

PARTS & INSTALLATION MANUAL

ET18KX(P)

Included in this manual:

ET18KX

- 4,500 lb Electric Hydraulic Telescopic Service Crane
- 8-12 ft Powered, Single-Stage Boom Extension
- 12-16 ft Manual Pullout Boom Extension

ET18KXP

- 4,500 lb Electric Hydraulic Telescopic Service Crane
- 8-12 ft Powered, Single-Stage Boom Extension
- 12-16 ft Manual Pullout Boom Extension
- Proportional Control

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VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
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ET18KX(P) (EJAAAC-*0)	SUPERSEDES	24068
	-	

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

SPECIFICATIONS & OPERATING FEATURES

ET16/18KX

OVERLOAD SENSING SYSTEM

This crane is equipped with an overload sensing system. If the capacity of the crane is exceeded, the "Winch Up", "Boom Out", and "Boom Out" functions will 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 systems are 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 (Rotate Right, Rotate Left, Boom Up, Boom Down, Boom Out, and Boom In) are designed to function one at a time

CABLE DRUM AND SHEAVE DIAMETERS

The drums on the ET16/18KX cranes are 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

CAPACITY INDICATOR

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

BATTERY HOOKUP

A parallel auxiliary battery should be installed near the crane as shown on DWG 19947 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.



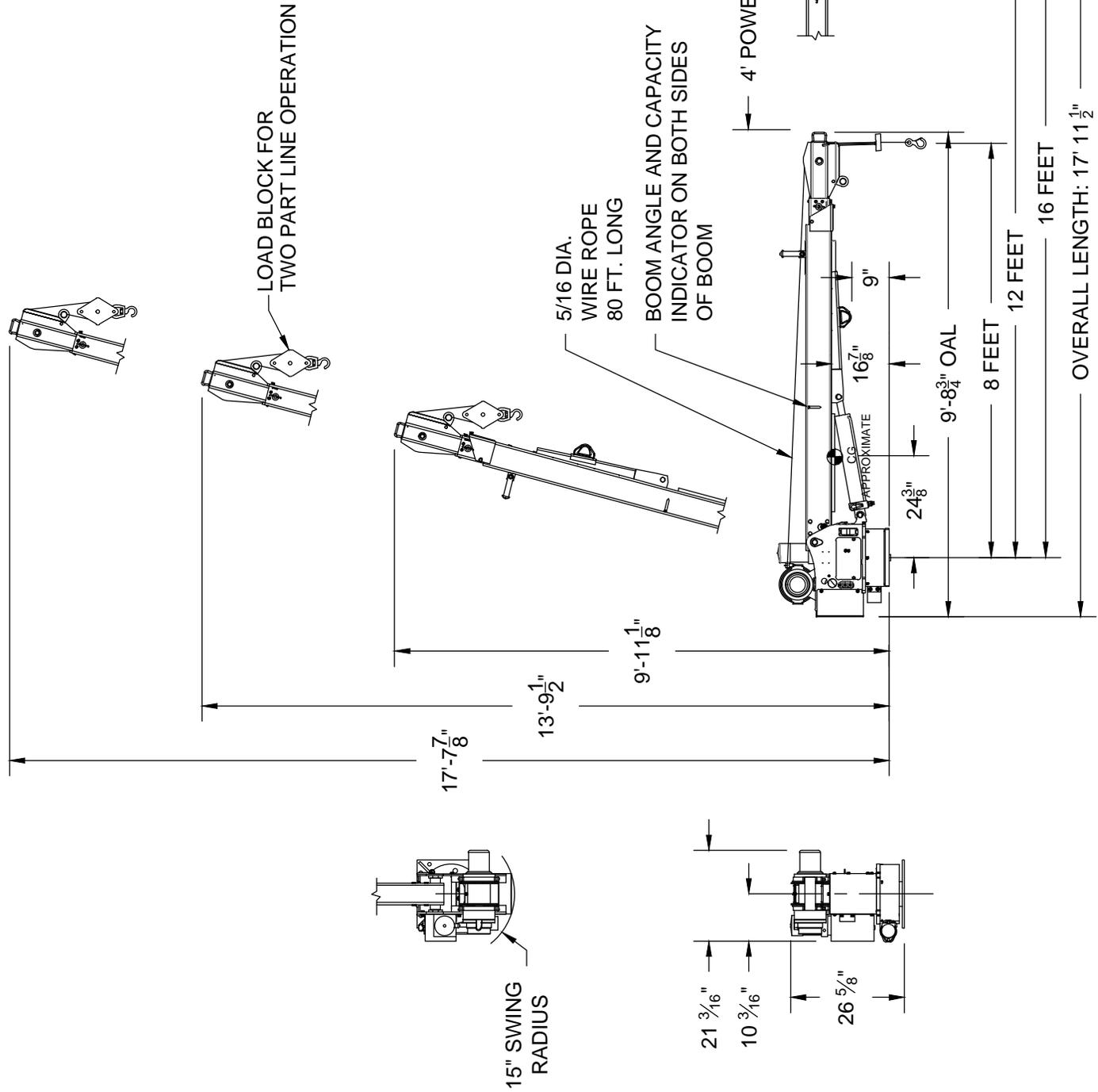
VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
SPECS & OP. FEATURES	10-22-14A	C100
ET16/18KX	SUPERSEDES 07-29-03	21302

WARNING



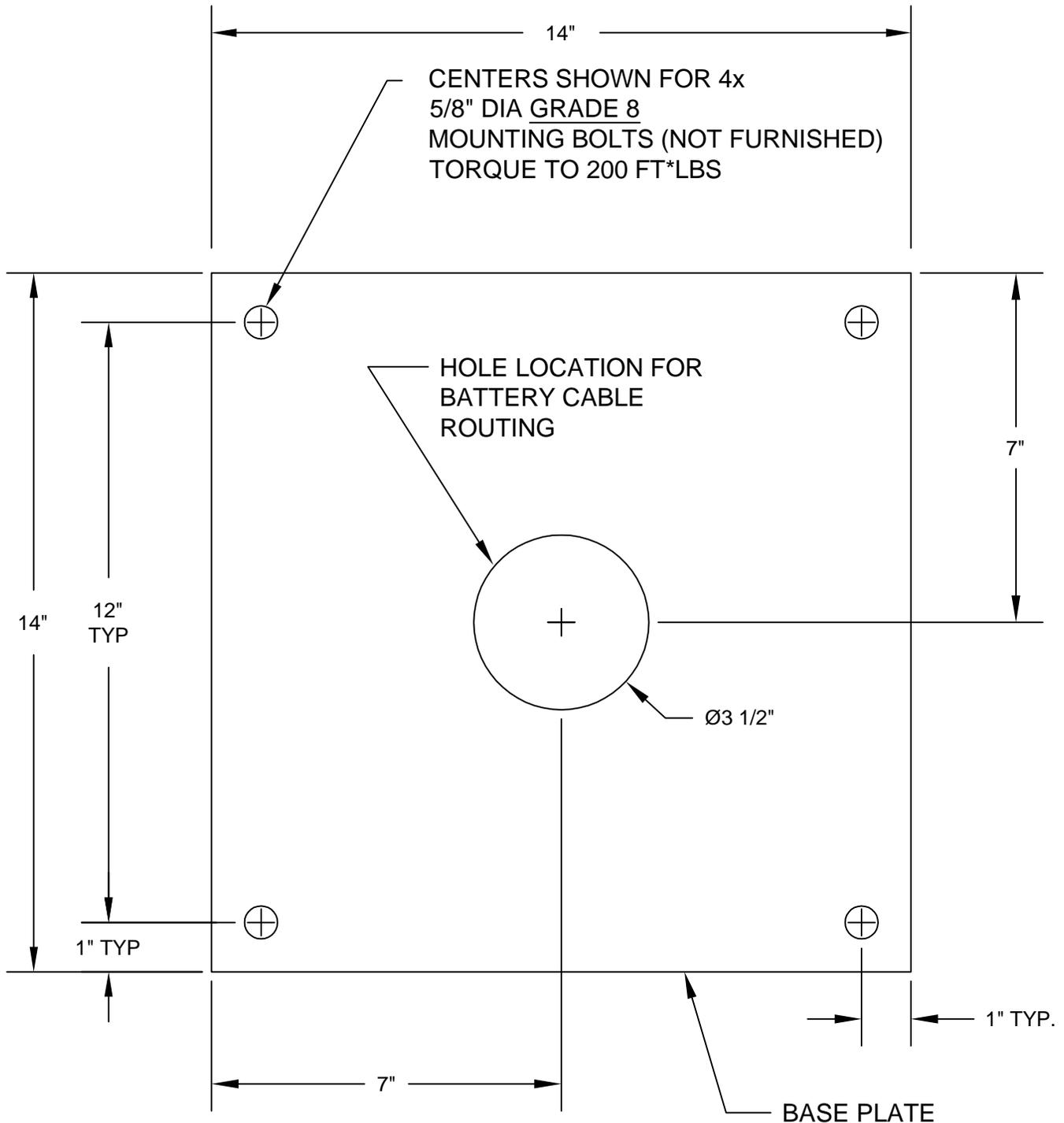
- THESE PRODUCTS ARE NOT PASSENGER LIFTS. THEY ARE NOT DESIGNED OR INTENDED TO BE USED TO LIFT, SUPPORT OR OTHERWISE TRANSPORT PERSONNEL.



TOTAL INSTALLED WEIGHT 1020 LBS.

	VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO		TITLE INSTALLATION DIMENSIONS	
	DATE 10-05-20A <small>SUPERSEDES</small> 11-18-19	SECTION C100	ET16/18KX, 8-12-16' BOOM	
				23989

21571 MOUNTING HOLE TEMPLATE



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	21571 BASE MNTNG DIMS
ET8/12/16/18 CRANES	

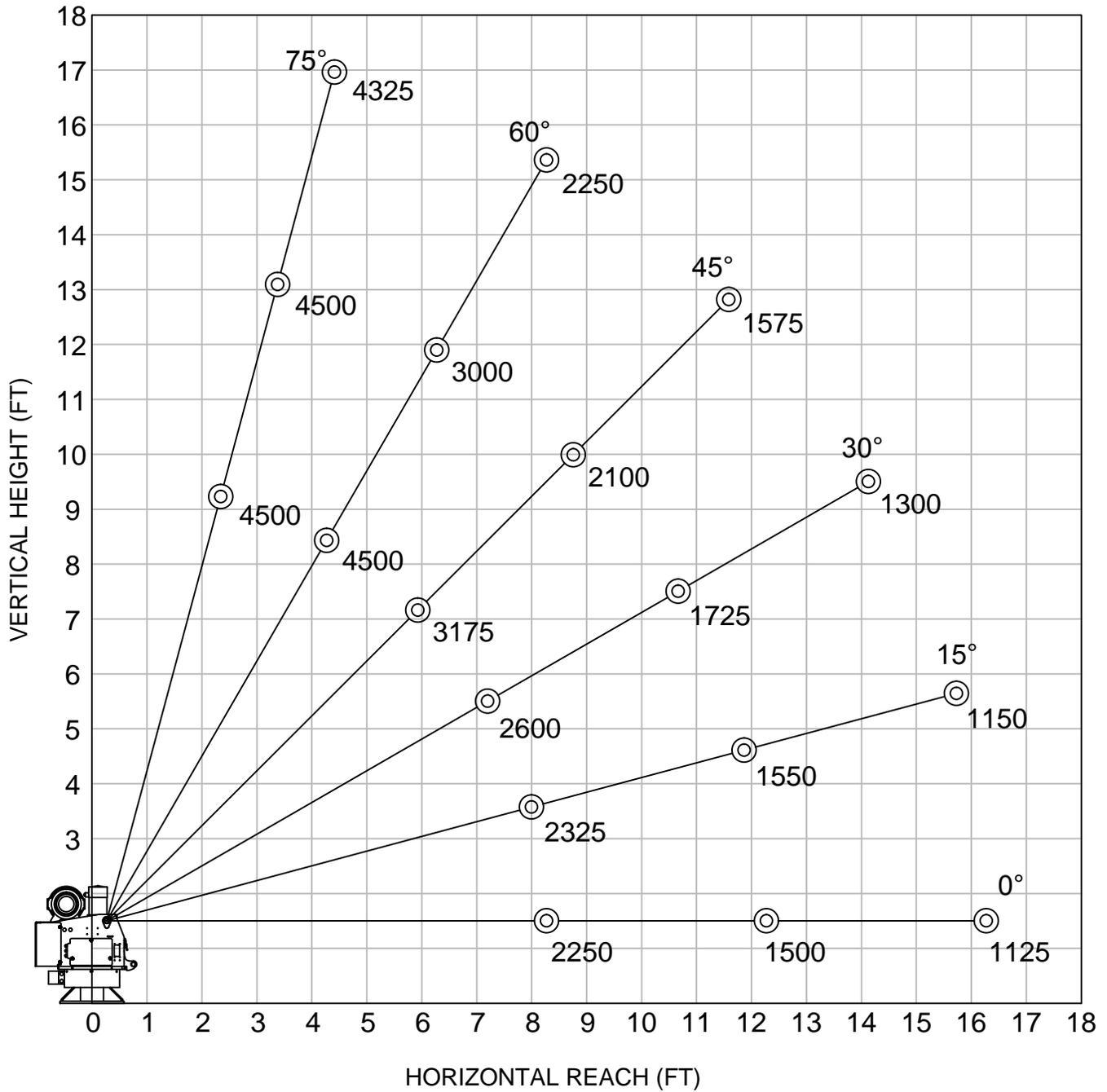
DATE	10-22-14F
SUPERSEDES	12-20-13E

SECTION	C100
21592	

ET18KX, 8'-12'-16' BOOM

▲ CRANE SERIAL NUMBER: _____

MAXIMUM LOAD CAPACITY CHART



WEIGHT OF LOAD HANDLING DEVICES ARE PART OF THE LOAD AND MUST BE DEDUCTED FROM THE GROSS CAPACITY.

LOAD BLOCK USAGE

1 PART LINE FOR LOADS LESS THAN 2250 LBS

2 PART LINE FOR LOADS OF 2250 LBS AND GREATER

WEIGHT OF LOAD BLOCK = 28 LBS



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
MAXIMUM LOAD CAPACITY

DATE
05-03-16B

SECTION
C100

ET18KX, 8'-12'-16' BOOM

SUPERSEDES
04-30-13A

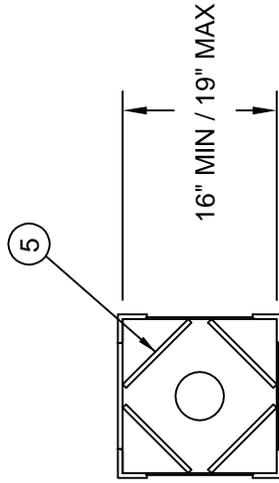
21392

TYPICAL SERVICE BODY REINFORCEMENT

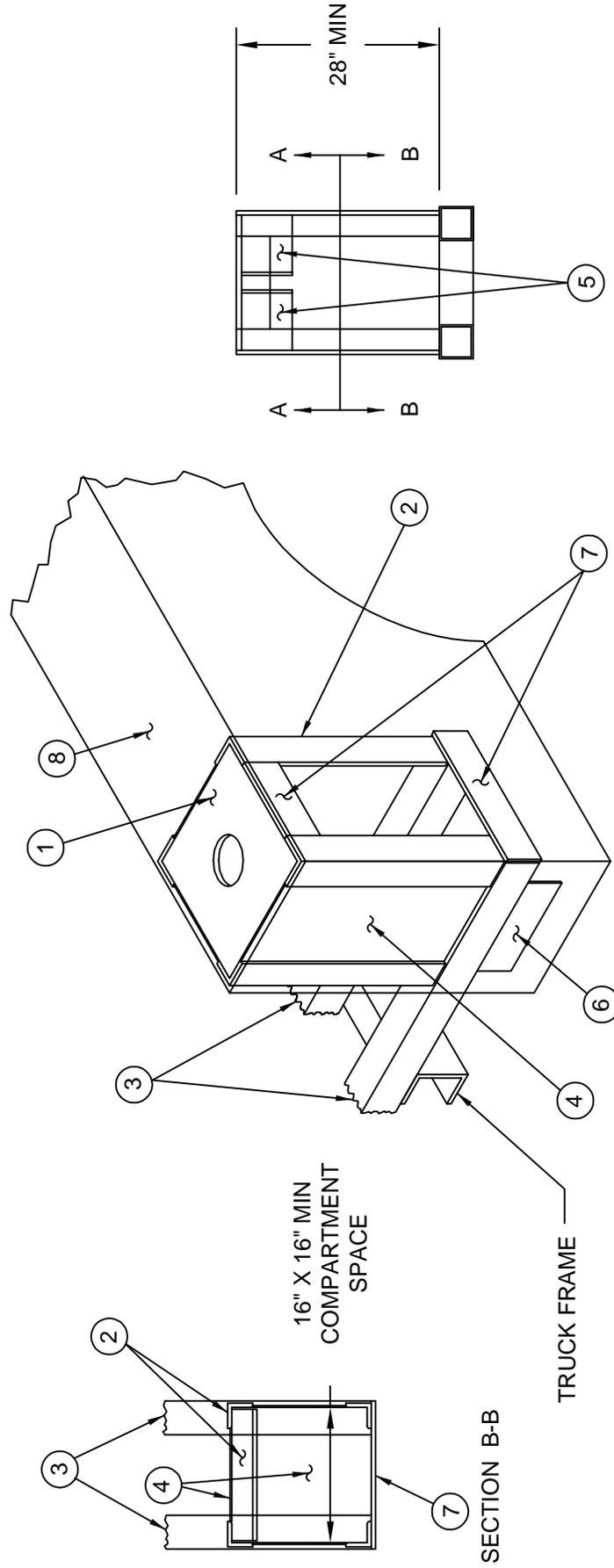
NOTE:

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

ITEM	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, SPAN FULL WIDTH
4	SHEAR WEB	3/16" STEEL PLATE
5	TOP PLT REINFORCEMENT	1/2" X 6" OR 3/4" X 5" STEEL BAR
6	OUTRIGGER RNFRCMNT PLT	1/4" THICK STEEL PLATE
7	GUSSET	1/2" X 4" H.R. STEEL
8	BODY TOP REINFORCEMENT	10 GA SMOOTH OR DIAMOND PLATE W/ 1" LIP OVER SIDE OF BODY



SECTION A-A



SECTION B-B



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
TYPICAL SERVICE BODY REINFORCEMENT

