SECTION L

THE STEERING

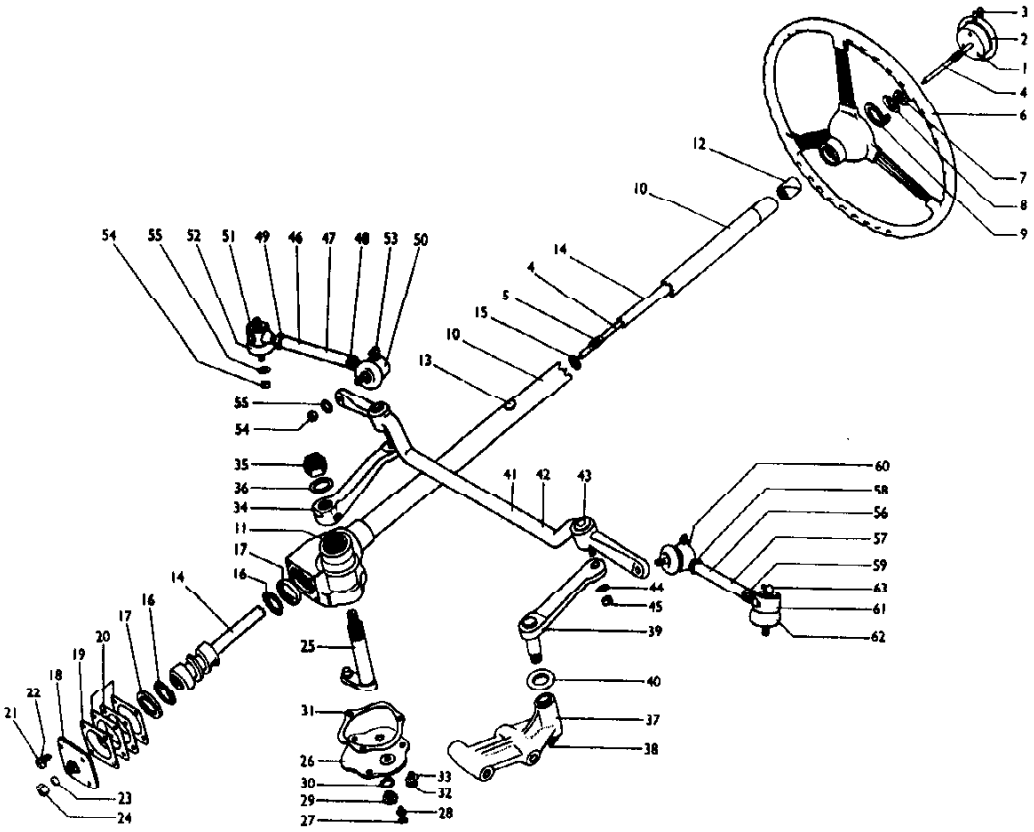

Figure L1.
Exploded view of steering details.

1. Control head.
2. Horn button and cover.
3. Flasher direction indicator switch.
4. Stator tube.
5. Anti-rattle spring.
6. Steering wheel.
7. Steering wheel nut.
8. Steering wheel washer.
9. Flasher direction trip lever.
10. Outer column and steering column.
11. Rocker shaft oil seal.
12. Outer column top bush.
13. Steering unit filler plug.
14. Inner column and cam.
15. Inner column rubber ring.
16. Cam ball race.
17. Top and bottom ball tracks.
18. End cover.
19. End cover joint washer.
20. Inner column adjustment shims.
21. End cover bolt.
22. End cover spring washers.
23. End cover/stator tube olive.
24. End cover/stator gland nut.
25. Rocker shaft and cam lever assembly.
26. Steering box cover.
27. Rocker shaft adjusting screw.
28. Rocker shaft adjusting screw nut.
29. Steering unit drain plug.
30. Drain plug washer.
31. Steering box cover joint.
32. Steering box cover bolt.
33. Steering box cover spring washers.
34. Drop arm.
35. Drop arm nut.
36. Drop arm lockwasher.
37. Idler bracket.
38. Grease nipple.
39. Idler bracket and fulcrum pin.
40. Grease seal.
41. Centre tie rod assembly.
42. Centre tie rod.
43. Silentbloc bush and taper pin assembly.
44. Washer.
45. Nyloc nut.
46. Outer tie rod assembly R.H.
47. Outer tie rod tube.
48. R.H. threaded locknut.
49. L.H. threaded locknut.
50. R.H. threaded ball joint.
51. L.H. threaded ball joint.
52. Rubber boot.
53. Grease nipple.
54. Nyloc nut.
55. Washer.
56. Outer tie rod assembly L.H.
57. Outer tie rod tube.
58. R.H. threaded locknut.
59. L.H. threaded locknut.
60. R.H. threaded ball joint.
61. L.H. threaded ball joint.
62. Rubber gaiter.
63. Grease nipple.

DATA

Make	Cam Gears Limited.
Type	Cam and Lever.
Steering ratio	14 : 1
No. of steering wheel turns lock to lock	2⅓

THE STEERING

DESCRIPTION

The steering is effected by a cam and lever type steering unit mounted drop arm upward at the side of the chassis frame and under the instrument facia in the cockpit of the car. A centre tie rod is mounted on the top face of the steering drop arm and is supported at the second end by an idler bracket assembly fitted in a similar manner to the steering unit but on the opposite side of the chassis frame. Movement of the steering wheel is transferred through the steering to the centre tie rod and the outer tie rod assemblies to the steering levers attached to the inside faces of the vertical links. The vertical link pivots top and bottom on a ball joint and trunnion block respectively and its limit of travel is effected by an eccentric mounted on the inside lug of the trunnion block contacting lugs cast in the front and rear faces of the two vertical links specifically for this purpose.

MAINTENANCE

FIRST 500 MILES (805 kms.)

Check oil level in steering unit.
Check alignment of front roadwheels.
Lubricate the steering linkage.

