

## FOREWORD

This handbook is issued with the object of providing the user with a handy reference work on the Gun, Machine, Polsten, 20 mm., Mk. 1, and its accessories.

It will be found to contain all the technical information necessary for the efficient maintenance of the gun and its magazines both at home and in the field. No attempt has been made to lay down any drill as this is covered by the relevant Small Arms Training pamphlet.

Appendices I to V will simplify the replacement of parts and they contain all the information necessary to this end. In addition, Appendix I has been arranged to be of assistance in stripping, as the assemblies, groups, and components of the gun are given in the order in which they should be stripped.

The plates are intended not only to illustrate adequately the text but to assist in the identification of component parts. For this purpose all items covered by Appendices I to V have a plate reference which is given in the form of the plate letter followed by the number attached to the required item on that plate.

It should be noted that this handbook covers only the Polsten gun and its accessories. For information on any of the mountings on which the gun may be used reference should be made to the relevant handbook.

## SECTION I

### INTRODUCTION

1. The Polsten machine gun is a 20 mm. weapon which has been designed primarily to fulfil an anti-aircraft role against low flying aircraft.

It is similar in principle to the 20 mm. Oerlikon gun now being used by the Navy, and it fires the same High Explosive, Incendiary, Tracer and Armour-piercing ammunition. This makes it an extremely effective weapon when employed in the A.A. role.

In a secondary role it may be used with good effect against ground targets, e.g., soft transport and lightly armoured vehicles.

There are several Mountings on which the Polsten is used (No. 2 Universal Mtg., Mk. I. Hazard-Baird Mtg., 20 mm. Triple Mtg., etc.), but it can be fitted, with slight modification to the firing gear, to other mountings on which the Oerlikon gun is normally carried.

A spare barrel is provided with each gun. The barrel can be changed quickly and easily, and this should be done frequently in order to reduce overheating and the consequent excessive barrel wear.

### GENERAL DESCRIPTION

2. The Polsten 20 mm. machine gun is a fully automatic weapon with no single shot mechanism. Its rate of fire is approximately 450 rounds per minute and its M.V. is 2,725 ft. per second.

The gun is of the "blowback" type, i.e., the action is not locked when the round is fired, but the breech block is still moving forward at the instant of firing. The chamber pressure set up by the explosion drives the bullet along the barrel and forces the empty case against the breech block head, thus first arresting the forward movement of the moving parts and then driving the breech block to the rear and compressing the barrel springs.

The principal features of the gun are :—

- (a) Very quick barrel change. A spare barrel is supplied with the gun. There is no other cooling system.
- (b) A double loading mechanism to prevent a second round being fed in when there is an obstruction in the chamber.
- (c) An Interlocking mechanism to ensure that the gun remains cocked and the sear locked when the magazine is empty, thus avoiding re-cocking by hand.
- (d) A Buffering system which reduces both backward and forward force of impact.

## Barrel Group

The barrel (C.1) is attached to the body by interrupted collars and is locked in position by the barrel retainer (G.18) which is spring loaded and housed in the top front part of the body. To facilitate assembly to the body, the barrel is provided with two indicating arrows marked "Insert" and "Locked." Towards the rear end of the barrel and projecting into the chamber is the double-loading stop (C.3) which is retained by its spring (C.2).

## Barrel Casing

The barrel casing (D.4) fits over the barrel and houses the two barrel springs (D.5 and D.7) these being separated by the barrel spring sleeve (D.6).

## Body Group

The body (C.4) is of circular cross section; reduced internally at the front end, within which is formed interrupted collars to correspond with those on the barrel.

The front block houses the double loading assembly and the barrel retainer assembly. At the rear of this block are two trunnion hooks which, in conjunction with the magazine catch, hold the magazine in position. The magazine catch (H.4) is operated by the magazine catch lever (H.3).

At the rear and on the top of the body is fitted the firing mechanism assembly (E.6) with the safety catch on the left side. The trigger (E.16) protrudes from the rear of this assembly through the firing mechanism retainer bracket (E.5) which is held in position by the body plug (E.1) which closes the rear end of the body.

