TRIUMPH REGISTER OF AMERICA

Formed to preserve the Triumph marque

ESTABLISH 1974

Concours d'Elegance

Judging Standards

&

Restoration Guidelines

TR4 & TR4A

***Important Note*: This Standard is in the process of revision; certain portions have been redacted in order to make this temporary working version available to the 2026 National Meet. This version is void after June 17, 2026.**

Introduction

This guide is intended to serve as reference for judges in TRA concours events and for TRA members doing restorations. The material presented is the result several years of assembling information from factory reference material, TRA members expertise, TRA judging school reviews and comments, and other Triumph history and reference material.

The material in this guideline is broken out into sections corresponding to the judging teams that are fielded at the concours. These are:

- Underhood
- Exterior
- Interior
- Chassis

Each of these teams will have a leader who is in charge of adding the points total for each car, reporting the points to the concours scoring team, and mediating difference within the team.

Appendix A is a tabular listing of the TR4/4A changes during the production run. These were used as the basis for these guidelines.

This is a living document. As corrections come to light new editions will be produced. And the changes noted in the revision history. Please note that the authors did there best in collecting and presenting this information, but we realize inaccuracies may still exist. If the reader notes any of these please contact TRA and tell us of your findings. You can contact us at clough@erinet.com.

Assumptions

This document was written for TR4 Concours judging of the TR4/4A model Triumph automobiles during the Triumph Register Of America's National meeting. It was not written as a restoration guide, although it can be used as a reference to what a "correct" TR4/4 would look like. It also was not written for the novice early TR owners to pick up and immediately become judge. This document makes the assumptions:

- The reader has a working knowledge of other TR models, in particular, the TR2/3.
- The reader will be augmenting his/her knowledge via judging schools held at the National Meeting.
- The reader is generally knowledgeable about mechanical systems.

Use Of American Automobile Terms

Since this is a TRA guide we shall use American descriptions for car parts. Numerous terms could be used throughout the difference references for the same part. Figure IN-1 is a glossary of part names and alternatives. Refer to this is an unknown term comes up.

Acknowledgements

The authors would like to acknowledge Moss Motors Inc., Graham Robson, Bill Piggott, for the use of drawings in thes guidelines. These are a bit clearer than the ones available from the TR4 Parts Catalogue (SPCE2), and also cover the TR4A.

We would also like to thank the following people for helping in the preparation of these guidelines.

Authors and principal contributors

Bruce Clough(Miami Valley Triumphs, COCTRA), John Thomas (COCTRA), Harold Kelly, Art Kelly (VTR TR4 Vehicle Consultant).

Other reviewers and contributors

Jim Conley (Mason Dixon/TRA), John Warfield (Mason Dixon/TRA).

Revision History

June 1997 - Initial draft version based on the TRA TR2/3 Judging Guidelines.

August 1999 - First publicized version.

June 2000 – Manual published with final revisions.

References

The following are referenced where appropriate. The abbreviations enclosed in parentheses are used to identify the associated reference.

(SPCEd2)	Triumph Sports Car 20 TR4 Spare Parts Catalogue, Edition 2, Part No. 510978
(TSOAHb)	Triumph Sports Owners Association Handbook, 2nd Edition.
(Robson)	The Triumph TRs, A Collector's Guide, Graham Robson, 1977, Motor Racing Publications LTD.
(Moss)	Moss TR2/3/4 Parts Catalog, Edition TRI-03
(Piggott)	Original Triumph TR, The Restorer's Guide To TR2, TR3, TR3A, TR4, TR4A, TR5, TR250, TR6. Bill Piggott. Bay View Books Ltd. Bideford, UK, 1991
(Newton)	Illustrated Triumph Buyer's Guide. Richard Newton, Motorbooks International, Osceola, WI, 1984
(Robson)	The Triumph TRs, A Collector's Guide. Graham Robson. Motor Racing Publications, Ltd. London, UK. 1977.
(Harvey)	TR For Triumph. Chris Harvey. Oxford Illustrated Press. Sparkford, UK. 1983.
(Dealer)	Dealer Brochures:

The Triumph TR4. Standard-Triumph, New York, NY. 1961

Newest In A Great Line Of Automobiles . Standard-Triumph, New York, NY. 1962.

America's most popular sports car. Standard-Triumph , New York, NY. 1962.

Triumph TR-4A . Standard-Triumph, Teaneck, NJ. 1965

(WKSHP) Bentley Workshop Manual, TR4/4A

(Ball) Triumph TR4 TR4A 1961-67 Autobook. Kenneth Ball, Autopress Ltd. Brighton, UK 1970.

(Glenn) Triumph Repair And Tune-Up Guide. Harold Glenn, Chilton Book Co. Philadelphia, PA. 1970

GLOSSARY OF PART NAMES AND ALTERNATIVES

ENGINE ..	**Gudgeon Pin**	Piston pin. Small-end pin. Wrist pin.
	Inlet Valve	Intake valve.
	Piston Oil Control Ring ..	Piston scraper ring.
	Induction Manifold	Inlet manifold. Intake manifold.
	Oil Sump	Oil pan. Oil reservoir. Sump tray.
	Core Plug	Expansion plug. Welch plug. Sealing disc.
	Dipstick	Oil dipper rod. Oil level gauge rod. Oil level indicator.
	Silencer	Muffler, expansion box, diffuser.
FUEL	**Carburettor Choke**	Carburettor Venturi.
	Slow Running Jet	Low speed jet. Idler jet.
	Volume Control Screw	Idling mixture screw.
	Fuel Pump	Petrol Pump. Fuel lift pump.
	Air Cleaner	Air silencer, muffler.
	Fuel Tank	Petrol tank.
	Accelerator	Throttle.
CLUTCH ..	**Clutch Release Bearing** ..	Throwout bearing. Thrust bearing.
	Clutch Lining	Disc facing. Friction ring.
	Spigot Bearing	Clutch pilot bearing.
	Clutch Housing	Bell housing.
GEARBOX ..		Transmission.
	Gear Lever	Change speed lever, gearshift lever.
	Selector Fork	Change speed fork. Shift fork.
	Input Shaft	Constant motion shaft. First motion shaft, drive gear. First reduction pinion. Main drive pinion. Clutch shaft. Clutch gear.
	Countershaft	Layshaft.
	Synchro Cone	Synchronizing ring.
	Reverse Idler Gear	Reverse Pinion.
REAR AXLE ..		Final Drive Unit.
	Crown Wheel	Ring gear, final drive gear, spiral drive gear.
	Bevel Pinion	Small pinion, spiral drive pinion.
	'U' Bolts	Spring clips.
	Axle Shaft	Half-shaft. Hub driving shaft. Jack driving shaft.
	Differential Gear	Sun wheel.
	Differential Pinion	Planet wheel.

Figure IN-1: Part Names And Alternatives (from Bentley, continued over)

ELECTRICAL..	**Generator**	Dynamo.
	Control Box	Cut-out, voltage regulator, voltage control, circuit breaker.
	Capacitor	Condenser.
	Interior Light	Dome lamp.
	Lens	Glass
	Head Lamp Rim	Head lamp surround. Head lamp moulding.
	Direction Indicators	Signal lamps, flashers.
	Micrometer Adjustment ..	Octane selector.
	Rear Lamps	Tail lamps.
STEERING ..	**Drop Arm**	Pitman arm.
	Rocker Shaft	Pitman shaft. Drop arm shaft.
	Swivel Pin	Pivot pin. King pin. Steering pin.
	Stub Axle	Swivel axle.
	Track Rod	Cross tube. Tie rod.
	Draglink	Side tube. Steering connecting rod.
	Steering Column	Steering gear shaft.
	Steering Column Bearing ..	Mast jacket bearing.
	Steering Arm	Steering knuckle arm.
	Starter Tube	Control tube.
BRAKES ..	**Master Cylinder**	Main cylinder.
	Brake Shoe Lining	Brake shoe facing.
BODY	**Bonnet**	Hood.
	Luggage Locker	Boot. Luggage compartment.
	Luggage Locker Lid	Boot lid. Rear deck.
	Mudguards	Quarter panels. Fenders. Mud wings. Wings.
	Roof	Canopy.
	Nave Plate	Wheel disc. Hub cap.
	Finishing Strip	Moulding. Chromed strip.
	Windscreen	Windshield.
	Rear Window	Rear windscreen. Rear windshield. Backlight
	Quarter Vent	(N.D.V.). No draught ventilator.

Abbreviations
L.H.S. — Left-hand side (viewed from driver's seat).
R.H.S. — Right-hand side (viewed from driver's seat).

Figure IN-1 (cont.): Part Names And Alternatives (Bentley)

General Judging Instructions

Scope

"Judging" inspection consists of evaluating the maintenance quality of the components and originality. Components earn points for quality of restoration, then deductions are made for originality deviations.

[redacted]

General Evaluation and Scoring Guideline

The standard that each judged car is held up to is what we have determined in these guidelines that the cars looked like after coming off of the assembly line. The inspection should be done from the point of view that we (TRA) encourage the driving of our cars, and driving the cars will mean that each and every component will not look like it just came off of the production line. A minimal amount of wear and tear is to be expected on well maintained cars. For example, a used manifold will not retain it's original color. Since our guide of originality is a car "coming off the production line", over-restoration is not rewarded. Better than showroom quality should not earn more or less than a component in "like-new" condition. For example, a highly buffed carb housing should not earn more points than a carb housing presented normally. Extreme over-restoration may qualify for originality deductions. For example, a surface that is not shipped chromed, should not be chromed. One exception is manifolds; they may be painted/coated with high temp, neutral colors.

Factory Options & After-Market Accessories

Numerous factory options and after-market accessories were available for TR4s. Factory options for each judging area are listed at the end of that section. Period accessories shall be treated as original equipment. Car owners must have proof of the "periodness" of the accessories such as ads from period publications or bills of sale.

Car Display And Presence Of Owner

The car should be displayed with the hood and trunk open, and doors open. The owner should be nearby to shut the body components so the exterior judging team can assess fit. The owner should also be nearby to answer questions about the car.

If you cannot see a component, then the car owner has improperly displayed his/her car. The rule, unless otherwise noted in this guide, is that if it cannot be seen, then it must be assumed to be missing. One would then deduct the maximum quality points available.

Caution: You may not remove or disassemble components to inspect. Avoid touching the car or components as much as practical.

Damage Incurred While Driving To TRA

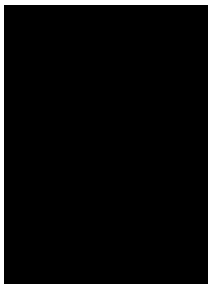
Since TRA encourages the driving of its cars, no deductions shall be made for component damage that occurred while driving to TRA. Such damage shall be documented by the owner and made available to the judging crew prior to judging. The judging crew will have to then make an assessment on the condition of the component prior to the recent damage. Perfect components shall not be assumed. In case of a discrepancy (such as an obviously old, rusted bumper that the owner said was damaged the day before) the judging team lead shall be the final judge on if the damage can be assumed to have happened in route. A small amount of road grime is acceptable.

Multi-Component Scoring

Quality of restoration points should be evenly distributed across components in a scoring category and judged independently. For example, if three of the four wheels are in excellent condition (earning Total Points) and the fourth is in very poor condition (No Points) , then the three should earn 3/4 of the points for the category and the fourth component should get no points.

Quality of Restoration Inspection

Presentation	Flaws
Installation	Incorrect mounting
	Improper retaining of wiring or fluid lines.
Appearance	Surfaces worn, badly scratched.
	Rusted surfaces., pitted chrome.
Cleanliness	Grease, Dirt Grime
Attention to Problem	Repairs not performed: dents, dings, or rust have not been repaired.
	Cracked or broken cap or boot.
	Hydraulic or oil leaks.
	Frayed or damaged wiring.



Evaluation

Components in excellent condition, free of sings of repair, and installed correctly.

Components in good condition with some minor flaws: visible signs of repair, lack of repair, or lack of attention to detail.

Numerous minor flaws: neglected repairs, consistently poor workmanship, lack of attention.

Originality Deductions

[redacted]

Incorrect Component	The (or a) primary component is not original to the model.
Major Assembly Deviation	A portion of the assembly is not original. A wrong variation of the component is installed or an improper substitute is installed.
Minor Deviations	A minor portion of the assembly is incorrect or missing.

[redacted]

Documenting Originality

During judging, crews may come across car items that do not seem as if they could be original, factory option, or period accessory. Judges should assume this guide is correct unless provided with documentation otherwise. This documentation is:

- Original Factory Item including Factory Options - British Motor Heritage Trust Vehicle Build Record. This can be purchased from BMHT, and states what the vehicle was built with.
- Dealer Modifications - Dealer bill of sale showing the modifications, dealer photographs, or period publications showing the same modification on a similar car.
- Period Accessories - Period publications showing ads for the item, or period illustrations/pictures of the item on similar cars.

Underhood Originality Guide

The following sections provide originality reference material for the major areas that are contained within the engine compartment. It is split up according to the sections on the Underhood Judging Score Sheet.

As in other sections, judges and restorers alike should recognize that even the most well documented changes are subject to a margin of error due to the mass production processes used in TR assembly. The margin is less than for earlier TRs, but still exists. Reference information should not be considered the absolute "gospel". Unless otherwise extended for specific components, a margin of error of 100 engine or commission numbers should be used throughout "Underhood."

Each section begins with a chronological summary of changes to that area and is followed by detail on individual components.

"Right" or "Left" indicate the side of the car that the component is located on. This is as the driver sitting facing forward on the car center line would judge the location.

At the end of this section are several figures showing the overall configuration of the underhood area. Figure UH-10 is several views of the early TR4 engine area from the factory workshop manual. Figure UH-11 is a view of a late TR4. Figure UH-12 is a cut-away of the early TR4 engine, and Figure UH-13 is a view of the TR4A underhood area. These are included for reference and will be updated as better pictures are obtained.

Note: factory material and other references use engine, body, and commission numbers to document changes. In this document any a CT or CTC stem is a chassis commission number unless it ends in an "E". Commission numbers ending in "E" are engine numbers. Numbers ending in CT or CTC indicate a body number.

Underhood - Identification Plates

Identification Plate Variations Summary

TR4	Up to at least CT19207	Similar to TR3 plates.
Later TR4, TR4/4A	All TR4A	Plate modified to show paint and trim codes.

Figure UH1, from SPCE2, page vii, shows the identification number locations for the TR4. The TR4A is similar.

Figure UH1: TR4 Identification Numbers (Moss)

Commission Plate (Vehicle Identification Plate).

The Commission Plate, a stamped metal plate with black background, is located on the right hand side of the firewall. Mounting is done with aluminum rivets. Two styles of plates were used:

Early TR4	Plates say "Triumph Sports Type TR4". We know this was used up to at least CT19207
LateR TR4, TR4A	Plates say "Comm No." and have spaces for paint code and trim.

It is usually illegal (state law) to tamper with the Commission Plate. Therefore limited deductions can be made for condition – if it is faded or corroded, that's fine, but if it shows paint overspray the owner has not done a good job of restoring, so give that a minor deviation.

TR4As with solid-axles carried CT, rather than CTC prefixes on their commission numbers. If a car has a CT Number greater than 50001 it must have a solid-rear axle on an IRS frame.

STC Identification Plate.

TR4/4A cars imported into North America sometime carried an extra plate which was added for identification purposes so the dealer could sell last year's car as a new model.. The plate color was white or light green and was usually located on the passenger's side of the firewall, and carried the letters "STC", followed by the model year. This plate is not on all TR4s of all model years, so if in place should be judged for presentation only.

Body Number.

The body number is stamped on a natural finish aluminum strip riveted to the horizontal section of firewall in front of the passenger, symmetrical around the middle car axis to the commission number.

Underhood - Inner Fenders, Hood Underside & Firewall

TR4	CT584< ( ) <CT2966L	Safety hook eliminated
TR4/4A	37689CT	Pressing change?

Note: The change to the inner fenders, actually the Front Wheel Arch Closing Assembly (vertical part of the inner fenders) is not well documented. Actual inspection of cars near that number will have to be done.

The "inner fenders" that are being referred to here are actually the combination of the metal body work found in the engine compartment. This includes the wheel arches, wheel arch closing assembly, and firewall.

General Finish Notes

The underhood was painted body color, but the finish was not as good as the exterior. Do not expect the same quality in the underhood finish as is on the exterior. Some flaws could be evident, however, the paint did exhibit a gloss finish.

Hood Securing Hardware.

The hood is secured by a spring loaded post which fits into a latch actuated from the passenger's side of the interior. The latch is on the passenger's side of the firewall, bolted to the vertical part near the battery. The latch and spring loaded post should be painted body color along with the securing bolts. This was on the car to secure the hood during exterior painting. The spring loaded post that fits into the latch attaches to the hood. It should also be painted body color. There is a safety hook on very early TR4s, this was deleted sometime after CT584 and before CT2966. This safety hook should also be painted body color.

The cable from the latch enters a grommet on the right side of the firewall above the passenger's (left-hand drive) feet. The cable is natural metal and attaches to a post on the latch. The end of the cable sheath is clipped to the latch with a natural finish spring steel clip.

Hood Hinges

Since the hinges were attached to the hood and body prior to painting, the hinges and attachment hardware should be painted body color.

Hood Prop Rod

Hood (Bonnet) prop rods have been seen in both body color and black in period photographs. If painted body color we assume that it was on the car when the tub was painted, thus the hardware would be painted. If it is black, and the car is not black, then we assume the rod was added after painting, and the hardware is natural. The prop rod was secured by a ¼" nyloc nut, a washer on either side of the prop rod.

Hood Badging Securing Hardware

The "open book" emblem and TRIUMPH lettering on the hood were secured by small cylindrical press-in inserts, not speed nuts. Insure correct hardware was used.

Hood Felt Padding

Padding was used between the hood panel and some of the strengthening members underneath to eliminate rattles. This material is black and very similar to horsehair. It is under front cross member and the long support that goes from the cross member that holds the hinges to the metal hat section on the back of the hood nearest the windscreen. This is glued to the hood, and was added after painting, so it is left natural.

Washer Bottle.

The washer bottle was listed as optional equipment, but it was usually put on cars headed to the USA. It is located on the side of the inner fender just forward of the firewall on the right side. In early cars the bottle is plastic with "Trafalger" embossed on the side. These have a small black cap similar to the TR3. Later TR4 and TR4A might have a Tudor unit fitted rather than a Trafalger. The bottle in the Tudor unit is slightly narrower with a wide white cap. Blue "Tudor" is screened on the top of the bottle.

Routing of the tube is through a rubber grommet behind the right side of the engine next to a large hole for the wiring harness. The tube itself is made of clear vinyl.

Front Valence Upper Supports.

These metal tubes, painted body color or black (We believe most of these were painted body color, but I've also found ones that were originally black with primer overspray! For the purpose of this guide we shall assume body color until this can be better documented- *ed*), attached to the inner fenders outside of the horns and ran to the front valence where they attached to mounts approximately 1.5 ft from the outer fenders. The hardware attaching the the supports to the body should be painted, that attaching the supports and upper grille brackets to the valence should be natural.

Body Mounting Bolts

Four mounting bolts are visible under hood. Two are at the front of the inner wheel arches next to the radiator mounts, the other two are next to the sides of the engine along the inner fender portion that slopes down towards the firewall. These 3/8 " bolts should be unpainted with unpainted washers.

Underhood - Battery

Battery Variations Summary

TR4A	CTC50001	Switched to negative ground
TR4A	CTC50001	Battery cable lead length changed to account for shorter run to solenoid.

Battery.

The battery is a standard 12 volt battery. The originals were black "tar-top" Lucas batteries for early TR4s, plastic top batteries for later cars. All batteries were the unsealed with caps to add water to the cells. Excellent reproduction period batteries are widely available on the aftermarket, so a minor deviation should be taken if a modern sealed battery is fitted. The battery displayed has to fit the form of the original battery. Batteries installed should be standard size and have period connectors. In the USA this is a Group 24 battery using post connectors.

Battery Polarity

TR4s were positive ground, TR4As negative. TR4 batteries had the positive post on the left hand side near the firewall. TR4As used the same battery, just reversed, so the positive post should be on the right side near the securing bracket (shown in Figure UH-13). Polarity reversal and wrong battery post location are minor originality deviations; however the appropriate terminals should be on the correct side of the battery (no battery leads should have to cross the battery).

Battery Securing.

The battery was secured using a bracket in conjunction two threaded bars that fit into holes on body mounting brackets and the bracket. Components:

- Securing Bracket - Plate with center cut out that is welded to body. Is part of the body and is painted body color.
- Angle Bracket - angled steel bar that goes across upper forward edge of battery, flattened where holes are drilled for securing rods. Should be painted black.
- Securing Rods - Hooked on end for slip over retaining bracket on body. Should be clear cad plated.
- Nuts, steel and felt washers, tie down securing rods to angle bracket - Nyloc nuts are specified. Nuts were left unpainted.

Battery Shelf.

Unlike the TR3, the TR4 simply had a shelf on which to mount. This was in the same location as the earlier TR's battery box. As with the earlier TR's, brackets were welded to the body for the battery securing rods to attach to. The battery box drain common to the TR3s was deleted and replaced by channels pressed into the shelf. Four rubber pieces were placed under the battery as a battery mat.

Battery Cables (Battery Leads or Engine Leads).

One change for the lead to the solenoid happened when going to the TR4A model. The solenoid was relocated to the flat section of the firewall adjacent to the right side of the battery. Original cables are characterized by lead caps that attach to the battery posts. Through the center of the lead caps, a sheet metal screw is turned into the top of the posts. The lead cap connectors provide marginal contact with the posts and some dealers reportedly replaced these with conventional clamp connectors for better reliability.

- Earth Lead (ground) - This is a round, woven cable. No sheathing.
- Solenoid Lead (this was negative for TR4s and positive for TR4As) - This cable is black-plastic sheathed with a rubber boot at the solenoid connection. The battery post connection might also be covered with black plastic on later cars. The battery post connection may be either the clamp or lead cap type.

Note On Corrosion

By the very action of generating electricity, batteries contain chemicals that corrode metal. Cars prepared for concourse should have paid attention to detail here. Be vigilant for corrosion of the battery shelf, firewall, terminals, and retaining bracket.

Underhood - Electrics

Variations Summary

Wiring Harness		
TR4/4A	CT9983	Change In Routing Of Engine And Horn Leads
	CT26929	Brake Light Switch Wiring Changed
	CTC50001	TR4A Wiring Harness
Windscreen Wipers		
TR4A	CTC50001	Standard 2-speed wiper motor.
Starter Motor, Solenoid		
TR4A	CTC50001	Solenoid moved from on the lower sloped part of the firewall to a horizontal section next to the right side of the battery.
Generator/Alternator		
Later TR4A	CTC60000(?)	Alternator Optional (see notes in body).
Brake Light Switch	CT26929	Moved from 5-way connector on frame to master reservoir mount.

Wiring Harness.

The main wiring harness was wrapped with blue vinyl. Connections are made with spade and bullet connectors. Variations above correspond to changes in components or component locations. Originally, the wiring harness was split into two runs, one that carried all the front lights and other electrical accessories that were mounted on the right side of the engine compartment, and the other that serviced the accessories on the left side of the engine.

At CT9984 the mounting attachment and routing complexity was changed to decrease production costs. The wires to the left hand side of the engine (temp gauge sender, ignition wire, horns) were included in the harness section the went around the front of the engine from the right side. This came around the front of the engine running along the valence support tubes and top of the radiator shroud. It was attached to the rods with plastic cable ties (not nylon, but a softer, rubbery tie that fit together like a belt buckle), and secured by clear cad coated metal clamps to the radiator shroud screws on "top" of the shroud.

The brake switch moved to the master cylinder mounting bracket at CT26929. This deleted two wires from the harness that runs around the engine and lights, but added two wires to the short harness that comes out inder the master cylinder bracket assembly.

The harness changed slightly with the introduction of the TR4A. The new solenoid mounting location caused a change, and so did the addition of the two speed wiper, but that was about it.

This guide assumes the judges are familiar with the Lucas wire color coding. Wires that do not meet that coding shall be considered a minor deduction per wire. References the Bently workshop manual for an excellent wiring diagram set for the model series.

Headlamp Harnesses

Hearlamp harnesses for early carts were made with laquered cloth covered wires. Later cars had plastic coated wires similar to the rest of the wiring harness. Untill we can determined where this change occurred assume eityher is acceptable for the TR4. TR4A should have plastic coated wires.

Wiring Harness Clips.

The metal tabs provided for the securing of the wiring harness should be covered with a black plastic tube doubled over before being used to clamp the wire. Early front light harnesses were run on the vertical part of the left inner fenders and were attached using clear plastic strap clamps (3) which pushed into the inner fender. After the harness changed at CT9983, these were deleted and the harness moved closer to the engine secured by bent over, plastic covered tabs.

Wire Harness Routing and Lighting Connections.

As stated in the above paragraph, early front light harnesses were run on the vertical part of the left inner fenders. After the harness changed at CT9983 it still ran down the right side of the car, but much closer to the engine (where the horn and generator wires just ran on the early cars). Early wiring harnesses went underneath the front valence, held there by clips pressed on to the metal lip inside under the air inlet. The wiring from the lights also passes through these clips, the electrical connections being left side of the car. After CT9983 the harness was routed above the air duct (easier installation?) and ran through clamps attached at the shroud mounting point on top. These clamps were clear cad plated steel. The electrical connections were made at that point. The harness ran to the shroud by going down the front valence support tube. It was secured to the tube by black plastic cable clamps which were secured similar to a belt buckle.

Auxiliary Harness Covers

Auxiliary harnesses, used to connect lights to the main harness, were covered with black plastic tubes to protect the wires. These protectors should be evident on wires from the main harness to the parking , turn signal, headlamp, side marker (TR4A) and license plate illumination lights (license plate light included here to mention them all!).

Wiper Motor.

The TR4 used a single-speed Lucas PS7 motor, but a two-speed 58SA was also an option. The TR4A used a two-speed DR3A motor assembly found is the single speed version. Visible components include:

- Wiper Motor - Motor body on single-speed units was painted wrinkle-finish matte black. Motor body on two-speed units was gray (silver) hammertone. Motor end caps where the electrical connections are made are natural cast aluminum.
- Electric Connectors - Made with spade (Lucar) connectors. Black ground wire attaches to inner fender just forward of motor
- Gearbox - Cast aluminum body left natural with clear cad plated steel cover and automatic parking switch hood.
- Crosshead and Rack - the cable and shaft connecting gearbox and wheelbox (in firewall). Unpainted, clear cad steel.

Voltage Regulator (Control Box), Fuse Box.

The Voltage Regulator and Fuse Box is the same basic unit on all models equipped with a generator. It is a RB106/2 unit mounted to the vertical part of the passenger's inner fender. The regulator ground is made via a bolt just in front of the regulator box. The fuse box is a Lucas type 4FJ with two 35 amp fuses fitted, with provisions to carry two more. The 4FJ has a cover such that the fuses can't bee seen. The fuse box is mounted to the passenger inner fender vertical section approximately a foot forward of the control box. Both were held on with flat-bladed screws clear cad coated.

The TR4 also separately fused the horns. This fuse is in line, located under the carbs, and should be covered with a cardboard insulating tube.

Starter Motor Solenoid.

The TR4 used the same solenoid as the earlier TR3s. The TR4 solenoid was attached to the firewall vertical section, right side, under the carb linkage. The TR4 solenoid is cylindrical clear cad steel with a rubber button for underhood startup. This button should be pointed away from the engine. The TR4A solenoid was moved to the passenger side of the battery, and at the same time a newer solenoid, with a black plastic body and clear cad plated plunger end, was replacing the earlier type. Either type could be on a TR4A. The change in solenoid location required a change in lead from the solenoid to the starter motor, the TR4A cable being much longer than the TR4 unit.

Starter Motor.

The starter was a Lucas type M418G inertial drive unit, body painted satin black, but the commutator end left natural cast aluminum with a clear cad plated steel end cap.

Generator(Dynamo)/Alternator.

All TR4s and almost all TR4As were equipped with a Lucas type C40/1 generator. This unit should be painted black with natural cast ends. Pulley and fan should also be painted black. Alternators were listed as optional for the TR4A, although this author has never seen one. (If fitted, they were probably type 15AC, which was of the period, and was the unit put on the TR250. The unit would be natural cast aluminum)

Electrical connections to the generator should be made with two connectors, a large Lucar connector carrying the generated power. This has a clear vinyl boot which discolors to orange with age and heat. The field (small) lead connection is with a smaller black-plastic covered spade. The field connection spade makes a right angle; should not be straight; the power lug connection should come straight out.

Horns.

Two horns are fitted: one high tone and one low tone. The horns are mirror images of each other, with the horn mouth pointed toward the radiator. The horns can be made by either Lucas or Clear Hooters, the brands were interchangeable; however, the car should have only one type of horns on the car. Two wires run to each horn, connections made with Lucar connectors. The horn attach to a clear cad plated steel bracket which attaches to the inner fenders with two bolts and heavy washers (unpainted). Horn bodies are painted black. The TR4A added a horn relay to the circuit. This Lucas relay was located just behind the right horn on the inner fender. The relay was left natural.

Coil.

All TR4/4A came equipped with a Lucas HA12 coil which is natural aluminum, black plastic top, with a Lucas decal on its side. The decal was fitted originally but is not required. Lucas competition coils are not considered to be original. Connections to the coil on the low tension side are via Lucar connectors, push on high tension terminal. The coil is bolted to the left side of the engine block. The clamp which holds the coil should be clear cad coated.

Distributor.

The TR4 originally was fitted wit a Lucas DM2P4 for cars up to CT17953, and a Lucas 25D4 from CT17954 through CTC78684. The distributor should have a natural cast aluminum body finish, black plastic cap, natural steel and aluminum vacuum advance units. The connection to the coil was made via a white wire with black stripe with insulated Lucar connections on both ends.

- Vacuum Advance Units - TR4s fitted with SU H6 carbs had solid natural steel vacuum advance lines which attached to the distributor and carbs with a compression fitting. Even though Stromberg and SU HS6 carbs used short press on rubber tubes instead of the compression fittings, the compression fitting advance unit was still used well into the TR4A series (glance at the TR4A picture in Robson, p43). SPCE2 shows a push on line advance unit.
- Vacuum Advance Line - The line was made of natural steel, protected by a clear cad plating. It attached to the vacuum advance unit by either a compression fitting, or a short piece of rubber tubing depending on the vacuum advance unit fitted. It attached via a compression fitting to SU H6 carbs, or short rubber tubing to Stromberg CD-175 or SU HS6 carbs.
- Vacuum Advance Line Routing - The vacuum advance line is routed through the eye (for early cazrs) or through the strap (later cars) that retains the fuel line at the thermostat. Between the vacuum unit and the thermostat, the line routes in front of the bypass hose, although routing behind the bypass has been observed on cars thought to be original; either will be accepted.
- Distributor Pedestal - The distributor sits on this pedestal, which is, in turn, bolted to the block. The pedestal is painted black, but has a natural brass male connection for the tachometer cable on the side facing the coil. The distributor is secured to the pedestal by a clear cad coated clamp on top.

Spark Plugs & Wires.

Originally TR4/4A came from the factory with Champion L87Y or Lodge CNY plugs; however, any functional plugs are acceptable. Black spark plug wires with insulation boots should be used. Period units might have Lucas or Champion on top of the plug insulation boots. Such configurations of the period are acceptable.

Headlamp Buckets

Several different Lucas headlamp buckets used on the TR4 and TR4A, differing only in detail. The steel buckets were painted satin black and mounted such that the wires exited from the top of the bucket. Both lacquer-covered cloth wires and colored vinyl wires were used. The early cars used cloth while the later ones used plastic. Since this was a detail change to an existing part, the change was not tracked n the SPCE2. Until we determine exactly where the break was, assume either type to be correct. We have narrowed the range between CT2966 and CT5368.

Other Electrics:

- Noise Filtering Capacitor - Cars fitted with radios by the dealer would originally had noise filter capacitors connected to the dynamo output at the regulator. This was attached to the firewall with a sheet metal screw somewhere close to the regulator.
- Temperature Sending Unit - The temperature sending unit for TR4/4As was an electrical device that screwed in to the thermostat housing in the same location as the earlier TR2/3 capillary tube. The sender body was made out of brass, and the electrical connection was made via a Lucar connector.
- Brake Switch Move - At CT26930 the brake light switch was moved from the 5-way connector on the frame rail opposite the right side of the engine to a bracket welded on to the master reservoir mounting bracket. The switch changed from one that sensed increased hydraulic pressure to one that simply sensed motion of the cylinder plunger. As noted, a wiring harness change went with that also.
- Side Markers - TR4A had side marker lamps added to meet Federal regulations. The wiring for this passed through a hole in the inner fender just behind the hood hinge attachment point. Hole has unpainted rubber grommet.
-

Underhood - Hydraulics

TR4	CT5783(disc) CT5856(wires)	Brake Master Cylinder change
TR4	CT26929	5-way to 4-way connector change
TR4	Before CT25645	Reservoir Cap Change To Aluminum
TR4A	From CTC50001	Lines re-routed, components moved to account for new frame

The TR4/4A was fitted with a Girling system, disc brakes on front and drums on the rear. In function and layout the TR4 system was very similar to the TR3 which it replaced. Only a few changes occurred during the TR4/4A series of cars, possibly less than that experienced by sidecurtain cars. The major change came at the introduction of the TR4A when the new frame changed the location of tubing routs

Master Cylinders.

The Girling master cylinders are integral reservoir, cylinders. The brake and clutch units are similar in operation, but differ on the amount of fluid that is contained in their reservoirs. Figure UH-2 shows the general configuration of the master cylinder unit. The following are several particular features of the cylinders. Any violation of these will be treated as minor deviations.

- The brake master cylinder, mounted in the master cylinder mounting bracket in front of the driver, is mounted to the right of the clutch master cylinder. The reservoir is larger, with a larger cap than the clutch unit. Cylinders up to CT5783 (disk), CT5856 (wires) had a 0.75" bore, and have a single ring around the barrel. After this the bore was reduced to 0.70" to slightly increase braking sensitivity. These cylinders have two rings around their barrels.
- The clutch master cylinder is similar to the brake unit except for a smaller reservoir and cap. The same cylinder was used throughout the TR4/4A production, however the tubing switched from 0.25 OD to 0.375 OD for better flow (probably) this necessitated an adapter male-to-male, screwed into the output port of the master cylinder.
- Sometime prior to CT25645 the reservoir caps changed from black painted steel to natural stamped aluminum. This obviously cut down the corrosion problem with dissimilar metals and hydroscopic fluid, and also eliminated a production step. There probably was a range of cars that could have had either fitted, probably that occurred in the mid CT20000's. A good rule of thumb is that cars prior to CT20000 has steel caps, after CT30000they were aluminum, and in between they could be either. As this judging guide matures we will be able to reduce this range. TR4As are a bit of an enigma since at least one original car has steel caps. Allow TR4As to have either type caps

Brake System Components.

- Frame mounted Connector - Up until CT26929 a frame-mounted 5-way connector on the right side of the engine, mounted to the frame rail, was used to tie together the lines going to the front and rear cylinders and also hosted the mounting point for the brake switch, similar to the sidescreen TRs. At CT26929 the brake switch moved to the master cylinder mount, and the 5-way connection was replaced with a 4-way connection. The restrictor valve on top of the connection was retained.

- Hydraulic Tubing - For TR4s, the tubing was made from steel, clear cad coated with male compression fittings at each end. The tubing went up over the battery, down the firewall, and went into the restrictor valve. The tubing was secured with a series of black-oxide coated steel clamps screwed to the body with pan-head sheet metal screws. For TR4As, the tubing type remained the same, but the 4-way connector moved to the left side of the engine, making a much shorter tubing run from the master cylinder (at least for left-hand driven cars). The TR4A was clamped to the firewall by one clamp located in the center driver's footwell. If the car is equipped with high strenght coppoer alloy tubing give a minor deduction since steel tubing is available.

Clutch System Components

- Hydraulic Tubing - The TR4 had 0.25" OD clear cad steel tubing, while the TR4A had bigger 0.375" OD tubing to the slave cylinder hose mount. Since they both used the same master cylinder, this meant that the TR4A has a male-male tubing adaptor at the master cylinder. The TR4 tube was male on the end that went into the master cylinder, but female where it attached to the slave cylinder flex hose. The TR4A tube was female on both ends. The TR4 was attached to the firewall in one spot with similar clips to the brake line. The TR4A tube shared the attachment point with the brake line.
- Flex Line - A flexible line was used to account for engine movement and vibration. This line ran from a bracket on the frame next to the aft of the left side of the engine to the clutch slave cylinder. The black rubber line has clear cad coated steel male connectors at both ends.
- Slave Cylinder and Hardware - The slave cylinder is bolted to a black-painted steel bracket attached to the lower left side of the front of the transmission. The cylinder itself is natural cast aluminum and is attached to the back side of the bracket. The bracket is attached to the back side of the transmission mounting flange. The top bolt is actually a rod which carries through to an oil pan bolt to carry cylinder actuating reaction loads. The cylinder has two ports in it. The top one has the bleed screw in it, the bottom one has the flex line attached. It is done this way to make it easier to bleed. The cylinder has a natural rubber dust boot with the rod that actuates the clutch coming from the center of the cylinder. The rod has a fork that screws on to its threaded end. The forked end attaches to the center hole in the clutch lever via a threaded pin. The pin also has a spring around it to keep it from rattling, and a plate that fits over the pin that has a hole in it for a spring that goes back to a hole in the slave cylinder mounting bracket. The spring and plate are usually black oxide coated, although the replacement plates available currently are clear cad plated.

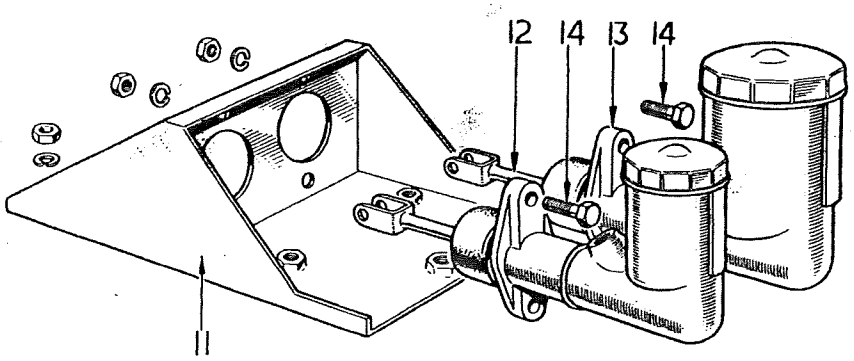


Figure UH-2: Master Cylinders And Mounting Bracket

Underhood - Engine

Engine Variations Summary

Model	Commission #	Item	Description
TR4/4A	CT1E	Valve Cover	Similar To TR3
	CT14234E		Brass Plug Added To Center
	CT23594E		Closed System Cover Used
TR4/4A	CT1E	Cylinder Head	
	CT21471E		Updated Head
TR4	CT1E	Engine ID Paint	
	CT????		Eliminated sometime after CT14234E
TR4	CT1E	Hoist Points	Similar To TR3
	CT????		Eliminated
TR4/4A	CT1E	Oil Filter Head	Purolator Unit, Similar To TR3
	CT????		Tecalemit Or Automotive Products Unit
TR4/4A	CT1	Exhaust Manifold	Similar To TR3
	CTC50001		Cast Iron With Split Downpipes

Engine Number and its relation to the Commission Number.

The engine number is stamped on a flat surface on the left-hand-side of the engine. This is just below the #3 spark plug, at the rear of the coil mounting bracket. Engine numbers are similar to Commission numbers but engine numbers have an "E" suffix, and CTC TR4s use "CT" engines. Take fair warning that parts manuals frequently leave off the "E" leaving the reader to his better judgment as to which is really being referenced. Some TR engines were used outside the TR line; therefore, the engine number in a TR should be equal to or greater than the commission number of the car. However; we have documented instances of a cars leaving the factory with an engine numbers less than the commission numbers. If the numbers are within several hundred it probably is an original engine. Beyond that, sufficient car build records are not available for precise identification of engine

numbers. One of the goals of this author will to be to build a chart that can be used to estimate what an appropriate engine number should be without having the build record. If the engine number is several thousand away from the commission number then it probably isn't the original engine.

Combustion Head.

All heads described below should be painted black. Bolt heads and nuts should be painted black since the block was painted after the head was attached. The TR4 had two different heads. Until the exact differences can be determined do not deduct for head type (unless it's an obvious problem, such as a TR2 head).

- Early Head - Used on engines up to CT21471E. Head similar to TR3A/B heads.
- Late Head - Used on and after CT21471E. Slight change in casting. Double exhaust springs replaced the earlier triple units used since the TR2.
- Head Stud, Washers, and Nuts - The only change in head studs occurred when the engine hoisting hardware was deleted. The right read stud was shortened to be the same as the rest. This occurred sometime after CT19207. Head nuts were not changed during production. After-market head nuts are available, made of stronger steel and slightly higher than the original. These are considered a safety item and do not constitute a reason for originality deduction. A washer should be present under the head nuts.

Cylinder Block.

The cylinder block did not change significantly through-out the TR4/4A production. Minor changes were made. All blocks are painted black.

- Breather Pipe Hole Elimination - According to service bulletins (see Breather Pipe), at CT23594E the breather pipe was eliminated when the system went to a closed engine breather system. This coincided with the introduction of a new valve cover and the "y" pipes from the cover to the air filters that provided the closed system
- TR Paint Markings on Side of Block - Initially, all TR4s were shipped with hand-painted numbers and letters on the starter side of the engine, generally toward the rear. These markings were provided to tell production line workers what engine went with which car line. The TR4 markings were dropped after Vanguard and TR3B production stopped, the only other cars at that time using the same block. Implications are that this happened sometime before CT13758 since that car does not have the marking. One would be safe in assuming this happened before the TR4A, so a TR4A should not have any identification paint on its side. We are researching this at the present, so assume any car CT5000 and earlier should have the markings, CT5000 to CT13757 might have them, and none after CT13757.
- Engine Front Plate - The engine front plate on the TR4 engines changed due to the wider track of the car. This probably does not need to be checked since if the wrong front plate is on the engine the engine will not fit in the car.

