in.). Recommended spark plug for TM 250 models is NGK type B-8ES or equivalent with an electrode gap of 0.6-0.7MM (0.024-0.028 in.). TS 250 models with P.E.I. (Pointless Electronic Ignition) are equipped with an NGK type B-7ES spark plug with an electrode gap of 0.7-0.8MM (0.028-0.030 in.).

CARBURETOR. All models are equipped with Mikuni sliding valve carburetors. TM 250 models are fitted with 32MM carburetors and TS 250 models use 28MM units. Refer to Fig. S12-1 and the following for standard carburetor specifications:

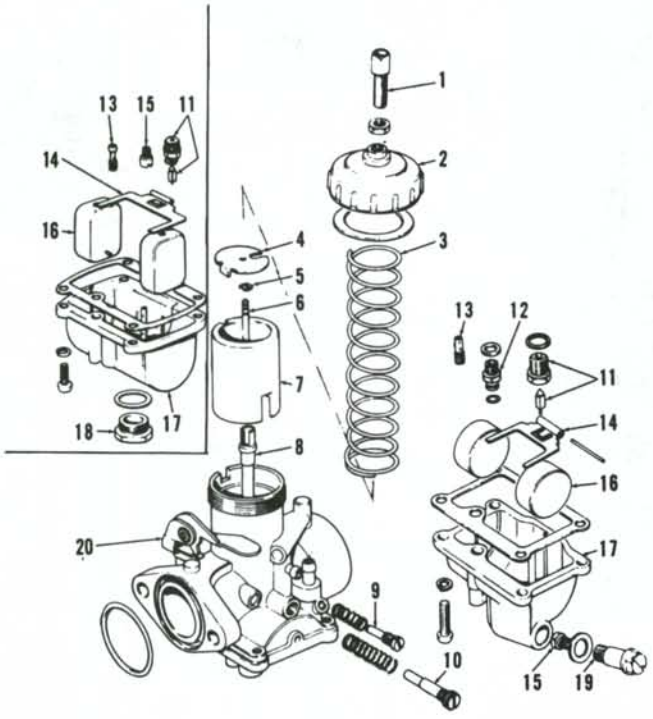


Fig. S12-1–Exploded view of typical Mikuni carburetor. Inset shows separate float/float arm used on some models.

1. Throttle cable adjuster
2. Mixing chamber cap
3. Throttle return spring
4. Spring seat
5. Jet needle clip
6. Jet needle
7. Throttle slide
8. Needle jet
9. Pilot air screw
10. Idle speed adjuster
11. Float valve assembly
12. Fuel passage
13. Pilot jet
14. Float arm
15. Main jet
16. Float
17. Float chamber
18. Float chamber drain plug
19. Main jet holder
20. Starter lever

TS 250 (VM 28 SC Spigot Mount Carburetor)

Main jet (15) ..... #115
Pilot jet (13) 25
Jet needle (6) ..... 5 EP 6
Needle jet (8) P-2
Throttle valve (7) 2.0
Clip (5) in third groove from top of needle (6).

TS 250 II (VM 28 SC Spigot Mount Carburetor)

Main jet (15) ..... #117.5
Pilot jet (13) 25
Jet needle (6) ..... 5 DP 10
Needle jet (8) P-0
Throttle valve (7) 2.0
Clip (5) in second groove from top of needle (6).

TS 250 R, TS 250 J and TS 250 K (VM 28 SH Flange Mount Carburetor)

Main jet (15)—
TS 250 R ..... #170
TS 250 J and TS 250 K ..... #180
Pilot jet (13) 25
Jet needle (6) ..... 5 CN 3
Needle jet (8) 0-4
Throttle valve (7) 2.5
Clip (5) in second groove from top of needle (6).

TM 250 J Before engine #31406 (VM 32 SC)

Main jet (15) ..... #260
Pilot jet (13) 20
Jet needle (6) ..... 6 FJ 11
Needle jet (8) Q-2
Throttle valve (7) 2.0
Clip (5) in third groove from top of needle (6).

TM 250 J Engine #31406 and Later and TM 250 K (VM 32 SC)

Main jet (15) ..... #230
Pilot jet (13) 40
Jet needle (6) ..... 6 DP 1
Needle jet (8) ..... P-O
Throttle valve (7) 1.5
Clip (5) in second groove from top of needle (6).

