



# Lockheed Martin F-117A Nighthawk

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Nach Entwürfen in den frühen 1970er Jahren für ein Flugzeug mit geringer Radar-Signatur wurden die Lockheed „Skunk Works“ 1976 damit beauftragt, im Rahmen des geheimen „Have Blue“ – Programms ein neuartiges Jagdflugzeug mit Tarnkappen-Technologie zu entwickeln. Es wurden zwei Testflugzeuge in verkleinertem Maßstab zur Erprobung der Technologie gebaut und geflogen, bevor fünf vollmaßstäbliche Vorproduktionsmaschinen und 15 F-117A in Serienproduktion gebaut wurden, die erste dieser Maschinen absolvierte am 18. Juni 1981 vom geheimen Erprobungszentrum Tonopah, Nevada, aus ihren Erstflug. Ihre Einsatz Einheit war die 4450th Tactical Group, USAF, die bis zum Eintreffen der F-117A zunächst mit A-7D Corsair-Maschinen ausgestattet worden war. Um die Geheimhaltung des Projekts zu wahren, wurden die A-7D bei Tag und die F-117A ausschließlich bei Nacht geflogen. Die Einheit wurde im Oktober 1983 für einsatztauglich erklärt, obwohl erst im November 1988 zum ersten Mal von der Existenz der F-117A berichtet wurde; der Öffentlichkeit wurde sie im April 1990 vorgestellt. Bereits etwa fünf Monate vorher waren Nighthawks für Bombeneinsätze auf Panama während der Operation „Just Cause“ eingesetzt gewesen. Zu diesem Zeitpunkt war die ursprüngliche Einheit in 37th Tactical Fighter Wing umbenannt und zur Nellis Air Force Base umgesiedelt worden. Insgesamt wurden 64 Flugzeuge gebaut und ausgeliefert. Für die Konstruktion der Flugzeugzelle wurden größtenteils herkömmliche Materialien sowie viele bereits existierende Avionik-Elemente und Komponenten anderer Flugzeugtypen für den Innenausbau verwendet, was zur Geheimhaltung und auch zur Kostenreduzierung beitrug. Die äußere Form ist durch die eckigen, flachen Platten, die sich zu einer facettenähnlichen Konstruktion fügen, auffallend ungewöhnlich; alle Bestandteile, die einen Radarstrahl reflektieren könnten, sogar die aller kleinsten Teile, wurden sorgfältig neu gestaltet, um diese Gefahr zu minimieren oder ganz auszuschalten. Dies führte u.a. zu den gezackten Rändern verschiedener Teile, wie z.B. dem Rahmen der Cockpitverglasung, des Fahrwerks und der Bombenschachtüren; die Kabinenhaube wurde außerdem mit Goldfilm behandelt. Zusätzlich ist die Außenhaut gänzlich mit einer Spezialfarbe und Radar absorbierenden Materialien („RAM“) überzogen. Die Auslassdüsen sind so gestaltet, dass sie die Triebwerksabgase, die im übrigen auch mittels Luftzufuhr gekühlt werden, um Infrarot-Emissionen zu verringern, feinst streuen. Der weltweiten Öffentlichkeit wurden die eindrucksvollen Fähigkeiten der Nighthawk-Maschinen erstmals kurz nach dem Beginn des Golfkriegs am 16. Januar 1991 vorgeführt, als ein Verband von 30 Maschinen 37 Einsätze auf hochrangige Ziele mit Präzisionsbomben innerhalb Bagdads flog; trotz heftiger Verteidigung durch Flugzeugabwehraketen und Luftabwehrkanonen in und außerhalb der Stadt führten die F-117A diese Einsätze – wie auch alle weiteren während der Dauer des Konflikts – absolut unbehelligt durch. In jüngerer Vergangenheit wurden Nighthawks während der Kosovo-Krise zu Beginn des Jahres 1999 eingesetzt, wobei bei einem in der Presse kräftig ausgeschlachteten Zwischenfall eine Maschine verlorenging; der Pilot konnte jedoch unverletzt geborgen werden.

## Lockheed Martin F-117A Nighthawk

Following studies in the early 1970s for a low radar signature aircraft the Lockheed 'Skunk Works' was selected in 1976 to develop a new stealth technology fighter under the secret 'Have Blue' programme. Two small scale technology demonstrator aircraft were built and flown prior to the five full scale development and 15 production F-117As, the first of these flying on 18 June 1981 from the secret Tonopah Test Range Airfield in Nevada. The operating unit was the 4450th. Tactical Group, USAF, which was initially equipped with A-7D Corsairs pending arrival of the F-117As; to maintain secrecy the A-7Ds were flown by day and the F-117As only at night. The unit was declared operational in October 1983 although it was not until November 1988 that the existence of the F-117A Nighthawk was announced, with the first public viewing in April 1990. Some five months prior to this Nighthawks had seen operational service when they bombed targets in Panama during Operation 'Just Cause'. By this time the original unit had been redesignated the 37th Tactical Fighter Wing and relocated to Nellis Air force Base. A total of 64 aircraft was built and delivered. The airframe is constructed largely of conventional materials and incorporates many existing avionics and internal equipment from other types of aircraft, which helped to maintain secrecy and reduce costs. The exterior shape is distinctly unconventional with the angular flat plate faceted construction of everything which could cause a radar return carefully designed to reduce or eliminate this possibility; even the smallest parts and features are so treated, accounting also for the 'zig-zag' edges of several items such as the canopy framing, undercarriage and bomb bay doors; the canopy itself is also treated with gold film. In addition the whole of the exterior is coated with special paint and radar absorbent materials (RAM); the exhaust nozzles are designed to disperse the engine gases, which are also cooled with air bled into them to reduce infra red emissions. The public worldwide first learned of the awesome capabilities of the Nighthawk soon after the start of the Gulf War on 16 January 1991 when a force of 30 aircraft flew 37 sorties to precision bomb high value targets within Baghdad; despite the heavy anti-aircraft missile and gun defences in and around the city, the F-117As operated with total immunity and did so for the rest of that conflict. More recently the Nighthawks saw action during the Kosovo crisis of early 1999, losing one machine in a highly publicised incident but from which the pilot was rescued unharmed. The subsonic F-117A is powered by two General Electric F404-GE-F1D2 turbofans each rated at 48.04kN (4,899 kg / 10,800 lb.) thrust, giving the type a maximum speed of 1,040 km/h (646mph). It's normal offensive load is two 907kg (2,000 lb.) laser guided bombs housed internally. Wing span: 13.2m (43ft 3.5in.) Length: 20.09m (65ft 11in.) Height: 3.78m (12ft 5in.)

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## Benötigte Farben / Used Colors

Benötigte Farben  
Required coloursPeintures nécessaires  
Benötigte KleurenPinturas necesarias  
Tintas necessáriasColori necessari  
Arvändera färgerTarvittavat värit  
Du trenger følgende fargerNødvendige farger  
Необходимые краскиPotrzebne kolory  
Απαιτούμενα χρώματαGerekli renkler  
Potřebné barvySzükséges színek  
Potrebne barve

A

anthrazit, matt 9  
anthracite grey, matt  
anthracite, mat  
anthracit, mate  
antracila, mate  
antracile, fosco  
antracile, opaco  
antracil, matt  
antrasiti, himmeä  
koksgrå, matt  
antrasit, matt  
антрацит, матовый  
antracyt, matowy  
anθρακί, ματ  
antrasit, mat  
antracit, matná  
antracit, matt  
tanno siva, mat

B

weiß, seidenmatt 301  
white, silky-matt  
blanc, satiné mat  
wit, zijdemat  
blanco, mate seda  
branco, fosco sedoso  
blanco, opaco seta  
vit, sidenmatt  
valkoinen, silkinhimmeä  
hvít, silkemat  
hvít, silkemat  
белый, шелковисто-матовый  
biały, jedwabisto-matowy  
λευκό, μεταξωτό ματ  
beyaz, ipek mat  
bílá, hedvábně matná  
fehér, selyemmatt  
bela, svila mat

