VELOSOLEX
A GUIDE TO ADJUSTING AND DISASSEMBLING THE ENGINE
To our mechanic friends

VELOSOLEX

This VELOSOLEX workshop manual is specifically designed in order that you may take all the necessary steps required in the event of a quick repair or the usual service operations.

The first part of this manual (pages 3 to 10) is devoted to problems involving trouble shooting whilst the second part (pages 11 to 22) deals with engine disassembly.

The sturdiness and quality of the parts, as well as the known simplicity of the SOLEX engine and its maintenance, excludes any serious failure.

Regardless of the type of operation performed, adjusted or repaired, remember that you must follow the numbered stages in this manual in the correct sequence and not simultaneously in conjunction with another stage.

This edition has been edited, updated and reformatted by Paul Grogan & Brian Colter

April 2013
GUIDE TO ADJUSTMENTS

WHERE TO LOOK

- From amongst the 8 points listed in the “PROBLEMS” section, determine one that is the closest match. Once you have made your choice, work through the various preliminary checks to determine what might have been the cause of the original failure.
- Note the paragraph numbers & letters suggested and move to the appropriate “CAUSES” section dealing with the:
  
  | Fuel Supply | - | Page 7 |
  | Ignition    | - | Page 8 |
  | Lighting    | - | Page 9 |
  | Maintenance | - | Page 9 |

- Then, carefully and systematically work through all the steps given in the “SOLUTIONS” column.

Reference numbers used in this guide are the same as the reference numbers found in the engine and cycle spare parts manual REF. 3809 EN.
PROBLEMS

Type of problem:
① - THE ENGINE WILL NOT START
② - THE ENGINE IS DIFFICULT TO START
③ - THE ENGINE STARTS THEN STOPS
④ - THE ENGINE RUNS WITH THE AIR CHoke PARtially CLOSED
⑤ - THE ENGINE 4-STROKES
⑥ - THE ENGINE Lacks POWER
⑦ - THE ENGINE IS NOISy
⑧ - THE LIGHTS DO NOT WORK

① - THE ENGINE WILL NOT START
Make sure that:
1. The fuel tank contains fuel
2. The lighting is off
3. Oil has not been poured directly into the tank
4. The choke lever (6) is closed when the engine is cold and it is open when the engine is hot

If these conditions have been met and the engine still will not start, check in the following order:

1 – FUEL SUPPLY
Disconnect the overflow pipe (9). Engage the engine and push the Solex forwards while decompressing the engine.

If fuel flows normally,
Check:
2 Ba } See “FUEL SUPPLY”

If the fuel does not flow,
Check:
2 A } See “FUEL SUPPLY”
3 A } See “FUEL SUPPLY”
4 A } See “FUEL SUPPLY”
1 B }
1 H } See “MAINTENANCE”

If the fuel bubbles through,
Check:
1 A }
1 D } See “FUEL SUPPLY”
1 E }

2 - IGNITION
To find out if the cause of the trouble is due to a bad ignition setting or a faulty part, remove the spark plug and, while connected to the spark plug cable, lay it on top of the cylinder head. Engage the engine and push the Solex forwards.

If there is a regular spark between the plug electrodes,
Check:
1 } See “IGNITION”
3 }

If the spark is intermittent or if there is no spark,
Check:
2 } See “IGNITION”
1 H } See “MAINTENANCE”

3 - MAINTENANCE
Check:
1 A }
1 B } See “MAINTENANCE”
1 H }
② - THE ENGINE IS DIFFICULT TO START
First of all make sure the light switch is in the “off” position. Then check the ignition.
See ① - THE ENGINE WILL NOT START, section 2 - IGNITION or section 3 - MAINTENANCE.

③ - THE ENGINE STARTS AND THEN STOPS
Make sure the riding technique was not incorrect during start-up. Specifically:
1. Forgetting to open the choke after travelling 200 meters (cold engine)
2. Choke is closed with the engine already warm.
If the procedure was correct.

