



VENTURO
TRUCK MOUNTED CRANES



ET18KX



INSTALLATION & OWNER'S MANUAL



Sold and Serviced by:

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TITLE	DATE	SECTION
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ET18KX	SUPERCEDES 7-22-04	22097

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

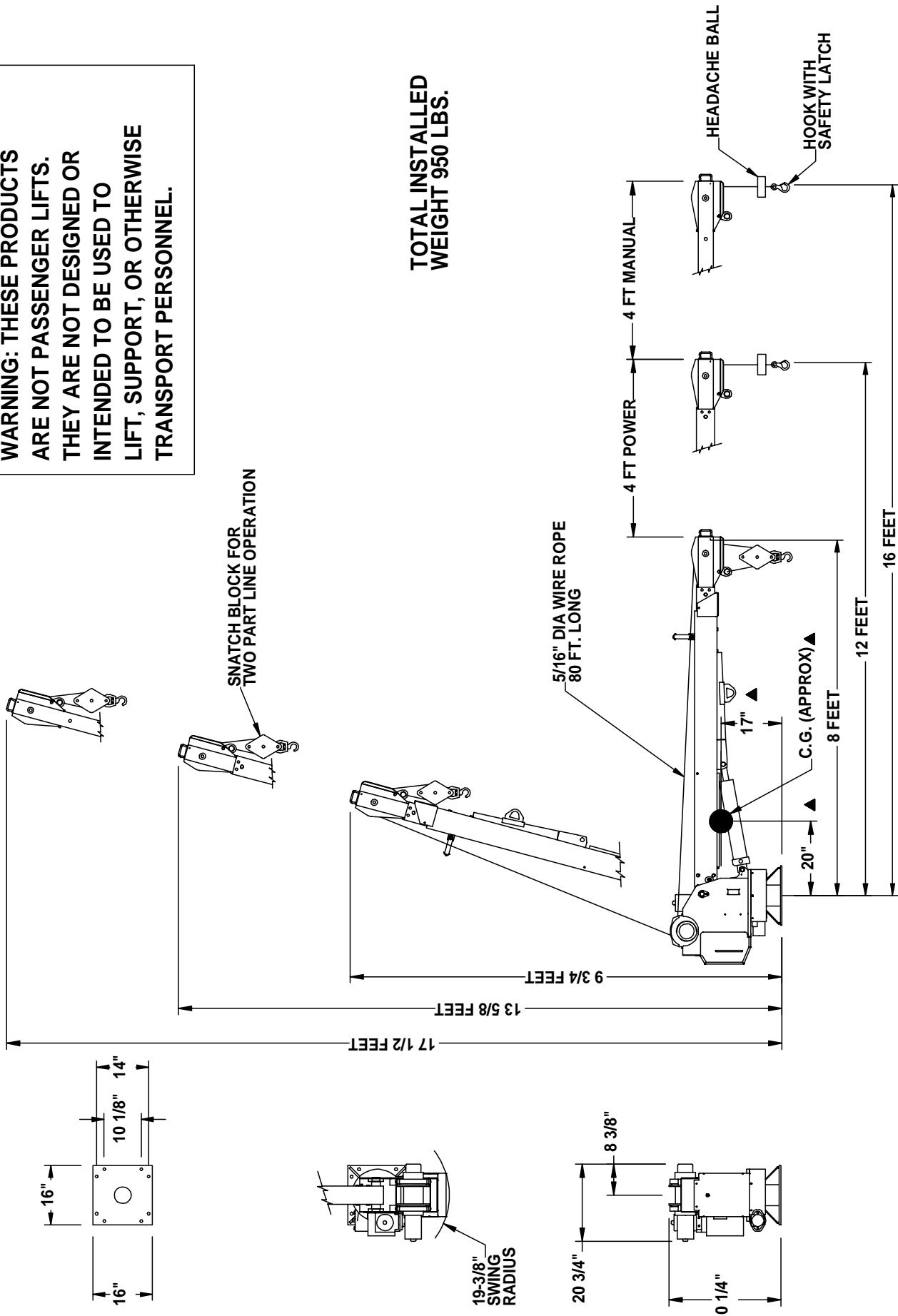
- A. CAPACITY INDICATOR
Select boom reach and angle allowable for load by using capacity indicator arrow and chart on either side of boom.
- B. BATTERY HOOKUP
A parallel auxiliary battery should be installed near the crane as shown on Dwg. I24600 under "RECOMMENDED INSTALLATION". The parallel auxiliary battery minimum rating should be 450 Cold Cranking Amps (at 0° F) and 100 reserve capacity, or 78 plates and 70 amp hours.



TITLE	INSTALLATION DWG	DATE	7-29-03	SECTION	C120
	ET18KX-8/16	SUPERCEDES	-		21302

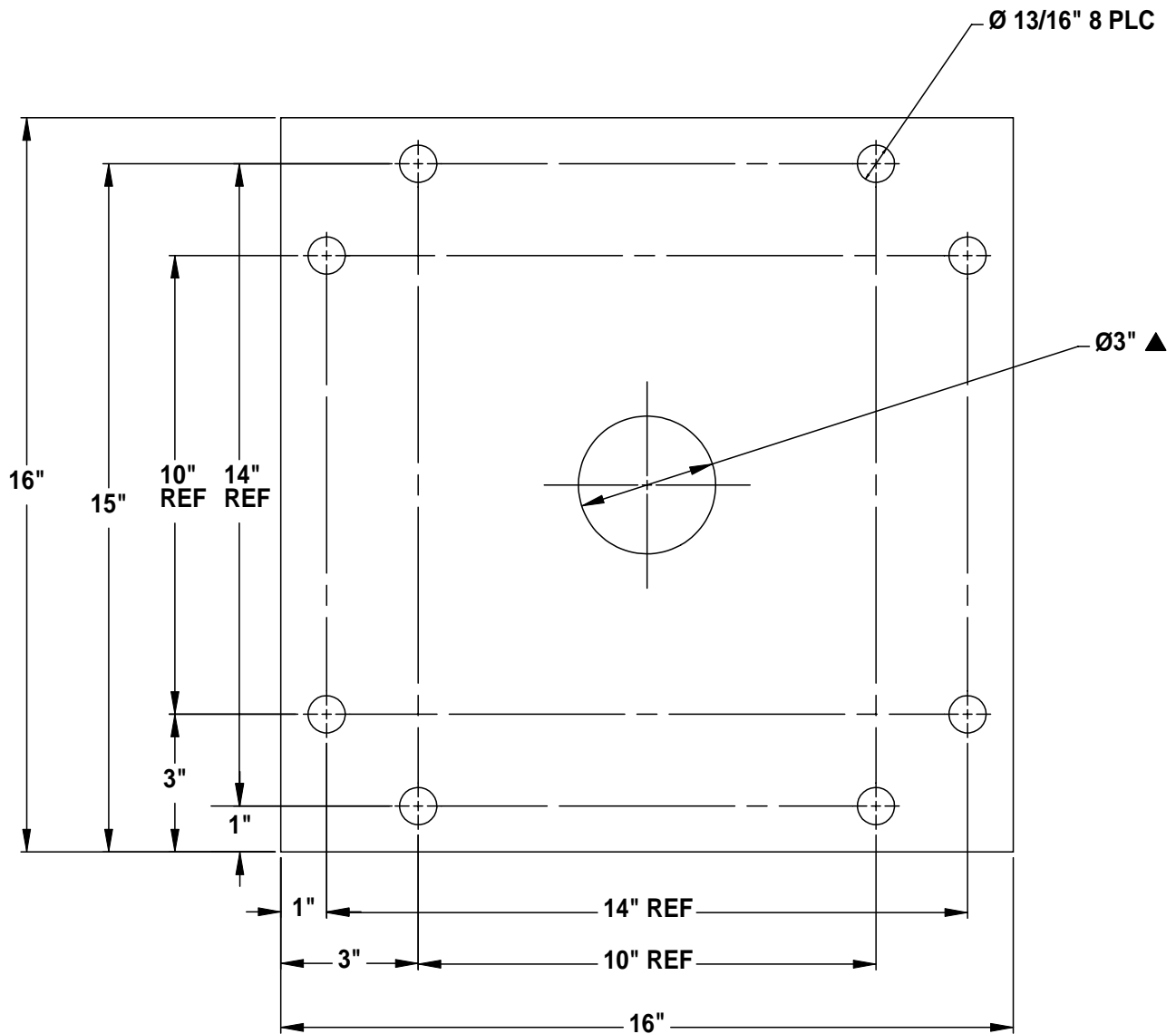
WARNING: THESE PRODUCTS ARE NOT PASSENGER LIFTS. THEY ARE NOT DESIGNED OR INTENDED TO BE USED TO LIFT, SUPPORT, OR OTHERWISE TRANSPORT PERSONNEL.

TOTAL INSTALLED WEIGHT 950 LBS.