EVERY 1,000 MILES (1,610 kms.)

Lubricate all steering joints.

EVERY 5,000 MILES (8,050 kms.)

Check oil level in steering unit.

LUBRICATION

LUBRICATION OF THE STEERING LINKAGE

The lubrication of the steering linkage is confined to nine points and is effected through nipples with a pressure or hand operated grease gun. It is best carried out with the front suspension blocked and with the weight of the car off the road wheels so that the steering can be turned from lock to lock. The grease nipples are in the following positions.

(i) One at each end of each outer tie rod. Fig. L2.

(ii) One in the bottom end of the idler bracket assembly situated on the opposite side to the steering unit. Fig. L3.

(iii) One at each end of the two vertical links situated at the outer end of each wishbone assembly. Figs. L4 and L5.

Sufficient grease should be injected into each nipple until that which exudes is observed to be clean; the excess grease is then wiped away.

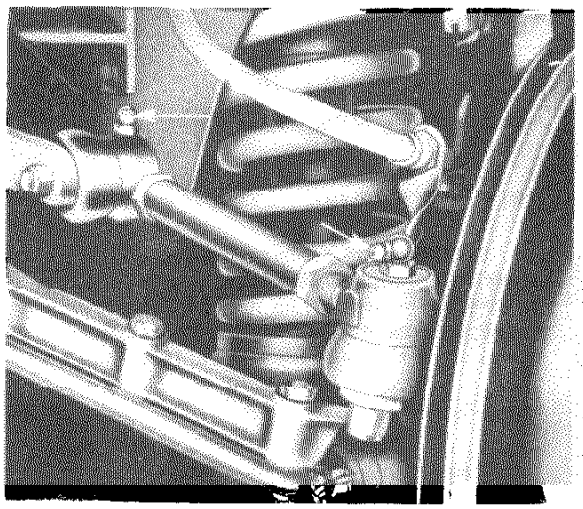

Figure L2.

Location of L. H. outer tie rod lubricators R. H. lubricators are symmetrically opposite.

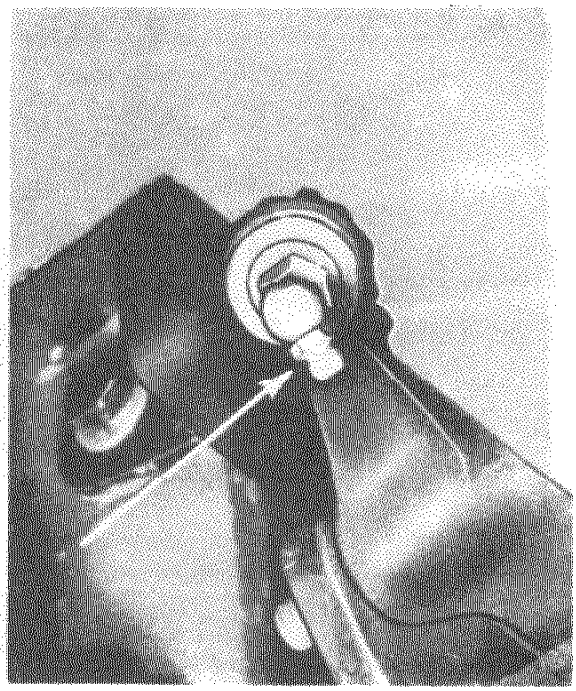

Figure L3.

Location of idler bracket lubricator.

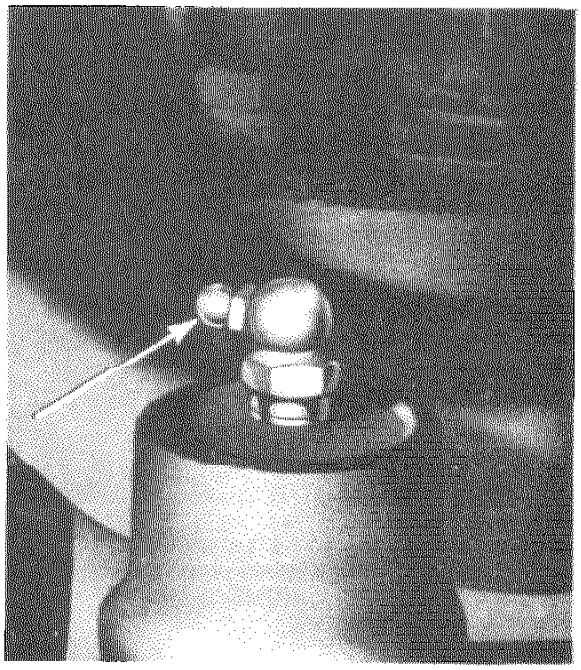

Figure L4.

Location of top steering swivel lubricator.

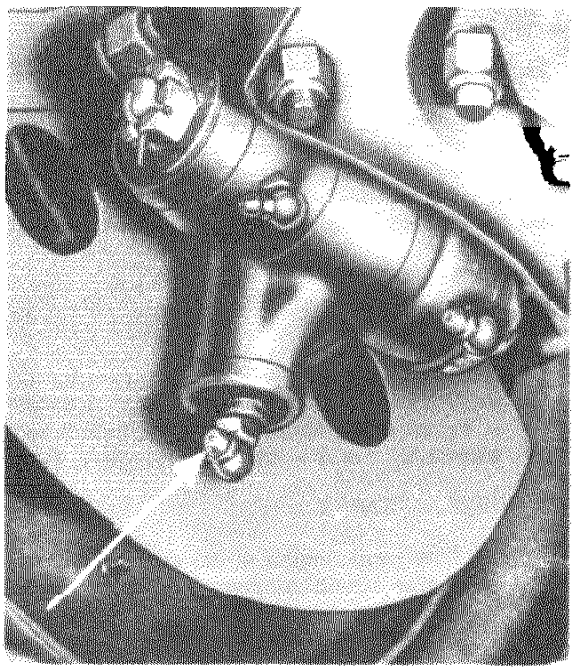

Figure L5.

