



Detroit Hoist & Crane Co.

Manufacturers of: Standard Electric Wire Rope Hoists
Winches & Crane Components

Selection to Suit Service Conditions of electric hoists

1. Duty (time of operation and type of duty)
2. Maximum load to be lifted
3. Maximum lifting height
4. Lifting speed

Detroit Hoists are dimensioned in accordance with the HMI Design Rules for series-produced hoists for maximum service lift and reliability. Decisive factors in selecting the best-suited type of electric hoists, apart from the maximum load to be lifted are the service conditions, i.e. the **daily operation period and the type of duty**.

The mean operating time per working day (running period of hoist motor) is roughly determined as follows:

$$\frac{\text{Mean operating period/day}}{2 \times \text{mean lifting height} \times \text{number of cycles/h} \times \text{working time/day}} = \frac{1}{60 \times \text{lifting speed}} \quad (\text{h})$$

where:

lifting height is expressed in m
working time in hours
lifting speed in m/min

The **duty rating** reflecting the severity of service is determined on the strength of three ideal load spectrums (in case of doubt, the cubic mean value k of the load spectrum to be used as a basis in selecting the electric hoist may be determined according to the formula given in the HMI Design Code.

Duty rating: 1. light duty

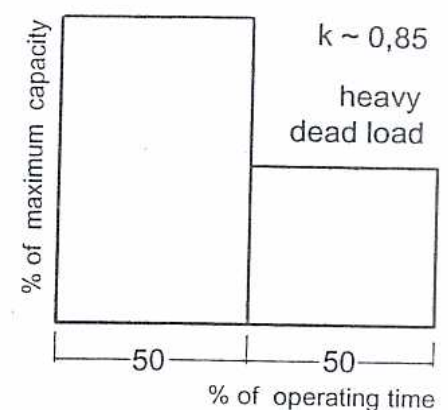
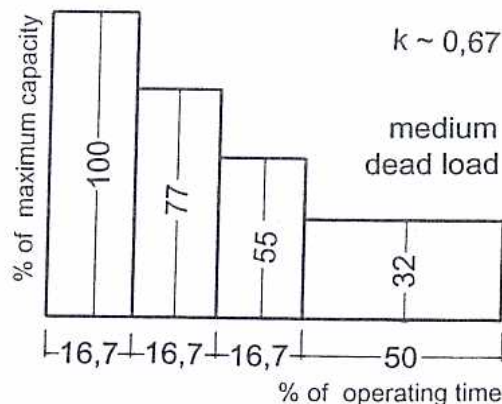
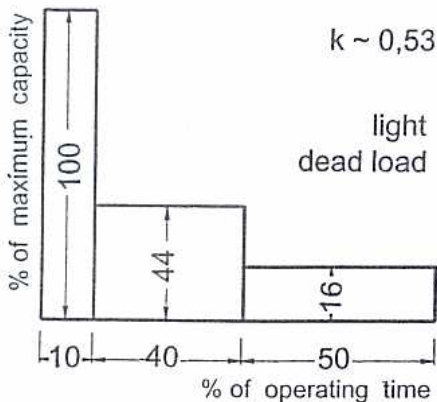
Electric hoists which are seldom required to lift the maximum load and are mainly used to handle lighter part loads

2. medium duty

Electric hoists handling the maximum load as well as mean and light part loads in approximately equal proportions of operating time.

3. heavy duty

Electric hoists handling mainly loads close to capacity.



The **mechanism group** in which the electric hoist selected is to be classed is determined on the basis of the mean operating time/day and the type of duty.

Type of duty	Average operating time per working day in hours						
1. light ($k < 0,53$)	to 2	2-4	4-8	16	over 16	---	
2. medium ($0,53 < k < 0,67$)	to 1	1-2	2-4	4-8	8-16	over 16	
3. heavy ($0,67 < k < 0,85$)	to 0.5	0.5-1	1-2	2-4	4-8	over 8	
Mechanism group to FEM	Ib	Ia	II	III	IV	V	
to HMI	H2	H3		H4		H5	

Further selection criteria:

5. Is sensitive handling of the load necessary? (creep speed)
6. Is the load to be traversed horizontally? (travel motion)