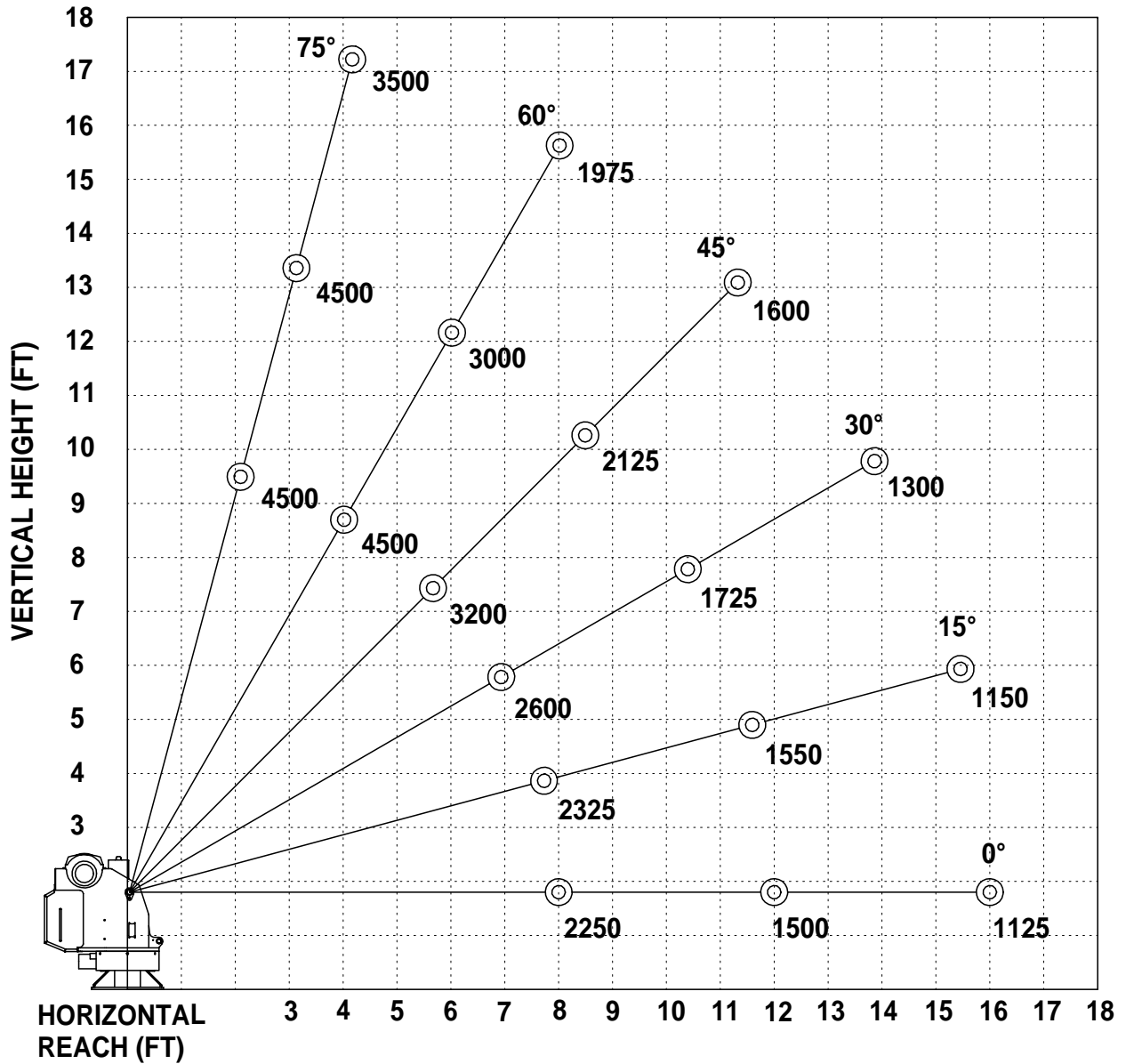


VENTURO MANUFACTURING, INC. CINCINNATI, OHIO		INSTALLATION DRAWING	
		ET/HT18K(X) - 8/12/16 BOOM	
TITLE	DATE 3-30-04A	SECTION -	21304
SUPPERSEDES	7-1-03		

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



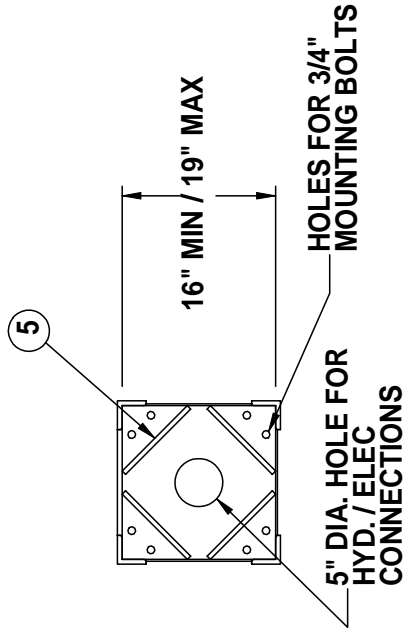
ET/HT18K(X) - 8-12-16 BOOM MAXIMUM CAPACITY CHART



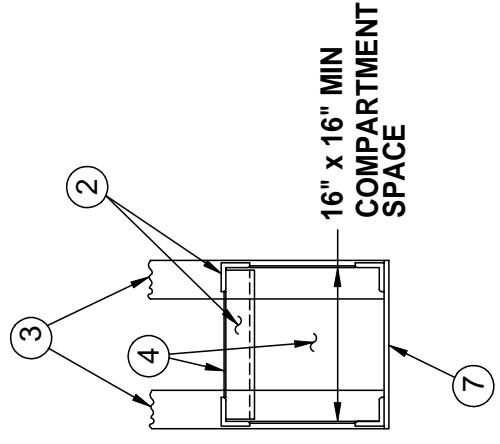
**MUST USE SNATCH BLOCK
FOR LOADS OF 2250 LBS.
AND GREATER**

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

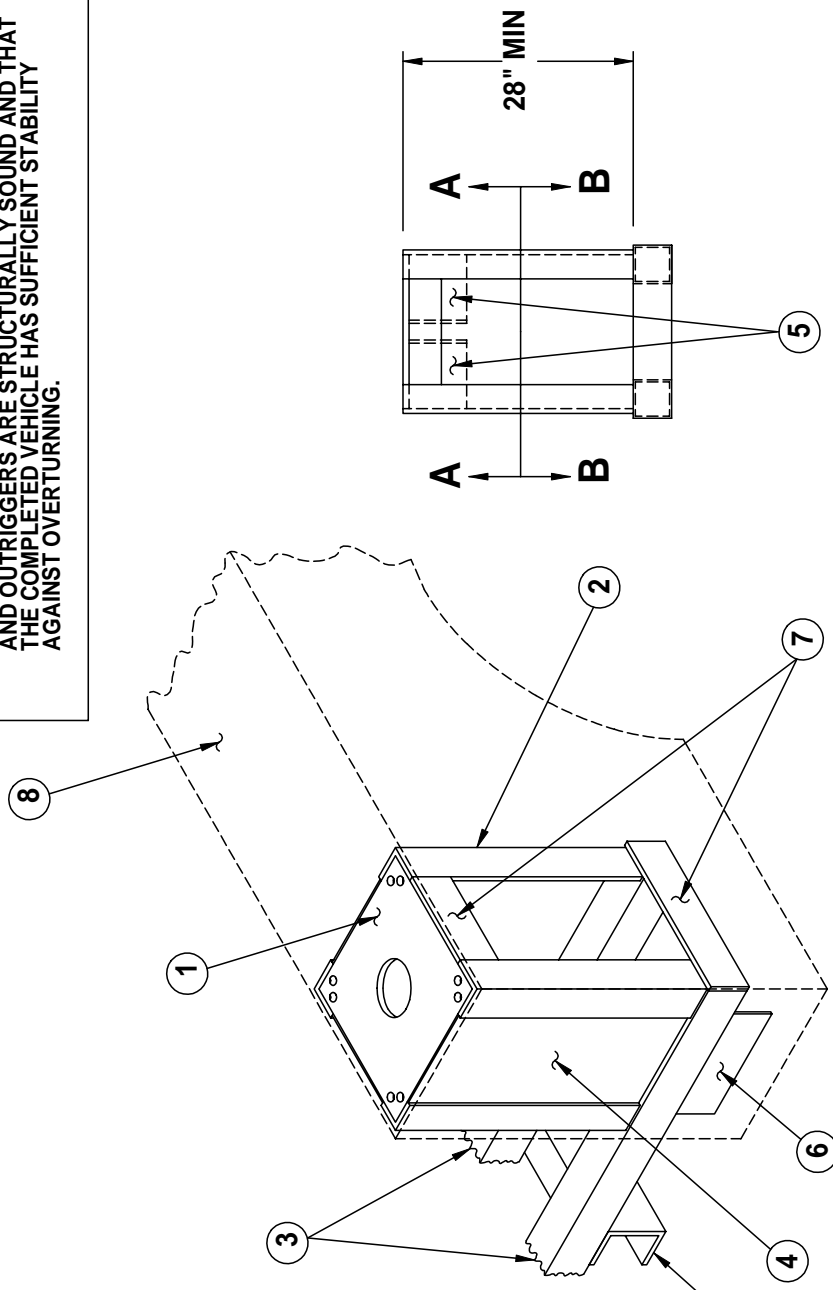
IT IS THE SOLE RESPONSIBILITY OF THE INSTALLER TO INSURE THAT THE TOTAL STRUCTURE OF CRANE, TRUCK, AND OUTRIGGERS ARE STRUCTURALLY SOUND AND THAT THE COMPLETED VEHICLE HAS SUFFICIENT STABILITY AGAINST OVERTURNING.



SECTION A-A



SECTION B-B



TYPICAL SERVICE BODY REINFORCEMENT

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

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.

3 x 3 x 3/8 ANGLES BOLTED INTO FRAME & LONGSILLS 2 PLACES

4 x 2 1/2 x 1/2 - 13.8 LBS./FT. SHIP & CAR CHANNEL

1/2 x 3 x 16 PLATE

APPROX. 36

LONGSILLS

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

PERIMETER RAIL

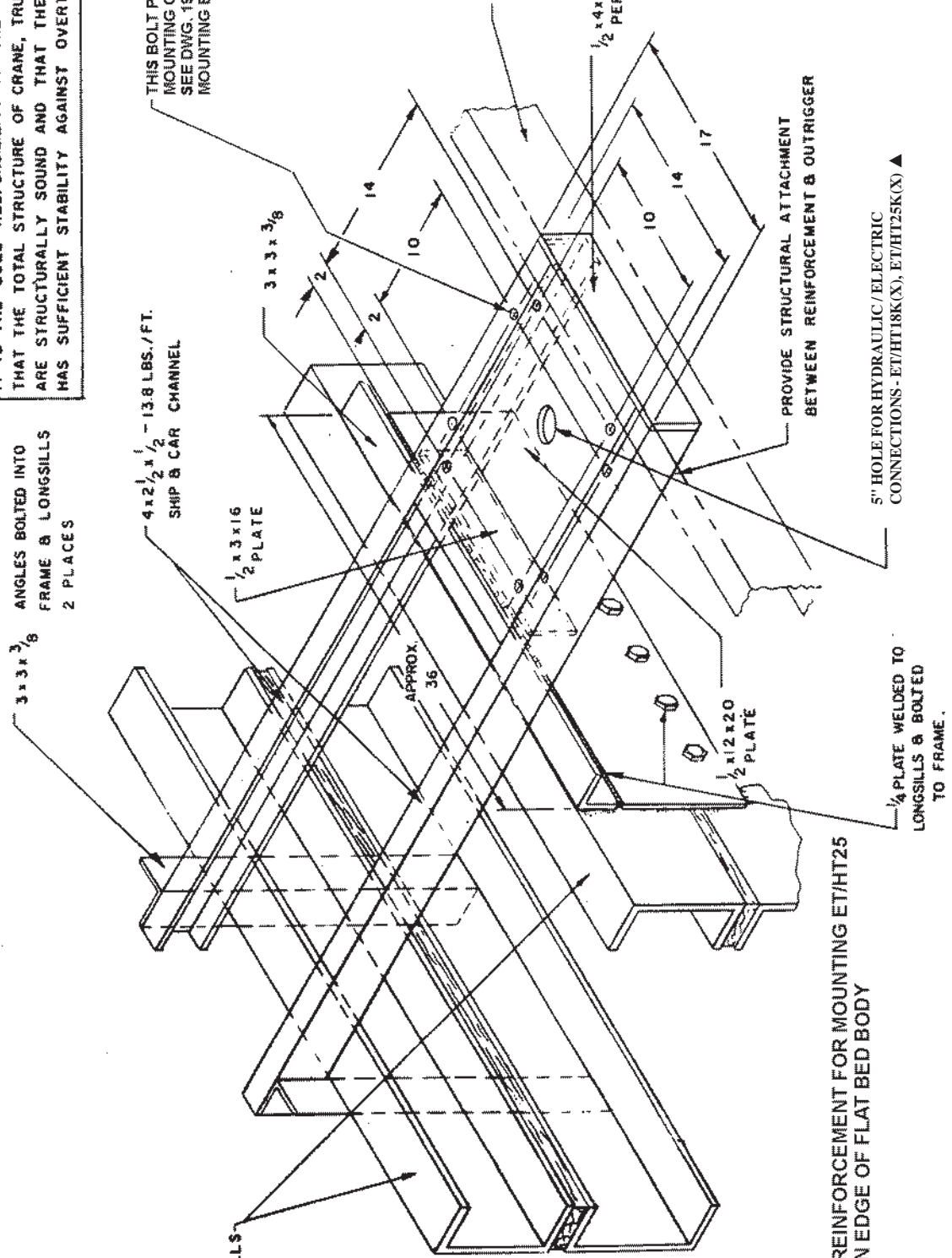
1/2 x 4 x 17 ATTACH TO PERIMETER RAIL

PROVIDE STRUCTURAL ATTACHMENT BETWEEN REINFORCEMENT & OUTRIGGER

5" HOLE FOR HYDRAULIC / ELECTRIC CONNECTIONS - ET/HT18K(X), ET/HT25K(X) ▲

1/4 PLATE WELDED TO LONGSILLS & BOLTED TO FRAME.

