

1.0 Scope

- 1.1 To define the requirements for 3-phase electric chain hoists.

2.0 Codes and Standards

- 2.1 ASME B30.16 "Overhead Hoists (Underhung)"
2.2 ASME HST-1M "Performance Standard for Electric Chain Hoists"
2.3 FEM 9.682 "Rules for the Design of Serial Lifting Equipment – Selection of Lifting Motors"
2.4 ISO 4301 "Cranes and Lifting Appliance – Classification"
2.5 JIS B 8815 "Electric Chain Hoists"
2.6 IEC 34-5 "Rotating Electrical Machines – Classification of Degrees of Protection Provided by Enclosures of Rotating Electrical Machines (IP Code)"
2.7 IEC 529 "Degrees of Protection Provided by Enclosures (IP Code)"
2.8 NFPA 70 "National Electric Code"

3.0 Design

- 3.1 The electric chain hoists shall be model ER1 as supplied by Harrington Hoists, Inc. The hoists shall be rated 1/8 US Ton through 20 US Ton.
3.2 The electric chain hoists shall meet the specifications and dimensions of EDOC0030, "Technical Information, ER/NER Electric Chain Hoist".
3.3 The electric chain hoists shall meet the design and construction criteria of paragraph 2.1 above.
3.4 The hoists' enclosure ratings shall provide protection against water jets from any direction in accordance with IP55 of paragraph 2.7 above.
3.5 The electric chain hoist shall be equipped with a two-button pendant control station with a rating of IP65 per item 2.7 above. The pendant shall connect to the hoist via a quick disconnect plug/socket assembly and it shall be equipped with integral strain relief.
3.6 The hoists' motor shall be of the totally enclosed fan-cooled squirrel cage induction type. It shall be compatible for 208-230/460 volt 3 phase power at 60 Hertz, and it shall be equipped with thermal overload protection. The motor's insulation shall meet Class B requirements. The hoists' motor shall be rated in accordance with paragraph 2.3 above and shall carry the following ratings:

Single Speed Motor

- Short Time Rating: 60 minutes
Intermittent Rating: 60% ED, 360 starts/hr.

Dual Speed Motor

- Short Time Rating: 40 minutes (30 min. high speed, 10 min. low speed)
Intermittent Rating: 60% ED (40% high speed, 20% low speed), 360 starts/hr (120 high speed, 240 low speed)

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- 3.7 The electric chain hoists shall be classified with a duty rating of H4 per item 2.2 above.
- 3.8 In addition to the duty rating requirement of item 3.7 above, the electric chain hoists shall carry rating classifications in accordance with items 2.3, 2.4, and 2.5 above, as per the following charts.

| Capacity (US Tons) | Product Code | Classification | |
|-----------------------|-----------------|----------------|-----|
| | | JIS/ISO | FEM |
| 1/8 | (N)ER001H | M5 | 2m |
| 1/4 | (N)ER003S | M5 | 2m |
| 1/4 | (N)ER003H | M5 | 2m |
| 1/2 | (N)ER005L | M4 | 1Am |
| 1/2 | (N)ER005S | M5 | 2m |
| 1 | (N)ER010L | M4 | 1Am |
| 1 | NER010M | M4 | 1Am |
| 1 | (N)ER010S | M5 | 2m |
| 1-1/2 | (N)ER015S | M5 | 2m |
| 2 | (N)ER020L | M4 | 1Am |
| 2 | NER020M | M4 | 1Am |

| Capacity (US Tons) | Product Code | Classification | |
|-----------------------|-----------------|----------------|-----|
| | | JIS/ISO | FEM |
| 2 | (N)ER020S | M5 | 2m |
| 2-1/2 | (N)ER025S | M4 | 1Am |
| 3 | NER030C | M4 | 1Am |
| 3 | (N)ER030L | M4 | 1Am |
| 3 | (N)ER030S | M4 | 1Am |
| 5 | (N)ER050L | M4 | 1Am |
| 8 | (N)ER080S | M4 | 1Am |
| 10 | (N)ER100L | M4 | 1Am |
| 10 | (N)ER100S | M4 | 1Am |
| 15 | (N)ER150S | M4 | 1Am |
| 20 | (N)ER200S | M4 | 1Am |

- 3.9 The electric chain hoists shall be equipped with the Pull Rotor type brake. The brake is rated for at least 200% braking capacity, and at least 500,000 brake operations before adjustment.
- 3.10 For ER models, a secondary brake shall be installed in the transmission between the hoists' electric motor and the load sheave. This Weston style mechanical load brake is rated for at least 100% braking capacity. (N)ER does not include this secondary brake.
- 3.11 The electric chain hoists shall be equipped with a friction clutch in the transmission between the hoists' electric motor and the load sheave. The friction clutch shall prevent the motor from turning the load sheave when the load exceeds the friction clutch setting.
- 3.12 The electric chain hoists shall be equipped with a fixed, non-adjustable over-travel limit switch for the Up direction of hoist operation. The limit switch, when activated, shall interrupt the Up control circuit to prevent additional lifting.
- 3.13 The electric chain hoists shall be equipped with case-hardened Grade 80 nickel plated load chain.
- 3.14 The electric chain hoists shall be equipped with hooks that are drop forged from carbon steel, and which are designed for ductile mode failure upon overload. The

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- hooks shall be equipped with spring loaded latch type throat closures. The bottom hook shall be equipped with a thrust ball bearing for 360 degree swivel.
- 3.15 The electric chain hoists shall be equipped with a microprocessor based meter with on-board readout for monitoring the number of starts/stops and total hoist run time.
- 3.16 The electric chain hoists shall employ a transmission comprised of spur and helical gearing operating in an oil bath. The oil compartment shall be equipped with a pressure relief vent plug.
- 3.17 The electric chain hoists shall be equipped with a warning tag per item 2.1 above. The warning tag shall be attached to the pendant cord, it shall be made of durable plastic laminated construction, and it shall give comprehensive information for the safe operation of the hoist.
- 3.18 The electric chain hoists shall have a single fall of load chain for capacities 3 US Tons and below.

4.0 Documentation

- 4.1 Each electric chain hoist shall be supplied with an Owner's Manual that includes the following information.
- a) Important Information and Warnings
 - b) Installation and Operation
 - c) Inspection
 - d) Lubrication, Maintenance and Handling, and Troubleshooting.
- 4.2 Each electric chain hoist shall be supplied with a Parts List.