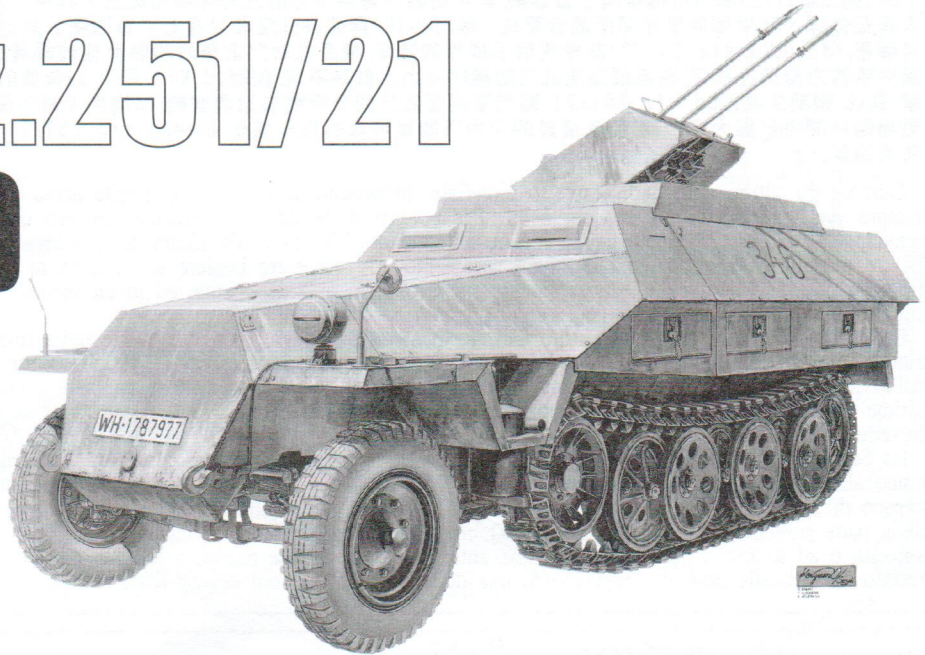




Sd.Kfz.251/21

Ausf.D



In last days of the WWII, the German lost air superiority hence ground troops became more and more vulnerable. The Germany Army mounted naval MG151/15 triplicate 15mm machine guns onto the Sd.Kfz.251 half-track armoured vehicle, resulting the Sd.Kfz.251/21 self-propelled anti-aircraft vehicle. The 3 machine guns were mounted on a revolving pedestal in juxtaposition with 3 side armour plates to protect the gunner. The revolving pedestal pivoted the 3 machine guns on trunnions for elevation and depression. Additional higher armoured plates were added on sides of crew chamber to protect the gunner. The Sd.Kfz.251/21 started to mass product on August 1944. Most of them used Sd.Kfz.251D chassis, however a few used Sd.Kfz.251c chassis.

On later stage, MG151/20 20mm machine guns from the Luftwaffe were adapted. The MG151/20 had larger caliber and shorter barrel, therefore the total weight was not added, but with slower muzzle velocity.

The Sd.Kfz.251/21 carried 2000 rounds, 900 of them were stored in 3 ammunition boxes under the mount, feeding the guns with belt. The rounds mixed with anti-personnel rounds, armour-piercing incendiary and tracer. Each MG151 was capable to shoot 700 rounds per minute. To improve manoeuvrability, rear armoured plates in crew chamber were removed in some Sd.Kfz.251/21s. The MG151 was operated manually, which showed incapability tracing low-altitude high-speed targets. As the result, the Sd.Kfz.251/21 had to deal with aircrafts, also ground targets. For this purpose, the German Army removed extra armoured plates around crew chamber in late version Sd.Kfz.251/21s to provide better depression angles. Although too few and too late for combat, however with its excellent firepower and reliability, the Sd.Kfz.251/21 became the best anti-aircraft weapon among Sd.Kfz.251 serials.

第二次大戦の終盤、連合軍が完全に制空権を掌握すると、ドイツ地上軍は激しい航空攻撃にさらされることとなった。その対策のひとつとしてドイツ陸軍は、Sd.kfz251装甲兵員車に海軍の開発したMG151/15三連装15mm対空機関銃の砲架を搭載し、Sd.kfz.251/21対空戦闘車として採用した。旋回式の台座に並置した三門の機関銃と、機銃手を防護する装甲板が設置され、車体の戦闘室側面にも機銃手を護るための装甲板が追加で装着された。Sd.kfz.251/21の生産は、1944年8月に開始され、ほとんどは、D型の車体で使用されたが、ごく少数ではあるがC型の車体を使ったものも存在したようである。

後期生産型では、空軍のMG151/20 20mm機関砲が装備されるようになる。このMG151/20は、MG151/15より大口径ながら砲身が短かったので、初速は低下したものの総重量は増えなかったため、問題なく搭載が可能だった。

Sd.kfz251/21は、2000発の弾薬を携行し、900発づつ3つの弾薬箱に収められた。弾薬は榴弾、焼夷徹甲弾、曳光弾が混合され、給弾はベルト式で行われ、MG151/20機関砲は、一門あたり毎分700発の速度で発射することが可能であった。

やがて、砲の操作性向上のため、戦闘室後部の装甲板を取り除いた車輛が現れた。MG151の砲架は、人力で操作するため、低高度を高速で移動する目標を追うことが不可能だということが明らかになってきたのである。また、航空機のみならず、対地目標との戦闘も避けられない状況になっていた。このため後期のSd.kfz.251/21では、戦闘室の装甲板を取り除き、浅い仰角での射撃を可能にしたタイプが登場したのである。Sd.Kfz.251/21は、連合軍の航空攻撃を防ぐには生産数も少なく、登場も遅すぎた。しかし、その強い火力と信頼性において、Sd.kfz.251シリーズの中の最も優秀な対空戦闘車輛であるといえるのであろう。

In der letzten Phase des 2. Weltkriegs verloren die Deutschen die Lufthoheit, was ihre Bodentruppen mehr und mehr verwundbar machte. Die deutsche Wehrmacht montierte ursprünglich als Flugzeug-Bordwaffen verwendete 15 mm MG 151/15 in Drillingsanordnung auf einem Halbketten-Fahrzeug der Sd.Kfz. 251-Reihe, wodurch die Selbstfahrlafette Sd.Kfz. 251/21 entstand. Die drei Maschinengewehre waren nebeneinander auf einem drehbaren Sockel montiert, der auf drei Seiten Panzerplatten als Schutz aufwies. Dieser drehbare flache Geschützturm konnte um eine horizontale Achse geschwenkt werden, so das die drei Geschütze erhöht oder abgesenkt werden konnten. Zusätzliche Panzerplatten, die oben auf den Wänden des Fahrzeugs angebracht wurden, sorgten für einen besseren Schutz der Besatzung. Die Serienfertigung des Sd.Kfz. 251/21 startete im August 1944, wobei meistens das Sd.Kfz. 251 Ausf. D, aber auch einige Fahrzeuge der Ausf. C verwendet wurden.

Bei späteren Produktionsmodellen wurde das 20 mm MG 151/20, ebenfalls eine Flugzeug-Bordwaffe, verbaut. Das MG 151/20 hatte ein grösseres Kaliber und einen kürzeren Lauf. Die höhere Durchschlagskraft wurde mit einer geringeren Mündungsgeschwindigkeit erkauft.

Das Sd.Kfz. 251/21 fuhrte einen Munitionsvorrat von 2000 Schuss mit sich, wovon 900 in drei Munitionskisten im unteren Bereich des Geschützturms untergebracht waren. Die Munitionszuführung erfolgte mit Hilfe von Munitionsgurten, die mit einer Mischung aus panzerbrechender sowie Spreng, Brand- und Leuchtspur-Munition bestückt waren. Jedes der drei MG 151 konnte 700 Schuss pro Minute abgeben. Um die Handhabung zu verbessern, wurden bei manchen Sd.Kfz. 251/21 die hintere Panzerung des Kampfraumes weggelassen. Die Zielerfassung erfolgte rein manuell, was bei tiefliegenden und schnellen Zielen zu Problemen fuhrte. Das Sd.Kfz. 251/21 wurde aber nicht nur gegen Flugzeuge, sondern auch gegen Bodenziele eingesetzt. Deshalb wurden bei späten Fahrzeugen die zusätzlichen Panzerplatten an der Oberseite wieder weggelassen, um einen niedrigeren Schusswinkel zu ermöglichen. Das Sd.Kfz. 251/21 gelangte zwar zu spät und in zu geringen Stückzahlen zur Truppe, erwies sich aber mit seiner grossen Feuerkraft und Vielseitigkeit als beste Flugabwehr-Lösung innerhalb der Sd.Kfz. 251-Reihe.

由於大戰後期德軍制空權的喪失，地面部隊遭受到來自空中攻擊的威脅日益加劇，專為海軍船艦搭載所設計的三聯裝15mm口徑機關砲(MG151/15)被引進至陸軍，並搭載於Sd. Kfz. 251半履帶裝甲車上，成為Sd. Kfz. 251/21對空自走砲，此三聯裝機關砲採水平並列布置，具前方及左右兩側的防盾用來保護射手，並以圓錐狀的底座固定於車身上，具有可俯仰的搖架與全周迴旋射擊的能力，戰鬥室四周也在原本的車身裝甲上另行加高裝甲以提高對射手的保護，此車於1944年8月開始生產，除少量使用Sd. Kfz. 251C型車身外，大多數均為Sd. Kfz. 251D型車身。

Sd. Kfz. 251/21及至生產中期之後又以空軍的20mm口徑機關砲MG151/20取代先前的15mm砲，雖然火砲口徑增大，但砲身較短，因此總重量並未因此增加，不過在砲口的初速上卻略有損失。

Sd. Kfz. 251/21車內可攜帶兩千發彈藥，其中掛載於砲架下方的三個彈藥箱即佔了其中的九百發，經彈鏈裝填至砲膛中，彈種分別由人員殺傷彈、穿甲彈與曳光彈所混合組成，每門MG151具有每分鐘發射達七百發砲彈的射速，因此三聯裝的MG151將可在瞬間形成一片彈幕，部分的Sd. Kfz. 251/21為考慮射手操作的效率，橫互在戰鬥室後方的裝甲板被乘員所移除，除此之外，MG151在射擊時完全倚賴射手的力量操控搖架，在追蹤高速低飛敵機的能力上較為不足，因而Sd. Kfz. 251/21負擔的主要任務尚包括了對地面目標的水平射擊，為此，後期生產的Sd. Kfz. 251/21，戰鬥室周邊額外的裝甲更被悉數省略，以增加火砲射擊的俯角，雖然此車生產的數量不大，投入戰場的時間也已屬大戰末期，但其優異的火力與簡單可靠的維修保養，卻使Sd. Kfz. 251/21成為Sd. Kfz. 251系列車輛中最为有效的防空利器。

Durante gli ultimi anni della 2° guerra mondiale, in seguito alla totale superiorita aerea degli alleati, le truppe tedesche divennero sempre piu vulnerabili agli attacchi aerei. Per potenziare le difese contraeree vennero costruiti svariati veicoli tra i quali questo semicingolato Sd.Kfz.251 equipaggiato con tre mitragliatrici MG151/15 da 15mm di derivazione navale che prese la sigla di Sd.Kfz.251/21. Le tre mitragliatrici erano montate su un basamento girevole e tre lamiere di corazzatura laterali proteggevano il servente al pezzo. Le armi potevano brandeggiare agevolmente sui loro perni di articolazione ed in un secondo tempo furono aggiunte delle corazzature supplementari per meglio proteggere l'equipaggio.

Il Sd.Kfz.251/21 fu prodotto a partire dall'agosto 1944, la maggior parte di queste unita firono costruite su telai di Sd.Kfz.251D, ma alcune vennero allestite con telai di Sd.Kfz.251C. In una fase successiva le MG151/15 furono sostituite con MG151/20 provenienti dalla Luftwaffe. Le MG151/20 avevano un calibro maggiore delle precedenti mitragliatrici, ma una canna piu corta, quindi, per queste ultime unita antiaeree non ci fu un aumento del peso totale a discapito delle prestazioni se non una velocita di rotazione delle armi lievemente piu bassa.

Lo Sd.Kfz.251/21 aveva una capienza di 2000 proiettili che erano immagazzinati in 3 contenitori posti sotto le armi. Le mitragliatrici erano alimentate a nastro con proiettili di vario genere mescolati tra loro: antiuomo, perforanti, incendiari e tracciantiogni MG151 era capace di sparare 700 colpi al minuto. Su qualche unita, per migliorare la mobilita delle armi, furono rimosse le piastre corazzate della parte posteriore del mezzo. Le MG151 erano comunque azionate manualmente ed erano spesso inefficaci contro bersagli ad alta velocita o ad altitudini elevate. Questa arma antiaerea fu comunque piuttosto efficace ed anche se fu prodotta in numero esiguo ed in ritardo rispetto alle esigenze, rappresento una delle migliori versioni del Sd.Kfz.251.

