



TRUCK MOUNTED CRANES

ET18KX

INSTALLATION & OWNER'S MANUAL

Sold and Serviced by:

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MFG., INC.
CINCINNATI, OHIO

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7-29-03
SUPERCEDES
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-
21300

SECTION 100

DESCRIPTION

&

SPECIFICATIONS

SPECIFICATIONS AND OPERATING FEATURES

ET18KX-8/16

SPECIFICATIONS

12 VOLT BATTERY OPERATED

18,000 FT-LBS OVERTURNING MOMENT (Or as limited by truck stability)

MOMENT OVERLOAD SYSTEM

TELESCOPIC BOOM	8 / 16
BOOM HYD ELEVATION	-8° TO 75°
BOOM HYD EXT	8 - 12 FT OR 12 - 16 FT
BOOM MANUAL EXT	4 FT
CAPACITY	1125 LBS @ 16 FT REACH
	4500 LBS @ 3 TO 4 FT REACH
WIRE ROPE	5/16" DIA x 80 FT
PENDANT CORD LENGTH	25 FT

WINCH - 2250 LBS SINGLE LINE CAPACITY
With Automatic Load Brake

ELECTRIC HYDRAULIC BOOM ELEVATION

ELECTRIC HYDRAULIC BOOM EXTENSION & RETRACTION - 4 FT STROKE

CONTINUOUS POWER ROTATION

REMOTE CONTROL PENDANT

25 ft Straight Cord with Four Environmentally Sealed Toggle Switches Protected by a Guard

MASTER DISCONNECT SWITCH

OUTRIGGERS AVAILABLE

Side Bracket Type Outriggers

Fold Away Type Outriggers

Pullout Type Outrigger System



MFG., INC.
CINCINNATI, OHIO

TITLE
INSTALLATION DWG

ET18KX-8/16

DATE
7-29-03

SUPERCEDES
-

SECTION
C120

21301

OVERLOAD SENSING SYSTEM

This crane is equipped with an Overload Sensing System. If the capacity of the crane is exceeded, the "Winch Up", "Boom Down", and "Boom Out" functions will be shut down. The "Winch Down", "Boom Up", and "Boom In" functions will continue to operate and can be used to relieve the overload condition. The "Rotation" function also will continue to operate.

CONTROL PRIORITY SYSTEM

The design intent of the electrical and hydraulic system is such that some functions can be operated simultaneously, while others are meant to be operated individually. To summarize the control system see the explanations below.

- Winch up takes priority over all functions.
- Winch Down can be operated with any other single function.
- Hydraulic functions (Rotation Right, Rotation Left, Boom Up, Boom Down, Boom Out and Boom In) are designed to function one at a time.

CABLE DRUM AND SHEAVE DIAMETERS

The drum on the ET18KX is 5-1/4" in diameter which is 18 times the 5/16" wire rope diameter as required by ANSI B30.15 Hydraulic Crane Standards. The cable sheaves are either 16 or 18 times the cable diameter which likewise conforms.

MISCELLANEOUS

A. CAPACITY INDICATOR

Select boom reach and angle allowable for load by using capacity indicator arrow and chart on either side of boom.

B. BATTERY HOOKUP

A parallel auxiliary battery should be installed near the crane as shown on Dwg. I24600 under "RECOMMENDED INSTALLATION". The parallel auxiliary battery minimum rating should be 450 Cold Cranking Amps (at 0° F) and 100 reserve capacity, or 78 plates and 70 amp hours.



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CINCINNATI, OHIO

TITLE
INSTALLATION DWG

ET18KX-8/16

DATE
7-29-03

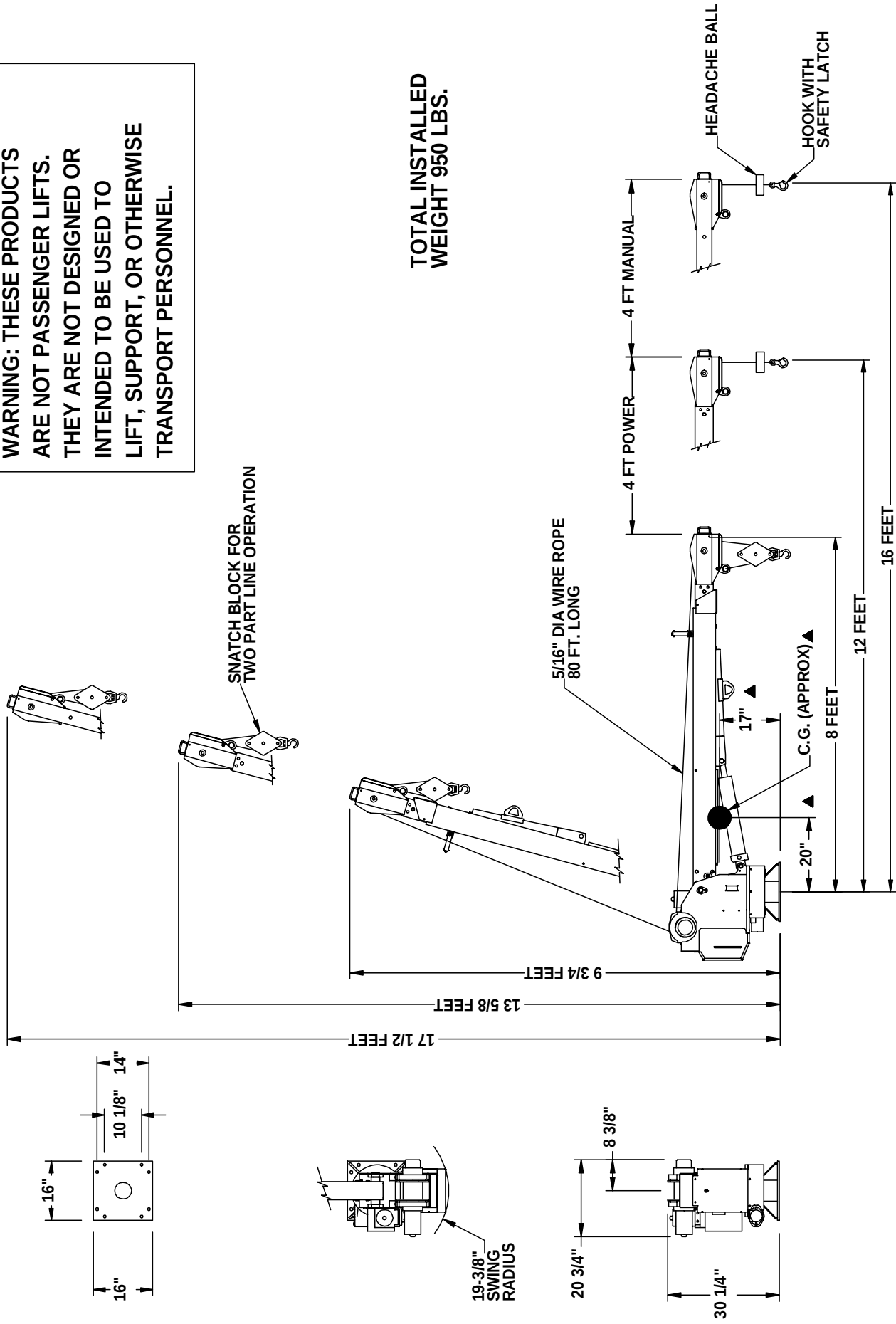
SUPERCEDES
-

SECTION
C120

21302

WARNING: THESE PRODUCTS ARE NOT PASSENGER LIFTS. THEY ARE NOT DESIGNED OR INTENDED TO BE USED TO LIFT, SUPPORT, OR OTHERWISE TRANSPORT PERSONNEL.

TOTAL INSTALLED WEIGHT 950 LBS.