60%

C

40%

grau, matt 57 +  
grey, matt  
gris, mat  
grijs, mat  
gris, mate  
cinzento, fosco  
grigio, opaco  
grá, matt  
harmaa, himmeä  
grå, mat  
grå, matt  
серый, матовый  
szary, matowy  
γκρι, ματ  
grí, mat  
šedá, matná  
szürke, matt  
siva, mat

mausgrau, matt 47  
mouse grey, matt  
gris souris, mat  
muisgrijs, mat  
gris raton, mate  
cinzento pardo, fosco  
grigio topo, opaco  
musedgrá, matt  
hiirenharmaa, himmeä  
musegrå, matt  
musedgrå, mat  
мышинно-серый, матовый  
myszaty, matowy  
γκρι ποικιλίου, ματ  
fare grisi, mat  
mysi šedá, matná  
egérszürke, matt  
míseje siva, mat

D

helloliv, matt 45  
light olive, matt  
olive clair, mat  
olijf-licht, mat  
azeituna, mate  
oliva chiaro, fosco  
oliva chiaro, opaco  
lysoliv, matt  
vazelean olivi, himmeä  
lysoliv, mat  
lys oliven, matt  
светло-оливковый, матовый  
jasnooliwk., matowy  
ονιγυτό χαλί, ματ  
apık zeytinli, mat  
sväteoliivová, matná  
világos oliv, matt  
svetlo oliva, mat

50%

E

50%

grau, matt 57 +  
grey, matt  
gris, mat  
grijs, mat  
gris, mate  
cinzento, fosco  
grigio, opaco  
grá, matt  
harmaa, himmeä  
grå, mat  
grå, matt  
серый, матовый  
szary, matowy  
γκρι, ματ  
grí, mat  
šedá, matná  
szürke, matt  
siva, mat

aluminium, metallic 99  
aluminium, metallic  
aluminium, métallique  
aluminium, metalizado  
aluminio, metalico  
aluminium, metallic  
aluminium, metalliikito  
aluminium, metallak  
aluminium, metallik  
алюминиевый, металлик  
aluminium, metaliczny  
αλουμινίου, μεταλλικό  
aluminium, metalik  
hliníková, metaliza  
aluminium, metáli  
aluminium, metalik

F

silber, metallic 90  
silver, metallic  
argent, métallique  
zilver, metallic  
plata, metalizado  
prata, metalico  
argento, metalico  
silver, metallic  
høpaa, metalliikito  
sølv, metallak  
sølv, metallic  
серебристый, металлик  
srebro, metaliczny  
σημί, μεταλλικό  
gümüş, metalik  
stříbrná, metaliza  
ezüst, metáli  
srebrna, metalik

G

kupfer, metallic 93  
copper, metallic  
cuivre, métallique  
koper, metallic  
cobre, metalizado  
cobre, metalico  
rame, metalico  
kopper, metallic  
kupari, metalliikito  
kobber, metallak  
kobber, metallic  
медный, металлик  
miedz, metaliczny  
χάλκινο, μεταλλικό  
bakır, metalik  
měděná, metaliza  
vörösréz, metáli  
bakır, metalik

H

gelb, matt 15  
yellow, matt  
jaune, mat  
geel, mat  
amarillo, mate  
amarelo, fosco  
giallo, opaco  
gul, matt  
keltainen, himmeä  
gul, mat  
жёлтый, матовый  
žółty, matowy  
κίτρινο, ματ  
sarı, mat  
žlutá, matná  
sárga, matt  
rumena, mat

I

blau, matt 56  
blue, matt  
bleu, mat  
blauw, mat  
azul, mate  
azul, fosco  
blu, opaco  
blå, matt  
sininen, himmeä  
blå, mat  
синий, матовый  
niebieski, matowy  
μπλε, ματ  
mavi, mat  
modrá, matná  
kék, matt  
plava, mat

J

olivgrün, seidenmatt 361  
olive green, silky-matt  
vert olive, satiné mat  
olijfgroen, zijdemat  
verde acituna, mate seda  
verde azituna, fosco sedoso  
verde oliva, opaco seta  
olivgrön, sidenmatt  
olivivihreä, silkinhimmeä  
olivgrön, silkemat  
olivengrön, silvematt  
зеленый оливковый, шелк-матовый  
oliwkowy, jedwabisto-matowy  
πράσινο ελιάς, μεταξωτό ματ  
zeytin yeşili, ipek mat  
olivová zelená, hedvábně matná  
olivzöld, selyemmatt  
oliva zelena, svila mat

K

eisen, metallic 91  
steel, metallic  
coloris fer, métallique  
ijzerkleurig, metallic  
ferroso, metalizado  
ferro, metalico  
ferro, metalico  
järnfärg, metallic  
teräksvärinen, metalliikito  
jern, metallak  
jern, metallic  
стальной, металлик  
żelazo, metaliczny  
σιδηρού, μεταλλικό  
demir, metalik  
železná, metaliza  
vas, metáli  
železna, metalik

L

aluminium, metallic 99  
aluminium, metallic  
aluminium, métallique  
aluminium, metalizado  
aluminio, metalico  
aluminium, metalico  
aluminium, metalliikito  
aluminium, metallak  
aluminium, metallik  
алюминиевый, металлик  
aluminium, metaliczny  
αλουμινίου, μεταλλικό  
aluminium, metalik  
hliníková, metaliza  
aluminium, metáli  
aluminium, metalik

M

schwarz, seidenmatt 302  
black, silky-matt  
noir, satiné mat  
zwart, zijdemat  
negro, mate seda  
preto, fosco sedoso  
nero, opaco seta  
svart, sidenmatt  
musta, silkinhimmeä  
sort, silkemat  
sort, silkemat  
черный, шелковисто-матовый  
czarny, jedwabisto-matowy  
μαύρο, μεταξωτό ματ  
siyah, ipek mat  
černá, hedvábně matná  
fekete, selyemmatt  
črna, svila mat

N

erdfarbe, matt 87  
earth brown, matt  
couleur terre, mat  
aardkleur, mat  
tierra colorante, mate  
côr de terra, fosco  
marone terra, opaco  
jordfärg, matt  
maanvärinen, himmeä  
jordfärg, mat  
jordfärg, matt  
землистый, матовый  
χρώμα γης, ματ  
toprak rengi, mat  
žlutavá, matná  
földszínű, matt  
barva zemlje, mat

O

rot, klar 731  
red, clear  
rouge, clair  
rojo, heider  
rojo, claro  
vermelho, claro  
rosso, chiaro  
röd, klar  
punainen, kirkas  
röd  
röd  
красный  
czerwony  
κόκκινο, διαυγές  
kırmızı, şeffaf  
červená, čirá  
piros, áttetsző  
rdeča, jasna

