Operation and Maintenance Manual for the *7,62x39 mm* Assault Rifle

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About the Manufacturer

S. Fabrica de Arme Cugir S.A. a subsidiary of **ROMARM S.A.**, has a long-standing tradition in precision manufacturing, dating back to 1799. Over the decades, the company has developed expertise in both civilian and military products, producing a wide range of firearms including rifles, pistols, submachine guns, and machine guns. Notably, in 1940–1941, Cugir Plants proudly manufactured the first Romanian-designed firearm, the 9 mm Parabellum Orita automatic pistol.

Today, the company combines advanced research and development with decades of manufacturing experience to deliver high-quality, reliable products to clients worldwide.

Cuprins

Construction, Service and Maintenance of the 7,62x39 mm Assault Rifle Type "AKM"

CHAPTER I

Purpose and Combat Characteristics of the Assault Rifle 7,62x39 mm

1. The 7.62x39 mm Assault Rifle (fig. 1) is a reliable individual weapon designed to destroy enemy manpower. The Assault Rifle is manufactured in two close-combat variants: one with a fixed wooden buttstock and one with a folding steel buttstock.

2. When firing the 7.62x39 mm Assault Rifle, standard cartridges are used: ball rounds (with steel core), tracer rounds, and armor-piercing rounds.

The weapon can fire in fully automatic or single-shot (semi-automatic) mode. Automatic fire, characteristic of the Assault Rifle, is delivered in short bursts (up to 5 rounds), long bursts (up to 10 rounds), or continuous fire.

Ammunition is fed from a detachable box magazine with a capacity of 30 rounds.

The most effective fire with the Assault Rifle is obtained at ranges up to 400 m. The rear sight is graduated accordingly.

Fig. 1. General view of the Assault Rifle with fixed and folding buttstock

The sight is graduated up to 1,000 m. The direct fire range against a chest-type target is 350 m. Concentrated fire against ground targets can be delivered effectively up to 800 m, and against low-flying aerial targets up to 500 m.

The theoretical rate of fire is approximately 600 rounds per minute.The practical rate of fire is:

- in burst fire – up to 100 rounds per minute;
- in single-shot fire – up to 40 rounds per minute.

The weight of the Assault Rifle with fixed wooden buttstock and a loaded magazine is 3.65 kg, and with a folding metal buttstock, 3.95 kg.

Construction and function of the 7.62x39 mm Assault Rifle

3. The main components of the Assault Rifle are (Fig. 2):

Fig. 2. Parts of the Assault Rifle:

No	Designation	No	Designation
1	Slant muzzle brake	35	Gas piston
2	Detent plunger	36	Bolt carrier body
3	Detent spring	37	Bolt body
4	Front sight/Gas block retaining pins	38	Firing pin
5	Front sight post	39	Ejector spring
6	Front sight post adjustment base	40	Extractor
7	Front sight block	41	Extractor retaining pin
8	Gas block	42	Firing pin retaining pin

No	Designation	No	Designation
9	Barrel	43	Full auto disconnector
10	Cleaning rod	44	Disconnector spring
11	Handguard retainer	45	Trigger
12	Upper handguard	46	Full auto rate reducer
13	Handguard retainer spring	47	Pistol grip nut
14	Gas tube	48	Stock screw
15	Lower handguard tensioning spring	49	Fixed stock rear trunnion
16	Lower handguard	50	Fixed stock
17	Rear sight leaf	51	Butt plate assembly
18	Rear sight leaf spring	52	Sling swivel assembly
19	Rear sight block	53	Safety selector lever
20	Gas tube locking lever	54	Selector stop
21	Barrel retaining pin	55	Magazine catch spring
22	Front trunnion	56	Magazine catch
23	Full auto sear spring	57	Magazine catch retaining pin
24	Full auto rate reducer spring	58	Tigger guard
25	Receiver	59	Magazine body
26	Hammer, Trigger, Sear axis pin	60	Magazine floor plate
27	Hammer	61	Magazine follower
28	Hammer spring	62	Magazine spring
29	Dust cover	63	Magazine follower spring base plate
30	Recoil spring	64	Pistol grip
31	Recoil spring rear guide	65	Pistol grip screw
32	Recoil spring front guide	66	Butt stock
33	Recoil spring retainer	67	Belt ring screw
34	Bolt carrier assembly rivet	68	Auto sear

4. Automatic operation is based on the use of gas energy, which is diverted from the barrel bore to the breechblock carrier gas plug.

