

CAN-AM

SHOP MANUAL 1973-74





SERVICE MANUAL

FOREWORD

This manual has been prepared as a guide to correctly service and repair the Can-Am motorcycle.

This edition was primarily published to be used by motorcycle mechanics who are, in general, already familiar with all service procedures relating to Bombardier made motorcycles.

Please note that the instructions will apply only if proper hand tools and special service tools are used.

Strict adherance to the information within will result in better, safer service work.

This manual emphasizes particular information denoted by the wording and symbols;

WARNING: Identifying an instruction which, if not followed, could cause personal injury.

CAUTION: Denotes an instruction which, if not followed, could severely damage vehicle components.

NOTE: Indicates supplementary information needed to fully complete an instruction.

Although the mere reading of such information does not eliminate the hazard, your understanding of the information will promote its correct use.

WARNING: This information relates to the preparation and use of Can-Am motorcycles and has been utilized safely and effectively by Bombardier Limited. However, Bombardier Limited disclaims liability for all damages and / or injuries resulting from the improper use of the contents. We strongly recommend that any services be carried out and / or verified by a highly skilled professional mechanic. It is understood that certain modifications may render use of the vehicle illegal under existing federal, provincial and state regulations.





SERVICE MANUAL

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SECTION 1

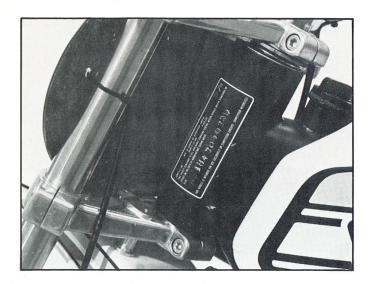
VEHICLE NUMBER

- 1. LOCATION
- 2. IDENTIFICATION



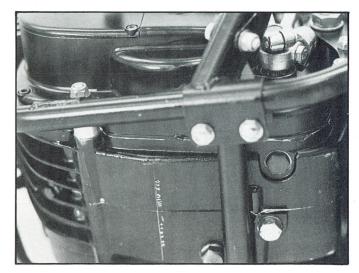
SUB-SECTION 1-1 VEHICLE NUMBER LOCATION

The VIN (Vehicle Identification Number) plate can be found on the left side of the frame head.



The engine serial number can be found under the engine crankcase and is identical to the VIN.

The first (4) four digits are the vehicle model while the last six (6) digits are the number of the unit.



Engine size is shown on the magneto side of the cylinder between the two lowest fins.



SUB-SECTION 1-2 VEHICLE IDENTIFICATION

The complete serial number of a CAN-AM motorcycle comprises 10 digits of which the first four represent the vehicle model while the last six are the serial number of the unit.

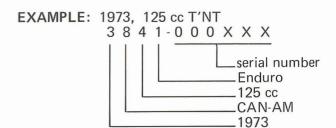
The model number reads as follows:

1st digit: year of production 2nd digit: CAN-AM division (8)

3rd digit: engine size 4th digit: model type

ENGIN	ESIZE		MODEL TYPE
Up to	50cc	1	Enduro (TN'T) 1
51 to	80cc	2	Touring 2
81 to	100cc	3	Motocross (MX-1) 3
101 to	125cc	4	Road race 4
126 to	200cc	5	Trials 5
201 to	250cc	6	T.T. Short Track 6
251 to	350cc	7	Speedway 7
351 to	500cc	8	Trail 8
501 to		9	Mini-Midi 9
751 to	1000 open	0	Open 0

The engine serial number corresponds with the motorcycle serial number.



NOTE: Whenever your serial number is required, mention all of the 10 digits.



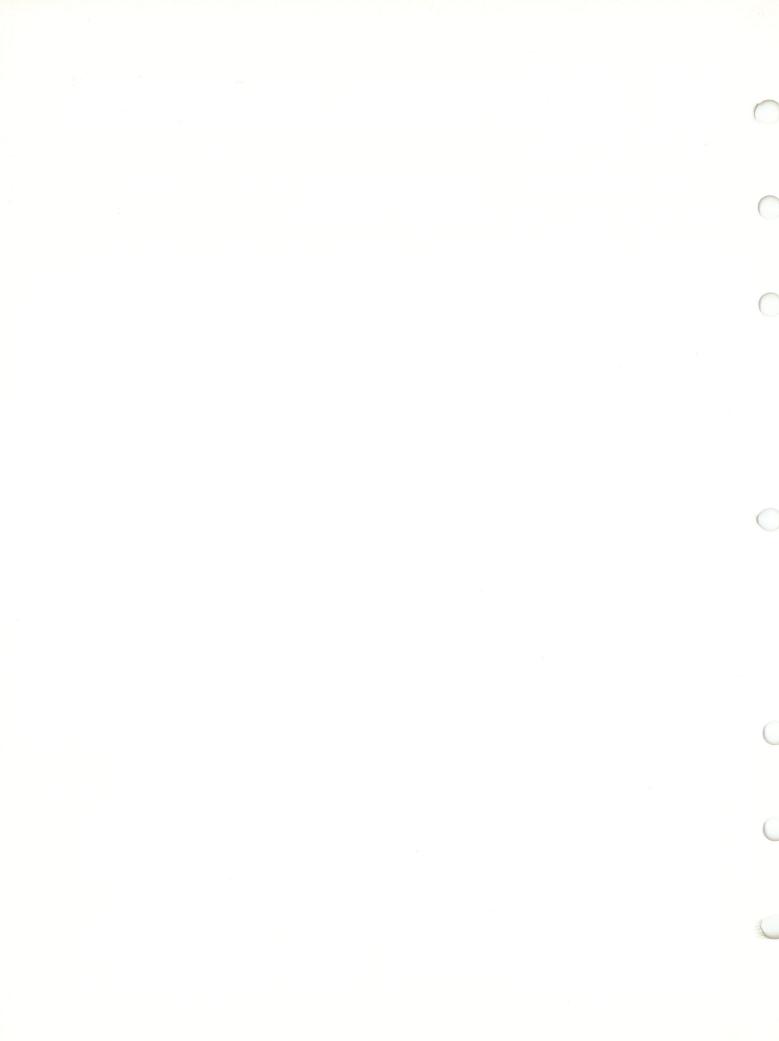


SECTION 2

MAINTENANCE

- 1. PRE-SERVICE PRECAUTIONS
- 2. CLEANING
- 3. MAINTENANCE SCHEDULE & CHECK LIST
- 4. MAINTENANCE PROCEDURES
- 5. STORAGE





SUB-SECTION 2-1

PRE-SERVICE PRECAUTIONS

- 1. Replace gaskets, O-rings, cotter pins, clips, lock washers, snaprings, etc., when reassembling.
- 2. Tighten bolts, nuts or screws gradually to the specified torque using a criss-cross pattern. See Torque Specifications, Section 4.
- 3. Use only genuine CAN-AM or CAN-AM recommended parts and lubricants when servicing your motorcycle.
- 4. Be sure to use CAN-AM special tools where specified.

- 5. Clean the engine before disassembly. Clean all parts after dismantling, and, when reassembling, coat all sliding surfaces with good quality lubricants.
- 6. Grease parts by coating or filling where specified.
- 7. When reassembling, make sure each part is securely tightened. Use "Loctite 271" (CAN-AM P/N: 747,020,000) whenever "Loctite" is mentioned. "Loctite Primer" may be used to shorten curing time.

NOTE: All service data is listed in Section 4.

SUB-SECTION 2-2

CLEANING

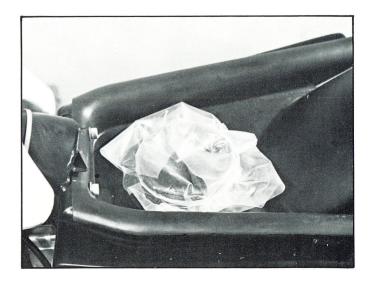
To maintain pride of ownership and to encourage routine inspection and adjustments, keep your new CAN-AM motorcycle clean and carefully detailed.

An effective way to clean your CAN-AM is with a degreasing solvent and warm, soapy water, rinsing with a low pressure spray.

Avoid the use of harsh detergents and high pressure car wash sprays as they may cause damage to paint and metal surfaces and corrosion of electrical connections.

PROCEDURE

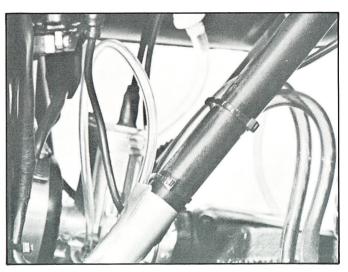
- 1. Remove seat and air filter.
- 2. Seal exposed air box opening with plastic and a rubber band.



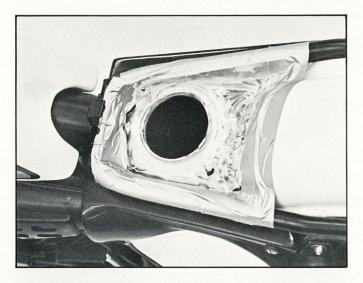
- 3. Using tape or bolts of adequate size, plug the vent tubes coming from:
 - a) Gear box filler cap
 - b) Magneto cover
 - c) Carburetor float chamber.
- 4. Thoroughly degrease any oily areas using solvent and a soft brush.
- 5. Spray the motorcycle down to remove the degreaser and excessive mud or dirt.

NOTE: Avoid spraying directly onto:

- a) Carburetor
- b) The electronic control unit
- c) The muffler opening
- d) Fuel and oil tank caps.



Section 2-2 Page 3

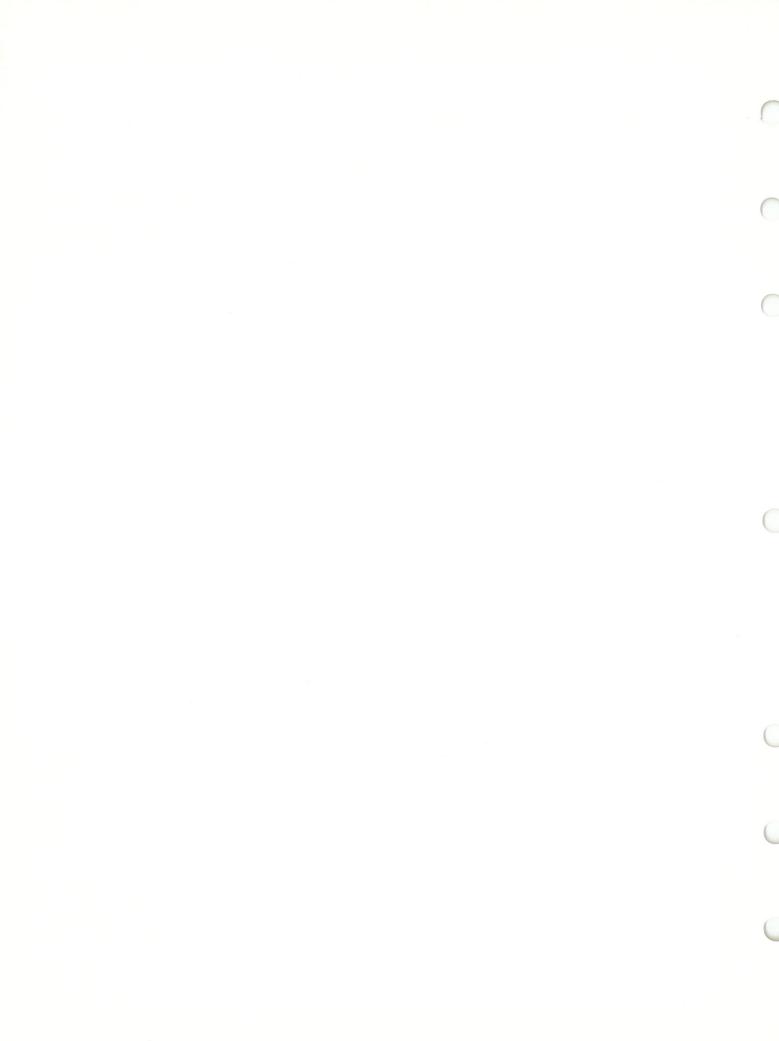


- 6. Using a sponge, cloth or brush, apply liberal quantities of soapy water to thoroughly remove any remaining dirt.
- 7. Rinse away all traces of soap and dirt with a low pressure water spray.
- 8. Wipe the motorcycle dry and remove the 3 vent plugs (or tape) and the plastic on the air box.
- 9. Apply a liberal ring of grease around the air filter base and install a freshy cleaned and oiled air filter.



- 10. Check the connector block and boot at the electronic control unit for trapped water. Dry and liberally coat with dielectric silicone compound as necessary (e.g. Dow Corning No 4).
- 11. Oil all lever and pedal pivot points, and lubricate the drive chain.
- 12. Start the motorcycle, allow it to warm up and then test-ride for several minutes.

CAUTION: Wet brake linings reduce stopping ability. Ride with care until brakes respond properly.



SUB-SECTION 2-3

MAINTENANCE SCHEDULE MAINTENANCE CHECK LIST

MAINTENANCE SCHEDULE T'NT

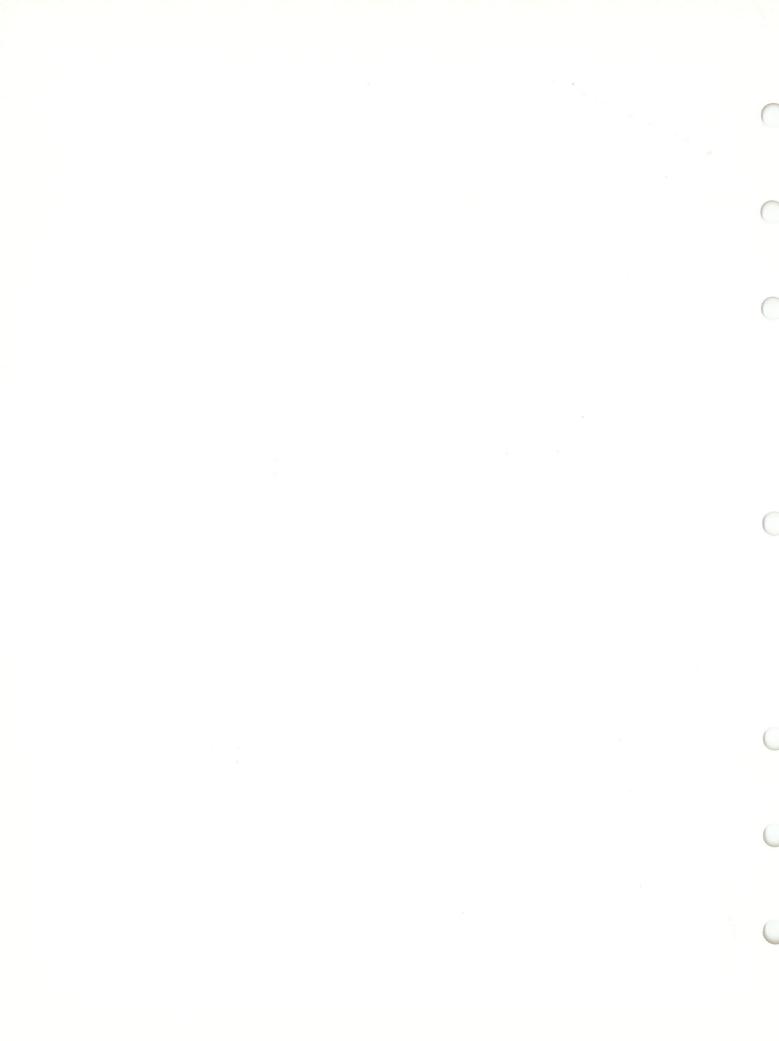
The service intervals shown in the Maintenance Schedule are intended as a guide to establish a regular servicing routine. Sustained severe or high speed operation under adverse conditions may necessitate more frequent servicing.

Service Required	Section 2-4 Page	Daily or as required	After 300 miles	Every 1000 miles	Once a year
Retorque cylinder base nuts and cylinder head nuts.	2		•	•	
Clean carburetor and fuel sediment bowl.	3				•
3. Adjust carburetor.	4		•	•	
4. Adjust throttle and injector pump synchronization.	4		•	•	
5. Adjust clutch and cable.	5		•	•	
6. Change transmission oil.	6		•	•	•
7. Clean air filter.	6	•	•	•	
8. Clean or change oil filter.	- 8 -			•	•
9. Clean or change gas filter.	0			•	•
10. Check steering stem bearing adjustment.	8		•	•	
11. Inspect wheel bearings.	9			•	•
12. Change fork oil.	9				•
13. Check and tighten spokes and sprocket bolts.	9		•	•	
14. Clean and lubricate drive chain.	10 —	•	•		
15. Adjust drive chain.		•	•		
16. Adjust front and rear brakes.	12	•			
17. Lubricate control pivot points.	12	•		•	
18. Check and adjust ignition timing.	13		•	•	
19. Check and tighten all nuts and bolts.	15		•	•	
20. Check battery electrolyte level. (Add water if necessary).	20		•	•	

MAINTENANCE SCHEDULE MX-1

The service intervals shown in the Maintenance Schedule are intended as a guide to establish a regular servicing routine. Sustained severe or high speed operation under adverse conditions may necessitate more frequent servicing.

Service Required	Section 2-4 Page	Daily or as required	After five (5) hours	Every race	Every three (3) races	Once a year
Retorque cylinder base nuts and cylinder head nuts.	2		•		•	
2. Clean carburetor and fuel sediment bowl.	3				•	•
3. Adjust carburetor.	4		•	•		
4. Adjust throttle and injector pump synchronization.	4		•	•		
5. Adjust clutch and cable.	5		•	•		
6. Change transmission oil.	6		•		•	•
7. Clean air filter.	6	•		•		
8. Clean or change oil filter.	8 -				•	•
9. Clean or change gas filter.	- 0 -				•	•
10. Check steering stem bearing adjustment.	8		•		•	
11. Inspect wheel bearings.	9				•	•
12. Change fork oil.	9		•			•
13. Check and tighten spokes and sprocket bolts.	9		•	•		
14. Clean and lubricate drive chain.	10	•	•	•		
15. Adjust drive chain.	10 —	•	•	•		
16. Adjust front and rear brakes.	12	•	•	•		
17. Lube cables.	12			•		
18. Check and adjust ignition timing.	13		•		•	
19. Check and tighten all nuts and bolts.	15		•	•		
20. Replace piston ring(s) (Necessay for optimum performance).	15				•	





Maintenance Check-List

This check-list is designed for effective control of all your maintenance operations and will provide you with a permanent record of the work performed. Insert the date or the mileage each time an operation is completed.

	DATE							
1. Retorque cylinder base nuts and cylinder head nuts.								
2. Clean carburetor and fuel sediment bowl.								
3. Adjust carburetor.								
4. Adjust throttle and injector pump synchronization.								
5. Adjust clutch and cable.								
6. Change transmission oil.								
7. Clean air filter.								
8. Clean or change oil filter.								
9. Clean or change gas filter.								
10. Check steering stem bearing adjustment.								
11. Inspect wheel bearings.								
12. Change fork oil.								
13. Check and tighten spokes and sprocket bolts.								
14. Clean and lubricate drive chain.								
15. Adjust drive chain.								
16. Adjust front and rear brakes.								
17. Lubricate control pivot points.								
18. Check and adjust ignition timing.								
19. Check and tighten all nuts and bolts.								
20. Check battery electrolyte level. (Add water if necessary).								
21. Replace piston rings. (Necessary for optimum performance).			7					



Liste de vérifications pour l'entretien

Cette liste de vérification est conçue pour vous aider a contrôler efficacement les opérations d'entretien et sert en même temps de registre permanent pour les opérations déja effectuées. Inscrire la date ou le millage chaque fois qu'une vérification est faite.

	DATE								
Resserrer les écrous du cylindre et de la culasse.									
Nettoyer le carburateur et la cuve de sédimentation du robinet.									
3. Régler le carburateur.									
4. Régler le synchronisme de la pompe a huile.		v							
5. Ajuster l'embrayage et son câble.									
6. Changer l'huile de la boîte de vitesses.									
7. Nettoyer le filtre à air.									
8. Nettoyer ou changer le filtre a huile.									
9. Nettoyer ou changer le filtre a essence.									
10. Vérifier les roulements de l'axe de fourche et graisser.									
11. Vérifier les roulements de roue.									
12. Changer l'huile de la fourche.									
13. Vérifier et resserrer les rayons de roue et les boulons du pignon.									
14. Nettoyer et huiler la chaîne.									
15. Ajuster la chaîne.									
16. Ajuster les freins.									
17. Lubrifier les câbles & contrôles.									
18. Ajuster l'avance a l'allumage.									
19. Vérifier et resserrer tous les boulons et écrous.		10				8			
20. Vérifier le niveau d'électrolyte de la batterie. (Au besoin, ajouter de l'eau).									
21. Remplacer le(s) segment(s) de piston*. *Indispensable pour obtenir la puissance maximale.									3



SUB-SECTION 2-4

MAINTENANCE PROCEDURES

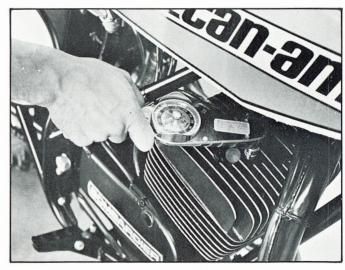
1.	Cylinder base & cylinder head nut retorque	2
2.	Carburetor & fuel sediment bowl cleaning	3
3.	Carburetor adjustment	4
4.	Throttle & injection pump adjustment	4
5.	Clutch adjustment	5
6.	Transmission oil change	6
7.	Air filter cleaning	6
8/9.	Oil & gas filter servicing	8
10.	Steering stem bearing adjustment	8
11.	Wheel bearing inspection	9
12.	Fork oil change	9
13.	Spokes & sprocket bolts inspection	9
4/15.	Drive chain servicing	10
16.	Brake adjustment	12
17.	Lubrication of controls	12
18.	Ignition timing	13
19.	Nuts & bolts	15
20A.	Piston ring replacement	15
20B	Electrical component inspection	20

CYLINDER BASE & CYLINDER HEAD NUTS RETORQUE

To tighten the cylinder base nuts, remove the cylinder head to gain access to the base nuts. Tighten the base nuts gradually, to the specified torque, using a criss-cross sequence.



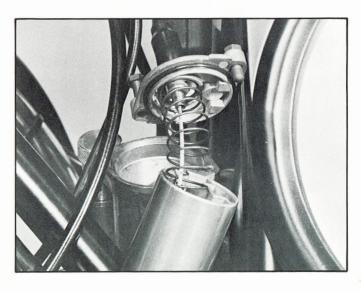
Replace the cylinder head and tighten cylinder head nuts gradually, to the specified torque, using a criss-cross sequence.

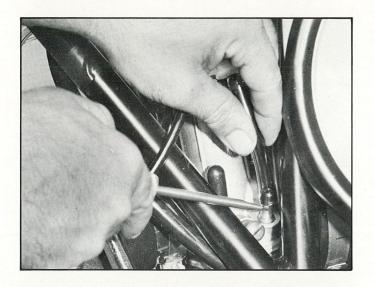


CARBURETOR BOWL CLEANING

- 1. Completely loosen both carburetor retaining hose clamps, (slide front clamp forward) and rotate carburetor towards clutch side.
- 2. Remove carburetor top plate and slide assembly.

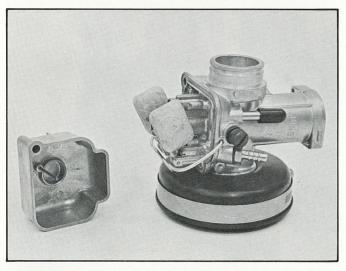
NOTE: Handle slide with care.





- 3. Disconnect fuel line (at carburetor) and pry carburetor body towards air box, out of connection hose.
- 4. Twist carburetor body away from engine inlet port and remove carburetor (complete with air box adaptor hose).

NOTE: Remove carburetor from magneto side.

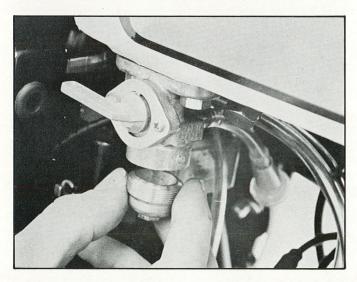


- 5. Pry float chamber retaining clip back and remove float chamber.
- 6. Clean carburetor and float chamber with gasoline or lacquer thinner and blow passages clear with compressed air.

NOTE: Lacquerthinner may dissolve the float material.

CAUTION: Gasoline is flammable and explosive under certain conditions. Always use caution and work in a well ventilated area.

7. Replace float chamber and carburetor in reverse order of removal.



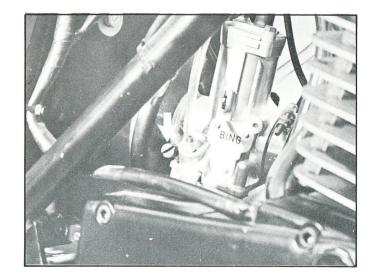
FUEL SEDIMENT BOWL CLEANING

The fuel control valve incorporates a fuel sediment bowl that will require periodic cleaning.

- 1. With the fuel valve at "O" (OFF) position, unscrew the sediment bowl and wash it out with gasoline or lacquer thinner.
- 2. Replace bowl.

CARBURETOR ADJUSTMENT

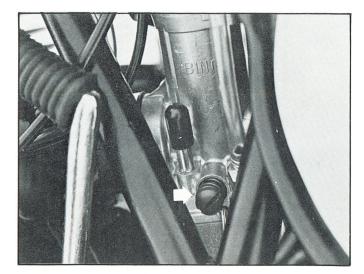
- 1. Gently turn air mixture adjusting screw in until it stops, then back it out 1 1/4 turns. (Basic setting).
- 2. Start the engine and allow it to warm up.



- 3. Adjust idle speed screw in or out for desired idle speed. (Approx. 1000 R.P.M.).
- 4. Turn air mixture screw in and out (within 1/4 turn of basic setting) to achieve smoothest idle possible.

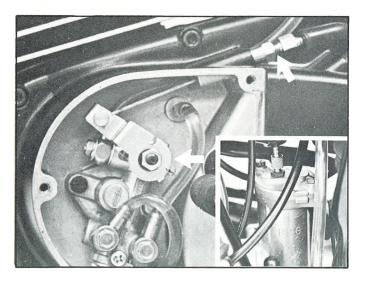
NOTE: Hold motorcycle vertical for this adjustment.

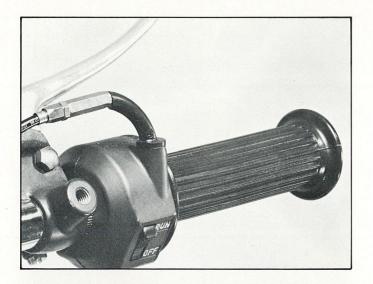
5. Re-adjust idle speed if necessary.



THROTTLE & INJECTION PUMP ADJUSTMENT

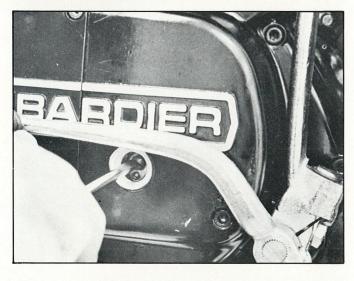
- 1. Loosen the throttle cable adjuster (at twist grip) to provide maximum slack.
- 2. Using the cable adjuster on the carburetor top plate, set cable slack to 1/16" (1.6 mm).
- 3. Using pump cable adjuster, adjust cable to align pump marks as shown.





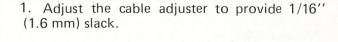
4. Adjust throttle cable (at twist grip) to provide 1/16" slack. (1.6 mm).

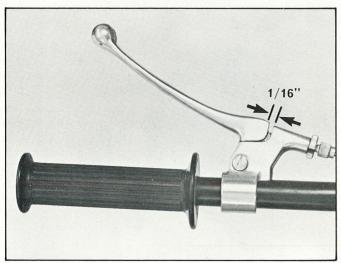
NOTE: Throttle action must be free to snap back to closed position.



CLUTCH ADJUSTMENT

- 1. Loosen the clutch cable adjuster (at handlebar) to provide maximum slack.
- 2. Remove the access plug and loosen the 4 mm set screw.
- 3. Turn the 8 mm clutch adjusting screw in and out to locate the point of contact with release bearing, then turn screw 1/8 turn out (counterclockwise).
- 4. Carefully tighten the 4 mm set screw to lock the adjustment.
- 5. Replace the access plug.

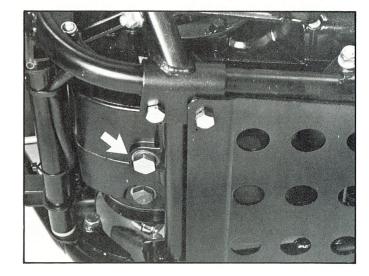




TRANSMISSION OIL CHANGE

- 1. Remove the drain plug and completely drain oil.
- 2. Replace the drain plug.

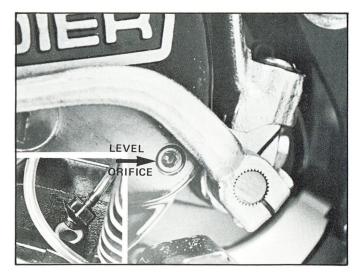
NOTE: Do not cross-thread or overtighten.



3. Remove the filler/vent plug and refill the transmission with approximately 1200cc of SAE 80 gear oil until oil reaches level orifice.

NOTE: Hold motorcycle upright to check oil level.

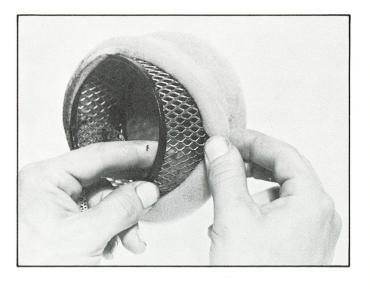
4. Replace the level plug, the filler/vent plug and the vent tube.

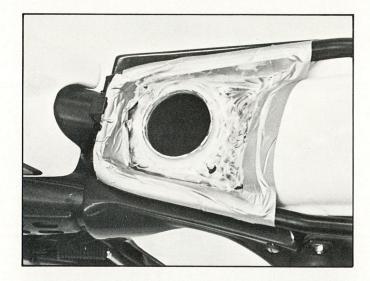


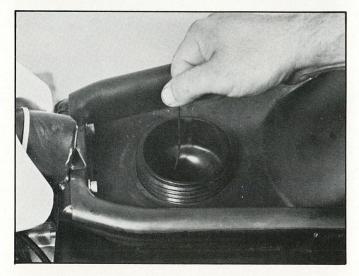
AIR FILTER CLEANING

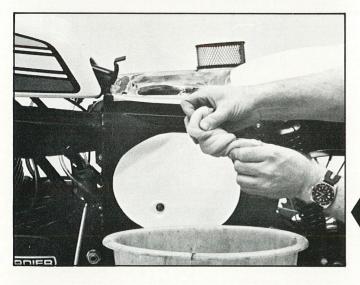
PROCEDURE

- 1. Remove the seat. Clean the area around the filter.
- 2. Remove air filter. Do not allow dirt or dust to fall into the air box opening.
- 3. Separate the foam from the filter screen.









4. Thoroughly wash the foam in solvent and let it dry.

CAUTION: Do not dry filter foam with a high pressure air flow or filter will loose efficiency due to structural cell damage.

Models 3841-3843-3851-3853-4843-4853

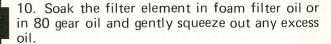
- 5. Remove the rubber shield from the top of the air box and clean it.
- 6. Clean the top of the air box and put a liberal quantity of grease around opening.
- 7. Reinstall the shield and grease the top of the shield where filter seats.
- 8. Tape the shield to the frame and to the rear fender to prevent water and dirt from entering the area.
- 9. In the same manner block the gap between the frame and the gas tank.

Models 4841-4851-5861-5863

- 5. Undo the plastic nut retaining the metal air filter pan. Remove the pan and thoroughly clean the air filter splash pan.
- 6. Pull the inlet tube and perforated tube out of the air box.

NOTE: If tubes resist removal, make a hook with some heavy wire and pull tubes out with the hook.

- 7. Inspect the interior of the air box. If dirt has entered determine the cause and repair before reassembly.
- 8. Reinstall the perforated tube and the inlet tube.
- 9. Grease the top of the splash pan around the air box opening and position the metal filter pan. Fill the pan with grease. Coat the threads of the plastic retaining nut with silicone sealant and screw it in position. DO NOT OVERTIGHTEN.



- 11. Fit the screen into the foam element and install the filter.
- 12. Install some foam (strip 1/4") around the bottom of seat on three sides to prevent air from entering through front or sides of seat. The air intake must only be from rear, between seat and fender.

NOTE: If dust or dirt is thought to have entered the engine, listen for piston noise or measure the clearance between piston and cylinder. Make sure that clearance is within specifications.

13. Install some tape between fender and frame rail to prevent water thrown by the rear wheel from entering filter area.

Tape Tape

FUEL & OIL FILTER SERVICING

Dirty filters may restrict fuel or oil supply thereby causing adverse engine conditions.

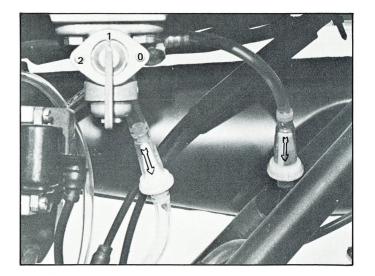
1. Carefully remove the filters from the plastic hoses and flush them with solvent in the reverse direction of flow (see arrow on filter). If filters cannot be cleaned, they must be replaced.

NOTE: Fuel control valve must be at "O" (OFF) position.

Plug oil supply hose to prevent loss of oil.

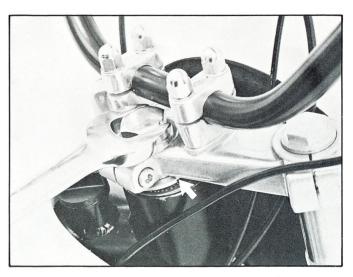
Handle filters with caution to prevent damage.

2. Replace the filters in proper flow direction.



STEERING STEM BEARING ADJUSTMENT

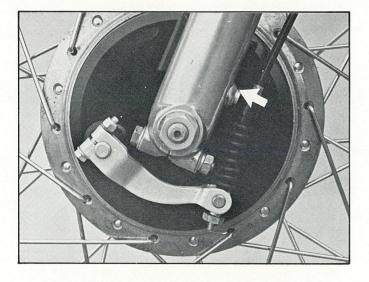
- 1. Loosen the stem top nut and the 5 Allen head screws retaining the upper crown.
- 2. Tighten the adjuster nut (see arrow) until steering becomes snug, not tight.
- 3. Tap upper crown down against adjuster nut then tighten top nut and the 5 clamp screws.



WHEEL BEARING INSPECTION

1. With the motorcycle mounted on a stand or box, rotate the wheels slowly and check for loose or noisy bearings.

NOTE: If wear or damage is suspected, bearings must be replaced.



FORK OIL CHANGE

NOTE: This operation should be performed on one fork leg at a time.

- 1. Remove fork drain plug and top nut.
- 2. Allow fork to drain completely, then replace drain plug.
- 3. Replenish fork with 200cc of fork oil.
- 4. Replace fork top nut.
- 5. Repeat the procedure for the other fork leg.

SPOKES AND SPROCKET BOLTS INSPECTION

As spokes and sprocket bolts are subject to extreme forces and may become loose, they should be periodically inspected and tightened as necessary.

NOTE: Incorrect spoke tightening can cause rim damage. In doubt, see your CAN-AM dealer for professional assistance.

DRIVE CHAIN SERVICING

Chain lubrication

To avoid excessive wear and friction, adequate lubrication must be maintened.

- 1. Lubricate chain whenever it appears dry. Direct the oil primarily at the roller and link edges to insure as much penetration as possible to the internal working surfaces of the chain.
- 2. When the chain has been subjected to adverse conditions (mud, sand, etc.) for long periods, remove it, wash in solvent and, after the solvent has dried off, immerse in oil for ten minutes. Drain excess oil off. Clean the sprocket and reinstall.



As the drive chain is perhaps the most abused piece of equipment on the motorcycle, it is necessary to know when and how to check and maintain it.

Checking for wear:

A) If chain can be lifted away from rear sprocket any more than as shown, it must be replaced.

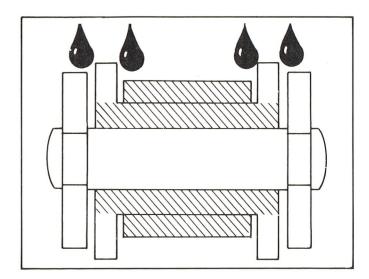
NOTE: A worn chain will cause severe sprocket damage — check sprockets for wear as shown in top picture on page 11.

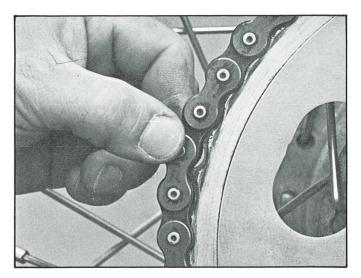
B) The length of 16 pitches of new chain (no. 520) is $10^{\prime\prime}$. If the chain has "stretched" more than 10~7/32", for 16 pitches, it must be replaced.

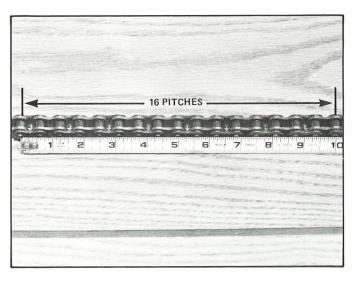
NOTE: Chain must be cleaned for this measurement.

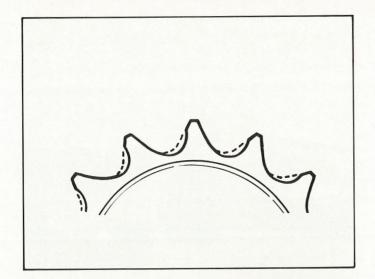
Lubricating:

- A) After chain has been cleaned with a stiff brush and solvent, it may be soaked overnight in warm chain oil.
- B) When using "chain spray" lubricants, direct spray as shown for maximum penetration to chain inner surfaces. Allow sufficient time for lubricant to thicken before riding.



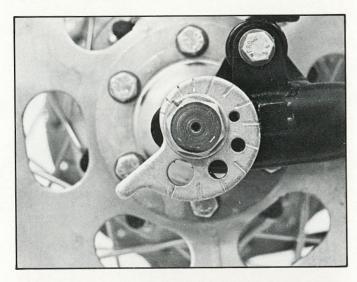






Sprockets

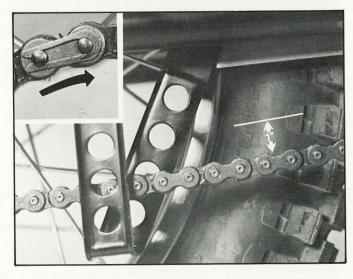
Worn sprockets assume a "hooked" appearance. As soon as this condition can be easily noticed, the sprocket should be replaced.



DRIVE CHAIN ADJUSTMENT

1. Loosen the rear axle nut and move each adjuster plate equally to tighten or loosen chain.

NOTE: Alignment marks must be the same on each side of wheel.



2. Adjust chain slack to 1" (25. mm).

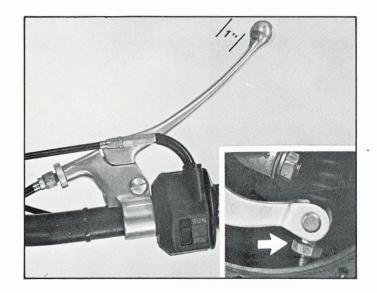
NOTE: If chain is replaced, connector clip must be installed as shown.

BRAKE ADJUSTMENT

FRONT BRAKE

1. Completely loosen the brake cable adjuster (at handlebar), then, using the adjuster located at the brake plate, adjust the cable to provide 1" of free lever travel. (25.4 mm).

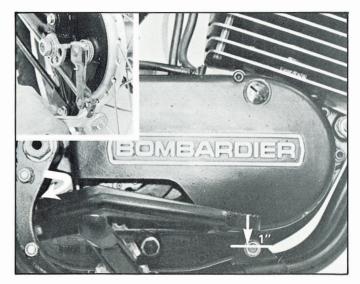
NOTE: Use adjuster at handlebar for final adjustment.



BRAKE ADJUSTMENT

REAR BRAKE

- 1. Turn the adjusting nut until the brake pedal free travel is 1" (25.4 mm).
- 2. The brake pedal height can be adjusted as desired by moving the stopper. (see arrow).



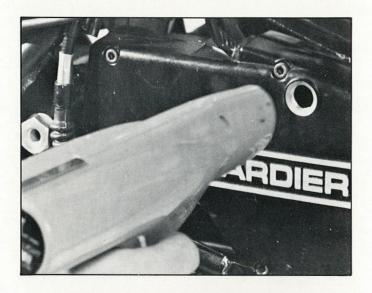
LUBRICATION OF CONTROLS

Apply a small quantity of oil to: Front brake lever pivot Clutch lever pivot Foot peg pivot Kick starter pivot

IGNITION TIMING

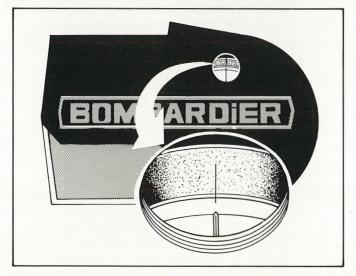
NOTE: Only stroboscopic timing lights utilizing a capacitor or inductive pick-up can be used to indicate correct spark setting without disturbing the electronic equilibrium of the ignition circuit.

Examples of suitable timing lights: Sun PTL 45 Snap-on Mt 215B Bosch EFAW 169A



- 1. Remove the timing inspection plug, and connect the timing light pick-up to the high tension lead.
- 2. Start the engine and allow it to warm up.

CAUTION: To prevent powerful electric shock, do not touch the high tension wire while engine is running.



3. Holding the engine at a steady 7000 R.P.M., point the timing light beam straight into the inspection hole. If the timing is correct, the timing marks will align as shown.

NOTE: Use a tachometer for accuracy.

- 4. If the timing is not correct:
 - a) Note if advanced or retarded and mark the amount of misalignment. (see dotted line).
 - b) Stop engine.
 - c) Remove magneto cover.

NOTE: Do not lose the 3 locating dowels.

- d) Loosen the 2 Allen screws.
- e) Move the stator plate in the advance or retard direction to correct the misalignment.
- f) Tighten the 2 Allen screws.
- 5. Replace the magneto cover, start engine, and at 7000 R.P.M., recheck the timing mark alignment.
- 6. Repeat this procedure until timing marks are perfectly aligned at 7000 R.P.M.

INSPECTION OF ELECTRICAL COMPONENTS

Check all electrical equipement.

- 1. Headlamp (Hi & Lo)
- 2. Taillamp
- 3. Stoplamp
- 4. Turn signal (left & right, front & rear)
- 5. Horn
- 6. Indicator lamps.

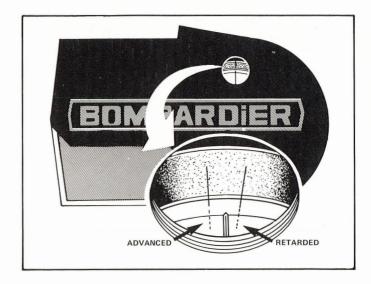
HEADLAMP

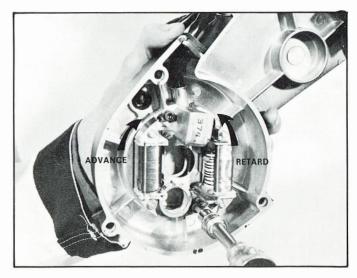
Adjust headlamp aim as per your State/Province legislation:

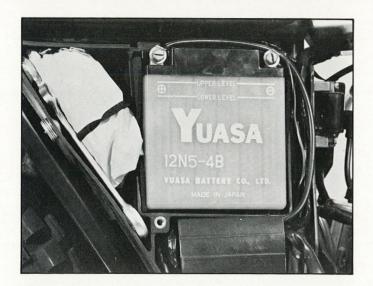
Canadian model: Loosen both reflector nuts, position the headlamp housing to obtain desired aim and retighten nuts.

U.S. Model: Loosen both side reflector nuts, position the headlamp housing to obtain desired height of aim and retighten nuts. Make the final adjustment with the adjusting screw located in front of the headlamp housing.

