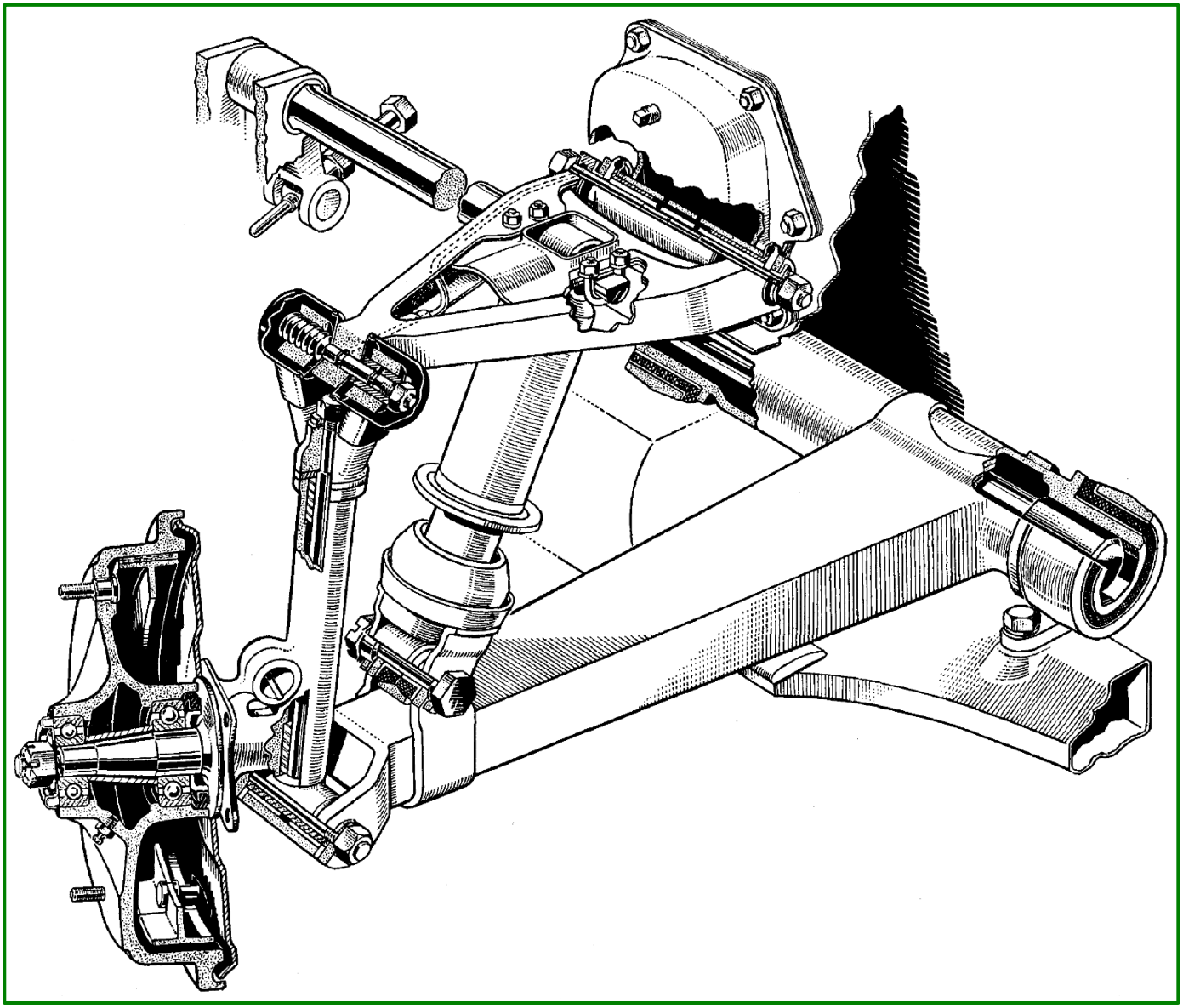
TECHNICAL NOTES SERIES

JOWETT JAVELIN – PA, PB, PC & PD
JOWETT JUPITER – SA



Above: Multi-section layout for Jowett Javelin front suspension. Jupiter is basically similar. Early version illustrated, showing oil feed to the swivel pin yoke.

PART XXIX – SWIVEL PIN YOKE AND UPPER LINK

The Jowett Car Club of Australia Incorporated is not responsible for any inaccuracies or changes that may occur within this document. Every effort has been made to ensure accuracy. It is not a Jowett Car Club publication and, therefore, the Club has no control over its contents. These Technical Notes have been compiled by using the information that was available, which was deemed accurate at the time.

Compiled by Mike Allfrey – November, 2021.
Revised – March, 2024.

