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THE INVESTIGATION OF EXTERNAL FORCE AND MOMENT PERTURBATION BY THE TYPE OF BEARINGS USED ON INTERNAL COMBUSTION ENGINE

by

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B.Eng., Chulalongkorn University, 1965

Thesis

Submitted in partial fulfillment of the requirements for the Degree of Master of Engineering

in

Chulalongkorn University Graduate School,

Department of Mechanical Engineering,

Bangkok, Thailand.

November, 1967

(B.E. 2510)

Accepted by the Graduate School, Chulalongkorn University in partial fulfillment of the requirements for the Degree of Master of Engineering.

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ABSTRACT

The investigation is an attempt to estimate engine performance and environmental noise by a piezo-electric transducer placed near the exhaust outlet from the engine. By a simply fitted device much useful data can be obtained and analysed. To further aid the design of exhaust systems in general an electrical analogy is given.

The paper shows the importance of electronic instrumentation. The electronic instrumentation used is of a modern type and suggests many other possibilities for their use. The importance of a reference line is stressed and the difficulty of marking an atmospheric datum is overcome by a special valve adapter, exposing the transducer alternately to atmospheric pressure and the gas pressure to be measured.

An analysis is given of the performance and noise of a small two stroke engine using the above technique and recording the pressure variation on oscillograms photographed by a high speed camera. Oscillograms of various exhaust systems are arranged at varying speeds from which a comparison of the various arrangements can be made.

ACKNOWLEDGEMENTS

The author wishes to express his gratitude for the up-to-date facilities provided by the Colombo Plan Scheme in the Mechanical Engineering Department of Chulalongkorn University, much of which was bought specially for the project, and to thank Mr. J.F. Heward B.Sc. (Eng.), C.Eng., A.M.I. Mech. E., A.M.I. Prod. E. for his constant encouragement.

As much of the author's work involved the use of electronic equipment he is most grateful to the lecturers and staff of the electrical engineering section of the Colombo Scheme for their frequent help and particularly to Dr. C.T. Davidson and Mr. A.C. Bensicle for the design and construction of components of the system.

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NOTATION

TDC	=	Top dead centre
BDC	=	Bottom dead centre
BTDC	=	Before top dead centre
ATDC	=	After top dead centre
IPO	=	Inlet port opens
IPC	=	Inlet port closes
EPO	=	Exhaust port opens
EPC	=	Exhaust port closes
TPO	=	Transfer port opens
TPC	=	Transfer port closes