



HT40KX

**HRAAD-PB & HRBAAD-PB
INSTALLATION & OWNER'S MANUAL**

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HT40KX / Prop Ctrl / W/ Eng Ctrls (HR*AAD-P***)

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MFG., INC.
CINCINNATI, OHIO

TITLE
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HT40KX (HR*AAC-P*)**

DATE
9-17-09

SUPERCEDES
-

SECTION
-

22991

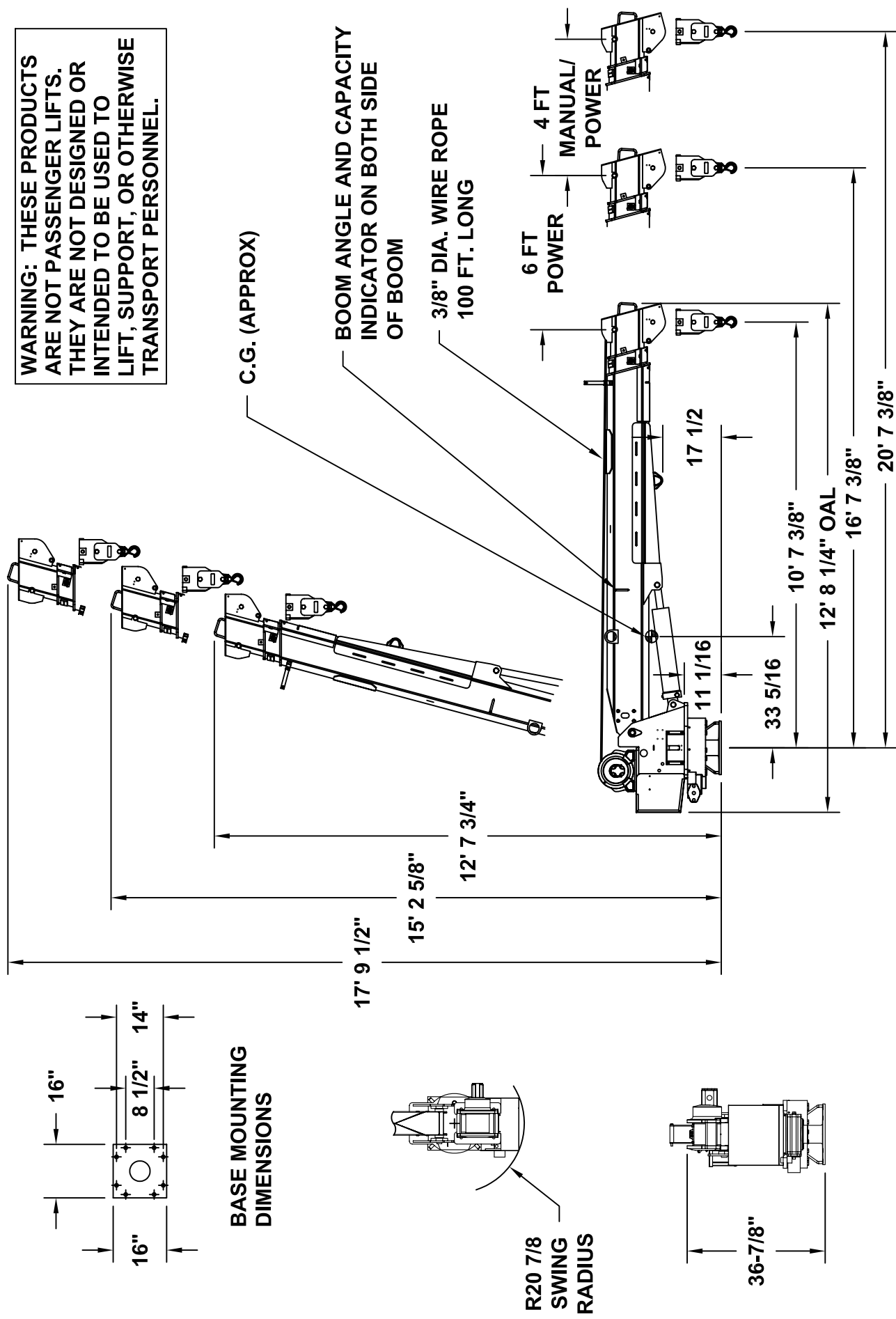
SECTION 100

DESCRIPTION

&

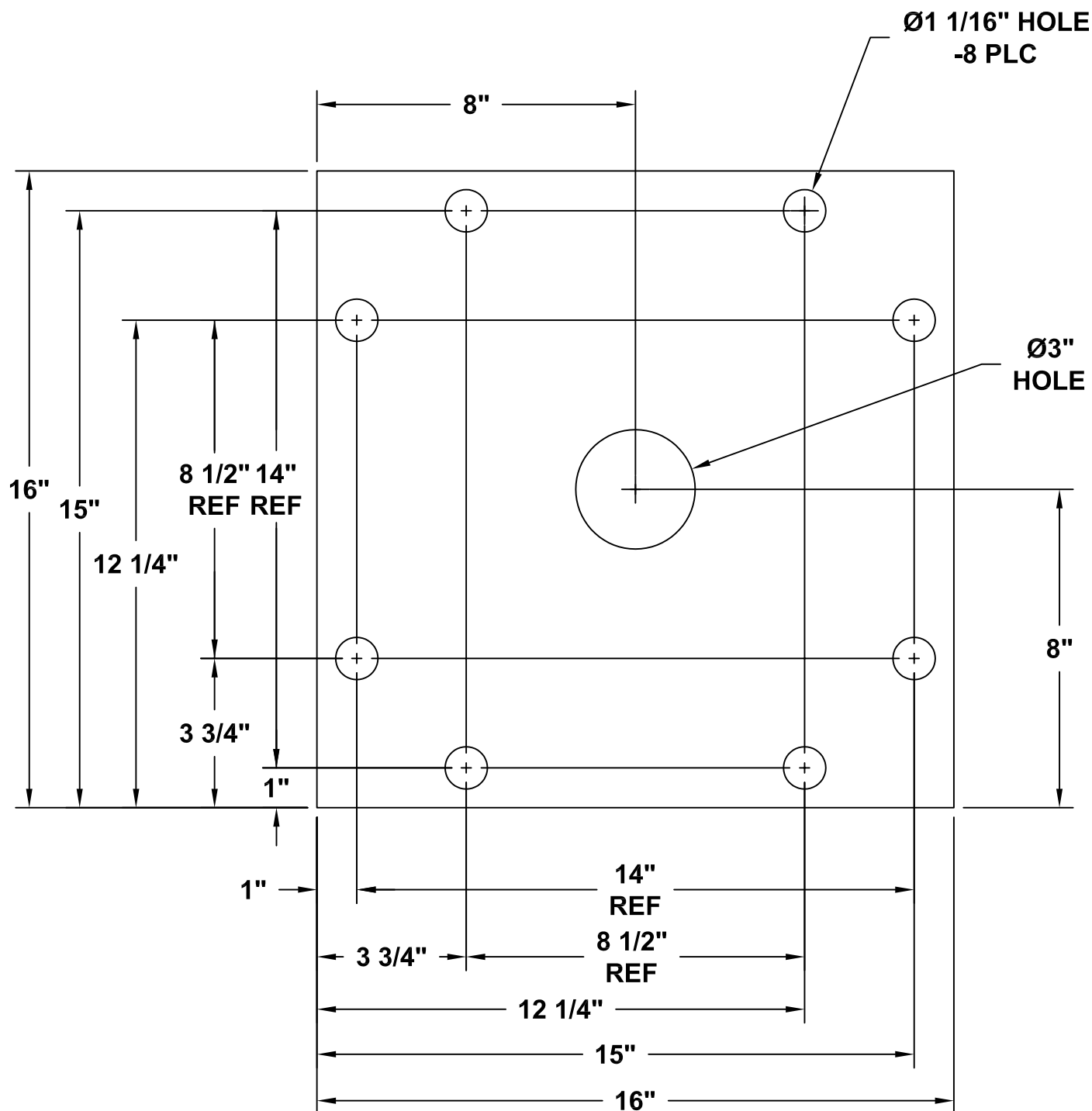
SPECIFICATIONS

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



| | | | | |
|---|----------------------------------|--|-----------------------------|------------------------|
| VENTURO MANUFACTURING, INC. CINCINNATI, OHIO | TITLE INSTALLATION DWG | | DATE 7-9-08A | SECTION C100 |
| | HT40KX, HT50KX - 10-16-20 | | SUPERSEDES 9-4-07 | 22912 |

▲ HT40/50KX BASE MOUNTING DIMENSIONS



MFG., INC.
CINCINNATI, OHIO

TITLE
▲ BASE MOUNTING DIM

HT40/50KX

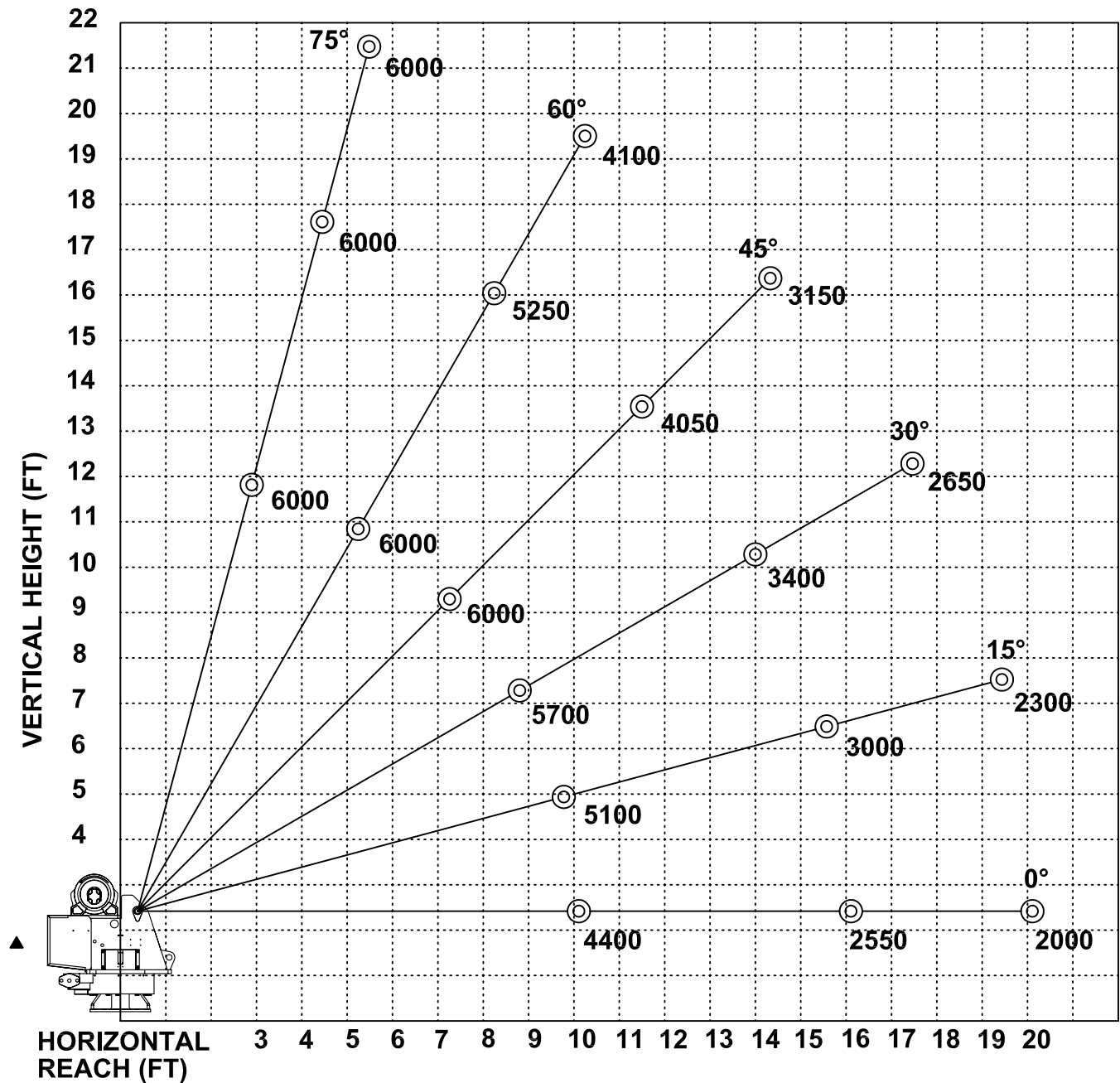
DATE
3-3-05F

SUPERSEDES
5-20-03E

SECTION
C100

18353

HT40KX - 10-16-20 BOOM MAXIMUM CAPACITY CHART



**MUST USE SNATCH BLOCK
FOR LOADS OF 3000 LBS.
AND GREATER**



MFG., INC.
CINCINNATI, OHIO

TITLE
CAPACITY CHART

HT40KX - 10-16-20

DATE
9-5-07D

SUPERSEDES
3-3-05C

SECTION
C100

22341

SECTION 150

SAFETY

VEHICLE & CRANE MOUNTED ELECTRICAL HAZARD SIGN APPLICATION & INFORMATION

ET & HT CRANE SERIES



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



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

REQUIRED MINIMUM CLEARANCES REFERRED TO ON SIGN NO. 15401

REQUIRED CLEARANCES FROM OVERHEAD HIGH-VOLTAGE LINES

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

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

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

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



MFG., INC.
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TITLE
INSTALLATION DWG

ET & HT CRANE SERIES

DATE
5-15-02H

SUPERCEDES
5-13-97G

SECTION
C150

15394

CRANE SAFETY AND HAZARDS

HT-SERIES CRANES

CAUTIONS

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

DANGER

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

YOU MUST NOT OPERATE THIS CRANE UNLESS

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

ELECTROCUTION HAZARD

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



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TITLE
INSTALLATION DWG

HYDRAULIC CRANES

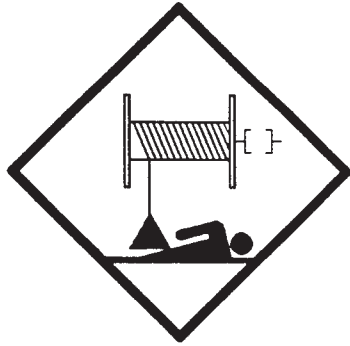
DATE
11-19-09B

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5-13-97A

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C150

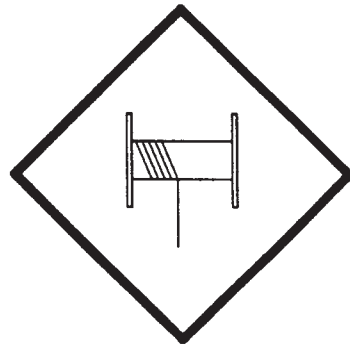
920612

WINCH SAFETY WARNINGS



DANGER

**DO NOT DISENGAGE
WINCH UNDER LOAD**



DANGER

**THE LAST FIVE
WRAPS OF WIRE ROPE
MUST BE LEFT ON
THE DRUM TO ASSIST
THE WIRE ROPE CLAMP IN
HOLDING THE LOAD**



WARNING

**WINCHES ARE NOT
TO BE USED FOR
THE LIFTING OR
MOVING OF
PERSONS**



MFGE., INC.
CINCINNATI, OHIO

TITLE
INSTALLATION DWG

HT CRANES

DATE
5-26-98B

SUPERCEDES
10-17-97A

SECTION
C150

19217

15581
ATTACHMENT

15398
UNPLUG
REMOTE

15401
UNLAWFUL
TO OPERATE

22499
KNOW
YOUR
SIGNALS

RIGHT

14473-1
OIL

15391
DANGER
(NOT
PASSENGER
LIFT)

20834
OVERRIDE
INST
INSIDE

15392
DANGER
ELEC.
HAZARD

14473-2
GREASE
2 PLACES

15390
CAUTION

LEFT

MANUAL OVERRIDE
19314-2 NON-PROP
22768-2 PROP

MANUAL OVERRIDE
19314-1 NON-PROP
22768-1 PROP

SHUT OFF DECAL
19315-1 MANUAL
19315-2 PROPORTIONAL

INSIDE OF REAR COVER

MODEL NO.
19746 - HT40
19747 - HT50

19788
PROPORTIONAL CONTROL
* PROPORTIONAL ONLY

CAPACITY

| DECAL | MODEL | PART NO. |
|-------|-------|----------|
| RIGHT | HT40 | 22342-1 |
| LEFT | HT40 | 22342-2 |
| RIGHT | HT50 | 22352-1 |
| LEFT | HT50 | 22352-2 |

17389
MEDIUM
VENTURO

17389-4
SMALL
VENTURO


14473-2
GREASE

BOOM

BACK

17389-4
SMALL
VENTURO

14473-2
GREASE



MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE
DECAL PLACEMENT
HT40/50KX

DATE
10-23-08E
SUPERSEDES
9-5-07D

SECTION
C150

22171

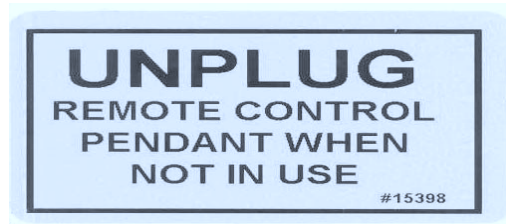
PART NO.: 15398

DECAL: UNPLUG REMOTE CONTROL

FUNCTION: To inform the operator to unplug remote control when not being used.

