US WARPLANE DESIGNATIONS

US AIR FORCE / US ARMY

The Aeronautical Division of the US Army was officially opened on August 1st, 1907. Delivery of the first aircraft, a Wright Model A biplane, was on August 2nd, 1909. The Aeronautical Division came under the control of the Signal Corps. on July 18th, 1914, as the Aviation Section. It was separated from the Army on May 20th, 1918 as the Air Service before becoming a part of the US Army again on June 4th, 1920. Early Army aircraft were simply operated under their manufacturer's model numbers, there was no official designation system in place at all. The role of most aircraft was only observation so the need for a system didn't come about until the First World War when aircraft began to take on a wider range of duties. Nothing however, was done about it until after the war had finished in 1918.

The following systems are based around the TYPE LETTER of a designation, more on which comes later.

The 1919 System
In September 1919, the Air Service introduced a classification system in the order of fifteen numerical types. The Engineering Division assigned letter codes to each numbered type, there being a separate numerical sequence within each type. Eight additional codes were eventually introduced to the system.
On June 4th, 1920, the Air Service became a part of the Army which it had been a part of originally prior to mid-1918. The name was later changed to the **United States Army Air Corps.** (**USAAC**) on July 2nd, 1926.

The 1924 System
The first revision took place in May 1924, aircraft in service with the old type prefixes retained them and additional type prefixes were introduced as they became necessary. This system stayed in place basically unchanged until after World War II.
On June 20th, 1941, the USAAC became the **United States Army Air Force** (**USAAF**) with rapid expansion in manpower and aircraft due to the growing Japanese threat and the war already being fought in Europe.

The 1948 System
On September 18th, 1947, the USAAF became the **United States Air Force** (**USAF**), now independent from the US Army. A second revision then took place in 1948 with many of the wartime two letter codes being dropped and each type letter being henceforth identified by a single letter only.

The 1956 Army System
The US Army Aviation introduced a system of its own which operated from 1956 to 1962 with two letter type symbols:

AC Airplane, Cargo
AO Airplane, Observation
AU Airplane, Utility
HC Helicopter, Cargo
HO Helicopter, Observation
HU Helicopter, Utility
VZ VTOL Research

The 1962 Tri-Service System
The third and most extensive revision was made on September 18th, 1962, and continues in use to the present day. The "Unified System" saw the USAF, US Army and US Navy services all combined under one designation system with very little changing for the USAF itself. Several new type letters were added for Army and Navy however, to bring them into alignment with everything else.

USAF / US ARMY AIRCRAFT DESIGNATIONS

The standard US military aircraft designation may have up to six parts as in this example of a Fairchild Provider: **VC-123B-18-FA**.

V **Status Prefix Letter**
C **Type Letter**
123 **Type Sequence Number**
B **Series Suffix Letter**
18 **Block Number**

FA Manufacturer Code

From this designation it can be deduced that the Fairchild Provider is the 123rd Cargo type to be commissioned by the USAF and that it's the second variant to enter service and was probably converted post delivery to it's primary role of VIP duties. It comes from a batch manufactured to Block 18 standards and was built at Fairchild Hagerstown, Maryland.

Status Prefix Letter

This range of letters prefixes the Type Letter indicating the aircraft has a secondary role such as Tactical Support, Drone Director, Staff Transport etc., this role also takes precedence over the aircraft's primary duty as indicated by the Type Letter. For example take a CB-24J Liberator, it's primary role is Cargo transport not Bombing.

G, **J**, **N**, **X** and **Y** however, always take precedence over any other Status Prefix Letter (e.g. YRF-4C-MC), with **Z** taking precedence over all Status Prefix Letters (e.g. ZXB-24Q-FO).

