



Installing track extensions on an M4, called grousers or duckbills

Duckbills



Extensions or “Variants” not included in the Second Edition †

#5 June 14, 2023

How to get the spreadsheet

Initially, Tom Trinko’s Penetration Spreadsheet could only be uploaded to the Facebook Files section. For those who are not on Facebook, we found another spot it could be uploaded: [click here](#). I neglected to thank Tom in the last issue of Duckbills for this heroic effort in making this spreadsheet. So, *thank you Tom!*

Tractics Scenarios

One can download free scenarios for Tractics by [clicking here](#). The first map is from the PDF entitled These scenarios are meant to acquaint you with the rules. And the second is Outpost in Ukraine. Note: the latter is WWII era.



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

Photo Recon

Often I’d peruse the US Army’s “green books” which are available *free on line* as PDFs now. The challenge: how could each image spark a *Tractics* game scenario? *The War Against Germany*, pages 100-101 US Navy gun support; page 201 assault boats; page 301 how far could a Tiger II with US markings get before it breaks down?

Turn Record Play Aid

Graham Hunt made a free turn record play aid that shows how many turns various tasks take that was compiled from the first edition of Tractics. It’s apparently his 8th version (says V8) from 12/8/22. You can download that by [clicking here](#); it is found towards the end of the Play Aids section and before Scenarios. Thanks Graham!

Graham Hunt v8

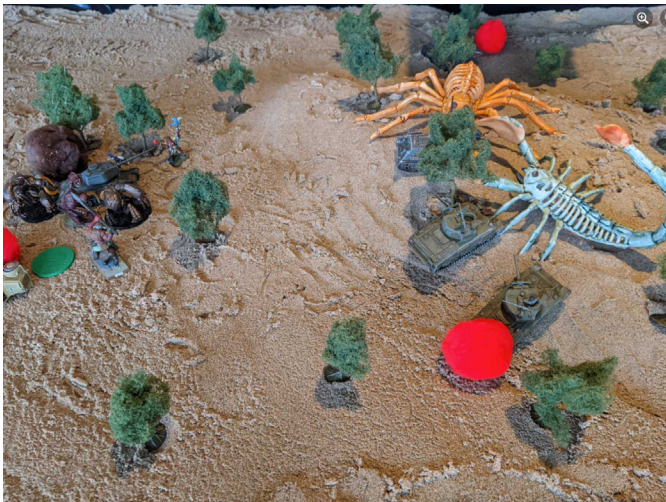
TRACTICS WWII MINIATURES RULES TIME/TURN CHART										Your Air Superiority							
TURN 3	TURN 4	TURN 5 * Mechanical Check All except IDA	TURN 6	TURN 7	TURN 8	TURN 9	TURN 10 * Mechanical Check All countries	<input type="checkbox"/> Total Air Superiority Up to 24 aircraft p	<input type="checkbox"/> Partial Air Superiority Ratio of friendly/	<input type="checkbox"/> In Doubt Use the Random #							
TURN 13	TURN 14	TURN 15 * Mechanical Check All except IDA	TURN 16	TURN 17	TURN 18	TURN 19	TURN 20 * Mechanical Check All countries	Percentage Wounded or Killed Small arms 90%, HE shells 80%, AFV crews 50% are generally killed.									
TURN 23	TURN 24	TURN 25 * Mechanical Check All except IDA	TURN 26	TURN 27	TURN 28	TURN 29	TURN 30 * Mechanical Check All countries	1d6 Wounded			Medical Attention						
								1	Return to combat								
								2-3	Ambulatory with aid								
								4-5	Severe Wounds		Urgent Medical Attention						
								6	Near Fatal		Immediate Medical Attention						
Take Down Weapons			Engineers and Related Areas			Men Digging			Mech Digger			Camouflage			Rocket Artill		
1 Turn			1 Man Foxhole. (min. 1 man digging)			5 Turns			---			3 Turns			USA 2.5" x20		

Sand Tables

Did you know you can stay next door to the former Gary Gygax home and perhaps also play a game in Gary’s basement on the replica sand table there? You can stay overnight at the house next door and book the Gygax home for a game. The *new owner* (click) will even provide a local dungeon-master or maybe even a Tractics judge!

Here’s a photo of the Gary Con sand table which Mike and Ben Reese put on both a World War II era Tractics game and a *Sturmgeschuetz & Sorcery* game each year.