QUANTITY: 1

PLACEMENT: Right side of housing.



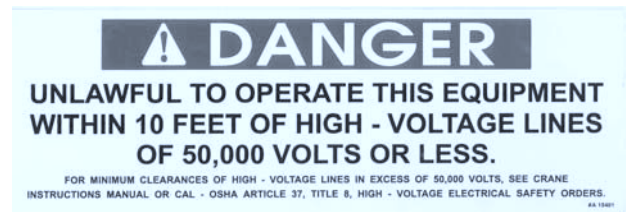
PART NO.: 15401

DECAL: UNLAWFUL TO OPERATE

FUNCTION: To inform the operator of proper operation in vicinity of power lines.

QUANTITY: 1

PLACEMENT: Right side of housing.



PART NO.: 19314-1

DECAL: MANUAL OVERRIDE (NON-PROP)

FUNCTION: To inform the operator of manual override locations.

QUANTITY: 1

PLACEMENT: Inside of rear cover.



PART NO.: 19314-2

DECAL: MANUAL OVERRIDE (NON-PROP)

FUNCTION: To inform the operator of manual override locations.

QUANTITY: 1

PLACEMENT: Inside of rear cover.



MFG., INC.
CINCINNATI, OHIO

TITLE

DECAL DRAWING & LIST

DATE

12-14-05A

SECTION

C150

HT40/50KX

SUPERSEDES

5-11-05

22181A

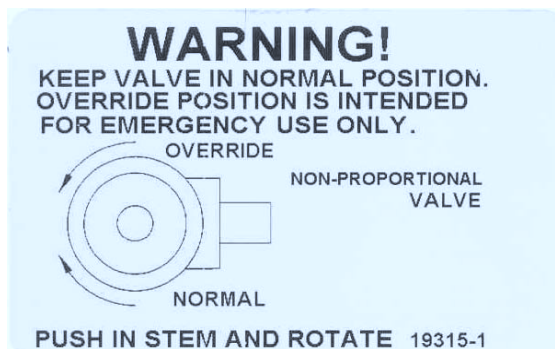
PART NO.: 19315-1

DECAL: SHUT OFF (NON-PROPORTIONAL)

FUNCTION: To show the operator how to override master shut off valve.

QUANTITY: 1

PLACEMENT: Inside rear cover.



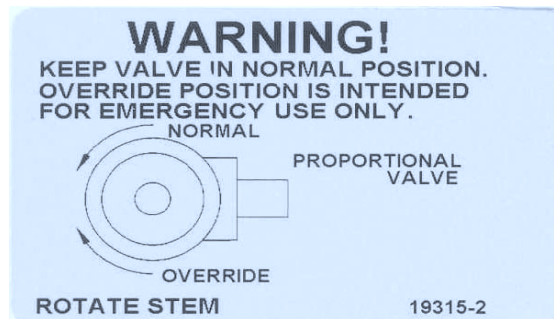
PART NO.: 19315-2

DECAL: MANUAL OVERRIDE (PROPORTIONAL)

FUNCTION: To show the operator how to override proportional valve.

QUANTITY: 1

PLACEMENT: Inside rear cover.



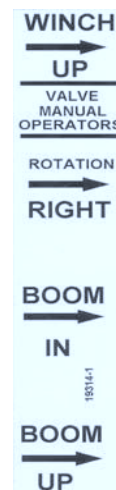
PART NO.: 22768-1

DECAL: MANUAL OVERRIDE

FUNCTION: To inform the operator of manual override locations.

QUANTITY: 1

PLACEMENT: Inside rear cover.



PART NO.: 22768-2

DECAL: MANUAL OVERRIDE

FUNCTION: To inform the operator of manual override locations.

QUANTITY: 1

PLACEMENT: Inside rear cover.



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TITLE
DECAL DRAWING & LIST

HT40/50KX

DATE
12-14-05B

SUPERSEDES
9-9-05A

SECTION
C150

22181B

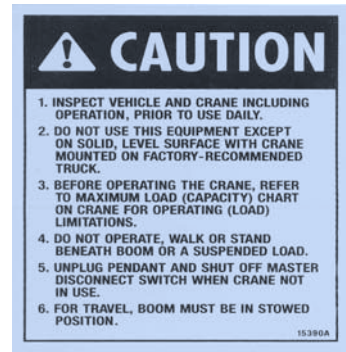
PART NO.: 15390

DECAL: CAUTION - INSPECT VEHICLE & CRANE

FUNCTION: To inform the operator of key operating requirements.

QUANTITY: 1

PLACEMENT: Left side of rear cover.



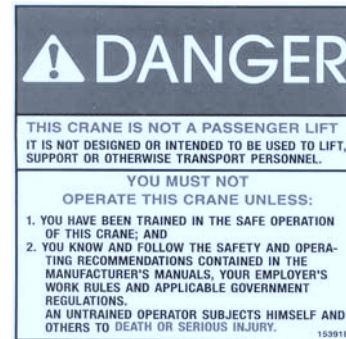
PART NO.: 15391

DECAL: DANGER - NOT PASSENGER LIFT

FUNCTION: To inform the operator not to lift, support or transport personnel, and to ensure that crane operator is adequately trained.

QUANTITY: 1

PLACEMENT: Left side of rear cover.



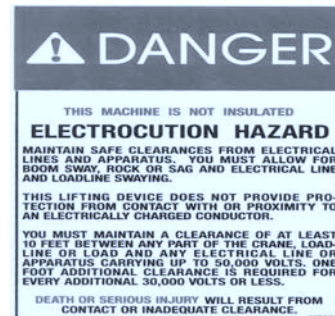
PART NO.: 15392

DECAL: DANGER - ELECTROCUTION HAZARD

FUNCTION: To inform the operator that the machine (crane) represents an electrocution hazard should it come too near or in contact with electrical voltage source.

QUANTITY: 1

PLACEMENT: Left side of rear cover.



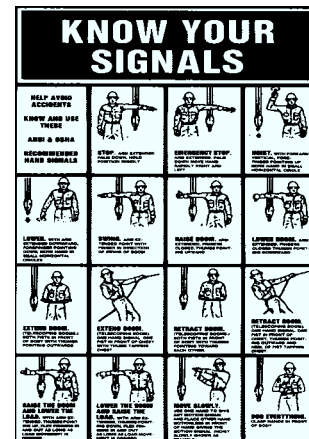
PART NO.: 22499

DECAL: KNOW YOUR SIGNALS

FUNCTION: To inform the operator of proper signals.

QUANTITY: 1

PLACEMENT: Right side of rear cover.



MFG., INC.
CINCINNATI, OHIO

TITLE

DECAL DRAWING & LIST

DATE

9-11-06B

SECTION

C150

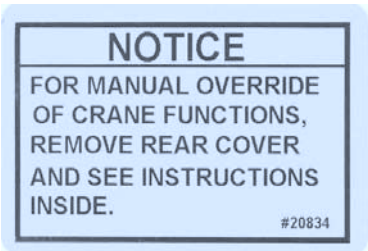
HT40/50KX

SUPERSEDES

9-9-05A

22181C

PART NO.: 20834
DECAL: FOR MANUAL OVERRIDE
FUNCTION: To inform the operator of locations
of manual override instructions.
QUANTITY: 1
PLACEMENT: Left side of rear cover.



▲
PART NO.: 17389-4
DECAL: SMALL VENTURO
FUNCTION: To show manufacturer of crane.
QUANTITY: 1
PLACEMENT: Rear cover.



MFG., INC.
CINCINNATI, OHIO

| TITLE | DATE | SECTION |
|----------------------|------------------------|---------|
| DECAL DRAWING & LIST | 9-11-06A | C150 |
| HT40/50KX | SUPERSEDES 12-15-05 | 22181D |

SECTION 200

INSTALLATION



CRANE INSTALLATION

HT40KX, HT50KX

BODY REINFORCEMENT

The truck body must be reinforced and outriggers provided to withstand the combined loads resulting from lifting and the weight of the crane and boom.

The maximum combined overturning moment for the HT40KX is 45,000 ft. lbs. and for the HT50KX is 55,000 ft. lbs.

The maximum vertical load for the HT40KX is 7100 lbs. and for the HT50KX is 9300 lbs.

CRANE MOUNTING

The crane base plate or mounting pedestal must be bolted to the body reinforcing plate with eight (8) grade five (5) bolts of 1" dia. with either coarse or fine threads. A 6" dia. hose clearance hole must be cut in this plate to allow the hoses to swing and coil freely.

ROTATION POSITIONING

The HT cranes are shipped with the boom rotated as shown on drawing 20051. It can be in any position that pleases the user since the boom can always reach the storage and travel position by rotating one way or the other.

HYDRAULIC CONNECTIONS

- ▲The crane is furnished with a pressure, return and a case drain hoses that come down through the center of the housing. The pressure and return hoses connect to two hydraulic swivels to prevent damage while rotating the crane right and left.

CAUTION: THE CASE DRAIN HOSE MUST BE A DEDICATED RETURN HOSE UNRESTRICTED TO TANK/RESERVOIR. DO NOT 'T' INTO ANOTHER EXISTING RETURN HOSE OR DAMAGE TO THE HYD. WINCH FROM BACK-PRESSURE WILL OCCUR. BACK-PRESSURE IN EXCESS OF 200 PSI WILL DAMAGE THE HYD. WINCH.

Arrange the pressure & return hoses in the compartment below the crane so that they are connected in a relaxed position while the crane is at the midpoint of the 400 degree rotation range -- regardless of the final position of the boom during storage/travel. See installation pages 22913 for more information on hose connections.

NOTE: If you purchased one of Venturo's hydraulic packages (P/N 19294-X.XXX), you will have received our pressure gauge kit. This kit includes a gauge, hose and bulkhead "T" fitting and should be installed on the pressure hose.



MFG., INC.
CINCINNATI, OHIO

TITLE
INSTALLATION DWG

HT40KX, HT50KX

DATE
6-20-11C

SUPERCEDES
7-12-10B

SECTION
C200

22172

ELECTRICAL CONNECTIONS

A 25 ft. electrical power lead - intended for 12V DC only - also comes down through the center of the crane base plate with the hoses. This lead should be looped in the compartment so that it remains relaxed throughout the 400 degree rotation of the crane.

A 15amp circuit breaker is mounted on the crane and protects the crane's internal wiring and solenoid coils. The 15amp circuit breaker does not protect the 25 foot electrical power lead. For added protection, the 25 ft. lead can be connected to a 15-20 amp protected circuit that, if possible, is powered only when the vehicle engine is running

HYDRAULIC FLUID

| <u>Average Climate</u> | <u>Type of Oil</u> |
|------------------------|--------------------|
| Cold to Moderate | ISO Grade AW 46 |
| Warm to Hot | ISO Grade AW 68 |

The fluid should have the highest anti-wear characteristics and treated to inhibit rust and oxidation.

HYDRAULIC HOSES & LINES

The minimum sizes for lines and hoses are as follows:

| | NON-PROP | PROP | ▲ |
|----------|----------|--------|---|
| PRESSURE | 3/8" | 5/8" | |
| RETURN | 1/2" | 3/4" | |
| SUCTION | 3/4" | 1-1/4" | |

RESERVOIR

The PTO reservoir should have a capacity of 10 gallons (non-proportional) or 25 gallons (proportional) fitted with 100 mesh suction screen, 10 micron return line filter, and filler/breather cap.

PTO PUMP

The PTO pump should be sized to allow an engine idle speed range that will deliver approximately 2.5 GPM for the HT40KX standard (non-proportional), 12.0 GPM for the HT40KX proportional, 3.0 GPM for the HT50KX standard or 12.0 GPM for the HT50KX proportional. The crane's relief pressure is set at 3000 psi.

PTO START-UP

Before connecting the PTO system to the crane pressure and return hoses, connect the PTO pressure and return lines together at the bulkhead. Operate the PTO system for about two (2) minutes per gallon of reservoir capacity (10 gallon reservoir 20 minutes) to flush out the lines and filter all the fluid several times.

ENGINE START/STOP & THROTTLE CONTROL

If your crane was purchased with optional engine start/stop and throttle control, refer to drawing 22615 in the replacement parts section for further information.



MFG., INC.
CINCINNATI, OHIO

TITLE
INSTALLATION DWG

HT40KX, HT50KX

DATE
7-12-10C

SUPERCEDES
11-4-08B

SECTION
C200

22173

CRANE OPERATION AND MAINTENANCE INSTRUCTIONS

HT40KX, HT50KX

SAFETY

Before operating this crane, read and understand these instructions, the 920612 Crane Safety and Hazards Information Sheet, and review all safety & instruction labels on the crane.

CRANE INSPECTION

Before operating this crane, inspect for wear, damage, or oil leakage. After the wire rope has been run out, check for wear, kinks, and broken strands. Check the hook and safety latch for damage. Correct any problems before using the crane.

CAPACITY

Before operating this crane, review the capacity charts on the sides of the boom to relate the load to be lifted to the boom length and angle. The boom angle is shown by a gravity arrow.

SNATCH BLOCK

If the load exceeds 3000 lbs.-HT40KX or 4000 lbs.-HT50KX or if reduced winching speed for better control of smaller loads is required, use the snatch block to rig the crane for two part line operation.

CONTROLS

This crane is operated by a remote control pendant. The pendant should be unplugged and stored in a compartment when the crane is not in use.

Before plugging the pendant in, inspect the plug, socket, cord, pendant head, and switches for damage. Actuate all four switches both ways to verify that they all have the same feel and sound and that they return to the center position.

Plug the pendant into the socket on the right side of the crane and snap the strain relief tether to the crane housing.

PTO SYSTEM

Check the hydraulic fluid level in the PTO system reservoir. Engage PTO and set the engine idle speed to provide the desired hydraulic flow rate per the PTO system instructions. A lower idle setting may be used for more delicate spotting of loads if required.

CRANE OPERATION

Use "Winch Down" to release tension on the wire rope to unhook it from the storage tie down position.

Use "Boom Up" to elevate the boom from the boom rest position.

Avoid repeated rapid reversals of the control switches. This can cause the load to swing.

Check all control functions to see that they are working as described in the following section.



MFG., INC.
CINCINNATI, OHIO

TITLE
INSTALLATION DWG

HT40KX, HT50KX

DATE
8-12-99B

SUPERCEDES
7-17-97

SECTION
C200

22345a

CONTROL FUNCTIONS

WINCH "UP" and "DOWN" - Raises and lowers the load with the winch.

BOOM "UP" and "DOWN" - Raises and lowers the boom elevation angle. The boom elevates from 8 degrees below horizontal to 75 degrees above horizontal.

BOOM "OUT" and "IN" - Extends and retracts the boom. The boom hydraulic extension stroke is 6 ft. or 10 ft.

ROTATION "L" and "R" - Controls the left and right direction of the crane rotation. The crane rotation is limited to 400 degrees.

POWER - (Non Proportional Systems) Energizes safety shutoff valve. See page 22328 for detailed operations instructions and warnings.

TRIGGER (Proportional Systems Only) - Varies the flow rate delivered to the crane valve. The farther the trigger is pulled, the faster the selected crane function operates.

OVERLOAD SENSING SYSTEM

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

For crane models HT25 serial numbers 80157, HT40 serial numbers 84092 and HT50 serial numbers 85086 and below, the Overload 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. Cranes with serial numbers above the aforementioned have been modified to allow the Overload system to remain active at the top of boom travel.

TWO-BLOCK SENSING SYSTEM

This crane is equipped with an anti two-block device that is mounted at the tip of the boom. If the snatch block/overhaul weight contacts the device the "Winch Up", "Boom Down", and "Boom Out" functions are disabled. The "Winch Down", "Boom Up", and "Boom In" functions will continue to operate and can be used to relieve the two-block condition. ▲

TELESCOPIC HEXAGONAL BOOM

The hexagonal shaped boom shall telescope to provide a horizontal reach range of 10 ft. to 20 ft. using a hydraulic power extension cylinder with a 10 ft. stroke. See page 22930. A 6 ft. hydraulic power extension and a 4 ft. manual extension section is also available. See page 22917.