Check:

- 2 A } See “FUEL SUPPLY”
- 2 Ba } See “FUEL SUPPLY”
- 3 A } See “FUEL SUPPLY”
- 4 A }
- 1 } See “IGNITION”
- 2 }

④ - THE ENGINE RUNS WITH THE CHOKE PARTIALLY CLOSED
This fault may be due to:
1. The fuel jet is too small or partially blocked.
2. Air is being drawn into the fuel suction circuit.
3. Air is being drawn in at the inlet manifold or crankcase.
Therefore, after disconnecting the fuel overflow pipe (9),

⑤ - THE ENGINE 4-STROKES
Make sure the choke is fully open and the carburettor air filter is not partially blocked with dirt.
Then check:

If fuel flows normally, Check:

- 2 Ba }
- 2 Bc }
- 2 Cb }
- 1 D }
- 1 E } See “MAINTENANCE”
- 1 F }
- 1 G }

If the fuel bubbles through, Check:

- 1 A } See “FUEL SUPPLY”
- 1 D ”
6 - THE ENGINE LACKS POWER
Make sure that the front tyre is inflated to the correct pressure
(Original = 2.0 bars or 200 kPa or 29 PSI. Recommended = 2.2 bars or 220 kPa or 32 PSI) and that the wheels turn freely.
If so, then check:

1. See “IGNITION”
2. See “MAINTENANCE”

7 - THE ENGINE IS NOISY
The noise may be due to a part that has become loose; an item that has developed some play or the engine may need decoking.
Check:
All engine assemblies are tight. If the noise persists then see:

1. See “MAINTENANCE”

8 - THE LIGHTS DO NOT WORK
For lighting failures, refer directly to the “LIGHTING” section where all the relevant information can be found.
**FUEL SUPPLY**  
*(Fig. 1 Engine diagram)*

<table>
<thead>
<tr>
<th>CAUSES</th>
<th>SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pump</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 1A Pump (13) | Poorly tightened  
Engine will not start or runs with the choke partially closed. | Check tightness:  
1. Of the pump fixing screws (4)  
2. Of the pillar (3). |
| 1B Check balls | Gummed up  
Engine will not start. | Change the pump (13) |
| 1C Diaphragm (2) | Porous  
Engine 4-strokes | Remove the four screws (4) fixing the pump body. Detach the pump body a little way from the pump housing. Remove the diaphragm (2). Slide in a new diaphragm and refit the pump. Make sure the diaphragm seat (1) is not distorted. If it is, change it. |
| 1D Diaphragm seat (1) | Deformed or mounted back-to-front  
Engine runs with the choke partially closed. | Remove the pump (13), diaphragm (2) and the diaphragm seat (1). Fit a new diaphragm seat with the flat side facing the crankcase and fitted over the centre pip which should be slightly expanded (or spread out). Reassemble the pump. |
| 1E Fuel pipe union (8) | Loose or squashed flange  
Engine will not start or starts and then stops or runs with the choke partially closed. | Tighten (but don’t over tighten) or change the pipe with the faulty union after first removing the tank. |
| **Carburettor** | |
| 2A Filter (14) | Clogged up  
Engine will not start or starts and then stops. | On engines earlier than 3800: Disconnect the fuel supply pipe (8). Insert a wood screw Ø 3.5 mm into the carburettor housing to facilitate extraction of the filter. Replace the filter and reassemble.  
On 3800 engines or later: Remove the air filter. The fuel filter protrudes from the carburettor under the air filter. Pull out filter and replace with a new one. |
| 2B Fuel Jet (7) | a. Blocked  
Engine will not start or starts and then stops or runs with choke partially closed. | Remove. Clean out using compressed air. Reassemble. Do not over tighten.  
**NEVER** push a wire or needle through the calibrated orifice. |
| | b. Too big  
Engine 4-strokes. | Remove. Replace with a jet one or two numbers smaller. Reassemble. Do not over tighten. Normal jet is 28 cc. Use only “SOLEX” jets. |
| | c. Too small  
Engine runs with the choke partially closed. | Remove. Replace with a jet one or two numbers larger. Reassemble. Do not over tighten. Normal jet is 28 cc. Use only “SOLEX” jets. |
2 C  Air jet (5)  
- **a. Blocked or too small.** Engine 4-strokes.  
  Remove the air jet. Clean out using compressed air or replace it with a larger jet. Reassemble.
- **b. Too big.** Engine runs with the choke partially closed.  
  Remove the air jet. Replace it with a smaller jet. Reassemble.

**Fuel Tank** 3 A  Filter (12)  
- **Dirty** Engine will not start or starts and then stops.  
  Remove the fuel tank. Unscrew the suction pipe. Remove the filter, clean and refit. Reassemble the suction pipe. (Do not over tighten the union.)

**Fuel Pipes** 4 A  Suction & Supply (11)  
- **Blocked** Engine will not start or starts and then stops.  
  Remove the fuel tank. Remove both pipes. Unblock using compressed air. Reassemble both pipes. (Do not over tighten unions.) Check the correct position of the supply pipe so that it does not touch the crankcase.