Motor Mounts

Two different types of motor mounts were used. These are shown in Figure UH-3.

- TR4 - The TR4 motor mount is circular, made of rubber disks and flat metal washers. It has a 3/8" NF stud protruding from both ends. Directly underneath the mount, next to the frame, is a metal plate with raised lower portions that fit the contour of the mount. This plate was used to limit the motion of the mount (and are usually not found on the cars since they were lost during engine removals after purchase). The motor mount is secured to the engine with a nyloc nut.
- TR4A - This unit is trapezoidal shaped, with the rubber in a "U" of metal. 3/8" NF studs protrude from top and bottom. The top side contains the rubber. The motor mount is secured to the engine with a nyloc nut.

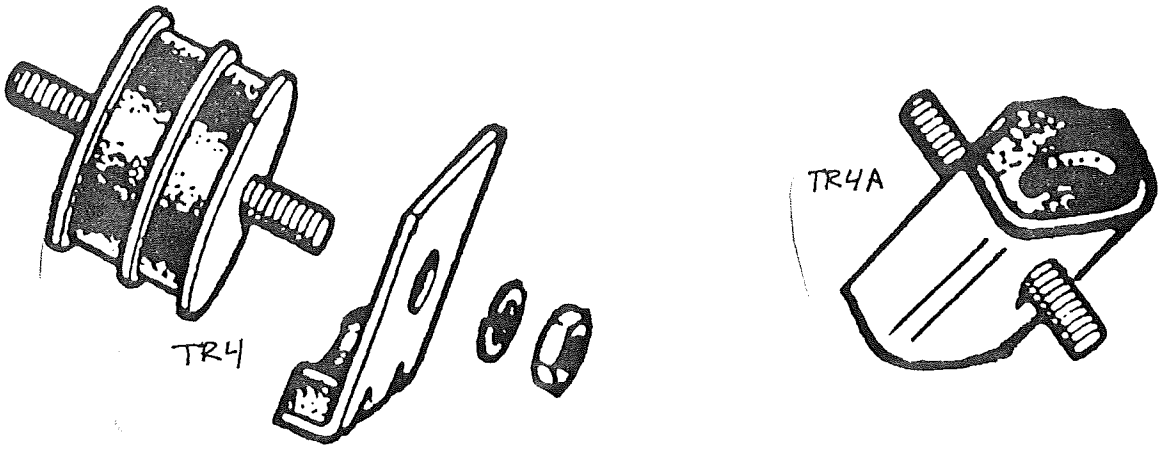


Figure UH-3. TR4 and TR4A Motor Mounts

Rocker Cover and Oil Filler Cap.

Rocker Covers (valve covers) changed three times during the TR4/4A production run. The oil filler/breather cap changed once. The details of each are:

- Early TR4s, up to engine number CT14234E, used a valve cover that was similar to the TR3 unit, except the oil filler/breather location was at the back of the engine, not the front. The cover was made of stamped steel, chrome plated. The oil filler cap was similar to the late TR3 units, painted a satin black with a round decal detailing the types of oils to be used in its center. The cap has 3 thumb grips, and a round, domed, profile. The little pie-pattern decal fits the caps within the thumb-holes on the top side. The NOS replacement parts for the cap were painted silver hammer-tone with a red decal.
- At CT14234E a slight modification was made. Due to changes in another vehicle which was using the same engine a hole was drilled in the valve cover. Since the TR4 did not use this for anything, a brass plug was put in it. This hole is on the top center of the valve cover. Same breather cap as the earlier rocker cover was used.
- At CT23594E the engine went to a closed breather system. The valve cover was still chrome plated stamped steel, but changed with the addition of a oil filler cap that sealed similar to a radiator cap. At the same time a short tube was welded on the side of the cover facing the carbs. This tube was connected via rubber hoses to the air filters, venting the engine fumes back into the combustion chamber. The oil filler cap was a clear cad coated unit which fastened to the cover in a similar manner as the radiator cap did to the radiator.
- At CTC50001 a PCV necessitated changing the cap to a higher pressure model. This looks similar to the later TR4 cap.

Cast Aluminum Valve Covers were available as period after-market accessories. They had fins running long-ways along their top with a chrome filler/breather cap at the back. Modern units that are not period accessories include those that have "Triumph Tune" on them.

Timing Chain Cover.

There were no variations. Covers should be painted black and the face covered with sound deadener, usually a light gray color. The sound deadener should not be painted.

Ground Strap.

A round, woven plated copper, ground strap is attached to the timing chain cover and the front left motor mount. The purpose is to ground engine with body by spanning the insulating motor mount.

Oil Filter Assembly. Three versions of the assembly are found (Piggott, Moss):

- At first a Purolator unit, similar to the TR3, was fitted.
- Later either a Tecalemit or Automotive Products unit was fitted. These were interchangeable during the production run where they were put on the cars (Piggott).

Functionally any of these oil filter heads will fit the TR4/4A engines. Exactly where the switch from Purolator to Tecalemit or AP occurred has still not been determined. It is safe to say that the first 5000 TR4s had Purolator units. It is also safe to say the last 5000 TR4As had either Tecalemit or AP units. Besides that, assume any oil filter head could be on a car.

All assembly versions have the same general appearance. The head is natural aluminum. The canister is painted a light blue-green (specific color unknown) which takes a pale green caste with age.

Oil Sump.

The oil sump shows no changes. Sumps are painted black. Aluminum Sumps were offered as optional high speed equipment. They are not painted and have fins on the bottom. The oil drain plug was a common square steel clear cad plated plumbing plug, ½ inch across the flats.

Breather Pipe.

The breather pipe (dog-legged tube mounted low on the rear of the distributor side of the engine) was fitted to early TR4s until the closed crankcase ventilation system was introduced at CT23594E. The breather is identical to the TR3 units, painted black, and is secured by a black painted strap to an oil pan bolt. The breather was replaced with a simple steel plug in post-CT23593E engines.

Dip Stick.

No changes are listed to the oil dip stick. The dip stick is not painted, but left natural steel. The dip stick uses a felt washer between the stick and the block to seal oil from leaking.

Engine Removal Hardware.

Early TR4s (at least through CT19207) had engine removal hardware (hoist points) similar to TR3 engines. These were deleted sometime after that.. The lifting hardware was removed before SPCE2 was printed since none of the diagrams show the equipment, nor is mentioned in the text. Assume CT1000 and below must have the hardware, cars with commission numbers above CT20000 do not. Cars between may, or may not have them. Future editions of this guide should narrow this range. Removal hardware includes the following components:

- Eye, front lifting assembly (bracket) -- bolted behind the timing chain cover and front engine plate on the left front side of the engine. This was painted black.
- Rear lifting bracket -- bolted on at rear manifold bolt and at rear head stud. This was also painted black. The rear manifold stud is longer than other studs to account for bracket thickness.

Underhood - Fuel System

Fuel System Variations Summary

TR4/4A	CT1E	Carburettor	SU H6
	CT16801E		Stromberg CD-175
	CT16901		SU H6
	CT21471E		Stromberg CD-175
	CTC62191		SU HS6
TR4/4A	CT1E	Air Filters	Similar To TR3
	CT23594E		Smaller, Includes Hole For Crankcase Breather
	CTC50001		Oval(late) Or Round(early) Paper Elements
TR4/4A	CT1E	Intake Manifold	Similar To TR3
	CT16801E		Stromberg CD-175
	CT16901E		SU H6
	CT21471E		Stromberg CD-175
	CTC62191		SU HS6
TR4/4A	CT1E	Exhaust Manifold	Similar To TR3
	CTC50001		Changed To A Dual Down Pipe Type
TR4A	CTC5001	Fuel Lines	Line Layout Changed For New Chassis
TR4/4A	CT23594E	Emission Control	Cranlkase Breather Added To Carbs
	CTC50001		PCV added, Carb Breather Deleted

Carburettor Assembly.

SU H6 carburettors were installed on TR4s until CT16801E. At that point a trial run of 100 cars was made having the Stromberg CD-175 carbs. SU H6 assemblies were then used from CT16901E until the switch to Strombergs again at CT21471E. Strombergs remained on the cars until CTC62191 when SU HS6 carbs were used until the end of TR4A production.

Some Carb Specifics

- Float Chamber Tags (SU H6). Aluminum tags are found on SU H6 carbs. Stamped on the tags are AUX (e.g., AUC, AUD) numbers which identify the jet installed. They are bolted through the bolt that fastens the float chamber lids, front and rear. Tags are usually anodized bright.
- Float Chamber Mounting (SU H6). Two types of float bowl mountings for SU H6 carbs could be present. The first is a banjo bolt, the second is a hollw stud. Either type could be mounted on the SU equipped cars, but the stud type was more common by then.
- Damper Caps (SU H6). Damper caps could be made of plastic or brass. Judge either a original.
- Jet Pipes (SU HS6). The original SU HS6 jet pipes were black plastic, connected to the float bowl with a white plastic (nylon?) tube covered with a steel wire wrap for protection. Current replacement pipes may be red with a black plastic tube to the float bowl. Since this is sold as a direct replacement, do not reduce points on account of originality.
-

Carb Component Finishes.

Carb bodies, float chambers, float chamber lids, piston covers are natural aluminum, sometimes mildly polished. Other finishes include:

- Brass (generally with milling marks left in place): throttle shafts spindle return anchor plates, jet ajusting nuts, jet lever, throttle lever, overflow pipe fitting, banjo fittings (when applicable), damper cap lid (nickel plating is known but rare), fuel filters in float chamber lids, and occasionally float chamber lid bolt, bango bolts.
- Black Oxide, Blued, or Natural dark Metal: bellcrank lever assembly, pivot lever assembly, throttle spindle couplings, choke arm, pivot bolt and washer on cam, and speed nuts if fitted.
- Clear Cadmium: Short and long throttle links (gold cadmium is found in later TR4/4As) front and rear, jet links, float chamber hold up bolt and clip washer, fule line and float chamber banjo bolts, jet control connecting rods, throttle spindle end clips, front jet lever to connecting rod clips, clevis pions.
- Other: Sundry screws, bolts, springs, cotter pins, etc. can be plated or left natural as well as the throttle spindle connecting rods. Jet head assemblies have all kinds of finishes, variations of brass, steel, copper, plastic, etc.

Carb Linkages

The throttle was controlled via an accelerator pedal and several linkages. The pedal and cross shaft (goes between inner fenders just behind the engine, held in via nylon bushes at the fenders. The pedal and shaft, and lever arm on the shaft are painted black. The brackets holding the nylon bushes should be cad plated or natural steel. A return spring goes from the lever on the shaft to the inner fender. This spring should be black oxide finished. What goes next depended on the types of carberators used:

- If SU H6 carbs were present, the cross shaft was connected to the carbs via a long shaft, bell crank and short shaft. The entire assembly was similar to the TR3 set-up. The long shaft was clear cad plated and had internal spring loaded connections. The bellcrank was natural steel or black oxide finished, and rode on a natural steel pivot which itself was bolted to the intake manifold. The bellcrank should be positioned such that the shaft ends ride toward the engine. The bellcrank is held on to the post with a cotter pin. A short shaft, constructed identical to the long shaft, connected the bellcranf to the throttle shaft lever on the front carb.
- The Stromberg CD-175 set-up was almost identical to the SU H6 configuration except the bellcrank pivot shaft was replaced by a single bolt that the bellcrank rode on. The bolt went directly into the intake manifold.

- The SU HS6 set-up was very different from the earlier ones. The construction was similar, but the long shaft went to a steel bracket that mounted (from the carb mounting studs on the intake manifold) between the carbs. The bellcrank now actuated a short rod that attached to a lever on the throttle shaft which went between the carbs.

Choke Connections

Since three different carbs were used, three different chock cable layouts were evident. For any of these configurations the choke cable came through a hole in the firewall underneath the battery tray.

- SU H6 choke lines were similar to the TR3. The choke cable ran to a lever assembly under the front carb that clamped the cable sheath and attached the cable to the front jet lever arm. A rod ran back to the rear carb.
- Stromberg CD-175 choke cables ran to the forward side of the front carb. They went into a hole in a receptacle built into the choke mechanism, then they went to a hole near the top of the carb and were secured by a set screw. When operating the choke one pulls the sheathing toward the set screw, not the cable into the sheathing as in the H6 arrangement.
- SU HS6 choke configuration had the cable going to the rear carb instead of the front one. It went into a receptacle in the front part of the carb over top of the carb. The sheathing fit into a brass socket there, the cable continuing through a hole and connecting to the choke actuating mechanism.

Air Cleaners.

Several different air filters were used throughout the TR4/4A production. These are illustrated in Figure UH-4. Note that since the H6, CD-175, and HS6 are almost "form, fit, function" replacements for each other (excluding the linkages) the air filter types are interchangeable. Not correct "originally", but functional.

- SU H6 and early Stromberg CD-175 carbs up until CT23594E used metal mesh filters similar to TR3 units. These can be painted black or hammertone silver. Either color should have a square "AC" sticker centered on the front, rectangular, dark blue, and have white lettering.
- At the introduction of a closed breather system for crankcase fumes (CT23594E) the air filters were changed to round paper element types. The exterior was made with grey painted steel, a steel mesh covered the paper element, and they incorporated a pipe in their center to attach the breather system to.
- The pollution control valve (PCV) was introduced with the TR4A. The air filters changed to simple paper element types that can be round (early TR4A) or oval (later TR4A). The steel front and back plates of the filters are left natural, but have a decal on their lower front section.

Emission Control

Early TR4s had no emission control equipment. Starting at CT23594E, the TR4 began using engines equipped with emission equipment. The emission equipment explained below is in Figure UH-5.

- At CT23594E the crankcase fumes were routed back through the carbs to be burnt. The block breather pipe was eliminated and hole blocked off. The rocker arm cover was replaced with a type with a cap that did not vent and a short tube welded on the carb side. From this, a short rubber coupling attached to a black (painted or oxide) steel tube. This attached to a black (painted or oxide) "Y" fitting with another short rubber coupling. The "Y" fitting attached to the inner air filter attachment bolts in front of the filters. From the "Y" fitting two rubber tubes went to the pipe in the center of the air filters. No clamps were used originally, but may be added as a safety item.
- With the introduction of the PCV the emission controls changed again. The PCV valve was made of cast aluminum with a natural steel to plate held on with a steel wire clip. The valve attached to a black steel bracket that itself attached to the rear intake manifold mounting stud. A rubber tube went from the valve cover to the top inlet of the valve. Another rubber tube went from the outlet on the bottom of the valve to a fitting in the back of the intake manifold cross tube near the rear carb. All tubing connections were clamped with wire clamps.

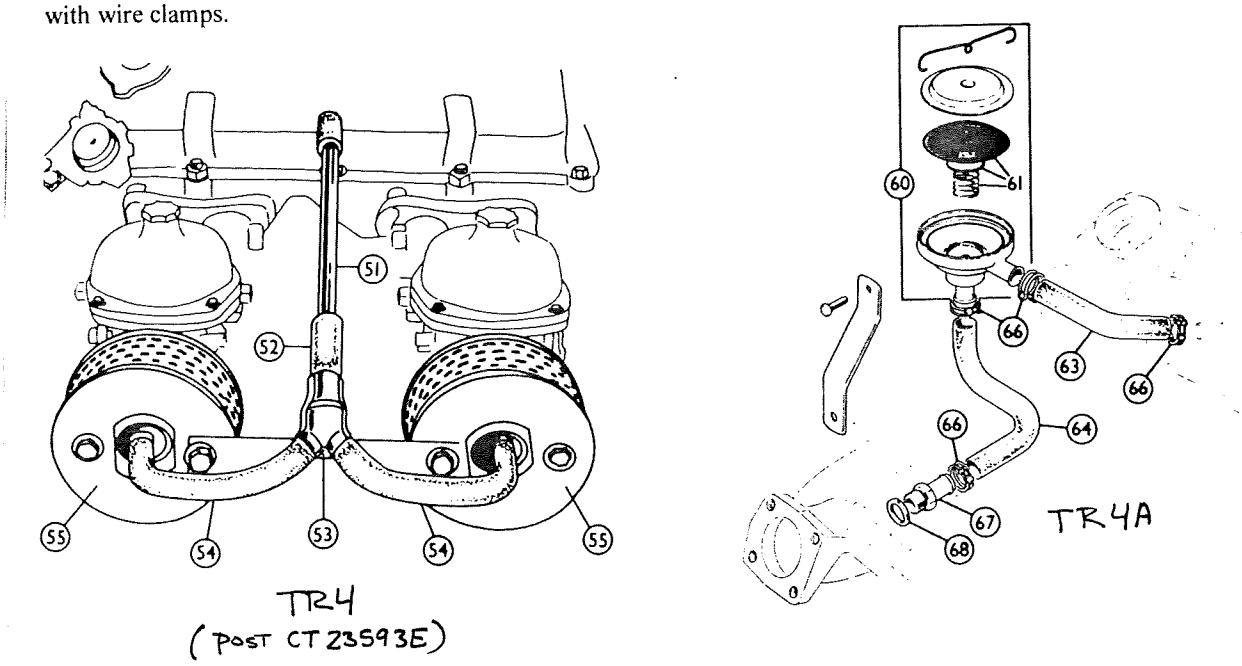


Figure UH-5: TR4/4A Emission Control Equipment

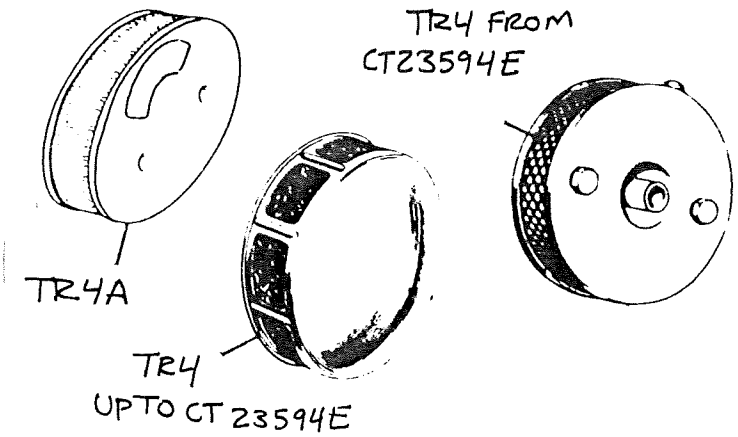


Figure UH-4. (right)

TR4/4A Air Filters

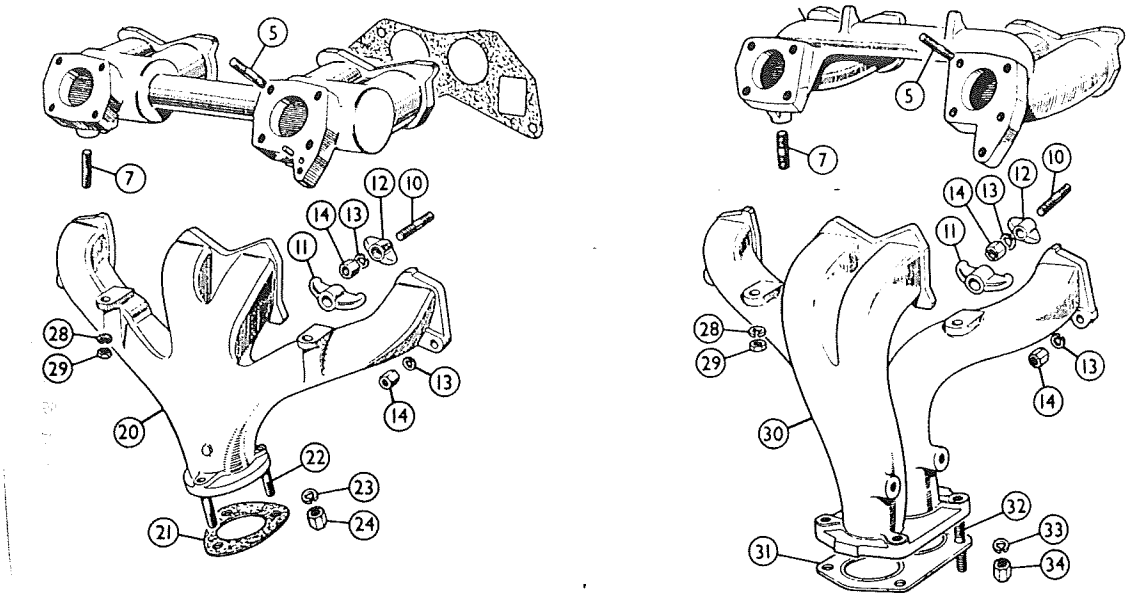


Figure UH-6 TR4 And TR4A Manifold Assemblies

Intake Manifolds

Several different intake manifolds were used during the TR4/4A production: Inlet (and exhaust) manifolds for the TR4 and TR4A are in Figure UH-6. This figure only shows the TR4 w/Stromberg manifolds and the TR4A set-up. It does not show the early TR4 manifolds which fitted the SU H6 carbs

- Early cars with SU H6 carbs have a natural cast aluminum manifold similar to the TR3 unit. More often than not there is a sloping "bump" cast into the cross tube. This is where the connection to manifold pressure was made for the optional vacuum assist braking system. Not all cars had this bump on their manifolds, so do not deduct for lack of this feature.
- With the introduction of the Stromberg CD-175 carbs the intake manifold became longer with more gradual bends to the intake ports. The manifold should have the bump for optional power assist brake take off. It also was cast aluminum, natural finish.
- When the TR4A was introduced the manifold lost the bump since the PCV valve had a dedicated attachment to manifold pressure on the side of the cross tube.

Insulator Blocks. Carb-to-manifold insulator blocks were white-gray asbestos. Because of health issues and unavailability, synthetic black ones are acceptable. Sealing gaskets should be visible each side of these blocks.

Exhaust Manifold

Two types of exhaust manifolds were used during the TR4/4A production. They were both made of cast iron with a natural finish. As such, manifolds on judged cars that just show rust shall not be grounds for an automatic quality point reduction. Painted, ceramic coated, or Jet-Hot'd manifolds are acceptable with the coating subject to quality evaluation.

- TR4 exhaust manifolds were identical to TR3 units. Four exhaust port intake combined into one output
- TR4A manifolds improved flow by having two outputs, two cylinders into each.

Fuel Pump.

No changes from TR3. The pumps are on the left rear of the engine block. The bodies are cast aluminum with a clear glass sediment bowl and stamped steel priming lever and steel sediment bowl retaining bracket. The top of the pump should be mounted such that the sediment bowl is directly forward of the pump body. One will see either red or black diaphragm material. Either is acceptable. Look around the fuel pump for oil leaks as this is one of the areas that will tend to exhibit them. Replacements are available that do not include the priming lever. Use of pumps without priming levers should not be considered original. Pumps should be unpainted. While inspecting the pump look for fuel leaks. If found, notify the owner and take a minor deduction.

Fuel Lines.

Fuel Line from Tank to Pump. Covered under the Chassis Chapter.

Inlet to Fuel Pump. The fuel line from the gas tank is attached to the inlet pipe of the fuel pump by a short (< 1ft) rubber hose. This hose originally did not have any hose clamps installed. The inlet pipe is a steel line with a compression fit junction at the fuel pump. The inlet line bends down approximately 90 degrees towards the frame where the rubber hose is attached.

Fuel Line from Pump to Carbs. For both the TR4 and TR4A a steel line ran from the fuel pump, attached via a brass compression fitting, to just in front of the front carb. It passes through a support bracket attached to the thermostat housing. This bracket was painted black and had a hole in the center of it which held a rubber grommet. The fuel line (and vacuum advance line) passed through this grommet. At the end of the line a short rubber tube was used to connect to the carbs. No fuel line clamps were used.

Fuel Lines Between Carbs. This differed depending on the carb fitted.

- The SU H6 fitted cars would have the short rubber tube coming from the fuel pump line going into the front carb float bowl. This was connected to a semicircular steel line (arc down) going to the back carb by another rubber hose piece. The semicircular line was connected to the back carb by another short rubber hose piece. No fuel line clamps were used.
- The Stromberg CD-175 were attached to a steel tube that went between them and also accepted the fuel supply line. This assembly had a brass "T" next to the front carb where the supply came in from the pump and went to the carbs. The supply pipe was bent at 90 degrees relative to the carb to accept the line from the fuel pump.
- The SU HS6 carb set-up had the rubber tube from the supply line attached to the front carb float bowl. A separate outlet at an angle from the inlet was attached via another rubber tube to a steel tube that ran around the front of the carbs to the rear carb float bowl, attached to the rear bowl by another rubber tube. The line between the carbs was supported by natural steel clamps on the inner air filter bolts (line ran through the clamp below the bolts) with a piece of rubber separating the clamps and the tubing. No fuel line clamps were used.

The fuel lines themselves are clear cad plated ¼ inch lines. Copper lines are not allowedc and are a minor deduction.

Allowable Concourse Fuel System Safety Modifications

Due to the explosive nature of gas fumes, as well as the flammability of the liquid itself, the following modifications to the fuel system, or additional equipment due to fire safety, shall not be cause for originality deductions. The safety items are subject to quality inspections.

- Inline Fuel Filter. Prefer installation under car; however, installation next to carbs is allowed..
- Clamps on flexible fuel line connections.
- Fire Extinguisher.

Note on Weber carbs. Webers or other high performance carb installation are not considered acceptable for concourse.

Underhood - Controls

Variations Summary

Model	Commission#	Description
TR4	CT30000(?)	Upper Oil Pressure Gauge Line Switched to Nylon
		Flex Line Eliminated

Steering.

The same basic unit was installed throughout production. Only the shaft assembly is judged in the Underhood section. The rack is covered under Chassis, the steering wheel under Interior. The steering shaft is made of several main components, and is shown in Figure UH-6A. The shaft runs from the firewall, through several coupling units, to the steering rack. The individual components are:

- The steering shaft shroud assembly, in which the steering shaft rides, comes through the firewall to the left of the battery. The hole it comes through has a grommet. The shroud is black painted aluminum with a natural aluminum end piece which the shaft itself comes out.
- The lower end of the steering shaft which comes out of the shroud is hollow with a natural steel finish Inside of this is a short shaft with a splined end, also with a natural steel finish. The inside shaft is held in place by a clamp that fits over both shafts where the outer one has been cut away and the inner one flattened. This assembly allows the shaft to collapse in case of a collision. The clamp is also natural steel finish.
- The splined short shaft fits into the upper coupler. The coupler is made of a rubber donut with a natural cast iron piece on each side that a splined shaft fits into. The shafts are notched to accept a securing bolt that goes through the cast pieces. The bolts are secured by Nyloc nuts. Since the steering shaft is the ground point for the horn there should be a jumper wire, a natural stranded wire with eye connections on both sides, rinning across the rubber donut and secured to the bolts holding the cast pieces to the donut.
- Below the upper coupler is a solid steel shaft painted black, this goes into the bottom coupler, which is, in turn attached to the rack.

Tachometer (Revolution Counter) and Speedometer Cables.

The same tach and speedometer parts were used throughout TR4/4A production.

Tachometer Cable. This cable was essentially unchanged from the TR3. It is a stranded wire cable which runs in a coiled steel sheath covered with grey plastic. This plastic may have discolored with age. It has aluminum female end, one of which attaches to the distributor pedestal, the other to the meter. The cable should go into the firewall through a rubber grommet located to the left of the oil pressure line, behind the brake master cylinder.

Speedometer Cable. The speedometer cable construction is similar to the tachometer with either grey or black plastic covering being used. The speedometer cable length and run differed depending on if overdrive was fitted (the speedometer connection was on the opposite (right) side of the transmission with the OD). Non-OD cars had the speedometer cable coming up the left side of the fire wall going into a rubber grommet in the firewall to the right of the oil pressure line. OD equipped cars would have the line running up the right side of the firewall, crossing behind the engine and in front of the battery.

Cable Straps. There is a black rubber strap which groups the two cables and oil pressure line together. This strap is located in front of the master cylinder bracket.

Oil Pressure Line.

Two oil pressure lines were used during the TR4/4A production run:

- The first several years of TR4 production used a set-up similar to the TR3. The oil pressure is picked up from a banjo fitting which goes over a stud on the bottom front of the oil filter head. The fitting is brazed on to a natural steel line which runs backwards under the filter unit and comes up behind the fuel pump. The line is clamped to the rear stud of the fuel pump, and ends in a brass female line fitting just above that. From there a short flex line, made of rubber, sheathed by a steel overbraid, originally sporting a yellow plastic band carrying the manufacturer's name, and having brass male fittings on both ends runs to another steel line with a female brass fitting. This steel line carries the oil pressure to the gauge. The line is made of natural steel and attaches to the firewall below the steering shaft with a brass clip, then attached to the firewall near the master cylinders with a black-oxide coated steel clip. It runs through the firewall above and left of the steering column.
- Sometime during later TR4 production a black nylon line was substituted for the flex and upper steel lines. This was attached to the firewall in similar manner. It is unclear where this switch occurred since SPCE2 lists the nylon line as an interchangeable part without a starting commission number mentioned. From interviewing TR4 owners it seems that this occurred sometime around CT30000. For judging purposes assume the TR3 configuration only continued through CT10000, either steel or nylon could be present up to CT30000, and only nylon from there until CTC78684. This range will be narrowed down as this guide matures.

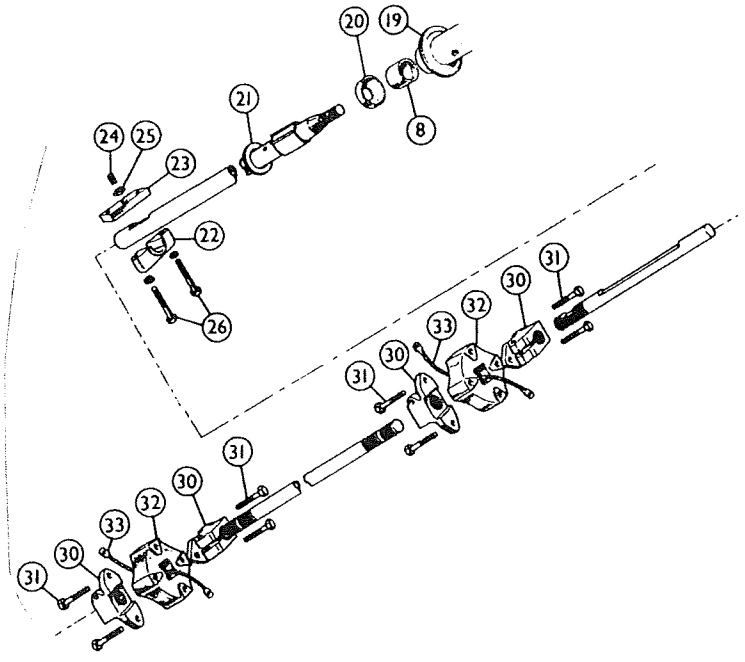


Figure UH-6A: Exploded View Of Steering Shaft

Underhood - Cooling System

Variations Summary

Model	Commission#	Description
TR4	CT9553	Header Tank Eliminated From Radiator
TR4A	CTC50001	New Radiator and Supports, Plastic Fan
TR4A	CTC56117	Plastic Fan Deleted, Metal Fan Substituted
TR4	CT???	Support Rods Moved: Inner Fender To Frame Cross Tube
TR4	CT????	Cooling System Went From 4 to 7 lbs Pressure
TR4	CT15537	Radiator Shroud Attaching Screw Length Changed.

Radiator.

Three radiators were used in the TR4/4A production run. Figure UH-7 shows these radiators as well as the radiator mounting hardware. Figure UH-8 shows the radiator and air deflector attachment, viewed from above. All the radiators should be painted black with clear cad radiator caps. Since caps wear out modern caps of the correct size are acceptable, but should be of the same shape and color (easy since the replacement Unipart caps have the same look as early AC caps). The replacement caps available are all 7 lb units. One item judges should be aware of on these new caps is that they are not as deep as required for proper operation. One has to add a rubber gasket inside the filler orifice to insure a good seal! That might explain the puddle of coolant under the car in the concourse field!

- The early radiator used up until CT9553 was essentially the same unit as the TR3. The only noticeable difference was that on cars built in 1962 could have an elongated crank hole sine the same radiator was used for TR3B and TR4 cars (radiator sat at different height so the hole had to be elongated). 1961 and 1963 cars seem to also have radiators with "normal" size holes that line up with the crank. It seems to the authors that this might be a different part, but nothing is stated in the SPCE2. Accept these at original.
- The header tank was eliminated at CT9553. It was useful on the TR3 where one could not get at the radiator proper, but was superfluous on the TR4. The pressure cap location moved to the top of the radiator. The same cap was retained.
- A new, lower, wider, and more efficient radiator was used on the TR4A. The radiator is almost square compared to the tall earlier TR4 radiator. The cap was located on the right top side.

Drain Taps

The TR4 had natural brass drain taps fitted to the radiator and engine block. The radiator tap is on the right rear bottom while the engine tap is below the exhaust manifold on the rear right hand side of the block. The radiator tap was changed to the screw in/out type at the introduction of the TR4A, but the block tap remained the same.

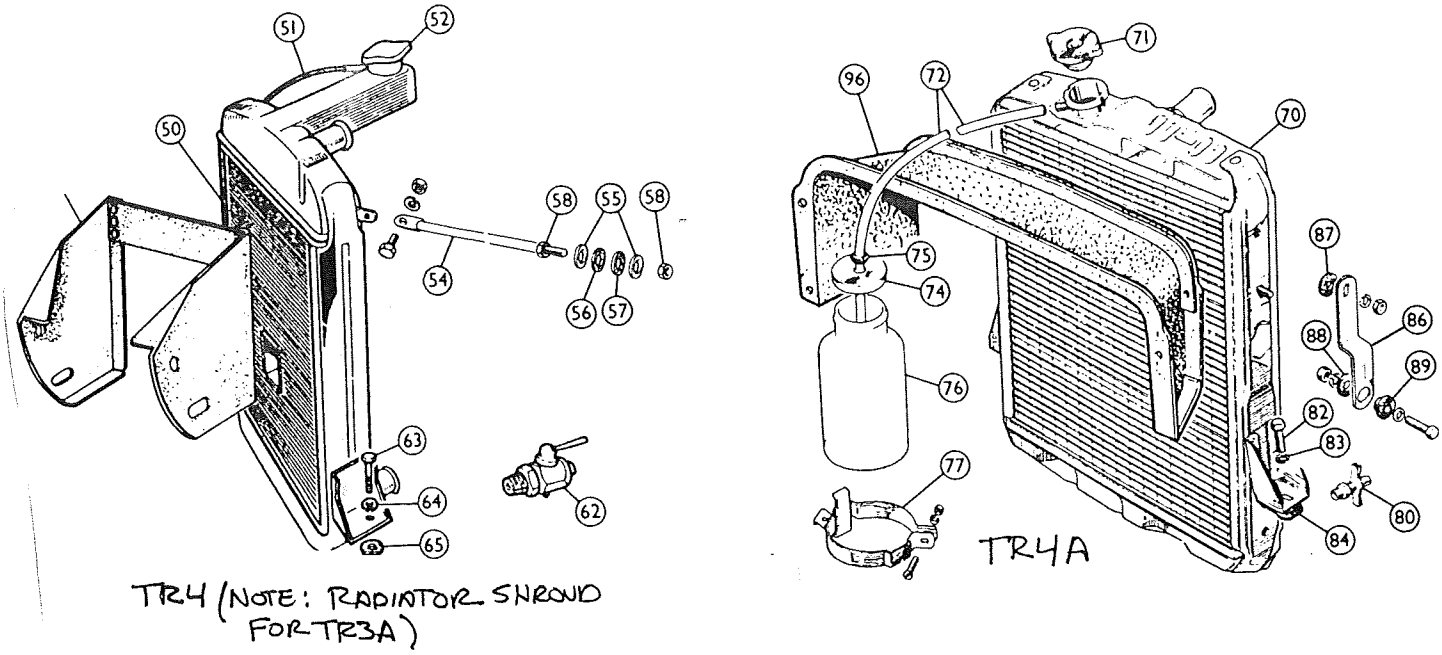


Figure UH-7: TR4/4A Radiators And Mounting Hardware

Radiator Overflow

On TR4s the radiator overflow was a plastic tube that went down the right side of the radiator. It dumped excess coolant off the car. The TR4A used a closed system. The plastic tube went to a white plastic bottle with steel cap mounted on the right inner fender. The bottle bracket was steel painted black.

Radiator Shroud

Both TR4 and TR4A cars used a black fiberboard radiator shroud secured with clear cad screws and washers. It attached to a lip around the front valence air opening.

Radiator Supports

Several different support configurations were used during the TR4/4A production run. Unless otherwise noted, support hardware was painted black.

- Very early TR4 could have had supports that ran to the inner fenders inside of the horn on the same steel body bracket. These would have been steel rods similar to the TR3 ones, but probably straight. They would have been secured with two nuts and two washers as the TR3 were.
- Sometime very early in the TR4 run Standard-Triumph found out that supports to the inner fenders weren't adequate. The mount location was moved to the shock tower cross member Two stout metal tabs with holes in them were welded to the cross member. The radiator support rods ran through these holes, secured with a rubber mount between two steel washers.

- TR4A replaced the rods with flat metal bars. They still went to mounts located on the cross member.

Water Pump, Pulley and Fan Belt.

The TR4/4A water pump consists of a pump with a removable pully mounted on a cast body housing, in turn mounted to the front of the engine block above the timing chain cover. The cast housing has a fitting for the tube carrying water from the heater on the left side. The water pump, body, and pulley should be painted black. A grease nipple should be installed on the upper RH of the pump, but left natural.

The fan belt is very wide and thick by today's standards. Belts 17 to 21mm wide will fit the system. The belt displayed should be of the wide type. Cogged belts are available to reduce heat generated in operation and are acceptable. After-market belts and pulleys using modern-width belts are available, but should not be considered original equipment.

Fan.

The standard TR4/4A fans are an improvement of the inadequate TR3 fan.

The TR4 kept the same basic four blade configuration was used, but the blades were now rectangular rather than "spatula" shaped. The fan blades are unpainted aluminum, but the steel center section is painted black. The rivets are natural. The fan is mounted with rubber vibration mounts to a hub extension on the crankshaft. The hub extension and the crankshaft pulley should be painted black. The fan mounting bolts are secured by natural steel tabs, two bolts to a tab. The fan should also have a hexagon-shaped metal plate mounted to the center. This secured the hub extension bolt. This plate is natural steel. One or more black metal weight could be present, but not required.

Initial TR4A fans were plastic, but these had reliability problems, so they were replaced by the old metal fans at CTC56117.

There was also an optional six-bladed metal fan fitted by dealers to cars if the customer complained of overheating. This fan was constructed and mounted similar to the 4-bladed unit, but had smaller blades with a greater angle to the plane of the radiator (increased angle-of-attack to increase air flow). Consider this fan to be original. These are seen much more frequently on the TR4As than the four-bladed fan.

Hub Extension Bolt

The hub extension bolt provided two services. It secured the hub as well as provided a place to crank start the car. Two types were used:

- TR4 used a hub extension bolt similar to the TR3 unit. It was longer since the hub extension was longer for a TR4, but retained the hexagonal shape and provisions for accepting a crankstart crank.
- The crankstart option disappeared with the introduction of the TR4A. The hole and teeth on the bolt were eliminated.

Radiator Hoses/Connecting Pipe.

The TR4 and TR4A used the same hose configurations even though the radiators changed.

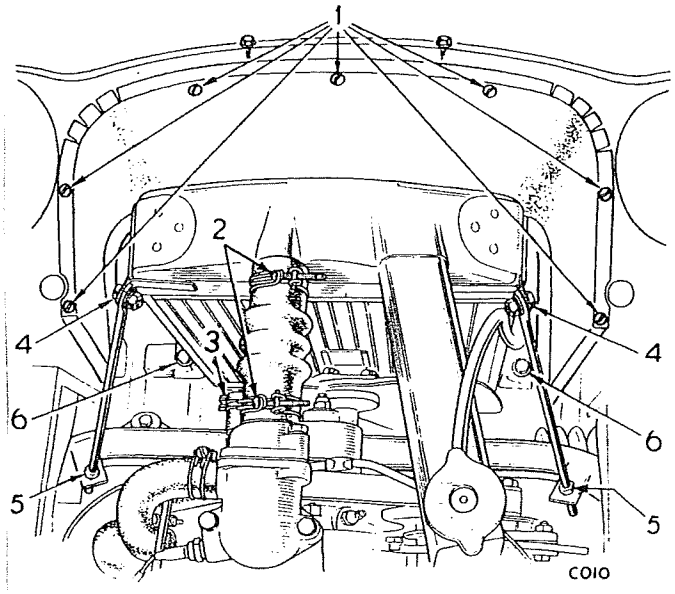
- Upper Hose. This was the same as the TR3 hose, "accordion" shaped to make up for vibration and allow easy installation.

- Lower Hose. This was actually two rubber hoses and a steel pipe in-between. It employed formed, angled hoses with a slightly bent pipe. Hoses are black. Pipes should be painted black. Wire-type clips are used on hoses.

Heater Connections/Controls

TR4 and TR4A shared the same heater connections and controls.

- Water Pump Connecting Pipe. A black painted steel pipe runs back from the left-rear side of the water pump housing alongside of the engine, then makes a 90 degree bend behind the engine, terminating near the rear of the exhaust manifold. The end of the pipe fit a compression fitting in the water pump housing, and had a bracket on the other end which fit over the rear exhaust radiator mounting stud.
- Hoses. Two ½" ID hoses are used to get water to/from the heater from the engine. One runs from the connecting pipe to a firewall connection on the firewall right side. It goes into the bottom firewall connection. The other runs from the firewall connection to the water valve. The hoses had ribs that ran along their length and were made of black rubber. They were secured on both sides by wire clamps.
- Firewall Connection. The firewall connection was two short pipes mounted on one flange. This unit was made of steel, black-oxide coated, mounted with slotted screws into speed nuts, and had a black rubber gasket between it and the body.
- Water Valve. The water valve is screwed via an elbow pipe extension into cylinder head at rear of engine. The elbow pipe has a slight (30 degree?) angle and is black-oxide or clear cad coated. The valve is made of a natural cast aluminum body with clear/ gold cad plated steel top. The heater hose connection faces the firewall. The heater control attached to a natural steel arm coming out of the top of the unit via a clamp for the control cable sheath, and a set screw in the arm for the cable itself. The cable came out of a grommet located above the firewall hose connection.



