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论坛 故障 关于32P发动机维修装配时的一些注意事项和要求（部分内容 ...

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版主

表情

关于32P发动机维修装配时的一些注意事项和要求（部分内容也适用于24P机器） [复制链接]

OHV engine maintenance considerations and requirements (part also applies to side-valve engines)

发表于 2012-10-7 11:03 | 只看该作者 | 倒序浏览 | 打印 楼主

本帖最后由 我为车 于 2012-10-6 22:50 编辑

随着越来越多的垮友对32P机器的认同和喜爱，32P机器的使用也越来越广泛，但32P机器比侧置气门的6V/12V 机器结构复杂，机械噪音和故障也远大于侧置气门机器，所以对维修和保养的要求也越来越高，下面我就根据自己的一些维修时的一点心得体会结合给大家做一个简单明了的介绍，希望能够对大家有所帮助，不足和错误的地方也请高手给予斧正！首先是机器的分解拆卸，分解机器需要8, 10,12,13,14,15,16,17,18, 19, 36的梅花或开口扳手，内六角扳手以及冲击起子及大号的冲击一字刀头，尤其是冲击起子是绝对不能代替的工具。



首先分解发动机和变速箱，过程就不描述了，大家都懂。
The OHV engine has become increasingly popular with sidecar riders. However this engine is more complex, noisier and has a higher failure rate than the side-valve engine, thus increasing maintenance requirements. Here is an introduction that I hope will help you to do your own maintenance. The first part is the disassembly, for which you need socket or open end wrenches of 8,10,12,13,14,15,16,17,18,19 and 36mm, Allen wrenches and an impact driver. We start with the gearbox already removed, as this is straightforward.



第一步先拆掉发动机前瓢盖，露出里面的发电机。 **Remove the front cover to expose the alternator.**



然后用一字口螺丝刀拆下发电机的三个固定螺丝。 **Remove the 3 bolts holding the stator.**



拿下发电机定子部分，注意不要让定子的上盖与线圈部分开，防止定子受损。Be careful not to damage the stator coil.



然后再用内六角扳手拆下发动机前机盖的固定螺栓，注意分电器后面还有一个10MM外方的单独的固定螺栓，也需要拆下。
Remove the single bolt (10mm wrench), then use an Allen wrench to remove the timing gear cover screws.



这些螺栓的拧紧力量较大，必要时需要使用加力杆。 **Use extra leverage if the bolts are tight.**



然后就是拆发电机转子，由于转子和曲轴连接轴是锥形紧配合，需要使用一个特制的小工具帮忙。首先拧入一个8MM的螺杆，顶部开一个一字型槽口，方便用螺丝刀拧。

Next remove the alternator rotor bolt. The rotor is tightly attached to an intermediate shaft having a taper fit, and requires a special method to disassemble it. First, insert a long 8mm grub screw.



然后把螺杆向里面拧，当感觉有突然掉进去的时候时再向里面拧几圈。



再找一个8MM的螺栓再向里面拧进去，直到顶到里面先拧进去的螺杆。

Screw in an 8mm bolt until it touches the end of the grub screw.



然后换用扳手用力向里面拧紧， **Tightening with a wrench will break the tapered shaft's bond,**



随着啪的一声，转子就顺利而且无损的拆下来了。
and allow the rotor to be easily removed.



然后拧出原来拧入的一字口螺杆。 **Remove the grub screw.**



这时就可以顺利的拿掉前机盖了。 **Now the timing gear cover can be easily removed.**



检查前机盖内部有无损坏和杂物 Check the inside of the front cover for debris or damage.



油道橡胶接头密封圈油封是否完好。 Check the oil seals.



发电机轴的轴承是否完好及齿轮是否有损伤。Check the bearing and gears for damage.



然后打开气门室盖，检查盖子底部的沉积物 Remove the valve cover and check the bottom for debris.



用15的扳手拆下摇臂固定螺母暨缸盖固定螺母 Use a 15mm wrench to remove the rocker arm / cylinder head nuts.



拆下上火花塞旁边的13MM螺母 Use a 13mm wrench to remove the nut behind the spark plug.



缸盖下部的13MM固定螺母 Use a 13mm wrench to remove the lower cylinder head nut.



