ARMY
CODE No
60593

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Issued August 1970

TRAILER, AIRPORTABLE BRIDGE, 1 TON, 2 WHEELED, SANKEY (FV2420)

Contract No WV8435

USER HANDBOOK

PRODUCED TO THE REQUIREMENT OF
THE MINISTRY OF DEFENCE
BY DIRECTOR OF QUALITY ASSURANCE
(FIGHTING VEHICLES AND ENGINEER EQUIPMENT)

U4248/3

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NOTES TO READERS

The subject matter of this publication may be affected by Defence Council Instructions. When an Instruction contradicts any portion of this publication, the Instruction is to be taken as the overriding authority. Amendments may be issued to correct the publication, but it will not always be possible to promulgate the amendments concurrently with the Instruction.

For periods of servicing and lubricants to be used, reference must be made to the Servicing Schedule.

ASSOCIATED PUBLICATIONS

	Code No.
Servicing Schedule	60374
Illustrated Spare Parts List	60604
Provisional User Handbook Class 16 Airportable Bridge (APB)	60249

GENERAL DESCRIPTION

1. The Trailer, Airportable Bridge, 1 Ton, 2 Wheeled, Sankey (FV2420) (Fig 1 and 2) is designed to carry up to four components of the Class 16 Airportable Bridge.

2. The trailer is normally towed by a ¾ ton G.S. or 3 ton G.S. truck and, when coupled to the prime mover, is capable of embarking or disembarking from LCT 9 and LST 3 vessels. It is also air portable in all present service transport aircraft.

3. The chassis consists of rectangular and tubular sections, and the suspension of independent trailing arms acting through rubber spring units. By relieving the load from the suspension and removing the quick release pins, the suspension can be retracted to lower the frame height by approximately 10 inches. (.25m.).

4. The brakes are hydraulic, connected to a spring loaded overrun mechanism, and a parking brake operates through compensated cables and overcentre lever.

5. Turnbuckle type lashing screws are provided for securing the bottom box of the bridge component load to the chassis, during transit. These are also used for lashing five stacked trailers together, during transport by air.

6. The 24 volt electrical system at the rear of the trailer is mounted on a quickly detachable bar, with extension cable for mounting on the trailer rear cross member, or rear of the bottom box of the bridge load. Bars, hinged for stacking, carry the side lamps.

7. The trailer will operate within temperature ranges of minus 25°F to plus 120°F without modification, and storage between minus 50°F and 160°F, and is capable of shallow fording to a depth of 30 inches (.76m.) in fresh or sea water, without preparation.

8. All components are protected against condensation, electrolytic action or fungoid growth, and are capable of resisting all forms of bacteriological attack, corrosion or rot.

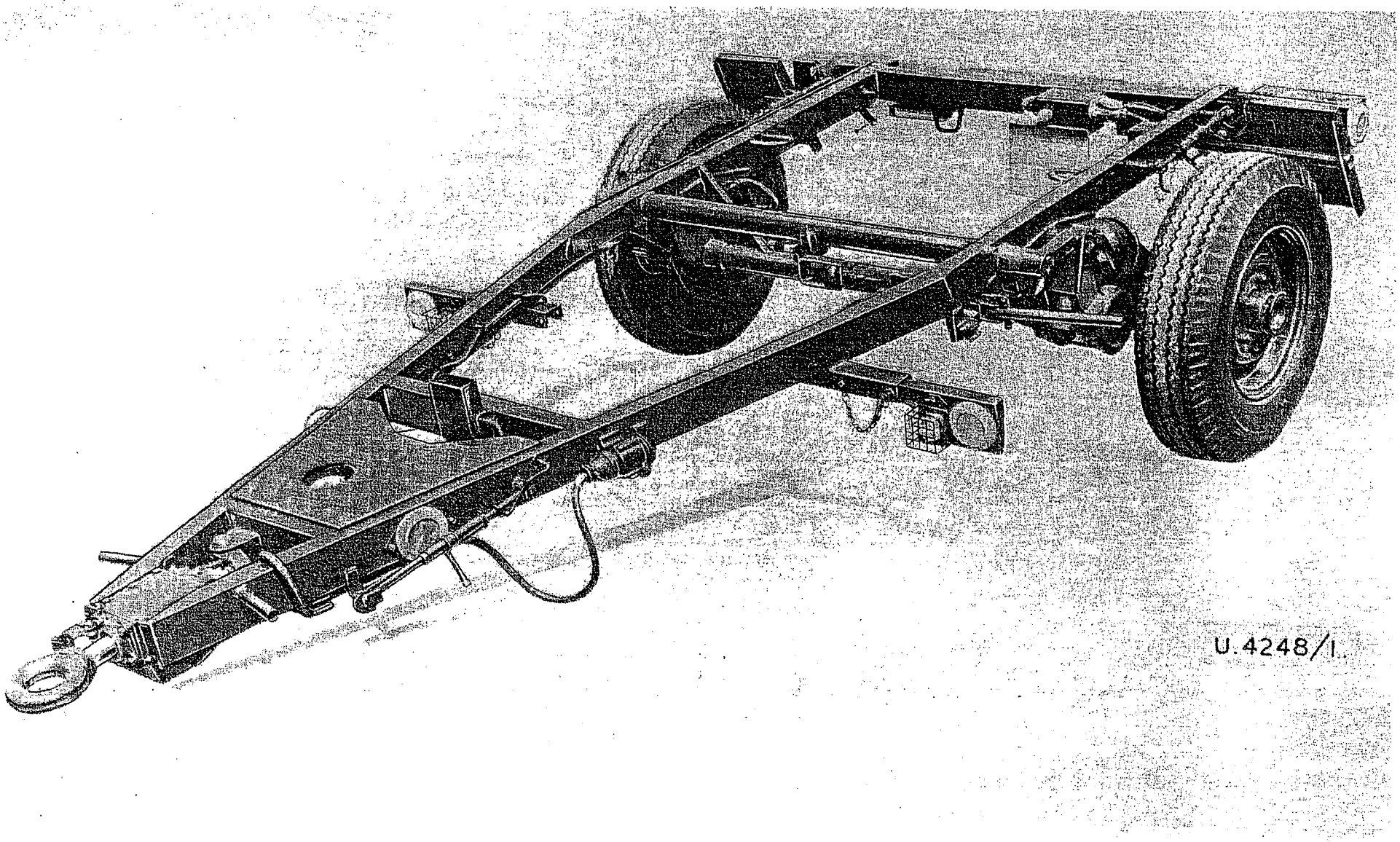


Fig. 1 FRONT LEFT VIEW

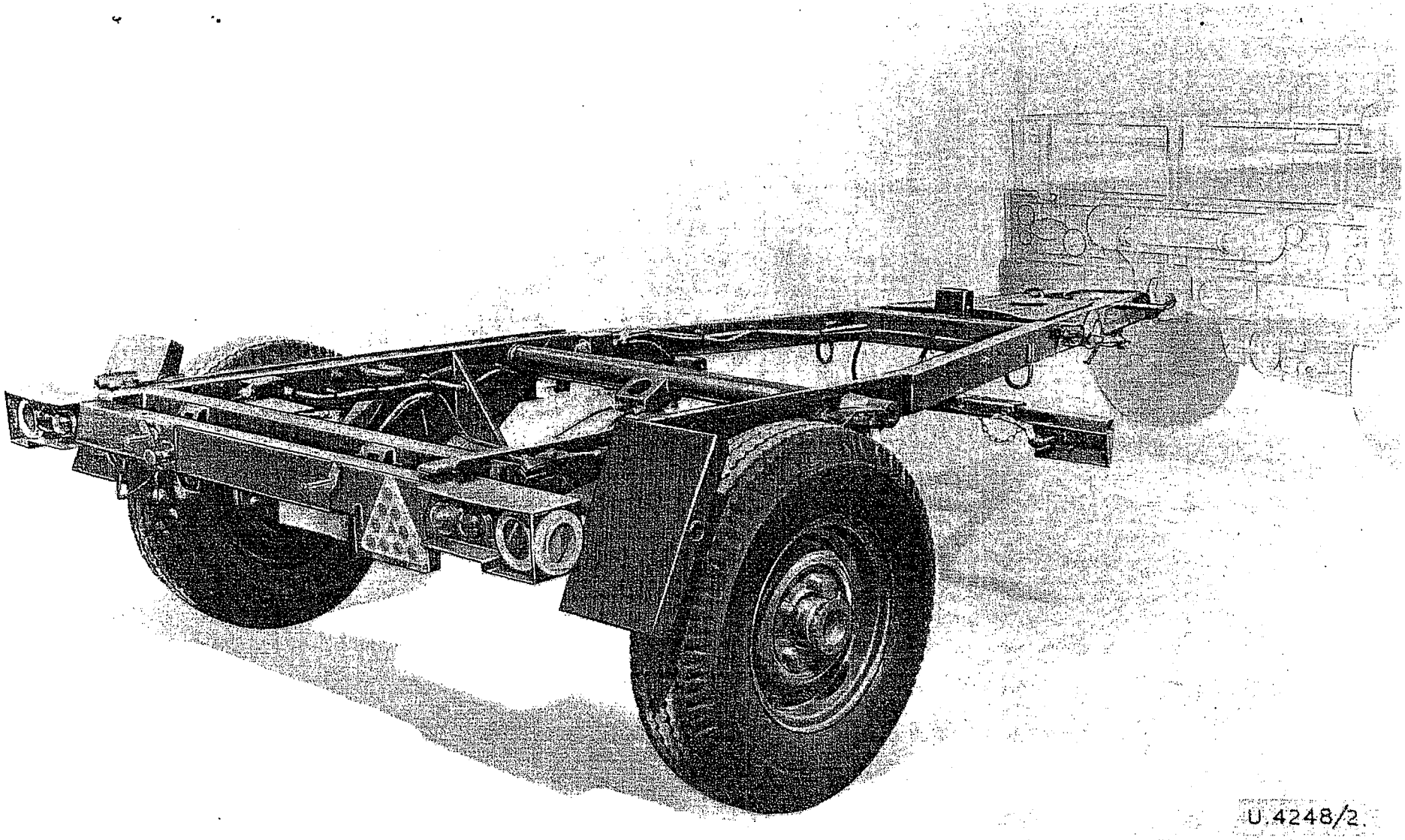


Fig. 2. REAR RIGHT VIEW

DATA

Dimensions — see Fig. 3.

Weights

Unladen	750 lb. (340.2 kg.)
Laden (maximum)	4,100 lb. (1859.76 kg.)

Bridge Classification

Unladen	1
Laden	3

Note: The bridge classification does not include the prime mover.

Fording depth

Without preparation — fresh or sea water	30 in (.76 m.)

Shipping tonnage 6 tons 4 cu.ft.

Performance

Capable of being towed fully laden at:

Good roads,	45 mile/h. (72.42 km/h.)
Rough roads,	15 mile/h. (24.14 km/h.)

Carrying capacity

Wheels

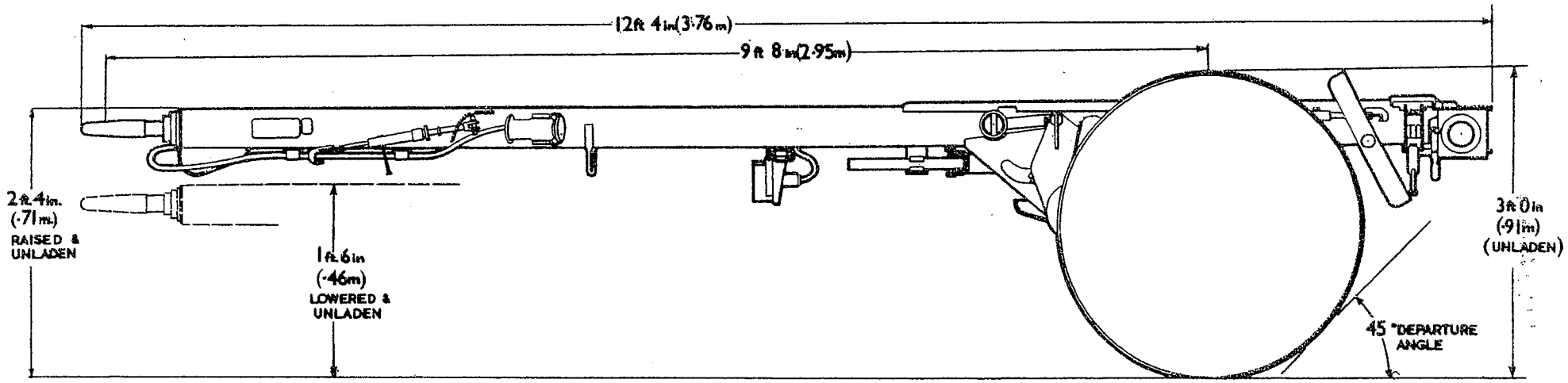
Number	2
Type	2 piece disc.
Size	5.50 in x 16 in (13.97 cm. x 40.64 cm.)

