



Installing track extensions on an M4, called grousers or duckbills

Duckbills



Extensions or "Variants" not included in the Second Edition†

#6 September 23, 2023

FAQ

Q. Does anyone have a table with all the various **special markings** used in the vehicle tables? Like the fact that *brackets*, [], around the vehicles *speed* means that the vehicle has *wide tracks*?

A. Yes, the **Abbreviations**, **Symbols** and **AFV Index** are referenced on the first page of section 5, Vehicle Data 5.1 to the upper left of Panzer I B:

The Abbreviations, Symbols & AFV Index pull-outs are also referenced on lower left of page 76 (screenshot

†More free Tractics play aids at wargamecampaign.wordpress.com/category/tractics/

that follows) and described in the National Vehicle Data Categories section pages 76-79.



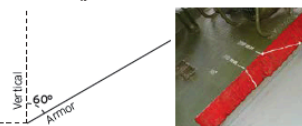
National Vehicle Data Categories

| Vehicle Data- GERMANY | | | | |
|---|---------|----------|-----------------------------------|---|
| Abbreviations 5.7 - Symbols 5.10 - Index 5.15 | Pz I B | Pz II B | Pz III B | Pz IV B |
| Turret Armor | | | | |
| Front | 15 | 13 | 13(30) | 35 |
| Mantle | 15 | - | 4+4(30) | 30(15) |
| Flank | 13 | 13 | 10 | 20 |
| Rear | 13 | - | 0 or 10 | 20 |
| Top | 8 | - | - | 10 |
| Hull Armor | | | | |
| Glacis - upper | 8(60) | 8(60) | 35(15) | 30 |
| Glacis - lower | 13(15) | 13(15) | 13 | 35 |
| Flank | 15 | 15 | 15 | 20 |
| Suspension | 13 | 13 | 15 | 20 |
| Rear | 15 | 15 | 15 | 15 |
| Top | 8 | 8 | 5 | 10 |
| Vulnerable Locations | | | | |
| Turret Hatches | 2 | No | No | T |
| Turret Coax MG | No | No | No | 1 MMG |
| Turret Vision Ports | F,L,R,B | F,L,R | F | F,L,R |
| Turret Periscopes | No | No | No | No |
| Turret Cupola | No | No | No | No |
| Hull Hatches | L,R | No | No | No |
| Hull Bow MG | No | No | No | No |
| Hull Vision Ports | F,L,R | F,L,R | F,L,R | F,L,R |
| Hull Periscopes | No | No | No | No |
| Special | | | | |
| Flame-thrower in turret | No | No | Some have 10 mm rear armor added. | Infantry flame-thrower on each fender (2) some models |
| Main Armament | | | | |
| Class | 2 MMG | 1 150L12 | 1 50L50 | 1 20L60 |
| Rate of Fire | 3 each | 1 | 2 | 4 |
| Turret Rotation | 90° | SP | SP | 135° |
| Other | | | | |
| Road Speed | 25 mph | 25 mph | 25 mph | 30 mph |
| Combat Weight | 5.7 ton | 9.4 ton | 11.8 ton | 10 ton |
| Crew | 1+1 | 1+4 | 2 or 3+1 | 2+1 |
| Introduced | 1935 | 1940 | 1940 | 1935 |

Vehicle Data categories are shown circled by the dotted line above and are described below. Abbreviations are defined in the Vehicle Data pull-out #5.7, Symbols on #5.10, and an Index of Vehicles on #5.15.

Armor: Thickness is shown in millimeters with any degree of "slope" in parenthesis and an added spaced armor plate after a plus sign.

Example of slope at a 60° angle from vertical/perpendicular is shown below in the diagrams at left and right a Finnish T-54's 100mm armor's effective increase to 200mm. Courtesy Mike, Wikipedia



Spaced armor is a sheet of armor plate like the German armored skirts on the Mark IV/H tank or a plate of armor like that added to the front of the Pz III/M tanks. In both cases the armor thickness is equal to the sum of both plates. In addition, the **space eliminates the effect of HEAT** and HE ammunition as the round is set off too soon.

For APCR/HVAP penetrating the first plate may change the angle of attack against the second plate usually resulting in non-penetration and/or shot break-up. HE still explodes but any armor penetration is expended only against the outer plate. HE blast radius affects soft elements like crew out of the hatches or passengers.