NOTE: Make sure the side reflectors have their locating boss (back of reflectors) in a vertical axis.







BATTERY ELECTROLYTE LEVEL (T'NT)

The electrolyte level should be up to the upper level line. Fill with distilled water if necessary.

GENERAL NUT AND BOLT INSPECTION

Check all nuts, bolts and fasteners and tighten them as required.

PISTON RING REPLACEMENT

Although your CAN-AM will run well for many trouble-free miles, it will, if used as a motocross racer, or for similar off-road competition, require new piston rings periodically to maintain its high level of performance. Maintenance is your key to top performance and dependability.

NOTE: To perform this replacement, you will need:

A small screwdriver.

A medium screwdriver.

10, 11, 12 and 13 mm sockets. (thinwall

- 3/8 drive).

A small flat file.

Feeler gauges.

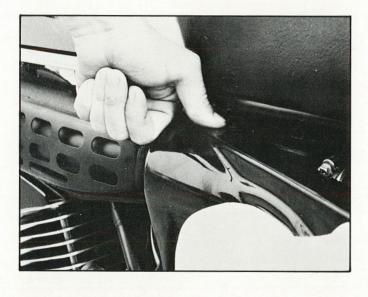
A torque wrench.

Medium emery paper.

Parts required:

1 - ring (or set).

 cylinder base gasket CAN-AM injector oil.

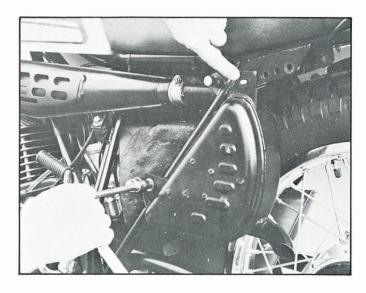


- 1. Thoroughly degrease and wash the motor-cycle.
- 2. Remove the left side cover and left shock absorber.

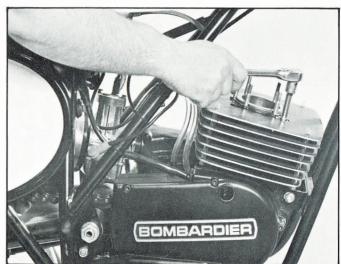
3. Remove the muffler and exhaust pipe.

NOTE: Do not loose the 2 special fiber washers.

4. Gradually, and in a criss-cross sequence, remove the cylinder head nuts, then remove head. Note the head shim/s used (if any).

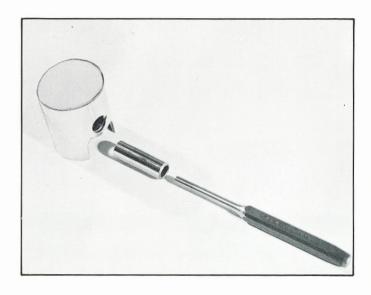


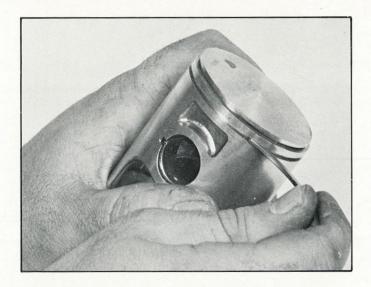
5. Gradually, and in a criss-cross sequence, remove the cylinder base nuts, then lift cylinder up and off being carefull not to damage piston or permit dirt to enter crankcase.



6. Place a clean rag in the crankcase cavity and, using a small screwdriver, remove one piston circlip, then remove piston pin, piston and bearing.

NOTE: Piston pin may be tapped out but connecting rod must not absorb any impact.





7. Remove the piston ring/s, break in half, and, using the machined end of one ring section, carefully scrape any deposits from ring groove/s.

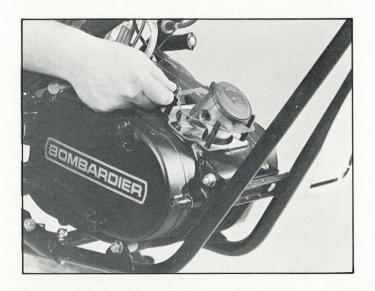
8. Using a hone or medium emery paper, lightly sand the bore to remove any glaze but do not sand with a motion parallel with the bore.

NOTE: Maximum allowable piston clearance is:

125cc -- .005" (.13 mm) 175cc -- .0055" (.14 mm) Minimum piston clearance is: 125/175cc -- .0025" (.064 mm)

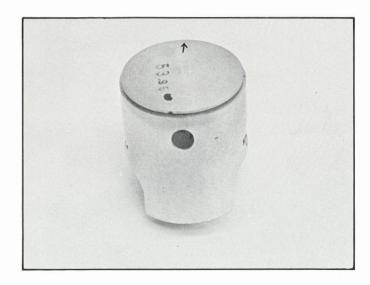
9. Scrape any deposit off piston crown and inspect piston for cracks or seizure marks.

NOTE: Slight seizure marks should be lightly filed away but if seizure has been severe or piston is cracked, piston must be replaced.

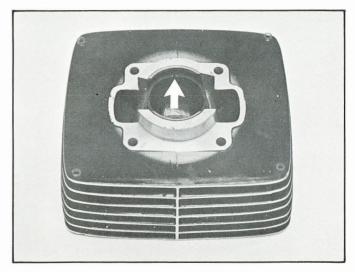


- 10. Remove all traces of the base gasket and fit a new lightly greased gasket.
- 11. Lubricate piston pin bearing with injection oil and fit bearing, piston and piston pin to connecting rod.

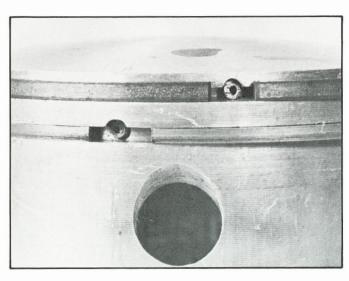
NOTE: Arrow on piston crown must point towards front of motor. Ring locating pins must point towards rear of motor. Do not forget to fit new circlips. Remove the rag from the crankcase cavity.

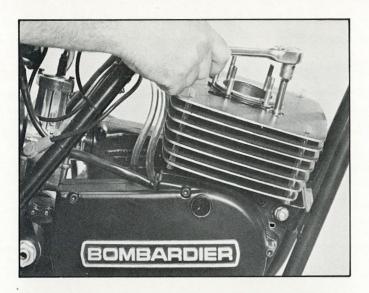


12. After checking piston ring end gap (.006"/.15 mm), fit ring/s to piston, liberally apply oil to piston and cylinder bore, then carefully slide cylinder down into place while compressing piston ring/s.

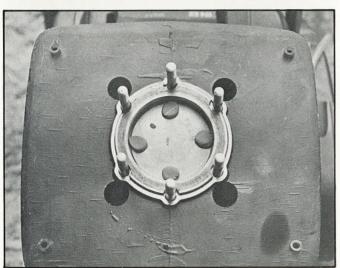


NOTE: Ensure adequate ring end clearance at locating pin and that ring is properly positioned in ring groove.





13. Gradually, and in a criss-cross sequence, torque cylinder base nuts to 20 ft/lbs. (2.8 k.p.m.).



14. NOTE: If piston has been replaced, combustion chamber squish area clearance must be checked to prevent possible engine overheating problems.

Bring the piston to 1/4" of TDC and place 4 small balls of clay (modeling paste) on the piston crown.



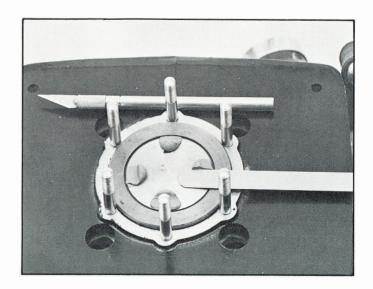
- 15. Install the cylinder head and, using a crisscross sequence, gradually torque the cylinder nuts to 12 ft/lbs. (1.6 k.p.m.).
- 16. Using the magneto side crankshaft nut, rotate the engine past TDC.

- 17. Remove the head, cut each flattened clay pad in half and measure the thickness of the pads at a point approximately 1/8" in. from the side of the piston.
- 18. Using the aforementioned measurement, calculate the head shim/s required to provide a squish area of $.030'' \pm .010''$ (.77 mm 26 mm).

NOTE: The head shim is not a head gasket and needs not be replaced unless damaged.

- 19. Fit the necessary shim/s (if required) and, using a criss-cross sequence, gradually torque the head nuts to 12 ft/lbs. (1.6 k.p.m.)
- 20. Install exhaust pipe, muffler, rear shock absorber and left side cover.

NOTE: Muffler joint packing must fit tightly.



SUB-SECTION 2-5

STORAGE

During winter, or other times when your motorcycle is not in use for a long period of time, proper storage is a necessity.

Storage preparation of your CAN-AM motor-cycle consists of checking and replacing missing or worn parts; properly lubricating and treating parts to insure that they do not become rusted; cleaning items such as the carburetor to prevent gum varnish formation; and, in general, preparing the vehicle so that when the time comes to use your motorcycle again, it will be in top condition.

ENGINE

With piston at bottom dead center, remove the spark plug and pour two (2) ounces of motor oil in the cylinder through the spark plug hole.

Rotate the engine slowly a few turns to insure good oil coating on the cylinder wall and related parts. Replace the spark plug or block the spark plug hole with a CAN-AM storage plug No. 748-019-000 to prevent moisture from damaging the engine.

NOTE: When the engine is started, it may smoke slightly until the storage oil is burned away.

FUEL SYSTEM

Empty the fuel tank by removing the fuel shut-off valve sediment bowl. The carburetor can be emptied by removing the float bowl. (See maintenance section).

WARNING: Gasoline is flammable and explosive under certain conditions. Always use caution and keep away from open flame or spark.

GEARBOX

Drain the transmission oil. Refill with fresh oil.

OIL TANK

Fill completely to avoid rust formation.

DRIVE CHAIN

Clean and soak in chain oil overnight. Drain and wipe off excess oil. Install and adjust.

TIRES

Support the motorcycle so the tires are not in contact with the ground. This will prevent flat spots due to cord deformation.

BATTERY

- 1. Disconnect and remove battery.
- 2. Clean the exterior of the battery with a solution of baking soda and water. Rinse thoroughly with water.

CAUTION: Avoid entry of soda solution or water into battery.

- 3. Cover both positive (+) and negative (-) terminals with grease, or coat them with L.P.S. (CAN-AM part #413-900-700).
- 4. Check the liquid level. Fill to the upper level with distilled water if necessary.
- 5. Recharge the battery at a maximum rate of 0.5 amp, untill fully charged.

WARNING: Charge the battery in a well ventilated area; the vapors emitted by the battery during the charge are explosive.

6. Store the battery in a dry, cool place.

NOTE: Completely recharge at least every 30 days (0.5 amp. charging rate). A stored battery will gradually lose its charge and begin to sulfate. Once this reaction has begun, the battery cannot be salvaged.





SECTION 3

OVERHAUL PROCEDURES

- 1. TROUBLE SHOOTING
- 2. ENGINE REMOVAL
- 3. ENGINE DISASSEMBLY
- 4. ENGINE REASSEMBLY
- 5. CARBURETION
- 6. EXHAUST SYSTEM
- 7. ELECTRICAL
- 8. SUSPENSION
- 9. WHEELS & BRAKES
- 10. FRAME ASSEMBLY
- 11. CONTROLS



Section 3-1 Page 1

SUB-SECTION 3-1

ENGINE TROUBLE SHOOTING

REVISION 1 (This page replaces original)

TROUBLE	CAUSE	REMEDY
Engine fails to start or does not start	1. No fuel is flowing to carburetor	
easily.	a) Clogged fuel filter	Replace.
	b) Defective carburetor float	Replace.
	needle. Check for worn tip.	Clean.
	c) Clogged fuel line.	
	2. Deteriorated or old fuel.	Replace.
	3. Raw gas in crankcase.	Start the engine with the throttle fully opened. In extreme cases, remove the engine crankcase drain plug, turn the shut-off valve to "O", turn the engine stop switch to "off" and kick start until excess fuel is expelled.
	4. Insufficient compression.	
	a) Crankcase compression leaks at oil seal.	Replace.
	 b) Crankcase compression leaks at crankcase mating surfaces. 	Repair.
	c) Worn or stuck piston rings.	Replace.
	d) Worn cylinder.	Rebore oversize.
	e) Rotary valve or rotary valve cover leaks.	Repair or replace.
	5. No spark at plug.	Check for fouled or defective spark plug; remove plug, ground it to the engine head and turn the engine with the kick starter. If no spark occurs, replace the plug and, if necessary, check the following items:
	a) Fouled plug.	Replace.
	b) Wet plug.	Dry off and try again or replace.
	c) Defective magneto.	Repair.
	d) Open or short circuit in ignition.	Check for moisture at the electronic control unit con- nector boot. Check for corroded, dirty or broken con- nectors. Repair or replace.
	e) Defective electronic control	Replace.
	unit.	
Engine stalls	1. Fouled plug.	Repair or replace.
frequently.	2. Restriction in the gas cap vent.	Gently suck on the ventilation hole located on the bot- tom center of the gas cap . If restriction persists, re- place the gas cap.
	3. Clogged fuel lines.	Clean.
	4. Clogged carburetor jets.	Clean.
	5. Crankcase compression leaks.	Repair.
	6. Intake manifold or rotary valve cover leaks.	Repair.
Engine does not have sufficient	Worn cylinder and worn or stuck piston rings.	Repair or replace.
power.	2. Incorrect ignition timing.	Adjust.

TROUBLE	CAUSE	REMEDY
	3. Incorrect plug gap.	Adjust or replace.
	4. Clogged carburetor jets.	Clean.
	5. Incorrect float height.	Adjust.
	6. Clogged air cleaner.	Clean or replace.
	Cracked or crushed expansion chamber.	Repair or replace.
	8. Deteriorated or old fuel.	Replace.
Engine overheats.	Excessive carbon deposit on cylinder head.	Clean.
	2. Lean fuel mixture.	Replace jet.
	3. Incorrect ignition timing.	Adjust.
Engine operation	Excessive plug gap.	Adjust or replace.
is erratic at high speed.	Defective electronic control unit.	Replace.
	3. Short circuit in magneto.	Replace.
	4. Clogged air cleaner element.	Clean or replace.
	5. Incorrect float level.	Adjust.
	6. Crankcase compression leaks.	Repair.
	7. Broken or cracked expansion	Repair or replace.
	chamber.	
Ignition fails	Fouled spark plug.	Replace.
to spark.	2. Defective electronic control unit.	Replace.
	3. Short circuit in magneto.	Replace.
	Defective emergency stop switch.	Replace.
Spark plug electrodes	Rich mixture (rich carburetion or dirty air filter).	Adjust or clean.
are fouled.	Incorrect oil pump setting.	Adjust.
	3. Incorrect spark plug heat range.	Replace.
0 1 1		
Spark plug electrodes	1. Incorrect heat range.	Use specified plug.
are burned.	2. Overheating engine.	See "engine overheats".
	3. Incorrect ignition timing.	Adjust.
	4. Loose spark plug.	Tighten.
	5. Lean mixture.	Replace jet.
Engine operation is erratic at	Carburetor air screw is improperly adjusted.	Adjust.
low speed.	Incorrect float level.	Adjust.
	3. Excessive spark plug gap or	Adjust or replace.
	dirty electrodes.	

TROUBLE	CAUSE	REMEDY
	4. Incorrect ignition timing.	Adjust.
	5. Defective electronic control unit.	Replace.
	6. Short circuit in magneto.	Replace.
Transmission fails to shift smoothly.	Improper gearbox oil or oil level.	Replace.
,	Shift drum index plunger is jammed.	Repair or replace.
	3. Bent shift shaft.	Repair or replace.
	4. Bent shift forks.	Replace.
	5. Loose pawl positioning cam.	Repair.
Change pedal	Broken gearshift return spring.	Replace.
fails to return.	2. Bent shift shaft.	Replace.
Steering is hard.	Overtightened steering stem.	Adjust.
	2. Broken steering stem bearings.	Replace.
Clutch slips.	Improperly adjusted clutch.	Adjust.
	2. Weak clutch springs.	Replace.
	3. Worn or deformed friction plates.	Replace.
Clutch drags.	1. Improperly adjusted clutch.	Adjust.
	2. Unequal clutch spring tension.	Replace.
	3. Deformed clutch plates.	Replace.
Front wheel	1. Deformed rim.	Replace or straighten.
shimmies.	Loose or damaged front wheel bostings	Replace.
	bearings. 3. Loose spokes.	Tighten.
	4. Loose axle and related parts.	Tighten.
	5. Unbalanced wheel.	Repair.
	6. Tire badly seated.	Repair.
Front suspension	1. Collapsed springs.	Replace.
is soft.	2. Insufficient fork oil.	Drain and replenish.
Front suspension is hard.	Incorrect fork oil: viscosity too high.	Replace.
เอาเฉเน.	2. Excessive fork oil.	Drain and replenish.
Rear wheel	1. Deformed rim.	Replace or straighten.
shimmies.	Loose or damaged wheel bearings.	Replace.
	3. Loose spokes.	Tighten.
-	4. Loose axle nut.	Tighten.

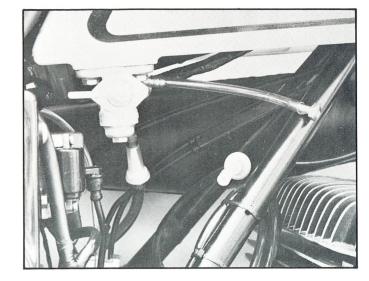
	TROUBLE SHOOTING				
TROUBLE	CAUSE	REMEDY			
	5. Unbalanced wheel.6. Tire badly seated.	Repair. Repair.			
Rear suspension is soft.	Weak springs. Improper rear suspension adjustment.	Replace. Adjust.			
Rear suspension is hard.	 Improper rear suspension adjustment. Bent shock absorber rods. Springs too stiff. 	Adjust. Replace. Replace.			
Braking is poor.	Improper brake shoe radius. Brake linings fouled with oil, grease or dirt.	Repair or replace. Replace.			
Brake free play is excessive.	 Worn brake shoes. Worn brake cam. Improper arm position. 	Replace. Replace. Repair.			



SUB-SECTION 3-2 ENGINE REMOVAL

Page 2

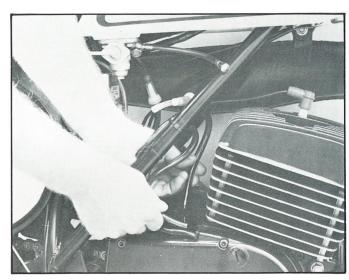
Disconnect the oil line at tank banjo and block the oil flow with a short piece of 7.5 mm (1/4") I.D. tubing and a 6 mm bolt.



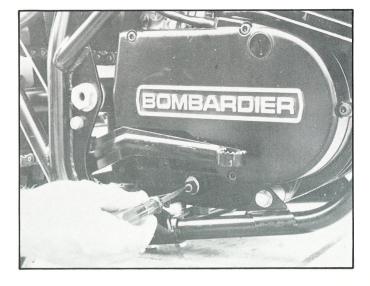
TOOLS:

7.5 mm (1/4") I.D. tubing 6 mm O.D. bolt

Cut the tie-wraps holding the vent tubes to the frame.



Remove the blue/white wire from the neutral indicator switch. (T'NT only)



TOOLS:

screwdriver



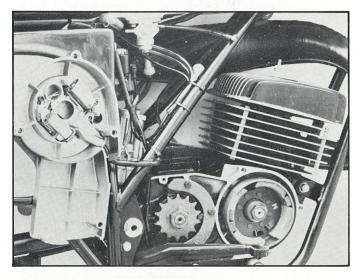
Remove the four (4) Allen screws retaining the magneto cover. Remove the magneto cover.

NOTE: It may be necessary to move the brake pedal down for adequate clearance.

Take care not to lose the three locating dowels.



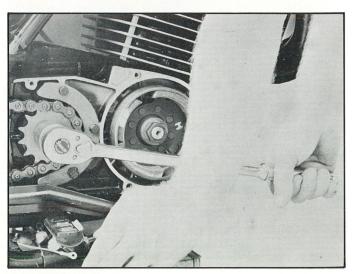
5 mm Allen wrench



Tie the magneto cover to the frame in a position where it will not interfere with your work.

TOOLS:

string or wire



If the engine sprocket has to be removed, bend the sprocket nut locking tab flat, engage rear brake and unscrew the sprocket nut.

Remove the drive chain and the sprocket.

NOTE: If sprocket cannot be removed by hand, use a puller.

TOOLS:

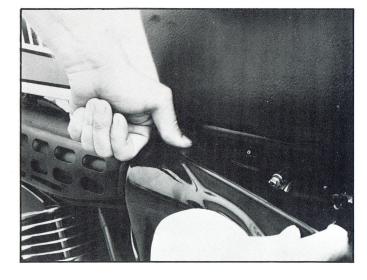
punch

hammer

27 mm socket

Page 4

Remove the two screws retaining the left side panel. Press the panel down at the frame retaining pin and slide the cover off. Take care not to lose the rubber grommet.

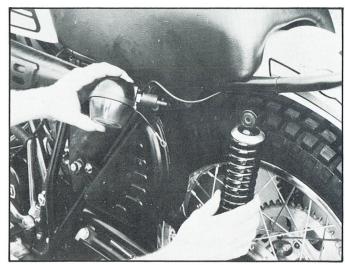


TOOLS:

screwdriver

Remove the upper left shock absorber mounting bolt and push the shock absorber back to provide clearance for muffler removal.

Remove the left turn signal on model 4841 and 4851. The shock absorber mounting bolt does not have to be removed.

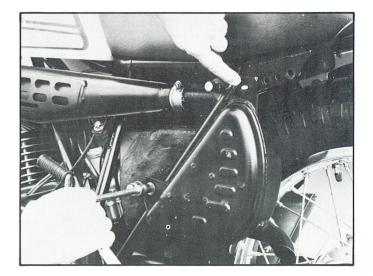


TOOLS:

13 mm open end wrench

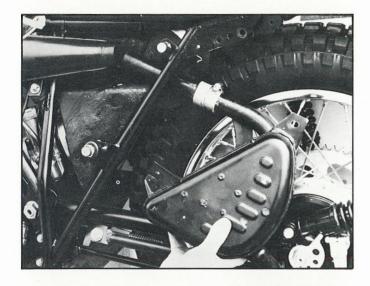
13 mm socket

Remove the two muffler retaining nuts and bolts.

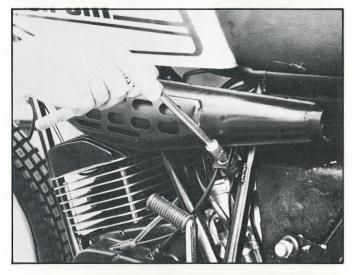


TOOLS:

10 mm wrench



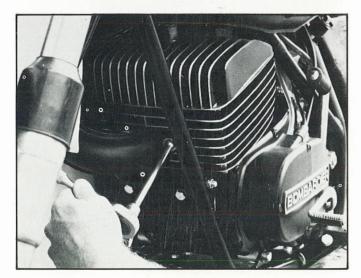
Remove the muffler.



Remove the two nuts and washers retaining the exhaust pipe to the rubber mounts.



12 mm socket



Remove the two nuts and lock washers retaining the exhaust pipe to the engine.

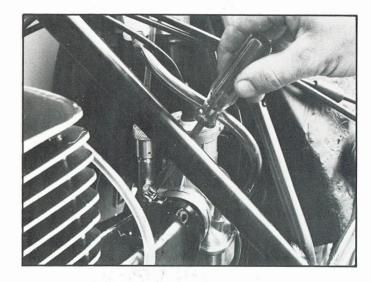
(1973 models only)

On 1974 models, remove the retaining springs only.

TOOLS:

13 mm socket

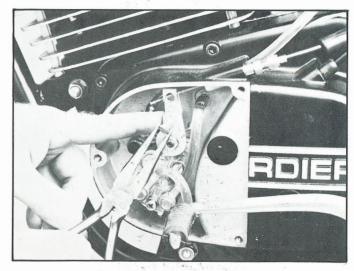
Loosen the screw of the clamp retaining the carburetor to the engine carburetor adapter.



TOOLS: screwdriver

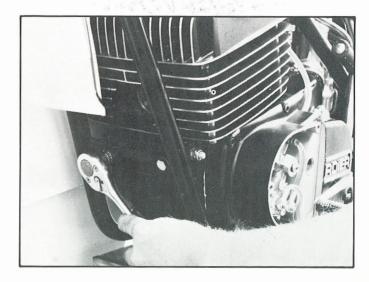
Remove the three (3) screws retaining the oil pump cover. Remove the oil pump cover.

Rotate the oil pump control lever clockwise to disengage the cable and pull the split nipple out. Remove the oil pump cable.

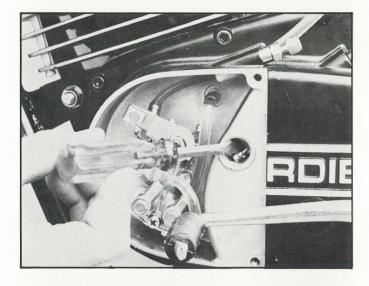


TOOLS: 4 mm Allen wrench long nose plier

Remove the two front motor mount bolts.



TOOLS: 13 mm socket



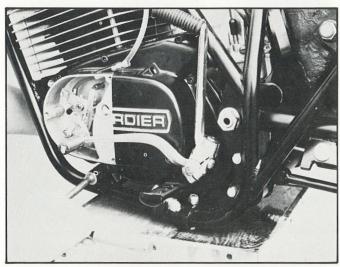
Remove the clutch cable from the lever (at handlebar).

Remove the clutch cable installation plug.

Pull the cable outer casing away from the clutch cover. Push the inner cable inside the cover until its tip is visible through the installation hole. With a screwdriver, disengage it from the clutch release arm and pull it out of the cover.



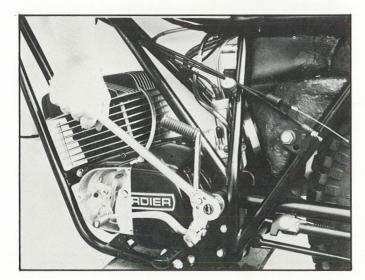
screwdriver



Remove the lower motor mount nut. Pull the motor mount stud out. Do not lose the two aluminium spacers.

TOOLS:

13 mm socket



Remove the swing arm pivot nut.

TOOLS:

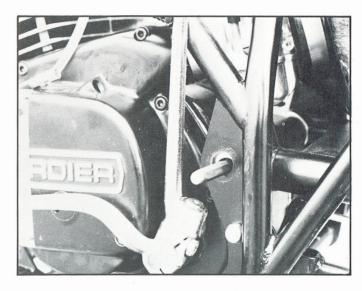
25 mm socket

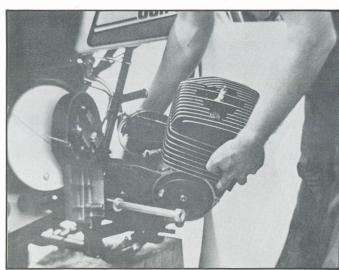
Pull the swing arm pivot bolt from the magneto side until it disengages from the engine. Leave the bolt there to support the magneto side swing arm pivot. Insert a punch through the clutch side to support that side of the swing arm. The punch must not be inserted in the engine boss.

Note the number of shims on the inside swing arm pivot flanges.

TOOLS: punch

Pull the engine upward and forward and remove it through the magneto side.





SUB-SECTION 3-3 ENGINE DISASSEMBLY

Page 2

Mount the engine unit on an engine stand with the clutch side up.

Remove the six (6) cylinder head nuts and flat washers.

Remove the cylinder head.



Remove the four (4) cylinder base nuts.

Remove the cylinder.

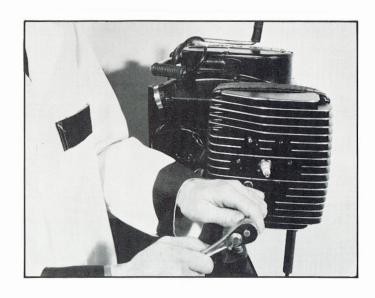
Remove the cylinder base gasket.

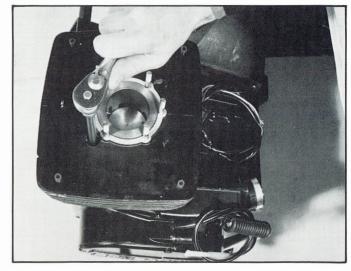


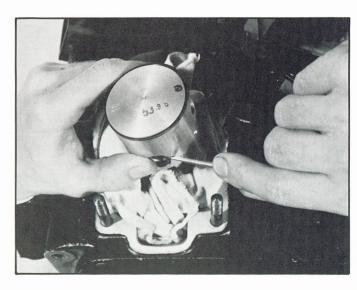
Carefully clean cylinder base area and place a clean rag under the piston in the crankcase cavity to prevent the piston pin circlips from entering the crankcase.

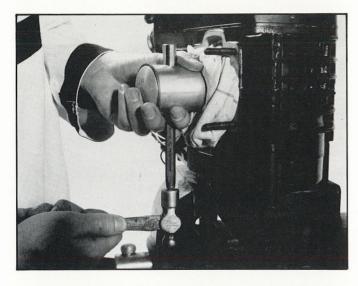
Remove both piston pin circlips with a sharp scribe.











Remove the piston pin.

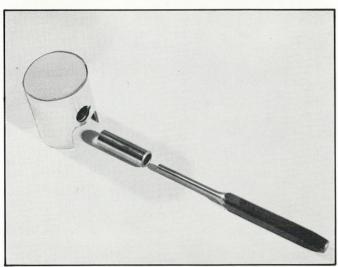
Lightly tap on the punch while holding the piston firmly to prevent connecting rod damage.

Remove the piston.

NOTE: All the impact must be absorbed by your hand and not by the connecting rod.

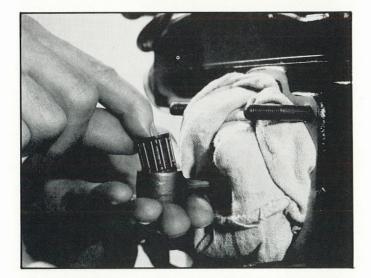


pin punch small hammer



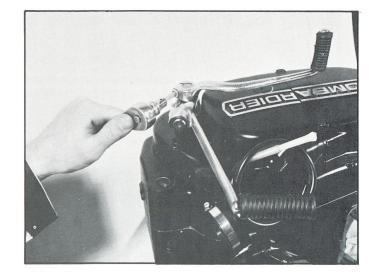
Exhaust side location mark on piston and a typical pin punch to remove and install the piston pin.

NOTE: The punch handle must be smaller in diameter than the piston pin outside diameter.



Remove the wrist pin bearing.

Remove the gear shift lever and the kick start lever.

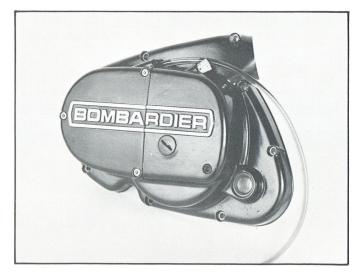


TOOLS:

5 mm Allen wrench 13 mm socket

Remove the eight (8) screws retaining the clutch cover.

NOTE: Two of the top screws have a sealing washer.



TOOLS:

5 mm Allen wrench

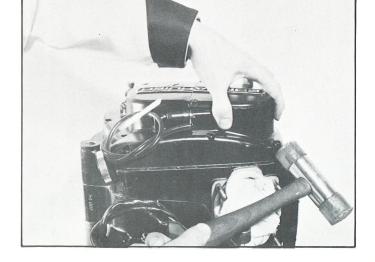
Tap the clutch cover lightly with a soft faced hammer until its seal is broken.

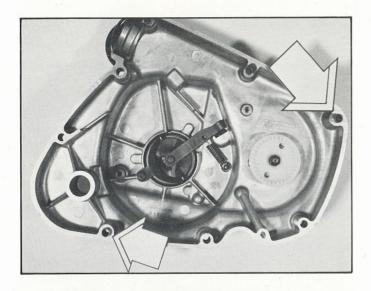
NOTE: Do not force a screwdriver between sealing surfaces as damage and leaks will occur. If the clutch cover is to be removed with engine in frame, take the left foot peg off first.

Remove the clutch cover.



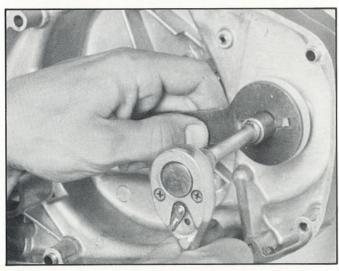
soft hammer





Take care not to lose the two (2) clutch cover locating dowels and the oil pump to rotary valve cover o' ring.

On models 4841 and 4851, remove the oil passage o' ring from its recess in the crankcase.



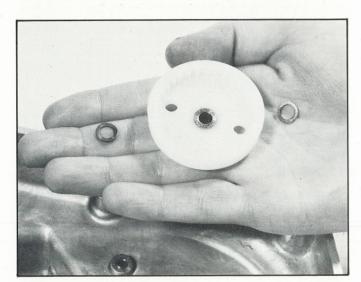
Holding the gear firmly with the aid of the CAN-AM tool no 420-277-900, remove the oil pump driven gear nut.

If the CAN-AM tool no 420-277-900 is not available, insert a pin punch through the hole in the gear and place it against the rib of the crankcase so as to keep the gear from turning (while removing the nut).

TOOLS:

CAN-AM tool no 420-277-900

10 mm socket



Remove the oil pump driven gear lock washer, gear, and second lock washer.

NOTE: There is one (1) special lock washer on each side of the gear.

On models 4841 and 4851, there is only one flat washer between gear and pump.

Page 6

Remove the three (3) oil pump housing cover screws.

Remove the oil pump cover.

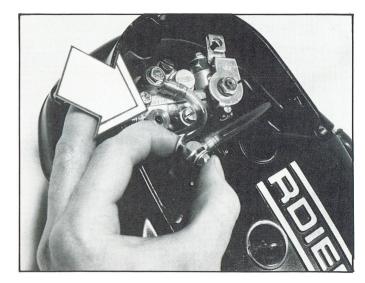


TOOLS: 4 mm Allen wrench

Disconnect the three (3) oil pump lines.

Replace the three (3) oil pump banjo bolts and the six (6) washers so as not to lose them.

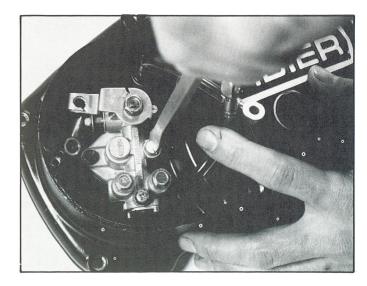
NOTE: There are two (2) aluminium washers with each bolt, one on each side of the banjo fitting.



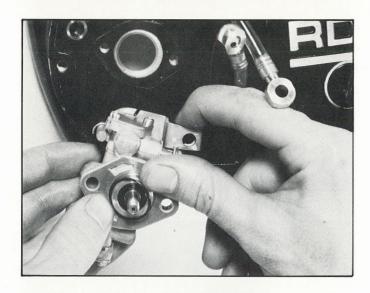
TOOLS: 8 mm wrench

Remove the two (2) oil pump mounting screws and the two (2) lock washers.

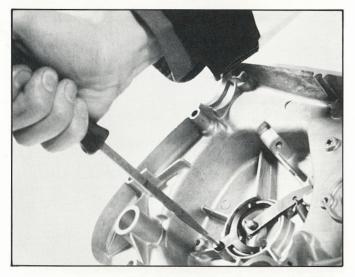
Remove the oil pump.



TOOLS: screwdriver



Remove the oil pump sealing o'ring.

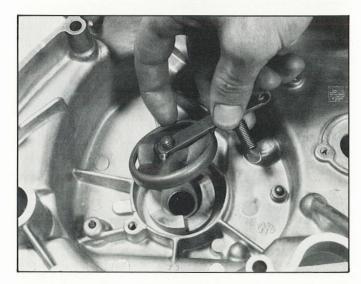


Remove the screw and the lock washer securing the clutch release cam retaining spring.

Remove the retaining spring.

NOTE: On model 4841 and 4851 there is no washer used on this screw.

TOOLS: screwdriver



Remove the clutch release return spring and then the clutch release cam.

Page 8

Remove each of the six (6) clutch pressure plate bolts and lock washers.

CAUTION:

Remove each bolt a few turns at a time in a crisscross pattern to prevent damage to the clutch hub, as it is under spring pressure.

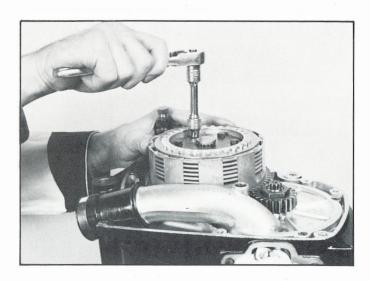
Remove the clutch pressure plate.

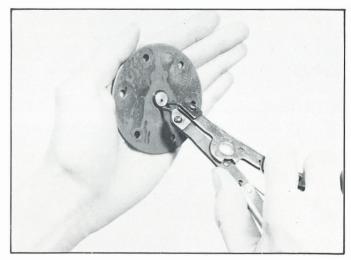


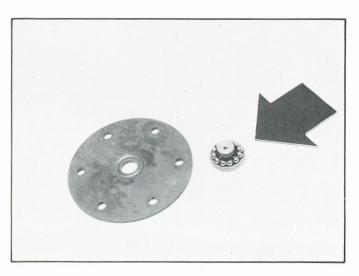
Remove the clutch pressure plate release bearing circlip.

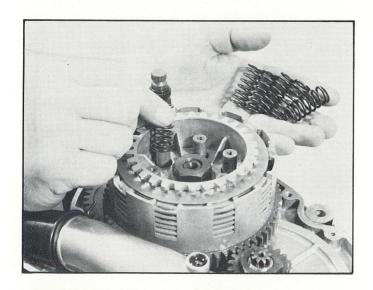


Removing the release bearing race and its loose ball bearings (12).

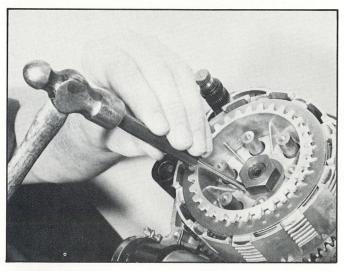




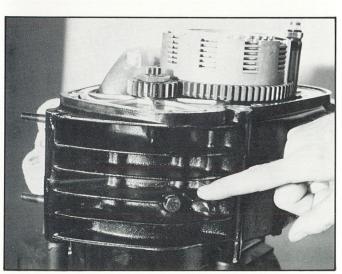




Remove the six (6) clutch springs.



Bend the clutch hub nut locking washer flat.



TOOLS: hammer drift punch

Remove the crankcase plug and sealing washer.

TOOLS:

13 mm socket

Page 10

Turn the crankshaft until the piston it at its top dead center position. (T.D.C.)

In this position, a hole in the crankshaft flywheel circumference will align with the crankcase plug hole.

Look through the crankcase plug hole to ensure that these two (2) holes align.

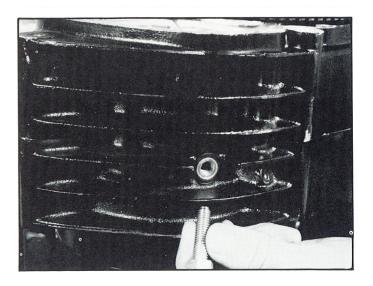
Screw a CAN-AM tool no 420-241-960 crankshaft locking bolt through the plug hole into the crankshaft flywheel hole.

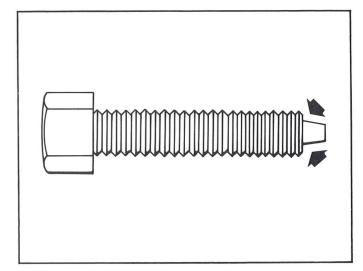
NOTE: Do not overtighten the locking bolt.

TOOLS:

crankshaft locking bolt CAN-AM no 420-241-960

If a CAN-AM tool no 420-241-960 crankshaft locking bolt is not available, use a good quality 8 mm bolt, 40 mm long. Grind the end of the bolt to ensure proper engagement into crankshaft hole.



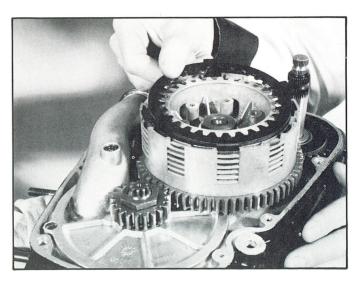


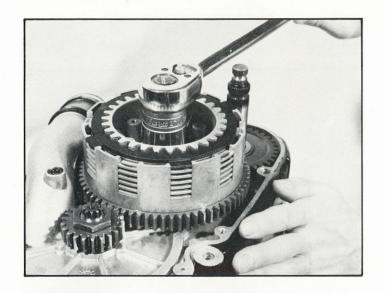
Install the clutch hub locking tool (CAN-AM no 420-277-885).

The clutch hub is now locked to the clutch drum assembly.

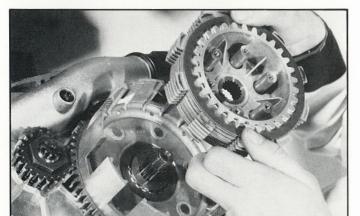


clutch hub locking tool CAN-AM no 420-277-885





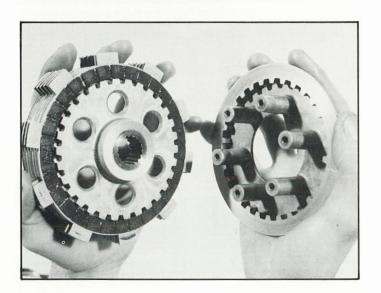
Remove the clutch hub nut and locking tab.



Remove the clutch hub and all the clutch plates.

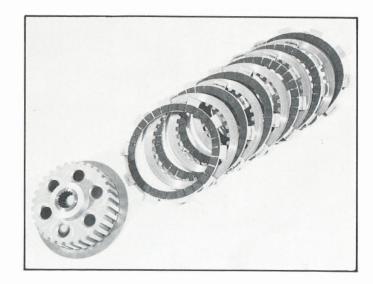
27 mm socket

TOOLS:



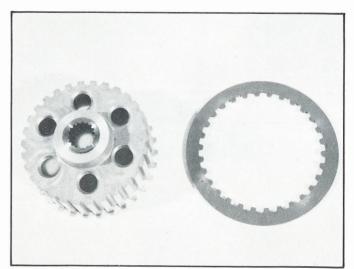
Remove the inner pressure plate.

Remove the clutch plates.

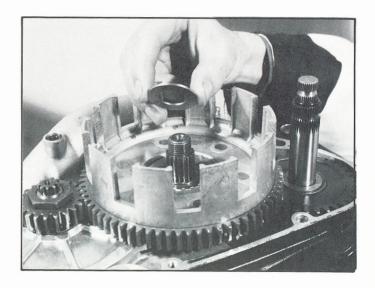


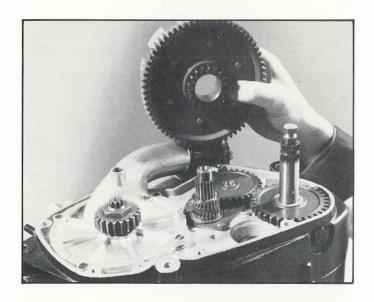
Remove the steel outer pressure plate (thick - 1.5 mm).

On models 4841 and 4851, there are 5 friction plates and 6 thick (1.5 mm) driven plates.

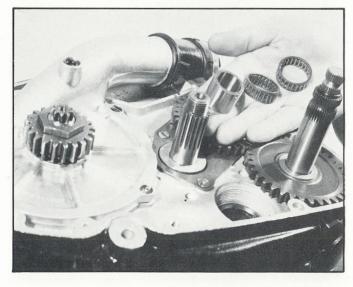


Remove the outer clutch drum thrust washer (thin - 1.5 mm).

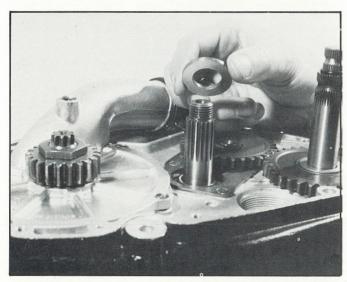




Remove the clutch drum.



Remove the two (2) clutch drum bearings and the inner bearing race sleeve.

