

PACER
MOPED
Workshop/Repair
MANUAL

Morini Engines
Franzoni Forks
CEV-Pagani Electricals
Grimeca Hubs
Dell'Orto Carburetor
Danzi Magnetos

PACER

CPS DISTRIBUTORS NOW
A DIVISION OF MARINA MOBILI
Moonachie, New Jersey

Dealer Assembly & Preparation

Assembling:

- 1- Remove unit from carton, being careful not to scratch paint. Before discarding carton, check packing bag attached to luggage rack. (Contents of bag are as follows):

<u>Quantity</u>	<u>Parts</u>	<u>Description</u>
4	#411	Handlebar support bolts
1	#410	Handlebar support
1	#415	Steering lock nut
1	#439 & 440	Pair pedals
1	#314	Speedometer
1	#314B	Speedometer console

- 2- Place handlebar on fork top with throttle control on right side of bike. Temporarily fasten handlebar to fork top using chrome cap nut. (Finger tight only) Place bracket over handlebar and fasten to fork top using 4 bolts.
Note: Before installing handlebar, ensure that threads on fork top and bolts are clean and free of paint. Always start bolts and nuts with fingers to prevent cross threading. Use of a light oil is recommended.
- 3- Check marking on pedals noting that right hand pedal (R) is right hand thread and left hand pedal (L) is left hand thread. Each pedal is tightened by turning toward the front wheel.
- 4- Tires- Before inflating tire, rotate wheel slowly while squeezing sidewall of tire around circumference. Add small amount of air, and repeat squeezing operations. This centers tube inside tire preventing tube pinching during inflation. Then slowly inflate tire to recommended pressure. (Front 22 lbs., Rear 30 lbs.)

Preparation: Although all machines are checked by the factory, following these steps will help assure total customer satisfaction.

- 1- Check transmission oil level by removing oil filler cap located on right side of engine, oil should be level with bottom of oil filler opening. Oil level must be checked with bike on stand. DO NOT OVER FILL!!!
- 2- Check drive chain tension, if loose adjust to specification.
- 3- Adjust front and rear brakes. Inspect cables for free movement.
- 4- Tighten all frame hardware to specification.
- 5- Fill fuel tank with pre-mixed oil, gas mixture.
Note: It is recommended that oil and gas be mixed in a separate container and the container shaken to insure proper mixture. Always shake container before mixture is added to tank as the oil has a tendency to settle out of mixture.

- 6- Start unit on stand. With unit running on stand, check operation of all lights and horn. Check for any oil or gas leaks, inspect exhaust system for leakage. Correct if necessary.
- 7- Test ride unit with attention to operation of brakes and general running conditions. Adjust if necessary.

Engine Break-In:

How the engine is treated in the first 200 miles of operation will determine its service life. It is extremely important to mix 6 oz. of regular two cycle oil with the first tank full of gasoline. (12 oz. in the Super Sport) This will insure proper engine break-in during the first 200 miles. After this period synthetic oil may be used and mixed according to oil manufacturer's recommendations listed on oil container. During this break-in period avoid prolonged full throttle operation and excessive hill climbing. Varying speed of engine between half and full throttle is recommended.

Following these guide lines will insure a long and trouble free life for the engine internal parts.

Engine Service

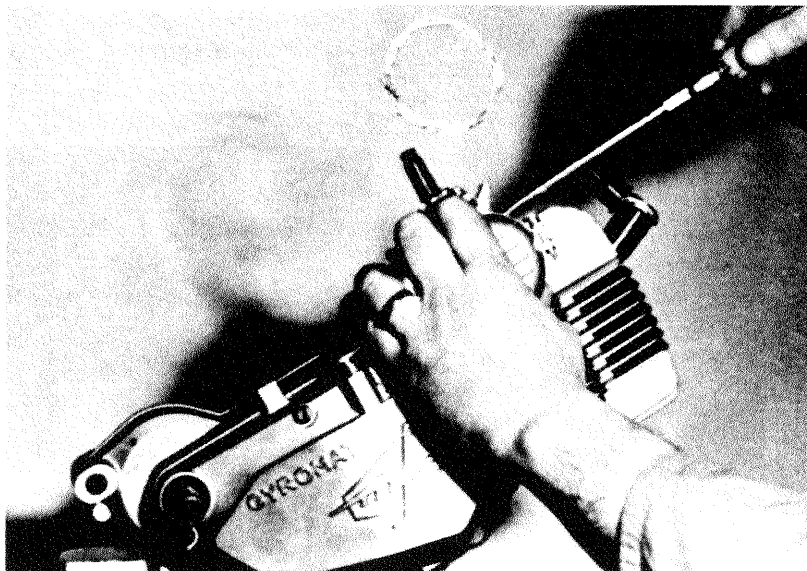
Although the Morini engine is as well engineered and trouble free as modern technology permits, there will be instances when service is necessary. It is strongly recommended that the mechanic become thoroughly familiar with the contents of this manual before major service is undertaken. In this way he will be able to approach the job with more confidence.

It is also important for the dealer to keep an adequate supply of normally replaced parts such as: Gaskets, Oil Seals, Pistons and Rings and Engine hardware. This will avoid unnecessary delay in service and insure a satisfied customer.

Removal from Vehicle:

1. Turn off fuel valve at fuel tank.
2. Drain transmission oil.
3. Disconnect chain at master link.
4. Disconnect 3 Magneto wires at splice block above engine.
5. Loosen carburetor clamp nut and carefully remove carburetor from manifold.
6. Remove right side foot rest and disconnect clutch cable from engine.
7. Unbolt muffler from frame, remove 2 exhaust pipe nuts and slide exhaust pipe off studs.
8. Remove left side foot rest.
9. Remove 3 engine mounting bolts - slide engine free of frame.
10. Clean exterior of engine.
11. Remove left and right side crank cotters.
12. Place engine on clean work surface or suitable stand. (Figure No. 1)

Figure 1



Flywheel - Pinion Removal:

1. Hold flywheel with flywheel tool #753 and unscrew center nut. (Figure No. 2)
2. Apply flywheel puller #751 holding the flywheel cover with the tool #753. (Figure No. 3)
3. After flywheel cover has been removed, using a screwdriver, remove the rest of the flywheel as shown in Figure No. 4.
4. To remove chain sprocket first hold same with Morino tool #754 and unscrew nut above sprocket. Then apply Morini tool #752. (Figure No. 5)

Figure 2

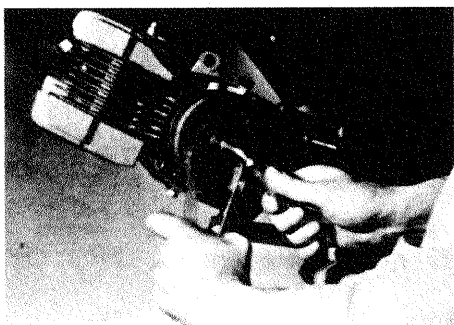


Figure 3

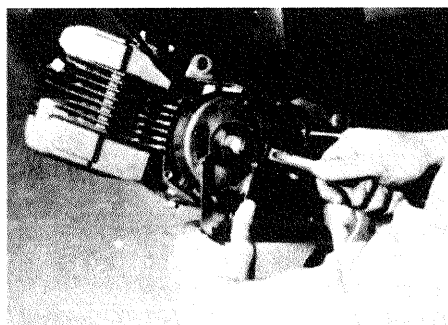


Figure 4

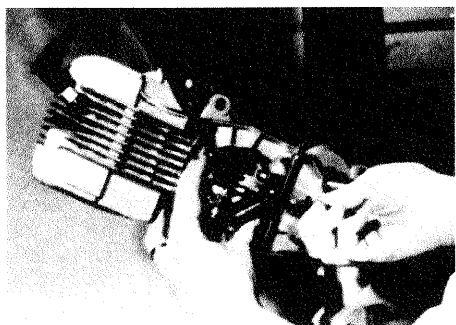
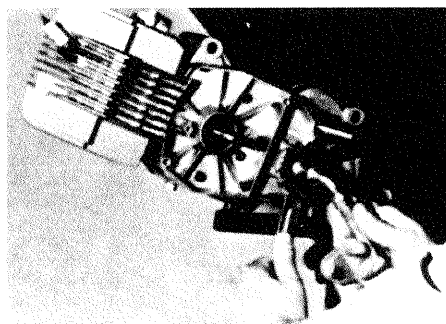


Figure 5



Clutch Removal

1. Remove clutch and transmission cover. (Figure No. 6)
2. Press disc clutch cover and remove steel ring, as per (Figure No. 7)
3. Hold clutch with Morini tool No. 753 and unscrew nut above clutch as per (Figure No. 8)
4. Place Morini tool No. 755 (clutch puller) on the clutch, tightening it with 2 screws (use same cover screws) by passing the screws through the slots in the clutch puller. (Figures No. 9 and 10) When clutch is out remove clutch container by hand.

Figure 6

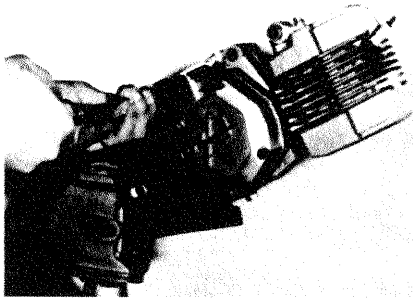


Figure 8

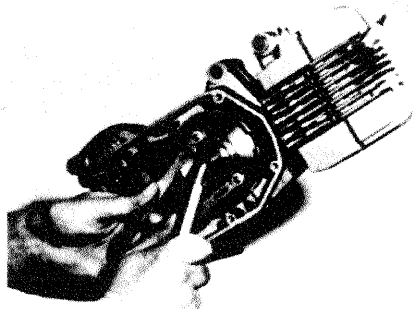


Figure 7

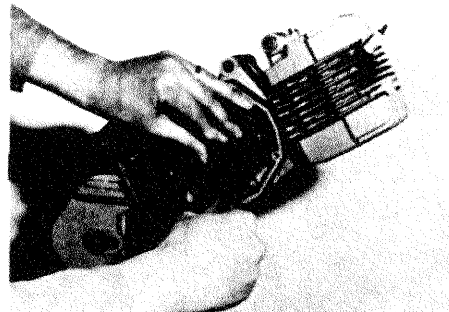


Figure 9

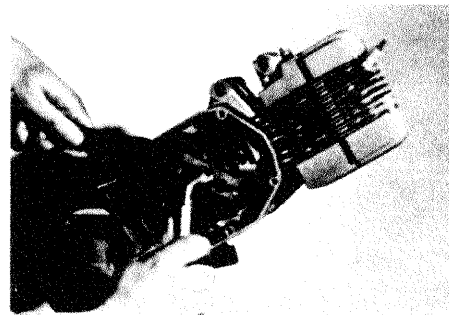
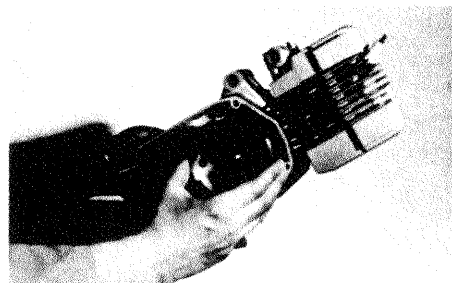


Figure 10



Transmission Removal

1. Hold transmission with screwdriver through the slots and unscrew nut above transmission. (Figure No. 11)
2. Place Morini tool No. 755 (transmission puller) on the transmission, tightening it with 2 screws (use same cover screws) by passing the screws through the transmission puller slots. (Figure No. 12)

