

BREW UP GRC

Game Reference Charts



Team Fire Variant

Each Firing Team or Vehicle MG rolls 1D6, and Hits on the number below or higher:

Range up to:	3"	6"	12"	24"	36"	48"
SMG	4+	6+	-	-	-	-
Rifle	4	4	4	5	-	-
Assault Rifle	3	3	4	5	-	-
LMG, Magazine	4	3	4	4	5	6
" Belt	4	3	3	4	5	-
MMG/HMG	4	4	4	4	5	6
Vehicle MG*	4	4	4	5	-	-
Pintle MG	3	4	4	4	6	-
Co-axial MG	5	4	4	4	4	5
Light Mortar	-	5	4	4	-	-

Modifiers: Pinned -1, Second Rate -1, Veteran or Crack +1, Firing from a Moving Vehicle or Moving On Foot** -1.

*Except Pintle or Coaxial MG. **Fired from over 6" all "hits" Pin instead.

Target Team hit rolls 1D6, for each hit and Saves on the number or higher:

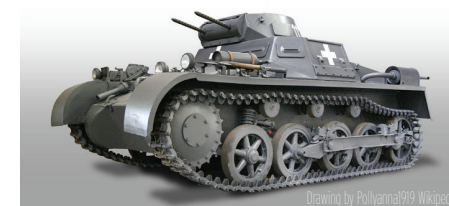
Target Cover	To Save
Open: no cover	6+
Light: Woods edge, Buildings, Fence, Soft Skin Vehicle	4+
Heavy: Dug-In, Stone/Concrete Buildings, Wall, AFV Open-Topped or Unbuttoned	3+

Modifier: Crack +1

Result

Missed	No Effect
Hit but saved	Pinned
Hit & fails save	Team Knocked Out

Quality	Regroup
Second Rate	14+
Regular	12+
Veteran	10+
Crack	8+



Drawing by Pollyanna199 Wikipedia

BREW UP














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GRC

GAME REFERENCE CHARTS

Turn Sequence

Phase	Actions
1	Each commander privately informs the game director of artillery fires .
2	Each commander privately informs the game director which of his tanks and anti-tank guns will continue to fire at the same target as on the prior turn.
3	Opposing commanders throw dice, and high roller chooses which is to move first .
4	First side to move does so. As each unit moves, the player in control indicates clearly whether it is moving hastily, normally, cautiously, or evasively. Plus embarking or disembarking, preparing entrenchments or emplacements, or removing obstructions.
5	The unmoved side fires . Those to move this turn must state that, so the penalty is applied, or it cannot move. Targets that moved in & out of sight may be fired upon but credited with obscuration or protection. Losses apply immediately , and unit checks morale .
6	The forces which have just had their opportunity to fire may now move . The conditions described in phase (4) apply now as well.
7	The first moving forces may now fire . The conditions described in phase (5) apply now as well.
8	Melees resolved now. Defenders may fire their weapons upon figures which have rushed forward across their field of fire to begin the melee. Those suffering losses in a melee conduct their morale checks .
9	Artillery shells scheduled to arrive this turn now land. Casualties or damage caused are inflicted immediately. Units which suffered losses must make a morale check .
10	Scanning for detection of concealed enemy units is conducted now. Hidden units which are detected by scanning designated locations are placed immediately on the table.

Movement		Maximum Normal Movement - Inches per Turn							
		Road	Open		Easy Slope	Hill or Gully	Constrictions		Reverse Gear
Hard	Soft		Sparse	Dense					
<i>Round fractions down</i>									
	On Foot	6"	6"	3"	6"	3"	6"	4"	N/A
	Crawling	2	2	2	2	2	2	2	N/A
	Horseback	12	9	6	9	3	9	6	N/A
	Rear Axle Drive	24	18	3	12	3	6	3	6
	All Axle Drive	20	15	6	12	6	9	6	6
	Armored Cars	20	15	6	12	6	6	3	6
 TANKS	Stuart & Chaffee	20	15	3	12	6	9	6	6
	Grant & Sherman	12	9	3	9	3	6	3	6
	Halftrack	20	15	6	12	6	9	6	6
 TANKS	Cavalry Tanks	16	12	3	9	4	6	3	6
	Infantry Tanks	9	6	3	3	2	6	3	3
	Comet & Cromwell	16	12	6	9	3	6	3	3
	Bren carrier	16	12	6	9	6	9	6	6
 TANKS	Panzer I to IV	12	9	3	9	3	6	3	6
	Panther	16	12	6	9	3	6	3	6
	Tiger I to II	9	6	0	3	0	3	2	3
	Halftrack	16	12	6	9	6	9	6	6
 TANKS	BT-7	20	15	9	12	9	9	6	6
	T-34	16	12	6	9	4	6	3	6
	KV & IS-I	9	6	2	4	2	3	2	3
	IS-II	12	9	3	6	3	6	3	3
	Italian	12	9	3	9	3	6	3	6
	French	9	6	3	3	2	6	3	3
	Japanese	12	9	3	9	3	6	3	6

