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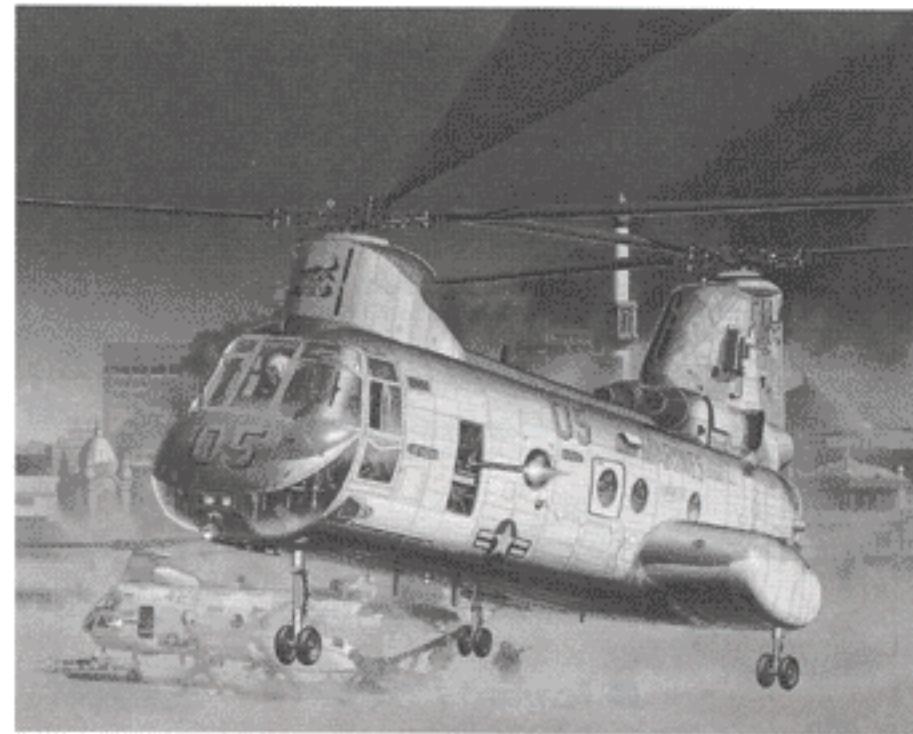
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MADE IN KOREA

CH-46E

CURRENT U.S. MARINES

"BULL FROG"

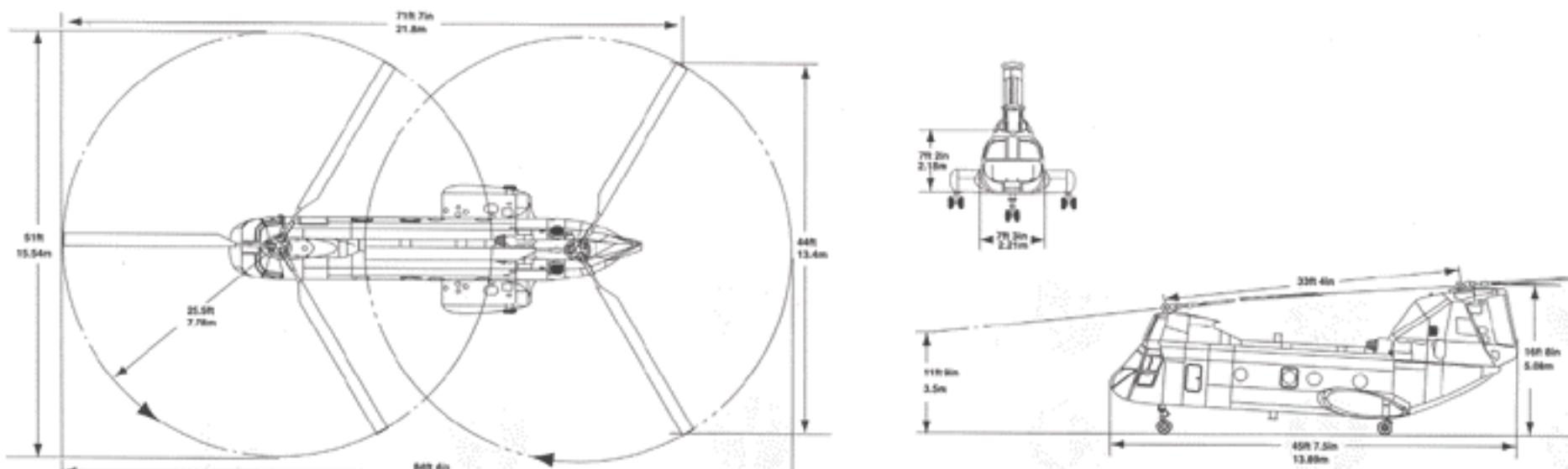
CH-46E "불 프로그" 현용 미해병대 헬리콥터

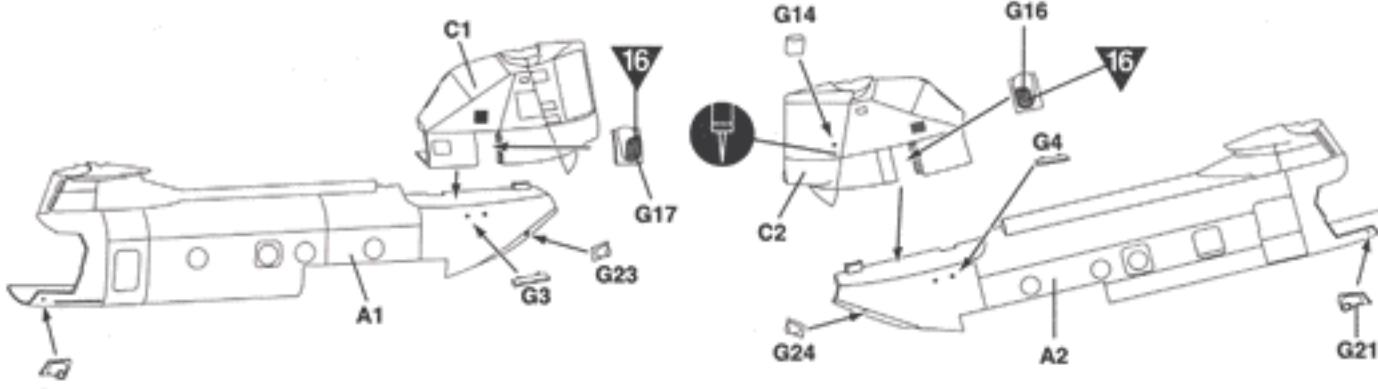
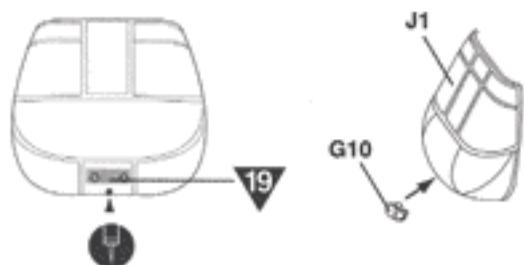
The Boeing CH-46 Sea Knight helicopter has served the US Navy and Marine Corp since the early 1960's. Its tandem rotor design sets it apart from other single rotor Navy and Marine helicopters and gives the Sea Knight excellent stability, powerful lifting capability and superior handling in difficult weather conditions. The CH-46 was first procured in 1964 to satisfy the Marine Corp's medium-lift requirements in Viet Nam. Since then the Sea Knight has served in almost every Marine peacetime and combat assignment. The US Navy also acquired the helicopter, though in smaller numbers, for shipboard re-supply missions ("vertical replenishment / Vertrep"), search and rescue (SAR) and general transport. The mission of the CH-46E Sea Knight helicopter in a Marine Medium Helicopter (HMM) squadron is to provide all-weather, day/night, assault transport of combat troops, supplies, and equipment during amphibious and subsequent operations ashore. Troop assault is the primary function and the movement of supplies and equipment is secondary. Additional tasks are: combat and assault support for evacuation operations and other maritime special operations; over-water search and rescue augmentation; support for mobile forward refueling and rearming points; aero medical evacuation of casualties from the field to suitable medical facilities. Besides the contra-rotating tandem rotors another interesting feature of the CH-46E Sea Knight is the two 1800 shaft horsepower GE-T58 engines mounted to the rear rotor pedestal. A drive shaft runs to each rotor and in the event of an emergency, either engine can drive both rotors. The Cargo bay has a loading ramp that can remain open in flight for oversized cargo or for parachute drops. For cargo loading a winch is built into the forward bulkhead and a system of rollers in the floor speeds loading and unloading. Additionally a cargo hook built into the belly allows external sling loads up to 4000 pounds. The three-bladed rotors fold hydraulically for easier ship-board storage. A pintle mounted 0.50 caliber Browning machine gun can be installed on each side of the aircraft for self protection into high threat areas. The Marines have given it the nickname "Frog" as the side sponsons and the aircraft's nose-up attitude on the ground make it look like a frog ready to hop. Updated versions with increased fuel capacity and larger sponsons are given the name "Bullfrog".

Der Boeing CH-46 Sea Knight Heliocopter steht bei der US Navy und dem Marine Corps seit den frühen sechziger Jahren im Einsatz. Sein Tandem Rotor Design ist nicht nur sehr auffällig, sondern sorgt auch für exzellente Stabilität, hohe Transportkapazität sowie überlegenes Handling bei schlechten Wetterverhältnissen. Der Hubschrauber wurde ab 1964 angeschafft und hatte seine ersten Einsätze in Vietnam. Seitdem war er bei jeder Kriegs- und Friedenmission des Marine Corps dabei. Die US Navy erhielt auch eine kleinere Anzahl für Nachschub-, Rettungs- und Transportaufgaben. Das Pflichtenheft des CH-46 umfasst den Allwetter/Tag und Nacht Transport von Truppen, Material und Ausrüstung die sekundäre. Weitere Zwecke sind Evakuierungen und andere seegestützte Einsätze wie Überwassersuche und Auftanken und Aufmunitionieren von vorgelagerten Stellungen sowie Verwundelentransporte. Außer zwei Rotoren besitzt der CH-46 auch zwei Triebwerke mit je 1800 PS an der Welle. Jede Maschine treibt einen Rotor an, im Notfall kann aber auch ein Triebwerk beide Rotoren versorgen. Die Laderampe kann während des Fluges offen bleiben, um sperrige Lasten zu transportieren oder Luftlandetruppen den Absprung zu ermöglichen. Eine interne Winde hilft bei der Be- und Entladung, zusätzlich erleichtert ein Rollensystem im Boden den Vorgang. Ein Kran im Bauch des CH-46 erlaubt das Mitführen von Außenlasten bis zu 4000 Pfund. Die Rotoren können zwecks Platzersparnis hydraulisch gefaltet werden. Für die Nahverteidigung sind bewegliche 0,50 Browning MGs in den Seiten möglich. Die Marines nennen den CH-46 "Frog"(Frosch), weil die hinteren Ausbuchtungen und die Kanzel an einen springbereiten Frosch erinnern. Neuere Versionen mit erhöhter Treibstoffkapazität und größeren Ausbuchtungen bekamen den Namen "Bullfrog"(Ochsenfrosch).

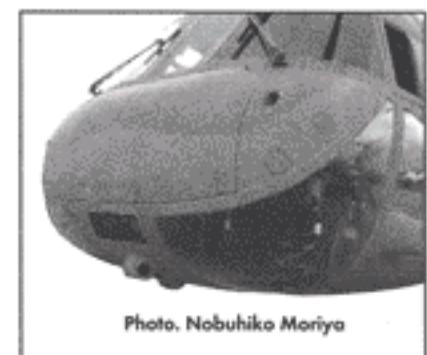
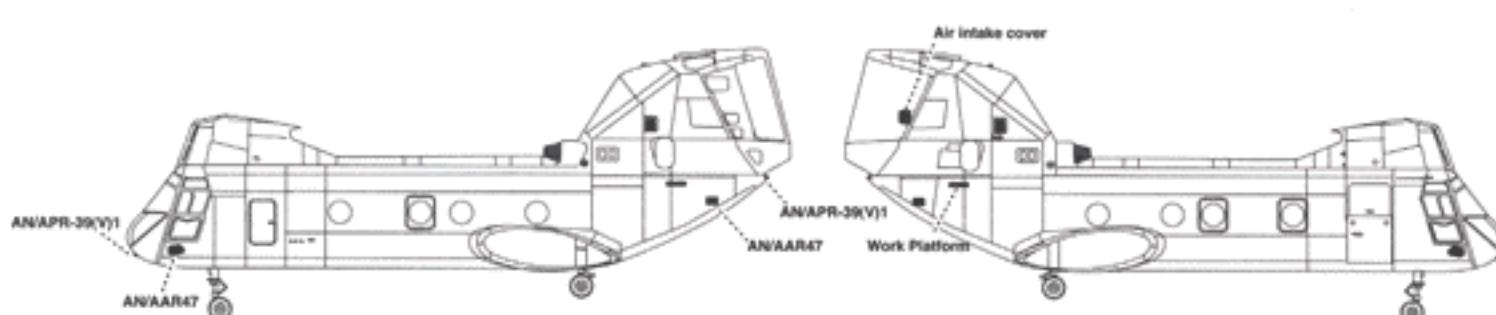
ボーイングCH-46型シー・ナイト・ヘリコプターは、1960年代の初め以来、米海軍および米海兵隊で使用されてきました。同ヘリコプターのタンデムのローター設計は、米海軍および米海兵隊のその他の単ローターのヘリコプターとは違っており、シー・ナイト・ヘリコプターの卓越した安定性、強力な空輸能力、悪天候条件下での優れた操縦性をもたらしたもの。CH-46型ヘリコプターは、ベトナムにおける中規模の空輸能力との米海兵隊の要求を満たすため、1964年に初めて調達されました。それ以来、シー・ナイト・ヘリコプターは、米海兵隊の平時および戦闘のほとんど全ての任務に使用されてきました。ごく少数ですが、米海軍もまた、同型ヘリコプターを、艦載の再補給任務(垂直補給/Vertrep)、捜索救難(SAR)および一般輸送の目的のために取得しました。米海兵隊の中型ヘリコプター(HMM)海兵航空隊は、上陸作戦および戦後の地上作戦での全天候、昼夜間における戦闘部隊、補給品、装備品の強襲輸送など部隊の強襲輸送が主たる任務で、補給品および装備品の輸送は二次的な任務です。追加的な任務は、撤退作戦やその他の特殊海上作戦での戦闘および強襲支援、洋上での捜索救難の増強用、前線の再補給地点、再武装地点での機動支援、前線から適切な医療施設への負傷者の医療空輸などです。反対方向に回転するタンデム・ローターの他に、CH-46型シー・ナイト・ヘリコプターの面白い特徴は、後部のローター・ペデスタル部に装備されている2基の1,800軸馬力のT58型エンジンです。一本の駆動軸が二つのローター間に走り、緊急事態には、どちらか一つのエンジンで両方のローターを回転させることができます。貨物倉は、はみ出るような大寸法の貨物を搭載したり、落下傘による投下の目的のため、開けたままにされる揚戻ランプがあります。貨物搭載のために、起重機が前部隔壁に組み込まれ、床上のローラー・システムが、貨物の搭載、取出しを早めます。追加的に機体底部に組みこまれた貨物フックは4,000ポンドまでの機外吊下げ荷重に耐えます。艦艇に容易に搭載できるよう、3枚羽根のローターは油圧で折りたためます。高密度の地域への侵入時の自衛のため、蝶番式に装備可能な口径0.5インチのプローニング型機銃を機体の両側部に装備することができます。米海兵隊は、同ヘリコプターの両側のスパンソソと地上での機首上げの姿勢が、今にも飛び上がりそうな蛙にそっくりなので「蛙(FROG)」というニックネームを付けています。燃料搭載量を増加し、より大型のスパンソソを装備した改良型の同ヘリコプターには、「牛蛙(BULLFROG)」の名前が付けられています。

