VENTURO

OWNER'S MANUAL

INST-24065

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Pages 1 - 60

PARTS & INSTALLATION MANUAL

ET16KX(P)-16'

Included in this manual:

ET16KX-16'

- 4,000 lbs Electric Telescopic Service Crane
- 8 – 12 ft Powered, Single-Stage, Boom Extension
- 12 – 16 ft Manual, Pullout, Boom Extension

ET16KXP-16'

- 4,000 lbs Electric Telescopic Service Crane
- 8 – 12 ft Powered, Single-Stage, Boom Extension
- 12 – 16 ft Manual, Pullout, Boom Extension
- Proportional Controls

VENCO VENTURO INDUSTRIES LLC
12110 BEST PLACE | CINCINNATI, OHIO 45241
800-226-2238

VENCO VENTURO INDUSTRIES LLC

This manual also available online at www.venturo.com.

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SECTION 100

DESCRIPTION

&

SPECIFICATIONS

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

SPECIFICATIONS

12 VOLT BATTERY OPERATED

16,000 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 EXTENSION	8 - 12 FT or 12 - 16 FT
BOOM MANUAL EXT	4 FT
CAPACITY	900 LBS @ 16 FT REACH
	4000 LBS @ 2 - 3 FT REACH
WIRE ROPE	5/16" DIA X 80 FT
PENDANT CORD LENGTH	25 FT

WINCH -- 2000 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 [4] environmentally-sealed toggle switches protected by a guard

MASTER DISCONNECT SWITCH

OUTRIGGERS AVAILABLE

Side bracket type outriggers

Fold-away type outriggers

Pullout type outriggers

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

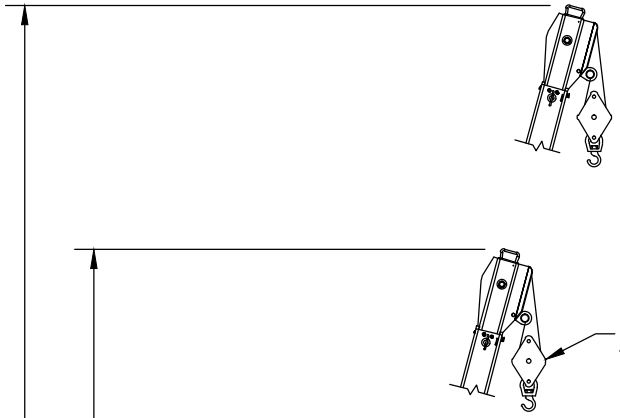
Select boom reach and angle allowable for load by using capacity indicator arrow and chart on either side of boom.

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.

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.

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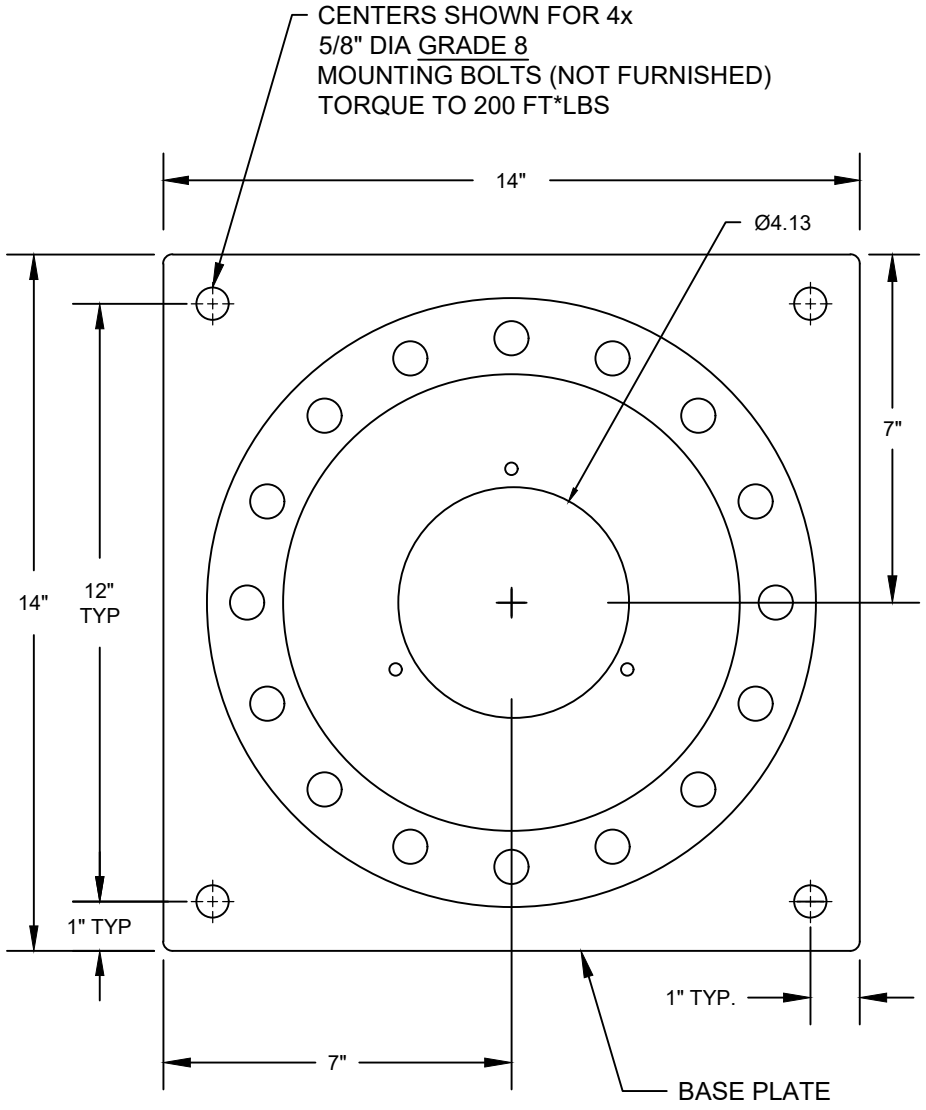
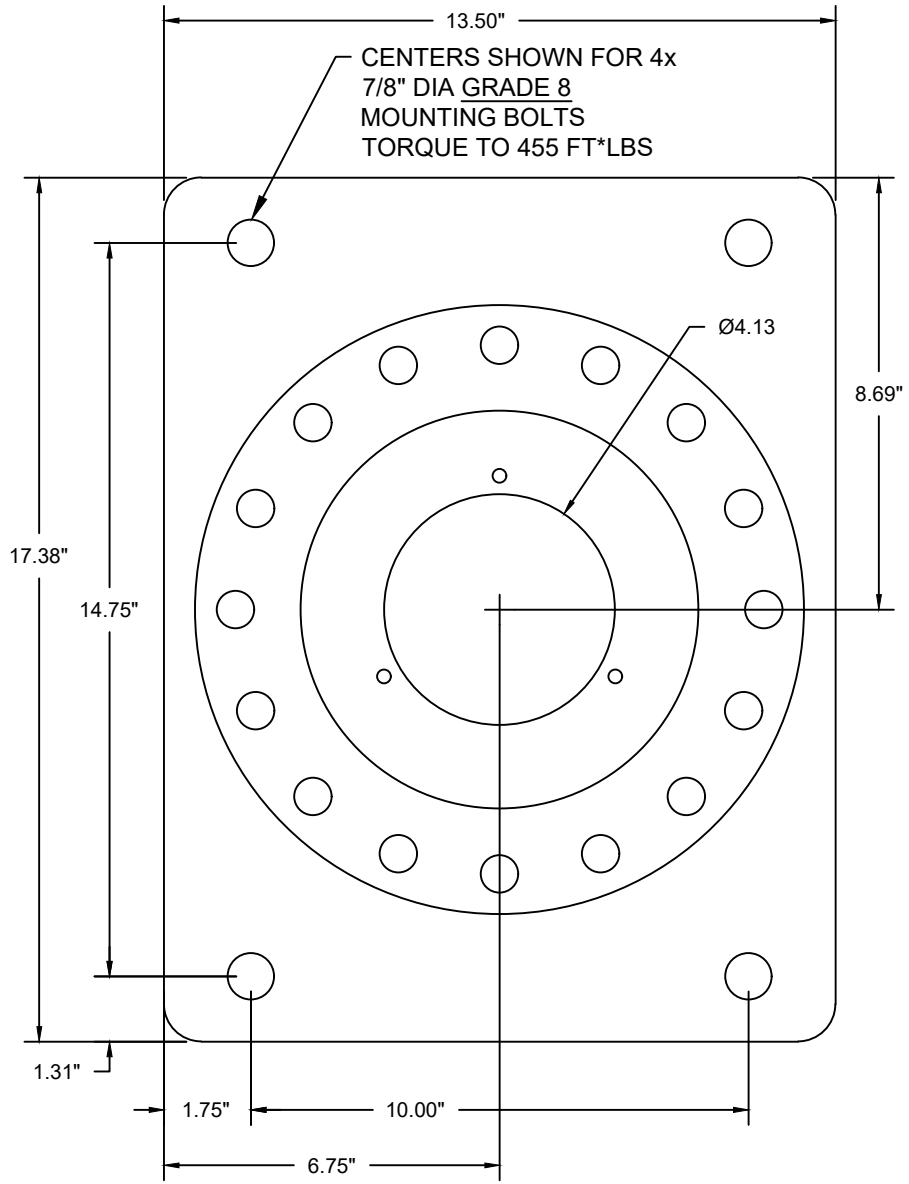
TITLE	DATE	SECTION
INSTALLATION DIMENSIONS	10-05-20A	C100
ET16/18KX, 8-12-16' BOOM	SUPERSEDES 11-18-19	23989

21735 - SQUARE



21735-WRB/CRB - RECTANGULAR



VENCO VENTURO INDUSTRIES LLC
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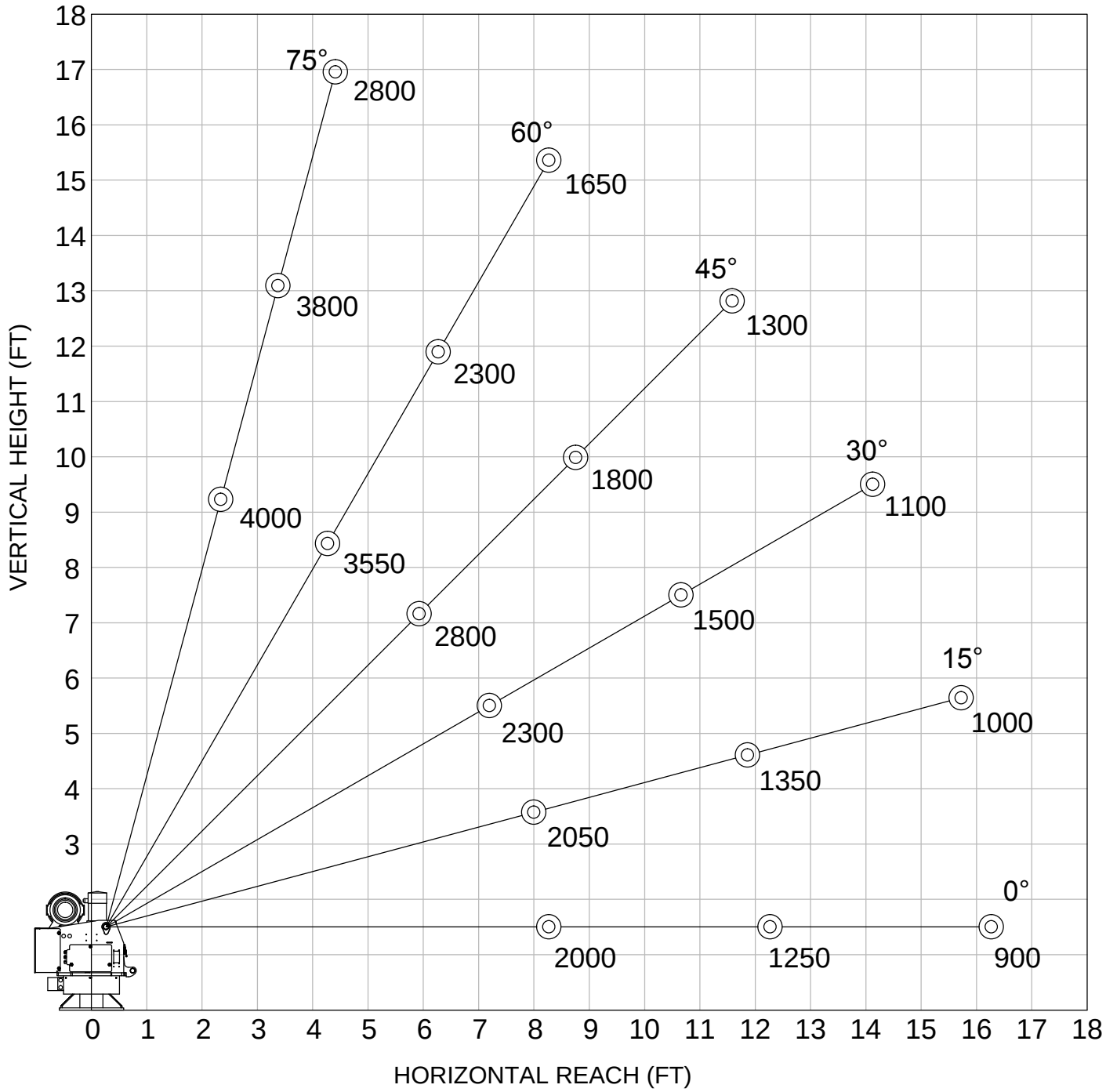
TITLE	DATE	SECTION
21735 BASE MOUNTING DIMENSIONS	11-12-24H	C100
ET8/12/16/18 CRANES	SUPERSEDES 03-06-23G	21592

ET16KX, 8'-12'-16'

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

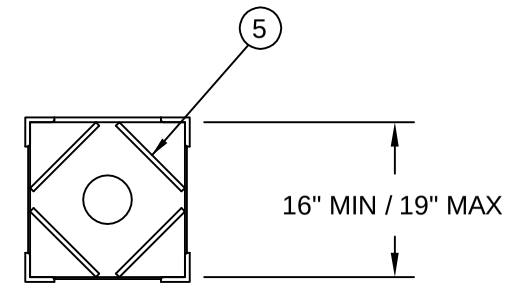
1 PART LINE FOR LOADS LESS THAN 2000 LBS

2 PART LINE FOR LOADS OF 2000 LBS AND GREATER

WEIGHT OF LOAD BLOCK = 28 LBS

VENTURO® VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO	TITLE: MAXIMUM LOAD CAPACITY	DATE: 04-20-20C	SECTION: C100
	ET16KX, 8'-12'-16' BOOM	SUPERSEDES: 05-03-16B	21974

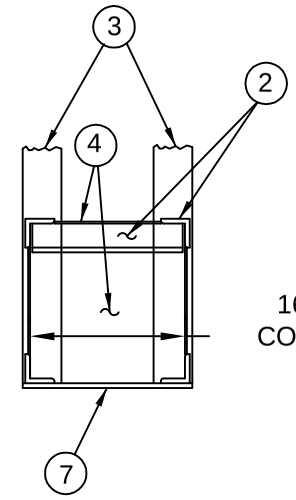
TYPICAL SERVICE BODY REINFORCEMENT



SECTION A-A

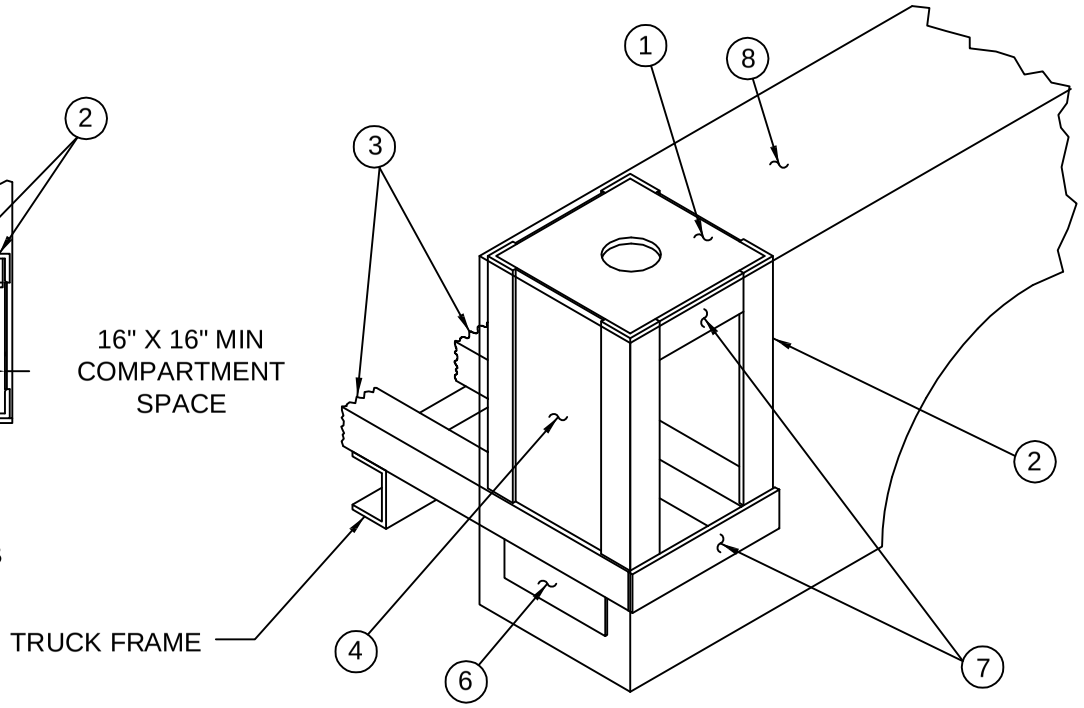
NOTE:
IT IS THE SOLE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT THE TOTAL STRUCTURE OF CRANE, TRUCK, AND STABILIZERS ARE STRUCTURALLY SOUND AND THAT THE COMPLETED VEHICLE HAS SUFFICIENT STABILITY AGAINST OVERTURNING.

