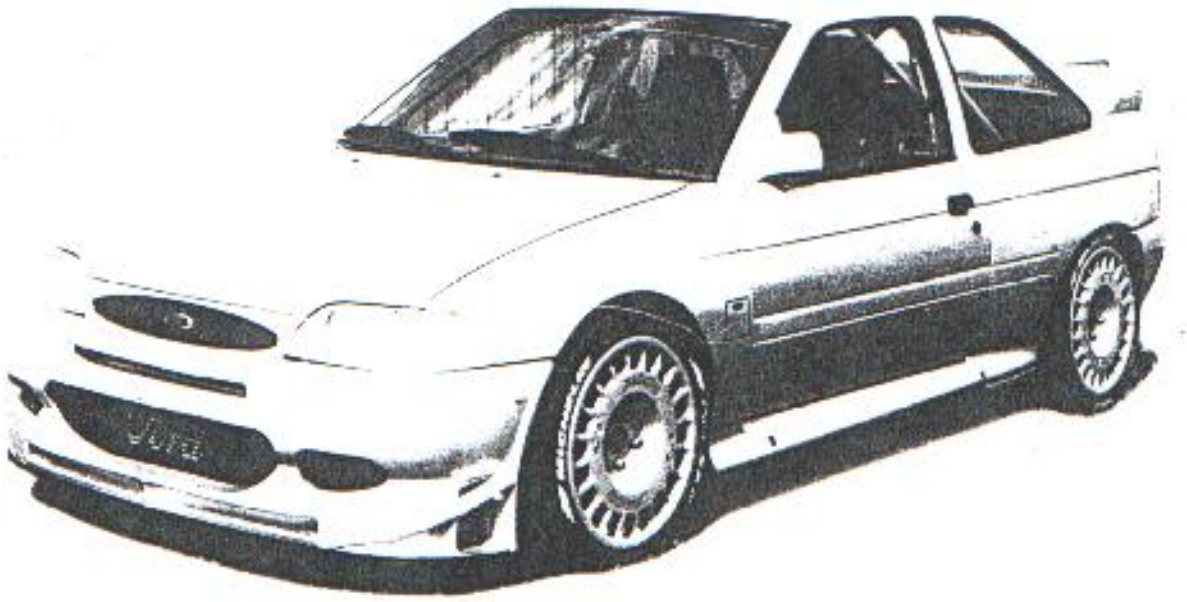
MOTORSPORT



Ford Escort World Rally Car Preparation Manual

Boreham Specification

MS WRC

Issue 1 – 10/97

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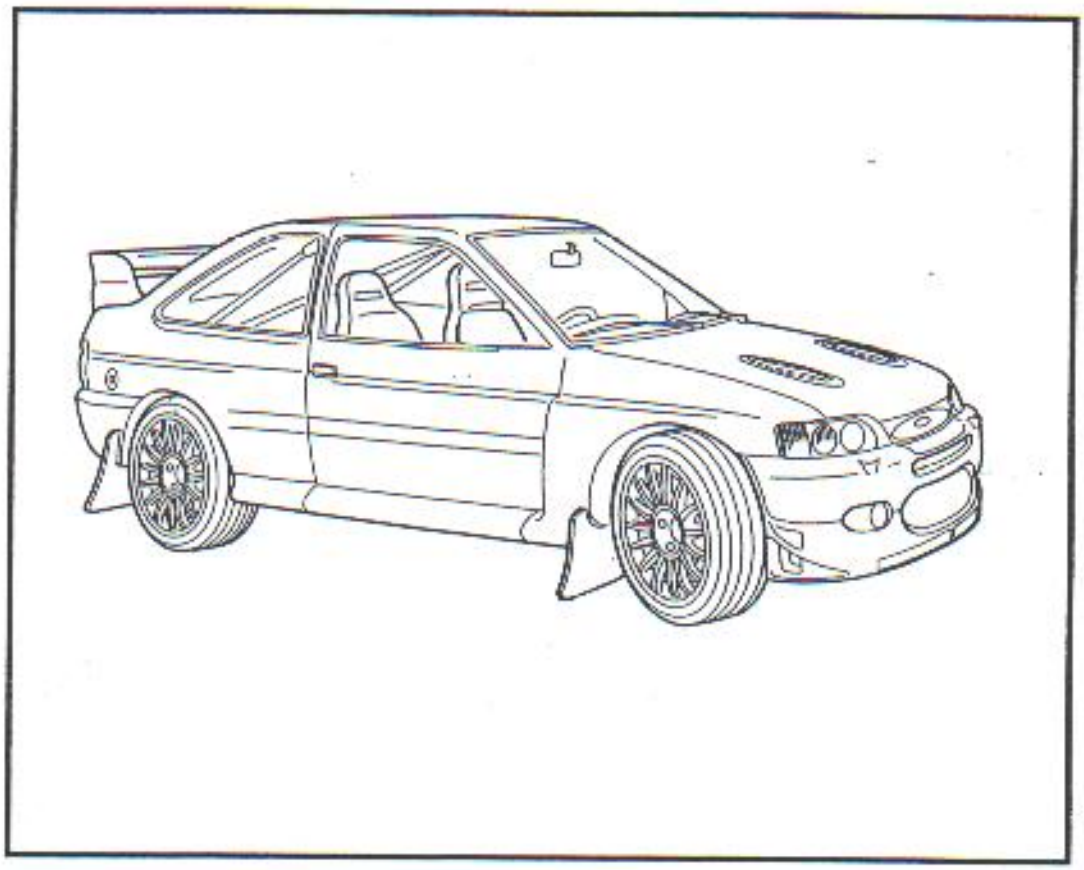
BODY

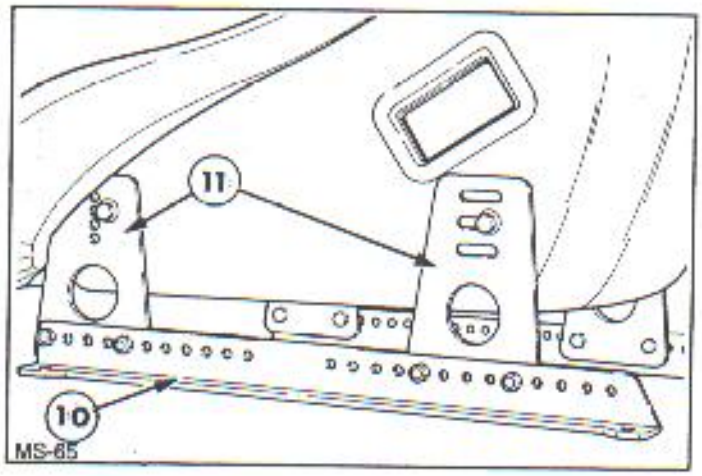


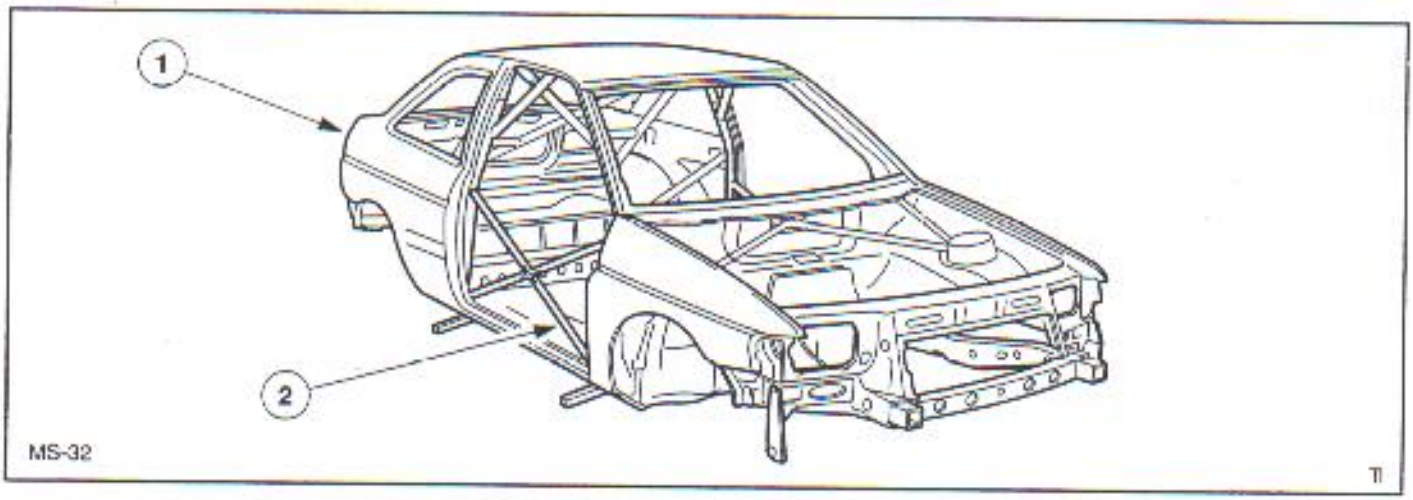
BODYSHELL

The Motorsport World Rally Car bodyshells are seam welded, strengthened and fitted with a welded in safety roll cage to give high torsional rigidity, long life and inherent safety, and include doors, bonnet and boot.

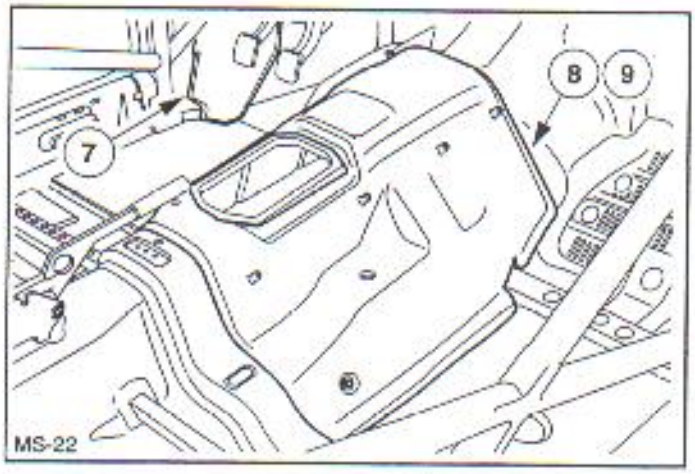
Bonnet locking pins should be fitted to the hood top and the tailgate. The best location for the tailgate fixing is on the rear window pillars.

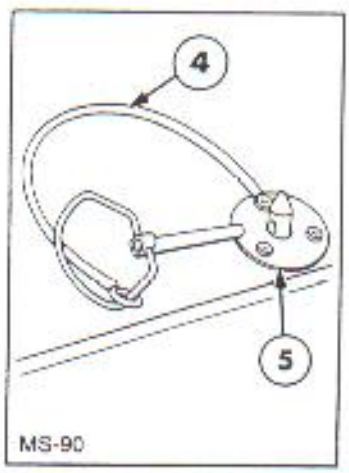
The netting is useful for carrying helmets and jackets in the rear, or as a map container on the navigator's door.





	Description	Finis Code	Comments	Qty.
1	Bodyshell – LHD	9096720	Welded in roll cage	1
2	Sleeving, Roll Cage	9092652		A/R
3	Netting, Side Storage	*6122596		2
4	Bonnet Pin Kit	9097068		4
5	Bonnet Bush	9095828		4
6	Radio Mtg. Bracket	9096429		1
7	Clutch Pedal Foot Rest	9096870		1
8	Heatshield Blanket	9096723	Trans. Tunnel	1
9	Heatshield Cover	9096724		1
10	Seat Rail Long	9097021		4
11	Seat Plate	9097020	Front	4
		9097019	Rear	4
12	Sparco Seat	9096220		2

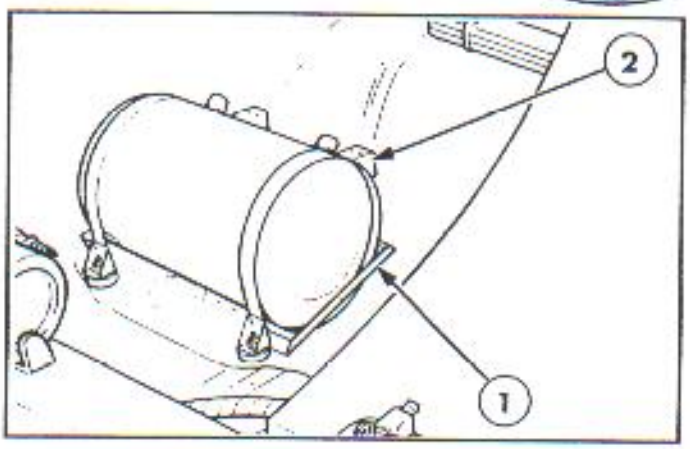


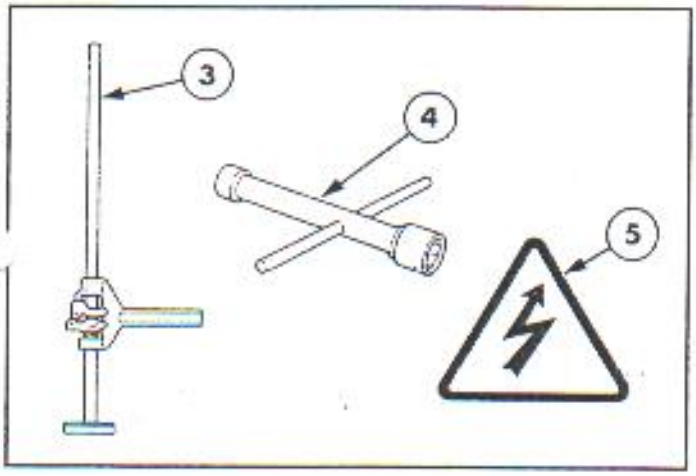


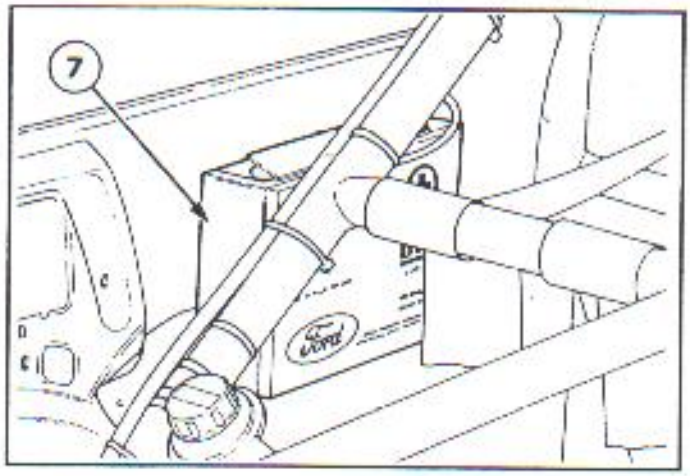
FISA require an automatic 'plumbed in' extinguisher system of 7½KG. (2.5kg cockpit, 5kg engine). New extinguishants are now approved by FIA refer to the FIA yellow book for details.

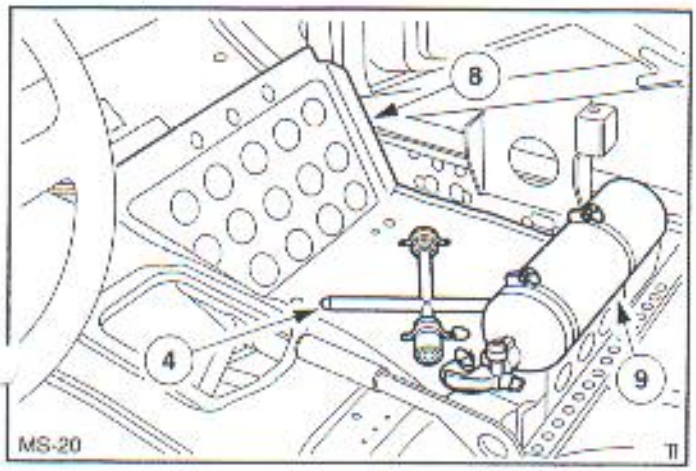
In addition, the car must be equipped with one or two hand held bottles containing 4kg minimum extinguishant.

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

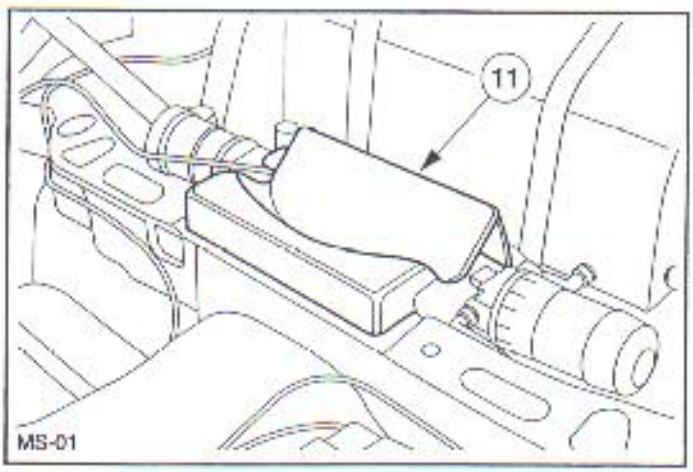








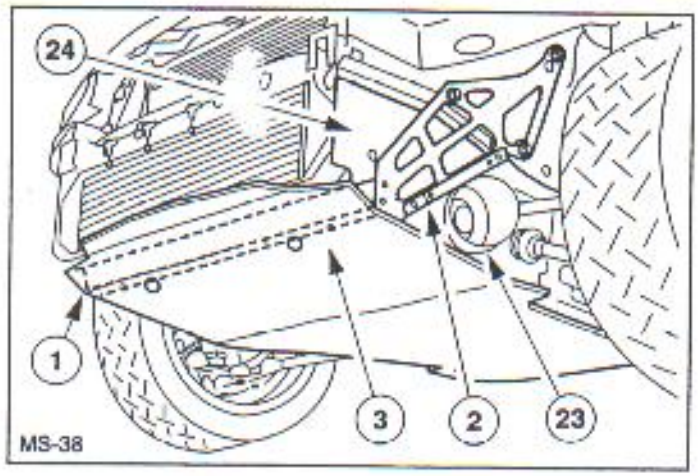
	Description	Finis Code	Comments	Qty.
1	Bracket, Fire Extinguisher	9092884		1
2	Strap, Fire Extinguisher	9092938		1
3	Jack, Short, (Quicklift) Complete with Handle	9091324		1
4	Wheelbrace	9095850		1
5	Decal – Ignition Cut – Out	9092875		1
6	Warning Triangle	*5027194		1
7	First Aid Kit	*5010466		1
8	False Floor Navigator	9096869	Does not include footrest	1
9	Hand Held Ext			1
10	Bracket - HH Ext			1
11	Spare Wheel Tray	9096737		1
12	Spare Wheel Strap	9096865		1

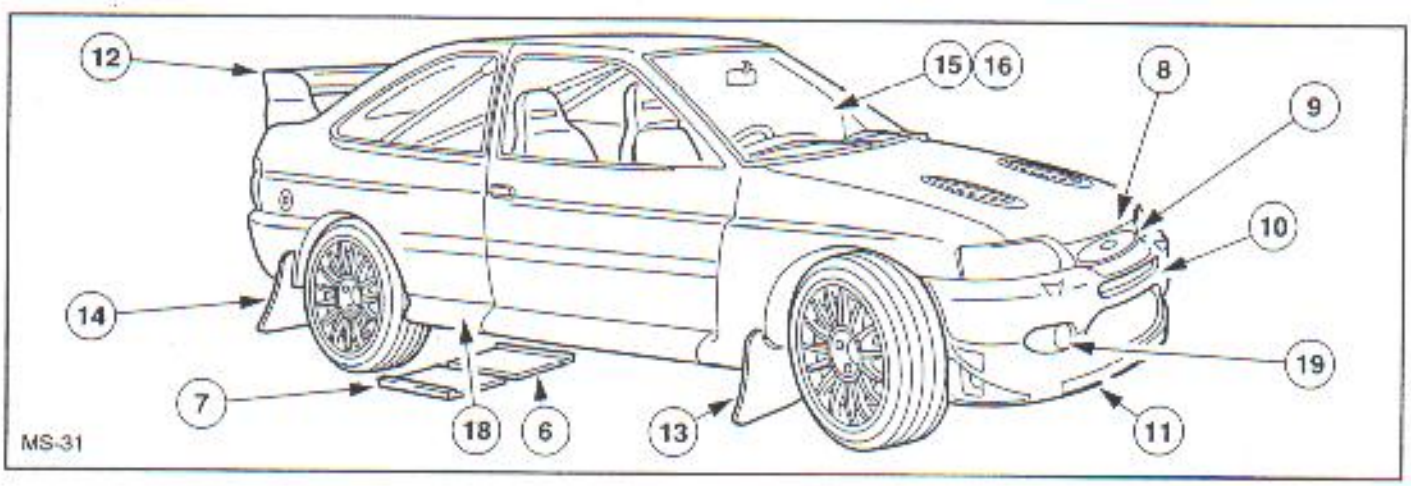


The under shield is mounted onto a front bracket supported by two aluminium side brackets, and two bolts into the chassis rails. A foam pad should be fitted between the undershield and the suspension cross member/sump.

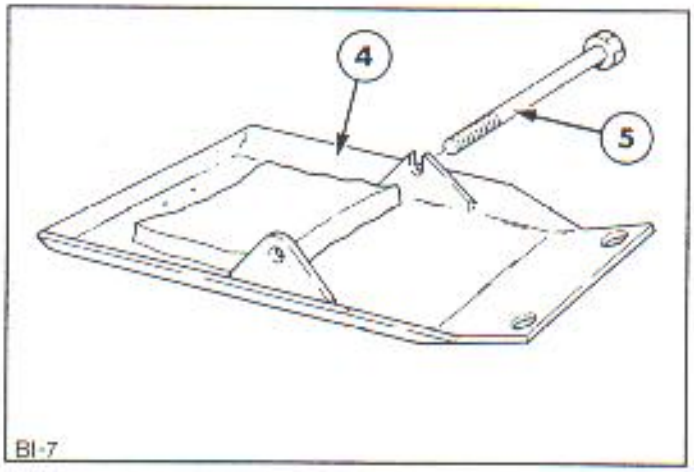
On gravel events, mudflaps are recommended.

The heated motorsport windscreen is held in place with a rubber weatherstrip. This requires a modified flange and therefore will only fit the fully prepared bodyshell.

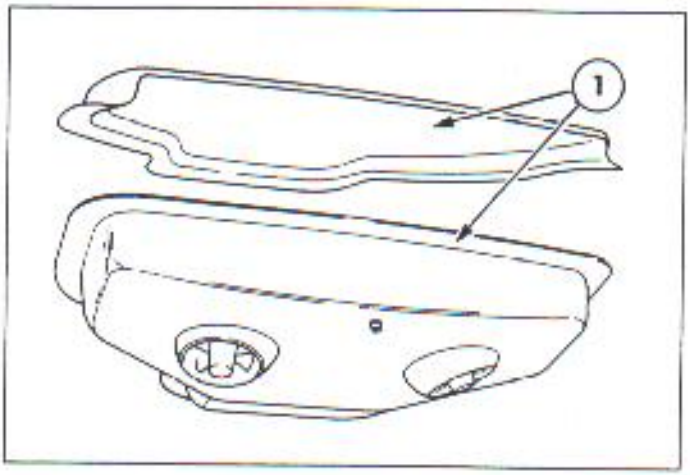


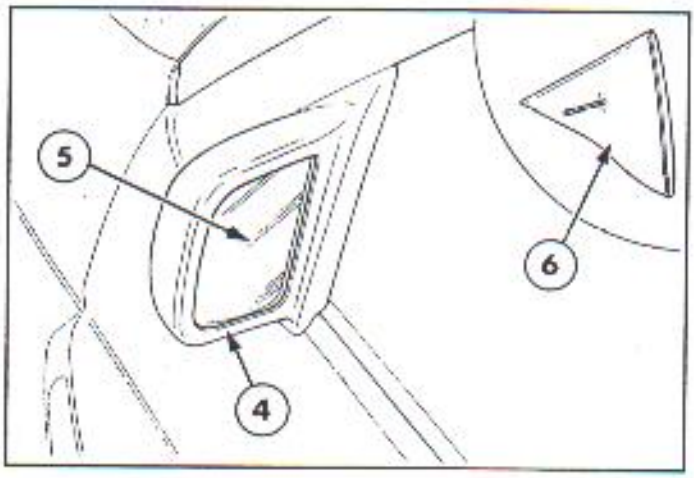


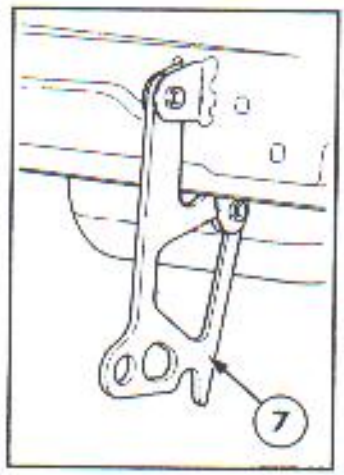
	Description	Finis Code	Comments	Qty.
1	Undershield, Front	9096943	Aluminium	1
2	Bracket Sumpshield Side	9096836		2
3	Support Bar	9096832		1
4	Undershield, 9" Axle	9096868		1
5	Bolt Axle	9093217		
6	Floor Pan Shield LH	9096606	Gravel Use	
7	Floor Pan Shield RH	9096607	Gravel Use	
8	Grille	9096776		1
9	Grille Surround	9096777		1
10	Front Bumper	9096728		1
11	Lip	9096764		1
12	Rear Wing	9096729		1
13	Mud Flap Front LH	9096244		1
	Mud Flap Front RH	9096243		1
14	Mud Flap Rear LH	9096245		1
	Mud Flap Rear RH	9096246		1
15	Windscreen Surround	9095603		1
16	Heated Windscreen	9096186		1
18	Sill Panel Mtg. Brkt.	9095840		1
19	Front Towing Eye	9095989		1

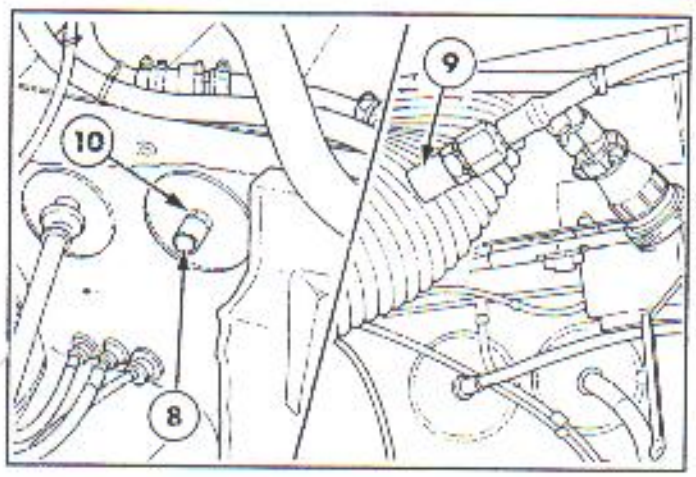


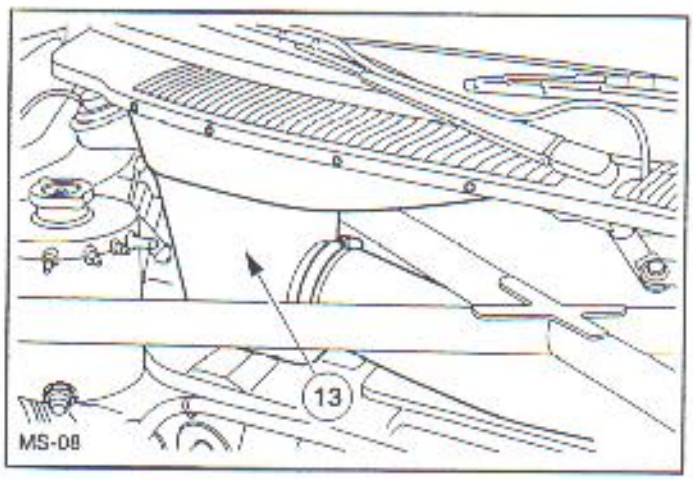
	Description	Finis Code	Comments	Qty.
20	Brace Frt. Bumper	9096959		1
21	Brkt. Bumper Mount	9096960		2
22	Support - LH	9096965		1
	Support - RH	9096964		1
23	Air Duct - LH	9096781	Trim to shape	1
	Air Duct - RH	9096780	Trim to shape	1
24	Closing Plate	9096779	Trim to shape	1





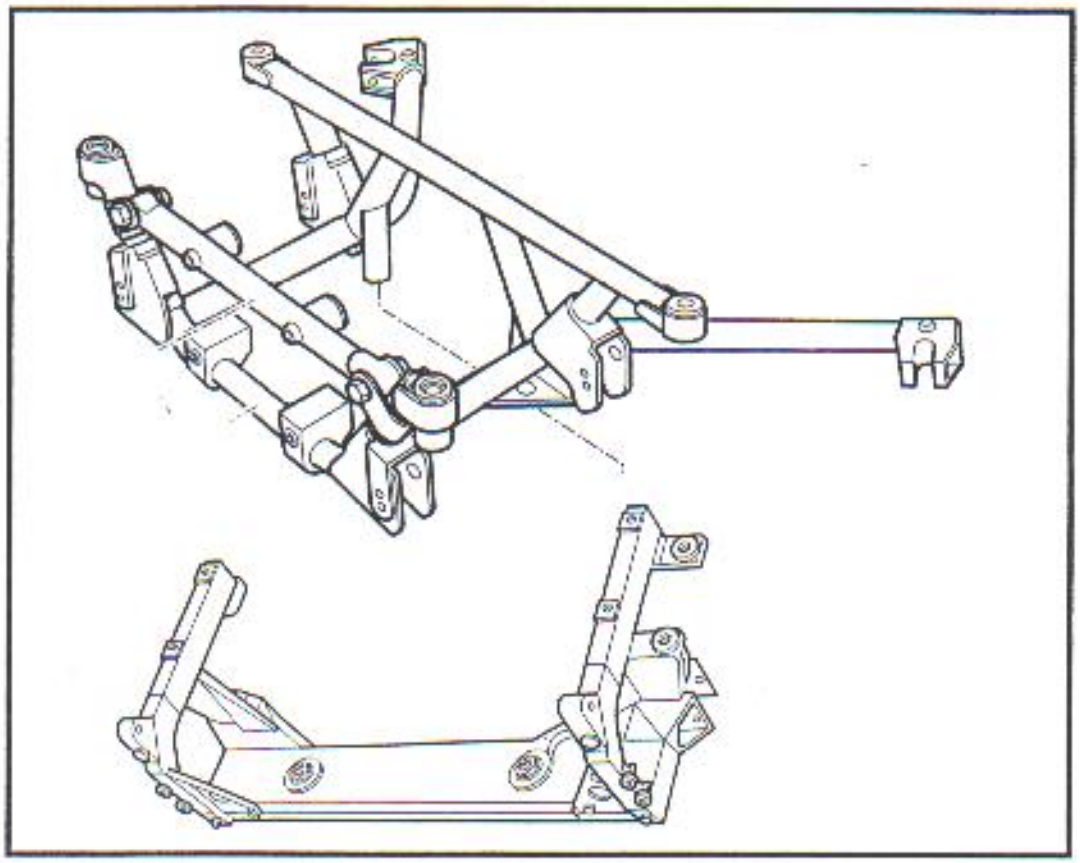






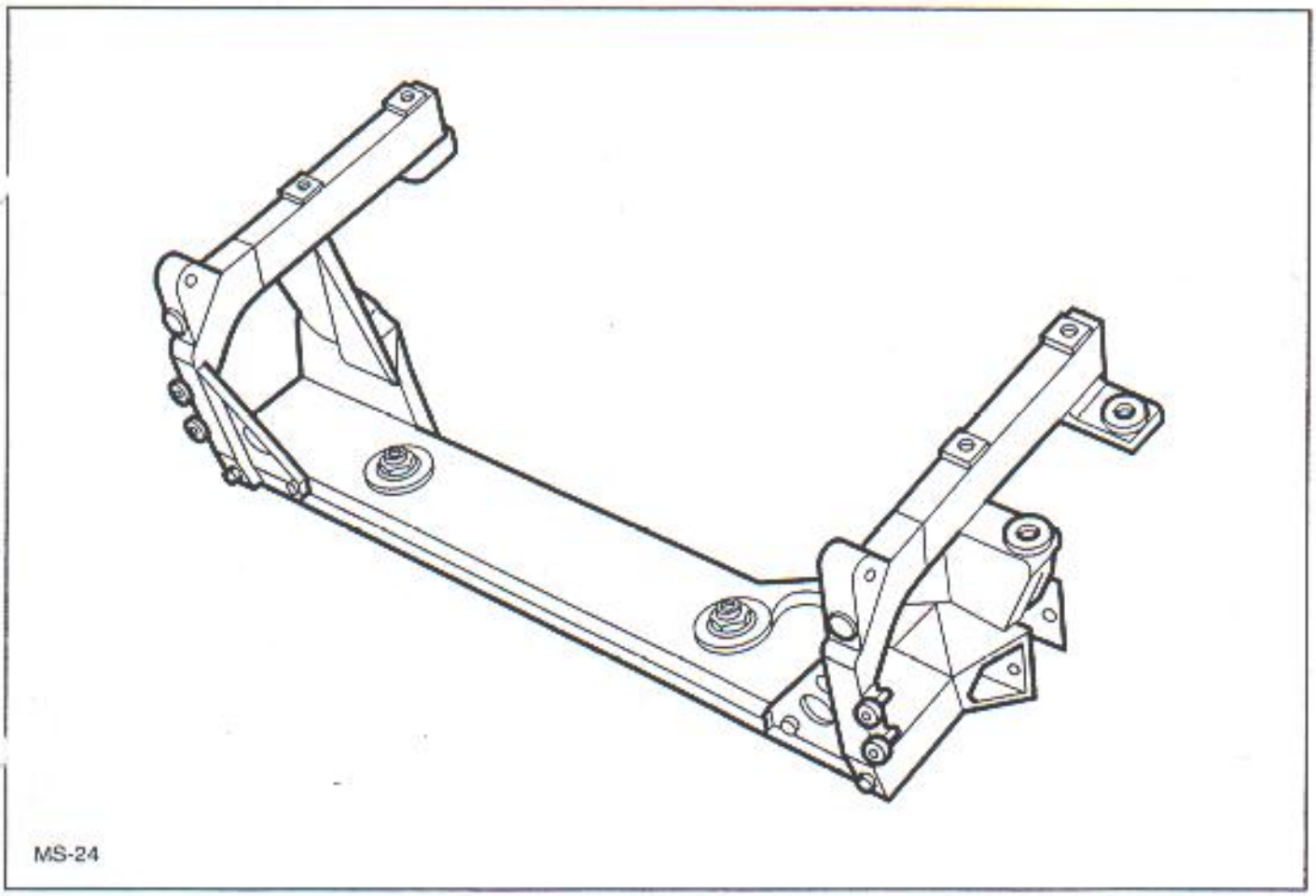
	Description	Finis Code	Comments	Qty.
1	Roof Vent Assy	9096583		2
4	Door Mirror Surround	9095678	LH	1
	Door Mirror Surround	9095916	RH	1
5	Door Mirror Glass	9096103	LH	1
	Door Mirror Glass	9096104	RH	1
6	RH Door Mirror Blank	9095679		1
8	Fire Extinguisher Nozzle	9095959		1
9	Fire Extinguisher Nozzle	9095960		1
10	Bulkhead Fitting	9095961		1
11	Door Trim Panel	9096217	RH	1
12	Door Trim Panel	9096218	LH	1
13	Air Duct Heater Intake	9096923		1
14	80mm Ducting	9096819	Flexible	1
15	Fan Impellor Clockwise	9096961		1
	Fan Impellor Anticlockwise	9096962		2
16	Air Deflector - Windscreen	9096925		2
17	Kit Heater Motor	*6157285	Use Motor Only	1
18	Heater Motor Cover	9096406		1

MOUNTINGS



The front suspension crossmember is fabricated in high strength steel.

Two alternative suspension pickup points are provided. The lower position is used on gravel and the upper position is used on tarmac events with a low ride height.



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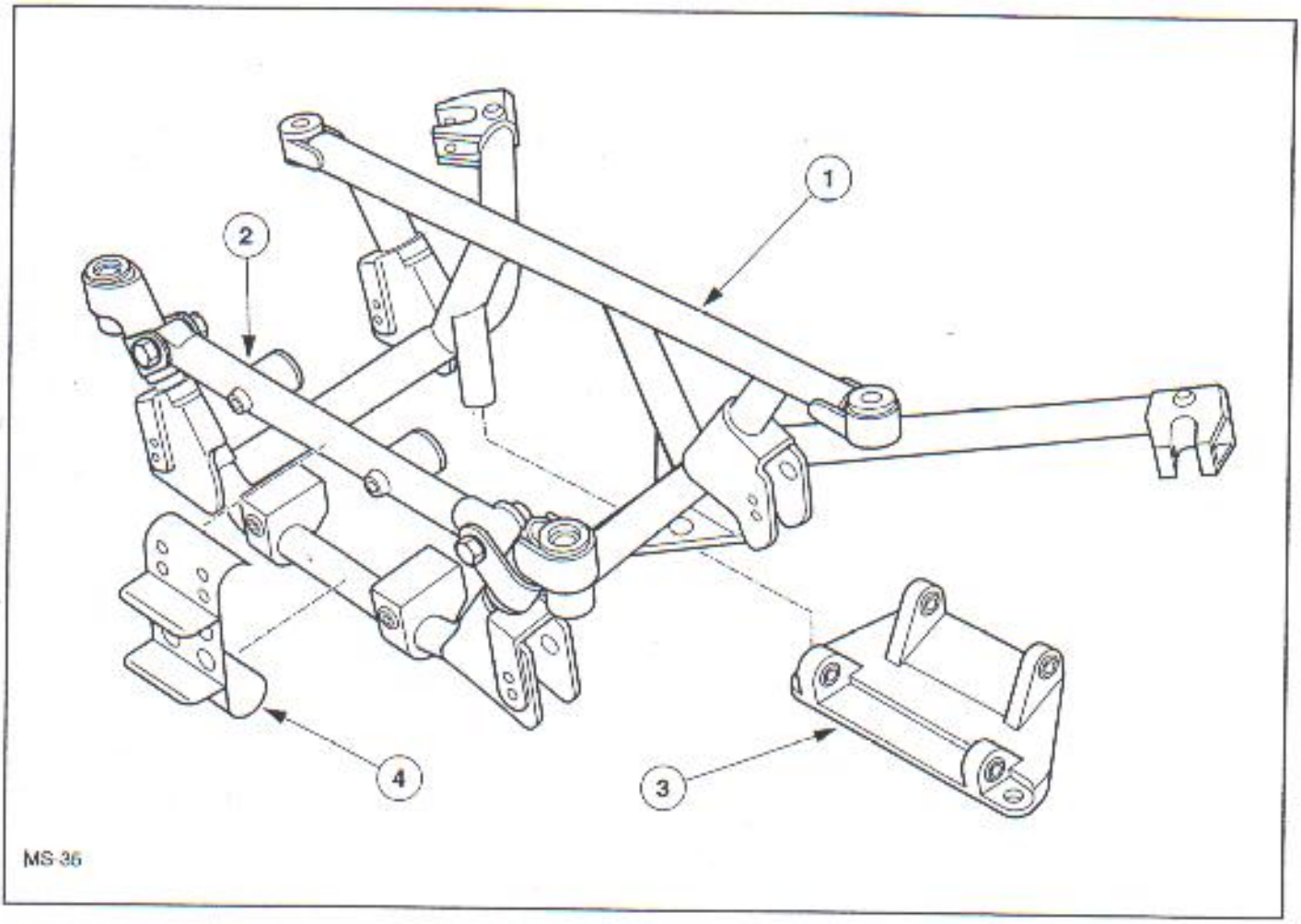
	Description	Finis Code	Comments	Qty.
1	Front Crossmember	9096722	6 point mtg T80	1

For tarmac – use the lower outer pickup holes in conjunction with the upper holes at the inboard point.

On gravel events the lower outer pickup can he combined with either upper or lower inner point depending on ride height/camber.

The rear axle oil cooler is attached via a bracket using tie straps.



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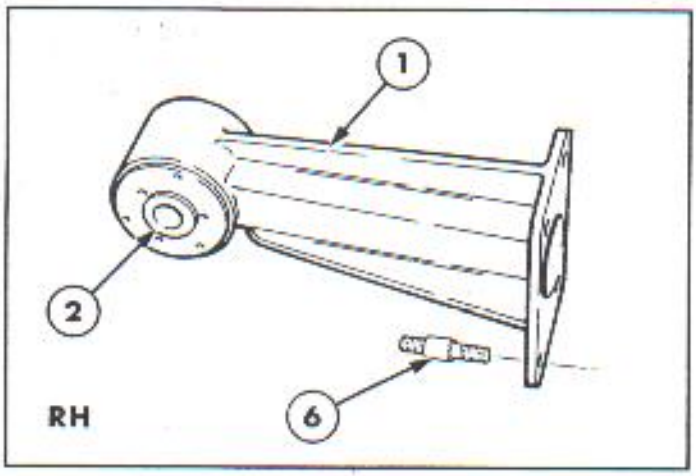
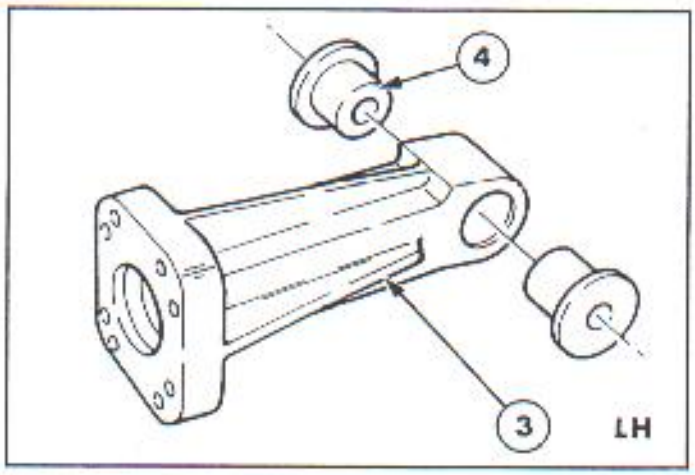
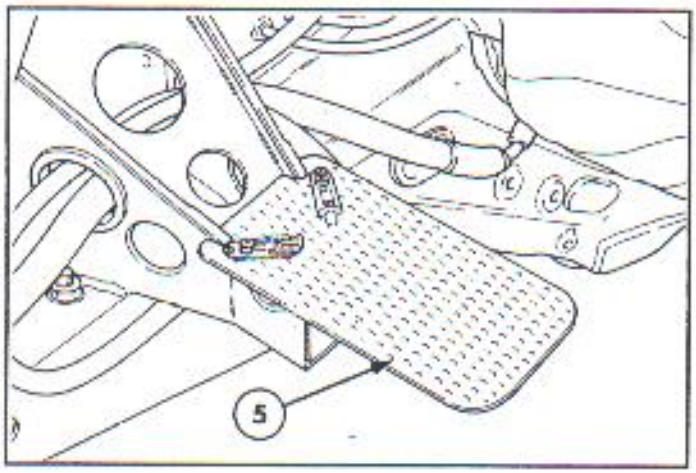
	Description	Finis Code	Comments	Qty.
1	Rear Subframe	9097069	Tarmac / Gravel	1
2	Rear Mount-Axle	9097059		1
3	Front Mount-Axle	9096802		1
4	Oil Cooler Bracket	9096798		1

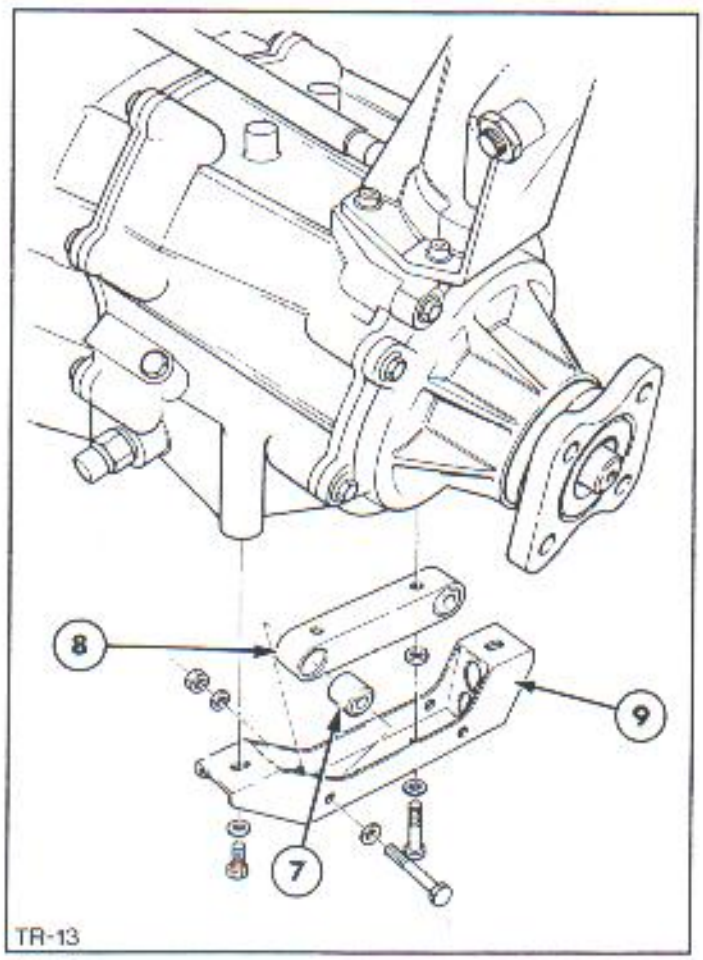
The engine mounts are designed for use with the 8½" front axle. In order to fit them it is necessary to remove 12mm from the right hand mounting bosses of the cylinder block (axle side).

The engine mounts should be fitted with dowelled studs – ensure maximum thread engagement in the block (counterbore cylinder block to fit).



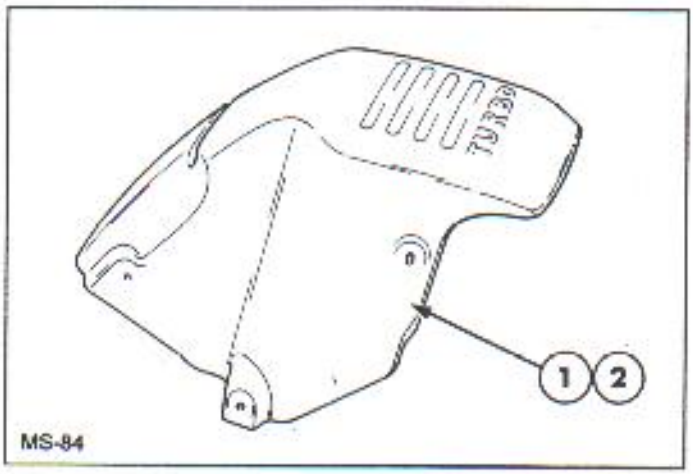






	Description	Finis Code	Comments	Qty.
1	RH Engine Mount	9096797		1
2	RH Engine Mount Bush	9096365		2
3	LH Engine Mount	9096618		1
4	LH Engine Mount Bush	9096365		2
5	Heatshield	9095767		1
	Engine Mount RHS			
6	Stud – Engine Mount	9096502		2
		9096325	Dowelled	2
		9096326		1
		9096327	Dowelled	1
		9096328	Dowelled	1
		9096329		1
7	Bush	*1619120	Transmission Mount	1
8	Tiebar-Gearbox	9094718		1
9	Crossmember-Gearbox	9094719		1

The turbo cover heatshield can be modified with quick release fixings.



