

Motorsport



Group 'N' Rally Preparation Manual



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This publication covers parts available for the Ford Escort RS Cosworth. Ford Motor sport continues to work on the design and development of new parts for Escort Cosworth 4x4 motorsport cars. These will initially be announced in Ford's PERFORMANCE NEWS service, but will then be included in the next issue of this publication.

Note: Finis Codes identified with an asterisk (*) are standard Ford Production car items, and should be ordered through any Ford dealer, who will acquire them either from Daventry in the U.K. (U.K dealers) or from Merkenich in Germany (Ford dealer in Europe).

DISCLAIMER

In certain countries some Ford Motorsport parts, installation, and recommended changes in this manual may not meet national type approval laws or construction and use regulations. At all times it is the responsibility of the customer to ensure compliance in a particular country. The eligibility of any part for use in Motorsport must be determined, by the customer, by reference to the relevant up-to-date homologation form, and (where applicable) championship regulations.

Ford cannot accept responsibility for any problems arising from failure to comply with these recommendations.

ESCORT RS COSWORTH GROUP 'N'



The Ford Escort RS Cosworth was Homologated into group 'A' and 'N' on Jan. 1st 1993. This publication details the modifications necessary or recommended for group 'N' competition. It should be read in conjunction with the F.I.S.A. yearbook and bulletins for international events. A copy of the standard workshop manual "Ford Sierra RS Cosworth and Escort RS Cosworth" (order code No CG1503/EN) is also useful and can be ordered via a Ford dealer, this covers normal service and repair procedures. The Homologation number for group 'N' is N5466.

Ford Motorsport have developed and tested the Group 'N' Escort during 1992. The car has been driven by Ford Works Drivers on Tarmac at Boreham and in Wales, and on gravel in Wales, Yorkshire and Cordoba in Spain. A wide range of parts have been tested in all conditions to determine component 'Life' as well as performance. Where possible an indication of safe working life will be shown as a guide, but it must be stressed that this varies widely with conditions and driving technique. In any case, every critical component should be checked regularly during the event, and replaced if wear or damage is evident. A system of preventative maintenance will help avoid costly failure.

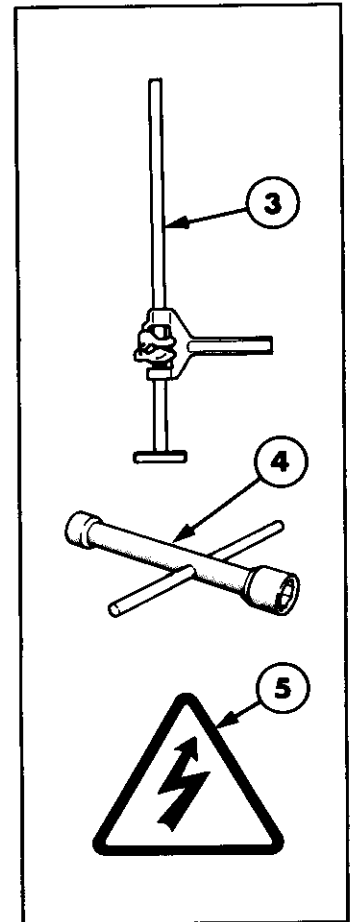
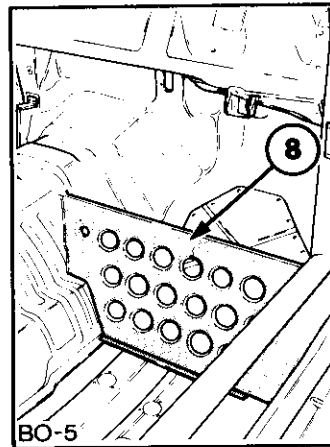
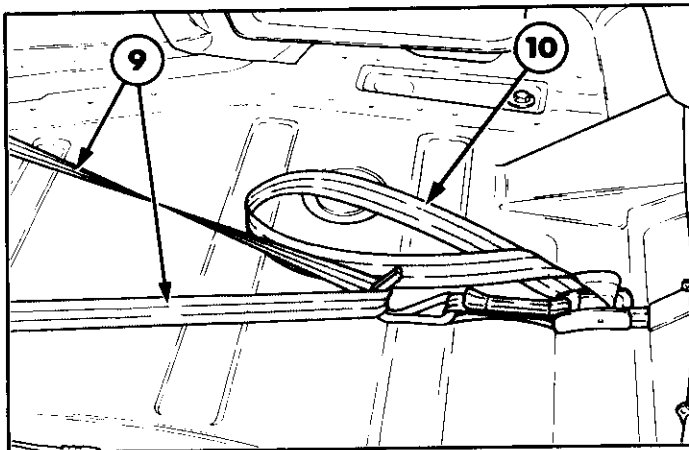
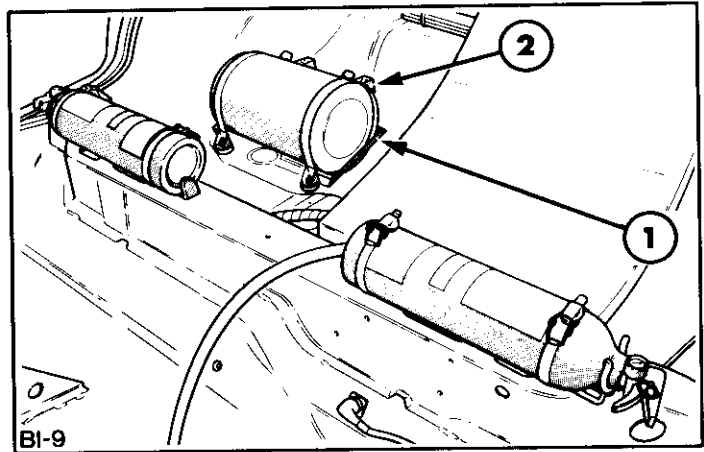
The Escort RS. Cosworth is based mechanically on the Sierra RS Cosworth 4x4 with minor changes to engine and driveline. The bodyshell is unique, with interior trim based on the Escort model range. The 'Roadsport' version is sold without radio, sunroof and electric windows to provide an ideal base vehicle for the competitor. The front spoiler incorporates an airsplitter which should be retracted for use on gravel and extended for Tarmac/race. The optional fog lamps can be fitted - there is no cooling advantage to be gained in fitting the grilles in group 'N'.

It is recommended that users register with the Ford Motorsport 'Performance News' service by contacting:
 Graham Robson
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 Bridport, Dorset DT6 4QFUK
 Fax: 0308 897416.