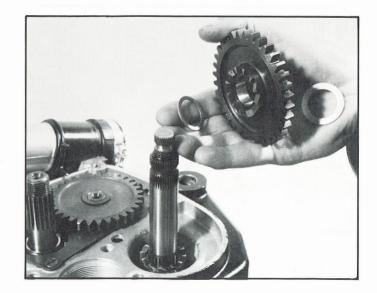


Remove the inner clutch basket thrust washer (thick - 3 mm).

Remove the outer kick starter drive gear shim. (30 mm O.D.)

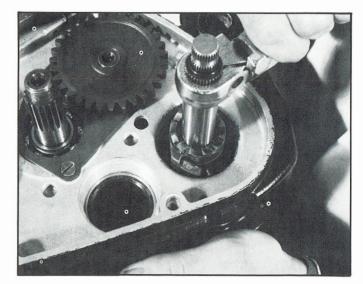
Remove the kick starter drive gear.

Remove the inner kick starter drive gear shim. (25 mm O.D.)



Install the kick starter lever and operate it in a normal fashion until the kick starter stop bolt releases the kick starter drive ratchet.

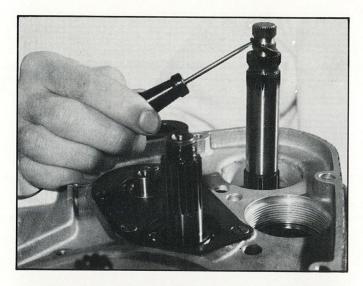
The ratchet will then spring up out of its housing.



Remove the kick starter drive ratchet.

Remove the kick starter drive ratchet spring.





Remove the o'ring from the gear shift shaft.



Remove the kick starter stop bolt and its sealing

screwdriver (thin)

TOOLS:

washer.

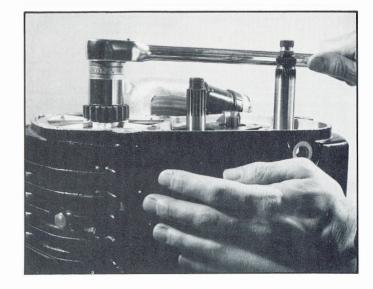


Remove the kick starter idler gear.

NOTE: Gear shoulder faces towards center of engine.

Remove the crankshaft gear nut.

NOTE: Always use crankshaft locating bolt (Can-Am no. 420-241-960) for this operation.



TOOLS: Can-Am tool no 420-241-960

Remove the crankshaft gear. Use a small finger puller if gear resists easy removal.

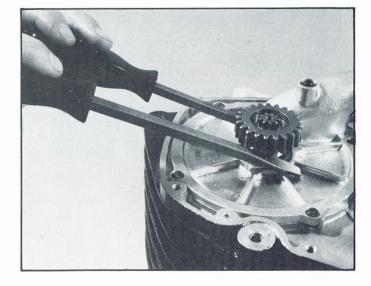
NOTE: If the oil pump gear is still on the crankshaft, put a spacer between the screw of the puller and the oil pump gear to prevent damage to the gear.

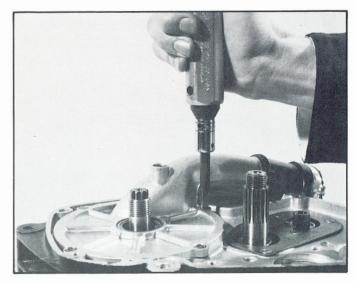
CAUTION:

Excessive leverage may damage rotary valve cover.

TOOLS: small finger puller

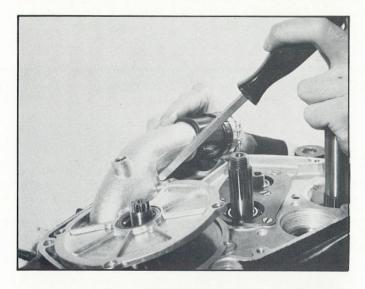
Remove the four (4) screws securing the rotary valve cover.



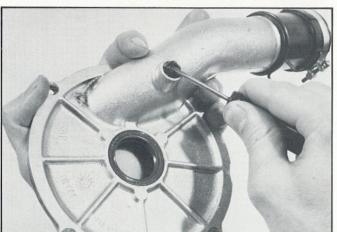


TOOLS:

impact screwdriver



Remove the rotary valve cover by prying it gently under the intake manifold as shown.

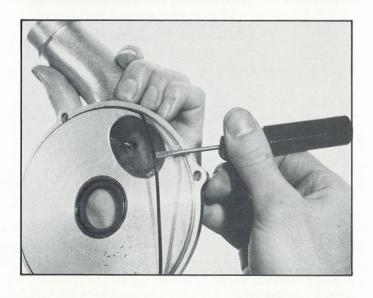


TOOLS: screwdriver

Remove the engine oil nozzle o'ring from the rotary valve cover.

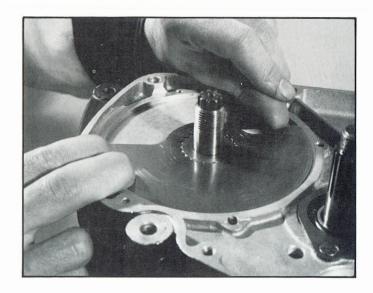
TOOLS: screwdriver (thin)

Remove the rotary valve cover sealing o'ring.

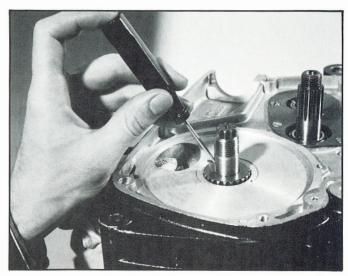


TOOLS: screwdriver (thin)

Remove the rotary valve.



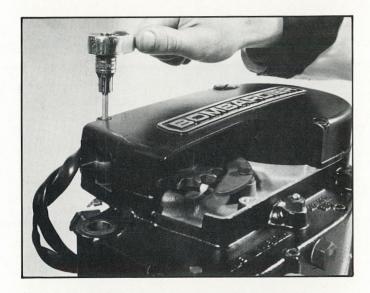
Remove the woodruff key locating the crankshaft drive hub on the crankshaft.



TOOLS: screwdriver

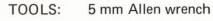
Remove the rotary valve drive hub.

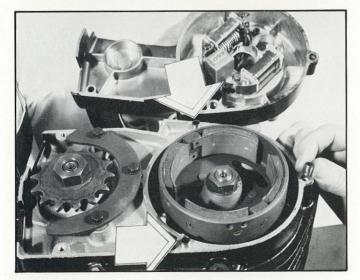




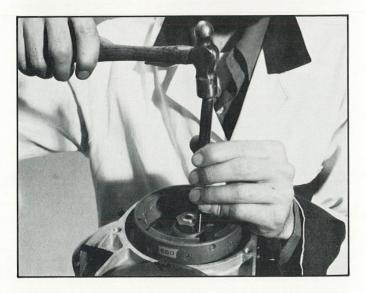
Mount the engine unit on the stand with the magneto side up.

Remove the four (4) magneto cover screws.





Remove the cover and take care not to lose the three (3) cover locating dowels.

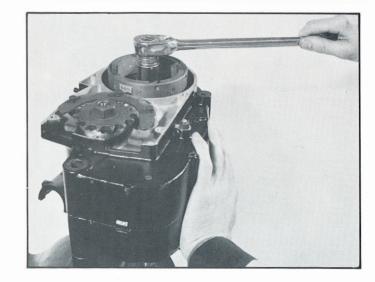


Bend the magneto side crankshaft nut locking washer flat.

TOOLS: punch

hammer

Remove the magneto side crankshaft nut and tab.



TOOLS: 24 mm socket

Install a flywheel puller (CAN-AM tool no 420-277-805) and remove the flywheel.



TOOLS:

22 mm wrench

CAN-AM puller no 420-277-805

Remove the woodruff key locating the flywheel to the crankshaft.



TOOLS:

small screwdriver

Section 3-3

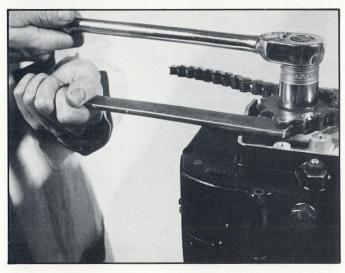


Remove the three (3) bolts and locking washers securing the chain guard.

Remove the chain guard and the three (3) spacers under it.



10 mm socket

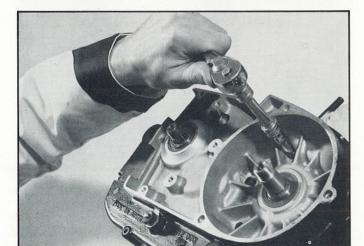


If sprocket was not removed while engine was being taken out of motorcycle, use a chain wrench and a 27 mm socket to unscrew the retaining nut.

NOTE: If sprocket resists easy removal use a gear puller.

TOOLS:

chain wrench 27 mm socket



Remove the crankshaft locking bolt (CAN-AM tool no 420-241-960).

Remove the five (5) long and the five (5) short crankcase screws and the ten (10) lock washers.

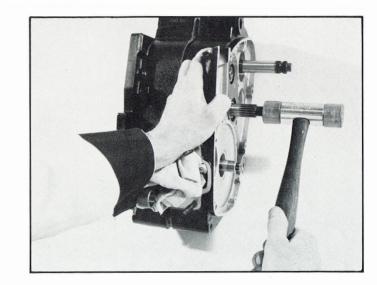
TOOLS:

5 mm allen wrench

Page 22

Split the crankcase by tapping equally on the gear shift shaft, the clutch shaft and the crankshaft.

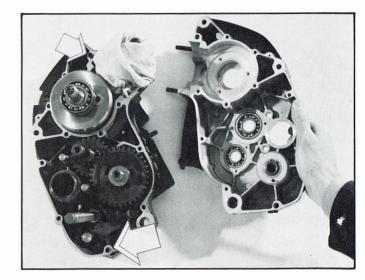
WARNING: Do not pry between engine case halves.



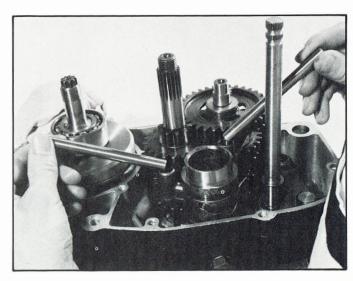
TOOLS: soft hammer

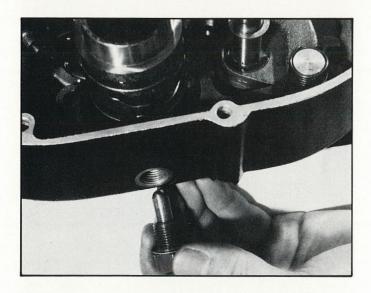
Separate the crankcase halves taking care not to lose the two (2) locating dowels.

On models 4841 and 4851, remove the oil passage o'ring from recess in the crankcase half.



Withdraw the two (2) shifting fork shafts.

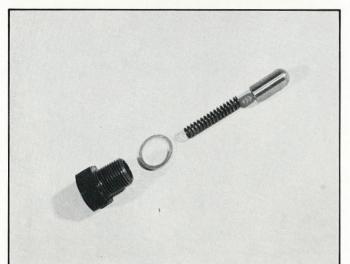




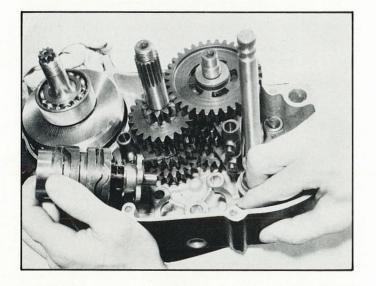
Remove the shifter drum index plug assembly and the sealing washer.



19 mm wrench



The index plug assembly.

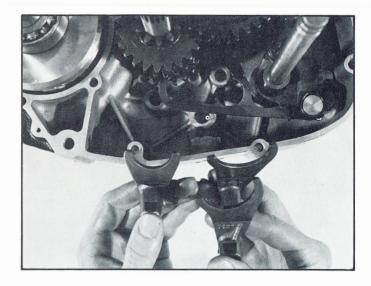


Hold the shifter drum actuating pawl down.

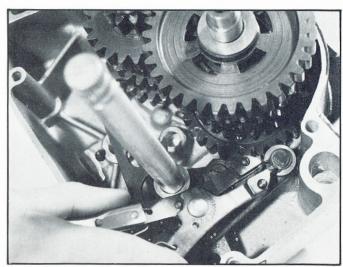
Remove the shifter drum.

Remove the three (3) shifter forks.

Note the position and shape of the three (3) shifter forks.

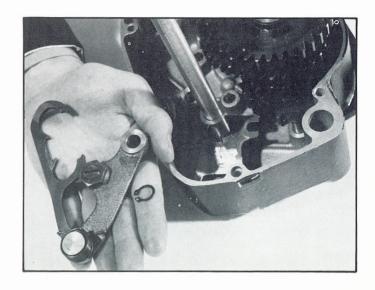


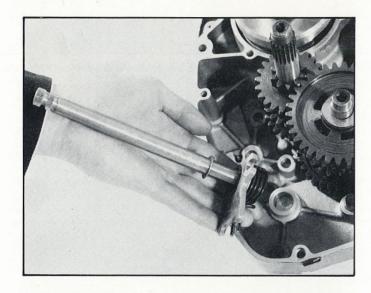
Remove the circlip retaining the actuator assembly.



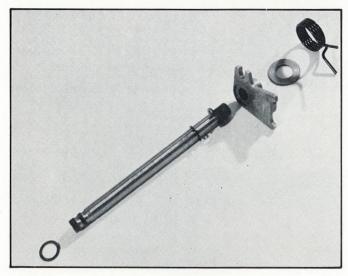
TOOLS: circlip pliers

Remove the actuator assembly.

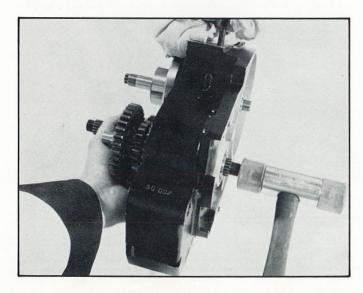




Withdraw the shifter shaft assembly.



Disassemble the shifter shaft assembly.

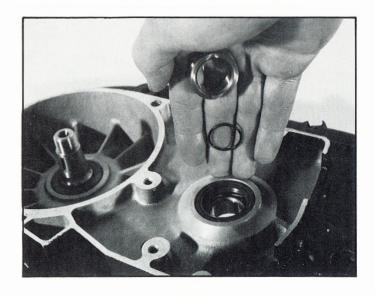


To remove the gear box cluster, tap on the magneto side end of the output shaft.

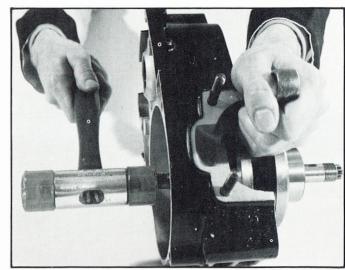
TOOLS: soft hammer

Remove the sprocket spacer and the o'ring.

NOTE: The chamfer of the sprocket spacer faces the o'ring.



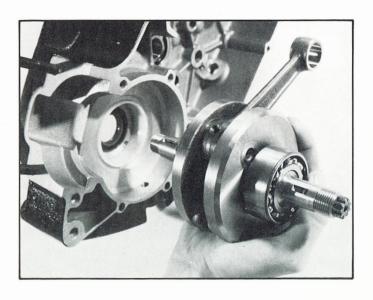
Remove the crankshaft by taping on the magneto side end with a soft hammer.

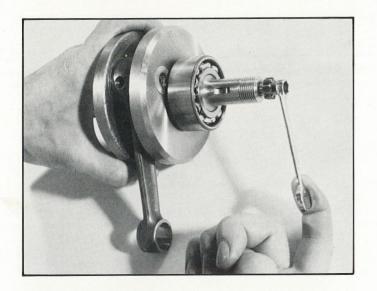


TOOLS: soft hammer

Removing the crankshaft.

NOTE: Do not remove the main bearing plastic insert in the clutch and magneto side crankcase halves unless they are to be replaced.



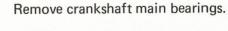


Remove the oil pump drive gear from the clutch side end of the crankshaft.

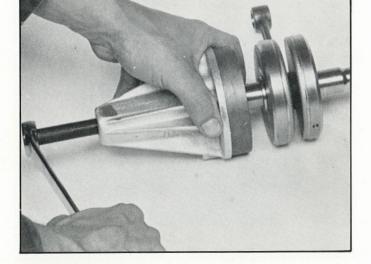
TOOLS:

one of the clutch pressure

plate bolts 8 mm wrench

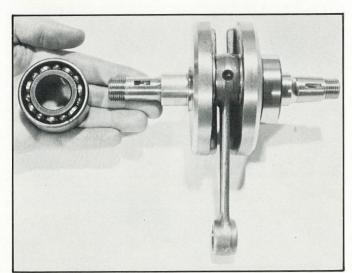


NOTE: When removing the magneto side main bearing, the oil guide plate will be damaged and must be replaced (unless using CAN-AM puller).



TOOLS: 420-876-296 Puller assembly

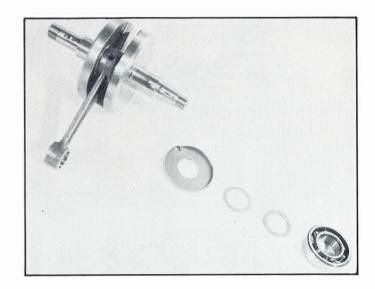
420-977-480 Ring for puller 420-277-890 Ring halves (2) 420-840-680 Screws for puller (2)



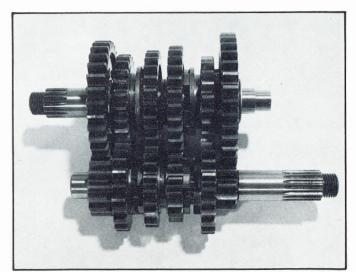
The clutch side crankshaft main bearing.

The magneto side bearing, shims and oil guide plate.

NOTE: The shim or shims behind the magneto side crankshaft main bearing are for adjusting the crankshaft end play to a maximum of .3 mm.

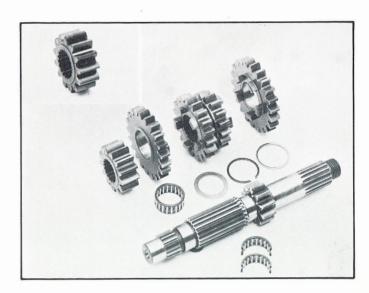


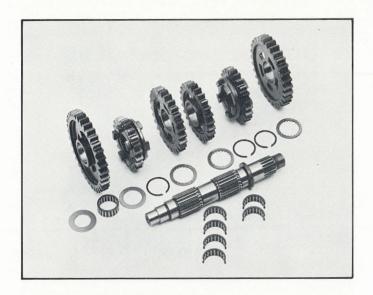
The gear cluster assembly.



The complete clutch shaft.

NOTE: The shoulder on 2nd gear (shown on insert) should face towards the end of the shaft.

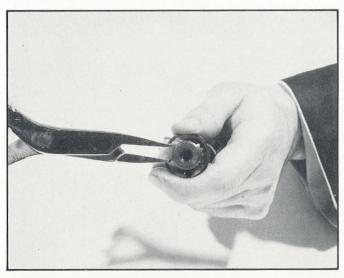




The complete main shaft.

The three (3) splined thrust washers have their smooth side towards the gear and their rough side towards the circlip.

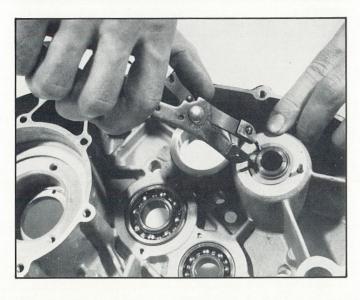
NOTE: The shoulder on the 1st gear (34 teeth) and shoulder on the 2nd gear (30 teeth) should face towards the ends of the output shaft.



Removing a circlip from a gear box shaft.

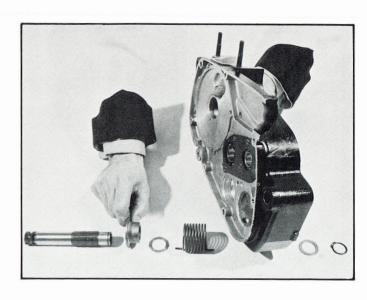


Removing the circlip from the kickstart shaft.



TOOLS: circlip pliers

The kickstart shaft assembly.



SUB-SECTION 3-4 ENGINE REASSEMBLY

Fit the magneto side crankshaft main bearing oil slinger and spacer.

Slinger spout is inserted into the crankpin hole.

Fit the crankshaft main bearings without any shims.

NOTE: Drive (drift) center race only.

TOOLS: soft drift

hammer

Fill magneto side oil seal with high melting point grease, and coat bearing with injection oil. Insert crankshaft into magneto side crankcase and fit clutch side crankcase (without joint sealant).

Install 5 short Allen head screws and washers around crankshaft and tighten them in a crisscross sequence.

TOOLS:

soft hammer

5 mm Allen wrench

Tap the crankshaft solidly into the magneto side crankcase. Measure the distance from the clutch side crankshaft end to the machined surface of the crankcase.

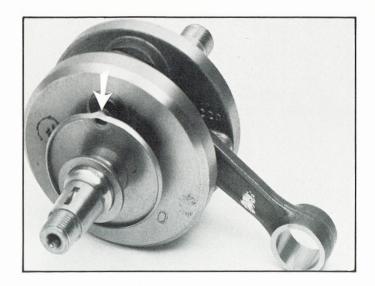
Tap the crankshaft solidly into the clutch side crankcase and measure again.

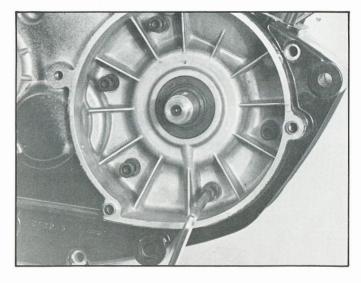
The total end float must not exceed 0.3 mm. (Shims are available in 0.1 - 0.2 - 0.3 - 0.5 - 1.00 mm sizes).

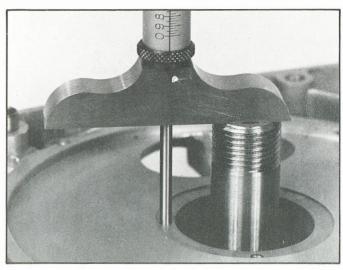
TOOLS:

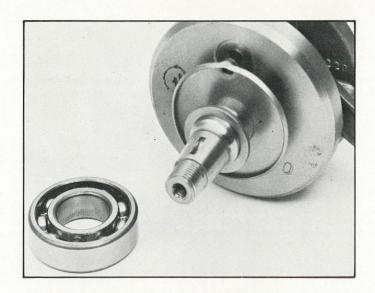
soft hammer

Vernier or dial indicator

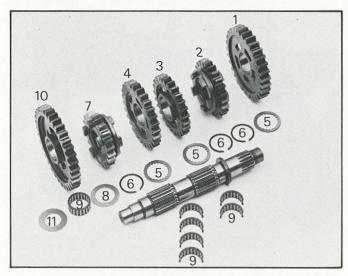


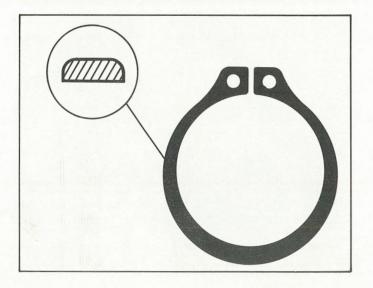






Remove clutch side crankcase and place any necessary shim/s between oil slinger and main bearing.





GEARBOX

Assemble the gearbox main shaft.

- 1. 2nd gear (30T)
- 2. 5th gear (23T)
- 3. 4th gear (25T)
- 4. 3rd gear (27T)
- 5. Thrust washer (splined)
- 6. Snapring
- 7. 6th (21T)
- 8. Thrust washer
- 9. Needle bearing
- 10. 1st gear (34T)
- 11. Thrust washer

NOTE: The shoulder on the 1st gear (34teeth) and the shoulder on the 2nd gear (30 teeth) should face towards the ends of the output shaft.

The three (3) splined thrust washers have their smooth edge towards the gear and their sharp edge toward the circlip.

Do not overstress the circlips. Always use new ones.

TOOLS: snapring pliers

Assemble the gearbox clutch shaft.

- 1. 6th gear (22T)
- 2. Thrust washer
- 3. Snapring
- 4. 4th & 3rd gear (19T/16T)
- 5. Thrust washer
- 6. Needle bearing
- 7. 5th gear (21T)
- 8. 2nd gear (13T)

NOTE: The shoulder on 2nd gear (shown in insert) should face towards the end of the shaft.

TOOLS: snapring pliers

Fill the transmission mainshaft seal with high melting point grease.

Fit the gearbox cluster into the magneto side crankcase as an assembly.

NOTE: It may be necessary to tap each shaft into the bearings.

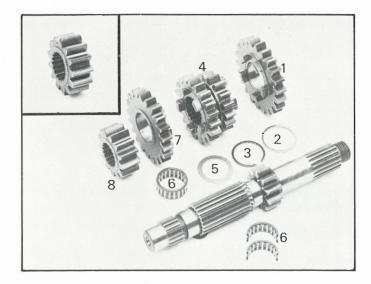
TOOLS: soft hammer

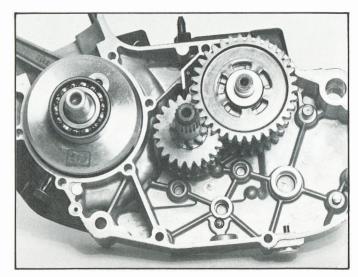
Fit the gearshift return spring and washer onto actuating lever.

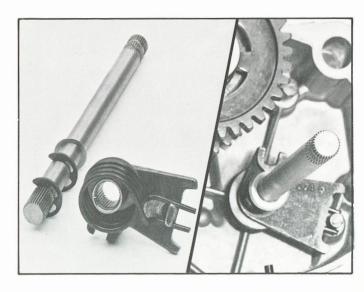
NOTE: See correct position of spring arms.

Fit shift shaft with the two snaprings and thrust washers.

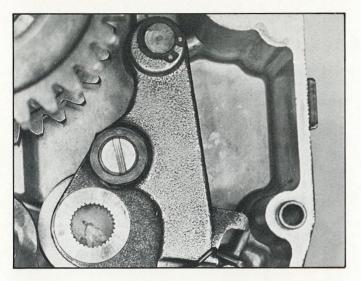
TOOLS: snapring pliers





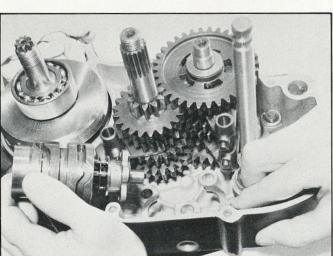


Section 3-4 Page 5



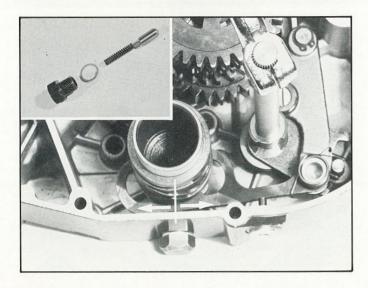
Position actuating lever and fit pawl assembly and snapring.

NOTE: Pawl positioning screw must be engaged with actuating lever.



TOOLS: snapring pliers

Depress shifter drum actuating pawl and fit shift drum assembly into place.



Adjust shifter drum actuating pawl. (in neutral)

- a) Install drum index plunger assembly and washer, and shift shaft (with shift lever).
- b) Gently move shift lever in each direction from the middle position until shifter pawl contacts shifter drum pin and note the amount of movement in each direction.
- c) Movement in both directions must be equal.
- d) If not equal, adjust the pawl positioning screw

NOTE: Lock nut must be tightened after each adjustment.

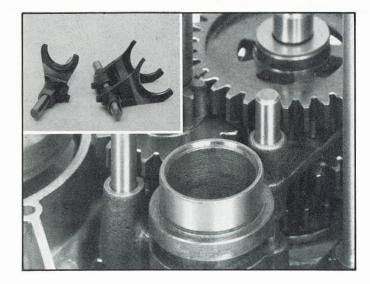
TOOLS:

screwdriver

17 mm socket

Page 6

Install shifting forks and guide shafts. Remove index plunger if necessary to allow easy drum movement.

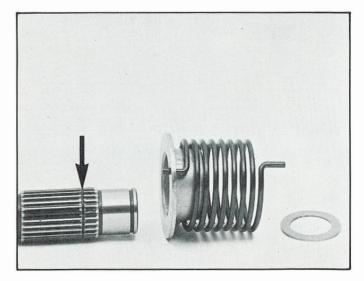


TOOLS:

19 mm socket

Fit the spring retaining hub and its locating snapring (arrow) onto the kickstart shaft.

Fit the return spring into place with one spring end in the retaining hub locating hole.



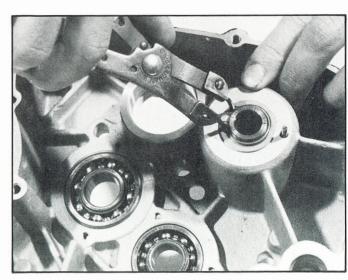
Fit the kickstart shaft retainer spring assembly into the clutch side crankcase being sure to insert the spring end into its locating hole in the crankcase.

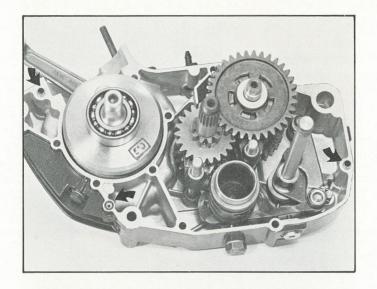
Secure the kickstart shaft with the washer and snapring and check endplay.

NOTE: Sharp edge of snapring must face magneto side.



snapring pliers





Fit the 2 dowel sleeves into the magneto side crankcase dowel holes.

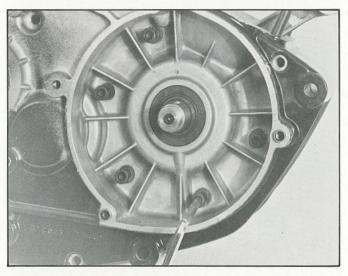
Page 7

On models 4841 and 4851, install the oil passage o' ring.

Apply silicone sealer to magneto side crankcase and fit clutch side crankcase.

NOTE: Ensure that oil passage hole is not and will not become blocked with sealer.

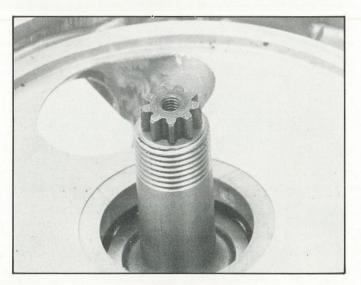
TOOLS: CAN-AM sealer no 747-002-000 soft hammer



Fit the 10 crankcase Allen screws and lock washers. Torque all screws in a criss-cross pattern.

Check shift shaft endplay.





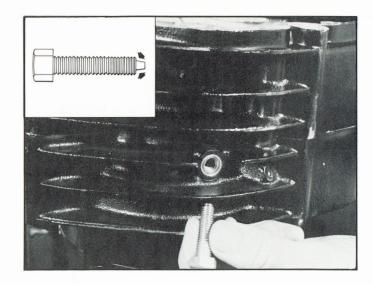
Gently tap the oil pump drive gear into the clutch side end of crankshaft.

On models 4841 and 4851, loctite the oil pump drive gear to the crankshaft.

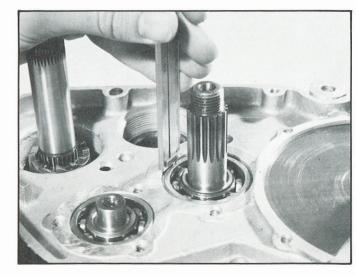
TOOLS: soft hammer

Fit the crankshaft locating bolt to lock the crankshaft and stuff a rag into the crankcase opening to prevent connecting rod damage or bearing contamination.

NOTE: Do not overtighten locating bolt.

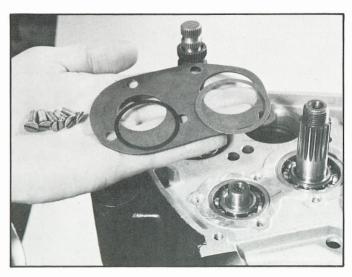


Tap both gearbox shafts towards magneto side crankcase. Tap both gearbox bearing inner races towards magneto side crankcase. Measure the distance between bearing outer race and case surface to determine shims required between bearing and retaining plate. End float must be 0.1 mm.



TOOLS: depth gauge

Fit bearing retaining plate and "Loctite" the 5 screws securely into place.

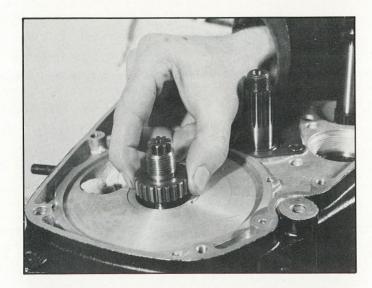


TOOLS:

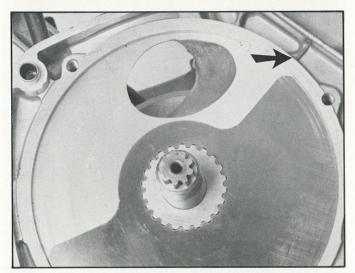
screwdriver

"Loctite" screw-lock

Section 3-4

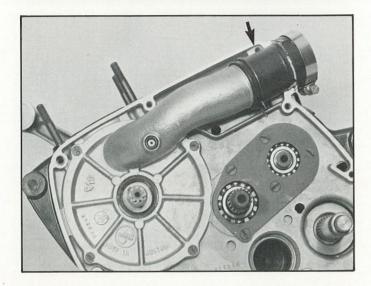


Fit woodruff key and disc valve splined hub.



Coat the disc valve with injection oil and position it so its leading edge aligns with the mark on crankcase, when crankshaft is at TDC.

NOTE: The disc is symmetrical and cannot be installed backwards.



Carefully position the large "O" ring in the disc valve cover groove.

Fit the rubber carburetor adaptor and retaining circlip to the disc valve cover.

NOTE: The relief in the adaptor must be aligned with the clutch cover bolt hole (see arrow).

Fill oil seal with high melting point grease and install disc valve cover. "Loctite" the 4 retaining screws.

TOOLS:

screwdriver

"Loctite" screw-lock

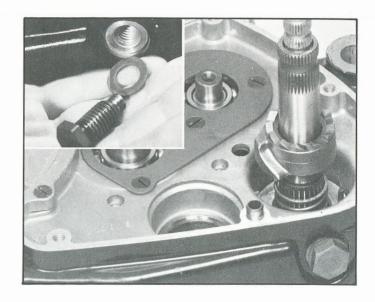
Fit the kickstart return stop screw and its sealing washer.

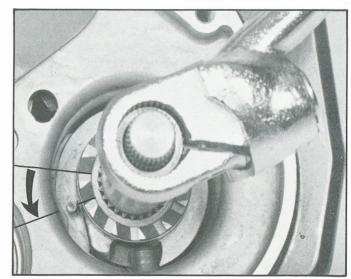
Drop the ratchet disengagement spring into place.

Drop the ratchet gear onto the kickstart shaft but do not position it yet.

TOOLS: 17 mm socket

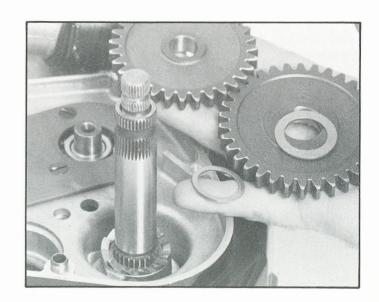
To position ratchet gear, install the kickstarter lever and preload the kickstarter spring 3/4 turn. Slide ratchet gear onto spline so the stop ramp on ratchet gear is at the 9 o'clock position. Release kickstarter lever slowly until the ratchet gear rests against its stop. The spring preload should now be correct.

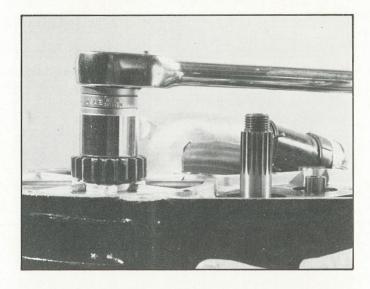




Fit kickstart drive gear with small o.d. thrust washer inside and large o.d thrust washer outside.

Fit idler gear with shoulder towards magneto side.



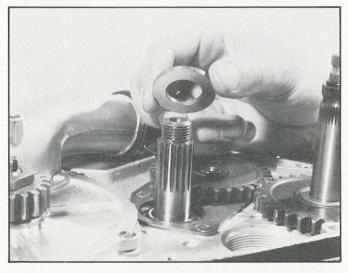


Fit crankshaft drive gear.

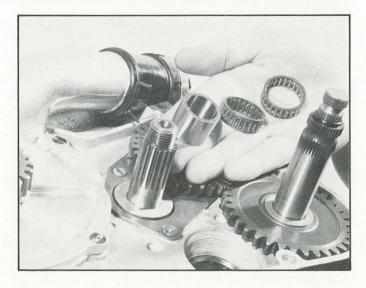
Carefully clean and prime crankshaft nut and crankshaft threads and apply "Loctite" screwlock to the top 3 threads. Torque the nut into place.

TOOLS:

"Loctite" primer
"Loctite" screw-lock
27 mm socket
torque wrench



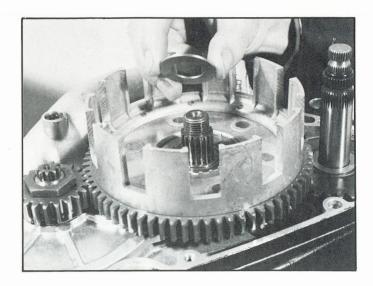
Fit the clutch drum inner thrust washer (3 mm thick).



Fit the inner race sleeve and the 2 bearings.

Page 12

Fit the clutch drum and the thin thrust washer. (1.5 mm).



Fit the clutch plate on the clutch hub in the following sequence:

thick steel plate, total 1 plate, (1.5 mm)

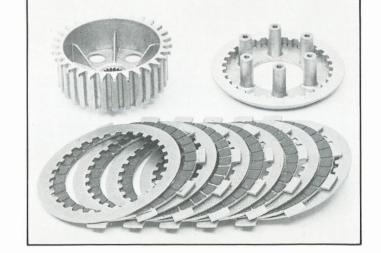
driven plate, (1.0 mm) (fibre)

drive plate, (plain)

driven plate, etc. (1.0 mm)

On models 4841 and 4851, there are six thick (1.5 mm) steel plates and 5 friction plates.

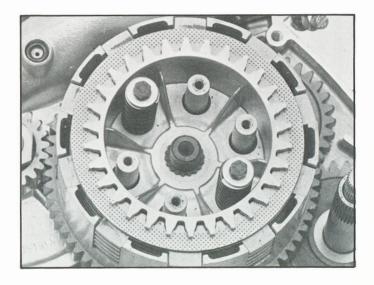
NOTE: Align the tabs on the friction plates.

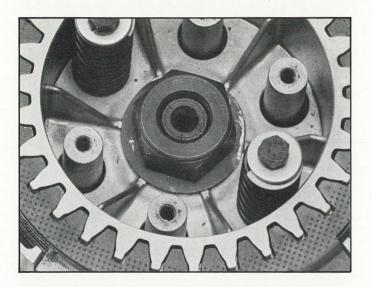


Fit clutch inner pressure plate in alignment with hub splines.

Carefully insert clutch hub/plate assembly into clutch drum and onto clutch shaft.

NOTE: Two clutch springs installed with washers will hold clutch together for easy assembly.





Fit lock plate and nut.

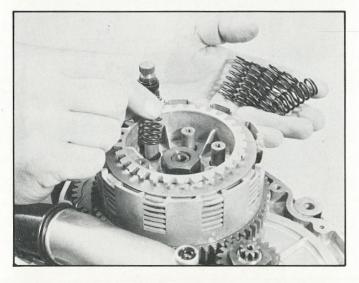
Using a CAN-AM tool no 420-277-885, lock the clutch assembly and torque the nut.

Bend the lock tab into place.

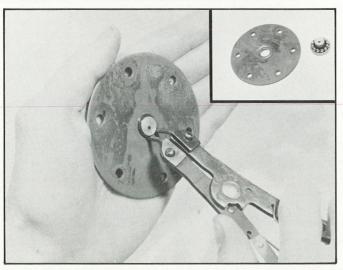
NOTE: Use "Loctite" on the clutch nut.

TOOLS: CA

CAN-AM no 420-277-885 27 mm socket torque wrench "Loctite" screw-lock water pump pliers



Insert the 6 clutch springs.



Lightly grease the clutch spring retaining plate ball race, fit the 12 balls into place and insert the retaining hub. Snap circlip into place.

NOTE: Retaining hub circlip must face magneto side.

TOOLS: snap ring pliers

Page 14

With the spring retaining plate in place, partially tighten each screw in a criss-cross pattern until all screws are tight.

NOTE: Do not fully tighten screws one at a time.

TOOLS: 8 mm socket

Fit the "O" ring to the oil pump body.

Place the oil pump in position in the clutch cover and fit the screws.

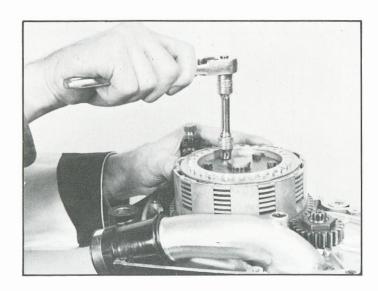


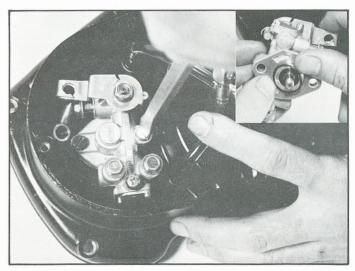
Fit 1 special locking washer onto the oil pump shaft and then the nylon gear and 1 special locking washer.

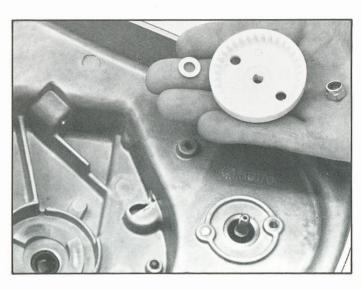
On models 4841 and 4851, install a flat washer, the gear and the nut.

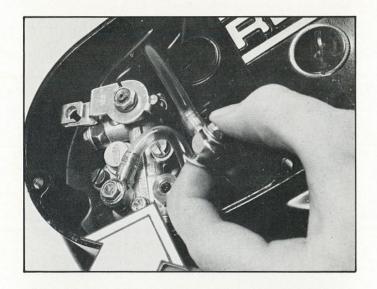
Using CAN-AM tool no 420-277-900 to hold the pump gear, tighten the gear retaining nut.

TOOLS: CAN-AM no 420-277-900 10 mm socket



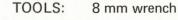


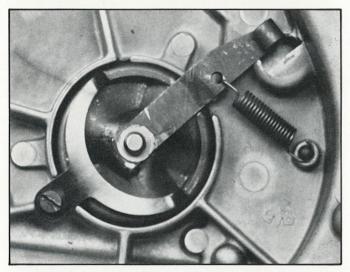




Connect the 2 oil pump banjo fittings with a special gasket washer on each side of the banjo.

NOTE: Large O.D. side of the banjo towards the oil pump.



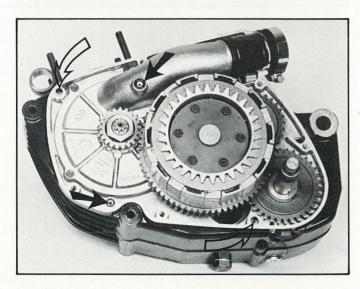


Drop the clutch release cam assembly into place and connect the spring to the cover pin.

Fit the retaining plate and screw it into place.

On models 4841 and 4851, "Loctite" replaces the lock washer.

TOOLS: screwdriver



Fit the 2 locating dowels into the crankcase.

Make sure the rotary valve cover o'ring is properly positioned.

Apply a thin coat of silicone sealant to the crankcase joint surface.

NOTE: Do not block the main bearing oil passage.

Fit the clutch cover onto the kickstart shaft and into place.

