

Operations Department / Instruction Department
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Secret

Head of Instruction Department
Head of Instruction Department 3
Operations Department
[illegible abbreviations here]

Subject: Dror Machine Gun Testing Report

Testing conducted in the presence of: 1. Operations/Instruction officer – Captain Saham Matityahu
2. Representative of the Main Arms Manufacturing Plant – Israel Balashnikov

The weapons

1. For this experiment I gathered: a) 8 Dror machine guns
b) 3 Czech Bren machine guns
c) 3 MG-34 machine guns.
 - 1a. The Bren and MG-34 machine guns were assembled for the purpose of being compared to the Dror in all conditions.
2. a. All the Dror machine guns were completely new.
b. The Bren machine guns were old, and were in fact assembled from the parts of 10 Czech Bren machine guns (which were in warehouses) by an Ordnance Branch workshop.
c. The MG-34 machine guns were in good condition.

The men

1. The soldiers that operated the guns had graduated from a training base and were instructor candidates, and received two weeks of deliberate training in the various machine guns, and then carried out the test.
2. Their average level was high relative to the soldiers currently present in the Army.

a. Actions undertaken

1. A field disassembly and re-assembly contest.
2. Zeroing the arms.
3. Accuracy test.
4. Shooting without lubrication.
5. Shooting in heavy dust.
6. Shooting in mud.
7. Shooting in water.
8. Shooting in the sea and on the sea shore.
9. Firing off a tripod.

b. Average results of all test can be seen in Appendix A.

c. Throughout all the tests various malfunctions were seen in every gun (see Appendix B).

d. Throughout all the tests it was made possible for a representative of the Central Arms Manufacturing Plant to repair the Dror machine guns and make minor changes to them.
To summarize the experiment I can list the disadvantages and advantages of this weapon.

Disadvantages

1. Disassembling the weapon is difficult and almost impossible to perform when prone.
2. The charging handle is part of the bolt, therefore: a. The handle is small and uncomfortable, injures the hand. b. Releasing the lock while cocking often injures the hand.
3. The magazine well faces downwards.
4. Inserting the magazine is difficult.
5. Bad feed (causes many malfunctions).
6. Overly forceful ejection tears the rim.
7. Torn rims fall into the magazine and causes stoppages in the functioning of the machine gun that cannot be overcome by soldiers in the field.
8. Barrel replacement is difficult.
9. The place where the barrel is held is not at the resting point.
10. Very sensitive to a lack of oil (does not function).
11. Very sensitive to dust (does not function).
12. Very sensitive to mud (does not function).
13. Very sensitive to water (does not function).
14. Very sensitive to sea water and sea shore sand (does not function). (In all of these experiments there had been incidents where the moving parts stopped and could not be moved, which made disassembly difficult) [this is noted on the side of the page next to points 12-14 so I estimate it only means these parts of the experiments – I cannot be certain though]
15. Primer ignition is not certain (often stops).
16. Due to inaccuracy in manufacturing, magazines that fit one gun do not always fit the other one.
17. Selection is not accurate.
18. Great dispersion during automatic fire.
19. Releasing the trigger does not always cause gun to stop firing.

Advantages:

1. Light and comfortable to carry.
2. In semi-automatic fire it is more accurate than all the other firearms.

In light of this summary, I see no possibility that this firearm be adopted by the Army.

Captain Shaham Matityahu
On behalf of Instruction Department 3

Appendix A

To the Dror Machine Gun Testing Report

1. a. Field disassembling contest
- b. Zeroing the weapons.

a.

1. Disassembling contests were held on Olga Hill on one of the shooting stations.
2. Dis-assembly included removing the stock and action of the firearm.
3. The contest was held in pairs, starting at a firing-ready position and ending at a firing-ready position.
4. Before the test a representative of the Central Arms Manufacturing Plant passed between the men with a file, filing down the stock catch on the Dror to make disassembling easier.

Average results:

Dror: 1.57 min. Bren: 0.26 min. MG 34: 1.58 min.

b.

1. Zeroing was conducted at a range of 100 yards.
2. Despite the fact that the crates in which the Dror machine guns came were marked 'after zeroing', we were forced to zero 6 out of 8 firearms.

2. Accuracy testing:

a. This testing was conducted at a regular range for all machine guns at the following ranges:

200 meters, automatic fire, 20 rounds to a target 120 by 120 centimeters in size.

200 meters, semi-automatic fire, 10 rounds to a target 120 by 120 centimeters in size.

300 meters, automatic fire, 20 rounds to a target 120 by 120 centimeters in size, in 40 seconds.

400 meters, semi-automatic fire, 10 rounds to a target 120 by 120 centimeters in size, in 60 seconds.