Move Type	Distance	Figures	Vehicles Towing Gun or Trailer Off Road
Normal	As above	May not be combined with another type	-33%
Hasty	" +33%	Must be followed by Normal or Cautious	+33% & a roll of 15+ wrecks the towed item & immobilizes
Cautious	" -33%	May not be combined with another type	Not applicable
Evasive	" -33%	May not be combined with another type	-33% & a roll of 15+ wrecks the towed item & immobilizes

Tank & Anti-Tank Fire Modifiers

Target Size	
House	+4
Cottage	+2
Large Tank	+1
Medium Tank	0
Small Tank or Halftrack	-1
Bren Carrier	-3
Medium Turret	-4
90mm AT Gun	-1
50-75mm AT	-3
20-37mm AT	-4
Heavy MG	-5
Light MG	-6

HE Fired	
20-37mm	+1
50-75mm	+2
90-105mm	+3
120-150mm	+5

Fired From	
Moving Vehicle	-5

Target Obscured	
None to 32%	0
33-66%	-2
67-99%	-5
100%	-8

Target Range	
0-2 feet	0
2-4 "	-1
4-6 "	-2
6-8 "	-3
8-10 "	-4
10-12 "	-5
12 & up	-6

Target Move	
None	0
Cautious	-1
Normal	-1
Hasty	-1
Evasive	-4

Target View	
Frontal	0
Flank	+1
Rear	0

Uninterrupt. Fire at Same†	
1st turn	0
2nd turn	+3
3rd turn	+5
Following turns	+6

†Uninterrupted fire at the same target.

Hits on Modified* **7+**

*Total score on **2D10** with penalty or bonus modifiers shown in the tables above.

Dice Roll	External Damage to AFV
0	Coaxial MG hit and destroyed
1	Hull MG hit and destroyed
2	Engine grate hit, its armor is 1 class less than stern
3-8	No effect
9	If 45mm or larger HE fired, a Suspension hit and track broken, vehicle immobilized
10-15	No effect
16	Turret ring hit and jammed, see note for unjamming
17	Main gun tube hit and put out of action
18	Commander cupola or hatch hit, 1 casualty & crew check morale

Modified Roll*	Internal Damage to AFV
0-5	0 casualties, no damage , crew must pass morale check†
6-8	0 casualties, crew dazed this and following turn & radio wrecked , crew must pass morale check†
9-10	1 casualty, vehicle immobilized , crew must evacuate**
11-12	1 casualty, main weapon wrecked , crew must evacuate**
13-14	2 casualties, vehicle knocked-out and wrecked , crew must evacuate, salvageable after battle
15+	4 casualties, vehicle brews-up and explodes , not salvageable after battle

***Bonus Modifier:** add each extra level of penetration above the target armor level.

For example, Penetration is 4 but the Armor is 2. So with 2 levels above, **add 2** to dice total rolled.

**May check morale on later turns to attempt reentry.

†To remain in vehicle.

