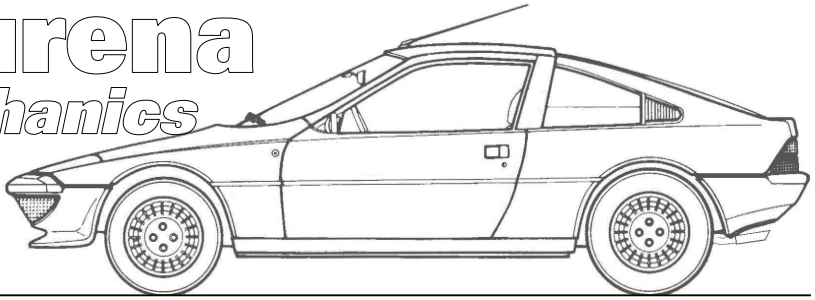
Murena mechanics



Roy Gillard

Wheels and Tyres

Any Murena owner, or anyone who has read the specs. will know it's slightly unusual compared to most conventional cars as it uses larger rear tyres and they require much more pressure than the front.

This is entirely normal for a mid-engined car and comes from the optimum design for this type. The rear tyres need to be large enough to take the weight, transmission power and provide the correct amount of grip and optimum ride and handling. However, the front of the car is much lighter and there is less demand without any drive, so using smaller front tyres reduces the unsprung weight which is important in car suspension design. The smaller tyres also allow a little more steering lock without them rubbing the inner wheel arch.

You only have to see any modern mid-engined racing car to see these use larger rear tyres, much larger admittedly for these extreme designs, compared to their fronts. Now a racing car will usually have larger rear wheels too, but for a road car this is not always necessary nor desirable if you consider the situation with the spare.

The Murena uses the same size wheels all round just with slightly larger rear tyres. On the original 1980 standard 1.6 model, which had steel wheels these sizes were: 5.5J x 13" wheels with 175/70x13 HR front and 195/70x13 HR rear tyres. The steel spare was fitted with a front tyre size. An option was four 6J x 14" alloys, fitted with 60 profile tyres in 185/60x14 HR front and 195/60x14 HR rear sizes. The front sized spare can be used on the rear if one gets punctured, but you need to be aware you are then driving a car with unequal rear tyres so you should drive at a reduced speed until you can get the correct rear tyre repaired or replaced.

As there is only 20mm extra width to a rear tyre, a rear will still fit in the front after changing it for the spare. Compare this with the situation faced by many car owners which have a 'space saver' spare with only just room for it. What do they do with the much larger wheel and tyre when they have a puncture? It certainly won't fit in the restricted space the that temporary spare came from!! At least Matra got that right.

When Matra introduced the more powerful 2.2 in February 1981 they fitted the previously optional alloy wheels and 60 profile tyres as standard to this model. This time the spare was also an alloy wheel, again with a front size tyre.

Tyres and ride height

Whilst the tyres on the alloys were close to the original in rolling radius, they are **not**

the same and this has an impact on the cars ride heights and in particular the front to rear stance, which is important.

The rolling radius of the 175/70x13 and the 185/60x14 are virtually the same - the latter being just 1mm greater. So far so good. However, the rear tyre disparity is 7mm and the 14" are smaller! So compared to a car on 13" steel wheels, the front of a car on 14" alloys is a fraction higher but the rear is a lot lower, altering the front to rear stance with a 'nose' up attitude, which is not good. Although the front suspension, being torsion bar, *could* have been adjusted down, there never was any set up difference made, nor listed in the workshop manuals. This time Matra got it wrong.

Some years later the 185/55 HR 14 tyre appeared on the market, and this tyre was 8mm lower than the original 13" front. With this fitted, the front to rear ride height balance on alloys was restored. We now had an 8mm drop at the front and a 7 mm drop at the rear. The attitude would be fractionally more 'nose' down which aids aerodynamics anyway, but so small a difference that it was the ideal front tyre.