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WARNING!
ASBESTOS COULD BE PRESENT IN GASKETS AND FIBRE WASHERS

INTRODUCTORY COMMENT FOR TECHNICAL NOTES

These introductory notes should be read prior to reading Part XXIX of the Technical Notes Series.

The Jowett Technical Notes Series have been an ongoing activity for several years. That means that some techniques and specifications may have been superseded in later notes on the same, or associated topics in the series. Also be aware that some topics and recommendations may be specific to certain Engine Serial Number ranges. It appears that, in Australia, the various State Main Agents did not carry out Service Bulletin information during Jowett active times. A set of known Service Bulletins is in Part III.

Some of the notes are restorations of what was written by members of the Jowett Car Club (UK), the Jowett Car Club (NZ) and by members of the JCCA.

Over the years of involvement with matters Jowett, and with the dawning of the personal computer age, a personal decision was made to help members of the Jowett Car Club of Australia Inc. with technical information. Included with the Technical Notes are 'restored' versions of the Javelin and Jupiter Maintenance Manuals and the associated Spare Parts Catalogues. Future generations will prefer to flick through images on their personal device screens, rather than leafing through pages in a tattered and oil stained book to access information.

The term 'restored' has been used because it soon became apparent that, as with our efforts in restoring Jowett vehicles, we desire excellent quality of workmanship in the reproduction of Jowett related documentation. Not for us the crude, and crooked, photocopies that have been issued over the years. These have, even though accurate at their time, become partly out of date.

Hence the decision to 'restore' the publications and documents that have come to hand.

It should be noted that the Javelin and Jupiter Spare Parts Catalogue is a combination of all the catalogues that were to hand (from 1948 to 1953).

The Maintenance Manuals were originally written on the assumption that they would be used by skilled motor mechanics who had attended service training courses conducted by Jowett Cars Limited and after works closure, were made available for owners who had reasonable mechanical knowledge of motor car maintenance and overhaul.

Included with the Technical Notes Series is a Lucas Overseas Correspondence Course, which can be of great assistance when trouble-shooting electrical problems related to your Jowett, or any other British vehicle of the same period.

Please be aware that this is an ongoing project . . . .