The table below gives a list of Status Prefix Letters with those still in use today in bold type:

Letter	Designation	Dates
A	Calibration	1948 – 1962
	Tactical Support	**1962 – present**
B	Bomber	1948 (not used)
C	**Transport**	**1943 – present**
D	**Drone Director**	**1948 – present**
E	Exempt	1946 – 1962
	Electronics	**1962 – present**
F	Photography	1945 – 1947
	Fighter	1948 (not used)
G	Glider Conversion	1948 (not used)
	"Parasite" carrier	1949 – 1951
	Permanently Grounded	**1962 – present**
H	**Search and Rescue**	**1962 – present**
J	**Temporary Special Tests**	**1956 – present**
K	Ferret	1944 – 1947
	Tanker	**1949 – present**
L	Liaison	1948 – 1962
	Cold Weather Operations	**1962 – present**
M	Medical Evacuation	1951 – 1962
	Missile Carrier	1962 – 1973
	Mine Countermeasures	1972 – 1976
	Multi-Mission (Special Ops.)	**1977 – present**
N	**Permanent Special Tests**	**1956 – present**
O	**Observation**	**1962 – present**
P	Passenger Transport	1948 – 1962
Q	**Radio Controlled Drone**	**1948 – present**
R	Restricted from Combat	1942 – 1947
	Reconnaissance	**1948 – present**
S	Search and Rescue	1948 – 1962
	Anti-Submarine	**1962 – present**
T	**Trainer**	**1943 – present**
U	**Utility**	**1941 – present**
V	**Staff Transport (VIP)**	**1945 – present**
W	**Weather Reconnaissance**	**1948 – present**
X	**Experimental**	**1924 – present**
Y	**Service Test (Prototype)**	**1928 – present**
Z	Obsolete	1928 – 1962
	Project (Planning)	**1962 – present**

Type Letter

The Type Letter is the main form of aircraft designation whether it be Fighter, Bomber or Trainer etc. Early systems quite often used a two letter code but this was dropped by 1948 for single letters only. This system has become the basis for all US Air Force and Army designation systems since it was first introduced in 1919.

The letters **D**, **G**, **H**, **Q**, **S**, **V** and **Z** are Vehicle Type Designators and are only used together with a mission type prefix, for example Helicopter types designated – AH-1 Cobra, SH-3A Sea King, UH-1 Iroquois.

The table below gives a list of Type Letters from the 1919 System onwards with those still in use today in bold type:

Letter	Designation	Dates
A	Ambulance	1919 – 1924
	Attack	1924 – 1947
	Aerial Target	1940 – 1941
	Amphibian	1948 – 1962
	Tactical Support	**1962 – present**
AG	Assault Glider	1942 – 1944
AO	Artillery Observation	1919 – 1924
AT	Advanced Trainer	1925 – 1947
B	**Bomber**	**1924 – present**
BC	Basic Combat	1936 – 1940
BG	Bomb Glider	1942 – 1944
BLR	Bomber, Long Range	1935 – 1936
BQ	Bomb, Guided	1942 – 1945
BT	Basic Trainer	1930 – 1947
C	**Transport**	**1925 – present**
CG	Transport Glider	1941 – 1947
CO	Corps. Observation	1919 – 1924
COA	Corps. Observation Amphibian	1919 – 1924
CQ	Target Control	1942 – 1947
DB	Day Bomber	1919 – 1924
D	**Unmanned Aerial Vehicle** (**UAV**) *(Ground Control Segment)*	**2002 – present**
E	**Electronics**	**1962 – present**
F	Photographic	1930 – 1947
	Fighter	**1948 – present**
FG	Fuel-carrying Glider	1944 – 1947
FM	Fighter, Multiplace	1936 – 1941
G	Gyroplane	1935 – 1939
	Glider	1948 – 1955
	Glider	**1978 – present**
GA	Ground Attack	1919 – 1924
GB	Glide Bomb	1942 – 1947
GT	Glide Torpedo	1942 – 1947
H	**Helicopter**	**1948 – present**
HB	Heavy Bomber	1925 – 1927
IL	Infantry Liaison	1919 – 1924
JB	Jet-propelled Bomb	1943 – 1947
L	Liaison	1942 – 1962
	Laser Equipped	**1997 – present**
LB	Light Bomber	1925 – 1932
M	Messenger	1919 – 1924
MAT	Messenger, Aerial Torpedo	1919 – 1924
NBL	Night Bomber, Long Distance	1919 – 1924
NBS	Night Bomber, Short Distance	1919 – 1924
NO	Night Observation	1919 – 1924
O	**Observation**	1924 – 1942
		1962 – present
OA	Observation, Amphibian	1925 – 1947
OQ	Target, Flying Model	1942 – 1947
P	Pursuit (fighter)	1925 – 1947
	Patrol (**Maritime**)	**1962 – present**
PA	Pursuit, Air-cooled	1919 – 1924
PB	Pursuit, Biplace	1935 – 1941
PG	Pursuit, Ground Attack	1919 – 1924
	Powered Glider	1943 – 1947
PN	Pursuit, Night	1919 – 1924