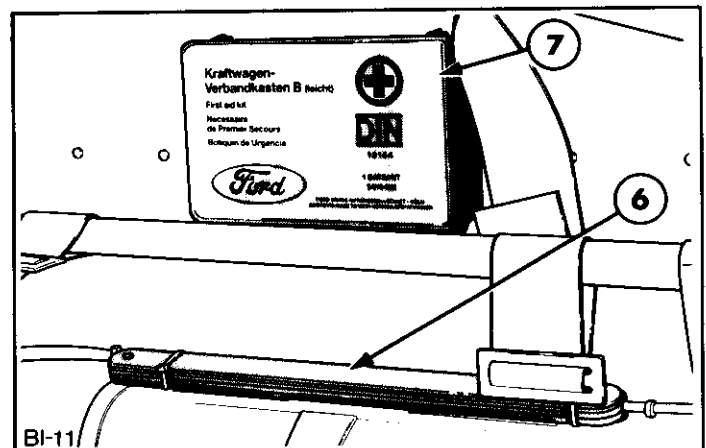
FISA recommend an automatic 'plumbed in' extinguisher system of 71/2KG. (2.5kg cockpit, 5kg engine). The system should be "powder or an agent of similar efficiency and non-toxicity". Currently, halon 1211 or 1301 (BCF-BTM) is common. New regulations concerning extinguishants are currently under review by FISA.

In addition, the car must be equipped with one or two hand held bottles containing 4kg minimum extinguishant.

Rally cars must carry First Aid kit and warning triangles in most European countries to comply with traffic laws.



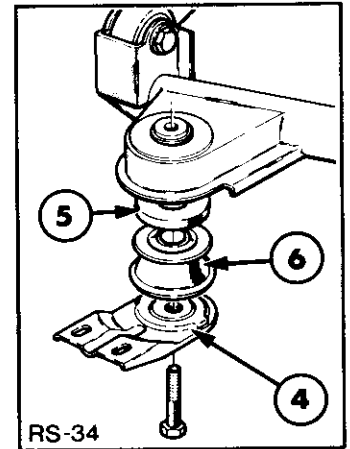
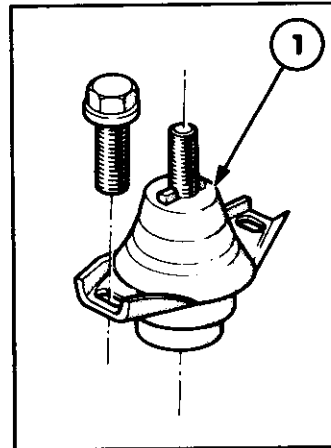
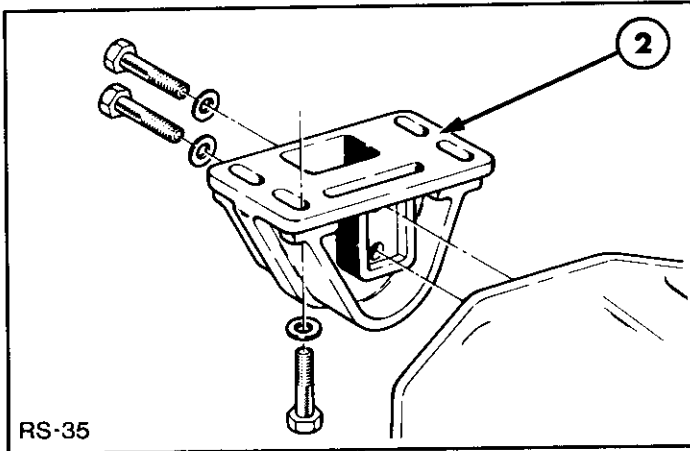
Description	Finis Code	Comments	Qty.
1 Bracket, Fire Extinguisher	9092884		2
2 Strap, Fire Extinguisher	9092938		2
3 Jack, Short, (Quicklift) Complete with Handle	9091324		1
4 Wheelbrace - High Speed Spinner Type	9090628		1
5 Decal - Ignition Cut - Out	9092875		1
6 Warning Triangle	*5027194		1
7 First Aid Kit	*5010466		1
8 Footrest LHD	9095258	Kevlar (alt.)	1
9 Spare Wheel Strap	9090630		1
10 Spare Wheel Strap	9090631		1



It is important to check the front and rear engine mounts regularly on rough gravel events or where the car is jumping.

The standard engine mount heatshield must be fitted on the R.H.S. near the turbocharger to avoid heat damage to the rubber and consequential failure.

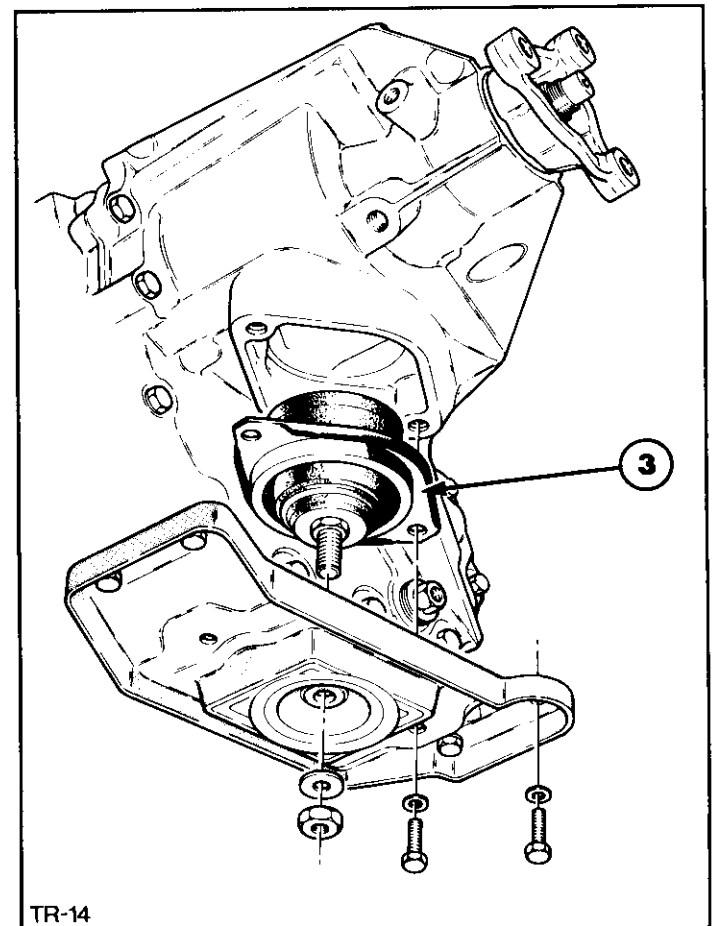
Engine mount failure can cause the driveshafts to pull out. Ensure the bolts to the engine block are as long as possible and correctly torqued, as block castings can crack.