TRUCK SETUP & OUTRIGGERS

1. The truck should be parked on ground that is as level and as firm as possible when using the crane.
2. The center of the crane should be positioned close enough to the job so that it can be operated at a reach that puts the load within the rated capacity of the crane.



MFG., INC.
CINCINNATI, OHIO

TITLE
INSTALLATION DWG

HT40KX, HT50KX

DATE
6-20-11H

SUPERCEDES
7-22-10G

SECTION
C200

22345b

3. Set the vehicle parking brake and put the vehicle transmission in "park" if it is an automatic.
4. Deploy the outriggers to help stabilize the vehicle against rocking or overturning when lifting with the crane.

PREPARATION FOR TRAVEL

1. Return the outriggers to the stowed position. Install and secure all pins.
2. Stow the crane boom in the boom support.
3. Hook the winch line to a tie down point on the body or pedestal and apply tension.
4. Disengage the PTO pump and idle speed control.
5. Unplug the control pendant and store in a body compartment or the cab.

MAINTENANCE

The crane requires only periodic lubrication. As a standard procedure, this can be done at the time the vehicle is serviced.

The winch planetary gearbox lube should be maintained at the level plug.

To ensure optimal winch performance, the following lube schedule and lube specifications should be followed:

Initial Change - after 6 weeks or 10 hours of operation.

Periodic Change - on an annual basis or every 50 hours of operation.

| <u>Temp Range (°F)</u> | <u>Winch Hydraulic Oil</u> |
|------------------------|----------------------------|
| 120 to 10 | SAE 50 |
| 40 to -25 | 75W90 |
| 30 to -50 | Conoco DN600 or equivalent |

Service grease fittings and rotation gear with molybdenum-disulfide graphite-filled lithium-based extreme pressure grease.

Grease fitting locations:

- Boom pivot at rear of boom
- Speed reducer (2 fittings)
- Elevation cylinder tail clevis
- Bottom of Swing Bearing (2 fittings)

Remove rear cover and check all hydraulic tube and hose fittings for tightness.

Check electrical connections for looseness and corrosion.



MFG., INC.
CINCINNATI, OHIO

TITLE

INSTALLATION DWG

DATE

2-3-09A

SECTION

C200

HT40KX, HT50KX, HT66KX

SUPERCEDES

5-13-05

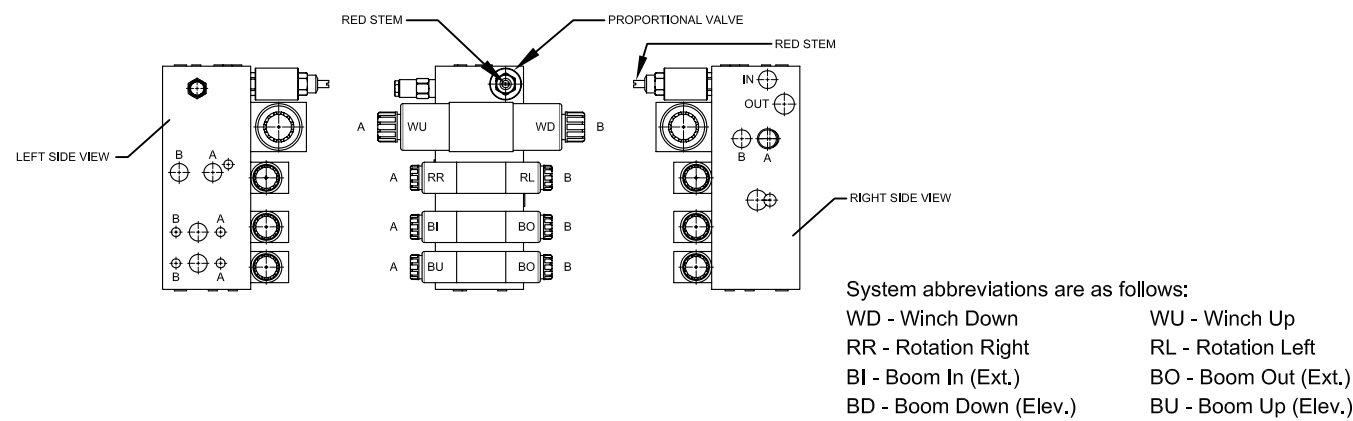
22174

EXPLANATION OF HYDRAULIC VALVE SYSTEM

OVERVIEW

This proportional crane utilizes a proportional valve, which controls the rate at which the hydraulic fluid flows through the valve bank. When the proportional valve is fully closed, hydraulic fluid bypasses the valve bank and returns directly to the tank. When the proportional valve is fully open, hydraulic fluid cycles through the valve bank and allows the crane to function at full speed. When the proportional valve is at any setting between, a portion of the fluid is allowed through the valve bank, with the remainder returning directly to the tank.

The four crane functions (winch, rotation, boom elevation, and boom extension) are controlled by four separate valve sections. Each valve section has two solenoid coils (and two manual overrides) which control the direction that the function operates (e.g. winch up vs. winch down). For a given crane function and direction (e.g. winch up) the solenoid coil and the associated manual override lie on the same side of the valve bank (both "push").



MANUAL OVERRIDE SYSTEM

Should an electrical failure occur, your Ventura crane can be operated manually. **The manual overrides are intended for emergency use only and should not be used for normal operation.**

To operate in manual override mode:

- Override the proportional valve by turning the red stem on the valve as stated below.
 - For override operation, rotate stem clockwise (the farther the stem is turned the faster the crane will operate).
 - To return to normal operation, rotate the stem counterclockwise until it stops.
- Determine the coil/override associated with the function you wish to operate, then insert a small diameter object (an allen wrench works well) into the detent on the end of the valve stem and press firmly inward. For example, pushing the stem labeled A on the first bank (refer to the illustration) will actuate winch up.

Warning! For normal crane operation, the proportional valve must be in the "normal" position (as described above). To verify "normal" operation, you may set the pendant (or radio) control aside and actuate a single crane function by pushing "in" on any of the manual override pins, located at the ends of each function control valve. If that function operates, the proportional valve is still in manual override. Check the position of the proportional valve "red thumb screw" to insure that it is fully counterclockwise.

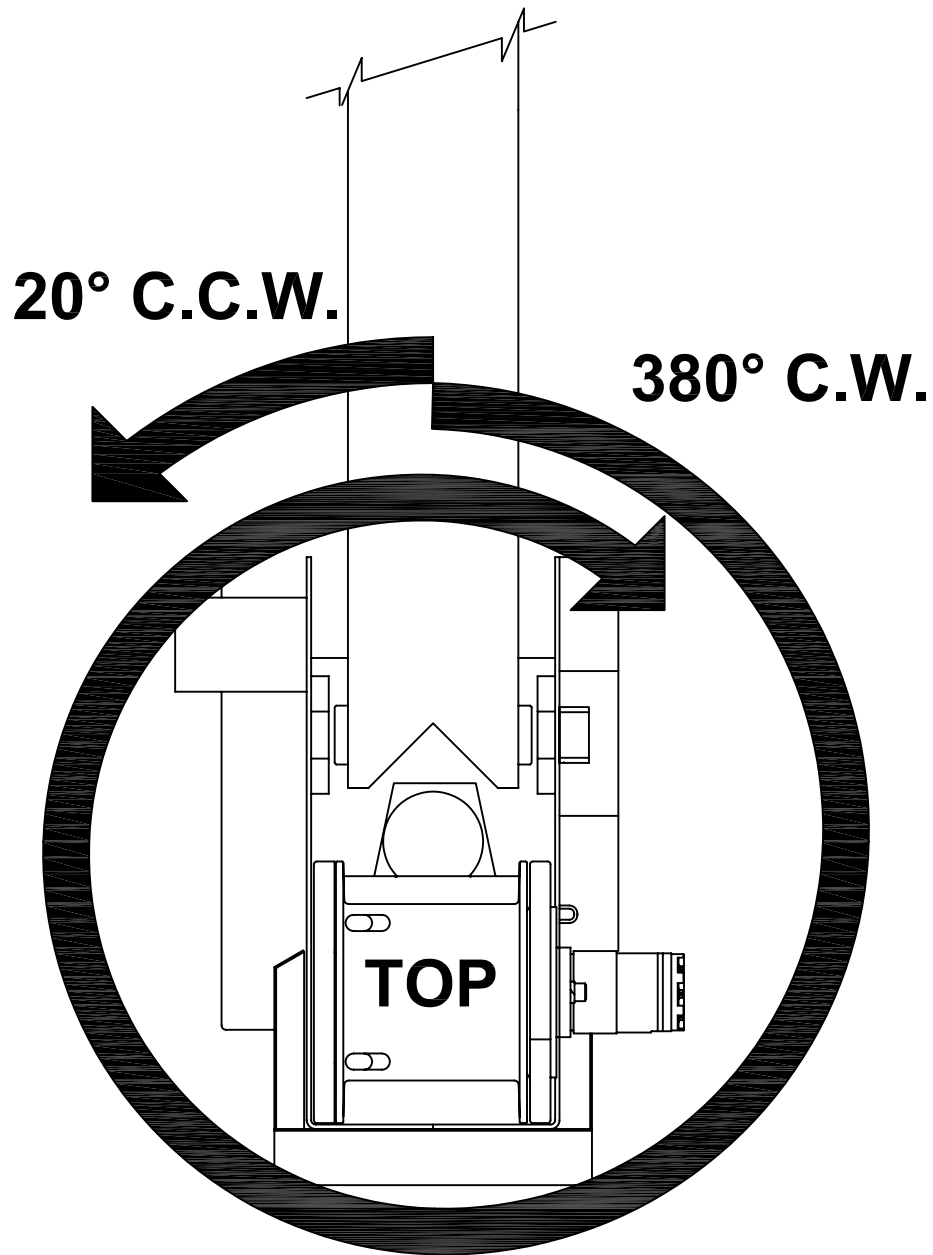
EMERGENCY STOP

In the unlikely event that a function of the crane does not stop once the function's toggle switch is released, the Proportional crane can be stopped by releasing the trigger.



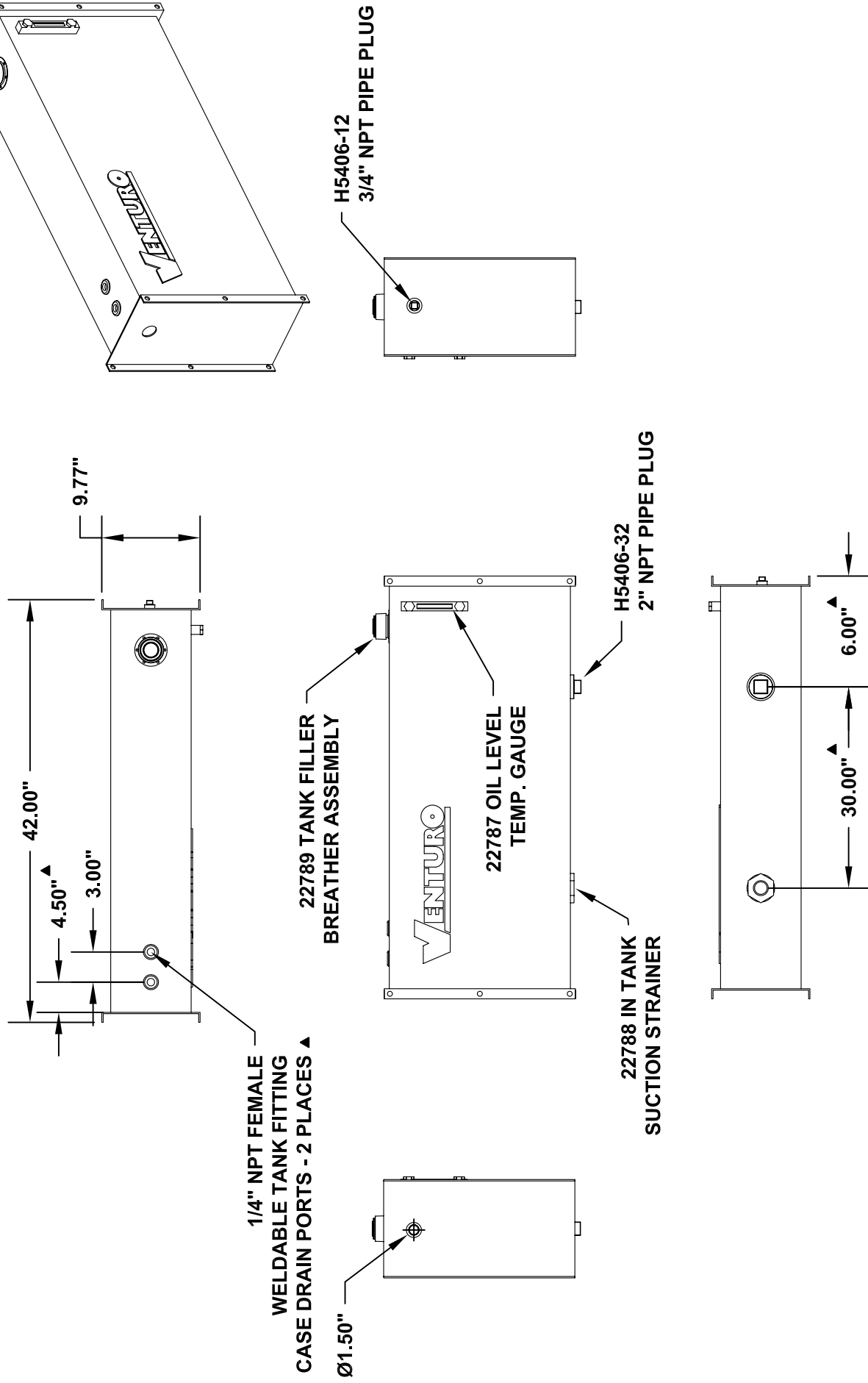
MFG., INC.
CINCINNATI, OHIO

| | | |
|-------------------|-----------------------|---------|
| TITLE | DATE | SECTION |
| HYDRAULIC SYSTEM | 05-25-11B | C200 |
| HT40/50/66 - PROP | SUPERSEDES 5-26-05 | 22168 |



This Venturo crane is shipped with the rotation orientation as shown above. To change the orientation rotate crane base prior to mounting to suit your application.

22785 BULKHEAD MOUNT OIL RESERVOIR

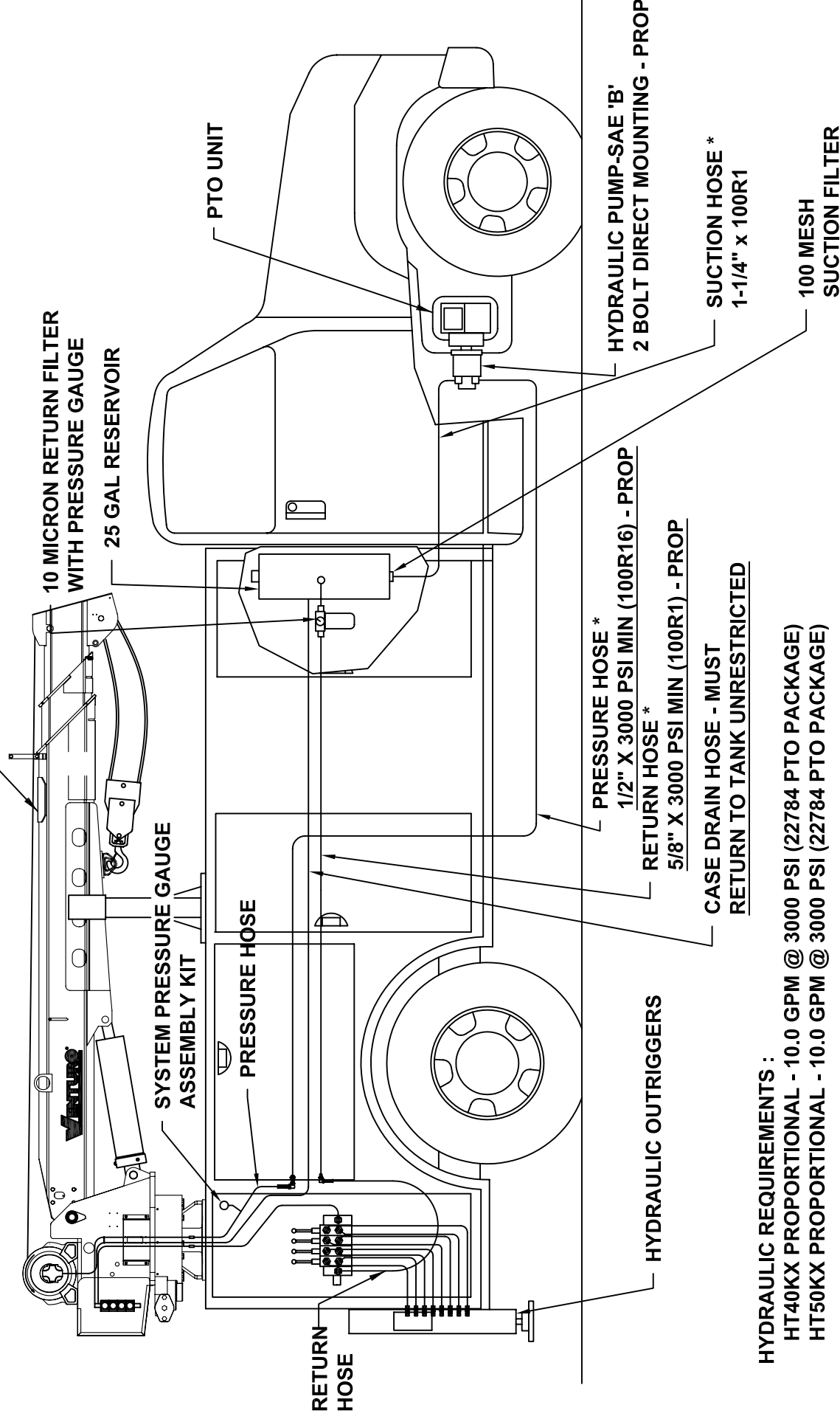


| | | | | |
|--|--|--|-------------------------------|---------------------|
|  MANUFACTURING, INC. CINCINNATI, OHIO | TITLE 25 GALLON HYDRAULIC TANK | | DATE 8-26-09C | SECTION - |
| | - | | SUPERSEDES 11-5-08B | 22825 |

CAUTION: THE CASE DRAIN LINE FROM THE WINCH MUST HAVE AN UNRESTRICTED PATH TO TANK/RESERVOIR.