Tyres

Size	7.50 in. x 16 in. (19.05 cm. x 40.64 cm.) (LV6/MT14 — 2610 — 99 — 809 — 3385. 8 ply rating.)
Pressures — good roads, fully laden	See Servicing Schedule.
Pressures — rough roads, fully laden	

Brakes

At each wheel station	Girling 11 in. x 2¼ in. (27.94 cm. x 5.72 cm.) Hydraulically and mechanically operated.



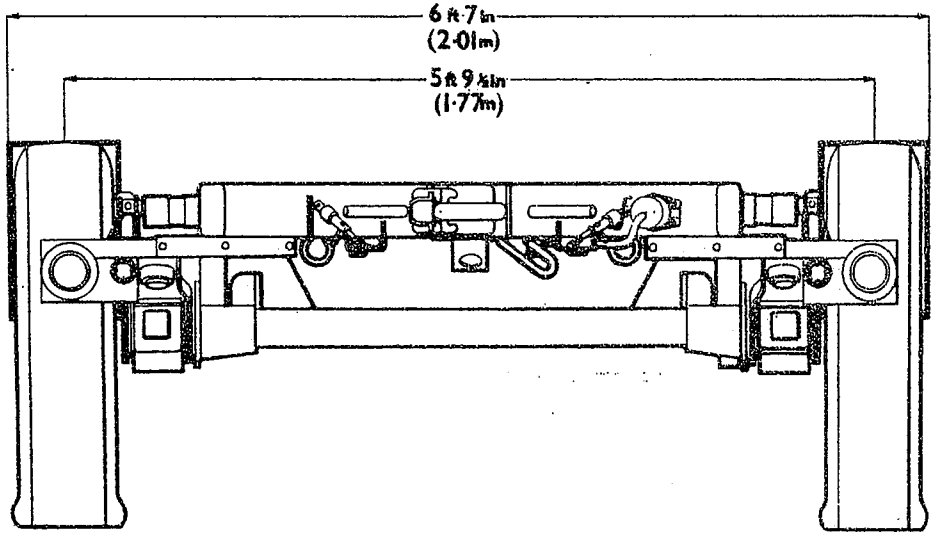


Fig. 3. DIMENSIONS

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SUSPENSION

Description

9. Independent suspension by two parallel trailing arms is employed, operating through rubber springs. Each unit is very simply retracted for stacking, or completely removed for servicing.

Servicing (Fig. 4) (Qualified tradesman)

10.a. Slacken the wheel nuts and raise the trailer onto trestles so that the wheels are clear of the ground. The wheels may then be removed.

b. Disconnect the handbrake linkage and hydraulic pipe at the brake drum, having a suitable container ready to catch the fluid. Plug the wheel cylinder apperture and the pipe end.

c. Turn back the tab washer (17), remove the retaining bolt (16) and plain washer (15).

d. Slacken the stop bolt locknut and unscrew the stop bolt (4),

e. Whilst the weight of the hub and brake assembly is supported, the locking pin (5) must be rotated until its stop is in line with the stop on the retraction arm (27). The locking pin may then be withdrawn. (Refer to Fig. 17).

f. Swing clear the anchor arm (3) and remove the complete suspension unit from the pivot.

g. With the retaining cap (18) removed, the retraction arm can be separated from the suspension arm and the bushes (12 and 22) examined. Press in new ones if required.

h. Clean all parts thoroughly, renew the 'O' rings (11 and 19) and the felt seal (10), smear the pivot and bushes with the specified lubricant and check the security and condition of the 'Aeon' rubber spring (6).

i. Fit the retraction arm (27) over the suspension arm (8) and slide the unit on to the pivot (21).

j. Replace the retaining cap (18) and secure with the plain washer (15), tab washer (17) and retaining bolt (16).

k. With the retaining bolt tightened down, the suspension unit must swing freely on the pivot without any noticeable end float. Adjustment is made by selecting shims (14) of the following thicknesses: .003 in., .010 in., .020 in. and .060 in. (.08mm., .25mm., .51mm., and 1.52mm.)

l. Swing the suspension unit into position and secure to the anchor arm (3) with the locking pin (5). Secure the latter by rotating until the short end of the handle meets the retraction arm stop. Screw in fully the stop bolt (4) and then unscrew half a turn and lock with the nut.

m. Pressure fill the axle arm through the greaser (20) with the correct lubricant. Connect up the handbrake cable and hydraulic pipe.

n. Bleed the system (Refer to paragraph 21, sub-paragraphs a & b).

o. Fit the road wheels (Refer to Fig. 6) and remove the trestles.

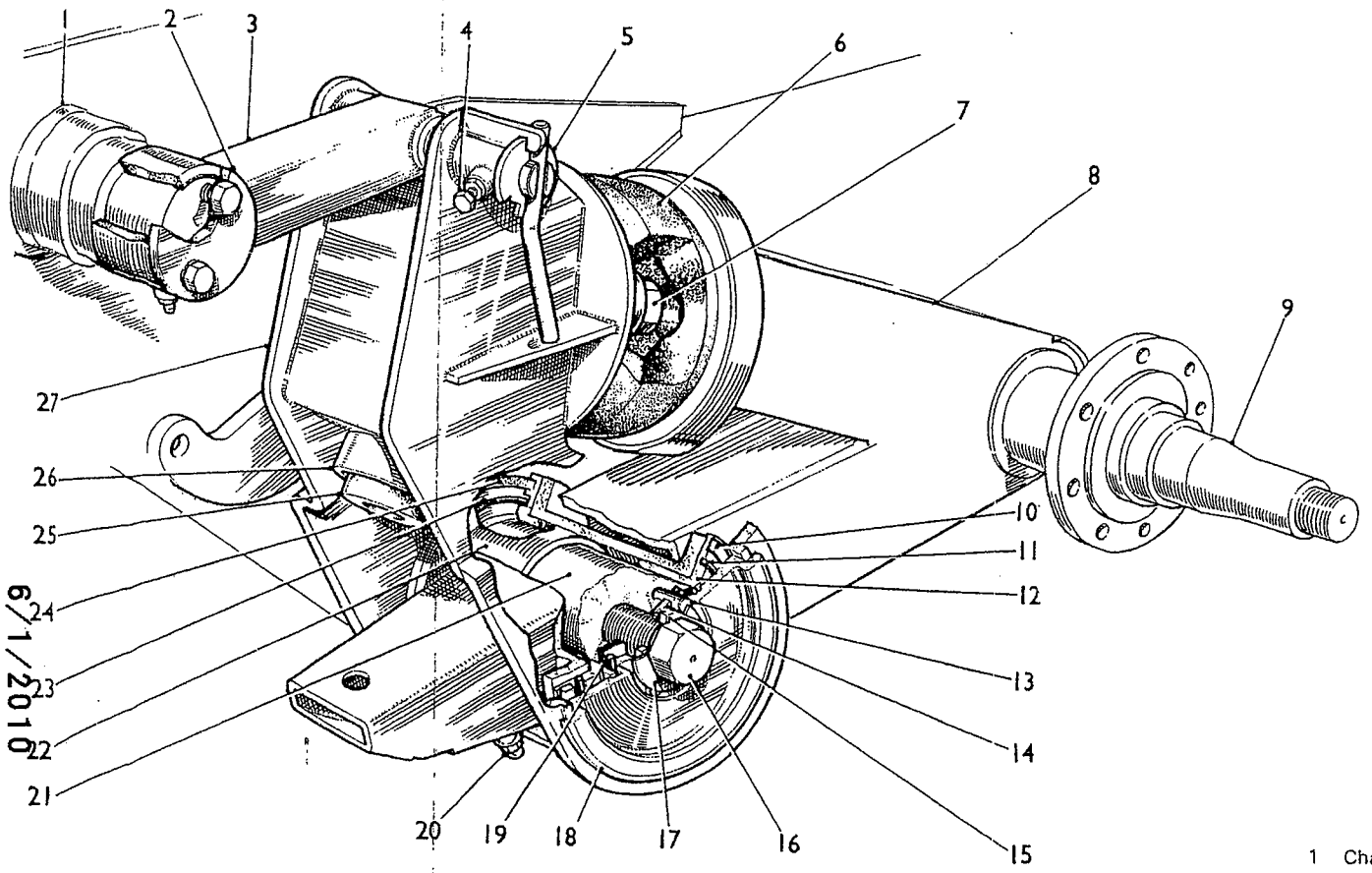


Fig. 4. SUSPENSION UNIT

1	Chassis pivot	15	Washer
2	End cap	16	Retaining bolt
3	Anchor arm	17	Tab washer
4	Stop bolt	18	Retaining cap
5	Locking pin	19	'O' ring
6	'Aeon' rubber spring	20	Axle arm greaser
7	Anchor pin	21	Suspension pivot
8	Axle arm	22	Bush
9	Stub axle	23	'O' ring
10	Felt seal	24	Felt seal
11	'O' ring	25	Rebound rubber
12	Bush	26	Stop
13	Mills pin	27	Retraction arm
14	Shims		

HUBS

Servicing (Fig. 5) (Qualified tradesman)

11.a. Place a jack under the suspension arm in line with the wheel hub.

b. Slacken the wheel securing nuts (L.H. thread on left side of trailer, R.H. thread on right side.).

c. Raise the wheel and remove from the hub.

d. Remove the external wire circlip (14) and unscrew the hub cap.

e. Turn back the lock washer tab (10) and, with a suitable spanner, remove the circular nut (9) followed by the tab washer (10), inner circular nut (9) and plain washer (8).

f. If it is necessary to remove the brake drum, this is secured by three counter sunk screws (18)

g. With an extractor withdraw the hub taking care not to damage the seal (3) or contaminate the brake shoes and drum with grease.

h. Remove the internal 'O' ring (16) and seal (3), followed by both taper bearings (4 and 17) if it is considered advisable to replace them.

i. Wash the hub bearings and stub axle with kerosine. Dry all parts before assembly.

j Repack the hub with the specified lubricant between the bearings.

k. Smear the roller bearings with the specified lubricant and press into each end of the hub. Fit a new 'O' ring and oil seal.

l. Wash off with kerosine any lubricant that may have found its way onto the brake linings or drum, and dry off.

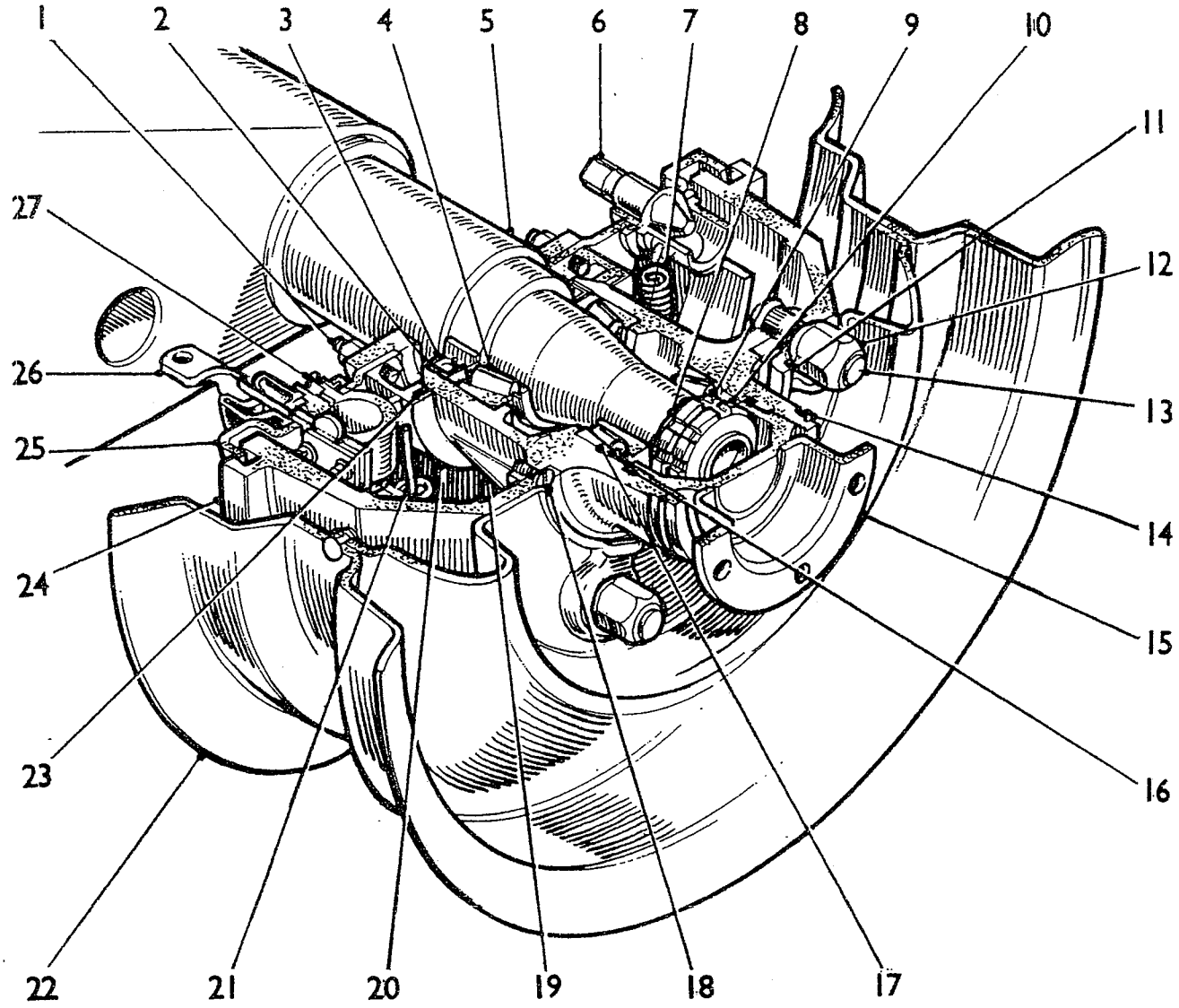
m. Replace the felt seal (23) situated in the axle mounted housing (20).

n. Press the assembly onto the stub axle taking great care not to damage the seals.

o. Replace the plain washer (8) and tighten the circular nut on the stub axle. An end float of .008 to .010 ins. (.20 to .25 mm.) is obtained. The tab washer and second circular nut can then be fitted and the tab turned down.

p. Screw home the hub cap and secure with a new external wire circlip.

q. Refit the road wheel (Refer to Fig. 6.).