Vehicle Characteristics

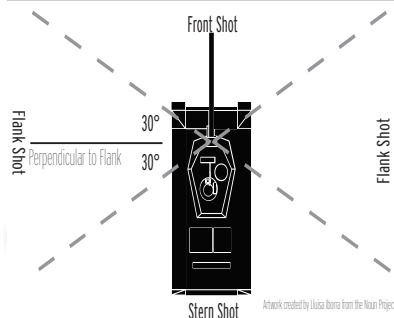
Vehicle		Armor			Weapons		Turret Rotation
		Front	Flank	Stern	Primary	Secondary	
	Halftrack M3/M5	1	1	1	LMG or 50 cal.	-	-
	M-8/M-20*	2	2	1	37mm HV/-	AAHMG & Coax MG /-	360°/-
	Stuart M-3/M-5	4	3	2	37mm HV	Bow & Coax MG	180
	Grant/Lee	5	3	2	75mm MV	37mm HV & Coax MG	180
	Sherman M-4	5	3	2	75mm MV	Bow & Coax MG	120
	" M-4E8	6	3	2	75mm HV	Bow & Coax MG	90
	Priest M-7	3	3	2	105mm LV	AA HMG*	-
	Wolverine M-10	3	2	2	75mm HV	AA HMG*	90
	Jackson M-36	3	2	2	90mm HV	AA HMG*	60
	Chaffee M-24	4	2	2	75mm MV	Bow & Coax MG	120
	Pershing M-26	7	5	3	90mm HV	Bow & Coax MG	60
	Hellcat M-18	2	2	2	75mm HV	AA HMG*	90
		Bren Carrier	1	1	1	-	Bow MG
Humber Arm. Car*		2	1	1	37mm HV	Coax MG	120
Dingo Arm'd Car*		2	2	1	Bren LMG	-	-
Cruiser		3	3	3	37mm HV	Bow & Coax MG	180
Crusader		5	3	3	50mm HV	Coax MG	120
Matilda		6	6	4	37mm HV	Coax MG	120
Valentine		5	4	4	50mm HV	Coax MG	120
Cromwell		6	4	4	75mm MV	Bow & Coax MG	120
Comet		7	4	4	75mm EV	Bow & Coax MG	60
Churchill III		7	6	6	50mm HV	Bow & Coax MG	120
Churchill VII		8	6	5	75mm HV	Bow & Coax MG	90
Sexton		3	3	2	90mm LV	-	-
Firefly		5	3	2	75mm EV	Coax MG	60
	FT-17	2	1	1	37mm MV	-	180
	Renault 35	4	3	3	37mm MV	Coax MG	180
	Hotchkiss 35	4	3	3	37mm MV	Coax MG	180
	Somua 35	5	4	4	50mm MV	Coax MG	180
	Char B1	6	4	4	75mm LV	50mm MV	180

Vehicle		Armor			Weapons		Turret Rotation
		Front	Flank	Stern	Primary	Secondary	
	Halftrack 250/251	2	1	1	LMG	-	-
	Arm. Car 222/231*	2	1	1	20mm HV	Coax MG	90°
	Arm. Car 234/1*	3	2	2	20mm HV	Coax MG	90
	Pzkwf I	2	1	1	MG	Coax MG	180
	Pzkwf IId	3	2	1	20mm HV	Coax MG	180
	Pzkwf 38t	3	2	1	37mm HV	Bow & Coax MG	180
	Marder	2	2	1	75mm HV	-	-
	Wespe	2	2	1	105mm LV	-	-
	Hetzert†	7	2	3	75mm HV	MG with shield 90°	-
	Pzkwf IIIId	3	2	2	37mm HV	Bow & Coax MG	180
	Pzkwf IIIg	4	2	2	50mm MV	Bow & Coax MG	180
	Pzkwf IIIj	5	2	2	50mm HV	Bow & Coax MG	120
	StuG IIIb	4	2	2	75mm LV	-	-
	StuG IIIg††	5	2	2	75mm HV	Coax MG	-
	Pzkwf IVd	3	2	2	75mm LV	Bow & Coax MG	120
	Pzkwf IVf2	4	2	2	75mm HV	Bow & Coax MG	90
	Pzkwf IVh	6	2	3	75mm HV	Bow & Coax MG	90
	Panther	7	4	4	75mm EV	Bow & Coax MG	60
	Jagd-Panther	8	4	4	90mm EV	Bow MG	-
	Tiger I	7	6	6	90mm HV	Bow & Coax MG	60
Tiger II	10	7	6	90mm EV	Bow & Coax MG	45	
Jagd-Tiger	11	7	6	120mm HV	Bow MG	-	
	M13/40	3	2	2	50mm MV	Bow & Coax MG	180
	Semovente 75/18	4	3	3	75mm LV	-	-
	Semovente 90/53	2	2	2	90mm MV	-	-
	Semovente 149	2	2	2	150mm LV	-	-

*All starred vehicles are wheeled; Armored cars Sdkfz 234/2 50mm HV, following do not have a turret: 234/3, 75mm LV, 234/4 75mm HV. Sdkfz 233 (8 rad) & Sdkfz 234 reverse gear is the same as forward gears because they have rear drivers and transmission. †The German **Hetzer**, because of its unusually cramped casemate, is allowed only the turret rate of 1 shot per turn, and only 5° traverse of the gun. MG has 360°; same MG is on late StuG III assault guns. ††**StuG IV** identical to StuG IIIg. **StuH 42** same armor as IIIg but with 105mm LV.