Added armor such as track, welded on plates, sandbags, wood logs, concrete add to the base armor thickness as found on page 64.

Combat Weight, in tons (shades shown below), is used with AT Mine damage modifier (page 107), Bridge Capacity Limitations (page 22), Getting Stuck (page 23), Hedgerows (page 29), and Mechanical Reliability (page 73, the three tonnage classes are highlighted). Tonnage Categories: 0-20 21-50 >50

Crew: Numbers given are number of personnel in turret and hull, i.e., "3+2" would be three (3) men in the turret and two (2) men in the hull. If only one number is given, then only one crew compartment exists. Where several numbers are given (usually multiple turrets) the last is for the number of hull crew.

Note that the screenshot is of the *PDF version* of Tractics; that's why page numbers have hyperlink "boxes" around them. This makes it easier for the reader to quickly go directly to page highlighted.

The highlighted **page number** at the bottom of *each page* takes you directly to the **Pull-Outs List** (below). From there one can hyperlink directly to each Pull-Out section. Or the two links at lower right will take one directly to the detailed **Table of Contents** and **Index**.



Scenario Ideas

A great way to get scenario ideas is to watch or listen to YouTube videos. Good for time washing the dishes or cleaning the house. There are plenty of videos featuring equipment, nationalities and campaigns that may correspond to your collection. They may spark scenario inclusions that feature a unique focus. *The following bold & italic text is a hyperlink to a video.*

Audio memoirs is the focus of a new YouTube channel **WW2 Stories**. Most are read (by a British-accented robot voice I am surmising) from German soldiers written memoirs. Subtle aspects that one learns from these could be used to add authenticity to a wargame scenario. I read Guy Sajer's *The Forgotten Soldier* when I was in high school when it seemed likely that my next trip was to Vietnam. Hearing these audio editions now reminds me of that time. Many come in multi-part series of about an hour each. Since the series are just portions of the memoirs, one can usually find the author's name in the comments of the videos so you can consider buying his memoir. Von Luck's memoir is particularly recommended. Excerpts are found in ***Memoir of German Tank Commander***.

One can end up down a rabbit hole with some of the series. For example ***Diary of a German Infantry Officer in France*** ends up following a German who is captured and ends up in the USA. The scenario material runs out early but the historical interest continues.

For example, here are several Mike Reese found on Anti-Tank weapons. These are not from WW2 Stories. Here's a sixteen-minute video from the British Tank Museum on the ***Panzerfaust***.

Mike says: I like the ***Panzerschreck*** video as I have both Puppchen and Panzerschreck units in 15mm (and panzerfausts as well in 15mm and 28mm). Also, the Flame Of War German units have two Panzerschreck on a stand when, as the video mentions, the Ger-

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mans used them in groups of 3 teams of 2 men each, with three Panzerschreck. NOT in groups of two. A squad had six teams of two men each with a total of 6 Panzerschreck. A platoon would have three squads or 18 Panzerschreck. A company three platoons or 54 Panzerschreck. These replaced anti-tank guns in one of the companies in the Panzerjager battalions. The other companies were 10 SP AT guns (Marder, StuG III, or Hetzer), and 12 Pak 40 anti-tank guns. The Regiments had a company or battery of Panzerschrecks as well in its anti-tank unit.

Mentioned in the videos on the ***US Bazooka*** and the British ***PIAT*** are references to shipping them to Russia and the Russians not using them. I always suspected it was the cold weather. Neither weapon was designed for 25-40 degrees below zero F. The first version of the bazooka used batteries which wouldn't work at all in a Russian winter. Testing or use would have shown them to be close to useless, and although easy for US and British troops to learn to use them I am not so sure about the Soviet peasant. That could also have been a factor. The Germans made winterized rockets after all. The US firing mechanism with the solenoid was copied from the German panzerschreck.

Mike responded to my mention of a series on WW2 Stories about an FO entitled ***Diary of an Infantry Solider in Russia***. I mentioned that I thought German infantry guns mainly direct fire. Mike: Each gun section of two guns had a FO team. There were four to six 75mm and two 150mm infantry guns separate in an Infantry Gun Company in an infantry regiment. The Panzergrenadier Regiments had the same, towed by trucks not horses, or if they had a SP battery, six Grille SIG33 or BISON guns. Intended to provide direct fire support they could be used, and were, in the indirect fire role. I suspect indirect fire was standard on the defense, while on the attack in 1939-42 they were used more in the direct fire role against infantry, machine-guns, and artillery pieces. The Soviets had a 76mm version and used their ZIS-3 76mm gun in the same way.