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



VENTURO MANUFACTURING, INC. CINCINNATI, OHIO	TITLE INSTALLATION DRAWING		DATE 7-29-03M	SECTION C100
	ET/HT18K(X), ET/HT25K(X) ▲		SUPERCEDES 10-11-02L	14510

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



TITLE
INSTALLATION DWG

DATE
5-15-02H

SECTION
C150

ET & HT CRANE SERIES

SUPPERCEDES
5-13-97G

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

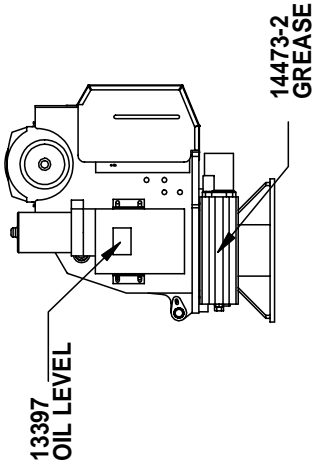
1. YOU HAVE BEEN TRAINED IN THE SAFE OPERATION OF THIS CRANE
AND
2. YOU KNOW AND FOLLOW THE SAFETY AND OPERATING RECOMMENDATIONS CONTAINED IN THE MANUFACTURER'S MANUALS, YOUR EMPLOYER'S WORK RULES, AND APPLICABLE GOVERNMENT REGULATIONS. AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO DEATH OR SERIOUS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

ELECTROCUTION HAZARD

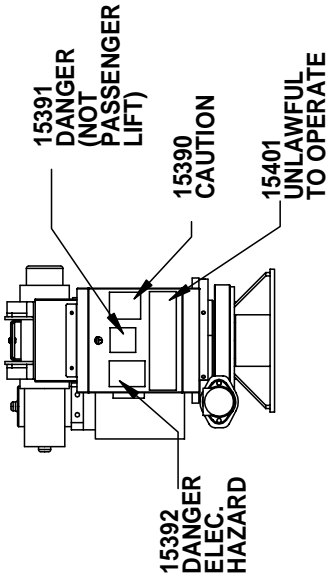
- THIS MACHINE IS NOT INSULATED.
- MAINTAIN SAFE CLEARANCES FROM ELECTRICAL LINES AND APPARATUS.
- YOU MUST ALLOW FOR BOOM SWAY, ROCK OR SAG, AND ELECTRICAL LINE AND LOADLINE SWAYING.
- THIS LIFTING DEVICE DOES NOT PROVIDE PROTECTION FROM CONTACT WITH OR PROXIMITY TO AN ELECTRICALLY CHARGED CONDUCTOR.
- 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.



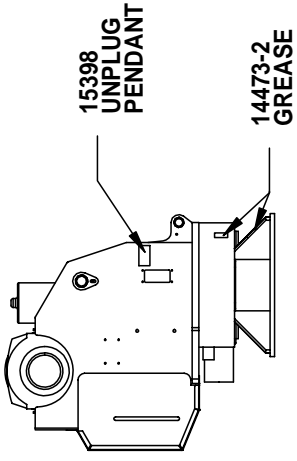
TITLE	INSTALLATION DWG	DATE	7-29-03G	SECTION	C150
	ET5500MPB-ET25KX	SUPERCEDES	10-14-97F		850711



LEFT



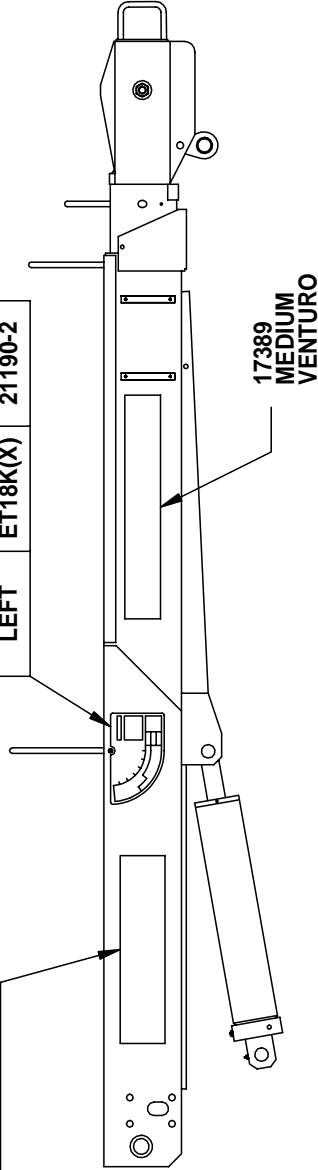
BACK



RIGHT

MODEL NO.
21191 - ET18K
21192 - ET18KX

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



BOOM

VENTURO
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.



MFG., INC.
CINCINNATI, OHIO

TITLE
CABLE & BATTERY

ET18KX / ET25KX

DATE
7-29-03A

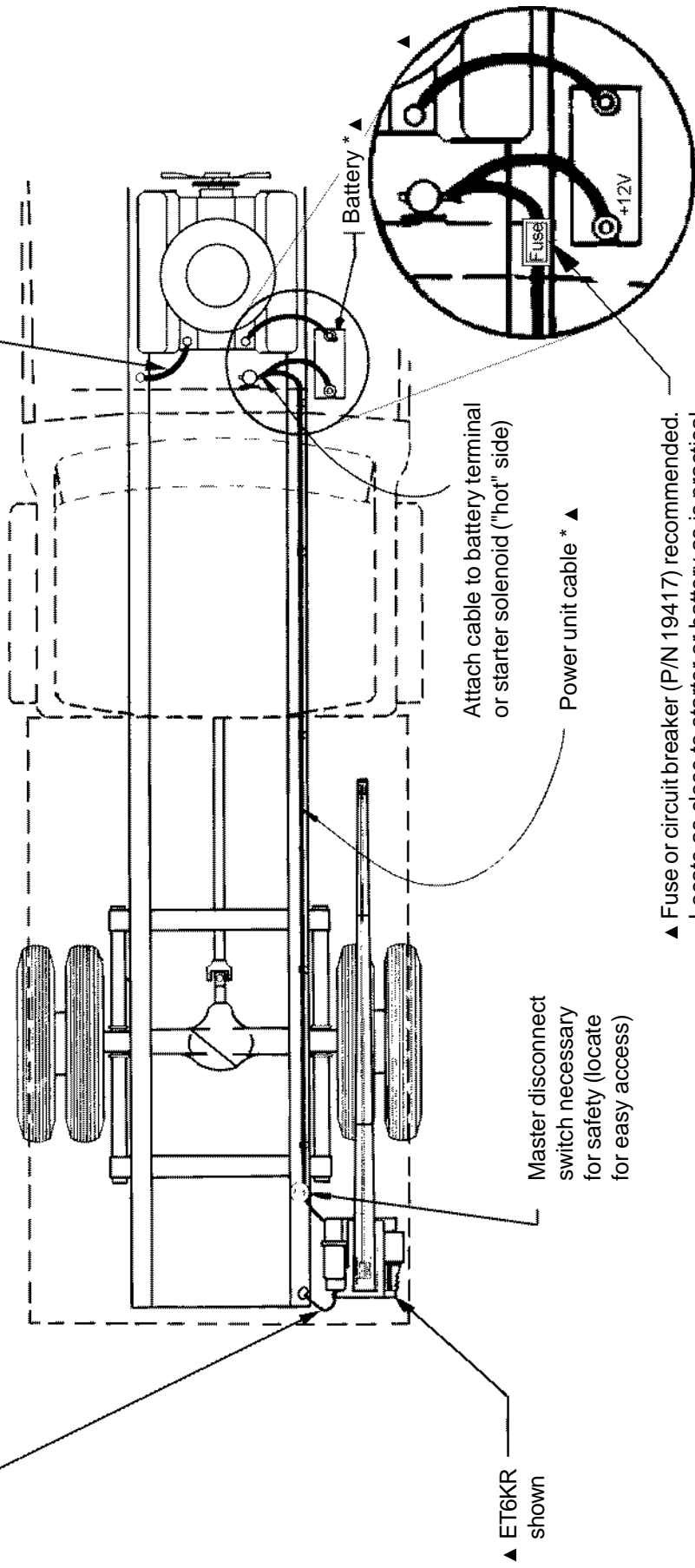
SUPERCEDES
9-4-01

SECTION
C200

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, & ET25KX cranes.

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



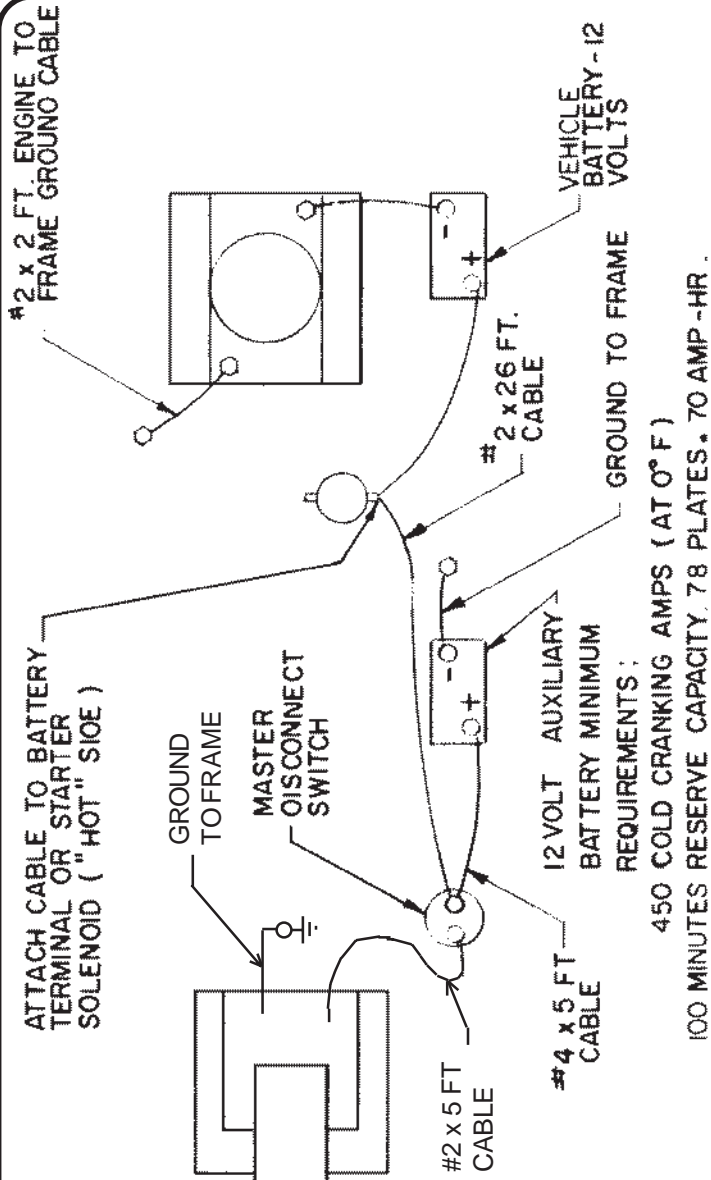
▲ Fuse or circuit breaker (P/N 19417) recommended. Locate as close to starter or battery as is practical.

