EXPLANATION OF PRATT & WHITNEY AIRCRAFT
ENGINE DESIGNATIONS

1. The method of presenting and interpreting Pratt & Whitney Aircraft engine designations has undergone several revisions; therefore, it is our aim to explain the original and subsequent methods of engine designation presentations based on the factors explained in paragraphs 2 and 3 which have remained stable.

2. The designation Wasp Jr., Wasp, Twin Wasp Jr., Hornet, Twin Wasp, Twin Hornet, Double Wasp and Wasp Major are Pratt & Whitney Aircraft trade names and identifies the engine model. The Turbo Wasp is likewise a trade name and indicates a reaction type engine. Invariably, the symbols "JT" and "PT" for turbo jet and turbo prop, respectively, are used to identify this model engine.


4. The designations R-985, R-1340, R-1535, R-1690, R-1830, R-1860, R-2000, R-2180, R-2800, R-4360, "J" and "T" are used by the U.S. Military Services to identify the military engine model. The prefix before the numerals indicates the engine type, i.e., "R" indicates radial aircooled and the number describes the displacement; "J" indicates a turbo jet and "T" a turbo prop. engine.

5. Subsequent to World War II, surplus military engines have been certified by CAA for commercial applications. A suffix M1, M2, M3, etc., is assigned to the military engine model by the CAA to denote a specific modification; e.g., R-2000-9 M1.

6. Using the Wasp "H" series as an example, the early designations are as follows:

   (a) Basic designation Wasp H
   (b) Design change affecting interchangeability H1
   (c) Altitude rated SH1
   (d) Sea level rated TH1
   (e) Change in rating SIH1
   (f) Propeller reduction gear SIH1-G

7. As engine incorporated various types of supercharger designs for varied applications, a new set of designations was introduced. Using the Double Wasp "C" series as an example, the designations are as follows:

<table>
<thead>
<tr>
<th>CONFIGURATION</th>
<th>PREFIX</th>
<th>SUFFIX</th>
<th>DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single stage, single speed</td>
<td>S</td>
<td>1 through 9</td>
<td>SCl</td>
</tr>
<tr>
<td>Single stage, single speed, suitable for exhaust turbine</td>
<td>TS</td>
<td>1 through 9</td>
<td>TSCl</td>
</tr>
<tr>
<td>Single stage, variable speed</td>
<td>VS</td>
<td>1 through 9</td>
<td>VScI</td>
</tr>
<tr>
<td>Single stage, variable speed, with exhaust turbine</td>
<td>TVS</td>
<td>1 through 9</td>
<td>TVScI</td>
</tr>
<tr>
<td>Single stage, two speed</td>
<td>2S</td>
<td>11 through 19</td>
<td>2Sc11</td>
</tr>
<tr>
<td>Two stage, two speed</td>
<td>SS</td>
<td>21 through 29</td>
<td>SS21</td>
</tr>
<tr>
<td>Two stage, variable speed</td>
<td>VSS</td>
<td>21 through 29</td>
<td>VSS21</td>
</tr>
<tr>
<td>(d) Pusher installation</td>
<td>P</td>
<td>as applicable</td>
<td>VSSC21P</td>
</tr>
<tr>
<td>(e) Change in rating</td>
<td></td>
<td></td>
<td>SSIC21</td>
</tr>
<tr>
<td>(f) Propeller reduction gear</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Single rotation, single speed  
Single rotation, two speed  
Dual rotation, single speed  
Dual rotation, two speed  
Remote drive, single speed (extension shaft)  
Remote drive, two speed (extension shaft)  

(a) Basic designation  
(b) Design change affecting interchangeability  
(c) Supercharger and minor modification combination:

<table>
<thead>
<tr>
<th>CONFIGURATION</th>
<th>SUFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single stage, single speed</td>
<td>1 through 9</td>
</tr>
<tr>
<td>Single stage, two or variable speeds</td>
<td>11 through 19</td>
</tr>
<tr>
<td>Multi-stage</td>
<td>21 through 29</td>
</tr>
</tbody>
</table>

7. In the interest of simplicity, the engine designations on all future piston engine models and modifications will incorporate a condensed engine designation. Using the Double Wasp E series as an example, the new designations will be as follows:

DESIGNATION
Double Wasp E
EA

8. The designation system for the Turbo Wasp engine model is somewhat similar to the simplified system explained above. In this group a letter rather than number identifies the specific engine model. The "JT" symbol applies to the Turbo Jet (without propeller) model; "PT" to the Turbo Prop. (with propeller). Using the Turbo Wasp JT as an example, the designating procedure will be as follows:

DESIGNATION
Turbo Wasp JT 6
JT 6A
JT 7
Symposium Lecture #2

GENERAL PRATT & WHITNEY ENGINE SPECIFICATIONS

Speaker -- L. B. Clark, Supervisor -- Service School

Note: The following explanation of Pratt & Whitney Engine designations has been taken from a restricted publication entitled "Pratt & Whitney Engine Model Designations and Characteristics".