NOTE: Exercise caution to prevent oil seal damage.

Make sure the pump gear meshes with the crankshaft gear. To ensure this, remove the locating bolt and turn crankshaft slowly while tapping clutch cover on.

Fit the clutch 8 cover Allen screws.

NOTE: Do not omit the 2 aluminum washers. (See arrows).

TOOLS:

5 mm Allen wrench

soft hammer

Fit the kickstart lever.

Fill 'o' ring groove with grease and fit the 'o' ring onto the gearshift shaft.

Fit the gear shift lever onto the gearshift shaft.

TOOLS:

13 mm wrench

5 mm Allen wrench

Fit the sprocket 'o' ring and the spacer on the gearbox main shaft.

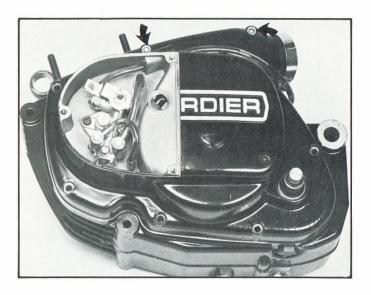
NOTE: Chamfered side of spacer must face 'o' ring.

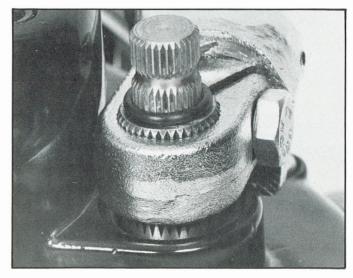
Using "Loctite", fit the sprocket, the lock tab and the sprocket retaining nut. Reinstall crankshaft locating bolt and select a gear.

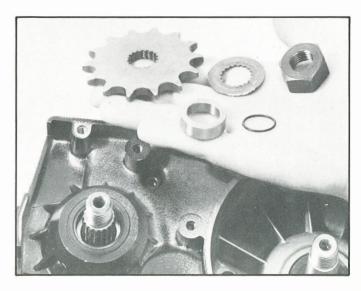
Torque nut and bend the lock tab into place.

TOOLS:

27 mm socket torque wrench water-pump pliers "Loctite" stud-lock









Fit the chain guard with its 3 distance spacers. Secure it with 3 bolts and lock washers.



TOOLS: 10 mm socket

Fit the woodruff key into magneto side crank-shaft keyway.

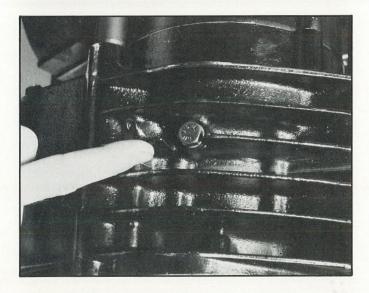
Clean the crankshaft taper and apply "Loctite" screw-lock.

Carefully slide flywheel into place, fit the lock tab, tighten the nut, and bend lock tab into place.

Fit the 3 locating dowels into place.

TOOLS:

22 mm socket torque wrench water pump pliers use "Loctite" screw-lock

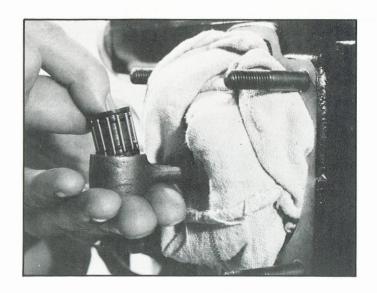


Remove the crankshaft locating bolt and install the drain plug and washer.

TOOLS: 13 mm socket

Wipe excess silicone seal from cylinder sealing surface and install the cylinder base gasket.

Apply injection oil to the piston pin bearing and fit it to the connecting rod.



Fit piston onto rod and insert wrist pin and circlips. Piston directional arrow must face forward.

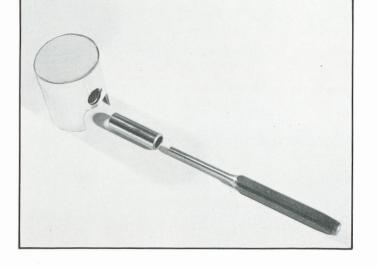
NOTE: Replace circlips if they are loose in piston. All punch impact must be absorbed by your hand - not by the rod. Refer to disassembly for picture.

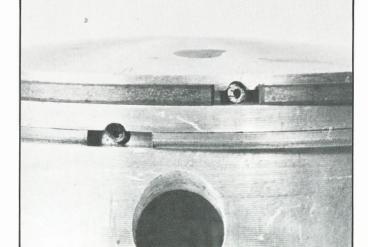


punch

circlip pliers

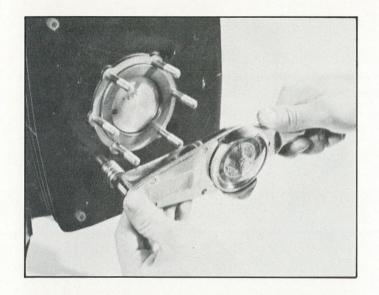
Measure ring gap in cylinder. Fit ring/s onto piston and align ring gap with locating pin/s.





TOOLS:

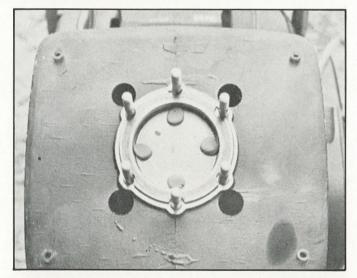
feeler gauges



Oil cylinder liner, piston and rings with injection oil and lower the cylinder into place. Tighten the 4 cylinder base nuts in a progressive manner.

TOOLS:

11 mm socket torque wrench

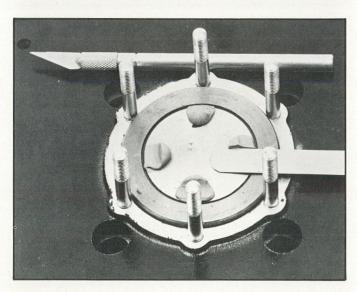


Bring the piston to 1/4" B.T.D.C. and place 4 small balls of modeling clay on the piston crown as shown.

Fit the cylinder head and washers and tighten the 6 nuts.

TOOLS:

11 mm socket



Using the magneto flywheel, rotate the engine past top dead center.

Remove the head, cut each flattened clay pad in half and measure the thickness of the pads.

TOOLS:

11 mm socket

knife

feeler gauges

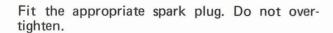
Using the aforementioned measurement, calculate the head shims necessary to adjust the squish area to min. 0.5 mm (.020 $^{\prime\prime}$) to max. 1 mm (.040 $^{\prime\prime}$)

NOTE: .75 mm (.030 $^{\prime\prime}$) is optimum. Shims are 0.2 mm thick (.008 $^{\prime\prime}$).

Fit the necessary shim/s (if any) and torque head into place.

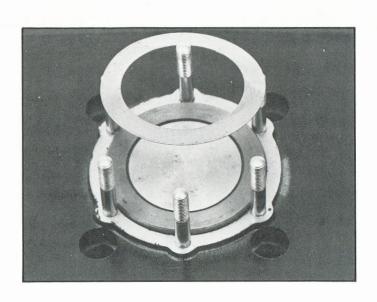
TOOLS:

11 mm socket torque wrench



TOOLS: spark plug wrench

For engine re-installation, refer to engine removal section and reverse the sequence.



SUB-SECTION 3-5

CARBURETION

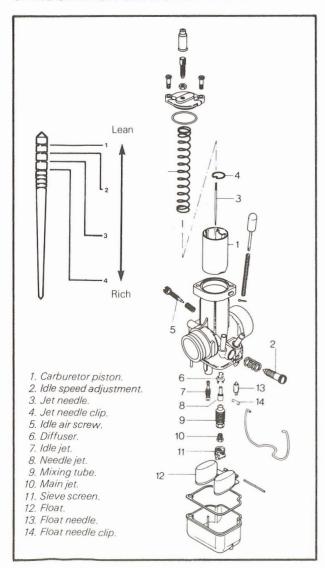
GENERAL

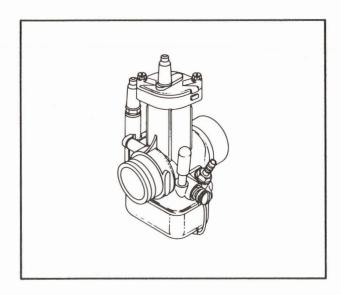
The "Bing" carburetor used on all Can-Am motorcycles is a piston type carburetor with fixed high speed and low speed jets, a float controlled fuel level and an enrichener device for cold starting.

Its air supply is controlled by a cylindrical piston moving up and down a bore, through the action of the throttle twist grip. Attached to the piston is a tapered needle that moves within a cylindrical needle jet. This varies the fuel supply as the throttle piston is moved up or down.

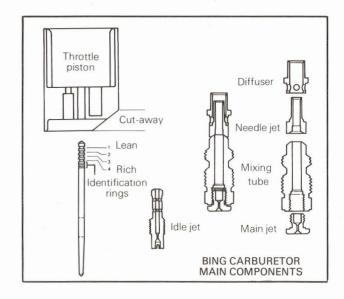
A fuel supply is kept in a bowl at the base pivot of the carburetor. Two plastic floats on a pilot control a needle valve to keep the fuel at a determined level within the bowl.

CARBURETOR EXPLODED VIEW



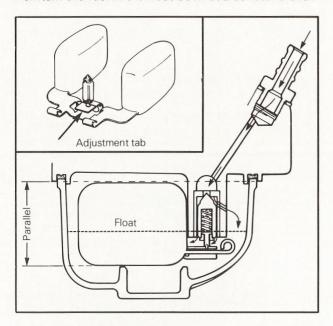


PRINCIPLE COMPONENTS



FUEL LEVEL

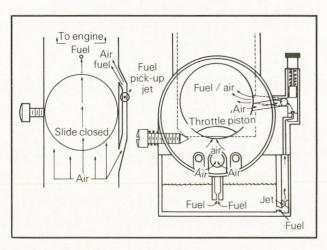
The fuel for all carburetor operations flows from the fuel tank to the float bowl. The float operates a needle that opens and closes the fuel inlet valve to maintain the fuel in the float bowl at a constant level.



THE STARTING SYSTEM

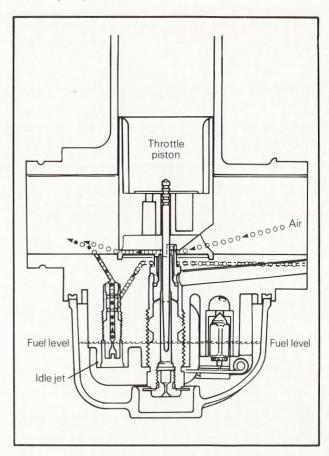
With the throttle closed and the starter knob lifted and turned to the open position, the engine will draw air from the piston by-pass hole and fuel from the float bowl via the starting jet to form a rich starting mixture for easy starting. After the engine is warm, the starter knob may be returned to the closed position and the engine will run on the normal systems.

NOTE: Opening the throttle will reduce the vacuum in the starting system and it will not supply the required enriched mixture. There are no adjustments to the starting system.



THE IDLE JET SYSTEM

At idle speeds, these is insufficient vacuum to draw fuel through the main jet system hence the need for the idle jet system.

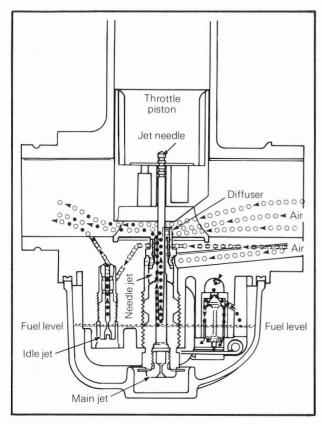


With the carburetor piston held slightly open by the idle speed adjusting screw, the engine draws air from the carburetor inlet and fuel from the float bowl via the idle jet to provide a mixture for slow running or idling. The air delivery rate is adjustable by means of a pointed "air screw" to achieve the mixture required for smooth idling.

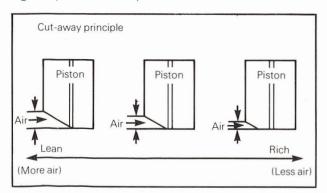
The fuel supply is adjusted by changing the idle jet size to suite certain extreme conditions such as winter / summer differences.

THE MAIN JET SYSTEM

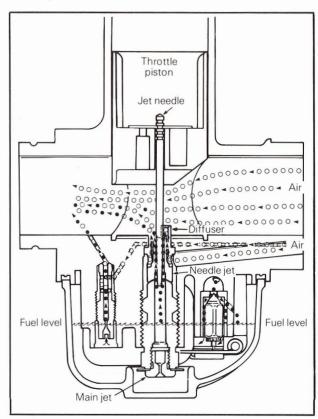
Once the piston is lifted to partial throttle opening, sufficient vacuum is developed to draw fuel up the main jet system from the float bowl.



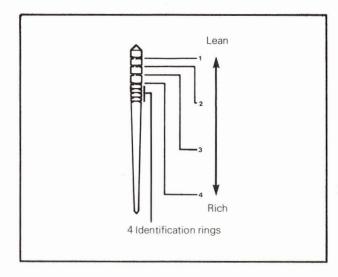
At this stage of carburetion, the throttle piston cutaway controls the amount of air admitted as the needle is lifted progressively out of the needle jet in the main jet system. A smaller cut-away causes a richer mixture and vice versa up to ¼ throttle opening. Only one cut-away is available for Can-Am.



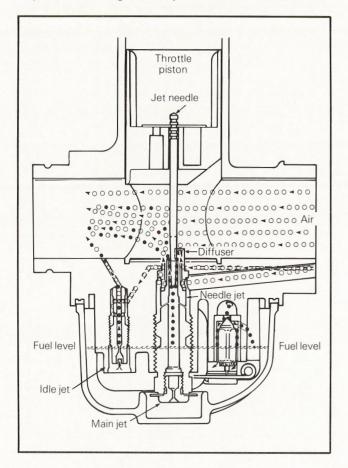
The tapered jet needle is lifted progressively out of the main jet by the throttle piston to admit a controlled amount of fuel through the main jet, the needle jet and the diffuser.



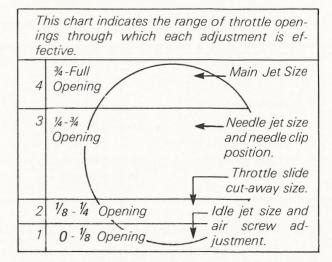
Due to the taper of the needle and the adjustment clip grooves at the top of the needle, a lower needle position provides a leaner mixture and vice versa from ¼ to ¾ throttle opening. Similarly, the needle jet may be smaller (leaner) or larger (richer) as desired.



Once fully opened, the throttle piston will have lifted the jet needle to maximum height, leaving the main jet as the fuel control device for high speed operation. A larger main jet allows a richer mixture.



1) RANGE AND SEQUENCE OF CARBURETOR ADJUSTMENT



2) CARBURETOR SETTING RANGES

Plug Reading	Idle J	et Slide	Away N	Clip Po	Need	Main J	et Float Les	187
Rich						180 175		
	45					170 165 160		
	70			4th	2.73			
Normal	40	1	4ring	3rd	2.70	155	25mm	
	35 30		2ring	2nd 1st		150 145 140		
Lean								

NOTE: Unless affected by climatic conditions, altitude or special engine modifications, carburetion should be left at standard settings.

73 / 74 CARBURETOR SPECIFICATIONS

	T'NT 125 cc	T'NT 175 cc	MX-1 125 cc	MX-1 175 cc
Carburetor type	1 / 32 / 114	1 / 32 / 113	1 / 32 / 102	1 / 32 / 104
Main jet	150	155	150	155
Needle jet	2.73	2.73	2.70	2.70
Idle jet	40	40	40	40
Needle identification	4 rings	4 rings	4 rings	4 rings
Needle setting (from top)	3rd groove	3rd groove	3rd groove	3rd groove
Slide	No. 1	No. 1	No. 1	No. 1
Idle jet screw adjustment	1¼ turns out	1¼ turns out	1¼ turns out	1¼ turns out
Float level	25 mm (1 in.)			

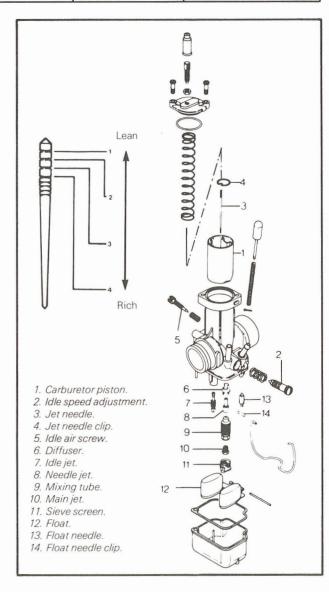
3) CARBURETOR SERVICING

- Completely loosen both carburetor retaining hose clamps. (Slide front clamp forward and rotate carburetor towards clutch side.
- 2. Remove carburetor top plate and the slide assembly.

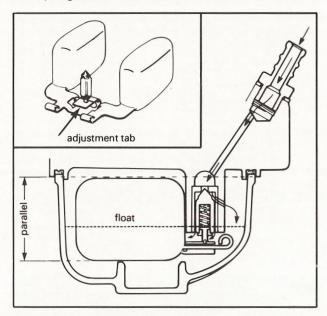


CAUTION: Handle slide with care.

- Disconnect fuel line (at carburetor) and pry carburetor body towards air box, out of front connection hose.
- 4. Twist carburetor body away from engine inlet port and remove carburetor (complete with air box adaptor hose).
- 5. Pry float chamber retaining clip back and remove float chamber.
- WARNING: Gasoline is flammable and explosive under certain conditions. Always use caution and work in a well ventilated area.
- 6. Clean carburetor and float chamber with gasoline or cleaning solvent and blow passages clear with compressed air.
- CAUTION: Strong solvent may dissolve the float material.
- NOTE: During prolonged periods of storage, stale gasoline may plug the small orifices of the carburetor.



7. To adjust the float level, carefully bend the adjusment tab on the float arm until the bottom of the plastic float is parallel to the carb body and the float arm is touching but not depressing the spring loaded needle stem.



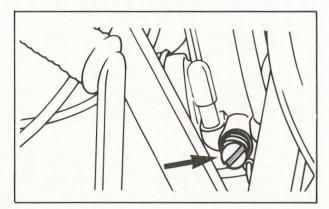
8. Replace float chamber and carburetor in reverse order of removal.



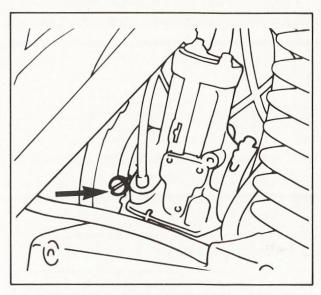
CAUTION: Do not overtighten air box boot hose clamp or air box flange may distort sufficiently to allow entry of foreign particles.

4) CARBURETOR ADJUSTMENT

- NOTE: Hold the motorcycle vertical for this adjustment.
 - 1. Gently turn the mixture adjusting screw in until it stops, then back it out 1 turn. (Basic setting).
 - 2. Start the engine and allow it to warm.
- 3. Adjust the idle speed screw in or out for desired idle speed. (Approx. 1000 RPM maximum).



4. Turn the air mixture screw in and out (within ¼ turn of basic setting) to achieve smoothest idle possible.

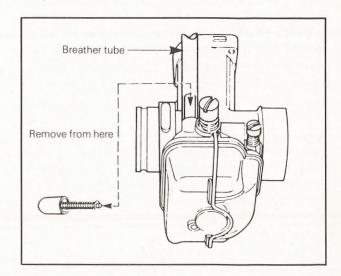


5. Re-adjust the idle speed if necessary.

5) THROTTLE SERVICING & WATERPROOFING

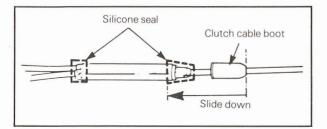
The following section will fully protect and waterproof the Can-Am throttle system against sand, water, mud, snow, etc.

- 1. Disassemble the throttle assembly and remove the carburetor and clean all the parts.
- 2. Disassemble the carburetor and punch out the primer knob.

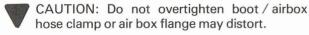


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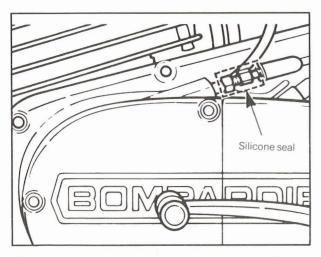
- 3. Using a carburetor cable grommet (part no. 420 260 370) and silicone sealant, seal the throttle side of the throttle cable junction box.
- 4. Seal the other side of the junction box (oil pump cable and carburetor cable) with silicone sealant.



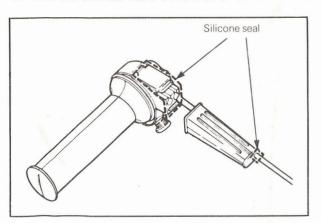
5. Reassemble and install the carburetor.



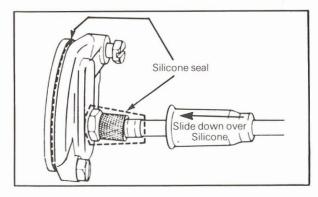
Seal the oil pump cable boot (at engine adjuster) with silicone sealant.



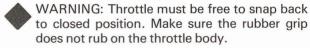
- 7. Install the twist-grip and cable on the handle bar.
- 8. Seal the throttle cable boot with silicone sealant.



- Assemble the carburetor cable, cover plate and slide and, with a light smear of silicone sealant around the "O" ring, install them on the carburetor.
- 10. Using the cable adjuster located on the carburetor top plate, set cable slack to $\frac{1}{16}$ (1.6 mm).
- 11. Pack the cable grommet with silicone sealant and slide it down into place over the adjuster.



12. Test the throttle action.



13. Fit an 18" piece of gas tubing to the primer knob guide. This tube will be a breather for the float bowl. It must run upward to the rear of the gas tank, over the frame, and back down to prevent entry of water. Fasten it to the frame with tie wraps or tape.

6) SPARK PLUG SERVICING*

*Courtesy of Champion Spark Plug Company of Canada Limited.

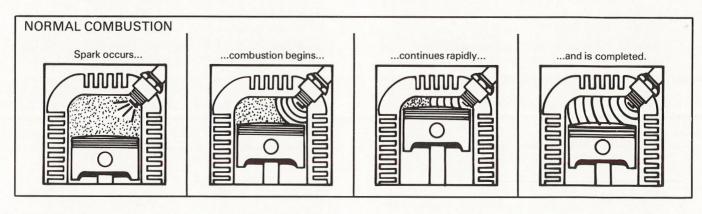
COMBUSTION — NORMAL AND ABNORMAL

The power in an internal combustion engine is developed by expanding gases resulting from the burning of the air / fuel charge. If you have the proper air / fuel mixture, timing is correct, and the anti-knock (octane rating) quality of the fuel meets the engine requirements, the burning process should occur evenly and steadily. This is normal combustion... a cycle which will be repeated many thousands of times every minute the engine is in operation.

There are, however, various forms of abnormal combustion which are not only troublesome, but can be expensive with occasional failures to pistons, spark plugs and other engine parts. Abnormal combustion has always been a problem to contend with in all types of engines. ... Engine manufacturers are aware of these problems and caution against indiscriminate use of fuels, oils, oil mixes and poor maintenance practices.

The spark plug is rarely the cause, but, rather, the victim of abnormal combustion. Because the spark plug is positioned in the combustion chamber, it is readily exposed to the damaging effects of preignition and detonation. The responsibility for piston damage is often unfairly placed on the spark plug simply because it may show evidence of damage similar to the piston. There are many times, however, that piston

failure does occur with no damage to the spark plug. In any case, damaged engine parts, after thorough examination, can almost always be attributed to some form of abnormal combustion, revealing that preignition or detonation is the real cause. Because preignition and detonation are so closely related, it is difficult to determine where one ends and the other begins.



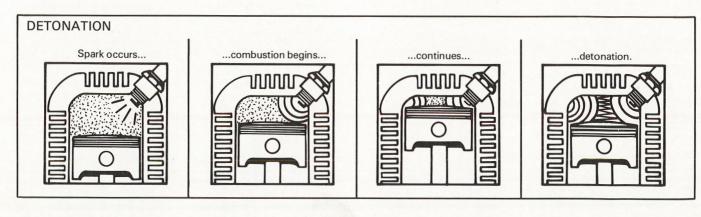
Detonation occurs when the anti-knock value of the fuel does not meet the engine requirements. A portion of the air / fuel charge begins to burn spontaneously from increased heat and pressures just after ignition. The two flame fronts meet and the resulting "explosion" applies extreme hammering pressures on the piston and other engine parts. Piston damage occurs from the pounding pressures of severe detonation, and the increased heat factor can cause preignition.

Preignition is just what the term implies. It is the ignition of the air / fuel charge prior to the timed spark. Any hot spot within the combustion chamber can cause preignition.

Detonation and preignition are usually the result of one or a combination of the following conditions.

DETONATION:

- 1. Ignition timing advanced too far.
- 2. Fuel octane rating too low.
- 3. Lean mixtures. Poor carburetion and / or leaks in manifolds-crankcase and / or intake.
- 4. Compression ratio increase due to combustion chamber deposits or engine modification.
- 5. Excessive intake manifold temperatures.
- 6. Lugging the engine.



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Because of the hammering pressures of detonation, piston damage usually appears as fractures on or through the crown, or in the skirt and wrist pin area.

PREIGNITION:

- Combustion chamber deposits which become incandescent.
- 2. Hot spots in the combustion chamber due to poor heat dissipation.
- 3. Scuffing due to inadequate lubrication or improper clearance on engine parts.
- 4. Detonation or conditions leading to it.
- 5. Spark plug heat range too high for engine operating situation.

Because of the high temperatures of preignition, piston damage is evidenced by a burned or melted effect. Damage may appear on and through the crown, through the ring lands, or both.

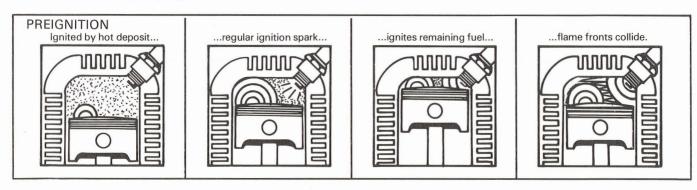
Another DANGER sign that preignition has been encountered, is evidenced by aluminum throw-off from the piston onto the spark plug.

A scuffing condition, almost without fail, will appear on the piston when severe detonation or preignition is encountered. It can, however, occur singly because of a loss of lubricant, improper piston to bore clearance or abnormally high combustion temperatures. It, too, can cause preignition.

Effects of high temperature on the spark plug is usually indicated by a clean white insulator core nose, and / or excessive electrode erosion.

In almost all cases, abnormal combustion can be completely eliminated by: (1) a regular maintenance schedule which includes a proper tune-up with particular attention to spark timing; (2) using spark plugs of the correct heat range for the engine and the type of running situation; (3) using a suitable grade of lubricant. (4) selecting a proper octane-rated fuel and maintaining correct mixtures in 2-cycle engines; and (5) keeping ALL cooling fins functional... free from dirt, mud, oil, and grease.

Abnormal combustion can be troublesome and expensive... but it can be averted with proper care and attention given to the engine, the fuel, and engine adjustments.



HEAT RANGE

The term "heat range" refers to the classification of spark plugs according to their ability to transfer heat from the firing tip of the insulator to the cooled cylinder head. The rate of heat transfer is controlled basically by the distance the head must travel to reach the cylinder head.

Since each engine has different temperature characteristics, typical temperature readings with hot and cold running plugs are as illustrated.

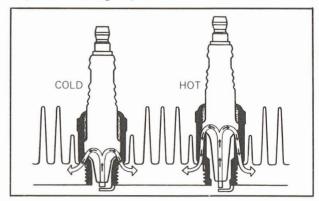
A "cold" type plug has a relatively short insulator nose and transfers heat very rapidly into the cylinder head.

Such a plug is used in heavy duty or continuous high speed operation to avoid overheating.

The "hot" type plug has a longer insulator nose and transfers heat more slowly away from its firing end. It runs hotter and burns off combustion deposits

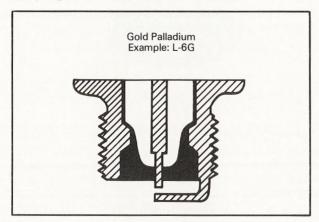
which might tend to foul the plug during prolonged idle or low speed operation.

Because plug temperatures vary in different engines, and under different engine service conditions, spark plugs are made in several "heat ranges" to meet these requirements and to provide satisfactory, dependable engine performance.



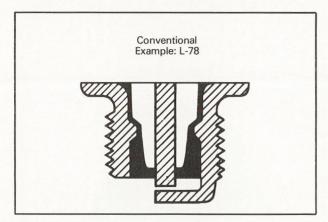
FIRING TIP DESIGN

The quality and condition of spark plugs are most important to the dependable performance of motor-cycle engines.



For special requirements, Champion offers a Gold Palladium spark plug having a small diameter center electrode. This semi-precious metal alloy makes it possible to provide extra performance design features resulting in faster, easier starts, fewer stalls and "false starts", reduced fouling deposits, and usually longer life.

The Gold Palladium requires less ignition voltage than the conventional massive electrode types. It also provides more clearance between the shell and the insulator for far better scavenging of fuel deposits and less fouling. Gold Palladium designs are identified by the suffix letter G in the numbering system.

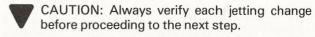


A conventional type Champion spark plug is available for every make and model of motorcycle. When used as recommended in Champion specification charts, this design will provide the dependable engine performance for which Champion is known the world over. Conventional types have no suffix letter to the number.

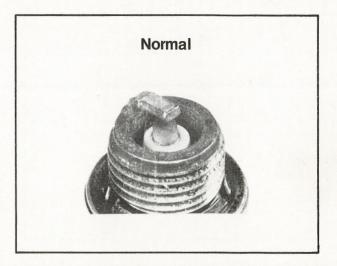
PLUG CHECK PROCEDURE

The best method to employ is as follows:

- A) Mark the twist grip and twist grip body to indicate \(\frac{1}{2} \frac{3}{4} \) throttle opening;
- CAUTION: It is best to start test with standard jetting or slightly richer to ensure engine protection.
- B) Run the motorcycle along a level ½ mile stretch of road open at full throttle opening, stop the engine, immediately and remove the spark plug for a plug reading;
- If the spark plug reads rich, fit a smaller main jet.
- If the plug reads lean, fit a larger main jet.
- C) If the plug indicates a proper mixture, proceed to ½ throttle opening and adjust as necessary, using:
- 1. Higher needle position (richer)
- 2. Lower needle position (leaner)
- 3. Larger needle jet (richer)
- 4. Smaller needle jet (leaner)
- D) Proceed to ¼ throttle opening for idle jet tuning.
- If the plug reads lean, fit a larger idle jet;
- If the plug reads rich, fit a smaller idle set.



SPARK PLUG ANALYSIS



Light tan to gray color and slight electrode wear indicate correct heat range.

Change plugs at regular intervals using same heat range.

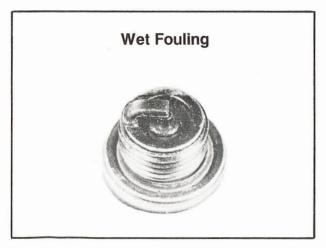
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Combustion particles wedged or fused between the electrodes or the core nose and shell.

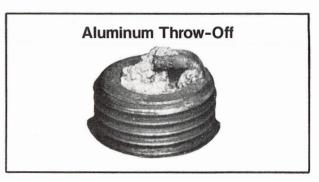
Both core bridging and gap bridging are caused by excessive combustion chamber deposits striking and adhering to the spark plug's firing end. They originate from the piston and cylinder head surfaces. These deposits are formed by one or a combination of the following:

Excessive carbon in cylinder. Use of non-recommended oils. Immediate high-speed operation after prolonged low-speed running. Improper ratio of fuel / oil mixture.



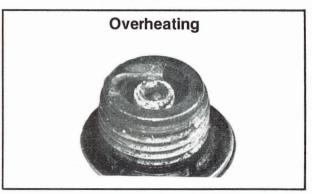
Damp or wet, black carbon coating over entire firing end. Forms sludge in some extreme cases.

Wrong spark plug heat range (too cold). Prolonged slow operation. Low-speed carburetor adjustment is too rich. Improper ratio of fuel-to-oil mixture. Weak or faulty ignition system, resulting in lack of voltage.



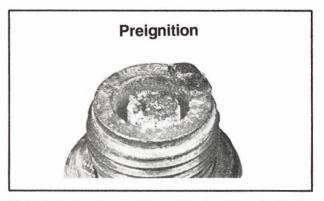
Aluminum deposits on electrodes and insulator core nose.

Caused by first stages of preignition within the cylinder which melts the aluminum alloy of the piston crown. Do not install new plug until piston is examined and the source of preignition is determined.



Electrodes badly eroded. Premature gap wear. Insulator has gray or white "blistered" appearance.

Incorrect spark plug heat range (too hot). Ignition timing overadvanced. Consistent high-speed operation.



Melted electrodes and / or white insulator indicates sustained preignition. (Insulator may be dirty due to misfiring or debris in the combustion chamber).

Check for correct plug heat range, proper lubrication and / or overadvanced ignition timing. Determine the cause of preignition before putting engine back into service.

CLEANING THE PLUG

If required, degrease the firing end of the plug with solvent. This will remove the oily film from the insulator. Remove the solvent with a dry, clean cloth and dry the plug with air blasts.

To remove deposits from the insulator and firing bore, use an abrasive-blast spark plug cleaner like Champion's Model 800 Spark Plug Cleaner and Tester or equivalent.

Light blasting should be sufficient to clean the firing end. Prolonged use of the abrasive blast may damage the insulator and electrodes.

Make sure all of the abrasive particles have been removed from the insulator, firing bore, threads, and gasket seat areas before reinstalling the plug.

FILING THE ELECTRODES

Do not file center electrode of Gold-Palladium or other fine center wire spark plugs.

Precious metal alloys are softer than conventional electrode alloys. They will not withstand heavy filing and can be easily bent.

REGAPPING THE PLUG

A correct gap setting is necessary for efficient firing. Too narrow a gap causes rough running at low speeds; too wide a gap results in engine missing because voltage is insufficient to jump the gap. The setting is determined for each engine by the manufacturer and should be maintened. Check the shop manual or the Champion recommendation chart for the recommended setting.

To adjust the gap, bend the side (ground) electrode only. Check the gap with a feeler gauge, preferably, a wire feeler gauge. Champion's gap tool has a built-in steel electrode bending fixture and thin, double-cut file.

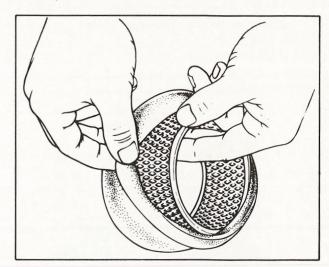
7) AIR FILTER SERVICING



WARNING: A dry or dirty filter will cause extreme piston and cylinder damage.

- Remove the seat. Clean the area around the filter.
- Remove the air filter. Do not allow dirt or dust to fall into the air box opening.

3. Separate the foam from the filter screen.

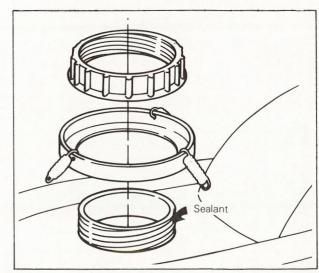


4. Thoroughly wash the foam in solvent or with soap and water and allow it to air dry.



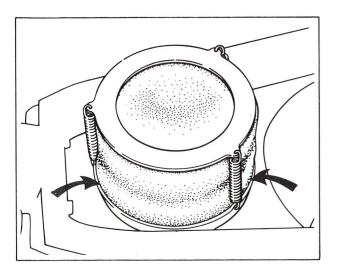
CAUTION: Do not dry filter foam with a high pressure air flow as it will lose its efficiency.

- 5. Remove the plastic nut retaining the metal filter pan. Remove the pan then thoroughly clean the air filter splash pan.
- 6. Inspect the interior of the air box. If dirt has entered, remedy the cause before re-assembly.
- NOTE: If dust or dirt is thought to have entered the engine, listen for piston noise or measure the piston clearance. Make sure that clearance is within tolerances.
 - 7. Run a bead of silicone sealant around the air box neck / pan joint. Drop the metal filter pan into place and screw the nut tightly into place.

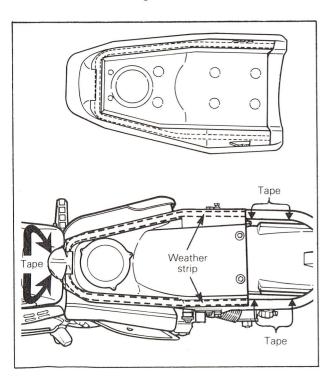


Page 14 Section 3-5

- 8. Pour 2 oz. of Can-Am filter Compound (or SAE 80 gear oil) onto the filter element and work it well into the foam until completely saturated.
- 9. Fit the screen into the foam element and install the filter.



- NOTE: be sure element edge is tucked into metal pan.
- 10. Tape the space between the fender and frame rail and between gas tank and frame to prevent water from entering the filter area.



- NOTE: Before competition in very dusty conditions, the top of the filter splash pan and the bottom of the seat should be coated with LPS No. 3 (P/N 413 900 700), or grease. This coating will help prevent contamination of the filter element.
- 11. Carry 2 or 3 extra filter elements (Pre-Serviced) for quick replacement between motos.

8) TROUBLE SHOOTING

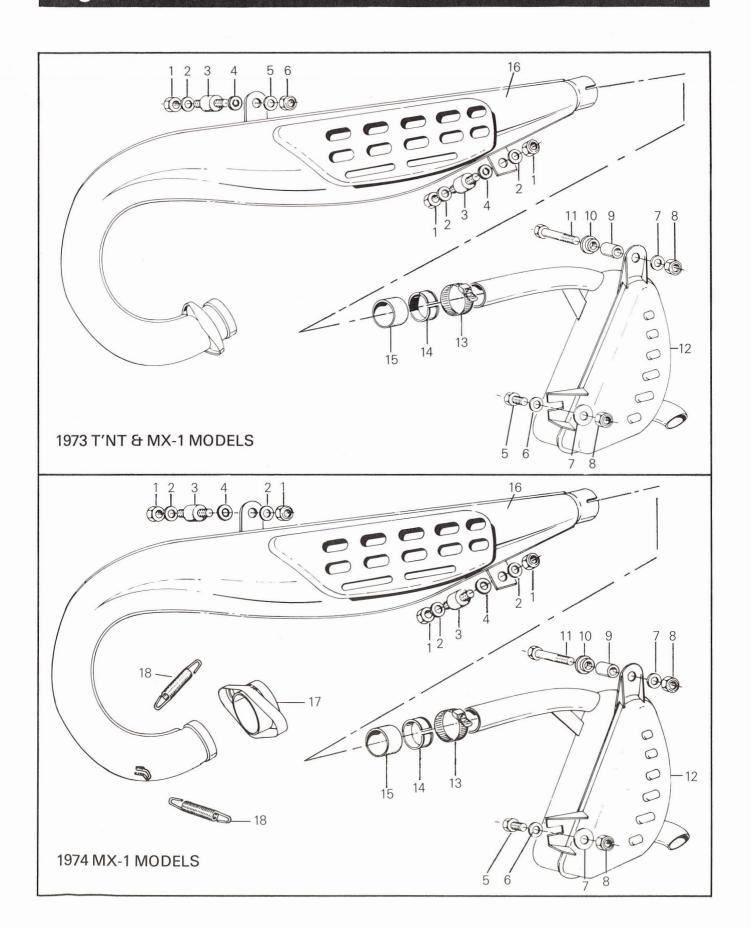
TROUBLE	CAUSE	REMEDY
Engine fails to start or does not start easily	No fuel is flowing to carburetor.	
	a) Restricted gas cap vent.	Check for mud or frost in cap vents. Gently suck on the ventilation hole located on the bottom center of the gas cap. If restriction persists, replace the gas cap.
	 b) Restricted carburetor float needle. Check for worn tip. 	Clean or replace with ''Viton'' tipped needle & seat kit.
	c) Clogged fuel line filter.	Replace. Check fuel valve sediment bowl.
	Deteriorated or old fuel.	Replace.
	3. Raw gas in crankcase.	Start the engine with the throttle fully opened. In extreme case remove the engine crankcase drain plug turn the shut-off valve to "O", and kick start until excess fuel is expelled and engine starts. Stop engine and replace drain plug.
	4. Insufficient compression.	
	 a) Crankcase compression leaks at oil seal. 	Replace seal.
	b) Crankcase compression leaks at mating surfaces.	Repair check head / cylinder / crankcase joints for leaks.
	c) Worn or stuck piston rings.	Replace.
	d) Worn cylinder.	Rebore oversize.
	e) Rotary valve cover leaks.	Repair or replace.
	 f) Incorrect squish clearance. 	Adjust to specifications.
	5. No spark at plug.	Check for fouled or defective spark plug; remove plug, ground it to the engine head and turn the engine with the kick starter. If no spark occurs, replace the plug and, if neces-
	a) Fouled plug. b) Wet plug.	sary, check the following items: Replace. Check air filter for contamination. Dry off and try again or replace (see item 3 above).
	c) Damaged charging coil.	Replace.
	d) Open or short circuit in ignition wires.	Check for moisture at the electronic control unit connector boot. Check for corroded, dirty or broken connectors. Repair or replace.
	e) Damaged electronic control unit.	Replace.

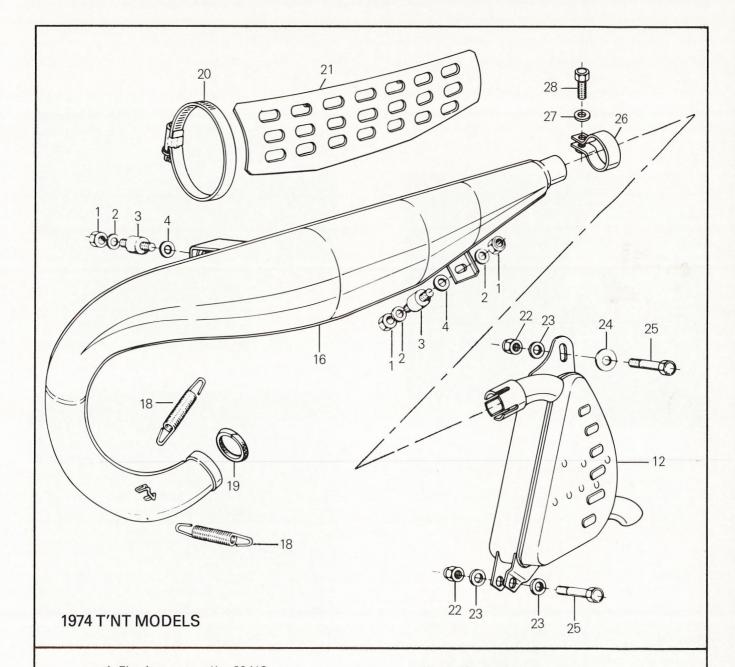
TROUBLE	CAUSE	REMEDY
Engine stalls frequently.	1. Fouled plug.	Replace. Check air filter for contamination.
nequently.	2. Restriction in the gas cap vent.	Check for mud or frost in cap vents. Gently suck on the ventilation hole located on the bottom center of the gas cap. If restriction
	Clogged fuel line filter. Clogged carburetor jets.	persists, replace the gas cap. Replace. Check fuel valve sediment bowl. Clean.
	5. Crankcase compression leaks.	Repair. Check head / cylinder / crankcase for leaks.
	6. Intake manifold or rotary valve cover leaks.	Repair or replace.
Engine does not have sufficient power.	 Worn cylinder and worn or stuck piston rings. 	Repair.
	 Incorrect ignition timing. Incorrect carburetor setting. 	Adjust at 9000 RPM with strobe light. Adjust.
	4. Clogged carburetor jets.	Clean.
	5. Incorrect float height.	Adjust (check float needle condition).
	6. Clogged air cleaner.	Service filter element.
	7. Cracked or crushed expansion chamber.	Repair or replace.
	8. Deteriorated or old fuel.	Replace.
	9. Carb. top plate reversed.	Remove & refit correctly.
	10. Incorrect squish clearance.	Adjust to specifications.
Engine overheats	Excessive carbon deposit on cylinder head.	Clean.
	2. Lean fuel mixture.	Clean, adjust or replace jets. Check head / cylinder joint.
	3. Incorrect ignition timing.	Adjust at 9000 RPM with strobelight.
	4. Choke body loose.	Apply Loctite & tighten screws.
	5. Air leak at carb. piston guide.	Apply silicone sealant.
Engine operation is erratic at high speed	1. Excessive plug gap.	Adjust or replace.
	Damaged electronic control unit.	Replace.
	3. Damaged charging coil.	Replace.
5	4. Clogged air cleaner element.	Service filter element.
	5. Incorrect float level.	Adjust. (Check float needle condition).
	6. Crankcase compression leaks.7. Broken or cracked expansion	Repair. Check head / cylinder joint. Repair or replace.
	chamber, broken muffler.	Trepair of replace.

