ADMIRALTY FLEET ORDER
GUNS, MOUNTINGS AND AMMUNITION, 0.5-IN. VICKERS

ADMIRALTY, S.W.1,
8th April 1943.

The following Order having been approved by My Lords Commissioners of the Admiralty is hereby promulgated for information and guidance and necessary action.

By Command of their Lordships,

[Signature]

To all Commanders-in-Chief, Flag Officers, Senior Naval Officers, Captains and Commanding Officers of H.M. Ships and Vessels including Minor War Vessels (1 Copy), and Superintendents or Officers in Charge of H.M. Naval Establishments concerned.

NOTE:—For scale of distribution see A.F.O. 998/43.
1639.—Guns, Mountings and Ammunition, 0.5-in. Vickers

(D.N.O. (W.O.) 32/43.—8.4.1943.)

I.—GENERAL

The following Order embodies all A.F.O.s. and C.A.F.O.s. affecting Vickers 0.5-in. guns, ammunition, and mountings Marks I to V inclusive, in force on 15th March, 1943, except those mentioned in III, paragraph 9, below; Orders published on 18th March, 1943, and later are not included.

2. General orders as regards maintenance, lubrication, cold weather precautions, the use of muzzle covers, etc., will be found in A.F.O.s. 1024–1028/43, to which special attention is drawn since their contents are not repeated in this Order.

3. Nothing is included in this Order regarding other types of 0.5-in. guns, such as the Browning (Colt).

4. The remainder of this Order is divided into the following parts:—

II.—AMMUNITION

PART III.—MARK III GUNS.

PART IV.—M MARKS I, II AND III MOUNTINGS.

PART V.—TWIN MARK IV MOUNTINGS.

PART VI.—MARK V POWER MOUNTINGS.

PART VII.—CANCELLATION OF PREVIOUS ORDERS.

II.—AMMUNITION

1. (a) Serious accidents have occurred with 0.5-in. Vickers machine guns while using S.A. 0.5-in. ammunition "F" Mark IZ, R.L. manufacture of dates 1st January, 1937, to 5th September, 1941, inclusive.

(b) There is reason to suspect that the cause of these accidents may be the effect of exposure, and/or the percolation of oil and water into the cartridge cases of this ammunition while in the ready use position on the mountings.

(c) The following precautions are to be taken:

(i) Pending further instructions ammunition of R.L. manufacture of dates 1st January, 1937, to 5th September, 1941, should not be used except for practice purposes as provided in (iv) hereof if otherwise available on board, or can be obtained in exchange from local armament sources.

(ii) In every endeavour is to be made to avoid keeping "R.L." ammunition manufactured prior to 5th September, 1941, exposed on mountings—only ammunition of other makes being used for this purpose wherever practicable.

(iii) To enable this action to be taken ship's outfts of 0.5-in. ammunition are to be adjusted where necessary to contain equal amounts of "R.L." and ammunition of other manufacture. Administrative authorities should arrange local exchanges between ships accordingly and Armament Supply Officers should assist in this adjustment to the extent of their local resources.

(iv) Pending further instructions practice firings are to be carried out with "R.L." ammunition manufactured prior to 5th September, 1941, only—unless none is available locally. Only fully serviceable ammunition of this manufacture should be used and not that labelled for "practice firing" or "first use". The use of such ammunition is suspended, and the following withdrawal instructions are to be observed.

(d) Withdrawal Instructions.—Cartridges 0.5-in. "F" Mark IZ of R.L. manufacture of all dates, that have been issued to H.M. ships and Naval establishments specifically for first use or practice are to be returned to the nearest Naval armament depot at the first opportunity, and others demanded in lieu. Any such ammunition at present in store at R.N. armament depots, etc., or subsequently received from H.M. ships, is to be forwarded to S.A.S.O., Upnor, for breakdown.