1 Air deflector attachment screws
2 Top hose clips
3 Bottom hose clips
4 Radiator stay attachments
5 Adjusting nuts
6 Radiator attachments

Figure UH-8: Radiator And Air Deflector Configuration Viewed From Top

Underhood - Factory Accessories

The following underhood items are listed as accessories in the SPCE2:

- Aluminum Oil Sump (pan) Kit. This sump replaced the stamped steel unit for greater heat dissipation and strength. It was made from cast aluminum, polished to a slight luster, and had cooling fins built into the bottom. From the literature it is unclear whether or not it extended below the frame rails.
- Starting Handle Kit. Crankstart capability was an option for the TR4. The kit consisted of the handle, a chrome guide bracket that mounted to the top center of the front bumper, chrome plated screws to hold the bracket on, and a rubber plug for the bracket when not in use.
- Two Speed Windscreen (windshield) Wiper Kit. This two speed kit for the TR4 consisted of a new motor and gearbox, wiring cable set, and switch. No illustrations are shown, but it looks as if the unit looks like the one-speed unit, but has an extra wire attached.
- "Mot-A-Vac" Vacuum Servo Unit. Power brakes were an option for the TR4/4A. The power-assist servo unit mounted to the firewall in front of the passenger (LHD cars). This explains the indentation in the rear of the right inner fender. The servo attached to a fitting in the center of the intake manifold to get manifold vacuum. Brake lines went from the master cylinder to the servo unit, and there to the brakes. The servo unit should be painted black except for the integral cylinder which should be natural aluminum. An exploded view of the Mot-A-Vac is below in Figure UH-9.
- Air Box. A TR4A option was to enclose the air filters in an air box similar to later TR units. This box is also shown below in Figure UH-9.

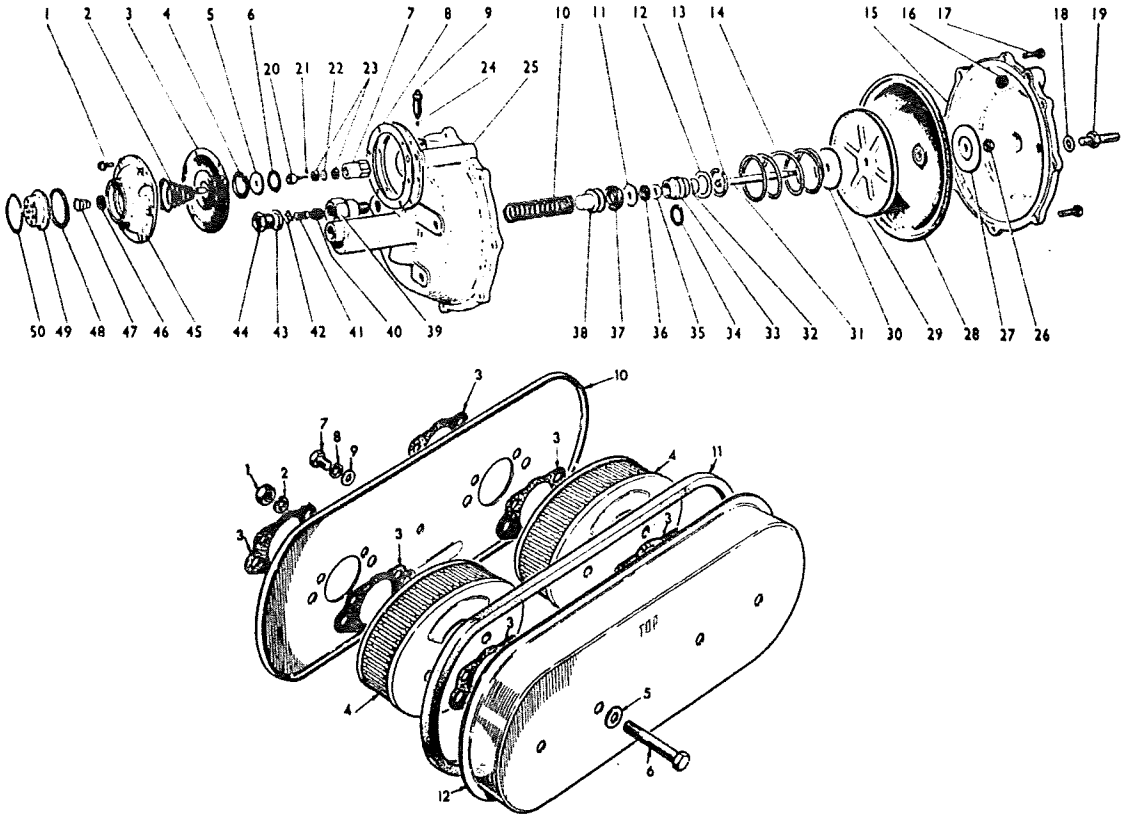
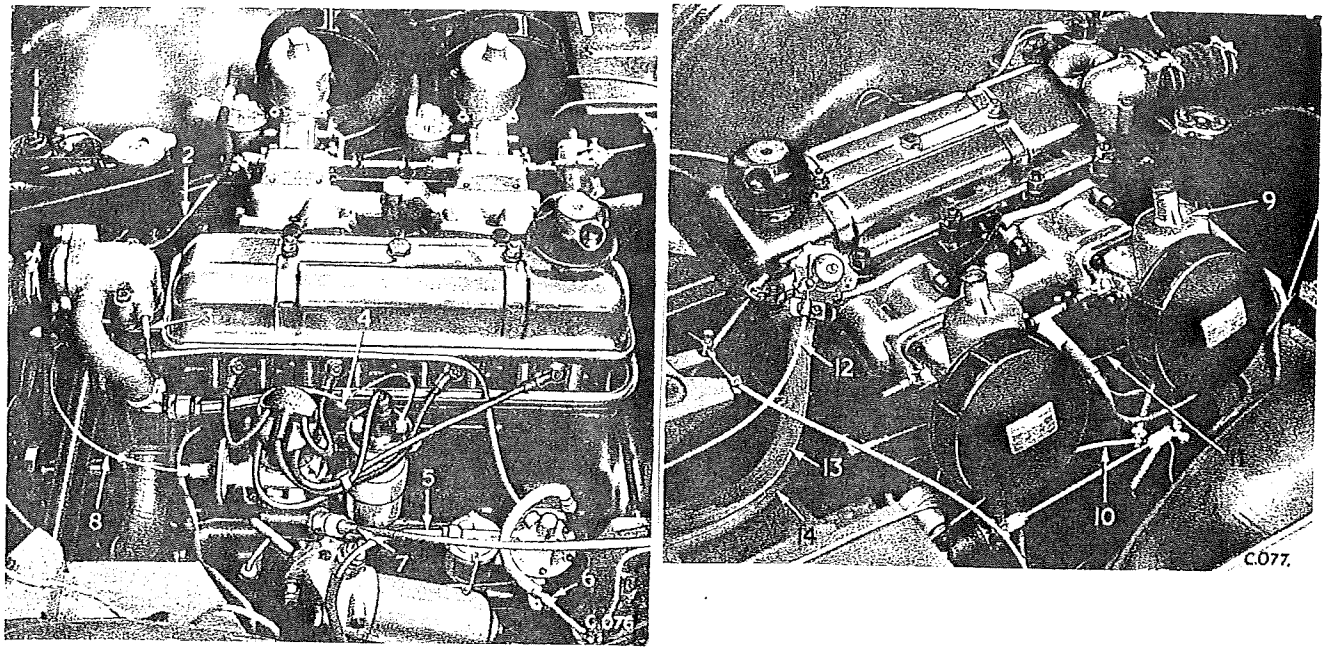


Figure UH-9: Mot-A-Vac and Air Box Accessories For The TR4 and TR4A



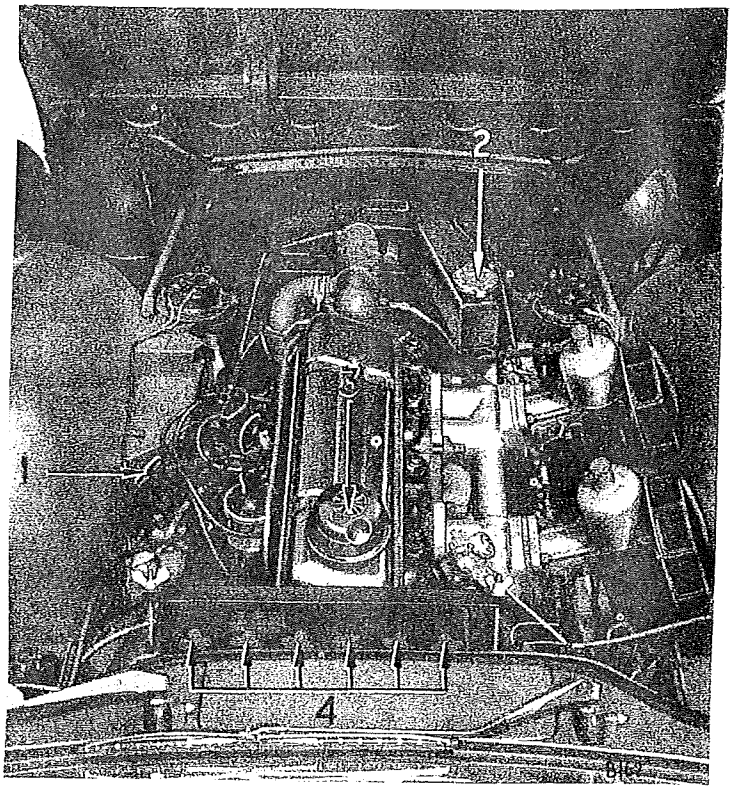


Figure UH-10: Underhood Views Of An Early TR4

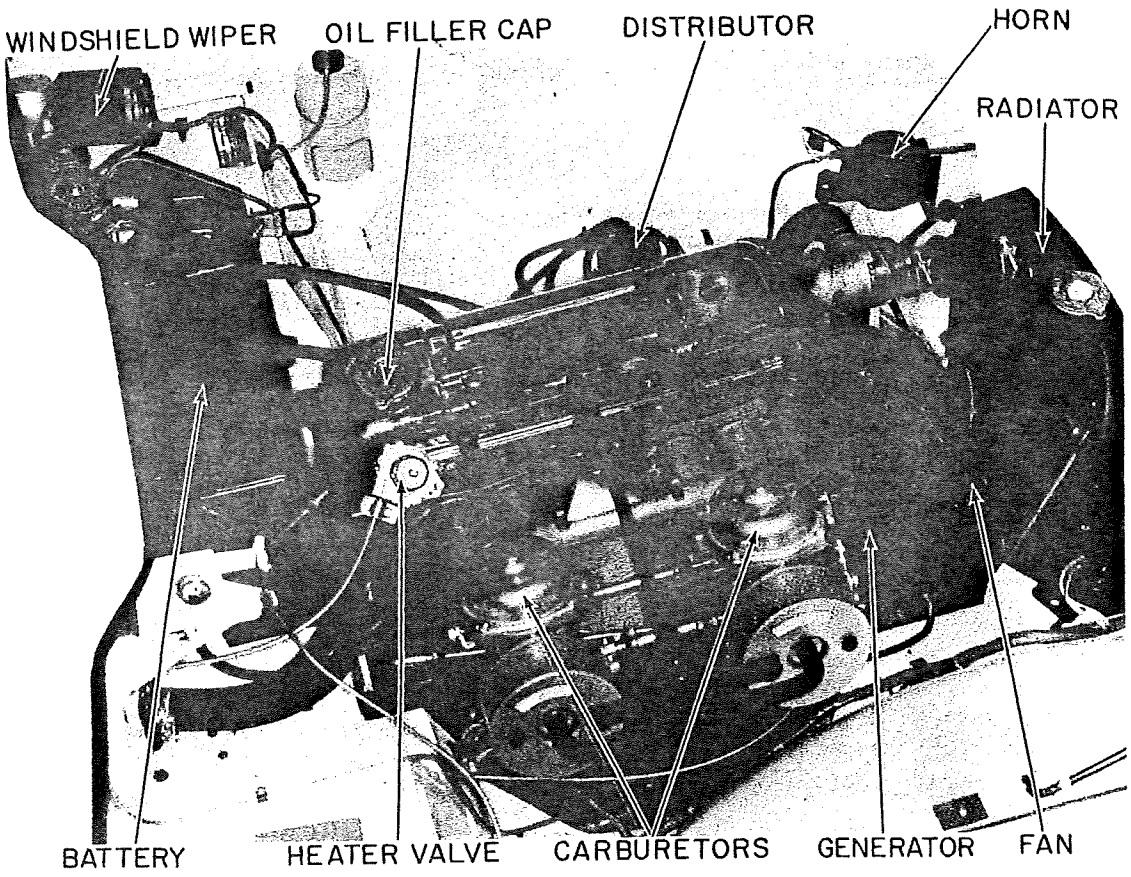


Figure UH-11: Underhood View Of Late TR4

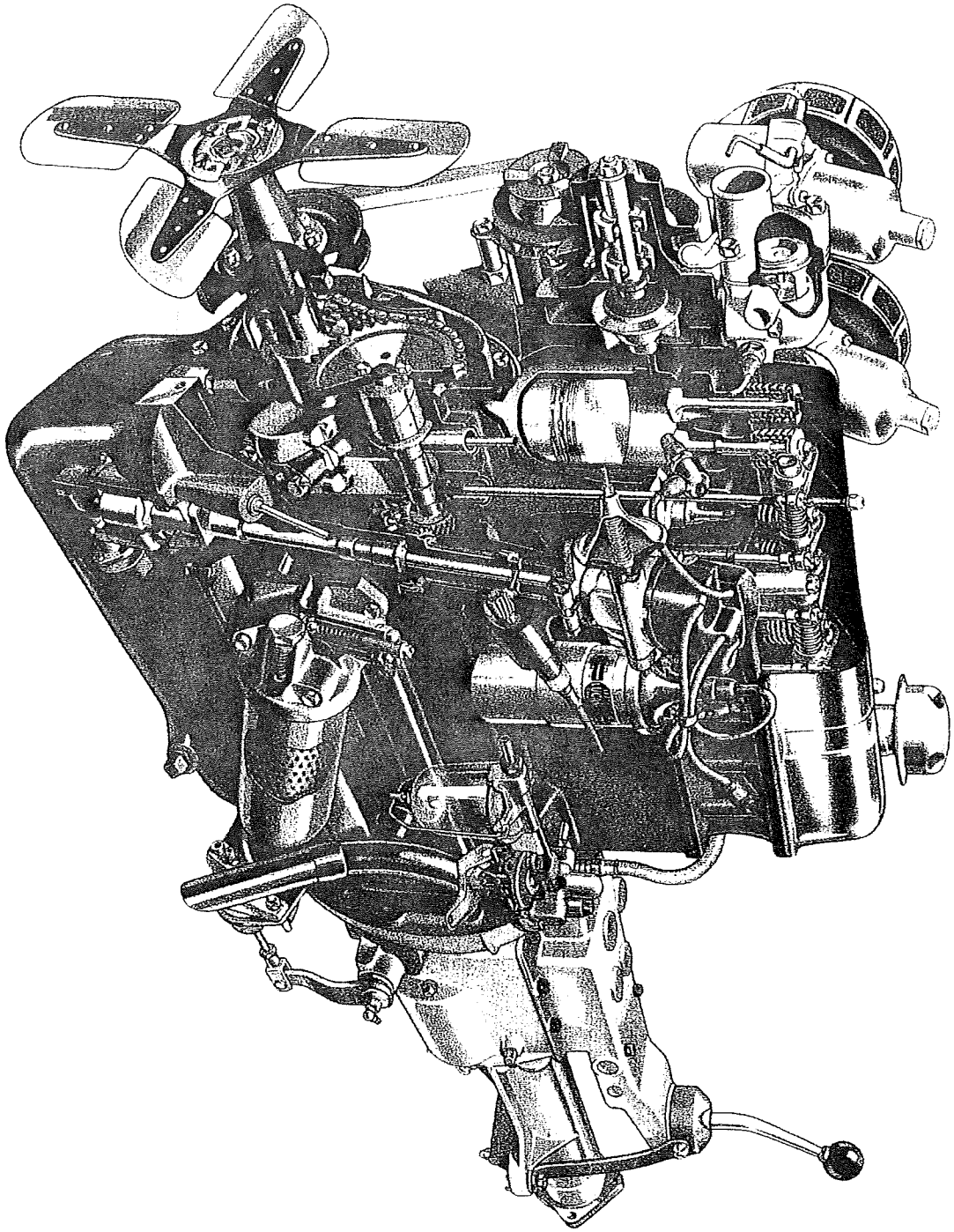
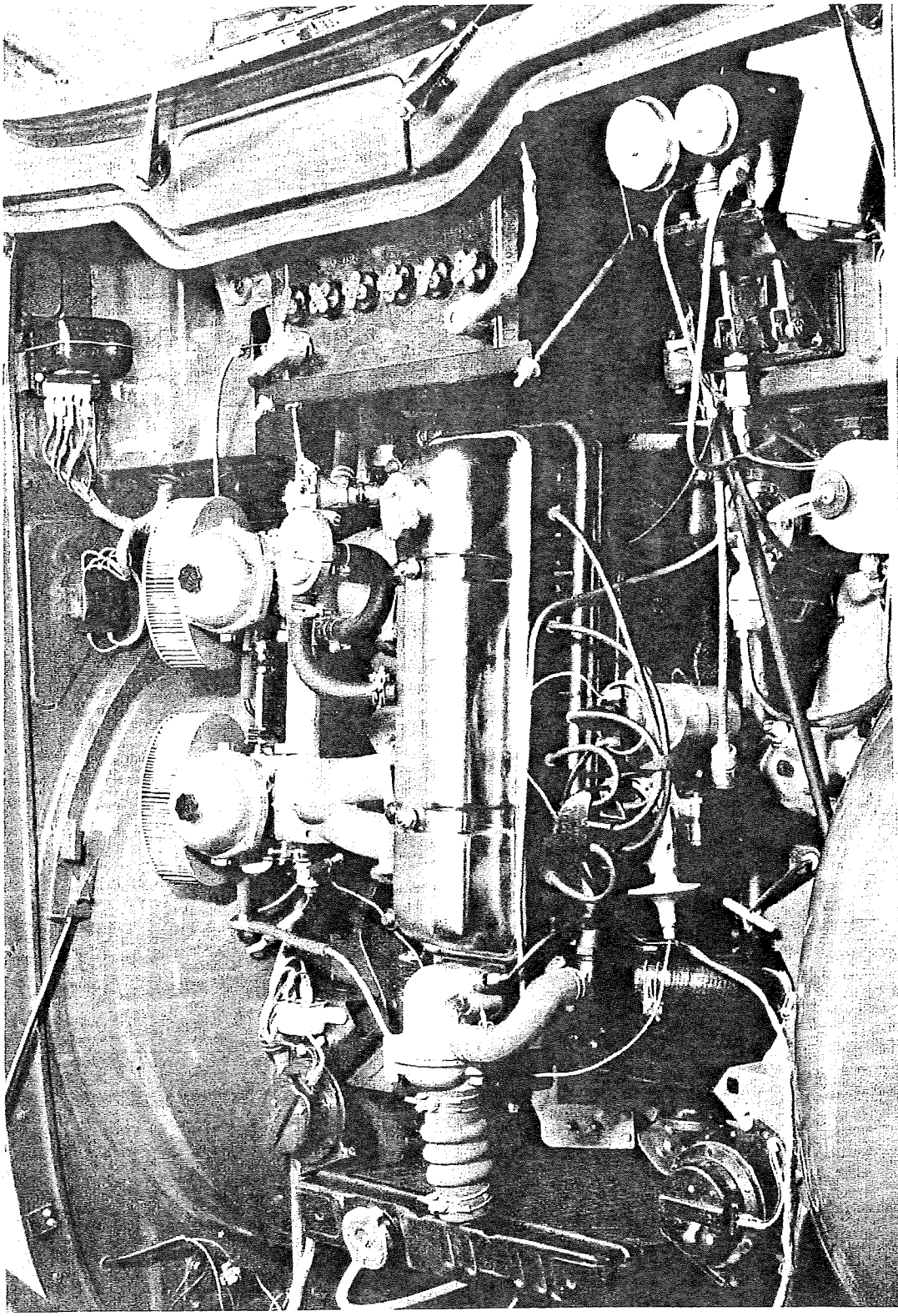


Figure UH-12: Cut-Away of Early TR4 Engine



Under-bonnet view of the TR4A, showing the Stromberg 175CD carburettors which had first been used on later-model TR4s and the more efficiently gas-flowed inlet manifolds used with the new carbs. Note that the TR4A's radiator did not have a filler cap extension.

Figure UH-13: TR4A Underhood View

Chassis Scoresheet

Entry # _____ Model _____ Year _____

Commission # _____

Owner _____

		Quality Points Earned	Originality Deductions
Chassis Frame	(15)	_____	_____
Exhaust System	(10)	_____	_____
Fuel and Brake Line Routing	(5)	_____	_____
Front Brakes, Suspension, and Lower steering.	(10)	_____	_____
Rear Brakes, Suspension, and Rear Axle Assembly	(10)	_____	_____
Propeller Shaft and Transmission:	(8)	_____	_____
Road Wheels (8 point per allocation per wheel):	(32)	_____	_____
Wheelarches and Underbody Panels:	(10)	_____	_____
	Subtotals	_____	_____

Chassis Total Score (Quality Points earned less Originality Deductions) (100) _____

Chassis Originality Guide

As in other sections, judges and restorers alike should recognize that even the most well documented changes are subject to a significant margin of error due to the mass production processes used in TR assembly. Reference information should not be considered the absolute "gospel". Unless otherwise extended for specific components, a margin of error of 100 commission numbers should be used throughout.

For your convenience, the Originality Guide is organized in outline form according to the components listed on the scoresheet and deductions guide. Engineering changes are noted in each section when appropriate. A summary of major changes is provided below.

"Right" or "Left" indicate the side of the car that the component is located in. This is as the driver sitting facing forward on the car center line would judge the location.

Figure CH-14 shows a comparison between TR4 and TR4A IRS chassis. This is an excellent presentation of the general differences in chassis.

Note: factory material and other references use engine, body, and commission numbers to document changes. In this document any a CT or CTC stem is a chassis commission number unless it ends in an "E". Commission numbers ending in "E" are engine numbers. Numbers ending in CT or CTC indicate a body number.

Chassis Frame

Chassis Frame Variations Summary

Model	Number	Description
TR4	CT1	Initial frame a modification of TR3 frame.
TR4	CT23383	Rear Spring Mount Moved
TR4A	CTC50001	Totally new frame introduced. Frame accommodated the independent rear suspension.
TR4A	CTC50001	Long Rear Bumper Mounting Bracket Changed Shape
TR4A	CTC50001	New Shock Tower Support Cross Tube
TR4A	CTC50001	New Radiator Shield

Basic Frame

TR4

The TR4 chassis, shown in Figure CH-1, was a slight modification of the existing TR3 chassis. The modifications included:

- The front cross support tube was eliminated.
- The shock towers were each moved two inches out using welded on channel sections.
- The shock towers and their supports were strengthened to account for the increase in track width.
- Forward body mounts moved even farther forward. Mounts now project forward from the front end of the frame rails.
- The motor mounts changed slightly to accommodate the new shock tower width (the other change was in the front plate of the engine).
- Steering mounts were changed to accommodate the rack and pinion steering. The cradles that held the TR3 steering box and idler arm were eliminated and two vertical brackets added to attach the rack to.
- Rear shock mountings strengthened.
- The early TR4 chassis may have brackets and other small pieces on them "left over" from the TR3. For instance, CT2966L has the small brackets on the side of the main frame rails behind the rear wheels that the TR3 fender brace straps bolted to.
- Since the TR4 body was wider than the TR3, extensions had to be added to the "outrigger" mounts near the inner rocker panels.

Unlike the TR3 chassis that could be painted any color, the TR4 chassis is painted black. The odds are that if a TR4 is present it's chassis will be original. It is theoretically possible to fit a TR3 chassis, practically; however, this is improbable.

Only one minor frame modifications was accomplished during the TR4 production run. At CT23383 the rear spring mount was changed to accommodate the "deep-dish" spring.

TR4A Frame

A totally new frame was put under the TR4A. This frame is shown in Figure CH-2. One will note that this same basic frame was used up through the end of TR6 production with just detail differences. No changes happened to the frame during TR4A production. The changes to accommodate the IRS are readily apparent.

Radiator Protector & Radiator Mounts

These differed for the TR4 and TR4A:

- TR4. The TR4 maintained the requirement that the bottom of the radiator had a shield to protect it from road debris and rough roads. The TR4 unit looked like the TR3 shield, basically a big angle iron with ends with bolt holes through them, but it was wider and also bolted to the front of the frame rails via tabs welded on its front. The radiator mounted to the inner frame rails sides via small mounts. Shield was painted black as the frame.
- TR4A. The TR4A shields bolted to the inside of the frame rails and contained integral eyelets to secure the car during shipping, eliminating the need for shipping bumpers. It was also painted black. The radiator mounts were moved to brackets that had both the radiator and front body mounting points built into them.

Shock Tower Cross-Tube

These differed for the TR4 and TR4A:

- TR4. The tube retained the same shape of the TR3 with three mounting bolts, but was longer. It also incorporated tabs for the radiator support rods. Note that these tabs may be missing for very early TR4s (pre CT1000 at least).
- TR4A. The cross tube maintained the same length, but the mounting bolt locations changed. The radiator support tabs changed to accommodate the bars, rather than rods, which were used to brace the radiator.

Bumper Mounting Hardware

The TR4 and TR4A used similar bumper mounting hardware.

- Front Bumper. The front bumper was mounted to two brackets that attached to the outside front of the frame rails. The bracket is similar in shape to the TR3A/B brackets, but has a different length. The brackets are painted black.
- Rear Bumper. The rear bumper was attached via four brackets, attached to the frame in sets of two. They attach to the outside of the rear frame rails. The short bracket is on the outside, the long one is to the inside. The TR4A long brackets changed shape since they no longer had to go around the rear body mounting points - they became much flatter. Both cars used rear over rider bracket ties. These metal bars that attach the bottom of the rear bumper over riders to the frame rails. All rear bumper bracket hardware is painted black.

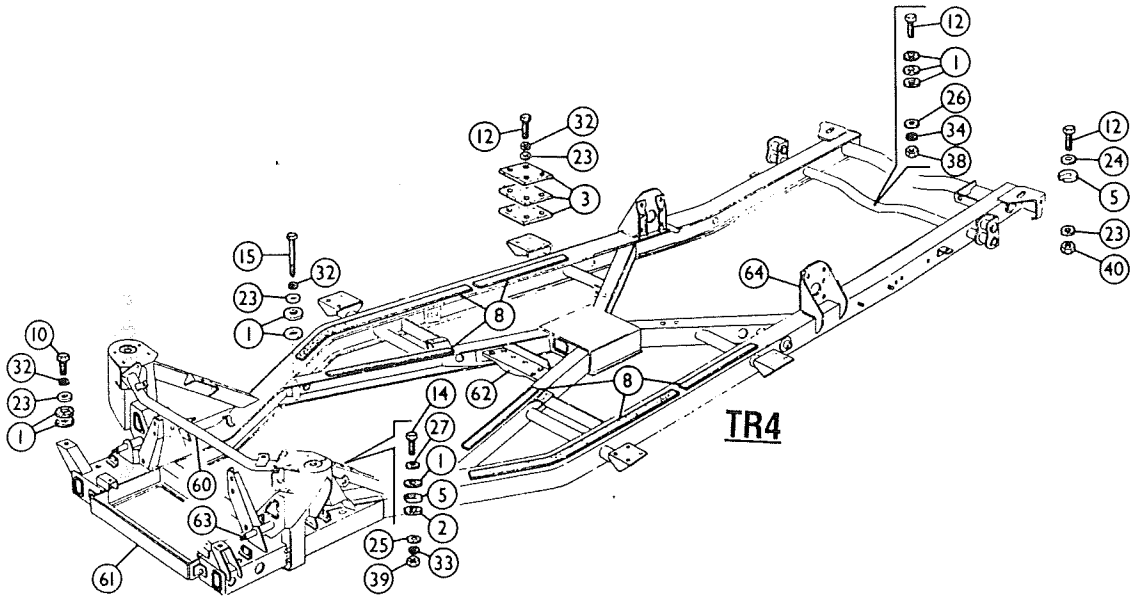


Figure CH-1: TR4 Frame

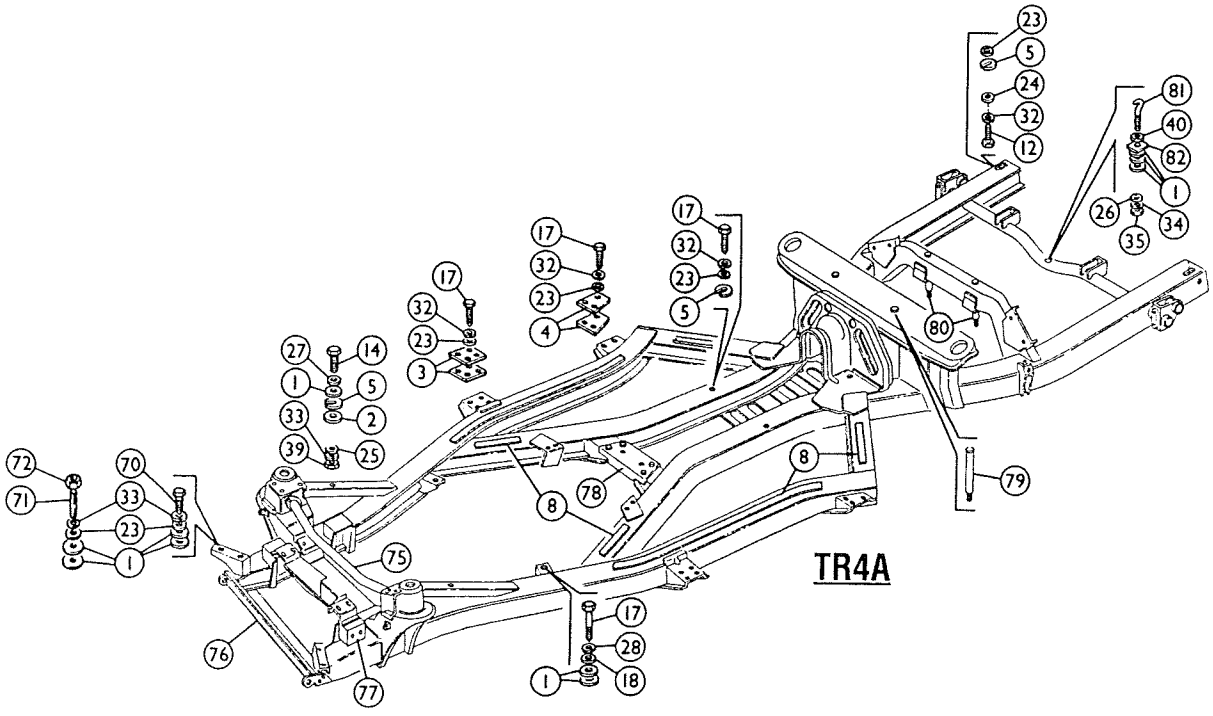


Figure CH-2: TR4A Frame

Body Mounting

The TR4/4A body was mounted to the frame by a series of bolts. The body was buffered by rubber pads both at the attachment points and rubber strips along the major frame rails.

Mounting Locations

Figure CH-1 and CH-2 show the mounting pads used attaching TR4 and TR4A bodies to the frames.

- The TR4 layout is very similar to the TR3 layout. The outrigger mounts used four bolts rather than two, and the number of bolts used to attach the body to the sloping shock tower mounts was reduced to one per side. An additional mount was added in the rear on the "skinny" rear frame cross support tube.
- Even with the new TR4A frame, the mounting points did not change. This took advantage of the existing TR4 body tooling which didn't require changing.

Mounting Pads and Hardware

Both the TR4 and TR4A used similar mounting hardware. At all locations except for the three rear attachment points, the body was attached by bolts to nuts built into the frame. At the rear separate nuts were used.

At all points except for the outriggers, rubber and cast metal spacers were used. The round cast piece was between round rubber washers with the bolt going through the center. Just rubber pads were used at the outriggers, three pads instead of the four used in the TR3 series of cars.

Strips of rubber were secured to the top of frame rails under the floor of the car. These provided buffer between frame and body.

Since the body was attached after painting, the attachment hardware is unpainted.

Fender Braces

As in the TR3, the rear fenders required bracing. These braces were integral with the side mounting points of the rear bumper. The brace attached to the back of the rear leaf spring mount and went from there to the fender side where it attached to the bumper. The brace was painted black.

Exhaust System

Chassis Frame Variations Summary

TR4	CT1	System similar to TR3
TR4A	CTC50001	Dual pipe manifold and front pipe
TR4A	Early TR4A Run	Front single muffler and Y-pipe feed to rear separate mufflers changed to single rear muffler fed by single pipe.

Figure CH-3 contains the three different types of exhaust system used during the TR4 through TR4A production run. All exhaust systems ran through the mid-frame box. The following is a description of each.

TR4

The TR4 exhaust system was a direct descendant of the TR3 system. It only differed in the front mount.

Layout

The single front pipe ran from the exhaust manifold, here it was attached by nuts to three studs on the manifold, to just aft the frame center box unit. The front pipe was supported by a mount attached to the transmission mount. This mount formed the "nut" for the right side transmission attachment point. The pipe was held by a steel strap which hung from the mount. The front muffler attached to the end of the front pipe via a clamp that looks like a horseshoe. The rear muffler is attached to the front muffler by an identical clamp. Another clamp attaches the rear of the rear muffler to a rubber strap, which is then attached to the frame. An aluminum tailpipe extension is attached to the end of the rear muffler pipe with a wire "Super Grip" clamp, similar to the ones used in the cooling system. The exhaust system, in general, goes diagonal across the car from right to left as it goes aft.

Finish

The exhaust system front pipe and mufflers on the TR4 were mild steel sprayed with a dull silver paint. This finish was of no value except in keeping the exhaust components from rusting during pre-assembly storage! Restored cars will be using either special exhaust paint designed to take the heat, or stainless steel systems which require no paint which are built to look like the original system in form, fit, and function. The other exhaust hardware was left natural. Clamps could have a clear cad coating. Make no deductions for painted natural mild steel, or stainless steel of correct configuration and in good order. The extension was a brushed aluminum piece, not polished to a chrome-like luster. Polished tailpieces are over-restoration.

TR4A

Two different types of TR4A systems were used. The early system was phased out due to expense, performance loss, and noise. It was replaced by a system that, in general architecture, was kept through the TR6 production run.

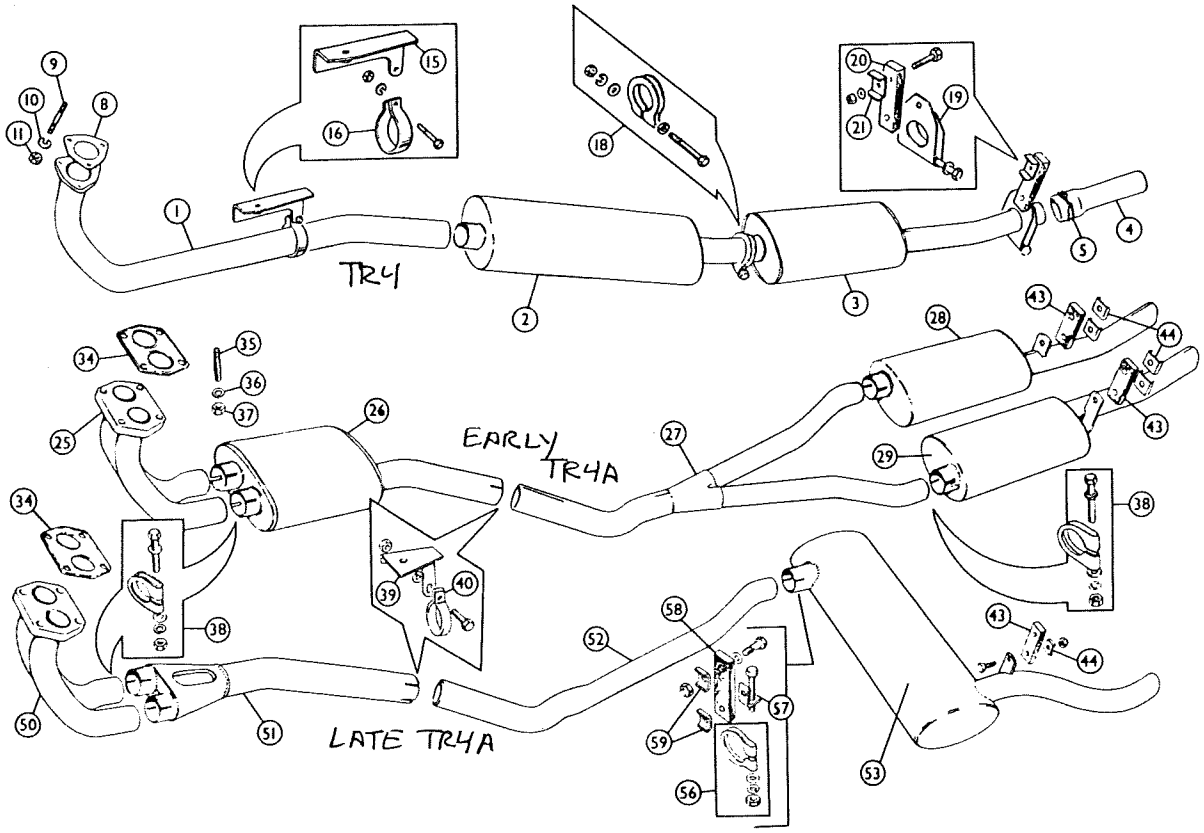


Figure CH-3: TR4 And TR4A Exhaust Systems

Layout.

- Early TR4A: The front pipe was changed to a short, dual down pipe unit that went into a muffler. From that front muffler a single pipe attached to a Y-pipe. The individual outlets of the Y-pipe each had their own rear muffler. Attachment hardware was similar to the TR4, with the added rear muffler hanger for the second rear muffler.
- Late TR4A. The front muffler and Y-pipe were eliminated, replaced with a single pipe which ran to a single muffler mounted cross-wise under the trunk. The single muffler outlet pipe exited on the left side of the car's rear.

Finish

The exhaust system front pipe and mufflers on the TR4A were mild steel sprayed with a dull silver paint. This finish was of no value except in keeping the exhaust components from rusting during pre-assembly storage! Restored cars will be using either special exhaust paint designed to take the heat, or stainless steel systems which

require no paint. The other exhaust hardware was left natural. Clamps could have a clear cad coating. Make no deductions for painted natural mild steel, or stainless steel of correct configuration and in good order.

Aftermarket Exhausts

High performance exhaust systems are currently available for both the TR4 and TR4A, but were not fitted by the factory. There were some aftermarket systems that were period, such as "Abarth". If an aftermarket system is fitted to the car, the car owner(s) must be able to prove that the particular type of system was available for that car when it was manufactured or it is an originality deduction.

Fuel and Brake Line Routing

Chassis Frame Variations Summary

TR4	CT4691 (wires) CT4388 (steel)	Changes to both solid lines and flexible hoses feeding front brake calipers
TR4A	CTC50001	Fuel and brake line routings changed to account for new frame. Slight difference between the live-axle and IRS version on brake line routing in the back.

The fuel and brake line routing stayed the same throughout the TR4 production. With the new frame in the TR4A the routing changed. The rear routing differed for the brake lines between the live-axle and IRS TR4A versions.

Fuel Line Routing And Components

Figure CH-4 shows the fuel system components up to the fuel pump for both the TR4 and TR4A.

- The TR4 line ran in a similar fashion as the TR3 line, attached to frame rails by clips and passing through frame sections is two places via rubber grommets. The fuel line was actually three lines connected with a short piece of rubber gas line that was pressed on the metal pipe ends, no clamps were used. One pipe ran from the tank to just forward of the rear axle, the middle line ran from there to just under the fuel pump. The other steel line went into the fuel pump itself.
- The TR4A fuel line was also made up of three segments attached with rubber hose. They were just bent differently to account for frame changes.

For safety purposes, clamps and steel sheathed flexible fuel lines are allowed where lines were pressed on and made of simply rubber.

Finish

Fuel lines were clear cad coated, left unpainted. The brass fittings were left bright. The clips holding the lines to the chassis were spring steel finished in black oxide. The rubber lines were black.

Brake Line Routing And Components

The brake line routings for the TR4 and live and IRS versions of the TR4A are in Figure CH-5. Figure CH-6 is a more detailed drawing of the early TR4 system included to show the different fittings used in the system.

- TR4 systems were very similar to the TR3 Girling systems. Three pipes came from the five way connector on cars before CT26930, or the four way systems on cars after CT26930. The front pipes changed slightly at CT4691 (wires), CT4388 (steel wheels) to accommodate the new Girling front calipers. Note that the front flexible pipes to the calipers changed at the same time. The line ran on the right side of the frame, passing though it via rubber grommets twice.

