



WHEELS & TYRES

SECTION GH

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GH.1 - GENERAL DESCRIPTION

The single piece, light alloy roadwheels are factory fitted with tyres engineered to provide the optimum balance of ride and handling characteristics. In order fully to exploit the dynamic qualities and packaging opportunities, the wheel and tyre sizes are different front and rear, so that interchanging of wheels and tyres between axles is not permissible. Note that the tyre tread pattern of both tyre types is directional, and must be fitted on the wheel with sidewall arrow pointing in the direction of forward rotation.

The tyres should be inspected frequently by the vehicle user, and also at every service, for signs of cuts, abrasions or other damage, and for any uneven tread wear patterns. Uneven treadwear may indicate that the suspension geometry or dampers require attention. Care should be taken when parking to avoid tyre contact with high or sharp edged kerbs, as mistreatment of this nature can cause internal damage to the tyre structure which may not readily be apparent. The alloy wheel rims may also be distorted or damaged by careless parking, and result in wheel imbalance or loss of tyre pressure. Safety considerations should always be paramount when assessing tyre condition and serviceability, and the tyres replaced if any doubt exists, or if the legal tread depth limits are approached.

The cold tyre pressures should be checked every week, or every 1,000 miles (1,700 km), whichever is the sooner, and corrections made as necessary. Under-inflation will cause excessive wear, rapid deterioration of the tyre sidewalls and heavy steering, whereas overinflation results in a hard ride and increased susceptibility to tyre damage. Both conditions will cause a degradation in the vehicle handling qualities. It is important that the tyre pressures are adjusted only when the tyres are cold (driven less than one mile), as the pressures may increase by 0.3 - 0.5 bar (4 - 8 lb/in²) when the tyres are warmed to normal running temperature. The tyre valve dust cap should always be replaced in order to prevent the ingress of dirt and moisture into the valve, which could cause leakage.

When balancing the wheel and tyre assemblies, the wheels should be located by the centre spigot - NOT by the wheel bolt holes. In order to maintain the correct handling feel and minimum steering wheel shake, it is very important that the radial and lateral run out of the tyres are to the high standard required by Lotus Cars. If any difficulty is experienced with replacement tyres, refer to the tyre manufacturer.

The Bridgestone Potenza, Yokohama AD07 or Yokohama A048 tyres fitted to the Elise are suitable for all normal weather conditions, but are optimised for dry road sports driving. The tyre characteristics include good feedback ('feel') from the road surface to the steering wheel, a high level of steering linearity and response, and little performance degradation with the high temperatures which may be reached on track. However, tyre performance will decrease at low ambient temperatures, resulting in reduced levels of grip and an increased susceptibility to damage from impacts. In these conditions, especially below 15°F (-10°C), it is recommended to fit a vehicle set of the recommended winter tyres (see below).

GH.2 - WHEELS

Elise: Standard wheels on the Elise 111R and Elise for North America, are the same style and rim sizes as used on the Rover powertrain Elise 111S; Cast alloy 8-spoke in 'high power' silver, 5.5Jx16 and 7.5Jx17. The rear wheels of Toyota powertrain cars however have a greater inset (38mm vs. 17.75mm) to compensate for the suspension pick up points having been moved further outboard. In addition, the wheels have been tested and approved to a higher load rating, and whereas Rover powertrain cars may use the later 'B' level front wheels, no Toyota powertrain model should be fitted with the earlier type 'A' level front wheel. For identification, refer to the 'max. load' rating marked on the inside of a wheel spoke: 'A' level = 230 kg; 'B' level = 255kg.

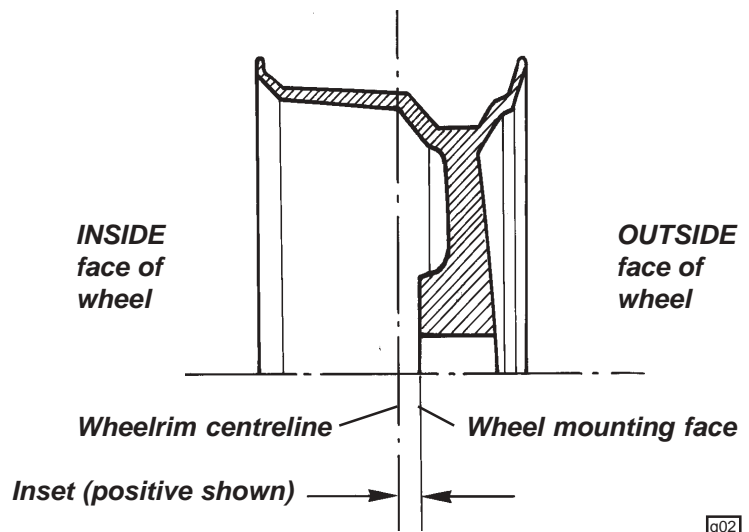
Exige: These models use unique, black finished wheels featuring 8 twin-spokes, and are fitted with wider, 6.5J front wheel rims to accommodate the wider A048 front tyres.

