

**EFFECTIVE SERIAL NO. 193-CH-988**

# **OWNERS MANUAL**

## **6006 SERIES**

**REVISION 8/88**

**PART NO. 999934**

**SERIAL NO. \_\_\_\_\_**

## **AUTO CRANE COMPANY**

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# **WARNING:**

FEDERAL LAW (49 CFR PART 571) REQUIRES THAT THE FINAL STAGE MANUFACTURER OF A VEHICLE CERTIFY THAT THE VEHICLE COMPLIES WITH ALL APPLICABLE FEDERAL REGULATIONS. ANY MODIFICATIONS PERFORMED ON THE VEHICLE PRIOR TO THE FINAL STAGE ARE ALSO CONSIDERED INTERMEDIATE STAGE MANUFACTURING AND MUST BE CERTIFIED AS TO COMPLIANCE. THE INSTALLER OF THIS CRANE AND BODY IS CONSIDERED ONE OF THE MANUFACTURERS OF THE VEHICLE. AS SUCH A MANUFACTURER, THE INSTALLER IS RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE FEDERAL AND STATE REGULATIONS, AND IS REQUIRED TO CERTIFY THAT THE VEHICLE IS IN COMPLIANCE.

IT IS THE FURTHER RESPONSIBILITY OF THE INSTALLER OF THE CRANE TO COMPLY WITH THE OSHA TRUCK CRANE STABILITY REQUIREMENTS AS SPECIFIED BY 29 CFR PART 1910.180 (C) (1).



## 6006 SERIES - OWNER'S MANUAL

### - CONTENTS -

	SECTION/PAGE
1. INTRODUCTION .....	1-1.0.0
2. INSTALLATION .....	2-1.0.0
3. MAINTENANCE OF BATTERIES .....	3-1.0.0
4. GENERAL ASSEMBLY .....	5-1.0.0
5. BASE ASSEMBLY .....	5-4.0.0
6. HOIST ACTUATOR.....	5-8.0.0
7. TURNER ACTUATOR.....	5-10.0.0
8. BRAKE ASSEMBLY .....	5-13.0.0
9. BOOM ASSEMBLIES .....	6-1.0.0
10. ELECTRICAL SECTION .....	7-1.0.0
11. HYDRAULIC SECTION .....	8-1.0.0
12. JACK LEG.....	10-1.0.0
13. WARRANTY .....	LAST PAGE



## INTRODUCTION -6006 SERIES

Auto Crane products have been engineered to provide safe, trouble-free, dependable service for many years when these products are properly used and maintained.

To assist you in obtaining the best service from your crane and to avoid untimely failure of the unit and/or the vehicle on which it is mounted, the following operating and service instructions are herein published, and it is specifically recommended that all operating and service personnel consider this manual as mandatory material for reading and study before operating or servicing Auto Crane products. It is highly recommended that crane owners, equipment managers and supervisors also read this manual.

Auto Crane has incorporated several safety features in the 6006 series for your protection. The material and electrical systems were designed to minimize weight and lengthen durability.

For your convenience the overall dimensions of the 6006 series are included on the General Dimension Drawing. Rotation and turning radius are also listed.

Remember that the crane adds weight to the vehicle and may change the driving and riding characteristics of the vehicle on which it is mounted unless this weight is properly provided for with appropriate overload springs. The payload of the vehicle is also reduced by the amount that the crane weighs, and as the vehicle is loaded, care should be exercised not to overload the vehicle. Exercising care in distributing the payload on the vehicle will greatly improve the driving and riding characteristics of the vehicle.

The 6006 series cranes are attached directly to your 12 volt truck electrical system. The power cable and retaining clips are included with the crane. A typical power cable mounting and hookup is shown. The 6006 series is another highly efficient Auto Crane product. The use of our "B" actuator maximizes your work capability for the least amperage draw from your truck battery. The performance of your new crane depends on the truck electrical system. The use of the low maintenance battery is not recommended for use on any Auto Crane product. The recommended alternator and battery that will give the longest life with the most useful duty cycle is a 75 amp. alternator with a 500 cold cranking rated battery. These specifications should be considered minimum.

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Auto Crane Company issues a limited warranty certificate with each unit sold. See last page for warranty policy.

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It has always been Auto Crane Company policy to handle warranty claims we receive as promptly as possible. If material workmanship is involved, immediate corrective action is taken is therefore, understandable that Auto Crane Company cannot assume responsibility or liability when our products have obviously been abused, mis-used, overloaded or otherwise damaged by inexperienced persons trying to operate the equipment without even reading the manual. The Auto Crane is designed a built to be safe and efficient. Auto Crane will not assume responsibility or liability for any unit which has been modified, changed or which has unauthorized or unapproved components installed.

Auto Crane maintains a strong distributor network and knowledgeable Customer Service Department. In most cases equipment problem can be solved through a telephone conversation with our Customer Service Department. The Customer Service Department also has the ability to bring a local distributor, regional sales manager, or a factory serviceman into the solution of an equipment problem if necessary. If through no fault of Auto Crane Company it is necessary to send an experienced factory serviceman on a field service call, the rates stated in the Auto Crane, Distributor's Flat Rate Manual will apply.

Auto Crane Company's extensive Research and Development Program assures our customers of the best equipment on the market, and our Engineering Staff, as well as our knowledgeable sales people are always available to our customers in solving crane and winch-type application problems. When in doubt-call the Auto Crane factory.

### DISTRIBUTOR ASSISTANCE:

Should you require any assistance not given in this manual we recommend that you consult your nearest Auto Crane Distributor. Our distributors are stocked with authorized replacement parts and a service department that can solve almost any need repair.

**NOTE: THIS MANUAL SHOULD REMAIN WITH THE CRANE AT ALL TIMES.**

The material herein does not imply to cover all maintenance instructions, operations, or variations pertinent to every possible situation. If additional information is required, please refer to Auto Crane Company at the following telephone number: 911-438-2760. The information contained in the manual was in effect at the time of printing. Auto Crane Company reserves the right to update this material at any time without prior notice or obligation.

## OPERATION OF UNIT

1. Make sure this manual has been thoroughly read by all crane operating personnel.
2. A routine inspection of the crane should be mandatory before each operating day. Any defects should be corrected immediately.
3. At a job site the vehicle should be positioned so that the crane can adequately reach the load within the rated capacity (centerline of rotation to hoist hook).
4. Keep the vehicle as level as possible during operation.
5. Engage emergency brake and turn off ignition with transmission left in gear. (or in park for automatic transmissions). For extended use (more than a few minutes), leave engine running with manual transmission in neutral, or automatic transmissions in park. This is for Auto Crane units requiring only battery operation. For larger Auto Crane units requiring battery and hydraulic operation, engage emergency brake and place gear select in neutral; press clutch and pull PTO knob in gear; release clutch and set throttle control to proper RPM. (see hydraulic section). **WARNING: DO NOT SET THROTTLE ABOVE REQUIRED SPEED - POSSIBLE DAMAGE MAY RESULT.**
6. Always use outriggers (jacklegs) from the truck to the ground. Be sure these are firm and adequately positioned.
7. Then remove pendant control from cab (on small units) and plug into receptacle on crane. Crane is now ready for operation.
8. Always boom up before rotating so that the boom will clear the required boom support.
9. When extending the boom always maintain clearance between the boom crown and the traveling block or hoist hook.
10. Always observe safe and practical operation to avoid possible accidents. Refer to Safety Tips and Precautions.
11. After completing lifting operations, return the boom to stowed position on the boom support. Avoid unneeded pressure on the boom support.
12. Store pendant control in proper location (in cab or on crane).
13. Return outriggers (jacklegs) to stowed position. Make sure they are pinned in place or jacklegs are returned to compartment.
14. Check work area for any tools or equipment not stored.
15. Press clutch and disengage PTO. Release throttle control and emergency brake.
16. Report any unusual occurrence during crane operation that may indicate required maintenance or repair.

## COLD WEATHER OPERATION

All standard products (all models of cranes and winches) as manufactured by the Auto Crane Company will operate satisfactorily from 0°F. to 120°F. By making the following minor modifications, all Auto Crane models of winches and cranes will be given the capability of operating from 0°F. down to -65°F.

1. Drain gear oil from actuators by removing drain plug. Replace plug and use one to one-and-one-half pints of kerosene per actuator. Then add extreme pressure gear lube (E.P. 80-90) with maximum capacity of gear oil and kerosene not to exceed two quarts.
2. Replace standard urethane protective boots on pendant control switches with special low-temperature Tech-Nut flex boots.
3. The minimum bend radius of the standard Auto Crane pendant control cable is increased from three inches to nine inches.
4. Spray all electrical equipment with special corrosion-resistant coating (eliminates rust or corrosion due to melting and freezing action of condensation).

The only inconvenience for the operator created by the above procedure is that the pendant control cable must be coiled into larger loops for storage purposes. Care must be exercised to avoid sharp bending of this pendant control cable during extreme cold operating conditions.

When Auto Crane winches and cranes are subjected to extreme cold (-65°F.) for long periods (two to six months or more), it is recommended that the following procedure be placed in action:

1. Completely drain the existing oil from the actuators and flush with kerosene.
2. Fill each actuator with Mobilube SHC-629 (approximately two quarts required per actuator) to the proper level (oil level plug must be removed to check level).

**Note:** Many customers have utilized heater-blanket type wrapping for these gear boxes.



## WIRE LINE LUBRICATION

Lubrication of the wire line serves two important purposes: (1) helps to prevent corrosion; (2) lubricates the cable strands to reduce wear due to flexing and abrasion caused by contact with the sheaves, rollers, and cable on the drum.

### PREPARATION:

Remove rust and foreign matter with a wire brush and wipe clean. Be sure cable is dry.

### APPLICATION:

Two methods are illustrated in figures 1 and 2. A light weight motor oil may be used, as in figure 1; or a heavier lubricant such as grease gun lubricant, as in figure 2.

Illustrated in figure 1 is one easy and effective method of applying lubrication. Dip the brush into the lubricant and apply. In some cases a rag or piece of sheepskin is dipped in the lubricant and used to swab the lubricant on to the rope.

Another simple method is shown in figure 2. Leather gloves are preferred to canvas because of greater protection and less penetration of the grease.

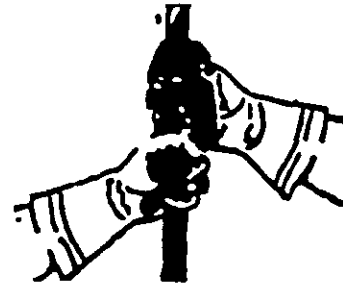


Fig. 1

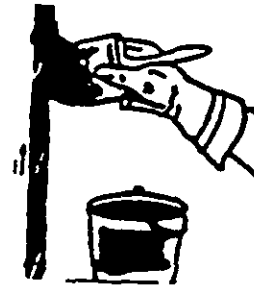


Fig. 2

## "LIFE OF WIRE LINE"

So many variable factors can cause the deterioration of wire line cable that it is not possible to determine a definite life expectancy.

Some of these factors are:

1. Load being handled.
2. Corrosive conditions.
3. Maintenance of the unit.
  - a. Keep the sheaves turning freely.
  - b. Maintain tension of cable to insure proper spooling.
  - c. Lubricate line (See above).
  - d. Avoid kinks in cable.
  - e. Avoid abrasive action and contact with sharp corners.
4. Frequency of use.

Auto Crane 5004 and 6006 Series use 1/4" and 5/16" diameter x 19) aircraft cable. It is recommended when 2000 pound loads are exceeded to use a two part line with a traveling block and cross sheave.

1/4" diameter cable has a minimum breaking strength of 70 pounds.

5/16" diameter cable has minimum breaking strength of 98 pounds.

Keeping the above factor of safety in mind and knowing the kind of loads that will be handled, the user can determine by inspection of the cable as to when it should be replaced.

Items to look for while inspecting the cables are:

1. Broken strands
2. Kinks and flattened sections.
3. Corrosion and abrasion.

**CAUTION:**  
BOOM MUST BE PROPERLY SECURED  
IN PLACE ON A BOOM SUPPORT  
BRACKET, WHEN CRANE IS NOT IN  
USE. (TO PREVENT GEAR DAMAGE.)

**BOOM SUPPORT BRACKET**  
**P/N 750585**

(REF.) 6006 SHOWN.

1. DRILL 13/16 DIAMETER HOLE IN FLOOR. INSTALL CABLE, AND BUSHING WHICH IS FURNISHED ON CABLE, AS SHOWN. WRAP ELECTRICAL TAPE AROUND CABLE SO IT WILL FIT BUSHING SNUG.
2. RUN CABLE INSIDE CHASSIS FRAME TO STARTER SOLENOID BATTERY CONNECTION. LOCATE CABLE SO THAT IT WILL BE PROTECTED, AVOID SHARP EDGES. INSTALL THE NO. 838 FRAME CLIPS TO HOLD CABLE SECURELY IN PLACE. IF SURPLUS CABLE EXISTS THE CABLE CAN BE CUT OFF, AND EXTRA TERMINAL FURNISHED WITH CABLE INSTALLED.
3. REMOVE NUT ON SOLENOID BATTERY TERMINAL POST, INSTALL CRANE POWER CABLE, REPLACE NUT AND TIGHTEN.
4. IF THE BATTERY IS GROUNDED TO THE ENGINE IT MAY BE NECESSARY TO ADD AN ADDITIONAL GROUND CABLE FROM THE ENGINE TO THE CHASSIS FRAME IN ORDER TO OBTAIN MAXIMUM POWER AT CRANE. THE CRANE SHOULD BE GROUNDED TO THE CHASSIS FRAME. THIS IS USUALLY ACCOMPLISHED THROUGH THE MOUNTING BRACKET.

**BATTERY**  
**(REF.)**

**POSITIVE POLE**  
**STARTER SOLENOID**

**BATTERY CABLE  
FROM CRANE UNIT**

## STARTER

**-GROUND FROM MOTOR  
TO CHASSIS FRAME.**

NO.600422 BATTERY  
CABLE ASSEMBLY

- NO. BB-50 INSULATOR  
BUSHING ON CABLE  
ASSEMBLY.