보잉 CH-46 '씨 나이트' 헬리콥터는 1960년대초 이후 미해병대 및 해군의 대표적인 다목적 헬기로 사용중인 기종이다. CH-46 헬기에 채택된 쌍발의 텐덤식 로터설계는 미해군과 해병대에서 운용중인 여러 단발 헬기들과 비교할 때 탁월한 안정성과 강력한 수송능력을 제공하며, 악천후 상황에서도 우수한 조종성을 발휘할 수 있는 특징을 지니고 있다. CH-46 헬기는 베트남전 당시 미해병대가 중형급 공수헬기의 필요성을 새로이 제기함에 따라 개발되었으며, 1964년부터 일선배치가 개시되었다. 이후 CH-46 헬기 시리즈는 평시, 전시를 막론하고 미 해병대의 거의 모든 임무에 사용되고 있으며, 비록 소수이긴 하지만 미해군에서도 항상 재보급(수직보급/Vertrep), 수색/구조(SAR) 및 일반수송 등의 용도에 사용하기 위해 이 기종을 채택하고 있다. 미해병대의 중형헬기(HMM)비행대에 소속된 CH-46E형 헬기는 상륙작전 및 후속 지상작전 수행시 주, 야간 전천후로 병력 및 장비, 기타 각종 물자 등을 신속히 수송하는 것을 주임무로 하고 있으며, 그 밖에도 철수작전 및 기타 특수 해상작전시의 전투 및 강습지원, 해상 수색구조의 보강임무, 전선의 재급유/재무장거점의 기동지원, 부상자의 후방 의료후송등을 수행하고 있다. 텐덤식 로터외에 CH-46 헬기가 지닌 또 다른 특징으로는, 후발루터 대좌부에 장착되어 있는 1,800축마력급의 T58형 엔진 2기를 들 수 있다. 1개의 구동축이 전, 후방 로터사이드 연결하는 방식을 채택하고 있는 CH-47의 동력전달체계는, 긴급사태 발생시 어느 한쪽의 엔진만으로도 2개의 로터 모두를 회전시키는 것이 가능하다. 화물칸의 경우 화물칸의 크기보다 긴 화물을 싣거나 화물의 낙하산투하에 편리하도록 열린 상태에서도 비행 가능한 화물칸 램프도어를 갖추고 있다. 아울러 화물 탑재용 원치가 통체내부 전방격벽에 장착되어 있으며, 화물칸 바닥엔 롤러장치가 설치되어 있어 화물의 신속한 탑재, 하역이 가능하다. 또한 기체 하부에 장착된 화물 견인용 후크는 약 4,000파운드의 하중을 기체아래에 매단 채 비행이 가능하다. 그 밖에도 3개의 날개를 지닌 로터부는 선박등에 쉽게 실을 수 있도록 유압식 접이구조를 갖추고 있으며, 기체의 방어용도로 캘리버 .50 기관총을 동체 양측면에 장착할 수도 있다. 참고로 미해병대에선 동체 양 옆으로 뛰어나온 돌출부 형태와 착륙상태에서 기수를 쳐든 자세가 마치 금방이라도 뛰어오를 듯한 개구리와 달았다고해서 'FROG'라는 별명으로 부르고 있으며, 연료탱크를 증가시켜 한층 대형화된 돌출부를 장비한 개량형 모델은 일명 '황소개구리(BULL FROG)'란 별명으로 부르고 있다.

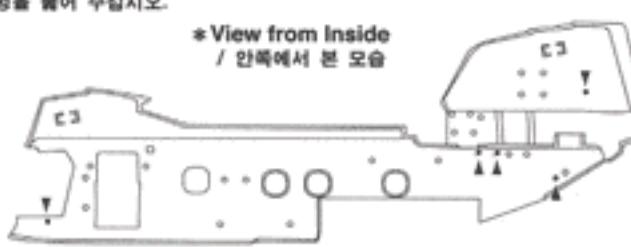
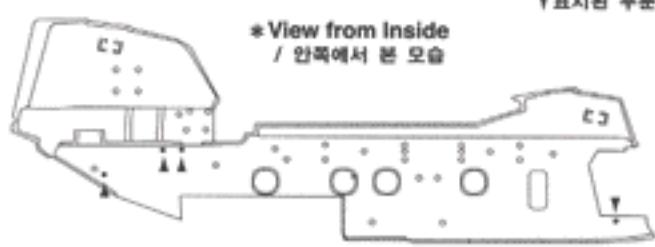
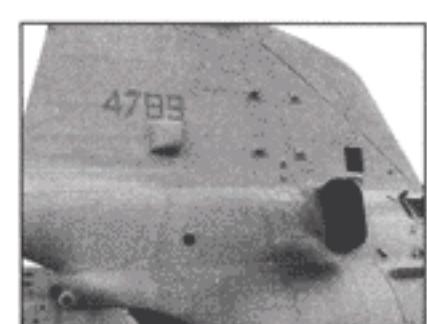
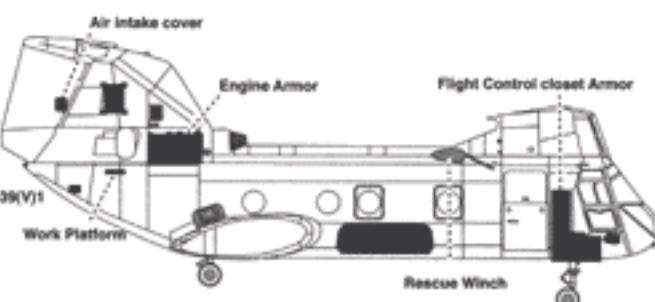
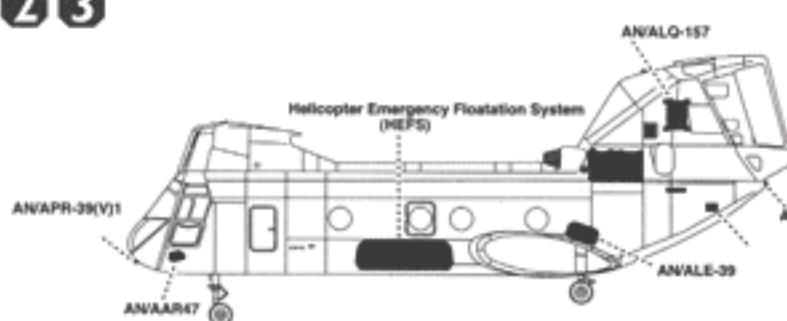


STEP 2**STEP 3**

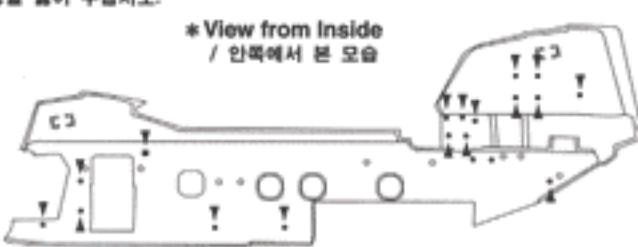
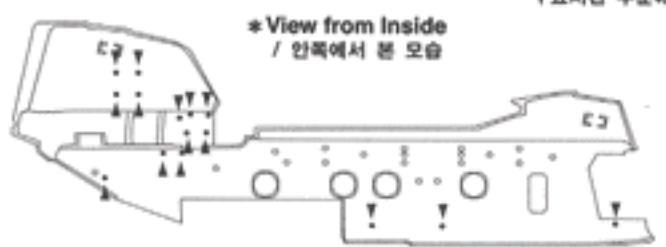
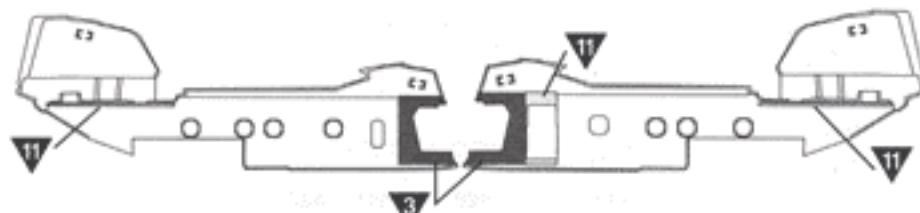
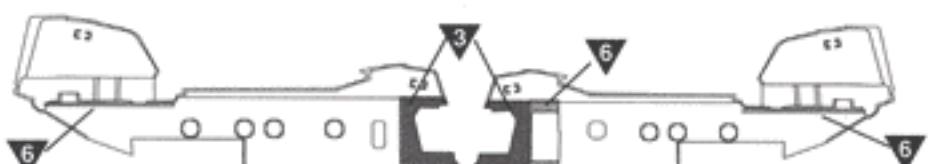
※ Refer to page 10 and 11 for painting.
10, 11페이지의 색칠지시를 참조하여 선택하십시오.

**Drill holes location**

▼ 표시된 부분에 구멍을 끌어 주십시오.

**2 3****Drill holes location**

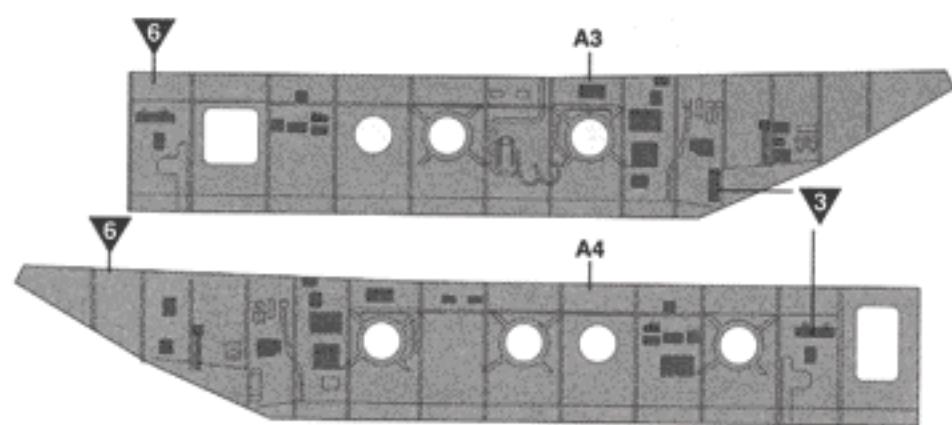
▼ 표시된 부분에 구멍을 끌어 주십시오.

**■Interior Painting Instruction / 동체내측 색칠 참조**

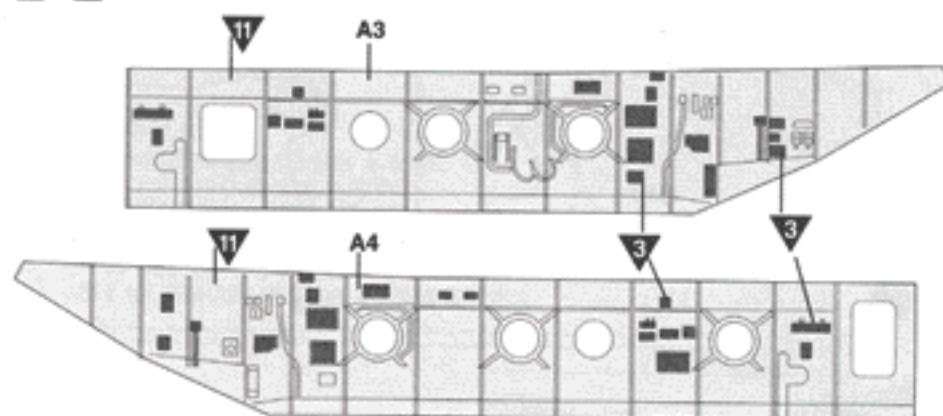
STEP 4

■Interior Painting Instruction / 내부 색칠 참조

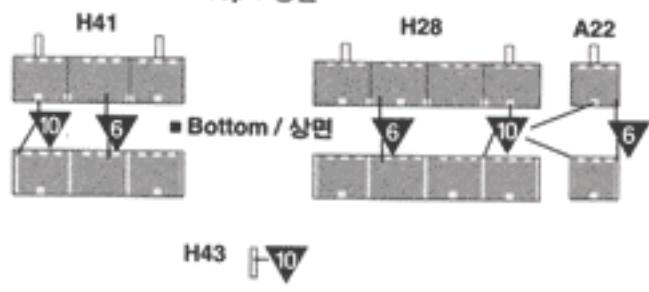
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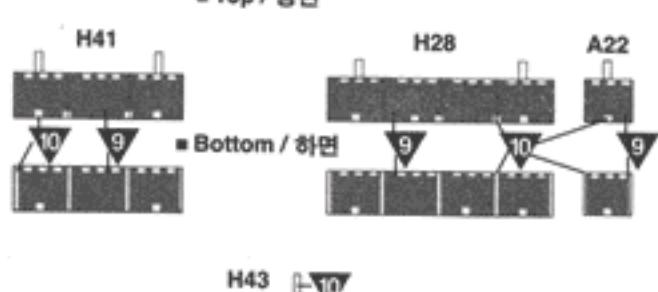
2 3