(FIG. 5) WHEEL HUB ASSEMBLY

1 Seal housing and brake plate stud
2 Seal housing
3 Seal
4 Taper roller bearing
5 Stub axle
6 Brake adjuster
7 Brake shoe return spring
8 Washer
9 Circular nut
10 Tab washer
11 Circular nut
12 Wheel nut
13 Wheel stud
14 Circlip
15 Hub cap
16 'O' ring
17 Taper roller bearing
18 Brake drum retaining screw
19 Hub
20 Seal housing
21 Brake shoe return spring
22 Road wheel
23 Seal
24 Brake drum
25 Brake back plate
26 Hand brake lever
27 Brake expander

To adjust the Hub Bearings (Qualified tradesman)

12.a. Remove the external wire circlip (14) and unscrew the hub cap.

b. Turn back the lock washer tab (10) and with a suitable spanner remove the circular nut (9) followed by the tab washer (10).

c. Jack up the wheel.

d. Adjust the end float by slackening the inner circular nut (9) to increase float, or tighten the nut to reduce it. End float should be .008 to .010 in. (.20 to .25 mm).

e. Remove the jack and lock the hub with the tab washer and circular nut.

g. Screw home the hub cap and secure with a new external wire circlip.

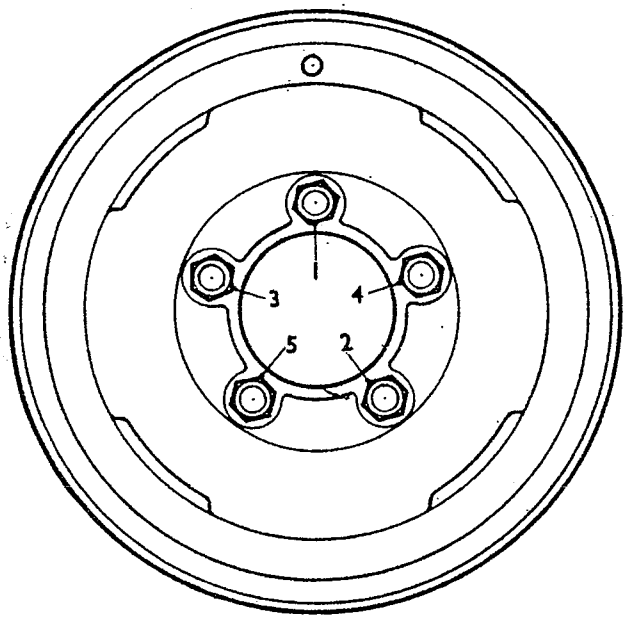


Fig. 6. Wheel nut Tightening Sequence

Check

13.a When the vehicle is halted after a run, check the wheel hubs and brake drums for overheating as follows:—

b. Visually inspect each hub and drum individually for obvious signs of overheating such as smoke or sizzling grease. Do not touch any parts.

c. If obvious signs are absent, place a hand close to each component being checked. If excessive heating is observed, do not touch the component but report the matter.

d. If excessive heating is not apparent, the parts should be touched cautiously. If the heat is greater than can comfortably be borne by hand, report. Otherwise the parts are in order.

HYDRAULIC SYSTEM:

DESCRIPTION (FIG. 7)

14. This is governed by the draught eye (1), which operates the master cylinder (11) via a relay lever (6) and, through the expansion valve (12) applies the wheel brakes. After application a spring (4) returns the relay lever and master cylinder piston to "brakes off" position. A clearance of .10 in. (2.54 mm.) (5) is required between the draught eye pin and the relay lever when the draught eye is free and the relay lever fully forward. This is to ensure that the brakes are applied only under retardation.

SERVICING

Brake Adjustment (Qualified tradesman)

15.a. Jack up the wheel clear of the ground.

b. Apply a spanner to the squared end of the adjuster stem (Fig. 8 (25)), turn it in a clockwise direction until the shoes are locked in the drum.

c. "Click back" until the wheel begins to revolve freely

d. Repeat for the other wheel.

NOTE: Do not attempt to adjust the brake shoes by means of the handbrake linkage.

Fitting new Brake Shoes (Fig. 8) (Qualified tradesman)

16. The drums should be removed periodically and the brake linings examined. They should never be allowed to wear down to the rivets or, where bonded linings are fitted, below 1/16 in (1.59 mm.) from the metal shoes.

17.a. Jack up the trailer and remove both wheels and brake drums, as described in paragraph 11, sub-paragraphs a, b, c and f.

b. Prise one shoe from the wheel cylinder abutment, using a manufacturers' shoe horn or suitable tool.

c. Both shoes (1 and 24) and pull-off springs (5 and 28) may now be removed, leaving the wheel cylinder and adjuster unit in position on the backplate. It is advisable to retain the wheel cylinder pistons (6 and 20) in position by means of an elastic band.

d. Wipe down the backplate and clean with the specified cleaning fluid.

e. Check the wheel cylinders for freedom of movement. The fixing nuts should be slackened half a turn after tightening so that the cylinder will slide in the slotted holes in the backplate.

f. Check the adjuster (25) for ease of operation and turn in an anti-clockwise direction to the fully retracted position. Lubricate the mechanical parts when necessary, with the specified lubricant, and unscrew the steady posts (3 and 22) two turns. Slacken the lock nuts (4 and 21).

g. Attach new pull-off springs to the new shoes, ensuring that the springs are between the shoe webs and the backplate. Do not handle the shoes more than necessary and be sure that they are completely free from grease.

h. Place the shoes, with springs attached, against the backplate, and position one shoe in its correct abutment.

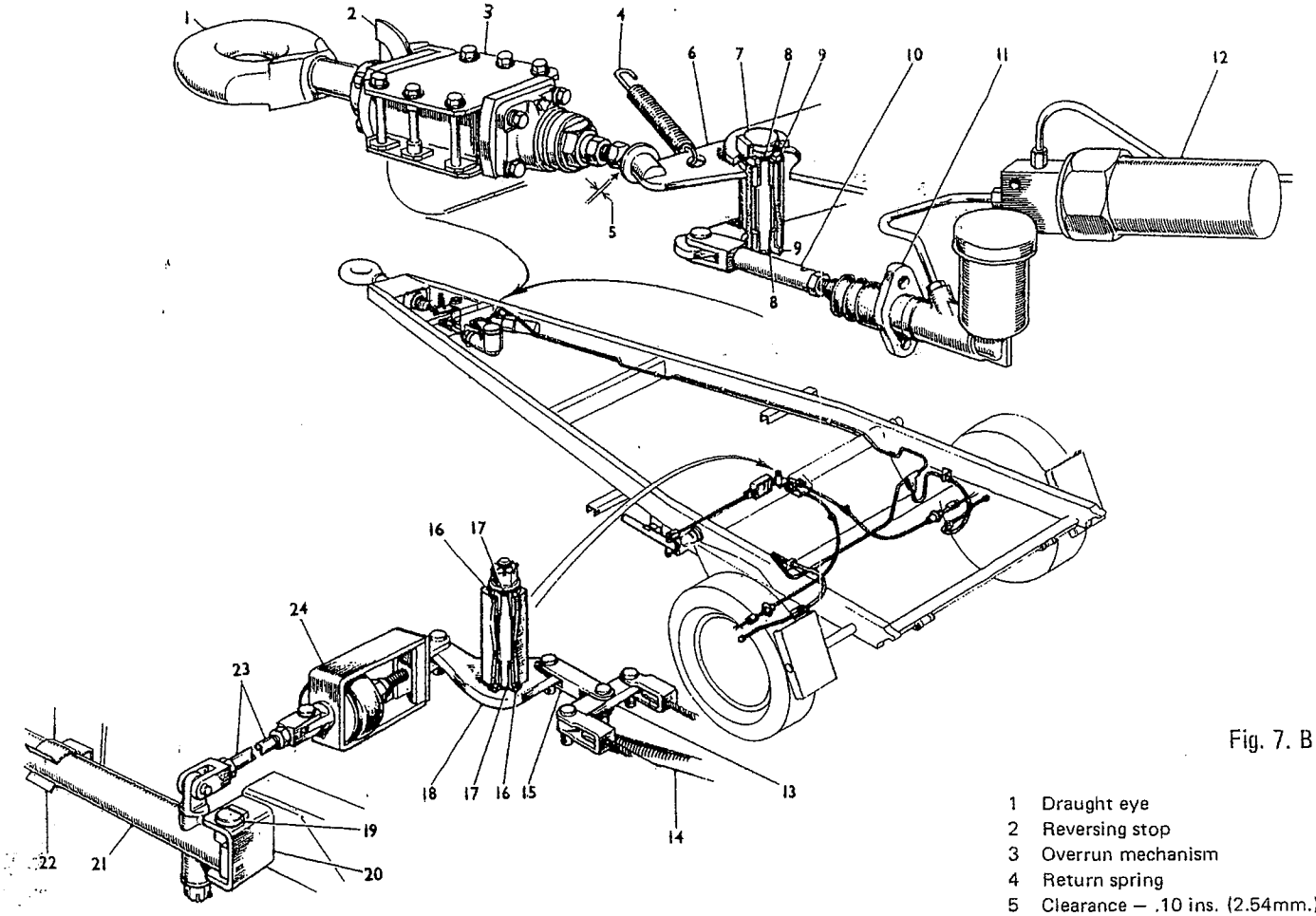


Fig. 7. BRAKING SYSTEM

1 Draught eye
2 Reversing stop
3 Overrun mechanism
4 Return spring
5 Clearance — .10 ins. (2.54mm.)
6 Brake lever (relay)
7 Swivel pin
8 'O' ring
9 Flanged bearing
10 Push rod with jaw
11 Master cylinder
12 Expansion valve
13 Link
14 Return spring
15 Double fork end
16 Flanged bearing
17 'O' ring
18 Pivot pin and lever
19 Handbrake pivot pin
20 Handbrake pivot bracket
21 Handbrake lever
22 Handbrake lever retaining clip
23 Brake rod
24 Brake tensioner

i. The second shoe may now be eased into position with the aid of a manufacturers' shoe horn or suitable tool placed under the shoe web.

j. Make sure the drum and linings are completely free from grease and fit the drum.

k. Lock the shoes hard in the drum by turning the adjuster clockwise. Hammer round the drum with a rubber or hide mallet and tighten the adjuster further.

l. Tighten the wheel cylinder fixing bolts and then slacken one half turn.

m. Adjust the steady posts (3 and 22) by screwing in the posts until they just bear against the shoe webs and, whilst holding that position tighten the lock nuts (4 and 21). The shoes may be out of square to a maximum of .006 in. (.15mm.) on the side nearest to the backplate only. (Refer to Fig 8 (19)).

n. Slacken off the adjuster two or three "clicks" to free the drum.

o. Refit the road wheels, jack down and test.

Adjusters (Fig. 8) (Qualified tradesman)

18.a. Detach the unit (27) from the back-plate, take out the links (26) and screw the wedge (25) right through the unit.

b. Clean all parts and examine for wear. Replace if necessary.

c. Smear the parts with the specified brake grease before reassembly, and fit the unit to the backplate. Note: *the links are "handed" and must be placed in their correct positions.* Locate against the flats of the adjuster wedge with the slots of the links parallel to the backplate. When fitted correctly, four distinct "clicks" will be felt and heard during a complete revolution of the wedge.

Wheel Cylinders (Fig. 8) (Qualified tradesman)

19. Periodically the wheel cylinders should be replaced by new ones. However, they may be serviced, but only if the cylinder bores are in perfect condition.