P

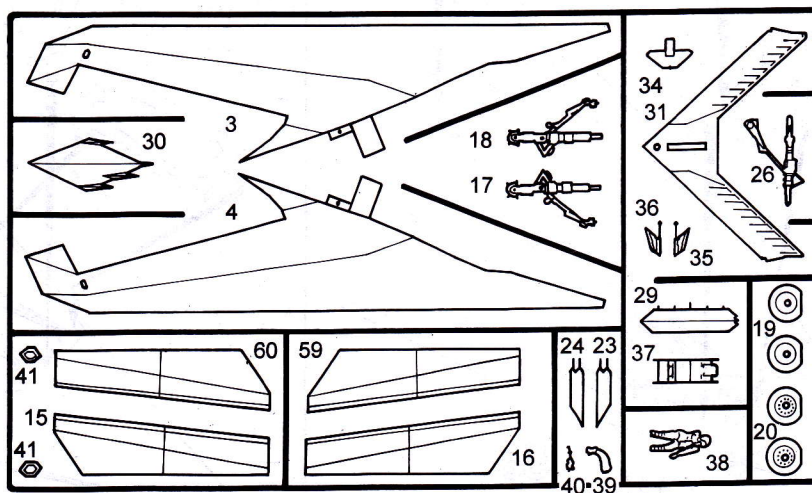
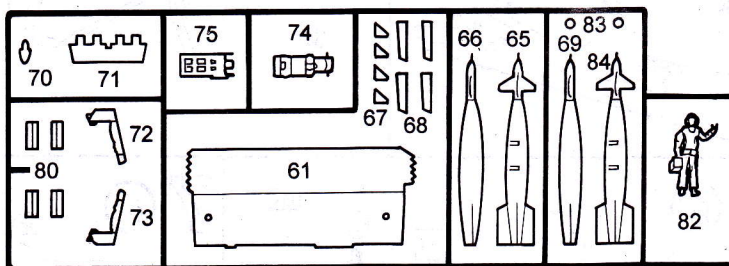
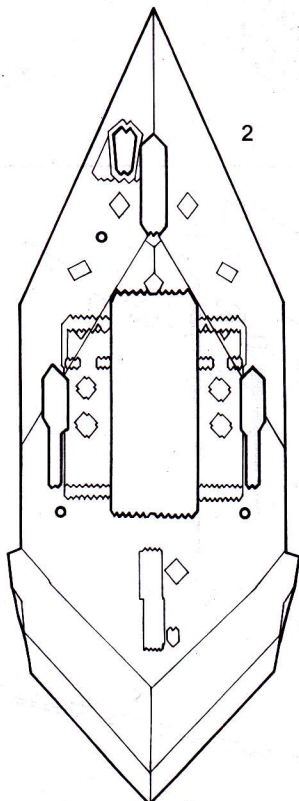
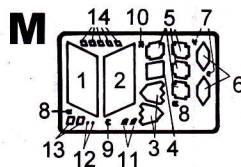
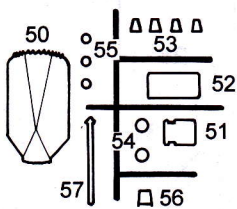
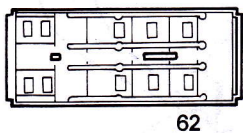
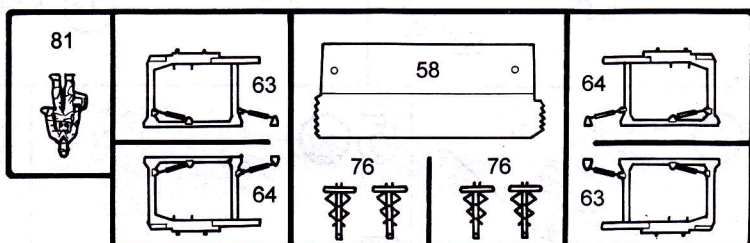
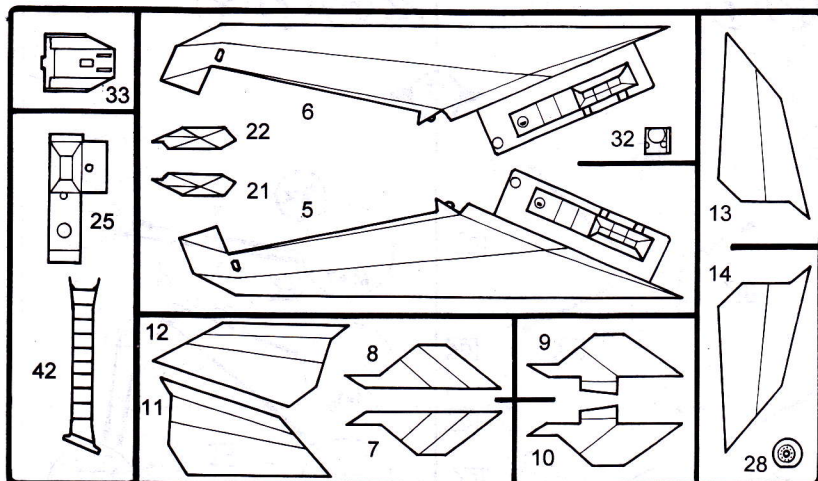
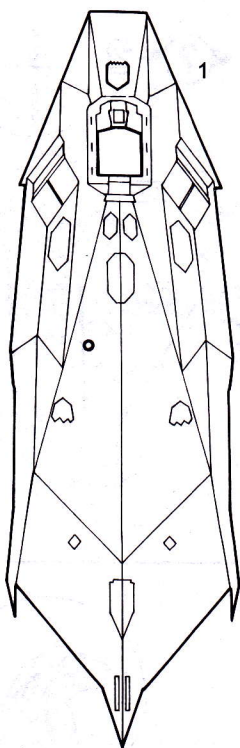
hautfarbe, matt 35  
flesh, matt  
couleur chair, mat  
huidskleur, mat  
color piel, mate  
côr da pele, fosco  
colore pelle, opaco  
hudfärg, matt  
ihonvärinen, himmeä  
hudfärg, mat  
hudfärg, matt  
телесный, матовый  
cielisty, matowy  
χρώμα δέρματος, ματ  
ten rengi, mat  
barva kůže, matná  
bőrszínű, matt  
barva kože, mat

Q

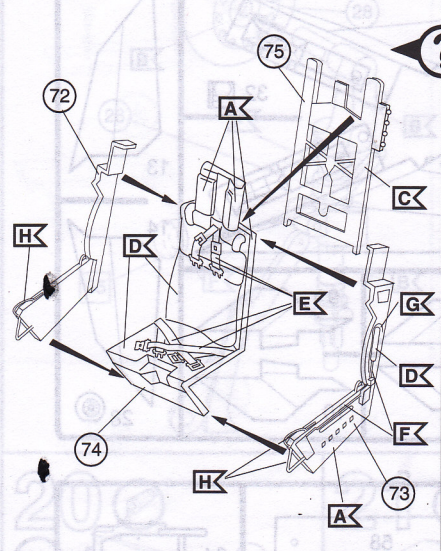
leuchtorange, matt 25  
luminous orange, matt  
orange voyant, mat  
lichtorange, mat  
naranja fosfores., mate  
laranja fosfores., fosco  
arancione chiaro, opaco  
lysorange, matt  
høbo-oranssi, himmeä  
lysende orange, mat  
lysende orange, matt  
оранжевый светящийся, матовый  
pomarańczowy świecący, matowy  
πορτοκαλί φωτεινό, ματ  
apık portakal, mat  
svitici oranžová  
világító narancs, matt  
svetlo pomorandžast, mat

R

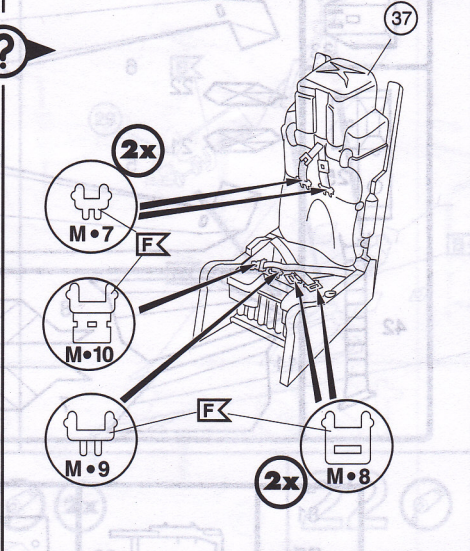
beige, matt 89  
beige, matt  
beige, mat  
beige, mate  
beige, fosco  
beige, opaco  
beige, matt  
beige, himmeä  
beige, mat  
beige, matt  
бежевый, матовый  
beżowy, matowy  
μπεζ, ματ  
bež, mat  
béžová, matná  
bézs, matt  
bež (slonova kost), mat



