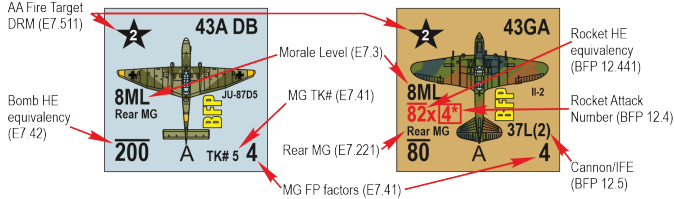




AIRCRAFT OF OPERATION BAGRATION

12. AIRCRAFT: Several aircraft that made an impact in Operation Bagration are included for both the Germans and the Russians. Refer to this diagram for counter layout information and details.



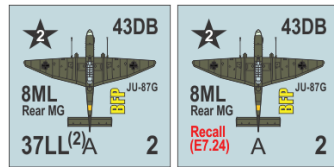
12.1 STUKA JU-87

12.11 The 43DB is a JU-87G¹ armed with 37mm tank busting cannons, and the 43A DB is a JU-87D5 with 20mm cannons (12.5) instead of the standard machineguns. Both are available to the Germans in the OtO CG and by SBR in some scenarios. Normal Stuka (E7.403) rules apply except as amended below.

12.12 Models:

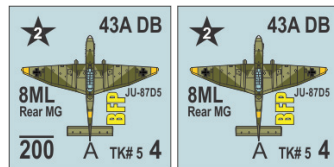
German 43DB

Available: ≥ Mar 43
MG: 2
ROF: N/A
Bombs: N/A
Cannon: 37LL(2 IFE)
AA DRM: 2
Rear MG



German 43A DB

Available: ≥ June '43
MG: 4
ROF: N/A
Bombs: 200
AA DRM: 2
Rear MG
TK# 5



12.1 Aircraft Model Table	
DR	Model
2-5	43DB
6-12	43A DB

If the 43A DB is allocated in RG F2 of the OtO CG, make a subsequent dr (per aircraft) for AT Cluster Bomb (ATCB; 12.6) availability. On a dr ≤ 2, that Stuka is ATCB equipped; otherwise, the Stuka is equipped with HE bombs. **NOTE:** Each Stuka *automatically* comes equipped with either ATCB or HE bombs and, contrary to E7.21, no second dr is necessary.

12.13 Attacks: The 43A DB is treated as a normal DB in every way except it has a MG TK#5. The 43DB may conduct a Strafing or a Point Attack, and may use its cannons or 2 FP machineguns (the MGs may not make a TH/TK DR).

The cannon (12.3; 12.5) may conduct 1 Strafing Run or 2 Point Attacks. A 43DB is Recalled (per E7.24) after a cannon Strafing Attack or after its second cannon Point Attack. A 43DB does not Pin infantry per E7.404, even when making a Point Attack.

12.131 Sighting TC DRM: Sighting TC are conducted normally [EXC: the 43DB incurs a +2 DRM against non-vehicular targets].

12.14 Rear MG: Both models are considered 42DB for all purposes of Dogfight Resolution (E7.221).

12.15 Light AA Fire: Like a FB, the 43DB is susceptible to Light AA fire (E7.51) prior to making any attacks.



JU-87G Example of Play 1:

43DB conducting a Strafing Run.

In this situation two Russian tanks are in hexes J19 and H20. The tank in H20 is CE. Both tanks have not moved during their player turn. During Defensive Final Fire, the German player opts to conduct a strafing run and places the aircraft in N17; the original target hex is J19. The Sighting TC receives the following DRM:

- 1 vehicular target
- 2 target not concealed

Any DR with the exception of 12 results in a successful sighting TC and the plane may now start its attack. It must first achieve a Hit, and does so with a DR ≤ 9 (Base 9 with no modifiers). With a hit, the tank-buster can eliminate/shock/immobilize the tank on an Final DR ≤ 10: **[Basic TK# is 11, +1 rear target facing +1 height advantage -3 Aerial AF]**. The Stuka continues to attack along the hex grain into I20 (empty hex) and then H20 where the KV is located. No sighting TC is required to attack this target, and the TH and TK numbers are the same as previously discussed. The only difference is that the TH DR also attacks the CE crew on the 2 column of the IFT with a +2 DRM normally provided to a CE crew. As you can see from this example, the JU-87G can quickly earn its nickname of tank-buster. However, after making this strafing run (it made 4 attacks into hexes J19, I20, H20, and G21; note that NO residual is placed in any of these hexes) it is Recalled (E7.24) for making its one allotted Strafing Run per 12.13.

JU-87G Example of Play 2:

43DB conducting a Point Attack.

In this situation, a T34/ATO42 has moved to orchard hex W37. The



12.2 Aircraft Model Table	
DR	Model
2	44C GA
3	44B GA
4-5	44A GA
6-7	44GA no rockets
8-10	44GA
11	43GA
12	42GA

After the Model is determined for RG F1 of the OtO CG, make a subsequent dr (per aircraft) for ATCB (12.6) availability. On a dr ≤ 2 , that Sturmovik is ATCB equipped; otherwise the Sturmovik is equipped with HE bombs. **NOTE:** Each Sturmovik *automatically* comes equipped with either ATCB or HE bombs and, contrary to E7.21, no second dr is necessary.

12.22 Attacks: Russian aircraft using rockets (12.4) use Red TH numbers. Sturmovik 37L cannons incur a +2 TH DRM.

12.23 Rear MG: Sturmovik GA aircraft are equipped with Rear MGs, and are considered 42DB for all purposes of Dogfighting (E7.221).

12.3 ORDNANCE ATTACKS: Aircraft armed with rockets/cannons have the following options in a single fire phase:

- a) MGs and/or bombs normally
- b) Rockets only
- c) Cannon only

The procedures for conducting a Sighting TC and resolving Light AA attacks remain unchanged per Chapter E. After a successful Sighting TC but before any attack, the owning player must declare if the attack is to be made with MG/bombs or rockets or cannon. Conduct attacks per Chapter E if a MG/bomb attack is declared.

12.4 ROCKETS: This armament is listed in red below the Morale on the aircraft counters. If a rocket attack is declared, it is the only weapon that can be used by that aircraft in that fire phase. Russian aircraft are equipped with 82mm or 132mm rockets. The **Rocket Attack Number (RAN)** is listed inside a box to the right of the rocket diameter. The RAN is the number of TH attempts that aircraft can make during the fire phase. The RAN is halved if ATT (C3.33) is used (Ex: the 42 GA can make either 8 ITT/VTT or 4 ATT attacks). Rockets, like bombs, may be used only once. After conducting a rocket attack, flip or replace the aircraft counter with one of the same type without rockets. Any Original TH DR 12, using any target type, results in a malfunction of the rocket system (*all remaining rockets are considered jettisoned, replace or flip the aircraft counter to the appropriate side; the aircraft continues to move along its attack route and is subject to Light AA fire normally even though it does not conduct any additional attacks in this Player Turn*).

An aircraft loaded with rockets engaged in Aerial Combat (E7.22) suffers the same penalty as an aircraft carrying bombs (E7.221). The DRMs for Rockets and bombs are cumulative in Dogfights. Rockets may be jettisoned like bombs (and at the same time as bombs) per E7.225.

12.41 Infantry/Vehicle Target Type (ITT/VTT): ITT/ VTT may only be used during a Strafing Run (E7.401). Any combination of TH attempts per hex(es) can be used up to the full RAN. After a rocket attack is declared, all hex(es) and the unit(s) being attacked must be announced prior to resolving the first attack. Each attack is conducted regardless of the outcome of the prior attack.