Here's another photo of Tom Trinko's giant 8x8' sand table taken with a Go Pro hung on the ceiling. I took this from the Tractics fan group on Facebook. There are other photos of his sand table in previous issues of Duckbills.



A sand table which is supposed to have been made by the Afrika Korps. However *TinEye* could not verify that.



Ground Scale Conversion

Many of the tables in the rules use the 1"=25 meter scale. Corrections for scale are provided in this article.

This article resolves that problem by providing for the updated Artillery Rules' (page 132 of the rulebook) **Direct Area Fire miss location** and **Indirect Area Fire FFE** "shift" to be the same scale as your models. Depending on the model scale use the **die type** below (X) to determine the results. Note 2" means use that distance for 6mm rather than multiply by a die roll.

SCALE CONVERSION TABLE

Updated Indirect Fire

Scale	Use this die type for results	
6mm	X=	2"
10-12mm	X=	D4
15-20mm	X=	D6
25-28mm	X=	D8
36-54mm	X=	D10

Use the table below for **misses** by **Direct Area Fire** (Updated Artillery). The die size is determined by the table above. **Examples:**

28mm figures. Use a D8 so a D20 roll of 1-6 on the next table would be short 2D8.

For **6mm** the fire landed short 2" so the target likely isn't in the blast diameter. If something else is there, go to the AFWE to determine hits and damage.

DIRECT AREA FIRE MISSES

If Missed, roll 1D20	Direction	Miss Location
1-6	Short	2DX
7-12	Left	1DX
13-16	Right	1DX
17-20	Over	2DX



Indirect Area Fire SPOTTING ROUND

Use the table in the rules but the Scale Conversion table distance (6mm) or die type (all other scales) instead of the values shown.

1D20	All but Rockets	1D20	Rockets*
2 or less	On Target	1-8	Short 4DX
3-8	Short 4DX	9-12	Left 2DX
9-12	Left 2DX	13-16	Right 2DX
13-16	Right 2DX	17-20	Over 4DX
17-20	Over 3DX		

*One launcher in a battery fires a **single rocket**

Registered Indirect Area Fire BARRAGE SHIFT TABLE

This table is used with the UPDATED ARTILLERY rules to determine the shift from the registration point of a barrage.

INDIRECT AREA FIRE FIRE FOR EFFECT SHIFT			
1D20	FFE	How. & Mtr.	Rockets
1-8	Short	2DX	4DX
9-12	Left	1DX	2DX
13-16	Right	1DX	2DX
17-20	Over	2DX	4DX

For **6mm** the range is 1, 2, or 4 *times X* (which is 2") to get shifts of 2", 4", or 8".

Using the above three tables you use the size die indicated in the first table to determine if a direct area round hits or misses, or to determine a registration point location, or to find the distance a barrage shifts depending on the model scale you are using. Thus, if using 28mm figures with 1/56 or 1/48 scale vehicles and 28mm figures from the scale adjustment table you use a D8 in the three above tables to determine the miss location. For a FFE howitzer barrage the barrage will, on a D20 roll of 14, be right by 1D8 inches.

Most batteries are 4, 6 (US and German Self-propelled), 8 (British/Commonwealth 2x4 25 pdr), or 12 (Soviet battalion usually 8 76mm and 4 122mm).

The barrage size and the blast diameter for individual shells is also affected by the ground scale.

This **6mm** table is *unchanged* for the Point Barrages and Line Barrages; the following is the same as is **currently** in the rules:

Barrage Areas multiple weapons in Fire Request Order

Width x Depth	Point Target Barrage Area				Line Barrage Area	
	Heavy Rockets 250+mm	Rockets Under 250mm	All Guns & Howitzers	Mortars	All Guns & Howitzers	Mortars
Number of Weapons						
2	8x4"	4x14"	2x6"	2x6"	2x3"	2x3"
3	12x4"	6x14"	3x6"	3x4"	3x6"	3x3"
4	16x4"	8x14"	4x6"	4x4"	4x6"	4x3"
5	20x4"	10x14"	6x6"	6x4"	6x6"	6x3"
6	30x4"	12x14"	6x6"	6x6"	6x6"	6x3"
7	-	14x14"	6x6"	6x6"	7x6"	7x3"
8	-	16x14"	7x10"	7x10"	8x6"	8x3"
9-12	-	17x14"	8x10"	8x10"	10x6"	10x3"
13-18	-	31x14"	10x10"	10x10"	14x6"	14x3"
19-24	-	40x14"	10x10"	10x10"	14x6"	14x3"

The tables that follow are **increased** by the **multiple** that follows (times the 6mm table above):

10-12mm 1.25x
15-20mm 1.67x
25-28mm 2.5x
36-54mm 5.0x

Example. In a game with 10-12mm figures, multiply a 2-weapon Heavy Rocket barrage area of 8x4" (in 6mm) by 1.25 and one has a 10x5" barrage area instead.