PQ	Aerial Target, Manned	1942 – 1947
PS	Pursuit, Special Alert	1919 – 1924
PT	Primary Trainer	1925 – 1947
PW	Pursuit, Water-cooled	1919 – 1924
Q	Aerial Target	1948 – 1962
	Unmanned Aerial Vehicle (**UAV**)	**1997 – present**
R	Racer	1919 – 1924
	Rotary Wing (heliopter)	1941 – 1947
	Reconnaissance	1948 – 1949
S	Seaplane	1919 – 1924
	Supersonic Research	1946 – 1947
	Sailplane	1960 – 1961
	Anti-Submarine	**1962 – present**
	Spaceplane	**1988 – present**
SR	Strategic Reconnaissance	non-standard
T	Transport	1919 – 1924
	Trainer	**1948 – present**
TA	Trainer, Air-cooled	1919 – 1924
TG	Trainer Glider	1941 – 1947
TP	Two-seat Pursuit	1919 – 1924
TR	**Tactical Reconnaissance**	non-standard
TW	Trainer, Water-cooled	1919 – 1924
U	**Utility**	**1962 – present**
V	Convertiplane	1952 – 1956
	VTOL or **STOL**	**1954 – present**
X	**Special Research**	**1948 – present**
Z	**Lighter-than-Air**	**1962 – present**

Type Sequence Number

This is simply a numerical system denoting the number for any given Type Letter to have been commissioned by the US armed forces. The numbers started at 1 with the 1924 system and climbed from there with each successive type that was built, tested or put into production. For example the B-17 was the 17th Bomber design built since 1924 and the P-51 the 51st Pursuit design since 1924.

Type Sequence Numbers of the 1924 system were cancelled with the 1962 Tri-Service System and all types were again started at 1. This is why we have the Lockheed C-141 Starlifter first flown in 1963 being followed by the Lockheed C-5 Galaxy first flown some years later in 1968.

Series Suffix Letter

A letter was applied after the Type Sequence Number to indicate a modification to the aircraft such as an engine or armament upgrade. Design changes also denoted a new Suffix Letter such as cockpit layout, wing or structural upgrades etc., basically a new Series Suffix Letter denoted a new variant. The initial model of each aircraft type originally had no Suffix Letter (e.g. XP-40), with the second variant having an A, the third a B and so on.

The 1962 Tri-Service System changed things so the letter A was always given to each types initial variant, regardless of its status including prototypes (e.g. YF-14A, YC-17A).

The letters I and O are not used as these may be confused with numerals.

Block Numbers

These were introduced in 1941 when it was found that the Series Suffix Letters for modifications only worked up to the end of the 26 letter alphabet and in some cases modifications stretched into the hundreds. So, Block Numbers were formed to denote minor modifications such as on board equipment like radios, oxygen equipment, minor mechanical changes etc. In most cases major upgrades that would affect aircraft performance would then be reserved for new Suffix Letters only. The following lists a few pointers on how block numbers have been assigned over the years:

– As a rule, the numbering system was assigned in gaps, or “blocks”, of five digits (-1, -5, -10, -15 etc.). The numbers started at -1 for each new variant and each separate plant building those variants. This was the case for almost all WW2 production of the A-26, B-17, B-24, B-25, B-29, C-47 and fighters such as the

P-40, P-47 and P-51. Essentially any aircraft with very high production orders. A good example of this system is the B-24J series built at five different plants in the United States:

Consolidated San Diego	B-24J-1-CO to B-24J-210-CO	43 block assignments.
Consolidated Fort Worth	B-24J-1-CF to B-24J-105-CF	22 block assignments.
Douglas Tulsa	B-24J-1-DT to B-24J-10-DT	3 block assignments.
North American Dallas	B-24J-1-NT to B-24J-5-NT	2 block assignments.
Ford Willow Run	B-24J-1-FO to B-24J-20-FO	5 block assignments.

