



# EUROCOPTER EC135 ADAC

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## EUROCOPTER EC135 ADAC

Der leichte zweimotorige Vielzweck-Hubschrauber EC135 ist eine deutsch-französische Gemeinschaftsentwicklung. Er entstand aus der Weiterentwicklung des erfolgreichen BO 105 von Messerschmitt-Bölkow-Blohm. Das Demonstrationsmodell für neue Technologien BO 108 war erstmals mit einer Fly-by-Wire-Steuerung und einem neuen gelenk- und lagerlosen Hauptrotor ausgerüstet, der materialermüdende Vibrationen auf ein Minimum reduziert, agil reagiert und verhältnismäßig leise ist. Die Gelenke konnten durch verwindungsfähige Blätter in GFK-Bauweise eingespart werden. MBB brachte den BO-108-Prototypen in das 1992 gegründete Unternehmen Eurocopter mit ein. Der Erstflug des BO 108-A1 mit dem neu entwickelten Fenestron-Heckrotor des französischen Partners Aérospatiale erfolgte am 15. Februar 1994 in Ottobrunn. 1996 lief die Serienproduktion des EC135 an. Die Zelle des Hubschraubers ist überwiegend aus CFK gefertigt. Die tragende Konstruktion ist zum Teil geklebt. Als Triebwerk kommt in der Version EC135 P2 - seit 2002 in der Produktion - das Pratt & Whitney Canada PW 206B2 zum Einsatz. Eine vollautomatische elektronische Triebwerkssteuerung (FADEC) gewährleistet maximale Leistung und Sicherheit sowie optimalen Kraftstoffverbrauch. Die hervorragenden Noteleistungswerte der Turbinen bei Ausfall eines Triebwerkes erhöhen die Flugsicherheit. Der EC135 gilt derzeit als der kostengünstigste und leiseste Hubschrauber seiner Klasse. In der Grundkonfiguration kostet ein Exemplar 4,8 Millionen Euro. Er stellt bislang die erfolgreichste Entwicklung von Eurocopter dar und hat sich international in der Luftrettung einen Namen gemacht. Für viele Fachleute stellt der EC135 die optimale Lösung dar. 2011 lieferte Eurocopter seinen 1000. EC135 an den ADAC aus. Die ADAC-Luftrettung GmbH ist mit 49 eigenen Rettungs- und Intensivhubschraubern sowie 180 Piloten, Co-Piloten, Bordtechnikern und Angestellten die größte Luftrettungs-Organisation in Deutschland. Am 1. November 1970 wurde der erste zivile und ständig einsatzbereite Rettungshubschrauber „Christoph 1“ in München in Dienst gestellt. Bis Ende 2012 sind rund 690.000 ADAC-Einsätze durchgeführt worden. Neben 35 täglich von Sonnenaufgang bis Sonnenuntergang einsatzbereiten Stationen in Deutschland gibt es eine in Suben (Österreich) und eine in Groningen (Niederlande). Die Stationen Wilhelmshaven, Flughafen Münster-Osnabrück und Senftenberg sind dabei sogar rund um die Uhr einsatzbereit. Der ADAC arbeitet mit mehr als 700 Hubschrauberärzten und 260 HEMS-Crew-Members zusammen. Im ersten Halbjahr 2013 hoben die „Gelben Engel der Lüfte“ 25.500 Mal ab und versorgten rund 23.000 Personen. Der EC135 P2 D-HBYF (c/n 0078) des ADAC, Baujahr 1999, gehörte anfänglich der Polizei des Bundeslandes Bayern. Die Maschine wurde für den neuen Einsatzzweck umgerüstet und steht seit März 2011 im Dienst der ADAC-Luftrettung. Der Helikopter verfügt über das neue IBF-System. Die erstmals von Eurocopter 2010 auf der HeiExpo in Houston, USA, vorgestellte Partikelfilter-Anlage IBF (Inlet Barrier Filter) verlängert die Lebensdauer der Triebwerke und reduziert die Wartungskosten. In Zukunft soll die gesamte EC135-Flotte des ADAC mit dem IBF-System ausgestattet werden.

### Technische Daten EC135 P2:

Besatzung:	1-2 Piloten, insgesamt 7 Personen maximal
Länge über alles:	12,19 m
Höhe über alles:	3,62 m
Kabine: Länge x Breite =	3,5 m x 1,5 m
Kabinenhöhe:	1,26 m vorn, 1,15 m hinten
Rotordurchmesser:	10,20 m
Rotorkreisfläche:	81,7 qm
Durchmesser des Fenestron:	1,0 m
Leergewicht:	1420 kg
Zuladung:	1.455 kg max.
Kraftstoffmenge:	576 kg
Max. Abfluggewicht:	2.910 kg
Antrieb:	2 x Pratt & Whitney PW 206B2, je 321 kW (436 WPS)
Noteleistung (O.E.I.):	609 kW (828 WPS)
Hauptrotordrehzahl:	~ 400 U/min
Reichweite (bei max. Abfluggewicht):	635 km
Reisegeschwindigkeit:	259 km/h (bei max. Abfluggewicht: 254 km/h)
Dienstgipfelhöhe:	6.096 m

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## EUROCOPTER EC135 ADAC

The light twin-engined EC-135 multi-purpose helicopter is a Franco-German joint development. It originated through further development of the very successful BO 105 from Messerschmitt-Bölkow-Blohm (MBB). The demonstration model for the new technology BO 108 was initially equipped with Fly-by-Wire controls and a new hinge and bearing free Main Rotor, which reduces disruptive and fatigue inducing vibrations to a minimum but still retains agility and is comparatively quiet. The rotor head hinges were discarded and flexible blades constructed with composite materials were used instead. In 1992, MBB took the BO-108 prototypes into the newly formed Eurocopter company. The BO-108-A1 undertook its maiden flight at Ottobrunn, Bavaria on 15th February 1994, fitted with the newly developed "Fenestron" tail-rotor from the French partner Aérospatiale. Mass production of the EC-135 began in 1996. The helicopters airframe is constructed mainly of carbon-fibre composite materials. Load-bearing components are largely bonded. In production since 2002 - the engines fitted to the EC135 P2 are the PW 206B2 from Pratt & Whitney Canada. The fully automatic electronic engine management system (FADEC) provides maximum performance and safety combined with optimal fuel efficiency. Flight safety is improved by the turbine engines extraordinary emergency power rating available with one engine out. The EC 135 is currently recognised as the cheapest and quietest helicopter in its class. In the basic configuration the EC135 costs €4.6 million. It is currently Eurocopter's most successful design and has made a name for itself internationally in the air rescue role. For many aviation specialists the EC135 provides an ideal solution. In 2011, Eurocopter delivered its 1000th EC135 to ADAC. With 49 of its own Rescue Helicopters and 180 pilots, co-pilots, flight engineers and employees the ADAC Air Rescue Service Ltd is the largest air rescue organization in Germany. The first permanently operational Civilian Rescue Helicopter "Christoph 1", entered service in Munich on 1 November 1970. By the end of 2012, the ADAC had undertaken approximately 690,000 operational sorties. In addition to 35 operational rescue locations (daily from sunrise to sunset) in Germany, there is also one in Suben (Austria) and in Groningen (Netherlands). The stations at Wilhelmshaven, Münster-Osnabrück Airport and Senftenberg even provide a round the clock (H24) service. The ADAC works together with more than 700 "Flying" Doctors and 260 HEMS crew members. In the first half of 2013, the "Yellow Angel of the Skies" took off some 25,500 times and helped approximately 23,000 people.

The ADAC's EC135 P2 D HBYF (c/n 0078) was built in 1999 and initially belonged to the Bavarian State Police Force. The helicopter underwent a conversion for its new rescue role and has been in service with the ADAC Air Rescue Service since March 2011. The helicopter is fitted with the new IBF system. First displayed by Eurocopter at the HeiExpo in Houston, Texas in 2010, the particle filter system IBF (Inlet Barrier Filter) prolongs engine life and reduces maintenance costs. In the future, the entire ADAC EC135 fleet is to be equipped with the IBF system.

### Technical Data EC135 P2:

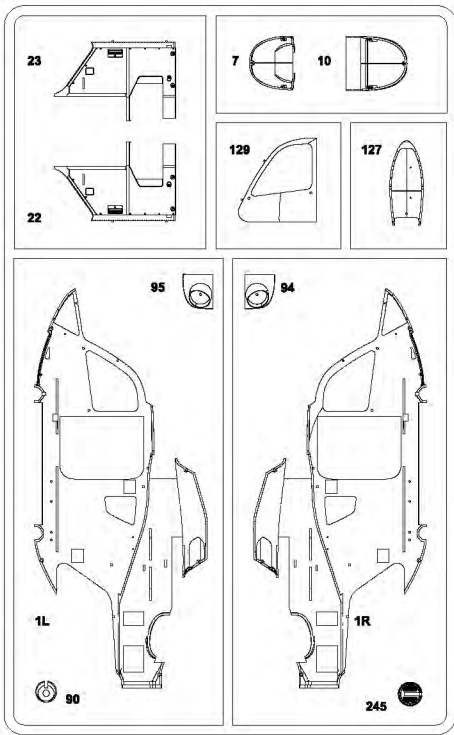
Crew:	1-2 Pilots, a total 7 People maximum
Length over all:	12,19 m (40ft 0ins)
Height over all:	3,62 m (11ft 11ins)
Cabin:	Length x Width = 3,5 m x 1,5 m (11ft 6ins x 5ft 0ins)
Cabin Height:	1,26 m (4ft 2ins) front, 1,15 m (3ft 9ins) rear
Rotor Diameter:	10,20 m (33ft 6ins)
Rotor Disc Area:	81,7 qm (880 Sq/ft)
Fenestron Diameter:	1,0 m (3ft 3ins)
Empty Weight:	1420 kg (3131 lbs)
Payload:	1.455 kg (3208 lbs)
Maximum Fuel Load:	576 kg (1272 lbs)
Maximum Take-off Weight (TOW):	2.910 kg (6416 lbs)
Engines:	2 x Pratt & Whitney PW 206B2, each 321 kW (436 Shp)
Emergency Power Rating (O.E.I.):	609 kW (828 Shp)
Main Rotor Rpm:	~ 400 Rpm
Range (at max. TOW):	635 km
Cruising Speed:	259 km/h (160 mph), at max. TOW: 254 km/h (158 mph)
Service Ceiling:	6.096 m (20000 ft)

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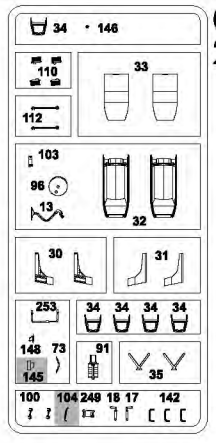






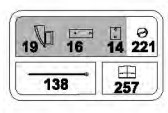
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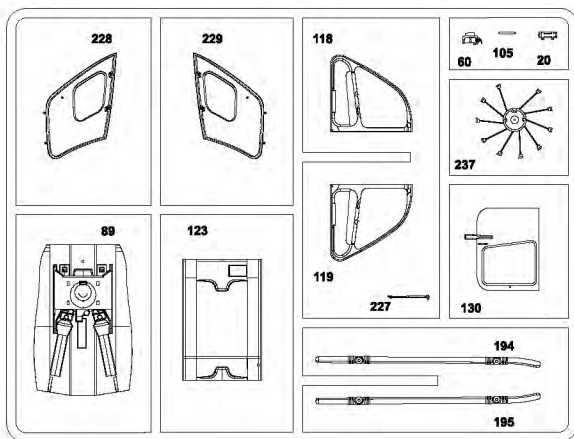


C1  
2x

C2  
2x

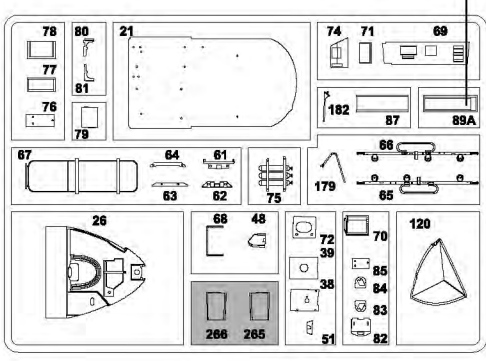


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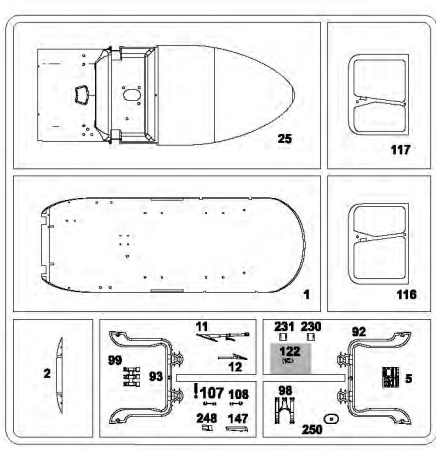
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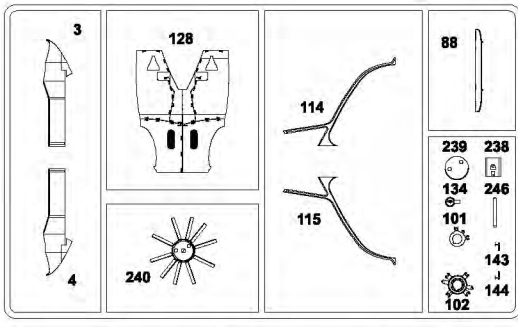
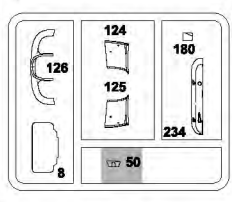
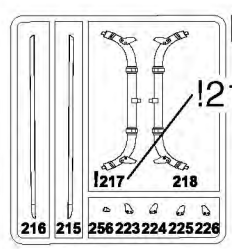
D4

Nicht benötigte Teile  
 Parts not used  
 Pièces non utilisées  
 Niet benodigde onderdelen  
 Piezas no necesarias  
 Peças não utilizadas  
 Partii non usate  
 Inre användda delar  
 Tarpeetomat osat  
 Ikke nødvendige dele  
 Deier som ikke er nødvendige  
 Неиспользуемые детали  
 Elementy niepotrzebne  
 μη χρειάζομενα εξαρτήματα  
 Gereksiz parçalar  
 Nepotrebné dily  
 fel nem használt alkatrészek  
 Nepotrební deli