Larger-scales' tables continued on the next page



For 10-12mm the depth and width are increased by 1.25 from the 6mm values.

POINT BARRAGE	10-12mm							
NUMBER OF WEAPONS	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH
	Heavy Rockets 250mm+		Rockets under 250mm		All Guns & Howitzers		Mortars	
2	10	5	5	18	3	8	3	8
3	15	5	8	18	4	8	4	5
4	20	4	10	18	5	8	5	5
5	25	4	13	18	8	8	8	5
6	38	4	15	18	8	8	8	8
7			18	18	8	8	8	8
8			20	18	9	13	9	13
9-12			21	18	10	13	10	13
13-18			39	18	13	13	13	13
19-24			50	18	13	13	13	13

For a Line Barrage, the increase is also 1.25 times the base 6mm area.

LINE BARRAGE	10-12mm			
NUMBER OF WEAPONS	WIDTH	DEPTH	WIDTH	DEPTH
	ALL GUNS & HOWITZERS		MORTARS	
2	3	4	3	4
3	4	8	4	4
4	5	8	5	4
5	8	8	8	4
6	8	8	8	4
7	9	8	9	4
8	10	8	10	4
9-12	13	8	13	4
13-18	18	8	18	4
19-24	18	8	18	4

For 15-20mm the 6mm size is increased by 1.67.

POINT BARRAGE	15-20mm							
NUMBER OF WEAPONS	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH
	Heavy Rockets 250mm+		Rockets under 250mm		All Guns & Howitzers		Mortars	
2	13	7	7	23	3	10	3	10
3	20	7	10	23	5	10	5	7
4	27	7	13	23	7	10	7	7
5	33	7	17	23	10	10	10	7
6	50	7	20	23	10	10	10	10
7		0	23	23	10	10	10	10
8		0	27	23	12	17	12	17
9-12		0	28	23	13	17	13	17
13-18		0	52	23	17	17	17	17
19-24		0	67	23	17	17	17	17

LINE BARRAGE	15-20mm			
NUMBER OF WEAPONS	All Guns & Howitzers		Mortars	
	WIDTH	DEPTH	WIDTH	DEPTH
2	3	5	3	5
3	5	10	5	5
4	7	10	7	5
5	10	10	10	5
6	10	10	10	5
7	12	10	12	5
8	13	10	13	5
9-12	17	10	17	5
13-18	23	10	23	5
19-24	23	10	23	5



25-28mm is 2.5 times the 6mm value.

POINT BARRAGE	25-28mm							
NUMBER OF WEAPONS	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH
	Heavy Rockets 250mm+		Rockets under 250mm		All Guns & Howitzers		Mortars	
2	20	10	10	35	5	15	5	15
3	30	10	15	35	8	15	8	10
4	40	10	20	35	10	15	10	10
5	50	10	25	35	15	15	15	10
6	75	10	30	35	15	15	15	15
7			35	35	15	15	15	15
8			40	35	18	25	18	25
9-12			43	35	20	25	20	25
13-18			78	35	25	25	25	25
19-24			100	35	25	25	25	25

LINE BARRAGE	25-28mm			
NUMBER OF WEAPONS	WIDTH	DEPTH	WIDTH	DEPTH
	All Guns & Howitzers		Mortars	
2	5	8	5	8
3	8	15	8	8
4	10	15	10	8
5	15	15	15	8
6	15	15	15	8
7	18	15	18	8
8	20	15	20	8
9-12	25	15	25	8
13-18	35	15	35	8
19-24	35	15	35	8

The 36-54mm scale multiplies the 6mm width and depth by 5.