Option: Optional wheels on Exige, and as part of the Elise Roadsport package, are unique lightweight forged alloy, 7-spoke design, using the wider front rim size. These wheels are available in either painted or natural anodised finishes, but it is important to be aware that the natural anodised surface finish may be attacked by some proprietary wheel cleaning products. Wash only using hot soapy water or car bodywork shampoo. Advise tyre fitting companies accordingly.



Type	- Std.	- Elise	Rimstock, cast alloy, 8 spoke, Hi-power Silver
		- Exige	Rimstock, cast alloy, 8 twin-spoke, Black
	- Option		Rimstock, lightweight forged alloy, 7 spoke, Silver painted or natural anodised finish.
Front wheel max. load rating			255 kg
Size	- front	- Elise	5.5J x 16
		- Exige, Roadsport Elise	6.5J x 16
	- rear		7.5J x 17
Inset	- front		+ 31.3 mm
	- rear		+ 38.0 mm
PCD			100 mm
Wheel bolt torque			105 Nm (77.5 lbf.ft)
Centre spigot hole diameter			56.5 mm
Radial run-out at bead seat			0.3 mm max.
Lateral run-out at bead seat			0.3 mm max.

Note that the inset figure is the displacement of the wheelrim centreline relative to the wheel/hub mounting face. A positive inset indicates that the wheelrim centreline lies inboard of the wheel mounting face, whereas a negative inset means the wheelrim centreline is outboard of the mounting face.

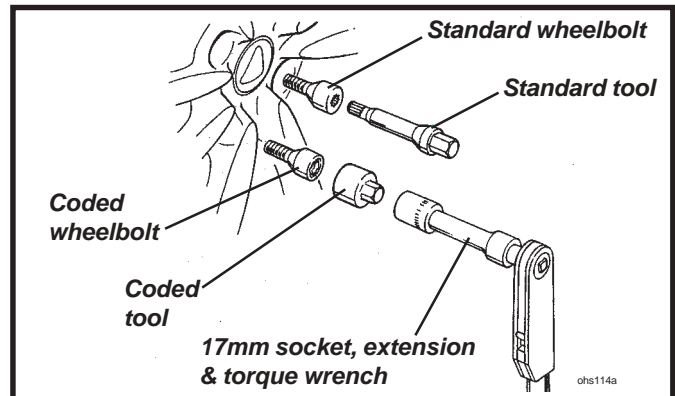


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Wheel Bolts

The wheel bolts used are of a special design to suit the small diameter fixing tunnels in the wheel centres. The bolts have an M12x1.75 thread, 60° conical seat, and a 10 spline socket head for which a special extension tool is supplied with the car.

A 17 mm a/f **deep** socket and 1/2 inch square drive wrench should be applied to the extension tool, with a tightening torque of 105 Nm required.



To protect against wheel theft, one of the four bolts securing each wheel is key coded, and requires a corresponding coded extension tool. Rotate the tool until full engagement into the bolt head is ensured before applying release torque. Note that an alignment mark is provided on the coded bolt head and tool to aid refitting. Both the standard and coded spline drive extension tools are stowed in the vehicle tool kit, and should remain with the car at all times to allow servicing to be performed.

A sticker with the code number is supplied with the vehicle for safe keeping by the vehicle owner. This code will enable dealers to order a replacement coded extension tool if necessary. It is the responsibility of the dealer to verify the legitimacy of any customer request for a coded tool. Typical security code; FEOR17025



GH.3 - TYRES

Elise 111R: Lotus engineers have worked with the tyre manufacturer Bridgestone, to produce a version of the 'Potenza RE040' tyre specifically for the Lotus Elise 'Mk.2' including Elise 111R, to optimise performance on both road and track. This tyre is identified by the construction code element of the DOT code moulded on one of the tyre sidewalls, and it is most important that ONLY this version is fitted if the correct handling characteristics are to be maintained.