400 meters, automatic fire, 20 rounds to a target 120 by 120 centimeters in size, in 60 seconds.

600 meters, semi-automatic fire, 10 rounds to a target 120 by 120 centimeters in size, in 90 seconds.

600 meters, automatic fire, 20 rounds to a target 120 by 120 centimeters in size, in 90 seconds.

Average results:

Dror: 200 meters, semi-automatic fire, 30.8 points out of a maximum of 40

Dror: 200 meters, automatic fire, 27.8 points out of a maximum of 80

Dror: 300 meters, automatic fire, 5 points out of a maximum of 80

Note: Some of the machine-guns did not complete firing their 20 rounds due to stoppages.

Dror: 400 meters, semi-automatic fire, 8.7 points out of a maximum of 40

Note: On average, only 7 rounds were fired due to stoppages.

Dror: 400 meters, automatic fire, 1.6 points out of a maximum of 80

Note: On average, only 14 rounds were fired due to stoppages.

Dror: 600 meters, semi-automatic fire, 2 points out of a maximum of 40

Note: On average, only 7.2 rounds were fired due to stoppages.

Dror: 600 meters, automatic fire, 2 points out of a maximum of 80

MG-34:

: 200 meters, semi-automatic fire, 24 points out of a maximum of 40

: 200 meters, automatic fire, 18 points out of a maximum of 80

: 300 meters, automatic fire, 5.5 points out of a maximum of 80

Note: 19 rounds only fired due to stoppages.

: 400 meters, semi-automatic fire, 8.1 points out of a maximum of 40

: 400 meters, automatic fire, 1.6 points out of a maximum of 80

: 600 meters, semi-automatic fire, 3.3 points out of a maximum of 40

Note: 6 rounds only fired due to stoppages.

: 600 meters, automatic fire, 7 points out of a maximum of 80

Bren:

- : 200 meters, semi-automatic fire, 27 points out of a maximum of 40 (all rounds fired)
- : 200 meters, automatic fire, 35 points out of a maximum of 80
- : 300 meters, automatic fire, 7 points out of a maximum of 80

Note: Some of the machine-guns did not complete firing their 20 rounds due to stoppages.

- : 400 meters, semi-automatic fire, 8 points out of a maximum of 40
- : 400 meters, automatic fire, 6.3 points out of a maximum of 80

Only 19 rounds were fired due to stoppages.

- : 600 meters, semi-automatic fire, 1 points out of a maximum of 40
- : 600 meters, automatic fire, 3.3 points out of a maximum of 80

3. Shooting without oil: The machine guns have been cleaned, all moving parts dried of oil, except for the trigger mechanism where soldiers cannot normally reach. Every machine gunner had to fire 50 rounds on semi-automatic and 100 rounds on automatic fire.

The results are as follows:

- a) The Dror machine guns: Except for one machine gun which functioned normally, the other 7 machine guns could not fire the 50 rounds of semi-automatic fire and ceased functioning.
- b) We attempted firing some of the guns on automatic fire before they completed the 50 rounds of semi-automatic fire. Some fired bursts even after the trigger was released, and then also malfunctioned.
- c) Even after a representative of the Central Arms Manufacturing Plant received permission to clean the chamber with steel wool and file the locking teeth in some of the machine guns it did not help.
- d) The Bren machine guns: Functioned normally.
- e) The MG-34 guns: Fired well on semi-automatic, but experienced several ejection stoppages on automatic fire.

After the test all firearms were cleaned and re-oiled according to all the rules for cleaning firearms before shooting.

4. Shooting in heavy dust: We made use of the wind, positioning loaded machine guns and pouring sand near them to fill the guns with dust. After this every machine gun was assigned 50 rounds for semi-automatic and 100 rounds for automatic fire.

The results are as follows:

- a) The Dror machine guns: None of the machine guns functioned.
- b) We attempted to use them as rifles, feeding and extracting using the bolt handle. Some of the men received injuries to their hands from the bolt handle.
- c) In some of the machine guns the moving parts were stuck mid-way and could not be moved by hand. We were forced to disassemble the guns, and even that was only possible with great difficulty.
- d) Those machine guns that we managed to operate as rifles failed to pierce the primer.
- e) The Bren machine guns: Functioned normally after the bolt was 'played with' by moving it back and forth without rounds.
- f) The MG-34 guns: All machineguns fired on semi-automatic, but experienced many ejection

stoppages on automatic fire and eventually ceased functioning altogether.

After the test all firearms were cleaned and re-oiled according to all the rules for cleaning firearms before shooting.