– The idea behind the five digit gap allowed for post factory field modifications. So, for example North American built B-24J s/n: 42-78475 was designated as a B-24J-2-NT post factory. The B-25 had many post factory mods with block numbers -17, -22, -27, -32, -37 known to have been assigned.

– Sometimes specific block numbers were skipped. This was likely to keep block number modifications in line with other plants. This became more common after WW2, and in some cases the numbers seemed to be assigned in a totally random manner! The reasons for this are not fully known.

– Some second source production started block number allocations at -5 or higher, likely due to the fact the second plant started later so numbers were assigned keeping in line with mods at the parent plant. Two examples of this were the Tulsa built Invader starting at: A-26B-5-DT and A-26C-15-DT. The Kaiser-Frazer built C-119F is likely to have started at C-119F-5-KM but this is currently unproven.

– Post WW2, with a sharp decline in large production orders, some block number assignments remained the same as above but others appear to have changed with production requirements. One style were block numbers running from -1 upwards assigned to a <u>particular plant</u> regardless of variant. Some examples being the Boeing B-47, B-50 and B-52:

Boeing Wichita	B-47B to B-47E	-1-BW / -135-BW
Boeing Renton	B-50A to B-50D	-1-BN / -125-BN
Boeing Seattle	B-52A to B-52F	-1-BO / -110-BO
Boeing Wichita	B-52D to B-52H	-1-BW / -175-BW

– In contrast to the above, block numbers were sometimes assigned from -1 upwards to <u>specific variants</u> regardless of the plant location, some examples being the F-86F and F-100D:

F-86F North American Inglewood (NA) & Columbus (NH)	-1-NA / -15-NA -20-NH / -25-NH -30-NA / -40-NA
F-100D North American Inglewood (NA) & Columbus (NH)	-1-NA / -30-NA -35-NH / -55-NH -60-NA / -75-NA -80-NH / -85-NH -90-NA

– Some aircraft were given consecutive block numbers (-1, -2, -3 etc.), to denote successive production batches, or contract orders, rather than line modifications. This is apparently only so only for the C-123 Provider: C-123B-1-FA / C-123B-22-FA (22 batches) and the F-4 Phantom II: F-4A-1-MC / F-4E-67-MC (67 batches). C-97 production were given consecutive block numbers but these changed to the 5-digit system on delivery. The C-119 is bit of a mystery in that consecutive block numbers appear to have been assigned to the C-119B / C but the 5-digit system was then applied to the C-119F / G.

– Some high production order aircraft like the C-130 Hercules and UH-1 Iroquois appear to have made little or no use of block numbers. The C-130 block numbers appear to have been phased out after C-130B production.

From the late 1960s up to today, block numbers have largely been done away with in favour of what are now known as **Lot Numbers** reflecting aircraft production batches. Most fighter aircraft like the F-15, F-16 and F-35 make use of this system.

Manufacturer Codes
From 1939 onwards with the growing amount of aircraft production under which several manufacturers built the same type of variant at several different plants, it became necessary to identify which aircraft came from which plant. Two letter codes were introduced after the Block Number to denote straight away which factory an aircraft came from.

The Consolidated B-24J Liberator was built at five plants throughout the US from 1943 to 1944, it can be deduced with Manufacturers Codes that those plants were: Consolidated San Diego (CO), Consolidated Fort Worth (CF), Douglas Tulsa (DT), North American Dallas (NT) and The Ford Motor Co., Willow Run (FO).
Manufacturer Codes are to extensive to list here and are listed where appropriate in the databases.
Use of Manufacturer Codes was officially dropped in 1976.

US NAVY / US MARINES / US COAST GUARD

The US Navy flew it's first aircraft, a Curtiss A-1 Triad, on July 1st, 1911 and except for a short period from 1917 to 1922, the US Navy identified its aircraft up to 1962 by specific designation systems that conveyed a considerable amount of information about the aircraft type, origin and nature.

