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## GENERAL

All American Crane (ACECO) cranes are manufactured in accordance with current mandatory requirements of the National Safety and Health Act, OSHA Section 1910.179 and 1910.309 as applicable. Additionally, all ACECO cranes are manufactured in accordance with the appropriate standard of ANSI specifications, the National Electric Code, and the Crane Manufacturers Association of America (CMAA) specifications.

## CRANE BRIDGE

Crane girders are computer designed using, ASTM A-36 or ASTM A572 GR50 structural steel beams (reinforced as necessary) or fabricated plate box sections. Bridge girder to end truck connections are designed for loadings, stresses and stability in accordance with current CMAA design specifications. Gusset and wing plate connections utilize high strength A-325 bolts. Critical alignments are assured by means of completely assembling and testing each crane prior to shipment.

The bridge drive arrangement utilizes an A-4 dual drive for positive traction. The gear motor assembly is flange mounted to each end truck with a final guarded open spur gear reduction at the bridge truck wheel. Individual drive units on each truck eliminate the need for cross bridge drive shafting. Cranes with bridge speeds of 120 feet or higher will have a rotating axle with totally enclosed gearing.

## BRIDGE END TRUCKS AND WHEELS

Bridge trucks are constructed of high strength ASTM A500 structural tubing or welded structural shapes forming a rigid box section.

Wheels are double flanged, and manufactured from high strength cast spheroidal (nodular) iron. Nodular iron has the highest damping capacity of all engineered materials. The wheel material has high strength (80,000 PSI tensile) with a hardness of 260-285 BHN. This hardness range will prevent premature rail wear. Steel wheels are also available.

Wheels rotate on fixed axles with (2) bearings, seated against a machined shoulder. Bearings will be single row ball type on 6" and 10" dia. wheels, and shall be sealed without the need for periodic lubrication. 12" & 16" diameter wheels are furnished with precision tapered roller bearings and pressure lubrication fittings. Bearing life will exceed CMAA for Class C 5000 hours and 10,000 hours for Class D. Rotating axle designs are also available and are supplied as standard for top running cranes with bridge speed 120 fpm and higher.

Trucks are provided with rail sweeps and suitable bumpers designed to meet or exceed safety standards.

## HOIST/TROLLEY UNITS

Hoists utilize state of the art technology providing safe, proven and quiet designs meeting CMAA's design standards. Units are designed based on a modular principle to allow easy maintenance access. Hoist/Trolley frames are precision fabricated steel weldments.

An adjustable upper and lower hook elevation limit switch is standard. Additionally, a self tensioning rope cable guide is standard. This feature insures that the hoisting cable tension is maintained during hoisting and lowering, thereby greatly increasing the wire rope life.

Hoist alloy steel gearing is triple reduction helical or spur gearing running in oil bath lubrication. All bearings are anti-friction type. Convenient oil level dip sticks or check ports are provided.

Hoist drums are fabricated from steel tubing with full depth machined grooving supported by large roller bearings.

The hook block is semi-enclosed with the bottom sheave assemblies adequately sized for long rope life. The hook is supported by a thrust bearing allowing 360-degree rotation of lifted loads. Crane hooks are forged steel and are equipped with a spring-loaded safety latch.

Trolley drive consists of 50% of wheels driven via a totally enclosed motor and reducer.

Hoist motors are squirrel cage type with class F insulation. Hoist motors are designed for high performance and feature TEFC construction with cast aluminum housings. The bearings are double-shielded ball type, regreasable without disassembly. The hoist motor brake is an asbestos free self-adjusting AC disc brake or rotor pull type motor brake rated at 150% of full load motor torque. The brake is spring set and electrically released.

## **BRIDGE AND TROLLEY DRIVES**

The travel drive gearcases will be totally enclosed units featuring helical gearing and oil bath lubrication. Gear material consists of SAE 8620 drop forgings, with a finish up to and including AGMA CL12. All gears are heat treated to 58-60 Rockwell C. Gear shafting is fabricated from SAE 1045 steel and supported by anti-friction bearings for optimum load carrying capacity and long service life. Gearcase housings are manufactured from high strength gray cast iron, SAE Class 30, and feature oil fill, level and vent plugs.

Motors are squirrel cage type with class F insulation. Motors have TEFC enclosures, are designed for continuous duty, and meet NEMA design B electrical characteristics. The travel drive motor stator is made from a silicon aluminum alloy to resist corrosion. Bearings are shielded or sealed to prevent grease contamination. Travel motor brakes are DC disc type with asbestos-free lining material. Travel brakes are rated for 50% minimum full load motor torque.

## **ELECTRICAL**

The electrical control panel is custom designed and engineered in accordance with all applicable codes. Panel wiring is labeled to match the wiring diagram, utilizing computer generated "Brady" style markers. Branch circuit protection is provided by fuses or breakers. A manual disconnect switch and mainline contactor, mounted in the electrical enclosure, allows maintenance personnel to shut off the power supply to the crane.

Mainline contactor and reversing starters, where applicable, are modular plug-in style, and designed for rugged reliability and a mechanical life of up to 10 million operations.

The electrical controls are housed in a heavy-duty 14 gauge gasketed steel NEMA 12 gasketed enclosure designed to provide protection from dust, dirt, oil and water. The door is mounted on a continuous hinge and is easily removed by pulling the single hinge pin. A hasp and staple are provided for padlocking.

The pendant pushbutton station is suspended from a steel roller track to allow operator flexibility of movement across the entire bridge length. The station is made from an extremely rugged, double insulated polypropylene. The enclosure is rated NEMA 4, 4X and 5 to IP65. The station is designed for ease of handling with work gloves. The enclosure features a shock resistance value of 100G. A separate strain relief wire supports the station, with the drop cable being type SO with Kellems grips at each end.

A galvanized heavy gage steel track system supports the festooned cable, designed to supply power and control to the trolley hoist. Cables are extra flexible flat cable with bright yellow PVC jacketing. Cable carriers are pressed steel with ball bearing trolley wheels.

Wiring is in accordance with NFPA 70 Article 610. With the exception of festooning wire, conductor bars and leads for motors, limit switches and collectors, all wiring external to an electrical enclosure is placed in rigid galvanized steel conduits where the fittings and junctions are watertight. Short lengths of flexible steel conduit with a watertight covering are used to make connections to control devices, such as limit switches or equipment subject to vibration.

## **PAINTING**

All painted surfaces will receive proper metal preparation and cleaning prior to application of the paint coating system to insure good adhesion. A rust inhibiting prime coat shall be applied followed by a finish coat of industrial enamel.

Finish color will be safety yellow for crane bridge unit and blue for trolley unit, thus providing good trolley positioning contrast.

## **DOCUMENTATION**

Three maintenance and repair manuals will be provided. Manuals will be provided in CD-ROM format at the request of the customer. A recommended spare parts list shall be included in the Operating, Parts & Maintenance Manual.

## **FINAL FACTORY INSPECTION AND RUN TESTING**

All motor, control and drive equipment will be operationally no load, power run tested upon completion of manufacture. Factory run test/check reports are completed to insure manufacturing compliance.

The crane will be completely assembled and squared prior to shipment. The trolley hoist assembly is run the complete length of the bridge in order to assure proper function before the crane leaves the factory.

Upon completion of shop testing, parts that require disassembly are clearly match-marked and tagged.