

Pentosin

lubricants & specialties

潘东兴双离合变速箱油
PENTOSIN Double Clutch Transmission Oils



Audi
Vorsprung durch Technik



May 22 – 24, 2012

内容概要

Table of Contents



1. 为大众公司量身订制的双离合变速箱油 (DCTF)
Tailor made Pentosin Double Clutch Transmission Oils

2. Pentosin DCTF 品种
Pentosin's DCTF variety

3. Pentosin DCTF在世界范围内处于主导地位
Pentosin's world wide DCTF dominance

4. Pentosin FFL-2意大利纳多赛道测试
Pentosin FFL-2 test on Nardo racing course

5. Pentosin FFL-2路试结果
Pentosin FFL-2 field test results

6. Pentosin DCTF 摩擦性能优化
Pentosin DCTF friction management





1.a) 为大众公司量身订制的双离合变速箱油FFL-2 Tailor made Pentosin DCTF FFL-2 for VW

- **FFL-2是世界上第一款可供商用的双离合变速器专用油**
FFL-2 was the first commercially available DCTF in the world
- **找到适合其双离合变速器的这款Pentosin产品是当时大众DCT项目的首要任务**
The availability of the Pentosin product was mission critical for the VW DCT project

大众研发出的双离合
变速器

DCT
developed by:

VW



采用FFL-2的大众
双离合变速器DSG 250
和DSG 500:

FFL-2 runs in
DSG 250:

Golf VI
Passat
Eos
Touran
Audi A3
Audi TT

DSG 500:

T5
Tiguan



1.b) 为保时捷公司量身订制的双离合变速箱油 FFL-3 Tailor made Pentosin DCTF FFL-3 for Porsche



- **FFL-3, Pentosin 专门为保时捷研发的第二代DCTF**
FFL-3, Pentosin's 2nd DCTF generation, was specifically developed for Porsche
- **Pentosin的FFL-3是世界上第一款正式的寿命油**
Pentosin FFL-3 was the world's first official Life Time DCTF

采埃孚和保时捷联合
研发出的双离合
变速器

DCT
developed by:

ZF / Porsche



采用FFL-3的保时捷
双离合变速器:

FFL-3 runs in:

Carrera
Boxster
Cayman
Panamera
918 Spyder



1.c) 为宝马公司量身订制的双离合变速箱油FFL-4 Tailor made Pentosin DCTF FFL-4 for BMW



- Pentosin专门为宝马研发的FFL-4
Pentosin FFL-4 was specifically developed for BMW
- BMW对PentosinFFL-4的评价：我们无法破坏这款油！
BMW's assessment of Pentosin's FFL-4: We cannot destroy it!

格特拉克和宝马
联合研发出的
双离合变速器

DCT
developed by:

Getrag / BMW



采用FFL-4的宝马
双离合变速器：

FFL-4 runs in:

BMW M3
BMW M5
BMW Z4
BMW 335is
BMW 135i
BMW Vision



1.d) 麦克拉伦使用潘东兴的双离合变速箱油FFL-4 Pentosin DCTF FFL-4 for McLaren



- 麦克拉伦MP4-12C采用Pentosin的FFL-4
Pentosin FFL-4 runs in the McLaren MP4-12C
- 使用Pentosin的FFL-4是欧利康、贺尔碧格和麦克拉伦的研发其双离合变速器的基础
Pentosin FFL-4 was the development basis for Oerlikon / Hoerbiger / McLaren

欧利康研发出的
双离合变速器

DCT
developed by:

Oerlikon



1.e) 为布加迪量身定制的双离合变速箱油 FFL-2 Plus Tailor made Pentosin DCTF FFL-2 Plus for Bugatti



- 布加迪·威龙 1001 HP 采用Pentosin的FFL-2
Pentosin FFL-2 runs in the Bugatti Veyron 1001 HP
- Pentosin FFL-2 Plus 是为布加迪·威龙 1250 HP专门研发的一款性能改良后的油品
Pentosin FFL-2 Plus has been developed for the new Bugatti Veyron of 1250 HP