(e) S.A. 0.5-in. Vickers "F" Mark IZ ammunition of R.L. manufacture of 6th September, 1941, and later dates has harder cartridge cases and is fully serviceable for firing greased with Cooper's Grease No. 4. Such ammunition can be identified as follows:

(i) Date of work on the label on the package of 6th September, 1941, or later. This gives ready identification without the necessity to open packages.

(ii) Base of cartridge is stamped with the year of manufacture in full i.e. 1941, in lieu of last two figures of year of manufacture i.e. 41. This gives identification of the ammunition after removal from packages.

(f) Ammunition of R.L. manufacture of dates 1st January, 1937, to 5th September, 1941, inclusive will be exchanged for fully serviceable ammunition as the supply position permits.

2. Certain 0.5-in. Vickers machine gun links ammunition manufactured since November, 1941, are defective and prevent the belt hinging freely when rolled on ammunition drums. The links concerned can be identified by the letter P stamped thereon.

Belts supplied subsequent to the above-mentioned date should be tested for flexibility before rolling on to drums.

Any links found defective may be rectified by ship's staff by removal of metal from radii between double loops and back bone or, if not rectified, should be landed at a Naval Armament Depot.

III.—MARK III GUNS

1. (a) To reduce the tendency to No. 3 stoppages the fitting of strengthened pattern buffer springs was approved in February, 1941.

(b) These springs are designated Mark II, the previous springs being Mark I.

(c) A satisfactory fuze spring tension in guns fitted with Mark I and Mark II buffer springs and with or without shock-absorbers has been found to be 12 to 16-lb. The final and best setting must be found from actual firing experience, the tension being taken with the lock assembled in place and the front cover open.

2. (a) An instance occurred where the lock was wrongly assembled thus causing the guns to fire in automatic on being assembled without pressing the trigger.

(b) This was caused by the trigger being assembled the wrong way round which, when so assembled, does not come into contact with the tumbler, the gun being fired solely off the sear.

(c) Care must be taken to assemble the trigger with the grooved portion to the rear, i.e. chamfered top edge to the muzzle.

3. The allowance of machines filling belt, 0.5-in. Vickers machine guns, has been reduced temporarily to one per eight or less number of guns for H.M. ships in home waters.

Quantities now carried in excess are to be returned at the first opportunity to the nearest Royal Naval Armament Depot or Officer-in-Charge of Armament Supply, and ships without machines are to render demands as necessary.

4. The following are the instructions for the use of the gauge, cartridge head space:

With the gauge pushed into the chamber, washers are to be inserted behind the adjusting nut until the extractor abuts on the base of the gauge. Due to wear or to an accumulation of clearances in the holes in the crank, connecting rod and side levers, it may be necessary to ease the rear faces of the splines on the connecting rod to permit of sufficient washers being inserted.

5. (a) Instructions for the fitting and operation of electrical heaters to the barrel water jackets were given in C.A.F.O. 1333/41, which has since been incorporated in A.F.O. 1025/43 and cancelled.
(b) The heat applied by these heaters should be regulated to maintain the liquid at 150°F to 190°F in an air temperature of zero °F. and a wind of 2-3 knots. When the heaters are in action as far as possible barrel casings should be filled with water not admixed with glycerine.

(c) When the electrical heaters are in use with guns kept loaded for immediate action, 0-5-in. S.A.P. should be used, not 0-5-in. S.A.P. tracer.

(d) All guns loaded as above are once every five days to be unloaded and the rounds so recovered returned to the nearest Naval Armament Depot if opportunity immediately offers, alternatively they may be jettisoned. The rounds replaced must be as stated above if the heaters are in use.

6. Consequent upon the introduction of smooth water jackets for 0-5-in. machine guns, it has been found necessary to modify the present design of barrel heater to render it suitable for both the smooth and the corrugated jackets.