Location of bottom steering swivel lubricator.

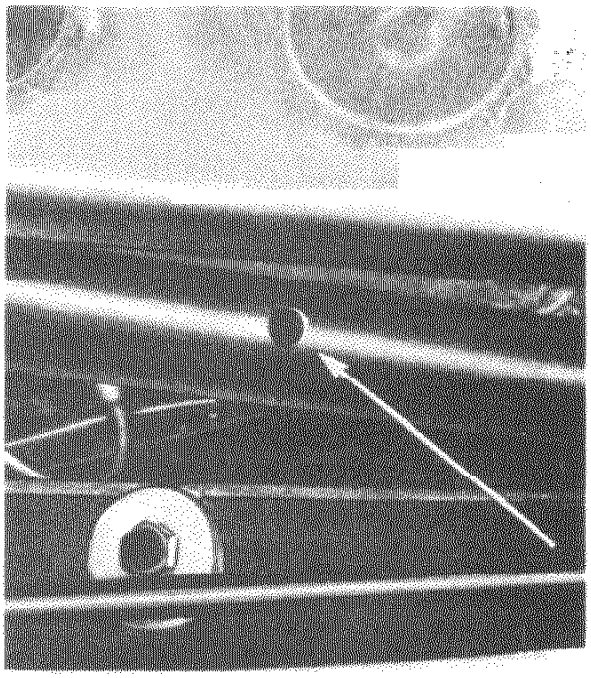

Figure L6. (Left)
Location of steering unit lubricator.

CHECKING THE OIL LEVEL Fig. L6.

Withdraw the rubber plug from the steering column situated inside the engine compartment and top up with the recommended brand and grade of oil until it overflows. Clean off the excess oil and replace the plug.

OIL CAPACITY

$1\frac{1}{2}$ Imp. pints. 2 U.S. pints (0.852 ltrs.)

THE STEERING WHEEL

DIAMETER

17" 431.800 mm.

DESCRIPTION

The steering wheel is of the flat wire spoked sprung type and locates by splines on the top end of the inner steering column being held by a nut which also secures and positions the trip lever of the cancelling device of the flasher direction indicators. When the roadwheels are in the straight ahead attitude, one of the three spokes, which are equidistant, is positioned so that it is between the speedometer and engine speed indicator instruments without masking either.

REMOVAL AND REPLACEMENT

1. REMOVAL

Withdraw the control head from the centre of the steering wheel as detailed in the ELECTRICAL EQUIPMENT, SECTION O Pt. 1. Identify the position of the steering wheel to the steering column, remove the nut and control head trip lever. Utilizing a suitable extractor, remove the steering wheel from the steering column.

2. REPLACEMENT

The replacement of the steering wheel is the reversal of the removal sequence but particular attention must be given to the following points:-

(i) That the front roadwheels are set in their straight ahead position.

(ii) That the steering wheel is fed onto the splined top of the steering column so that the top spoke is situated immediately between the speedometer and engine speed indicator instruments.

(iii) That the control head trip lever is in the six-o'clock position.