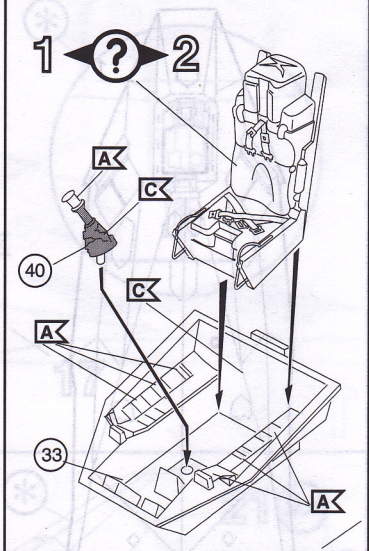
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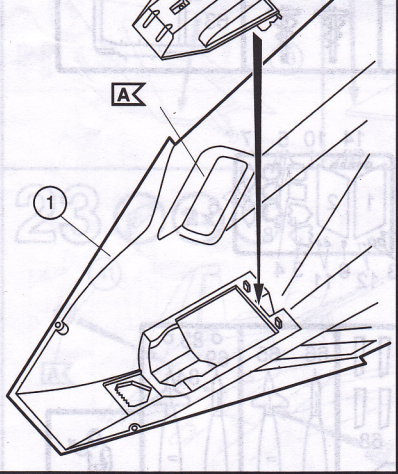
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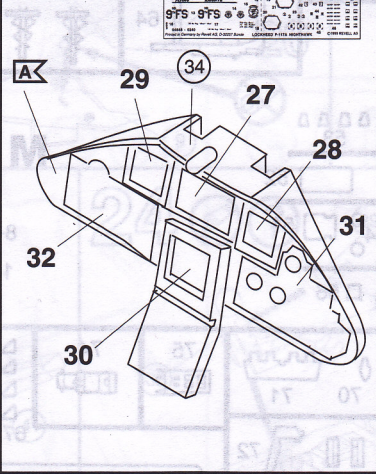
# 3



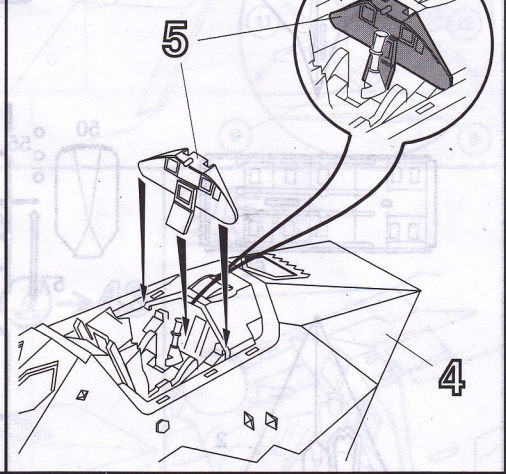
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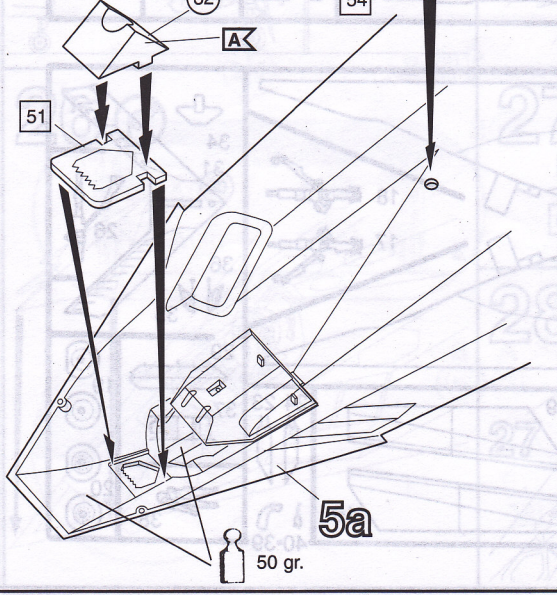
# 5