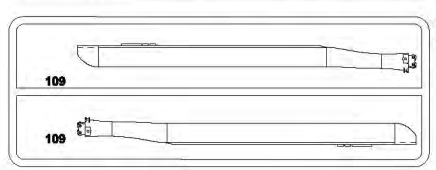
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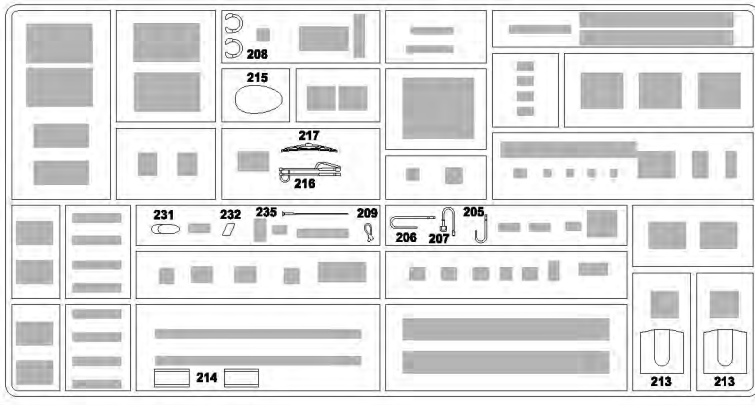
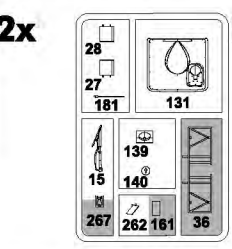


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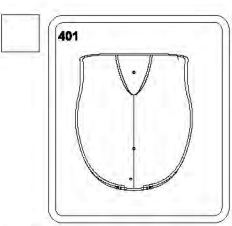
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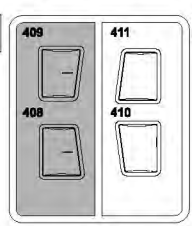
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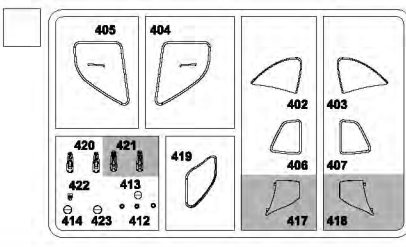
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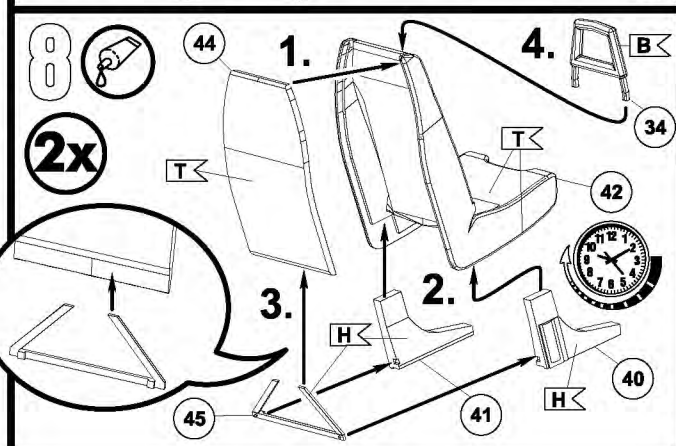
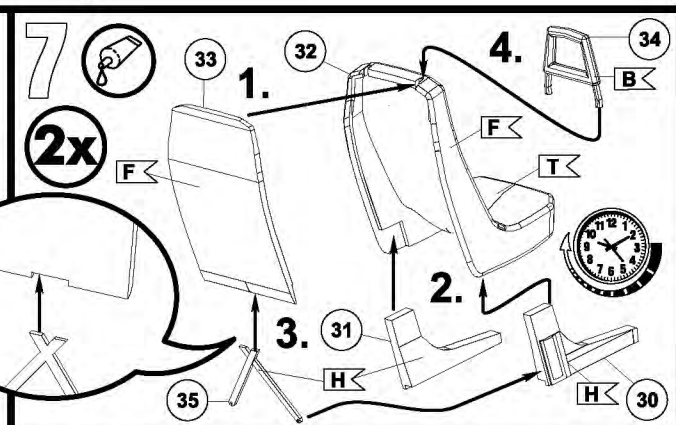
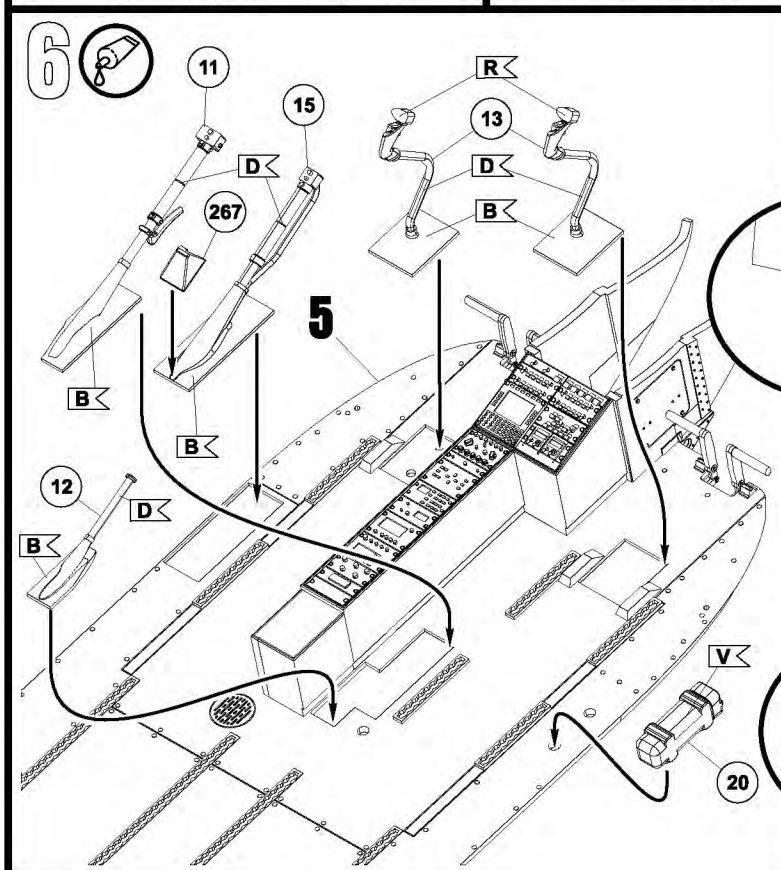
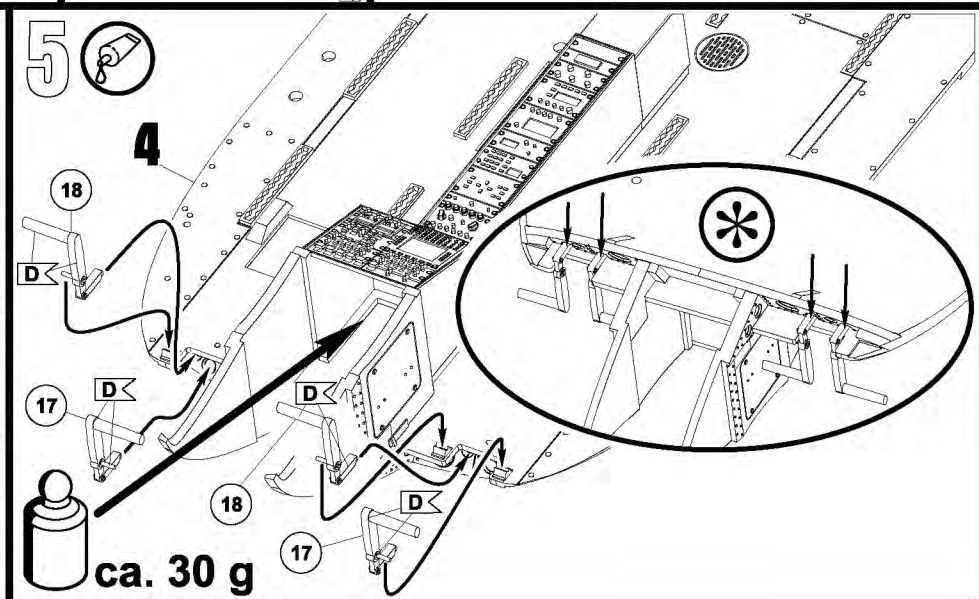
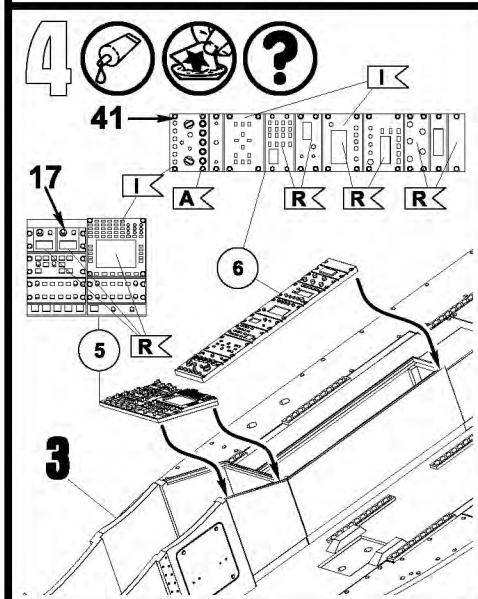
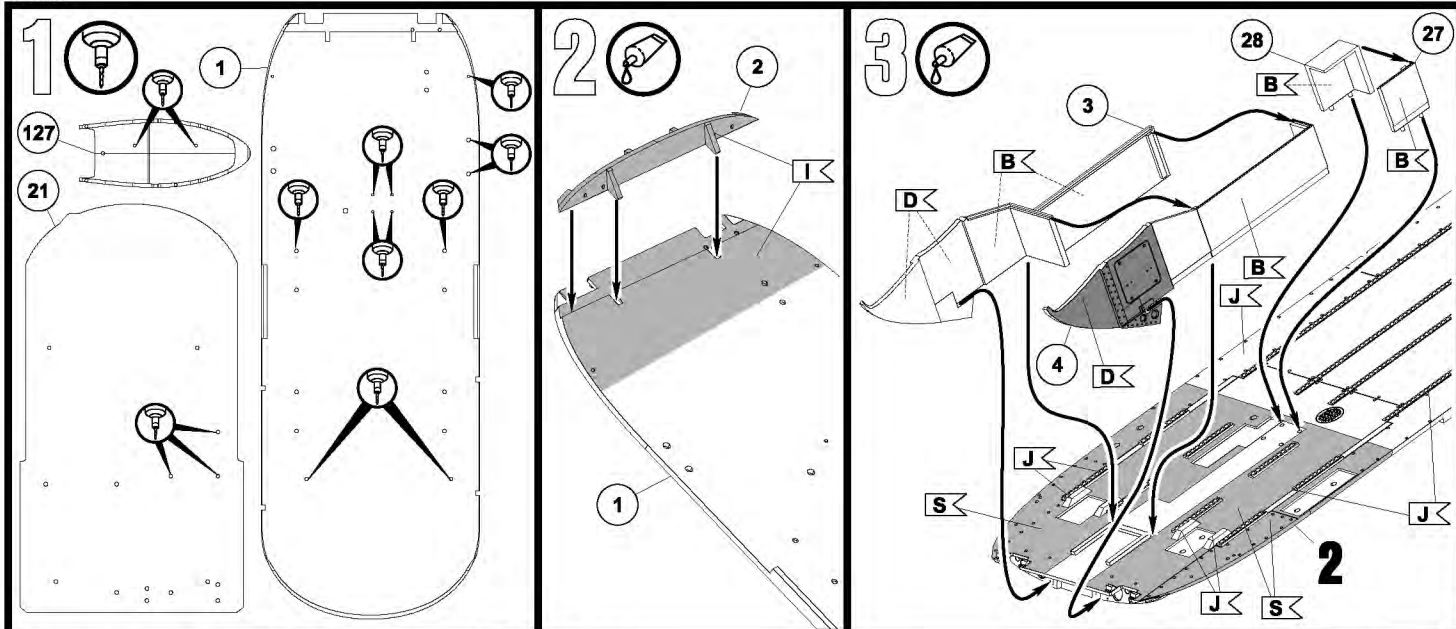
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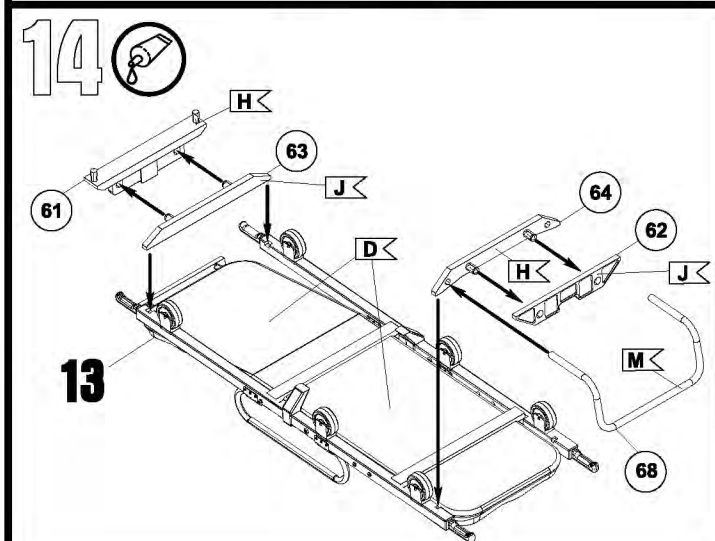
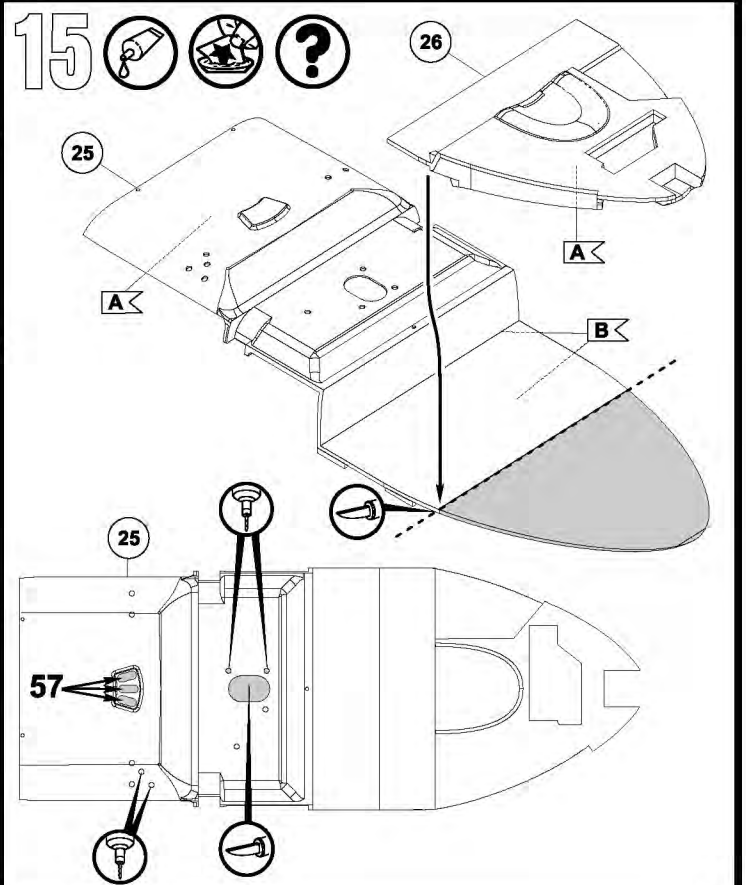
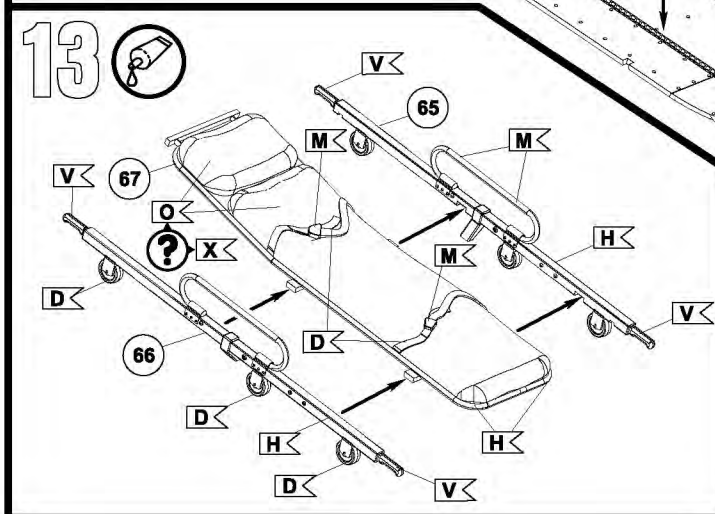
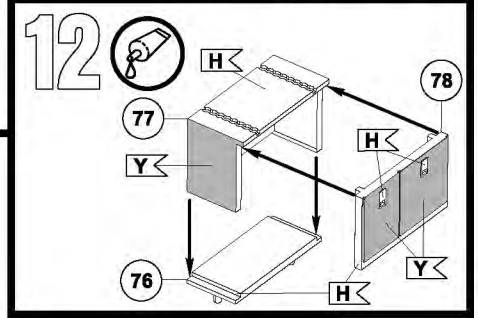
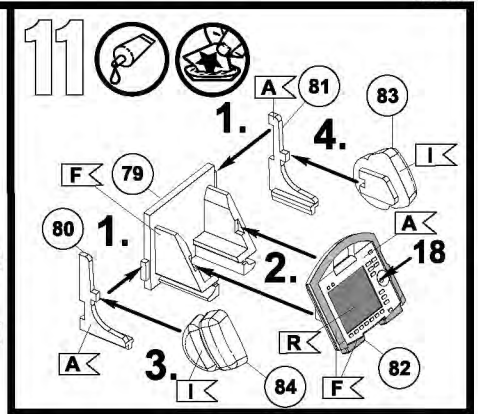
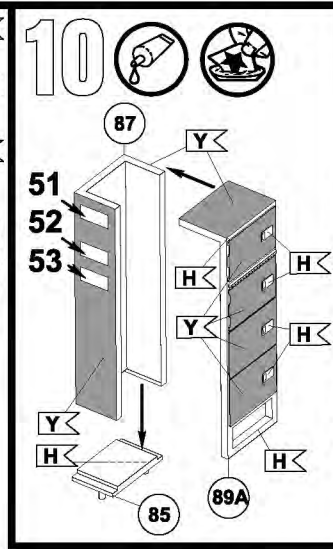
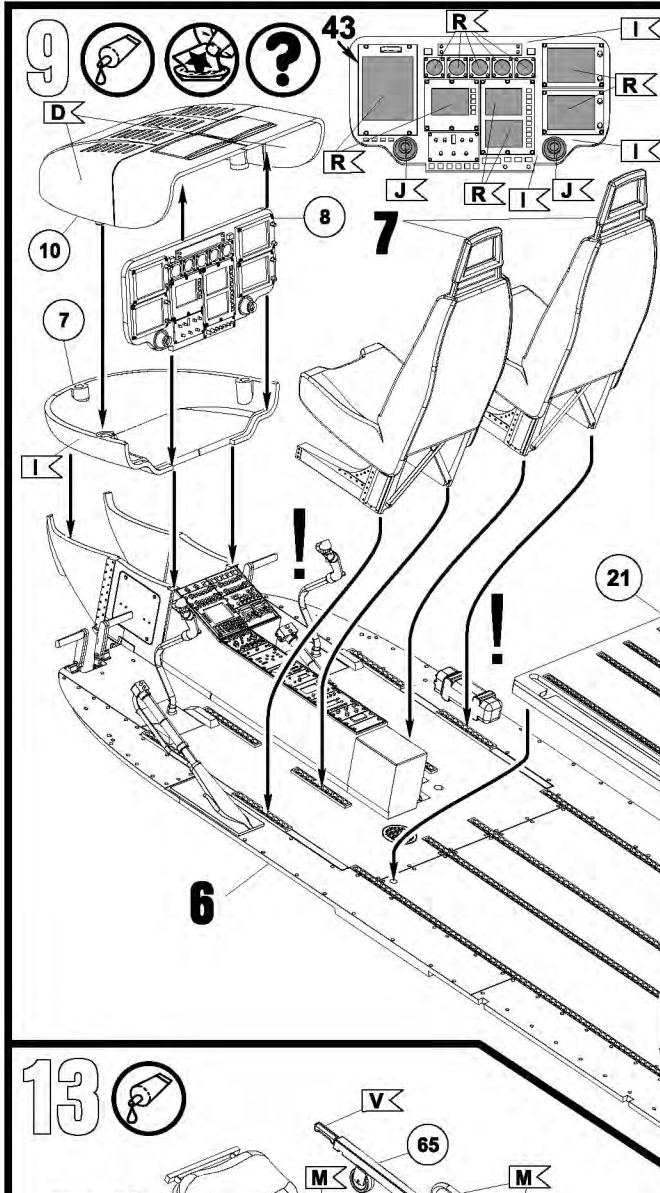


