Product Name :	Product Code :
Industrial Heavy Door Portal	EEH0006

Description :

Industrial Heavy Door Portal

Technical Specification :

Industrial Heavy Door Portal Manufacturer

Operating field

A heavy door is used in the steel industry, nuclear industry, aeronautics, offshore, banks, industrial hangars,

tests laboratories, hydroelectric dams valves and military industry.

Function

The heavy doors have safety environmental functions, for example:

- Steel industries and foundries: thermal Protections.
- Hydroelectric dams: pondage and flow control.
- Nuclear industry: Protection against radioactivity.
- Industrial hangars: Protection against vandalism.
- Banks: Protection against hold up.

Main characteristics

Power And Industrial Mechanical Components.

- Modular And Upgradeable Product.
- Change of motorization.
- Modification of the kinematic linkage.
- Change of the components. (couplings, bearings, gearwheels, guides and rails, etc.)

Different Safety Devices Technologies

- Different Energies ; Electric, Hydraulics, pneumatic.
- Important Incremented Variation Of The Load.
- The mass of the door, or load, varying from 150 to 630 Kg, by increments of 20 Kg.

Teaching objectives

According to the chosen options, the PORTEL allows to develop the following objectives :Change of the coupling by a torque limiter.

Change of the guide system (friction ; sliding).

Change of the bearing.

Change of the gearwheel.

Change of the rack.

Lubrication.

Draining and filling of the reduction gear with oil.

Showing the disturbances resulting from a bad mechanical adjusting .

Butting.

Stick-slip motion.

Vibration.

Temperature increase.

Friction, sliding.

Technological improvements.

Comparison using Electric and Hydraulic energies.

Change of the gear motor and the guide rail.

Improvement of the electrical cabinet.

Adjusting of the torque limiter.

ON/OFF hydraulic technology.

Proportional hydraulic technology

Features :

The sources of energy generally used to open and close these kind of doors are :

The Electric energy.

The Hydraulic energy.

These kind of equipment are generally composed of :

A motorization.

A transmission kinematic linkage.

Safety devices.

The training equipment PORTEL has been designed for teachers in maintenance, electrotechnology and safety fields and has the following characteristics.

Robustness and industrial power.

Modularity of the system.

Flexibility for an efficient adaptation to the needs of training.

Competitive price.

Technical specifications

Weight of the door (when empty) : 70 daN.

Weight of the removable masses : 24 masses of 20 daN.

Mini weight in movement: 70 daN,

Maxi weight in movement: 550 daN.

Power of the gear motor: 2,2Kw.

Opening speed of door.

Max : 24m / min.

Middle : 12m / min.

Mini : 6m / min.

1/ Main Module.

The PORTEL has been designed in order to allow several upgradeable configurations from the main unit PORTEL.

The main module PORTEL unit is made of two main dissociable units:

The power sub system

A control cabinet.

A gear motor.

A frame supporting the gear motor.

The operative part

A support frame, door post.

A kinematic linkage.

The heavy door.

A protective enclosure equipped with two protective doors.

A set of safety devices.

Control cabinet

It is an electric cabinet which allow to control the opening and the closing of the door in semi-automatic and automatic working; at variable speed; and to manage all the safety devices.

It is equipped with an electric cabinet made of painted steel including :

An PLC 12 input / 8 outputs ON/OFF power supply 230 V AC.

A speed driver with integrated braking resistance.

A disconnecting switch 4 poles 20A lockable mounted on the lateral face of the cabinet.

A transformer 230 V / 24V AC 50 VA for the supply of the auxiliary circuits.

A set of lights and safety devices with an emergency stop button.

The connection terminals of the sensors and actuators.

A potentiometer for the motor control.

Two switches with 2 positions for the semi auto / auto modes and the up /down modes.

Motorisation :

Gear motor LEROY SOMER, equipped with a brake. Weight : 50 Kg.

Power 2,2 KW , 400V 3 phases + neutral .

A support frame :

Support frame, mechanically welded, squared section tube of 100 mm. It receives the heavy door, the two protective doors, the different linking plates. It is mounted on wheels and three support feet with adjustable screws.