Illustration: 圖示說明



Method For Applying Decals:

1. Clean Model Surface With Wet Cloth.
2. Cut Out Of Decal Sheet And Dip Them In Water For 15 Seconds.
3. Place it on proper position on model.
4. Slide off base paper leaving decals On Model With Wet Finger Tip.
5. Move Decals To Exact Position, Push Out Excess Water Under Decal With Soft Cotton Cloth.
6. When Decals Get Dry Then Complete.

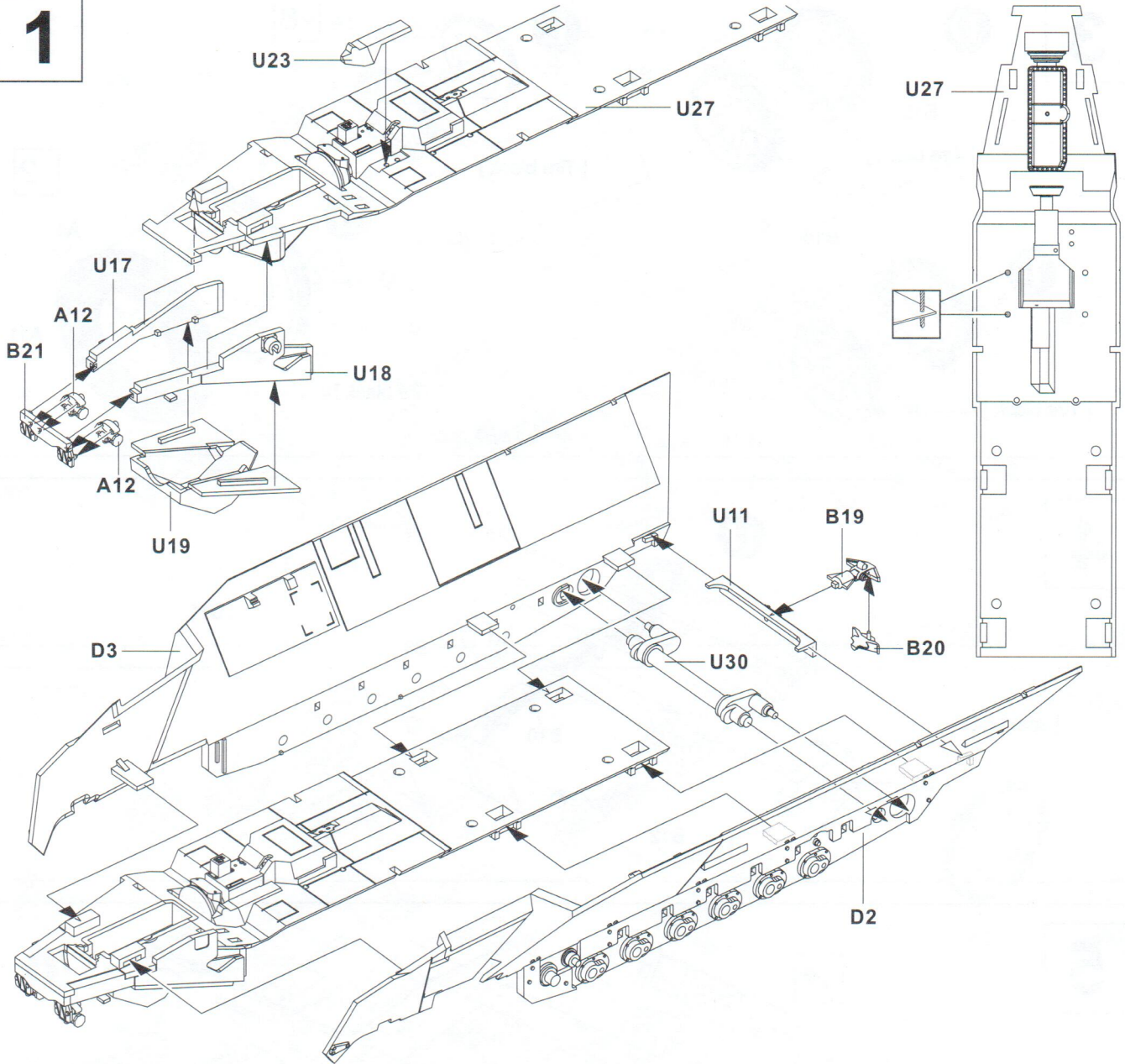
水貼紙使用說明:

1. 將模型表面擦乾淨
2. 將貼紙剪下泡入清水中約15秒
3. 將泡濕之貼紙取出置於欲貼處旁
4. 用指尖輕推貼紙表面使其滑出底紙
5. 將貼紙調整至適當位置並輕擦拭水份
6. 待其自然乾燥後即完成

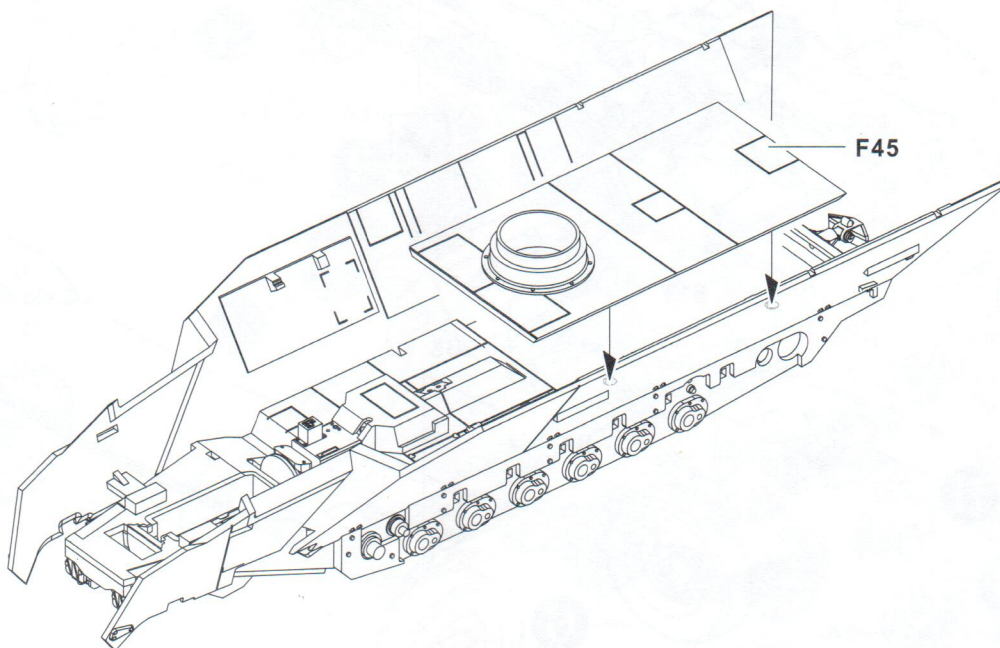
Color list: 塗料表

Color	Brand	GSI Creos (Gunze Sangyo)			Humbrol	Revell	Life Color
		Hobby Color	Mr. Color	Mr. Color Spray			
Wood brown	木棕	H-37	C-43	J-43	34	05	UA085/ UA125
Dark green	深綠	H-36/H-405	C-70	J-70	149	363	UA083
Dark yellow	深黃	H-79	C-39	J-39	83	16	UA081
Steel	黑鐵	H-18	C-28	J-28	53	91	LC76
Tire black	輪胎黑	H-77	C-137		85	302	LC02
Brass	黃銅	H-9	C-9	J-9	54	92	LC75
Metallic green	亮綠	H-89	C-77	J-77	131	364	
Red	紅	H-3	C-3	J-3	19	31	LC56
Flat white	消光白	H-11	C-62	J-62	34	05	LC01
RLM02 Gray	灰	H-70	C-60		92	79	UA071