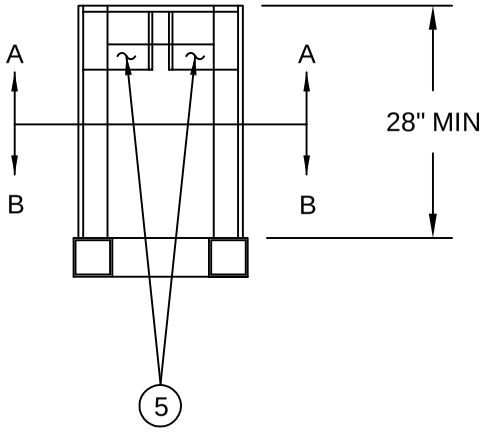
ITEM	DESCRIPTION	MINIMUM RECOMMENDED MATERIAL SIZE
1	TOP PLATE	1/2" STEEL
2	CORNER POST	3" X 3" X 1/2" STEEL ANGLE
3	CROSS FRAME	4" X 4" X 5/16" SQUARE TUBING, SPAN FULL WIDTH
4	SHEAR WEB	3/16" STEEL PLATE
5	TOP PLT REINFORCEMENT	1/2" X 6" OR 3/4" X 5" STEEL BAR
6	OUTRIGGER RNFRCMNT PLT	1/4" THICK STEEL 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 B-B

16" X 16" MIN
COMPARTMENT
SPACE



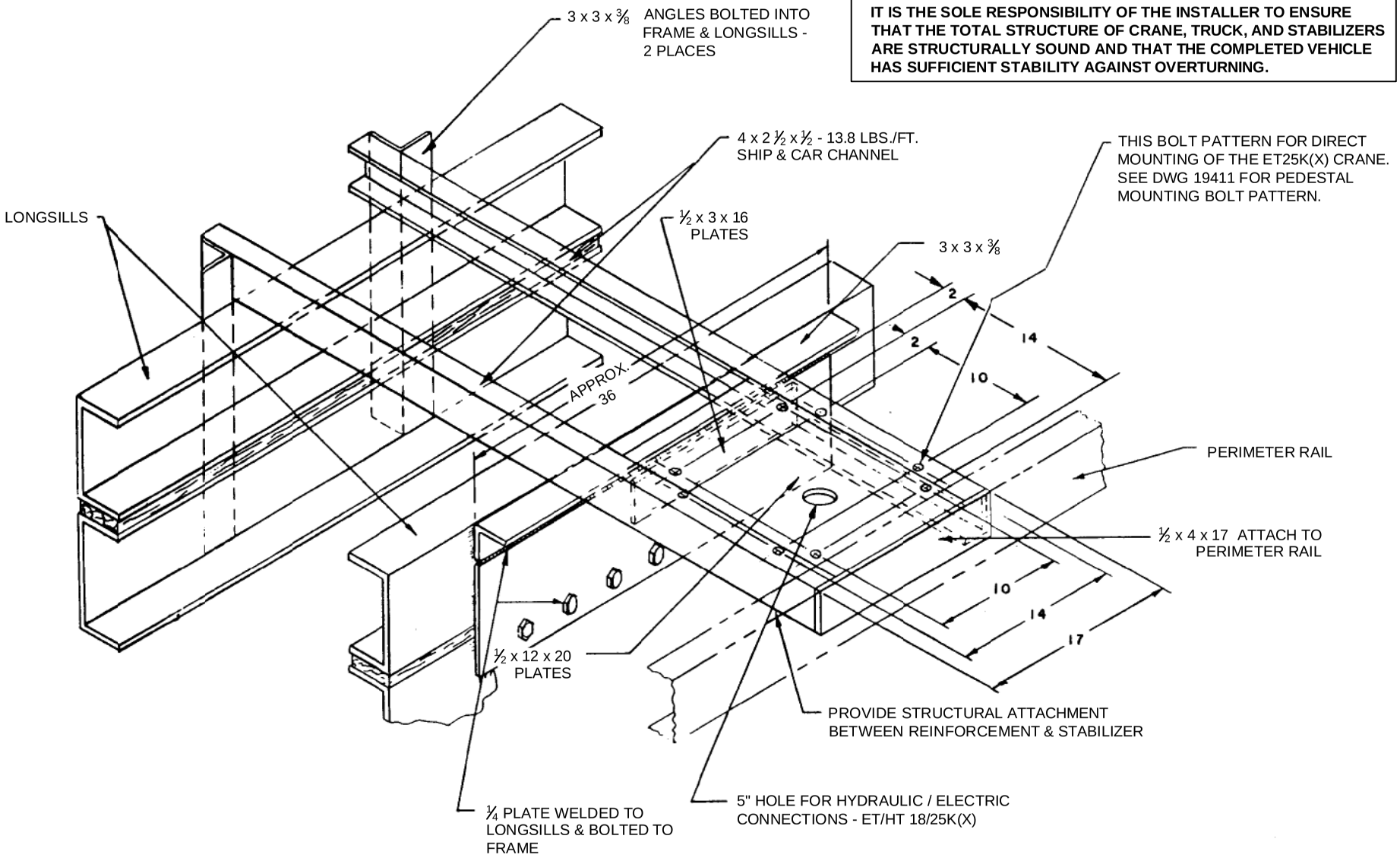


VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
TYPICAL SERVICE BODY REINFORCEMENT	10-22-14H	C100
ET16/18KX	SUPERSEDES 12-20-10G	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.



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VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
TYPICAL FLATBED MNTNG REINFORECMENT	10-22-14N	C100
ET16/18KX	SUPERSEDES 07-29-03M	14510

SECTION 150

SAFETY

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

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 RECOMMENDATIONSCONTAINED 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

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.

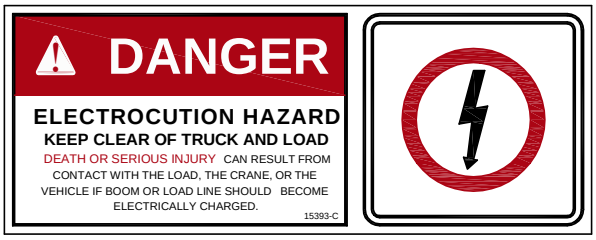
NOTICE - WARRANTY VOID IF DISCONNECTED

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

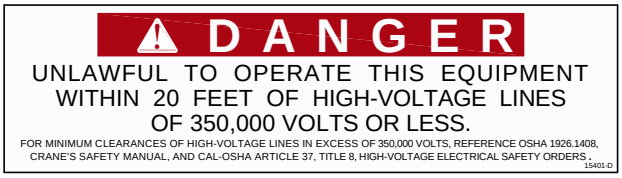
DO NOT DISCONNECT THIS SYSTEM

INTENTIONALLY LEFT BLANK

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

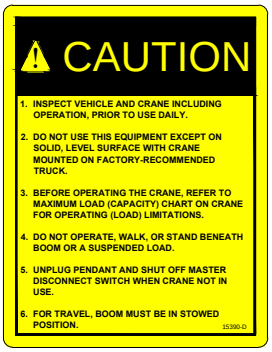
Voltage (nominal, kV, alternating current)	Minimum clearance distance (feet) *
Up to 50	10
over 50 - 200	15
over 200 - 350	20
over 350 - 500	25
over 500 - 750	35
over 750 - 1000	45
Over 1000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with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

Table T - Minimum Clearance Distances While Traveling With No Load

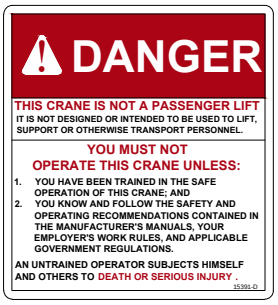
Voltage (nominal, kV, alternating current)	While traveling - minimum clearance distance (feet) *
0 - 0.75	4
over 0.75 - 50	6
over 50 - 345	10
over 345 - 750	16
over 750 - 1000	20
Over 1000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with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

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

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

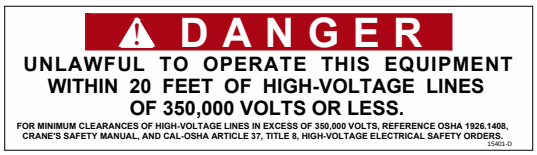


DECAL #: 15391
DESCRIPTION: DANGER, NOT A PASSENGER LIFT
PURPOSE: TO INFORM OPERATOR NOT TO LIFT, SUPPORT, OR TRANSPORT PERSONNEL, AND TO ENSURE OPERATOR IS ADEQUATELY TRAINED.
QUANTITY: 1
PLACEMENT: REAR COVER OR SIDE OF CRANE



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

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

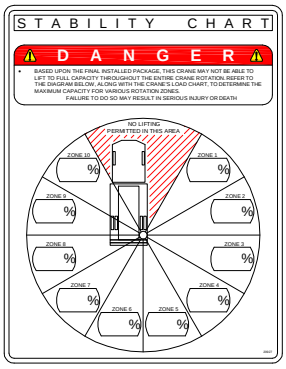
DECAL: CRANE STABILITY

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.

▲



PART NO.: 14473-2

DECAL: CONDUCTIVE GREASE

FUNCTION: To show the operator where to apply grease.

QUANTITY: Varies

PLACEMENT: Near grease fittings.

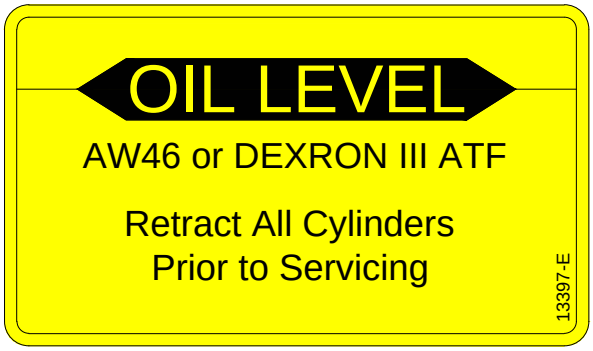
PART NO.: 13397

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.

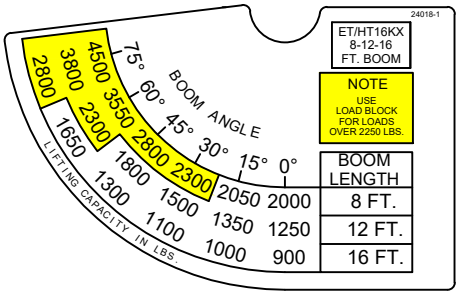
PART NO.: 24018-1 & 24018-2

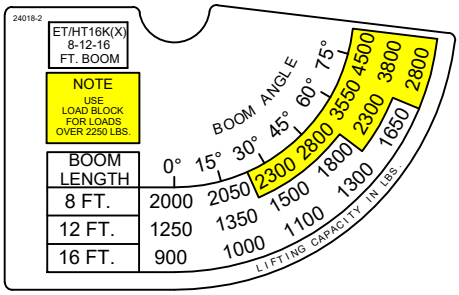
DECAL: CRANE CAPACITY

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

QUANTITY: 1 each

PLACEMENT: One on each side of boom.





PART NO.: 28580

DECAL: MODEL ET16KX

FUNCTION: To show the model of the crane.

QUANTITY: 2

PLACEMENT: One on each side of boom.

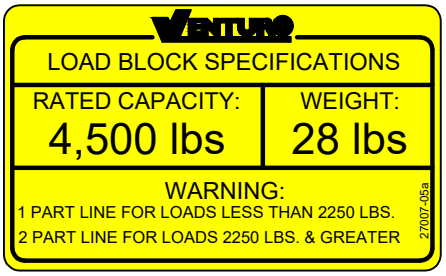
PART NO.: 27007-05a

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.

INTENTIONALLY LEFT BLANK

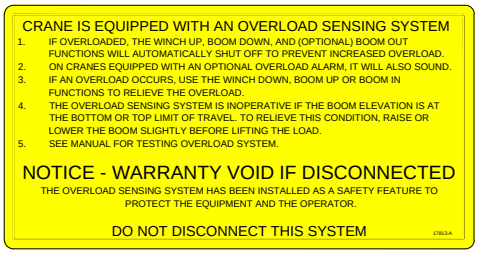
PART NO.: 17813

DECAL: OVERLOAD SENSING SYSTEM DECAL

FUNCTION: To advise operator of overload sensing system.

QUANTITY: 1

PLACEMENT: Location may vary.



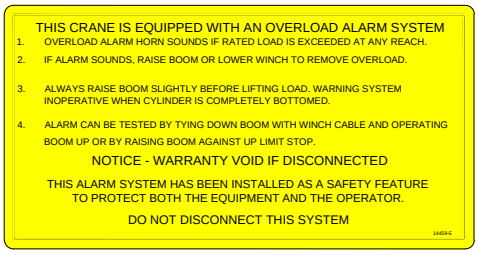
PART NO.: 14459 (WITH OPTIONAL ALARM)

DECAL: OVERLOAD ALARM SYSTEM DECAL

FUNCTION: To advise operator of overload alarm system.

QUANTITY: 1

PLACEMENT: Location may vary.



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

SECTION 200

INSTALLATION

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

7607200A

!! 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.

RECOMMENDED CIRCUIT BREAKER TABLE

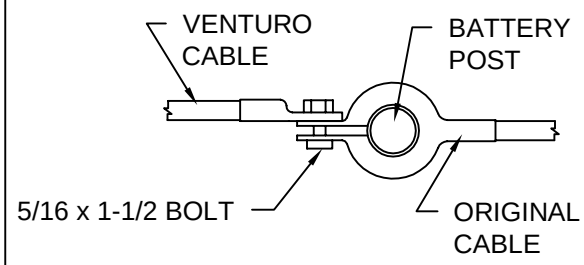
CRANE	DESCRIPTION	PART NO.
CT310KX	250 AMP, MAN RESET	22946-250
DT7	250 AMP, MAN RESET	22946-250
CE-1500-FB	150 AMP, MAN RESET	22946-150
CE6K	150 AMP, MAN RESET	22946-150
CT200X	250 AMP, MAN RESET	22946-250
ET6K	250 AMP, MAN RESET	22946-250
ET8/12K(X)	250 AMP, MAN RESET	22946-250
▲ ET12KXP	300 AMP, MAN 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

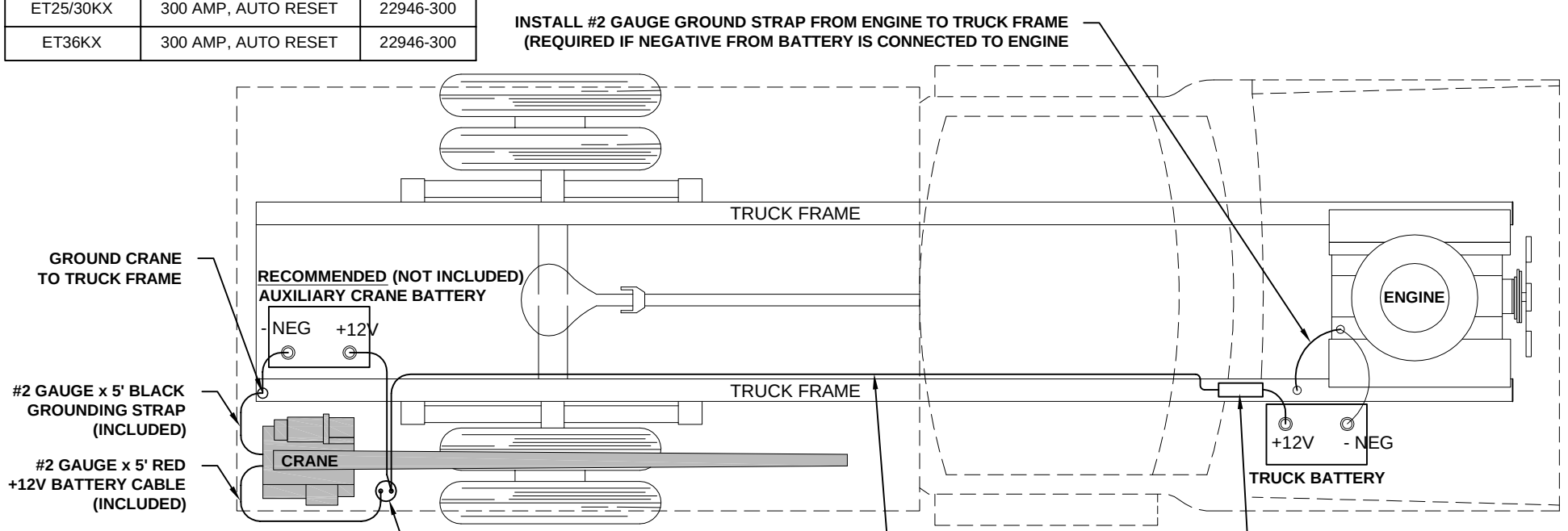
BATTERY REQUIREMENTS

- **12 VOLT *VEHICLE* BATTERY REQUIREMENTS**
  - **625 COLD CRANKING AMPS (AT 0º 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.

RECOMMENDED BATTERY TERMINAL ATTACHMENT





VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
BATTERY CABLE & COMPONENT INSTALL	09-03-20M	C200
ET CRANES	SUPERSEDES 07-30-18L	15660

STABILITY TEST - ET16-16' 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% of truck stability.

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. Locate the Overload Pressure Switch at the base of the elevation cylinder
   - 5.1. Disconnect the black & white wires from the housing and then connect the black & white wires together to by-pass the Overload Pressure Switch for the stability test. ***Note: The black & white wires MUST be reconnected to the Overload Pressure Switch after the stability test has be completed.***

6. Use a ***Test Weight*** weighing a ***minimum*** of ***1059 lbs***, (includes load block weight of 28 lbs.) to a ***maximum of 1125 lbs***.

7. Position the boom level and fully retracted.

8. Referring to the Stability Chart (drawing 20907) rotate the crane to a position between 1 and 2 o'clock (truck cab is facing 12 o'clock) to begin testing.

9. Use the winch to lift the Test Weight; DO NOT allow the weight to be more than 6" off the ground at any time during testing (for safety).

10. Using the test weight, extend the boom slowly, until one of two conditions occur:
    - 10.1. Full extension is reached - Mark the ZONE in question **100%**
    - 10.2. The truck becomes unstable i.e. a tire lifts off the ground
      - 10.2.1. Retract the boom until at least one tire on each corner of the truck is making contract with the ground
      - 10.2.2. Use the formula below to determine the allowable ***% of Rated Capacity*** for the ZONE in question.

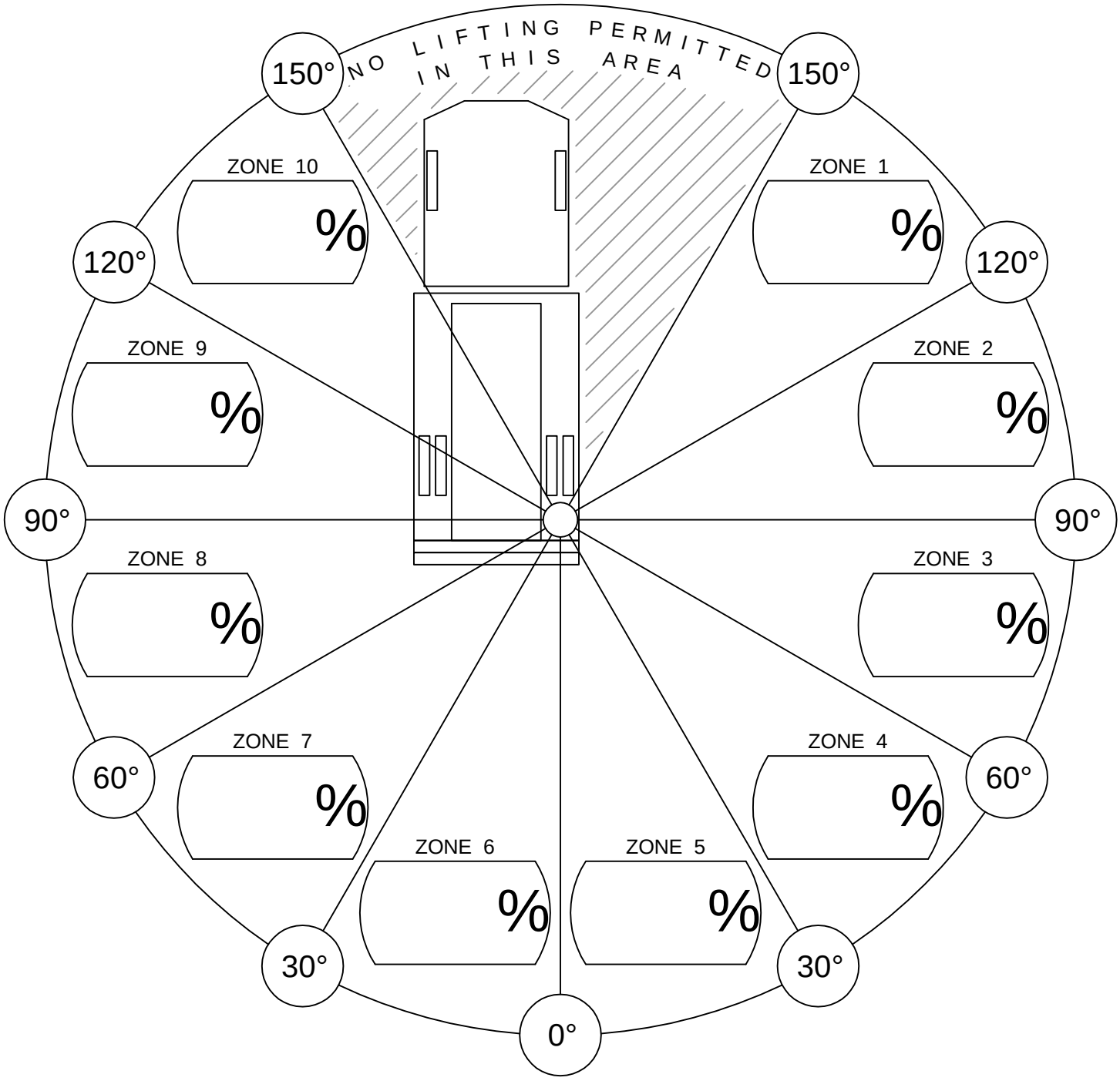
11. Note: The "***Max Stable Reach in inches"*** is measured from the ***center of rotation*** of the crane housing to the ***lifting load hook.***

$$\textbf{\% Rated Capacity} = \frac{\text{"Max Stable Reach" in inches"}}{192} \textbf{ X 100}$$

12. Record the **% of Rated Capacity** in the appropriate blank (region) on the Crane Stability page (ref. 20907) and decal.