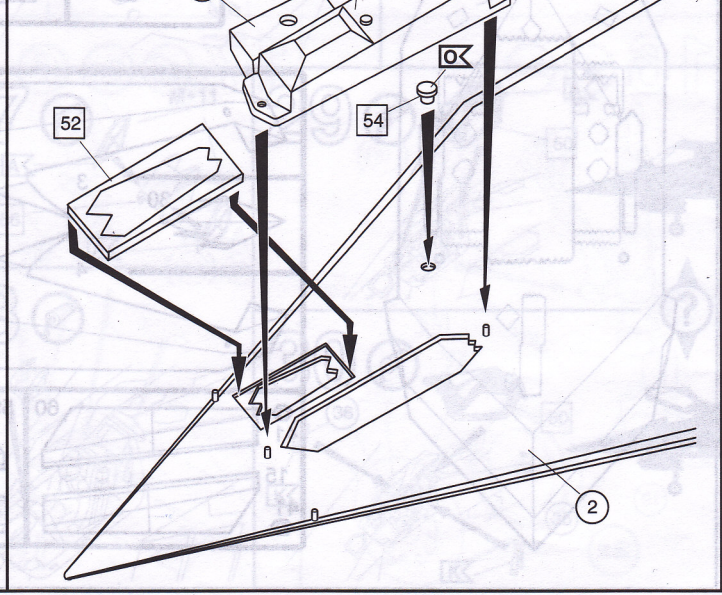
# 5a

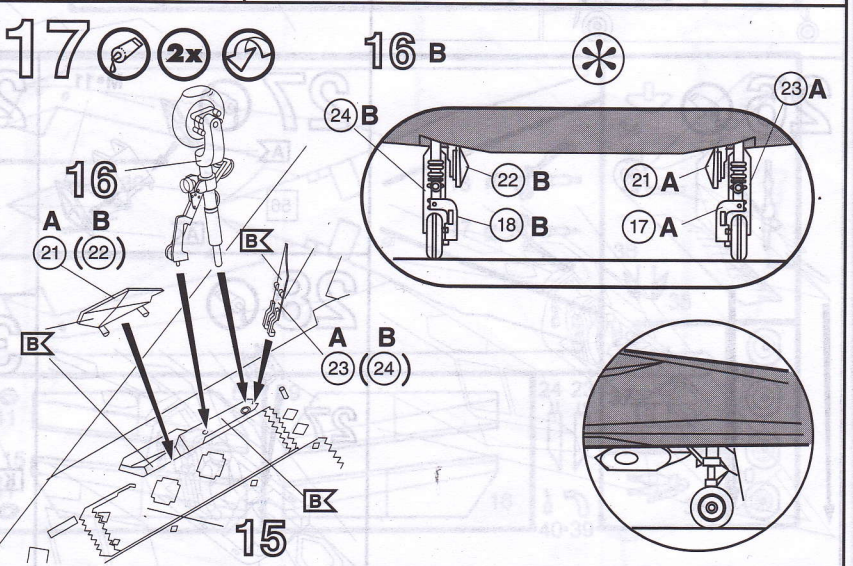
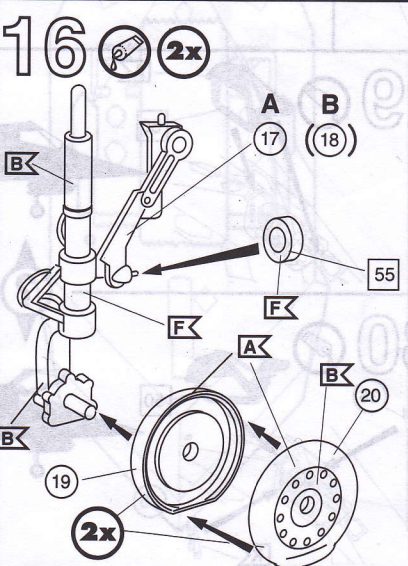
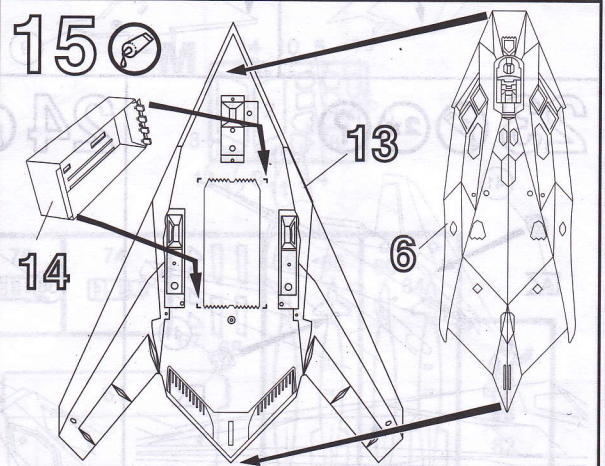
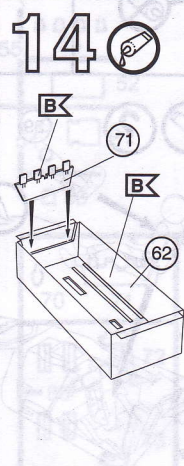
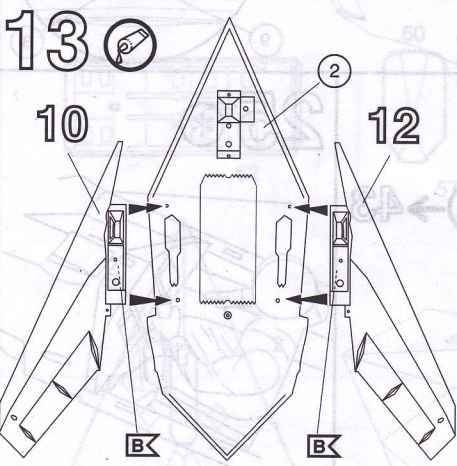
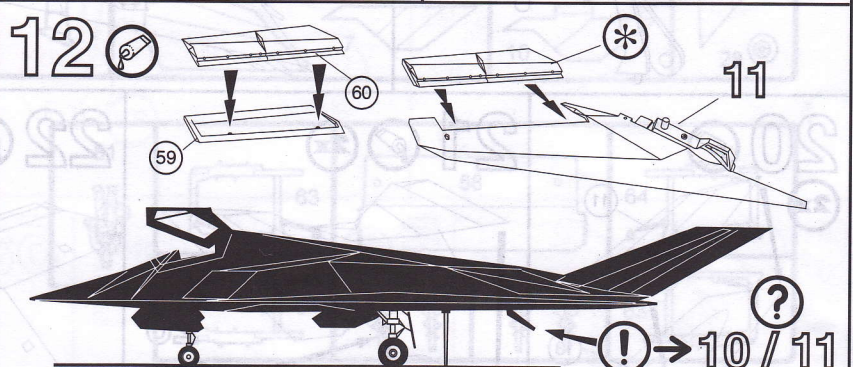
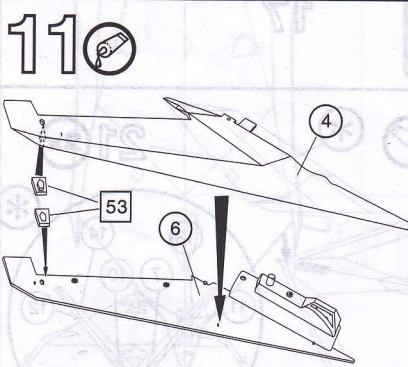
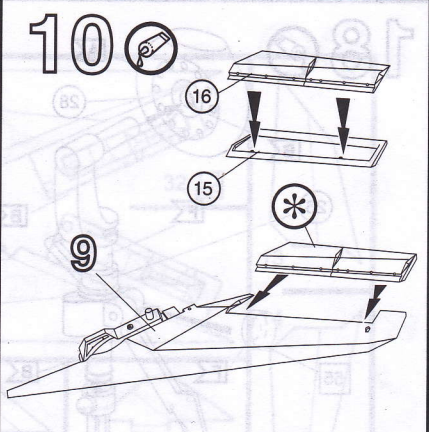
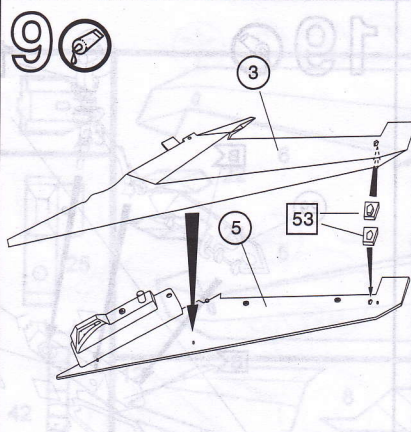
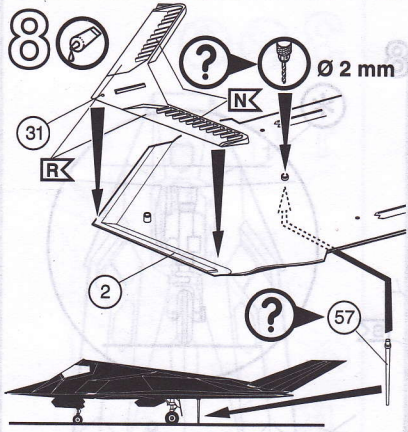