HT40/50KX PROPORTIONAL CRANE

FOR INFORMATION ON OUR
PTO PACKAGES REFERENCE 22448



HYDRAULIC REQUIREMENTS :

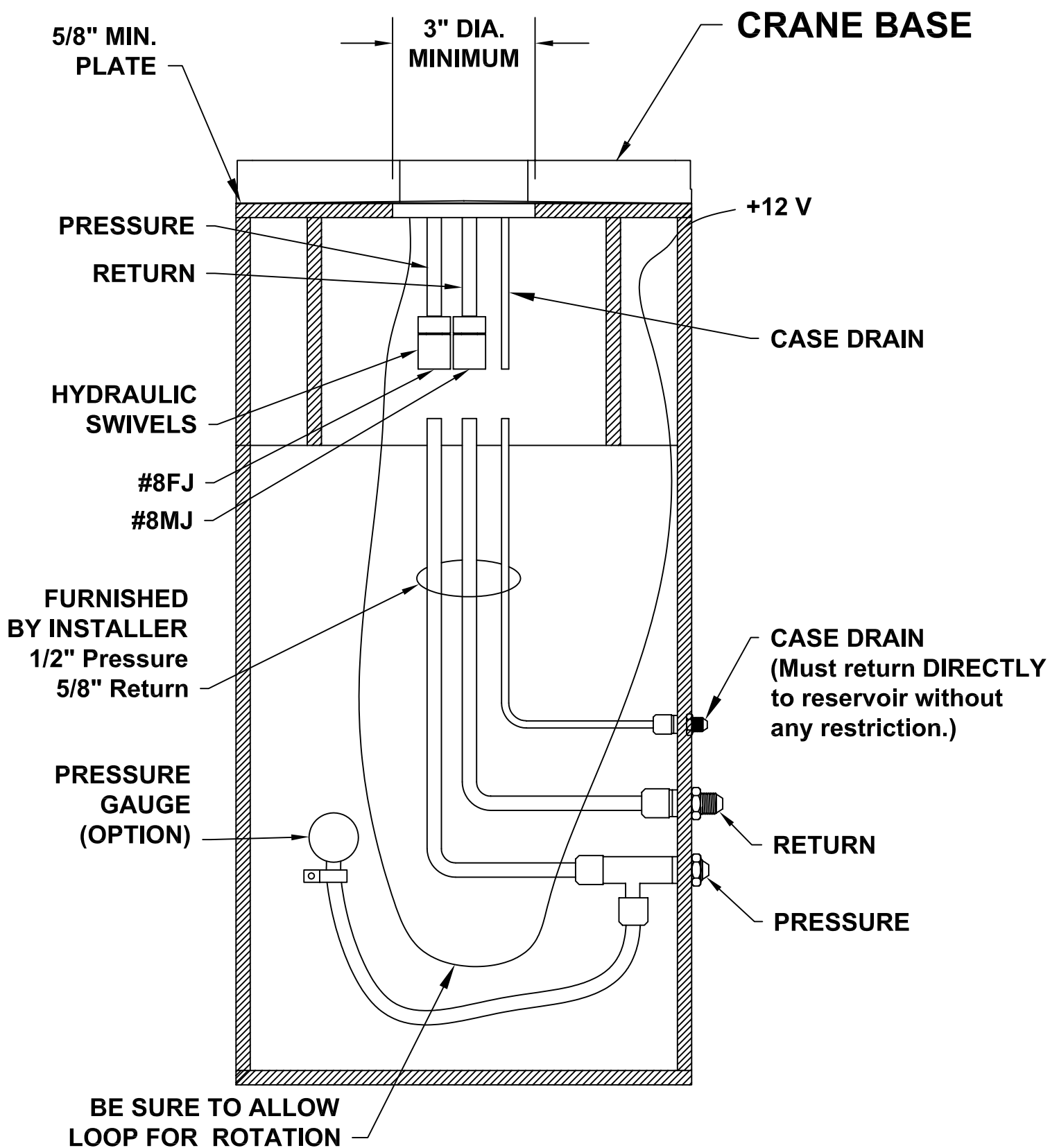
HT40KX PROPORTIONAL - 10.0 GPM @ 3000 PSI (22784 PTO PACKAGE)

HT50KX PROPORTIONAL - 10.0 GPM @ 3000 PSI (22784 PTO PACKAGE)

SEE INSTALLATION INSTRUCTIONS 22344 (2 PAGES).

* HOSES OR FITTINGS BETWEEN PUMP, RESERVOIR, AND CRANE NOT INCLUDED.

| | | | | |
|--|-----------------------------------|--|-----------------------------|------------------------|
|  MANUFACTURING, INC. CINCINNATI, OHIO | TITLE INSTALLATION DWG | | DATE 7-21-08A | SECTION C200 |
| | PTO INST - HT40/50 (PROPORTIONAL) | | SUPERSEDES 1-4-07 | 22883 |



MFG., INC.
CINCINNATI, OHIO

TITLE
CRANE & HOSE INST.

HT40/50/66 - PROP

DATE
9-10-09B

SUPERSEDES
2-3-09A

SECTION
C200

22913

WIRE ROPE INSTALLATION

STEP 1: UNWIND COIL OF WIRE ROPE BY 'ROLLING' ALONG THE FLOOR. THIS WILL PREVENT 'KINKING'.

STEP 2: INSERT WIRE ROPE END THROUGH ANTI-TWO-BLOCK WEIGHT.

STEP 3: INSERT WIRE ROPE END INTO POCKET OPENING ON WINCH AND THROUGH WEDGE POCKET AS SHOWN IN (FIG 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 (3) TURNS OF WIRE ROPE ON THE WINCH DRUM WHILE UNDER LOAD.