Figure 11

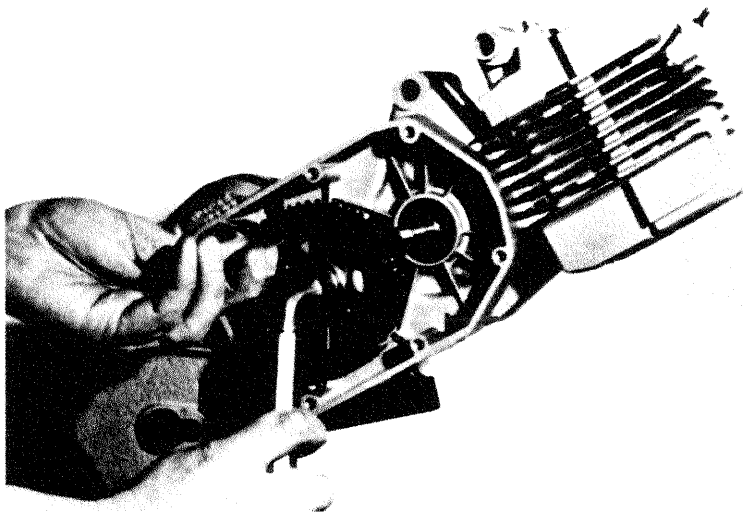
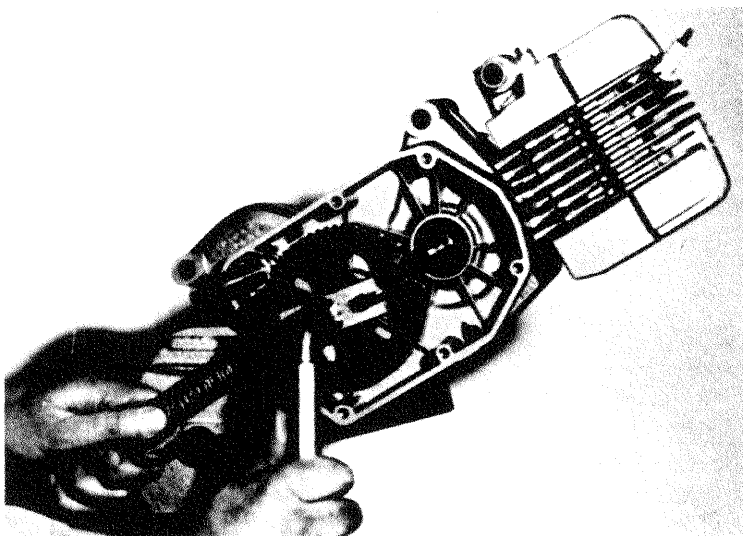


Figure 12



Cylinder Head, Cylinder and Piston Removal

1. Loosen and remove the 4 screws on the cylinder head and gently pull same together with gasket. (Figure No. 13)
2. Gently pull out the cylinder with the gasket. (Figure No. 14)
3. At this point the piston is uncovered and ready to be removed.
4. Remove the 2 piston pin clips and drive out piston pin using suitable size drift punch. (Figure No. 15)

Figure 13

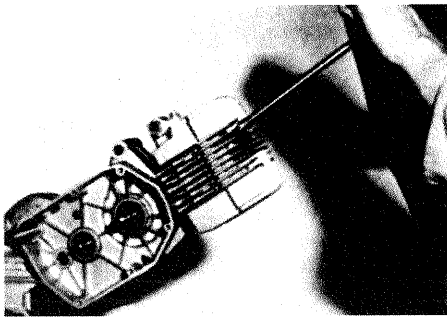


Figure 14

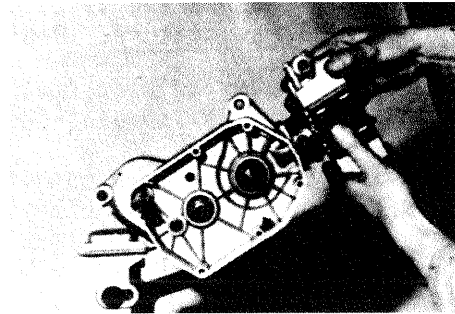
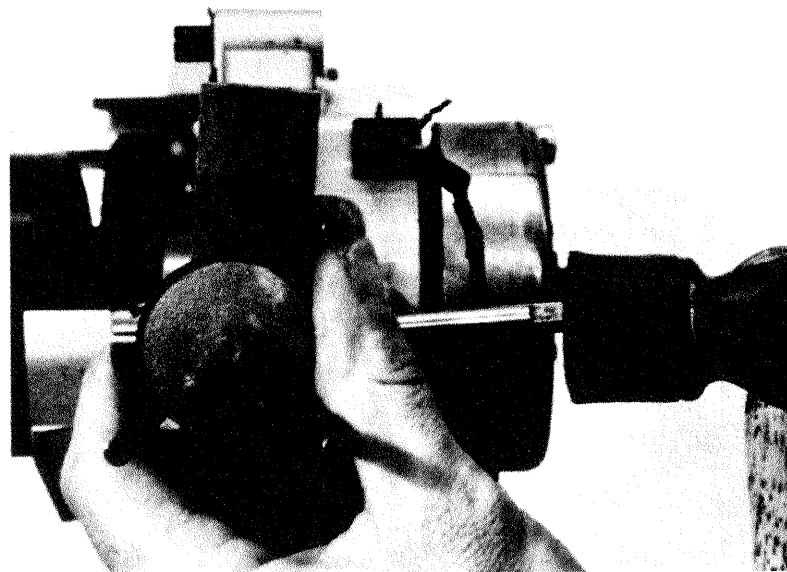


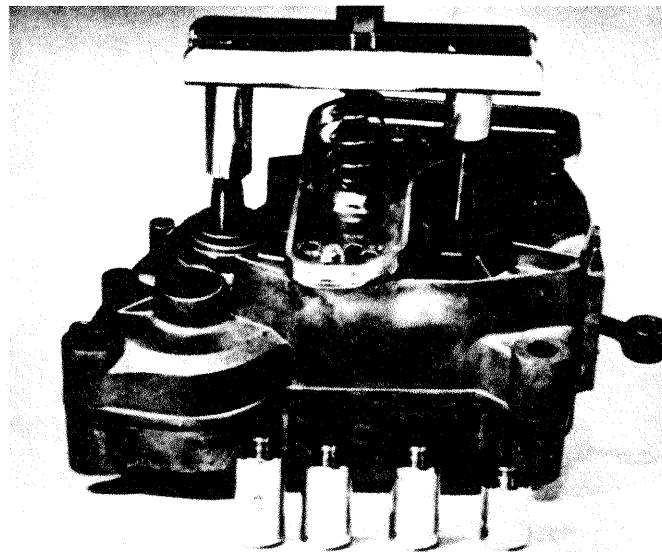
Figure 15



Dismantling Semi - Case:

1. Remove the 9 semi case bolts.
2. Apply semi case extractor (Morini Tool #756) as per (Figure No. 16). Use of this tool will prevent damage in extractor of semi case halves.
3. With semi cases separated, carefully note location and number of all spacer washers as their number and placement is critical in re-assembly procedure.
4. Crank shaft, pedal shaft and gear shaft can now be tapped out from remaining side of semi case using plastic hammer. Note: Any bluish-black discoloration of crankshaft big end, piston skirt or roughness of crankshaft big end bearing is evidence of extreme overheating caused by improper oil/gas mixture. Replacement of crankshaft, cylinder and piston is required.

Figure 16



Semi-Case Reassembly

Note:

The importance of a clean work area cannot be over emphasized. Any dirt or grit on internal engine parts will cause serious engine malfunction.

1. Before reassembling semi-case halves, check side play of connecting rod at big end of crankshaft. If side play exceeds .012" (.3mm) replace entire crankshaft as a unit. (Figure 17) Do not attempt to replace connecting rod alone!
2. Check crankshaft and gear shaft bearings and bushings for roughness and wear, replace if required.
3. Rough bearings can be tapped out of semi-case with a drift punch. Old bushings can be drilled out with appropriate size drill.
4. New bearings can be tapped into place with soft hammer. Bushings can be carefully tapped or pressed into place.
5. Replace any other worn or broken parts.
6. Remove all old oil seals before reassembling semi-case halves.
7. Replace old semi-case gasket insuring that semi-case gasket surfaces are clean and smooth.
8. With all parts and spacers in place, carefully tap semi-case halves together.
9. Replace semi-case bolts and torque to specification.
10. Check for free turning of crank shaft, pedal shaft, if binding occurs, remove semi-case and correct condition before proceeding.
11. Replace oil seals using oil seal tool #757 being careful not to damage seals. (Placing oil on shaft and seal will aid in oil seal seating). (Figure 18)
12. Replace 3 dowel pins into mounting holes.

Figure 17

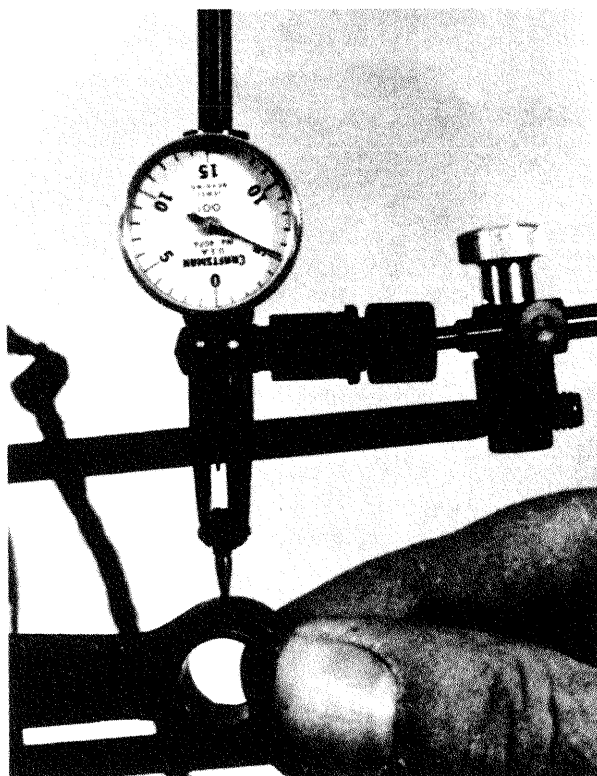
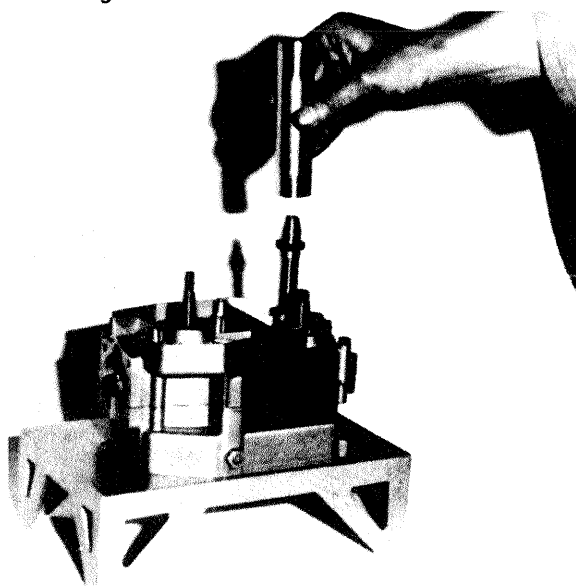


Figure 18



Cylinder and Piston Inspection

1. Before refitting piston and cylinder, ascertain that piston and cylinder are not excessively worn or damaged. (If either one shows signs of roughness or scoring, replace both as a set).
2. Check connecting rod small end bushing for excessive play. Free play at skirt of piston should not exceed (.001 dial gage). If play exceeds this figure, replace bushing. (Figure 19)
3. Note: Piston to cylinder clearance is .00197" (.050 mm.)