Mike Allfrey – February, 2024

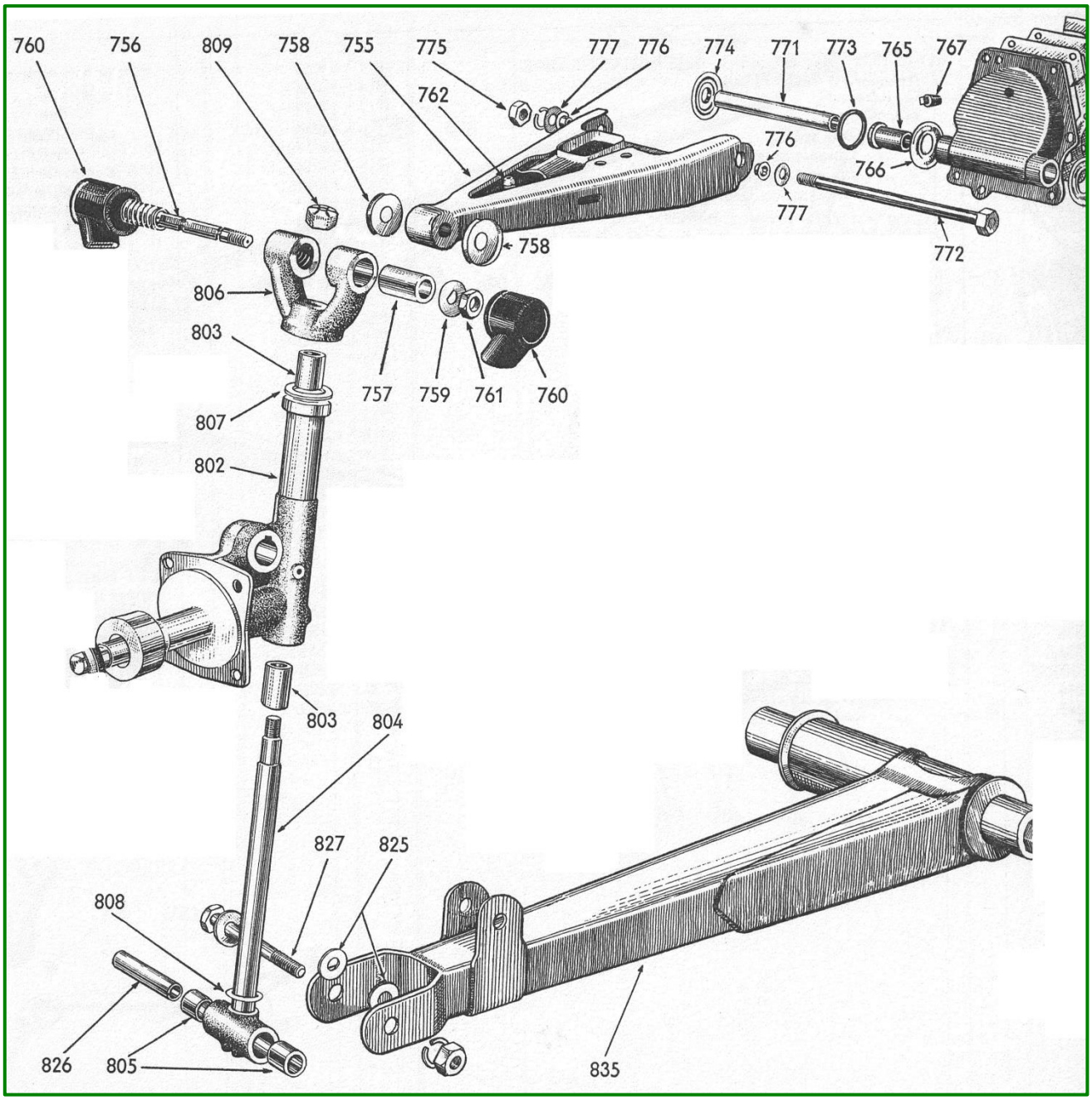
Introduction

These notes have been assembled in a format that, as much as possible, they assist those who have never attempted a Jowett Javelin/Jupiter front suspension overhaul, and for those who cannot realise what the sketches and sectioned drawings relate to.

The Jowett front suspension, if well-maintained, is simple to overhaul.

These notes begin on the next page with a description of the parts that are the car's front suspension. Within the text will be Part Number information show as Item No.-Part No. (804-50276). *Figure 1*, has been scanned from the 1951 Spare Parts Catalogue. Item numbers may differ from those shown in earlier catalogues.

1. Description Of The Parts



Above: Figure 1. Illustration taken from the Spare Parts Catalogue, dated January, 1951.

Legend for the illustration:

Item	Qty.	Part No.	Description
755	2	50279	Upper Link
756	2	50286	Upper Link Pin (fits in *Item 806*)
757	2	50287	Upper Link Bush
758	4	50288	Upper Link Seal Washer
759	2	50289	Upper Link Pin ‘D’ Tab Washer
760	4	50290	Upper Link Seal
761	2	FN208K	Lock (thin) Nut ½-in. BSF
762	2	52719	Greaser, Upper Swivel Pin Yoke
763	1	50291	Upper Link Bracket – LHS (not illustrated)
764	1	50292	Upper Link Bracket – RHS
765	4	50297	Upper Link Trunnion Bush

Item	Qty.	Part No.	Description (Continued)
766	4	50298	Upper Link Seal Retainer
767	2	50299	Upper Link Bracket Plug
768	12	FB105/5	Upper Link Bracket Mounting Bolt (not illustrated)
769	AR	52084	Upper Link Bracket Shim (quantity as required)
770	AR	54023	Upper Link Bracket – Half Shim (can help align with swivel pin)
771	2	50300	Upper Link Bracket Trunnion Tube
772	2	52716	Upper Link Bracket Trunnion Pin
773	4	50496	Upper Link Bracket Trunnion Seal ('O' ring)
774	4	50302	Upper Link Bracket Trunnion Washer
775	2	FN107/K	Nut 7/16-in. BSF (Unscrew this Nut Before Removing *Item 764*)
776	4	50990	Sealing Sleeve (this aligns *Item 774* with *Item 755*)
777	4	50988	Copper Washer (seals ends of *Item 772*, use new washers)
801	1	54082	Stub Axle – LHS (not illustrated)
802	1	54083	Stub Axle – RHS
803	4	50275	Bush, Swivel Pin
804	2	50276	Swivel Pin
805	4	52590	Swivel Pin Bush, Lower
806	2	50278	Swivel Pin Yoke
807	2	52392	Swivel Pin Thrust Washer (Grease Groove Faces Stub Axle)
808	AR	52591	Shim, Swivel Pin (0·005-in., 0·010-in., 0·020-in.)
809	4	52704	Nut, Nyloc ½-in. BSF (Described as an Oddie Nut)
810	2	50411	Greaser, Swivel Pin (not illustrated)
825	4	50312	Spring Arm Washer
826	2	50313	Spring Arm Distance Tube
827	2	50311	Spring Arm Pin
828	AR	52241	Shim, Spring Arm Pin (0·002-in., 0·005-in. – not illustrated)
834	1	50303	Front Spring Arm – LHS (not illustrated)
835	1	50304	Front Spring Arm – RHS

Quantities – per vehicle.

