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*National Air and Space Museum*

## Packard V-1650 Merlin 12-Cylinder V Reports Collection

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2013

National Air and Space Museum Archives  
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## Collection Overview

<b>Repository:</b>	National Air and Space Museum Archives
<b>Title:</b>	Packard V-1650 Merlin 12-Cylinder V Reports Collection
<b>Date:</b>	1941-1945
<b>Identifier:</b>	NASM.2013.0036
<b>Creator:</b>	Fraas, Arthur P., 1915-2011
<b>Extent:</b>	0.79 Cubic feet (2 letter size document boxes)
<b>Language:</b>	English .
<b>Summary:</b>	This collection consists of 0.79 cubic feet of reports relating to the Packard V-1650 Merlin 12-Cylinder V engine, mostly prepared by Arthur P Fraas, 1943-1945.

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## Administrative Information

### Acquisition Information

Arthur Fraas, Gift, 2013, NASM.2013.0036.

### Processing Information

Arranged and described by Patricia Williams, 2013. Updated by David Schwartz and encoded by Jessamyn Lloyd and Amara Pugens, 2025.

### Preferred Citation

Packard V-1650 Merlin 12-Cylinder V Reports Collection, NASM.2013.0036, National Air and Space Museum, Smithsonian Institution.

### Restrictions

No restrictions on access.

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## Biographical / Historical

Arthur P. Fraas (1915--2011) graduated from the Case Institute of Technology with a Bachelor of Science in Mechanical Engineering in 1938 and earned an Master of Science in Aeronautical Engineering from New York University in 1943. Between 1938 and 1940, Fraas worked as a test engineer at the Wright Aeronautical Corporation, Patterson, New Jersey. In 1943, he moved to Detroit as an experimental projects engineer on the Packard V-1650

Merlin 12-Cylinder V at the Packard Motor Car Company. He left Packard at the end of World War II and joined the faculty at Case Institute of Technology. From 1950 to 1976, he worked at Oak Ridge National Laboratory, retiring as the Associate Director of the Reactor Division.

The Packard V-1650 Merlin 12-Cylinder V engine was a version of the Rolls-Royce Merlin aircraft engine, produced under license in the United States by the Packard Motor Car Company. This engine was used in North American P-51 Mustangs.

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## Scope and Contents

This collection consists of 0.79 cubic feet of reports relating to the Packard V-1650 Merlin 12-Cylinder V engine, mostly prepared by Arthur P Fraas, 1943-1945.

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## Arrangement

Reports are housed individually by report number. Other documents are arranged by topic.

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## Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

Aeronautics  
Packard V-1650 Merlin 12-Cylinder V

Types of Materials:

Manuals

## Container Listing

Box 1, Folder 1	Packard Motor Car Company, Instruction No. 8, Single Cylinder Instructions, 8/24/1942
Box 1, Folder 2	Packard Motor Car Company, Report No. 21 (partial), Checks on Following Aneroids for Recovery After Pulling Boost Cut-Out, n.d.
Box 1, Folder 3	Packard Motor Car Company, Report No. 126, Test of V-1650-3 Engine B-6 at War Emergency Power, 6/3/1943
Box 1, Folder 4	Packard Motor Car Company, Report No. 145 (draft), Coolant Pump Test Summary Report , Circa 11/1943
Box 1, Folder 5	Packard Motor Car Company Report No. 148 (partial), Power Check with North American Aviation Exhaust Stacks on V-1650-3 Engine, n.d.
Box 1, Folder 6	Packard Motor Car Company Report No. 154, Investigation of Optimum Spark Advance on V-1650-3 Engine, 11/11/1943
Box 1, Folder 7	Packard Motor Car Company Report No. 169 (draft), Heat Rejection and Coolant Flow Characteristics of V-1650 Two-Stage Engines, circa 1/1944
Box 1, Folder 8	Packard Motor Car Company Report No. 169, Heat Rejection and Coolant Flow Characteristics of V-1650 Two-Stage Engines, 1/28/1944
Box 1, Folder 9	Packard Motor Car Company Report No. 170, Full-Scale Performance of Grade 130 Fuel in V-1650 Two-Stage Engines, 1/20/1944
Box 1, Folder 10	Packard Motor Car Company Report No. 180, Cylinder Head Temperature Survey on V-1650-3 Engine, 3/3/1944
Box 1, Folder 11	Packard Motor Car Company Report No. 196 (draft), Factors Affecting Induction System Temperatures, 4/19/1944
Box 1, Folder 12	Packard Motor Car Company Report No. 196, Factors Affecting Induction System Temperatures [two copies], 4/19/1944
Box 1, Folder 13	Packard Motor Car Company Report No. 198 (draft) Cylinder Head Temperature Thermocouple
Box 1, Folder 14	Packard Motor Car Company Report No. 199 (draft) Full Scale Performance of PPF-44-1 Fuel in V-1650 Two-Stage Engines, circa 5/1944
Box 1, Folder 15	Packard Motor Car Company Report No. 211 (partial draft), [Improvement of Aftercooler Effectiveness], circa 5/1944