All future purchases of these heaters will be of the modified type to which Pattern Nos. 19561A (220 volts) and 19562A (110 volts) have been assigned. Existing heaters, Patterns 19561 and 19562, are not suitable for the smooth type of water jacket. Ships already supplied with these heaters should demand the new types for replacement when machine guns having water jackets of the smooth type are fitted. The original heaters are to be returned to store for issue to ships on which guns are fitted with the corrugated type of water jacket.

To avoid error in supply and to ensure that the existing stocks of heaters, Patterns 19561/2 are utilised, demands for heaters required for 0-5-in. machine guns are to state whether smooth or corrugated water jackets are fitted.

The adjustment of the balance of guns fitted with smooth water jackets has been arranged, see A.F.O. 5767/42.

7 (a) The revised nomenclature shown below is to be adopted in future for the various types of 0-5-in. Vickers' Mark III machine guns now in service:

Revised Nomenclature

Gun, machine, 0-5-in., Vickers:
Mark III, No. 1, left hand ...
Mark III, No. 1, right hand ...
Mark III, No. 2, left hand ...
Mark III, No. 2, right hand ...
Mark III, No. 3, left hand ...

(b) The No. 2 and No. 3 guns differ from the No. 1 gun as shown below:

No. 2 gun.

Trigger bar lever and lanyard bracket complete are removed. In addition the height of the foremost rivet securing the trigger bar lever bracket is to be reduced in height to 01-in. if not already done. A special trigger bar lever for use with No. 2 guns is supplied as part of the gun-mounting, and is a Vote 8 store.

No. 3 gun.

Gun is fitted with A.A. sights, hand-firing gear and a shoulder piece, and lanyard bracket is removed. A setting line is also engraved on the rear face of the trunnion block of the gun to aid alignment of sights. These details are shown on drawings N.O.D. 3100/8 and N.O.D. 3100/858, Sheet 1. After guns are mounted, sights should be aligned with the bore on a distant object.

(c) Guns are to be prepared as Nos. 1, 2 or 3 by R.N. Armament depots as necessary before issue to suit the type of mounting for which they are required.

8. On all occasions of topping up water jackets, 2| pints of liquid should be removed by elevating the 0-5-in. Mark III V.M.G. before replacing the filling plug to prevent excessive pressure forming, which would result in stoppages.

This precaution is general to all 0-5-in. Mark III V.M.G. and should be observed on all mountings so fitted, including the 0-5-in. Mark VI pedestal mounting fitted in landing craft, for which no handbook has been issued.

The handbooks for the other mountings fitted with 0-5-in. Mark III V.M.G., i.e. 0-5-in. Mark II, II*, III, 0-5-in. twin Mark IV and 0-5-in. twin Mark V, are being amended accordingly.

9. Modifi cations to Mark III guns have been ordered in the following A.F.Os. — 8700/40, 3601/41, 3607/41, 3405/42, 3767/42 and 813/43.

IV. — "M" MARKS I, II AND III MOUNTINGS

1. (a) Early in 1941 arrangements were made to fit shields to these mountings, and to convert the eye-shooting sights to 200 knots, supply of the necessary parts being obtained from the Gun Mounting Stores at Parkhead and Coventry, and from H.M. Dockyard, Portsmouth.

(b) The arrangement of the shield is shown in A.F.O. Diagram No. 90/41, issued in conjunction with A.F.O. 905/41. The arrangement of the sight is shown in C.A.F.O. Diagram 175/41 (1-2) C, issued in conjunction with C.A.F.O. 857/41.

(c) Two additional foresights per mounting, complete with supporting stays, should be carried.

3. (a) Whenever 0-5-in. Mark III, equipments are replaced in ships by other weapons, the mounting and gun mounting spares are to be returned to the Gun Mounting Store, Coventry, and the guns, ammunition and associated gear to the nearest R.N. Armament Depot, or O.C.A.S.