Pilot air screw (9) should be 1-1½ turns out from a lightly seated position on SC type carburetors and 1¾ turns out on SH type units. Float level should be 28MM (1.1 inch) on units with one piece float/float arm assembly. Level on these units is measured from bottom of float with carburetor inverted to gasket surface of mixing chamber body with gasket removed. Float level (A—Fig. S12-2) should be 23MM (0.90 inch) on TS 250 (VM 28 SC) units with separate floats and float arm. Float level (A

—Fig. S12-3) should be 15MM (0.59 inch) on TS 250 R, J and K (VM 28 SH) models and 9.1MM (0.358 in.) on TM 250 (VM 32 SC) models. Level on all models is adjusted by bending tang (B —Fig. S12-2).

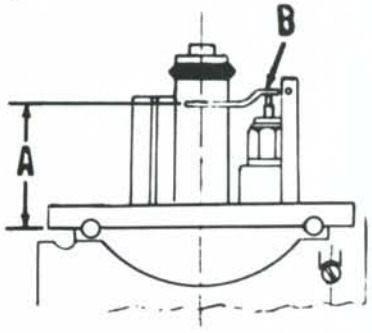


Fig. S12-2–Float level on some early models is checked by measuring from float arm to gasket surface of float bowl with gasket removed. Adjust level by bending tang (B).

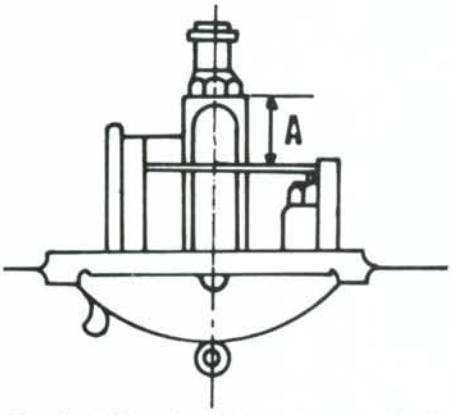


Fig. S12-3–Float level (A) on later models is checked by measuring from float arm to jet holder boss with mixing chamber body inverted.

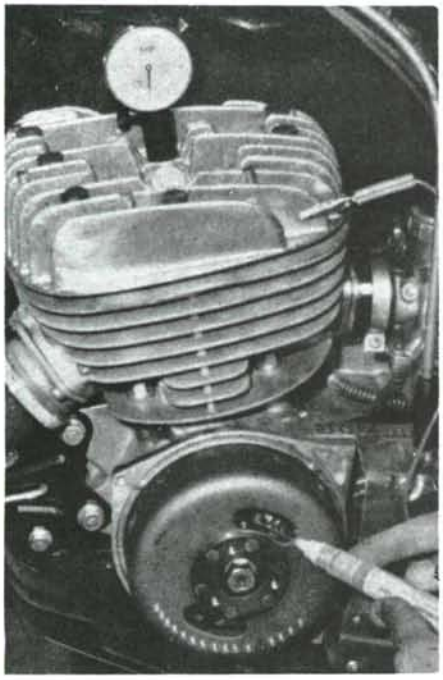


Fig. S12-4–Checking point opening with a dial gage and static timing light. Gage shown is available from Central Tool Co.

IGNITION AND ELECTRICAL. A 6V 2 AH battery is common to all models equipped with lights. A rectifier is fitted to convert AC current to DC. All electrical parts on PEI models are DC operated while earlier models use DC current for horn, turn signals and brake light only.

An ohmmeter or simple continuity tester may be used to inspect the rectifier. When test leads are installed on rectifier, indicator should show continuity in one direction and not in the other. If current flows in both directions or not at all, unit is faulty.

IGNITION INSPECTION AND ADJUSTMENT OF CONTACT BREAKER MODELS. Inspect breaker points for burning or wear. Clean and set maximum point gap to 0.3-0.4MM (0.012-0.016 in.). Ignition should occur (points just open) at 21 degrees BTDC. Piston will be 2.7MM (0.106 inch) BTDC and mark on flywheel will align with punch mark on crankcase at this time. Timing marks are at approximately same position as on PEI model in Fig. S12-5.