5. Shooting in mud: We located clay/sandy soil in the area in the area, and made it into mud. We placed all the machine guns in it loaded, except for the MG-34 guns, which were unloaded when placed in the mud. After this every machine gun was assigned 50 rounds for semi-automatic and 100 rounds for automatic fire.

a) The Dror machine guns: None of the machine guns functioned.

b) The Bren machine guns: 2 out of 3 machine guns functioned well after the bolt assembly was “played with” by moving it back and forth several times while the gun was unloaded. The third machine gun failed due to gunner error as the latter removed the barrel, at which point mud entered the barrel catch, and he was unable to put the gun back together again.

c) The MG-34 machine guns: Did not function at all.

After the test all firearms were cleaned and re-oiled according to all the rules for cleaning firearms before shooting.

6. Testing of shooting after dipping into water:

Due to the fact that sweet water was impossible to procure, we dipped the firearms into seawater for a period of 4-5 seconds only.

The results are as follows:

a) The Dror machine guns: Functioned only as rifles, the machine gunners being forced to remove spent cases and insert new cartridges by hand. This caused many of our men to be injured, and the others developed pains and swelling in their hands.

b) The Bren machine guns: One of the machine guns functioned well, another fired only in semi-automatic, and the third did not function at all.

c) The MG-34 machine guns: Only one of the machine guns functioned well.

After the test all firearms were cleaned and re-oiled according to all the rules for cleaning firearms before shooting.

7. Testing of shooting after dipping into seawater and sea-shore sand: We dipped the firearms into the sea for approximately 5 seconds, and then poured sea-shore sand on them.

The results are as follows:

a) The Dror machine guns: Did not function.

b) The Bren machine guns: Did not function.

c) The MG-34 machine guns: Did not function.

8. Tripod firing test: The machine guns were attached, using adapter links, to universal Bren tripods. One must note that the adapters for the Czech-made Bren were made in a very bad quality, which caused instability in the firearm, while the MG-34 and Dror machine guns were relatively stable. The test was conducted thus: each machine gun was loaded with a 20-round magazine, while the

MG-34 machine guns received a 20-round belt.

After this every machine gun was aimed at a target, and the Brens were adjusted for stability. After aiming every machine gunner fired his 20 rounds in regular service bursts without altering his aim. Here are the results in terms of the size of the hit area:

- a) Dror machine guns: 77.4 centimeters in length, 61 centimeters in width.
- b) Bren machine guns: 75 centimeters in length, 50 centimeters in width.
- c) MG-34 machine guns: 78 centimeters in length, 69 centimeters in width.

Captain Shaham Matityahu
On behalf of Instruction Department 3

Summary table for accuracy test

Semi-automatic fire

Range	MG-34	Bren	Dror	Maximum points
200	24	27	30	40
300				40
400	8.1	8	8.7	40
600	3.3	1	2	40

Automatic fire

Range			Dror	Maximum points
200	18	35	27.3	80
300	5.5	7	5	80
400	1.7	5.3	1.6	80
600	7	3.3	2	80

Appendix B:

Following below is a list of stoppages as they occurred in the various machine guns by day. The stoppages listed below occurred in most of the machine guns. This list omits stoppages that occurred in only one or two machine guns.

1. Day One:

a) Dror machine guns:

- 1. Magazine is difficult to insert
- 2. On automatic fire the gun continues firing after the shooter lets go of the trigger.
- 3. Failure to feed.
- 4. Failure to detach.
- 5. Torn rim.

b) Bren machine guns:

1. No stoppages.
- c) MG-34 machine guns:
 2. No stoppages.

2. Day Two:

a) Dror machine guns:

1. Does not lock properly.
2. Failure to detach.
3. Stopped piercing the primer (reason unknown)
4. Failure to eject.
5. Torn rim.
6. Failure to detach due to torn rim.
7. Difficult to insert magazine.
8. Faulty feed.
9. On automatic fire the gun continues firing after the shooter lets go of the trigger.
10. At 200 meters we were forced to raise the sights to 400.

b) Bren machine guns:

1. No stoppages.

c) MG-34 machine guns:

1. Failure to detach (occurs rarely).

3. Day Three:

a) Dror machine guns:

Same stoppages previously seen.

4. b) Bren machine guns: No stoppages.

c) MG-34 machine guns:

1. No stoppages.

5. Day Four

a) Dror machine guns:

1. Same stoppages as previously seen (and see Appendix A on dipping test).

b) Bren machine guns:

1. No stoppages (and see Appendix A on dipping test).

c) MG-34 machine guns:

1. Hard detaching.

On other days, wherein we conducted dipping, stoppages have not been recorded in detail since our goal was to see whether the firearm functions at all. An answer to that question can be seen in Appendix A.

Captain Shaham Matityahu

On behalf of Instruction Department 3