"Engine oils for modern cars are a nightmare"**.....they don't have to be**
But get the oil wrong on modern cars and it will come back and bite you

Is there a simple way of making sense of modern oils, without having a degree in Tribology?
You will be please to know the answer is yes

Use the 4 level approach and engine oil confusion will disappear before your eyes

I have used the 4 level approach in my oil training with motor factors and independent garages ...it works every time. Whether it's for in-warranty or out of warranty cars.

It used to be so straightforward back in the day. We had 20W-50 in the 1970s, 10W-40 in the 1980s and in the early 2000 along came the 5W-30 semi synthetic and fully synthetic oils. What has changed?
The simple answer is manufacturer specifications.

The question that often asked is why the car manufacturers have created these oil specifications? The car manufacturers will rightly say it due to the technological advancements that are specific to the engine, emission regulations and the drive for fuel economy
Cynics may suggest it's a way of encouraging the owner to return to the main dealer, clutching the owner's handbook, asking for oil that is stated in the handbook. I'm sure you have your own view.

Either way. As an independent garage, if you supply the wrong specification oil for a car under warranty, you potentially have big expense coming your way.

Being curious and keeping up to date about engine technological advances is part of running a successful garage business – Oil is now very much part of that technological advance

The oil registration look up sites are easy to use and accurate. What the 4 level approach does is simplifies the logic and reasoning for different oil recommendations

Follow the 4 logical steps – and be reassured that you won't have a warranty claim rejected due to the wrong specifications being used. Additionally you will have the confidence in your oil knowledge to challenge any judgements.

Level 1 and 2 are sort of obvious. It's levels 3 and 4 that things liven up

Level 1
The first question to ask yourself is: Is the oil Mineral Semi Synthetic or Fully Synthetic?
All modern oils are Fully Synthetic and this will be stated on the specification sheet.

A few years ago, things were not so clear, with semi synthetic and fully synthetic jostling for attention. Take for example the Ford semi synthetic 5W-30 and the Ford fully synthetic. Thankfully technology has moved on from those days.

Level 2
The next question is: What is the viscosity?
Easy to find information on the bottle

Things have changed in the last couple of years. An example being Mercedes Benz and BMW. In the past they allowed a couple of viscosities with their specifications of MB 229.51 and BMW LL-04.
Car manufacturers now tend to stipulate one viscosity to go with their specifications.

Viscosity is the most important feature about oil. Right? – Maybe not, viscosity has an important role to play - but it's not the only criteria in modern engine oils

As an aside, the viscosity term we are familiar with, as an example 5W-30, is what is known as the Kinematic viscosity.
There are two other viscosity you will come across with engine oil. Firstly the dynamic viscosity which is used to determine the cold start standard.
The second is the High Temperature High Shear viscosity. This viscosity is very much at the forefront of the oil chemists' minds, when they are formulating the recently introduced fuel economy oils
A topic for another day!

Level 3
This is where things get interesting...the ACEA or ILSAC specification

What is ACEA? The European Automobile Manufacturers' Association (ACEA) represents the 16 major Europe-based car, van, truck and bus makers.

What is ILSAC? International Lubricant Standardization and Approval Committee (ILSAC) is an organisation through which Ford, General Motors, Chrysler and the Japan Automobile Manufacturers Association, Inc develop minimum performance standards for passenger car engine oils used in petrol fuelled engines.

All engine oil sold in Europe will have an ACEA or ILSAC standard. If it doesn't. Don't buy it!
The oil watchdog VLS would have something to say about oil sold in the UK without an ACEA or ILSAC standard
Who is the VLS? The Verification of Lubricant Specifications is an independent organisation providing a credible and trusted means to verify lubricant specifications

Back to ACEA: Typical designations you will come across will be the Low SAPS oils C1, C2, C3, C4, C5 There are others, but these are the popular Low SAPS – Low Sulphated Ash Phosphorous Sulphur oils, designed for cars with Diesel Particulate Filters (DPF) and Gasoline Particulate Filters (GPF)

There is often a curved ball in oil, and here comes one of those curved balls!
The oil may only have an ILSAC classification. No ACEA specification.
That's OK, The oil is simply so new that ACEA haven't got round to giving it an ACEA classification
The 0W-16 fuel economy oils may only have an ILSAC specification on the bottle. Oh and there is a 0W-8 on its way. Super fuel economy oil

There are three ILSAC specifications that are worth being aware of, because they are relevant for modern petrol engine oils.