■ Top / 상면



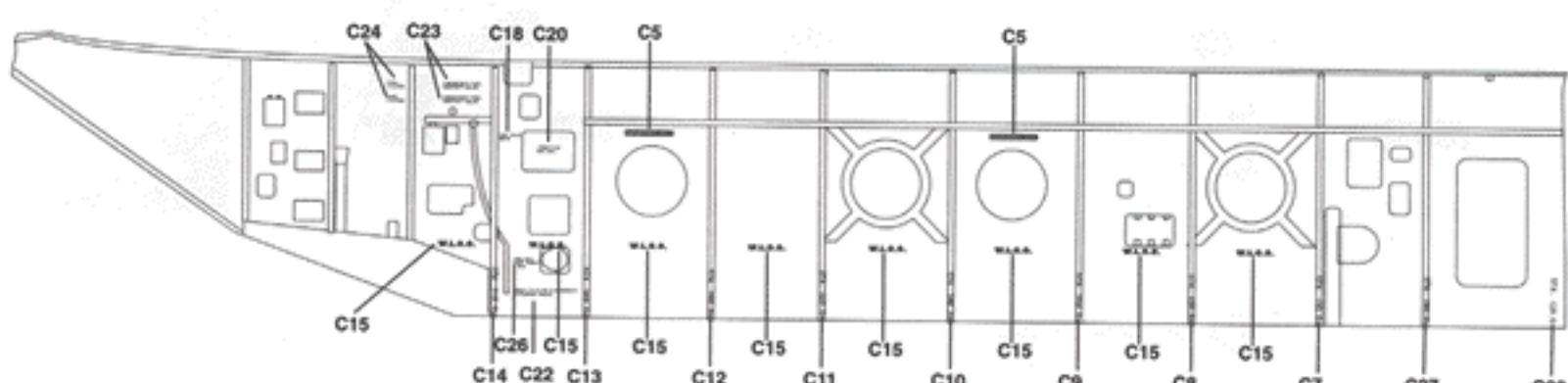
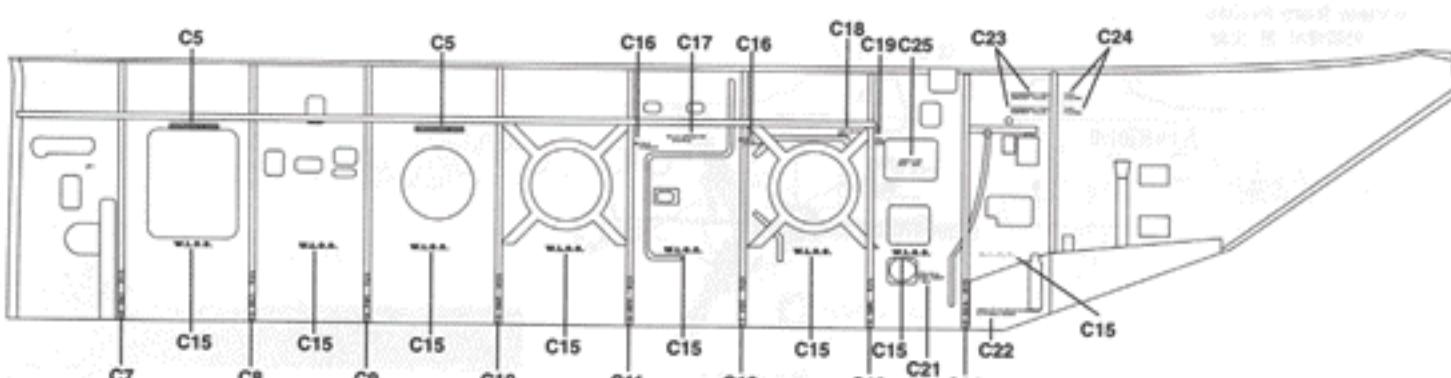
■ Top / 상면



1 2 3



■Interior Decal Applying / 동체내부 전사지 붙이기



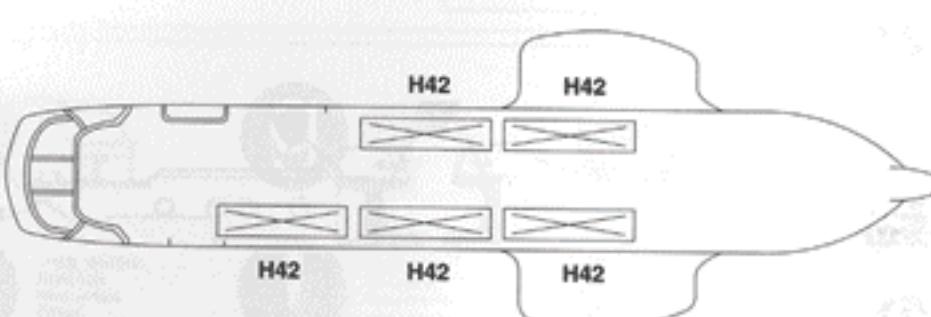
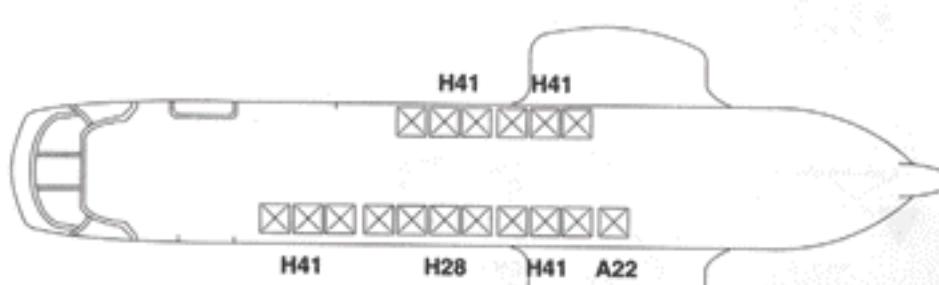
STEP 5

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 <Option / 선택하십시오.>

■Troop Seat Plan / 의자 장착시 ⇒ Step 6

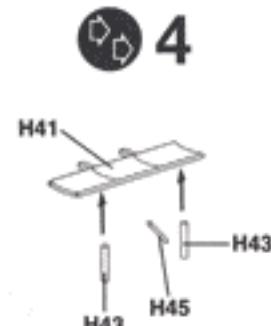
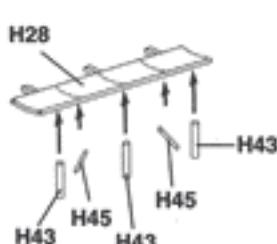
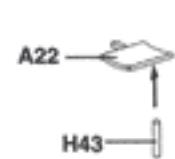
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 ■Litter Plan / 허물 장착시 ⇒ Step 7

STEP 6

<Troop Seat Assembly / 의자 장착시>

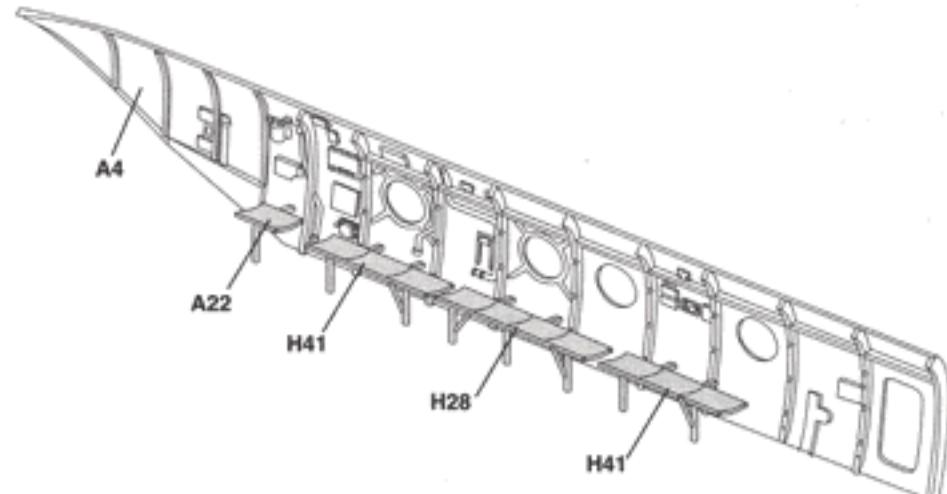
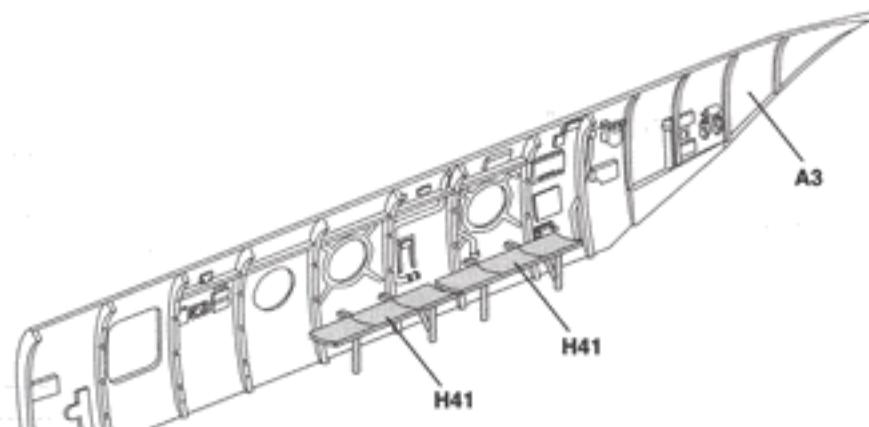
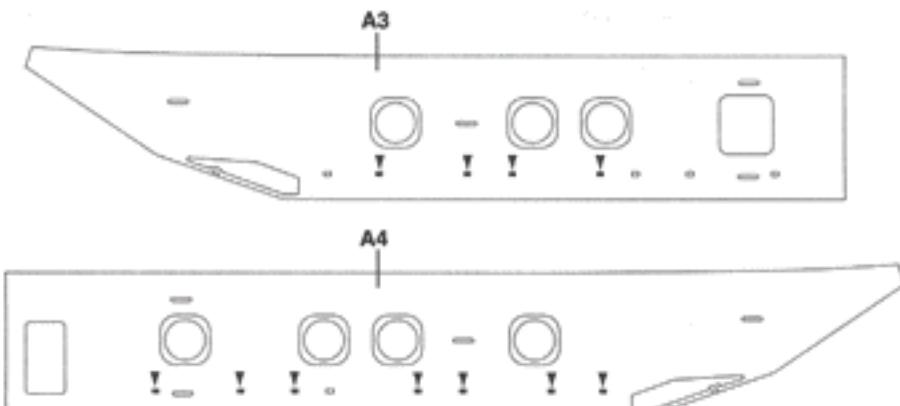
(A) ■Troop Seat Developed / 의자 펼친 상태



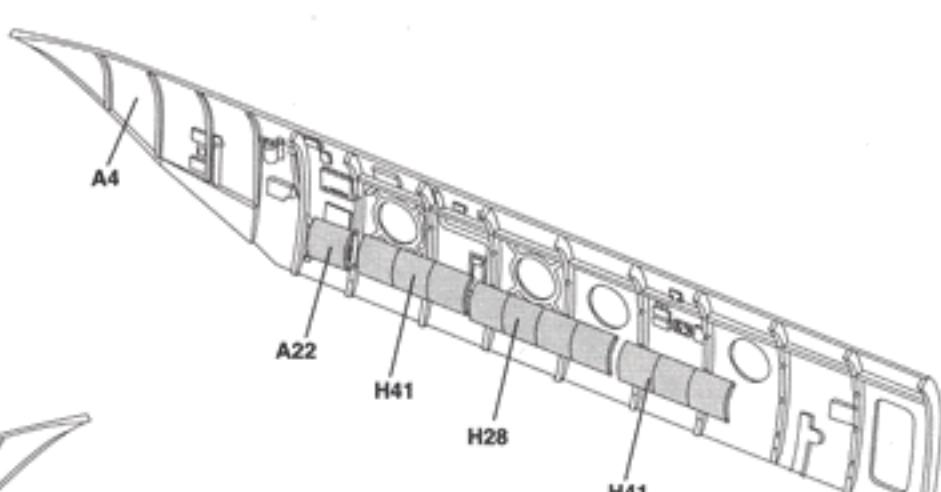
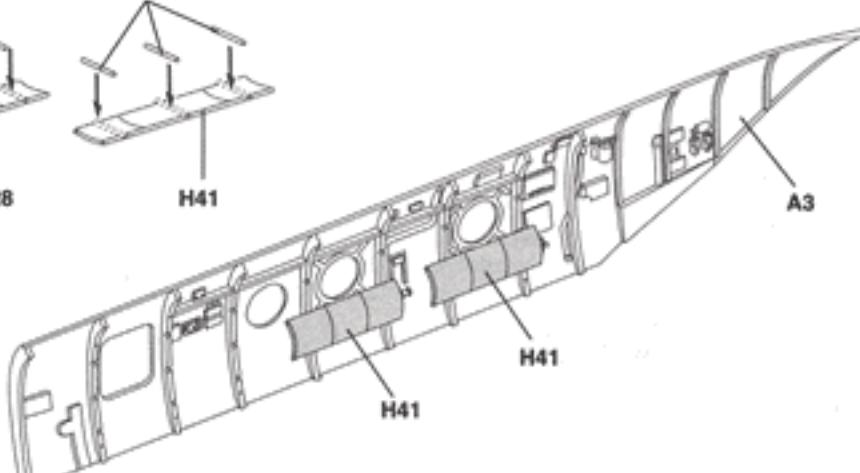
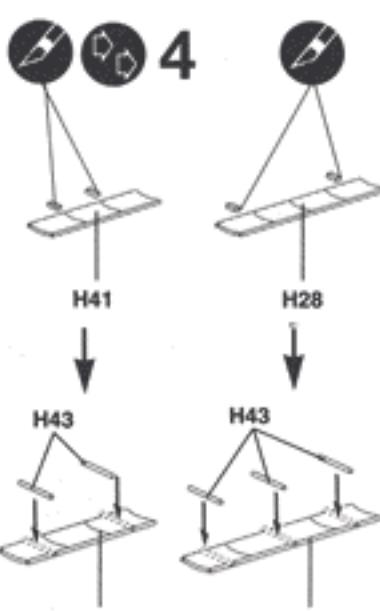
4

Drill holes for Troop Seats (developed)

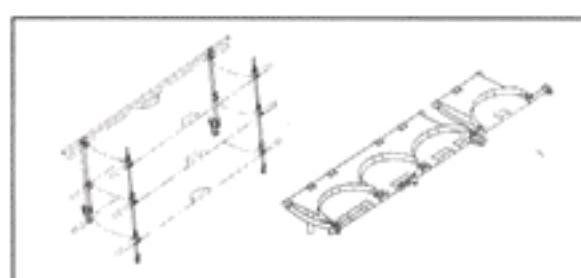
표시된 부분에 구멍을 뚫어 주십시오.