POINT BARRAGE	36-54mm							
NUMBER OF WEAPONS	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH	WIDTH	DEPTH
	Heavy Rockets 250mm+		Rockets under 250mm		All Guns & Howitzers		Mortars	
2	40	20	20	70	10	30	10	30
3	60	20	30	70	15	30	15	20
4	80	20	40	70	20	30	20	20
5	100	20	50	70	30	30	30	20
6	150	20	60	70	30	30	30	30
7			70	70	30	30	30	30
8			80	70	35	50	35	50
9-12			85	70	40	50	40	50
13-18			155	70	50	50	50	50
19-24			200	70	50	50	50	50

LINE BARRAGE	36-54mm			
NUMBER OF WEAPONS	WIDTH	DEPTH	WIDTH	DEPTH
	All Guns & Howitzers		Mortars	
2	10	15	10	15
3	15	30	15	15
4	20	30	20	15
5	30	30	30	15
6	30	30	30	15
7	35	30	35	15
8	40	30	40	15
9-12	50	30	50	15
13-18	70	30	70	15
19-24	70	30	70	15



Individual artillery blast diameters are also affected.

The diameters in the rules for blast diameters are for **6mm** scale at **one inch equals 25 meters**, as found on page numbers:*



- 188 **Bombing Effects** (232),
- 193 **Weapons & Shells** (207),
- 230 **Optional Advanced Assault Table** (197),
- 231 **Weapon Data** (195), and
- 234 **Miscellaneous** (189).

*Initial page numbers are for the portrait-style charts. Page numbers in parenthesis are for the landscape-style charts.

The charts below converts that scale to **10-12mm**, **15-20mm**, **25-28mm**, and **36-54mm**.

Bombing Effects (In Inches) Page 188 (232)										
WEAPON	BLAST 6mm	BLAST 10- 12mm	BLAST 15- 20mm	BLAST 25- 28mm	BLAST 36- 54mm	AREA 6mm	AREA 10- 12mm	AREA 15- 20mm	AREA 25- 28mm	AREA 36- 54mm
Strafing	-	-	-	-	-	3x5	4x6	5x8	8x13	15x25
100 lb bomb	3	4	5	8	15	4x4	5x5	7x7	10x10	20x20
250 lb bomb	5	6	8	13	25	6x10	8x13	10x17	15x25	30x50
500 lb bomb	8	10	13	20	40	8x10	10x13	13x17	20x25	40x50
1000 lb bomb	10	13	17	25	50	10x12	13x15	17x20	25x30	50x60
2-4000 lb	15	19	25	38	75	10x12	13x15	17x20	25x30	50x60
7.2" Rocket	3	4	5	8	15	-	-	-	-	-
7.2" Barrage	-	-	-	-	-	8x8	10x10	13x13	20x20	40x40



WEAPONS & SHELLS Page 193 (207)	SHELL BLAST DIAMETER BY SCALES – 6mm, 10-12mm, 15-20mm, 25-28mm, 36-54mm										
	Weapon Class	HE 6mm	HEAT 6mm	HE 10mm-12mm	HEAT 10mm-12mm	HE 15-20mm	HEAT 15-20mm	HE 25-28mm	HEAT 25-28mm	HE 36-54mm	HEAT 36-54mm
	12.7-14.5mm	0	0	0	0	0	0	0	0	0	0
	20L60	0	0	0	0	0	0	0	0	0	
	37L40	1	0	1	0	1	0	1	0	3	
	37L50	1	0	1	0	1	0	1	0	3	
	37L60	1	0	1	0	1	0	1	0	3	
	50L40	2	0	2	0	2	0	4	0	8	
	50L50	1	0	1	0	1	0	3	0	5	
	50L60	1	0	1	0	1	0	3	0	5	
	75L20-30	3	1	3	1	3	1	6	3	13	
75L40/42	2	1	3	1	3	1	5	3	10		
75L50	2	1	3	1	3	1	5	3	10		
75L60	2	1	2	1	2	1	4	1	8		
75L70	2	1	2	1	2	1	4	1	8		
90L40	3	2	4	2	4	2	8	4	15		
90L50	3	1	4	1	4	1	8	3	15		
90L60	2	1	3	1	3	1	5	3	10		
90L70	2	1	3	1	3	1	5	3	10		
105L40	4	2	5	3	5	3	10	5	20		
105L60	3	2	4	2	4	2	8	4	15		
120L30	5	3	6	3	6	3	11	6	23		
120L40	4	2	5	3	5	3	10	5	20		
120L60	4	2	4	2	4	2	9	4	18		
150L40	6	3	8	3	8	3	15	6	30		
150L60	5	2	6	2	6	2	13	4	25		

The base size is **6mm**. Each two columns provide the blast diameter for shells of the gun classes listed in each of the model scales for **High Explosive (HE)** and **High Explosive Anti-Tank (HEAT)**.



