

**P.O. ENGINEERING DEPT.
ENGINEERING INSTRUCTIONS
TOOLS & TRANSPORT
MECHANICAL AIDS
L 1020
Issue 1, 16.12.59**

KIOSK TRAILERS

1. General

This Instruction describes the construction, operation and general maintenance of the three types of kiosk trailer in service. Each type provides a means of picking up a complete, fully painted Kiosk No. 6 and placing it in a horizontal position on the trailer. The trailer can then be towed to the erection site where the kiosk can be unloaded and placed vertically on to a prepared base.

FIG. 1 KIOSK TRAILER, TYPE 1

2. Types in use

Each type provides the main basic facilities of picking up, transporting and placing a kiosk. The two later types have been developed from the original experimental Type 1. The main difference between the types is in the method employed for loading and unloading the kiosk and is as follows:-

- a. Type 1 (Experimental) - Trailers bearing Mechanical Aid Serial Nos. TK2663 - TK2941 inclusive. Operation by wire rope and winch. Some of these trailers have been modified for operation by hydraulic ram.
- b. Type 2 - Trailers bearing Mechanical Aid Serial Nos. TK5975 - TK7875 inclusive. Operation by worm and gear segment.
- c. Type 3 - Trailers bearing Mechanical Aid Serial Nos. TK10446 and above. Operation by hydraulic ram.

3. Description of Type 1

The trailer is mounted on two pneumatic-tyred road wheels with quarter elliptic springing and overrun braking. A pawl is provided on the overrun brake mechanism to render the brakes inoperative when backing the trailer by means of the towing vehicle. A small retractable castor wheel is fitted to the draw-bar assembly. This wheel may be lowered and secured by a clamp for use when the trailer is manhandled and a small amount of vertical adjustment is obtained by means of a screw in the castor wheel post. Two steady posts with small wheels at the lower ends are fitted to the rear of the trailer and two metal wheel ramps are carried in the forward part. A handle is provided on each side of the forward part of the chassis to assist in manhandling. A removable cross-bar carrying the dummy number and trailer plates is fitted across the rear of the chassis. The cross-bar is secured by a chain to the nearside of the chassis and, when the trailer is being loaded, can be swung round into two brackets on the main nearside member. The trailer is fitted with a pair of rear lamps connected by a flexible cable to a small bayonet connector near the towing eye. This plug is inserted in a lamp holder fitting at the rear of the towing vehicle. The

trailer laden with a kiosk is shown in Fig. 1.