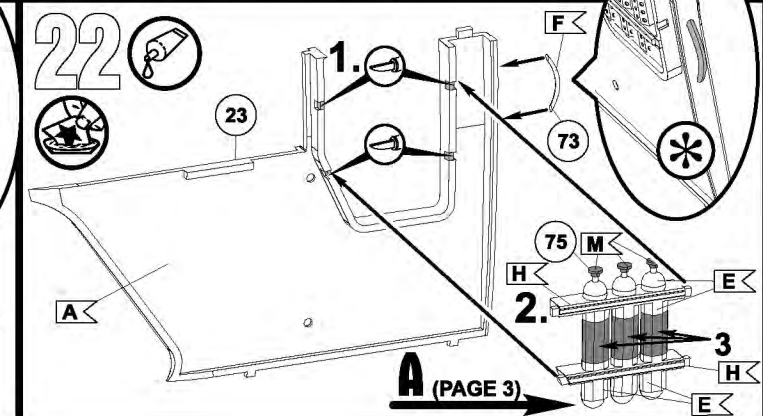
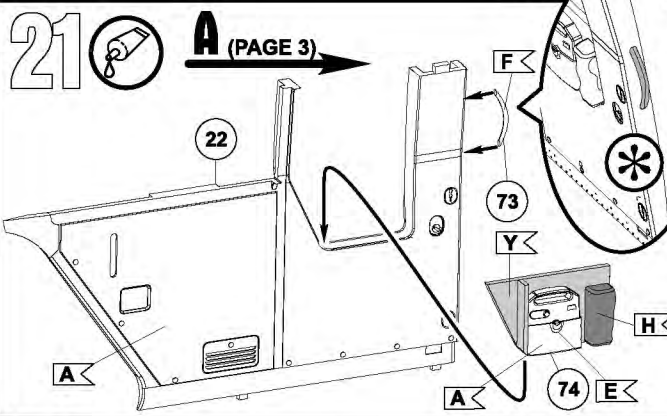
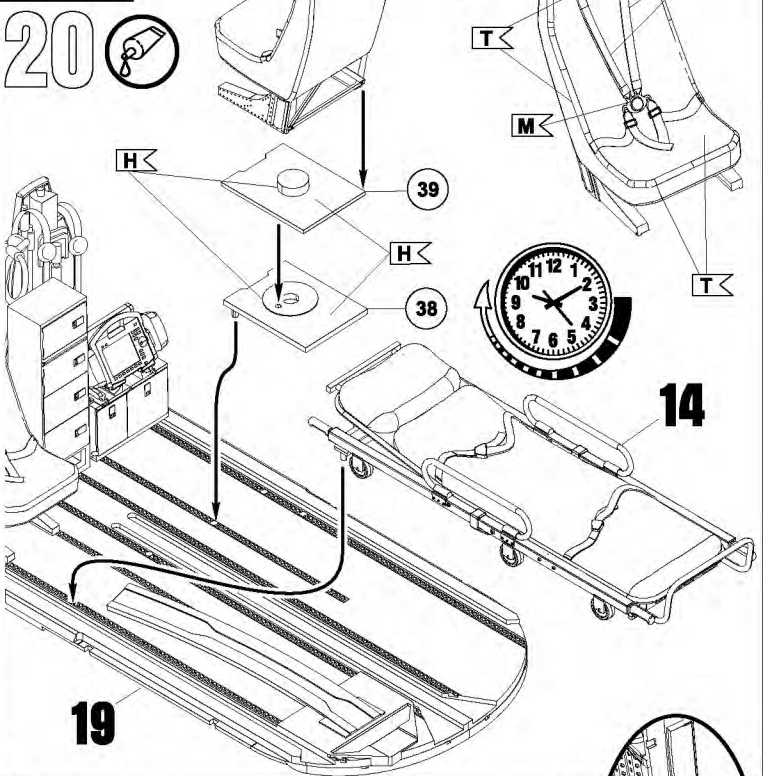
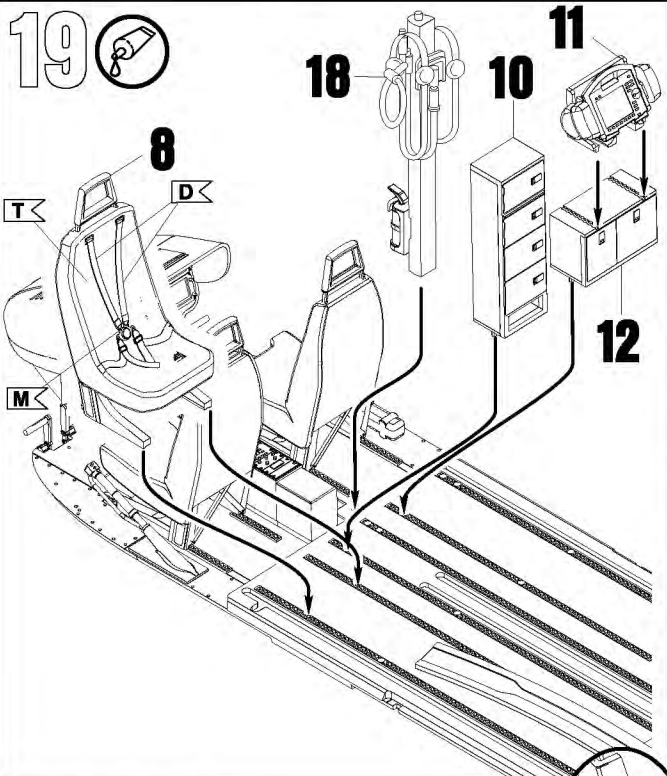
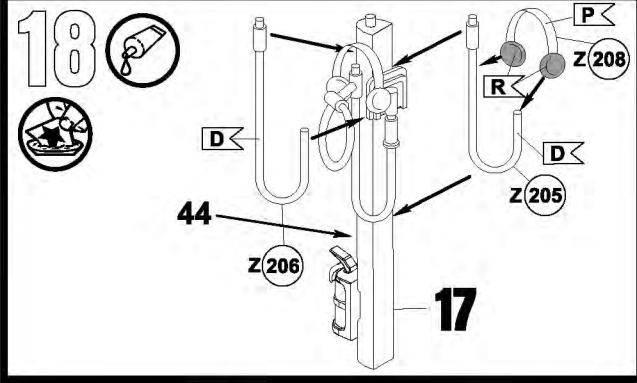
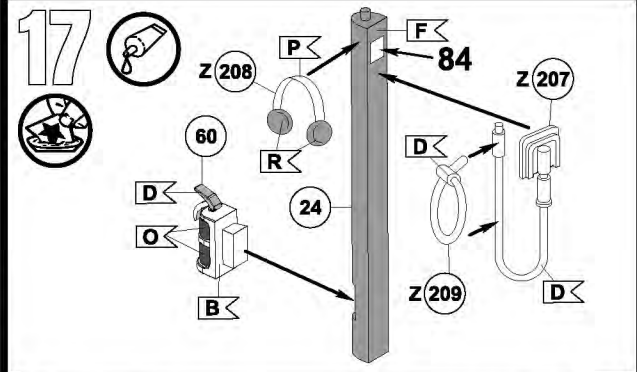
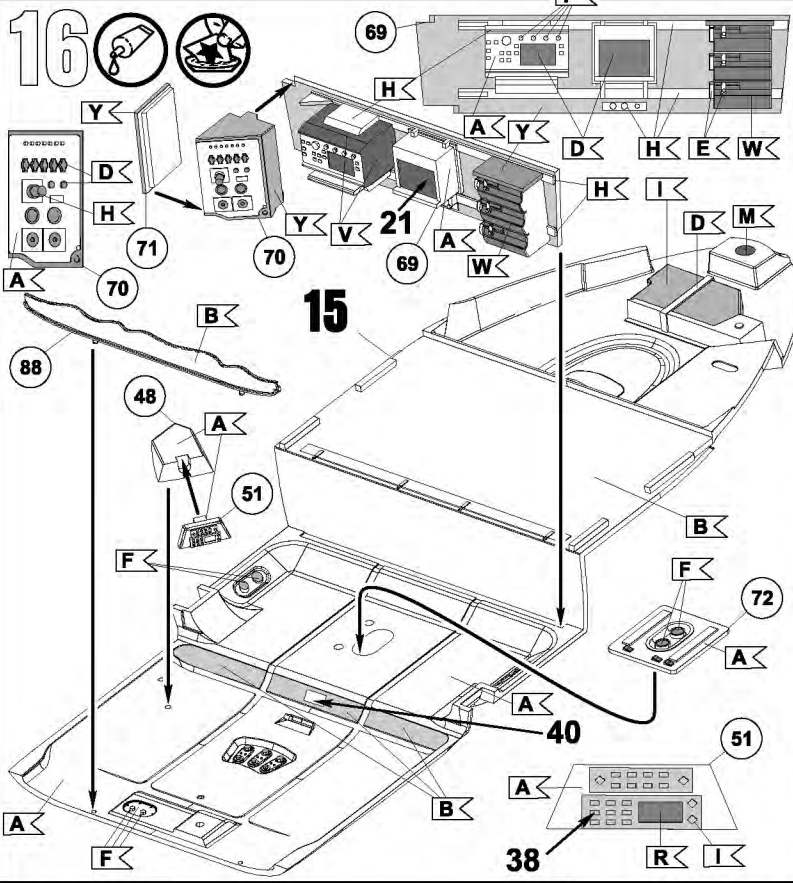
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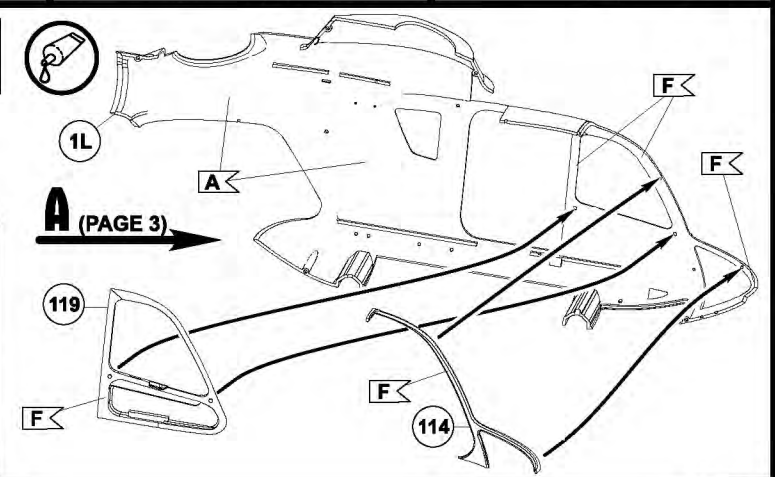
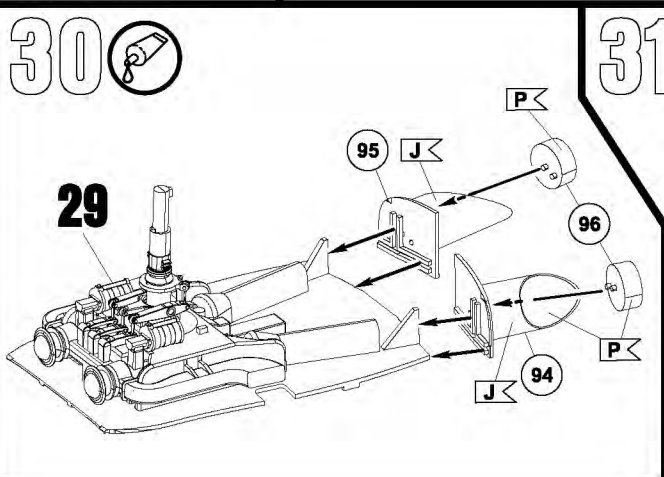
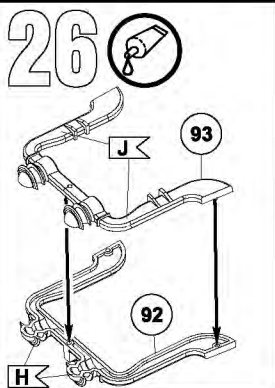
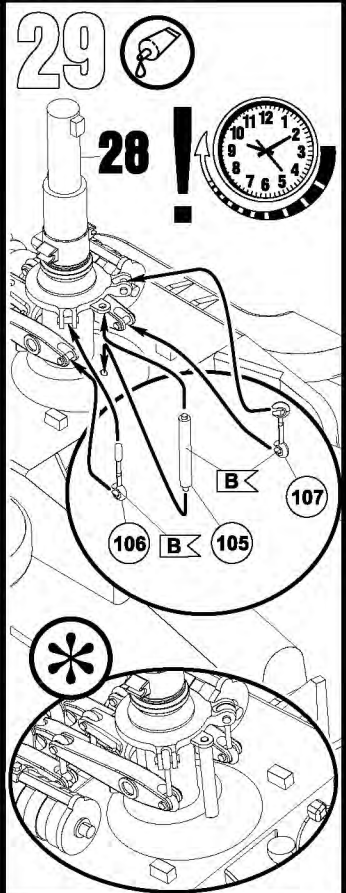
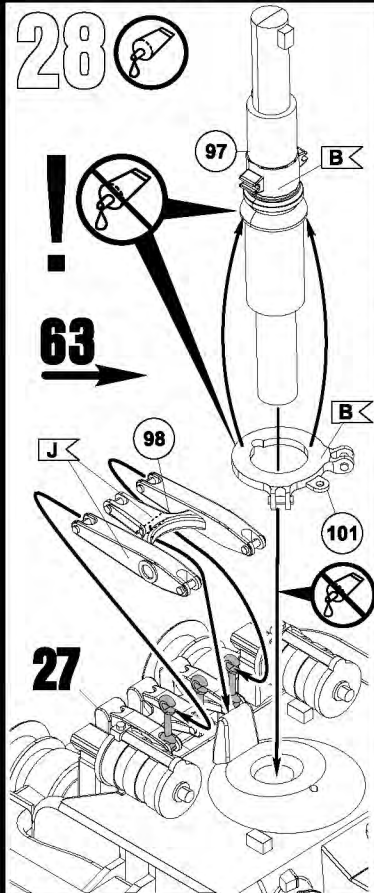
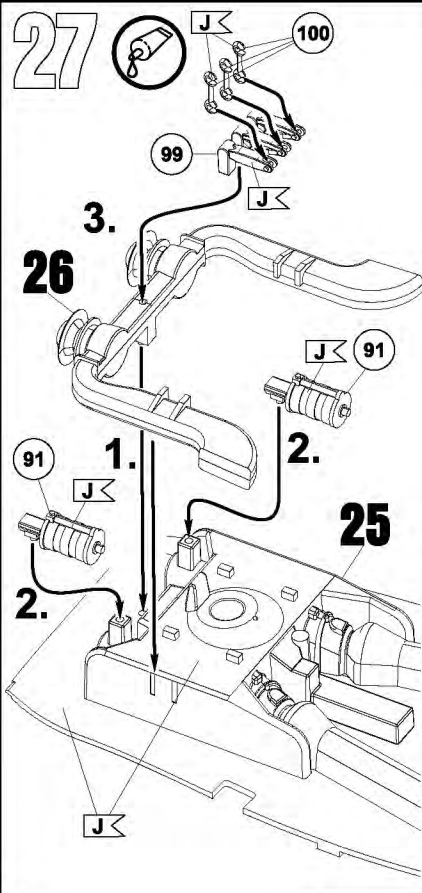
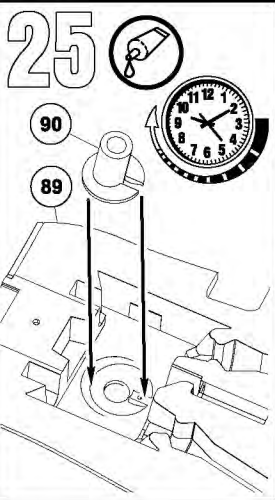
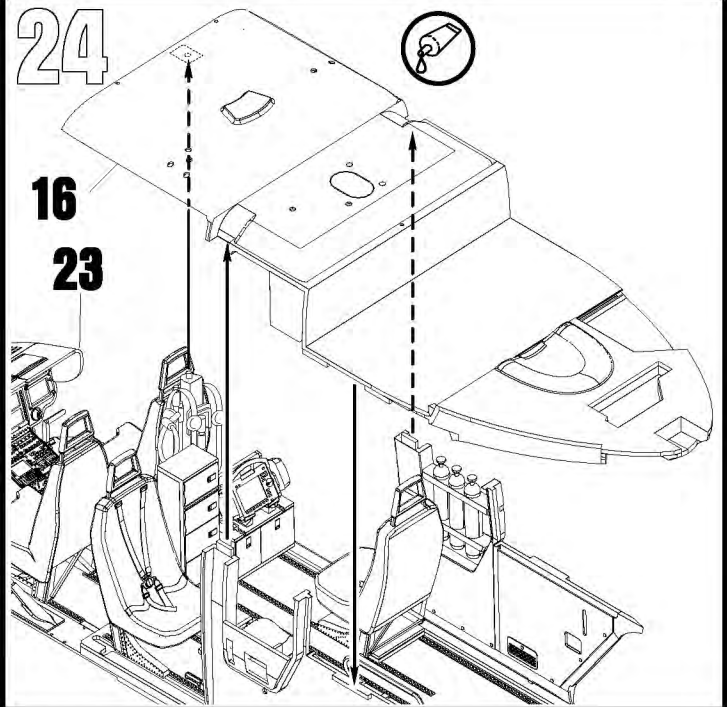
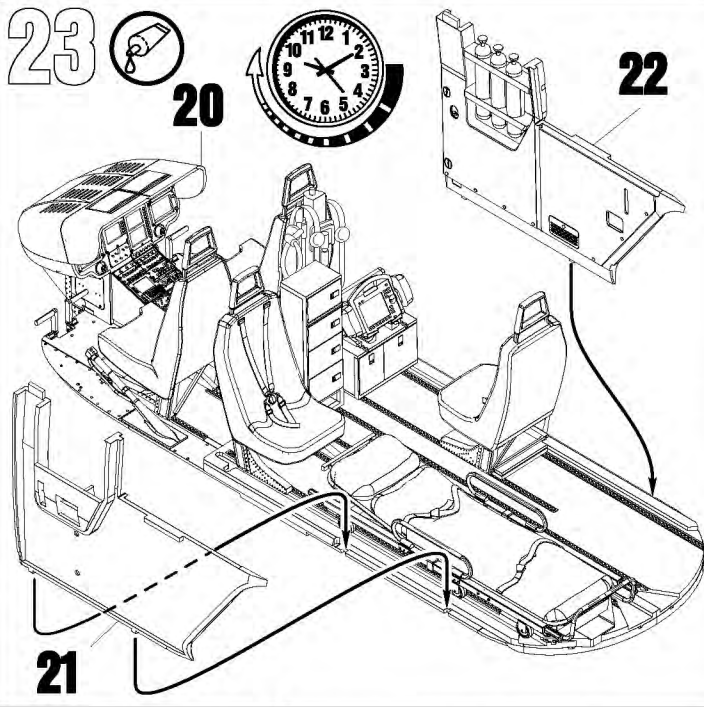
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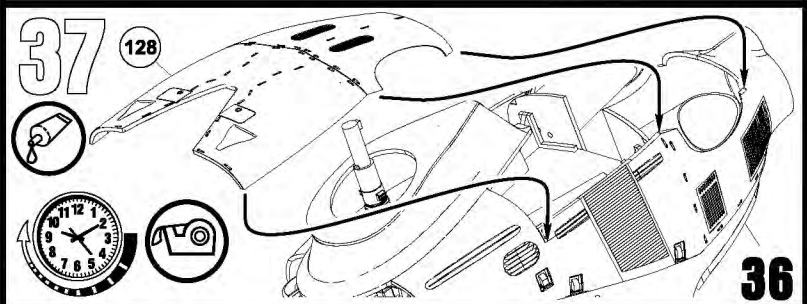
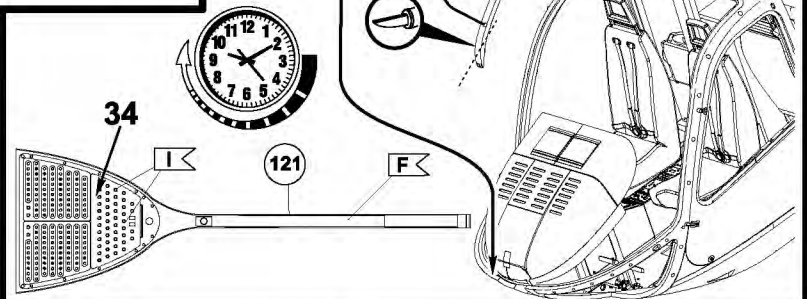
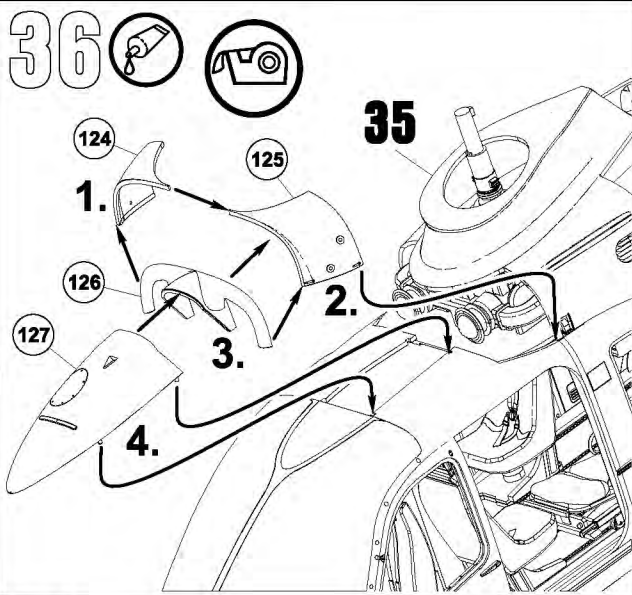
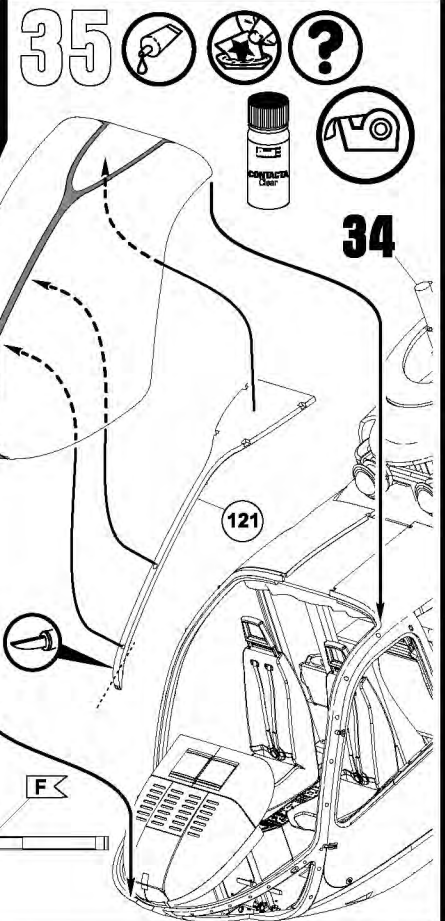
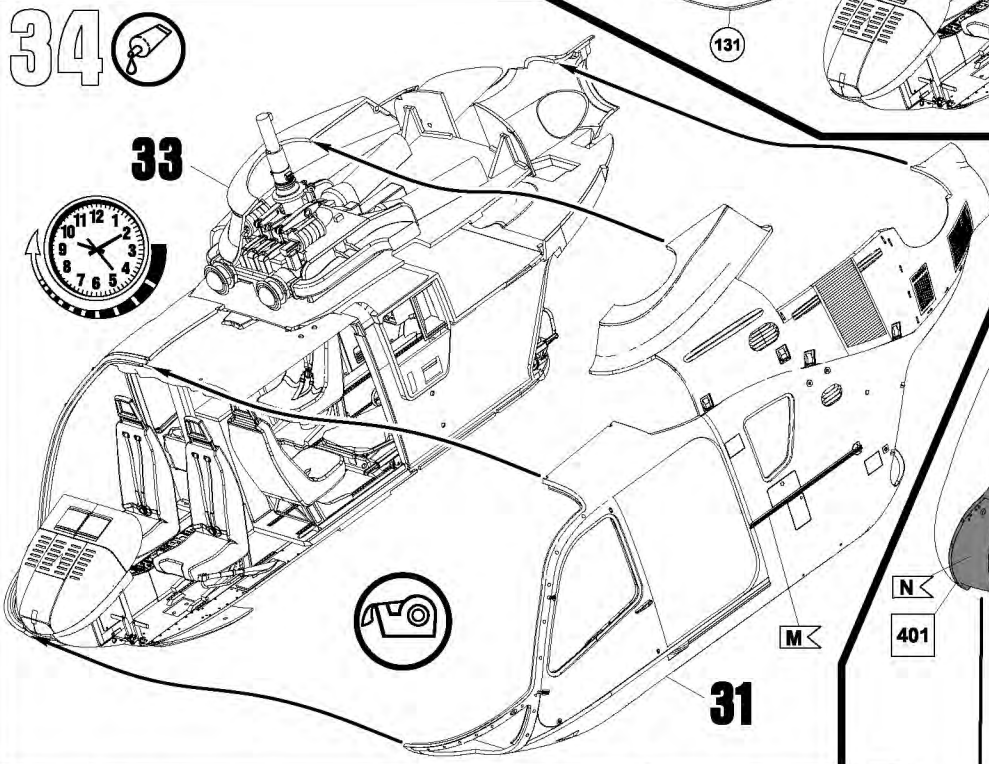
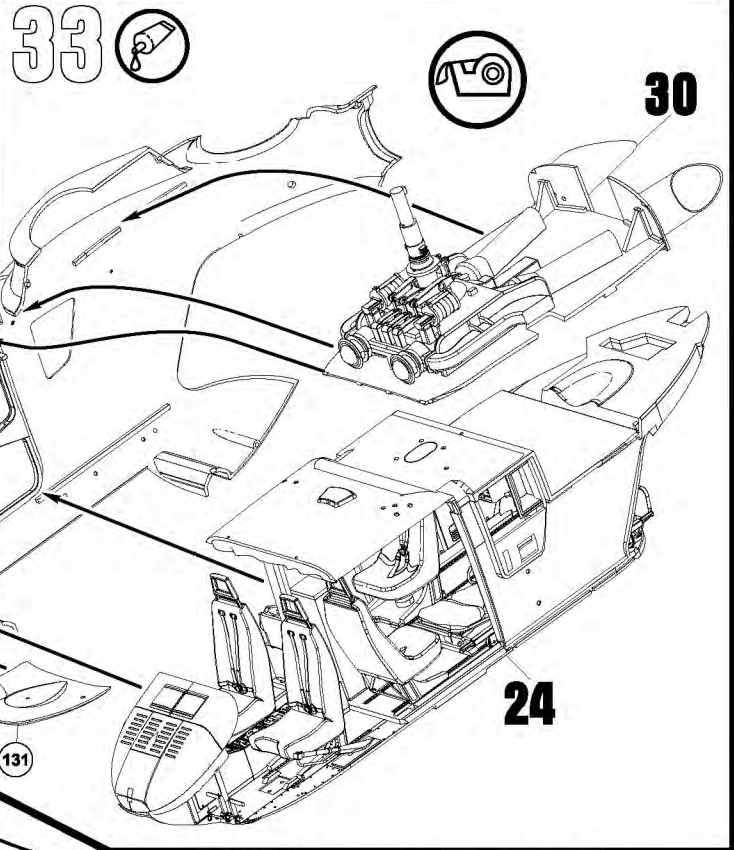
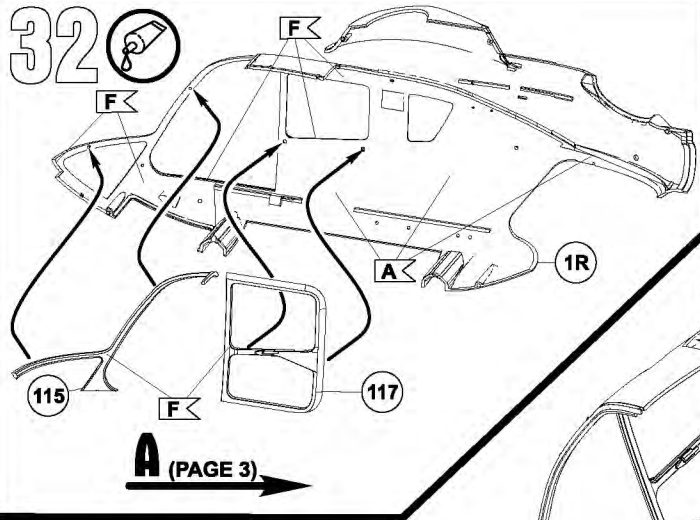


