

A & A GAME ENGINEERING PRODUCT SUPPORT

Product Support sheets come in the following types:

- Clarifications – these are more general clarifications about game play in response to questions from players.
- Corrections and Amendments – these include corrections to errors in game data, typing errors, and mistakes in game play that have come to light. These may come in two alternatives:
 - applicable to the most recent edition.
 - applicable to previous editions. These items will all have been incorporated into the latest edition on sale.
- New Rules – These rules will have been developed in response to requests from players. They may also have been developed from House Rules (see below).
- House Rules and player suggestions. House rules that are tested and work well may be incorporated into the basic rules if the author(s) approve.

The content of the sheets follows the same order as the rules in the book and the first sheet shows a summary of these sections and indicates those that are affected by the current sheet.

SCRAMBLE

RULES UPDATE 1.4

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1. INTRODUCTION
 2. MEN AND MACHINES
 3. SETTING UP A GAME AND DEPLOYMENT
 4. FLIGHT FUNDAMENTALS
 - ⇒ New Manoeuvres ('Sideslip' and 'Skid')
 5. SHOOTING
 - ⇒ 5.8 – Effect of Relative Pilot skills in Gunnery
 - ⇒ 5.15 – Combining Fire from Multiple Mounts (*July 2007*)
 - ⇒ 5.16 – “Selektakrit” (*July 2007*)
 - ⇒ 5.17 – Resolving attacks on high DV targets (“an impossible shot”) (*September 2010*)
 6. ATTACKING A SURFACE TARGET
 7. BIBLIOGRAPHY
 8. GROUND DEFENCES AGAINST AIR ATTACK
 - ⇒ General revision of Anti Aircraft rule text (*31 March 2005*)
 9. NIGHT ACTIONS
 10. OPTIONAL RULES
 - ⇒ 10.6 – Computing Gun Sights
 11. SETTING UP A TYPICAL GAME
 12. AIRCRAFT DATA AND THEATRES OF USE
 13. EXPANDED AIRCREW TRAINING
 - ⇒ “Basic Training” (*July 2007*)
 - ⇒ Aircrew Training (*July 2007*)
- APPENDIX C - TABLE OF AIRCRAFT WEAPONS
 APPENDIX D – DESIGNERS’ NOTES
 FIGHTER RECORD CARDS
 BOMBER RECORD CARDS

Background

Some of these new rules are developed to take account of high DVs encountered at the end of World War Two. They are applicable to most allied aircraft and reflect developments in the war to counter the problem which has been encountered in the rules by players.

Some of the problem is down to a 'miscalculation' on our part when doing the DVs and using the methanol boost values for the late German fighters. These values have been revised and corrected and are available on a download sheet.

This does not solve the problem with the German jets or with fast Japanese fighters, which were a problem for allied airmen in battle.

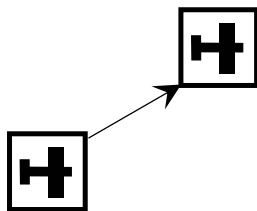
The more recent additions to the rules come from suggestions by Scramble pilots, and these are marked with a side bar.

Flight Fundamentals (4)

Sideslip manoeuvre (new rule)

The attempt to sideslip must be declared before any movement takes place, and is the only movement action that can be taken. It cannot be combined with another movement action. A VPSR is required before movement.

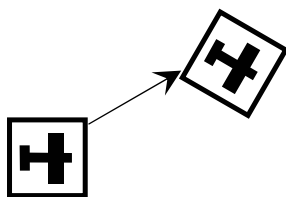
- Pass – Move between ST and half AS in a straight line, up to 30 degrees to right or left of current heading (Pilot's choice); the aircraft remains facing in the same direction as it started the turn.
- Fail – Aircraft moves forward half AS and drops ALT levels by the amount by which the test fails.



