

# ***Specifications***

## ***Model 1070***



**General Requirements:**

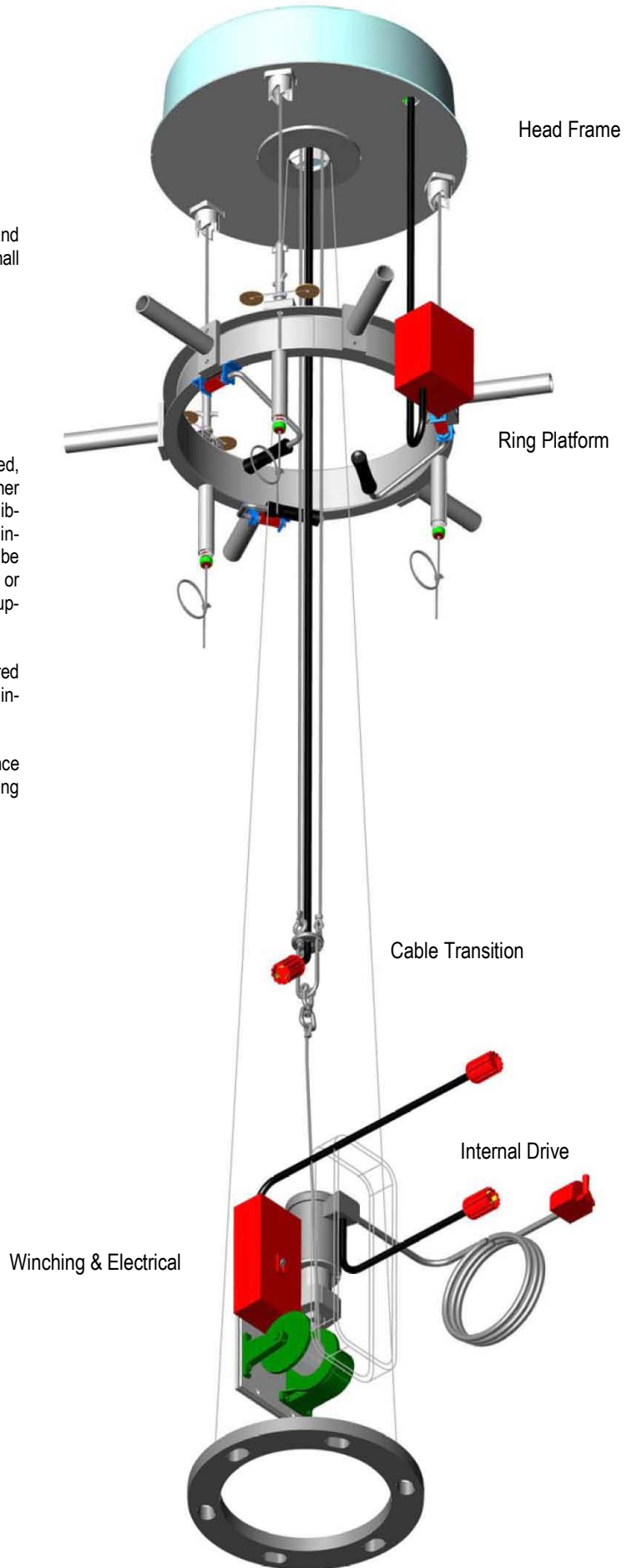
The raising and lowering system shall be a top latching device and provide a factory incorporated internal drive unit. The system shall consist of five main sub assemblies.

- Head Frame
- Ring Platform
- Winching & Electrical
- Cable Transition
- Internal Drive Unit

The comprehensive unit shall be entirely manufactured, assembled, and warranted by a single manufacturer. Any sub-assembly either manufactured or otherwise assembled on an OEM basis will be prohibited. Product submittals and/or cut-sheets shall be detailed and include comprehensive bill of material requirements. All welding will be performed by certified AWS welders. All galvanizing shall meet or exceed the requirements of ASTM A123. All hardware shall be supplied as stainless steel.