拿下气门摇臂组合，注意按照位置摆放好，方便检查和清洗。
Remove the rocker arm assembly for cleaning, noting the position of the various components.



然后取下另一侧的摇臂组合 Remove the rocker arm assembly from the opposing cylinder.



抽出门顶杆并检查磨损及长度误差，必要时按位置做记号

Remove the valve push rods, and check for straightness and wear.



然后就可以取下缸盖了， Next remove the cylinder head,



检查缸盖有无漏气变形的地方
and check for deformation that can lead to leakage.



缸桶有无拉伤，磨损及漏气的地方。

Check the cylinder wall for wear or damage.

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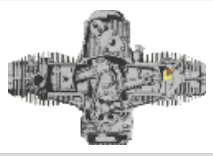
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沙发



版主
😊🌙☆

本帖最后由 我为车 于 2012-10-6 23:41 编辑



检查另一侧缸盖的

漏气及平整度

缸垫有无漏气损坏

Must be perfectly flat to avoid leaks.



拿掉缸垫再检查

Unbolt the cylinder.



拆下缸桶的四个固定螺母，然后抽出气缸 Pull off the cylinder.



拉出活塞检查裙部有无拉伤或过度磨损，活塞环有无卡死，断裂伤等。

Remove the cylinder gasket, then check the cylinder skirt and piston rings for damage.



检查活塞顶有无损伤 Check the piston head for damage.



活塞销转动是否灵活，间隙是否正常（拉动时不能有任何有间隙的感觉）

The piston should move freely on the wrist pin, and there should be no in-and-out free play.



准备拆卸凸轮轴及超越离合器，注意超越离合器左上和右下的两个固定螺丝。Ready to remove the camshaft.



拧下螺丝，抽出凸轮轴及超越离合器。

Remove the two screws (upper left and lower right), and pull out the camshaft and starter clutch.



拆卸曲轴前轴承压盖板固定螺丝，注意上面的一个是沉头螺丝，需要用冲击螺丝刀。



用带勾头的工具把发电机轴撬出来，我用的是拔轮器的拉爪。

Remove the front crankshaft bearing retainer plate. Use an impact screwdriver on the upper bevel-head screw. Then, pry off the alternator shaft.



一个力量不够，再加一个拉爪撬。



再把曲轴正时齿轮也拔出拆下。

You can use the same claw puller to remove the crankshaft timing gear.



搞定不足，垫了两个扳手加高。Slip a couple of wrenches behind the bearing plate if needed.



把机器离合器朝上放好，用大号的一字口刀头配合冲击起子拆离合压盘螺丝。

Turn the engine with the clutch facing upwards, and then use a flat-bladed impact screwdriver to remove the clutch plate screws.



拿稳冲击起子，用力砸！

Hold the impact screwdriver, and strike firmly!

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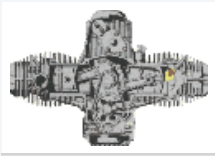
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👤 发表于 2012-10-7 11:03 | 只看该作者

板凳



版主



本帖最后由 我为车 于 2012-10-7 01:09 编辑



用不易掉碎屑的木棒从右缸气缸孔插入，挡住右缸的后曲轴柄，记住一定是右缸的后曲轴柄！！防止曲轴受力过大造成扭曲而报废！ **Place a piece of wood in the right cylinder to prevent the crankshaft from turning.**



然后

用36的套头松开飞轮固定螺丝，拧松几扣，然后用大锤对准螺丝用力一下，飞轮就松脱了。
Use a 36mm wrench to loosen the bolt a few turns, then strike with a hammer to loosen the flywheel.

