Higher Technical Institute
MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN OF AN AIR OPERATED WINCH

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Project Report
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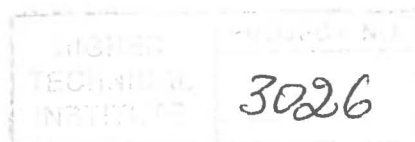
In partial fulfilment of the requirements

for the diploma of

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In

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Summary

The objective of this project was to design an air-operated winch that would be able to lift 1 ton.

In chapter 1 I studied the principles of operation of existing winch systems, both manual and power operated.

In chapter two I present the creativity phase of my design, in which my ideas are shown among with their advantages and disadvantages.

In chapter 3 the decision making is presented. (basic idea of what is to be designed).

In chapter 4 the rope was selected and the drum was designed.

Next in chapter 5 the air-gear-motor was selected.

In chapter 6 the connections between the shaft and the drum were designed.

In chapter 7 the shaft was designed, according to the ASME equation.

In chapter 8 the bearings, and the couplings were selected.

In chapter 9 the strength analysis of the beams took place.

Next in chapter 10 some "details" of the design were delt with.

In chapter 11 some simple and basic maintenance instructions are given.

Finally in chapter 12 the cost of manufacturing this air operated winch is calculated.

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