2. Dismantling The Front Suspension – Upper Swivel Pin Yoke

One side of the car is being described here. Keep the parts for each side separate, this will keep major components in their original positions. Follow the steps below:

1. Apply the handbrake firmly. Jack up the side of the car to be worked on, and place a chassis stand to take the weight. Do not work on a vehicle supported only on a jack, of whatever type. Remove the road wheel.
2. Before removing any parts, with a white permanent marker, mark the outboard side of the swivel pin (804-50276) at its base so that it can be returned to its original position at reassembly.
3. Loosen the spring arm pin (827-50311) taking note of the position of the angled steering stop.
4. At the top of the swivel pin, loosen off the self-locking nut (809-52704). Cut the copper wire (or cord) used to secure the rubber seals (760-50290), and fold both seals below the upper link pin (756-50286). This provides access to the pin's securing nut and tab washer.

5. The original installation featured a tab washer with a ‘D’ shaped centre (759-50289) and a plain thin nut (761-FN208K). This nut should be dead tight.
6. Using a ¼-in. Whitworth open end spanner, or an eight-point socket, at the square end of the upper link pin (756-50286), unscrew the pin completely out of the swivel pin yoke (806-50278). The nut (809-52704), ½-in. BSF, can be removed using a heavy duty ring spanner. The rubber seals and their special washers (758-50288) can then be removed from the yoke.
7. At the steering arm, measure the amount of thread, for ball joint, protruding beneath the steering arm and record the dimension for future reference. Loosen off the clamp bolt for the steering ball joint and unscrew the ball joint and tie the steering rod clear of work area.
8. The stub axle (802-54803, 50274-early) can be lifted away and secured with a cord so that there is no strain on the brake hose, from the swivel pin. Keep the shims (808-52591) in a safe place. The swivel pin thrust washer (807-52392) should be examined for wear, the washer contains a grease groove. Wear could have taken place at the thrust washer, swivel pin yoke and the upper surface of the stub axle.
9. The swivel pin (804-50276) can then be removed from the spring arm (835-50304). The spring arm distance tube (826-50313) and the two bushes (805-52590) should be inspected for wear. At this time, the swivel pin pivot journals and bushes (803-50275) require careful inspection.
10. It is best to remove the upper link bracket (764-50292) from the vehicle’s dash panel for repairs to the trunnion parts. It will also provide a chance to inspect the inboard face of the upper link bracket. The oil reservoir is formed by a plate soldered into the housing’s pressed shape.

    NOTE: There will, most likely, be no oil in the reservoir that forms the upper link bracket.

3. Dismantling The Front Suspension – Upper Link And Bracket

To remove the upper link bracket (764-50292), proceed as follows:

11. Disconnect the swivel pin yoke (description in Steps 3 to 6) from the swivel pin and support the stub axle assembly so that the brake hose does not carry weight. Unscrew the nut (*Item 775*) before removing the upper link bracket from the dash panel. Remove the two ‘U’ bolts securing the shock absorber to the upper link (755-50279).
12. Detach the upper link bracket from the dash side panel, taking care to note the number of shims (769-52084) inboard of the bracket, temporarily with one bolt attach the shims to the dash side, remove the upper link and bracket assembly, which should be gripped in a suitable soft jawed vice. The bracket should be clamped in such a manner that the upper link pin (*Item 772)* can be easily removed.

    Note: There could be half-shims present, such must be kept in their original positions.
13. Release the nut securing the upper link pin (772-52716), note the orientation of the pin – it should be noted that the pin is actually a high-tensile stud with a nut welded at one end, and screw (or drive) out the pin. The pin may require to be driven out through the upper link trunnion tube (771-50300) due to rust. Withdraw the upper link, remove and save the sealing sleeves (776-50990) fitted into the drillings at the inboard end of the upper link and the trunnion washers (774-50302). Remove the trunnion rubber seals. Drift the trunnion tube from the upper link bracket and renew if necessary.
14. Step 13 has been written as a simple operation, however, it may not be that simple. Firstly, the upper link trunnion pin may be severely rusted into the upper link trunnion tube, making it difficult to remove the trunnion pin and possibly requiring a press for its removal. Should a press be required, then the head of the arm will need to be supported on a tube with an inside diameter that will allow the sealing sleeve to follow through. Secondly, the upper link (755-50279) may require some leverage for its removal from the upper link bracket. Should leverage assistance be required, care must be taken to ensure that the reservoir is not distorted. Some distortion could result in the upper link trunnion bushes (765-50297) not being in perfect alignment. Such a condition could make reassembly of the components difficult. Before attempting to lever the upper link away from the bracket, the seals (773-50496) should be well-lubricated and that the pivot movement of the upper link is completely free.