ET16/18KX

DATE
10-22-14H

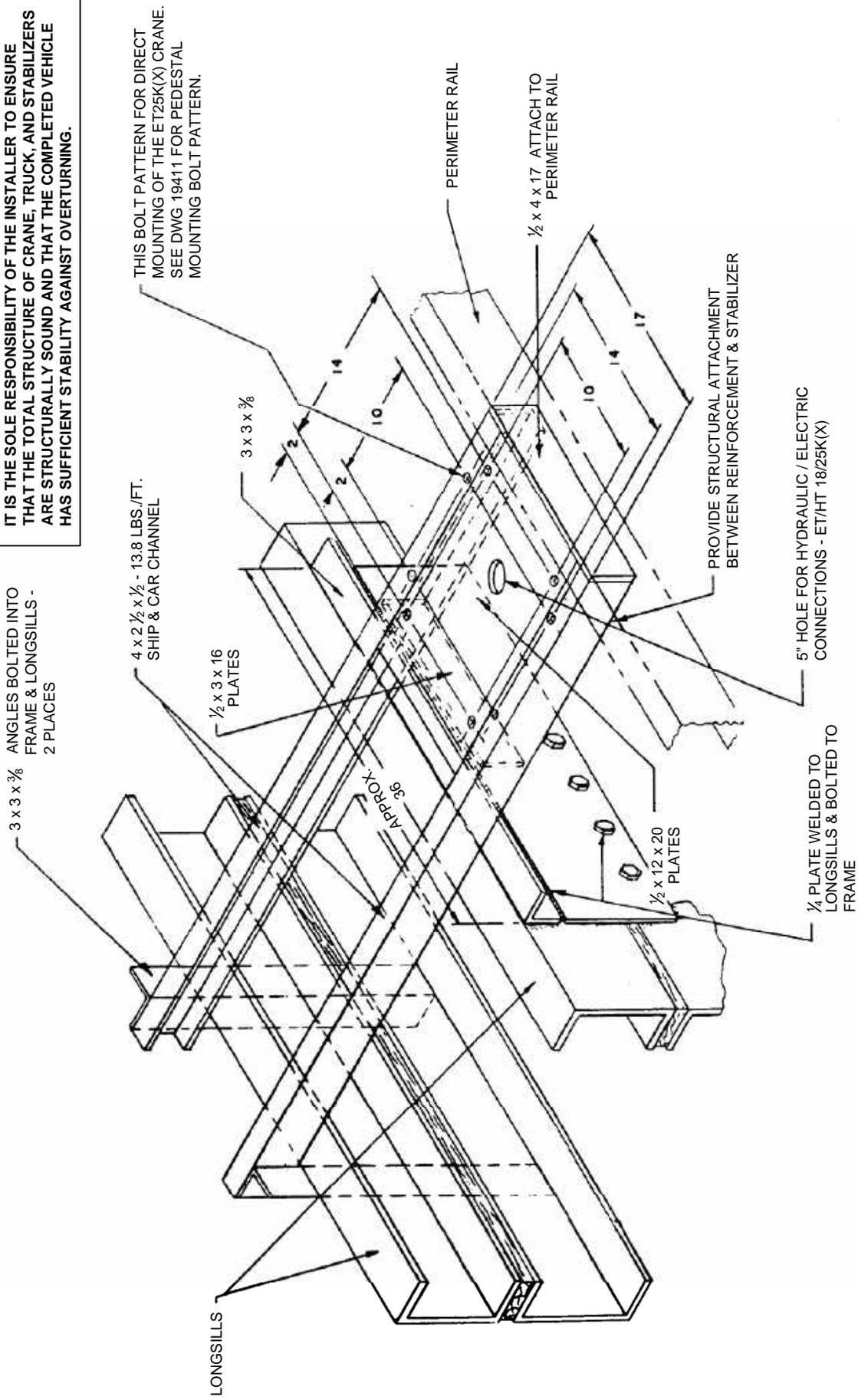
SUPPERSEDES
12-20-10G

SECTION
C100

19288

TYPICAL FLATBED MOUNTING REINFORCEMENT

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



 <p>VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO</p>	TITLE	SECTION
	<p>TYPICAL FLATBED MNTNG REINFORCEMENT</p> <p>ET16/18KX</p>	<p>C100</p>
	DATE	SUPERSEDES
	<p>10-22-14N</p> <p>07-29-03M</p>	<p>14510</p>

SECTION 150

SAFETY



CRANE SAFETY AND HAZARDS

CAUTIONS

1. INSPECT VEHICLE AND CRANE, INCLUDING OPERATION, PRIOR TO USE DAILY.
2. DO NOT USE THIS EQUIPMENT EXCEPT ON FIRM LEVEL GROUND 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, IF SO EQUIPPED.
6. UNPLUG PENDANT AND SHUT OFF MASTER DISCONNECT SWITCH WHEN CRANE IS 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 APPARATUSES.
- YOU MUST ALLOW FOR BOOM SWAY, ROCK, OR SAG, AND ELECTRICAL LINE AND LOAD-LINE 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, LOAD-LINE, OR LOAD, AND ANY ELECTRICAL LINE OR APPARATUS CARRYING UP TO 50,000 VOLTS. REFER TO DRAWING 15394 FOR ADDITIONAL INFORMATION.
- **DEATH OR SERIOUS INJURY** WILL RESULT FROM CONTACT OR INADEQUATE CLEARANCES.

OVERLOAD SENSING SYSTEM - STANDARD ON ALL CRANES

1. IF OVERLOADED, THE WINCH UP, BOOM DOWN, AND (OPTIONAL) BOOM OUT FUNCTIONS WILL AUTOMATICALLY, SHUT OFF TO PREVENT INCREASED OVERLOAD.
2. ON CRANES EQUIPPED WITH AN OPTIONAL OVERLOAD ALARM, IT WILL ALSO SOUND.
3. IF AN OVERLOAD OCCURS, USE THE WINCH DOWN, BOOM UP OR BOOM IN FUNCTIONS TO RELIEVE THE OVERLOAD.
4. THE OVERLOAD SENSING SYSTEM IS INOPERATIVE IF THE BOOM ELEVATION IS AT THE BOTTOM OR TOP LIMIT OF TRAVEL. TO RELIEVE THIS CONDITION, RAISE OR LOWER THE BOOM SLIGHTLY BEFORE LIFTING THE LOAD.
5. SEE MANUAL FOR TESTING THE OVERLOAD SYSTEM.

NOTICE - WARRANTY VOID IF DISCONNECTED

THE OVERLOAD SENSING SYSTEM HAS BEEN INSTALLED AS A SAFETY FEATURE TO PROTECT THE EQUIPMENT AND THE OPERATOR.

DO NOT DISCONNECT THIS SYSTEM



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE

SAFETY & HAZARDS

DATE

01-29-15K

SECTION

C150

ELECTRIC CRANES

SUPERSEDES

12-20-13J

850711

CRANE SAFETY AND HAZARDS - CONT'D

OVERLOAD ALARM SYSTEM - OPTIONAL

1. OVERLOAD ALARM HORN SOUNDS IF RATED LOAD IS EXCEEDED AT ANY REACH.
2. IF ALARM SOUNDS, RAISE BOOM OR LOWER WINCH TO REMOVE OVERLOAD.
3. ALWAYS RAISE BOOM SLIGHTLY BEFORE LIFTING LOAD. WARNING SYSTEM INOPERATIVE WHEN CYLINDER IS COMPLETED BOTTOMED.
4. ALARM CAN BE TESTED BY TYING DOWN BOOM WITH WINCH CABLE AND OPERATING BOOM UP OR BY RAISING BOOM AGAINST UP LIMIT STOP.

NOTICE - WARRANTY VOID IF DISCONNECTED

THIS ALARM SYSTEM HAS BEEN INSTALLED AS A SAFETY FEATURE TO PROTECT BOTH THE EQUIPMENT AND THE OPERATOR.

DO NOT DISCONNECT THIS SYSTEM

INTENTIONALLY LEFT BLANK



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE

SAFETY & HZRDS, CONT.

DATE

01-29-15

SECTION

C150

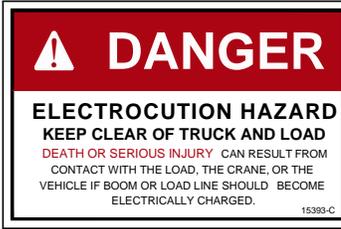
ELECTRIC CRANES

SUPERSEDES

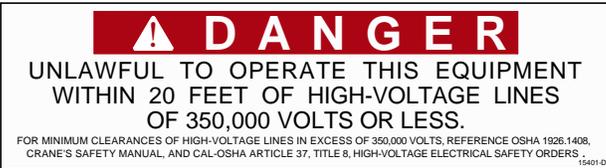
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850712

VEHICLE & CRANE MOUNTED ELECTRICAL HAZARD SIGN APPLICATION & INFORMATION



SIGN NO. 15393 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.

Table A - Minimum Clearance Distances

Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet) *
Up to 50.....	10
over 50 - 200.....	15
over 200 - 350.....	20
over 350 - 500.....	25
over 500 - 750.....	35
over 750 - 1000.....	45
Over 1000.....	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

Table T - Minimum Clearance Distances While Traveling With No Load

Voltage (nominal, kV, alternating current)	While traveling - minimum clearance distance (feet) *
0 - 0.75.....	4
over 0.75 - 50.....	6
over 50 - 345.....	10
over 345 - 750.....	16
over 750 - 1000.....	20
Over 1000.....	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

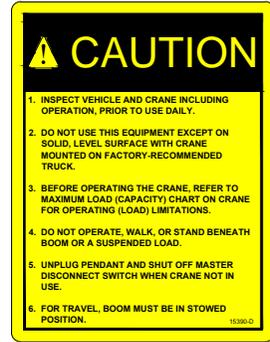
* NOTE: ENVIRONMENTAL CONDITIONS SUCH AS FOG, SMOKE, OR PRECIPITATION MAY REQUIRE INCREASED CLEARANCES



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
HAZARD APPS & INFO	02-21-14M	C150
ET/HT CRANES	SUPERSEDES 12-20-13L	15394

DECAL #: 15390
 DESCRIPTION: CAUTION, INSPECT VEHICLE & CRANE...
 PURPOSE: TO INFORM THE OPERATOR OF KEY OPERATING REQUIREMENTS.
 QUANTITY: 1
 PLACEMENT: REAR COVER OR SIDE OF CRANE



DECAL #: 15391
 DESCRIPTION: DANGER, NOT A PASSENGER LIFT
 PURPOSE: TO INFORM OPERATOR NOT TO LIFT, SUPPORT, OR TRANSPORT PERSONNEL, AND TO ENSURE OPERATOR IS ADEQUATELY TRAINED.
 QUANTITY: 1
 PLACEMENT: REAR COVER OR SIDE OF CRANE



DECAL #: 15392
 DESCRIPTION: DANGER, ELECTROCUTION HAZARD, MACHINE (CRANE)
 PURPOSE: TO INFORM OPERATOR THAT MACHINE (CRANE) REPRESENTS AN ELECTROCUTION HAZARD SHOULD IT COME CLOSE TO OR IN CONTACT WITH AN ELECTRICAL VOLTAGE SOURCE.
 QUANTITY: 1
 PLACEMENT: REAR COVER OR SIDE OF CRANE



DECAL #: 15401
 DESCRIPTION: DANGER, UNLAWFUL TO OPERATE
 PURPOSE: TO INFORM OPERATOR OF PROPER OPERATION IN VICINITY OF ELECTRICAL LINES.
 QUANTITY: 1
 PLACEMENT: RING COVER OR SIDE OF CRANE



DECAL #: 15393
 DESCRIPTION: DANGER, ELECTROCUTION HAZARD, VEHICLE (TRUCK)
 PURPOSE: WARNS OF DANGER FROM ELECTRICALLY CHARGED VEHICLE, CRANE, OR LOAD.
 QUANTITY: 4
 PLACEMENT: EACH SIDE & EACH END OF VEHICLE



VENCO VENTURO INDUSTRIES LLC
 CINCINNATI, OHIO

TITLE
 SAFETY DECALS

VENTURO CRANES

DATE
 04-29-16E

SUPERSEDES
 10-24-13D

SECTION
 C150

21353

PART NO.: 15513

DECAL: MASTER DISCONNECT SWITCH

FUNCTION: To inform the operator of location and operation of master disconnect switch.

QUANTITY: 1

PLACEMENT: On master disconnect switch bracket.



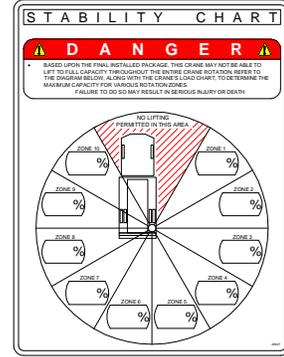
PART NO.: 20927

DECAL: CRANE STABILITY

FUNCTION: To inform the operator of the crane's lifting capacity throughout the entire rotation.

QUANTITY: 1

PLACEMENT: In prominent location, so it is easily seen and readily identifiable.



▲



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
SAFETY DECALS	06-06-14C	C150
CRANES	SUPERSEDES 04-02-13B	21384

PART NO.: 14473-2

DECAL: CONDUCTIVE GREASE

FUNCTION: To show the operator where to apply grease.

QUANTITY: Varies

PLACEMENT: Near grease fittings.



PART NO.: 13397

DECAL: OIL LEVEL

FUNCTION: To inform the operator of proper oil level to maintain.

QUANTITY: 1

PLACEMENT: Side of hydraulic power unit.



PART NO.: 15398

DECAL: UNPLUG REMOTE CONTROL

FUNCTION: To inform the operator to unplug remote control when not in use.

QUANTITY: 1

PLACEMENT: Near pendant socket.



MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE
DECALS

ET CRANES

DATE
11-12-19E

SUPERSEDES
12-23-13D

SECTION
C150

21354

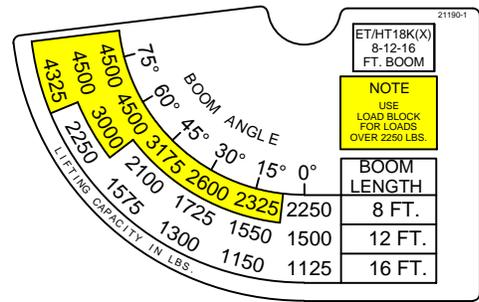
PART NO.: 21190-1 & 21190-2 (OPPOSITE)

DECAL: CRANE CAPACITY

FUNCTION: To show the operator the operating capacities of crane.

QUANTITY: 1 each

PLACEMENT: One on each side of boom.



PART NO.: 21192

DECAL: MODEL NUMBER (ET18KX)

FUNCTION: To show the model of the crane.

QUANTITY: 2

PLACEMENT: One on each side of boom.



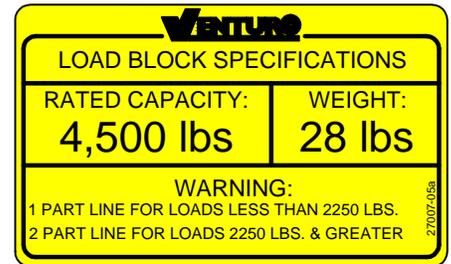
PART NO.: 27007-05a

DECAL: LOAD BLOCK CAPACITY

FUNCTION: To show the capacity of the load block.

QUANTITY: 2

PLACEMENT: One on each side of load block.



PART NO.: 19788-1

DECAL: PROPORTIONAL Decal (ET16/18KXP)

FUNCTION: To show the crane has proportional feature.

QUANTITY: 2

PLACEMENT: One on each side of boom.



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
MODEL/CAPCTY DECALS	02-04-20C	C150
ET18KX(P)	SUPERSEDES 10-20-14B	21356

PART NO.: 17813
 DECAL: OVERLOAD SENSING SYSTEM DECAL
 FUNCTION: To advise operator of overload sensing system.
 QUANTITY: 1
 PLACEMENT: Location may vary.

CRANE IS EQUIPPED WITH AN OVERLOAD SENSING SYSTEM

1. IF OVERLOADED, THE WINCH UP, BOOM DOWN, AND (OPTIONAL) BOOM OUT FUNCTIONS WILL AUTOMATICALLY SHUT OFF TO PREVENT INCREASED OVERLOAD.
2. ON CRANES EQUIPPED WITH AN OPTIONAL OVERLOAD ALARM, IT WILL ALSO SOUND.
3. IF AN OVERLOAD OCCURS, USE THE WINCH DOWN, BOOM UP OR BOOM IN FUNCTIONS TO RELIEVE THE OVERLOAD.
4. THE OVERLOAD SENSING SYSTEM IS INOPERATIVE IF THE BOOM ELEVATION IS AT THE BOTTOM OR TOP LIMIT OF TRAVEL. TO RELIEVE THIS CONDITION, RAISE OR LOWER THE BOOM SLIGHTLY BEFORE LIFTING THE LOAD.
5. SEE MANUAL FOR TESTING OVERLOAD SYSTEM.

NOTICE - WARRANTY VOID IF DISCONNECTED
 THE OVERLOAD SENSING SYSTEM HAS BEEN INSTALLED AS A SAFETY FEATURE TO PROTECT THE EQUIPMENT AND THE OPERATOR.

DO NOT DISCONNECT THIS SYSTEM

PART NO.: 14459 (WITH OPTIONAL ALARM)
 DECAL: OVERLOAD ALARM SYSTEM DECAL
 FUNCTION: To advise operator of overload alarm system.
 QUANTITY: 1
 PLACEMENT: Location may vary.

THIS CRANE IS EQUIPPED WITH AN OVERLOAD ALARM SYSTEM

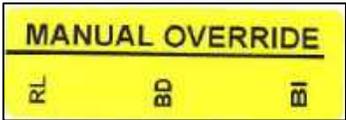
1. OVERLOAD ALARM HORN SOUNDS IF RATED LOAD IS EXCEEDED AT ANY REACH.
2. IF ALARM SOUNDS, RAISE BOOM OR LOWER WINCH TO REMOVE OVERLOAD.
3. ALWAYS RAISE BOOM SLIGHTLY BEFORE LIFTING LOAD. WARNING SYSTEM INOPERATIVE WHEN CYLINDER IS COMPLETELY BOTTOMED.
4. ALARM CAN BE TESTED BY TYING DOWN BOOM WITH WINCH CABLE AND OPERATING BOOM UP OR BY RAISING BOOM AGAINST UP LIMIT STOP.

NOTICE - WARRANTY VOID IF DISCONNECTED
 THIS ALARM SYSTEM HAS BEEN INSTALLED AS A SAFETY FEATURE TO PROTECT BOTH THE EQUIPMENT AND THE OPERATOR.

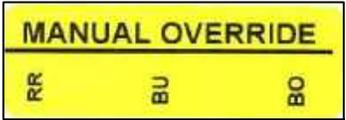
DO NOT DISCONNECT THIS SYSTEM

PART NO.: 23188 (RIGHT) & 23191 (LEFT)
 DECAL: MANUAL OVERRIDE DECAL (ET16/18KX)
 FUNCTION: To show the manual override ports.
 QUANTITY: 1
 PLACEMENT: Right & Left side of housing.

