ALVIS
STRAUSSLER
COVENTRY
ENGLAND

ALVIS-STRAUSSLER BOMB LOADING TRAILER

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ILLUSTRATIONS.

General Data.

Wheelbase	13 ft. $2\frac{1}{4}$ ins.
Track	3 ft. $5\frac{3}{16}$ ins.
Overall Length	17 ft. $3\frac{3}{4}$ ins.
Overall Width	4 ft. 0 ins.
Minimum Ground Clearance (loaded)	3 ins.—4 ins.
Maximum Ground Clearance (loaded)	15 ins.–16 ins.
Size of Tyres:	18 ins. × 7 ins., low pressure pneumatics.
Recommended Tyre Pressures:	20 lbs/sq. in. front and rear.

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CHAPTER I.

General Description.

THE Alvis-Straussler Bomb Loading Trailer is a four-wheeled vehicle designed to carry either two 500 lb. bombs, four 250 lb. bombs, two 18.9 inch diameter bombs, or when carriers are fitted, two 250 lb. containers for small bombs.

The central chassis member may be lowered to within about 4 ins. of the ground for loading purposes or when the bomb trailer is required to pass under low-wing aeroplanes.

For towing, and to negotiate rough ground, the central chassis member may be elevated by means of the hydraulic rams to provide any ground clearance required up to about 16 ins.

CHASSIS.

The "backbone" of the trailer is a central rolled steel member of inverted "T" section. A bracket is bolted to each end of this member and pivotally mounted to the top of each of these is a spring bracket carrying a quarter elliptic laminated spring and connected to the ram arm. The hydraulic rams are carried on two other brackets attached to the central member, and between these are four cradles and four small supports on which the cradles rest when employed for carrying 250 lb. containers for small bombs.

BOMB CRADLES.

The bomb cradles are each constructed of two steel pressings welded together to give a hollow box section. Each cradle provides support for two bombs, one on either side of the central member, and is normally fixed to the latter at two points, one

by a detachable pin, and the other by a bolt, allowing the cradle, when the pin is removed, to be pivoted over to lie flat against the centre frame member. The cradles are rubber padded and fitted with webbing straps, having friction buckles and tensioner springs, for securing the bombs, and adjustable hooks for attaching the bomb-box carriers.

The rubber blocks in the cradles are detachable should they need renewing. If 18.9 in. diameter bombs are to be carried, the first two cradles must be replaced by two of larger size (see loading diagram). It should be noted that these bombs can only be carried in the front position.

AXLES AND SUSPENSION.

The two axles are of "I" section steel. The front is pivoted centrally, allowing an angle of lock of approximately 60°, and the rear is positioned by two radius arms.

The bracket holding the pivot bearings of the front axle is attached to the centre member at the bottom by a pivoted link and at the top to the solid head of the quarter elliptic spring. The draw bar is pivotally attached to the front axle. The rear axle is suspended in the same manner as the front except that the link and spring are attached directly to the axle instead of on a swivel pin bracket. This axle is fitted with a towing hook. The link system of suspension ensures a constant angle between the axes of the centre member and the axles, this assembly forming a parallel motion for any position when elevating or lowering the centre member.

WHEELS AND TYRES.

Each wheel consists of two steel pressings

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bolted together round the hub centre. The wheels are attached to the roller bearing hubs by wheel studs with spherical seating nuts. The tyres are 18 in. by 7 in. low pressure pneumatics. Brakes are fitted to the front wheels for parking purposes, and are applied when the draw-bar is lowered to its horizontal position.

HYDRAULIC RAMS.

The hydraulic rams are 30 cwt. type and act via the spring brackets and springs to the axle arms. The rams are self-contained units complete with reservoir, pump box and valves, and, if replacements should be necessary, they may be removed in a very short time.

Each ram is operated by moving a hand lever in an upwards and downwards direction. A release valve allows the frame to sink back until it is arrested by a stop reaching a bracket on the frame member.

DRAW-BAR.

The draw-bar is of the telescopic type measuring 3 ft. $2\frac{1}{4}$ ins. when closed, and 5 ft. 1 in. when extended. It is made of tubular steel with a 2 in. eye at the end for fitting standard towing hooks. The bar is pivotally mounted to allow for variations in height of the towing vehicle. A suitable hand bar is fitted to facilitate man-handling.

When manoeuvring the trailer by hand under aircraft, it will probably be found advantageous to extend the draw-bar.