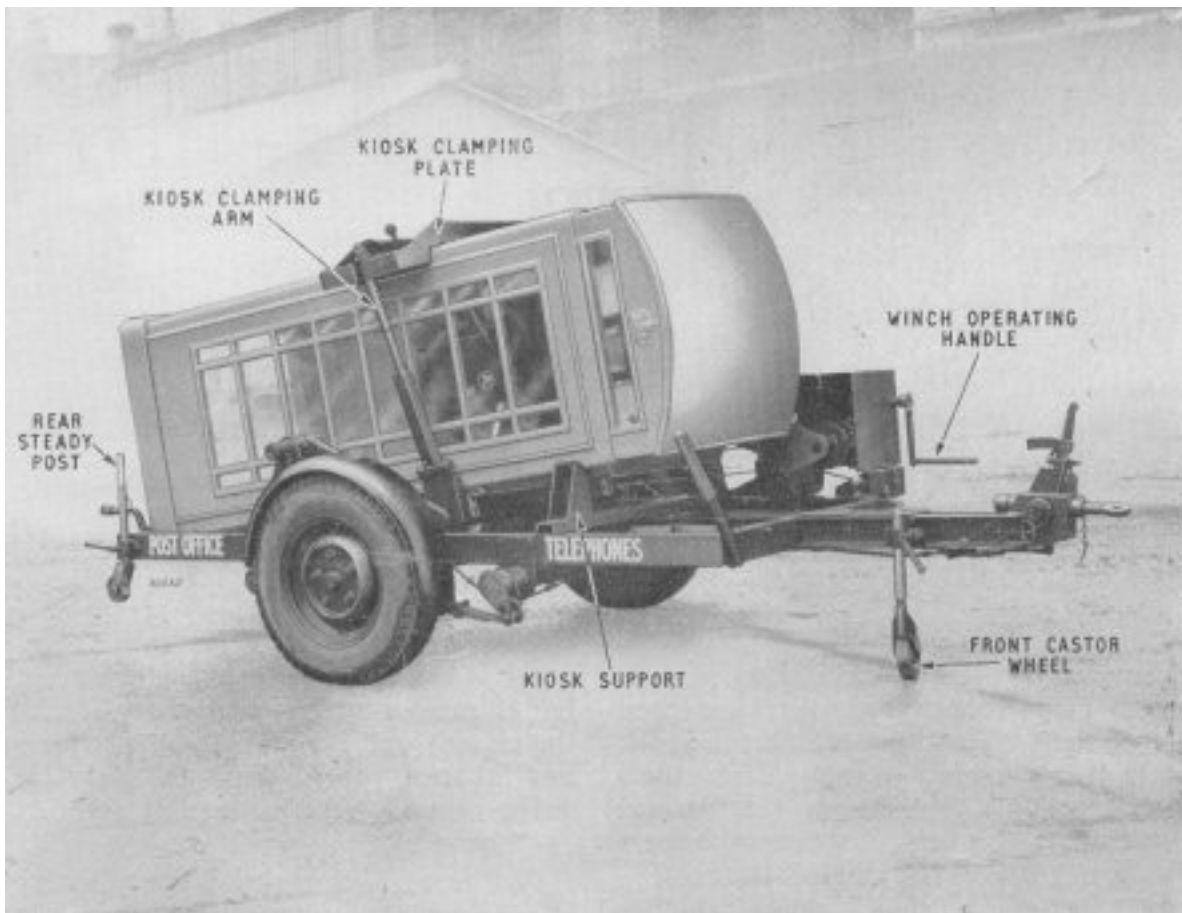


FIG. 1. TYPE 1 TRAILER

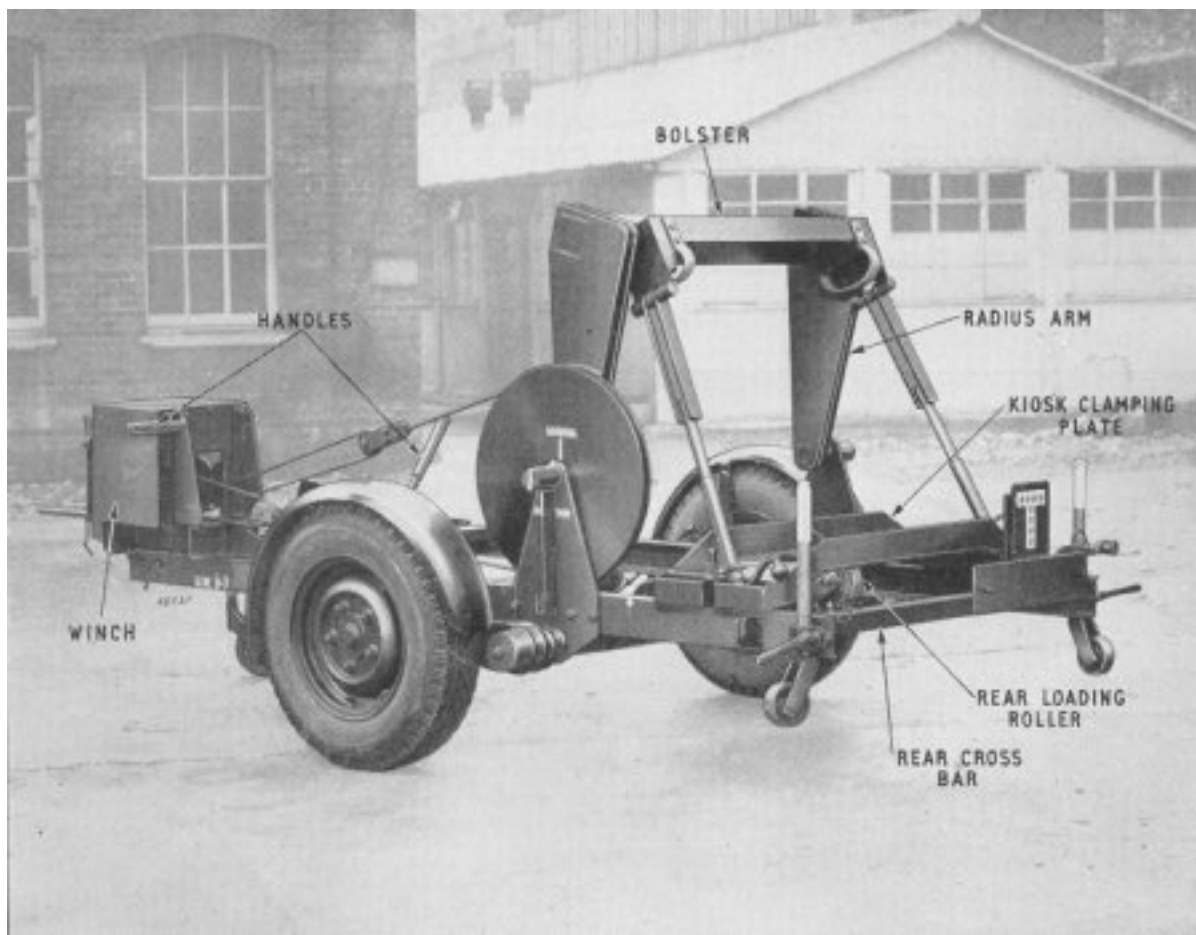


FIG. 2. TYPE 1 TRAILER, UNLADEN

4. Two pivoting radius arms, connected together by a bolster, are fitted one on each side of the trailer. Two kiosk clamping arms are fitted to the bolster which, together with the kiosk clamping plate, grip the kiosk when it is being handled. Two balata strips are fitted to the bolster where it comes into contact with the kiosk. The interconnected radius arms are fixed to a large-diameter pulley sheave and are moved through an arc of approximately 120° by means of a wire rope passing round the sheave from a hand operated worm winch.
5. When the trailer is unladen the clamping plate is stowed across the rear of the chassis by means of two screw-type fixings and the ends of the clamping arms are placed in pockets on the ends of the clamping plate as shown in Fig. 2. The unladen weight of the trailer is 12 cwt.
6. The inner surface of the kiosk clamping plate is lined with rubber. Two rubber-tired rollers are fitted to the rear part of the trailer about which the kiosk pivots when it is being loaded or unloaded. Two rubber-covered supports are provided on the forward part of the trailer and it is on these that the upper part of the kiosk rests when it is being carried.
7. To ensure that the radius arms are placed in the correct position for picking up a kiosk, the words **LOADING** and **POSITION** are painted on the moving pulley sheave and the fixed framework respectively and are positioned so that a white line between the words becomes continuous and straight when the radius arms are in the correct position. The placing down of a kiosk in the required position is

facilitated by the provision of a broad white-painted arrow-head on each side of the chassis which indicates the position that will be taken by the edge of the kiosk base.

8. Description of Type 2

The general shape of the trailer is the same as for the Type 1 but it contains a number of modifications. The road wheel assembly is unchanged. The castor wheel assembly is very much stronger and has screw adjustment only but retracts upwards between the draw-bar members. The rear of the chassis is swept upwards to give greater road clearance. The rear steady posts are more robust and are fitted with additional supports. The overrun and parking-brake mechanism on the drawbar is enclosed. The rear cross-bar is not secured to the chassis and brackets for the stowage of the crossbar are not provided on the nearside. The trailer laden with a kiosk is shown in Fig. 3.