13. Repeat Steps 7 through 12 for each ZONE on the stability page.

CRANE STABILITY



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

CONDITIONS:

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

VENTURO® VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO	TITLE: STABILITY CHART	DATE: 05-11-17F	SECTION: C200
	VENTURO CRANES	SUPERSEDES: 02-21-14E	20907

WIRE ROPE INSTALLATION

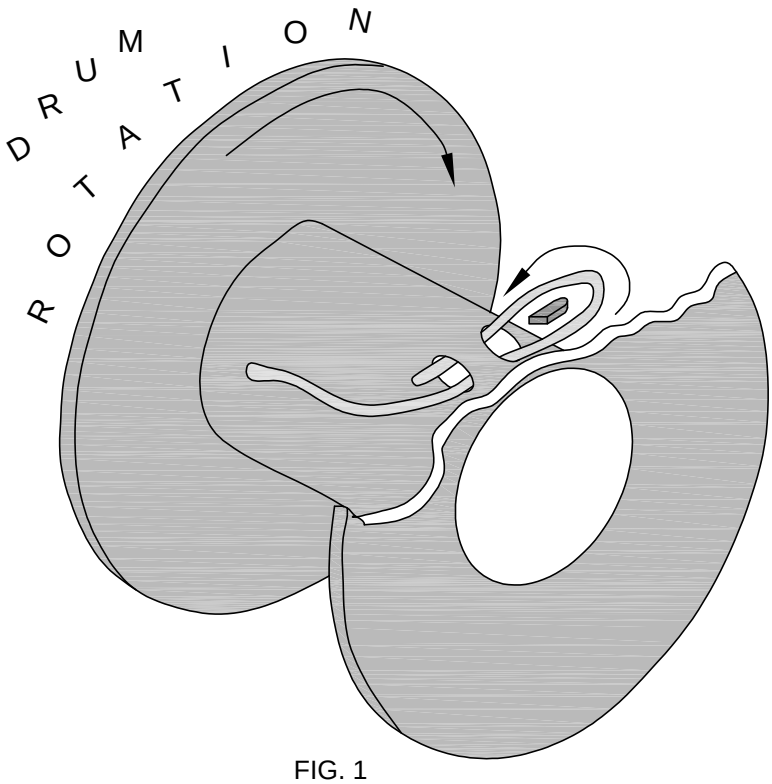


FIG. 1

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.

SECTION 300

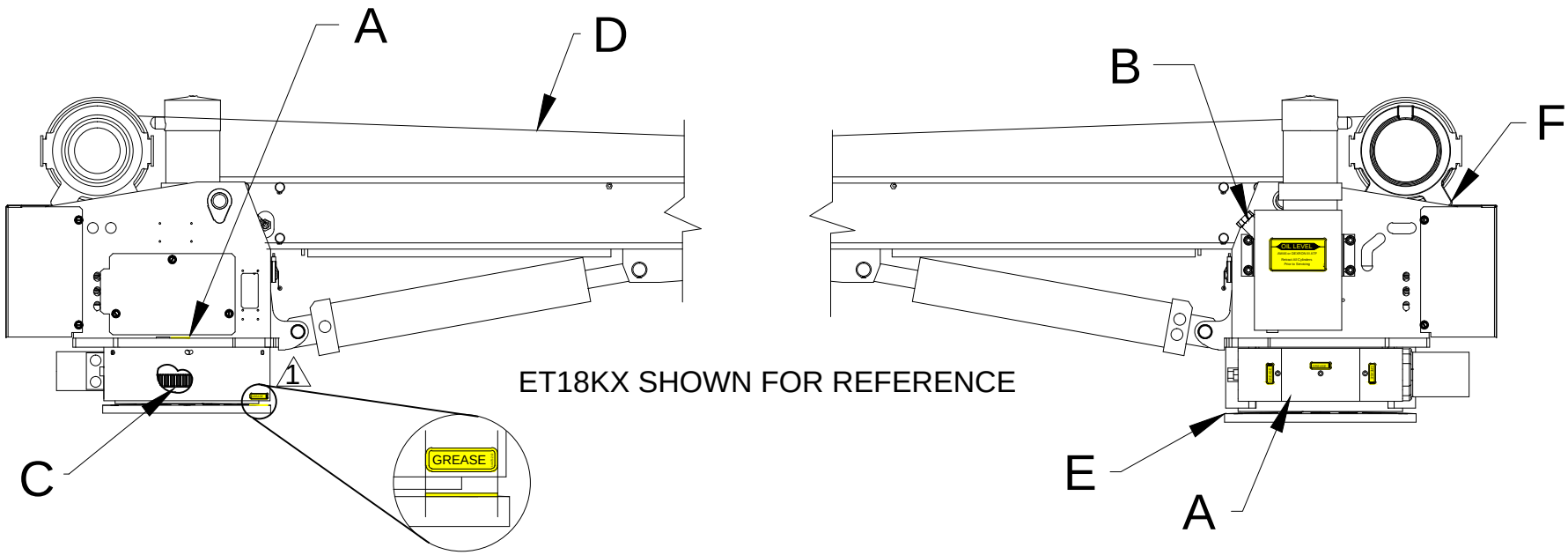
MAINTENANCE

&

SERVICE

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

7607300A



ET18KX SHOWN FOR REFERENCE

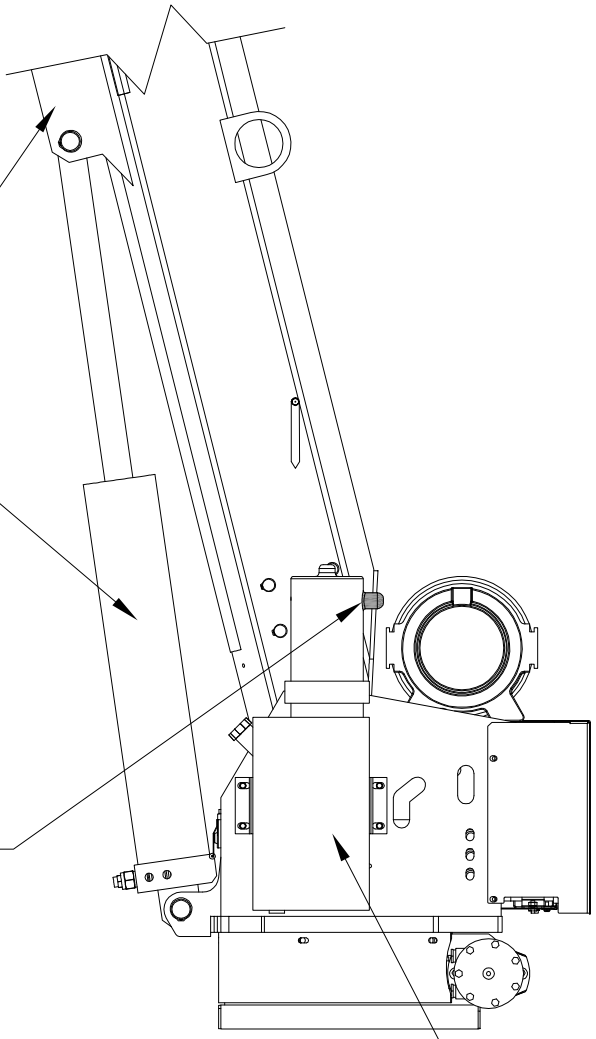
ATTENTION:
NEVER WASH THIS CRANE WITH CHEMICAL PRODUCTS OR HIGH PRESSURE WATER JETS, AS THEY CAN CAUSE DETACHMENT OF DECALS OR ENTRANCE OF WATER INTO ELECTRICAL OR SLEWING RING COMPONENTS

Location	Service Required	Note		Service Interval
A	Grease fitting With Pressure Grease Gun	Use FUCHS Renolit Aluminum Complex Grease, or equivalent 1 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 Base Mounting Bolts	Square Base: Torqued to 200 ft-lbs		Time of Truck Service
-	Check Torque of Base Mounting Bolts	Rectangular Base: Torqued to 455 ft-lbs		Time of Truck Service
F	Check Torque of Winch Mounting Bolts	Bolts should be torqued to 35 ft-lbs*		Time of Truck Service

* 32 FT-LBS. FOR ET8/12 WITH GTD-2200 COMEUP WINCH. SEE PAGE 21741 FOR WINCH IDENTIFICATION.

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

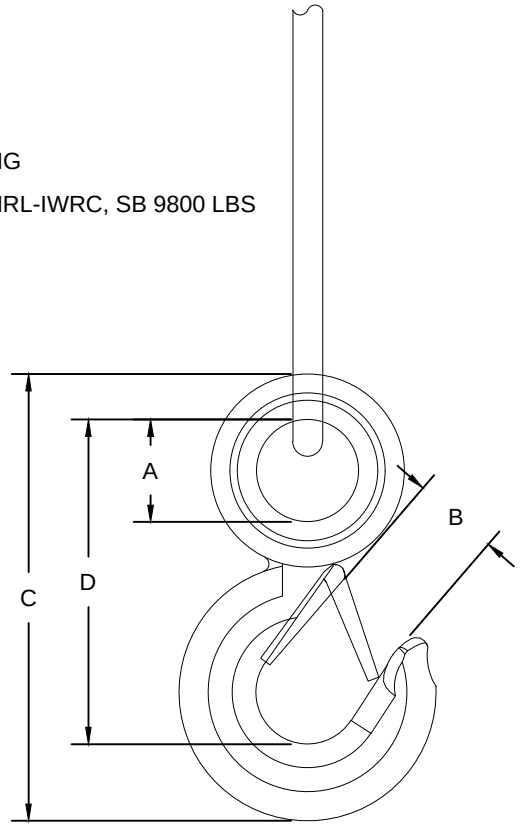


WIRE ROPE ASSEMBLY

WIRE ROPE:

5/16" DIA, 80' LONG

▲ GAC 7X19 XIP-RHRL-IWRC, SB 9800 LBS



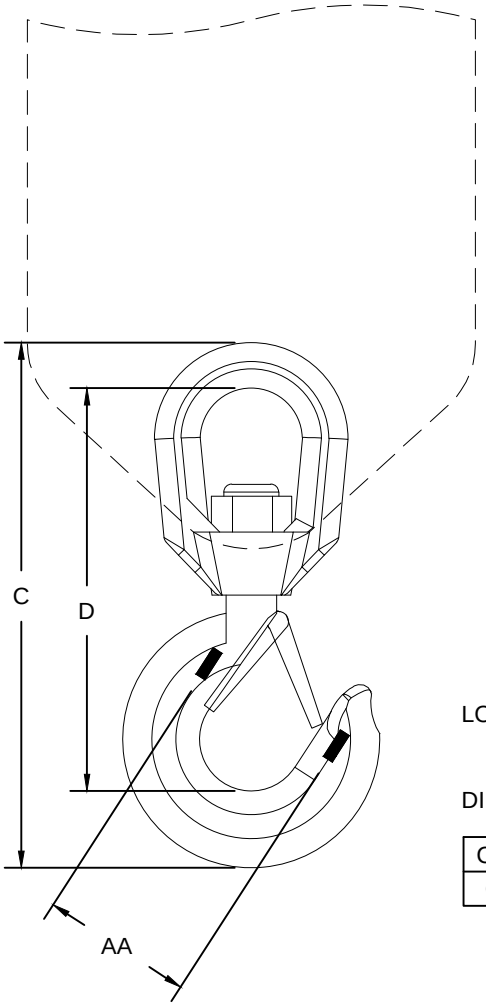
WIRE ROPE HOOK:

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:

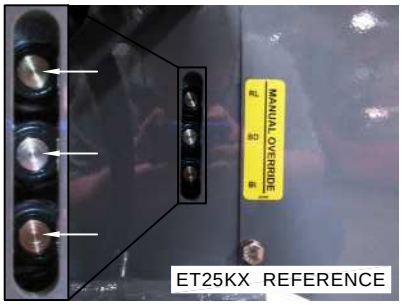
COLOR	BRAND	AA	C	D
GOLD	CROSBY	2.00"	8.25"	6.50"

MANUAL OVERRIDE INSTRUCTIONS
ET NON-PROPRTIONAL SERIES CRANES ▲

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

ET8K REFERENCE

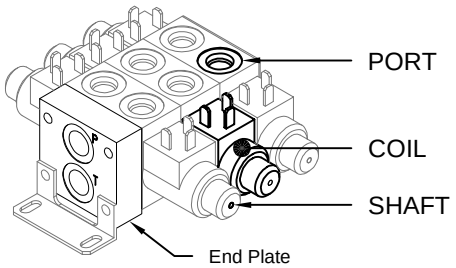
ET18KX REFERENCE



ET25KX REFERENCE

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).

1



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

2

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 HARNESSES 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

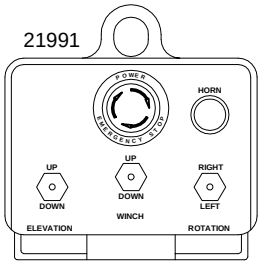
5. Reference the functions listed on your pendant or radio (see figure 3)

6. Press the switch or button for the same function

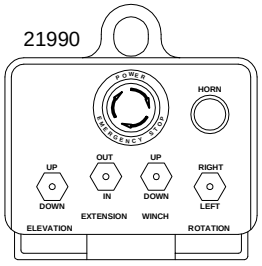
7. If you need to change function,
   7.1. Release switch or button
   7.2. Remove tool from shaft
   7.3. Go to step 3

3

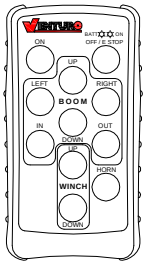
21991



21990



21986-ET

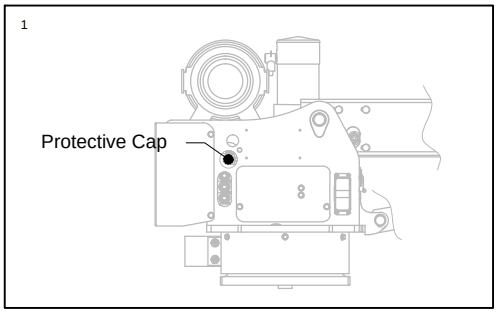


For assistance, please feel free to contact Technical Support at 800-226-2238.

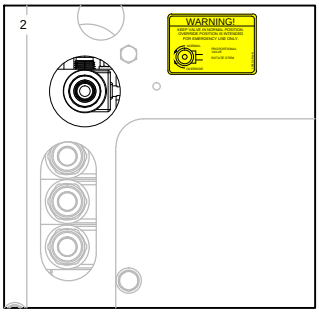
MANUAL OVERRIDE INSTRUCTIONS
ET PROPRTIONAL SERIES CRANES

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

1



2



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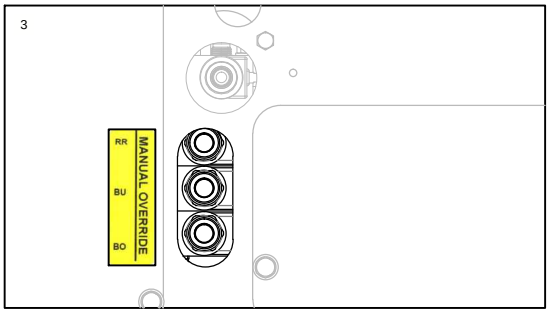
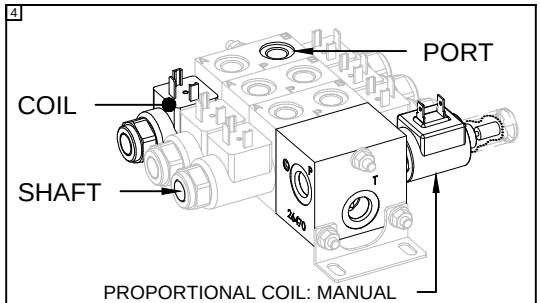


Each valve station incorporates [2] hydraulic ports and [2] coils. Manual override shafts are located in the center of the coils (see figure 4).
Manual override decals are placed on each crane near the valve assembly. These decals provide a visual aid that helps the operator determine the function designations (Reference figure 3 & 5).

3-STATION FUNCTIONS:

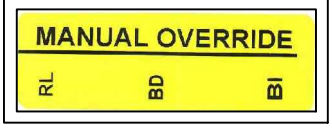
RR	=	Rot. Right	RL	=	Rot. Left
BU	=	Boom Up	BD	=	Boom Down
BI	=	Boom In	BO	=	Boom Out

4



PROPORTIONAL COIL: MANUAL OVERRIDE WITH GUARD

5



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 HARNESSES SHOULD BE REMOVED BEFORE OPERATING A CRANE IN MANUAL OVERRIDE !!