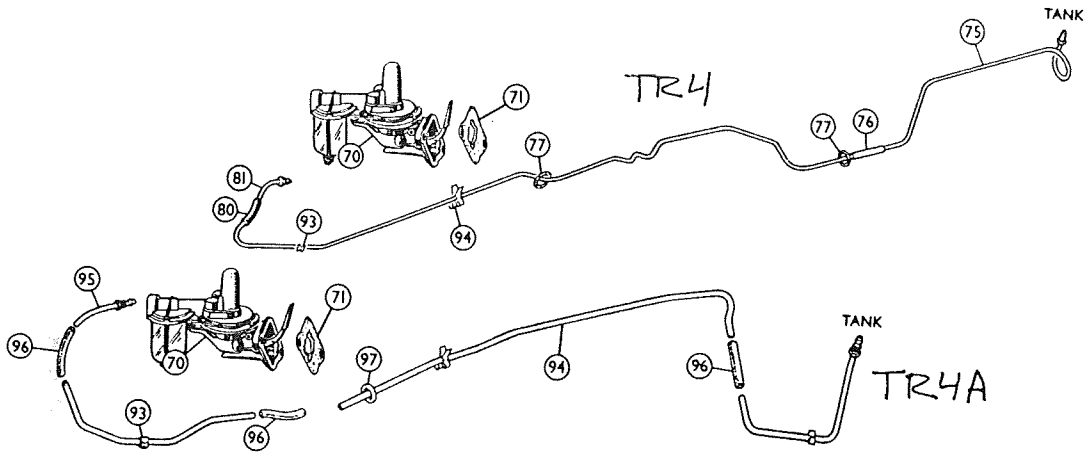


Figure CH-4: Fuel Line Routing For The TR4 and TR4A

- TR4A system configuration responded to the frame change. The four-way connection moved to the right side of the engine, and the rear brake line ran along the right side of the frame. The long line had a double-sided male compression fitting in the middle of it to aid installation. The lines were held by clips that pushed into frame holes. The line did not pass through the frame, so grommets were not required. The IRS line went into a body mounted junction from which a flex line went to the right side rear brakes. A solid pipe went to the left side where another flex line competed the connection. The live-axle version line ran directly to the left rear cylinder via a flex line. The left cylinder does not have a bleeding nipple. Instead, another solid line goes across the axle to the right cylinder which has the bleed nipple (this configuration was used later on the TR7 - just though the reader might want to know).

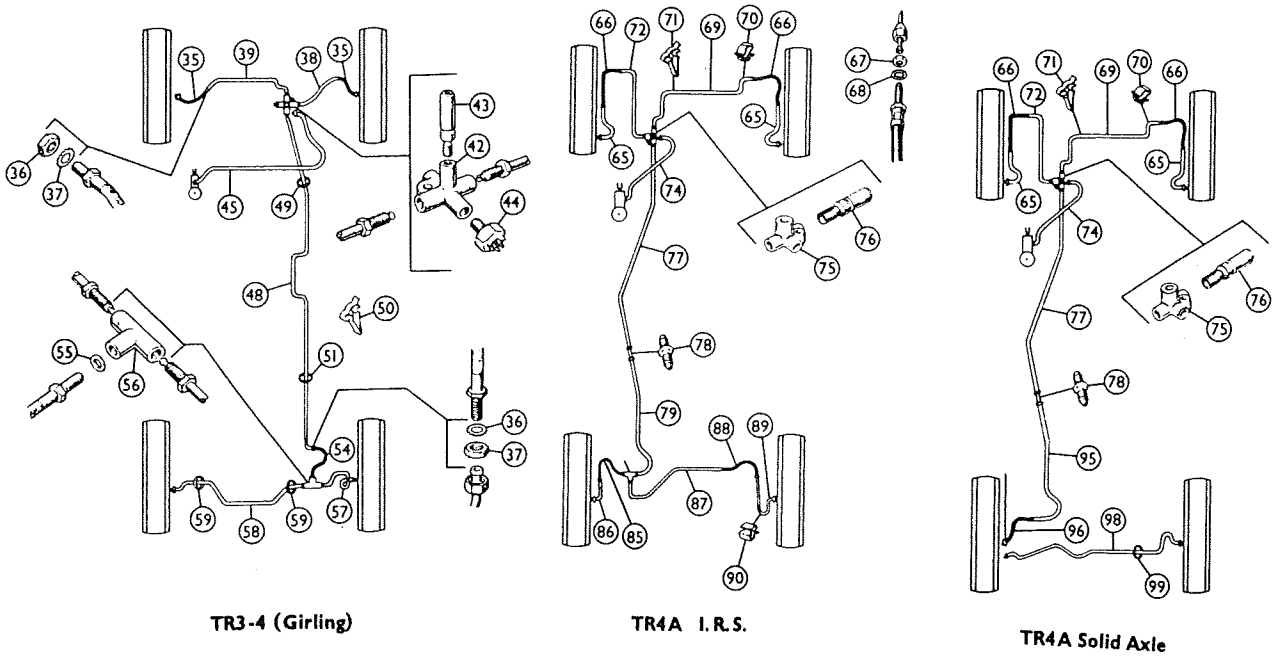


Figure CH-5: Brake Line Routing

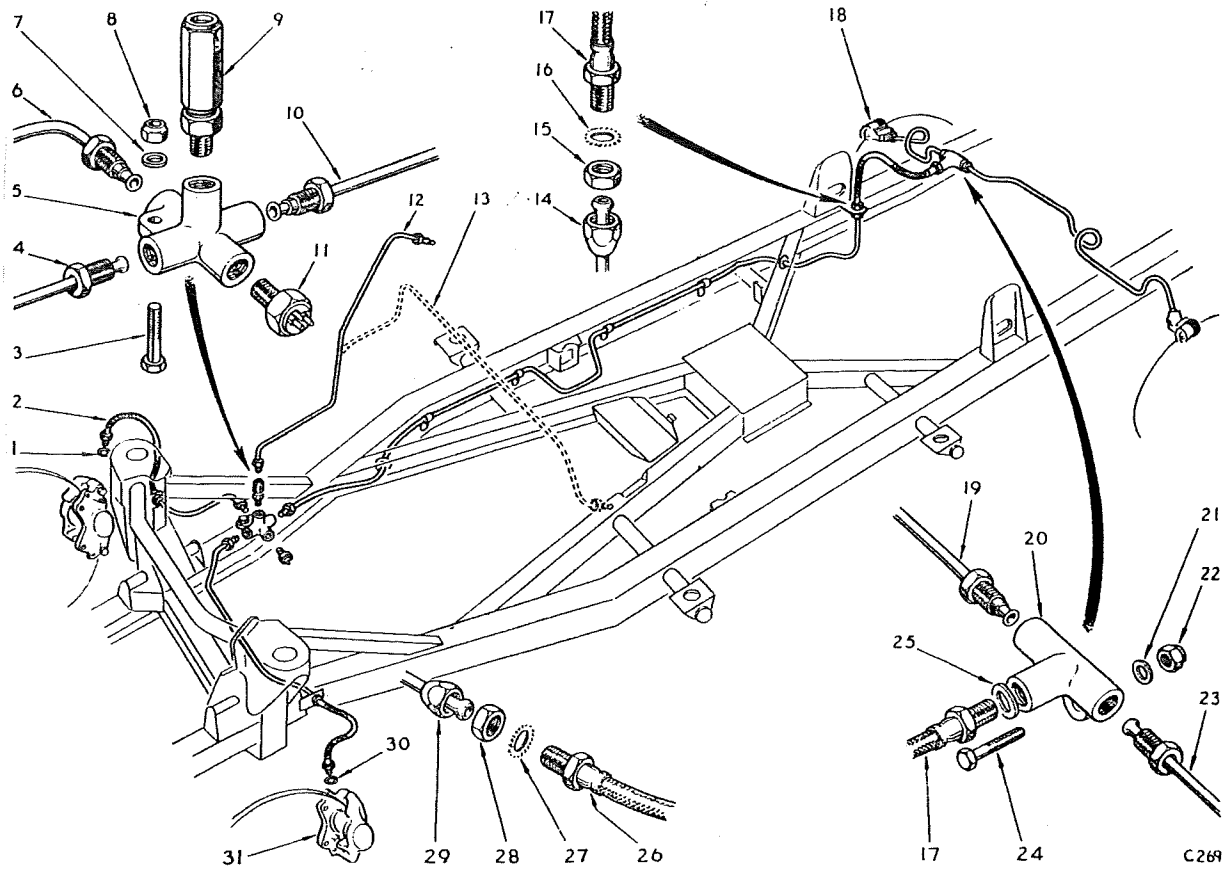


Figure CH-6: Brake Line Routing And Components In Early TR4s

Finish

Brake lines were clear cad coated steel with bright steel or brass fittings. The clips holding the lines to the chassis were made of spring steel and finished in black oxide.

Judging Note: Judging of lines in the engine comparment are covered in Underhood; lines from the four, or five-way junction and back are covered here in addition to the brake lines at the front disc calipers.

Front Brakes, Suspension, and Lower Steering Details

Chassis Frame Variations Summary

TR4	CT4690 (wires) CT4387 (disc)	Front brake calipers changed to smaller caliper packs (same piston area) with pads held in by two pins. The rotor changed slightly at the same time.
TR4	CT6344 (wires) CT6391 (disc)	Upper wishbones, ball joints, tie rods, and trunions changed
TR4	CT7219	Trunion seal changed, two shims added to outer trunion shaft seal.
TR4	CT16463 (wires) CT16350 (disc)	Unspecified tie rod change
TR4	CT20064	Aluminum steering rack mounts changed to rubber.
TR4	CT29985	Road spring lenghtened, packing piece eliminated
TR4A	CTC50001	Front suspension, brakes, and steering changed to accomodate new frame. Multiple component changes. Refer to Appendix A, Table 2, for complete list

Front Brakes

The original TR4 front brakes were identical to those used on late TR3A and TR3B Girling units. At CT4690 (wires) and CT4387 (disc) these were changed to a slightly smaller unit that had the same size pistons, but held the pad in with two pins secured by cotter pins. Figure CH-7 shows the difference in the two types of calipers. At the same time the diameter of the rotor was slightly reduced. Early cars with later rotors will not wear the entire pad, while earlier rotors will rub on later calipers. The calipers are mounted with the bleed screw on top to facilitate bleeding.

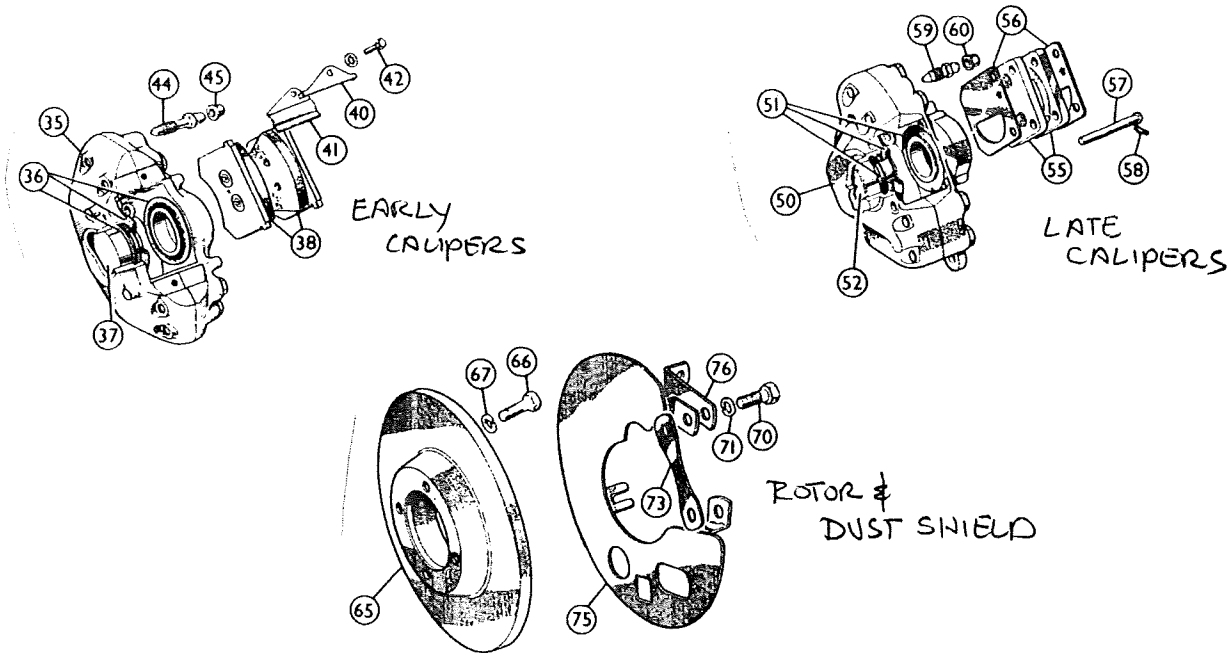


Figure CH-7: TR4 and TR4A Front Brakes

Finish

Both the early and late calipers were made of cast iron and should be left natural metal, or painted to look like natural metal. The rotors were unpainted cast iron. Bleed screws were natural steel or clear cad coated. Attachment bolts were black oxide Grade 8 with lock washers

Front Suspension

TR4

The inital TR4 suspension was identical to the late TR3A, TR3B suspension. At CT6344 (wires) and CT6391 (disc) this was changed. The upper wishbone, ball joint, tie rods, and trunion changed to a stonger unit with a different castor angle. The change can be noted in Figure CH-8. The insert in the upper right corner is the later upper wishbone assembly, the most visible part of the change. Some details to look for when judging the suspension:

- Rubber rebound bolt mounted in the center of the lower, rear wishbone arm. The rebound is conical, black rubber.
- Although originally equipped with blue Armstrong shocks, the shock absorbers can be any unit with fit, form, and function of the originals. Adjustable shocks are acceptable. Air shocks are not.
- Rubber rebounds should be mounted to a bracket on the frame under the center of the lower wishbone.

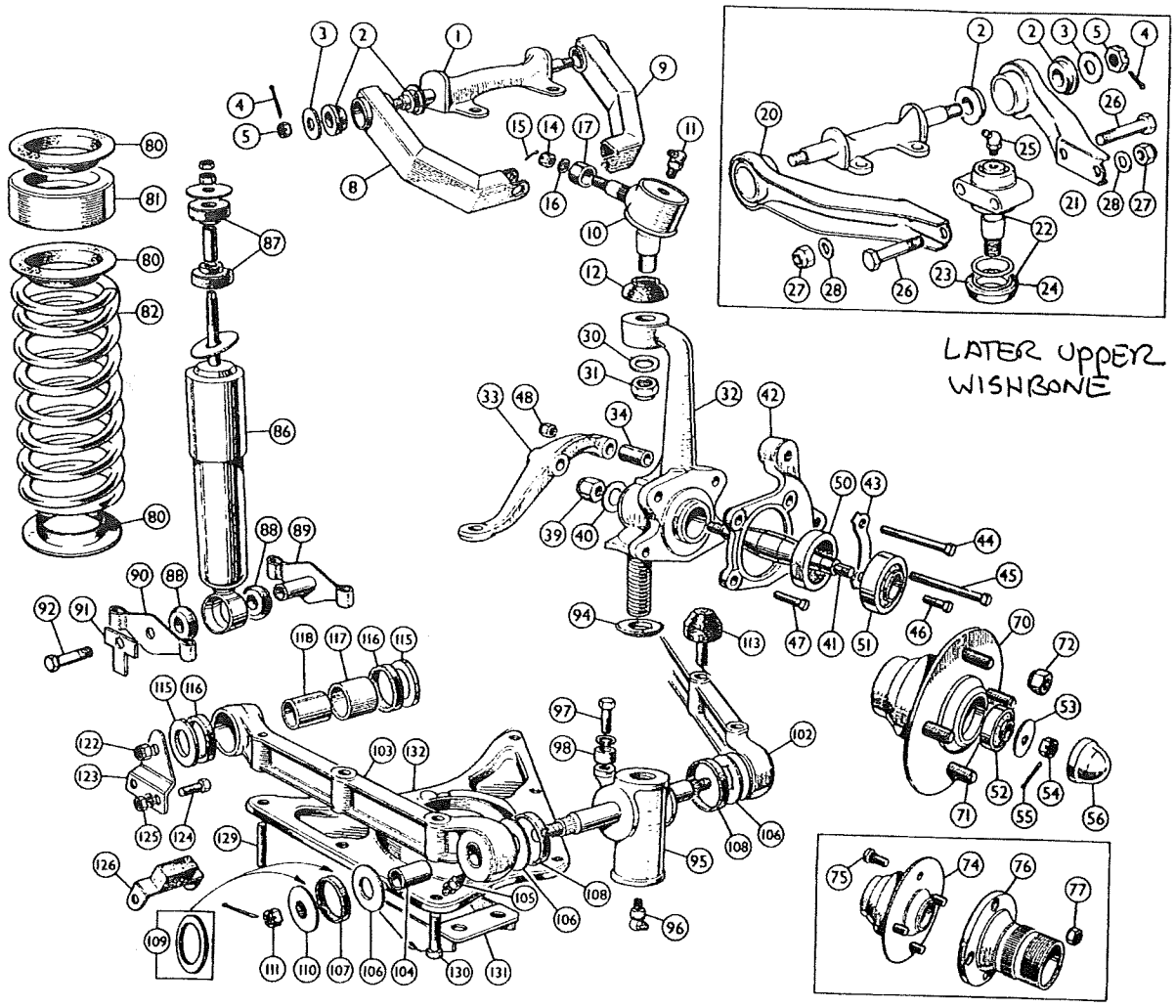


Figure CH-8: TR4 Front Suspension

- Some grease should be present both for lubrication and protection of junctions, but excessive grease allowing dirt build-up is grounds for a quality deduction.
- Rubber seals should be seen over joints on the lower wishbones.
- Black rubber upper wishbone bushings should be visible and in good shape. Modern nylatron and urethane bushings are available, but not original. non-original bushings should be treated as a minor deduction.
- The nuts holding the spring pan to the lower wishbone arms should be castle-type with cotter pins, as well as the nuts on the trunion shafts and upper fulcrum pin.
- Ensure a dust shield is fitted. Those tend to be lost over the years.

- Post CT7219 cars should have shims in their trunion mounting pint grease seals.
- Wire wheel equipped cars should have the splined hub extension bolted to the hub.
- A round steel piece bolted to the back of the trunion. This was the steering stop. Many times this piece is lost during a restoration.

Finish

In general, most front suspension pieces were painted black. Attachment hardware was not painted, usually Grade 8, black oxide coated. Exceptions to this are:

- Ball joints were left natural cast iron.
- Trunions are natural cast brass
- Shocks may be painted the color consistent with the manufacturer.
- Grease "Zirc" fittings are clear cad coated.
- Packing piece is natural cast aluminum.

TR4A

The TR4A front suspension was roughly similar to the earlier TR4 suspension, but many components had to change given the new frame. Figure CH-9 shows the TR4A front suspension. Note some of the outstanding differences:

- Lower wishbones arms now bolted into brackets, which were, in turn, bolted into the sides of the frame rails.
- Lower trunion became smaller, attached to the lower wishbone by a bolt that passes through it.
- Packing piece was added to the road spring again. The Moss catalog lists two packing pieces, one for a short spring, the other for a long spring. Either could be fitted.

Finish

In general, most front suspension pieces were painted black. Attachment hardware was not painted, usually Grade 8, black oxide coated. Exceptions to this are:

- Ball joints were left natural cast iron.
- Trunions are natural cast brass
- Shocks may be painted the color consistent with the manufacturer.
- Grease "Zirc" fittings are clear cad coated.
- Packing piece is natural cast aluminum.
- Lower wishbone arm bracker shims were left natural steel.
- Lower fulcrum brackets were left natural.

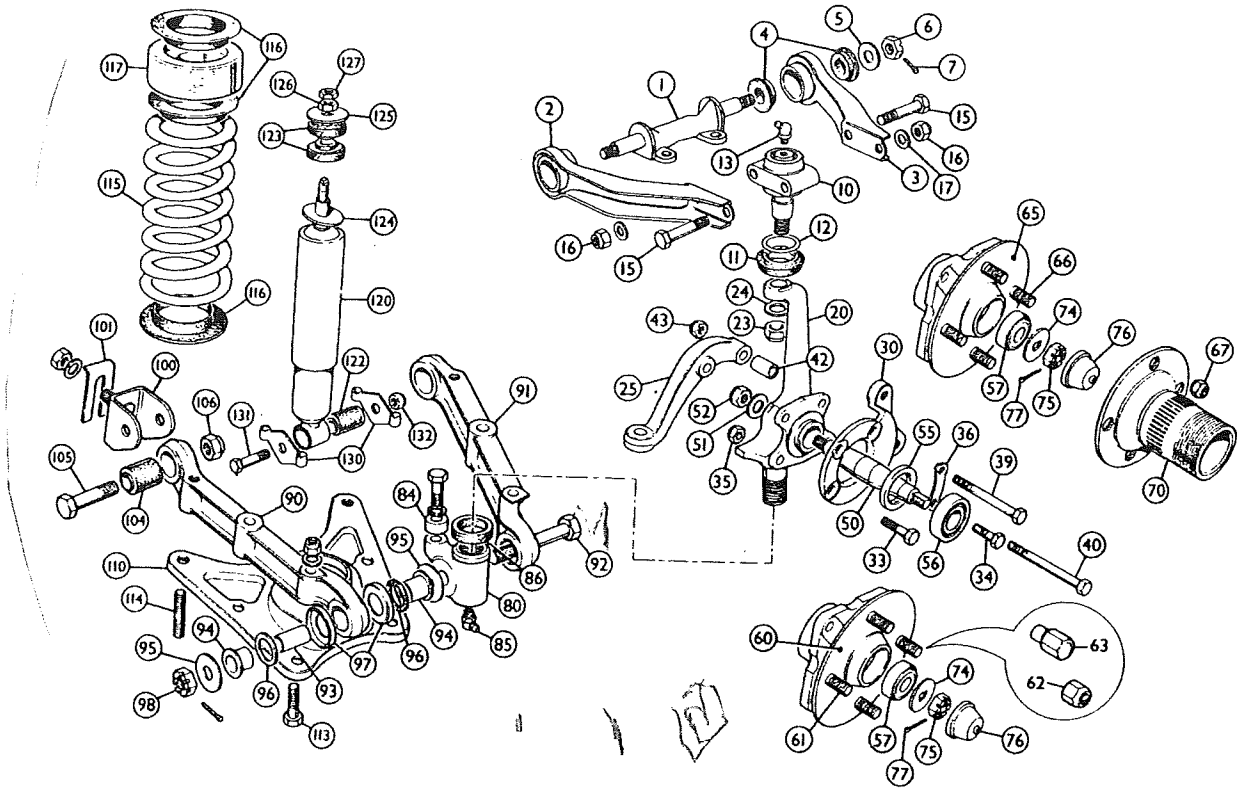


Figure CH-9: TR4A Front Suspension

Lower Steering

The TR4 and TR4A employed rack-and-pinion steering rather than the peg-and-worm gear of the earlier TR3. Figure CH-10 is an exploded view of the rack. The rack is made of a combination of steel and aluminum, all steel except for the aluminum pinion housing. The unit is lubricated via a bolt on the top of the pinion housing. The rack mounted to the chassis using aluminum mounts up to CT20064, rubber mounts after that. The rack has black rubber gaiters at the end to keep dust out of the rack. These gaiters are attached to the rack with a twisted wire on the left side, and a wire clamp on the right. The gaiters are attached to the shaft that the tie rod screws into by wire clamps on both sides. Tie rods with grease fittings were used. Some things to look for while judging:

- Gaiters should be intact.
- Tie rod ends should have intact rubber dust seals.

- Rubber mount cars should have a ground strap from the rack to the chassis for horn ground circuit.

Finish

The lower steering assembly had the following finishes:

- The pinion housing was natural cast aluminum with the cap and grease point bolt being natural steel.
- The tube housing the rack should be black or left natural. Both have been seen on "original" cars.
- Gaiters are black rubber.
- Gaiter securing wire and clamps are natural or clear cad coated.
- Shaft running to tie rod ends should be natural steel.
- Tie rod ends are natural cast except for the top holding the zirc fitting. The top is bright steel, with the zirc fitting being clear cad coated.

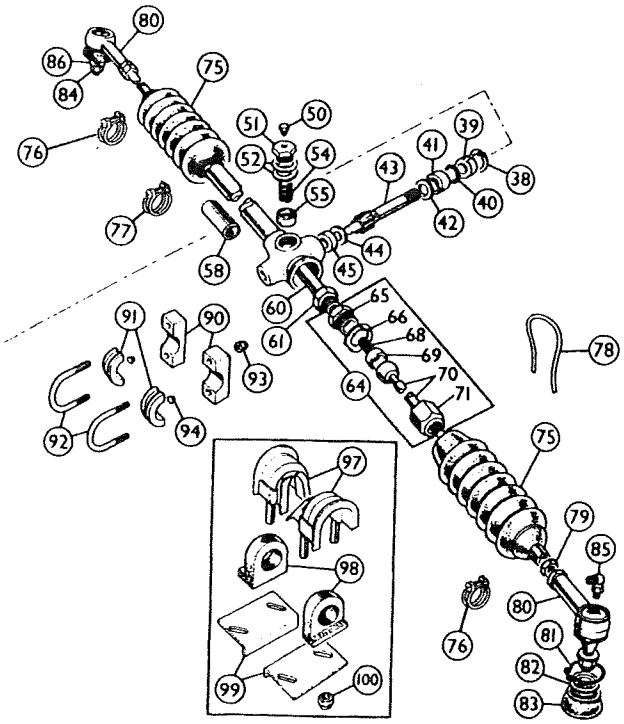


Figure CH-10: Exploded View Of TR4/4A Steering Rack

Rear Brakes, Suspension, and Rear Axle Assembly

Chassis Frame Variations Summary

TR4	CT425	Parking brake tab washer changed to common lock washer
TR4	CT5656 (wire) CT5783 (disc)	Brake cylinder bore reduced to "0.70
TR4	CT23383	Rear spring and mounting changed.
TR4A	CTC50001	IRS rear suspension becomes standard. Optional solid axle configuration available for North American customers. Many changes at this time. Refer to Appendix A for more details.

Rear Brakes

Hydraulic

The TR4 and TR4A rear brakes were identical. The system, illustrated in Figure CH-11, is similar to the TR3 system. The only change was the cylinder bore reduction to "0.70 to redistribute braking forces.

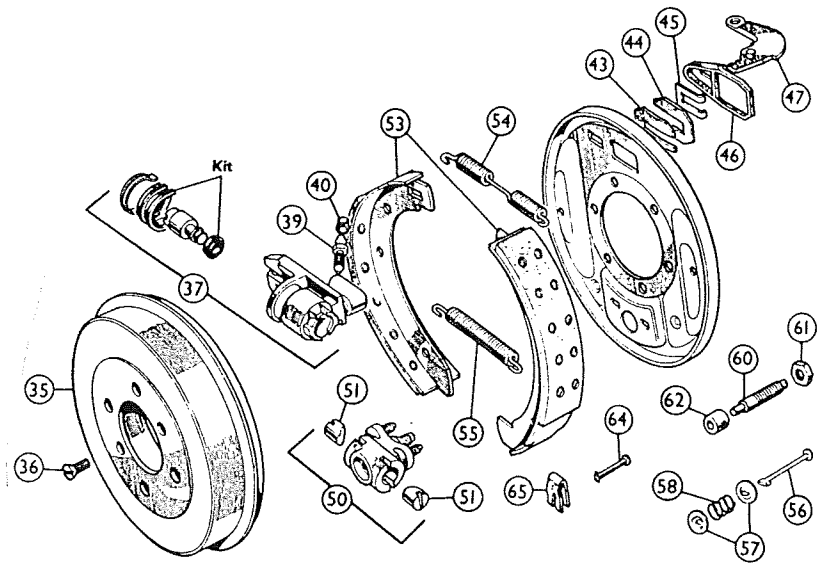


Figure CH-11: Rear Brake Assembly

Note the rubber dust excluder on the cylinder mounting hardware . This is left off on many restorations. Bleed screw should have a cap.

Finish

The only parts visible during inspection will be the drum, back plate, adjuster screws, hardware, and part of the cylinder.

- The drum and back plate should be painted a semi-gloss or gloss black.
- Adjuster screws should be left natural.
- Attachment bolts from the solid axle to back plate should be painted black.
- Other attachment hardware should be natural.
- Cylinder should be natural cast aluminum, mounting hardware should be natural, bleed screw natural or clear cad plated.

Hand Brake

The TR4 handbrake assembly was identical to the TR3 unit except for details. TR4A used a redesigned handbrake arrangement.

TR4

Figure CH-12 shows the handbrake assembly for the TR4. The difference was the longer cables from the compensator lever on the axle to the brake calipers demanded by the longer axle. The only change occurred at CT425 where the tab washer (#21) was replaced by a common lock washer.

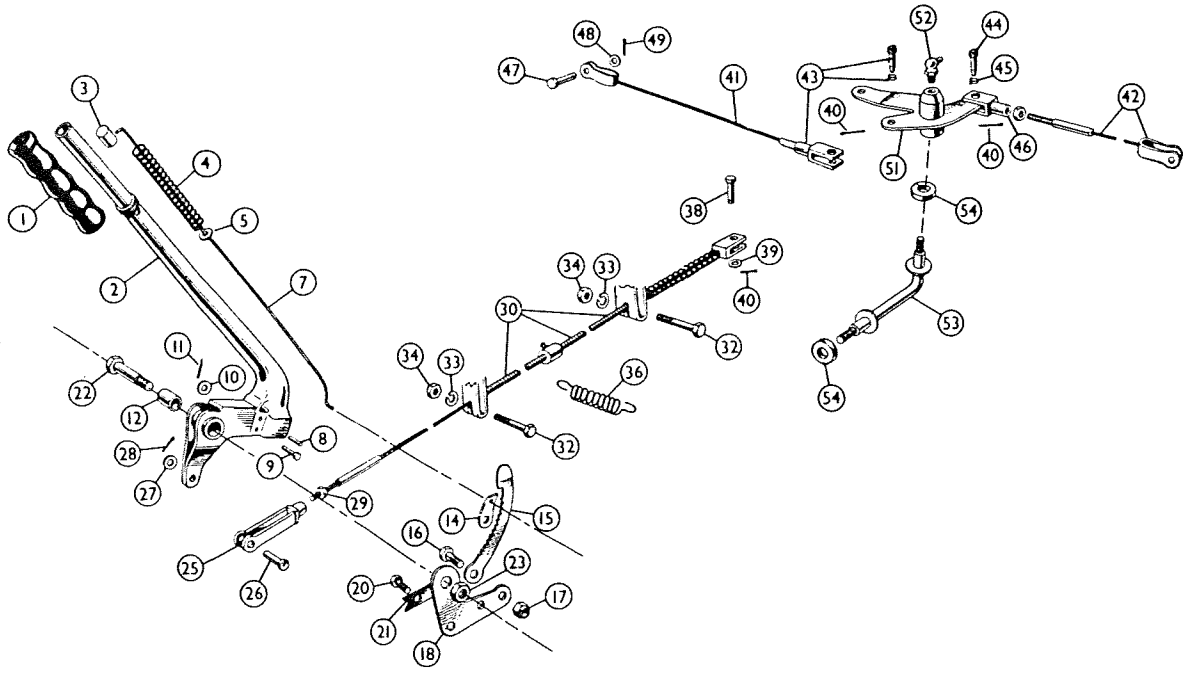


Figure CH-12: TR4 Handbrake Assembly

When judging the handbrake assembly look out for these problems:

- Missing cable conduit spring. This spring (#36) went from the cable conduit to a tab attached to the underside of the body. This held the conduit up close to the bottom of the frame rails so it wouldn't hit anything.
- Too much grease. The conduit contains an integral grease fitting and excess grease may be on the outside of the conduit.

Finish

The TR4 handbrake parts were pretty much all left natural. The only exception were the compensator bar and lever which could be painted black.

TR4A

The handbrake assembly moved from the right of the transmission tunnel to on top of the drive shaft tunnel with the introduction of the TR4A. Figure CH-13 shows the new configuration which was used for both IRS and solid-axle TR4As. This configuration was kept for later TRs up through the TR6.

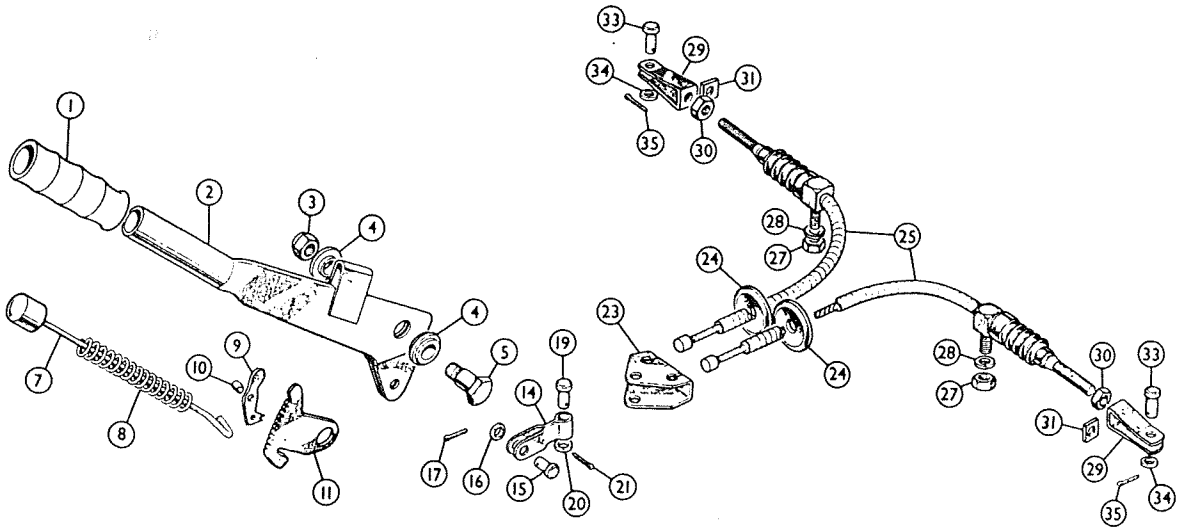


Figure CH-13: TR4A Handbrake Details

Finish

As with the TR4 handbrake hardware, the TR4A system was left natural.

Suspension

The TR4 and TR4A IRS had totally different rear suspension systems. Some (roughly 25%) of TR4A production had solid rear axles, and that makes a third suspension system to worry about! Each of these will be treated separately. The next page contains Figure CH-14 which shows the difference between the TR4 and TR4A chassis, focusing on the rear suspension changes.

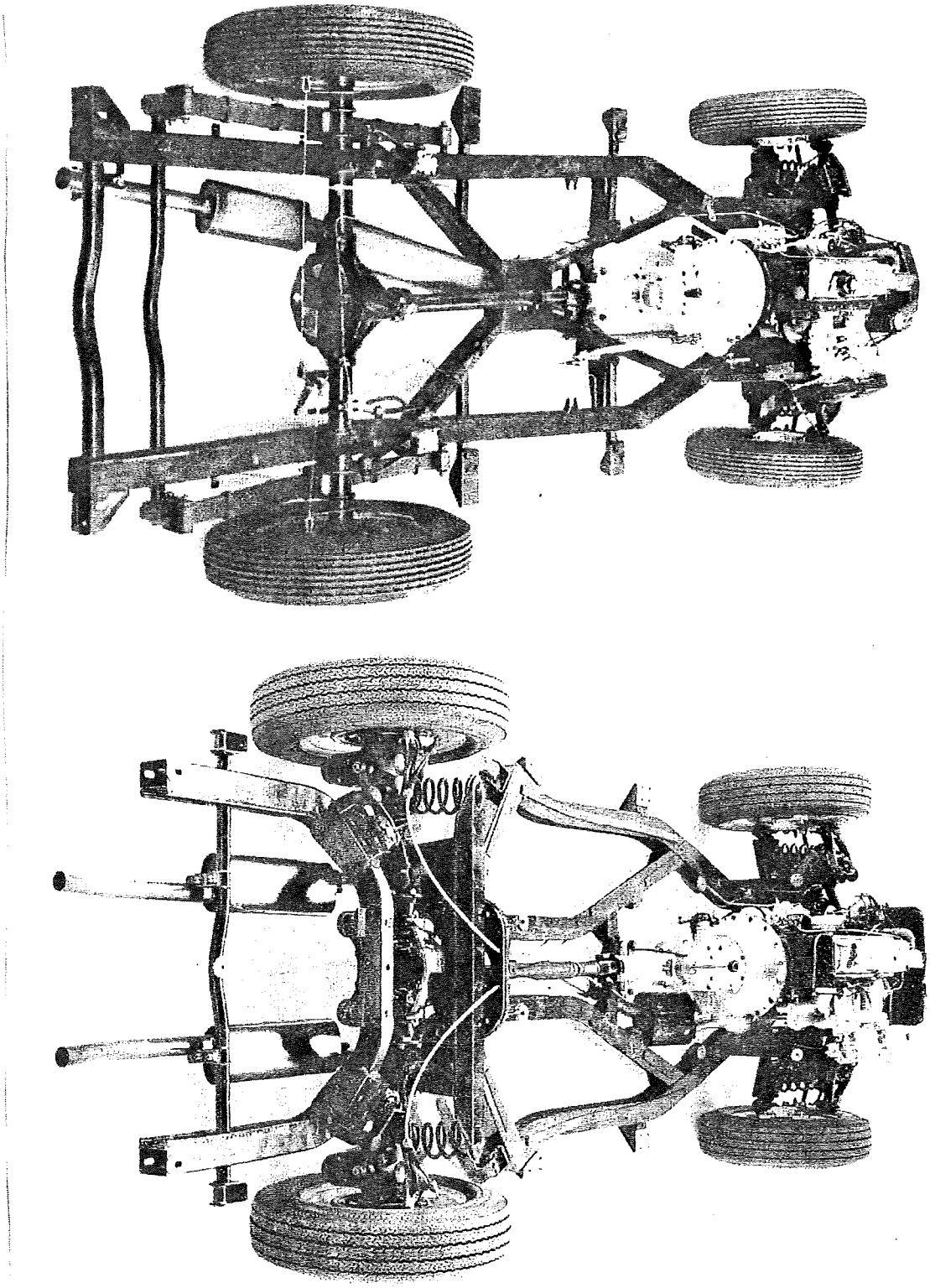


Figure CH-14: Comparison Between TR4 and TR4A Chassis

TR4

The rear suspension of the early TR4 was essentially unchanged from the TR3. The only change to the leaf spring/axle over frame configuration was in the spring rate, which cannot be seen by looking at it! An exploded view of the left side of the rear suspension is below in Figure CH-15.

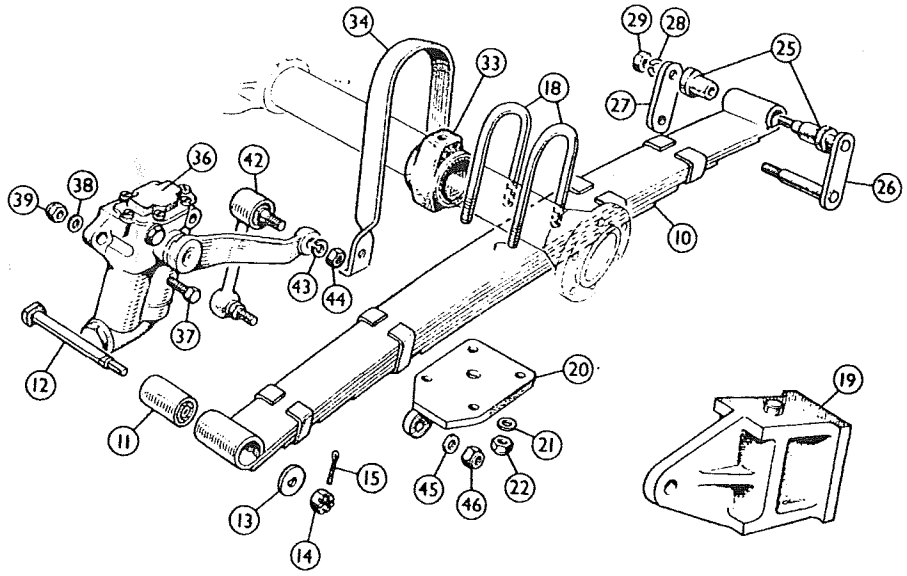


Figure CH-15: Exploded View Of Left Side Of TR4 Rear Suspension

The distance piece (#19) was added at CT23383 when the spring went to a deeper arc design. Since the shock link mount was built into this piece, the bottom plate (#20) changed to eliminate the mount from it.

Finish

The rear suspension was usually finished as thus:

- Leaf spring painted black. Some oil allowed on unit since this is called out for in maintenance instructions.
- Mounting hardware left natural.
- Distance piece natural cast aluminum.
- Shock left natural, shock link is painted black.
- Check strap painted black.

TR4A - IRS

The IRS rear suspension was a total change from the leaf spring configuration. Two figures are included here to show the configuration. The first figure, Figure CH-16, is a photograph of a TR4A show chassis. The way the

trailing arms were attached to the chassis, brake line and cable routing, shock configuration, and relative have shaft locations can be clearly seen.

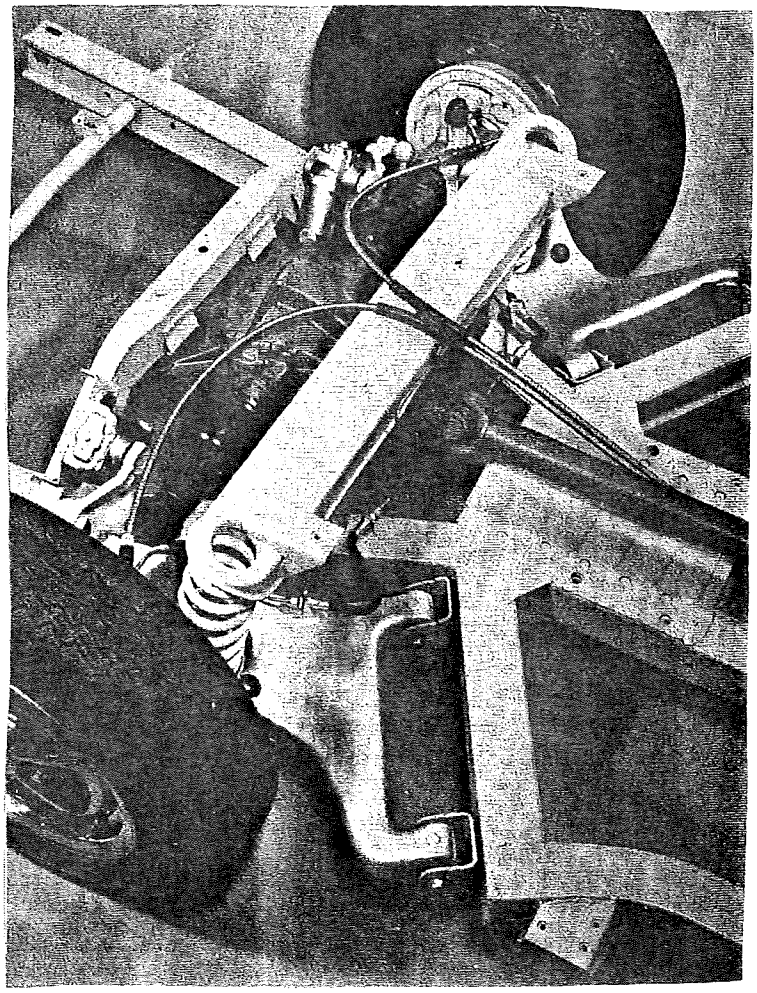


Figure CH-16: Picture Of TR4A Rear Suspension

Figure CH-17 is an exploded view of the rear suspension. This all looks familiar to the TR6 owners reading this, but it's quite a change from the TR3!