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**IGNITION** (Fig. 2 Timing diagram)

<table>
<thead>
<tr>
<th>CAUSES</th>
<th>SOLUTIONS</th>
</tr>
</thead>
</table>
| **1. Spark Plug**  
Electrode  
*Dirty. Gap too big or too small. Engine will not start or starts with difficulty or lacks power or 4-strokes.*  
Remove the air filter body. Take out the spark plug. Clean the electrodes using a wire brush. Adjust the electrode gap to 0.020" / 0.5 mm. (Do not force the earth electrode as it is possible to break it off.)  
**Warning:** When replacing the plug, only use the recommended type. |
| **2. Plug lead**  
Insulation  
*Lead cut or insulation damaged. Engine will not start or runs erratically.*  
Remove the engine cover. Unscrew the lead retaining plate and disconnect the lead from the flywheel housing. Replace the lead with a new one. **Use only suppressed plug leads recommended for use on a Velosolex.** |
| **3. Flywheel Magneto**  
Timing  
*Contact breaker points out of adjustment Engine will not start or starts with difficulty or lacks power or 4-strokes.*  
Remove the magneto cover. Turn the rotor (12) and line up the two timing marks (6 & 5). Loosen by a quarter turn the two screws (8) securing the fixed contact bracket. Insert a piece of cigarette paper between the contact points. By carefully rotating the eccentric screw (7), thus moving the fixed contact support (4), adjust the points gap so that the paper just begins to slide freely with a light pulling pressure. Retighten the two screws (8). **Be very careful not to leave a scrap piece of paper between the contacts.** |
## LIGHTING

<table>
<thead>
<tr>
<th>CAUSES</th>
<th>SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Bulbs</strong></td>
<td><strong>Broken or earthed</strong></td>
</tr>
<tr>
<td>Filament</td>
<td>Remove either the headlight lens or the rear lamp lens in order to replace the faulty bulb. Bulb specifications are: 6V, 6W (1 Amp) for the headlight bulb. 14V, 7W (0.5 Amp) for the rear bulb.</td>
</tr>
<tr>
<td><strong>2. Lighting wiring</strong></td>
<td><strong>Broken or frayed</strong></td>
</tr>
<tr>
<td></td>
<td>Replace the faulty wire.</td>
</tr>
<tr>
<td><strong>3. Earth circuit</strong></td>
<td>Check the condition of the conductors, insulation of the terminals, headlamp and rear lamp contacts.</td>
</tr>
<tr>
<td><strong>4. Light switch</strong></td>
<td><strong>Dirty</strong></td>
</tr>
<tr>
<td></td>
<td>Clean the contact boss on the switch lever and the contact stud on the lighting terminal.</td>
</tr>
</tbody>
</table>

## MAINTENANCE

<table>
<thead>
<tr>
<th>CAUSES</th>
<th>SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaks</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1 A. Decompressor valve (11498)</strong></td>
<td>Engine will not start, or lacks power and there is lack of compression.</td>
</tr>
<tr>
<td></td>
<td>Check:</td>
</tr>
<tr>
<td>1 B. Cylinder head gasket (10522)</td>
<td>Engine will not start or lacks power.</td>
</tr>
<tr>
<td></td>
<td>Remove the cylinder head (11373). Change the gasket (10522). Reassemble the cylinder head.</td>
</tr>
<tr>
<td><strong>1 D. Manifold gasket (408)</strong></td>
<td>Oil leaks. Engine runs with choke partially closed and lacks power.</td>
</tr>
<tr>
<td></td>
<td>Remove the exhaust pipe. (11005). Remove the inlet/exhaust manifold (11143) and the carburettor (11651). Change the gasket (408). Reassemble.</td>
</tr>
<tr>
<td><strong>1 E. Cylinder base gasket (142)</strong></td>
<td>Oil leaks. Engine runs with choke partially closed and lacks power.</td>
</tr>
<tr>
<td></td>
<td>Remove the fuel tank (11648) and the exhaust pipe (11005). Remove the cylinder barrel (10839) along with the cylinder head (11373), the inlet/exhaust manifold (11143) and the carburettor (11651). Change the base gasket (142). Reassemble.</td>
</tr>
<tr>
<td><strong>1 F. Crankcase end cover gasket (10199)</strong></td>
<td>Oil leaks. Engine runs with choke partially closed and lacks power.</td>
</tr>
<tr>
<td></td>
<td>Remove the fuel tank (11648), the cylinder barrel (10839) and the crankcase end cover (10119). Fit a new gasket (10199), lightly smeared with grease or oil. (If applicable, cut the top of the gasket to the crankcase profile). Reassemble.</td>
</tr>
</tbody>
</table>
| **1 G. Intake manifold to carburettor (11143)** | Nut loose  
Engine runs with choke closed | Check the tightness of the manifold nut (10551) and the condition of the manifold olive (10547). |
|---|---|---|
| **1 H. Clutch mechanism (11853)** | Worn out or oily  
Engine runs with choke closed | Engage the motor onto tyre and remove the magneto cover. Without using the decompressor, push the Velosolex forwards. If the rotor does not turn, the clutch is slipping. Have the work done by a Velosolex Service Agent. |
| **2 A. Cylinder barrel (10839)** | Worn  
Engine noisy and lacks power. | Strip the cylinder barrel (10839) completely and replace. |
| **2 B. Piston rings (11333)** | Worn  
Engine lacks compression, power and is noisy. | Remove the cylinder barrel (10839). Change the piston rings (11333). Reassemble. |
| **2 C. Piston gudgeon pin** | Worn  
Engine is noisy. | Change the conrod and piston assembly (10840) or get a Velosolex Service Agent to do it. |
| **2 D. Piston** | Worn  
Engine lacks power and is noisy. | Change the conrod and piston assembly (10840) or get a Velosolex Service Agent to do it. |
| **2 E. Crank-pin bushing (11474)** | Play  
Engine is noisy. | Remove the fuel tank (11648), the cylinder barrel (10839) and the crankcase end cover (10119). Undo the crankshaft nut and remove the conrod and piston assembly (10840). Replace the crank-pin bushing (11474) and reassemble. |
| **2 F. Main Bearing** | Worn  
Engine is noisy. | Have the work done by a Velosolex Service Agent. |
| **2 G. Clutch (11853)** | Worn mechanism or drum  
Engine is noisy and lacks power or does not start. | Have the work done by a Velosolex Service Agent. |