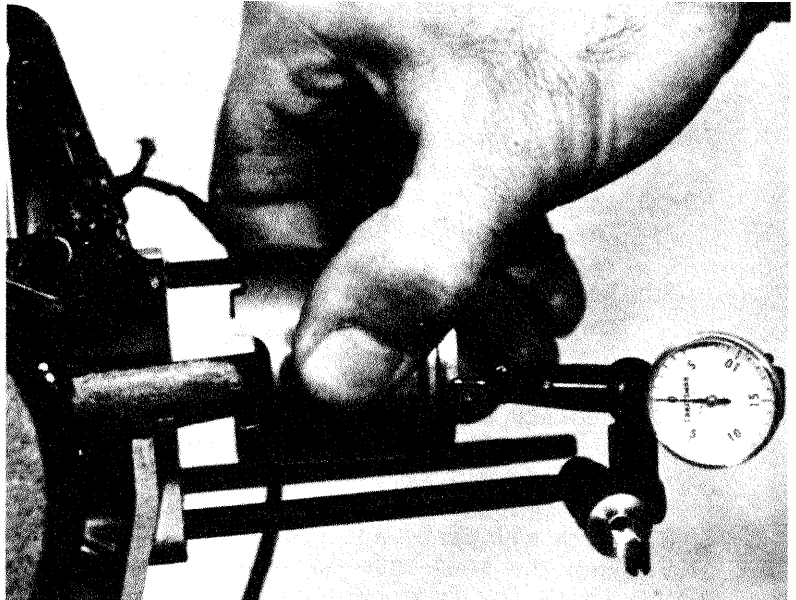


Figure 19

Small End Bushing Replacement:

1. Remove old bushing using suitable size drill (13mm or 17/32") to drill out old bushing.

Alternate Method: Use coping saw and making inside cut, cut bushing into segments which will then fall out.

Caution: Avoid hitting connecting rod with hammer as damage to rod will result.

Bushing Installation:

1. Press in new bushing using press or soft jaw vise. (Figure 20)
2. Drill (3) 1/8" holes for oil passage.
3. Carefully ream new bushing to piston pin size using bushing ream tool #758.

Caution: Do not over ream, test fit often. Pin should fit snugly with no side play.

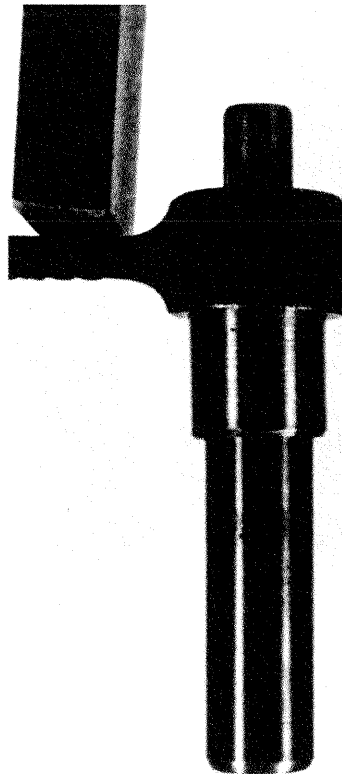


Figure 20

Piston and Cylinder Refitting:

1. Place piston on connecting rod with cutout at rear of piston skirt facing top of engine.
2. Carefully drive pin through piston and connecting rod bushing. Reinstall clips.
3. Check fit of piston ring in cylinder by sliding a piston ring 1/4" into bottom of cylinder bore. Check end gap with feeler gauge: Minimum .006" (.15mm) Maximum .020" (.5mm) (Figure No. 21) If end gap is less than .006", wrong piston ring is indicated. Obtain proper size ring before proceeding. If gap is more than .020" worn cylinder is indicated, replace cylinder and piston. (Cylinder may be bored to 40.6 or 40.8mm oversized pistons are available for these sizes.
4. Install rings on piston being sure that gap on ring is over tab in piston grove. (Oil on the ring and piston will aid in installation)
5. Install new cylinder base gasket, insuring that gasket surfaces are clean and smooth.
6. Slide cylinder (right side up) on to studs, and using beveled bottom of cylinder bore as a guide, work piston and rings into cylinder bore.
Note: If excessive difficulty in fitting piston into bore, check to be sure ring gaps are over pins in piston grove. Liberally oil piston to aid in this operation. (Figure No. 22)
7. Install new head gasket and replace head (spark plug pointing up). Replace washers and nuts and tighten to specification.

Figure 21

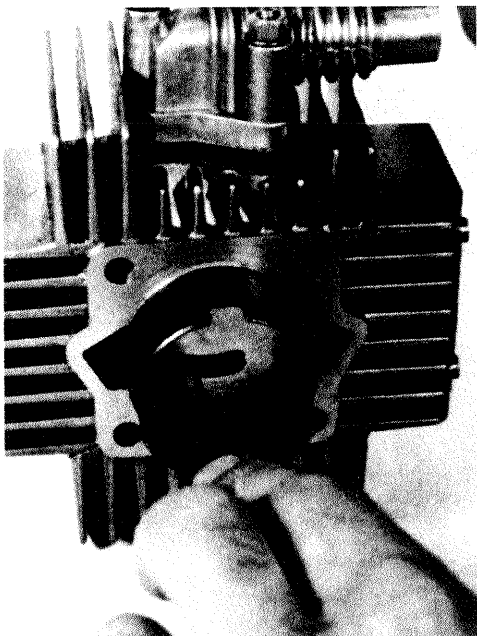
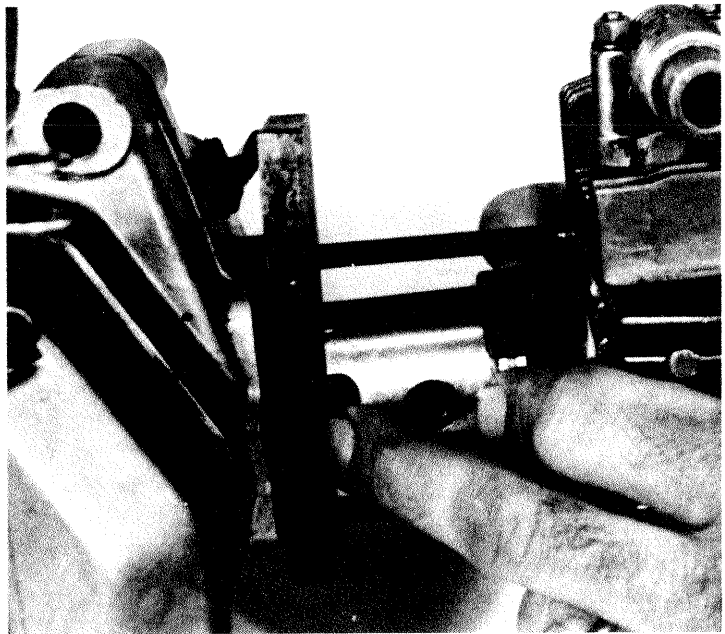


Figure 22



Clutch and Transmission Re-assembly (M01):

1. Replace transmission gear on shaft and tighten to specifications.
2. Reassemble clutch drum and shoe assembly to crankshaft using space washers previously removed. Tighten nut to specifications.
3. Reinstall spring, coverplate and circlip.
Note: Before installing cover plate, insure that thickness of cover plate lining is at least .1" (2.5mm) if less, replace cover plate.
4. Measure clutch shoe to drum gap at both shoes. (Figure 23) Allowable gap is .002" - .040" (.1mm-1.1mm). If gap is greater or less than this, replace shoe assembly as a unit only.
5. Check end float of clutch drum assembly using dial guage. End float should be .004 - .008 (.1-.2mm). If float is excessive, check for missing shim washers. (Figure 24)
6. Replace clutch cover, installing new cover gasket and oil seal. Torque screws to specification.

Figure 23

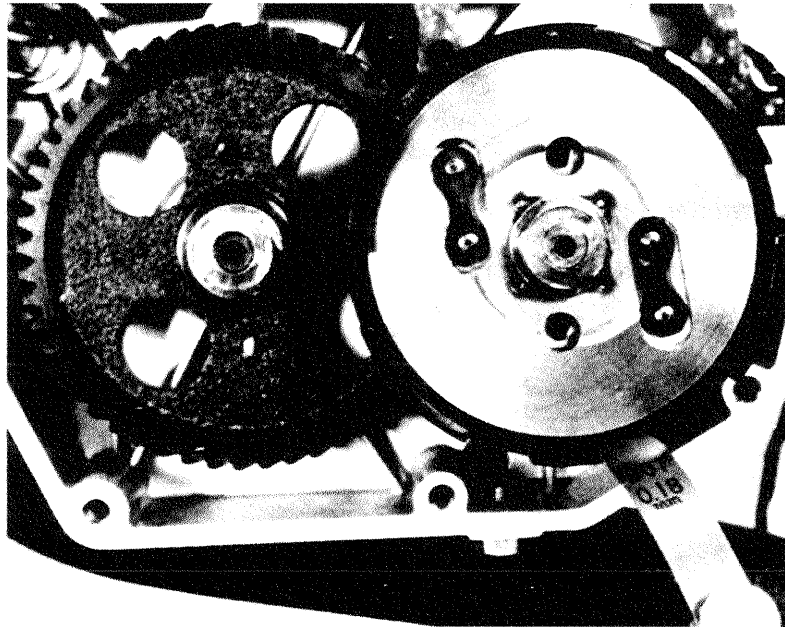
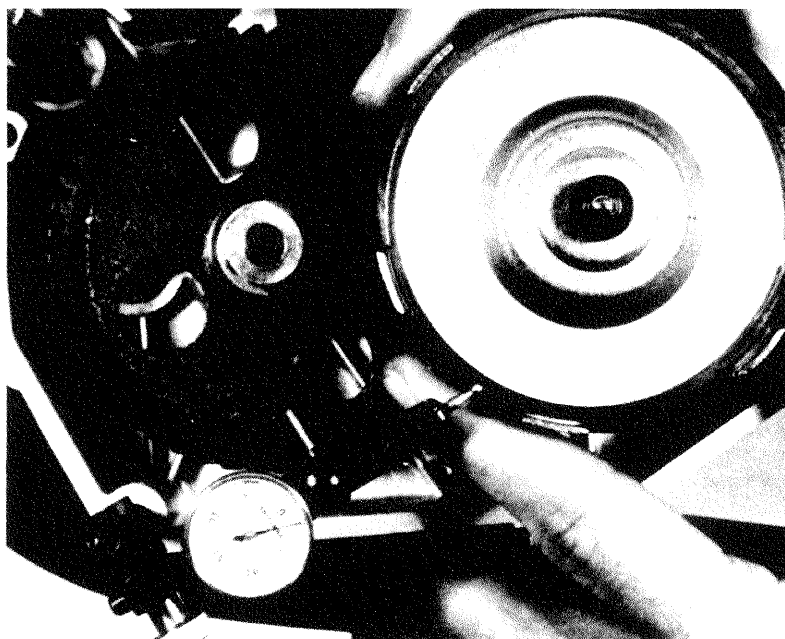


Figure 24



Morini MO-2 Two-Speed Transmission

The MO-2 Two-Speed Engine operates on the same principal as that of the Single-Speed MO-1. The only variation would be that it has two clutches that operate automatically.