Pratt & Whitney Aircraft (Commercial) Engine Designations

Pratt & Whitney Aircraft engines are classified according to take-off horsepower and/or type variations by a letter designation used in conjunction with the engine trade name. This letter designation indicating engine series is modified to facilitate spare parts identification and to indicate model variations as follows:

A. Service engines up to and including the following letter designation:

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Series Designation</th>
<th>Military Designation</th>
<th>Trade Name</th>
<th>Series Designation</th>
<th>Military Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wasp</td>
<td>H</td>
<td>R-1340</td>
<td>Twin Wasp</td>
<td>D</td>
<td>R-2000</td>
</tr>
<tr>
<td>Hornet</td>
<td>E</td>
<td>R-1690</td>
<td>Twin Hornet</td>
<td>A</td>
<td>R-2180</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Double Wasp</td>
<td>B</td>
<td>R-2800</td>
</tr>
</tbody>
</table>

Example:

Wasp H

B. Series

1. Unmodified
2. Propeller reduction gearing
3. Variations in major parts
   Numerical suffix to letter designation

C. Model:

1. Sea level normal rating
2. Altitude normal rating
3. Variations in ratings
4. Propeller gear ratio

D. Complete model designation

During the year 1940, in order to clarify the identification of engines equipped with various types of superchargers, the following symbols were
adopted as the Model Prefix of all engines not already designated as in A above:

S for single stage - single speed  
2S for single stage - two speed  
SS for two stage - two speed  
TS for single stage - single speed with turbo

Engines having letter designations subsequent to those described in IA:

Example:  
Double Wasp C

A. Series:

1. Unmodified Letter Designation  
   C
2. Propeller reduction gearing G  
   C-G
3. Supercharger - Numerical suffix to letter designation:

   Single stage - single speed  1 through 9  
   Single stage - two speed  11 through 19  
   Two stage - two speed  21 through 29  
   CI-G  
   CII-G  
   C2I-G

4. Variations in major parts Change in numerical suffix to letter designation  
   C12-G

B. Model:

1. Single stage - single speed rating Prefix S  
   SC2-G
2. Single stage - two speed rating Prefix 2S  
   2SIC12-G
3. Two stage - two speed rating Prefix SS  
   SSC22-G
4. Single stage - single speed rating with turbo Prefix TS  
   TSC2-G
5. Variations in ratings Prefix modified  
   2SIC12-G
6. Propeller gear ratio Suffix  
   2SIC12-G20:9

C. Complete model designation Double Wasp 2SIC12-G20:9

Pratt & Whitney Aircraft engine designations have been further amplified as follows:

A. Basic Engine Series

<table>
<thead>
<tr>
<th>HP</th>
<th>Series Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2800</td>
<td>A</td>
</tr>
<tr>
<td>3000</td>
<td>B</td>
</tr>
</tbody>
</table>

B. Model Prefix

<table>
<thead>
<tr>
<th>Supercharging Type</th>
<th>Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single stage - single speed supercharging</td>
<td>S</td>
</tr>
<tr>
<td>Single stage - variable speed supercharging</td>
<td>VS</td>
</tr>
<tr>
<td>Two stage or multi-stage supercharging</td>
<td>SS</td>
</tr>
<tr>
<td>Single stage - single speed &amp; turbo supercharging</td>
<td>TS</td>
</tr>
</tbody>
</table>
General Pratt & Whitney Engine Specifications

C. Supercharger

Single stage - single speed
Single stage - variable speed
Two stage - variable speed
Multi-stage - variable speed

*Variations - S1, S2, etc.

Power & Rear Section

A1 through A9*
A11 " A19
A21 " A29
A31 " A39
Pusher - AlP, AllP, etc.

D. Propeller Reduction Gearing

Series Designation Suffix (Nose Section)

Single rotation - single speed
Single rotation - two speed
Dual rotation - single speed
Dual rotation - two speed
Remote Drive

-G
-G2
-GD
-G2D
-RG, -RG2, etc.

As an example of how these would be used for the Double Wasp two-stage engine, the following are outlined:

Single rotation - single speed
Single rotation - two speed
Dual rotation - single speed
Dual rotation - two speed
Remote Drives (extension shafts)

Double Wasp SSC22-G
" " SSC22-G2
" " SSC22-GD
" " SSC22-G2D
" " SSC22-RG

E. Sample Designations:

1. Series A1-G

Model Wasp TSAl-G

TS - Single stage, single speed & turbo supercharging

2. Series A22-G2

Model Wasp Major SSA22-G2

SS - Two stage, two speed supercharger
A22-G2-A - (2800 hp) power section with two-stage supercharger - single rotation two-speed reduction gear (assembly specifications modified).