9. The arrangement of the pivoting radius arms, bolster and clamping arms is generally the same as for the Type 1. The bolster is fitted with two oak bearing blocks where it comes into contact with the kiosk. The interconnected radius arms are fixed to a gear segment and are moved through an arc of approximately 120° by means of a worm wheel. On later issues the worm gear is enclosed in an oil bath. To reduce the manual effort required to turn this worm gearing the driving shaft is chain geared to the operating handle located at the front nearside of the trailer. An instruction plate giving directions on the raising and lowering of the bolster is fitted to the nearside of the trailer adjacent to the operating handle.

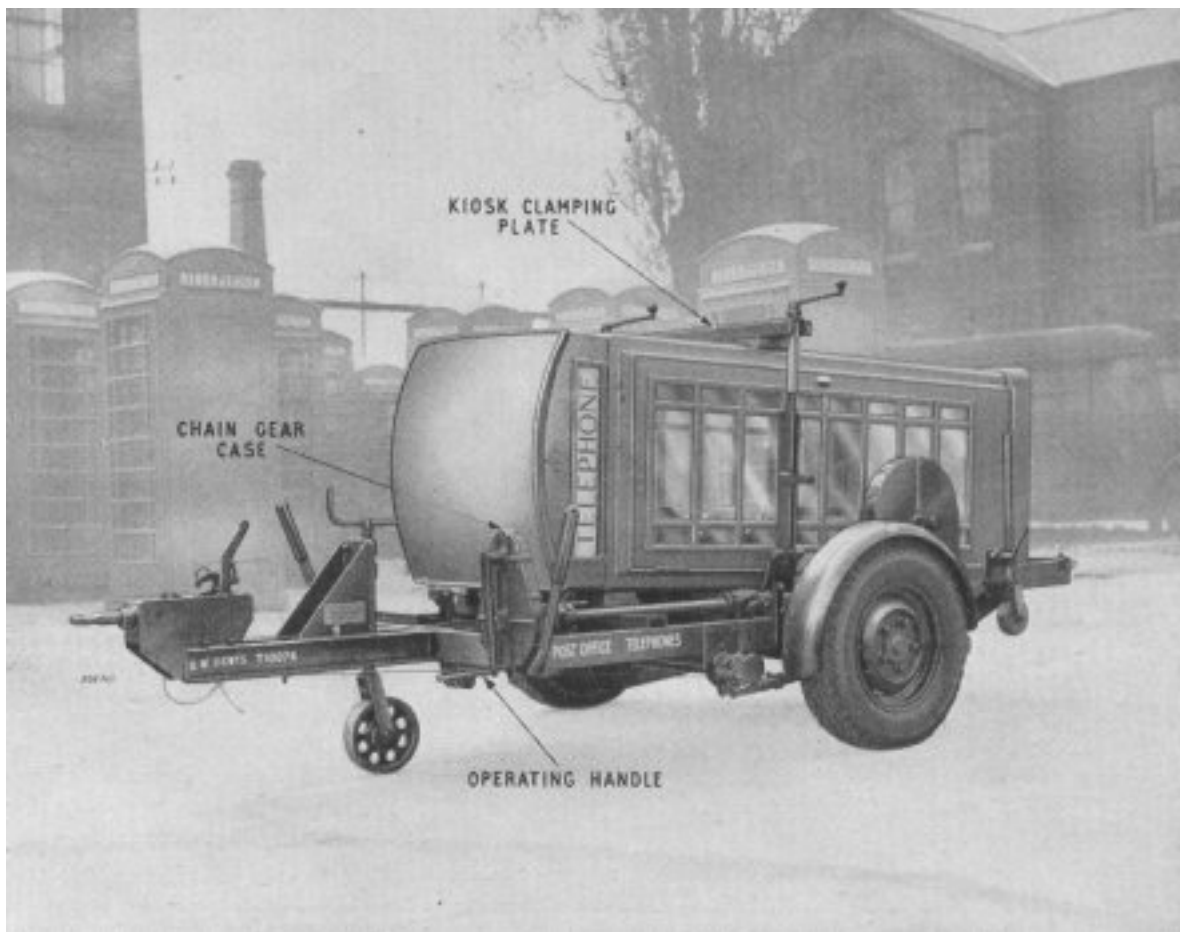


FIG. 3. TYPE 2 TRAILER, LADEN

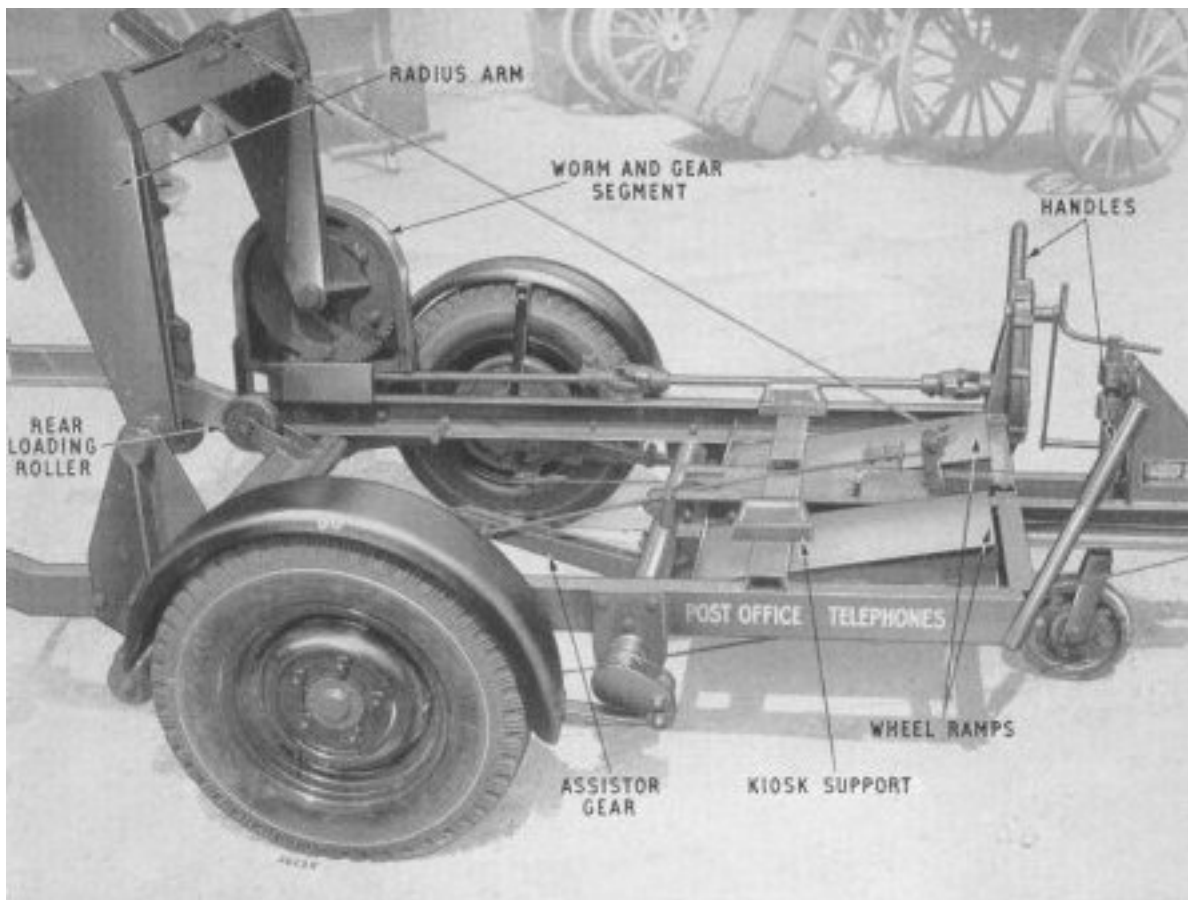


FIG. 4. TYPE 2 TRAILER, LOADING GEAR