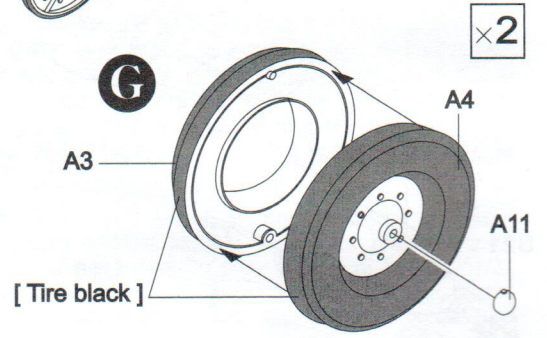
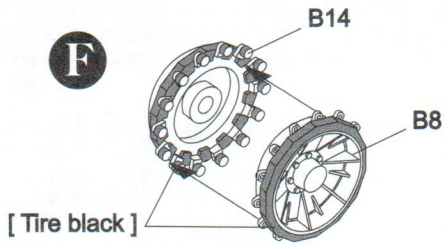
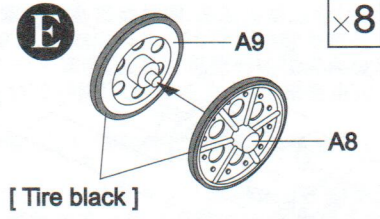
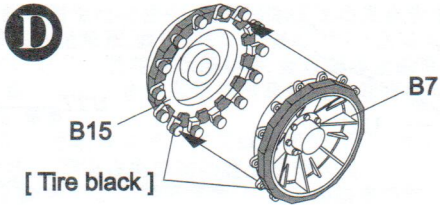
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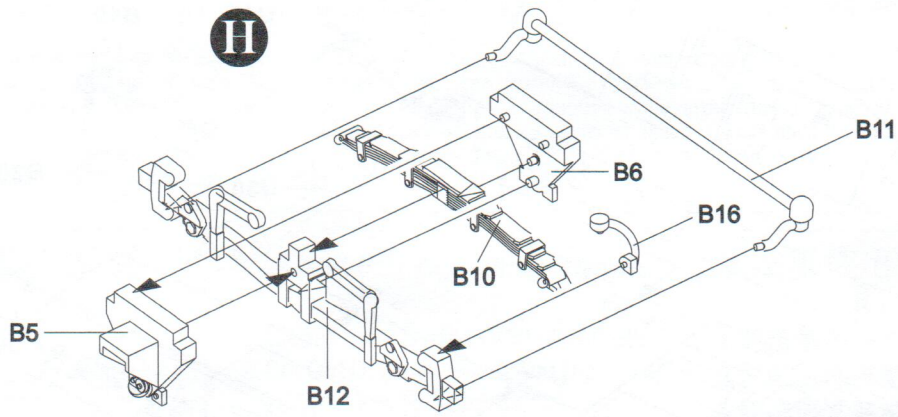
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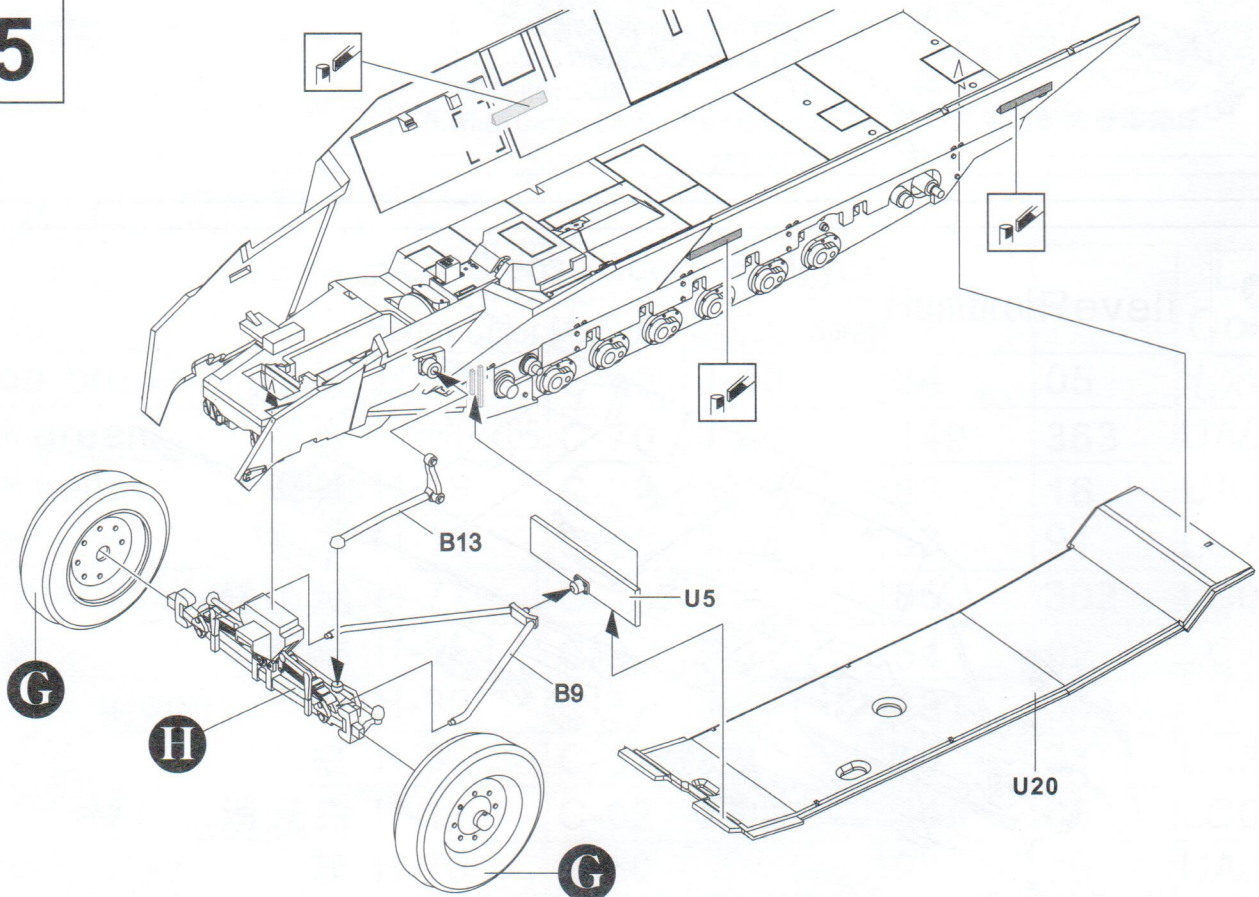
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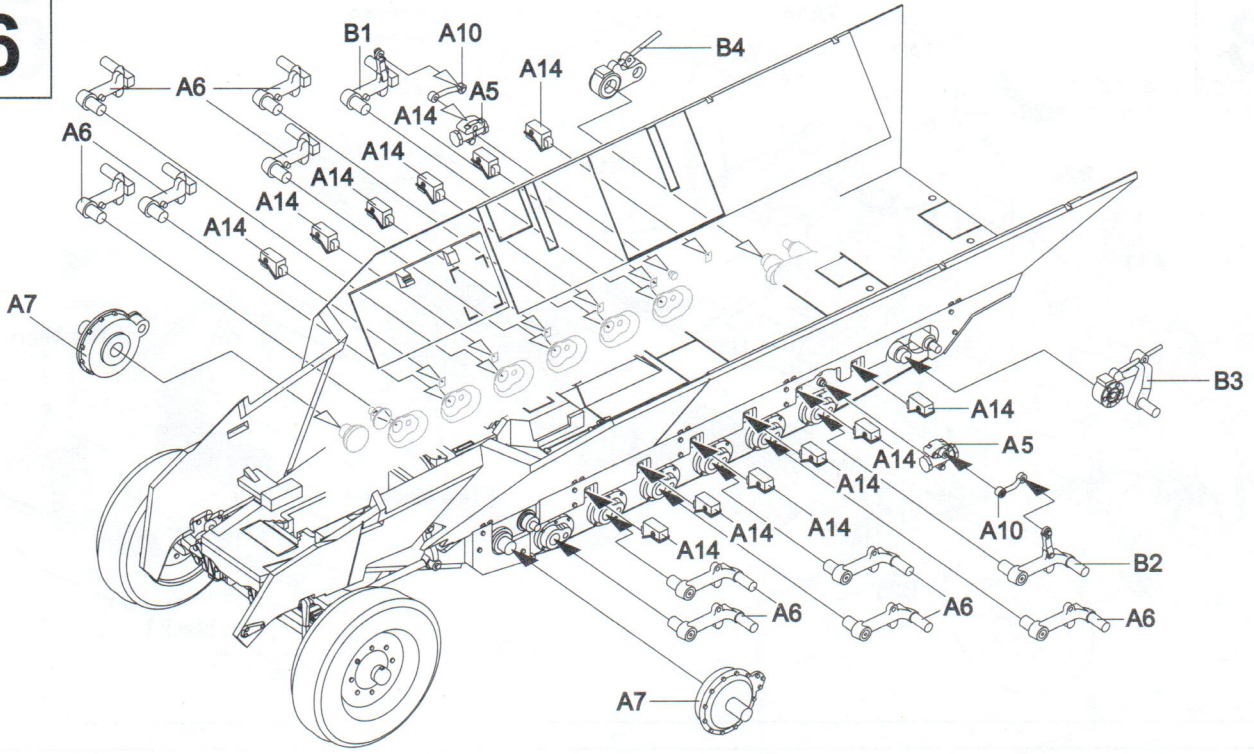
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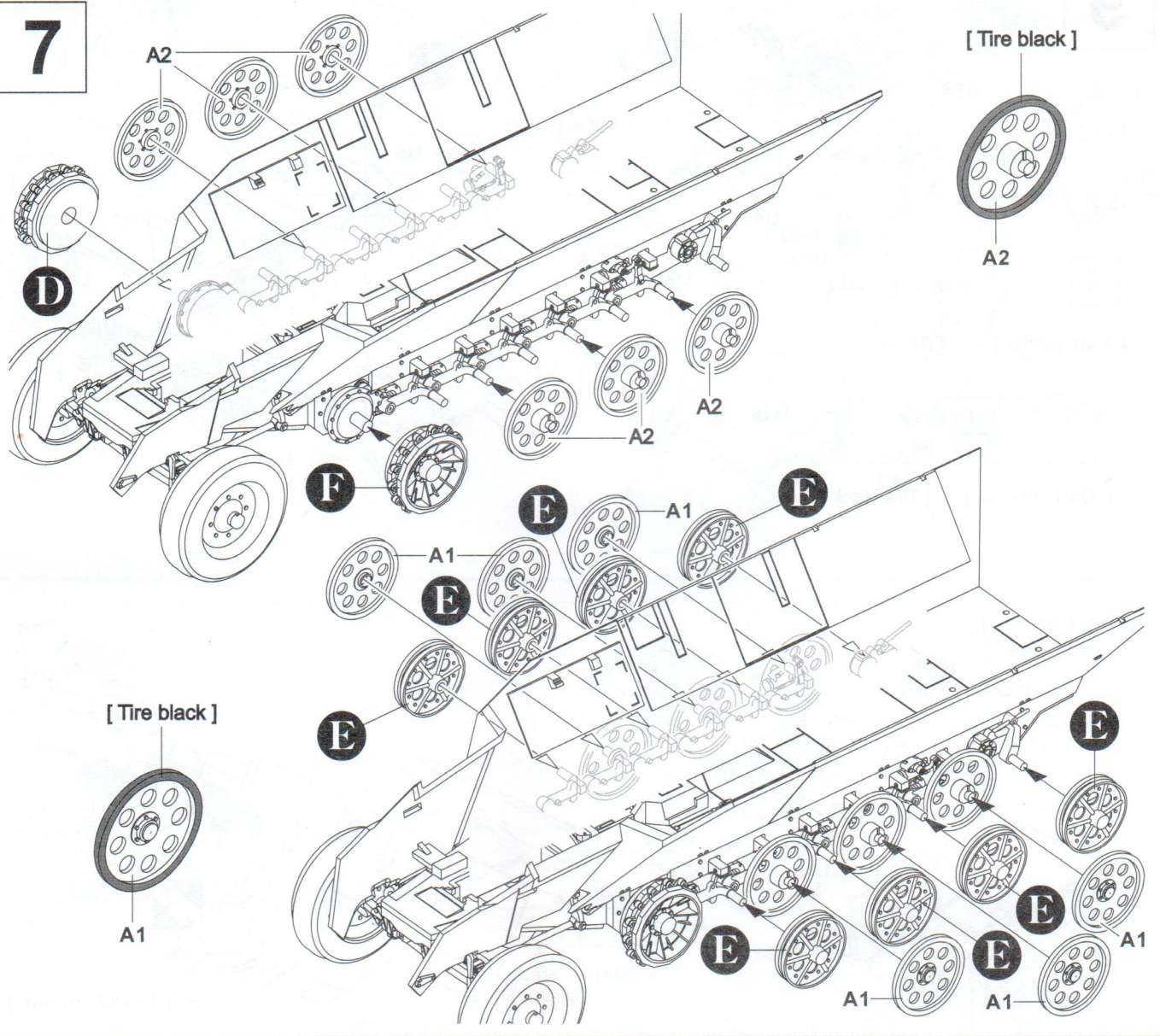
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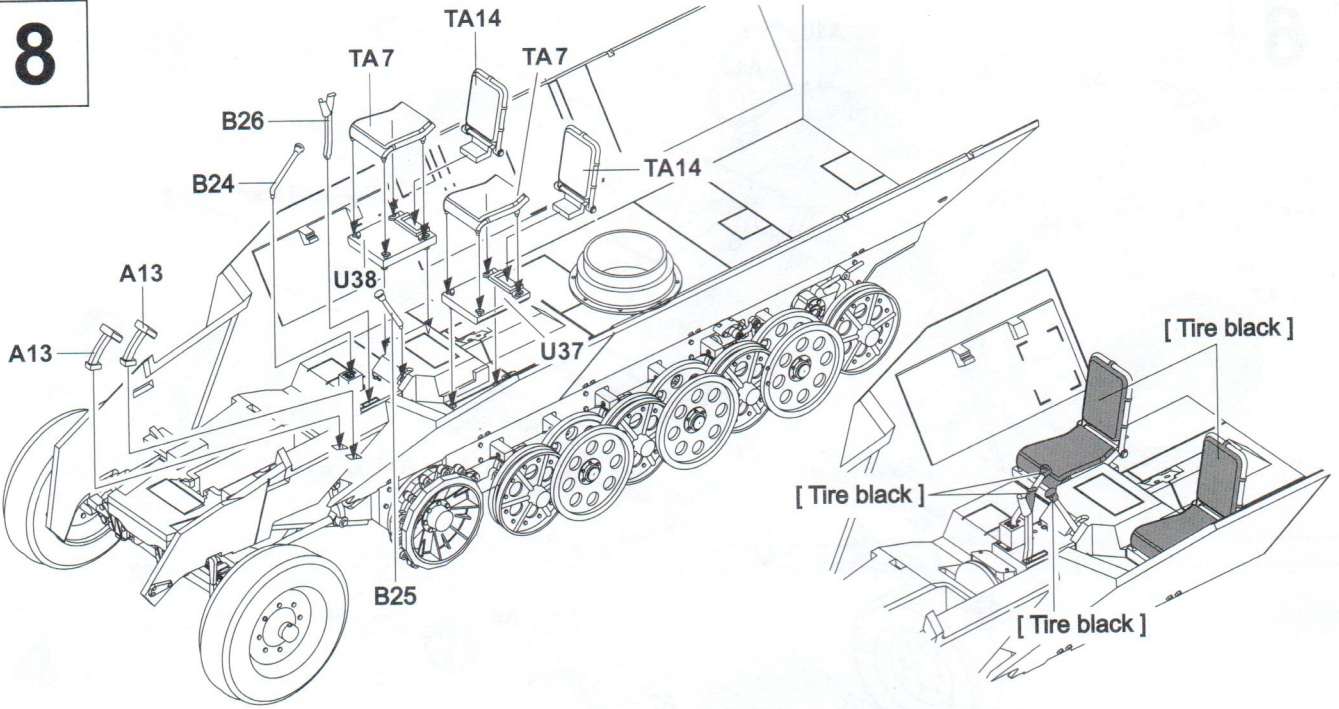
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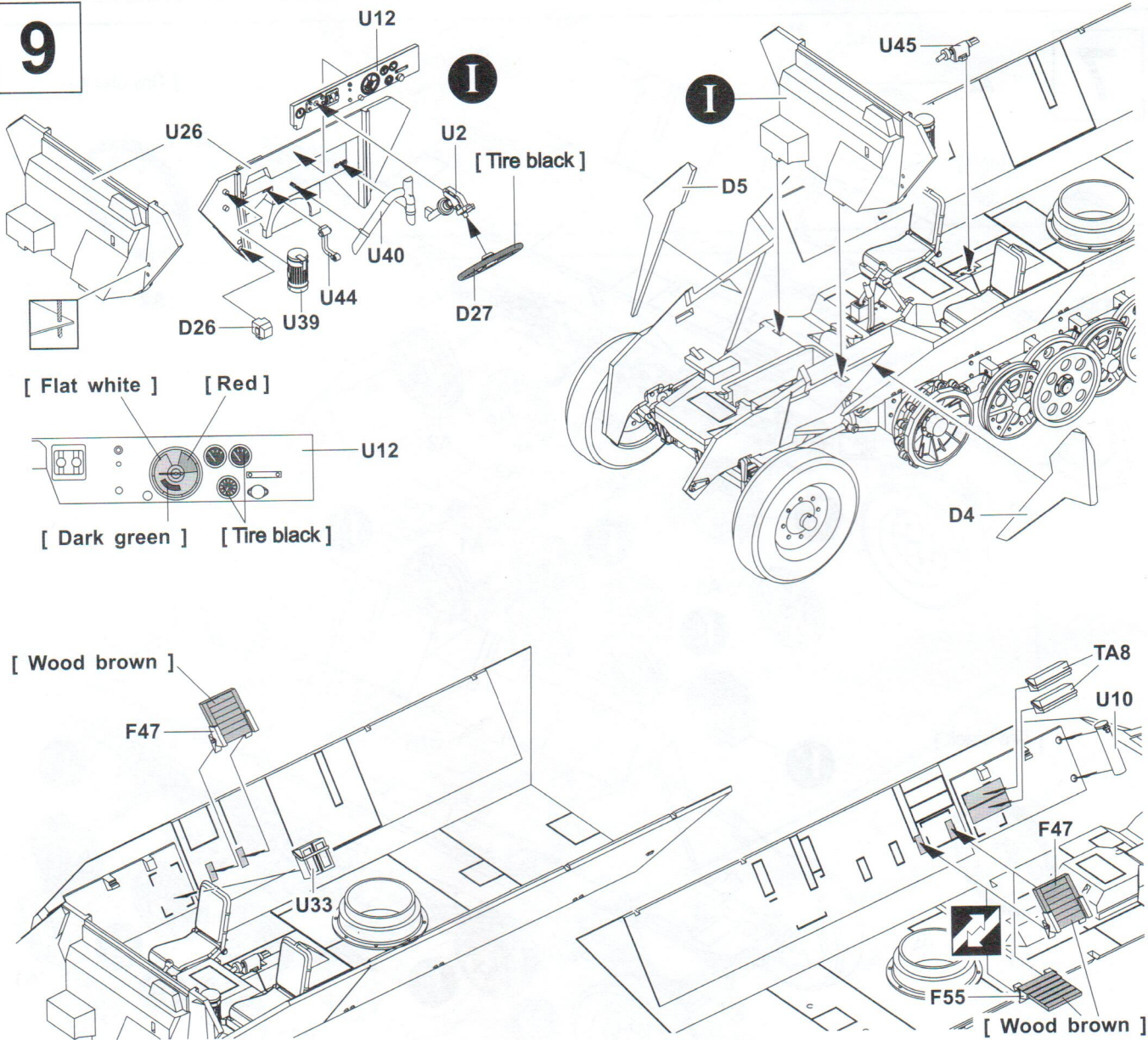