Description	Finis Code	Comments	Qty.
1 Insulator Engine Mount	9095171	'Selected'	2
2 Insulator, Rear Diff..	9094679	'Selected'	2
3 Insulator - Engine Rear	9094771	'Selected'	1
4 Plate Assembly, Rear Suspension Steady	9094799	Reinforced	2
5 Reinforcement, Body to Rear Crossmember	9094694	Weld to bodyshell	2
6 Insulator - Rear Beam	9094678	'Selected'	2

Torques

1 Front Engine Mount to Arm	90 Nm
2 Engine Mount to Front X MBR	55 Nm
3 Rr Axle Mount to Axle	50 Nm
4 Rr Axle Mount to Floor	25 Nm
5 Transmission Mount to X MBR	65 Nm
6 Rear Beam Mountings	88 Nm



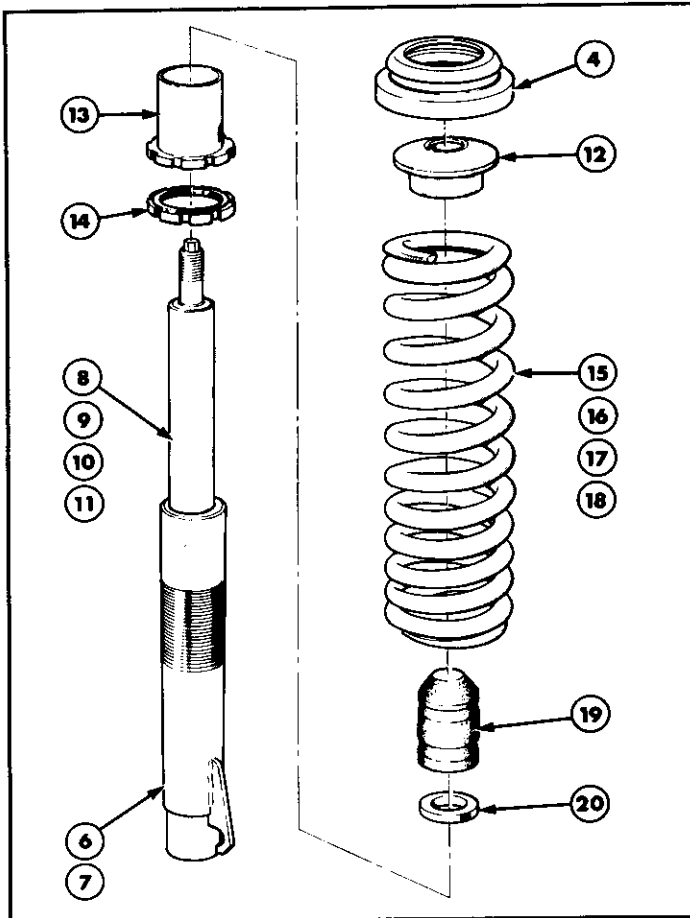
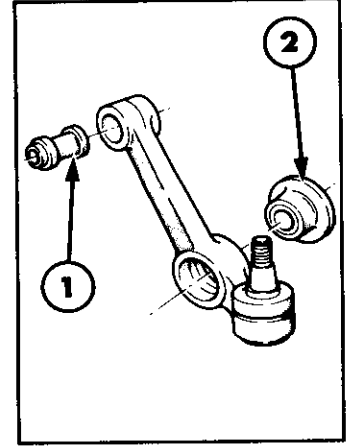
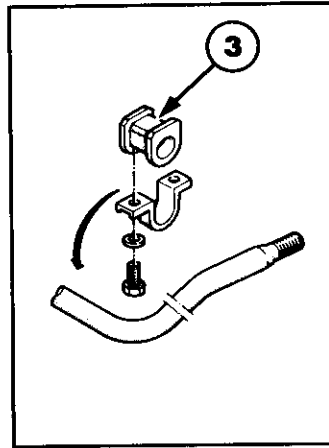
The standard front anti roll bar is 29mm on the Escort. The roll bar nuts must be checked for tightness regularly. The ends can be drilled and fitted with 'R' pins for added security. Tighten suspension bolts when car is on the ground to avoid 'wind-up', in the bushes.

Track control arms and upright castings must be changed frequently - as any wear can cause failure of the T.C.A. ball pin.

Front hubs should be checked regularly and renewed after 500km. Shotpeening will help to avoid fatigue cracking.

Front bumpstop length is critical to the handling of the car (see spec. sheets).

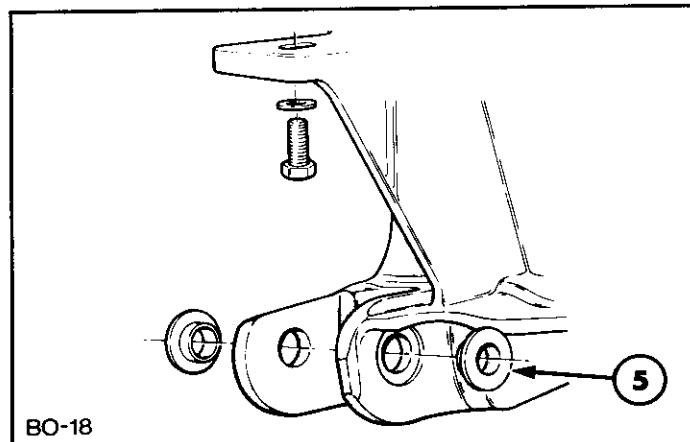
Ensure the crossmember bushes (5) are flush with the inside face of the crossmember or the TCA will jam in position making removal difficult.



Description	Finis Code	Comments	Qty.
1 Bush, Track Control Arm, Inner	9092364	'Selected'	2
2 Bush, Track Control Arm, Outer	9092349	'Selected'	4
3 Bush, Anti-Roll Bar Mounting	9092347	'Selected' Suits 29mm anti-roll bar	2
4 Mounting, Front Suspension, Upper	9095389	'Selected'	2
5 Bush, Crossmember To Track Control Arm	9094758	Press into crossmember	4
6 Body, Front Strut or	9095488	Optimised camber	2
7 Body, Front Strut	9094682	Gravel and tarmac (Alt.)	2
8 Insert, Front Strut	9094683	Gravel 360/140	2
9 Insert, Front Strut	9095479	Gravel 380/160	2
10 Insert, Front Strut	9095161	Tarmac 500/200	2
11 Insert, Front Strut	9094860	Tarmac 325/150	2
12 Upper Spring Seat	9095502		2
13 Lower Spring Seat	9093328		2
14 Locking Ring, Lower	9093179	Use with 9093328	2
15 Road Spring, Front	9095481	85 N/mm Tarmac	2
16 Road Spring, Front	9094856	90 N/mm Tarmac (Alt.)	2
17 Road Spring, Front	9095480	Gravel, 72 N/mm &	2
18 Road Spring, Front	9094687	Gravel, 80 N/mm (Alt.)	2
19 Bumpstop-Front	9094714	Cut to required length.	2
20 Spacer-Bumpstop	9095297	6mm	2