**Noise**

**Carbon build up**

| Cylinder head (11373)  
Piston  
Cylinder barrel (10839)  
Exhaust pipe (11005)  
Inlet / exhaust manifold (11143) | Engine 4-strokes, pinks and lacks power. | Light carbon deposit in the exhaust port: Remove the cylinder head (11373) after removing the air cleaner body, engine lift lever and the cylinder head bolts. Take the piston to bottom dead centre. Scrape away the carbon deposited in the exhaust port. Clean. Reassemble. Carry out an engine decoke (see page 21) |
GUIDE TO DISASSEMBLY

TOOLING
In addition to conventional tools, open-ended spanners, box spanners of 7, 9, 12, 13 & 14 mm and screwdrivers, etc., some procedures on the engine require the use of specialist tools. Reference numbers, descriptions and their use are indicated in the “Special Tooling” section shown on page 22.

SEQUENCE OF OPERATIONS
To proceed with a complete engine disassembly, just follow the operations sequentially described in the "Guide to Disassembly" on pages 12 – 21. However, if you wish to replace a specific component, select the item from the table below and follow the operations listed to achieve the desired result.

<table>
<thead>
<tr>
<th>No.</th>
<th>REFERENCe</th>
<th>OPERATIONS</th>
<th>No.</th>
<th>REFERENCe</th>
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<th>No.</th>
<th>REFERENCe</th>
<th>OPERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>11474</td>
<td>Crank-pin bush</td>
<td>3-4-5-6-8-9-10</td>
<td>10840</td>
<td>Piston, rings and con rod assembly</td>
<td>3-4-5-6-8-9-10</td>
<td>11657</td>
<td>Fuel pump</td>
<td>3-15</td>
</tr>
<tr>
<td>1117</td>
<td>Ignition coil</td>
<td>3-11</td>
<td>11031</td>
<td>Air filter</td>
<td>4</td>
<td>777</td>
<td>Crankcase bearing</td>
<td>16</td>
</tr>
<tr>
<td>1118</td>
<td>Lighting coil</td>
<td>3-11</td>
<td>12546</td>
<td>Transmission roller</td>
<td>3-11-12-13-14</td>
<td>778</td>
<td>Flywheel bearing</td>
<td>3-11-12</td>
</tr>
<tr>
<td>779</td>
<td>Spark plug</td>
<td>4</td>
<td>11309</td>
<td>Clutch pad</td>
<td>3-11-12-13</td>
<td>11333</td>
<td>Piston rings</td>
<td>3-4-5-6-8</td>
</tr>
<tr>
<td>11656</td>
<td>Headlamp shell</td>
<td>3</td>
<td>10199</td>
<td>Crankcase end cover gasket</td>
<td>3-6-8-9</td>
<td>10454</td>
<td>Pump diaphragm seat</td>
<td>3-15</td>
</tr>
<tr>
<td>11111</td>
<td>Flywheel cover</td>
<td>3</td>
<td>10522</td>
<td>Cylinder head gasket</td>
<td>4-5</td>
<td>11005</td>
<td>Exhaust pipe</td>
<td>1</td>
</tr>
<tr>
<td>11651</td>
<td>Carburettor</td>
<td>1-4-7</td>
<td>142</td>
<td>Cylinder barrel gasket</td>
<td>3-6-8</td>
<td>11498</td>
<td>Decompressor valve</td>
<td>4-5</td>
</tr>
<tr>
<td>13035</td>
<td>Crankcase</td>
<td>1-2-3-4-5-6-8-9-10-11-12-13-14-15-17</td>
<td>408</td>
<td>Manifold gasket</td>
<td>1-4-7</td>
<td>11094</td>
<td>Stator plate</td>
<td>3-11-12</td>
</tr>
<tr>
<td>11191</td>
<td>Condenser</td>
<td>3-11</td>
<td>11501</td>
<td>Engine lift lever</td>
<td>4-5</td>
<td></td>
<td>Suspension</td>
<td>1-2-6-11-12-13-14-17</td>
</tr>
<tr>
<td>10119</td>
<td>Crankcase end cover</td>
<td>3-6-8-9</td>
<td>281</td>
<td>Fuel pump diaphragm</td>
<td>3-15</td>
<td>11773</td>
<td>Fuel supply pipe</td>
<td>3-6</td>
</tr>
<tr>
<td>11373</td>
<td>Cylinder head</td>
<td>4-5</td>
<td></td>
<td>Piston</td>
<td>3-4-5-6-8-9-10</td>
<td>11143</td>
<td>Inlet/exhaust manifold</td>