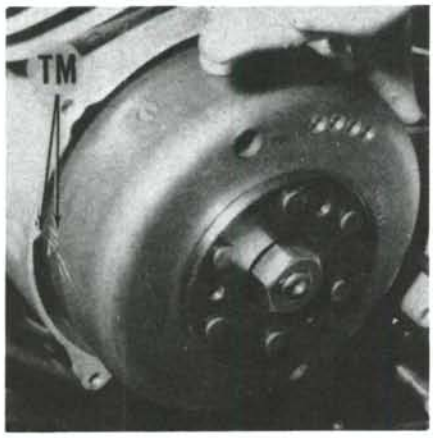


Fig. S12-5–Timing marks of TS 250 R and later models. Use a power timing light and an engine speed of 6000 RPM to check PEI models.

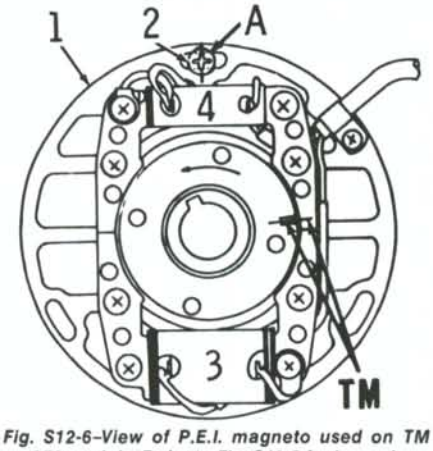


Fig. S12-6–View of P.E.I. magneto used on TM 250 models. Refer to Fig. S12-8 for legend.

IGNITION INSPECTION AND ADJUSTMENT OF PEI (POINTLESS ELECTRONIC IGNITION) MODELS. The breakerless electronic ignition systems are used on TM 250 models and TS 250 R, J and K models. A small, internal rotor is used on TM models while TS models have a large external flywheel and coils to handle lighting as well as ignition. After initial installation, further adjustment should not be necessary, however, timing may be inspected with a power timing light. Timing marks (TM—Fig. S12-5 and S12-6) should align at 6000 RPM. If stator plate has been removed, timing may be reset by installing stator base plate with scribe mark at upper mount screw hole (A—Fig. S12-6) aligned with small boss, on crankcase. Recheck timing with power timing light after installation.

As the PEI magneto flywheel (Fig. S12-7) turns, a current is induced in the exciter coil (approximately 100-300 V). This current is rectified by diode "A" and stored in the condenser (capacitor). As the flywheel rotates a current is also produced in the trigger coil. This trigger current is rectified by diode "B" and channeled through the trigger signal control circuit. The trigger signal is delayed in the control circuit by a Zener diode until sufficient voltage is produced (depending on engine RPM) to release the trigger signal to the thyristor. When trigger voltage is introduced to the thyristor, current in the condenser is released to the ignition coil and ignition spark follows.

Some parts of the system may be inspected with an ohmmeter. Resistance of the exciter coil (4—Fig. S12-6 and S12-8) should be 320 ohms on TM 250 models and 220 ohms on all other models. Exciter coil resistance is measured between the black/red wire and

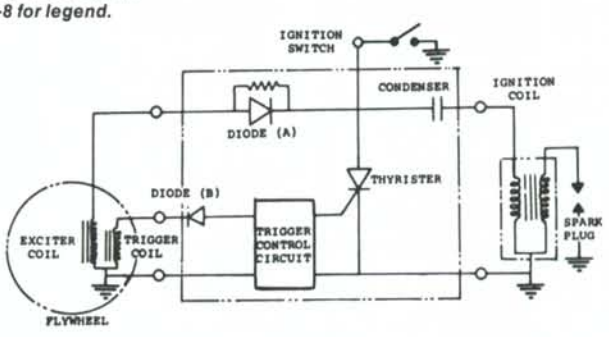


Fig. S12-7–Simplified diagram of PEI system used on the TS 250 R and later models.

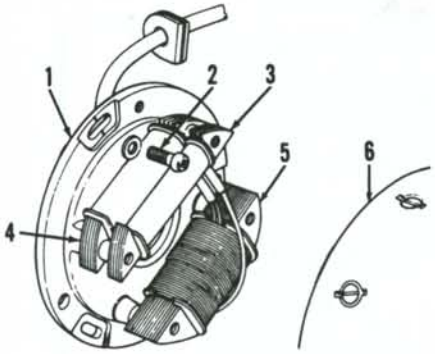


Fig. S12-8–Magneto assembly of PEI models. Center of screw (2) should be aligned with punch marks on base plate (1).

