BL Motorsport Memorandum

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SOLIHULL

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At ABINGDON

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TR8 MODIFICATIONS

PURPOSE

A green TR8 registration number NWK988W from Solihull has been subject to both engine and suspension modifications at B L Motorsport, Abingdon. The purpose of this was to present alternative engine and chassis specifications for, the UK and European Sports Car Market.

ENGINE MODIFICATIONS

All following modifications were carried out on a standard TR8 V8 unit as fitted in test vehicle.

1. **Compression ratio raised from 8.31:1 to 9.35:1 by fitting current SD1 V8 pistons.**
2. **Standard camshaft replaced by 'WL9' Motorsport camshaft and valve spring assemblies.**
3. **Zenith-Stromberg carburettor fitted with alternative fuel control needle to suit 'WL9' camshaft.**

The engine will be tested on the rolling road in Jan when it returns to Abingdon with more running-in completed.

CHASSIS M0DIFICATIONS

The following modifications have been carried out so far and are felt to have improved the car. Final 'tuning' of our proposed specification will be made in Jan 1981 after initial comments from Solihull test mileage.

FRONT BRAKES

A Ventilated Brake Disc Kit was fitted using Ferodo DS11 pads this has improved the standard braking significantly and is virtually fade-free from repeated high speed stops. The kit was developed by Brian Owen at Abingdon in conjunction with John Moore at Automotive Products (Racing) Leamington.

Automotive Products would be able to supply in quantity.

These brakes will only fit the car with Alloy wheels.

FRONT SPOILER

A rally TR7 V8 spoiler was fitted, with small modifications to fit under the bumper. This is a GRP moulding made for us by Albert Coates in John Cooper's 'Plastics Development' area at Solihull.

The spoiler has proved very robust, but for extra durability a flexible polyurethane moulding was planned for the (now scrapped) 1981 rally TR8.

Wind tunnel testing at MIRA during rally car development indicated that this spoiler should reduce front lift by between 10 and 30%. This assists straight line and cross wind stability which was found to be a problem. Engine cooling should also be improved.

FRONT SPRINGS

These were as set up for the 1979 Donington Rallysprint cars i.e. TKC 3088 (blue) springs lowered 25 mm by heating one coil. Actual spring specification will be established by removal and measurement in Jan. A properly made and heat treated pair will be made for final presentation. A further 10 mm reduction of trim height is envisaged for this final presentation.

FRONT DAMPER INSERTS

The standard car seems to suffer from under damping especially on rebound. This causes a large amount of pitch over bumps even on 'smooth' motorways and causes large variation of tyre/ ground contact force.

Dampers with approximately 25% more bump and 50% more rebound £force were considered but since we had already units with 25 and 100% extra these have been fitted at present. Armstrong are willing to make a set of trial units to our specification.

FRONT SUSPENSION

The standard car suffers badly from nosedive under braking which is uncomfortable, reduces braking stability and causes large variations in headlight range. To reduce this an extra packing piece UKC 9883 is fitted between roll bar clamp ~ sub frame. The standard bolt is long enough to allow this. UKC 9883 does not appear in our parts lists but seems to be £fitted on the cars. The proposed extra reduction in trim height will further reduce brake dive.

The standard car also suffers badly from compliance in the track control arm/roll bar joint. To reduce TCA movement and caster change under braking, a hard polypropylene bush is used behind the TCA. This is similar to the standard part UKC 208 but with approximately 70 shore

hardness. This modification also greatly assists straight-line stability as there is considerable fore/aft motion of the wheel over bumps.

Rally experience shows that a completely revised joint giving far less compliance would provide very significant improvements in handling and braking. It is not anticipated that this would give a large increase in road noise transmitted to the body since there is already rubber in the roll bar and TCA transmission paths to the sub frame, which itself is rubber mounted to the body.

STEERING

No changes have been made in this area but bump steer checks will be carried out before final presentation. My personal impression of the steering is that it gives a very good balance between steering effort and feel which suits the car well. Steering ratio is good for road use.

Congratulations to whoever developed this.

REAR SPRINGS

The first set of springs tried were TKC 2404 lowered by approximately 25 mm. These worked well but have settled further and given problems of bottoming on the bump stops.
The springs originally fitted were then lowered by 25 mm, and subsequently by a further 12 mm. These seem to have a higher rate than the first set but the MG closure has temporarily left us without testing facilities.

As with the Front Springs a properly made and heat treated pair of springs will be fitted for final evaluation.

REAR SHOCK ABSORBERS

The standard units seem to be about right on bump setting but, as the front, lack rebound capacity. Some adjustable units have been fitted to the rear and are set to give a good compromise between ride and handling.

The bump setting at the rear has a very great effect on ride comfort, the occupants being close to the rear axle and any large increase over standard bump makes the ride harsh.

Armstrong are willing to make a set *of* trial units, testing the adjustable units to arrive at the required setting.

REAR SUSPENSION

To reduce compliance (and hence steer and tramp) the 'windowed' lower link bush has been replaced by standard Dolomite and
TR7 Part 149827. The 4 upper link bushes have been replaced

by Motorsport tuning parts for Dolomite - Part No STR 0018.
These bushes are similar to the standard bush but with shore hardness increased from 45 to approx 65-70.

Stiffening the bushes does not seem to give an unacceptable
increase in transmitted noise - especially in this soft top version.

The mounting in the body for the lower trailing link has been raised by 25 mm. This considerably reduces the rear end 'squat' which is very evident on acceleration in the standard car. Traction is considerably improved and the standard tendency for axle tramp is reduced.

REAR BRAKES

Alternative brake lining material (VG 95) was fitted to reduce fade. This material is readily available from Ferodo.

TYRES

The car was fitted with 185-70/13 Goodyear tyres. These do not give particularly good grip, especially in the wet. From our experience with Michelin TRX tyres these can give improved ride as well as cornering power. The ride properties of the tyre would help to counterbalance any extra harshness from stiffer suspension. The extra handling performance will enhance the car's already high cornering power and make it safer.

John Re at Canley has or will have some fabricated wheels to try TRX tyres on a TR7 but they may not fit on the ventilated brake hubs. Michelin are to provide some suitable wheels and tyres in late Jan for test purposes.

Contact at Michelin - Dave Taylor (0782 48101 Ext 241).

Richard Hurdwell Engineering Liaison

RH/AM