Procedure:

1. Turn Master disconnect switch to "ON"

2. Remove Protective cap (see figure 1)

3. Rotate Valve Stem Clockwise to close (see figure 2)

4. Power up the pendant / radio
   4.1. Twist EMERGENCY STOP button clockwise

5. On the crane, reference the function you wish to perform using the manual override decal (see figure 3)

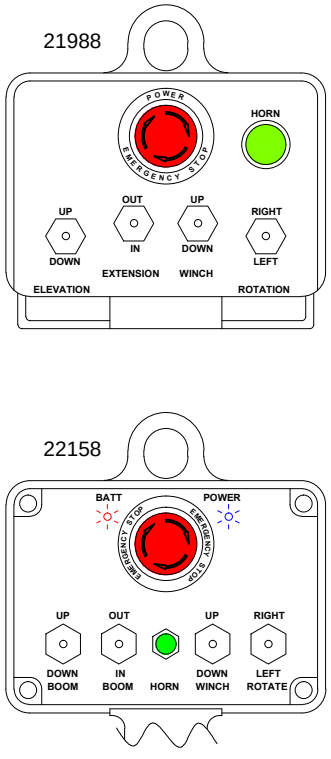
6. Using a tool with a diameter of 1/8" or smaller, press the shaft inward and hold

7. Reference the functions listed on your pendant or radio (see figure 6)

8. Press the switch or button for the same function

9. If you need to change function,
   9.1. Release switch or button
   9.2. Remove tool from shaft
   9.3. Go to step 5

6



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

VENTURO®
VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

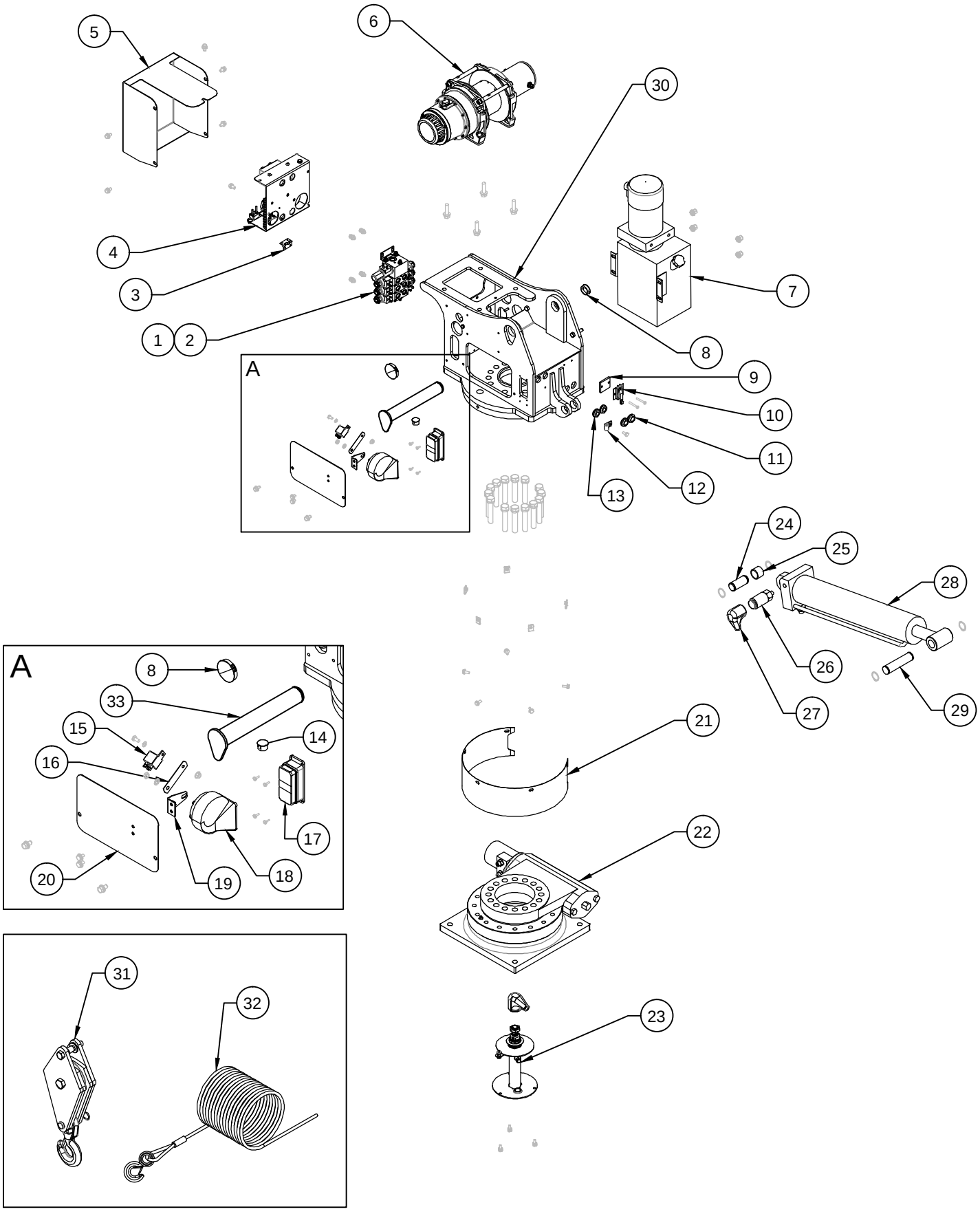
TITLE	DATE	SECTION
MAN. OVERRIDE INSTR.	11-12-19	C200
ET16/18KX PROPORTIONAL	SUPERSEDES -	23987

SECTION 400

REPLACEMENT

PARTS

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

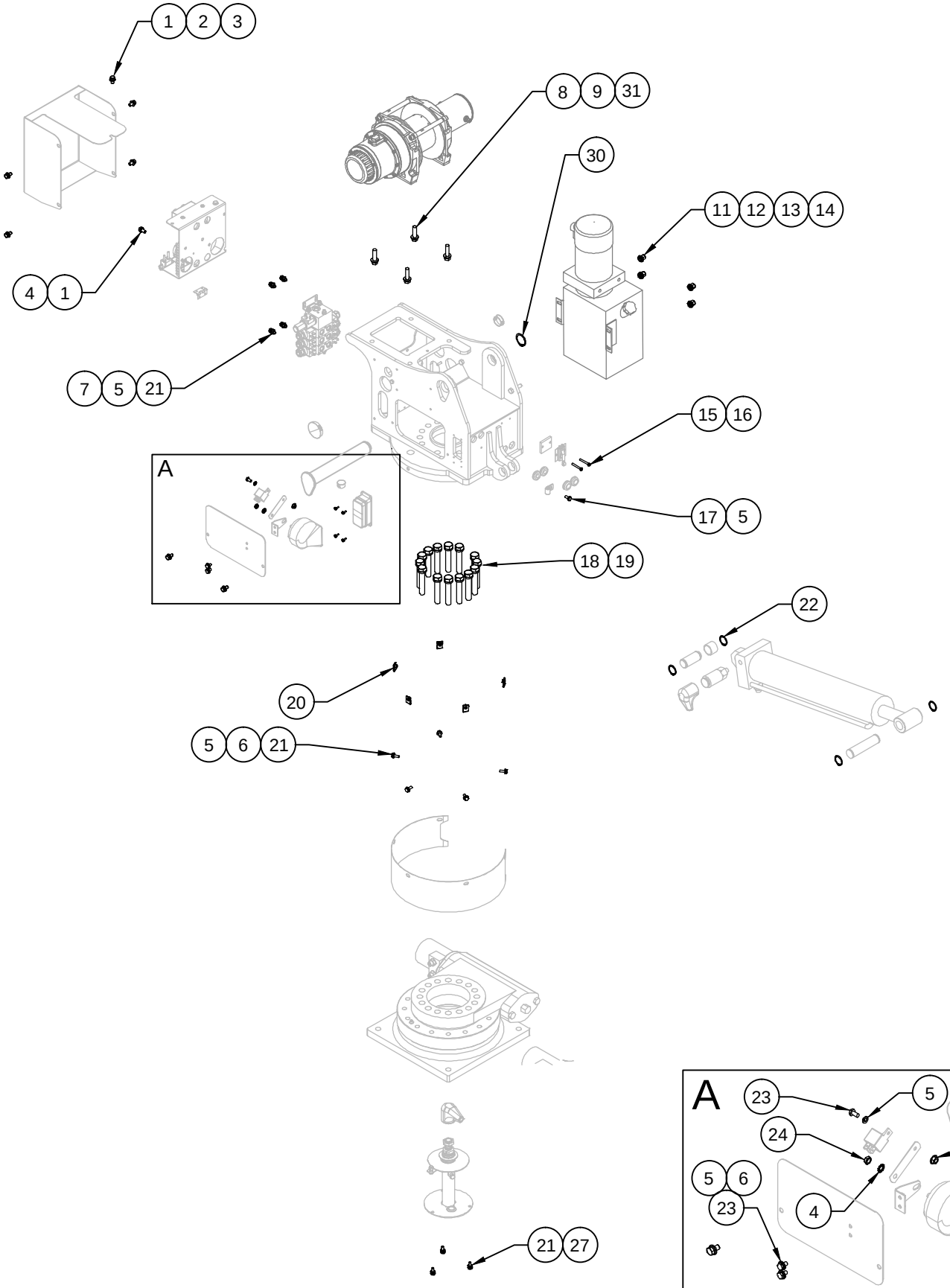


VENTURO® VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO	TITLE RPLCMNT PARTS DWG - MECH	DATE 05-27-21C	SECTION C400
	ET16/18KX(P)	SUPERSEDES 03-12-21B	23990

ET16KX(P) - REPLACEMENT PARTS LIST- MECH

ITEM NO.	KX(X)	KX(X)P	PART NO.	DESCRIPTION
1	1	-	21614	VALVE BLOCK; 3-SPOOL
2	-	1	26479	VALVE BLOCK; 3-SPOOL PROP VALVE
3	1	1	1586A22	HINGE
4	1	1	23154	ELECTRICAL PANEL
5	1	1	23173	REAR COVER, MECHANISM
6	1	1	21215	WINCH, PERMANENT MOTOR
7	1	1	26489	HYDRAULIC POWER UNIT
8	2	1	26492	PLUG; Ø2", LOCKING
9	1	1	20896	UHMW SPACER - TOP POSITION SWITCH
10	1	1	19904	BOOM SHUT OFF SWITCH ASSEMBLY
11	2	2	20889	GROMMET 5/8" ID
12	1	1	19269	CLAMP,CABLE - 1/4 IN.
13	2	2	14775	GROMMET 1/2" ID
14	1	1	25019	PLUG; HOLE, 7/8", PLASTIC
15	1	1	22739	RELAY. 12VDC
16	1	1	-	RELAY BRACKET (INCLUDED WITH 21948)
17	1	1	22480	SOCKET ASSY-16+1 POLE
18	1	1	21948	HORN, OPERATOR CONTROLLED 12V
19	1	1	22000	BRACKET; HORN
20	1	1	23155	PLATE; COVER, RIGHT SIDE
21	1	1	21185	ROTATION GEAR GUARD
22*	1	1	21735	SLEW DRIVE; SQUARE BASE
			21735-1	SLEW DRIVE; RECTANGULAR BASE
23	1	1	16780-2P8	ASSY; SWIVEL TERMINAL, 2-POLE
24	1	1	21172	PIN; ELEV CYLINDER BASE
▲ 25	1	1	21124	MRP COMPOSITE BEARING
26	1	1	17460-2200-21	OVERLOAD PRESSURE SWITCH
27	2	2	17012	BOOT COVER
28	1	1	21743	ELEVATION CYLINDER
29	1	1	21127	PIN; ELEV CYLINDER ROD
30	1	1	23149	HOUSING; WELDED ASSEMBLY
31	1	1	23169	LOAD BLOCK ASSEMBLY
32	1	1	25810-5/16-80	WIRE ROPE, 5/16" x 80'
33	1	1	21160	PIN; BOOM PIVOT, MAIN

* EITHER 21735 OR 21735-1 DEPENDING ON CONFIGURATION

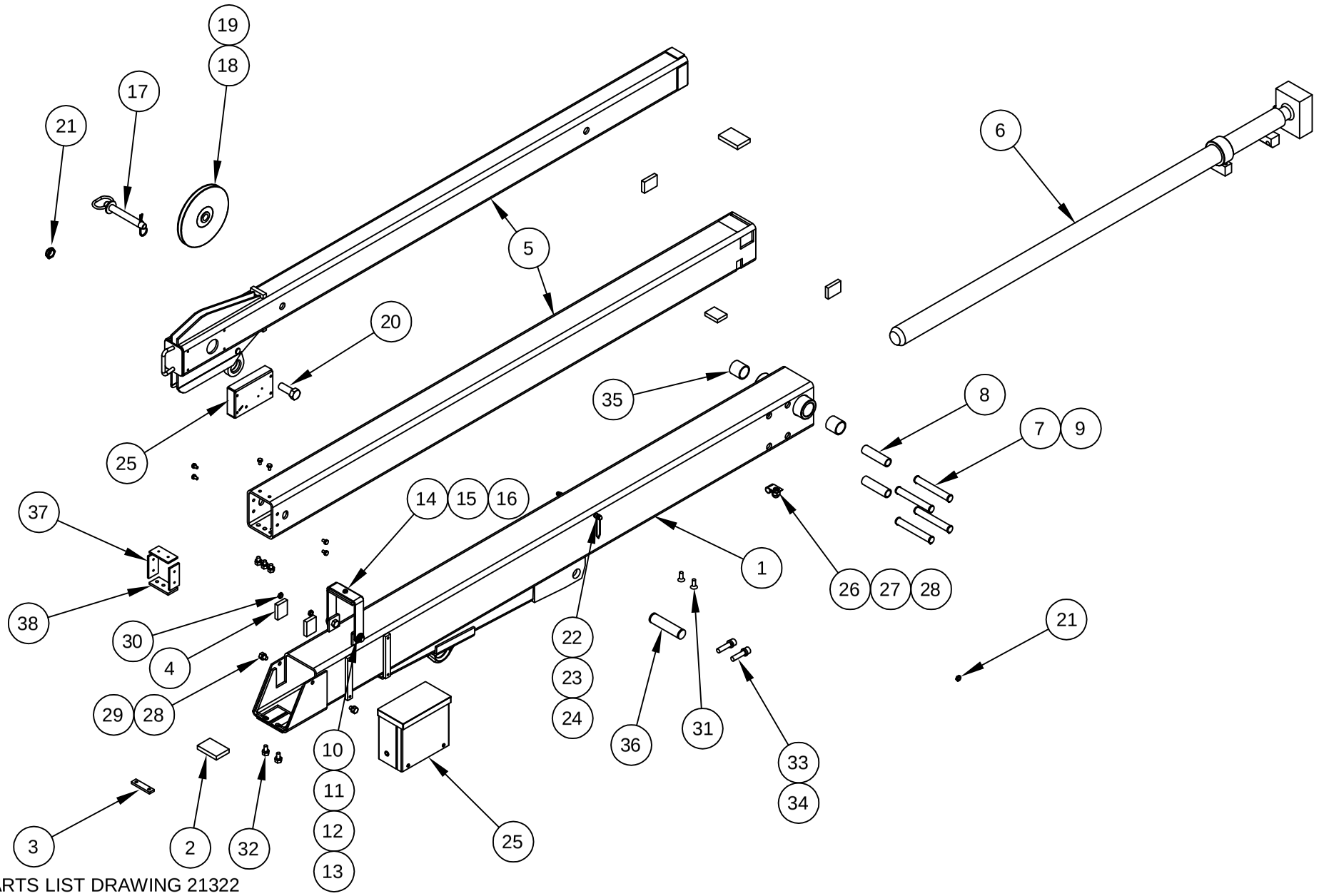


VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO	TITLE RPLCMNT HW DWG - MECH	DATE 05-11-23E	SECTION C400
	ET16/18KX(P), GEN. B	SUPERSEDES 09-28-22D	23991

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	25921	SHCS; M12-175x50mm Gr. 12.9
9	4	!FWSH-M12	FLAT WASHER; M12
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
28	-	-	-
29	-	-	-
30	1	!SRNG-138	SNAP RING 1-3/8 IN - PLATED
31	4	!LWSH-M12-8.8	LOCK WASHER; M12, GRADE 8.8

21200 BOOM PARTS DRAWING



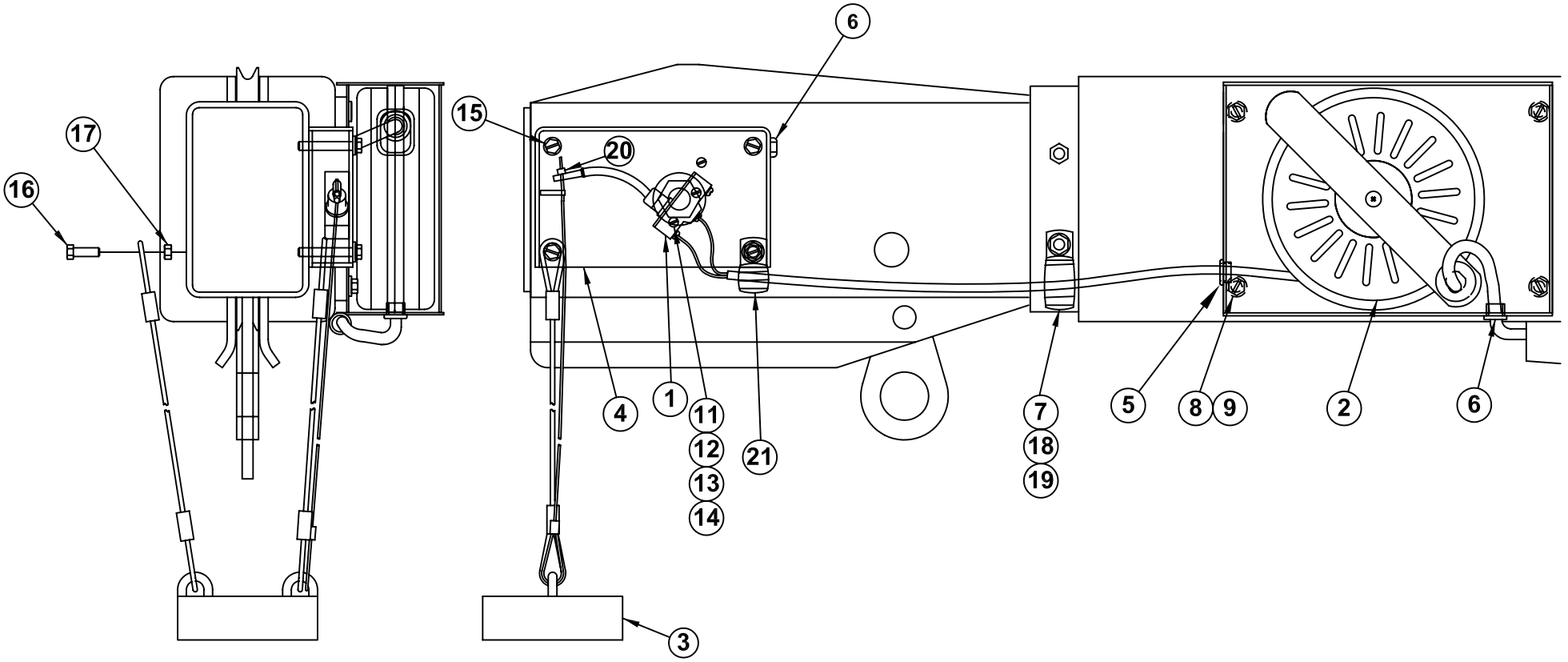
REF PARTS LIST DRAWING 21322

VENCO VENTURO INDUSTRIES LLC CINCINNATI, OHIO	TITLE 21200 BOOM PARTS DRAWING	DATE 10-23-14C	SECTION C400
	ET16/18KX	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	!LWSH-050-HC	LOCK WASHER 1/2" HI COLLAR
	33	2	!SHCS05013200	SOCKET HEAD CAP SCREW 1/2-13 X 2" LONG
	32	2	!HHCS03816075	HEX HEAD CAP SCREW - 3/8-16 X 3/4 LONG
	31	2	!CACS03816100	CNTRSNK ALLEN HEAD CAP SCREW 3/8-16 X 1" LG
	30	2	!JNUT-03816	JAM NUT - 3/8-16 GRADE 5
	29	4	!LWSH-038	LOCK WASHER 3/8"
	28	2	!HHCS03816050	HEX HEAD CAP SCREW 3/8-16 X 1/2" LG - GR 5
	27	1	!LWSH-025	LOCK WASHER - 1/4"
	26	1	19269	CABLE CLAMP - 1/4"
	25	1	21276	ANTI-TWO BLOCK ASSEMBLY - L.H.
	24	3	!ANUT-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	!LNUT-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	!JNUT-02520N	NYLON INSERT JAM NUT - 1/4-20
	15	1	!PHCS02520063	PAN HEAD CAP SCREW - 1/4-20 X 5/8 LONG
	14	1	19881	CABLE GUIDE WEAR STRIP
	13	2	!JNUT-05013N	1/2-13 NYLON INSERT JAM NUT
	12	2	!FWSH-050	FLAT WASHER 1/2"
	11	2	!HHCS05013100	HEX HEAD CAP SCREW 1/2-13NC X 1 LG
	10	1	19880	CABLE GUIDE STRUCTURE
	9	8	!SRNG-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	27791	PRIMARY BOOM WELDED ASSEMBLY