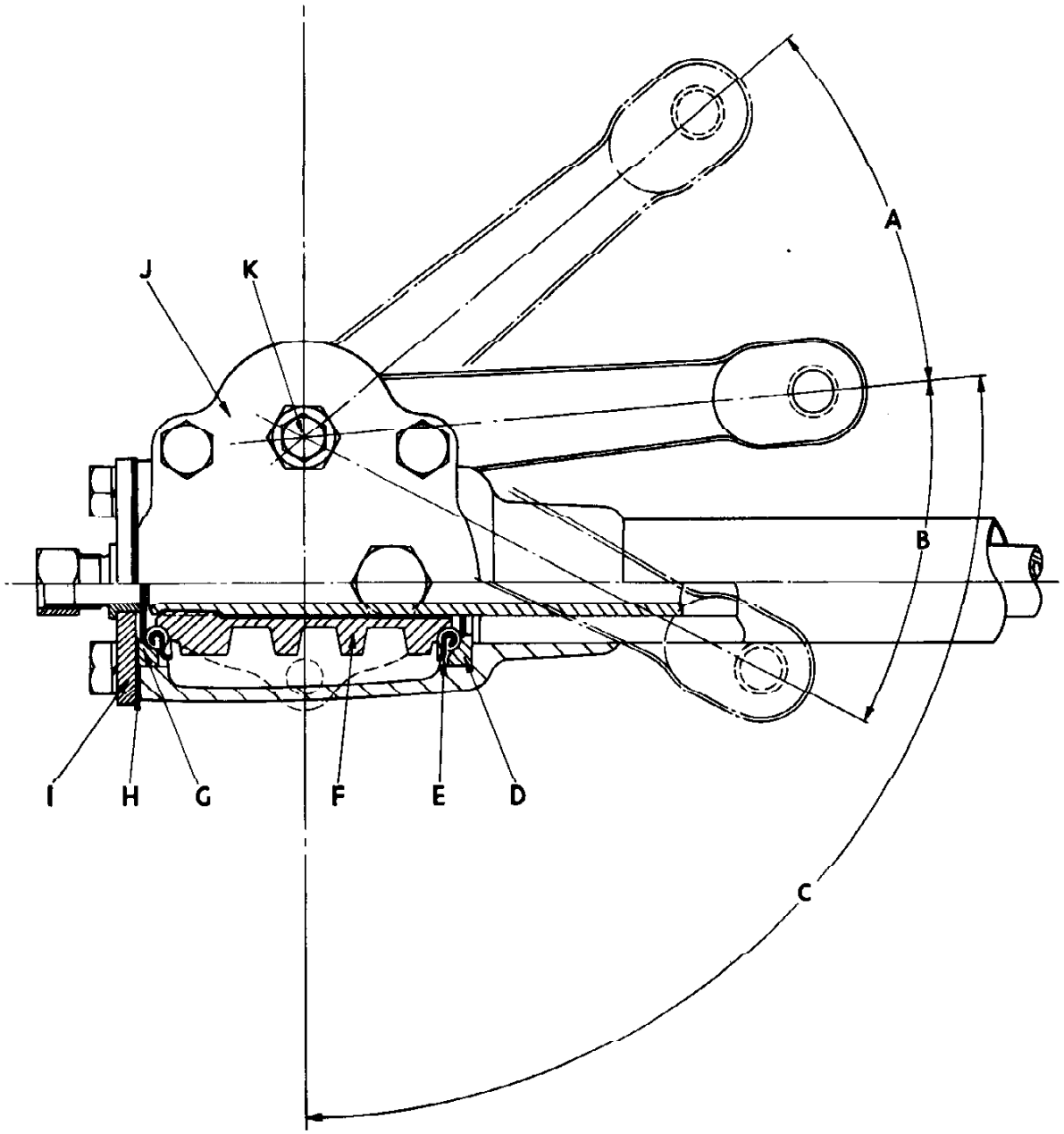

Figure L.7

Partial cross section through steering unit, also showing angular travel of drop arm.

A. 34° L.H. Lock.
B. 32° R.H. Lock.
C. 95°
D. Top ball race track.
E. Top ball race.
F. Cam on bottom end of steering column.
G. Bottom ball race track.
H. Shim pack.
I. Bottom cover.
J. Cover plate.
K. Rocker arm adjusting screw.

R.H. drive illustrated; L.H. drive symmetrically opposite.

THE STEERING UNIT DROP ARM

DESCRIPTION Fig. L7.

The steering unit drop arm is located on the outer end of the rocker shaft by splines so that it points upward and toward the steering wheel. During manufacture a mark is made on the bottom end of the rocker shaft and the face of the drop arm. the latter should always be fitted so that these marks align. When these marks are not readily distinguished the drop arm relationship should be marked by some other method.

When the drop arm is correctly positioned in the end of the rocker shaft and the inner steering column set for straight ahead travel the drop arm will be 5^{o} away from the steering column and give a R H. lock of 32^{o} and a L.H. lock of 34^{o}.

REMOVAL AND REPLACEMENT
STEERING UNIT DROP ARM

The steering unit drop arm cannot be removed without first withdrawing the steering unit from the car. It must never be removed with hammer blows as the impact from these blows is transferred to the hardened steel pin in the lever of the rocker shaft resulting in irreparable damage being done to the cam worm inside the steering box.

1. REMOVAL

Remove the radiator as detailed in THE COOLING SYSTEM, SECTION C. Detach the tapered pin of the centre tie rod from the drop arm by removing the nut and utilizing a suitable extractor. Identify the relationship of the drop arm to the rocker shaft if the existing ones are not distinguishable. Remove the drop arm from the rocker shaft by removing the nut and utilizing a suitable extractor.

2. REPLACEMENT

The replacement of the steering unit is the reversal of the removal sequence but particular attention must be given to the following points:

(i) That the drop arm is returned to its correct relative position to the rocker shaft.

(ii) That the setting of the steering lock stops are checked as detailed on page L9.

THE STEERING UNIT

DESCRIPTION

The steering unit is of the cam and lever type with the cam in the form of a generated worm on the bottom end of the inner steering column and the lever integral with one end of the rocker shaft with a roller peg locating the cam of the inner steering column. Rotation of the inner steering column by movement of the steering wheel causes the roller peg to move up and down the cam and so rotates the rocker shaft to which it is attached by the lever. The steering drop arm is splined to the outer end of the rocker shaft and transfers the movement to the road wheels to which it is attached by tie rods.

The roller peg which locates the cam has a conical end and does not contact the bottom of the cam track. A certain amount of normal wear can, therefore, be cancelled out by engaging the peg more deeply in the cam track. This is effected by a screw, locked by a nut. which is in contact with a hardened steel pad in the rocker shaft.

The rocker shaft is mounted in a bush bearing and has a lip type oil seal toward its splined end. The inner steering column is mounted either side of the cam by a ball bearing cage and adjustment is effected by the disposition of shims between the box and the end cover. The olive and gland nut effects an oil seal.

The entire cam and rocker shaft assembly runs in an oil bath.

REMOVAL AND REPLACEMENT
STEERING UNIT Fig. L8.

1. REMOVAL

Drain the radiator and remove the radiator drain tap as detailed in THE COOLING SYSTEM. Remove the steering wheel from the steering column as detailed on page

Release the steering column clamps by slackening the two nuts situated under the instrument facia and remove the draught excluder. Detach the drop arm from the centre tie rod by removing the nut and utilizing a suitable extractor. Slacken the pinch bolt of the steering unit mounting bracket situated above the steering box and detach the steering column mounting bracket from the outside face of the chassis frame crossmember by withdrawing two bolts. Withdraw the steering unit from the car in a forward and downward direction.

2. REPLACEMENT

The replacement of the steering unit is the reversal of the removal sequence but particular attention must be given to the following point.

That before the drop arm is attached to the centre tie rod assembly the steering lock stops are checked.

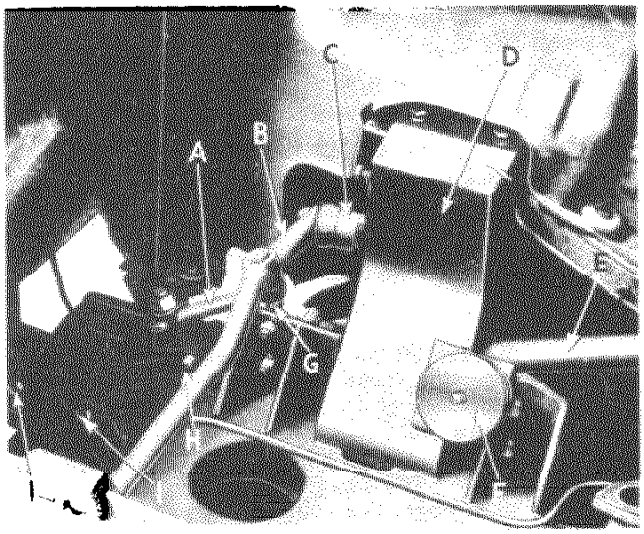

Figure L.8
View of right hand front corner of engine compartment showing steering drop arm and centre tie rod.