## -CHASSIS FRAME

NO. 638 —  
CLIPS 6  
FURNISHED

**BATTER  
CABLE**

DRILL  $\frac{13}{16}$  THRU FLOOR.

**NUT-**

		ITEM	D/S	PART NO.	DESCRIPTION	
QUANTITY		LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED. ANGLES 1/4"   SEE 2.40 FRACTIONAL 5/16   SEE 2.510 REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973		DRAWN BY DATE CHK'D BY DATE ENG. BY DATE	<b>AUTO CRANE COMPANY</b> P.O. BOX 46648 • TULSA, OKLAHOMA 74146 9240 BROKEN ARROW EXPRESSWAY • 918-627-0475			
		TITLE <b>INSTALLATION-BATTERY CABLE</b>				
		SCALE		SIZE	DRAWING NO.	REVISION
				C	AW-6018	
NEXT ASSY		WEIGHT				SHEET 1 of 1
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRI- MENTAL TO THE COMPANY.						

## MAINTENANCE OF BATTERIES

Batteries furnished with Auto Crane units for 24-volt or 12-24-volt operation, are required by law to be shipped without electrolyte. Be sure the electrolyte has been added before operating the unit.

Maintenance of Auto Crane unit batteries differs very little from the generally prescribed maintenance of any lead acid battery. All batteries must be kept properly charged; they must be kept properly filled with water; and they must be kept relatively clean.

Many things affect the proper charge to a battery, such as regulator settings, the proper tightness of belts on the alternator or generator, and good, clean connections of all cables and wires at the battery, regulator, starting motor, alternator or generator, and – most important – the ground connections. See Cable Instructions.

Keeping the battery as fully charged as possible without overcharging is of extreme importance, especially when vehicles are left outside for extended periods of time in extremely cold climates. A battery can freeze; freezing points for various specific gravities of acid are as follows:

Specific Gravity (Corrected to 80°F)	Freezing Temperature Degrees F.
1.280	-90°F
1.250	-62°F
1.200	-16°F
1.150	5°F
1.100	19°F

From the above, it is apparent that a half-charged battery (about 1.200 specific gravity) cannot stand for any length of time at -20°F or it will freeze.

The main reason for keeping the battery as fully charged as possible without overcharging, of course, is to assure that power is available even though the vehicle has been standing for some time.

The battery should be properly filled with water at all times. If the electrolyte level is allowed to fall below the top of the plates, the results become threefold: 1, the exposed portion of the plate will become sulfated; 2, the portion of the plate exposed is not usable; and 3, that portion of the acid remaining becomes more concentrated and may cause more rapid deterioration of the remaining parts of the battery.

The battery should be kept clean. Batteries filled with acid and which are not in use self-discharge to a limited degree because of the nature of the materials within the battery; but if dirt is allowed to collect on the top of the battery, and this dirt absorbs moisture, an electrical path can be set up between the various terminals of the battery of the ground. Once such a path has been established, the self-discharge of the battery is considerably accelerated. This also accelerates corrosion of the battery cables at the terminals.

Periodic Maintenance is Needed.

A definite program of periodic maintenance of all batteries should be conducted on a regular basis. Periodic maintenance

includes checking belts for tightness on the charging equipment, checking battery electrolyte levels, checking cables for good connections, and cleaning where corrosion is apparent. When corrosion is cleaned off, the cable terminals and battery terminals should be coated with a light coating of petroleum jelly before they are replaced. When terminals are cleaned the top of the battery should be cleaned with a mild solution of soda water.

If the condition of the battery is in question, it should be removed from the vehicle, taken to the shop, and allowed to reach room temperature. It should then be recharged until specific gravity readings are unchanged over three readings taken at one hour intervals. If the specific gravity readings are fairly uniform, the battery should be checked with a high rate tester in accordance with instructions on the tester. A load test is the best test to make on a battery.

If, after charging, it is noted that the specific gravity reading of one cell is 30 points less than any of the other cells, it may be assumed that that cell is bad and that the battery should be replaced. If all cells are uniform but not up to full charge, a slow rate of charge should be attempted for an extended period of time. This usually will recover a badly sulfated battery.

If it is necessary to replace a battery, and a dry charge battery is used, the following procedure applies:

1. Fill the battery with electrolyte of the proper specific gravity.
2. Place the battery on charge in accordance with instructions given by the manufacturer.

It is essential that the second step above be followed to assure that the battery going on the vehicle is fully charged.

It is also very important that the battery hold-downs be checked periodically to assure that the batteries are properly positioned to avoid vibration problems, breakage of cables, or terminal breakage. Care must be taken to avoid cracking or breaking contact covers by tightening hold-down fixtures excessively, yet they must not be so loose that breakage results from a too loose hold-down.

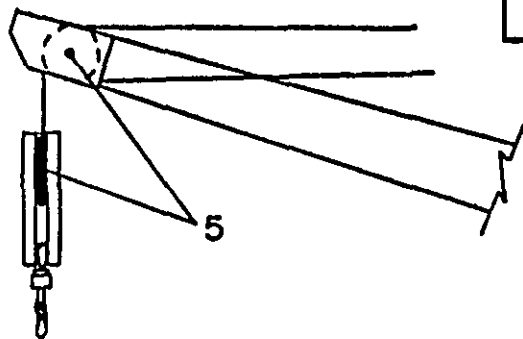
Low maintenance batteries (such as the Delco "Freedom Battery") should not be used on Auto Cranes or trucks equipped with Auto Cranes. These batteries are not designed for "deep" charge.

### MINIMUM VOLTAGE AT CRANE BATTERY – 13.2V.

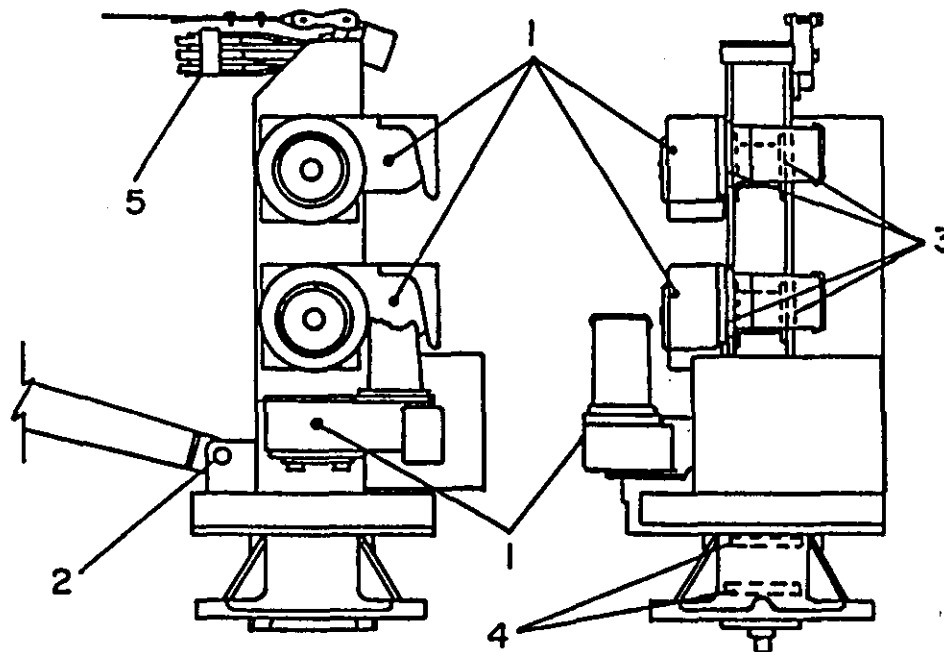
Check to make sure of good ground between truck engine and frame. Manufacturers sometimes leave this off and ground only to the truck, which is mounted on rubber pads and does not conduct to good ground.

If bodies or beds are to be mounted on wooden strips (along side of frame), a ground strap must be routed from frame (truck) to the body (across the wooden strips). All of the above is important to assure good ground for the charging system of the unit, as well as proper installation of the Tweco bracket.

To keep your charging systems working correctly, do not just start other equipment off of battery unit.



1. ACTUATOR GEAR CASES: Maintain oil level at points indicated. Use extreme pressure gear lube (E.P. 80-90).
2. BOOM HINGE POINT: 3 strokes with grease gun every 15 days. Use chassis lubricant.
3. DRUM SHAFT BALL BEARINGS: Sealed for life. No lube required.
4. QUILL TAPER ROLLER BEARINGS: Packed at factory. No lube required unless disassembled. Use chassis lubricant.
5. SHEAVE ROLLER BEARINGS: Sealed type. No lube required.


 CHG  
LTR

## REVISIONS

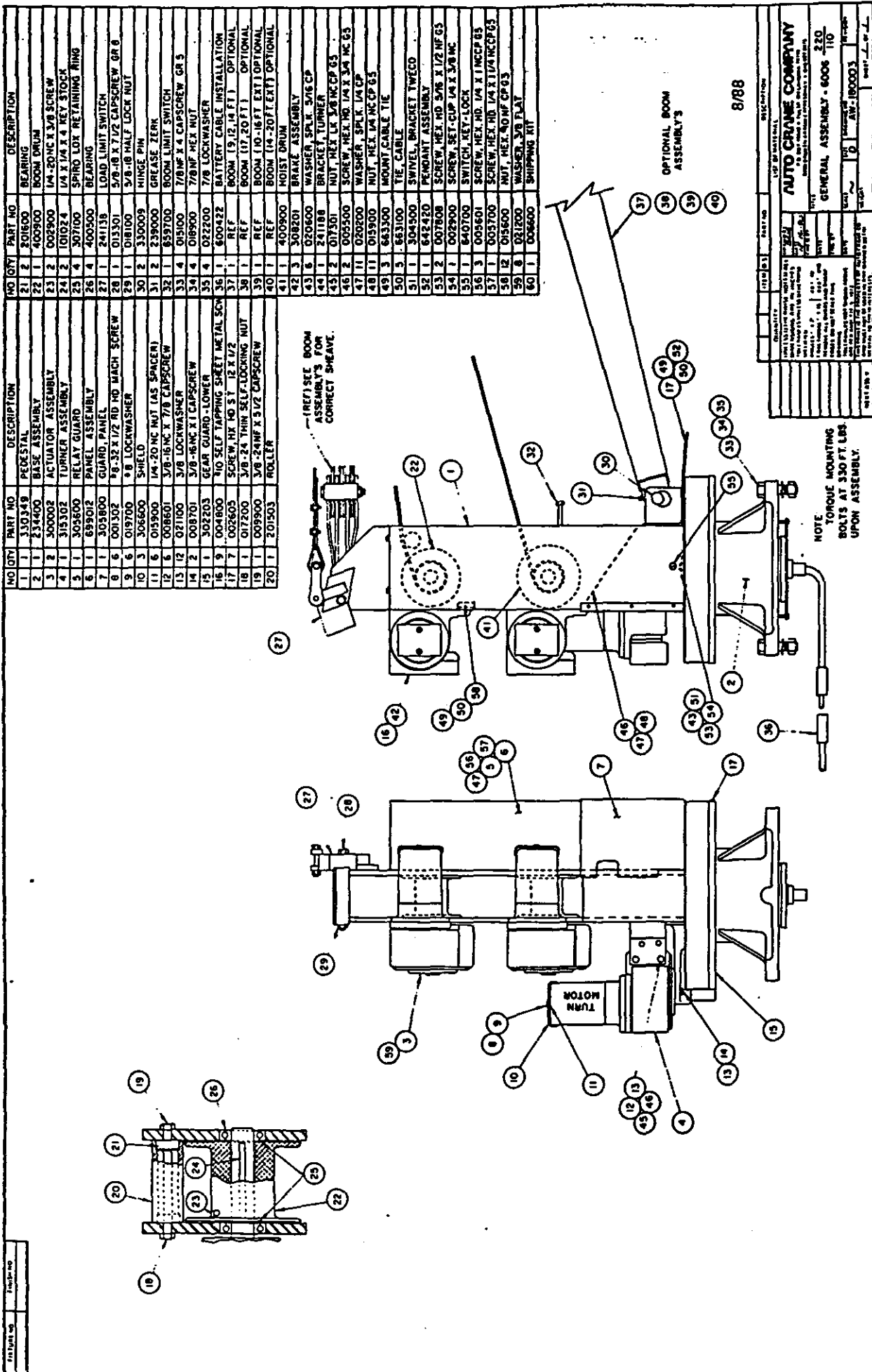
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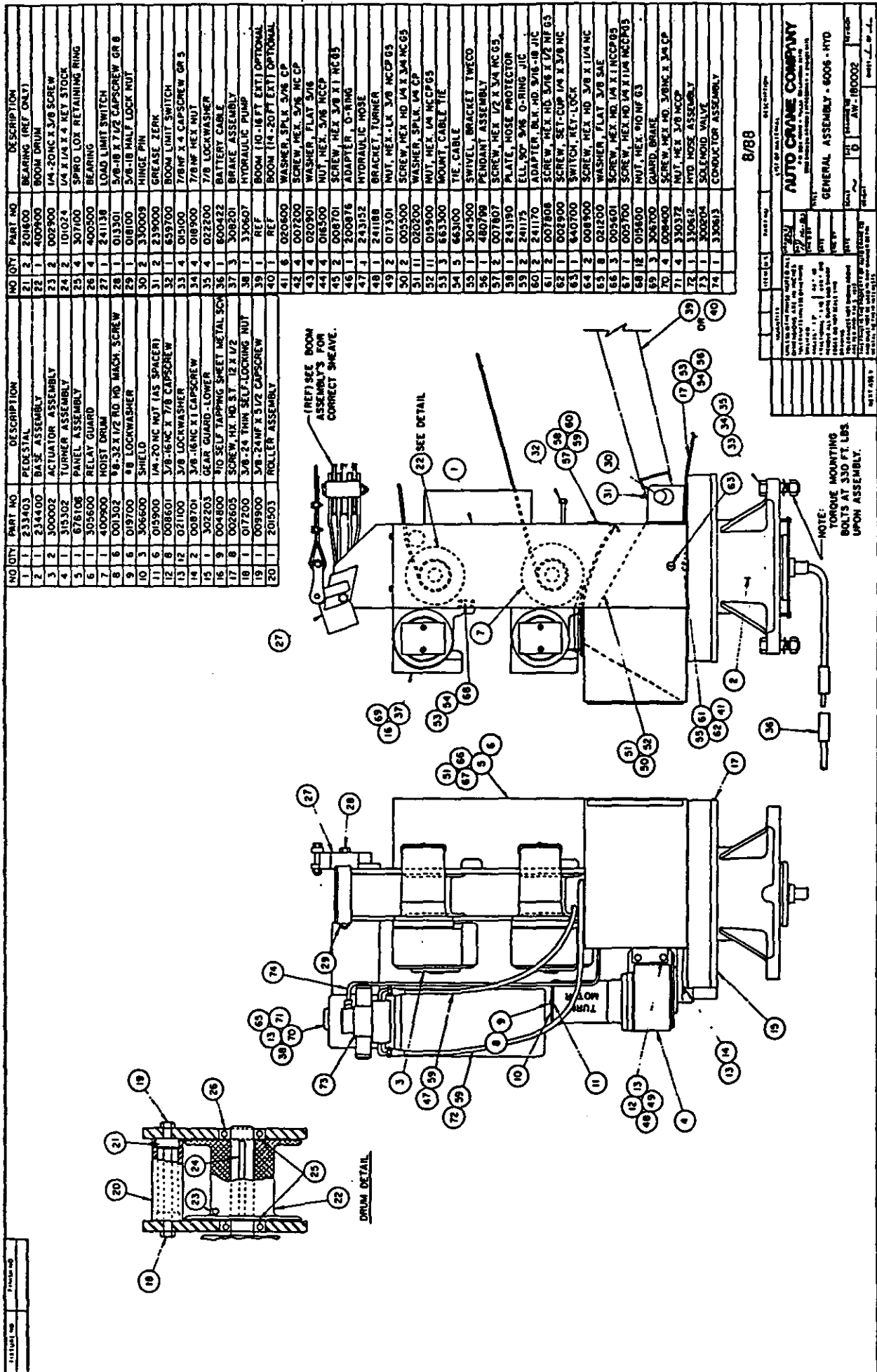
DATE

