# ZS1P75MN-A(NEXUS300S电喷)
# ZS1P75MN-A (NEXUS300S EFI)
# 维修手册
# Maintenance Manual

（签字页）

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重庆宗申动力机械股份有限公司

Chongqing Zongshen Power Machinery Co., Ltd.

# 1 发动机主要参数及性能

# 1 Main parameters and performance of the engine

| 序号<br>S/N | 项　　目<br>Item | | 主要参数和结构型式<br>Main Parameters and Structure |
|---|---|---|---|
| 1 | 型号<br>Model | | ZS1P75MN-A |
| 2 | 型式<br>Type | | 单缸、四冲程、四气门、水冷、卧式、顶置凸轮、CVT 传动<br>Single-cylinder, four-stroke, four-valve, water-cooled, horizontal, overhead cam, CVT transmission |
| 3 | 外廓尺寸（长×宽×高），mm× mm× mm<br>External dimension (L×W×H), mm × mm × mm | | 717×427×330 |
| 4 | 净质量，kg<br>Net weight, kg | | 37 |
| 5 | 性能参数<br>Technical parameter | 最大功率及其相应转速 kW(r/min±5%)<br>Max. power/corresponding speed, kW (r/min±5%) | 19.4 kW/(8250 r/min) |
| 6 | | 标定功率及其相应转速 kW(r/min±5%)<br>Rated power/corresponding speed, kW (r/min±5%) | 18.5 kW/(8250 r/min) |
| 7 | | 最大扭矩及其相应转 N·m(r/min±5%)<br>Max. torque/corresponding speed, N·m (r/min±5%) | 25.7 N·m /(6250 r/min) |
| | | 标准扭矩及其相应转 N·m(r/min±5%)<br>Standard torque/corresponding speed, N·m (r/min±5%) | 24.5 N·m /(6250 r/min) |
| 8 | | 最低空载稳定转速(怠速)，r/min<br>Min. idling stabilized speed (idling), r/min | 1700 (1±10%) |
| 9 | | 最低燃油消耗率，g/kW·h<br>Min. fuel consumption rate, g/kW·h | ≤340 |
| 10 | | 机油消耗率，g/kW·h<br>Engine oil consumption rate, g/kW·h | ≤3 |
| 11 | 结构参数<br>Structural parameter | 气缸直径，mm<br>Cylinder diameter, mm | 75 |
| 12 | | 活塞行程，mm<br>Piston stroke, mm | 63 |
| 13 | | 气缸工作容积，mL<br>Cylinder working volume, mL | 278 |
| 14 | | 压缩比<br>Compression ratio | 11:1 |
| 15 | | 怠速时点火提前角（上止点前）°/（r/min）<br>Idling ignition advance angle before TDC, °/(r/min) | 16/1700 |
| 16 | | 点火器类型<br>Type of CDI | 无触点 PEI<br>PEI without contact |
| 17 | | 点火方式<br>Ignition method | 电感储能式<br>Inductive energy storage type |
| 18 | | 进角方式<br>Timing method | 数字进角<br>Digital timing |
| 19 | | 润滑方式<br>Lubrication method | 压力加飞溅<br>Pressure and splash lubrication |
| 20 | | 配气相位<br>Port timing　进气（升起 1mm 时）<br>Intake (when rise by 1 mm) | 开：上止点前 6°；关：下止点后 50°<br>Open: 6° before TDC; close: 50° after BDC |

| | | | | |
|---|---|---|---|---|
| | | | 排气（升起 1mm 时）<br>Exhaust (when rise by 1 mm) | 开：下止点前：41°；关：上止点后 2°<br>Open: 41° before TDC; close: 2° after BDC |
| 21 | 燃油供油型式<br>Fuel supply type | | | ECU 控制燃油泵精确喷油<br>ECU controls the fuel pump for precise fuel injection. |
| 22 | 燃油混合比(针对二冲程发动机)<br>Fuel mixing ratio (for two-stroke engines) | | | / |
| 23 | 冷却液型号(针对水冷发动机)<br>Coolant type (for water-cooled engines) | | | / |
| 24 | 气门间隙（冷机状态），mm<br>Valve clearance (cold), mm | | | 进： 0.10±0.02；排：0.15±0.02<br>Inlet: 0.10±0.02; outlet: 0.15±0.02 |
| 25 | 传动装置<br>Drive device | 变速器型式<br>Transmission type | | 无级变速加固定啮合<br>Stepless speed change and constant mesh |
| 26 | | 离合器型式<br>Clutch type | | 干式离心式<br>Centrifugal and dry type |
| 27 | | 初級减速比<br>Primary reduction ratio | | / |
| 28 | | 各档位传动比<br>Gear ratio of each gear | 一档<br>First gear | |
| | | | 无极变速比<br>Stepless gear ratio | 固定速比<br>Fixed gear ratio |
| | | | 0.815−2.3 | 6.818 |
| 29 | 起动方式<br>Start-up method | | | 电起动<br>Electrical start-up |
| 序号 | 项 目<br>Item | | | 主要参数和结构型式<br>Main Parameters and Structure |
| 30 | 燃油与润滑油<br>Fuel and the lubricating oil | 汽油牌号<br>Gasoline grade | | 与≥RQ90 型号等效（GB 17930）<br>Equivalent to the model ≥ RQ90 (GB17930) |
| 31 | | 润滑油牌号<br>Lubricating oil grade | | 曲轴箱：SAE SJ 5W/40 型号或等效（GB 11121）<br>Crankcase: SAE SJ 5W/40 or equivalent (GB11121)<br>传动箱：GL-5 80W/90 型号或等效（GB 11121）<br>Transmission case: GL-5 80W/90 or equivalent (GB11121) |
| 32 | | 润滑油总容量，mL<br>Total volume of lubricating oil, ml | | 曲轴箱：1300 传动箱：250<br>Crankcase: 1300 Transmission case: 250 |
| 33 | 配套附件<br>Accessories | 化油器型号、型式<br>Model and type of carburetor | | / |
| 34 | | 磁电机型号、型式<br>Model and type of magneto | | 与图纸标明型号等效<br>Equivalent to the model indicated on the drawing |
| 35 | | 点火线圈型号、型式<br>Model and type of ignition coil | | 与图纸标明型号等效<br>Equivalent to the model indicated on the drawing |
| 36 | | 火花塞型号、型式<br>Model and type of spark plug | | 与 NGK CR8EKB 火花塞型号等效<br>Equivalent to NGK CR8EKB spark plug |
| 37 | | 润滑油泵型式<br>Lubricating oil pump type | | 与摆线转子式强制润滑油泵型号等效<br>Equivalent to cycloid rotor type forced lubricating oil pump model |
| 38 | | 起动电机型式<br>Starting motor type | | 直流永磁、0.45KW 起动电机<br>DC permanent magnet, 0.45 kW starting motor |

# 2 发动机保养维修

# 2 Engine maintenance and repair

## 定期检查和调节

## Regular inspection and adjustment

**火花塞检查**

**Check of spark plug**

**1. 拆下：**

**1. Remove:**

- 火花塞接头。

  Spark plug connector.