20.a. Remove the wheel and brake drum as described in paragraph 11, sub-paragraphs a, b, c and f. Drain the fluid from the system by attaching a tube to the bleed screw (10), unscrewing half a turn, and pumping the fluid out into a container by operating the foot pump.

b. Remove the brake shoes as described in paragraph 17, sub-paragraphs b, c and d.

c. Disconnect the handbrake cable from the draw link (15) and detach the hydraulic pipe by unscrewing the union nut. Remove the bleedscrew and ball (10), unscrew the cylinder fixing nuts and remove the cylinder from the backplate. Note the correct order of the cylinder cover plate, dust cover and dust cover plate.

d. Clean the outside of the cylinder, remove the rubber band and dust covers and extract all internal parts.

20.e. Clean the inside of the cylinder with the specified cleaning fluid. If the bore is smooth and free from ridges or score marks, new seals may be fitted. But if the condition of the bore gives rise to the slightest doubt a new cylinder should be fitted.

f Clean all parts separately with the specified cleaning fluid and place on clean paper.

g. Moisten the new seals (9 and 17) and dust covers, with unused brake fluid and assemble the cylinder in the reverse order of dismantling. Place a rubber band around the cylinder to retain the pistons (6 and 20).

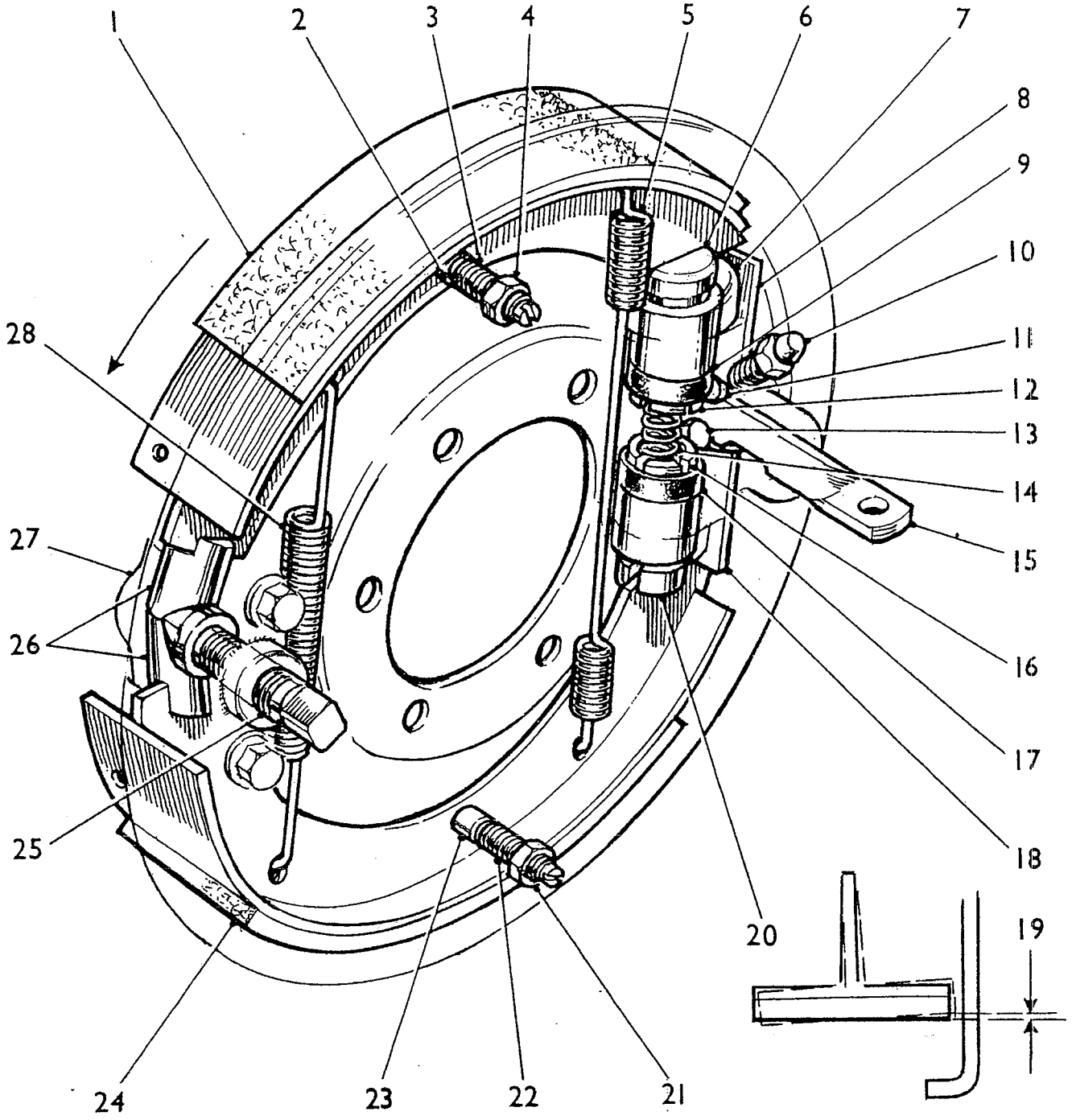


Fig. 8. WHEEL BRAKE UNIT

1	Lined shoe (leading)	15	Draw link
2	Bush	16	Seal support
3	Steady post	17	Seal
4	Nut	18	Tappet
5	Return spring	19	Diagram of tolerance
6	Piston	20	Piston
7	Dust cover	21	Nut
8	Tappet	22	Steady post
9	Seal	23	Bush
10	Bleed screw	24	Lined shoe (trailing)
11	Roller	25	Wedge
12	Seal support	26	Link
13	Roller	27	Adjuster
14	Spring	28	Return spring

h. Dismantle the handbrake expander mechanism from the cylinder by removing the cover plate and lifting out the draw link (15), rollers (11 and 13) and tappets (8 and 18).

i. Clean and examine the parts and apply a smear of the specified brake grease to the channels.

j. Fit new expander parts if necessary, apply a smear of the specified brake grease to the underside of the cover plate, and refit, securing with the four screws and spring washers.

k. Replace the cylinder and adjuster and pack the rubber boot with the specified grease. Reassemble the rest of the brake assembly as described in paragraph 17, sub-paragraphs e to o.

Bleeding the System

21.a. Bleed the system using a pipe from the bleed screw to a glass jar containing some brake fluid. Commence with the cylinder furthest from the master cylinder.

b. Unscrew the bleedscrew enough to allow the fluid to be pumped out (half a turn is normally sufficient) and close the bleed screws immediately after the last backward stroke of the brake lever when bubbles no longer appear. Note that the brake lever should be depressed slowly throughout the full stroke and allowed to return slowly. There should be a pause of three or four seconds, and the movement repeated until the air is dispelled at each bleedscrew.

Hydraulic Hoses

22. Clean and examine the brake hoses for perishing and attack by lubricants, and the pipes for fractures and leaks at unions.

Lubrication

23. Lubricate the steady posts, shoe ends, adjuster parts, mechanical expander parts and between the sliding type wheel cylinders and backplate on the rear brake, with the specified brake grease. Use only the smallest amount and take care that the grease does not touch the hydraulic parts or dust covers.

Topping up the hydraulic brake reservoir

24.a. Support the front of the trailer so that the frame is horizontal.

b. View the fluid level in the transparent reservoir (Fig. 9) through the aperture provided in the master cylinder guard, by peering beneath the chequer board on the left hand side of the vehicle.

c. If topping up is necessary, remove the chequer board by means of the four slotted countersunk screws.

d. Clean the area around the reservoir filler cap.

e. Remove the cap and pour in the specified fluid from a clean container to the level marked on the reservoir.

25. The fluid should be renewed periodically as it collects moisture over a period of time. To do this proceed as follows:

26.a. Attach a rubber bleed tube to a bleedscrew.

b. Loosen the bleedscrew and pump out most of the fluid into a suitable container, leaving some fluid in the reservoir.

c. Fill up the reservoir with new fluid of the approved type and proceed with each wheel in the same manner and order as for bleeding the system. (Refer to paragraph 21, sub-paragraphs a and b).

d. Take care to keep topping up the reservoir so that air does not enter the system whilst continuing to bleed both brakes until clean fluid is seen in the glass jar.

MASTER CYLINDER (Fig. 9)

27. Periodically, the unit should be replaced by a new one. However, the cylinder may be serviced at this period when new seals must be fitted, but only if the bore is in perfect condition.

Operation

28. When pressure is applied to the brake lever, the push rod (21) contacts the plunger (18) and pushes it along the bore. In the first 1/32 in. (.79mm.) of movement, the centre valve seal (11) closes the port to the reservoir and as the plunger continues to move along the bore the fluid is forced through the pipe line to the wheel cylinders. On the return stroke, the plunger moves back with the return of the fluid and the final movement of the plunger lifts the valve seal off the seat, allowing an unrestricted flow of fluid between system and reservoir.

Servicing (Qualified tradesman)

29.a. Drain the system as described in paragraph 26, sub-paragraphs a and b, and disconnect the pipe from the cylinder.

b. Remove the pin from the forkend (1) and brake lever and, taking out the securing bolts, remove the cylinder from the trailer.

c. Unscrew the filler cap (9) and drain out any surplus fluid.

d. Pull back the dust cover (5) and remove the circlip (20) together with the retaining washer (19) and push rod (21). Shake the cylinder to eject the plunger assembly (11 to 18).

e. Lift the leaf of the spring retainer (16) and remove the spring assembly (11 to 16) from the plunger (18).

f. Compress the spring (15) to free the valve stem (14) from the keyhole of the spring retainer (16), thus releasing the tension of the spring. Remove the spring (15) valve spacer (12) and valve spring (13) from the valve stem (14) and the valve seal (11) from the valve head.

g. Remove the seal (17) from the plunger (18), clean all parts thoroughly with the specified cleaning fluid and examine them for scores, burrs or ridges and renew if necessary.

h. Fit the new seal (17) to the plunger (18) and the valve seal (11), smallest diameter leading, to the valve head.

i. Position the valve spring (13) on the valve stem so that it "flares" away from the valve stem shoulder, and follow with the valve spacer (12) legs first and spring (15).

j. Fit the spring retainer (16) to the spring and compress the spring until the valve stem passes through the key hole slot and engages in the centre.

k. Fit the spring immediately to the plunger and press home the leaf of the spring retainer to secure.

l. Liberally lubricate the seal and plunger bore with unused brake fluid and insert the plunger assembly, valve end leading, into the cylinder.

m. Position the push rod and retaining washer (19) and fit the circlip (20) to secure. Check that there is approximately 1/32 in. (.79 mm.) between the plunger and the push rod. Smear the lips of the dust cover with the specified grease, and fit.

n. Fit the cap washer and filler cap, and remount the cylinder onto the trailer.