<td>1-4-7</td>
</tr>
<tr>
<td>11839</td>
<td>Cylinder barrel</td>
<td>3-4-5-6-8</td>
<td>11120</td>
<td>Contact breaker</td>
<td>3-11</td>
<td></td>
<td>Crankshaft</td>
<td>16</td>
</tr>
</tbody>
</table>
GUIDE TO DISASSEMBLY
To reassemble, just follow the reverse order of disassembly

1 - REMOVING THE EXHAUST
Loosen the nut No. 788 securing the silencer onto the mudguard. Unscrew and remove the bolt No. 670 fixing the exhaust pipe to the suspension flange.
Disengage the pipe lower fixing tab from the mudguard
Tilt and gently rock the pipe whilst pulling it downwards to disengage it from the joint.
Every 3,500 miles, (6000 km) change the exhaust silencer when performing a decoke.
When fitting a new exhaust, make sure the outlet pipe is not blocked with paint.

2 - ENGINE REMOVAL
Unhook the decompressor operating rod, disconnect the rear light wire, loosen the throttle cable clamp screw on the carburettor valve lever and remove the cable from the carburettor.
Unscrew and remove the two bolts and nuts No. 670 & 50 fastening the engine supports to the front forks.
Loosen the two nuts No. 50 at the upper fixing.
Lift the engine to release it from the slotted brackets.
When reassembling, adjust the throttle cable setting (see page 21).
3 - REMOVAL OF THE HEADLAMP COWL ASSEMBLY AND LAMP
To remove the magneto flywheel cover, disengage the two rubber securing clips No. 10762. This operation also allows the headlamp cowl to be removed after disconnecting, if applicable, the rear light wire.
When reassembling, adjustment of the headlamp beam can be made by pressing down on the two tabs (L) at the base of the headlamp lens (the engine must be in the lowered position on the tyre).
In order to change a bulb No. 764, press down on the two tabs (L) and tilt the whole lamp assembly forward.
Bulb specifications are:
   Front: 6V, 6W (1 Amp)
   Rear: 14V, 7W (0.5 Amp)

4 - REMOVING THE AIR FILTER BODY
Unscrew the screw No. 11413, remove the washer No. 10612 and then lift off the whole air filter body. To access the air filter: remove the cover No. 11410 by holding the assembly in one hand and lightly tapping with a mallet on the tab "L". With a screwdriver, remove the filter collar No. 11032 and then remove the filter No. 11031.
When reassembling, don’t forget to make sure rubber gasket No. 10546 is seated correctly.
5 - REMOVING THE CYLINDER HEAD AND THE LIFT LEVER
After disconnecting the H.T. spark plug lead No. 11660, unscrew (but do not remove) the 4 screws No. 10307 fastening the cylinder head and then remove the complete assembly, including the lift lever and decompressor.
After each removal of the cylinder head, change the gasket No. 10522. When decoking, scrape the inside of the cylinder head and then use a drill Ø 3.5 mm to clear the sloping decompressor channel. Use ‘Special Tool’ Valve Seat Cutter 92 00 000 to carry out the cutting of the decompressor valve seat. Change the decompressor valve spring and the valve; a small amount of valve seat grinding will be required. This is very important as it has a great bearing on the performance and running of the engine.
Valve grinding: Add a few drops of oil onto the valve seat and nothing else. Place the new valve into the cylinder head and use a screwdriver to rotate the valve head backwards and forwards for a few seconds whilst applying light pressure.