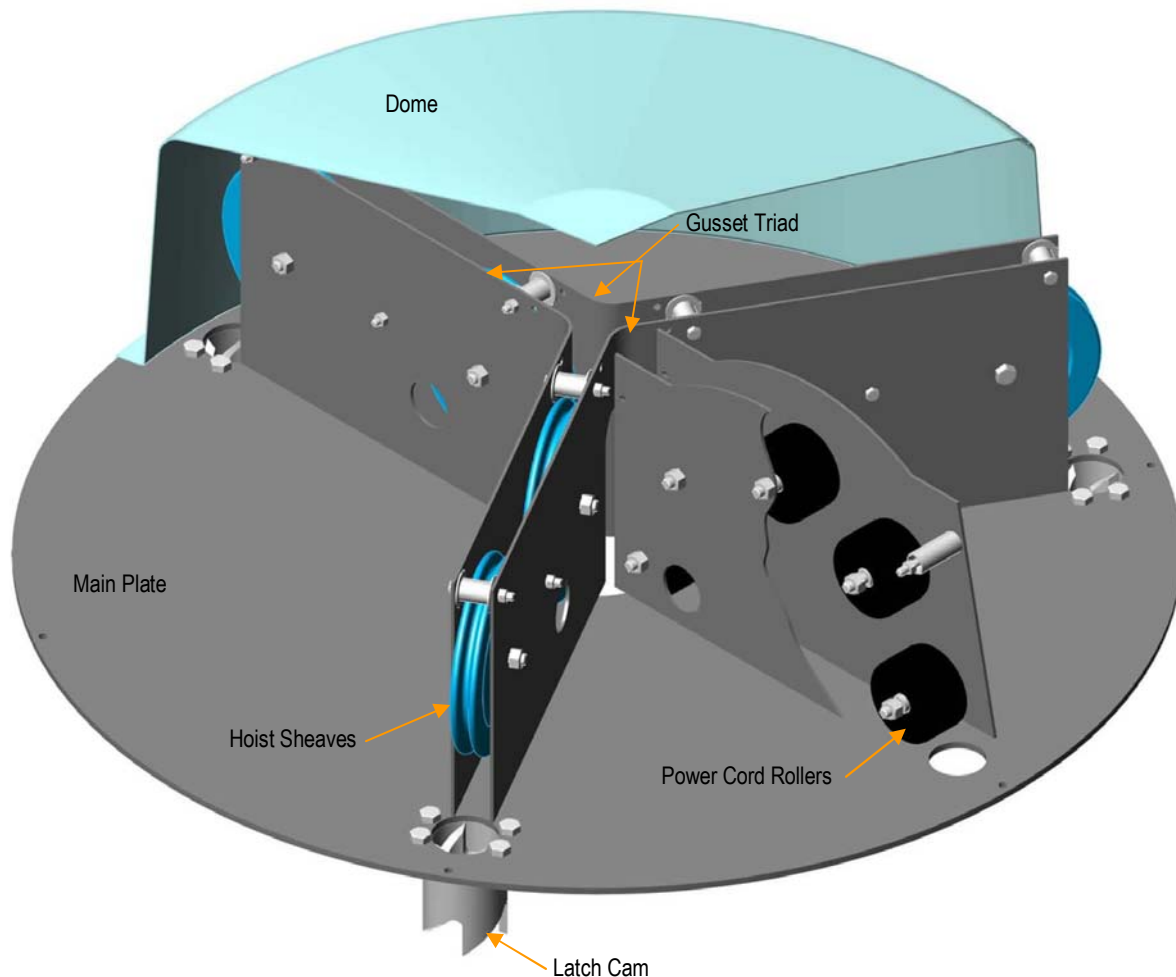
Supporting pole structure designs shall be certified by a registered professional engineer for the State in which the product will be installed.

The system manufacturer shall have a minimum of 5 years experience in the design, development, manufacture, and installation of raising and lowering devices.



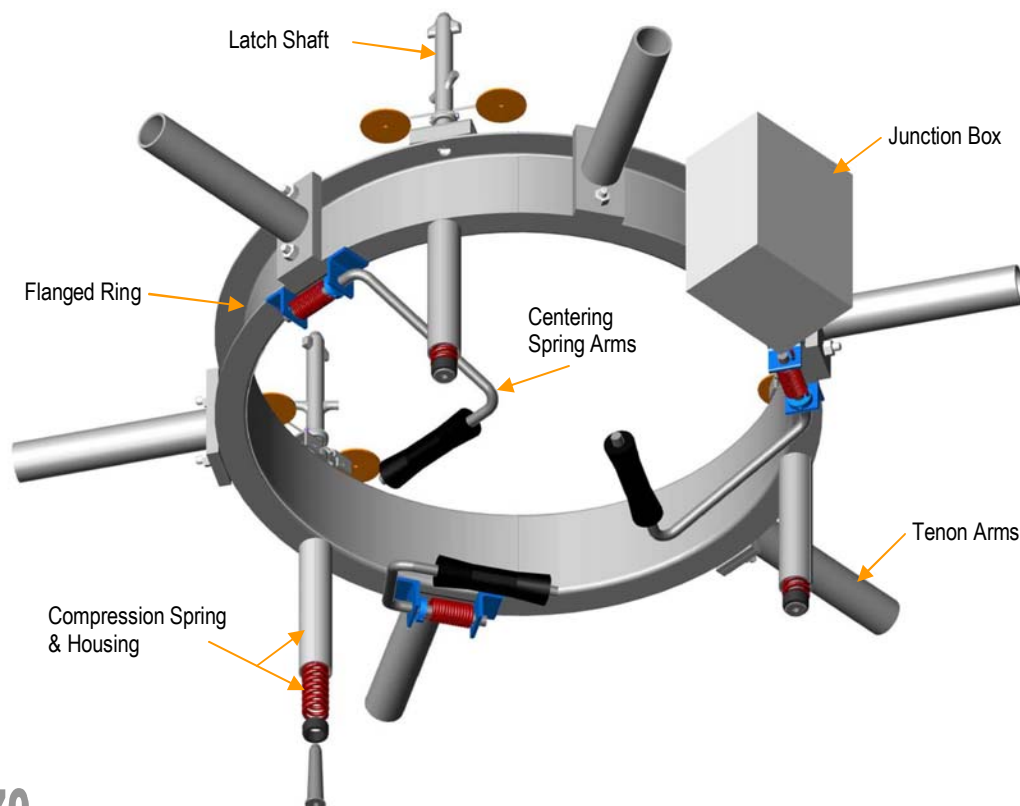
## 1.0 Head Frame:

- 1.01 The head frame shall consist of a minimum ¼" thick ASTM A36 main plate and minimum 11-gauge (.1196") gusset supports for the hoist and power cord sheaves. All plates will be laser cut to insure dimensional position and quality. The hoist sheave gussets shall be manufactured from a maximum 3 pieces that will form a rigid triad supporting system.
- 1.02 After welding the head-frame main plate and gusset pieces into place the entire unit shall be hot dipped galvanized in accordance with ASTM A123 specifications. No additional cutting, drilling, or otherwise machining of the head frame will be allowed after galvanizing to insure the highest quality protective coating.
- 1.03 The head frame shall include a minimum of six aluminum hoist sheaves. Each sheave shall be a minimum 6.875-inch outside diameter and minimum working diameter of 6-inch. The sheave and cable combination shall either meet or exceed the requirements of the Wire Rope Technical Board. Each sheave shall have a precision groove to properly mate the wire hoisting rope. Each sheave shall have oil impregnated, pressed-in sintered bronze bushings.
- 1.03 The wire rope hoist cables that operate over the 6-inch sheaves shall be 7 x 19 construction stainless steel aircraft cable. The cables shall be manufactured to the United States Department of Defense Military Specification MIL-DTL-83420M and Federal Specification RR-W-410e.
- 1.04 The head frame shall incorporate a power cord roller assembly consisting of a minimum five non conductive PVC rollers placed on a minimum 7.5-inch bend radius arc for the cord to travel. Each sheave shall be a minimum 3" diameter. Each roller shall have oil impregnated, pressed-in sintered bronze bushings. The design shall incorporate two roller pins (a.k.a. keeper pins) to insure the cord remains tracked over the arc during operation.
- 1.05 Three one-piece latch cams (i.e. barrels) manufactured as an investment casting and made from 316 stainless steel shall be installed on the underside of the head frame assembly. Each latch cam shall be designed to hold the entire weight of the ring and luminaires with a minimum safety factor of 10. The latch cams shall be designed to mechanically operate and mate with an opposing latch shaft also manufactured from a one-piece investment casting of the same material. Dissimilar materials between the latch cam and latch shaft will be prohibited. The latch cam shall support the ring in a top-latched position, unloading the transition assembly, wire rope cables, and the winch when the device is not in operation.
- 1.06 The entire top section of the head frame assembly shall be enclosed with an aluminum dome shaped cover. The cover will be manufactured from non corrosive aluminum. The entire circumference of the cover shall rest equally over the surface of the head frame and be attached by means of stainless steel hardware.
- 1.07 Installation of the head frame will be through four ½" stainless steel connecting bolts. The head frame plate will be concentrically slotted to allow for rotational adjustment of the device in the field during installation.



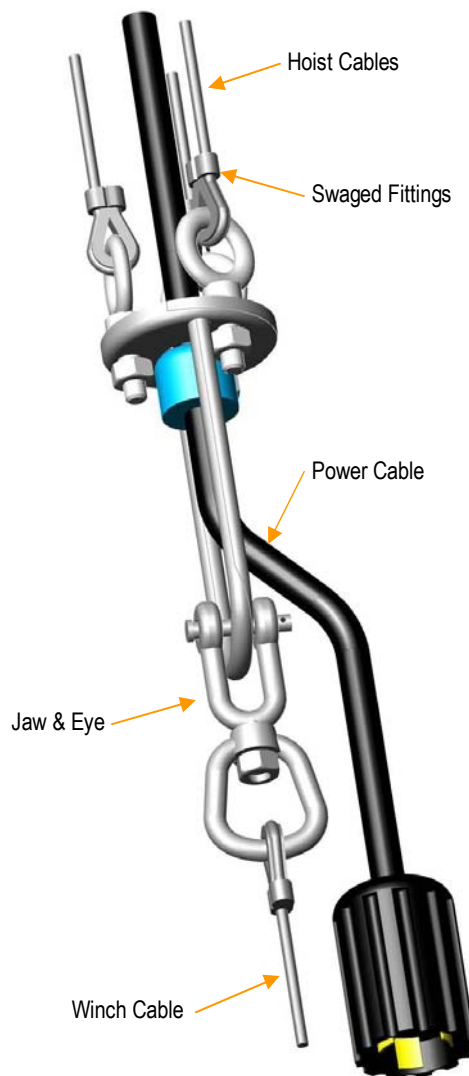
## 2.0 Ring Platform:

- 2.01 The flanged ring shall be roll form manufactured from #7 gauge steel meeting the requirements of ASTM A1010 specifications. The ring shall include one weld seam that shall be ground flush with the parent material. The channel between flanges shall be a minimum of 6-inch and each of the flanged ends will be minimum 2-inches in length.
- 2.02 The ring shall have arm simplex plates welded to the outside flanges of the ring. The number of simplex plates will be respective to the number and orientation of the fixtures required for lighting. A mating simplex plate and luminaire tenon arm will be provided for each fixture location. The tenon arms will be fabricated from a minimum 2" schedule 40 pipe (2.375" OD) meeting ASTM A53 specifications. The arm length may vary depending upon the quantity of fixtures required and their respective orientation to one another. The arms will be shipped as a separate component for assembly in the field.
- 2.03 Each ring will come installed with a tool-less entry factory pre-wired junction box. The box shall be manufactured from aluminum and meet NEMA 3R specifications. Inside the box the factory will pre-install din rail and combination power distribution/terminal block. The combination block will be factory pre-wired for the respective fixture requirements. The distribution/terminal block shall have separated input and output locations. The entire block shall be inclusive of a transparent safety screen.
- 2.04 The factory shall preinstall fixture cable to the proper input and output sections of the distribution/terminal block. The main power cable will meet or exceed SEOOW specifications and will be sized (conductor and length) in accordance with the incoming primary load, respective fixture loads and overall structure height. The fixture cables shall be 16/3 SEOOW. Each fixture cable shall be cut to length and be capable of wrapping the ring to a desired tenon arm and fixture head.
- 2.05 The factory will preinstall at the factory a male twist lock connector and cable stop to one end of the main power cable. The other end will be installed into the junction box in the field via a weatherproof strain relief grip that the factory will have pre-installed onto the junction box.
- 2.06 The back panel of the box will be provided with exit points for the luminaire cables. Gasket sheeting will ensure a weatherproof transition as the fixture cables exits the J-box and is strung around the ring to its desired fixture destination.
- 2.07 Mounted to one side of the junction box will be a factory installed weatherproof test inlet. This inlet will allow fixture testing at the ground level during maintenance visits.
- 2.08 On the top flange of the ring three one-piece latch shafts manufactured as an investment casting and made from 316 stainless steel will be factory installed. Each latch shaft shall be a mating unit to the latch cam barrels located on the underside of the head frame.
- 2.09 On the bottom side of the ring platform three aluminum compression spring housing tubes will be mounted. Each housing will be a minimum of 9-inches in length to accept a minimum 10-inch compression spring.
- 2.10 The factory will supply three zinc plated compression springs, strandvises, and hardware to be field installed. Each compression spring shall be a minimum of 10-inches in length and during operation are captured within the compression spring housing on the ring. The compression spring and housing mechanism will allow the ring to self level during the latching operation and provide stability for each spring to uniformly compress without vertical distortion.
- 2.11 The ring assembly shall include a self centering spring arm mechanism. The arms will "work" in a motion parallel to the vertical pole structure. The spring arms, springs, support brackets and hardware shall all be manufactured from stainless steel materials. Each arm will have a non marking roller with a minimum length of 6-inches. The spring mechanism for each arm will keep the ring centered in relation to the pole structure and restrict the ring from bumping the structure during operation.
- 2.12 Each latching shaft shall include a pre-installed flagging system. Flags shall include two high intensity red reflectors that will alert operators when the system is latched (visible) or unlatched (hidden) from view.