12.42 Area Target Type (ATT): ATT may be used only during a Point Attack. When using the ATT, the RAN is reduced to half of the printed number. Half of these attacks are made from 4 hexes and half from 3 hexes. Each attack is conducted regardless of the outcome of the prior attack. Each attack is conducted as Area Fire (C1.55).

12.43 Rocket TH DRM: The E7.421 provisions for a Direct Hit or Near Miss do not apply to rockets. All hits when using the ITT/VTT are Direct Hits, and all hits with ATT use the IFT at half firepower. All aerial TH DRM apply normally, with the following additions:

DRM	Target Type
-1	Area (ATT)
+2	Infantry (ITT)
+3	Vehicle (VTT)

12.44 Rocket TK DRM: The C7.22 Aerial Advantage applies as a +1/+2 to the Modified TK # on the VTT; it applies as a -1/-2 DRM to C1.55 ATT IFT DR. The C7.21 AFV Rear Target Facing is never used as a DRM.

12.441 Rocket Effects: Attacks against infantry use the applicable IFT column (82mm or 132mm rockets and halved if using ATT). If the VTT was used, AFVs are attacked on the applicable C7.34 HE/Flame TK Table (80+ or 120+ column). If the ATT was used, vehicles are attacked per C1.55.

12.442 Special Ammunition: 132mm rockets have a chance for HEAT whenever there is a hit vs an AFV, but only when using the VTT. After a hit is achieved, make a subsequent dr. If the dr is ≤ 2 , that rocket uses the 122mm HEAT TK number. Schuerzen do not apply to this type of attack.

12.5 CANNONS: Cannons may be used to conduct a Strafing Run or a Point Attack. Any unarmored targets in hexes attacked by the cannon are attacked by the IFE as if a MG per E7.41, with no placed Residual Firepower. The Russian 37L cannon incurs a +2 TH DRM. An Original TH DR of 12 disables that aircraft's cannon and it cannot conduct further cannon attacks; however, it may use other weapons if available in subsequent turns.

12.6 ANTITANK CLUSTER BOMBS³ (ATCB): AT Cluster Bombs are available to the Russians starting in April 1943 and



the Germans in May 1943. These are only available per SBR or in the CG with a successful dr associated with 'F#' purchase. This is primarily an antitank weapon, but can have an effect on Infantry/unarmored vehicles. Cluster Bombs always use the ATT for TH purposes. There are two hexes that can possibly be hit with an ATCB attack; the original target hex and the hex immediately adjacent to and behind the target hex along the aircraft's flight path. "To Hit" DRs are made separately against each hex with appropriate ATT DRMs as normal HE bomb attack.

12.61 Effect Against Armored/Partially Armored Vehicles: If an AFV is successfully hit, make a subsequent dr on the following table to determine the TK# to be used:

dr	Basic TK Number
1-2	Use Basic TK# 12
3-4	Use Basic TK# 9
5-6	Use IFT with 8 Firepower (C1.55)

Use the applicable TK# to determine the effect on an AFV. All Aerial TK# modifiers such as C7.21 (+1 rear target facing) and C7.22 (+1/+2 aerial advantage) apply as well as the use of Aerial Armor Factors (C7.12) normally associated with aerial attacks are applicable to determining the Final TK#. Additionally, the 12.62 DRM table lists other DRMs that apply to AFVs attacked on the IFT when using ATCB.

12.62 Effect Against Infantry/Unarmored Vehicles: Cluster bombs attack Infantry/unarmored vehicles on the 8 FP column of the IFT, regardless of HE equivalency on the counter. All Cluster bomb attacks against any target type receive the following IFT/TK effects DRM, all DRM are cumulative:

DRM	Terrain
-2	Unarmored Vehicle
0	Open Ground
+1*	Crag/Shellhole
+2	Orchard
+2	Crew manning an emplaced Gun
+2	CE AFV crew
+3	Woods [EXC: Airburst is NA]
+4*	Trench/Foxhole
?	Double normal DRM of all other terrain