6 - REMOVING THE FUEL TANK
Disconnect the fuel overflow pipe No. 8236 and unscrew the lower suction pipe union into the fuel pump. Loosen the screw No.318 for the rear tank mounting and then completely remove the front and lower fixing screws no. 670. Remove the tank.
When reassembling: Check for the presence of, and clean out, the small filter "F" inside the tank housing of the inlet pipe connection. Do not over tighten the pipe unions.
7 - REMOVAL OF THE CARBURETTOR AND MANIFOLD ASSEMBLY
Loosen the throttle cable clamp screw on the throttle lever and remove the throttle cable from the carburettor. Unscrew completely the fuel supply pipe union and the two screws No. 11171 securing the manifold. Remove the carburettor and manifold assembly. To further separate, unscrew the inlet pipe union fitting No. 10551.
When reassembling: After confirming the presence and condition of the small nylon inlet pipe sealing ring No. 10547 and the long nylon fuel filter No. 13039, slide the carburettor onto the inlet pipe. Do not fully tighten the union fitting No. 10551 yet as this can only be done after the manifold has been fitted to the cylinder barrel and the air filter body is in place.
Refit the throttle cable and adjust the setting (see page 21).
When decoking the exhaust manifold tubing, replace the gasket No. 408.

8 - REMOVING THE CYLINDER BARREL
Unscrew the four nuts No. 50 and remove them along with the four spring washers No. 13099.
Unscrew the stroke limiter plug screw No. 670 and insert the ‘Special Tool’ Crankshaft Stroke Limiter No. 1213 00 000 so as to immobilise the crankshaft at T.D.C. Remove the cylinder barrel and base gasket No. 142.
During a decoke, remove any carbon build up from the exhaust port and the two transfer ports. Pass a Ø 5.0 mm drill into the vertical decompressor outlet.
9 - REMOVING THE CRANKCASE END COVER
Unscrew the eight screws securing the end cover No. 10119 and remove the cover and gasket.
When reassembling: position the new gasket No. 10199 (previously lightly coated with grease or oil), then loosely assemble the two long upper fastening screws No. 10231 with washers No. 413. (If applicable, cut the top of the gasket to the crankcase profile.) Loosely assemble the remaining six screws No. 445 with washers No. 413. Fit the cylinder base gasket No. 142.

![Diagram of engine cylinder and parts]

Arrange the piston rings such that the gaps are neither lined up nor in the same alignment as the cylinder barrel ports, then carefully assemble the barrel No. 10839 onto the piston. Install the four spring washers No. 13099, nuts No. 50 and tighten. Next, tighten the top two screws No. 10231 already installed. Slacken off by a sixth of a turn two nuts No. 50 on the end cover side. Starting from the bottom and going towards the top, tighten the six end cover screws. Finally, retighten the two cylinder barrel nuts No. 50 on the end cover side.
10 - REMOVING THE CONROD ASSEMBLY

Use ‘Special Tool’ Crankshaft Stroke Limiter No. 1213 00 000 to block the crankshaft.

Unscrew the crankshaft end nut No. 11528.

Remove the washer No. 307, conrod assembly No. 10840 and the crank-pin bush No. 11474.

Mark the conrod so that it can be reassembled in the same way it was disassembled.

When reassembling: Make sure the crank-pin bush No. 11474 is placed on the crank pin with the chamfered side facing inwards and the flat side of the big end bearing is facing the crankshaft flyweight.

11 - REMOVAL OF THE FLYWHEEL MAGNETO ROTOR

Use ‘Special Tool’ Crankshaft Stroke Limiter No. 1213 00 000 to block the crankshaft.

Unscrew the deflector nut No. 11797 fastening the deflector plate No. 11794 and the rubber gasket No. 11795 so as to gain access to the rotor locknut No. 11796.

Unscrew the rotor locknut and remove.

To remove the rotor, use ‘Special Tool’ Rotor Extractor No. 313 00 000, 331 00 000 & 670 00 000: Screw nut No. 313 00 000 all the way down the crankshaft thread. Position large washer No. 331 00 000 to the rotor and secure in place using three screws No. 670 00 000. Slacken off nut No. 313 00 000 to draw the rotor from the crankshaft. Remove extractor washer and three screws from the rotor and the nut from the end of the crankshaft.