TITLE

INSTALLATION DRAWING

ET/HT18K(X) - 8/12/16 BOOM

SECTION

3-30-04A

SUPERSEDES

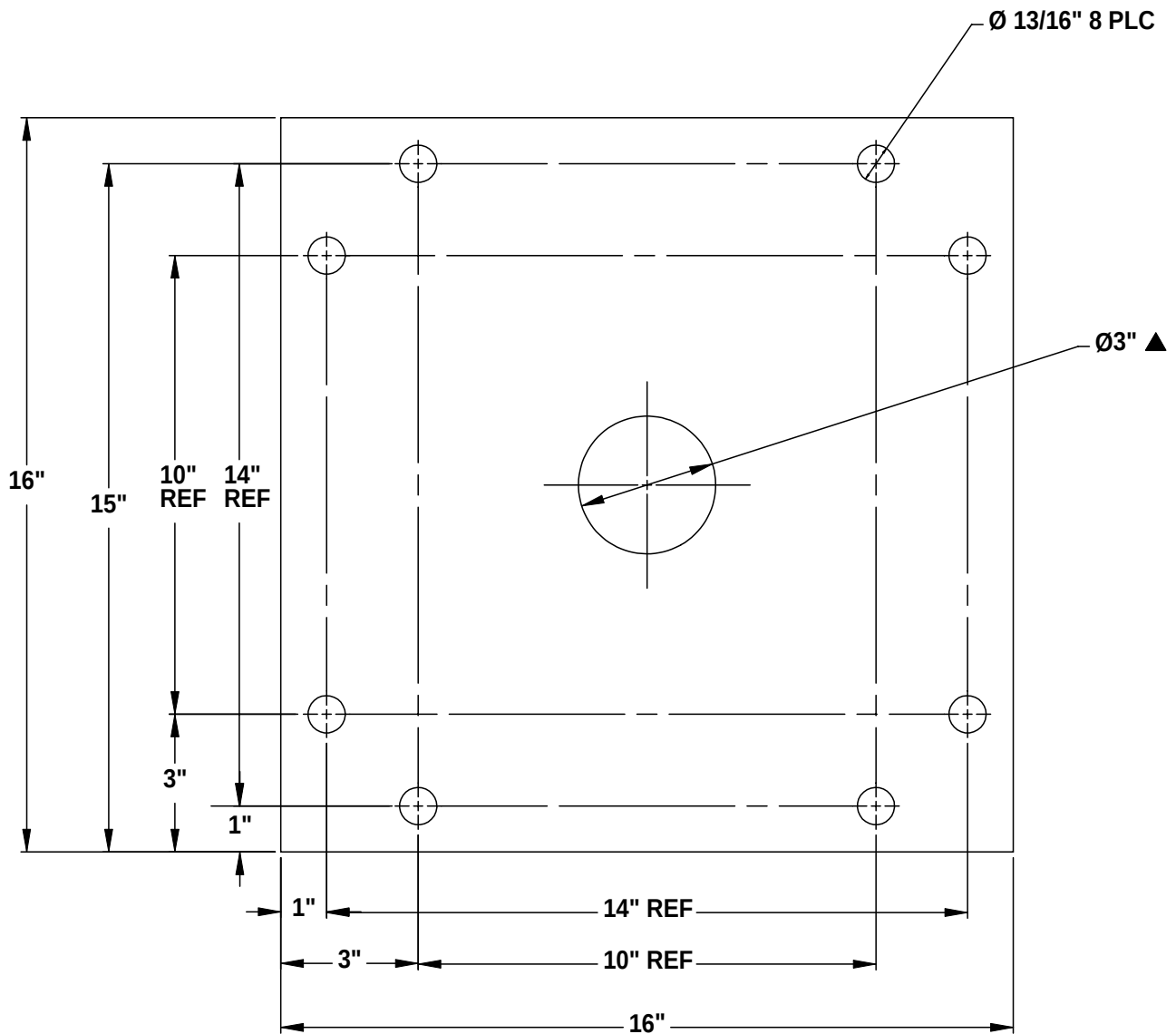
7-1-03

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CINCINNATI, OHIO

VENTURO

21304

▲ ET/HT18K(X) & ET/HT25K(X) BASE MOUNTING DIMENSION



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CINCINNATI, OHIO ▲

TITLE

BASE MOUNTING DIM

DATE

7-29-03B

SECTION

C200

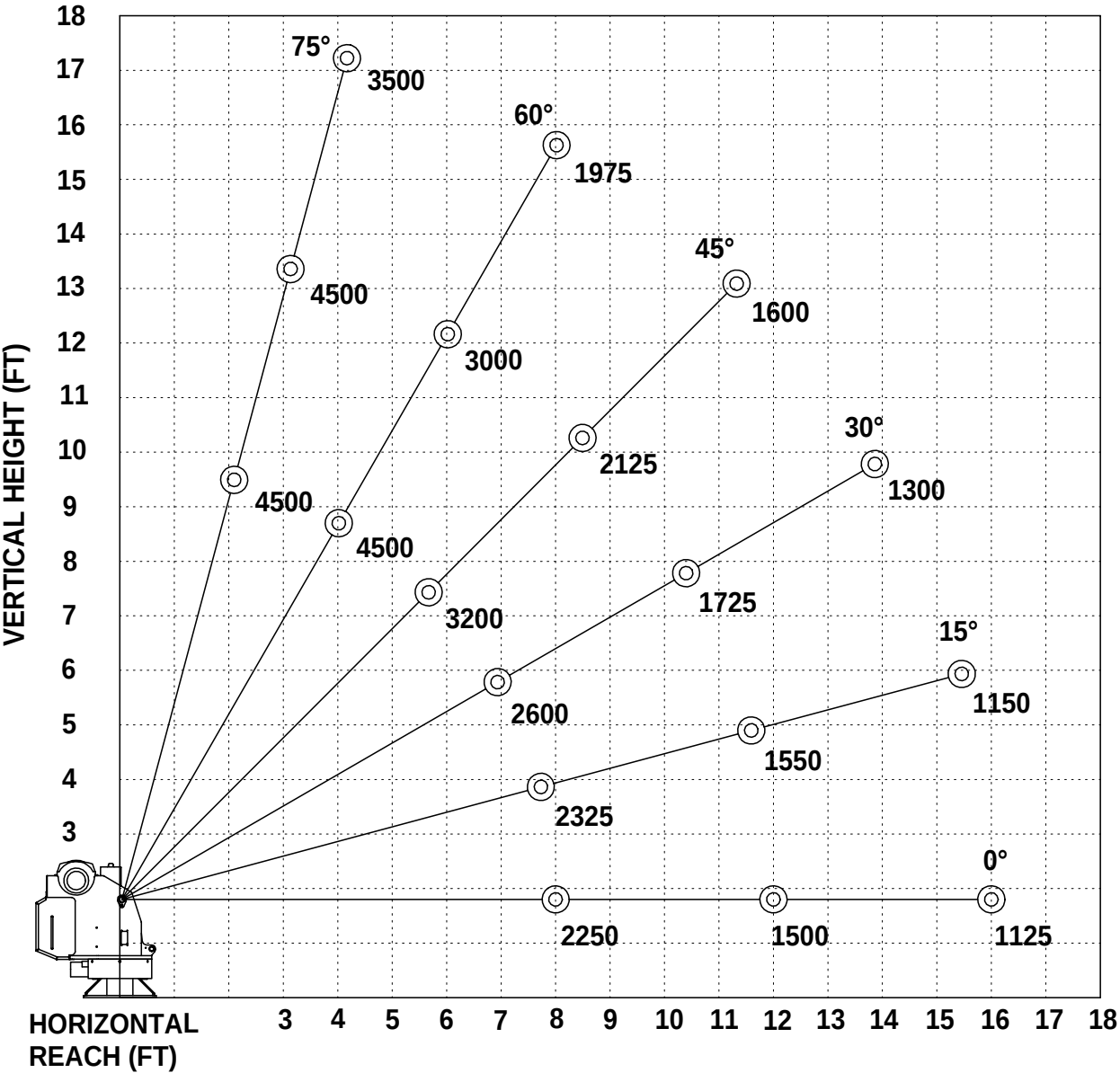
SUPERSEDES

5-21-03A

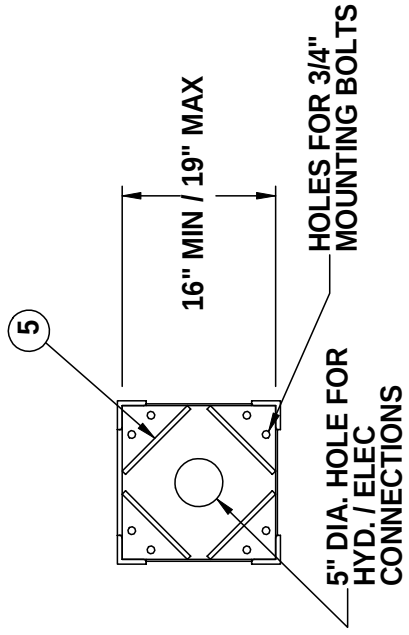
ET/HT18K(X) ET/HT25K(X)

19930

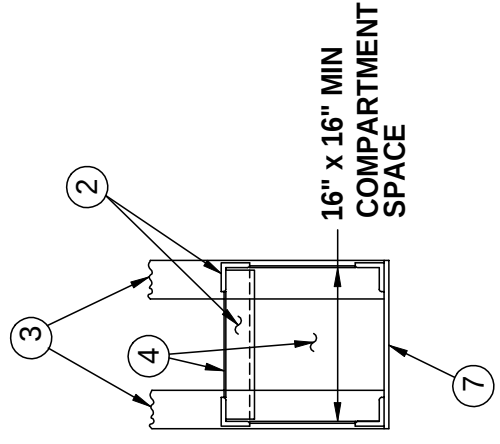
ET/HT18K(X) - 8-12-16 BOOM MAXIMUM CAPACITY CHART



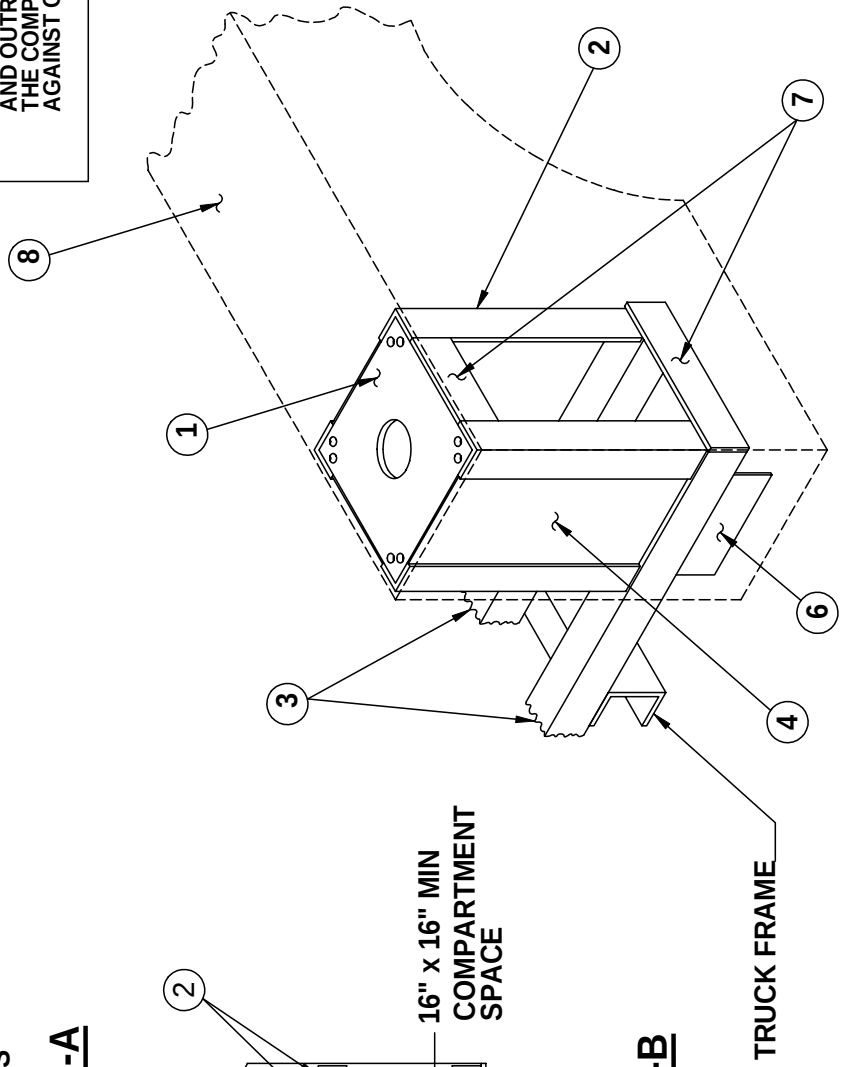
MUST USE SNATCH BLOCK
FOR LOADS OF 2250 LBS.
AND GREATER



SECTION A-A



SECTION B-B



TYPICAL SERVICE BODY REINFORCEMENT

PART	DESCRIPTION	MINIMUM RECOMMENDED MATERIAL SIZE
1	TOP PLATE	1/2" STEEL
2	CORNER POST	3" x 3" x 1/2" STEEL ANGLE
3	CROSS FRAME	4" x 4" x 5/16" SQUARE TUBING
4	SHEAR WEB	3/16" STEEL PLATE
5	TOP PLATE REINFORCEMENT	1/2" x 6" OR 3/4" x 5" STEEL BAR
6	OUTRIGGER REINFORCEMENT PLATE	1/4" THICK STEEL PLATE
7	GUSSET	1/2" x 4" H.R. STEEL
8	BODY TOP REINFORCEMENT	10 GA SMOOTH OR DIAMOND PLATE WITH 1" LIP OVER SIDE OF BODY

IT IS THE SOLE RESPONSIBILITY OF THE INSTALLER TO INSURE THAT THE TOTAL STRUCTURE OF CRANE, TRUCK, AND OUTRIGGERS ARE STRUCTURALLY SOUND AND THAT THE COMPLETED VEHICLE HAS SUFFICIENT STABILITY AGAINST OVERTURNING.

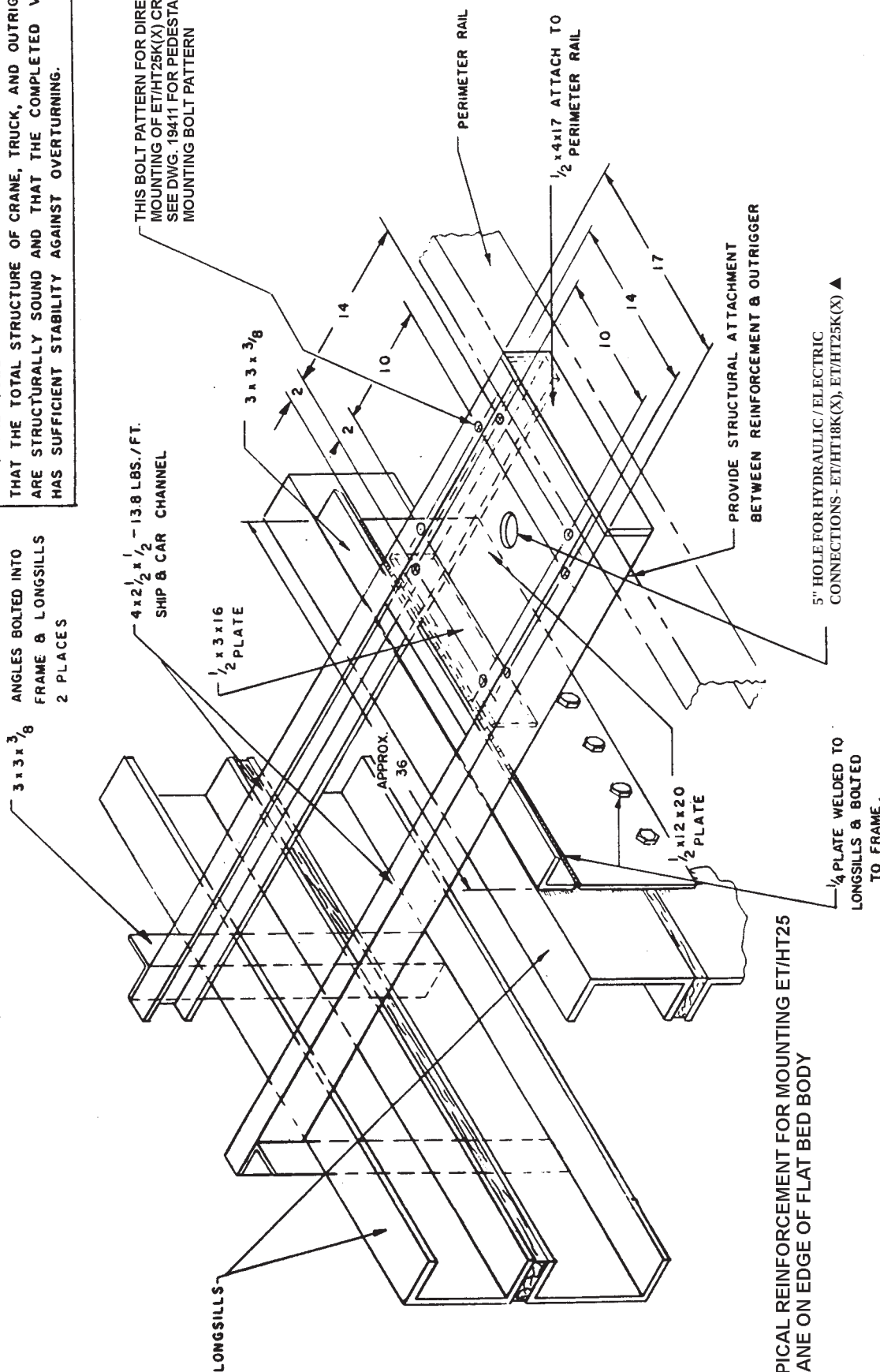


TITLE INSTALLATION DWG	DATE 7-29-03D	SECTION C100
	SUPERSEDES 10-11-02C	
ET/HT25K(X) & ET/HT18K(X) ▲		
19288		

19288

ANGLES BOLTED INTO
FRAME & LONGSILLS
2 PLACES

THIS BOLT PATTERN FOR DIRECT MOUNTING OF ET/HT25K(X) CRANE SEE DWG. 19411 FOR PEDESTAL MOUNTING BOLT PATTERN



TYPICAL REINFORCEMENT FOR MOUNTING ET/HT25 CRANE ON EDGE OF FLAT BED BODY



MANUFACTURING, INC.
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TITLE INSTALLATION DRAWING

ET/HT18K(X), ET/HT25K(X) ▲

DATE 7-29-03M

SECTION C100

SUPERCEDES
10-11-02L

SECTION 150

SAFETY

VEHICLE & CRANE MOUNTED ELECTRICAL HAZARD SIGN APPLICATION & INFORMATION

ET & HT CRANE SERIES



▲ SIGN NO. 15393A DISPLAYS THE INTERNATIONAL SYMBOL FOR ELECTRICITY AND WARNS OF DANGER FROM AN ELECTRICALLY CHARGED VEHICLE, CRANE, OR LOAD. FOUR ARE RECOMMENDED (ONE FOR EACH SIDE AND ONE FOR EACH END OF VEHICLE) TO BE APPLIED IN LOCATIONS WHICH ARE READILY VISIBLE TO GROUND PERSONNEL.



▲ SIGN NO. 15401 PROVIDES ADDITIONAL WARNING OF LEGAL REQUIREMENTS WHEN OPERATING NEAR HIGH VOLTAGE LINES. THIS SIGN IS PLACED ON THE CONTROL PENDANT SIDE OF BOOM.