*NA to vehicle

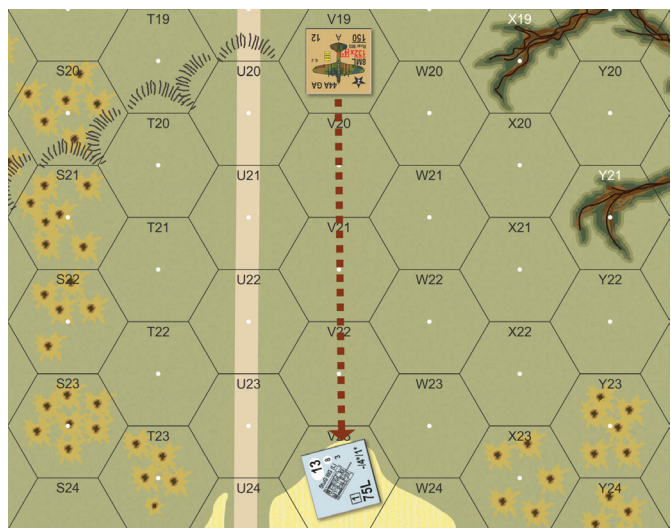
12.63 Critical Hits⁴: A cluster bomb Critical Hit *always* occurs on any Original TH DR of 2, even if an improbable hit. Use Random Selection to determine which target is affected by the CH if that hex contains more than one unit. The firepower of a CH against Infantry/unarmored vehicle is doubled to 16; TEM is not reversed, but all positive TEM becomes 0 [EXC: remains -2 against an unarmored vehicle; FFNAM and FFMO as applicable]. Critical Hits against AFVs are resolved as if the dr were a 1 or a 2 on the 12.61 table.



Sturmovik Example of Play 1:

44GA conducting a Rocket Point Attack.

StuG in V23 is attacked by a 44GA from V19. The 44GA conducts and passes a Sighting TC from V19. It is subject to, but receives no Light AA fire. At this point the owning player determines to use rockets. Because all rocket attacks must be declared prior to the first attack, this also determines whether the GA is conducting a Strafing Run or a Point Attack. A Point Attack is declared, so this is an Area Target Type (ATT) attack (12.42), and subsequently a maximum of four attacks may be made. The first two attacks must be fired from V19 and the second two from V20. Each TH attempt requires an Original DR ≤ 7 to achieve a hit. [Base 7; DRMs: - 1 Rocket ATT (12.43) + 1 target size = 7]. Any hits attack the StuG on the IFT because it was an Area attack. It is resolved on the 8FP IFT column using the mechanics of C1.55 with a -1 DRM for aerial advantage per 12.44.



Sturmovik Example of Play 2:

44A GA conducting a Rocket Strafing Run.

The StuG is in V23 and the 44A GA attacks from V19. The 44A GA conducts and passes a Sighting TC from V19. It is subject to, but receives no Light AA fire. The controlling player announces the use of the VTT and thus must make a Strafing Run. The player wants to only attack the StuG in V23,



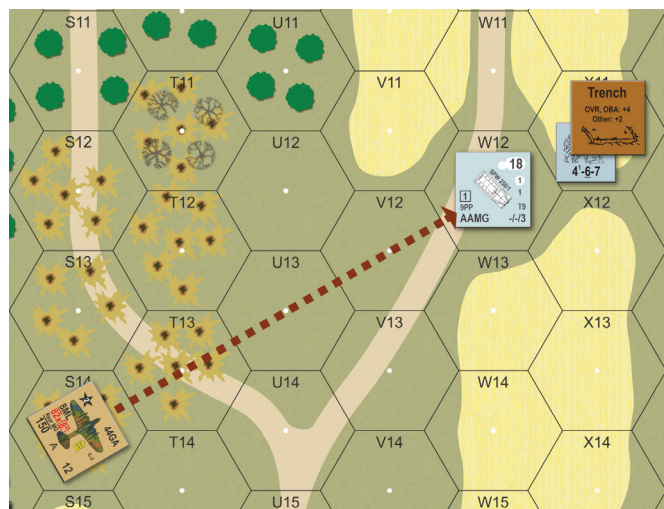
so all four rockets are fired from V19. Each rocket is then fired at a 4 hex range (7-12 Aerial Range (E.5)), and a Final DR ≤ 4 is necessary for a hit. **[Base 8 - 3 VTT (12.43) - 1 target size = 4]**. On each hit that is secured, a subsequent dr of 1 or 2 uses the HEAT TK#. The 122 HEAT round scores an effect on a Final DR of ≤ 16 . **[Base TK 17 - 2 Aerial AF + 1 aerial advantage (C7.22)]**. If HEAT is not available, a Final DR ≤ 11 is required for an effect. **[Base TK 12 - 2 Aerial AF + 1 aerial advantage (C7.22) = 11]**.



