

Late Cold War T series Tank recognition

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What am I going to cover?

This is a guide in which you will find information about how to differentiate between T-64, T-72, T-80, T-90 types and their variants from each other.

(you will not find every variant and one of prototypes in this guide, I am mainly focusing on variants what were or are in service with a few exceptions what are usually export variants)

I. Part: Differentiating the types from each other

page 5-25

- I. Road Wheels
- II. Idler Wheels
- III. Exhaust
- IV. Drivers Hatch
- V. IR Searchlight
- VI. Heavy Machinegun
- VII. Fording Tube
- VIII. Engine Deck
- IX. Tracks
- X. Drive Sprocket

(if you want just the quickest most basic information how to differentiate between types look at the highlighted chapters with orange)

II. Part: Recognizing passive and active protection systems what are necessary to differentiate between variants

page 26-47

III. Part: Differentiating the variants from each other *Missing at the moment*

Types and Variants what this guide will cover

Type marked with: ●

Ukrainian variants: ■

Yugoslav variants: ■

-Earliest version of the types is at the top

Variant marked with: ○

Polish variants: ■

Export variants: *T-something*

-Latest at the bottom

T-64

- T-64 (object 432)
- T-64A
- T-64B
- T-64B1
- T-64BV
- T-64B1M**
- T-64BM1 Bulat
- T-64BM2 Bulat
- T-64BV model 2017

T-72

- T-72 Ural
- T-72A
- T-72M**
- T-72M1**
- T-72B
- T-72B1
- T-72AV
- M-84**
- T-72B obr. 1989 (model 1989)
- T-72BA
- PT-91 Twardy**
- T-72B3
- T-72B3 model 2016 (T-72B3M)

T-80

- T-80
- T-80B
- T-80BV
- T-80U
- T-80UK
- T-80UD
- T-80UE1
- T-80UM2
- T-84**
- T-84 Oplot**
- T-84 Oplot-M**
- T-80BVM

T-90

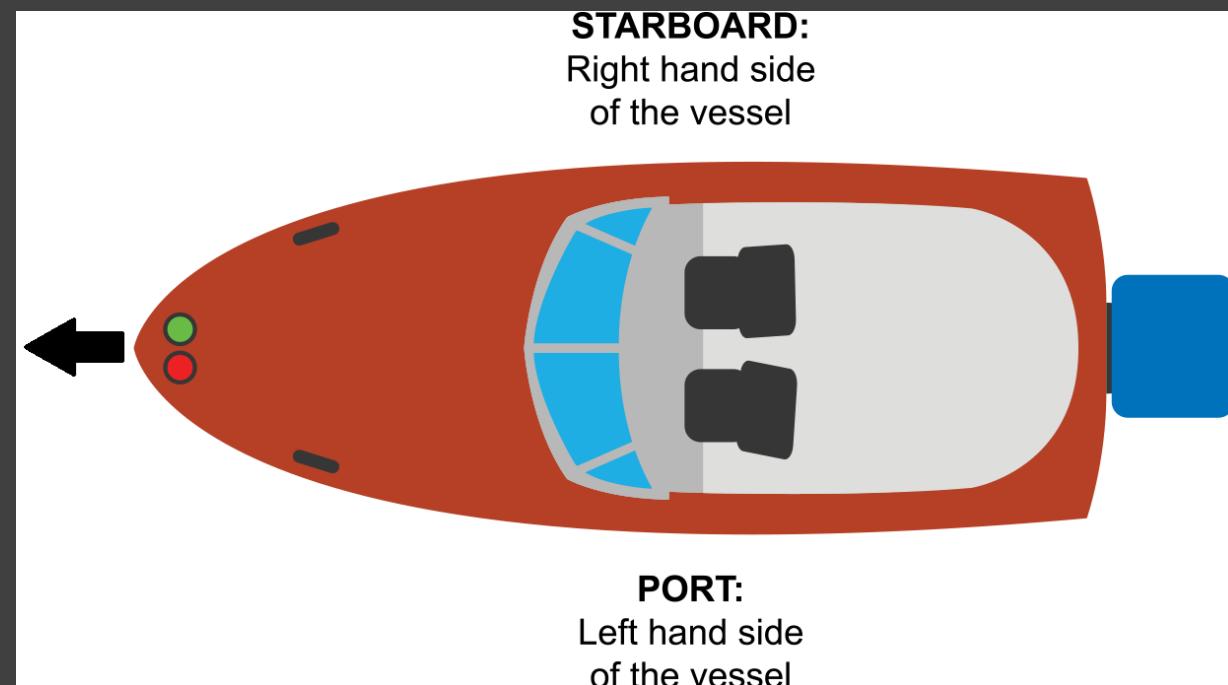
- T-90 obr. 1992 (model 1992)
- T-90A
- T-90M

A few important words

To prevent confusion when we are looking at something from the front I will use **Port** and **Starboard** terms to differentiate between sides.

If you are not familiar with these terms here is a quick rundown:

- **Port side:** if you are in your car and looking forward your left side is the port side of the vehicle
- **Starboard side:** if you are in your car and looking forward your right side is the starboard side of the vehicle



I. PART

I. Road Wheels

T-64



T-80



I.

II.

III.



T-72 / T-90

T-64:

- small full metal wheels
- big circular flat wheel hub what has 6 screws
- 10 U shaped dents on the wheel

T-72 / T-90 (T-90M):

- large wheels with thick rubber coating on its rims
- The wheel hub is a half sphere and around it is 6 screws
- it has 6 or 8 dents with 1 screw in each (they look like flower petals)
- T-90 types only use the II. III. variants but, variant III. only used on T-90M

T-80:

- large deep wheels with a thick rubber coating on its rims
- large cylindrical wheel hub with a half sphere in the middle surrounded by 10 screws
- around the wheel hub is 10 long screws

II. Idler Wheels

T-64



T-80



T-64:

- idlers are basically T-64 road wheels just with a slightly different wheel hub
- small full metal wheels
- the wheel hub has 1 big screw in the middle and 6 screws around it
- 10 U shaped dents on the wheel

T-72 / T-90:

- small full metal wheels
- large wheel hub with a half sphere in the middle with 1 screw surrounded by 10 screws
- five triangle shaped holes + 5 protruding "blades"

T-80:

- small "wire like" full metal wheel
- large wheel hub with a half sphere in the middle surrounded by 10 screws
- 10 trapezoid holes



T-72 / T-90

III. Exhaust

First:

- if you see an **exhaust at the port side** of a T series tank that has to be a **T-72 or T-90** ((T-44; T-54; T-55; T-62;... has the exhaust at the side too but we are talking about the aforementioned types))
- If the **exhaust is at the back** it is a **T-64 or a T-80**

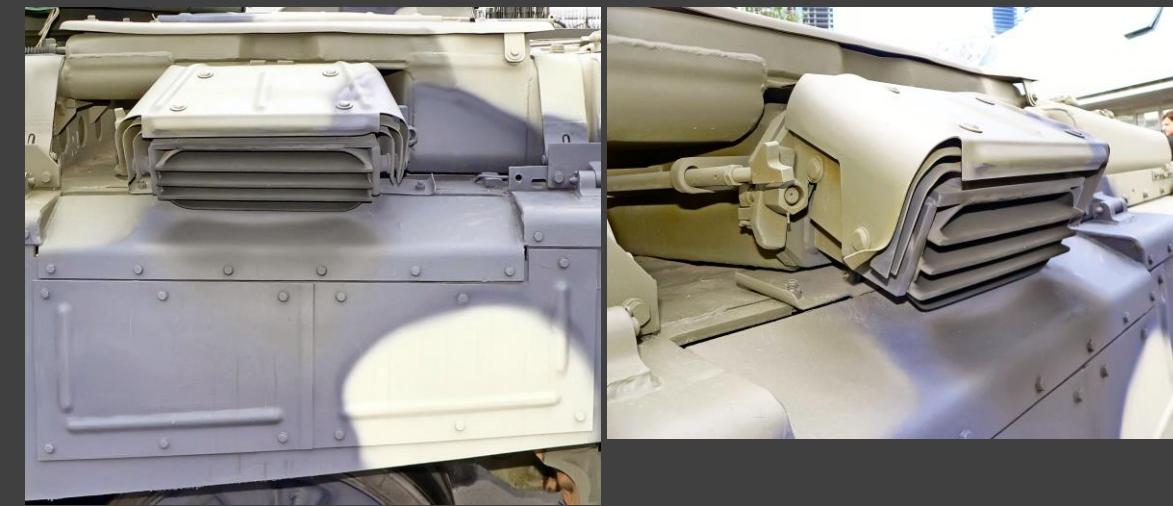
At the port side there is two main type of exhausts:

1. if you see these oval shaped; long; slightly curved exhausts with a metal cover, that is a **T-72 or a T-90 obr. 1992 (model 1992)** **BUT JUST THIS VARIANT OF THE T-90 HAS THIS TYPE OF EXHAUST**
2. these small rectangle shaped exhausts with 3 horizontal plates are **ONLY ON T-90A and T-90M tanks**

1.