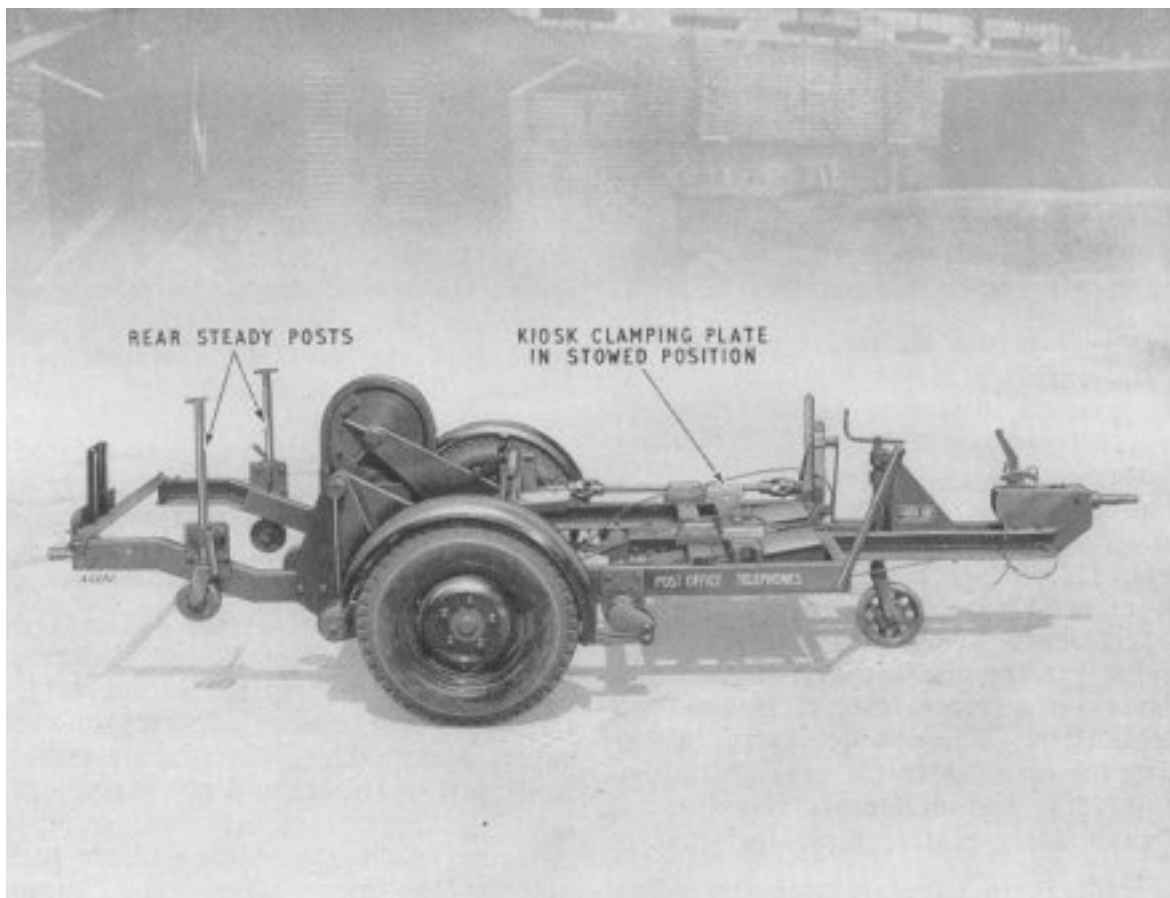


FIG. 5. TYPE 2 TRAILER, UNLADEN

10. To further reduce the manual effort at the positions when the outreach of the centre of gravity of the kiosk is greatest, a spring assistor gear is mounted in the centre of the chassis. The assistor gear consists primarily of a strong spring which is compressed by a lever when the bolster is farthest from the central vertical position and is moving downwards. The energy stored in the spring is utilized to assist the operator when the bolster is moving upwards with the kiosk. Similarly, when the radius arms are in the position for loading the kiosk, the spring is compressed by means of a second lever via a steel rope attached to the bolster. The energy stored in the spring then assists the operator in the initial lifting of the kiosk during loading and unloading. The general arrangement of the loading gear is shown in Fig. 4.