TROUBLE	CAUSE	Adjust (if air screw has no effect, check for carb. piston wear). Adjust (Check float needle condition). Adjust or replace. Adjust at 9000 RPM with strobelight. Replace. Replace. Apply Loctite & tighten screws. Replace. Repair or replace. Repair or replace.		
Engine operation is erratic at low speed	 Carburetor air screw is improperly adjusted. Incorrect float level. Excessive spark plug gap or dirty electrodes. Incorrect ignition timing. Damaged electronic control unit. Damaged charging coil. Choke body loose. 			
Ignition fails to spark	Damaged electronic control unit. Short circuit in magneto. Shorted emergency stop switch.			
Spark plug electrodes are fouled	 Rich mixture (rich carburation or clogged air filter). Incorrect oil pump setting. Incorrect spark plug heat range. 	Adjust carburetor or service filter element. Adjust. Replace.		
Spark plug electrodes are burned	 Incorrect heat range. Overheating engine. Incorrect ignition timing. Loose spark plug. Lean mixture. 	Use specified plug. See ''engine overheats''. Adjust at 9000 RPM with strobelight. Tighten. Clean, adjust or replace jets. Check for air leaks.		

SUB-SECTION 3-6

EXHAUST SYSTEM





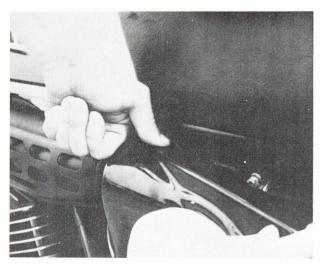
- 1. Elastic stop nut 1/4 x 20 NC
- 2. Flat washer 6 mm x 20 x 1"
- 3. Rubber mount
- 4. Asbestos washer
- 5. Hexagon cap screw M6 x 1.00 x 25
- 6. Flat washer 6 mm x 12 x 1.50
- 7. Flat washer 6 mm x 20 x 1.00
- 8. Elastic stop nut M6 x 1.00
- 9. Shock bracket spacer
- 10. Step washer
- 11. Hexagon cap screw M6 x 1.00 x 40
- 12. Muffler
- 13. Hose clamp
- 14. Muffler collar

- 15. Muffler packing
- 16. Exhaust pipe
- 17. Exhaust pipe flange
- 18. Spring
- 19. Exhaust packing
- 20. Hose clamp
- 21. Heat shield
- 22. Elastic stop nut M8 x 1.25
- 23. Flat washer 8 mm x 17 x 2
- 24. Flat washer 8 mm x 25 x 1.25
- 25. Hexagon cap screw M8 x 1.00 x 35
- 26. Clamp
- 27. Flat washer 6 mm x 12 x 1.50
- 28. Hexagon cap screw M6 x 1.00 x 16

REMOVAL

Remove the two screws retaining the left side panel. Press the panel down at the frame retaining pin and slide the cover off. Take care not to lose the rubber grommet.

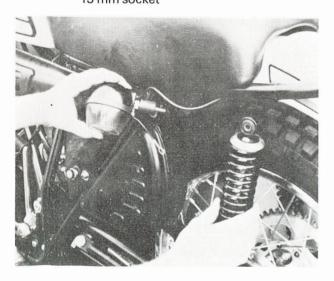
TOOLS: screwdriver



Remove the upper left'shock absorber mounting bolt and push the shock absorber back to provide clearance for muffler removal.

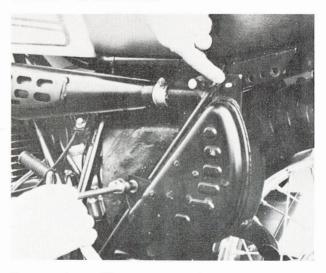
Remove the left turn signal on model 4841 and 4851. The shock absorber mounting bolt does not have to be removed.

TOOLS: 13 mm open end wrench 13 mm socket

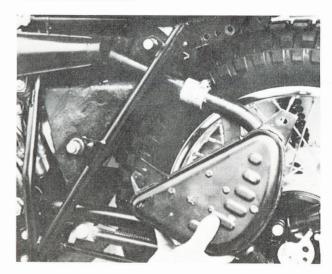


Remove the two muffler retaining nuts and bolts.

TOOLS: 10 mm wrench

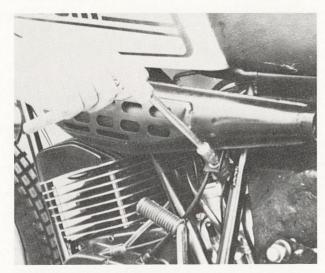


Remove the muffler.



Remove the two nuts and washers retaining the exhaust pipe to the rubber mounts.

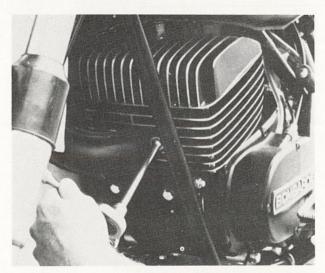
TOOLS: 12 mm socket



Remove the two nuts and lock washers retaining the exhaust pipe to the engine. (1973 models only)

On 1974 models, remove the retaining springs only.

TOOLS: 13 mm socket



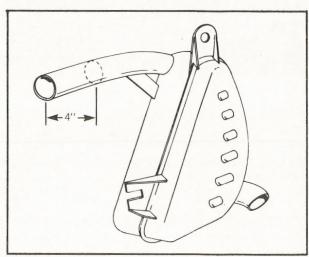
INSPECTION AND SERVICE

- Inspect the exhaust pipe and muffler for scratches, fractured flange, crushed surfaces, or fractured brackets, replace or repair as per condition.
- Inspect the muffler & exhaust packing (if applicable) for heat or age deterioration, replace if necessary.
- Inspect exhaust pipe for accumulation of carbon.
 Clean with a scraper or a length of old chain.
- Inspect nuts and rubber mounts, if damaged replace.

INSTALLATION

To install the exhaust pipe and muffler on the vehicle, inverse removal procedure.

NOTE: To fit a new muffler on 175 cc, 4" has to be cut off the muffler box stinger.

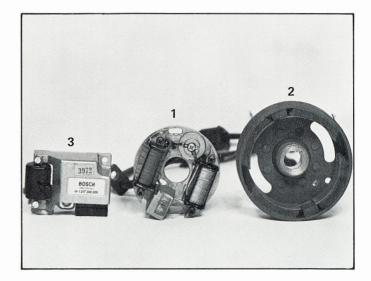


SUB-SECTION 3-7

ELECTRICAL

The Can-Am ignition system is a Bosch, Capacitor discharge (C.D.I.) magneto/generator system which consists of:

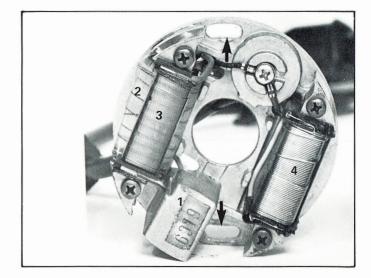
- The stator plate assembly.
 The flywheel.
- 3. The C.D.I. control unit.



The stator plate assembly has the following components:

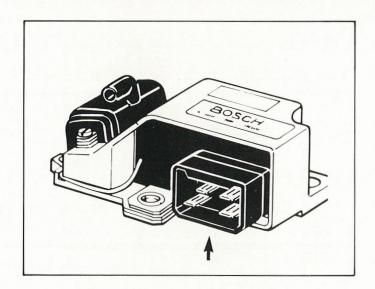
- 1. The base plate and trigger coil, with timing adjustment slots (arrows).
- 2. The ignition charging coil.
- 3. The lighting coil (15W).
- 4. The lighting coil (40W).

NOTE: The trigger coil is cast into the base plate and connot be removed.

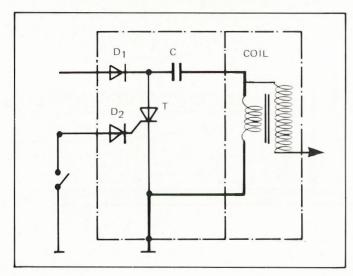


The flywheel consists of four, symmetrically magnetized ceramic magnets. The ignition is triggered by the overlapping lug terminals of the poles shoes. (arrow).





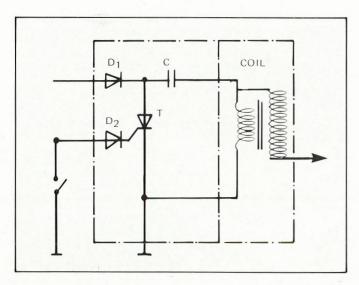
The C.D.I. control unit sealed with epoxy-resin, contains two diodes, a capacitor and a thyristor. The high tension coil is externally mounted. The stator plate wiring connects to the C.D.I. box with a 4-pole plug. (Arrow).



How it works

Charging the ignition:

The rotation of the magnetized flywheel induces alternative current in the charging coil. This current is rectified by a diode (D 1) to charge the storage capacitor (C) up to 350V.



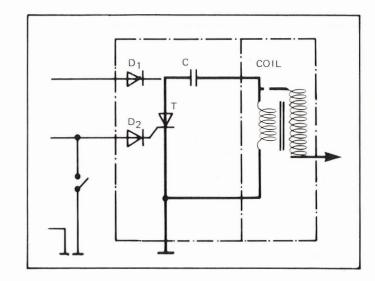
Triggering the ignition:

The trigger on the armature base plate consists of two coils, fitted on two iron cores, wound in a contrary direction. When the pole shoe lugs of the flywheel pass in front of the trigger coil, negative and positive voltages are induced in both coils. The positive impulse triggers the ignition while the negative impulse is stopped by a diode (D 2). The pole shoe without lugs induces impulses of equal phase in the two trigger coils, thus suppressing each other. Therefore, there is only one trigger impulse per flywheel revolution.

When the voltage of the trigger coil reaches the actuating tension of the thyristor, the thyristor (T) becomes conductive and the capacitor (C) discharges to ground, through the thyristor.

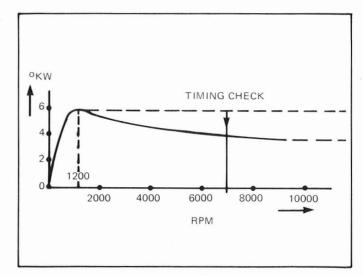
Discharging the ignition:

The discharge of the capacitor induces a sudden rise of current in the primary winding of the ignition coil, inducing high voltage in the secondary winding, and to the spark plug.



Electronic shift of ignition timing:

In the speed range from 0 up to 1200 rpm, an adjustment to advance the ignition about 4° will be caused by the fact that, with increasing speed, the trigger voltage of the Thyristor, which is necessary for ignition, will be reached earlier. Therefore it is necessary to check ignition timing at 7,000 rpm.



Ignition timing:

Remove the timing inspection plug, and connect the timing light pick-up to the high tension lead.

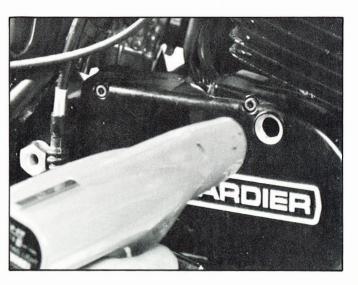
NOTE: Only stroboscopic timing lights utilizing a capacitor or inductive pick-up can be used to indicate correct spark setting without disturbing the electronic equilibrium of the ignition circuit.

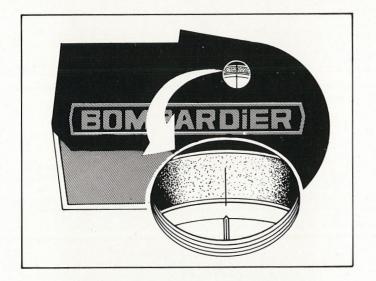
Examples of suitable timing lights: Sun PTL 45

Snap-on MT 215B Bosch EFAW 169A

Start the engine and allow it to warm up.

CAUTION: To prevent powerful electric shock, do not touch the high tension wire while engine is running.

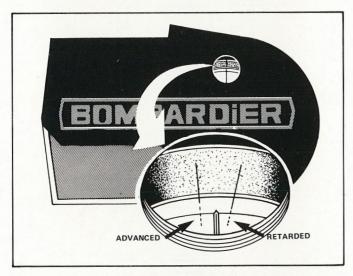




Holding the engine at a steady 7,000 rpm, point the timing light beam straight into the inspection hole.

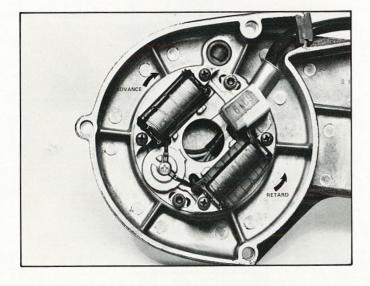
If the timing is correct, the timing marks will align as shown.

NOTE: Use a tachometer for accuracy.



If the timing is not correct:

- a) Note if advanced or retarded and mark the amount of misalignment. (see dotted line).
- b) Stop engine.



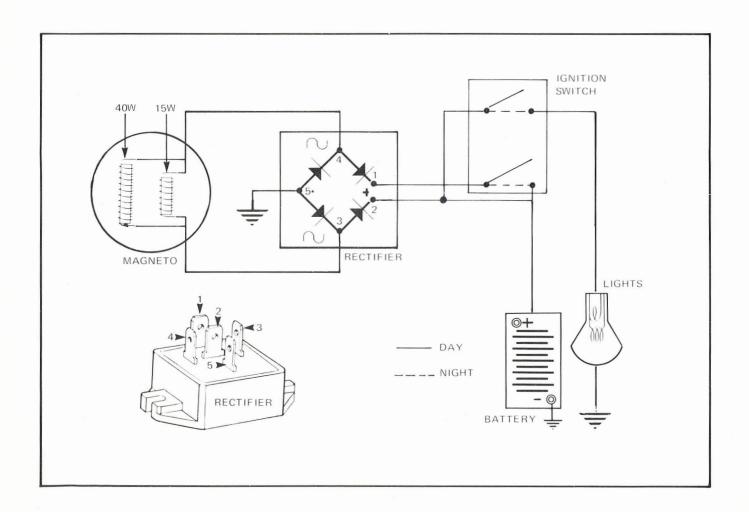
TO ADJUST TIMING:

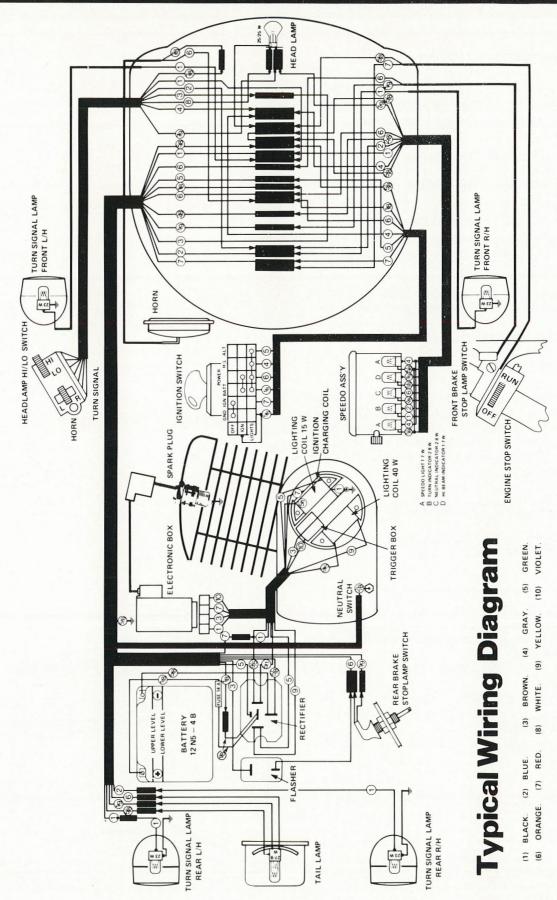
a) Remove magneto cover.

NOTE: Do not lose the 3 locating sleeves.

- b) Loosen the 2 Allen screws.
- c) Move the **stator plate** in the advance or retard direction to correct the misalignment.
- d) Tighten the 2 Allen screws.
- e) Replace the magneto cover, start engine, and at 7,000 rpm, recheck the timing mark alignment.
- f) Repeat this procedure until timing marks are perfectly aligned at 7,000 rpm.

The lighting system (T'NT):
The 40W lighting coil and the 15W lighting coil are wired together and are connected to the rectifier. When the ignition switch is at "Ignition", only 1/2 of the output is in use to limit the battery charge rate. When the switch is at "light" position, the full output is in use to cover the load.





1) SERVICE PRECAUTIONS

- A) In the event of any electrical trouble, study the wiring diagram to locate the possible cause and then check it out on the motorcycle.
- B) Check for a burned or broken fuse. DO NOT REPLACE THE FUSE UNTIL YOU HAVE CORRECTED THE CAUSE OF ITS FAIL-URE.
- C) Inspect circuits for broken or shorted wires.
- D) Check battery for level and specific gravity of the electrolyte. Check for loose or dirty battery connections.
- E) Be sure the battery vent tube is properly routed and not restricted in any way.

2) TESTING PROCEDURES

IGNITION SYSTEM

The emergency stop switch should be tested for continuity between BLACK and BROWN. When the switch is at the "on", the circuit should be open; at "off" the circuit should be closed. On T'NT the ignition switch must simultaneously be at "on" or "off".

CHARGING AND TRIGGER COIL

The charging and triggering coils can be tested with an OHMMETER.

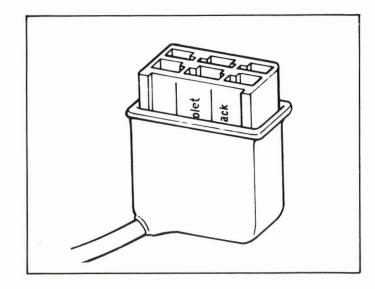
Disconnect the multiple connector at control unit and run a resistance test between the pins of the connector block:

between violet and brown (trigger coil) = 60 ohms ± 20 %

between red and brown:

Charging coil P/N 420-264-510 1200 ohms max.,1000 min.

Charging coil P/N 420-264-517 500 ohms max., 425 min.



Section 3-7 Page 9

TESTING PROCEDURES

Since both lighting coils are wired together, they can be tested together.

MX-1: The four wires are under the gas tank, but not used.

T'NT: They are connected to the two side con-

T'NT: They are connected to the two side connectors of the current rectifier.

The value of the two lighting coil (wired together) should be .73 ohm \pm 0.1.

If this is not the case, the coils should be tested independently, i.e.: separate the yellow from the green wire and test:

- A) yellow/green and yellow: $0.8 \pm .12$ ohms (largest coil)
- B) green/black and green: 8 ± 1 ohms (smallest coil)

NOTE: The wires should be disconnected from the current rectifier in order to run this text.

BATTERY

To check the state of charge of a battery, use a hydrometer. The reading should be 1.260 at 68° F., for a completely charged battery. If the reading is below 1.230, charge the battery at the rate of 0.5 amp/hr until the density becomes 1.260.

If this reading cannot be attained, the battery should be replaced.

CURRENT RECTIFIER

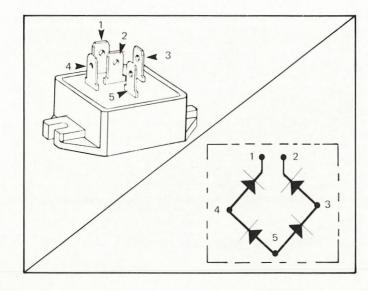
The current rectifier used on the Can-Am motorcycle is made of two double diode rectifier circuits. The diodes can be tested with an ohmmeter.

Each diode must be tested separately and in each direction as follows:

Positive lead	Negative lead
of tester:	of tester:
5	$3 = 1300 \text{ ohms} \pm 100$
5	$4 = 1300 \text{ ohms } \pm 100$
4	$1 = 1300 \text{ ohms} \pm 100$
3	$2 = 1300 \text{ ohms} \pm 100$

Readings should be equal for each diode.

Reverse the polarity of tester and repeat test: Each diode should show an open circuit other wise the rectifier should be replaced.



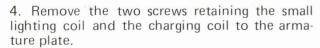
3) OVERHAUL PROCEDURES

MAGNETO

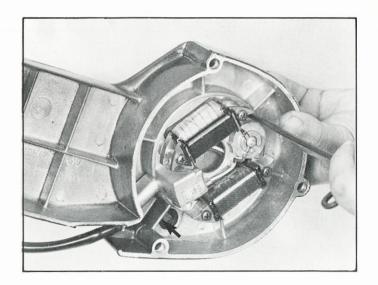
Disassembly

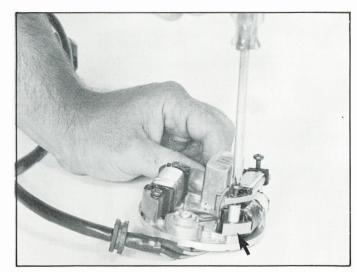
- 1. Remove magneto cover as per section 3-3.
- 2. Disconnect the wiring harness from the control unit and from the currect rectifier (T'NT).
- 3. Remove the two screws retaining the stator plate to the magneto cover. Remove stator plate from cover with its wiring harness.

Take note of the position of the metal shield (see arrow).



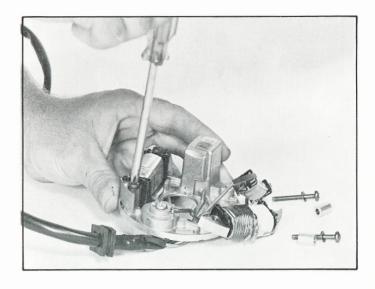
NOTE: Some charging coils may have spacers (two at each end of the coils). Take note of the position of these spacers. (arrow) These spacers are required when bosses on stator plate is 10.5 mm high. They are not required if bosses are 12 mm high.



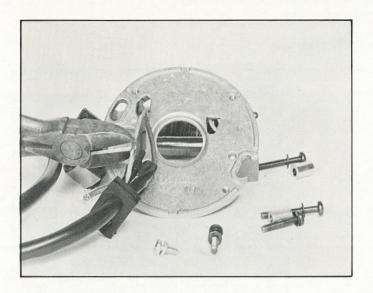


- 5. Remove the two screws retaining the large lighting coil to the armature plate.
- 6. Remove the screw retaining the ground terminal.

Mark the position of the stator plate in the magneto cover for ease of assembly and engine timing.



Section 3-7 Page 11



7. Slice the plastic harness open for one inch from the armature plate end. Cut each splice connector and remove the coils to be replaced from the stator plate.

Assembly

- 1. Connect all wires with new splice connectors and carefully tape the end section of the harness.
- 2. Reinstall the coils in their proper position, using "Loctite" on each screw.
- 3. Install the stator plate in the magneto cover.
- 4. Install magneto cover and check engine timing.

NOTE: Due to tolerance in electrical components, timing must be checked any time an ignition part is replaced.

ELECTRICAL SYSTEM

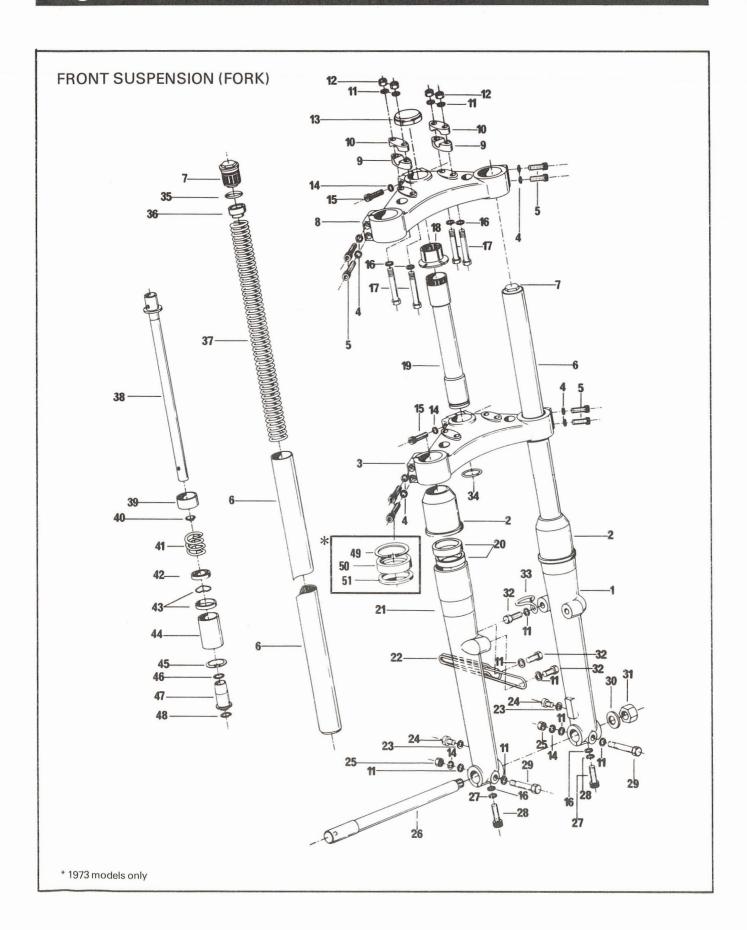
TROUBLE SHOOTING

PROBLEM	CAUSE	REMEDY
IGNITION		The state of the s
No spark at plug.	 Fouled or defective spark plug. Defective high tension wire. Defective electronic control 	Clean or replace. Check oil pump setting. Replace (Use silicone sealer). Replace.
	unit. 4. Defective connection between magneto & control unit.	Check connector block for corrosion or trapped water. (Use silicone compound DC-4). Check wiring harness.
	5. Defective trigger coil.	Check impedance of coil (see procedures). Check for shorted wires at stator plate.
	6. Defective or wet charging coil.	Check impedance of coil (See procedures). Air dry or replace. Check for burned or shorted wires at stator plate.
	7. Defective emergency stop switch or switch wiring.	When emergency switch and ignition switch are at "ON", circuit should be open. Check between black wire (at control unit) and frame.
Emergency switch does not stop engine.	Defective switch. Loose or broken ground wires.	Repair or replace. Repair.
ACCESSORIES (T'NT)		
Lights don't work.	Burned bulbs. Burned fuse. Defective Ignition Switch.	Replace. Replace but locate problem first. Replace
Lights work only when engine is	Loose or broken battery connections.	Repair.
running.	Battery is dead.	Recharge.
	a) Defective lighting coils.b) Defective rectifier.	Replace.
Headlamp does not dim.	Defective dimmer switch. Burned elements.	Repair or replace. Replace.
Turn signal lamps do not work.	Defective flasher unit. Burned bulb(s). Defective turn signal switch. Burned fuse.	Replace. Replace. Repair or replace. Replace.
Horn does not work.	Defective horn button. Defective horn.	Replace or repair. Replace.

SUB-SECTION 3-8

SUSPENSION

FRONT SUSPENSION
REAR SUSPENSION



- 1. Fork slider left
- 2. Dust boot (2)
- 3. Lower triple clamp
- 4. Lock washer 6 mm (8)
- 5. Allen screw M6 x 1.00 x 30 (8)
- 6. Fork tube (2)
- 7. Fork spring retaining cap (2)
- 8. Top triple clamp
- 9. Handlebar clamp bottom (2)
- 10. Handlebar clamp top (2)
- 11. Washer 8 mm x 17 x 2 (11)
- 12. Elastic stop nut M8 x 1.25 (4)
- 13. Steering stem cap nut
- 14. Lock washer 8 mm
- 15. Allen screw M8 x 1.25 x 30 (2)
- 16. Flat washer 8 mm x 14 x 1.5 (6)
- 17. Hexagon screw M8 x 1.25 x 75 (4)

- 18. Steering stem adjuster nut
- 19. Steering stem
- 20. Main fork seal (4)
- 21. Fork slider right
- 22. Speedometer cable guide
- 23. Fiber washer (2)
- 24. Drain screw (2)
- 25. Hexagon nut M8 x 1.25 (2)
- 26. Front axle
- 27. Lock washer 8 mm (2)
- 28. Allen screw M8 x 1.25 x 25 (2)
- 29. Hexagon screw M8 x 1.25 x 55 (2)
- 30. Axle washer
- 31. Axle nut
- 32. Hexagon screw M8 x 1.25 x 16 (3)
- 33. Brake cable guide
- 34. Circlip

- 35. "O" ring (2)
- 36. Spring upper guide (2)
- 37. Fork spring (2)
- 38. Damping rod (2)
- 39. Bushing (2)
- 40. Circlip (2)
- 41. Top out spring (2)
- 42. Valve orifice (2)
- 43. Valve washer (2)
- 44. Damper body support (2)
- 45. Circlip (2)
- 46. Fiber washer (2)
- 47. Valve (2)
- 48. "O" ring (2)
- 49. Circlip (2)
- 50. Fork seal (2)
- 51. Spacer (2)

FRONT FORK ALIGNMENT

To correct any misalignment, loosen the two (2) Allen screws on each side of the top and lower triple clamp, hold the front wheel tightly between your legs and twist the handlebars right or left as necessary. Tighten the screws and test ride for result.

FRONT SUSPENSION MAINTENANCE

STEERING STEM

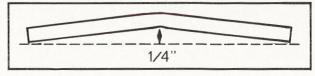
- 1. Check for loose or rough bearings.
- 2. Rough bearings must be replaced. Loose bearings must be adjusted as follows:
- a) Loosen the stem top nut and the 5 Allen head screws retaining the upper crown.
- b) Tighten the adjuster nut until the steering becomes snug, but not tight.
- c) Tap the upper crown down against the adjuster nut then tighten the top nut and the 5 Allen screws.

FORK SLIDER & TUBES

- Place the motorcycle on a stand so the front wheel is off the ground. Remove the front wheel and the fork springs.
- 2. Slowly lift each slider and check for grinding noises, stiff spots or dented sliders.
- 3. If necessary disassemble the forks and inspect all sliding surface for pitting or scratches, etc.
- 4. Rotate each fork tube against a straight edge, checking for bends. Any slight bends may be straightened in a press.



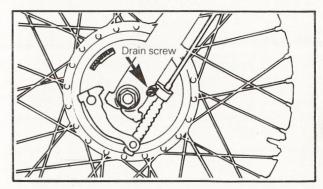
CAUTION: Tubes bent more than 1/4" must be replaced.



- 5. Reassemble the forks and check the alignment.
- 6. Refill each leg with fresh fork oil.

FORK OIL CHANGE

To change fork oil, remove the fork spring retaining cap counter-clockwise with 25 mm wrench, place drain pan underneath the fork leg and remove the drain screw from the bottom side of fork slider with a standard tip screwdriver. Bounce the forks a few times to insure complete draining of all the oil.



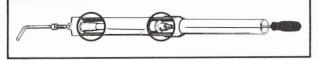
- Examine drain screw fiber washer and replace if necessary.
- Reinstall drain plug and fiber washer and tighten firmly.
- Add fork oil as required and reinstall the fork spring retaining cap.
- NOTE: This operation should be performed on one leg at a time.

OPTIONS	SOFT	MEDIUM	FIRM
RIDER WEIGHT	Up to 150 lbs	150 to 200 lbs	200 lbs plus
FORK OIL	SAE 10	SAE 20	SAE 30
MINIMUM CAPACITY	180 cc	180 cc	180 cc
MAXIMUM CAPACITY	200 cc	200 cc	200 cc

FORK SERVICE

Removal

- Mount motorcycle on a stand or box with front wheel raised.
- Remove front wheel assembly.
- Remove the fork spring retaining cap, then drain fork oil. Reinstall drain screws.
- Remove damper rod retaining screw.
- NOTE: With the fork springs removed, and using an appropriate screwdriver, locate damper rod holding slot, then remove retaining screw.

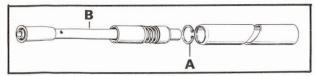




CAUTION: Never insert any jamming device into oil drain orifice or slider may be damaged.

- Pull sliders down and off fork tubes.
- NOTE: Slider-to-damper grip may impede slider removal. If so, insert axle into slider and strike it downwards using a soft faced hammer.

Remove the large circlip (A) from bottom of the fork tube.



Pull the damper assembly (B) down from the fork tube.

- To remove fork tubes slacken the two Allen screws on each triple clamp then slide fork tubes downwards.
- NOTE: On T'NT models, slacken the headlamp bracket retaining bolts prior to sliding fork tubes downwards.

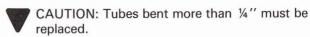
CLEANING AND INSPECTION

 Clean all parts carefully with a general purpose solvent.



WARNING: Solvent with a low flash point such as gasoline, naphta, benzol, etc. should not be used as each is flammable and explosive.

- Inspect all parts for damage, excessive wear or dents, replace if necessary.
- Inspect the fork seals, replace if worn excessively or damaged.
- Check if fork tubes are bent.



 Check if the fork springs are broken, sagged, or worn.



CAUTION: If the fork springs need replacing, both springs should be replaced.

- Inspect dust boots, if damaged replace.

FORK SEAL REPLACEMENT

 Disassemble forks and carefully remove old fork seals.



CAUTION: Do not scratch or damage inside of fork slider when removing fork seals.

- Make sure seal housing is round and is undented.
 The seal seats in this area therefore the wall must be uniform.
- Install spacer under the seal.
- Install seal in fork leg with oil cavities facing downwards. (No tool is needed: seal is hand-pressed into housing.)
- Install circlip. (sharp edge up). There will be some clearance between circlip and seal. This clearance is normal and should not be altered.
- Re-assemble forks and install dust boots.
- Fill each fork leg with the recommended amount of fork oil.

minimum capacity: 180 cc maximum capacity: 200 cc

On the 1974 T'NT models, two fork seals are used in each fork leg, instead of the circlip and spacer. To remove damaged fork seals from 1974 T'NT models, pry them out using a screwdriver.



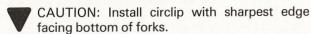
CAUTION: Use an appropriate cushion between the screwdriver blade and the fork slider top portion when prying seals out. Take care not to scratch or damage inside of fork slider.

The seals are a press-fit in the fork dampers, the use of an oil seal insertion jig is needed to fit new seals.

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Re-Assembly

- Re-install fork tubes then tighten the Allen screws of top and lower crown.
- Push the damper assembly back into the fork tube and replace the circlip.



 Lubricate seals with oil and gently ease sliders up onto fork tubes until they contact the damper rods.

NOTE: The slider with a brake plate anchor lug is to be installed on the left.

- Insert damper rod retaining screw and tighten securely. (Use an appropriate screwdriver to hold damper rod firmly.)
- Insert fork springs and temporarily install fork spring retaining caps.
- Install front wheel assembly.
- NOTE: Spin wheel in forward rotation, apply brake. Hold the brake on while tightening axle nut. This is important as it centers the brake shoes.

CAUTION: Briskly compress forks (with front brake applied) to align fork legs before tightening axle pinch bolts.

 Remove spring retaining caps and add fork oil as required.

OPTIONS	SOFT	MEDIUM	FIRM
RIDER WEIGHT	Up to 150 lbs	150 to 200 lbs	200 lbs plus
FORK OIL	SAE 10	SAE 20	SAE30
MINIMUM CAPACITY	180 cc	180 cc	180 cc
MAXIMUM CAPACITY	200 cc	200 cc	200 cc

FORK SPRING RATE

To test the fork spring rate for your particular weight, ride the motorcycle at approximately 30 mph and, stopping briskly, note the amount of fork compression. Should the forks compress no more than $\frac{2}{3}$ of their full travel, optional springs are available from your Can-Am motorcycle dealer.

NOTE: A tie wrap around one fork tube will provide an excellent gauge.

0	40 11	
Optional:	19 lbs.	
Optional:	18 lbs.	
Optional:	16 lbs.	
Optional:	14 / 24 lbs.	

FORK DAMPING

The fork damping is directly affected by the oil viscosity; the higher the viscosity, the stiffer the damping.

NOTE: Use non-detergent oils to prevent oil foaming.

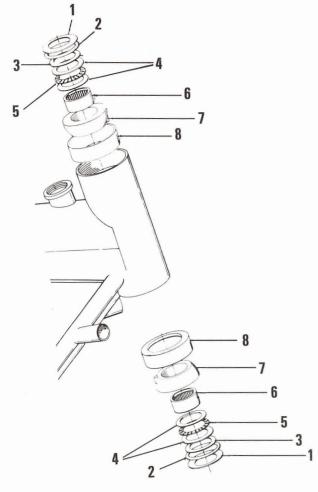
To test the fork damping, stand astride the bike, apply the front brake and push briskly downwards on the handlebars to compress the forks. You should be able to compress the forks to about ½ their travel. If the forks are too stiff, change the grade of fork oil for a thinner oil (*ATF or SAE 20). If too soft, change for a thicker fork oil (SAE 20 or SAE 30). If desired damping cannot be achieved within grades from *ATF to SAE 30, the forks are probably damaged or excessively worn.

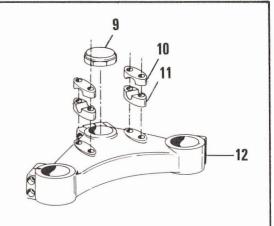
NOTE: The forks should never "bottom".

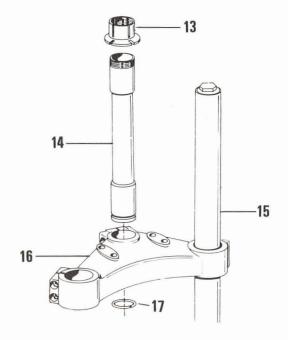
Test ride the bike to get accustomed to its new handling. You may want to further modify its characteristics. Experience will help select the perfect suspension combination for your requirements.

*ATF: Automatic transmission fluid.









- 1. "O" ring retainer (2)
- 2. "O" ring 1½" x 1¾ x 1/8 (2)
- 3. Shim .024" (2)
- 4. Thrust washer (4)
- 5. Thrust bearing (2)
- 6. Needle bearing (2)
- 7. Steering cone (2)
- 8. Steering cup (2) 9. Steering stem cap nut

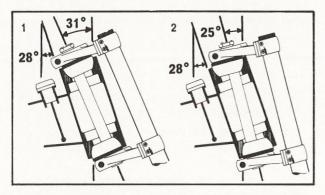
- 10. Handlebar clamp top (2)
- 11. Handlebar clamp bottom (2)
- 12. Top triple clamp
- 13. Adjuster stem nut (split nut)
- 14. Steering stem
- 15. Fork tube
- 16. Lower triple clamp
- 17. Circlip

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FORK ANGLE VARIATIONS

The standard fork angle on your Can-Am motorcycle is 30° this provides the optimum steering and handling for most types of riding. However the fork angle is adjustable from 25° to 31° inclusive. This provides the fork angles that may be more suitable for specific racing or competition applications.

- 1. An extended fork angle provides greater stability at high speeds.
- 2. A retracted fork angle provides more maneuverability in restricted areas or on trials sections.



The standard frame angle is $28^{\circ}\,$.

The standard fork angle is 30°.



WARNING: Incorrect fork angle may cause adverse handling conditions.

FORK ANGLE RECOMMENDATIONS			
Fast road work	28° to 30°		
Motocross	30° to 31°		
Oval racing	25° to 28°		

FORK ANGLE ADJUSTMENT DISASSEMBLY

- 1. Mount the motorcycle on a stand or a box, so that the front wheel does not touch the ground.
- 2. Loosen the Allen screws retaining the fork legs to the upper crown.
- 3. Loosen the Allen screw retaining the upper crown to the steering stem.
- 4. Remove the front brake cable from the lever.
- 5. On T'NT models, disconnect the speedometer cable.
- 6. Remove the steering stem nut.
- 7. Remove handlebar and crown and let it hang by the control cables.
- 8. On T'NT models, remove the two side reflector nuts retaining the headlamp to the brackets. Let the headlamp hang by the wiring harness.
- 9. Support the fork assembly and remove steering stem split nut.
- 10. Remove the upper "O" ring retainer, the "O" ring, the first thrust washers, the thrust bearing then finally the second thrust washer. Place them in order on a clean rag.
- 11. Carefully lower the fork assembly from the frame head.

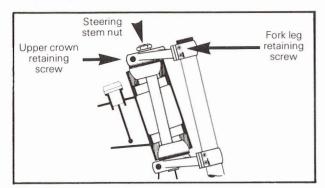
The following table gives a list of cones to be used to attain a given fork angle.

UPPER BEARING			LOWER BEARING			
FORK ANGLE	CONE KEY POSITION	CAN-AM PART NO.	CONE ANGLE	CONE KEY POSITION	CAN-AM PART NO.	CONE ANGLE
31°	FORWARD (F)	746 010 300	+11/2	REARWARD (R)	746 010 300	+11/2
30½ °	F	746 010 300	+ 11/2	R	746 010 200	+1
* 30°	F	746 010 200	+1	R	746 010 200	+1
. 29½ °	F	746 010 200	+1	R	746 010 100	+1
290	F	746 010 100	+ ½	R	746 010 100	+ ½
281/2 0	F	746 010 100	+ ½	RorF	746 010 000	0
28°	ForR	746 010 000	0	RorF	746 010 000	0
271/20	R	746 010 100	- 1/2	F	746 010 000	0
27°	R	746 010 100	- 1/2	F	746 010 100	- 1/2
261/2 0	R	746 010 200	-1	F	746 010 100	- 1/2
26°	R	746 010 200	-1	F	746 010 200	-1
251/2 0	R	746 010 300	- 11/2	F	746 010 200	-1
25°	R	746 010 300	-11/2	F	746 010 300	-11/2

12. Remove the upper and lower cones from their cups.



WARNING: Do not attempt to remove or turn the cups., They are pressed into the frame head and misalignment would result in the forks being positioned out of line with the frame.



CLEANING AND INSPECTION

 Clean all parts carefully with a general purpose solvent.

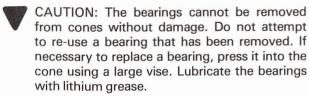


WARNING: Solvent with low flash point such as gasoline, naphtha, benzol, etc, should not be used as each is flammable and explosive.

- Inspect bearing journals of the steering stem.
- Inspect "O" rings. If damaged replace.
- Inspect the thrust needle bearings and the thrust washers. If damaged, replace.
- Inspect steering cone needle bearing. If damaged, replace.

ASSEMBLY

- 1. Select the cones needed and determine their position as per the table.
- Coat the round surface of both cones with a thick coat of silicone sealant.
- 3. Install the cones in the cups in their respective position, making sure that the cone key perfectly aligns with the cup keyway.
- NOTE: A small punch mark on each cone and on the steering head will facilitate alignment.



4. Lubricate both needle thrust bearings and the "O" rings with lithium grease. Replace fork assembly into frame head being careful not to damage or move the cups.

- 5. Replace the upper thrust washer, the thrust bearing, the other thrust washers, the "O" ring and the "O" ring retainer.
- Position the steering stem locking split nut then tighten it until the steering becomes snug, but not tight.
- 7. Replace handlebar, crown and stem nut. Tighten the five (5) Allen screws holding the fork leg and steering stem to the upper crown.
- 8. Reconnect brake and speedometer cables. Reinstall the headlamp.

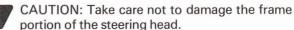
STEERING STEM REPLACEMENT

To replace steering stem, take the steering head apart as explained above.

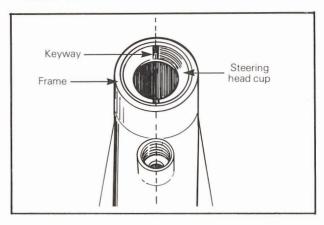
- 1. Remove the front fender from lower triple crown.
- 2. Loosen the Allen screws (6 mm wrench) retaining the steering stem to the lower crown.
- 3. Tap gently on the steering stem top portion to lower it through the triple clamp. Remove the circlip.
- 4. To re-install a new steering stem inverse the removal procedure.
- NOTE: At assembly, lightly grease the stem and tighten adjuster nut until the steering becomes snug, but not tight.