APP'D

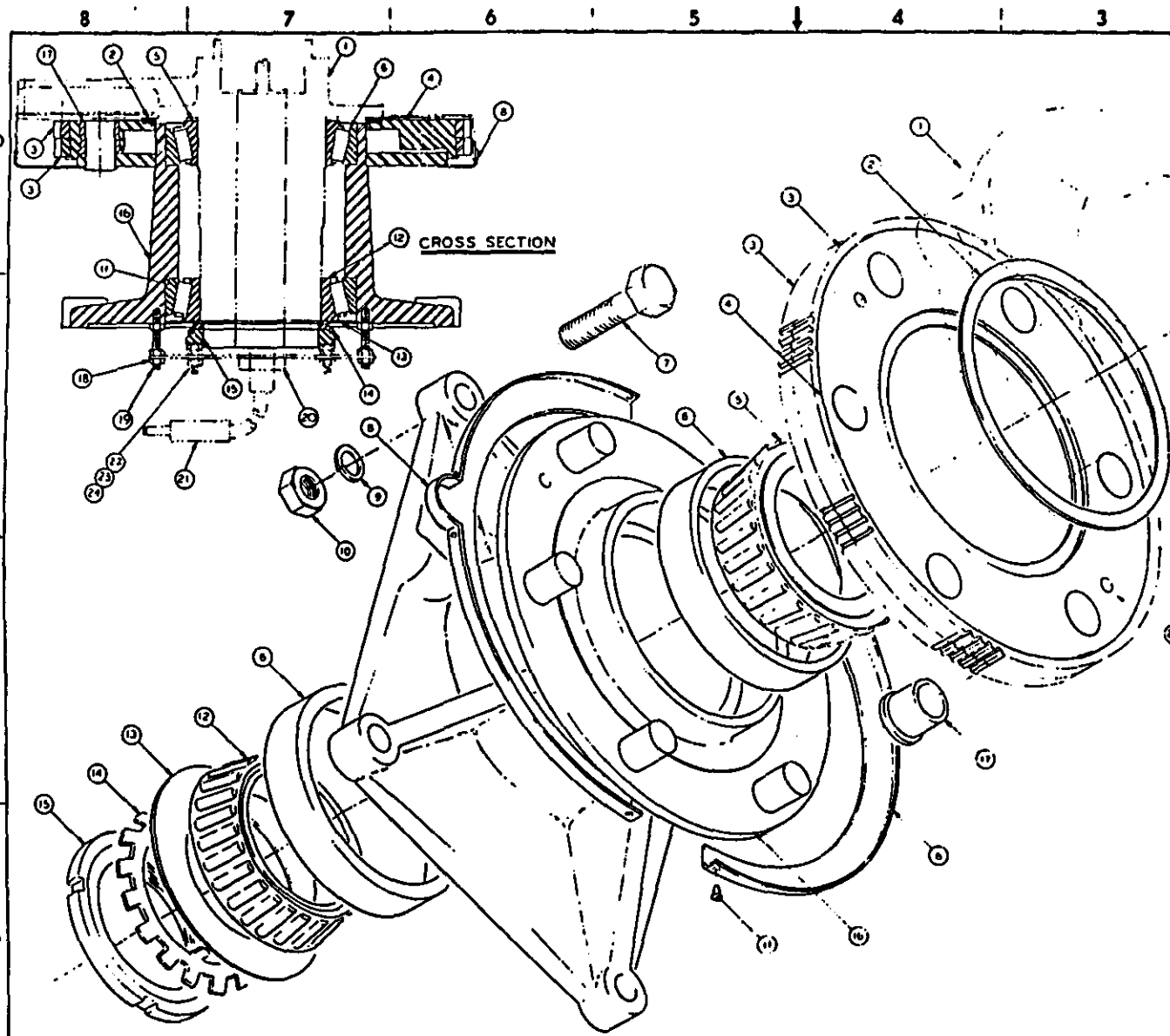
ITEM	D/S	PART NO.	DESCRIPTION
QUANTITY		LIST OF MATERIAL	
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED. ANGLES $\pm 1/2^\circ$   .XX $\pm .40$ FRACTIONAL $\pm 1/16$   .XXX $\pm .010$ REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 - 1973		DRAWN BY <i>Amstons</i> DATE <i>4/23/81</i> CHK'D BY  DATE  ENG. BY  DATE  THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.	<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475 <b>TITLE</b> <b>LUBRICATION CHART</b> <b>5004 - 6006</b>
NEXT ASS'Y		SCALE ~	SIZE A
		DRAWING NO. AW-1001	REVISION
		WEIGHT	SHEET <u>1</u> OF <u>1</u>







5-4.0.0



ITEM	QTY	PART NO.	DESCRIPTION
1	1		PEDESTAL ASSY (REF)
2	1	210001	SYNTHANE RING
3	2	301300	GEAR
4	1	234101	GEAR PLATE
5	1	238700	CONE, UPPER
6	2	238500	CUP
7	4	015100	7/8 - 14 NF X 4 GD 3 CAPSCREW
8	1	302203	GEAR GUARD, LWR
9	4	022200	7/8 LOCKWASHER
10	4	016900	7/8 - 14 NF HEX NUT
11	7	004800	# 10 X 3/8 SELF TAPPING P.H. SCR
12	1	238800	CONE, LWR
13	1	302402	SHIELD
14	1	306202	LOCKWASHER
15	1	307702	NUT
16	1	234400	BASE
17	6	234300	BUSHING
18	6	016600	3/16 - 24 NF NUT HEX
19	2	007810	3/16 - 24 NF X 2-1/2" ALL THD
20	1	304400	LOWER BRACKET
21	1	802713	MALE PLUG
22	2	020200	WASHER, SPLX 1/4 CP
23	4	015800	NUT, 1/4 NCCP
24	2	006002	SCREW 1/4-20 X 3/4

NOTE:  
235700-BASE KIT CONSISTS OF  
ITEMS 4,6,17, AND 20.

WHEN ORDERING PARTS BE SURE TO  
SPECIFY MODEL AND SERIAL NUMBER

CONTRACT NO. ....		AUTO CRANE COMPANY	
AUTO CRANE CO.		2000 BROWN AVE. (N.W.) DALLAS, TEX. 75210	
DRAWING NO.	DATE	BASE ASSEMBLY 8006	
APPROVED			
CHECKED			
DRAWN	JBM 7-1-70		
SHEET NO. 1 OF 1		DRAWING NO.	
D		M 115	
SCALE	WEIGHT	SHEET OF	



## MAINTENANCE OF BASE ASSEMBLY MODEL 6006 SERIES

The features incorporated in the Model 6006 Series base permits the increased rating of the unit. Some of these features are: The heavier pedestal quill (Item 1) which permits the maximum spread between the bearings. The double ring gears (Item 3) provide for rotating the boom with heavier loads. An added feature is the floating gear plate (Item 4) which provides perfect alignment of the ring gears with the turn drive pinion. The gear plate is mounted on 6 resilient bushings (Item 17). The bushings absorb shock loading on the gear teeth and provide a cushioned start and stop of the swinging boom.

### 1. PREPARATION FOR DISASSEMBLY:

To disassemble the base, some preparation must be made: Disconnect the coupling (21) from the power source, remove turn actuator, remove unit batter. Remove crane from its mounting by removing four hold-down bolts (7) and lift the crane vertically to clear the swivel assembly (20). One method is to block up under the boom near the hinge point and tilt the unit over on the bottom to a horizontal position. Remove lower gear guard (8) by removing seven self-tapping screws (Item 11). Next (4) 5/8 N.C.X. 1 1/2 capscrews (Item 25, cross sectional view) should be installed and pulled down tight. These capscrews will hold the compression on the shoulders of bushing (17) and hold the gear plate in proper relation until reinstalled.

### 2. REMOVE SWIVEL ASSEMBLY:

Remove nut (18). Swivel bracket (20). Remove stud bolts (19) to avoid damage to studs.

### 3. REMOVE BEARING NUT:

One tongue of lockwasher (14) is bent into one of the key slots in the nut (15). Bend Tongue out of key slot using screwdriver or drive bar. Remove nut using spanner wrench or drive bar.

The base (16) is now held to the quill by the cone of bearing (12). Remove base from quill using puller or drive bar. Cone bearing (12) will come off with base. Thrust ring (2) can now be removed.

### 4. GEAR REMOVAL:

If the base was removed in order to replace the gear rings (3), no further disassembly need be done. The gears have been heated and installed on the gear plate (4) and then tackwelded in place.

Remove tackwelds with a chisel or cutting torch. A grinder could also be used. The gears can be cut with a cutting torch holding the torch at a tangent to the gears.

### 5. GEAR INSTALLATION:

Check to be sure all burrs have been removed from the gear mounting surface of the gear plate. Since the gear is laminat-

nated, consisting of two gear rings, the installation procedure is as follows:

Heat one ring with a torch or in an oven to around 500°F using heavy gloves and install the first ring down against shoulder of gear plate. Allow to cool. Heat second ring.

(NOTE: It is important that the gear rings be evenly heated around the total circumference.) Install top ring down against lower rings.

It is important that the gear teeth are in alignment. This alignment can be accomplished by using a blunt chisel which has point slightly thicker than the pinion teeth. Drive the chisel lightly between the teeth of the two gear rings at different points around the gears while the upper ring cools. Continue checking and aligning teeth until the gear shrinks securely onto the gear plate. Tackweld each ring to the gear plate in at least four places.

NOTE: Unless the customer has the facilities to install the gear rings as outlined above, it is recommended that he order the gear plate with the gear rings factory installed. If the gear and plate assembly is returned, an exchange price adjustment will be made.

### BEARING REMOVAL:

If the base is being disassembled in order to replace the pedestal assembly (Item 1), the bearing cone (Item 5) should be removed from the pedestal quill. This can be done by using a pry bar. If the bearings are to be replaced, the cone (5) should be removed as well as the bearing cups (Item 6). The cups can be removed by using a drive bar through the open ends of the base.

### REASSEMBLE, BEARING INSTALLATION:

To install bearing cone (5) heat to around 200°F. Be sure the bearing cup is installed up against upper shoulder. Install bearing cups (6) in base; be sure they are all of the way in, up against the shoulders in the base. Lubricate upper cone (5) with grease gun grease, filling spaces between rollers. Install base on pedestal quill. Lubricate and install lower cone (12). Install grease shield (13), lock washer (14) and nut (15). Tighten nut (15) until it requires considerable effort to rotate the base on the quill.

Bend one of the tongues on lock washer (14) into one of the slots of the nut (15). Install swivel connection. The unit can now be raised and hold-down bolts (7) installed. Reinstall turn actuator.

WHEN ORDERING PARTS BE SURE TO SPECIFY MODEL AND SERIAL NUMBER.

FIXTURE NO.	FINISH NO.	CHG LTR	REVISIONS	DATE	APP'D
		DESCRIPTION			

6006 SHOWN, 5004 QUILL SIMILIAR

THESE BOLTS MUST TOUCH BOTTOM OF NUT (ON QUILL) TO HAVE PROPER GROUND. AS THEY WEAR, EACH MUST BE READJUSTED TO TOUCH NUT.