11. When the trailer is travelling unladen, the radius arms are wound down so that the bolster rests on the assistor lever with the two clamping arms clipped together by means of a spring clip or, in the case of later issues, by a leather strap. A bonnet clip is provided to hold the clamping arm assembly against a pair of stops on some trailers where it was found to be necessary. This is unnecessary on later issues as movement of the assembly is limited. The kiosk clamping plate is stowed across the front of the chassis in such a way that one Padlock 1.25 in. will secure the clamping plate and the pair of wheel ramps. Fig. 5 shows the trailer ready for towing in the unladen condition with the exception that the castor wheel must be fully raised when connected to the towing vehicle. The unladen weight of the trailer is 11 cwt.

12. The kiosk clamping plate is fitted with two oak bearing blocks. Two rubber buffers on the forward part of the chassis support the upper part of a kiosk when it is being carried.

13. Description of Type 3

The trailer is generally the same as the Type 2 but differs in the method employed for turning the radius arms and in other respects. The brakes are rod operated instead of cable operated. The wheel-assembly crank-arm bearing is of rubber and not the normal type of steel bearing. The rear of the chassis is tapered off instead of being swept upwards. Rubber pads are inserted between the front castor wheel mounting and the supporting bracket on the draw-bar to enable the castor wheel to withstand shock loading. The trailer laden with a kiosk is shown in Fig. 6. A facility is provided for securing the kiosk clamping plate to the chassis by means of a Padlock, 2 in. The hand brake may also be locked in the 'on' position with a similar padlock.

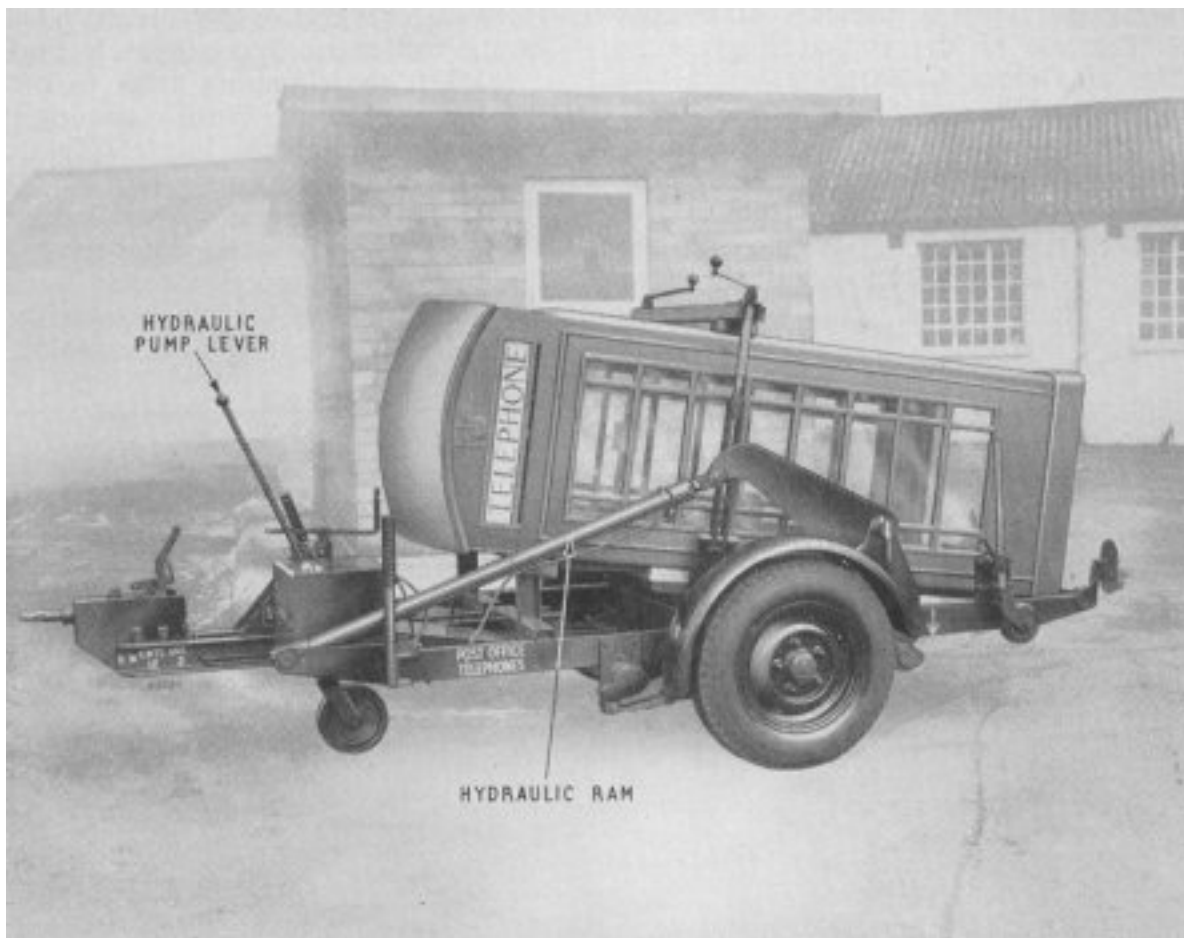


FIG. 6. TYPE 3 TRAILER, LADEN

14. The method of turning the radius arms is by means of a double-acting ram controlled by a hand operated pump and a control valve located on the front nearside of the chassis. This hydraulic gear is contained within a cover and the long pump lever and the short control valve lever project through the top. Two other valves, a restrictor valve and a non-return valve, are also mounted on a back plate beneath this cover. The hydraulic equipment, with cover removed, is illustrated in Fig. 7. The control valve lever can be placed in any one of three positions. When this lever is moved towards the front of the trailer, oil will be pumped into the ram so that the bolster is lowered. If the lever is moved towards the rear of the trailer, the bolster will be raised. With the lever in the vertical position, the hydraulic system is sealed and the ram cannot be moved.