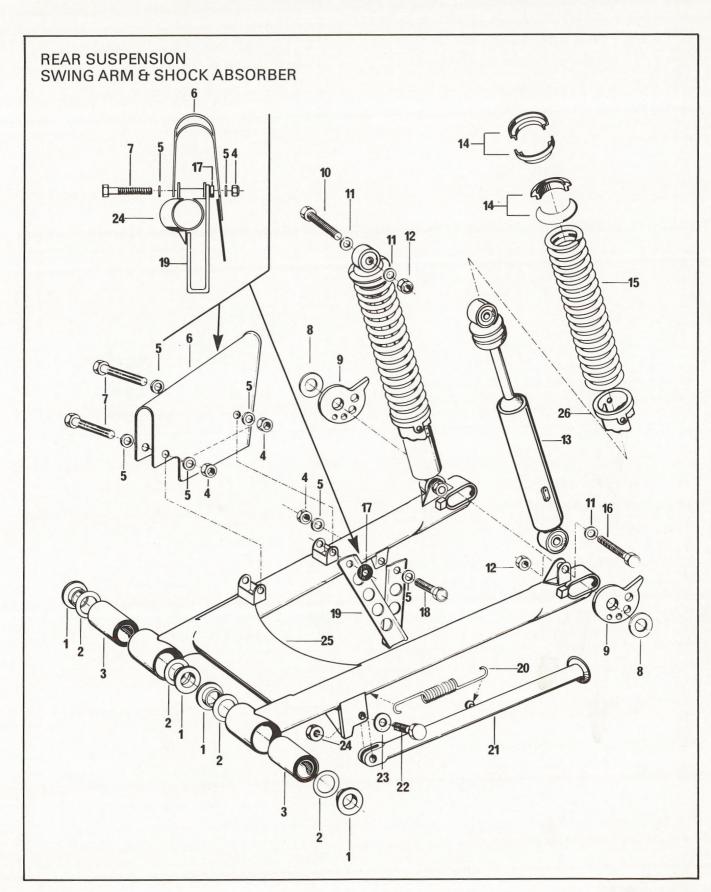
STEERING HEAD CUP REPLACEMENT

- To replace steering head cups, remove the front fork completely.
- Remove the gas tank.
- Remove the damaged cups using a hammer and punch.



 Use a press to fit new cups into place. The key has to be in the center line with the frame.





- 1. Flanged bushing (4)
- 2. Shims .036", .018" (as required)
- 3. Swing arm bushing (2)
- 4. Elastic stop nut M6 x 1.00 (2)
- 5. Flat washer 6 mm x 12 x 1.50 (6)
- 6. Chain guard
- 7. Hexagon bolt M6 x 1.00 x 50 (2)
- 8. Flat washer 17 mm x 28 x 2 (2)
- 9. Cam adjuster
- 10. Hexagon bolt M8 x 1.25 x 40 (2)
- 11. Flat washer 8 mm x 17 x 2 (6)
- 12. Elastic stop nut M8 x 1.25 (4)
- 13. Shock absorber (2)

- 14. Spring collar (2)
- 15. Shock absorber spring (2)
- 16. Hexagon bolt M8 x 1.25 x 35 (2)
- 17. Spacer
- 18. Hexagon bolt M6 x 1.00 x 18
- 19. Chain guide
- 20. Side stand spring
- 21. Side stand
- 22. Hexagon bolt M10 x 1.50 x 35
- 23. Flat washer 10 mm x 21 x 2.5
- 24. Elastic stop nut M10 x 1.50
- 25. Swing arm
- 26. Adjuster ring.

The Can-Am motorcycle swing arm is mounted on two bonded "rubber" bushings which if properly installed and shimmed, are absolutely maintenance free

REMOVAL

- Remove drive chain and rear wheel.
- Unscrew the two lower bolts of the shock absorbers, and pull shocks away from swing arm.
- Unscrew the swing arm pivot bolt nut and remove swing arm pivot bolt. Pull swing arm from its position. Observe the position of the shim / s on each side of flanged bushing.
- Unscrew the two upper bolts of the shock absorber. Remove shocks.

CLEANING AND INSPECTION

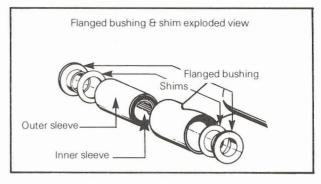
- Clean all parts carefully using a general purpose solvent.
- W as
 - WARNING: Solvent with a low flash point such as gasoline, naphtha, benzol, etc, should not be used as each is flammable and explosive.
- Check if swing arm is bent, cracked or twisted, repair or replace if necessary.
- Check swing arm bushings. If damaged, replace.
- Check chain guide & chain guard. If bent, worn or cracked, repair or replace.
- Check side stand bolt and spring. If worn or damaged, replace.

INSTALLATION INSTRUCTIONS

Shimming:

When a swing arm assembly or any associated parts are replaced, the following instructions apply:

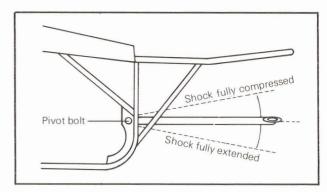
1. Fit a flanged bushing and a .018" shim into each end of each swing arm bushings.



- The swing arm should now slide firmly into place without any clearance between the flanged bushings and the frame plates or the engine mount boss.
- NOTE: If clearance is noted between a flanged bushing and the frame or the engine mount boss, a .036" shim may be required at that particular flanged bushing.
- 3. Insert the swing arm pivot bolt.
- 4. PLACE THE SWING ARM AT THE MIDDLE OF ITS TRAVEL, THEN TIGHTEN THE PIVOT BOLT.



CAUTION: The bushings are maintenance free but the pivot bolt must be tight or sleeve damage will occur.



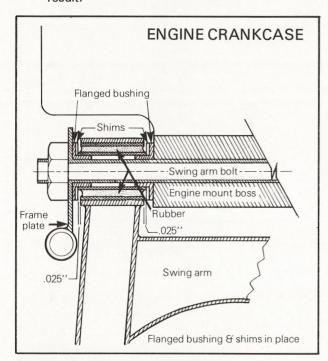
Tighten pivot bolt when swing arm is positioned mid-way. (Torque to 65-75 ft-lbs).

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5. Using feeler gauges, check that there is at least .020" clearance between the shims and the swing arm bushing **outer** sleeve.



CAUTION: If there is insufficient clearance between the shim and the outer sleeve, the inner sleeve may have been forced to one side causing the outer sleeve to bind on the frame or the engine. Stiff swing arm action will therefore result.

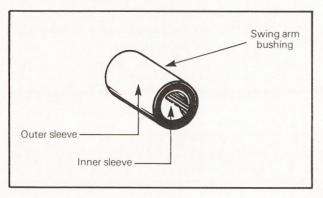


BUSHING REPLACEMENT

- 1. Using an 1.240" dia. adaptor, press the outer steel sleeve out of the swing arm.
- Using the same adaptor, press the new bushing into the swing arm until the inner steel sleeve protrudes equally on both sides of the swing arm boss.

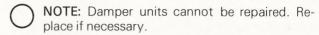


CAUTION: Do not apply pressure to the inner steel sleeve or the bonded rubber will shear and be destroyed.



SHOCK ABSORBERS

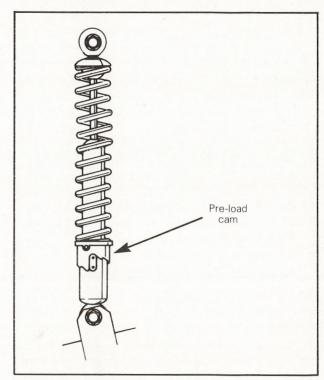
- 1. Check each shock absorber for:
- a) Damping action
- b) Bent shaft
- c) Leaking oil seal
- d) Body damage



Check the condition of the shock unit bushings and bolts.

SHOCK ABSORBER PRE-LOAD

To set the rear spring pre-load, place yourself on the motorcycle in the normal riding position. Check the rear spring sag. The shock should not settle down more than one inch. If so, adjust the spring pre-load cam position.

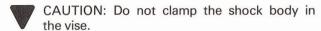


SHOCK ABSORBER DAMPING

- NOTE: Occasionally an air void may develop in the pressure chamber of a shock. To bleed this air from the pressure chamber:
- 1. Hold shock in normal vertical position (top end up) then fully extend shock.
- Turn the shock upside down and fully depress shock.
- 3. Repeat this procedure five (5) to six (6) times to make sure the air is properly bled.

TEST PROCEDURE

- Remove both shocks from motorcycle, and remove the shock springs.
- With the shocks in a vertical position, clamp lower mounts in a vise.



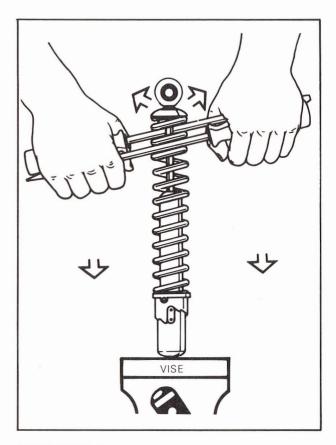
- Compress and extend each shock by hand at various speeds and compare the resistance of one shock to the other.
- NOTE: Obtain a known good shock for comparison purposes.
- 4. Pay attention to the following conditions that will denote a defective shock.
- A skip or a hang back when reversing stroke at mid travel.
- Seizing or binding condition except at extreme end of either stroke.
- Oil leakage.
- A gurgling noise, after completing one full compression and extension stroke.
- NOTE: Keep in mind that the rebound resistance (retracting the shock) is normally stronger than the compression resistance. (Approximately 2:1).

SHOCK ABSORBER SPRING RATE:

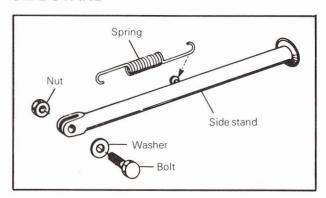
To check the shock spring rate, test ride the motor-cycle on a bumpy track. Normally, the rear shocks should "bottom" only on the toughest bumps.

Optional springs:	100 lbs
	88 lbs.
	82 lbs.
	75 lbs.
	65 lbs.
5	55 lbs.
	60 / 90 (progressive)
	45 / 70 lbs. (progressive)
	, 0

Springs with various ratings, can be obtained from your Can-Am motorcycle dealer.



SIDE STAND



The side stand is mounted with a tension spring. To remove, fold the stand to a closed position, remove the spring, then the attaching bolt.



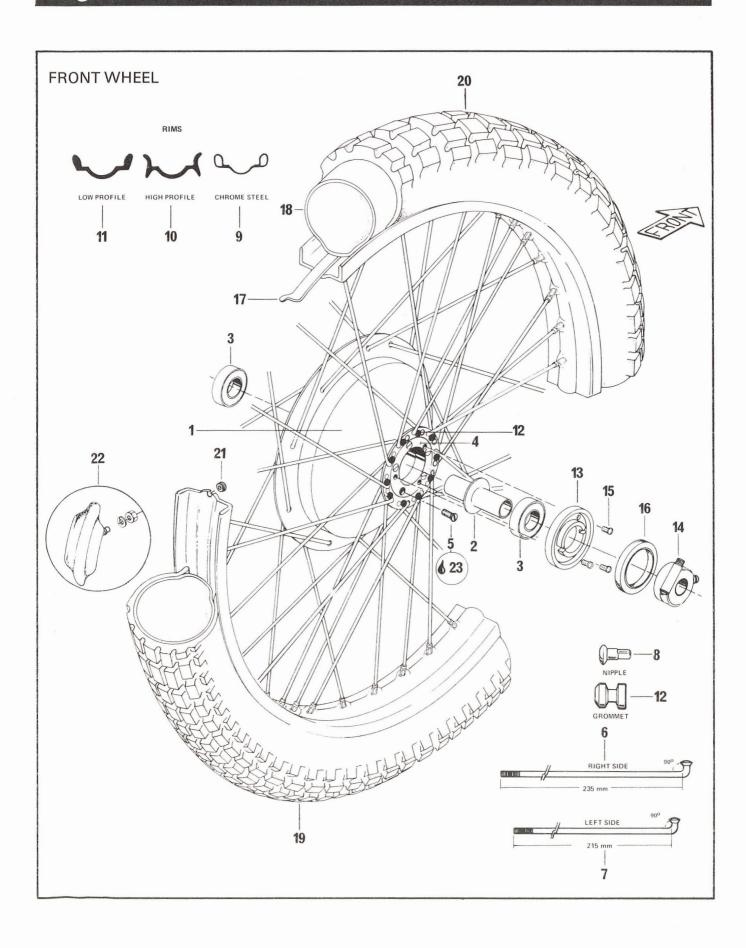
WARNING: It is recommended to use a pair of vise grip pliers to remove the spring.

Inverse removal procedure for re-assembly.

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SUB-SECTION 3-9

WHEELS AND BRAKES



- 1. Front hub
- 2. Bearing distance spacer
- 3. Bearing 6302 RS (2)
- 4. Spoke flange
- 5. Flat head machine screw M6 x 1.00 x 12 (5)
- 6. Spoke R.H. (20)
- 7. Spoke L.H. (20)
- 8. Nipple (40)
- 9. Rim (chrome steel)
- 10. Rim (Alloy high profile)
- 11. Rim (Alloy low profile)
- 12. Spoke flange grommet (10)

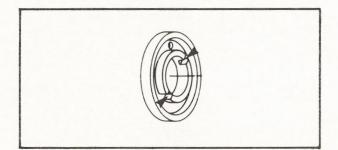
- 13. Speedometer drive flange
- 14. Speedometer drive gear
- 15. Pan head screw M3 x 0.50 x 5 (3)
- 16. Speedometer drive seal
- 17. Rim liner
- 18. Inner tube 3.00 x 21
- 19. Tire (universal trials) 3.00 x 21
- 20. Tire (knobby) 3.00 x 21
- 21. Rubber plug
- 22. Rim lock
- 23. Loctite

FRONT WHEEL REMOVAL

- Mount the motorcycle on a stand or box with the front wheel raised.
- Unscrew the speedometer cable from the speedo drive gear (if applicable).
- Unscrew the brake cable adjuster nut (at brake plate) and pull the cable housing away from the backing plate.
- NOTE: Place the spring, rubber boot, rod barrel and adjuster nut back on the cable to prevent loss.
- Remove the axle nut.
- Loosen the two (2) axle pinch bolts, and remove axle.

FRONT WHEEL INSTALLATION

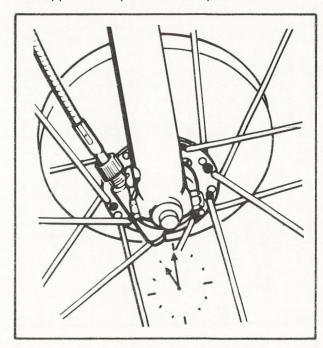
- Position the speedometer drive gear, on one side, and the brake plate on the other.
- NOTE: Make sure the two (2) drive lugs of the speedometer drive gear fit into the channels of the wheel hub.



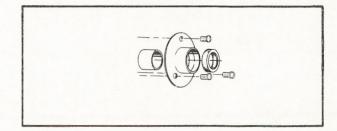
 Position the wheel and insert the axle from the magneto side. Make sure the left fork leg boss is in the backing plate channel.



CAUTION: Speedo drive must be positioned at approximately 11:00 o'clock position.

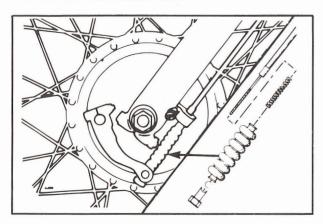


NOTE: On the MX 1 model, a spacer is used in place of the speedometer drive gear.



Page 4 Section 3-9

- Install the front brake cable.

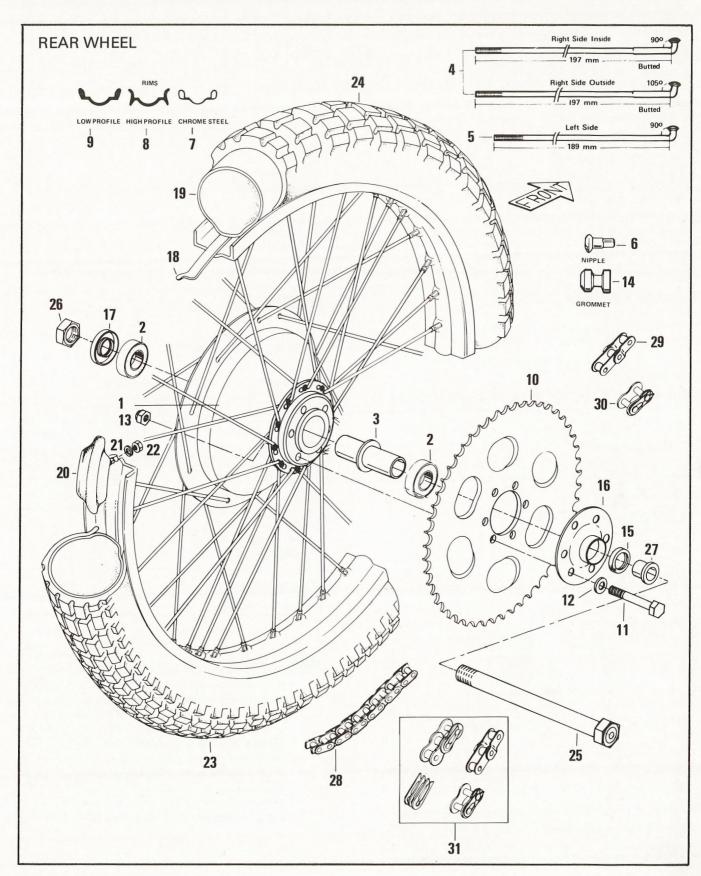


- Spin front wheel in forward rotation, apply brake and, while holding brake on tighten axle nut.
- NOTE: This is important, it centers the brake shoes.



CAUTION: To ensure correct fork action, briskly compress forks (with front brake applied) to align fork legs before tightening axle pinch bolts.

 Connect the speedometer cable to the speedo drive gear.



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- 1. Rear hub
- 2. Bearing no. 6303 RS (2)
- 3. Bearing distance spacer
- 4. Spoke R.H. outside butted (10) Spoke R.H. inside butted (10)
- 5. Spoke L.H. (20)
- 6. Nipple (40)
- 7. Rim (chrome steel)
- 8. Rim (Alloy high profile)
- 9. Rim (Alloy low profile)
- 10. Sprocket
- 11. Hexagon screw M8 x 1.25 x 45 (6)
- 12. Flat washer 8 mm x 17 x 2 (12)
- 13. Elastic stop nut M8 x 1.25 (6)
- 14. Spoke flange grommet (10)
- 15. Seal 25 x 38 x 7

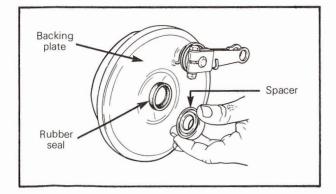
- 16. Cover
- 17. Seal 26 x 47 x 7
- 18. Rim liner
- 19. Inner tube 400 x 18
- 20. Rim lock
- 21. Lock washer 8 mm
- 22. Hexagon nut M8 x 1.25
- 23. Tire (trials universal) 4.00 x 18
- 24. Tire (knobby) 4.00 x 18
- 25. Rear axle
- 26. Hexagon nut M16 x 1.50
- 27. Spacer R.H.
- 28. Chain
- 29. Half link
- 30. Master link
- 31. Link kit

REAR WHEEL REMOVAL

- Mount the motorcycle on a stand or a box with the rear wheel raised.
- Remove the brake adjustment nut and pull out the actuating rod.
- Remove the 6 mm bolt holding the torque arm to the brake backing plate. Remove the torque arm.
- Remove the chain master link and the chain from the wheel sprocket.
- Remove the axle nut, the washer and the cam adjuster. Pull out the axle. The wheel can then be removed.

REAR WHEEL INSTALLATION

 Inverse the removal procedures to re-install the wheel, making sure the rubber seal is properly inserted between the spacer and the backing plate.



- Install the brake cable and adjust chain tension.
- Spin the wheel in the forward rotation, apply brake, and while holding brake on, tighten axle nut.
- NOTE: This is important, it centers the shoes.

A. TIRE

1. TIRE PRESSURE

Adjust the tire pressure as required.

TERRAIN CONDITIONS	FRONT 3.00 x 21	REAR 4.00 x 18
ROAD	26 PSI (182 kPa)	28 PSI (196 kPa)
ALL Trail riding & off road racing conditions	15 PSI (105 kPa)	15 PSI (105 kPa)
Except soft and wet terrain conditions	12 PSI (84 kPa)	15 PSI (105 kPa)



WARNING: Failure to maintain the recommended tire inflation pressure or to increase tire pressure as recommended when operating at maximum loaded vehicle weight, or loading the vehicle beyond the capacities specified, may result in unsafe operating conditions due to premature tire failure, unfavorable handling characteristics, and excessive tire wear. The tire reserve load percentage is a measure of tire capacity, not of vehicle capacity. Loading beyond the specified vehicle capacity may result in failure of other vehicle components.

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MODEL: T'NT 125-175 cc	FRONT	REAR
Recommended tire size designation (Yokohama)	3.00 x 21	4.00 x 18
Recommended cold inflation pressure for maximum loaded vehicle weight (485 lbs)	26 PSI (182 kPa)	28 PSI (196 kPa)
Tire reserve percentage	55	45

2. INSPECTION

- Check for any foreign objects imbedded in the thread.
- Inspect for any cuts or deteriorated rubber. Replace tire if necessary.
- If the tire is removed from the rim inspect the inside cords. Replace if cords are broken or separated from casing.
- Check the inner tube for signs of porosity or damage near the valve core.
- Periodically ensure that the valve stem is not tilted, by unscrewing the valve stem lock nut. If tilted, it indicates that the tire crept on the rim. To correct this condition, deflate the tire, loosen the rim lock / s loosen the bead from both sides and rotate the tire as necessary on the rim.

3. FLAT TIRE REPAIR PROCEDURE

REMOVAL

- Mount the motorcycle on a stand or a box with the wheel (with flat tire) raised.
- Remove the wheel (front or rear wheel removal).
- Remove the valve cap, core and valve stem lock nut.
- Unscrew the rim lock / s retaining nut. Work the tire bead away from the rim on both sides.
- Beginning at the valve core, work either bead completely over the rim.
- NOTE: A solution of soapy water around the rim on both sides, will considerably help the removal and installation of the tire.
- The tube can now be removed for inspection or repair.

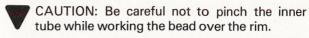


CAUTION: Remove the rim liner and verify if any spoke stems protrude through the spoke nipples. File or grind down the ones that protrude.

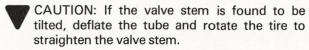
Inspect the rim liner carefully before re-installing.
 If damaged, replace.

RE-ASSEMBLY

- Lightly sprinkle inner tube with talcum or chalk powder.
- Install and / or relocate the rim lock / s.
- Work the inner tube carefully into the casing and insert the valve stem through the rim. Install the lock nut to retain the stem in place.
- Work the bead over the rim, starting at a point opposite the valve orifice.



 Inflate the tire to 55 lbs maximum to properly seat the bead.



- Release the air and install the valve core, inflate the tire to the recommended pressure.
- Tighten the rim lock / s retaining nut properly, and lightly tighten the valve stem lock nut.
- Re-install wheel (front or rear wheel installation).

B. WHEEL MAINTENANCE

1. WHEEL BEARING SERVICE

 Mount the motorcycle on a stand or a box to hold the wheels clear of the ground. Rotate the wheels slowly and check for noisy bearings. Any lateral motion from the vertical center line of the wheels indicates worn bearings.

DISASSEMBLY

- Remove wheel(s) from machine.
- Remove wheel bearing seal and / or dust cover.
- Heat inside bearing boss in hub with butane torch, place heated side on work bench and tap out bearing using a flat ended punch and hammer.
- Set bearing distance spacer aside. Heat outer bearing boss and tap out outer bearing.

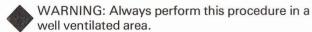
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CAUTION: Always apply heat to remove or install wheel bearings, failure to apply heat can result in metal being drawn out from the bearing boss, causing a loose fitting bearing within the hub.

CLEANING AND INSPECTION

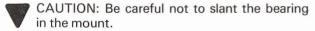
- Clean bearings, distance spacer and wheel hub with solvent. Dry using compressed air.
- WARNING: Solvent with low flash point such as gasoline, naphtha, benzol, etc., should not be used as they are flammable and explosive.
- Clean brake friction surface with lacquer thinner to remove any oil film.



- Check if the inner and outer races of the wheel bearings are cracked, pitted or chaffed. Rotate the bearing and check for roughness.
- Inspect wheel hub at bearing bosses and inside where the distance spacer is supported. If distorted, fractured or worn, replace hub.
- Inspect dust seal lips. If damaged, replace.
- Check the bearing fit within the hub bosses. If a loose fit is encountered, a hub replacement is necessary.

RE-ASSEMBLY

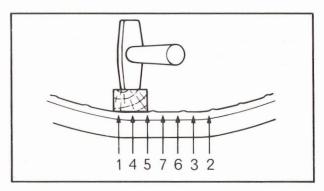
- Pack the wheel bearings with a waterproof wheel bearing grease.
- Heat one side of the hub around bearing boss, seat bearing into hub.



- Turn the wheel over, install bearing distance spacer. Heat hub around bearing boss and install the other bearing.
- NOTE: The shielded portion of the bearings must face towards the outside of the wheel.
- Allow hub to cool, mount dust cover and seal properly.
- Remount wheel(s) onto machine.

2. RIMS

 Check the rims for dents or damage. Small dents may be knocked out using a block of hard wood and a mallet following the numbered impact sequence:



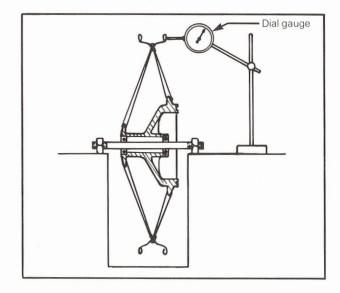
Wheel rims should be true to within 1/16 " maximum radial and axial run out.

3. SPOKES

- Make sure all spokes are clean.
- Tap each spoke lightly using a wrench listening to the tone of each spoke. They should give the same crisp ringing sound. A loose spoke will give a dull note.
- Should a spoke or two be loose, tighten them a turn or so. If several spokes adjacent to one another are loose or if all the spokes are loose, dismount the wheel and tighten the spokes as described in the following section.

C. TRUING WHEELS

- To perform the truing of the wheel, the tire, rim lock(s) and rim liner have to be removed to allow the grinding off of spokes that might protrude through the spoke nipples after truing the wheel.
- Check run-out of the rim (as illustrated).



- If all spokes are loose, tighten each spoke 1 to 1½ turns. Tighten any single loose spoke and replace any broken one.
- Check the rim off-set.

Rear wheel: Rim edge must be off-set 2.010" from sprocket outer edge.

Front wheel: Rim edge must be off-set 0.403" from bearing outer edge (steel spoke flange side).

- To correct the off-set, loosen all spokes on one side an equal amount and tighten the opposite ones by the same amount.
- To correct an eccentric wheel (oval shape), spin the wheel then using a piece of chalk, mark the high spots on one edge of the rim. Stop wheel and check marks. Usually, one or two sections will be found to be high, covering the distance of two to five spokes. According to the amount of eccentricity, the spokes in the marked area should be tightened, normally from 1 to 2 turns.
- NOTE: Tighten each spoke equally, to prevent side to side distortion.
- Erase the chalk marks and repeat process.
- Adjust rim to run true within a tolerance of 1/16 "
 maximum.
 - CAUTION: Any overtightening in one area of the rim will create a flat spot. It may be necessary to loosen the spokes directly opposite from the high spots to relieve the pressure.
- To correct a wobbling (side-to-side motion), spin the wheel and mark the rim to find the sections out of true. The out of true section is usually covered by two to five spokes. Supposing that the mark covers three spokes, the spokes on the marked side should be loosened ¾ or 1¼ turns and the opposite spokes should be tightened the equal amount.
- NOTE: As you move away from the high spots, in both directions, less turns are required on the spoke nipples.
- Erase chalk marks and repeat process.
- Adjust rim to run true within a tolerance of ½6 "maximum.

D. LACING WHEELS

1. RIM REPLACEMENT

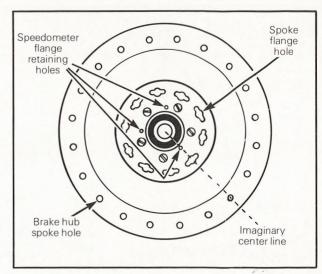
- Prior to the spoke nipple removal, tape spokes together at each meeting points, midway between hub and rim.
- Remove nipples and lift away hub and spokes.

- Prior to assembly, properly locate the rim, as described in hub replacement.
- Reposition all the spokes and tighten. True the wheel as earlier described in wheel truing section.

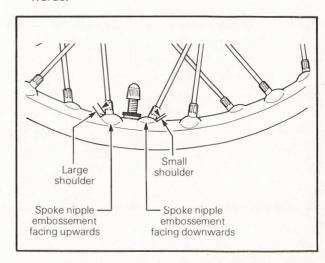
2. HUB REPLACEMENT

FRONT WHEEL

Place hub with the brake side facing downwards.
 On the wheel hub, three holes align perfectly together when tracing an imaginary center line.
 i.e. one brake hub spoke hole, one spoke flange hole and one speedometer flange retaining hole.



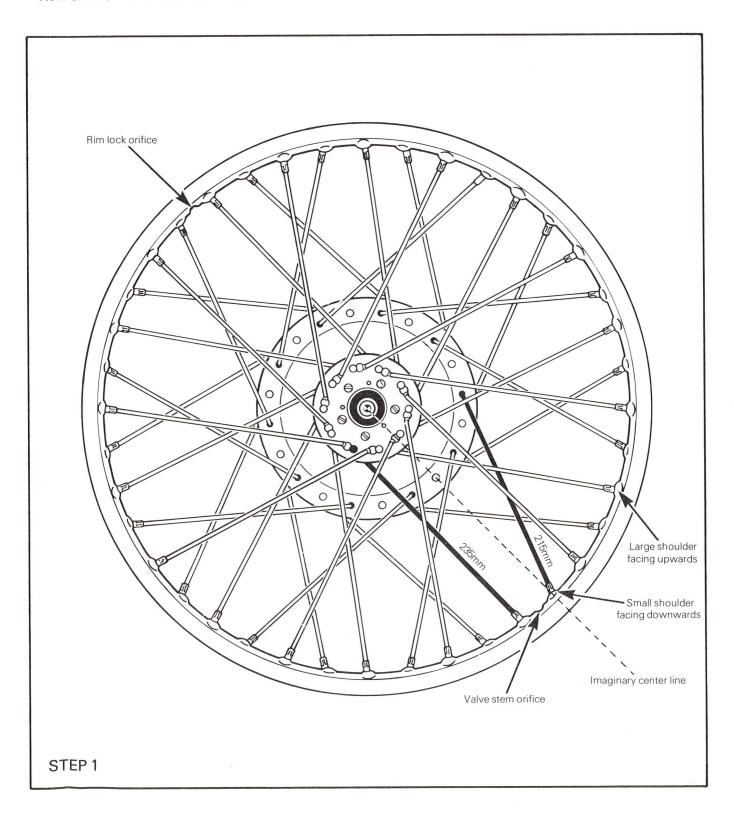
Position the rim to have the spoke nipple embossement with the small shoulder facing dowwards.



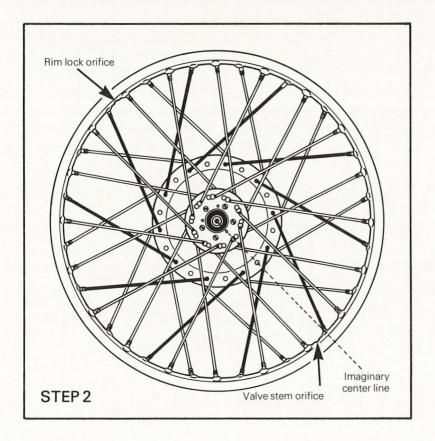
NOTE: Make sure to position the spoke nipple embossement with the small shoulder on the right hand side of the valve stem orifice.

3. Align the hub and the rim on an imaginary center line drawn through the small shouldered spoke nipple embossement (located nearest to the valve stem orifice) and the 3 centered holes of the hub.

Install the two first spokes, as illustrated. Install nipples and screw on a few turns.

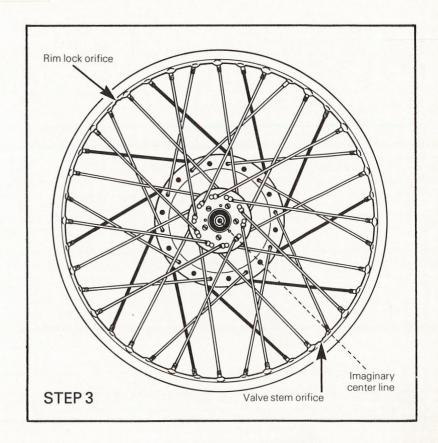


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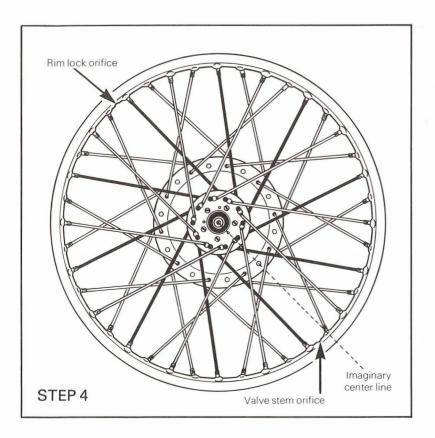


4. Install all the brake side spokes (215 mm) facing upwards. As illustrated. Install nipples and screw on a few turns.

5. Install all the brake side spokes (215 mm) facing downwards. As illustrated. Install nipples and screw on a few turns.

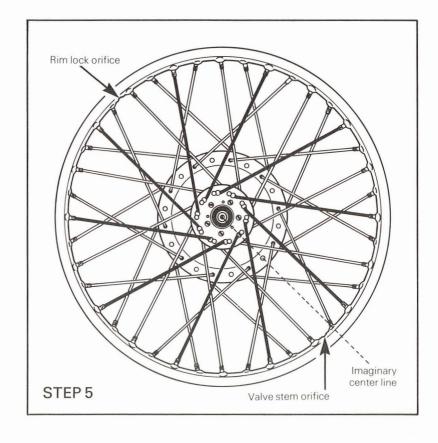


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6. Install all the spoke flange side spokes (235 mm) facing downwards. As illustrated. Install nipples and screw on a few turns.

- 7. Install all the spoke flange side spokes (235 mm) facing upwards. As illustrated. Install nipples and screw on a few turns.
- 8. All the spokes are now loosely installed in the wheel assembly. Starting at the valve stem orifice, tighten all the spokes equally a couple of turns. After tightening, true the wheel as described in wheel truing section.

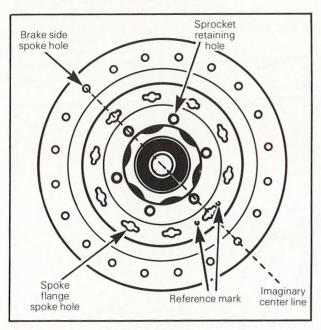


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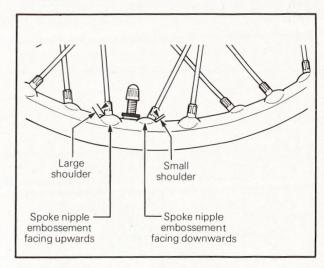
REAR WHEEL

Place hub with the brake side facing downwards.
 On the wheel hub 6 holes align perfectly together
 when tracing an imaginary center line., i.e. 2 brake
 side spoke holes, 2 spoke flange holes and 2
 sprocket retaining holes.

NOTE: On the sprocket side one spoke hole is marked with 2 dots, to use as a reference mark.



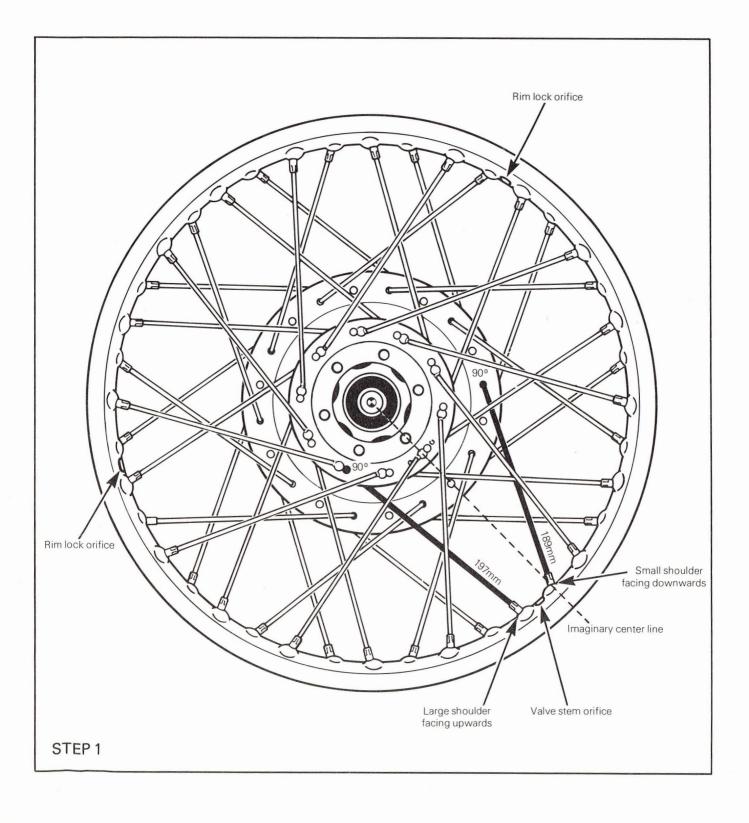
2. Position the rim to have the spoke nipple embossement with the small shoulder facing downwards.



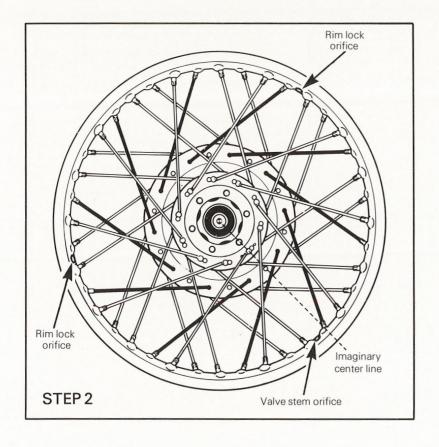
- NOTE: Make sure to position the spoke nipple embossement with the small shoulder on the right hand side of the valve stem orifice.
- 3. Align the hub and the rim on an imaginary cen-

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ter line drawn through the small shouldered spoke nipple embossement (located nearest to the right hand side of the valve stem orifice) and the spoke flange reference mark (1 dot stamped on each side of a spoke hole). Install the 2 first spokes, as illustrated. Install nipples and screw on a few turns.

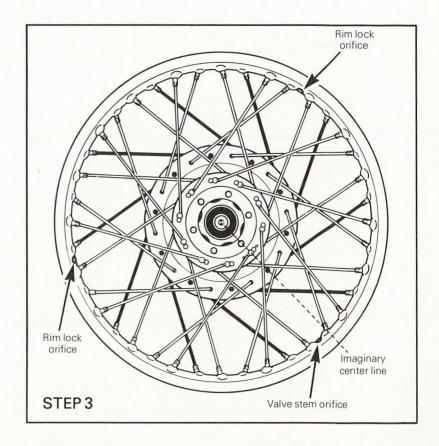


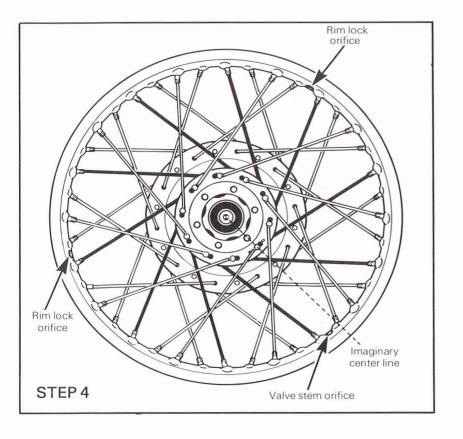
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Install all the brake side spokes (189 mm, left side 90°) facing upwards.
 As illustrated. Install nipples and screw on a few turns.

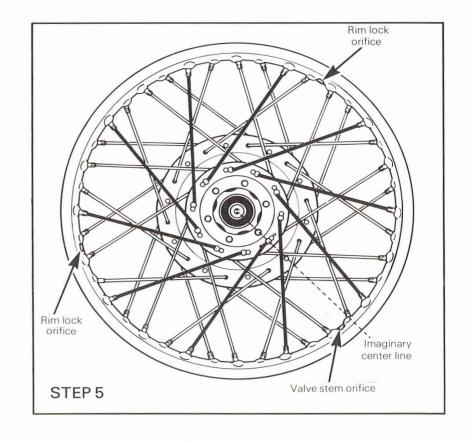
5. Install all the brake side spokes (189 mm, left side 90°) facing downwards. As illustrated. Install nipples and screw on a few turns.





6. Install all the sprocket side spokes (right side inside 197 mm,90°) facing downwards. As illustrated. Install nipples and screw on a few turns.

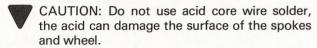
- Install all the sprocket side spokes (right side outside 197 mm, 105°) facing upwards. As illustrated. Install nipples and screw on a few turns.
- 8. All the spokes are now loosely installed in the wheel assembly. Starting at the valve orifice, tighten all the spokes equally a couple of turns. After tightening, true the wheel as earlier described in wheel truing section.



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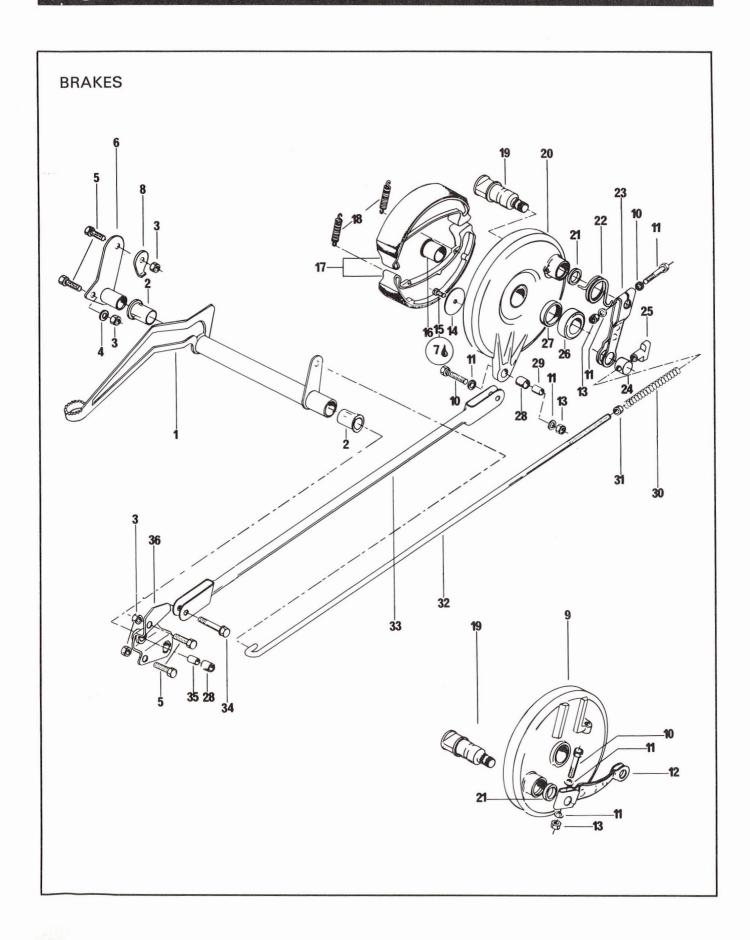
E. BALANCING WHEELS

- Remove wheel assembly and set the brake backing plate aside.
- Mount the wheel onto motorcycle (without the backing plate).
- Turn the wheel and allow it to stop. The heaviest portion will be down, mark the center of that heavy area.
- Suppose the mark made is 0° mark the wheel at 120° and 240° around the circumference of the tire.
- Using resin core wire solder, add equal weight to the 120° and 240° positions by coiling the wire solder around the spokes nearest to the marks.
 Begin coiling around the spoke nipple and do not extend coils longer than 2".