2 3 1 9 1



2 3 1 8 8



VENCO VENTURO INDUSTRIES LLC
 CINCINNATI, OHIO

TITLE
ADDITIONAL DECALS

DATE
 11-12-19

SECTION
 C150

ET16KX(P)

SUPERSEDES
 -

23986

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 AUXILIARY BATTERY SIZE

MODEL	TOTAL LENGTH OF CABLE (FT) *								▲ 12 VOLT AUXILIARY BATTERY REQUIREMENTS	
	0-20	21-25	26-30	31-40	41-50	51-60	61-70	71-80	CCA (A) **	RC (MIN) ***
▲ CE1500 CE6K CT2000 CT2003/4/5 DT7K	#4	#4	#2	#2	#1	#0	#0	#00	350	100
ET5500MPB ET5500R ET6KMPB ET6KR ET6K ET8K ET10K ET12K	#2	#2	#1	#0	#00	NOT RECOMMENDED			450	100
ET8KX ET10KX ET12KX ▲ ET12KXP	#2	#2	#1	#0	#00	NOT RECOMMENDED			550	150
ET18K(X) ET25K(X) ET30KX ET36KX	SEE DRAWING 15660 FOR CABLE AND BATTERY REQUIREMENTS									

* INCLUDES GROUND CABLE

** CCA = COLD CRANKING AMPS AT 0° (F).

*** 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.



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
CABLE & BATTERY

DATE
07-30-18X

SECTION
C200

ELECTRIC CRANES

SUPERSEDES
09-27-17W

711105

RECOMMENDED CIRCUIT BREAKER TABLE

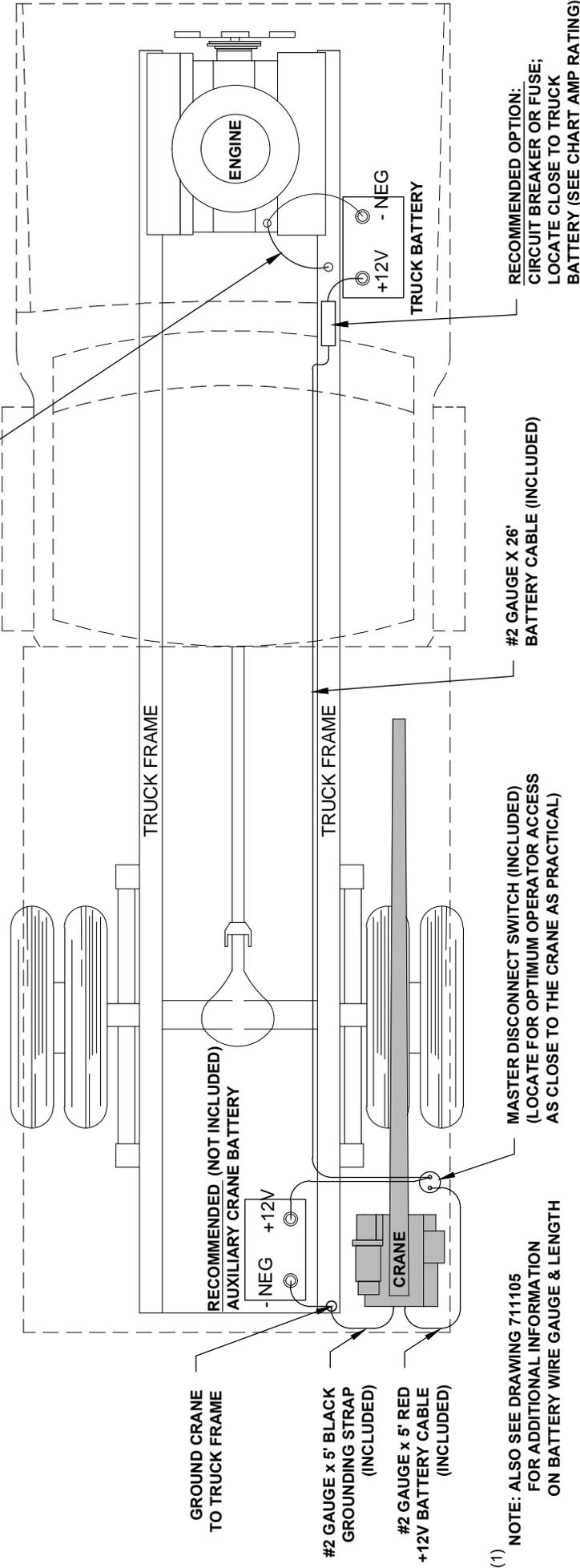
CRANE	DESCRIPTION	PART NO.
CT310KX	250 AMP, MAN RESET	22946-250
DT7	250 AMP, MAN RESET	22946-250
CE-1500-FB	150 AMP, MAN RESET	22946-150
CE6K	150 AMP, MAN RESET	22946-150
CT200X	250 AMP, MAN RESET	22946-250
ET6K	250 AMP, MAN RESET	22946-250
ET8/12K(X)	250 AMP, MAN RESET	22946-250
ET12KXP	300 AMP, MAN RESET	22946-300
ET16/18KX-16'	250 AMP, MAN RESET	22946-250
ET16/18KX-20'	300 AMP, MAN RESET	22946-300
ET25/30KX	300 AMP, AUTO RESET	22946-300
ET36KX	300 AMP, AUTO RESET	22946-300

BATTERY REQUIREMENTS

- 12 VOLT VEHICLE BATTERY REQUIREMENTS
- 625 COLD CRANKING AMPS (AT 0° F)
- 160 MINUTES RESERVE CAPACITY
- 102 PLATES, 105 AMP-HR
- (1)
- 12 VOLT AUXILIARY BATTERY REQUIREMENTS
- SEE MINIMUM WIRE GAUGE AND BATTERY SIZE

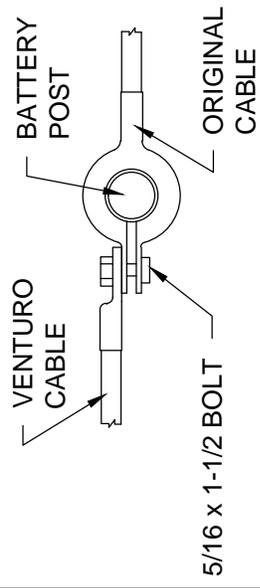
NOTE: OPERATING WITH THE VEHICLE BATTERY 'ONLY' IS PERMISSIBLE, BUT NOT RECOMMENDED.

INSTALL #2 GAUGE GROUND STRAP FROM ENGINE TO TRUCK FRAME (REQUIRED IF NEGATIVE FROM BATTERY IS CONNECTED TO ENGINE)



(1) NOTE: ALSO SEE DRAWING 711105 FOR ADDITIONAL INFORMATION ON BATTERY WIRE GAUGE & LENGTH

RECOMMENDED BATTERY TERMINAL ATTACHMENT





VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
BATTERY CABLE & COMPONENT INSTALL

ET CRANES

SECTION
C200

DATE
09-03-20M

SUPERSEDES
07-30-18L

15660

STABILITY TEST - ET18-16' SERIES

Overview

Venturo follows the guidelines of ANSI B30.5 in defining stability. Generally speaking, a truck is considered stable as long as it is not on the verge of tipping - i.e. with the truck level, at least one tire on each corner of the truck must remain in contact with the ground.

It is important to note that nearly every installation is unique and will, therefore, typically require stability testing.

The procedure outlined below follows ANSI's (B30.5 - 5-1.1.1) specified "maximum load rating" of 85%.

Testing Procedure

1. Locate the truck on firm, level ground and set parking brake.
2. Fully deploy stabilizers, making sure they are firmly in contact with supportive ground; use stabilizer pads as required. The tires of the truck should remain in full contact with the ground.
3. Inspect wire rope and other key components of crane (consult owners manual for more information).
4. Conduct an operational check of all crane functions.
5. Use a **Total Test Weight of 1324 lbs**, which includes the ET18-16' load block weight of 28 lbs.

Test Weight Explanation: Test Weight of 1296 lbs + Load Block Weight of 28 lbs = **Total Test Weight of 1324 lbs**.

The Total Test Weights are derived by **dividing** the published crane capacity of the level boom at full extension by **.85** e.g. ET18-16' published capacity at this point is 1125 lbs / .85 = 1324 lbs

The Total Test Weight is now in compliance with ASME B30.5-2018, requiring the max capacity of the crane at full reach (1125 lbs) to be 85% of the Total Test Weight used to determine the tipping point or point at which the vehicle is unstable; thus providing a 15% margin of safety with the cranes max capacity at full reach of 1125 lbs; boom level at full extension.

VLC ONLY: The VLC (Venturo Logic Controls) shall be placed in 'Stability Mode' in order to conduct the stability tests. Stability Mode allows live loads to be as high as 118% above the published capacities, accommodating the Total Test Weight for the stability test.

6. Do NOT allow the weight to be more than 6 inches from the ground at any time during testing - this ensures that if the truck does become unstable and tip, it will not tip far.
7. Rotate the crane to a position between 1 and 2 o'clock (the truck cab is facing 12 o'clock).
8. Ensure that the boom is horizontal (0° elevation) and fully retracted.
9. Use the winch to lift the test weight, keeping it within 6 inches of the ground.
10. Extend the boom slowly until the boom reaches full extension (199 inches) OR until the truck becomes unstable. As you extend, use the winch to keep the weight within 6 inches of the ground.
 - a. If the boom reaches full extension, the % of Rated Capacity is 100% for the tested region.
 - b. If, however, the truck becomes unstable (tire(s) leave the ground) prior to full extension, record (in inches) the horizontal distance from the center of rotation to the lifting point (e.g. 179 inches). This is the Maximum Stable Reach. Determine the % of Rated Capacity using the following formula:

$$\% \text{ Rated Capacity} = \frac{\text{"Max Stable Reach" in inches}}{199} \times 100$$

11. Record the % of Rated Capacity in the appropriate blank (region) on the Crane Stability page (ref. 20907) and decal.
12. Repeat Steps 7-11 for each of the remaining regions (2-3 o'clock, 3-4 o'clock, etc.).



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE

STABILITY TEST

ET18-16' SERIES

DATE

04-23-20B

SUPERSEDES

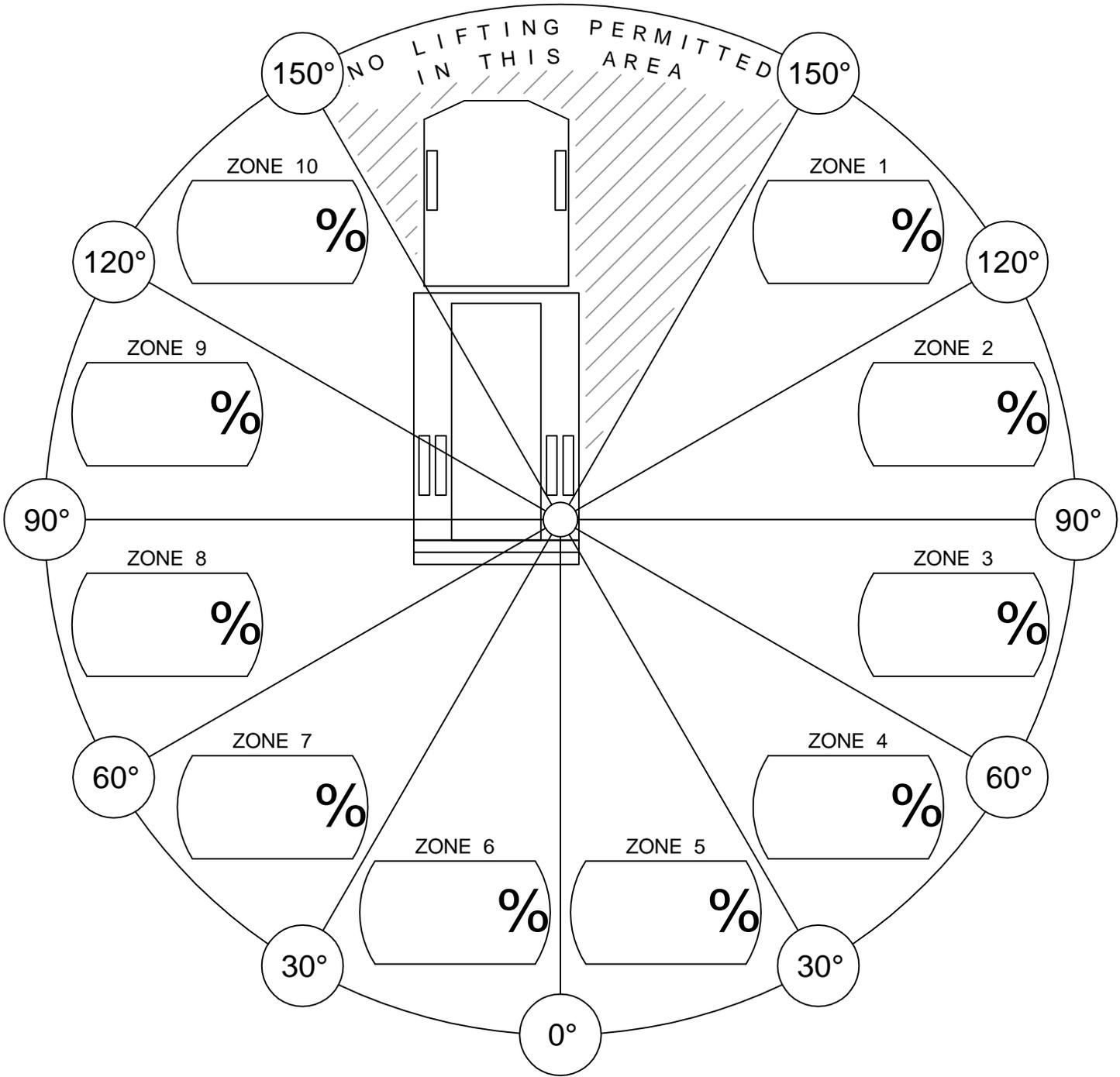
08-15-11A

SECTION

C200

20906-18

CRANE STABILITY



% of Rated Capacity for each of the 10 regions are provided above.

CONDITIONS:

- STABILIZERS FULLY EXTENDED & DOWN, ON FIRM LEVEL GROUND.



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
STABILITY CHART

VENTURO CRANES

DATE
05-11-17F

SUPERSEDES
02-21-14E

SECTION
C200

20907

WIRE ROPE INSTALLATION

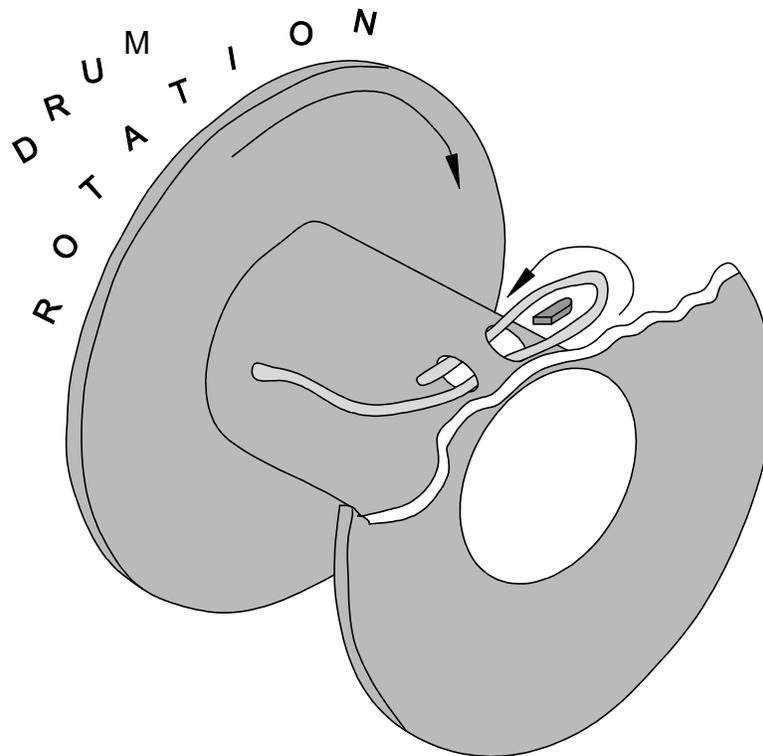


FIG. 1

- STEP 1: UNWIND COIL OF WIRE ROPE BY 'ROLLING' ALONG THE FLOOR. THIS WILL PREVENT 'KINKING'.
- STEP 2: INSERT WIRE ROPE END UP THROUGH ANTI-2-BLOCK (A2B) CAGE ASSEMBLY, BETWEEN CHEEK PLATES, OVER THE TOP SHEAVE, AND THROUGH WIRE ROPE GUIDE.
- STEP 3: INSERT WIRE ROPE END INTO POCKET OPENING ON WINCH, WRAP AROUND WEDGE, AND BACK THROUGH POCKET OPENING AS SHOWN IN FIGURE 1.



CAUTION

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



CAUTION

- THERE MUST ALWAYS BE AT LEAST [5] DEAD WRAPS OF WIRE ROPE ON THE WINCH DRUM WHILE UNDER LOAD.

NOTE: SOME WINCHES MAY BE SUPPLIED WITH A HEX NUT IN LIEU OF A WEDGE FOR INSTALLING THE WIRE ROPE.