Skid manoeuvre (new rule)

This is a slip with a subsequent change of heading. The attempt to skid must be declared before any movement takes place, and is the only movement action that can be taken. It cannot be combined with another movement action. A VPSR is required before movement.

- Pass – Move between ST and half AS in a straight line, up to 30 degrees to right or left of current heading (Pilot's choice); the aircraft then changes facing by up to 30 degrees to left or right (i.e. turning in the opposite direction to the initial slip).
- Fail – Aircraft moves forward half AS and drops ALT levels by the amount by which the test fails.



These new rules will be incorporated in the next edition.

Relative Pilot Skills in Gunnery (5.8)

We should have considered this issue for the effect of fighters fighting fighters (and attacking bombers as well). Of course a more skilled pilot should be able to either aim his craft better or dodge the bullets (depending on where he is).

This rule only applies to cases where the pilot is shooting fixed guns. Compare the PILOT skill of the shooter and the target. If the pilot skill of the shooter is greater than that of the target aircraft ADD +1 to the to hit roll. If the pilot on the target has a better pilot skill then the shooter DEDUCTS -1 from the to hit roll.

Combining Fire from Multiple Mounts (New Rule – 5.15)

It is clear that the Allied Bombers (especially in the daylight offensive) had to defend themselves by means of intensive fire in a barrage against attacking fighters. Again this is an area which we have not really examined in detail and I admit we should have done.

(Change 29 December 2004) This rule only applies to turret and flexible guns (usually) on Bombers

This applies only to an aircraft with several guns that will bear upon an individual target. The rule developed works as follows:

- You can combine the attacks of several mounts on a single target. These mounts must be of 20mm calibre or less.
- These do not have to be of the same calibre but all guns must be in range of the target.
- If a single gunner serves several different types of gun mount (and/or in some cases arcs) he can only fire one of the guns into one arc.
- The player must decide which gunner will be used to "aim" the guns and he must attack the closest target as per the rules. This means that you must be careful when you have to choose between a gunner with 360 degree vision and one with a restricted arc. The restricted arc gunner may be able to select a target further from the shooting aircraft and use the 360 turret gunners guns. The turret gunner may have another closer (but unthreatening) target which he would otherwise have been forced by the rules to shoot at.
- Long Bursts are permitted. The depletion roll is based on the gun being used to resolve the attack. If a "deplete" result happens then on Bombers ONE of the attacking gun mounts is depleted (owner's choice). Bomber depletion effects apply as usual (so it may be only marked as "first depletion"). Fighters deplete as normal.
- The Gunnery Skill of the "aiming" gunner is used.
- The attack modifier applied to the "aiming" gunner's guns is applied as normal. One to hit roll is made.
- An attack bonus is applied of +1 for each additional mount included in the attack.
- Damage is applied using the "aiming" gunner's mount but a damage bonus is given per additional gun mount in the attack as follows:
 - +1 per machine gun mount
 - +2 per heavy machine gun mount
 - +3 per 20mm mount.

Examples (ignoring ranges, effects of automatic hits, or target aspect in arcs of fire):

A Halifax with a quad .303 on the top and rear attacks a single target. It shoots as a machine gun (+2), with 3 extra mounts (+3) and if it hits it scores 1D6 +3 damage. It will not deplete unless using long burst, when it will deplete on 10.

A B-17G Flying Fortress can attack an aircraft coming from the side with the front twin, two 360 twin turrets and two single side guns, all 0.5 calibre. As an HMG it gets +1, there are 4 additional mounts (+4), and if it hits it does 2D6 + 8 damage. It will deplete one mount on a 10, long burst depletes one mount on 9 or 10.

A B-29A Superfortress could attack an aircraft coming from the tail with a total of 6 0.5 mounts plus one 20mm mount. If we assume that the gunner chooses to use the 20mm for the attack (+0) it attacks at +6 and would do 3D6+12 damage. If he rolls a 9 or 10 then one of the mounts depletes unless he used long burst when one would deplete on 8, 9 or 10

A Kawanishi H8K2 Emily has some gunners with a choice of 20mm or 7.7mm guns in the same arc. The gunner can only fire one of these.