The following systems are based around the TYPE LETTER which is described in more detail later:

The 1911-1914 System
A fairly cumbersome system that could only cope with a small amount of aircraft deliveries. Each aircraft was given a letter to identify it's manufacturer, followed by a number to show its order of procurement.

The 1914-1916 System
On March 17th, 1914, a new system was created and all aircraft on hand were redesignated. Aircraft were identified by type and sub-type, followed by a number to show its order of procurement, a system similar to ship designations. On July, 1st, 1915, the Office of Naval Aeronautics was officially set up with the Naval Flying Corps. established in August 1916.

The 1917-1922 System
No standard system was used during these years and all aircraft were operated under their manufacturers names and model numbers.

The 1922-1962 System
The Bureau of Aeronautics (BuAer) was formed on August 10th, 1921, to assume all responsibility for matters relating to naval aviation. On March 29th, 1922, BuAer reorganized the entire designation system for naval aircraft which also applied to the US Marine Corps. and the US Coast Guard from 1935.
A further revision was made on March 10th, 1923, with this system being the one that stayed in practice until the "Unified" System was introduced on September 18th, 1962, which saw all Naval, Marine and Army aircraft placed under the same designation system as that of the USAF.

US NAVY / US MARINE AIRCRAFT DESIGNATIONS

The standard US Navy aircraft can have up to six parts as in this example of a Grumman Hellcat: XF6F-3N.

X **Status Prefix Letter**
F **Type Letter**
6 **Manufacturer Type Sequence Number**
F **Manufacturer Code**
3 **Type Series Number**
N **Special Purpose Suffix Letter**

From this designation it can be deduced that this Grumman Hellcat is a prototype Fighter aircraft, the sixth Fighter design to be produced by the Grumman Aircraft Corp. and is the third variant to be produced and has a special purpose role of being a Night-fighter.

Status Prefix Letter
A first letter was only applied if an aircraft had a changed status such as being built or converted to a prototype aircraft which saw the use of X as the designator for this role. Y was used when an aircraft was undergoing service tests.

Type Letter

This is the main designation system that is the primary means of identifying an aircraft type, whether its a Fighter, Patrol Bomber or Trainer etc. This is the system that applied to aircraft from 1922 to 1962 and is presented in the table below:

Letter	Designation	Dates
A	Ambulance	1943
	Attack	1946 – 1962
B	Bomber	1941 – 1943
BF	Bomber-Fighter	1934 – 1937
BT	Bomber-Torpedo	1942 – 1945
DS	Drone, Anti-Submarine	1959 – 1962
F	Fighter	1922 – 1962
G	Transport, Single-Engined	1939 – 1941
	Tanker	1958 – 1962
H	Hospital (Ambulance)	1929 – 1931
		1942 – 1944
HC	Helicopter, Crane	1952 – 1955
HJ	Helicopter, Utility	1944 – 1949
HN	Helicopter, Training	1944 – 1948
HO	Helicopter, Observation	1944 – 1962
HR	Helicopter, Transport	1944 – 1962
HS	Helicopter, Anti-Submarine	1951 – 1962
HT	Helicopter, Training	1948 – 1962
HU	Helicopter, Utility	1950 – 1962
J	Transport	1926 – 1931
	Utility	1931 – 1955
JR	Utility Transport	1935 – 1962
K	Radio-Controlled	1947 – 1962
KD	Target Drone	1947 – 1962
LB	Glider, Bomb-Carrying	1941 – 1945
LN	Glider, Training	1941 – 1945
LR	Glider, Transport	1941 – 1945
M	USMC Expeditionary	1922 – 1923
	Missile	1947 – 1962
N	Trainer	1922 – 1947
O	Observation	1922 – 1962
OS	Observation-Scout	1935 – 1945
P	Pursuit	1923
	Patrol	1923 – 1962
PB	Patrol Bomber	1935 – 1962
PTB	Patrol Torpedo Bomber	1937
R	Racer	1922 – 1928
	Transport	1931 – 1962
RO	Rotorcycle	1954 – 1959
S	Scout	1922 – 1946
	Anti-Submarine	1947 – 1962
SB	Scout Bomber	1934 – 1946
SN	Scout Trainer	1939 – 1946
SO	Scout Observation	1934 – 1946
T	Torpedo Aircraft	1922 – 1935
	Transport	1927 – 1930
	Trainer	1948 – 1962
TB	Torpedo Bomber	1935 – 1946
TD	Target Drone	1942 – 1946
TS	Torpedo Scout	1943
U	Unmanned Drone	1946 – 1955
	Utility	1955 – 1962
W	Airborne Early Warning	1952 – 1962
ZN	Airship, Training	1941 – 1945
ZP	Airship, Patrol	1941 – 1 962
ZS	Airship, Anti-Submarine	1941 – 1962