**NOTE:**  
 PROPER GROUND BETWEEN TRUCK CHASSIS & BASE OF CRANE IS VERY IMPORTANT FOR CHARGING OF CRANE BATTERY.

ITEM	Q/S	PART NO.	DESCRIPTION
QUANTITY			
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED.			
ANGLES $\pm 1/2^\circ$   .XX $\pm .40$ FRACTIONAL $\pm 1/16$   .XXX $\pm .010$ REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 - 1973			
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.			
NEXT ASS'Y			

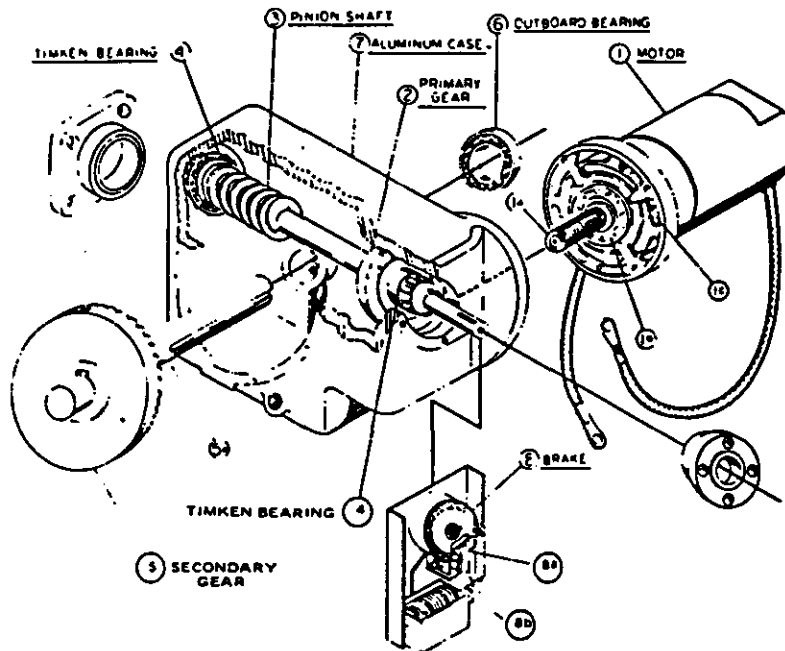
**AUTO CRANE COMPANY**  
 P.O. BOX 45548 • TULSA, OKLAHOMA 74145  
 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475

**BASE ASSEMBLY - TWECO**

SCALE: ~ SIZE: B DRAWING NO: AW-304601 REVISION:   
 WEIGHT: SHEET 1 OF 1

# AUTO CRANE

## "Model "B" Actuator



## MODEL "B" ACTUATOR

Designed and Manufactured by AUTO CRANE for the most efficient operation.

### OUTSTANDING FEATURES

1. The motor is the source of power. It is a universal type, reversible motor, available in up to 24-volt direct current. The direct current motor will develop 3/4 H.P. on 12-volt direct current at 5000 RPM (8000 RPM no load speed), or 1-1/2 H.P. on 24-volt direct current at 10,500 RPM (16,000 RPM no load speed).

The primary gear pinion (1-a) is integral with the armature shaft. The armature shaft is mounted on two ball bearings (1-b). The motor is cooled by a fan (1-c) which is mounted on the armature shaft, providing forced air cooling through the motor housing.

2. The primary gear is mounted on the secondary pinion shaft.
3. The secondary pinion is integral with the shaft.
4. The secondary pinion shaft is mounted between two Timken tapered roller bearings.

5. The secondary gear is mounted on the output shaft (5-a) and completes the Helicon R gear train which provides the most efficient reduction. Ratios of 514 to 1, or 1028 to 1 overall reductions are available. (a 163 to 1 high speed reduction is also available using a secondary worm and gear.)
6. When mounted on the crane structure, outboard ball bearings (sealed for life) support the 1-1/4" diameter output shaft (5-a).
7. The gear train is mounted within an aluminum alloy case. The gears are totally enclosed and are oil bath lubricated. The motor (1) mounts directly to the gear case.
8. The secondary pinion shaft (3) extends through the gear housing and provides for attachment of the inertia and load holding brake (8). The springs (8-a) applies the brake band at all times except when the motor is energized. When the motor is energized, the solenoid (8-b) is also energized and will release the brake. Since the motor is reversible, the load is controlled during raising or lowering under power. When the motor and solenoid are de-energized, the brake will hold the load until the motor and solenoid are again energized.
9. Refer to Dwg. AW-008 for maintenance instructions for the motor brushes.

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ITEM QTY PART NO DESCRIPTION

## NOTE:

\* SCREW 005611 MAY BE NEEDED  
DEPENDING ON MOTOR BEING USED.

## NOTES

1. USE PART NO. 300904 FOR  
PRESSFIT OF ITEMS 9 AND 39.
2. USE PART NO. 300801 FOR  
PRESSFIT OF ITEMS 8 AND 38.

SEE NOTE 2

SEE NOTE 1

CONTRACT NO.		AUTO CRANE COMPANY	
DRAWING NO.		1946 REEVE-SPEER LIFTING SYSTEMS, INC.	
APPROVED		ACTUATOR ASSEMBLY MODEL "B" (B-3000)	
CHECKED		DATE	
DRAWN		DATE	
SCALE		DWT	
SCALE		DWT	

5-8.0.0

D

C

B

A

D

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B

A

**ACTUATOR ASSEMBLY MODEL "B"**  
**AW-300002**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	300105	MOTOR 24 VDC
2	1	300205	PRIMARY GEAR
3	1	300306	SHAFT
4	1	300405	SECONDARY GEAR
5	1	300503	GEAR CASE
6	1	300601	COVER
7	1	300706	GASKET, SET
8	1	300801	BEARING, CARRIER
9	1	300903	BEARING, CARRIER
10	1	301706	SEAL-OUTPUT SHAFT
11		(REF.)	HOUSING
12	1	301806	SEAL, SECONDARY SHAFT
13	1	301906	SHIM SET
14	1	302008	SHIM SET
15	1	302101	BEARING, CONE
16	1	302201	BEARING, CONE
17	5	005610	CAPSCREW 1/4 - 20 X 3/4 SOC. HD.
18	8	020200	LOCKWASHER, 1/4
19	2	008601	CAPSCREW 3/8 - 16 X 7/8 HX. HD.
20	6	020601	5/16 LOCKWASHER
21	4	008701	3/8 - 16 X 1 SCREW
22	4	021402	LOCKWASHER 3/8 SHAKEPROOF
23	1	040406	#404 WOODRUFF KEY
24	1	060600	#606 WOODRUFF KEY (3/16 X 3/4)
25	1	060601	#E WOODRUFF KEY (3/8 X 1 1/4)
26	3	000209	1/4 PIPE PLUG, SOC. HD.
27	1	302406	VENT, FITTING
28	1	302500	SEAL
29	1	307201	CHANNEL
30	2QT.	REF.	MOBIL OIL # 46 SAE 90
31	1	307701	BRAKE HUB ASSEMBLY
32	6	007811	5/16 - 18 X 1 GR.5 CAPSCREW
33	2	021100	3/8 LOCKWASHER
34	1	301006	SHAFT, OUTPUT
35	1	400600	RETAINING RING (RST-125)
36	4	005903	1/4 - 20 X 7/8 GR.5 CAPSCREW
37	1	800320-003	1/4 X 1/4 X 1 15/16 KEYSTOCK (REF.)
38	1	302102	BEARING CUP
39	1	302202	BEARING CUP
40	1	000210	BUSHING, PIPE

## MAINTENANCE OF HOIST ACTUATOR AND BOOM ACTUATOR

This actuator is used with cable drums. It is used as the load hoist and boom hoist on the 5004 and 6006 Series units. It is also used on the 2403 Series units.

### 1. ACTUATOR REMOVAL

The actuator is attached to the base or pedestal by 3/8" NC x 3/4" long bolts (Item 19). A typical hoist drum installation is shown in the cross-sectional view. After capscrews (1) have been removed and electrical wires disconnected from the motor, the actuator and output shaft can be moved to the left. The key (37) will remain in the drum. On pedestal mounted units as shown, spacer rings are located on the shaft between the drum and support bearings, also between the gear case and the bearing.

### 2. OIL REMOVAL

The next operation will be to drain the oil from the gear case. This can be accomplished by removing one of the plugs (Item 26) located on the bottom side of the case.

### 3. MOTOR REMOVAL

Remove 4 socket head capscrews (Item 17) using the 3/16" long handle Allen wrench furnished with the unit for this purpose. The motor can now be lifted away from the gear case. The "O" ring (Item 28) serves as an oil seal between the motor/pilot and the gear case. Be sure that this "O" ring is in the recess of the gear case before reinstalling the motor.

### 4. COVER AND GEAR REMOVAL

Remove six capscrews (Item 32); remove cover (6) and shim set (7). **CAUTION:** Do not damage or destroy shim set). Drive the drum shaft (34) to the left, using block of wood (Avoid damage to the shaft). The gear (4) will come out of the large opening as the shaft is driven out. Remove gear from shaft. Woodruff key (25) and retaining ring (35) will remain with shaft.

### 5. PRIMARY GEAR AND SECONDARY PINION SHAFT REMOVAL

Remove brake kit (See brake kit instructions.) Remove screw (31) from brake hub. Pull brake hub, remove key (23). Remove 4 capscrews (Item 36) which hold brake channel and bearing carrier (8) to case. Remove Item (8). **CAUTION:** The shim sets (13 and 14) consist of the correct thickness for bearing and primary gear adjustment on each individual gear case. Remove seal (12). Remove four buttonhead capscrews (Item 21) using a 7/32" Allen wrench. Remove cover (9) and shim set (14). Bearing cups (15 and 16) can be removed by using a pry bar.

The pinion shaft and primary gear can now be removed from the gear case by extending the pinion end through the opening to the left until the primary gear end can be moved outwardly through the large side opening. Bearing (16) can best be removed by pulling primary gear (2) and bearing together – use puller or press. Bearing (15) can be removed with puller or press.

### 6. REASSEMBLY:

The above procedure constitutes removal and disassembly of the Actuator. To reassemble, perform the operations in reverse order.

### 7. GEAR ADJUSTMENT

The gear adjustment should be checked if new bearings (15 and 16) or new gears (2,3 or 4) are installed. Proceed as follows:

Install motor (1) with bearings (15 and 16) and primary gear (2) installed on shaft (3). Insert shaft in gear case. With bearing cups installed in bearing carriers (8 and 9), install bearing carriers without shims, using capscrews (21 and 36). Adjust the shaft until gear (2) fits snugly against pinion shaft on the motor.

Using plastic color coded shim set (14) as a feeler gauge, add or remove shims until a drag occurs when inserted between carrier (9) and gear case (5). Remove carrier (9) and add two paper shims, one each on front and back sides of the plastic shim set. This usually gives the proper clearance between primary gear and motor pinion. Check backlash between the gear and motor pinion which should be not less than .002" or more than .007". This can be approximated by placing the hand through the large opening in the gear case and determining that the gear has a very small amount of backlash.

Next remove motor and install carrier (8) with plastic shim set and two paper shims. Add or remove plastic shims until bearings fit snugly in cups with the shaft free to turn. Reinstall motor and again check the backlash.

Install cover (6) and gear (4) against secondary pinion (3); determine thickness of shim set required in the manner described above. Check the backlash for the full 360° rotation.

If new gears or bearings are to be installed, new shim set are recommended. Each shim set consists of:

- 1—.005 Blue
- 1—.0075 Clear
- 2—.020 Yellow
- 2—.005 Vellumoid Brown

### 8. REINSTALL ACTUATOR ON PEDESTAL

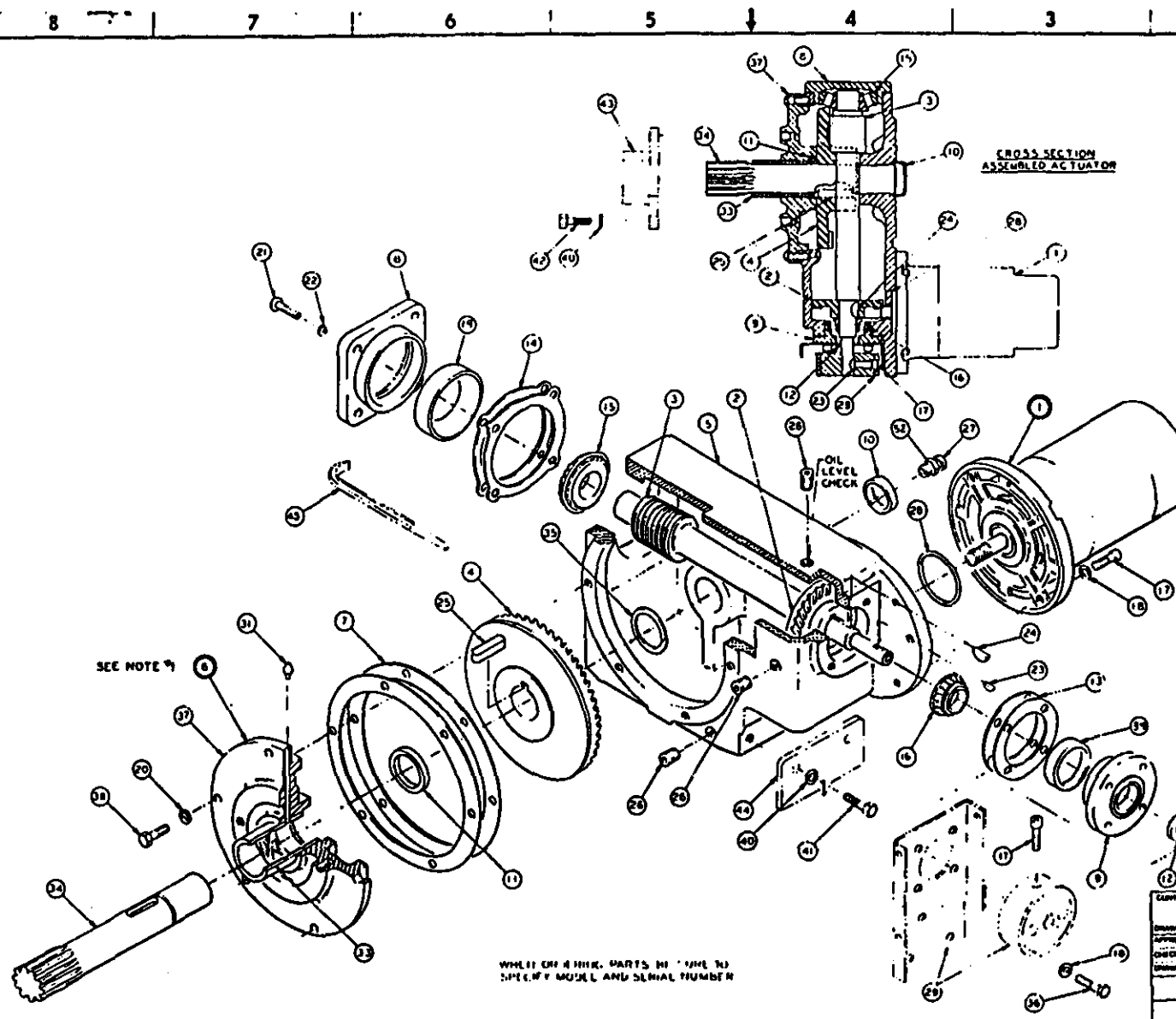
This can best be accomplished by removing the outboard bearing from the side plate (Removal of relay panel will be required). Install spacers on output shaft which will be between actuator case and side plate. Install shaft through left bearing just far enough to install spacer which will be between drum and bearing. Install the drum between the side plates and shove shaft through the drum. Key (37) and the drum spacer can be installed through the bearing opening. Reinstall outboard bearing.