Disassembly:

Place engine on clean working surface, remove six cover screws, taking note of different sizes to insure proper re-assembly. Then hold flywheel magneto still with flywheel tool #753 and proceed to remove clutch plate retaining nut and washer. Then remove washer from drive gear main shaft and with snap ring pliers remove main gear shaft circlip. (Figure 25) Holding flywheel still with flywheel tool remove main gear shaft nut and washer. With small flat chisel and plastic hammer remove starting clutch spacer by tapping lightly around edges, spacer should pop out. After this remove at the same time starting clutch and 2nd gear. (Figure 26) To remove clutch drum tap crank shaft with plastic hammer.

Re-Assembly:

Re-assemble both clutches to the crankshaft. Follow the disassembly steps in reverse order making sure that all washers are correctly replaced. Check fit of clutch shoes in drum with feeler gage, allowable gap is .004" - .040" (.1mm-1.1mm). If gap is greater or less than this, replace shoe assembly as one unit. (Figure 23 Page 12)

Check end float of clutch drum assembly using dial gauge (Figure 24 Page 12) end float must be held between .004" - .008" (.1mm-.2mm). If end float is excessive, check for missing shim washers.

Replace clutch cover using new cover gasket and oil seal torque screws to specification.

Figure 25

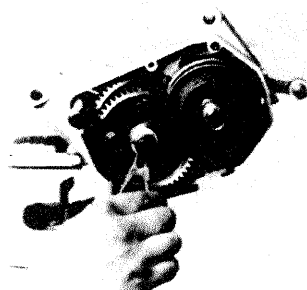
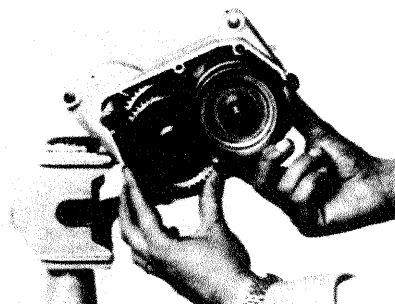


Figure 26



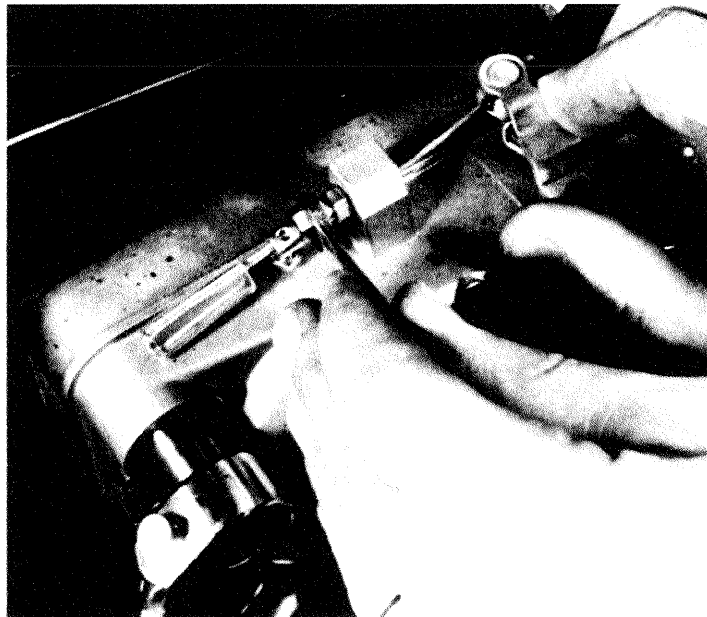
Final Assembly:

1. Replace pinion gear, being careful to properly position shaft key in slot of gear. Tighten nut to specifications.
2. Replace stator plate and flywheel assembly. Set point gap to specifications.
3. Replace flywheel cover and torque screws to specification.

Refitting Engine to Vehicle:

1. Refitting is a reversal of the removal procedure with attention to the following details:
 - A. Clutch Cable Adjustment: Before tightening clutch cable clamp, (turn barrel adjuster fully clockwise) move clutch lever as far rearward as it will go (against spring tension). Then, allow lever to spring back 1/3" (9 mm) check adjustment by moving lever rearward and observing 1/3" travel when lever is released. Small adjustment can be made at barrel adjuster. When adjustment is correct, tighten lock nut on barrel adjuster. (Figure 27)
2. After engine is completely re-installed verify point gap setting and reset ignition timing.

Figure 27



Compression Testing:

1. To test for low engine compression, warm engine up to normal operating temperature. (When Possible)
2. Remove spark plug and insert compression gauge.
3. With ignition switch in "off" position, choke released and throttle wide open, crank engine over twice and record reading.
4. Repeat procedure to verify correct reading.
5. Compare reading to compression specifications.
6. Low reading indicates possible worn piston rings, or leaking head gasket.

Decarbonizing:

Note: Excessive carbon build up in cylinder head, exhaust pipe and muffler will cause engine to lose power, overheat or stall. To decarbonize, follow directions carefully.

1. Remove cylinder head and gasket. (See page 7)
2. Rotate flywheel to bring piston to top of stroke.
3. Using soft wire brush and scraper, carefully remove all carbon from cylinder head recess and top of piston. Take care not to scratch cylinder head gasket surface or top of piston.
4. Clean or replace spark plug.
5. Refit cylinder head using new head gasket and tighten to specification.
6. Remove muffler from frame of vehicle and exhaust pipe.
7. Remove exhaust pipe nuts and washers, remove exhaust pipe and gasket from cylinder.
8. With piston at top of stroke, clean carbon from exhaust port area. Clean carbon from exhaust pipe using circular wire brush. (Gun cleaning brush) Refit exhaust pipe to cylinder using new gasket.
9. Muffler can be cleaned by removing baffle at rear of muffler. Working from both front and rear of muffler openings, clean interior holes in muffler using gun cleaning brush. The only alternative to cleaning is replacing the entire muffler as a unit.

Carburetor Service

Note: Use your carburetor parts list as an aid in following these instructions.

The carburetor on the moped is Dell Orto single barrel, side draft variable venturi unit. It is supplied in 2 models depending on the horsepower of the engine used. Model SHA 14-12 for 25/30 mph engines and SHA 14-9 for 20 mph engines. The differences are in the main jet diameter and internal air horn diameter. The trouble shooting procedures are the same for both.

It is imperative that a clean work area be used, as any dirt inside of carburetor will result in improper operation.

Disassembly:

1. Remove air cleaner cover.
2. Carefully pry out air cleaner element (624).
3. Loosen clamp screw (632) two turns and carefully slide carburetor body off intake manifold. (avoid kinking throttle cable)
4. Remove two valve screws (66).
5. Grasp valve cover and with slight upward pressure, remove cover assembly with gas flow regulator.
6. Remove spring (67) from under valve cover and slide end of throttle cable clear or gas flow regulator. (617)
7. Remove two float bowl screws (69) and pull float bowl down until clear of float mechanism.
8. Remove filter cover screw, gasket, cover and filter. (611, 68, 615, 618)
9. Remove idle mixture screw and spring. (628, 610)
10. Drive out float hinge pin (612) and remove float and float valve. (65, 625)
11. Clean body of carburetor, main jet, float bowl and throttle slider in carburetor cleaner, rinse and blow parts dry. Blow gas filter clear or replace if plugged. (Clean air filter in solvent, rinse and blow dry.)
12. Check float for fuel inside. Replace if cracked.
13. Check tip of float needle for wear or damage. Replace if in doubt.
14. Check tip of idle mixture screw for wear or damage, if grooved, replace.
15. Reassemble using new float bowl gasket if its condition is questionable.
16. Re-install carburetor being certain that plastic bushing is flush with body of carburetor and that expansion slots are at a right angle to slot in body of carburetor. (Figure No. 1 & Figure No. 2)

Note: If excessive amount of dirt is found inside carburetor, flushing and cleaning of fuel tank is recommended. The fuel tank also contains a filter which is attached to the fuel valve and can be accessed by unscrewing fuel valve. After cleaning tank, be sure vent in fuel tank cap is clear.

17. Check condition of fuel line to carburetor. If brittle or leaking, replace.

Carburetor Adjustment:

1. To set preliminary adjustment of idle mixture screw, turn clockwise with fingers until screw seats. Then turn screw counterclockwise two full turns.
2. To make final adjustment of mixture screw, start engine and warm up to operating temperature. Adjust screw for idle speed of 1000-1200 RPM. Turn screw clockwise to increase speed and counterclockwise to decrease speed. (If no tachometer available, adjust idle speed until rear wheel turns slowly, with moped on stand)

Throttle Cable Adjustment:

1. Throttle cable is adjusted for proper length by means of barrel adjuster located at top of carburetor. (62)
2. To adjust, slide rubber boot up cable to expose barrel and lock nut (64) to tighten cable, loosen locknut and turn barrel counterclockwise (viewed from top). To loosen cable, turn barrel clockwise. When adjustment is satisfactory, retighten locknut.

Figure 1

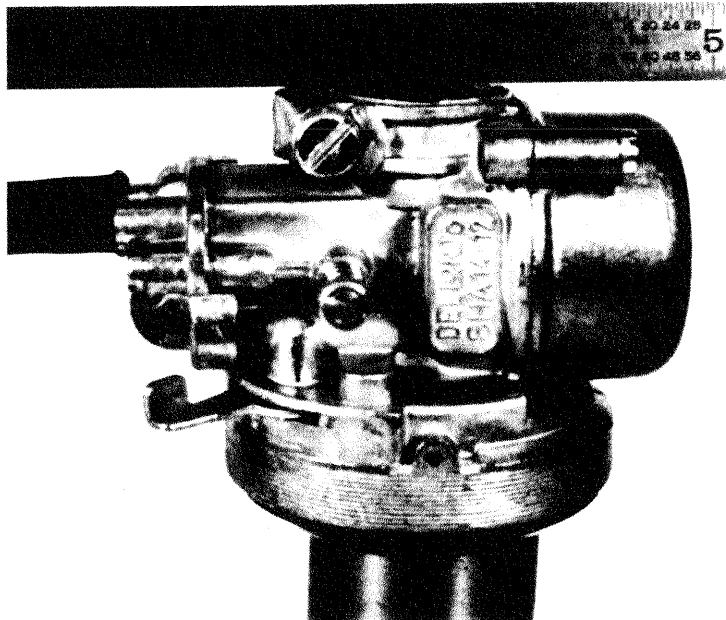
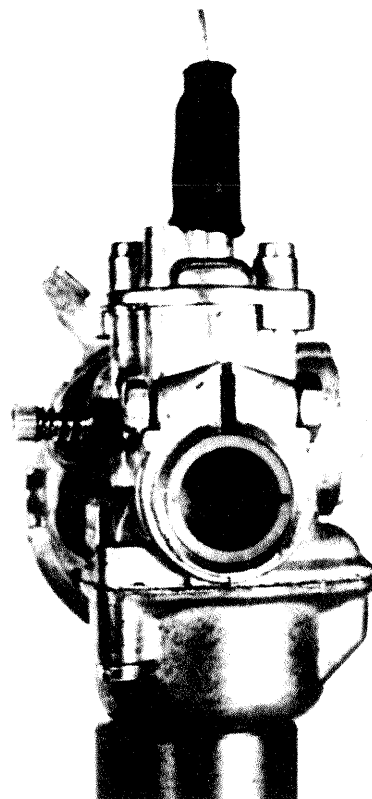


Figure 2



Carburetor Trouble Shooting:

<u>Problem</u>	<u>Remedy or Cause</u>
1. Engine races, idle mixture screw seems to have no effect.	1. Loosen throttle cable adjustment. 2. Check cable for binding, lubricate.
2. Engine idles ok, but hesitates or stalls on acceleration.	1. Clean carburetor, check fuel tank for dirt.
3. Engine will not start, compression and ignition system ok.	1. Clean carburetor, check fuel tank for dirt.
4. Engine runs, but only with choke on. Stalls when choke released.	1. Plastic bushing mis-aligned or not seated properly in throat of carburetor. 2. Blocked main jet. 3. Loose or cracked intake manifold or spacer.
5. Fuel leaks from carburetor when tank valve is turned on.	1. Stuck or dirty float needle. 2. Crack in lip of fuel filter. 3. Cracked fuel line.
6. Engine runs briefly, then stalls.	1. Plugged vent in fuel tank cap.
7.. Engine fails to start, or runs poorly. Ignition and fuel systems check good.	1. Fuel contaminated. (Drain and clean fuel tank, drain carburetor float bowl. Re-fill with clean, fresh fuel).