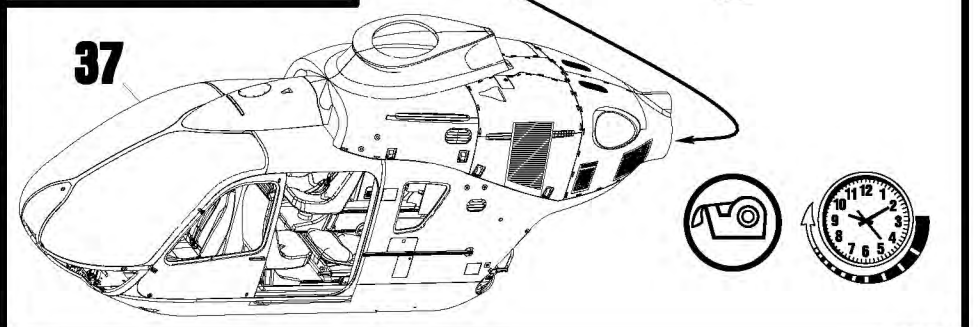
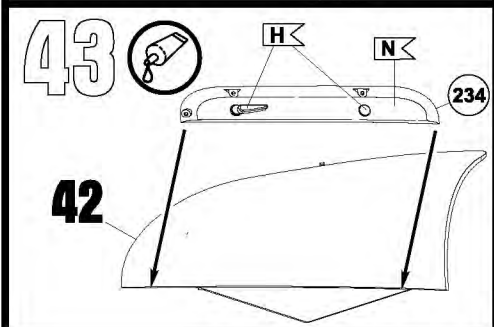
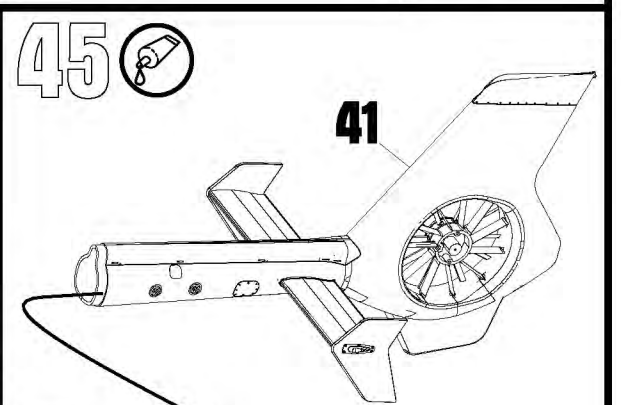
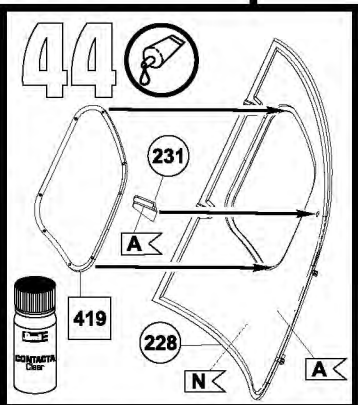
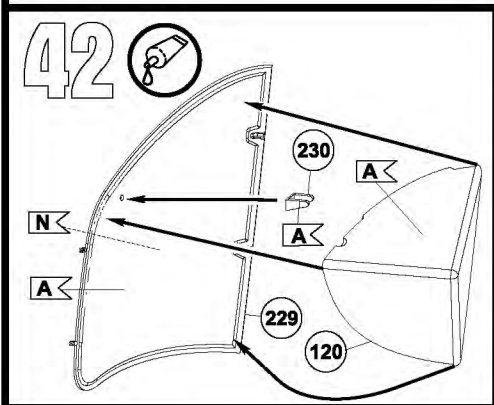
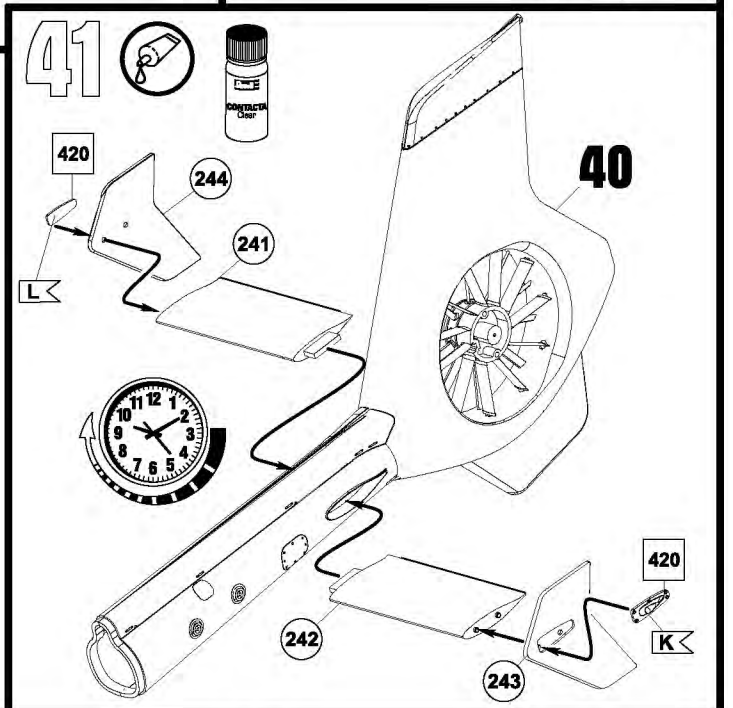
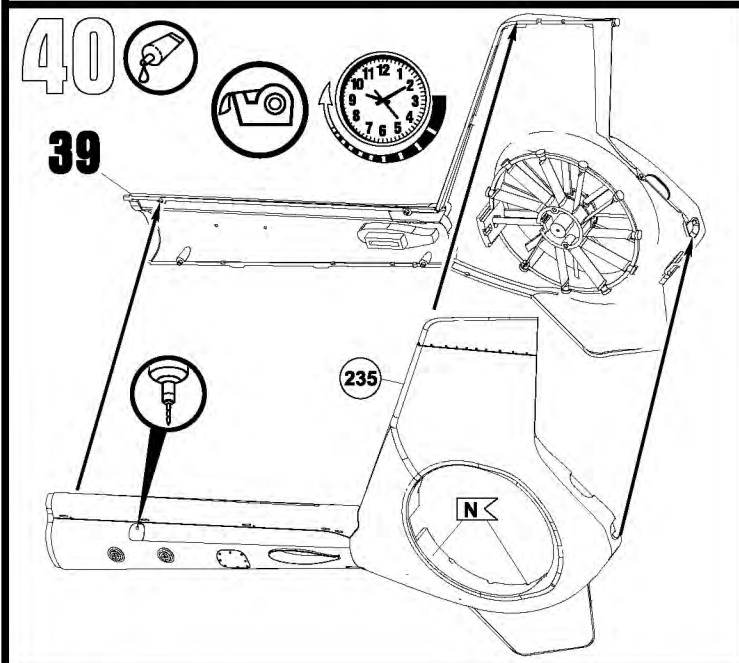
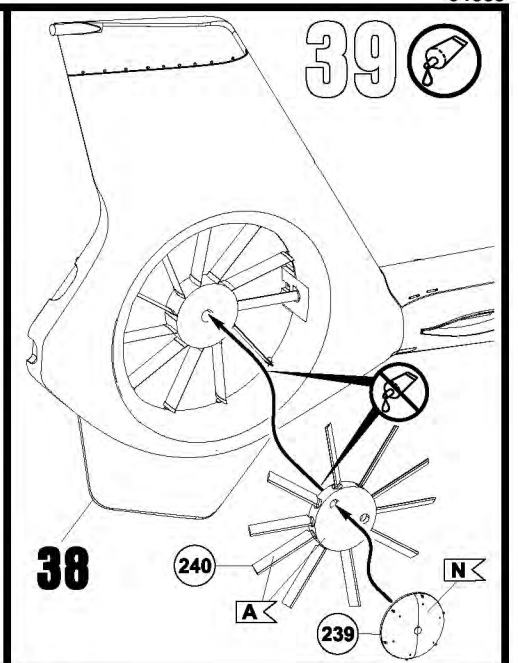
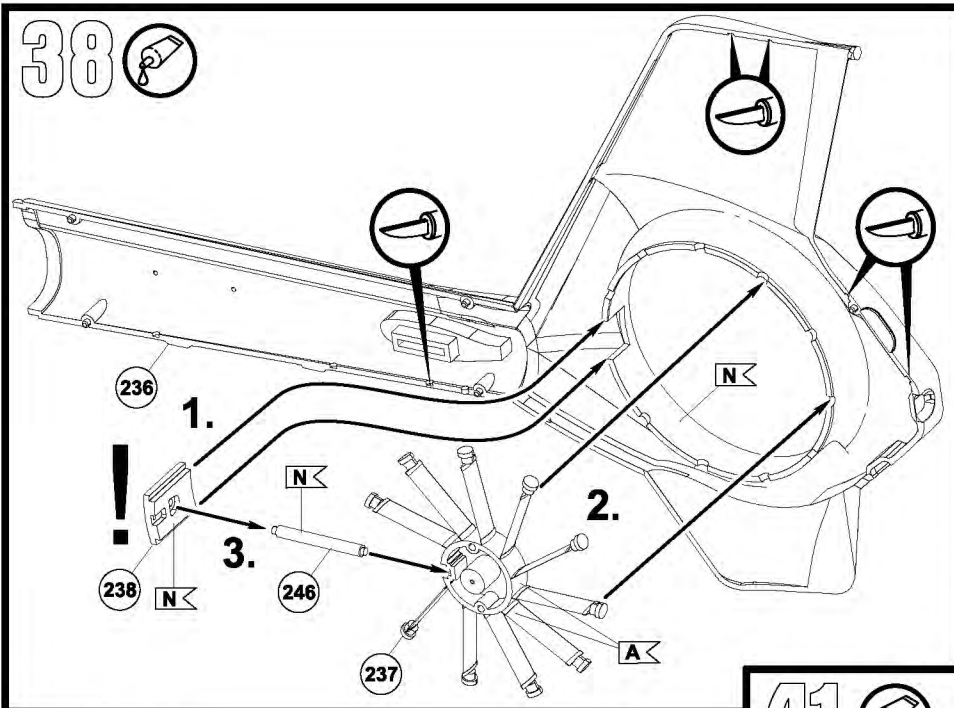