Weapon Data (small arms) Page 231 (195) – Blast Diameters (Blue column is area, black columns are diameter of a circle.)

Weapon	6mm	6mm	10-12mm	10-12mm	15-20mm	15-20mm	25-28mm	25-28mm	36-54mm	36-54mm
Flame thrower*	4	2x6	5	3x8	7	3x10	10	5x15	20	10x30
Grenade, Hand	1		1		2		3		5	
Grenade, Rifle	1		1		2		3		5	
Grenade, Rifle AT	0.5		1		1		1		3	
Grenade Lchr 40mm	2		3		3		5		10	
Panzerfaust 30	2		3		3		5		10	
Panzerfaust 60 & 100	3		4		5		8		15	
Pak 36 Stick Bomb	3		4		5		8		15	
Baz. German 88mm	2		3		3		5		10	
Baz, USA, 2.36"	1.5		2		3		4		8	
PIAT	2		3		3		5		10	
Recoilless Rifle 50mm	1.5		2		3		4		8	
Recoilless Rifle 75mm	2		3		3		5		10	
Recoilless Rifle 105mm	3		4		5		8		15	

*Flame Thrower, Personnel (Man-Pack) Ranges in 2nd-4th-6th-8th-10th column is Width at end of the flame and length of the flame. For 6mm this is 2" wide at end and 6" in length. For Vehicle Flame thrower on the Crocodile tank double the size given which would make it 4x12 inches.

*The man-pack flamethrower has only one 4" diameter charge but five of the 2"x 6" shots. A Vehicle Flamethrower has 10 shots, Crocodile 15.



OPTIONAL ADVANCED ASSAULT TABLE Page 230 (197)

WEAPON	6mm		10-12mm		20-25mm		25-28mm		36-54mm
AT Hand Grenade	.5"		1"		.5"		1"		2.5"
Gammon Bomb	1"		1"		1"		2"		5"
Sticky Grenade	1"		2"		1"		2"		5"
Grenade Bundle	1"		2"		1"		2"		5"
Hawkin's Mine	1"		2"		1"		2"		5"
Molotov Cocktail	.5"		1"		.5"		1"		2.5"
Magnetic AT Mine	1"		2"		1"		2"		5"
Lunge Mine	1"		2"		1"		2"		5"
Satchel Charge	2"		3"		2"		5"		10"
Demolition Charge	2"		3"		2"		5"		10"
Teller Mine	2"		3"		2"		5"		10"



Page 234	MORTARS and FIELD GUNS/HOWITZERS		HE BLAST DIAMETERS in Inches					NOTES
1 tube	SIZE	ROF	6mm	10-12mm	15-20mm	25-28mm	36-54mm	1 Round HE Blast Diameter
Mortar	50-60mm	4	1	1	2	3	6	
Mortar	81mm	3	2	3	3	5	13	
Mortar	105-120mm	2	4	5	7	10	25	
Howitzer	75L20-30	3	3	3	4	6	16	
Howitzer	75L40	2	2	3	3	5	13	
Howitzer	90L40	2	3	4	5	8	19	
Howitzer	105L40	1	4	5	7	10	25	
Howitzer	120L30	1/2	5	6	8	11	28	

ROCKET ARTILLERY			HE BLAST DIAMETERS in Inches					Page 234	
# TUBES	SIZE	Armor Pen	6mm	10-12mm	15-20mm	25-28mm	36-54mm	NOTES	
1 Lchr	USA 2.5"	5	1.5	2	3	4	9	Calliope	
1 Lchr	USA 4.5"	30	3	4	5	8	19	Mattress	
1 Lchr	GER 150mm	50	5	6	8	13	31	Nebelwerfer	
2 rockets	BR 7.2"	65	7	9	12	18	44	Tank mounted	
1 Lchr	USA 7.2"	65	7	9	12	18	44	Truck mounted or towed.	
1 Lchr	USSR 7.2"	65	7	9	12	18	44	Truck mounted	
1 Lchr	GER 280mm	102	8	10	13	20	50	Stuka Zu Fuss	
1 Lchr	GER 320mm	Flame	10	13	17	25	63	Stuka Zu Fuss	
1 rocket	GER 380mm	182	12	15	20	30	75	Stormtiger	

DFM Armor Penetration

The table on the next pages provides the direct fire table in **6mm** base scale and in **25-28mm** scale. The other scales can be calculated using the *multiplies* in the chart on page 19 of the rule book.