REQUIRED MINIMUM CLEARANCES REFERRED TO ON SIGN NO. 15401

REQUIRED CLEARANCES FROM OVERHEAD HIGH-VOLTAGE LINES

NOMINAL VOLTAGE (kV) (PHASE TO PHASE)	MINIMUM REQUIRED CLEARANCE (FEET) *
0 - 50	10
over 50 - 200	15
over 200 - 350	20
over 350 - 500	25
over 500 - 750	35
over 750 - 1000	45

REQUIRED CLEARANCES FROM ENERGIZED HIGH-VOLTAGE CONDUCTORS
(WHILE IN TRANSIT)

NOMINAL VOLTAGE (kV) (PHASE TO PHASE)	MINIMUM REQUIRED CLEARANCE (FEET) *
0 - 0.75	4
over 0.75 - 50	6
over 50 - 345	10
over 345 - 750	16
over 750 - 1000	20

* NOTE: ENVIRONMENTAL CONDITIONS SUCH AS FOG, SMOKE, OR PRECIPITATION MAY REQUIRE INCREASED CLEARANCES



MFG., INC.
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TITLE
INSTALLATION DWG

ET & HT CRANE SERIES

DATE
5-15-02H

SUPERCEDES
5-13-97G

SECTION
C150

15394

CRANE SAFETY AND HAZARDS ▲

ET5500MPB/R, ET6KMPB/R, ET8100R, ET10K(X), ET18K(X), ET25K(X)

CAUTIONS

1. INSPECT VEHICLE AND CRANE, INCLUDING OPERATION, PRIOR TO USE DAILY.
2. DO NOT USE THIS EQUIPMENT EXCEPT ON SOLID, LEVEL SURFACE WITH CRANE MOUNTED ON FACTORY-RECOMMENDED TRUCK.
3. BEFORE OPERATING THE CRANE, REFER TO MAXIMUM LOAD (CAPACITY) CHART ON CRANE FOR OPERATING (LOAD) LIMITATIONS.
4. DO NOT OPERATE, WALK, OR STAND BENEATH BOOM OR A SUSPENDED LOAD.
5. ATTACH PENDANT CORD SUPPORT SNAP TO ATTACHMENT POINT BEFORE PLUGGING IN PENDANT.
6. UNPLUG PENDANT AND SHUT OFF MASTER DISCONNECT SWITCH WHEN CRANE NOT IN USE.
7. FOR TRAVEL, BOOM MUST BE IN STOWED POSITION.

DANGER

- THIS CRANE IS NOT A PASSENGER LIFT
- IT IS NOT DESIGNED OR INTENDED TO BE USED TO LIFT, SUPPORT, OR OTHERWISE TRANSPORT PERSONNEL.

YOU MUST NOT OPERATE THIS CRANE UNLESS

1. YOU HAVE BEEN TRAINED IN THE SAFE OPERATION OF THIS CRANE
AND
2. YOU KNOW AND FOLLOW THE SAFETY AND OPERATING RECOMMENDATIONS CONTAINED IN THE MANUFACTURER'S MANUALS, YOUR EMPLOYER'S WORK RULES, AND APPLICABLE GOVERNMENT REGULATIONS. AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO DEATH OR SERIOUS INJURY.

ELECTROCUTION HAZARD

- THIS MACHINE IS NOT INSULATED.
- MAINTAIN SAFE CLEARANCES FROM ELECTRICAL LINES AND APPARATUS.
- YOU MUST ALLOW FOR BOOM SWAY, ROCK OR SAG, AND ELECTRICAL LINE AND LOADLINE SWAYING.
- THIS LIFTING DEVICE DOES NOT PROVIDE PROTECTION FROM CONTACT WITH OR PROXIMITY TO AN ELECTRICALLY CHARGED CONDUCTOR.
- YOU MUST MAINTAIN A CLEARANCE OF AT LEAST 10 FEET BETWEEN ANY PART OF THE CRANE, LOADLINE, OR LOAD, AND ANY ELECTRICAL LINE OR APPARATUS CARRYING UP TO 50,000 VOLTS. ADDITIONAL CLEARANCE IS REQUIRED FOR VOLTAGES IN EXCESS OF 50,000 VOLTS. REFER TO DRAWING 15394 FOR ADDITIONAL INFORMATION.
- **DEATH OR SERIOUS INJURY** WILL RESULT FROM CONTACT OR INADEQUATE CLEARANCE.



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CINCINNATI, OHIO

TITLE
INSTALLATION DWG

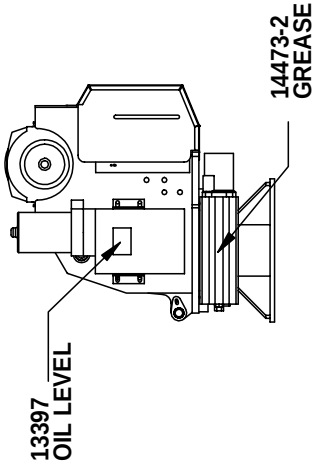
ET5500MPB-ET25KX

DATE
7-29-03G

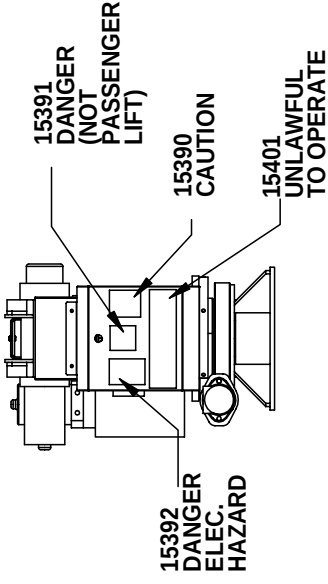
SUPERCEDES
10-14-97F

SECTION
C150

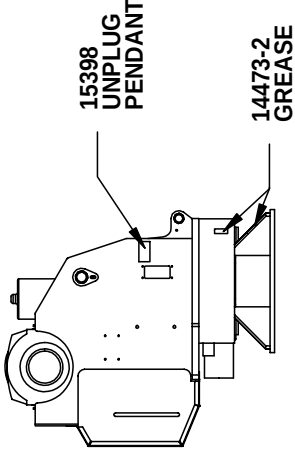
850711



LEFT



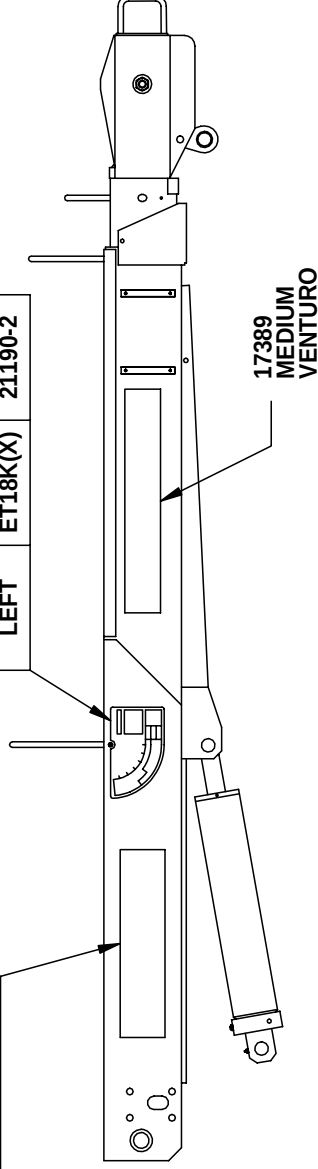
BACK



RIGHT

MODEL NO.
21191 - ET18K
21192 - ET18KX

CAPACITY		
DECAL	MODEL	PART NO.
RIGHT	ET18K(X)	21190-1
LEFT	ET18K(X)	21190-2



BOOM



MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE
DECAL PLACEMENT

ET18K(X)

DATE
7-29-03

SUPERSEDES
.

SECTION
C150

21305

SECTION 200

INSTALLATION



IMPORTANT

ADEQUATE WIRING IMPERATIVE FOR PROPER OPERATION

1. PROPER GROUND PATH - SEE DWG 15660

2. CURRENT DRAW IS SEVERAL HUNDRED AMPERES -
ADEQUATE WIRE SIZE AND BATTERY CAPACITY IS ABSOLUTELY
ESSENTIAL (SEE CHART BELOW.)

MINIMUM WIRE GAUGE AND BATTERY SIZE

MODEL	TOTAL LENGTH OF CABLE (FT)*								12 VOLT BATTERY REQUIREMENTS	
	0-20	21-25	26-30	31-40	41-50	51-60	61-70	71-80	CCA (A)**	RC (MIN)***
CE6K CT2000 CT2003/4/5 DT7K	#4	#4	#2	#2	#1	#0	#0	#00	350	100
ET5500MPB ET5500R ET6KMPB ET6KR ET10K	#2	#2	#1	#0	#00	NOTRECOMMENDED			450	100
ET10KX	#2	#2	#1	#0	#00	NOTRECOMMENDED			550	150
ET18K ET18KX ET25K ET25KX	SEE DRAWING 19947 FOR CABLE AND BATTERY REQUIREMENTS									

* INCLUDES GROUND CABLE

** CCA=COLD CRANKING AMPS AT 0° F.
THE CCA RATING IS A MEASURE OF THE ABILITY OF THE BATTERY TO DELIVER A HIGH CURRENT FOR A SHORT PERIOD OF TIME.

*** RC=RESERVE CAPACITY IN MINUTES AT 25 AMPS AND 80° F.
THE RC RATING IS A MEASURE OF THE PERIOD OF TIME THE BATTERY CAN SUPPLY A GIVEN CURRENT WITHOUT RECHARGING.



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TITLE

CABLE & BATTERY

DATE

7-29-03A

SECTION

C200

ET18KX / ET25KX

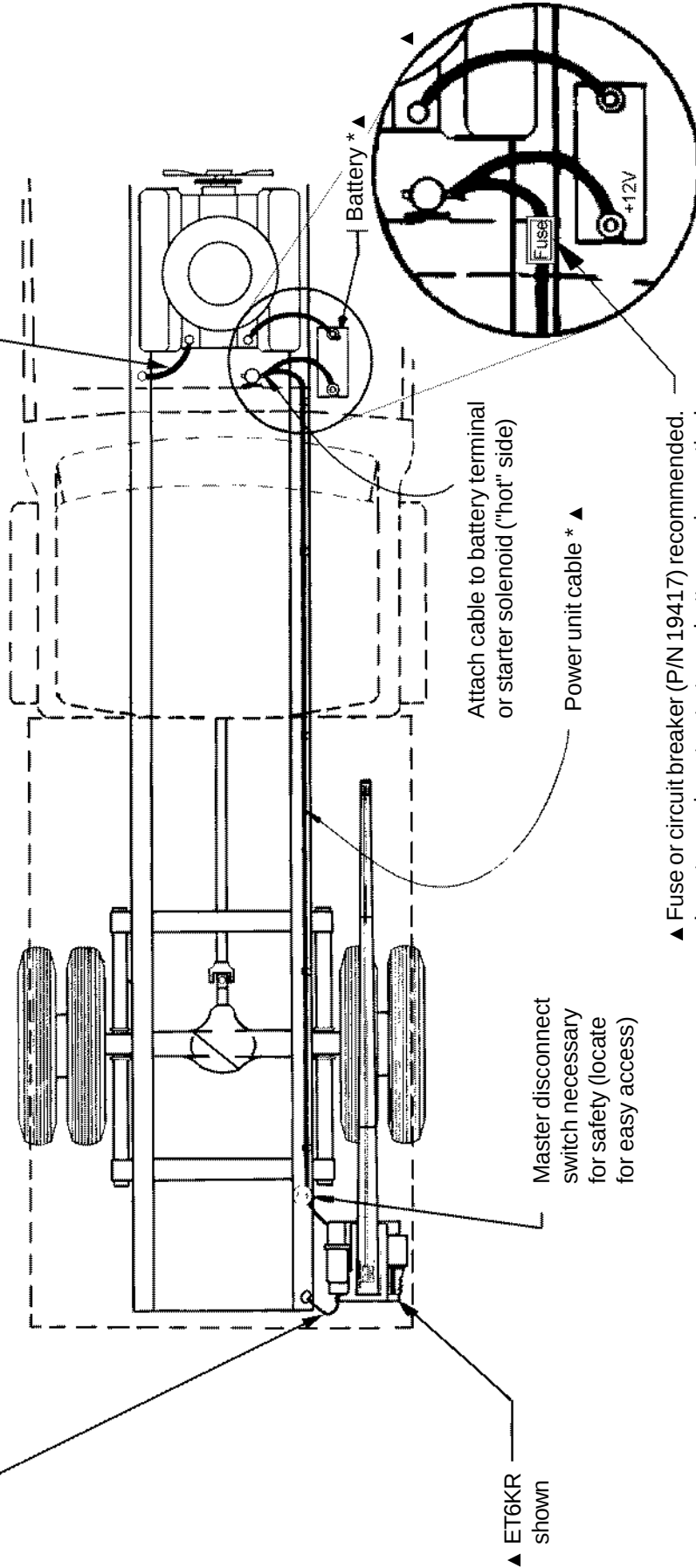
SUPERCEDES

9-4-01

19959

Important: The crane must make connection with the negative of the battery. To insure this, install a #2 gauge grounding strap from the engine to the truck frame (required if negative from battery is connected to the engine.) Also, install a #2 gauge grounding strap from the crane base to the truck frame, included with ET6R, ET10K(X), ET25K, & ET25KK cranes.

Failure to accomplish the above mentioned steps may result in intermittent operation of electric crane.