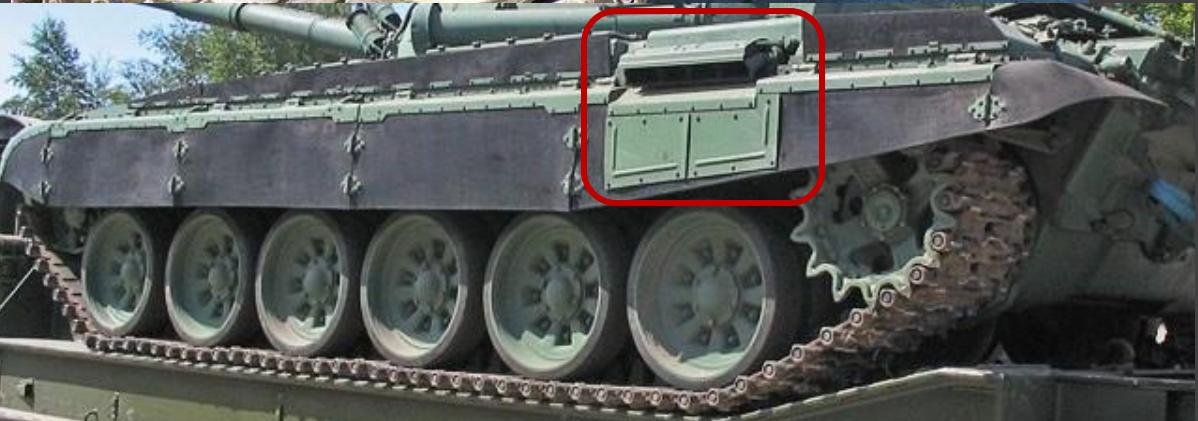
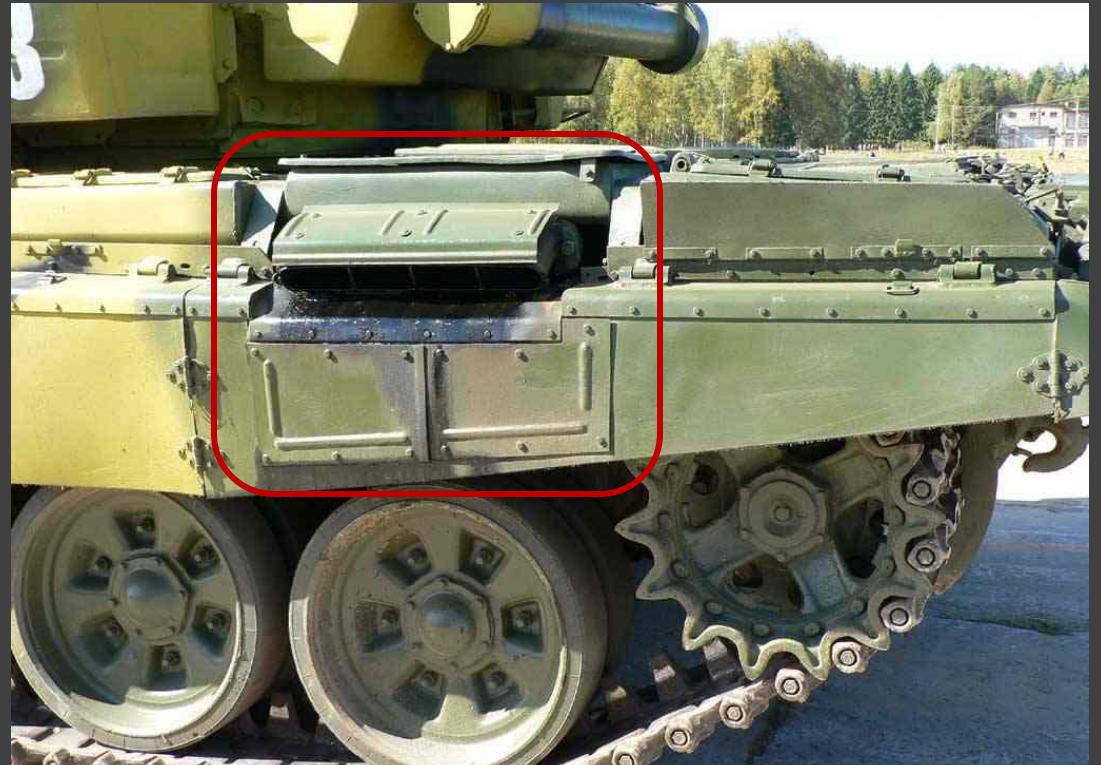


2.



III. Exhaust

T-72 / T-90



III. Exhaust

At the back there are two main types (**and 2 exceptions**) of exhausts:

1. if you see an exhaust that is at the same level as the engine deck; covers 2/3 of the length on the back plate; divided to 2 parts with horizontal, thin, long, rectangular openings; and has a wedge shaped small metal cover at the port side **that is a T-64**
2. If the exhaust is at the middle of the back plate; lower than the engine deck; has large grates with lots of openings **that is a T-80**

1.



2.



III. Exhaust

T-64



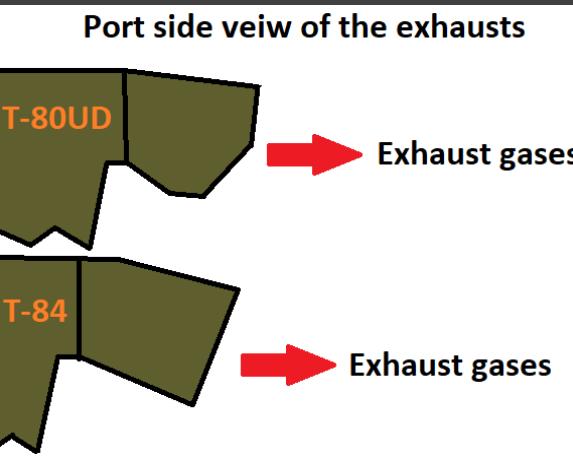
T-80



III. Exhaust

Exceptions

T-80UD and T-84 have a mix between the T-64, T-80 exhausts. Both tanks exhaust is at the middle of the back plate, and they are on the same level as the engine deck with a small angle. Looking at them from behind they are covering 2/3 of the width of the backplate, their shape is rectangular with large grates. Difference between the two is where the exhaust gases leave on T-80UD its angled twice while on T-84 is one continuous angle.



T-80UD



T-84



IV. Drivers Hatch

T-64BV



T-64



T-72 / T-90

T-64, T-72, T-90 types have 1 big periscope before the drivers hatch, while every T-80 has 3 small periscopes before the drivers hatch

T-80BV



T-80

V. IR Searchlight

First IR Searchlight is a shortening for Infrared Searchlight, you will see these devices on vehicles what are using image intensifier to operate at night or in dark conditions (on vehicles what are using thermal sights you will never see these).

They are always on the turret face and can be easily recognized by their circular shape.

If you see a IR Searchlight at the port side of the turret face that is 100% sure a T-64. (exception T-72 Ural and the T-80 [not the collective T-80, the 1976 variant what was the first version] because those tank have T-64A turrets).

If you see a IR Searchlight at the starboard side of the turret face that is a T-72 or a T-80 (exception again T-72 Ural and T-80 those have it at the port side[not the collective T-80, the 1976 variant what was the first version]).

There is no T-90 variant what has IR Searchlight.



T-90

VI. Heavy Machinegun

In general you will see two type of heavy machinegun mount on these tanks:

- Facing forward: T-64, T-80, T-90
- Facing backwards: T-72

T-64, T-80, T-90 types have these mounted above the commander's cupola main periscope, the only way to rotate these is by moving the cupola so it always facing that direction where the commander main periscope is.

Exceptions:

1. **T-80U; T-80UK:** these tank have a tall cylindrical pipe before the commander's cupola at the starboard side, this is the mount for the heavy machinegun
2. **T-90M:** this variant of the T-90 has a remotely operated panoramic sight behind the commander's cupola what has a heavy machinegun at its left side

T-72 variants have their heavy machinegun mounted behind the commander's cupola hatch on a protruding metal support facing backwards, the only way to rotate these is by moving the cupola so it always faces 180° the opposite way where the commander main periscope looks.



T-64



T-64



T-64

VI. Heavy Machinegun

T-72 variants have their heavy machinegun mounted behind the commander's cupola hatch on a protruding metal support facing backwards, the only way to rotate these is by mowing the cupola so it always faces 180° the opposite way where the commander main periscope looks.