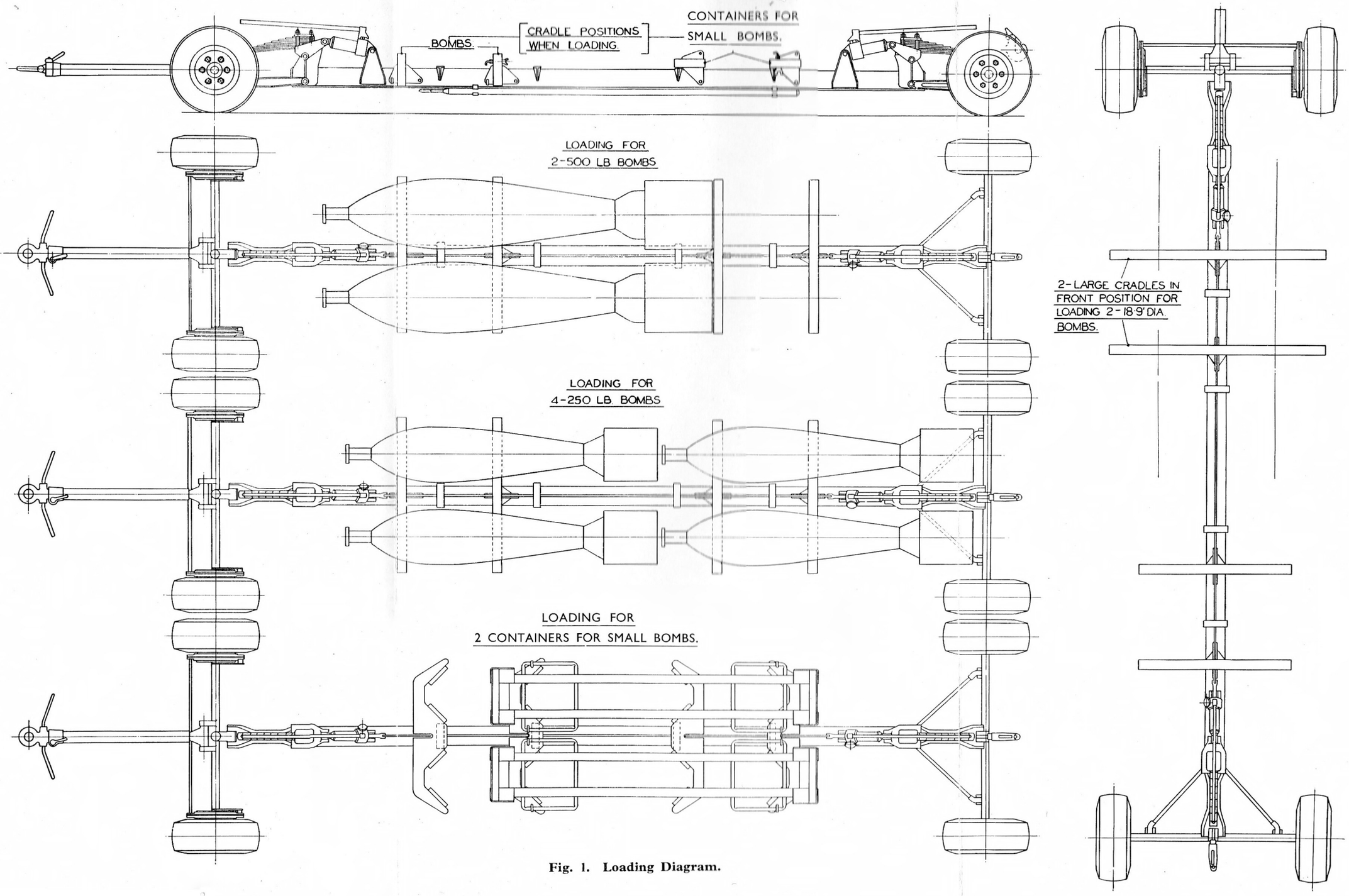


Fig. 1. Loading Diagram.

CHAPTER II.

Instructions for use of Trailer.

OPERATION OF HYDRAULIC RAMS.

To Elevate.

Close the release valve by turning in a clockwise direction and operate the ram handle with an upward and downward stroke.

To Lower.

Open the release valve slowly by turning it in an anti-clockwise direction. Leave the valve open when the chassis member has been lowered.