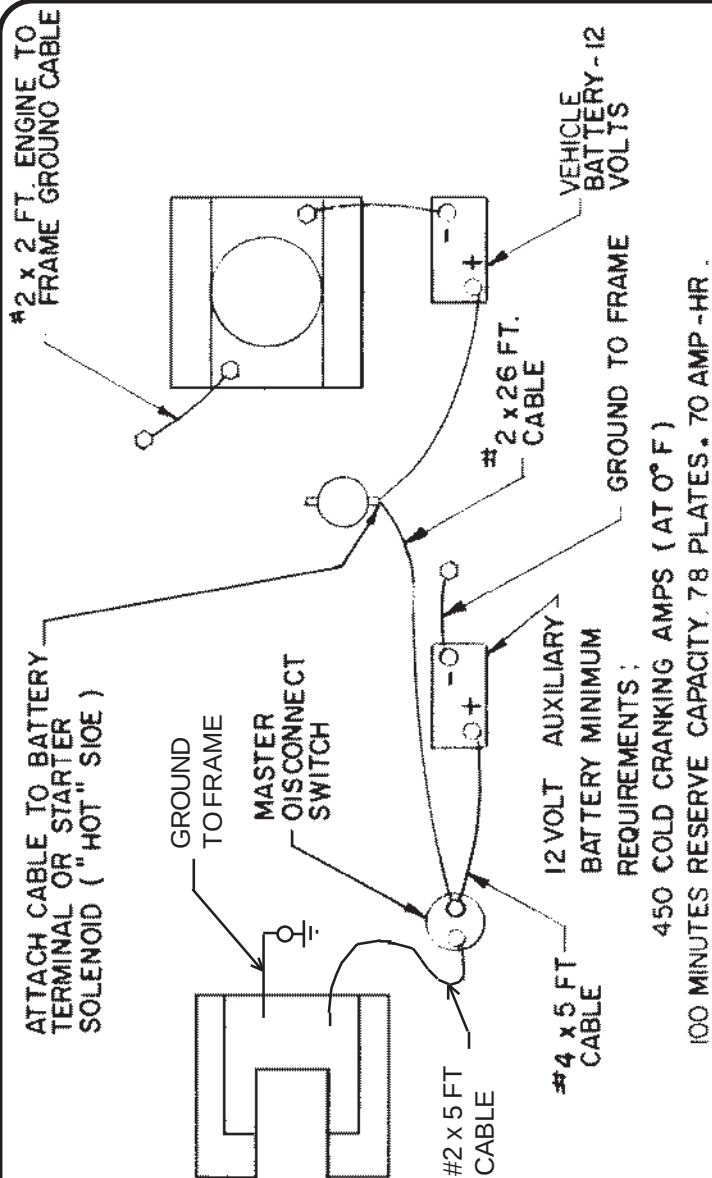
▲ Fuse or circuit breaker (P/N 19417) recommended.
Locate as close to starter or battery as is practical.

▲ * Note: See Dwg 711105
for recommended battery
and cable specifications

VENTURO MANUFACTURING, INC. CINCINNATI, OHIO	TITLE	INSTALLATION - BATTERY CABLE	DATE	1-15-02E	SECTION	C200
		WINCH & CRANE	SUPERCEDES	11-7-01D		15660

RECOMMENDED INSTALLATION

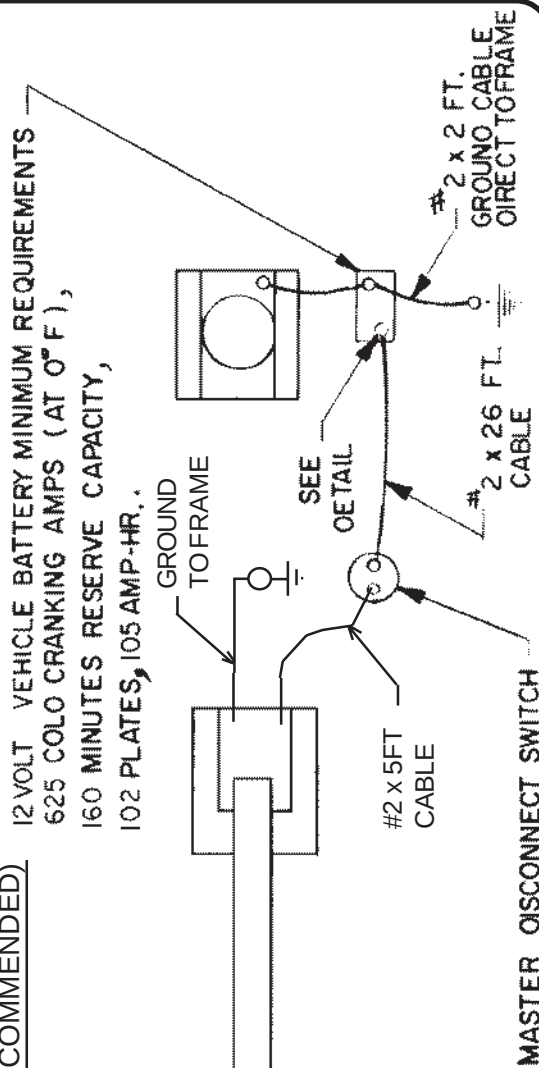
W/ AUXILIARY BATTERY IN PARALLEL WITH VEHICLE BATTERY.



IF LONGER CABLE NECESSARY, CONSULT VENTURO ENGINEERING DEPT.

LIMITED DUTY ALTERNATE INSTALLATION (NOT RECOMMENDED)

NOTE: ALTERNATE INSTALLATION MAY BE USED ONLY IF VEHICLE BATTERY MEETS MINIMUM REQUIREMENTS AND A #2 X 26 FT CABLE WILL REACH FROM THE MASTER DISCONNECT SWITCH DIRECTLY TO THE BATTERY (NOT THE SOLENOID).



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VENTURO

TITLE ELECTRICAL INSTALLATION

DATE 7-29-03A

SECTION -

ET18KX & ET25KX

SUPERCEDES 9-26-01

19947

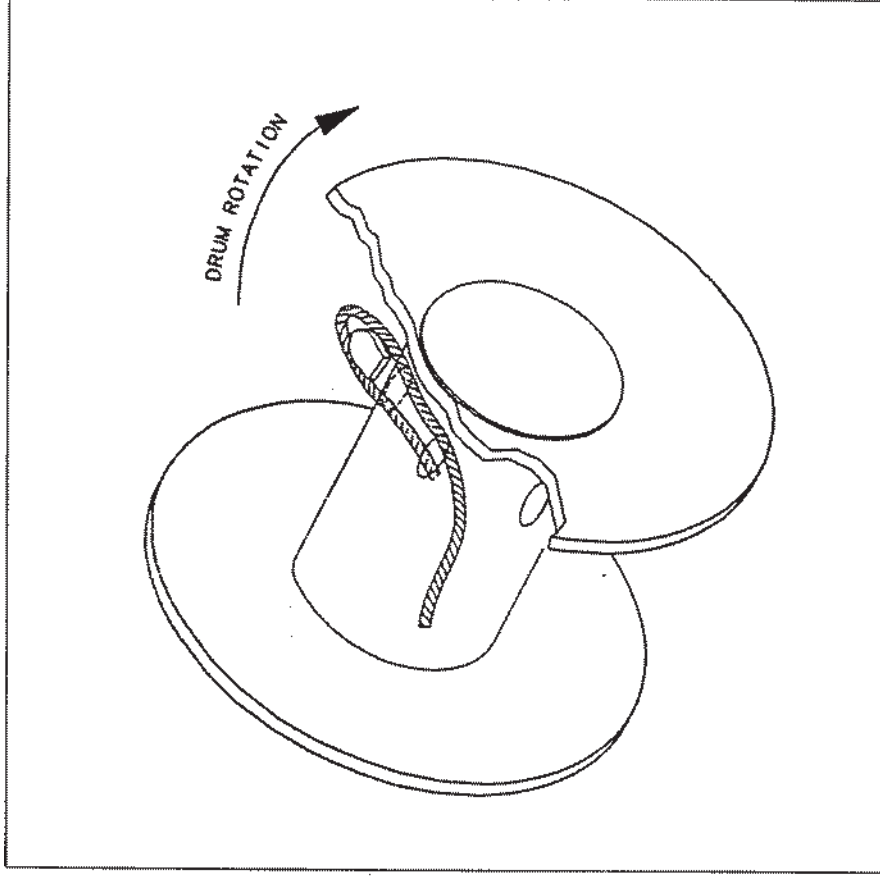
WIRE ROPE INSTALLATION

STEP 1: INSERT WIRE ROPE END THROUGH ANTI-TWO-BLOCK WEIGHT.

STEP 2: INSERT WIRE ROPE END INTO POCKET OPENING AND THROUGH WEDGE POCKET.

CAUTION: IF THE WIRE ROPE IS NOT INSTALLED FOR THE CORRECT DRUM ROTATION, THE WINCH BRAKE VALVE WILL NOT HOLD THE LOAD.

NOTE: ▲ ON THE ET18K(X) AND ET25K(X) A 7/16" HEX NUT WILL BE USED IN LIEU OF A WEDGE.



▲ REMTRON RADIO REMOTE CONTROL

▲ (20410, 20412 & 20414)

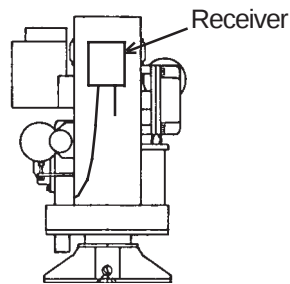
INSTALLATION

Mounting locations:

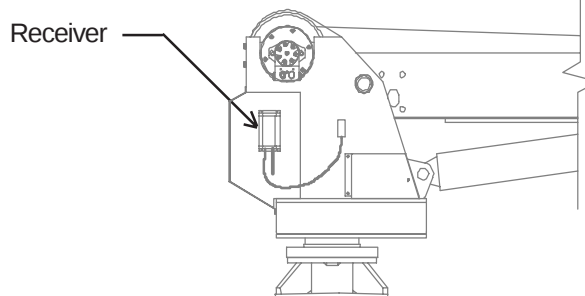
On-crane mounting:

For cranes without the “In-Compartment Controls” option, where the pendent/receiver connector plugs into a connector mounted on the crane housing, the receiver must be mounted directly on the crane as follows.

The **ET10KX** model without “In-Compartment Controls” requires the radio to be mounted on the rear of the crane housing with the cable and antenna facing downward as shown. Mounting the radio in this location will obscure several decals. Replacement decals (decals 15390A instructions, 15391B warning, 15392 warning) have been included in the retrofit kit and should be installed as close to the original locations as possible.



The **HT40/50KX** model without “In-Compartment Controls” requires the radio to be mounted on the right side of the crane's rear cover with the cable and antenna facing downward as shown.



WARNING

- The master disconnect (power) switch must be turned off when the crane is not in use! Leaving the power on when not in use may result in dangerous, unintentional activation of the crane functions.



MFG., INC.
CINCINNATI, OHIO

TITLE
INSTALLATION DWG

RADIO REMOTE CONTROL

DATE
7-25-03A

SUPERCEDES
2-10-03

SECTION
C200

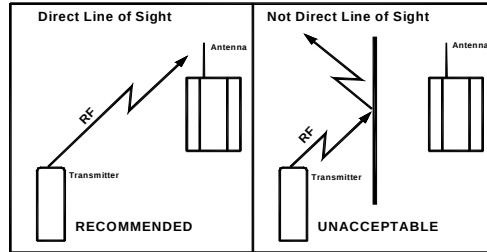
20415A

▲ REMTRON RADIO REMOTE CONTROL

Remote antenna location:

Some applications may not provide adequate radio reception and therefor may require mounting the antenna in a remote location from the receiver. A remote antenna mounting kit (part number 20965) includes an extension cable and antenna mounting bracket. Note that a replacement antenna, part number 20966, is available but is not included in the remote antenna mounting kit.

- ▲ It is suggested that in applications requiring remote mounting of the antenna, that a high location be chose such as on top of the truck body but in a location which is not vulnerable to damage. The remote antenna mounting location must provide line of sight access between the transmitter and receiver.

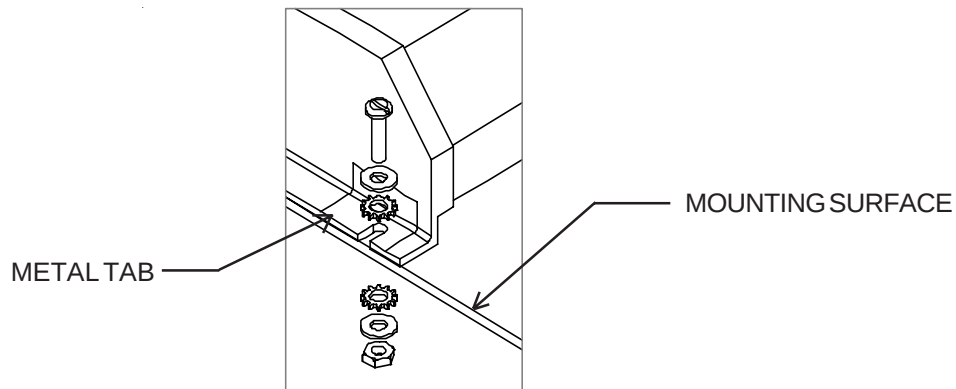


In-compartment mounting:

For cranes with the “In-Compartment Controls” option the radio will be mounted inside the body compartment where the pendent/receiver connector is located. In order to provide full radio range the receiver must be mounted such that a line of sight path to the transmitter is provided, Note that the compartment door must remain open during operation to minimize interference with radio transmissions.

Mounting instructions for all locations:

Locate the radio as described above and mark for mounting hardware making sure that both drilling and installation of the mounting hardware will not cause damage or interference with other components. Drill four .25 inch diameter clearance holes for the mounting hardware. Install the four #10x.75 long screws with flat washers through the mounting flanges on the receiver and through the mounting surface. Secure with the flat washers, lock washers and nuts provided. Note that one mounting flange has a metal ground tab. Star washers should be installed between the metal tab and hardware as well as between the mounting surface and hardware as shown. Install antenna and plug receiver connector into the socket to operate the crane.



The transmitter is powered by a single 9V alkaline battery which may be replaced by removing the 4 screws from the transmitter housing and separating the 2 halves. Be sure to carefully align the two housing halves when reassembling the transmitter.



MFG., INC.
CINCINNATI, OHIO

TITLE

INSTALLATION DWG

DATE

7-25-03A

SECTION

C200

RADIO REMOTE CONTROL

SUPERCEDES

2-10-03

20415B

▲ REMTRON RADIO REMOTE CONTROL

▲ (20410, 20412 & 20414)

OPERATION

To operate the crane the receiver plug must be plugged into the socket and power must be switched on. The indicator on the receiver will light when it is powered and ready. The indicator will flash when the receiver is receiving a properly coded signal from the transmitter. The receiver requires "line of sight" access to the transmitter for full range operation. For cranes with in-compartment controls the compartment door must be left open during operation of the crane in order to avoid obstructing the radio signal.



WARNING

- The receiver connector must be unplugged from the socket and the master disconnect (power) switch must be turned off when the crane is not in use! Leaving the receiver connected and the power on when not in use may result in dangerous, unintentional activation of the crane functions.