REF PARTS DRAWING 21310



▲	ITEM	QTY	PART NO.	DESCRIPTION	ITEM	QTY	PART NO.	DESCRIPTION
	21	1	19269	CABLE CLAMP - SMALL	10	1	-	-
	20	1	19302	SET COLLAR - 3/32"	9	4	!LWSH-031	LOCK WASHER - 5/16"
	19	1	!LWSH-025	LOCK WASHER - 1/4"	8	4	!SHCS03118050-5	SOCKET HEAD CAP SCREW - 5/16-18 x 1/2"
	18	1	!ANUT-02520	ACORN NUT - 1/4-20	7	1	19275	CABLE CLAMP - LARGE
	17	1	!HNUT-02520	HEX NUT - 1/4-20	6	2	19270	SNAP BUSHING - 3/8" I.D.
	16	1	!HHCS02520075-5	HEX HEAD CAP SCREW - 1/4-20 x 3/4" GR. 5	5	1	19063	SNAP BUSHING - 1/2" I.D.
	15	4	!HHCS02520175	HEX HEAD CAP SCREW - 1/4-20 x 1 3/4"	4	1	21291	ANTI TWO-BLOCK HOUSING ASSEMBLY
	14	2	!LWSH-#06	LOCK WASHER - #6	3	1	19377-2	CABLE WEIGHT ASSY
	13	2	!FWSH-#06	FLAT WASHER - #6	2	1	22683	CORD REEL ASSY
	12	2	!HNUT-#0632	HEX NUT - #6-32	1	1	19376	LIMIT SWITCH
	11	2	!PHMS#632125	PAN HEAD MACHINE SCREW - #6-32 x 1 1/4"				

VENTURO MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE
REPLACEMENT PARTS DWG

DATE
10-17-11E

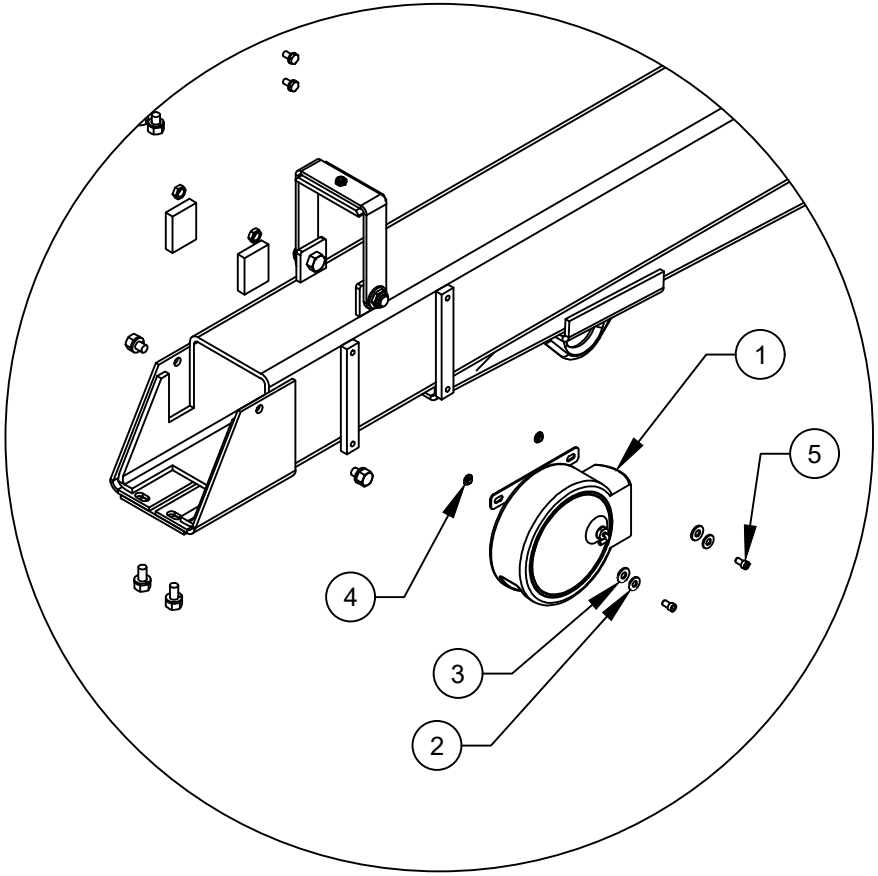
SECTION
C400

21276 ANTI-TWO-BLOCK SYSTEM

SUPERSEDES
10-7-09D

21275

BOOM ROUND CORD REEL 28190-2



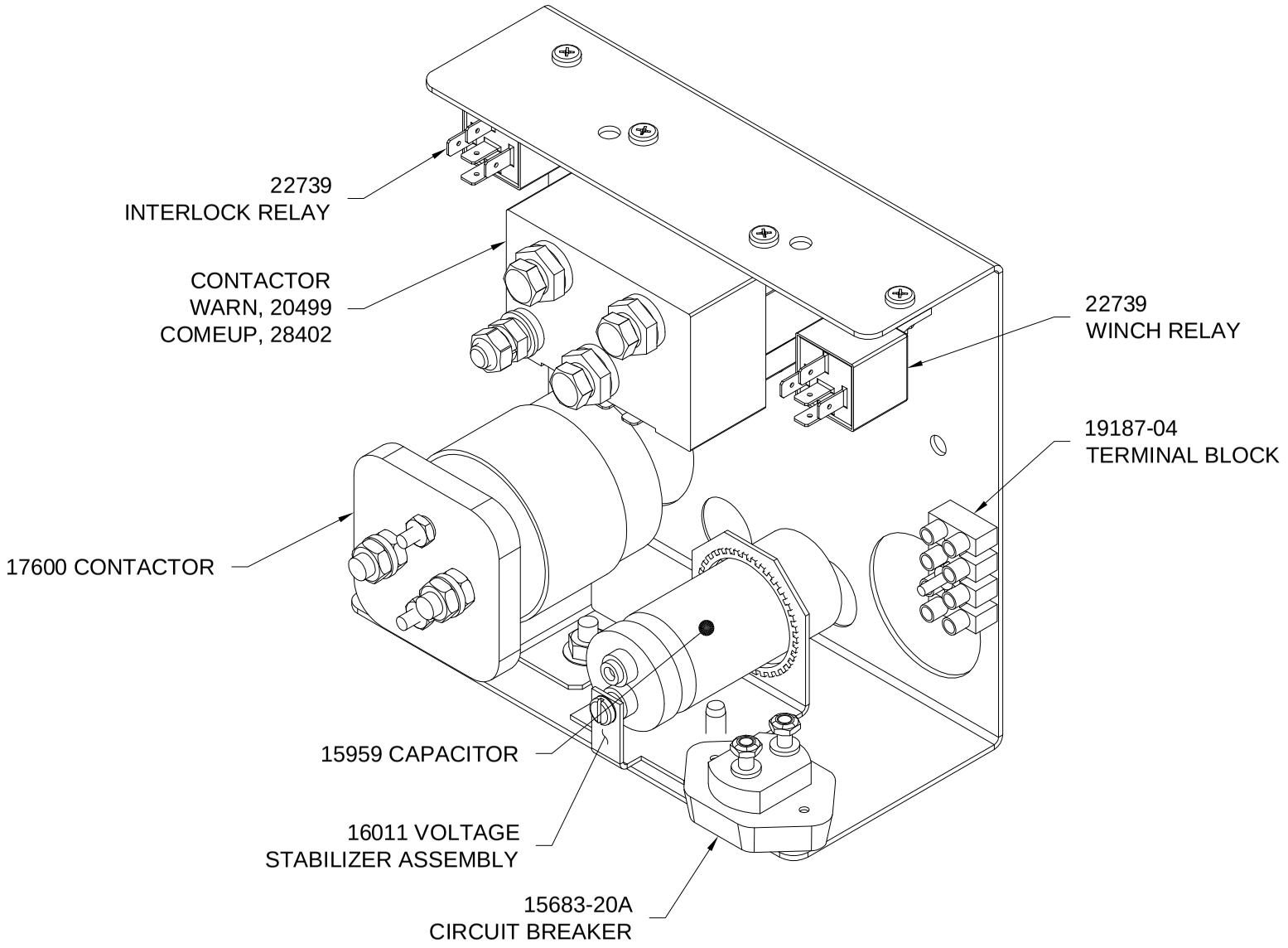
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	28190-2	CORD REEL
2	2	!FWSH-031	WASHER FLAT; 5/16"X.75 O.D., 304 S/S
3	2	01016	FIBER WASHER
4	2	28198	INSULATING SLEEVE WASHER; 5/16"
5	2	!SHCS03118063S	SHCS; 5/16"-18X5/8"LG.S/S

VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
BOOM ROUND CORD REEL 28190-2	02-09-24	C400
ET16/18KX-16'	SUPERSEDES -	24100

23154-3 ELECTRICAL COMPONENT ASSEMBLY



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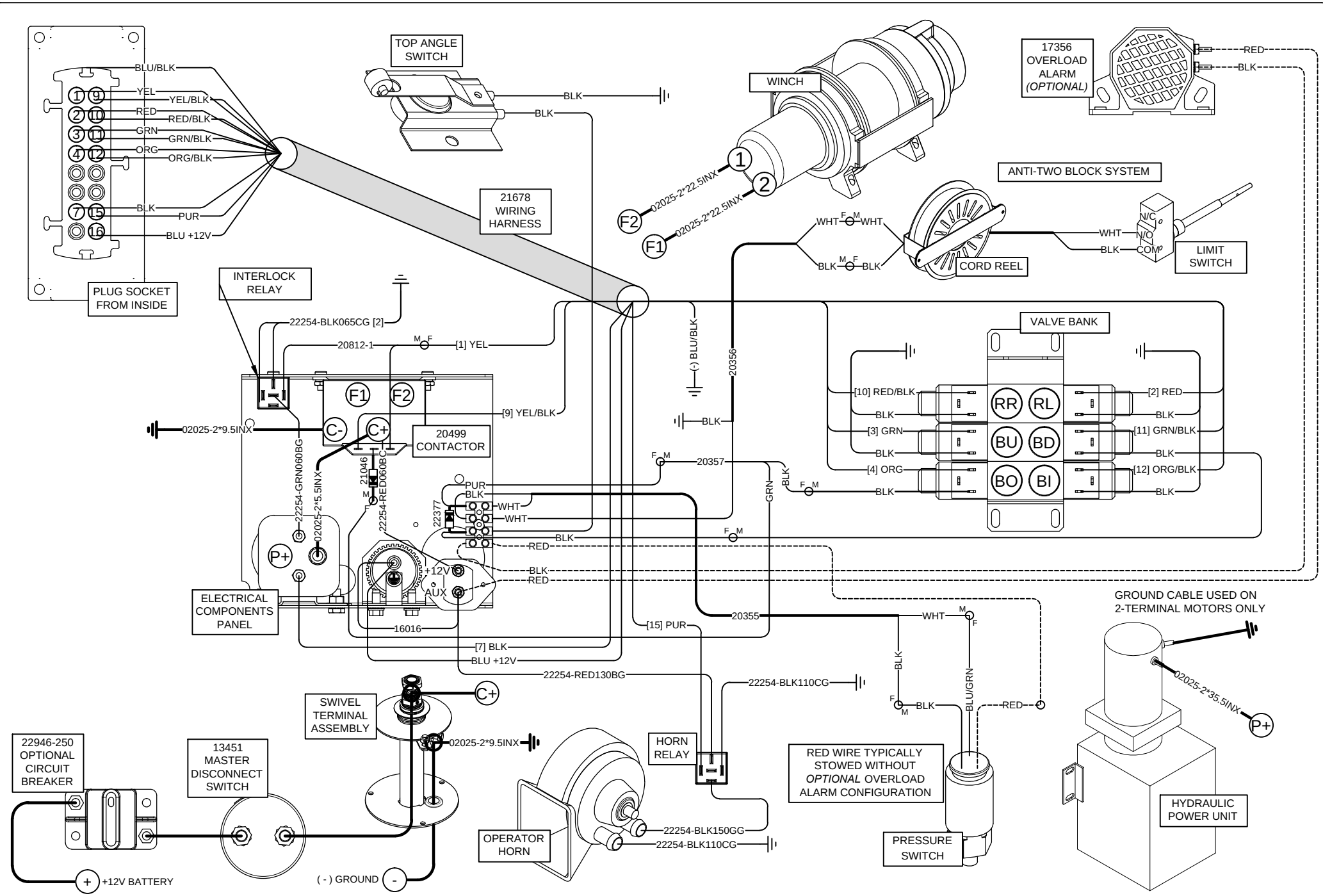
VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
ELECTRICAL COMPONENT ASSEMBLY	10-21-21	C400
ET16/18KX	SUPERSEDES -	26533



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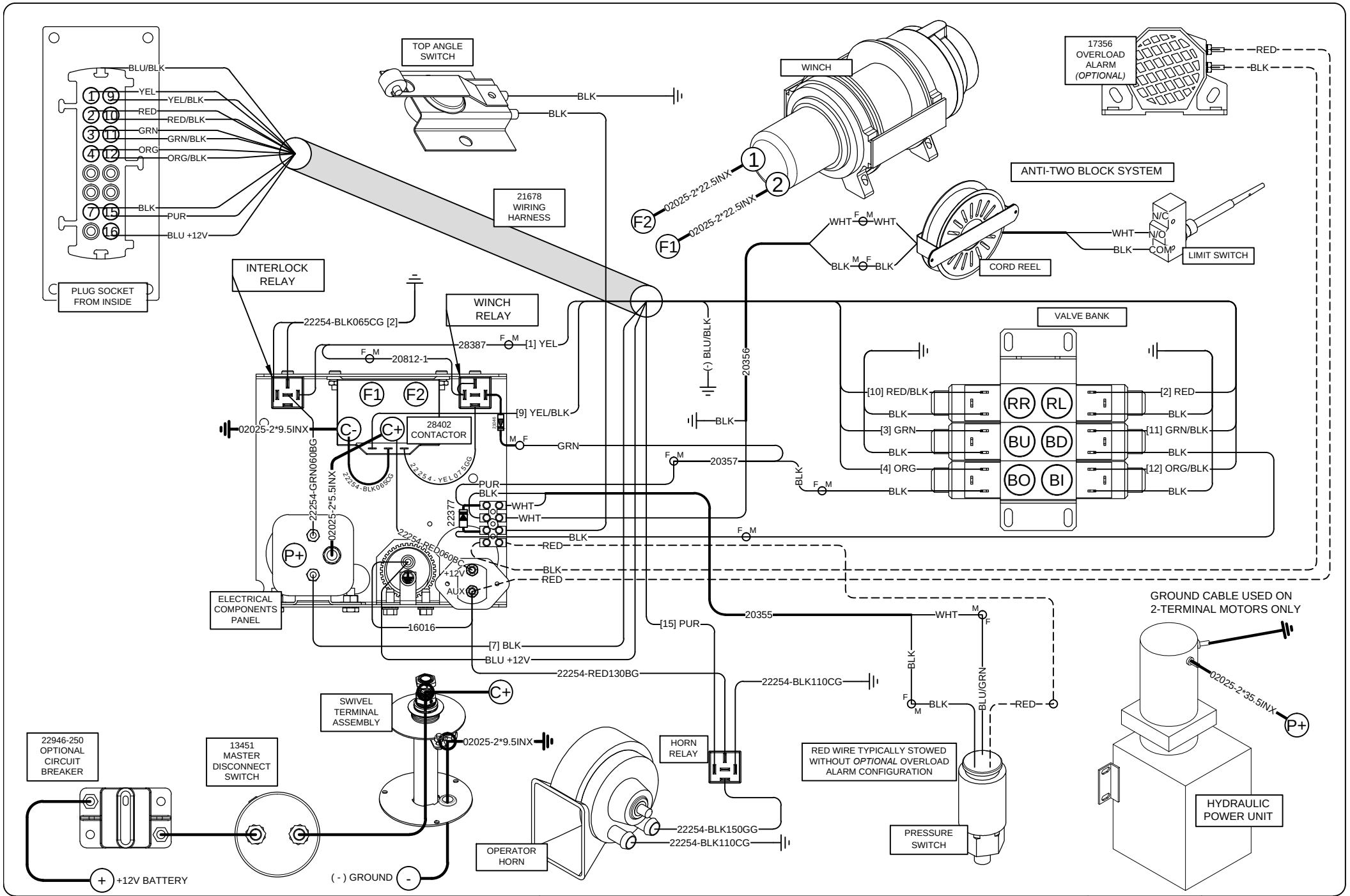
VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

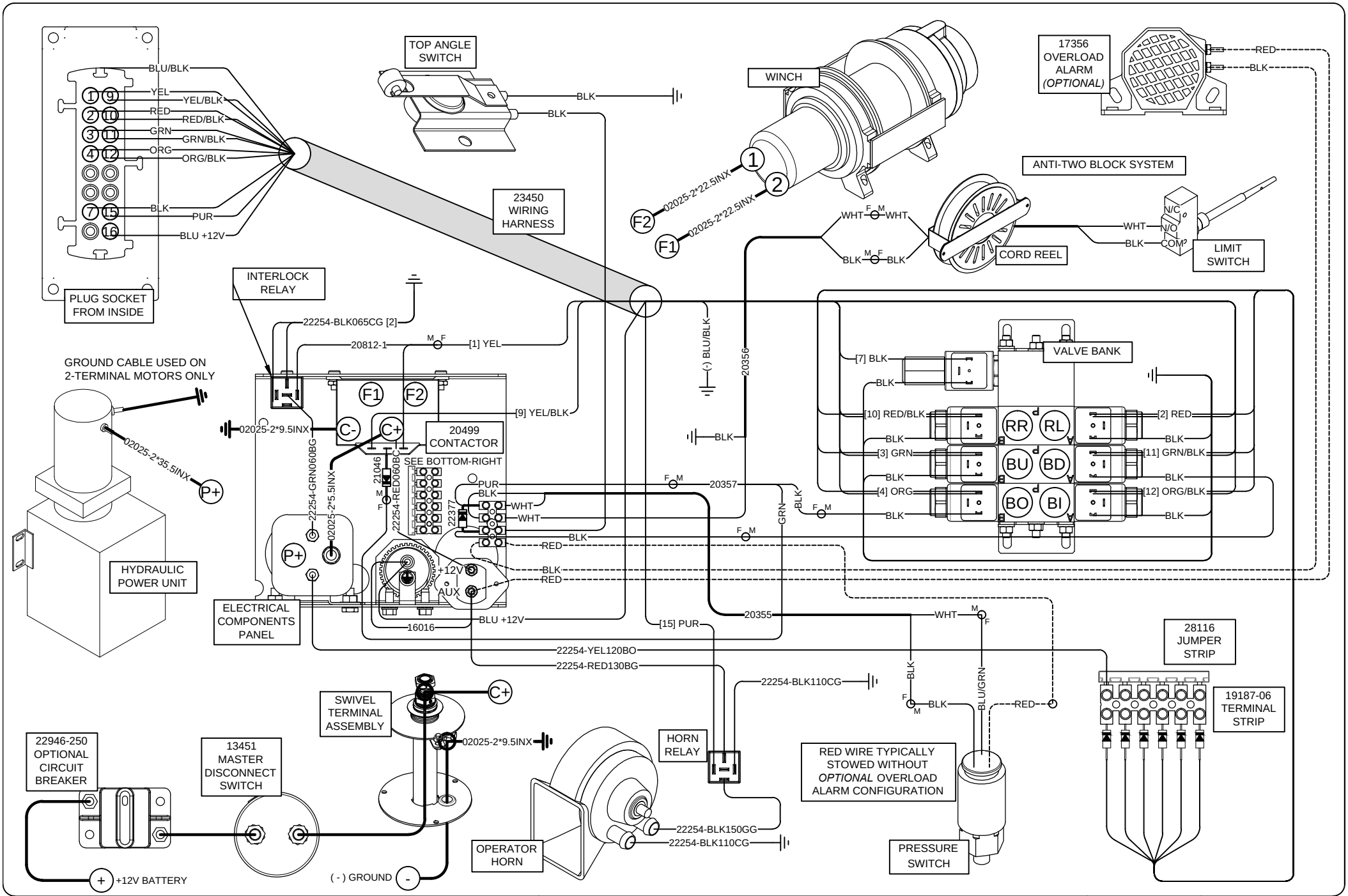
TITLE	DATE	SECTION
WIRING DIAGRAM	05-11-23E	C400
ET16/18 W/ 16' OR 20' BOOM NON-PROPORTIONAL WINCH: COMEUP OR WARN CONTACTOR: 20499	SUPERSEDES 11-04-22D	26525



VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

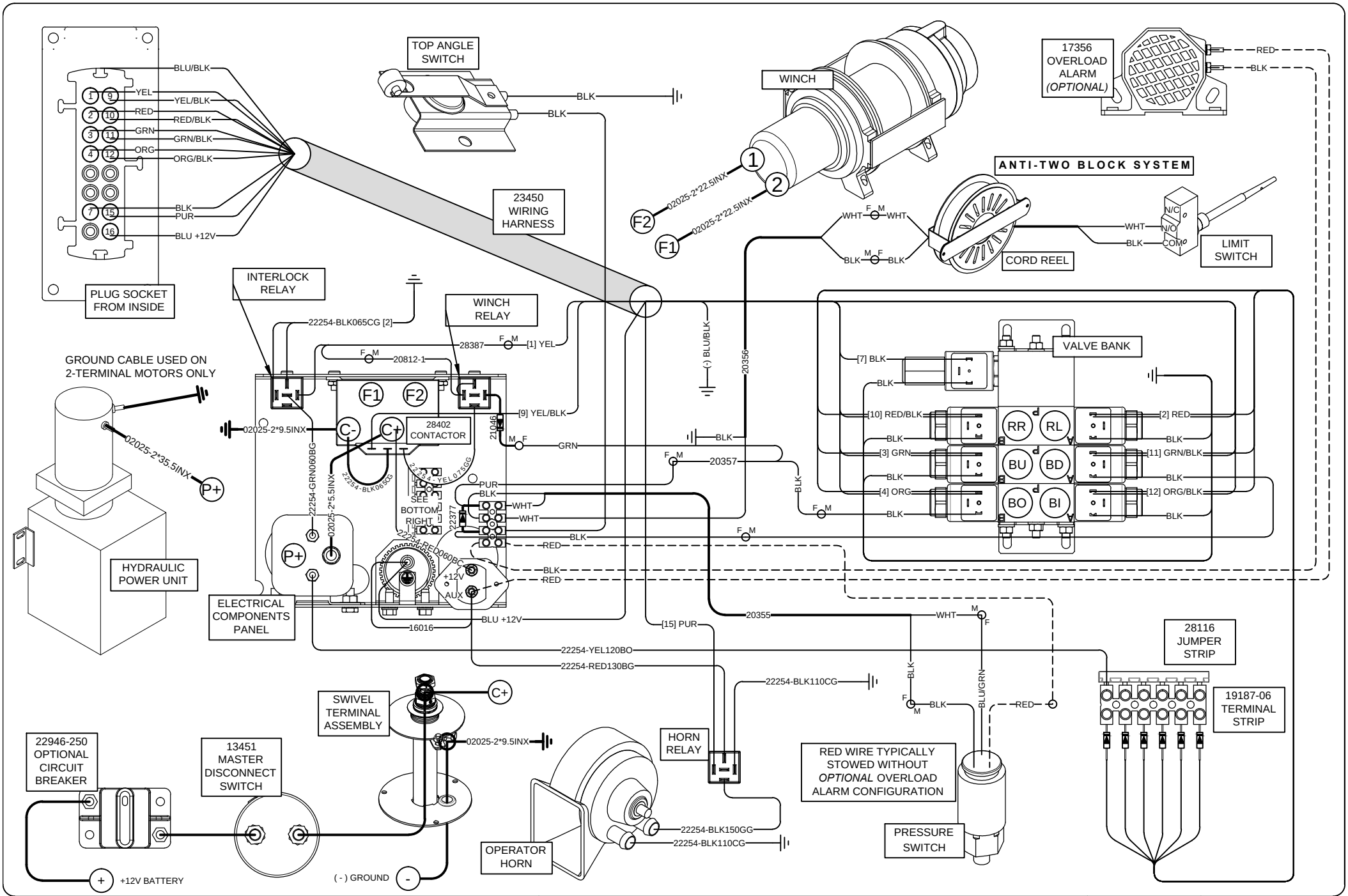
TITLE	DATE	SECTION
WIRING DIAGRAM	05-11-23C	C400
ET16/18 W/ 16' OR 20' BOOM NON-PROP WINCH: COMEUP OR WARN CONTACTOR: 28402 W/ RELAY	SUPERSEDES 11-02-22B	26531



VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE: WIRING DIAGRAM		DATE: 05-11-23E	SECTION: C400
ET16/18 W/ 16' OR 20' BOOM PROPORTIONAL	WINCH: COMEUP OR WARN CONTACTOR: 20499	SUPERSEDES: 11-02-22D	26527



VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

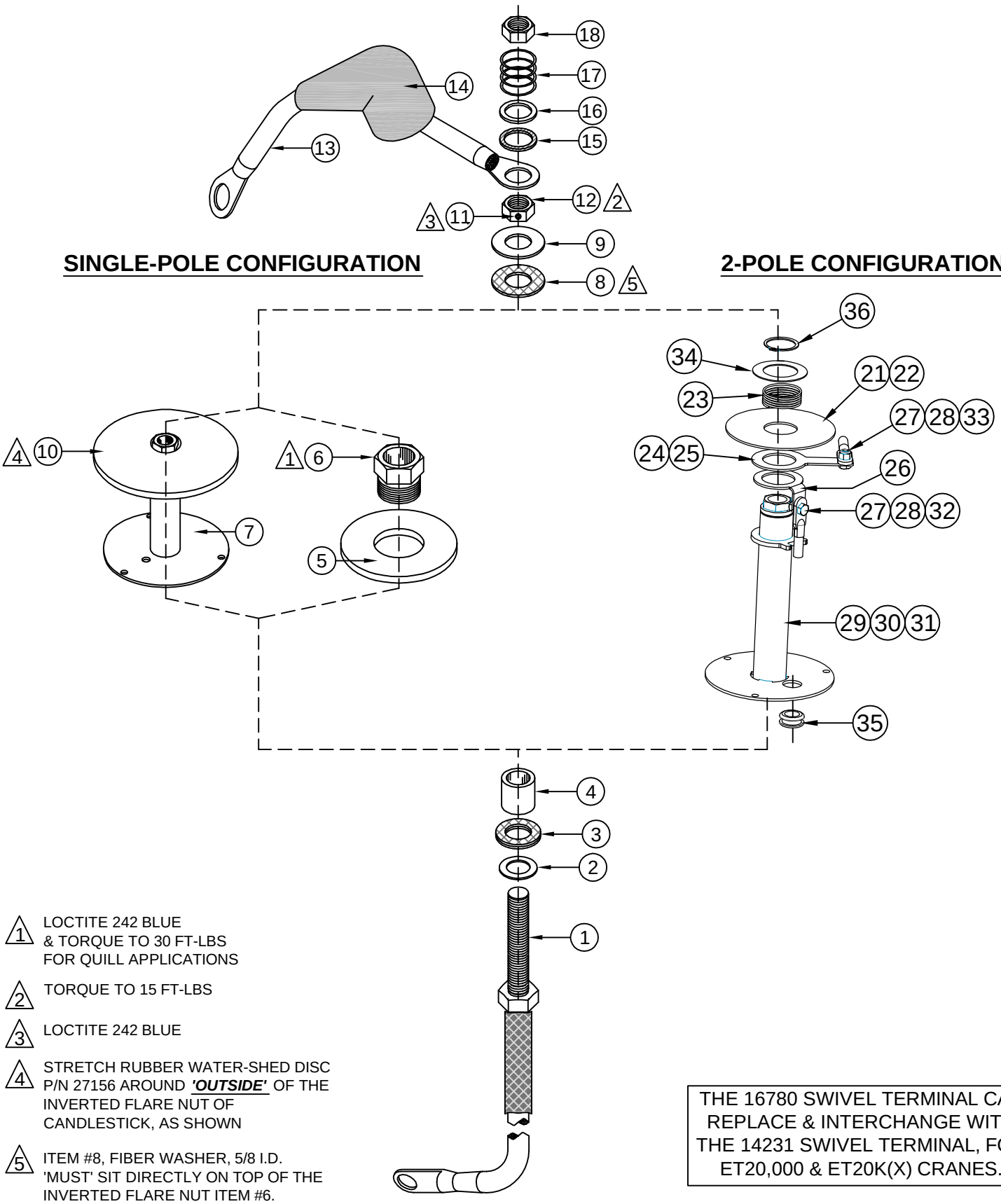
TITLE: WIRING DIAGRAM		DATE: 05-11-23C	SECTION: C400
ET16/18 W/ 16' OR 20' BOOM PROPORTIONAL	WINCH: COMEUP OR WARN CONTACTOR: 28402 W/ RELAY	SUPERSEDES: 11-04-22B	26532

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	#	PART	DESCRIPTION
QTY								
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	!FWSH-063SAE	FLAT WASHER; 5/8" SAE
-	1	-	-	-	-	10	27156	RUBBER WATER SHIELD; 1/8" THICK
1	1	1	1	1	1	11	!SHCS02528025KC	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	!HHCS03118075-B	BRASS HHCS
-	-	1	1	1	-	28	!HNUT-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"

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



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.

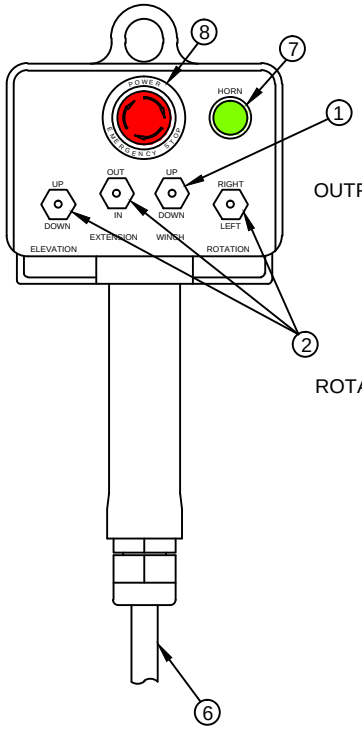
THE 16780 SWIVEL TERMINAL CAN REPLACE & INTERCHANGE WITH THE 14231 SWIVEL TERMINAL, FOR ET20,000 & ET20K(X) CRANES.

VENTURO®

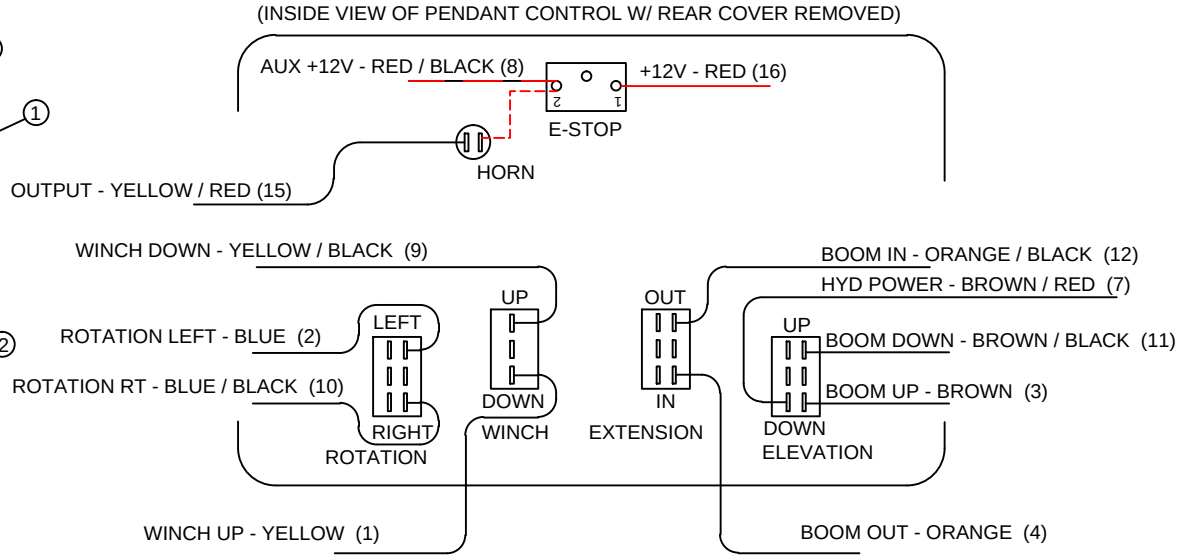
VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
REPL. PARTS ILLUSTRATION	04-27-18	C400
ET6/8/12/16/18/25/30/36K(X)	SUPERSEDES -	21293

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



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



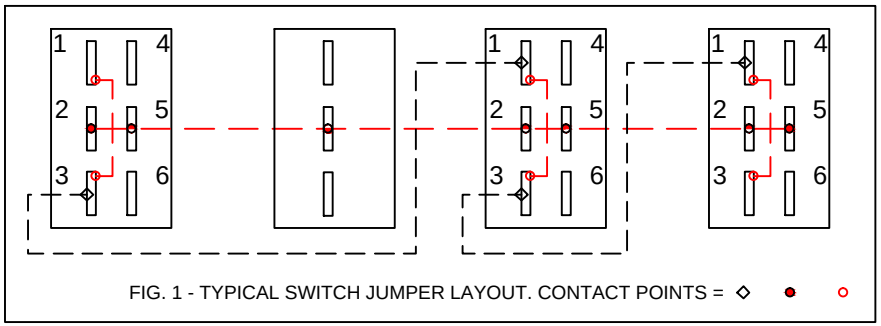
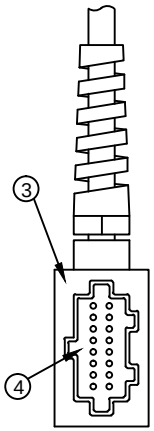


FIG. 1 - TYPICAL SWITCH JUMPER LAYOUT. CONTACT POINTS = ◇ ● ○

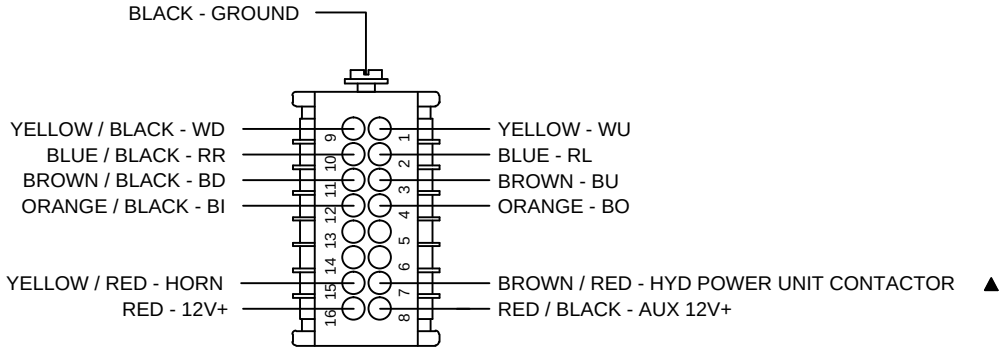
NOTE 1:
WIRE TERMINALS TO BE INSTALLED 'AFTER' ROUTING REPLACEMENT CORD ASSY THROUGH PENDANT HEAD AND PLUG HOUSING.

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



16-PIN PLUG ASSY.



16-PIN PLUG - BACKSIDE VIEW

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

VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE: REPLACEMENT PARTS DWG & LIST

21990 PNDNT; 4 FNCTN ET CRNS, ESTP/HRN

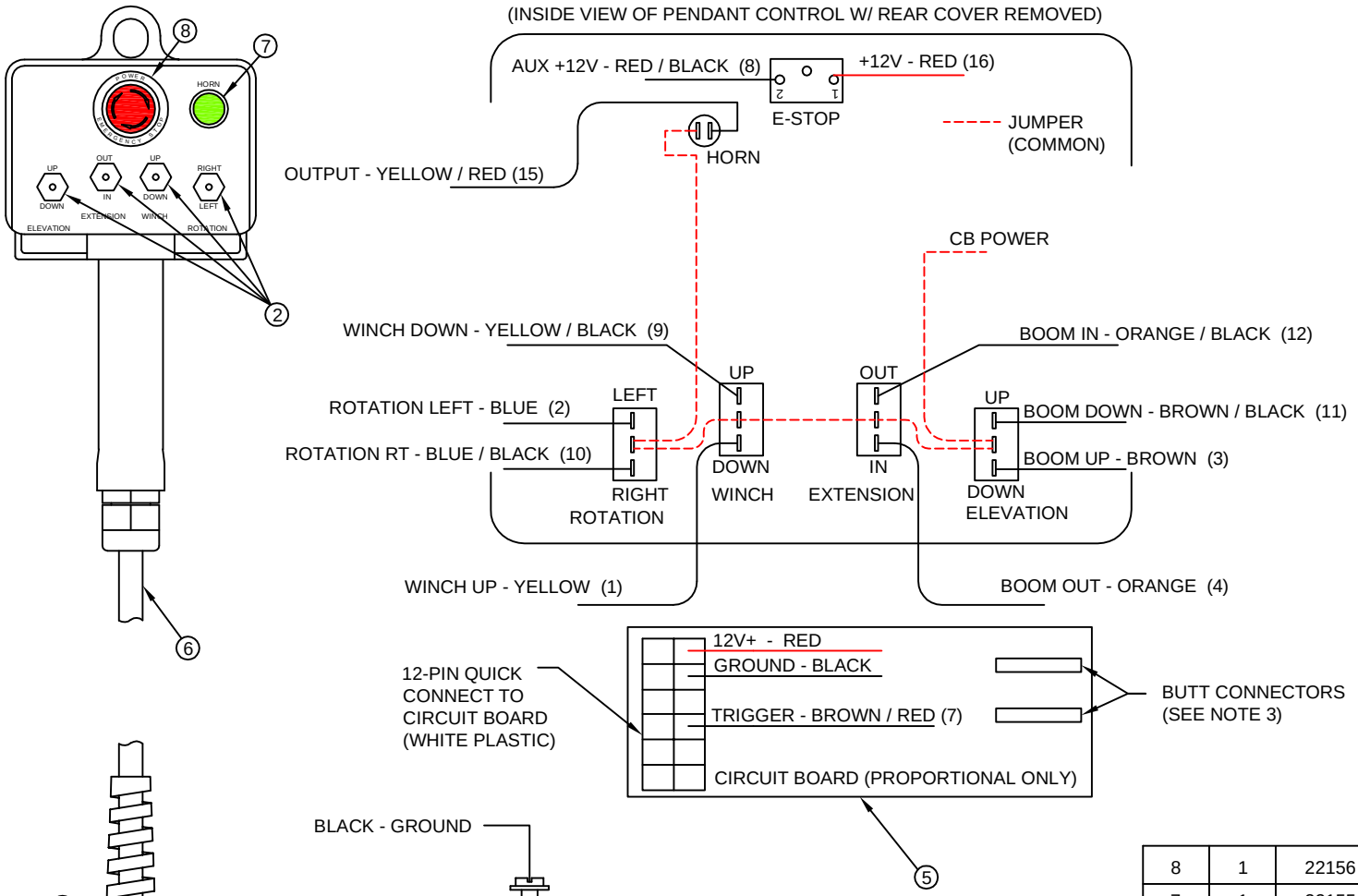
DATE: 01-12-17B

SUPERSEDES: 10-20-14A

SECTION: C400

23075

21988 PENDANT; PROP, NO ENG CNTRL, E-STOP / HORN



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.