Reassembly: Make sure the key in the rotor is correctly engaged into the keyway in the crankshaft before assembling the rotor locknut. Replace the rubber gasket, deflector plate and nut.
12 - REMOVING THE STATOR
Loosen the drive roller cleaning screw No. 11132 and lift or move aside the plug lead securing strip No. 11131 which holds the HT spark plug lead No. 11660 in place. Unscrew the lead connection terminal at the back of the stator and remove the lead. Unscrew fastening screw No. 10307 located outside on the top of the casing and the two fastening screws No. 12104 found inside the casing. Using ‘Special Tool’ Stator Extractor No. 195 00 000, screw the threaded end onto the crankshaft and fit the two ‘ears’ of the extractor under the corners of the coils. Unscrew the ‘Special Tool’ Crankshaft Stroke Limiter No. 1213 00 000 and remove. Tighten the Stator Extractor adjusting screw to release the stator.
It is possible during disassembly, that stator bearing No. 778 will remain on the crankshaft. In this case, it will become necessary to use ‘Special Tool’ Stator Bearing Extractor No. 883 00 000 to remove it.

Reassembly: Insert and tighten the ‘Special Tool’ Crankshaft Stroke Limiter No. 1213 00 000. Position the stator (with its bearing) onto the crankshaft and engage the 3 fastening screws (one located outside on top and two inside fitted with captive washers). Position the short tube over the threaded end of the Stator Extractor and screw onto the end of the crankshaft. Using the two ‘ears’ as handles, turn the tool in a clockwise direction to seat the stator and bearing. Remove the extractor and tube. Tighten the two internal screws No. 12104 and external screw No. 10307.
13 - REMOVING THE CLUTCH
Use ‘Special Tool’ Crankshaft Stroke Limiter No. 1213 00 000 to block the crankshaft. Using the ‘Special Tool’ 21 mm Tube Wrench No. 110 00 000, unscrew the nut No. 10808. Remove the clutch assembly.
If heavy lining wear is noted, it is necessary to change the clutch. As the linings are glued to the mechanism, an exchange clutch replacement will be required.
When reassembling the clutch, make sure the face marked with an ‘X’ is visible and to the outside.
Check the thickness of the pads which must be 5 mm

14 - REMOVAL OF THE ROLLER - DRUM ASSEMBLY
Remove the sealing cap No. 11851, taking care not to damage the oil seal located inside and not visible during disassembly.
Using the ‘Special Tool’ 21 mm Tube Wrench No. 110 00 000, loosen the (lightly tightened) second nut No. 10808 and remove along with the spacer washer No. 13052. The drum, backplate and roller assembly can be pulled off the crankshaft without the use of tools.
Reassembly: Once the drum and roller assembly is placed over the crankshaft, gently apply pressure whilst rotating the drum slightly so as to engage the bronze bushing on the drive roller side within the seal in the housing without damaging it. Tightening nut No. 10808 securing the drum must be done using the 21 mm tube wrench without the tommy bar so as to limit the tightening torque.
15 - REMOVING THE FUEL PUMP
To remove the pump, unscrew the 4 screws (and if necessary, the two fuel pipe unions) then slide the pump body to the right.
Remove the diaphragm No. 281 and the diaphragm seat No. 10454.
**When reassembling:** Make sure that the diaphragm is not punctured, the balls are not stuck and the diaphragm seat is not distorted.
The diaphragm seat must be installed with the flat side facing the crankcase and fitted over the centre pip which should be slightly expanded (or spread out).

16 - CRANKCASE BEARING OR CRANKSHAFT
The deterioration of the main bearing No 777 usually causes failure of its housing or the housing of the roller seal, therefore an exchange of the complete assembly No. 13035 is required.

17 - REMOVAL OF THE SUSPENSION OR THE CRANKCASE
Using pliers, unhook the two suspension springs No. 11905.
Remove the small plastic protection plate No. 11129 from the rear and then loosen the two nuts No. 12057 securing the friction plates to the front of the housing. Remove them as well as the two spacers No. 11387 and two bolts No. 10727 thereby releasing the front mud guard No. 11388 and the two friction slides No. 11128.
Unscrew one of the support plate nuts No. 50053 after releasing it from the suspension nut lock No. 11907 by loosening the suspension bolt No. 11666.
Remove the engine support plate and then, from the other side, take out the nut No. 50053 and engine pivot pin No. 319. This will release the other support plate as well as washers No. 310 and the rubber silent blocks No. 320.
In order to free the friction slides from the support plates, unscrew the fixing screws No. 10231 and the tension nuts No. 11183.
**When reassembling:** Upon re-assembly, do not forget to detain the nuts by the peening of the ends of the bolts No 10727 and screws No. 10231.
**Caution:** *Never* use grease or oil to lubricate the slides. They should only be cleaned using the fuel mixture.
DECOCKING
After many miles, carbon deposits will obstruct the various ports in the engine and this will be detrimental to its proper running.