15. When the trailer is travelling unladen the bolster is lowered and the two clamping arms are strapped together. The kiosk clamping plate is stowed across the front of the chassis as in Type 2. The unladen weight of the trailer is 12 cwt. 2 qrs.

16. Automatic lowering of a kiosk

A part of each operation of loading and unloading a kiosk can be performed automatically without operating the hydraulic pump provided that the control valve lever is in the appropriate position. The automatic operation is caused by the weight of the kiosk forcing oil out of the ram but the rate at which the oil is allowed to escape is regulated by a restrictor valve. This valve will only allow the kiosk to lower slowly. The automatic lowering is effective when the kiosk is inclined at approximately 30° or

more to the vertical and can be stopped immediately by moving the control valve lever to the central vertical position.

OPERATION

17. Weight of laden trailer

The weight of a trailer laden with a fully equipped kiosk is as follows:-

Type 1 - 27 cwt. 3 qrs.

Type 2 - 26 cwt. 3 qrs.

Type 3 - 28 cwt 1 qr.

18. Operating instructions

Whenever the trailer is parked the hand parking brake should always be applied. The rear steady posts should always be fully raised and clamped securely, except during the loading and unloading operations. The front castor wheel is provided to assist during manual manoeuvring and should always be fully raised when the trailer is coupled to a vehicle. The operating instructions are applicable to the three types of trailer. Additional information on the use of the trailer is given in TELEPHONES, Call Offices, C 3001.

19. The following procedures apply when the trailer is being used on level ground and when the kiosk is to be placed on a base which is at the same level as that upon which the trailer is standing. If other conditions are encountered it will be necessary to adjust the front castor wheel and/or the rear steady posts to meet the particular conditions.

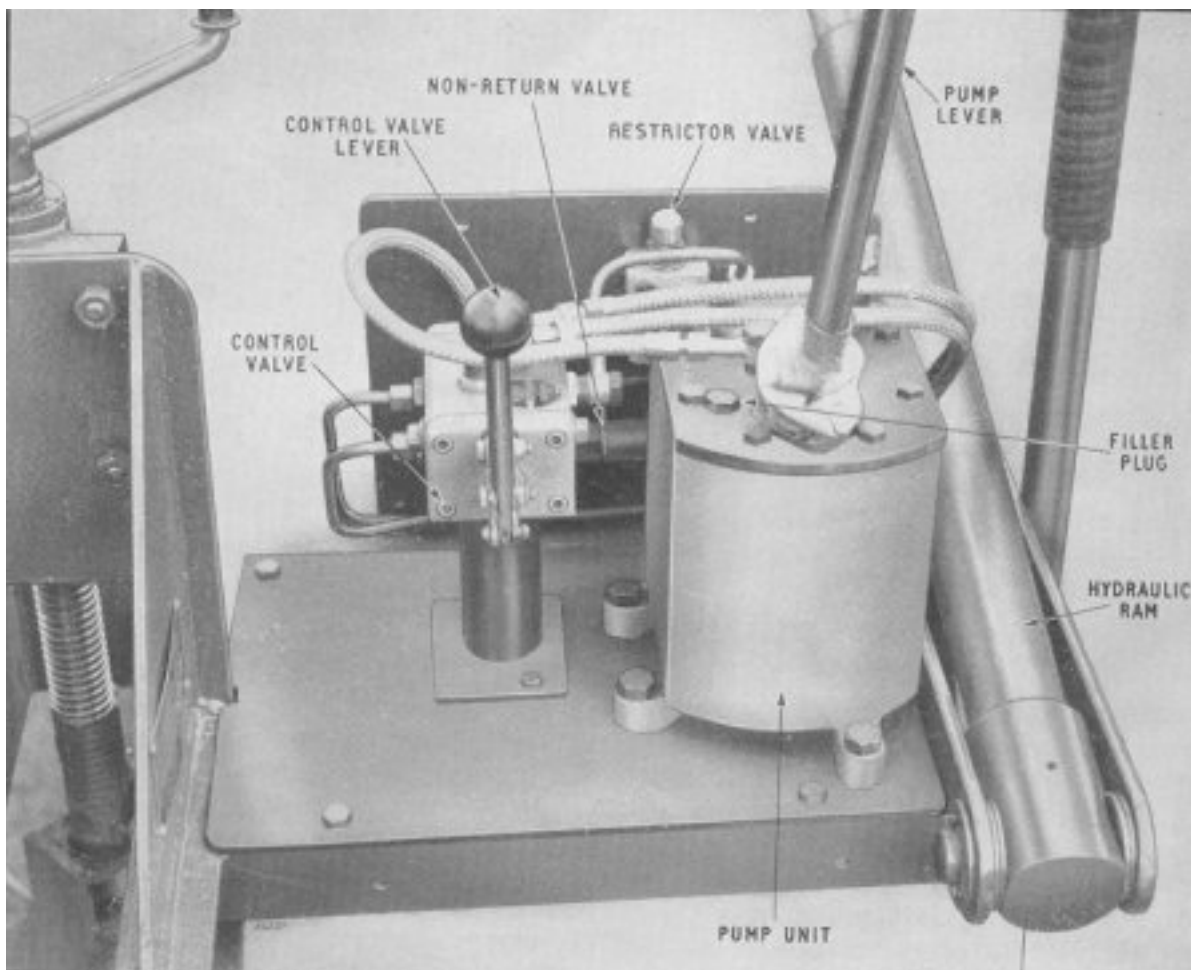


FIG. 7. TYPE 3 TRAILER, HYDRAULIC EQUIPMENT

20. To load a kiosk on to the trailer (Fig. 8):-

NOTE:- When a kiosk is to be recovered from a site all concrete must be removed from inside the base before any attempt is made to load it on to the trailer.