▲ * 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

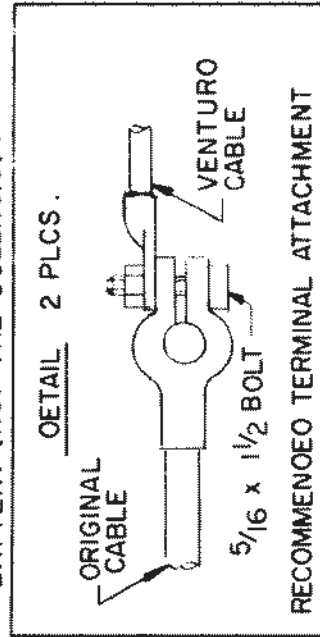
W/ AUXILIARY BATTERY IN PARALLEL WITH VEHICLE BATTERY.



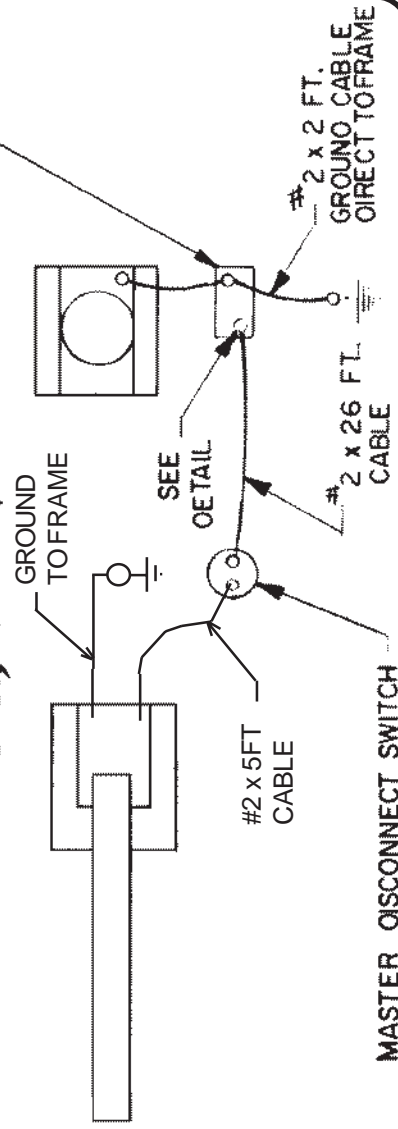
IF LONGER CABLE NECESSARY, CONSULT VENTURO ENGINEERING DEPT.

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) .



12 VOLT VEHICLE BATTERY MINIMUM REQUIREMENTS
625 COLD CRANKING AMPS (AT 0° F) ,
160 MINUTES RESERVE CAPACITY ,
102 PLATES , 105 AMP -HR . .



TITLE

ELECTRICAL INSTALLATION

SECTION

DATE
7-29-03A

SUPERCEDES
9-26-01

MANUFACTURING, INC.
CINCINNATI, OHIO

VENTURO

ET18KX & ET25KX

19947

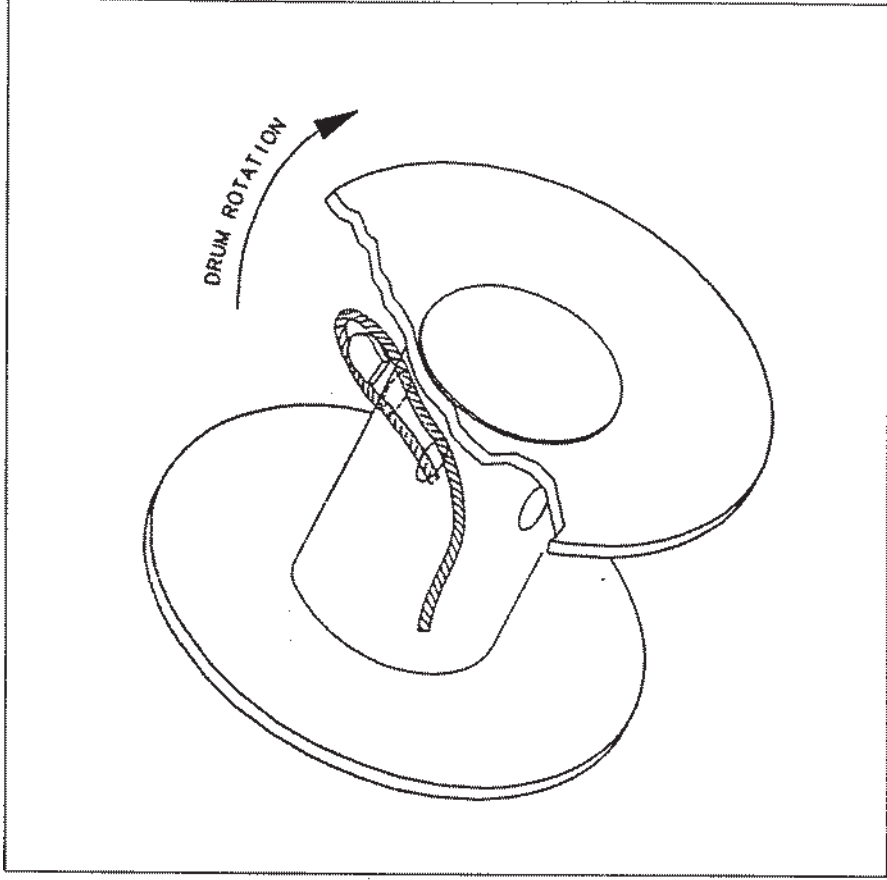
WIRE ROPE INSTALLATION

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 WINCHBRAKE 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.



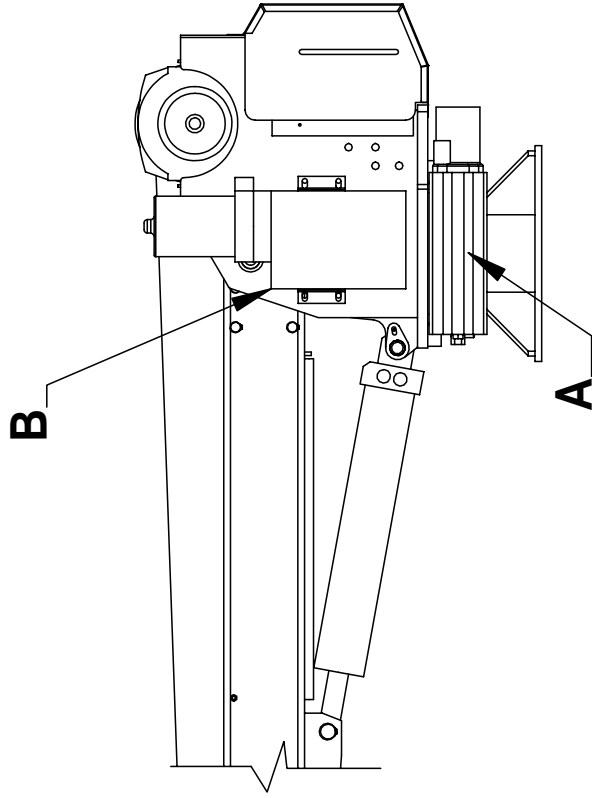
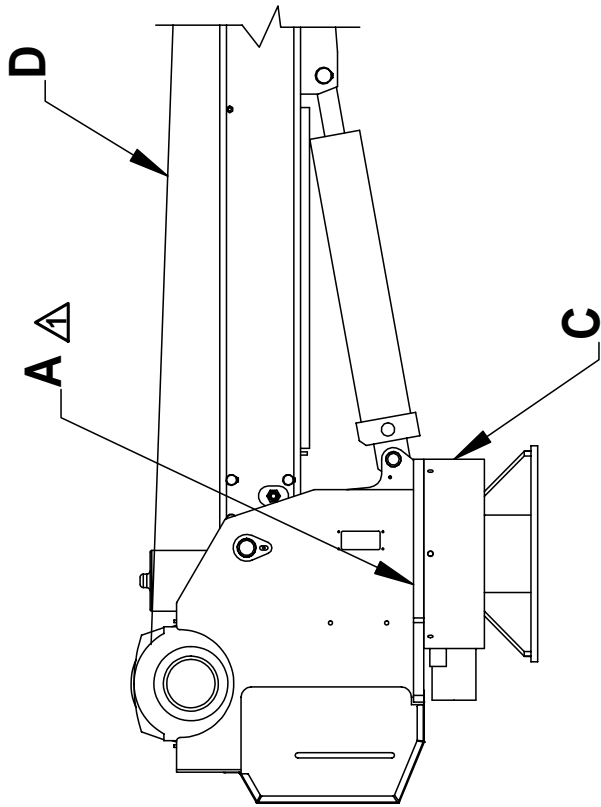
VENTURO MANUFACTURING, INC. CINCINNATI, OHIO	TITLE	WIRE ROPE INSTALLATION DRAWING	DATE	7-29-03E	SECTION	C200
		ET/HT18K(X), ET/HT25K(X), HT40KX, HT50KX	SUPERCEDES	11-22-02D		22245

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	<p>Use Lithium Based Grease</p> <p>⚠ To align hole w/ fitting, line up grease decals on lower cover and base gusset.</p>	Time of Truck Service
B	Fill Oil Reservoir to Oil Level with Boom Down	<p>Use Dextron ATF for Ambient Temperatures Between -22° F and 30° F</p> <p>Use ISO Viscosity Grade 68 or Equivalent for Ambient Temperatures Between 10° F and 125° F</p>	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

VENTURO MANUFACTURING, INC. CINCINNATI, OHIO	TITLE LUBRICATION & MAINTENANCE CHART	DATE 7-29-03 <small>SUPERSEDES</small> -	SECTION -
	ET18K(X)		21306