里卡多研发出的
双离合变速器

DCT
developed by:

Ricardo



Bugatti Veyron 16.4 Super Sport

采用FFL-2 Plus的
布加迪·威龙 1250 HP
在2010年创造出431,5 km/h的世界纪录

Bugatti Veyron
1250 HP
used

FFL-2 Plus

for its
world record of

431,5 km/h

in 2010



May 22 - 24, 2012

1.f) 戴姆勒公司使用潘东兴的双离合变速箱油FFL-4 Pentosin DCTF FFL-4 for Daimler



- **Pentosin FFL-4**已经通过戴姆勒公司测试成为其**A级、B级**车双离合变速器使用的专用油
Pentosin FFL-4 has been tested by Daimler for their A- and B-Class DCT
- 经过其第一阶段的系列严格测试，戴姆勒决定在**2010年11月**开始分别在严冬和酷暑进行昂贵的路试。**2011年4月**，油品已成功通过冬季测试。
In Nov.2010, after an impressing series of 1st pass results, Daimler decided to start expensive winter and summer field trials. In April.2011, the winter trails have been finished sucessfully.

戴姆勒研发出的
双离合变速器

DCT
developed by:

Daimler



戴姆勒公司投入生产的
第一款双离合变速器乘用车:

B级车

**First Daimler DCT
Application:**

**A-Class
B-Class**



1.g) 上汽集团使用潘东兴的双离合变速箱油 FFL-2 Pentosin DCTF FFL-2 for SAIC



- Pentosin FFL-2是德国的GIF公司为他们的上汽集团双离合变速器项目选中的专用油
Pentosin FFL-2 has been selected by GIF for the DCT Development for SAIC
- Pentosin已经获得上齿集团有限公司 (SAGW)的授权许可。
Pentosin FFL-2 is approved as a Life Time DCTF for SAGW.

GIF和上齿集团联合
研发出的双离合
变速器

DCT
developed by:

GIF / SAGW



ROEWE



Roewe 550



1.h) 为江淮汽车提供双离合变速箱油 FFL-2 Pentosin DCTF FFL-2 for JAC



- Pentosin FFL-2是德国的Hofer公司为他们的江淮汽车双离合变速器项目选中的专用油
Pentosin FFL-2 has been selected by Hofer for their DCT development for JAC
- Pentosin FFL-2 已经通过所有测试的考验并且成为Hofer公司唯一推荐的一款DCTF
Pentosin FFL-2 has passed all the tests and is Hofer's only DCTF recommendation

Hofer研发出的
双离合变速器

DCT
developed by: **JAC**
M O T O R S
Hofer



江淮汽车投入生产的
第一款双离合变速器乘用车:

First JAC DCT
Application:

JAC
Passenger Cars

安徽江淮汽车集团
Anhui Jianghuai Automobile Company



2. 潘东兴的双离合变速箱油品种多样 Pentosin's DCTF variety



- **Pentosin**研制的**DCTF**具有广泛的应用范围，例如：
Pentosin has developed a wide range of DCTFs, like e.g. for:
 - 高销量的小型车，例如大众的高尔夫
smaller cars that are sold in high numbers like e.g. Golf
 - 豪华运动轿车，例如保时捷
posh sports cars like Porsche
 - 名贵跑车，例如布加迪·威龙
extraordinary cars like the Bugatti Veyron
- **50 – 1250马力的汽车均使用Pentosin的DCTF**
The power of the cars using Pentosin DCTFs range from 50 to 1250 hp
- **Pentosin的DCTF成功被应用于种类繁多、设计多样的变速箱，例如：**
There is also a great variety of different gear box designs and architectures that successfully make use of Pentosin DCTFs, as e.g.:

1)	VW	2)	ZF
3)	Getrag	4)	Oerlikon
5)	Ricardo	6)	Daimler
7)	Hofer	8)	Others (confidential)