Ignition System

The heart of the ignition and electrical systems of the moped is the flywheel magneto. The magneto fitted is the Dansi 6 volt, 23 watt. It consists of an ignition coil, lighting coil, points, condensor and flywheel. The secondary ignition coil with spark plug lead is mounted on the frame of the moped.

Ignition Timing:

Proper ignition timing is critical to the smooth running, starting and life of the engine. Therefore, it is imperative that you become thoroughly familiar with the following timing procedures.

Point Setting:

It is imperative that the points be properly gapped before engine timing is attempted. Set gap at .014" - .018" (.35-.45mm)

Setting Points:

Looking at magneto flywheel from left side of engine, you will see 2 marks on flywheel edge. (Figure 1) (Important: If no marks are visible, see procedure for marking flywheel before proceeding). Right hand mark (Figure 1-A) is top dead center (TDC). Left hand mark (Figure 1-B) is 23° before top dead center (23° BTDC). With right hand mark (TDC) aligned with triangular index on crankcase, (Figure No. 1-C) set the point GAP to .014 - .018" (.35-.45mm). Points are adjusted by loosening clamp screw (Figure 2-A) slightly and placing screwdriver in adjusting slot and moving points left or right to obtain proper gap. Note: It may be necessary to move flywheel slightly to gain access to adjusting slot. Be sure to return flywheel mark to proper alignment with crankcase index before checking point gap. When proper gap is obtained, re-tighten clamp screw and recheck point gap. Note: A small dab of distributor cam lubricant placed on flywheel cam will greatly increase the life of point setting.

Figure 1

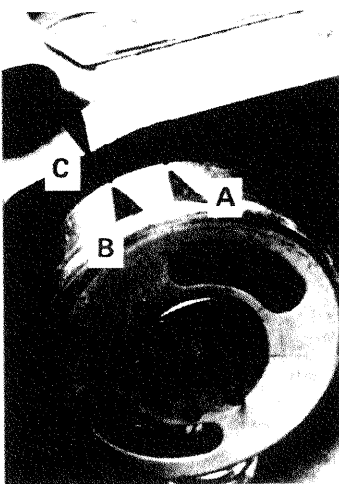
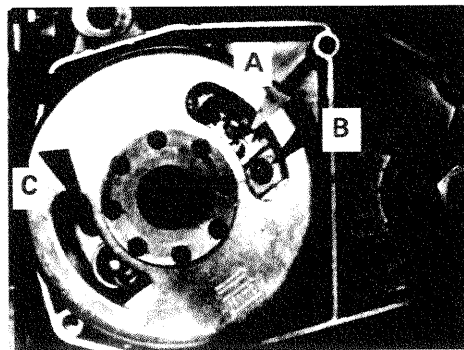


Figure 2



Ignition Timing:

1. Before timing is attempted, insure that point gap is set at .014 - .018".
2. Connect Exactime timer to magneto as follows:
 - a. Remove red primary lead from right side of frame secondary coil. Connect a suitable jumper wire between red primary lead and terminal of coil (Fig. 3)
 - b. Connect either one of the alligator clip leads of Exactime to this jumper insuring good electrical contact.
 - c. Connect other alligator clip lead of Exactime to convenient ground on engine block (i.e. Cooling fin).
 - d. Disconnect spark plug wire from spark plug and connect remaining (center) lead of Exactime to brass connector inside spark plug lead, insuring good electrical contact.
3. Place ignition switch to "Run".
4. Rotate flywheel in direction of arrow (counter clockwise) until left hand mark of flywheel (23° BTDC) is approximately 1" to right of index on crankcase.
5. Slowly rotate flywheel counter clockwise until light on Exactime comes on. If timing is correct, light will come on when left hand mark on flywheel is exactly opposite triangular index on crankcase. (Figure 1-B)

Note: If light on Exactime does not come on at all:

- a. Check to see that ignition switch is in "Run" position.
- b. Check all connections to Exactime.
- c. Replace battery in Exactime with a fresh one.

If light still does not come on, a broken spark plug wire or open ignition coil is indicated.

Ignition System:

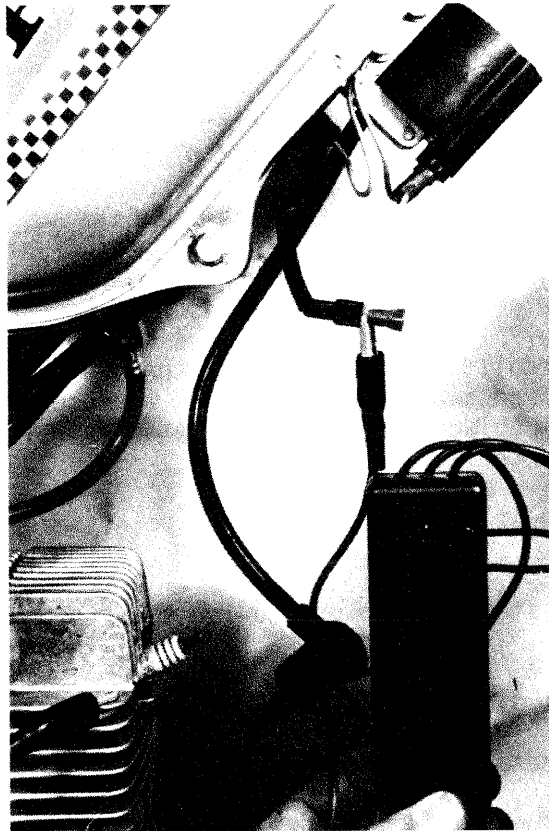
Procedure for marking flywheel if no timing marks are present:

1. Remove spark plug.
2. Insert microtime or dial indicator into spark plug hole.
3. Rotate flywheel until piston is exactly at top dead center.
4. Holding flywheel in this position, carefully scribe a mark on flywheel exactly opposite triangular index on crankcase. This mark is now TDC.
5. Using a flexible ruler, measure 29/32" (23mm) counter clockwise from TDC.

Mark and scribe a second mark on flywheel. This mark is now 23° BTDC.

6. Return to section on ignition timing.

Figure 3



Ignition System Trouble Shooting

When trouble in the ignition system is suspected, the best way to find the problem is by a step by step process of elimination. The following steps should be taken and only when one step is eliminated as the source of trouble should the next one be taken:

1. Replace spark plug. Testing for spark outside the engine is not a guarantee that spark plug will fire under actual engine conditions.

2. Magneto Tester - Note: Disconnect spark plug wire from plug. Connect 1 wire of magneto tester (#783) to spark plug and other wire of tester to plug wire with ignition switch to "Run". Crank engine over and observe meter reading. Proper reading should 6-8. If meter does not move, or reading is excessively low, trouble in the ignition system is indicated. Check meter reading with engine running. Normal reading is 6-8. If reading is very high shorted plug is indicated.

3. Remove ignition switch clamp from switch and hold switch away from handlebars. This will eliminate shorted ignition switch from grounding out magneto.

4. Remove spark plug wire from coil (wire unscrews counter clockwise from body of coil) and test resistance of plug wire. Resistance of wire should be "0" ohms. If high resistance or open circuit is evident, check connection of wire to spark plug cap by unscrewing brass screw from cap and sliding plug wire out of cap. Cut 1/2" off wire, re-insert fully in cap and replace brass screw tightening fully. Re-check resistance of wire if wire is still open, replace wire. (Re-check output)

5. Check point gap, ignition timing. Be sure points are clean, free of oil. (Re-check output)

6. The following is a step by step method for checking the magneto for internal problems.

- a. Remove flywheel using puller #751.
- b. Disconnect red magneto wire at magneto wiring block.
- c. Remove condenser mounting screw and pull condenser body clear of magneto stator plate. (Body of condenser must not touch mounting plate)
- d. Place piece of cardboard between points to insulate them.
- e. Connect 1 lead of coil & condenser tester to red magneto wire, and other lead to body of condenser. Perform condenser test and replace condenser if bad. Note: Good condenser should read .3 - .4 on tester.
- f. Disconnect tester lead from body of condenser and connect to stator plate ground. Then test ignition primary coil. Good coil should read 19 - 20 on coil scale of tester. If meter does not read, coil is open or a wire is broken. Repair wire or replace coil as necessary.
- g. Test for shorted points as follows: With coil tester leads connected to red magneto wire and stator plate ground, and condenser body free of stator plate, remove plate, remove ignition coil mounting screws and gently pull ignition coil away from stator plate. Place cardboard between points. (Note: Ignition coil, condenser body must not touch stator plate).

Repeat coil test. If meter deflects to right, points are shorted, (Check the nylon insulators installed at contact point wire terminal. Be sure no pieces of metal are bridging them). (Repair - Re Test).

Note: Before replacing flywheel, check condition of all wires in magneto and behind stator plate. Replace or repair any that show signs of frayed or worn insulation. Be sure no wires are rubbing on crankshaft or flywheel, or damage to coil will result.

7. To test secondary coil, connect coil tester to spark plug wire and coil terminal marked "R". Good coil should read 4-6 on tester scale. If no reading, repeat test with plug wire disconnected. If no reading (or very high reading) coil is defective and should be replaced.

Electrical System

The electrical system of the moped consists of the lighting coil located in the magneto, the associated wiring harness, and devices connected to the harness. Refer to the wiring diagram at the end of this section.

Electrical Trouble Shooting Hints

1. If for any reason vehicle will be operated with one of its electrical devices removed, be sure to insulate its connectors with electrical tape. If this is not done, the lighting coil may be burned out due to accidental contact with the frame of the vehicle.

2. When intermittent operation of one or more devices is encountered, (ie., horn or lights) check soldered connections at handlebar mounted light switch. Verify soldered connections by gently pulling each wire where it enters switch. A loose connection will usually pull free under moderate pressure. Re-solder any loose or questionable connections.

Note: Use only moderate heat for short time when re-soldering. Excess heat will melt switch base. Use only rosin core electronic solder.

3. If failure of entire lighting system occurs, check connections at magnet wiring block located at front of engine between engine and frame. Also check pigtail wire connection at speedometer light socket. If this condition exists, trim excess conductor to avoid a re-occurrence. If no problem can be found in these areas, try substituting one bulb at a time with a known good bulb as a shorted bulb unit can cause total system malfunction.

Note: To check lighting coil, disconnect green and black wires from magneto side of magneto wiring block. Connect lead of coil tester (#782) to engine. Ground other lead to black magneto wire. Perform test. Meter should read 18-20 if coil is good. Repeat test using green lead of magneto wire. Meter should again read 18-20. If no reading is obtained, check for broken wire or replace lighting coil. (Re-test)

4. The importance of proper grounds cannot be over emphasized. When troubleshooting electrical problems, do not overlook connection of grey ground wire to magneto secondary coil and chassis ground.