Sturmovik Example of Play 3:

44GA conducting a Rocket Strafing Run vs Infantry.

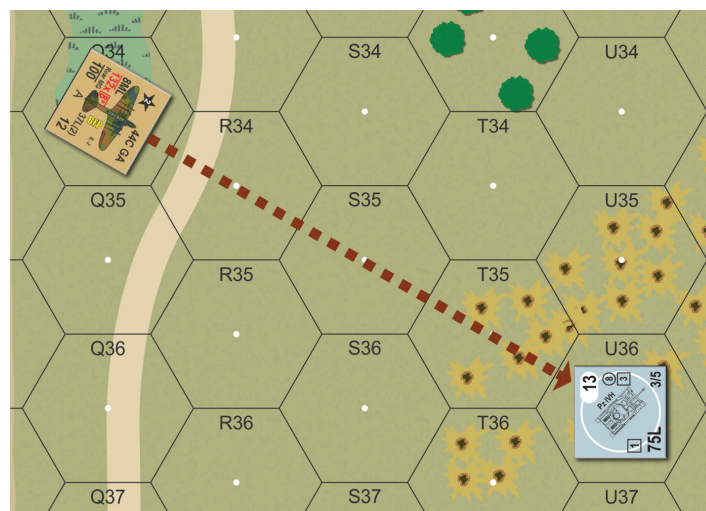
German squads are Y16 (in a Trench) and X16 and a 44GA is in T18. The 44GA conducts and passes a Sighting TC from T18. It is subject to, but receives no Light AA fire. The controlling player announces the use of the ITT, and thus a Strafing Run per 12.41. All rocket attacks must be declared prior to any attacks. The player chooses to fire four rockets at X16 and four at Y16. He could have chosen to fire 2 rockets each at X16, Y16, Z15, and AA14, or any other combination on those hexes, up to a total of eight. A Final DR of ≤ 4 is necessary to hit the squad in X16. **[Base 6 (7-12 range for aerial range using ITT) - 2 ITT DRM per 12.43 = 4]**. Hitting the squad in Y16 will require a Final DR ≤ 2 . **[Base 6 (7-12 range for aerial range using ITT) - 2 ITT DRM per 12.43, - 2 Trench TEM = 2]**.



Sturmovik Example of Play 4:

44GA conducting an ATCB attack.

A German squad is in a Trench in X11 and a SPW250/1 is in W12, a 44GA (with Cluster Bombs) in S14. The GA conducts and passes a Sighting TC from S14. It is subject to, but receives no Light AA fire. MG attacks are ignored for purposes of this example. The controlling player announces an ATCB attack into W12. The only applicable ATT To Hit modifier is the halftrack's small target size. If the Final DR is ≤ 6 **[Base 7; DRMs: + 1 target size = 6]**, which is a Hit, the GA player then makes a subsequent dr to determine the type of hit. The dr is a 1, so the attack is conducted with an unmodified Basic TK# of 12 (12.61), which will rise to a Final TK# of 15 (with the inclusion of +1 rear and +2 OT aerial advantage) which will then be applied against the halftrack's Aerial AF of 0 (C7.11) in this example. The Infantry attack in hex X11 will also be conducted on the ATT. In this case there are no TH DRM, so the ATCB attack needs a DR ≤ 7 for a hit. A hit attacks the infantry on the 8 FP column with a DRM of +4 (12.62).