For safety reasons the receiver will only function when it recognizes coded transmissions which match that of the intended transmitter. In the event that the receiver fails to recognize commands from the intended transmitter or when initially using a replacement transmitter the receiver must "learn" the transmission code of the transmitter. "Learning" a new transmission code is accomplished by depressing any button on the transmitter then depressing the "learn" button on the receiver, next to the antenna, until the light on the receiver begins to flash. Once the receiver light begins to flash release the learn button and then the transmitter button. The receiver will now recognize transmissions from the "learned" transmitter.

The transmitter is powered by a single 9V alkaline battery which may be replaced by removing the 4 screws from the transmitter housing and separating the 2 halves. Be sure to carefully align the two housing halves when reassembling the transmitter.



MFG., INC.
CINCINNATI, OHIO

TITLE

INSTALLATION DWG.

DATE

7-25-03A

SECTION

C200

RADIO REMOTE CONTROL

SUPERCEDES

2-11-03

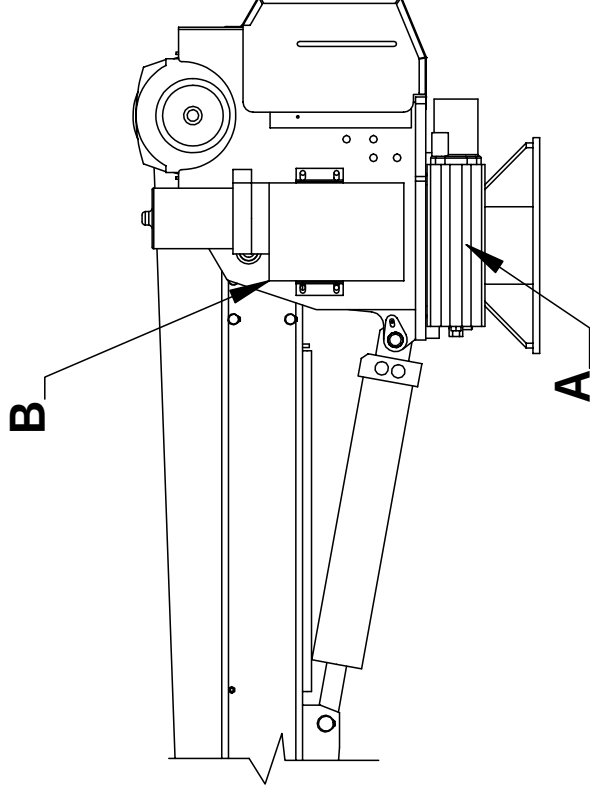
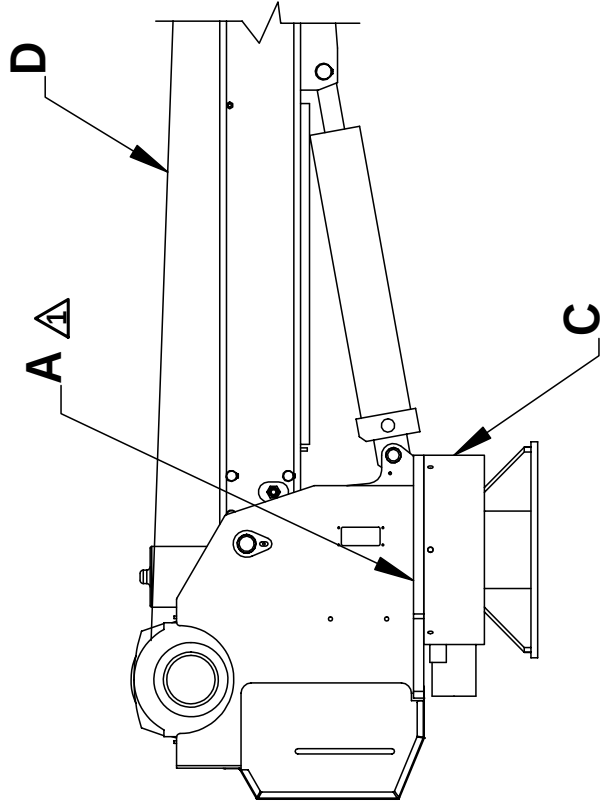
20416

SECTION 300

MAINTENANCE

&

SERVICE



ATTENTION
NEVER WASH THIS CRANE WITH CHEMICAL PRODUCTS OR HIGH PRESSURE WATER JETS, AS THEY CAN CAUSE DETACHMENT OF STICKERS OR ENTRANCE OF WATER INTO ELECTRICAL OR SLEWING RING COMPONENTS

Location	Service Required	Note	Service Interval
A	Grease fitting With Pressure Grease Gun	A To align hole w/ fitting, line up grease decals on lower cover and base gusset. Use Lithium Based Grease	Time of Truck Service
B	Fill Oil Reservoir to Oil Level with Boom Down	Use Dextron ATF for Ambient Temperatures Between -22° F and 30° F Use ISO Viscosity Grade 68 or Equivalent for Ambient Temperatures Between 10° F and 125° F	Time of Truck Service and as required by changes in the ambient temperature range
C	Lubricate Gear Teeth	Remove Cover & Use Chassis Grease	Time of Truck Service
D	Check Wire Rope and Hook	Rope should be free of kinks and fraying	Time of Truck Service

LUBRICATION & MAINTENANCE CHART

TITLE

DATE

SECTION

VENTURO MANUFACTURING, INC.
CINCINNATI, OHIO

7-29-03
SUPERSEDES

ET18K(X)

21306

MINIMUM VOLTAGE TEST

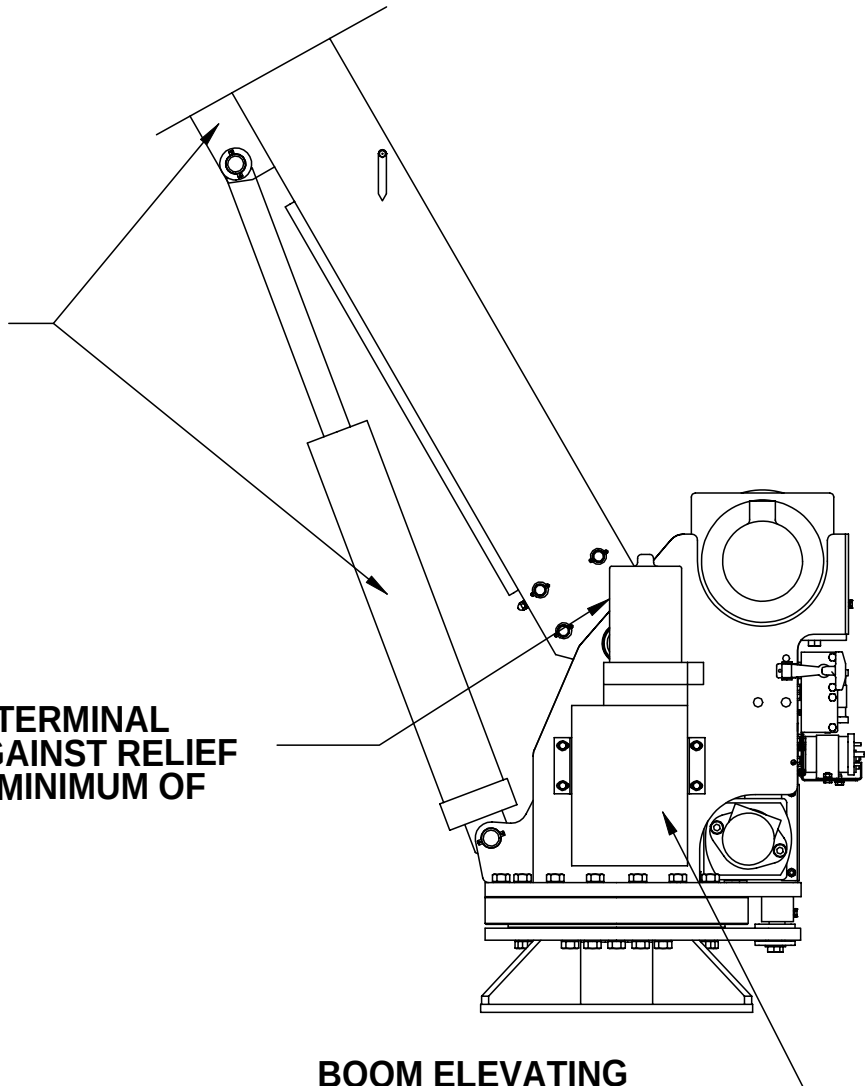
▲ ET18K(X) / ET25K(X)

ONE OF THE MOST COMMON ELECTRICAL PROBLEMS ENCOUNTERED ON 12 VOLT ELECTRICAL CRANES IS INSUFFICIENT VOLTAGE AT THE MOTOR WHEN DRAWING THE LARGE CURRENT THAT EXISTS AT FULL LOAD

EXTEND BOOM CYLINDER
AGAINST "UP" STOP
(RELIEF VALVE WILL OPEN)

VOLTAGE AT MOTOR TERMINAL
WHEN OPERATING AGAINST RELIEF
VALVE SHOULD BE A MINIMUM OF
8 VOLTS

BOOM ELEVATING
ELECTRIC HYDRAULIC
POWER UNIT



MFG., INC.
CINCINNATI, OHIO

TITLE
MINIMUM VOLTAGE TEST

ET18K(X), ET25K(X)

DATE
7-29-03A

SUPERSEDES
9-5-01

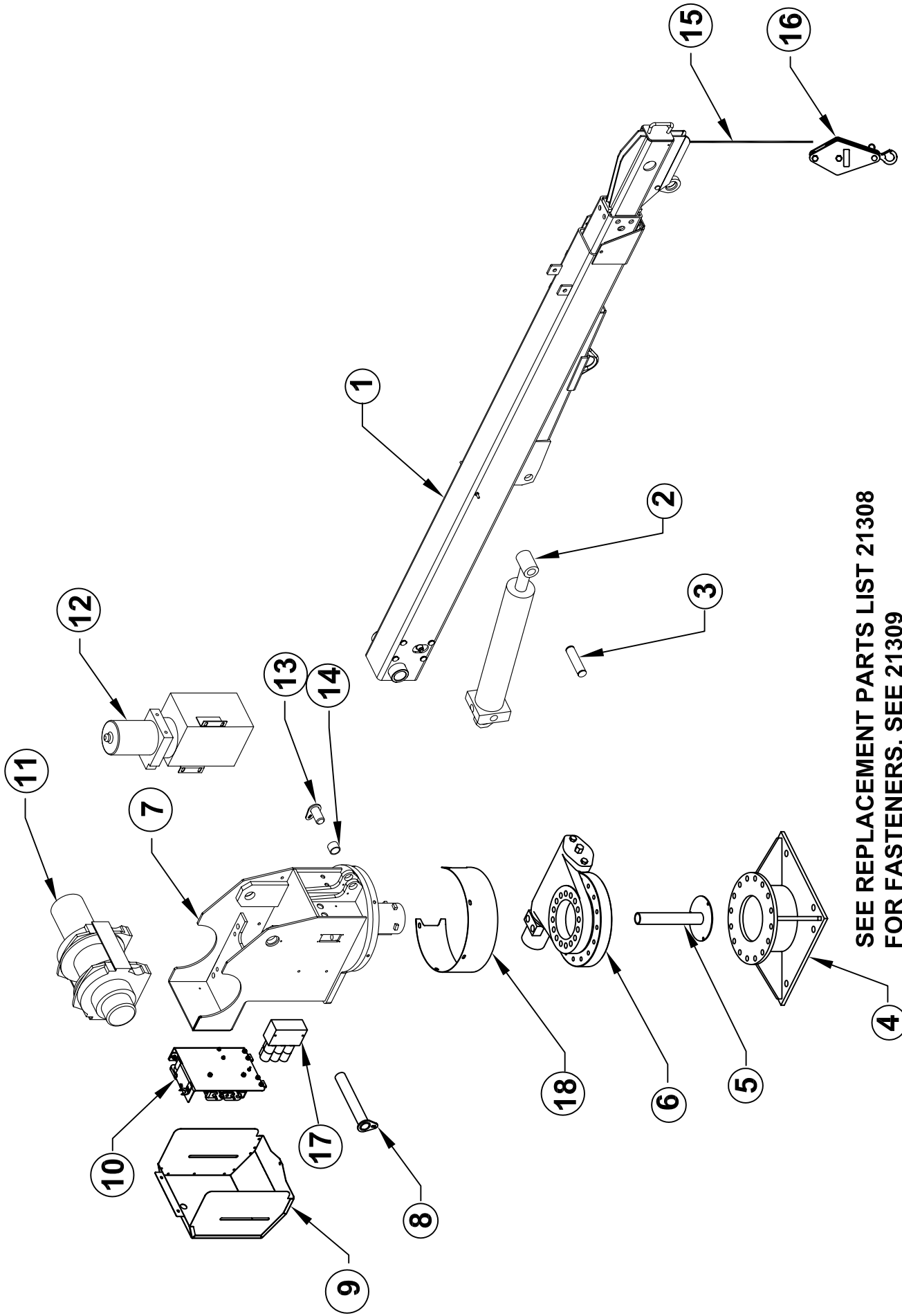
SECTION
-

19963

SECTION 400

PARTS





SEE REPLACEMENT PARTS LIST 21308
FOR FASTENERS, SEE 21309



MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE

REPLACEMENT PARTS DRAWING

ET18KX

DATE

7-30-03

SUPERSEDES

-

SECTION

-

21307

ITEM #	PART #	DESCRIPTION	ITEM #	PART #	DESCRIPTION
1	21200	FINAL BOOM ASSEMBLY - ET18KX			
2	21120	ELEVATION CYLINDER			
3	21127	BOOM PIVOT PIN			
4	21115	BASE WELDED ASSEMBLY			
5	21129	SWIVEL PIGTAIL CANDLESTICK ASSEMBLY			
6	21117	ROTATION DRIVE SYSTEM			
7	21116	HOUSING WELDED ASSEMBLY			
8	21125	PIVOT PIN - MAIN BOOM PIVOT			
9	21128	REAR COVER ASSEMBLY			
10	19897	ELECTRICAL COMPONENT ASSEMBLY			
11	21121	ELECTRIC WINCH			
12	19820	HYDRAULIC POWER UNIT ASSEMBLY			
13	21126	PIVOT PIN - ELEVATION CYLINDER BASE			
14	21124	POLY BEARING - ELEVATION CYLINDER BASE			
15	25810-5/16-80	WIRE ROPE ASSEMBLY - 5/16" X 80 FT (8/16 FT BOOM)			
16	23169	SWIVEL SNATCH BLOCK ASSEMBLY			
17	19815-2	VALVE BLOCK			
18	21185	LOWER COVER			
		REPLACEMENT PARTS DWG REF 21307			
		REPLACEMENT PARTS LIST			
		ET18KX		DATE	SECTION
				7-30-03	-
				SUPERCEDES	
				-	21308