- ILSAC GF-5 Usually found alongside the GM Dexos1 specification. Oils that are formulated for Low Speed Pre Ignition issues
- ILSAC GF-6-A Some 5W-20 and 0W-20 oils
- ILSAC GL6-B Only 0W-16 oils

Level 4
This is where the manufacturer warranty rejects usually occur
Or put another way. The car manufacturer warranty department is only interested in the correct level 4 specification.
The previous levels may be correct. But it's a definite reject if this level is incorrect.

Back in the day when we used 20W-50 and 10W-40 – there was limited or no level 3 or 4 specification.
The oil was Level 1: mineral or semi synthetic - and Level 2: 20W-50 or 10W-40
Not any longer:

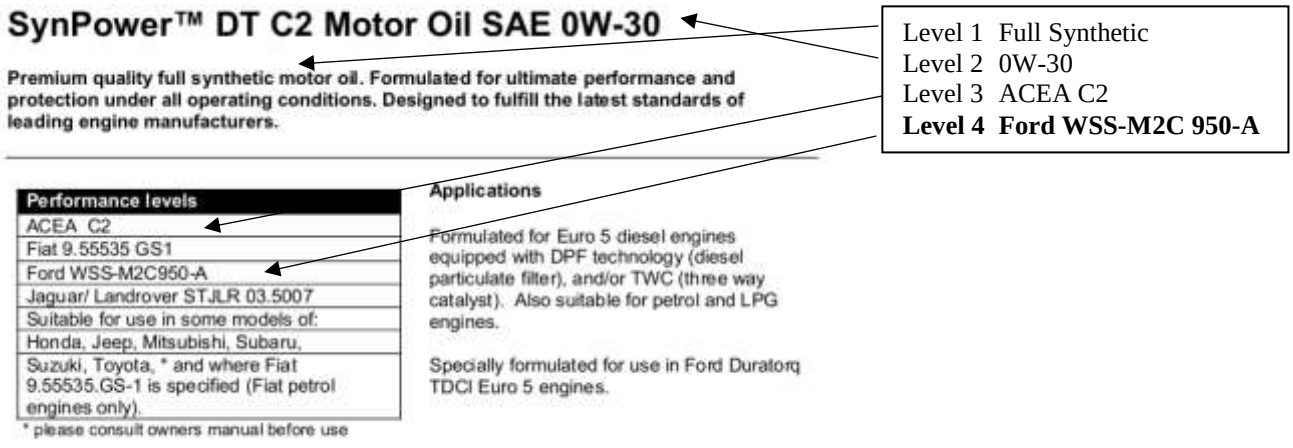
An example of two typical modern oils are the Ford and Peugeot Citroen 0W-30 oil specifications
Two deceptively similar, but different level 4 specification oils

Using the 4 level process:
Level 1 Both Fully Synthetic
Level 2 Both 0W-30
Level 3 Both ACEA C2
Level 4 Different specifications Ford WSS-M2C 950-A PSA B71 2312

Ford or PSA are not interested in Level 1,2,3 – (They have formulated their oils to incorporate the important parts of level 1,2,3)
However they are very interested that the correct level 4 oil specification is used.