Two slots, one in each side of the body, act as guides for the cotter (D.3) which passes through the breech block (F.1) and is attached at each end to the barrel casing (D.4) by means of bushes (D.2) and split pins (D.1).

The hammer cam (C.6) is fitted in dovetail slots in the left underside of the body at the front of the magazine opening.

The feet on the underside of the body serve to secure the gun to the mounting from which it is to be fired. The front foot is recessed to receive the gun securing plunger of the mounting.

The ejection opening is a long slot between the two feet on the underside of the body.

## SAFETY ARRANGEMENTS

3. When the gun is mounted on the Universal mounting it is fired by the hand firing gear (Plate N) which is part of the mounting, being attached to it by four bolts. The firing gear is connected to the gun by a cable, the outer end of which is connected to a trigger lever (B.1) mounted in the tubular portion at the top of the firing mechanism retainer bracket (E.5).

### Emptying a filled magazine

32. (i) Release all tension.
- (ii) Pull out the coupling sleeve, and turn it so that it cannot snap back.
- (iii) Engage the boss on the side of the loading lever with the collar retaining pin in the end of the feed shaft, and move it so that the rounds are kept pressed against the lips of the magazine opening.

While this pressure is being exerted, push out the rounds one by one.

If the pressure is not continuously maintained, the rounds may fall over and cause a jam.

## SECTION VII

### MAIN WEIGHTS AND DIMENSIONS

Rate of fire ... ..	450 rds. per min.
Muzzle velocity ... ..	2,725 ft. per sec.
Rifling ... ..	Concentric R.H. twist 1 turn in 720 mm. 9 grooves. Rifled for 4 ft. 1 in.
Feed ... ..	Magazine
Magazine capacity ... ..	30-round Box Type or 60-round Drum Type
Overall length of gun ... ..	7 ft. 0 in.
Length of barrel ... ..	4 ft. 9 in.
Weight of gun ... ..	126 lb.
Weight of barrel ... ..	31½ lb.
Weight of 60-round magazine empty ... ..	31½ lb.
Weight of 60-round magazine filled ... ..	64 lb.
Weight of 30-round magazine empty ... ..	14 lb.
Weight of 30-round magazine filled ... ..	30 lb.
Weight of 20 mm. ammunition per round ... ..	about ½ lb.