A. Steering unit drop arm.
B. Centre tie rod assembly.
C. Outer tie rod assembly inner ball joint.
D. Front suspension pillar.
E. Steering column.
F. Front engine mounting.
G. Centre tie rod tapered pin assembly.
H. Steering unit mounting bracket pinch bolt.
I. Steering unit mounting bracket bolts.

DISMANTLING AND ASSEMBLING
STEERING UNIT

1. DISMANTLING

Identify the position of the drop arm relative to the rocker shaft. Detach the drop arm from the rocker shaft by removing the nut and utilizing a suitable extractor. Identify the top face of the steering unit bracket and withdraw from the rocker shaft bearing housing by slackening the pinch bolt. Drain off the oil by withdrawing the screwed plug from the cover plate and remove the latter from the steering unit by withdrawing three bolts. Cover the splines of the rocker shaft so they will not damage the oil seal and withdraw it from the steering unit. Remove the bottom end cover and shims from the bottom of the steering unit by withdrawing four bolts. Eject the inner steering column and collect the bottom ball race assembly, remove the two ball race components from the top of the cam worm and extract the third from the bottom of the steering outer column. Prise out the oil seal and eject the bush bearing from the rocker shaft housing when they are known to be badly worn. Withdraw the felt bush from the top of the steering column.

2. ASSEMBLING

The assembling of the steering unit is the reversal of the removal sequence but particular attention must be given to the following points:-

(i) That the felt seal fitted to the top of the steering unit is left until last.

(ii) That the rocker shaft splines are covered so they will not foul the lip of the oil seal.

(iii) That the rocker shaft engagement adjustment is effected as detailed below.

(iv) That the inner column bearings are adjusted as detailed below.

(v) That the bottom steering unit mounting bracket is fitted according to the identification markings or by following the procedure detailed below.

(vi) That the drop arm is fitted according to its identification marking or by following the procedure detailed on page L6.

ADJUSTING ROCKER SHAFT ENGAGEMENT Fig. L9.

The adjustment governs the amount of engagement between the conical pin in the lever of the rocker shaft and the cam worm. It is accurately set during the initial assembly of the car, it will not require attention until a considerable mileage has been covered or in extreme instance when the adjusting screw has been inadvertantly slackened off.

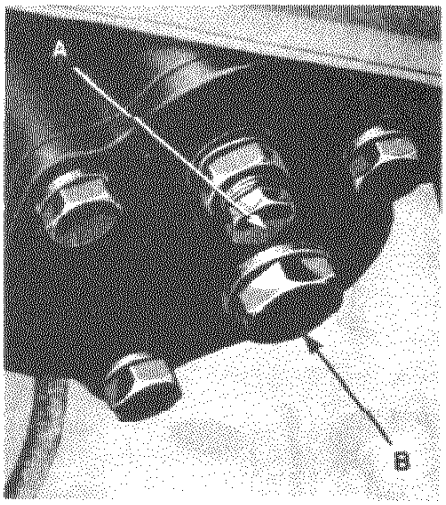

Figure L9. (Left)

Location of rocker shaft adjusting screw and steering unit drain plug.

A. Rocker shaft adjusting screw.
B. Steering unit drain plug.

Slacken off the locknut of the rocker shaft adjusting screw in the cover plate on the underside of the steering unit. Turn the screw clockwise to increase the engagement and anti-clockwise to decrease the engagement. The adjustment is said to be correct when slight resistance is felt when turning the rocker shaft from the straight ahead position.

INNER COLUMN BEARINGS - ADJUSTMENT

Assemble the inner column and bearings by the reversal of the removal sequence and utilizing the old shim pack fit the end cover. Adjust to remove all end float in the bearings without preload by adding or removing shims as necessary.

STEERING UNIT
MOUNTING BRACKET

1. BOTTOM

The bottom steering unit mounting bracket is fitted to the rocker shaft bearing housing so that the two chassis attachment holes are on the opposite side of the rocker shaft to the steering wheel and also the casting in which they are drilled points downward. The steering

unit bracket is secured to the rocker shaft housing by a pinch bolt and to the outside of the chassis frame side member and a mounting plate welded to the front tubular crossmember by two bolts.

2. TOP

The top steering unit mounting bracket consists of two cast "U" clamp pieces, one either side of the steering column. These are secured together by nuts and the top half is attached by two stays to the underside of the windscreen.

THE STEERING LOCK STOPS

DESCRIPTION

The steering lock stops consist of eccentric discs mounted on a raised lug cast integrally with the trunnion blocks and a bolt fitted through it facilitates adjustment. It is most important that the steering action of the front road wheels stop before the peg in the rocker shaft reaches the end of the cam path. The steering lock stops are accurately set during the initial assembly of the car and should not need resetting unless a replacement steering unit is fitted or the drop arm has been removed from the rocker shaft.

SETTING THE STEERING LOCK STOPS

Detach the steering unit drop arm from the centre tie rod assembly by removing nut and utilizing a suitable extractor. Block the two front suspension units as detailed in THE FRONT SUSPENSION SECTION Pt. 1 and lift the front off the ground. Slacken off the steering lock stop bolts on the inside lug of the front suspension trunnion block. Turn the roadwheels by hand to full lock and follow with the steering wheel but do not apply any force as it approaches the full extent of its travel. Reset the position of the steering lock eccentric so that the pin in the centre steering rod reaches its limit of travel before the drop arm. Check that the tyre does not foul the wheel arch when on full lock. Adjust the lock stops to give minimum clearance if necessary. Repeat the foregoing with the other lock and fit the centre steering rod to the drop arm and secure with a nut. Lower the front of the car to the ground.

