

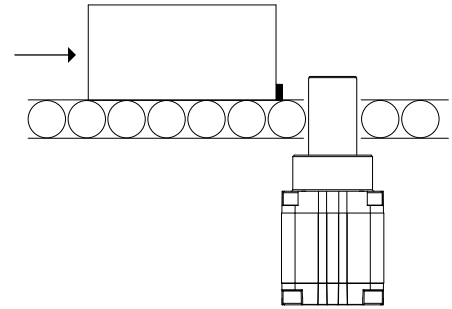
# Dimensioning guide for Series ST Stopper cylinders

In order to select the correct cylinder dimensions, the following parameters are needed:

- Weight of the impact object  $m$  [kg]
- Impact speed  $v$  [m/min]
- Operating pressure STOPPER  $P$  [bar]
- Bumper deformation\*  $\Delta a$  [mm]
- Bumper/rod friction coefficient  $\mu$

## Stop and release of a pallet

Data:  
 $m = 20$  kg  
 $v = 20$  m/min  
 $P = 4$  bar  
 $\Delta a = 1$  mm  
 $\mu = 0,5$



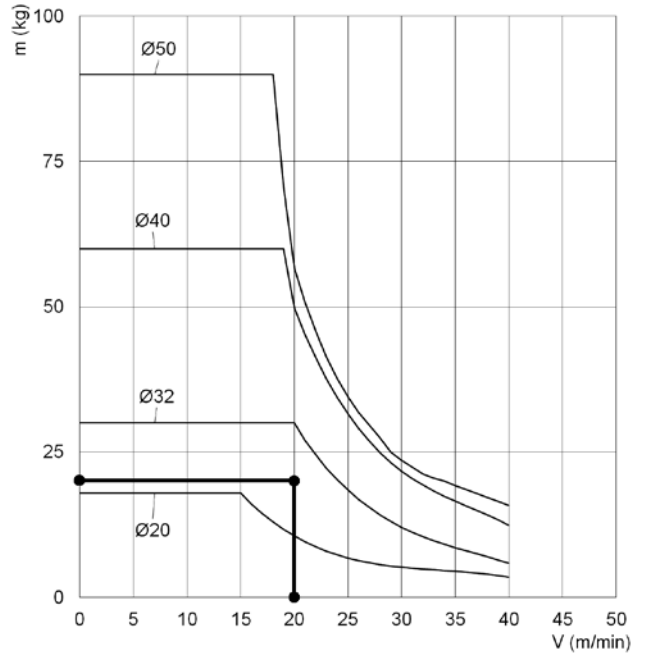
\* = Between the impact object and the rod of the stopper, assume to insert an elastic bumper capable of absorbing the impact, deforming by at least 1 mm.

DIMENSIONING GUIDE FOR SERIES ST STOPPER CYLINDERS

### PHASE 1: Choosing the cylinder size

By analyzing the data, you will find which cylinder size to use for the required application using the mass / speed graph. In this case we will have to choose a  $\varnothing 32$  cylinder.

N.B.: it is not correct using 2 cylinders of  $\varnothing 20$ .



### PHASE 2: Check of return force

Once selected the size, we need to check if the return force is sufficient by using the graph of allowable lateral force (FR).

**Calculation:**

$$F_{ATT} = m \cdot g \cdot \mu$$

$$F_{ATT} = 25 \cdot 9.81 \cdot 0.5 \cong 122.6 \text{ N}$$

$$F_R > F_{ATT}$$

$$400 \text{ N} > 122.6 \text{ N}$$