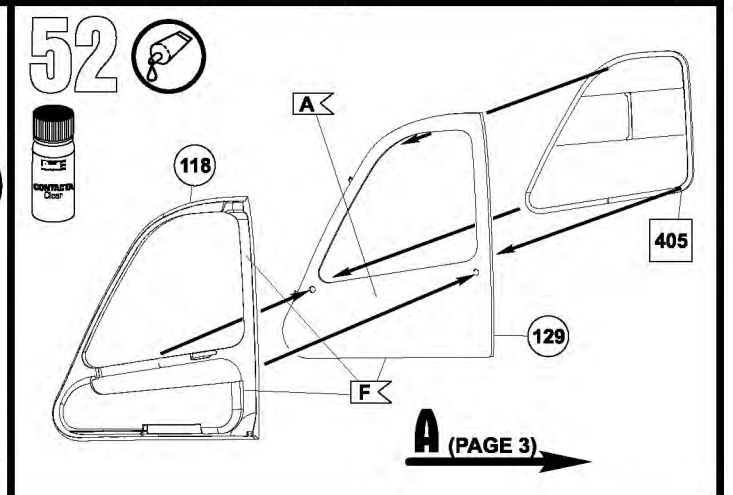
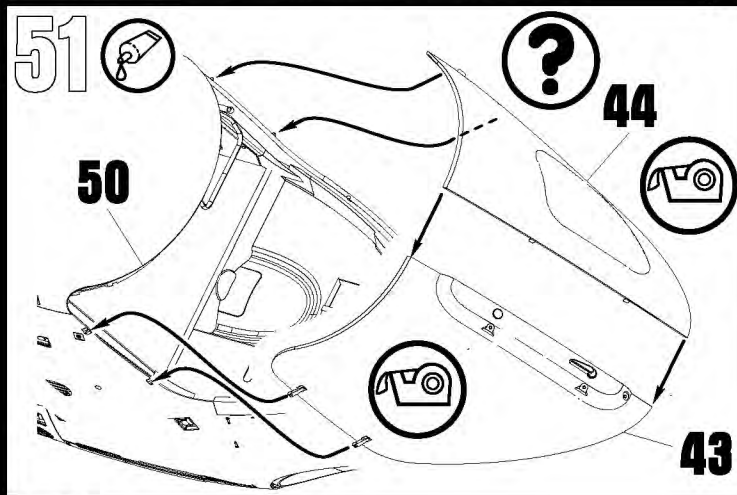
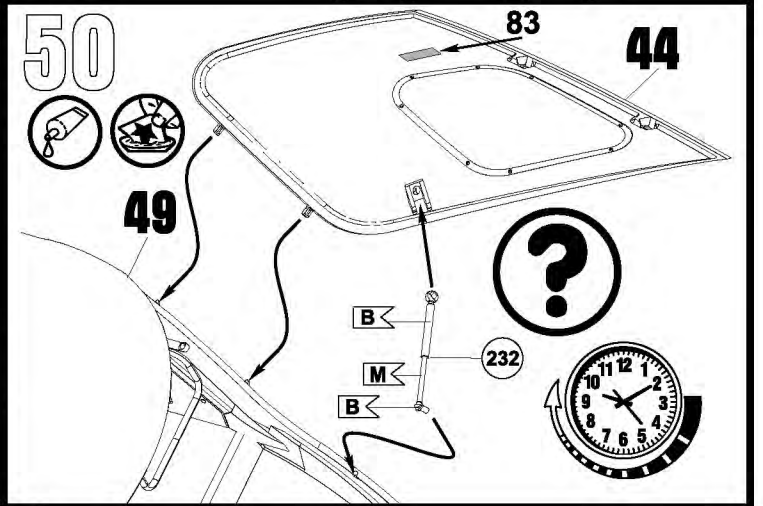
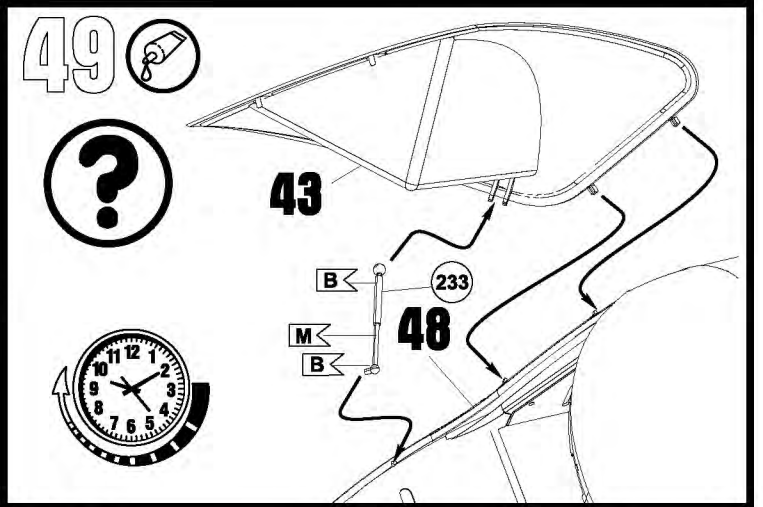
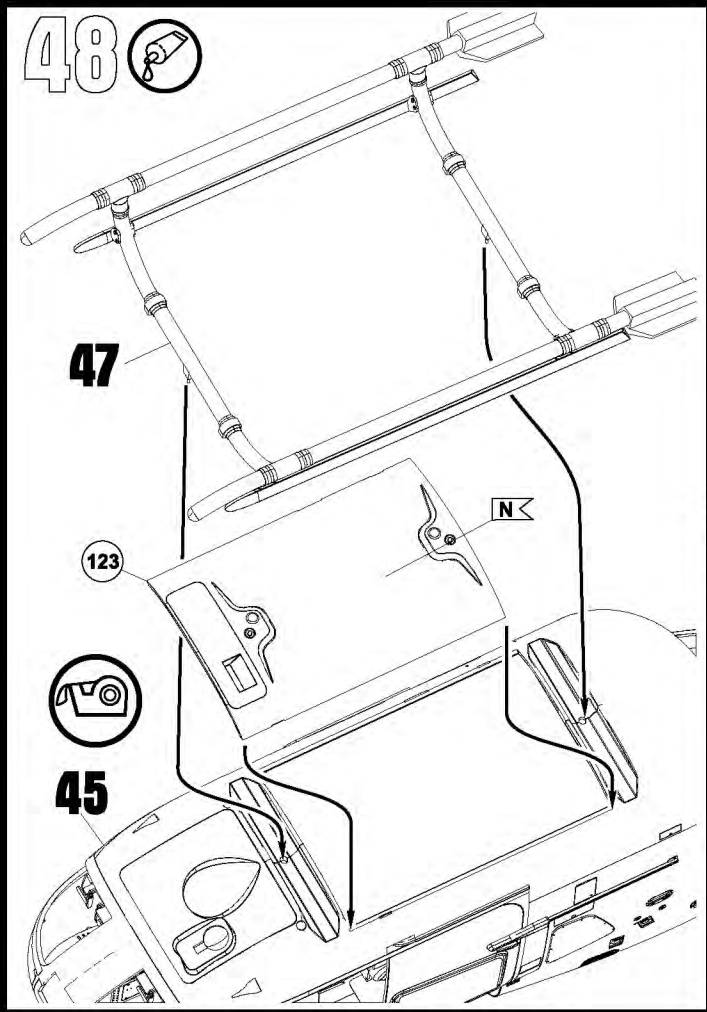
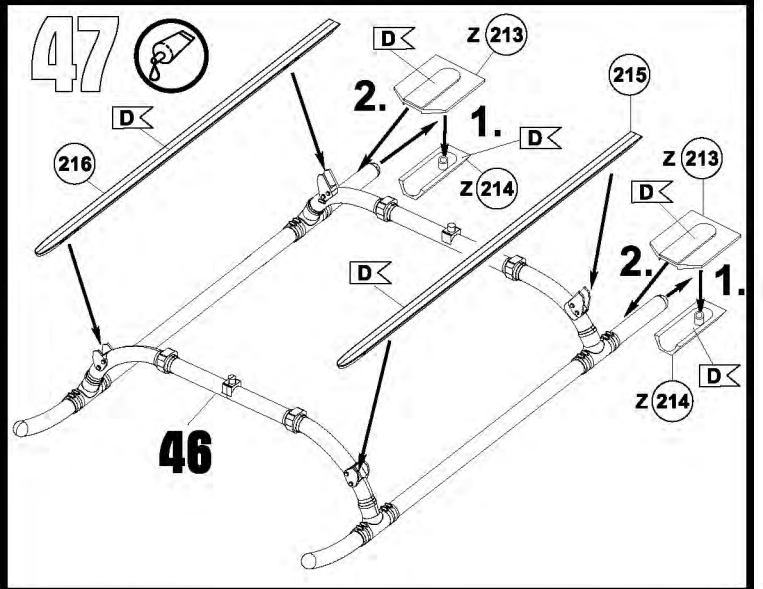
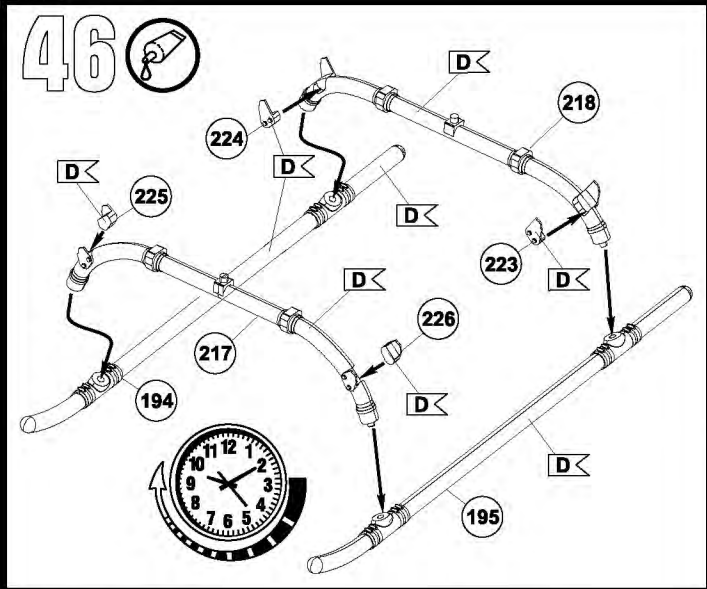