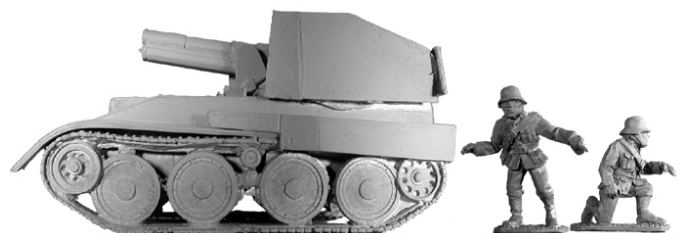


Mike says: I have two 1/48 Grille, one early with the gun forward and the engine in the rear; and one late with the gun to the rear and the engine forward. Same Pz 38(t) chassis as the Marder III H and M.

Had a Grille in a convention Arnhem game. Gave it to use by the German player who needed it most. In FOW it has a 16" direct fire range and, I think a 48" or 54" indirect fire range. Instead of staying between 12-16" away from the British in their buildings he moved it up to 8" away where it was promptly knocked out by a PIAT.

The Bison in the photo at the right is a older model from an advertisement.

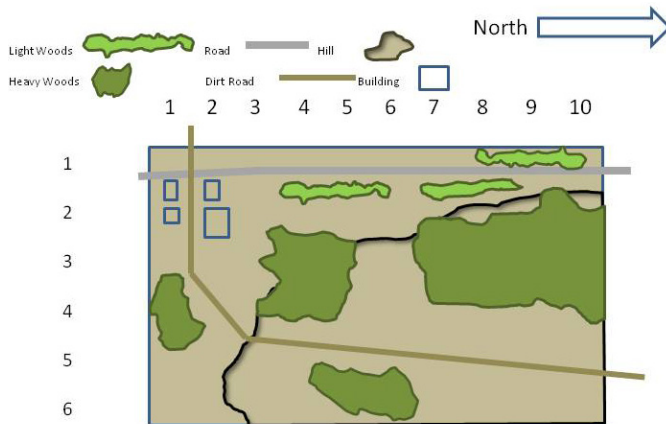
Above: a 1/48mm sIG18 15cm infantry gun.



1971 Gen Con Scenario

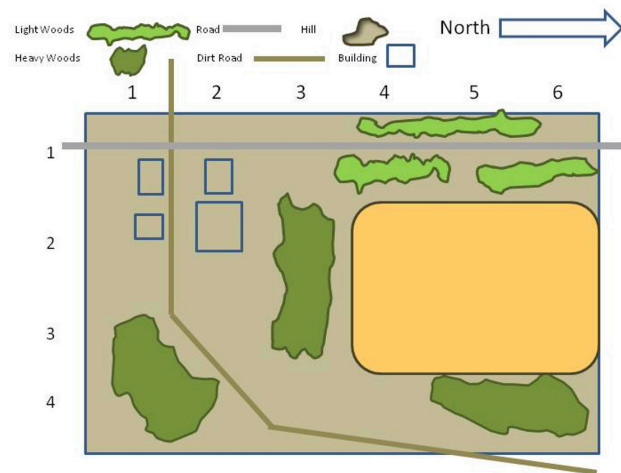
Mike has provided a September 1942 scenario south of Stalingrad. One can download it from this [LINK@@@](#)

The last page of the PDF is the correct map for a 10 foot long, 6 foot wide table (i.e. at Gen Con) and is shown below.



GaryCon – TRACTICS – 1942 Russia Map 10' x 6'
By Mike Reese

The map with the large field is for a smaller table 6 x 4' and is shown below.



GaryCon – TRACTICS – 1942 Russia Map 6'x4'
By Mike Reese for the 28mm Russia Game

There should probably be a ridge going left to right that also goes through the center of the map that is Height of 1 (Heights. 1 = 2 meters, 2 = 4 meters, 3 = 6 meters,

etc. Basically a 1 height can be seen over by the crew of a tank but not an infantryman on the ground. A 2 height cannot be seen over. The rise from the ridge can be steep, average, or gentle. Vehicles can't go up steep, can go up average but there is a penalty except to very slow vehicles, and gentle doesn't affect vehicle speeds.).