(B) ■Troop Seat Contained / 의자 접은 상태



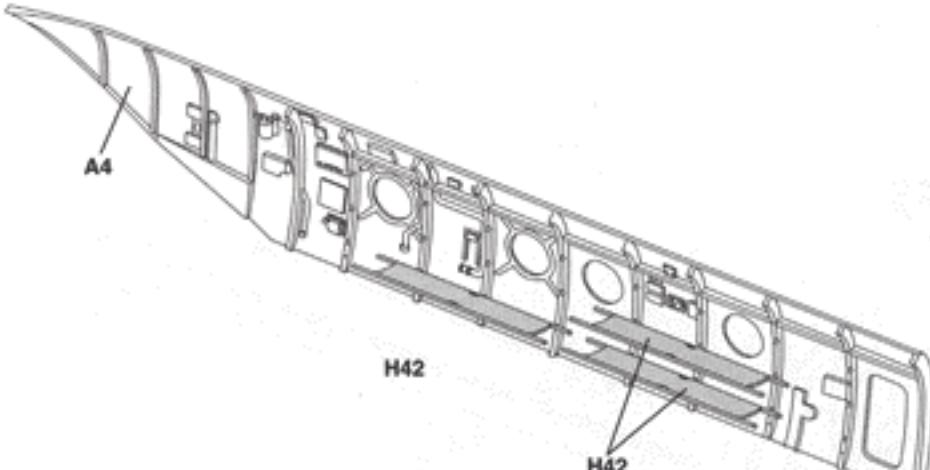
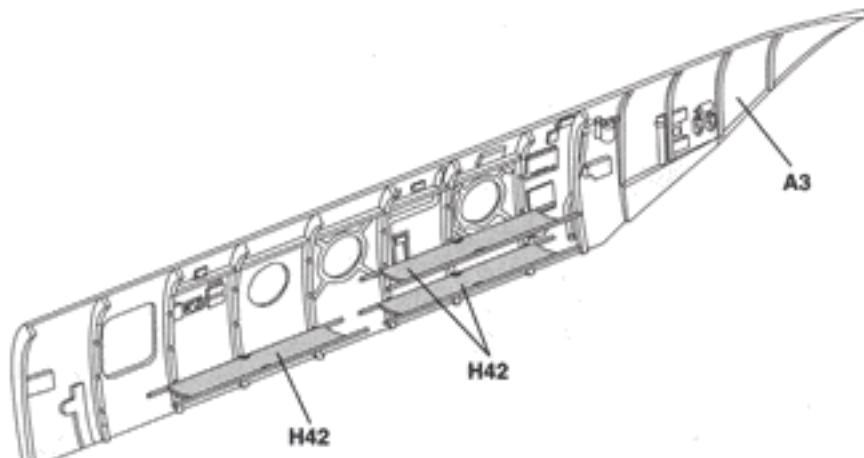
TYPICAL TROOP SEAT AND LITTER INSTALLATION

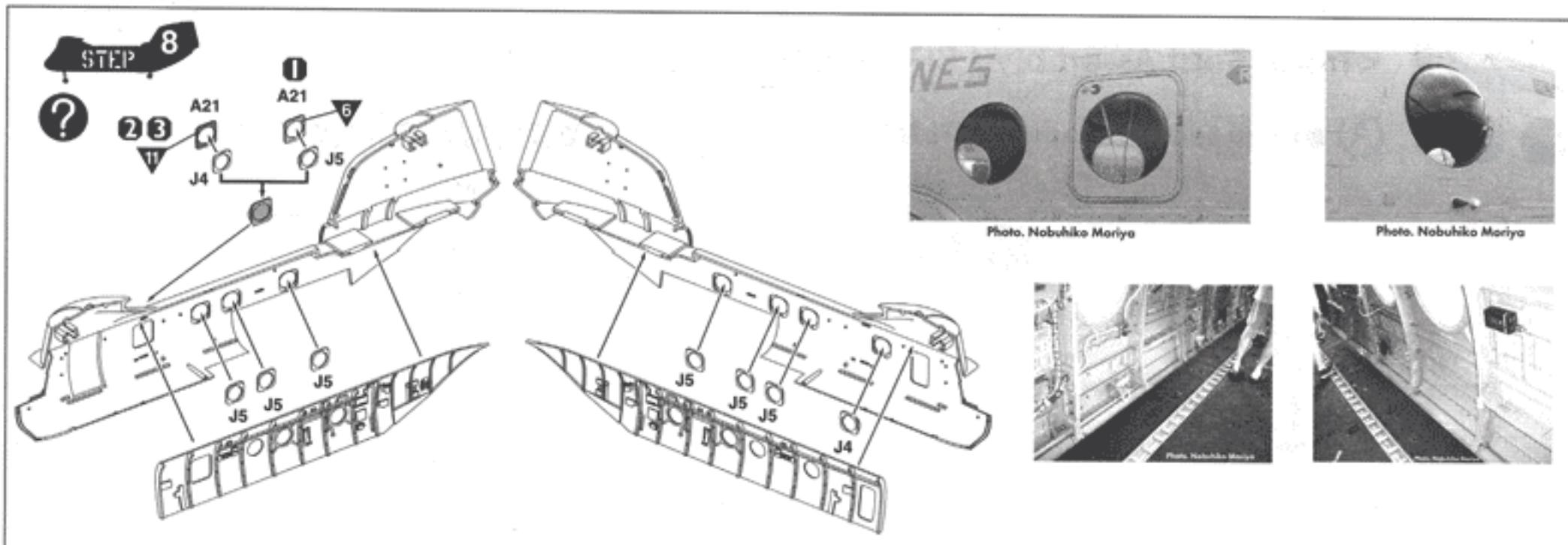


United States Navy, via Jonathan Primus

STEP 7

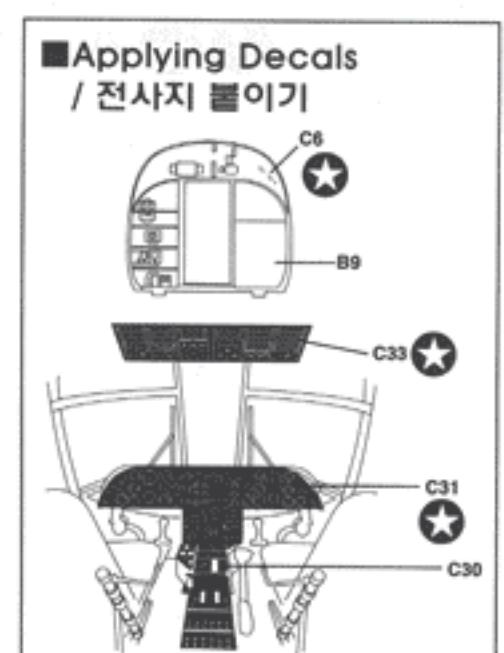
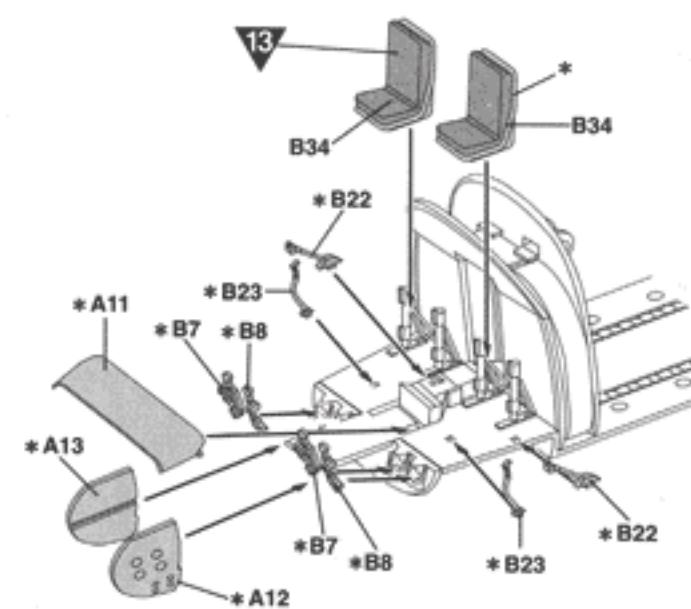
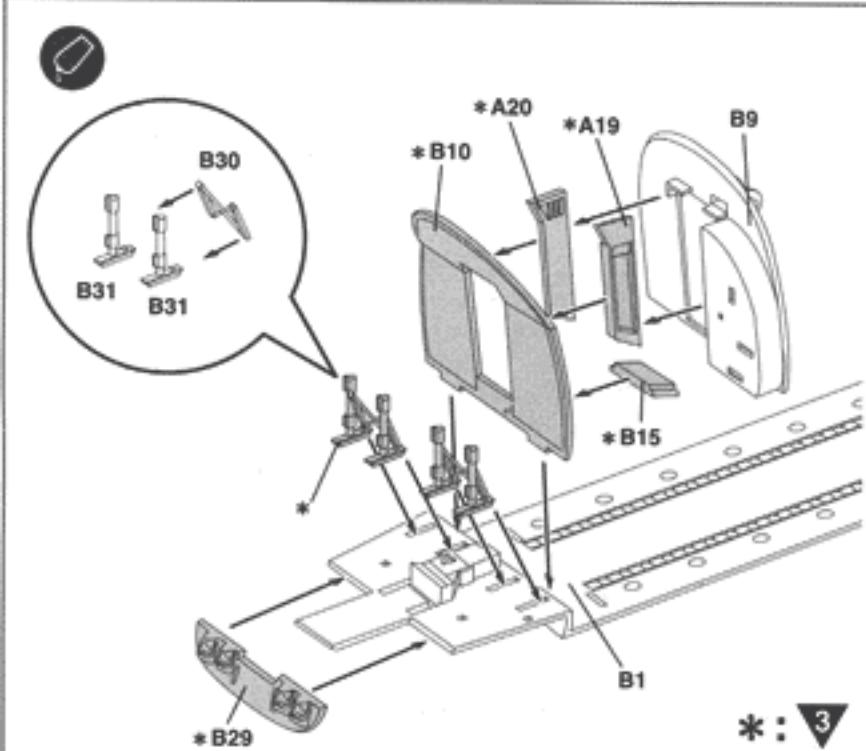
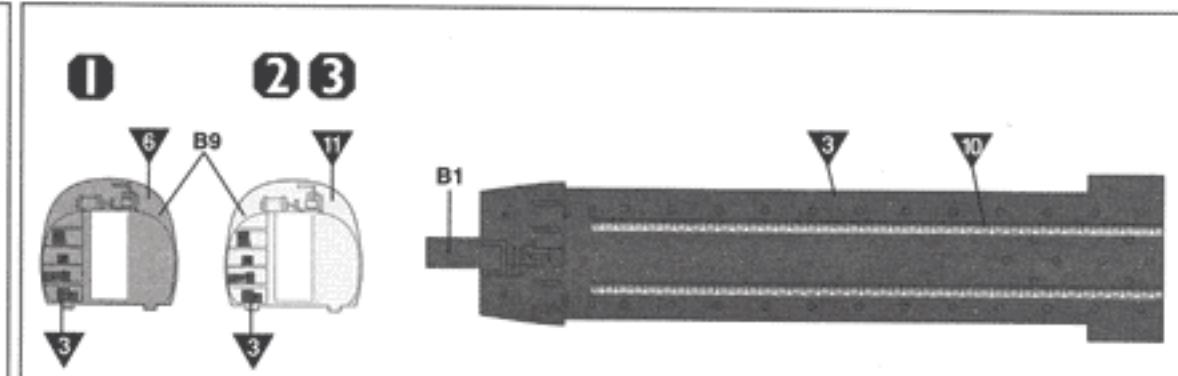
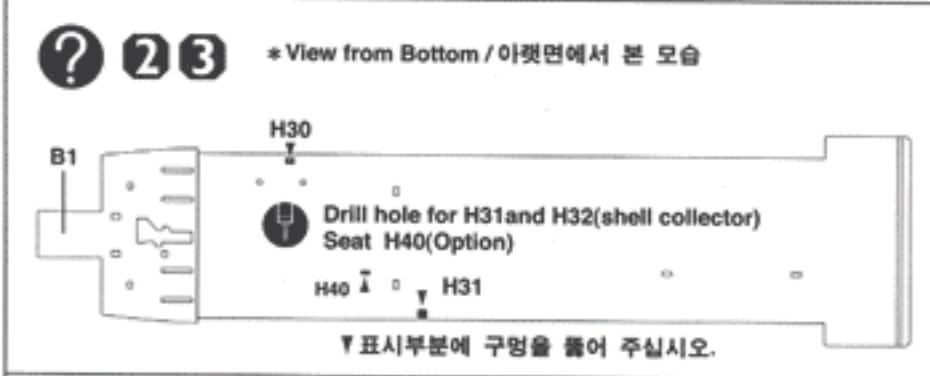
<Litter Assembly / 륜것 장착시>