Torques

Hub Nut	350 Nm
Top Mount	52 Nm
Anti Roll Bar to Chassis	97 Nm
Anti Roll Bar to Track Control Arm	110 Nm



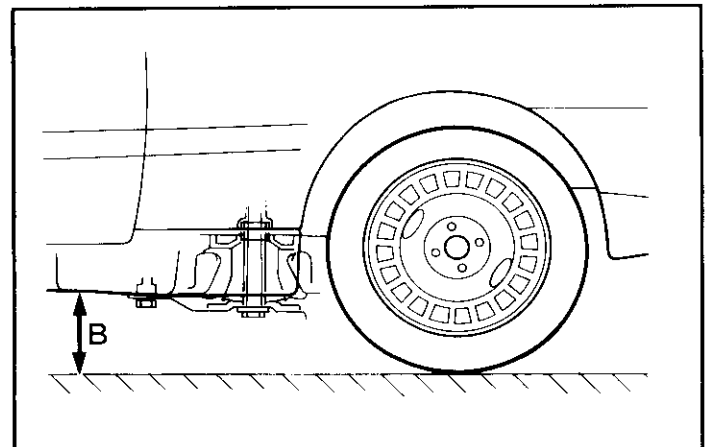
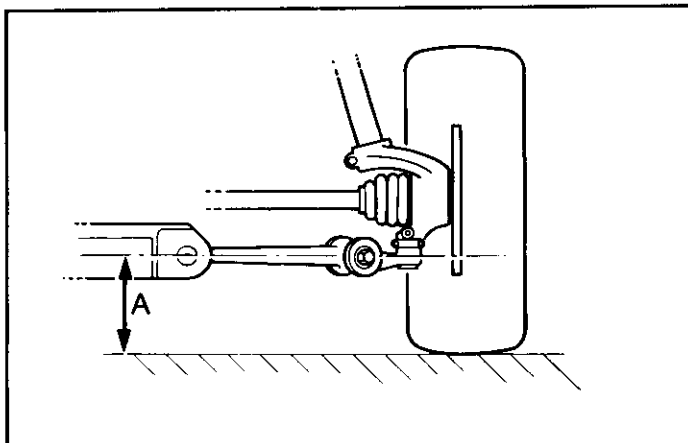
BO-18

FORD MOTORSPORT VEHICLE BUILD SPECIFICATION

EVENT	TARMAC		GRAVEL	
	FRONT	REAR	FRONT	REAR
SUSPENSION Springs Dampers Bump Rubbers Anti-Roll Bar Blade Position	85 N/mm 500/200 70mm + 6mm Ø 29mm -	85 N/mm 400/170 50mm Ø 22mm -	72 N/mm 380/160 94mm + 6mm Ø 29mm -	78 N/mm 350/130 75mm + 6mm Ø 22mm -
CASTOR	3° 30'	-	3° 30'	-
CAMBER	3° 00'	2° 00'	2° 25'	1° 00'
TOE IN	2mm	3mm	2mm	3mm
RIDE HEIGHT	160mm	170mm	215mm	220mm
BRAKES Master Cylinder Brake PAD Material	Ø 278mm Disconnect ABS Blue Carbon	Ø 273mm Disconnect ABS Red Carbon	Ø 278mm Disconnect ABS Red Carbon	Ø 273mm Disconnect ABS Blue Carbon
CLUTCH	9½" Paddle		9½" Paddle	
WHEELS Tyre Compound Pressure	8" x 16" Ø 620 x 225mm - 2.0 Bar	8" x 16" Ø 620 x 225mm - 2.0 Bar	7" x 16" Ø 660mm - 2.0 Bar	7" x 16" Ø 660mm - 2.0 Bar

GEARBOX SPEC. NUMBER	9095468		
CENTRE DIFF. CHAIN RATIO	34% Front	66% Rear	50 Nm V.C.
FRONT AXLE.	9095165		
REAR AXLE LSD	9095164		180 Nm V.C.

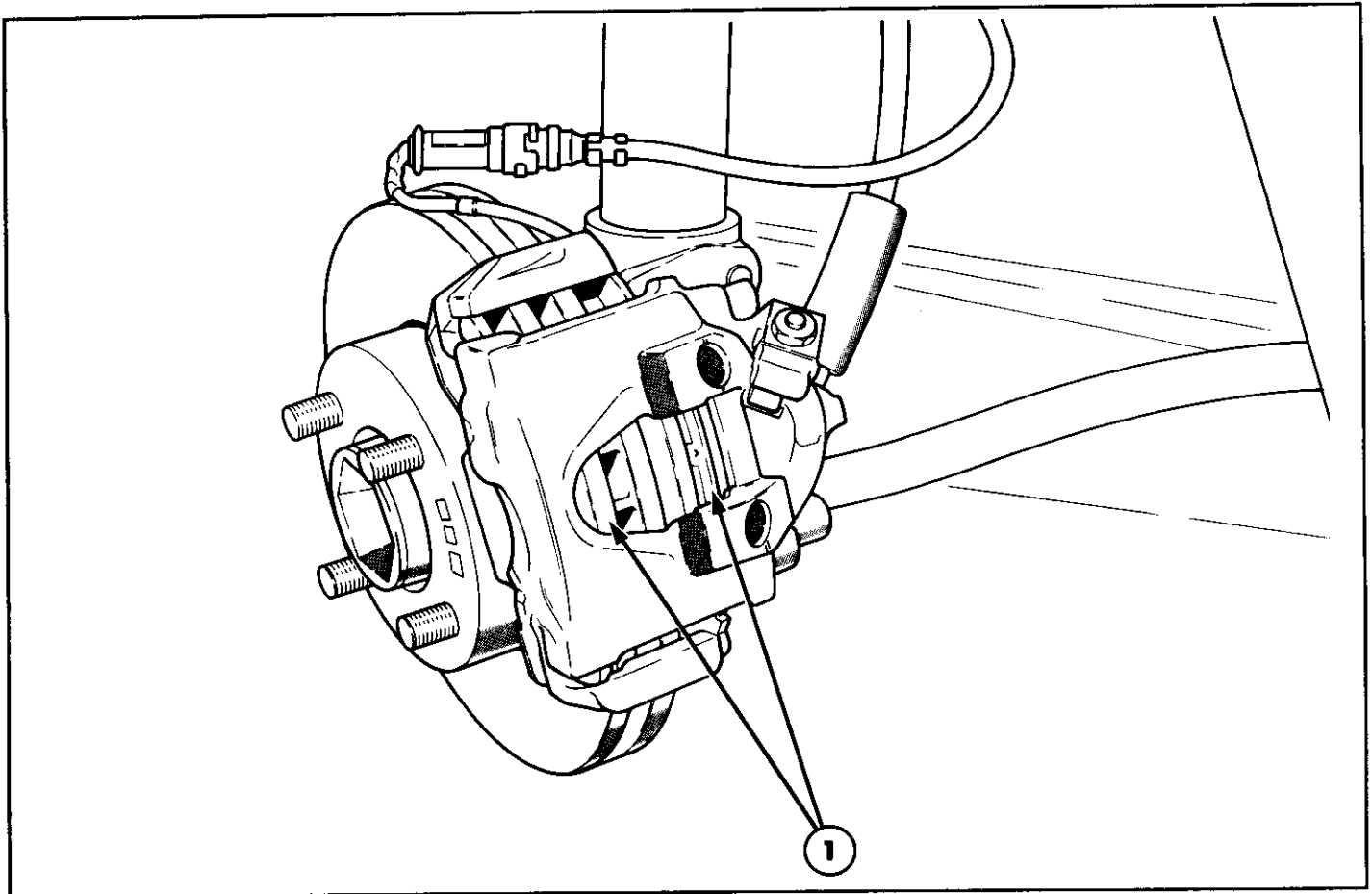
NOTE: Front ride height is measured from centre line T.C.A. joint to ground on recommended tyre (A). Rear ride height is measured from steady plate mounting face to ground on recommended tyre (B). Camber/castor figures quoted are within production tolerances of ±1°. Ride heights should be increased by 10 – 15mm on rough gravel or bumpy tarmac.