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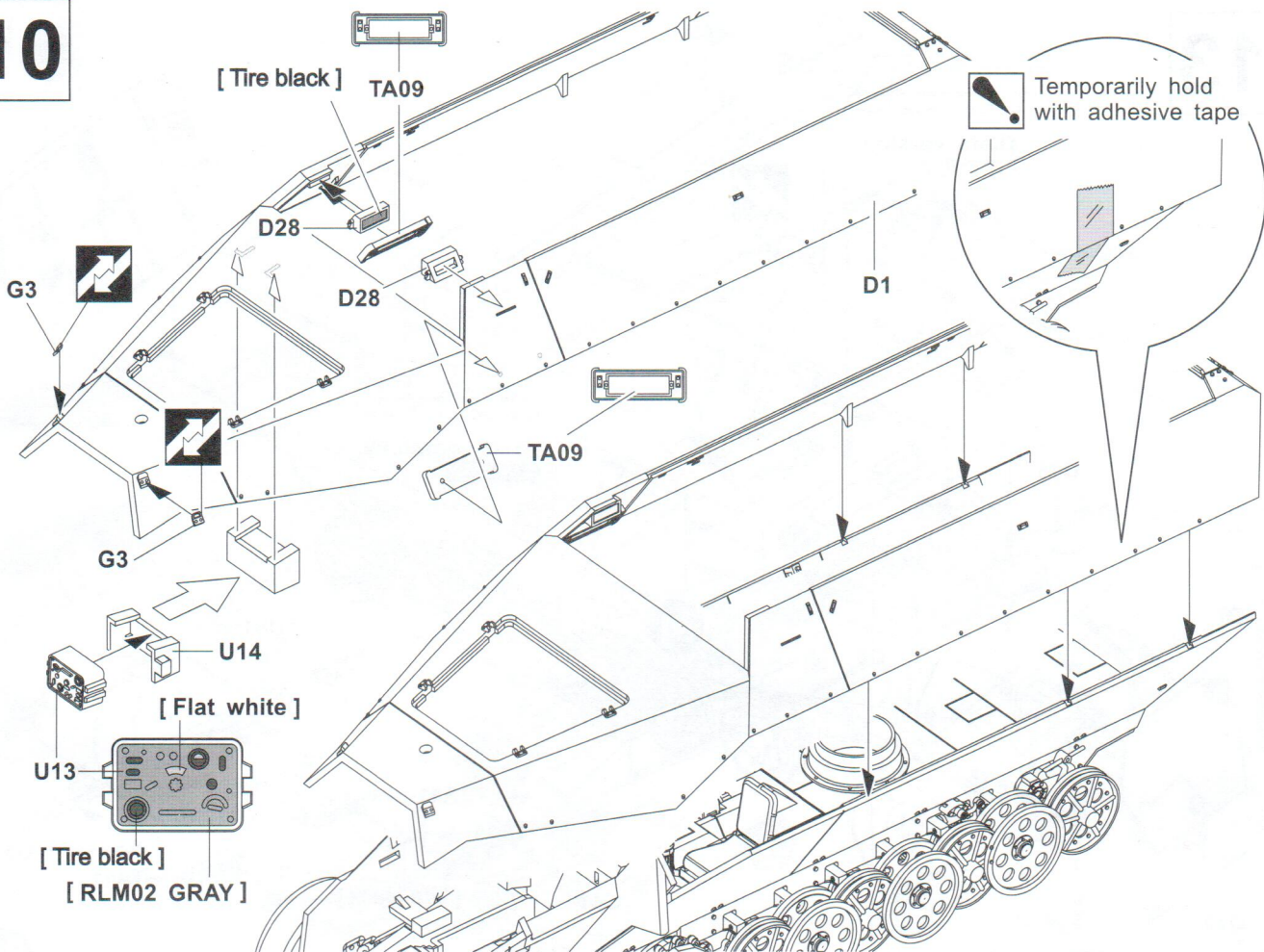
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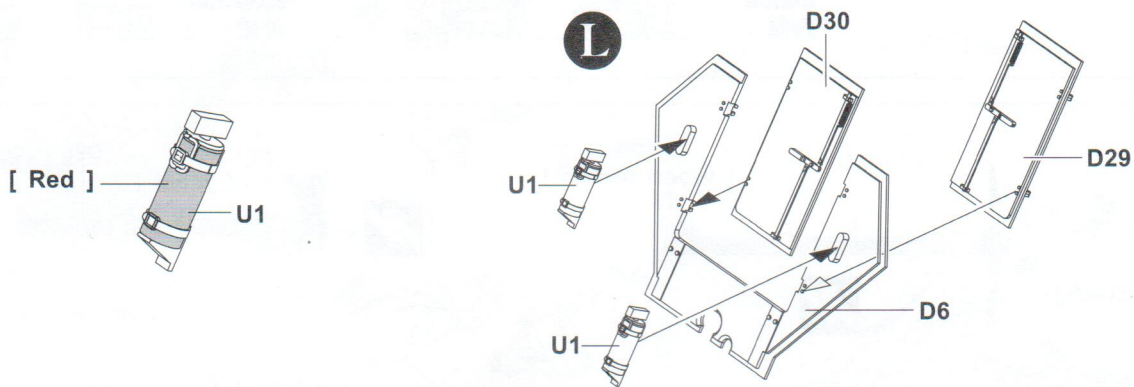
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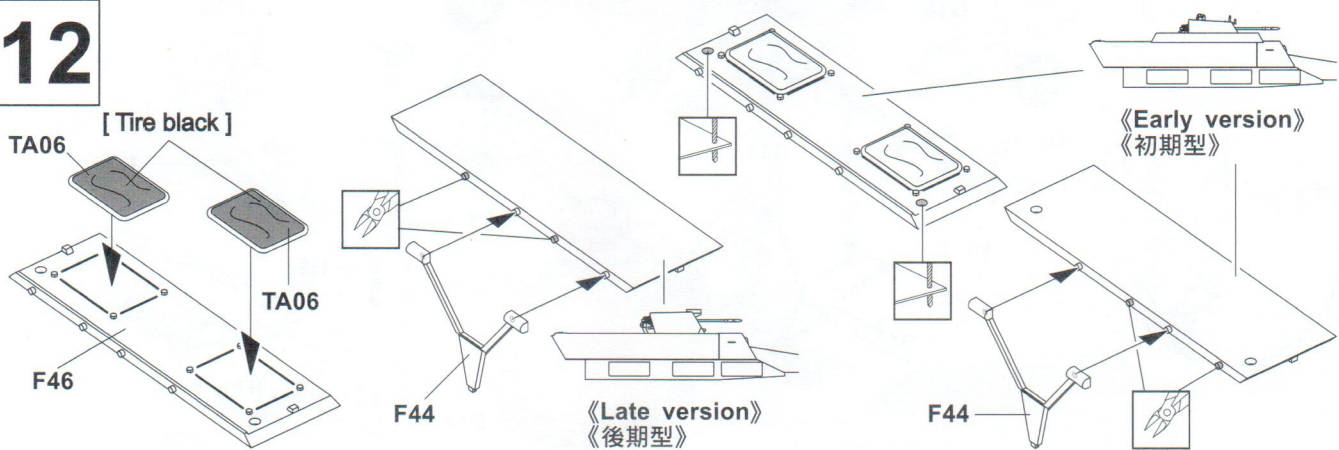
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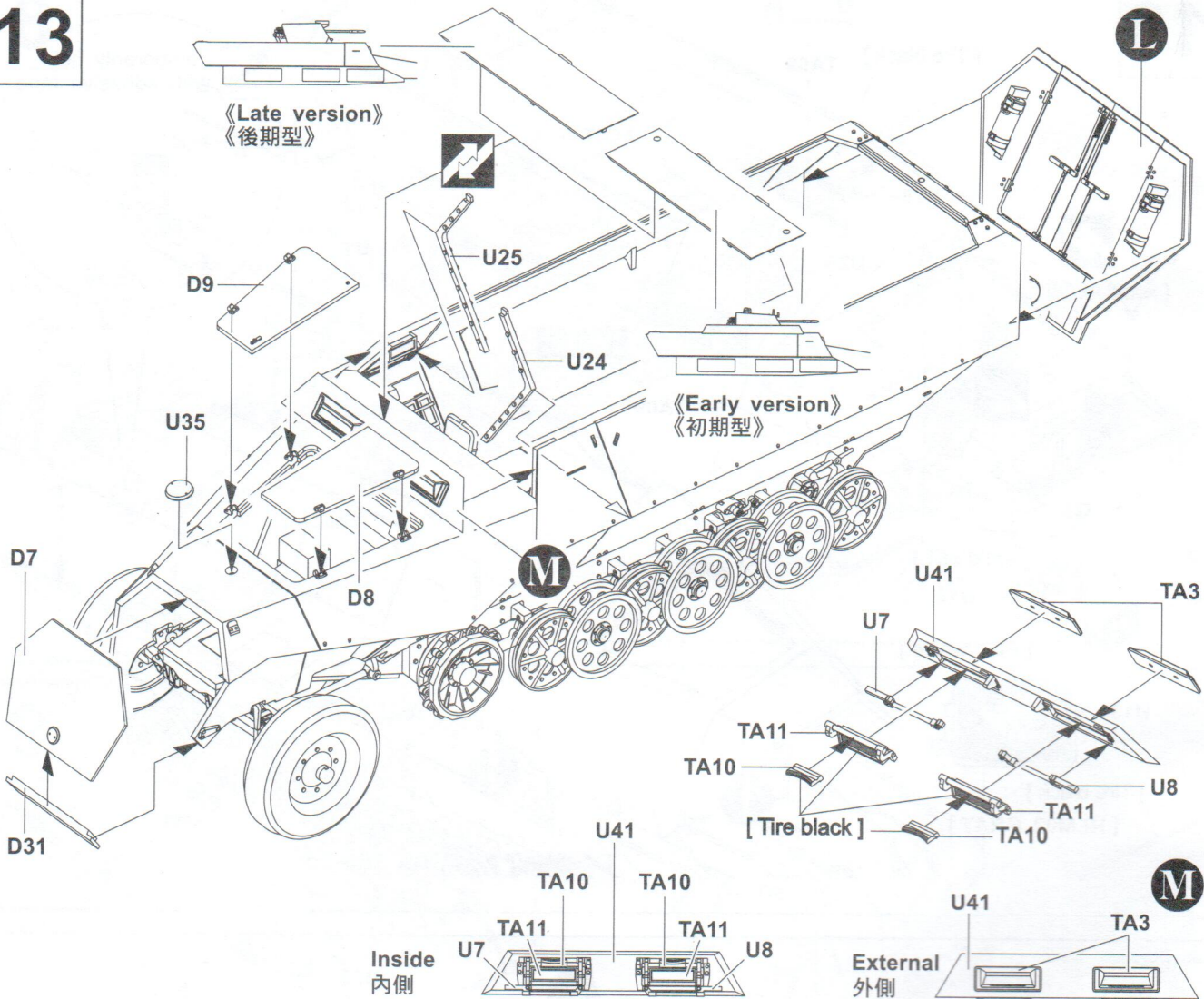
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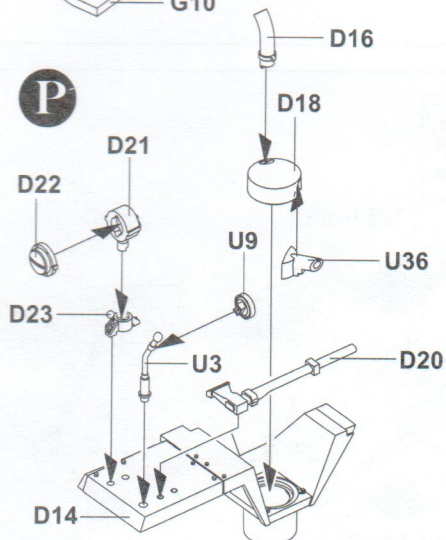
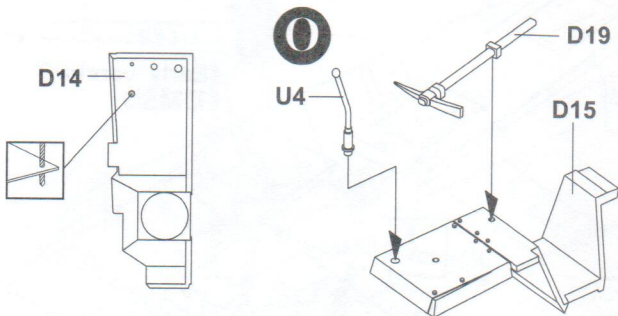
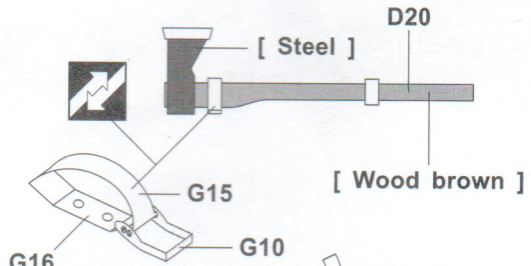
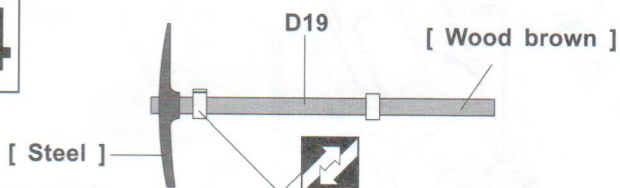
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《後期型》