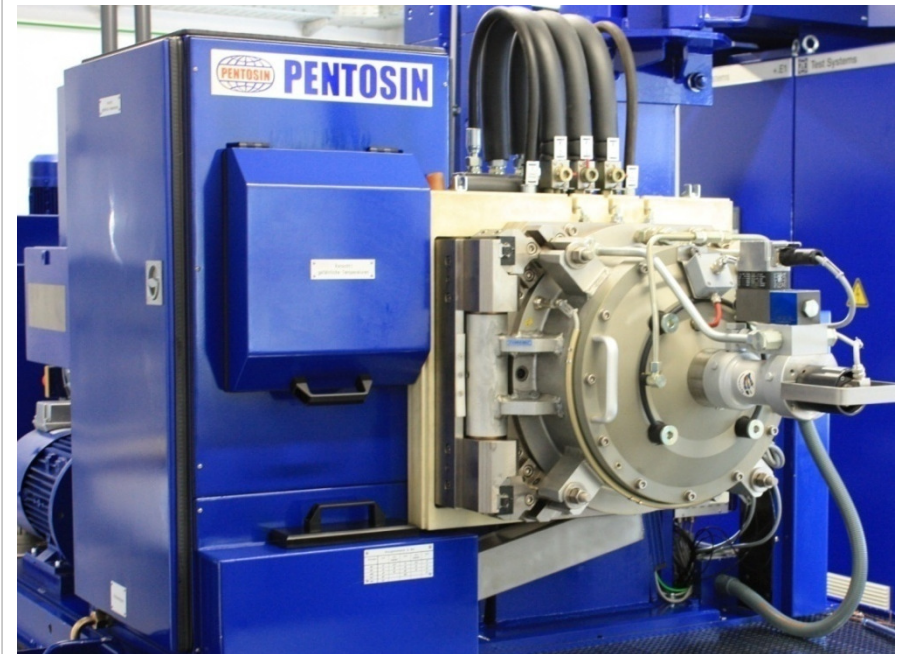
3. 潘东兴的双离合变速箱油在世界范围内居于主导地位 Pentosin's world wide DCTF dominance



始终一路领先...

如今**95%**的双离合变速箱车型使用**Pentosin**的技术

- 由于双离合变速器给汽车带来驾驶的舒适性和油耗的经济性越来越多驾驶汽车的人看好这种车型。因此，越来越多的汽车制造商开始为他们的双离合变速器配备**Pentosin**的润滑油，因为**Pentosin**的润滑技术在世界上处于领先地位。
- 双离合变速器专用油（**DCTF**）是一款将自动变速箱油（**ATF**）和手动变速箱油（**MTF**）优点集于一身的一款尖端技术高品质润滑油。调配这种油的难度在于将其摩擦稳定性、抗磨损性能以及同步性能完美结合起来。
- 用**Pentosin**技术装备的双离合变速器车型也始终保持一路领先。

