



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.

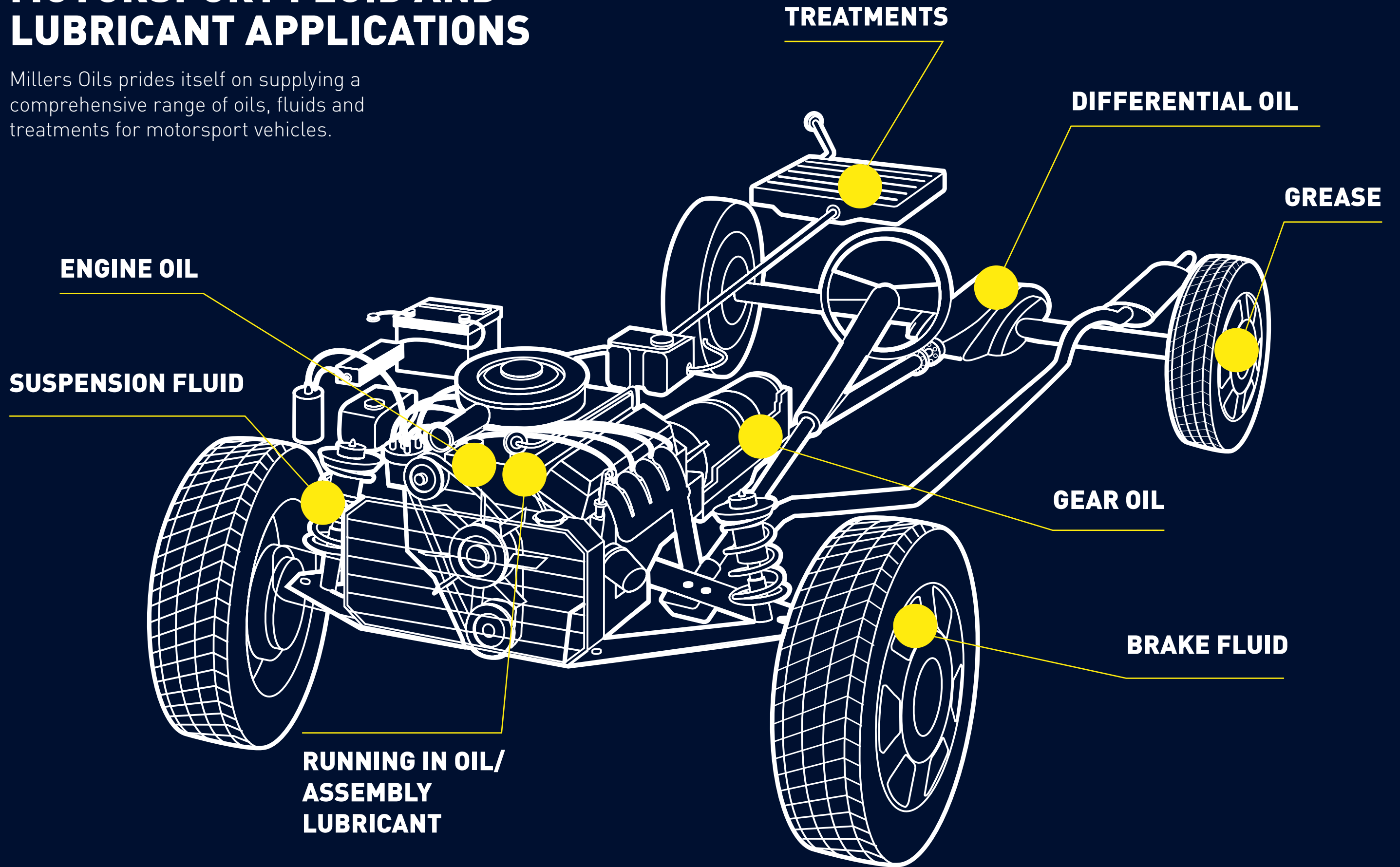
In 2007, Millers Oils made its name in the motorsport world with its award winning NANODRIVE range for both engine and gear applications. Since then, Millers Oils has continued to develop its motorsport range, ensuring users keep the competitive edge on the track.

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MOTORSPORT FLUID AND LUBRICANT APPLICATIONS

Millers Oils prides itself on supplying a comprehensive range of oils, fluids and treatments for motorsport vehicles.



ENGINE REBUILD/REFRESH

Race engines need regular rebuilds and refreshes to ensure maximum power and torque output are delivered in every race.

In motorsport applications, clearances between the moving engine components are engineered to be extremely narrow and precise. As a consequence, when these engines are pushed to the limit in race conditions, they can exceed their tolerance very quickly, leading to reduction in engine performance and even failure.

Millers Oils dedicated motorsport range reduces the compromise between power and component life, so the vehicle can operate at the limit for longer.

ASSEMBLY LUBRICANT

Assembly lubricant is recommended for use during engine rebuild to protect the valve train. The high level of ZDDP (Zinc Dithiophosphate) anti-wear additive protects from the extreme high load placed on the camshaft and cam followers on initial start-up.