The idea being that if not up near the crest of the ridge you can't see a vehicle on the other side. Scale-wise I use the height of 2=2" meters which is just higher than 1.8 meters for a standing man who is 5' 11" tall, in 28mm scale. So 2" equals each level and can be used to correspond to the contours on a 1:25,000 map. I believe the ridge is on a gentle slope. However, a wheat crop that is "up" would be another 2" tall so the top of the ridge is "4 inches" above level ground.

Hope that helps. If you have a 1:25,000 map, which is the standard NATO scale map used, then each square on the map is a kilometer or 100cm on the table (1 to 25 scale). Which works well for 3mm or 6mm models.

Errata

Clarification: Indirect Fire Mode, in the Classic and Modified edition, there was a chance to Knock Out a tank when engine grates were hit by IFM of 1-10. This would come about in these steps:

1. If the tank is hit via the Types of Fire: CFA or CFA-M base of 6, RFA base of 3 or BFA base of 2.
2. One then rolls on the HLAA (Hit Location All Aspects) and on rolling a "4" gets an Engine Grate hit.
3. Engine grates have 50% the thickness of normal top armor (that note is found in DEP (Damage Evaluation Procedure—Armored Targets) in the Vulnerable Detail under Basic Thickness of Armor.



4. Remember that when HE is fired—all *indirect artillery* is HE not AP—there is no Slope or Attitude column adjustment.
5. If the **HE penetration** amount (found on both the Light Artillery Characteristics and Weapons & Shells) is the **same or more than** the halved Top Armor amount, then one uses the normal DFM Damage Procedure to determine the extent of damage. Roll a D6 and modify as normal.
6. Note the asterisks under that table (below) that say that without Explosive Destruction, there will be no crew casualties.
7. However, if the HE Penetration is less than the halved Top Armor, then one rolls a D20 and if 1-10 the tank is knocked out with no casualties. Just as noted in the two asterisks in the table (below) if knocked out, the engine can only repaired in a campaign game setting and no chance of Explosive Destruction.*

*For variety, and as a variant to number 7, Mike Reese suggests after rolling a 1-10 in #7, one could instead roll for the DFM Damage Penetration procedure but no HE or Engine Hit bonus, but only the usual shell size bonus as the artillery round indicates (50-60mm mortar +0, 75mm howitzer +1, 80-110mm mortar or gun +2 etc.). No crew casualty even with Explosive Destruction. This approach is to determine whether it's on fire (Explosive Destruction is rolled) and junk, or damaged and, again, potentially repairable in a campaign.

If were me, I'd allow for the other Damage states to result where the Engine compartment might range from No Damage, Temporary Local Damage, Permanent Local Damage or Explosive Destruction.

Clarification: Decoding the ND & ED. The Table that follows is from the *Penetration & Damage*, second column, page 64.

| Adjusted Spots | Damage Inflicted* |
|----------------|--------------------------------|
| 2 or less | (ND) No Damage |
| 3 | (TLD) Temporary Local Damage** |
| 4 | (PLD) Permanent Local Damage |
| 5 | (GD) General Damage |
| 6 or more | (ED) Explosive Damage |

*If penetration occurs, **always roll for casualties** unless the hit was on the engine area and does **not** result in Explosive Destruction!

**Any engine damage is considered permanent for the duration of the game—vehicle out of commission.

Note: The damage codes (TLD through GD) are detailed in items #6-8 on page 64. However, I notice that **ND** is not detailed! Well, it means *no damage as it says in the rules* but one *still rolls for casualties* and indeed that is what it says on pull-out #11 (below).

| Result of Penetration | ⑪ |
|-----------------------|---------------------------------------|
| Roll* | Damage Inflicted |
| 1-2 | ND Casualties only |
| 3 | TLD Compartment out for 3 turns |
| 4 | PLD Compartment Out |
| 5 | GD Tank KO but salvageable |
| 6+ | ED +1 to Crew Cas. roll; tank is junk |

*1D6 roll adjusted by +/- from Damage & HEAT correction to left

ED is not detailed on page 65 either but is on pull-out #11, where it says “tank is junk” which seems pretty clear that is what Explosive Destruction means. Likewise, one rolls for crew casualties with a minus 1 so 0-5 casualties could occur.

Clarification: ED Crew Casualties: One must keep straight the +1 on the *Damage Inflicted* roll for an ED in either *crew compartment*, and the -1 for an ED in the *engine* compartment.