Vehicle		Armor			Weapons		Turret Rotation
		Front	Flank	Stern	Primary	Secondary	
🇨🇳	BA-64*	2	2	1	AAMG	-	90°
	BT-7	3	2	2	50mm MV	Coax MG	180
	T-26	4	3	3	50mm MV	Coax MG	180
	T-34/76	6	5	5	75mm MV	Bow & Coax MG	90
	T-34/85	6	5	5	90mm MV	Bow & Coax MG	45
	KV-1c	7	7	5	75mm MV	Bow & Coax MG*	60
	KV-85	6	5	5	90mm MV	Bow & Coax MG*	45
	JS-2	8	6	5	120mm MV	Coax MG* **	30
	SU-76M	3	3	3	75mm MV	-	-
	SU-85	6	5	5	90mm MV	-	-
	SU-100	7	5	5	105mm MV	-	-
	SU-122	6	5	5	120mm LV	**	-
	SU-152	7	6	4	150mm LV	**	-
	ISU-122	8	5	4	120mm MV	-	-
	ISU-152	8	5	4	150mm LV	-	-
KV-2	6	5	5	150mm LV	Bow MG	15	

🇨🇳	Ha-Go Type 95	2	1	1	37mm MV	Bow & Rear MG	180
	Chi-Na Type 97	3	2	1	50mm HV	Bow & Rear MG	120
	Chi-Nu Type 3	4	3	2	75mm MV	Bow MG	120
	Ho-Ni Type 1	3	2	1	75mm MV	-	-
	Ho-Ro Type 4	3	2	1	150mm LV	-	-
	I-Go Type 89	3	2	2	50mm LV	Bow & Coax MG	60



US AA HMG is an Anti-Aircraft heavy machinegun. This is the US M2HB .50 cal weapon. It can be used against ground targets but the gunner is fully exposed since its location is good vs. air but the user has to be exposed to use it. At best 50% cover might be available depending on the mount and vehicle.

*MG on turret rear. **AA HMG on roof

Penetration Table

Weapon Type	Velocity	Rate of Fire*		Gun Classification for Solid Projectiles: APC, APCBC						Other HEAT HESH
		Tank Turret	All Other†	Short Range		Middle Range		Long Range		
				Maximum Penetration Class Out to Range Shown						
20mm	HV	4	6	4	To 12"	2	To 24"	1	To 48"	-
37mm ¹	MV	2	3	3	12"	2	24"	2	48"	-
	HV	2	3	5	15"	3	30"	2	60"	-
50mm ²	LV	2	3	3	12"	2	24"	1	48"	4
	MV	2	3	4	15"	3	30"	3	60"	-
	HV	2	3	6	18"	4	36"	3	72"	-
75mm	LV	2	3	4	12"	4	24"	4	36"	5
	MV	1	2	6	18"	5	36"	4	72"	-
	HV	1	2	8	21"	6	42"	5	84"	-
	EV	1	1	10	24"	7	48"	5	96"	-
90mm ³	LV	1	2	5	15"	5	30"	5	45"	6
	MV	1	1	7	21"	6	42"	5	84"	-
	HV	1	1	9	24"	7	48"	6	96"	-
	EV	1	1	11	27"	8	54"	6	108"	-
105mm ⁴	LV	2	3	-	-	-	-	-	54"	4
	MV	1	1	8	24"	7	48"	6	96"	-
	HV	1	1	10	27"	8	54"	7	108"	-
120mm ⁵	MV	1/2	1	-	-	-	-	-	108"	8
	HV	1/2	1	11	30"	9	60"	8	120"	-
150mm ⁶	LV	1/2	1	-	-	-	-	-	81"	10

Hit penetrates armor if same or higher gun classification

For example: a 2 gun penetrates 1 or 2 armor. **Gun shields** are armor class 1; Soft Vehicles have **no** armor.

Turret hit on **hull down** AFV is **classed 1 category higher**; exception Pzkwf IVH-J turret is classed 1 category **lower**.

Flank may be hit if no more than 30° from perpendicular.

*Shots per turn, all must be directed at a **single target**, number of shots may be reduced if optional rule is used: first turn of fire at new target or crossing uneven. **1/2** means weapon may only fire **every other turn**.

†Open turreted tank destroyer, casemate assault gun, tank destroyer, or trailed gun.

Also includes: ¹40mm. ²45mm, 47mm & 57mm. ³88mm, 3.7" & 25 Pounder. ⁴100mm. ⁵122mm & 128mm. ⁶155mm.