TURNING RADIUS ANGLES

Inside roadwheel	Outside wheel.
10^{o}	10^{o}
20^{o}	18^{o} 30'
30^{o}	27^{o}

The roadwheel to which side the car is turning is the inside wheel.

THE IDLER BRACKET

DESCRIPTION

The idler bracket assembly consists of a drop arm welded to a fulcrum pin mounted in a threaded bore in the top end of a bracket similar in shape to the steering unit mounting bracket. The idler bracket assembly is fitted to the opposite side of the chassis to the steering unit and attached to one end of the centre tie rod; the other end being attached to the drop arm of the steering unit.

A single nipple is fitted to the bottom face of the threaded bore for lubrication purposes and a rubber seal is interposed between the top of the bore and the underside face of the drop arm welded to the fulcrum pin.

REMOVAL AND REPLACEMENT IDLER BRACKET ASSEMBLY

1. REMOVAL

Detach the drop arm of the idler bracket assembly from the opposite end of the centre tie rod to the steering unit by removing the nut and utilizing a suitable extractor. Remove the

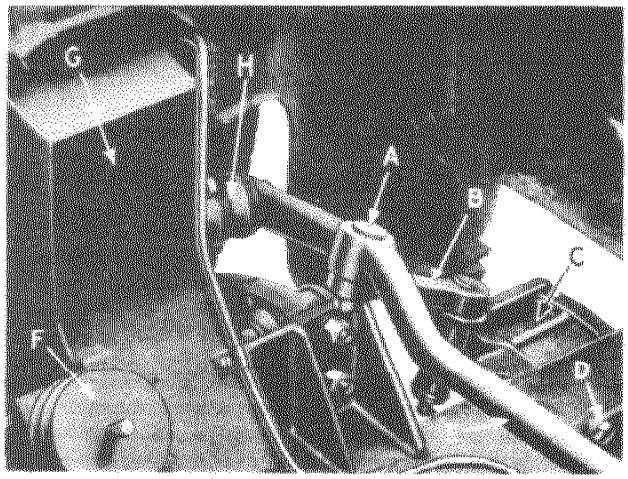

Figure L10

View of L. H. front corner of engine compartment, showing idler bracket and centre tie rod

A. Centre tie rod taper pin assembly.
B. Idler bracket drop arm.
C. Idler bracket.
D. Idler bracket attachment bolt.
E. Centre tie rod assembly.
F. Front L. H. engine mounting.
G. Front suspension pillar.
H. Outer tie rod assembly, inner ball joint.

idler bracket assembly from the outside face of the chassis frame crossmember by withdrawing two bolts.

2. REPLACEMENT

The replacement of the idler bracket assembly is the reversal of the removal sequence but particular attention must be given to the following point.

That the drop arm and fulcrum pin are correctly set as detailed below.

DISMANTLING AND ASSEMBLING
IDLER BRACKET ASSEMBLY

1. DISMANTLING

Withdraw the drop arm and fulcrum pin assembly from the idler bracket by unscrewing. Remove the rubber seal from the shank of the threaded fulcrum pin.

2. ASSEMBLING

The assembling of the idler bracket assembly is the reversal of the dismantling sequence but particular attention must be given to the following point.

That the fulcrum pin thread is covered while the oil seal is fitted to prevent damage.

SETTING IDLER BRACKET DROP ARM

Screw the fulcrum pin into its bracket without using force until it bottoms, then unscrew one full turn. Ensure that the position of the drop arm is upward and points away from the bracket attachment holes.

THE STEERING SWIVELS

The two steering swivels are closely built into the front suspension units and it is for this reason they are omitted from this section and dealt with more fully in THE FRONT SUSPENSION, SECTION M, Part I.

1. THE TOP STEERING SWIVEL

The removal of the top steering swivel entails the removal of the ball joint from the top end of the vertical link and the outer end of the top wishbone assembly.

2. BOTTOM STEERING SWIVEL

The removal of the bottom steering swivel entails the removal of the trunnion from the bottom end of the vertical link and outer end of the bottom wishbone assembly.

THE CENTRE AND OUTER TIE ROD ASSEMBLIES

DESCRIPTION

The centre tie rod assembly is of fixed length and attached by its extreme ends to the inner ball joints of the outer tie rod assemblies. The centre tie rod is mounted on the top faces of the steering and idler unit drop arms by tapered pins fitted in metal and rubber bonded bushes; a special tool is required to extract these pins from the drop arms.

The two outer steering rod assemblies connect the extreme ends of the centre tie rod to the steering levers mounted on the inside face of the vertical link. Each consists of a length of tube with a ball joint attached at each end. The shanks of the ball joints have handed threaded ends so their length can be varied without detaching the tapered pins of the ball joints from centre tie rod or steering lever.

In each instance, the ball joint having the L.H. threaded shank is fitted to the steering lever end of the assembly.

The outer tie rods are adjustable to facilitate the setting of the front roadwheel alignment. However, their length is accurately set during initial assembly of the car and should require no attention during normal circumstances.

The centre pins of the ball joints, which locate the centre tie rod and steering lever, have tapered faces and a special tool is required for their removal.

REMOVAL AND REPLACEMENT OUTER TIE ROD ASSEMBLY

1. REMOVAL

APPLY THE HANDBRAKE

Turn the roadwheels to full lock on the side requiring outer tie rod removal. Jack up the car and remove the roadwheel. Identify the ball joint adjacent to the steering lever. Detach the outer tie rod ball joint from the steering lever and the inner ball joint from the centre tie rod by removing the nuts and utilizing a suitable extractor.