T-72



T-72



T-72

Commander's main periscope

VI. Heavy Machinegun

Exceptions

T-80BVM

T-80U; T-80UK: these tank have a tall cylindrical pipe before the commander's cupola at the starboard side, this is the mount for the heavy machinegun

(T-80BV and T-80BVM pictures are here to show the difference between the mounting locations)



VI. Heavy Machinegun

Exceptions

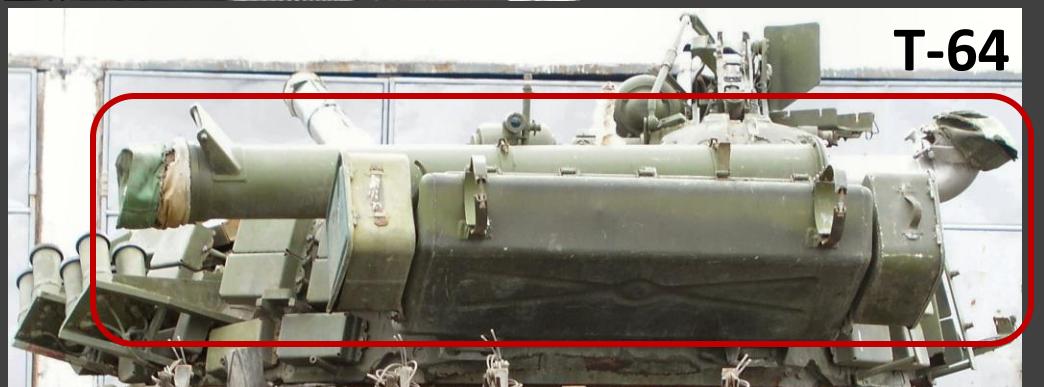
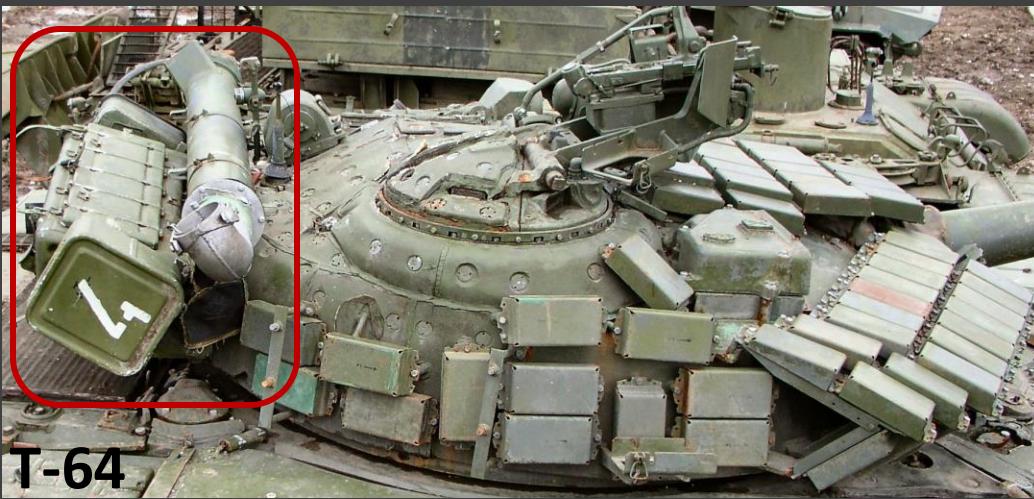
T-90M: this variant of the T-90 has a **remotely operated panoramic sight** behind the commander's cupola what has a **heavy machinegun** at its left side



VII. Fording Tube T-64

Fording Tubes are those large long tubes at the side or at the back of a turret on soviet tanks, these are used at river crossings. When installed they supply air to the crew and engine while the vehicle is under water.

T-64 have a relatively short small diameter fording tube, at one side is a smaller diameter tube what shaped like a L, on the other side is a metal plug what usually has a rubberized canvas cover. **ITS ALWAYS MOUNTED ON THE BACK OF THE TURRET** behind the commander's cupola, above the very distinctive looking sheet metal box what is unique to the T-64. (this box in most cases have one small rectangular box on its two sides)



VIII. Fording Tube T-80

You can easily spot T-80s by their fording tubes. These are large diameter ,long tubes and **THEY ARE ALWAYS LOCATED BEHIND THE TURRET** on two brackets what are spacing and elevating them from the back of the turret. Usually you will see these in two type of configuration:

I. at one side is a rectangular cover, on the other side is a circular cover, and in most cases there is two rectangular shaped boxes on the tube, there is always a lot of space between the tube and the turret (variants: T-80 [the first version of the T-80s]; T-80B; T-80BV)

II. at one side is a rectangular cover, on the other side is a complex shape adapter for the exhaust, between the tube and the turret usually is an oval shaped tube facing up with a rectangular bottom this is the air intake adapter (every variant of T-80 after the T-80BV)



I.



II.

VIII. Fording Tube T-72 / T-90

I.

- Just old and export variants of T-72 used this attachment point at the **port side of the turret** for the fording tube.
 - a) Old variants of T-72: *T-72 Ural; T-72A*
 - b) Export variants: *T-72M; T-72M1; M-84*

II.

- Every variant of T-72 after T-72A what is not export and all T-90 use this position at the **back of the turret** for the fording tube.
 - a) so *T-72B; T-72B1; T-72AV; T-72BA; T-72B obr. 1989 (model 1989); T-72B3; T-72B3 model 2016 (T-72B3M)*
 - b) so *T-90 obr. 1992 (model 1992); T-90A; T-90M*



I.



II.



VIII. Engine Deck

T-64:

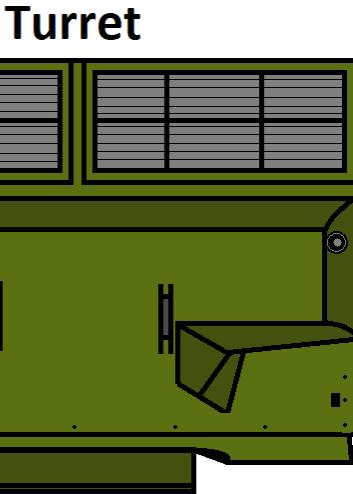
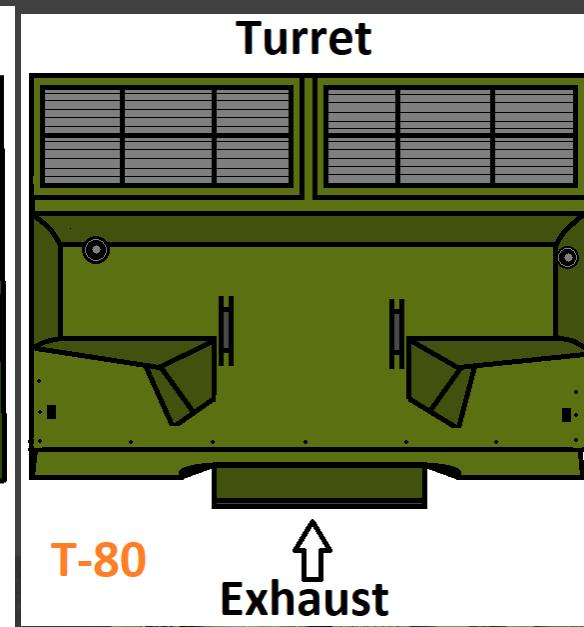
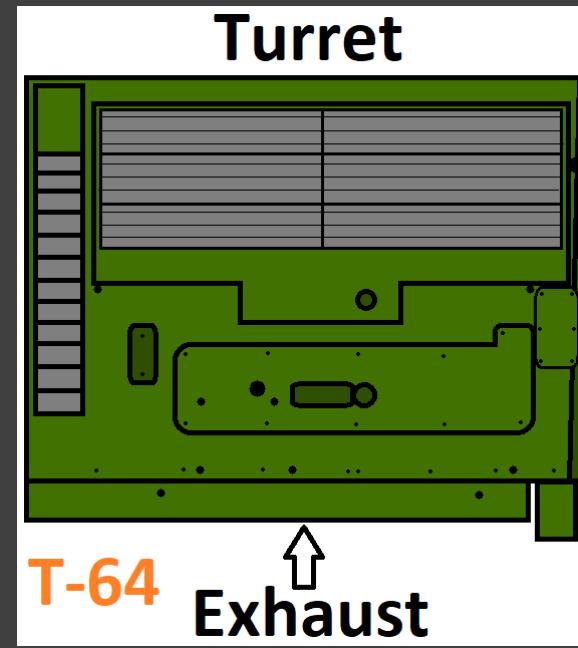
- a long vertical thin intake at the port side
- behind the turret is a large horizontal intake, with 6 rectangular segments, covering half of the engine deck

T-72 / T-90:

- Large horizontal metal cover behind the turret what is covering half of the engine deck
- two large horizontal intakes be side each other, with 6 rectangular segments each
- behind the large horizontal intakes is a smaller horizontal intake with 2 segments