To remove these deposits, first proceed with the disassembly of:
1. Cylinder head No. 11373, after removing the air cleaner body and the lift lever
2. Carburettor No. 11651 and manifold assembly No. 11143.

Scrape the carbon deposits from the cylinder head and the top of the piston.
Properly clean the exhaust port, as well as the exhaust pipe, making sure there are no carbon obstructions at any point.
Pass a $\varnothing$ 5.0 mm drill bit into the vertical channel of the decompressor in the cylinder barrel and a $\varnothing$ 3.5 mm drill bit into the inclined channel in the cylinder head. Clean the decompressor seat and replace the valve and spring, if necessary. Adjustment of the decompressor valve opening is achieved by fully tightening the nut No. 11499 and then loosening off one and a half turns. The exhaust silencer cannot be dismantled and a new one must be purchased.

When reassembling:
- Before fitting a new exhaust, insert a $\varnothing$ 6.0 mm drill into the outlet pipe and make sure it is not blocked with paint.
- Always use new gaskets.
- Check the contact breaker opening point on the magneto flywheel - see "IGNITION - 3".
- Set the spark plug electrodes to 0.020" (0.5 mm)
- Clean the air filter using fuel mixture.
- Carry out adjustment of the throttle control.

THROTTLE CONTROL SYNCHRONISATION
Set the handlebars to their normal position (stem height of 28 to 30 mm).
Adjust the front brake by means of the notched adjuster wheel.
Make sure the twist grip is turned to "full throttle".
Engage the throttle cable outer in the cable support bracket (B) of the carburettor.
Then give a complete turn of the inner cable on the plastic roller (G) and under the locking washer. Pull the inner throttle cable taut.
Hold the lever (L) in its lowest position, pull the inner cable tight and fully tighten the clamp screw (V).
## SPECIAL TOOLING

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<th>Description</th>
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<th>Image</th>
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<td>92 00 000</td>
<td>Valve Seat Cutting tool</td>
<td>See operation no. 5</td>
<td><img src="image1" alt="Valve Seat Cutting Tool" /></td>
</tr>
<tr>
<td>109 00 000</td>
<td>T-Spanner, 9 mm</td>
<td>Used in various applications</td>
<td><img src="image2" alt="T-Spanner" /></td>
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<tr>
<td>110 00 000</td>
<td>Tube Wrench, 21 mm</td>
<td>See operation no’s. 13 &amp; 14</td>
<td><img src="image3" alt="Tube Wrench" /></td>
</tr>
<tr>
<td>957 00 000</td>
<td>Clutch Centering Tool</td>
<td>See operation no. 14</td>
<td><img src="image4" alt="Clutch Centering Tool" /></td>
</tr>
<tr>
<td>1213 00 000</td>
<td>Crankshaft Stroke Limiter</td>
<td>See operation no’s. 8, 10, 11, 12 &amp; 13</td>
<td><img src="image5" alt="Crankshaft Stroke Limiter" /></td>
</tr>
<tr>
<td>1218 00 000</td>
<td>Combination Spanner, 9mm</td>
<td>Used in various applications</td>
<td><img src="image6" alt="Combination Spanner" /></td>
</tr>
<tr>
<td>883 00 000</td>
<td>Stator Bearing Extractor</td>
<td>See operation no. 12</td>
<td><img src="image7" alt="Stator Bearing Extractor" /></td>
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<tr>
<td>313 00 000</td>
<td>Ignition Timing Light</td>
<td>Enables a more accurate adjustment than the method described on Page 8, op. no. 3</td>
<td><img src="image8" alt="Ignition Timing Light" /></td>
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<tr>
<td>331 00 000</td>
<td>Flywheel Magneto Rotor Extractor</td>
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<td><img src="image9" alt="Flywheel Magneto Rotor Extractor" /></td>
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<td>670 00 000</td>
<td>Flywheel Magneto Rotor Extractor</td>
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<td><img src="image9" alt="Flywheel Magneto Rotor Extractor" /></td>
</tr>
<tr>
<td>195 00 000</td>
<td>Stator Extractor</td>
<td>See operation no. 12</td>
<td><img src="image10" alt="Stator Extractor" /></td>
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