- 火花塞。

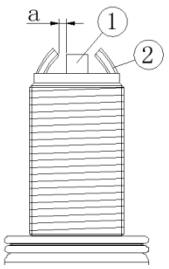
  Spark plug.

注意：拆卸火花塞之前，要用压缩空气吹净周围污物，防止落入发动机中。

Note: Before removing the spark plug, clean the surrounding dirt with compressed air to prevent dirt from falling into the engine.

**2. 检查：**

**2. Check:**




- 火花塞类型

  Model of the spark plug

不正确=>**更新**。

Nonstandard => **Replace**.

**标准火花塞**：NGK CR8EKB

**Standard spark plug**: NGK CR8EKB

**3. 检测：**

**3. Test:**

- 电极(1)

  Electrode (1)

损坏/弯曲/磨损=>**更换**

Damaged/bent/worn => **Replace**

- 绝缘体(2)

  Insulator (2)

异常颜色=>更换

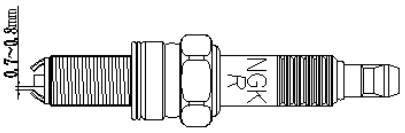
Abnormal color => Replace

正常颜色为浅棕色。

The color shall be light brown.

**4. 清洁：**

**4. Clean:**




- 火花塞

  Spark plug

（用火花塞清洁剂或钢丝刷清洁火花塞）

(Clean the spark plug with detergent or wire brush)

**5. 测量：**

**5. Measure:**

- 电极间隙（a）（用塞尺测量）

  Electrode clearance (a) (measure with feeler gauge)

电极之间的间隙：0.7mm-0.8mm

The electrode clearance shall be: 0.7 mm−0.8 mm

**6. 安装：**

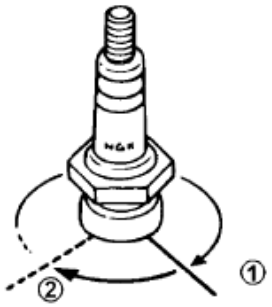
**6. Install:**

- 火花塞

  Spark plug

火花塞：1.2-1.4Kg•m（12-14N•m）

Spark plug: 1.2 kg•m−1.4 kg•m (12 N•m−14 N•m)




N.B.:

- 火花塞安装前，应清洁塞座和垫片。

  Clean the plug seat and gasket before installing the spark plug.

- 如果没有扭力扳手，调节正确扭矩的方法是用手拧紧火花塞(1)，然后再拧紧 1/4 至 1/2 圈(2)。

  To adjust torque, if a torque wrench is not available, manually screw up the spark plug (1) tightly, and then tighten it again by 1/4 to 1/2 turn (2).

- 一定要使用新垫片。

  Use a new gasket.

**<u>调节压缩压力</u>**

**<u>Adjust the compressing pressure</u>**

N.B.：压缩压力不足会导致功率不足。

N.B.: Insufficient compressing pressure will cause insufficient power.

**1. 检查：**

**1. Check:**

- 气门间隙。

  Valve clearance.

- 超出规定值=>调节

  Greater than standard => Adjust

- 见“气门间隙调节”一节。

Refer to "Adjustment of valve clearance"

- 启动发动机，暖机数分钟。

  Start the engine and warm it up for a few minutes.

- 停机。

  Shut down the engine.

**2. 拆下：**

**2. Remove:**

- 火花塞。

  Spark plug.

- 注意：拆卸火花塞之前，要用压缩空气吹净周围污物，防止落入发动机中。

  Note: Before removing the spark plug, clean the surrounding dirt with compressed air to prevent dirt from falling into the engine.

**3. 安装：**

**3. Install:**

- 压力表(1).

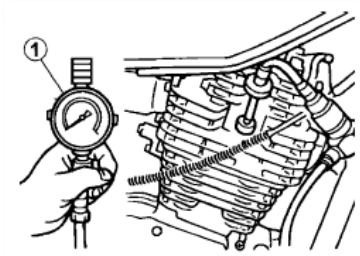
  Pressure gauge (1)

**4. 测量：**

**4. Measure:**

- 压缩压力。

  Compressing pressure




如果超过许用最大压力=>**检查气缸盖、气门表面和活塞头有无积碳。**

Higher than the maximum allowable pressure => **Check the cylinder cover, valve surface, and piston head for any carbon deposition.**

如果低于最小压力=>**向气缸内喷入数滴机油然后再测量。**

Lower than the minimum allowable pressure => **Add engine oil to the cylinder and measure the pressure again.**

**按照下表：**

**Refer to the table below:**

| 压缩压力（向气缸中喷入机油）<br>Compressing pressure (adding engine oil to the cylinder) | |
|---|---|
| 读数<br>Read the value | 诊断<br>Diagnose |
| 比无油时高<br>Higher than before | 活塞磨损或损坏<br>The piston is damaged or worn |
| 与无油时相同<br>Same as before | 活塞环、气门或气缸盖或活塞的密封可能损坏=>**修理**<br>The sealing parts of the piston ring, valve, cylinder cover, or piston may be damaged => **Repair** |

**压缩压力（不带减压阀）：**

**Compressing pressure (without pressure reducing valve):**

**标准值：**

**Standard value:**

1100 kPa (11 kg/cm$^2$)

**最小：**

**Minimum value:**

950 kPa (9.5 kg/cm$^2$)

**拆卸步骤：**

**Removal steps:**

- 油门全开时启动发动机，直到压缩读值稳定。

  Start the engine when the throttle is fully open until the compressing pressure valve is stable.
- 安装：

  Install:
- 火花塞

  Spark plug

## 检查机油油位

## Check the engine oil level

- 将摩托车置于平坦表面。

  Place the motorcycle on flat ground.

**注意：**保证摩托车与地面平行，以便正确检查油位。

**Note:** Make the motorcycle parallel to the ground to get the true oil level.

- 启动发动机，暖机数分钟。

  Start the engine and warm it up for a few minutes.
- 停机。

  Shut down the engine.
- 取下油尺(A)。用布拭净，然后拧入机油滤器孔中，然后立即抽出。

  Take off the dipstick (A). Wipe it with a cloth. Insert it into the oil filter hole and then pull it out immediately.