NOTE: Should the upper link trunnion seals have become hardened due to age, but are still of original ring section diameter, the upper link, the upper link trunnion washers and the upper link sealing sleeves can be difficult to lever from the upper link bracket due to the rubber rings being stubborn to compress and let the trunnion washers slide over them.

15. When the upper link has been withdrawn from the upper link bracket, the grease nipple (762-52719) should be removed and the drilling cleared to ensure lubrication.
16. Examine the bushes (765-50297) and the tube for wear, and also check that the oil drillings (early upper link assemblies) in the pin are clear. Be prepared to remove and replace the rubber 'O' ring seals (773-50496) if these have perished or are worn.
17. Should the upper link trunnion tube be worn at the two points where the upper link trunnion bushes pivot, the tube and bushes should be replaced. It is highly likely that a new upper link trunnion tube will have to be made.

    NOTE: The length of the trunnion tube is critical.
18. The worn trunnion bushes can be driven from the upper link bracket with a suitable drift, or the inside diameter can be fine thread-tapped with a fine pitch thread to facilitate drawing out with a setscrew, nut and spacer that provides clearance at the shoulder on the bush.
19. Check that the seal washers (774-50302) are a good fit against the side faces of the upper link, correct any distortion, or re-place if necessary. Examine the side faces of the upper link and clean up if necessary. With the upper link bracket pin withdrawn, and the two seals worn, it should be possible withdraw the upper link with comparative ease. The upper link seal retainers require treating with carefulness during this procedure.
20. There are two small dowel-type locating pegs (not illustrated and have no part number) in the arms of the upper link that fit into holes drilled into the upper link trunnion washer (774-50302) to rotate the washer as the upper link oscillates with suspension movement. These pegs may require driving out to assist removal or installation of new seals. Not sure at this stage how the dowel-pegs can be driven out to 'assist upper link removal'. From memory they are held in place by the sealing sleeves (776-50990) which cannot be easily removed, due to their fit in the upper link arms. Keep them in a safe place.

4. Inspection Of Components

Depending on how the car was maintained, front suspension components can be caked in oil and dust which entails thorough cleaning of all parts – this instruction includes inside the oil reservoir.

The upper link brackets were prolific leakers of oil from the reservoir, this was probably due to the sealing rings (773-50496) having all manner of road grime thrown at them while the suspension is in constant movement. Therefore, it is important that the outer upper link trunnion washers (774-50302) and the inner seal retainers (766-50298) are carefully examined for wear and corrosion. The sealing rings require smooth surfaces for them to operate on, and thus help eliminate oil leakage. These two items have been hardened during manufacture.

The upper link brackets did suffer from solder joint breakage, these can be repaired by thorough cleaning and resoldering. Another method for sealing the reservoir is to make a solid camber shim (without the large opening) of the same thickness as one of the original shims. The 'solid' shim can be sealed to the inboard face of the upper link bracket by cleaning the contact faces with Loctite 7471 cleaner/activator. Allow to dry and then apply a small continuous bead of Loctite Blue RTV sealant and bolt the two pieces firmly together, using the remainder of the shim pack as a stiffener, allow to cure before oil is poured in.

As mentioned previously, the upper link trunnion tube diameter must be measured at the ends that pivot in the upper link trunnion bushes, a small amount of wear at this location multiplies considerably at the outer end of the upper link. The trunnion tube cannot be successfully rotated to present an unworn surface to the trunnion bushes – the upper link would still exhibit excessive movement at its outer end. The trunnion tube should project beyond the pressed in bushes with their shoulders firmly holding the upper link seal retainers, the total end-float should be 0·003 to 0·005-in. (0·076 to 0·127 mm). The tube is not shim adjustable.