Manufacturer Type Sequence Number
This reflects the delivery of different models of the same Type Letter from the same manufacturer. For example the Grumman F4F Wildcat was the fourth Fighter Type produced by Grumman with the single F5F Skyrocket being the fifth Grumman Fighter design etc. Of course the next aircraft was the F6F Hellcat which like the F4F became legend.

Manufacturer Codes
Simply a single letter that denotes the aircraft's manufacturer. Unlike the two letter codes used for the USAF, which determine the actual plant, the Navy single letters tend only to identify the overall manufacturer. So for example the PBY-5A was produced at two plants but the Y code applied to both the Consolidated San Diego plant and also the Consolidated New Orleans one. Situations where a different manufacturer was license building an aircraft type, a different code would of course be used. Hence, the TBF Avenger applied to aircraft produced by Grumman and the TBM Avenger designation applied to the same aircraft, but produced by General Motors. Manufacturer Codes are to extensive to list here and are listed where appropriate in the databases.

Type Series Number
This number basically denotes the number of variants produced of an aircraft type. The first variant of an aircraft would be -1, the second -2 etc. The Navy used this numbering sequence whereas the USAF and Army used a Suffix Letter to denote their progressive variants.

Special Purpose Suffix Letter
Similar to the Air Force Status Prefix Letter, this goes at the end of the designation in the Navy, not at the start as is the case with the Air Force. It indicates a special purpose mission role or secondary duty that the aircraft was modified to perform. For example the photographic reconnaissance version of the F4F Wildcat was designated as the F4F-4P Wildcat.

In some cases a further modification made to an aircraft my result in a second sub-variant identified by a number 2 following the Suffix Letter (e.g. TBM-3S2).

In rare cases during World War II, aircraft designated from Army aircraft versions used Suffix Letters to indicate the variant of the aircraft. So the North American B-25D Mitchell was designated in US Marine Corps. service as the PBJ-1D and the B-25J the PBJ-1J etc.

The table below is the Special Purpose Suffix Letters in use from 1922 to 1962:

Letter	Designation
A	Armament (on normally unarmed aircraft).
	Arrestor gear (on aircraft normally without).
	Amphibian.
	Land-based version of carrier aircraft.
	Army obtained aircraft.
B	Special armament.
	British obtained aircraft (Lend-Lease).
C	Stressed for catapulting.
	Arrester gear fitted.
	Cannon armed.
	Equivalent of USAAF C-model.
CP	Photographic survey (Trimetrogen camera).
D	Drone director.
	Drop tanks.
	Special search.
	Special radar.
	Equivalent of USAAF D-model.
E	Electronic equipment.
F	Flagship conversion.
	Special power-plant.
G	USCG model.
	Search and Rescue.
	Armed (on normally unarmed aircraft).
	Equivalent of USAAF G-model.
H	Ambulance.
	Equivalent of USAAF H-model.

J	Special weather equipment.
	Equivalent of USAAF J-model.
K	Drone.
KD	Radio-controlled drone.
L	Cold weather operations.
	Searchlight equipped.
M	Missile launcher.
N	Night-fighter.
	All-weather radar / operations.
NA	Night-fighter modified for day attack.
NL	Night-fighter modified for cold weather operations.
P	Photographic reconnaissance / survey.
Q	Electronic countermeasures.
R	Support transport.
	Transport conversion.
S	Anti-Submarine (Killer).
T	Trainer.
U	Utility.
W	Anti-Submarine (Hunter).
	Special search.
	Airborne Early Warning.
Z	Staff / VIP transport.