

Product Name :
Hydraulic Gate Opener

Product Code :
NLAB-TECHNICALAB30017



Description :

Hydraulic Gate Opener

Technical Specification :

The equipment covers the following areas of study :

Energetic

Fluid mechanics

Functional analysis of an industrial product

Technical communication tools

Mechanical links

Relationship between product – manufacturing process – material

Measurement of physical values and calculation of performance

These calculations are entered into a spreadsheet file (model supplied) to allow interpretation of the test data and results.

Using the measurements and experimental data, calculations will among other give :

The theoretical capacity of the pump (using CAD software)

The determination of the following parameters, based on the measurements obtained with the equipment:

Translation speed of jack rod (time, distance)

Theoretical flow rate of the pump (capacity, rotation speed)

Oil flow rate (piston diameter, rod diameter, rod speed)

Released mechanical power (mass lifted, rod speed)

Resultant pressure forces on the piston (piston diameter, rod diameter, pressure)

Jack efficiency and global efficiency (if functioning in load)

Flow measurement comparison: pump – jack and jack – pump.

Analysis of the functions provided by the different valves and safety pressure valve used in the hydraulic circuit

Highlighting of the change in efficiency and friction as a function of the applied load and temperature increase

Analysis of the design methods associated to prevent leaks and to facilitate assembly.

Technical Specifications

The electro-hydraulic gate opener is mounted on a plastic PVC base together with the related instrumentation.

It includes :

An electrical motor

An oil gear pump

A lift device for the mass (the masses can be hanged in a driven position or a braking position)

A complete instrumentation allowing the measurement of:

Motor speed using an induction sensor and signal conditioner / indicator display

Power consumed using an optional Clamp-type ammeter

Oil pressure in the two supply circuits of the cylinder using 2 pressure gauges

Time taken for the shaft to reach a predetermined position using an optional stopwatch

Certain essential specifications for the equipment are provided, including :

Pump dimensions, measured on a tri-axis measurement machine and profile projector, supplied on CAD files

Performance specifications of the hydraulic jack

Intensity of the lifted mass (system can also be used empty)

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