During firing, a portion of the gas following the bullet passes through a port in the barrel wall into the gas chamber, acts on the front face of the gas plug, and pushes the plug and the breechblock carrier with the breechblock rearward.

As it moves backward, the breechblock opens the barrel, extracts the spent cartridge case from the chamber, and ejects it. At the same time, the breechblock carrier compresses the recoil spring and cocks the hammer.

The breechblock carrier and breechblock then return to their initial positions under the action of the recuperator spring. The breechblock strips the next round from the magazine into the chamber, closes the barrel, and engages with the sear to ready the trigger mechanism.

The breechblock is fully closed by rotating it to the right and by the engagement of the cocking buffle with the receiver’s cocking notch.

If the safety lock is set to automatic fire (FA), the weapon continues firing as long as the trigger is held and cartridges remain in the magazine.

If the safety lock is set to semi-automatic fire (FF), the weapon fires one round per trigger pull. The trigger must be released and pressed again to fire the next round.

If the safety selector is set to safe (S), the weapon will not fire, even if the trigger is pulled.

CHAPTER II

Possible Firing Malfunctions And How To Correct Them

5. If the Assault Rifle is properly used and maintained, its parts and mechanisms are highly reliable. Nevertheless, due to fouling of the parts, improper handling, or defective ammunition, certain incidents may occur during firing.

6. Any incident that occurs during firing must be immediately cleared by re-charging the weapon. To do this, quickly pull the cocking handle of the breechblock carrier to its rearmost position, release it, and continue firing. If the incident cannot be cleared immediately, its cause must be determined and remedied as follows:

Name of the incident	Causes of incidents	Corrective Actions
The magazine fails to feed cartridges into the Assault Rifle. The breechblock is in the forward position, but the weapon does not fire – there are no cartridges in the chamber.	The magazine is dirty or damaged The magazine catch is defective.	Reload the Assault Rifle and continue firing. Load the magazine. If the magazine catch is defective, replace the magazine.
Jammed cartridge. The cartridge is stuck, with the bullet in the breechblock, and the moving parts stopped in mid-travel.	The magazine edges are bent	Grasp the breechblock carrier handle, remove the jammed cartridge, and continue firing. If the malfunction recurs, replace the magazine.
Misfire. The breechblock is in the forward position, a cartridge is in the chamber, the hammer is down off the sear, but no percussion occurs.	The cartridge is defective. The firing pin or firing mechanism is defective; the grease is dirty or solidified.	Reload the Assault Rifle and continue firing. If the malfunction recurs, check and clean the firing pin and firing mechanism. If they are broken or worn, replace the weapon

Name of the incident	Causes of incidents	Corrective Actions
The fired case is not extracted from the chamber. The spent cartridge remains in the chamber, the next cartridge is pushed against it by its bullet, and the moving parts stop in mid-travel.	The cartridge or the chamber is dirty. The extractor or its spring is dirty or defective.	Pull the breechblock carrier handle back, hold it in the rear position, remove the magazine, and extract the jammed cartridge. Extract the fired case from the cartridge chamber using the breechblock or the cleaning rod. Continue firing. If the incident occurs again, clean the cartridge chamber and the cartridges. Check and clean the extractor, then continue firing. If the extractor is defective, the assault rifle must be replaced
The case is not ejected. The spent cartridge is not ejected from the receiver; it remains in front of the breechblock or is pushed back into the chamber by the breechblock.	The moving parts, gas ports, or chamber are dirty. The extractor or the cartridge is dirty or defective.	Pull the breechblock carrier handle to the rear, eject the cartridge, and continue firing. If the malfunction recurs, clean the gas ports, moving parts, and chamber; then lubricate the moving parts. If the extractor is defective, replace the assault rifle

CHAPTER III

Maintaining and Preserving the Assault Rifle

7. The Assault Rifle shall always be ready for combat. This is ensured by timely cleaning and oiling, proper maintenance, and by promptly replacing or repairing broken or defective parts and mechanisms.
8. The Assault Rifle shall be cleaned:

- immediately after firing;
- after guard duty or training exercises on the drill ground without firing, upon returning;
- daily during combat operations or prolonged training;
- at least once a week if unused.