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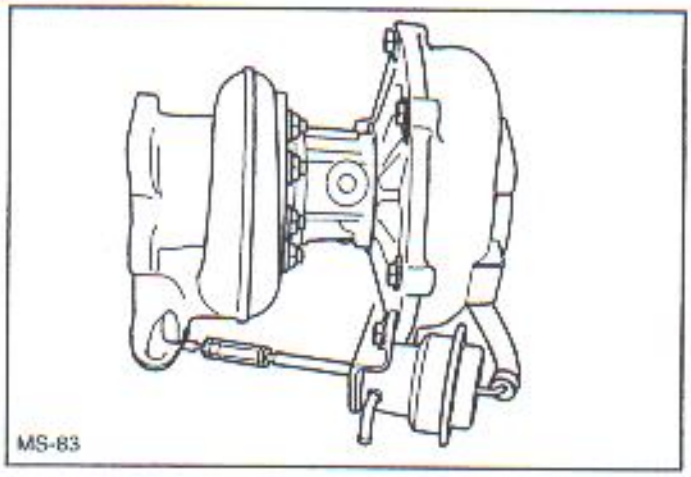
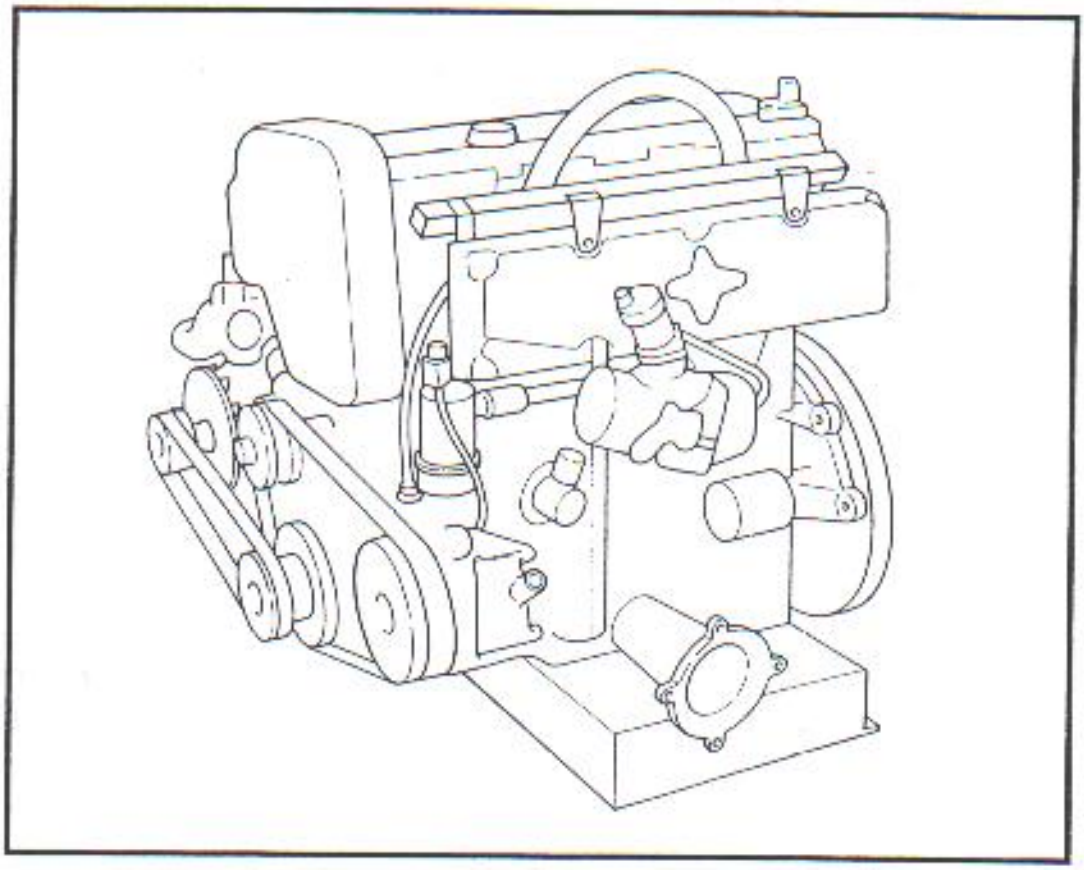

MS-83

	Description	Finis Code	Comments	Qty.
1	Turbo Cover	*6780986		1
2	Turbo Cover Mtg. Brkt.	9095974	Turbo Box Mtg.	1
3	Turbo Cover Mtg. Brkt.	9095972	Side Mtg.	1
4	Turbo Cover Mtg. Brkt.	9096337	Cam Cover Mtg.	1
5	Turbo Cover Mtg. Brkt.	9095971	Bulkhead Mtg.	1
6	Spacer	9095973	Cam Cover to Brkt.	2

ENGINE



The basic engine is virtually a carry over from the Sierra Cosworth 4x4, but with a larger turbo.

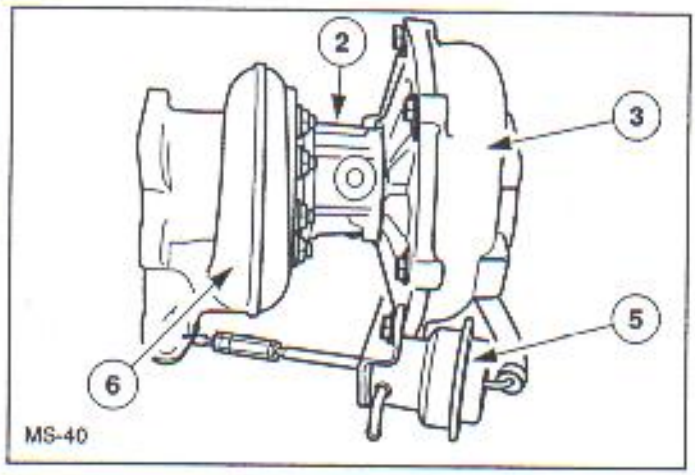
It is strongly recommended that the World Rally Car engine is built by a professional tuning company who will optimise the compression ratio and cam timing on a dynomometer. Fit the recommended injectors, spark plugs, map sensor and fuel pump. Set the boost to (TBE) bar peak. Excessive boost will raise the water temperature and shorten turbo and gasket life. The turbocharger will normally last for 800km between rebuilds. Ensure air filter element is replaced regularly in dusty conditions or if wet. Seal gaps around radiator/intercooler with tape

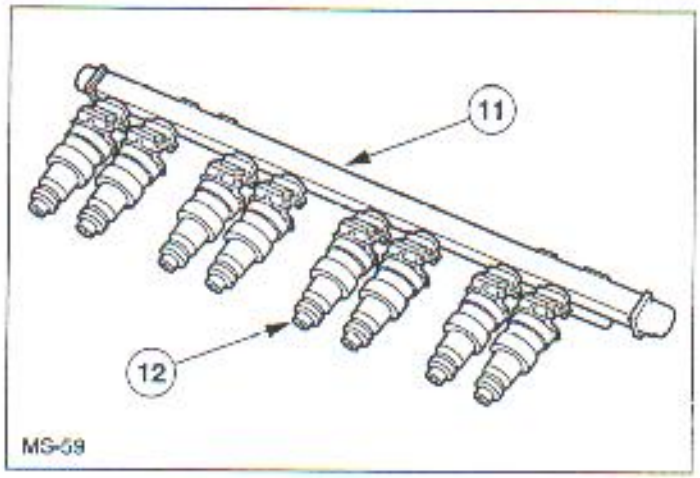
The water temperature should be approx. 90°C at 20°C ambient. In warm climates, run the radiator fans continuously (fit an override switch). The intercooler spray system (WSS) will keep the plenum temperature at 40°C (ensure container is refilled at service points). The thermostat can be modified or replaced. Use new cylinder head bolts at each rebuild.

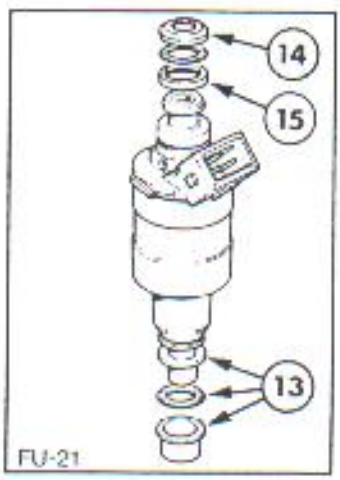
The turbocharger exhaust housing can be modified by slotting three holes to help quick removal. Use one bolt and three studs.

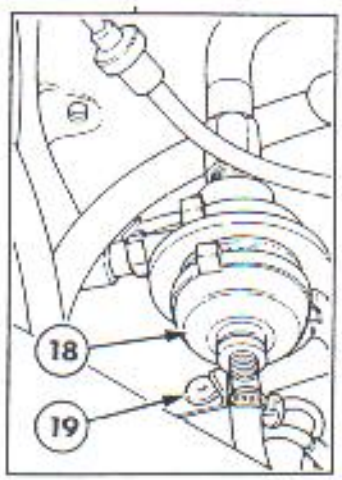
	Description	Finis Code	Comments	Qty.
1	Turbo Assembly	9097060		1
2	CHRA Turbo Core	9096858	Service	1
3	Compressor Hsg.	9096857	Service	1
4	Turbo Restrictor	9096812	34mm Ø	1
5	Wastegate Capsule	9096860	Service	1
6	Turbine Housing	9096985	Service	1
7	Exhaust Manifold	9096718		1
8	Inlet Manifold	9096717		1
9	Bolt – Turbo Mounting	9095143		1
10	Nut – Turbo Mounting	9095144		3
11	Fuel Rail	9096719		1
12	Fuel Injector	9092438	Refer to engine tuner	8
13	Fitting Kit – Injector	9092400		8
14	Adaptor Ring	9092397	Upper	8
15	Adaptor Ring	9092396	Lower	8
17	Turbo Adaptor	9096866	Fabricated	1
18	Fuel Pressure Regulator	9095878		1
19	Brkt – Pressure Reg.	9096154		1
20	Adaptor – Pressure Reg.	9095789		1
21	Flywheel	9096942	Lightweight	1
22	ECU Support Brkt	9096977		1
23	Fuel/Oil Pressure Sensor	9096681	100 psi	1
24	Con Rod	9096714		4
25	Piston	9096713		4
26	'O' Ring - Restrictor	9096812		1
27	Stud - Turbo/Manifold	6145414		3

ONLY SUPER UNLEADED FUEL (98 OCTANE) SHOULD BE USED OR FISA FUEL ON WRC EVENTS OR AS ADVISED BY ENGINE BUILDER.

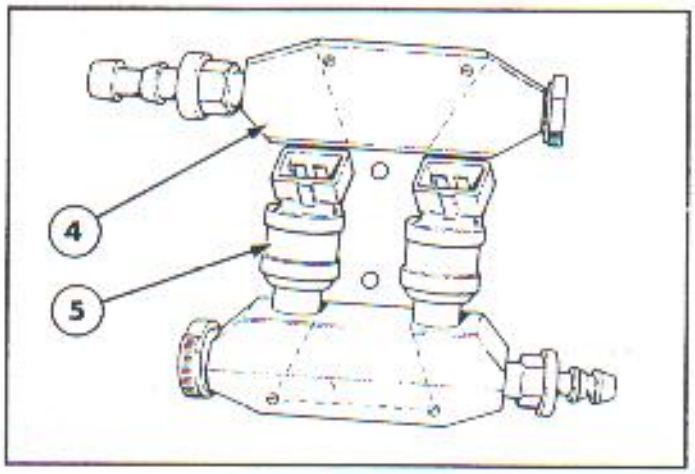


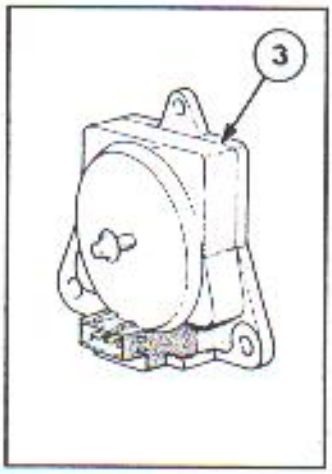






	Description	Finis Code	Comments	Qty.
1	Ignition Coil	*6503280		1
3	MAP Sensor	9092433	3.0 Bar	2
4	Kit–Wastegate Control	9096258		1
		9097114		1
5	Injector only for 6258.	9095169		4
6	Brkt – Coil Mounting	9096448		1
7	Ignition Leadset (Distributorless Ign)	9096372		1
9	Plate Map Sensor Mounting (Fits Inside Car)	9096362		1



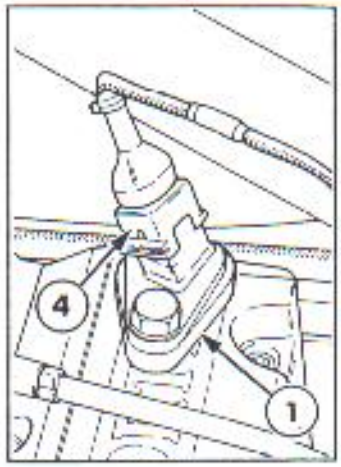


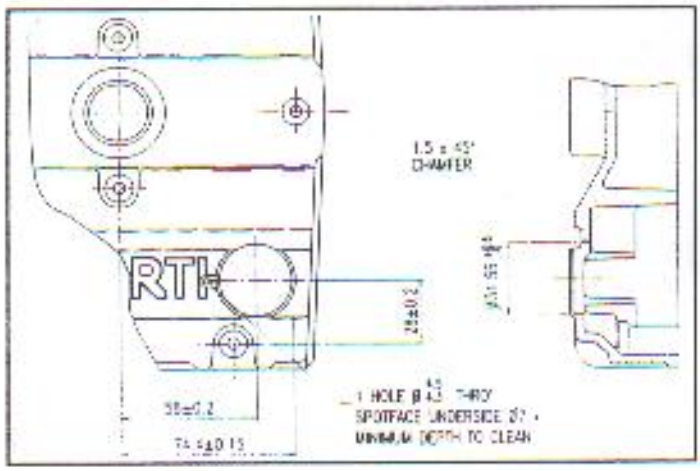
10	Disc - Idle Valve	9096951		2
11	Air Temp. Sensor	9096835	Short	1
12	Shaft - Throttle Body	9096949	H/Duty	1
13	Pulley Jackshaft	9096982		1

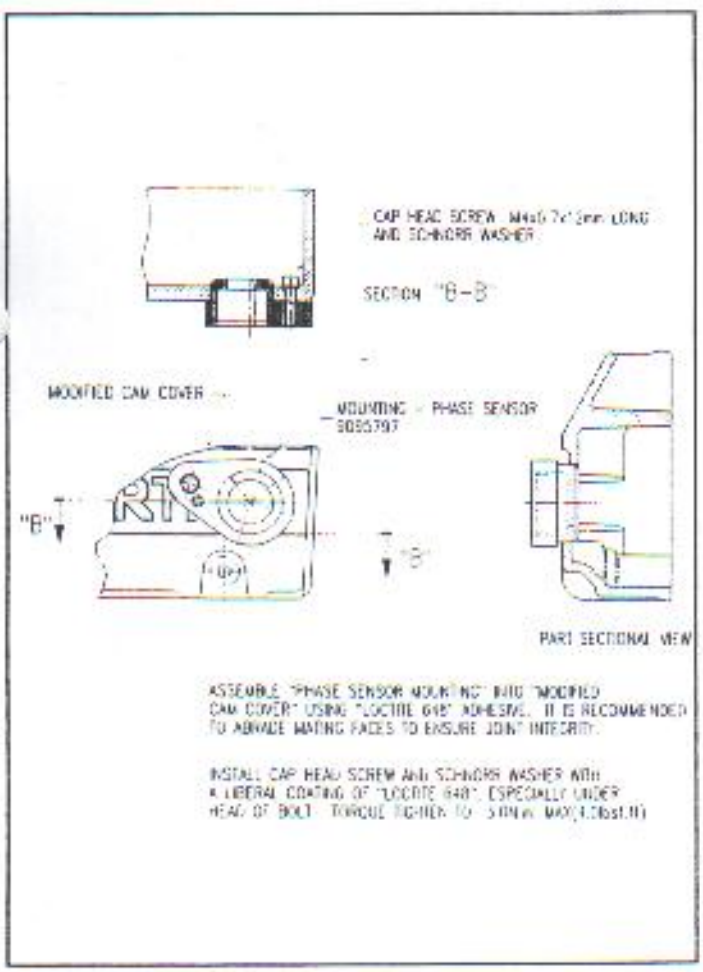
The cam phase sensor is designed to replace the distributor pickup. To install the sensor, it is necessary to modify the cam cover by machining as shown in the illustration (below right).

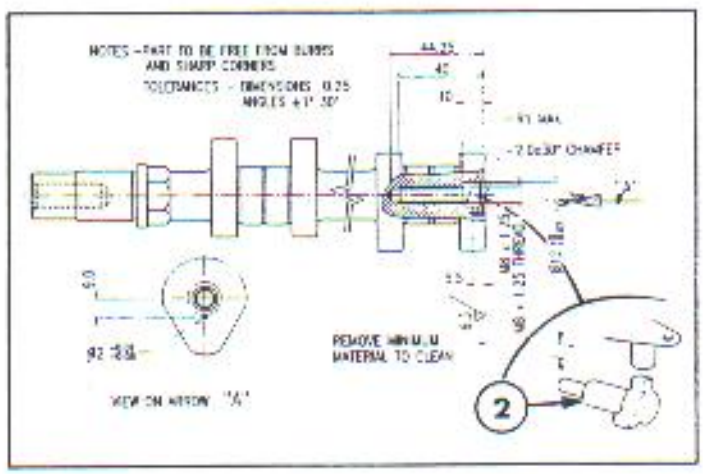
The end of the inlet cam is drilled and tapped to install the trigger (bottom right.

Assemble the phase sensor mounting as shown (bottom left) and adjust the gap with shims to achieve 0.0015 – 0.0018" (0.38 – 0.45mm).



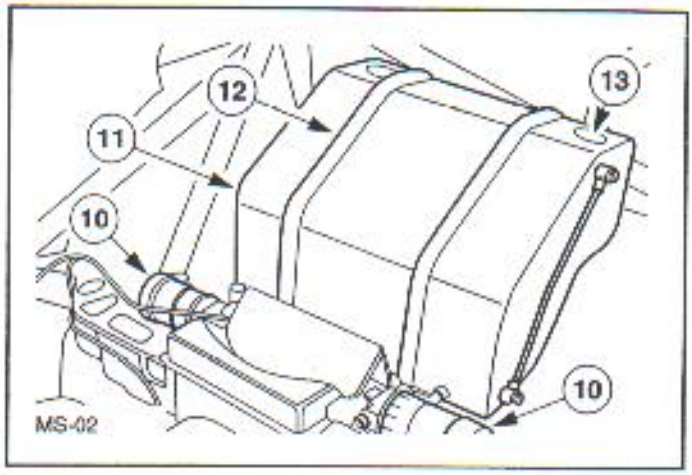


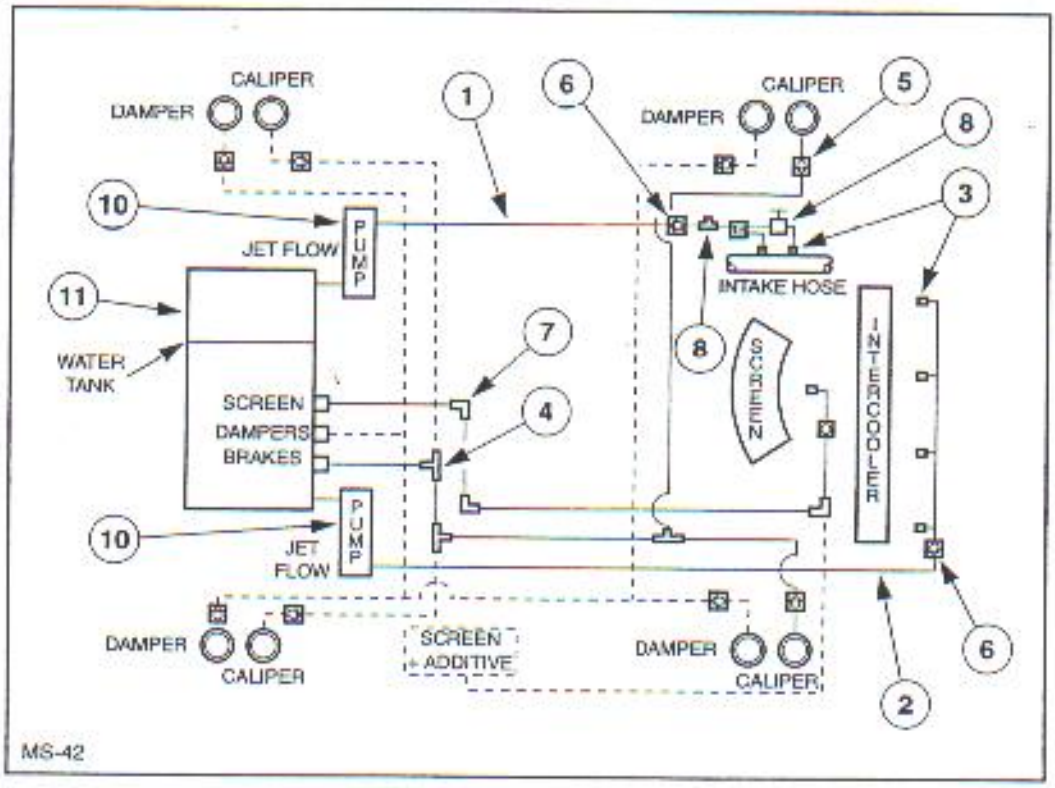




	Description	Finis Code	Comments	Qty.
1	Phase Sensor Mounting	9095797		1
2	Cam Phase Trigger	9095792	on camshaft	1
3	Shim Kit	9095793	phase sensor mounting	1
4	Cam Phase Sensor	6602999		1
5	Cam Belt	9095800		1
6	Crank Sensor	9096617		2
7	Bracket - Sensor	9096986		1
8	Crank Timing Adaptor	9096974	(F8)	1

The intercooler on the Ford Escort World Rally Car no longer features a precooled water jacket. The larger intercooler now features a Water Spray System (WSS).





Note:
Pure Water-Blue Tubing-PPU 06-04 BU

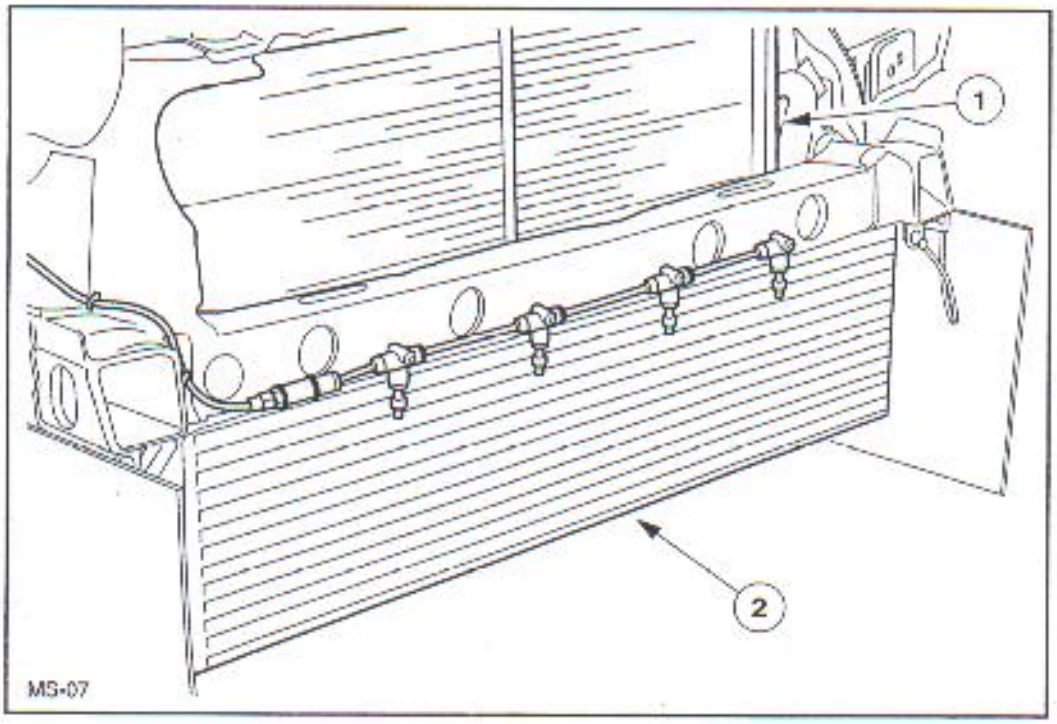
Water with additive -Yellow Tubing -PPU 06-04 Y

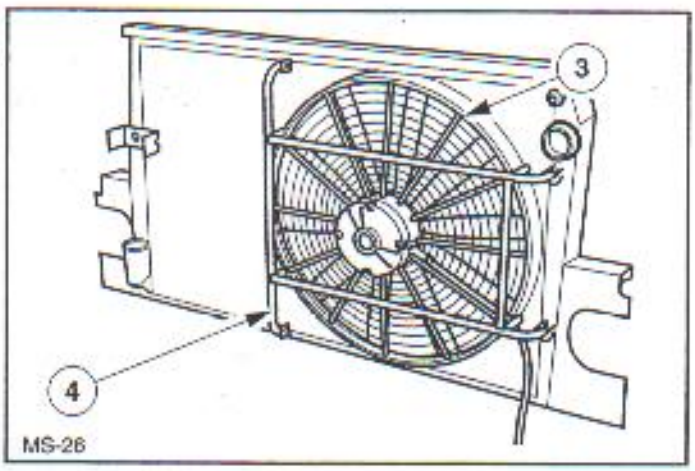
Damper cooling is not requied with dynamic dampers.

WIS - Water Injection System (Internal)

WSS - Water Spray System (External)

	Description	Finis Code	Comments	Qty.
1	WIS Fitting Kit	9096778		1
2	WSS Fitting Kit	9096775		1
3	Spray Jets	9096771	0.7mm	7
4	Tee			
5	Non Return Valve (BW)	9095871		A/R
6	Non Return Valve	9096482		2
7	Elbow			
8	Control Valve			1
9	Pressure Test Point		Incl in Item 1	1
10	Flow Jet Pumps	9096763		2
11	WIS/WSS Tank	9096769		1
12	Hoop Tank Retaining	9096958		2
13	Cap-Tank Fill			2
14	Tank Fittings Kit	9097051	Sight Gauges Pipe & Fittings	

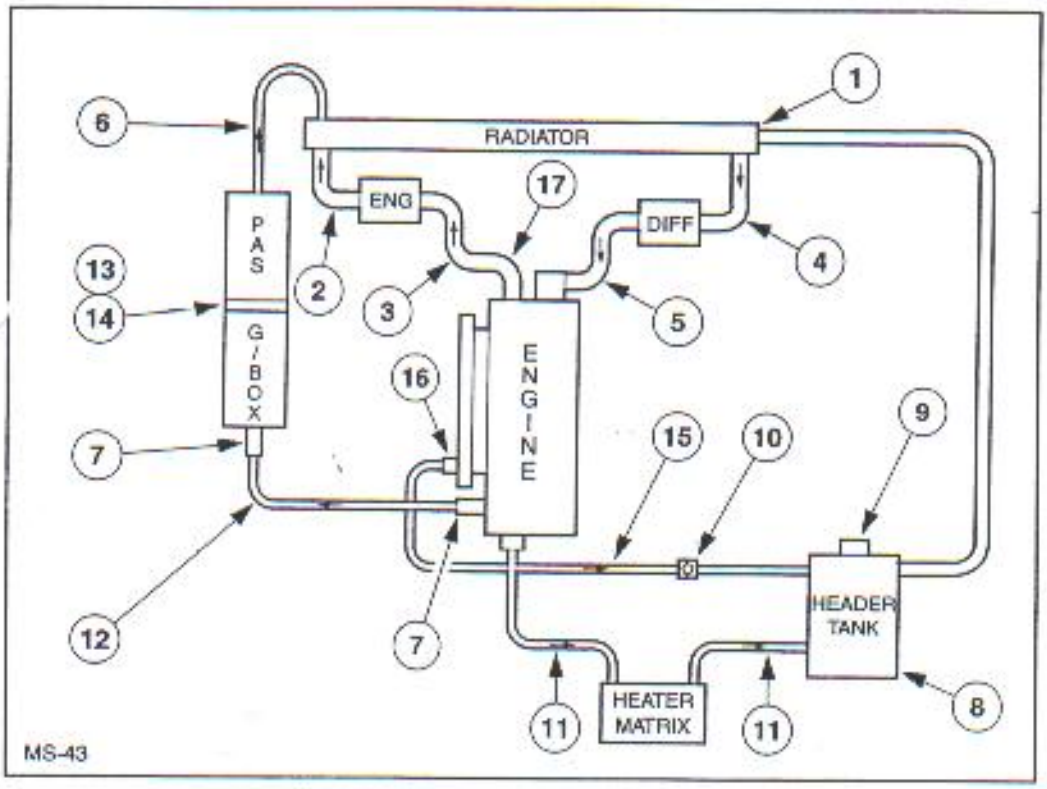




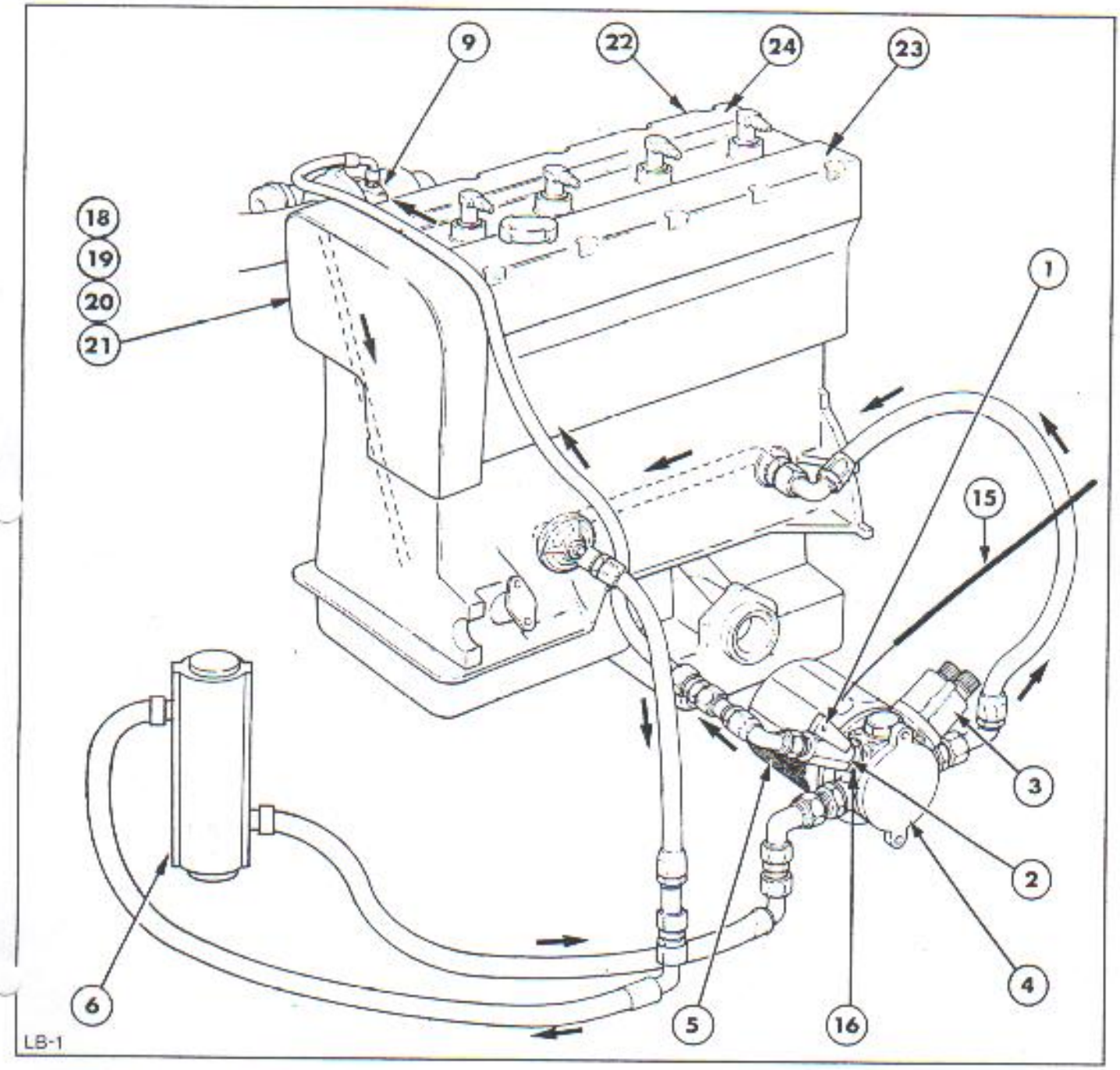
Note: The World Rally Car has a revised radiator layout. The larger intercooler is positioned in front of the radiator. The radiator now features a single cooling fan at the rear. (Optional additional front fan for Gravel).

	Description	Finis Code	Comments	Qty.
1	Radiator	9096946		1
2	Intercooler	9096770		1
3	Fan-Rear	9096752	Tarmac & Gravel	1
4	Frame-Fan	9096745		1

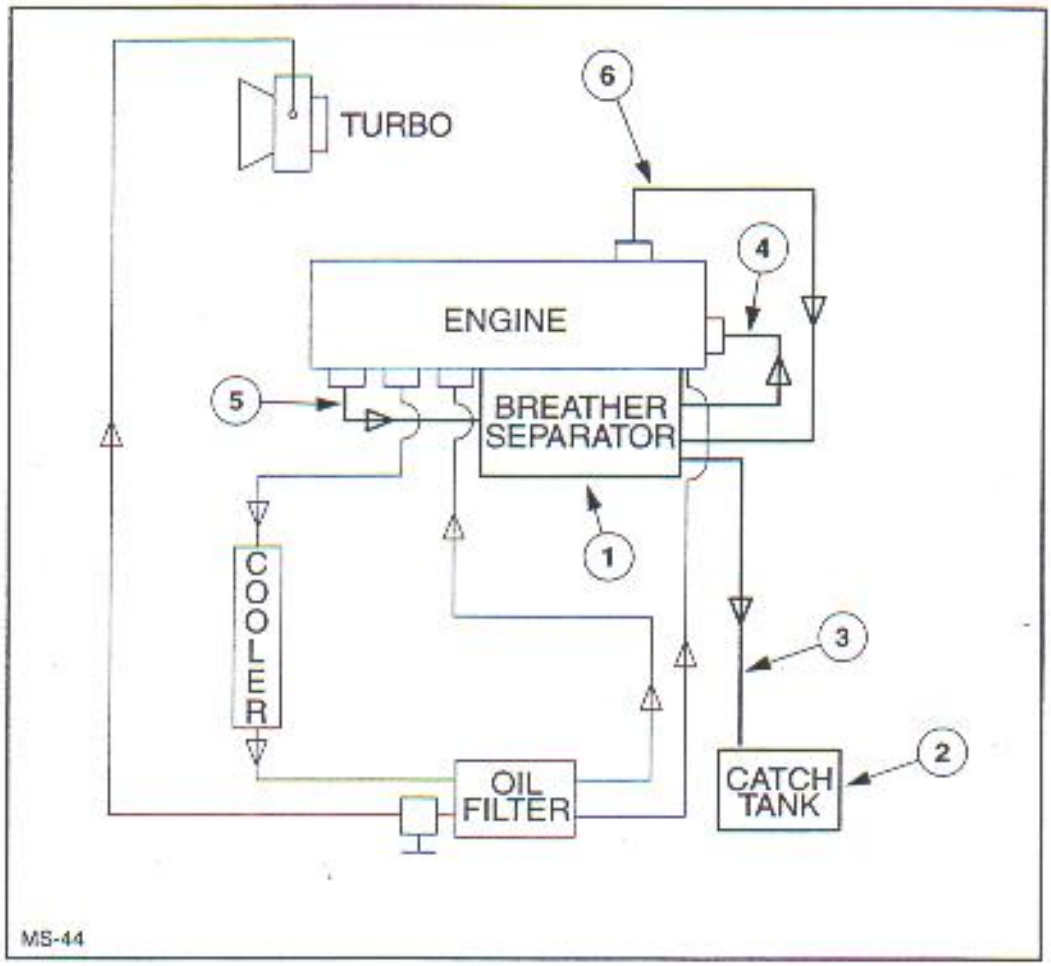
The Engine cooling system now includes heat exchangers for Transmission, Differential, PAS and Engine Oil which replace the oil coolers featured on the Group A RS Cosworth.



	Description	Finis Code	Comments	Qty.
1	Radiator	9096946		1
2	Hose, Eng. Cooler to Rad	9096750	38mm	1
3	Hose, Eng. to Eng. Cooler	9096751	38mm	1
4	Hose, Rad. to Diff. Cooler	9096746	38mm	1
5	Hose, Diff. Cooler to Water Pump	9096747	38mm	1
6	Hose, PAS Cooler to Rad	9096748	15mm	1
7	Hose, to Ally. Pipe	9096749	15mm	2
8	Header Tank	9096834	2ltr	1
9	Cap, Header Tank	9095183	2bar	1
10	Valve (One Way)	9096482		1
11	Hose, Matrix connections	*1643728		A/R
12	Pipe Ally.	9096947		1
13	Joiner, Coolers	9096975		1
14	Stud, Joiner	9096978		4
15	Wurth hose		7.5mm bore	1
16	Connector Block, Cyl.Head	9096984	Bleed Pipes	1
17	Engine Water Outlet	9096941		1



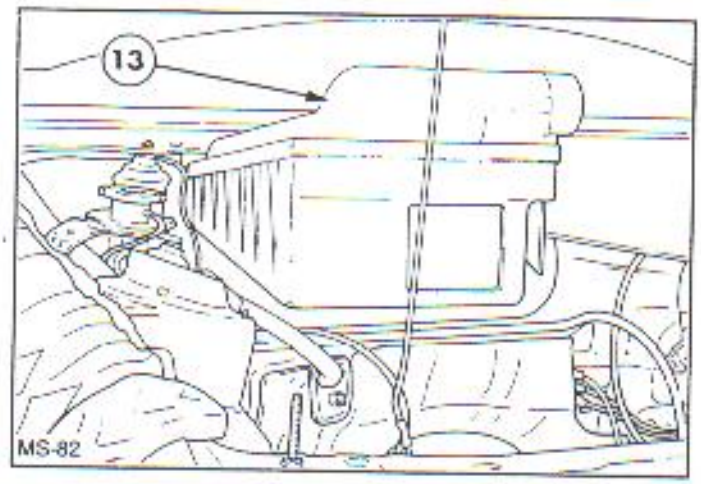
	Description	Finis Code	Comments	Qty.
1	Turbo Cut Off Valve	9094842		1
2	Union	9095663		1
3	Sender – Oil Pressure	9096681		1
4	Block – Oil Filter	9096505		1
5	Oil Filter	9094911		1
6	Heat Exchanger – Oil	9096931		1
9	Union – Turbo Oil Feed	9096774		1
15	Cable Pull – Turbo Cut Off	9093767		1
16	Lock Nut	9096475		1
17	Dip Stick	9095799		1
18	Tube – Turbo Oil Drain	9096826		1
19	Hose – Turbo Oil Drain	9096825		1
20	Gasket Oil Drain Tube	9096944		1
21	Heatshield – Drain Hose	9096945		1
22	Cam Cover	6909225		1
23	Inlet Cam	9094773	Virgin Lobes	1
24	Exhust Cam	9094774	Virgin Lobes	1
25	3/4 UNF x -6 Adaptor	9096516	Oil Pressure Sender	1
26	Lock Nut	9096475	Cut Off Adaptor	1

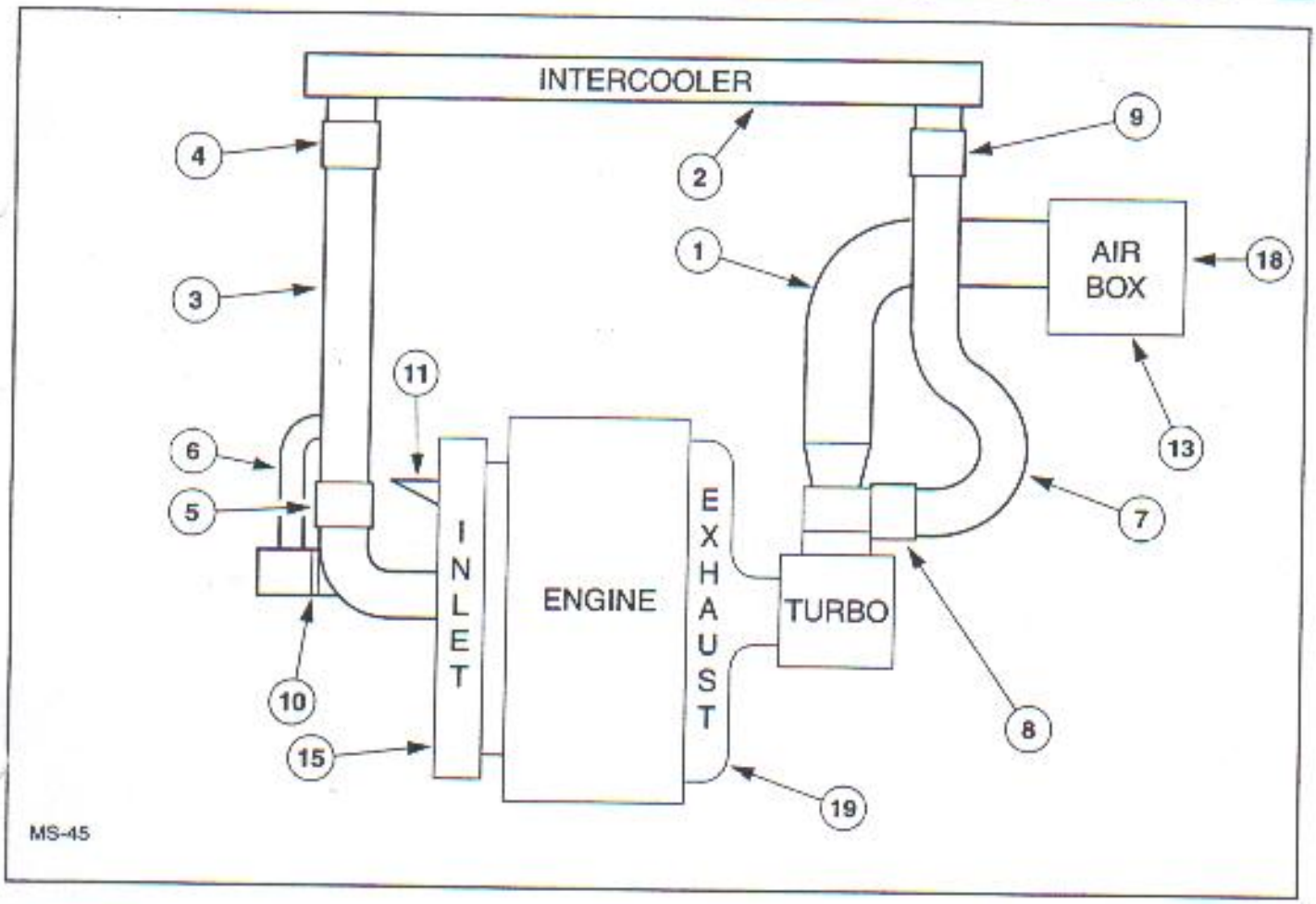


	Description	Finis Code	Comments	Qty.
1	Breather Can – Engine Block	9096983		1
2	Catch Tank – Triangular	9096283		1
3	Hose, Breather to Tank	9096082	22mm – Silicon	1
4	Hose, Breather to Sump	TBE		1
5	Hose, Sump to Breather	TBE		1
6	Hose, Breather to Block	TBE		1

The airbox is adapted from a standard Sierra Cosworth base (1637724). The inner side is reconstructed and a new air intake hole made to match the air intake duct.

Protect from heat with foil tape.