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

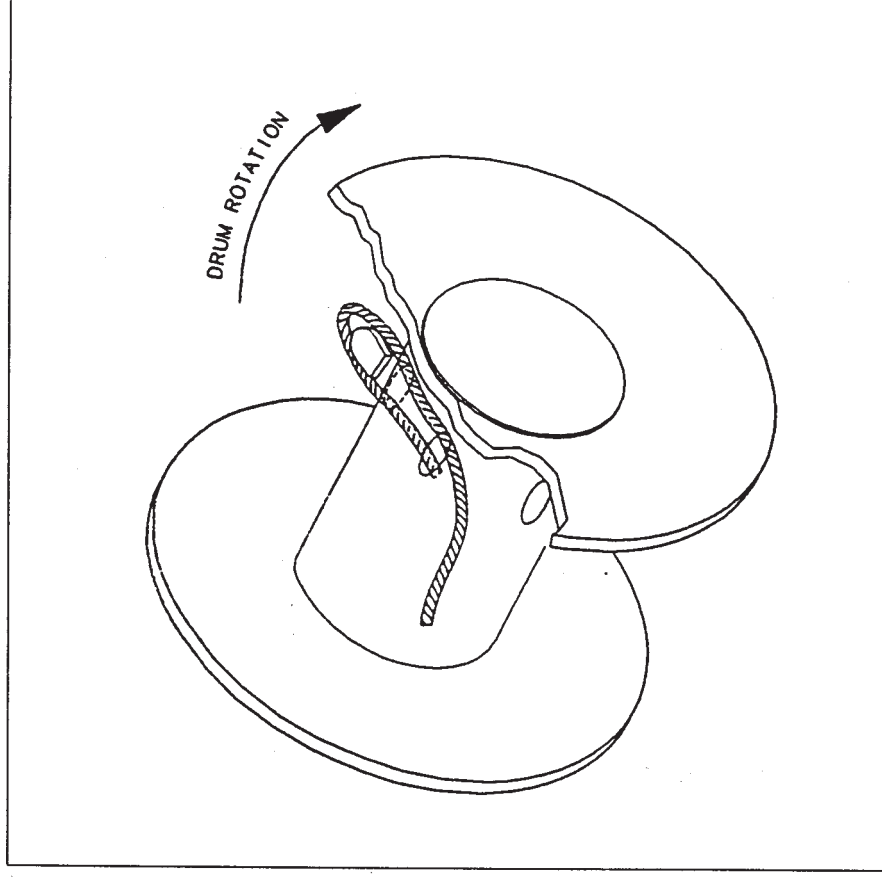


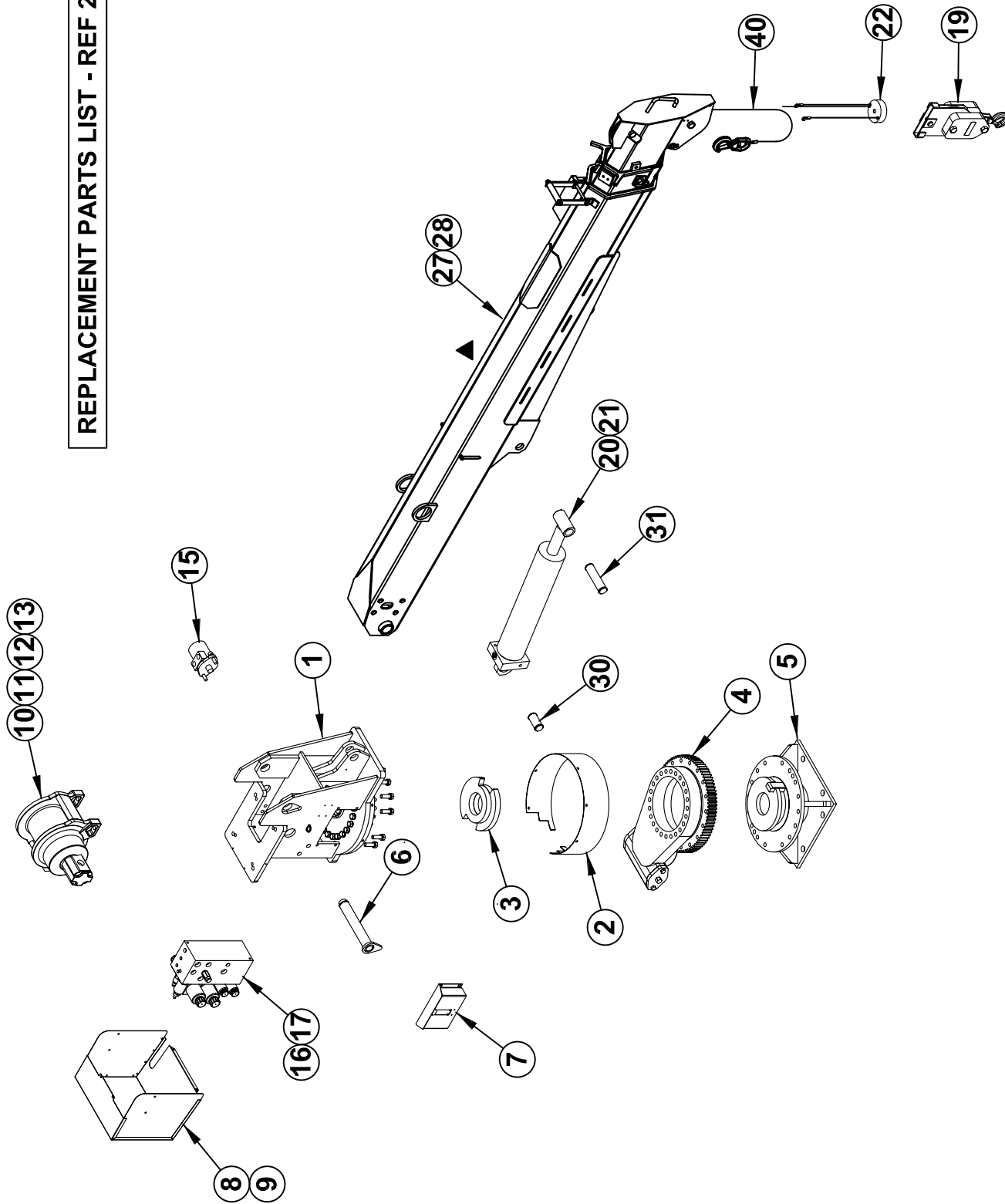
FIG 1

SECTION 400

PARTS



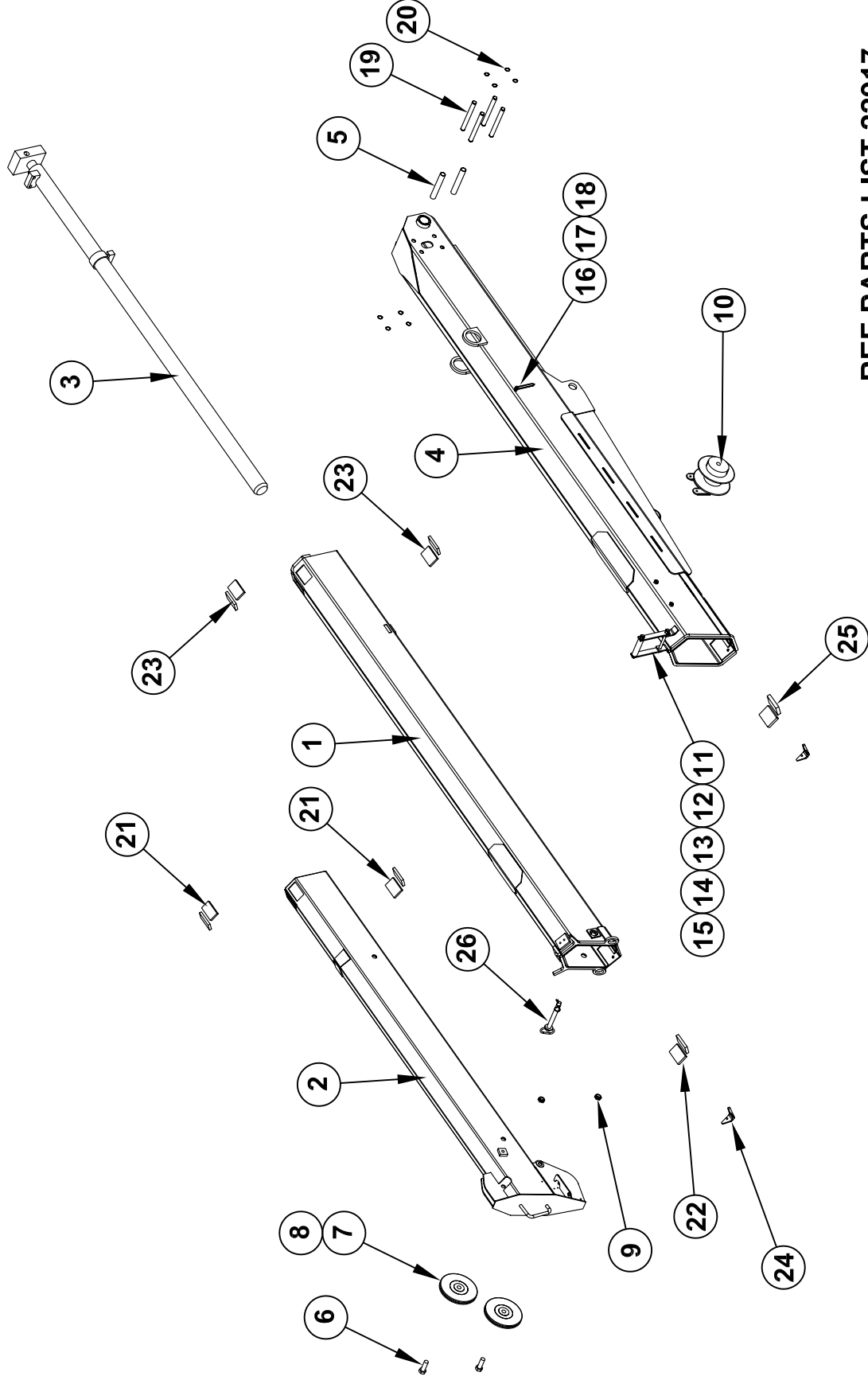
REPLACEMENT PARTS LIST - REF 22988




| ITEM # | PART # | DESCRIPTION | ITEM # | PART # | DESCRIPTION |
|--------|---------------|--|--------|--------|--|
| 1 | 27033 | HOUSING WELDED ASSEMBLY | 41 | - | - |
| 2 | 22726 | OUTER RING | 42 | - | - |
| 3 | 22702 | ROTATION STOP RING WELDED ASSEMBLY | 43 | - | - |
| 4 | 22704 | SLEWING RING | 44 | - | - |
| 5 | 22710 | PEDESTAL WELDED ASSEMBLY | 45 | - | - |
| 6 | 22721 | PIVOT PIN MAIN BOOM PIVOT | 46 | - | - |
| 7 | 22715 | SIDE COVER | 47 | - | - |
| 8 | - | - | 48 | - | - |
| 9 | 22842 | REAR HYD. VALVE COVER FOR PROP. & NON-PROP. APPLC. | 49 | - | - |
| 10 | 22828 | WINCH - 3000 LB (SINGLE LINE) - HT40KX - NON-PROP | 50 | - | - |
| 11 | 22829 | WINCH - 3000 LB (SINGLE LINE) - HT40KX - PROP | 51 | 22920 | FIELD SERVICE LABEL KIT - HT40KX NON-PROP. |
| 12 | 22909 | WINCH - 4000 LB (SINGLE LINE) - HT50KX-NON-PROP | 52 | 22921 | FIELD SERVICE LABEL KIT - HT40KX PROPOR- |
| 13 | 22830 | WINCH - 4000 LB (SINGLE LINE) - HT50KX-PROP | TIONAL | | |
| 14 | - | - | 53 | 22924 | FIELD SERVICE LABEL KIT - HT50KX NON-PROP. |
| 15 | 19177 | HYDRAULIC ROTATION MOTOR | 54 | 22925 | FIELD SERVICE LABEL KIT - HT50KX PROPOR- |
| 16 | 22501 | HYDRAULIC VALVE ASSEMBLY - NON-PROP | TIONAL | | |
| 17 | 22736L | HYDRAULIC VALVE ASSEMBLY - PROP. | 55 | - | - |
| 18 | - | - | 56 | - | - |
| 19 | 17949 | SNATCHBLOCK ASSEMBLY | 57 | - | - |
| 20 | 21747 | ELEV. CYL. 4.5" BORE x 2" ROD x 19.63" STROKE | 58 | - | - |
| 21 | 22022-1 | ELEV. CYL. 5" BORE x 2" ROD x 19.63" STROKE | 59 | - | - |
| 22 | - | - | 60 | - | - |
| 23 | - | - | 61 | - | - |
| 24 | - | - | 62 | - | - |
| 25 | - | - | 63 | - | - |
| 26 | - | - | 64 | - | - |
| 27 | 21420 | BOOM ASSEMBLY - HT40/50KX | 65 | - | - |
| 28 | 21410 | BOOM ASSEMBLY - HT40/50KXX | 66 | - | - |
| 29 | - | - | 67 | - | - |
| 30 | 22256 | ELEVATION CYLINDER PIN - INBOARD | 68 | - | - |
| 31 | 22257 | ELEVATION CYLINDER PIN - OUTBOARD | 69 | - | - |
| 32 | - | - | 70 | - | - |
| 33 | - | - | 71 | - | - |
| 34 | - | - | 72 | - | - |
| 35 | - | - | 73 | - | - |
| 36 | - | - | 74 | - | - |
| 37 | - | - | 75 | - | - |
| 38 | - | - | 76 | - | - |
| 39 | - | - | 77 | - | - |
| 40 | 17094-3/8-100 | WIRE ROPE ASSEMBLY - 3/8" x 100 FT | 78 | - | - |
| | | ITEM NOT SHOWN ON REPLACEMENT PARTS DRAWING | 79 | - | - |
| | | REPLACEMENT PARTS DWG REF 22987 | 80 | - | - |

| | | | | | |
|---|----------------|------|-------------------|------------|---------|
|  VENTURO MANUFACTURING, INC. CINCINNATI, OHIO | TITLE | | REPLACEMENT PARTS | | SECTION |
| | HT40KX, HT50KX | | HT40KX, HT50KX | | C400 |
| | | DATE | 08-18-11D | SUPERCEDES | 22988 |

21420 BOOM PARTS DRAWING (POWER / MANUAL)



REF PARTS LIST 22917

| | | | | | | | |
|--|-------|--|--------------------------|------|------------|----------|-------|
|  MANUFACTURING, INC. CINCINNATI, OHIO | TITLE | | 21420 BOOM PARTS DRAWING | DATE | 7-14-10B | SECTION | C400 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | HT40/50KX - HEX BOOM | | SUPERSEDES | 3-19-08A | 22916 |

21420 BOOM PARTS LIST

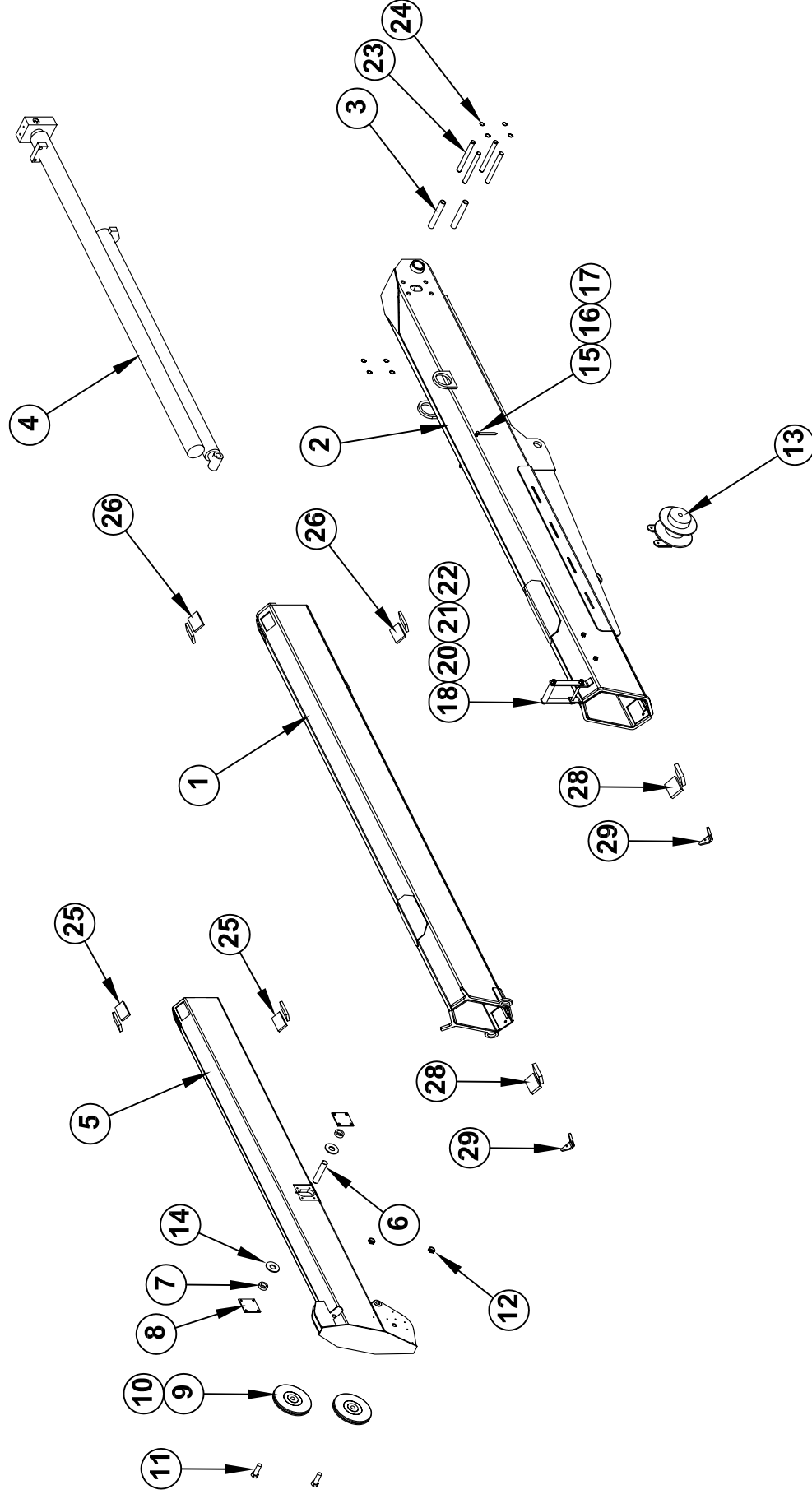
| | | | |
|---------------------------|---|---------------|---|
| 26 | 1 | 14600 | HITCH PIN ASSEMBLY |
| 25 | 2 | 23217-4 | UHMW GUIDE PAD |
| 24 | 2 | 23183 | V-BLOCK SLIDER |
| 23 | 4 | 23217-2 | UHMW GUIDE PAD |
| 22 | 2 | 23217-5 | UHMW GUIDE PAD |
| 21 | 4 | 23217-1 | UHMW GUIDE PAD |
| 20 | 8 | ISRNG-075 | RETAINING RING - 3/4" SHAFT DIA. |
| 19 | 4 | 22255 | EXTENSION CYLINDER THRUST PIN |
| 18 | 2 | IANUT-02520S | ACORN NUT 1/4-20 STAINLESS |
| 17 | 2 | 13459-2 | BOOM ARROW 4-7/16 LONG |
| 16 | 2 | 22490 | SPACER, BOOM ARROW 1/2" O.D. |
| 15 | 2 | ILNUT-04414 | NYLON INSERT LOCK NUT - 7/16-14 |
| 14 | 1 | IHHCS04414550 | HEX HEAD CAP SCREW - 7/16-14 X 5-1/2 LG |
| 13 | 1 | 21560 | ROLLER,UHMW GUIDE |
| 12 | 1 | 21936 | FLAT,MOUNT;WIRE ROPE GUIDE |
| 11 | 1 | 21935 | WIRE-ROPE GUIDE WELDED |
| 10 | 1 | 27034 | ANTI 2 BLOCK CORD REEL ASSEMBLY |
| 9 | 2 | ILNUT-07510 | LOCKNUT 3/4-10 |
| 8 | 2 | 23929 | SPACER - 23927 & 23928 POLY SHEAVES |
| 7 | 2 | 23928 | BOOM SHEAVE WITH BUSHING |
| 6 | 2 | 17059-1 | SHEAVE AXLE |
| 5 | 2 | 24535 | THRUST ROLLER |
| 4 | 1 | 27207 | PRIMARY BOOM WELDED ASSEMBLY |
| 3 | 1 | 22032-H | EXTENSION CYLINDER |
| 2 | 1 | 27214 | TERTIARY BOOM ASSEMBLY |
| 1 | 1 | 27212 | SECONDARY BOOM TUBE WELDED ASSEMBLY |
| ITEM NO. QTY. PART NUMBER | | | DESCRIPTION |

REF PARTS DRAWING 22916


| | | | | |
|---|------------|--|------------------------|-----------------|
|  VENTURO MANUFACTURING, INC. CINCINNATI, OHIO | TITLE | | REPLACEMENT PARTS LIST | |
| | DATE | | 7-14-10C | SECTION C400 |
| | SUPERSEDES | | 10-27-09B | 22917 |

HT40/50KX

21410 BOOM PARTS DRAWING (FULL POWER)



REF. PARTS LIST 22931

| | | | | |
|--|---|--|-------------------------------------|-------------------------------|
|  MANUFACTURING, INC. CINCINNATI, OHIO | TITLE 21410 BOOM PARTS DRAWING | | DATE 7-14-10B | SECTION C400 |
| | HT40/50KXX BOOM | | SUPERSEDES 6-3-08A | 22930 |

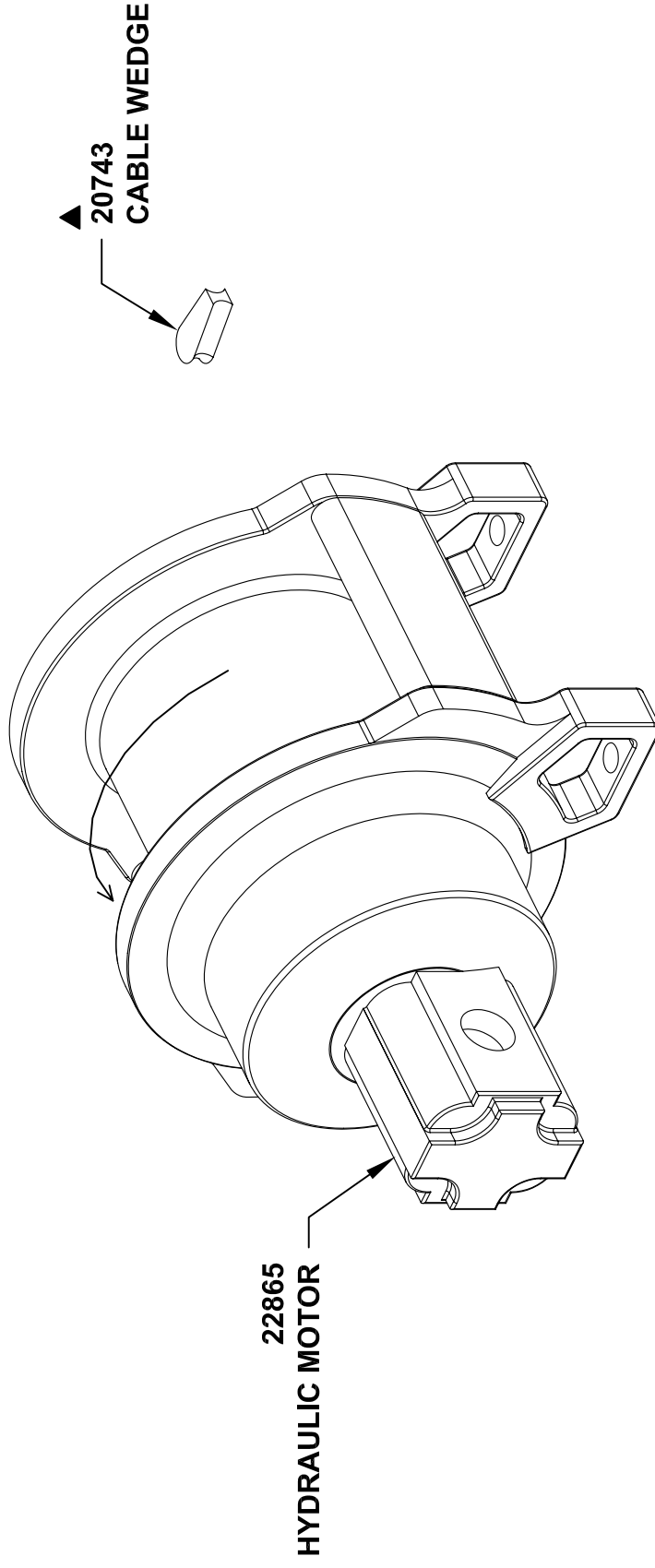
21410 BOOM PARTS LIST

| | | | |
|----------|---------------|---------------|-------------------------------------|
| 28 | 2 | 23183 | V-BLOCK SLIDER |
| 27 | 4 | 23217-4 | UHMW GUIDE PAD |
| 26 | 4 | 23217-2 | UHMW GUIDE PAD |
| 25 | 4 | 23217-1 | UHMW GUIDE PAD |
| 24 | 8 | ISRNG-075 | RETAINING RING - 3/4" SHAFT DIA. |
| 23 | 4 | 22255 | EXTENSION CYLINDER THRUST PIN |
| 22 | 2 | ILNUT-04414 | NYLON INSERT LOCK NUT - 7/16-14 |
| 21 | 1 | 21560 | ROLLER,UHMW GUIDE |
| 20 | 1 | !HHCS04414550 | HHCS - 7/16-14 X 5-1/2 LG |
| 19 | 1 | 21936 | FLAT,MOUNT;WIRE ROPE GUIDE |
| 18 | 1 | 21935 | WIRE-ROPE GUIDE WELDED |
| 17 | 2 | !ANUT-02520S | ACORN NUT 1/4-20 STAINLESS |
| 16 | 2 | 13459-2 | BOOM ARROW 4-7/16 LONG |
| 15 | 2 | 22490 | SPACER, BOOM ARROW 1/2" O.D. |
| 14 | 2 | !FWSH-100 | FLAT WASHER - 1" |
| 13 | 1 | 27034 | A2B CORD REEL |
| 12 | 2 | !JNUT-07510N | NYLON LOCK-JAMNUT 3/4-10 |
| 11 | 2 | 17059-1 | SHEAVE AXLE |
| 10 | 2 | 23929 | SPACER - 23927 & 23928 POLY SHEAVES |
| 9 | 2 | 23928 | BOOM SHEAVE WITH BUSHING |
| 8 | 2 | 23116 | PIN BLOCK REINFORCING |
| 7 | 2 | 21428 | BUSHING |
| 6 | 1 | 21405 | PIN - CYLINDER |
| 5 | 1 | 21416 | TERTIARY BOOM ASSEMBLY |
| 4 | 1 | 21744 | EXTENSION CYLINDER |
| 3 | 2 | 24535 | THRUST ROLLER |
| 2 | 1 | 27207 | PRIMARY BOOM WELDED ASSEMBLY |
| 1 | 1 | 27209 | SECONDARY BOOM WELDED ASSEMBLY |
| ITEM NO. | EXPLODED/QTY. | PART NUMBER | DESCRIPTION |