1. Base plate
2. Screw
3. Trigger coil
4. Exciter coil
5. Lighting coil
6. Flywheel

plate (1). Standard resistance of trigger coil (3) is 87 ohms on TM 250 models and 75 ohms on all other models. Trigger coil resistance is checked between the red/white wire and base plate. Standard resistance of primary winding of ignition coil (measured between black/white and white/blue wire) is approximately 0.7 ohms. Resistance of secondary winding (spark plug lead to ground) is approximately 12,000 ohms.

The following checks are all made to the PEI unit (located under seat) with an ohmmeter. Connect one lead from ohmmeter to black/yellow wire and other lead to black/white wire, reverse leads. Current should flow in one direction and not in the other. Place leads on black/red and black/yellow leads from box. There should be continuity in one direction and approximately 2 Megohms resistance in other direction. Connect meter leads to black/white wire and red/white wire. There should be no continuity in one direction and 100-500 ohms in the other direction. Finally, connect leads to black/yellow and white/blue wires. Meter should bounce across scale and return to original position. If any of the previous checks do not test as indicated, unit must be renewed.

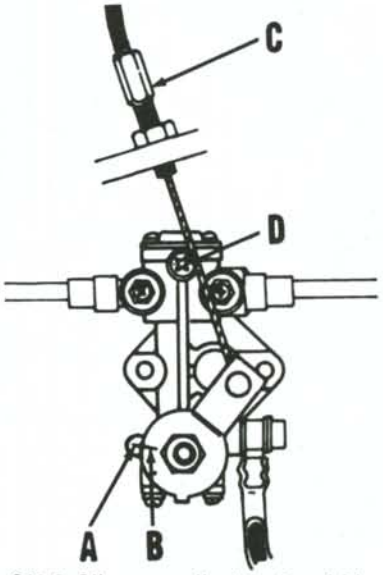
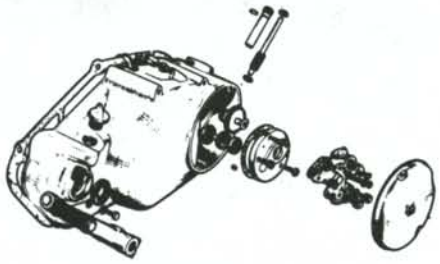


Fig. S12-9–Oil pump adjustment and bleed points. Small punch marks on lever are factory reference marks and should not be used as aligning marks.



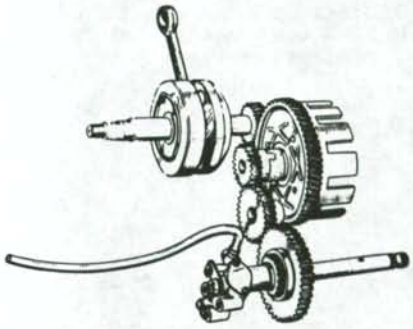


Fig. S12-10–Different oil pump drives have been used. Early models have oil pump mounted on right side of engine and drive from crankshaft. Later units mount oil pump at left rear of engine (right view) and drive through kick idler gear.

LUBRICATION. Oil capacity of gearbox on TS 250 and TS 250 II is 1100cc. Oil capacity of gearbox on all other models is 700cc. Recommended gearbox lubricant for all models is SAE 20 W/40 motor oil.

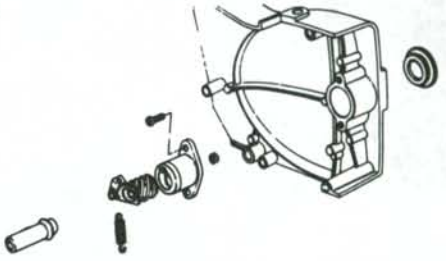
Engine lubrication on all models is accomplished by an automatic oil metering system. Only oils intended for use in air cooled two cycle engines should be used. Oil is pumped in direct relation to engine speed and amount of throttle opening to the intake port and left crankshaft main bearing. Transmission oil is used to lubricate right main bearing. On early models (TS 250 and TS 250 II) the oil pump is driven by the primary gear and located on right side of engine. Later units (TS 250 R, J, K and TM 250 models) mount oil pump on left side of engine to the rear and drive through the kickstarter. Adjustments on all models are similar.

Turn cable adjuster (C—Fig. S12-9) so that aligning marks (A&B) align with throttle wide open.

If oil pump has been removed or allowed to run dry, it will be necessary to bleed the injection system. Pump and main inlet line are bled by loosening bleeder screw (D) and allowing oil to flow until air bubbles are no longer present in oil coming from bleeder hole. Air in pressure lines is expelled by holding oil pump control arm full on and running engine at idle until air is removed.