Two grades of carbon brake pads are now available. Blue carbon has the higher friction. The 'red' carbon material is less prone to brake 'grab' and not so aggressive to the discs. A change in balance can be achieved by using different material front and rear (i.e. red at the rear on Tarmac will avoid rear brake lockup.)

To bed in: Make a few gentle stops to remove high spots, then several hard applications from high speed down to 30 kph with recovery in between. Continue until fade is no longer apparent. Drive until brakes cool down. Bed new discs with used pads and vice versa. Check discs regularly during events. Disconnect ABS module inside car.

For additional cooling the optional lower grille end shields and duct covers should not be fitted.

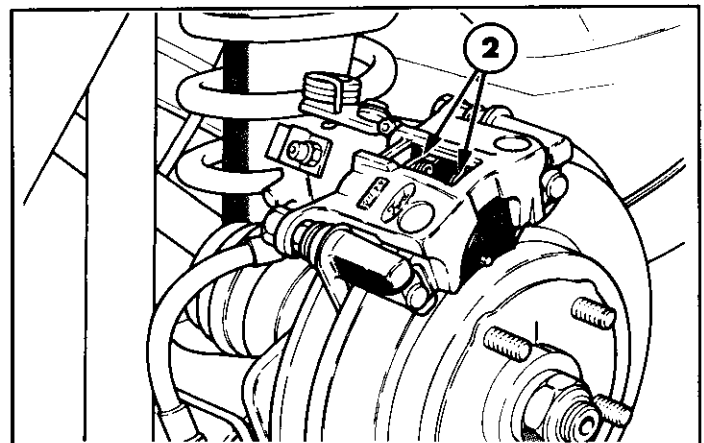


Description	Finis Code	Comments	Qty.
1 Brake Pads, Front Carbon	9094826	Blue	4
or	9095473	Red (Alt.)	4
2 Brake Pads, Rear Carbon	9095333	Blue	4
or	9095472	Red (Alt.)	4

Recommended Fluid: AP 600

Torques

Caliper Mounting Bolts: 61 Nm



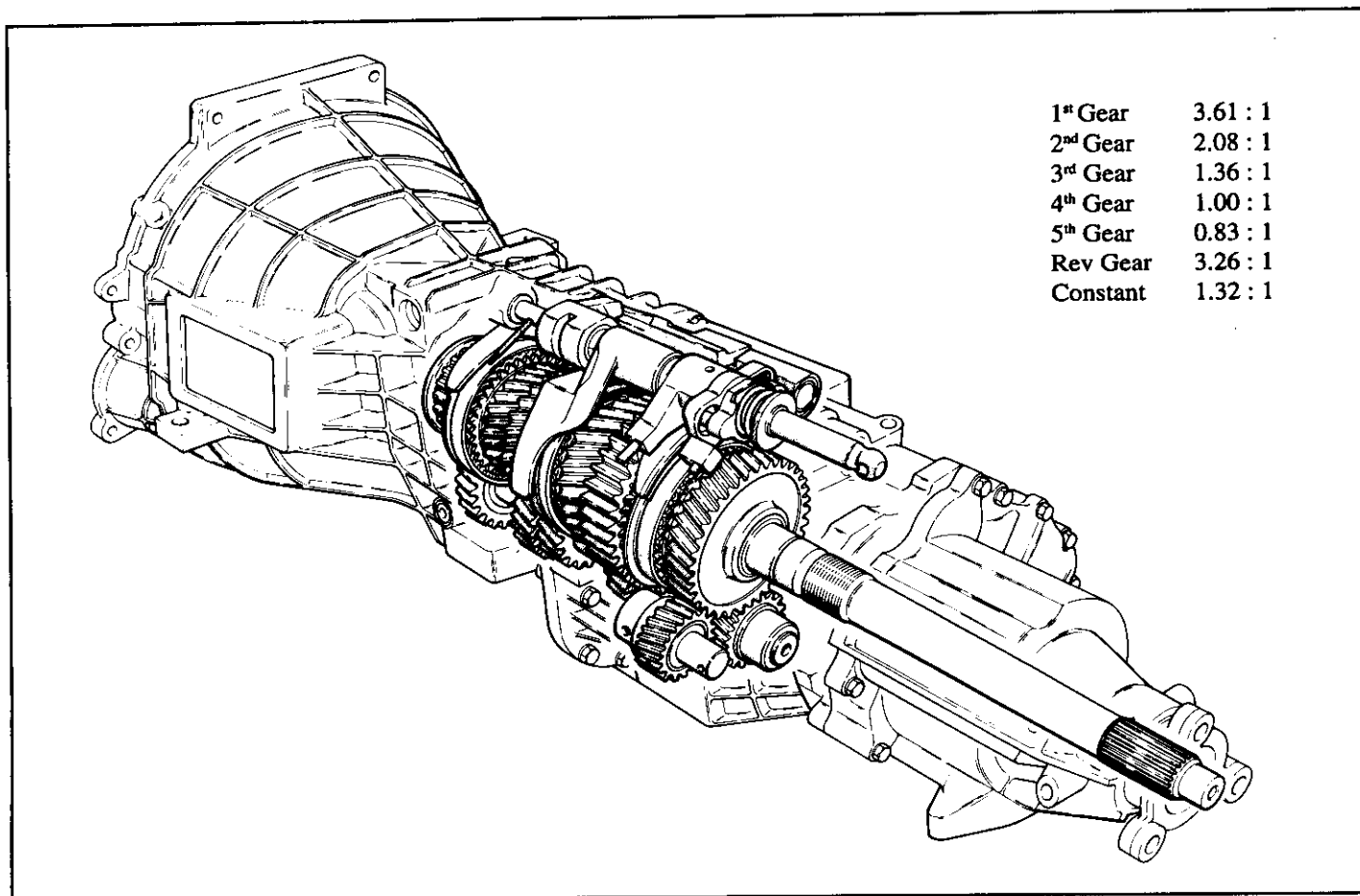
The Escort RS Cosworth transmission is very similar to the Sierra 4x4, but with a slightly longer output shaft to suit the new rubber propshaft coupling.