Infantry Fire Modifiers

Target Size	
Tank	+3
Halftrack or Truck	+2
3" dense mass of men	+1
3" sparse mass of men	0
Individual figure	-3

Target Obscured	
None to 32%	0
33-66%	-2
67-99%	-5
100%	-8

Target Range	
0-4"	+2
to 8"	0
to 16"	-2
to 24"	-4
to 36"	-6
to 48"	-8

Target Protection	
None to 32%	0
33-66%	-1
67-99%	-5

†For Automatic Weapon, roll & add its **bonus to above table modifiers** & see below instead for multiple hits.

Target Move	
None	0
Cautious	-1
Normal	-1
Hasty	-1
Evasive	-4

Other	
Non-shoulder weapon	-2
Hasty shot (moved & fired)	-5
Weapon braced (not MG)	+3

Single Shot † Hits a
on Modified* **7+**
*Total score on 2D10
with penalties or bonuses.

Modified Roll*	Automatic Weapons: % Casualties, At Least #	
0-6	None	None
7-12	10%	1 Figure
13-16	30%	2 Figures
17 to 19	50%	3 Figures
20 to 21	70%	4 Figures
22+	90%	5 Figures

Infantry Fire Damage to Vehicles & Weapons	
Engine: if targeted (-3) & hit, soft vehicle disabled for remainder of battle.	Gun: if crew targeted & hit, throw dice again. Weapon disabled for remainder of battle if score 13-15 unmodified, ammunition brews up if score 16+ .
Gas Tank: if targeted (-3) & hit, soft vehicle out of fuel in 5 turns; vehicle brews up if dice thrown again & unmodified score 10+ for rifle or 30-cal. MG tracer, 7+ for 50-cal. tracer, or 4+ for bazooka etc.	Other: soft vehicle or weapon begins to burn automatically if hit by flamethrower, or an AFV is set afire if dice thrown again and an unmodified score 8+ .

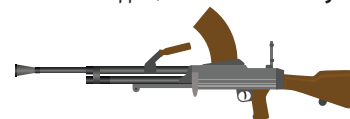
Infantry Weapon Characteristics

Type	Maximum Range	Automatic Weapon Bonus*	Armor Penetration Class
Pistol	4"	-	-
Carbine	16"	-	-
Rifle	24"	-	-
BAR Auto./Assault Rifle	24"/24"	3/10 to 8", 4 to 16"	-
Submachinegun	8"	10	-
MG	Light, air cooled	28"	box 6, belt 8
	Heavy, air cooled	36"	box 6, belt 8
	Heavy, water cooled	36"	box 8, belt 10
	50-cal.	48"	4
Flamethrower	12"	12	B to 12", A to 48"
Anti-Tank Rifle	28"	-	B to 12", A to 28"
Bazooka, Panzerschreck	12"	-	6/8
Panzerfaust 30/Later	3"/6"	-	7/9
Piat	10"	-	6
Hand Grenade	4"	-	-
Rifle Grenade	16"	-	6

*Add **Automatic Weapon bonus** in this column to all other **Infantry Fire modifiers** and **instead** of hitting one figure on a **7+**, see table called Automatic Weapon %/# for possible multiple figures hit in Target Area of 3x3" or line up to 4.25". First edition referred to this as Multiple Projectile Bonus (MPB).

Masses: ≥6 figures in 3x3" = Dense mass; 4-5 figures in 3x3" = Sparse Mass; ≥3 = individual figure(s).

Interdicted Area by Heavy MG: 4x4" from a minimum of 18" to maximum range after two consecutive turns. Without passing a hazardous morale check, no figures, soft vehicles or open-topped will enter, cross or remain in area. If any are in area, Target Protection is 67% less effective for open turret armor, 33% less for Open-Topped, or none otherwise. **Ignore obscuration** listed and **deduct** the roll of a **third die**.



Examples of MG types: LMG Box Bren; LMG Belt MG34/42, USA M1919; HMG air cooled MG34/42 on tripod; HMG water-cooled MG08, Vickers, Maxim.

Grenade Modifiers

Target Type		
Large	Group	+2
Small	in Open	+2
Farside of wall		-4
Large	Weapon Pit	-2
Med.		-3
Small		-4
Vehicle Suspension ¹		-3
Open Top ²	Vehicle Turret	-9
Open Tank Hatch ²		-12
Doorway		-3
Window		-6
Firing Embrasure		-12

Target Range	
0-1"	+8
to 2"	+2
to 4"	0
to 8"	-1
to 16"	-2

Target Move	
None	0
Cautious	-2
Normal	-4
Hasty	-4
Evasive	-8

Burst	
Ground	0
Grenade thrown hastily (moved)	-5
Grenade dropped or rolled from above	+6

Hits on Modified* 7+

*Total score on 2D10 with penalties or bonuses above.

