

'PHASER' METAL DETECTOR

A project report presented in partial fulfillment of the requirement for the award of Diploma in Electronic Engineering of MARA OF TECHNOLOGY.

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## ABSTRACT

This report explained the purpose of PHASER METAL DETECTOR, how it works and some of its application, taking for granted that the reader has acquired some basic knowledge in electrical and electronics circuit theory.

The report has been made chapter by chapter by introducing the principles and the buildings blocks which make up a phaser metal detector. The chapters include the actual construction of the phaser metal detector, some theory of the components used and the operation.

Also included are discussion and the numerous illustrations which will help to reinforce the text.

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TABLE OF CONTENTS	Page
Abstract	i
Acknowledgements	ii
Table Of Contents	iii
List Of Illustrations and Figures	v

## CHAPTERS

1. INTRODUCTION	1
1.1 General Introduction	2
1.2 Applications	3
2. PROJECT ANALYSIS	5
2.1 Basic Principles of Operation (Block Diagram)	6
2.2 Circuit Theory	8
2.2.1 Voltage generator	9
2.2.2 Audio oscillator	11
2.2.3 Trigger	15
2.2.4 Mixer	16
2.2.5 Smoothing circuit	18
2.2.6 D.C. Amplifier	20
2.2.7 Frequency divider	23
2.2.8 Chopper	24
3. Theory of Essential Components Used	27
3.1 Transistor Switching	28
3.2 Buffer Amplifier	30

## 1.1 GENERAL INTRODUCTION

The PHASER METAL DETECTOR is built to detect a metal which operates by detecting small phase change of the signal in the search coil when metal is brought near to the coil.

The detector is operating in a very low frequency (VLF). 'Very low frequency' in metal detectors terms, generally means a frequency at the upper end of the audio spectrum, with frequency around 17Khz being quite typical.

The point of using relatively low operating frequencies in metal detectors is that to avoid problems with the ground effect. So this equipment is free from the ground effect without using any special shielding.

Practical experiments with very low frequency phase detector, circuits proved quite encouraging and the final design is quite simple but effective. The higher sensitivity of ultra-sensitive detectors is often unusable anyway due to problems with small amounts of other metals in the soil giving a sort of pseudo-ground effect.