REF PARTS DRAWING 22930

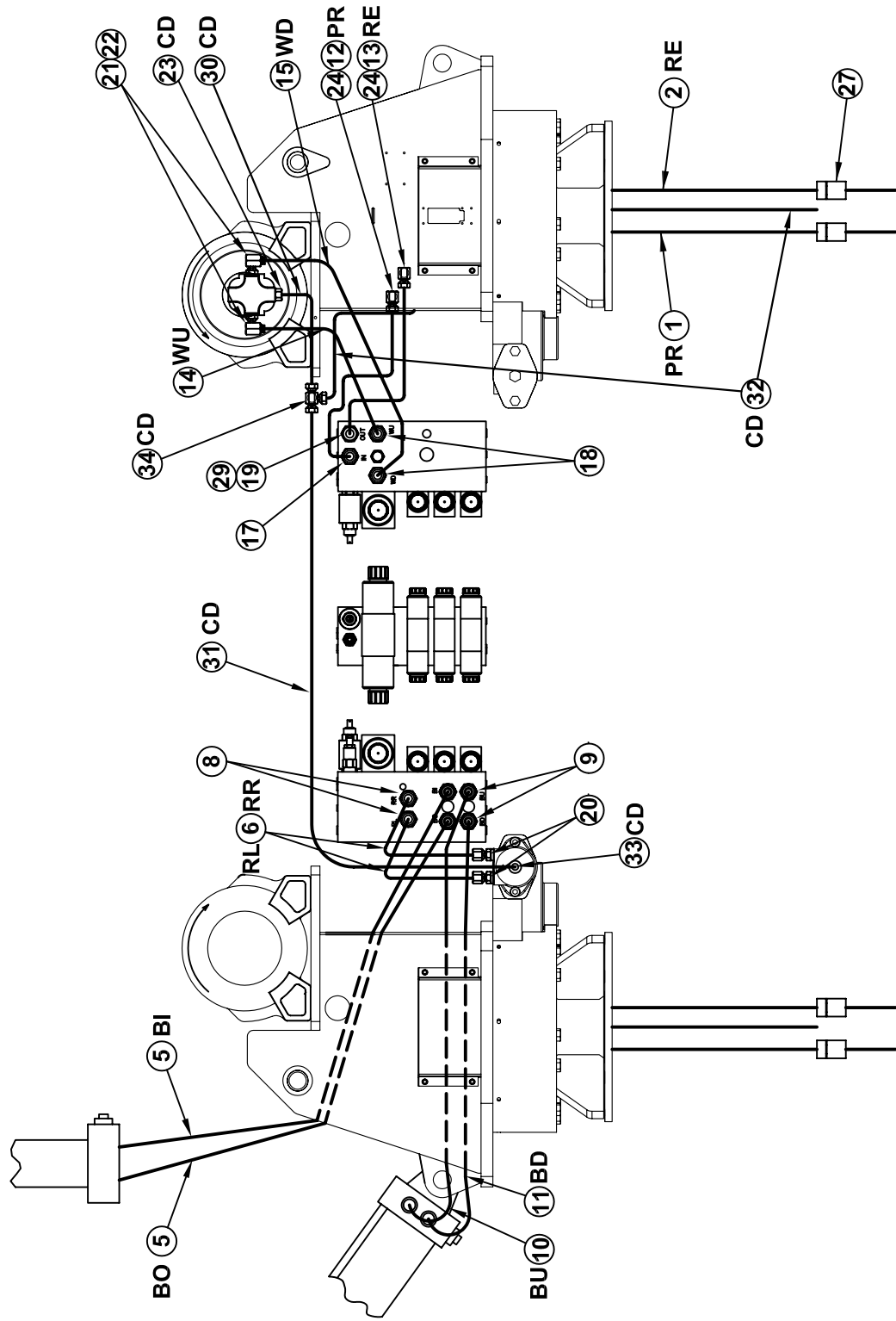
| | | | | | |
|---|------------|--|------------------------|-------|---------|
|  VENTURO MANUFACTURING, INC. CINCINNATI, OHIO | TITLE | | REPLACEMENT PARTS LIST | DATE | SECTION |
| | HT40/50KXX | | 3-23-11D | C400 | |
| | | | SUPERSEDES 7-14-10C | 22931 | |

REPLACEMENT PARTS 22830 WINCH



| | | | | |
|---|-----------------------------------|--|----------------------|---------|
| VENTURO MANUFACTURING, INC. CINCINNATI, OHIO | TITLE | | DATE | SECTION |
| | REPLACEMENT PARTS DRAWING | | 7-21-08A | - |
| | 22830 ROTZLER WINCH - HT50KX PROP | | SUPSEDES 12-18-06 | 22876 |


REPLACEMENT PARTS LIST REF 22979



LEFT SIDE VIEW

RIGHT SIDE VIEW

| | |
|----|----------------|
| CD | CASE DRAIN |
| RR | ROTATION RIGHT |
| RL | ROTATION LEFT |
| BO | BOOM OUT |
| BI | BOOM IN |
| BU | BOOM UP |
| BD | BOOM DOWN |
| PR | PRESSURE |
| RE | RETURN |
| WU | WINCH UP |
| WD | WINCH DOWN |



MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE

REPLACEMENT PARTS DRAWING

HT40/50KX PROP. HYD. COMPONENTS

DATE

11-12-09

SUPERSEDES

-

SECTION

C400

22978

HYDRAULIC SYSTEM COMPONENTS - HT40/50KX CRANES

REPLACEMENT PARTS LIST

| ITEM | PART NUMBER | DESCRIPTION |
|------|--------------|---|
| 1 | 22760 | HOSE ASSY. - PRESSURE (SOURCE TO BULKHEAD) |
| 2 | 22761 | HOSE ASSY. - RETURN (BULKHEAD TO RESERVOIR) |
| 3 | - | - |
| 4 | - | - |
| 5 | 27592 | HOSE ASSY. BOOM IN / OUT |
| 6 | 27598 | HOSE ASSY. - ROTATION |
| 7 | - | - |
| 8 | FF6400-0606 | ADAPTER - 6OFS - 6MO (VALVE BLOCK: ROTATION LT / RT) |
| 9 | FF6801-0606 | ELBOW - 6OFS - 6MO (BOOM UP / DOWN) |
| 10 | 27026 | HOSE ASSY - BOOM UP |
| 11 | 27027 | HOSE ASSY - BOOM DOWN |
| 12 | 22758 | HOSE ASSY - PRESSURE (BULKHEAD TO VALVE) |
| 13 | 22759 | HOSE ASSY - RETURN (BULKHEAD TO VALVE) |
| 14 | 27024 | HOSE ASSY - WINCH UP |
| 15 | 27025 | HOSE ASSY - WINCH DOWN |
| 16 | - | - |
| 17 | H6400-0810 | ADAPTER - 8MJ - 10MO (VALVE BLOCK, PRESSURE / IN PORT) |
| 18 | FF6400-0810 | ADAPTER - 8OFS - 10MO (VALVE BLOCK, WU/WD) |
| 19 | H6801-1212 | HYD ELBOW FITTING 12MO - 12MJ - 90° - EXTRA LONG DROP (VALVE, RETURN/OUT) |
| 20 | FF6400-0610 | REDUCER/EXPANDER - 6OFS - 10MO (ROTATION MOTOR) |
| 21 | FF6801-0808 | ELBOW - 8OFS - 8MO (WINCH MOTOR) |
| 22 | H6410-1608 | REDUCER - EXPANDER - 16MO-8FO (WINCH MOTOR) |
| 23 | H6801-0404 | HYD ELBOW - 4MJ-4MO - 90° (WINCH MOTOR CASE DRAIN) |
| 24 | H2701LN-0808 | HYD BULKHEAD UNION ELBOW W/ LOCK NUT 8MJ - 90° (MECHANISM, RT SIDE) |
| 25 | - | - |
| 26 | - | - |
| 27 | 22764 | LIVE CONTINUOUS HYDRAULIC SWIVEL |
| 28 | - | - |
| 29 | H2406-1210 | HYD TUBE ADAPTER 12FJ - 10MJ (INSTALLS ON ITEM 19) |
| 30 | 22952 | CASE DRAIN HOSE 13" LONG |
| 31 | 22953 | CASE DRAIN HOSE 30" LONG |
| 32 | 22903 | CASE DRAIN HOSE 96" LONG |
| 33 | H6801-0404 | ELBOW 4MJ-MO (ROTATION MOTOR) |
| 34 | H2603-040404 | HYD. TEE - 4MJ-4MJ-4MJ (JOINS ROTATION & WINCH CASE DRAINS) |
| 35 | - | - |

REPLACEMENT PARTS DWG REF 22978



MFG., INC.
CINCINNATI, OHIO

TITLE
REPL. PARTS LIST

HT40/50KX - PROP

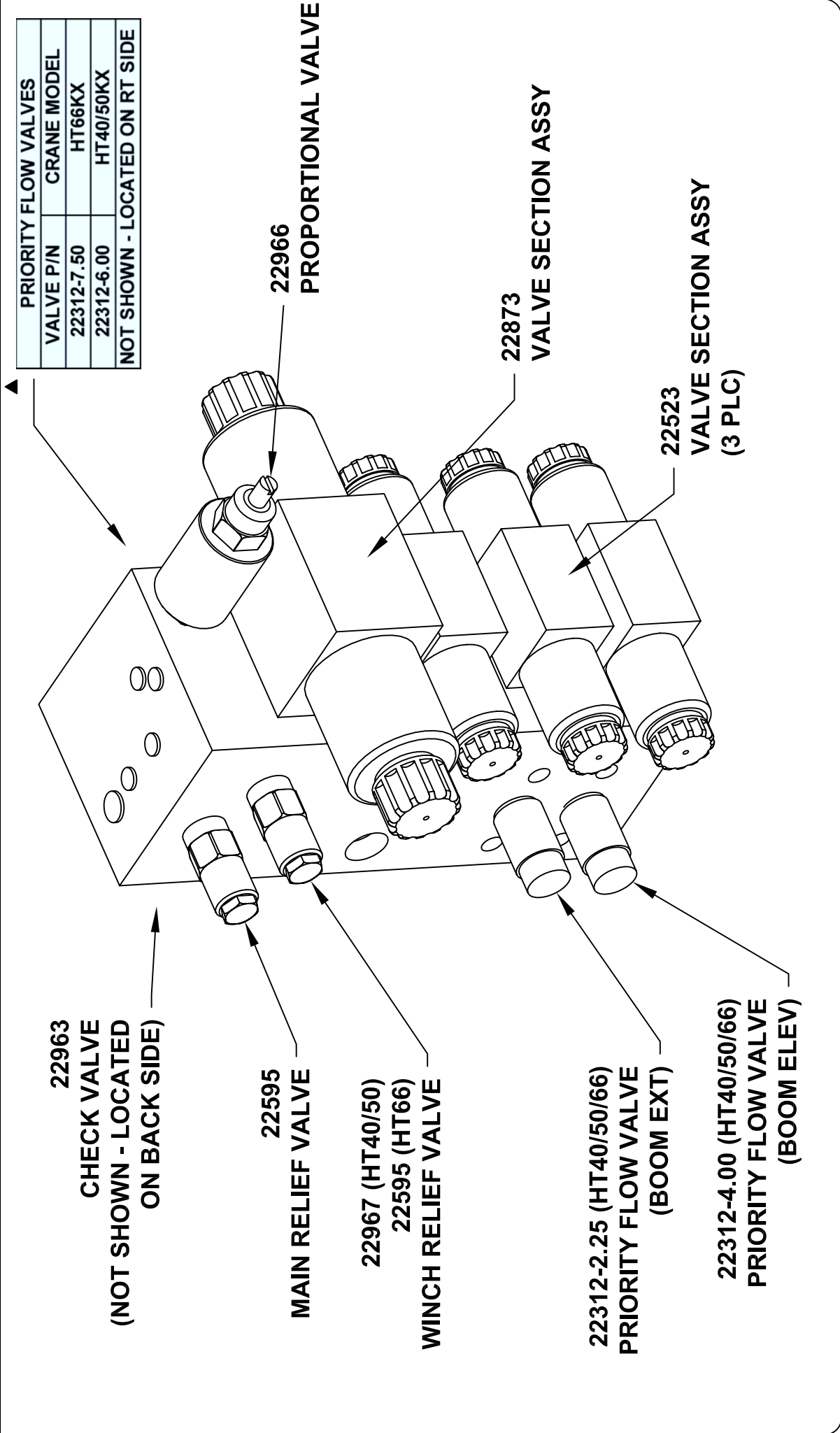
DATE
11-17-09

SUPERCEDES
-

SECTION
C400

22979

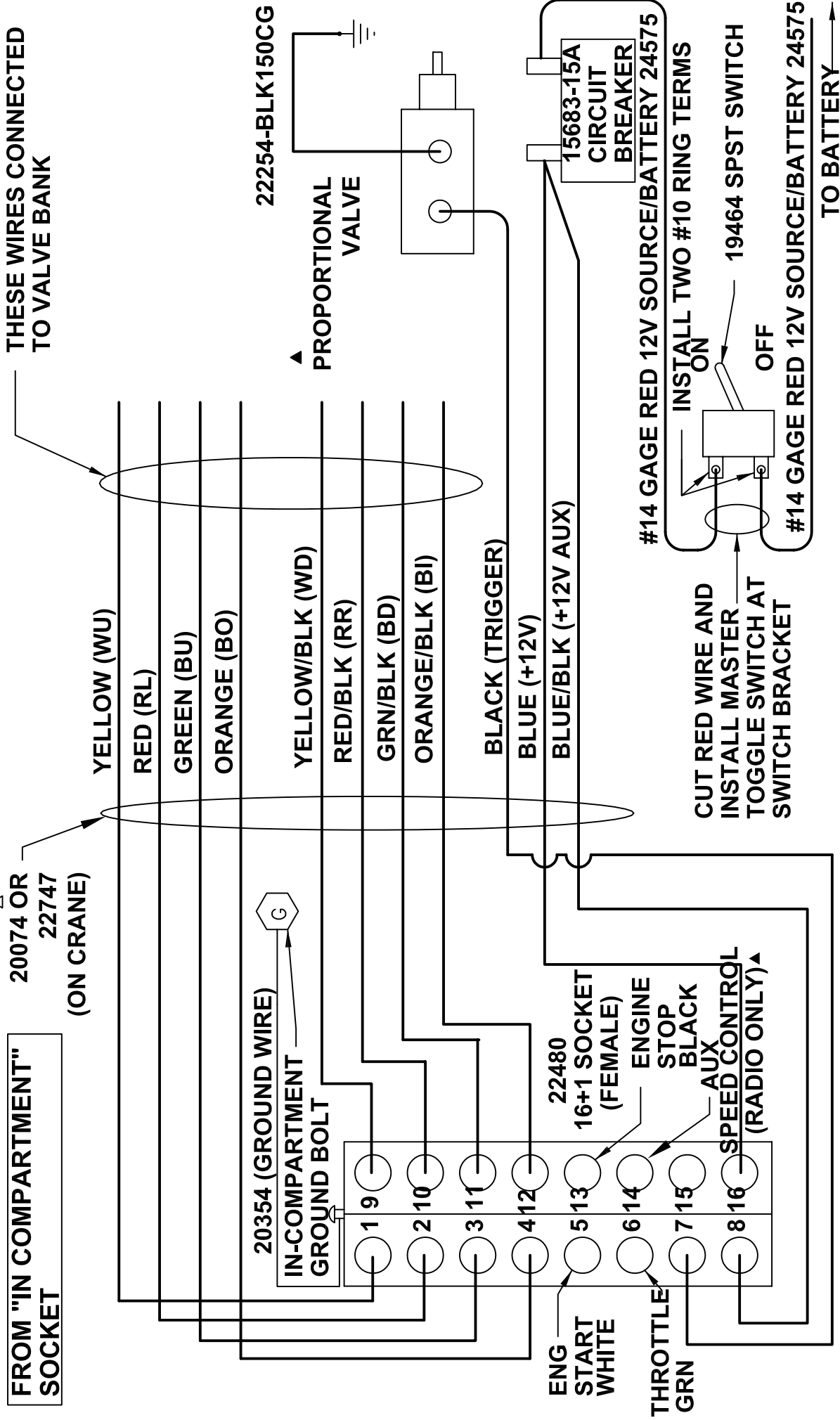
22736L HYDRAULIC VALVE MANIFOLD REPLACEMENT PARTS



| | | | | | | |
|--|-------|--------------------------|------------|-----------|---------|-------|
| <div> <div>VENTURO</div> <div>MANUFACTURING, INC.</div> <div>CINCINNATI, OHIO</div> </div> | TITLE | 22736L REPLACEMENT PARTS | DATE | 6-21-11B | SECTION | - |
| | | HT40/50/66 PROPORTIONAL | SUPERSEDES | 03-24-11A | | 22940 |