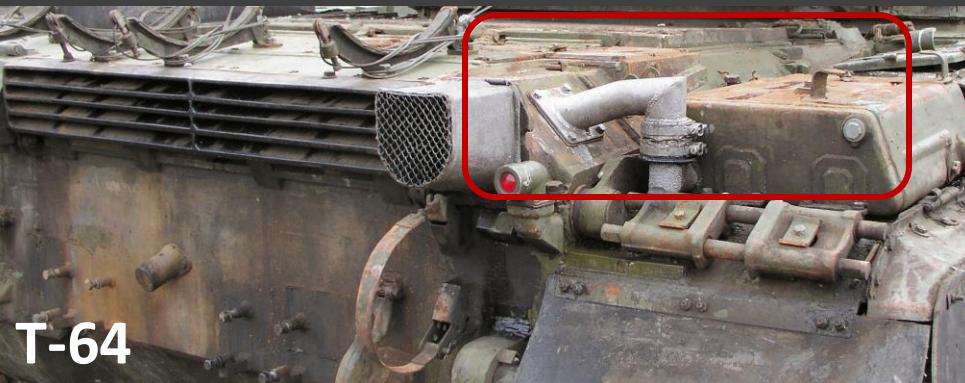
T-80:

- behind the turret is 2 separate horizontal intakes with 6 segments, what are covering 1/3 of the engine deck
- rest of the engine deck in most cases full metal

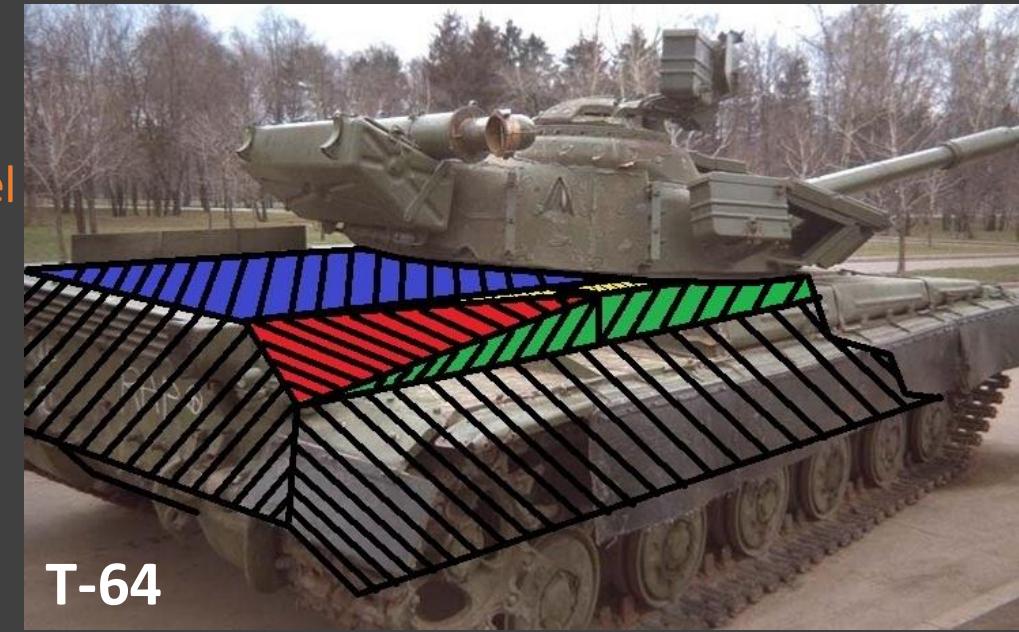


VIII. Engine Deck

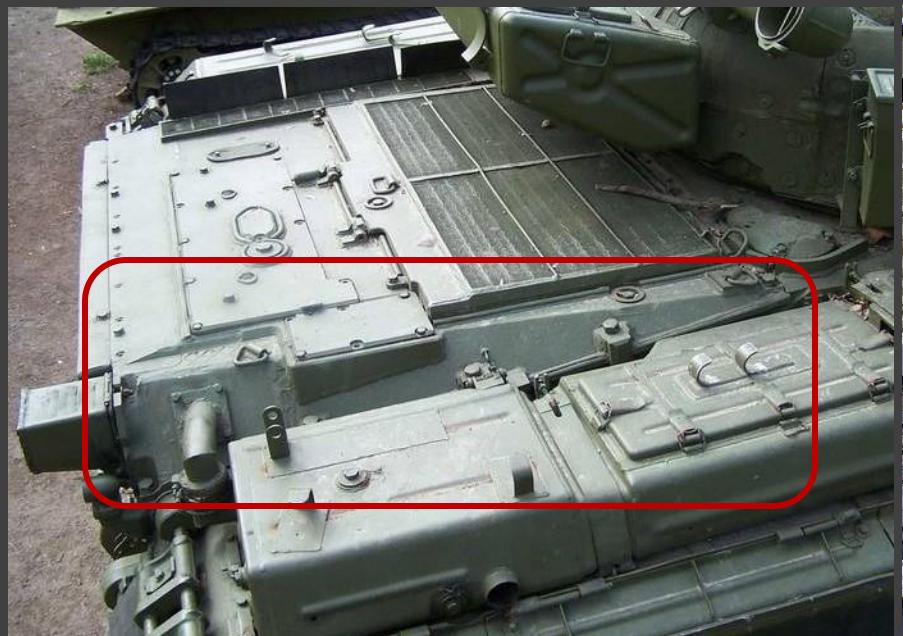
T-64 have a unique feature. On their starboard side engine deck is a 45° angel cut what slowly tapers up until it reaches the horizontal level of the engine deck, only T-64 has this feature among the T series tanks.



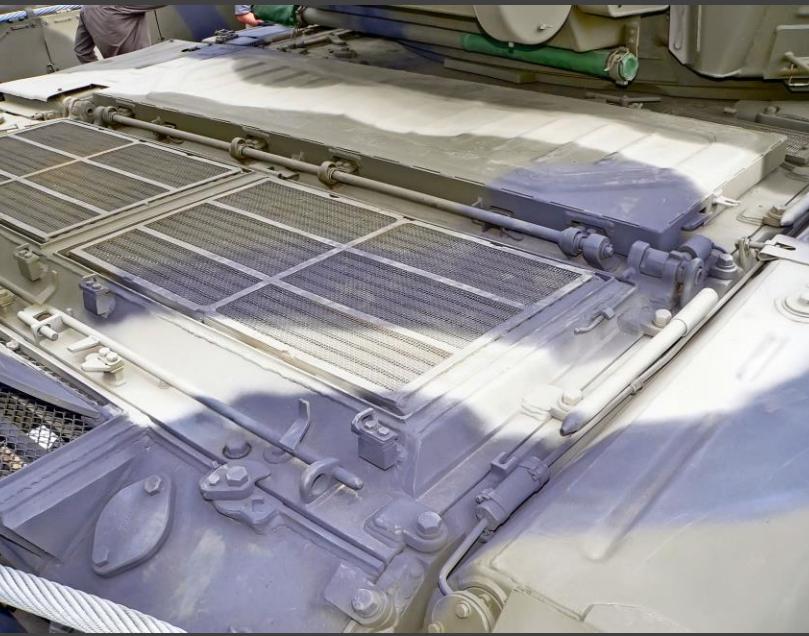
T-64



T-64



T-64



T-72 / T-90



T-80

IX. Tracks

I.

- only used on T-64 variants

II.

- used on T-72 variants and on T-90 obr 1992 (model 1992) BUT JUST ON THIS VARIANT OF T-90

III.

- used on all T-80 variants, T-72B3; T-72B3 model 2016 (T-72B3M), T-90A; T-90M,



I.



III.



II.



X. Drive Sprocket

V.

I.

- only used on T-64 variants

II.

- used on all T-72 variants (except T-72B3; T-72B3 model 2016 [T-72B3M]) and on T-90 obr 1992 (model 1992) **BUT JUST ON THIS VARIANT OF T-90**

III.

- used on T-72B3; T-90A

IV.

- used on all T-80 variants (except T-84 variants) and on T-72B3 model 2016 (T-72B3M); T-90M

V.

- only used on T-84 variants



I.



II.



III.



IV.



III. PART

Recognizing passive and active protection systems

First, what is passive and active protection system?:

I. **Passive protection systems**: usually add-on armors what are defending the vehicle by just being installed, without needing any other action to work.

II. **Active protection systems (APS)**: is a system designed to actively prevent certain anti-tank weapons from destroying a vehicle.:

- **Soft kill** : Countermeasures that either conceal the vehicle from, or disrupt the guidance of an incoming guided missile threat.
- **Hard kill** : Countermeasures that physically strike an incoming threat to damage or destroy it and thereby limit its ability to penetrate armor.