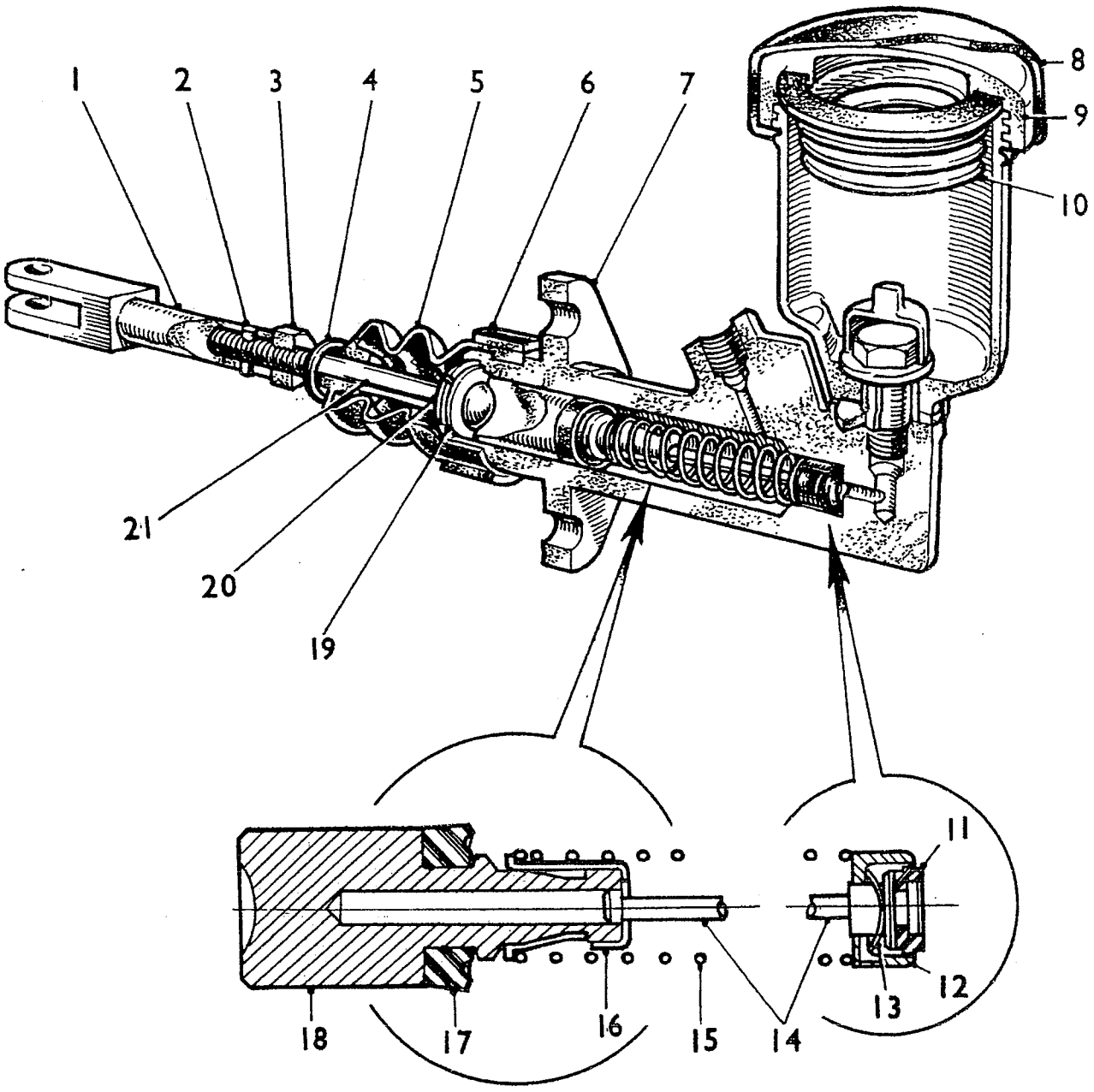


Fig. 9. HYDRAULIC MASTER CYLINDER

1	Forkend	12	Valve spacer
2	Mills pin	13	Valve spring
3	Lock nut	14	Valve stem
4	Crimping band	15	Spring
5	Rubb cover	16	Spring retainer
6	Rubber band	17	Plunger seal
7	Body	18	Plunger
8	Dust cover	19	Retaining washer
9	Filler cap	20	Circlip
10	Moisture barrier	21	Push rod
11	Valve seal		

EXPANSION VALVE (Fig. 10)

Operation

30. This unit is fitted to the brake piping system between the master cylinder and the wheel cylinders its purpose being to cushion any violent brake application in its initial stages, thus reducing the dangers of wheels locking or possible damage to the system. It functions in the following manner:—

31. On fluid being forced into the inlet from the master cylinder, the valve (2) is forced back compressing the spring (4) and thus absorbing the first rapid movement of the fluid. Nevertheless the wheel brakes are still applied immediately due to the through-flow in the expansion valve.

Servicing (Qualified tradesman)

32.a. Drain the system as described in paragraph 19, sub-paragraph a and b. Disconnect the two pipes and mounting bolts and place the rectangular end of the chamber in a vice.

b. Remove the lock wire and unscrew the spring cover (5) with the spring (4).

c. Remove the valve assembly and examine it followed by the internal 'O' ring, and check the valve body bore for scoring or other damage, and clean all parts with the specified cleaning fluid.

d. Smear a new 'O' ring (8) and seal (9) with unused brake fluid and fit to the bore and valve respectively. Smear the bore and valve with brake fluid and carefully enter the valve into the bore taking care not to disturb the 'O' ring.

e. Examine the spring for signs of collapse or cracks and, if the washer (7) has been removed, secure with a new circlip (3). The spring cover with the spring inside may then be screwed on right up to the shoulder of the valve body, and locked with 22 SWG (.028 in. (.71 mm.)) locking wire as indicated on Fig. 10.

f. Fit the unit to the trailer, couple up the two pipes and bleed the system as described in paragraph 21, (sub-paragraphs a and b).

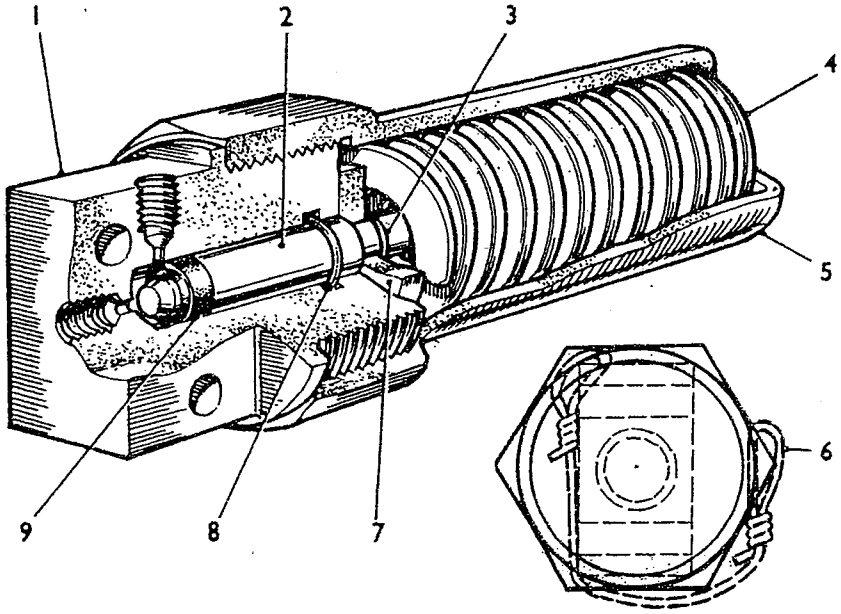


Fig. 10 EXPANSION VALVE

1	Valve body	6	Locking wire
2	Valve	7	Washer
3	Circlip	8	'O' Ring
4	Spring	9	Seal
5	Spring cover		

DRAUGHT EYE ASSEMBLY (Fig. 11)

Operation

33. The trailer over-run brake operates when the brake is applied on the forward towing vehicle providing that the reversing stop (paragraph 35) is not being utilized.

Operation of the towing vehicle brake induces a forward thrust by the trailer against the towing vehicle. This action compresses the spring incorporated in the draught eye assembly. The rearward movement of the draught-eye and shaft is transmitted to the master cylinder as described in paragraph 28.

Servicing (Fig. 11) (Qualified tradesman)

34.a. Remove the unit from the trailer by withdrawing the six bolts holding the case to the side members.

b. Place the eye in a vice; utilizing the flats on the eye. Slacken the lock nut (14) and remove the pin (13).

c. Turn back the tab washer (11) and remove the large nut (12) and tab washer, followed by the washer (10), pad (9) and washer (8).

d. Remove the four set pins (7) from the rear bearing and oil seal housing (18), and withdraw the housing complete with bush (19) 'O' ring (15) and oil seal (16).

e. With the draught eye still in the case, hold the unit up clear of the bench with the eye pointing upwards. The spring (21), with its two bushes (20 and 22), will then slide down the draught eye and out of the case.

f. Withdraw the draught eye and shaft (1) and remove the front bearing and oil seal housing. Note that the reversing stop base plate (5) is attached by two of the housing set pins.

g. Carefully clean and examine all parts and press new bushes (19 and 24) into their respective housings (18 and 23) if excessive play is present between them and the shaft. Ensure that the bush with the larger internal diameter is fitted to the front housing.

h. Renew 'O' rings (15 and 25) and oil seals (16 and 26) and examine the spring for signs of collapse.

i. Smear bushes (19 and 24), spring (21), spring bushes (20 and 22) and shaft of the draught eye (1) with the specified grease. Also pack the case with grease.

j. Fit the front housing assembly (23), complete with reversing stop unit (4 & 5), followed by the draught eye.

k. Position the unit vertically so that it stands on the eye. The front (short) spring bush (22) can then be slid down the shaft, flange first, followed by the spring and the long spring bush (20), flange uppermost.

l. Fit the rear housing assembly, followed by the washer (8), pad (9), washer (10), tab washer (11) and nut (12).

m. Clamp the flats of the eye in a vice, tighten the nut (12) and lock with the tab washer (11).

n. Loosely screw in the pin (13) with locknut (14). Fit the draught eye assembly into the frame and adjust the pin so that the relay lever in the fully forward position gives a clearance, between the pin and lever, of .10 in. (2.54 mm.). Lock the pin with the lock nut.

o. Finally apply the correct lubricant through the housing greasers (2).

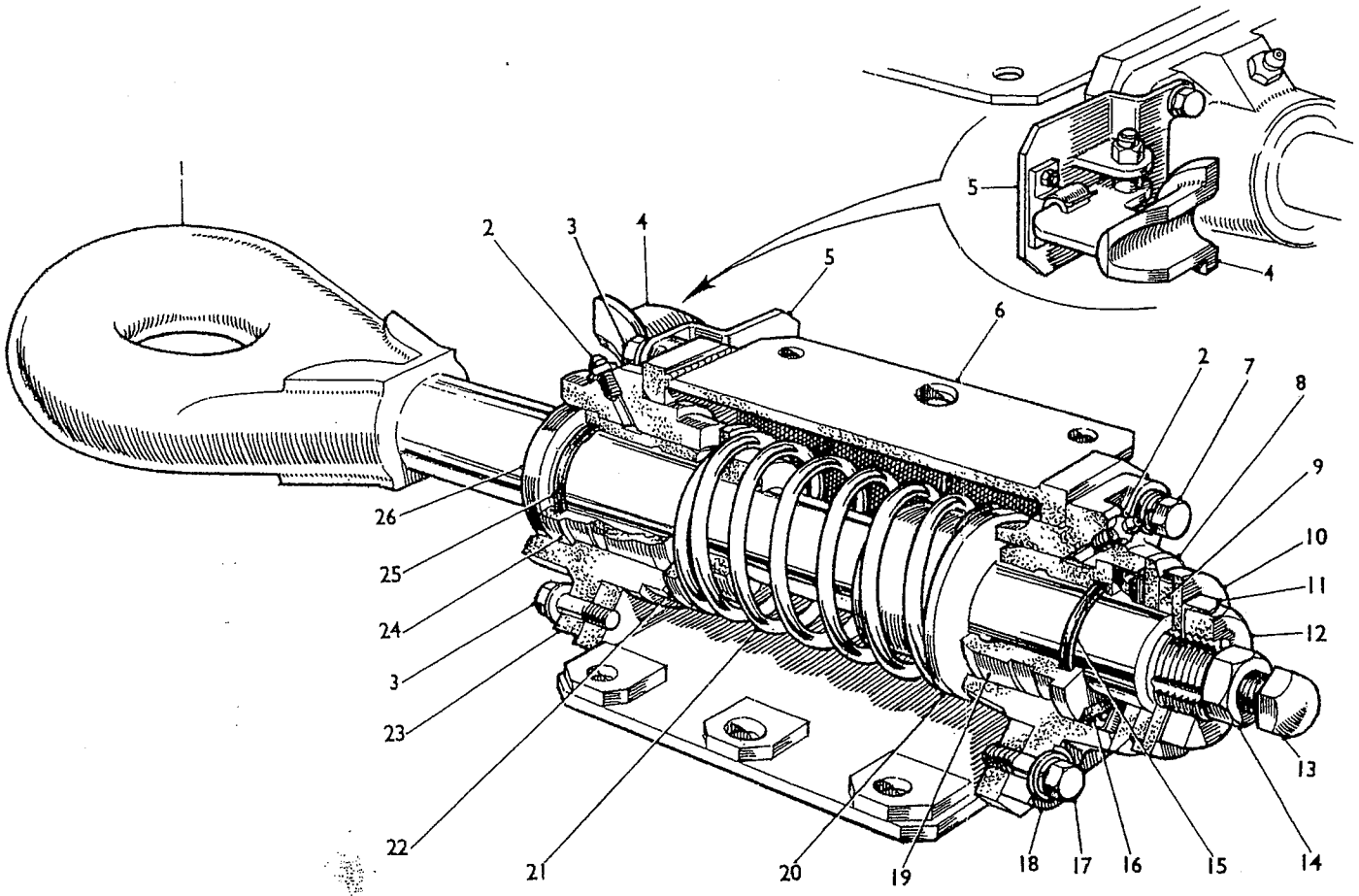


Fig. 11 DRAUGHT EYE

1	Draught eye and shaft	14	Lock Nut
2	Greaser	15	'O' ring
3	Set pin	16	Oil seal
4	Reversing stop	17	Set pin
5	Base plate	18	Bearing and oil seal housing
6	Case	19	Bush
7	Set pin	20	Spring bush
8	Washer	21	Spring
9	Pad	22	Spring bush
10	Washer	23	Bearing and oil seal housing
11	Lock washer	24	Bush
12	Nut	25	'O' ring
13	Pin	26	Oil seal

REVERSING STOP

35. The saddle shaped reversing stop (Fig. 11(4)) pivots on a bracket bolted to the forward end of the draught eye. When not in use it is swung clear of the draught eye shaft and held in position by a clip on the bracket.

The purpose of the reversing stop is to prevent brake application by the overrun action of the draught-eye assembly when the trailer is being reversed.