The small difference of the 55 profile tyre compared to the 60 profile means the wheel will rotate fractionally faster for the same speed and since the speedometer is driven from the left front wheel, it will alter the speedometer slightly. However, the effect is so small as to be negligible and in fact it makes the speedometer read a fraction faster than originally. This means you will run a fraction slower at your speedometer readings, so you are on the safe side of true anyway! (speedometers are allowed by law to read up to 10% over true, but nothing below true, i.e. +10% -0%)

An additional benefit of using 55 profile tyres on the front is that the slightly smaller sidewall compared to the 60 profile, means they are slightly stiffer, so the steering and handling actually improves too. I have run these 55 profile front tyres now since they came out many years ago, and would not go back. In fact whenever I have driven someone else's Murena on the original 60 profile front tyres, it simply feels wrong and even less safe. I would say any Murena still on 60 profile front tyres should have the suspension adjusted down, at least.

You can use directional pattern tyres if you wish and can find suitable ones, since you are never going to change the wheels and tyres around. The fronts and rears are different sizes so cannot be swapped anyway, and unlike crossplies, radials should always remain rotating the way they have always rotated, so they should always stay on the same side. (forget any idea of wheel rotation as with really old cars)

What size spare?

I recommend you keep a 60 profile **symmetrical** pattern tyre on the spare wheel, because that gives you a wheel that can be used **either side** and is a reasonable compromise between the front and rear. It will be slightly taller than a 55 profile front and smaller than a 195 width rear, but it is only for emergencies... and it is still better than a space saver in my opinion!

So if you have some 60 profiles on the front and you wish to change them to 55 profile, do it whilst the 60 profiles are still reasonable, say 3mm tread depth, and keep those for the spare. There is little point in carrying around a new tyre on the spare that will hardly ever be used; so some part-used ones are ideal for that purpose.

In some countries such as Germany with the TUV, and France I believe, they insist that the car as presented for test must have the same tyres for which it was homologated. So 55 profile front tyres might not be acceptable even though they are more correct and safer. (if I was in one of these countries I would keep a pair of wheels with 60 profile tyres just for the test if they insist!) But I wonder how rigid this rule can be anyway.

What about the time when the homologated tyres are no longer available? What about tyres that are older than a certain age? If presented in winter with winter tyres fitted, they may have only a 'T' speed rating when the homologated tyres had a higher 'H' speed rating? There has to be some sensible acceptance and if not then they are stupid. This is supposed to be about safety. At least in the U.K. we view this with common sense and I have never had any test problems with 55 profile front tyres.

Tyre Availability

At the time of writing (2019) some tyres sizes for 14" wheels are getting more difficult or are only available in certain brands, at least from normal stockists, just as with the 13" tyres sizes some years ago. As previously with the Bagheera, if you want the correct tyre sizes and ratings, you may have to use Vintage Tyre Supplies or something similar in the future.

However there is something else to consider. We tend to prefer the well known brands that we have known for many years. and consider them superior to the newer brands possibly from the far east. Well that may have been true in the beginning as they had to learn but they are catching up fast, so don't always dismiss them out of hand.

The South Korean company Hankook is fast becoming a respected brand, whilst I have used some Nankang winter tyres on my Espace and found them perfectly good. So when looking for tyres, if you can only find the size you want in a brand you're not sure about, then try to find some respected reviews or other customer opinions before you dismiss them.

Tyres and pressures

One important point. If you alter the widths of the tyres from the recommended ones, beware that the pressures may need to alter, and not always the way some think.

Tyre pressures are mainly about the weight on them as much as anything. Think about the way you increase the tyre pressures if you have a fully laden car. If you increase the tyre size a lot some think the pressures must be increased too. But you have to consider the change in the contact patch area, because pressures are related to area!

Pressure is stated in pounds **per square inch** for instance, so if the area is increased the poundage to support a given weight is lowered. A wider low profile tyre with a flatter tread will most likely have an increased contact patch compared to the original tyre. Therefore the pressures in each tyre to support the same weight as previously, will be lower. You need to know what the new contact patch size is and how it relates to the original.