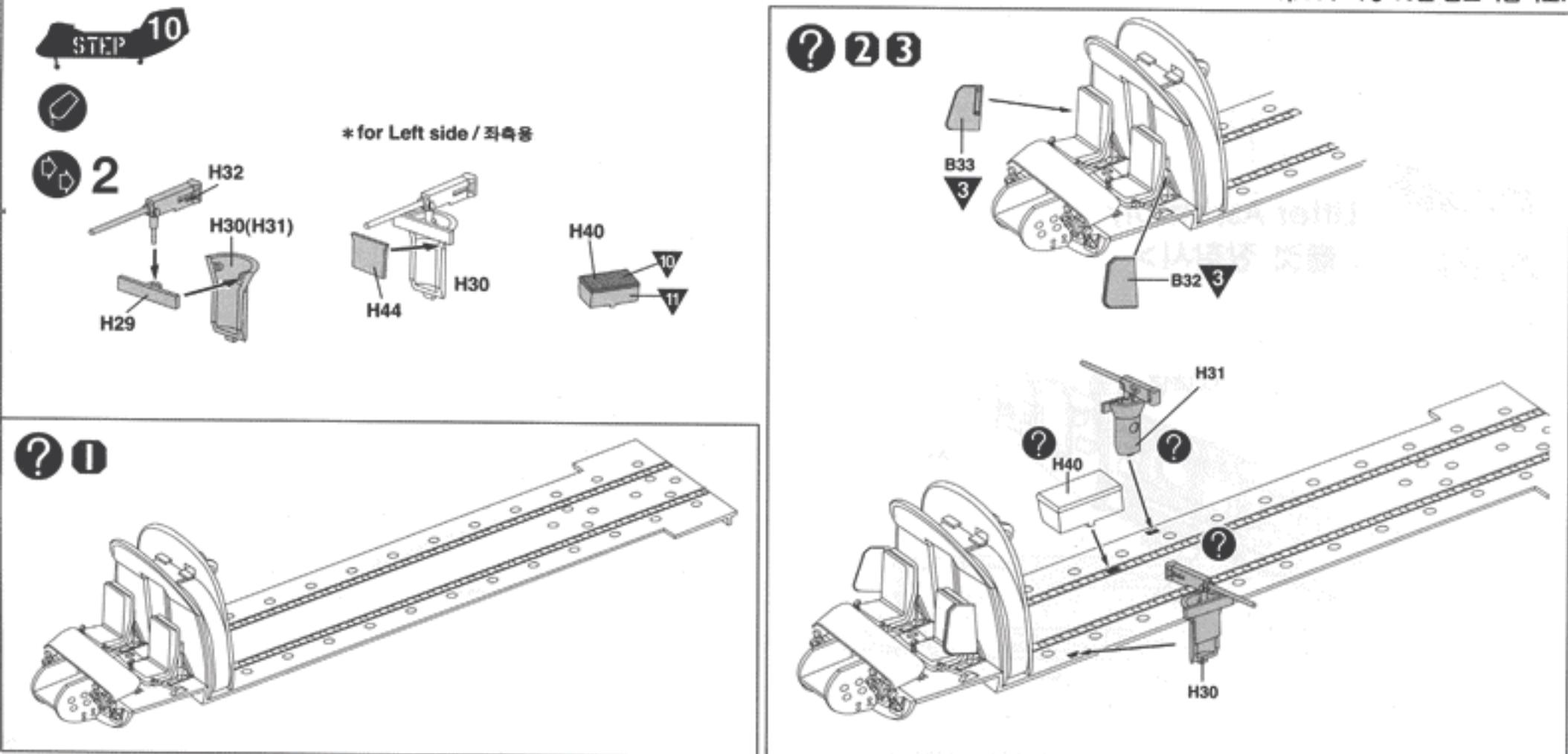


STEP 9

■Interior Painting Instruction / 동체 내부색칠 참조

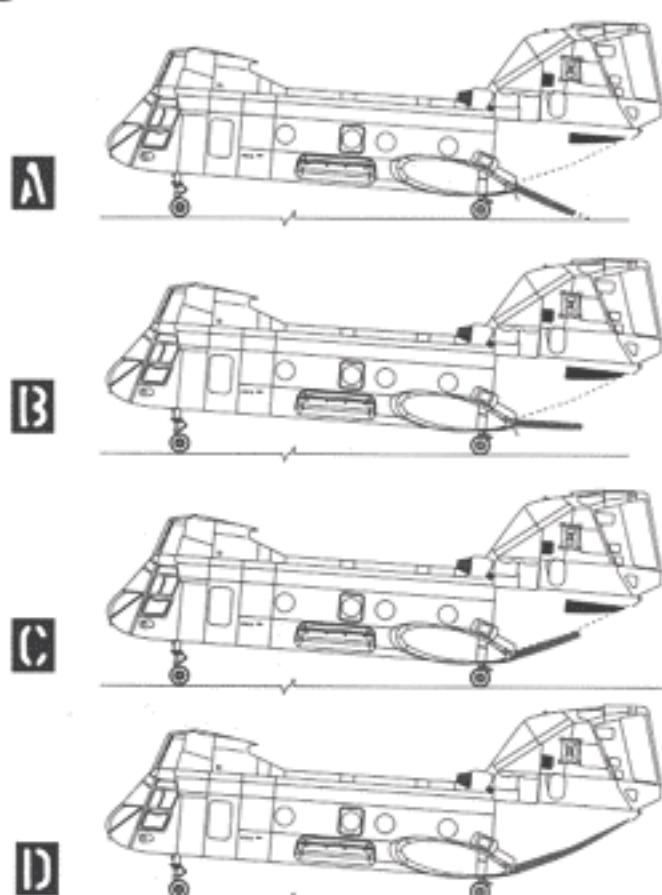


* Note Step13 / 과정 13을 참조하십시오.

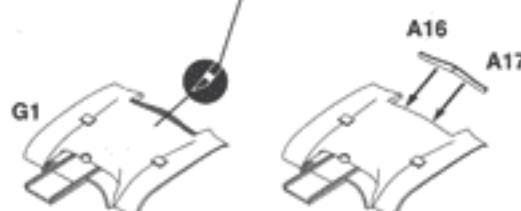


STEP 11

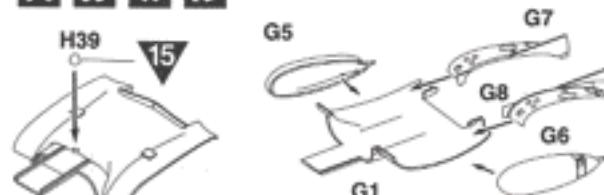
*Note Step 15, 16
과정 15, 16을 참조 하십시오.



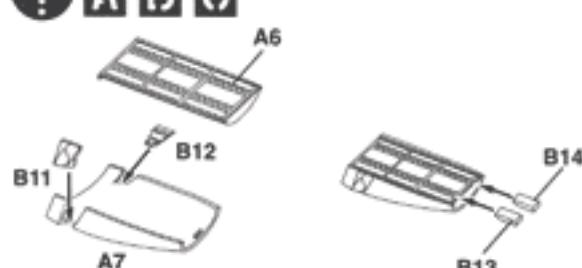
② A B *remove shaded area for Ramp opening
/도어 열린상태로 조립시엔 이부분을 제거해 주십시오.



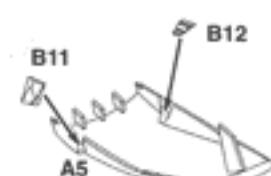
③ C D



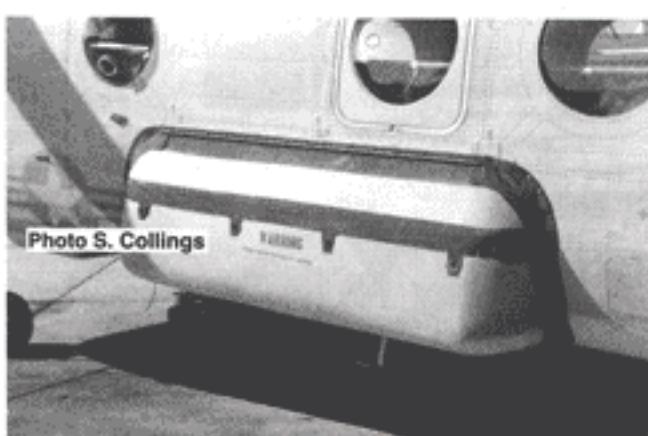
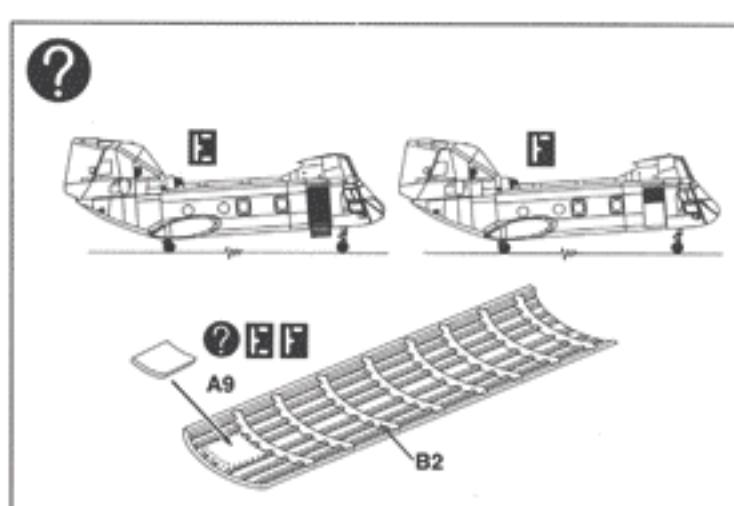
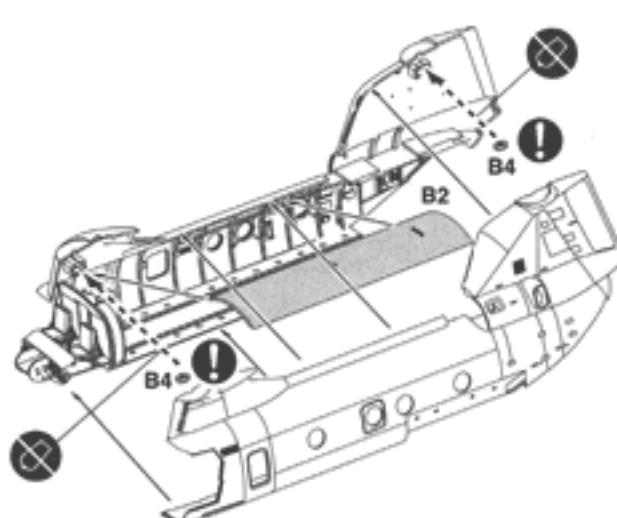
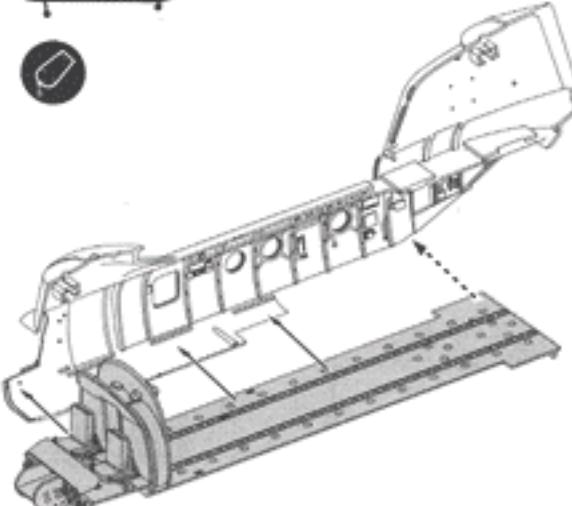
④ A B C



⑤ D



STEP 12



The CH-46 can land on water in an emergency.
Stability is aided by inflatable emergency
floatation bags on each side that provide extra buoyancy.
Occassionally the entire bag is painted the fuselage color.

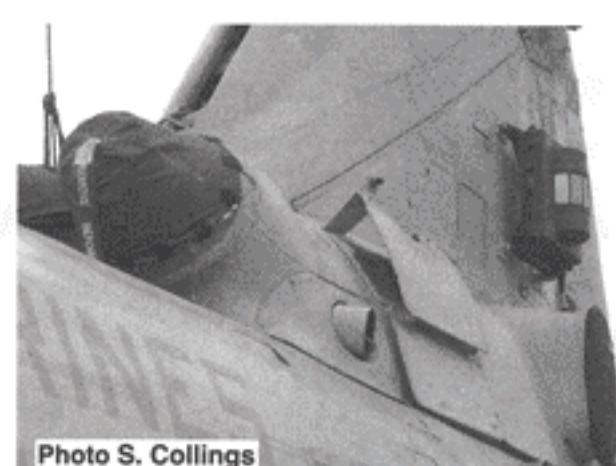
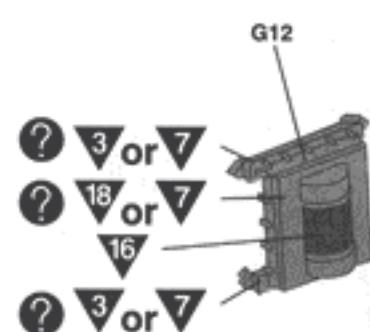


Photo S. Collings

The engine's protective armor panels are
positioned away from the fuselage side
allowing cooling air to enter.

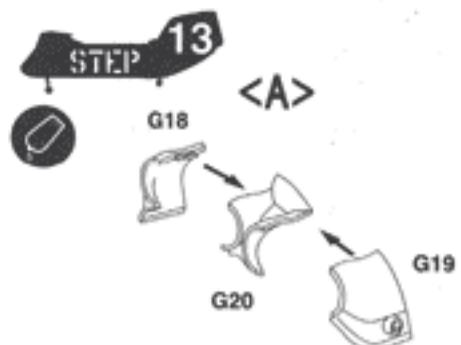


Photo S. Collings
Good photo showing the position of various components
such as the armor plates, infrared missile jammer,
missile detector and chaff/flare dispenser.

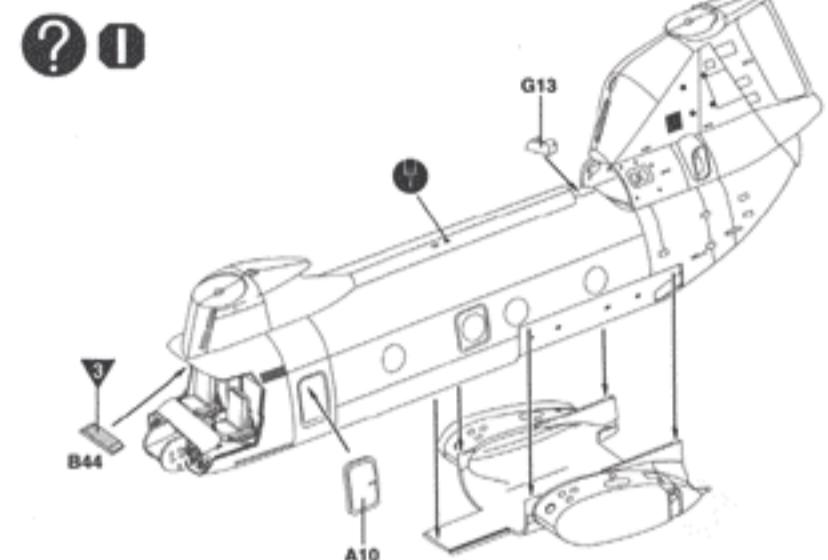
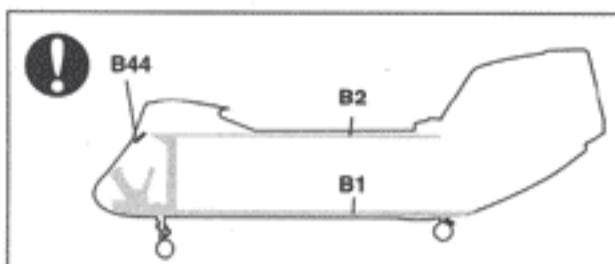
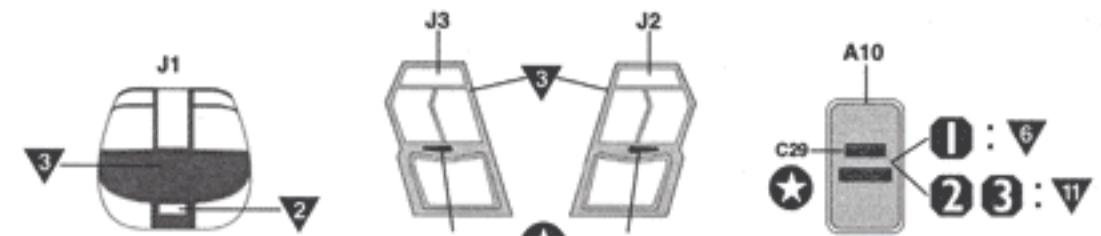


Mounted to the sides of the rear pylon
are the AN/ALQ-157 pulsed infrared
surface-to-air missile jammers.