### 9. LUBRICATION

An extreme pressure (EP-80-90) lubricant is used in the gear case. The output shaft bearings are factory lubricated and sealed and need no further lubrication.

**WHEN ORDERING PARTS BE SURE TO SPECIFY MODEL AND SERIAL NUMBER**

5-10.0.0



NOTES:

1. ITEM NO. 6 CONSISTS ITEMS 11, 31, 33, 37 AND MAY BE PURCHASED FACTORY ASSEMBLED.
2. USE PART NO. 300801 FOR PRESSFIT OF ITEMS 8 AND 19.
3. USE PART NO. 300904 FOR PRESSFIT OF ITEMS 9 AND 39.

CONTRACT NO.	AUTO CRANE CO.		
DRAWING NO.	TURNER ACTUATOR ASSY.		
DATE	JUN 16-53		
BY	D		
SCALE	1/2"	1/2"	1/2"
SHEET	1	OF	1

AUTO CRANE COMPANY  
TURNER ACTUATOR ASSY.  
(8-3153)

AW-315302

**TURNER ACTUATOR ASSEMBLY**  
**AW-315302**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	300105	MOTOR
2	1	300205	PRIMARY GEAR
3	1	315000	SHAFT
4	1	315100	SECONDARY GEAR
5	1	300503	GEAR CASE
6	1	319200	COVER ASS'Y: SEE NOTE 1
7	1	300706	GASKET, SET
8	1	300801	BEARING, CARRIER
9	1	300903	BEARING, CARRIER
10	1	309800	SHAFT, END COVER
11	1	310800	SEAL, OUTPUT SHAFT
12	1	301806	SEAL, SECONDARY SHAFT
13	1	301906	SHIM SET
14	1	302008	SHIM SET
15	1	302101	BEARING CONE
16	1	302201	BEARING CONE
17	5	005610	1/4 - 20 X 3/4 SOC. HD. CAPSCREW
18	8	020200	1/4 LOCKWASHER
19	1	302102	BEARING CUP
20	6	020601	5/16 LOCKWASHER
21	4	008404	3/8 - 16 X 1" BUTTON SOC. HD. SCREW
22	4	021402	3/8 LOCKWASHER, SHAKEPROOF
23	1	040406	#404 WOODRUFF KEY-HARD (1/8 X 1/2)
24	1	060600	#606 WOODRUFF KEY (3/16 X 3/4)
25	1	315325	KEY 3/8 X 3/8 X 1 1/2 RD. END.
26	3	000209	1/4 PIPE PLUG SOC. HD.
27	1	304406	VENT FITTING
28	1	302500	SEAL
29	1	308201	BRAKE KIT
30	2QT.	REF.	MOBIL OIL #46 SAE 90
31	1	239000	ALEMITE 1728-B ZERK
32	1	000210	BUSHING, PIPE 1/4 X 1/8
33	1	310700	SLEEVE BEARING
34	1	309600	PINION
35	1	400600	RETAINING RING
36	4	005606	1/4 X 7/8 NC GR.5 CAPSCREW
37	1	310600	ACTUATOR COVER
38	6	007811	5/16 X 1 NC GR.5 CAPSCREW
39	1	302202	BEARING CUP
40	4	021100	3/8 LOCKWASHER
41	2	008701	3/8 - 16 X 1 NC GR.5 CAPSCREW
42	2	008601	3/8 - 16 X 7/8 GR.5 CAPSCREW
43			QUILL (REF.)
44			ANCHOR BRACKET (REF.)
45			LINE UP BAR (REF.)



## MAINTENANCE OF TURNER ACTUATOR

This actuator is used on units that provide power rotation of the boom. It is installed on the unit with the motor in a vertical position. The actuator is attached to the pedestal by support arm (43) which positions the pinion (34) in the proper relation to the turn gear mounted on the base of the unit. Two capscrews (Item 42) hold the actuator down on the support arm. Two capscrews (Item 41) attach the actuator to bracket (44) to prevent rotation of the gear case about pinion shaft (34).

### ACTUATOR REMOVAL

To remove actuator from pedestal, remove capscrews (41) and (42), disconnect electric cables from motor and lift actuator vertically upward until the pinion (34) is out of the support arm (43).

### OIL REMOVAL

The next operation will be to drain the oil from the gear case. This can be accomplished by removing one of the plugs (Item 26) located on the bottom side of the case.

### MOTOR REMOVAL

Remove 4-socket head capscrews (Item 17) using the 3/16 long handle Allen wrench furnished with the unit for this purpose. The motor can now be lifted away from the gear case. The "O" ring (Item 28) serves as an oil seal between the motor pilot and the gear case. Be sure that this "O" ring is in the recess of the gear case before reinstalling the motor.

The motor removal can be accomplished without removing the actuator from the unit as described in Paragraph (1).

### GEAR COVER AND PINION REMOVAL

The output shaft (34), cover plate (37), secondary gear (4) and retaining ring (35) are put together as a sub-assembly, and must be assembled in this order before installing in gear case.

Observe location of zerk fitting (31). The cover must be reinstalled in the same relation to the gear case. Remove the two buttonhead capscrews using a 3/16 Allen wrench. Observe that these buttonhead capscrews are on opposite side from the zerk fitting, and are required to provide clearance between the cover and the support arm (43). Remove the remaining hex-head capscrews (38). Remove cover from gear case.

### PINION REMOVAL

After removing cover from gear case, remove retaining ring (Item 35) from pinion shaft (34). Pull secondary gear (4) from shaft, using puller or press. Remove key (25) from shaft. Drive shaft through cover, use hammer handle or other soft object. Do not damage shaft. The seal (11) can now be removed.

### REMOVAL OF BUSHING

The bushing (33) is installed in the cover in the following manner:

The bushing is pressed into cover, being sure that oil holes through bushing will line up with grease groove in cover.

### 7. PRIMARY GEAR AND SECONDARY PINION SHAFT REMOVAL

Remove brake kit. (See brake kit instructions.) Remove 4 cap screws (Item 36) which hold brake channel and bearing carrier (9) to case. Remove Item (9). CAUTION: The shim sets (13 and 14) consist of the correct thickness for bearing and primary gear adjustment on each individual gear case. Remove seal (12). Remove four buttonhead capscrews (Item 21) using a 7/32 Allen wrench. Remove cover (8) and shim set (14). Bearing cup (15 and 16) can be removed by using a line-up bar.

The pinion shaft and primary gear can now be removed from the gear case extending the pinion end through the opening to the left until the primary gear end can be moved outwardly through the large side opening. Bearing (16) can best be removed by pulling primary gear (2) and bearing together - use puller or press. Bearing (15) can be removed with puller or press.

### 8. REASSEMBLY

The foregoing constitutes disassembly of the turner actuator. To reassemble, perform the operation in reverse order.

### 9. GEAR ADJUSTMENT

The gear adjustment should be checked if new bearing (15 and 16) or new gears (2, 3 or 4) are installed. Proceed as follows:

Install motor (1) with bearings (15 and 16) and primary gear (2) installed on shaft (3). Insert shaft in gear case. With bearing cups installed in bearing carriers (8 and 9), install bearing carriers without shims, using capscrews (21 and 36). Adjust the shaft until gear (2) fits snugly against pinion shaft on the motor.

Using plastic color coded shim set (14) as a feeler gauge, add or remove shims until a drag occurs when inserted between carrier (9) and gear case (5). Remove carrier (8) and add two paper shims, one each on front and back sides of the plastic shim set. This usually gives the proper clearance between primary gear and motor pinion. Check backlash between the gear and motor pinion which should be not less than .002" or more than .007". This can be approximated by placing the hand through the large opening in the gear case and determining that the gear has a very small amount of backlash.

Next remove motor and install carrier (9) with plastic shim set and two paper shims. Add or remove plastic shims until bearings fit snugly in cups with the shaft free to turn. Reinstall motor and again check the backlash.

With turner pinion shaft assembly consisting of pinion (34), cover (37) and gear (4) installed against secondary pinion (3), determine thickness of shim set required in the manner described above. Check the backlash for the full 360 degree rotation.

If new gears or bearings are to be installed, new shim set are recommended. Each shim set consists of:

- 1-.005 Blue
- 1-.0075 Clear
- 2-.020 Yellow
- 2-.005 Vellumoid Brown

If a shim is added to the front carrier bearing, you must take the same amount out of the rear. This moves shaft forward toward the motor pinion shaft.

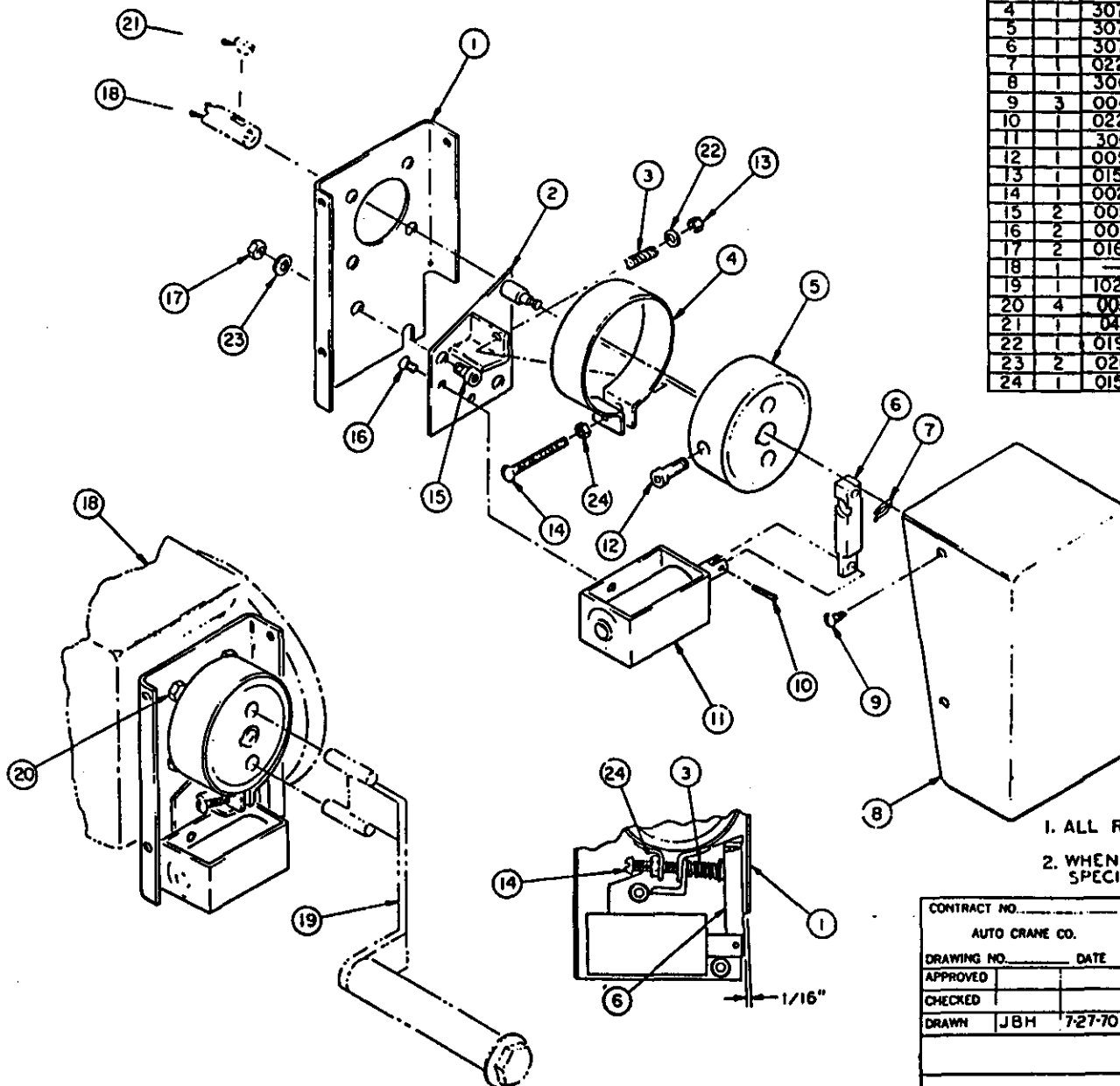
For Example: If you take twenty-thousandths (1 yellow shim) out of the rear, you must add twenty-thousandths to the front if the shaft needs to be moved forward. Reverse this procedure to move the shaft backwards, away from the motor pinion shaft.

#### 10. LUBRICATION

An extreme pressure (EP-80-90) lubricant is used in the gear case (capacity 2 quarts). A chassis lubricant is recommended for the bushing. Check oil level and lubricate bushing every 40 hours of crane operation.

WHEN ORDERING PARTS, BE SURE TO SPECIFY  
MODEL AND SERIAL NUMBER.