CLUTCH CONTROLS. Clutch may be adjusted on TS and early TM models after removing adjustment cover on left engine case. Loosen lock nut (18—Fig. S12-12) and turn adjusting screw (17) until it just contacts push rod (14). Back adjusting screw out ½ turn and tighten lock nut. Turn adjusters on clutch control cable to obtain 4MM free play at pivot of clutch lever on handle grip.

Clutch adjustment on TM 250 K is accomplished by turning cable adjusters at either end of clutch cable to obtain free play of 4MM measured at pivot of handlebar mounted clutch lever.



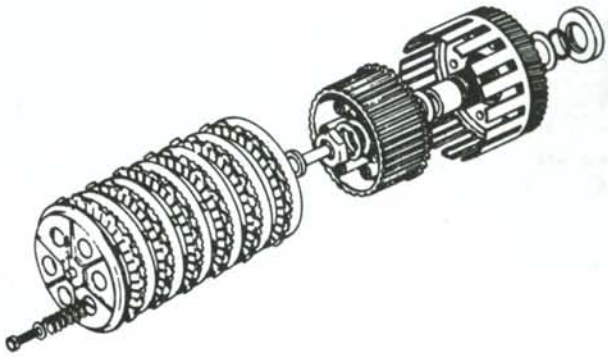


Fig. S12-11–Clutch assembly used on early model TS 250. Basic parts are similar to TS 250 R unit in Fig. S12-12.

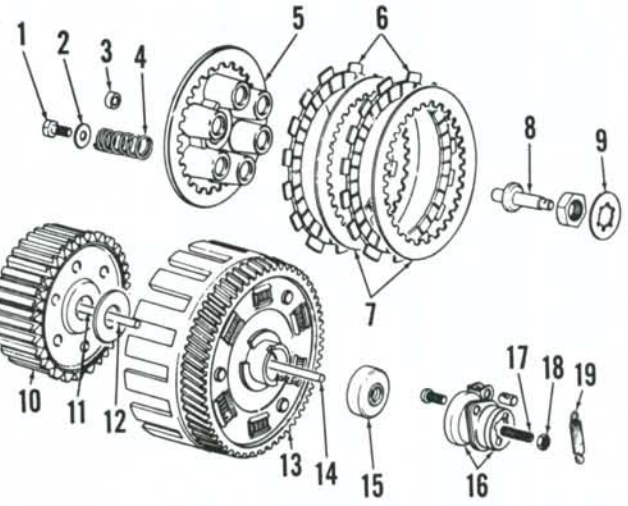


Fig. S12-12–Exploded view of TS 250 R clutch assembly. Later units are similar.

1. Bolt
2. Washer
3. Oil seal
4. Clutch spring
5. Pressure plate
6. Friction discs (6 used)
7. Steel plates (6 used)
8. Push piece
9. Lock washer
10. Clutch hub
11. Push rod
12. Thrust washer
13. Primary driven gear assembly
14. Push rod
15. Oil seal
16. Release screw assembly
17. Adjusting screw
18. Lock nut
19. Release screw return spring

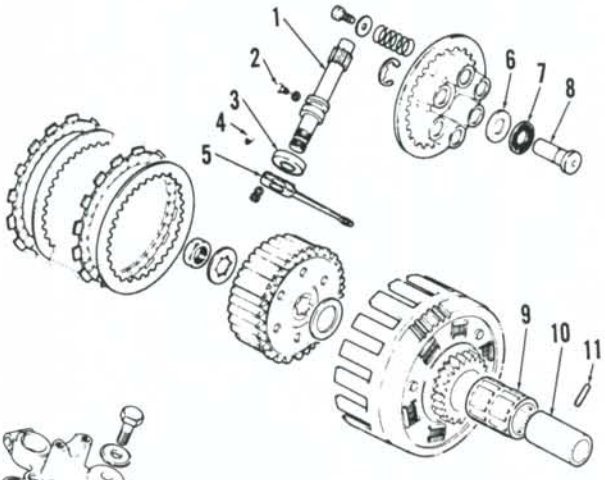


Fig. S12-14–View of clutch and release mechanism used on TM 250 K models. Clutch components are similar to other models.