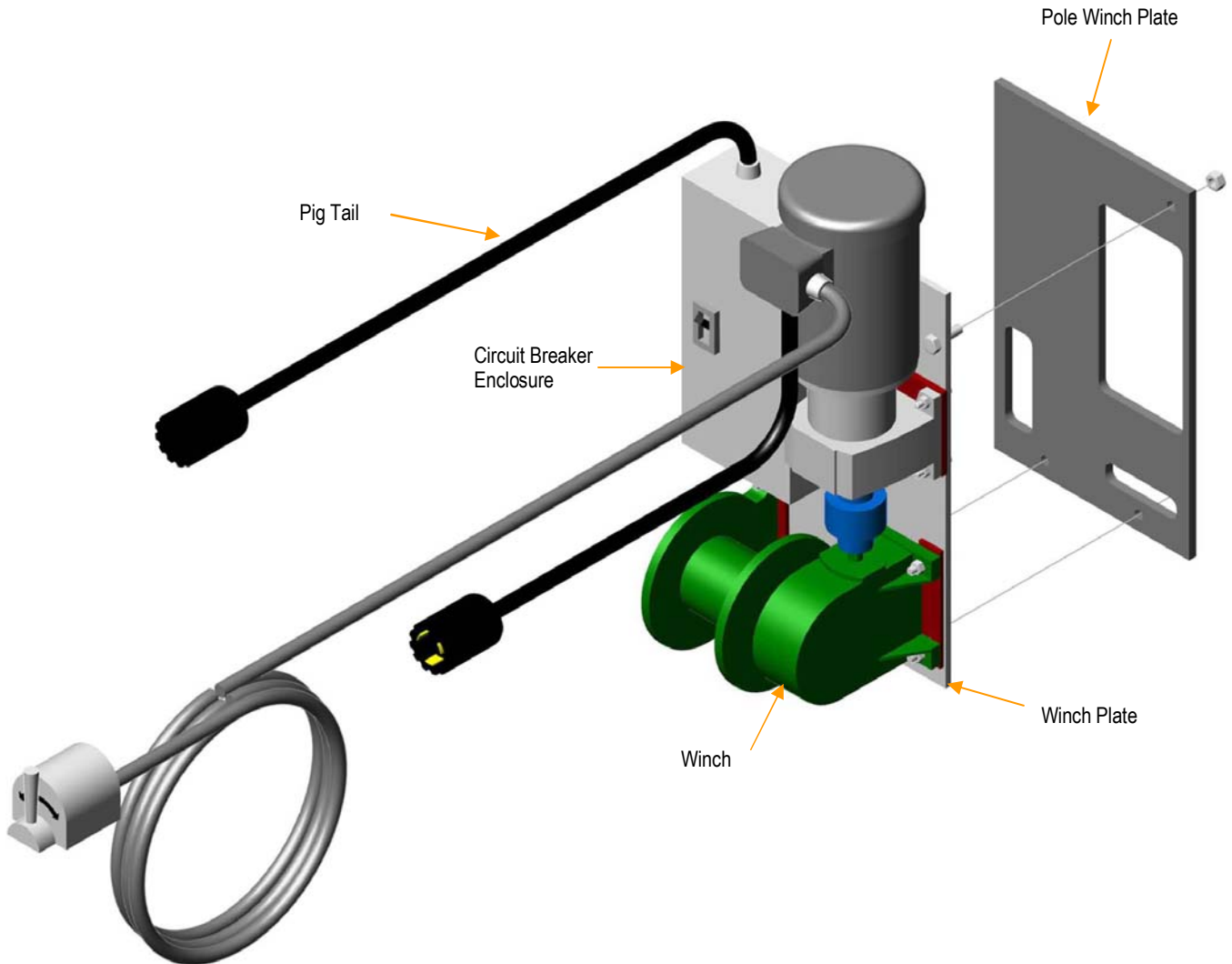
### 3.0 Cable Transition:

- 3.01 The cable transition assembly shall be designed to support two main functions. It will provide a connection point between the three hoist cables and the single winch cable. And it will provide a means to center the main power cord in the structure during operation.
- 3.02 The transition assembly will consist of a plate and U-bolt that are welded together at the factory. The U-bolt section of the assembly will be a minimum of 8-inches in length to assure a smooth sweep and free rotation of the power cable through the transition. After fabrication the entire unit will be hot dip galvanized in accordance with ASTM A123 specifications.
- 3.03 The hoist and winch wire rope cables shall be terminated with properly sized wire rope thimbles, factory and swaged fittings.
- 3.04 The hoist cables shall attach to the transition assembly and be aligned via respective eye bolts. The winch cable shall be attached to the transition assembly via a jaw-and-eye mechanism that will allow for limited rotation of the cable during operation.



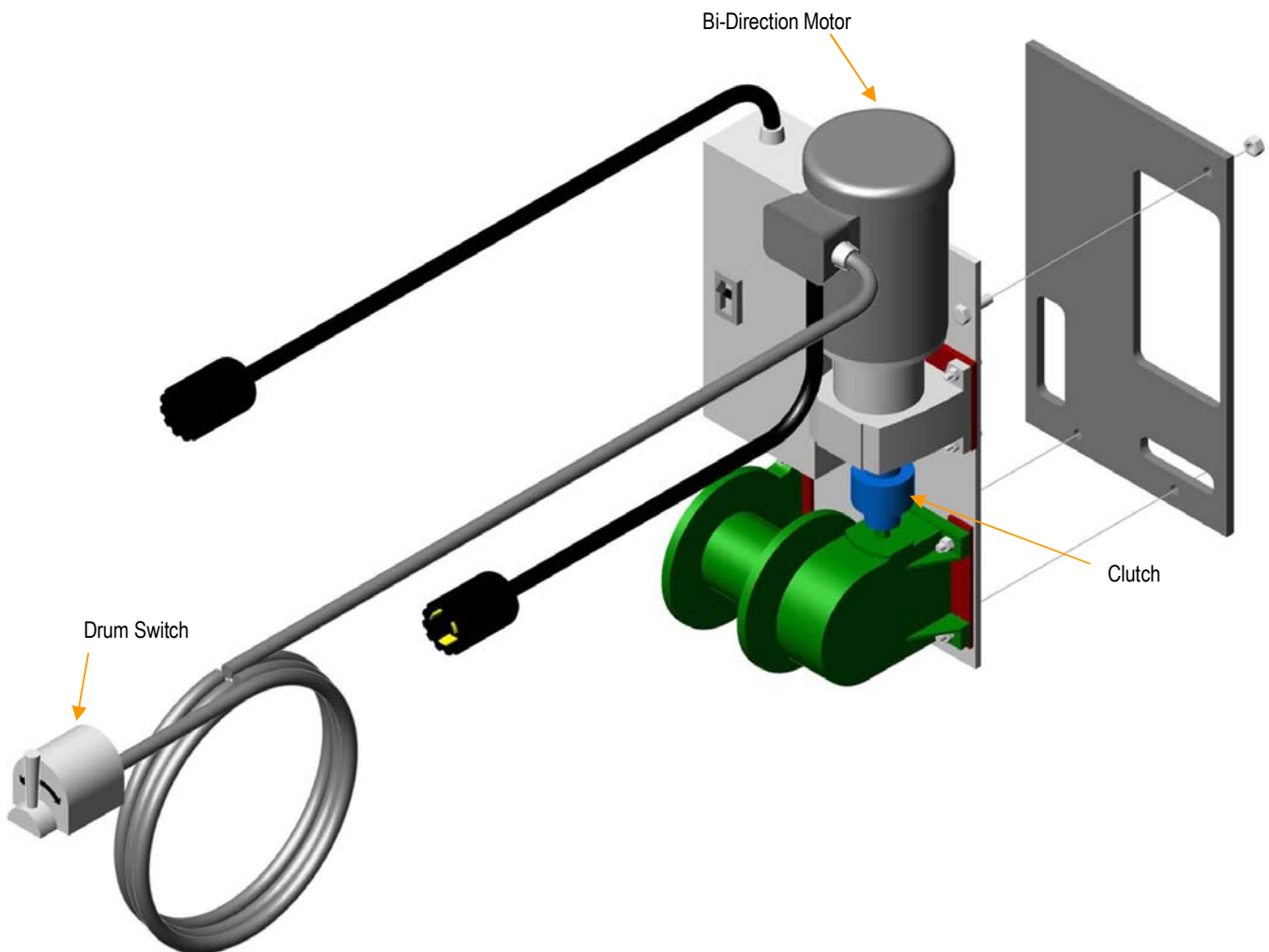
#### 4.0 Winching & Electrical:

- 4.0 The winching and electrical assembly shall consist of a steel plate where the winch mechanism, reduction gear, breaker box, and drive unit will be factory mounted as a single component for direct installation to the corresponding winch plate inside the pole structure.
- 4.01 The winch mechanism shall be an enclosed oil bath 30:1 reduction worm geared system set with an internal drag brake to prevent “free-spooling”. The winch housing, drum, and outboard support arms shall be manufactured from cast ductile iron.
- 4.02 The winch shall have a minimum ultimate output torque limit of 15,000 in/lbs, and ultimate overhung load limit of 7,500 lbs. During operation the actual working capacity limit of the winch shall not exceed 5:1 for either the output torque or overhung load (i.e. 3,000 in/lbs and 1,500 lbs respectively).
- 4.03 The drum of the winch shall be factory pre-spooled with the appropriate sized diameter 7x19 stainless steel winch cable for the application. The cable length will equal the total of the operating length for the structure plus any additional length as required to provide for one complete wrap on the spool. The pre-wrapped first layer will be used as an additional means to properly guide the cable back to the drum during operation. The flanged end of each drum will include an anti-stacking bead that will reverse the wrapping or spooling direction of the cable.
- 4.04 The circuit breaker enclosure shall be aluminum and house the circuit breaker and grounding lug. If the system is designed for multiple circuits the enclosure will include the respective number of circuit breakers. Each circuit breaker will be appropriately sized for the incoming primary load and then the proper amp, volt, and phasing for the fixture load.
- 4.05 From the breaker enclosure the factory shall pre-wire a 10-foot electrical cord (a.k.a. pig tail). One end shall be terminated inside the circuit breaker enclosure. It will pass through a weather proof CVG connector in the top of the box and be terminated at the other end with a female connector. The cord and plug will be of the same size as the main power cord.
- 4.06 The winch plate shall include a receiver hitch that will accept a portable drive motor. The hitch shall properly align the drill motor to the input shaft of the winch. Once connected the hitch shall be of sufficient size to support the portable drive motor assembly and properly transfer the motor torque to the winch assembly.



## 5.0 Internal Drive Unit:

- 5.01 The internal drive unit shall consist of an electric motor, gear reducer, bi-directional clutch, drum switch, and optional step down transformer (over 240-volts). The factory shall pre-assemble these components onto the winch and electrical assembly mounting plate prior to shipment.
- 5.02 The motor shall be 1.5 HP and have reversing capability. The motor shall be factory pre-wired to operate at either 240, 208, or 120 volts as dependent to the incoming primary. The motor shall include an internal limit capacitor that will shut the operation down should an overload occur.
- 5.03 If the incoming primary load is greater than 240 volts, then the factory will preinstall a transformer directly to the winch and electrical assembly. The transformer will convert the higher voltage to either 240, 208, or 120 volts for safe operation of the motor.
- 5.04 Between the motor and the clutch the factory shall pre-install an 8:1 gear reducer.
- 5.05 The clutch shall be preset at the factory. The clutch shall not be adjustable by maintenance personnel. Only factory personnel will be able and qualified to adjust the clutch settings. The clutch shall be capable of overload bi-directional activation. The clutch shall be capable of bi-directionally resetting itself without operator manipulation (i.e. automatic reset).
- 5.06 The motor shall come from the factory with a 25-foot cord and applicable drum switch for bi-directional operation of the motor.





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