5-13.0.1



ITEM	QTY	PART NO.	DESCRIPTION
1	1	307201	CHANNEL (REF)
2	1	330402	BRACKET
3	1	308000	COMPRESSION SPRING
4	1	307300	BRAKE BAND
5	1	307701	BRAKE HUB ASSEMBLY (REF)
6	1	307500	LEVER
7	1	022800	CARBURETOR CLIP, 1/8"
8	1	306700	GUARD, ACTUATOR BRAKE (REF)
9	3	004800	SCREW, #10 X 3/8 S.T. PN.HD. (REF)
10	1	022700	SELOK PIN 3/32 X 1/2
11	1	306412	SOLENOID
12	1	005610	SCREW, 1/4-20 X 3/4 (REF)
13	1	015800	NUT, #10-32 SELF-LOCKING
14	1	002603	SCREW, #10-32 X 2 RD.HD.
15	2	005609	SCREW, 1/4-20 X 5/8 (REF)
16	2	001800	SCREW, #10-32 X 1/4 FLAT HD.
17	2	016300	NUT, 1/4-20 SELF-LOCKING (REF)
18	1		ACTUATOR ASSEMBLY (REF)
19	1	102400	HAND CRANK (REF)
20	4	005903	SCREW, 1/4-20 X 7/8 SOC. HD.(REF)
21	1	040406	WOODRUFF KEY #404 (REF)
22	1	019900	#10 FLAT WASHER CP (REF)
23	2	020400	WASHER, 1/4 FLAT (REF)
24	1	015803	10-32 CNTR. LOCK NUT CP

1. ALL REF. ITEMS MUST BE ORDERED SEPARATE.

2. WHEN ORDERING PARTS BE SURE TO SPECIFY MODEL AND SERIAL NUMBER.

CONTRACT NO. _____		AUTO CRANE CO.	
DRAWING NO. _____		DATE _____	
APPROVED _____	CHECKED _____	DRAWN J.B.H. 7-27-70	
SIZE C		CODE IDENT. NO.	DRAWING NO. AW-308201
SCALE	NONE	WEIGHT	SHEET OF

7/84

## MAINTENANCE OF 12/24 VOLT BRAKE KIT

### 1. FUNCTION

A brake is incorporated on each actuator. The brake was designed to perform two functions. One of the functions is load holding after the pendant switch is neutralized. The other function is to prevent excessive coasting after either pendant switch release or the boom travel limit switch is triggered.

### 2. TROUBLE SHOOTING

A. Problem	Cause	Repair
Brake fails to hold load or stop hub effectively	Damaged or out of adjustment	Replace damaged parts. If necessary, adjust per instructions.
Brake hub turns on shaft	Woodruff key sheared in actuator shaft	Replace Key
No electrical current to brake	Broken Wires or damaged terminals	Replace wiring to brake
Solenoid inoperative	Dirty contact points at solenoid	Remove brake wires from solenoid terminals, clean and reattach.
	Solenoid burned out	Replace with new solenoid.

### 3. ADJUSTMENT:

A view of proper adjustment of the brake is shown on illustration and inside brake guard, Item (8). The sequence is repeated here in the event the instructions in the cover are not available.

- A. Remove brake guard (Item 8) by removing three # 10 pan HD screws.
- B. Inspect brake assembly to insure that no foreign objects will impair a proper setting of the brake.
- C. Hold the self-locking nut (Item 13) with a proper wrench. With a screwdriver, turn the adjusting screw (Item 14) until a clearance of 1/16" is obtained between brake lever (Item 6) and brake channel (Item 1).
- D. Observe brake operation by operating the proper toggle on pendant. Make sure the brake releases the instant it is pushed. If not, increase brake lever clearance slightly until this occurs.
- E. Replace brake guard.

### 4. DISASSEMBLY:

Disassembly of the brake can be accomplished without removing actuator from unit. However, if disassembly is to include brake channel (Item 1) and brake hub (Item 5), the oil should be drained from actuator.

#### A. Removal of Brake Assembly:

- (1) Remove brake guard (Item 8) by removing three # 10 pan HD screws (Item 9).
- (2) Remove the two brake wires to solenoid (Item 11).
- (3) Release brake assembly from brake system by removing

two 1/4-20 Allen head capscrews (Item 18).

- (4) Located on backside of brake assembly bracket (Item 2) are two # 10 flat HD screws (Item 16) which must be removed to replace brake solenoid (Item 11).
- (5) Remove small carburetor clip from brake lever anchor pin, compress brake band spring (Item 4) and lift off brake lever (Item 6).
- (6) Hold acorn nut (Item 13) and turn adjusting screw (Item 14) until separation. Then slide off washer (Item 22) and spring (Item 10).
- (7) To remove solenoid plunger from brake lever (Item 6) drive out pin (Item 10).

B. The remaining two items are attached to the actuator assembly and care should be taken during their removal to avoid damage to actuator.

- (1) Remove 1/4-20 Allen HD bolt (15). The brake hub (Item 5) is a press fit on actuator shaft; therefore, a small gear puller will be required for removal. Check Woodruff key (Item 21) for damage.
- (2) The brake channel (Item 1) is held in place by four 1/4-20 Hex HD capscrews that also hold bearing carrier for actuator shaft to actuator housing.

### 5. REASSEMBLY:

Assemble in reverse sequence to above.

- A. When brake hub has been removed, the proper relocation during assembly is approximately 1/32" past being flush with end of shaft.
- B. Do not fail to place a small amount of grease on the anchor pin and in the counter bore of the brake lever.
- C. Adjust brake per instructions and install brake guard (Item 8).

### 6. EMERGENCY MANUAL OPERATION:

In case of power failure, remove three #10x3/8 screws (Item 9) holding the brake cover (Item 8). Insert hand crank (Item 19) into the two holes in the brake hub. Release the brake by manually actuating brake solenoid with thumb or finger while turning crank. This will permit positioning the crane in stowed position until power can be restored.

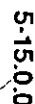
### BRAKE REPAIR

Brake Hub Assembly (Item 5) is subject to normal wear. As a result, the brake pad surface will become glazed and smooth over a period of time, depending upon usage of the crane and cause ineffective braking and increased coasting after the pendant switch is released.

The easiest way to repair the brake pad is as follows:

1. Remove brake guard (Item 8) by removing three # 10 pan head screws (Item 9).
2. Remove band and solenoid assembly by removing two 1/4-20 soc. head capscrews (Item 15).
3. Hold the solenoid and press the lever (Item 6) keeping the lever pressed to release the brake band (Item 4). Carefully pull the whole assembly away from the hub.
4. Brake Hub Assembly (Item 5) will now be visible for inspection. If the surface of pad is found to be glazed, hold a Vixon file or Emery cloth against the pad (braking surface) and run the particular motor by engaging pendant switch.
5. After the entire surface of the pad has been uniformly roughened, assemble in reverse sequence to above.

CHG LTR	REVISIONS		
	DESCRIPTION	DATE	APP'D



ITEM	QTY	D/S	PART NO	DESCRIPTION
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>OTHERWISE NOTED ALL S ARE IN INCHES UNLESS OTHERWISE</p> <p>7" XX 2.40 S 2.1/16 XX 2.510 BURNS &amp; SHARP OT SCALE THIS</p> <p>NOT SHOWN ABOVE S 1/16 S-1073</p> <p>THE PROPERTY OF AUTO CRANE CO. NOT TO BE USED IN ANY MANNER DETRIM.</p> </div> <div style="width: 65%;"> <p style="text-align: center;">LIST OF MATERIAL</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>AUTO CRANE COMPANY</b></p> <p>PO BOX 06548 • TULSA, OKLAHOMA 74116</p> <p>9700 BROKEN ARROW EXPRESSWAY • 916 627 8475</p> </div> <p><b>TITLE</b></p> <p style="text-align: center; font-size: 1.2em;"><b>GUARD ASSEMBLY 24V.</b></p> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> <p><b>SCALE</b></p> <p style="font-size: 1.5em;">~</p> </div> <div> <p><b>SIZE</b></p> <p style="font-size: 1.5em;">C</p> </div> <div> <p><b>DRAWING NO.</b></p> <p style="font-size: 1.5em;">AW-306000-1</p> </div> <div> <p><b>REVISION</b></p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> <p><b>WEIGHT</b></p> </div> <div> <p><b>SHEET</b> 1 <b>OF</b> 1</p> </div> </div> </div> </div>				

UNLESS OTHERWISE NOTED ALL  
DIMENSIONS ARE IN INCHES.  
TOLERANCES UNLESS OTHERWISE  
SPECIFIED

ANGLES $\pm 1/2^\circ$	XX $\pm .40$
FRACTIONAL $\pm 1/16$	XXX $\pm .010$

REMOVE ALL BURRS AND SHARP  
EDGES. DO NOT SCALE THIS  
DRAWING.

TOLERANCES NOT SHOWN ABOVE  
ARE PER ANSI Y14.5 - 1973

## AUTO CRANE COMPANY

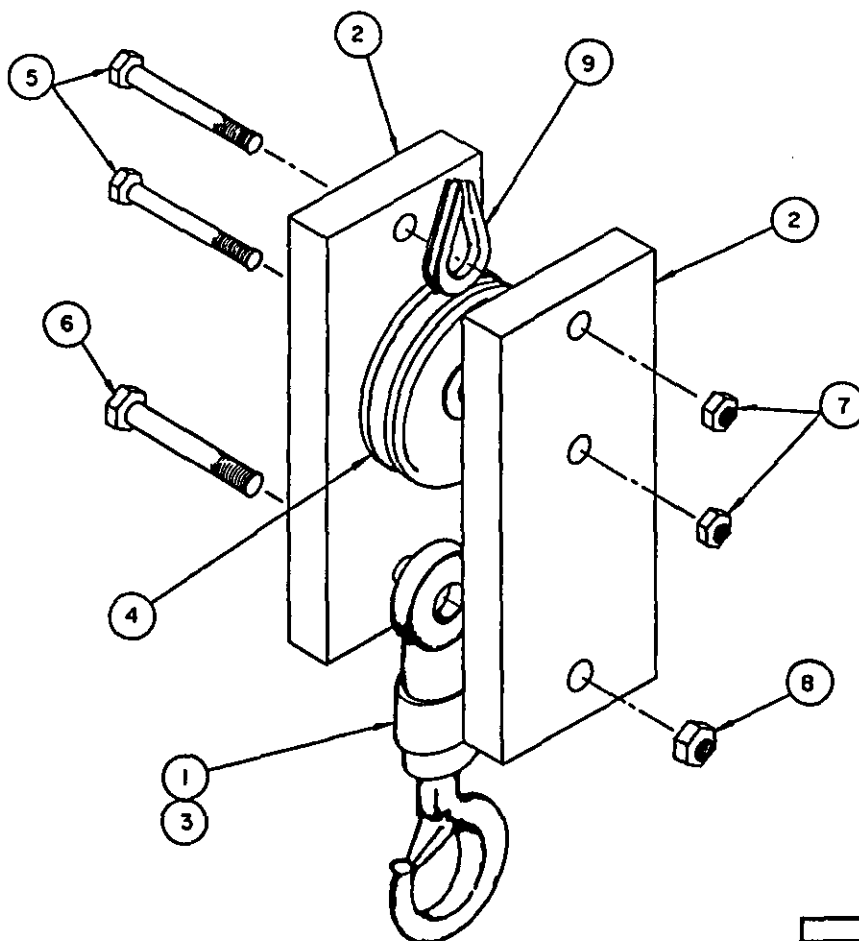
PO BOX 46648 • TULSA, OKLAHOMA 74146  
9780 BROKEN ARROW EXPRESSWAY • 918 627 0475

GUARD ASSEMBLY 24 V.

SCALE ~	SIZE C	DRAWING NO. AW-306000-1	REVISION
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RIGHT SHEET 1 OF 1

CHG LTR	REVISIONS		
	DESCRIPTION	DATE	APPRO



1	9	023600	THIMBLE - 5/16
1	8	018100	NUT, HEX. HALF LOCK 5/8 -18
2	7	017700	NUT, HEX. HALF LOCK 1/2 -20
1	6	013513	SCREW, H.H. 5/8-18 X 3 1/2" GR 5
2	5	011506	SCREW, H.H. 1/2 -20 X 3 1/2" GR 5
1	4	200163	SHEAVE ASSEMBLY
1	3	330000	TUBING, RD. DOM. 1" O.D. X 1" LG.
2	2	200162	PLATE, TRAVELING BLOCK
1	1	200197	HOOK, SWIVEL

		ITEM	O/S	PART NO	DESCRIPTION
		LIST OF MATERIAL			
QUANTITY		<b>AUTO CRANE COMPANY</b> P O BOX 6646 • TULSA, OKLAHOMA 74116 9700 BROKEN ARROW EXPRESSWAY • 918 527 9475			
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED ANGLES: 1/2"     3/8" & 40 FRACTIONAL: 1/16"     3/32" & 8/16 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973		DRAWN BY <i>SPJ</i> DATE <i>12/24/70</i> CHK'D BY  DATE  ENG BY  DATE		TITLE <b>TRAVELING SWIVEL BLOCK ASSEMBLY            (STANDARD)</b> SCALE <i>~</i> SIZE <b>C</b> DRAWING NO <b>AW-200161</b> REVISION	
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRI- MENTAL TO THEIR INTERESTS.		WEIGHT		SHEET <i>1</i> of <i>1</i>	

5-17.0.0

FIXTURE NO.	FINISH NO.	CHG LTR	REVISIONS DESCRIPTION	DATE	APP'D

ITEM	QTY	D/S	PART NO.	DESCRIPTION
8	2		360605	PIN BLOCK
7	2		360124	HITCH PIN (HAIR PIN)
6	1		017800	NUT HX. LK. 1/2 - 20
5	1		006801	SCW. HX. HD. 1/2 - 20 X 4
4	1		240237	SPACER, BUSHING 1" O.D.
3	2		360601	BLOCK, SIDE PLATE
2	1		200197	HOOK SWIVEL
1	1		240236	SHEAVE ASSEMBLY

QUANTITY		LIST OF MATERIAL	
		<b>AUTO CRANE COMPANY</b> <small>P.O. BOX 4848 • TULSA, OKLAHOMA 74116            (918) 437-0475</small>	
		<b>TITLE</b> TRAVELING BLOCK ASSEMBLY	
		SCALE ~	SIZE C
		DRAWING NO. AW-360602	REVISED 1
		WEIGHT ~	SHEET ____ OF ____