1. Release pinion
2. Screw
3. Oil seal
4. Screw
5. Arm
6. Thrust washer
7. Needle bearing
8. Release rack
9. Needle bearing
10. Spacer
11. Dowel

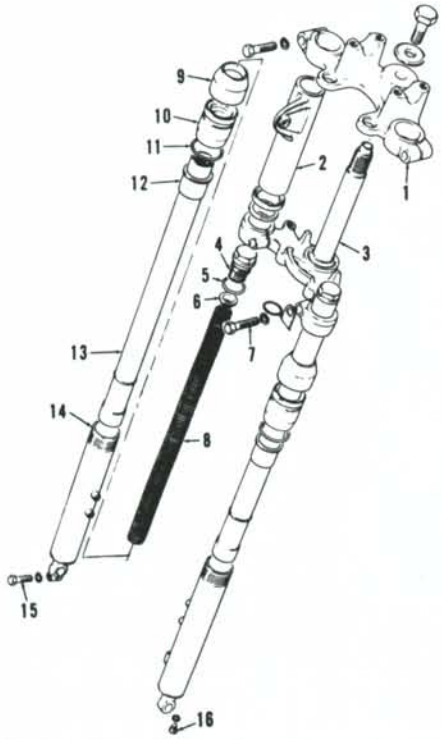


Fig. S12-15–Front suspension system used on TS 250, TS 250 R and TS 250 J. Units used on other TS models are similar.

1. Steering stem head
2. Fork inner tube cover
3. Steering stem
4. Fork top bolt
5. "O" ring
6. Spring guide
7. Pinch bolt
8. Fork spring
9. Dust cover
10. Outer tube nut
11. "O" ring
12. Metal slide
13. Fork inner tube
14. Fork outer tube
15. Axle pinch bolt
16. Oil drain plug

SUSPENSION. Front suspension units on early (TS 250 and TS 250 II) models contain 250cc of oil each and units on later (TS 250 R, J and K) models contain 255cc of oil each. Front suspension units on TM 250 J and TM 250 K models contain 190cc of lubricant. Oil used in all models should be SAE 10 W/30 motor oil or A.T.F. (Automatic Transmission Fluid). Inner fork tubes (13—Fig. S12-15) should extend 5MM (3/16 in.) beyond top of upper triple clamp (A—Fig. S12-16) on TS 250 and TS 250 II models. Inner fork tube should be mounted flush with top of clamp on all other models.

Rear suspension units are not repairable and should be renewed if leaking or damaged.

REPAIRS

PISTON, RINGS AND CYLINDER. Cylinder and piston may be removed without dismounting engine from frame. Head retaining nuts should be loosened and tightened diagonally to prevent head warpage. Refer to the following repair specifications:

Maximum cylinder taper or out of round ..... 0.05MM (0.002 in.)

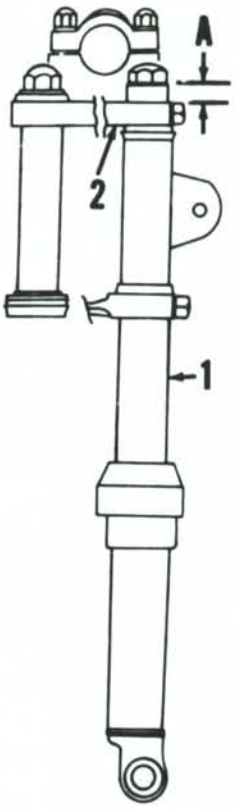


Fig. S12-16–Distance (A) should be approximately 5MM (0.20 inch) on early models. TS 250 R and later models should have fork inner tube (1) top level with top of steering head (2).

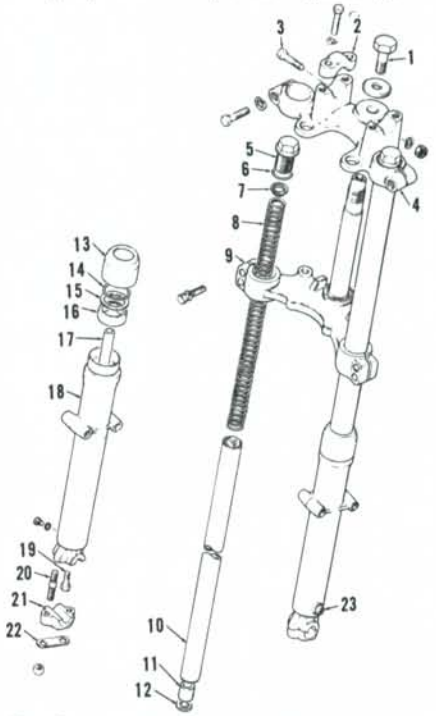


Fig. S12-17–Exploded view of front suspension units used on TM 250 models.