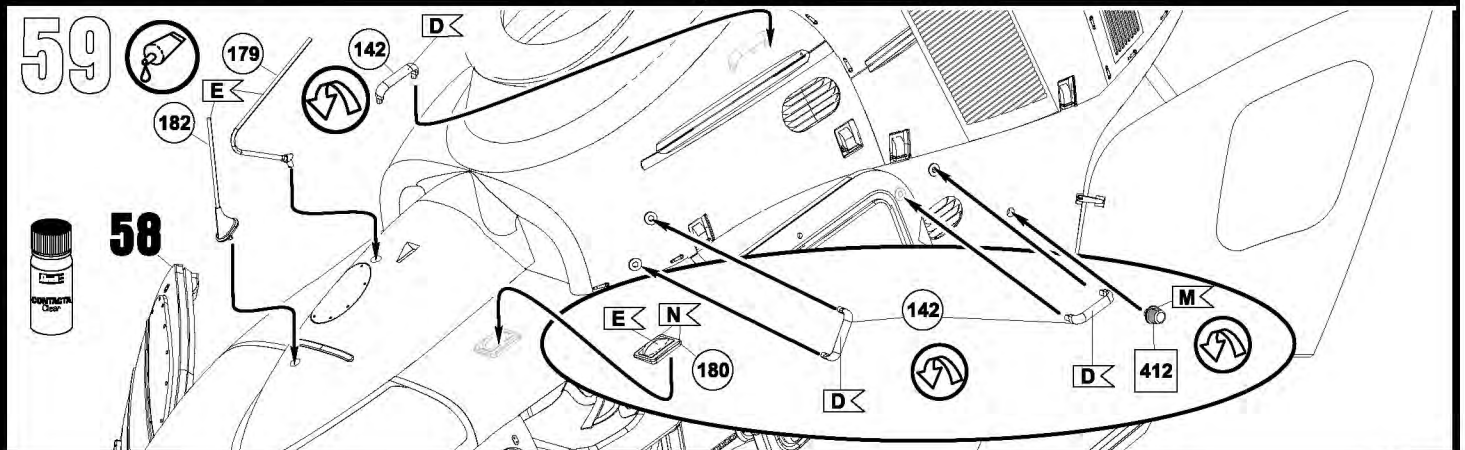
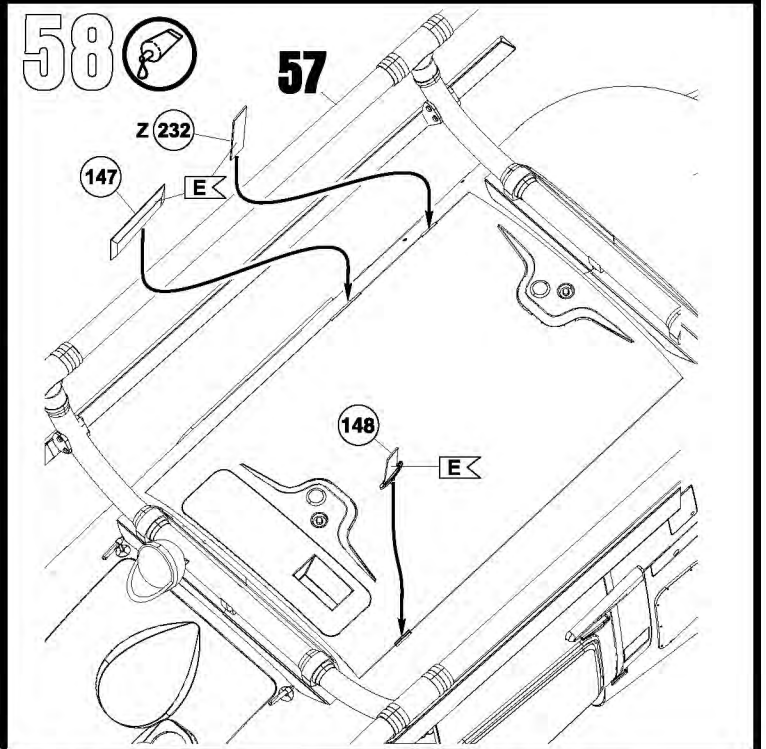
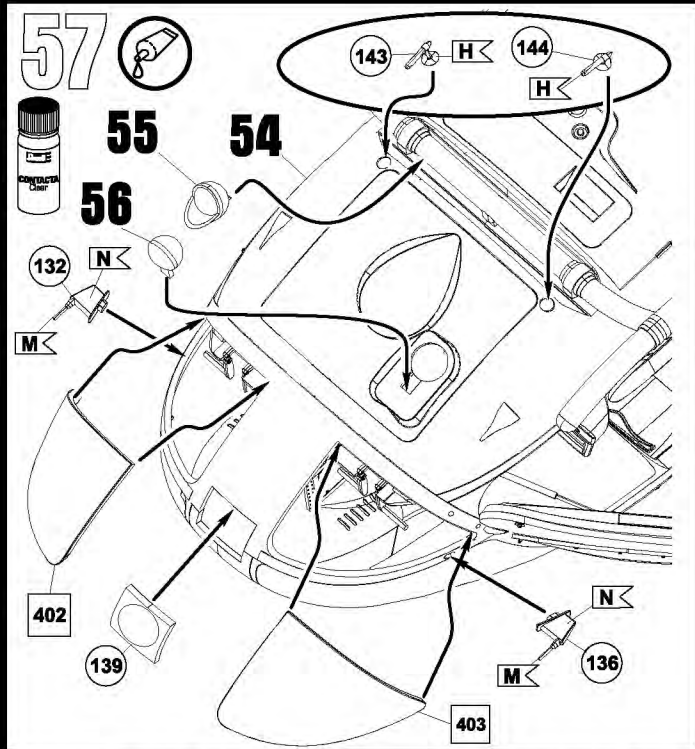
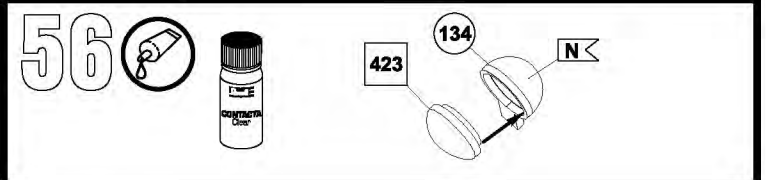
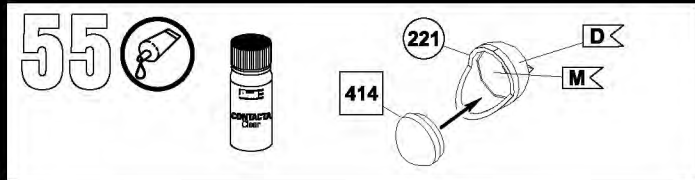
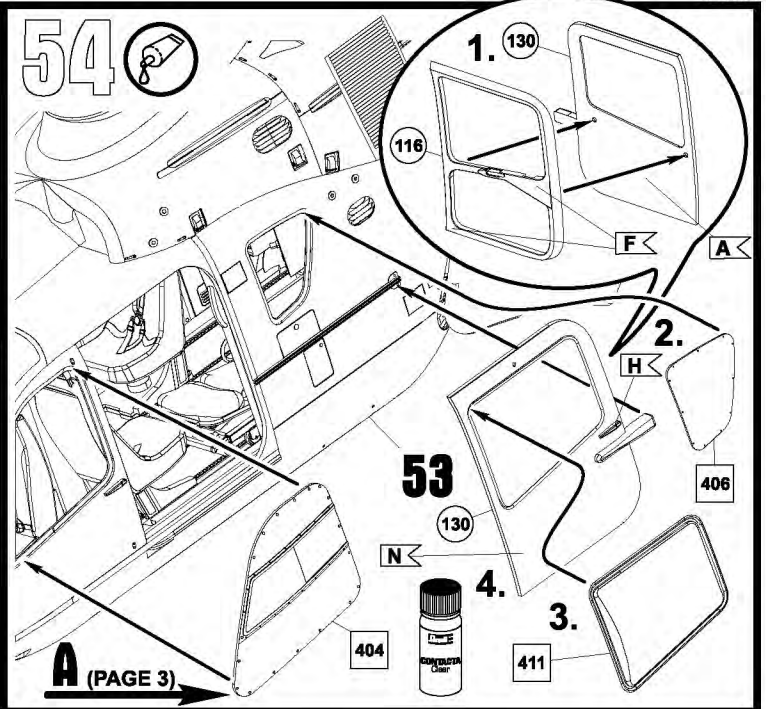
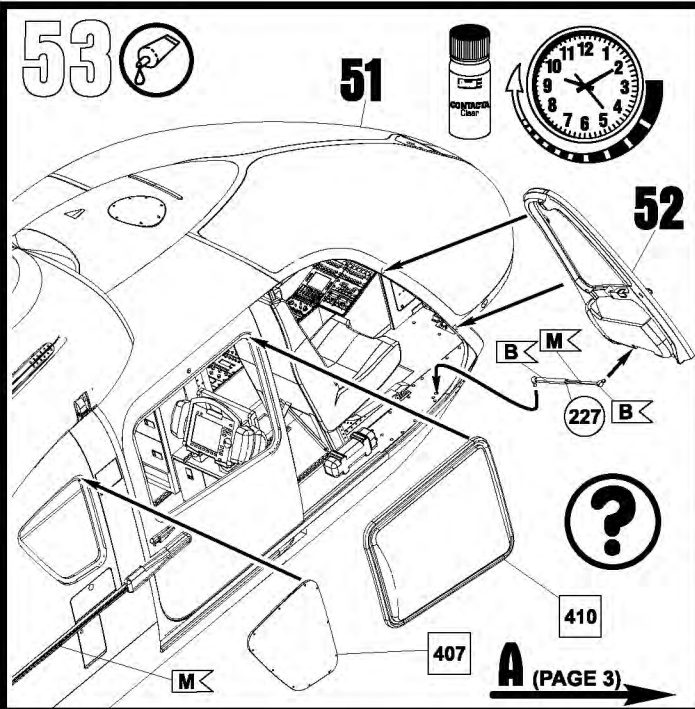