Supplementary Instructions For Installing
C.E.V. Model 10421 Directional Kit

Note:

Follow instructions supplied with directional kit, with the exception of the following changes;

1. "The Feeding Group":

- A. The switch supplied with the directional kit replaces the existing engine cutoff switch.
- B. Disconnect red wire from old cutoff switch.
- C. Loosen single mounting screw from new directional switch and remove switch assembly. (Switch base may now be clamped to handlebar).
- D. Hold switch assembly so that solder lugs are facing you and ignition switch lugs (single pole switch) are at upper right.

Note:

Before soldering wires to switch lugs, pass wires through rubber grommet in switch base.

- E. Solder red wire from old ignition switch to one lug of single pole switch.
- F. Solder a 4" jumper wire to remaining terminal of single pole switch. Tin 1" section of remaining end of jumper wire and clamp tinned end between switch clamp and handlebar. (This ensures a good ground for ignition switch).

2. "Directional Switch Wiring":

- A. Hold switch assembly as in item 1D above.
- B. Solder wire #9 (green wire) to lower left lug only of double pole switch.
- C. Solder wire #10 (brown wire) to lower right lug only of double pole switch.
- D. Solder wire #8 (white wire) to upper center lug only of double pole switch.

.....This completes Ignition & Directional
Switch wiring.....

3. Under "Running Note"

- A. The connections from battery pack to magneto must be made properly to insure maximum charging current to battery pack. Connect wires in following order only:
 - 1. Yellow wire from battery pack to green wire from magneto.
 - 2. Black wire from battery pack to red wire from magneto.

Note:

Connections to magneto are found by pulling wire harness forward to expose magneto wiring block. (Harness located between top of engine and frame.)

Electrical System Identification

1. Before working on or ordering parts for the electrical system of the moped, you must determine which type system you are working on. There are presently two systems utilized on the moped. They are the Dansi #101286 and Dansi #101765. This number can be found stamped on the face of the magneto flywheel. Once this number is determined, the proper wiring diagram can be consulted to aid in troubleshooting.
2. There are also different replacement part numbers required, and they are listed below with the appropriate magneto numbers:

<u>Part Description</u>	<u>Magneto Number</u>	
	<u>101286</u>	<u>101765</u>
Tail Lamp	324 & 324A	324B
Brake Light Switch	333	333B
Stop Light Bulb	327B	327C

Note: The 324B Tail Lamp employs a resistor (#347) mounted behind the bulb socket, and wired to prevent failure of the ignition system should a bulb failure result. Always replace this component with the same part number. This insures proper operation of ignition and lighting systems.

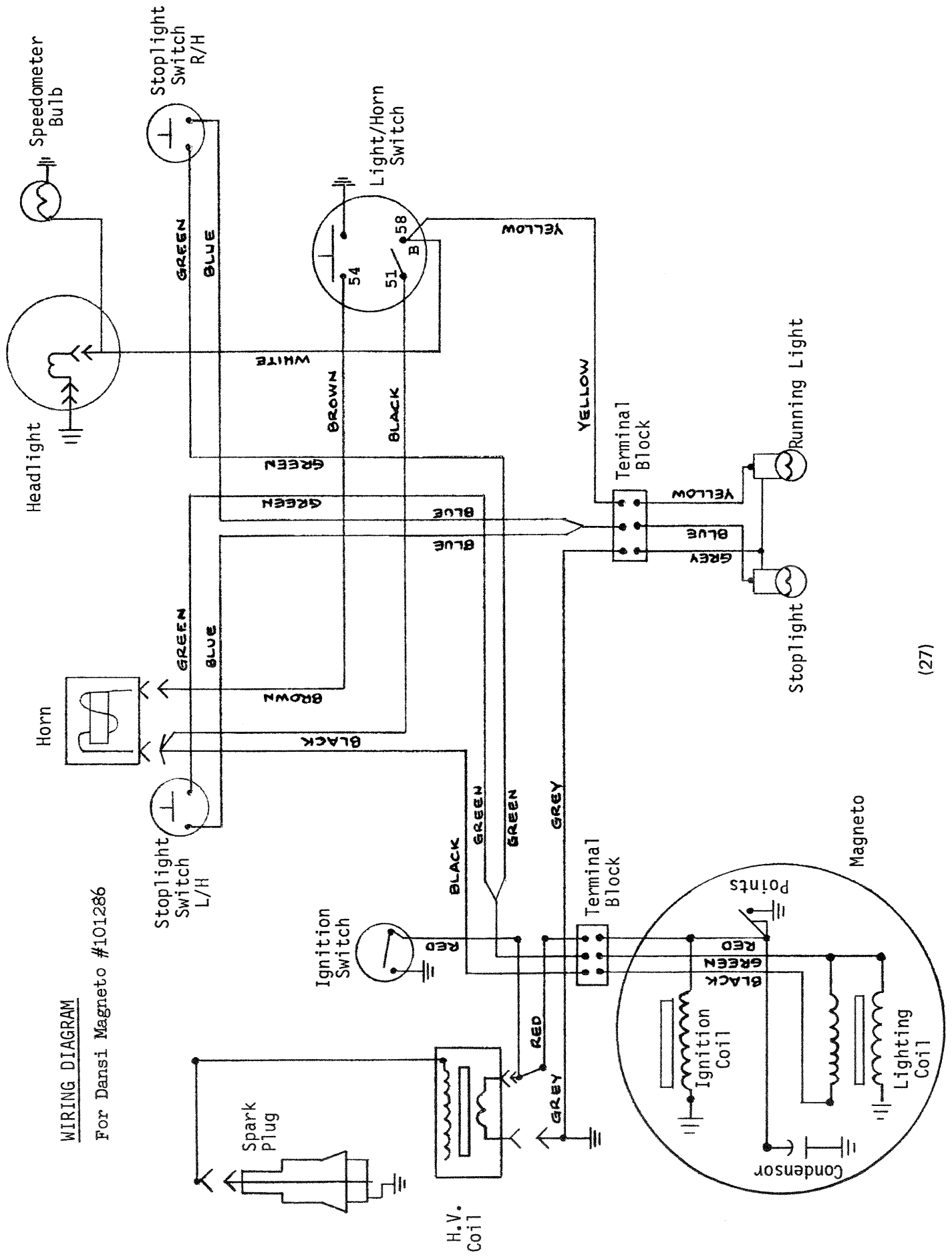
Lighting Switch Wiring Instructions for C.E.V. #19715

The following is a wiring connection guide for the CEV #19715 lighting switch fitted to certain model mopeds:

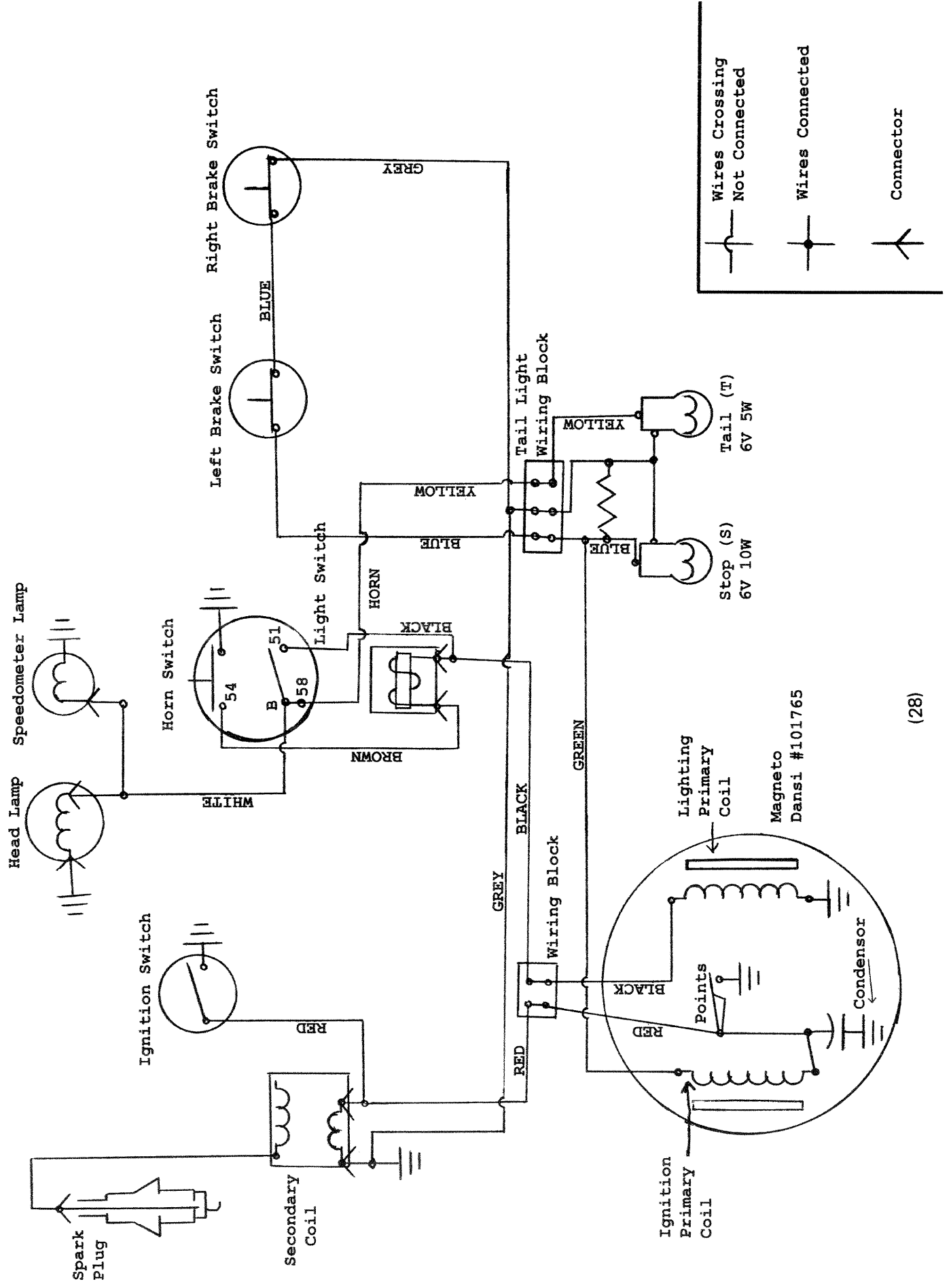
<u>Switch Terminal Number</u>	<u>Lead From Wire Harness</u>
1	Brown
2	Yellow
3	Black
4	None
5	White
6	None

WIRING DIAGRAM

For Dansi Magneto #101286



Pacer Wiring Diagram (Dansi Magneto #101765)



Frame and Fork

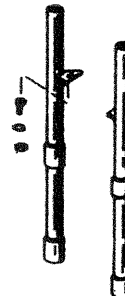
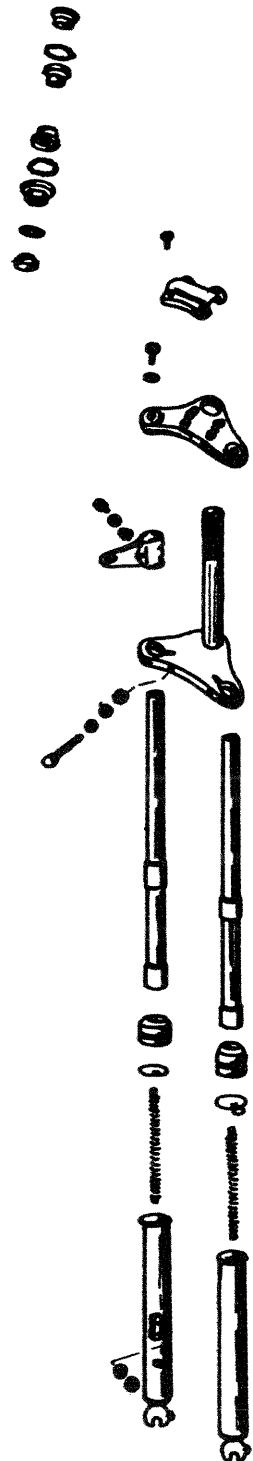
Front Fork:

The front fork of the mopeds is a Franzoni telescopic spring type unit. As it is non-hydraulic, there are no seals to wear out or leak.