Photo S. Collings



■Interior Painting Instruction / 내측 색칠 참조



2 3

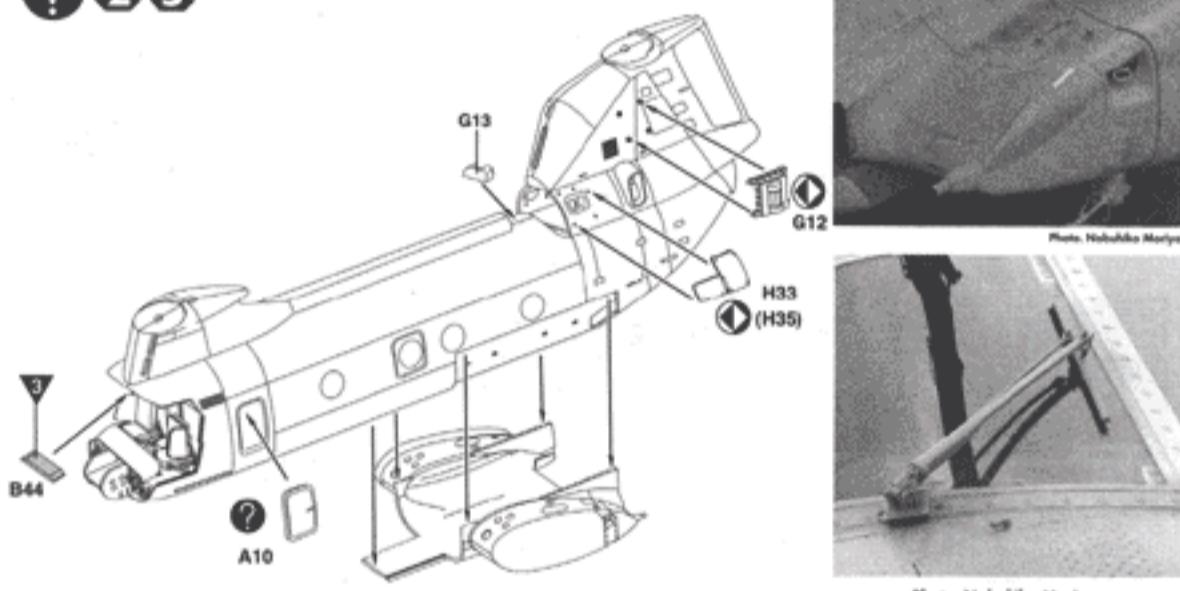


Photo: Nobuhiko Moriya

Photo: Nobuhiko Moriya

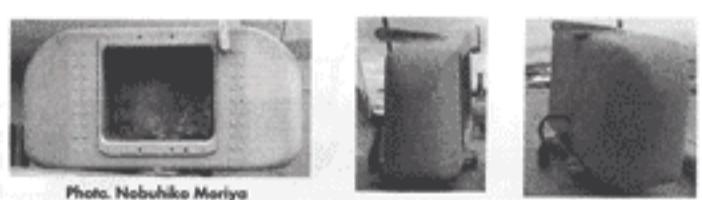
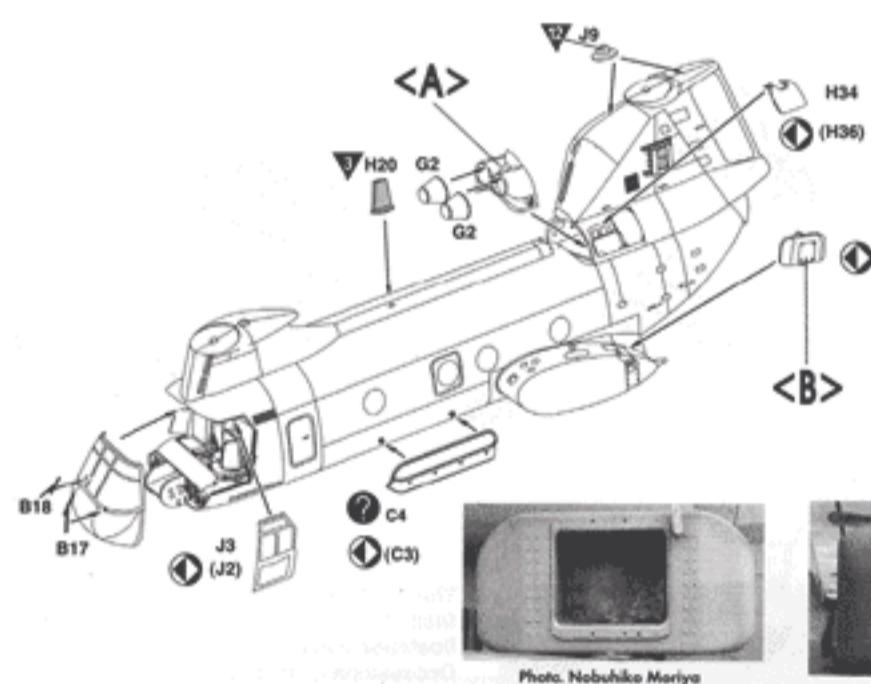
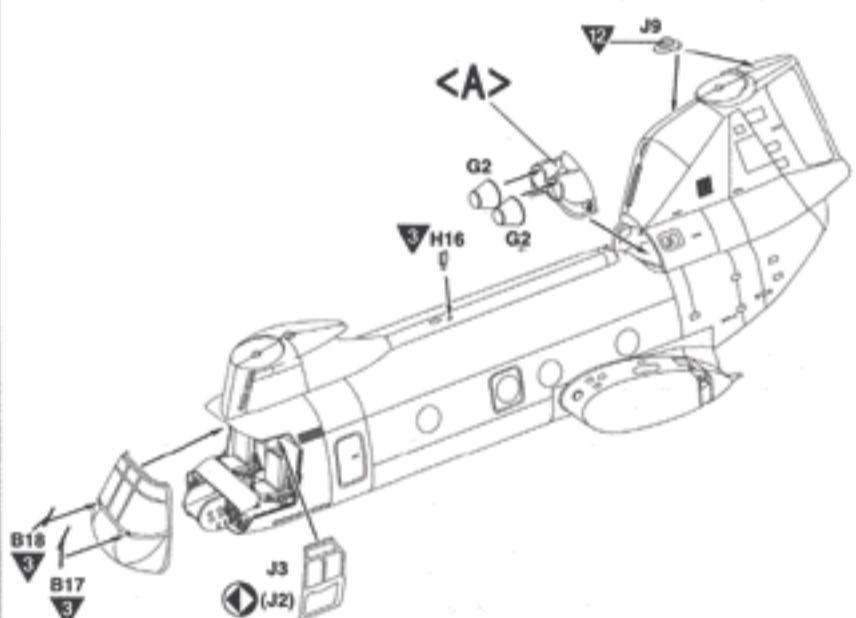
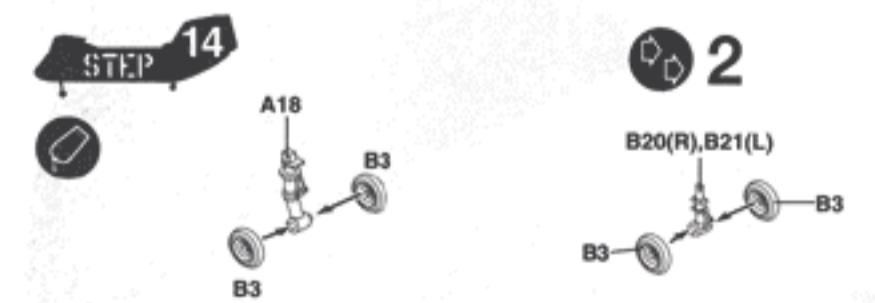
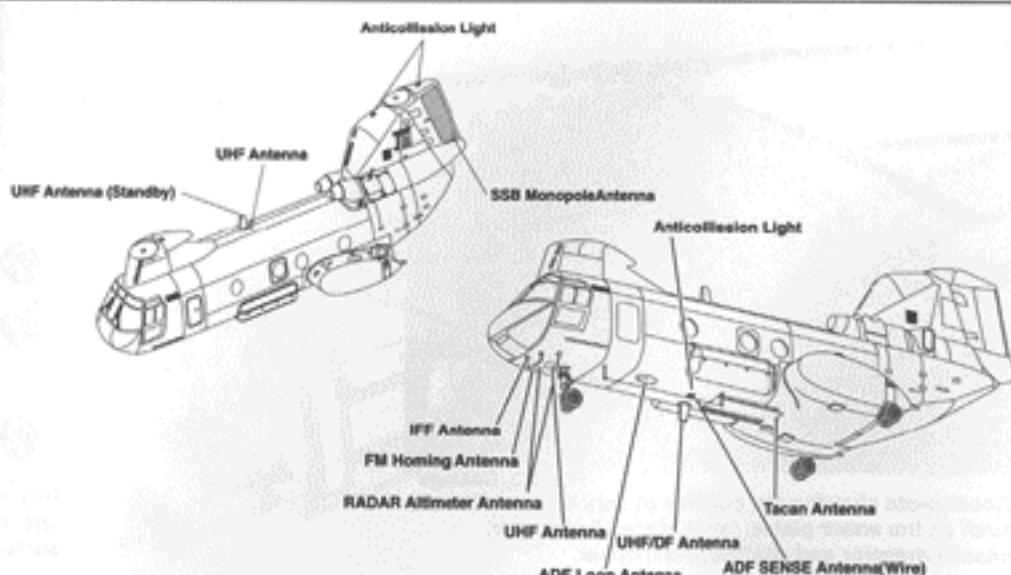
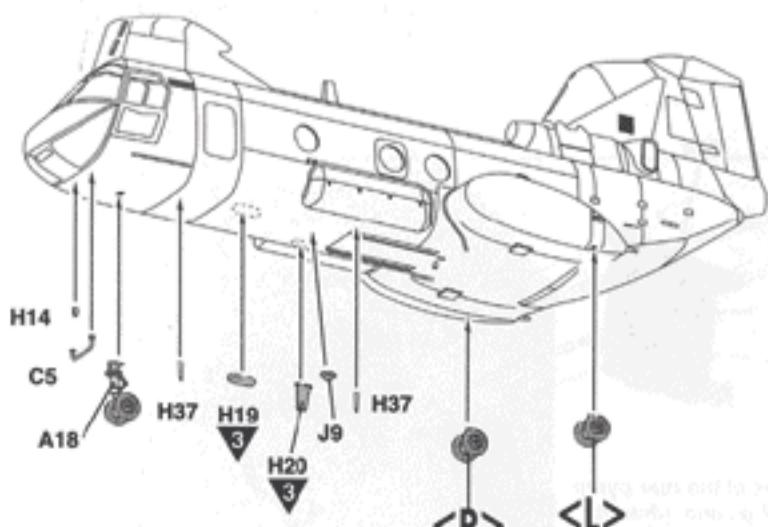
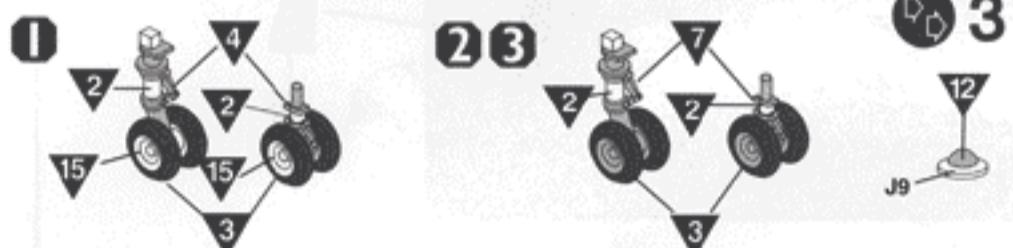


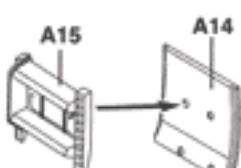
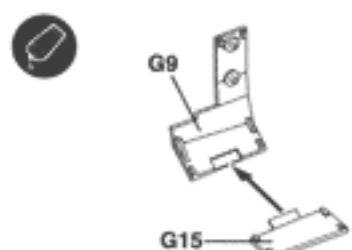
Photo: Nobuhiko Moriya



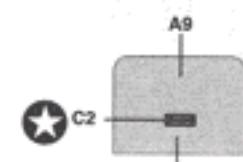
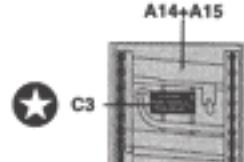
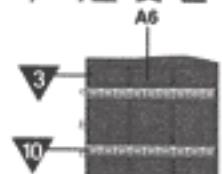
■Painting Instruction / 색칠 참조



