



MILLERS OILS



MOTORSPORT

MILLERS OILS IN MOTORSPORT

Millers Oils is a highly innovative independent manufacturer of market leading advanced oils and fuel treatments, with a history of providing creative lubrication solutions for some of the world's best known brands, based on over 130 years' experience in the lubricants industry.

In 2007, Millers Oils made its name in the motorsport world with its award winning NANODRIVE range for both engine and gear applications. Since then, Millers Oils has continued to develop its motorsport range, ensuring users keep the competitive edge on the track.

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ENGINE OIL

The world of motorsport is incredibly diverse, covering everything from small hill-climb events to top flight endurance racing. Millers Oils offers a range of engine oils in different viscosities to not only suit your race but also your vehicle, including any modifications.

ENGINE OIL FUNDAMENTALS

HOW DOES RACE TYPE AFFECT OIL SELECTION?

A key consideration for motorsport oil selection is the type of race in which a vehicle is competing.

Certain race types, e.g. Rallying, place the engine under high stress, increasing operating temperatures and pressures. With these race conditions it is often recommended to increase the viscosity of the engine oil.

Some races, for example endurance racing, require improved fuel economy which can be achieved by reducing the engine oil viscosity. By switching from a 5w40 to a 5w30 grade, fuel consumption can be reduced by up to 3%!

Lower viscosities are also favoured when there is a short or no warm-up time, as the oil flows more efficiently on start-up.

HOW DO MODIFICATIONS AFFECT OIL SELECTION?

Modifications to vehicles can effectively make the original oil specification and viscosity redundant.

As power is increased, the internal temperatures and pressure of the engine rise, meaning the oil has

to work harder. In general, the more stress placed on the oil, the more the required viscosity will deviate from the original vehicle specification, in order to maximise film strength and protection.

For product selection and recommendation, please contact our technical help desk on 01484 475 060

WHAT IS VISCOSITY?

Viscosity is the 'thickness' of a fluid, which is an important property for lubricants as it helps determine how well the oil flows around the components, as well as how strong the oil film is.

Modern engine oil viscosity grades consist of two numbers, e.g. **5w40**

The first number is the low temperature specification, or the ability of the fluid to flow when cold (pump-ability when cold cranking), even at temperatures as low as -35°C.

The second is the high temperature specification at 100°C, to replicate when the engine is running at operating temperature.

Maintaining the correct viscosity and therefore protective oil film is even more critical when dealing with a race engine that is operating under arduous conditions, and most likely highly modified compared to a standard engine.

WHAT IS ZDDP, AND WHAT'S THE RIGHT AMOUNT?

Zinc Dithiophosphate (ZDDP) is an anti-wear additive used in lubricants. ZDDP is required to protect high load contact points such as camshaft lobes and followers. It also acts as an anti-oxidant to extend oil life under harsh conditions.

There is an optimum level of ZDDP: too little won't offer enough anti-wear protection, but too much

actually increases friction and wear. The ideal level is 1000 – 1400 ppm, and all Millers Oils motorsport engine oils use this optimised amount.

It is important to note that a product with 1400 ppm ZDDP is not necessarily better, as the level has to be balanced with other additives in the formulation to ensure all-round performance.

ENGINE OIL FOR THE PROFESSIONAL

The Competition Fully Synthetic NT+ range of engine oils incorporates Millers Oils second generation NANODRIVE low friction technology to achieve winning results for the professional race team.

The benefits:

Fully synthetic oil protects engine at both low start-up and high running temperatures.

Triple ester formulation works synergistically for optimised film strength and anti-wear protection.

Second generation NANODRIVE low friction technology maximises power.



For product selection and recommendation, please contact our technical help desk on 01484 475 060

For full details on performance profiles and specifications please refer to the technical data sheet.

THE RANGE

Product	Part code
CFS 0w20 NT+	7961
CFS 0w30 NT+	7962
CFS 5w40 NT+	7963
CFS 10w50 NT+	7964
CFS 10w60 NT+	7965

Our flagship NANODRIVE brand is used in motorsport disciplines all over the world including WRC, BTCC, Dakar Rally, drag racing and across the Caterham series. We pride ourselves on having a product range that can be used in the varied and challenging divisions of the motorsport world.