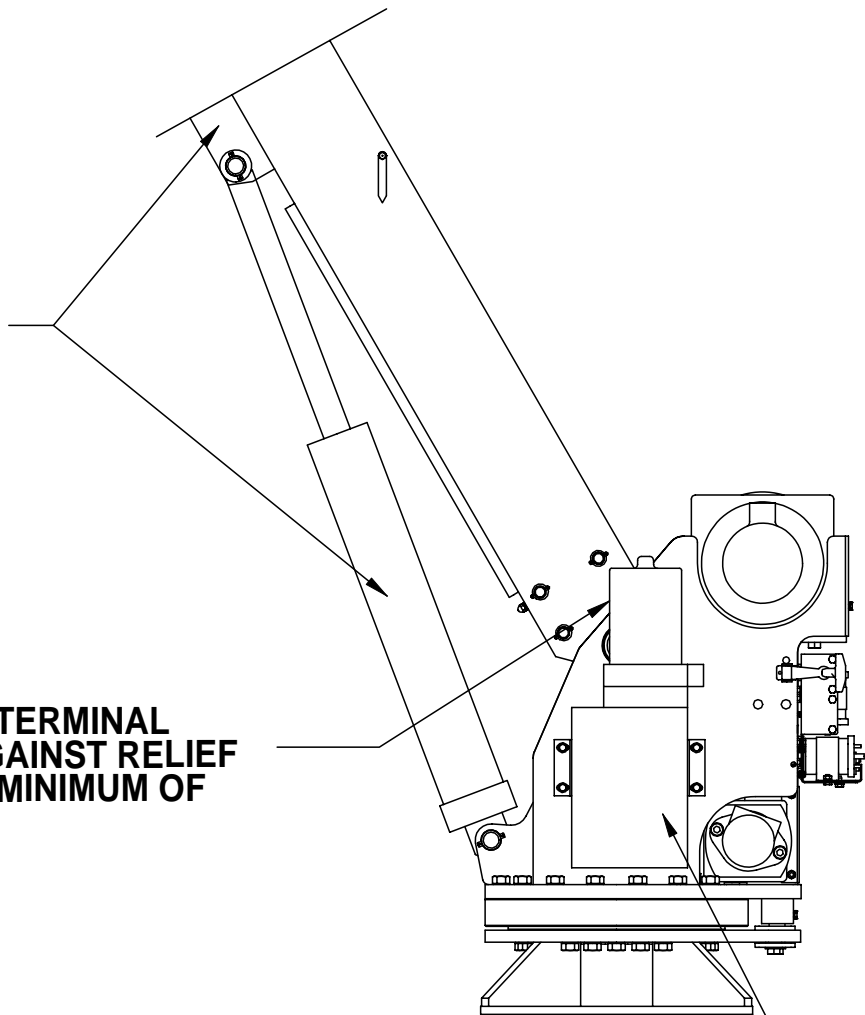
MINIMUM VOLTAGE TEST

▲ 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



TITLE
MINIMUM VOLTAGE TEST

DATE
7-29-03A

SECTION
-

ET18K(X), ET25K(X)

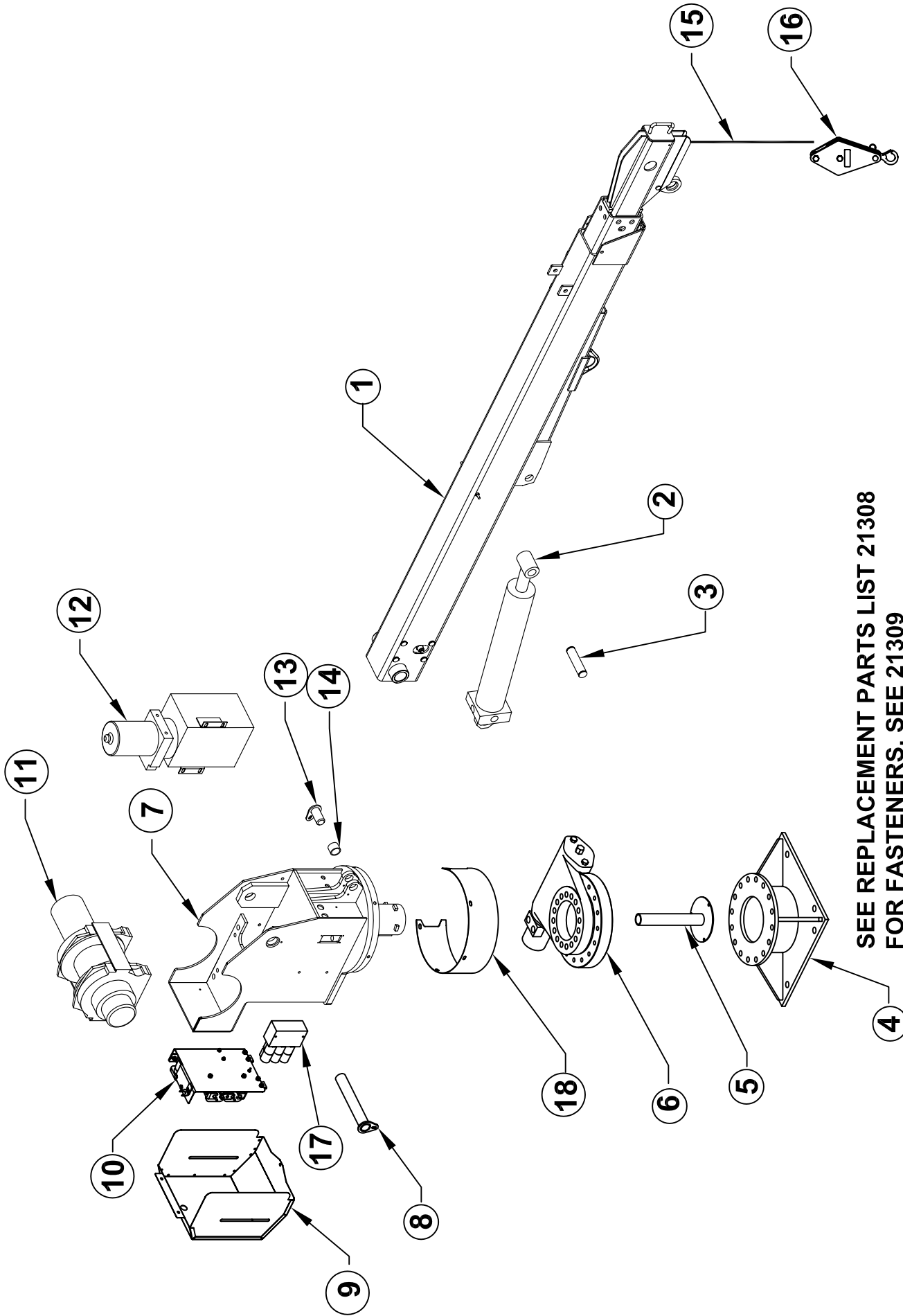
SUPERSEDES
9-5-01

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			

TITLE REPLACEMENT PARTS LIST		DATE 7-30-03	SECTION -
		SUPERCEDES -	21308
VENTURO MANUFACTURING, INC. CINCINNATI, OHIO		ET18KX	

FASTENER LIST FOR ET18KX

PART NUMBER	DESCRIPTION	QTY	LOCATION/FUNCTION
!HHCS03118063	HEX HEAD CAP SCREW 5/16-18 X 5/8" LG	1	GROUND STRAPON CANDLESTICK
!LWSH-031	LOCK WASHER - 5/16	1	GROUND STRAPON CANDLESTICK
!HNUT-03118	HEX NUT - 5/16-18	1	GROUND STRAPON 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	BOOMPINS
!LWSH-025	LOCK WASHER - 1/4"	1	BOOMPINS
!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

DATE
7-30-03

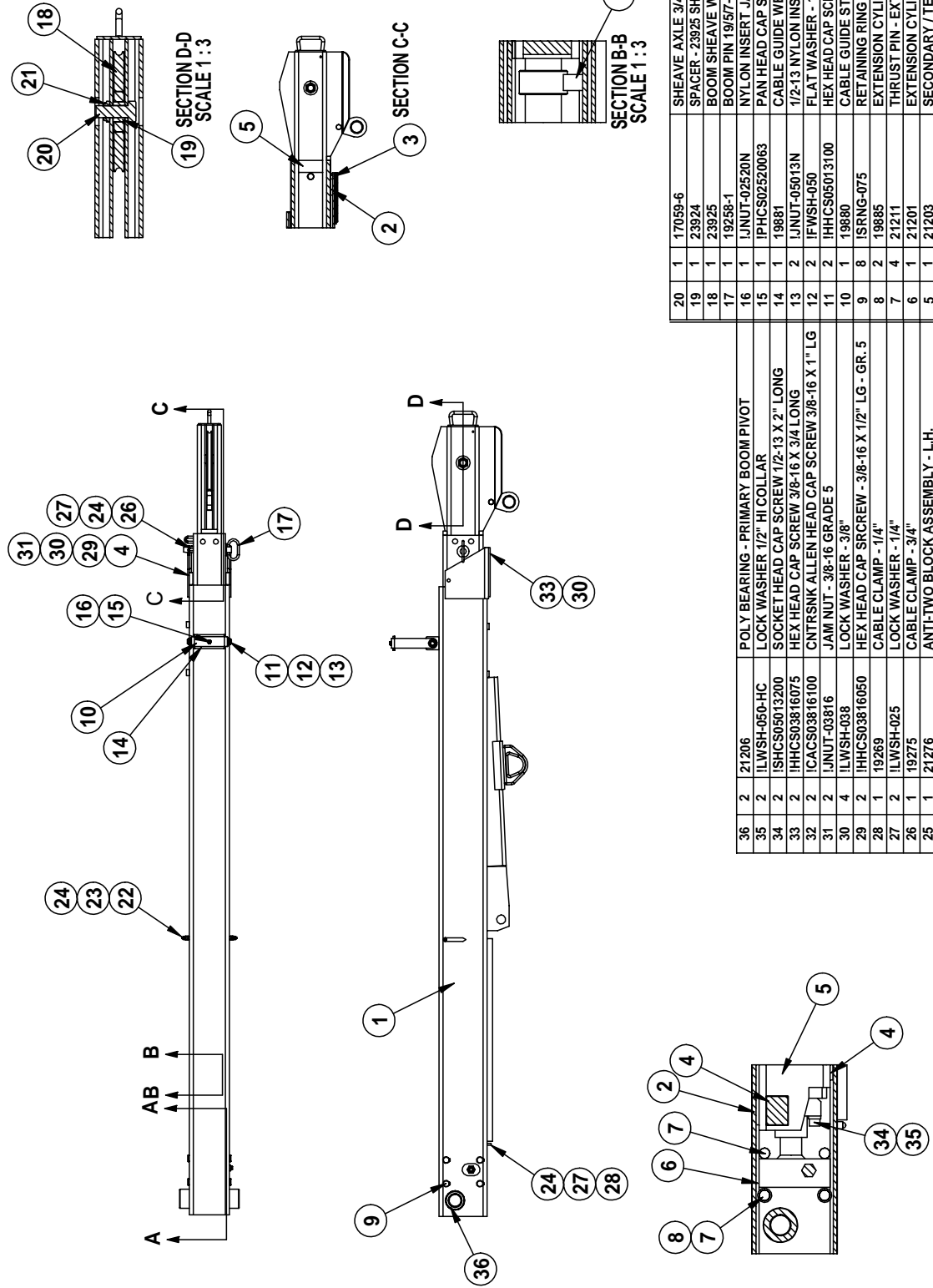
SECTION
C400

ET18K(X)