Items to Check

- The TR4A chassis is as prone to rust as the TR6 frame it preceded. Rust usually is worse where the trailing arms bolt to the frame, especially on the outer portion where the body mount is at. Check for rust and/or bad repairs in this area.
- The frame is prone to cracking where the springs fit in to it.

- Conical rubber bumps attached to the trailing arm (bumps against flat spot on shock arm) must be present.

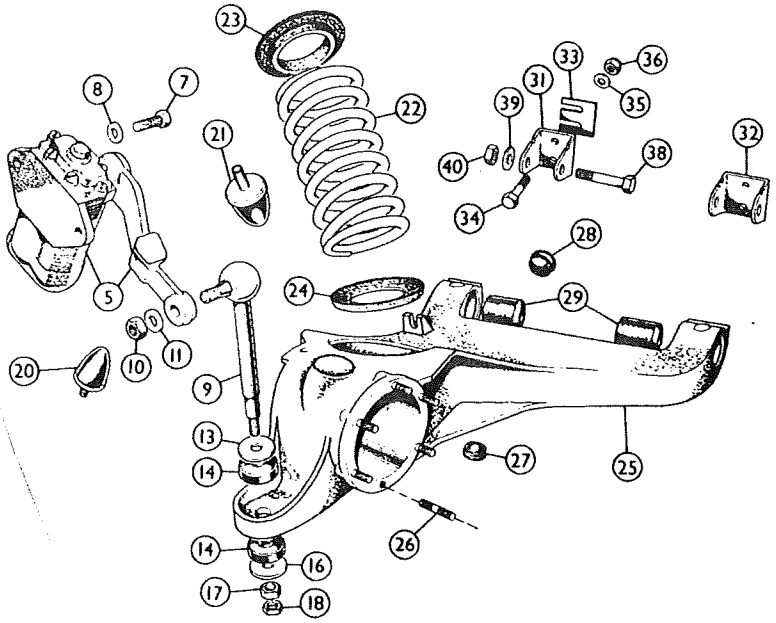


Figure CH-17: Exploded View Of TR4A Rear Suspension

Finish

The finish of the TR4A rear suspension was similar to the TR4. The one huge difference is that the trailing arms are left natural cast aluminum.

- Coil spring painted black.
- Mounting hardware left natural.
- Shock left natural, shock link is painted black.

TR4A - Solid Axle

American dealers were lukewarm about the IRS unit and concerned about the additional price, so Triumph produced a solid axle TR4A variant using TR4 suspension parts which fit on the TR4A chassis. Figure CH-18 is a picture of that arrangement. The chassis was slightly modified to do this. The overhead support for the coil springs was removed and a rear leaf spring mount was welded on. Note that solid-axle cars had a "CT" commission number, while the IRS cars carried "CTC". It is estimated that about 25% of TR4A production was solid-axle.

Figure CH-19 is an exploded view of the left rear suspension pieces. The Triumph engineers were very ingenious on the reuse of TR4 components and their fitting to the TR4A chassis. No axle check strap was required; however, a rubber bump stop had to be added above the pinion housing.

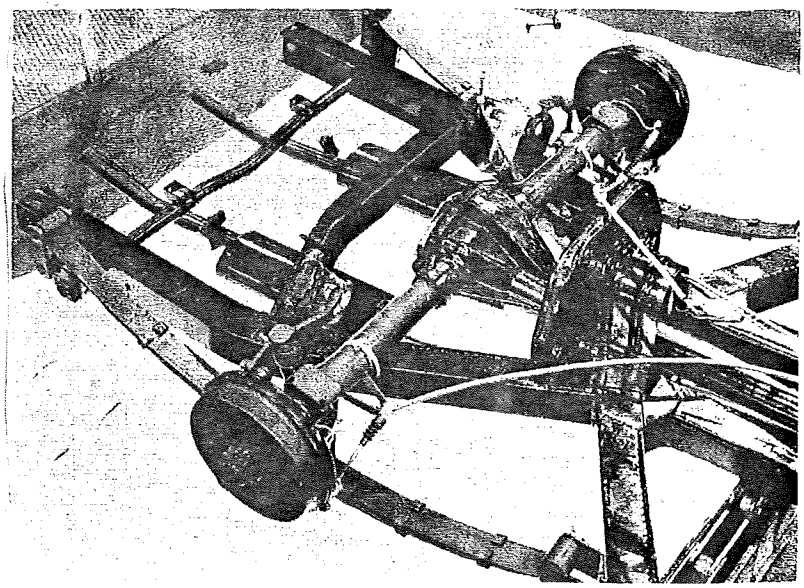


Figure CH-18: Photograph Of Solid-Axle TR4A Rear Suspension

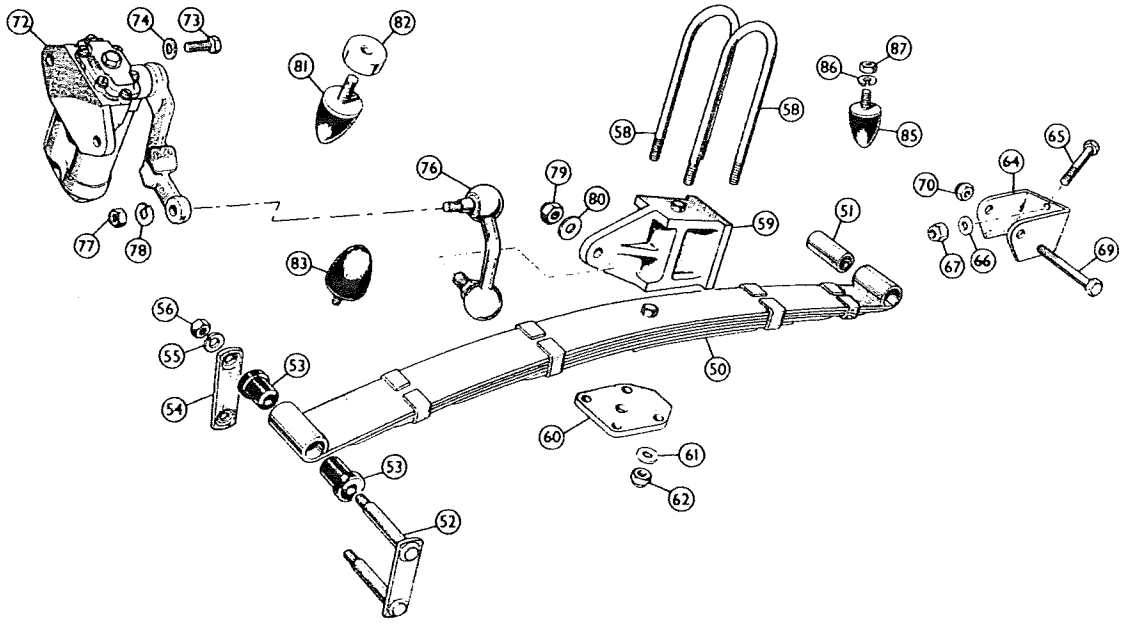


Figure CH-19: Exploded View Of TR4A Solid-Axle Rear Suspension

Finish

Again, similar to the TR4 and TR4A:

- Leaf spring painted black. Some oil allowed on unit since this is called out for in maintenance instructions.
- Mounting hardware left natural.
- Distance piece natural cast aluminum.
- Shock left natural, shock link is painted black.

Rear Axle Assembly

Two rear axle assemblies were used during the TR4/TR4A production run. The solid axle was used for the TR4 and TR4A solid-axle version. The IRS was in the TR4A IRS (stating the obvious). The solid axle was essentially the TR3 axle with lengthened axle shafts. TR3 axles will not fit a TR4. Good views of this axle are in Figures CH-14 and CH-18.

The IRS unit shared the same crown and pinion gears, but attached to the frame via four rubber mounts. Half shafts with two U-joints each went to the outer bearings built into the trailing arms. Plastic dust covers protected half shaft U-joints. The input flange was identical with the earlier units. The IRS axle assembly can be seen in Figure CH-16.

Some of the items judges should be looking for during concours are:

TR4

- Steel clips holding the brake hydraulic lines to the axle. These flat metal bands fit into a "cotter pin" looking clip and were wound up to tighten the band. Two were used, mounted inboard of the frame rails on the axle housing.
- Rubber bumpers attached to the axle housing above the frame rails to allow the axle to hit the frame without damage. These were secured to the axle housing with twisted wire, a flat side down towards the frame. These can be missing from rebuilds, or in sad shape from years pressing against the frame rails.
- Check for oil leaks from pinion seal and axle shaft seals.
- Check for excess grease at outer axle housing bearing grease nipple (under axle housing close to wheel)

TR4A IRS

- Ensure rubber mounts for differential are in good shape. These are subject to deterioration.
- Ensure half shaft dust covers are in good shape.
- Check for minimal amount of spare grease around U-joints.
- Check for differential oil leaks.
- Ensure rubber gaiters around half shafts are in good shape. They are secured by twisted wire clips on each side.

TR4A Solid-Axle

- No rubber bump stops are on the TR4A Solid-axle.

- The two steel pipe clips on the TR4 axle were retained.
- Flat steel pieces were attached to the top of the axle housing near the wheels. Unsure of their purpose since the body stops were provided in the shock absorber arm.
- Parking brake cables attached to brackets attached to the axle housing inboard of the wheels.
- Check for oil leaks from pinion and ends of axle shafts.
- Check for excess grease at outer axle housing bearing grease nipple (under axle housing close to wheel)

Finish

Although the rear axles differed during the TR4/4A production run, the finish was similar:

- Differential housings, axle housings, and half shafts were painted black. Hardware attaching axle housings to outer hubs and brake inner plates should be painted black also.
- Filler, and drain plug should be left natural pipe steel, black oxide finish.
- Hose clips are natural clear cad coated.
- Breather should be left natural steel.
- Rubber should be natural, wire clips unpainted steel, clear cad coated.
- U-Joints left natural steel.
- Other hardware was left natural.

Interesting Observation: differential cover inspection has uncovered different color dots painted on them. These probably signified the axle ratio as this changed depending on if an overdrive was fitted. The green dot we believe is the 3.7:1 ratio. This will be researched further for the next judging guideline edition.

Propeller Shaft and Transmission

Chassis Variations Summary

TR4	CT1	Overdrive Model 22/61374
TR4/4A Live Axle	Late October 1964	Overdrive Model 22/61712
TR4A IRS	All	Overdrive Model 22/61753

As one can see, not a whole lot of changes occurred to the transmission and drive shaft during the production run.

Transmission

The TR4 transmission is not simply an improved TR3 transmission, it changed in a few ways that makes it noticeably different from the earlier TR units.

- The addition of a synchronized first gear added a bump to the left side to house the synchros.
- To accommodate the added synchros the unit was longer than earlier transmissions.
- Ribs were added to the bell housing for increased strength.

When checking the transmission, first look for the first gear synchro housing. If that is not present then an earlier unit is fitted. Later (TR250, TR6) transmissions fit, but one must look at the top of the transmission (for reverse lamp switches), or the serial number to tell them apart. Even having a reverse lamp switch is not always indicative of later transmission since a reverse lamp option was available (see Accessories). The serial number is the best way to identify the transmission, but it is hard to see while the car is on the ground. TR4/4A transmissions carry the number on the top of a boss on the left-hand side of the transmission (see Figure UH-1).

When inspecting the transmission area, look for oil from the engine, and insure that the rear transmission mount is in good shape. This is exposed to heat and engine fluids and tends to degrade over the years.

Finish

A general under-car view of the transmission (non-OD) is in Figure CH-20 which shows the finish of the unit.

- Housing was made of cast aluminum, left natural.
- Filler and drain plugs are pipe steel, black oxide or clear cad coated.
- Clutch input shaft and arm were left natural.
- Grease fittings were clear cad coated

Overdrive

TR4 and TR4A could be purchased with optional overdrive unit which attached to the back of the transmission. The unit was made by Laycock-De-Normanville, and was operated by a remote electric switch mounted to the steering column (switch location and type are covered in the Interior Section). Cars with L commission numbers may be refitted with overdrive units; cars with LO commission numbers should be equipped with overdrive units.

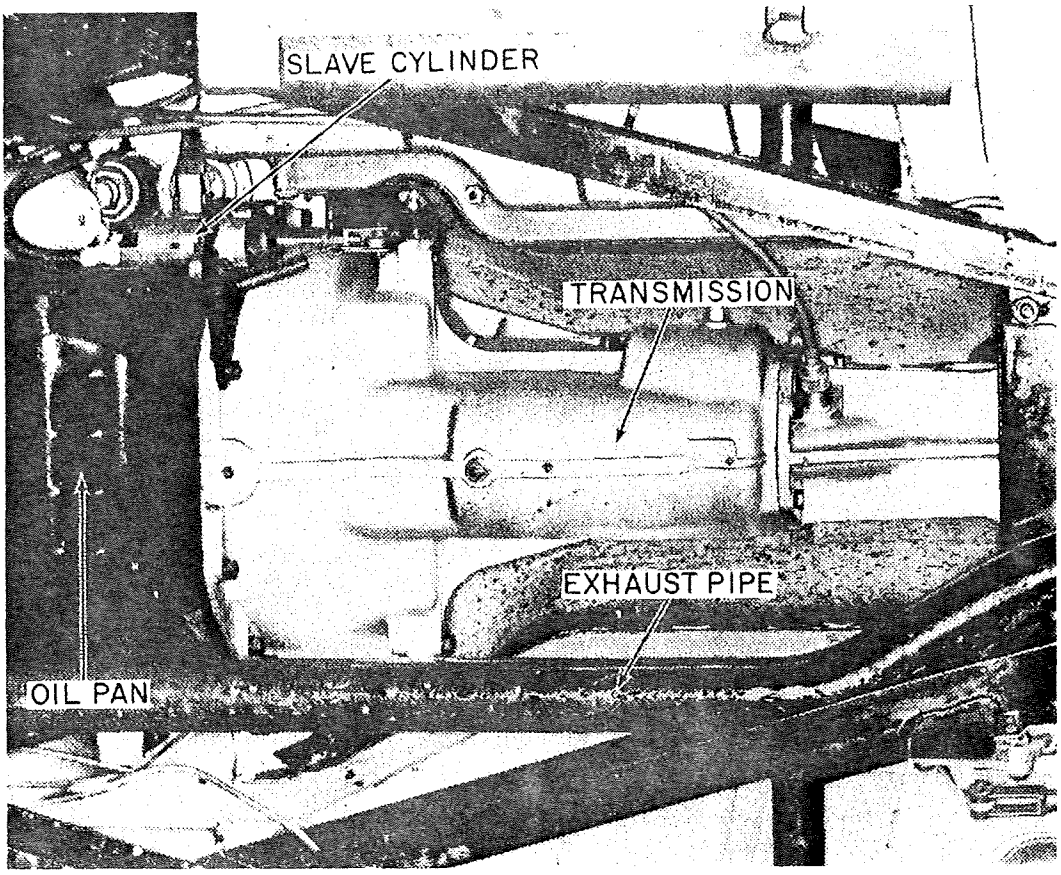


Figure CH-20: View Of Bottom Of Transmission In A TR4

Finish

Overdrive units should be natural. The case, transmission mounting plate, and rear extension are cast aluminum. The brake ring is black oxide steel. All hardware is left natural. The solenoid has a clear cad body with rubber cap. The solenoid plunger should have a rubber dust excluder on it.

Propellor Shaft

The propellor shaft did not change from the TR3, and did not change during the TR4/4a production run. It has a flexible yoke using a U-joint at each end. The sleeved yoke end of the propellor shaft should be mounted forward, on the transmission end.

Finish

The propellor shaft was painted black. Universal joints are natural.

Road Wheels

Chassis Variations Summary

TR4	Late in production run	Hubcap medallion changed from cloisonné to painted
TR4	March 1963	Steel Wheels painted Spa White

Three types of wheels were used on the TR4 and TR4A, steel, wire and alloys. Figure CH-21 shows the wire and steel wheels.

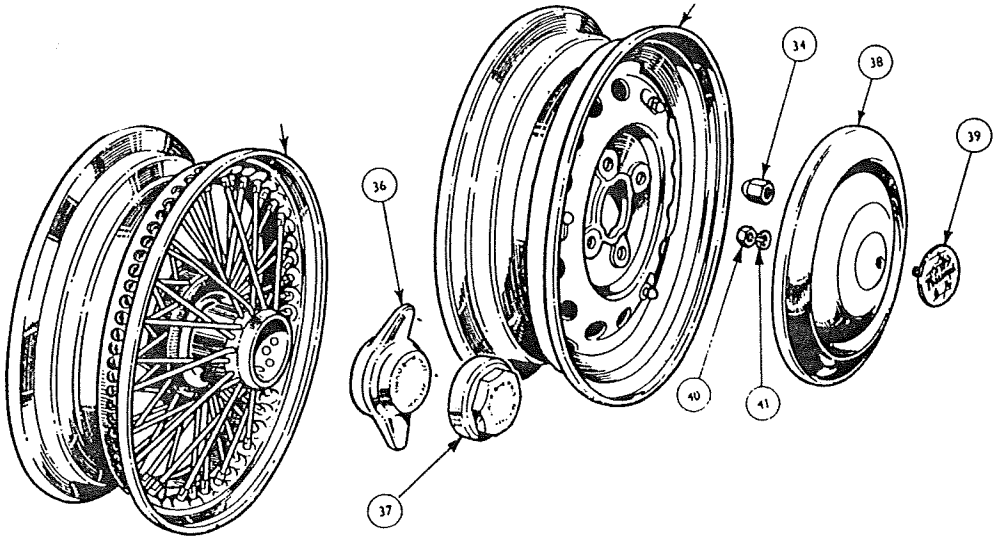


Figure CH-21: Steel And Wire Wheels Used On TR4/4A Cars

Steel Wheels

The stock wheels were pressed steel with hubcaps. The wheels were identical to later TR3 wheels, with a 4.5" width and 15" diameter. The hubcaps were similar to TR3 hubcaps, simple discs with a medallion in the center, but an economic change was made late in the TR4 production where the cloisonné medallions were replaced with cheaper painted ones.

Finish

The wheels were painted a "warm" silver on early TR4s. This was changed to Spa White in March 1963. Hubcaps were chromed. A center medallion on the hubcaps displayed the Triumph "World" logo in color. As is stated above, this chromed medallion changed from cloisonné to painted late in the TR4 series.

Wire Wheels

Wire wheels were a factory option for both the TR4 and TR4A. These wheels, made by Dunlop, were available painted or chromed in either 48 or 60 spoke models. The wire wheels rode on splined hubs bolted to the car's hubs. The wheels were held on by "eared" knockoffs on early cars, octagon ones on later cars. TR4s should have eared knockoffs, TR4As can have either style. Over the years many steel wheel cars have been converted to wires. Some things to look for when judging wheels:

- Check the integrity of the wheels. Look for missing or bent spokes. Treat missing spokes as major deviations and warn the owner that spokes are missing. This is a safety concern.
- Check for wheel to be on the proper side. The wheels have left and right side models (left wheels should be on driver's side for LHD models). Treat wheels on wrong side as a major deviation and warn owner. This is a safety concern.

Finish

Wire wheels came either painted or chromed. The paint used was either a Lacquer finish (warm silver) , or "aluminium". Chrome wheels were either "bright" or "dull" chrome. The chrome wheels can either be all chrome, or have a chromed rim with stainless wires. Do not deduct for stainless wires since that is done to increase the structural integrity of the wheel, i.e., an allowed safety modification. Knockoffs are bright chromed and should exhibit minimal damage from being removed and tightened (the owner should use a rawhide hammer or knockoff wrench to minimize damage).

Alloy Wheels

Alloy wheels were not provided by the dealer, but were an aftermarket item. As such the owner would have to prove the vintage of the wheels for concours showing. The one exception would be the American Racing "mini-lite" wheels used in the 1960's on TR4/4As. These were very popular for use on the Triumphs, and were only made for a few years. Figure CH-21 shows these wheels on a TR4 prepared to race (and win!). These had a center hub which looked like a knock-off, eared for early wheels, octagon for late, but it was strictly for show. These were removed for racing in the photo.

Finish

Early wheels, such as would be found on the TR4, would have the rims natural, the center and spokes painted charcoal gray. Later units, as would be found on later TR4As had the center and spokes painted a lighter gray. The fake knockoffs should be bright chromed.

Tires

The tires fitted to the earliest TR4s were Michelin "X" series radials, and 590 series bias-ply Dunlops. Later cars were offered only with radial tires. Bias ply tires are acceptable on later cars since they were aftermarket period options. Both blackwall and whitewall styles were offered. As tires are consumables and older tires are a safety hazard, judges should accept tires that are comparable replacements to the originals (for example, a wide ply tire would not be comparable to a Dunlop 590 but a similar sized radial from a Michelin competitor would be comparable). The acceptable ranges are:

- Radials - width: 155 to 165, diameter: 15
- Bias plies - width: 590 to 650, diameter: 15

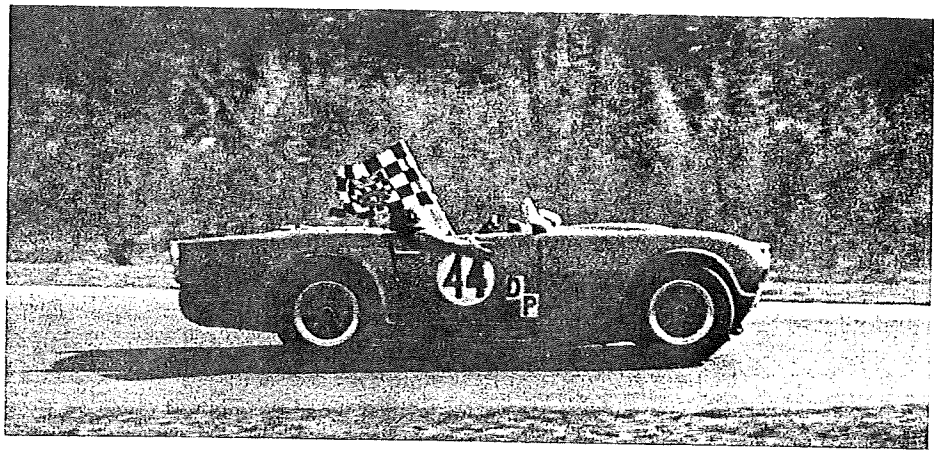


Figure CH-22: TR4 Race Car Showing American Racing Alloy Wheels

One last note. The type of spare tire matched the fitted tires for wires and steel wheels. Insure that this matches when judging. If not, treat as incorrect component.

Wheel Arches and Underbody Paneling

Chassis Frame Variations Summary

No recorded changes during production run.

This section covers the components in the wheel arches and the underbody paneling (floors).

Wheel Arches

When checking the arches, insure that the baffle plates (bulkhead sealer plates) are present with the rubber strip on the end which seals against the fender. Check for the presence of the sill sealing plates on the end of the rocker panels.

Finish

TR4/4A wheel arches were painted body color. This includes the bulkhead sealer plates and rubber seals. This was not the world's greatest paint job, runs and other imperfections are to be expected. No other components in the wheel arches should exhibit body color overspray since they were attached after painting. In addition, a thin spray of Waxoyl or other similar types of rustproofing has been found running along the underside seam between the fenders and inner wheel arch sections of the main body tub. Make no deductions for the presence or absence of this material.

Undercoating (black tar/asphalt substance) hides details and is subject to a major deviation unless the owner can produce documentation showing it was done by the dealer which originally sold the car. The same argument goes for other types of rustproofing not covered above.

Underbody Panels

These are the bottoms of the floors and trunk. These panels have corrugations in them for added stiffness. Jacking holes have rubber plugs in them, as well as holes toward the outside of the footwells and other places.

Check for:

- Missing captive nuts holding the body to the chassis, and seats to the floor.
- Rubber grommet in body hole for gas tank vent. The gas tank vent line should pass through a clip on the frame.
- Oil and grime. A small amount is to be expected. Large amounts indicate lack of care.
- Rubber plug on the bottom rear of the trunk.
- Jagged/non-round holes (except for the handbrake hole) which could be present due to modifications (such as roll bars.

- Rubber plug in the forward outside of the foot wells.
- TR4As have rubber bump stops for the rear suspension attached to the panels above the rear shocks.

Finish

The panels themselves should be painted body color. The finish on the paint may contain runs and other errors since the same care as painting the top body panels was not taken. The hardware was unpainted as well as the rubber plugs, stops, and grommets.

Factory Accessories

Accessories

The se are the only factory accessories listed for the TR4/4A Chassis:

- Anti-Roll Bar. This bar is shown in Figure CH-23. The bar is black with natural hardware. This bar is only listed for the TR4.
- Overdrive Transmission.

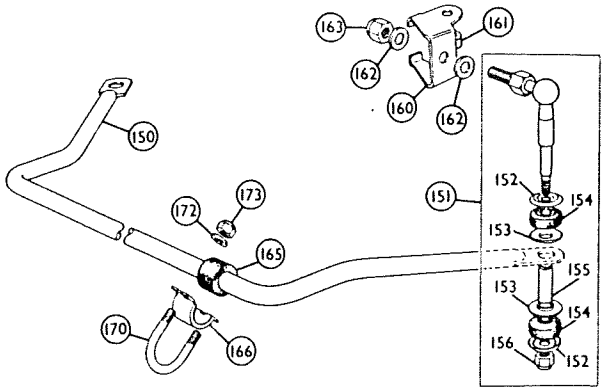


Figure CH-23: Optional TR4 Front Anti-Roll Bar

- Reverse Lamp Kit

A number of high speed and handling accessories were available to the TR enthusiast when the cars were new, both from the factory and from a host of aftermarket suppliers. Make no deductions for the presence of these items, as long as they are consistent with the period of the cars' manufacture. If there is a question, the owner must provide proof of period availability. Some of these items include: Mag Wheels, Rim embellishers (trim rings), and Skid-plates.

Hardware

The manufacturers of the various nuts and bolts that were used on the TRs were many and some of the finishes no doubt varied. A general rule on undercarriage hardware is that bolts and setscrews were most often finished in black oxide industrial finish, not the gold cadmium used later in the late 1960s. Some castle nuts and standard pattern nuts may have been black also. Nyloc nuts were usually finished bright. Judges are not to make deductions for consistency, as consistency didn't always exist. Neatness and safety take precedence on this one.

TR4 Exterior

Table of Contents.

Exterior Judging

Scope. Exterior judging covers the car body panels, windshield, lights, bumpers, and other objects mounted on the car exterior. Judging is based on:

Quality of Restoration -- The condition of the various components.

Originality -- The components presented match those specified for the model and commission number.

Scoring. In general, points are earned for quality and points are deducted for originality deviations. Scoring is recorded on the Exterior Scoresheet. In addition, a supplemental scoresheet, Exterior Scoring, Bodywork and Paint Worksheet, is provided for the evaluation of the quality of bodywork and paint. Both sheets will be returned to the Official Scorer.

Exterior Scoresheet -- has two sections:

*Body Sections: The cars are divided up into five exterior sections of which each is scored in four categories: Bodywork, Paint, Alignment and Mountings. Each area is judged for quality. Quality points are earned (subtotal obtained from the worksheet) by section and subtotaled. Scoring considerations are described in the Bodywork, Alignment, and Mountings-Judging Quality of Restoration section (EX-7) and the Paint-Judging Quality of Restoration section (EX-9)

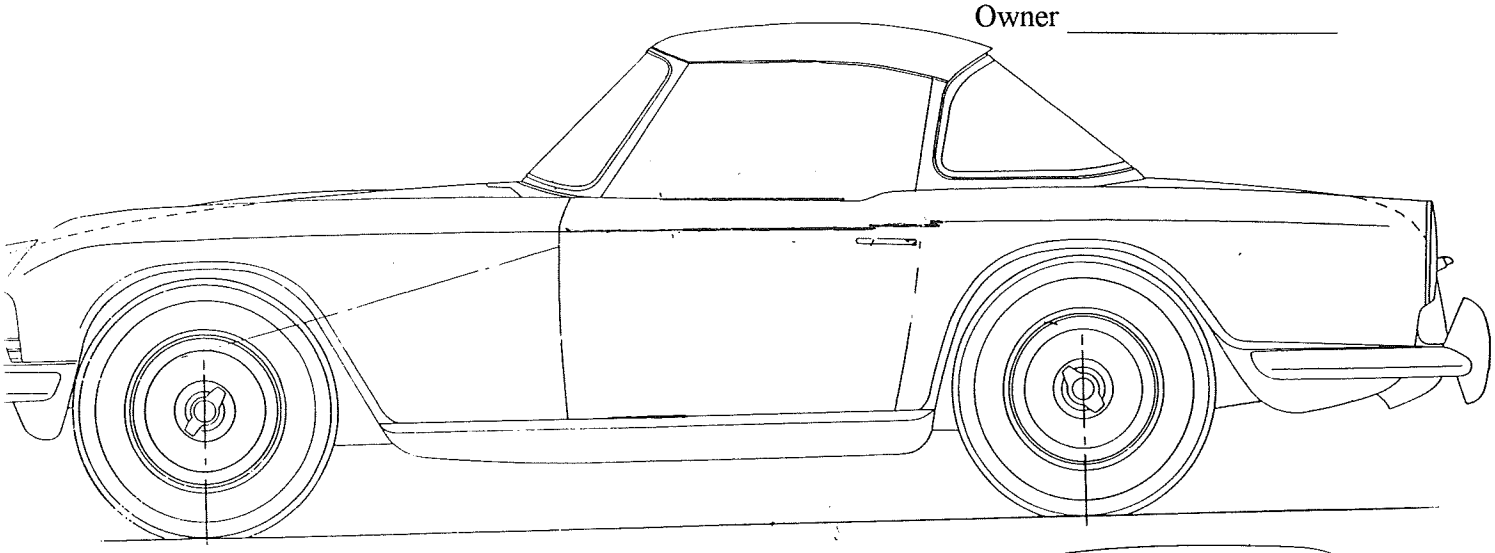
* Originality: Deductions are made for originality deviations. Originality judging reference material is provided for each major area of the exterior including variations in the models. The Exterior Scoresheet describes the various deductions for deviations from originality.

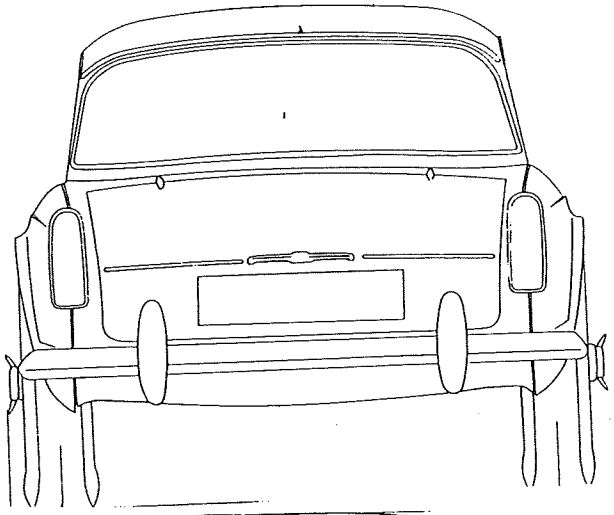
Exterior Scoring, Bodywork, Alignment and Paint Worksheet -- This worksheet includes a diagram of the sheet metal and a scoring table. The judges will annotate flaws observed on the diagram for their own use and and for the owners reference. They will convert the observations into scores for individual panel types. Scores per panel are broken into three categories: Bodywork, Paint, and Mountings. Mountings include items that are "mounted" on the panels, like door handle and trunk securing mechanisms. The maximum points that can be given in a category and across a panel are included in the table. General bodywork and paint evaluation guidelines are provided in supplemental material. Included in the support material is a Body Panel Evaluation Guide which lists particular areas to be checked on each panel.

Car Inspection Requirements. Quality of restoration must be judged with the Trunk and Hood in the closed position.

Exterior Scoring:Bodywork and Paint Worksheet

Entry # _____
Owner _____

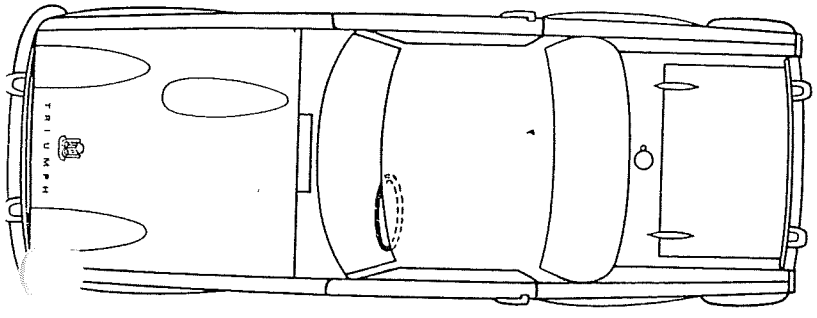


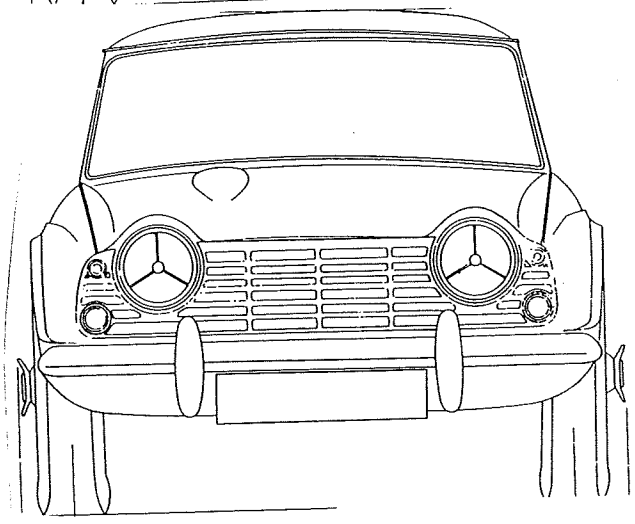


Annotations:

X	Bodywork flaw
VVV	Paint flaw
//	Alignment flaw

Major flaws circled.





Bodywork, Alignment and Mountings - Judging Quality of Restoration

Scope. Bodywork, Alignment and Mountings inspection should concentrate on the condition of each component and should not include consideration of the surface paint condition. Rust or damage affecting bodywork, alignment, mounting and paint condition may be considered in both bodywork and paint quality. Originality Deductions should not affect point earnings here.

Multi-Component Scoring: Point allocations should be distributed evenly between the individual components and each component judged independently. For example, if three of four fenders are in excellent shape and the fourth is in poor shape, the three good fenders should earn 3/4ths of the allocation .

Inspection --

The inspection should include but is not limited to the following areas:

Presentation.....	Flaws.....
Contours	* Waves due to sandblasting, collision * Bulges due to collision or misalignment. * Body filler does not restore original surface contour resulting in high, low or bumpy areas.
Fine work	* Edges of repair are not feathered, softened adequately. * Sanding marks showing thru paint.

Attention to Detail	* Repairs not performed: dents, dings, or rust have not been repaired.
Fine Trim	*Chrome work shiny with no pits, scratches or corrosion *Gasket and rubber, smooth, no cracks or abrasions
Alignment	* Panel lines out of alignment with tub or other panels.

Caution: Avoid reducing score on two different components for alignment problems: eg., don't reduce fender and hood scores if fender-hood alignment is not uniform. The Body Panel Evaluation Guide section attempts to organize evaluation items of this sort so that this will not be a problem.

Body Panel Evaluation Guidelines (EX-12) should be used as a guideline for identifying what to look for and at in each section and as general guide describing the location and description of various components.

Paint - Judging Quality of Restoration

Scope. Paint inspection should concentrate on the condition of surface paint and should not include consideration of the underlying bodywork. Rust or damage affecting panel condition and paint condition may be considered in both bodywork and paint quality. Evaluation is to be based on paint presented, by panel; Originality Deductions should not affect point earnings here.

Multi-panel Scoring. In the case of fenders, and other multi-panel categories, point allocations should be distributed evenly between the individual panels and each panel judged independently. For example, if three of four fenders are in excellent shape and the fourth is in poor shape, the three good fenders should earn 3/4ths of the allocation .

Inspection --

The inspection should include but is not limited to the following areas:

Presentation.....	Flaws.....
Smoothness	* Rough from overspray, dry paint, checking, dirt, cracking.
Even application	* Runs, sags, visible touch-up layers or spot rings.
Color consistency	* Light spots to uneven application, blending problems, moisture control.
Clarity	* Orange peel, fish-eyes, water spots.
Luster	* Hazy, dull areas due to application or lack of necessary post-paint rub-out.
Wear	* Chips or scratches.

Reference Body Panel Evaluation Guidelines (pg EX-12) which lists by panel specific areas that should be checked.

Body Panel Evaluation Guidelines
Quality of Restoration

Scope: The following is provided to assist Body Panel, Quality of Restoration, judging. Originality judging is not included. This information supplements panel evaluation described in the sections: Bodywork - Judging Quality of Restoration and Paint - Judging Quality of Restoration.

Doors and Rockers

- Bodywork: Visible transition from rocker panels to front and rear fenders.
- Alignment: Uniform Gap between doors, fenders, rockers and scuttle. Door skin flush with rockers and scuttle.
- Mountings: Door handles on both the TR4 and TR4A are chrome with a hand grip and a thumb press opener toward the rear. The key hole is integrated into the thumb press. Handle should have a black gasket between the chrome handle and the door skin. The latch and closure assembly has a metal clasp near the top of the "B" post which mates to a flange on the rear end of the door. The latching mechanism on the "B" post consists of metal and plastic and mates with a sprocket and hexagonal or round nut mounted on the door. On the "A" post, a metal strap prohibits the door from swinging outward to far. Two metal hinges mount the door to the car body. The TR4 and TR4A came equipped with roll up windows. The windows had a black rubber seal along the door on the out and a stainless and felt seal on the inside. The TR4A has a stainless strip running horizontally along the door skin ridge to above the door handle. Two or three tonneau cover snaps (stainless metal) can be along the upper edge of the door skin for both models. Surrey top cars should not have these snaps. Side view mirrors can be mounted on the driver's door or both doors. Mirrors should be chromed and period (arm with round mirror, arm with trapezoidal mirror or bullet style). There should <u>not</u> be a stainless strip along the rocker panel.

Fenders

- Bodywork: Fender is straight and not bowed out. Shape should match up with the connecting pieces in the wheel well.
- Alignment: Scuttle and rockers match up evenly. Fender beading straight with no nicks or bends from front to back
- Mountings: Correct tail lights with good pit free chrome. TR4A has chrome repeater on front fender with clear plastic light forward and orange plastic lens on the side. Behind this repeater is a stainless strip which goes the length of the front fender. Both should be firmly attached with no gaps between the strip and the fender. The drivers side front fender or both fenders can have a side view mirror. Front fenders attached with three body color bolts at the bottom of the fenders behind the wheel wells. A narrow drain slot should be located along the seam with the inner fender.

Trunk and Rear Scuttle

- Bodywork: Look for bad repairs along the beading and seams. Check the trunk lid for fit especially along the seal (corners of trunk often bend up slightly). Rear apron should be checked for poor repairs, scrapes and bends.

- Alignment: Uniform gap between the scuttle, fenders and apron. Surfaces must be flush. There should be a uniform gap around the trunk lid.
- Mountings: Check the condition of the gas cap, luggage rack (must be period) and trunk hinges. The trunk lid should have TRIUMPH in evenly spaced letters across the rear above the license plate. TR4 or TR4A lettering should be on the right lower rear of the trunk lid. Very early TR4's may not have script lettering. Independent rear suspension TR4A's should have IRS lettering centered below the script TR4A. A chrome wrap around bumper is below the trunk hatch. Two chrome overriders are centered on the back bumper. Both overriders have integral license plate illumination lamps which point inward toward the license plate. Black brackets hold the overriders on the bottom. Hinges on the trunk lid are chromed and visible. Trunk lid handle is chromed and has integral key hole in center. Handle should be horizontal when closed. The license plate is centered on the rear of the trunk lid and the attaching bracket is body color. The rear deck lid capping attaches to the scuttle by rivets. Early cars were plated brass and later cars were aluminum. This was removed on the TR4A.

Hood, Front Scuttle and Grill

- Bodywork: Hood should be smooth with hood bulge on the right side. Latch mechanism should include a hand operated hook (on early cars) and spring loaded latch opened by a pull switch in the passenger compartment. Front Apron; Check for poor repairs, scrapes and dents. Apron should be body color on both sides. Prop rod should be black. Hood supports should be body color.
- Alignment: Uniform gap between the fenders, apron and scuttle. Surfaces should be flush. Hood should open and close without rubbing.
- Mountings: Air vent should be flush when closed and open and close easily with spring attached properly. A rubber gasket should seal the air vent. TRIUMPH lettering should be across the front of the hood. Triumph badge should be in the front, center of the hood. Blue and White "open book style" badge should be on the TR4 and the Triumph World badge should be on the TR4A. If a car has a radio, the antenna should be mounted on the right side of the front scuttle for a left hand drive car. Window washers should be usable and have proper nozzles. The bumper is wrap around chrome plated with two chromed overriders and license plate mounting holes. The TR4 has large overriders which are mounted inside the head lamps. Each has a black painted brace which goes through the grill and connects to the body. The TR4A has smaller overriders which are mounted outside the head lamps. These have no connection to the body. The bumper is connected to the frame by two black brackets which connect by bolts to the backside of bumper. The TR4 has a stamped aluminum grill with a crank hole. The TR4A has a grill with horizontal polished aluminum bars and a crank hole. Both grills should be polished, straight, and scratch free. Head lamps should have snap on chromed rims around them. Early cars had a wide rim and later cars had a narrow rim. Early TR4's had separate bulb "tripod style" head lamps. Later TR4's and all TR4A's had sealed beams. The TR4 has a small Lucas Style 658 sidelight in the top corner of the grill. The sidelight moved to the fender in the TR4A's. Both models have a flasher light on the bottom outside of the grill.