Aimed Fire (a.k.a. “Selektakrit”) (New Rule 5.16)

This rule is only available to the pilot of an aircraft who is aiming his whole aircraft at the target. In the gunnery phase he must declare he is attempting to target a specific part of the target, represented on the Crit table by rows 1 to 6. To succeed he must pass a VPSR roll. If he fails he cannot shoot.

If he passes he declares his aiming point (all shots go to that point) and shoots using normal rules including long bursts etc. He then rolls for damage using whichever number of dice the normal rules would give. Every 6 rolled for initial damage provides a d6 roll on the selected row of the Crit table. The Critical effects of the D6 roll are applied, scores of 1 to 5 give structural damage, every 6 allows for a roll on row 7 of the table.

When rolling on row 7, apply the effects as normal for the rules. If further 6's is rolled here, they are treated as normal critical hit rolls on the entire table.

Resolving attacks on High DV targets (“an impossible shot”) (New Rule 5.17)

Players will recall that earlier editions of Scramble had some aircraft which had excessive DV values, caused by our overlooking the inclusion of the effects of methanol boosting in some of our source data. That issue was resolved when some data was recalculated to provide a more realistic value by removing the effects of the boost. Nevertheless there are aircraft in the data lists which have a DV in excess of 20, which means that they are difficult or even impossible to hit. In addition we have done some calculations to provide aircraft data for the Korean War (available as a download on our website). Nearly all of these new aircraft have very high DV values, which make them impossible to actually hit under normal circumstances.

Clearly it was necessary to address this issue at the same time. The following new rule has been created and is also compatible with the rest of the rules system and can be used to resolve attacks which would otherwise not be possible due to the tactical situation or lack of skill on the part of the shooting player's pilot or crewman.

Firstly, the condition that must apply is that when you add the gunnery skill, the tactical and gun-based modifiers, plus 10 (the maximum score on the “to hit” roll) and the result is LESS than the

DV of the target, the rule may be used. If you are using the optional computing gun sights rule, then you must also add 6 to this calculation. (If you are using these rules in the Korean war then you should assume that both sides are using such gun sights on their fighters). This condition may look complicated but is in fact the reverse of the automatic hit rule (5.9).

In this case, the shooting aircraft sacrifices damage dice to gain a to hit bonus. Each group of weapons on an aircraft is treated separately when using this rule.

A Spitfire with 2x20mm and 4x.303 guns would treat each of these gun groups separately when calculating the bonus (as you would in fact when shooting because the to hit modifiers are different).

It may be the case that you only need to sacrifice damage with one of the gun groups on an aircraft because the other would hit. When making this sacrifice, the damage reduction is applied sequentially to the gun mounts on an aircraft. If you only have rifle calibre machine guns, then you must have at least two mounts to apply the rule.

A Hurricane with 8x.303 guns has four mounts. It could sacrifice up to three of these, retaining 1d6 of damage, but potentially gaining a considerable to hit bonus.

Each damage dice sacrificed gives a cumulative attack bonus of 1d6 to the resolution of all the remaining dice rolls for the group of guns. For the sake of simplicity, the bonus d6s are rolled once, and the resulting score is then added to each of the actual d10 attack dice.

If our Hurricane decided to sacrifice 2 of the damage dice, he then rolls 2d6 to calculate the to hit bonus, scoring 2 and 2 for a total of 4. He then rolls 2d10 for the remaining pairs of guns, adding 4 to each of the scores.

If the attacking plane is a Hellcat with 6x0.5 cal heavy machine guns, 3 attack rolls and 2d6 damage per attack, the player might choose to sacrifice 3 damage dice, gaining a 3d6 to hit bonus. He has two attacks left, but must roll these separately because one of the attacks will only do 1d6 damage, while the other retains its full 2 dice of damage.