SUPERCEDES
-

21309

21200 BOOM PARTS DRAWING




ITEM QTY	PART NO.	DESCRIPTION
20	1	17059-6 SHEAVE AXLE 3/4 X 2 W/ 1" SHANK
19	1	23924 SPACER - 23925 SHEAVE
18	1	23925 BOOM SHEAVE WITH BUSHING
17	1	19258-1 BOOM PIN 19157-3/4
16	1	1JNUT-02520N NYLON INSERT JAM NUT - 1/4-20
15	1	1PHCS02520063 PAN HEAD CAP SCREW - 1/4-20 X 5/8 LONG
14	1	19881 CABLE GUIDE WEAR STRIP
13	2	1JNUT-05013N 1/2-13 NYLON INSERT JAM NUT
12	2	1FWSH-050 FLAT WASHER - 1/2"
11	2	1HHC505013100 HEX HEAD CAP SCREW 1/2-13 X 1" LONG
10	1	19880 CABLE GUIDE STRUCTURE
9	8	1SRNG-075 RETAINING RING - 3/4" SHAFT DIA - PLATED
8	2	19885 EXTENSION CYLINDER ROLLER
7	4	21211 THRUST PIN - EXTENSION CYLINDER
6	1	21201 EXTENSION CYLINDER
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 - 2 X 3 X 1/2
2	2	21208 BOOM BEARING - 2 X 3 X 1/2
1	1	21202 PRIMARY BOOM WELDED ASSEMBLY

SECTION A-A
SCALE 1:3

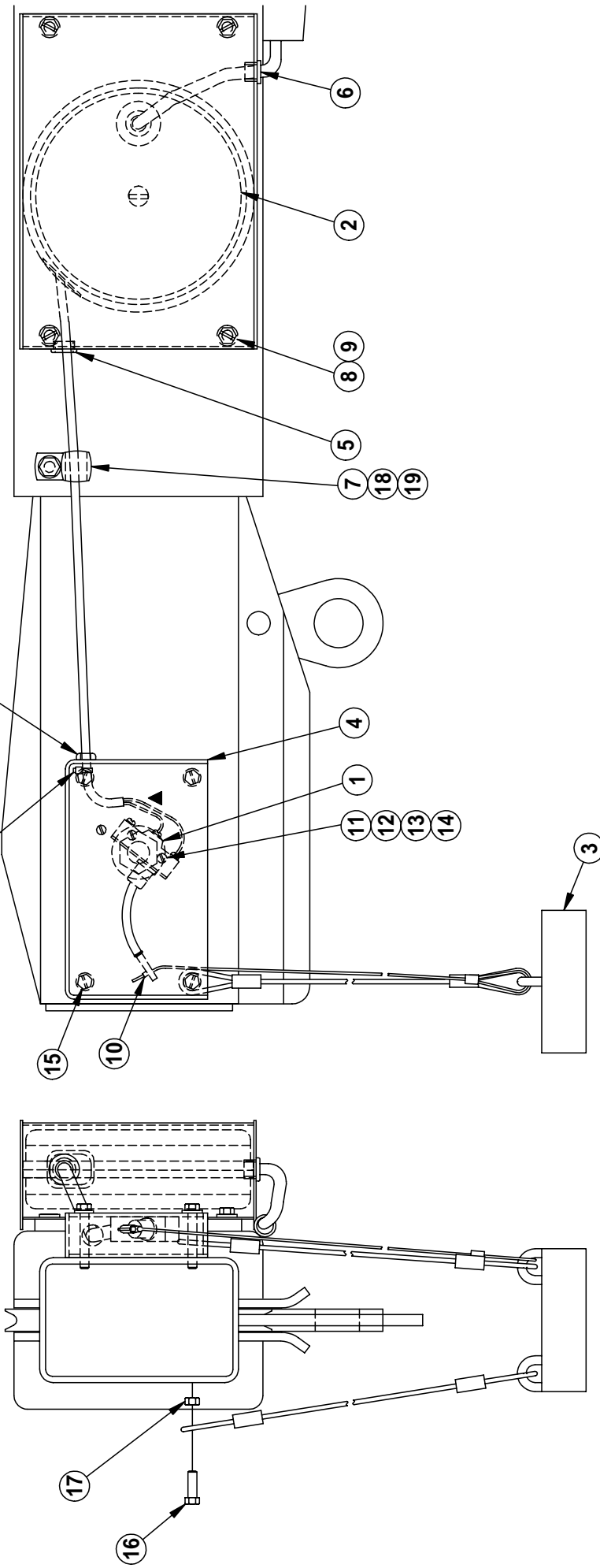
SECTION B-B
SCALE 1:3

SECTION C-C

SECTION D-D
SCALE 1:3

 VENTURO MANUFACTURING, INC. CINCINNATI, OHIO	TITLE 21200 BOOM PARTS DRAWING	DATE 7-30-03	SECTION -
	DESCRIPTION ET/HT18KX	SUPPERSEDES -	PART NO. 21310

WIRE TIE
CABLE & CUT
OFF STEM



ITEM	QTY	PART NO.	DESCRIPTION
19	1	1LWSH-025	LOCK WASHER - 1/4"
18	1	1ANUT-02520	ACORN NUT - 1/4-20
17	1	1HNUT-02520	HEX NUT - 1/4-20
16	1	1HHCS02520075-5	HEX HEAD CAP SCREW - 1/4-20 x 3/4" GR. 5
15	4	1HHCS02520175	HEX HEAD CAP SCREW - 1/4-20 x 1 3/4"
14	2	1LWSH-#06	LOCK WASHER - #6
13	2	1FWSH-#06	FLAT WASHER - #6
12	2	1HNUT-#0632	HEX NUT - #6-32
11	2	1PHMS#632125	PAN HEAD MACHINE SCREW - #6-32 x 1 1/4"
10	1	19302	SET COLLAR
9	4	1LWSH-031	LOCK WASHER - 5/16"
8	4	1SHCS03118050-5	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
REPLACEMENT PARTS DWG