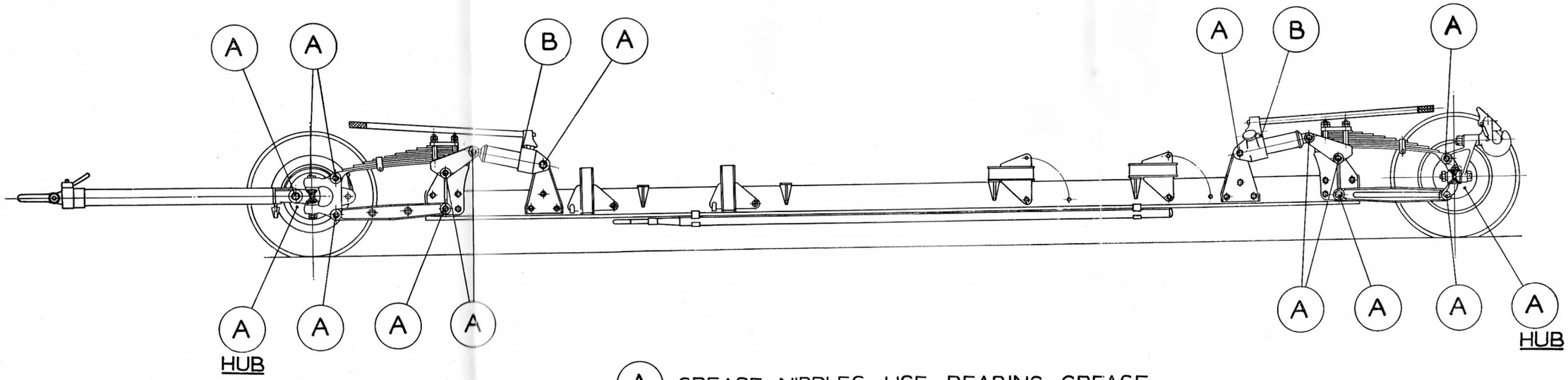
TO EXTEND THE DRAW-BAR.

Slacken off the clamping handle which will be found immediately behind the eye piece. The extending portion of the draw bar must now be given approximately three and a half turns in an anti-clockwise direction in order to release it. It may then be extended to the required length and locked in this position by means of the clamping handle.

When the trailer is to be towed the draw bar must be in the fully closed position and care must be taken to ensure that the extending portion of the draw bar has been screwed fully home.

LOADING BOMBS.

All bombs must be loaded nose forward and secured with the webbing straps, which are provided with friction type buckles and tensioner springs.



(A) GREASE NIPPLES. USE BEARING GREASE.

(B) FILLER PLUGS. USE PRICES HYDRAULIC JACK OIL REF. Nº 2391.

Fig. 2. Lubrication Diagram.

CHAPTER III.

Maintenance.

LUBRICATION.

High pressure grease gun nipples are fitted to all requisite points and should be lubricated with bearing grease at regular intervals. The lubrication chart indicates all points needing attention. The bearings for the radius rods are fitted with oil-less bushes and therefore require no lubrication.

The hydraulic rams require topping up occasionally with Price's Hydraulic Jack Oil Ref. No. 2391 and for this purpose each ram is provided with a filler plug which will be found at the side of the operating handle mounting. When filling, the air plug should be unscrewed.

REMOVAL OF WHEELS AND TYRES.

The axle should be jacked up or suitably supported and the wheel detached by removing the six cadmium plated securing nuts and withdrawing it from the hub. The tyre should now be deflated and the five screws holding together the two sections of the wheel removed. These sections may now be drawn apart and the tyre and tube detached. When replacing the wheels care should be taken to ensure that the seatings of the spherical nuts are quite free from dirt, otherwise the nuts will not bed down.

TO REMOVE HYDRAULIC RAMS.

Each ram is secured to the chassis with two bolts, one connecting the ram arm to the spring

When it is desired to carry 18.9 in. diameter bombs, the two forward cradles must be changed for others of the larger size. It is only possible to carry two of these bombs on each trailer and they must be mounted in the forward cradles as shown on the loading diagram.

REMOVING AND REFITTING CRADLES.

A cradle may be removed by first taking out the detachable pin and then removing the cotter and nut from the bolt securing it to the central frame member. The bolt may then be withdrawn, thus enabling the cradle to be lifted clear of the frame member.

A replacement is fitted by reversing the order of operations given above.

FITTING SMALL BOMB CONTAINER CARRIERS.

Remove the detachable pins from the cradles and pivot the latter over so that they lie flat against the support brackets. Reinsert the pin into the centre member. Each carrier should now be mounted on the three rear cradles, one carrier on either side of the centre member and secured by placing the hooks over the carrier handles and tightening down by means of the wing nuts provided (see loading diagram).

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bracket and the other securing the base of the cylinder to a bracket on the frame.

To detach the ram therefrom, it is only necessary to remove the split pins from the two nuts, unscrew the nuts and withdraw the bolts.

TO RENEW MAIN RAM PACKINGS.

The first operation of removing these packings makes both gland and cup packings accessible.

Unscrew the ram gland nut. Hold base securely placing a tommy-bar through the hole in the outer end of the ram and by this means withdraw the ram.

Take out the screw which is shown securing the cup packings and the packing will come away easily.

In order to replace, the packing should be fitted up and screwed in position in the manner indicated on the diagram and pushed into the cylinder. Although they can be replaced without any other assistance it is advisable to make use of a bell mouth bush in halves, the bush being placed in the position normally occupied by the ram gland nut and packing, thus giving a start to the foremost leather when pushing home. Once the ram is in, it only remains for the gland nut to be screwed tightly into position.