You also need to consider the use to which they will be put and their cost. You would not want a budget tyre on a car like a Porsche that can top 150 mph (in the right place and conditions) and equally there is no point buying extremely high priced high speed rated tyres for an 'econobox'!

I contend that any decent tyre should have good grip, because it is only through those four tyre contact patches that you have some control of your car. I strongly disagree with these low rolling resistance 'eco' tyres that are supposed to improve economy and therefore help with pollution control. Low rolling resistance means less friction and therefore less grip, which in turn means longer stopping distances! The chances are you will hardly notice the difference in fuel consumption anyway, but longer braking can be dangerous.

In the same vein when the temperature drops below 7 degrees centigrade the normal summer tyre simply loses its ability to grip as it becomes hard and cannot change its tread pattern shape easily. In comparison a winter tyre performs so well below 7°C that even if you're driving on snow and ice, it really feels like you're still on a dry road! I have been using winter tyres for some years and can verify this. However if you need more convincing, take a look at this short youtube video:
www.youtube.com/watch?v=atayHQYqA3g

Some countries in Europe quite rightly demand winter tyres, or chains, during certain months, but since we don't get much snow in the U.K. most of the time, except maybe in Scotland, we don't make them a requirement here. Yet I think we should recommend at least 'All Season' compounds if not winter tyres (or cold weather tyres which is possibly a better name for them) because our conditions are often below 7°C, wet and icy, and even if we don't have snow, these tyres would help. More importantly, if we do suddenly get some snow they would immediately help prevent all the usual problems we have of road blockages and accidents caused by cars with no grip.

If it was law then you would have to budget for two sets of tyres, but with two sets they would last roughly twice as long anyway so the main cost would be having them changed twice a year, unless you bought a cheap set of steel wheels to put the winter tyres on, which you could simply swap yourself. There is another option and that is to leave the winter tyres on all year round, which I have tried with really good results. The main problem with winter tyres in summer is slightly longer braking on dry roads, but no worse than these low rolling resistance tyres.

The reason is that the multitude of sipes necessary in a winter tyre compromise the grip on dry roads compared to the solid rubber patterns of a summer tyre, but they are getting better. For instance Nokian (who invented winter tyres) now have a good winter tyre with really good dry braking grip comparable to many summer tyres. Hankook, Vredestein, Goodyear and Continental all have some good all-season tyres and now Michelin have come out with a 'CrossClimate' tyre that has virtually summer tyre grip on an all-season tyre. So you can run these all year round *if* you can get them in the correct size.

Accidents During Winter

Research shows the frequency of vehicle damage insurance claims, increases sharply with the onset of the cold season. On damp or wet roads, tyres grip differently - and the braking distance is substantially longer, which means the question of the right tyres and the temperature is even more important. Braking on wet, snow or ice covered roads with cold weather tyres reduces the distance by vital metres. These can be the difference between stopping in time, or having that accident which could be lethal for some.

Braking Distances

A recent report from Tyre Safe showed test results comparing summer and winter tyres. In icy conditions, braking from just 20mph, a car shod with winter tyres stopped some 11m shorter. On snowy roads, from 30mph, the difference was 8m. That's one and a half to two car lengths!

A good website if you haven't seen it, is: **www.tyrereviews.co.uk** on which you can put in the tyre size and aspect ratio you are looking for, hit Search and it will list all the tyres currently available in that size. If you input 185/55x14 and 195/60x14 you might be surprised by the number of tyres available in each of these sizes.

When these cars were new you might have pushed them closer to their limits and wanted the best tyres you could get. Now they are approaching 40 years old, they are probably not driven anywhere near their limit, so tyres that are not actually the best but are still good will probably satisfy most owners. Also you have to consider that in published comparative tyre tests, hardly any are actually done using mid-engined cars, and all the tyres are always the same brand and tyre pattern, and often today on larger 16" to 18" diameter wheels.

For the Murena, you may have to use different front & rear tyres so any review has to be considered unrepresentative.