When the trailer is to be reversed the reversing stop must be placed over the shaft between the eye and the body of the draught-eye assembly.

When the trailer is to be towed in the forward direction, the reversing stop must be placed in the clip provided on the reversing stop bracket.

Brake Relay Lever (Fig. 7) (Qualified tradesman)

Servicing

36.a. Replace the flanged bearings (9) which take the brake relay lever (6), if excessive play exists:

b. Uncouple the return spring and master cylinder fork end.

c. Remove the split pin, slotted nut and washer under the bracket, and remove the swivel pin (7) followed by the relay lever.

d. Remove the 'O' rings (8) and flanged bearings (9) from the relay lever and replace with new ones after cleaning the parts.

e. Pack the area between the bearings with the specified lubricant, and reassemble the lever, swivel pin, washer and slotted nut which must be locked with a split pin.

f. Couple up the master cylinder fork end and the return spring, and check that the clearance (5) between the draught eye button and the brake lever button is .10 in. (2.54 mm.). Adjust on the draught eye button as required.

MECHANICAL SYSTEM: (Fig. 7)

DESCRIPTION

37. This is a purely mechanical arrangement utilising rods, levers and cables in conjunction with a brake tensioner. To apply the handbrake, pull back beyond 90° to the stop on the handbrake pivot bracket (20) and against the pressure of the brake tensioner (24). This takes the brake rod (23) beyond the centre line of the handbrake pivot pin (19) and the lever (21) is held in the "on" position by the compression of the brake tensioner rubber spring. When the lever is returned to its clip (22) a return spring (14) assists in returning the linkage to the off position.

SERVICING (Qualified tradesman)

38.a. Examine the linkage for play caused by worn pins and/or ovality of the pin holes, replace where necessary and apply the specified lubricant.

b. Check the cables for fraying or kinking, and use the specified lubricant with a grease gun.

c. See that the brake tensioner (24) rubber is in good condition and that the return spring has not stretched.

d. Replace the flanged bearings (16), which take the pivot pin and lever (18) if excessive play exists:

(i) Withdraw the split pin, the slotted nut and washer, and remove the pivot pin and lever.

(ii) Remove the 'O rings (17) and flanged bearings (16) from the pivot mounting, and replace with new ones after cleaning the parts.

(iii) Pack the area between the bearings with the specified lubricant, fit the pivot pin and lever and secure with the washer, slotted nut and split pin.

ELECTRICAL EQUIPMENT

Servicing (Fig. 12 and 15) (Where fitted)

39. The 24 volt electrical system is supplied and controlled from the towing vehicle by way of a plug at the end of a flexible cable on the trailer for socket connection to the towing vehicle.

40. To ensure serviceability of the equipment, check the following details:

a. Connecting leads, for security of plugs and deterioration of cable: unstrap the extension cable on the L.H. side of the light beam (Fig. 12 (8)) and examine carefully.

b. Trailer plug (3) and light beam plug (4), for damage and security.

c. Light beam (8) and side lamp brackets (24), for security and ease of operation.

d. Lights, for security and cleanliness, and lamps for operation. Also the light lens's and reflectors, for cleanliness.

e. Earth points, for cleanliness: see that they are smeared with petroleum jelly or the approved equivalent.

Convoy and Registration Plate Lights. (Fig. 13)

41. These two lights are similar. For lamp renewal the bayonet type lampholder is removed by unscrewing the locking ring (10) immediately behind the mounting plate. When replacing the lampholder, care must be taken to ensure correct location of the front rubber mounting (5).

Side and Turn Lights (Fig. 14)

42. To gain access to the lamp of these lights, the lens must be unscrewed from the mounting plate. After replacing a lamp, ensure that the lens is screwed firmly into position.

Tail/Stop Light

43. To gain access to the lamp of the tail/stop light, the lens must be unscrewed from the mounting plate. This is similar to Fig. 14 except that the lamp is a double contact index pin type and can be inserted in one position only. Ensure that the lens is screwed firmly into position after lamp replacement.

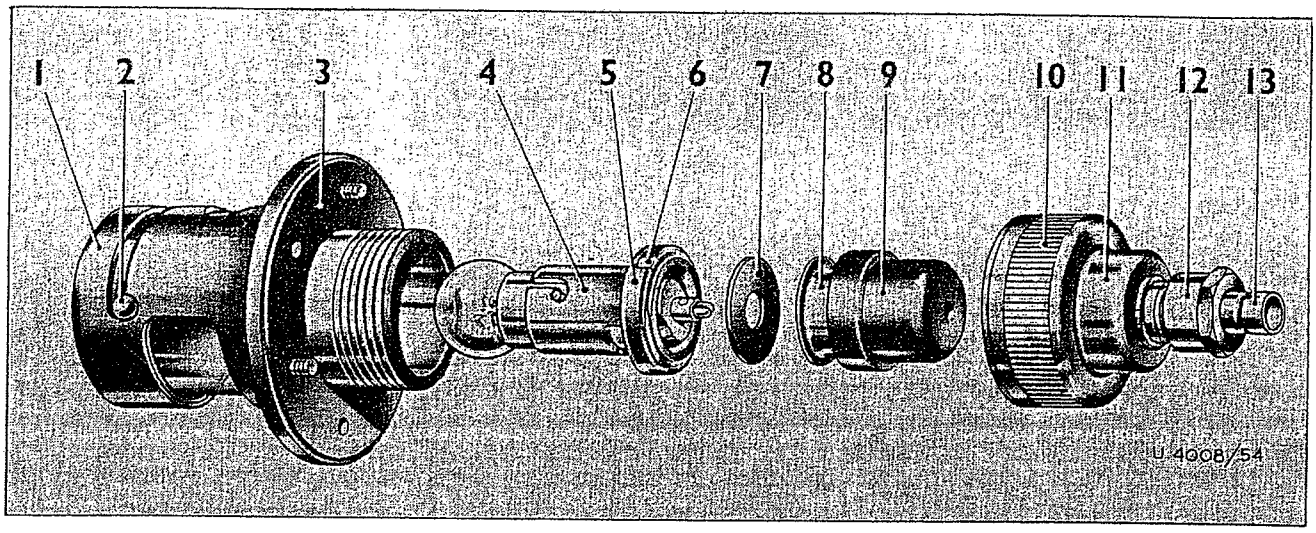


Fig. 13 REGISTRATION PLATE LIGHT

1 Light shield
2 Locating peg
3 Backplate and bush
4 Lampholder
5 Front rubber mounting
6 Earthing ring
7 Insulating washer
8 Lampholder cup
9 Rear rubber mounting
10 Locking ring
11 Case
12 Gland nut
13 Ferrule