If the attacking aircraft is a MiG-15 with 1x37mm and 2x23mm, these have 7 and 4 damage dice respectively. The 37mm gun shoots at -3 normally due to the type and the single gun. It can however sacrifice up to 6 damage dice to gain a to hit bonus if necessary. Similarly the 23mm guns can also gain a good to hit bonus. If this aircraft chose, for instance, to sacrifice 4 and 2 dice respectively, the attacks are resolved by rolling 4d6+1d10 for the 37mm gun, doing 3d6 damage if it hits, and 2d6+1d10 for the 23mm guns doing 2d6 damage if they hit. Bear in mind that the bonuses are always rolled separately for each gun group, vne if they have sacrificed the same number of damage dice.

When using these rules, all other tactical and gun mount modifiers apply as usual, as do any optional rules you have chosen to apply. You must always roll to hit, even if the random to hit bonus was not enough to get a hit on the target, because you may deplete the gun. Obviously, depleted guns cannot provide a to hit bonus.

You cannot apply these rules to gain the automatic hit bonus.

You can also apply these rules to Air to Air rockets and light anti-aircraft guns by sacrificing some of their damage dice. You can also apply the rules to aircraft with multiple mounts, however the guns must all be of the same calibre and must all bear on the target. Damage calculation follows the multiple mount rules, however the gun mount being used to resolve the attack may not sacrifice any of

its damage dice. The damage bonus applied to the resulting hit is 1 per damage dice in excess of the basic damage for the mount (which is how the combined fire extra damage is assessed).

If we take as an example a B-29A Superfortress being attacked by a MiG-15, it has a total of 6 0.5cal mounts each doing 2d6 damage plus one 20mm mount doing 3d6 damage. For our purposes we will ignore the 20mm and use the 0.5 for the attack. The gunner chooses to sacrifice 3d6 damage from two mounts to gain 3d6 to hit bonus. This means that he has 5 0.5 mounts left for the attack as he did not sacrifice all the dice from one of the mounts. This means that he will gain another +4 to hit for the extra mounts being used. He makes one to hit roll at +4 and +3d6. If he hits he will do 2d6 + 7 damage (there are 4 extra mounts left which would normally give him 2 points each, but one of those has sacrificed a damage dice so it only gives one dice).

Ground Defences against Air Attack (8ff)

Added 31 March 2005. These rules have been reviewed and a replacement page is part of this update sheet.

Computing Gun Sights (10.6)

At present the modifier is just +2. The revised rule is that an aircraft with a computing gun sight fitted rolls one D6 and adds this to each of the to hit dice when you shoot from all aspects EXCEPT for the head-on attack, where the current - 2 becomes - 4. For game purposes if you choose to have the benefit of the sight you must also accept this penalty.

The effect is variable because individual pilots had different experiences using the sight. When calculating the "Automatic Hit" effect the Computing gun sight is treated only as +1 (not +2 as per the rules). The "Auto Hit" is usually only used against bombers, against which targets the Computing Gun Sight is less effective (or necessary).

(Computing Gun Sights are usually limited to the pilot, we do not have any information about flexible guns or turret guns – if you find any information and players are happy you can extend the rule to them.)

The above rule modification missed out an important caveat on the previous download sheet (the printed rules in Scramble are correct).

Expanded Aircrew Experience (New Rules)

The rules do not really reflect experience, other than in a simple fashion after a game. The following rules introduce an overall concept of experience, with associated game effects.

"Basic Training"

Experience is always applied to an entire air crew on an aircraft (if only for the purposes of simplicity). When buying the aircraft at the start of the game, the overall cost of plane plus crew is modified for the level of experience purchased:

Recruit:	- 40%
Green:	- 20%
Average:	+ 0%
Veteran:	+ 20%
Elite (/Ace):	+ 40%

Effects:

Recruits:

cannot use sideslip or skid manoeuvres

must always use long burst
must pass VPSR to tail
must pass VPSR to maintain tail
all attacks AGAINST the aircraft gain critical hits if the initial damage rolls scored 5 or 6.