If you only use your Murena in the 'summer' months and you don't need any cold weather ability, then the choice is probably between Hankook and Uniroyal at the cheaper end to Michelin and Yokohama at the top end. Use an All-season tyre and you are probably going to choose the Vredestein Quatrac 5, whilst in a winter tyre the choice is between the Hankook at the cheaper end and the Continental TS860 at the top end. These are all highly rated.

I know many people only consider using the same (brand) tyres all round but because of the unusual requirements of the Murena this may not always be possible. Even with the same brand it might be that the front and rear use different tyre patterns to get the correct sizes. So it makes little difference then that you might have say Uniroyal one end and Kleber the other. As long as both are the same type (summer, winter or all-season) and have similar characteristics, then that maybe the best you will achieve. The tyre companies dictate what is available and we may have to accept a compromise.

After all, many Murena owners already are doing just that. Consider a 1.6 owner who has changed their car from 13" steel to 14" alloys and 70 profile to 60 profile tyres all round. As I have shown that alters to ride height incorrectly and gives a front high stance, which is not good.

Or consider a 1.6 owner who has uprated the power of their engine or fitted a 1.9 XU engine instead or the original 1592cc. They may have even changed the springs, shock absorbers and maybe the ride heights. They might be running close to the power of the original 2.2 or even more. All this has been done without having the proper facilities for testing and getting optimal set up.

Matra considered they needed to increase the rear track width for the 2.2 version, as well as alter the springs and shock absorbers all round. Yes some was due to the different power train and weights, but with all those modifications how many have rechecked their corner weighting anyway?

So an uprated 1.6 is using narrower rear track and probably not the ideal set up for the higher power. Driving this car will always entail a compromise owing to the unknown variables. All I'm saying is that adding another compromise in the way of different tyres front and rear is unlikely to make much difference at this point.

Importance of Tyre Pressures...
A small amount of maintenance pays great dividends in terms of safety too. Only well-maintained tyres perform fully and provide a comfortable ride. Tyres should be inspected regularly for cracks, cuts and bulges, and every four weeks check the pressure on the cold tyre to ensure optimum contact with the road. The old idea of low pressures in snow no longer applies either!
The Murena 1.6 tyre pressures are:
13" steel Front: 1.8 bar Rear: 2.1 bar
14" alloys Front: 1.8 bar Rear: 2.4 bar
The Murena 2.2 & 'S' tyre pressures are:
Front: 1.8 bar Rear: 2.5 bar
All these are for motorway speeds, but I believe that since the Murena can reach those speeds so easily that they should be considered the general settings.

...And Tread Depth
Double-check the tread depth too, because as this decreases, braking distances increase. It's a clear indicator of when to change your tyres - when summer tyres have only 3mm tread depth and winter tyres only 4mm their effectiveness drops off rapidly. Don't wait until they reach the 1.6mm legal limit.

All the tyres on 1.6 and 2.2 models should be 'H' rated (speeds up to 130 mph) but the 'S' had 'V' rated tyres (over 130) which they really didn't need. Now the only available VR rear's are MXV 3A at very high cost.

Be aware that the Murena wheels have only a 29mm offset. Most common wheels that fit this hub are from Fiat/Lancia/Alfa and they have a 38mm offset. If you use them they will **narrow** the track by 18mm!

Some Sobering Figures...
Drivers are **five** times more likely to skid in snow/icy conditions than on dry roads.

The number of accidents under wet road conditions increases by **267%** in winter.

There are over **6000** more accidents involving cars on the U.K.'s roads in winter than there are in summer.

Nearly a third of people have had a particularly bad experience whilst driving due to winter weather conditions.

60% of people feel scared or uneasy when driving in winter conditions.

Over a third of people have found themselves stuck on a journey due to winter conditions. Yet 65% of people spend less than £200 on preparing their car for winter driving.

75% of people would not consider fitting winter tyres... (*until, I would contend, they have experienced the difference, then their attitude changes!*)

So using all-season or winter tyres in the winter is definitely better. However, just remember, you may be able to drive much easier, but braking will still be limited so don't get over confident!

Thanks to Continental Tyres for the above accident and insurance data in this article.

Roy Gillard