When new packings are being fitted care should be taken that the packings are held securely, though the screw should not be tightened so much as to cause the packings to bulge unduly.

TO RENEW PUMP PLUNGER PACKINGS.

Remove the working handle and socket indicated on the diagram. Unscrew the gland nut and

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withdraw the plunger. The packing may then be withdrawn and the cup leather taken from the bottom of the plunger by unscrewing the retaining screw.

At this stage the suction valve may be removed if necessary by unscrewing the suction valve plug indicated on the diagram.

In order to re-fit the packings and replace, slide the plunger into the gland and fix a new cup packing to the bottom of the ram.

Draw the gland downwards until it just covers the cup leather and then screw the gland into position in the body as tight as possible and give the plunger a sharp blow. This ensures the plunger and packing coming into the correct position.

To fit the gland packing lift the plunger approximately half-an-inch and unscrew the gland. Wrap the packing round the plunger about three times and push into position, finally tightening the gland down.

The filling plug and air plug are clearly shown and when filling, the air plug is to be unscrewed so that air can be released. The container must always be kept full of oil.

In order to get at the release ball valve as indicated on the diagram or to repack with suitable gland packing it is only necessary to unscrew the gland nut which will bring the release valve spindle away at the same time. The packing can then be inserted and the gland nut screwed back into position.

Should the restriction plug be removed care should be taken to replace this correctly, that is, with the small end at the bottom.

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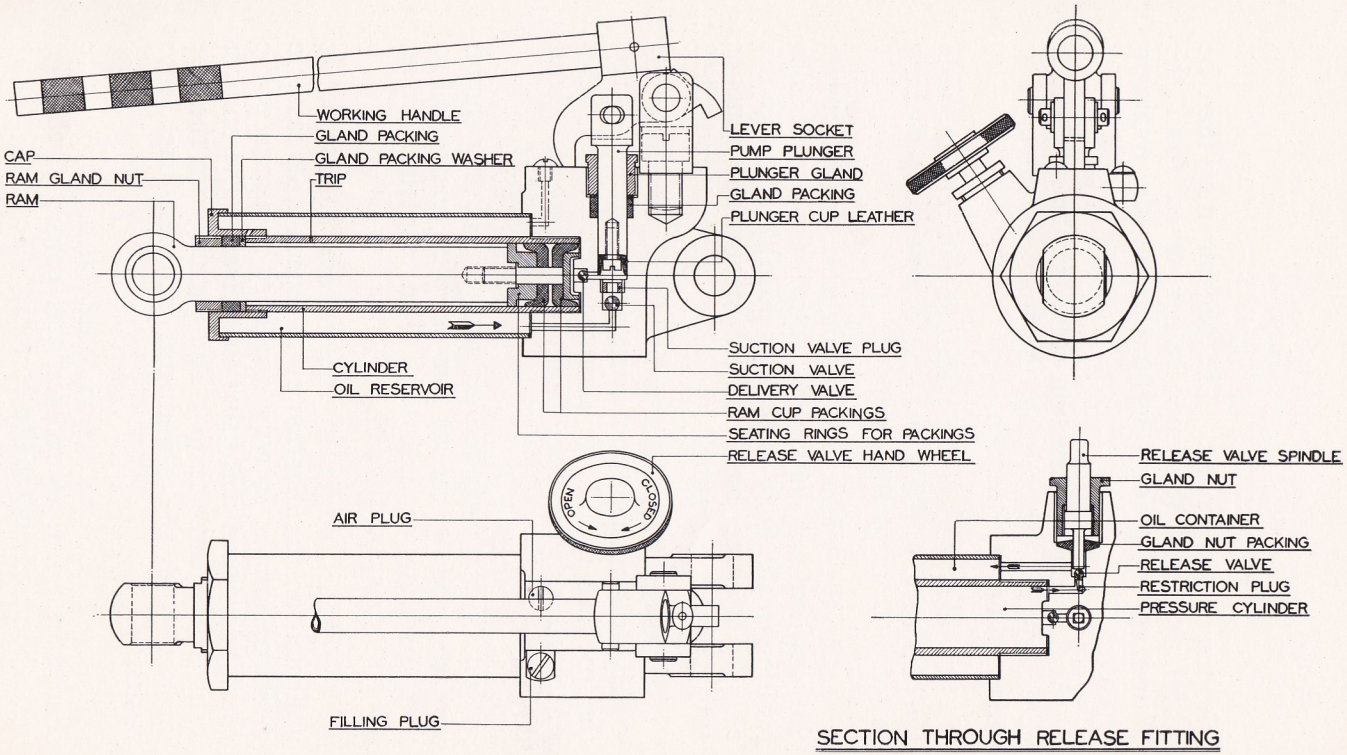

Fig. 3. The Hydraulic Ram.

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