When an engine compartment is hit and the damage roll from **ND** (No Damage) up through **GD** (General Damage), there are *no casualties*. Only when an engine hit results in an **ED** (Explosive Damage) does one subtract the entire crew count, *and* you also subtract one from the Casualty 1D6 roll.



Examples of one & two compartments:

Engine compartment penetrated but *not* an ED (Explosive Destruction).

StuG III. (One compartment) *No casualties (see at right)*
 Sherman. (Two compartments) *No casualties (see at right)*

Engine compartment with ED damage (-1).

StuG III. 1D6-1-4 (crew)=casualties
 Sherman tank. Hull 1D6-1-3 (turret crew)=casualties
 " Turret 1D6-1-2 (hull crew)=casualties

Other compartment penetrated but *not* an ED.

StuG III. 1D6 -0 (no other compartment)= casualties
 Sherman tank. Hull 1D6-3 (crew in turret)=casualties
 " Turret 1D6-2 (crew in hull)=casualties

Other compartment ED (+1).

StuG III. 1D6+1-0= casualties (*no other compartment*)
 Sherman tank. Hull 1D6+1-3 (turret crew)=casualties
 " Turret 1D6+1-2 (hull crew)=casualties

This should make the results clear.

Penetration in engine compartment: no casualties unless ED. If ED in the engine compartment, roll for crew casualties **1D6-1 with no other modifiers**. The results will range from 0 to 5 crew lost.

| | |
|---|-------|
| ED Engine Compartment† | 1D6-1 |
| AP, APC, APCBC, APCR, APDS, HVAP, or HEAT penetration | 1D6 |
| Infantry Weapons HEAT penetration† | 1D6-1 |
| HE or HESH penetration | 3D6 |
| HESH <i>relative</i> pen., see at left, rule #10 | 1D6 |

Modifier: +1 if damage was ED Explosive Destruction†

Reminder: Crew Casualties Inside, in a crew compartment. For a Sturmgeschütz III, all the crew are in the *same compartment*. So whatever the modified roll is, is also the number of crew lost. This is easy to forget if most of your cases have been turreted tanks where one deducts the crew count of the *other* compartment to determine the number of casualties received in the compartment hit.

Subtract the number of men in the *non-penetrated* compartment(s). **Result is the number of casualties in the penetrated compartment.** Any extra left over casualties are taken from the non-penetrated compartment (except HESH non-penetration is taken from the hit compartment only). ED is for the entire crew, hit compartment first.

| 5 | GD Tank KO but salvageable |
|--|---|
| 6+ | ED +1 to Crew Cas. roll; tank is junk |
| <small>*1D6 roll adjusted by +/- from Damage & HEAT correction to left</small> | |
| Roll* | Suspension Component Hit |
| 1-3 | No significant Damage. Ignore. |
| 4-5 | Damaged. Speed reduced to 1D20-10" |
| 6 | Significant Damage. Immobilized. |
| Crew Casualties, Inside | ED non-Engine ↓ |
| ED Engine Compartment 1D6-1 | 1D6+1 |
| AP, APC, APCBC, APCR, APDS, HVAP, HEAT† | 1D6 |
| HE & HESH | 3D6 |
| HESH "relative" penetration* | 1D6 |
| <small>Subtract # of men in other compartment(s) from die roll. Result is # of casualties. Any extra left over casualties are taken from the other compartment (*HESH: compartment only). †Inf Wpn HEAT D6-1</small> | |

The Pull-Out (above) may be more apparent than the rule section (following), which has a table showing a (-1 for an ED in the *engine* compartment) & a modifier (+1 for an ED in either *crew* compartment) that *appears* to conflict. The rules before the table help clarify the -1 penalty modifier, so the +1 is for the remaining crew compartments. And *no* casualties for a non-ED (ND through GD) in the engine compartment.

‡More free *Tractics* play aids at wargamecampaign.wordpress.com/category/tractics/



I WANT TO AWARD WWII MEDALS TO THE PROOFREADERS AND MIKE FOR DOING GREAT JOB ON TRACTICS' RULESET ACCURACY. THE VAST MAJORITY OF ERRATA AND FAQ ARE JUST CLARIFICATIONS. FEW CORRECTIONS HAVE BEEN NEEDED.