Considerable attention has been paid to gears to ensure reliability, and the Motorsport gearbox is now fitted with the highest quality production gears available. The centre VC. is set at 50nm.

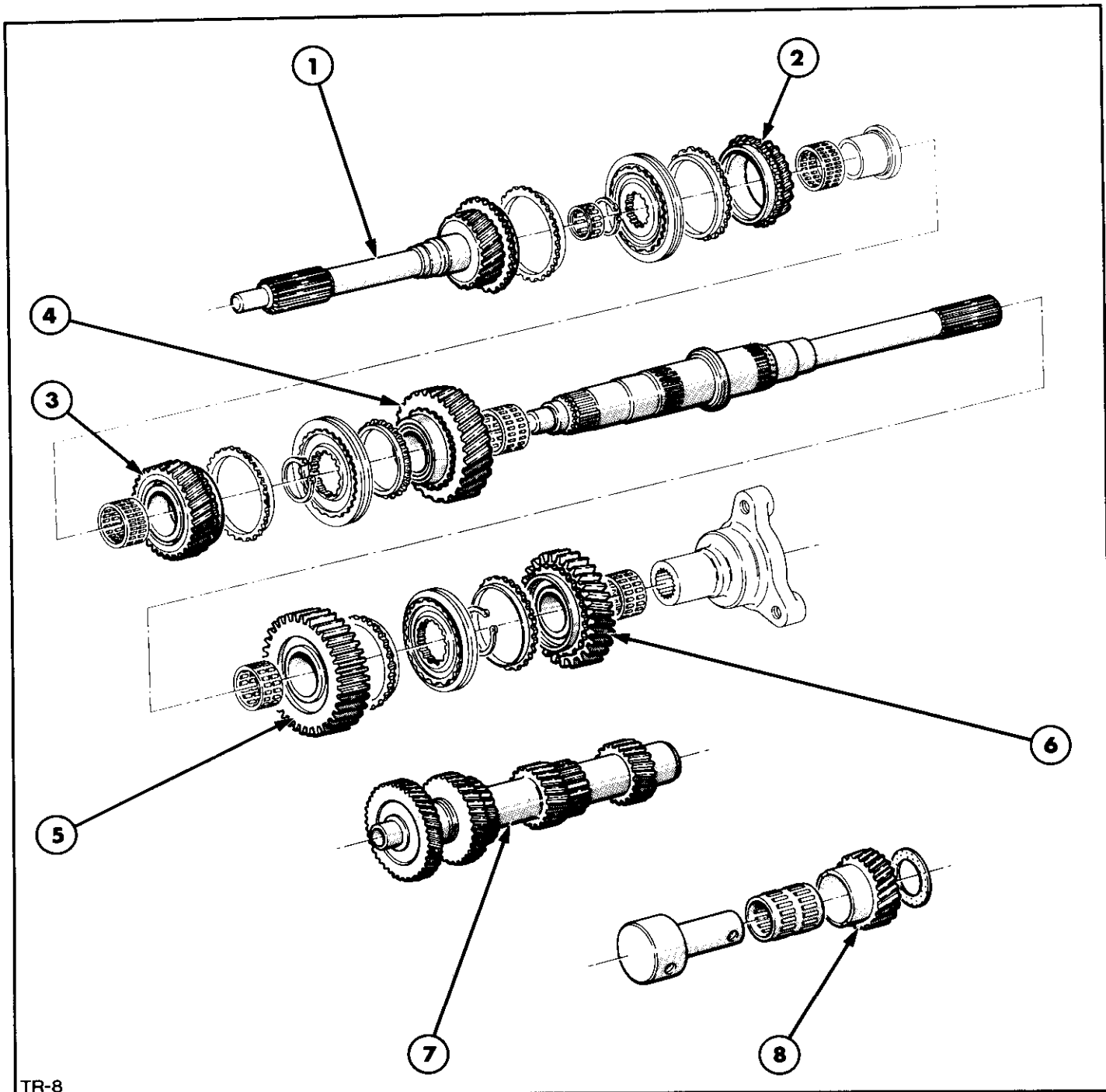
The recommended service interval is 500 km stage mileage in normal conditions. At each rebuild cracktest all gears, replace 3rd gear bearing and sleeve (6152807). Warm sleeve before fitting to shaft. Check selector forks for wear or bending. Tighten countershaft bearing housing while rotating transmission, until shaft is locked, then slacken off by one tooth to ensure bearing preload.

Use a good quality synthetic gear oil. For full repair procedure see the workshop manual (MT75 transmission publication No. CG1502/EN).

Check driveshaft and propshaft joints regularly and repack with grease. When building the car, check front driveshaft plunge in all suspension positions (no spring fitted and inner gaiter rolled back) To ensure that the driveshaft joint will not pull-out, plunge must be within 3-15mm measured at the hub stub shaft (with nut removed).