(b) All component and spare parts, ammunition drums, tools, etc., still on board or landed in ships in home waters surrendering their 0-5-in. quadruple equipments, are to be forwarded forthwith to the Gun Mounting Store, Coventry, as they are urgently required for other services.

4. Orders were given in C.A.F.O. 951/40 that barrels were to be paralleled. C.A.F.O. Diagram 125/40 (1-2) shows the suitable sight testing board. Alternatively, a distant object test can be used.

V. — TWIN MARK IV MOUNTINGS

1. To prevent the jamming of the cartridge belts in the throats of the lead-in chutes of the ammunition support brackets, orders were issued in February, 1941, for a roller to be fitted across the entrance to the throat in each bracket, as shown in A.F.O. Diagram No. 89/41, this item being treated as a defect.

2. In February, 1941, orders were also issued that in future mountings additional lubricators would be fitted to the firing gear, as shown on A.F.O. Diagram No. 84/41.
3. Particulars of a canvas cover for use on twin mountings when fitted with shields and gun water jacket heaters are shown on the Drawing M.G. 10676, Sheets 1 and 2, which can be obtained from Portsmouth Yard.

4. (a) To improve the performance in training and to effect smoother action it was decided in November, 1941, to replace the two-start training worms and wormwheels by four-start gearing.

(b) The new worms and wormwheels are available on demand from the Admiralty Gun Mounting Stores at Parkhead and Coventry, and from H.M. Dockyard, Portsmouth. Demands should be made on the most convenient source of supply.

(c) Ships should include an item, Classification "B", in their current lists of As. and As. to cover this work. The new worms and wheels should be interchangeable with the original gearing, subject to slight adjustment, the work to be carried out by dockyards or repair establishments.

(d) The registered number of the mounting should be stated when demanding sets of the modified gearing, the original worms and wheels being returned to the source from which the new gearing is demanded.

(e) Mountings Registered Numbers 173 to 201, 452 to 701, and 726 onwards, will be fitted with the new gearing before delivery.

5. Reports have been received of empty cases and clips jamming 0·5-in. "M" Mark IV mountings in training by lodging between the housing stop and its seating or the semi-permanent stops.

To avoid this, suitable guard plates should be made and fitted in accordance with A.F.O. Diagram 13/42 (Drawing No. M.G.1069).

The work is to be carried out by ship's staffs, assisted as necessary by Dockyards and Repair Establishments, and should be covered by an item in the next Defect List.

6. To facilitate the operation of the safety catch on the firing gear pedal on the above mountings when sea-boots are worn, a modification should be made in accordance with A.F.O. Diagram 117/42.

The work should be carried out by ship's staffs, assisted as necessary by dockyards and repair establishments.

7. (a) 05-in. Twin, Mark IV mountings manufactured in Canada and bearing the register Nos. C.A.N. 1 to 226, are fitted with 300 knot foresights and sight lay-out of Canadian design, as shown in A.F.O. Diagram 118/42 (1) (G.R. 5987).

(b) To enable ships' stocks of these foresights and spares to be replaced when they become unserviceable, by the standard 300 knot foresights shown on C.A.F.O. Diagram 299/41, Sheet 2, adapter plates are being supplied with each mounting for fitting to the existing foresight brackets.

(c) The target board dimensions shown on A.F.O. Diagram 118/42 (2) (G.R. 5980), are for use with Canadian mountings fitted with either the Canadian or standard 300 knot foresight.

8. (a) Depression control gear for fitting to all 05-in., Mark IV mountings, not so fitted before delivery, is available for supply on demand from the Gun Mounting Stores at Coventry and Parkhead, and the M.E.D., H.M. Dockyard, Portsmouth.

(b) The control gear, shown on A.F.O. Diagram No. 165/42 (G.R. 6015), will be supplied complete with the exception of the deck cam rail, which should be supplied and profiled locally to suit the requirements of individual mountings.

(c) Ships concerned should include an item Classification "A" in their current list of As. and As. to cover the work, which should be carried out by dockyards or repair establishments at the first opportunity.