If hit, see **Artillery Hit Casualties** (to Figures) or **Damage to Vehicles & Weapons**. The Artillery damage table's protective cover modifiers are ignored because grenade is assumed to have exploded inside the protective position, vehicle or the latter's suspension.

¹ A hit in the **AFV suspension** is treated as enclosed armor.

² An explosion **within AFV** is treated as open-topped armor.

Grenade Hit Damage

Casualties	
Modified* Roll	% Casualties
0-5	0%
6-8	10%
9-10	30%
11-13	50%
14-17	70%
18+	90%

After % applied, round fraction **up**. Apply casualties to most vulnerable modifier total first. Any excess, **saving throw 1D10: 6+** each.

Vehicles & Weapons					
Modified Roll*	Closed AFV	Open AFV	Soft Skin	Towed Gun	Other
0-5	NONE	NONE	NONE	NONE	NONE
6-8	NONE	NONE	Immobilized		NONE
9-10	NONE	Immobilized			Disabled
11-13	Immobilized				Disabled
14-17	Immob.	Disabled	Destroyed	Disabled	Destroyed
18+	Disabled		Destroyed		Destroyed

AFV hit in: Suspension Within AFV - with Grenade

Melee Modifiers

Attacking Figure		
Quality	Crack	+3
	Veteran	+1
	Second Rate	-3
Regular +0		
Has Fixed Bayonet		+2
Has semi-automatic weapon		+3
Has SMG or Assault Rifle		+4
On Higher Ground		+2
On Flank or Rear of Defender		+3

Defending Figure		
Quality	Crack	+3
	Veteran	+1
	Second Rate	-3
Regular +0		
Has Fixed Bayonet		-2
Attacked by more than one figure		+3
Springing from crew-served weapon		+4
Jumping from vehicle		+2
67-99% protected by obstacle		-4
Fleeing as Fugitives		+6

In order to succeed in eliminating the defending figure, the Modified total score on the dice must be **10+**

*Grenade Damage Modifiers

Burst	
Ground	0
Air	
Versus Figures	+4
All Other Targets	-4

Hit Type	
Direct	+3
Near	-3
Marginal	-9

*Kneeling Examples: Gun crews and those in entrenchments.

Figure

Erect	+3
Kneel*	0
Prone	-3

Protection†

Minimal	0
Soft	-2
Hard	-5

† Ignore Protection for Grenades.

HE Shell Diameter

20-45mm	+1
50-77mm	+2
80-115mm	+3
116-130mm	+4
131-203mm	+5
204+mm or 250 pound bomb	+6

Table also used for Grenades: only apply modifiers per symbol

When to check Morale

After suffering a casualty
After an armored vehicle that has been penetrated
After the crew of a vehicle discovers that the vehicle has been immobilized
Before entering an interdicted zone*
Before reentering a penetrated or immobilized vehicle*
Before leaving relatively secure positions and crossing open areas known to be swept by hostile automatic weapon fire*
Before any other obviously heroic or suicidal action*

*Even though no casualties have been suffered. In this case, any roll worse than Modified roll of 4-6 "refuses to leave protective cover" is considered to be equivalent to that morale state, **not** worse.

Modified Roll*	Morale Result
0 or less	Unit disintegrates into rout , flees as fugitives, abandons weapons, surrenders if no secure retreat path.
1-3	Unit retires in good order to less threatened position, bails out of (evacuates) penetrated or immobilized armor, saves weapons except crew-served weapons abandoned in a melee. ⁶
4-6	Unit refuses to leave protective cover , drops to ground if in the open and takes maximum advantage of available cover, remains in penetrated armor, retreats from a melee unless defending established positions. ⁷
7+	The unit may act freely , and may re-enter evacuated armor.

Protective Cover Examples & Modifiers

Cover	Example	Artillery Blast	Infantry Fire
Minimal	0-32%	Brush, Buildings	0
Soft	33-66%	Woods, Soft Veh.	-1
Hard	67-99%	Entrenchments*	-3
Total	100%	<i>Not in LOS: cannot be hit except by Blind Fire</i>	-8

Infantry Fire Note: apart from targets at basement windows (Soft), ordinary buildings provide no protection from bullets (and certainly not HE fragments), but do continue to offer 33-66% Obscuration from occupants ducking back between shots.

Artillery Blast Note: players may introduce scenario-specific adjustments between the main categories: lighter or heavier woods could be -1 or -3, more substantial buildings could be -1 to -3 (concrete -2 to -3; bunker/pillbox -3 to -10).