1. Stem bolt
2. Handlebar clamp
3. Pinch bolt
4. Top crown
5. Top bolt
6. "O" ring
7. Spring seat
8. Spring
9. Steering stem assembly
10. Inner fork tube
11. Piston
12. Clip
13. Dust cover
14. Clip
15. Washer
16. Oil seal
17. Fork cylinder
18. Outer fork tube
19. Cylinder lock bolt
20. Stud
21. Axle clamp
22. Washer
23. Drain screw

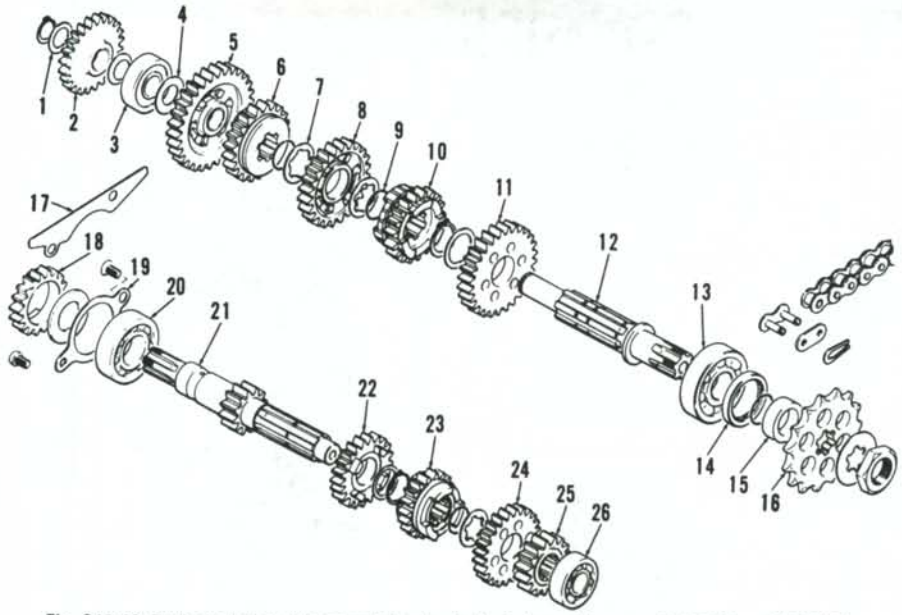


Fig. S12-18–Exploded view of transmission typical of all models except TS 250 and TS 250II.

1. Wave washer
2. Kick starter idle gear
3. Ball bearing
4. Thrust washer
5. First driven gear
6. Fourth driven gear
7. Washer
8. Third driven gear
9. Retaining clip
10. Fifth driven gear
11. Second driven gear
12. Drive shaft
13. Ball bearing
14. Oil seal
15. Spacer
16. Drive sprocket
17. Oil reservoir plate
18. Kick starter driven gear
19. Bearing holder
20. Ball bearing
21. Counter shaft
22. Fourth drive gear
23. Third drive gear
24. Fifth drive gear
25. Second drive gear
26. Ball bearing

Piston skirt to cylinder clearance—
TS 250 and TS 250 II . 0.18-0.19MM (0.0071-0.0074 in.)
All other models ..... 0.06-0.07MM (0.0024-0.0028 in.)

Piston ring end gap—
Standard ..... 0.15-0.35MM (0.006-0.014 in.)
Wear limit ..... 1.0MM (0.040 in.)

Install piston with arrow on dome toward exhaust port (front) of engine. Measure pistons on early models (TS 250 & TS 250 II) for cylinder clearance check at a point 52MM (2.0 in.) from bottom of skirt at right angle to pin hole. Measure pistons for all other models at a point 26MM (1.0 in.) from bottom of skirt at right angle to pin hole. Pistons and rings are available in standard and two oversizes. Piston rings are Keystone type and must be installed with markings toward top. Piston made for TS 250 R and later units should not be installed in earlier models. Torque head retaining nuts to 2 kg-m (14.5 Ft.Lbs.) using a diagonal pattern.