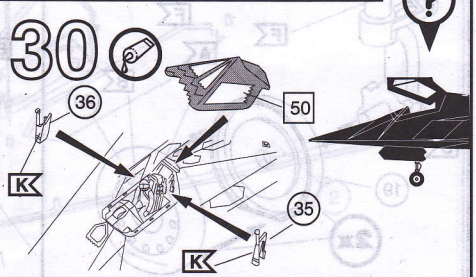
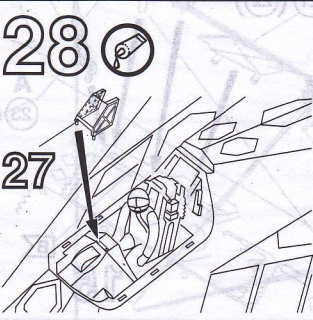
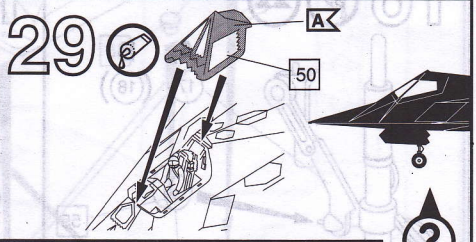
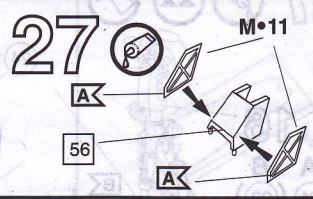
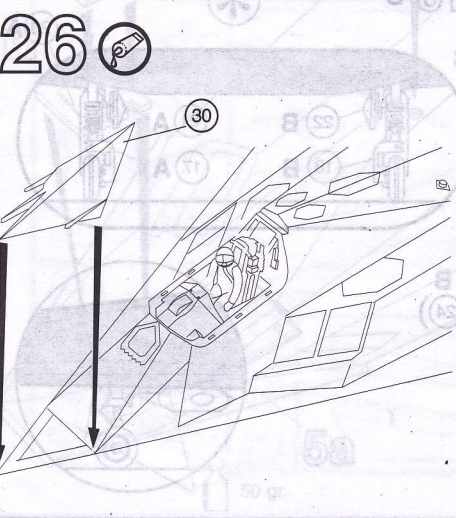
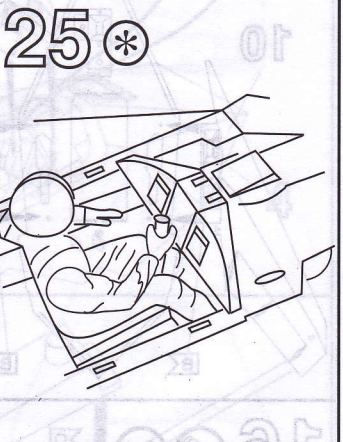
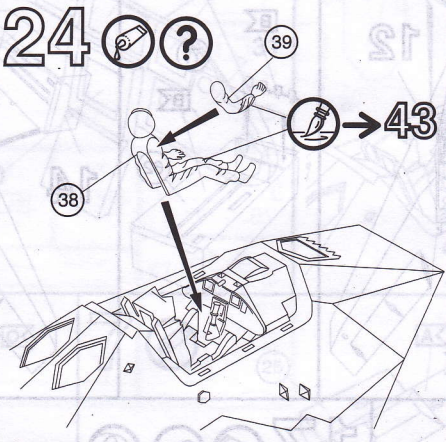
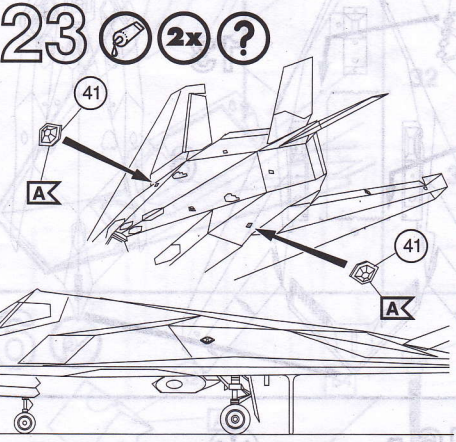
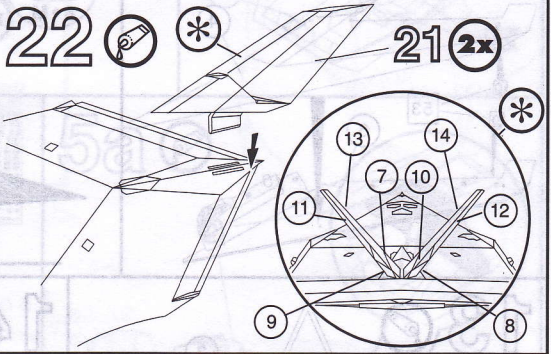
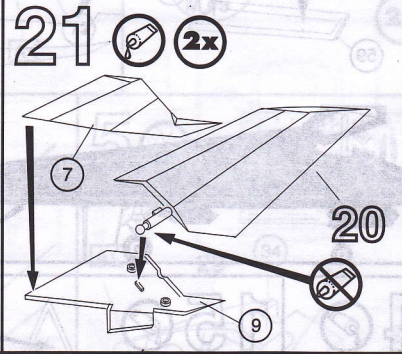
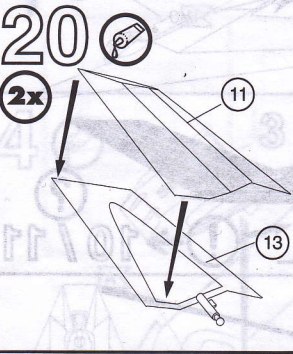
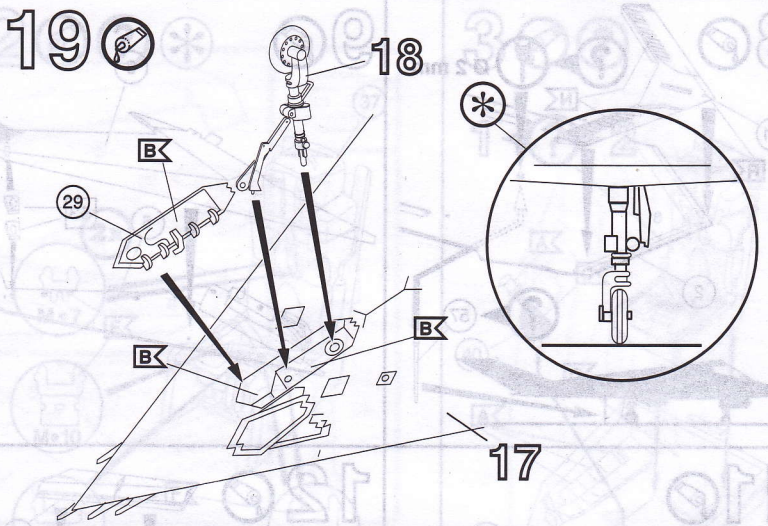
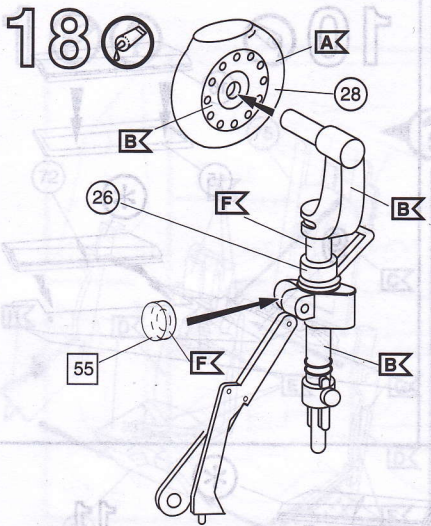
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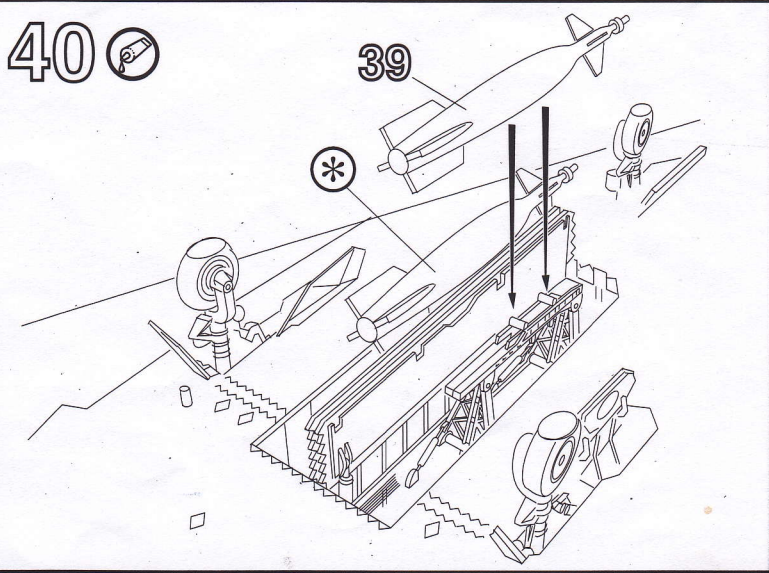
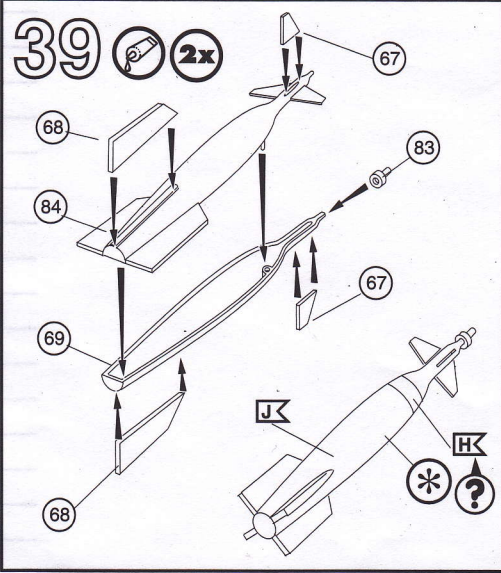
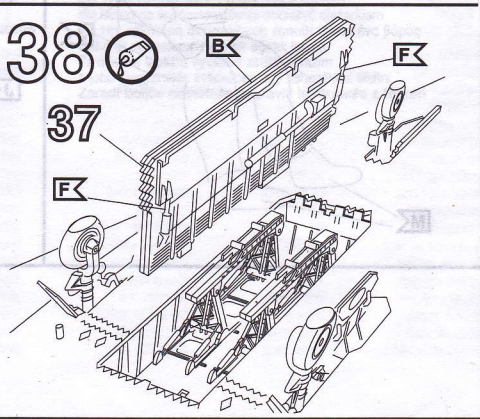
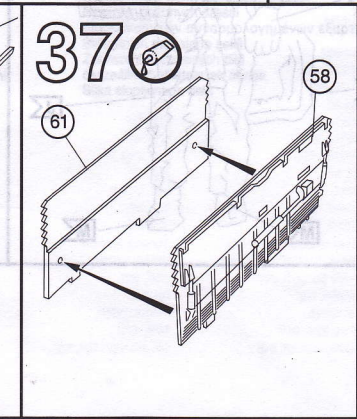
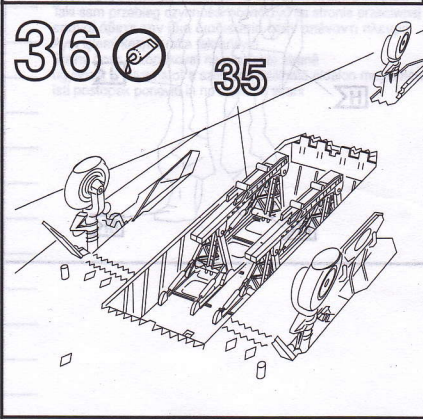
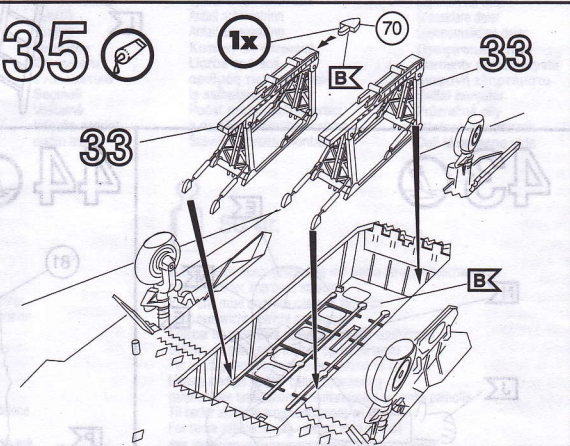
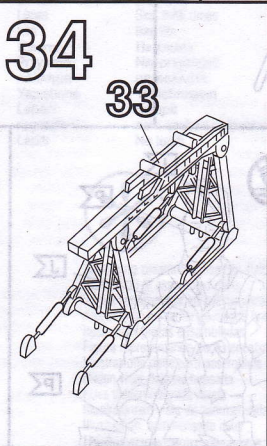
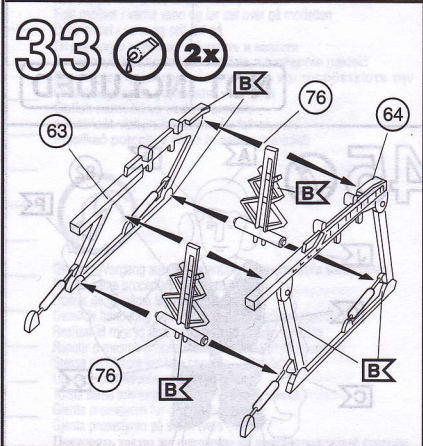
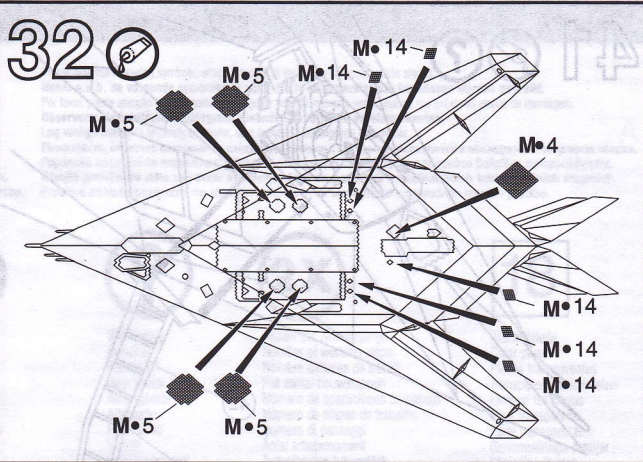
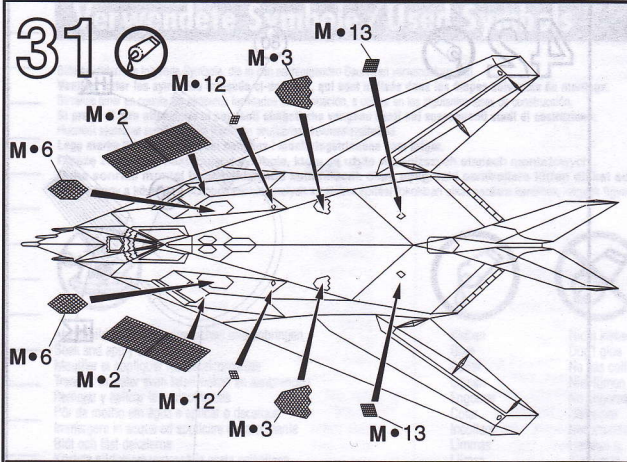