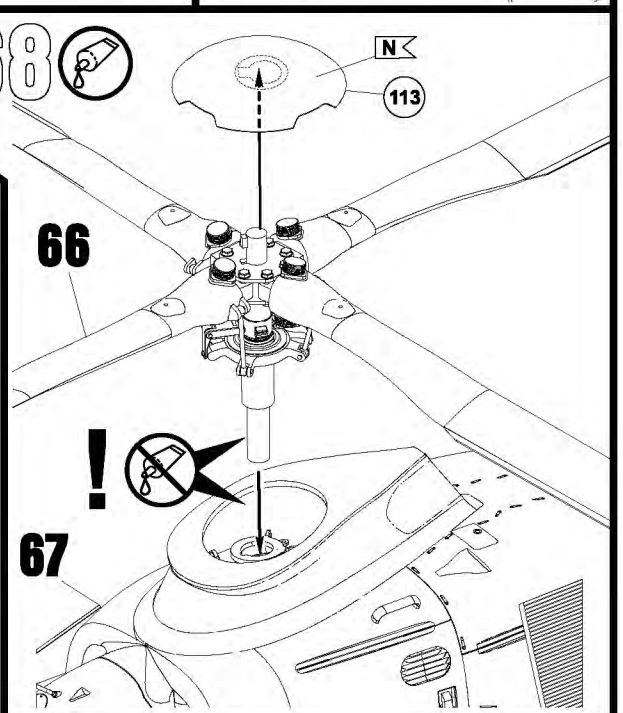
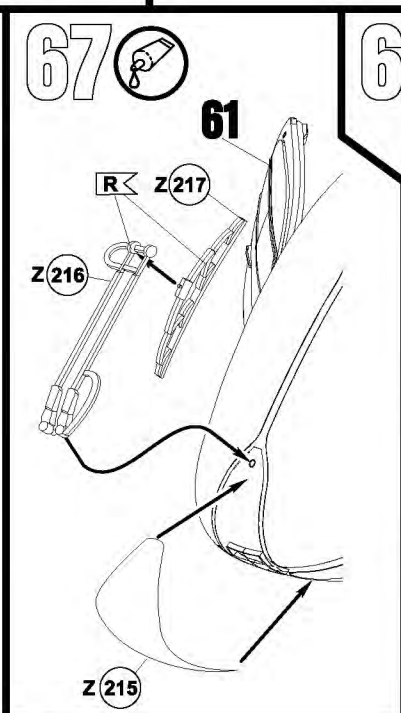
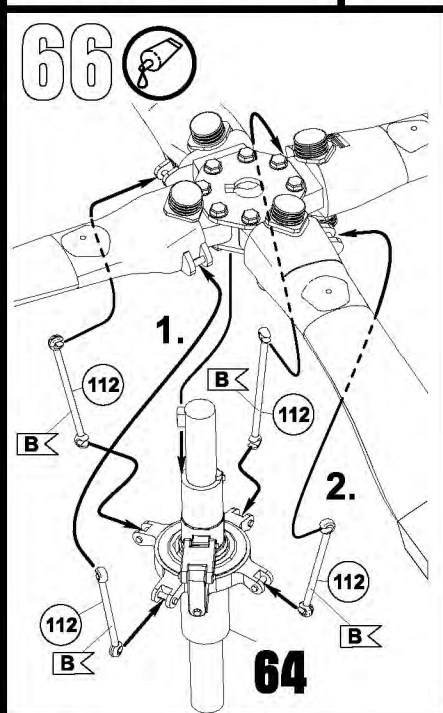
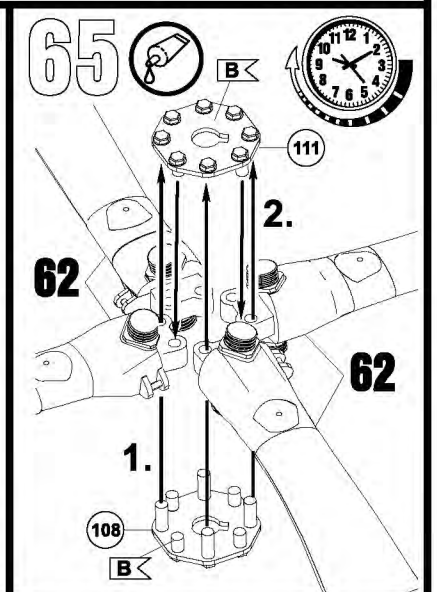
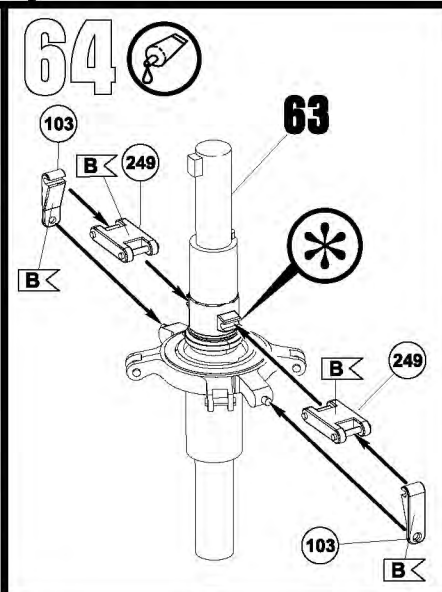
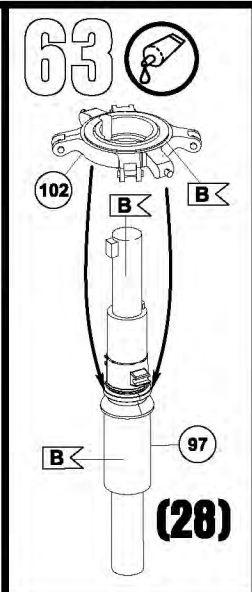
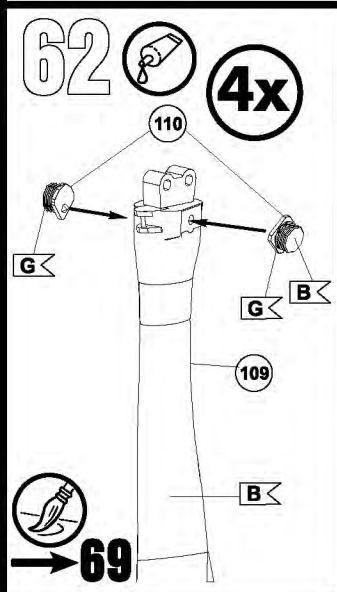
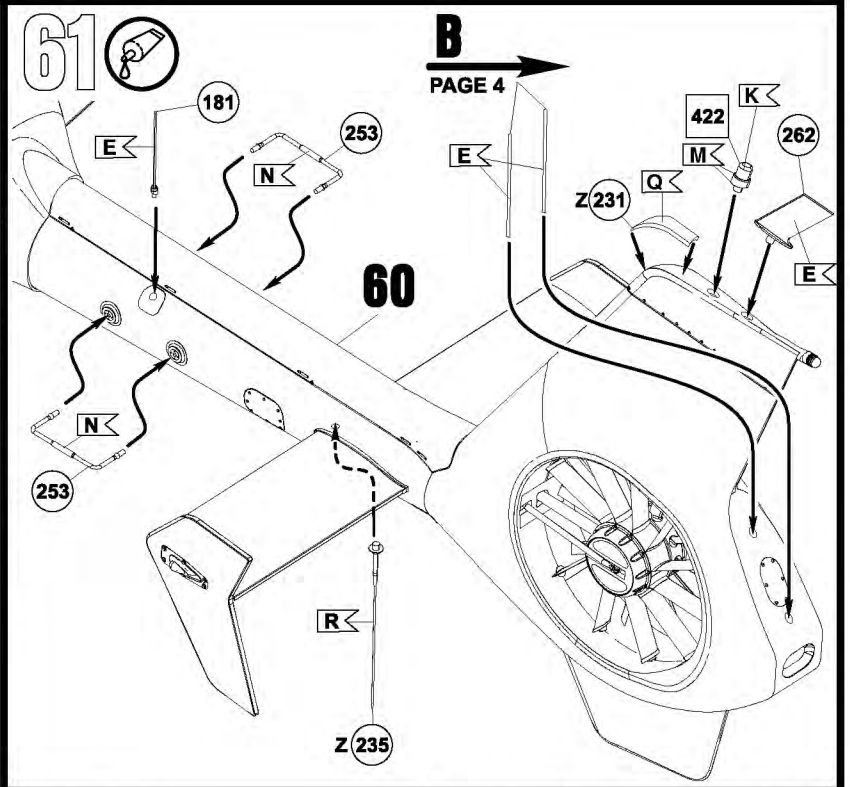
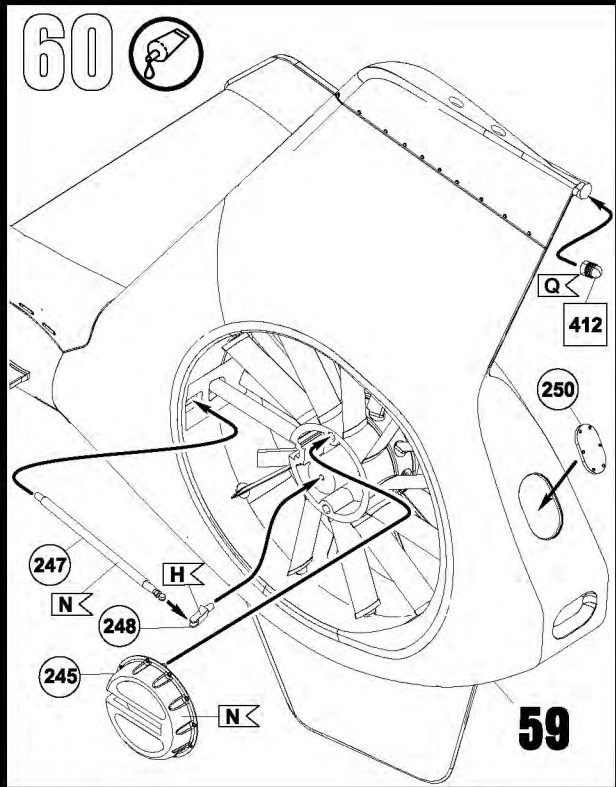