STEP 15



■Interior Painting & Decal Placement / 색칠 및 전사지 붙이기 참조



1 : ▼
2 3 : ▾

1 : ▼
2 3 : ▾

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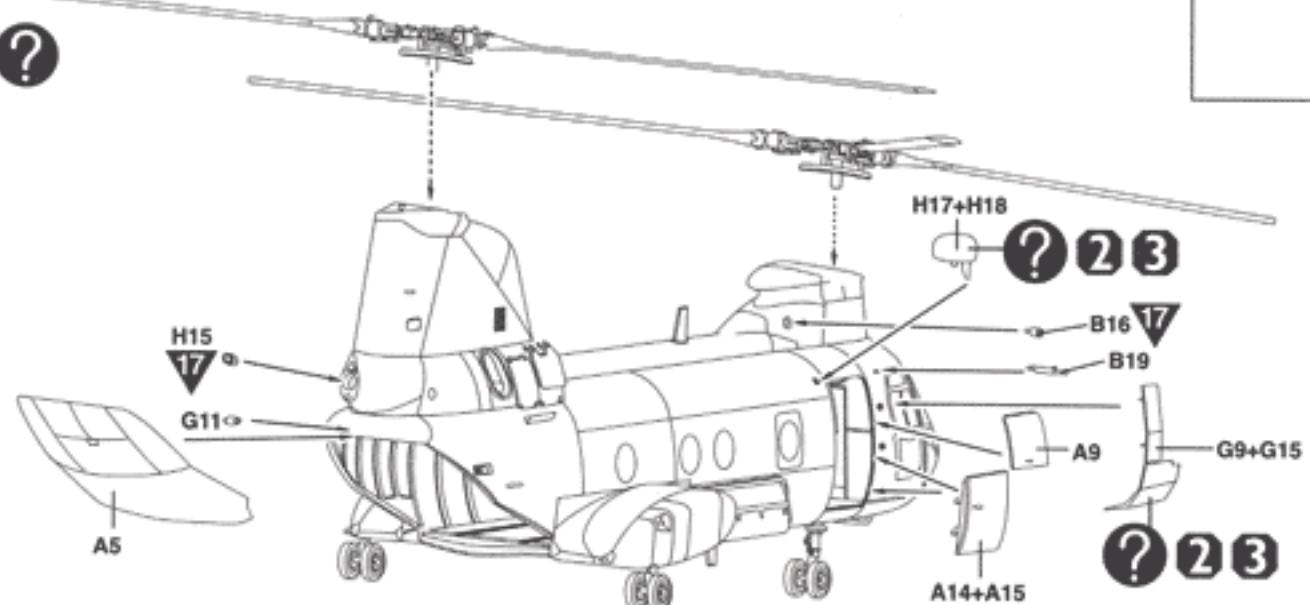


Photo: Nobuhiko Moriya



Photo: Nobuhiko Moriya

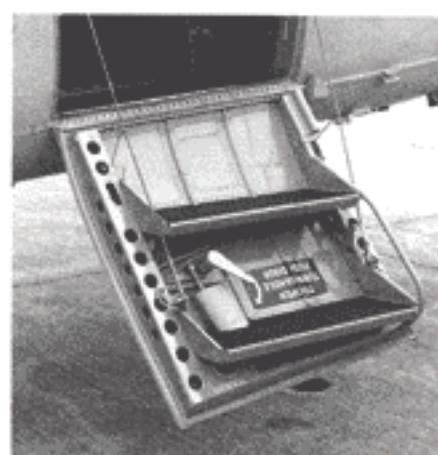
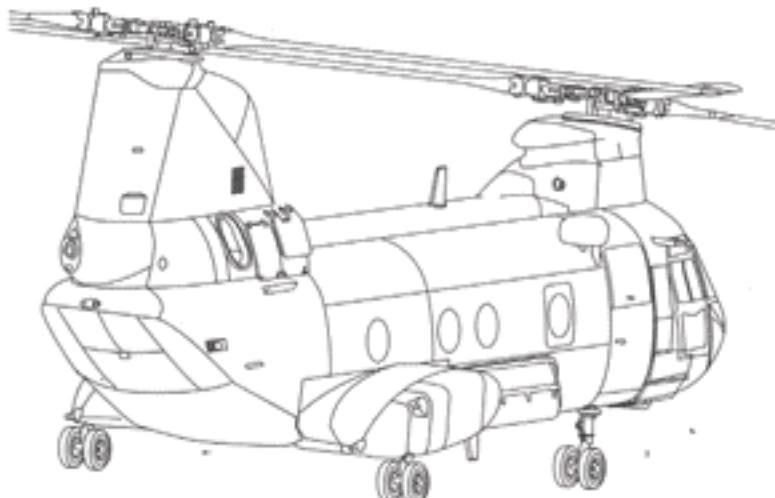


Photo: Nobuhiko Moriya

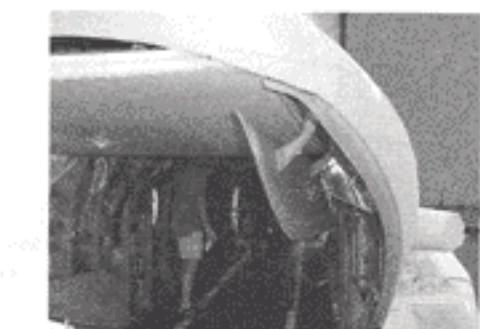


Photo: Nobuhiko Moriya

STEP 16

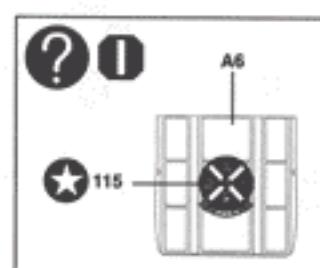
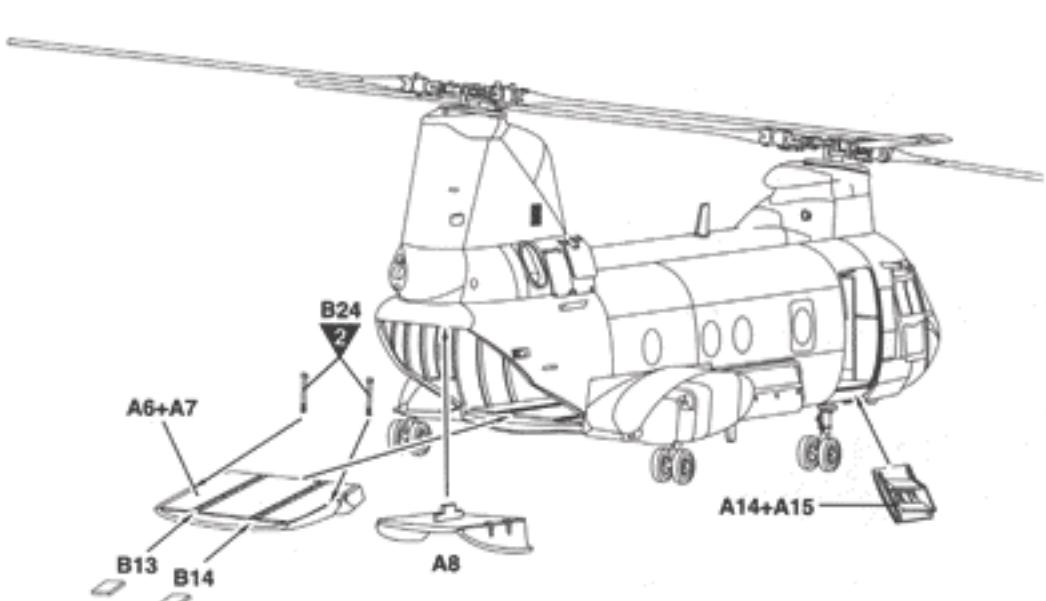
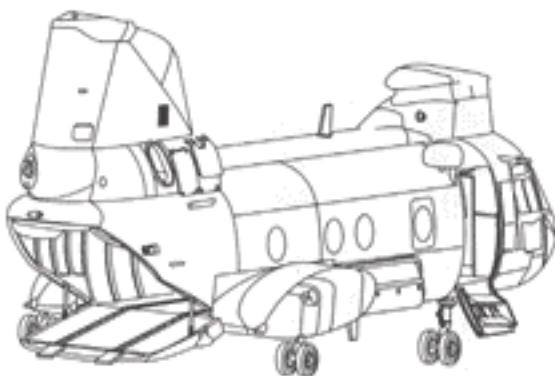


Photo: Nobuhiko Moriya

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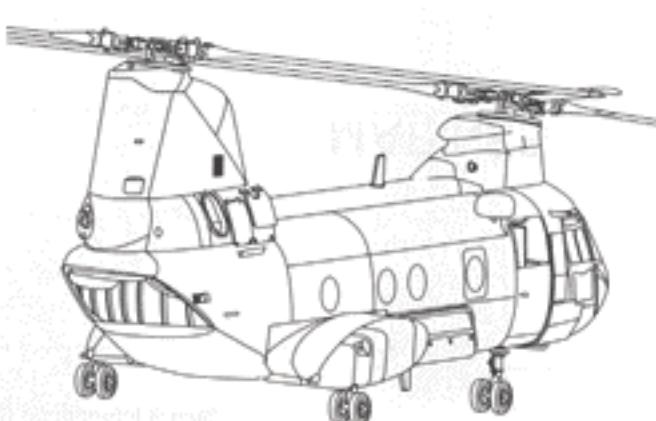


Photo: Nobuhiko Moriya

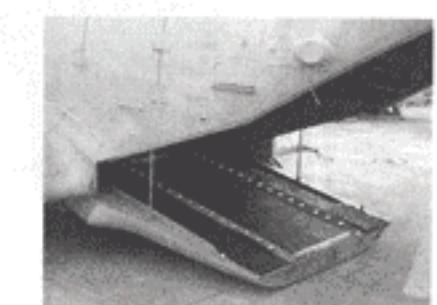
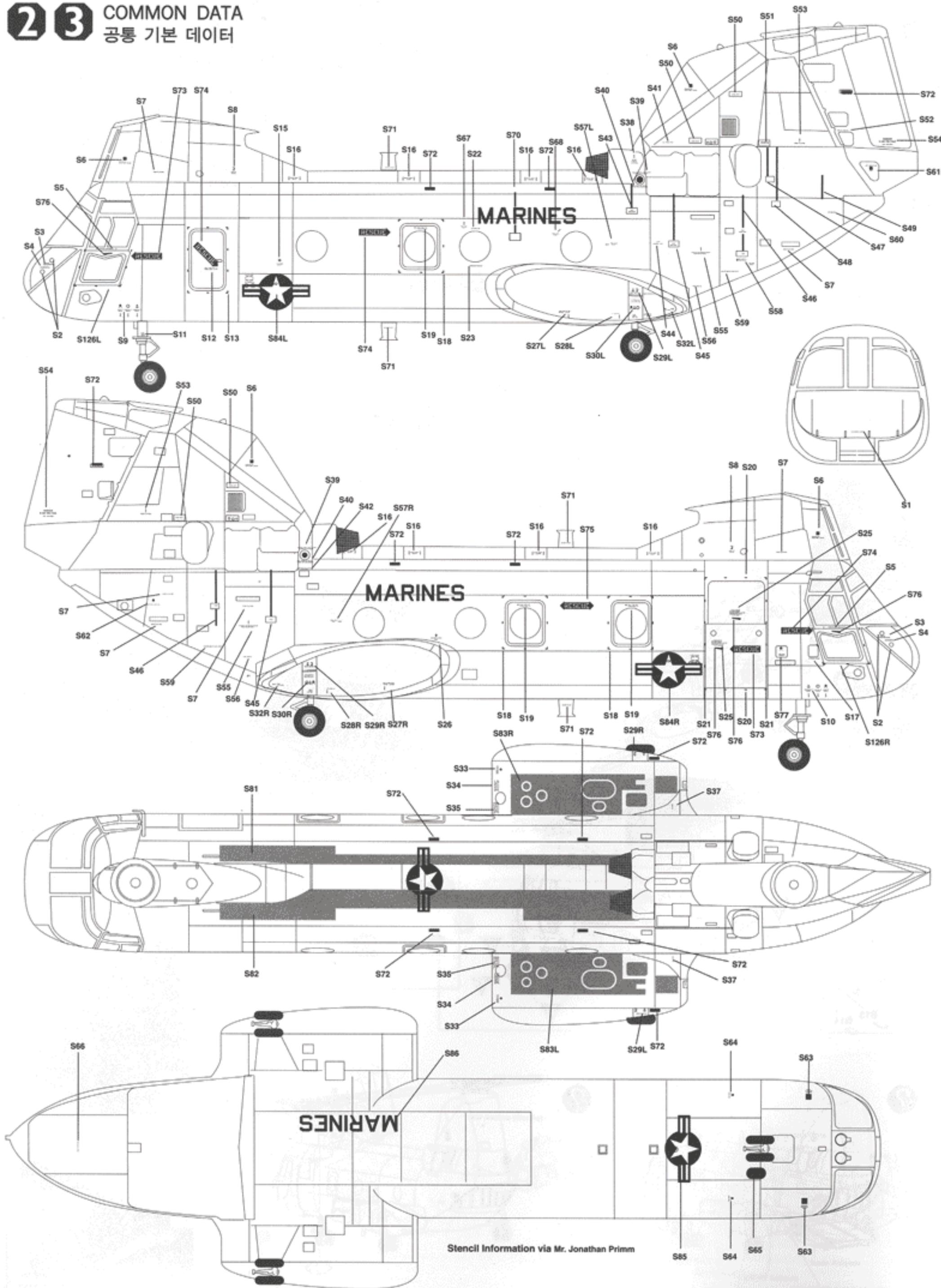