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE

WIRE ROPE INSTALLTN

DATE

02-21-14K

SECTION

C200

ET6K & LARGER CRANES

SUPERSEDES

12-26-13J

22245

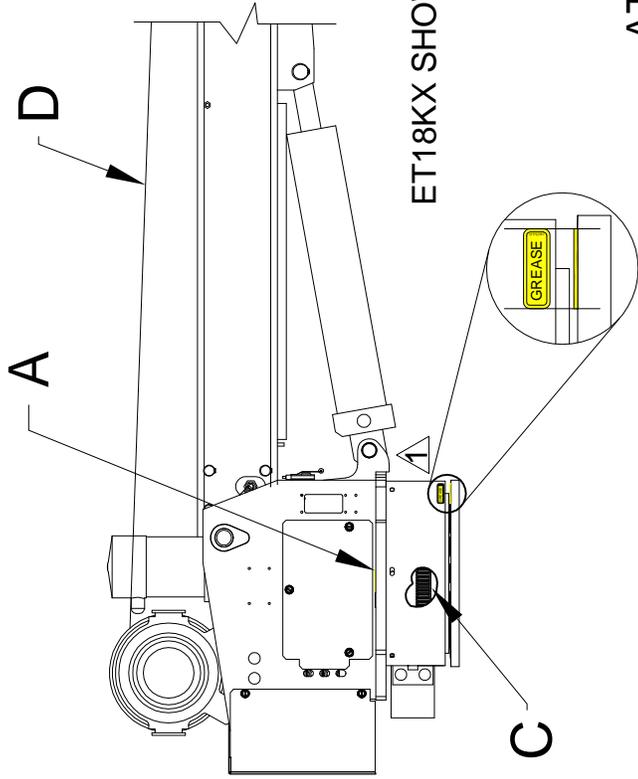
SECTION 300

MAINTENANCE

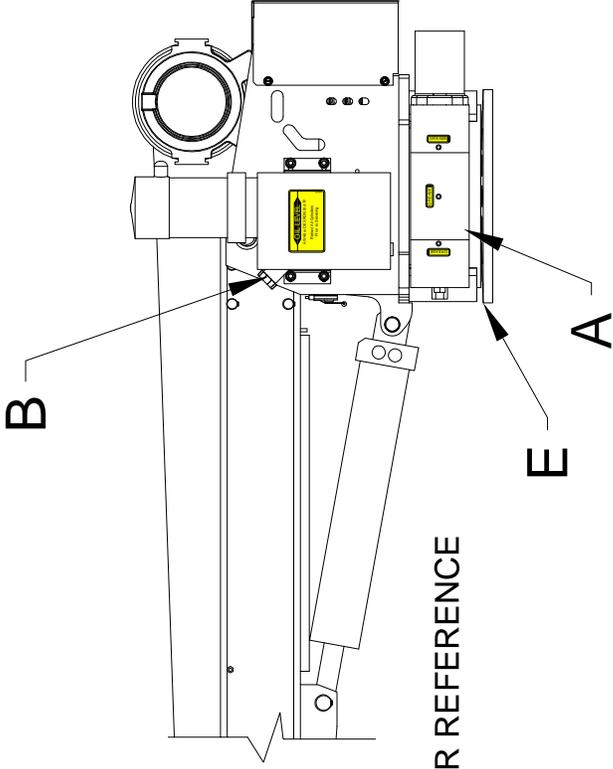
&

SERVICE





ET18KX SHOWN FOR REFERENCE



ATTENTION:

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

Location	Service Required	Note	Service Interval
A	Grease fitting With Pressure Grease Gun	Use FUCHS Renolit Aluminum Complex Grease, or equivalent ▲ ALIGNMENT: To align hole w/ fitting, line up grease decals on lower cover and base gusset.	Time of Truck Service
B	Fill Oil Reservoir to Oil Level with Boom Down and Boom In.	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
E	Check Torque of bolts	Bolts should be torqued to 200 ft-lbs	Time of Truck Service



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
LUBRICATION & MAINTENANCE CHART

DATE
03-08-19J
SUPERSEDES
11-18-14H

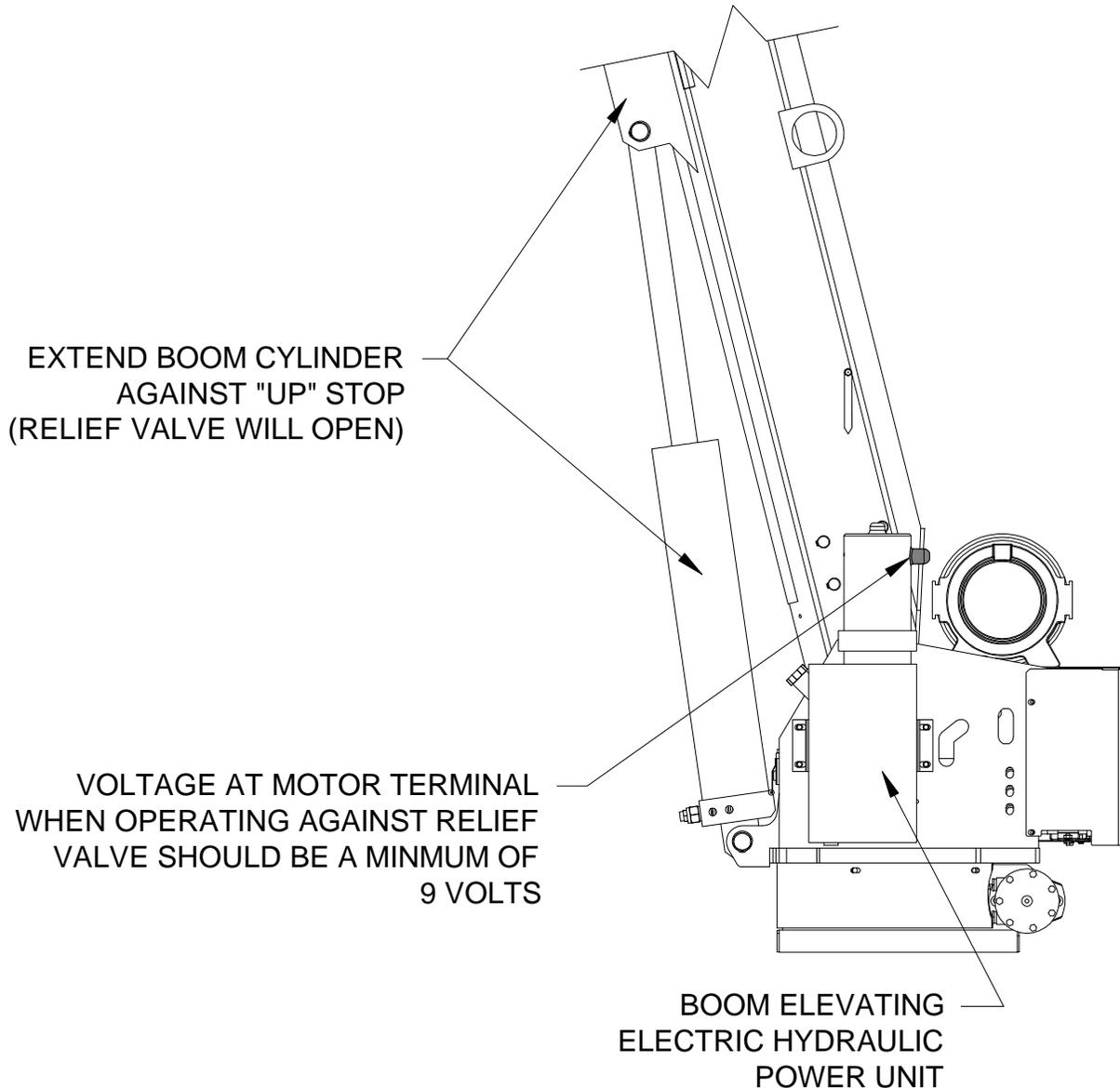
SECTION
C300

ET8/12/16/18 SERIES CRANES

21306

MINIMUM VOLTAGE TEST

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



MANUFACTURING, INC.
CINCINNATI, OHIO

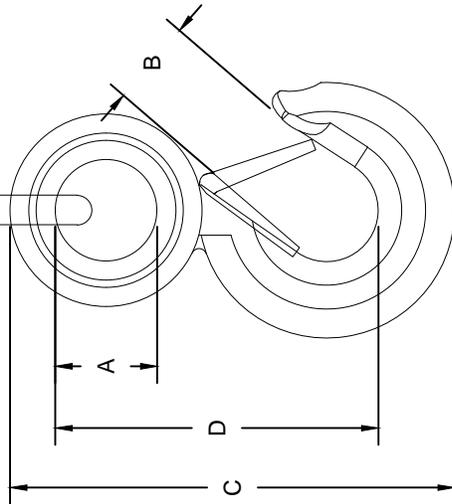
TITLE
MINIMUM VOLTAGE TEST
ET SERIES CRANES

DATE
12-26-13G
SUPERSEDES
10-05-09F

SECTION
C300
19963

WIRE ROPE ASSEMBLY

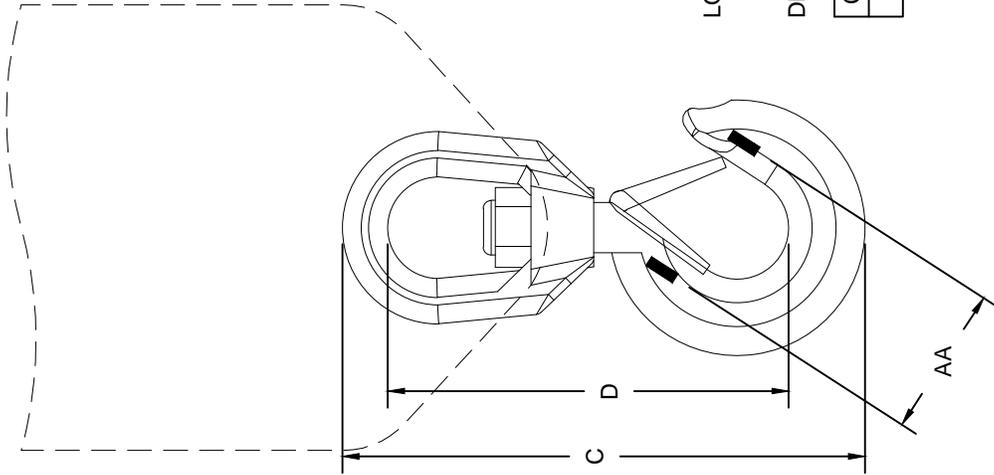
WIRE ROPE:
 5/16" DIA, 80' LONG
 ▲ GAC 7X19 XIP-RHRL-IWRC, SB 9800 LBS



WIRE ROPE HOOK:
 RATING: 1.5 TONNE (3310 LBS)
 DIMENSIONS:

A	B	C	D
1.13"	1.06"	5.50"	4.13"

LOAD BLOCK ASSEMBLY

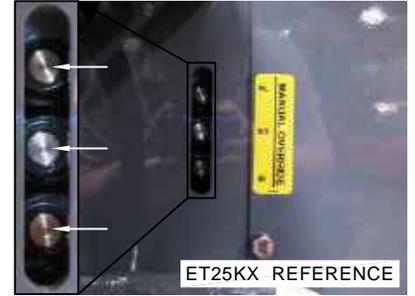
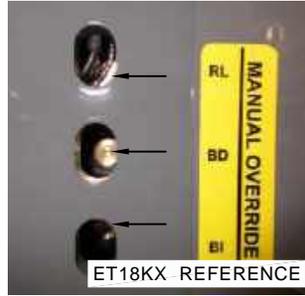


LOAD BLOCK HOOK:
 RATING: 3 TONNE (6615 LBS)
 DIMENSIONS:

COLOR	BRAND	AA	C	D
GOLD	CROSBY	2.00"	8.25"	6.50"

MANUAL OVERRIDE INSTRUCTIONS
 ET NON-PROPRIONAL SERIES CRANES ▲

!! READ ALL INSTRUCTIONS BEFORE PERFORMING MANUAL OVERRIDE PROCEDURES !!



Each valve station incorporates [2] hydraulic ports and [2] coils. Manual override shafts are located in the center of the coils (see figure 1). Manual override decals are placed on each crane near the valve assembly. These decals provide a visual aid that helps the operator determine the function designations (Reference figure 2).

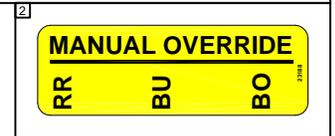
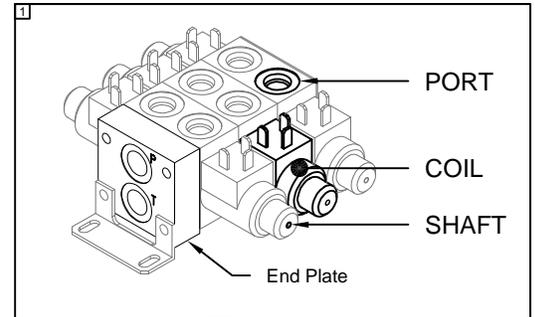
2-STATION FUNCTIONS:

RR = Rot. Right RL = Rot. Left
 BU = Boom Up BD = Boom Down

3-STATION FUNCTIONS include previous functions, plus:

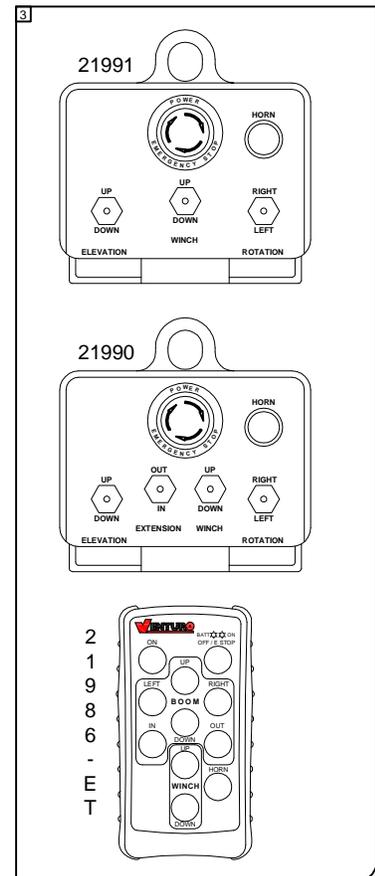
BI = Boom In BO = Boom Out

ALWAYS BE SURE TO CHECK HYDRAULIC OIL LEVEL BEFORE PROCEEDING. IT IS RECOMMENDED TO REMOVE ANY ITEM(S) THAT MAY INTERFERE WITH OPERATING THE CRANE MANUALLY. IF POSSIBLE, STRAPS AND/OR HARNESSSES SHOULD BE REMOVED BEFORE OPERATING A CRANE IN MANUAL OVERRIDE !!



Procedure:

1. Turn Master disconnect switch to "ON"
2. Power up the pendant / radio
 - 2.1. PENDANT - twist EMERGENCY STOP button clockwise
 - 2.2. RADIO - Press green ON button
3. On the crane, reference the function you wish to perform using the manual override decal
4. Using a tool with a diameter of 1/8" or smaller, press the shaft inward and hold
5. Reference the functions listed on your pendant or radio (see figure 3)
6. Press the switch or button for the same function
7. If you need to change function,
 - 7.1. Release switch or button
 - 7.2. Remove tool from shaft
 - 7.3. Go to step 3



For assistance, please feel free to contact Technical Support at 800-226-2238.



VENCO VENTURO INDUSTRIES LLC
 CINCINNATI, OHIO

TITLE
MAN. OVERRIDE INSTR.
 ▲
 ET NON-PROP CRANES

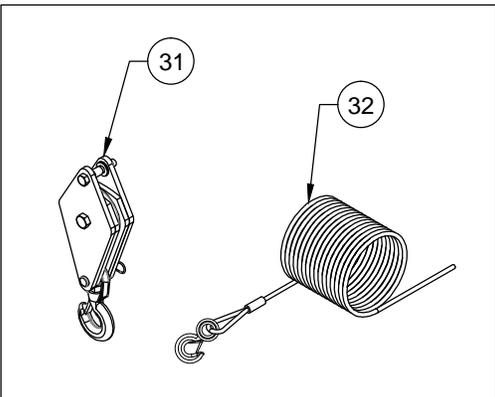
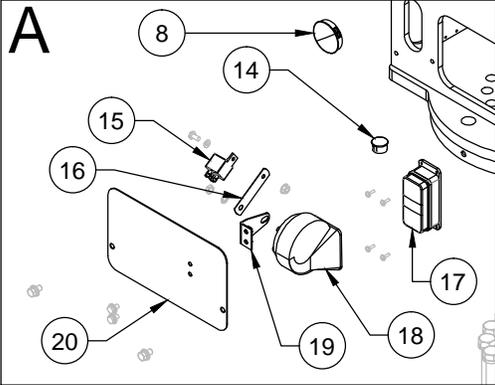
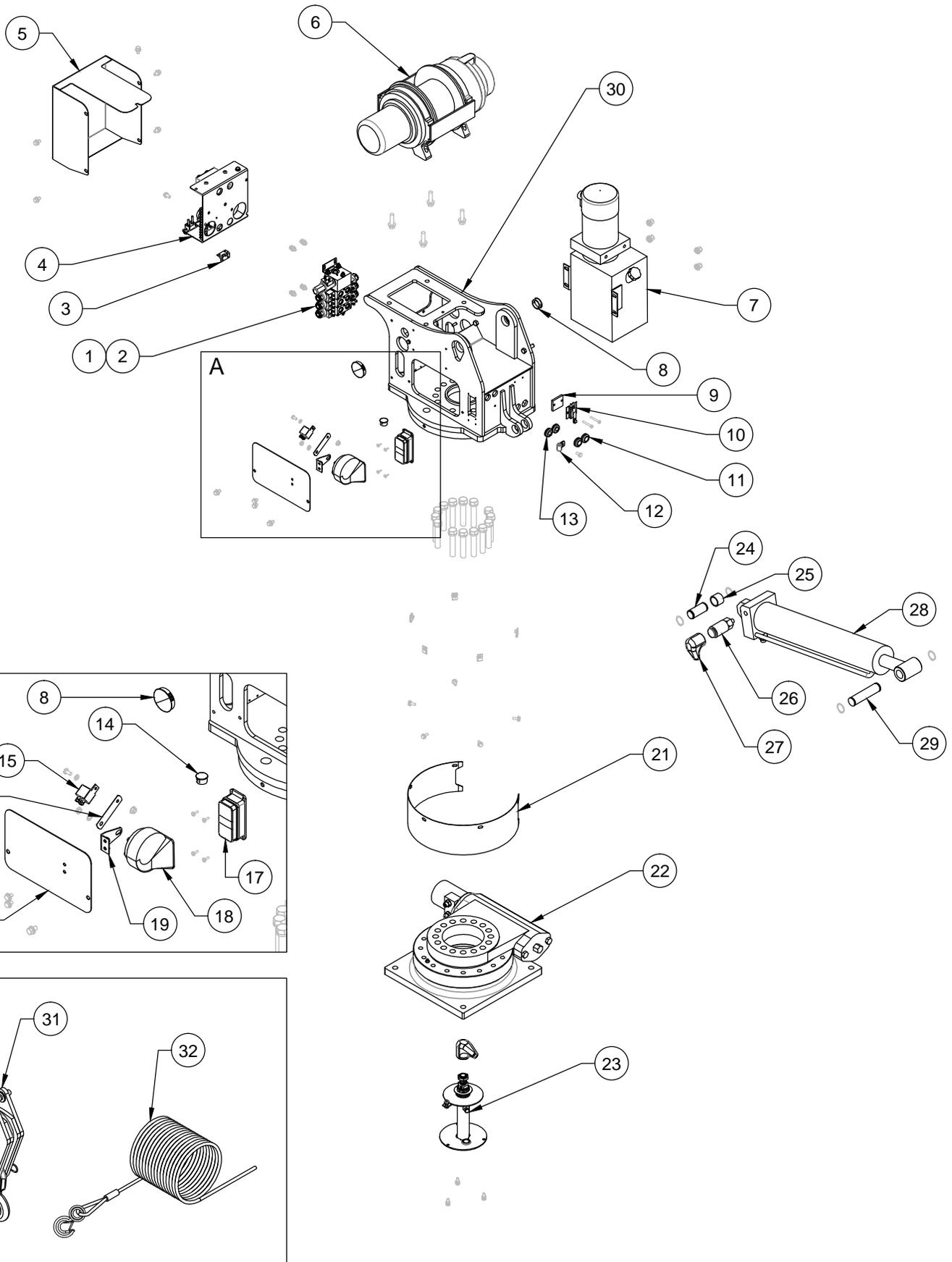
DATE
03-08-19A
 SUPERSEDES
02-09-17