Assembly Lubricant is a fluid, rather than a paste, to allow miscibility with the oil. This removes the requirement for an oil change following rebuild.

The benefits:

- Provides maximum mechanical protection of newly assembled components during initial start-up.
- Fully miscible with engine and transmission oils for quick dispersal on start-up: no need for additional oil change.

COMPETITION RUNNING IN OIL

Where engines have had new components, "running-in" is required to bed in the new moving parts. This smooths asperities on the component surfaces to achieve the optimum compression and combustion pressures, delivering peak performance. Without this critical running-in procedure, there is increased risk of glazing the cylinder bores which can lead to a reduction in performance as well as increased oil consumption.

The benefits:

- Maximises the power output by optimising the bedding in process.
- Provides protection of highly stressed components during the critical running-in process.

THE RANGE	
Product	Part code
Assembly Lubricant	7982
Competition Running In Oil	7981



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.

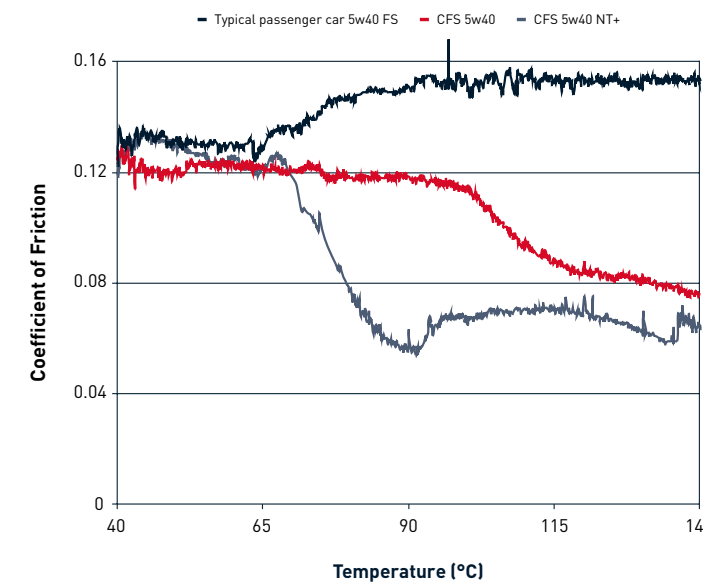
Esters are very valuable functional molecules in a lubricant, providing excellent lubricity as well as high oxidation stability. They are also surface-active, so they efficiently coat the metal surface to protect against friction and wear. There are different types of esters that interact differently 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.

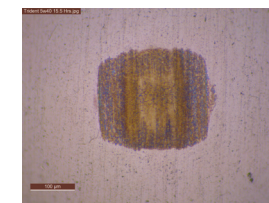
NANODRIVE: Friction



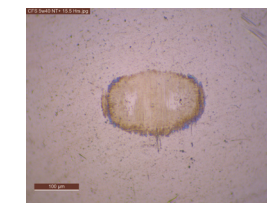
Over
53%
reduction in coefficient
of friction

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.



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 make the original oil specification and viscosity effectively 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.

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.



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

ENGINE OIL FOR THE RACING ENTHUSIAST

The Competition Fully Synthetic range of engine oils incorporates 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.



THE RANGE

Product	Part code
CFS 5w40	7953
CFS 10w40	7954
CFS 10w50	7955
CFS 10w60	7956
CFS 15w60	7957

ENGINE OIL FOR THE CLASSIC RACER

Automotive oils that meet today's vehicle specifications contain the very latest base oil and additive technologies. However, due to changes in fuel and engine design over the years, these products are not always suitable for classic race vehicles.

Millers Oils has developed a full range of products specifically designed for older race cars, taking today's lubrication technology and formulating it to protect and enhance yesterday's race car.

This range also includes the award winning NANODRIVE technology combined with triple ester chemistry to greatly reduce friction, protect against wear and maximise power from your classic race car.

THE RANGE

Product		Part code
CSS 10w40	A high performance competition semi-synthetic engine oil. Combination of the highest quality and latest performance additives in synthetic and mineral base stocks. CSS 10w40 is a high performance semi synthetic road and race oil for car and motorcycle engines alike.	7951
CSS 20w60	A high viscosity semi-synthetic engine oil which is specifically designed to protect competition engines running at very high temperatures. The higher viscosity also enhances performance for endurance events and is ideal for older competition engines.	7952
Classic High Performance 20w50	This high performance oil is the world's finest SAE 20w50 fully synthetic multigrade engine oil. It has been uniquely engineered for classic performance racing, with shear stable viscosity index improvers. This product incorporates our unique nanotechnology ultra-low friction additive system. It is formulated with full ZDDP for ultimate protection.	8355
CTV Mini 20w50	CTV Mini 20w50 is specifically formulated for competition Minis and any application where the engine and gearbox share a common oil. Very high performance semi-synthetic competition oil for engines which have their transmission in the sump such as the original Mini. Extra high performance engine oil based on the highest quality performance additives and shear stable viscosity improvers in synthetic and mineral base.	7959
COR 20w50	COR 20w50 is a high performance synthetic fortified competition engine oil especially developed for short oval racing engines requiring a 20w50 viscosity. It is based on the highest quality performance additives and shear stable viscosity improvers in synthetic and mineral base oils. It is exclusively formulated for short circuit racing and particularly suited to older classic sport applications.	7958

ENGINE OIL FOR SPECIALITY APPLICATIONS

KR2T

KR2T is an advanced 2-stroke competition engine oil with a high performance and low ash profile, specifically developed for high revving 2-stroke engines. KR2T has been tested and proven in Rotax Max and Honda TM Kart engines, and is also suitable for motorbikes, karts and all other 2-stroke applications.

The benefits:

- Improves sealing of the bores for increased power and torque.
- Delivers maximum lubricity for reduced wear.
- Eliminates crank case deposits, making engine rebuilds easier.
- Dyed blue for easy confirmation that the fuel has been treated.

CB40

Competition castor based engine oil for 4-stroke car or motorcycle engines that require a vegetable based oil. Designed for use with methanol or other alcohol based fuels.

The benefits:

- Outstanding wear protection due to extra load-carrying additives and natural lubrication properties of castor oil.
- Enhanced anti-oxidant performance.

THE RANGE

Product	Part code
KR2T	7960
CB40	7983



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.
- Includes second generation NANODRIVE low friction technology that maximises torque and power.



THE RANGE

Product	Description	Part code
CRX 75w 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. Available in a range of viscosities for different applications.	8311
CRX 75w80 NT+		8310
CRX 75w90 NT+		7966
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. Available in a range of viscosities for different applications.	7968
CRX LS 75w140 NT+		7970
CRX DCT-DSG NT+	Designed to provide extreme protection in many wet and dry style dual-clutch transmissions. A fully synthetic competition dual clutch transmission oil to protect the transmission system against corrosion, oxidation, deposits, and foam.	8312

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

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 320 PLUS	High temperature brake fluid with dry boiling point of 320°C. Provides exceptional resistance to vapour locking and offers improved brake-feel and driver feedback.	8353
Racing Brake Fluid 300 PLUS	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

GREASE

Millers Oils offers a wide range of grease to lubricate many parts of a motorsport vehicle such as CV joints and wheel bearings. The advanced lubrication technology delivers high scuff resistance, minimising wear for maximum performance of moving parts and joints under extreme load and temperature.

THE RANGE		
Product	Description	Part code
Hi-Mol 20	Ideal for highly loaded constant velocity (CV) joints in motorsport applications. Eliminates sliding spline binding under high acceleration loads.	5264
Black Moly MM2	Suitable for Differentials/Splineshafts. Ideal for applications where a high level of anti-wear and EP performance is required, both in the industrial and automotive sectors.	5262
Deltaplex 2EP	Ideal for both anti-friction and plain wheel bearings, and highly suitable for the lubrication of universal joints.	5305
Red Rubber Grease	Ideal for the lubrication of rubber and associated components which are in contact with rubber. Used for most seals on motorsport braking systems as it is compatible with brake fluid.	5196

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
Fuel		
CVL 250ml	A valve seat lubricant and combustion enhancer that protects against valve seat recession. Provides flame control, allowing engines to run more advanced ignition timing, without the danger of pre-ignition or detonation. Protects against the corrosive effects of ethanol found in modern E5 and E10 unleaded petrol. Suitable for race cars fitted with knock sensors and catalytic converters.	5587
CVL Extra 500ml	A valve seat lubricant and combustion enhancer that protects against valve seat recession. Provides flame control, allowing engines to run more advanced ignition timing, without the danger of pre-ignition or detonation. Protects against the corrosive effects of ethanol found in modern E5 and E10 unleaded petrol. Suitable for race cars fitted with knock sensors and catalytic converters. Adds up to 4 octane numbers to base fuel.	5792
Water		
Extra Cool 250ml	A 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. Suitable for use in motorsport applications where antifreeze is not allowed.	5547

PARTNERSHIP PROFILES

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 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 collaboration between 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 5w30	For use in the Ginetta G56 engine.	8264
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

TECHNICAL HELPDESK

Millers Oils has a dedicated Technical Helpdesk to recommend products for specific motorsport applications in order to achieve the best performance. With vast knowledge and experience, they are always on hand to offer advice.

T: **+44 (0) 1484 475060**

E: **technical@millersoils.co.uk**

Millers Oils Head Office

Millers Oils Ltd
Brighouse, West Yorkshire,
HD6 3DP, UK
T: **+44 (0) 1484 713201**
F: **+44 (0) 1484 721263**
E: **sales@millersoils.co.uk**

www.millersoils.co.uk



MillersOilsLtd

All products and information are reflective of the latest specifications at the time of going to print. The company reserves the right to change formulations and specifications without prior notice.

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Millers Oils Scotland

T: **+44 (0)1236 280 107**
E: **glasgow@millersoils.co.uk**

MADE IN BRITAIN