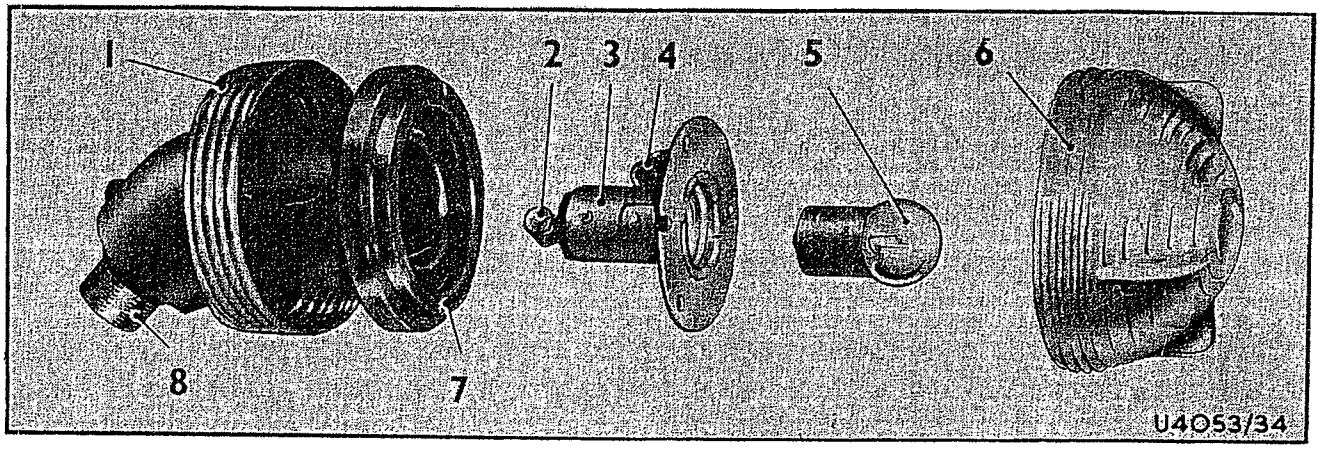


Fig. 14 SIDELIGHT

1 Base
2 Contact ferrule
3 Lampholder assembly
4 Earth ferrule
5 Lamp
6 Lens
7 Body
8 Cable gland

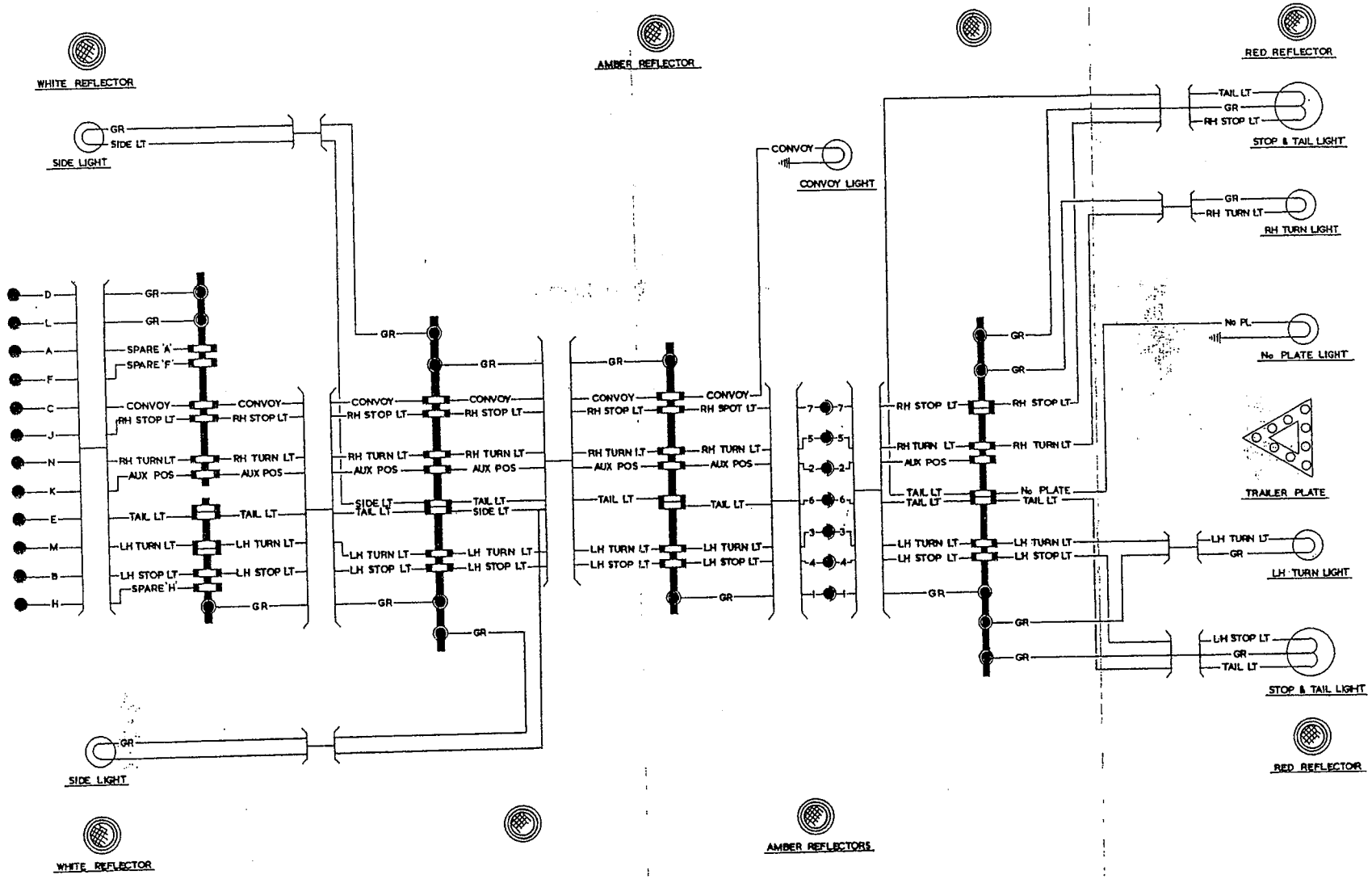


Fig. 15. WIRING DIAGRAM

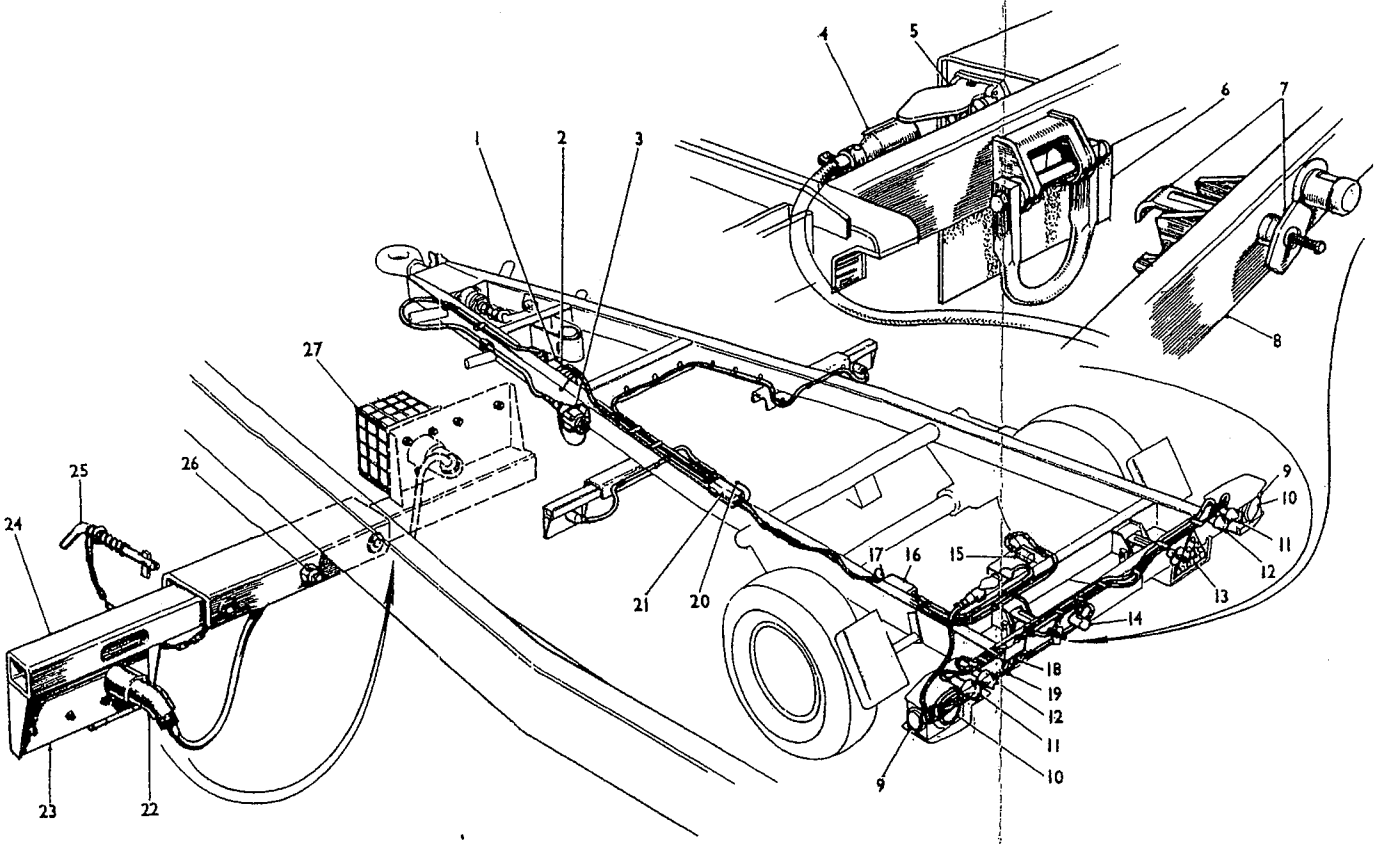


Fig. 12 ELECTRICAL SYSTEM

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1	Clamp connector	14	Number plate light
2	Earth point	15	Convoy light
3	Trailer plug	16	Rear connector junct
4	Beam plug	17	Earth point
5	Socket – beam plug	18	Beam connector junc
6	Convoy plate	19	Earth point
7	Clamping hook and nut assembly	20	Earth point
8	Light beam	21	Mid. connector junct
9	Amber reflector	22	Side light
10	Red reflector	23	White reflector
11	Rear light	24	Lamp and reflector b
12	Turn light	25	Locking handle
13	Trailer plate	26	Pivot bolt
		27	Side light guard

OPERATING INSTRUCTIONS

To couple the trailer to a prime mover

44.a. Reverse the towing vehicle to the front of the trailer and raise the front of the trailer using the handles provided.

b. Release the trailer handbrake and couple the trailer to the vehicle.

c. Connect the trailer electrical plug into the socket on the vehicle.

Checks before moving off

45.a. Remove any flints or stones from the tyre treads.

b. Adjust the tyre pressure, if necessary, to that shown in the Servicing Schedule.

c. Check the tightness of all wheel nuts (L.H. threads on left side and R.H. threads on right side wheel). (Refer to Fig. 6.)

d. Release the handbrake by returning it to its clip on the frame side.

e. Check the operation of all lights by operating the vehicle controls.

f. When all the above checks have proved satisfactory, the trailer is ready to move off.

Checks during a journey

46. Stop after running for a mile and:—

a. Check the security of the load and draught eye connection.

b. Check the tyres for punctures and embedded flints and stones.

c. Check the wheel hubs and brake drums for overheating, as instructed in paragraph 13.

d. Repeat the above checks at intervals of four hours running time.

To uncouple the trailer

47.a. If the trailer is loaded, the load must first be removed.

b. Unplug the electrical connection, support the front end of the trailer by the handles provided, and uncouple from the vehicle.

c. Lower the front of the trailer onto the skid and apply the handbrake.

Retracting the Suspension

48.a. Remove the mudguards by means of the two pairs of bolts situated on the rear inside faces of the side members. (Ref to Fig. 16).

b. Remove each locking pin from its side lamp bracket, swing the bracket 180° inwards and secure with the locking pin. (Refer to Fig. 12).

c Refer to Fig. 17 and unscrew the stop bolt (5) after slackening the lock nut (4).

d. With four men supporting the trailer, the locking pin (3) must be rotated until its slot is in line with the stop on the retraction arm (2). The locking pin may then be withdrawn.

e. Rotate the anchor arm (1) away from the retraction arm until it hangs vertically.

f. Lower the trailer until the locking pin eyes in the retraction arm are in line with the eye of the anchor arm, push home the locking pin and rotate to lock.

g. Screw in the stop bolt (5) and undo half a turn. Lock with the nut (4).