9. The following materials shall be used for cleaning and oiling the Assault Rifle:

- **Oil** – for lubricating all metal parts; this oil ensures proper functioning of the mechanism throughout the year.

- **Grease** – for long-term preservation of the Assault Rifle.
- **White spirit** – for cleaning parts after long-term preservation; for removing rust from some parts; and for dissolving hardened residues remaining after firing.
- **Grease** – for lubricating leather accessories.
- **Rags and cotton waste** – for cleaning and oiling parts.

For cleaning grooves, notches, and holes, small wooden sticks may be used

CHAPTER IV

Preparation of the Assault Rifle for Firing

10. The preparation of the Assault Rifle for firing is carried out to ensure its reliable and continuous operation during shooting.
11. The following operations shall be performed to prepare the Assault Rifle for firing:

- clean, inspect, and oil the parts of the disassembled Assault Rifle;
- inspect the assembled Assault Rifle;
- inspect the magazines.

Clean the barrel bore (rifled portion and cartridge chamber) until dry, inspect the cartridges, and load the magazines immediately before firing. If the Assault Rifle has been exposed to low temperatures for a long time, pull the cocking handle of the breechblock carrier vigorously several times and push it forward just before loading the Assault Rifle.

CHAPTER V

General data and Check-up and Ajustment of the Assault Rifle Range

12. The Assault Rifle shall always be properly adjusted. The check-up and adjustment shall be performed:

- when introducing the Assault Rifle into the unit’s supply;
- after repairing the Assault Rifle or replacing parts that may affect its alignment;
- when it is observed that, during firing, the bullets deviate abnormally.

In combat conditions, all possibilities shall be used to check and adjust the Assault Rifle.

13. Before the check-up and adjustment, the Assault Rifle shall be thoroughly inspected and all recorded defects shall be corrected.
14. The check-up and adjustment of the Assault Rifle shall be carried out under the guidance of the commander on a training ground, in windless conditions, in a specially arranged area or in a sector protected against wind, with normal lighting.
15. Firing for the check-up, adjustment, and zeroing of the Assault Rifle range shall be performed by the best shooters selected. The check-up shall be assisted by other shooters operating the Assault Rifles and by technicians equipped with the necessary tools.
16. The check-up and adjustment shall be carried out using cartridges with bullets from the same lot. The firing range shall be 100 m, with the rear sight set to position 3. The firing position shall be prone, with the Assault Rifle supported.

17. Fire round-by-round at a black rectangle target, 350 mm in height and 250 mm in width, fixed on a white panel 1 m high and 0.5 m wide. The center of the base of the black rectangle shall be used as the aiming mark, approximately at the Assault Riflener's eye level. On the vertical line, 250 mm above the aiming mark, mark with chalk or a colored pencil the normal mean point of impact (MPI). This point shall also serve as the control point (CP) for the Assault Rifle range.

The Check up

18. For the check-up, the Assault Rifle fires four rounds, aiming carefully and consistently at the center of the base of the black rectangle. After firing, the commander supervising the check-up inspects the target and, based on the placement of the rounds, determines the grouping and the mean point of impact (MPI) of the rounds.
19. The grouping shall be considered normal if all four rounds, or at least three (in the case of one round deviating), fall within a circle with a diameter of 150 mm. If the grouping does not meet this specification, the firing shall be repeated. If the result is still unsatisfactory, the Assault Rifle shall be sent to the repair shop to eliminate the causes of abnormal bullet deviation. If the grouping is normal, the commander determines the mean point of impact, which will serve as the control point (CP).
20. To determine the mean point of the four rounds, the following procedure shall be used:

- Connect the two nearest rounds with a straight line and divide the distance between them in half;
- Connect the resulting midpoint with the third round and divide the distance into three equal parts;
- Connect the nearest division point from the first two rounds with the fourth round and divide the distance into four equal parts;
- The nearest division point from the first three rounds shall be the mean point of the four rounds (Fig. 3a).

Alternatively, the mean point may be determined as follows: connect the rounds in pairs, then connect the midpoints of these two lines. Divide the resulting line in half; the division point shall be considered the mean point of the rounds (Fig. 3b).

21. If all four rounds do not fall within a circle with a 150 mm diameter, it is permissible to determine the mean point using the three best-grouped rounds, provided that the fourth round lies more than 2.5 times the radius of the circle containing these three rounds from the mean point.