Kinematic linkage.

Gear motor LEROY SOMER.

Coupling

Drive shaft, adjusted diameter 35 h7.

2 squared flange bearing, with greasers.

2 cylindrical pinions 18 teeth module 5.

2 square racks in steel.

Heavy door 650 x mm 1500 mm.

Friction guide with band width 40 mm.

4 masses of 20 daN each.

Heavy door :

The heavy door is a vertical sliding door. It is made of an aluminium plate of 25 mm thickness, 650 mm width, 1500 mm height, equipped with 12 pairs of axes to place the masses. Its empty weight is of about 70 daN. Its stroke is of 1000 mm.

It is limited in the two way by 2 x 2 limit switches. The first switch allows to switch in reduced speed, the second switch allows the stop the movement of the door.

It is equipped in basic version with 4 removable masses of 20 daN allowing to make vary the load. It is designed to receive a total of 24 masses, that allow to make vary the load from 70 daN to about 550 daN.

It is equipped with the different machinings that allow it to receive the ball guides available in option.

Safety devices :

On the electrical cabinet : a set of fuses and safety relays.

On the kinematic linkage : an electric brake on the motor, a torque limiter (in option) as well as a disk brake (in option).

On the door : Safety by obstacle, inviolable door opening. Protective carter with sensor and fall-prevention device (in option).

2 Additional Modules To The Main Module Portel

The main module PORTEL has been designed to receive later on and without any modification the following additional modules.

Balls guides module Ref MEA 110.

Balls guides made of 4 skates and 2 rails.

This module is provided with all the necessary accessories for its installation.

Torque limiter coupling

Torque limiter coupling module with a maximum torque of 500 Nm. It allows :

To limit and to adjust the torque to transmit.

To absorb the ” jolts “, the vibrations, the irregularities.

To correct the vertical misalignments.

The setting of the torque is possible from 10% to 100% of the nominal torque.

Set of 4additional masses module Ref MEAS 130.

Set of 4 steel masses equipped with fixing devices. Their weight is of 20 daN.

The PORTEL can receive until 24 masses of which 4 are provided with the main module.

Extension of the transmission chain

This extension module allow to modify fully the power subsystem. In this configuration, the T-square supporting the gear motor is replaced by a mobile frame. It is assembled on the operative part subsystem, for and on behalf of the motorization frame of the main module PORTEL.

It is composed of :

A mechanically welded frame mounted on 4 wheels.

A set of 2 double pinions with removable chain and hub.

Chain with fast attachment.

The gear motor (supplied with the main module PORTEL).

A set of carters allowing to protect the student from the dangerous parts of the kinematic linkage.

An angle transmission box with disengaging mechanism. This box allows to isolate the gear motor from the kinematic linkage.

Two couplings allowing the links between.

The angle transmission and the manual operation reduction gear.

The angle transmission and the power gear motor.

Pneumatic disk brake module:

A disk brake with pneumatic control, with three types of brake pads allowing different tests.

Manual control module:

A reduction gear equipped with a hand wheel allowing to control the door manually. This removable system is made of conical pinions, roller bearings and a system of jaw clutching.

Hydraulic module:

A jack fixed at the centre of the frame crossbar of PORTEL thanks to journals allows through the help of a yoke fixed at the bottom of the door, the vertical displacement of this one.

The features of the hydraulic components are the followings :

Hydraulic jack: bore diameter : 40 mm, rode diameter :18 mm, stroke : 1000 mm.

Hydraulic power station : Pressure: 70 bars, Flow: 3l/mn

This equipment allows a displacement of the door at a speed of 300 cm / min on a stroke of 1m.

Dimensions and weight

Door : 1500 X 650 X 25 mm.

Main module PORTEL (overall dimensions) : L x W : 1260 X 1830 mm.

High : Door opened : 3010 mm – Door closed : 2200 mm.

Weight of the main module without the removable masses : about 350 Kg.

Weight of the main module with the removable masses : about 830 Kg.

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