Green crews:

cannot use sideslip or skid manoeuvres
must pass VPSR to tail
all attacks AGAINST the aircraft gain critical hits if the initial damage rolls scored 5 or 6.

Average crews:

cannot use sideslip or skid manoeuvres

Veteran crews:

cannot use skid manoeuvre
all attacks BY aircraft cause gain critical hits on 5 or 6 on initial damage rolls (4, 5, or 6 against Green or Recruit)

Elite crews:

pilot can use Aimed Fire rules
all attacks BY aircraft cause gain critical hits on 5 or 6 on initial damage rolls (4, 5, or 6 against Green or Recruit)

Note regarding critical hits.

You will see that the chances of causing critical hits are increased by one if the target is substandard and if the shooter is above average. In theory we could have said that Recruits and Green have a reduced chance of causing (i.e. cannot cause) Critical hits while Vets and Elite have an improved chance. What we have done here is maintain the basic rules, so anyone can still cause critical hits, but chances go up if you are more experienced, and even further if the target is inexperienced. When resolving critical hits, additional critical hits only happen if the d6 is a 6. The improved critical hit chance only applies to the initial dice score for damage, not to subsequent rolls on the table.

Crew Training

In a campaign environment, we allow for skills to be increased in certain circumstances. If you want to run a campaign with the new experience rules, you should agree the level of starting experience, and purchase planes accordingly.

When the game is over calculate the victory points as usual, and ascertain whether any Bonus Experience Points are gained. You can now "spend" victory points either to upgrade an entire aircraft and crew to the next higher experience level, or to increase skills by buying Experience Points (as per existing rules), or a combination of both.

To upgrade an aircraft to the next higher experience level you must pay, in victory points, the cost of the aircraft at its new level. This means that if your aircraft and crew cost you a total of 100 points when bought as average, you would pay 120 victory points to turn it into a veteran.

Remarks

The combination of the experience and new gunnery rules will overcome in some way the issue of big bombers being quite difficult to shoot down. Now experienced pilots can get better chances of inflicting serious damage on their targets. Aces will be able to probably down big planes in one pass if they have a well armed aircraft and above average skills.

8 — GROUND DEFENCES AGAINST AIR ATTACK

In addition to his aircraft the Defender can also purchase Anti Aircraft installations from his starting points. The costs are shown in the table below. Any of these installations is a potential target in any mission type, but can only be damaged by a Ground Attack. The costs of AA guns take into account their damage potential. AA installations that are destroyed give the Attacker VPs equal to their purchase price.

Type	Damage	DV	Cost / VPs
20mm Light FLAK (twin)	12	18	25
20mm Light FLAK (quad)	14	16	31
25mm Light FLAK (Japanese, triple)	14	16	28
Medium FLAK up to 40 mm (twin)	16	14	34
Medium FLAK up to 40 mm (quad)	18	12	47
Heavy FLAK 3" to 4.1"	40	12	52
Heavy Flak 128 mm and over	45	12	63
Searchlight	10	15	15

8.1 – Anti Aircraft Batteries

Anti-aircraft batteries may be represented by small card stock counters about 2 in diameter which mark their position on the table. You could also use small models as well. Batteries are made up of a varying number of weapons, depending on calibre. A battery represents between four to eight actual weapons together with a command post, and can shoot all round.

Heavy Batteries are guns of 3" and over, such as the 88 mm or 4.5", and have a slower rate of fire shooting heavy shells in an area barrage. 4 such weapons represent one battery.

Medium Batteries are slower firing direct fire guns, such as the 2pdr "pom-pom", 40mm Bofors or 37 mm FLAK M42, which could theoretically destroy a small aircraft with a single hit. 6 such weapons represent one battery.