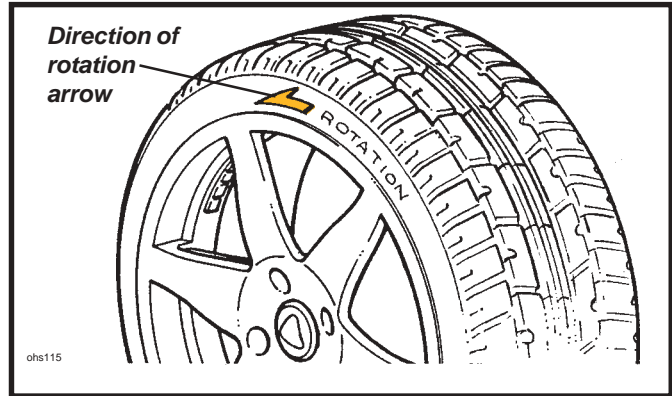
D O T # # # # D C K # # # #

Front tyre code = CFE Rear tyre code = DCK

At the introduction of the 111R, the speed rating of the tyres was uprated from 'V' to 'W', without any physical change to the construction. For legal reasons, only tyres marked with a 'W' rating should be used on the 111R.

Wear indicators are moulded into the bottom of the tread grooves at intervals around the tyre, indicated by small pointers on the outer tread blocks.

The tyres should be replaced before being worn to this minimum legal tread depth. Note that the 'Potenza' tread pattern is directional, so that the tyre must be fitted onto the wheel with regard to which side of the car the wheel is to be fitted. A direction of rotation arrow is included in the tyre sidewall markings.



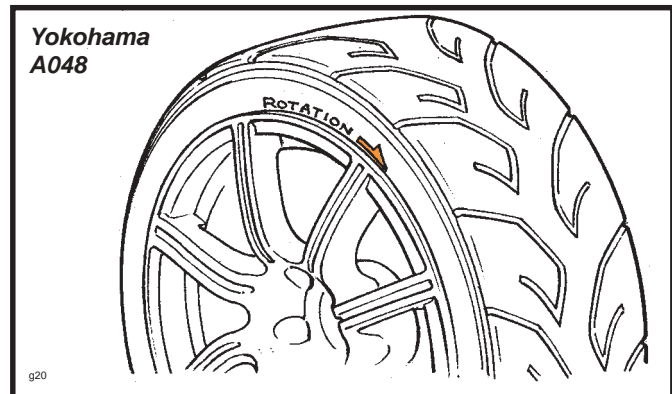
Tyre type	Bridgestone Potenza RE040
Size - front	175/55 R16 80W
- rear	225/45 R17 90W
Identification code (see above) - front	CFE
- rear	DCK
Pressure (cold) - front	1.8 bar (26 lb/in ²)
- rear	2.0 bar (29 lb/in ²)

Exige & Roadsport Elise: These models are fitted with Yokohama A048 tyres, which have been developed jointly by Lotus and Yokohama to suit the requirements of the performance driver, with special emphasis on track use.

Compared with the standard tyre, the front tyre width is increased and the profile reduced from 175/55 to 195/50. The tyre tread design is directional, such that each wheel/tyre assembly is dedicated to a single vehicle corner.

On Elise models, in order to maintain sufficient vehicle stability with these track based tyres, Lotus approves of A048s only as part of the complete 'Roadsport' package. The tyres should not be fitted on standard specification wheels, or with standard suspension.

The Lotus specific construction is identified by the letters 'LTS' moulded on the tyre sidewall. Ensure that any replacement tyre is so marked.

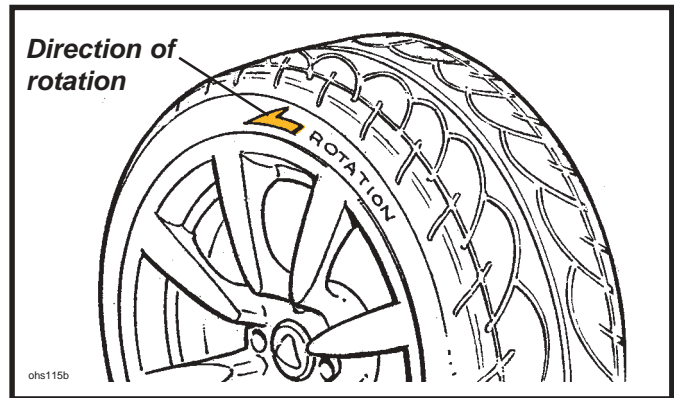




Type	Yokohama A048 'LTS'
Size - front	195/50 R16 84W
- rear	225/45 R17 90W
Pressure (cold) - front	1.8 bar (26 lb/in ²)
- rear	2.0 bar (29 lb/in ²)

Elise North America: These cars are fitted with Yokohama AD07 tyres developed specifically for the Elise, and are optimised for dry road sports driving. The Lotus specific construction is identified by the letters 'LTS' moulded on the tyre sidewall. Ensure that any replacement tyre is so marked.