Windscreen

- Bodywork: The frame should have a smooth finish and be the same color as the car.
- Alignment: The Frame should be aligned with the car. The rubber molding around the windshield should be centered and uniform.
- Mountings: Aluminum or chrome capping should be polished with no bends or scratches. Non surrey top cars should have two rubber plugs in the holes provided for the surrey top connection. Capping should be riveted to the length of the windscreen. TR4 Capping has two snaps for the convertible top. The TR4A does not. Windshield wipers should be period with the left wiper arm being cocked to miss the air intake. The seam between the scuttle and wind screen is sealed with a black rubber seal. The Rubber molding around the windshield should be black and crack free. A silver trim piece is inset in the molding. Early TR4's had a two piece aluminum trim with joints centered at the top and bottom with stainless clips covering the joint. Later TR4's and all TR4A's had a one piece plastic trim with a silver foil cover. The joint was centered at the bottom and has a stainless clip covering it. Surrey tops were an option on both models. They came in black or white interior and black, white or body color exterior. The rear is one piece aluminum with a wrap around window. Each could have a soft or hard top. The early TR4 surrey hard tops were aluminum and later ones were steel. All TR4A tops were steel.

Originality Judging -- Exterior

The following pages describe originality features of panels and components for all models. Most variations in TR4 and TR4A are due to model feature changes. These are usually well known and easily identified. Several variations, however, occur within the two individual models. These are less well known, and in some cases the breakpoint at which a feature changes may not be exact.

As in other sections, judges and restorers alike should recognize that even the most well documented changes are subject to a significant margin of error due to the mass production processes used in TR assembly. Reference information should not be considered the absolute "gospel". In the Originality Judging sections that follow you will find notes that will give guidelines for judging variations in the model lines and how to assess the originality of cars near a breakpoint as necessary. Unless otherwise extended for specific components, a margin of error of 200 engine or commission numbers should be used throughout. The head judge should be consulted if you are uncertain of how to judge a particular car.

The following table summarizes commission numbers by model and variations within models.

Model Variation Summary

TR4	**CT1 through CT40304**
TR4A	**CTC50001 through CTC78684***
	***Non-IRS cars continued to have the CT lable**

DOORS AND ROCKERS

Stainless Side Molding Strips	
CT1 through CT40304	None
CTC50001 through CTC78684	Strips added to door
Door and "A" Post	
CT1 through 22343CT	
22344 through CTC78684	Check strap mount strengthened
Door Checkstrap	
CT1 through 22343CT	Vertical strap bar attached to a pin on the door.
22344 through CTC78684	Horizontal bar like TR3

FENDERS

Stainless Side Molding Strips

CT1 through CT40304	None
CTC50001 through CTC78684	Strips added to front fender

Side repeater lamp

CT1 through CT40304	None
CTC50001 through CTC78684	Added to front fender

TRUNK LID AND REAR SCUTTLE

Rear deck

CTC50001 through CTC 78684	Change connection point for new convertible top.

Trunk Badging

CT1 through CT40304	Lettered TR4
CTC50001 through CTC78684	Lettered TR4A*

*Independent rear suspension TR4A had IRS badge also.

Rear Deck Lid Capping

CT1 through CT1845<X>CT3479	Chrome plated brass
CT1845<X>CT3479 through CT40304	Aluminum
CTC50001 through CTC78684	Removed

License Plate Lamps

CT6402 through CTC78684	Plinth removed between bumper and light rim

HOOD, FRONT SCUTTLE AND GRILL

Hood

CT1 through CT6429	Small "bulge" hood
CT6430 through 37689CT	Large "bulge" hood with flat area above locating pins
37689CT through CT40304	Conical locating pin receptacles
CT50001 through CT78684	Holes changed for different badge

Hood Latch

CT1 through CT1845<X>CT3479	Had Latch, After CT 3479 no latch pressent

Hood Badge

CT1 through CT40304	Blue and white "Open Book" style with TR4
CTC50001 through CTC78684	Round Triumph World badge

Front Bumper Overriders

CT1 through CT40304	Large chromed overriders with brace to wheel arch.
CTC50001 through CTC78684	Smaller overricers mounted outside the head lamps.

Headlamp Rims

CT1 through 24600CT	Wide Rim
24601CT through CTC78684	Narrow Rim

Front Repeaters

CT1 through CT40304	Small, clear light above turn signal
CTC50001 through CTC78684	Integrated on fender with side marker

Front Turn Signals

CT1 through 30348CT	Clear Glass
30349CT through CT unknown	Clear Plastic
CT unknown through CTC78684	Orange Plastic

Grill

CT1 through CT40304	Stamped aluminum
CTC50001 through Unknown	Aluminum Strips
Unknown through CTC78684	Aluminum Strips with sharper edges

WINDSCREEN

Windshield Capping

CT1 through CT1845<X>CT3479	Chrome plated brass
CT1845<X>CT3479 through CT40304	Aluminum with snaps for top
CTC50001 through CTC78684	Snaps removed

Surrey Top Plugs

CT1 through CT8010	Rubber plug
CT8010 through CTC78684	Plugs slightly modified

Windshield Seal Molding

CT1 through CT24516	Two piece metal
CT2424517 through CTC78684	One piece plastic

Interior

Scope

Interior judging consists of evaluating the quality and originality of the various interior components. Components earn points for quality of restoration or preservations, then deductions are made for originality deviations.

Quality of Restoration Inspection -

The inspection should include but is not limited to the following areas:

Presentation.....	Flaws.....
Installation	* Fitting of interior components lacking in neatness, components do not fit properly as designed.
	* Top (hood) does not fit properly.
	* Hardware missing or in poor condition (rust, pitting, or flaws in paint).
Appearance of Fabric	* Interior panels, seats, dash (fascia), carpets excessively worn, faded, torn or dirty, excessive stains.
	* Convertible top (hood) excessively worn, faded, stained, or windows excessively scratched or "yellowed".
	* Surrey top headlining material torn, stained, dirty, faded, or worn as above (when fitted).

Condition of Fittings and Sundry Parts	* Small fittings such as dash chrome, gauges, switches, cubbybox components, center instrument panel, grab bar, rearview mirror, etc., are dirty, pitted, scratched, broken, dented, etc. * Tools excessively dirty, rusty, tool roll (if fitted) severely stained or torn.

Caution: *You may not remove or disassemble components for inspection. Avoid touching the car or components if possible.*

General Evaluation and Scoring Guideline - The inspection should be done from the point of view that the cars have been (and should be) driven and that each and every component will not be of showroom quality. For example, leather upholstery will develop "character wrinkles" with use, and Top frames will show scratched paint with use. Better than showroom quality should not earn more or less points than a component in "like new" condition. For example, a polished sill edge finisher should not earn more or less than one that is dull. Extreme over restoration, however, may result in Originality deductions. For example, components that were not shipped chromed should not be chromed.

Interior Originality Guide

This guide is provided to serve as a reference material for TRA judges and restorers alike. Although the guidelines outlined below were compiled from factory reference materials, extensive research by Roadster Factory staff, and prolonged observation of the most original cars available, the very manner in which TR's were assembled makes any reference work on these cars subject to cars having commission numbers far ahead or behind those specified by the factory as "changeover" cars, and thus a relatively wide margin of error must be recognized when judging or restoring cars against those engineering changes.

As in other sections, judges and restorers alike should recognize that even the most well documented changes are subject to a significant margin of error due to the mass production processes used in TR assembly. Reference information should not be considered the absolute "gospel". Unless otherwise extended for specific components, a margin of error of 100 commission numbers should be used throughout.

For your convenience, the Originality Guide is organized in outline form according to the components listed in the Originality Deductions Guide. Engineering changes are noted in each sections.

As a general reference, several figures showing the TR4 and TR4A interiors are included here. The first Figure IN-1, shows a very early, possibly prototype, TR4 interior.

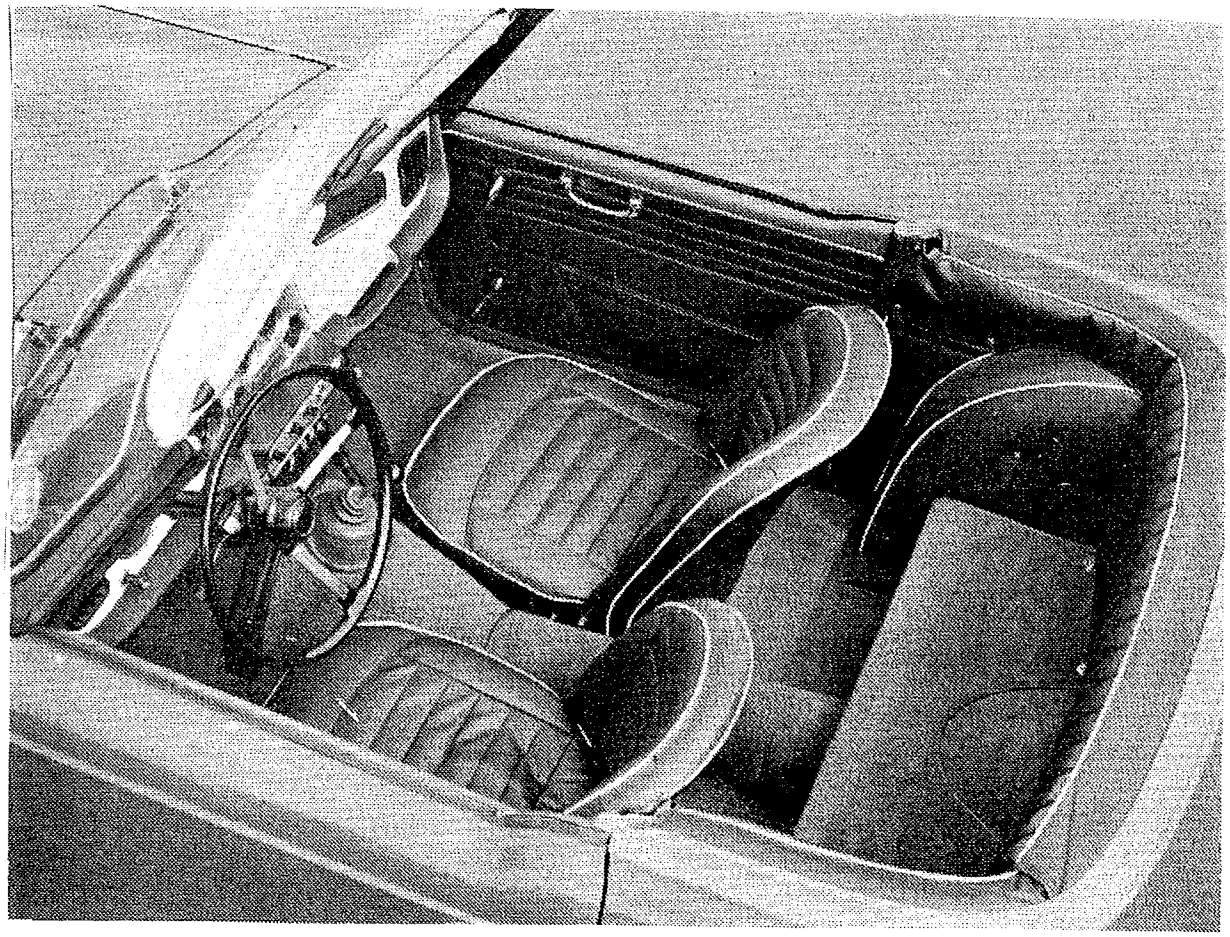


Figure IN-1: Early TR4 Interior

The next Figure IN-2, shows the same early car's dash. Note that the ashtray, heater/fan controls, and horn push are unique, and have not been found on any cars attending shows in North America.

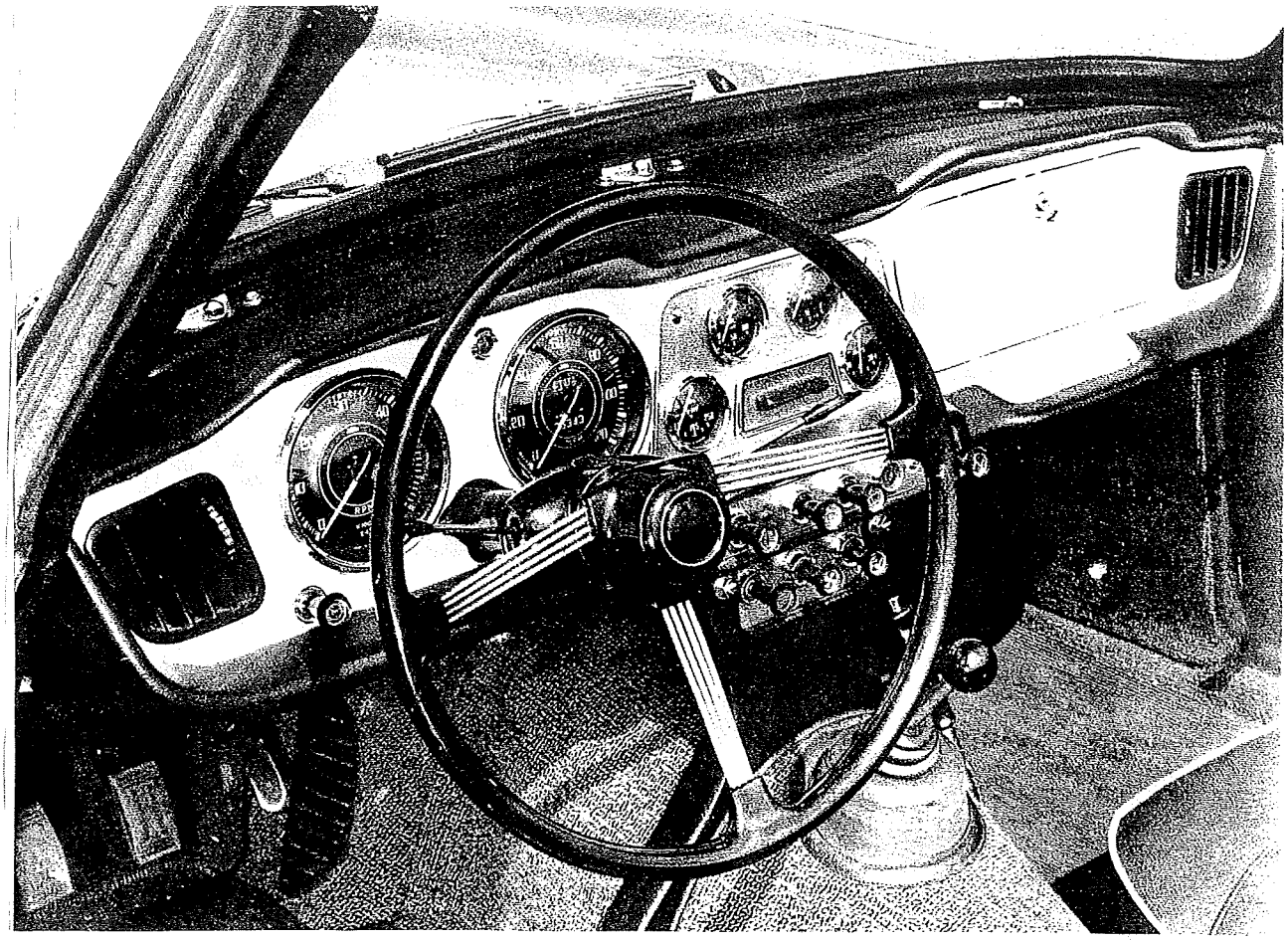


Figure IN-2: Early TR4 Dash

The last two figures in this introductory section for Interior shows the dash from a right-hand-drive post 4398CT bodied car (Figure IN-3) and a TR4A (Figure IN-4).

Note: factory material and other references use engine, body, and commission numbers to document changes. In this document any a CT or CTC stem is a chassis commission number unless it ends in an "E". Commission numbers ending in "E" are engine numbers. Numbers ending in CT or CTC indicate a body number.

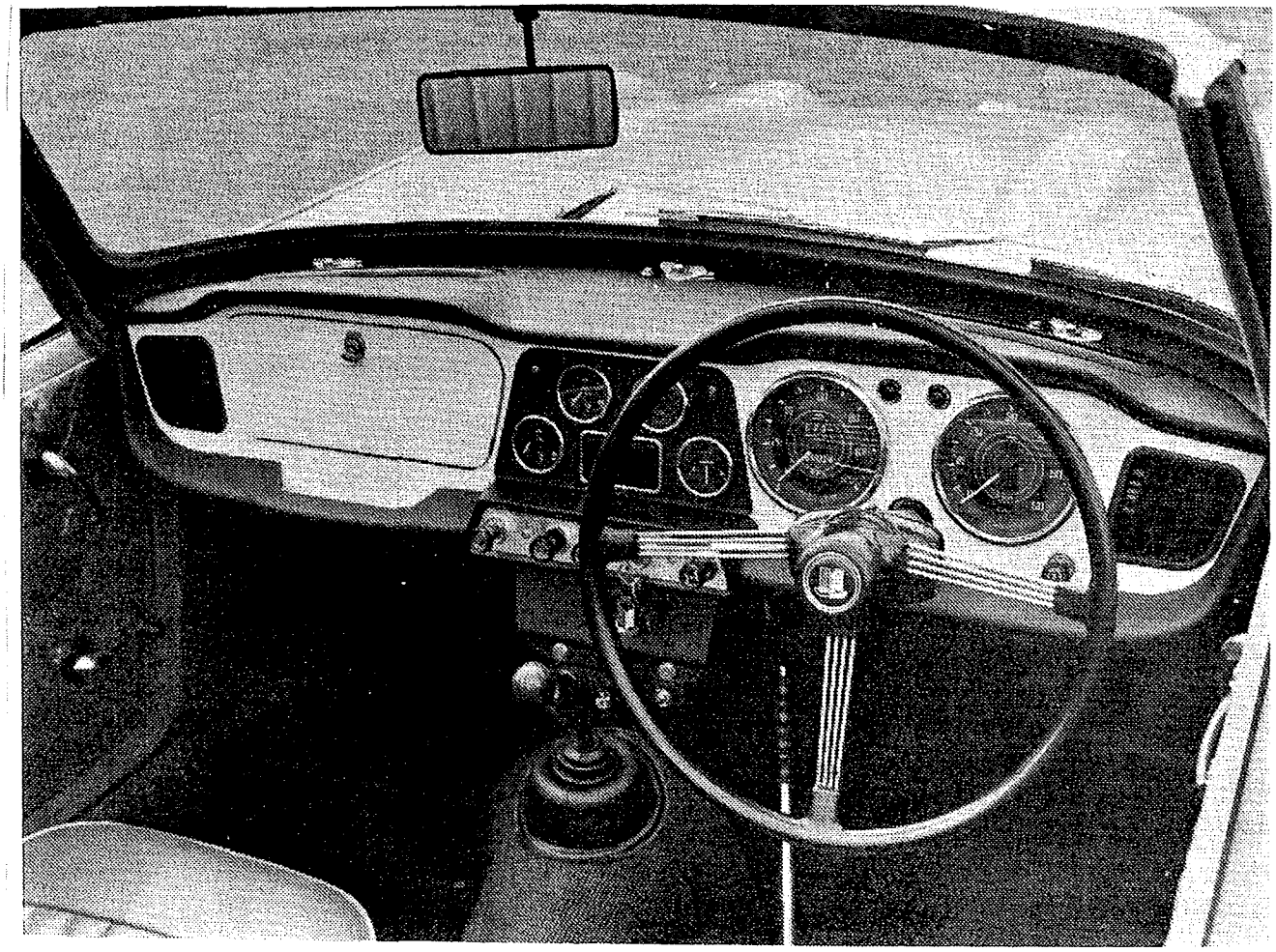


Figure IN-3: TR4 Interior From Post 4398CT Bodied Car

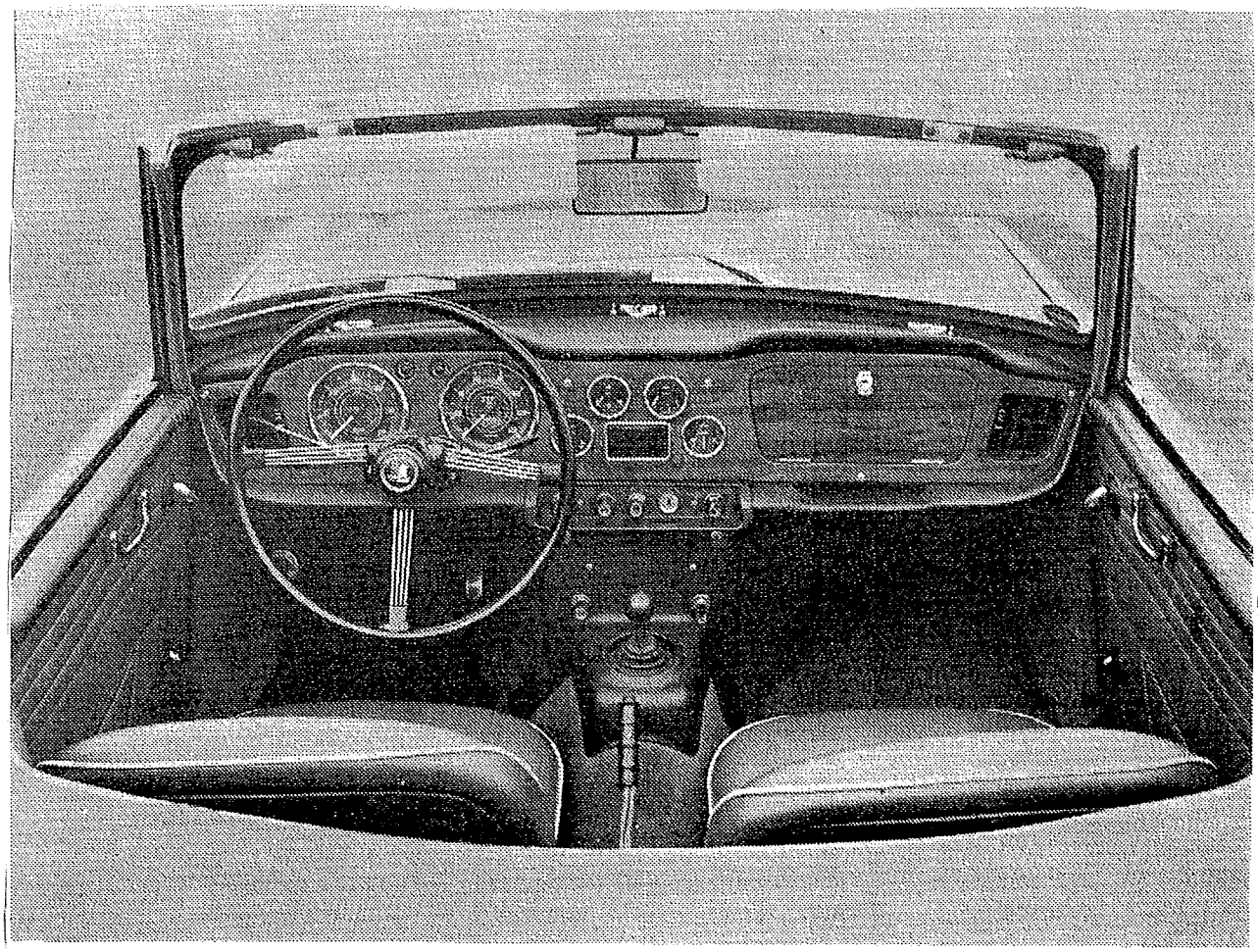


Figure IN-4: TR4A Interior Photograph

Top (Hood) & Associated Hardware

Interior Variation Summary

TR4	CT1	Convertible top completely removes from frame for storage. Surrey top optional.
TR4	CT????	Chrome plated brass capping changed to aluminum.
TR4	CT????	Metal interior rear view mirror changed to plastic.
TR4	5932CT	Lift-The-Dot socket changed
TR4A	CTC50001	Hardware added to inside windscreen frame to secure top.
TR4A	CTC50001	Rear cockpit capping eliminated.
TR4A	CTC50001	Convertible top remains attached to frame when folded. Surrey top similar to TR4. Obviously frame changed also.

Note: Cars are to be shown with the convertible top erected and snapped into place. Cars fitted with Surrey tops can be displayed with either soft or hard roof section in place. Both are not required.

Top (Hood)

Figure IN-5, reproduced from SPCE 2, shows the parts making up the TR4 Top. The TR4A top is not shown, but it is similar to the TR250 and TR6 top which came along later.

TR4

Description - The TR4 top came off of the frame (also referred to as bows or hoodsticks) and stored in the trunk when not in use. The top was secured to the windscreen by flaps with metal pieces in them which fit under the capping piece on the windscreen top. It was secured in the back and sides to Lift-A-Dot fasteners on the rear cockpit capping. Inside a fabric strip sewn to the top snapped around the middle frame bow, and snaps mounted on elastic bands on the sides to the frame, making a more positive contact with the door window. Hooks mounted in the side-front of the top secured it to pegs at the top sides of the channel in the windscreen which the door window rode in. The entire frame stowed under upholstery pieces when not in use.

Fabric - The convertible tops, sidecurtains, hoodstick covers and tonneau covers fitted to all TR4 were all manufactured from the same basic material: a "crushed" grain vinyl over a natural or tan colored canvas. The closest available material at this writing is British Everflex, which is reputedly the original material, with minor improvements. For judging purposes, no points should be deducted for cars with Everflex or similarly constructed aftermarket tops of the correct pattern and color, this includes most tops manufactured today.

Color - TR4 tops were offered in white or black.

Construction - The tops on the sidecurtain TR's were sewn together, as opposed to heat pressed. Windows were heat pressed to the top. As with the earlier TR3's, the thread observed on the original tops appears buff in colour, although this may be the result of years of fading. The main seams run along where the frame bows ride.

Windows - The TR4 should have three windows made of clear vinyl plastic.

Attachment Hardware. The front of the TR4 top is fitted with a flap which contains three steel strips. These slip under the windscreen capping piece to secure the front of the top. The hooks which attached to the window channel tops were natural steel. The top elastic side strap snaps and the top securing (to the middle bow) snaps

were natural metal finish. The top secures to the sides and back using Lift-A-Dot fasteners. The Lift-A-Dot fasteners were natural finished.

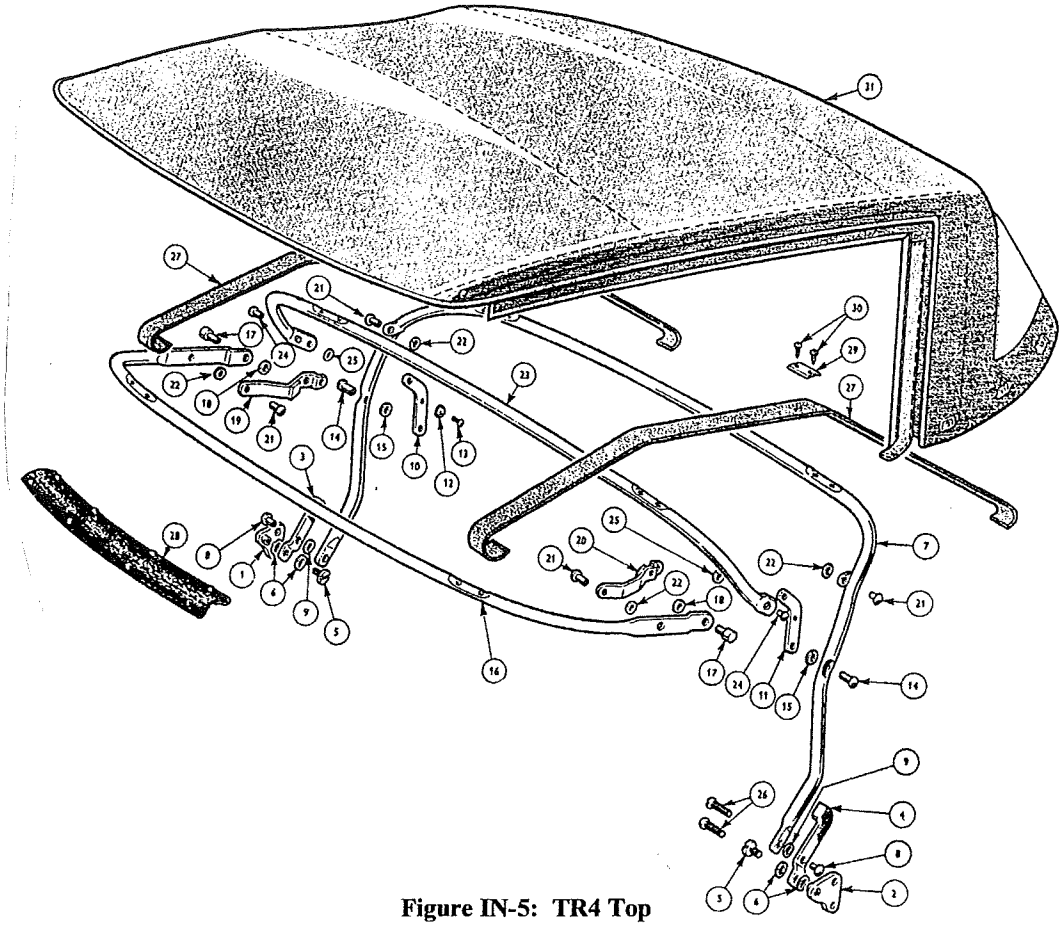


Figure IN-5: TR4 Top

TR4A

Description - The TR4A unit simply folded down, top and frame attached. The back of the top attached to the body via a steel strip which was bolted to the back of the cockpit. No hoodstick covering was provided, although a "boot" was available to cover the top in a stowed position. The top had straps with snaps on the corners which snapped to the frame to provide extra support.

Fabric - The convertible tops, sidecurtains, hoodstick covers and tonneau covers fitted to all TR4A's were all manufactured from the same basic material: a "crushed" grain vinyl over a natural or tan colored canvas. The closest available material at this writing is British Everflex, which is reputedly the original material, with minor improvements. For judging purposes, no points should be deducted for cars with Everflex or similarly constructed aftermarket tops of the correct pattern and color, this includes most tops manufactured today.

Color - TR4A tops were only offered in black.

Construction - The tops on the sidecurtain TR's were sewn together, as opposed to heat pressed. Windows were heat pressed to the top. The thread observed on the original tops appears buff in color, although this may be the result of years of fading. The main seams run along where the frame bows ride. The front of the top was secured to the frame which attached to the windscreen via two latches.

Windows - The TR4A should have three windows made of clear vinyl plastic.

Attachment Hardware. The top of the TR4A is attached in the front to a frame transverse piece that also attaches to the windscreen. It is attached to another transverse piece in the back which attached permanently to the body. The sides of the top snap to the body using press-on snaps rather than the Lift-A-Dots of the TR4. An elastic ban above the windows snaps to the frame. The snaps are natural finished on the TR4A versus the black snaps of the later tops.

Hoodsticks

TR4

Description - The TR4 hoodsticks are also shown in Figure IN-5. In form they changed from the TR3 units, but in function they were the same. The webbing stretched from the first bow to the back of the cockpit, similar in fashion to the TR3s, but it attached over a long Lift-A-Dot fastener stud instead of being permanently mounted to the body. The end of the webbing that fit over the Lift-A-Dot fastener on the TR4 fit into a plastic piece which the fastener went through. The TR4 units fitted to all cars were essentially the same, variations, if any, being insignificant or unnoticeable.

Finish - The TR4 frames were painted sandalwood (light beige). The canvas webbing was a natural off-white color. The webbing attachment hardware was left natural or painted black. The snaps on the frame were natural. The plastic piece at the end of the webbing was a very light beige color.

TR4A

Description - The TR4A frame was much more substantial than the TR4 frame, having a front piece that attached directly to the windscreen as well as side pieces to insure positive contact to the windows. The whole top raised with scissors-action for smoother operation. Latches built into the front piece attached to the windscreen.

Finish - The TR4A hoodsticks were painted a satin black. The side rails had a natural rubber strip attached to make positive contact with the door windows. The hoodstick webbing is off-white in color. The latches are chromed.

Surrey Top

Description - The surrey top was an option through the TR4A. Figure IN-6 is an exploded view of the surrey top from SPCE 2. A car either came with a surrey top or a normal convertible top, not both. The top had three pieces: the rear window section made of aluminum which was permanently bolted to the car, a removable hard top section made initially of aluminum, later steel, and a removable soft top section. The soft top consisted of a removable canvas on a frame unit.

Finish - The window section was painted white, black , or body color. The hard top was painted body color, and the soft top had black vinyl coated canvas (similar to convertible top material). The soft top frame was natural metal.. The fitting hardware was black painted metal, usually wrinkle coat. The surrey top headliner was a thin tan cotton broadcloth glued directly to the hardtop shell. The window sealing rubber had a chrome strip on the outside.

Things To Look Out For During Judging:

- Top fits snugly with all fasteners used.
- Windows clear.
- Minimal wear showing on frame.

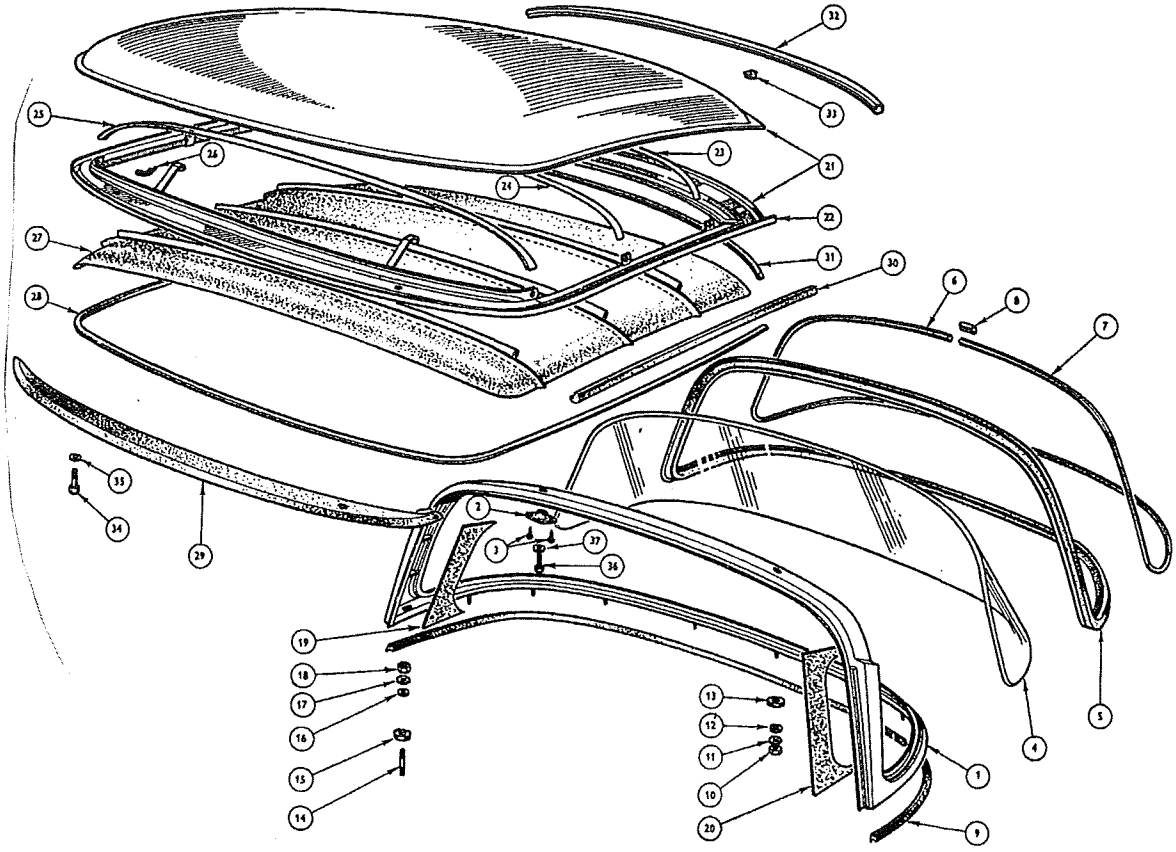


Figure IN-6: Exploded Parts View Of Surrey Top

Seats

Interior Variation Summary

TR4	15077CT	New seat introduced.
TR4	20695CT	New seat introduced.
TR4	CT29925	Both seats flipped forward. (Piggott).
TR4A	CT50001	New seats introduced.

Four separate seat styles were used during the TR4, TR4A production run. Three in the TR4, a single style in the TR4A. The above is a simplifed version of the changes that were happening. The full seat changes take up several pages of the parts catalogue since the catalogue breaks them out for color and whether or not vinyl or leather was used! For those really interested, we refer the reader to pages 290 to 305 of the Brookland's SPCE 2 reprint. The numbers above reflect the parts book and Moss.

TR4

Early Seats

The early seat used up to 15077CT are in Figure IN-7 from the parts catalogue. These seats are also shown in Figure IN-1.

Frame & Shape - The early TR4 seat was identical in shape to the late TR3A/B seat. Only the passenger's seat flipped forward.

Upholstery - Both leather and vinyl trim were available for seat trim. Leather was an option, and only the seat face was done in leather. The vinyl had a leather-like pattern to it.

Upholstery Pattern - The seats have center pleats crossing the seat "horizontally". Piping went in two beads across the top of the frame, and one bead around the edge of the seat.

Upholstery Construction - The seats were assembled using horsehair mats, cotton wadding, wood strips, and split rivets. Seat bottoms used springs and horse hair padding as the TR3. These seats were trimmed by hand, so variance of detail is expected.

Upholstery Color - The colors available for seats and other interior trim components were black, red or blue. Piping could be either white or seat color with these early units.

Seat Slides - Both seats were fitted to clear cadmium plated seat slide assemblies, two per seat. These are numbers 4 through 6 in Figure IN-7. The seat slides were mounted to the body with cadmium plated body bolts, with the lock release lever assembly mounted on the outboard slide. The handle in the release lever was made of black plastic.

Seat Hardware - Most of the upholstery hardware is described above. Note that the passenger's seat had a black oxide or blued bushing between the bottom seat pan and the folding squab frame, and is finished with chrome beveled washers and domed nuts. The seat frames were generally painted black or left in red oxide primer. Spring cases were mostly plated or natural. The passenger's seat had a Lift-A-Dot post on the inside in the bottom frame for a support strap built into the tonneau cover. Note that this is sometimes left off during a restoration.

Mid TR4

At roughly 15077CT (we say roughly since it changed at different body numbers depending on the color and construction) the seat changed.

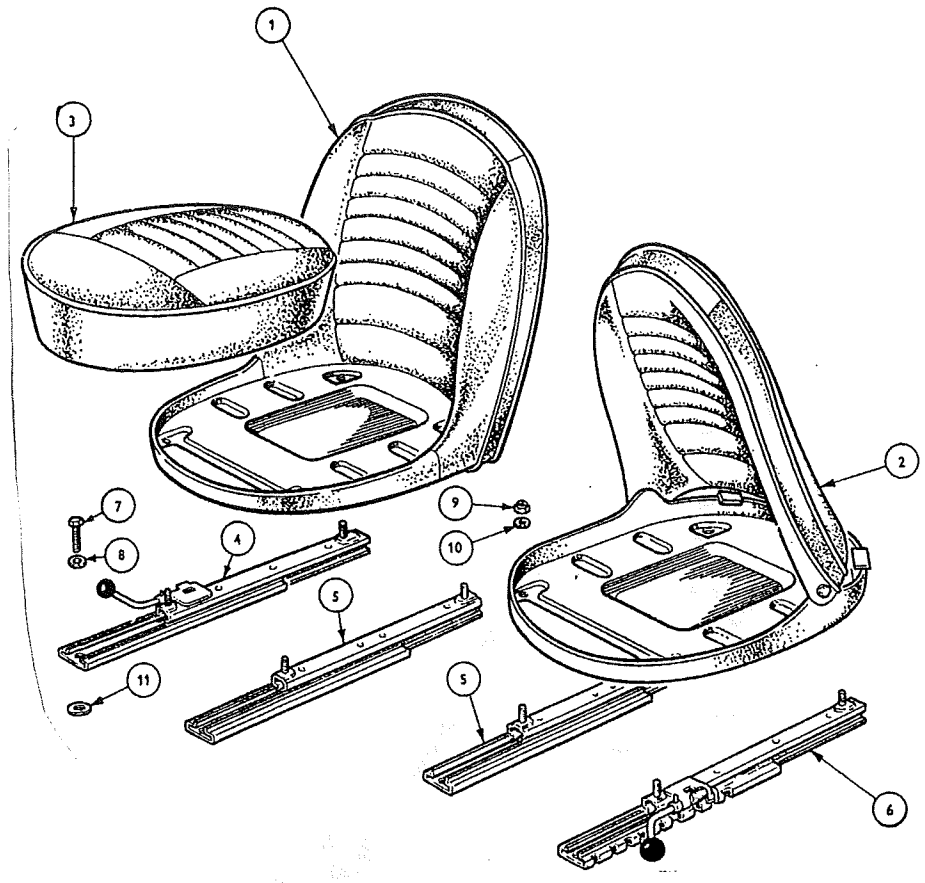


Figure IN-7: TR4 Early Seat Types (from SPCE 2)

Frame & Shape - The mid TR4 seat was identical in shape to the early TR3A/B seat from the exterior. The seat "pan" became deeper for the foam padded seat. This is only visible by looking under the seat. Only the passenger's seat flipped forward.

Upholstery - Both leather and vinyl trim were available for seat trim. Leather was an option, and only the seat face was done in leather. The vinyl had a leather-like pattern to it.