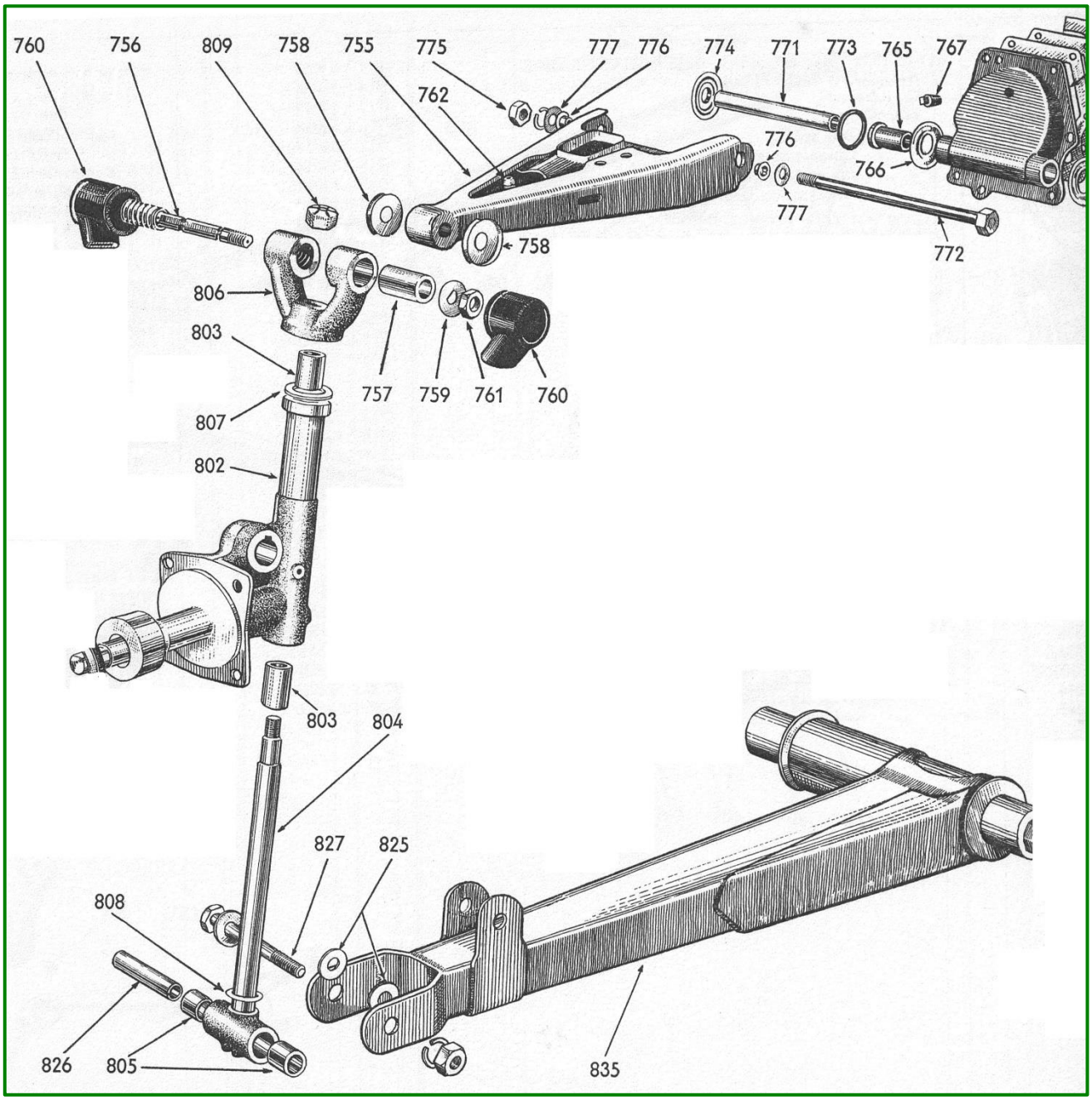
5. Lubricants

The Penrite Oil Company can supply an oil product called Penrite Steering Box Lube. This is a very thick oil, close to being a type of light grease. It is an excellent product for filling the upper link bracket to the oil level fill hole.

The upper yoke (806-50278) should be greased with a decent quality wheel bearing grease, as should the swivel pin bushes. Herschell wheel bearing grease is recommended.

For assembly purposes, Nulon L90 Assembly Paste should be employed – that means its use at all pivot points. For the upper link trunnion pin, where it fits through the upper link, the trunnion tube, the seal washers, the sleeves and they in turn fit into the upper link, Loctite 771 Anti-seize should be applied during assembly.

6. Assembling The Upper Link And Upper Link Bracket



Above: Figure 2. Repeat illustration taken from the Spare Parts Catalogue, dated January, 1951.