ENGINE OIL FOR THE RACING ENTHUSIAST

The Competition Semi-Synthetic and Competition Fully Synthetic ranges of engine oils incorporate Millers Oils original NANODRIVE low friction technology, increasing power and torque for a competitive edge in non-professional racing.

The benefits:

High quality oils protect engine at both low start-up and high running temperatures.

CFS triple ester formulation works synergistically for optimised film strength and anti-wear protection.

Original NANODRIVE low friction technology increases power.



For product selection and recommendation, please contact our technical help desk on **01484 475 060**

For full details on performance profiles and specifications please refer to the technical data sheet.

THE RANGE

Product	Part code
CSS 10w40	7951
CSS 20w60	7952
CFS 5w40	7953
CFS 10w40	7954
CFS 10w50	7955
CFS 10w60	7956
CFS 15w60	7957
CTV Mini 20w50	7959

DOES MOTORSPORT OIL MEET PASSENGER CAR SPECIFICATIONS?

Millers Oils motorsport products do not claim automotive specifications, as the performance requirements are different to those for road vehicles. Motorsport oils are superior at higher temperatures and pressures, but they are not always formulated with the level of detergents and dispersants needed for today's heavily regulated passenger car market.

TECHNOLOGY SHOWCASE: NANODRIVE

What is NANODRIVE?

NANODRIVE is the award-winning Millers Oils motorsport brand that incorporates advanced nanoparticle technology for high performance applications, where stress on components is at its limit.

First launched in 2007, NANODRIVE was developed to meet the demanding requirements of the motorsport industry for greater and more consistent lubrication

over a wider temperature range, particularly in gear box applications.

Today NANODRIVE technology is used in Millers Oils engine, gear oils and suspensions fluids.

How does it work?

In engine and gear oils, NANODRIVE technology combines advanced nanoparticles with triple ester chemistry to greatly reduce friction, protect against wear and maximise power. In suspension fluids, the advanced nanoparticles reduce friction for a consistently smooth operation.

Although the surfaces in engines and gearboxes look smooth to the naked eye, microscopic inspection reveals roughness and asperities that promote friction and wear, especially in harsh conditions where the oil film can no longer be relied upon for lubrication. Nanoparticles work by adsorbing to the surface of the metal components, both smoothing out the surfaces and providing a physical layer that prevents destructive metal to metal contact – even at high temperatures and pressures.

Esters are very valuable functional molecules in a lubricant, providing excellent lubricity as well as high oxidation stability. They are also surface-active, so they efficiently coat the metal surface to protect against friction and wear. There are different types of esters that interact differently both with themselves and other additives, so the oil blend has to be expertly balanced. Millers Oils has developed a unique triple ester formulation that works synergistically to greatly enhance performance.

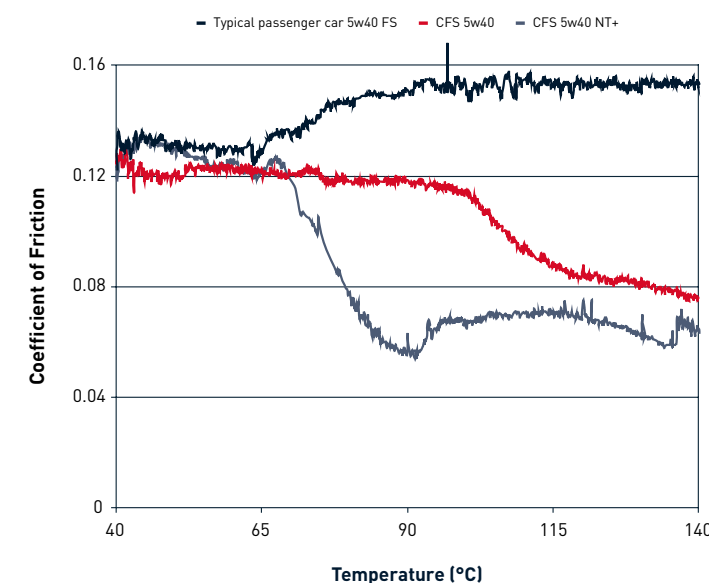
WHAT'S THE EVIDENCE?