- **检查：**

  **Check:**
- 机油油位。

  Engine oil level.
- 机油油位应位于最高和最低刻线之间。

  The engine oil level shall be between the maximum and minimum tick marks.
- 油位低于最低刻线=>加油至正确高度。

  The oil level is lower than the minimum tick mark => Add appropriate amount of engine oil to correct height.

**发动机推荐用油**

**Recommended oil for engine**

- **发动机推荐用油：**

  **Recommended oil for engine:**

- SAE SJ 5W/40 型号等效同等油。

  SAE SJ 5W/40 or equivalent.

- 启动发动机，暖机数分钟。

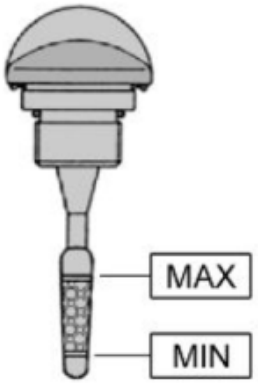
  Start the engine and warm it up for a few minutes.

- 停机。

  Shut down the engine.

- 重新检查油位前应等几分钟，待油往内渗透。

  Before checking the oil level again, wait a few minutes until the oil seeps in.




**更换机油**

**Replace the engine oil.**

- 启动发动机，暖机数分钟。

  Start the engine and warm it up for a few minutes.

- 停机，在发动机下放置一个容器。

  Shut down the engine and put a container under the engine.

- **拆下：**

  **Remove:**

- 油尺。

  Dipstick.

- 放油塞(B)。

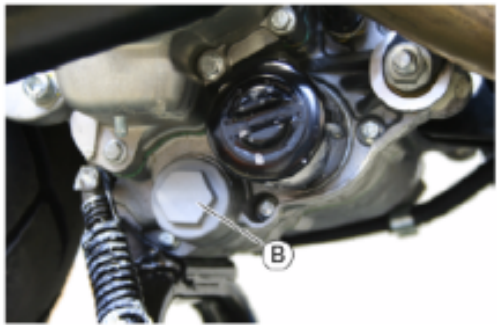
  Bleeder plug (B).

- 预过滤器。

  Pre-filter.

- 放出曲轴箱中的油。

  Drain the oil from the crankcase.




- **安装：**

  **Install:**

- EI 预滤器。

  EI pre-filter.

- 放油塞(B)。

  Bleeder plug (B).

- 机油尺。

Dipstick.

- **预滤器帽：**

  **Pre-filter cap:**

- 2.4 kg•m−3.0 kg•m (24 N•m−30 N•m)
- **加油：**

  **Add oil:**

- 向曲轴箱内加油。

  Add oil to the crankcase.

- **油量：**

  **Oil volume:**

- 1300 ml
- 油品：SJ 5W/40

  Oil: SJ 5W/40

- **检查：**

  **Check:**

- 机油油位。

  Engine oil level.

- 见“检查机油油位”一节。

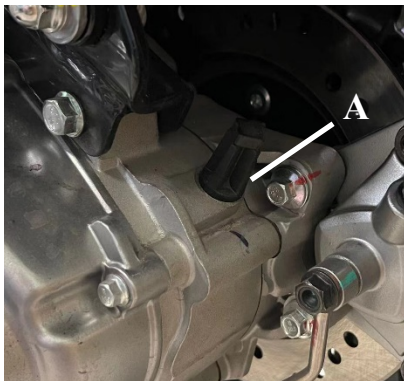
  Refer to "Check engine oil level"

**检查齿轮油油位**

**Check the gear oil level**

- 将摩托车置于平坦面。

  Place the motorcycle on flat ground.




- 取下机油尺(A)，用布拭净，然后拧入机油滤器孔中，然后立即抽出。

  Take off the dipstick (A), and wipe it with a cloth. Insert it into the oil filter hole and then pull it out immediately.

- 检查：

  Check:

- 齿轮油油位应位于最高和最低刻线之间。

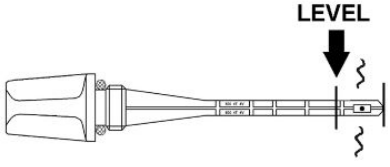
  The gear oil level shall be between the maximum and minimum tick marks.

- 油位低于最低刻线=>加油至正确高度。

  The oil level is lower than the minimum tick mark => Add appropriate amount of engine oil to correct height.

**发动机推荐用油：**

**Recommended oil for engine:**



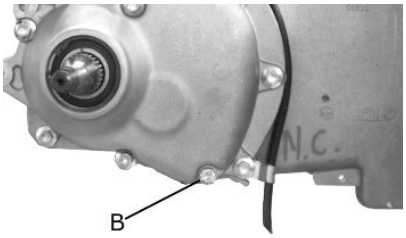

- SAE 80W/90 型号等效同等油。

  SAE 80W/90 or equivalent.

**更换齿轮油：**

**Replace gear oil:**




- 取下机油尺(A)。

  Take off the dipstick (A).
- 在放油螺栓(B)下方放置一个容器，拆下放油螺栓(B)。

  Place a container under the bleeder bolt (B) and remove the bleeder bolt (B).
- 齿轮油全部放出后重新装配放油螺栓(B)。

  Reassemble the bleeder bolt (B) after fully draining the gear oil.
- 装配扭矩 15 到 17N.m。

  Keep the assembly torque between 15 N.m and 17 N.m.
- 向齿轮箱内加注齿轮油。

  Fill the gearbox with gear oil.
- 油量：250mL

  Oil volume: 250 mL
- 检查：见“检查齿轮油油位”一节。

  Check: Refer to "Check gear oil level".
- 装配机油尺(A)。

  Assemble the dipstick (A).

**检查排气系统**

**Check the exhaust system**

- 检查：

  Check:
- 螺栓（排气管）

  Bolt (exhaust tubing)
- 松动/损坏=>拧紧/更换

  Damaged/loosen => Tighten/replace
- 垫片（排气管）。

  Gasket (exhaust tubing)
- 废气泄漏=>拧紧/更换

  Leakage of exhaust gas => Tighten/replace
- 螺栓：

  Bolt:
- 1.7-1.9Kg•m (17-19N•m)

**气缸头**

**Cylinder head**

**1. 清除：**

**1. Clean:**

- 用圆刮刀清除（燃烧室中的）积碳。

  Remove the carbon deposition (in the combustion chamber) with a round scraper.