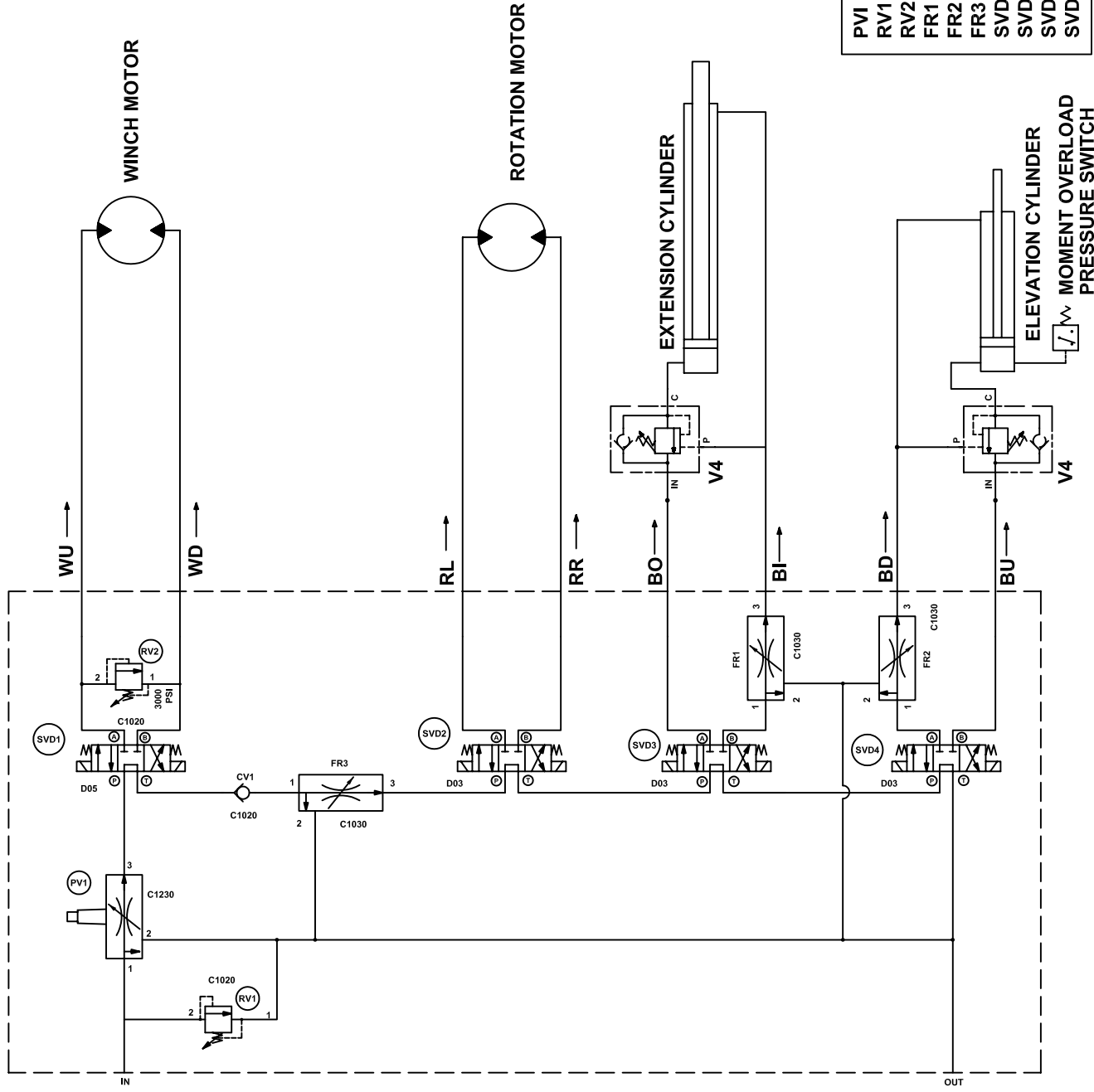


PROPORTIONAL IN-COMPARTMENT CONTROLS W/ ENG START/STOP AND/OR THROTTLE CONTROL

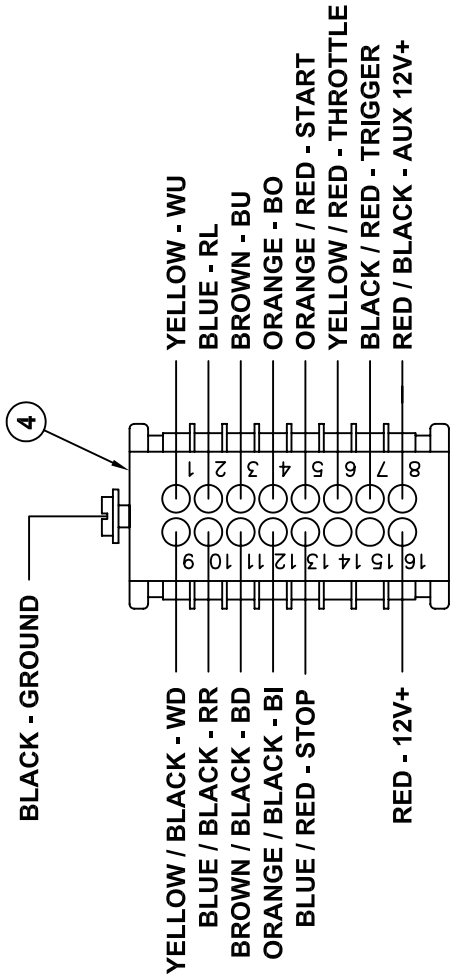
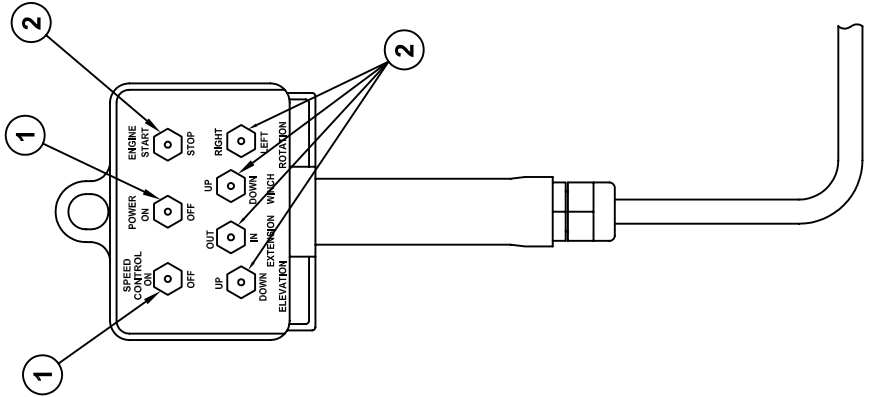


| | | | | |
|---|----------------------------------|--|------------------------|--------------|
|  | TITLE | | DATE | SECTION |
| | PROP W/ IN-COMP CTRLS & ENG CTRL | | 11-17-09D | - |
| | HT18/25/30/40/50 CRANES | | SUPERSEDES 7-20-09C | 22125 |

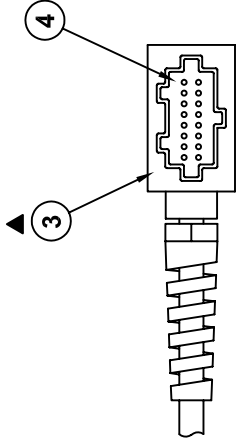
MANUFACTURING, INC.
CINCINNATI, OHIO



22065 PENDANT (PROP W/ ENG CTRLS)




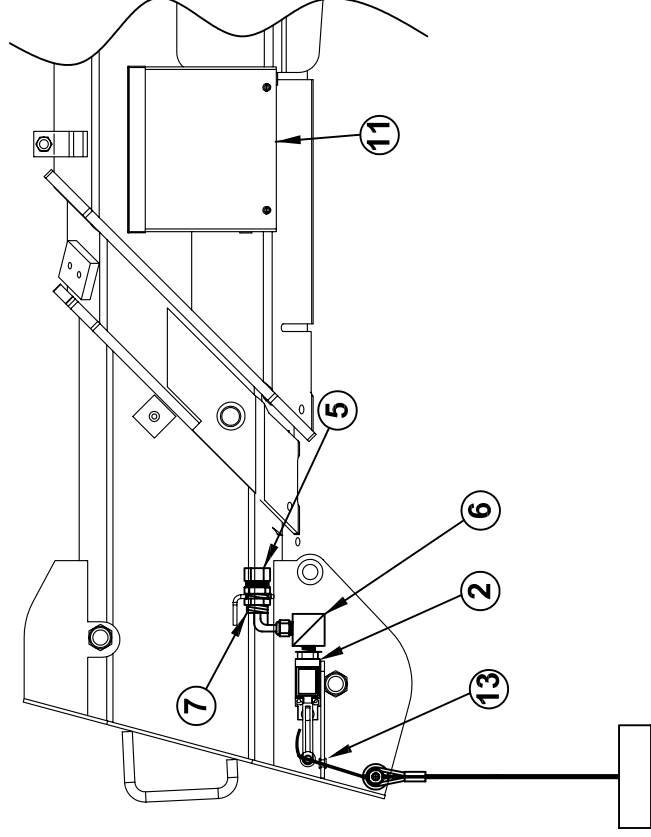
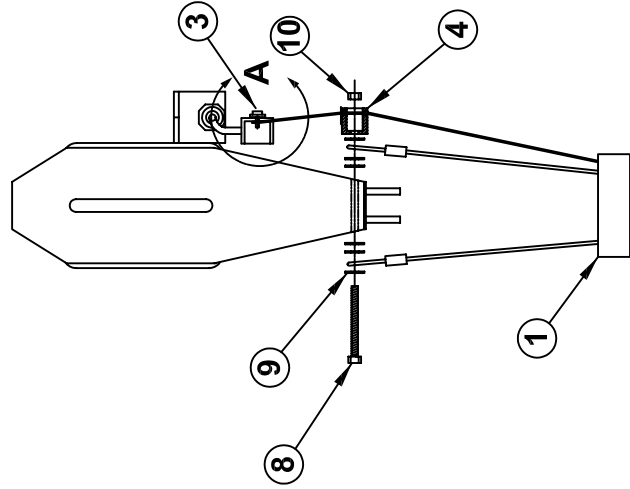
PLUG - BACKSIDE VIEW



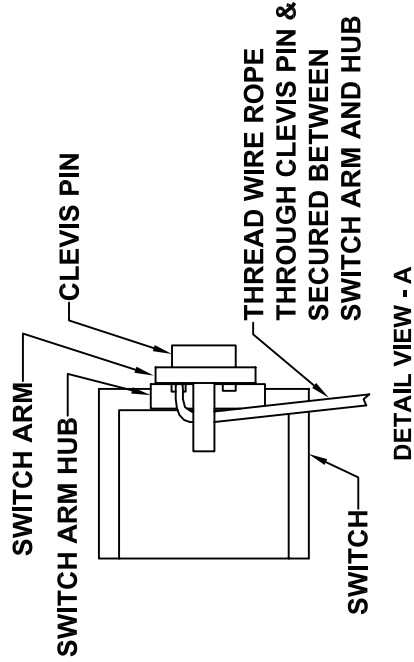
⊗ ITEM NOT SHOWN ON PRINT

| | | | |
|------|-----|----------|--------------------------------|
| 5 | 1 | 22082 | PROP. VALVE DRIVER CONT. BOARD |
| 4 | 1 | 22472 | MALE INSERT - 16 + 1 POLE |
| 3 | 1 | 22471 | PLUG CASE - 16 + 1 POLE |
| 2 | 4 | 22081 | SPDT MOMENTARY SWITCH |
| 1 | 1 | 22080 | SPST SWITCH |
| ITEM | QTY | PART NO. | DESCRIPTION |

| | | | | |
|---|-----------------------------------|--|----------------------|---------|
|  | TITLE | | DATE | SECTION |
| | REPLACEMENT PARTS DRAWING | | 7-30-04A | C400 |
| | 22065 PENDANT (PROP W/ ENG CTRLS) | | SUPERSEDES 7-1-04 | 22073 |



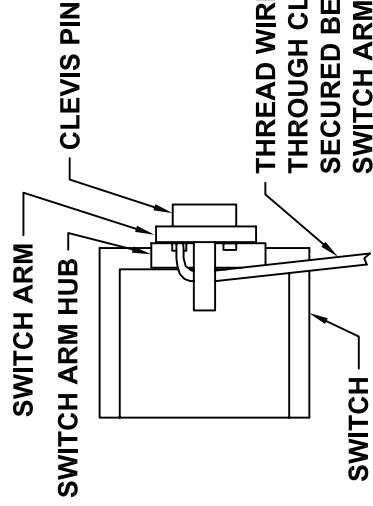
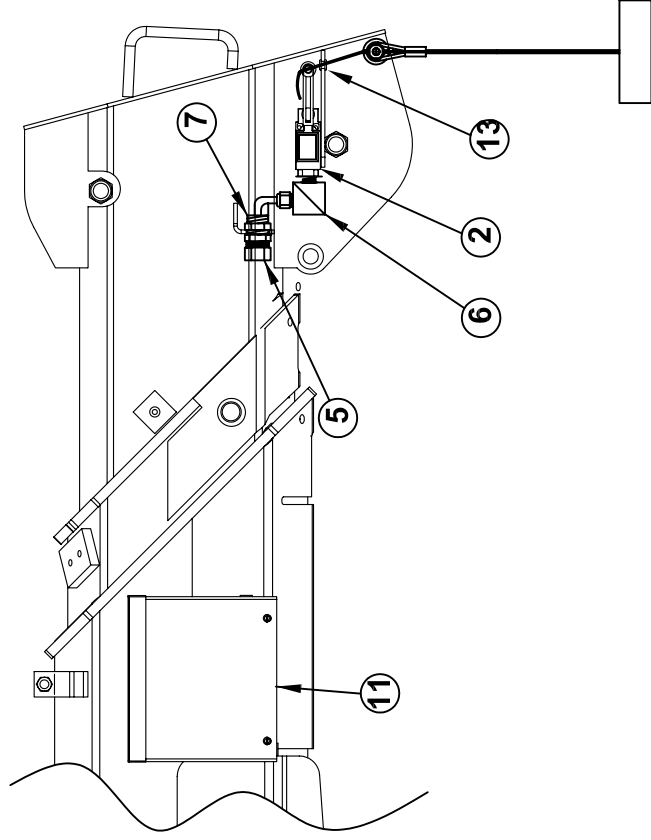
NOTE: FOR STANDARD LEFT HAND CORD REEL



| | | | |
|----|---|---------------|--------------------------------------|
| 13 | 1 | 19063 | SNAP BUSHING - 1/2 I.D. |
| 12 | 1 | 20951-3 | HANGER CABLE |
| 11 | 1 | 22683 | CORD REEL ASSEMBLY - LEFT HAND |
| 10 | 1 | !LNUT-02520 | LOCK NUT, NYLON 1/4-20 |
| 9 | 6 | !FWSH-025 | FLAT WASHER 1/4 |
| 8 | 1 | !HHCS02520275 | HHCS 1/4-20 x 2-3/4" GR. 5 |
| 7 | 1 | PL-20-469 | LOCKNUT (1/2" PIPE) |
| 6 | 1 | 19060 | STRAIN RELIEF - 90DEG |
| 5 | 1 | 22455 | STRAIN RELIEF - STRAIGHT (1/2" PIPE) |
| 4 | 1 | 22454 | CABLE GUIDE - BLACK DELRIN |
| 3 | 1 | 21269 | CLEVIS PIN - 3/16 X 1/2 |
| 2 | 1 | 22453 | MICROSWITCH |
| 1 | 1 | 19377-3 | WEIGHT ASSY. |

| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|-------------|
|------|-----|----------|-------------|

| | | | | |
|---|--------------------------------------|---|------------|---------|
| <div><div>MANUFACTURING, INC. CINCINNATI, OHIO</div></div> | TITLE | | DATE | SECTION |
| | REPLACEMENT PARTS DWG - LH CORD REEL | | 9-11-07 | C400 |
| | 22685 ANTI-TWO BLOCK SYSTEM | | SUPERSEDES | 22918 |
| | | - | | |