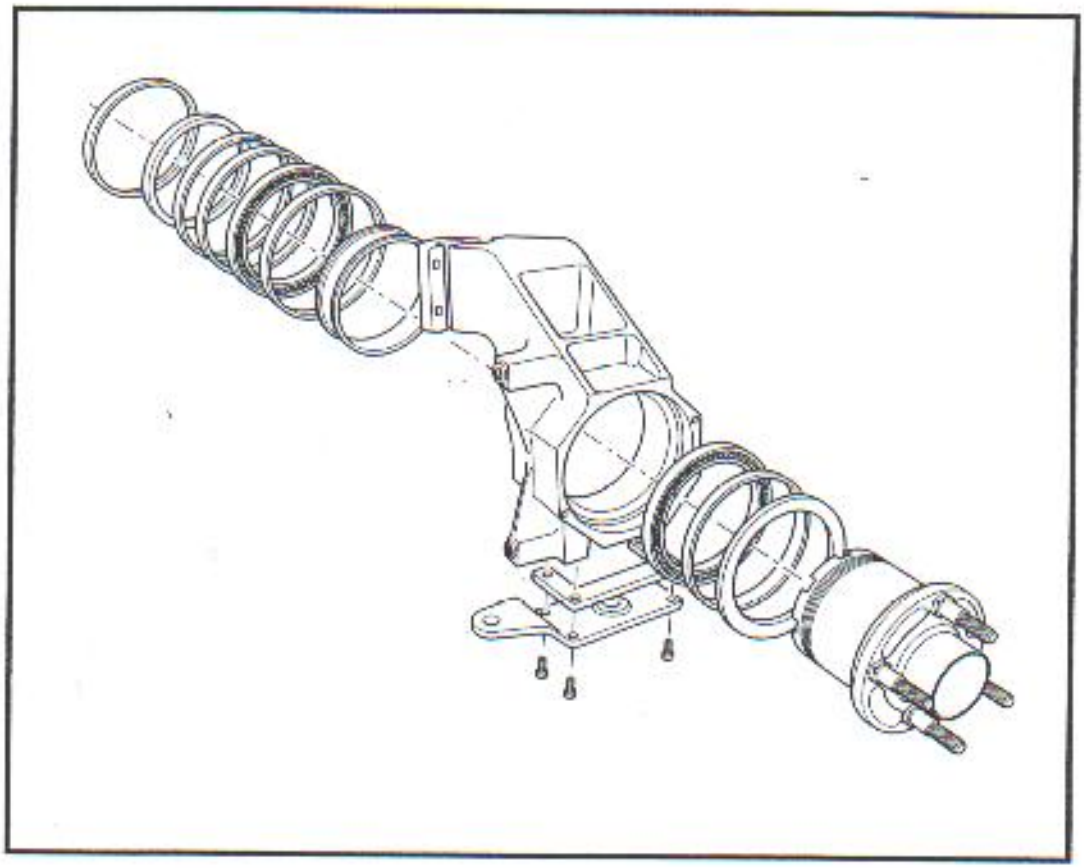




	Description	Finis Code	Comments	Qty.
1	Hose – Airbox to Turbo	9096589		1
2	Intercooler	9096770		1
3	Pipe, I/C to Engine	9096755		1
4	Hose, I/C to Pipe	9097111		1
5	Hose, Pipe to Throttle body	9096754		1
6	Hose, Pipe to Bypass valve	9096756		2
7	Pipe, Turbo to I/C	9096757		1
8	Hose, Turbo to Pipe	9097112		1
9	Hose, Pipe to I/C	9097111		1
10	O – Ring, Air Bypass valve	9096804		1

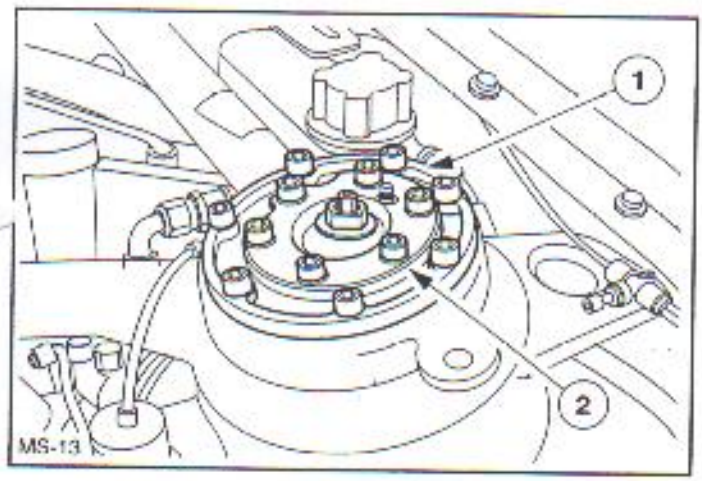
	Description	Finis Code	Comments	Qty.
11	Throttle Bracket	9094892	Modified Steel	A/R
	Throttle Bracket	9096948	Alu	1
12	Air Intake Duct	9096584		1
13	Air Box Lid	9095593		1
14	O Ring – Intake Manifold	9095558		1
15	Inlet Manifold	9096717		1
16	Brkt Wiring Loom to Fuel Rail	9095567		1
17	O Ring – Inlet Manifold to Head	9095798		4
18	Air Filter Element	9096222	Paper	1
19	Exhaust Manifold	9096718		1
20	Connector	9096817		1
21	Valve Body	9096816		1

FRONT SUSPENSION

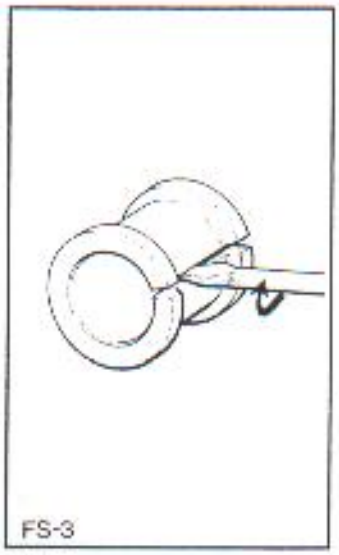


The front suspension homologated into World Rally Car is basically carried over from the very successful Escort RS Cosworth 4x4. It consists of an alloy upright, adjustable track control arm and compression strut with a separate, adjustable - blade anti-roll bar. Each blade has 3 positions – ' SOFT', 'HALF' and 'FULL STIFF'.

Hubs and bearings should be inspected at regular intervals. Clean all components regularly and protect from corrosion.

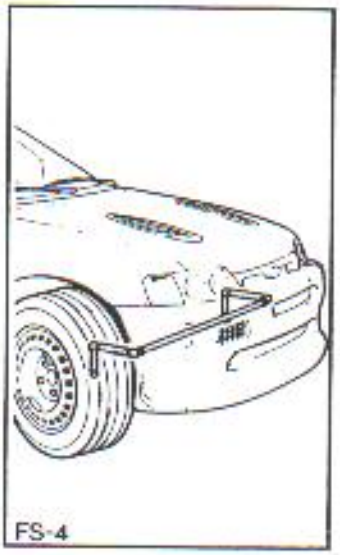


	Description	Finis Code	Comments	Qty.
1	Top Mount Plate	9096809	Gravel	2
		9096808	Tarmac	2
2	Bearing Housing	9096807		2

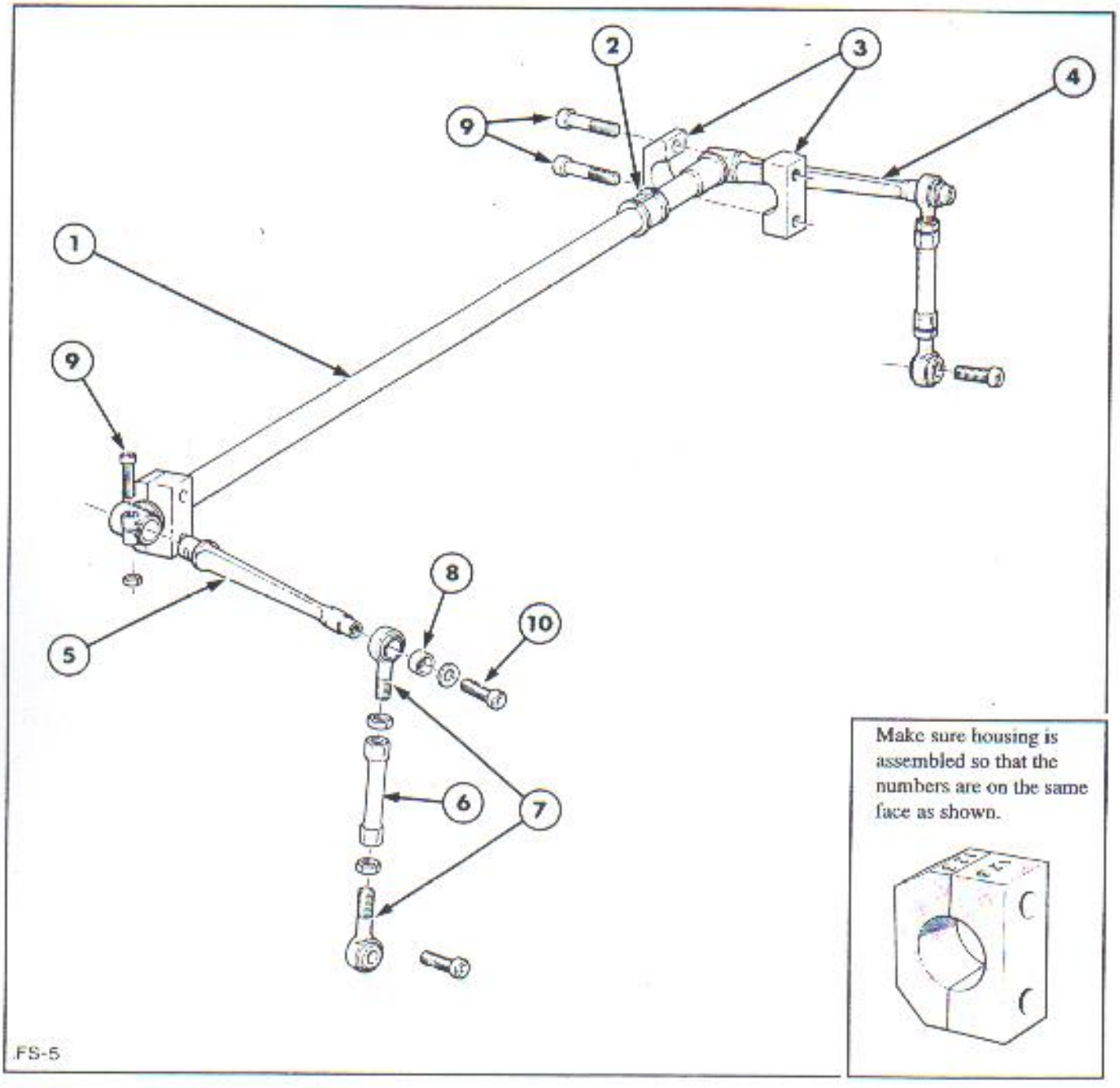


FS-3

	Description	Finis Code	Comments	Qty.
1	Anti-roll Bar – Front	9096938	Tarmac 20000	1
		9096937	Gravel 4000	1
2	Bearing – Anti-roll Bar	9090660	Nylon	2
		TBC	PTFE	2
3	Clamp – Anti-roll Bar	9094703		2
4	Blade – Anti-roll Bar LH	9092232		1
5	Blade – Anti-roll Bar RH	9092233		1
6	Drop Link – Front	9096544	Tarmac	2
	Front	9096336	Gravel	2
7	Kit – Ball Joint	9096165		2
8	Spacer	9096236	Plain	2
		9096232	Shouldered	6
9	Cap Head Bolt		M6 x 35	6
10	Cap Head Bolt		M10 x 40	2
11	Lock Nut	9096968		4



FS-4



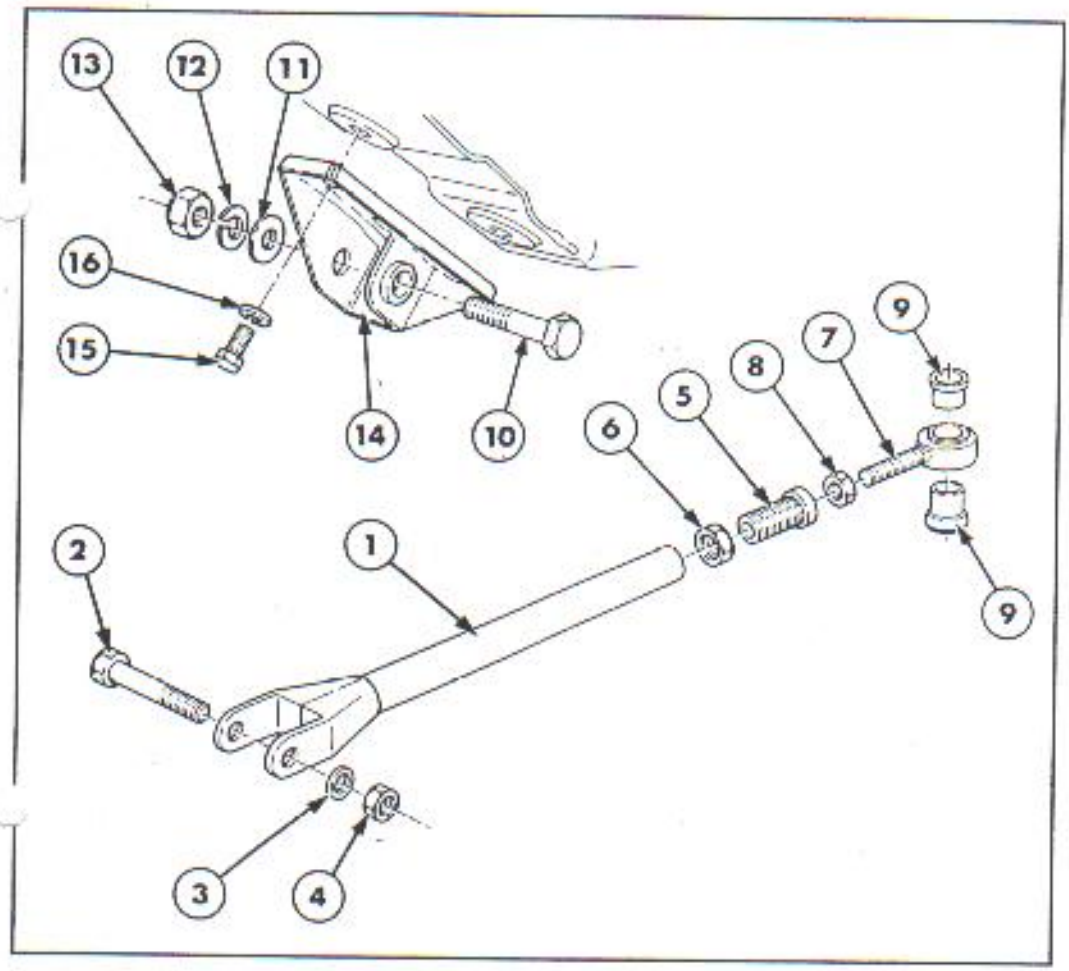
FS-5

Make sure housing is assembled so that the numbers are on the same face as shown.

The compression struts are fabricated from high grade steel, the gravel version being in a heavier grade.

Do not attempt to repair by welding.

After use, clean and protect from corrosion.



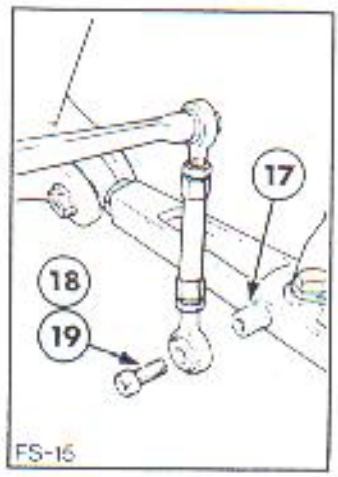
	Description	Finis Code	Comments	Qty.
1	Compression Strut	9096299	Tarmac – Red	2
			Gravel – Blue	2
2	Bolt, Comp. Strut to TCA	9096382	M12	2
3	Locking Washer		M12	2
4	Nut M12	*6078595	Grade 10.9	2
5	Bush Adjusting	9095687	Titanium – Short	2
		9096268	Titanium – Long	2
6	Locknut	9095688	Titanium	2
7	Rod End Sphr. Joint	9096489		2
8	Locknut	9090063		2
9	Spacer Comp. Strut to	9096335	Steel	4
	Chassis Bracket	9096334	Aluminium	

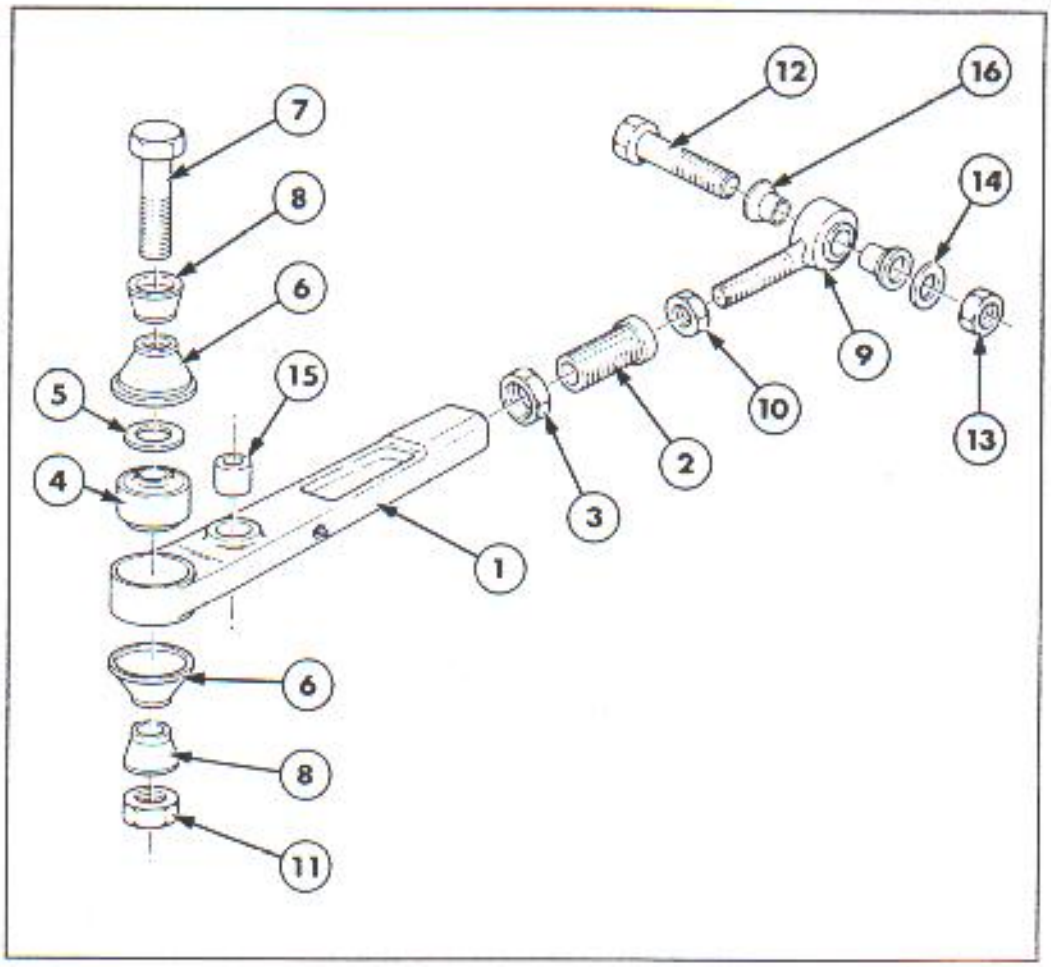
	Description	Finis Code	Comments	Qty.
10	Bolt Comp. Strut to	9096929	M12 x 72	2
	Comp. Strut Bracket			
11	Flat Washer		M12	2
12	Locking Washer		M12	2
13	Nut – M12	*6078595	Grade 10.9	2
14	Compression Strut Bracket	9095773	Gravel LH	1
		9095774	Gravel RH	1
		9096854	Tarmac LH	1
		9096853	Tarmac RH	1
15	Bolt M10x30	9096929		4
16	Flat Washer			4

To fit the outer bearing, heat the track control arm on a hotplate to 100°C and cool the bearing in a fridge/freezer.

Ensure the bearing is properly seated before fitting the circlip. Lubricate with grease and wire lock the gaiters in position.

The compression strut bushes should be press fitted.





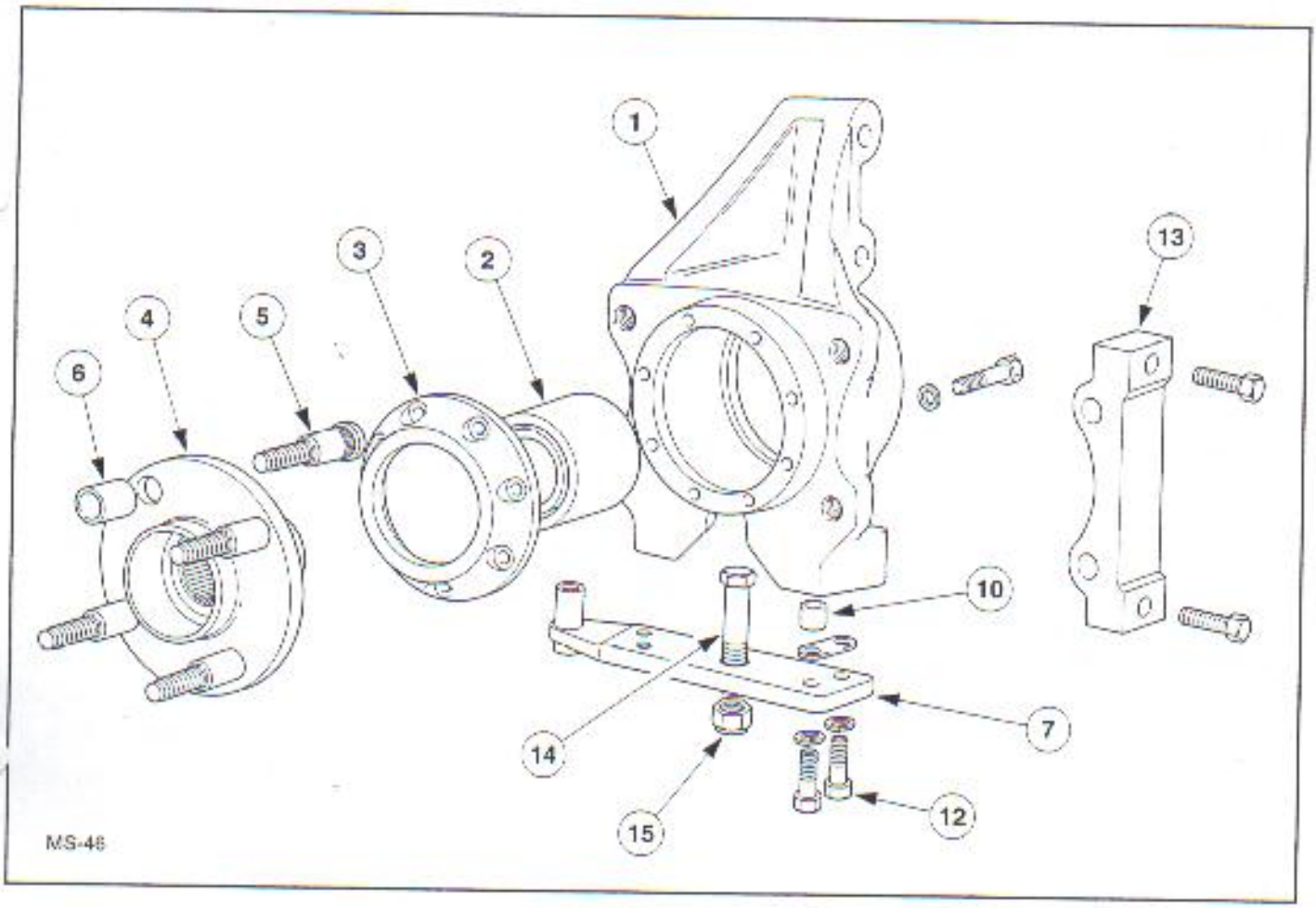
	Description	Finis Code	Comments	Qty.
1	Track Control Arm	9096493	Tarmac – Gold	2
		9096679	Gravel	2
2	Adjustable Bush	9095687	Titanium Tarmac & Gravel	2
3	Locknut	9095688	Titanium Tarmac & Gravel	2
4	Bearing	9095525		2
5	Circlip – TCA Brg.	9092954		2
6	Gaiter – TCA	9093181	Secure with lockwire	4
7	Pin Outer TCA-Upright	9096235	Titanium Tarmac – Yellow	2
		9096108	Steel Gravel – Red	2
8	Spacer – Outer TCA Pin	9096115	Tarmac & Gravel	4

	Description	Finis Code	Comments	Qty.
9	Joint – Rod End	9096489		2
10	Locknut	9090063		2
11	Locknut, Pin – TCA	9093779		2
12	Bolt (Crossmember to TCA)	9095855		2
13	Nut, M12 Self-locking	*1629583		2
14	Washer M12	*6082613		2
15	Bush TCA to Comp. Strut	9093775	Tarmac & Gravel	2
16	Spacer TCA to Crossmember	9096511	Short	2
		9096933	Long	2
17	Spacer – ARB to TCA	9096236		2
		9096232		2
18	Caphead Bolt		M10	2
19	Self Locking Nut	9096968		4

To fit the bearing, warm the upright on a hotplate to 100°C and cool the bearing overnight in a freezer. Ensure the bearing is fully seated before fitting retaining cap and pressing the hub into place.

The wheelstuds are pressfit into the hub and sleeve to ensure they are fitted accurately, an old wheel centre fitted with steel inserts can be modified as a jig.

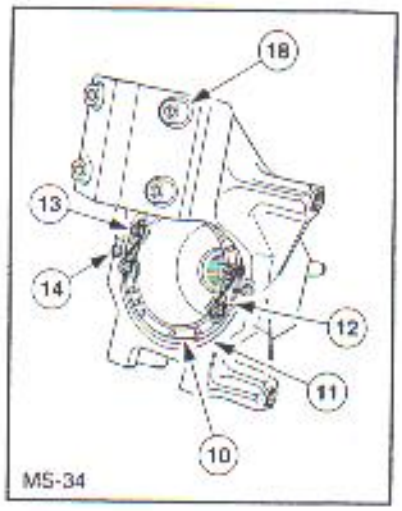
Check wheel bearings regularly, replace after 1000 km approx. or as soon as play is evident.



	Description	Finis Code	Comments	Qty.
1	Front Upright	9097102	Gravel only	2
2	Bearing	9096436		2
3	Cap – Bearing	9095757		2
4	Hub – Front	9097016		2
5	Stud – Wheel	9095513		8
6	Sleeve – Wheel Stud	9095414		8
7	Front Steering Arm LH	9096686		1
	Front Steering Arm RH	9096685		1
10	Dowel - Stg. Arm	9091585		4
12	Cap head bolt		M10 x 40	8

	Description	Finis Code	Comments	Qty.
13	Caliper Adapter	9096242	AP. Caliper	2
14	Pin – TCA	9096108	Steel	2
15	Lock Nut - TCA Pin	9093779		2

Special procedures and tools are necessary for assembly and overhaul. For further assistance or advice please contact the technical support team.



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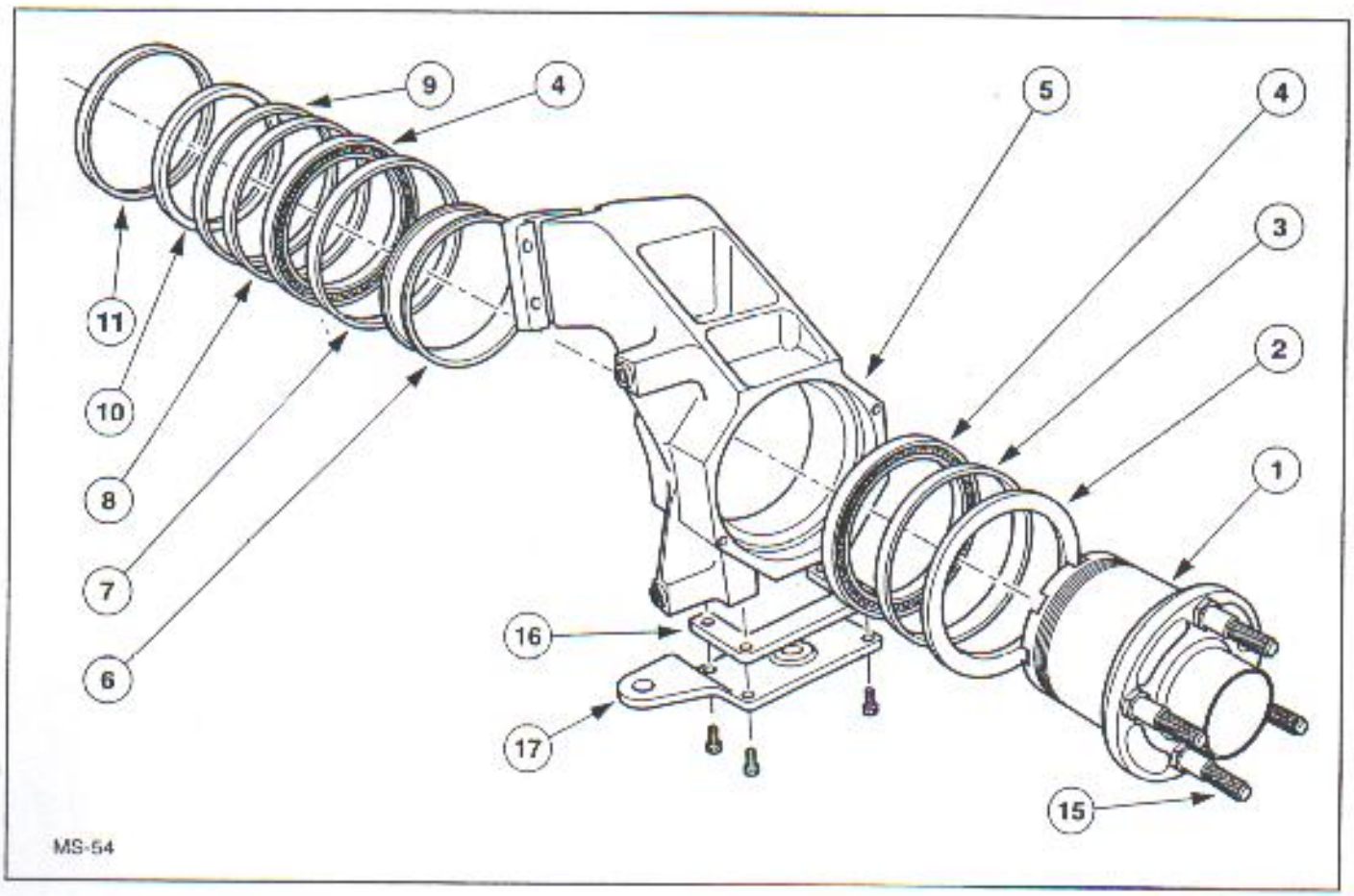

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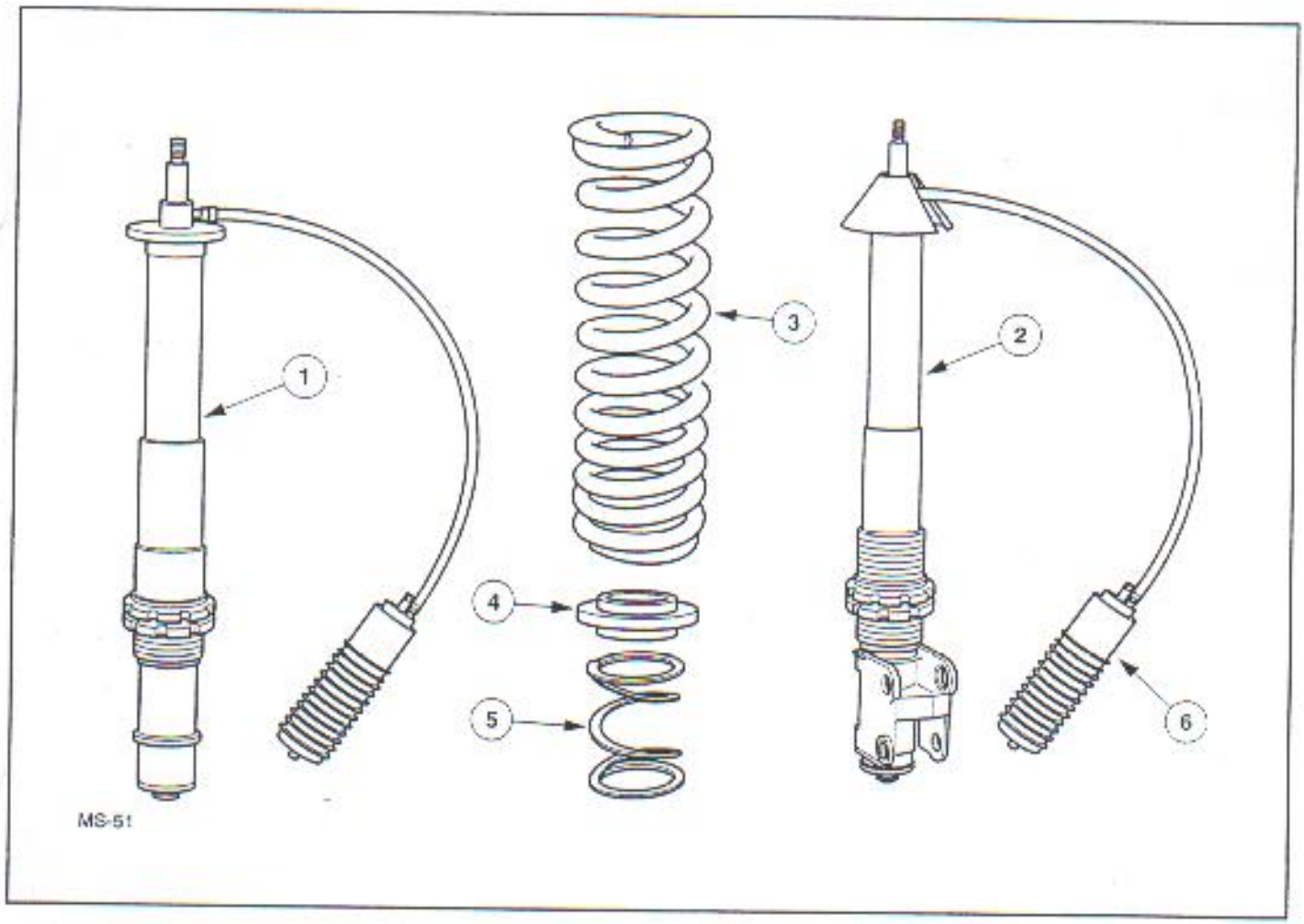
	Description	Finis Code	Comments	Qty.
1	Hub	9096907		2
2	Outer Seal	9096876		2
3	Spacer-Outer Seal	9096916	4.8 mm	2
4	Bearing	9096605		4
5	Upright - RH	9096917		1
	Upright - LH	9096918		1
6	Spacer - Bearing Adjust	9096921	Machine to suit Assy	2
7	Spacer - Inner Brg track	9096919	12mm	2
8	Spacer - Inner Seal	9096915	5.2mm	2
9	Inner Seal	9096878		2
	Flinger - Hub	9096877		2
	Spacer - Lockring	9096920		2

	Description	Finis Code	Comments	Qty.
10	Lock Ring - Hub	9096906		2
11	Retainer - Inner Seal	9096911	17mm	2
12	Lock Tab	9096908	Use 2 tabs as required	
		9096909		
		9096910		
13	Bolt - Lock Tab		M6 x 12mm	8
14	Bolt - Seal Retainer		M4 x 12mm - button hd	4
15	Stud - Wheel	9096912		8
16	Roll Ctr. Spacer	9096928	12mm Thick	2
	or	9096171	18mm Thick	2
17	Steering Arm - RH	9096913		1
	Steering Arm - LH	9096914		1
18	Bolt-Cap	9096967		8

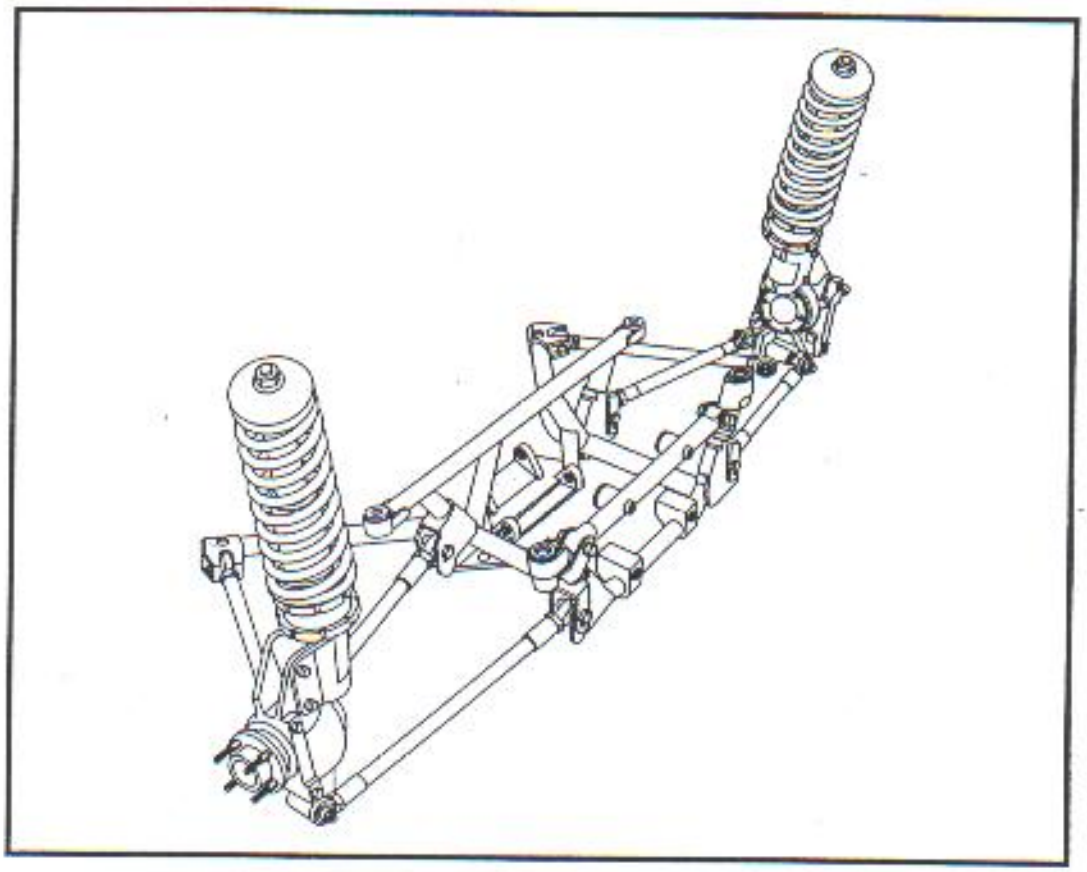
The new dynamic dampers come as a complete unit. Please note that bump stops are not included and should be fitted before use. While the gravel strut bolts directly to the upright the tarmac strut is clamped into the upright.

The dampers are 3-way adjustable with adjustments for compression, rebound and low speed compression.

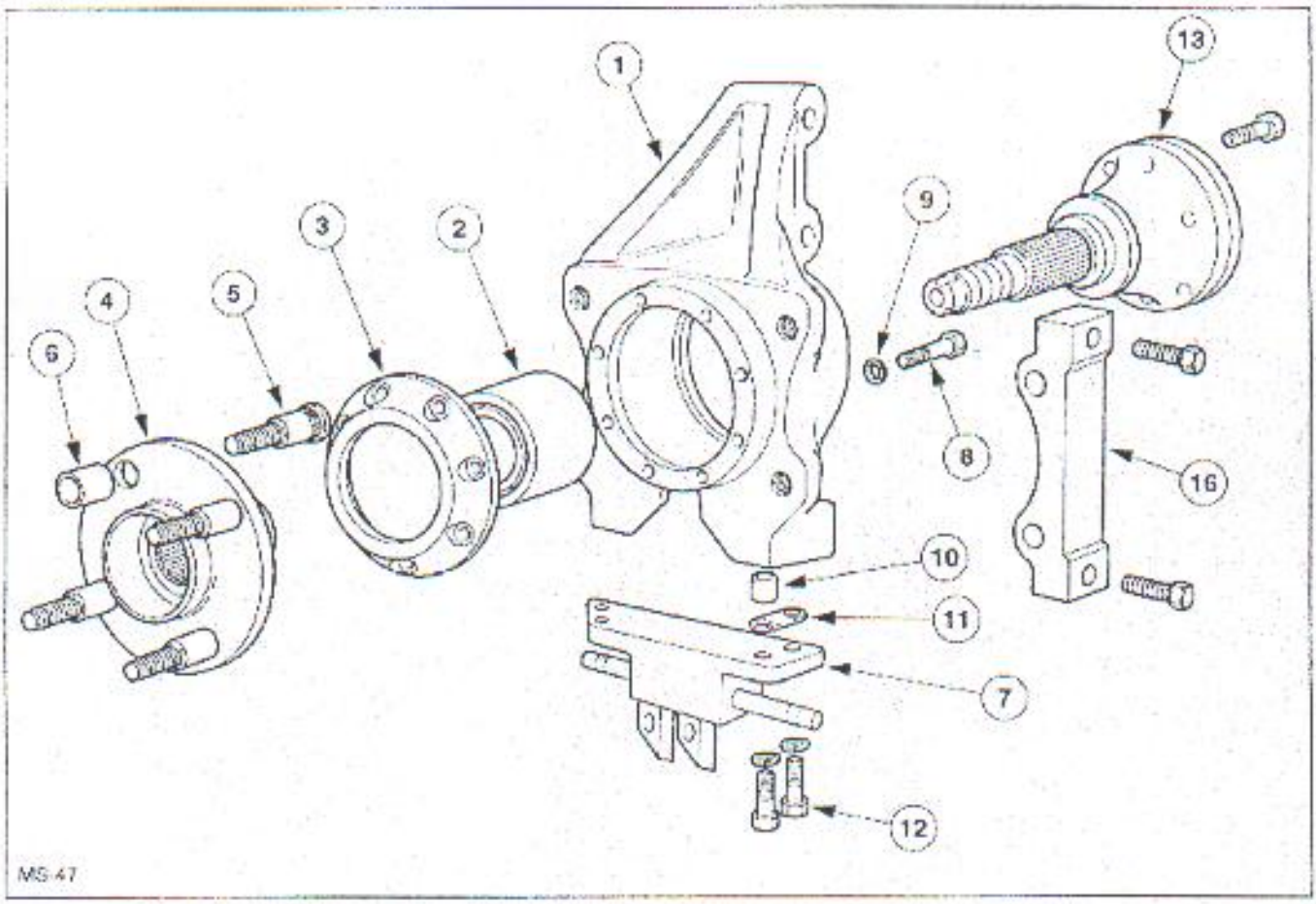


	Description	Finis Code	Comments	Qty.
1	Strut Assy – Dynamic Spec 3	9096871	Tarmac	2
2	Damper Assy – Dynamic Spec 1	9096872	Gravel	2
3	Spring – 84 N/mm – Tarmac	9096880	165 x 61mm Ø	2
	Spring – 88 N/mm – Tarmac	9096879	165 x 61mm Ø	2
	Spring – 40 N/mm – Gravel	9096882	230 x 91.5mm Ø	2
	Spring – 42 N/mm – Gravel	9096881	230 x 91.5mm Ø	2
4	Guide – Spring	9096361	Gravel	2
		9096364	Tarmac	2
5	Helper Spring		Gravel – 70	2
			Tarmac – 40 – 60 – 70	2
6	Remote Reservoir		Included in Assy	
7	Bumpstop – 40x75mm	9092536	Not Included in Assy (Cut to length)	2

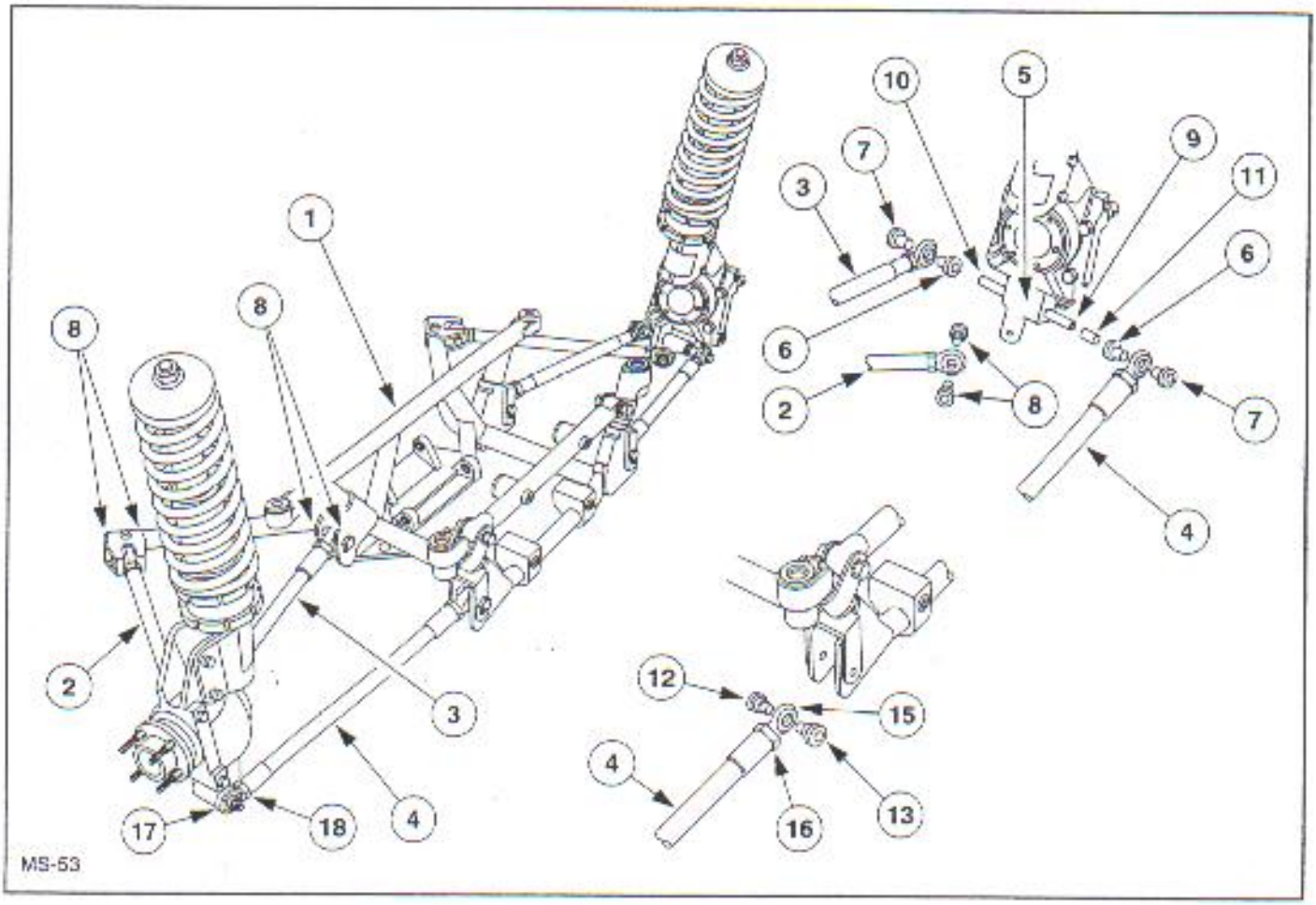
REAR SUSPENSION



The rear upright is identical to the gravel front upright (see Front Suspension section for details).