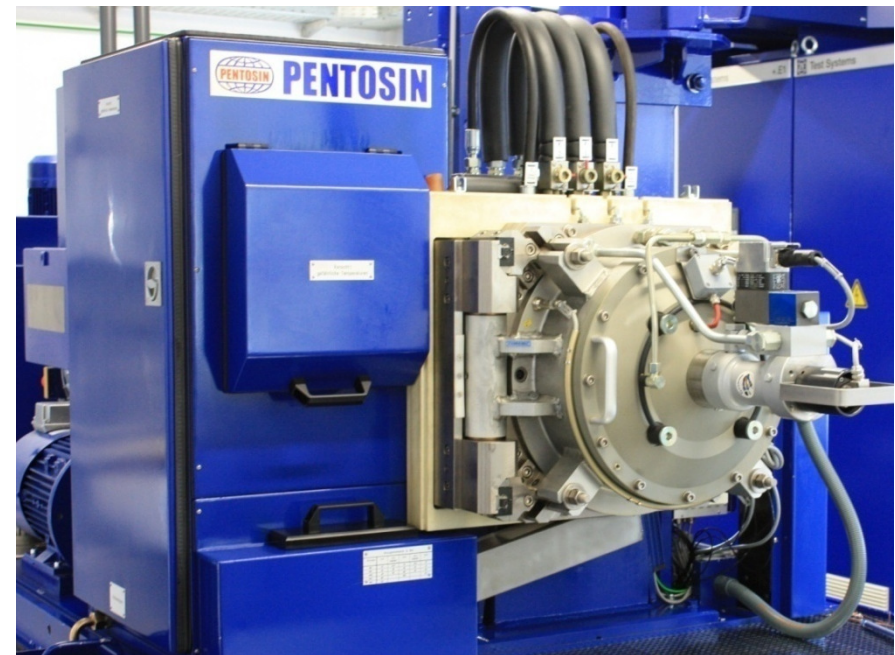


3. Pentosin's world wide DCTF dominance

Always a step ahead ...

Today **95 %** of all DCT equipped vehicles use Pentosin technology

- More and more drivers are looking to Double Clutch Transmission due to the excitement to drive and its excellent fuel economy. More and more OEMs are turning to Pentosin, who has a leading position in the lubricants technology for DCTs.
- DCTFs are a new class of highly sophisticated lubricating oils comprising the performance qualities of automatic (ATF) and manual (MTF) transmission fluids. The challenge is to combine frictional properties for the double clutch together with superior protection of the gears and State-of-the-Art synchronizer performance.
- DCT equipped vehicles using Pentosin technology are always a step ahead.



4. Pentosin FFL-2在意大利纳多赛道上进行寿命测试 Pentosin FFL-2 Life Time Test on Nardo Racing Course



引进Pentosin FFL-2 前大众公司对这款油进行了大量严格的测试

- 其中一项是正值酷暑在意大利的纳多赛道上进行测试。
- 测试是在汽车开足最大马力行使**150000**公里的条件下对油品进行的严格的考验。
- 测试后化验结果:

铁/ Iron	234 ppm
总酸值/ TAN	1,41 mg KOH/g
运动黏度/ kV100	5.96 mm/s

- 这个测试的成功是我们**FFL-2**的一个重大突破！这因为如此，**Pentosin**正式获得了大众公司对这款油品的授权认可。
- 对大众来说这是其整个双离合变速器项目的里程碑，**FFL-2**将该项目从停滞的边缘挽救回来。



4. Pentosin FFL-2 Life Time Test on Nardo Racing Course

Before introducing Pentosin FFL-2 it was vigorously tested by VW

- One of many tests was done on the Nardo racing course in Italy during hot summer days

- The oil was vexed in a brutal test over a distance of 150.000 km at full power.

- Laboratory results:

Iron	234 ppm
TAN	1,41 mg KOH/g
kV100	5.96 mm/s

- This test run was the break through for our FFL-2! As a result Pentosin obtained the official VW DCTF approval.
- For VW this result was a milestone in their DCT project that was on the verge of being stalled.



5. Pentosin FFL-2 与大众途安配合作业的路试结果 Pentosin FFL-2 field test results: VW Touran



德国权威汽车杂志„Autobild“发表的测试结果 Test Report of the German Car Magazine „Autobild“

大众途安和Pentosin FFL-2配合作业100000公里的耐久性测试结果

Results of a 100.000 km DCT durability test with a VW Touran and Pentosin FFL-2:

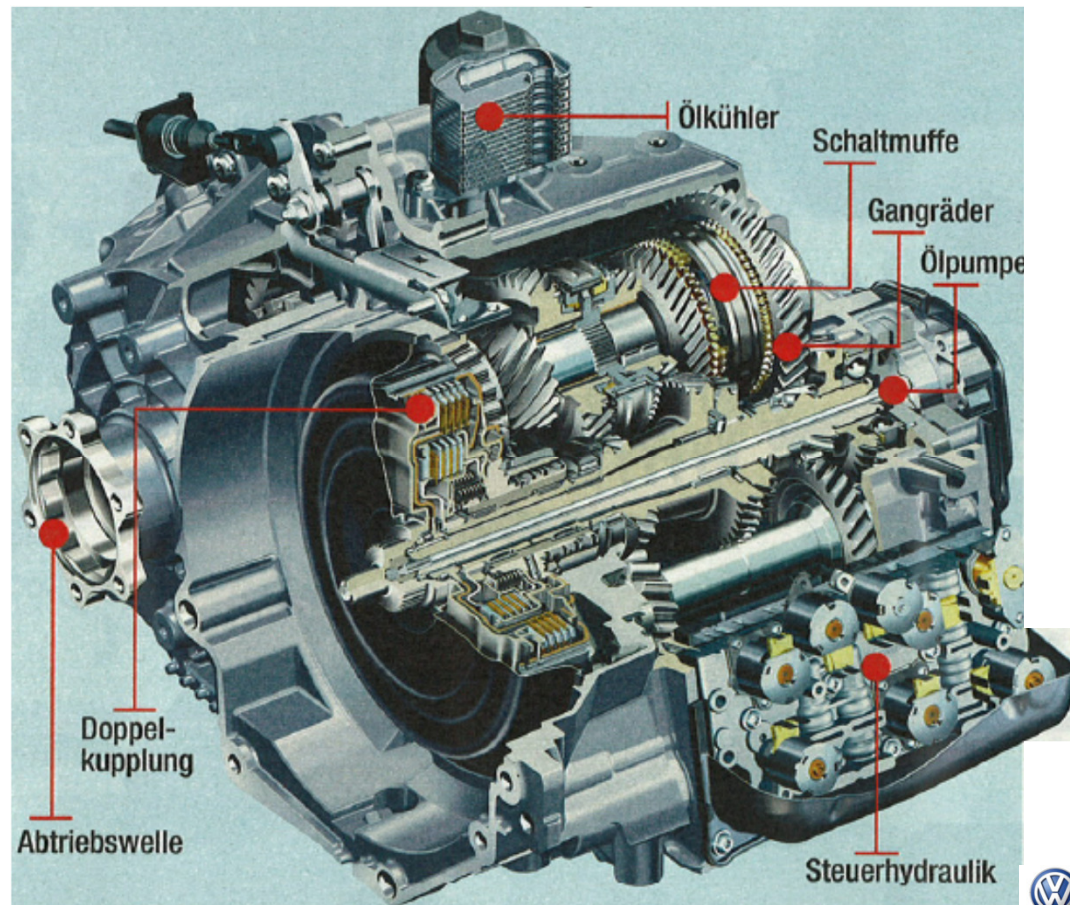
从第一个公里到最后一公里，齿轮相互配合得完美而准确。

The gears matched perfectly and very reliably from the first to the last kilometer.

拆卸变速箱后对所有零部件进行检测的结果：
After dismantling the DCT all the parts were measured:

齿轮的磨损程度微乎其微，经过高强度摩擦后它们仍然跟新的一样。

The wear of the many gears is negligible as it is within the tolerances of a new gear box.



5.b) Pentosin FFL-2 与奥迪A3配合作业的路试结果 Pentosin FFL-2 field test results: Audi A3



潘东兴FFL-2与奥迪 A3配合作业182000公里的耐久性测试结果 Pentosin FFL-2 results of a 182000 km durability test with an Audi A3

测试结束后大众将双离合变速箱拆卸下来并进行检测 The VW DCT has been checked and validated by VW

检测结果 / Results:

- 齿轮上未出现任何点蚀或磨损现象 / The gears do not show any pittings or wear
- 测试后油品中铁的含量非常低：作业102000公里后铁的含量为79 ppm；作业182000公里后铁的含量为120 ppm / This is backed by the low iron content of 79 ppm after 102000km and 120 ppm after 182000 km
- 测试后油品在100℃的粘度分别为6,1 mm²/s (102000公里) 和5,9 mm²/s (182000公里) / The corresponding viscosities at 100℃ were 6,1 and 5,9 mm²/s at 102000 and 182000 km
- 测试结束后A3的变速箱无任何磨损，如崭新一般 / At EOT the performance of the A3 was like new
- 结论：**FFL-2是一款真正的双离合变速箱寿命油** / Conclusion: **FFL-2 is a real Life Time DCTF**





谢谢！

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