

Application #1 – HVAC DUCT VALVE

An HVAC 6' x 6' duct valve is located 30 feet above a manufacturing process facility floor. The baffle needs to be adjusted periodically to maintain proper airflow through the building. The loads, duty cycle and other operation details have been identified. The concern is with the amount of dust and particulate that will accumulate on the actuator due to the fact that it is located directly above foam manufacturing equipment.

SPECIFICATIONS:

- Maximum force to open and close the valve under maximum airflow is 2,000 lbs.
- Cylinder will be in compression
- Maximum speed is 32 inches per minute
- Actuation cycle: 2 times per day; 365 days per year
- Desired design life is twenty years
- Mechanism must be mounted overhead
- Limit Switches needed
- Maximum stroke is 18 inches

ANALYSIS:

There is a specific life requirement so a ball screw actuator is needed. As shown on the Series DD-25 product reference page 366, using the DD-2512-HD with a 1/2 hp brake motor will provide a travel rate of 36"/min and give 4.1 million inches of life at 2000lbs. Additionally, the charts show that this application is within the column load strength of the DD-2512-HD. The door swings through an arc so a double clevis style will be needed. Due to the environment concerns an enclosed Rotary Limit Switch should be used instead of a Rod type Limit Switch.

SELECTION:

DD-2512-HD / 053 –1 / 2CA – 4E / CC / 18 / S

Application #2 – DISTRIBUTION CONVEYOR

A warehouse conveyor system distributes filler material across a 48 inch wide packaging line. One end of the conveyor is hinged to a loading station, the other end must move across the conveyor.

SPECIFICATIONS:

- The maximum load from the conveyor with material is 1,100 pounds
- A servo drive will be used to control the actuator
- The conveyor will move 480 times an hour, 16 hours a day, 350 days per year
- Life expectancy is 5 years
- Stroke length is 24 inches maximum
- Minimum Travel Rate is 24 inches in 3 seconds

ANALYSIS:

An In-Line cylinder will be used because of the frequent cycle requirement. With a travel rate of 480 inches per min ((24 inches / 3 seconds) * 60 seconds) and a life expectancy of 15 million inches, an ILA-10-HL is selected. The application would require a servomotor that can produce 96.8 inch-lbs of torque (0.088 inch-lbs * 1,100 lbs) at 960 rpm (480 inches per min / .500 Lead).

SELECTION:

ILA-10-HL / 24 / M

M- Modified motor adapter to mount servomotor.