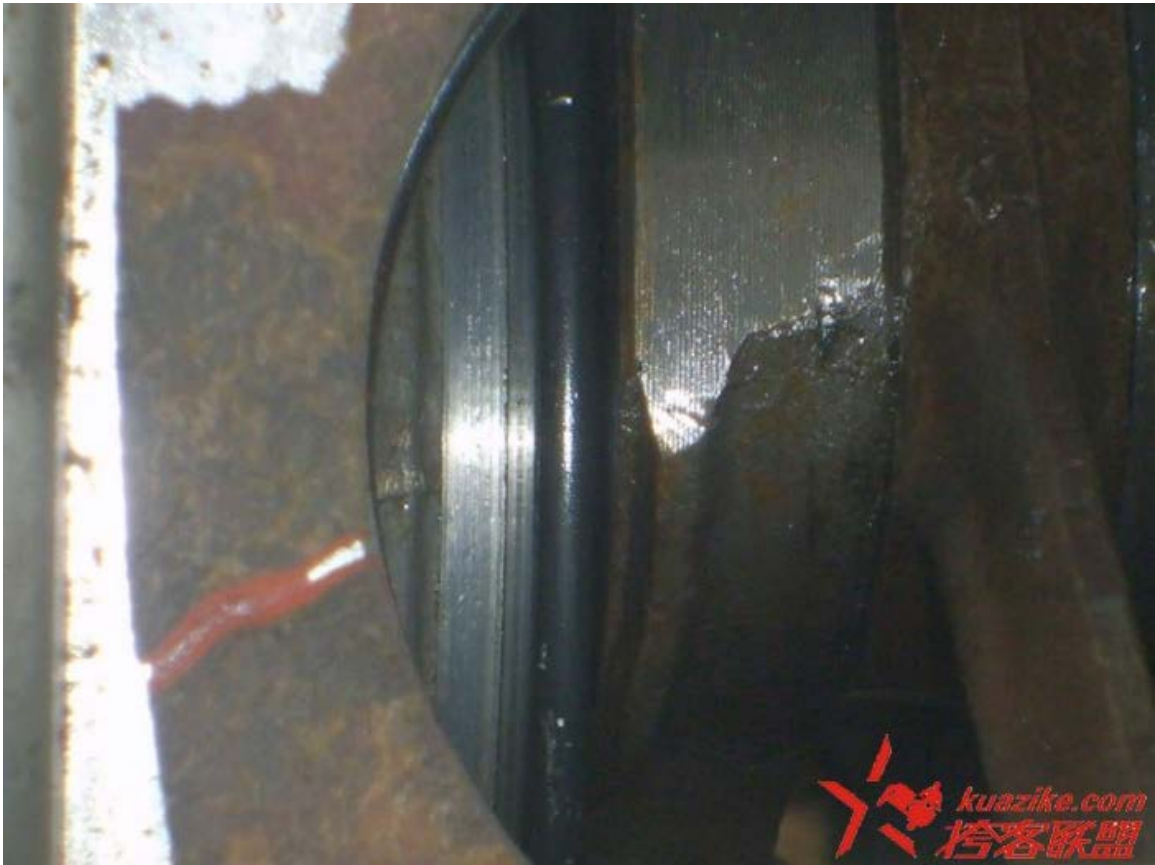


拆下曲轴后安装体的固定螺丝，先不要急着把安装体拆下。 **Remove the bearing housing plate bolts.**



检查飞轮及锥形孔和键槽是否完整。
Check the flywheel tapered hole and keyway for damage.

Check the gap between the crankcase and the oil slinger, the oil should be channeled into the slinger. This is a photo of the rear slinger, showing a slightly large gap.



检查曲轴前后挡油盘和输送油凸台的结合间隙，正常输送油凸台应该陷入挡油盘内。这是后挡油盘照片，间隙稍大。



这是前挡油盘照片，间隙正常。This photo is of the front oil slinger, showing normal clearance.



检查连杆大头的径向间隙 Check the connecting rods for in-and-out free play.



用冲击起子拆下曲轴前后挡油盘。
Use an impact screwdriver to remove the oil slingers.



清理挡油盘内部的杂质！ Clean them well!



不要小看，杂质很多的！清理干净是延长曲轴寿命的关键之一。

Don't underestimate the importance of cleaning the slingers. This is the key to long crankshaft life.

从现在开始，机器开始进入装配阶段！ **Now it's time to re-assemble the engine!**



超越离合器橡胶缓冲块的位置 **Starter clutch rubber shock absorbers.**



锁紧超越离合器 **Tighten the starter clutch cover plate screws.**



装入凸轮轴固定压板和定位键后压入超越离合器，可能会需要用压床才可以。**Assembling the camshaft components.**



装上分电器传动涡轮。**Fitting the distributor drive gear.**



装入钢丝卡环 Pushing the circlip in place.