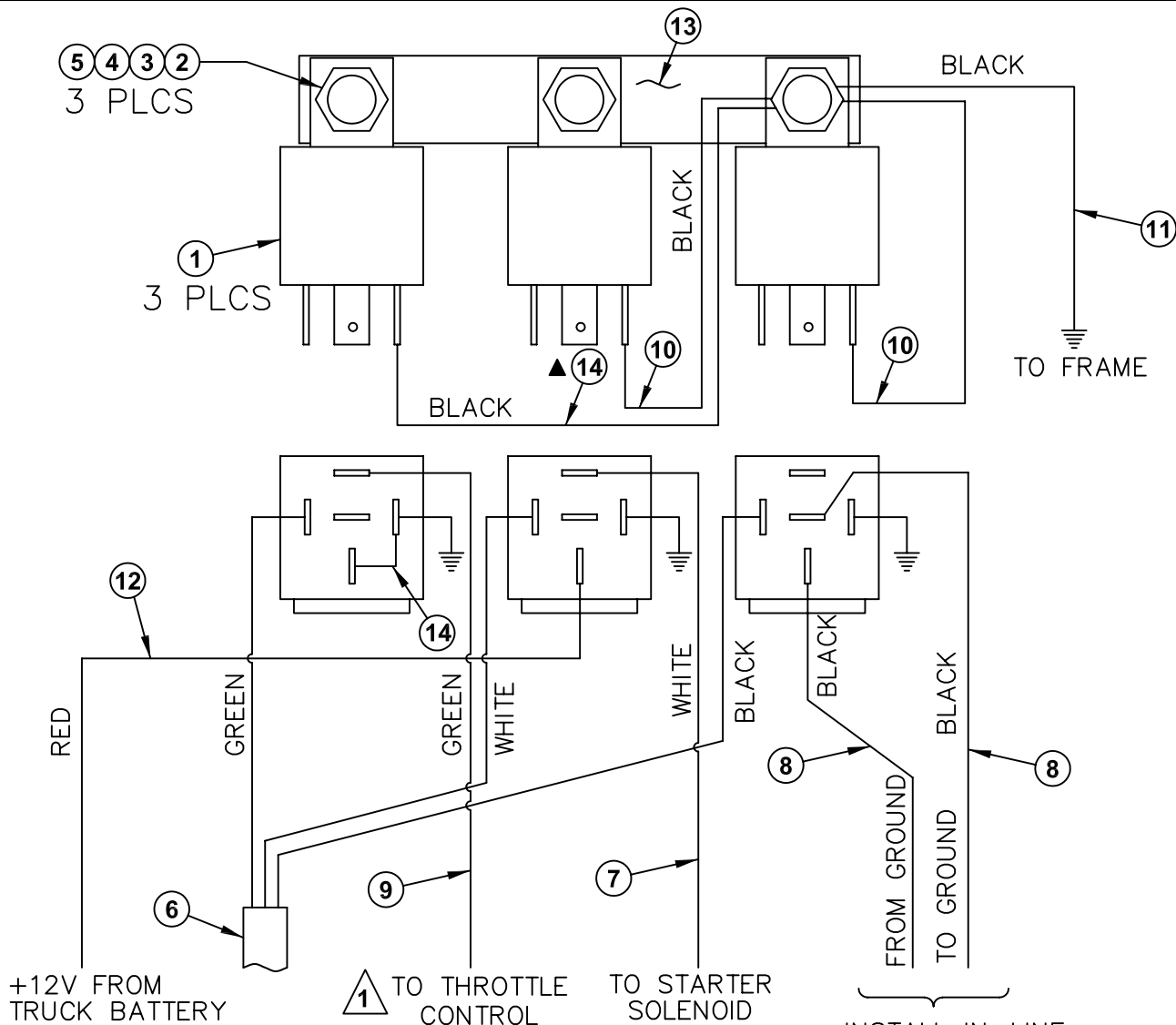
DETAIL VIEW - A

NOTE: FOR OPTIONAL RIGHT HAND CORD REEL.

| | | | |
|----|---|---------------|--------------------------------------|
| 13 | 2 | 19063 | SNAP BUSHING 1/2 I.D. |
| 12 | 1 | 20951-3 | HANGER CABLE |
| 11 | 1 | 22388 | CORD REEL ASSEMBLY - RH |
| 10 | 1 | !LNUT-02520 | LOCK NUT, NYLON 1/4-20 |
| 9 | 6 | !FWSH-025 | FLAT WASHER 1/4 |
| 8 | 1 | !HHCS02520275 | HHCS 1/4-20 x 2-3/4" GR. 5 |
| 7 | 1 | PL-20-469 | LOCKNUT (1/2" PIPE) |
| 6 | 1 | 19060 | STRAIN RELIEF - 90DEG |
| 5 | 1 | 22455 | STRAIN RELIEF - STRAIGHT (1/2" PIPE) |
| 4 | 1 | 22454 | CABLE GUIDE - BLACK DELRIN |
| 3 | 1 | 21269 | CLEVIS PIN - 3/16 X 1/2 |
| 2 | 1 | 22453 | MICROSWITCH |
| 1 | 1 | 19377-3 | WEIGHT ASSY. |

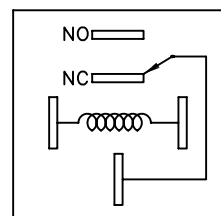
| ITEM | QTY | PART NO. | DESCRIPTION |
|------|-----|----------|-------------|
|------|-----|----------|-------------|

| | | | | |
|--|--------------------------------------|--|------------|---------|
|  VENTURO MANUFACTURING, INC. CINCINNATI, OHIO | TITLE | | DATE | SECTION |
| | REPLACEMENT PARTS DWG - RH CORD REEL | | 9-11-07 | C400 |
| | HT40KX, HT50KX | | SUPERSEDES | 22919 |



1
NOTE:
THROTTLE CONTROL IS DESIGNED
TO PROVIDE A GROUND SIGNAL
WHEN SWITCH IS ACTIVATED

| ITEM | QTY | PART# | DESCRIPTION |
|------|-----|---------------|--|
| 1 | 3 | 22739 ▲ | RELAY |
| 2 | 3 | !PHCS#1024075 | #10-24 X 3/4 PHIL PAN HD BOLT |
| 3 | 3 | !LWSH-#10 | #10 LOCKWASHER |
| 4 | 3 | !FWSH-025 | #10 WASHER |
| 5 | 3 | !HNUT-#1024 | #10 NUT |
| 6 | 1 | 22607 | WIRE HARNESS - 12/3 SJO |
| 7 | 1 | 22609 | WHITE - 16 GAGE ELECTRICAL WIRE - 15 FEET LONG |
| 8 | 2 | 22610 | BLACK - 16 GAGE ELECTRICAL WIRE - 15 FEET LONG |
| 9 | 1 | 22611 | GREEN - 16 GAGE ELECTRICAL WIRE - 15 FEET LONG |
| 10 | 2 | 22612 | BLACK - 16 GAGE ELECTRICAL WIRE - 6 INCHES LONG |
| 11 | 1 | 22613 | BLACK - 16 GAGE ELECTRICAL WIRE - 8 FEET LONG |
| 12 | 1 | 22614 | RED - 14 GAGE ELECTRICAL WIRE - 15 FEET LONG |
| 13 | 1 | 01181 | BUSS BAR |
| 14 | 1 | 22619 | BLACK - 16GA WIRE ASSY - 6" LONG W/ 3 INCH PIGTAIL |



RELAY
SCHEMATIC



MFG., INC.
CINCINNATI, OHIO

TITLE **ENGINE START/STOP
THROTTLE CONTROL**

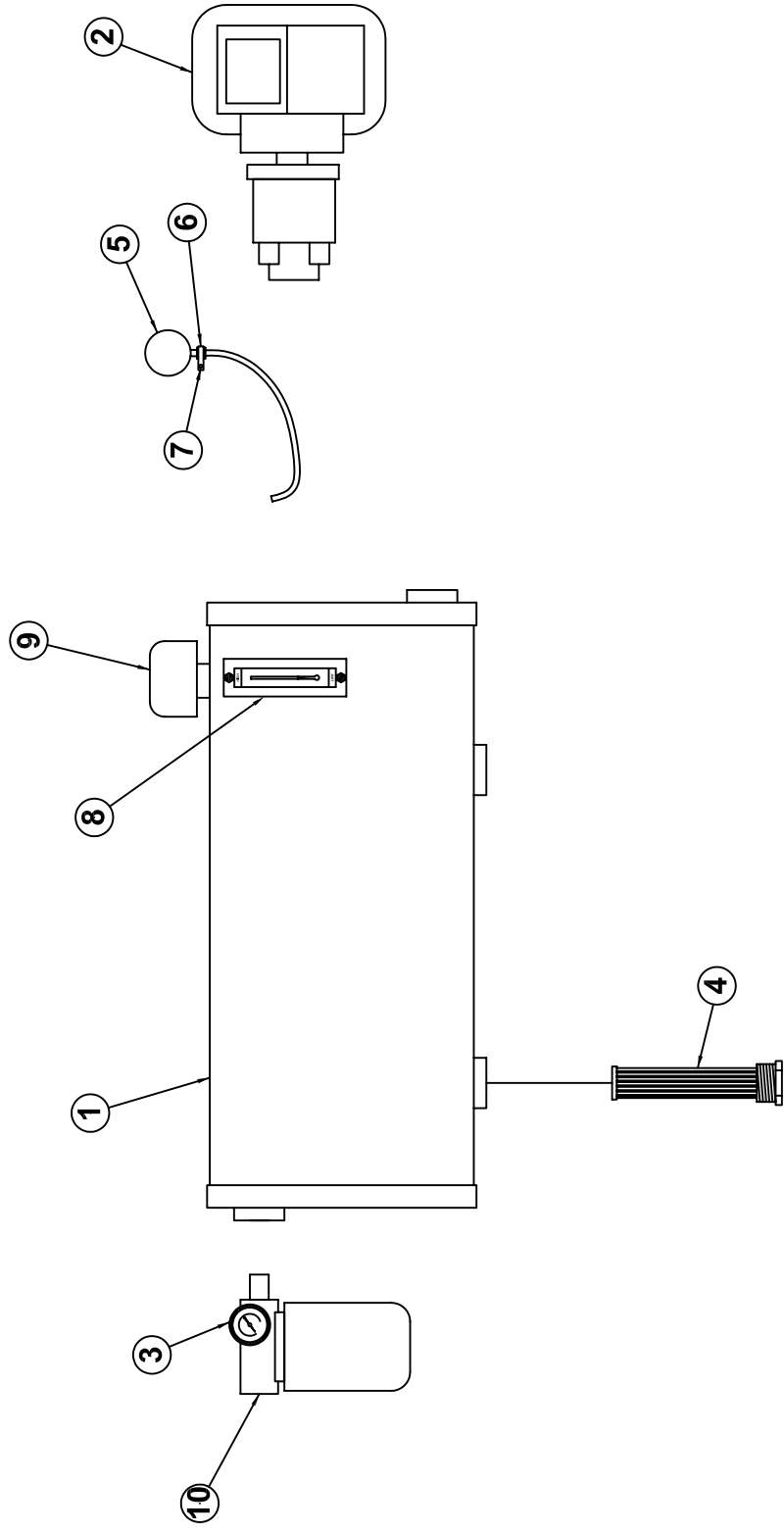
▲ HT18/25/40/50

DATE **5-26-05D**

SUPERSEDES
2-2-05C

SECTION
C400

22615



| | | | |
|----|---|----------------|---|
| 10 | 1 | 19298 | FILTER ASSY, RETURN – 100 MESH |
| 9 | 1 | 22789 | FILLER / BREATHER CAP ASSEMBLY |
| 8 | 1 | 22787 | SIGHT GLASS |
| 7 | 1 | !HWH02520075-F | HEX WASHER HEAD 1/4-20 X 3/4 SELF TAPPING |
| 6 | 1 | 19275 | CLAMP |
| 5 | 1 | 22730 | PRESSURE GAUGE ASSEMBLY |
| 4 | 1 | 22788 | SUCTION SCREEN – 100 MESH |
| 3 | 1 | 19297 | PRESSURE GAUGE – RETURN |
| 2 | 1 | 19296-10.0 | PTO PUMP |
| 1 | 1 | 22786 | 25 GAL. HYDRAULIC TANK |



MANUFACTURING, INC.
CINCINNATI, OHIO

TITLE

PTO REPLACEMENT PARTS DRAWING

DATE

6-29-05

SECTION

-

HT40/50KX - PROPORTIONAL

SUPERSEDES

-

22783

HT40KX - PROPORTIONAL 22921 FIELD SERVICE LABEL KIT

| ITEM | PARTNUMBER | QTY | DESCRIPTION |
|------|------------|-----|--|
| 1 | 15581 | 1 | ATTACHMENT DECAL |
| 2 | 15398 | 1 | UNPLUG PENDANT DECAL |
| 3 | 22768-1 | 1 | VALVE BANK DECAL - LEFT |
| 4 | 22768-2 | 1 | VALVE BANK DECAL - RIGHT |
| 5 | 14473-1 | 1 | OIL DECAL |
| 6 | 14473-2 | 4 | GREASE DECAL |
| 7 | 17389 | 2 | VENTURO DECAL (MEDIUM) |
| 8 | 15401 | 1 | UNLAWFUL TO OPERATE DECAL |
| 9 | 22342-1 | 1 | HT40KX BOOM CAPACITY DECAL (RIGHT) |
| 10 | 22342-2 | 1 | HT40KX BOOM CAPACITY DECAL (LEFT) |
| 11 | 19746 | 2 | HT40KX DECAL |
| 12 | 15392 | 1 | DANGER ELECTROCUTION HAZZARD DECAL |
| 13 | 15391 | 1 | CRANE NOT PASSENGER LIFT DECAL |
| 14 | 19315-2 | 1 | PROPORTIONAL OVERRIDE HYDRAULIC BANK DECAL |
| 15 | 15390 | 1 | CAUTION, INSTRUCTIONS DECAL |
| 16 | 22499 | 1 | KNOW YOUR SIGNALS DECAL |
| 17 | 22489 | 1 | DECAL PLACEMENT DRAWING |
| 18 | 19788 | 2 | PROPORTIONAL CONTROL DECAL |
| 19 | 20834 | 1 | MANUAL OVERRIDE INSTRUCTION LOCATION DECAL |
| 20 | - | - | - |
| 21 | - | - | - |
| 22 | - | - | - |
| 23 | - | - | - |
| 24 | - | - | - |
| 25 | - | - | - |
| 26 | - | - | - |
| 27 | - | - | - |
| 28 | - | - | - |
| 29 | - | - | - |
| 30 | - | - | - |
| 31 | - | - | - |
| 32 | - | - | - |
| 33 | - | - | - |
| 34 | - | - | - |
| 35 | - | - | - |



MFG., INC.
CINCINNATI, OHIO

| | | |
|-----------------------|------------|---------|
| TITLE | DATE | SECTION |
| FIELD SERV. LABEL KIT | 9-13-07 | - |
| HT40KX - PROP. | SUPERCEDES | 22923 |
| | - | |



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. This warranty covers:

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

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

WARRANTY CLAIMS

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

WARNING – It is the responsibility of the installer to 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 products without the expressed written consent of the manufacturer. Reinstallation of any Venturo product must be done by an authorized Venturo Distributor, to the standards of the industry; including maintenance, service and affixing of all instruction, safety and warning decals. Users should again be instructed as to the safe operation at time of delivery. Maintenance, service, operation and safety warning decals are available on request from Venturo Manufacturing, Inc.

VENTURO MANUFACTURING, INC
DIVISION OF COLLINS ASSOCIATES, INC
12110 BEST PLACE – CINCINNATI, OHIO 45241
513-772-8448
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