- a. Remove the pins securing the rear cross-bar and lift it from the chassis.
- b. Operate the loading gear to place the radius arms in the correct loading position as indicated by the white line.
- c. Open the kiosk clamping arms outwards.
- d. Remove the kiosk clamping plate from the chassis.
- e. Manoeuvre the trailer into position so that the kiosk is standing centrally between the rear chassis members and against the two rubber-tyred rollers. Apply the hand brake.
- f. Lower the rear steady posts and adjust the front castor wheel so that the main chassis members of the trailer are approximately horizontal.
- g. Lift the clamping arms to each side of the kiosk and place the kiosk clamping plate on them, thereby encircling the kiosk. Tighten the clamps until the kiosk is securely held.
- h. Turn the operating handle clockwise (Types 1 and 2) or operate the pump lever (Type 3) until the kiosk is resting in an approximately horizontal position on the rubber supports on the chassis. Do not leave the operating handle projecting outwards.
- i. Replace the rear cross-bar. Raise and clamp the rear steady posts in their highest position.

- j. Release the parking brake. Manhandle the trailer to the towing vehicle and connect with the towing clevis. Raise the front castor wheel.



FIG. 8. LOADING A KIOSK ON TO A TRAILER

21. To unload a kiosk from the trailer:-

- a. Lower the front castor wheel and uncouple the trailer from the towing vehicle.
- b. Manhandle the trailer to the site prepared for the kiosk. Place the trailer so that the white arrows marked on the chassis are in line with the position required for the edge of the kiosk base. Ensure that the main chassis members of the trailer are approximately horizontal.
- c. Apply the parking brake, lower the rear steady posts and remove the rear cross-bar.
- d. Turn the operating handle anti-clockwise (Types 1 and 2) or operate the pump lever (Type 3) to bring the kiosk vertical and to lower it on to the prepared base.
- e. Loosen the kiosk clamps and remove the kiosk clamping plate.
- f. Fully raise and clamp the rear steady posts, release the parking brake, and move the trailer clear of the kiosk.
- g. Apply the parking brake, stow the kiosk clamping plate across the chassis and refit the rear cross-bar.
- h. Lower the bolster until, with Type 1, the clamping arms are wedged in the pockets of the stowed clamping plate or, with Types 2 and 3, until the radius arms are approximately horizontal. Clip or

- strap the kiosk clamping arms together. Do not leave the operating handle projecting outwards.
- i. Release the parking brake, connect the trailer with the towing vehicle and raise the front castor wheel.

MAINTENANCE

22. Brake testing

The testing of brakes and inspection of the chassis will be carried out by the M.T. Mechanic Staff in accordance with the procedure given in Vehicles, D 0032.

23. Adjustments to the kiosk lifting gear should not normally be made in the field but should be done at the Mechanical Aids Centre. The adjustments which may be required are as follows:-

(a) Type 1

The wire ropes should be tightened if they become slack. This will be evident when loading or unloading a kiosk because it will give a lurch when it passes over the point of balance.

(b) Type 2

When the gear segment becomes worn, a kiosk during loading or unloading will give a similar lurch as in (a). The gear segment should then be replaced or the trailer be modified (see par. 28). The worm wheel should not normally be disturbed as it is lined up with shims when the trailer is assembled.

(c) Type 3

The only adjustment which may need to be made to the hydraulic gear is to regulate the rate of fall of the kiosk when loading or unloading. Remove the hydraulic gear cover and the domed nut sealing the top of the restrictor valve. Beneath the domed nut is the slotted head of the valve stem which can be adjusted by loosening the lock nut. Turn the slotted head clockwise with a large screwdriver to decrease the rate of fall and turn it anti-clockwise to increase the rate of fall. The capacity of the hydraulic system is approximately one gallon. With the ram closed the depth of oil in the pump body should be between 2.5 and 3 in. Topping-up of the hydraulic system should be done through the filler plug on the left-hand side of the pump lever and the Rate Book item Oil, Bearing, No. 12 should be used for this purpose.

24. Periodic attention

The following attention should be given by the workman-in-charge of the trailer or by the workman nominated for this duty in accordance with A 1020.

25. Fortnightly:-

- a. Check the tyre pressure which should be maintained at 45 lb./sq. in.
- b. Inspect rear lamps, wiring and bayonet connexion.
- c. Keep the trailer free from dirt and surplus grease.
- d. Check that the rubber lining of the kiosk clamping plate and the forward supports is in good condition (Type 1 only).

- e. Check that the chain-drive oil bath and worm drive oil bath (if fitted) contain sufficient oil. Top up with Oil, Cylinder, Lorry if necessary (Type 2 only).
- f. Check that the oak bearing blocks are in good condition (Types 2 and 3 only).
- g. The following points should be smeared with grease:-
 Winch worm and gear and wire ropes (Type 1 only)
 Assistor gear - all moving parts and wire ropes (Type 2 only)
 Worm and gear segment (Type 2 only).
- h. The following points should be oiled with an oil-can:-
 Brake link pivots
 Front castor wheel spindle
 Clamping arm hinges
 Road wheel springs
 Ram pivots (Type 3 only)
- i. The following points should be greased by a grease gun:-

	No. of nipples
Front castor wheel spindle	1
Spring shackle link eyebolt	2
Spring shackle link pin	2
Wheel-assembly crank-arm bearing	1 (Types 1 and 2 only)
Rear loading roller spindles	2
Rear steady post wheel spindles	2 (Types 2 and 3 only)
Kiosk clamps	2
Brake cables	4 (Types 1 and 2 only)
Universal couplings on worm gear driving shaft	2 (Type 2 only)

26. Six-monthly:-

Remove the hub caps and replenish the hubs with grease.