**注意：**

**Notes:**

- 在火花塞螺纹上

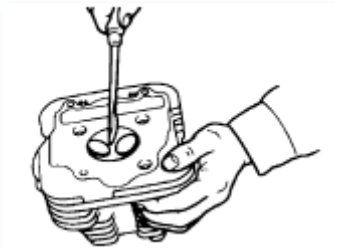
  On the thread of spark plug

- 气门座上

  On the valve seat

  不得使用可能损坏或擦伤零件的有锐边的工具。

  Do not use sharp-edged tools that may damage or scratch the parts.



**2. 检查：**

**2. Check:**

- 缸面

  Cylinder surface

  磨损/损坏=>更换

  Worn/damaged => Replace



- 变形测量和矫正的步骤：

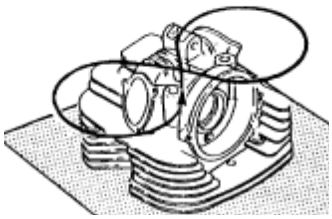
  Steps for measuring and correcting deformation:

  如右图所示，在气缸头/缸体结合平面表面放置一个直尺(1)和测厚仪(2)。

  As shown in the right figure, place a ruler (1) and gaugemeter (2) on the joint surface of the cylinder head and cylinder block.

  在平面上放置一张 400~600 砂纸，按照右图所示顺序（“8”）打磨平面。

  Place a piece of 400−600 abrasive paper on the surface and polish the surface in the order ("8") shown in the right figure.



N.B.：转动气缸盖数圈，防止一侧打磨过多的材料。

N.B.: Turn the cylinder cover several times to avoid over polishing of one side.

**调节气门**

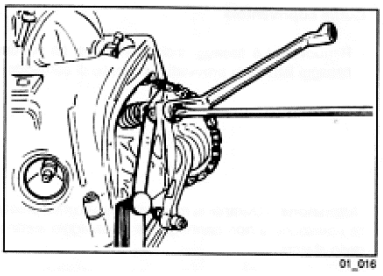
**Adjust valve**

- 检查气门间隙时，必须按上面说明使配气机构相位标记对准。

  When checking the valve clearance, align the phase mark of the valve distributing mechanism as described above.

- 用厚薄规检查气门和调整垫片之间的间隙是否符合规定值。 如果进、排气门间隙分别与以下规定值不同，按图拧松防松螺母，调整气门间隙。

  Check whether the clearance between the valve and the adjusting gasket meets the specified value with a thickness gauge. If the clearance of the inlet and exhaust valves is different from the following specified values, loosen the locknut as shown in the figure to adjust the valve clearance.




  进气门（冷机状态下）：0.10mm

  Intake valve (cold): 0.10 mm

  排气门（冷机状态下）：0.15mm

  Exhaust valve (cold): 0.15 mm

**气门座**

**Valve seat**

**1. 清除：**

**1. Clean:**

- （气门面和气门座上的）积碳。

  Carbon deposition (on the valve surface and valve seat).

**2. 检查：**

**2. Check:**

- 气门座。

  Valve seat.

沟槽/磨损=>**研磨气门**

With groove/worn => **Polish the valve**

**拆卸步骤：**

**Removal steps:**

- 在气门面上涂蓝色机械涂料（Dykem）(b)。

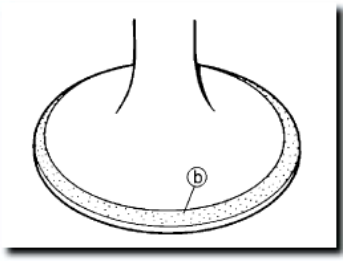
  Apply blue mechanical paint (Dykem) on the valve surface (b).

- 将气门装入气缸盖内。

  Put the valve into the cylinder cover.

- 朝着气门导管和气门压下气门，产生可见痕迹。

  Press the valve toward the valve guide and valve to leave an indentation.

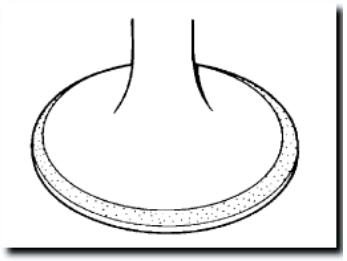



- 测量气门座宽度。

  Measure the width of the valve seat.

- 如果气门座和气门面之间有接触，涂料会被擦除。

  If the valve seat contacts with the valve surface, the paint will be peeled off.



- 如果气门座宽度过大或过小，或者未处于正中心，必须重复上述步骤。

  If the valve seat is too wide or too narrow, or is not centered, repeat the above steps.

**3. 研磨：**

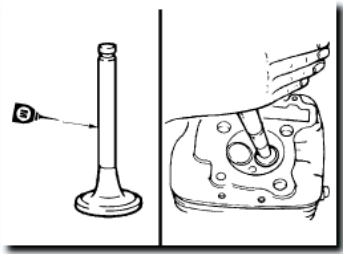
**3. Grind:**

- 气门面

  Valve surface

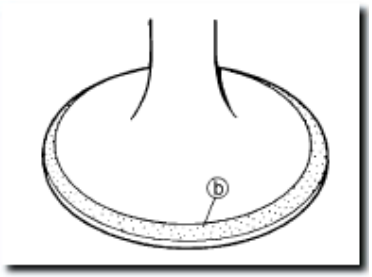
- 气门座

  Valve seat



**N.B**.：修整气门座或更换了气门及导管后，必须重新研磨气门座和气门面。

**N.B**.: After repairing the valve seat or replacing the valve and valve guide, grind the valve seat and valve surface again.




**气门落座步骤：**

**Steps for valve seating:**

- 在气门面上涂粗研磨膏。

  Apply coarse grinding paste to the valve surface.

- 注意：

  Notes:

- 研磨膏不得流入气门杆和导管之间的空隙中。

  The grinding paste shall not flow into the gap between the valve rod and valve guide.

- 在气门杆上涂二硫化钼润滑剂。

Apply molybdenum disulfide lubricant to the valve rod.

- 将气门装入气缸盖中。

  Put the valve into the cylinder cover.

- 转动气门，直至气门面及气门座能均匀研磨，然后立即去除研磨膏。

  Turn the valve until the valve surface and valve seat can be evenly ground. Then remove the grinding paste immediately.

- N.B.：为了使气门落座效果最佳，应轻轻摇动气门座，同时用手前后拧动气门座。

  N.B.: To achieve the best valve seating effect, gently shake the valve seat and screw it back and forth at the same time.

- 在气门面上涂粗研磨膏，重复上述步骤。

  Apply coarse grinding paste to the valve surface and repeat the above steps.