Sturmovik Example of Play 5:

44C GA conducting a Cannon Point Attack.

There is a stationary PzIVH in hex U36, and the Russian player has decided to conduct a Cannon Point Attack against it from hex Q34. It must first pass a Sighting TC with the following DRM:

- 2 target is not concealed
- 1 target is a vehicle

The Sturmovik passes the Sighting TC. Once passed, it must make a TH DR. The first TH DR is conducted at an Aerial Range of 7-12 hexes. An Original DR ≤ 7 is required for a hit: **[Base 9 + 2 DRM for Russian Cannon attack (12.5)]**. The second TH attempt is made at an Aerial Range of 2-6 hexes with an Original DR ≤ 8 required for a hit: **[Base 10 + 2 DRM for Russian Cannon attack (12.5)]**. If either of the TH attempts are successful, the Sturmovik can affect the tank with a Final TK DR ≤ 9 : **[Basic TK 9 + 1 rear target facing (C7.21) + 1 height advantage (C7.22) - 2 Aerial AF]**. If the tank crew was CE, the TH DR would also attack the CE crew Collaterally (D.8) on the 2FP IFT column with a +2 DRM normally provided to a CE crew.



AIRCRAFT NOTES:

(1) **JU-87G STUKA:** Experimental flights of this “tank-busting” Stuka began in March 1943. The first significant combat use was during Operational Citadel in July 1943, but otherwise this aircraft remained a rare commodity. This aircraft was used throughout the war almost exclusively on the East Front. The “G” model is basically a “D” model with the bomb racks and forward MGs removed; two heavy 37mm guns replaced the bomb racks, and at least one MG was fitted to fire forward to help site the guns, strafe ground targets, and provide some air-to-air self defense. The weight of the guns did not allow the conventional dive-bombing that had made the Stuka famous, thus this model does not automatically pin infantry with a Point Attack. Each of the 37mm guns carried between 12-16 rounds. The rounds were composed of a special high quality tungsten which provided excellent penetration of armored targets.

(2) **IL-2 STURMOVIKS:** Sturmoviks were aircraft specifically designed as ground attack aircraft. In 1942 they were redesigned as a two-seater with a rear .50 caliber machinegun. Although relatively slow, they were well armored and armed, earning them the nickname of “flying tank”. They were very effective against ground targets, but took losses to anti-aircraft fire because they attacked low and slow. Additionally, they were also vulnerable to German fighter bombers. The 37mm armed versions were initially designed for the battle at Kursk. However, there were complications and overall were not very effective. At least 1,000 Sturmoviks were armed with the cannon, but emphasis shifted to the Anti-Tank Cluster Bomb, which was more effective.

(3) **ANTI-TANK CLUSTER BOMBS:** Both the Germans and Russians used various forms of cluster bombs. These differed from conventional bombs in that instead of impacting as one large explosion, numerous “grenade” type bomblets discharged at a certain height. The Russian versions, called PTAB (short for **Противотанковая Авиабомба**, or “Anti-Tank Aviation Bomb”), contained up to 192 bomblets. The German version, called the butterfly bomb, contained up to 108 bomblets. Although used earlier, versions of cluster bombs that would be effective against frontline troops were not used until 1943. The TH procedure for a cluster and conventional bomb is relatively similar. The IFT DRMs differ because bomblets affect the target in a much different manner. Overhead cover such as trees and buildings significantly reduced their effects.

(4) **CLUSTER BOMB CH:** Clusterbomb Critical Hits are different from conventional Critical Hits for several reasons. The number of bomblets falling over an area significantly increases the chance one will land directly in a foxhole, window, etc. However, because of their generally small size compared to a normal bomb, the effects are not as devastating.