- Balancing is completed when the wheel remains in any static position without rolling.
- Remount the wheel.

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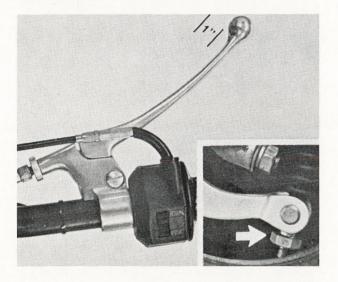
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- 1. Brake pedal
- 2. Nylon bushing (2)
- 3. Elastic stop nut M8 x 1.25 (4)
- 4. Flat washer 8 mm x 17 x 2
- 5. Hexagon screw M8 x 1.25 x 20 (4)
- 6. R.H. pivot mount
- 7. Loctite 271 (as required)
- 8. Brake pedal stop adjuster
- 9. Front backing plate
- 10. Hexagon screw M6 x 1.00 x 35 (3)
- 11. Flat washer 6 mm x 12 x 1.5 (6)
- 12. Front brake arm
- 13. Elastic stop nut M6 x 1.00 (3)
- 14. Brake shoe retaining washer (2)
- 15. Pan head screw M5 x 0.80 x 10 (2)
- 16. L.H. axle rear spacer
- 17. Brake shoe (4)
- 18. Brake shoe spring (4)

- 19. Cam (2)
- 20. Rear backing plate
- 21. Felt seal
- 22. Rear brake arm spring
- 23. Rear brake arm
- 24. Brake rod barrel
- 25. Brake rod adjuster nut
- 26. Rear backing plate spacer
- 27. Rubber seal
- 28. Rubber cushion (2)
- 29. Torque arm bushing
- 30. Brake rod spring
- 31. Nut M6 x 1.00
- 32. Brake rod
- 33. Torque arm
- 34. Head lock flange screw 1/4-28NF x 1 1/8
- 35. Front torque arm bushing
- 36. L.H. pivot mount

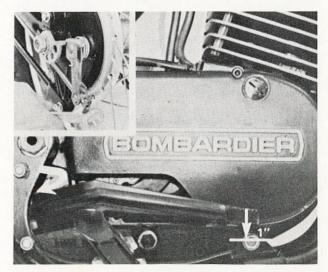
A. FRONT BRAKE ADJUSTMENT

- 1. Completely loosen the brake cable adjuster (at handlebar) then using the adjuster located at the brake plate, adjust the cable to provide 1" of free lever travel. (25.4 mm).
- NOTE: Use adjuster at handlebar for final adjustment.



B. REAR BRAKE ADJUSTMENT

- 1. Turn the adjusting nut until the brake pedal free travel is 1" (25.4 mm).
- 2. The brake pedal height can be adjusted as desired by moving the stopper. (See arrow).



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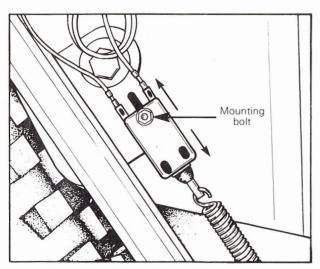
C. REAR BRAKE STOPLAMP SWITCH ADJUSTMENT

The rear brake stoplamp switch should be adjusted so that the stoplamp goes on when the brake pedal completes its free play travel and starts its application of the brake.

In order to achieve this adjustment, the stoplamp switch can be moved up or down in its mounting hole.

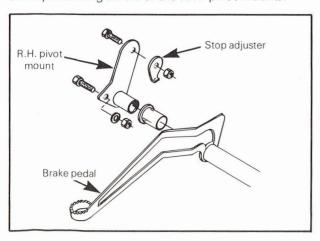
To make this adjustment:

- Remove the right hand side number plate.
- Loosen the switch mounting bolt, move the switch to the correct position and retighten the mounting bolt properly.



D. BRAKE PEDAL HEIGHT ADJUSTMENT

The desired brake pedal height can be achieved by altering the position of the stop adjuster. (Located on the top retaining screw of the R.H. pivot mount).



E. BRAKE MAINTENANCE

In trail riding and Enduro competition, the brakes may be subjected to some rather severe conditions, i.e.: water, sand, mud, excessive heat, etc. We therefore recommend that you frequently clean and service the front and rear brakes to keep them in good, safe working order.

DISASSEMBLY

- Mount the motorcycle on a box or a stand with front or rear wheel raised.
- Remove the wheel (front or rear wheel removal).
- Remove the brake shoes from the brake plate. Remove cam shaft pinch bolt, lift brake arm clear of splines then push the cam shaft out of backing plate.

CLEANING AND INSPECTION

- Clean the brake shoes thoroughly with soapy water.
- Clean the brake plate and cam using a degreaser solvent. Dry using compressed air.
- WARNING: Solvent with low flash point such as gasoline, naphtha, benzol, etc., should not be used, as they are flammable and explosive.
- Reclean shoes and brake hub friction surface using lacquer thinner or alcohol to remove any oil film.
- WARNING: Always perform this procedure in a well ventilated area.
- Inspect the wheel hub for cracking, scoring, pitting, out of roundness. If damaged, replace. If wheel hub is rusted, polish the surface with sandpaper.
- Inspect wheel bearings. (See wheel bearing removal).
- Inspect brake springs. If damaged or worn, replace.
- Inspect the lining condition. Replace if the lining is grease or oil soaked, or if lining is badly grooved.

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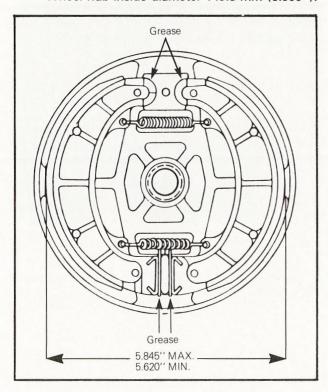
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WARNING: Brake lining limits are:

148.5 mm (5.845") maximum (when fitting new parts).

142.7 mm (5.620") minimum (linings must be replaced).

Wheel hub inside diameter 149.8 mm (5.900").



- Inspect backing plate casting, replace if damaged.
- Inspect cam shaft and brake arm splines. Replace if damaged.
- Inspect and clean the felt seal.

RE-ASSEMBLY

- Lightly grease the cam shaft and the pivot, insert cam into backing plate and install the felt seal on the exterior end of the cam.
- Install the brake shoes onto backing plate.
- NOTE: Everytime new brake shoes are fitted, it is recommended to replace the brake shoe springs, as they may weaken under constant abuse.
- Reinstall brake arm and secure the pinch bolt properly.

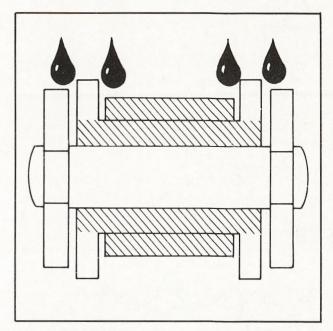
F. DRIVE CHAIN MAINTENANCE

CHAIN LUBRICATION

To avoid excessive wear and friction, adequate lubrication must be maintened.

- Lubricate chain whenever it appears dry. Direct the oil primarily at the roller and link edges to insure as much penetration as possible to the internal working surfaces of the chain.
- When the chain has been subjected to adverse conditions (mud, sand, etc.) for long periods, remove it, wash in solvent and, after the solvent has dried off, immerse in oil for ten minutes.

Drain excess oil off. Clean the sprocket and reinstall.

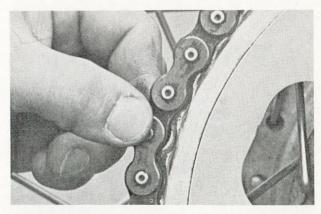


CHAIN INSPECTION

As the drive chain is perhaps the most abused piece of equipement on the motorcycle, it is necessary to know when and how to check and maintain it.

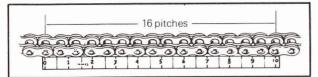
Checking for wear:

 If chain can be lifted away from rear sprocket any more than as shown, it must be replaced.



NOTE: A worn chain will cause severe sprocket damage — check sprockets for wear.

- The length of 16 pitches of new chain (no. 520) is 10". If the chain has "stretched" more than 10 $^{1/32}$ ", for 16 pitches, it must be replaced.



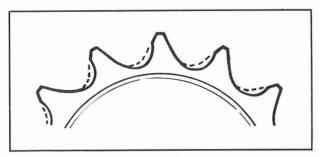
NOTE: Chain must be cleaned for this measurement.

Lubricating:

- After chain has been cleaned with a stiff brush and solvent, it may be soaked overnight in warm chain oil.
- When using "chain spray" lubricants, direct spray as shown for maximum penetration to chain inner surfaces. Allow sufficient time for lubricant to thicken before riding.

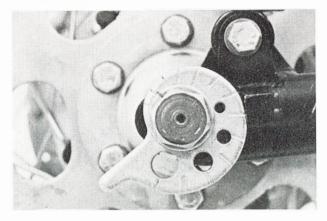
SPROCKETS

Worn sprockets assume a "hooked" appearance. As soon as this condition can be easily noticed, the sprocket should be replaced.

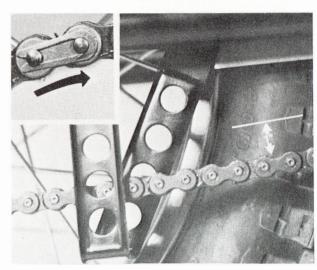


DRIVE CHAIN ADJUSTMENT

- Loosen the rear axle nut and move each adjuster plate equally to tighten or loosen chain.
- NOTE: Alignment marks must be the same on each side of wheel.



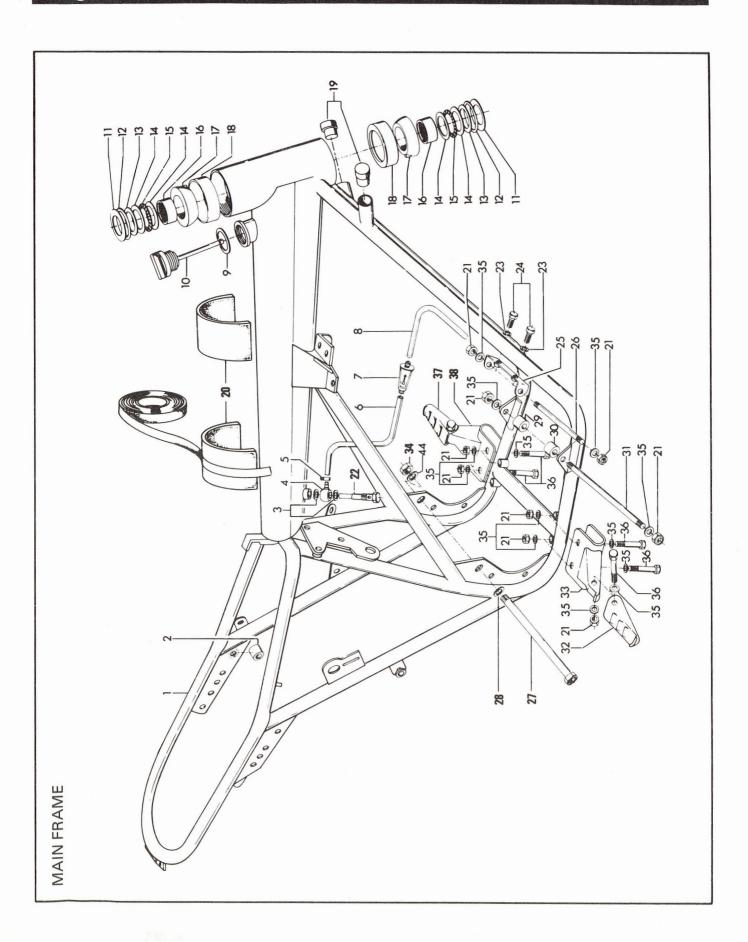
- Adjust chain slack to 1" (25.4 mm).
- NOTE: If chain is replaced, connector clip on master must be installed as shown.



- Spin the wheel in forward rotation, apply brake, and while holding brake on tighten axle nut.
- NOTE: This is important, it centers the brake shoes.

SUB-SECTION 3-10

FRAME ASS'Y



- 1. Frame weldment
- 2. Shock bracket spacer
- 3. Washer
- 4. Oil outlet banjo
- 5. Hose clamp
- 6. Tube
- 7. Filter
- 8. Oil line-560 mm
- 9. Oil cap gasket
- 10. Oil tank cap
- 11. Steering cone cover
- 12. "O" ring 38 mm I.D. x 3 mm
- 13. Shim .024"
- 14. Thrust washer
- 15. Thrust bearing
- 16. Needle bearing
- 17. Steering cone (2)
- 18. Steering cup (2)
- 19. Steering rubber bumber (2)

- 20. Rubber pad
- 21. Elastic stop nut M8 x 1.25
- 22. Oil outlet banjo bolt
- 23. Lock washer 8 mm
- 24. Bolt M8 x 1.25 x 15 mm
- 25. Front engine mount
- 26. Front engine stud
- 27. Swing arm bolt
- 28. Flat washer 17 mm x 28 x 2
- 29. Spacer R.H.
- 30. Spacer L.H.
- 31. Lower engine stud
- 32. Footrest R.H.
- 33. Footpeg R.H.
- 34. Nut M16
- 35. Flat washer 8 mm x 17 x 2
- 36. Bolt M8 x 1.25 x 40
- 37. Footrest L.H.
- 38. Footpeg L.H.

CLEANING AND SERVICING

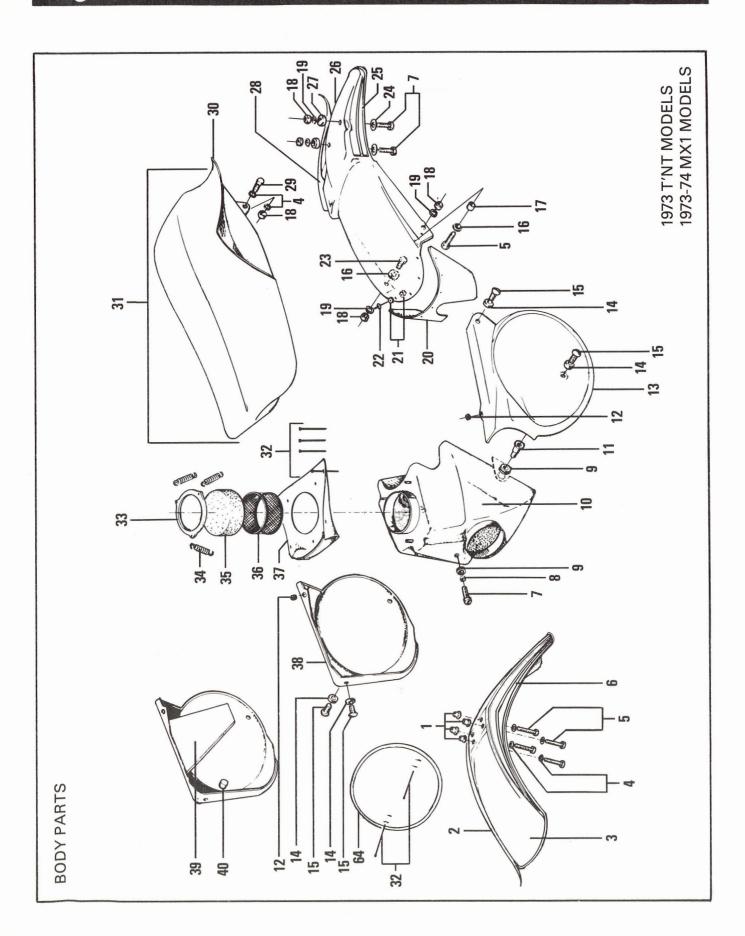
- Clean the frame with a solution of soapy water to remove mud, dirt, etc.
- Inspect the frame for any dents or cracks.
- Inspect the steering head thrust bearing and washer. If damaged, service as explained in section 3-8 suspension.

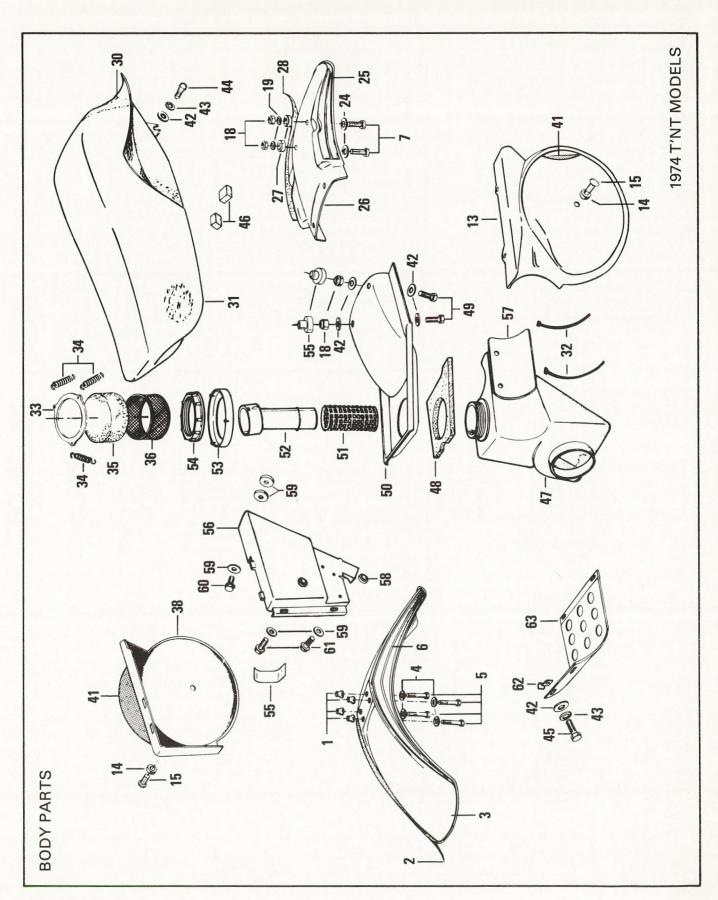
FRAME WELDING

- Electric welding or oxy-acetelene.

ELECTRIC	WELDING	OXY-ACETELENE				
Amperage: Voltage: Rod:	150 amp 19 volts E7014 mild steel	Rod:	Steel			

NOTE: It is not recommended to braze weld.





- 1. Front fender spacer
- 2. Front fender decal R.H.
- 3. Front fender
- 4. Flat washer 6 mm x 20 x 1
- 5. Bolt M6 x 1 x 40
- 6. Front fender decal L.H.
- 7. Bolt M6 x 1 x 25
- 8. Grommet spacer
- 9. Grommet
- 10. Air box (fiberglass)
- 11. Step bolt (2)
- 12. Grommet spae naur No. RB 212
- 13. Side panel L.H.
- 14. Rubber washer
- 15. Slotted head screw M6 x 1.00 x 16
- 16. Step washer
- 17. Shock bracket spacer
- 18. Elastic stop nut M6 x 1.00
- 19. Flat washer 6 mm x 20 x 1
- 20. Rear fender rubber flap
- 21. Flat washer . 131" I.D.
- 22. Pop rivet 1/8 x .481"

- 23. Bolt M6 x 1.00 x 18
- 24. Flat washer 6 mm x 20 x 1
- 25. Rear fender decal L.H.
- 26. Rear fender
- 27. Rear fender spacer
- 28. Rear fender decal R.H.
- 29. Bolt M6 x 1.00 x 16
- 30. Seat cover
- 31. Seat assembly
- 32. Tie wrap 8"
- 33. Air filter retainer
- 34. Spring
- 35. Air filter element
- 36. Air filter frame
- 37. Air filter rubber shield
- 38. Side panel R.H.
- 39. Wire protector pad
- 40. Rubber bumper (battery)
- 41. Side panel decal
- 42. Flat washer 8 mm x 17 x 2
- 43. Lock washer 8 mm

- 44. Bolt M6 x 1.00 x 16
- 45. Bolt M8 x 1.25 x 20
- 46. Foam protector (seat)
- 47. Air box
- 48. Foam protector (air box top)
- 49. Bolt M8 x 1.25 x 16
- 50. Splash pan
- 51. Perforated tube
- 52. Inlet tube
- 53. Air filter pan
- 54. Plastic nut
- 55. Grommet (seat)
- 56. Battery box
- 57. Heat insulator (muffler)
- 58. Spacer (battery box)
- 59. Washer (battery box)
- 60. Self tapping screw
- 61. Self tapping screw
- 62. Clamp (skid plate)
- 63. Skid plate
- 64. Number plate

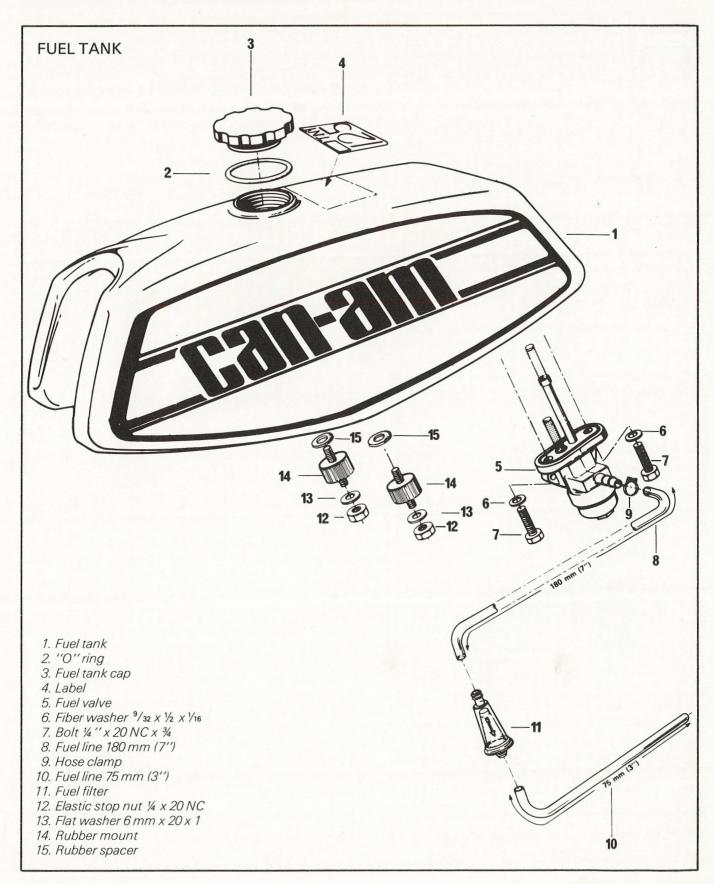
DECAL SERVICE

To replace the fender decals,

- Remove the damaged decal by pulling off by hand.
- Clean the surface properly.
- Apply a solution of soapy water on new decal.
 Position decal and pass a sponge over decal to remove air bubbles and water. Allow to air dry.

SEAT COVER REPLACEMENT

- Remove the seat from the machine.
- Place the seat upside down on a clean surface and pry out all the retaining staples.
- Remove the damaged cover.
- Fit the new cover over the seat and center it carefully.
- NOTE: Prior to fitting, warm the cover with a heat lamp so as to make the material supple.
- Staple the front section and then each side and finish at the rear.
- NOTE: While inserting the staples, compress the foam lightly by pushing on the bottom of the seat. This will stretch out the small wrinkles when releasing the tension on the foam.



FUEL TANK REMOVAL



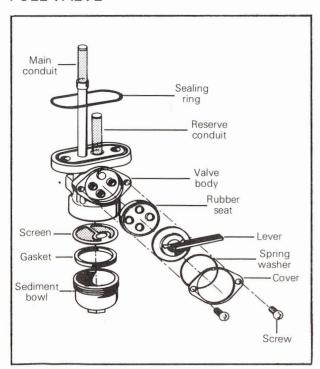
WARNING: Always perform this procedure in a well ventilated area, away from open flame and sparks.

- Turn the fuel valve to "O" off position.
- Loosen the fuel line hose clamp and pull the hose from the fuel valve.
- Remove the two (2) retaining nuts (located underneath the tank) and lift the gas tank from the machine.

CLEANING AND INSPECTION

- Clean the fuel tank with a solution of soapy water and rinse thoroughly with clear water.
- Inspect the fuel filter periodically.
- Inspect the fuel valve for leakage.
- Inspect the fuel tank for any cuts or leaks.

FUEL VALVE



If the fuel valve leaks, remove the lever cover and the sediment bowl and clean thoroughly. Make sure that the valve is reassembled correctly.

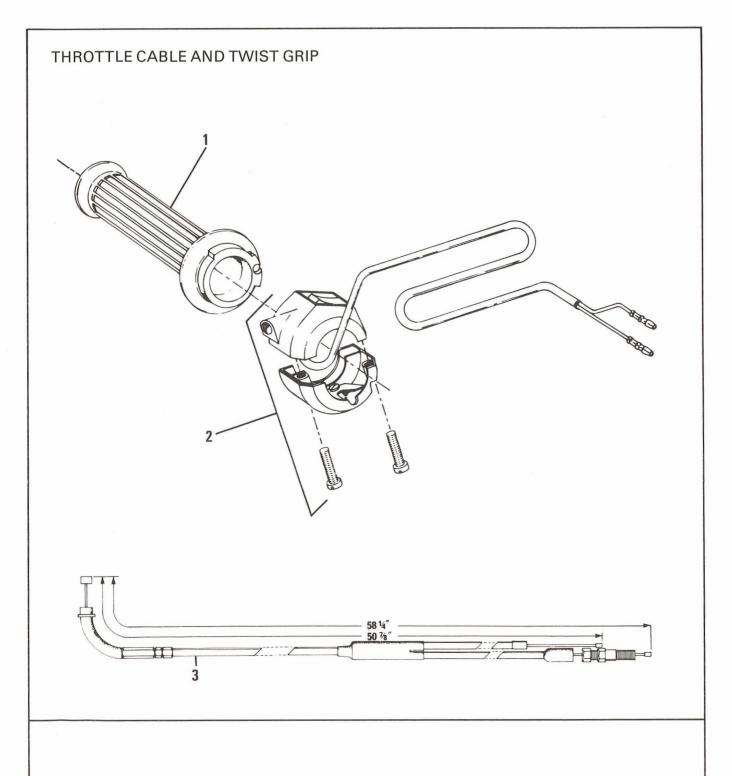
NOTE: If the valve is defective, complete unit replacement is necessary.

FUEL TANK CAP

- Inspect the gas cap vent by gently sucking on the ventilation hole located on the bottom center of the gas cap. If restriction persists, replace the gas cap.
- Inspect the "O" ring for deterioration. Replace if damaged.

SUB-SECTION 3-11

CONTROLS

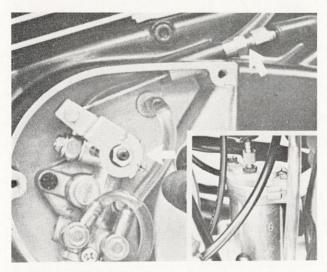


- Throttle rubber grip (on throttle drum)
 Throttle and stop switch ass'y
 Throttle cable

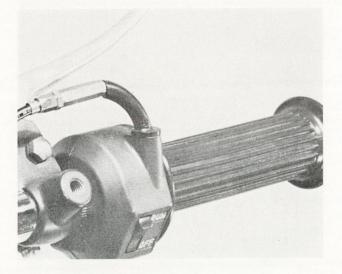
Section 3-11 Page 3

THROTTLE & INJECTION PUMP ADJUSTMENT

- 1. Loosen the throttle cable adjuster (at twist grip) to provide maximum slack.
- 2. Using the cable adjuster on the carburetor top plate, set cable slack to 1/16 (1.6 mm).
- 3. Using pump cable adjuster, adjust cable to align pump marks as shown.



- 4. Adjust throttle cable (at twist grip) to provide $\frac{1}{16}$ " slack. (1.6 mm).
- WARNING: Throttle action must be free to snap back to closed position when released.

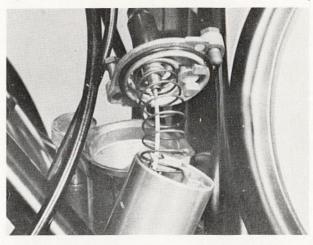


THROTTLE CABLE REPLACEMENT

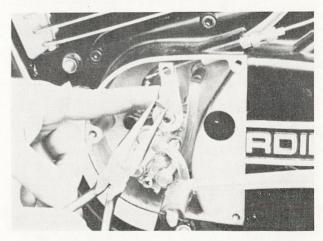
- 1. Completely loosen both carburetor retaining hose clamps, and rotate carburetor towards clutch side.
- 2. Remove carburetor top plate and slide assembly.



CAUTION: Handle slide with care.

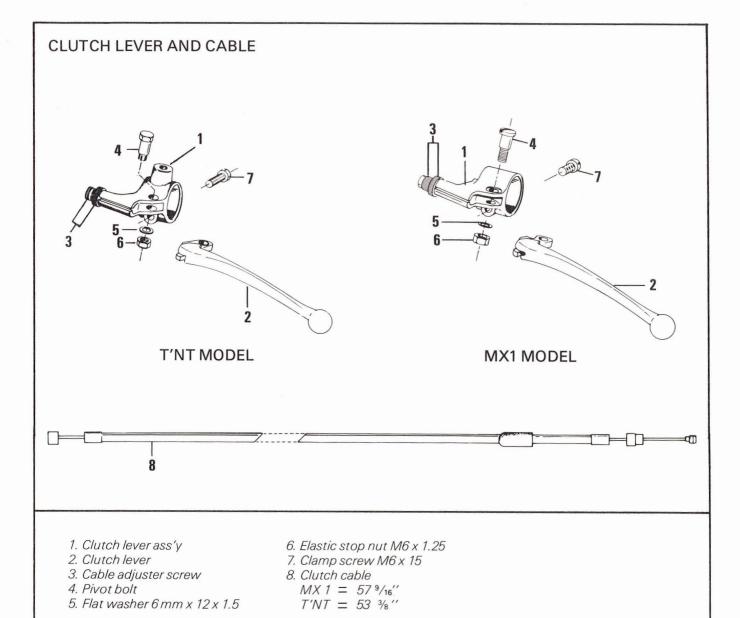


- 3. Unhook the cable from the slide by compressing the spring and push the cable further into slide to disengage cable end.
- 4. Remove the three (3) screws retaining the oil pump cover. Remove the oil pump cover.
 - Rotate the oil pump control lever clockwise to disengage the cable and pull the split nipple out. Remove the oil pump cable.
- NOTE: Cable end must protrude at least ¼" from split nipple to disengage nipple.



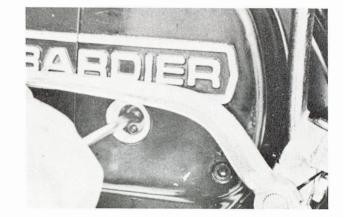
- 5. Dismantle the throttle and stop switch and remove the cable.
- 6. To install the throttle cable on the vehicle, inverse the procedure.

Page 4

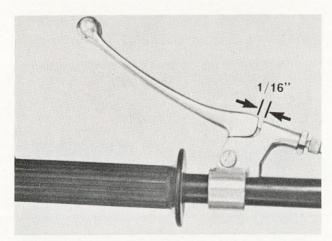


CLUTCH ADJUSTMENT

- 1. Loosen the clutch cable adjuster (at handlebar) to provide maximum slack.
- 2. Remove the access plug and loosen the 4 mm set screw.
- 3. Turn the 8 mm clutch adjusting screw in and out to locate the point of contact with release bearing, then turn screw 1/8 turn out (counter-clockwise).
- 4. Carefully tighten the 4 mm set screw to lock the adjustment.
- 5. Replace the access plug.



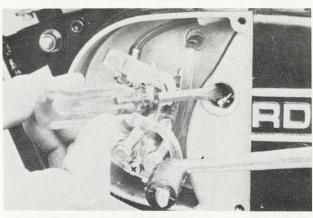
6. Adjust the cable adjuster to provide $\frac{1}{16}$ " (1.6 mm) slack.



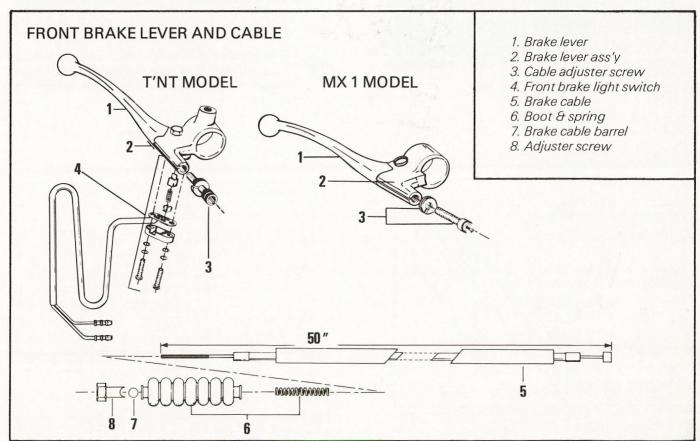
CLUTCH CABLE REPLACEMENT

- 1. Remove the clutch cable from the lever (at handle-bar).
- 2. Remove the three (3) screws retaining the oil pump cover.
 - Remove the oil pump cover.
- 3. Remove the clutch cable installation plug.

4. Pull the cable outer casing away from the clutch cover. Push the inner cable inside the cover until its tip is visible through the installation hole. With a screwdriver, disengage it from the clutch release arm and pull it out of the cover.



- 5. To install the clutch cable on the vehicle, inverse the procedure. Route the cable underneath the gas tank and out to the right side of the steering head (in between the upper and lower crown) and to the clutch lever.
- NOTE: On the T'NT 1974 model, route the cable through a cable guide located on the left speedometer mount.



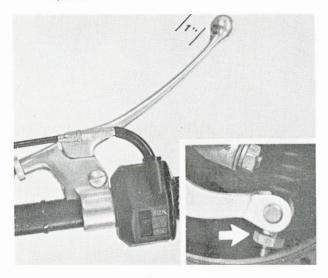
Section 3-11

FRONT BRAKE ADJUSTMENT

 Completely loosen the brake cable adjuster (at handlebar) then, using the adjuster located at the brake plate, adjust the cable to provide 25 mm (1") of free lever travel.

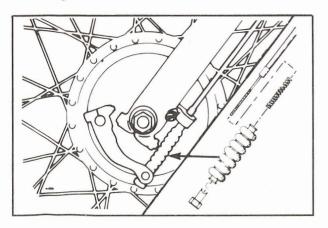
Use adjuster at handlebar for final adjustment. If more adjustment is needed, the brake arm is mounted on a splined cam shaft and can be relocated a maximum of 2 splines.

WARNING: When brake adjustment (including 2 spline relocation) is no longer possible, brake linings are worn to safe limit and must be replaced.



BRAKE CABLE REPLACEMENT

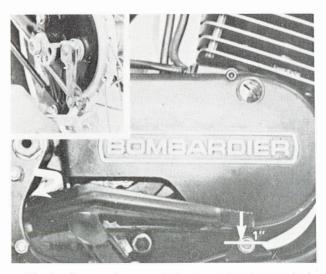
- Remove the brake cable from the lever (at handlebar).
- 2. Remove the adjuster screw from the backing plate brake arm and pull the cable up, and out of the cable guide.



3. To install the brake cable inverse the procedure. Route the cable through the cable guide (located on the left fork leg) and up to the brake lever.

REAR BRAKE ADJUSTMENT

- 1. The brake pedal height can be adjusted as desired by moving the stopper. (See arrow).
- 2. Turn the adjusting nut until the brake pedal free travel is 25 mm (1").



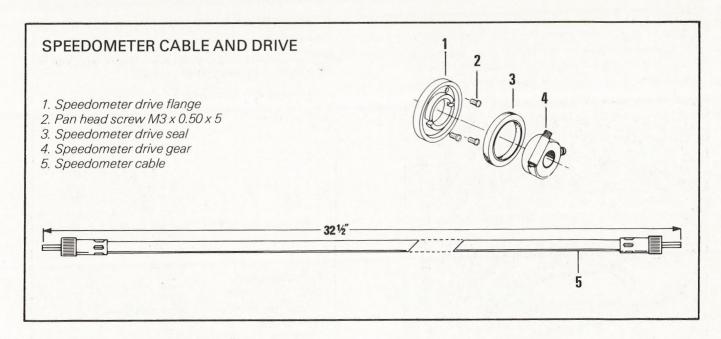
The brake arm is mounted on a splined cam shaft and can be relocated a maximum of 2 splines.



WARNING: When brake adjustment (including 2 spline relocation) is no longer possible, brake linings are worn to safe limit and must be replaced.

REAR BRAKE MECHANISM REPLACEMENT

If any replacement or repairs are to be performed, refer to the section 3-9 wheels and brakes.

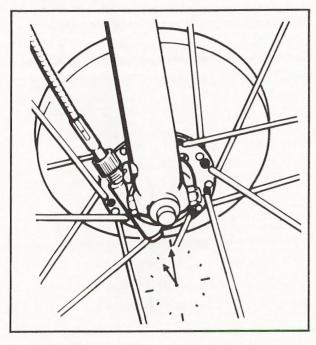


SPEEDOMETER CABLE REPLACEMENT

- 1. To remove, unscrew the speedometer cable from the speedometer housing and then from the speedometer drive gear.
- 2. To install the speedometer cable, inverse the procedure. Route the cable through the cable guide (located on the right fork leg) and secure properly.

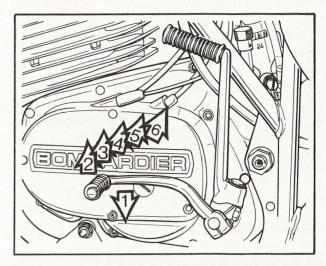


CAUTION: Speedometer drive must be positioned with cable at approximately 11 o'clock to prevent cable damage when forks are fully extended.



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GEAR CHANGE LEVER



The gear change lever operates a progressive shift, positive stop mechanism. One full stroke of the lever will shift only one gear position. The lever is spring loaded to return to its static position. Lifting lever up will progressively engage higher gears and pressing lever down will engage lower gears.

The neutral position is located between 1st and 2nd gear.

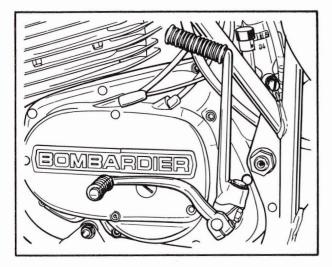
GEAR CHANGE LEVER REPLACEMENT

To remove the shifter lever, unscrew the Allen screw M6 x 20 totally and pull the lever off the shaft.

To install the shifter lever, inverse the procedure. Tighten screw to 1.1 kg / m (8 ft-lb).

Page 8 Section 3-11

NOTE: The shifter lever is mounted on a splined shaft and is usually set at the "Bombardier" name plate level of the clutch cover (as illustrated). Although, the shifter lever can be moved a few splines to suit a rider's demand.



KICK START PEDAL

To start engine, gently press pedal down until engagement is felt, then kick down with a rapid, follow through motion.

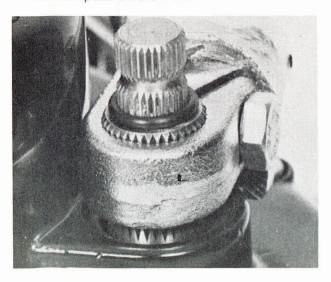
To start engine in other than neutral, disengage clutch.



CAUTION: Do not operate kick start pedal if side-stand is down.

REMOVAL

- 1. Remove the shifter lever by unscrewing the Allen screw M6 x 20 totally and pulling on the lever.
- 2. Remove the hex. bolt M8 x 28 totally and pull the kick start pedal off the shaft.

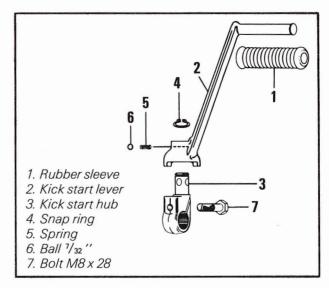


3. To install the kick start pedal, inverse the removal procedure.



CAUTION: Make sure pedal shank does not hit cover when folded into place.

DISASSEMBLY & ASSEMBLY

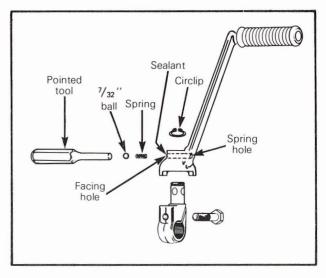


1. Remove the circlip and pull the lever off the hub.



CAUTION: Since the lever is spring loaded, exercise care when pulling the lever off, the ⁷/₃₂" ball and spring may fly away.

- Inspect all the parts. Replace any damaged or excessively worn parts.
- 3. Place the lever partially on the hub and position the spring and 7_{32} " ball inside the spring hole. Push the ball and spring using a pointed tool inserted through the facing hole then drop the lever into place on the hub and re-install the circlip.
- NOTE: A dab of silicone sealant on the spring hole (see arrow) will prevent dirt accumulation.