*Other examples: **Hard Cover-** Open-Topped & Unbuttoned AFVs; until buttoned, crew members are presumed to be peering out and subject to casualties. **Total Cover-** Buttoned-Up Closed-top AFV.

*Morale Modifiers

Quality	Crack	+9
	Veteran	+3
	Regular +0	Second Rate
Strength	76-100%	0
	51-75%	-2
	26-50%	-5
	1-25%	-9
NCO leader lost ¹		-6
Unit Supported ² By		
Friendly	AFVs within 18"	+5
	Artillery suppressing nearest enemy position	+4
	Unit in front firing MG's or advancing	+2

NOTES:

¹ The "loss" of the NCO means either his elimination, or his accidental separation from his unit by more than 12 inches, or his inadvertent attachment to another unit.

² The entire set of "support" modifiers is normally **ignored for an AFV crew** checking to see whether they will remain in or bail out of a penetrated vehicle.

³ The "protective cover" modifier alone is normally ignored for a unit checking to see whether or not to obey an order to move **from protective positions in to the open**, or to perform a heroic or hazardous action.

⁴ The "hostile automatic weapon" modifier is normally **deleted for an AFV crew** unless the vehicle is **open-topped** and the incoming fire is plunging interdictive type fire.

⁵ Recent, either the present turn, or the immediately preceding turn.

Fire by each of unit's own automatic weapons	+3 EACH	
Present positions giving 67% to 99% protective cover ³	+6	
Senior command figure within 18"	+3	
Unit Challenged by		
Hostile	AFV within 18"	-5
	Artillery fire on unit's position	-3
	MG fire on position ⁴	-2
Penetration of armor of unit's AFV ⁵	-9	
Recent destruction of friendly unit within 18 ⁵	-3	
Before hazardous, heroic, or suicidal act	-4	

⁶ A unit whose morale indicated that it **must withdraw to less threatened positions** would not actually retreat if it would expose itself to more deadly fire by abandoning existing protective positions than by cowering in the bottom of those present positions. The unit will **not fire its weapons** while in this morale condition.

⁷ A unit whose morale indicates that it **must drop to the ground and take maximum advantage of available cover, may crawl towards better cover** than found in its present positions, even if that movement involves coming closer to hostile troops. Figures in the open **without any apparent cover on the table may be credited with 33-66% cover** when they go to ground under this morale condition. Figures **with good natural cover may fire their weapons while in this condition**. A unit in a melee will fall back in good order if its opponents are not also required to retire; but **may hold in place** if defending established positions and the enemy which attempted to attack those positions **is required to fall back**.

Artillery Fire To Hit

Modified Roll*	Shell Result
14 or less	Shell missed intended ground point (ignore)
15	Marginal Hit: shift in inches = Blast Diameter**
16	Near Hit: shift in inches = Blast Radius**
17+	Direct Hit: on target

*Artillery To Hit Modifiers	Turn of Fire	
When firing at a ground point under direct observation by the officer requesting the fire support, or by the forward artillery observer . Represents fire correction for repeated fire at the same target.	First	0
	Second	+3
	Third	+5
	Thereafter	+6
Any Barrage or Blind fire (if ground is not under direct observation). Represents lack of deliberate fire correction.	Minus the roll of 1D10	

Roll **direction die, round fractions **up** & shift Blast Area the # of **inches shown**, per blast diameter on Weapon Characteristics.

Artillery Hit Damage:

Casualties	
Modified* Roll	% Casualties
0-5	0%
6-8	10%
9-10	30%
11-13	50%
14-17	70%
18+	90%

After % applied, round fraction **up**. Apply casualties to most vulnerable modifier total first. Any excess, **saving throw 1D10: 6+** each.

Vehicles & Weapons					
Modified Roll*	Closed AFV	Open AFV	Soft Skin	Towed Gun	Other
0-5	NONE	NONE	NONE	NONE	NONE
6-8	NONE	NONE	Immobilized		NONE
9-10	NONE	Immobilized			Disabled
11-13	Immobilized		Disabled		
14-17	Immob.	Disabled	Destroyed	Disabled	Destroyed
18+	Disabled	Destroyed			

↑ AFV hit in: Suspension
↑ Within AFV
– with Grenade

*Artillery Damage Modifiers

Burst	
Ground 🗺️	0
Air	+4
Versus Figures	+4
All Other Targets	-4

Hit Type	
Direct 🗺️	+3
Near	-3
Marginal	-9

*Kneeling Examples: Gun crews and those in entrenchments.