**N.B.**：每次气门落座操作后，一定要保证完全去除气门座表面的研磨膏。

**N.B.**: Every time the valve is seated, be sure to remove all grinding paste on the surface of the valve seat.

- 在气门面(b)上涂蓝色的机械涂料（Dykem）。

  Apply blue mechanical paint (Dykem) on the valve surface (b).

- 将气门装入气缸盖中。

  Put the valve into the cylinder cover.

- 下压气门，穿过气门导管压在气门座上，形成良好接触。

  Press down the value through the valve guide to make it well seated on the valve seat.

**气门及气门弹簧**

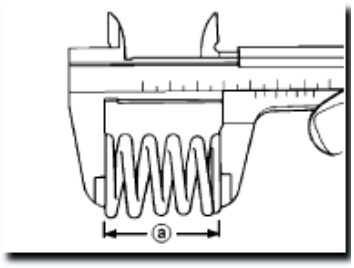
**Valve and valve spring**

**1. 测量：**

**1. Measure:**

- 弹簧自由长度(a)。

  Free length of the valve spring (a).




超出规定值=>**更换**

Longer than standard => **Replace**

**气门弹簧自由长度：**

**Free length of the valve spring:**

39



**2. 测量：**

**2. Check:**

- 弹簧接触表面。

  Contact surface of the valve spring.

磨损/损坏/擦伤=>**更换**。

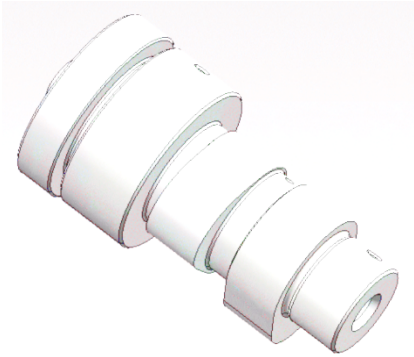
Worn/damaged/scratched => **Replace**.

**检查凸轮轴**

**Check camshaft**

**1. 检查：**

**1. Check:**



- 凸轮凸角。

  Cam lobe.

沟槽/擦伤/变蓝=>**更换**。

With groove/scratched/turning blue => **Replace**.

**2. 检查：**

**2. Check:**

- 凸轮轴中的油道。

  Oil duct in the camshaft.

堵塞=>**用压缩空气吹除。**

Blocked => **Blow with compressed air.**

**正时链、链轮和导链板**

**Timing chain, chain wheel, and chain guide**

**1. 检查：**

**1. Check:**



- 正时链。

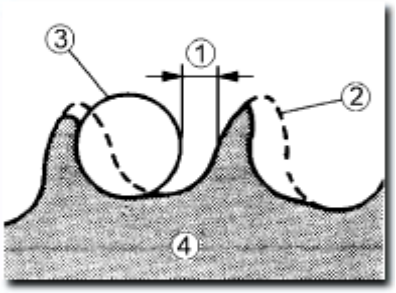
  Timing chain

僵硬/损坏=>**更换链条和链轮。**

Rigid/damaged => **Replace the chain and chain wheel.**

**2. 检查：**

**2. Check:**

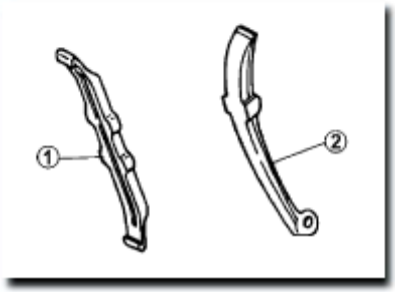



- 主动链轮

  Driving chain wheel

损坏/磨损=>**更换链轮和正时链**。

Damaged/worn => **Replace the chain wheel and timing chain**.




（1）1/4 齿

(1) 1/4 tooth

（2）正确

(2) Correct

（3）滚子

(3) Roller

（4）链轮

(4) Chain wheel

**3. 检查：**

**3. Check:**

- 正时导链板（排气）(1)

  Timing chain guide (exhaust) (1)

- 正时导链板（进气）(2)

  Timing chain guide (inlet) (2)

损坏/磨损=>**更换**。

Damaged/worn => **Replace**.

**气缸和活塞**

**Cylinder and piston**

**1. 检查：**

**1. Check:**

- 气缸壁和活塞壁

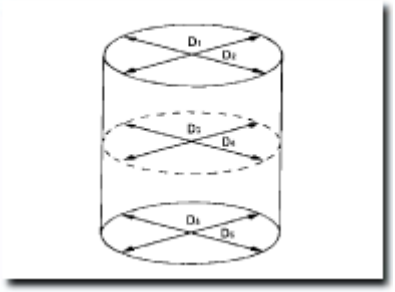
  Wall of cylinder and piston

竖向擦痕=>**修理或更换气缸和活塞。**

With vertical scratches => **Repair or replace the cylinder and piston.**

**2. 测量：**

**2. Check:**



- 气缸-活塞间隙

  Clearance between the cylinder and piston

**拆卸步骤：**

**Removal steps:**

- 用内径规测量气缸直径 C。

  Measure the cylinder diameter C with an internal gauge.

N.B.：横向且垂直于曲轴测量气缸直径 C。然后计算平均测量值。

N.B.: Put the internal gauge widthwise and perpendicular to the crankshaft to measure the cylinder diameter C. Then calculate the average measured value.

**气缸和活塞间隙：**

**Clearance between the cylinder and piston:**

0.050-0.064mm

## 曲轴连杆活塞组件的检查

## Check of crankshaft connecting rod piston assembly

### 曲轴检查

### Check of crankshaft

- **检查连杆轴向间隙。**

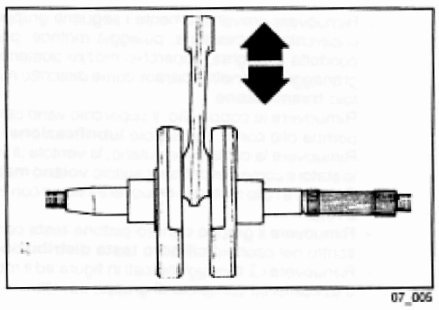
  **Check the axial clearance of the connecting rod**

  标准间隙：0.20~0.50mm

  Standard clearance: 0.20 mm−0.50 mm

  最大间隙：0.50mm

  Maximum clearance: 0.50 mm




- 检查连杆径向间隙，手工锁止曲轴，按图在垂直方向上移动连杆，用安装在连杆小头端面上的百分表测量间隙。

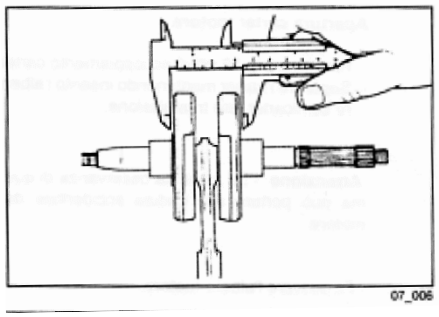
  Check the radial clearance of the connecting rod: Manually lock the crankshaft and vertically move the connecting rod as shown in the figure. Then measure the clearance with the dial gage installed on the end face of the connecting rod head.