* Such as might result from changes in fuel specifications, etc., not affecting spare parts interchangeability in basic model.
* Range of numbers to provide for changes in assembly specifications for any given engine-supercharger-reduction gear combination affecting spare parts interchangeability.
3. Series B11P-RG2D

Model Wasp Major VSB11P-RG2D

VS - Single stage, variable speed supercharger
B11P-RG2D-B - (3000 hp) power section with single stage variable speed supercharger - pusher - remote dual rotation two-speed reduction gear.

Comparison with U.S. Military Designations

The U.S. Army and Navy employ a numerical suffix to the Military type designation (i.e. R-1830-43, R-1830-92 etc.) to identify the complete engine model in accordance with the applicable model specification as amended by contract change orders thereto.

In the past, the Army and Navy adhered strictly to the rule of using odd dash numbers for the Army and even for the Navy. This, however, is no longer strictly the case. In the interests of standardization, wherever an identical engine is used by both the Army and the Navy, the same dash number is used according to which of the services first procured the basic Pratt & Whitney Aircraft model engine.

The designation of an engine is changed whenever an engine modification is made which affects either performance or installation in an airplane, or any other modification which requires identification.

Pratt & Whitney Aircraft designations identify (1), the engine series and (2), the performance characteristics of the particular model thereof, as defined above, and are applied for that purpose to development or stock engines. Pratt & Whitney Aircraft specifications which may permit a choice of alternate equipment. Thus individual customer requirements define the equipment schedules covering such items as reduction gear ratio accessory equipment, etc.

Pratt & Whitney Aircraft designations are also currently used to facilitate the identification of military designated engines (i.e., R-1830-43 is TSCh-G16:9), and in such cases, the specifications applicable to the military dash numbers define the guarantees and equipment schedules.

Pratt & Whitney Aircraft Specification Forms

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Indicating</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW</td>
<td>Standard Commercial (FW) form</td>
<td>FW-1000</td>
</tr>
<tr>
<td>A-</td>
<td>AN form - Coordination with Army</td>
<td>A-1000</td>
</tr>
<tr>
<td>N-</td>
<td>AN form - Coordinating with Navy</td>
<td>N-1000</td>
</tr>
<tr>
<td>AN-</td>
<td>AN form - Joint coordination with Army &amp; Navy</td>
<td>AN-1000</td>
</tr>
<tr>
<td>None</td>
<td>Army form prior to AN specifications (1939)</td>
<td>1000</td>
</tr>
<tr>
<td>F/A-18A Designation</td>
<td>Displacement &amp; Military Designation</td>
<td>Number of Cylinders</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Wasp Jr.</td>
<td>T1H4</td>
<td>9</td>
</tr>
<tr>
<td>Wasp</td>
<td>T6H1-G</td>
<td>9</td>
</tr>
<tr>
<td>Twin Wasp T6C-5G</td>
<td>R-1830 -43</td>
<td>14</td>
</tr>
<tr>
<td>T6C-5G</td>
<td>R-1830 -65</td>
<td>14</td>
</tr>
<tr>
<td>T6C-9G</td>
<td>R-1830 -75</td>
<td>14</td>
</tr>
<tr>
<td>SSC-7G</td>
<td>R-1830 -86</td>
<td>14</td>
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<tr>
<td>SIC-4G</td>
<td>R-1830 -90B</td>
<td>14</td>
</tr>
<tr>
<td>SIC-3G</td>
<td>R-1830 -92</td>
<td>14</td>
</tr>
<tr>
<td>2SC-9G</td>
<td>R-1830 -94</td>
<td>14</td>
</tr>
<tr>
<td>2SD-5G</td>
<td>R-2000 -7</td>
<td>14</td>
</tr>
<tr>
<td>2SD-12G</td>
<td>R-2000 -14</td>
<td>14</td>
</tr>
<tr>
<td>Double Wasp &quot;B&quot; Series 2SBG</td>
<td>R-2800 -31</td>
<td>18</td>
</tr>
<tr>
<td>2SB-2H</td>
<td>R-2800 -10W</td>
<td>18</td>
</tr>
<tr>
<td>Double Wasp &quot;C&quot; Series 2SCC2G</td>
<td>R-2800 -18W</td>
<td>18</td>
</tr>
<tr>
<td>2SCC-14G</td>
<td>R-2800 -14W</td>
<td>18</td>
</tr>
<tr>
<td>TSC-2</td>
<td>R-2800 -57</td>
<td>18</td>
</tr>
<tr>
<td>Wasp Major</td>
<td>VSB-1C-4</td>
<td>28</td>
</tr>
</tbody>
</table>

**Pratt & Whitney Aircraft Service School** • **East Hartford** • **Connecticut**