6-1.0.0

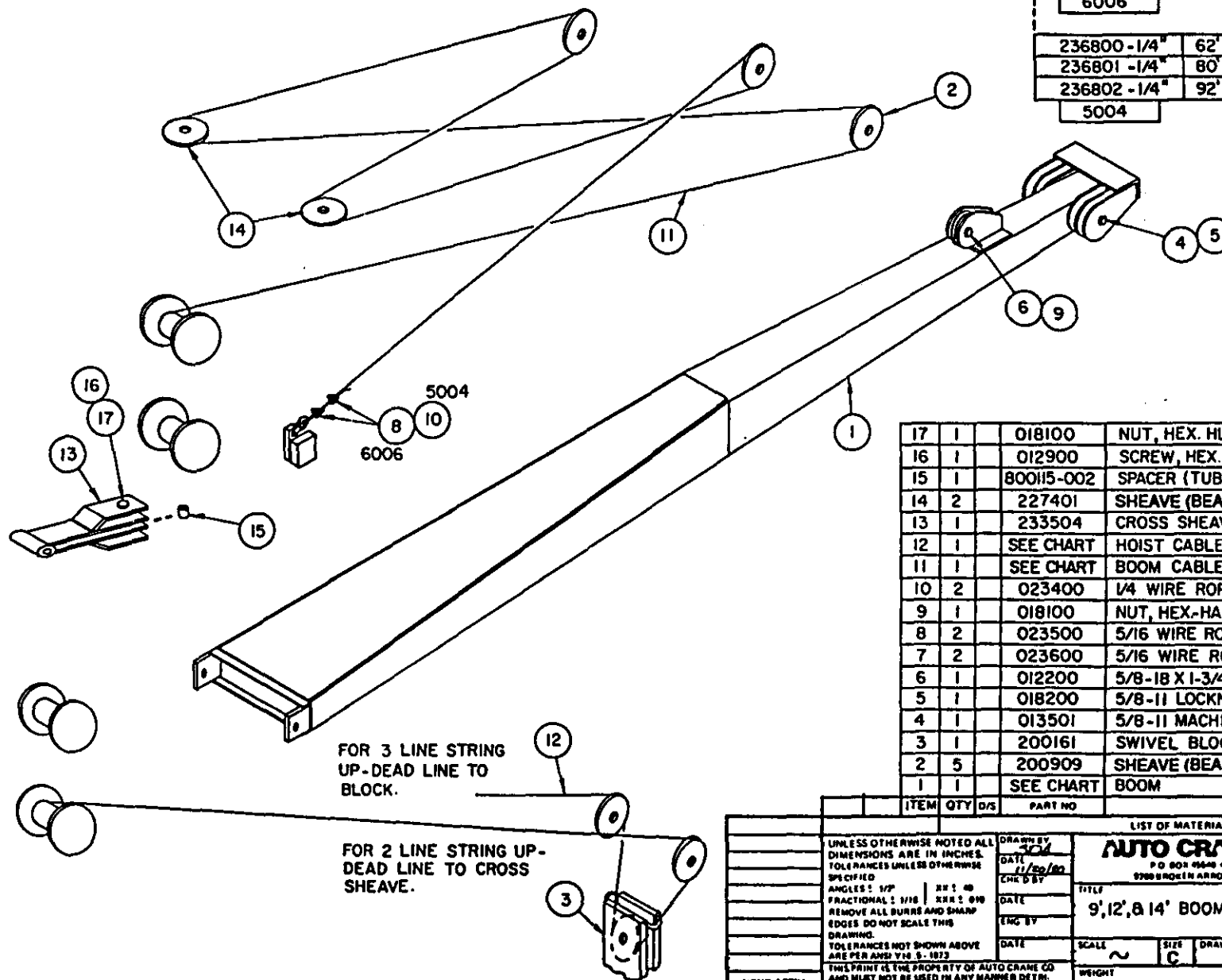
FIXTURE NO.	FINISH NO.

BOOM		BOOM CABLE		HOIST CABLE	
PART NO.	LG.	PART NO.	LG.	PART NO.	LG.
228009	9'	223002 - 5/16"	62'	236803 - 1/4"	75'
228012	12'	223006 - 5/16"	80'	236803 - 1/4"	75'
228014	14'	223003 - 5/16"	92'	236803 - 1/4"	75'

6006

236800 - 1/4"	62'
236801 - 1/4"	80'
236802 - 1/4"	92'

5004



17	1	018100	NUT, HEX. HLF.-LK. 5/8-18
16	1	012900	SCREW, HEX. HD. 5/8-18 X 3-1/2 GR-5
15	1	800H5-002	SPACER (TUBING, RD.)
14	2	227401	SHEAVE (BEARING 200100)
13	1	233504	CROSS SHEAVE FRAME
12	1	SEE CHART	HOIST CABLE
11	1	SEE CHART	BOOM CABLE
10	2	023400	1/4 WIRE ROPE CLAMP
9	1	018100	NUT, HEX.-HALF-LOCK 5/8-18
8	2	023500	5/16 WIRE ROPE CLAMP
7	2	023600	5/16 WIRE ROPE THIMBLE
6	1	012200	5/8-18 X 1-3/4 HEX. HD. SCREW
5	1	018200	5/8-11 LOCKNUT
4	1	013501	5/8-11 MACHINE BOLT 9" LONG
3	1	200161	SWIVEL BLOCK
2	5	200909	SHEAVE (BEARING 200100)
1	1	SEE CHART	BOOM

ITEM	QTY	DVS	PART NO	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 9540 • TULSA, OKLAHOMA 74109 9700 BROOKHURST EXPRESSWAY • 918 677 0675				
TITLE <b>9', 12', &amp; 14' BOOM ASSEMBLY</b>				
SCALE		SIZE	DRAWING NO	REVISION
~		C	AW-035	
WEIGHT		SHEET 1 OF 1		

UNLESS OTHERWISE NOTED ALL  
DIMENSIONS ARE IN INCHES.  
TOLERANCES UNLESS OTHERWISE  
SPECIFIED  
ANGLES: 1/2°    3/4° ± .00  
FRACTIONAL: 1/16    3/32 ± .00  
REMOVE ALL BURRS AND SHARP  
EDGES DO NOT SCALE THIS  
DRAWING.

TOLERANCES NOT SHOWN ABOVE  
ARE PER ANSI Y14.5-1973

THIS PRINT IS THE PROPERTY OF AUTO CRANE CO.  
AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL  
TO THEIR INTERESTS

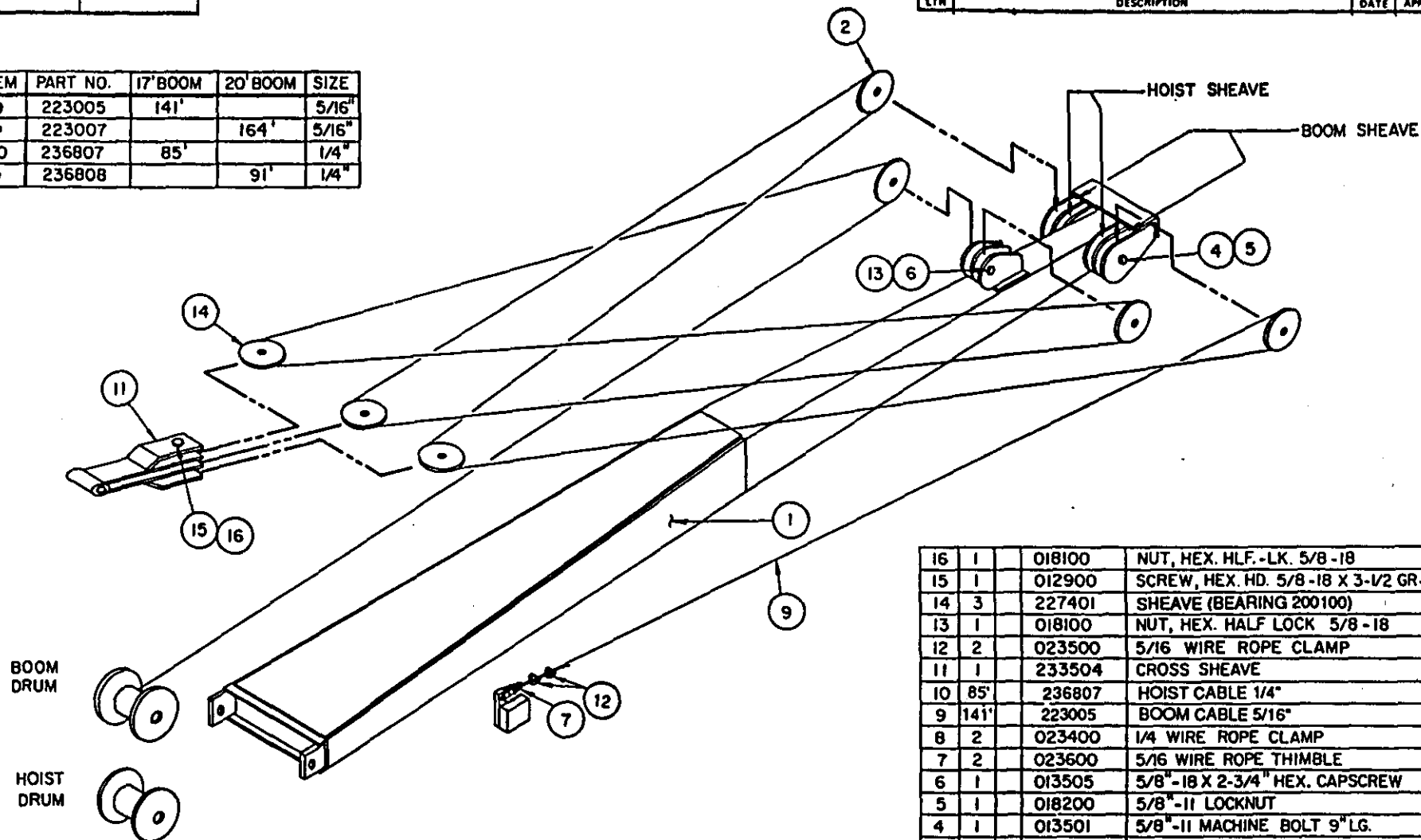
NEXT ASSY



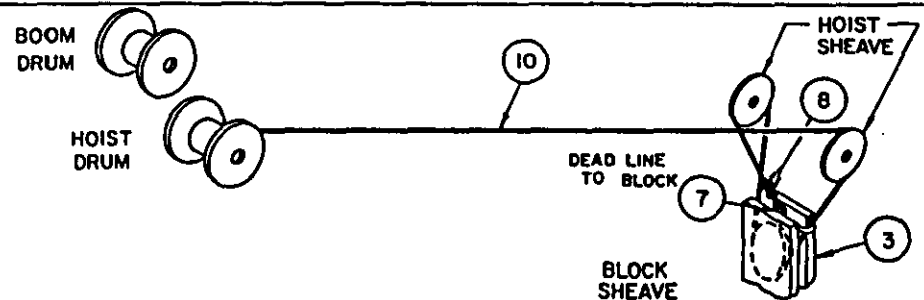
FIXTURE NO.	FINISH NO.

CHG LTR	REVISIONS		DATE	APP'D
	DESCRIPTION			

ITEM	PART NO.	17' BOOM	20' BOOM	SIZE
9	223005	141'		5/16"
"	223007		164'	5/16"
10	236807	85'		1/4"
"	236808		91'	1/4"



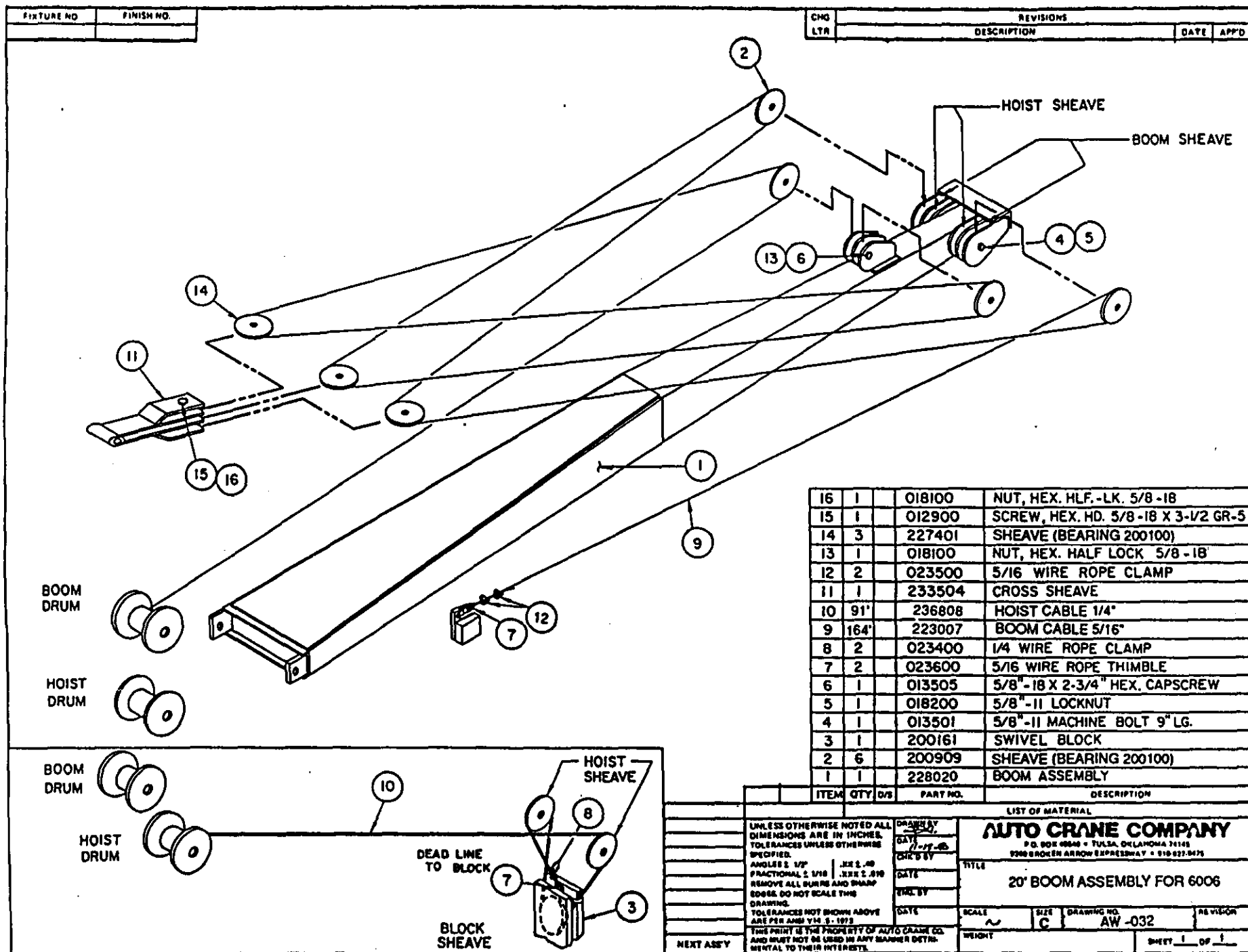
16	1	018100	NUT, HEX. HLF.-LK. 5/8 -18
15	1	012900	SCREW, HEX. HD. 5/8 -18 X 3-1/2 GR-5
14	3	227401	SHEAVE (BEARING 200100)
13	1	018100	NUT, HEX. HALF LOCK 5/8 -18
12	2	023500	5/16 WIRE ROPE CLAMP
11	1	233504	CROSS SHEAVE
10	85'	236807	HOIST CABLE 1/4"
9	141'	223005	BOOM CABLE 5/16"
8	2	023400	1/4 WIRE ROPE CLAMP
7	2	023600	5/16 WIRE ROPE THIMBLE
6	1	013505	5/8"-18 X 2-3/4" HEX. CAPSCREW
5	1	018200	5/8"-11 LOCKNUT
4	1	013501	5/8"-11 MACHINE BOLT 9" LG.
3	1	200161	SWIVEL BLOCK
2	6	200909	SHEAVE (BEARING 200100)
1	1	228017	BOOM ASSEMBLY