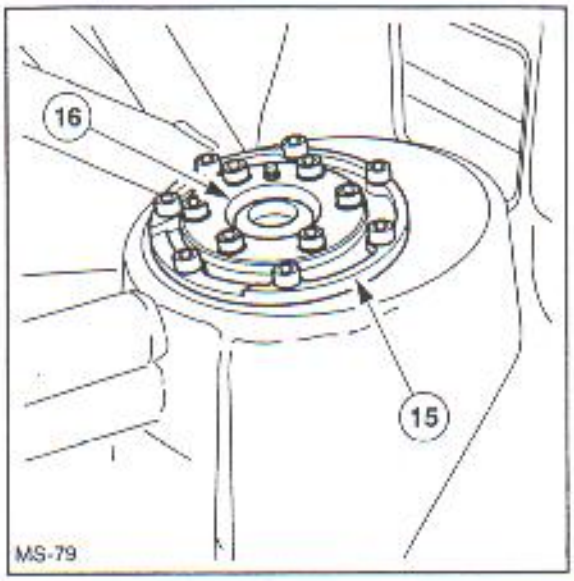
	Description	Finis Code	Comments	Qty.
1	Rear Upright	9097102	Tarmac & Gravel	2
2	Bearing	9096436		2
3	Bearing Locator	9095757		2
4	Hub - Rear	9097016		2
5	Stud - Wheel	9095513		8
6	Sleeve - Wheel	9095414		8
7	Rear Steering Arm LH	9097071	R/B 7099	1
	Rear Steering Arm RH	9097070	R/B 7098	1
8	Cap Screw	9096467		16
9	Washer			16
10	Dowel - Stg. Arm	9096095		4
11	Spacer - Stg. Arm	9096981	15mm	4
12	Cap Head Bolt			8
13	Stubshaft Tarmac	9096783		2
	Stubshaft Gravel	9096996		2
14	Hub Nut	9097119		2
15	Wheel Retaining Nut	9096395		8
16	Adapter Caliper	9096926	Brembo (Tarmac)	2
	Adapter Caliper	9096242	A.P. (Gravel)	2

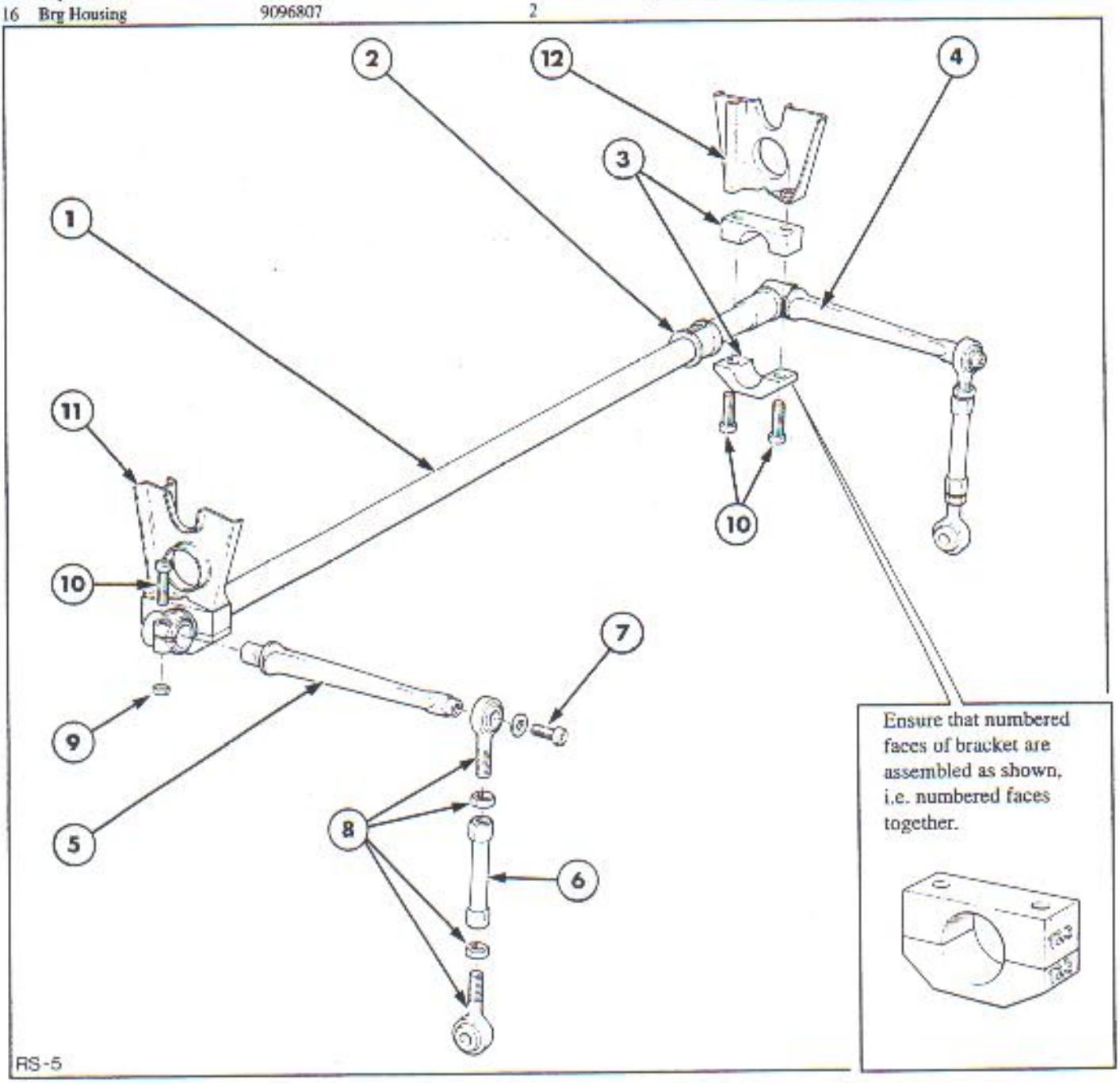


	Description	Finis Code	Comments	Qty.
1	Rear Sub Frame	9097069		1
2	Tie Rod	9096787	Tarmac - Black/Green	2
		9096831	Gravel - White/Green	2
3	Centre Link	9096785	Tarmac - Black/Red	2
		9096829	Gravel - White/Red	2
4	Rear Link	9096786	Tarmac - Black/Yellow	2
		9096830	Gravel - White/Yellow	2
5	Rear Stg Arm LH	9097071	R/B 9097099	1
	Rear Stg Arm RH	9097070	R/B 9097098	1
6	Spacer - Rod End to Stg Arm	9096790	Centre Link	2
	Inner	9097088	Rear Link	2
7	Spacer - Rod End to Stg Arm	9096791	Centre Link	2
	Outer	9097089	Rear Link	2
8	Spacer - Rod End to Subframe Stg. Arm Clevis	9096796	Centre Link, Tie Rod	12
9	Stg Arm Pin Long	9097085	Use with 7098/9	2
10	Stg Arm Pin Short	9097100	Use with 7098/9	2
11	Sleeve - Pin Long	9097087	Use with 7098/9	2
12	Spacer - Rod End to Subframe	9097089	Short	2
13	Spacer - Rod End to Subframe	9097090	Long	2
14	Nut - Rod End to Stg Arm	9096969	Centre Link	2
		9097086	Rear Link	2

	Description	Finis Code	Comments	Qty.
15	Rod End Brg - RH Thread	9096792		6
16	Lock Nut - RH Thread	9096794		6
17	Rod End Brg - LH Thread	9096793		6
18	Lock Nut - LH Thread	9096795		6

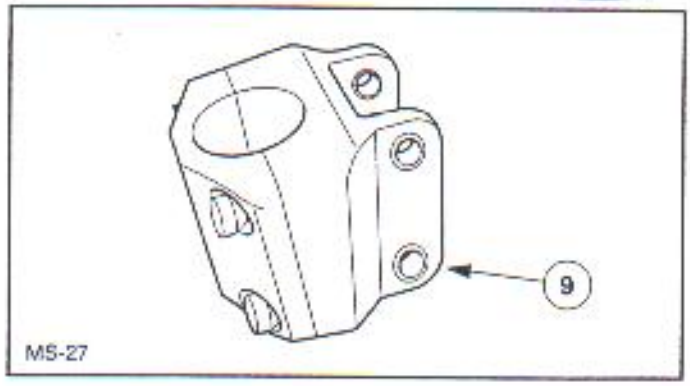
	Description	Finis Code	Comments	Qty.
1	Anti-roll Bar	9096940	4000 Gravel	1
1	Anti-roll Bar	9096939	20000 Tarmac	1
2	Bearing Sleeve	9090660	Nylon	2
		TBC	PTFE	2
3	Clamp – Anti-roll Bar	9094703		2
4	Blade ARB LH	9092232		1
5	Blade ARB RH	9092233		1
6	Drop Link	9096279	Gold	2
	Drop Link - Gravel	9096544		2
	Clevis	9096311		2
	Pin - Clevis			2
	Plate - ARB	TBE		2
7	Cap Head Bolt		M10x40	2
8	Kit – Ball Joint	9096165		2
9	Nut – Anti-roll Bar Clamp	1471512		2
10	Bolt – Anti-roll Bar Clamp	1470247		6
11	Bracket – ARB to Chassis RH	9093256	Part of Body/Cage Assy	1
12	Bracket – ARB to Chassis LH	9093255	Part of Body/Cage Assy	1
15	Top Mount Plate	9096784	Gravel / Tarmac	2
16	Brg Housing	9096807		2

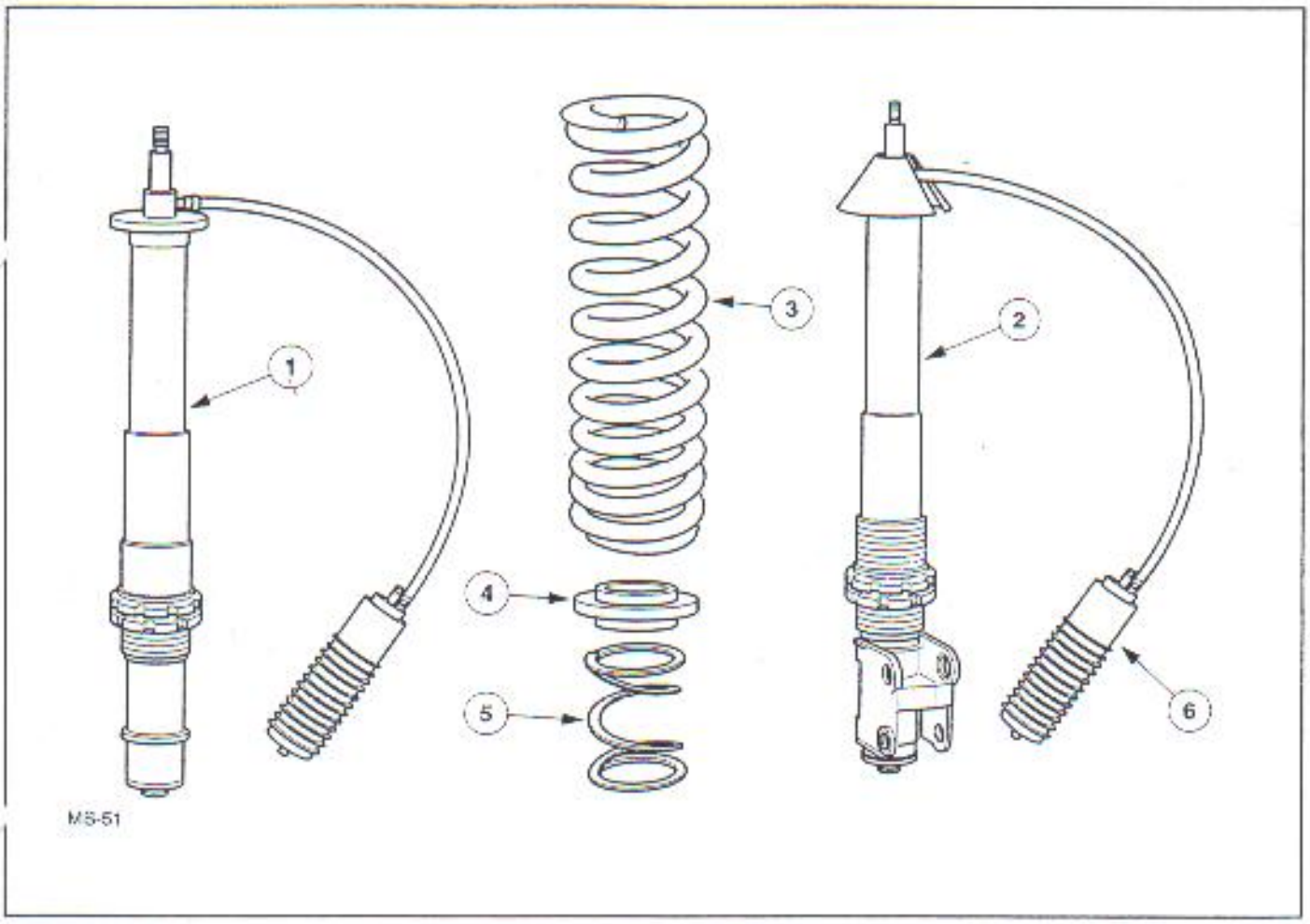




Ensure that numbered faces of bracket are assembled as shown, i.e. numbered faces together.

The new dynamic dampers come as a complete unit. Please note that bump stops are not included and should be fitted before use. While the gravel strut bolts directly to the upright the tarmac strut is clamped into a bracket (9097052).





	Description	Finis Code	Comments	Qty.
1	Strut Assy – Dynamic Spec 3	9096874	Tarmac	2
2	Damper Assy – Dynamic Spec11	9096873	Gravel	2
3	Spring – 59 N/mm – Tarmac	9096884	165 x 61mm Ø	2
	Spring – 62 N/mm – Tarmac	9096883	165 x 61mm Ø	2
	Spring – 30 N/mm – Gravel	9096886	230 x 91.5mm Ø	2
	Spring – 32 N/mm – Gravel	9096885	230 x 91.5mm Ø	2
4	Guide – Spring	9096361	Gravel	2
		9096364	Tarmac	2
5	Helper Spring	9096412	Tarmac. – 50 – 60 – 30	2
			Gravel, – 70 – 91 – 30	
6	Remote Resevoir		Included in Assy	
7	Bumpstop	9092536		

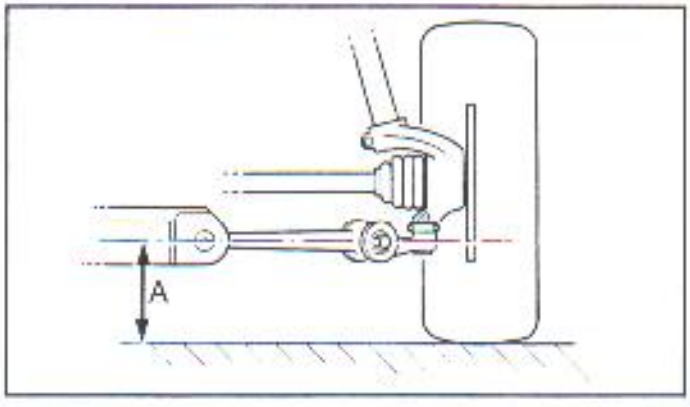
	Description	Finis Code	Comments	Qty.
9	Bracket, Strut to Upright	9097052	Tarmac	2
10	Bush – Camber Adjust	9096847	3.5 – Tarmac	4
		9096848	3.25 – Tarmac	4
		9096849	3.00 – Tarmac	4
		9096850	2.75 – Tarmac	4
		9096851	2.50 – Tarmac	4
		9096852	2.25 – Tarmac	4
11	Bush – Camber Adjust	9096841	2.25 – Gravel	4
		9096842	2.00 – Gravel	4
		9096843	1.75 – Gravel	4
		9096844	1.50 – Gravel	4
		9096845	1.25 – Gravel	4
		9096846	1.00 – Gravel	4

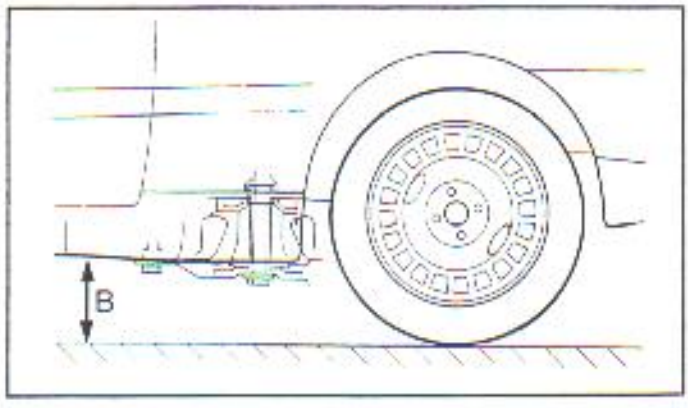
SPECIFICATIONS

FORD MOTORSPORT VEHICLE BUILD SPECIFICATION

EVENT	TARMAC		GRAVEL	
SPECIFICATION	FRONT	REAR	FRONT	REAR
SUSPENSION Springs Dampers Bump Rubbers Anti-Roll Bar Blade Position	 84/88 N/mm Dynamic 40mm + 5mm 20,000 Full Stiff	 59/62 N/mm Dynamic 50mm 20,000 Full Stiff	 40/42 N/mm Dynamic 50mm 3,000/4,000 –	 30/32 N/mm Dynamic 50mm 3,000/4,000 –
CASTOR	3° 30'	–	3° 30'	–
CAMBER	3° 00'	2° 45'	1° 30'	2° 00'
TOE IN	0mm	2mm	0mm	3mm
RIDE HEIGHT	160mm	165mm	220mm	220mm
BRAKES Master Cylinder Brake Pad Material Caliper	Ø 378mm 0.75" Carbon Metallic Brembo 8 Pot	Ø 313mm 0.75" Carbon Metallic Brembo 4 Pot	Ø 315mm 0.7" Carbon Metallic AP 4 Pot	Ø 315mm 0.7" Carbon Metallic AP 4 Pot
CLUTCH	AP Carbon - 7¼" Paddle		AP Carbon - 7¼" Paddle	
WHEELS Tyre Compound Pressure	8" x 18" OZ Ø650 x 225mm – 2.0 Bar	8" x 18" OZ Ø650 x 225mm – 2.0 Bar	7" x 15" Ø650mm – 2.0 Bar	7" x 15" Ø650mm – 2.0 Bar
CENTRE DIFF. FRONT AXLE REAR AXLE	MPC MPC 30°/90° - 8f/s - 40 Nm Preload		MPC MPC 30°/30° - 8f/s - 40 Nm Preload	

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) Ride heights should be increased by 10 – 15mm on rough gravel or bumpy tarmac. Spring/Damper rates shown are typical but should be verified in testing, to suit local conditions and driver preference.





WHEELS

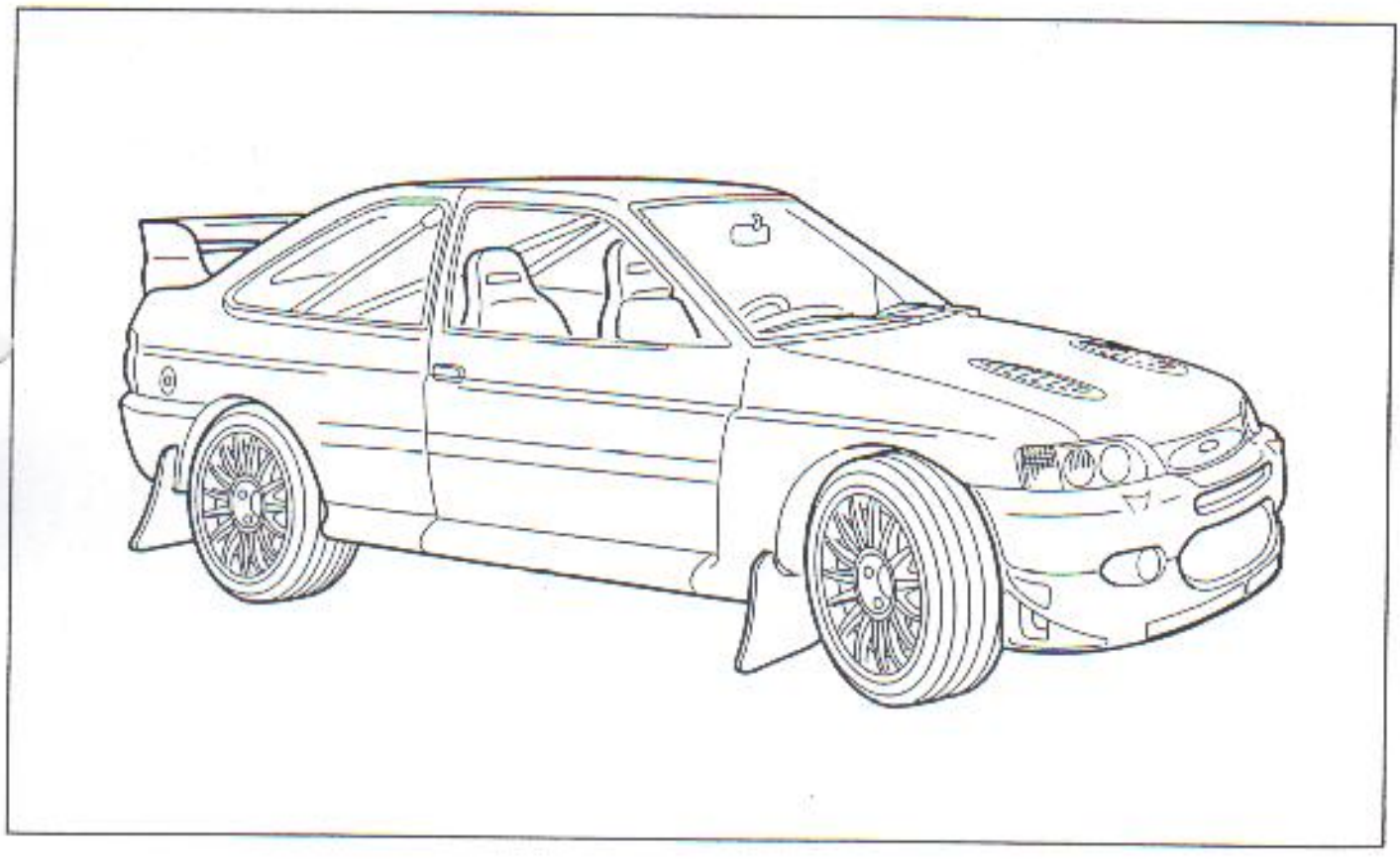
Group 'A' regulations stipulate a maximum wheel and tyre width of 9" (228mm), with a maximum overall diameter of 650 mm. Additional wheel fans are not allowed.

Recommended wheel size is 7" x 15" gravel, 8" x 18" tarmac both with 33mm offset. Magnesium wheels should be regularly cleaned, inspected and repainted to combat corrosion.

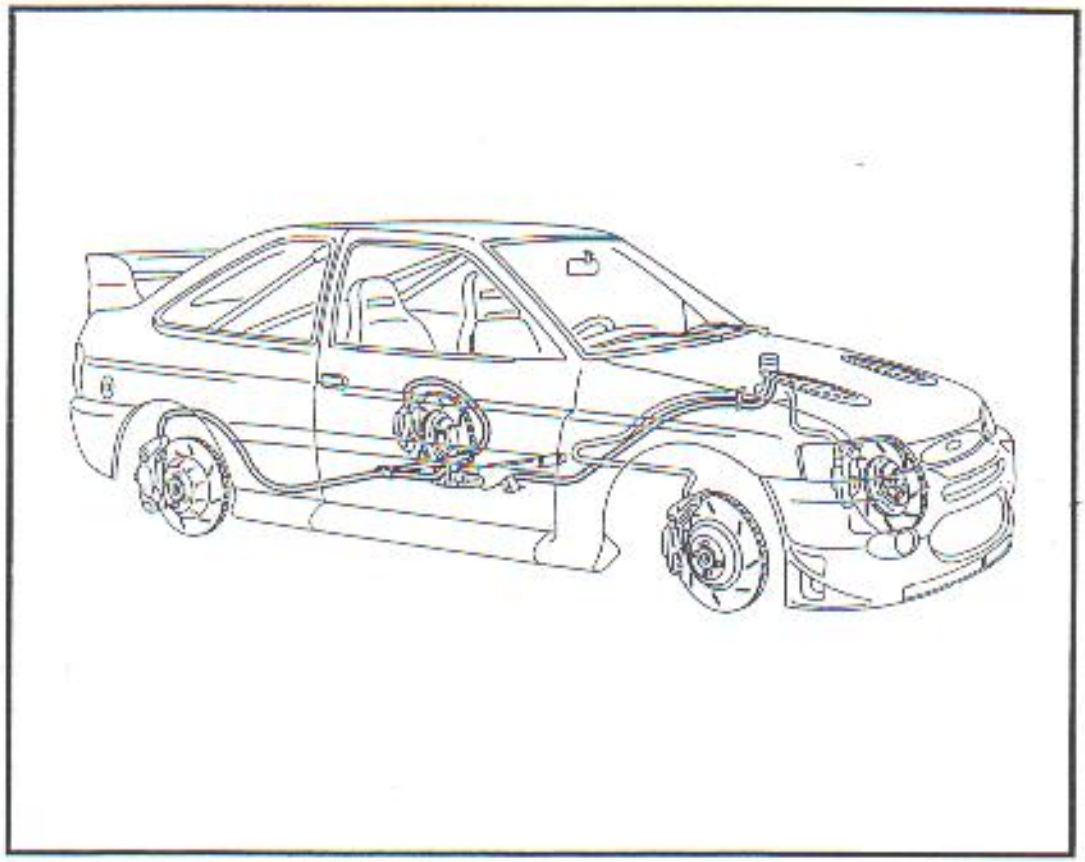
	Description	Finis Code	Comments	Qty.
1	Wheel	9097063	8" x 18" Tarmac	5
1	Wheel	9097062	7" x 15" Gravel	5
2	Wheel Nut M14	9096395	aluminium	16

Torque	
Wheel Nut	65lb/ft 88 Nm

Tyre Pressures	
(Michelin)	2.0 Bar



BRAKES

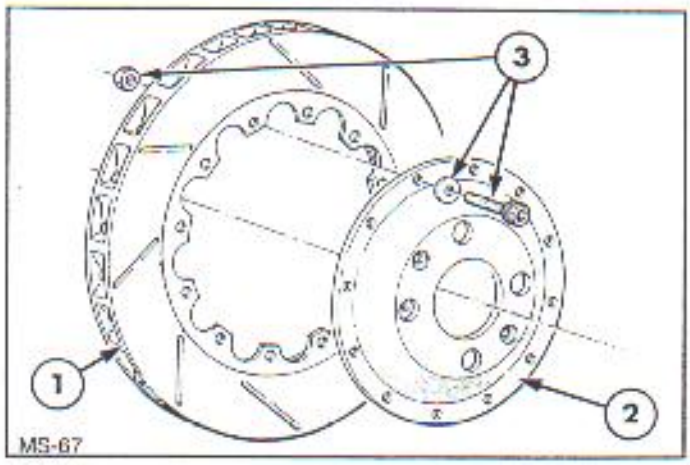


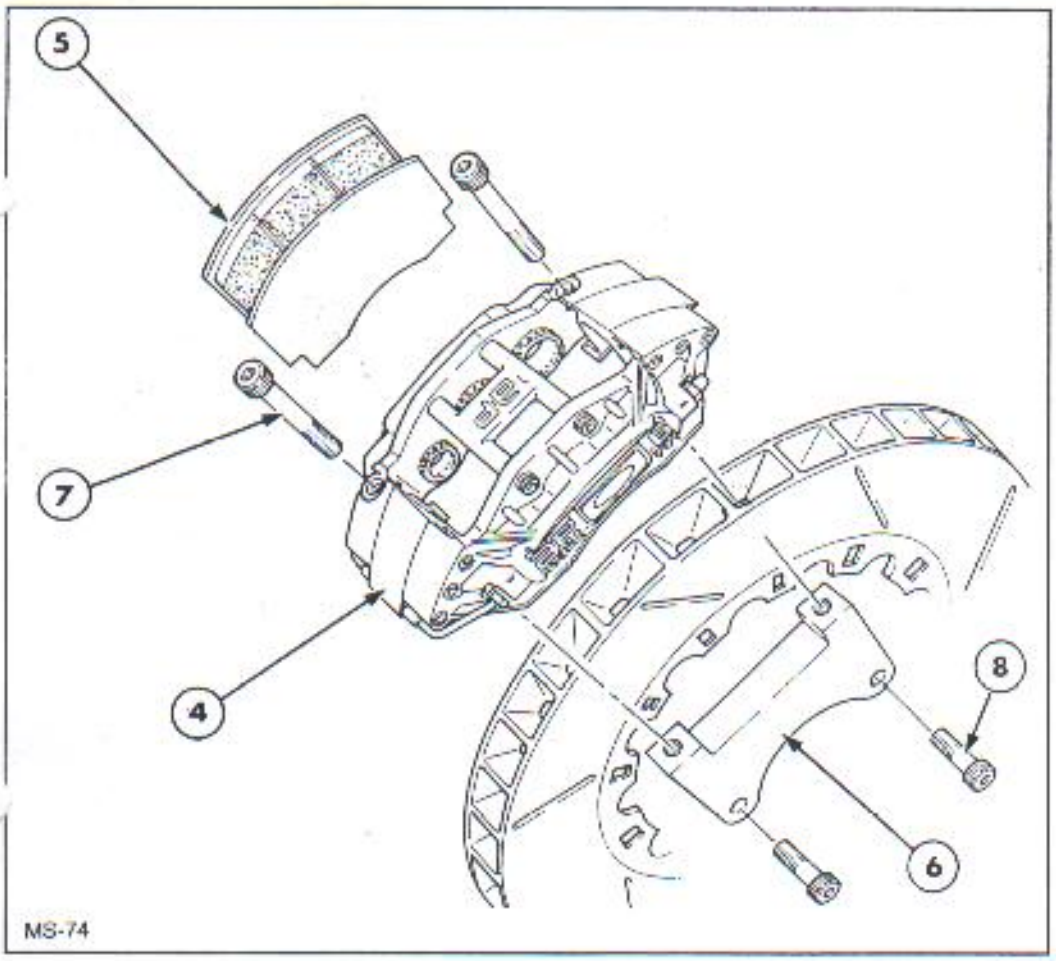
Brake discs and calipers should be carefully bedded-in before use.

To bed in: Make a few gentle stops to remove high spots, then several hard applications from high speed down to 30kph, with recovery in between, continue until fade is no longer apparent,. Drive until brakes cool down.

Bed new pads with used discs and new discs with used pads.

NOTE: All brake discs and calipers must be stamped with the vehicle manufacturer's trade mark. (International events).





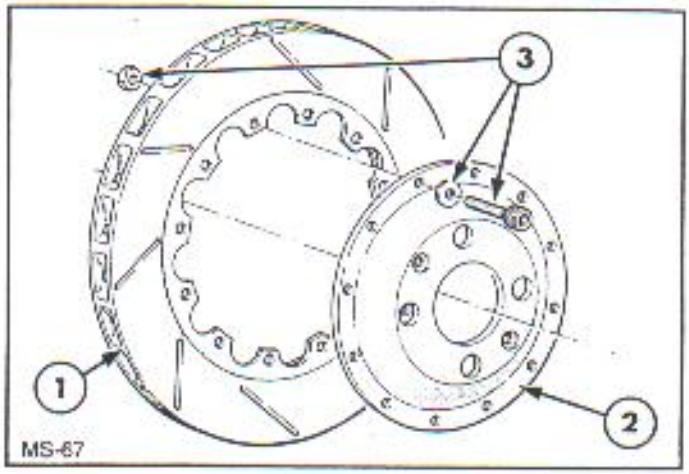
	Description	Finis Code	Comments	Qty.
1	Brake Disc Ø315 x 25 mm	9096278	LH, Front and Rear	2
		9096277	RH, Front and Rear	2
2	Disc Bell	9095808		4
3	Bolt Fixing Kit	9092107		48
4	4 Pot Caliper - AP	9095716	LH	2
		9095715	RH	2
5	Brake Pads-Carbon	9096434		8
6	Brake Caliper Adaptor	9096242		4
7	Bolt (Caliper to Adaptor)	9096157		8
8	Bolt (Adaptor to Upright)	9096378		8

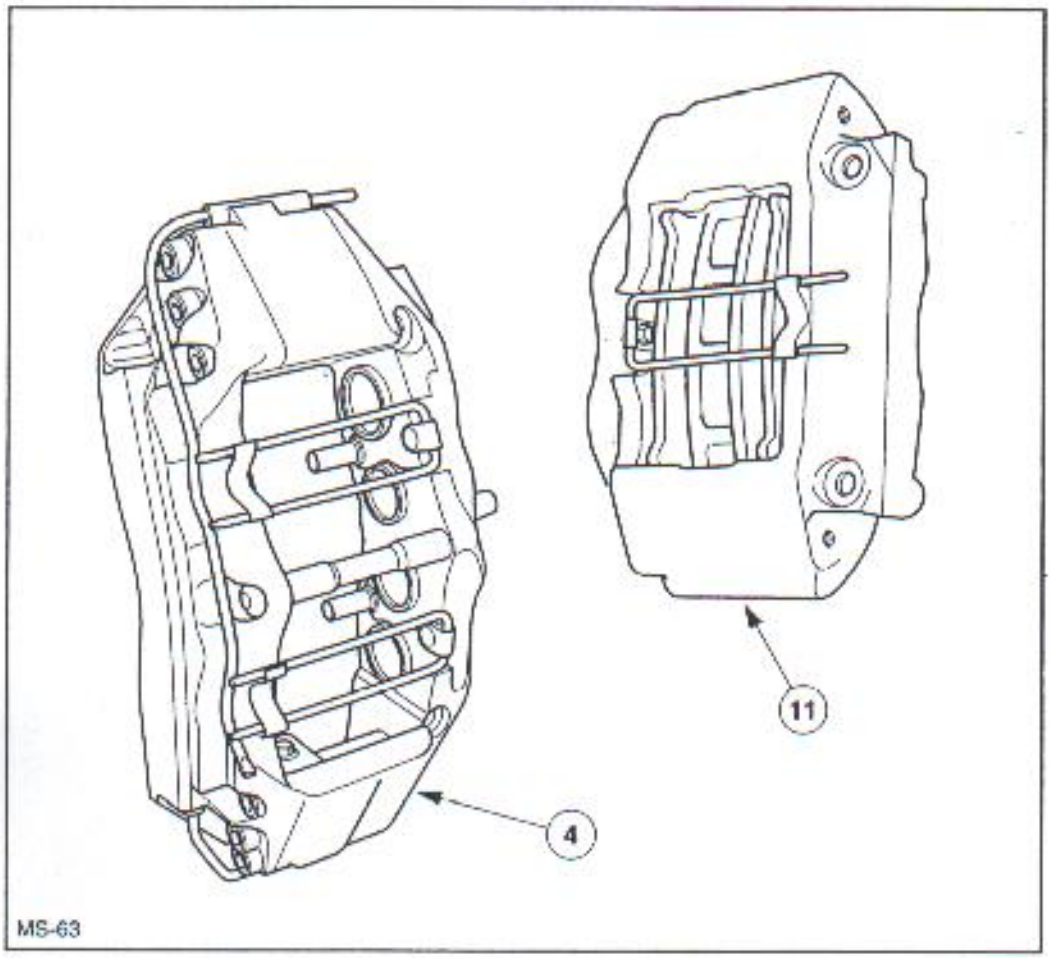
Brake discs and calipers should be carefully bedded-in before use.

To bed in: Make a few gentle stops to remove high spots, then several hard applications from high speed down to 30kph, with recovery in between, continue until fade is no longer apparent. Drive until brakes cool down.

Bed new pads with used discs and new discs with used pads.

NOTE: All brake discs and calipers must be stamped with the vehicle manufacturer's trade mark. (International events).

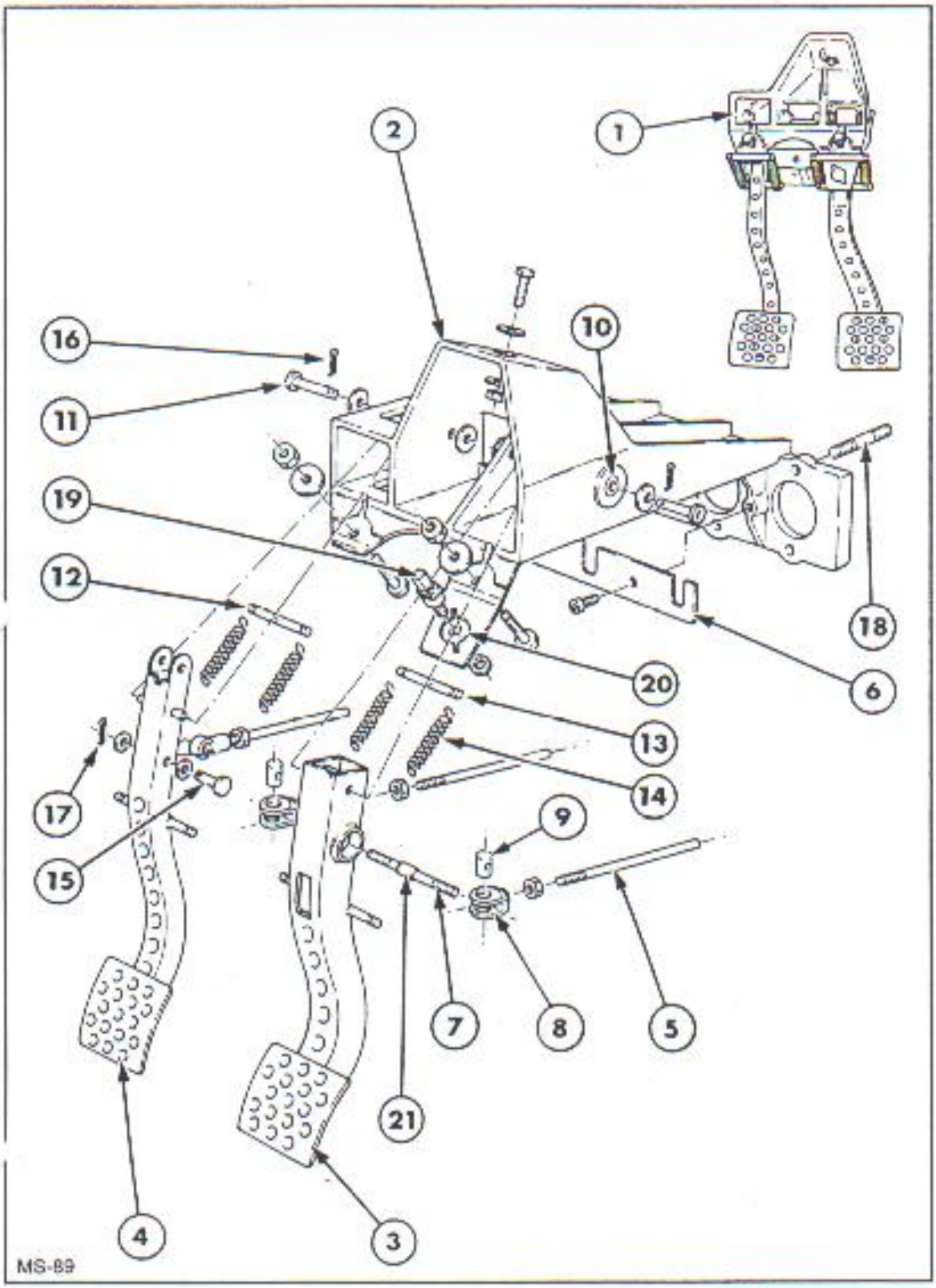




NOTE: Brembo Calipers for Tarmac use are not stocked by Ford Motorsport. They are used on works' vehicles and the Front Tarmac Upright is designed to fit the 8 Pot Brembo Caliper (no adaptor).

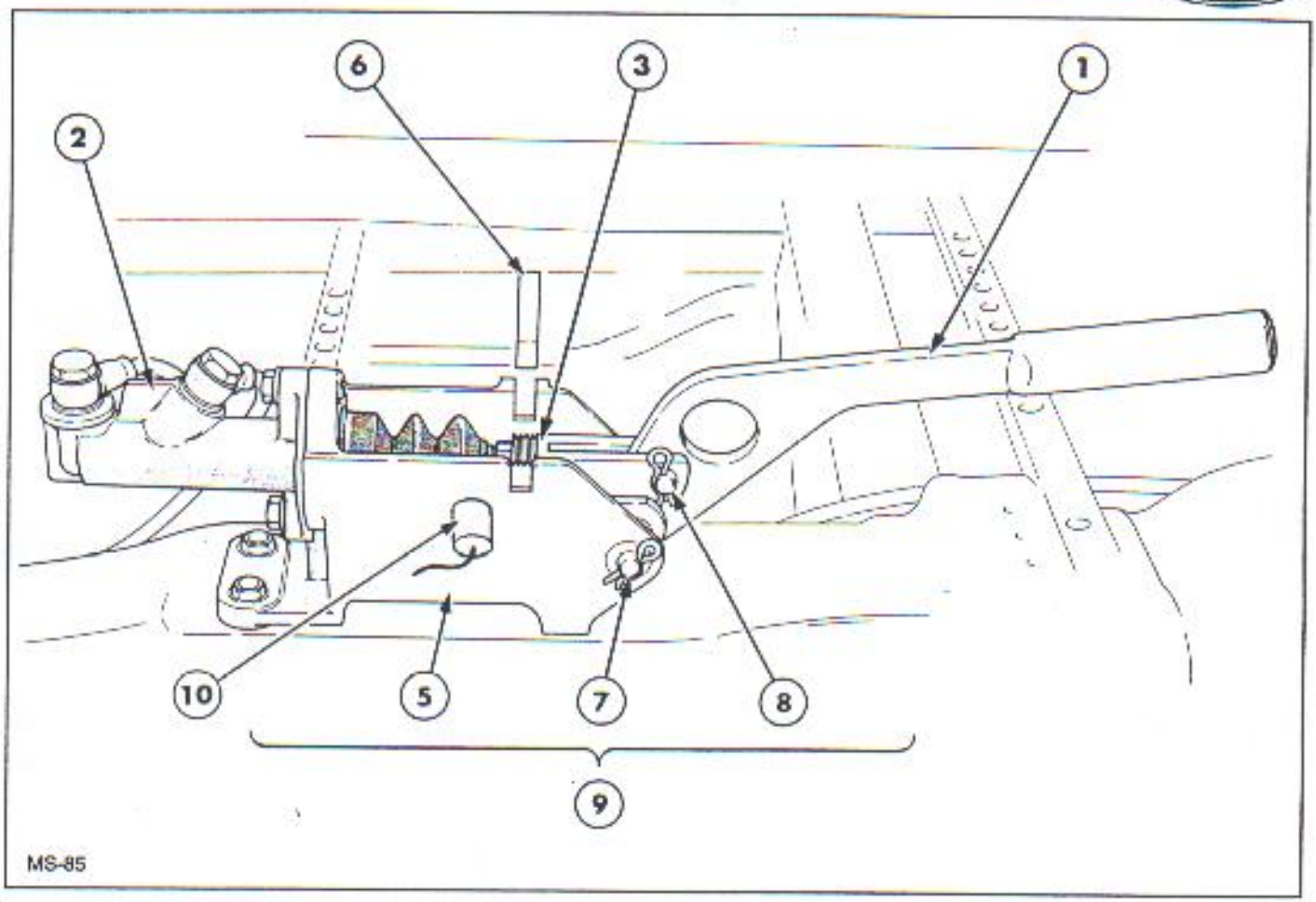
	Description	Finis Code	Comments	Qty.
1	Brake Disc Ø378mm - Brembo		LH Front	1
			RH Front	1
	Brake Disc Ø313mm - Brembo		LH Rear	1
			RH Rear	1
2	Disc Bell	9096972	Ø378 mm disc	2
		9096973	Ø313 mm disc	2
3	Bolt Fixing Kit		Ø378 mm disc	24
			Ø313 mm disc	24
4	8 Pot Caliper - Front		LH - Brembo	1
			RH - Brembo	1

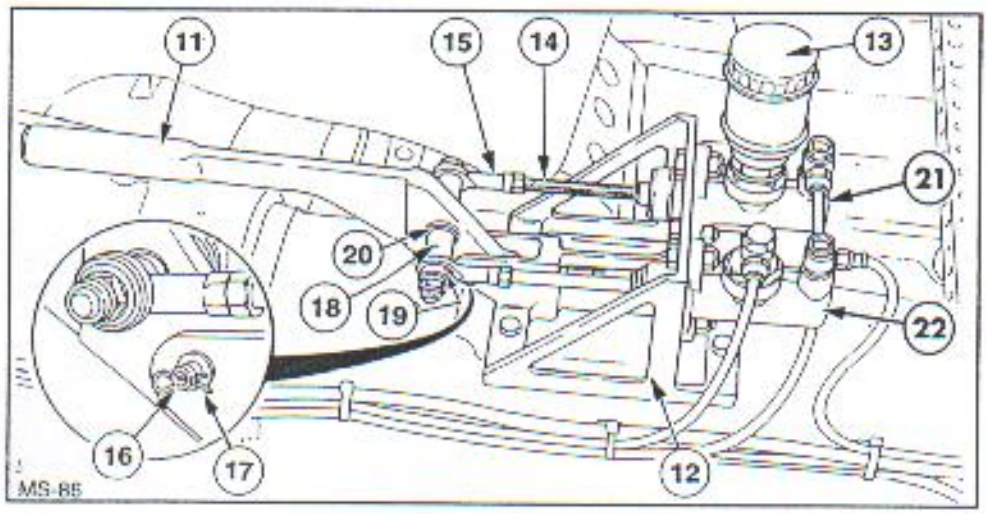
	Description	Finis Code	Comments	Qty.
5	Brake Pad - Carbon		Front	8
			Rear	4
6	Brake Caliper Adaptor	9096924	Rear Only	2
7	Bolt (Caliper to Adaptor)		Rear Only	4
8	Bolt (Adaptor to Upright)		Rear Only	4
9	Bolt (Caliper to Upright)		Front Only	4
10	Adaptor Spacer			
11	4 Pot Caliper - Rear		LH - Brembo	1
			RH - Brembo	1



	Description	Finis Code	Comments	Qty.
1	Pedal Box Assembly	9096625		1
Service Items				
2	Pedal Box Casting	9095439		1
3	Brake Pedal	9095933		1
4	Clutch Pedal	9096139		1
5	Push Rod	9095420		3
6	Support – Push Rod	9095434		1
7	Shaft – Brake Balance	9093140		1
8	Clevis – Brake Balance	9093320		2
9	Clevis – Pin	9093317		2
10	Bush	9095432		4
11	Pedal Pivot Pin	9095431		2
12	Spring Post	9095436		1

	Description	Finis Code	Comments	Qty.
13	Spring Post	9095437		1
14	Spring – Pedal Return	9095433		4
15	Clevis Pin	9095934		1
16	'R' Pin	*1443787		2
17	'R' Pin	*1762257		1
18	Stud	9095606		4
19	Switch – Brake Light	*6089985		1
20	Bush – Switch	*6089984		1
21	Balance Bar Bush	9096179		1
22	Accelerator Pedal	9096257		1



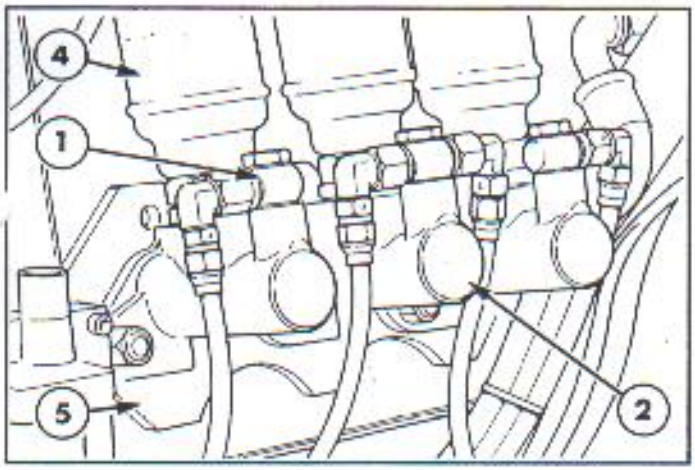


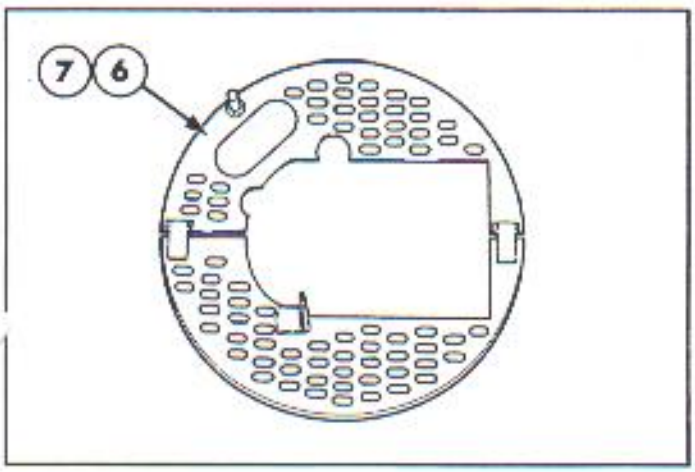
The World Rally Car now uses a single cylinder handbrake (top) with a proximity switch to disconnect the active centre diff.