SECTION
C200
23084

SECTION 400

PARTS





VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
RPLCMNT PARTS DWG - MECH
ET16/18KX(P)

DATE
05-08-20A
SUPERSEDES
02-24-20

SECTION
C400
23990

ET18KX(P) - REPLACEMENT PARTS LIST- MECH

ITEM NO.	PART NO.	KX-16'	KXP-16'	DESCRIPTION
1	21614	1	-	VALVE BLOCK; 3-SPOOL
2	26479	-	1	VALVE BLOCK; 3-SPOOL PROP VALVE
3	1586A22	1	1	HINGE
4	23154	1	1	ELECTRICAL PANEL
5	23173	1	1	REAR COVER, MECHANISM
6	21215	1	1	DC2500 WINCH, PERMANENT MOTOR
7	19820	1	1	HYDRAULIC POWER UNIT
8	26492	2	1	PLUG; Ø2", LOCKING
9	20896	1	1	UHMW SPACER - TOP POSITION SWITCH
10	19904	1	1	BOOM SHUT OFF SWITCH ASSEMBLY
11	20889	2	2	GROMMET 5/8" ID
12	19269	1	1	CLAMP, CABLE - 1/4 IN.
13	14775	2	2	GROMMET 1/2" ID
14	25019	1	1	PLUG; HOLE, 7/8", PLASTIC
15	22739	1	1	RELAY. 12VDC
16	-	1	1	RELAY BRACKET (INCLUDED WITH 21948)
17	22480	1	1	SOCKET ASSY-16+1 POLE
18	21948	1	1	HORN, OPERATOR CONTROLLED 12V
19	22000	1	1	BRACKET; HORN
20	23155	1	1	PLATE; COVER, RIGHT SIDE
21	21185	1	1	ROTATION GEAR GUARD
22	21735	1	1	SLEW DRIVE
23	16780	1	1	ASSY; SWIVEL TERMINAL, 2-POLE
24	21172	1	1	PIN; ELEV CYLINDER BASE
25	21124	3	3	MRP COMPOSITE BEARING
26	17460-2400	1	1	PRESSURE SWITCH 2400 PSI
27	17012	2	2	BOOT COVER
28	21743	1	1	ELEVATION CYLINDER
29	21127	1	1	BOOM PIVOT PIN
30	23149	1	1	HOUSING; WELDED ASSEMBLY
31	23169	1	1	LOAD BLOCK ASSEMBLY
32	25810-5/16-80	1	1	WIRE ROPE, 5/16" x 80'

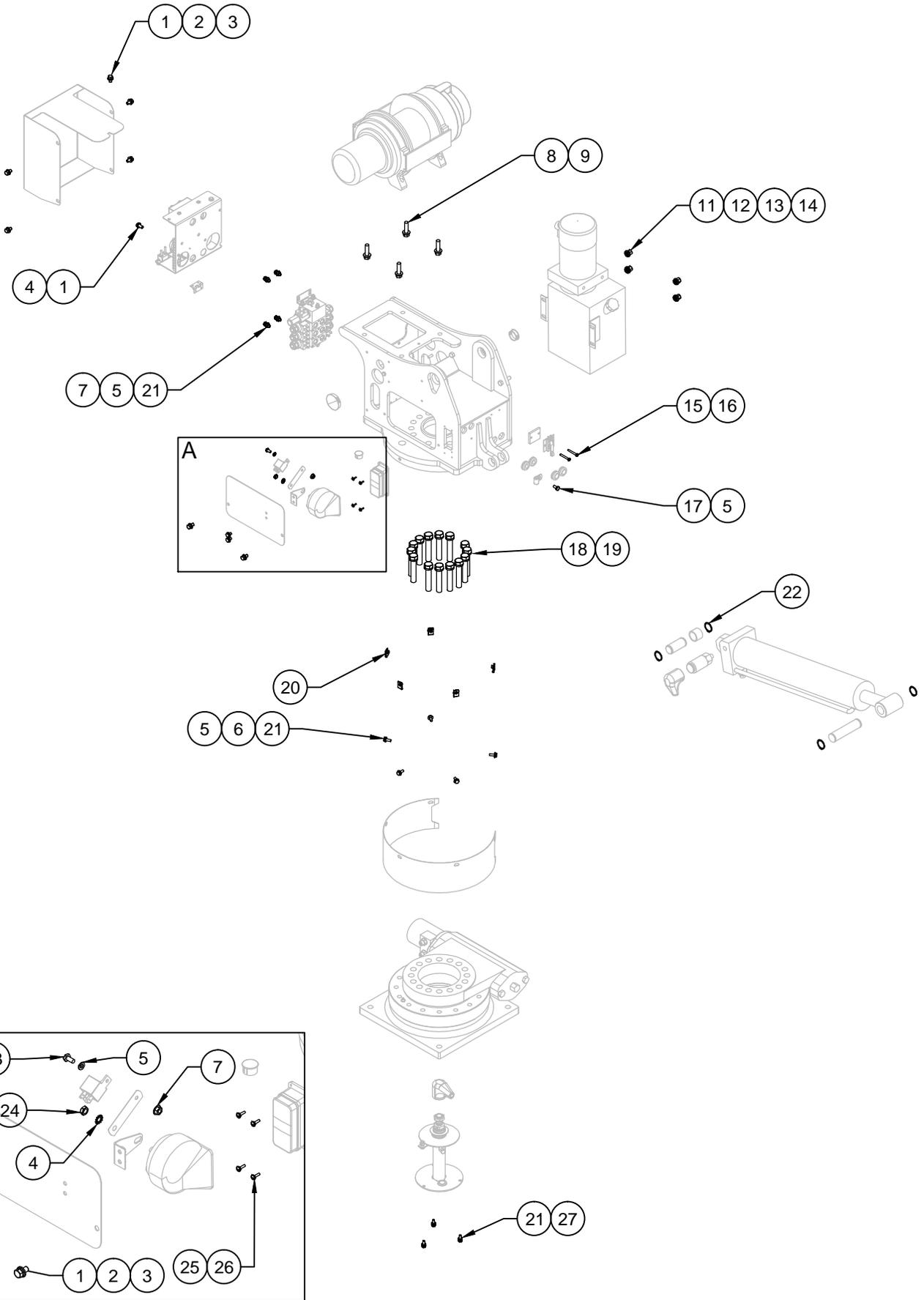


VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
REPLACEMENT PARTS LIST
ET18KX(P) - MECH

DATE
05-08-20A
SUPERSEDES
02-24-20

SECTION
C400
24056



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
RPLCMNT HW DWG - MECH
ET16/18KX(P), GEN. B

DATE
11-19-19
SUPERSEDES
-

SECTION
C400
23991

REPLACEMENT H/W LIST - ET16/18KX(P) MECH

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	8	!HHCS03118063S	HEX HEAD CAP SCREW, 5/16-18 X 5/8 LG, STAINLESS
2	7	!LWSH-031S	LOCK WASHER 5/16 S/S
3	7	!FWSH-031S	FLAT WASHER 5/16 S/S
4	2	!LWSH-031-STAR-SS	LOCK WSHR, 5/16 EXT STAR , STAINLESS STEEL
5	12	!LWSH-025S	LOCK WASHER 1/4 S/S
6	7	!FWSH-025	FLAT WASHER 1/4 S/S
7	5	!FNUT-02520-SS	FLANGE NUT; 1/4-20, STAINLESS STEEL
8	4	(INCL. W/ WINCH)	12MM X 50MM
9	4	!FWSH-050SAE	WASHER; FLAT, 1/2 SAE, ZNC PLTD
10	4	!LWSH-050	LOCK WSHR; 1/2, GR. 5, ZINC
11	4	!LNUT-03816	LOCK NUT; 3/8-16, GR. 5, ZINC, NYL-NSRT
12	4	!LWSH-038	LOCK WSHR; 3/8, GR. 5, ZINC
13	4	!FWSH-038	FLAT WSHR; 3/8, GR. 5, ZINC
14	5	!LWSH-038-STAR	LOCK WSHR; 3/8, GR. 5, ZINC, X-TOOTH
15	2	!PHPMS#1024150S	PHILLIPS HEAD PAN, MACH SCREW, # 10-24 X 1-1/2LG, S/S
16	2	!LWSH-#10	LOCK WSHR; #10, GR. 5, ZINC
17	1	!HHCS02520063S	HEX HEAD CAP SCREW, 1/4-20 X 5/8LG, STAINLESS
18	14	!HHCS06311350	HHCS 5/8-11 X 3-1/2 GR.2
19	14	!LWSH-063	LOCK WSHR; 5/8, GR. 5, ZINC
20	5	!UNUT-02520-LKG	U-NUT; 1/4-20, LOCKING TYPE
21	12	!HHCS02520075S	HEX HEAD CAP SCREW, 1/4-20 X .75 LG, STAINLESS
22	4	!SRNG-113	EXT. RET. RING, 1-1/8 ZINC PLATED
23	3	!HHCS02520050	HHCS; 1/4-20 X 1/2, GR. 5, ZINC
24	1	!HNUT-03124	HEX NUT; 5/16-24, GR. 5, ZINC
25	4	!SHPMS#0832050S	SLOT HEAD, PAN, MACH SCREW #8-32 X 1/2 LG STAINLESS
26	4	!LWSH-#08	LOCK WSHR; #08, GR. 5, ZINC
27	6	!LWSH-025-STAR	LOCK WSHR; 1/4, GR. 5, ZINC, X-TOOTH



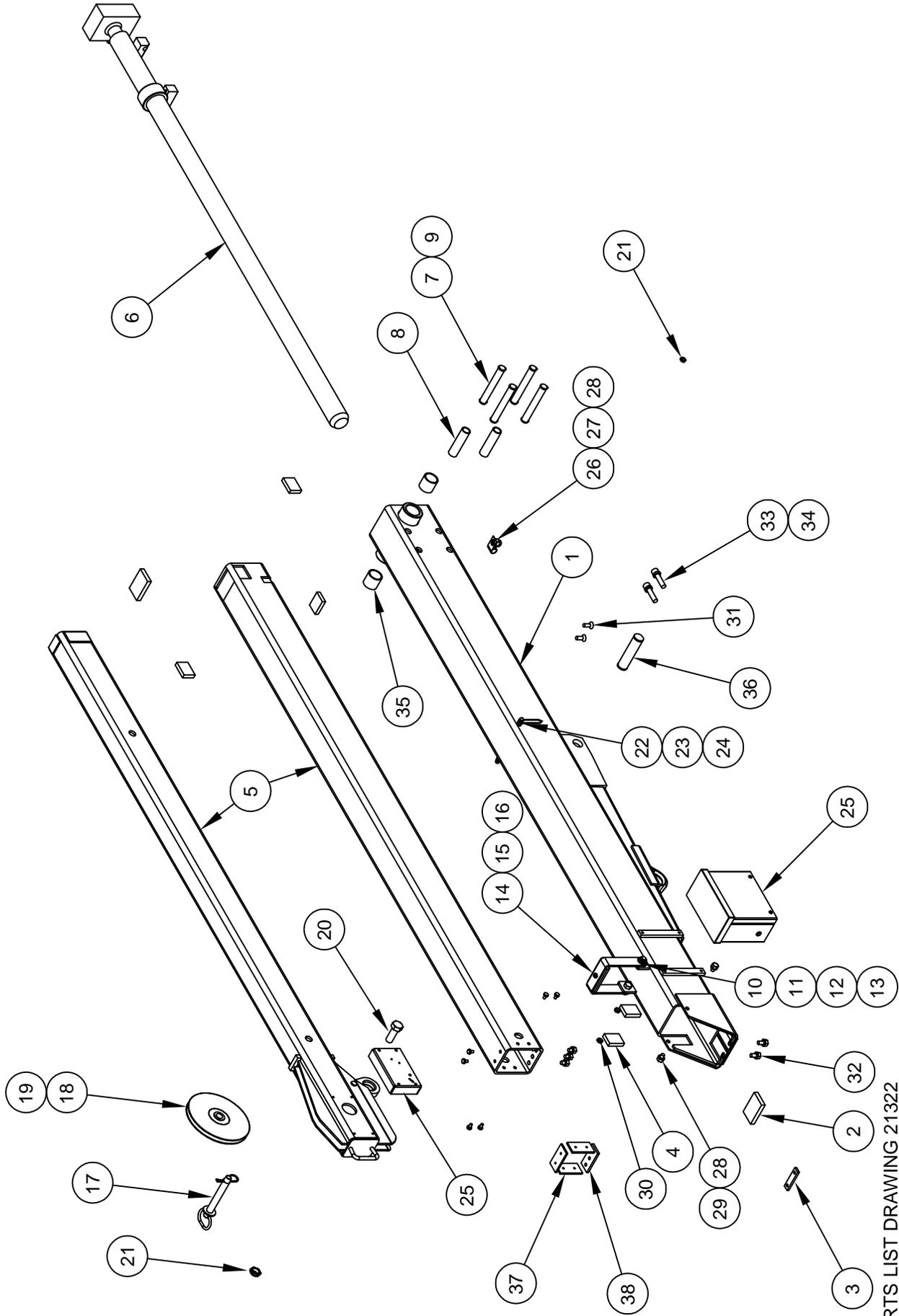
VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
RPLCMNT HW LIST- MECH
ET16/18KX(P) SERIES

DATE
11-19-19
SUPERSEDES
-

SECTION
C400
23992

21200 BOOM PARTS DRAWING



REF PARTS LIST DRAWING 21322

 <p>VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO</p>	TITLE	21200 BOOM PARTS DRAWING	SECTION	C400
		ET16/18KX	DATE	10-23-14C
			SUPERSEDES	04-21-08B
				21310

21200 BOOM PARTS LIST

ITEM NO.	EXPLODED/QTY.	PART NUMBER	DESCRIPTION
38	1	22145	LOWER STOP BLOCK
37	3	22146	TOP SHIM
36	1	21127	BOOM PIVOT PIN
35	2	21206	POLY BEARING - PRIMARY BOOM PIVOT
34	2	ILWSH-050-HC	LOCK WASHER 1/2" HI COLLAR
33	2	IFHCS05013200	SOCKET HEAD CAP SCREW 1/2-13 X 2" LONG
32	2	IFHCS03816075	HEX HEAD CAP SCREW - 3/8-16 X 3/4 LONG
31	2	ICACS03816100	CNTRSNK ALLEN HEAD CAP SCREW 3/8-16 X 1" LG
30	2	ILNUT-03816	JAM NUT - 3/8-16 GRADE 5
29	4	ILWSH-038	LOCK WASHER 3/8"
28	2	IFHCS03816050	HEX HEAD CAP SCREW 3/8-16 X 1/2" LG - GR 5
27	1	ILWSH-025	LOCK WASHER - 1/4"
26	1	19269	CABLE CLAMP - 1/4"
25	1	21276	ANTI-TWO BLOCK ASSEMBLY - L.H.
24	3	IANUT-02520S	ACORN NUT 1/4-20 STAINLESS
23	2	22490	SPACER, BOOM ARROW 1/2" O.D.
22	2	13459-1	BOOM ARROW 3-3/16 LONG
21	1	ILNUT-07510	LOCKNUT 3/4-10
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
16	1	ILNUT-02520N	NYLON INSERT JAM NUT - 1/4-20
15	1	IFHCS02520063	PAN HEAD CAP SCREW - 1/4-20 X 5/8 LONG
14	1	19881	CABLE GUIDE WEAR STRIP
13	2	ILNUT-05013N	1/2-13 NYLON INSERT JAM NUT
12	2	IFWSH-050	FLAT WASHER 1/2"
11	2	IFHCS05013100	HEX HEAD CAP SCREW 1/2-13NC X 1 LG
10	1	19880	CABLE GUIDE STRUCTURE
9	8	ISRNG-075	RETAINING RING - 3/4" SHAFT DIA
8	2	19885	EXTENSION CYLINDER ROLLER
7	4	21211	THRUST PIN - EXTENSION CYLINDER
6	1	21217-1	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 RETAINING BAR
2	2	21208	BOOM BEARING - 2 X 3 X 1/2
1	1	21202	PRIMARY BOOM WELDED ASSEMBLY

REF PARTS DRAWING 21310



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
21200 BOOM PARTS LIST

ET16/18KX

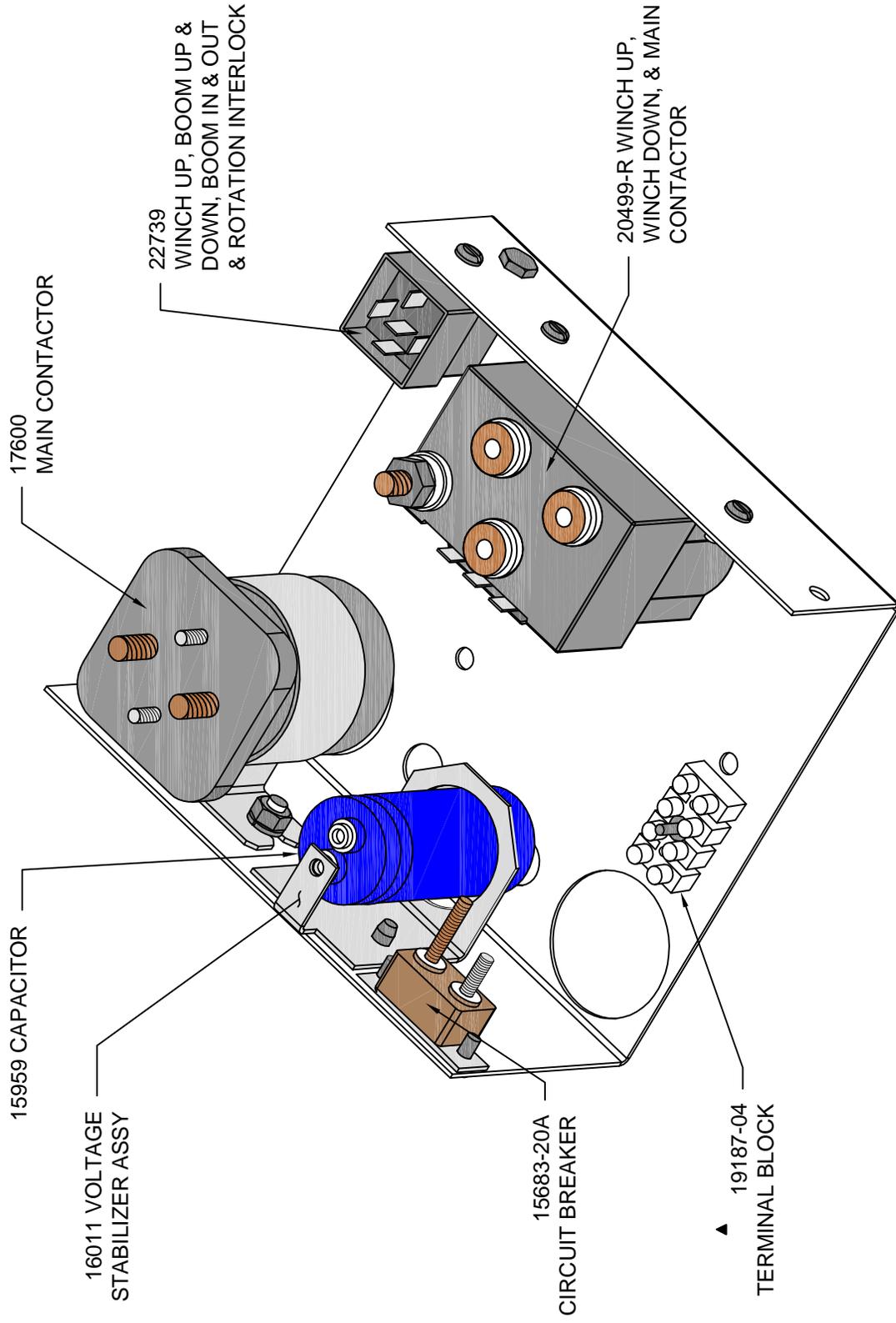
DATE
10-23-14B

SUPPERSEDES
12-11-13A

SECTION
C400

21322

23154-1 ELECTRICAL COMPONENT ASSEMBLY



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
ELECTRICAL COMPONENT ASSEMBLY