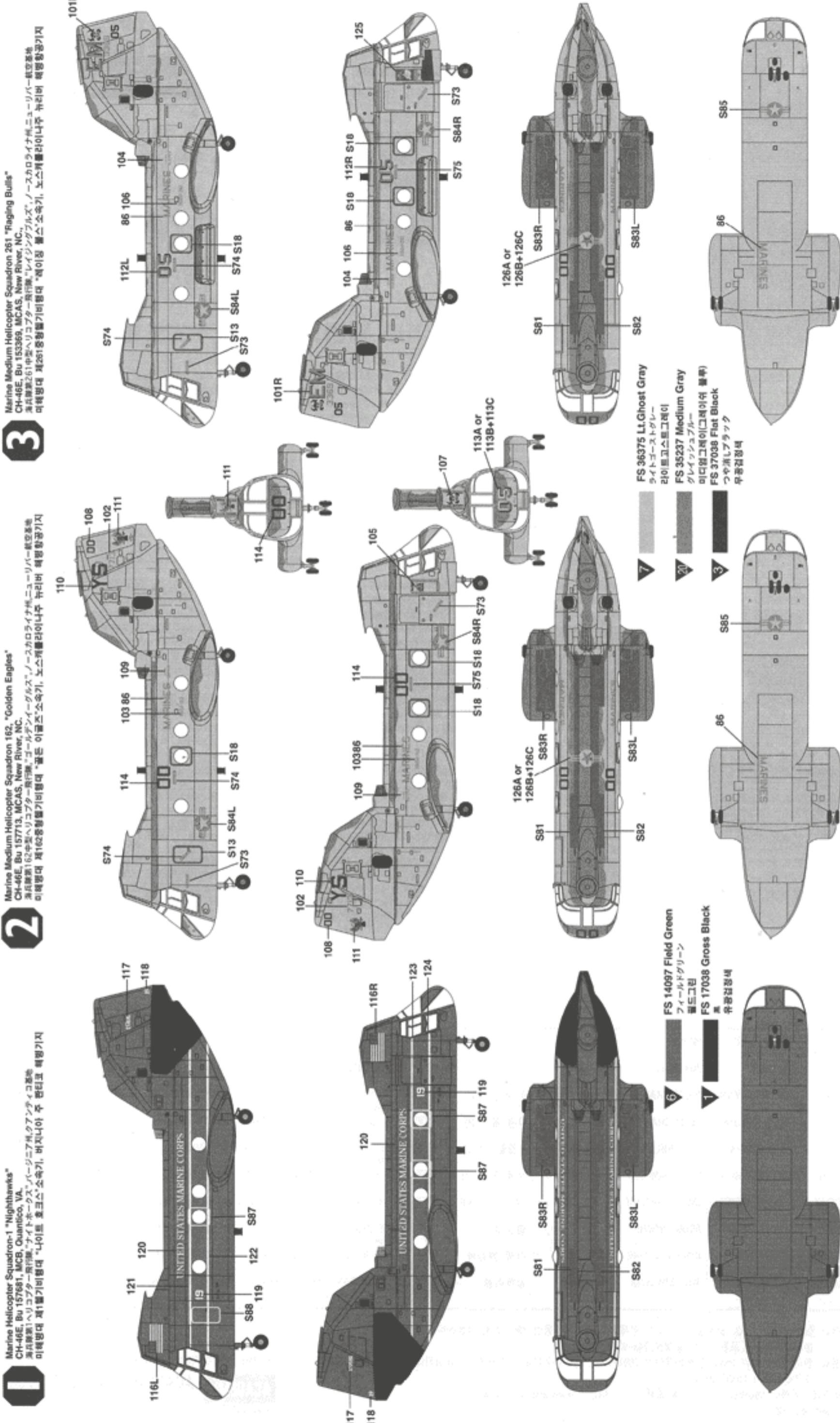
Photo: Nobuhiko Moriya

2 3 COMMON DATA

공통 기본 데이터



Painting & Decal placement 썩 철 및 전시지 뿐이기

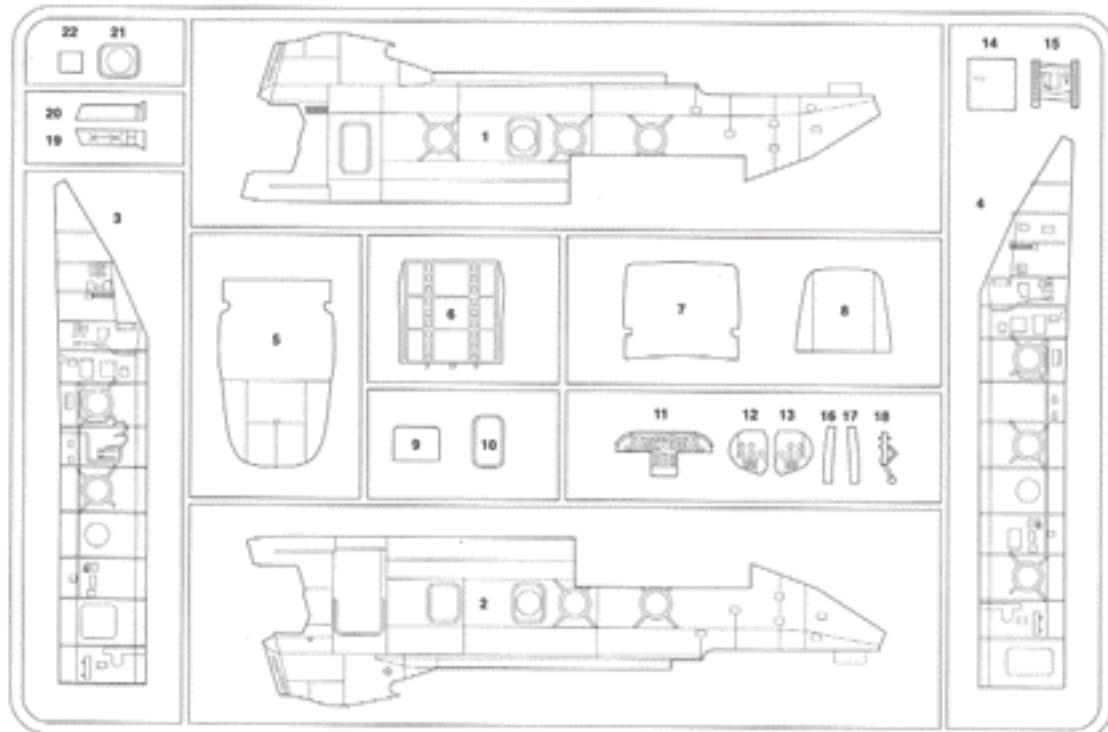
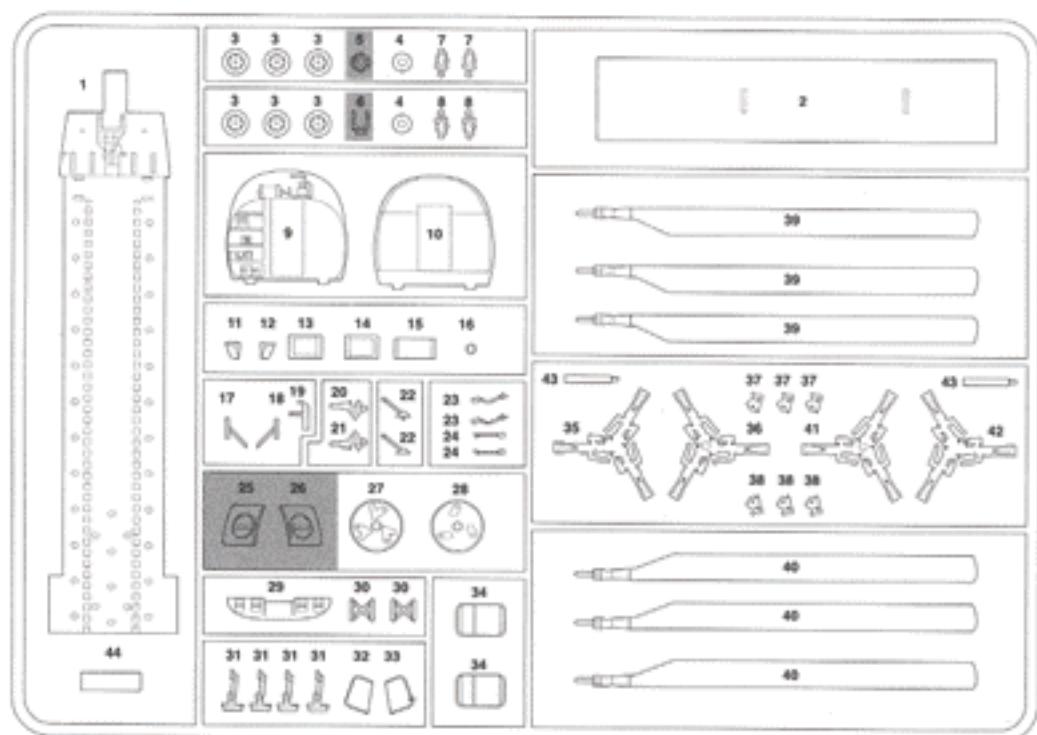
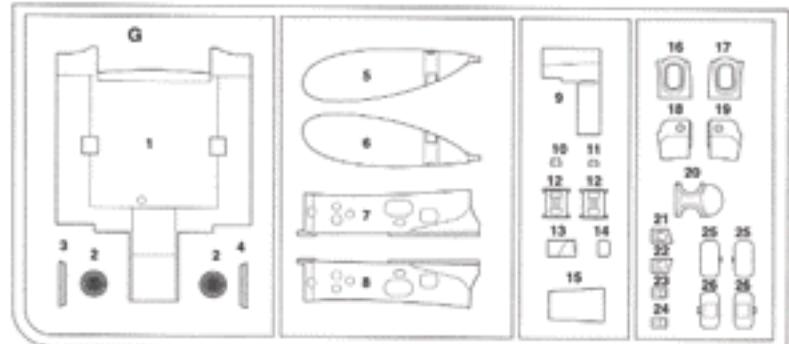
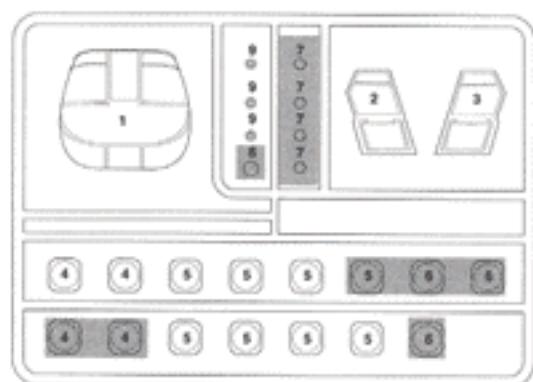
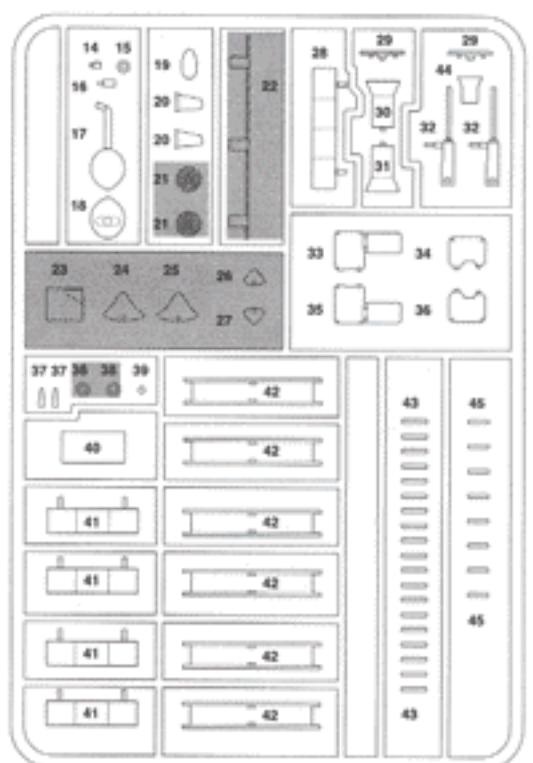
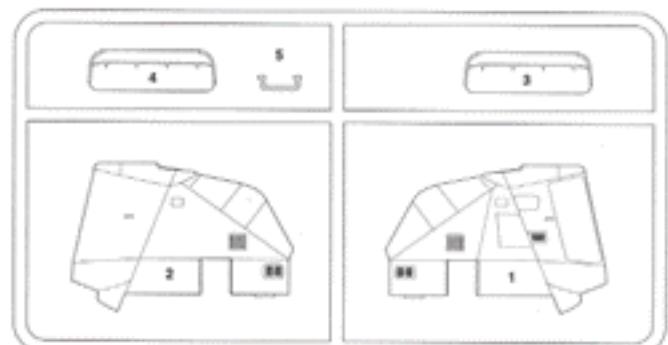


Mr. Jonathan Primm, SSgt. Dave Roof USMC,
Mr. "MURKIE" Takashita, Mr. Shabani Miltawa
Mr. Nambudhiran Madras, Mr. "VANU" Vanu

A 1000 K model of the emission of an ideal black body. The spectrum from 1000 to 10000 Å

A 100 KHz-1 MHz Frequency-selective Beam Filter

Pain: Scheme and Exterior Marking is based on the manual "MIL-STD-2161(AS)" provided by S/Sgt. Dave Roof USMC.

A**B****G****CH-46E Parts List****J****H****C**Parts are not for use
使用しません
概算上 単価

1 GLOSS BLACK FS 17038	SCHWARZ	NOIR	黒	유광검정색	11 DARK GULL GRAY FS 36231	DUKEL MÖWENGRAU	GRIS MOUETTE FONCÉ	ダークガルグレイ	다크걸 그레이
2 SILVER FS 17178	SILBER	ARGENT	シルバー	은색	12 CLEAR RED	ROT, REIN	ROUGE CLAIR	クリアレッド	클리어레드
3 FLAT BLACK FS 37038	MATTSCHWARZ	NOIR MAT	つや消しブラック	무광검정색	13 MEDIUM GREEN FS 34102	MITTEL GRÜN	VERT MOYEN	メディウムグリーン	미디엄 그린
4 FIELD REEN FS 14097	FELD GRÜN	VERT CHAMP	フィールドグリーン	유광 필드그린	14 STEEL	METALL-GRAU	GRIS ACIER	黒鉄色	건메탈
5 NEUTRAL GRAY FS 36270	NEUTRAL GRAU	GRIS NEUTRE	ニュートラルグレイ	뉴트럴그레이	15 WHITE FS 17925	WEIB	BLANC	FS 17925 ホワイト	흰색
6 FIELD GREEN FS 34097	MATT FELDGRÜN	VERT CHAMP MAT	フィールドグリーン	무광 필드그린	16 METALIC RED	METALLIC-ROT	ROUGE MÉTALLISÉ	メタリックレッド	메탈릭레드
7 LT.GHOST GRAY FS 36375	HELLES SCHATTENGRAU	GRIS FANTÔME FONCÉ	ライトゴーストグレイ	라이트고스트그레이	17 BURNT IRON	GRAU METALLIC	GRIS MÉTAL	焼鉄色	메탈릭그레이
8 INSIGNIA RED FS 11136	SIGNAL ROT	ROUGE INSIGNE	インシグニアレッド	빨강색	18 OLIVE DRAB FS 34087	OLIVE GRÜN	BRUN OLIVE	オリーブドラブ	국방색
9 SEMI GLOSS RED FS 21136	SATIN ROT	ROUGE SATINÉ	セミグロスレッド	반광 빨강색	19 CLEAR BLUE	BLAU, REIN	BLEU CLAIR	クリアーブルー	클리어블루
10 SATIN ALUMINUM FINISH FS 21136	ALUMINIUM	ALUMINIUM	アルミニウム	알루미늄	20 MEDIUM GRAY FS 35237	MITTEL GRAU	GRIS MOYEN	グレイッシュブルー	미디엄그레이 (그레이쉬 블루)

■ 직매점 겸 A/S센터 삼선교:742-9293, 방배동:525-9031, 양재동:575-9997, 용산:796-1214, 아셈하비센터:6002-6293

■ A/S센터 본사:908-7000(교환 147), 동대문:745-9293

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대구아카데미:(053)744-9293■ 유통사업부 아카데미피엔디:586-9293 ■ 홈페이지 <http://www.academy.co.kr>

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