DATE
8-8-03

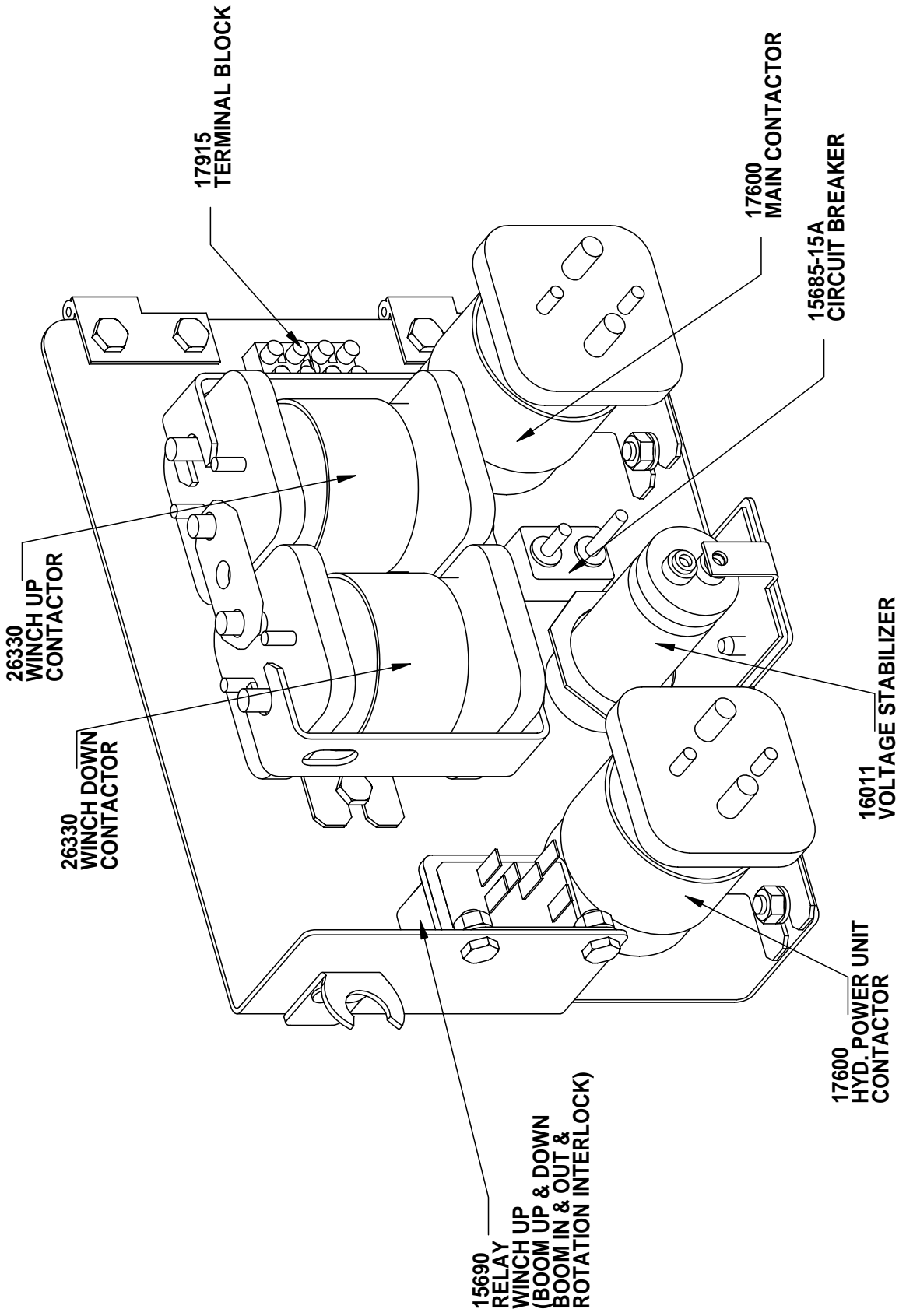
SECTION
C400

21276 ANTI-TWO-BLOCK SYSTEM

SUPERSEDES
-

21275

19897 ELECTRICAL COMPONENT ASSEMBLY



VENTURO
 MANUFACTURING, INC.
 CINCINNATI, OHIO

TITLE

ELECTRICAL COMPONENT ASSEMBLY

DATE

7-31-03B

SECTION

-

SUPERSEDES

7-16-02A

ET18K(X), ET25K(X) ▲

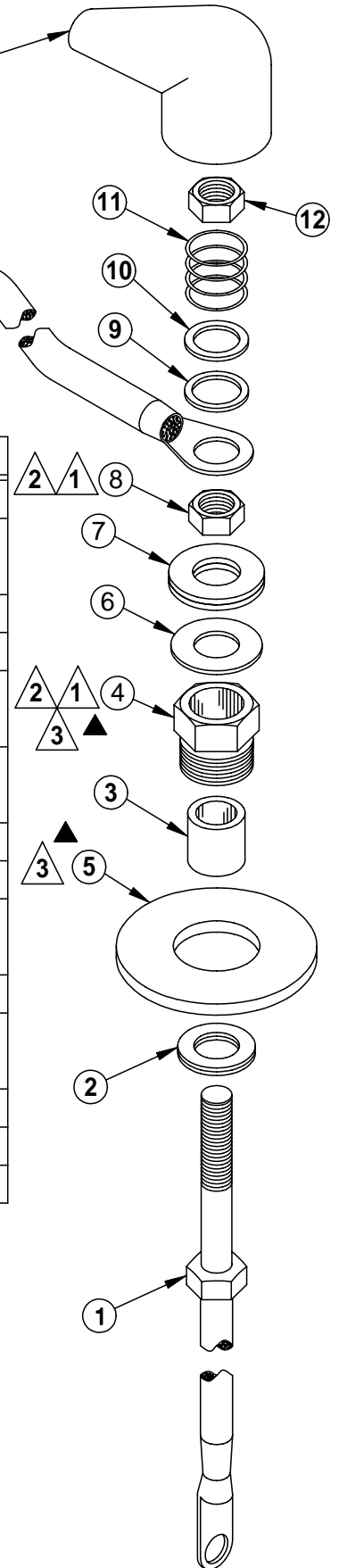
19919

▲ 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

VENTURO MFG., INC.
CINCINNATI, OHIO

TITLE
REPLACEMENT PARTS

DATE
8-8-03B

SECTION
C400

ET18K(X), ET25K(X)

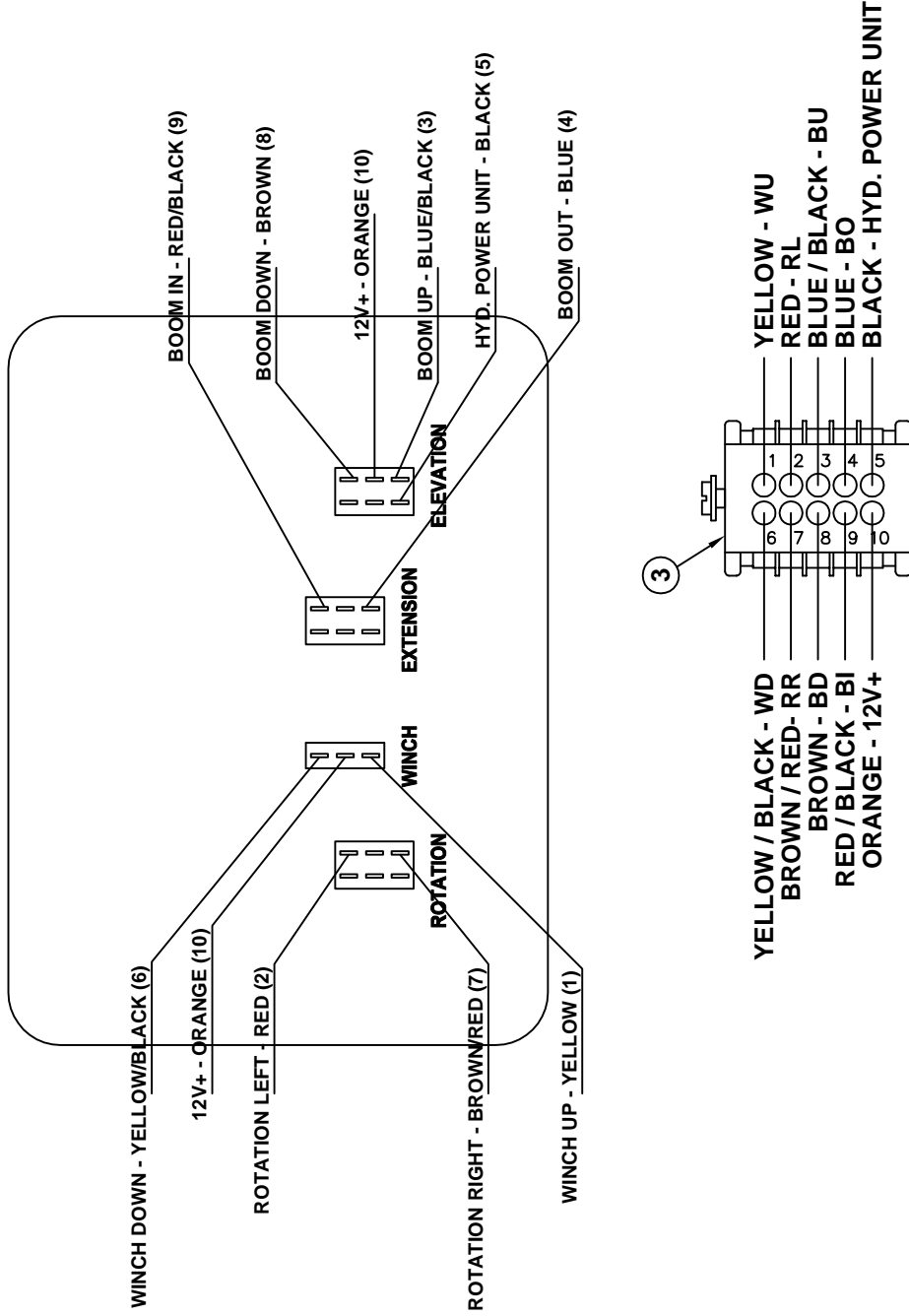
SUPERSEDES
10-17-97A

19368

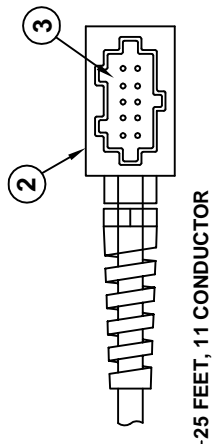
22060 PENDANT (4 - SWITCH)

CORD REPLACEMENT INSTRUCTIONS

(INSIDE VIEW OF PENDANT CONTROL W/ REAR COVER REMOVED)



PLUG - BACKSIDE VIEW

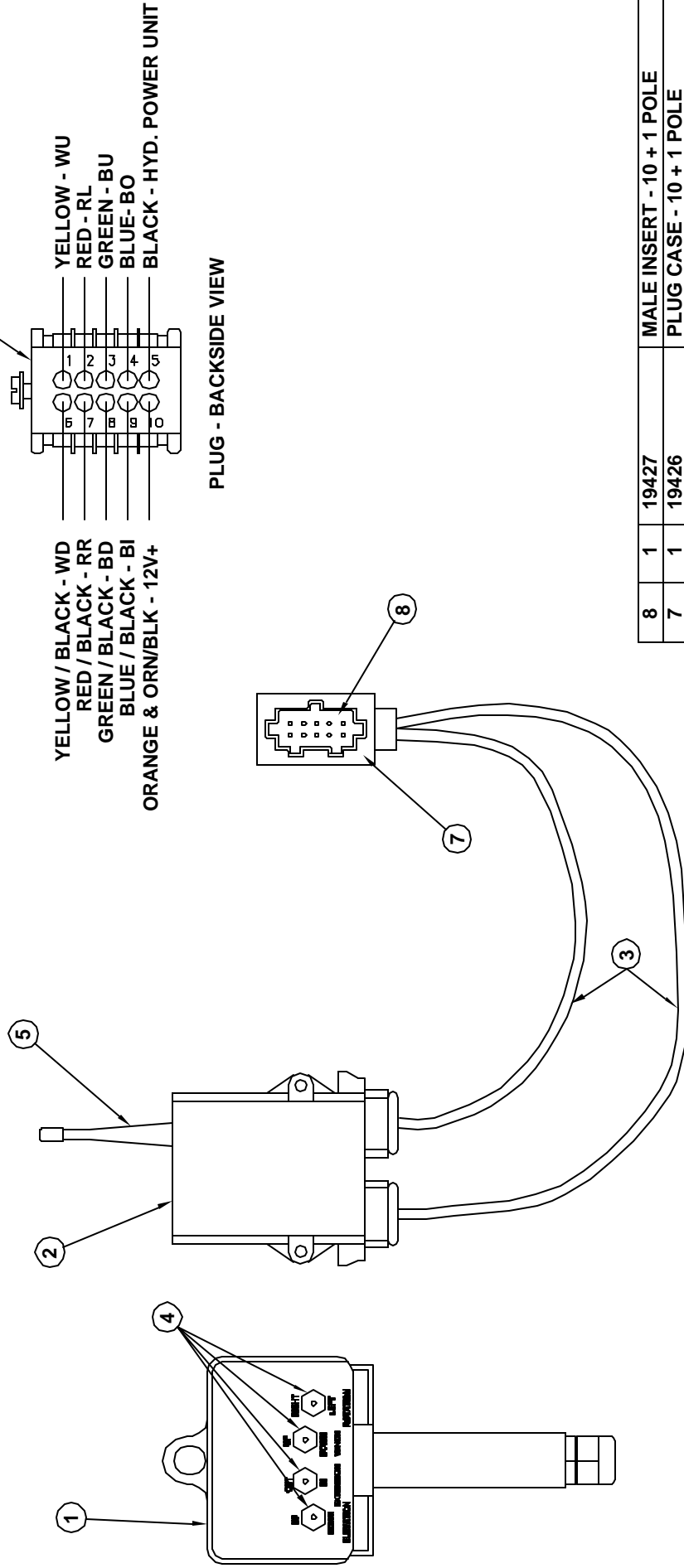


- NOTE 1)
 WIRE TERMINALS TO BE
 INSTALLED 'AFTER' ROUTING
 REPLACEMENT CORD ASSY
 THROUGH PENDANT HEAD
 AND PLUG HOUSING.
- NOTE 2)
 TOGGLE SWITCH JUMPER
 WIRES NOT SHOWN FOR
 CLARITY.
- NOTE 3)
 STOW OR CUT-BACK
 UNUSED WIRES.