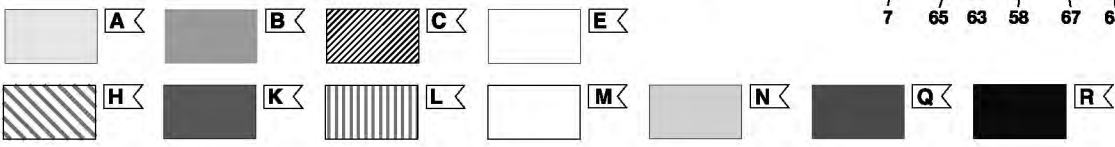
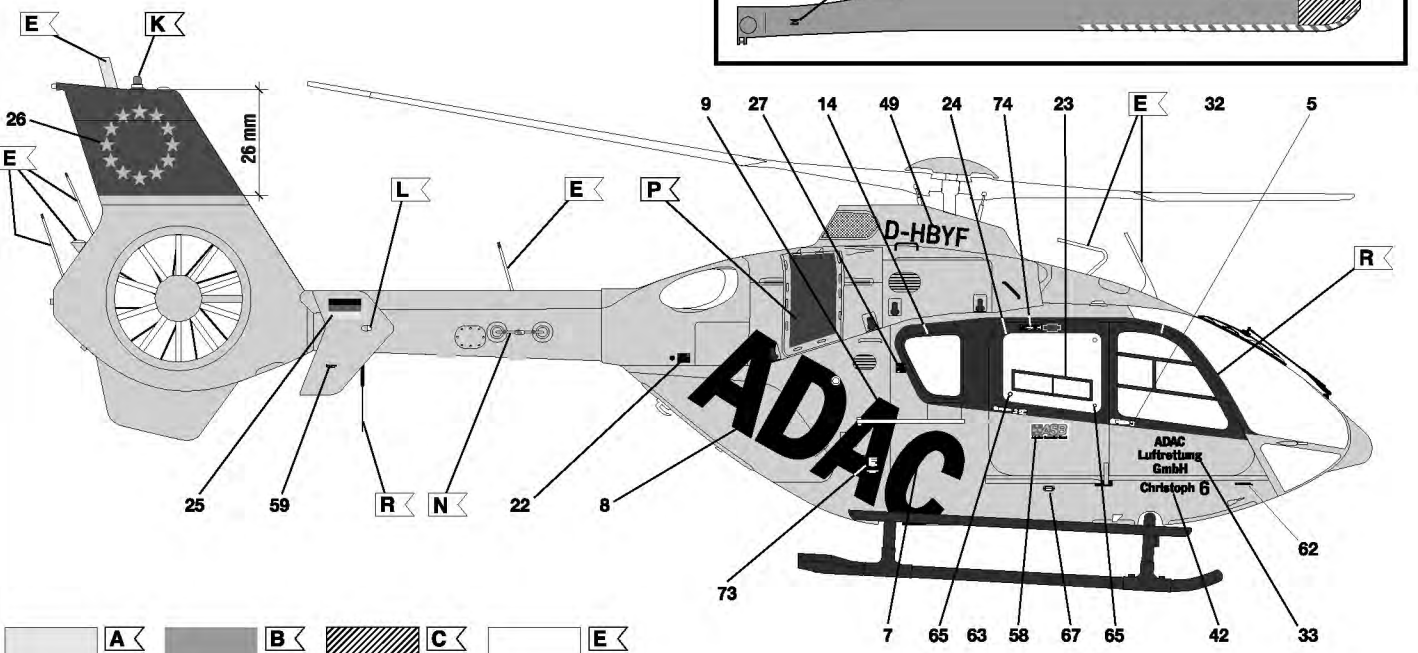
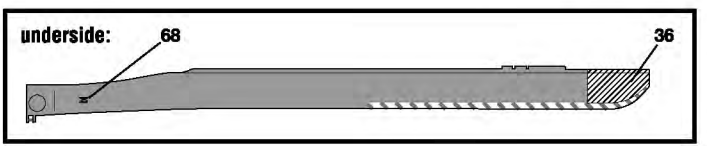
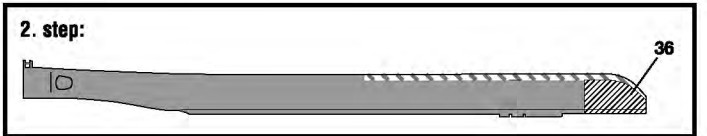
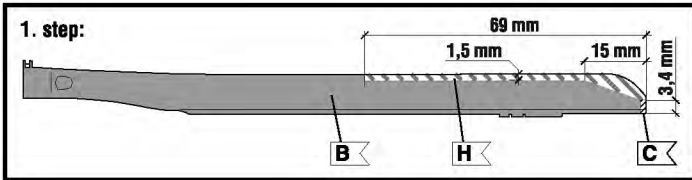
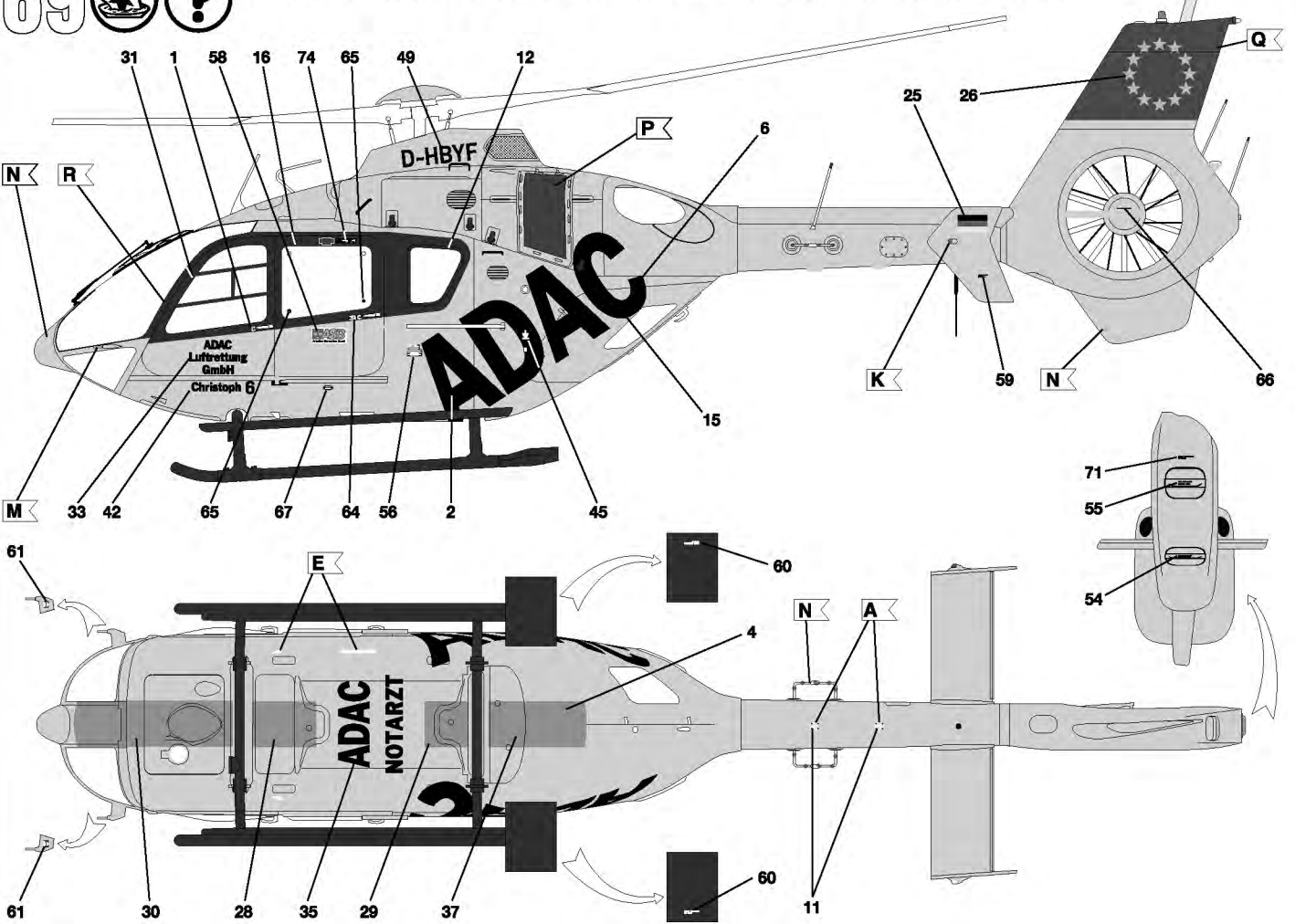








Eurocopter EC135 P2, c/n 0078, D-HBYF, ADAC, "Christoph 6", Bremen, Germany, 2013





Eurocopter EC135 P2, c/n 0100, D-HBYH, ADAC, "Christoph 31", Berlin, 2013