Millers Oils has carried out extensive testing on its formulations, proving that NANODRIVE dramatically improves film strength, reduces friction and boosts power. NANODRIVE products have won awards such as MIA Business Excellence Awards, World Motorsport Symposium Innovation award and Race Tech most

innovative new motorsport product.

Today, NANODRIVE products are being used globally in numerous disciplines such as the British Touring Car Championship, the Dakar rally and the World Rally Championships.

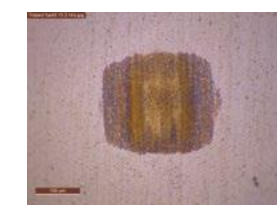
Nanodrive: Friction Testing



Over
53%
reduction in coefficient
of friction

Coefficient of friction: measurement of friction between two surfaces

CFS 5w40, CFS 5w40 NT+ and a typical 5w40 passenger car engine oil were tested on the HFRR at temperatures between 40°C and 140°C, with a ramp rate of 1°C per minute, and a contact pressure of 833kPa. At 100°C, the normal operating temperature of an engine, CFS 5w40 reduces the coefficient of friction by 27%, and CFS NT+ reduces the coefficient of friction by over 53% compared to the typical 5w40 oil.



Without Nanodrive
Typical passenger
car 5w40:
54,100µm²



With Nanodrive
CFS 5w40 NT+:
28,260µm²

48%
reduction in
wear scar

Wear scar: area of material removed by metal to metal contact

CFS 5w40 NT+ and a typical 5w40 passenger car engine oil were tested on the HFRR with a contact pressure of 833kPa. The results show that the CFS 5w40 NT+ offers over a 48% reduction in wear scar area over the typical passenger car product.

NANODRIVE
LOW FRICTION TECHNOLOGY

GEAR OIL

The Millers Oils range of competition gear oils is fully synthetic and incorporates second generation NANODRIVE low friction technology to achieve winning results in both professional and non-professional racing.

The benefits:

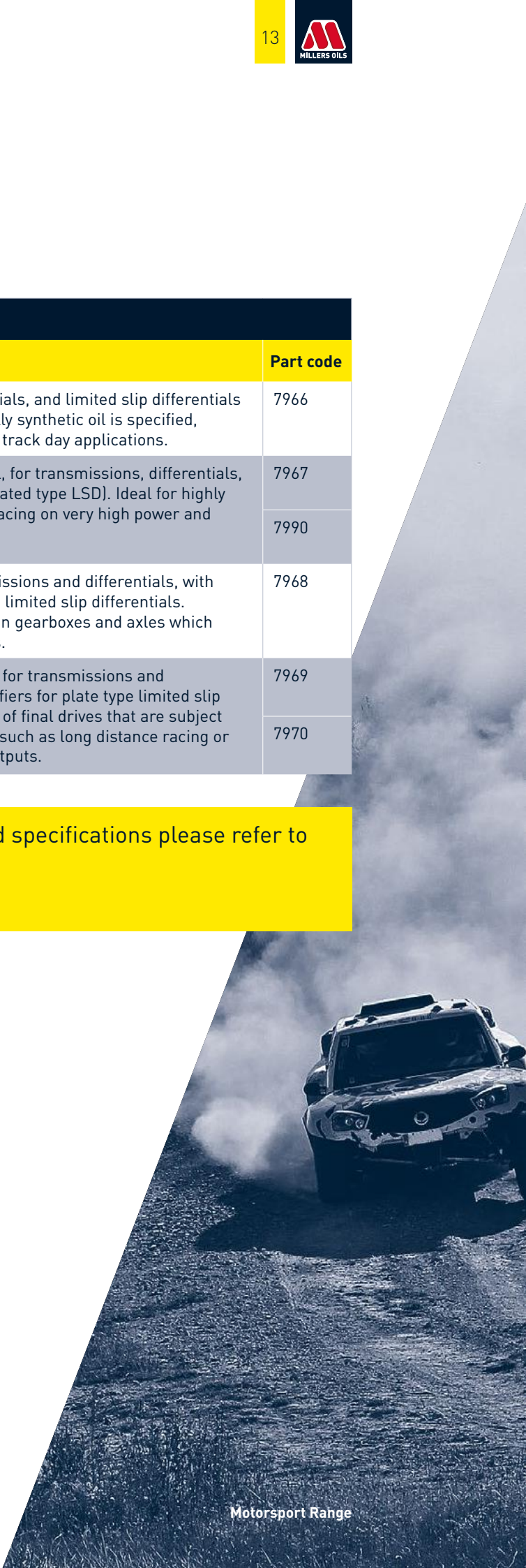
- Fully synthetic oils protect the gear teeth at both low start-up and high running temperatures.
- Triple ester formulation works synergistically for optimised film strength and anti-wear protection.
- Second generation NANODRIVE low friction technology maximises torque and power.