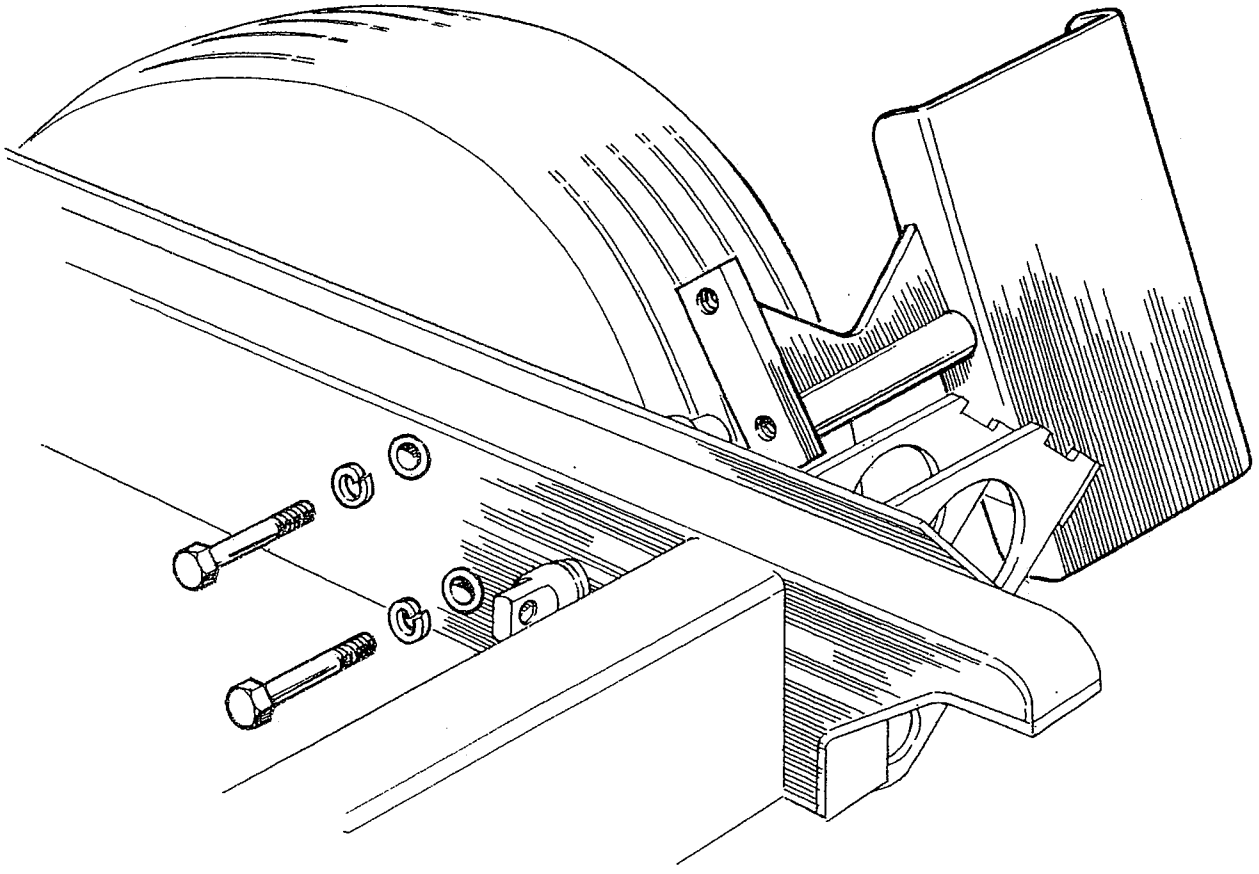

Fig. 16. Mudguard removal

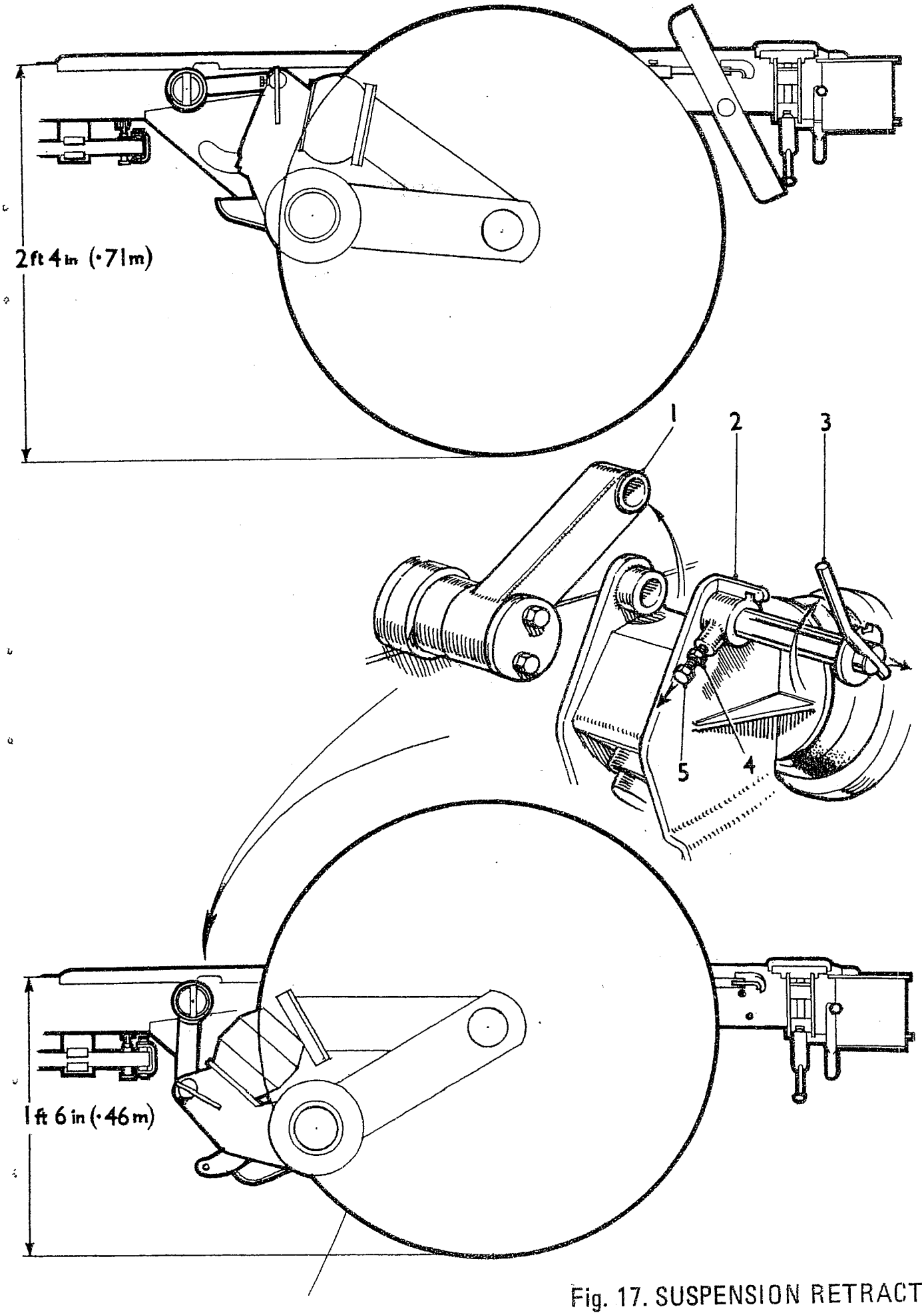

Fig. 17. SUSPENSION RETRACTION

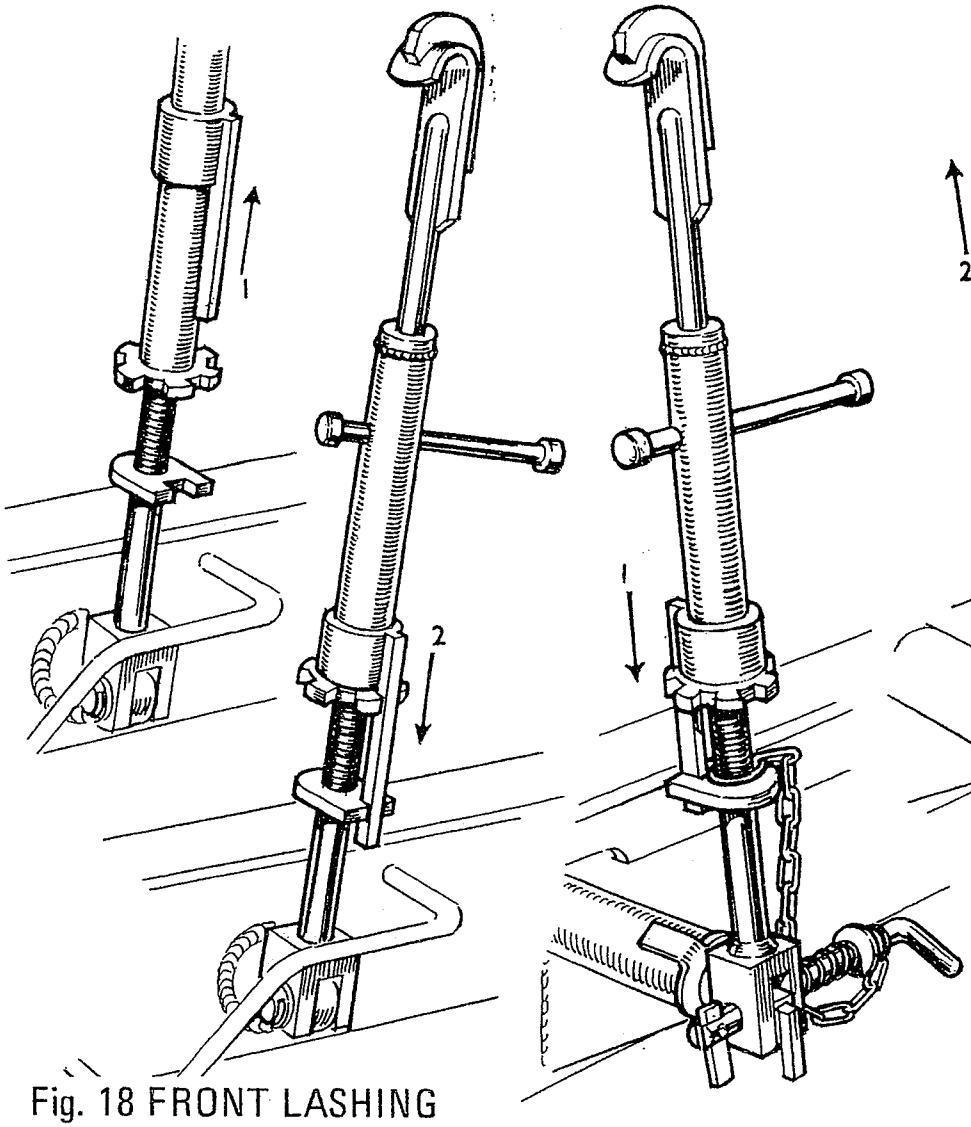

Fig. 18 FRONT LASHING

1. Unlocked
2. Locked

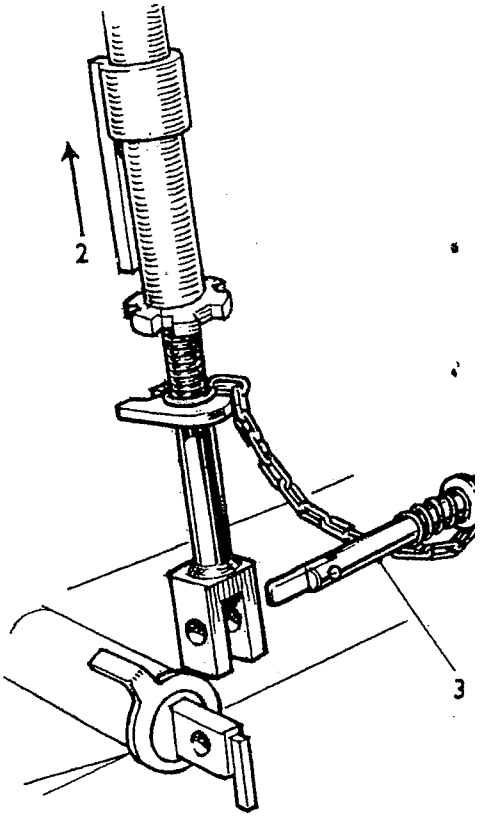

Fig. 19 REAR LASHIN

1. Locked
2. Unlocked

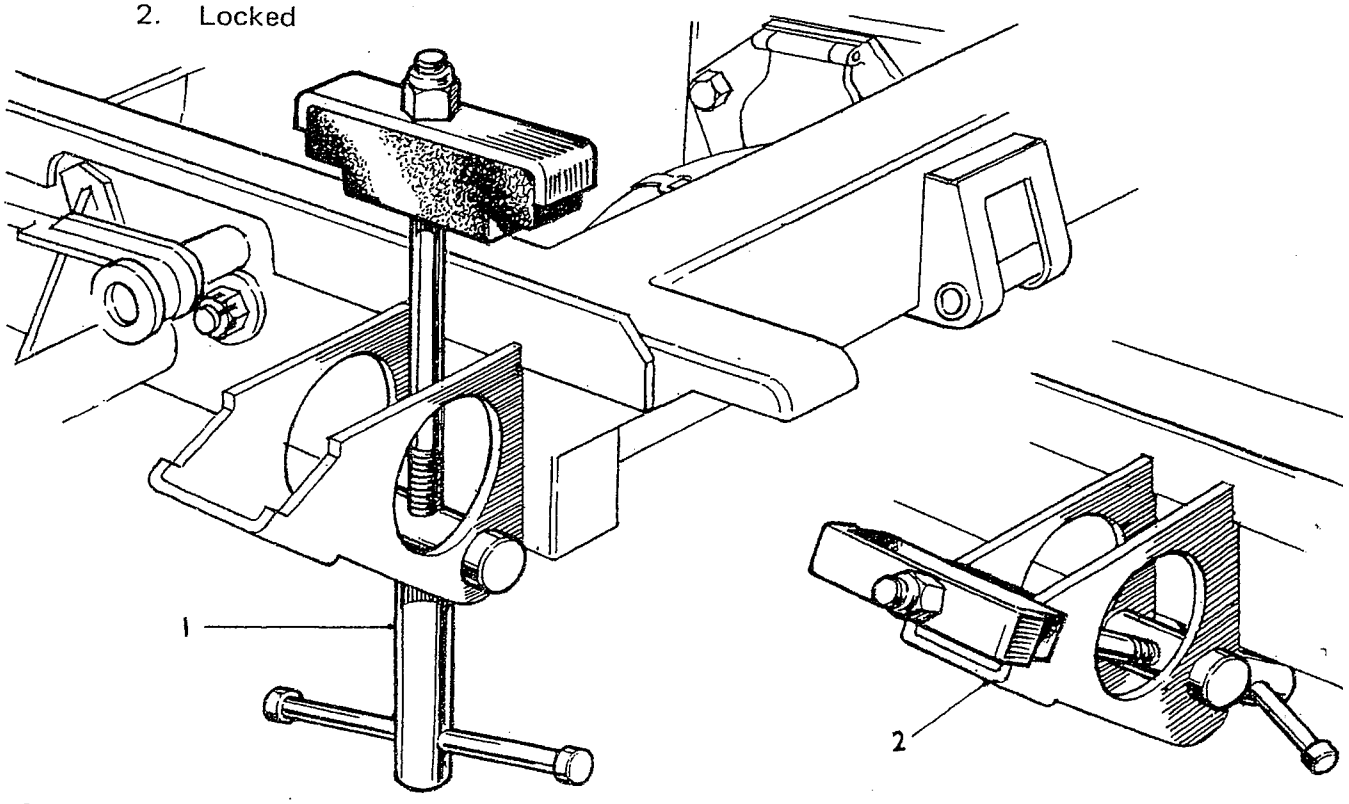

Fig. 20 REAR LASHING (Corner)

1. Clamping position
2. Stowed position

DESTRUCTION OF EQUIPMENT

GENERAL

Destruction

49. Destruction of the equipment, when subject to capture or abandonment in the combat zone, will be undertaken by the using arm.

Degree of damage

50.a. Methods of destruction should achieve such damage to equipment and essential spare parts that it will not be possible to restore the equipment to a usable condition in the combat zone either by repair or by cannibalization.

b. Classified equipment must be destroyed in such degree as to prevent, whenever possible, duplication by, or revealing means of operation or function to the enemy.

c. Any classified documents, notes, instructions or other written material pertaining to function, operation, maintenance or employment, including drawings or parts lists, must be destroyed in a manner to render them useless to the enemy.

Priorities for destruction

51.a. Priority must be given to the destruction of classified equipment and associated documents.

b. When lack of time and/or stores prevents complete destruction of equipment, priority is to be given to the destruction of essential parts, and the same parts are to be destroyed on all like equipment.

c. A guide to priorities for the destruction of this equipment is shown below.

Parts	*Priority*
Tyres, wheels and suspension	1
Frame	2
Braking system	3

Equipment being carried on the trailer

52. Equipment being carried on the trailer should be destroyed in accordance with the priorities for the equipment itself, taking into account the relative importance of the equipment being carried and the trailer itself.

Spare parts

53. The same priority, for destruction of component parts of a major item necessary to render the item inoperable, must be given to the destruction of similar components in spare parts storage areas.

Authority

54. The authority for ordering the destruction of equipment is vested in the divisional and higher commanders, who may delegate authority to subordinate commanders when the situation requires.

Reporting

55. The reporting of the destruction of equipment is to be done through command channels.

METHODS OF DESTRUCTION

56. The following information is for guidance only. Of the several means of destruction, those generally applicable are as under

Mechanical

57. This requires an axe, pick, crowbar or similar implement. The equipment should be destroyed in accordance with the priorities given in paragraph 51.

Burning

58. This requires gasoline, oil or other flammables.

a. Smash all vital parts in accordance with the priorities given in paragraph 51.

b. Pour gasoline and oil over the entire equipment.

c. Ignite by means of an incendiary granade fired from a safe distance, by a burst from a flame thrower, by a combustible train of suitable length, or other appropriate means.

d. Take cover immediately.

Warning: *Due consideration should be given to the highly flammable nature of gasoline and its vapour. Carelessness in its use may result in painful burns.*

Gunfire

59.a. Smash all vital parts, in accordance with the priorities given in paragraph 51.

b. Destroy the equipment by gunfire, using adjacent gun tanks, self propelled guns artillery, rifles using rifle grenades or launchers using anti-tank rockets. Fire on the equipment aiming at the road wheels. Although one well placed direct hit may render the equipment temporarily useless, several hits are usually required for complete destruction unless an intense fire is started, in which case the equipment may be considered destroyed.

Warning: *Firing artillery at ranges of 500 yards or less should be from cover. Firing rifle grenades or anti-tank rockets should be from cover.*

60. In general, destruction of essential parts, followed by burning, will usually be sufficient to render the equipment useless. However, selection of the particular method of destruction requires imagination and resourcefulness in the utilization of the facilities at hand under the existing conditions. Time is usually critical.

If destruction is ordered, due consideration should be given to:—

a. Selection of a point of destruction that will cause greatest obstruction to enemy movement and also prevent hazard to friendly troops from fragments or ricocheting projectiles which may occur incidental to the destruction by gunfire.

b. Observance of appropriate safety precautions.