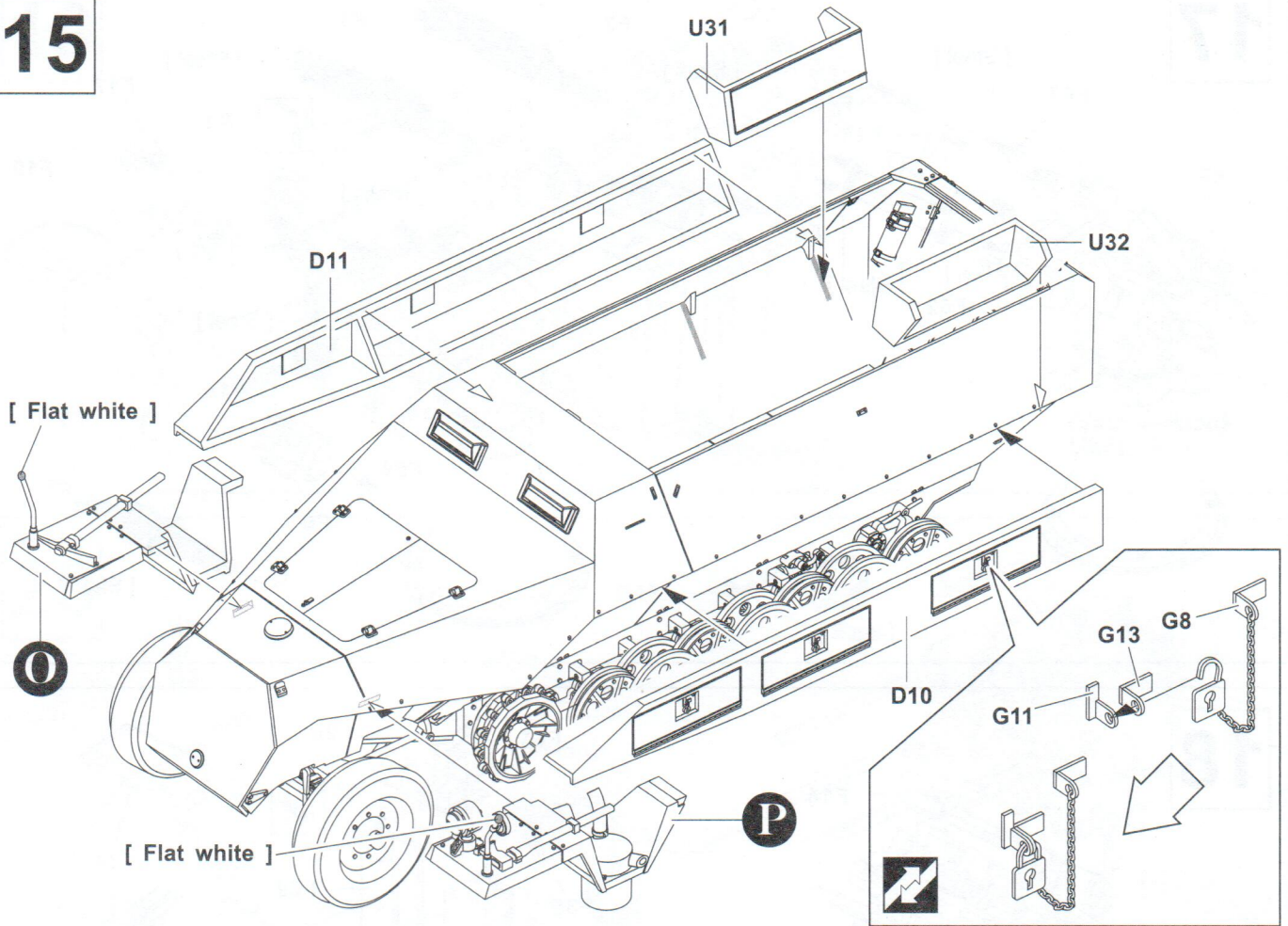
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《初期型》