32P的机油泵，这是清洗检查过后的。
The OHV oil pump after cleaning and inspection.



原厂的摇臂 The original rocker arm.



有很多多余的部分可以用作减肥处理。
There is excess metal that can be trimmed off to reduce weight.





前后挡油盘有区别，中间凸台高的是前面，低的是后面。The two oil slingers are not identical; the one with the lower centre boss goes on the rear.

锁紧挡油盘固定螺丝 Tighten the oil slingers screws.



装上曲轴前轴承并震到位，到位后声音变沉重了。Tap the crankshaft bearing into position; the sound will change when it is fully seated.



装上曲轴前轴承压板。 Put the bearing retaining plate in place.



上固定螺丝，注意上面一个是沉头的螺丝！！

Bolt the cover plate in position, insuring that the bevel-head screw is in the upper position!!



装入曲轴，很多朋友装入曲轴时是用大锤曲轴后部把曲轴砸入轴承内的，这是完全错误的！！这样会使得曲轴受力不匀而产生变形，甚至报废！！正确的做法是用8MM的螺丝把曲轴“拉”到位！看图！**DO NOT HAMMER THE CRANKSHAFT!**



这是拉曲轴的工具，“手头当时没有长螺丝，临时用发电机螺丝代替了”

Hammering the crankshaft onto the bearing can ruin the bearing. Instead, use an 8mm bolt to pull the crankshaft into the bearing. You can "borrow" the alternator bolt for this purpose.



装上曲轴 正时齿轮的定位键。 Place the timing gear's Woodruff key on the shaft.





装上正时齿轮 Fitting the timing gear to the crankshaft.



用力震到位，到位后声音会变得沉重。

Tap the timing gear onto the shaft. The sound will change when it is fully seated.



Bolt on the bearing cover plate.

安装曲轴后轴承安装体，并把所有固定螺丝全部挂胶再拧入，分两遍拧紧！



为了防止松脱，必须穿上防脱铁丝！

Safety wire prevents the bolts from coming undone.



用锉刀修平油底壳结合平面，降低漏雨风险。Clean up any high points on the oil pan surface that may cause leaks.



均匀抹上密封胶，不需要用纸垫子。
Using sealant instead of a gasket.



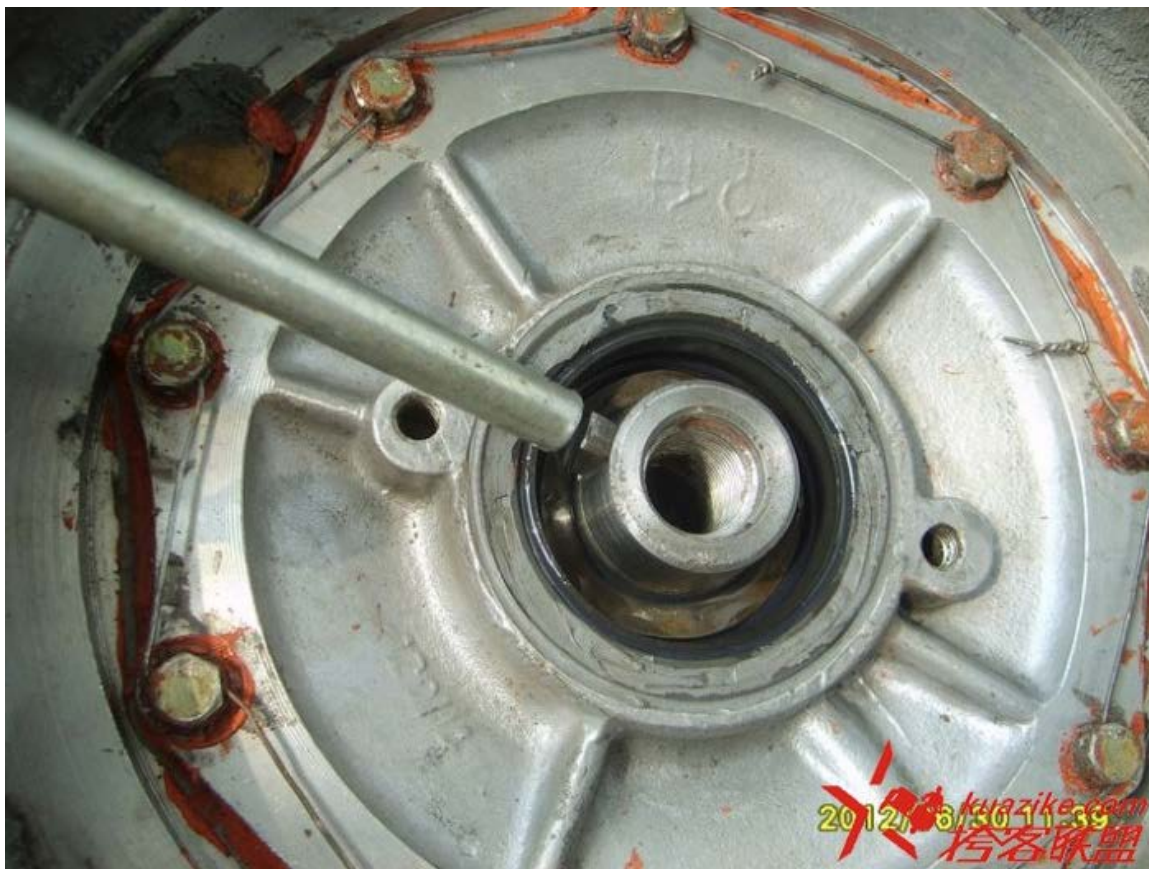
凡是和机器内部相通的螺丝都必须挂胶拧入！这油底壳螺丝也不例外，也需要分两次拧，第一次不需要拧太紧，等三个小时后密封胶固化以后在彻底拧紧，防漏效果就很好了。 **All screws should be sealed to prevent oil leaks.**