1 st Gear	3.61 : 1
2 nd Gear	2.08 : 1
3 rd Gear	1.36 : 1
4 th Gear	1.00 : 1
5 th Gear	0.83 : 1
Rev Gear	3.26 : 1
Constant	1.32 : 1

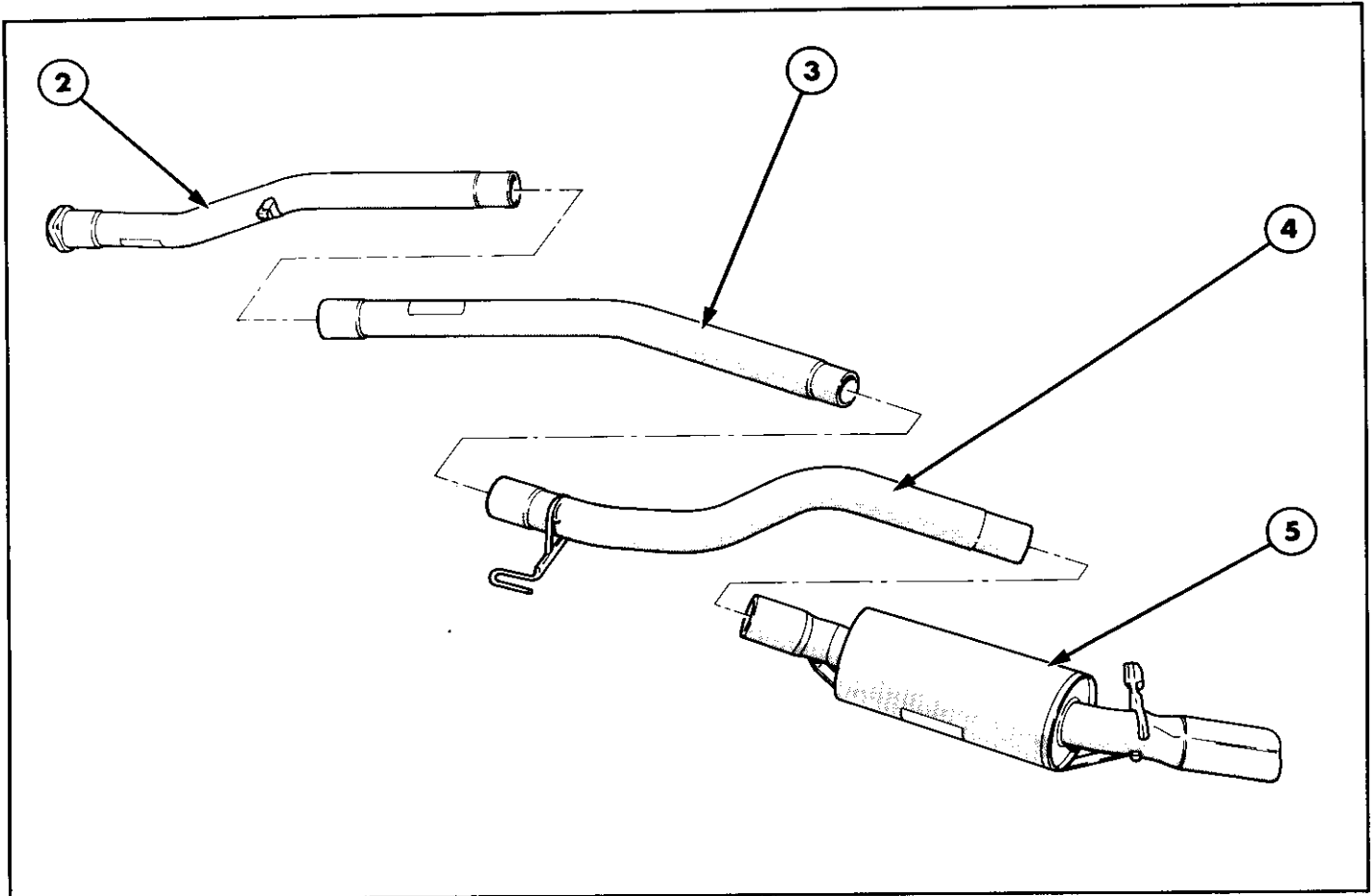


TR-8

Description	Finis Code	Comments	Qty.
1 Input Shaft	9095172		1
2 3rd Gear Main	9095507		1
3 2nd Gear Main	9095509		1
4 1st Gear Main	9095510		1
5 Reverse Gear	9095574		1
6 5th Gear Main	9095178		1
7 Countershaft	9095512		1
8 Reverse Gear Idler	9095575		1

NOTE: THESE GEARS SUIT TRANSMISSION 9095468 ONLY

The exhaust system can be modified (replaced) from the first silencer providing that the diameter is not increased. The 'first silencer' is the catalyst fitted to the downpipe - so the non-catalyst downpipe is substituted. The Motorsport exhaust system is routed above the rear beam to avoid damage, and exits through the bumper.



Description	Finis Code	Comments	Qty.
1 Downpipe	*6494220	Std.	1
2 Front Pipe	9095490	Stainless	1
3 Intermediate Pipe	9095491	Stainless	1
4 Intermediate Pipe RR	9095494	Stainless	1
5 Silencer	9095495	Stainless	1
6 Catalyst	TBE	Fit to downpipe	1

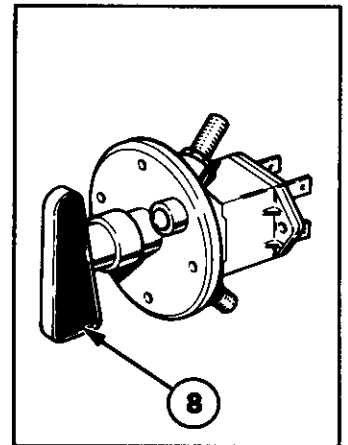
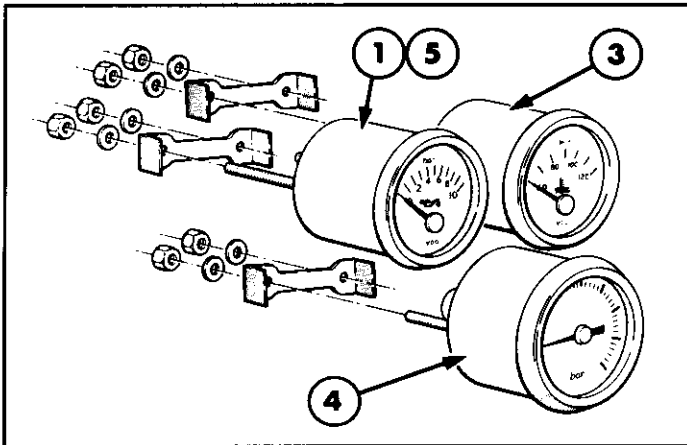
Additional auxiliary gauges "may be freely installed, provided that their fitting is not likely to create any danger".

The horn may be changed or an additional one added "possibly for passenger use". The air horn kit is ideal for this purpose, with a foot operated button on the navigators footrest.