  标准间隙：0.028~0.046 mm

  Standard clearance: 0.028 mm−0.046 mm

  最大间隙：0.046mm

  Maximum clearance: 0.046 mm




- 检查曲轴表面有无划痕现象，按图用卡尺检查曲轴宽度。

  Check the crankshaft surface for any scratch, and check the crankshaft width with the caliper as shown in the figure.

  标准尺寸：55.67~55.85mm

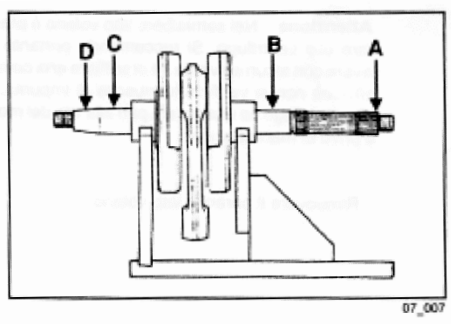
  Standard size: 55.67 mm−55.85 mm

- **曲轴直线度的检查**

  **Check of crankshaft straightness**

将曲轴装到支承上，在图中指示的 4 个位置检查直线度。

Install the crankshaft onto the support and check the straightness at the 4 positions indicated in the figure.




直线度最大允许偏差：

Maximum allowable deviation of straightness:

A=0.15 mm

B=0.01 mm

C=0.01 mm

D=0.10 mm

**注释：**如果测量值超过允许值不多，尝试用木榔头校

直曲轴，必要时，用虎钳夹紧曲轴。

**Note:** If the measured value is slightly greater than the allowable value, try to straighten the crankshaft with a wooden hammer. If necessary, clamp the crankshaft with a vice.

在这种情况下，如果测量值与允许值差异很大，就要更换曲轴。

If the measured value is much greater than the allowable value, replace the crankshaft.

## 从动皮带轮的检查

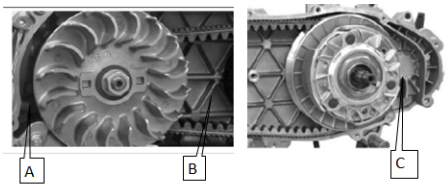
## Check of driven belt pulley

- 用专用工具锁止离合器罩。

  Lock the clutch housing with the special tool.

- 拆下螺母、离合器罩和从动皮带轮总成。

  Remove the nut, clutch housing, and driven belt pulley assembly.




**检查：**

**Check:**

- 皮带型腔清洁度

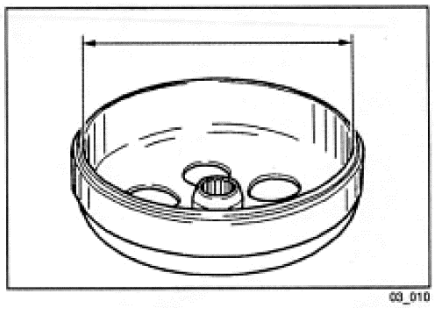
  Cleanness of the belt mold cavity

- 粉尘=>气枪吹净型腔各处粉尘(A&B&C)。

  Dusted => Blow off the dusts in the mold cavity with an air gun (A&B&C)

**从动皮带轮**

**Driven belt pulley**




- 检查离合器罩有无磨损或损坏现象。

  Check the clutch housing for any wear or damage.

- 测量离合器罩内径。

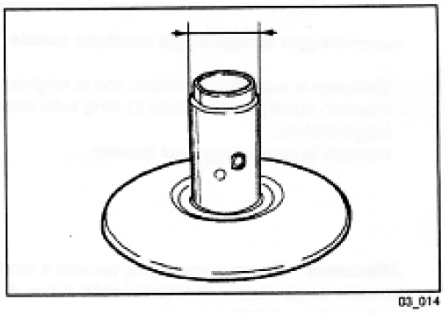
  Measure the inner diameter of the clutch housing.

  标准值：∅134+0.2 /0mm

  Standard value: ∅134+0.2/0 mm

  最大值：∅134.5mm

  Maximum value: φ 134.5 mm




- 注释：检查偏心度：最大 0.20mm。

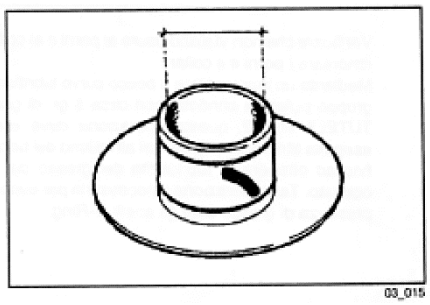
  Note: check the eccentricity: maximum: 0.20 mm.

**离合器的拆卸**

**Removal of clutch**

**固定从动盘**

**Fixed driven plate**




- 测量皮带轮滑套外径。

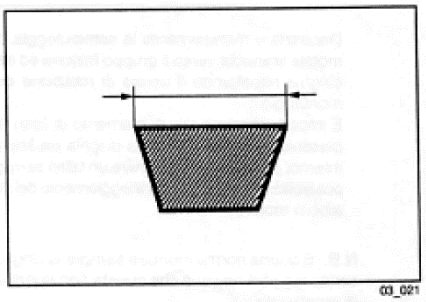
  Measure the outer diameter of the belt pulley sleeve.
- 最小允许直径：∅40.950mm

  Minimum allowable diameter: φ 40.950 mm
- 标准直径：∅41（-0.015/-0.035）mm

  Standard diameter: ∅41 (-0.015/ -0.035) mm

**移动从动盘**

**Movable driven plate**




- 拆下 2 个皮碗和 2 个密封圈。

  Remove 2 cups and 2 sealing rings.
- 测量移动从动盘滑套内径。

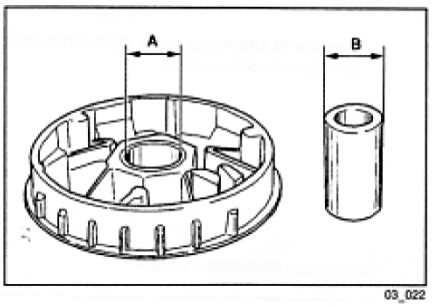
  Measure the inner diameter of the sliding sleeve of the movable driven plate.
- 最大允许直径：∅41.08mm