Upholstery Pattern - The seats have center pleats running vertically. The pleats ran to the piping on the back, and to the piping that ran across the seat cushion. Piping went in two beads across the top of the frame, and one bead around the edge of the seat.

Upholstery Construction - The seats were assembled using polyether pads (foam) rather than horsehair mats, cotton wadding, wood strips, and split rivets. Seat bottoms used polyether pads also. These seats were trimmed by hand, so variance of detail is expected.

Upholstery Color - The colors available for seats and other interior trim components were black, red or blue. Piping was white.

Seat Slides - Both seats were fitted to clear cadmium plated seat slide assemblies, two per seat. These are numbers 4 through 6 in Figure IN-7. The seat slides were mounted to the body with cadmium plated body bolts, with the lock release lever assembly mounted on the outboard slide. The handle in the release lever was made of black plastic.

Seat Hardware - Most of the upholstery hardware is described above. Note that the passenger's seat had a black oxide or blued bushing between the bottom seat pan and the folding squab frame, and is finished with chrome

beveled washers and domed nuts. The seat frames were generally painted black or left in red oxide primer. The passenger's seat had a Lift-A-Dot post on the inside in the bottom frame for a support strap built into the tonneau cover. Note that this is sometimes left off during a restoration.

Late TR4

The TR4 seats change at 20695. Figure IN-8 shows later TR4 seat in a car from Piggot's "Original Triumph TR " book.

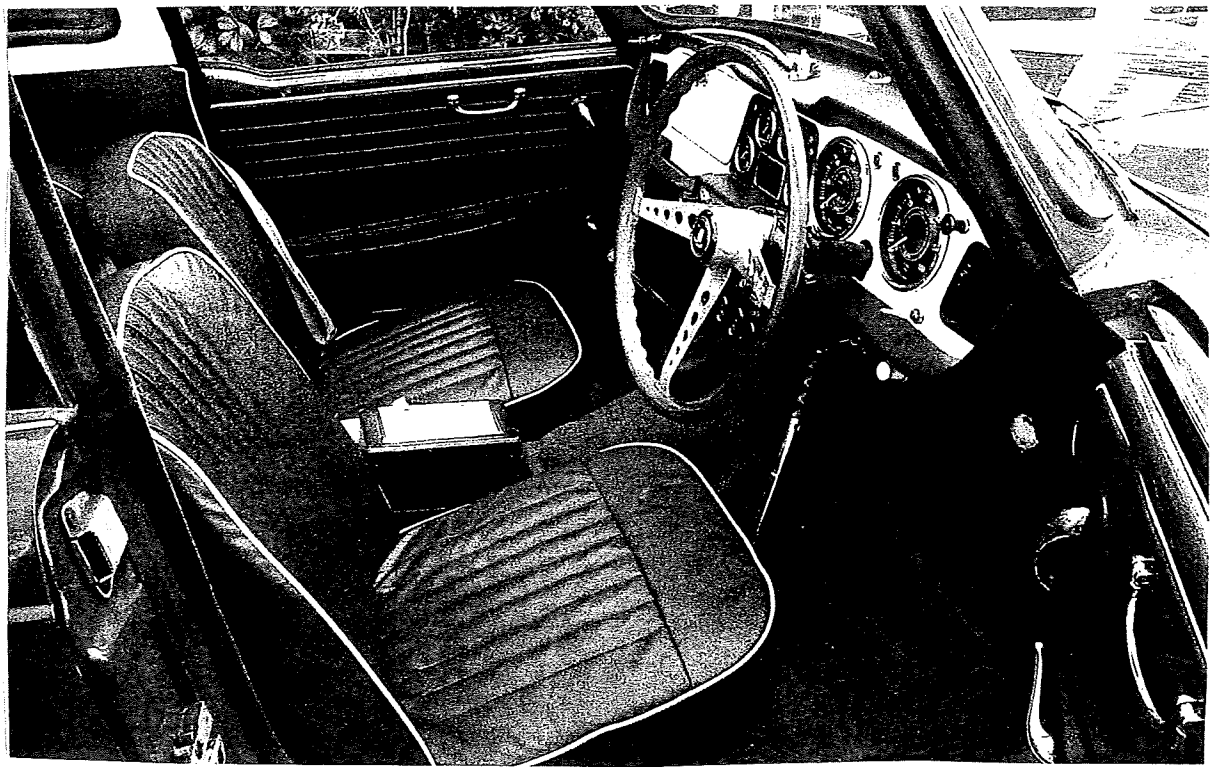


Figure IN-8: Late TR4 Seats (Piggott Photo)

Frame & Shape - The seat became squarer, and not quite as "deep". The method of hinging the seat changed. The entire seat hinged forward rather than just the back. Piggott indicates that at CT29925 both seats hinged forward.

Upholstery - Both leather and vinyl trim was available. On the seats, only the seat facings were trimmed in leather, the rest of the seat upholstery being vinyl. The vinyl had a leather-like pattern to it.

Upholstery Pattern - The seats have center pleats running vertically. The pleats ran to the piping on the back, but not to the piping that ran across the seat cushion, similar to the early seats. The seat pleats go 3/4 the way to the piping. Piping went in a single bead across the top of the frame, and one bead around the edge of the seat.

Upholstery Construction - The seats were assembled using foam padding around the frame. A rubber pad is attached to the bottom of the seat. These seats were trimmed by hand, so variance of detail is expected.

Upholstery Color - The colors available for seats and other interior trim components were black, red or blue. Piping was white.

Seat Slides - A one-piece seat slide assembly was introduced at this time. This slide was clear cadmium plated and had the adjusting handle moved to the front center.

Seat Hardware - Most of the upholstery hardware is described above. The passenger's seat had a Lift-A-Dot post on the inside in the bottom frame for a support strap built into the tonneau cover. Note that this is sometimes left off during a restoration.

Note: TR4 seats are subject to foam padding deterioration. This will show up as foam "dust" under the seats.

TR4A

The TR4A seats used during production are shown in Figure IN-9.

Frame & Shape - The seat became more "rounder" and padded.

Upholstery - Both leather and vinyl trim was available on the cars. On the seats, only the seat facings were trimmed in leather, the rest of the seat upholstery being vinyl. The vinyl had a leather-like pattern to it. Piping was always plastic.

Upholstery Pattern - The seat had vertical pleats only in the central section of the seat. The pleated section was separated from the rest of the seat face by a band of piping (please refer to Figure IN-9). Piping also ran around the edge of the seat and the outside of the seat frame, moving toward the back at the top of the seat.

Upholstery Construction - The seats were assembled using foam padding around the frame. A rubber pad is attached to the bottom of the seat. These seats were trimmed by hand, so variance of detail is expected.

Upholstery Color - The colors available for seats and other interior trim components were black, red or blue. Piping was white.

Seat Slides - A one-piece seat slide assembly was introduced at this time. This slide was clear cadmium plated and had the adjusting handle moved to the front center.

Seat Hardware - Most of the upholstery hardware is described above. The passenger's seat had a Lift-A-Dot post on the inside in the bottom frame for a support strap built into the tonneau cover. Note that this is sometimes left off during a restoration.

Note: TR4 seats are subject to foam padding deterioration. This will show up as foam "dust" under the seats.

Occasional Seat

The occasional seat was an option for both the TR4 and TR4A. They are rare on the TR4, and rarer still on the TR4A since the attached top and larger frame would have severely limited the already small space to sit!

Description - The occasional seat was a pad designed to allow someone to ride on the rear shelf of the TR4/4A. It snapped into brackets on the shelf behind the seats.

Construction and Upholstery - The seat was made of covered foam padding on a wood base. The covering had longitudinal pleats and piping around the seat face. Occasional seats were trimmed in vinyl, or leather and vinyl, to match the seats in color and pattern. Leather was on the cushion facings only. Piping was usually white but could be seat color.

Hardware - The occasional seat attached to the shelf with two teardrop shaped posts mounted to the body fitting into steel clips on the seat. Hardware should be natural. When introduced with TS 8637, the occasional seat assemblies consisted of an upholstered cushion board and upholstered squab board, both of wood. These boards were secured by iron brackets, or a single "S" shaped iron bracket painted black or more commonly, to match the trim.

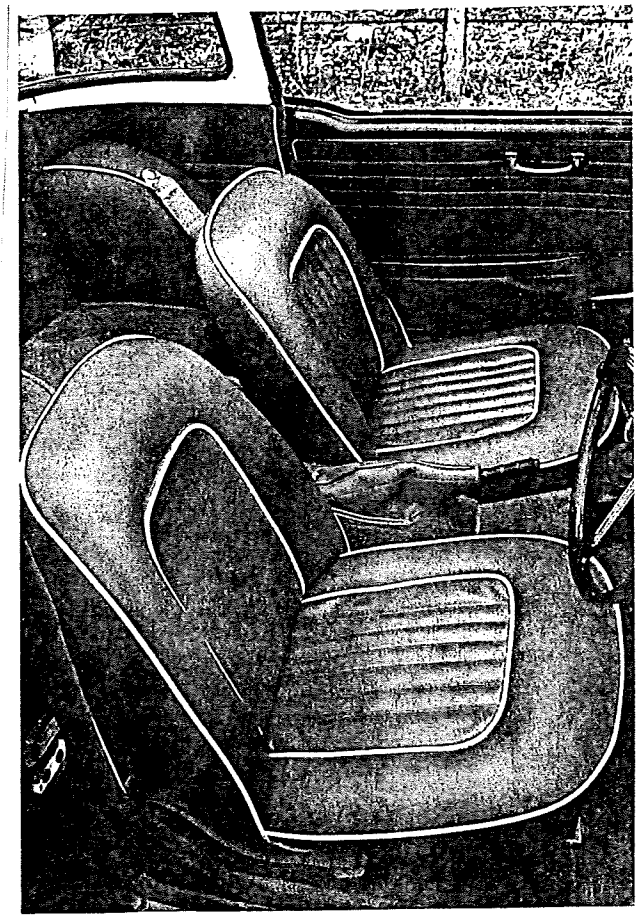


Figure IN-9: TR4A Seat

Door Panels

Interior Variation Summary

TR4A	CTC50001	Door top padded piece added.

The door panels changed very little during the TR4/4A production run. The major change was the addition of a pad to the top of the door for the TR4A. Prior to this is had been just door metal painted body color. A nice view of a TR4 door panel from Piggott is in Figure IN-10.

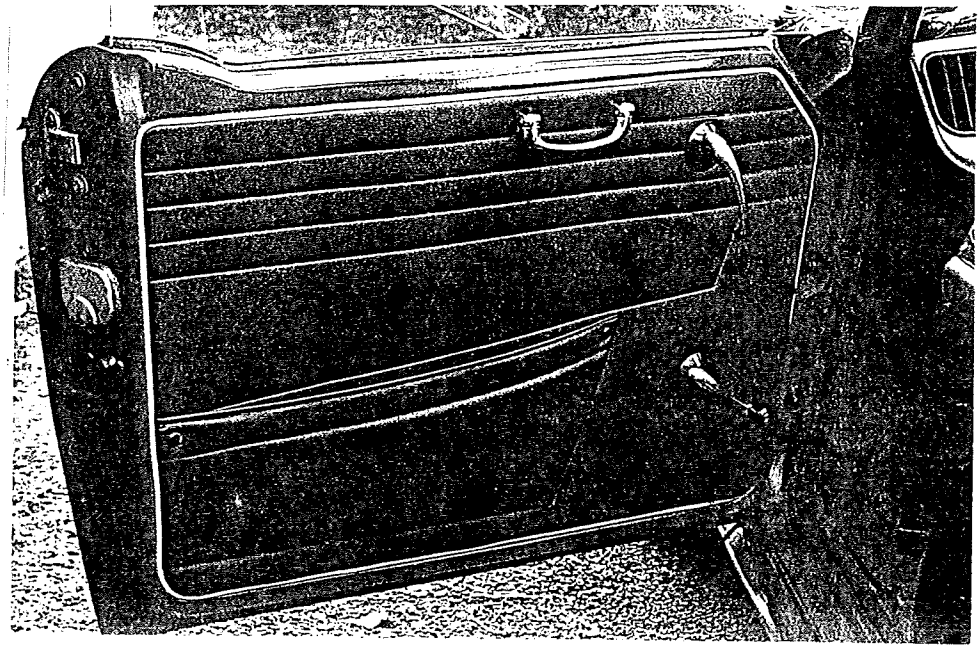


Figure IN-10: TR4 Door Panel (Piggott)

Covering - Door panels were covered in vinyl to match the trim of the car. This cam in red, blue or black colors. Padding was provided by a thin sheet of cotton or foam padding. Vinyl is a leather grain patters, either coarse or fine.. The panel itself was 3/16" fiber or masonry board. The vinyl trim was stapled to the fiberboard panel.

Map Pockets - Map pockets were built into the lower-aft part of the panel. They were secured at each end by a metal screw which had a black painted metal cap (modern replacements use black plastic.

Piping - Piping went around the outside of the panel. The piping was made of white vinyl.. It also was secured to the panel board by staples.

Panel Hardware - Each door had a door handle, window crank handle, and door pull. The door handle was a simple chrome plated cast metal unit that pointed down and slightly forward. It was located near the front-top corner of the panel. The window crank handle was a chrome plated cast metal unit with a black plastic knob attached located below the door handle towards the bottom of the panel. The knob rotated when the crank was turned. Both the door handle and window crank had a black plastic escrutcheon which provided separation to the handle from a spring behind and kept the pin in which held the handles to the door! The door pull was a simple chrome plated cast metal handle attached near the top center of the panel by two chrome plated, countersunk slot head metal screws. It hinged to retract after use, getting it out of the way.

Door Top Padding - The painted visible door top in the TR4 was covered by padded vinyl in the TR4A. The padding was a shaped foam piece covered in a harder vinyl than the other upholstery glued to the door. The author has only seen this unit in black and blue, but he assumes they also could be red.

Panel Attachment Hardware - The panels were attached to the doors by press-in wire clips around the periphery of the panel. These press-fit into holes in the panel board and snapped into holes in the door metal.

Items For Judges To Watch Out For

- Water damage to panel bottom.
- Missing map pocket screw covers and cover holders (clips).
- Cracked handles where they attach to the door.
- Lifting panel due to missing securing clips.
- Door pull attached by improper screws.
- Door handle knob cannot rotate due to corrosion.

Carpet

Interior Variation Summary

TR4A	CTC50001	Front rubber mats changed to padded carpeting.

Figure IN-11, from the SPCE 2, shows the carpet set used with the TR4. The TR4A was similar, but the front rubber mats were replaced with a padded carpet piece.

Footwell Mats - All TR4s were delivered with rubber footwell mats, most of which have not survived to today! Replacements units are carpet. Treat replacements as major deficiency.

Fabric - The carpet material used on the TR4/4A was a nylon loop. No padding seems to have been used until the footwell carpet was introduced in the TR4A. Make no deductions fort he presence or absence of this underpadding material, as it has marginal insulation value, and holds moisture which only causes the carpet to smell and floor to rot.

Mats Built Into Carpet - Rubber mats (heel pads) were built into the dash side pieces and the footwell carpet sections of TR4As.

Carpet Color - The TR4 carpet was a charcoal gray in color. We think the TR4A carpet did come in different colors matching the upholstery color, and are researching this now. Do not take an originality deduction for colored carpet in TR4As at this time as long as it matches the appropriate upholstery color.

Carpet Binding - The carpet was bound in vinyl to match the carpet color on all wearing edges.

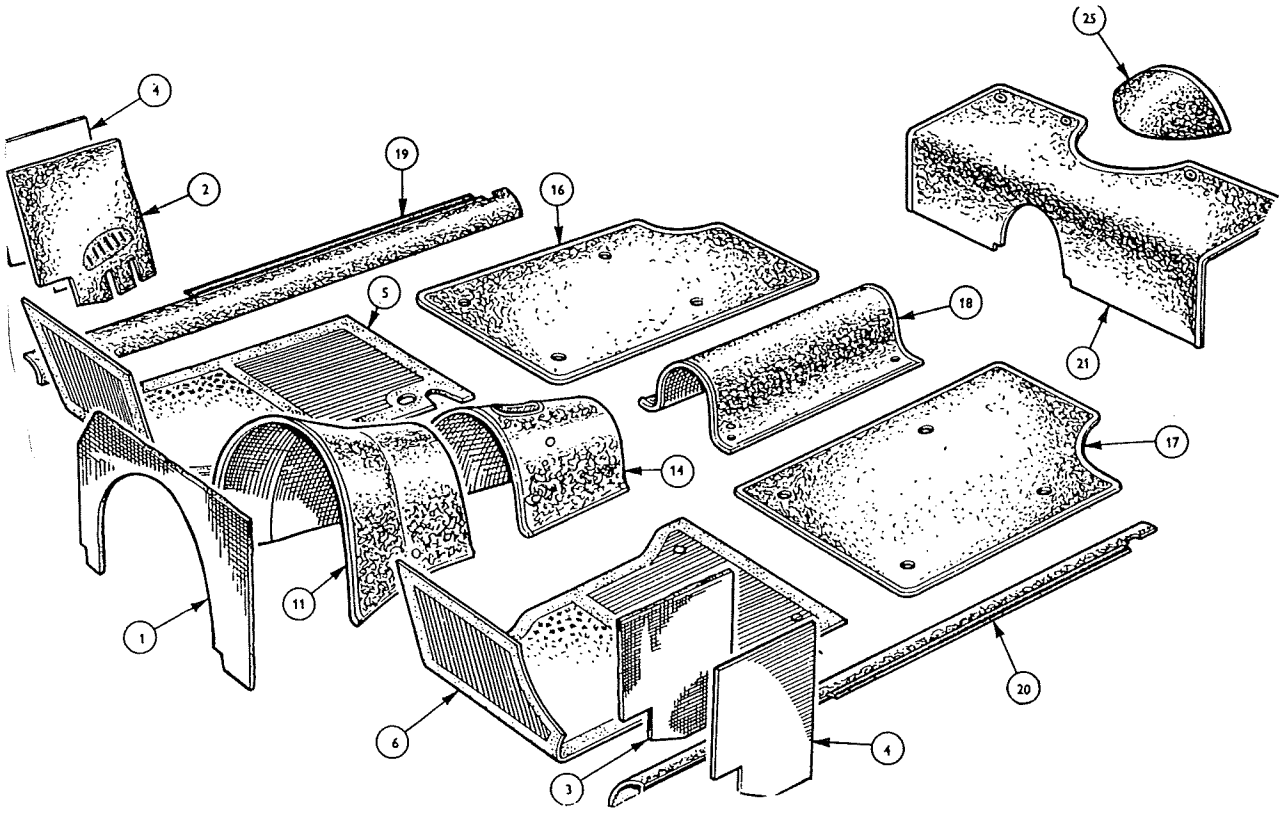


Figure IN-11: TR4 Carpet Pieces

Carpet Attachment Hardware - The footwell pads/carpet was attached by prongs at the top, and snaps at the bottom on the floor near the front of the seat. The two piece transmission cover snapped in place on the tunnel. The dash center section was glued to the firewall, sill carpets glued to sills, and dash side pieces glued to fiberboard units screwed to footwell sides. The rear floor sections were held in place by the seat rail bolts. Transmission tunnel cover snapped in place, heelboard and seat pan assembly was glued at the bottom, but used Lift-A-Dot fasteners at the back since it lifted up for the top frame cover to slip under. The differential cover was glued down.

Items For Judges To Watch For

- Insure hole exists in center dash section for accelerator pedal stop bolt.
- TR4s should have front rubber mats.
- Unsure dash side carpet pieces are on fiberboard, not just glued to body.
- Insure attachment hardware is in place, especially the Lift-A-Dot fasteners on seat pan carpet.

Dash and Instruments

Interior Variation Summary

TR4	CT4398	Dash color changed from Spa White to New White.
TR4	CT4398	Instrument cluster panel changed from stamped aluminum to black painted steel.
TR4	CT25935	Switch Mounting Plinth changed to plastic.
TR4	CT11308	Flat instrument glass introduced.
TR4A	CTC50001	Wood Dash becomes standard.
TR4A	CTC50001	Switch Mounting Plinth changed to be open on top.
TR4A	CTC50001	Two-piece gearshift boot replaces one-piece unit.
TR4A	CTC50001	Light switch moved to steering column. Overdrive switch moved to other side behind turn signal switch.
TR4A	CTC50001	New dimmer switch used.
TR4A	CTC50001	Instrument light rheostat moved to Switch Mounting Plinth.
TR4A	CTC50001	Handbrake moved to top center of driveshaft tunnel.
TR4A	CTC50001	Dash support padded and expanded to include radio mount.

The TR4 and TR4A dashes during the production run were shown in Figures IN-2 through IN-4. What follows is a description of the items that made up the dash. Unless otherwise noted the items applied for both the TR4 and TR4A. An exploded view of the TR4 dash is in Figure IN-12.

Dash

Dash Front & Finish -

- The standard TR4 dash was a white painted stamped metal. Spa white was used up to CT4397, after which New White was used. The wood dash was optional for the TR4. This should be a walnut veneer unit with glossy finish. Most post-CT30000 cars shipped to the USA came with the wood dash.
- The standard dash on the TR4A was wood, walnut veneer with a gloss finish.

Dash Padding - The padding around the dash was black vinyl covered foam. The passenger's side lower foam piece should have a handle formed in it. This handle should have a metal back for TR4s.

Air Vents - Fresh air vents were provided at the sides of the dash. A black plastic louvered piece that fit into the dash directed the airflow, while a black plastic knob controlled the amount of air. The air control valve was a black metal plate which went against a felt pad (#10 in IN-12) to seal the air when shut.

Defroster Vents - Satin black painted metal trims were around the defroster vents in the top of dash.

Lower Windscreeen Securing Hardware - Three chromed bolts held the bottom of the windscreen on the top of the dash. Aluminum plates covered the attachment flanges, and a tonneau snap on a metal strip was also attached. This metal strip was painted black, snap natural. The center bolt held a strip with a snap on both ends. The outside snaps should be facing the car's centerline.

Glovebox Cover - This cover was stamped metal for metal dash cars, wood for wood dash cars. Finish was similar to the rest of the dash. The lock mechanism was chromed.

Glovebox - The glovebox was made of natural fiberboard, painted black on the inside.

Under Dash Support - The under dash support (#49) was painted black with natural hardware.

Center Dash Support - This metal unit straddled the transmission tunnel and attached to the bottom of the dash.

- The TR4 unit was cast aluminum covered with black wrinkle finish paint. It attached to the radio mounting plate with two chrome plated bolts, usually phillips head. It attached to the floor (chassis) with four bolts. The front of the unit has three controls. From left, these are the heat control, fan control, and air control. These are described in the instrument section. The radio, if fitted, was mounted in a plate that went between the center support and the bottom of the dash. The radio hole was cut out of this plate. The plate was also painted with a black wrinkle finish paint.
- The TR4A unit was also cast aluminum, but it was covered with padded black vinyl. The three heater controls were also mounted in it as well as the radio. The top of the support bolted directly to the dash with two chrome or black bolts.

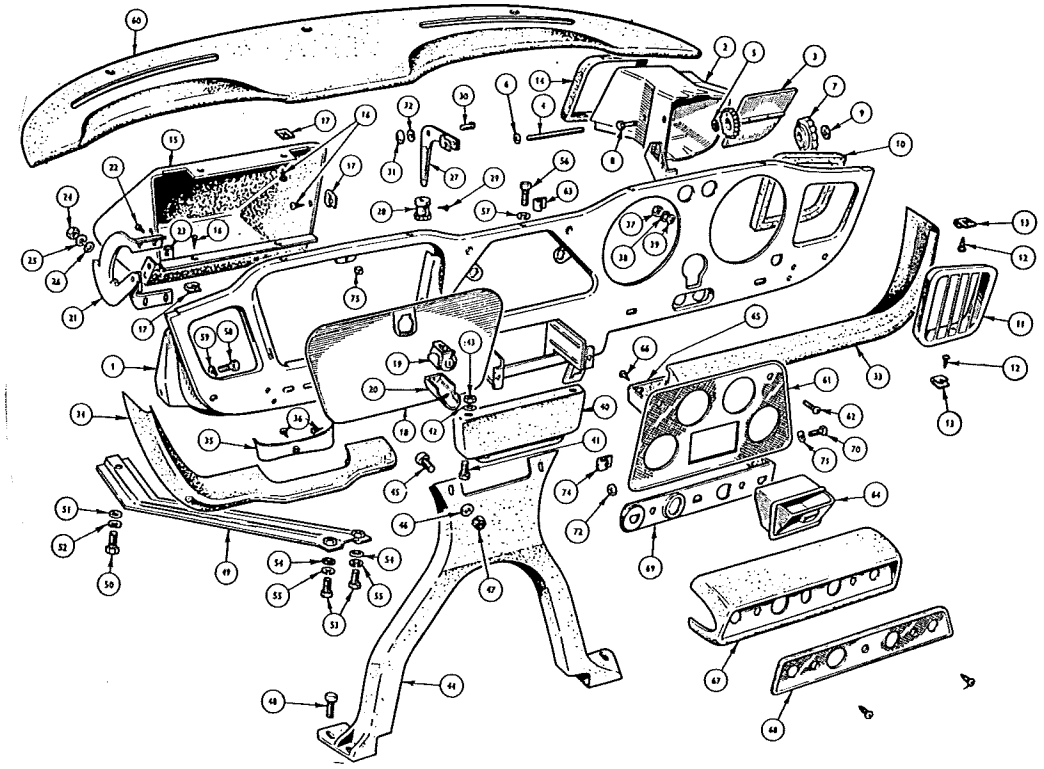


Figure IN-12: Exploded View Of The Dash And Supports

Instruments

The TR4/4A instruments are shown in Figures IN-2 through IN-4 also. Figure IN-13 is the instrument illustration from the parts catalogue. Note that some of the items in this section are shown in Figure IN-12.

Instrument Panel - This center dash panel held the small gauges and the ashtray. On cars up to 4397CT this panel was stamped aluminum, after this it went to black painted aluminum with a "leather" grain. Needless to say that TR4As and TR4s with wood dashes would not have this.

Gauge Location - One of the most common originality deductions involves gauge location. Figure IN-13 shows the gauge location for RHD cars. This is mirrored for LHD cars.

Gauges - All of the gauges, with the exception of the ammeter, were manufactured by Smiths. The ammeter was manufactured by Lucas. All gauges featured black faces, white indicators and needles, chrome bezels, and domed glass up to CT11308 when flat glass was introduced. At the same time the tachometer was changed so that rather than have a red line at "redline", the whole sector was shaded red.

Warnings Lights -The warning lights were located in the dash between the tach and speedo. The ignition warning light was red plastic, and the direction indicator light was green. Both were set into slotted chromed bezels with the directional indicator to the outside.

Switches and Other Controls

Center Dash Mounted Instrument Panel Switches and Controls - The instrument panel light switch, windscreen wiper switch, side/head lamp switch, starter/ignition switch, windscreen washer pump, and choke control were located in the center panel. These switches are shown in Figure IN-13, and are in the correct position (this did not swap between RHD and LHD cars). Switch knobs were black with their function indicated pictorially on the front behind a clear plastic cover. These functions are shown in Figure IN-14.

- Ignition switch (#'s 23-26) had the key number stamped into the face of the barrel, and a circular chrome bezel. Early cars could have bezels which are similar to TR3 bezels. Later cars came with bezels that were wider and had a raised edge.
- Light and wiper motor switch (#'s 15-17 and 28-30 respectively) had circular chrome bezels. Early cars could have bezels which are similar to TR3 bezels. Later cars came with bezels that were wider and had a raised edge.
- Choke cable (#'s 39-41) has a one-piece cable and mount. The bezel, also attached to the cable assembly, was the wide type from the start.
- Mounting Plinth (#67, Figure IN-12) for the early TR4 was a cardboard unit covered with leather grain vinyl. The insert (#68) was stamped aluminum left natural. Later Plinths were injection molded black plastic.
- Cars equipped with windscreen washers (optional accessory usually found on North American cars) had a manually operated pump usually mounted between the light switch and washer switch on the plinth.
- Instrument Light Rheostat was located in the dash on the lower left hand side of the tach. Same wide bezel and knob construction as other switches.
- Changes at TR4A were: the light switch moved to the steering column, and the instrument light rheostat moved to the vacant hole in the plinth. The plinth itself was now made of black vinyl coated plastic, with a built in small "shelf" on the lower portion (see Figure IN-4).

Heater Fan Switch - Cars equipped with heaters (heaters were optional, but all North American cars came equipped with heaters) had an on/off fan switch located in the center of the dash center support. Same wide bezel and knob construction as other switches.

Heater Control - The control for the heater valve was a cable running from the dash center support to the valve. This sheathed cable mounted to the left of the fan switch using the wide bezel and knob with heater element symbol on it.

Air Flow Control - This switch selects no air, defrost, or cockpit heat. A large flapper valve in the heater unit is remotely actuated by a cable connected to a knob on the right side of the fan switch. Cable construction is similar to the heater control with same type of bezel and knob.

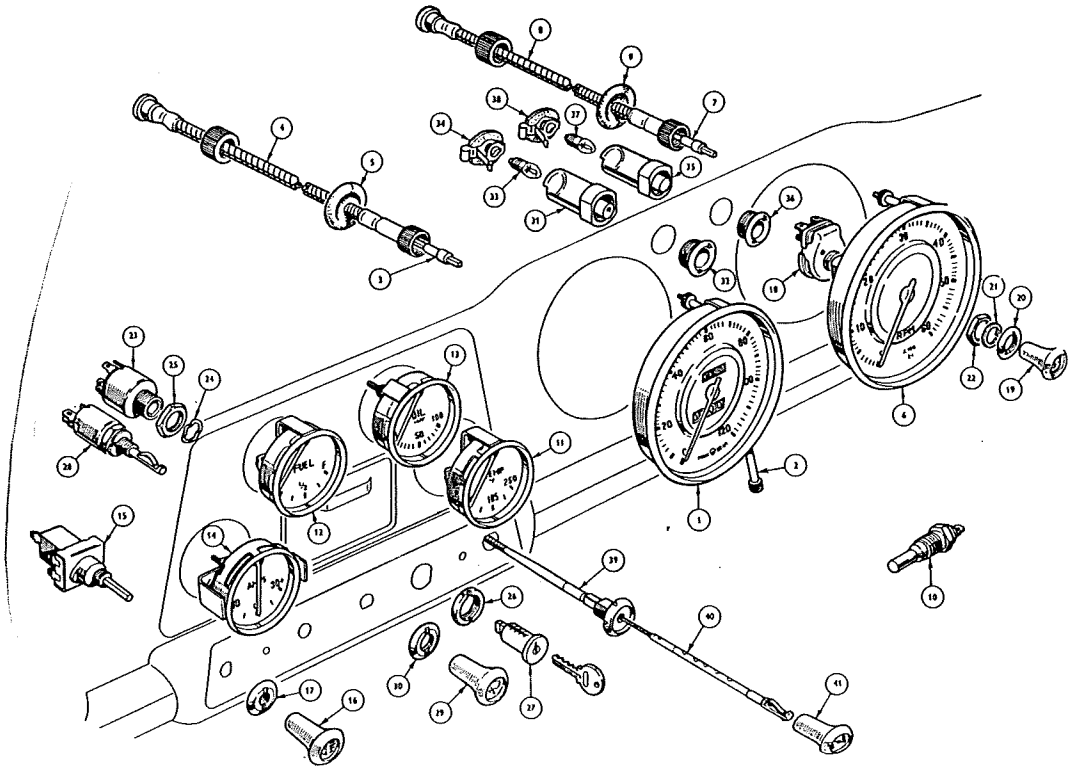


Figure IN-13: Instrument Locations

Gear Change Lever and Knob - The gearshift lever on all cars was chromed, with a chromed nut to serve as a stop for the gearshift knob when screwing it into place. The shaft is bent roughly 30% of the way toward the top. The gearshift knob was round black plastic, without a gearshift pattern molded into the top of the knob. There was no contrasting color markings on the knob.

Gearshift Boot - The gearshift boot for the TR4 was soft rubber, round, one piece, and has small "bellows" built into the top. The TR4A boot was surrounded by the case dash center support piece, and was a two piece black rubber unit, still with the bellows.

Handbrake Lever -

- TR4 - The handbrake lever on all TR4s was chromed, with a black plastic grip. A rubber boot sealed the floor opening from the lever. This assembly was unchanged from the TR3, but the black plastic grip was the push on type rather than the screw-on type of earlier TR3s.
- TR4A - The handbrake lever moved to the top of the drive shaft tunnel. The lever was metal painted black with a black release button and black plastic handle. The boot was built into the tunnel carpet, made of vinyl the same color as the carpet.

Accelerator, Brake and Clutch Pedals - These assemblies were not changed on U.S. specification cars during the production run. The pedal pads on the brake and clutch were molded with the familiar "T". All pads were black rubber. The accelerator pedal was painted black with the pedal surface being natural metal, if only due to wear. The brake and clutch pedals (and pedal box) were painted gloss black.

Headlamp Dipper Switch - On U.S. specification cars, the headlamp dipper switch was mounted on the bulkhead (side). The switch was round, clear cadmium plated, and the mounting bracket was gloss black. Right hand cars

had these mounted on the front bulkhead (firewall) adjacent to the transmission tunnel. The switch type changed at TR4A introduction to a squarer unit with a cast aluminum switch base.

Vent Controls - The scuttle vent knob was located under the right side of the dash near the center dash support. The knob was unmarked black bakelite, the lever it was attached to was painted white as the dash for TR4s, gray primer in the TR4A. .

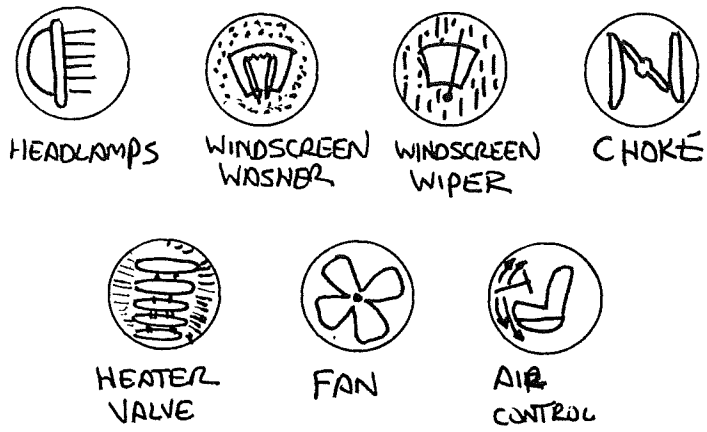


Figure IN-14: Knob Pictures and Functions

Other Dash Items

Rear View Mirror - Several different rear view mirrors were used during the production run. Three are listed in the parts catalogue. The rear view mirror mounted to the top of the windscreen in the middle.

- Early TR4s used an all metal unit with a rubber strip around the mirror mounting similar to the later TR3 mirror.
- Later TR4s and TR4As used a plastic mirror.

When did this switch occur? Not noted. Until this is determined either type of mirror is acceptable on TR4s. TR4As should have plastic mirrors.

Sunvisors - Sunvisors were optional on the TR4, but very likely to be on a North American car. They were standard in the TR4A. Made from padded foam covered in grained white vinyl, the passenger's visor incorporated a mirror. The attachment hardware was painted satin black and attached with chromed slotted screws.

Ashtray - Ashtrays were mounted in the center of the instrument panel between the two lower gauges. The unit is square black bakelite with a chrome pan it fits into.

Radios - Radios were an option on the TR4 and TR4A. In North America dealers would fit Smiths, Bendix or Motorola AM radios with "Triumph" on the front of the radio on the tuner display. These fit into a hole cut in the radio mounting plate above the center dash support. The rear of the radio bolted to a strap provided on the heater unit. The early radios (at least through 1964) had chrome trim rings and chrome knobs. Later black plastic could have been used. The antenna was mounted to a hole in the scuttle on the passenger's side. The speaker was usually, but not always, mounted in the passenger's footwell. Two speakers were used. The Smiths unit was cardboard and screwed to the top of driveshaft tunnel. The Bendix and Motorola units were steel and mounted under the right side footwell. Both were black, but the Smiths unit had a chrome speaker grill.

Turn Signal Flasher – The turn signal flasher is located under the dash on the firewall on the left side. It mounts into a socket attached to the firewall.

Voltage Stabilizer - The voltage stabilizer is attached above the kick panel on the right side footwell

Other Options/Add-on - A variety of radios, cigar lighters, map lights, anti-dazzle mirrors, and such were fitted to the cars. Some were factory approved arrangements, some were purely aftermarket additions. Do not deduct for period or period appearing accessories that are tastefully fitted in a manner consistent with the age of the car.

Items For Judges To Look For

- All TR2-TR6 similar function gauges were the same size, so judges should insure that gauges are proper for the car and not borrowed from, say, a TR6!
- Insure knobs are of the correct type, on the correct switch, and have clear plastic covers on them.
- Insure the trip-meter knob on the speedometer is attached.

Steering Wheel and Shaft Controls

Interior Variation Summary

Late TR4	Column Escutcheons made from black plastic.
TR4A	Overdrive switch moved to behind left escutcheon.

Steering Wheel

Steering Wheel - The TR4 and TR4A steering wheel , shown very well in Figures IN-2 through IN-4, consisted of a cast aluminum hub unit painted gloss black, three groups of four stainless steel rods arranged in a "T" pattern, and the outer rim made from black bakelite covered metal.

Optional Factory Wood Wheel - An optional wood wheel was available. No pictures of this are available, but it would have been a form, fit, and function replacement, so the horn would be operational with an original horn button.

Aftermarket Wheels - If an aftermarket wheel is fitted the car owner must have proof of period or a major originality deduction is required.

Note that a common remedy for cracked and worn steering wheel rims is to fit an aftermarket steering wheel cover. While this is definitely not the preferred manner of dealing with this problem, make no deductions for period appearing, steering wheel rim, covers. Note that this rule discriminates against the honest owner in concours, but the rule is grandfathered over from the TR3 judging rules.

Horn Push - Both the TR4 and TR4A had a horn push in the center of the steering wheel. The unit was mostly bakelite with a chrome trim ring separating the body from the button. The button carried the blue and white Triumph "open book" logo under clear plastic. Some very early cars might not have the logo (reference Figure IN-1) although this author has never seem one even on cars with serial numbers in the low hundreds.

Controls And Shaft

Figure IN-15 shows the steering column and the attached controls.

Shaft Cover (#1) - This cover for the steering shaft was made of aluminum and painted gloss black. It had a gloss black steel harness cover (#9) that fit underneath it

Column Escutcheons - These mounted on the sides of the column in front of the steering wheel and housed turn signal and overdrive (if fitted) switches in the TR4, with the addition of the light switch in the TR4A. Initially made of stamped steel and painted gloss black, they were black plastic by the time the TR4A was introduced. TR4s can have either attached, but the TR4As should have plastic. Turn signal escutcheons should have a turn signal decal on them. The TR4A right escutcheon should have light switch pictorial decals on it. The TR4 left escutcheon was modified slightly to accept the overdrive switch. The escutcheons mounted with chrome phillips head screws.

Turn Signal Switch - This was mounted in the left hand escutcheon on LHD cars. On the TR4s It initially had a chrome plated stalk which was replaced later with a stainless stalk. A bakelite knob was fitted to the end.

Light Switch (TR4A) - This moved to the right hand escutcheon for the TR4A. The overdrive switch moved to behind the turn signal switch.

Overdrive Switch - This was located in the right escutcheon for TR4s and moved behind the turn signal switch in the TR4A. The switch had the same wide chrome bezel as the dash switches with a stalk either chrome or stainless, matching the turn signal.

Column Supports - The steering column support rods were black painted metal. The supporting block directly behind the dash was natural cast aluminum. Padding was put around the column at the dash support and at the firewall support. Hardware was left natural.

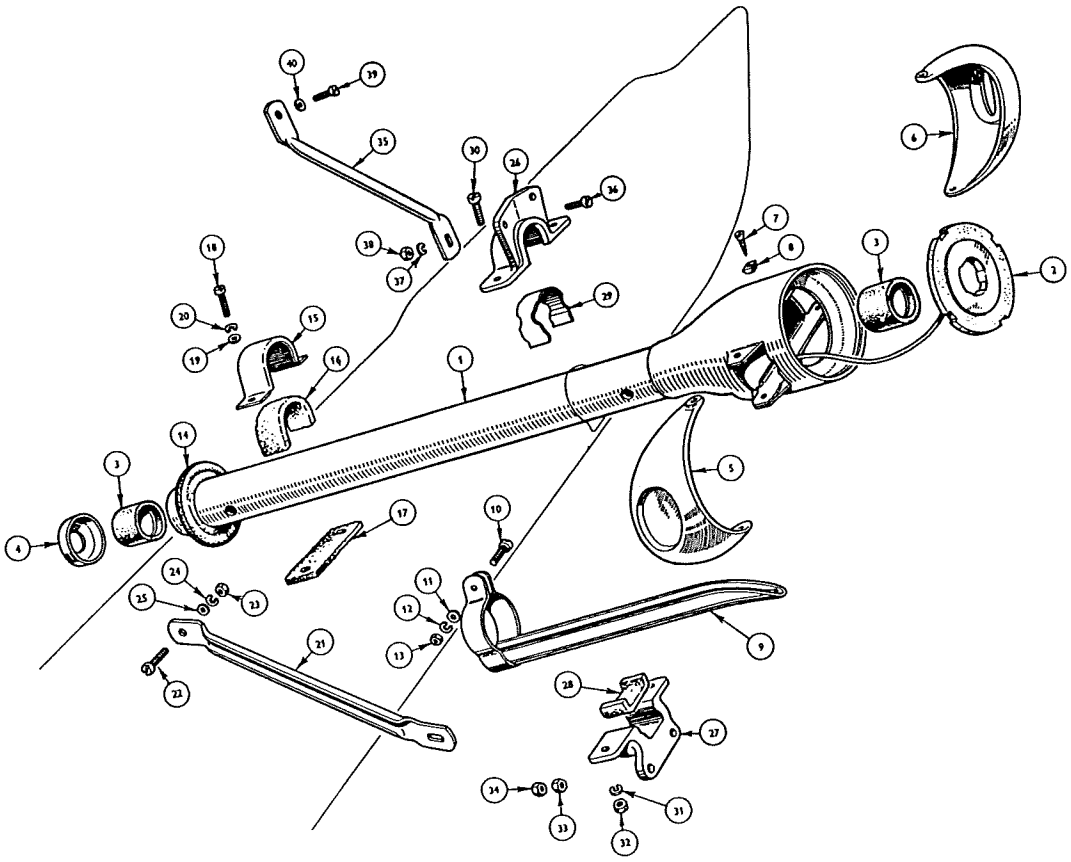


Figure IN-15: TR4 Steering Column Components (TR4A Similar)

Item For Judges To Look Out For

- Chrome stalked column switches in TR4As.
- Mixed metal and plastic escutcheons, either metal or plastic, but not both.
- Metal escutcheons on TR4As.
- No decals on restored escutcheons.