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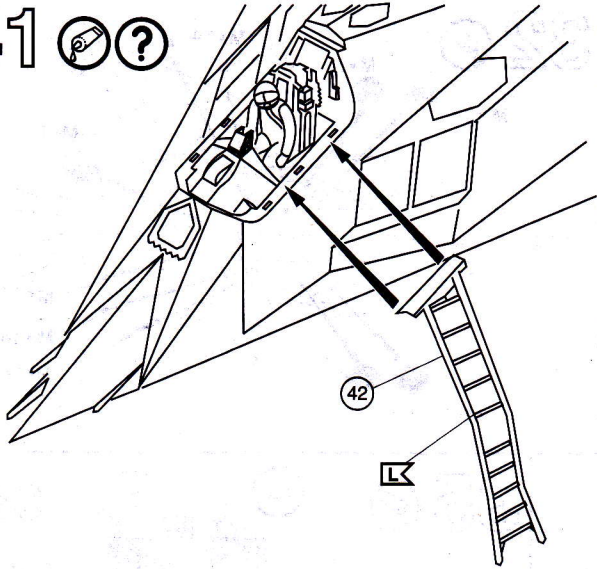




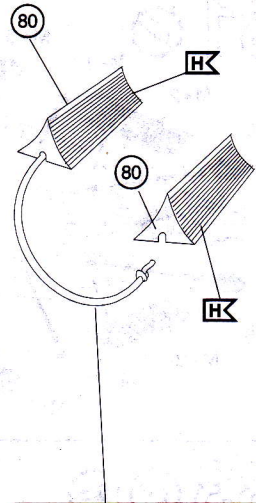




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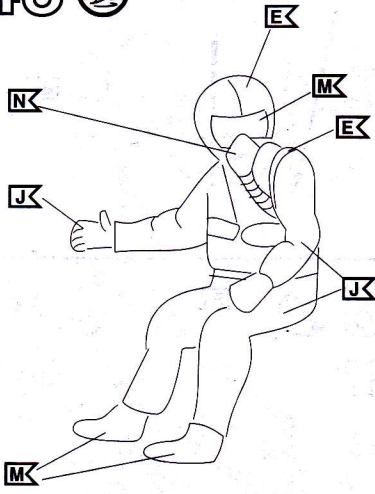


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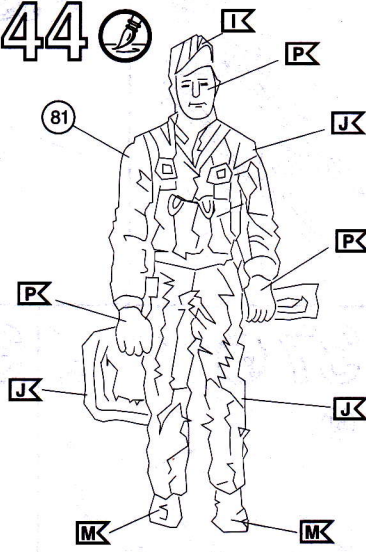