  Maximum allowable diameter: ∅41.08 mm
- 标准直径：∅41（+0.035/0）mm

  Standard diameter: ∅41 (+0.035/0) mm

**传动皮带**

**Drive belt**




- 检查传动皮带有无损坏现象。

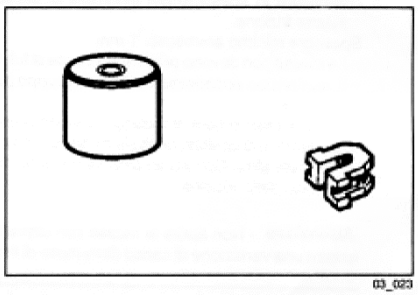
  Check the drive belt for any damage.
- 检查皮带宽度: 最小宽度：19.5mm

  Check the belt width: minimum width: 19.5 mm
- 标准值：21.3±0.2mm

  Standard value: 21.3 ± 0.2 mm

**主动轮**

**Driving wheel**




- 检查图中指示的衬套有无异常磨损现象，测量内径 A。

  Check the bushing shown in the figure for any wear, and measure the inner diameter A.
- 最大允许直径：φ25.12mm

  Maximum allowable diameter: φ 25.12 mm
- 标准直径：φ25(+0.021/0) mm

  Standard diameter: φ25 (+0.021/0) mm

**注意：**切勿对衬套进行润滑或清洗。

**Note:** Do not lubricate or clean the bushing.

- 测量图中指示的主动轮滑套外径 B。

  Measure the outer diameter B of the driving wheel sliding sleeve shown in the figure.

- 最小允许直径：∅24.95mm

  Minimum allowable diameter: ∅24.95 mm

- 标准直径：∅25(-0.02/ -0.041)mm

- Standard diameter: ∅25 (-0.02/ -0.041) mm

  检查滚轮有无损坏或磨损现象。

- Check the roller for any damage or wear.

- 最小允许直径：∅20mm

  Minimum allowable diameter: ∅20 mm

- 标准直径：∅21±0.1mm

  Standard diameter: ∅21±0.1 mm

- 检查滚轮压板有无磨损现象。

  Check the roller pressing plate for any wear.

- 检查移动盘和固定盘上滚轮槽和皮带接触表面磨损状况。

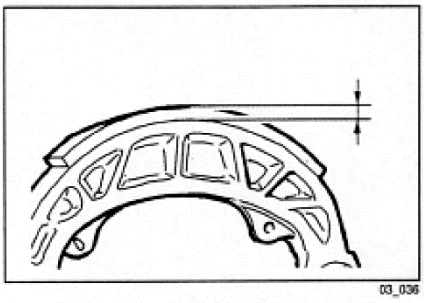
  Check the roller groove and belt contact surface on the movable disc and fixed disc for any wear.

**蹄片的检查安装**

**Check and installation of brake shoe**

- 检查蹄片摩擦材料最小厚度。

  Check the minimum thickness of brake shoe friction material.




- 最小厚度：1mm

  Minimum thickness: 1 mm

- 检查凸轮和轴座有无磨损现象。

  Check the cam and shaft seat for any wear.

- 检查弹簧有无磨损或损坏现象。

  Check the spring for any wear or damage.

- 如果发现异常现象，就要更换蹄片。

  In case of any abnormality, replace the brake shoe.

- 蹄片带弹簧总成的安装按与拆卸相反的程序进行。

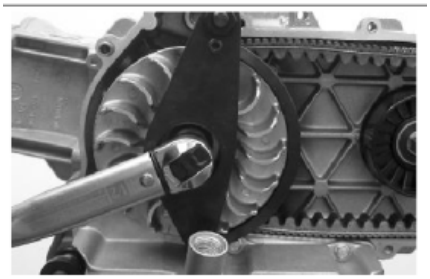
  Install the brake shoe with spring assembly in the order reverse to disassembly.

**固定盘的安装**

**Installation of fixed disc**

- 重新安装固定盘总成（滚轮架带滑套总成、限位垫圈、皮带传动装置、垫圈和螺母）。

  Reinstall the fixed disc assembly (roller carrier with sliding sleeve assembly, stop washer, belt drive unit, washer, and nut).



- 按 75～83N·m 拧紧，用专用工具防止主动轮转动。

  Tighten them at 75 N•m−83 N•m, and prevent the driving wheel from rotating with the special tools.

- 注释：每次重新安装时使用新的螺母。

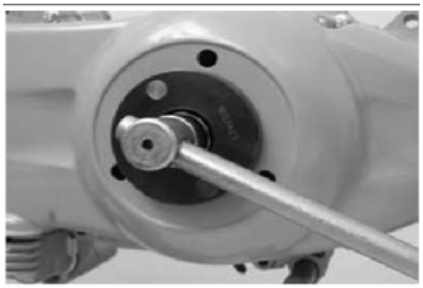
  Note: Use new nuts for each reinstallation.

- 拧紧力矩+转角：75～83N·m。

  Tightening torque + rotating angle: 75 N•m−83 N•m

**离合器罩的安装**

**Installation of the clutch housing**



- 使用专用工具重新安装从动皮带轮总成、离合器罩和螺母。

  Reinstall the driven belt pulley assembly, clutch housing, and nuts with the special tools.

- 拧紧力矩：55～65N.m

  Tightening torque: 55 N•m−65 N•m

## 机油泵的检查

## Check of the oil pump

- 拧下 2 个固定螺钉，拆下机油泵盖。

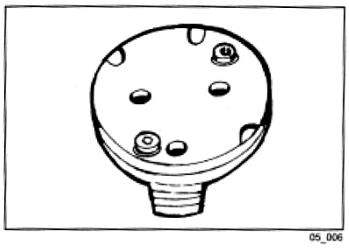
  Screw off 2 fixing screws and remove the oil pump cover.

- 拆下内部转子锁环。

  Remove the internal rotor lock ring.

- 拆下转子，用除油溶剂和压缩空气仔细清洗。

  Remove the rotor and carefully clean it with degreasing agent and compressed air.

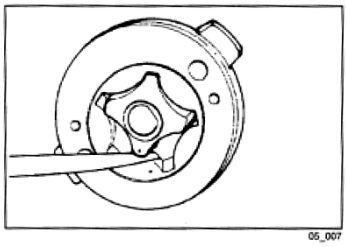



- 重新安装转子和泵体，使 2 个标记从外面可以看见。安装锁环。

  Reinstall the rotor and pump body to enable two marks to be visible from the outside. Install the lock ring.