NOTE: the tables are modified by a factor of 1.25, 1.67, 2.5, and 5 times the base **6mm** value in the rule book. The results are rounded to the nearest whole number. Thus some base numbers when multiplied may result in a value larger than expected as a result of rounding.

Ranges are in **inches** and the gray tone shows the **penetration** in millimeters. The Armor Penetration chart is found on page 226 (205).

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



RANGE UP TO:	Point Blank	Point Blank	Short	Short	Short	Med	Med	Long	Long	Long	Very Long	Very Long	Extreme	Extreme						
Scale	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	72	180
6mm 12.7mm	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	180	180
25-28mm 12.7mm	39	35	32	30	28	26	24	22	20	18	18	17	16	15	14	13	12	12	12	12
PENETRATION	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	72	72
6mm 20L60	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	180	180
25-28mm 20L60	46	42	39	37	35	33	31	29	27	26	25	24	23	22	21	20	19	19	19	19
PENETRATION	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	36	36
6mm 37L20	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	90	90
25-28mm 37L20	32	30	28	26	24	22	20	18	16	14	12	11	10	10	9	9	8	8	8	8
PENETRATION	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	54	54
6mm 37L40	8	15	23	30	38	45	53	60	68	75	83	90	98	105	113	120	128	135	135	135
25-28mm 37L40	52	51	51	50	49	48	47	47	46	45	44	44	43	42	42	41	41	40	40	40
PENETRATION	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	72	72
6mm 37L50	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	180	180
25-28mm 37L50	61	59	57	55	53	52	51	50	49	48	47	46	45	44	43	42	41	41	41	41
PENETRATION	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	90	90
6mm 37L60	13	25	38	50	63	75	88	100	113	125	138	150	163	175	188	200	213	225	225	225
25-28mm 37L60	83	78	74	70	67	64	61	58	56	54	52	50	48	46	44	43	42	41	41	41
PENETRATION	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	36	36
6mm 50L20	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	90	90
25-28mm 50L20	36	35	33	31	30	28	26	24	23	21	19	18	16	14	13	11	9	8	8	8
PENETRATION	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	72	72
6mm 50L40	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	180	180
28mm 50L40	79	77	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61	61	61	61
PENETRATION	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	108	108
6mm 50L60	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	270	270
28mm 50L60	117	111	105	101	96	92	88	85	82	79	76	74	72	70	68	66	64	62	62	62
PENETRATION	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	72	72
6mm 75L20	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	180	180
25-28mm 75L20	47	46	44	42	41	39	37	36	34	32	31	29	27	26	24	22	21	19	19	19
PENETRATION																				

Armor Penetration 12.7mm-75mmL20

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



RANGE UP TO:	Point Blank	Point Blank	Short	Short	Short	Med	Med	Long	Long	Long	Very Long	Very Long	Extreme	Extreme				
Scale	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144
6mm 105L40	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360
25-28mm 120L40	121	118	116	114	112	110	108	106	104	102	100	98	96	94	93	92	91	90
PENETRATION	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216
6mm 105L60	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540
25-28mm 105L60	180	173	167	161	155	150	145	141	137	133	129	125	122	119	116	113	110	107
PENETRATION	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
6mm 120L40	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450
25-28mm 120L40	160	156	152	148	145	143	140	137	134	131	128	125	123	121	119	117	115	113
PENETRATION	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288
6mm 120L60	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600	640	680	720
25-28mm 120L60	209	199	190	182	174	167	161	156	151	146	141	136	132	128	124	120	117	114
PENETRATION	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216
6mm 150L40	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540
25-28mm 150L40	190	186	182	178	175	172	169	166	163	160	157	154	151	149	147	145	143	141
PENETRATION	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360
6mm 150L60	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900
25-28mm 150L60	261	248	237	227	218	209	201	193	186	179	173	167	162	157	153	149	145	142
PENETRATION																		

Armor Penetration 120mmL40-150mmL60

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





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 two starred items were corrected in all editions.*

For convenience we list Variants' titles but not their text.

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.

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)

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.

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.

Parting Shot

Another unverified photo: a sandbox in an unknown locale probably British soldiers in World War II:

