

## Section 11000 – Equipment (or 14600 – Hoists and Cranes)

### Part 1 – General

- 1.1 Experience: manufacturer shall have a minimum of 5 years experience producing substantially similar equipment.
- 1.2 Quality Assurance: manufacturer shall be registered ISO 9001:2000 compliant with an independent certification agency approved by the International Organization for Standardization.

### Part 2 – Products

#### 2.1 Davit Crane

- 2.1.1 Manufacturer: davit crane shall be as manufactured by Thern, Inc., Series 5124.
- 2.1.2 Design Factor: designed with an ultimate design factor greater than 3:1 for all components including the lifting winch and base.
- 2.1.3 Lift Capacity: davit crane shall have a variable lift capacity based on boom length, to vary between 2000 pounds lift capacity with the boom in the shortest length, and 1000 pounds with the boom fully extended.
- 2.1.4 Hook Reach: boom shall telescope up to 4 different lengths allowing a maximum hook reach of at least 81 inches measured from mast center to hook center.
- 2.1.5 Hook Height: hook height shall be adjustable by moving the boom up or down between 5 degrees above horizontal and 45 degrees from vertical, with a minimum of 48 inches between the lowest position and the highest position with the boom fully extended.
- 2.1.6 Boom Angle: boom angle shall be adjustable at all times, including when under full rated load, with a hand operated screw jack acting to raise or lower the boom between 5 degrees above horizontal and 45 degrees from vertical.
- 2.1.7 Boom Sheave: wire rope shall pass over a sheave at the end of the boom. Sheave shall have a bronze bearing.
- 2.1.8 Clearance: minimum height of the boom shall be 36 inches between mounting surface and the underside of the boom in all base configurations.
- 2.1.9 Rotation: mast and boom shall rotate 360 degrees in the base on pin bearing and bearing sleeve, with a rotational handle attached to mast to facilitate rotation.
- 2.1.10 Fastening Pins: crane components shall be fastened together using stainless steel clevis style pins, secured with lynch pins with lanyards fastening the lynch pins to primary structural components.
- 2.1.11 Portability: davit crane shall break down into portable components with no single component weighing more than 100 pounds. Carrying handles shall be welded to mast and boom.
- 2.1.12 Winch Location: lifting winches shall be located such that the center point of the drive shaft is behind the centerline of the mast.
- 2.1.13 Nametag: davit crane shall be labeled with a non-corrosive metal identification plate labeled or imprinted with the manufacturer's name, model number, serial number, capacity rating, and other essential information.

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### 2.2 Crane Base

- 2.2.1 Manufacturer: crane base shall be as manufactured by Thern, Inc., Series 524.
- 2.2.2 Interface: crane base shall allow for removal of the mast.
- 2.2.3 Bearings: crane base shall have a pin bearing to support the end of the mast and a Nyloil MDX bearing sleeve to support the mast at the top of the base.

#### **FOR 524R WHEEL BASE**

- 2.2.4 Leg Width: wheel base width shall be adjustable with a maximum 35 inch outside width with the legs in, and a minimum 40 inch inside width with the legs out.
- 2.2.5 Leg Length: legs shall telescope to 4 different lengths.
- 2.2.6 Non-Rotation: bolt through base shall secure mast and prevent rotation.
- 2.2.7 Wheels: wheel base shall have spark resistant 6 inch diameter wheels in front and 4 inch diameter caster wheels in the rear.

### 2.3 Crane and Base Finish

#### **FOR STANDARD MODELS**

- 2.3.1 Material: crane boom, mast and base shall be fabricated from steel meeting ASTM standards.
- 2.3.2 Finish: crane boom, mast and base shall have a corrosion resistant finish.

#### **FOR GALVANIZED MODELS ENDING WITH GAL**

- 2.3.1 Material: crane boom, mast and base shall be fabricated from steel meeting ASTM standards.
- 2.3.2 Finish: crane boom, mast and base shall be hot-dipped galvanized.

#### **FOR STAINLESS STEEL MODELS ENDING WITH SS**

- 2.3.1 Material: crane boom, mast and base shall be fabricated from AISI 304/304L stainless steel minimum, with electro-polish finish. Screw-jack with galvanized finish.

### 2.4 Lifting Winch

#### **FOR M4312PB-K OR CRANE MODELS ENDING IN M1**

- 2.4.1 Lifting Winch: winch shall have machine cut gears, an adjustable handle that mounts securely to the drive shaft, bronze and radial ball bearings, and a positive load holding Weston style brake able to stop and hold the load automatically if the winch handle is released.
- 2.4.2 Cable Anchor: lifting winch shall include the Thern Quick Disconnect feature allowing quick attachment and detachment of wire rope equipped with a swaged ball anchor.
- 2.4.3 Finish: lifting winch shall have a zinc and iridescent dichromate plated corrosion resistant finish.

#### **FOR M4312PBSS-K OR CRANE MODELS ENDING IN M3**

- 2.4.1 Lifting Winch: winch shall have machine cut gears, an adjustable handle that mounts securely to the drive shaft, bronze and radial ball bearings, stainless steel

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- fasteners, and a positive load holding Weston style brake able to stop and hold the load automatically if the winch handle is released.
- 2.4.2 Cable Anchor: lifting winch shall include the Thern Quick Disconnect feature allowing quick attachment and detachment of wire rope equipped with a swaged ball anchor.
  - 2.4.3 Material: lifting winch shall be fabricated from type 304/17-4 stainless steel minimum, with electro-polish finish.

### **FOR 4WM2-K OR CRANE MODELS ENDING IN M2**

- 2.4.1 Lifting Winch: winch shall have machine cut worm gears operating in an enclosed oil bath, cast aluminum gear case and drum construction, an adjustable handle that mounts securely to the drive shaft for manual operation, bronze and radial ball bearings, pressure plate, and a positive load holding mechanical brake able to stop and hold the load automatically if the winch handle is released.
- 2.4.2 Cable Anchor: lifting winch shall include the Thern Quick Disconnect feature allowing quick attachment and detachment of wire rope equipped with a swaged ball anchor.
- 2.4.3 Drill Operation: lifting winch shall be equipped with a hex drive input to allow drill drive operation with a maximum rated drill speed of 400 rpm.

### **FOR 4WP2-K OR 4777-K FOR CRANE MODELS ENDING IN E2 OR E4**

- 2.4.1 Lifting Winch: winch shall have machine cut worm gearing operating in an enclosed oil bath, cast aluminum gear case construction, bronze and radial ball bearings, pressure plate, and a positive load holding mechanical brake able to stop and hold the load automatically if winch operation is halted.
- 2.4.2 Motor: motor shall be totally enclosed non-ventilated, or fan cooled, with anti-friction bearings and Class B insulation minimum. Motor shall be reversible with torque characteristics suitable for the hoist service and capable of operating at specified loads, with a NEMA 4 pendant control on a minimum 6 foot control cord. Motor at rated frequency shall be capable of operating within 10% of rated motor voltage.
- 2.4.3 Cable Anchor: lifting winch shall include the Thern Quick Disconnect feature allowing quick attachment and detachment of wire rope equipped with a swaged end fitting.

## **2.5 Wire Rope**

- 2.5.1 Wire Rope: wire rope construction shall be 7 x 19 type 304 stainless steel cable.
- 2.5.2 Hooks: latch type hooks shall be used and shall be either non-rotating eye type or swivel type to allow 360 degree rotation under all load conditions. Hooks shall be heat treated drop forged type 304/316 stainless steel.