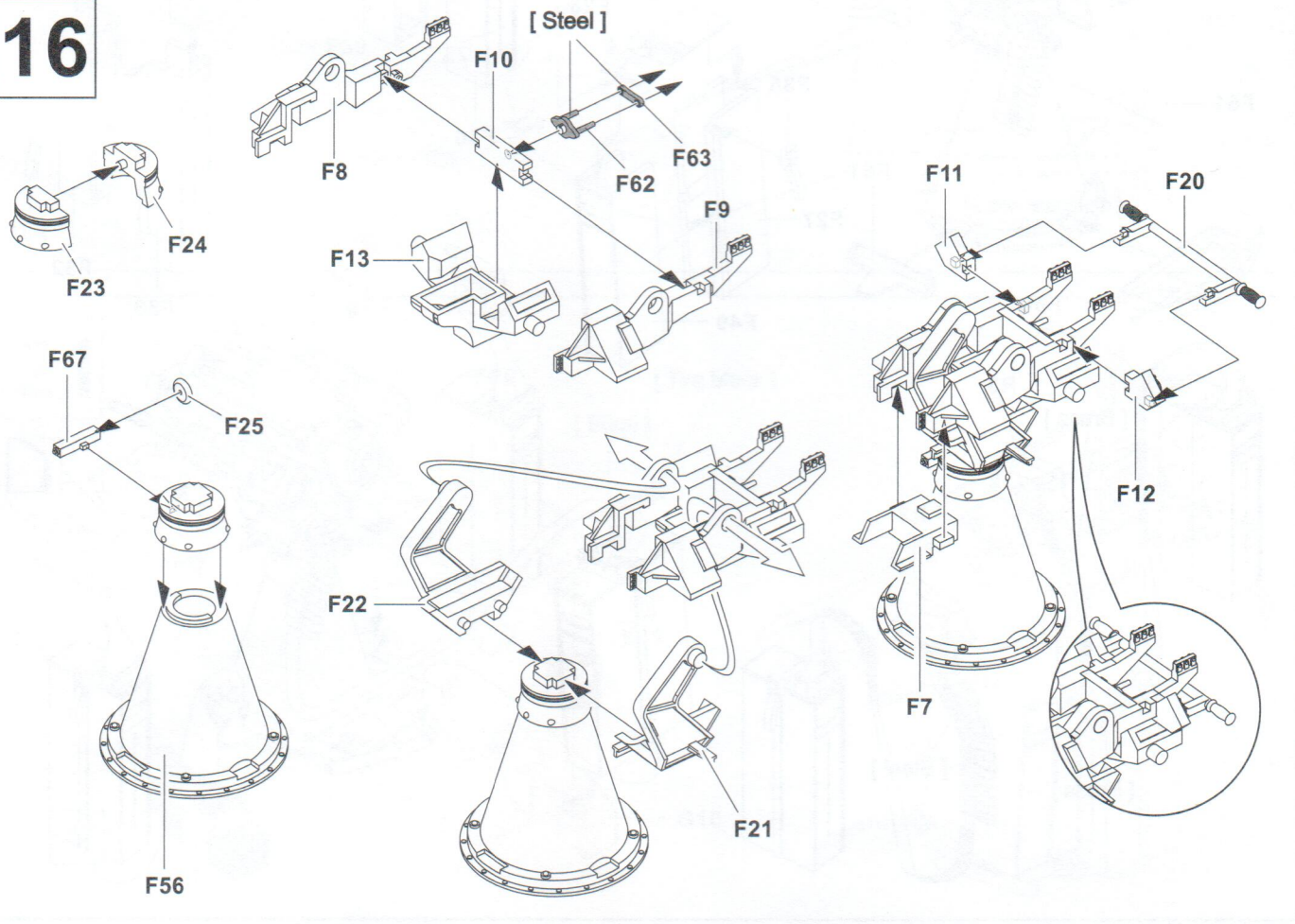
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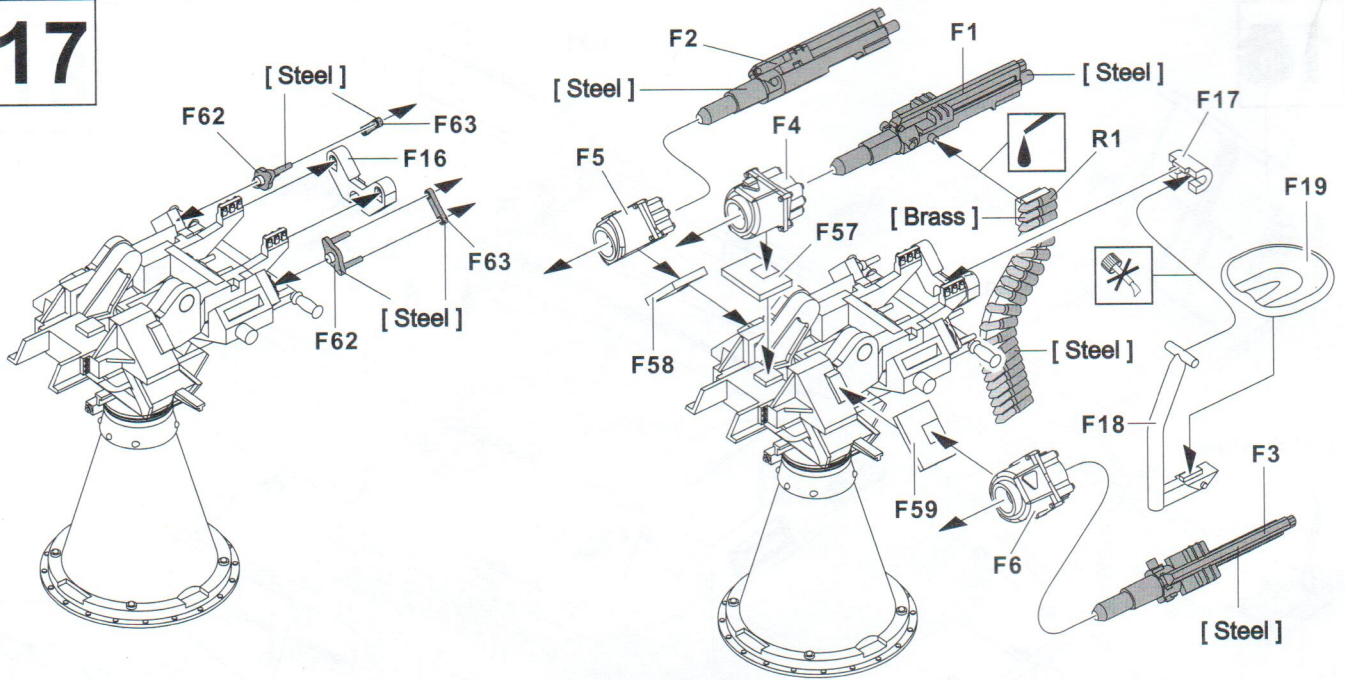
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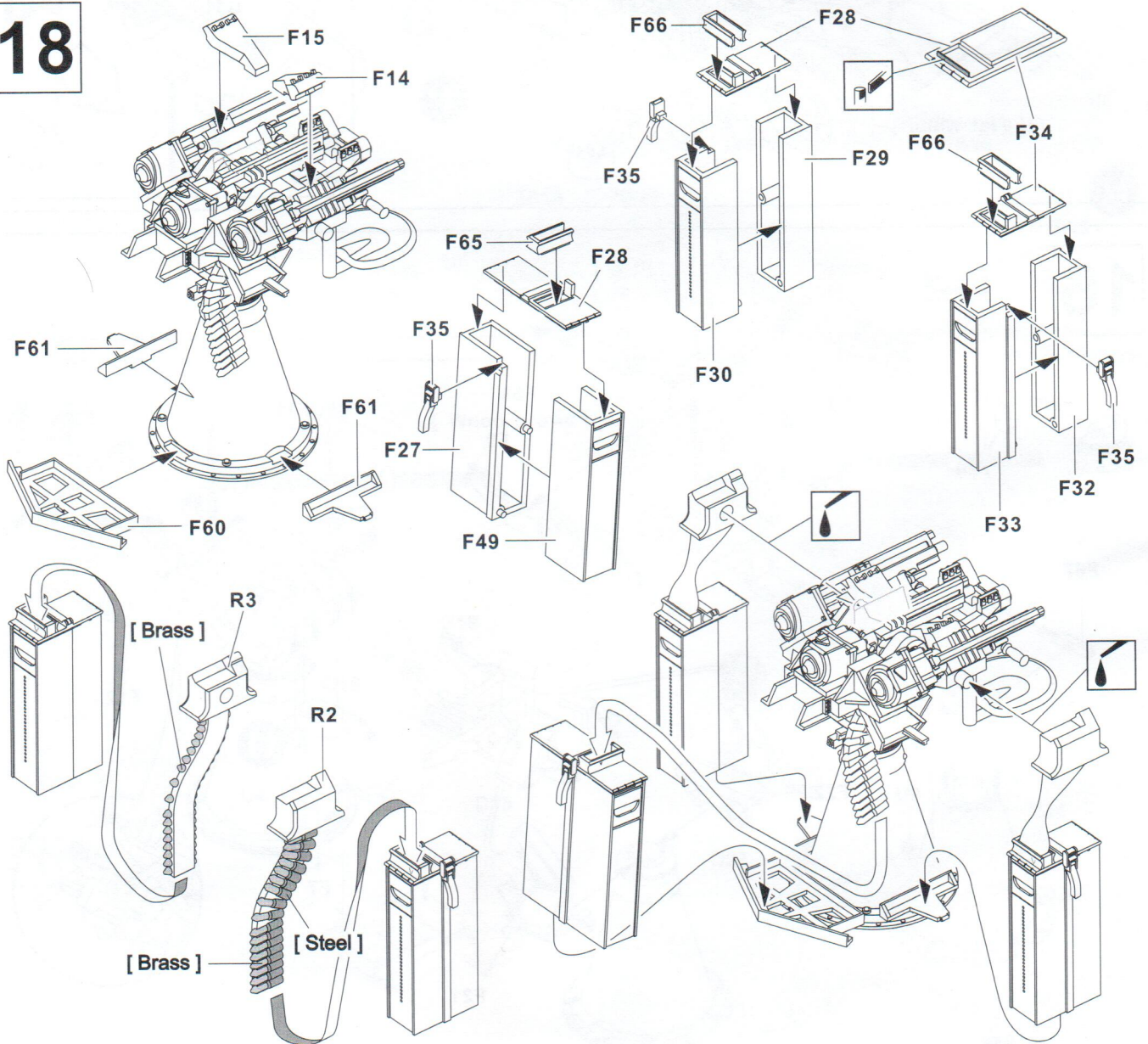
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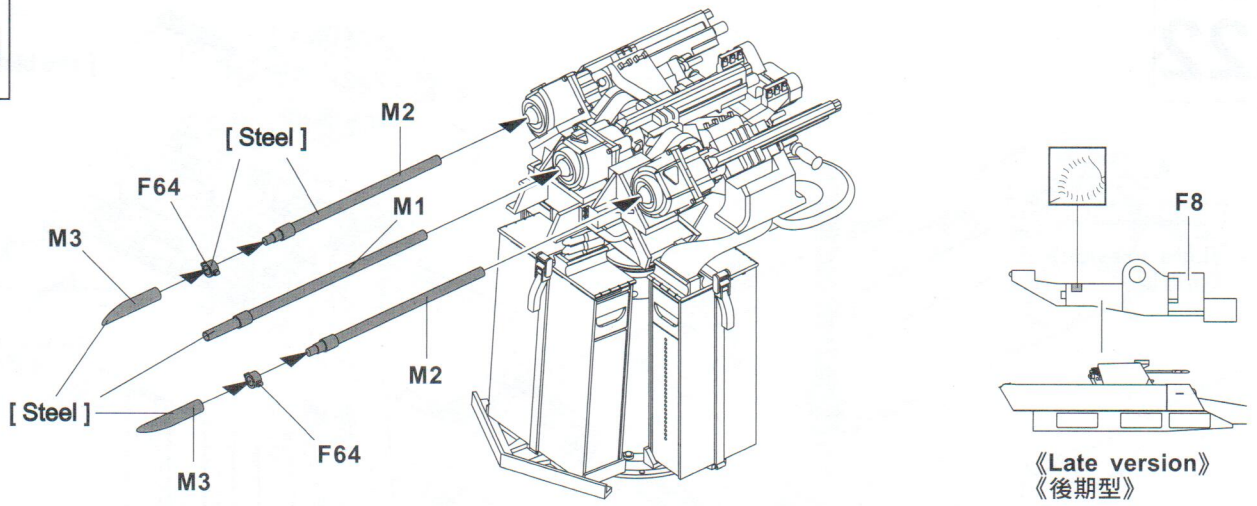
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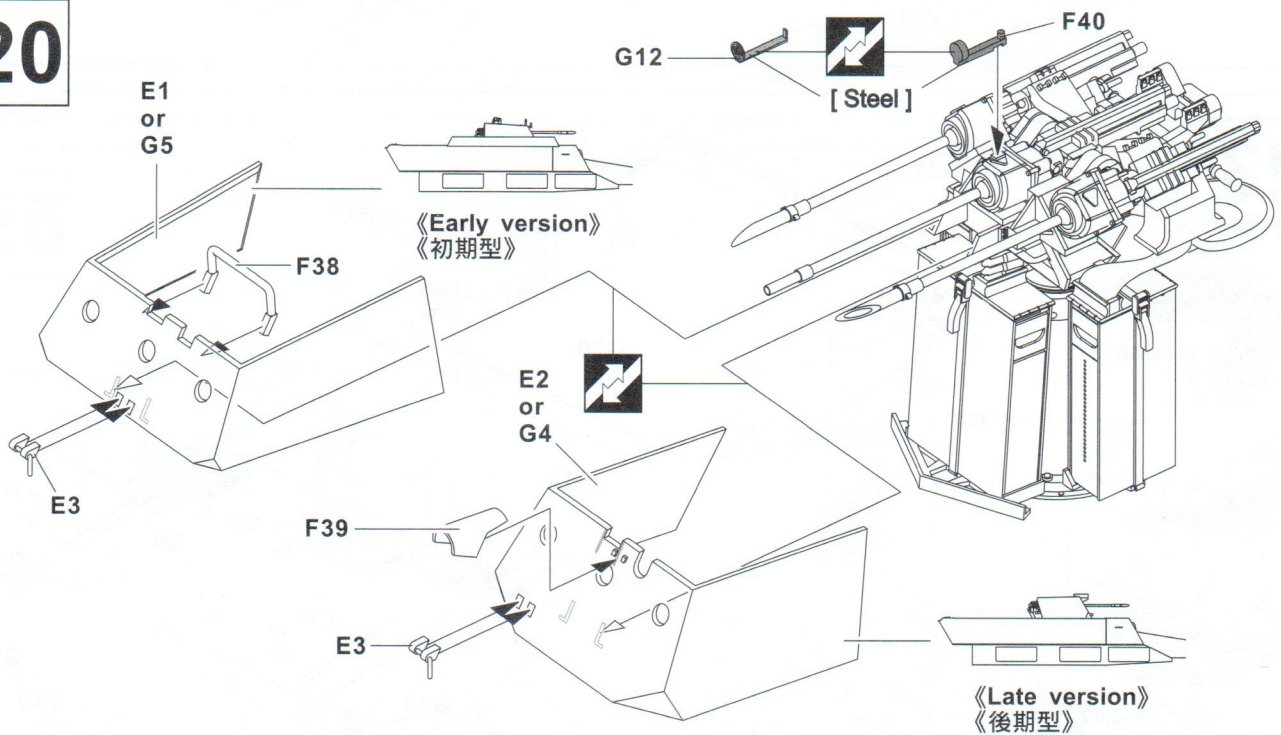
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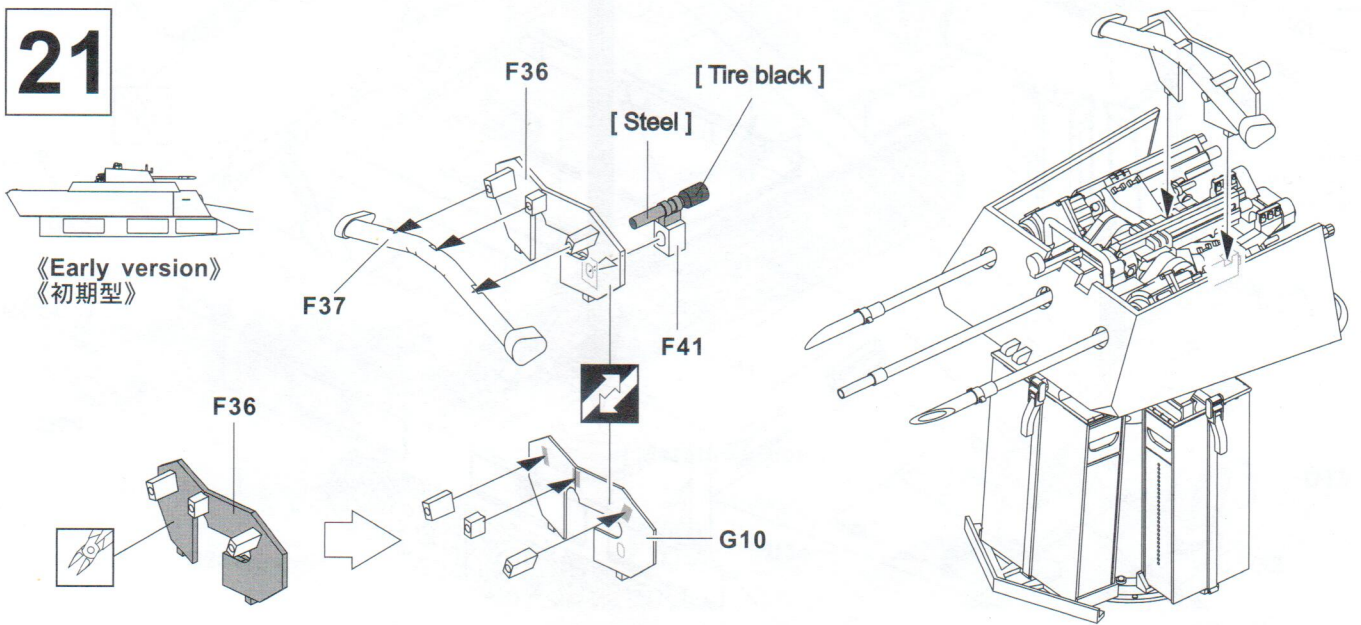
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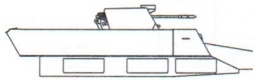
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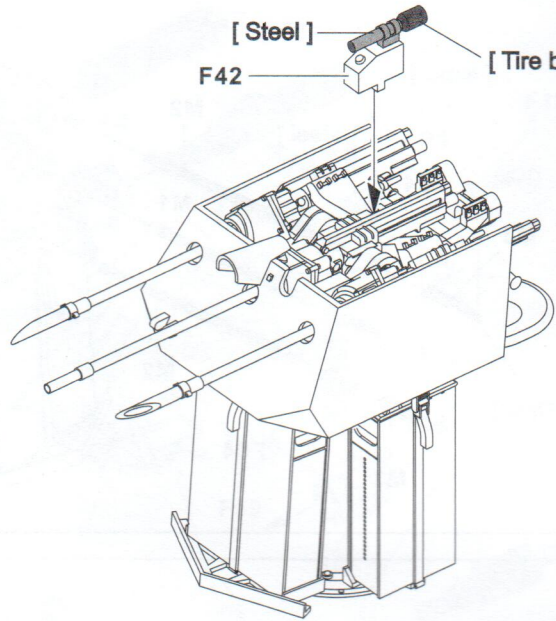