Light batteries are direct fire light weapons such as 20 mm Oerlikon or 20 mm FLAK 30, which were often multi-barrelled, usually with a high rate of fire. Normally 8 such weapons represent one battery. In the case of Japanese triple 25 mm AA batteries on ships, 12 such weapons represent a battery but these attack at +1 for triple mounts cancelled by a penalty of -1 because of the calibre, doing 4 dice of damage.

Determining the number of batteries

This is normally of interest if creating an historical target, especially a ship. In this case you calculate the number of barrels in the size being determined, divide this number by 4, 6 or 8 (12 for Japanese 25mm) rounding to the nearest whole number, the result is the number of batteries. In the case of light and medium Flak these are twin (triple) mounts. In the case of twin mounts you may choose to swap two twins for a quad mount. This will be cheaper

Maximum horizontal range / Vertical range for FLAK	
20mm (3D6), 25mm (4D6)	16 / 1 to 5 ALT
37mm, 40mm, 2pdr "pom-pom" (7D6)	32 / 1 to 10 ALT
75mm, 76.2mm, 3" (1D6)	80 / 10 to 25 ALT
85mm, 88mm, 90mm, 105mm, 3.7", 4", 4.1"(1D6)	100 / 10 to 25 ALT
128 mm, 4.5" and larger (2D6)	120 / 10 to 48 ALT

but will reduce the number of targets you can engage.

Effect of range

Altitude increases the effective range to the target. Add 2 to the actual range to the target point for each Altitude.

When shooting at a target at 20,000 ft, the maximum horizontal range of an 88 mm Flak battery is reduced by 40 to 60. When setting up Flak positions, bear in mind the BRL used by bombers.

A light bomber at Altitude 8 and 17 units away from a 37 mm Flak gun is out of range being the equivalent of 33 units away.

8.2 – Heavy batteries

Heavy AA batteries have a horizontal range which depends on the height of the target. They cannot engage targets in certain positions because of fusing and safety considerations, so they have a minimum altitude restriction of Altitude 10 OVER LAND and a minimum range of 20 (including ALT modification). The maximum effective Altitude that the guns can shoot to is 25.

At the end of the shooting phase, place a heavy flak burst marker for each battery anywhere on the table within its range and altitude capability, marked with its ALT for the centre of the burst. In the next shooting phase, the damage caused by heavy Flak is resolved first. Roll 1 or 2 D6 for damage to every aircraft, both enemy and friendly, within 3 horizontally and 2 Altitude of the flak burst. Scores of 1 to 5 do small amounts of shrapnel damage, however each score of 6 means that a direct hit has occurred. Roll on the Critical Hit table adding 3 to the D6 score. The score, after modification, on the D6 denotes additional damage scored (i.e. from 4 to 9 damage) and a roll of 6 means an additional Critical Hit is scored, though this extra hit is rolled as normal (without adding 3 to the D6).

8.3 – Light and Medium batteries

Each battery fires and causes damage in the normal sequence, exactly like an aircraft, using a Gunnery Skill determined for the nationality involved. To save time in setting up and to add uncertainty, dice for the skill of each battery as it is needed. Note that as in the normal firing rules the "to-hit" score is for a twin-barrelled mount. Triple and Quadruple mounts only roll 1 die to hit but get a "to hit" bonus as shown below.

Light and medium AA batteries have modified target priorities. If they shoot, they must shoot at the closest target in range (regardless of whether it is a friend or an enemy!). A hint for novice players: DO NOT GET IN A DOGFIGHT NEAR YOUR OWN FLAK. It was in fact worse in real life, because Flak always fired if there was a target in range until told to cease fire!

Tactical modifiers for Light and Medium FLAK	
Triple Barrel	+1
Quadruple Barrel	+2
25 mm calibre	-1
37 mm, 40mm calibre, 2pdr "pom-pom"	-2
Target aspect Head-on	-2
Target aspect into tail arc	+2