MANUFACTURING, INC.
CINCINNATI, OHIO

FASTENER LIST FOR ET18KX

PART NUMBER	DESCRIPTION	QTY	LOCATION/FUNCTION
!HHCS03118063	HEX HEAD CAP SCREW 5/16-18 X 5/8" LG	1	GROUND STRAP ON CANDLESTICK
!LWSH-031	LOCK WASHER - 5/16	1	GROUND STRAP ON CANDLESTICK
!HNUT-03118	HEX NUT - 5/16-18	1	GROUND STRAP ON CANDLESTICK
!HHCS02520063	HEX HEAD CAP SCREW 1/4-20 X 5/8"	3	CANDLESTICK TO BASE
!LWSH-025	LOCK WASHER - 1/4"	3	CANDLESTICK TO BASE
!HHCS06311200	HEX HEAD CAP SCREW 5/8-11 X 2"	16	LOWER BASE TORING
!LWSH-063	LOCK WASHER - 5/8"	16	LOWER BASE TORING
!PHCS02520200	PAN HEAD CAP SCREW 5/8-11 X 2"	2	SPEED REDUCER TORING
!HHCS06311300	HEX HEAD CAP SCREW 5/8-11 X 3"	14	UPPER HOUSING TORING
!LWSH-063	LOCK WASHER - 5/8"	14	UPPER HOUSING TORING
!HHCS03816100	HEX HEAD CAP SCREW - 3/8-16 X 1"	4	HYDRAULIC POWER UNIT
!LWSH-038	LOCK WASHER - 3/8"	4	HYDRAULIC POWER UNIT
!HNUT-03816	HEX NUT - 3/8-16	4	HYDRAULIC POWER UNIT
!HHCS02520075	HEX HEAD CAP SCREW 1/4-20 X 3/4"	2	VALVE BLOCK
!HNUT-02520	HEX NUT - 1/4-20	2	VALVE BLOCK
!LWSH-025	LOCK WASHER - 1/4"	2	VALVE BLOCK
!HHCS02520075	HEX HEAD CAP SCREW 1/4-20 X 3/4"	4	BASE HINGES
!LWSH-025	LOCK WASHER - 1/4"	4	BASE HINGES
!HHCS#1024100	HEX HEAD CAP SCREW - #10-24 X 1"	2	LATCH
!LWSH-#10	LOCK WASHER - #10	2	LATCH
!HNUT-#1024	HEX NUT - #10-24	2	LATCH
!HHCS03118100	HEX HEAD CAP SCREW 5/16-18 X 1"	1	GROUND (WINCH)/TETHER
!LWSH-031	LOCK WASHER - 5/16	1	GROUND (WINCH)/TETHER
!HNUT-03118	HEX NUT - 5/16-18	1	GROUND (WINCH)/TETHER
!FWSH-031	FLAT WASHER - 5/16"	2	GROUND (WINCH)/TETHER
!HHCS#0832075	HEX HEAD CAP SCREW #8-32 X 3/4"	1	TETHER ON PANEL
!LWSH-#08	LOCK WASHER - #8	1	TETHER ON PANEL
!HNUT-#0832	HEX NUT - #8-32	1	TETHER ON PANEL
!HHCS03816100	HEX HEAD CAP SCREW - 3/8-16 X 1"	1	GROUND (IN HOUSING)
!FWSH-038	FLAT WASHER - 3/8"	1	GROUND (IN HOUSING)
!LWSH-038	LOCK WASHER - 3/8"	1	GROUND (IN HOUSING)
!HNUT#0832063	HEX HEAD CAP SCREW - #8-32 X 5/8"	1	PENDANT PLUG
!LWSH-#08	LOCK WASHER - #8	1	PENDANT PLUG
!HHCS02520050	HEX HEAD CAP SCREW - 1/4-20 X 1/2"	1	BOOM PINS
!LWSH-025	LOCK WASHER - 1/4	1	BOOM PINS
!HHCS02520050	HEX HEAD CAP SCREW - 1/4-20 X 1/2"	2	CYLINDER PINS
!LWSH-025	LOCK WASHER - 1/4	2	CYLINDER PINS
!HHCS#1024125	HEX HEAD CAP SCREW - #10-24 X 1-1/4"	2	TOP POSITION SWITCH
!LWSH-#10	LOCK WASHER - #10	2	TOP POSITION SWITCH
!HHCS-02520063	HEX HEAD CAP SCREW - 1/4-20 X 5/8"	1	CABLE CLAMP (PRESSURE SWITCH)
!LWSH-025	LOCK WASHER - 1/4	1	CABLE CLAMP (PRESSURE SWITCH)
!SRNG-100	SNAP RING - 1"	2	ELEVATION CYLINDER ROD PIN
!UNUT-02520	U NUT - 1/4-20	5	LOWER COVER
!HHCS-02520063	HEX HEAD CAP SCREW - 1/4-20 X 5/8"	5	LOWER COVER
!FWSH-025	FLAT WASHER - 1/4"	5	LOWER COVER
!HHCS02520063	HEX HEAD CAP SCREW - 1/4-20 X 5/8"	3	REAR COVER
!FWSH-025	FLAT WASHER - 1/4"	3	REAR COVER



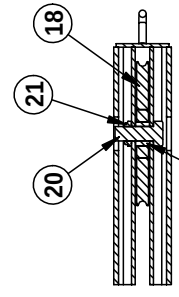
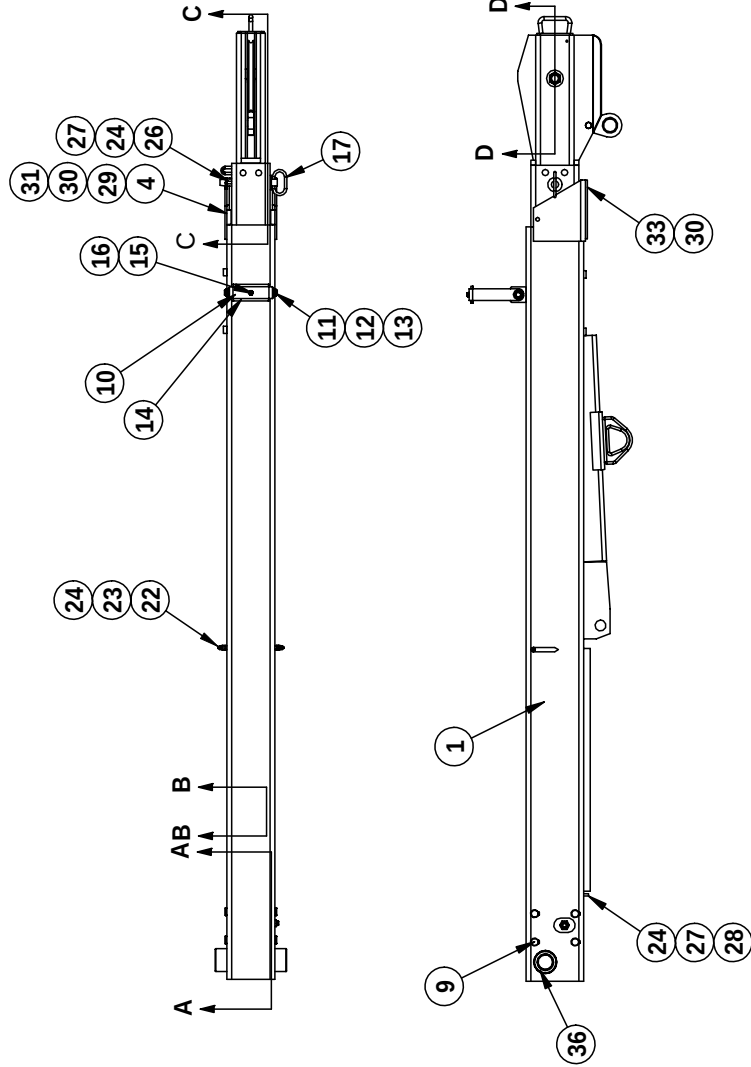
MFG., INC.
CINCINNATI, OHIO

TITLE
REPL. FASTENERS LIST
ET18K(X)

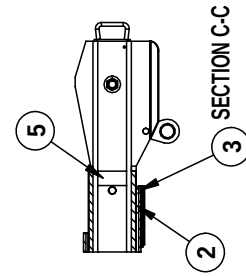
DATE
7-30-03
SUPERCEDES
-

SECTION
C400
21309

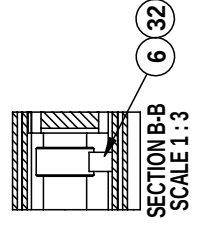
21200 BOOM PARTS DRAWING



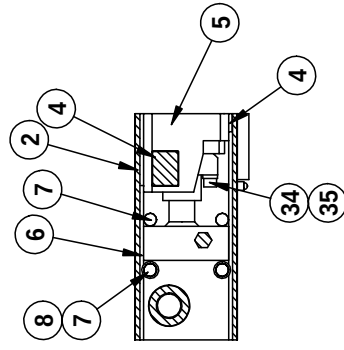
SECTION D-D
SCALE 1:3



SECTION C-C
SCALE 1:3



SECTION B-B
SCALE 1:3



SECTION A-A
SCALE 1:3

ITEM	QTY	PART NO.	DESCRIPTION	ITEM	QTY	PART NO.	DESCRIPTION
36	2	21206	POLY BEARING - PRIMARY BOOM PIVOT	20	1	17059-6	SHEAVE AXLE 3/4 X 2 W/ 1" SHANK
35	2	ILWSH-050-HC	LOCK WASHER 1/2" HI COLL AR	19	1	23924	SPACER - 23925 SHEAVE
34	2	ISHCS05013200	SOCKET HEAD CAP SCREW 1/2-13 X 2" LONG	18	1	23925	BOOM SHEAVE WITH BUSHING
33	2	IHCSC03816075	HEX HEAD CAP SCREW 3/8-16 X 3/4 LONG	17	1	19258-1	BOOM PIN 19157-3/4
32	2	ICACSC03816100	CNTRSNK ALLEN HEAD CAP SCREW 3/8-16 X 1" LG	16	1	IPHCSC02520N	NYLON INSERT JAM NUT - 1/4-20
31	2	ILNUT-03816	JAM NUT - 3/8-16 GRADE 5	15	1	IPHCSC0252063	PAN HEAD CAP SCREW - 1/4-20 X 5/8 LONG
30	4	ILWSH-038	LOCK WASHER - 3/8"	14	1	19881	CABLE GUIDE WEAR STRIP
29	2	IHCSC03816050	HEX HEAD CAP SCREW - 3/8-16 X 1/2" LG - GR. 5	13	2	ILNUT-05013N	1/2-13 NYLON INSERT JAM NUT
28	1	19269	CABLE CLAMP - 1/4"	12	2	IFWSH-050	FLAT WASHER - 1/2"
27	2	ILWSH-025	LOCK WASHER - 1/4"	11	2	IHCSC05013100	HEX HEAD CAP SCREW 1/2-13 X 1" LONG
26	1	19275	CABLE CLAMP - 3/4"	10	1	19880	CABLE GUIDE STRUCTURE
25	1	21276	ANTI-TWO BLOCK ASSEMBLY - L.H.	9	8	ISRNG-075	RETAINING RING - 3/4" SHAFT DIA - PLATED
24	4	ILNUT-02520S	ACORN NUT 1/4-20 STAINLESS	8	2	19885	EXTENSION CYLINDER ROLLER
23	2	22490	SPACER, BOOM ARROW 1/2" O.D.	7	4	21211	THRUST PIN - EXTENSION CYLINDER
22	2	13459-1	BOOM ARROW 3/16 LONG	6	1	21201	EXTENSION CYLINDER
21	1	ILNUT-07510	LOCKNUT 3/4-10	5	1	21203	SECONDARY / TERTIARY WELDED ASSEMBLY
				4	5	21209	BOOM BEARING - 1-1/2 X 2 X 7/16
				3	1	21207	PRIMARY BEARING RETAINING BAR
				2	2	21208	BOOM BEARING - 2 X 3 X 1/2
				1	1	21202	PRIMARY BOOM WELDED ASSEMBLY