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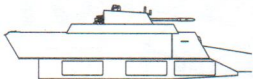


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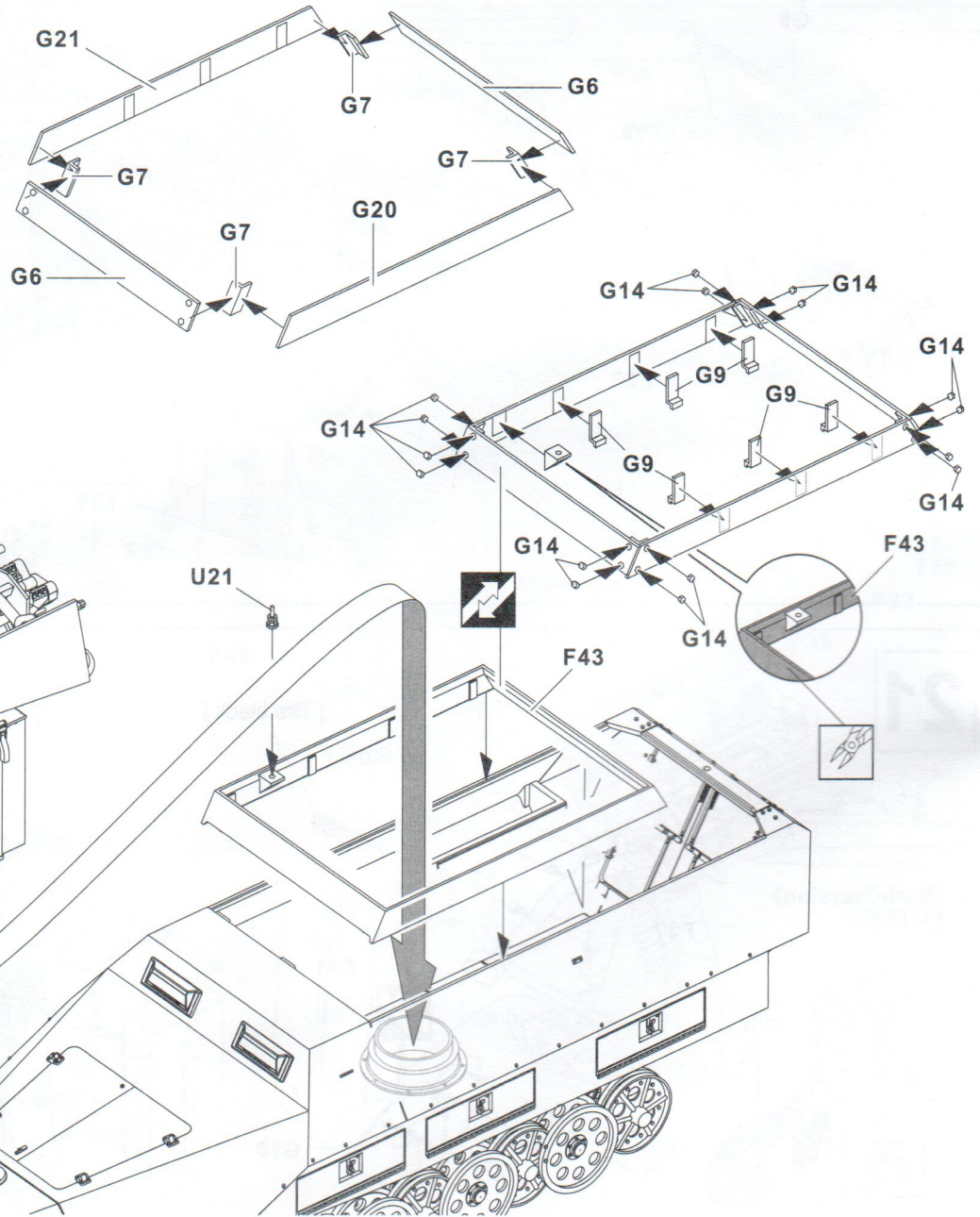
[Steel]
F42 [Tire black]



23

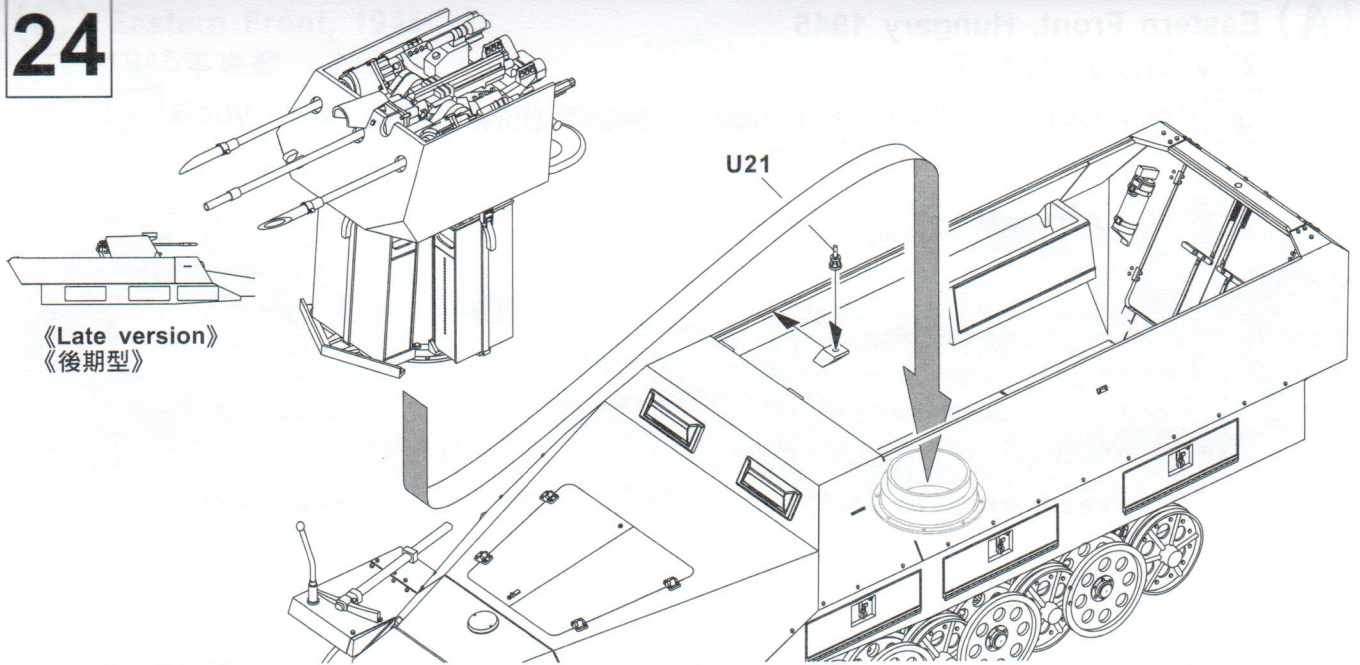


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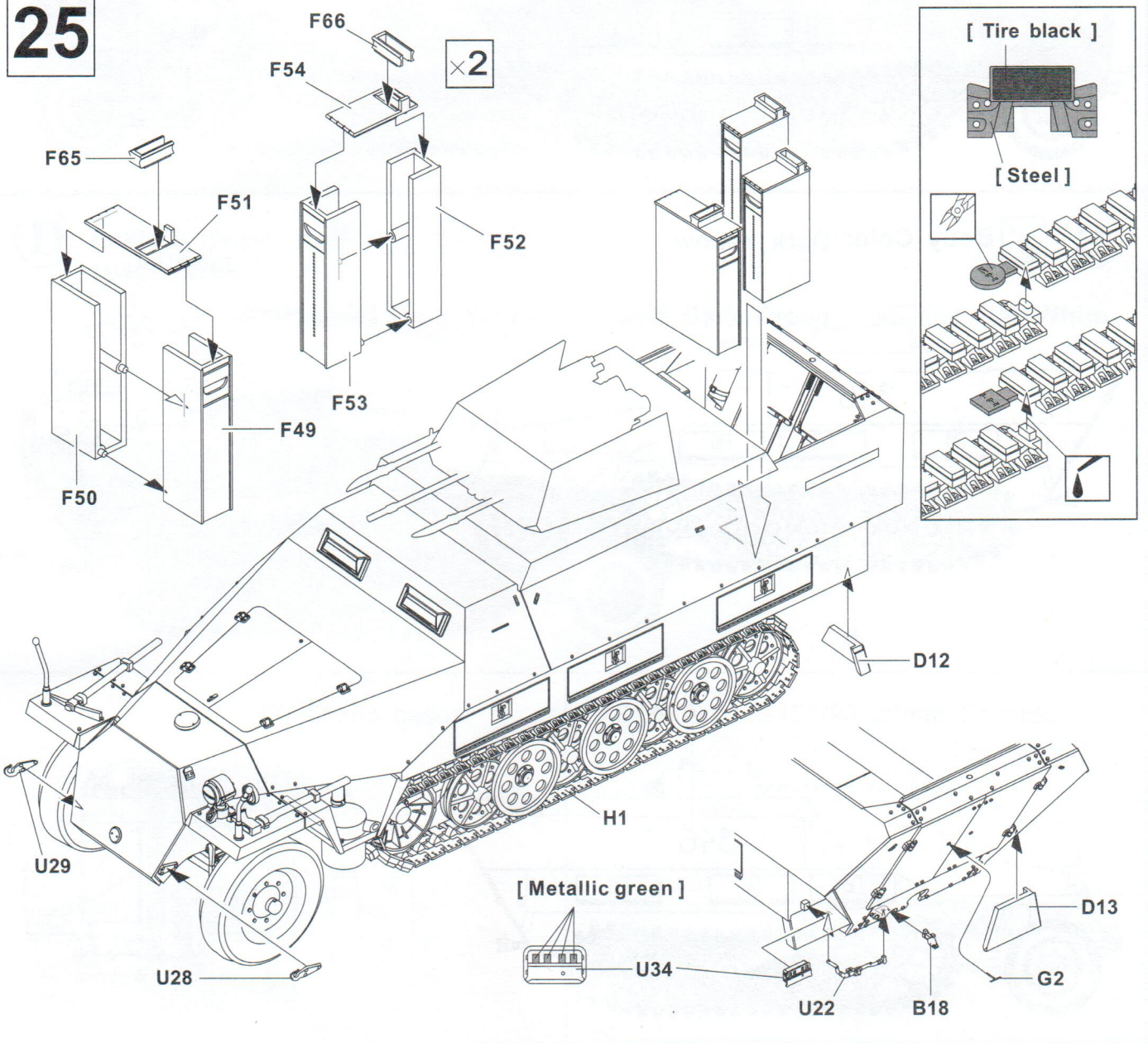