Removal:

1. Remove front wheel and fender.
2. Disconnect speedometer cable from speedometer.
3. Remove handlebar support and steering lock nut from handlebars. Swing handlebars aside being careful not to kink any cables.
4. There are two types of top fork yokes fitted to mopeds. To determine which top you are working with, examine the two fork top bolts. If the bolt heads are stamped "8.8" proceed to step 5. If bolt heads have no marking, proceed to step 6.
5. Loosen the two fork top bolts approximately three turns. Tap each bolt head with a plastic hammer or block of wood until bolt head drops down. This fork top is free of fork tubes. (Proceed to step 7)
6. Remove two fork top bolts. Lift fork top clear of fork.
7. Unscrew fork adjusting nut and lift clear of fork.
8. Supporting frame firmly, slide fork free of frame.
9. Inspect headset bearings and cups for wear-pitting. Replace if necessary. Repack bearings with multi purpose grease. Damaged races can be tapped out and new ones tapped in.
10. Remove fork sliders by unscrewing and pulling downward. Replace any bent or damaged parts.
11. Reassembly is a reversal of the removal procedure.

Note: If any twisting of front fork is encountered, continue to tighten fork top bolts evenly until looseness is eliminated.



Frame:

As the frame is of one piece welded construction, any repairs to the frame are limited to the replacement of swing arm bushings or fork lock. If frame appears cracked or bent, replace entire unit.

Swint Arm Bushing Repair: (Refer to Frame Parts Diagram)

1. Remove rear wheel.
2. Remove swing arm nut (18) and washer (17).
3. Remove spindle by turning spindle counterclockwise until threads are clear of left side of swing arm.
4. Tap spindle clear of swing arm and remove swing arm.
5. Check spindle for wear, if spindle appears worn, replace.
6. Tap right side bushing out from left side of frame using long drift punch. Repeat for left side,
7. Press or tap in new bushings.
8. Test fit spindle. Ream if necessary. (Use Bushing Reamer #758)
10. Replace rear wheel.

Fork Lock Replacement:

1. Drill out old retaining lock screw located on underside of frame cutout (use 3.3mm drill).
2. Twist old lock unit out of frame.
3. Insert new lock unit into frame unit and lock with new lock screw. Turn lock screw until head twists off.
4. If old lock screw hole is stripped, drill a new hole 1/8: (3.3mm) and tap it with a 4-70 metric tap.

Wheels and Brakes

Front Wheel - Hub Removal:

Refer to figures and parts list for part identification.

1. Loosen brake cable clamp nut and slide cable clear of brake hub lever (220).
2. Disconnect speedometer cable from sending unit.
3. Loosen two axle nuts and slide axle downward and free of fork. Note: Press brake cover bracket inward to free it from guide pin on right fork slider.

Dismantling:

1. Clamp left side of wheel in vise being careful not to damage axle.
2. Remove right side drum nut (214), washer, and lift off brake drum cover. Note location of any flat washers inside brake drum cover.
3. Holding right side bearing cone with wrench, loosen cone nut. Remove nut and cone. (Figure 1) Withdraw axle from left side of wheel. Bearings are loose, do not lose any.
4. Pry out left and right dust caps, clean all parts. Replace any that show signs of wear or pitting. Note number of bearings removed and replace same number when reassembling.
5. Pack new bearings in multi-purpose grease, place in cages (races) and tap new dust caps in place. Note: Bearings cages (races) can be tapped out of hub and new ones pressed in if replacement is required.
6. Re-assemble axle in reverse order and adjust wheel bearings for free turning with minimum side play.

Rear Wheel:

1. Follow directions for front wheel with exception that the master link must be freed from chain and chain removed from sprocket before rear wheel can be removed.

Brakes:

The brakes on the moped are shoe type internal expanding drum brakes. As the lining is bonded to the shoes, the shoe must be replaced when the linings are worn out.

Specifications:

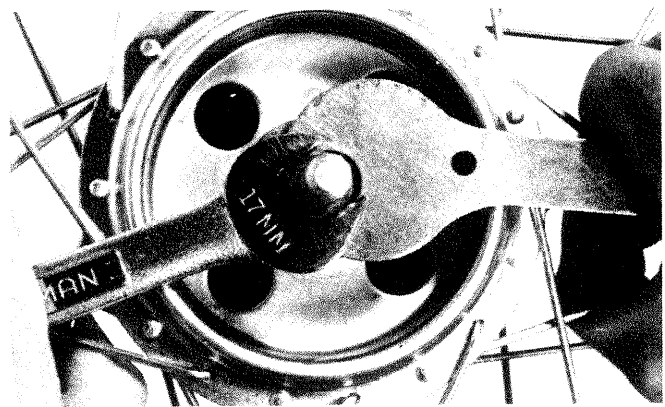
Drum Diameter

New 3.54" (90mm)
Wear Limit 3.58" (91mm)

Brake Shoe Diameter (Assembled on Plate)

New 3.50"=3.52" (88.9-89.4mm)
Wear Limit 3.43" (87.1mm)

Figure 1



1. For access to brakes see "Front Wheel - Hub Removal".
2. To free brake shoes, pry return springs off shoes. Lift shoes free of back plate.
3. If old drum is to be reused, clean it thoroughly with a brake cleaning solvent.
4. If old brake shoes are to be reused gently roughen lining and drum surfaces with emery paper.
5. A small amount of brake lubricant should be applied to brake shoe cam and pivot.
Under no circumstances allow lubricant to touch brake shoes or drum surfaces!
6. Reassemble shoes to back plate and reassemble hub. (See front wheel-hub removal)

Brake Adjustment:

The following procedure applies to both front and rear brake assemblies...

1. Before re-installing brake cable, loosen adjusting barrel lock nut and turn barrel clockwise as far as it will go. (Figure 2)
2. Thread cable through adjusting barrel and through hole in clamp nut.
3. Holding brake arm against spring tension, tighten cable clamp over cable (Figure 3)
4. Spin wheel and apply brakes a few times to center brake shoes.
5. Check to see that brakes lock wheel when handlebar lever is in first 1/3 - 1/2 of its travel. If handlebar lever exceeds this travel before brakes apply, tighten cable adjustment by turning adjusting barrel counter clockwise.
6. Release handlebar lever and spin wheel. If wheel binds, adjustment is too tight and excessive brake wear will result. Loosen adjustment by turning adjustment barrel clockwise or slacking brake cable slightly. Re-check brake lever travel.

Figure 2

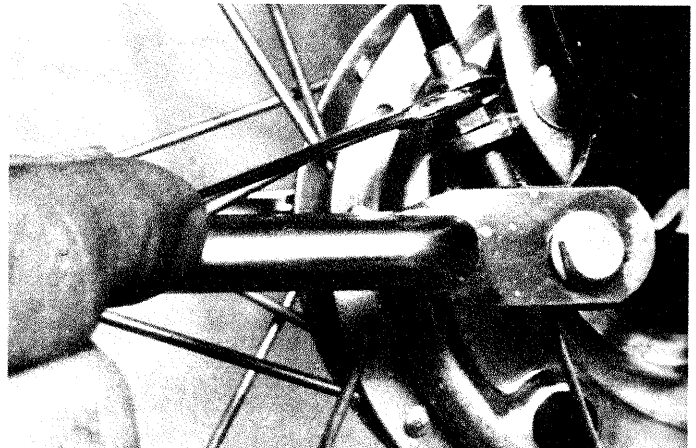
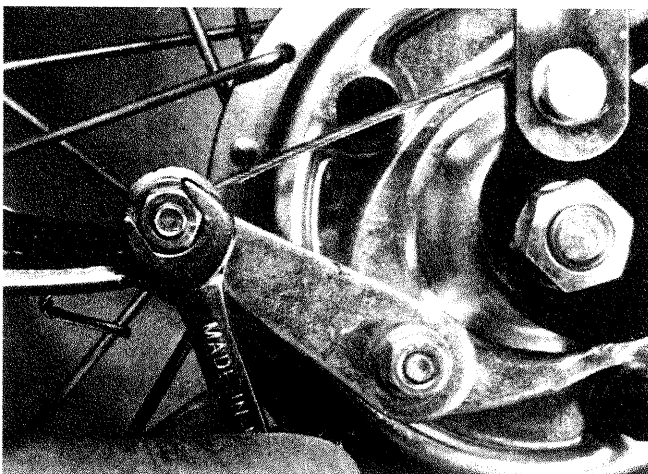


Figure 3



7. When correct adjustment is obtained, slip plastic protector over end of cable and tighten adjusting barrel locknut. (Figure 2)
8. Periodic brake cable adjustments can be made to brakes by adjusting cable barrel to take up cable stretch or lining wear.
9. Brake lining wear can be checked by removing rubber plugs located on right side brake drum cover.

Drive Chain Adjustment

1. Chain is properly adjusted when moderate downward pressure at mid-point of chain produces 1/2" deflection (Figure 4).
2. To tighten chain, loosen rear axle nuts and press forward on left side chain adjuster until proper chain tension is achieved. Holding adjuster with thumb, tighten left side axle nut. (Figure 5)
3. Press right chain adjuster forward until rear wheel is square in swing arm cutout. Tighten right side axle nut to specification.
4. If chain cannot be adjusted to proper tension with adjustors fully forward, replace chain.

Figure 4

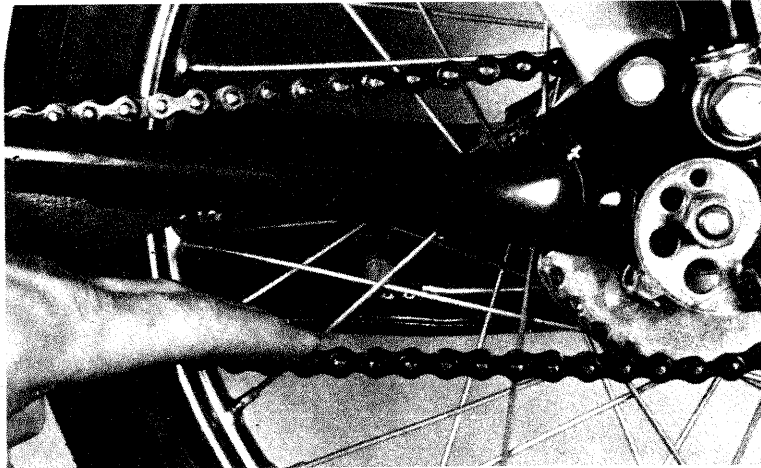


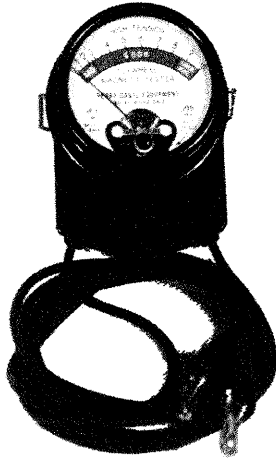
Figure 5



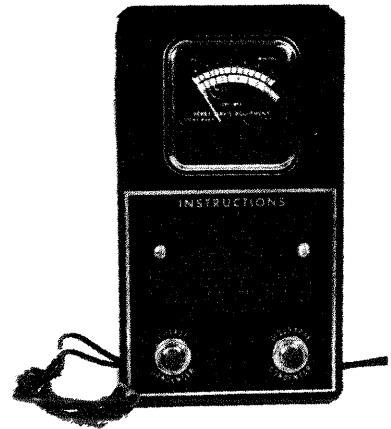
Recommended Electrical Testers

The following testers were chosen as an aid in trouble shooting the Electrical and Ignition Systems. Their use can cut servicing time dramatically.

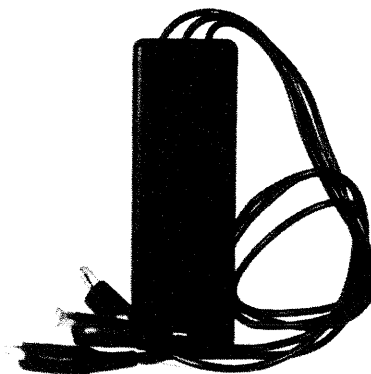
Magneto Tester #783



Condenser & Coil Tester #782



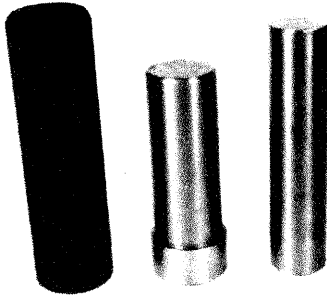
Exactime #781



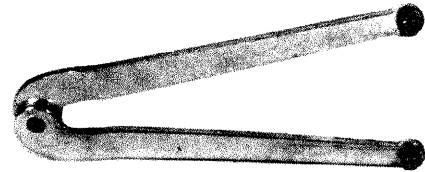
Morini Engine Required Tool List

Only those tools unique to the Morini Engine are listed here. The possession of standard workshop tools are the dealers responsibility.

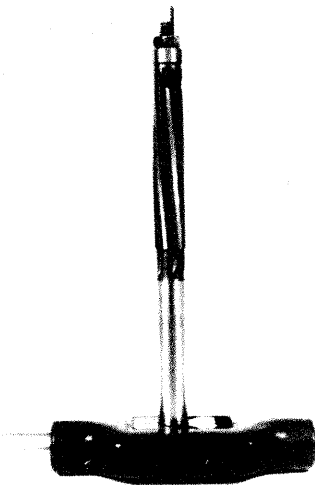
Oil Seal Tools #757



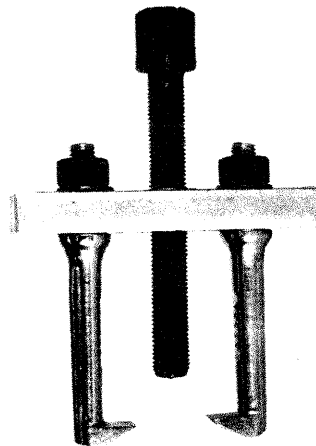
Flywheel Holder #753



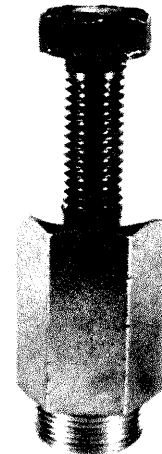
12mm Bushing Reamer #758



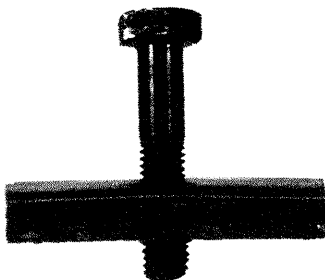
Pinion Puller #752



Flywheel Holder Extractor #751



Clutch Puller #755



Pinion Holder #754



MAINTAINENCE CHART

Operation	Odometer Reading (Miles)						
	At first 100 Miles	At first 500 Miles	1000	1500	2000	2500	3000
Check Tire Pressure	X	X	X	X	X	X	X
Check Tire Condition		X	X	X	X	X	X
Check Transmission Oil Level	X		X		X		X
Change Transmission Oil		X		X		X	
Inspect Spark Plug	X	X	X	X	X	X	X
Check Magneto Point Gap and Ignition Timing		X		X		X	
Clean Carburetor				X			X
Check Idle Speed	X	X	X	X	X	X	X
Re-Torque Bolts and Nuts		X			X		
Clean Fuel Tank and Filter		X			X		
Decarbonize Engine				X			X
Adjust Clutch Cable		X		X		X	
Adjust Brake Cables		X	X	X	X	X	X
Inspect Brakes		X		X		X	
Adjust Throttle Cable		X		X		X	
Clean Air Filter				X			X
Clean, Lubricate and adjust Drive Chain		X		X		X	
Re-Pack Wheel Bearings							X
Lubricate All Cables		X		X		X	
Adjust Headset Bearings		X			X		
Re-Pack Headset Bearings							X
Replace Muffler							X

Note: Operations called for under "First 100 Miles" and "First 500 Miles" must be performed by dealer in order for warranty to be valid.

Time Allowance: The following times are presented as an aid in computing labor costs for various maintainence operations.

First 100 Mile Maintainence 15 minutes

First 500 Mile Maintainence 2.0 hours

Technical Specifications

Engine Model: Morini MO-1 Single Cylinder 2 Stroke and MO-2

	<u>20 M.P.H.</u>	<u>25/30 M.P.H.</u>
Displacement	49.6 cc	49.6 cc
Compression Ratio	8 to 1	8 to 1
Compression Pressure	110 lbs. (70lbs. min.)	110 lbs. (70 lbs. min.)
Cooling	Air Cooled	Air Cooled
Bore	40.4 mm	40.4 mm
Stroke	40.0 mm	40.0 mm
Transmission (MO-2)		Dual Speed Automatic
Carburetor	Dell'Orto SHA 14/9	Dell'Orto SHA 14/12
Main Jet	45	48
Ignition	Magneto 6V 23W	Magneto 6V 23W
Point Gap	.014-.018 (.35-.45mm)	.014-.018 (.35-.45mm)
Ignition Timing	23° BTDC	23° BTDC
Spark Plug	Bosch W 175 T 30	Bosch W 175 T 30
	Champion N9Y	Champion N9Y
	NGK BP6ES	NGK BP6ES
Spark Plug Cap	.016-.020" (.4-.5mm)	.016-.020" (.4-.5mm)
Ignition Coil	Frame Mounted	Frame Mounted
Transmission	Single Speed Automatic	Single Speed Automatic
Transmission Oil Capacity	1 Pint	1 Pint
Clutch	Single Centrifugal	Single Centrifugal
Drive Chain	88 Link 1/2" x 3/16" (12.7 mm x 4.8 mm)	82 Link 1/2" x 3/16" (12.7 mm x 4.8 mm)
Gear Teeth	Pinion: 13T	Pinion: 12T
	Sprocket: 40T	Sprocket: 28T
Clutch (MO-2)		Dual Centrifugal

Frame Specifications

Frame Construction	Welded Tubular Steel
Fork	Telescopic Spring
Fenders	Polished Stainless Steel
Wheels (Deluxe & Super Sport)	Chrome Plated Steel, 36 Spoke 2 1/4" x 16"
Wheels (Sport)	Chrome Plated Steel, 36 Spoke 2 1/2" x 16"
Brakes	Drum Type, Internal Expanding
Drum Diameter	Diameter 3.6" (90 mm)
Lining Width	.7" (18 mm)
Tire Size (Deluxe & Super Sport)	2 1/4" x 16" DOT Approved (Front & Rear)
Tire Size (Sport)	2 1/2" x 16" DOT Approved (Front & Rear)
Tire Pressure	Front 22 lbs.- Rear 30 lbs.
Fuel Tank Capacity	Deluxe: 9/10 Gallon Including Reserve
	Sport: 2/3 Gallon
	Super Sport: 2 Gallons

20/25/30 M.P.H.

Weights - Dimensions:

Shipping Weight	108 lbs.
Curb Weight	98 lbs. (Single Speed) 100 lbs. (Two Speed)
Wheelbase	42" (106.7 cm)
Ground Clearance	5.5" (14 cm)
Length Overall	63" (157 cm) Deluxe & Super Sport 64" (160 cm) Sport

Lubrication:

Engine	2 Cycle Oil, 20:1 Ratio (6 oz. oil per tank) Synthetic Oil, 50:1 Ratio (2.5 oz. oil per tank)
Transmission	SAE 20 non-detergent motor oil (below 32° use SAE 10) Capacity 1 Pint
Wheel Bearings	Lithium base grease
Drive Chain	Chain lubricant
Cables	Cable lubricant or light grease

<u>Fuel:</u>	Regular Grade Leaded Gasoline (<u>DO NOT USE UNLEADED GASOLINE!</u>)
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Torque Specifications

<u>Engine:</u>	Single & Two Speed
Pinion Gear	29 ft/lb (4 kg/m)
Flywheel Nut	25-29 ft/lb (3.5-4.0 kg/m)
Cylinder Head	7 ft/lb (1 kg/m)
Semi-Case Bolts	7.0-8.5 ft/lb (1.0-1.2 kg/m)
Flywheel Clutch Cover	7.0-8.5 ft/lb (1.0-1.2 kg/m)
Intake and Exhaust Manifold	4.0 ft/lb (.5 kg/m)
Clutch Disc Assembly	29 ft/lb (4 kg/m)

<u>Frame:</u>	All Models
Axle Fixing Nuts	29 ft/lb (4 kg/m)
Shock Absorber Mounting Nuts	35 ft/lb (5 kg/m)
Kickstand Spindle Nut	25 ft/lb (3.5 kg/m)
Swing Arm Spindle Nut	29 ft/lb (4 kg/m)
Fork Top Bolts	25 ft/lb (3.5 kg/m)
Handlebar Clamp Bolts	7 ft/lb (1 kg/m)
Throttle Control Clamp Bolt	1-2 ft/lb (.125-.250 kg/m)
Crank Cotter Nuts	5 ft/lb (.6 kg/m)

Vehicle Storage

If moped is to be stored for two months or more, the following procedure should be carried out:

1. Preparation of Gas Tank: There are several effective ways for preparing the gas tank for storage. The alternative most suitable will be determined by the environment in which the moped will be stored.

Option 1. - For storage in warm dry area:

- A. Drain all fuel from fuel tank by removing fuel line at carburetor and draining fuel into a suitable container.
- B. With fuel valve in reserve position, run engine until out of fuel.
- C. Leave gas cap off and fuel line disconnected and in the open position so as to permit air to flow through the tank so as to hinder condensation.

Option 2. - For storage in damp areas.

- A. Follow step A. listed above.
- B. Follow step B. listed above.
- C. Follow step C. listed above. In addition, liberally spray WD-40 or equivalent into the gas tank so as to coat the interior as completely as possible. When bringing the unit out of storage, the WD-40 will mix with the gasoline and will not adversely affect the operation of the moped.

Option 3. - Since this option calls for leaving gasoline in the vehicle, it is as potentially hazardous as storing any vented container of gasoline. Accordingly, individual discretion as well as local fire ordinances must determine the feasibility of this method. Once again, this option is primarily for storing the moped in damp areas.

- A. Put approximately one ounce of Sta-bil into gas tank. Fill tank to capacity with normal gas/oil mixture. The Sta-bil will preserve the gasoline so that it will be useable upon taking the unit out of storage.

2. Remove spark plug and spray WD-40 (or equivalent) into spark plug hole.
3. Spray WD-40 (or equivalent) on all exposed metal surfaces, paying particular attention to chrome.

4. Be sure drive chain is clean and lightly oiled.
5. Inflate tires to 30 P.S.I.
6. Remove all embedded materials from tire treads.
7. If using a cover for storage, be sure cover is ventilated to allow for air circulation so moisture will not be trapped.
8. When re-activating moped, clean or replace spark plug and change transmission oil.