(d) A report quoting the registered number of the mounting should be forwarded to the Admiralty on completion.

(e) Difficulty may be experienced in fitting the cam rail shown in A.F.O. Diagram 165/42 to mountings which are sited on base supports of any appreciable height above deck level.

A.F.O. Diagram 398/42 (G.R. 6078) shows an alternative method of securing the cam to the lower racer plate of the mounting, and should be adopted in cases where the first method is considered impracticable.

(f) The fitting of this depression control gear should be regarded as optional, it need not be fitted where no advantage will be gained over existing arrangements.

The gear where not required but already fitted on mountings delivered should be removed and stored in ships, but replaced on re-allocation of the mountings elsewhere.

The work should be carried out by ships' staffs.

9. It has been found difficult, with a gloved hand, to operate the filter in the rear sight of later 05-in., Mark IV mountings fitted with the three-leaf piece sight, owing to the close proximity of the shield.

To overcome this, finger plates should be fitted in accordance with A.F.O. Diagram 65/43 (G.R. 6219).

VI.—Mark V Power Mountings

1. The dimensions of the targets required for carrying out sight tests of 05-in. Mark V mountings are shown on A.F.O. Diagram 338/41.

2. (a) Muzzle-rails, fitted for the purpose of limiting depression of the guns of the above mounting, constitute a likely source of damage to the equipment, especially when only one gun is engaged on the rail, which results in an unequal loading of the cradle assembly.

(b) Muzzle-rails also foul gun barrel heaters, when fitted.

(c) These rails are therefore to be removed at the earliest opportunity, and the following gear fitted:

(i) Depression control gear, consisting of striking-gear secured to the torque-tube assembly, riding on a cam-rail fitted to the outside of the barbette, and providing control between 16° depression and 40° elevation.

(ii) Permanent stops, where applicable.

(iii) A combination of (i) and (ii), where applicable.

(d) Vessels equipped with 05-in. Mark V mountings fitted with muzzle-rails are to forward a report to the Admiralty, through the Administrative Authorities concerned, stating which of the gear referred to at 2 (i), (ii) or (iii) above is required, and arrangements will be made for early supply.

(e) The work of removing muzzle-rails and fitting the new gear is to be treated as a defect item, to be carried out by ships' staffs, assisted by base staffs or dockyards as necessary.

(f) Depression control gear is fitted to the 05-in. Mark V mounting in order to assist the gunlayer in controlling his fire when on a dangerous bearing.

(g) Continued high speed training and depression on to the cam-rail will eventually result in damage to the mounting, and ships' officers are to instruct personnel accordingly.

3. The following allowances of gun loading boxes, and ready-use lockers, for 05-in., Mark V, turrets, in coastal force craft, are approved, and issue of extra boxes to the bases concerned will be made as they become available:—

(a) All coastal force craft, 70 feet and above, other than M.T.Bs. referred to at (b):—

Three gun loading boxes per gun. Two ready-use lockers per turret. Each locker contains two boxes.

(b) M.T.Bs. 60 ft. and 70 ft.:

Three gun loading boxes per gun. One ready-use locker per turret containing two gun loading boxes.

Note. The remaining two gun loading boxes (per turret) stow in the magazine.
4. The supply to coastal force craft of wooden ready-use lockers for 0·5-in., Mark V, machine guns, has been discontinued. Steel R.U. lockers, to drawing D.N.C. 28/A/1153, will be supplied in lieu.

On receipt of the steel lockers arrangements should be made for the wooden lockers to be returned to the Naval Store Officer at the nearest dockyard or R.N. store depot.

Dockyards and R.N. Store Depots.—The wooden lockers having proved unsatisfactory in service are to be disposed of by sale or brought to produce, unless any dockyard or naval store use can be found for them.