Figure 🗺️

Erect	+3
Kneel*	0
Prone	-3

Protection†	
Minimal	0
Soft	-2
Hard	-5

† Ignore Protection for Grenades.

HE Shell Diameter

20-45mm	+1
50-77mm 🗺️	+2
80-115mm	+3
116-130mm	+4
131-203mm	+5
204+mm or 250 pound bomb	+6

Table also used for Grenades: only apply modifiers per 🗺️ symbol

Artillery Weapon Characteristics

	Type	Range		Rate of Fire ¹	Diameter of Blast Area	Time Delay
		Minimum	Maximum			
MORTARS	50mm	6"	18"	4	2"	0
	60mm 🗺️	15	48	3	2	0
	80mm	18	60	3	3	0
	105mm	24	72	2	4	1
	120mm	30	96	1	5	1
HOWITZERS	75mm LV ²	36	84	3	3	0
	90mm	45	105	2	3	1
	105mm	54	126	1	4	1
	120mm	63	147	1	4	2
	150mm	81	189	1	5	3
FIELD GUNS	75mm ³	84	147	2	3 MV/HV / 2" EV	1
	90mm	96	14	2	2	2
	105mm	108	189	1	4	2
	120mm	120	210	1	4	3
	150mm	144	252	Every 2nd Turn	5	4
	200mm	180	315	Every 3rd Turn	6	5
240mm	216	378	Every 4th Turn	8	6	

¹ Optional: reduce Rate of Fire to half for first turn firing at a new target or crew includes untrained infantry.

Detection Distances

Type of Target		Type of Terrain in which Target is Concealed					
		Grass & Pasture	Wheat Field	Scrubby Thicket	Bank & Hedgerow	Rubble & Low Wall	Wall & Building
Tank	Large	108"	96"	48"	36"	72"	30"
	Medium	96	84	36	24	60	24
	Small	84	72	30	18	48	18
Halftrack/Truck		72	60	30	18	36	18
Jeep/Bren C'r		42	36	24	12	24	12
AT Gun	90mm	48	42	30	24	36	18
	50-75mm	36	30	18	12	18	12
	20-37mm	30	24	12	6	12	6
MG	Heavy	24	18	12	6	12	6
	Light*	18	12	6	4	6	4
Prone Rifleman		12	6	4	2	4	2

Distance Modifiers:

*Or Bazooka.

Scanning unit is a buttoned-up AFV: **distance halved**

Concealed unit is firing its weapons: **tripled**

Status of Scanning Unit	
Half or less the maximum distance at which detection is possible	+6
Stationary or moving Cautiously	+4
Normal movement	0
Hasty or Evasive movement	-4
Buttoned-up AFV	-6

Status of Concealed Unit	
Firing a rocket, recoilless rifle, bazooka, or tracer rounds	+9
Firing a tank gun, anti-tank gun, or howitzer	+7
Firing automatic weapons, or starting engines	+5
Firing light weapons, running engines, creeping carefully	+3
Occupying exceptionally carefully concealed positions	-3

Detects concealed on Modified roll of 8+

Turns to Set Up Weapons	
37mm-60mm	1
75mm-80mm	2

90mm-105mm	3
120mm-150mm	4
200mm-240mm	8

APDS*, APCR† & Squeeze-Bore		Range & Penetration Category		
Size	Rate of Fire	Short	Medium	Long
37mm or 28/20mm	3	6 to 18"	5 to 36"	3 to 60"
50mm or 42/30mm	2	8 to 21	7 to 42	5 to 84
75mm or 75/55mm	1	9 to 24	8 to 48	6 to 96
90mm	1	11 to 27	9 to 54	8 to 108
105mm	1	12 to 30	10 to 60	9 to 120
120mm	1/2	13 to 36	11 to 72	10 to 144

1/2 means weapon may only fire every other turn.

*To Hit Modifier: APDS -2; †Penetration Class: APCR +1 Short, -1 Long

Anti-tank Mine Damage

Dice Roll	Light Tank	Medium Tank	Heavy Tank	Soft Vehicle
8 or less	Immobilize			
9-10	Disable			
11-12	Overturn	Disable		Destroy*
13-14	Penetrate	Overturn	Disable	
15-16		Penetrate	Overturn	
17-18		Penetrate	Penetrate	

* Roll for casualties like a grenade burst

Armor Thickness by Classification Number				
1	5mm-9mm		6	80mm-99mm
2	10mm-19mm		7	100m-124mm
3	20mm-34mm		8	125mm-174mm
4	35mm-59mm		9	175mm-224mm
5	60mm-79mm		10	225mm-349mm