THE RANGE		
Product	Description	Part code
CRX 75w90 NT+	Ideal for modern transmissions, differentials, and limited slip differentials (excluding plated type LSD) and where fully synthetic oil is specified, especially for high performance road and track day applications.	7966
CRX 75w110 NT+	Heavy-duty, fully synthetic competition oil, for transmissions, differentials, and limited slip differentials (excluding plated type LSD). Ideal for highly stressed applications e.g. long distance racing on very high power and torque output.	7967
CRX 75w140 NT+		7990
CRX LS 75w90 NT+	Fully synthetic competition oil for transmissions and differentials, with additional friction modifiers for plate type limited slip differentials. Designed for the lubrication of competition gearboxes and axles which require limited slip high performance oils.	7968
CRX LS 75w110 NT+	Heavy duty, fully synthetic competition oil for transmissions and differentials, with additional friction modifiers for plate type limited slip differentials. Designed for the lubrication of final drives that are subject to high stresses or arduous applications, such as long distance racing or rallying on very high power and torque outputs.	7969
CRX LS 75w140 NT+		7970

For full details on performance profiles and specifications please refer to the technical data sheet.

Technical help line: 01484 475 060



SUSPENSION FLUID

The Millers Oils range of motorsport suspension fluids incorporates second generation NANODRIVE low friction technology for an extremely smooth suspension operation.

The benefits:

- Second generation NANODRIVE technology gives extremely smooth suspension operation.

Superior temperature stability minimises damping force variation for a consistently smooth ride.

High level performance across air, nitrogen and argon filled systems.

Available in a range of viscosities for fine tuning of suspension characteristics to suit driver preference.



THE RANGE	
Product	Part code
Suspension 2.5 NT+	7971
Suspension 5 NT+	7972
Suspension 7.5 NT+	7973
Suspension 10 NT+	7974
Suspension 15 NT+	7975

TREATMENTS

Millers Oils offers a range of motorsport fuel treatments to complement its lubricants, ensuring every marginal gain is achieved on the race track.



THE RANGE		
Product	Description	Part code
CVL*	Valve seat lubricant and combustion enhancer that protects against valve seat recession. CVL also provides flame front control allowing engines to run more advanced ignition timing, without danger of pre-ignition or detonation. Enables older engines to run on modern unleaded fuel, and is equally effective in modern engines fitted with knock sensors and catalytic converters.	5587
CVL Turbo*	Valve seat lubricant and combustion enhancer that protects against valve seat recession, adds up to 4 octane numbers to base fuel. CVL Turbo also provides flame front control allowing engines to run more advanced ignition timing, without danger of pre-ignition or detonation. Enables older engines to run on modern unleaded fuel, and is equally effective in modern engines fitted with knock sensors and catalytic converters.	5792
Extra Cool	Corrosion inhibitor and coolant enhancer concentrate, designed to be added to coolant to help maintain flow and reduce deposit formation in radiators, and reduce coolant temperature by up to 15°C. Provides powerful corrosion protection for all metals found in engines. Can be used in motorsport applications where antifreeze is disallowed.	5547

*Trade only

BRAKE FLUID

Brake fluids play a key role in driver experience and vehicle feedback. The Millers Oils motorsport brake fluids maintain their viscosity even at high temperature, and are robust against water absorption to ensure consistent performance.



