

FINAL YEAR PROJECT REPORT
DIPLOMA IN MECHANICAL ENGINEERING
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TITLE

DESIGN, DEVELOPMENT AND FABRICATION OF HYDRAULIC
DRIVES SCREW PRESS FOR METAL FORMING OPERATION.

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PREFACE

Metal Forming Processes are attaining increasing importance in production engineering. In the industry, mechanical and hydraulic presses play an important role.

The increasing use of hydraulic drives and control has a significant influence on press operation. Hydraulic presses were known in the early development of machine design. With the development of hydraulic control system, the operation of mechanical presses were automated.

The automation of machine tools is a factor of great importance in the development of the engineering industry which, in turn, forms the necessary basis for technical progress in the national economy. Automation increases the productivity of labour, reduces the physical strain on operators, improves the quality of products and ensures the reliable operation of equipment.

Hydraulic drives are used in many fields of engineering, but their main application is in the area of machine tool operation.

The range of application of hydraulic drives and mechanisms is continuously increasing and their design improved in the area of metal working presses.

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Any suggestions for the improvement of the report shall be welcome.

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INTRODUCTION

Forming process is one of the very important parts of metal working operation. This process needs a specific machine for a specific work. Hydraulic drives screw press is one of them.

Hydraulic drives screw press consists two main systems that is, hydraulic system and mechanical system. Both hydraulic and mechanical systems are operated together which will give a higher efficiency than using one of the systems either mechanical or hydraulic.

The machine is designed, basically depending on the nominal energy, nominal force, maximum slide displacement, maximum slide velocity and approximate table area. The specification are listed below:

- | | |
|-------------------------------|-----------------|
| 1. Nominal force | 50 kN |
| 2. Nominal energy | 5000J |
| 3. Maximum slide displacement | 250 mm |
| 4. Maximum slide velocity | 0.5 to 0.6 m/s |
| 5. Approximate table area | (300 x 300) mm |

Simplicity, strength and finally appearance on the factors considered in the designing of this machine.