Legend for the illustration:

Item	Qty.	Part No.	Description
755	2	50279	Upper Link
756	2	50286	Upper Link Pin (fits in *Item 806*)

Item	Qty.	Part No.	Description (Continued)
757	2	50287	Upper Link Bush
758	4	50288	Upper Link Seal Washer
759	2	50289	Upper Link Pin 'D' Tab Washer
760	4	50290	Upper Link Seal
761	2	FN208K	Lock (thin) Nut ½-in. BSF
762	2	52719	Greaser, Upper Swivel Pin Yoke
763	1	50291	Upper Link Bracket – LHS (not illustrated)
764	1	50292	Upper Link Bracket – RHS
765	4	50297	Upper Link Trunnion Bush
766	4	50298	Upper Link Seal Retainer
767	2	50299	Upper Link Bracket Plug
768	12	FB105/5	Upper Link Bracket Mounting Bolt (not illustrated)
769	AR	52084	Upper Link Bracket Shim (quantity as required)
770	AR	54023	Upper Link Bracket – Half Shim (can help align with swivel pin)
771	2	50300	Upper Link Bracket Trunnion Tube
772	2	52716	Upper Link Bracket Trunnion Pin
773	4	50496	Upper Link Bracket Trunnion Seal ('O' ring)
774	4	50302	Upper Link Bracket Trunnion Washer
775	2	FN107/K	Nut 7/16-in. BSF (Unscrew this Nut Before Removing *Item 764*)
776	4	50990	Sealing Sleeve (this aligns *Item 774* with *Item 755*)
777	4	50988	Copper Washer (seals ends of *Item 772*, use new washers)
801	1	54082	Stub Axle – LHS (not illustrated)
802	1	54083	Stub Axle – RHS
803	4	50275	Bush, Swivel Pin
804	2	50276	Swivel Pin
805	4	52590	Swivel Pin Bush, Lower
806	2	50278	Swivel Pin Yoke
807	2	52392	Swivel Pin Thrust Washer (Grease Groove Faces Stub Axle)
808	AR	52591	Shim, Swivel Pin (0·005-in., 0·010-in., 0·020-in.)
809	4	52704	Nut, Nyloc ½-in. BSF (Described as an Oddie Nut)
810	2	50411	Greaser, Swivel Pin (not illustrated)
825	4	50312	Spring Arm Washer
826	2	50313	Spring Arm Distance Tube
827	2	50311	Spring Arm Pin
828	AR	52241	Shim, Spring Arm Pin (0·002-in., 0·005-in. – not illustrated)
834	1	50303	Front Spring Arm – LHS (not illustrated)
835	1	50304	Front Spring Arm – RHS

Quantities – per vehicle.

Proceed as follows:

1. Press replacement upper link trunnion bushes (765-50297) into the upper link bracket (764-50292), making sure that the seal retainers (766-50298) are fitted between the flanges of the bushes and the bracket.

2. Re-assembly is a reversal of the routine detailed in Section 3, but the following points should be given attention.

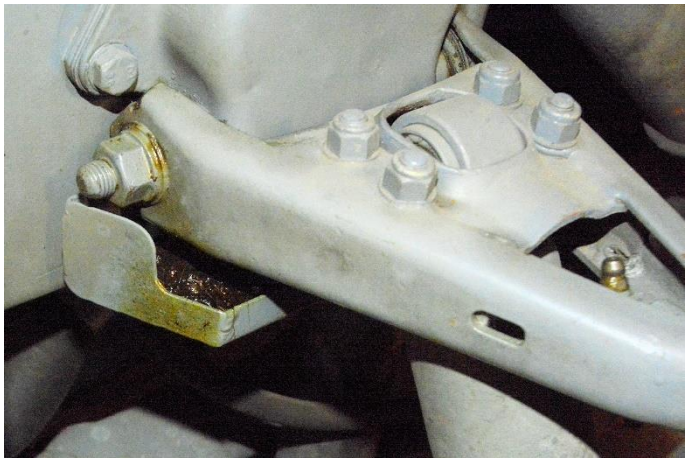
   It is good practice to assemble the upper link (755-50279) on the upper link bracket (764-50292) and all related components, less the rubber seals, but not forgetting the dowel pegs, to ensure that the upper link is free to pivot when the upper link trunnion pin (775- FN107/K) nut has been fully tightened. This procedure is a good rehearsal for installing the rubber seals (773-50496).
3. With a fine point permanent white marking pen, mark the outside edge of the upper link seal retainers (774-50302) adjacent to the peg hole. This will ease the task of tapping the peg home during the final assembly of the parts.
4. It will ease fitting if the trunnion seals are fitted to the seal retainers first, and the locating pegs (not illustrated) in the upper link are removed or driven back before the upper link is fitted to the bracket assembly. The seals and the retainers should be lubricated with Nulon L90 Assembly Paste during installation.
5. Both ends of the trunnion tube (771-50300) should be slightly proud 0·003 to 0·005-in. (0·076 to 0·127 mm total) of the flanges on the trunnion bushes. The sealing sleeves (776-50990) must be a good fit in the trunnion washers (774-50302).
6. New trunnion rubber seals ('O' Rings) should always be fitted and the fit and location of the trunnion washers should be very carefully checked. The head of the trunnion pin (772-52716) must be fitted against a new copper washer (777-50988) at the rear of the upper link. The nut must be fully tightened against its copper washer so that the upper link rotates as a unit with the trunnion pin and the trunnion tube in the upper link bracket.
7. The upper link bracket trunnion washers, that were marked in Step 3, should be set so that the dowel peg holes align and the pegs then driven home from the outer faces of the upper link.
8. It is important that the shims (769-52084) inboard of the upper link bracket (764-50292) are refitted in their original positions, when the upper link bracket is bolted to the dash panel, so that the correct castor and camber angle is maintained.