ANOTHER ITEM THAT MIGHT BE TAKEN FOR GRANTED IS HOW THE PULL-OUTS ARE SYNCHRONIZED TO BE PRECISELY THE SAME ACROSS ALL RULES EDITIONS AND SUPPLEMENTS. WE USE A TOP-SECRET GRAPHIC PROCESS THAT OTHER LESS-DETAILED RULESETS WOULD BENEFIT FROM.





Consolidated Errata

Now that we have multiple Duckbills (DB) issues, we are consolidating **errata** from all so you have just one document to refer to—the latest.

**The two starred items were corrected in all editions.*

For convenience, in gray highlight we list Variants' titles but not their text.

When in a yellow highlight additional clarifications were added in **this** issue of Duckbills about an **old** issue.

DB#1 Q. Where are the **German 88mm guns**?

A. They are classed as 90; see the discussion on pages 19-20.

*Pull-Out #11 (also on page 66) has a “3” on the 45° Slope Angle when it should be “4” like the 45° Qtr in the next column.

*The 2nd Runner on the Platoon HQ table (page 11) is blank. The same data applies as for the 1st Runner.

Examples of Play, page 160, Turn Sequence Phase 1: delete the asterisk (*) at the end of the 3rd sentence.

The modern weapon, Am, LAW, on the Infantry Weapons chart should be American LAW.

Clarification: Out of Command, pg. 27 'd' 2nd bullet
It may not be clear here but a squad always has to have an order change rolled for if the order is issued by the Squad Leader. BUT, if the Platoon Leader or Plt Sgt or higher ranking leader is within 2” of the Squad leader and issues a new order to the squad then you don't have to roll to change the order.

Clarification: Orders, lower right, pg. 28:
If the tanks were being run by a separate player—a “tanker” then I would not be doing his tank order arrows. He would.

Duckbills #1 Variants: Initiative, Flukes, Ammo Loads, Quick Reactions, Radio Net & Squad/Team Fire.

DB#2 *Typo:* Page 98 2nd column. “***Pinned:** goes prone. Fires with a -4 penalty for one in your next phase.”

Q. When you have an element behind a High Hedge-row **what angle in degrees can he spot out.** I would think 45 degrees total (22.5 each side).

A. Elements in or behind concealing terrain which they have moved up to, or into, observe and fire out of that terrain with the same limitations as if in a building. 45 degrees while behind the terrain, 30 degrees if positioned in it, or 180 degrees if leaning out of the terrain in order to shoot. This would apply to hedge-rows including Norman Hedgerows, bushes, or thick shrubbery. See page 45 second column. An **improved position** in or behind such terrain will allow all observation angles to be doubled. An improved position means that the unit has spent enough time to cut lanes of observation and fire in the terrain. This takes the same time as digging a 2-man foxhole. Seven turns. ~~This does not include the time to dig in.~~ See page 116.

The time to improve the position does not include the time to dig the position in the hedge. Instead of that sentence say that: Improving a position takes double the time to dig a 2-man foxhole position. Improving can also be carefully camouflaging the position, or applying overhead cover. Overhead cover requires material to hold the sandbags and dirt and turf over the position. To do all three - dig, improve spotting, add camouflage, add overhead cover would take 28 turns in total. This improved position is not done in a hurry but if you have the time it can be done. This type of position would be part of a prepared defense position.

Q. **Early US Bazooka** is 75mm Pen., though later variants should be 100mm, and 125mm respectively.

A. 2.36” Bazooka. 75mm North Africa and Sicily. 100mm after August 1943. (December 1943 for Pacific)

Jan 1945 for 125mm Europe and in the Pacific issued by not used. NOTE: these dates are estimated.

Q. On page 170 of the **Infantry Combat examples**—3rd paragraph—MG34 casualties—it lists 2 casualties at first (which is correct), but then mentions 3 casualties in the next sentence (which is wrong).

A. Correct. Should be 2 men were hit.

Q. Also, the number of **dice for determining who gets hit** of the five targets should be 1D5, or 1D6, ignoring the number 6 result and re-rolling, not the 2D6 mentioned in the play example.

A. Next sentence has to be changed to read: “A 1-3 would be the closest man, 4-5 the next closest.” The example rolls 1D6 for each of the two casualties. He is spreading the hits among all five men, I am spreading the hits between the two closest men to the MG.



Duckbills #2 Variants: Soviet Smoke, Auto-Search, Solo Play.