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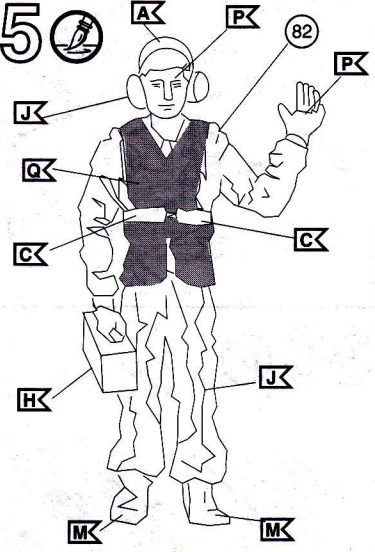
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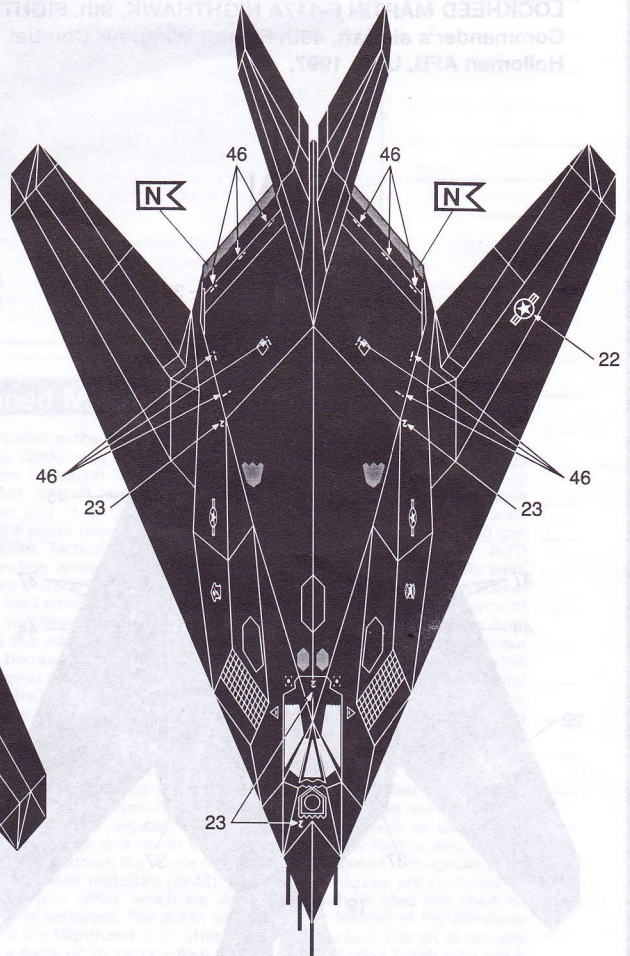
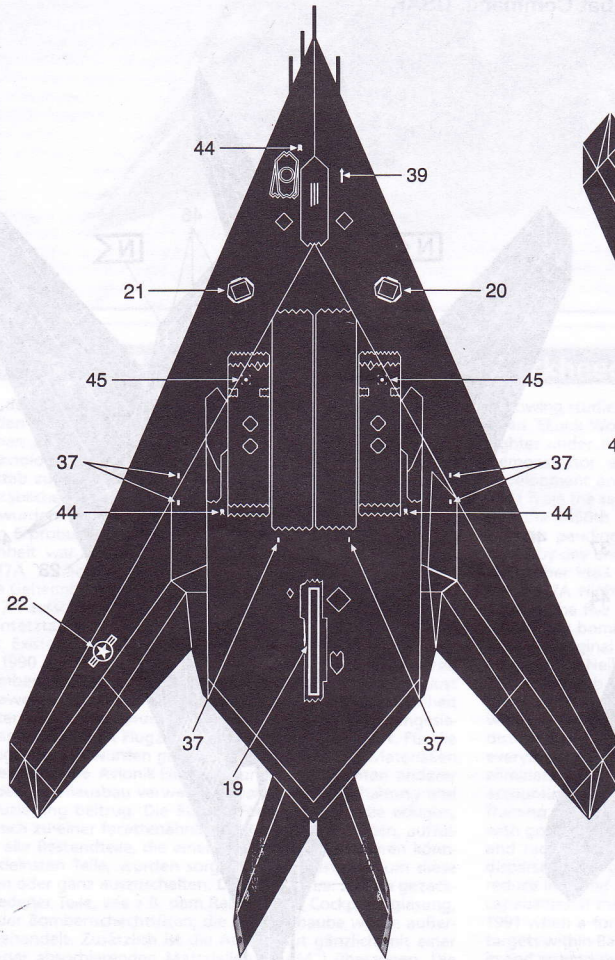
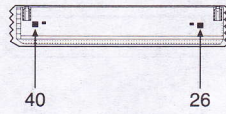
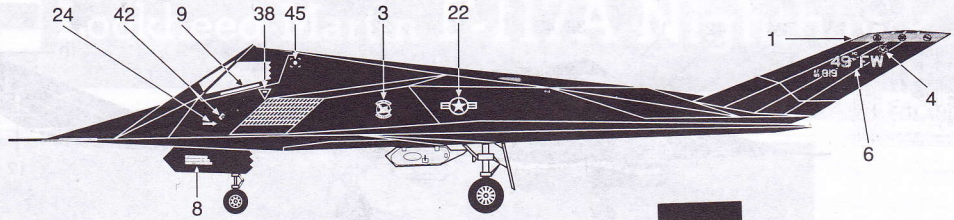
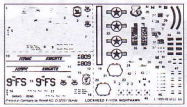


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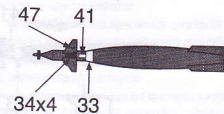
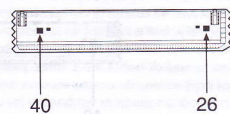
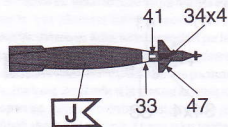
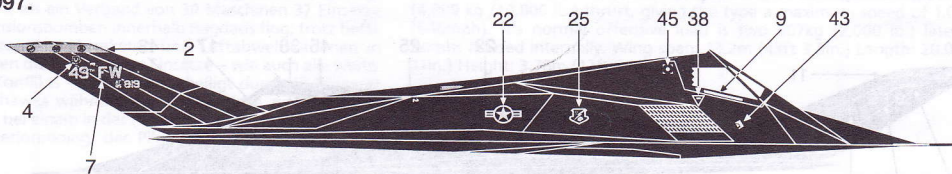




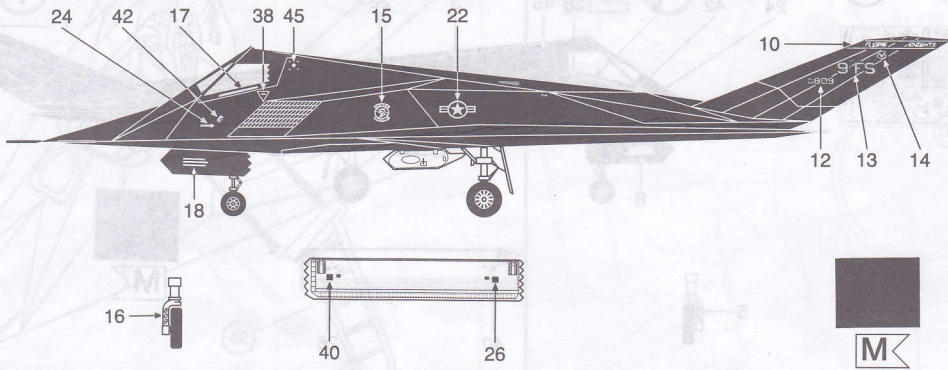
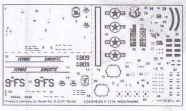
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LOCKHEED MARTIN F-117A NIGHTHAWK, 49th. FIGHTER WING, Commander's aircraft, Air Combat Command, USAF, Holloman AFB, USA, 1997.



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LOCKHEED MARTIN F-117A NIGHTHAWK, 9th. FIGHTER SQUADRON, Commander's aircraft, 49th Fighter Wing, Air Combat Command, USAF, Holloman AFB, USA, 1997.