A quick glance at the Valvoline specification sheet for the Ford and PSA 0W-30, gives us the 4 levels of information we need

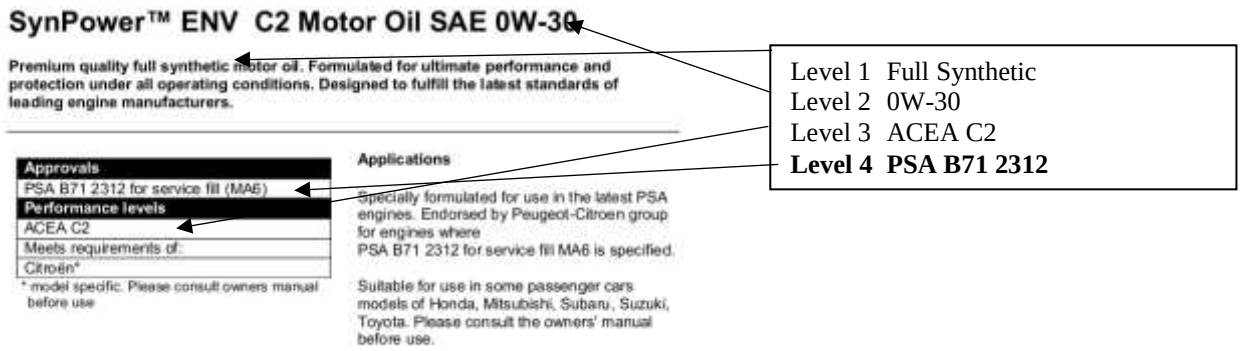
Ford 0W-30 Ford 0W-30



Ford 0W-30 Ford 0W-30

Level 1 Full Synthetic
Level 2 0W-30
Level 3 ACEA C2
Level 4 Ford WSS-M2C 950-A

Peugeot Citroen 0W-30



……Don't confuse the Ford 0W-30 oil with the Peugeot Citroen 0W-30

Level 1 Full Synthetic
Level 2 0W-30
Level 3 ACEA C2
Level 4 PSA B171 2312

……And these two modern 0W-30 oils are definitely not too confused with the 0W-30 that Volvo stipulated way back in the early 1990s

The only level that is correct in this ancient oil is the Level 2: 0W-30!

Volvo 0W-30 from the early 1990s

Level 1 Usually Semi Synthetic
Level 2 0W-30
Level 3 ACEA A5/B5
Level 4 No level 4 specification (or so old that it's not relevant)

I know from experience that this oil has inadvertently been used instead of the correct Ford / PSA oil!

Below are examples of current manufacturer specifications

Manufacturer specifications

For guidance only – always check the manufacturer lookup

BMW	BMW LL-04	BMW LL-12 FE 0W-30	BMW LL-14 FE+ 0W-20
Ford	WSS M2C 913 -A/B/C 5W-30	WSS M2C-913 – D 5W-30	WSS M2C-948-B Ecoboost 5W-20
	WSS M2C-950-A 0W-30	WSS M2C-934-A ACEA C1 5W-30	
Fiat	9.55535-M2	9.55535-N2	9.55535-GS1
	9.55535-S1	9.55535-S2	9.55535-DS1
	9.55535-S4		
Land Rover	STJLR 03.5003 5W-30	STJLR 03.5004 5W-20	STJLR 03.5005 5W-30 C1
	STJLR 03.5006 0W-20	STJLR 03.5007 0W-30 C2	STJLR 51.5122 0W-20 C5
Mercedes Benz	MB 229.52	MB 229.51	MB 228.51
	MB 229.71 0W-20 C5		
Peugeot Citroen	B71 2290 5W-30	B71 2312 0W-30	
Porsche	A40 0W-40 or 5W-40	C30 Diesel Engines	C20 0W-20
Renault	RN0700	RN0710	RN0720 ACEA C4
VAG	VAG 504/507	VAG 508/509	VW 505.01
Vauxhall	GM Dexos2	GM dexos1™ Gen 2	
Volvo	A5/B5 0W-30	RBSO- 2AE 0W-20	
ACEA Specifications	A3/B4 A5/B5	Low SAPS C1, C2, C3, C4, C5	Commercial E7 Low SAPS E6, E9
JASO Motorcycle	MA	MA2	MB