ET16/18KX

DATE
12-14-18F

SUPERSEDES
02-10-15E

SECTION
C400

21397

Single & 2-Pole Slip-ring Replacement Parts (1 of 2)

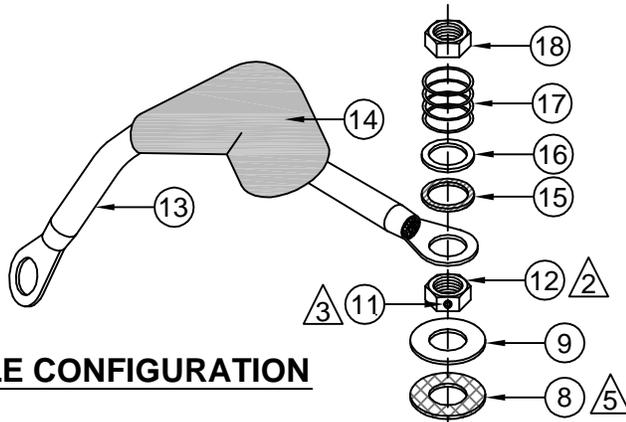
						16780 BILLS OF MATERIALS		
Quill Rotation	Slew Rotation Single Pole Slip-Ring	Slew Rotation 2-Pole Slip-Ring (ET6K ONLY)	Slew Rotation 2-Pole Slip-Ring (ET8-18KX)	Slew Rotation 2-Pole Slip-Ring (ET25-36KX)	ALL CRANES			
16780	16780 - 1	16780 - 2P6	16780 - 2P8	16780 - 2P25	16780 - KIT			
QTY						#	PART	DESCRIPTION
1	1	1	1	1	-	1	16783	PIGTAIL AND STUD ASSEMBLY
1	1	1	1	1	1	2	12534-5	ZINC BUSHING; 5/8" I.D. X 1" O.D. X 14 GAUGE
2	2	2	2	2	2	3	14357-1	FIBER WASHER; 5/8" I.D. X 1 1/16" O.D. X 1/16"
1	1	1	1	1	1	4	14233	INSULATING BUSHING; 5/8" I.D. X 7/8" O.D. X 7/8"
1	-	-	-	-	-	5	14318	FLAT WASHER; 1 3/16" I.D. X 2 3/4" O.D. X 3/16"
1	-	-	-	-	-	6	14232	INVERTED FLARE NUT; 1 3/16"-16
-	-	-	-	-	-	7	27568	WELDED ASSY. CANDLESTICK
1	1	1	1	1	1	8	14357-2	FIBER WASHER; 5/8" I.D. X 1 1/4" O.D. X 1/16"
1	1	1	1	1	1	9	IFWSH-063SAE	FLAT WASHER; 5/8" SAE
-	1	-	-	-	-	10	27156	RUBBER WATER SHIELD; 1/8" THICK
1	1	1	1	1	1	11	ISHCS02528025KC	SET SCREW W/ KNURLED CUP; 1/4"-28 X 1/4"
1	1	1	1	1	1	12	21273	BRASS JAM NUT; 5/8"-11
-	-	-	-	-	-	13	26035-2	PIGTAIL; SWIVEL TERMINAL
-	-	-	-	-	-	14	17012	RUBBER BOOT; SWIVEL TERMINAL
1	1	1	1	1	1	15	5612-162-62	TEFLON WASHER
1	1	1	1	1	1	16	5714-113-62	BRASS WASHER
1	1	1	1	1	1	17	LC-098K-00	SPRING; 0.845" O.D. X 0.098" WIRE X 1.00 F.L.
1	1	1	1	1	1	18	!JNUT-06311N	JAM NUT; 5/8"-11, NYLON NUT
1	1	1	1	1	1	19	LOCTITE-24205	REMOVABLE THREAD LOCKER; 0.5ML
1	1	1	1	1	1	20	19368	IDWG; 16780 SWIVEL TERMINAL
-	-	1	-	-	-	21	27456	UHMW WATER SHIELD, (ET6K ONLY)
-	-	-	1	1	-	22	27456-1	UHMW WATER SHIELD, (ET8 - ET36)
-	-	1	1	1	-	23	27461	SPRING, (-) SLIP-RING ASSY.
-	-	-	1	1	-	24	27441-1	COPPER SLIP-RING, (ET8 - ET36)
-	-	1	-	-	-	25	27441	COPPER SLIP-RING, (ET6K ONLY)
-	-	1	1	1	-	26	27449-1	BRASS SLIP-RING (ET6 - ET36)
-	-	1	1	1	-	27	IHHCS03118075-B	BRASS HHCS
-	-	1	1	1	-	28	IHNUT-03118-B	BRASS NYLOC NUT
-	-	1	-	-	-	29	23255	SLIP-RING, WELDED ASSY, ET6K
-	-	-	1	-	-	30	23255-1	SLIP-RING, WELDED ASSY, ET8 - 18K(X)
-	-	-	-	1	-	31	23255-2	SLIP-RING, WELDED ASSY, ET25 - 36K(X)
-	-	1	1	1	-	32	02025-2*96.5INX	(-) WELDING CABLE ASSY, BRASS SLIP-RING
-	-	1	1	1	-	33	02025-2*22.5INX	(-) WELDING CABLE ASSY, COPPER SLIP-RING
-	-	1	1	1	-	34	27463	SHIM, WIDE RIM, 18GA, 2-1/4 O.D. X 1-1/2 I.D.
-	-	1	1	1	-	35	20889	RUBBER GROMMET
-	-	1	1	1	-	36	!SRNG-150	SNAP-RING, EXTERNAL, 1-1/2"



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

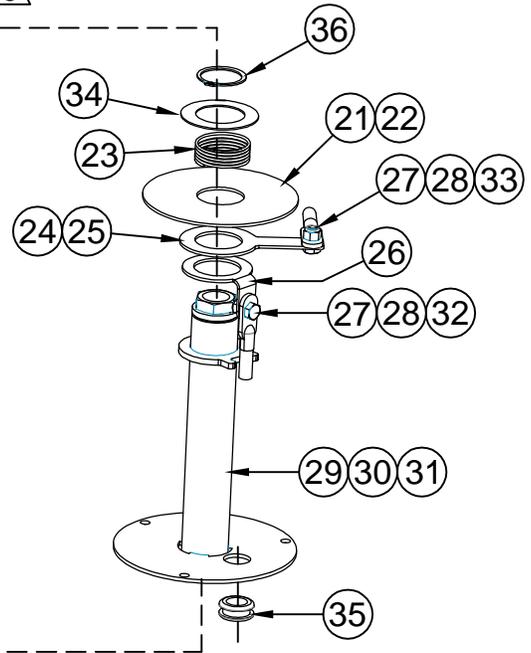
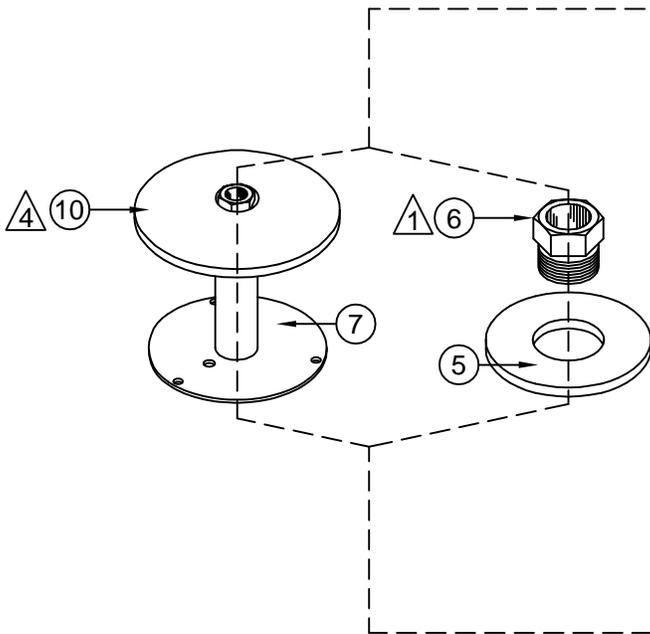
TITLE	DATE	SECTION
16780 REPLACEMENT PARTS	03-29-19A	C400
ET6/8/12/16/18/25/30/36K(X)	SUPERSEDES 04-27-18	21292

Single & 2-Pole Slip-ring Replacement Parts (2 of 2)

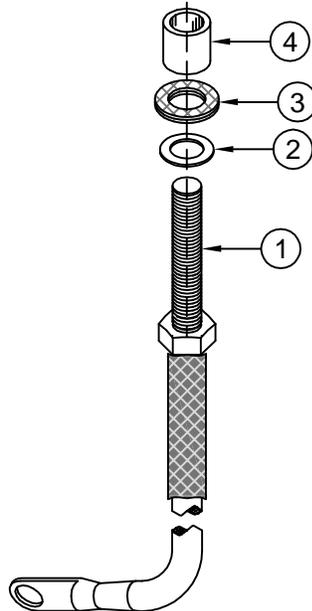


SINGLE-POLE CONFIGURATION

2-POLE CONFIGURATION



- ① LOCTITE 242 BLUE & TORQUE TO 30 FT-LBS FOR QUILL APPLICATIONS
- ② TORQUE TO 15 FT-LBS
- ③ LOCTITE 242 BLUE
- ④ STRETCH RUBBER WATER-SHED DISC P/N 27156 AROUND **'OUTSIDE'** OF THE INVERTED FLARE NUT OF CANDLESTICK, AS SHOWN
- ⑤ ITEM #8, FIBER WASHER, 5/8 I.D. **'MUST'** SIT DIRECTLY ON TOP OF THE INVERTED FLARE NUT ITEM #6.



THE 16780 SWIVEL TERMINAL CAN REPLACE & INTERCHANGE WITH THE 14231 SWIVEL TERMINAL, FOR ET20,000 & ET20K(X) CRANES.



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
REPL. PARTS ILLUSTRATION
ET6/8/12/16/18/25/30/36K(X)

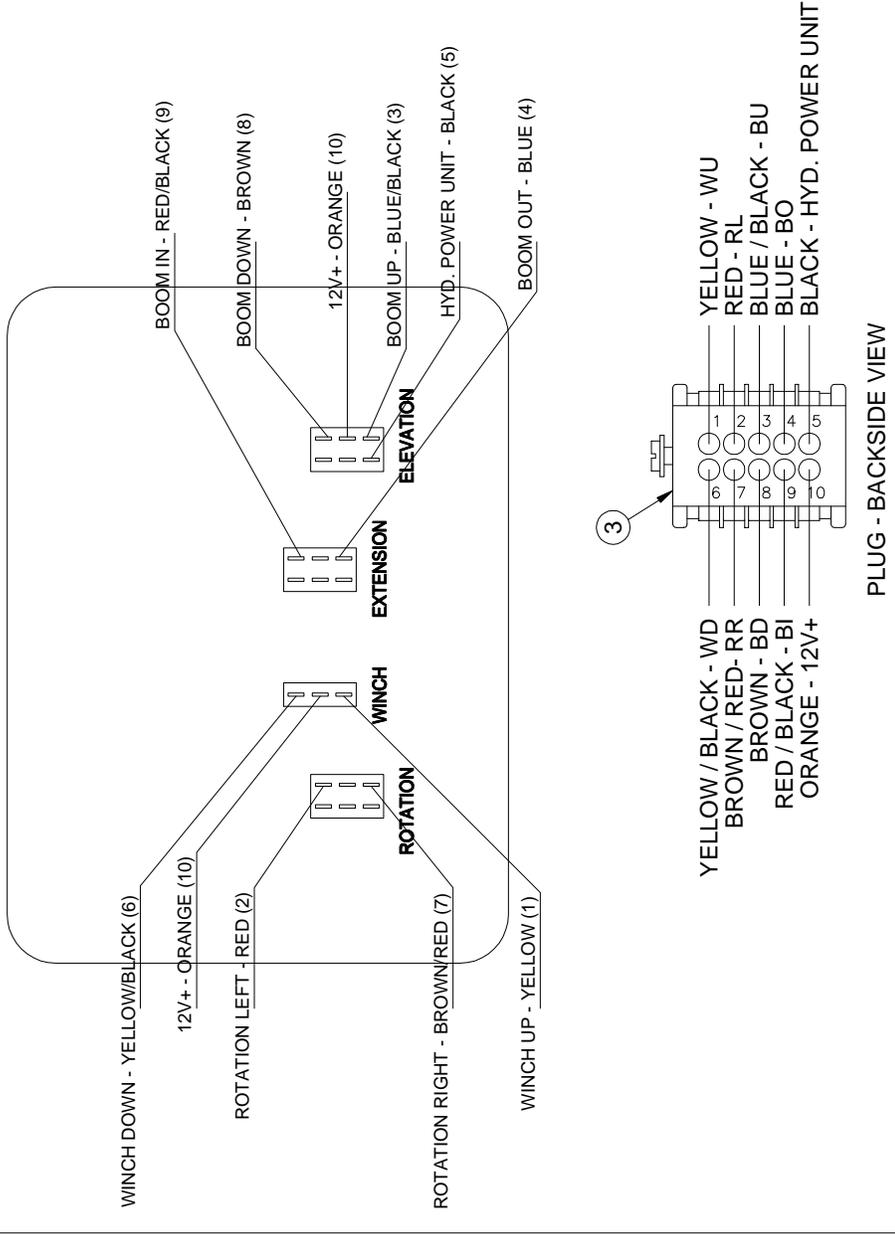
DATE
04-27-18
SUPERSEDES
-

SECTION
C400
21293

22060 PENDANT (4 - SWITCH)

CORD REPLACEMENT INSTRUCTIONS

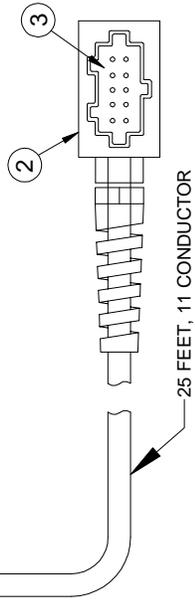
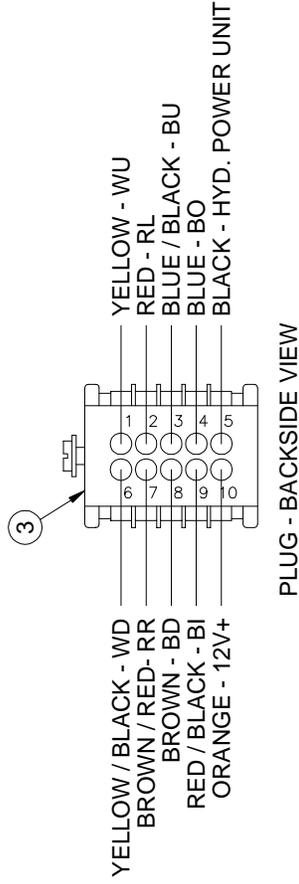
(INSIDE VIEW OF PENDANT CONTROL W/ REAR COVER REMOVED)



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	1	22081	SPDT MOMENTARY TOGGLE SWITCH

TITLE
REPLACEMENT PARTS DRAWING & LIST

22060 PENDANT (STANDARD CONTROL)

DATE
12-10-13C

SUPERSEDES
09-28-12B

SECTION
C400

22076

MANUFACTURING, INC.
CINCINNATI, OHIO

21990 PENDANT; 4 FUNCTION ET CRANES, E-STOP / HORN

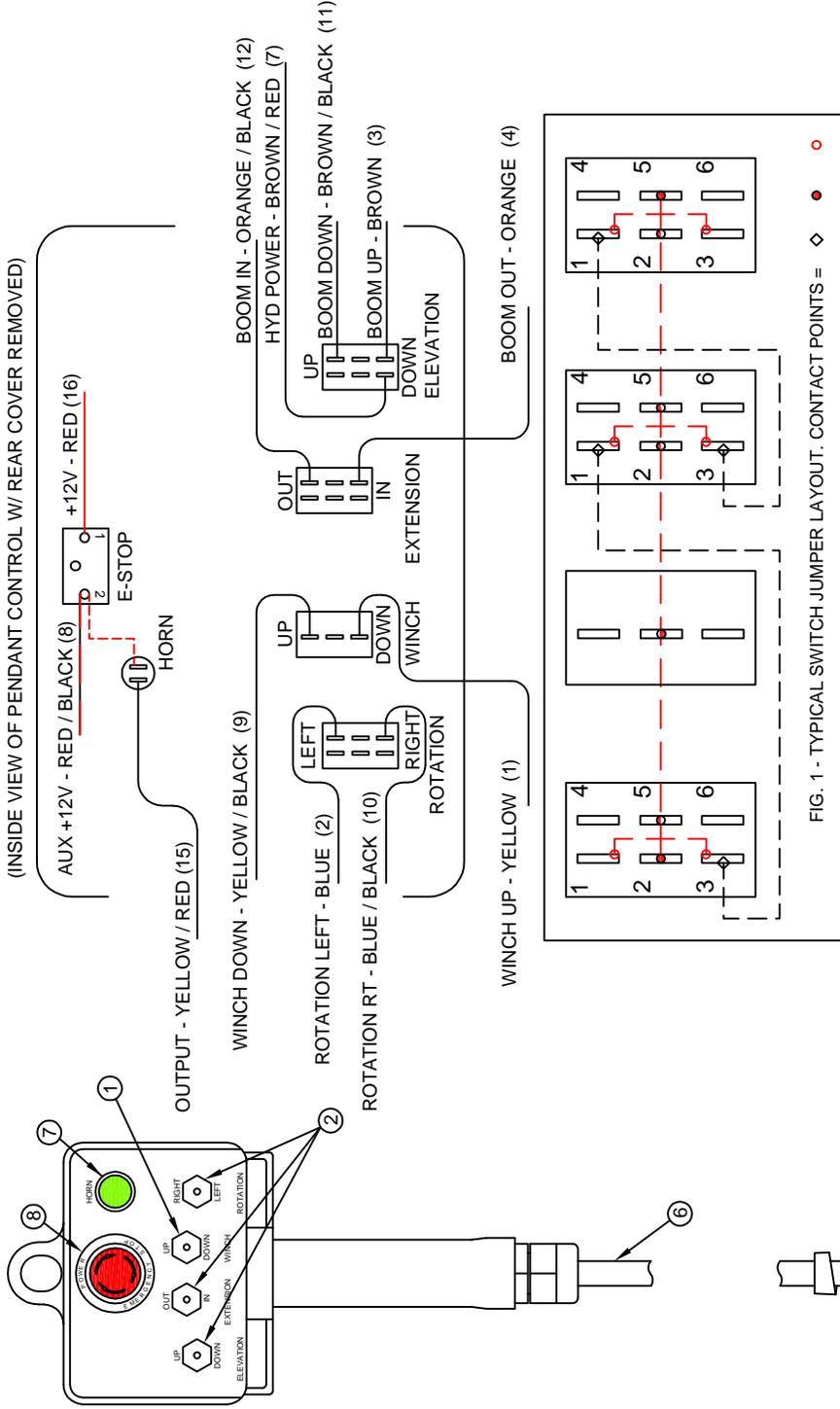
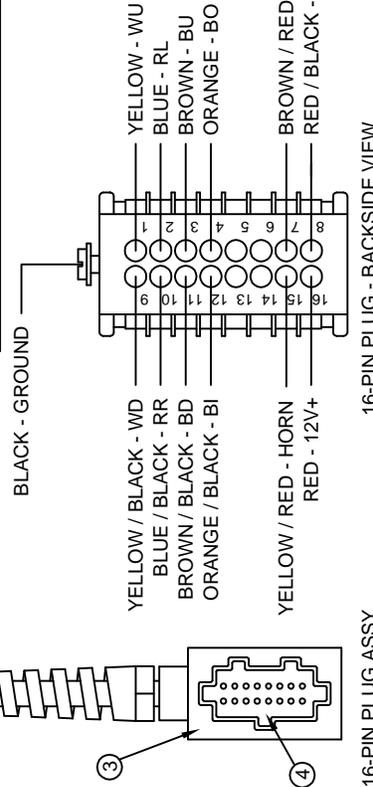


FIG. 1 - TYPICAL SWITCH JUMPER LAYOUT. CONTACT POINTS =



NOTE 1:
WIRE TERMINALS TO BE INSTALLED 'AFTER'
ROUTING REPLACEMENT CORD ASSY
THROUGH PENDANT HEAD AND PLUG
HOUSING.