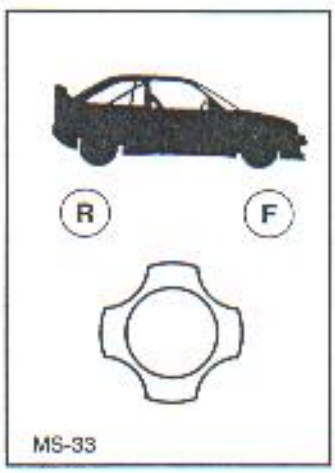
When using passive diffs the Group 'A' Escort Cosworth unit (left) should be fitted.

	Description	Finis Code	Comments	Qty.
1	Handbrake – Lever	9095614	Active	1
2	Master Cylinder	9096676	Ø 0.625"	1
3	Clevis	9095613		1
4	Accelerator Pedal	9096257	High Ratio	1
5	Bracket	9096515		1
6	Handbrake Stop	9095610		1
7	Pivot Pin	9095612		1
8	Pivot Pin	9095624		1
9	Assembly Hand Brake (Consists of Items 1,3,5,6,7,8)	N/A		1
10	Proximity Switch	9099704	MPC Only	1

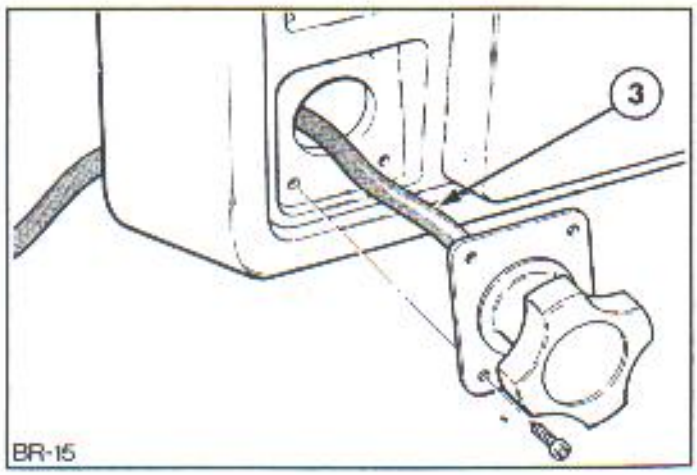
	Description	Finis Code	Comments	Qty.
11	Handbrake Lever	9096421	Passive	1
12	Handbrake - Bracket	9096404		1
13	Reservoir	9095813		
14	Push Rod - Clutch Release	9096308		1
15	Rod End Brg	9090861		1
16	Bush Handbrake Lever	9096287		1
17	Pin - Handbrake	9096303		1
18	Spacer - brg - Handbrake	9096305		2
19	Spacer Handbrake	9096331		2
20	Brg - Handbrake Release	9096284		1
21	Brake Master Cylinder13/16	9096285	Clutch - Metric Thread	1
22	(Vertical Mounting) 625	9096543		1





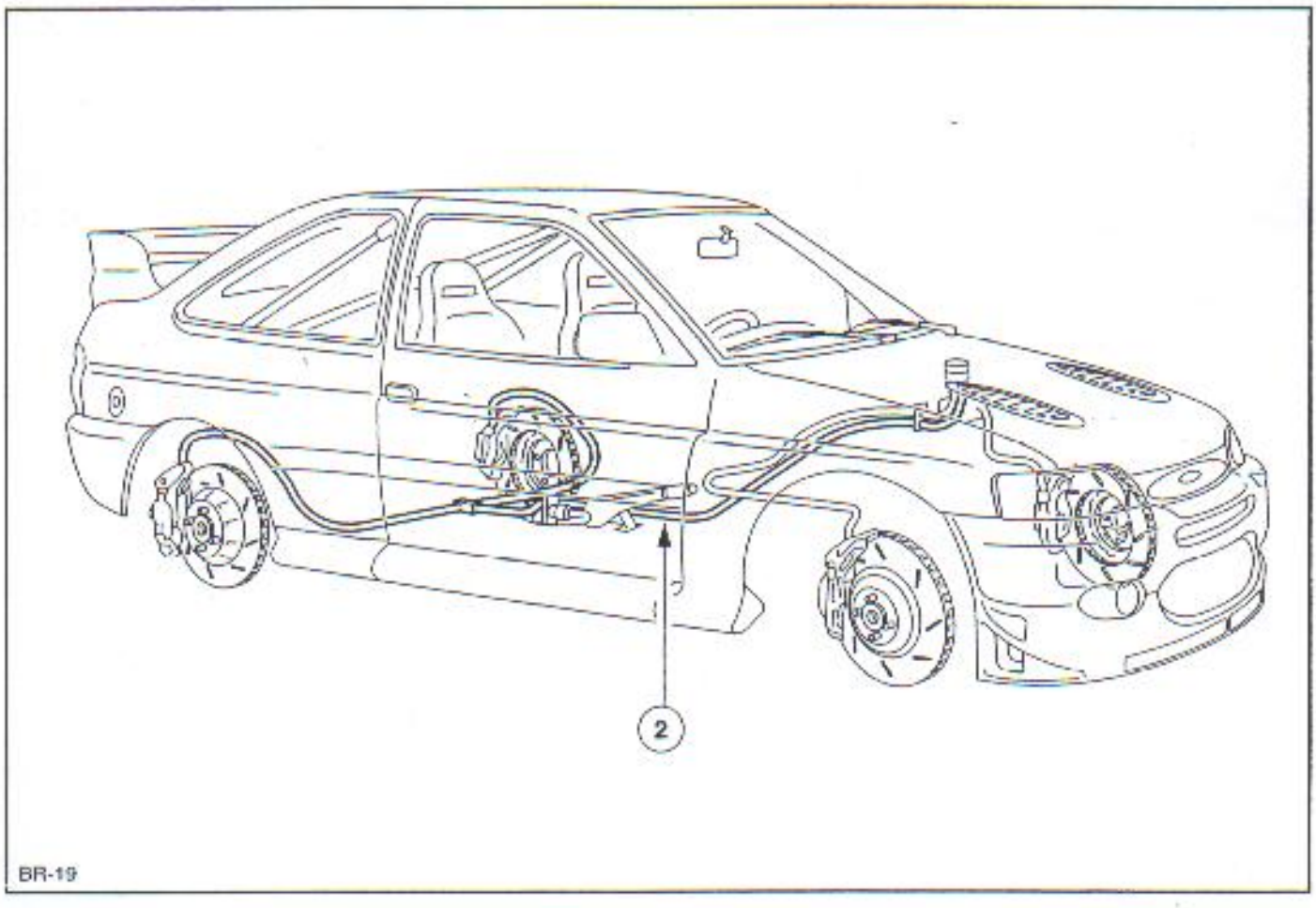


	Description	Finis Code	Comments	Qty.
1	Banjo Kit	9093487		1
2	Master Cylinder	9095354	0.625" Ø	A/R
2	Master Cylinder	9095355	0.700" Ø	A/R
2	Master Cylinder	9095356	0.750" Ø	A/R
2	Master Cylinder	9095357	0.812" Ø	A/R
2	Master Cylinder	9095371	0.875" Ø	A/R
3	Balance Cable	9093142		1
4	Reservoir	9095814	Direct Filling	2
5	Plate	9096190		1
6	Shield – Brake Disc LH		Gravel for Ø315	1
7	Shield – Brake Disc RH		Gravel for Ø315	1



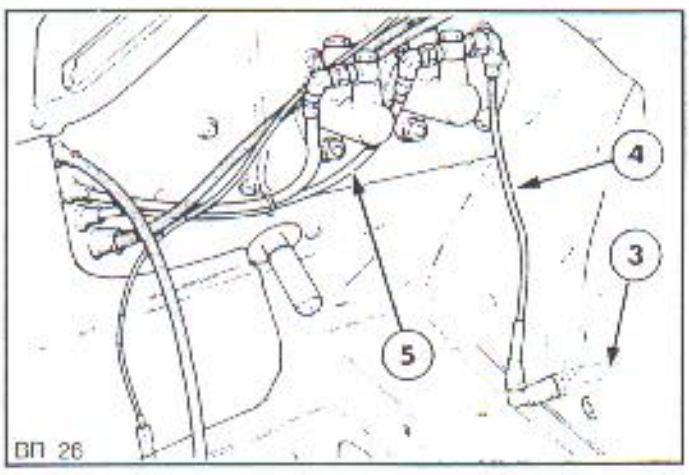
The brake hoses must be carefully routed to avoid chafing and stone damage. In particular, check the front caliper hoses in all suspension and steering positions to avoid contact with tyres and springs.

The rear 'T' piece can be fitted to the rear subframe and the hoses clipped to the semi-trailing links.



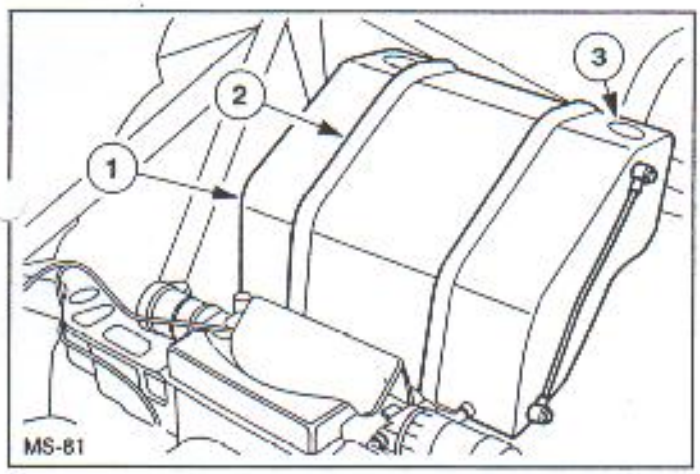
BR-19

	Description	Finis Code	Comments	Qty.
2	Hose (Non Active Only)	9095897	Master cylinder to handbrake	1
3	Hose – Front	9095898	Wing to caliper	2
4	Hose – Front	9095896	Master cylinder to wing	1
5	Hose – Front	9095899	Master cylinder to wing	1



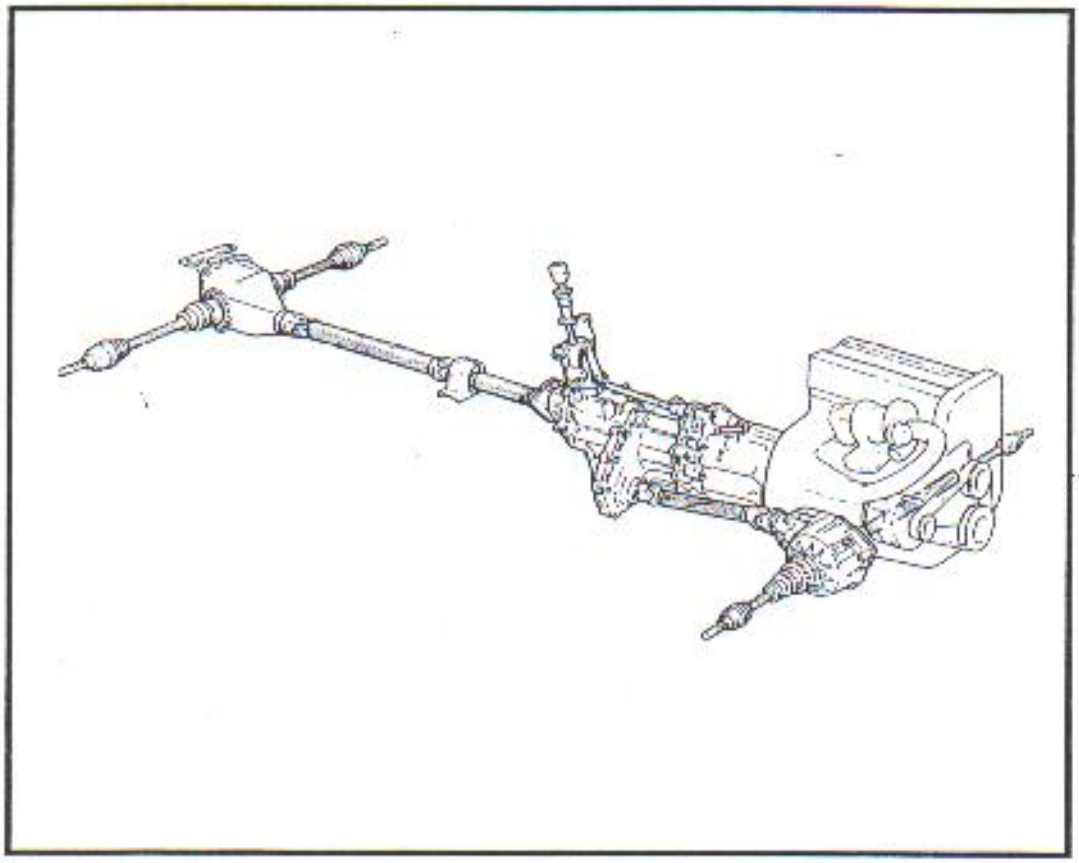
BR 26

The front calipers can be cooled as on the Group 'A' Escort Cosworth. However, this system now shares the reservior used for the WIS and WSS (see Engine Section).



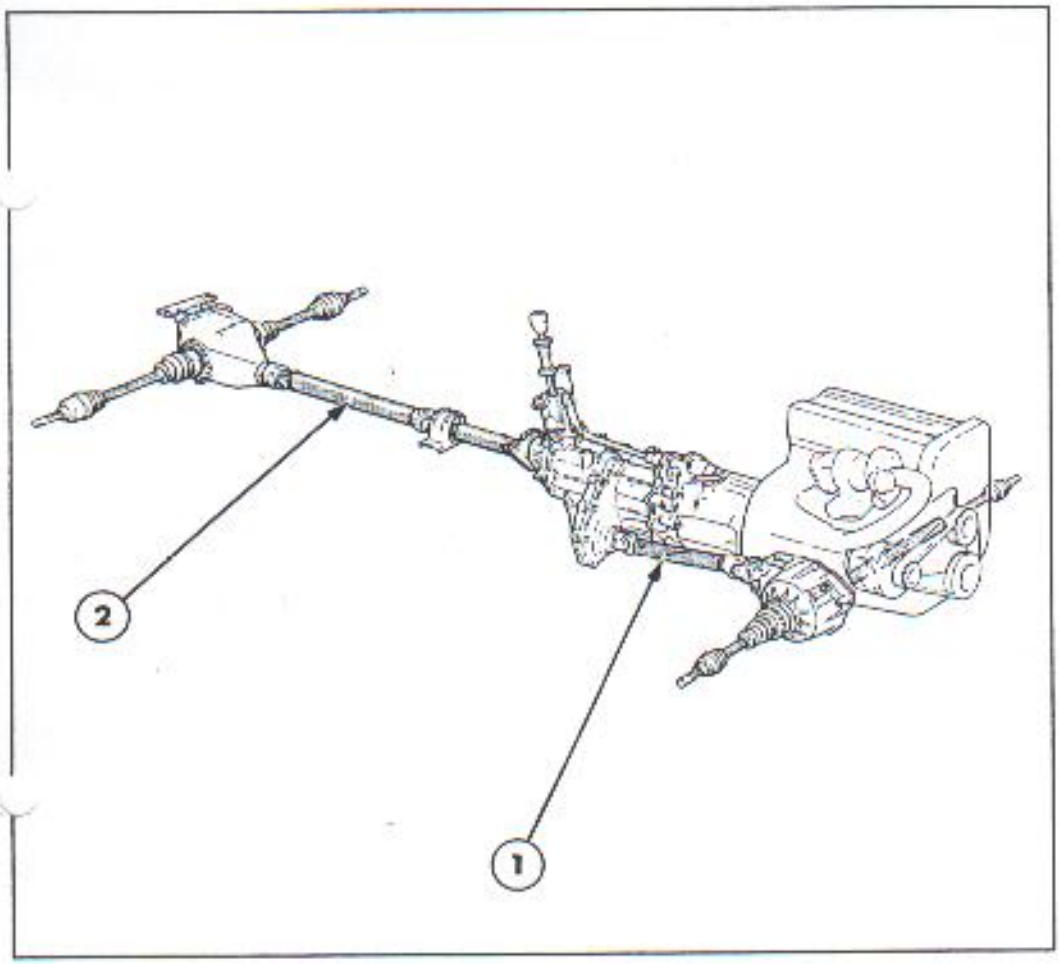
	Description	Finis Code	Comments	Qty.
1	Reservoir - WIS & ISS	9096769		1
2	Hoop - Retaining	9096958		2
3	Filling Cap			1
4	Fittings Kit - Reservoir			1

FRONT AXLE AND DRIVESHAFTS



The 8½ front axle must be fitted in conjunction with the correct sump assemblies and engine mountings.

Propshaft bearings should be checked regularly for wear. The front axle is now of an active Multi Plate Clutch (MPC) type on works cars (see Transmission section for schematics).



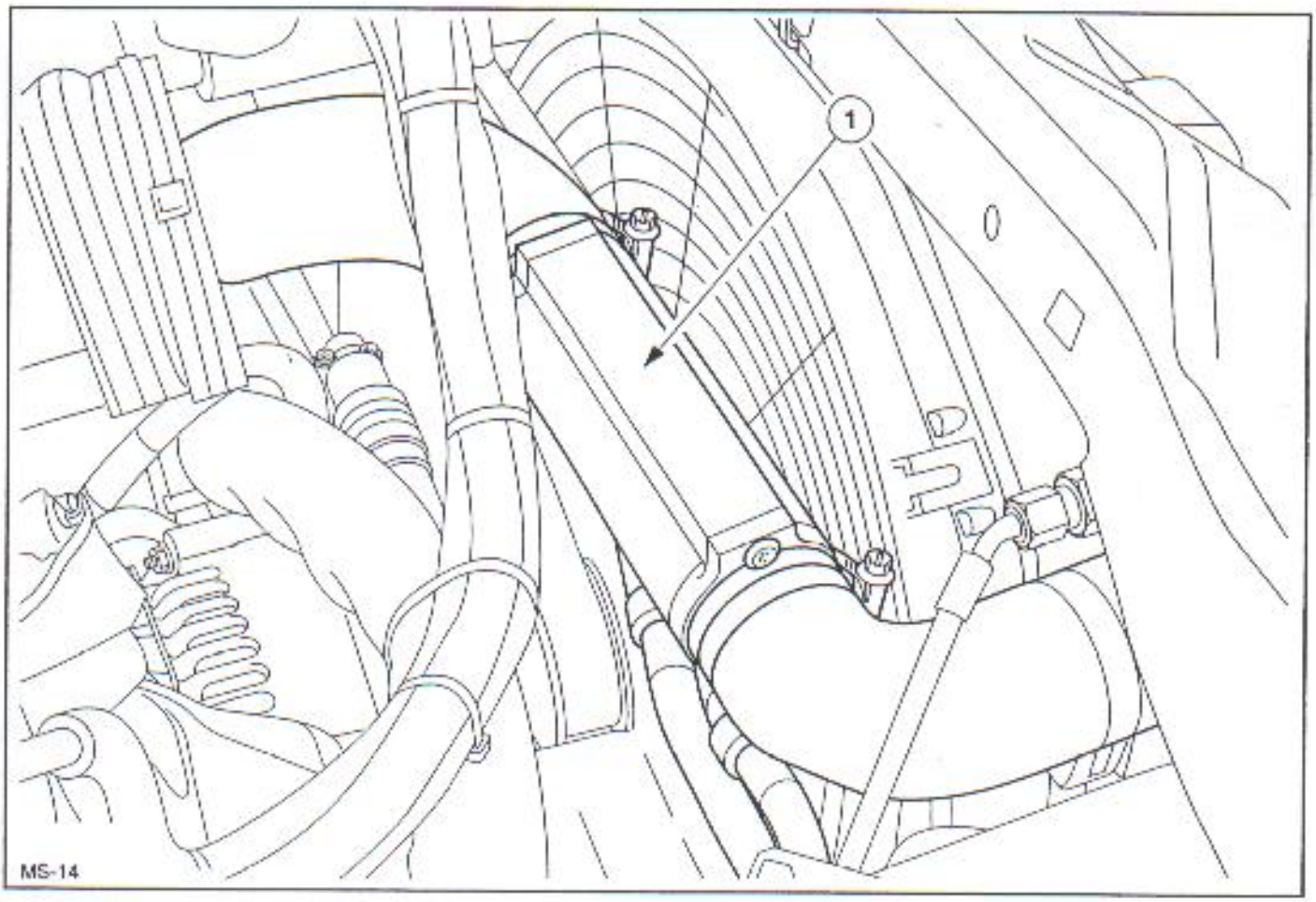
	Description	Finis Code	Comments	Qty.
1	Front Propshaft	9097029		1
		9096689	1¾" Passive	1
2	Rear Propshaft	9096895	One piece Aluminium Active	1
		9096248	Active	1
		9096301	Handbrake Rel.	1

NOTE :
The 8 ½" axle is only available for LHD cars. It is impossible to fit this on a RHD vehicle as it fouls the steering rack.

It will be necessary to fit the following items as a package:

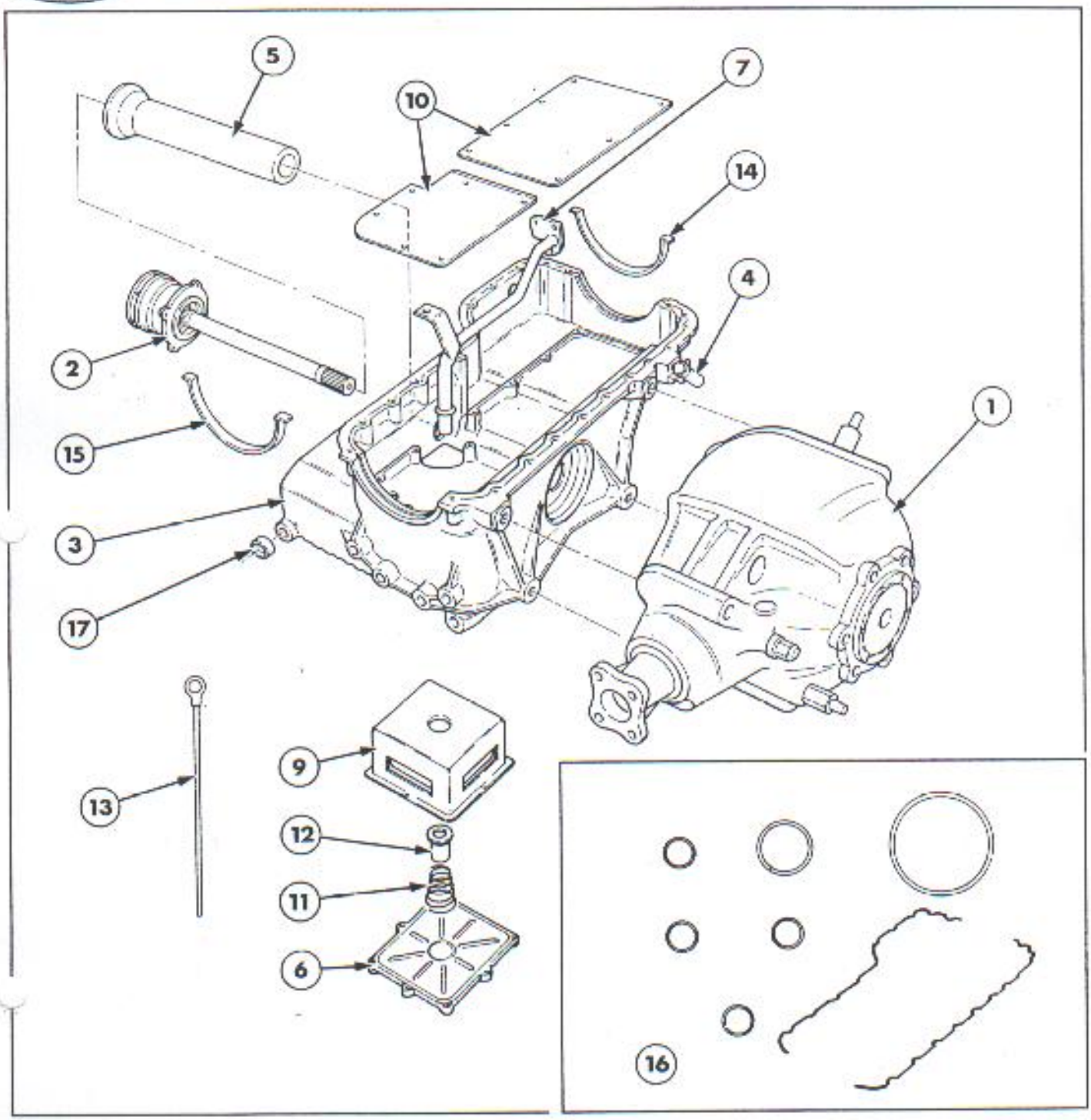
- 8 ½" axle, including crown wheel pinion, viscous coupling limited slip differential, or the Active axle with MPC differential.
- Magnesium sump, including baffles and pick up
- Cross shaft assembly, including bearings
- Driveshafts

The front axle oil heat exchanger should be positioned behind the radiator as shown. Pipe routing should be carefully checked to avoid chafing or heat damage.



	Description	Finis Code	Comments	Qty.
1	Heat Exchanger	9096932		1

Front axle oil capacity: 1.5 L



	Description	Finis Code	Comments	Qty.
1	Axle Assembly	9096744	8½" Active	1
		9095744	8½" Passive	1
2	Cross-shaft Assembly	9095745		1
3	Oil Pan	9096200		1
4	Oil Drain Tube	9095882		1
5	Cross Tube	9095146		1
6	Cover Plate	9095552		1
7	Suction Pipe	9095538		1
8	Dipstick Tube	9095551		1
9	Oil Collector	9095550		1
10	Oil Baffle	9095554		1
11	Spring-oil Strainer	9095540		1
12	Oil Strainer	9095776		1

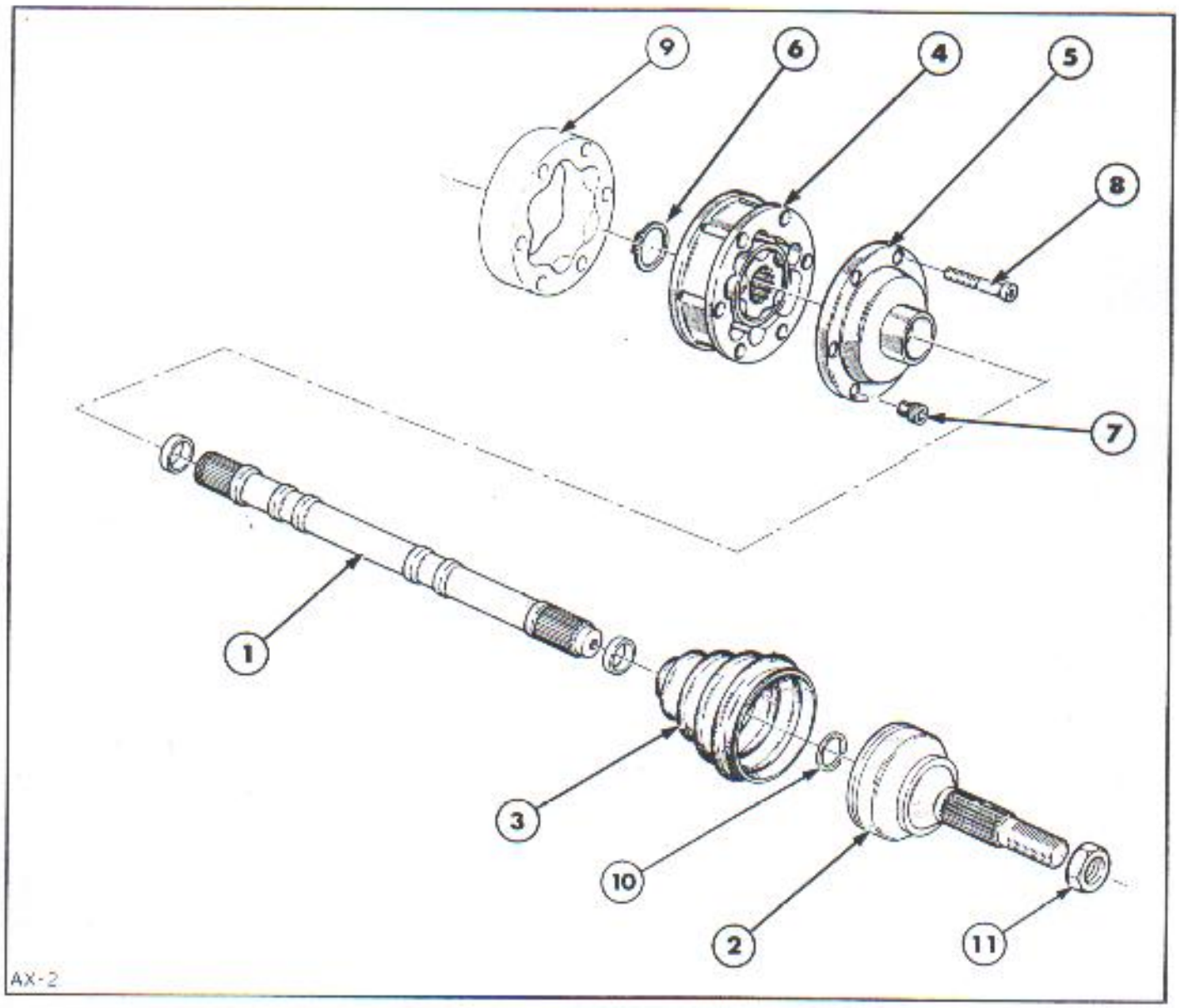
	Description	Finis Code	Comments	Qty.
13	Dipstick	9095799		1
14	Oil Seal Front	*1511264		1
15	Oil Seal Rear	*1639247		1
16	Oil Seal Kit	9095539		1
17	Drain Plug	*1454117		1

Service details available from:
F.F. Developments Ltd.,
Wolston Business Park,
Main Street,
Wolston,
Coventry CV8 3LR
Tel: 44(0) 1203 544 048

The driveshaft joints must be packed with grease and checked for wear after each rally.

Paint a white line along each shaft to check straightness and mark 'Left Hand' and 'Right Hand', the driveshaft spacers (item 9) must be selected to achieve the correct driveshaft joint plunge after the suspension has been fitted. Check Plunge on full droop and fit spacers to achieve 5 – 7mm.

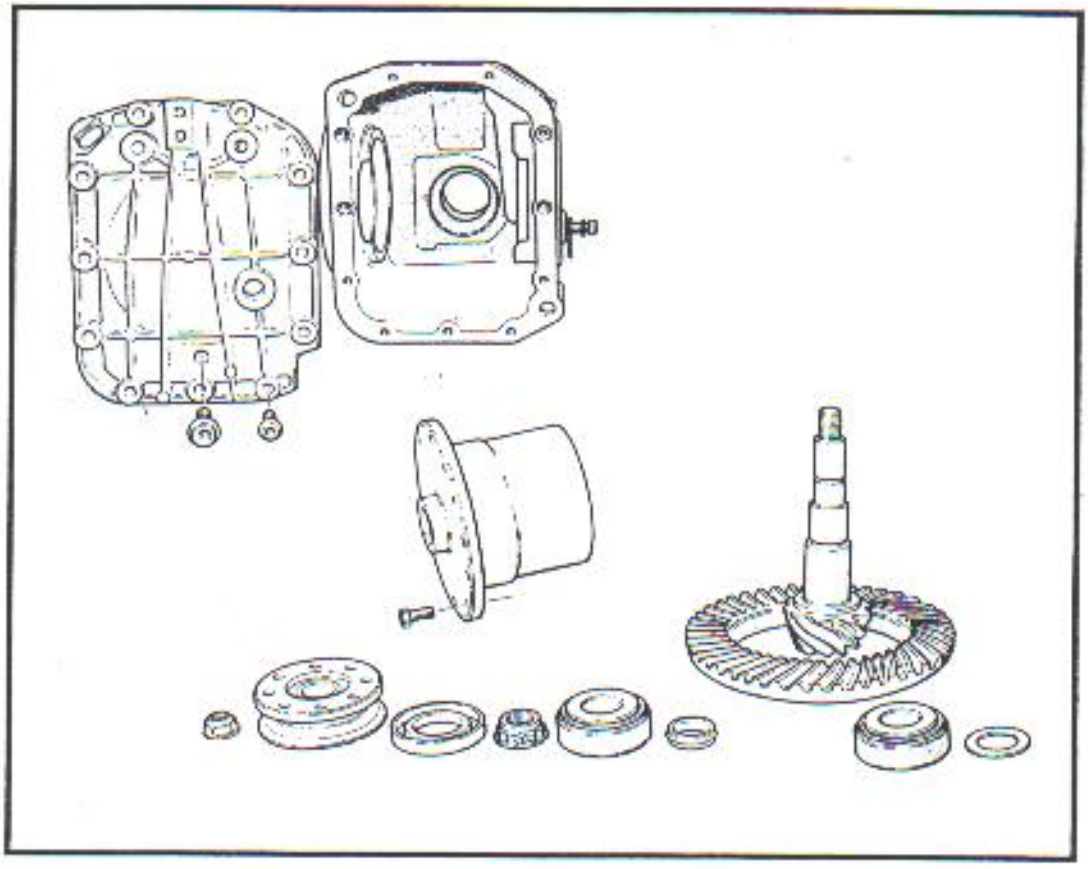
Check also on full lock and fit lockstops to achieve 3mm minimum.

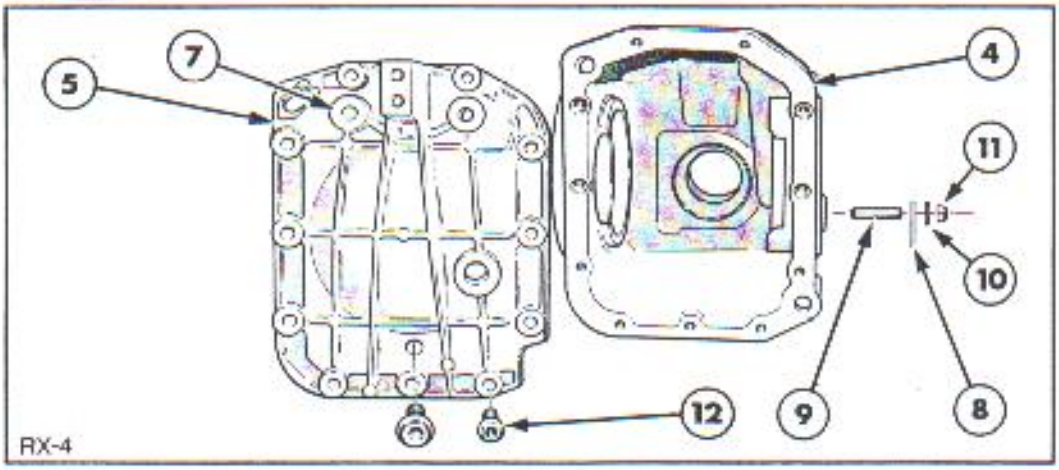


	Description	Finis Code	Comments	Qty.
1	Driveshaft – Front	9096264	Tarmac	2
		9096702	Gravel	2
2	CV Joint – Outer	9095703	Tarmac - Modified	2
		9096703	Gravel	2
3	CV Gaiter – Outer	9095428	Tarmac	2
		*1016771	Gravel	2
4	CV Joint – Inner	9095301	Tarmac	2
		9096721	Gravel	2
5	CV Gaiter – Inner	9096312		2
6	Circlip – Inner	9095384		2
7	Dowel – Long	9092516		
	Short	9092518		
8	Bolt	9095300	Blue No spacer	6
	Bolt – 6mm Spacer	9096048	Yellow	A/R

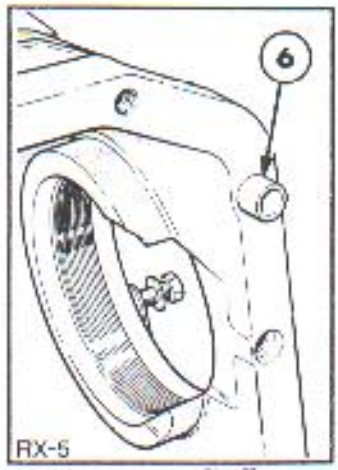
	Description	Finis Code	Comments	Qty.
8	Bolt – 8mm Spacer	9096049	Red	A/R
	Bolt – 10mm Spacer	9096050	Green	A/R
	Bolt – 12mm Spacer	9096051	White	A/R
	Bolt – 14mm Spacer	9096052	Black	A/R
9	Spacer – 6mm	9096087	Yellow	A/R
	Spacer – 8mm	9096088	Red	A/R
	Spacer – 10mm	9096089	Green	A/R
	Spacer – 12mm	9096090	White	A/R
	Spacer – 14mm	9096091	Black	A/R
10	Snap Ring	9097058		2
11	Nut (Outer CV)	9097119		2

9" REAR AXLE AND DRIVESHAFTS





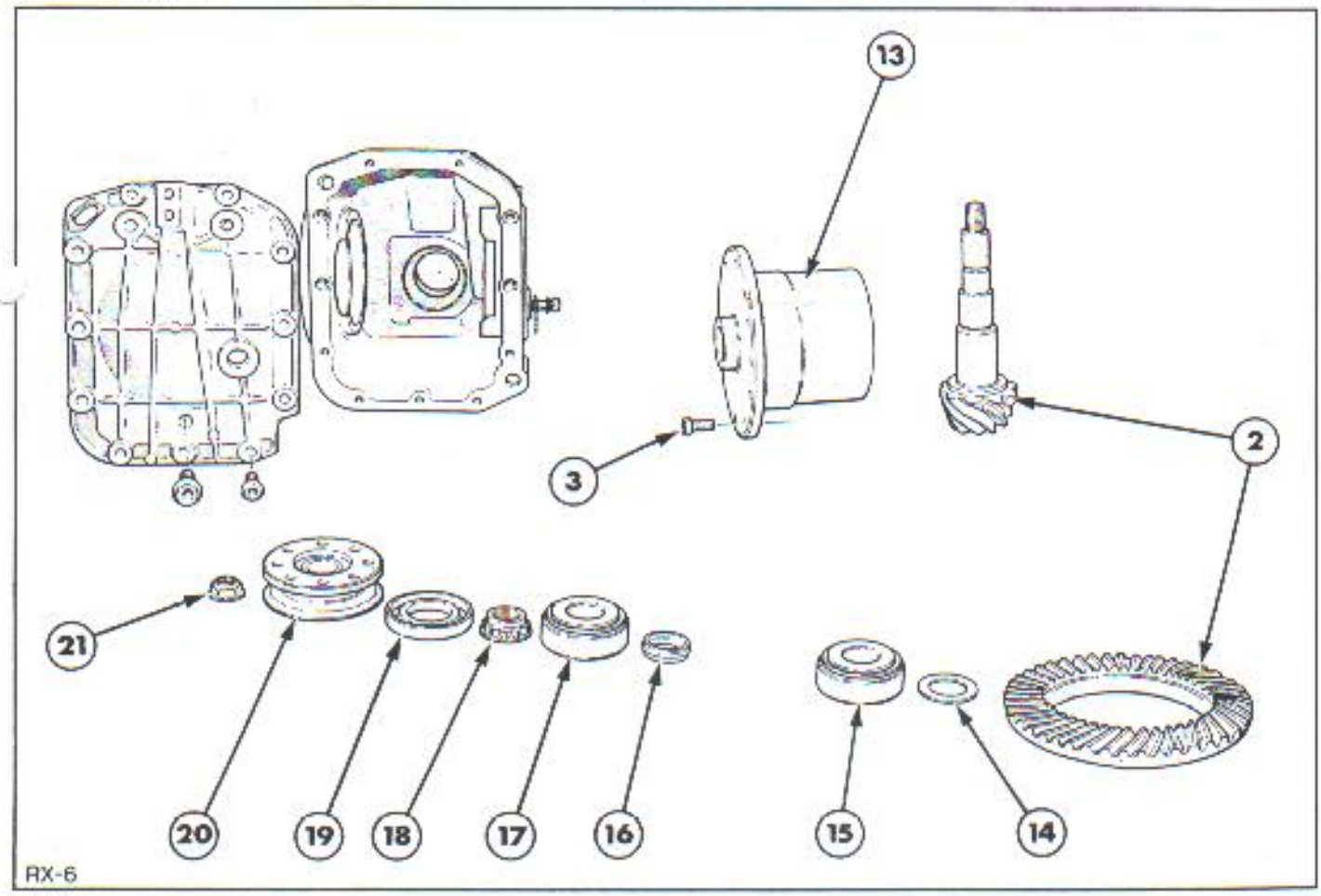
RX-4



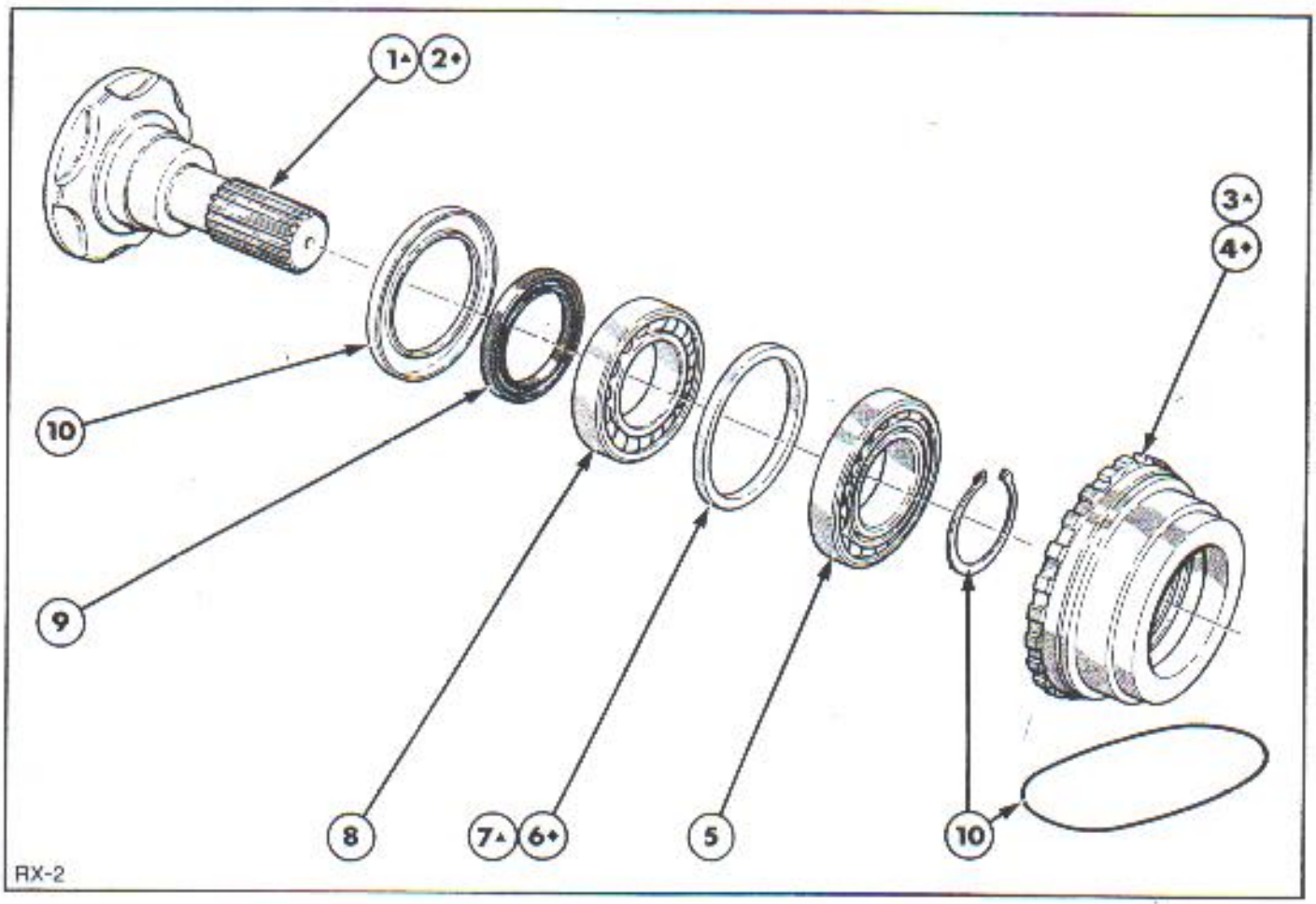
RX-5

	Description	Finis Code	Comments	Qty.
1	Complete Axle 9"CWP	9096018	Magnesium case. V.C.	1
		9096274	Aluminium case. V.C.	1
	Note: Axle Casing requires some machining to fit			
	Service Parts:			
1	CWP 9"	9095467		1
2	Bolt c/wheel	9092508	Thin Head	10
		9093506	Thick Head	10
4	Case Assy	9095506	Magnesium	1
		9093242	Aluminium	1
5	Cover Assy	9093322	Aluminium	1
6	Dowel	9093240		4
7	Insert Rear Cover	9092537		2
8	Locking Plate	*6093240		2
9	Stud-locking Plate	9092509		2
10	Washer-locking Plate	*1477027		2

	Description	Finis Code	Comments	Qty.
11	Nut-locking Plate	*1436267		2
12	Allen Screw	*6132498		11
13	V.C. Diff	9094054	520Nm	1
	Plate Diff	9096507	30/30 ramp	1
14	Shim	0417000-025	Select as required	
15	Pinion Brg. Outer	*6510925		1
16	Spacer Pinion	*6597300	Collapsible	1
17	Bearing Pinion	*6144969		1
18	Nut-pinion	*6510925		1
19	Oil Seal	*6099522		1
20	Pinion Flange	9095831		1
21	Nut M16	*6122453		1
22	Pinion Brg Inner	*6144969		1
23	Seal Kit - Brg Hsg	9096077		1



RX-6



RX-2

RX-3

	Description	Finis Code	Comments	Qty.
1	Output Shaft LH	9093250		1
2	Output Shaft RH	9093251		1
3	Bearing Housing LH	9093253		1
4	Bearing Housing RH	9093252		1
5	Bearing Assy Inner	9093246		1
6	Spacer RH	9093247		1
7	Spacer LH	9093248		1
8	Bearing Assy Outer	9093245		1
9	Seal Kit	9096077	Includes seal circlip and 'O' ring	1
10	Dust Shield	9093254		2

ESCORT 9" REAR AXLE : SETTING AND ADJUSTMENT PROCEDURE

Special Service Tool Required For Rebuilds

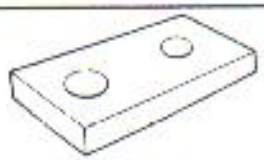
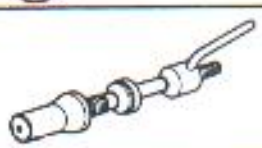
These Tools May Be Obtained From

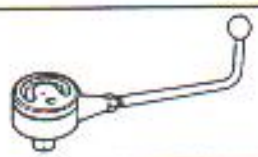
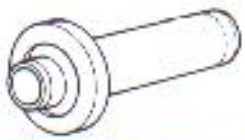
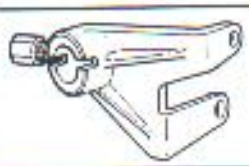
V. L. Churchill & Co. Ltd.
P.O. Box No. 3
London Road
Daventry
NORTHANTS NN11 4NF

V. Löwener
Industriestrasse 67
Postfach 2071
D-4018 Langefeld
GERMANY

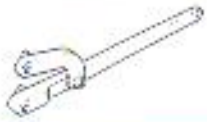
O.P.T.O.M.S.A.
Calle Alphonso Gomez 42
(Esquina Emilio Munez 41)
MADRID 17
SPAIN

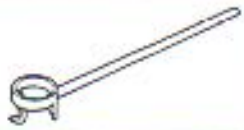
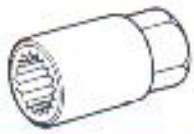
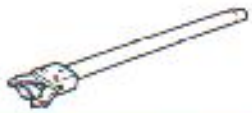
Churchill tools required:

	Dial test indicator mounting block	15-008
	Dial test indicator holding fixture adaptor	15-008-01
	Gauge bar	15-019
	Oil seal and bearing cup installer	14-019
	Master pinion	15-020
	Dial test indicator holding fixture	15-022-A

	Preload gauge	15-041
	Pinion bearing installer	15-042
	Dial test indicator (graduated in mm)	15-046
	Pinion oil seal installer	15-047
	Pinion bearing cup installer	15-068
	Rear axle mounting bracket	15-070

Churchill tools required (continued):

	Preload sleeve	15-023
	Universal flange holding wrench	15-030
	Bearing cup installer	15-033

	Pinion oil seal remover	15-072
	Pinion preload socket	15-073
	Pinion bearing cup remover	15-074

Use proprietary Installers and Removers to:

i) Remove oil seals from differential bearing housings
ii) Remove both the bearings from the housings

At this point, please note that the spacers between the ball bearing and the differential bearing cups, in the bearing housings, are of different thicknesses on each side. When rebuilding an axle, do **not** interchange these spacers from side to side.