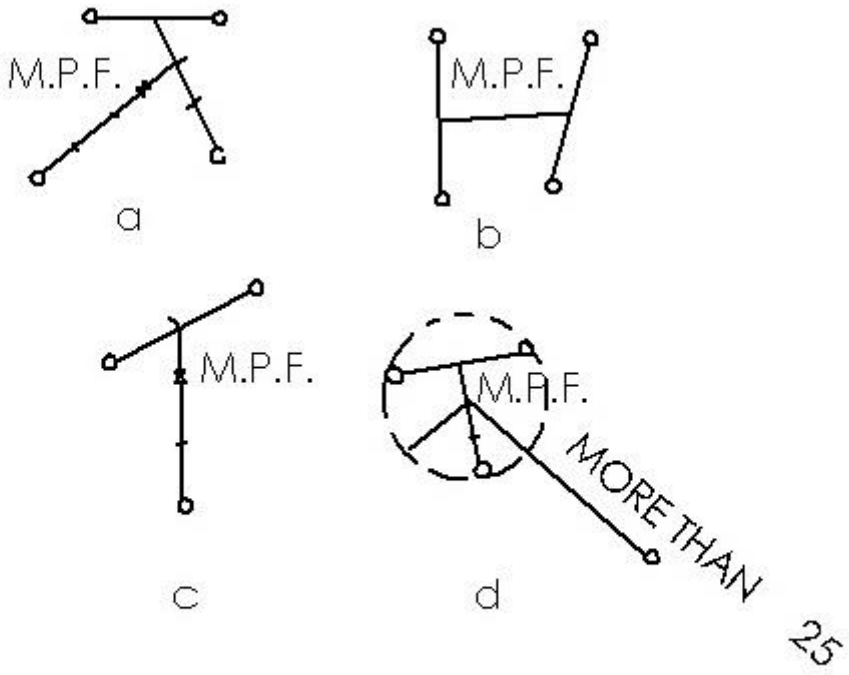

Fig. 3. The determination of the mean point of the rounds:
a,b the fourth round; c. for three rounds; d. determination of the deviated round

22. To determine the mean point of three rounds, the following procedure shall be used:

- Connect the two nearest rounds with a straight line and divide the distance between them in half;
- Connect the resulting midpoint with the third round and divide the distance into three equal parts.
- The nearest division point from the first two rounds shall be considered the mean point of the three rounds.

23. If the Assault Rifle is properly adjusted, the mean point of the rounds shall coincidewith the control point or deviate from it by no more than 100 mm in any direction.
24. If the Assault Rifle is found to be abnormal during the test, it shall be adjusted in accordance with Article 19. Any weapon whose mean point deviates more than 100 mm from the control point shall be adjusted according to Article

Adjustment

25. If, during round-to-round firing, the mean point of the rounds deviates more than 10 cm from the control point in any direction, the position of the front sight shall be adjusted accordingly; If the mean point is below the control point, the front sight shall be screwed up; If the mean point is above the control point, the front sight shall be unscrewed; If

the mean point is to the left of the control point, the front sight slider shall be moved to the left; If the mean point is to the right of the control point, the front sight slider shall be moved to the right. Moving the front sight 1 mm laterally at a range of 100 m shifts the mean point of the rounds by 26 cm. A full rotation of the front sight changes the mean point of the rounds by 20 cm in height at a range of 100 m.

After adjusting the front sight, the Assault Rifle shall be tested again by firing.

ANNEX

Ballistic and Construction Data of the 7.62×39 mm Modernized Assault Rifle

1. Firing range when using the rear sight	1000
2. Direct Fire Range against Chest Target, in m	350
3. Theoretical rate of fire in rounds per minute	600
4. Practical rate of fire, in rounds per minute	
• Single-shot fire	40
• burst fire	100
5. Muzzle velocity, in m/s	715
6. Effective fire, in m	1500
7. Maximum range of bullet, in m	3000
8. Weight of Assault Rifle, in Kgs.	
• with magazine, charged	3.650
9. Magazine capacity, cartridges	30
10. Weight of empty magazine, in Kgs.	0.33
11. Overall length, in mm	870
12. Caliber. in mm	7.62
13. Barrel length, in mm	415
14. Length of the rifled portion of the barrel, in mm	369
15. Total number of rifling grooves	4
16. Foresight diameter, in mm	2
17. Sight radius, in mm	384