NOTE 2:
STOW OR CUT BACK UNUSED WIRES.

MODEL	STARTING S/N
ET8KX	73800
ET12KX	69800
ET16KX	170000
ET18KX	95900
ET25KX	125300
ET30KX	130300
ET36KXX	140300

ITEM	QTY	PART NO.	DESCRIPTION
8	1	22156	SWITCH; E-STOP
7	1	22155	SWITCH; PUSHBUTTON, HORN
6	1	22135	KIT; REPLACEMENT CORD ASSY
5	-	-	-
4	1	22472	INSERT; MALE, 16 + 1 POLE
3	1	22471	PLUG CASE; 16 + 1 POLE
2	3	22152	SWITCH; DPDT, MOMENTARY
1	1	22081	SWITCH; SPDT, MOMENTARY



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
REPLACEMENT PARTS DWG & LIST

21990 PNDNT; 4 FNCTN ET CRNS, ESTP/HRN

DATE
01-12-17B

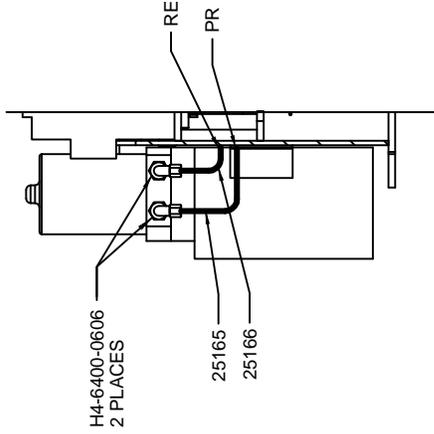
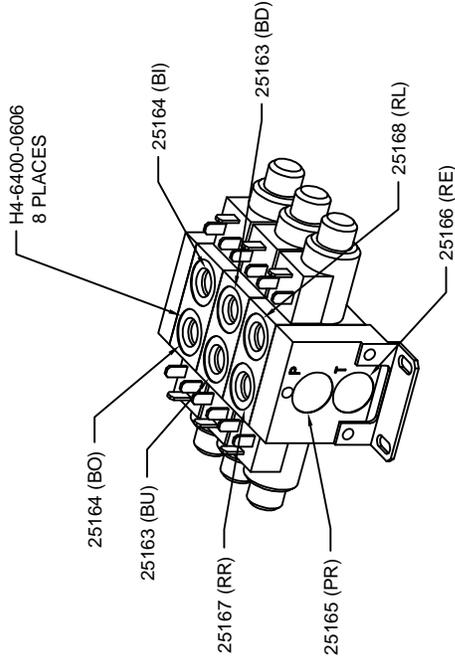
SUPPERSEDES
10-20-14A

SECTION
C400

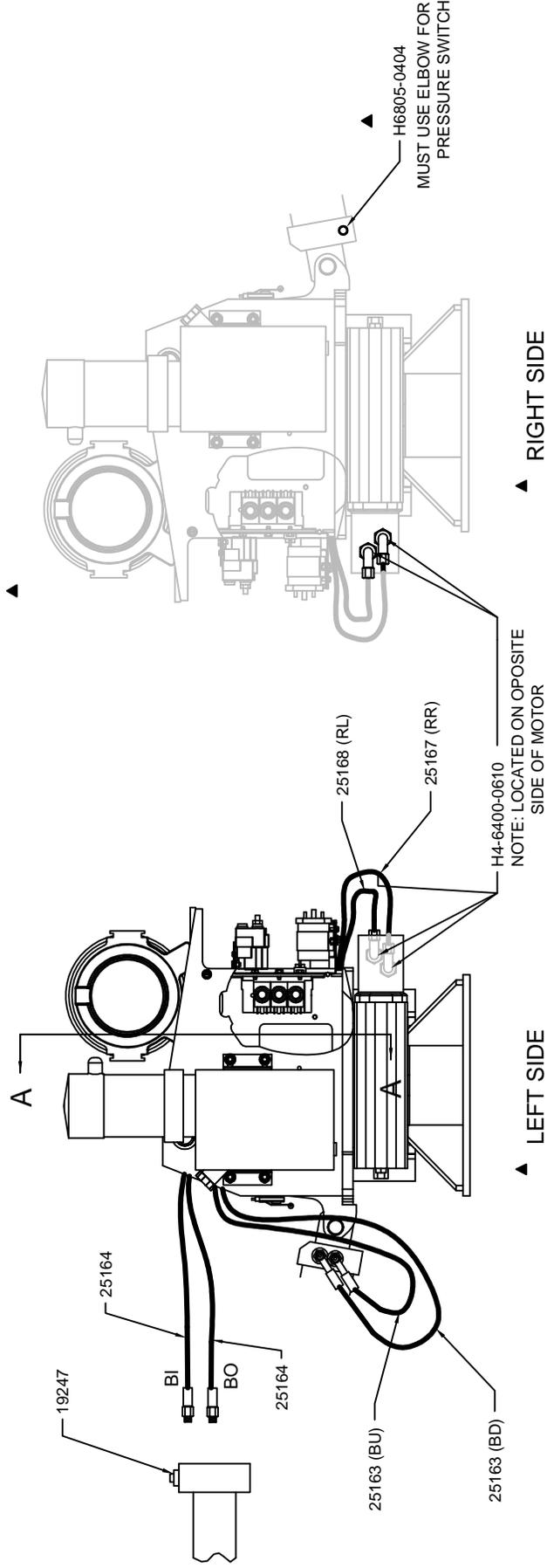
23075

ET16/18KX HYDRAULIC COMPONENTS DRAWING

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



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
HYDRAULIC COMPONENTS DRAWING

DATE
12-16-16B
SUPERSEDES
10-23-14A

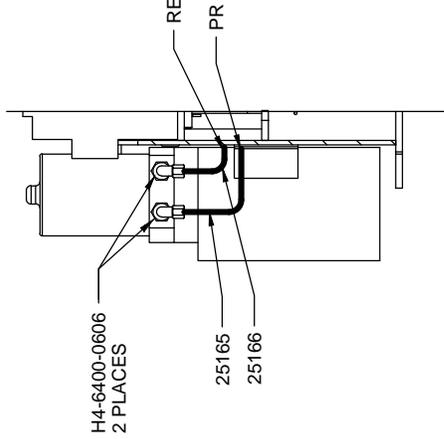
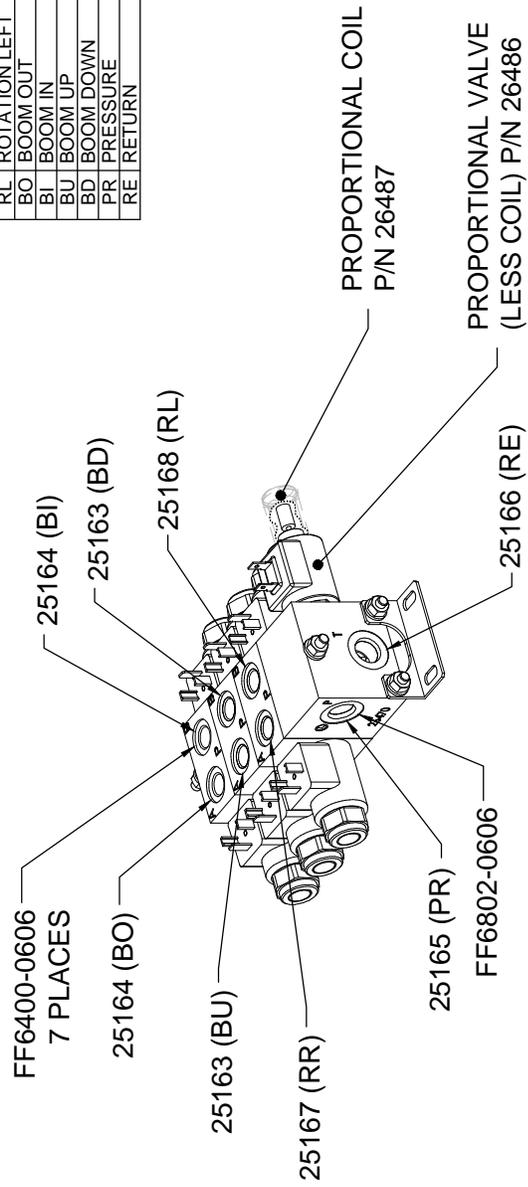
SECTION
C400

21407

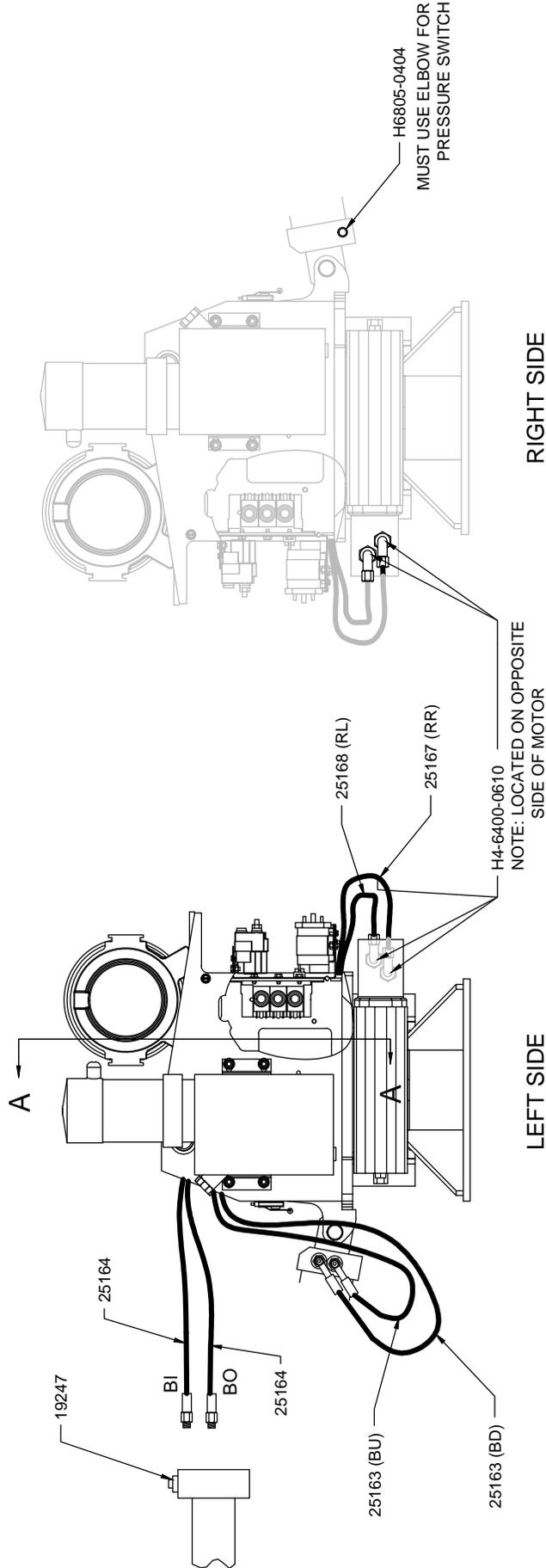
ET16/18KX

ET16/18KXP HYDRAULIC COMPONENTS DRAWING

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



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
HYDRAULIC COMPONENTS DRAWING

ET16/18KXP

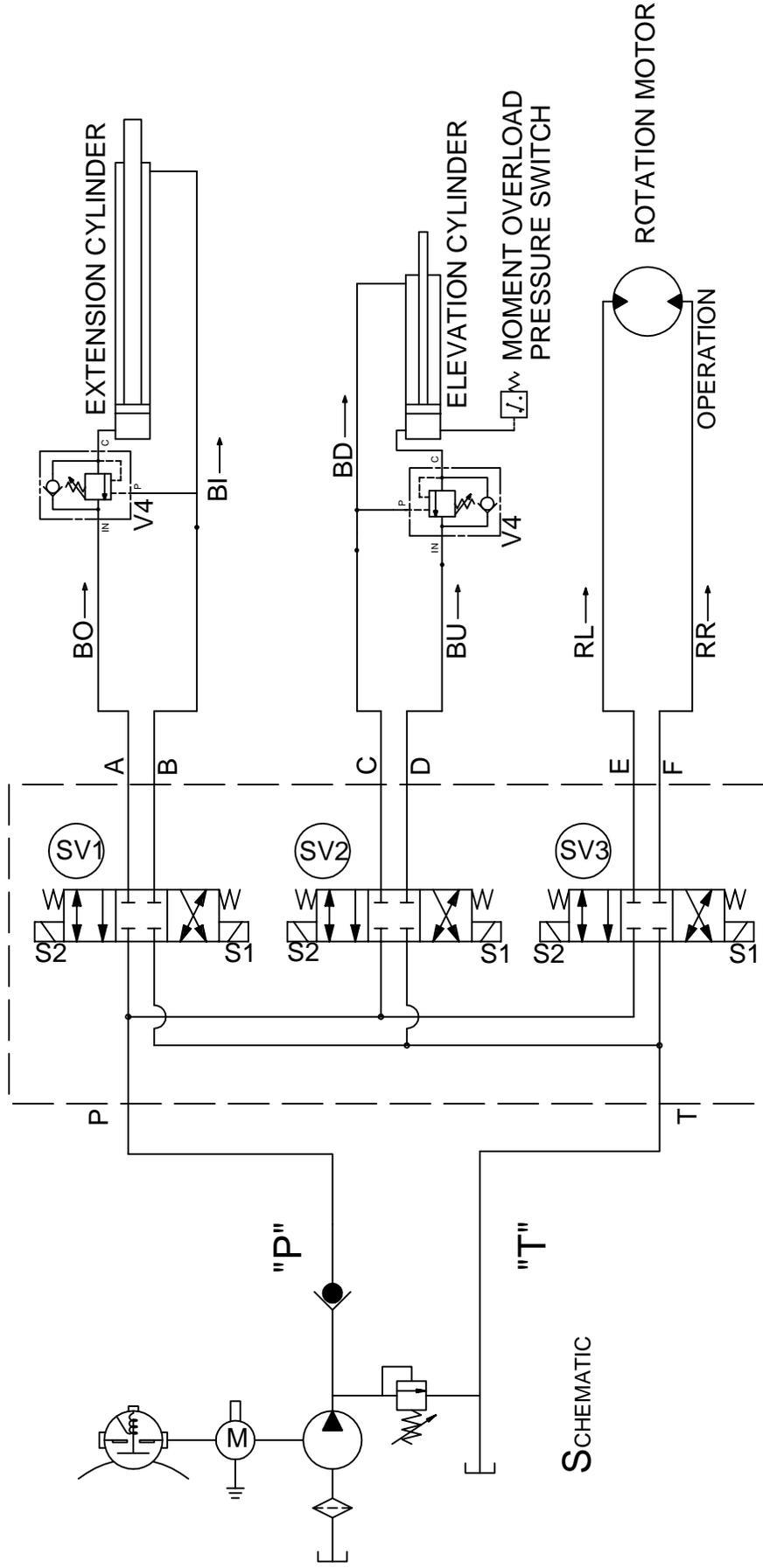
DATE
11-19-19

SUPERSEDES
-

SECTION
C400

23988

ET16/18/25/30/36KX HYDRAULIC COMPONENT DIAGRAM

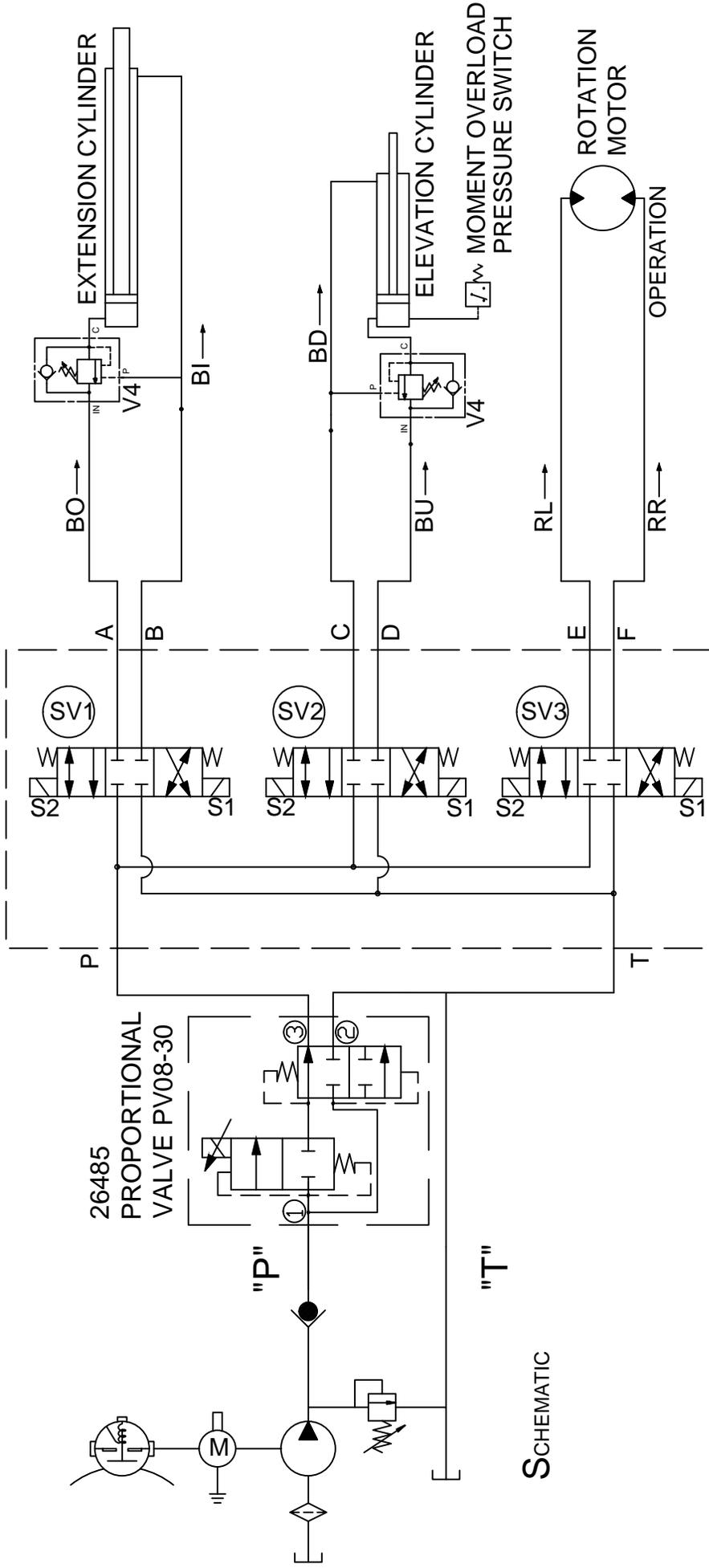


SCHMATIC

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

	VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO	TITLE HYDRAULIC SYSTEM DIAGRAM	DATE 10-23-14D SUPERSEDES 01-31-05C	SECTION C400
ET16/18/25/30/36KX ▲			20156	

ET16/18/25/30/36KXP HYDRAULIC COMPONENT DIAGRAM



SCHMATIC

- 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'

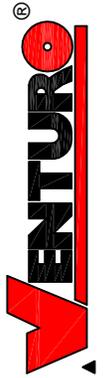
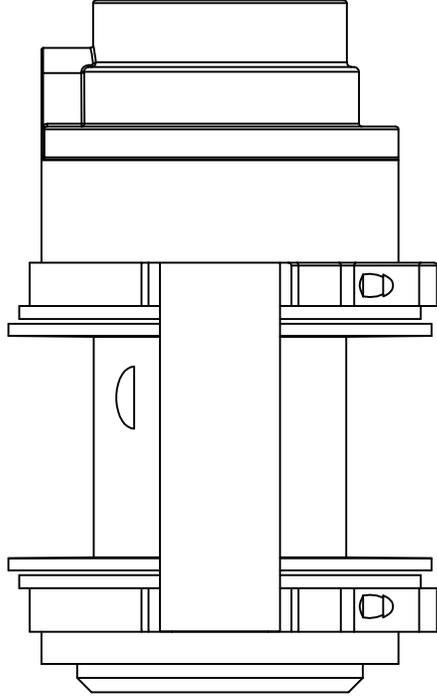
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	ET16/18/25/30/36KXP	DATE 10-14-19 SUPERSEDES -	24434

21215 WINCH (DC2500) REPLACEMENT PARTS

!HNUT-04414 HEX NUT (WIRE ROPE ANCHOR)
OR EQUIVALENT METRIC HEX NUT

21980 BRAKE ASSY

21778 MOTOR



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE

WINCH (DC2500) REPLACEMENT PARTS

ET16/18KX ▲

DATE

10-23-14F

SUPERSEDES

05-01-13E

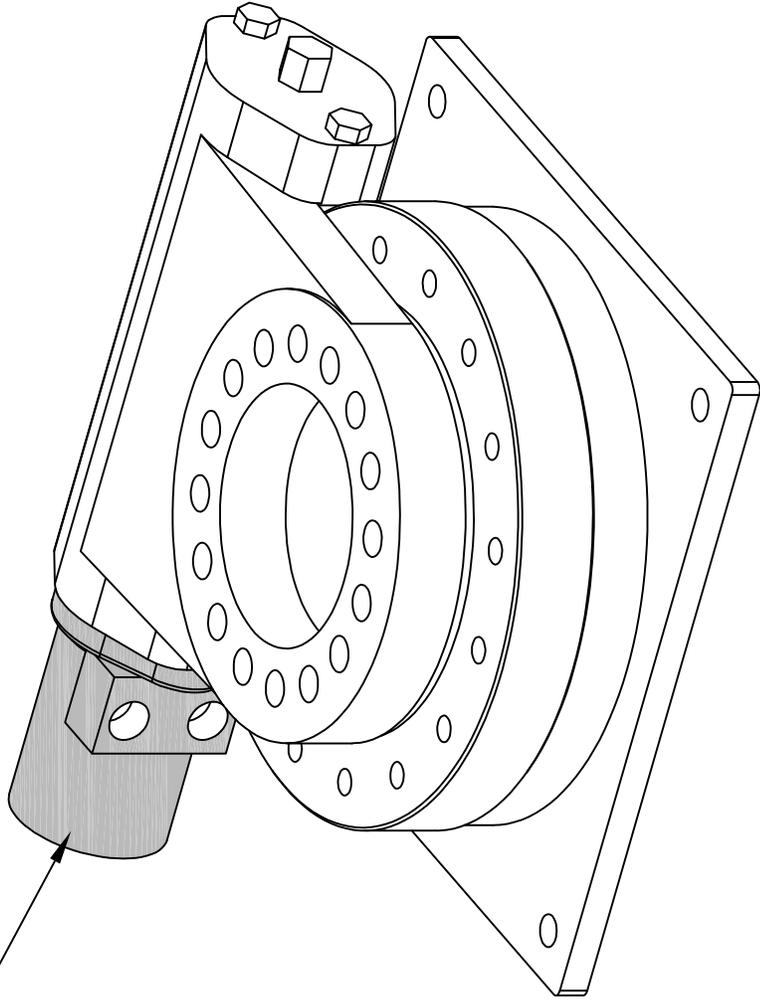
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C400

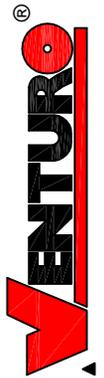
21054

21735 SLEWING SYSTEM REPLACEMENT PARTS

21123 MOTOR (ONLY)



21218 - MOTOR SEAL KIT



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE

SLEWING SYSTEM REPLACEMENT PARTS

ET8/12K & ET8/12/16/18KX ▲

DATE

10-23-14B

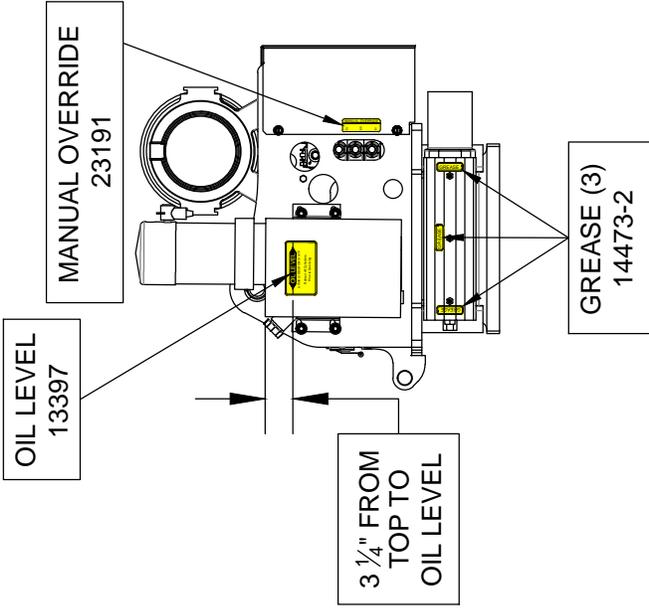
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12-27-13A

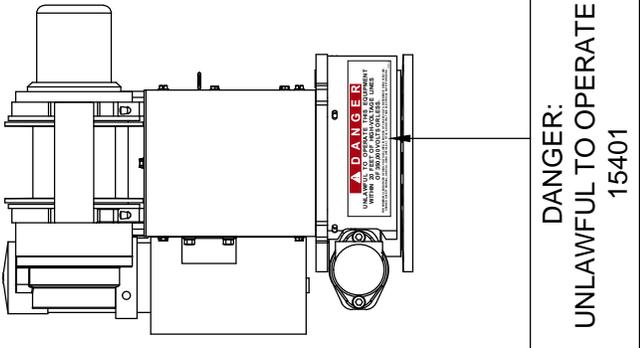
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C400

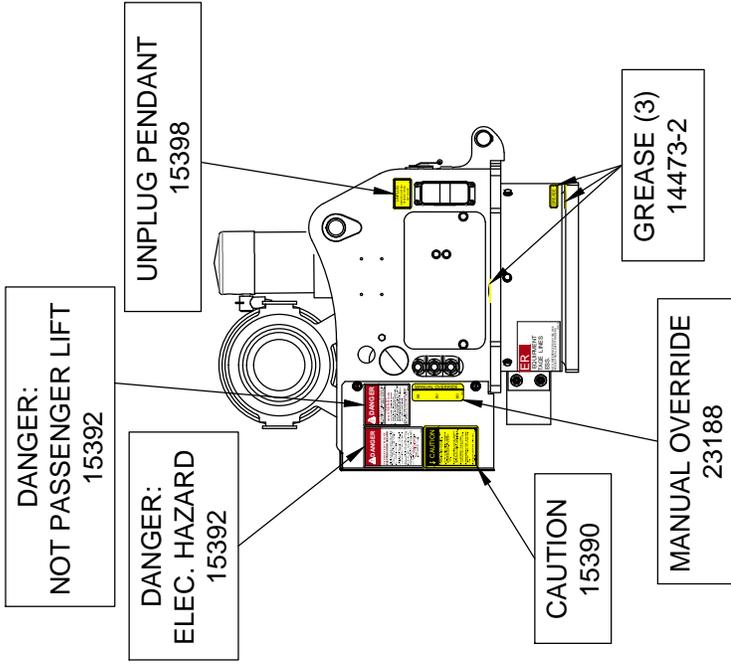
21973



LEFT



BACK

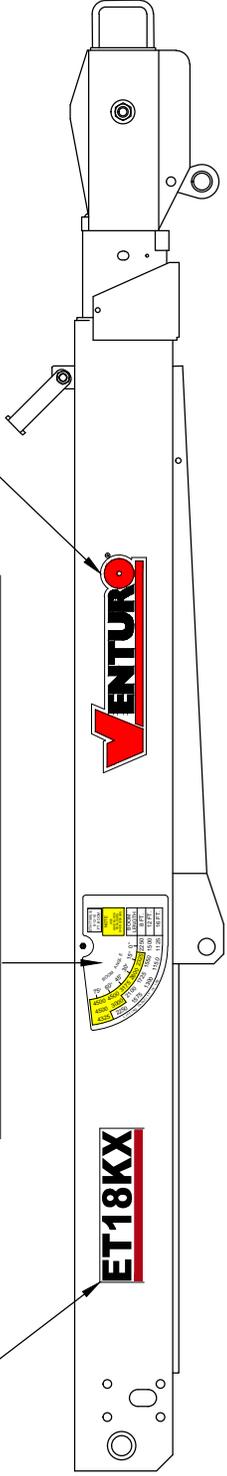


RIGHT

MODEL	
ET16KX	24019 (2)
ET18KX	21192 (2)

CAPACITY		
ET16KX	ET18KX	
RIGHT 24018-1	RIGHT 21190-1	
LEFT 24018-2	LEFT 21190-2	

VENTURO	MEDIUM 17389 (2)
----------------	------------------



▲ BOOM



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
DECAL PLACEMENT

ET16/18KX

DATE
03-02-20C

SUPERSEDES
05-07-15B

SECTION
C400

21393

ET16/18KX(P) FIELD SERVICE LABEL KITS

24082; FIELD SERVICE LABEL KIT, ET16KX

PART NO.	QTY.	DESCRIPTION
14473-2	6	DECAL; GREASE
17389	2	DECAL; VENTURO LOGO, MEDIUM
24079-1	1	DECAL; BOOM CAPACITY, RIGHT, ET16KX
24079-2	1	DECAL; BOOM CAPACITY, LEFT, ET16KX
24019	2	DECAL; MODEL NAME, ET16KX
13397	1	DECAL; OIL LEVEL
23188	1	DECAL; MANUAL OVERRIDE, RIGHT
23191	1	DECAL; MANUAL OVERRIDE, LEFT
17813	1	DECAL; OVERLOAD SENSING SYSTEM
16184-1	1	DECAL; HORN RELAY
20818	1	IDWG; FIELD SERVICE LABEL KIT
21393	1	IDWG; DECAL PLACEMENT
INST-23233	1	SAFETY MANUAL, VENTURO CRANES
15397	1	KIT; ACCIDENT PREVENTION SIGNS

21108; FIELD SERVICE LABEL KIT, ET18KX

PART NO.	QTY.	DESCRIPTION
14473-2	6	DECAL; GREASE
17389	2	DECAL; VENTURO LOGO, MEDIUM
21190-1	1	DECAL; BOOM CAPACITY, RIGHT, ET18KX
21190-2	1	DECAL; BOOM CAPACITY, LEFT, ET18KX
21192	2	DECAL; MODEL NAME
13397	1	DECAL; OIL LEVEL
23188	1	DECAL; MANUAL OVERRIDE, RIGHT
23191	1	DECAL; MANUAL OVERRIDE, LEFT
17813	1	DECAL; OVERLOAD SENSING SYSTEM
16184-1	1	DECAL; HORN RELAY
20818	1	IDWG; FIELD SERVICE LABEL KIT
21393	1	IDWG; DECAL PLACEMENT
INST-23233	1	SAFETY MANUAL, VENTURO CRANES
15397	1	KIT; ACCIDENT PREVENTION SIGNS

24083; FIELD SERVICE LABEL KIT, ET16KXP

PART NO.	QTY.	DESCRIPTION
14473-2	6	DECAL; GREASE
17389	2	DECAL; VENTURO LOGO, MEDIUM
24079-1	1	DECAL; BOOM CAPACITY, RIGHT, ET16KX
24079-2	1	DECAL; BOOM CAPACITY, LEFT, ET16KX
24019	2	DECAL; MODEL NAME, ET16KX
13397	1	DECAL; OIL LEVEL
19788-1	2	DECAL; 'PROPORTIONAL'
23188	1	DECAL; MANUAL OVERRIDE, RIGHT
23191	1	DECAL; MANUAL OVERRIDE, LEFT
19315-2	1	DECAL; MAN. OVERRIDE, PROP. VALVE
17813	1	DECAL; OVERLOAD SENSING SYSTEM
16184-1	1	DECAL; HORN RELAY
20818	1	IDWG; FIELD SERVICE LABEL KIT
21393	1	IDWG; DECAL PLACEMENT
INST-23233	1	SAFETY MANUAL, VENTURO CRANES
15397	1	KIT; ACCIDENT PREVENTION SIGNS

24076; FIELD SERVICE LABEL KIT, ET18KXP

PART NO.	QTY.	DESCRIPTION
14473-2	6	DECAL; GREASE
17389	2	DECAL; VENTURO LOGO, MEDIUM
21190-1	1	DECAL; BOOM CAPACITY, RIGHT, ET18KX
21190-2	1	DECAL; BOOM CAPACITY, LEFT, ET18KX
21192	2	DECAL; MODEL NAME
19788-1	2	DECAL; 'PROPORTIONAL'
13397	1	DECAL; OIL LEVEL
23188	1	DECAL; MANUAL OVERRIDE, RIGHT
23191	1	DECAL; MANUAL OVERRIDE, LEFT
19315-2	1	DECAL; MAN. OVERRIDE, PROP. VALVE
17813	1	DECAL; OVERLOAD SENSING SYSTEM
16184-1	1	DECAL; HORN RELAY
20818	1	IDWG; FIELD SERVICE LABEL KIT
21393	1	IDWG; DECAL PLACEMENT
INST-23233	1	SAFETY MANUAL, VENTURO CRANES
15397	1	KIT; ACCIDENT PREVENTION SIGNS

15397 ACCIDENT PREVENTION SIGNS		
PART NO.	QTY.	DESCRIPTION
15390	1	DECAL; CAUTION, OPERATIONS
15391	1	DECAL; DANGER, NOT PASSENGER LIFT
15392	1	DECAL; DANGER, ELECTRICAL HAZARD SIGN
15393	4	DECAL; DANGER, ELECTRICAL HAZARD
15394	1	APPLICATION INSTRUCTIONS
15398	1	DECAL; UNPLUG PENDANT
15401	1	DECAL; UNLAWFUL TO OPERATE
15513	1	DECAL; MASTER DISCONNECT
22317	1	DECAL SHEET; VENTURO, COMPLEMENTARY
20927	1	DECAL; CRANE STABILITY



VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE
FIELD SERVICE LABEL KIT
ET16/18KX(P)

DATE
08-04-20G
SUPERSEDES
04-20-20F

SECTION
C400
20818



VENTURO CRANES LIMITED WARRANTY POLICY

Venturo products are built to last...we guarantee them.

As a purchaser of any new Venturo product covered by warranty, you will receive 1 year of the most complete coverage available...and, at no added cost to you.

1-Year Limited Warranty Policy

This limited policy warrants new products of Venturo to be free from defects in material and workmanship for a period of one (1) year from date of original installation. OEM products or accessories purchased by Venturo as part of or offered with our product will carry the OEM manufacturer's respective warranty. Our 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. There is no warranty of merchantability, fitness for a particular purpose, warranty arising from course of dealing or usage of trade, or any other implied or expressed warranty, except as made specifically herein. This warranty supersedes all previous warranties, written or implied.

Warranty Claims

Venco Venturo Industries LLC 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 ensure the installation is completed according to the manufacturer's recommendations, ensure 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 product without the expressed written consent of Venco Venturo Industries LLC. Installation 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 be instructed as to the safe operation at time of delivery. Maintenance, service, operation and safety warning decals are available on request from Venco Venturo Industries LLC.

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