Box 1, Folder 16	Packard Motor Car Company Report No. 211, Improvement of Aftercooler Effectiveness [two copies], 6/7/1944
Box 1, Folder 17	Packard Motor Car Company Report No. 225, Summary Report on Tests of Intake Systems for the V-1650-9 Engines, 8/7/1944
Box 1, Folder 18	Packard Motor Car Company Report No. 250, Sea Level Power Calibration and Mixture Requirements of the V-1650-9 Engine, 12/21/1944
Box 1, Folder 19	Packard Motor Car Company Report No. 260, V-1650-9 Cylinder Bank Coolant Flow Test, 1/14/1945
Box 1, Folder 20	Packard Motor Car Company Report No. 267, V-1650-3 Knock Limit Alcohol-Water Injection Tests with ANF-33 Fuel, 2/3/1945
Box 1, Folder 21	Packard Motor Car Company Report No. 279, Center of Gravity and Moment of Inertia of V-1650-9 Engine No. V-381009, 3/8/1945
Box 1, Folder 22	Packard Motor Car Company Report No. 287 (drafts), V-1650 Engine Valve Gear Operation Analysis, 4/10/1945
Box 2, Folder 1	Packard Motor Car Company Report No. 287, V-1650 Engine Valve Gear Operation Analysis, 4/10/1945
Box 2, Folder 2	Packard Motor Car Company Report No. 288, V-1650-3 Knock-Limit and Economy Test of AN-F-33 at 7:1 Cylinder Compression Ratios, 3/29/1945
Box 2, Folder 3	Packard Motor Car Company Report No. 294, D-2 Water Regulator Settings for AN-F-28R and PPF-44-1 Fuels, 5/15/1945
Box 2, Folder 4	Packard Motor Car Company Report No. 296, Correlation of Various Methods of Detonation Detection in V-1650 Engines, 5/19/1945
Box 2, Folder 5	Packard Motor Car Company Test Order No. 357, Testing of Aftercooler Pump, 3/27/1944
Box 2, Folder 6	Packard Motor Car Company Test Order No. 584, Aftercooler Core Flow Test, 9/11/1944
Box 2, Folder 7	Packard Motor Car Company Test Order No. 610, Supercharger First Stage Volute Drain, 10/3/1944
Box 2, Folder 8	Packard Motor Car Company Test Order No. 622, Test Fixture for Coolant Pump 620660 with Oil Lubrication, 5/3/1945
Box 2, Folder 9	Packard Motor Car Company Test Order No. 628, Fafnir Ball Bearing, No. 203-KDD Coolant Pump Impeller Shaft Lower, 1/25/1945

Box 2, Folder 10	Packard Motor Car Company Test Order No. 636, Schwitzer-Cummings Seal and Heavier Washer of Morganite MM-1 Material in A/C Pump, 5/4/1945
Box 2, Folder 11	Packard Motor Car Company Test Order No. 671, Engine Power Distribution, 2/5/1945
Box 2, Folder 12	Engine Performance Curve Handbook - V-1650 Engine Performance
Box 2, Folder 13	Engine Performance Curve Handbook - V-1650 Engine Performance (1944?)
Box 2, Folder 14	[Packard Motor Car Company Aircraft Engine Division Miscellaneous Folder]
Box 2, Folder 15	Modine Manufacturing Report No. 3316, Packard Aftercooler Test - 10 and 14 Fin/in. Test Cores Similar to Packard 603113 and 620655, 4/27/1945
Box 2, Folder 16	Modine Manufacturing Report No. 3316, Supplementary Report - Packard Aftercooler Core Development, 5/3/1945
Box 2, Folder 17	NACA Military Report No. E6H05 [Westinghouse 19-B Jet Engine Altitude Performance]
Box 2, Folder 18	Technical Memorandum C-43, Air and Vapor Separation from Coolant in Aircraft Cooling Systems, 12/7/1943, revised 1/5/1944
Box 2, Folder 19	Wright Aeronautical Corporation Serial No. 597, Report on The Selection of Intercooler Requirements and Dimensions with Direct Reading Charts for Airesearch Intercoolers, 8/5/1941
Box 2, Folder 20	Wright Aeronautical Corporation Serial No. 598, Report on The Selection of Intercooler Requirements and Dimensions with Direct Reading Charts for Harrison Intercoolers, 8/5/1941
Box 2, Folder 21	Discussion of Forced Vibrations with Non-Linear Spring Characteristic by H.N. Eklund, 7/25/1941