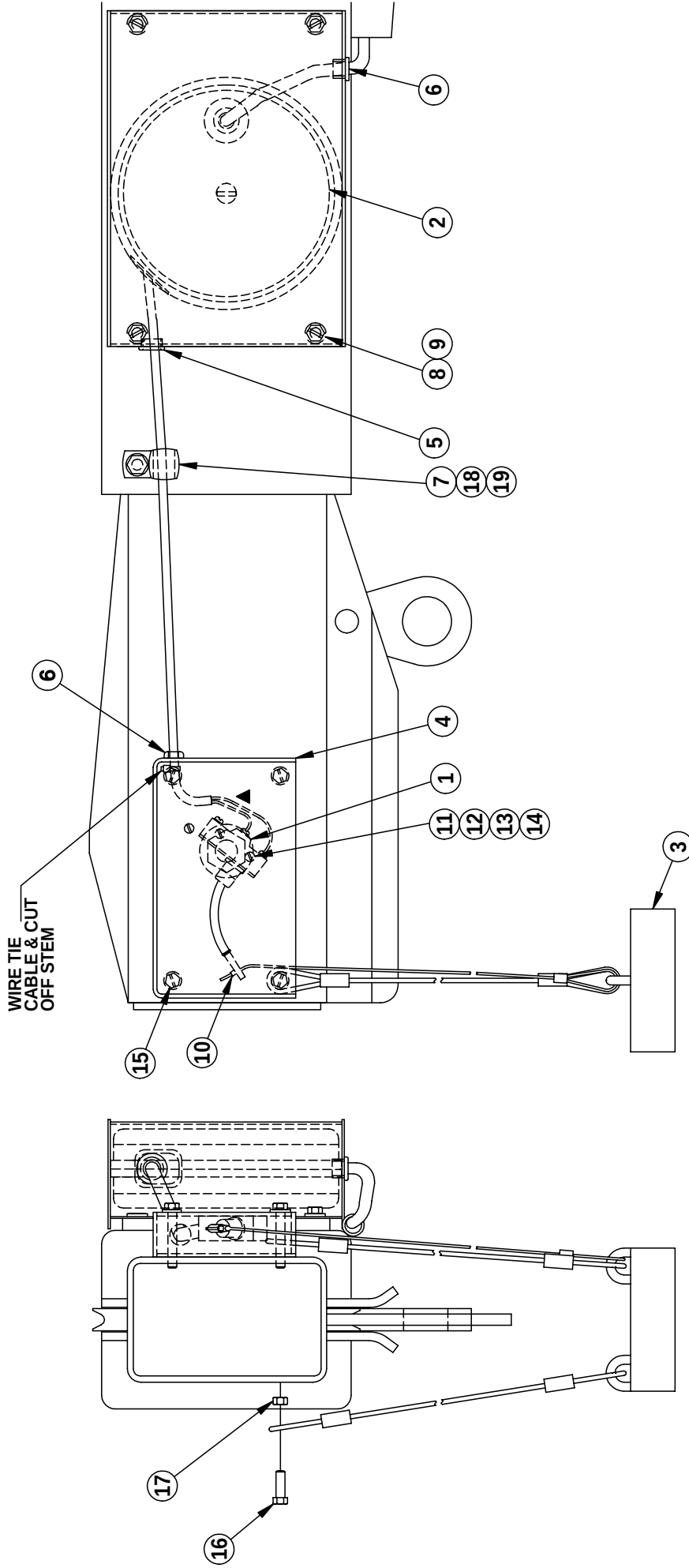
MANUFACTURING, INC.
CINCINNATI, OHIO

21200 BOOM PARTS DRAWING

TITLE	DATE	SECTION
21200 BOOM PARTS DRAWING	7-30-03	-
ITEM	QTY	PART NO.
ET/HT18KX		

ITEM	QTY	PART NO.
ET/HT18KX		

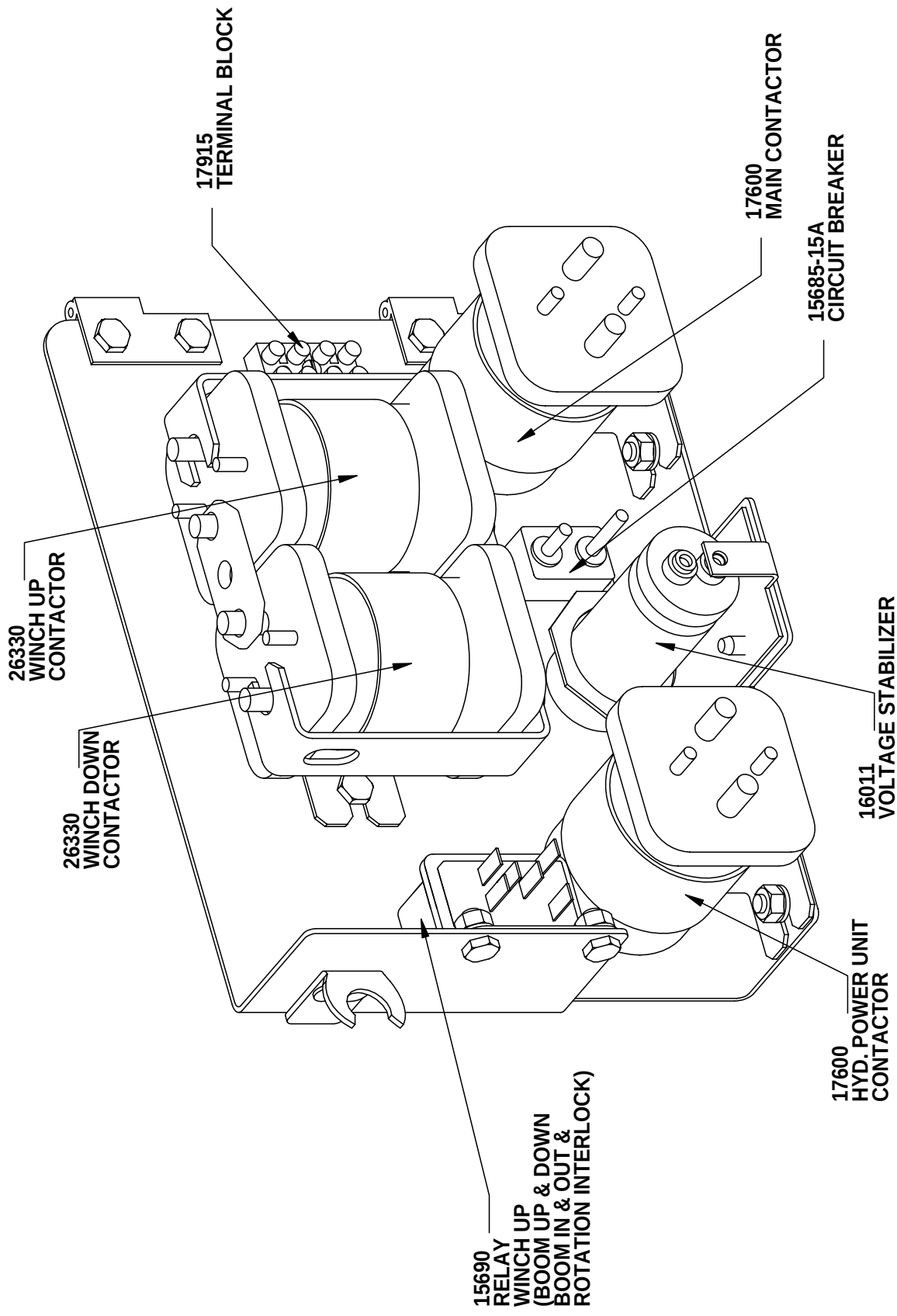
21310



ITEM	QTY	PART NO.	DESCRIPTION
10	1	19302	SET COLLAR
9	4	ILWSH-031	LOCK WASHER - 5/16"
8	4	ISHCS03118050-5	SOCKET HEAD CAP SCREW - 5/16-18 x 1/2"
7	1	19275	CABLE CLAMP - 3/4" x 13/32" HOLE
6	2	19270	SNAP BUSHING - 3/8" I.D.
5	1	19063	SNAP BUSHING - 1/2" I.D.
4	1	21277	SWITCH BRACKET
3	1	19377-2	CABLE WEIGHT ASSY
2	1	22683	CORD REEL ASSY
1	1	19376	LIMIT SWITCH

 VENTURO MANUFACTURING, INC. CINCINNATI, OHIO	TITLE		DATE	SECTION
	REPLACEMENT PARTS DWG		8-8-03	C400
	21276 ANTI-TWO-BLOCK SYSTEM		SUPERSEDES	21275

19897 ELECTRICAL COMPONENT ASSEMBLY



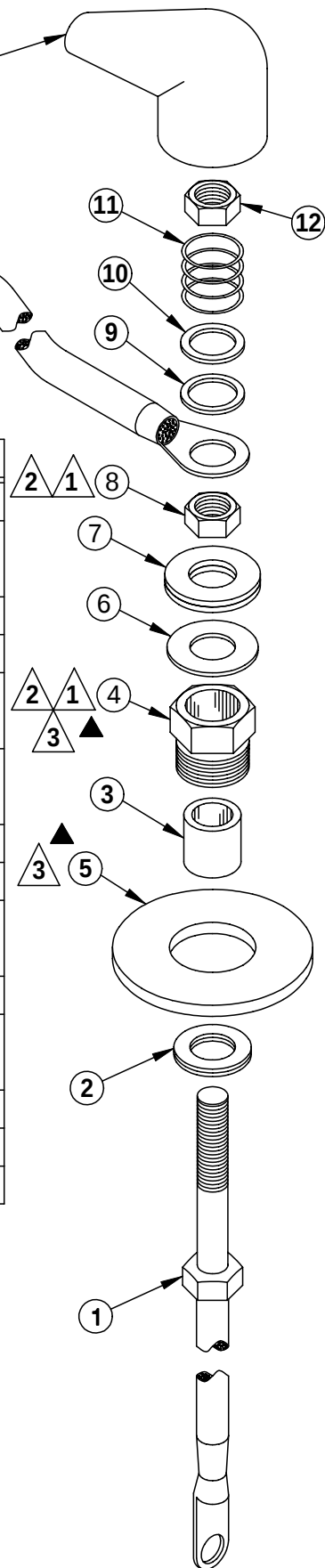
 MANUFACTURING, INC. CINCINNATI, OHIO	TITLE ELECTRICAL COMPONENT ASSEMBLY		DATE 7-31-03B	SECTION -
	ET18K(X), ET25K(X) ▲		SUPERSEDES 7-16-02A	19919

▲ 16780 AND 16780-1 SWIVEL TERMINAL ASSY.

17012 RUBBER BOOT - REF

26035 OR 26035-1
SWIVEL PIGTAIL - REF

ITEM	QTY	PART NO.	DESCRIPTION
1	1	16783	PIGTAIL & STUD ASSY
* 2	2	14357-1	FIBER WASHER 5/8" I.D. x 1 1/16" O.D. x 1/16" THK
* 3	1	14233	INSULATING BUSHING
4	1	14232-R	7/8" INVERTED FLARE NUT
5	1	!FWSH-113SAE	FLAT WASHER 1 3/16" I.D. x 2 3/4" O.D. x 3/16" THK
* 6	1	14357-2	FIBER WASHER 5/8" I.D. x 1 1/4" O.D. x 1/16" THK
* 7	2	!FWSH-063SAE	FLAT WASHER - 5/8" SAE
* 8	1	21273 ▲	BRASS JAM NUT - 5/8"-11 W/ SET SCREW
* 9	1	5612-162-62	TEFLON WASHER .657" I.D. x .875" O.D. x .062" THK
* 10	1	5714-113-62	BRASS WASHER
* 11	1	LC-098K-00	SPRING .845" O.D. x .098" W x 1.00" F.L.
* 12	1	!JNUT-06311N	NYLON LOCK-JAMNUT - 5/8"-11
* 13	1	LOCTITE-24205	LOCTITE CAPSULE GRADE 242 BLUE
* 14	1	19368	16780 REPLACEMENT PARTS DWG



* ITEMS INCLUDED IN 16780-KIT (REPLACEMENT PARTS KIT)

16780 SWIVEL TERMINAL ASSY REPLACES & IS
INTERCHANGEABLE WITH 14231 SWIVEL TERMINAL
ASSY ON ET20000 & ET20K(X) CRANES.

▲ 1 TORQUE TO 30 FT-LBS.

▲ 2 SECURE WITH LOCTITE 242 BLUE

▲ 3 16780-1 ASSY DOESN'T INCLUDE ITEM 4 OR 5



MFG., INC.
CINCINNATI, OHIO

TITLE
REPLACEMENT PARTS

ET18K(X), ET25K(X)

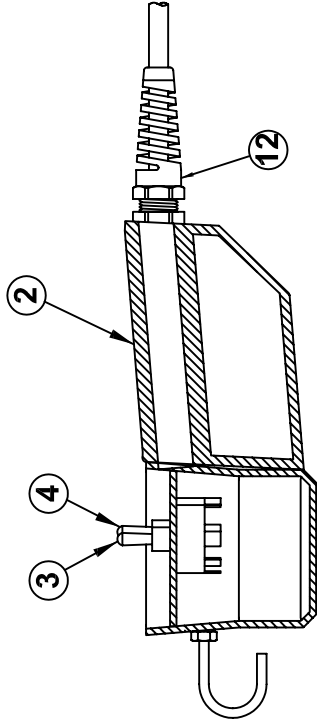
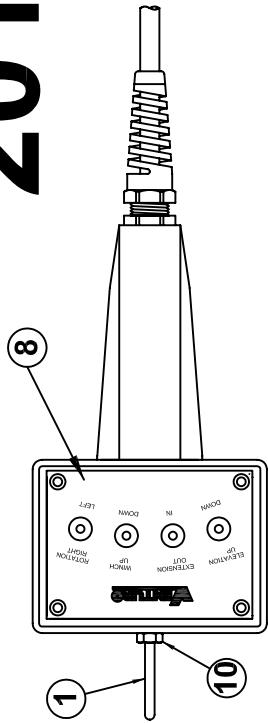
DATE
8-8-03B

SUPERSEDES
10-17-97A

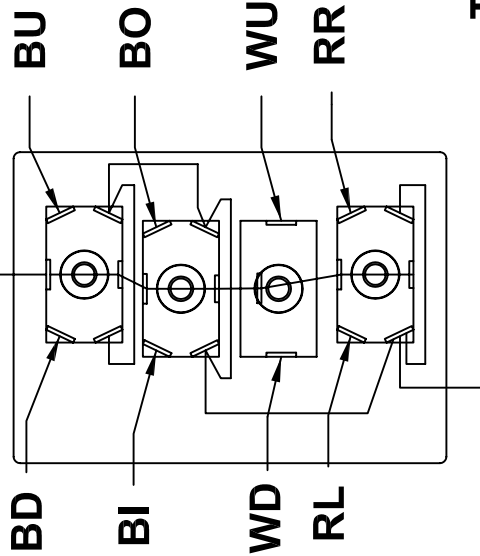
SECTION
C400

19368

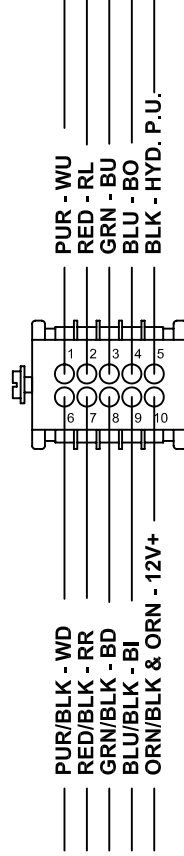
20170 PENDANT



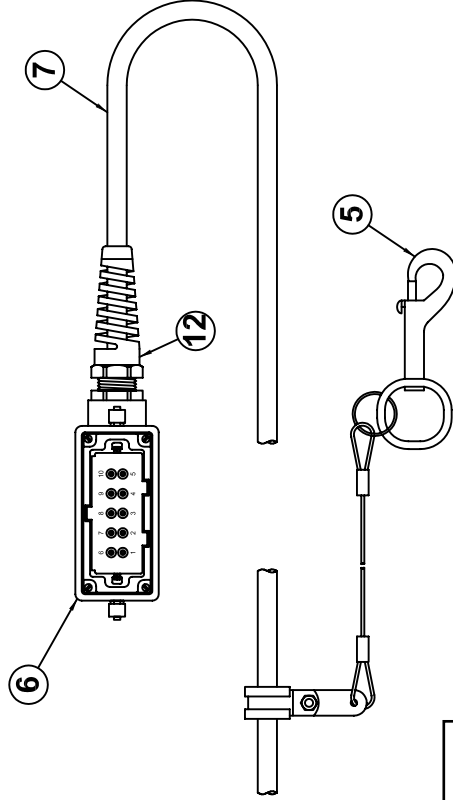
+12 VDC



TO HYD. P.U.