Trim

Interior Variation Summary

TR4	CT2966L< CT???? < CT35739LO	Rear body lifting holes and studs removed.
TR4A	CTC50001	Hoodsticks Covers Eliminated

Figure IN-16 shows the trim components discussed in this section:

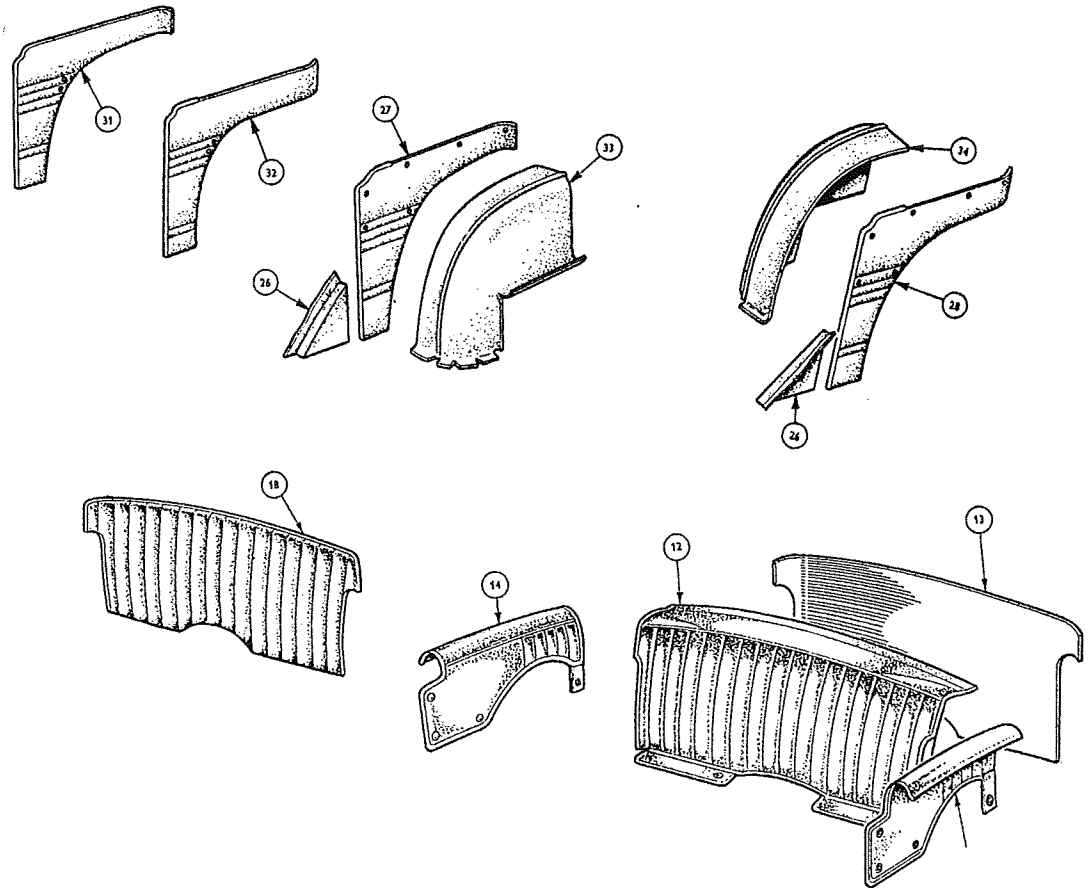


Figure IN-16. Interior Trim Items In the TR4 and TR4A

Wheel arch Covers - These vinyl covers were dyed to match the trim color of the car (black, blue or red), and glued directly to the metal of the wheel arch. A 1/8" white plastic piping ran down the length of the cover where the curve of the wheel arch was sharpest. Thin cotton wadding was used as padding between this piping and the intersection of the wheel arch and the quarter lining panel (inner dogleg).

Lifting holes - Early TR4s had two chrome plated phillips head screws in the side of the wheel arch. These filled holes that were used during construction to lift the body (the other two points were the hood hinge attachment bolt holes). These can be seen clearly in Figure IN-1. Sometime later in the TR4 production run these were done away with. We are currently assessing where that happened. These should not be on TR4As and TR4s later than CT35000.

Quarter Casings - These fiberboard "dogleg" panels were covered in vinyl to match the interior trim. The vinyl was strapped to the panel with minimal padding. Quarter casings were screwed to the quarter lining panel (inner dogleg) with chromed slotted #4 trim screws and cup washers. There were two types of these depending on if a surrey top was fitted. The convertible top version had holes for the frame mounting bolts and frame (hoodsticks) covering. These were deleted on the surrey top version. The casings had six horizontal lines made by heat pressing, four near the top and two near the bottom. On the convertible top TR4 version three snaps on each side were provided to secure the hoodsticks cover. White piping ran around the edges of the convertible units, and just the sides of the surrey top units.

Hoodsticks Cover - The TR4 had three upholstery pieces in the back to cover the hoodsticks when not in use. These are also shown in Figure IN-1 and IN-16. These were made of padded vinyl (that matched the interior color) with vertical pleats, two side pieces and a rear piece (rear piece also known as the Rear Squab). The side pieces snapped to the quarter casings and the rear squab backboard. The rear squab attached to posts that the rear shelf carpet attached to with Lift-The-Dot fasteners. Those fasteners held the squab bottom down. The other side of the cover pieces attached to the car between the body and quarter casings and backboard. The cover pieces each had a single white piping piece, forming a continuous line when the covers were in place.

Rear Squab on Surrey Top Cars. The TR4 used a fiberboard with padded, vertical pleated vinyl that looked similar to the convertible rear squab. This was eliminated (from what we can tell in the pictures) in the TR4A, the simple backboard panel (below) used instead.

Backboard Panel (Front Petrol Tank Casing) - This was used on the convertible TR4 and TR4A. On the TR4 they were either plain black fiberboard. On the TR4A, were covered with thin vinyl with heat pressed vertical lines on them. They were secured with chromed slotted #4 trim screws and cup washers.

Side Panels - These small triangular panels were made of vinyl covered fiberboard, finished in vinyl to match car. They were located just below and aft of the doors on the inside of the car

Door Seals – Two types were used:

- TR4s uses a two part seal. A furflex strip runs around the edge of the door opening, and a rubber seal is just outside of this riding in its own channel.
- TRAs have a single combined furflex and rubber seal that affixes to the edge of the door opening

Trunk(Boot)

Interior Variation Summary

TR4	5643CT	Stay changed from prop rod to a sliding unit.
TR4	14209CT	Trunk floor panel (spare tire cover) changed (strengthened).

The trunk on the TR4and TR4A was quite simple. Very few changes occurred during the production run. The most major change was the prop rod assembly.

Early Prop Rod Assembly - Initially the TR4 had a prop rod assembly as shown in Figure IN-17. The rod (#19) fit into a bracket welded to the left side of the trunk. It snapped to the trunk frame using a rubber clip the same as the one that fits the TR3 hood (bonnet). A black plastic covered safety wire kept the trunk lid from opening too far. The rod was painted black, attached with an unpainted nyloc nut to the trunk lid frame. The later TR4a and TR4As used a locking/sliding bar and concept which remained unchanged through the late TR7s! For the locking slide, the body bracket for the rod and the trunk lid frame bracket for the rubber rod holder were eliminated, and brackets for the bar added. The locking bar was unpainted.

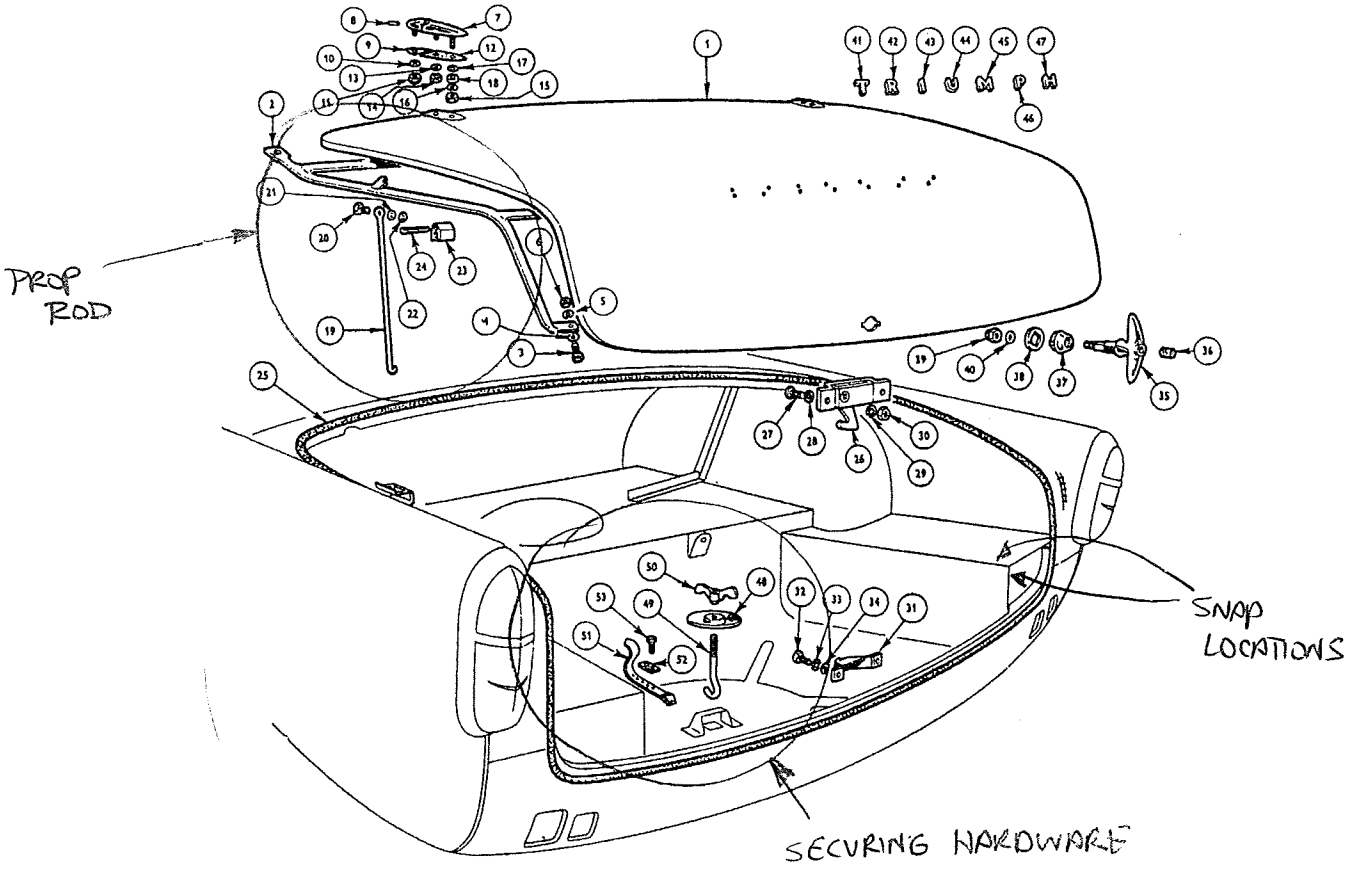


Figure IN-17: Early Trunk Hardware

Trunk Paint - The trunk was painted body color.

Trunk Floor Covering - No trunk floor covering was used during the production run.

Spare Tire Cover. . This metal strengthened fiberboard covered the spare tire. The board was painted black and had metal strips attached. One metal strip was an angle piece that fit behind the trunk millboard to hold the "back" of the millboard in place. It was steel painted black and had two rubber bumpers built in to buffer it from the millboard. The "front" strip, the one closest to the trunk opening when cover was in place, was also made of black painted steel. Natural rivets held the metal pieces to the cover. The change at 14209CT was to make it stronger. Piggott lists the cover as being made of plywood, but the author has only seen fiberboard units. We are looking into this. It was secured to the car by slipping the angle piece behind the millboard, and forcing the back sides into metal clips built into the body to hold it. The front secured using several snaps

Trunk Millboard - The trunk millboard (rear petrol tank casing - the vertical piece that covers the back of the gas tank) was black fiberboard and held to the car by screws that fit into speed nuts attached to the millboard. The board attached to the back of the top metal attachment lip of metal with #4 trim screws and washers, which meant that the metal strip was showing. It attached in front of the attachment points on the sides and bottom.

Spare Tire Stowage Hardware - The spare tire cover was secured by two short fabric straps with snaps in them. These were located on the corners of the cover closest to the trunk opening (when cover was installed). The fabric was black, the snaps natural. They attached to snaps built into the body on the vertical body sections just inside the trunk opening that flank the spare tire well. The cover could also have two snaps built into the board just behind where the fabric straps attach to the cover. These snaps attached to the body on the trunk floor next to the spare tire well. The spare tire storage is not normally seen with a TR4/4A in concours display (cover is down), but it consists of a threaded hooked rod that goes through the center of the tire and attaches to a metal strap built in to the floor of the spare tire well. The top of the rod is secured by a black painted round metal plate held down by a wingnut. This wingnut is made of cast aluminum alloy and is subject to stripping.

Tool Stowage Strap - This leather strap, located to the left of the spare tire and secured to the bottom of the spare tire well, held the tool roll. This leather strap was black, with a natural buckle. It was held to the body by a metal strip secured by two screws. The metal strip has been seen in both black paint and natural finish. Accept either for now, but expect a correction in future editions. Screws should be natural.

Items For The Judges To Look For:

- Early prop rod assembly have safety wire?
- Spare tire cover secured by two straps?
- Millboard attached behind metal mounting strips on top? In front of them on the sides and bottom?

Tools

Standard Tools

The TR4 and TR4A came standard with a tool roll. We are taking the SPCE 2 verbatim on what was required in the tool kit. The following tools are required for concours:

- TR4 Instruction Book
- Jack
- Jack handle
- Hubcap (nave plate) Remover (steel wheeled cars only)
- Wheel Nut Spanner (steel wheeled cars only)
- Knockoff hammer (wire wheeled cars only)
- Open end spanner 3/8" x 7/16" A/F
- Open end spanner 3/4" x 5/8" A/F
- Open end spanner 1/2" x 9/16" A/F
- Tube spanner 1/2" x .56" A/F
- Sparking plug tube spanner
- Pair slip joint grips (pliers)
- Combination Tool (Hubcap remover and screwdriver, steel wheel cars only)
- Tommy bar
- Screwdriver
- Adjustable wrench
- Greasegun
- Feeler gauge assembly
- Distributor tool (Lucus key like feeler gauge)
- Headlamp rim removing tool

All tools were finished in clear cadmium, except the following:

- Jack and Jack Handle -. The jacks were usually painted varying shades of orange red, and the feet of these jacks were blued or black-oxide finished. The ratchets were blued or painted black.
- Wheel Nut Spanner - Disc wheeled cars were issued a wheelbrace (lugnut wrench) which was painted gloss black except a blue metallic painted area inside the socket.
- Knockoff Hammer - Wire wheeled cars were issued knockoff hammer, which was either copper or lead. Thor hammers being reproduced today are perfectly acceptable.
- Grease guns were painted blue metallic hammertone or bronze metallic. The potmetal caps were natural, as was the shaft. The nozzle was clear cadmium.
- The screwdriver blade was slotted, and natural. The grip was light hardwood.

The tool roll was a thin plastic/vinyl with heat pressed tool pockets. The tie straps were either white or black cotton. The tool roll itself was either peach or black plastic in very early TR4s, black plastic afterward.

Optional Tools

Crank Start Handle - This optional tool was provided with TR4s fitted with the optional crank start kit. If fitted with the kit on the front bumper, the handle must be in the tool kit. The TR4 unit looks like the earlier TR3 units, differing only slightly in the position of the boss which slips into the starting handle guide, located farther toward the handle. All were finished gloss black.

Appendix A: TR4/4A Changes

The following tables were used to document the changes to TR4/4A Components while developing and publishing this guide. They are included here to show the reader the magnitude of changes throughout the model life.

Table 1: TR4 Underhood Changes

Group	Item	From Commision Number	To Commision Number	Notes
Engine				
	Valve Cover	CT1E	CT14234E	From TR4 SPCE 2. Valve Cover looks like TR3 valve cover with breather towards back instead of front
		CT14234E	CT23594E	From TR4 SPCE 2. Brass plug added to middle top of valve cover
		CT23594E	CTC78684	From TR4 SPCE 2. Breather pipe added. Cap changed to twist-on sealed type (similar to radiator cap)
	Carburettor	CT1E	CT16801E	SU H6. From SPCE 2
		CT16801E	CT16901E	Zenith-Stromberg CD175. SPCE 2
		CT16901E	CT21471E	SU H6. SPCE 2
		CT21471E	CTC62191	Zenith-Stromberg CD175. Piggott. Note that the "to" is a commision number. Need to clarify this w/Bill.
		CTC62191	CTC78684	SU HS6. Piggott.
	Cylinder Heads	CT1E	CT21471E	SPCE 2
		CT21471E	CTC78684	SPCE 2
	Air Cleaners	CT1E	CT23594E	TR3 type air filters w/ decal. SPCE 2. There is some confusion since the SPCE 2 also states that the "y" pipe starts at CT14234E, but the entire system isn't together until CT23594E. Need to check this. This implies that a closed-loop system existed with SU's, something I've never seen, or heard of.
		CT23594E	CT40304	Round metal filters with inlet in the center for engine breather gasses. Note that the TR4A-style air cleaner was used with an optional air box available to both the TR4 and TR4A. Moss and SPCE 2.
		CTC50001	Last TR4A	Oval paper elements. No inlet pipe. Could be in an optional air box unit.

Table 1: TR4 Underhood Changes

Group	Item	From Commision Number	To Commision Number	Notes
	Engine lifting Eyes	CT1	CT????	SPCE 2 doesn't mention these, but the early TR4s had these hoist points. Certainly the one in the maual had them. CT516L also had them as well as engine CT985E. The TR3B engines had them also, so it stands resonable that the first thousand or so TR4s had them. Good question is when BL eliminated them as a cost saving move. Clough.
	"TR4" paint on RS of engine.	CT1E	CT????	Early engines had "TR4" on the side of them just as TR3s had. This was probably discontinued when the Vangaurd was no longer made. Then the only car using that block at Triumph was the TR4. no reason to paint then. Clough.
	Oil Filter Head	CT1	CT?????	Purolator Unit as TR3. Piggott, Moss.
		CT?????	CTC78684	Tecalemit or Automotive Products Units. Piggott. Moss catalog lists TR4A as also having Purolator, but I tend to agree with Piggott.
	Exhaust Manifold	CT1	CT40304	Exhaust manifold similar to TR3. Moss, Piggott.
		CTC50001	CTC78684	Cast Iron manifold with split downpipes (1/4 on one, 2/3 on the other). Moss, Piggott.
Cooling				
	Radiator & Overflow	CT1	CT9553	Similar to TR2/3. Crank hole may be elongated (done when TR3B was being built so one radiator would fit both cars), or not present at all. Clough and SPCE 2
		CT9553	CT40304	Header tank extension removed. Cap built into top of radiator. Moss and SPCE 2.
		CTC50001	CTC78684	Wider, squarer radiator. Radiator support rod that went to the front cross-brace are now flat straps that attach to body (?). Overflow bottle attached to right side.

Table 1: TR4 Underhood Changes

Group	Item	From Commision Number	To Commision Number	Notes
	Radiator support rod attachment location	CT1	CT????	Indications are that the early TR4 radiator supprt rods attached to the body near the horn mountings. Finding that insufficient, Triumph moved the mounts to the suspension tower cross brace. This probably happened early. Clough. Need some more research on this.
	Fan	CT1	Near the CTC78684	Four-bladed fan with larger blades than TR2/3 fan. steel with aluminum blades. Six-bladed metal fan optional for hot climates.
		Near CTC78684	CTC78684	Five bladed fan. Metal or plastic? Who knows. Hal Kelly talks about a five bladed TR4A fan and Moss mentions that some TR4A had different fans. Need to check on this.
	Radiator Cap	CT1	CT????	Sometime during the TR4 run the cap changed from 4 lb to 7 lb. Need to determine this.
	Radiator Duct Screws	CT1	CT15537	Seven identical screws used to hold the cover
		CT15537	CTC78684	Five screws of one type, two of another. Probable difference is in length.
Hydraulics				
	Brake Master Cylinder	CT1	CT5783 (disc) CT5856 (wires)	0.75" Bore. Denoted by a single raised band around bore. SPCE 2
		CT5783 (disc) CT5856(wires)	CTC78684	0.70" Bore. Denoted by two raised bands around bore. SPCE 2
	Master Cylinder Caps	CT1	Mid-TR4	Steel Caps, painted black. Clough
		Mid-TR4	CTC78684	Aluminum caps left natural. This one will be good research. Clough
	Front Hydraulic Connection	CT1	CT26929	Five way connector
		CT26929	CTC78684	Four way connector
	Master Cylinder Support Bracket	CT1	CT26929	

Table 1: TR4 Underhood Changes

Group	Item	From Commision Number	To Commision Number	Notes
		CT26929	CTC78684	Bracket added to the side to hold the relocated brake switch
Electrics				
	Brake Light Switch	CT1	CT26929	Located on five way hydraulic connnection similar to TR3. Lucar connectors.
		CT26929	CTC78684	Switch mounted on bracket attached to master cylinder support bracket assembly.
	Starter Solenoid and Location	CT1	CT40304	Starter Solenoid similar to TR3 unit with push button. Solenoid located on side of firewall near where right side of accelerator cross shaft enters firewall. Held by two small bolts which go into nuts set in firewall.
		CTC50001	CTC78684	Solenoid w/o push button located on the right side of the battery.
	Starter Cables to/ from Solenoid	CT1	CT40304	Long cable to the solenoid, short cable to starter.
		CTC50001	CTC78684	Short cable to solenoid, long cable to starter.
	Wiring Harness	CT1	CT9983	SPCE 2.
		CT9984	CT26999	SPCE 2, Moss lists this change at CT26929, the same number the brake light switch changed location. Either the factor screwed up, or there are 70 cars out there with long wire extensions on their brake lamp switches.
		CT27000	CT40304	Will have to see exactly what this change is besides the brake switch. I think a number of wires swapped sides of the engine they ran on.
		CTC50001	CTC78684	Totally new harness.
	Wiring sleeves	CT13298	CT40304	Sleeve added which corresponds to changes in wiring from front side and turn signal lamps.
	Dimmer Switch	CT1	CT40304	Similar to later TR3. Moss.
		CTC50001	CTC78684	New switch, squarer with cast body (rather than stamped). Moss.

Table 1: TR4 Underhood Changes

Group	Item	From Commision Number	To Commision Number	Notes
	Wiper Motor	CT1	CT40304	Motor similar to TR3 units located on firewall shelf on left side on engine compartment. Moss, Clough.
		CTC50001	CTC78684	Not quite sure what the big change is. Moss shows a number change, but unit still looks to be located in the same place and looks the same (Piggott).
	Ground Strap	CT1	CT40304	Similar to TR3
		CTC5001	CTC78684	Moss shows a parts change. Probably a length difference from the prior strap to account for the frame change.
		CT26929	CTC78684	Wires to brake switch now come off of harness on left side near master cylinder support bracket
	Distributor	CT1	to early 1963	Lucas Model #DM2P4. Moss.
		early 1963	CTC78684	Lucas Model #25D4 (marked 25D). Moss.
Emission Controls				
		CT1E	CT23594E	Oil breather tube as TR3.
		CT23594E	CT40304	Oil breather tube eliminated. Y tube from valve cover breather pipe routes internal engine gasses to air filters
		CTC50001	CTC78684	PCV added. Provides positive crankcase ventilation to the inlet manifold. Moss catalog.
Misc				
	Oil Pressure Gauge Line	CT1	<CT35739L	Metal oil pressure line similar to TR3. Clough, Moss
		<CT35739L	CTC78684	Nylon oil pressure line. Flexible hose eliminated. SPCE 2 list these pipes as alternates to each other, but my experience tells me that early cars had metal pipes, later ones nylon. I know this happened before CT35739L. Need to establish the turn-over dates for this. Clough, Moss.

Table 1: TR4 Underhood Changes

Group	Item	From Commision Number	To Commision Number	Notes
	Throttle Link Assembly	CT1	CTC62191	For H6 and CD175 Carbs. Moss.
		CTC62191	CTC78684	Link for SU HS6 carbs. Moss. Right now I'm unsure of the change. My guess is that the HS6 link is shorter to account for the new linkage at the carbs.
	Shock Tower Cross-Support Tube	CT1	CT40304	Similar To TR3. Moss.
		CTC50001	CTC78684	Three bolts on either side replaced by two. Radiator support brackets elimi-nated. Moss, Clough.
	Front Wheelarch Closing Panel Assembly	CT1	37689CT	SPCE 2
		37690CT	CTC78684	You got me! Pressing change? This will have to be investigated. SPCE 2.
	Hood Locator Pins	CT1	37689CT	Flat top
		37690CT	CTC78684	Pointed rubber top corresponding to change in hood.
	Hood Safety Catch Assembly	CT1	CT?????	Good question on when this was fitted. Need to inspect and track early cars.
		CTC50001	CTC78684	As far as i know this unit look like the TR250 and TR6 units.

Table 2: TR4 Chassis Changes

Group	Item	From Commision Number	To Commision Number	Notes
Frame				
	Frame	CT1	CT40304	Similar to TR3 frame. Outriggers have four holes, no front cross tube, brackets for rack steering.
		CTC50001	CTC78684	Brand new frame, front and aft. Looks similar to TR250 and TR6 Frames.

Table 2: TR4 Chassis Changes

Group	Item	From Commision Number	To Commision Number	Notes
Front Suspen-tion				
	Upper Wishbone Arms	CT1	CT6343 (wires) CT6390 (disc)	Similar to TR3 units. Moss.
		CT6344 (wires) CT6391 (disc)	CTC78684	Changed to allow different ball joint. More curved, less angular than earlier unit.
	Ball Joint Assem-bly	CT1	CT6343 (wires) CT6390 (disc)	Similar to TR3 units. Moss.
		CT6344 (wires) CT6391 (disc)	CTC78684	Two bolts hold it to the upper wishbone rather than one stud. Moss.
	Tie Rod Lever	CT1	CT6343 (wires) CT6390 (disc)	Similar to TR3 units. Moss.
		CT6344 (wires) CT6391 (disc)	CT16462 (wires) CT16349 (disc)	Changed to account for trunion change. Moss.
		CT16463 (wires) CT16350 (disc)	CT40304	Unsure of change. Moss.
		CTC50001	CTC78684	
	Road Spring	CT1	CT29984	Similar to TR3
		CT29985	CTC78684	Longer spring eliminated packing piece.
	Packing Piece	CT1	CT29984	Similar to TR3. Moss.
		CT29985	CT40304	Eliminated. Moss.
		CTC50001	CTC78684	Packing piece added. Two different types, a "short" and "long". Moss.
	Trunion	CT1	CT6343 (wires) CT6390 (disc)	Similar to TR3 units. Moss.
		CT6344 (wires) CT6391 (disc)	CT40304	Changed to provide three degrees of cas-tor. Moss.
		CTC50001	CTC78684	Changed for TR4A. Moss.
	Trunion Grease Seal	CT1	CT7218	Similar to TR3. Moss.
		CT7219	CT40304	Changed maybe to account for the castor change? Moss.
		CTC50001	CTC78684	Comes with new trunion in TR4A. Moss.

Table 2: TR4 Chassis Changes

Group	Item	From Commision Number	To Commision Number	Notes
	Anti-Roll bar	CT1	CT40304	Optional factory item for TR4. Not listed for TR4A.
Rear Suspension				
	Rear Springs & Hardware	CT1	CT23382	Similar to TR3with slightly different rate. Moss.
		CT23383	CT40304	Spring changed to deep dish type. This change added an aluminum packing piece between the axle and spring, and required longer U bolts and a different shock link. The shock absorber attachment plate was eliminated and the shock attached to the packing piece. I was going to list each change, but I got lazy. The change is pretty self evident.
		Solid Axle TR4A		Leaf spring similar to late TR4. Retained packing piece and mounting hardware of late TR4. Moss.
		IRS TR4A		Conical springs were introduced that fit into recepticals in the frame and trailing arms.
	Shock Absorbers	CT1	CT40304	Some internal changes were made to increase or decrease rates during the use of these units. No external differences.
		CTC50001	CTC78684	Arm changed to allow different mounting on frame. Incorporated flat areas for bump stops.
	Bump Stops	CTC50001	CTC78684	Added to limit shock absorber arm travel. One attached to the body, the other to the frame. Same for solid axle and IRS.
Transmission				
	Overdrive	CT1	to TR4s made in October 1964	Unit number 22/61374. Moss.
		from TR4s made in October 1964	Through TR4A w/ Solid rear axle	Unit number 22/61712. Moss.
		TR4A w/IRS	CTC78684	Unit number 22/61753. Moss.

Table 2: TR4 Chassis Changes

Group	Item	From Commision Number	To Commision Number	Notes
				No external changes in the transmission. The clutch assembly was changed, going from a finger to diaphram clutch in the TR4A, but that cannot be seen from the outside. Slave cylinder remained the same.
Drive-shaft/ Rear Axle				
	Rear Axle	CT1	CT40304 and solid axle TR4A	Similar to TR3 except whole unit was wider.
		IRS TR4A		Went to differential, half shafts, and outer bearings placed in trailing arms bolted to the frame. Internally the differential was identical to the TR4 unit. This same configuration stayed essentially the sme through the TR6. The differential bolted to the frame
Brakes				
	Handbrake Lever Washer (#18, Plate U, SPCE 2)	CT1	CT424	Tab type similar to TR3. SPCE 2
		CT425	CT40304	Lock washer. SPCE 2
	Rotor	CT1	CT4688(wires) CT4386(disc)	Rotor Similar To TR3
		CT4689(wires) CT4387(disc)	CTC78684	Rotor diameter reduced with caliper change.
Steering				
	Steering rack mounting blocks	CT1	CT20063	Solid Aluminum Block
		CT20064	CTC78684	Rubber mounts. Added to reduce vibration to the steering wheel.
Fuel				
	Fuel line	CT1	CT40304	
		CTC50001	CTC78684	Change appears to be due to frame change. Lines run allong frame boxes, so a new frame means the tubing would change.

Table 2: TR4 Chassis Changes

Group	Item	From Commision Number	To Commision Number	Notes
Hydraulics				
	Pipe from front connection to RH shock tower bracket	CT1	CT4689(wires) CT4387(disc)	
		CT4690 (wires) CT4387 (disc)	CT40304	Pipe changed to account for different bracket mounting on shock support tower. This was due to the change in brake calipers
	Pipe from front connection to LH shock tower bracket	CT1	CT4689(wires) CT4387(disc)	
		CT4690 (wires) CT4387 (disc)	CT40304	Pipe changed to account for different bracket mounting on shock support tower.
	Flexible Pipe from shock tower braket to brake calipers	CT1	CT4689(wires) CT4387(disc)	Same as TR3
		CT4690 (wires) CT4387 (disc)	CT40304	Pipe changed to account for different bracket mounting on shock support tower.
	Brake Hydraulic System	CT1	CT40304	System topology similar to TR3. Moss.
		CTC50001	CTC78684	System topology changed. Four way connector and pipe to rear brakes went to right side of car. Pipe to four-way connector now went directly down instead of going above the battery to the other side. Moss.
	Front Brake Calipers	CT1	CT4689(wires) CT4387(disc)	Same as TR3B. SPCE 2.
		CT4690 (wires) CT4387 (disc)	CTC78684	Smaller caliper with pads located by two pins. Similar to TR6.
	Rear Brake Cylinders	CT1	CT5655 (wires) CT5782 (disc)	Similar to late TR3. SPCE 2.
		CT5656 (wires) CT5783 (disc)	CTC78684	Look similar to before, but bore reduced to 0.70". Moss, SPCE 2.
Wheels/ Tires				

Table 2: TR4 Chassis Changes

Group	Item	From Commision Number	To Commision Number	Notes
Exhaust				
	Front Pipe	CT1	CT40304	Similar to TR3
		CTC50001	CTC78684	Dual pipe unit.
	Rest of exhaust system	CT1	CT40304	Similar to TR3 except for hanger unit attached to bracket from rear transmission mount rather than the frame rails.
		CTC50001	CTC78684	Early TR4A units had a front muffler, y-pipe split, and two rear mufflers. This was changed to a single muffler in the rear fed by a single pipe early in the TR4A production run. Muffler has one input and output, but is similar in configuration to TR6 mufflers. Moss & Piggott.
Misc				

Table 3: TR4 Exterior Changes

Group	Item	From Commision Number	To Commision Number	Notes
Body Panels				
	Hood	CT1	CT6429	Small "bulge" hood
		CT6430	37689CT	Large "bulge" hood with flat areas above locating pins.
		37690CT	CT40304	Locating pin receipticals added for conical pins.
		CTC50001	CTC78684	Holes relocated for hood medalilon change
	Door and A Post	CT1	22343CT	

Table 3: TR4 Exterior Changes

Group	Item	From Commision Number	To Commision Number	Notes
		22343CT	CTC78684	I think this change was done to make a stronger door check strap assembly. Moss.
	Door Checkstrap	CT1	22343CT	Vertical strap bar that attached to a pin on the door.
		22343CT	CTC78684	Horizontal bar similar to the TR3 check-straps.
	Floors, driveshaft tunnel, rear inner fenders and Sill Mounts			These all changed when going from the TR4 to TR4A to account for mounting to the new frame.
	Rear deck			This changed from TR4 to TR4A to account for the different convertable top, and its new mounting points. The change was in where holes were drilled, and if a caged nut was installed or not. Moss, Clough.
Trim				
	Side Moulding Strips	CTC50001	CTC78684	Stainless strips added to doors and front fenders.
	Hood Badging	CT1	CT40304	"Open Book" badge similar to TR3, but with "TR4" on it.
		CTC50001	CTC78684	Round "World" badge replaced "Open Book" badge.
	Trunk Badging	CTC50001	CTC78684	"A" placed after "TR4" on trunk lid.
		TR4A IRS		"IRS" placed below "TR4A" on trunk lid.
	Front Bumper Overriders	CT1	CT40304	
		CTC5001	CTC78684	Overriders made smaller, moved toward the ends of the bumper. Support tube to wheel arch eliminated.
Top				
	Convertable Top	CT1	CT40304	Removable top. Surry Top an option.
		CTC50001	CTC78684	Top remained attached to bows. Is Surry Top still an option?
	Top Bows	CT1	CT40304	Simple unit similar in shape and operation to the TR3.

Table 3: TR4 Exterior Changes

Group	Item	From Commision Number	To Commision Number	Notes
		CTC50001	CTC78684	Heavier, retractable bows that pysically attach to the windscreen. Similar to TR250.
	Windshield Cap-ping	CT1	CT????	Chrome plated brass
		CT????	CT40304	Aluminum
		CTC5001	CTC78684	Changed to allow for top latched which attached to the windscreen frame.
	Rear Deck lid Cap-ping	CT1	CT????	Chrome plated brass
		CT????	CT40304	Aluminum
		CTC5001	CTC78684	Eliminated since top is perminently attached.
Glass/ Wind-shield				
	Glazing Rubber Finisher	CT1	CT????	Two piece chrome plated brass. Working on establishing the cut-off commission number on this. TR4 owners on the Inter-net.
		CT????	CT24516	Two piece aluminum. Moss
		CT24517	CTC78684	One piece plastic.
	Rearview Mirror	CT1	CT????	Metal type. Moss.
		CT????	CTC78684	Plastic Type. Moss. Note that SPCE 2 lists 5 types of mirrors.
Lighting				
	Headlamp Rim	CT1	24600CT	Wide rim. SPCE 2.
		24601CT	CTC78684	Narrow rim. SPCE 2.
	Front Parking lamps	CT1	CT40304	Small, clear lamps above turn signal lights. SPCE 2.
		CTC50001	CTC78684	Parking lamps integrated with side maker unit. Moved to chrome plated cast unit on side of front fenders. Moss, Piggott.
	Front Turn Signals	CT1	30348CT	Similar to TR3. Clear glass. Moss.

Table 3: TR4 Exterior Changes

Group	Item	From Commision Number	To Commision Number	Notes
		30348CT	CTC78684	Larger, plastic lens. Early ones were clear, later ones could be amber. Moss, Clough.
	Licence Plate Lamps.	CT6402	CTC78684	Plinth between bumper and light rim eliminated. Moss.

Table 4: TR4 Interior Changes

Group	Item	From Commision Number	To Commision Number	Notes
Seats				
		CT1	15076CT	Similar to TR3 Seats except the seat padding unit is foam instead of springs and horse hair padding.
		15077CT	CT20924	Similar shape, but entire passenger's seat flipped forward. Piggott.
		CT20925	CT40304	One peice seat, both seats flip forward, squarer back and seat.
		CTC50001	CTC78684	Rounder back than earlier TR4 seats, more padding, piping change - only in squab center section.
Trim				
	Bow cover	CT1	CT40304	Only for cars with soft top. Eliminated for Surry top cars.
		CTC50001	CTC78684	Eliminated.
	Door Panels	CT1	CT40304	
		CTC50001	CTC78684	Will have to look uo exactly what these changes are. They look very similar.
	Door windor regulator handle	CT1	CT20310	
		CT20310	CTC78684	Unsure of exacly what this change is. The handles were made "safer". Will have to compare.

Table 4: TR4 Interior Changes

Group	Item	From Commision Number	To Commision Number	Notes
	Padded Door Top Piece	CTC50001	CTC78684	Added for TR4A. Moss, Piggott.
	Dog leg covers, wheel arch cover, etc.	CT1	CT40304	
		CTC50001	CTC78684	Changed to account for body changes induced by chassis changes.
	Sunvisors	CT1	CT40304	Optional. Piggott, SPCE 2.
		CTC50001	CTC78684	Standard. Piggott
Carpet				
				We have assumed that gray carpet was standard on all TR4s. This seems to be a good assumption since SPCE 2 lists only one number for it, although many numbers for vinyl trim that is in three colors.
Instruments				
	Dash	CT1	CT4397	Painted Spa White. Piggott.
		CT4398	CT40304	Painted New White. Wood dash optional for ant TR4. Evidence indicates that all later TR4s shipped to the USA had wood dashes, say after CT30000 or so.
		CTC50001	CTC78684	Wood Dash became standard.
	Instrument Glass	CT1	CT11307	Curved Glass
		CT11308	CTC78684	Flat glass.
	Instrument Panel	CT1	4398CT	Made of stamped aluminum. Clough
		4399CT	CT40304	Made of black painted steel for those dashes not having wood. This panel was eliminated on wood dashes.
	Switch Mounting Plinth	CT1	25934CT	
		2935CT A 5	CT40304	I think this was a change to plastic from vinyl coated cardboard, but I need to check.
		CTC50001	CTC78684	Changed to be more open on top to give better accessability to the switches.
Controls				

Table 4: TR4 Interior Changes

Group	Item	From Commision Number	To Commision Number	Notes
	Gear Shift Boot	CT1	CT40304	One piece boot with ribs on top.
		CTC50001	CTC78684	Two piece rubber boot. Optional gaiter w/top boot could also have been fitted.
	Light Switch	CT1	CT40304	Located in Switch mounting Plinth.
		CTC50001	CTC78684	Moved to steering wheel column. Stalk switch replaced pull switch.
	Dimmer Switch	CT1	CT40304	Similar to later TR3. Moss.
		CTC50001	CTC78684	New switch, squarer with cast body (rather than stamped). Moss.
	Instrument Light Reostat	CT1	CT40304	
		CTC50001	CTC78684	Moved from in the dash to the Switch mounting Plinth when the light switch moved to the steering column.
Misc				
	Handbrake Lever	CT1	CT40304	Similar to TR3 with push on handgrip
		CTC50001	CTC78684	Black painted lever with plastic handle astride the trannie tunnel between the seats.
	Dash Support	CT1	CT40304	Cast aluminum piece covered with black wrinkle paint.
		CTC50001	CTC78684	Piece now padded and contains room for a radio and an extention to surround the gear shift mechanism.

Table 5: TR4 Trunk Changes

Group	Item	From Commision Number	To Commision Number	Notes
Hard-ware				
	Trunk Lid Rein-forcement (frame)	CT1	5642CT	Allowed for the operation of the early Trunk Lid Stay assembly. Moss, Clough, Piggott.

Table 5: TR4 Trunk Changes

Group	Item	From Commision Number	To Commision Number	Notes
		5643CT	CTC78684	Changed for the "automatic" type trunk stay used on all later TR's up until late TR7s and TR8s.
	Trunk Stay Rod	CT1	5642CT	Early TR4s used a prop rod similar to the TR3. This snapped into a rubber piece built into the trunk lid frame
		5643CT	CTC78684	Stay similar to TR250/6 type. Rubber piece and metal piece attached to inner trunk piece to put the prop rod end in when open eliminated.
Trim				
	Trunk Floor/Spare Wheel Cover	CT1	14208CT	
		14208CT	CTC78684	Possibly strengthened.
Tools				
				I know the early TR4 had a tool roll that was populated as much as the TR3 tool roll. Early TR4 tool rolls were a peach colored plastic, but were black plastic later (so they knew which ones went in the TR4 versus the TR3s?). The number of tools went down over time, but we need to track this. I seem to remeber that Piggotts book covered this, but I couldn't find it.