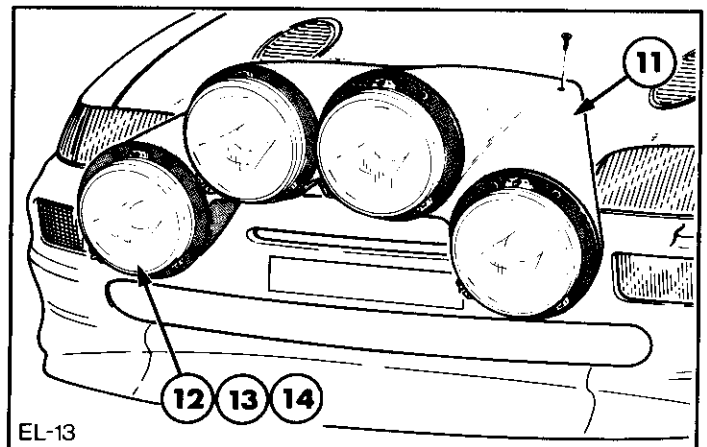
Ensure any additional lamps are wired through separate relays to avoid overloading the standard wiring. Problems are caused by chafing wires or radio interference. Keep radio equipment away from engine electronics.

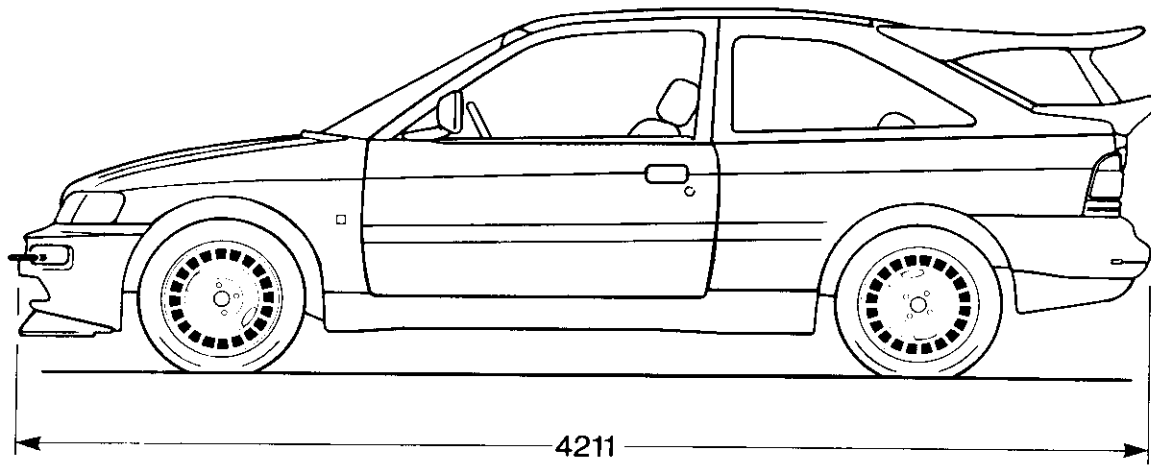
 **WARNING**

Disconnect the battery before conducting electrical work on the vehicle to avoid any damage to the electrical system. Disconnect the E.C.U. before welding.

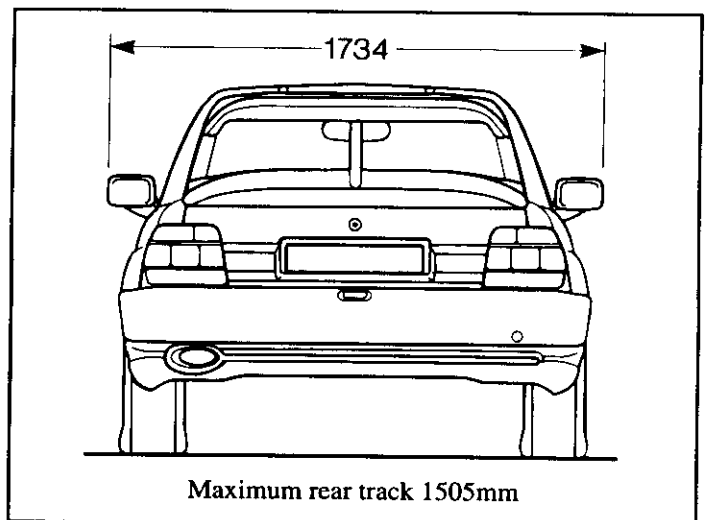
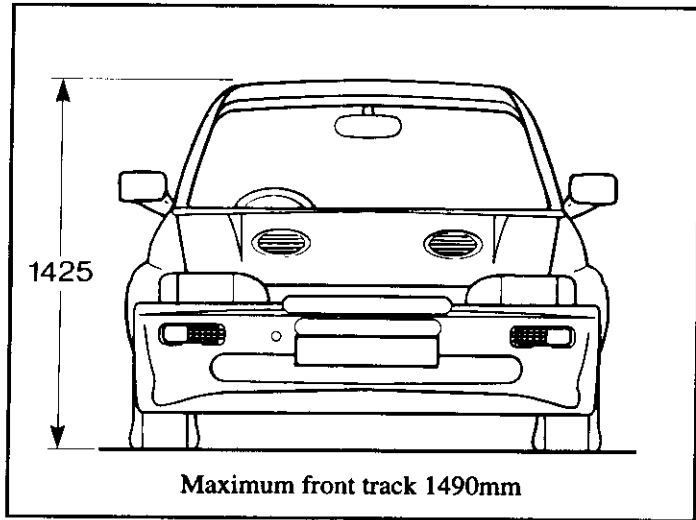


Description	Finis Code	Comments	Qty.
1 Gauge - Oil Pressure	9090780		1
2 Gauge, Water Temperature	9090777		1
3 Gauge, Turbo Boost	9090778	1.5 Bar	1
4 Gauge, Fuel Pressure	9091435		1
5 Gauge, Fuel Level	9090776		1
6 Pressure Sender	9091956	Oil and fuel	1
7 Switch, Master Cut Off	9092629		1
8 Kit, Air Horns	*5006122		1
9 Alternator, 150 Amp	9092574		1
10 Map Reading Lamp	9095676		1
11 Lamp - Pod	9095590	4 Lamp - bonnet mounting	1
12 Lamp - Fog	9095979		2
13 Lamp - Driving	9095977		2
14 Lamp - Long range	9095978		2





Homologated minimum weight 1185Kg (no rollcage) 1215Kg (with rollcage)



MS NUMBERS APPLICABLE TO STICKERS, BADGES AND LITERATURE

STICKERS:

MS13	3" Ford Oval
MS14	8" Ford Oval
MS15	10" Ford Oval
MS16	14" Ford Oval
MS17	20" Ford Oval
MS18	30" Ford Oval
MS19	40" Ford Oval
MS23	4 1/2" Ford Oval
MS24	6" Ford Oval
MS38	4" x 2" Ford Motorsport
MS39	6" x 3" Ford Motorsport
MS40	8" x 4" Ford Motorsport
MS41	12" x 6" Ford Motorsport

BADGES:

MS26	Oval Cloth
9091528	Rectangular with Ford in Oval

LITERATURE:

MS36	Escort Group 'N' Preparation Manual (Illustrated)
MS37	Escort Group 'A' Preparation Manual (Illustrated)

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