5. On R.M.Ls. mounting 0·5-in., Mark V, equipment forward, the ready-use lockers (2 in No.) should be fitted approximately 2-ft. shaft the mounting and 3-in. on each side of the centre line of the ship.

The Commanding Officers of vessels affected are to include an item Classified "B", in their next list of approved As. and As. to cover the work involved.

6. During very cold weather, the reliability of 0·5-in. guns can be improved if they are worked in recoil once every watch when at sea or when closed up at air defence stations in harbour. In order to do this, one cocking lanyard and bracket will be issued to each boat mounting a 0·5-in. twin Mark V equipment. The following points are to be brought to the notice of all guns' crews:

(i) If a gun is elevated with a bracket shipped, a serious jam will result and the mounting will be put out of action. Lanyard brackets are never to be kept shipped on a gun; they are only to be put on to work the gun in recoil and kept stowed below at all other times.

(ii) Each time a loaded gun is moved in recoil, a live round will be ejected into the empty cartridge box and these rounds must be recovered.

7. Reports have been received with regard to the jamming of 0·5-in. ammunition links between the gun feed-blocks and the inner trunnion faces of 0·5-in., Mark V mountings, the jams occurring chiefly on loading, but sometimes during firing.

This defect can be overcome by fitting steel plating '1·4-in. thickness, in the form of a bridge-plate, across the small gap which exists between the gun feed-block and the inner trunnion face, the bridge being brought through to the outer face of the trunnion, turned down through approximately 90°, and secured by 2 in No. 14-in. steel screws. 14-in. screwed holes are to be tapped in each side of the centre line of the ship.

Ships' staffs as necessary, and an item to cover the work should be inserted in the current defect lists of the vessels concerned.

8. In the event of a complete failure of hydraulic power, due to pump failures or damage to hydraulic leads, it is possible to operate 0·5-in., Mark V mountings, the jams occurring chiefly on loading, but some times during firing.

In twin turret M.G.B., 70-ft. class, M.G.B. 501 class and boats similarly fitted it will probably be necessary to crank the handspike levers, in order to clear the superstructures of the boats concerned.

Handspike fittings are to be manufactured by base staffs, assisted by dockyards as necessary, and an item to cover the work should be inserted in the current defect lists of the vessels concerned.

9. 0·5-in., Mark V mountings, Register Nos. 557 and onwards are fitted with modified sights, in which the attachment of the forward area sight grid differs slightly from the design of attachments on earlier mountings.

To permit the issue of standardised spare forward area sights, complete with new design of attachment, for mountings up to and including Reg. No. 556, the sight bars of those mountings are to be modified in accordance with A.F.O. Diagram No. 285/42.

The modification is to be carried out by ships' staffs, assisted by Base staffs as necessary, and an item to cover the work is to be inserted in the current defect lists of the vessels concerned.

VII.—CANCELLATION OF PREVIOUS ORDERS

The following Orders, which are embodied in the different parts of this Order, are cancelled:

Part II.—A.F.O. 1767/42
A.F.O. 3659/42
A.F.O. 2878/42
A.F.O. 5154/42
A.F.O. 247/42
A.F.O. 3682/42
A.F.O. 223/42

Part III.—A.F.O. 650/41
A.F.O. 756/41
A.F.O. 4485/40
A.F.O. 556/41
A.F.O. 5208/42
A.F.O. 1629/42
A.F.O. 39/43

Part VI.—A.F.O. 8004/41
A.F.O. 1183/42
A.F.O. 1531/42
A.F.O. 1189/42
A.F.O. 5008/42
A.F.O. 2875/42
A.F.O. 3255/42
A.F.O. 3378/42

* A.F.O. 39/43

Part IV.—C.A.F.O. 937/41
A.F.O. 955/41
A.F.O. 2119/40
C.A.F.O. 9248/41
A.F.O. 1865/42
A.F.O. 951/40

* C.A.F.O. 951/40

* Not in annual volume.