III. **Sensors**: I am mainly thinking about meteorological sensors.

I. Passive Protection Systems

ERA = Explosive Reactive Armor: these are sacrificial armor blocks, what are design to explode when hit to destroy or degrade the penetration of projectiles (mainly designed against HEAT [High Explosive Anty Tank] and APFSDS [Armor Piercing Fin Stabilized Discarding Sabo] projectiles)

1. Soviet/Russian:

- Kontakt 1 / 4S20
- Kontakt 5 / 4S22
- Relikt / 4S23
- 4S24 blocks

2. Ukrainian:

- Nozh
- Duplet

3. Polish:

- Erewa 2

4. Cage armor

II. Active Protection Systems

APS = Active Protection System shortening

1. Soft kill:

- Shtora-1
- Lazer warning receivers
- Smoke dischargers

2. Hard kill:

- Drozd
- Zaslin

I. Passive Protection Systems

1. Soviet/Russian:

Kontakt 1 / 4S20 : you can easily differentiate **kontakt 1** blocks from other ERAs because they are **always mounted in small rectangular shaped boxes on the outside of the vehicle**. You will see them mounted on the turrets; upper plate; lower plate and sides of the tanks **usually following the shape of the vehicle, exception is the turret face on some variants those have placed in a V shape, namely: T-64BV; T-72AV; T-80BV**

Only variants with **kontkat 1**: T-64BV; T-72B; T-72B1; T-72AV; T-80BV



I. Passive Protection Systems

1. Soviet/Russian:

Kontakt 5 / 4S22 : kontakt 5 is placed in a far larger rectangular shaped boxes than kontakt 1 and you can easily differentiate between the two especially on the turret faces. Kontakt 5 is always built into the upper plate and side skirts of the vehicles, unlike kontakt 1 blocks what are always outside of the upper plate and side skirts.

Kontakt 1



Kontak 5



I. Passive Protection Systems

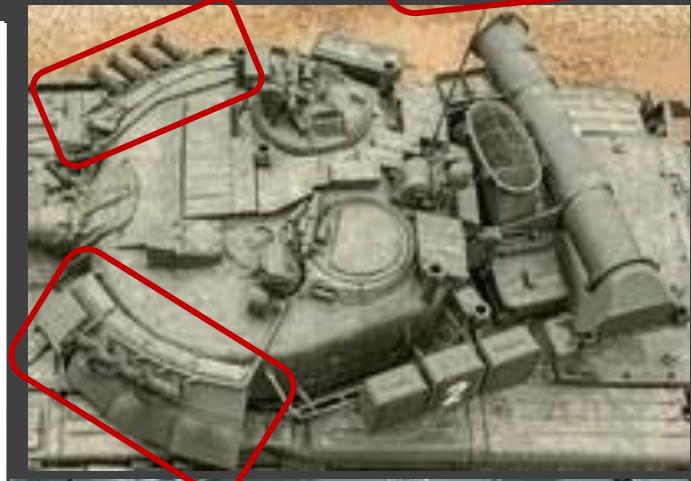
1. Soviet/Russian:

Kontakt 5 / 4S22 on the turret:

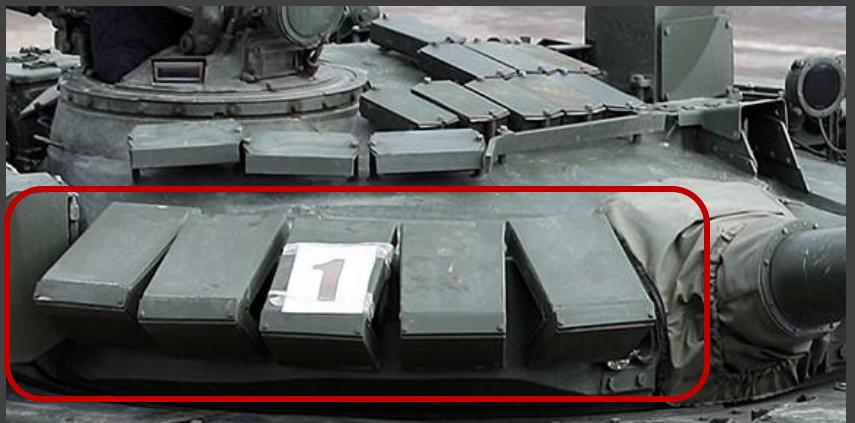
I. only used on late T-72 variants in this configuration, you can easily differentiate this between other ERA by the huge gaps between the kontakt 5 blocks. T-72B obr. 1989 (model 1989); T-72BA; T-72B3; T-72B3 model 2016 (T-72B3M)

II. This configuration only used on T-90 variants, namely: T-90 obr. 1992 (model 1992); T-90A

III. This configuration only used on T-80U variants, namely: T-80U; T-80UK; T-80UD; T-80UE1; T-80UM2; T-84



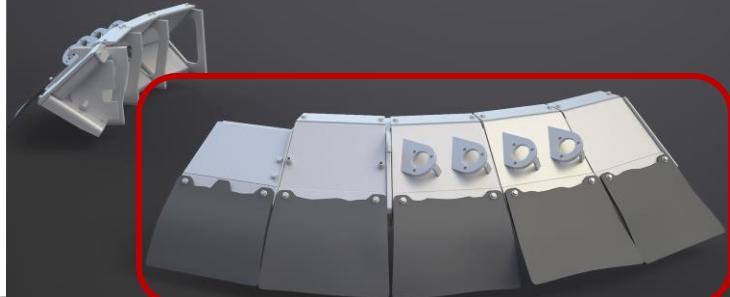
I.



II.



III.



I. Passive Protection Systems

1. Soviet/Russian:

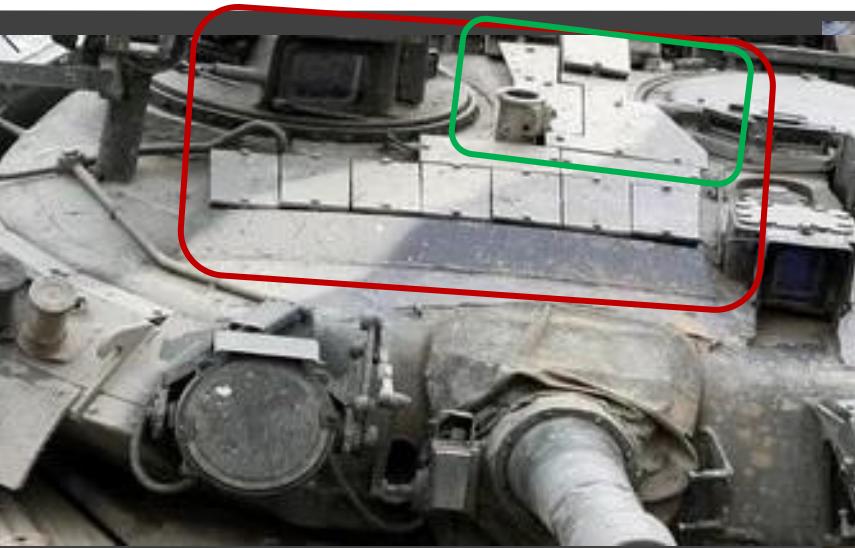
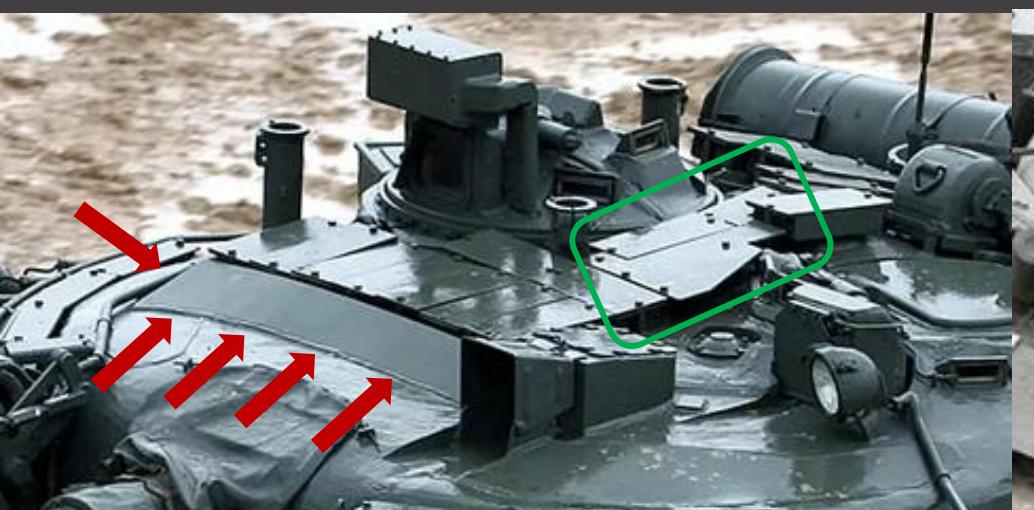
Kontakt 5 / 4S22 on the top of the turret:

I. small, thin, rectangular boxes with angles on their shorter ends are only used on late T-72, T-90 variants (except T-90M) and T-80BVM.:

T-72B obr. 1989 (model 1989); T-72BA; T-72B3; T-72B3 model 2016 (T-72B3M); T-90 obr. 1992 (model 1992); T-90A; T-80BVM

II. small, thin, rectangular kontakt 5 boxes only used on T-80U variants (and T-84). If you look at the front there will be a small raised angled metal plate before the ERA blocks and two complex shaped ERA between the commander gunner hatch.:

T-80U; T-80UK; T-80UD; T-80UE1; T-80UM2; T-84



I. Passive Protection Systems

1. Soviet/Russian:

Kontakt 5 / 4S22 on the upper plate:

I. 6 rectangular shaped covers in 2 horizontal rows (four in the upper row two in the lower), a big horizontal water reflector between the headlights, and the **TOWING HOOKS** are **ON THE ERA BLOCKS**. This type of kontakt 5 upper plate is used just on late T-72 and T-90 variants (except T-90M).:

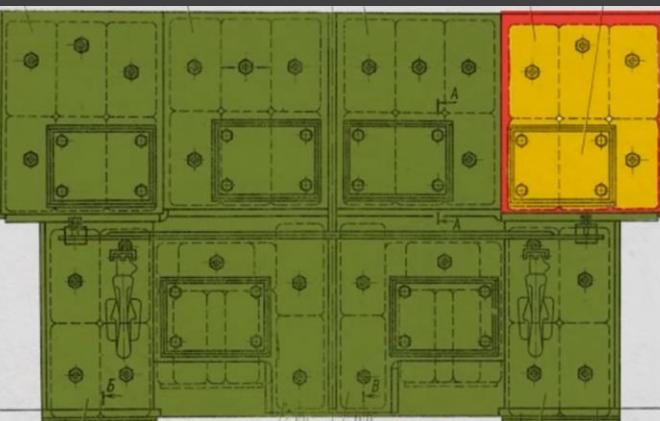
T-72B obr. 1989 (model 1989); T-72BA; T-72B3; T-72B3 model 2016 (T-72B3M);
T-90 obr. 1992 (model 1992); T-90A

II. 6 rectangular shaped covers positioned vertically at the middle of the upper plate, on them is a short horizontal water reflector; there is a large space ahead of the driver's periscopes what is not covered with ERA; the **TOWING HOOKS** have cut outs in the ERA because they are mounted **ON THE MAIN ARMOR OF THE TANK NOT ON THE ERA** (because of this they sit low). This type of kontkat 5 upper plate only used on T-80U variants (and only on T-84).:

T-80U; T-80UK; T-80UD; T-80UE1; T-80UM2; T-84

I.

II.



I. Passive Protection Systems

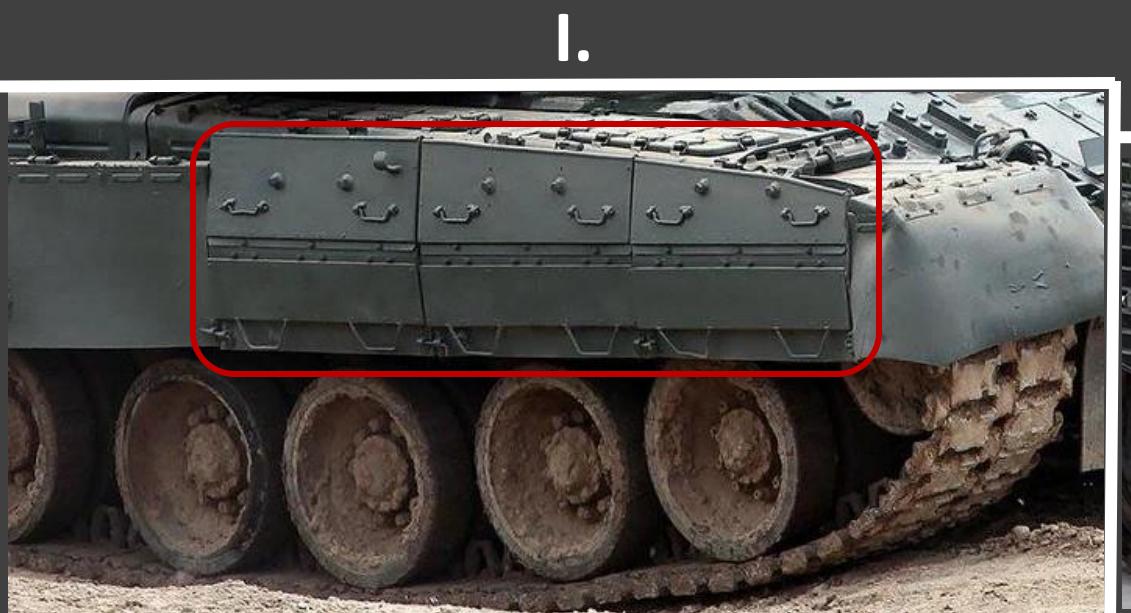
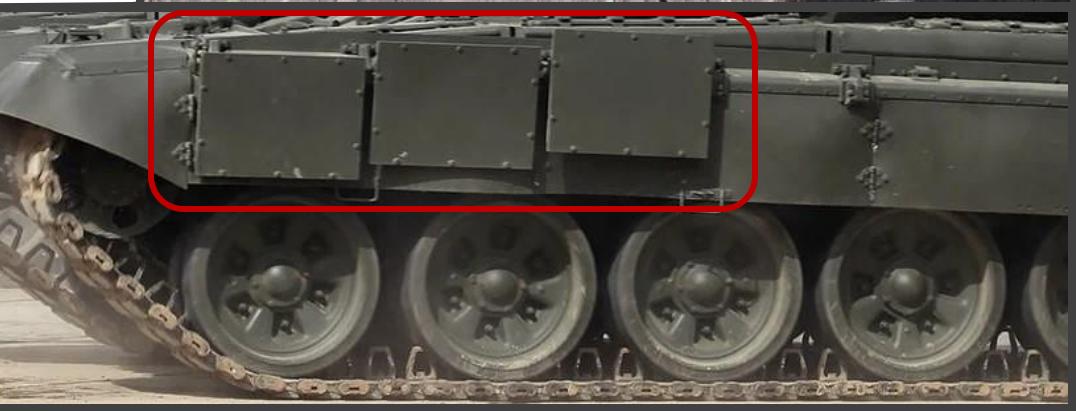
1. Soviet/Russian:

Kontakt 5 / 4S22 on the sides: this can be a little confusing because sometimes these kontakt 5 side panels are not installed on the vehicles, usually you will see this happen on T-72 and T-90.

I. only on T-80U variants (and T-84)

II. only :T-72B3; T-72B3 model 2016 (T-72B3M); T-80BVM; T-90M

III. only used on late T-72 and T-90 variants.:T-72 obr. 1989 (model 1989); T-72BA; T-72B3; T-90 obr. 1992 (model 1992); T-90A



I. Passive Protection Systems

1. Soviet/Russian:

Relikt / 4S23 : relikt on the turrets are large rectangular boxes mounted in a V shape and always closely connected (they are larger than kontkat 5 blocks)

On the upper plate you will see 1 type: ahead of the driver's periscopes is 4 vertical rectangular covers with 2 horizontal row of screws and 3 row of short fins, other parts of the plate have a smooth finish, where the upper and lower plate meets is a row of large 6 screws what are always visible.

Relikt only used on T-80BVM and T-90M.



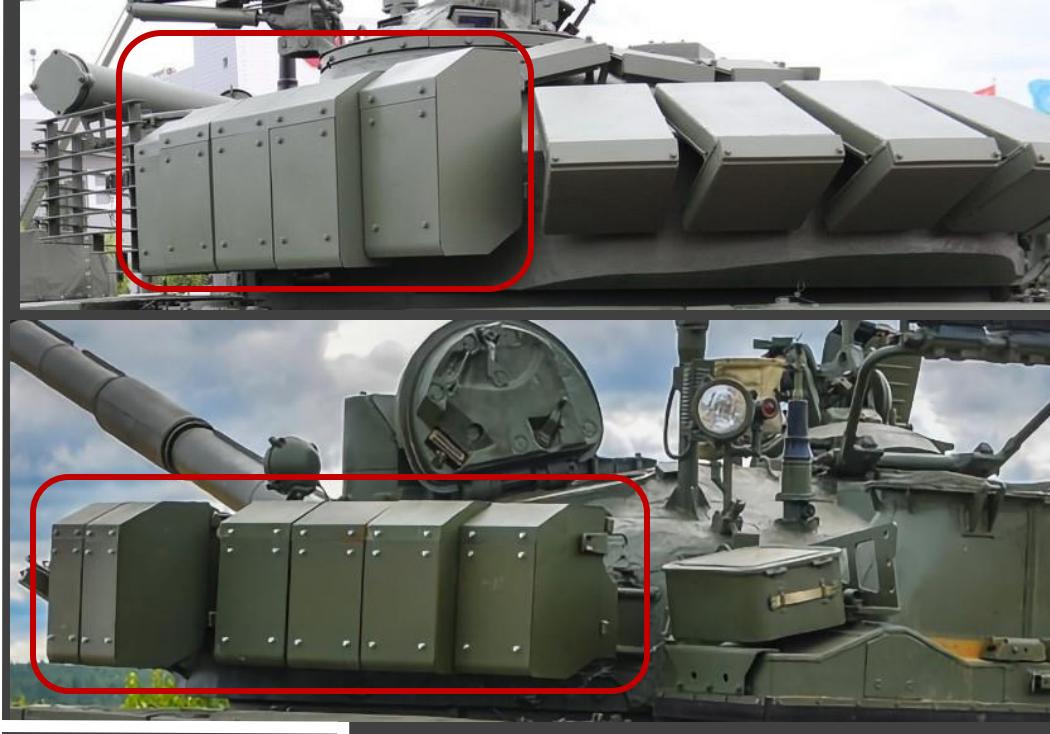
I. Passive Protection Systems

1. Soviet/Russian:

4S24 blocks :

I. These ERA bags are always used at the sides, on top of the side skirts, in most cases you will see them on T-72B3; T-72B3 model 2016 (T-72B3M); T-80BVM

II. These blocks are always mounted on the turret sides of tanks.: T-72B3; T-72B3 model 2016 (T-72B3M); T-80BVM



I.