PLUG - BACKSIDE VIEW



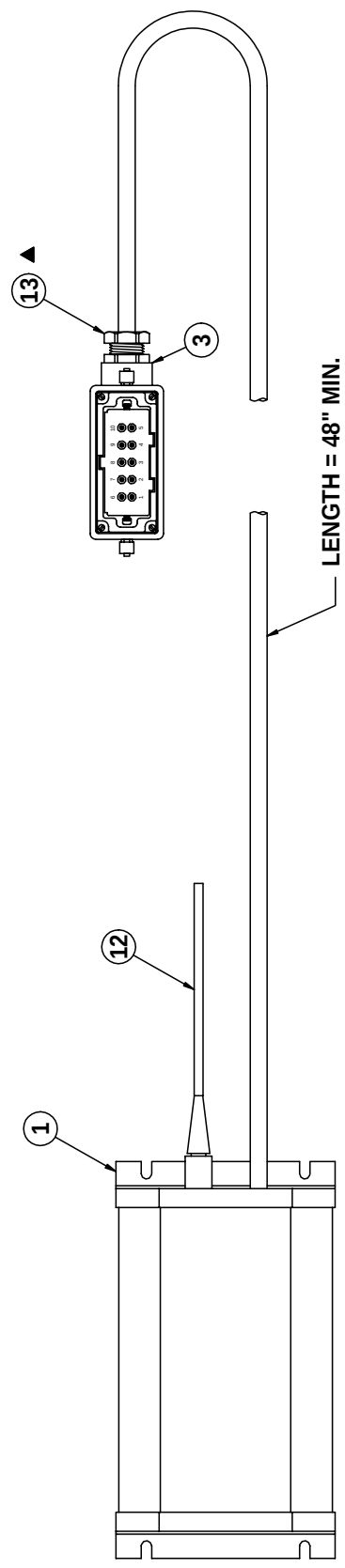
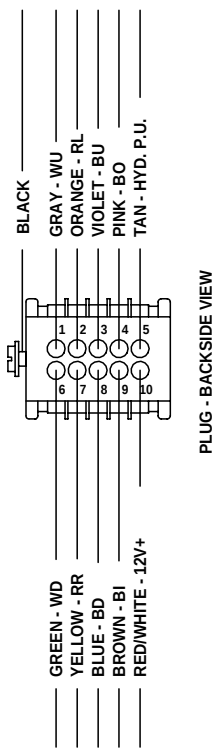
11/18/11
NOTICE
FOR REPLACEMENT CORD ASSEMBLIES YOU
MUST USE ENGINEERING DRAWING 19505-XX
REV. 'C', WHICH CALLS FOR THE 18/13
CONDUCTOR WIRE/CABLE.

Joe D.,

14	1	20195	JUMPER - 3-1/2" LONG - 5 JUMPS
13	-	-	-
12	1	20975	STRAIN RELIEF - M20
11	4	1FHPS#10150A	FLAT HEAD PHILLIPS SCREW - #10 x 1 1/2" LG
10	1	1HNUT-02520	HEX NUT - 1/4-20
9	1	20194	JUMPER - 3-1/2" LONG - 6 JUMPS
8	1	20475	LOGO PLATE, PENDANT CONTROL
7	1	19505-XX	CORD ASSEMBLY (xx = LENGTH IN FT.)
6	1	19482	PLUG ASSEMBLY - 10 + 1 POLE
5	1	15913-2	PHAN., CLAMP AND TETHER ASSEMBLY
4	3	20137	TOGGLE SWITCH
3	1	13763	TOGGLE SWITCH
2	1	20154	PENDANT HOUSING
1	1	11557	PENDANT HOOK

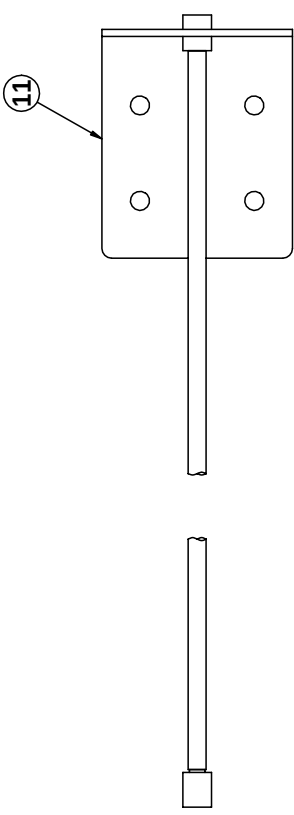
 MANUFACTURING, INC. CINCINNATI, OHIO	TITLE		DATE	SECTION
	REPLACEMENT PARTS DRAWING		5-31-06H	-
	ET12KX, ET18KX, ET25KX		SUPERSEDES 1-12-04G	20085

20412 RADIO REMOTE



NOTE: ANTENNA IS SUPPLIED WITH RADIO, ALSO AVAILABLE AS A REPLACEMENT PART

ITEM	QTY	PART NO.	DESCRIPTION
13	1	20405	CABLE GLAND - M20
12	1	20966	ANTENNA (SEE NOTE)
11	1	20965	REMOTE ANTENNA ASSEMBLY (OPTIONAL)
10	1	1TERM16G#10RG	16GA #10 RING TERMINAL (NOT SHOWN)
9	10	1TERM16G-PIN	16 GA PIN TERMINAL (NOT SHOWN)
8	4	1HNUT-#1024	HEX NUT - #10-24 (NOT SHOWN)
7	2	1LWSH-#10-STAR	LOCK WASHERS - STAR (NOT SHOWN)
6	3	1LWSH-#10	#10 LOCK WASHERS (NOT SHOWN)
5	8	1FWSH-#10	#10 FLAT WASHERS (NOT SHOWN)
4	4	1PHCS-#10075	PAN HEAD CAP SCREWS - #10-24 - (NOT SHOWN)
3	1	19482	10 PIN CONNECTOR
2	1	20413-TX	REMTRON RADIO TRANSMITTER
1	1	20413-RX	REMTRON RADIO RECEIVER

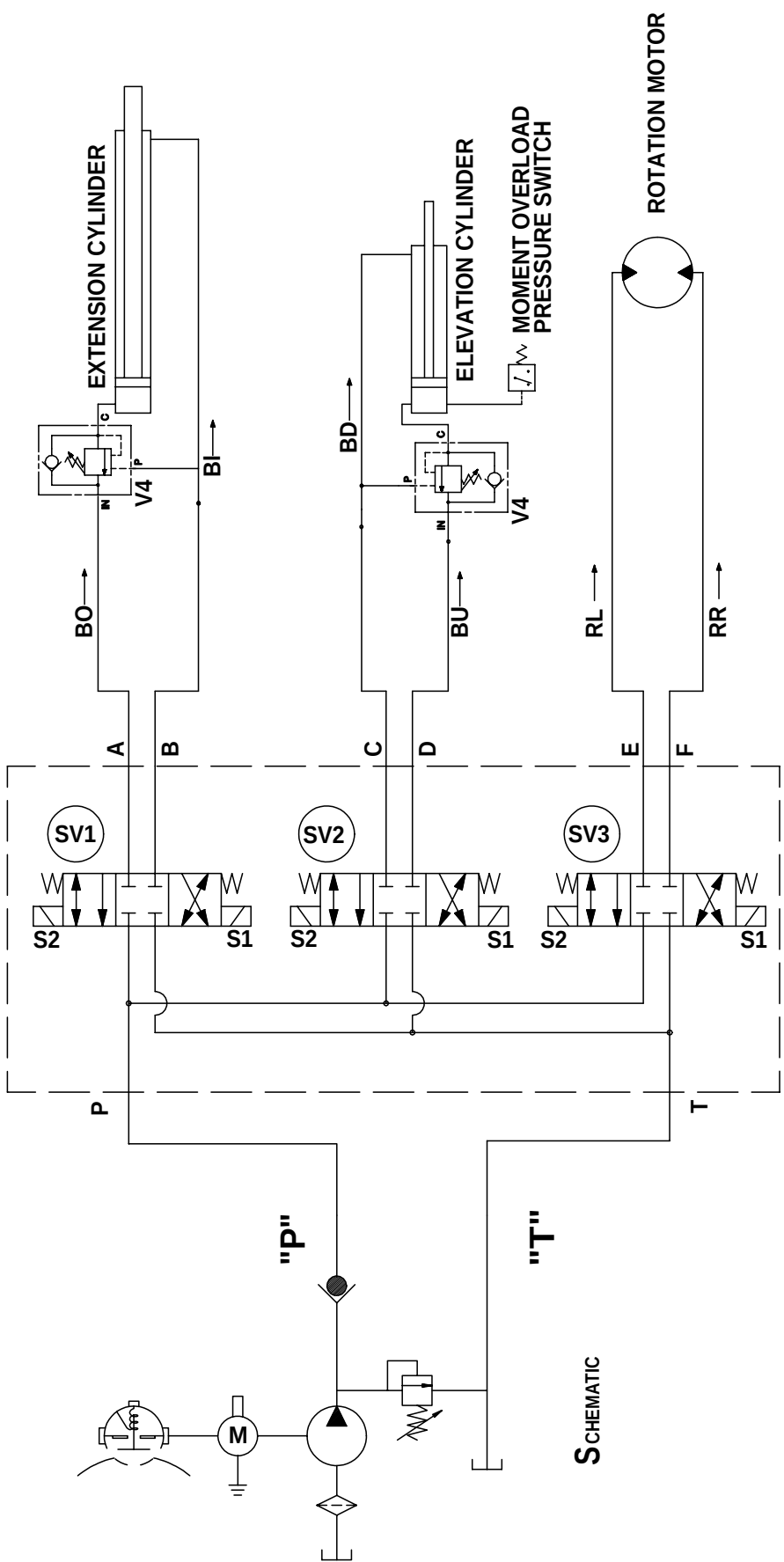


**VENTURO**
MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE
REPLACEMENT PARTS DRAWING
ET18KX, ET25KX

DATE
10-8-03D
SUPERSEDES
7-31-03C

SECTION
C400
20419



OPERATION

- SV1**
 - ENERGIZE "S2" OPEN FLOW 'P' TO 'A'
 - 'B' TO 'T'
 - ENERGIZE "S1" OPEN FLOW 'P' TO 'B'
 - 'A' TO 'T'
- SV2**
 - ENERGIZE "S2" OPEN FLOW 'P' TO 'C'
 - 'D' TO 'T'
 - ENERGIZE "S1" OPEN FLOW 'P' TO 'D'
 - 'C' TO 'T'
- SV3**
 - ENERGIZE "S2" OPEN FLOW 'P' TO 'E'
 - 'F' TO 'T'
 - ENERGIZE "S1" OPEN FLOW 'P' TO 'F'
 - 'E' TO 'T'

VENTURO MANUFACTURING, INC. CINCINNATI, OHIO	TITLE HYDRAULIC SYSTEM DIAGRAM		DATE 7-31-03B	SECTION C400
	ET18KX, ET25KX		SUPERSEDES 4-5-02A	20156



LIMITED WARRANTY POLICY

This limited policy warrants new products of Venturo be free from defects in material and workmanship for a period of one (1) year from date of original installation. This warranty covers:

- ◆ ***Repair or replacement of product***
- ◆ ***Labor to repair or replace product***
- ◆ ***Freight to return and/or replace product***

We shall not be liable for any contingent liabilities arising out of the improper function of any products. Warranty shall become void if the product is improperly installed, modified, damaged, abused or used for application other than intended use.

WARRANTY CLAIMS

Venturo Manufacturing, Inc. will make a good faith effort for prompt correction or other adjustment with respect to any product, which proves to be defective after our inspection and within the warranty period. Before any repairs are attempted or before returning any product, your Venturo Distributor is required to obtain a warranty claim number. This number is necessary for any claim to be considered. To obtain a warranty claim number, Venturo requires the model and serial number. Only authorized Venturo Distributors can perform warranty. For the name and address of your local Venturo Distributor call the **Warranty Claim Department – 513-772-8448**.

WARNING – It is the responsibility of the installer to insure the installation is completed according to the manufacturer's recommendations, insure the ultimate user understands how to operate product in a safe manner and understands the need for regular service and maintenance by an authorized Venturo Distributor. No modifications or alterations may be made to any Venturo products without the expressed written consent of the manufacturer. Reinstallation of any Venturo product must be done by an authorized Venturo Distributor, to the standards of the industry including maintenance, service and affixing of all instruction, safety and warning decals. Users should again be instructed as to the safe operation at time of delivery. Maintenance, service, operation and safety warning decals are available on request from Venturo Manufacturing, Inc.

VENTURO MANUFACTURING, INC

DIVISION OF COLLINS ASSOCIATES, INC
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