27. The bearings listed below do not require lubrication as they are fitted with "Oilite" bushes:-

	No. of bushes
Radius arm pivots (two on each arm)	4
Bolster pivots (one each end)	2
Towing eye shaft	2
Brake lever (Types 2 and 3 only)	1
Hand-brake lever (Types 2 and 3 only)	1

Chain sprocket shafts (Type 2 only)	2
Brake rod compensator main pivot (Type 3 only)	1
Worm gear driving shaft centre bracket (Type 2 only)	1

MODIFICATION OF TYPE 2 TO HYDRAULIC OPERATION

28. The worm and gear-wheel segments are specially made for the Type 2 trailer and when existing stocks held by the manufacturer are exhausted it is not proposed to order any more. Provided that the trailer is in good condition it is the intention that it should be fitted with hydraulic gear if the worm and segment fail and a replacement is not available. The conversion will be carried out by the trailer manufacturer, Low-Loading Trailer Co., Dean Street, Bedford.

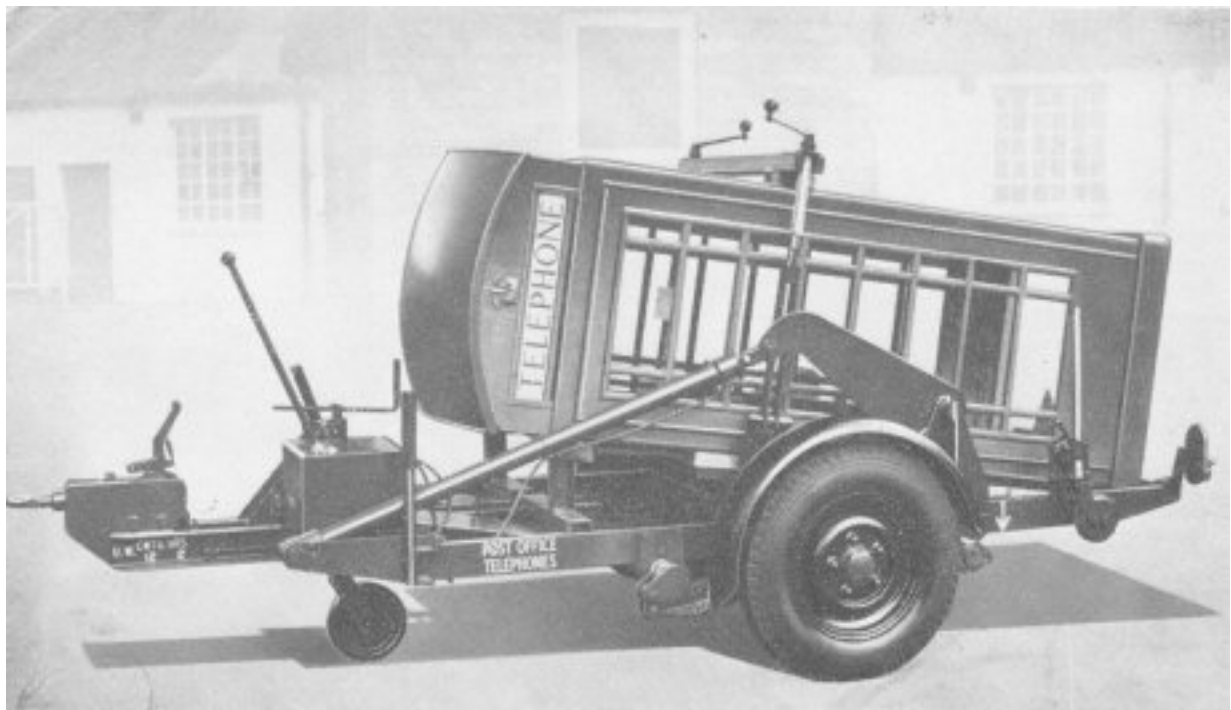
SUPPLY

29. Requirements should be advised in the annual Mechanical Aids (Eng. Dept.) Estimate. For the allocation of expenditure see Works, Estimates and Allocations, C 0074.

References:- A 1020
Vehicles D 0032

P.O. ENGINEERING DEPT TOOLS & TRANSPORT
ENGINEERING INSTRUCTIONS
MECHANICAL AIDS
N 2505
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MECHANICAL AIDS DATA SHEET **Trailer, Kiosk, No. 1**



1. Application

Used for transporting fully assembled kiosks and finally to place them on site.

2. General description

The trailer is designed to handle one kiosk at a time. It has two road wheels and a front castor wheel which is retractable. Steady-posts with wheeled feet are provided at the rear of the trailer. A framework supporting two arms and a clamping plate is provided to grip the kiosk approximately about its centre of gravity. These arms can be rotated through about 120°. This facility allows the kiosk to be picked up, placed horizontally on the trailer and finally after transportation to site, placed in position on a prepared concrete foundation. The rotation of the kiosk clamping arms is controlled by a hydraulic ram and a manually operated hydraulic pump. The surfaces hearing against the kiosk in the clamping assembly are of oak and when on the trailer, the kiosk rests on rubber buffers. The trailer is provided with overrun and parking brakes. Two wheel ramps are provided and are stored in the front part of the chassis.

3. Dimensions

(Approx.):-

Length 13 ft., width 6 ft.

Height unloaded 3 ft. 6 in.

Height loaded 5 ft. 6 in.

4. Weight

12 cwt. 2 qrs.

5. Transport

May be towed by 1 ton vehicles and over.