Note that the AD07 tread pattern is directional, so that the tyre must be fitted onto the wheel with regard to which side of the car the wheel is to be fitted. A direction of rotation arrow is included in the tyre sidewall markings.



Type	Yokohama Neova AD07
Size - front	175/55 R16 80W
- rear	225/45 R17 91W
Pressure (cold) - front	1.8 bar (26 lb/in ²)
- rear	2.0 bar (29 lb/in ²)

Tyre Characteristics: All standard equipment tyres fitted on the Elise are suitable for all normal weather conditions, but are optimised for dry road sports driving. The tyre characteristics include good feedback ('feel') from the road surface to the steering wheel, a high level of steering linearity and response, and little performance degradation with the high temperatures which may be reached on track. However, tyre performance will decrease at low ambient temperatures, resulting in reduced levels of grip and an increased susceptibility to damage from impacts. In these conditions, especially below -10°C (15°F), it is recommended to fit a vehicle set of the recommended winter tyres (see below).

GH.4 - WINTER TYRES & SNOW CHAINS

If the car is to be used in very cold territories, or driven on snow covered roads, it is recommended to fit winter tyres developed specifically for such conditions.

Winter Tyres

Type - front	Pirelli 210 Snowsport
- rear	Pirelli 240 Snowsport
Size - front	195/50 R16
- rear	225/45 R17
Pressure (cold) - front	1.8 bar (26 lb/in ²)
- rear	1.9 bar (27.5 lb/in ²)

WARNING:

- **When winter tyres are fitted, a maximum speed of 118 mph (190 km/h) must be observed.**
- **The tyres are NOT suitable for studding.**

Snow Chains

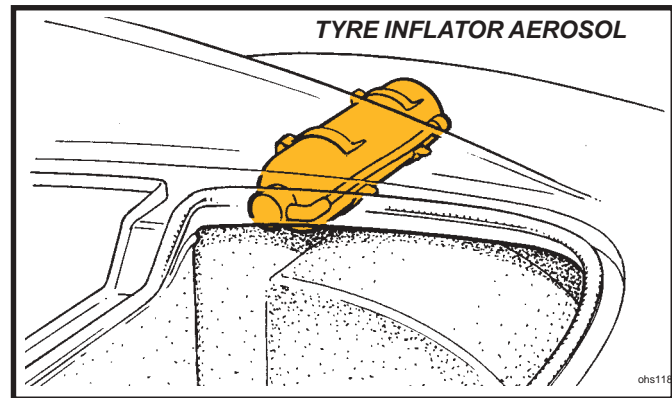
In extreme conditions, Lotus approves the fitment of Pewag Neon X3 - NX 373 snow chains, used only in conjunction with winter tyres (see above) and fitted on only the rear wheels. Close attention should be paid to the fitting and tensioning instructions supplied with the chains, and the chains should be removed as soon as road conditions allow.



GH.5 - PUNCTURED TYRE EMERGENCY INFLATOR (If fitted)

In order fully to exploit the benefits of light weight, and to maximise stowage space, no spare wheel is included in the Elise specification, but a temporary puncture repair facility is provided in the form of a tyre inflator aerosol. The aerosol is mounted in spring clips at the extreme right hand front corner of the rear luggage compartment.

When the aerosol is connected to the tyre valve, and the button pressed, a mixture of liquid latex and propellant is injected into the tyre, such that the solidifying latex is forced into the puncture site at the same time as the tyre is inflated, effecting a temporary repair and enabling the car to be driven at moderate speed to the nearest tyre depot.



WARNING:

- Use of the aerosol does not constitute a permanent repair, but is designed to allow the car to be driven to the nearest tyre depot. At the earliest opportunity, the tyre should be professionally repaired or replaced dependent on the severity of the damage.
- Until the tyre is repaired or replaced, the car should be driven in a moderate manner, not exceeding 30 mph (45 km/h).
- Do not use the aerosol for large holes or repairs, or when the tyre sidewall has been damaged, or if the tyre has been displaced from the rim.
- For safety reasons, the aerosol should be carried at all times in the designated stowage position. Never carry in the passenger compartment.