2. REPLACEMENT

The replacement of the outer tie rod is the reversal of the removal sequence but particular attention must be given to the following points.

That when a new replacement is being fitted it is set to the length of the one removed or to that specified on page L12.

That the front roadwheel alignment is checked as detailed on page L14.

REMOVAL AND REPLACEMENT CENTRE TIE ROD

1. REMOVAL

APPLY THE HANDBRAKE

Jack up the front of the car and remove the two roadwheels. Withdraw the inner ball joints of the outer tie rod from the outer ends of the centre tie rod by removing the nuts and utilizing a special extractor. Remove the taper pins from the top faces of the steering and idler unit drop arms by removing the nuts and utilizing a special extractor, withdraw the centre tie rod through either front wheel arch.

2. REPLACEMENT

The replacement of the centre tie rod is the reversal of the removal sequence but particular attention must be given to the following point:

That the front roadwheel alignment is checked.

DISMANTLING AND ASSEMBLING
OUTER TIE ROD ASSEMBLY Fig. L11.

1. DISMANTLING

Determine and make a note of the dimension between the centres of the two ball joints. Slacken off the ball joint lock nuts and remove the ball joints; the ball joint adjacent to the steering lever has a L.H. thread.

2. ASSEMBLING

The assembling of the outer tie rod assembly is the reversal of the dismantling sequence but particular attention must be given to the following points:

(i) That the ball joint having the L.H. thread shank is identified as such so that it can be replaced adjacent to the steering lever.

(ii) That the dimension between the ball joint centres is set to that noted during the dismantling sequence or the dimension specified on page L13.

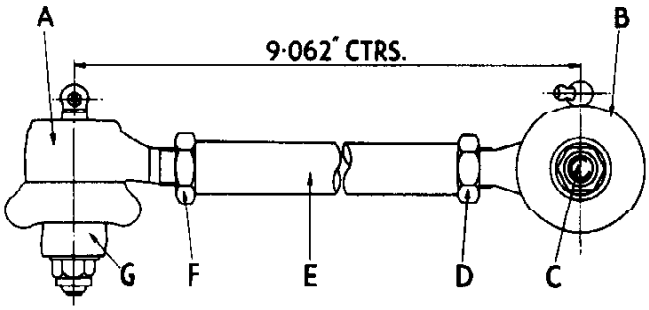

Figure L11
The outer tie rod assembly.

R.H. illustrated L.H. symmetrically opposite.

A. Ball joint attached to steering lever.
B. Ball joint attached to centre tie rod.
C. Tapered pin.
D. R.H. threaded locknut.
E. Centre tube.
F. L.H. threaded locknut.
G. R.H. steering lever.

REMOVAL AND REPLACEMENT
CENTRE TIE ROD SILENT BLOC BUSH
AND TAPERED PIN ASSEMBLY

1. REMOVAL

Eject the silentbloc bush and tapered pin assembly from the top of the centre tie rod by applying pressure to the washered end of the tapered pin. This washer will close to the end of the metal bush and so transfer the thrust, ejecting the silentbloc bush and tapered pin assembly from the centre tie rod.

2. REPLACEMENT

The replacement of the silentbloc bush and tapered pin assembly is the reversal of the removal sequence but particular attention must be given to the following:

(i) That the silentbloc bush and tapered pin assembly is offered up to the centre tie rod so that the tapered pins protrude away from the two upturned ends of the centre tie rods.

(ii) That the silentbloc bush and tapered pin assembly is pressed in, washered end first, with the thrust being applied to the outside metal bush until its end face is flush with the machined facing on the underside of the centre tie rod.

DIMENSIONS

	English	Metric
Length between ball joint centre.	22.681"	579.0974 mm.
	22.639"	579.0306 mm.
Length of centre tie rod	9.062"	230.1870 mm.

THE STEERING LEVER.

DESCRIPTION

The two steering levers are steel stampings and are attached to the inside faces of the vertical links. They are connected to the ball joints at the outer ends of the two outer tie rod assemblies and they transfer the movement of these tie rods to the vertical links which pivot on the outer ends of the top and bottom wishbone assemblies.

REMOVAL AND REPLACEMENT
STEERING LEVERS

1. REMOVAL

APPLY THE HANDBRAKE

Jack up the front of the car and remove the roadwheel. Turn the steering full lock, to the side requiring the steering lever removal. Detach the nut and withdraw the tapered pin of the outer tie rod ball joint by utilizing an extractor. Remove the flexible hose bracket from the front fixing point of the steering lever by withdrawing one bolt. Remove the steering lever from the inside face of the vertical link by withdrawing the second bolt.

2. REPLACEMENT

The replacement of the steering lever is the reversal of the removal sequence but particular attention must be given to the following points:

(i) That the steering lever is offered up to the inside face of the vertical link so that it points forward and downward.

(ii) That the front steering lever attachment bolts also secure the bracket of the front brake hydraulic hose.

(iii) That the front roadwheel alignment is checked.

THE FRONT ROADWHEEL ALIGNMENT

DESCRIPTION

The front roadwheel alignment is the attitude in which the front section of the roadwheel, that portion of the front roadwheels forward of the hubs, is set. The roadwheels when positioned in their straight ahead position must be set so they "toe-in", i.e., turned toward the centre line of the car; but when they are set to effect a turn they will, in relationship to one another, "toe-out".

When the car is turning, both the front roadwheels must travel in circles having a common centre and the inside roadwheel must have a smaller radius than the circle travelled by the outside roadwheel. This condition is necessary to avoid excess tyre wear which would result if the roadwheels remain parallel. The amount of "toe-out" will increase as the radius of the turn becomes shorter and the corresponding alteration to the alignment of the front roadwheels is effected by the length of the outer tie rod assemblies, which is adjustable, and the design of the steering levers.