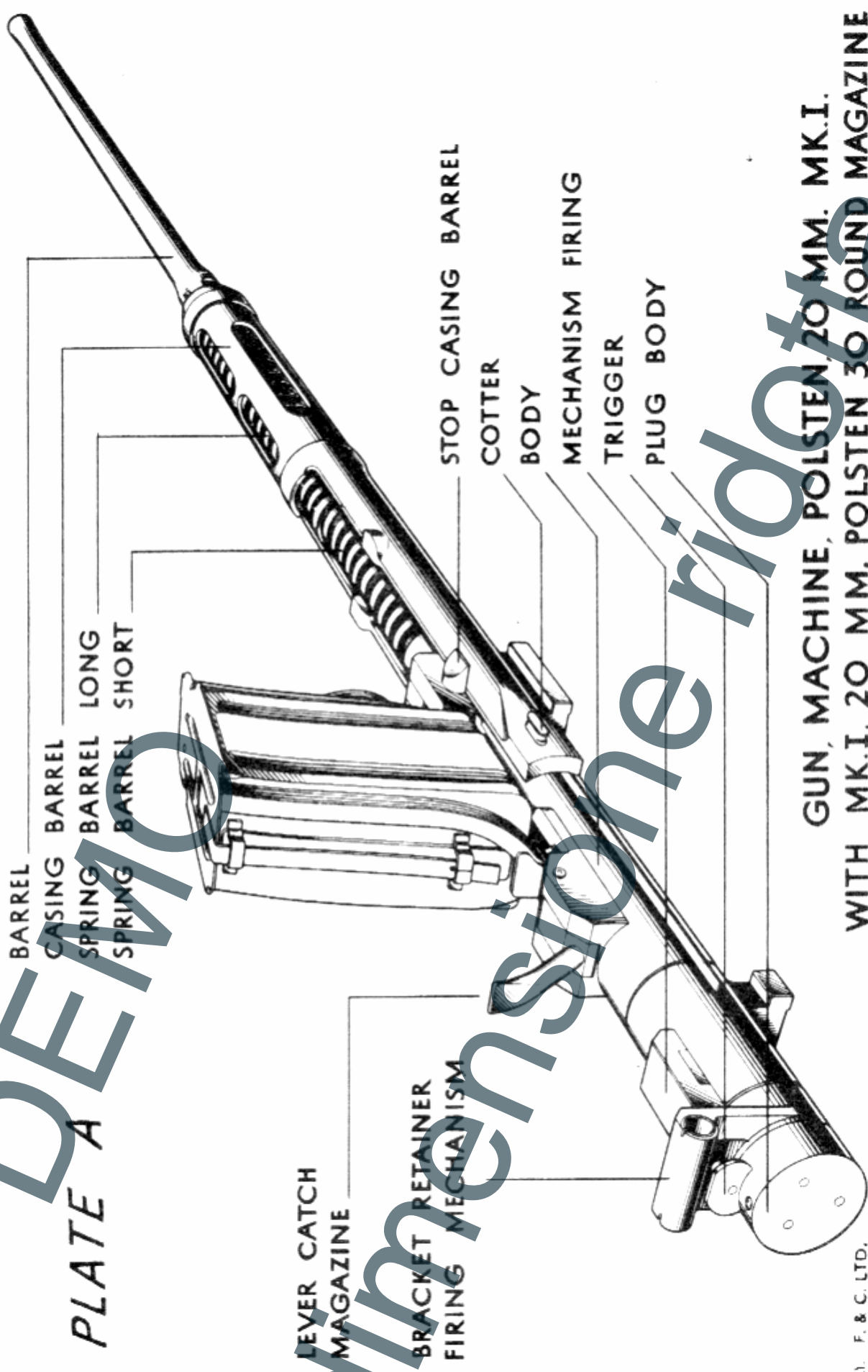
## APPENDIX I

## Gun, Machine, Polsten, 20 mm. Mk. I

## LIST OF COMPONENTS IN ORDER OF STRIPPING

Plate Ref.	Cat. No.	Nomenclature	No. per Gun
A. & B.	BH 0250	Gun, Machine, Polsten, 20 mm., Mk. I	
C.	BH 0251	<b>Barrel, Assembly</b> ... ..	1
C.1	BH 0396	Barrel ... ..	1
C.2	BH 0315	Spring, stop, double loading ... ..	1
C.3	BH 0317	Stop, double loading ... ..	1
D.		<b>Casing, Barrel, Group</b> ... ..	1
D.1	BH 0287	Pin, split, cotter ... ..	2
D.2	BH 0255	Bush, cotter... ..	2
D.3	BH 0266	Cotte. ... ..	1
D.4	BH 0258	Casing, barrel ... ..	1
D.5	BH 0303	Spring, barrel, short ... .. (Common to spring, barrel, right, Mk. I on the Oerlikon gun)	1
D.6	BH 0301	Sleeve, springs, barrel ... ..	1
D.7	BH 0302	Spring, barrel, long ... .. (Common to spring, barrel, left, Mk. I on the Oerlikon gun)	1
E.	BH 0288	<b>Plug, body, assembly</b> ... ..	1
E.1	BH 0393	Plug, body ... ..	1
E.2	BH 0297	Screw, catch, body plug ... ..	1
E.3	BH 0262	Catch, plug, body ... ..	1
E.4	BH 0308	Spring, plug, body ... ..	1
E.5	BH 0267	<b>Bracket, retainer, firing, mechanism</b> ... ..	1
E.6	BH 0395	<b>Mechanism, firing, Mk. II, assembly</b> ... ..	1
E.7	BH 0390	Casing, mechanism, firing, Mk. II ... ..	1
E.8	BH 0263	Catch, safety ... ..	1
E.9	BH 0286	Pin, sear ... ..	1
E.10	BH 0280	Pin, catch, sear ... ..	1
E.11	BH 0300	Sear ... ..	1
E.12	BH 0313	Spring, sear ... ..	1
E.13	BH 0264	Catch, sear ... ..	1
E.14	BH 0270	Guide, spring, sear catch ... ..	1
E.15	BH 0308	Spring, catch, sear ... ..	1
E.16	BH 0319	Trigger ... ..	1
E.17	BH 0311	Spring, trigger ... ..	1
E.18	BH 0318	Stop, rod, interlock ... ..	1
E.19	BH 0270	Guide, spring, interlock rod stop ..	1