ITEM	QTY	PART NO.	DESCRIPTION
4	3	22152	DPDT MOMENTARY TOGGLE SWITCH
3	1	19427	MALE INSERT - 10 + 1 POLE
2	1	19426	PLUG CASE - 10 + 1 POLE
1	4	22081	SPDT MOMENTARY TOGGLE SWITCH

TITLE	REPLACEMENT PARTS DRAWING	SECTION	C400
DATE	9-28-12B	SUPERSEDES	9-6-11A
22060 PENDANT (STANDARD CTRL)		22076	

22067 PENDANT (RADIO - 4 SWITCH)



ITEM	QTY	PART NO.	DESCRIPTION
8	1	19427	MALE INSERT - 10 + 1 POLE
7	1	19426	PLUG CASE - 10 + 1 POLE
6	1	22089	MAGNET ASSEMBLY
5	1	22088	RECEIVER ANTENNA
4	4	22087	TOGGLE SWITCH & SEALING BOOT
3	1	22086	RECEIVER EXTERNAL HARNESS
2	1	22067-RX	RADIO REMOTE RECEIVER
1	1	22067-TX	RADIO REMOTE TRANSMITTER

⊗ ITEM NOT SHOWN ON DRAWING

TITLE
REPLACEMENT PARTS DRAWING

DATE
7-19-04

SECTION
C400

SUPPERSEDES
-

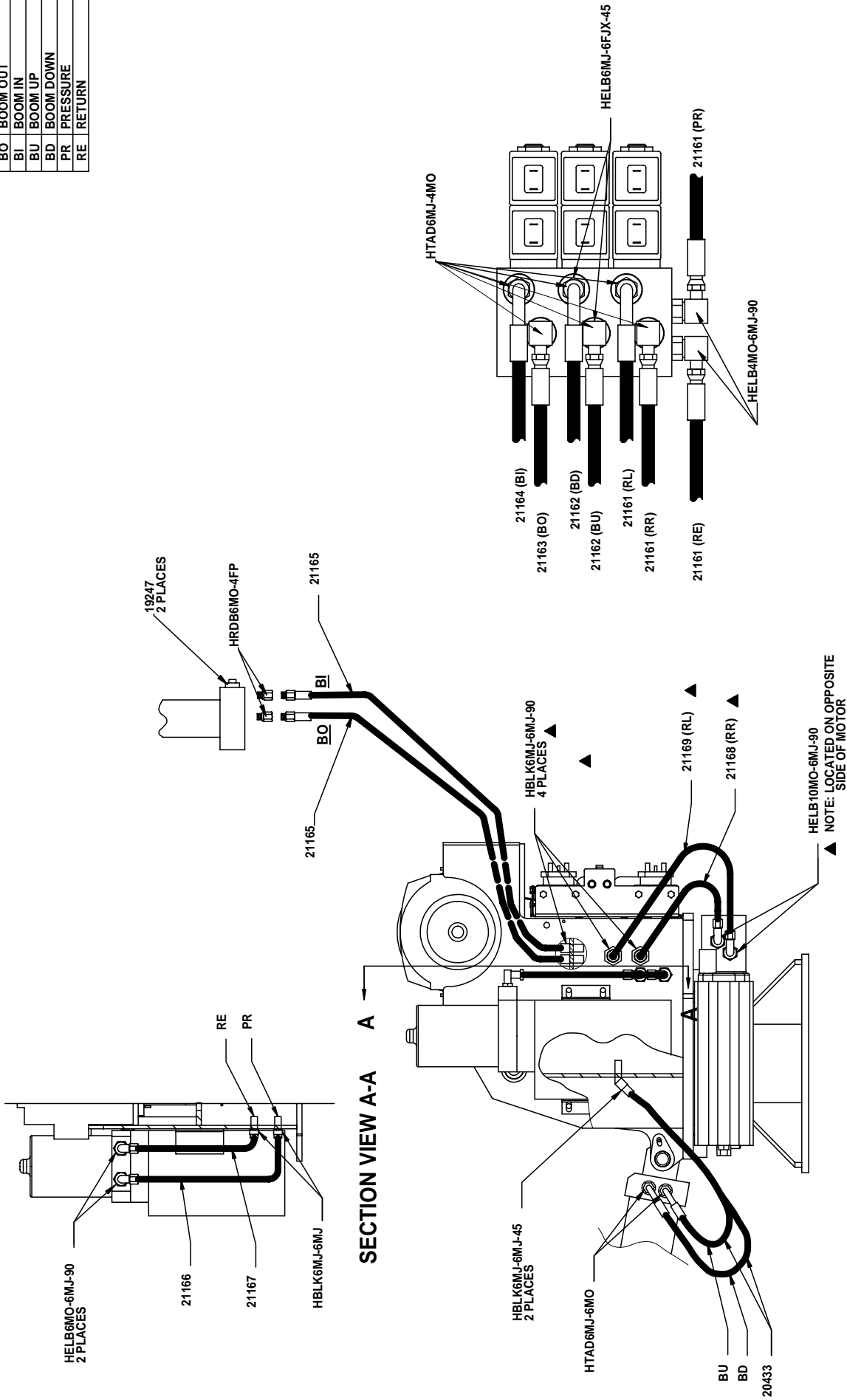
22085

ET18/25K(X)

MANUFACTURING, INC.
CINCINNATI, OHIO



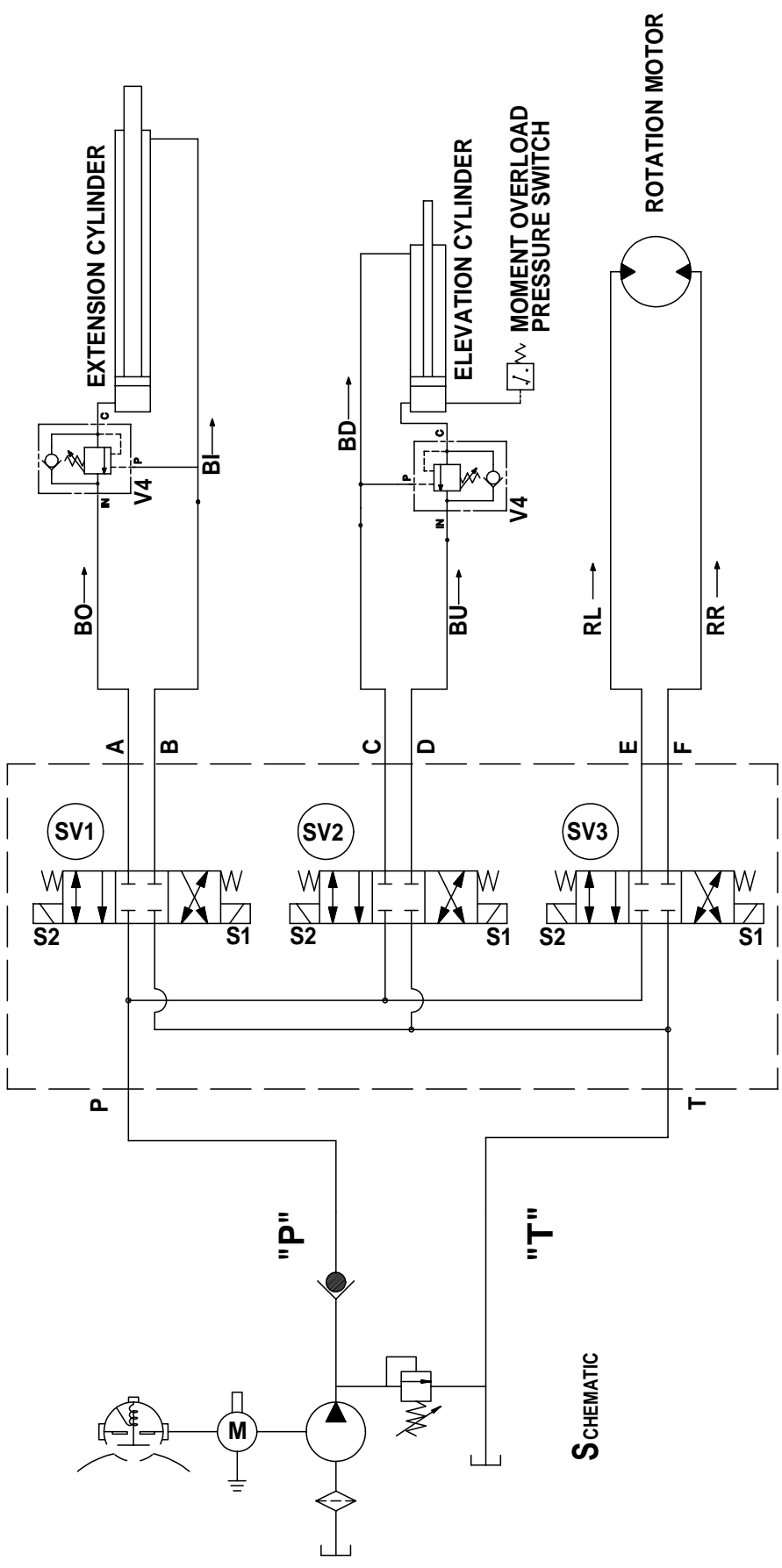
RR	ROTATION RIGHT
RL	ROTATION LEFT
BO	BOOM OUT
BI	BOOM IN
BU	BOOM UP
BD	BOOM DOWN
PR	PRESSURE
RE	RETURN



SECTION VIEW A-A

TITLE	REPLACEMENT PARTS DRAWING	DATE	11-19-03A	SECTION	C400
	ET18KX HYDRAULIC COMPONENTS	SUPERSEDES	8-1-03		21312

VENTURO MANUFACTURING, INC.
CINCINNATI, OHIO



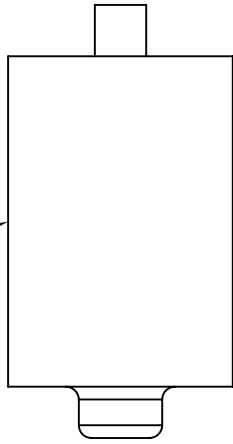
SCH**E**M**A**T**I**C

OPERATION

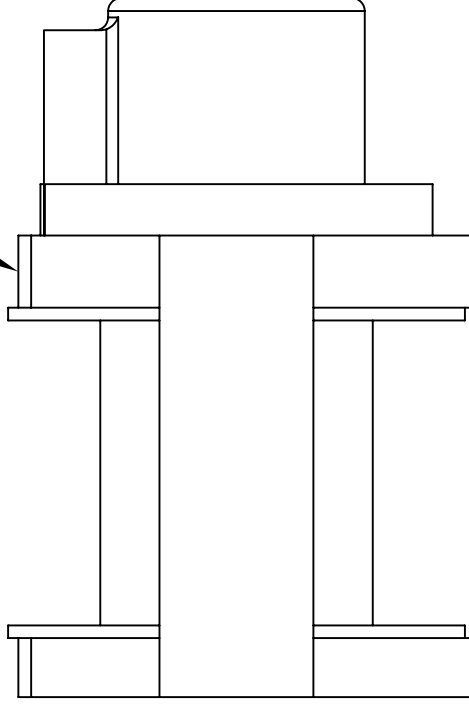
- (SV1) ENERGIZE "S2"
OPEN FLOW
'P' TO 'A'
'B' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'B'
'A' TO 'T'
- (SV2) ENERGIZE "S2"
OPEN FLOW
'P' TO 'C'
'D' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'D'
'C' TO 'T'
- (SV3) ENERGIZE "S2"
OPEN FLOW
'P' TO 'E'
'F' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'F'
'E' TO 'T'

TITLE HYDRAULIC SYSTEM DIAGRAM ET18KX, ET25KX	DATE 7-31-03B	SECTION C400
	SUPERSEDES 4-5-02A	20156

21052 MOTOR



21121 WINCH



TITLE

WINCH REPLACEMENT PARTS

ET18KX

DATE

10-27-04

SUPERSEDES

-

SECTION

-

21054



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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