1.0 Purpose

To define the requirements for 3-phase EQ and 1-phase SEQ electric chain hoists.

2.0 Scope

All EQ/SEQ electric chain hoists with capacities ranging from 1/8 to 1t.

3.0 Codes and Standards

3.1 ASME B30.16 "Overhead Hoists (Underhung)

3.2 ASME HST-1M "Performance Standard for Electric Chain Hoists"

3.3 FEM 9.682 "Rules for the Design of Serial Lifting Equipment – Selection of Lifting Motors"

3.4 ISO 4301 "Cranes and Lifting Appliance – Classification"

3.5 JIS B 8815 "Electric Chain Hoists"

3.6 IEC 34-5 "Rotating Electrical Machines – Classification of Degrees of Protection Provided by Enclosures of Rotating Electrical Machines (IP Code)"

3.7 IEC 529 "Degrees of Protection Provided by Enclosures (IP Code)

3.8 NFPA 70 "National Electric Code"

3.9 UL508 "Industrial Control Equipment"

3.10 UL508A "Industrial Control Panels"

3.11 UL1004 "Rotating Electrical Machines"

3.12 CSA C22.2 No 33-M1984 (R2004) "Construction and Test of Electrical Cranes

3.13 CSA Std. C22.2 No 14-13 - Industrial Control Equipment

3.14 CSA Std. C22.2 No. 66.1-06 (R2011) - Low Voltage Transformer-Part I: General Requirements

3.15 RoHS (Restriction of Hazardous Substances) Compliance

4.0 Design

4.1 The electric chain hoists shall be model EQ/SEQ as supplied by Harrington Hoists, Inc. The hoists shall be rated 1/8 to 1 metric tonne.

4.2 The electric chain hoists shall meet the specifications and dimensions of:

- EDOC1119, "EQ Electric Chain Hoist Model EQ1 - Specifications and Dimensions"
- EDOC1120, "EQM Electric Chain Hoist with Motorized Trolley Models EQ1 and MR2Q – Specifications and Dimensions"
- EDOC1121, "EQG & EQP Electric Chain Hoist with Manual Trolley Models EQ1 and TS2 – Specifications and Dimensions"
- EDOC1122, "SEQ Electric Chain Hoist Model EQP1 - Specifications and Dimensions"

- EDOC1124, "SEQG & SEQP Electric Chain Hoist with Manual Trolley Models EQP1 and TS2 - Specifications and Dimensions"

4.3 The electric chain hoists shall meet the design and construction criteria of paragraph 3.1 above.

4.4 The hoists' enclosure ratings shall provide protection against water jets from any direction in accordance with IP55 of paragraph 3.6 above.

4.5 The electric chain hoist shall be equipped with either a two-button pendant control station with an emergency stop button for hoist only or with manual trolley or a four-button pendant control station with an emergency stop button for hoist and motorized trolley combination. Both pendants will have a rating of IP65 per item 3.7 above. The pendant shall connect to the hoist via a cable holder and have a quick disconnect plug/socket assembly inside the control cover. The pendant shall be equipped with integral strain relief.

4.6 The electric chain hoists shall be certified and listed by CSA to UL(508, 508A, 1004) and CSA C22.2(30, 14-13, 66.1-06) per items 3.9 through 3.14 above.

4.7 The electric chain hoist shall be built without the use of six environmentally harmful materials listed in the RoHS standard per item 3.15 above. In addition, nine other environmentally harmful materials are excluded.

4.8 The electric chain hoists shall be equipped with unique load sheave with 5 pockets as standard. Increased number of pockets reduces chain vibration and increases chain life.

4.9 The electric chain hoist shall be equipped with external pins for suspension, which allow for quick change from one suspension configuration to another.

4.10 The electric chain hoist with trolley mount is configured as perpendicular to the beam. Parallel mount by hook mounting to a suspender is available as an option.

4.11 The electric chain hoists shall be equipped with an engineered fan blade and fan cover design, which provide high air flow for cooling the motor, brake, and braking resistor.

4.12 The hoists' motor shall be of the totally enclosed fan-cooled squirrel cage induction type. The EQ hoist motor shall be compatible for 200-230 or 380-460 volt 3 phase power at 50/60 Hertz, and the SEQ hoist motor shall be compatible for 115/230 volt 1 phase power at 60 Hertz. The hoist shall be equipped with thermal overload protection for the motor. The motor's insulation shall meet Class B requirements. The hoists' motor shall be rated in accordance with paragraph 3.3 above and shall carry the following ratings:

- 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)

4.13 The EQ 3-phase electric chain hoist shall have a nominal operating voltage range of 200-230V or 380-460V. The SEQ 1-phase hoist shall have a nominal operating voltage range of 110-120V or 220-240V. Minimum and maximum

allowable operating voltage shall be defined as ±10% of the nominal operating voltage range in order to compensate for the variations in power supply.

4.14 The electric chain hoists shall be classified with a duty rating of H4 per item 3.4 above.

4.15 In addition to the duty rating requirement of item 3.2 above, the electric chain hoists shall carry rating classifications in accordance with items 3.3, 3.4, and 3.5 above, as per the following charts.

Capacity (US Tons)	Product Code	Classification	
		JIS/ISO	FEM
1/8	(S)EQ001SD	M6	3m
1/4	(S)EQ003SD	M6	3m
1/2	(S)EQ005SD	M6	3m
1	(S)EQ010SD	M5	2m

4.16 The electric chain hoists shall be equipped with a pull rotor brake. The brake is equipped with electrical failsafe design. The hoist brake is under warranty for 5 years.

4.17 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. This mechanism protects the hoist from overwinding. Carbon friction material provides consistent performance over a wide temperature range.

4.18 The electric chain hoists shall be equipped with a variable frequency drive, located under the control cover. The VFD shall have the following features:

- Speed adjustability for high/low speed with a ratio of 6:1.
- A no load high speed feature which allows hoist speed to increase to 130% of high speed (180% for SEQ010SD) when the load is less than 30% of rated capacity.
- Motor overheat protection
- Motor overload protection
- Count hour meter – records and displays the number of lifting/lowering starts and hoist on time.

4.19 The electric chain hoists shall be equipped with fixed, non-adjustable over-travel limit switches for the Up and Down directions of hoist operation. The limit switches, when activated, shall interrupt the control circuit to prevent additional lifting or lowering.

4.20 The electric chain hoists shall be equipped with case-hardened Grade 80 nickel plated DIN load chain.

4.21 The load chain shall have a pitch to diameter ratio of 2.8:1.

4.22 The electric chain hoists shall be equipped with hooks that are drop forged from carbon steel, and are designed for ductile mode failure upon overload. The 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. The electric chain hoists shall be equipped with notched hook and latch system. This system provides positive closing and improves resistance against lateral forces.

4.23 The electric chain hoists shall employ a transmission comprised of spur and helical gearing operating in an oil bath.

4.24 The electric chain hoists shall be equipped with a warning tag per item 3.1 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 in three languages: English, Spanish, and French.

4.25 The electric chain hoists shall have a single fall of load chain.

4.26 The SEQ 1-phase hoist shall be voltage re-connectable between 115 and 230V through a simple one wire change inside of the hoist control box.

4.27 A plastic chain container shall come standard.

4.28 The control voltage shall be 24VDC.

5.0 Documentation

5.1 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.

5.2 Each electric chain hoist shall be supplied with a Parts List.

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