I. Passive Protection Systems

2. Ukrainian:

Nozh : you will find them in two forms,

I. in long rectangular blocks what are always mounted together without any gap between them, in most cases they cover the whole area where they are placed. On the turret faces you will see them placed in V shape usually with rubber skirts, on the upper plates you will see them in long vertical blocks with a big cut out for the driver periscopes, and the TOWING HOOKS ARE ON THE SAME LEVEL WITH THE ERA BLOCKS.

II. in Kontakt 1 blocks only on T-64BV model 2017

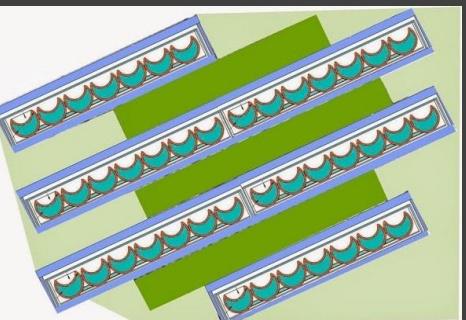
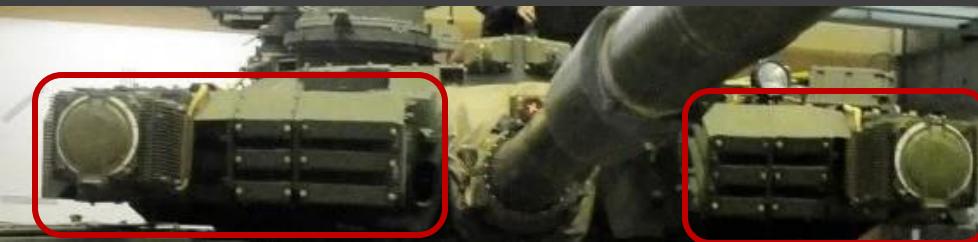
Only used on T-64B1M; T-64BM1; T-64BM2; T-64 model 2017; T-84 Oplot



I. Passive Protection Systems

2. Ukrainian:

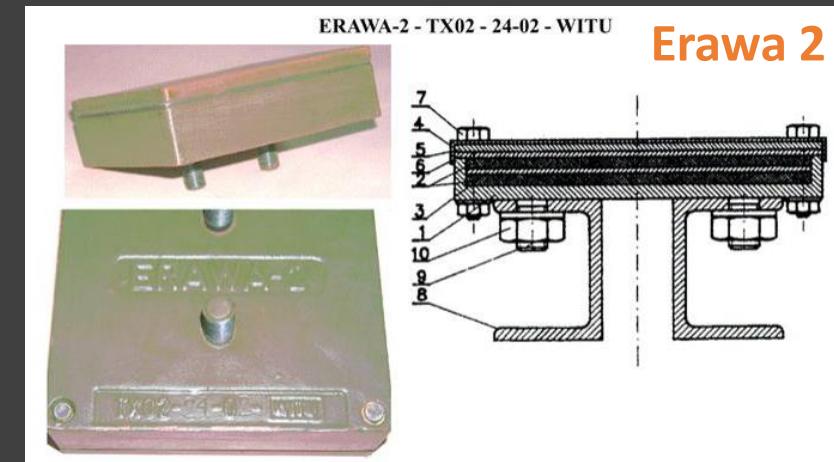
Duplet : duplet is basically 2-4 nozh ERA blocks stacked on each other with fillers between them, the width of the blocks is the same as nozh but they are way taller because there is multiple inside them. At the moment only T-84 Oplot-M fitted with this ERA.



I. Passive Protection Systems

3. Polish:

Erawa 2 : blocks are small square shaped, mounted close to each other; the **only** tank equipped with this ERA is PT-91



I. Passive Protection Systems

4. **Cage armor:** Welded metal structures what are resembling cages, usually mounted at the sides and back on vehicles. Their role is to destroy or "catch" HEAT projectiles and initiate their fuse ahead of the main armor of the vehicle, if this is achieved the jet from the projectile will slow and cool down while traveling the plus distance in air degrading its penetration.



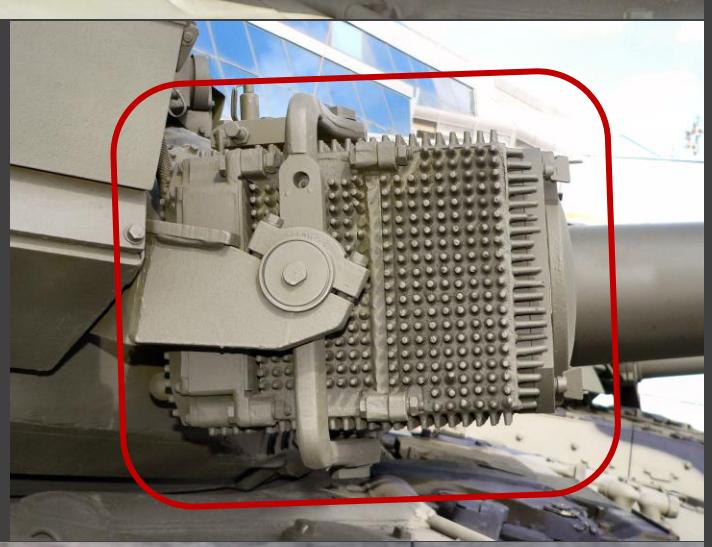
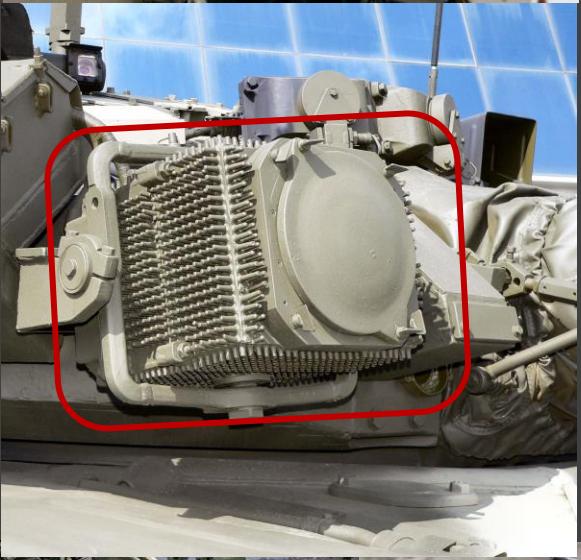
II. Active Protection Systems

1. Soft kill protection systems:

Sthora-1 : is an electro-optical jammer "dazzler" that disrupts the control of semiautomatic antitank guided missiles, laser rangefinders and target designators. These devices **always on the turret face at both sides**, have **a cubical shape with a big circular cover or without the cover you can see the circular lenses**. Its exterior is covered with fins what are providing passive cooling. These dazzlers are **always paired with laser warning receivers** what are above the main gun.

Used on.:

T-80UK; T-90 obr. 1992 (model 1992); T-90A; T-84; T-84 Oplot; (**T-84 Oplot-M has a very similar system what is called Varta**)

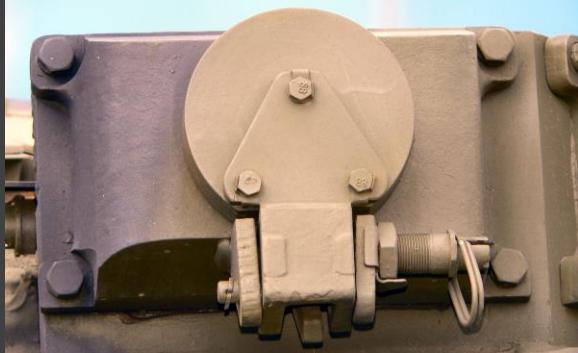
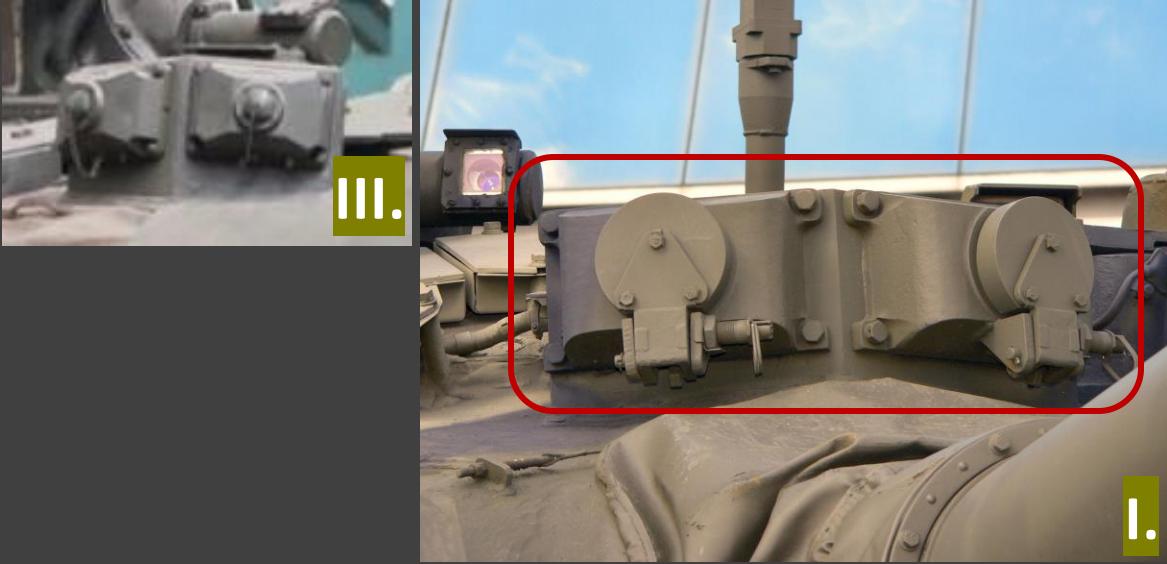