Recommended Tightening Torques:

Operation	Torque-Nm	lb.ft.
Drive pinion turning torque when adjusting with special tool 5-041 (Aim for lower torque value of 1.6 Nm/1.2lb.ft. when re-using old bearings)	2.5 to 3.0	1.8 to 2.2
Crown wheel to differential housing	85 to 90	63 to 66
Pinion bearing nut (minimum)	140	103
Pinion flange (drive pinion flange) self-locking nut	110 to 130	80 to 96
Bearing housing retainer	19 to 25	14 to 18
Rear axle casing to rear axle cross member mounting	70 to 90	52 to 66
Axle casing cover	45 to 60	33 to 44
Oil filler plug	35 to 45	26 to 33

Recommended sealants and grease:

Liquid sealant - rear axle case	Use FORD Specification SQM 4G 9523 A
Grease - bearing housing	Use FORD Specification ESEAM 1C 1014 A

Build Procedure:

Fit Pinion bearing cups. At the same time, fit a new standard shim (2mm thick) with the chamfered outer edge facing towards the casing.

NOTE: The shim originally fitted to the production car must be removed and scrapped. Replace the outer bearing cup in the same way.

To determine the Drive Pinion Shim Thickness:

Pull the inner taper roller bearing from the drive pinion using a standard puller

Install the bearings on a Master Pinion, Tool No. 15-020. Install this in the housing using Preload Sleeve 15-023, tightening it to:

i) The **lower** line, for new bearings.
ii) The **upper** line, for used bearings.

NOTE: Lubricate the taper-roller bearing with hypoid oil.

To install Gauge Bar:

Install the right and left-hand bearing housings without the O-ring seals, as a pair with the bearings and the gauge bar into the rear axles.

Lubricate the bearings with hypoid oil. Screw in the bearing housings uniformly, finger tight, until they abut against the bearing cups.

Hold the gauge bar with a suitable drift and unscrew the gauge bar adjusting nut by hand (having removed the drift). Rotate the gauge bar a number of turns to settle the bearings.

To Centralise the Drive Pinion:

Secure the dial test indicator and mounting to the rear axle casing.

Position the plunger of the dial test indicator against the outer edge of the Master pinion close to the gauge bar.

Slowly rotate the Master pinion one full revolution and note the **total deflection** on the dial test indicator.

Then rotate the Master pinion until the dial test indicator reading is **half** the value of the **total deflection.**

The master pinion must not be rotated any more after this operation.

To Centralise the Gauge Bar

Position the plunger of the dial test indicator on the middle of the gauge bar.

Slowly rotate the gauge bar one full turn and note the total deflection on the dial test indicator.

Rotate the gauge bar until the dial test indicator reading is half the total deflection.

The gauge bar must not be rotated any more after this.

Remove the dial test indicator from the fixture and fit it to the mounting block 15-008.

Place the mounting block and dial test indicator on to a surface plate and set the dial test indicator at '0' using a block precisely 32.9 mm high.

NOTE: A dial test indicator with a pointer which rotates clockwise when the plunger is pressed must be used for this operation.

NOTE: The millimetre scale of the dial test indictor must be set to '2' and the large pointer of the dial test indicator to '0'.

Position the mounting block and dial test indicator on the centre of the Master pinion end face and slowly move the plunger of the dial test indicator transversely across the gauge bar.

Observe the dial test indicator and note the measurement at the precise position at which the pointer changes direction.

Repeat this process a number of times as accurately as possible.

NOTE: Add the value to the **right** of the '0' to the 1 mm shim under the pinion head.

Subtract the value to the **left** of the '0' from the shim thickness.

Example:

Thickness of shim	1.00 mm
Dial test indicator reading to the left of the '0' (eg 95)	– 0.05 mm
	= 0.95 mm

This value is the thickness of shim required between the large taper roller bearing and the pinion head.

To Centralise the Gauge Bar (continued)

Remove the Master pinion.

Remove the taper roller bearing from the master pinion.

Using a micrometer, select a new shim of the required thickness established by the above procedure.

Fit the shim onto the Master pinion.

Refit the Master pinion as described above.

Centralise the Master pinion as described above.

Check that the dial test indicator on the mounting block is still at 'o' using the step gauge on the ground surface plate.

Place the mounting block and dial test indicator on the end of the Master pinion and move the plunger of the dial test indicator transversely across the gauge bar.

The dial test indicator must read 'O' if the preceding measurements have been carried out accurately.

A maximum deviation of +/-0.01mm from 'o' is permissible. However, if great deviations are indicated, repeat the entire measuring process.

NOTE: If the indicator reading is to the **right** of 'oo', fit a thicker shim: if the reading is to the **left** fit a thinner shim. The new shim **must** be selected by measurement

When the correct thickness shim has been established, remove the Master pinion from the rear axle housing and remove the bearing housings, bearings and gauge bar.

NOTE: The taper roller bearings and bearing housings must not be intermixed. They must be refitted to the differential on the same side during assembly.

Press both taper roller bearings onto the differential, using a suitable tool.

Remove the pinion form the rear axle housing.

To install the Drive Pinion:

Remove the bearing and spacer from the Master pinion and instal them on to the drive pinion, using Special Tool 15-042.

Insert the drive pinion into the rear axle casing with a new collapsible spacer and outer taper roller bearing and lubricate the bearings with the specified hypoid oil.

NOTE: The drive pinion nut has a left-hand thread.

Screw on a new drive pinion nut, holding it with tool GV-1504 , and tighten using special tool 15-073.

As the nut is tightened. continuously check the turning torque of the drive pinion, using torque gauge 15-041.

NOTE: If the specified torque is exceeded, the drive pion must be removed and the process repeated with a new collapsible spacer. The turning torque must **not** be corrected by slackening the pinion nut.

Tighten the pinion nut (don't forget the left-hand thread) until the specified turning torque is obtained.

Lock the pinion nut by staking the collar of the nut into the two grooves in the drive pinion.

Fit the drive pinion oil seal using special tool 15-047A.

NOTE: The grease packing of the new oil seal (as Supplied) must not be removed.

Slide the drive flange on to the pinion. Fit a **new** nut and tighten it to the specified torque (See **Tightening Torques,** above).

Hold the drive shaft flange with special tool 15-030.

To install the Differential

The following procedure has been evolved by the 'works' Motor sport Dept.:

1) Smear the threads of both bearing housings, with specified grease (see 'Recommended Sealants and Greases' above), insert the differential in the rear axle casing and fit the bearing housings with new O-rings on the right and left hand side.
[A special tool is required to engage in the adjusting teeth. It is **not** recommended that a C-spanner be used for adjustment, as single teeth may easily be broken off]

2) Tighten up the bearing adjusters uniformly until they make contact with the taper roller bearings and give excessive preload, ensuring that there is backlash between the crown wheel and pinion.

3) Strike the casing in several places, near to the bearing on each side, with a soft hammer, to settle the bearings.

4) Rotate the drive pinion a number of turns to settle the bearings. There must be appreciable backlash between the pinion and crown wheel.

5) Slacken off both adjusters.

6) Tighten both adjusters equally until bearing play is taken up, making sure that excessive Crown Wheel/Pinion backlash is maintained.

7) Attach a dial indicator from one side of the case to the other, to indicate the point at which preloading of the bearings begins. Find the zero preload position by this method.

8) Rotate the pinion several times.

9) Reduce the backlash almost to zero (0.01mm) by gradual equal adjustments of adjusters. Mark the flange and corresponding case position, so that it indicates the lowest backlash position.

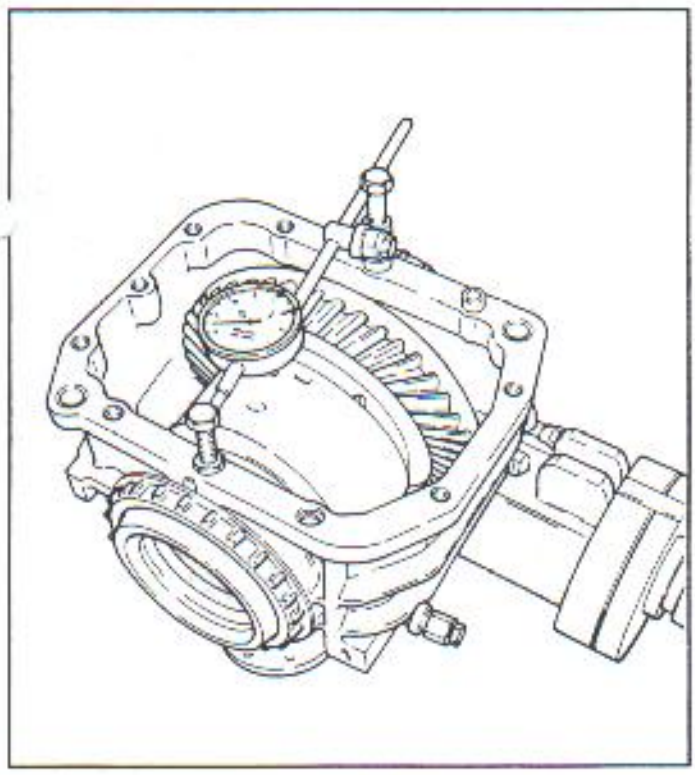
10) Completely rotate the pinion at least six (6) times, to completely rotate the crown wheel and check that there are no tight spots. Adjust the backlash if necessary, to eliminate tight spots.

11) Preload the differential bearings by tightening the adjuster on the differential side by six (6) teeth (1/4 turn)

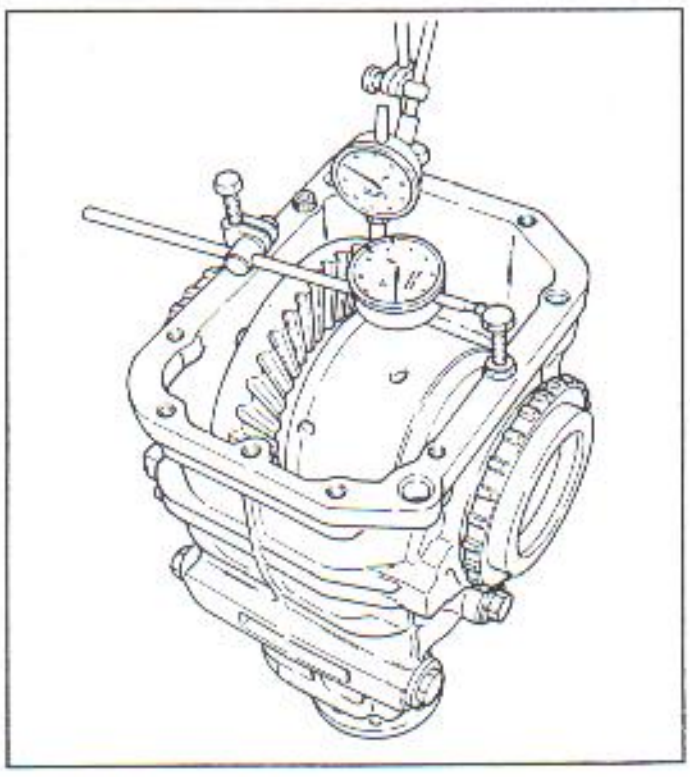
12) Observe the deflection of the casing during adjustment (the expected deflection if 0.25mm). [Refer back to item 7 in this procedure]

13) Strike the casing several times to settle the bearings.

14) Check the backlash, in the marked positions on the flange.



Zeroing the 'spread' on the axle casing, before setting the backlash, to eliminate end float.



Checking the backlash by adding a dial test indicator gauge.

To install the Differential (Continued)

15) Slacken the differential side adjuster again and check the zero preload position.

16) Preload again, by Six (6) teeth, using the new Zero position.

17) Strike the case, once again to settle the bearings.

18) Rotate the pinion several times.

19) Check the backlash in the marked positions on the flange.

20) Adjust the backlash h to 0.08 mm by equal adjustments to left and right adjusters. Do not go below 0.08-0.30mm, then the gears should be rejected.

21) Fit the lock plates to the bearing adjusters and fit the axle cover, using 11 cap screws. Use liquid sealer 1110B

22) When fitting the axle to the car, fill with hypoid oil to FORD (or equivalent) standards - see **Recommended Sealants and Greases.**

Running In the Assembly:

After fitting the axle to the car, run the car gently for 60 miles/100km. Use no more than 3,800 rpm in fifth gear.

Then return the car to the workshop and remove the rear cover.

Check the backlash.

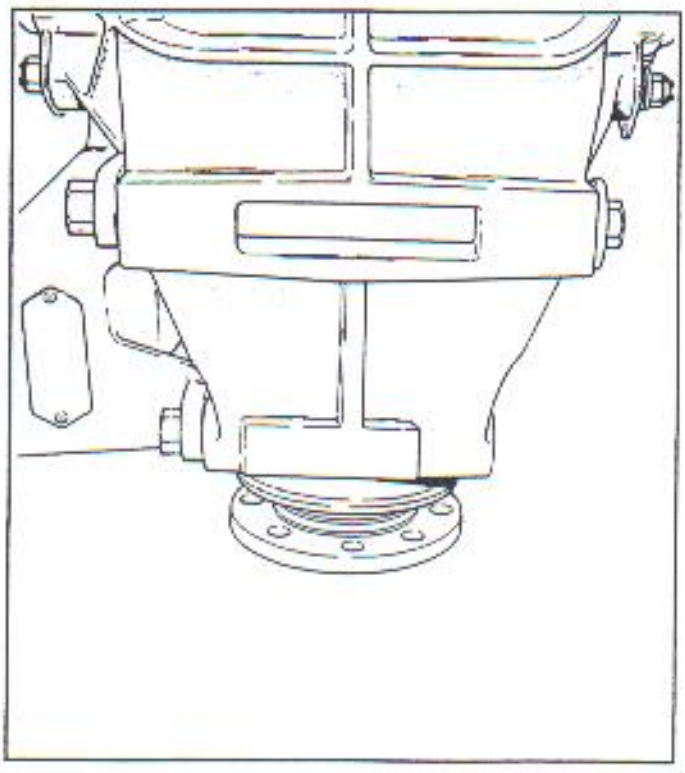
Fit a dial indicator to the rear of the case.

Check the zero bearing preload position.

Re-set the bearing preload to six (6) teeth from the new zero position.

Re-set the backlash and reassemble as before.

The axle is now ready for competition use. **Never use a new axle in competition until the above procedure has been followed.**

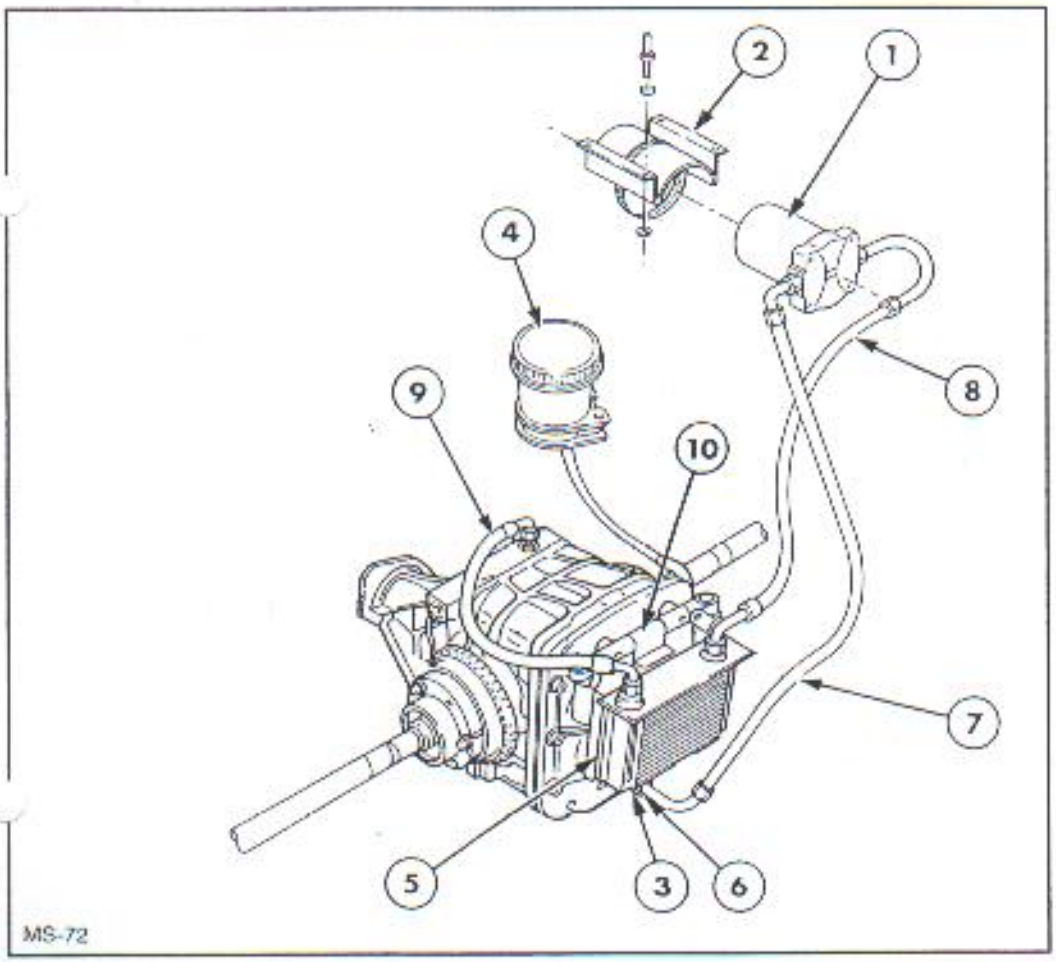


Checking the backlash by adding a dial test indicator gauge.

Fit the oil pump bracket to the underside of the floorpan, above the right hand driveshaft.

The oil cooler is now tie strapped to a bracket attached to the sub frame (see Mountings).

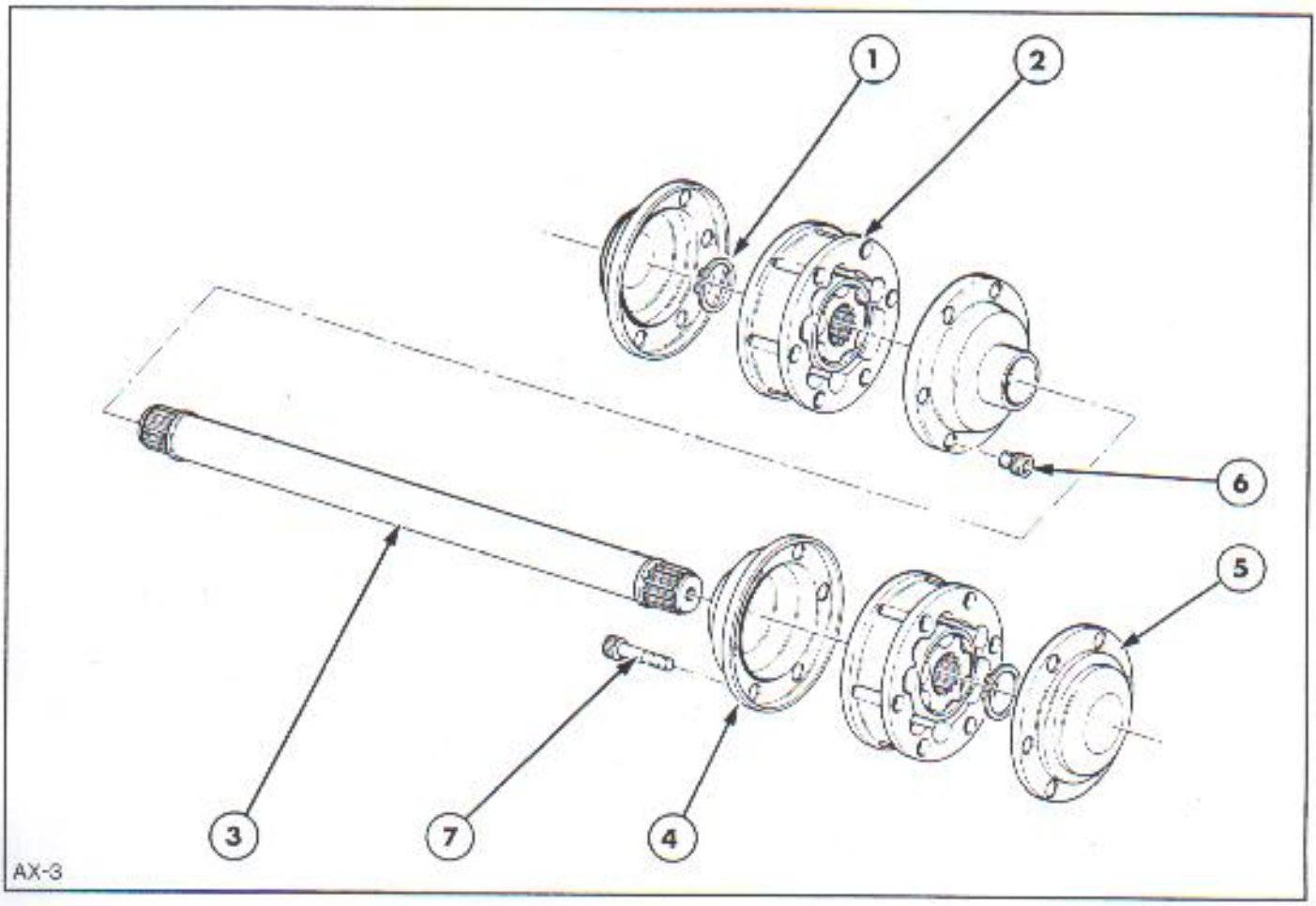
NOTE: The front of the casing should be modified to fit subframe.



	Description	Finis Code	Comments	Qty.
1	Oil Pump	9095724		1
2	Pump Bracket	9096241		1
3	Otter Temp. Switch	9093530		1
4	Breather	9095813		1
5	Oil Cooler	9095702		1
6	Oil Filter Pick Up	9091475		1
7	Hose	9095905		1
8	Hose	9095907		1
9	Hose	9095906		1
10	Cooler Bracket	9096798		1

Assemble the driveshafts as shown using a high temperature CV joint grease. After each event, strip and check joints for wear, clean out old grease and repack.

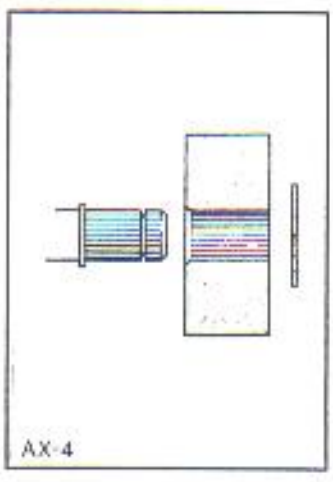
Paint a white line along each shaft when new to check for twist and mark 'LEFT HAND' and 'RIGHT HAND', do not refit a used shaft on the opposite side.



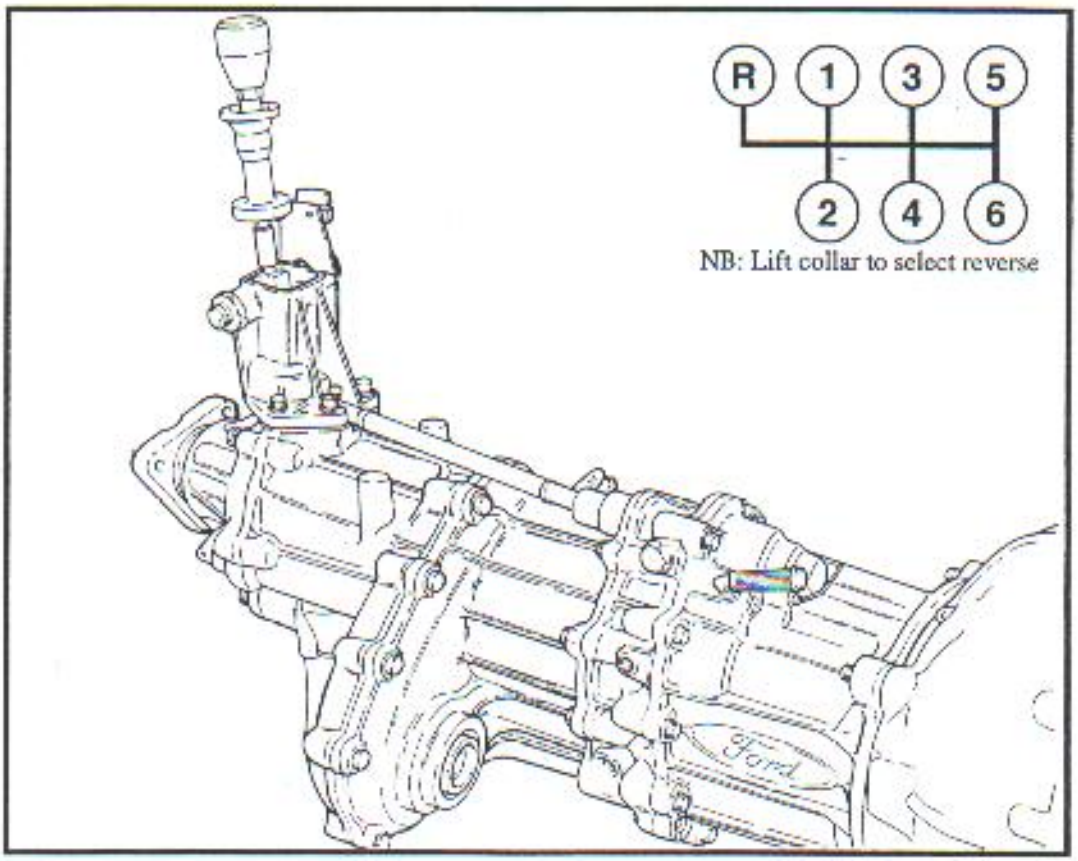
AX-3

	Description	Finis Code	Comments	Qty.
1	Circlip	9093237		4
2	Joint CV	9095327	Including gaiter	4
3	Shaft	9095636	Tar and Gravel	2
4	Gaiter	9093236		4
5	Cap	9095168		4
6	Dowel Stud	9095707	3 per joint	12
7	Bolt CV	9095300	Use with 9095327	12

Torque	
Driveshaft Bolts	75 Nm


AX-4

TRANSMISSION



The transmission generally for use in the Escort WRC is the MS95 (Note all homologated g/boxes may be used).

This is a six speed unit with dry sump lubrication via a built-in oil pump, and remote reservoir. The gears are selected by clutch rings ("dogs"). There is no synchromesh available.

The MS95 transmission is supplied with a detachable (four bolts) clutch housing. Clutch housing is normally hydraulic.

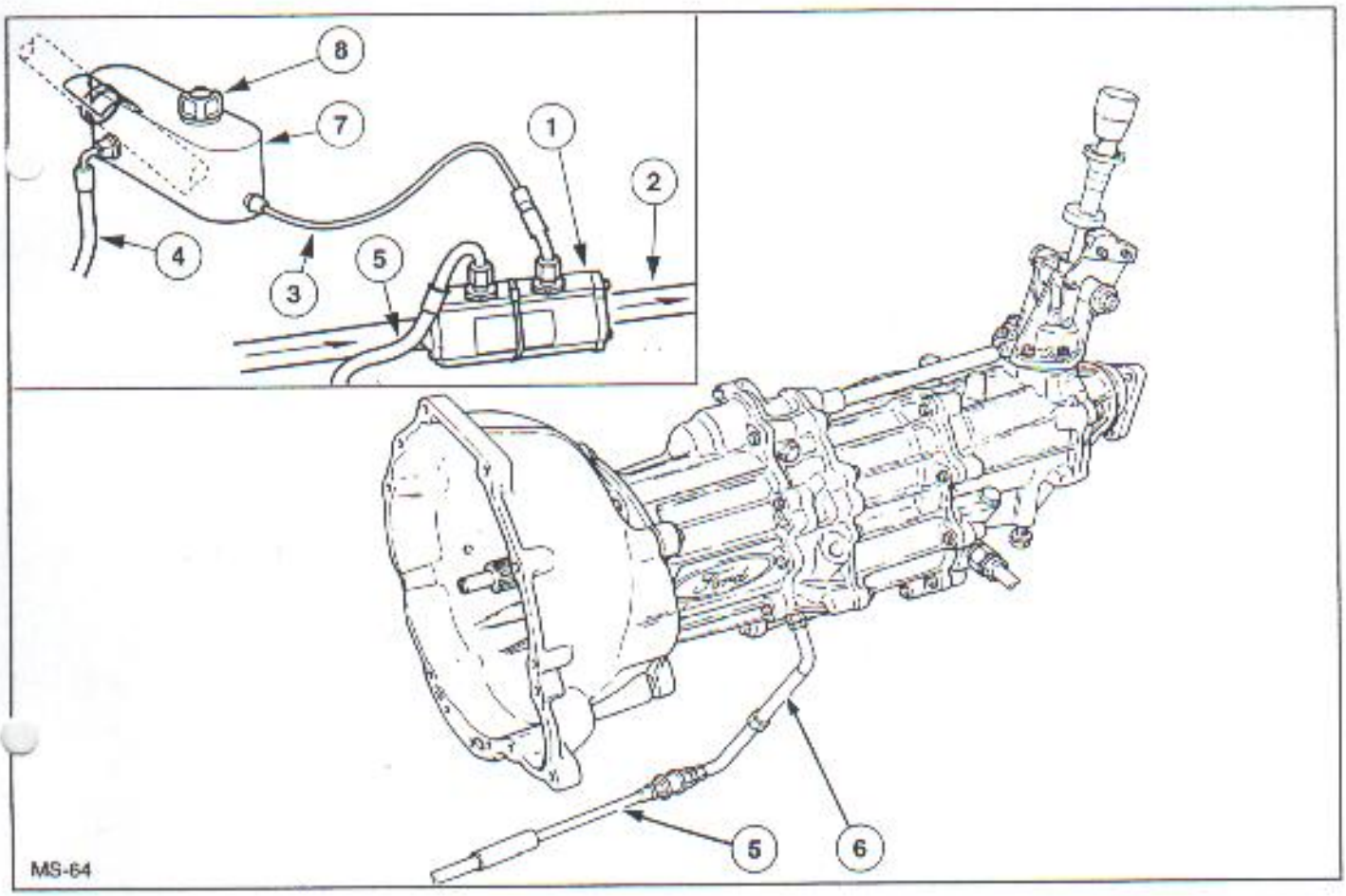
The overall ratio can be changed by replacing the primary gearset. The MS95 is supplied with the torque split set at 50% front, 50% rear. Alternative torque splits are also available.

Oil tank capacity 1.2L check level with engine running at 4000 rpm for 15 sec.

GEAR	RATIO	TEETH
1	1.800	15/27
2	1.263	19/24
3	0.955	22/21
4	0.783	23/18
5	0.667	24/16
6	0.583	24/14
REV.	2.143	14/30

INPUT RATIO

18/29 Standard
16/27 Alternative



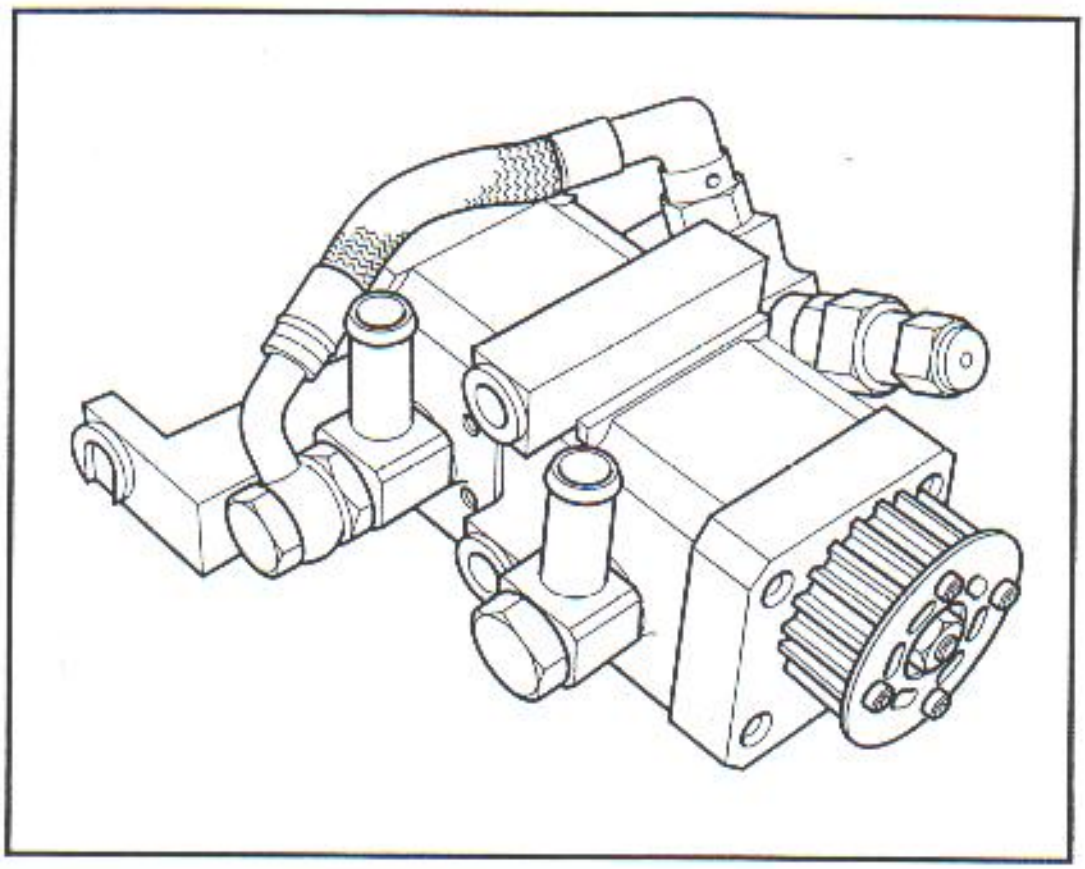
Description	Finis Code	Comments	Qty.
Transmission Assy. MS95	9096596	MPC	1
MS95	9096597	H/Brake Disconnect	1

Service details available from:
F.F. Developments Ltd.
Wolston Business Park
Main Street
Wolston
Coventry CV8 3LR
Tel: 44 (0) 1203 544 048

	Description	Finis Code	Comments	Qty.
1	Heat Exchanger	9096930		1
2	Hose from Engine to Radiator		Water	
3	Hose - Tank to Heat Exch			1
4	Hose - Tank to Gearbox			1
5	Hose - box to Heat Exch			1
6	Hose - box to Heat Exch			1
7	Oil Tank	9096123		1
8	Cap Oil Tank	TBA		1
9	MS95 Gearset	9096595	Input Ratio 18/29	1
10*	KIT MPC Conversion	9097023		
11	Gearshift Gaitor	9096833		1

* To Convert 9096597 to Active

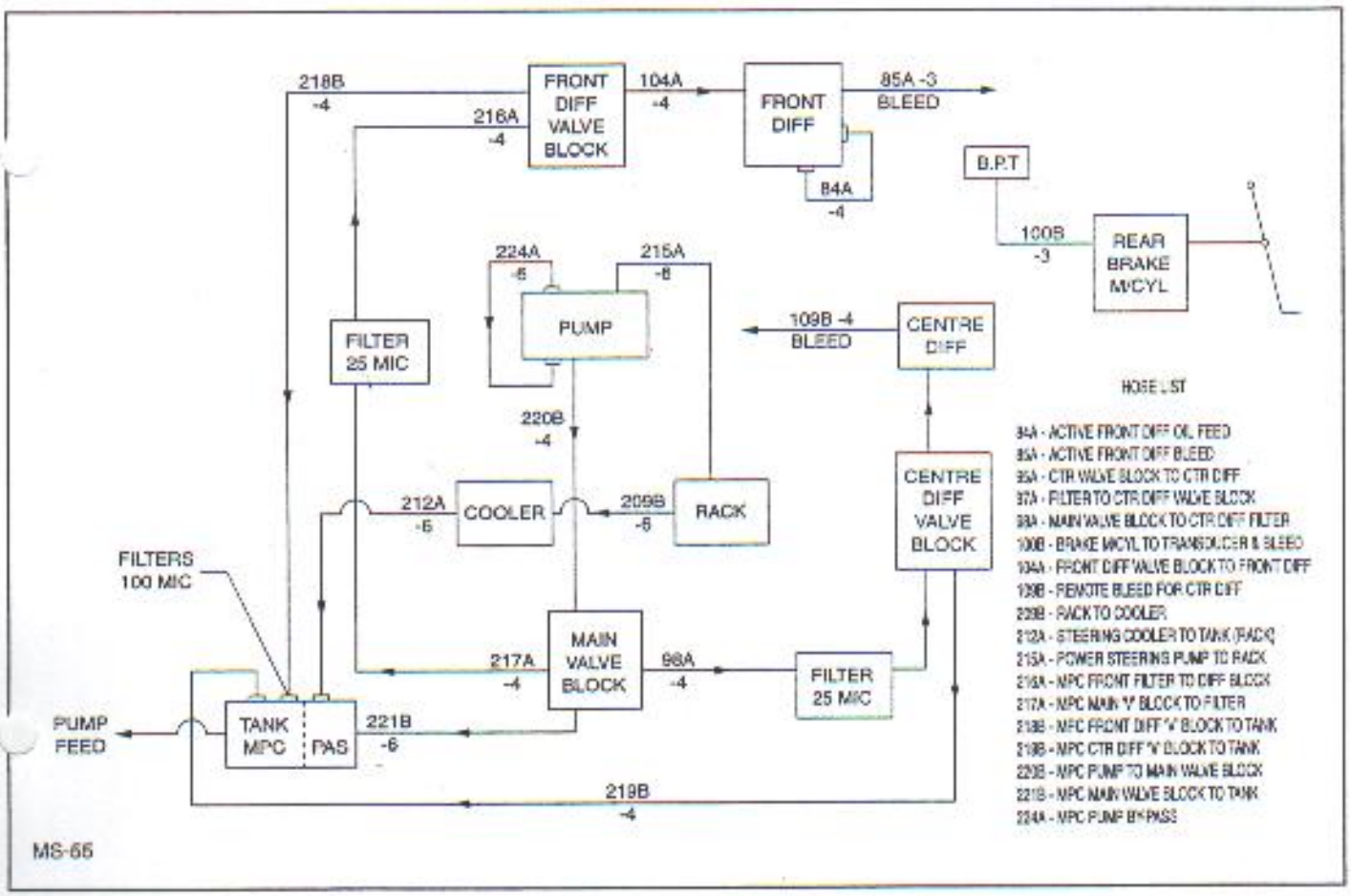
MPC SYSTEM



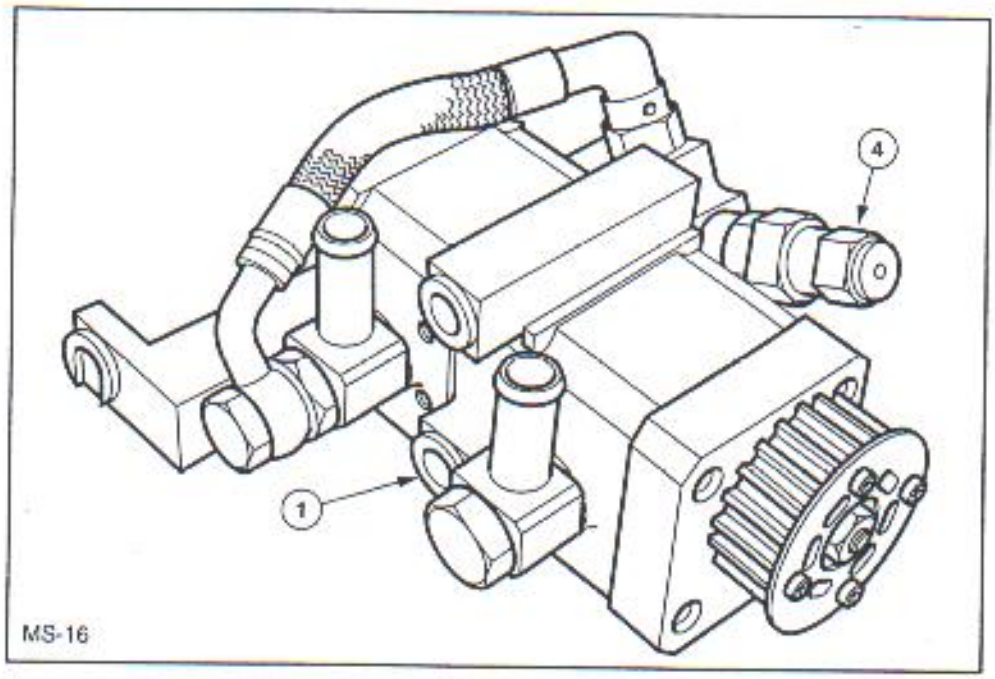
The works prepared cars now use 'Active' Multi Plate Clutch (MPC) front and centre differentials. The MPC system uses a two stage pump and a new hydraulic reservoir which also supply the PAS system.

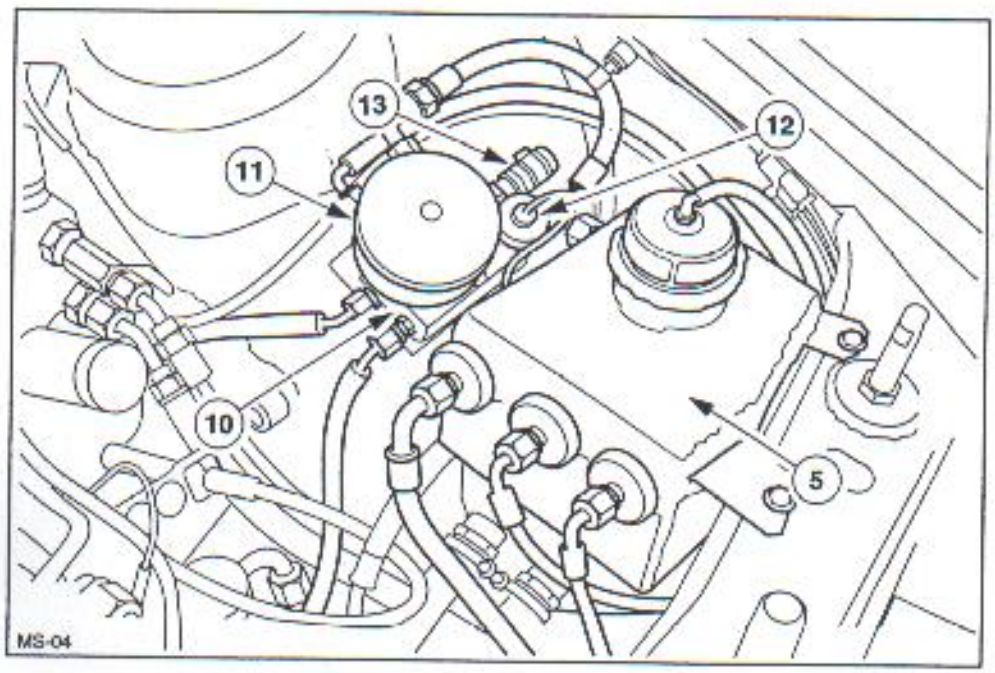
Speed sensors are fitted to driveshafts and propshafts, combined with a brake pressure transducer and handbrake sensor.

There are seperate monitors and control units for each differential.



Due to their complexity, the MPC components are offered as complete, tested assemblies. Ford Motorsport can also offer setup and rebuild support for the whole system. Please contact our T.S.T. (details listed on contact page) for advice or a quote.