DEMO



BARREL  
CASING BARREL  
SPRING BARREL LONG  
SPRING BARREL SHORT

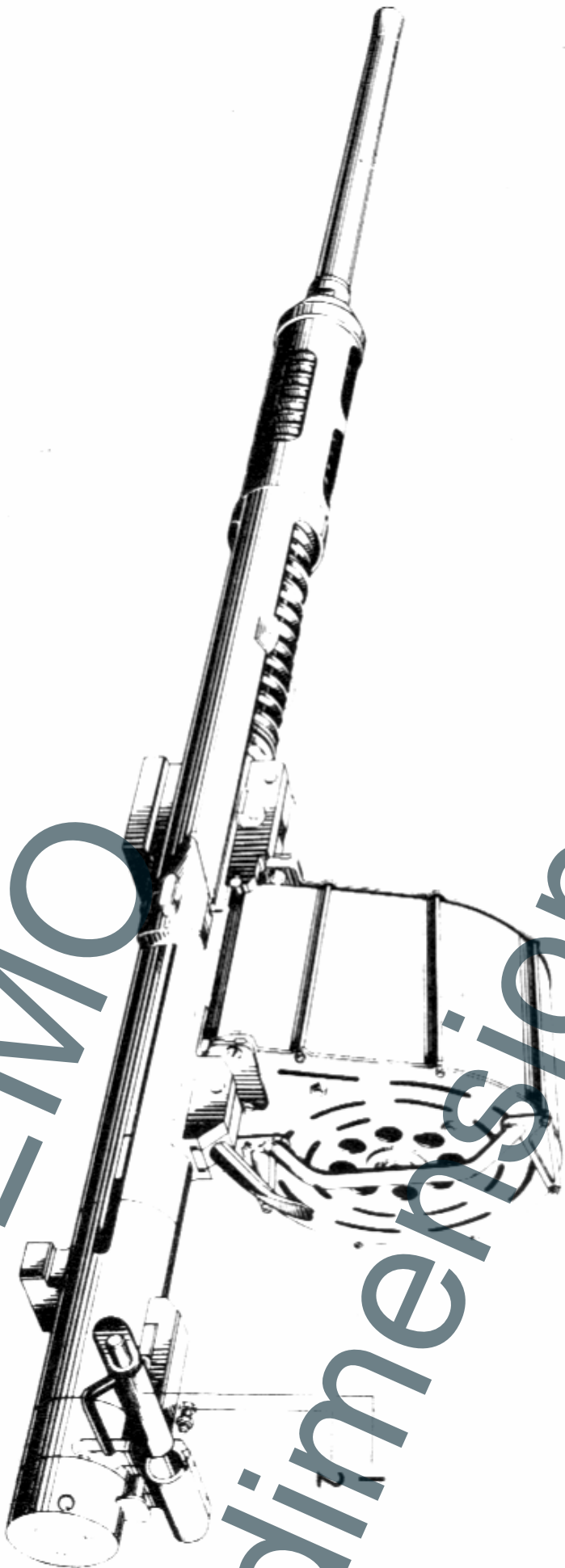
LEVER CATCH  
MAGAZINE

BRACKET RETAINER  
FIRING MECHANISM

STOP CASING BARREL  
COTTER  
BODY  
MECHANISM FIRING  
TRIGGER  
PLUG BODY

PLATE A

GUN, MACHINE, POLSTEN, 20 MM. MK.I.  
WITH MK.I. 20 MM. POLSTEN 30 ROUND MAGAZINE



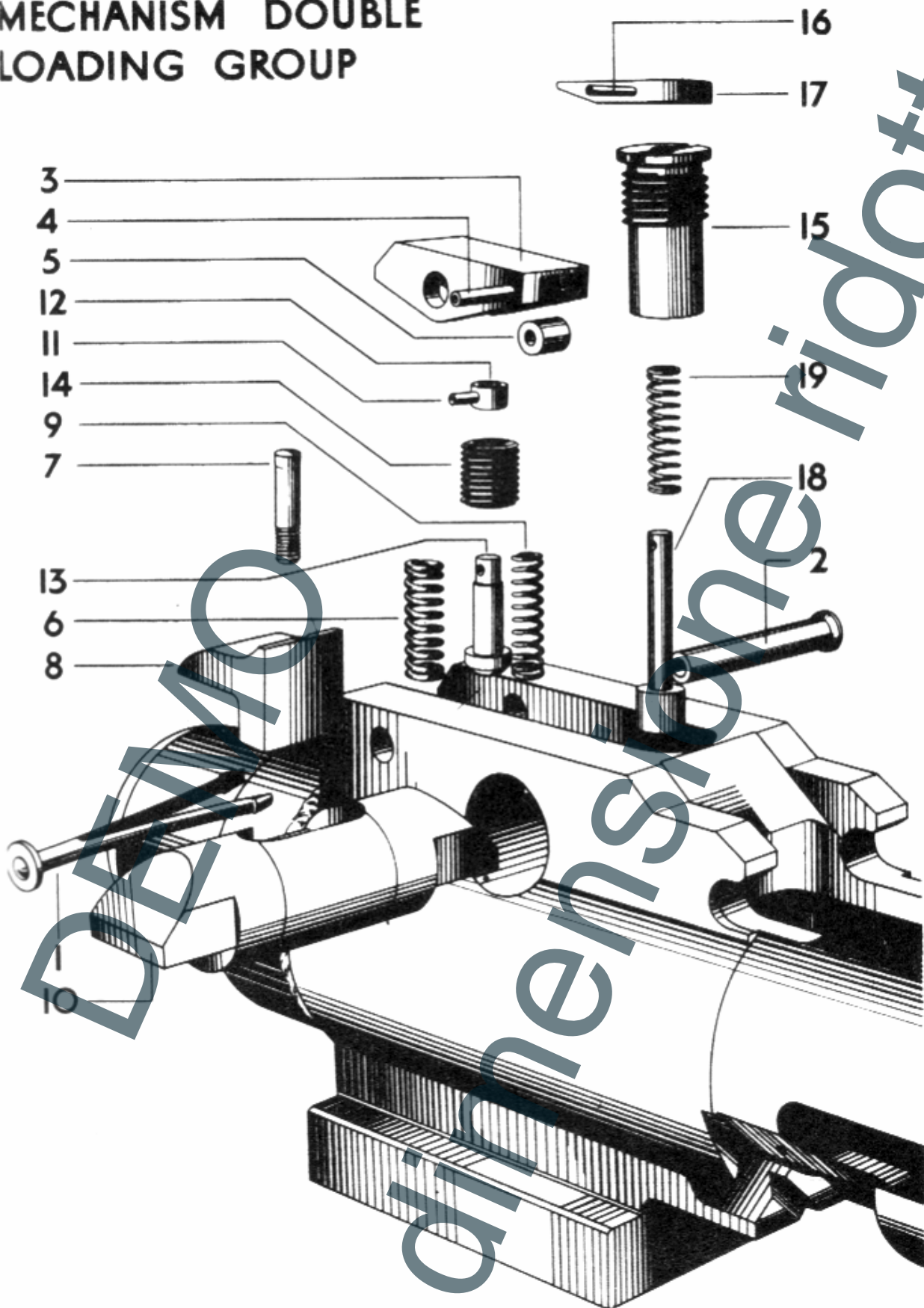
GUN, MACHINE, POLSTEN, 20 MM. MK. I  
WITH MK. II 20 MM. OERLIKON RIGHT HAND MAGAZINE

PLATE B

DEMO dimensione ridotta

RETAINER BARREL ASSEMBLY

MECHANISM DOUBLE LOADING GROUP





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NOTE.—References to the plates in the text of the handbook and in the Appendices are given as a letter followed by a number.