CRANKSHAFT AND CONNECTING ROD. Engine must be removed from frame and crankcase separated to remove crankcase assembly. Maximum eccentricity of crankshaft is 0.0023 inch with crankshaft supported on "V" blocks. Maximum shake at small end of connecting rod is 3MM (0.118 in.). Torque primary gear retaining nut to 4.9 kg-m (36 Ft.Lbs.)

CLUTCH. The wet type multi disc unit is located on transmission drive shaft at right side of engine. Refer to Fig. S12-11, Fig. S12-12 and Fig. S12-14. Standard thickness of friction discs is 3.5MM (0.138 in.). Discs should be renewed if less than 3.2MM (0.126 in.) thick. Steel plates should be renewed if warped more than 0.4MM (0.016 in.). Standard free length of clutch springs is 38.4MM (1.51 in.) and springs should be renewed if less than 36.9MM (1.46 in.) long.

CRANKCASE AND GEARBOX. Crankcase halves must be separated to remove the transmission. Cases should be thoroughly cleaned before reassembly and a non hardening type gasket sealer used. Early models are not equipped with a gasket between crankcase halves.

Kick starter lever and kick starter shaft on early models have punch marks that should be aligned on reassembly.

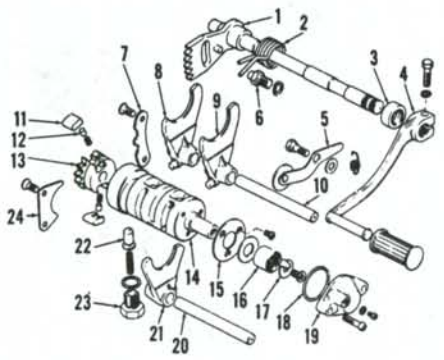


Fig. S12-19–Component parts of shifter assembly used in the late models. Shift forks (8 & 9) are interchangeable.

1. Shift arm
2. Shifter return spring
3. Oil seal
4. Shift lever
5. Shift cam stopper
6. Shift shaft stopper
7. Shift cam guide
8. Gear shift fork
9. Gear shift fork
10. Shift fork shaft
11. Shift pawl
12. Shift pawl roller
13. Cam gear
14. Shift cam
15. Cam stopper plate
16. Needle bearing
17. Neutral switch
18. "O" ring
19. Neutral switch cover
20. Shift fork shaft
21. Shift fork
22. Shift cam stopper
23. Shift cam stopper spring holder
24. Shift cam retainer

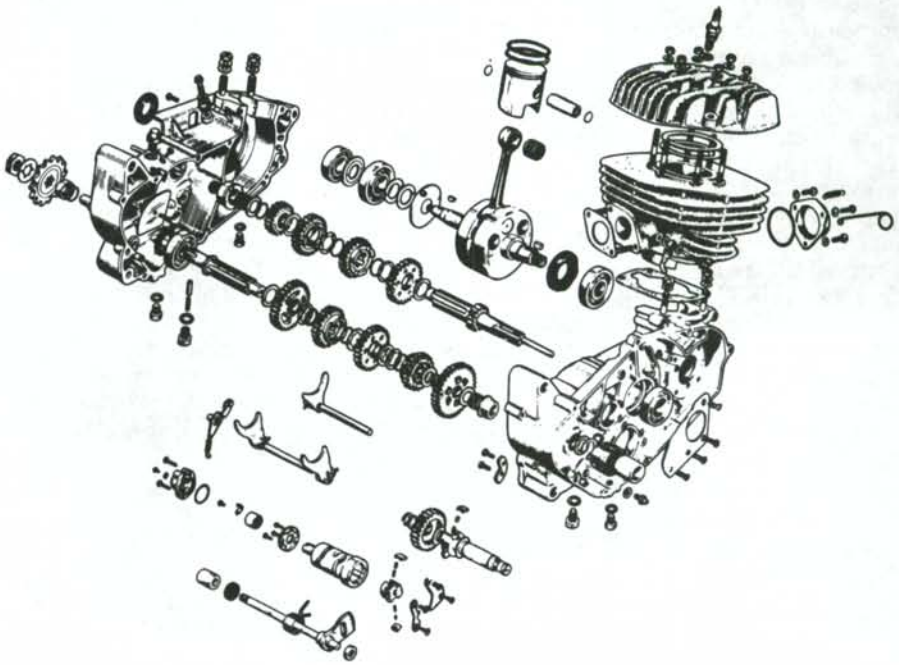


Fig. S12-20–Exploded view of TS 250 engine and transmission assembly. Minor differences may be seen between this unit and later models.