然后垫上曲轴后油封挡油盘的波形垫，
The spring washer holds the bearing oil deflector disk in place.



抹点机油给油封润滑 Lubricate the oil seal surface.



装上飞轮定位键
Put the flywheel's Woodruff key in its slot.



装上飞轮及锁片。
Place the flywheel bolt locking disk.

SIGNATURE -----

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图片太少 ， 不过瘾



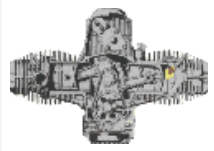
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14#



版主



第一页图片太多，打开太慢，转到第二页继续。



拧上飞

轮盘螺丝，并使用36的大套头拧紧，要用点力。

Screw in the 36mm flywheel bolt.



由于大套头不太好用力，完了再用铁棒再次敲击紧一些。Tighten by striking with a punch.



然后把锁片折起锁住螺丝，这个一定要锁紧。
Bend over the safety disk.



然后在螺丝周围抹一圈密封胶加强防漏效果。Cover with sealant to help prevent oil leakage.



检查并测量离合压簧的长度和弹性，长度误差不要超过两毫米，弹性不能有明显差异。
Check the springs' length. A difference of less than 2mm is not significant.



测量压盘固定桩的高度，误差不能超过一毫米。固定桩表面如果有明显的磨损痕迹，装车后会增加离合分离时的噪音，最好更换固定桩或把固定桩压下来旋转180度，还可以继续使用。Post height difference should be less than 1mm.



Make sure the six holes in the pressure plates is round and not oval. Maximum out of round is 1 mm.



检查三个离合压盘的平整度和固定孔的磨损度，不平度不能大于一毫米，固定孔不能成为椭圆形。

装车时，要保证六个压簧上部都准确的进入下压盘的压簧槽内（这张照片漏拍了），压盘的突出一面朝向飞轮方向，以自由状态正好对准六个固定桩为好。 **Make sure the springs fit into their recesses in the first pressure plate.**



离合片厚度四个角度的误差不能大于一毫米，否则会增加结合时的不平顺。

然后放上第一片离合片，突出一面也朝向飞轮方向。

When stacked, the clutch plates should be flat to within 1 mm.



放上中间的离合铁片，要对准上下固定孔。Place the pressure plate lined up with the screw posts.



放上第二片离合片，也是突出一面朝向飞轮。The friction plates go on with the rivet side out.



放上 上离合压盘，三层的固定孔都要对齐。The pressure plate is lined up with the bolt holes.