The need for checking the alignment of the front roadwheels is usually indicated by the steering behaviour of the car; a persistent tendency to turn to one side or to wander from side to side. Also abnormal tyre wear which is detailed in THE ROAD WHEELS AND TYRES, SECTION K. The angular difference between one roadwheel and the other is 1^{o} and the greater angle is always on the inside of the turn.

The front roadwheel alignment is accurately set during the initial assembly of the car and will require little attention during its normal life.

CHECKING THE FRONT ROADWHEEL ALIGNMENT Fig. L12.

In order to effect a satisfactory check, the car must satisfy certain basic requirements which are as follows:

(i) Tyre pressures must be correct for all four tyres and the amount of wear on the front tyres must be near to identical as possible.

(ii) The car must be loaded as it attains its datum height, see THE CHASSIS FRAME, SECTION P.

(iii) The front roadwheel rims are known to be true, the front roadwheel hubs are correctly adjusted and there is no perceptible amount of wear in any of the components of the independent front suspension or steering linkage.

(iv) The wheelbase measured on both sides of the car between the two hub centres are identical when the front roadwheels are in the straight ahead position.

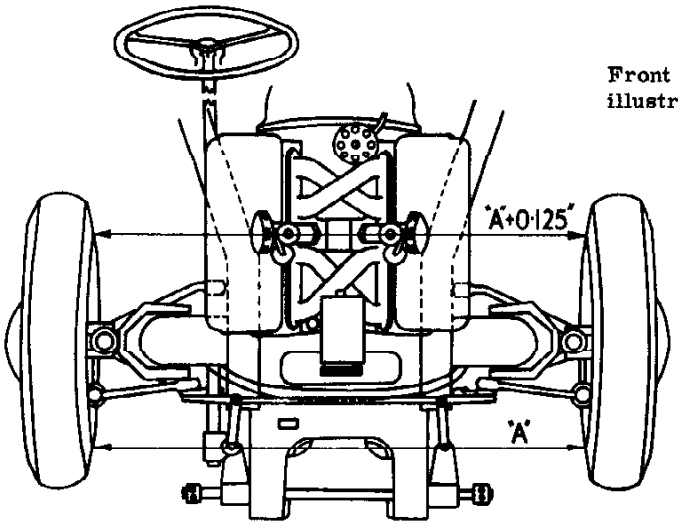

Figure L12.
Front roadwheel alignment. R.H. drive illustrated; L.H. drive symmetrically opposite.

SETTING FRONT ROADWHEEL ALIGNMENT

When the car satisfies the conditions detailed in "Checking, front wheel alignment" above, roll it forward onto a stretch of smooth level ground. Check the front roadwheel alignment with a proprietary checking equipment, carefully following the manufacturers instructions. When only a fractional correction is necessary it can be made to the outer tie rod on the opposite side of the steering unit. Slacken the two locknuts, the steering lever side is L.H. thread and shorten or lengthen the outer tie rod by turning the centre rod and then tighten the locknuts. Roll the car forward, recheck and make any further adjustment.

If any appreciable amount of misalignment is determined, check the length of the two outer tie rod assemblies; should these be of equal length make the necessary adjustment to both. When they are determined to be of unequal length, correct the outer tie rod adjacent to the steering unit to that specified on page L12, and make any further correction to the second outer tie rod. After making such corrections, it is good practice to check the length of the outer tie rods and when

found to differ appreciably from the dimension specified, the front suspension and steering should be checked thoroughly to assess any possible accidental damage.

DIMENSION
FRONT ROADWHEEL ALIGNMENT

FRONT ROADWHEEL ALIGNMENT.	0.125" TOE-IN. 3.175 mm. "

THE ASSESSMENT OF ACCIDENTAL DAMAGE

The suspected components must be removed from the car, thoroughly cleaned and examined. In the instance of the steering lever, it must be laid on a surface plate and the determined dimensions compared with those given in the illustration. Fig. L13.

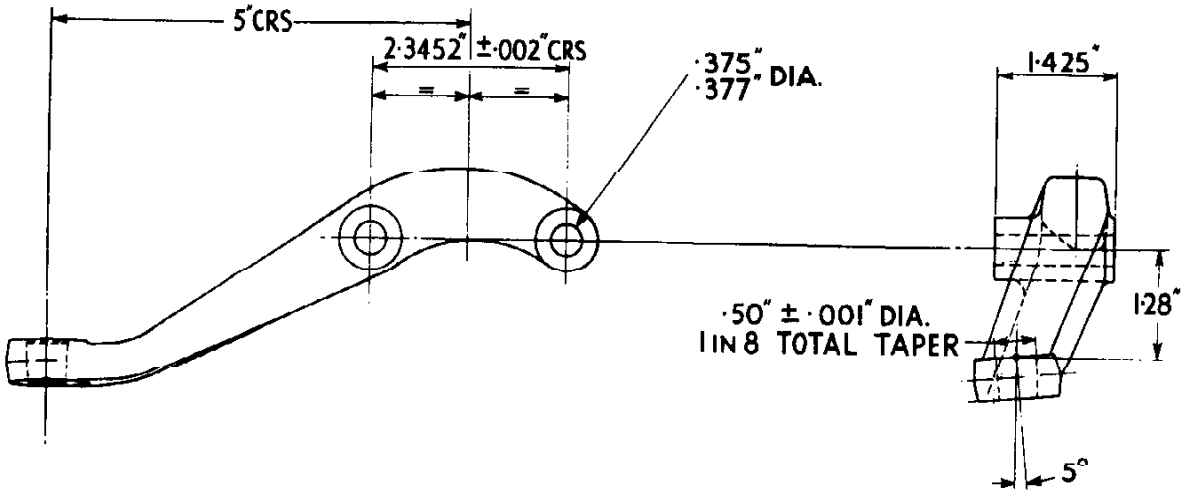

Figure L13.
The steering lever R.H. illustrated
L.H. symmetrically opposite.