NOTE 3:
WHEN REPLACING CORD ASSY, CUT BLACK AND BLACK / RED WIRES FROM 12-PIN QUICK CONNECT AND INSTALL 'BUTT CONNECTORS'; MATCH UP BLACK TO BLACK WIRES AND BLACK / RED TO BLACK / RED WIRES FROM REPLACEMENT CORD ASSY.

MODEL	STARTING S/N
HT25K(X)	120300
HT30K(X)	115300
HT40KX(X)	100900
HT50KX(X)	110600
HT66KXX	150300

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	1	22082	CIRCUIT BOARD; PROP VALVE CONTROLLER
4	1	22472	INSERT; MALE, 16 + 1 POLE
3	1	22471	PLUG CASE; 16 + 1 POLE
2	4	22081	SWITCH; SPDT, MOMENTARY
1	-	-	-

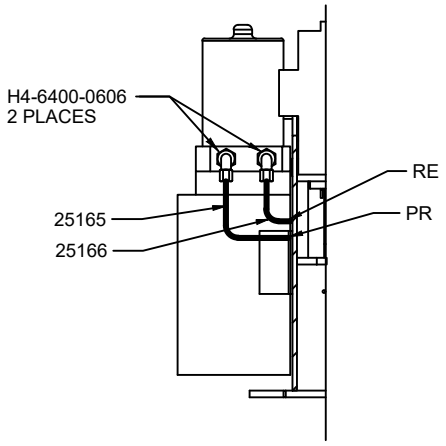
VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

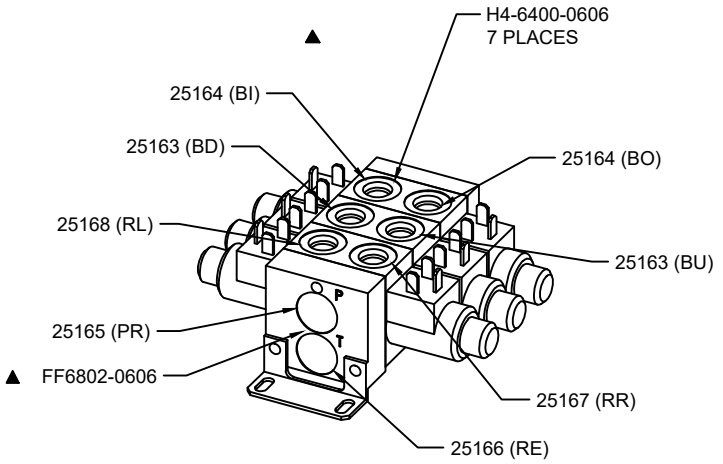
TITLE	DATE	SECTION
REPLACEMENT PARTS DWG & LIST	10-03-14	C400
21988 PNDNT; PROP, NO ENG CNT, ESTP/HRN	SUPERSEDES -	23073

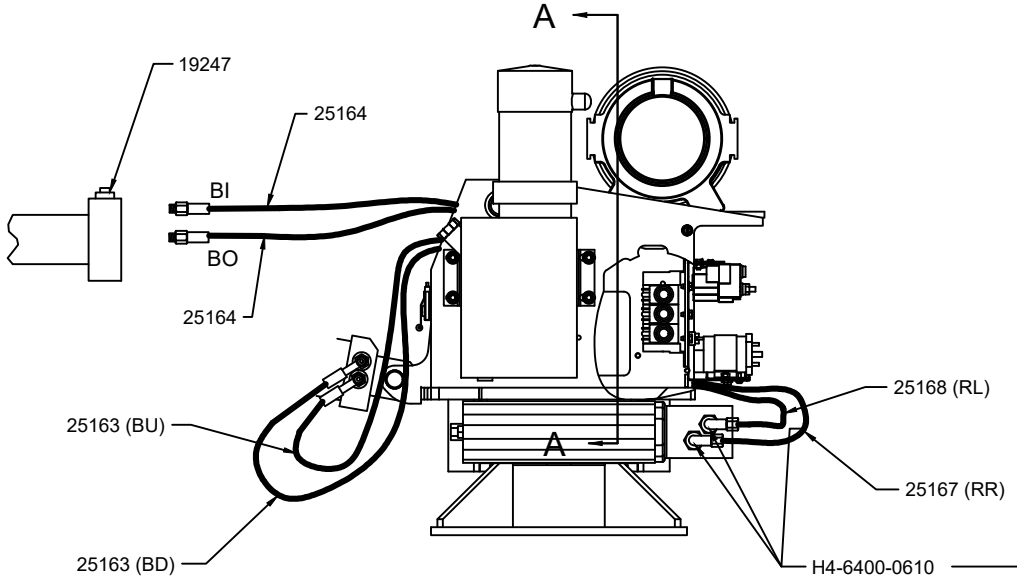
ET16/18KX HYDRAULIC COMPONENTS DRAWING

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

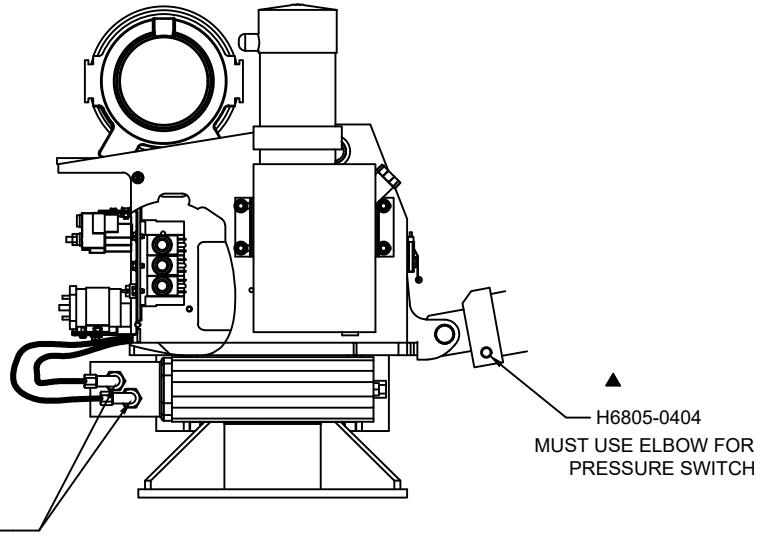


SECTION VIEW A-A





▲ LEFT SIDE



▲ RIGHT SIDE

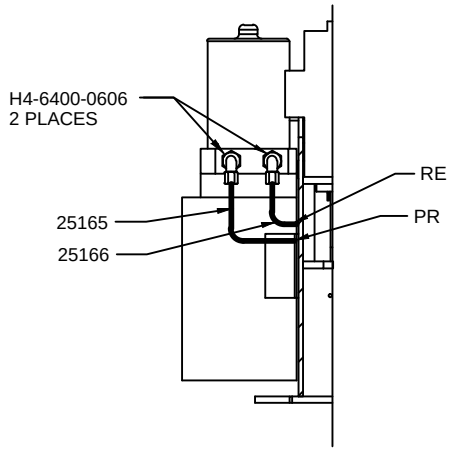
VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

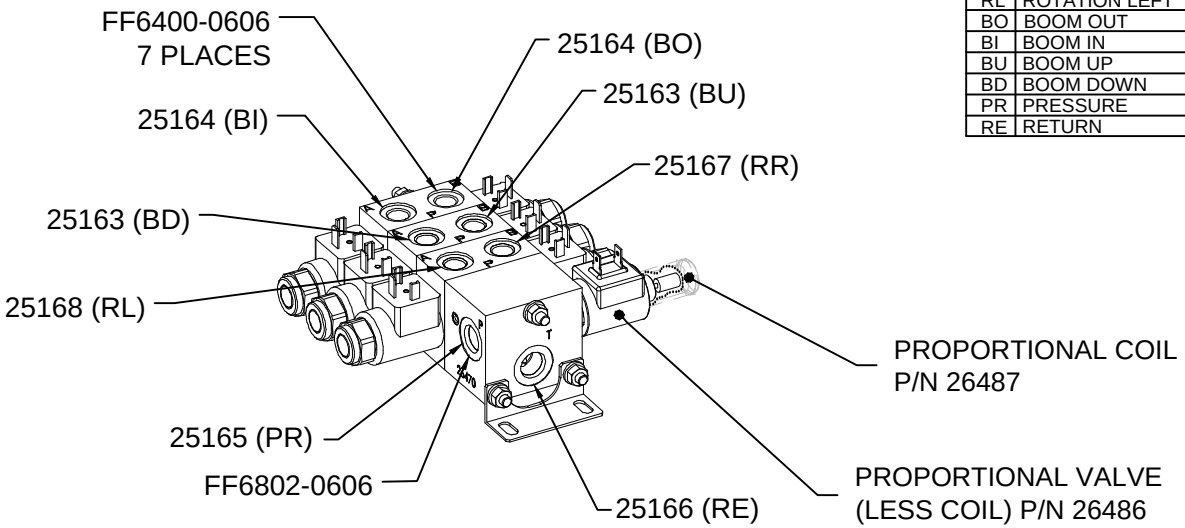
TITLE	DATE	SECTION
HYDRAULIC COMPONENTS DRAWING	03-11-24D	C400
ET16/18KX	SUPERSEDES 12-22-22C	21407

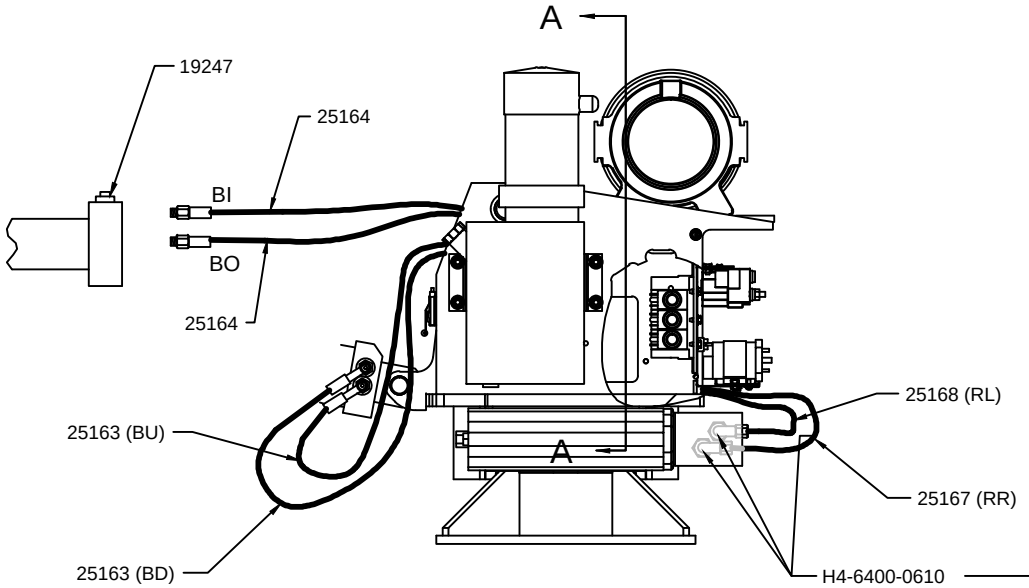
ET16/18KXP HYDRAULIC COMPONENTS DRAWING

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

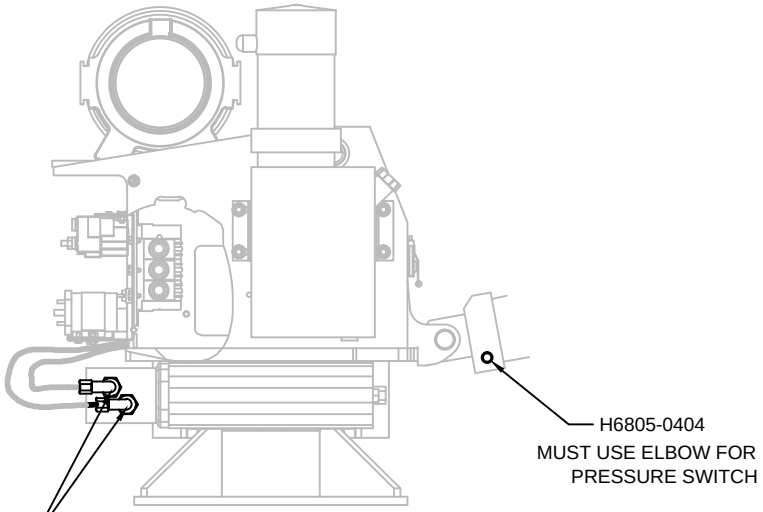


SECTION VIEW A-A





LEFT SIDE



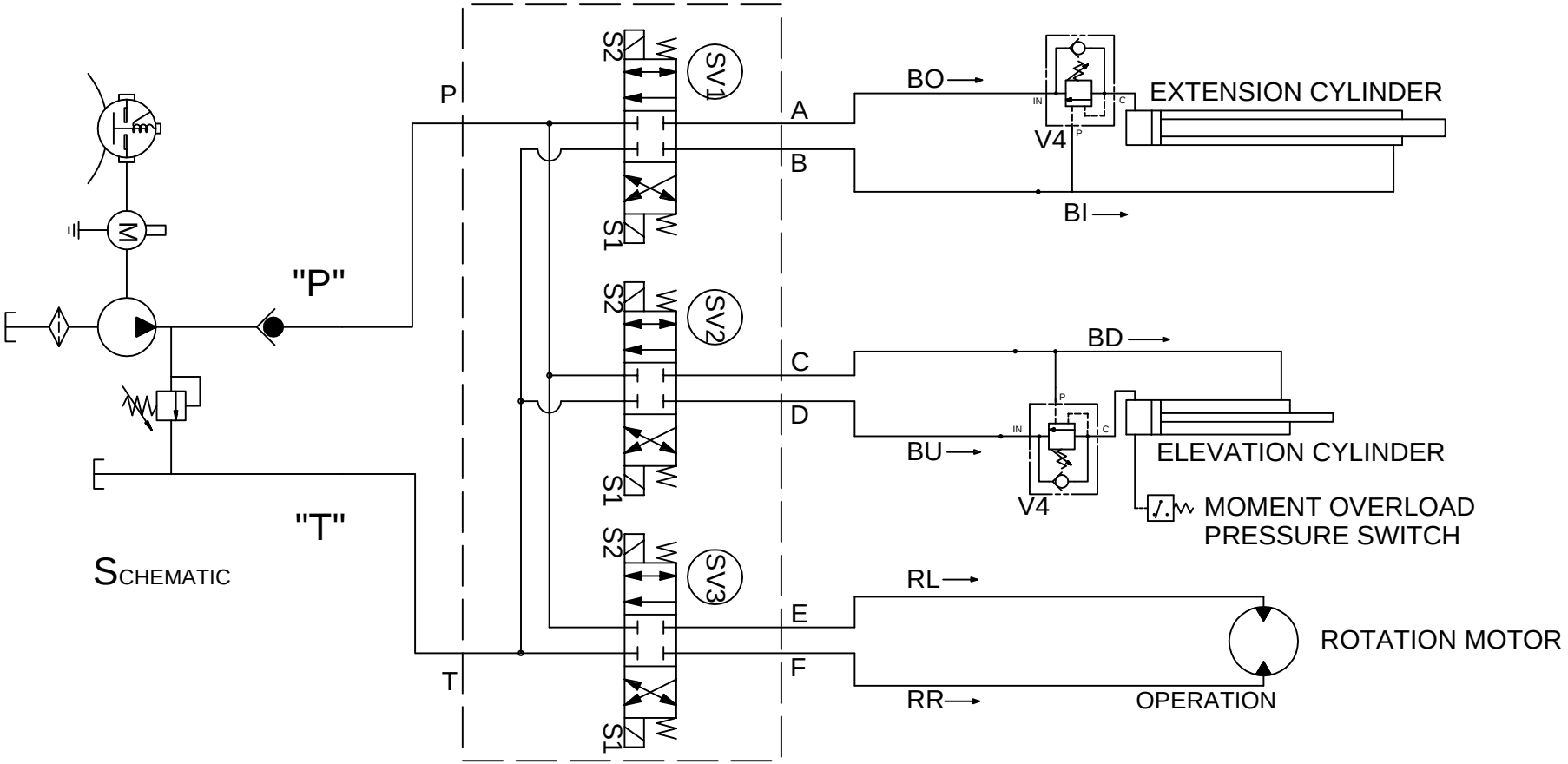
RIGHT SIDE

VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
HYDRAULIC COMPONENTS DRAWING	12-22-22A	C400
ET16/18KXP	SUPERSEDES 11-19-19	23988

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



SV1

ERNERGIZE "S2"
OPEN FLOW
'P' TO 'A'
'B' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'B'
'A' TO 'T'

SV2

ENERGIZE "S2"
OPEN FLOW
'P' TO 'C'
'D' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'D'
'C' TO 'T'