- 用厚薄规检查图中指示的位置上转子（内转子和外转子）之间的间隙。

  Check the gap between the rotor (inner rotor and outer rotor) at the position indicated in the figure with a thickness gauge.

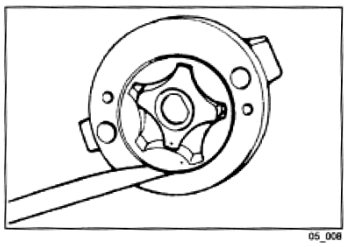



- 允许限值间隙：0.12mm

  Allowable limit clearance: 0.12 mm

- 按图检查外转子和内转子之间的间隙。

  Check the gap between the outer rotor and the inner rotor according to the figure.

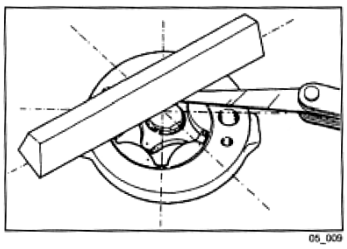



- 允许限值间隙：0.20mm

  Allowable limit clearance: 0.20 mm

- 按图将磨削后的长钢条作为基准面，测量转子的轴向间隙。

  Measure the axial clearance of the rotor with the ground long steel bar as the reference plane according to the figure.




- 允许限值间隙：0.09mm

  Allowable limit clearance: 0.09 mm

  **注释：**检查磨削后的长钢条是否正确放在机油泵体平面两个点上。

  **Note:** Check whether the ground long steel bar is properly placed at two points on the plane of the oil pump body.

## 机油泵的安装

## Installation of oil pump

- 检查机油泵轴和泵体有无磨损现象。

  Check the oil pump shaft and pump body for wear.

- 检查泵盖有无磨损或划痕现象。

Check the oil pump cover for any wear or damage.

- 如果测量值不符合要求，就要更换损坏的零件或总成。

  If the measured values do not meet the requirements, replace the damaged parts or assemblies.

- 将泵盖装到机油泵上，注意使机油泵与曲轴箱固定的孔对准（泵盖上 2 个孔，泵体上 2 个孔）。

  Install the oil pump cover onto the oil pump, pay attention to aligning the fixing holes on the oil pump and crankcase (2 holes on the oil pump cover and 2 holes on the oil pump body).

**检查油道**

**Check oil duct**

- **1. 检查：**

  **1. Check:**

- 油道

  Oil duct

- 堵塞=>用压缩空气吹除。

  Blocked => Blow with compressed air.

  **曲轴箱**

  **Crankcase**

- 1. 用汽油清洗曲轴箱。

  1. Clean the crankcase with gasoline.

- 2. 彻底清洁密封安装面和和曲轴箱接触表面。

  2. Clean the mounting surface of the sealing parts and the contact surface of the crankcase thoroughly.

- 3. 检查：

  3. Check:

- 裂纹/损坏=>更换

  With crack/damaged => Replace

  **油道**

  **Oil duct**

- 堵塞=>用压缩空气吹出。

  Blocked => Blow with compressed air.

  **轴承和卡环**

  **Bearing and snap ring**

- 1. 检查：

  1. Check:

- 轴承

  Bearing

- 清洁并润滑，然后用手转动内座圈。

Clean and lubricate it, then manually turn the inner race.

- 粗糙=>更换。

  Rough => Replace.

- 2. 检查：

  2. Check:

- 卡环

  Snap ring

- 损坏/磨损=>更换。

  Damaged/worn => Replace.

**锁紧环和垫圈**

**Lock ring and washer**

- 1. 检查：

  1. Check:

- 挡圈

  Retaining ring

- 垫圈

  Washer

- 损坏/松动/变形=>更换。

  Damaged/loosen/deformed => Replace.

# 3 发动机的保养

# 3 Engine maintenance

3.1. 起动发动机应轻轻地操作节气门起动。待运转 30~60s 后再适度打开。冷机起动后不要立即加速，待 运转 1~3min 后再加速。

3.1 To start the engine, gently operate the throttle at first. After 30s−60s, properly start the engine. When the cold machine is started, wait 1 min−3 min before accelerating.

3.2. 脚踏起动时，每次起动时间不应超过 5s（不包括辅助时间）。起动踏杆在踩压后，应能灵活地弹回原处。

3.2 In case of kick start, the starting time shall be within 5s (excluding auxiliary time). The kick-starter shall be able to flexibly reset after being pressed.

3.3. 电启动时，每次起动时间不应超过 5s，每次起动应间隔 10 秒，若.连续 5 次不能起动，则检查有无故障，起动运转后严禁再按起动按钮。

3.3 In case of electric start, the starting time shall be within 5s, and there shall be a 10s interval. If it fails to start after 5 consecutive attempts, check the engine for any fault. It is prohibited to press the start button if the engine is started.

3.4. 发动机正常启动后，怠速运行 3～5 秒时间，让发动机润滑系统开始工作后再行驶。同时注意避免发动机未预热前就高转速重负荷运行。

3.4 After the engine is started normally, wait 3s−5s at idle speed for the activation of the engine

lubrication system before driving. And avoid high speed and heavy load operation before the engine is preheated.

3.5. 新机装在摩托车上后，在头 1000 公里的驾驶期间，不能在高速长时间操作，也不能使其转速超过其最大转速的 80%。不要使节气门在全开的条件下操作。行驶 500 公里后，应进行一次维修，补偿磨合期的轻微磨损，才能确保发动机的良好性能。

3.5 During the first 1000 km driving range after the engine is installed on the motorcycle, the engine cannot work at high speed for a long time, nor can its speed exceed 80% of the maximum speed. Do not leave the throttle working at full-open. After driving for 500 km, repair and eliminate the slight wear caused during the running-in to ensure the good performance of the engine.

3.6. 每 2000 公里检查清洗一次空滤器，主要为检查空滤器各结合面密封情况，清除空滤器内腔和滤芯上的沙尘。装配时注意各结合面的密封，对失去密封作用的零部件做更换或修补处理，确保空气滤清效果，延长发动机活塞、缸体的使用寿命，有效避免烧机油或动力不足等情况发生。

3.6 Check and clean the air filter every 2000 km: mainly to check the sealing of each joint surface of the air filter and remove the sand and dust on the inner cavity of the air filter and filter element. During assembly, pay attention to the sealing of each joint surface. Replace or repair the parts without sealing function to ensure the air filtering effect, prolong the service life of engine piston and cylinder block, and effectively avoid oil burning or insufficient power.