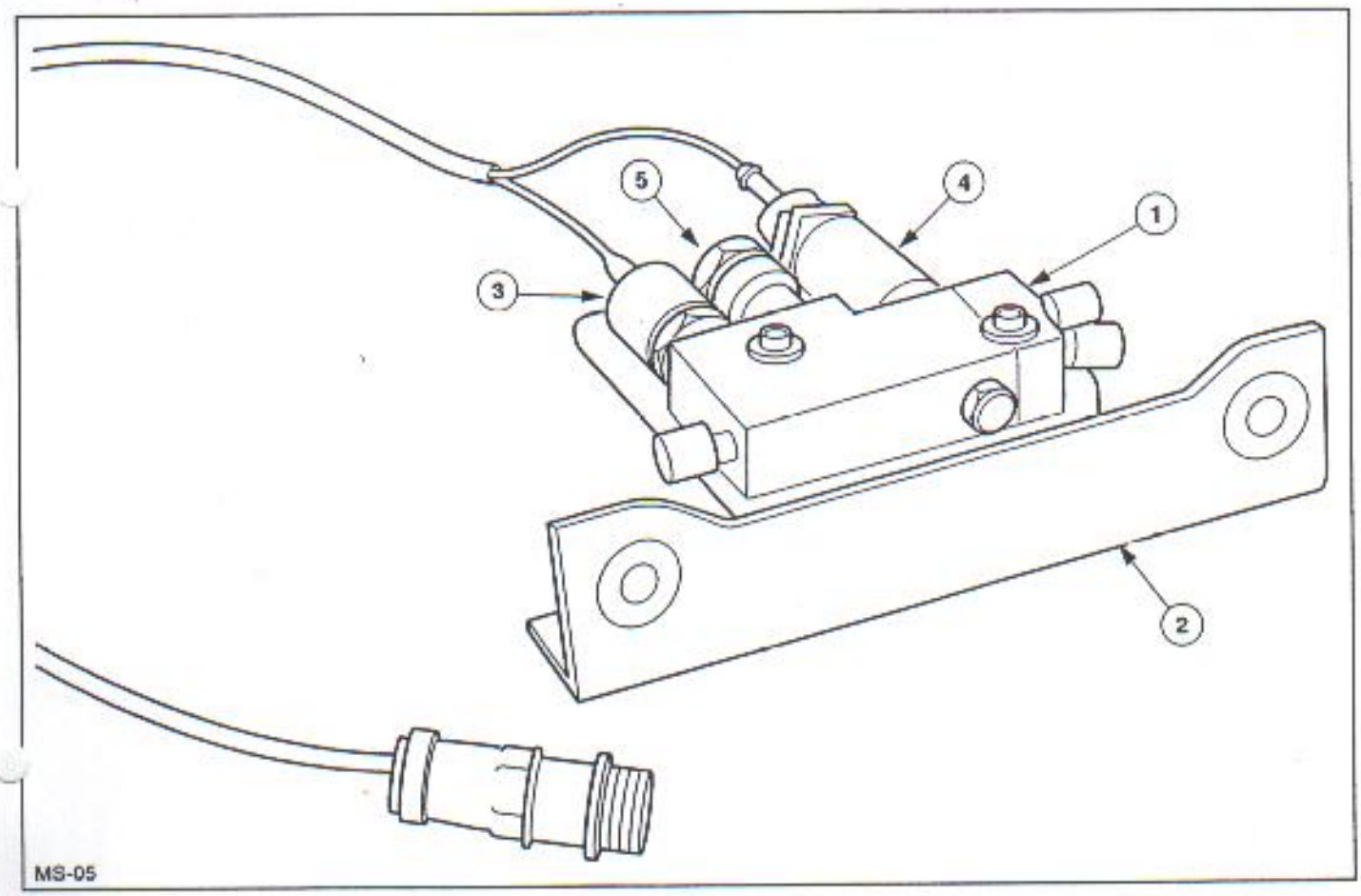


	Description	Finis Code	Comments	Qty.
1	Pump Assy – MPC/PAS	9097072	Complete Assy	1
2	Toothed drive belt	9097030		1
	Service Items:			
3	Seal kit – pump	9097064		1
4	Relief valve Assy		90 bar	1
5	Reservoir MPC/PAS	9097078		1
6	Filter	9097031	' – 4', 100 micron	2
7	Filter	9097032	' – 6', 100micron	1
9	Hose – Tank to Pump	9097022		2
10	Main Valve Block	9097075		1
	Service Items:			
11	Accumulator	9097040		1
12	Pressure Transducer	9097039	160 bar	1
13	Relief Valve PAS	9097079		1
14	Seal - Pump Centre	9097080		2
15	PRV Seal Kit	9097082		1

	Description	Finis Code	Comments	Qty.
16	Filter - Reservoir	9097081		2
17	Bleed Nipple	9097036		1
18	Lip Seal - MPC Pump	9097080		1
19	'O' Ring - Tank Filter	9097035		

The valve blocks for the front and centre differentials are the same. The centre diff block is mounted on the gearbox tie bar (on the bracket shown). The diff block is mounted on the inner wheel arch.

The brake pressure sensor block (not shown) is mounted on the roll cage just behind the front strut.



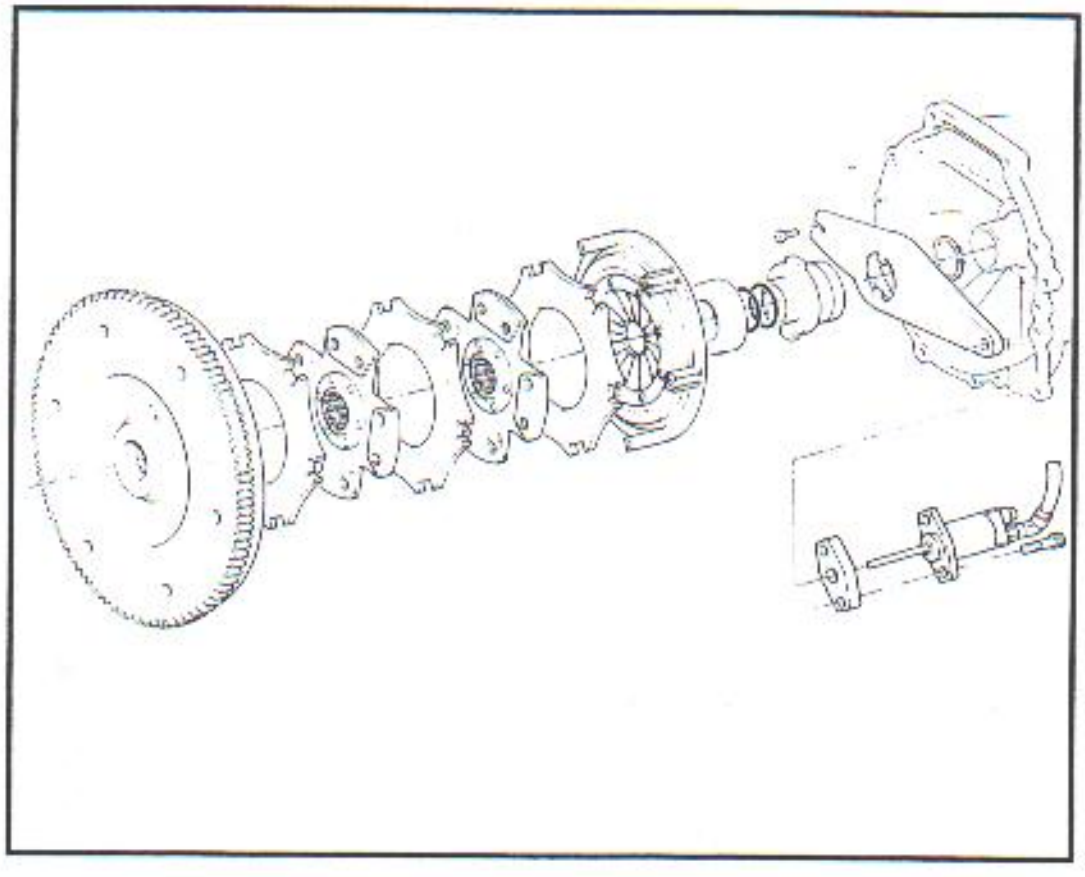
MS-05

	Description	Finis Code	Comments	Qty.
1	Diff Valve Block	9097076	Frt and Ctr – Complete Assy	2
2	Bracket		To Gearbox Tie Bar	2
	Service Items:			
3	Pressure Transducer	9097037	25 Bar	2
4	Control Valve	9097042	Rexroth	
5	Relief Valve Repair Kit	9097083		2
6	Brake Sensor Block	9097077	Not Shown – Complete Assy	2
	Service Item:			
7	Pressure Transducer	9097038	100 Bar	
8	Sensor Wheel	9097073	Frt. Driveshafts	2
9	Speed Sensor	9097045	Frt. Driveshafts	2
10	Sensor Bracket - Crosshaft	9097074		1

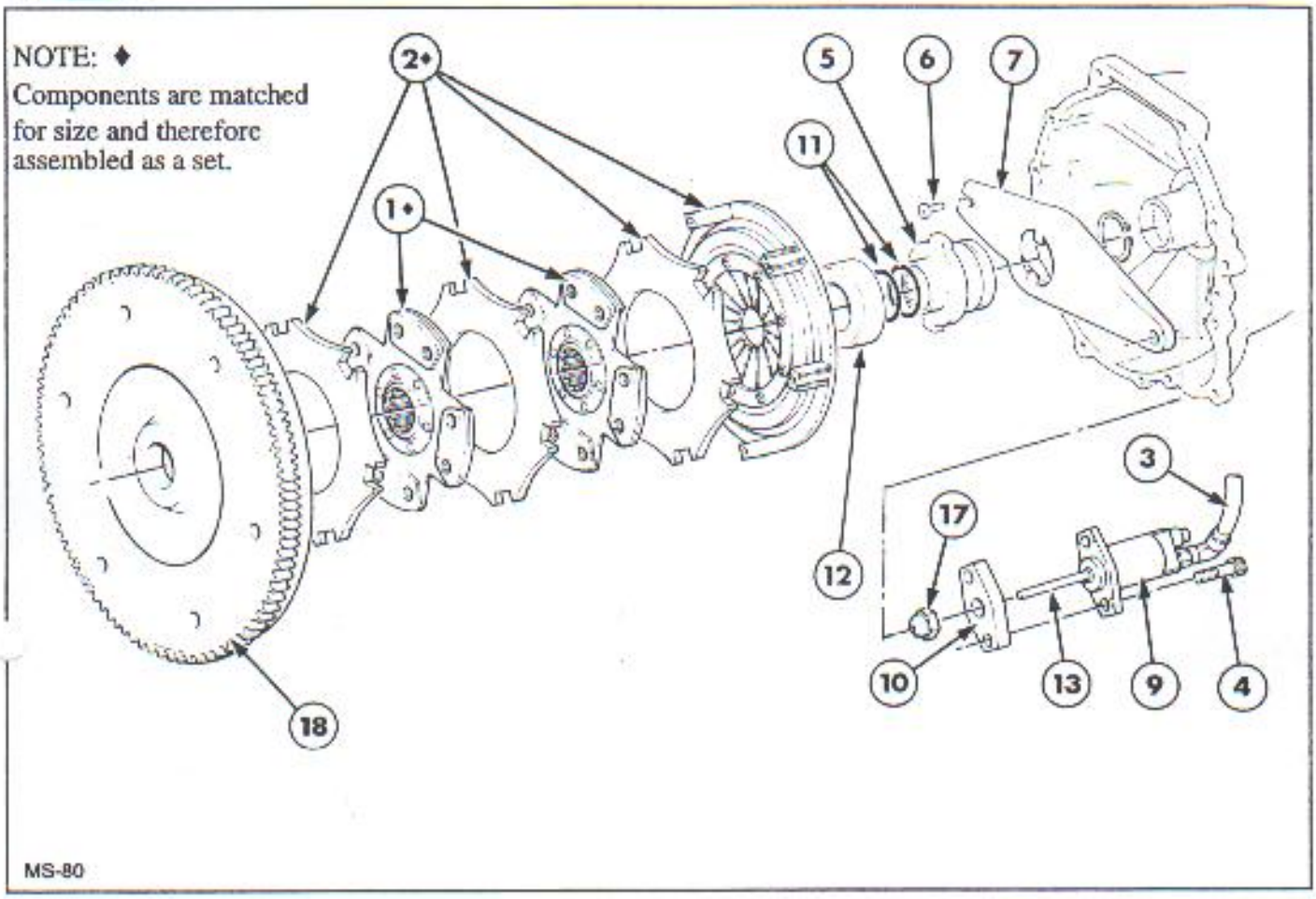
Note: Sensors are also fitted to the transmission for the centre differential.

11	Line Filter, 25 micron	9097033	To Diff Valve Blocks	2
12	Filter Body	9097034	Line Filter	2
13	Controller - Centre Diff	9097057	Gems - Dash mounted	1
14	Controller - Front Diff	9097056	Gems - Dash mounted	1
15	Display unit - Centre Diff	9097055	Gems - Dash mounted	1
16	Display Unit - Front Diff	9097054	Gems - Dash mounted	1

CLUTCH

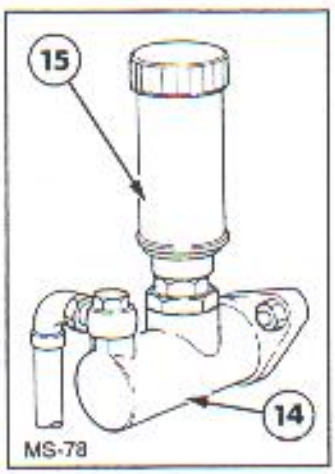


NOTE: ♦
Components are matched for size and therefore assembled as a set.



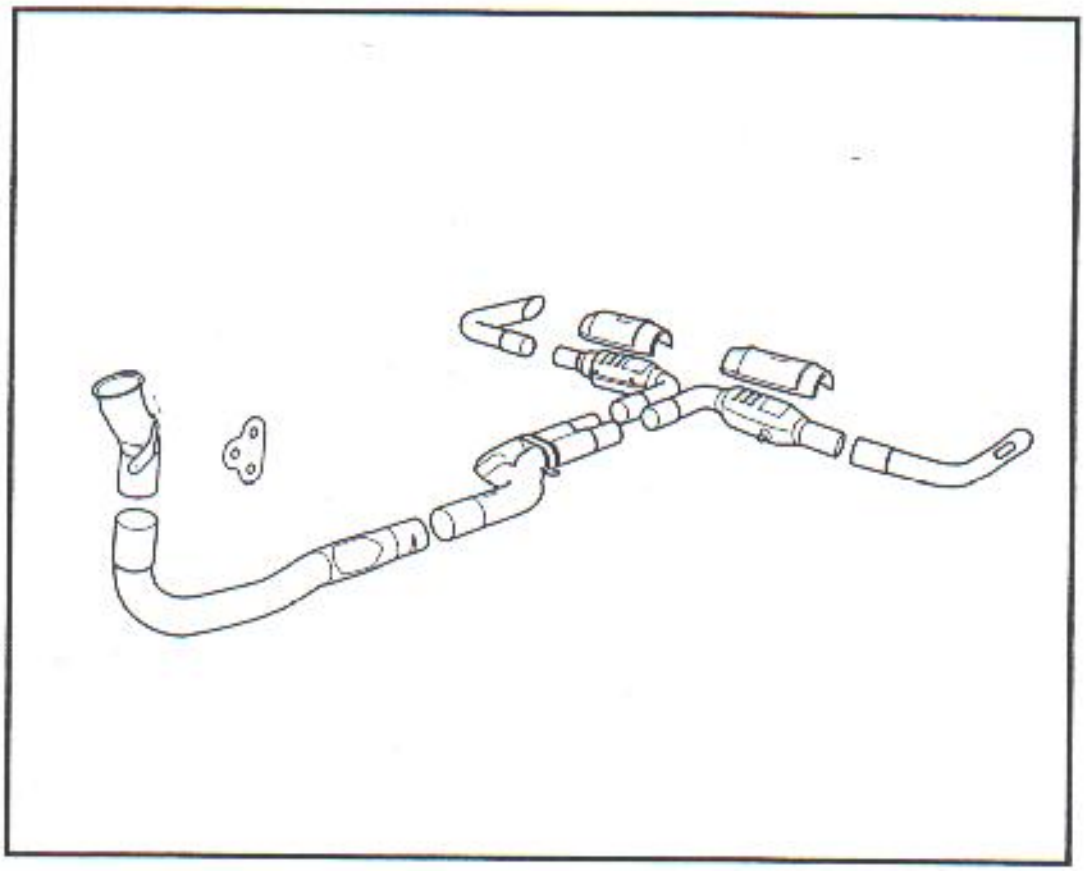
MS-80

	Description	Finis Code	Comments	Qty.
1	Clutch Plate	9096859	7¼". 1⅜₃₂" x 26T	2
2	Clutch Cover	9096201	7¼"	1
3	Hose - Clutch Feed	909		1
4	Bolt			2
5	Bearing Carrier	9096599	Clutch release	1
6	Pin	9095293	Clutch release	1
7	Lever	9096598	Clutch release	1
9	Slave Cylinder	9093223	Clutch release	1
10	Spacer	9095294	Clutch release	1
11	'O' Ring - Graphite	9096725	Clutch release	2
12	Bearing	9096600	Clutch release	1
13	Push Rod	9095291	Clutch release	1
14	Master Cyl	9095355	0.7"	1
15	Reservoir	9095813		1
16	Spring - Release Arm	9096976		1
	See pedal box for clutch pedal			
17	Nut Adjuster	9095608		1
18	Flywheel - Carbon Clutch Only	9096942		1



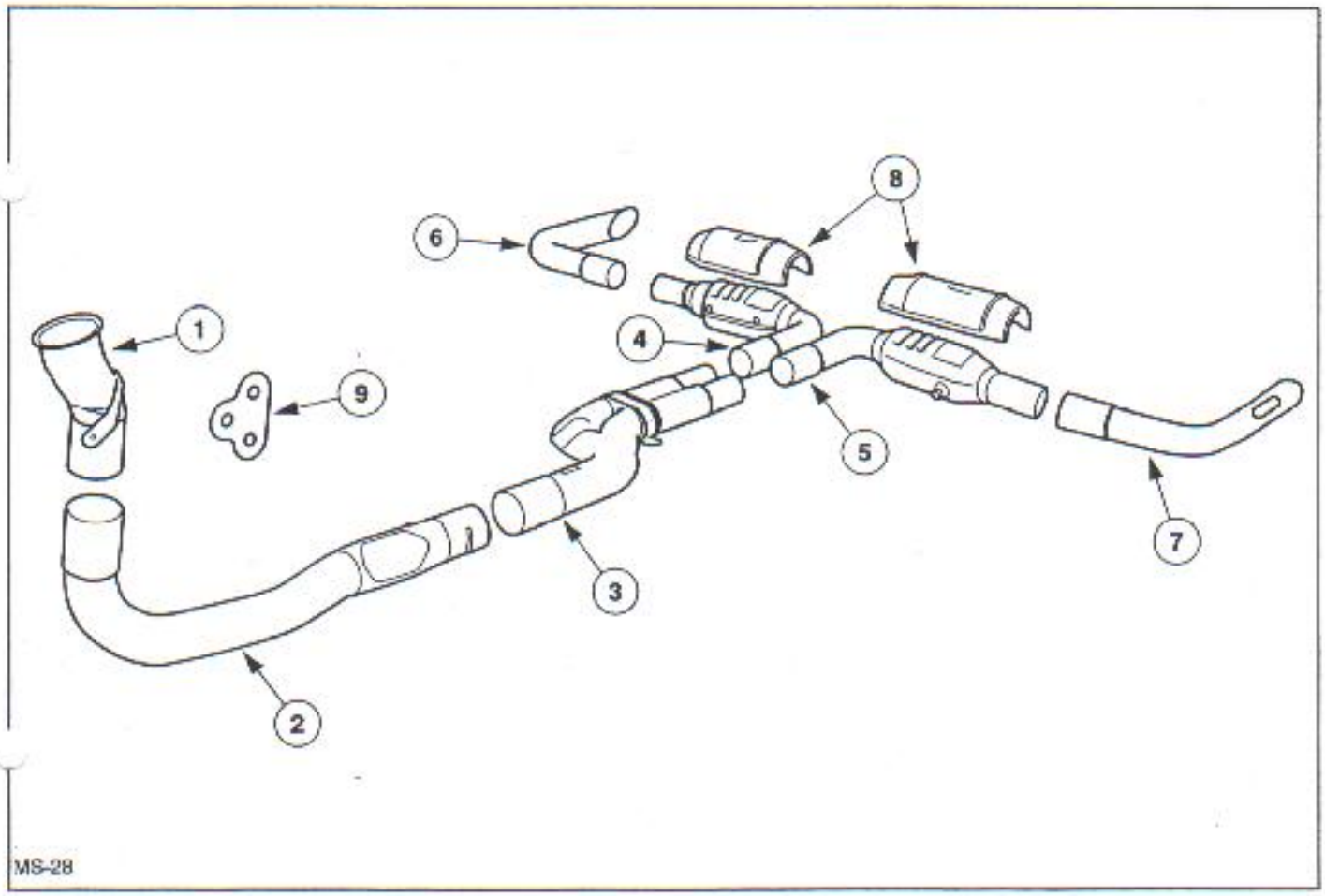
MS-78

EXHAUST



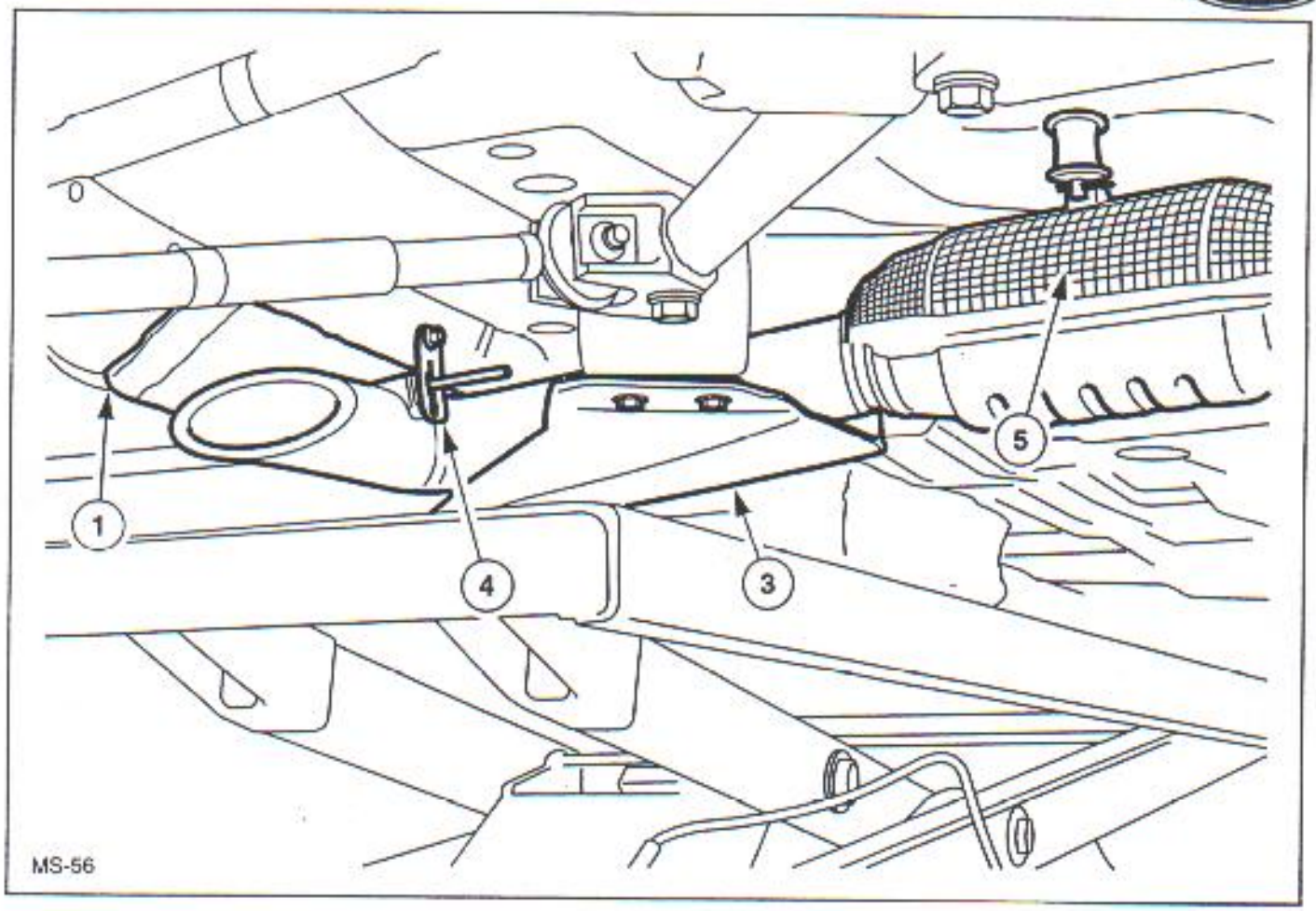
The exhaust system shown is suitable for use on tarmac and gravel. The system should be rubber mounted to avoid stress cracks. Ensure that all areas subject to heat are suitably protected – both inside and outside the car.

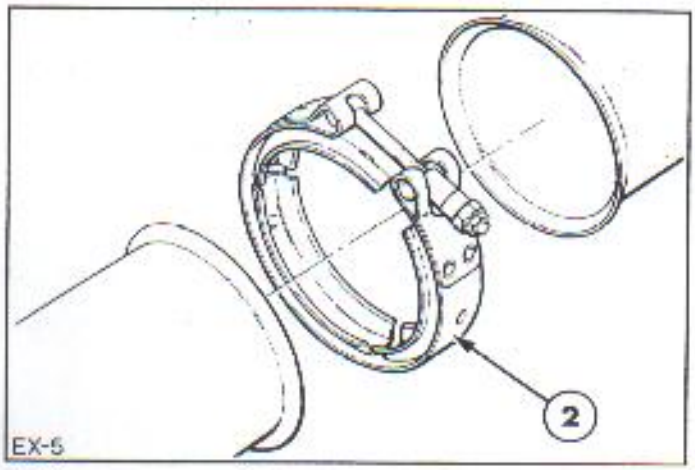
NOTE: Catalysts must be fitted in WRC Events.



MS-28

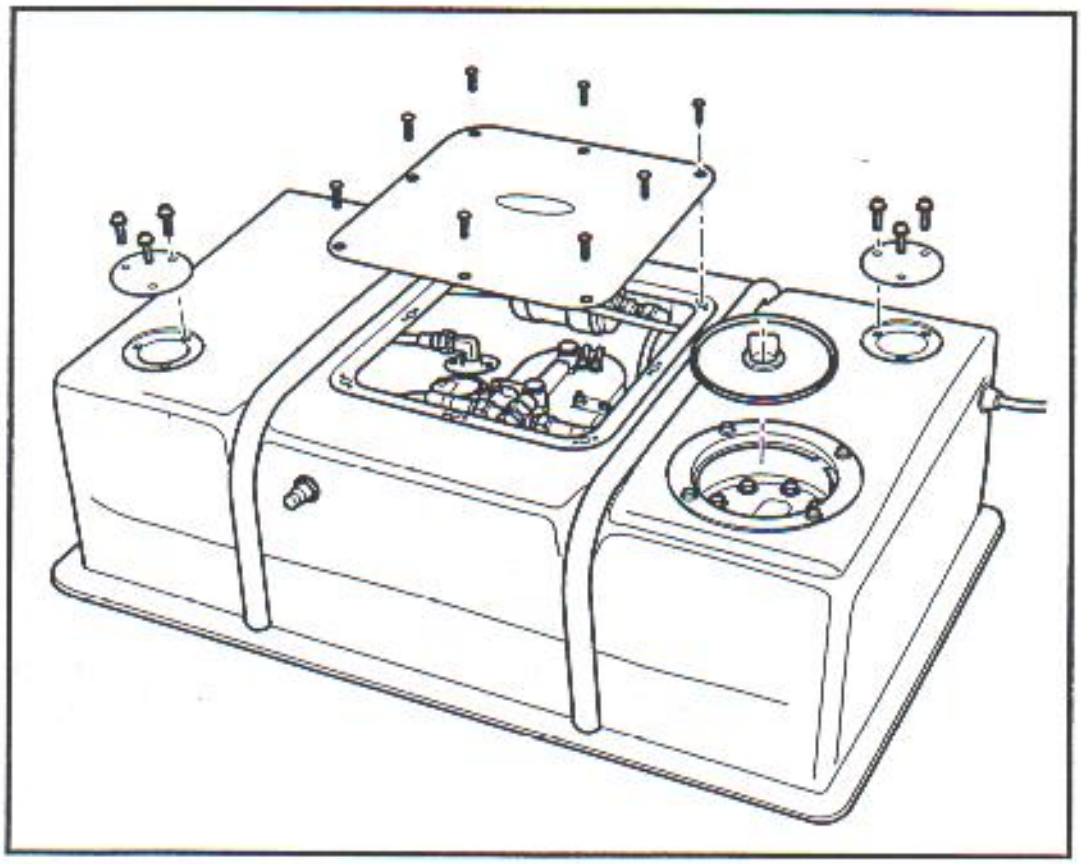
	Description	Finis Code	Comments	Qty.
1	Downpipe	9096814		1
2	Pipe 2	9096693	Titanium	1
	Alt	9096705	Steel	1
3	Pipe 3	9096867	With Silencer	1
		9096730	Without Silencer	1
4	Pipe 4 - LH	9096732	With Catalyst	1
5	Pipe 4 - RH	9096731	With Catalyst	1
6	Pipe 5 - LH	9096734		1
7	Pipe 5 - RH	9096733		1
8	Heatshield - Catalyst	9096735		2
9	Bracket - Down Pipe Support	9093114		1
10	Adaptor - Exhaust	9096866	Fabricated	1

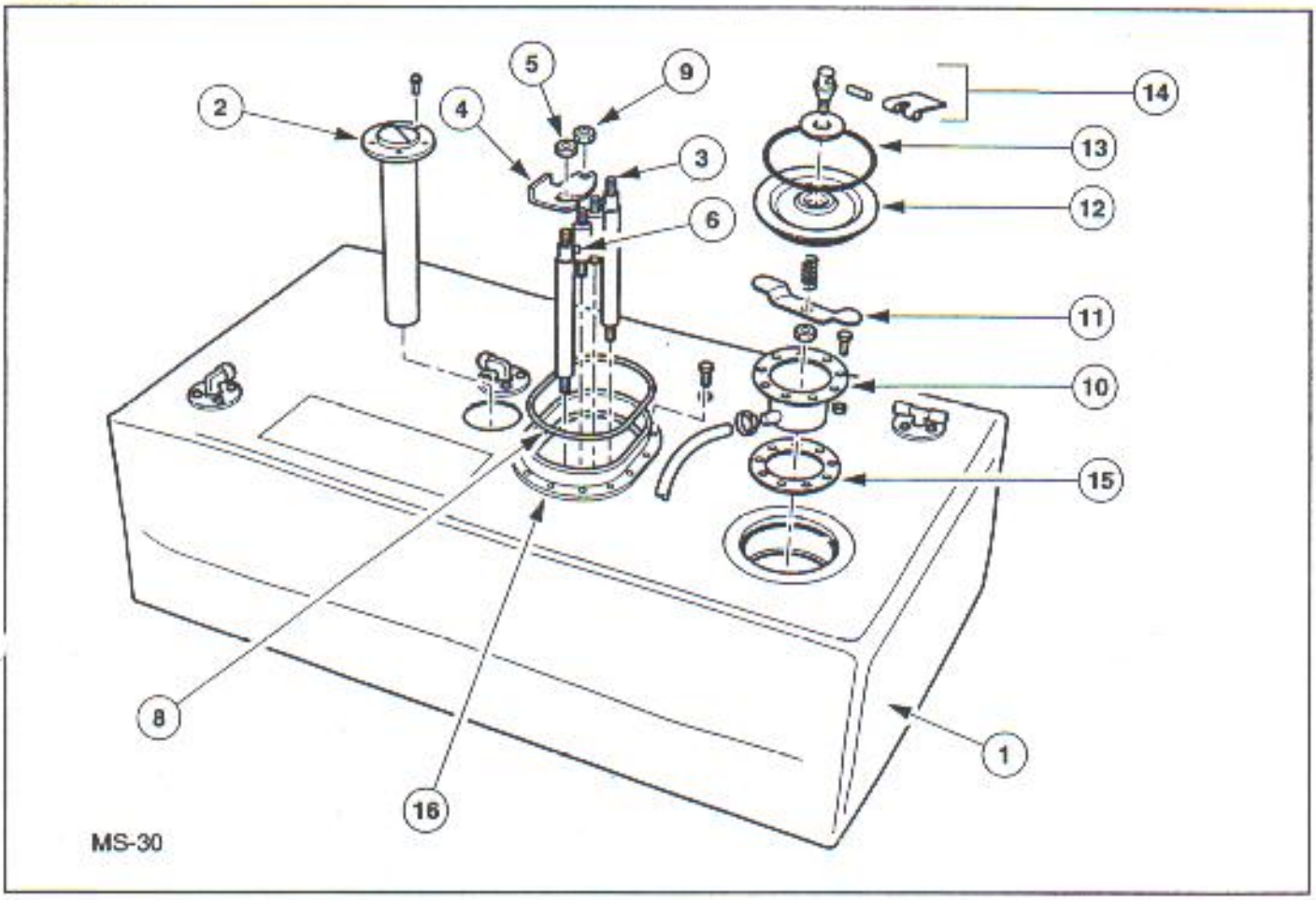




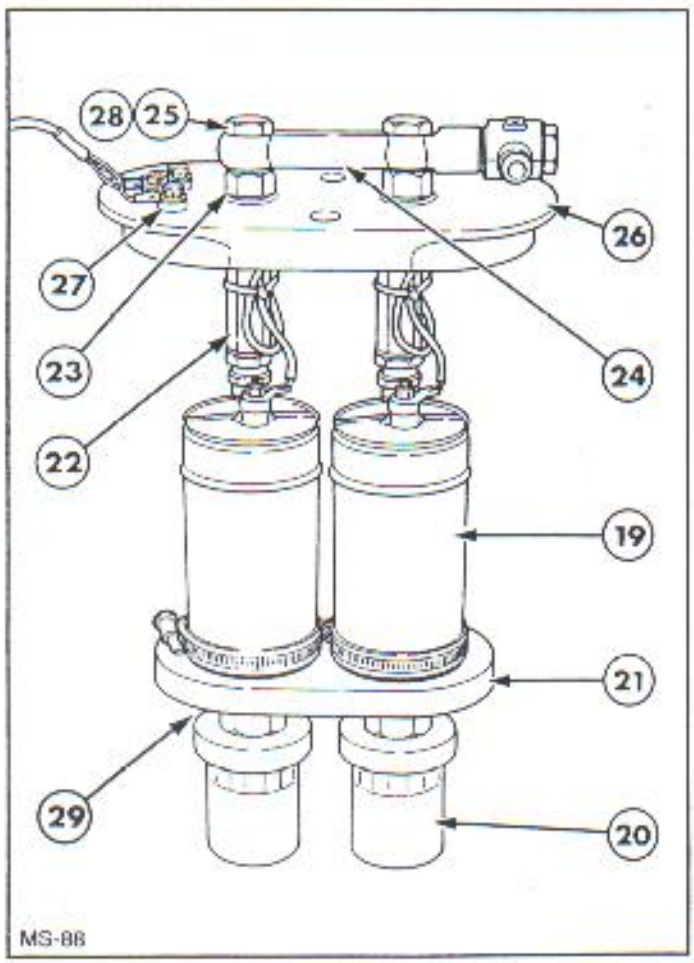
	Description	Finis Code	Comments	Qty.
1	Heatshield	9096687	Exhaust Exit	2
2	Clamp - Turbo/Down Pipe	9095868		1
3	Stone Guard RH	9096934		1
	LH	9096935		1
4	Pipe 5 Support			
5	Cat Heatshield	9096735		2

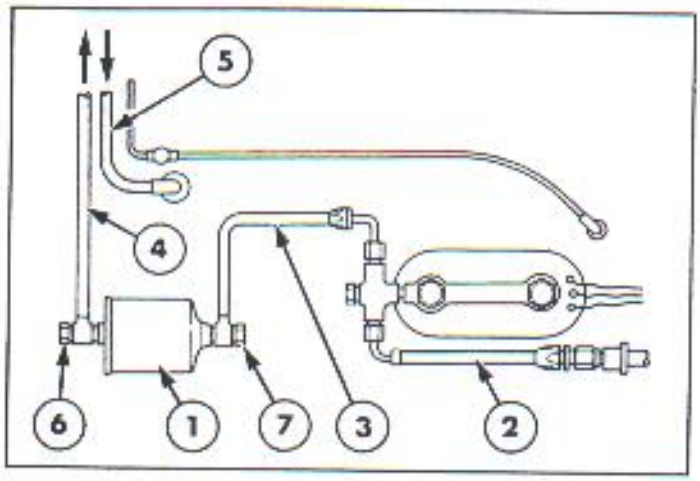
FUEL SYSTEM



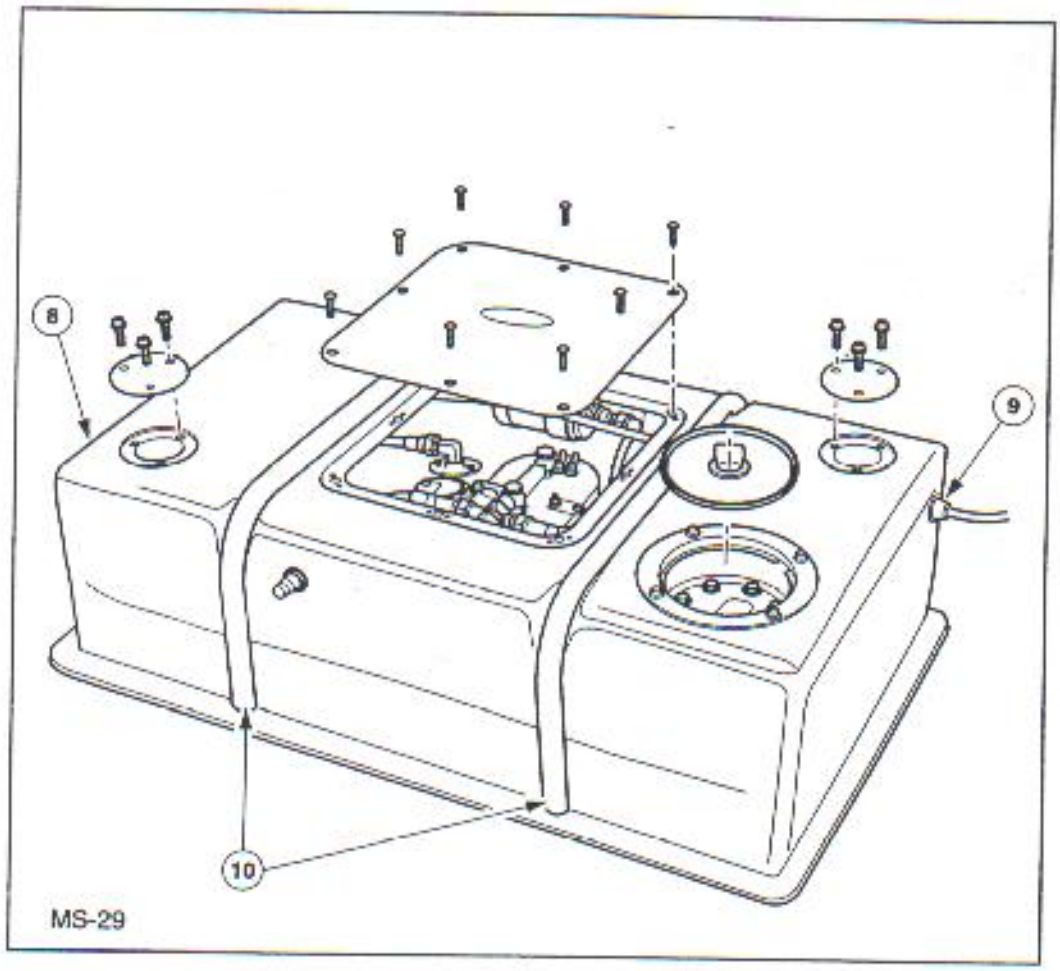


	Description	Finis Code	Comments	Qty.
1	Fuel Tank	9096726	80 ltrs	1
2	Fuel Sender			1
3	Support – Fuel Tank Unit	9096759		2
4	Latch – Pump Assembly	9095952		2
5	Nut – Special M6	9095951		1
6	Pillar	9096187		2
7	'O' Ring - Support Rod	9096224		2
8	'O' Ring	9096224		1
9	Nut	*1571668		2
10	Neck – Filler	9096760		1
11	Locking Bar	9096352		1
12	Cap – Filler Neck	9096761		1
	Spacer - Filler neck to tank	9096762		1
13	'O' Ring	TBE		
14	Latch Kit - Filler Cap	9095945		1
15	Gasket 9 Hole	9096707		3
16	Flange - Fuel Pump	9096100		1
17	Screw – M5 x 15	—		
18	Nut – Captive M5	—		
19	Fuel Pump	9096152	Pre Filter Type	2
20	Fuel Pre Filter	9096237		2
21	Cover – Collector Pot	9095942		2
22	Extension – Fuel Pump	9096758		2
23	Adaptor – Fuel Rail	9096041		2
24	Fuel Rail	9095943		1
25	Banjo Bolt	9095958		2
26	Cover Pump Assembly Top	9095940		1
27	Insulator – Electrical	9096339		6
28	Copper Washer			4
29	'O' Ring Filter	9096223		2
30	Valve - Rollover Vent	9096708		1



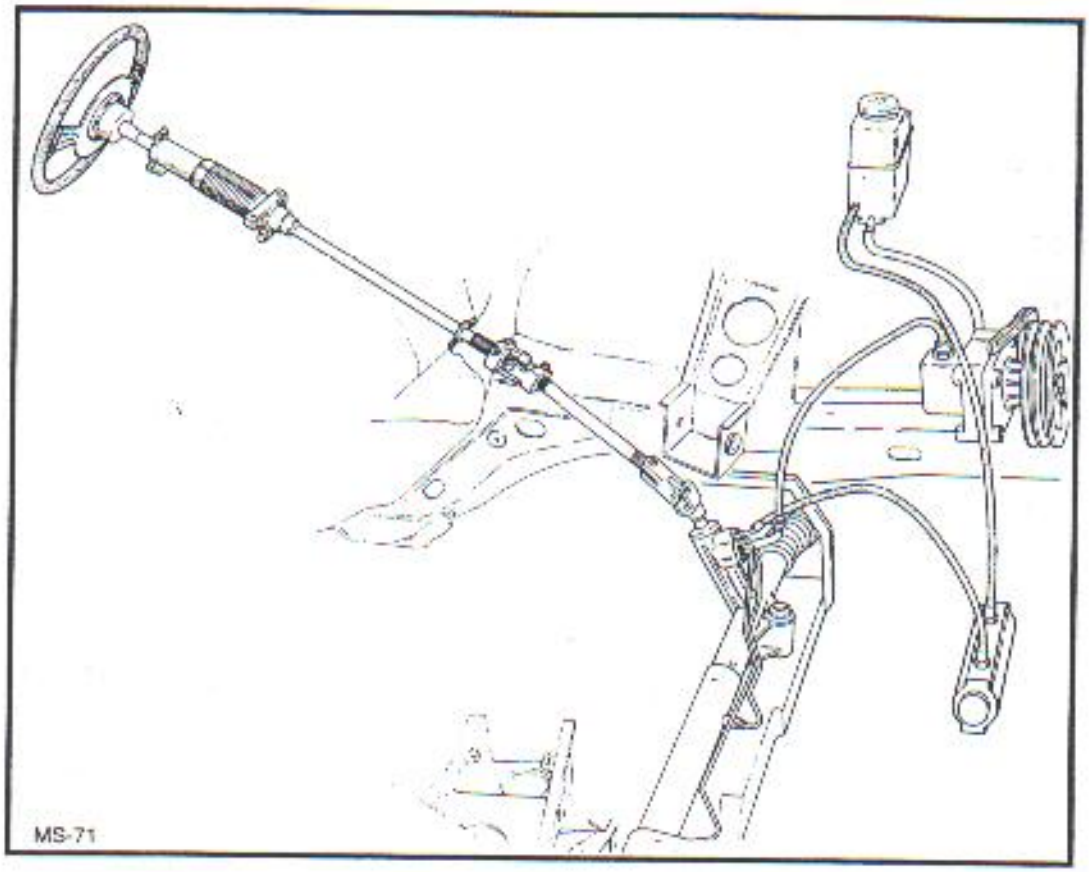


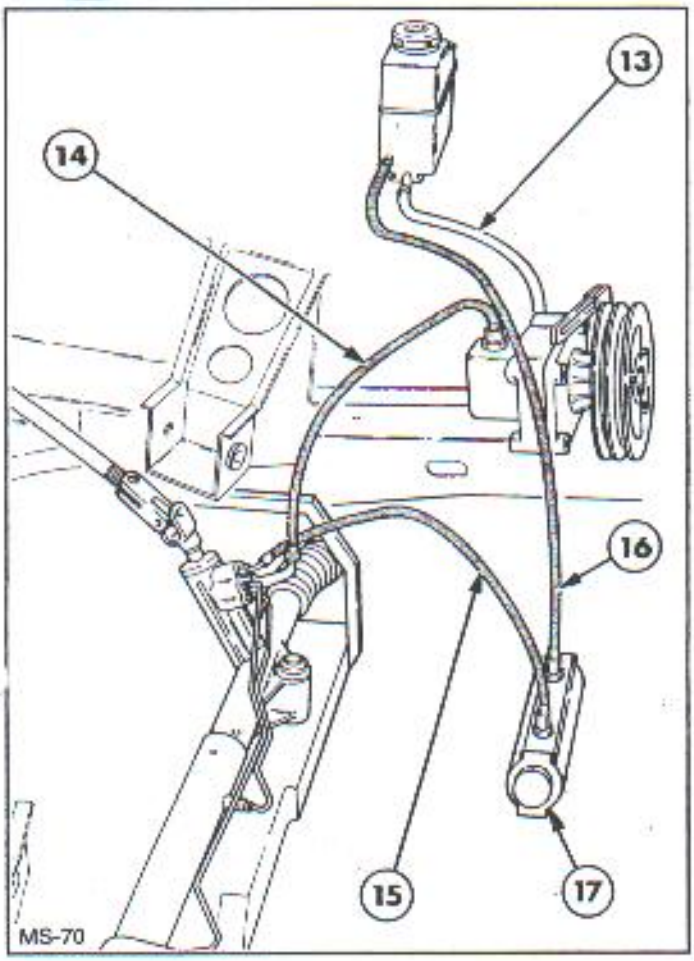
Note: Change fuel filter and clean pump pre-filters after each event.