为了准确对准两个离合片与压盘顶杆孔的位置，使用了变速箱一轴和离合顶杆，离合顶杆缠几层硬纸再插入一轴内，可以保证顶杆和一轴同心。The friction and pressure plates must be correctly aligned. Here a clutch push rod wrapped in paper inside a gearbox shaft is used as an alignment tool.



然后先找正两个离合片及压盘孔的位置后拧紧压盘螺丝，并用冲击起子拧紧并锁住螺丝。Tighten with an impact driver.



装配凸轮轴及超越离合器，装配前在凸轮轴前部轴孔内灌入少量的机油，用来预润滑超越离合器。
Some oil is poured into the camshaft end to pre-lubricate the starter freewheel clutch.



润滑凸轮轴后轴头，并把凸轮铜套内倒少量机油。The rear end of the camshaft is pre-lubricated.



装入凸轮总成，这时需要找到并对准正时齿轮上的正时刻度，这一点很关键，请仔细核对刻度。
The camshaft assembly is put in place, paying careful attention to the marks on the timing gears.



对准后，拧紧并锁紧凸轮压板的固定螺丝，都是沉头螺丝。With the gears aligned, the bearing plate screws are tightened.



另一个螺丝在起动机右侧外露，需要外上一个螺母。
One of the camshaft bearing retaining screws has a nut on the outside of the engine.



用冲击起子锁紧。 Tighten with an impact screwdriver.



装上发电机轴，注意先装好定位键。
Insert the alternator shaft, paying attention to properly align the Woodruff key.



用木棒把发电机轴震到位。Tap the alternator shaft in place.



装上前机盖上的废气阀的橡胶封堵，要求不能太松，否则掉下来会咬坏正时齿轮，并影响废气油气分离。

Make sure that the rubber baffle seal is tight enough so it doesn't fall off and foul the timing gears.



Insure that the O-ring on the front of the camshaft fits correctly, otherwise the starter clutch lubrication will be adversely affected.

装上凸轮轴前轴头油压密封圈，不能过松或破损，否则会影响油道机油油压。



前机盖油道链接橡胶接口，检查有无老化破损，高度是否足够，否则会引起油道漏油，也降低油道机油压力。

Make sure this oil seal is the right height and in good condition, otherwise the front end will leak oil, and the camshaft lubricating oil pressure will be affected.



用清洗剂清理前机盖油道。 Clean out the oil channel before assembling the front end.



经过检查，这个橡胶油道接口有点短，高度不足，手头没有配件，临时内部加了一个一毫米粗的密封圈垫高。
An inspection showed that the oil seal was a bit too short, so a 1mm thick washer was added.



用卡子扎紧油道接头，防止漏油。 A hose clamp was added as added assurance against leakage.



前机盖固定螺丝全部挂胶在上紧
Sealant added to the front cover bolts.



Do not overtighten at first. Wait for the sealant to cure for 3 hours, then do the final tightening.

也分两次拧紧，第一次不要拧太紧，三小时后胶体固化后再拧紧。



活塞环开口间隙最好不大于20丝，环在缸桶内漏光不超过三处。

The piston ring gap should be no more than 0.2mm.



清洗缸桶的回油油道 Cleaning the oil return channel on the underside of the cylinder.



环口三道环各自相差120度，组合油环的两道相差180度，各个环口都需要避开活塞销孔位置。

Place the piston rings 120 degrees apart. The 2 outer segments of the oil ring should be placed 180 degrees apart.



装上曲轴箱气缸孔内的橡胶密封圈，并在密封圈上抹上黄油，方便气缸尾部顺利进入。 Grease the O-rings.



Push the cylinder over the piston rings one by one, install the pushrod guide seals and insert the cylinder skirt into the crankcase.

气缸尾部也抹上黄油，气门底托沾机油后装入底托孔内。并把气门导管橡胶接头两面抹上密封胶，逐个把环推进气缸后把气缸尾部推入曲轴箱气缸孔内。

需要特别注意，气缸与曲轴箱之间的气缸底垫厚度不能大于0.5毫米，否则会使得气门导管橡胶接头压不到位引起漏油，还降低气缸压缩比。同时也不能省略这个垫子。另外该垫子不能或只能抹很少的密封胶，过多的密封胶会堵塞气缸强制润滑油

The bottom gasket must be no thicker than 0.5mm, otherwise the pushrod guide seal will leak, and the compression ratio will be reduced. Use sealant sparingly, as too much will obstruct oil circulation.