DB#3 *Informational correction* that does not affect the game process. The **Petard Mortar** is now 230mm not 290mm. Mike found out someone actually measured the diameter and found it was 230mm. The 290 size was an error copying the wrong number in an original report passed on for 50+ years.

Q. If I say that if my tank moves 4.1 inches, out of it's 26 inch movement allowance, and then **stops to fire** I have to apply a movement penalty? Is that the case for the 2nd and subsequent firing in the same turn?

A. Per Page 55, **either** movement penalties can be avoided by any turreted vehicles which move no more than half their allowed distance over the prevailing terrain and rate of fire is halved, fractions rounded up. **Or...** If you wanted to fire all three rounds you move your, say, 26" and fire three times. This fire would be where you started your move, after you moved 13", and the third time after you moved the full 26". All three shots would be penalized as *Firing While Moving*. Note: Automatic weapon such as a 20mm Flak 38 fires bursts where the rules treat it as shots—i.e. RoF 4 is 4 bursts for an auto weapon such as on a 222 armored car, but 4 shots from a French 25mm AT gun. So for a fully automatic fire weapon the RoF of 4 could be all fired once at the same time rather than every 1/4th of the target's move using opportunity fire. We didn't specify which weapons were automatic—although restrict them to anti-aircraft weapons 40mm or smaller, which are the AA Machine Guns 12.7-15mm and the 20-40mm AA.

To actually answer your question yes, the second round would be from a stationary position but rate of fire is also halved. If the gun has a The rules are written so that if you move less than half with a turreted vehicle and halt, you can fire stationary without the "firing while moving penalty" but you can only fire at one half your normal rate rounding up.

If you fire while moving 4.1 inches and then halt to fire your rate of fire is half. If the normal rate of fire is three then you get one fire stationary. If the normal rate of fire is two then you halt but cannot fire as you have already fired your one round.

Instead of firing on the move during the 4.1" movement don't fire. Then, when you halt you will get either one shot (RoF2) or two shots (RoF3) stationary with no fire while moving penalty.

Duckbills #3 Variants: Team Fire.

DB#4 Bonus & Penalty Modifiers Clarifications: **Tractics** modifiers adjust the Base to hit. Bonuses (numbers with a plus sign) add to the Base and Penalties (numbers with a minus sign) subtract from the base. One must roll the adjusted Base or less to hit. Bonuses and penalties are not die roll modifiers.

HE/HESH vs. Spaced Armor Clarification: In the National Vehicle Data Categories rules about Armor page 76 (top of the right-hand column) explain how the plus, "+", in armor is Spaced Armor:

Clarification: **Armor Thickness** is shown in millimeters with any degree of "slope" in parenthesis and an **added spaced armor** plate after a plus sign. The two numbers should be added together before comparison of penetration by Armor Piercing rounds.

Addition: When Spaced Armor is hit by HESH and HE, page 68's left column Note mentions HESH's inability to penetrate spaced armor, it omits that the same inability to penetrate the second armor also applies to HE. Note: HESH and HE penetration blows that much earth or concrete off of any fortification it hits. HESH/HE hitting a sandbag, spare tracks, wire, or metal screen, or spaced armor on a vehicle loses its "spalling effect" (HESH) against the vehicle itself! Likewise, **HE can only penetrate the initial armor plate.**

Churchill size *Correction:* British Churchill tanks are **not LT (Large Tank)** and are just ordinary medium tanks.

Duckbills #4 Variants: Penetration Spreadsheet, Zombies.

DB#5 *No errata.*

Duckbills #5 Variants: Tom Trinko's Penetration Spreadsheet; Scenarios; Photo Recon; Turn Record Play Aid; Sand Tables; Ground Scale Conversion.

DB#6 Where to find **Abbreviations, Symbols** and **AFV Index** and quick links within the PDF version of **Tractics**.

IFM Classic & Modified Clarification that a non-penetration on Engine Grate still has 1-10 on D20 to Knock Out (GD) the tank,

Decoding ND & ED Clarification that No Damage and Explosive Destruction require a crew casualty roll.

Two types of ED Clarification of the difference between two types of ED +1 if in a crew compartment or -1 if in the engine compartment.

When a Single Compartment (like Stg III) Reminder that when hit means the modified roll is the number of casualties.

Duckbills #6 Variants: Gen Con 1971 Scenario.