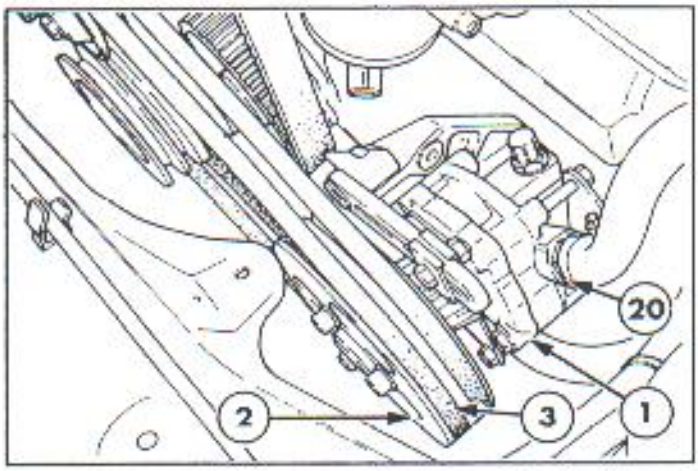


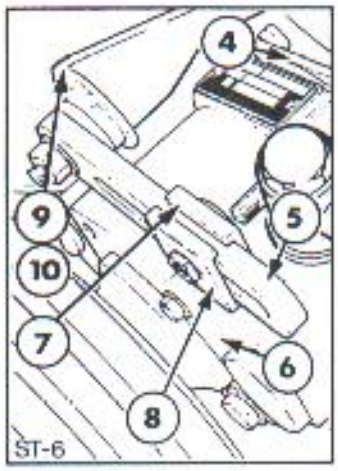
	Description	Finis Code	Comments	Qty.
1	Filter – Fuel	9090275		1
2	'Dry Break' Connector	—	F.I.A. – Approved	1
3	Hose – Pump to Filter	9095895		1
4	Hose – Fuel Feed	9096314		1
5	Hose – Fuel Return	9096323		1
6	Banjo Bolt M14	—		1
7	Banjo Bolt M12	*6054979		1
8	Fuel Tank Cover Assembly	9096727		1
9	Wiring Grommet	*6052198		1
10	Fixing Bar	9096954		2
11	Gasket - 4 hole	9095957		1

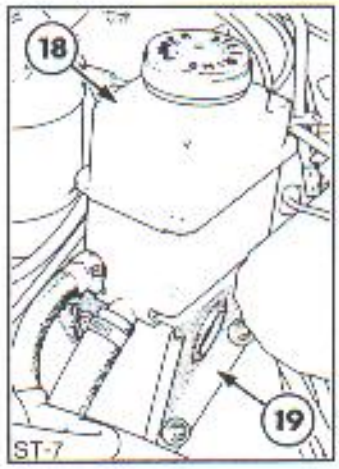
STEERING



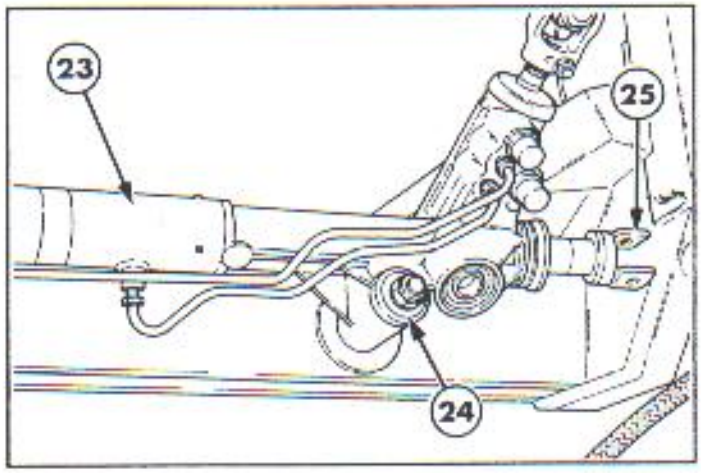






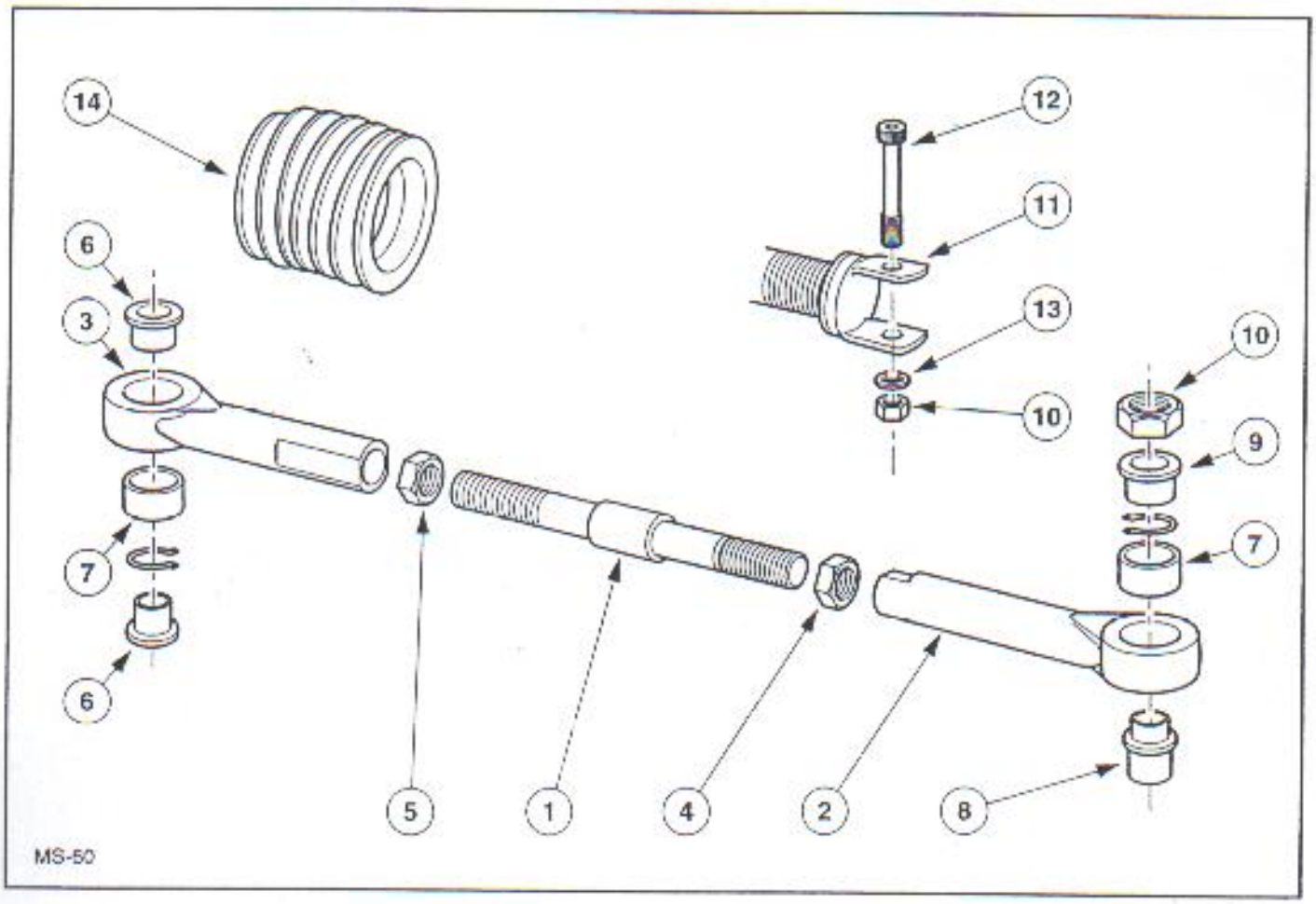


	Description	Finis Code	Comments	Qty.
1	Pump – PAS	9095670	75 Bar Non Active	1
2	Pulley – PAS	9096195	Poly Vee	1
3	Belt – PAS	9096193	Poly Vee	2
4	Plate – Rear PAS Pump	9096184		1
5	Strap	9092600	Nylon	1
6	Plate – Front PAS	9096183		1
7	Clamp – PAS Strap	9091941		1
8	Clamp – PAS Strap	9095158		1
9	Bracket – PAS	9095246		1
10	Spacer – PAS Bracket	9095089		1
11	Connector – Rack Feed	9096340	(red)	1
12	Connector – Rack Return	9096341	(blue)	1
13	Hose – Oil Feed	9097022		1
14	Hose – PAS Pump to Rack	9096247		1
15	Hose – Return	9096315		1
16	Hose – Cooler Return to PAS			1
17	Oil Cooler - Laminover	9096930		1
18	Reservoir – PAS	*6193721	Non - Active	1
19	Bracket – Reservoir	*1637854	Non - Active	1
20	Banjo – PAS Feed	9095672		1
21	Banjo Bolt – PAS Feed	9093283		1
22	Adaptor – PAS Pump	9093284		1
23	Steering Rack LHD	9096840		1
24	Insert – Rack Mounting	9094768		2
25	Yoke	9096192	Tarmac	2



Note: When using the active MPC system then there is a combined PAS and MPC pump (see transmission section for details).

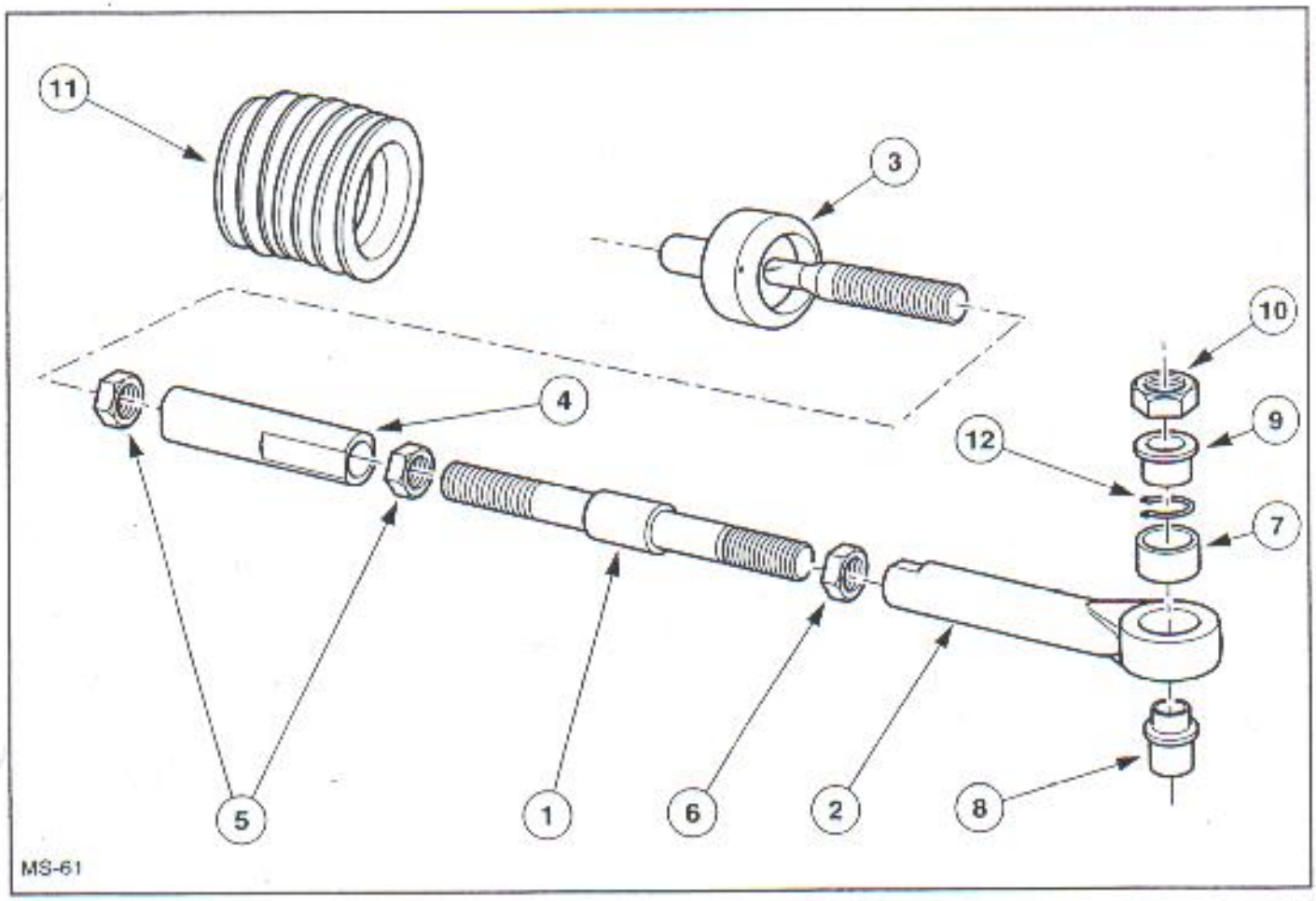
The yokes (item 11) are fitted with Loctite to each end of the steering rack, ensuring that the bolts (12) are vertical (±5°) this can be achieved by machining small amounts from the rack or adding shims.



	Description	Finis Code	Comments	Qty.
1	Bar – Track Rod	9096490	13.6mm	2
2	Housing Track Rod End Outer	9096162	Tarmac	2
3	Housing Track Rod End Inner	9096163		2
4	Locking Nut Track Rod End Outer	9095823		2
5	Locking Nut Track Rod End Inner	9095822	(L.H.T.)	2
6	Spacer Track Rod End Inner	9096449		4
7	Bearing Kit Track Rod End	9095350		4
8	Spacer Track Rod End (Outer)	9096926		2

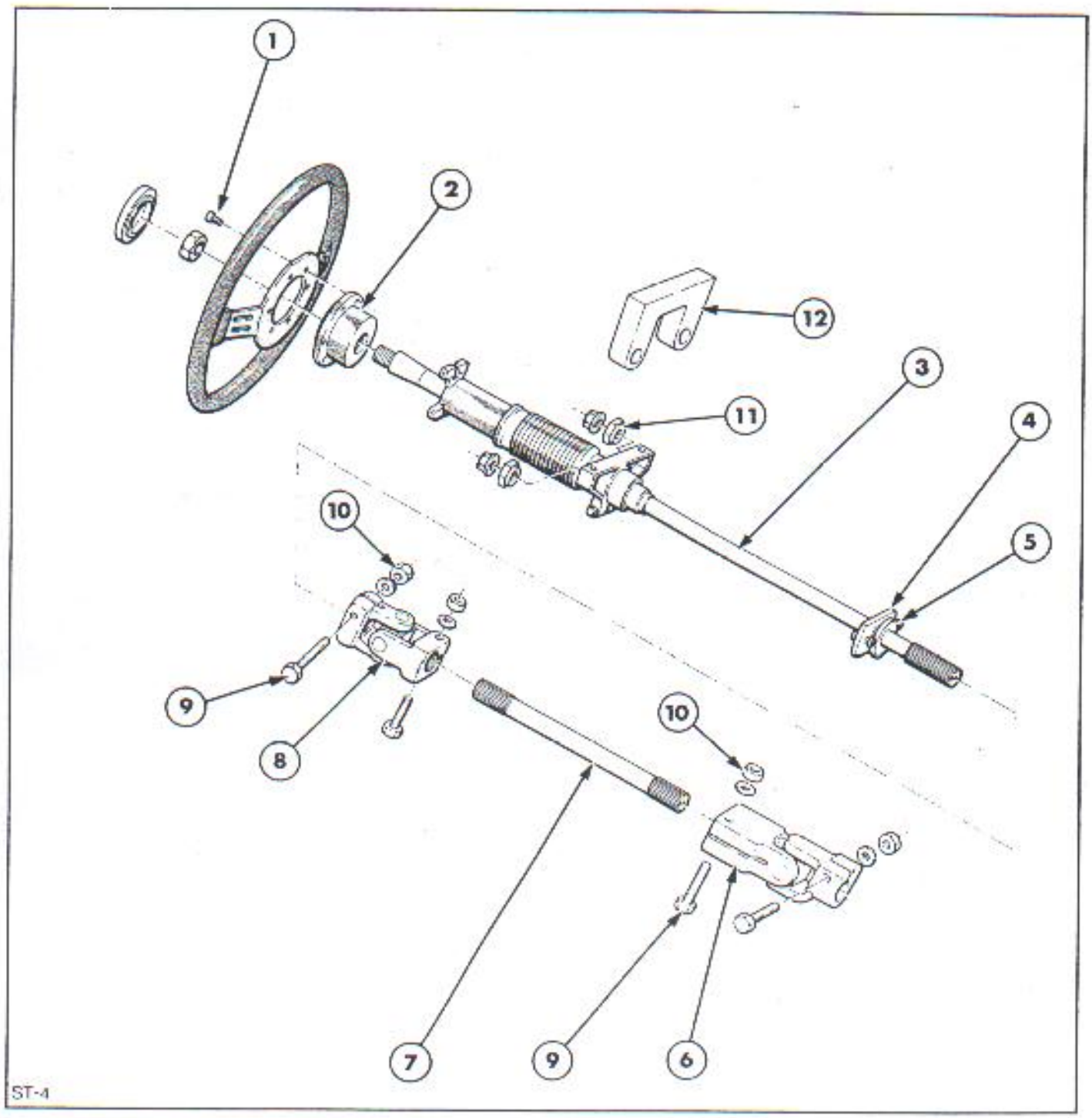
	Description	Finis Code	Comments	Qty.
9	Spacer Track Rod End (Outer Upper)	9095323		2
10	Nut Self Locking		M12 x 1.75	4
11	Yoke Track Rod End	9096192		2
12	Bolt Yoke to Track Rod Hsg.		M12 x 1.75 x 55	2
13	M12 Flat Washer			2
14	Gaiter	9096806		2
15	Lockstop 5mm	9093780	Nylon	2
or	Lockstop 10mm	9095251	Al.	2
16	Brg. Circlip	9096875		2

The Gravel setup now features an articulating joint, to replace the yoke. This is connected to the track rod by a sleeve.



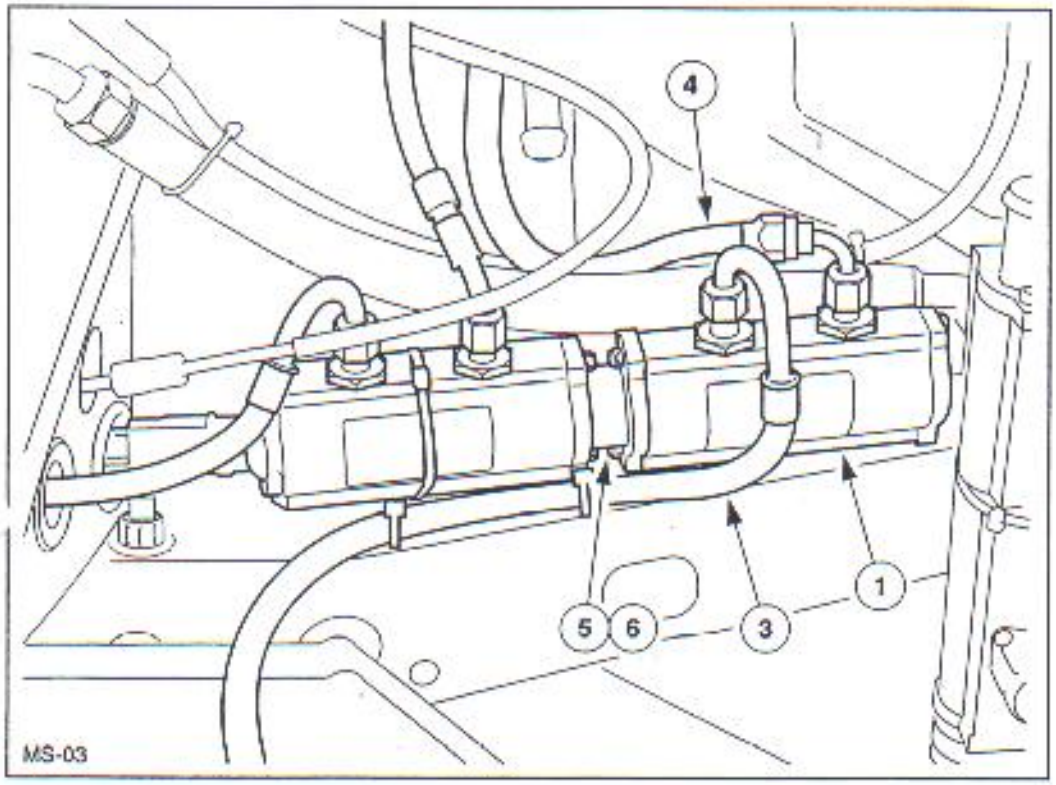
	Description	Finis Code	Comments	Qty.
1	Bar – Track Rod	9096927	16mm	2
2	Housing T.R.E. Outer LH	9096839	½" Brg	1
	Housing T.R.E. Outer RH	9096838	½" Brg	1
3	Inner Joint	9096508		2
4	Sleeve - Inner Joint	9096509		2
5	Lock Nut - Inner	9095822	L.H.T.	4
6	Lock Nut - Outer	9095823		2
7	Brg. Kit	9096827	½" Bearing	2
8	Spacer - Lower	9096828		4
9	Spacer - Upper	9097017		2
10	Nut Self Locking	9096970		2
11	Gaiter	9096806		2
12	Circlip - Brg.	9096875		2

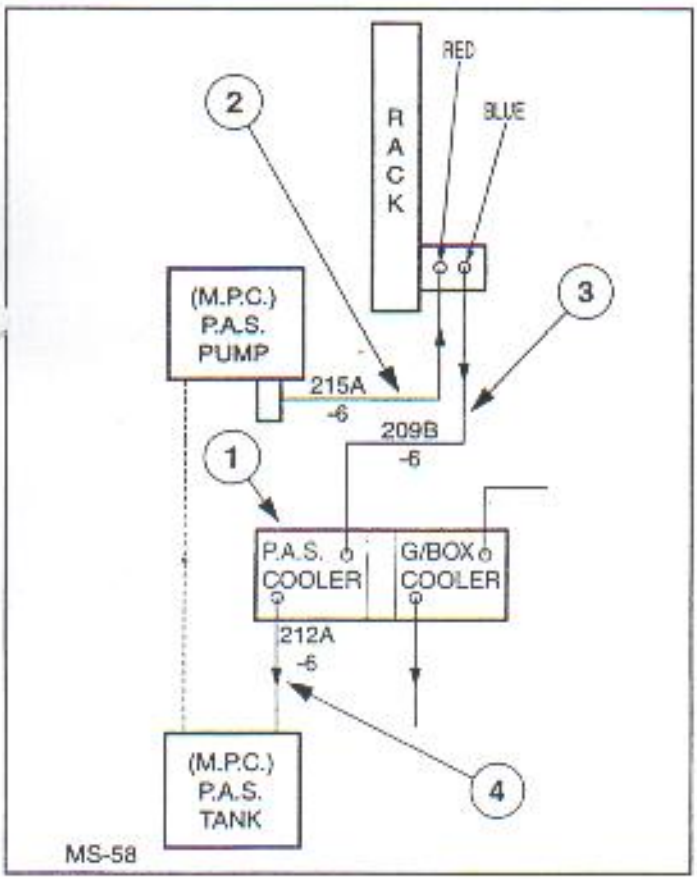
	Description	Finis Code	Comments	Qty.
1	Bolt – Counter-sunk		M5 x 0.8 x 12	6
2	Boss – Steering Wheel	9095919	Long 40mm	1
2	Boss – Steering Wheel	9092898	Short	1
3	Steering Column – Upper	9096173		1
4	Brg. – Steering Column	9096272		1
5	Seal	9094618	(fit to 9096272)	1
6	Universal Joint – Lower	9092563		1
7	Steering Shaft – Lower	9094616		1
8	Universal Joint – Upper	9092564		1
9	Bolt	*1542046	M8 x 40	4
10	Nut	*1474529	M8	4
11	Cam Nut	9094614		2
12	Bracket – Support	9095733		1
13	Tube Assy - Column Outer	*6956469		1



ST-4

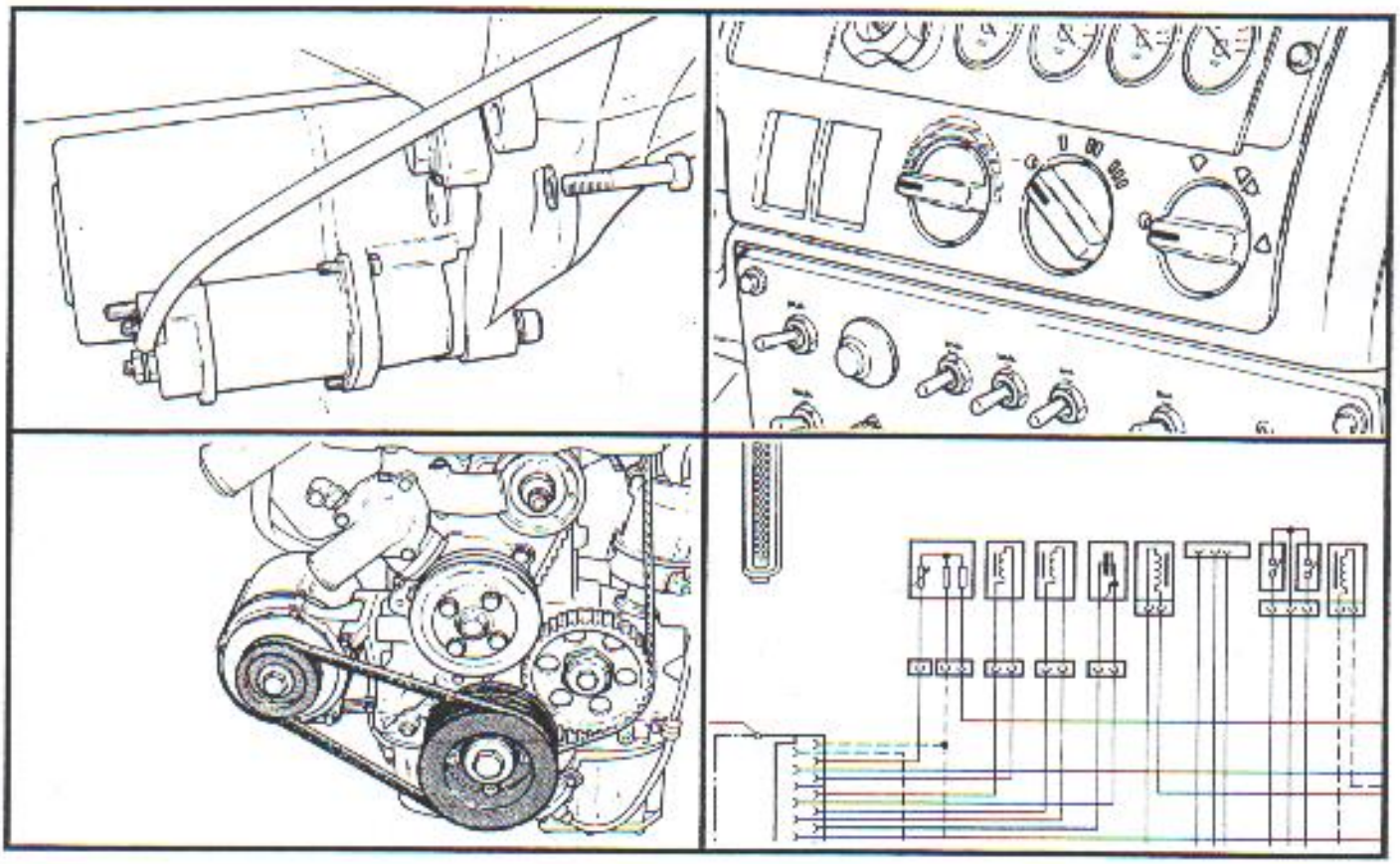
The heat exchanger for the PAS system is coupled with the gearbox oil heat exchanger. They are positioned behind the radiator on the chasis rail.





	Description	Finis Code	Comments	Qty.
1	Heat Exchanger	9096930		1
2	Hose, Pump to Rack			
3	Hose, Rack to Cooler			
4	Hose, Cooler to Reservoir			
5	Adaptor - Heat Exchanger	9096975		1
6	Stud - Adaptor	9096978		4

ELECTRICAL



The standard alternator fitted to the Escort Cosworth is rated at 90 amps.

This should be replaced by a 165 amp TAG alternator which will have enough capacity for a lamp pod, heated screen etc.

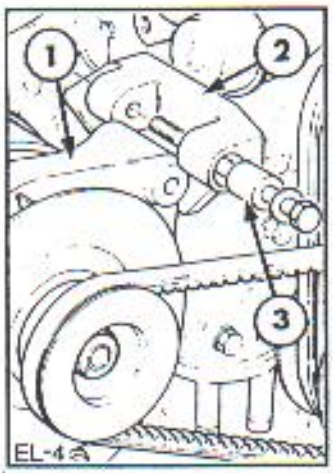
The battery can be fitted inside the car but must be enclosed in a box with ventilation to the atmosphere.

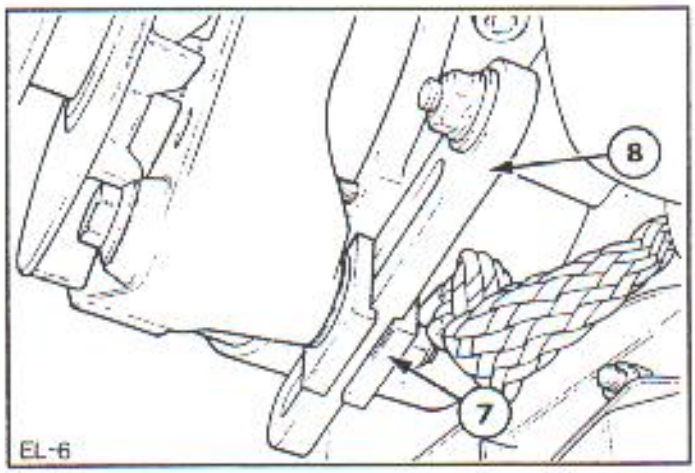
Use a sealed racing-type battery, and fit heavy duty jack-plugs to allow quick-change.

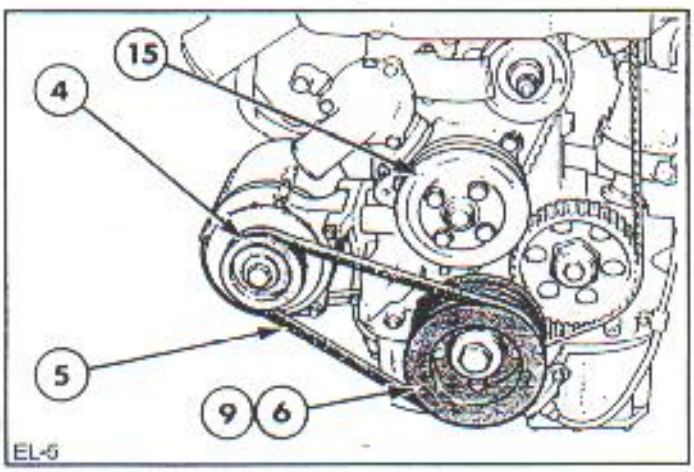
Disconnect battery and engine control unit when welding on car.

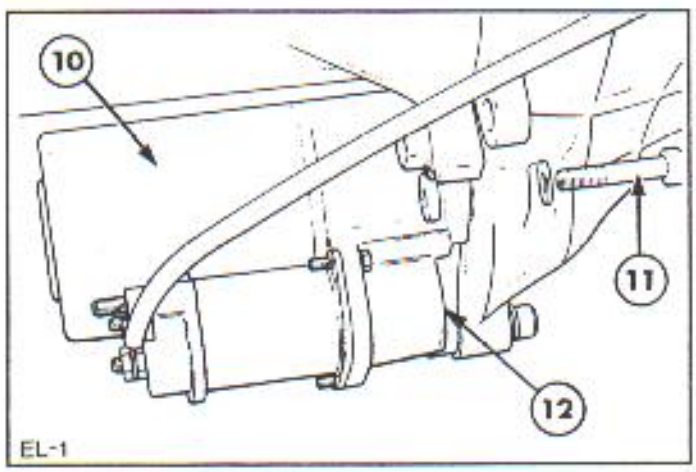
NOTE:
This starter motor has been modified to enable ease of removal as follows;

- Clutch housing drilled out to remove thread.
- Starter motor mounting flange tapped to accept mounting bolts from the rear of the bell housing.

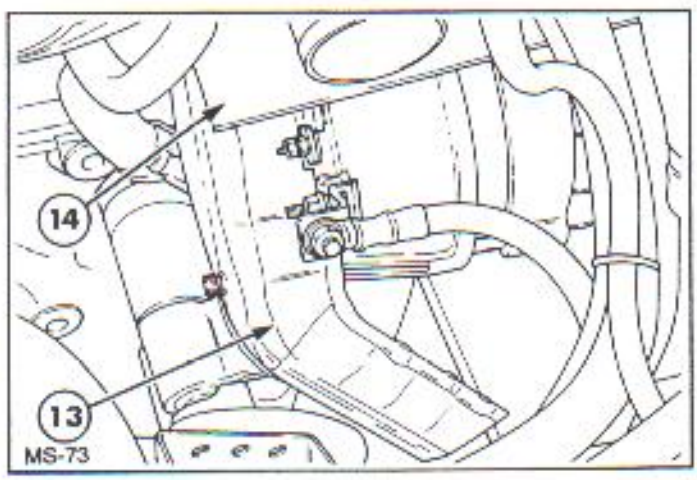






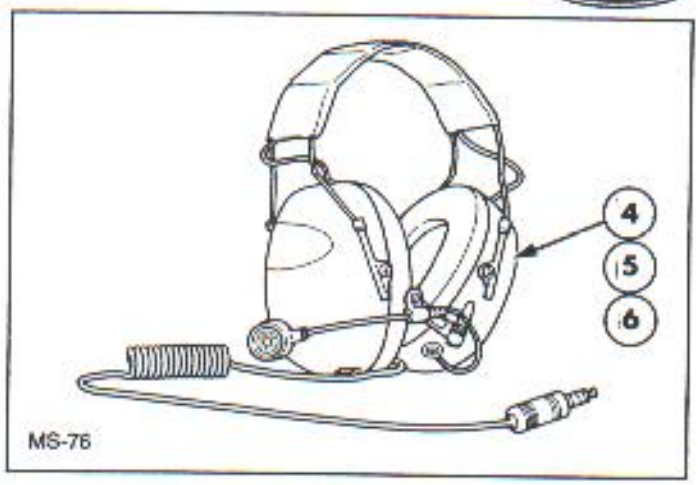


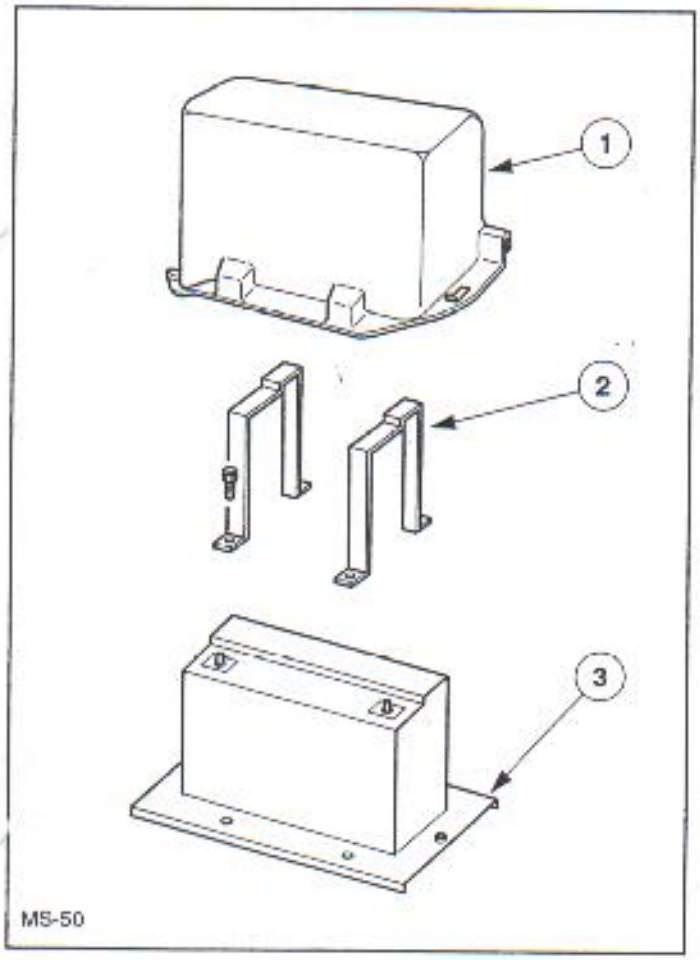
	Description	Finis Code	Comments	Qty.
1	Alternator	9096504	TAG - 165A	1
2	Bracket – Alternator	9096952	TAG	1
3	Bush – Alternator Mounting	9097084		2
4	Pulley – Alternator	9097108	TAG	1
5	Belt – Pulley Alternator	TBE	TAG	2
6	Pulley – Crankshaft	9096199	Poly Vee	1
7	Clamp – Alternator Strap	9095158		2
8	Strap – Alternator Adjust	9092600		1
9	Adaptor–Crank	9096974		1
10	Starter Motor	9096260		1
11	Bolt – Starter	*1515841		3
12	Adaptor - Starter	9096955		1
	Adaptor - Starter Active Trans	9096956		
13	Alternator Air Duct	9095819	Bosch only	1
14	Alternator Heat Shield	9095818	Bosch only	1
15	Water Pump Pulley	9097018		1

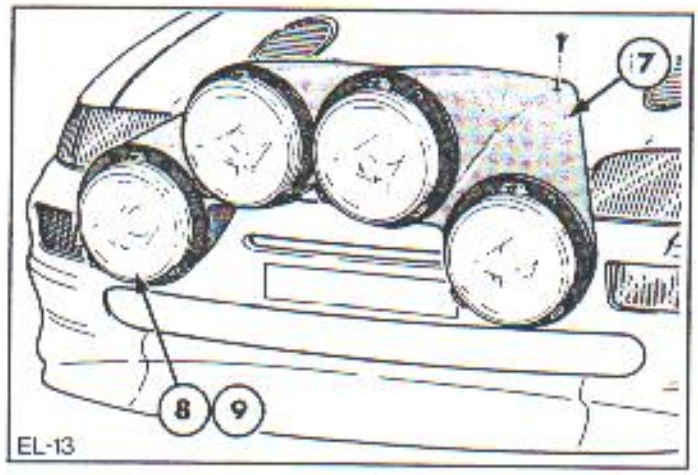


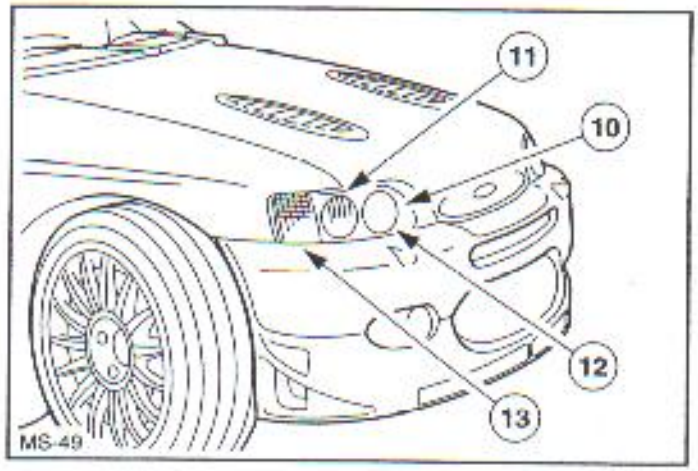
If the battery is fitted inside the vehicle it must be contained inside a sealed cover, ventilated to the exterior of the car.

The bonnet mounted lamp pod is carried over from the 'Group A' Escort Cosworth.





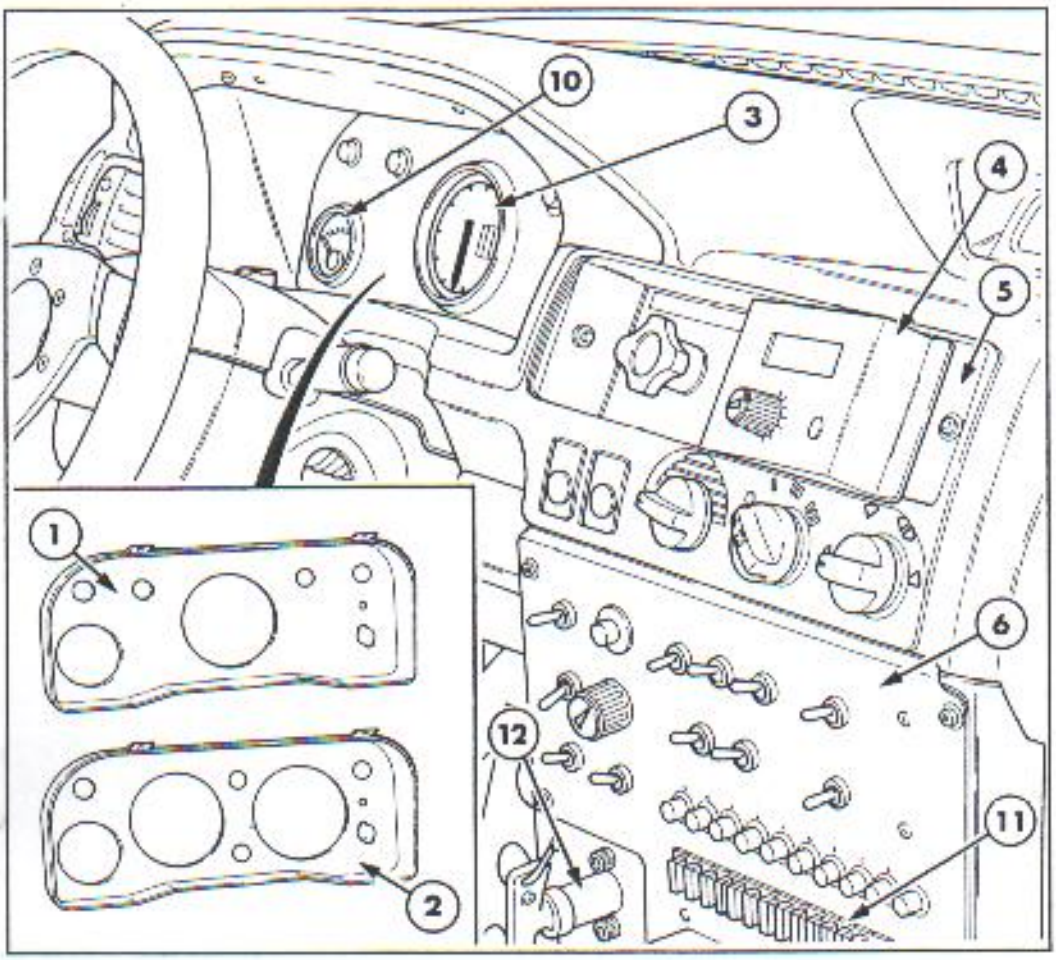




	Description	Finis Code	Comments	Qty.
1	Battery Box	9096773		1
2	Battery Strap	9096803		2
3	Battery Plate	9096772		1
4	Peltor Practice Headset	9095982		2
5	Peltor Intercom FMT15	9095983		1
6	Peltor Battery Eliminator	9095981	PC15	1
7	Lamp Mounting Pod	9095590		1
8	Driving Lamp	9095977		A/R

	Description	Finis Code	Comments	Qty.
9	Long Range Lamp	9095978		A/R
10	Headlamp Surround	9095650	LH	1
		9095651	RH	1
11	Headlamp Lens	9095647		2
12	Headlamp Blank	9095649		2
13	Indicator	9097043	LH	1
		9097044	RH	1

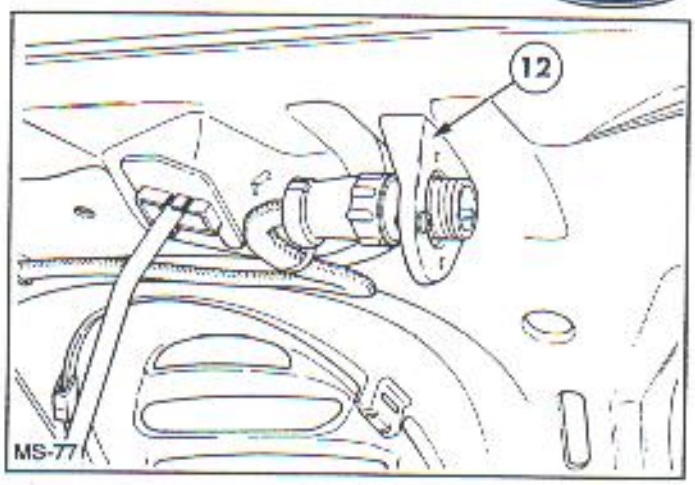
When the MPC system is fitted the control and display units (not shown) are mounted on the dashpanel.



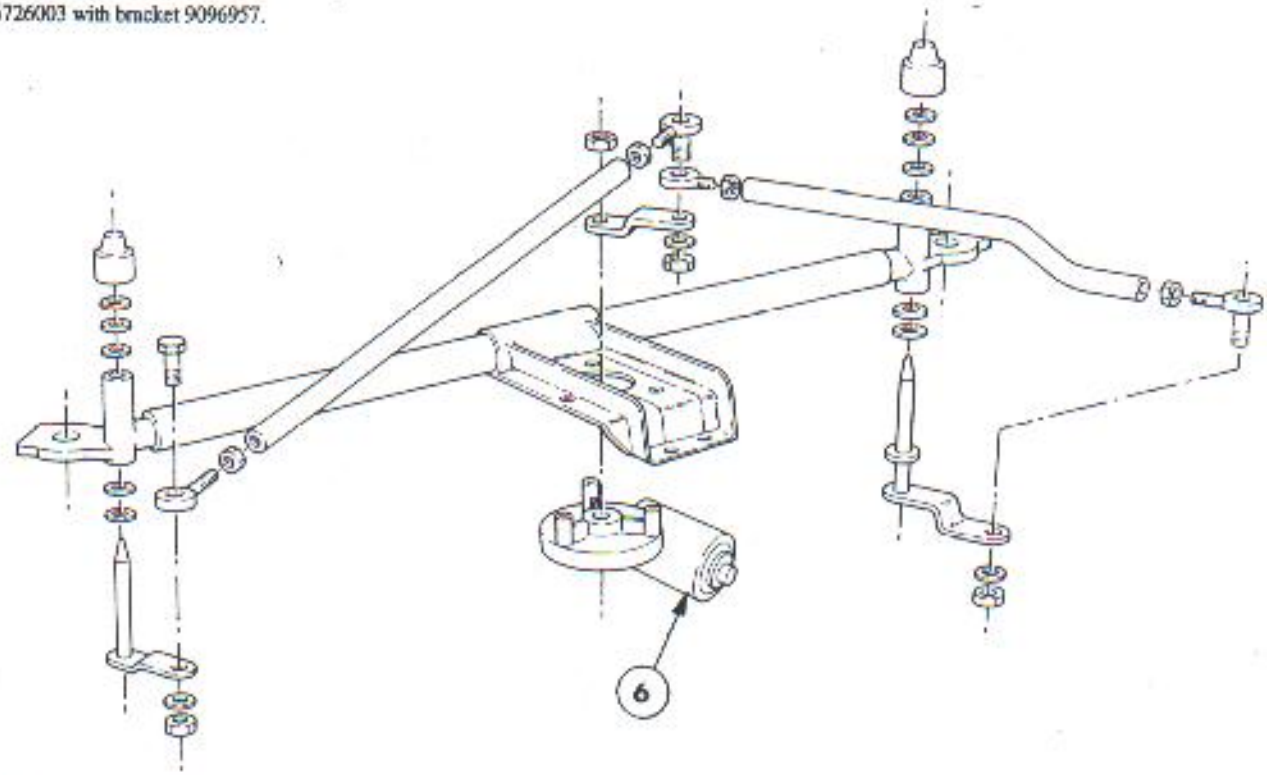
	Description	Finis Code	Comments	Qty.
1	Instrument Cluster Panel	9095732	Tacho only	1
2	Instrument Cluster Panel	9095731	Tacho/Speedo	1
3	Tachometer	9096864	2 cyl	1
4	Pectel Engine Monitor	9095988	Requires rework for F8 System	1
5	Pectel Engine Monitor Brkt	9095984		1
6	Main Control Panel			1
7	Boost Gauge	9095729	Not shown	1
8	Adaptor – Boost Gauge	9095737	Not shown	1
9	Boost Pressure Sensor	9095730	Not shown	1
10	Pressure Gauge	9096950	Fuel or Oil	1
11	Fuse Plate	*6114410		1
12	Battery Master Switch	9092629		1
13	Radio Bracket	9096429		1
14	Switch Panel	9095987	RH Footwell	1
15	Fuel Gauge	9090776		1
16	Gearshift Gaitor	9096833		1
17	Bracket - ECU	9096977		1

A fully adjustable wiper linkage is available. This will provide additional clearance to the roll cage.

Careful adjustment is necessary to ensure correct wiper operations.



Note:
This linkage is now obsolete. Use linkage 6726003 with bracket 9096957.



	Description	Finis Code	Comments	Qty.
1	Coralba Computer Door Brkt	9096963		1
2	Coralba Computer			1
3	Coralba Trigger Sensor	9095628		1
4	Coralba Trigger Sensor Brkt	9095920		1
5	Map Reading Lamp	9095676		
6	Uprated Wiper Motor	9095820		1
12	Brkt - Spotlamp Multipin Connector	9095928		1
13	Wiper Mtg Brkt	9096957	Aluminium	1
14	Linkage	6726003		1
15	Bracket	9096957		1