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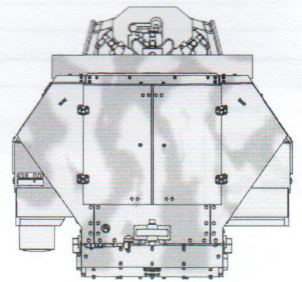
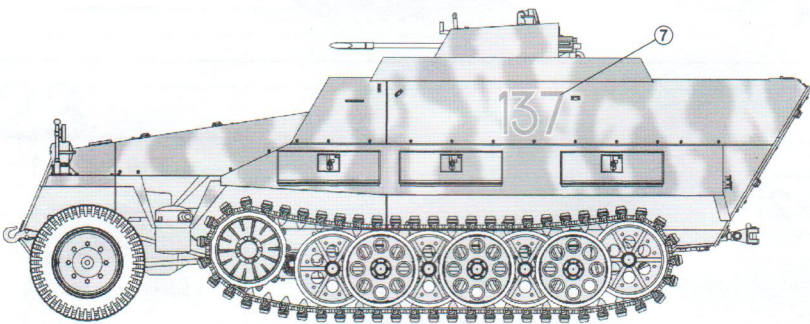
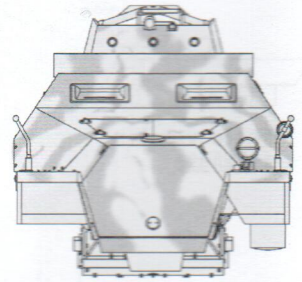
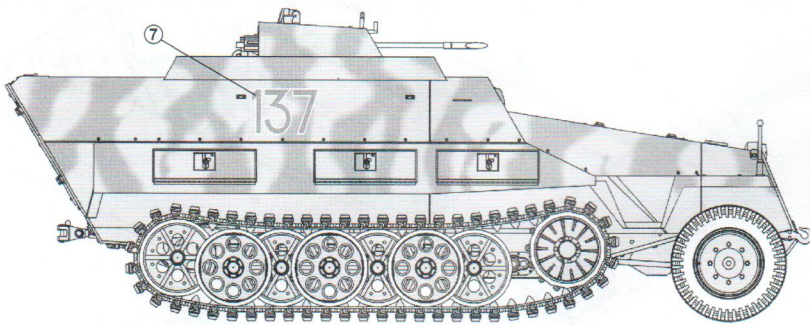


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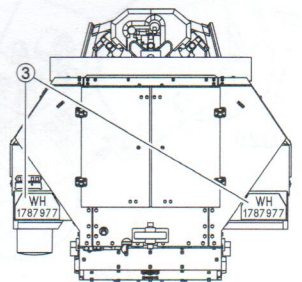
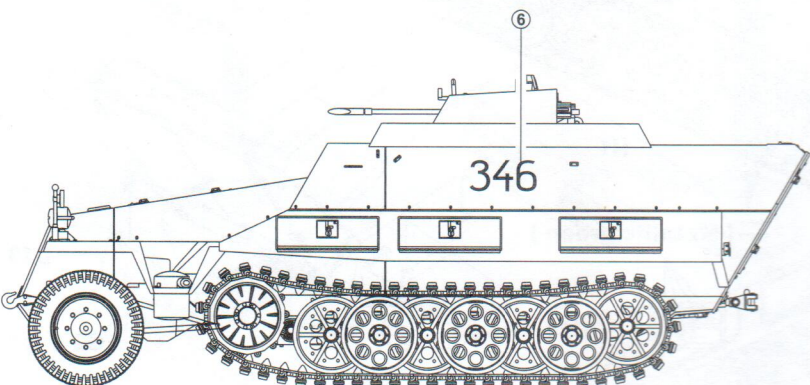
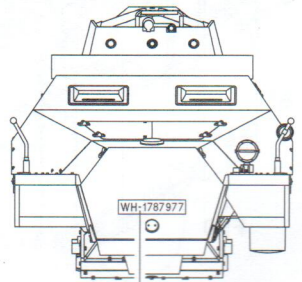
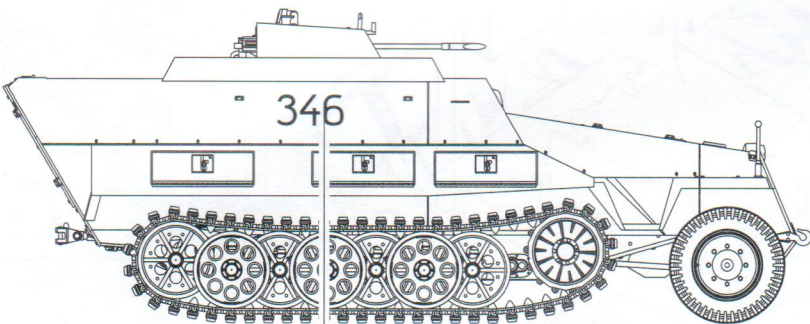


A Eastern Front, Hungary 1945
東線, 匈牙利, 1945年

 Body Color:  Dark Yellow  Dark Green

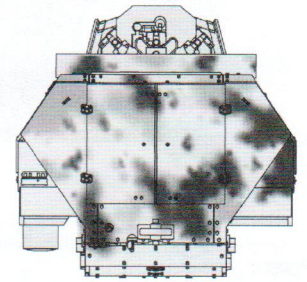
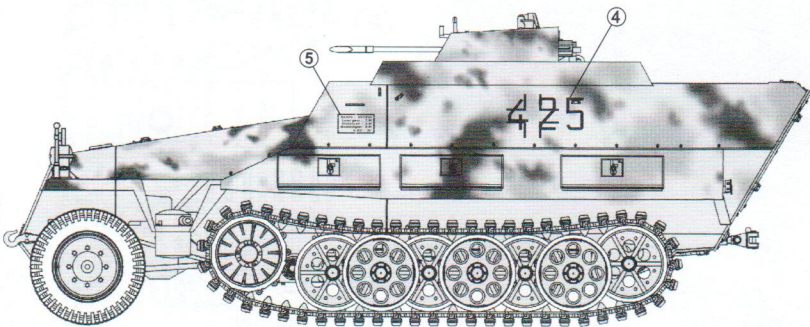
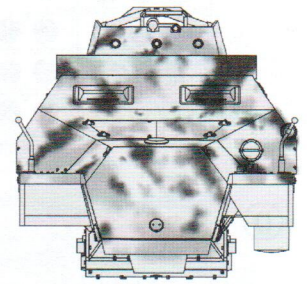
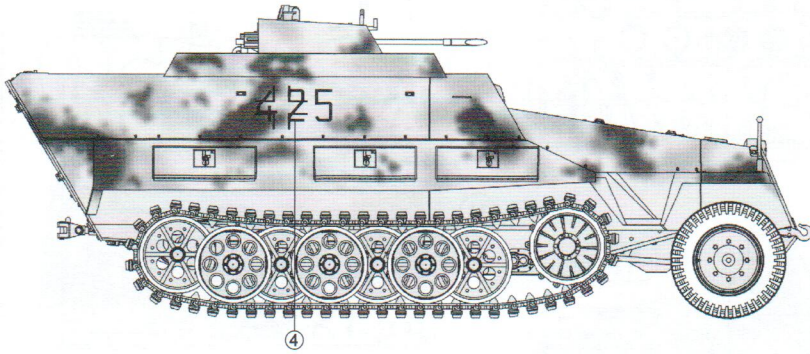


B  Body Color: Dark Yellow



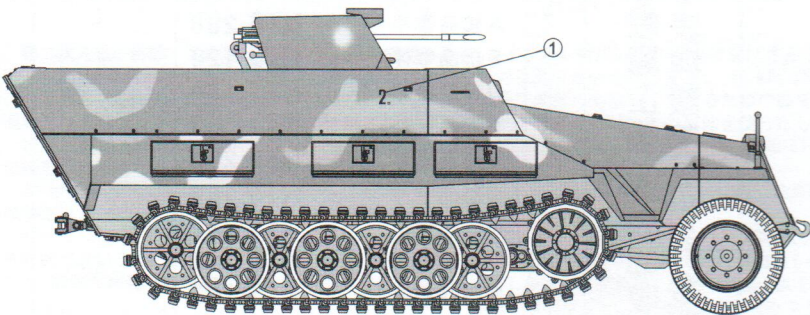
C Eastern Front, 1945
1945年東線

Body Color:  Dark Yellow  Dark Green
 Red Brown



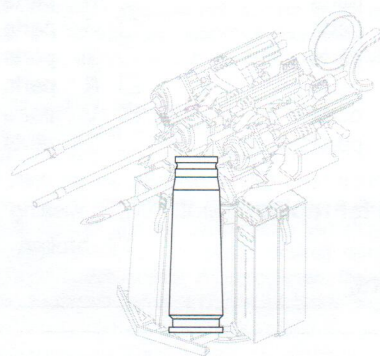
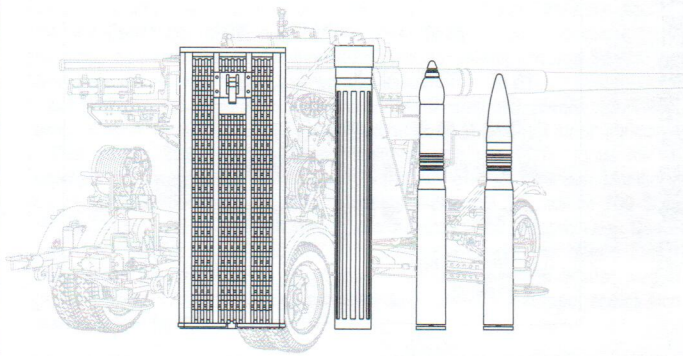
D Eastern Front, 1945
1945年東線

Body Color:  Dark Yellow  Dark Green  Flat White



AF 35107 8.8cm L/56 Ammo cases

AF 35090 MG151/20 20mm Cartridge



PARTS LIST 零件表

Parts :

A	2	E	1	H	1	R	1
B	1	F	1	J	1	U	1
D	1	G	1	M	1	TA	2



Instructions:

If for some reason, you are not fully satisfied or have questions concerning our product; Please use the form provide, and send it to our nearest representative or mail it directly to our office.

We will deal with that A.S.A.P.

限台灣地區使用 For Taiwanese use only!

		AF 35082 Parts Replacement Form	
<input type="checkbox"/> A parts	<input type="checkbox"/> H parts	<input type="checkbox"/> J parts	<input type="checkbox"/> M parts
<input type="checkbox"/> B parts	<input type="checkbox"/> R parts	<input type="checkbox"/> U parts	<input type="checkbox"/> TA parts
<input type="checkbox"/> D parts			
<input type="checkbox"/> E parts			
<input type="checkbox"/> F parts			
<input type="checkbox"/> G parts			
Reason for replacement:		<input type="checkbox"/> Missing <input type="checkbox"/> broken	
Signature: _____			

總代理：戰鷹企業 客服部收 本公司將盡速為您處理
請將本表與該部品相同金額之郵政匯票一同寄至

		AF 35082 零件補充申請表		申請人 姓名 地址 電話 : : :	
<input type="checkbox"/>	A 部品零件	NT\$ 280	<input type="checkbox"/>	H 部品零件	NT\$ 160
<input type="checkbox"/>	B 部品零件	NT\$ 120	<input type="checkbox"/>	J 部品零件	NT\$ 160
<input type="checkbox"/>	D 部品零件	NT\$ 180	<input type="checkbox"/>	M 部品零件	NT\$ 100
<input type="checkbox"/>	E 部品零件	NT\$ 80	<input type="checkbox"/>	R 部品零件	NT\$ 80
<input type="checkbox"/>	F 部品零件	NT\$ 280	<input type="checkbox"/>	U 部品零件	NT\$ 160
<input type="checkbox"/>	G 部品零件	NT\$ 180	<input type="checkbox"/>	TA 部品零件	NT\$ 120
郵資		NT\$ 60	請填 總計 NT\$ _____		
零件補充原因: 請於 <input type="checkbox"/> 打✓					
. 原包裝即 <input type="checkbox"/> 遺失或 <input type="checkbox"/> 毀損 .					
. 製作途中 <input type="checkbox"/> 遺失或 <input type="checkbox"/> 毀損 .					
. <input type="checkbox"/> 補充多餘零件 .					
其他原因 _____					