SV3

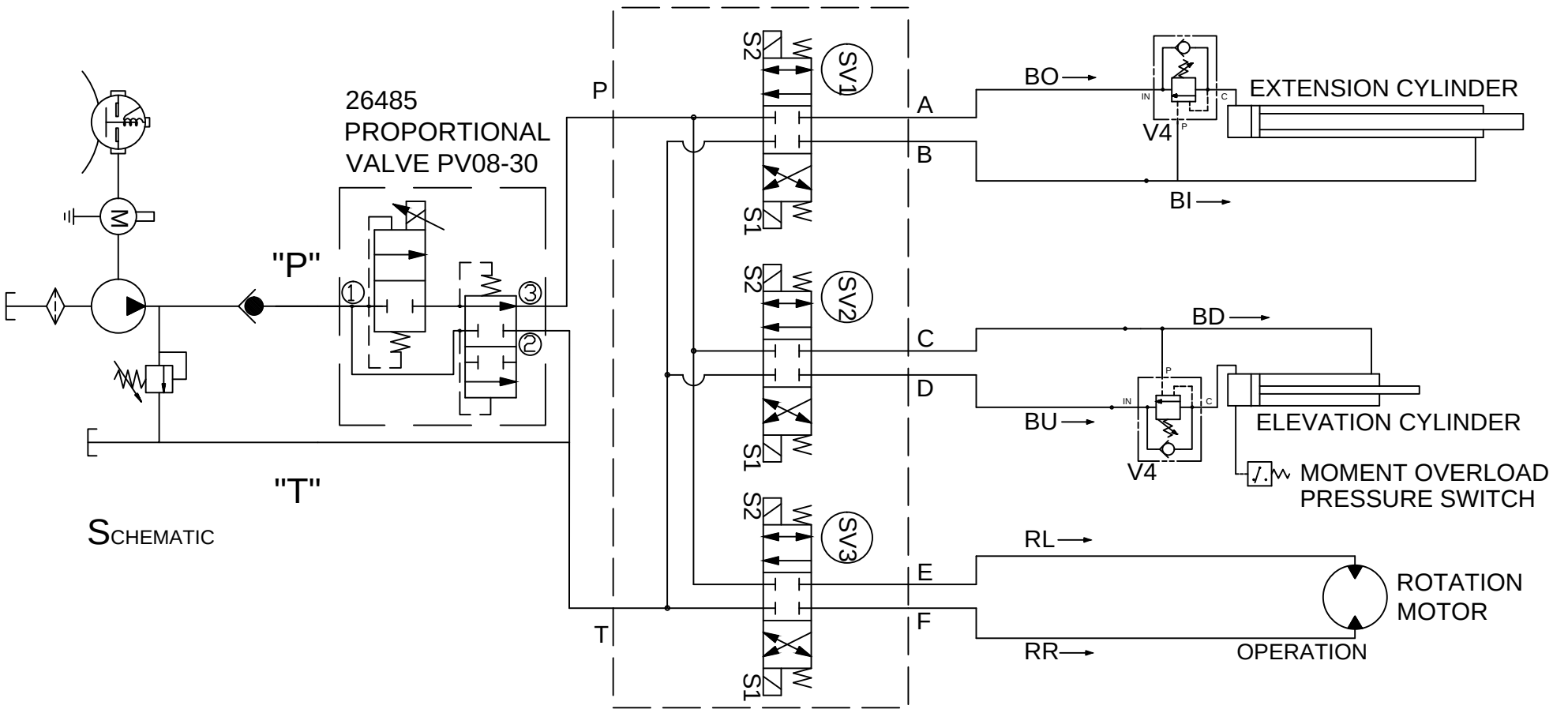
ENERGIZE "S2"
OPEN FLOW
'P' TO 'E'
'F' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'F'
'E' TO 'T'

VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
HYDRAULIC SYSTEM DIAGRAM	10-23-14D	C400
ET16/18/25/30/36KX ▲	SUPERSEDES 01-31-05C	20156

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



SCHEMATIC

SV1

ERNERGIZE "S2"
OPEN FLOW
'P' TO 'A'
'B' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'B'
'A' TO 'T'

SV2

ENERGIZE "S2"
OPEN FLOW
'P' TO 'C'
'D' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'D'
'C' TO 'T'

SV3

ENERGIZE "S2"
OPEN FLOW
'P' TO 'E'
'F' TO 'T'
ENERGIZE "S1"
OPEN FLOW
'P' TO 'F'
'E' TO 'T'

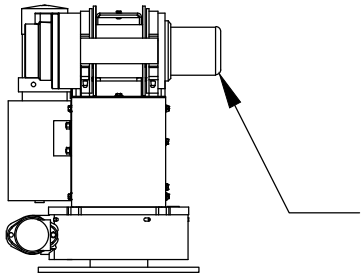
VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
HYDRAULIC SYSTEM DIAGRAM	10-14-19	C400
ET16/18/25/30/36KXP	SUPERSEDES -	24434

21215 WINCH REPLACEMENT PARTS

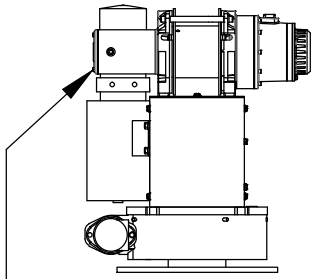
WARN DC2500



MOTOR ON RIGHT
WHEN VIEWED FROM REAR

(REAR VIEW)

COMEUP GTD-2800



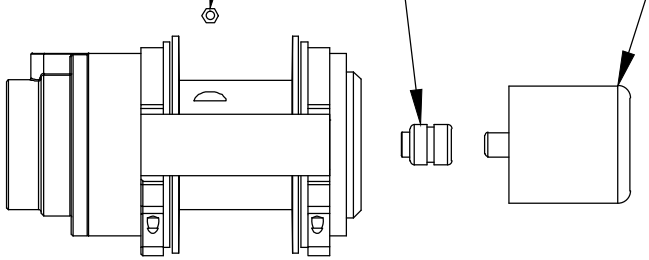
MOTOR ON LEFT
WHEN VIEWED FROM REAR

(REAR VIEW)

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

21980 BRAKE ASSY

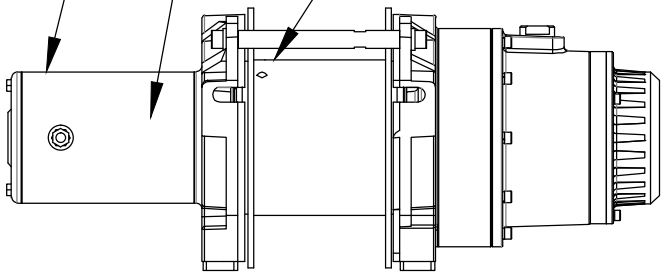
21778 MOTOR



23915 MOTOR

23918 BRAKE REPLACEMENT KIT

2X SET SCREW
(INCL W/ WINCH)



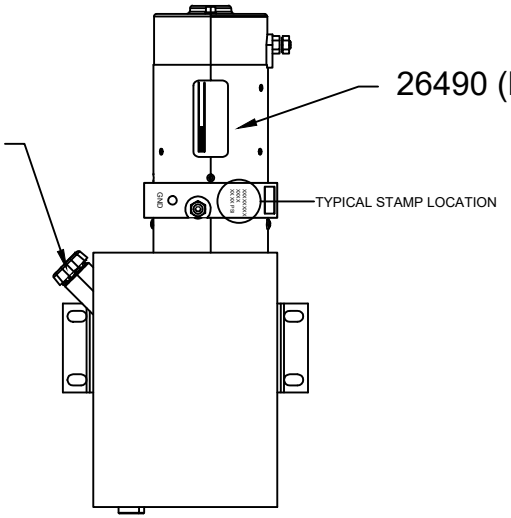
VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
WINCH REPLACEMENT PARTS	03-19-21G	C400
ET16/18KX	SUPERSEDES 10-23-14F	21054

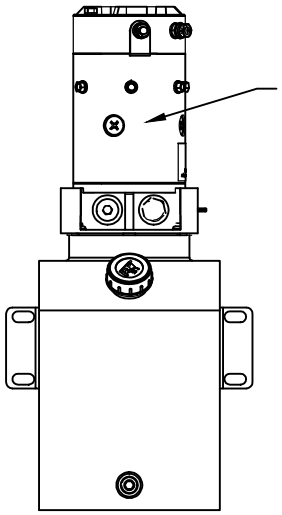
26489 HYD. POWER UNIT REPLACEMENT PARTS

BUCHER

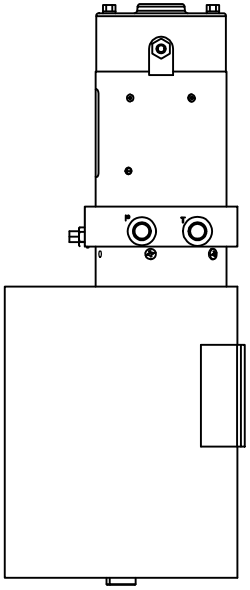


(FRONT VIEW)

KTI

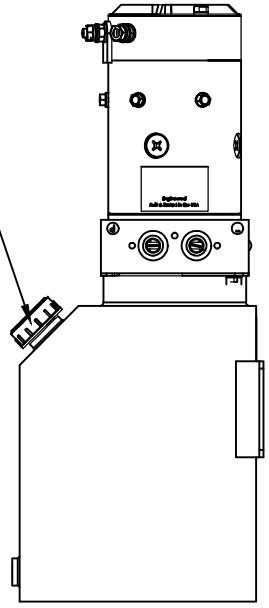


(FRONT VIEW)



NO GROUND
CABLE NEEDED

BUCHER



GROUND CABLE:
01025-4*23INX

KTI

VENTURO®

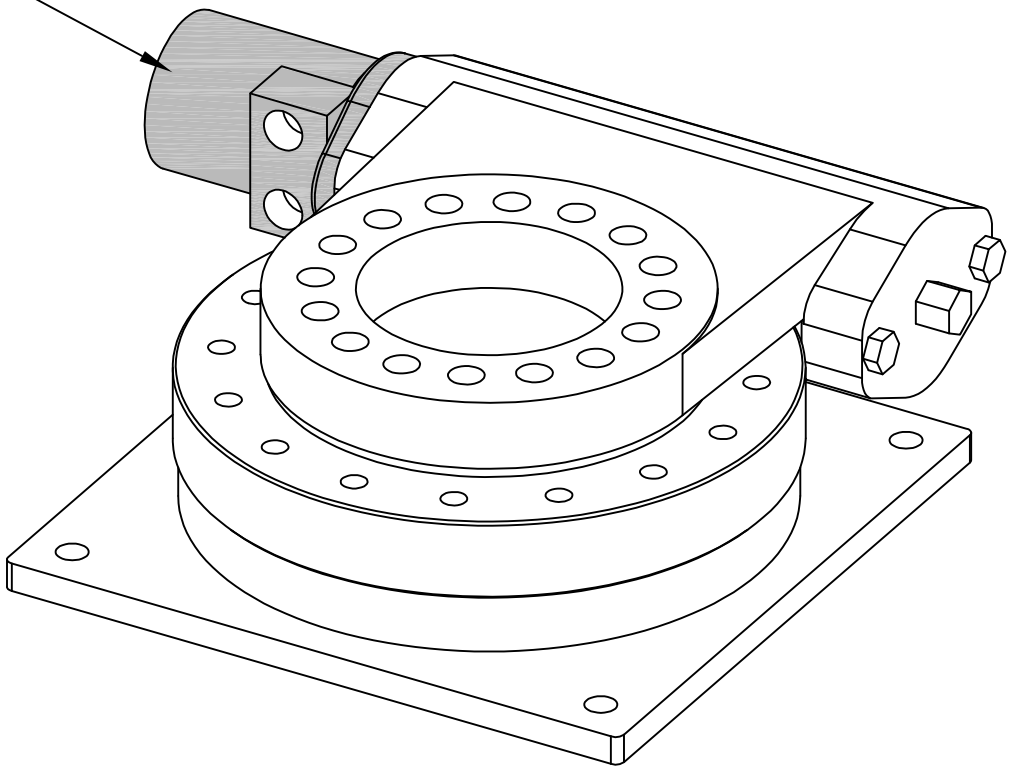
VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

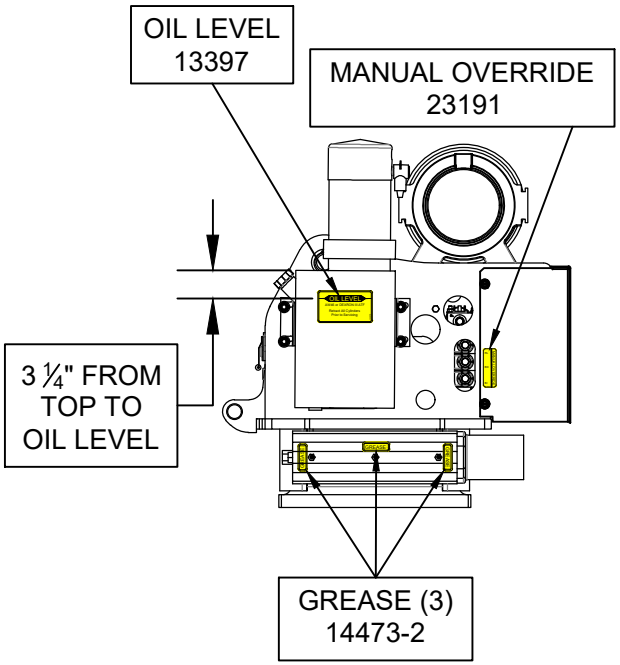
TITLE	DATE	SECTION
HYDRAULIC POWER UNIT REPLACEMENT PARTS	03-06-23 A	C400
ET12KX-16' PROP, ET16/18/25/30/36	SUPERSEDES 07-31-18	23787

21735 SLEWING SYSTEM REPLACEMENT PARTS

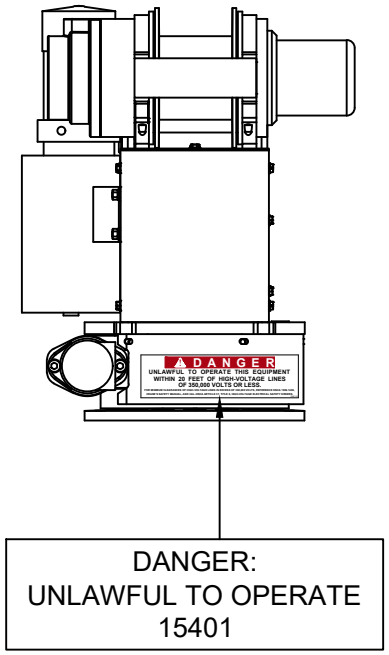
21123 MOTOR (ONLY)

21218 - MOTOR SEAL KIT

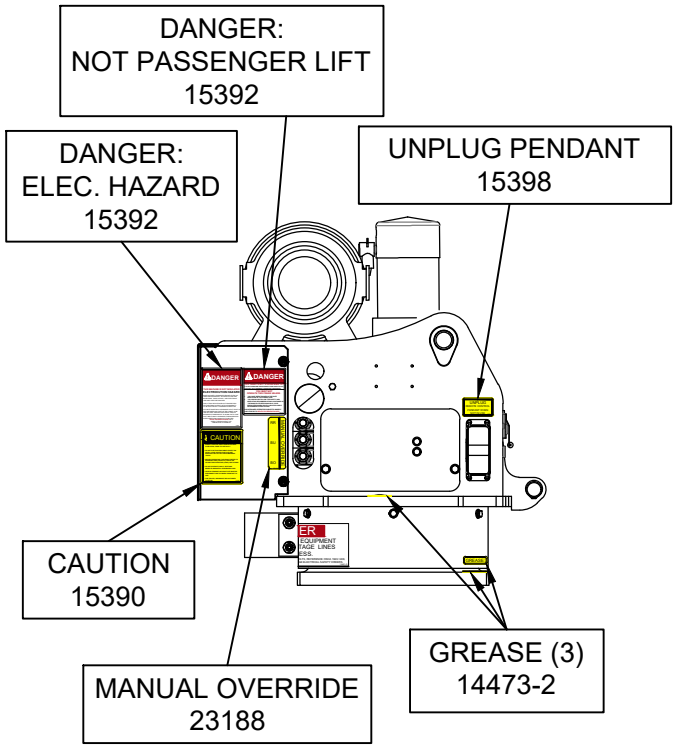




LEFT



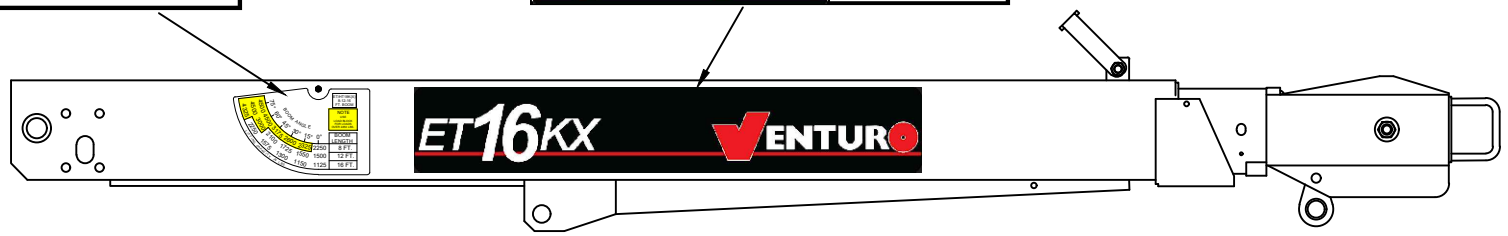
BACK



RIGHT

CAPACITY			
ET16KX		ET18KX	
RIGHT	24079-1	RIGHT	21190-1
LEFT	24079-2	LEFT	21190-2

MODEL	
ET16KX VENTURO	28580 (2)
ET18KX VENTURO	28581 (2)



BOOM

VENTURO®

VENCO VENTURO INDUSTRIES LLC
CINCINNATI, OHIO

TITLE	DATE	SECTION
DECAL PLACEMENT	12-05-23	C400
ET16/18KX	SUPERSEDES -	28584

ET16/18KX(P) FIELD SERVICE LABEL KITS

24021; FIELD SERVICE LABEL KIT, ET16KX

PART NO.	QTY.	DESCRIPTION
16184-1	1	DECAL; HORN RELAY
14473-2	6	DECAL; GREASE
28580	2	DECAL; MODEL ET16KX
24079-1	1	DECAL; BOOM CAPACITY, RIGHT, ET16KX
24079-2	1	DECAL; BOOM CAPACITY, LEFT, ET16KX
13397	1	DECAL; OIL LEVEL
23188	1	DECAL; MANUAL OVERRIDE, RIGHT
23191	1	DECAL; MANUAL OVERRIDE, LEFT
17813	1	DECAL; OVERLOAD SENSING SYSTEM
28585	1	IDWG; FIELD SERVICE LABEL KIT
28584	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
16184-1	1	DECAL; HORN RELAY
14473-2	6	DECAL; GREASE
28581	2	DECAL; MODEL ET18KX
21190-1	1	DECAL; BOOM CAPACITY, RIGHT, ET18KX
21190-2	1	DECAL; BOOM CAPACITY, LEFT, ET18KX
13397	1	DECAL; OIL LEVEL
23188	1	DECAL; MANUAL OVERRIDE, RIGHT
23191	1	DECAL; MANUAL OVERRIDE, LEFT
17813	1	DECAL; OVERLOAD SENSING SYSTEM
28585	1	IDWG; FIELD SERVICE LABEL KIT
28584	1	IDWG; DECAL PLACEMENT
INST-23233	1	SAFETY MANUAL, VENTURO CRANES
15397	1	KIT; ACCIDENT PREVENTION SIGNS

24075; FIELD SERVICE LABEL KIT, ET16KXP

PART NO.	QTY.	DESCRIPTION
16184-1	1	DECAL; HORN RELAY
14473-2	6	DECAL; GREASE
28580	2	DECAL; MODEL ET16KX
24079-1	1	DECAL; BOOM CAPACITY, RIGHT, ET16KX
24079-2	1	DECAL; BOOM CAPACITY, LEFT, 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
28585	1	IDWG; FIELD SERVICE LABEL KIT
28584	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
16184-1	1	DECAL; HORN RELAY
14473-2	6	DECAL; GREASE
28581	2	DECAL; MODEL ET18KX
21190-1	1	DECAL; BOOM CAPACITY, RIGHT, ET18KX
21190-2	1	DECAL; BOOM CAPACITY, LEFT, ET18KX
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
28585	1	IDWG; FIELD SERVICE LABEL KIT
28584	1	IDWG; DECAL PLACEMENT
INST-23233	1	SAFETY MANUAL, VENTURO CRANES
15397	1	KIT; ACCIDENT PREVENTION SIGNS

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.

VENCO VENTURO INDUSTRIES LLC
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www.venturo.com

Revised: January 2015 12-00073_VNT1-D