As soon as a puncture is suspected, the car should be stopped at the first safe opportunity. Continued driving on a deflated tyre will cause irreparable damage to the tyre.

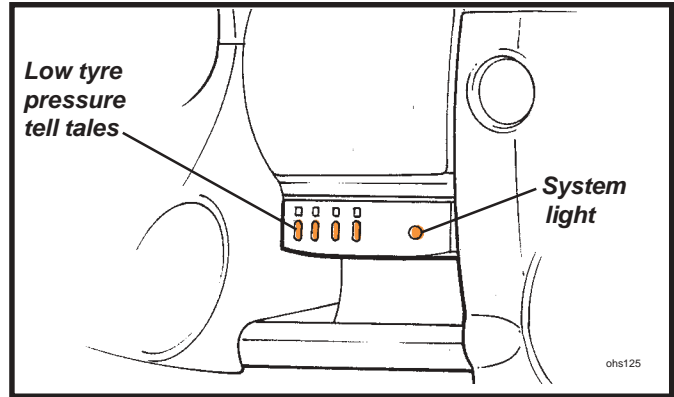
Directions for use of the aerosol: Before using, carefully read all the instructions on the canister, or on any literature accompanying the product. The following instructions apply to the use of Holts Tyreweld:

1. Remove the object causing the puncture, and position the wheel with the puncture site lowermost. Deflate tyre fully.
2. Shake the can vigorously. In cold conditions, warm the can using the car's heater outlets, or by body warmth.
3. Screw the aerosol tube onto the tyre valve, remove the cap, hold the can upright and press the button until the tyre is firmly inflated.
4. Immediately drive for 6 - 12 miles (10 - 20 km) (or to the tyre depot if nearer) in a moderate manner and not exceeding 30 mph (45 km/h), to allow the sealant to spread. Then check and adjust the tyre pressure as necessary.
5. Have the tyre professionally repaired or replaced at the earliest opportunity, and until such time, limit speed to 30 mph (45 km/h) with a moderate driving manner. Note that some tyre repairers may make an additional charge for cleaning the sealant off the tyre before repair, and that any subsequent repairs may not be guaranteed. If the vehicle is equipped with low tyre pressure monitoring equipment, be aware that the pressure sensor mounted inside the tyre, could be obstructed by the sealant, and should be replaced at the next opportunity.
6. Renew the puncture repair aerosol.



GH.4 - LOW TYRE PRESSURE ALERT/WARNING

As part of the factory fit roadsport suspension package, each forged alloy roadwheel is equipped with a pressure monitoring sensor which transmits a radio signal to the display unit mounted above the fascia tray outboard of the steering column. In order to attract the driver's attention to the display, a tyre icon tell tale in the instrument cluster will light up amber whenever an alert or warning signal is received. The system provides for two levels of driver notification of pressure loss - an initial 5 psi drop 'alert', followed by a 10 psi drop 'warning' if pressure loss continues.



The display incorporates four colour marked LEDs, one of which will light up red if the pressure in the tyre to which it is linked falls below 21 psi (front) or 23 psi (rear). An audible beep will sound once as an additional alert.

If pressure falls further to below 16 psi (front) or 18 psi (rear), the LED will flash continuously and the audible alarm will beep for 5 seconds, repeating every minute. For full operating instructions, refer to the separate booklet supplied by the system manufacturer, SmarTire.

The colour coding of the LEDs is as follows:

- Green; Right front tyre
- Red; Left front tyre
- Blue; Right rear tyre
- Yellow; Left rear tyre

This coding is also annotated by a coloured ring around each tyre valve stem. Be aware that if the emergency tyre inflator aerosol 'Tyreweld' or similar product is used, the pressure sensor mounted inside the tyre, could be obstructed and should be replaced at the next opportunity.

After sensor replacement, the receiver must be programmed to recognise the new sensor using a SmarTire FFD (Full Function Display) unit, part number A117M6067F and the instructions supplied therewith. This part, which plugs directly into the dash mounted receiver after unclipping the graphic panel from the standard display unit, features enhanced functionality including individual tyre pressure and temperature read-outs.

Note:

- When an FFD is fitted, the tell tale in the instrument cluster is no longer operative.
- The battery powered sensors have a life expectancy of 5 - 8 years or 150,000 miles.