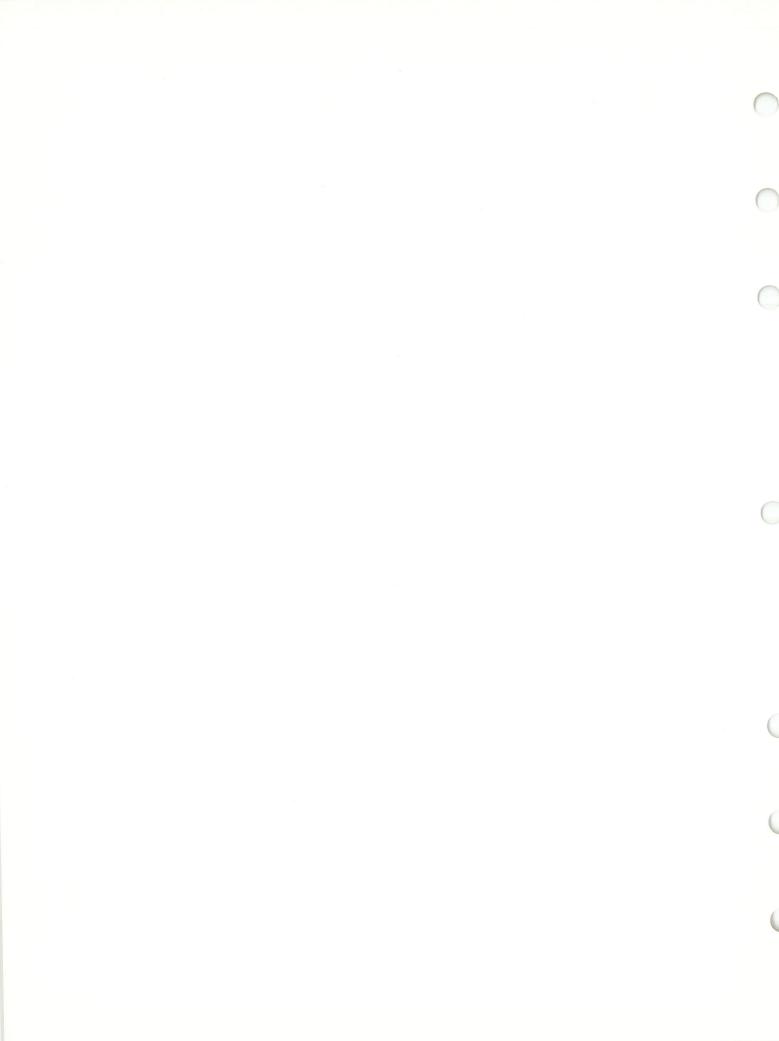


SECTION 4

TECHNICAL DATA

- 1. SPECIFICATIONS
- 2. DIMENSIONS
- 3. ENGINE EXPLODED VIEW
- 4. LUBRICATION SYSTEM
- 5. TORQUE SPECIFICATIONS
- 6. SERVICE LIMITS
- 7. SPECIAL TOOLS
- 8. CONVERSION TABLES





SUB-SECTION 4-1 SPECIFICATIONS

1973 —	125 MX-1, T'NT							2
1973 —	175 MX-1, T'NT							2
1974 —	125 MX-1, T'NT							4
1974 —	175 MX-1, T'NT	٠.						4
1974 –	250 MX-1, T'NT							6

Year Model number Name	73 3843 MX-1, 125cc	73 3853 MX-1, 175cc	73 3841 T'NT, 125cc	73 3851 T'NT, 175cc
CHASSIS Type Front suspension Rear suspension Fork angle (30° standard) Brakes/front & rear Rims/front rear Tires/front rear brand Weight (dry) Gross weight (starting	"Betor" teledraulic, 6 Swinging arm: adjustal Adjustable fork angle - Drum, single leading sh	1/2" travel (152.4 mm) ble "Girling" hydraulica – 25° to 31° in 1/2° ind noe 6" x 1", 18.85 sq. in	ully dampened crements n. (121.6 sq. cm)	233 250
line) LIQUID CAPACITIES Gas tank Oil tank Transmission Fork (each leg)	2 U.S. quarts — 1.5 lm 1.25 U.S. quarts — 1	p. quarts (2 I) Imp. quarts (120cc) _		
ENGINE Type Bore Stroke Displacement Compression ratio (uncorrected) Compression ratio (corrected) Horse power at rear wheel Lubrication	2.126" (54 mm) 2.126" (54 mm) 7.54 cu. in. (123.7cc) 13 to 1 5 to 1 20 Mikuni twin port injec	2.441" (62 mm) 2.264" (57.5 mm) 10.60 cu. in. (173.6cc	2.126" (54 mm) 7.54 cu. in. (123.7cc)	
POWER TRAIN Primary drive Primary drive ratio Clutch Transmission Gear ratio: 1st 2nd 3rd 4th 5th 6th Chain Number of pitches Engine sprocket	Straight cut gears 3.286 to 1 (21/69T) Multi plate — oil bath Constant mesh — 6 spe 3.40 (10/34T) 2.31 (13/30T) 1.68 (16/27T) 1.31 (19/25T) 1.09 (21/23T) 0.96 (22/21T) 5/8" pitch, 1/4" roller 104 14T	eed — rotary cam — slid width (No 520)	100	99
Rear wheel sprocket Ratio Overall ration (high gear)	50T 3.57 11.26	46T 3.28 10.35	48T 3.43 10.82	42T 3.00 9.46

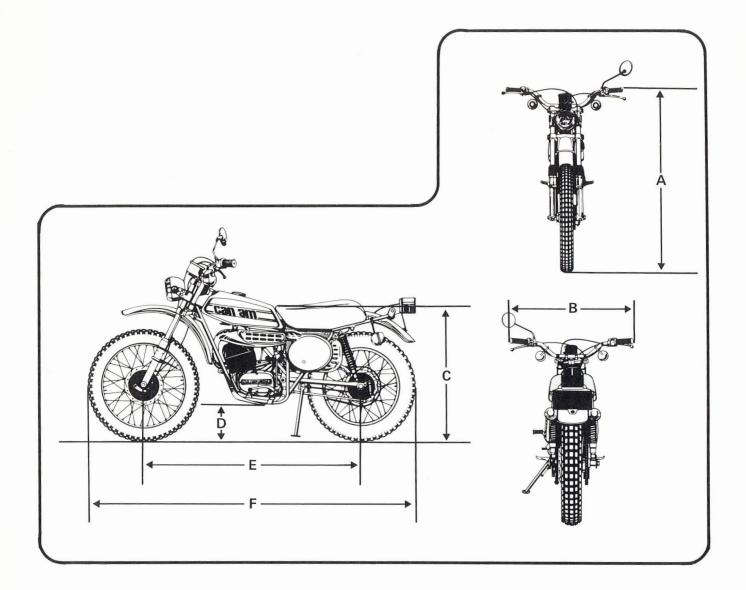
Year Model Number Name	73 3843 MX-1, 125cc	73 3853 MX-1, 175cc	73 3841 T'NT, 125cc	73 3851 T'NT, 175cc
CARBURETION Carburetor type Carburetor number Main jet Needle jet Idle jet Needle identification Needle setting Slide Idle jet screw adjustment Float level Air filter ELECTRICAL Ignition system Maximum ignition	1/32/102 155 2.76 40 2 identification grood 3rd ring from top Bing standard No. 1 1 1/4 turn out 1 1/32 inch (27 mm) Foam (oil impregnate	ed)	1/32/103 155	
output Ignition timing at 6000 RPM				
Spark plug type Spark plug number Spark plug gap Lighting Maximum alternator output Rectifier Battery (12 volts) Battery rating Fuse capacity Headlamp sealed beam Tail/stop bulb Speedometer illumination bulb Neutral indicator bulb Hi-beam indicator bulb Turn signal bulbs (4) Turn signal indicator bulb Turn signal Flasher	Bosch W280MZ2 0.020" (0.5 mm) Bosch alternator		Bosch, full wave 4 diode Yuasa # 12N5-4B 5 A/H 14 amps 25/25W 8/27W 1.7W 2.8W 1.7W 23W 2.8W 2.8W	

Year Model number Name	74 4843 MX-1, 125cc	74 4853 MX-1, 175cc	74 4841 T'NT, 125cc	74 4851 T′NT, 175cc
CHASSIS Type Front suspension Rear suspension Fork angle (30° standard) Brakes/front & rear Rims/front rear Tires/front rear brand Weight (dry) Gross weight (starting line)	"Betor" teledraulic, 6 Swinging arm; adjusta Adjustable fork angle Drum single leading sh	1/2" travel (152.4 mm) ble "S & W" hydraulical - 25° to 31° in 1/2° inc noe 6" x 1", 18.85 sq. in	ly dampened rements . (121.6 sq. cm)	233 250
LIQUID CAPACITIES Gas tank Oil tank Transmission Fork (each leg)	2 U.S. quarts — 1.5 In 1.25 U.S. quarts — 1 I	np. gal. (7.27 I) np. quarts (2 ⁻ I) Imp. quarts (120cc)		
ENGINE Type Bore Stroke Displacement Compression ratio (uncorrected) Compression ratio (corrected) Horse power at rear wheel Lubrication Starter	2.126 (54 mm) 2.126 (54 mm) 7.54 cu. in. (123.7cc) 13 to 1 5 to 1 20 Mikuni twin port inje		2.126 (54 mm) 2.126 (54 mm)) 7.54 cu. in. (123.7cc)	2.441 (62 mm) 2.264 (57.5 mm) 10.60 cu. in. (173.6cc)
POWER TRAIN Primary drive Primary drive ratio Clutch Transmission Gear ratio: 1st 2nd 3rd 4th 5th 6th Chain Number of pitches Engine sprocket Rear wheel sprocket Ratio Overall ratio(high gear)	Straight cut gears	eed — rotary cam — slid	ing fork	

Year Model number Name	74 4843 MX-1, 125cc	74 4853 MX-1, 175cc	74 4841 T'NT, 125cc	74 4851 T'NT, 175cc
CARBURATION Carburetor type Carburetor number Main jet Needle jet Idle jet Needle identification	40	1/32/104 155 2.70	1/32/114 150 2.73	1/32/113 155 2.73
Needle setting Slide Idle jet screw adjustment Float level Air filter	3rd ring from top Bing standard No 1 1 1/4 turn out 1 1/32 inch (27 mm) _			
ELECTRICAL Ignition system Maximum ignition output Ignition timing at 6000 RPM	30,000 volts 1.3 mm BTDC ± 0.2	1.4 mm BTDC ± 0.2	1.3 mm BTDC ± 0.2 16° BTDC ±1°	1.4 mm BTDC ± 0.2
Spark plug type Spark plug number Spark plug gap Lighting Maximum alternator output Rectifier Battery (12 volts) Battery rating Fuse capacity Headlamp sealed beam Tail/stop bulb Speedometer illumination bulb Neutral indicator bulb Hi-beam indicator bulb Turn signal bulbs (4) Turn signal indicator bulb Turn signal Flasher	0.020" (0.5 mm) Bosch alternator		Bosch, full wave 4 diode Yuasa # 12N5-4B 5 A/H 14 amps 25/25W 8/27W	



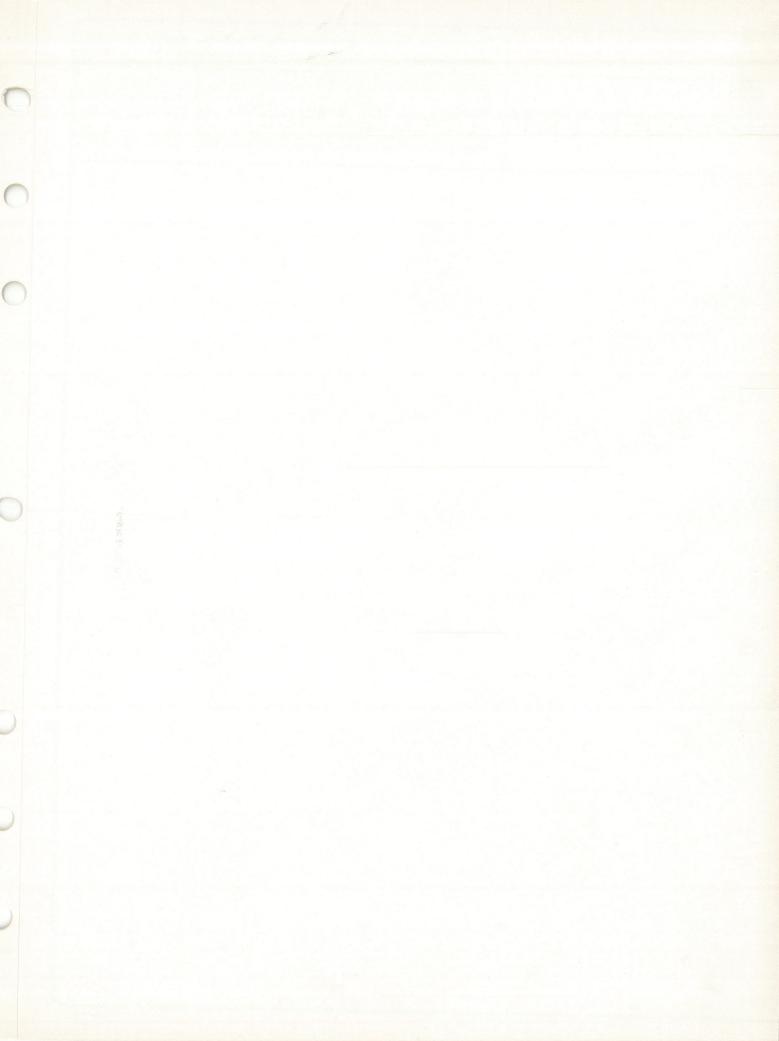
SUB-SECTION 4-2 DIMENSIONS



		125 & 175 MX & T'NT	250cc MX & T'NT
А	OVERALL HEIGHT (WITHOUT MIRROR)	213.4 cm (84 in.)	213.4 cm (84 in.)
В	OVERALL WIDTH (WITHOUT MIRRORS)	86.4 cm (34 in.)	86.4 cm (34 in.)
С	SEAT HEIGHT	76.2 cm (30 in.)	84 cm (33 in.)
D	GROUND CLEARANCE	18 cm (7 in.)	18 cm (7 in.)
Е	WHEEL BASE (WITH STANDARD FORK ANGLE)	137 cm (54 in.)	140 cm (55 in.)
F	OVERALL LENGTH	213 cm (84 in.)	213 cm (84 in.)

SUB-SECTION 4-3 ENGINE EXPLODED VIEWS



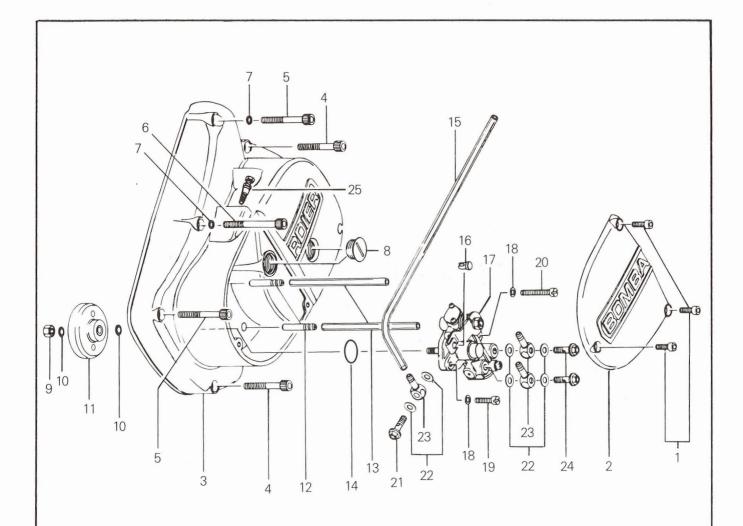




SUB-SECTION 4-4

ENGINE LUBRICATION SYSTEM

OIL INJECTION SYSTEM
SPECIFICATIONS
MAINTENANCE

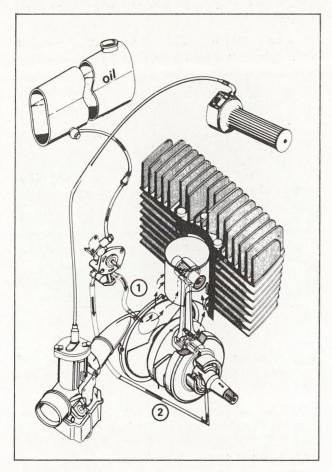


- 1. Allen screw M5 x 12
- 2. Oil pump cover
- 3. Clutch cover
- 4. Allen screw M6 x 35 (4)
- 5. Allen screw M6 x 40 (3)
- 6. Allen screw M6 x 50
- 7. Gasket, clutch cover screw (2)
- 8. Plug (2)
- 9. Oil pump gear nut M6
- 10. Washer 6.2 mm
- 11. Oil pump gear 34 T
- 12. Oil pump check valve
- 13. Oil line 90 mm

- 14. ''O'' ring 15. Oil line 560 mm
- 16. Split end nipple
- 17. Oil pump ass'y
- 18. Lock washer 5 mm
- 19. Screw M5 x 16
- 20. Screw M5 x 28
- 21. Banjo bolt
- 22. Oil banjo gasket
- 23. Banjo
- 24. Banjo bolt
- 25. Oil pump cable adjuster

Section 4-4 Page 3

OIL INJECTION SYSTEM



Lubrication oil is supplied under pressure by a Mikuni twin outlet pump to the intake (1) and to the crankshaft bearing (2).

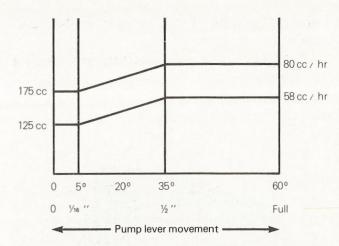
Engine R.P.M. controls the pressure while throttle action determines the flow.

Oil pump delivery specifications

At full throttle, the oil pump delivery is as follows:

125 cc.													58 cc / hr
175 cc.													80 cc / hr

The oil pump supplied maximum delivery from approximately 35 degrees of pump opening to the maximum of 60 degrees. This is from about $\frac{1}{2}$ "lever movement to full open. At idle, the pump delivers a 100-1 oil mix for the first $\frac{1}{16}$ " of lever movement.



Always use Can-Am injection oil (or equivalent injection oil). The oil tank capacity is 2.3 qts. U.S. (1.9 qts lmp.).

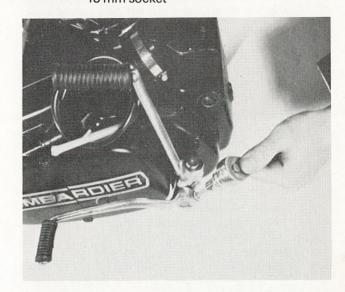


CAUTION: When oil level is at lower mark on dipstick, replenish with 1 can of Can-Am Injection Oil (16 oz). Never mix natural based injection oil with any synthetic oils as they are incompatible.

REMOVAL

Remove the gear shift lever and the kick start lever.

TOOLS: 5 mm Allen wrench 13 mm socket

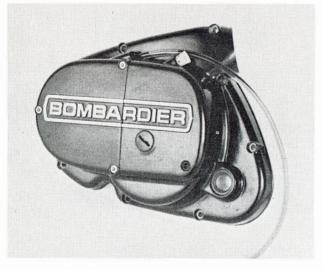


Page 4 Section 4-4

Remove the eight (8) screws retaining the clutch cover.

NOTE: Two of the top screws have a sealing washer.

TOOLS: 5 mm Allen wrench



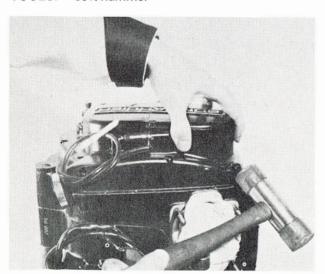
Tap the clutch cover lightly with a soft faced hammer until its seal is broken.



CAUTION: Do not force a screwdriver between sealing surfaces as damage and leaks will occur. If the clutch cover is to be removed with engine in frame, take the left foot peg off first.

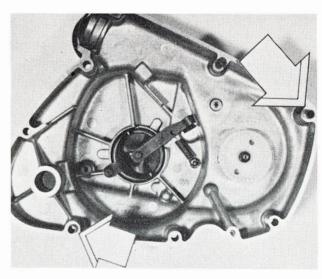
Remove the clutch cover.

TOOLS: soft hammer



Take care not to lose the two (2) clutch cover locating dowels and the oil pump to rotary valve cover "O" ring.

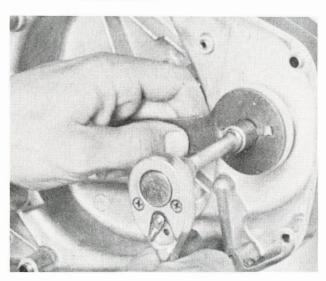
On models 4841 and 4851, remove the oil passage "O" ring from its recess in the crankcase.



Holding the gear firmly with the aid of the Can-Am tool no 420 277 900, remove the oil pump driven gear nut.

If the Can-Am tool no 420 277 900 is not available, insert a pin punch through the hole in the gear and place it against the rib of the crankcase so as to keep the gear from turning (while removing the nut).

TOOLS: Can-Am tool no 420 277 900 10 mm socket

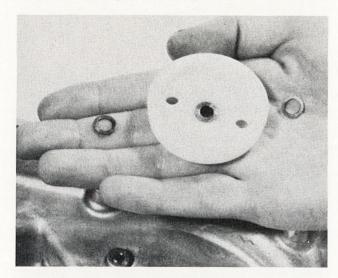


Section 4-4 Page 5

Remove the oil pump driven gear lock washer, gear, and second lock washer.

NOTE: There is one (1) special lock washer on each side of the gear.

On models 4841 and 4851, there is only one flat washer between gear and pump.



Remove the three (3) oil pump housing cover screws. Remove the oil pump cover.

TOOLS: 4 mm Allen wrench

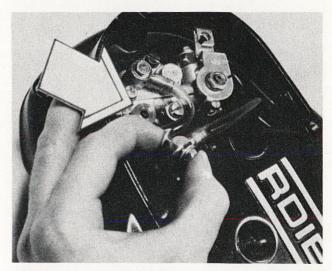


Disconnect the three (3) oil pump lines.

Replace the three (3) oil pump banjo bolts and the six (6) washers so as not to lose them.

NOTE: There are two (2) aluminum washers with each bolt, one on each side of the banjo fitting.

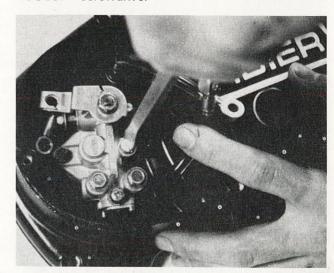
TOOLS: 8 mm wrench



Remove the two (2) oil pump mounting screws and the two (2) lock washers.

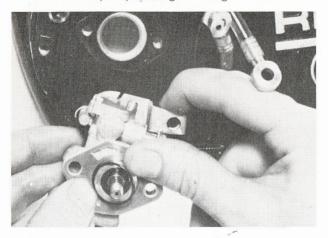
Remove the oil pump.

TOOLS: screwdriver



Page 6 Section 4-4

Remove the oil pump sealing "O" ring.



INSPECTION

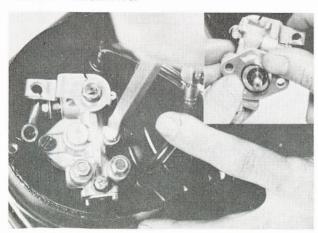
- Check all oil lines for leaks, breaks or cracks. If damaged, replace.
- Check oil pump gear for wear or cracks. If worn or cracked, replace.
- Check control wire for breaks or loose strands.
 If damaged, replace.
- Check that oil pump lever operates freely.
- Check oil pump mounting flange "O" ring for damage. If damaged, replace.
- NOTE: The oil pump cannot be disassembled and repaired. If the oil pump is defective, replace.

ASSEMBLY

Fit the "O" ring to the oil pump body.

Place the oil pump in position in the clutch cover and fit the screws.

TOOLS: screwdriver

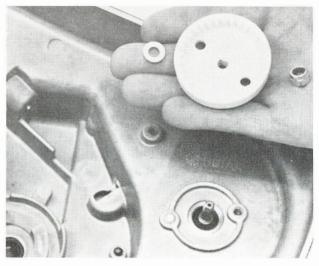


Fit 1 special locking washer onto the oil pump shaft and then the nylon gear and 1 special locking washer.

On models 4841 and 4851, install a flat washer, the gear and the nut.

Using Can-Am tool no 420 277 900 to hold the pump gear, tighten the gear retaining nut.

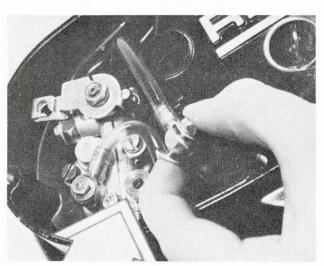
TOOLS: Can-Am no 420 277 900 10 mm socket



Connect the 2 oil pump banjo fittings with a special gasket washer on each side of the banjo.

NOTE: Large O.D. side of the banjo towards the oil pump.

TOOLS: 8 mm wrench



Section 4-4 Page 7

Fit the 2 locating dowels (A) into the crankcase.

Make sure the rotary valve cover "O" ring (B) is properly positioned.

Apply a thin coat of silicone sealant to the crankcase joint surface.

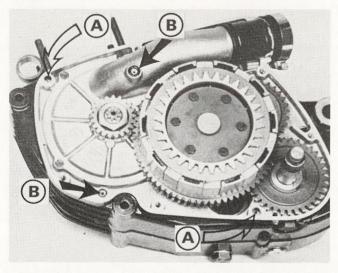


CAUTION: Do not block the main bearing oil passage.

Fit the clutch cover onto the kickstart shaft and into place.



CAUTION: Exercise care to prevent oil seal damage.



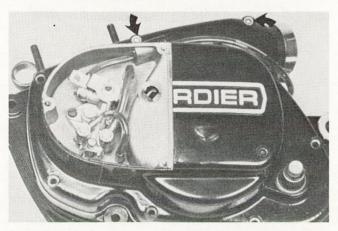
Make sure the pump gear meshes with the crankshaft gear. To ensure this, remove the locating bolt and turn crankshaft slowly while tapping clutch cover on.

Fit the clutch 8 cover Allen screws.



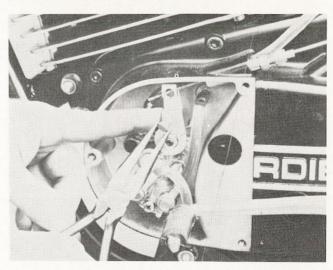
NOTE: Do not omit the 2 aluminum washers. (See arrows).

TOOLS: 5 mm Allen wrench soft hammer



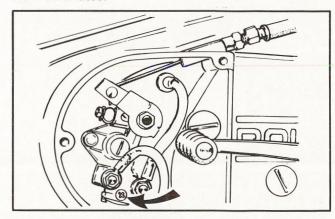
Litho'd in Canada

Rotate the oil pump control lever clockwise. Pass the cable through the lever and push the split nipple in position. Release the control lever.

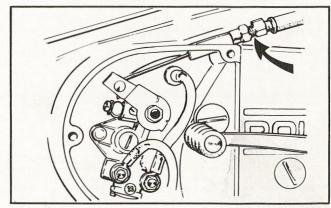


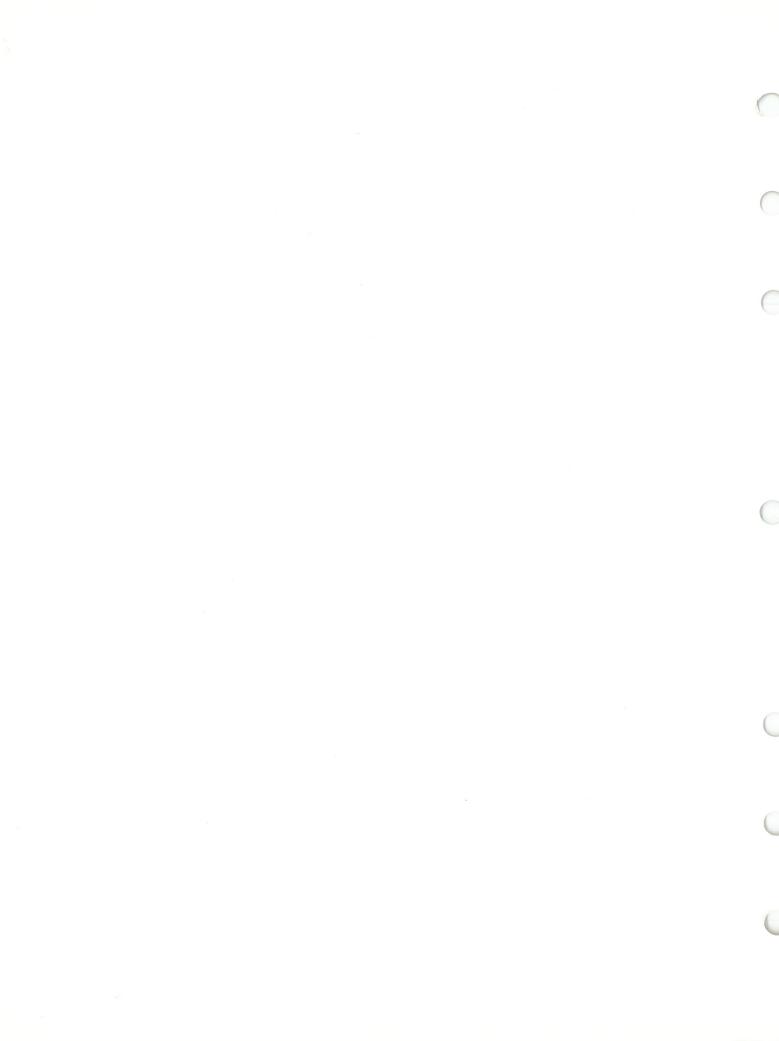
Bleed air out of the inlet oil line by unscrewing the lower screw (Phillip head type) until all the air bubbles are out.

To bleed the air out of the oil pump, start the engine and let it idle at $1100 \approx 1300$ RPM, push control lever to maximum opening and hold in this position for 3-5 minutes.



Using the pump cable adjuster, adjust cable to align pump marks when throttle is in closed position.





Section 4-5

Page 1

SUB-SECTION 4-5

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

		Maxim	
Size	Location	Tightening kg-m	Torque ft-lb
M6x25	Chain guard screw	1,1	8
* M5x12	Cam retaining spring screw (Loctite)	0,5	4
M5x16	Oil pump screw	4	3
M5x28	Oil pump screw		3
M6x11,5	Oil level plug (Allen)	0,5	4
M5x16	Armature plate screw	0,5	4
M8x20	Exhaust socket screw	2,1	15
M5x12	Bearing retaining plate screw (Loctite)	0,5	4
M5x16	Disk valve cover screw (Loctite)	0,5	4
M8x16	Crankcase drain plug		15
M6x50	Clutch cover, mag. cover screws (Allen)	0,8	6
* M5x25	Clutch spring retaining plate screws (Loctite)	0,5	4
M12	Kick start stop screw	3,5	25
M12	Transmission drain plug		8
M14	Shift drum index plug		25
M6x35	Clutch cover screw (Allen)		6
M6x40	Clutch cover screw	0,8	6
M6x45	Crankcase screw		8
M6x45	Magneto cover screw		6
M6x16	Banjo bolt		4
M5x12	Oil pump cover screw (Allen)		4
	Neutral indicator contact screw		4
M6x70	Crankcase screw (Allen)	1,1	8
M6x20	Shift lever clamp screw (Allen)		8
M8x22	Kick start hub clamp screw	2,1	15
M12x21	Pawl positioning locking nut (Loctite)		20
M16x1,5	Crankshaft nut, mag. side, (Loctite)		60
* M7	Cylinder head nut (125 / 175)		12
* M8	Cylinder head nut (250)		14
* M8	Cylinder base nut	· ·	22
M18x1,5	Crankshaft nut, clutch side (Loctite)		90
M16x1,5	Clutch hub and engine sprocket nuts (Loctite)		75
M6	Oil pump gear lock nut		3
M4x.7	Ignition coil screw (Loctite)		3
M14x1.25	Spark plug		20
* M8	Cylinder studs		8
*	Spoke nipples (front & rear)		3,5
* M16x1,50	Swing arm pivot bolt nut		50

^{*}REVISED OR NEW SPEC.

SUB-SECTION 4-6 SERVICE LIMITS

Service Limits 125 & 175

POWER HEAD	MAXIMUM	MINIMUM	LIMIT
Piston to cylinder sleeve			
125cc	.15 mm (.006'')	.06 mm (.0024'')	.15 mm (.006'')
175cc	.15 mm (.006'')	.07 mm (.0028'')	.15 mm (.006′′)
Squish area optimum is .75 mm (.030")	1.0 mm (.040'')	.5 mm (.020′′)	
(125 & 175cc, high & low compression head)			e
Piston ring end gap			
125cc	.35 mm (.014'')	.2 mm (.008'')	.8 mm (.032'')
175cc	.40 mm (.016′′)	.25 mm (.010′′)	.8 mm (.032'')
Cylinder sleeve to cylinder			
Cylinder I.D.			
125cc	60 + .03 mm (+ .0012'')	60.0	
175cc	68 + .03 mm (+ .0012'')	68.0	
Cylinder sleeve O.D.			
125cc	60 + .121 mm (+ .005)	60.02 + .102 (+ .004)	
175cc	68 ± .121 mm (.005")	68.0 ± .102 (.004'')	
Interference fit (sleeve to cylinder)			
125cc	.121 mm (.005'')	.072 mm (.003'')	
175cc	.121 mm (.005'')	.072 mm (.003'')	
CRANKCASE			
Crankpin interference fit 125/175	.095 mm (.004'')	.076 mm (.003'')	
Connecting rod to crankshaft clearance			.2 mm (.008'')
Connecting rod to piston pin clearance			.1 mm (.004'')
Piston pin (std. O.D. 18 mm)			18 mm — .05 (— .002'')

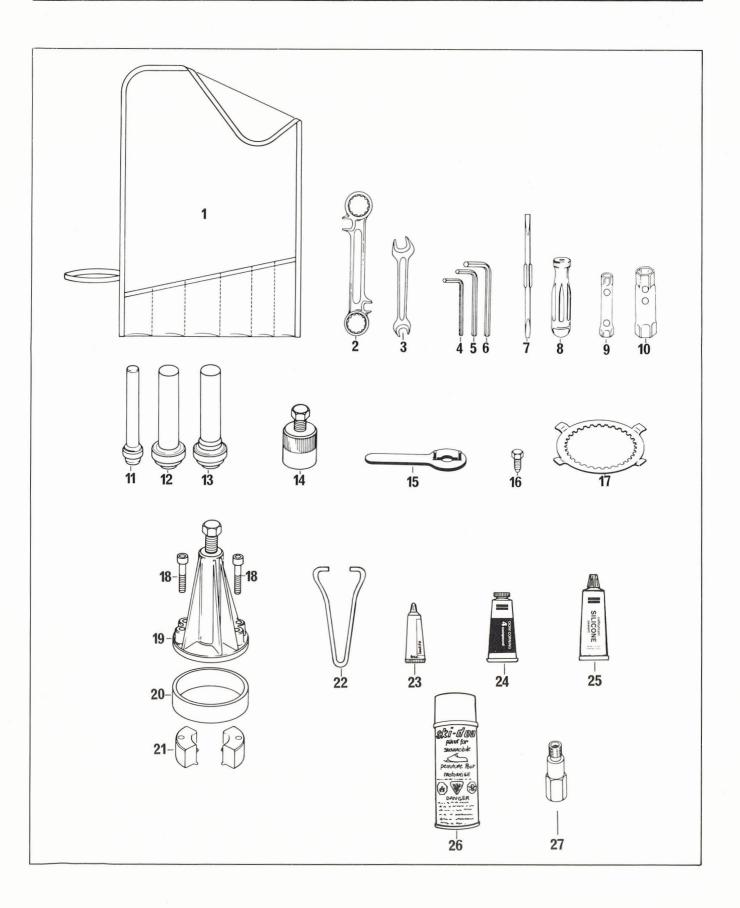
Service Limits 125 & 175

CRANKCASE	MAXIMUM	MINIMUM	LIMIT
Crankshaft excentricity		*	.05 mm (.002")
Depth of groove caused by crankshaft seals			.15 mm (.006")
Ball bearings clearances (all bearings)			.1 mm (.004")
radial		1	.05 mm (.002")
Connecting rod side play in crankshaft	.427 mm (.017'')	.250 mm (.010′′)	.7 mm (.028'')
Crankshaft end play	.3 mm (.012")		
Interference fit between Crankshaft ring and case (plastic inserts)	.04 mm (.0016'')	.01 mm (.0004′′)	
Wear limit of plastic inserts (clearance between bearing and plastic insert)			.1 mm (.004'')
Interference fit of oil pump gear and crankshaft	.04 mm (.0016'')	.03 mm (.0012'')	
Disc valve rotational play			1.2 mm (.048")
CLUTCH			
Radial clearance of clutch drum needle bearing			.06 mm (.0024′
Rotational play between slots of clutch drum and friction plate ears			1.0 mm (.040'')
Rotational play between the splines of clutch hub and the teeth of			
driven plate Thickness of friction plate			.7 mm (.028") 3.5 — .4 mm
TRANSMISSION			(.140'' – .016'')
Shifter shaft end play	.06 mm (.023′′)	.5 mm (.020'')	
Shifter drum end play	.3 mm (.012'')	.0 (0)	
Kick starter shaft end play	.4 mm (.016")	.3 mm (.012'')	

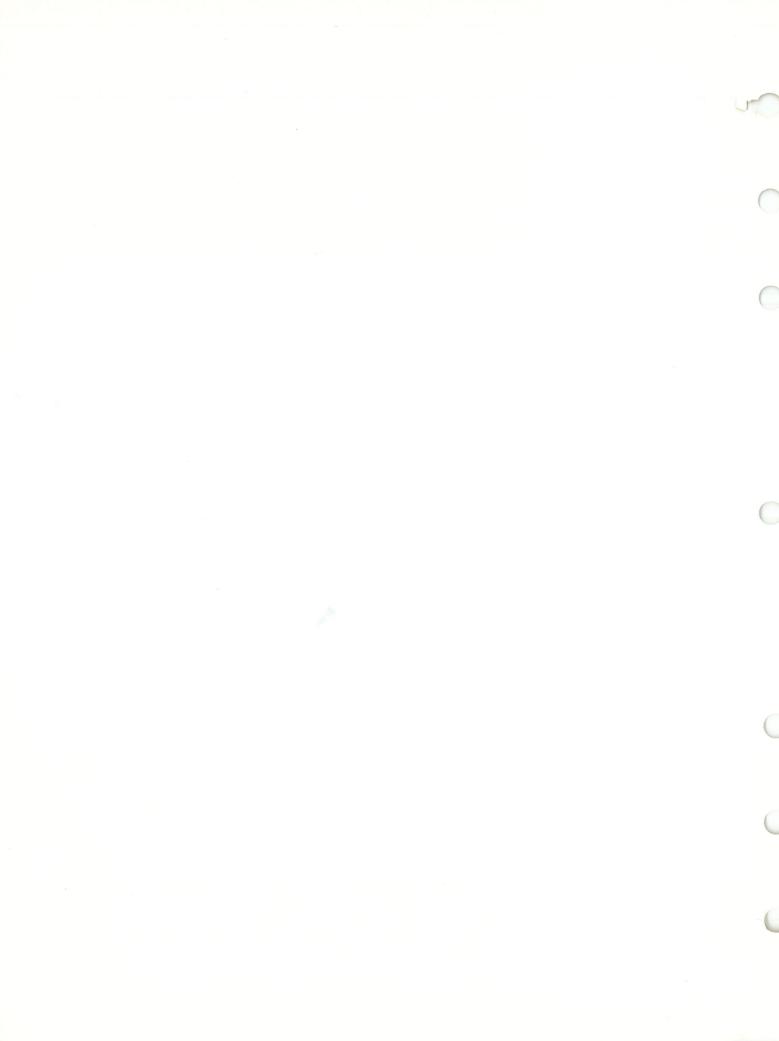
Service Limits 125 & 175

TRANSMISSION	MAXIMUM	MINIMUM	LIMIT
Shifter shaft radial clearance	.15 mm (.006'')	.11 mm (.0044")	
Needle bearing radial play			.08 mm (.0032'')
Axial clearance between shift fork and groove in gear			.5 mm (.020")
Axial clearance between pin of shift forks and groove in shift drum (Measured with shifter drum indexed in each gear except neutral)			.4 mm (.016'')
Main shaft end play			.1 mm (.004'')
Clutch shaft end play			.1 mm (.004'')

SUB-SECTION 4-7 SPECIAL TOOLS



ITEM NO	PART NUMBER	DESCRIPTION
1 to 10	420 277 780	Tool Kit
1	420 876 190	Tool Bag
2	420 876 820	Wrench, Combined
3	420 276 065	Wrench, Double Open End 10/13 mm
4	420 277 790	Wrench, Allen #4
5	420 876 360	Wrench, Allen #5
6	420 277 810	Wrench, Allen #6
7	420 277 830	Blade, Screwdriver
8	420 277 840	Grip, Screwdriver
9	420 876 220	Wrench, Socket 11/13 mm
10	420 277 410	Wrench, Socket 17/21 mm
11	420 277 850	Oil Seal Insertion Jig (Kick Starter)
12	420 277 860	Oil Seal Insertion Jig (Crankshaft Magneto Side)
13	420 277 870	Oil Seal Insertion Jig (Crankshaft Clutch Side, Main Shaft
14	420 277 805	Magneto Side) Puller Ass'y For Flywheel
15	420 277 900	Wrench, Pump Gear
16	420 241 960	Bolt, Locating For Crankshaft
17	420 277 885	Clutch Hub Locking Tool
18	420 840 680	Screw, Allen Head M8 X 40
10	420 040 000	Sciew, Alleit field Wo X 40
19	420 876 296	Puller Ass'y
20	420 977 480	Ring For Puller
21	420 277 890	Ring Segment For Puller
22	748 033 000	Cam Adjuster Tool S & W Shock Absorbers
23	747 020 000	Loctite No 271
24	747 018 000	Silicone Dielectric (Dow Corning DC-4)
25	747 002 000	Silicone Sealant (Dow Corning Clear)
	747 002 001	Silicone (Dow Corning Black)
26	413 402 600	Paint, Glossy Black (Spray)
27	748 019 000	Vapor Plug



SUB-SECTION 4-8 CONVERSION TABLES

METRIC TO AMERICAN	CONVERSION TABLE	AMERICAN TO METRIC	CONVERSION TABLE
MULTIPLY	BY TO OBTAIN	MULTIPLY	BY TO OBTAIN
(LINEAR)		(LINEAR)	
Millimeters (mm)	.03937 Inches .00328 Feet .3937 Inches .0328 Feet	Inches (in.)	2.54 Centimeters
(DISTANCE)		(DISTANCE)	
Meters (m)	39.37 Inches 3.28 Feet 3281 Feet .6214 Miles	Feet (ft)	.0254
(AREA)		(AREA)	
Square Centimeters (cm ²) Square Centimeters (cm ²) Square Meters (m ²)	.155 Square Inches .001076 Square Feet 10.76 Square Feet		6.452 Square Centimeters 929 Square Centimeters
(VOLUME)		(VOLUME)	
Cubic Centimeters (cc) Liters (1)	.06102 Cubic Inches 61.02 Cubic Inches	Cubic Inches (cu. in.) Cubic Inches (cu. in.)	16.39 Cubic Centimeters .01639 Liters
(LIQUID CAPACITY)		(LIQUID CAPACITY)	
Liters (1)	2.113 Pints 1.057 Quarts .2642 Gallons .0338 Fluid Ounces 1.2 Imperial gals 4.537 Liters 277.274 cu. in.	Quarts (qt.)	.4732 Liters .9463 Liters 3.785 Liters 29.58 Cubic Centimeters 1.2 Imperial gals. 4.537 Liters 277.274 cu.in.
(WEIGHT)		(WEIGHT)	
Grams (gm) Kilograms (kg)	.03527 Ounces 2.205 Pounds	Ounces (oz.) Pounds (lb.)	28.35
(OTHER)		(OTHER)	
Kilogram-Meters (kg-m) . Kilometers/Liters (km/l) . Metric Horsepower (ps) 1	7.233 Foot-Pounds (Ft-Lbs.) 2.352Miles/Gallon (mpg) .014 Brake Horsepower (bhp)	Miles/Gallon (mpg)	.1383 Kilogram-Meters (kg-m) .4252 Kilometers/Liter (km/l) .9862 Metric Horsepower (ps)

Millimeters to inches

mm.	Inches	mm.	Inches	mm.	Inches	mm.	Inches	mm.	Inches
.01	.00039	.41	,01614	.81	.03189	21	.82677	61	2.40157
.02	.00079	.42	.01654	.82	.03228	22	.86614	62	2.44094
.03	.00118	.43	.01693	.83	.03268	23	.90551	63	2.48031
.04	.00157	.44	.01732	.84	.03307	24	.94488	64	2.51968
.05	.00197	.45	.01772	.85	.03346	25	.98425	65	2.55905
.06	.00236	.46	.01811	.86	.03386	26	1.02362	66	2.59842
.07	.00276	.47	.01850	.87	.03425	27	1.06299	67	2.63779
.08	.00315	.48	.01890	.88	.03465	28	1.10236	68	2.67716
.09	.00354	.49	.01929	.89	.03504	29	1.14173	69	2.71653
.10	.00394	.50	.01969	.90	.03533	30	1.18110	70	2.75590
.11	.00433	.51	.02008	.91	.03583	31	1.22047	71	2.79527
.12	.00472	.52	.02047	.92	.03622	32	1.25984	72	2.83464
.13	.00512	.53	.02087	.93	.03661	33	1.29921	73	2.87401
.14	.00551	.54	.02126	.94	.03701	34	1.33858	74	2.91338
.15	.00591	.55	.02165	.95	.03740	35	1.37795	75	2.95275
.16	.00630	.56	.02205	.96	.03780	36	1.41732	76	2.99212
.17	.00669	.57	.02244	.97	.03819	37	1.45669	77	3.03149
.18	.00709	.58	.02283	.98	.03858	38	1.49606	78	3.07086
.19	.00748	.59	.02323	.99	.03898	39	1.53543	79	3.11023
.20	.00787	.60	.02362	1.00	.03937	40	1.57480	80	3.14960
.21	.00827	.61	.02402	1	.03937	41	1.61417	81	3.18897
.22	.00866	.62	.02441	2	.07874	42	1.65354	82	3.22834
.23	.00906	.63	.02480	3	.11811	43	1.69291	83	3.26771
.24	.00945	.64	.02520	4	.15748	44	1.73228	84	3.30708
.25	.00984	.65	.02559	5	.19685	45	1.77165	85	3.34645
.26	.01024	.66	.02598	6	.23622	46	1.81102	86	3.38582
.27	.01063	.67	.02638	7	.27559	47	1.85039	87	3.42519
.28	.01102	.68	.02677	8	.31496	48	1.88976	88	3.46456
.29	.01142	.69	.02717	9	.35433	49	1.92913	89	3.50393
.30	.01181	.70	.02756	10	.39370	50	1.96850	90	3.54330
.31	.01220	.71	.02795	11	.43307	51	2.00787	91	3.58267
.32	.01260	.72	.02835	12	.47244	52	2.04724	92	3.62204
.33	.01299	.73	.02874	13	.51181	53	2.08661	93	3.66141
.34	.01339	.74	.02913	14	.55118	54	2.12598	94	3.70078
.35	.01378	.75	.02953	15	.59055	55	2.16535	95	3.74015
.36	.01417	.76	.02992	16	.62992	56	2.20472	96	3.77952
.37	.01457	.77	.03032	17	.66929	57	2.24409	97	3.81889
.38	.01496	.78	.03071	18	.70866	58	2.28346	98	3.85826
.39	.01535	.79	.03110	19	.74803	59	2.32283	99	3.89763
.40	.01575	.80	.03150	20	.78740	60	2.36220	100	3.93700