II. Active Protection Systems

1. Soft kill protection systems:

Lazer warning receivers : small rectangular boxes, slightly facing away from each other, with two small circular lenses, **above the main gun (exception T-90M)**; in most cases these are paired with Sthora-1 or Varta dazzlers (exception T-90M).

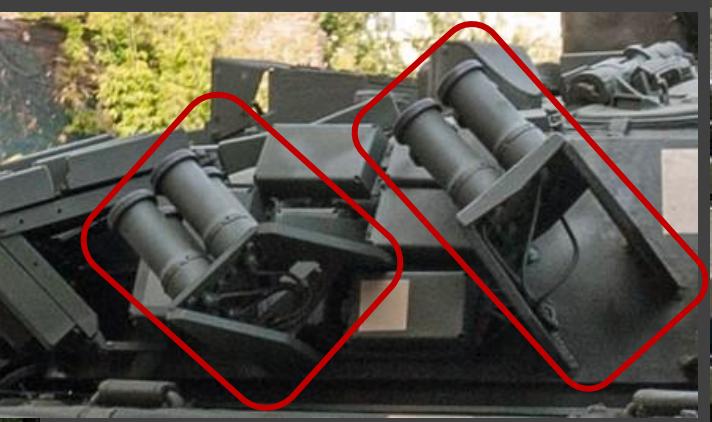
- I. T-80UK; T-90 obr 1992 (model 1992); T-90A; T-84
- II. T-90M
- III. T-84 Oplot; T-84 Oplot-M



II. Active Protection Systems

1. Soft kill protection systems:

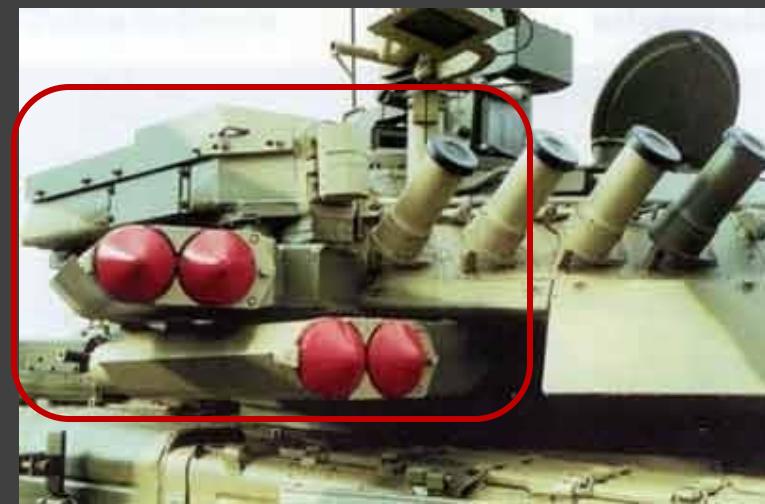
Smoke dischargers : cylindrical tubes at the sides or front of the turrets, each carries a smoke grenade, when deployed each can launch a smoke grenade what generates smoke between 25-40 sec to conceal the vehicle.



II. Active Protection Systems

2. Hard kill protection systems:

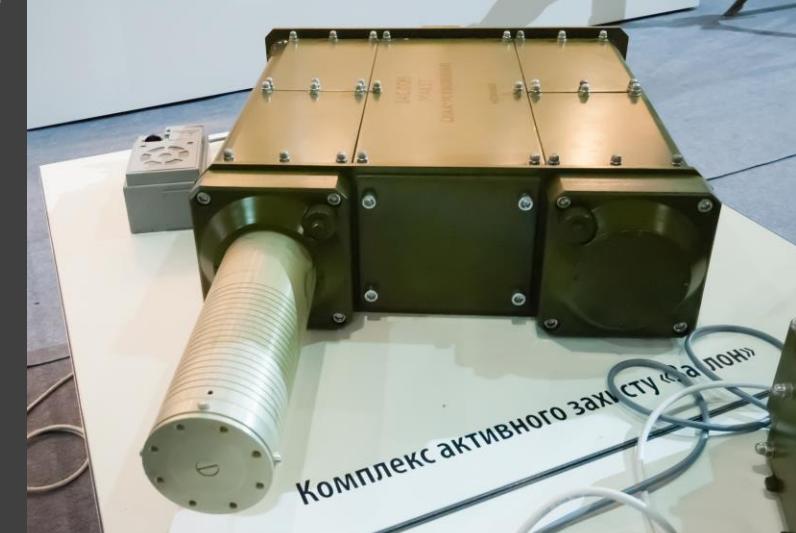
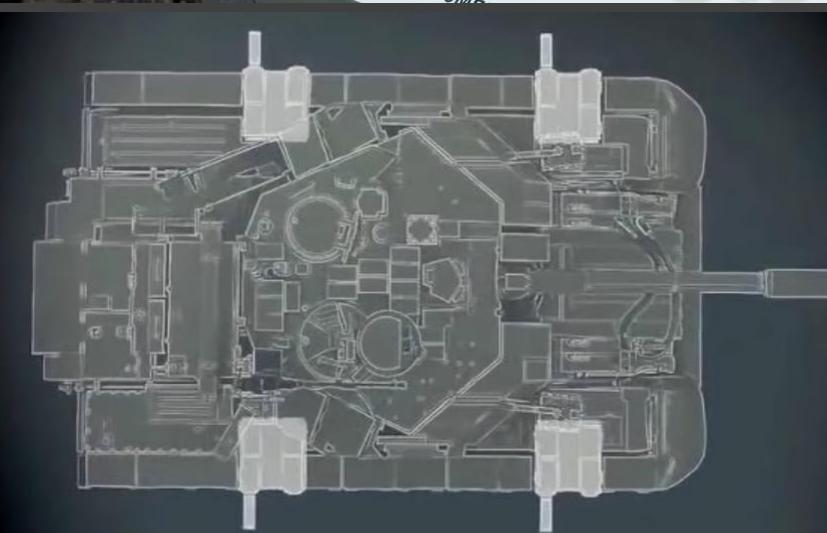
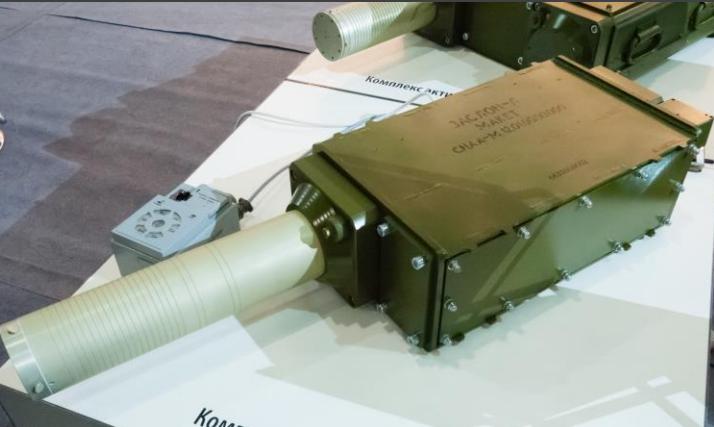
Drozd-2 : This system consist 4 launchers at both side of the turret, 2 looking forward and 2 looking slightly away the vehicle; above them at both sides one large rectangular metal box this is the radar and behind the launchers at the port side is a large metal box. Only one prototype was made with this APS named T-80UM2, (but this vehicle was lost in early March 2022 in Ukraine)



II. Active Protection Systems

2. Hard kill protection systems:

Zaslin : There is a very small chance you will see them mounted on the sides and roof of T-84 Oplot-M models.



III. Sensors

Meteorological sensors: These are always located behind the gunner's hatch at the port side of the turret