孔！



上螺母固定气缸，并把多余的密封胶擦去。Tighten the cylinder nuts and remove excess sealant.



清理气缸缸盖结合面，不能有杂质碎屑等，否则会影响缸垫的密封。
Clean the cylinder head contact surface, as any debris will affect the head gasket seal.



气门顶杆两头沾机油。 Grease the pushrod ends.



装上汽缸垫，这一张漏拍了！ 😊 注意缸垫上的回油孔必须和缸桶的油孔对准！！
然后装上汽缸盖，并插入气门顶杆。 **Forgot to take a picture! Note that the cylinder base gasket has a hole that must be aligned with the oil return tube on the underside of the cylinder.**
Next, mount the head, and insert the pushrods.



气门摇臂的组合顺序，从下到上依次是，下固定脚，摇臂垫，摇臂，摇臂轴，波形垫，上固定脚。
摇臂垫和波形垫都不能有明显的磨损，否则会加大噪音！



摇臂轴分上下，上部有一个孔，呈空心状，内部需要预先灌入机油。

The upper part of the hollow rocker arm shaft has a hole for lubricating oil.

The rocker arm assembly, from lower to upper: lower mounting block, thick washer, rocker arm, shaft, pressure washer, upper mounting block. Worn parts will increase valve noise.



摇臂也需要灌入机油。Pour in some oil before assembling.



在气门顶部和顶杆头部抹机油后装上摇臂组合。
Oil the rocker arm assembly.

Tighten the 4 cylinder head nuts equally, alternating diagonally. Note they are high strength (12.9 kg). Adjust the intake and exhaust valves to 0.1mm, and install the valve cover.



拧上缸盖螺母。注意这个螺母是专用螺母，强度为12.9公斤的高强度！不能随意代替，拧紧力度要均匀，对角拧紧。！！调整气门间隙，进排气均为0.1毫米，盖上汽门室盖即完成装配！



变速箱二轴尾部链接拨叉漏油很是麻烦，加橡胶垫子也不能保证长时间不漏。可以采用使用密封胶彻底灌死尾部的方法彻底封堵漏油，经过长时间的使用，效果不错！

The seal on the gearbox output shaft sometimes leaks. It can help to fill the void with sealant as shown.

S6000885.JPG (99.19 KB, 下载次数: 0)



SIGNATURE

为车、为车友、为理想再加油 本人张灿杰 电话13938661299 QQ 1002527240 欢迎骚扰 😊

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清风影

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15#



中级会员
🌙⭐

刚刚看的过瘾，居然没图了

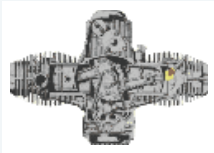
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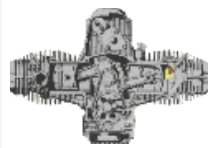
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16#



“ 清风影 发表于 2012-10-8 08:11
刚刚看的过瘾，居然没图了

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版主



本帖最后由 我为车 于 2012-10-14 23:14 编辑



齐中尉 发表于 2012-10-12 23:22

看懂了大半，但对凸轮轴和正时齿轮的刻度对准不明白？图上没看到刻度，楼主如白忙之中有空给说说，谢谢。幸 ...



Details showing the alignment marks on the timing gears.





这样就能够看明白了吧！
凸轮轴的正时齿轮上的正时刻度线不太容易看到，你可以用汽油仔细清洗干净再查找。
It's not always easy to see the timing gear marks. Clean the gears with solvent and the marks will be clearer.

SIGNATURE -----

为车、为车友、为理想再加油 本人张灿杰 电话13938661299 QQ 1002527240 欢迎骚扰 😊

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图文并茂 讲解生动。向我为车老师学习!!!!!!!!!!!!!!

The work of www.kuazike.com forum member 我为车 is gratefully acknowledged.

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🗣️ 心无限 发表于 2012-10-14 23:32 🍌

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