

# DUTY CLASSIFICATION

## TECHNICAL SPECIFICATIONS

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The industry standard that establishes performance requirements for electric chain hoists is referred to as **ASME HST-1**. It covers all electric chain hoist used for vertical lifting service involving material handling of freely suspended (unguided) loads using roller or welded link load chain. It specifies three Hoist Duty Classifications, H2, H3 and H4 depending on the service conditions.

Service conditions have an important influence on the performance of the wearing parts of a hoist, such as gears, bearings, load chain, sprockets, electrical equipment, brake linings, load and lift limiting devices, and wheels. Careful consideration of the hoist duty service classifications described in this article will enable the user to evaluate the application, and to obtain a hoist designed for optimum performance and minimum maintenance. If doubt exists regarding hoist selection, consult the specialists at Vulcan Hoist. Electric chain hoists consists of both mechanical and electrical components and both must be considered when analyzing the service the hoist must perform. The factors that influence the mechanical and electrical performance of any hoist include:

**(a) Load distribution:** the actual distribution or proportion of full and partial loads to be handled by the equipment, including lifting devices, has an important effect on the life of power transmission components. For example, ball-bearing life varies according to the cube of the load. A 2-ton (1814.4-kg) hoist operated at a mean effective load of 1 ton (907.2 kg) will have a ball bearing life eight times that of the same hoist used steadily at its rated load.

As a rule of thumb, the average load distribution should be around 65% of the hoist rated capacity.

**(b) Operational time:** the total running time of the hoist per hour or per work period.

**(c) Work distribution:** whether the operational time is uniformly distributed over the work period or concentrated in a short time span. Work distribution generally does not appreciably affect mechanical wear, but does materially affect the electrical components such as motors, brakes, and contactors. On time should always be established in number of minutes per hour (min/hr).

**(d) Number of starts and stops:** directly affects all electromechanical devices, such as motors, contactors, brakes, and solenoids.

**(e) Repetitive long lowering operations:** such operations generate heat in transmission and control braking mechanisms.

**(f ) Environmental conditions:** Vulcan electric products are designed to operate in ambient temperatures between -20°C and 40°C and in atmospheres reasonably free from dust, moisture, and corrosive fumes unless otherwise specified. In such cases, select the proper available option(s) to ensure optimal durability.

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HOST DUTY CLASS	Typical Areas of Application	Uniformly Distributed Work Periods		Infrequent Work Periods	
		Max. On Time min/hr	Max. No. of Starts/hr	Max. On Time From Cold Start, min	Max. No. of Starts
H2	Light machine shop fabricating, service, and maintenance; loads and utilization randomly distributed; rated loads infrequently handled	7,5 (12,5%)	75	15	100
H3	General machine shop fabricating, assembly, storage, and warehousing; loads and utilization randomly distributed	15 (25%)	150	30	200
H4	High volume handling in steel warehouses, machine shops, fabricating plants and mills, and foundries; manual or automatic cycling operations in heat treating and plating; loads at or near rated load frequently handled	30 (50%)	300	30	300