   IMPORTANT! The camber should always be checked as detailed in the Steering Gear Chapter (in the Maintenance Manual) after re-assembly.
9. Install the upper link seals (760-50290) and hold them at the bottom of the yoke arms. Install the bush (757-50287), lubricated with Nulon L90 into the yoke (806-50278). Locate the upper link (755-50279), and the seal washers (758-50288), with cupped faces towards the arms, between the arms of the yoke with the threaded arm to the rear, and fit the lubricated pin (756-50286) threading it into the tapped arm of the yoke, until it just makes contact with the upper link. It is important that the seal washer surfaces that contact the upper link are perfectly flat before assembly commences. Fit the washer (759-50289) – the 'D' washer – and ½-in. BSF thin nut (761-FN208K), and tighten up fully, setting the pin as necessary in the yoke so that when the nut is fully tightened against the bush the upper link is central between the arms of the yoke.

   New yoke, pin and bushing assemblies supplied by the JCC (UK) are provided with a black steel (toughened) washer and a Nyloc nut. The nut must be tightened dead tight. The thread at the pin and yoke arm can be tight and require a session with Brasso polish.
10. The yoke, pin, bush and upper link should be relaxed in their positions. Tighten the spring arm pin (827-50311) by holding its angled head in the position noted (Step 3, Page 5) and fully tightening the nut. Be aware of the position of the full-lock steering stop.
11. Place the selected shims (808-52591) at the base of the swivel pin. Ensure that the shims and entire length of the swivel pin are well lubricated.
12. Without straining the brake hydraulic hose, slide the stub axle over the swivel pin. Lubricate and install the swivel pin thrust washer (807-52392).
13. Lower the upper link yoke (806-50278) over the threaded end of the swivel pin. Install a flat washer and then tighten the yoke securing nut (809-52704) with a ring spanner till it is dead tight. The stub axle should be free to rotate on the swivel pin, if it is tight, the shimming at the base of the swivel pin will need to be reduced (if there is too much clearance between the thrust washer and the brass yoke, extra shims will be required). This clearance should be minimal.

The thrust washer should be installed with the grease groove (scroll) facing the stub axle.

14. With a grease gun, apply grease at the swivel pin greaser at the upper link, and at the stub axle greaser to ensure that the lubricant is reaching the yoke and the swivel pin bushes. It is important to ensure that the grease is reaching both arms of the yoke.
15. Secure the rubber seals to the seal washers (*Item 758*) with small-section black nylon zip ties and, if necessary seal the arms of the yoke to the rubber seals with black self-curing sealant.
16. Using a small grease gun, fill the upper link bracket to the level of the oil filler hole with Penrite Steering Box Lube. Install the plug, do not over-tighten.
17. Wait for the oil to leak at the seals!



Right: Figure 2. Oil catch tray, requires cleaning.

18. A solution to oil leakage is to employ the 'total loss oiling system'. To do this fabricate a steel tray to bolt to the bottom row of upper link bracket bolts. Once in place, cut a piece of thick felt to absorb oil drips. Twice per year, remove the felt pad and wash with degreasing fluid, rinse and dry before replacing in tray.

    A bonus of using the catch tray and pad is that there is proof that the oil is reaching the trunnion bushes and is periodically replaced when the oil level is topped up.
19. If the brake drum has to be replaced, tighten the castle nut dead tight, and then tighten further to align with the split pin hole in the stub axle shaft. Use a superior quality split pin and replace the hub cover and gasket (full hydraulic braking system).
20. Apply grease to the front hubs.

Please note that, even though there is an upper link and bracket in the writer's workshop, the upper link pin is firmly seized inside the assembly components. Currently, the assembly is soaking in a pan of Kerosene in the hope of loosening the pin. Hence, step by step photographs are not available for those who may need them.

A major proportion of these notes have been taken from memory, therefore, there could be some gaps within the instructions.

Prepared by Mike Allfrey – November, 2021.