THE RANGE		
Product	Description	Part code
Racing Brake Fluid 300+	High temperature brake fluid with dry boiling point of 310°C. Provides exceptional resistance to vapour locking and offers improved brake-feel and driver feedback.	7976
Performance Brake Fluid DOT 5.1	Long life brake fluid for all types of hydraulic actuated brake and clutch systems requiring DOT 5.1 specification. Ideal for anti-lock brake (ABS) systems. Also miscible with DOT 3, DOT 4 and other DOT 5.1 non silicone based products.	7977

SPECIALITY PRODUCTS



THE RANGE		
Product	Application	Part code
KR2T	Our FIA approved karting lubricant is a two stroke oil with a high performance/ low ash profile, specially developed for high revving 2 stroke engines. Tested and proven in Rotax-Max and Honda TM kart engines.	7960
CRO 10w40	A competition running in oil for test bed running up to four hours using an advanced formulation of high quality solvent refined mineral oils. Offers an extremely high protection level to new engine components.	7981
CB40	An SAE 40 competition castor based engine oil for 4 stroke engines. Designed for use with methanol or alcohol based fuels.	7983
Assembly Lubricant	Specially formulated for competition engine and transmission builders. Gives any high performance engine or transmission much needed additional lubricity in the crucial "maiden voyage". Very high ZDDP content.	7982
Hi-Mol 20	CV Joints	5264
Black Moly MM2	Differential/Spline shafts	5262
Deltaplex 2EP	Wheel bearings	5305
Red Rubber Grease	Used for most seals on automotive braking systems as it is compatible with brake fluid.	5196

Millers Oils has had long-standing success with competition products, including our flagship NANODRIVE range. As a result, we are trusted partner to a number of leading brands within the motorsport industry and produce bespoke premium product for both first and service fills.

GINETTA



Ginetta Cars has a long and successful history of producing hand built race cars and has gained a reputation as one of the most renowned British heritage race car brands, and one in which some of motorsport's biggest names began their careers.

Millers Oils is the official technical partner for Ginetta Cars, with title sponsorship and involvement in the famous junior championships, as well as supplying first fill oil for all Ginetta vehicles.

The Ginetta Tech range of oils was developed in tandem by Millers Oils and Ginetta and is used across all Ginetta championships as the lubricant of choice.

THE RANGE		
Product	Description	Part code
Ginetta Tech 0w30	For use in the Ginetta G40 engine	8105
Ginetta Tech 10w60	For use in the Ginetta G55 engine	8106
Ginetta Tech LS 75w90	For use in the Ginetta G55 axle	8107
Ginetta Tech 75w90	For use in the Ginetta G40 axle and the G40 and G55 gear box	8108
Ginetta Tech Brake Fluid 300 Plus	For use in the Ginetta G40 and G55 models	8109

HEWLAND

Hewland is a great example of British motorsport engineering. Founded in 1957, it has since invented the bespoke motorsport competition transmission and today boasts one of the largest ranges of off-the-shelf competition transmissions available.



Hewland is highly respected within the motorsport world: its gear boxes are used in the world's top formulas including Le Mans GT, Formula One and WRC rally, and it has over 60 years' experience working with top race teams.

Millers Oils created two unique formulations for Hewland to meet the demanding requirements of the modern motorsport transmission. Our award-winning NANODRIVE low friction technology paired with Hewland's precision engineering expertise offers race teams a winning formulation from the best of British motorsport technology.

THE RANGE		
Product	Description	Part code
Hewland UPB 75w90 LS	Designed for the lubrication of competition gearboxes and axles. For use in hypoid differentials with limited slip, gearboxes with combined limited slip differential, synchromesh and non-synchromesh manual gearboxes, transaxles and transfer boxes.	7935
Hewland UPB 75w140 LS	Designed for the lubrication of final drives. For use in Hypoid differentials with limited slip, gearboxes with combined limited slip differential, synchromesh and non-synchromesh manual gearboxes, transaxles and transfer boxes.	7934



MILLERS OILS

WHICH OIL?

The Millers Oils 'Which Oil?' guide is frequently used and can be found on our website. We want to make sure that people know which oil to use and the oil selector makes that very easy. Users can find out which oil they need by either entering their registration plate or typing in the make and model. The latest version of 'Which Oil?' is the most comprehensive version that we have ever published; it lists more options for better flexibility which means Millers Oils is able to fulfil customers' requirements.

To use our Which Oil? guide visit: www.millersoils.co.uk



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