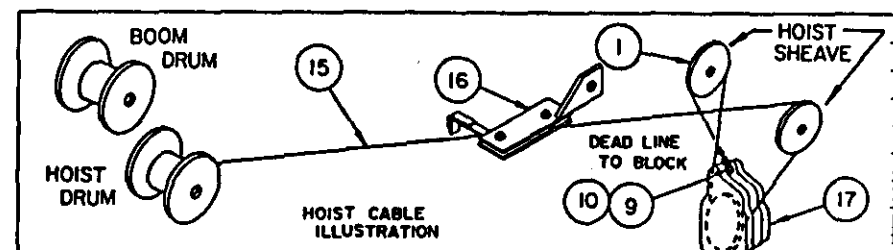
ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED				
ANGLES ± 1/2° OR 1.00 FRACTIONAL ± 1/16" OR 1.00 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING				
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 - 1973				
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS				
DRAWN BY DATE 10-19-80				
CHK'D BY DATE				
ENG BY DATE				
TITLE				
SCALE				
SIZE				
DRAWING NO.				
REVISION				
WEIGHT				
SHEET 1 OF 1				

6-2-0-0

6-3.0.0



CMG	REVISIONS		
LTR	DESCRIPTION	DATE	APP'D



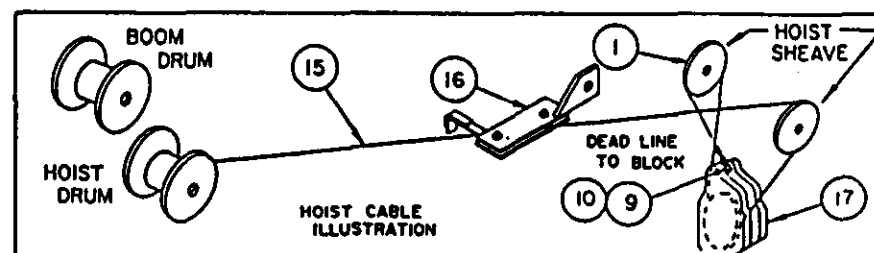
QUANTITY		ITEM	D/S	PART NO	DESCRIPTION
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED		<b>AUTO CRANE COMPANY</b> P O BOX 95548 • TULSA, OKLAHOMA 74105 9700 BROKEN ARROW EXPRESSWAY • 910 837 0415			
ANGLE 1/2"      HR 2.40 FRACTIGNAL 5/16      HR 2.000 REMOVS ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5. 1973		DRAWN BY DAI 12-12-70 CND BY		TITLE <b>EXTENDABLE BOOM</b> <b>10' - 16'</b>	
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTEREST.		DATE ENG BY DATE		SCALE ~	SIZE C
NEXT ASS'Y		DRAWING NO.		AW-241197	REVISION
		WEIGHT		SHEET 1 OF 2	

**EXTENDABLE BOOM AW-241197  
10' - 16' BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
1	6	240241	SHEAVE (BEARING 200100)
2	88'	800530	CABLE 5/16"
3	1	241196	LOWER BOOM
4	1	240201	BOOM, UPPER ASS'Y
5	3	227401	SHEAVE (BEARING 200100)
6	1	233504	CROSS SHEAVE
7	1	012900	SCREW 5/8 - 18 X 3 1/2 GR.5
8	2	018100	NUT HX. HLF. LK. 5/8 - 18
9	2	023600	5/16 WIRE ROPE THIMBLE
10	2	023400	1/4 WIRE ROPE CLAMP
11	2	023500	5/16 WIRE ROPE CLAMP
12	1	013504	SCREW HX. 5/8 - 18 X 5 GR.5
13	1	240246	PIN ASSEMBLY
14	2	012501	SCREW HX. 5/8 - 18 X 2 1/2 GR.5
15	88'	800529	CABLE 1/4"
16	1	240263	CABLE GUIDE ASSEMBLY
17	1	360602	SWIVEL BLOCK
18	1	012203	SCREW HX. 5/8 - 18 X 1 1/4 GR.5
19	1	240224	PAD LOCKING
20	2	007400	SCREW HX. 5/16 - 18 X 1" GR.5
21	2	020600	WASHER, SP. LK. 5/16
22	2	020901	WASHER, FLAT 5/16

- NOTE:**
1. 10' - 16' BOOM REQUIRES 360602 TRAVELING BLOCK
  2. TO CONVERT A FIXED BOOM TO A 10' - 16' EXTENDABLE BOOM, USE CONVERSION KIT PART NUMBER 241197-001

CHG LTR	REVISIONS		DATE	APP'D
		DESCRIPTION		



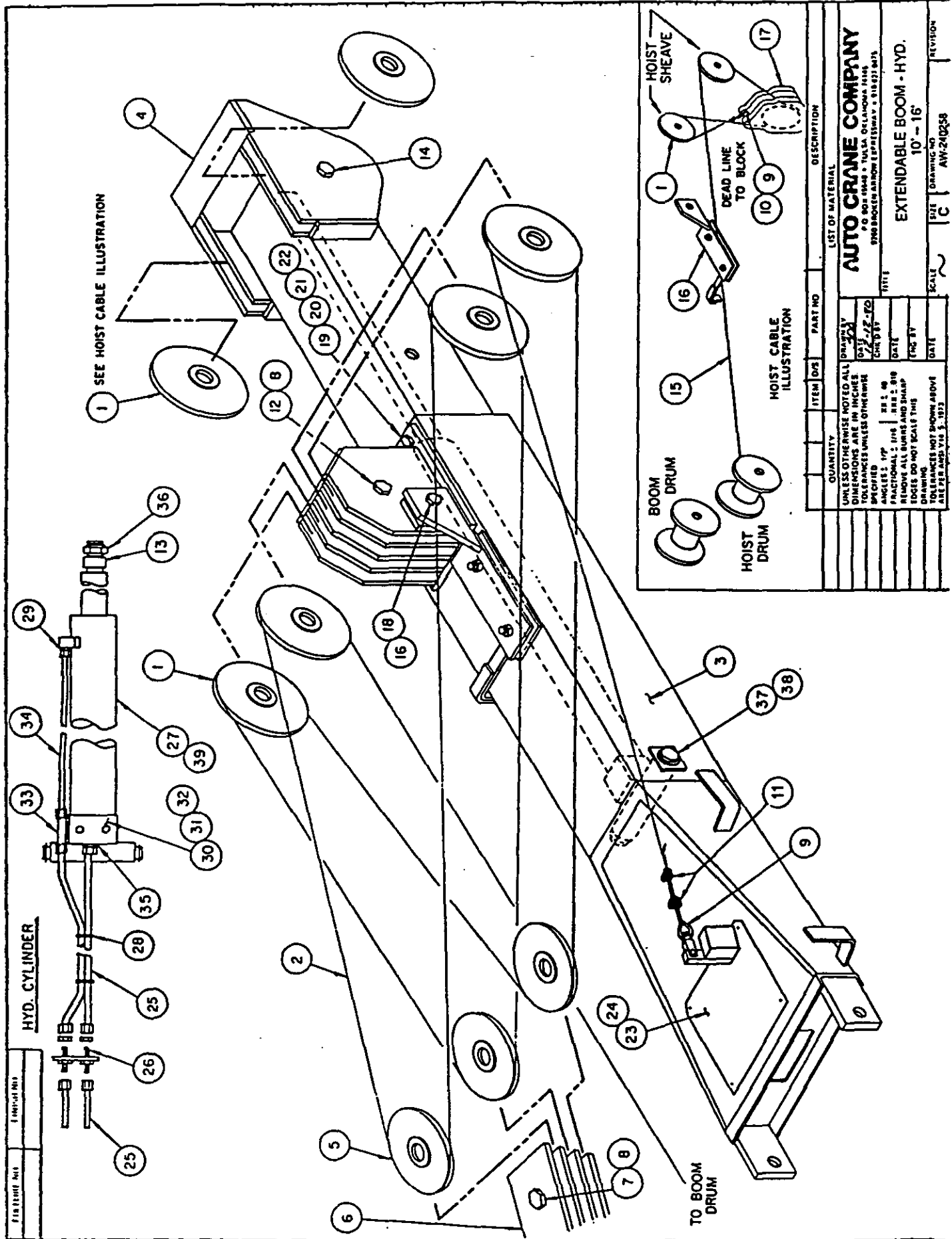
QUANTITY		ITEM D/S	PART NO.	DESCRIPTION
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED.		DRAWN BY <i>314</i>	LIST OF MATERIAL	
ANGLES 1/16" . . . . .X.X 2 .40 FRACTIONAL 2/16" . . . . .X.X 2 .010 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING.		CUT <i>114-70</i> CHK'D BY	<b>AUTO CRANE COMPANY</b> P.O. BOX 45546 • TULSA, OKLAHOMA 74116 9700 BROKEN ARROW EXPRESSWAY • 918-627-9475	
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.6 - 1973		DATE	TITLE	
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO.		ENG. BY	EXTENDABLE BOOM 14' - 20'	
		DATE	SCALE ~	SIZE C
			DRAWING NO. AW-240200	REVISION
		WEIGHT		

**EXTENDABLE BOOM AW-240200**  
**14' - 20' BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
1	6	240241	SHEAVE (BEARING 200100)
2	120'	800530	CABLE 5/16"
3	1	240202	LOWER BOOM
4	1	240201	BOOM, UPPER ASS'Y
5	3	227401	SHEAVE (BEARING 200100)
6	1	233504	CROSS SHEAVE
7	1	012900	SCREW 5/8 - 18 X 3 1/2 GR.5
8	2	018100	NUT HX. HLF. LK. 5/8 - 18
9	2	023600	5/16 WIRE ROPE THIMBLE
10	2	023400	1/4 WIRE ROPE CLAMP
11	2	023500	5/16 WIRE ROPE CLAMP
12	1	013504	SCREW HX. 5/8 - 18 X 5 GR.5
13	1	240246	PIN ASSEMBLY
14	2	012501	SCREW HX. 5/8 - 18 X 2 1/2 GR.5
15	92'	800529	CABLE 1/4"
16	1	240263	CABLE GUIDE ASSEMBLY
17	1	200161	SWIVEL BLOCK
18	1	012203	SCREW HX. 5/8 - 18 X 1 1/4 GR.5
19	1	240224	PAD LOCKING
20	2	007400	SCREW HX. 5/16 - 18 X 1" GR.5
21	2	020600	WASHER, SP. LK. 5/16
22	2	020901	WASHER, FLAT 5/16

**NOTES:**

1. TO CONVERT A FIXED BOOM TO A 14' - 20' EXTENDABLE BOOM, USE CONVERSION KIT PART NUMBER 240200-001



QUANTITY	ITEM NO.	PART NO.	DESCRIPTION
	1	1	BOOM DRUM
	2	2	HOIST DRUM
	3	3	DEAD LINE TO BLOCK
	4	4	HOIST SHEAVE
	5	5	1
	6	6	2
	7	7	3
	8	8	4
	9	9	5
	10	10	6
	11	11	7
	12	12	8
	13	13	9
	14	14	10
	15	15	11
	16	16	12
	17	17	13
	18	18	14
	19	19	15
	20	20	16
	21	21	17
	22	22	18
	23	23	19
	24	24	20
	25	25	21
	26	26	22
	27	27	23
	28	28	24
	29	29	25
	30	30	26
	31	31	27
	32	32	28
	33	33	29
	34	34	30
	35	35	31
	36	36	32
	37	37	33
	38	38	34

**AUTO CRANE COMPANY**  
 P.O. BOX 1848 • TULSA, OKLAHOMA 74101  
 900 BACKLICK ROAD • EPHRAIM, WY 82427

EXTENDABLE BOOM - HYD.  
 10' - 16'

UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES  
 TOLERANCES UNLESS OTHERWISE SPECIFIED  
 FRACTIONAL: 1/16, 1/8, 3/16, 1/2, 5/8, 3/4  
 DECIMAL: .005, .010, .015, .020, .025, .030, .035, .040, .045, .050, .055, .060, .065, .070, .075, .080, .085, .090, .095, .100  
 HOLES ALL SURFACES SHARP EDGES DO NOT SCALE THIS DRAWING  
 TOLERANCES NOT SHOWN ABOVE ARE PER AMS Y10.5.1973

**EXTENDABLE BOOM - HYD. AW-240258**  
**10' - 16' BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
1	6	240241	SHEAVE (BEARING 200100)
2	88'	800530	CABLE, BOOM 5/16"
3	1	240262	LOWER BOOM
4	1	330110	BOOM, UPPER
5	3	227401	SHEAVE (BEARING 200100)
6	1	233504	CROSS SHEAVE
7	1	012900	SCREW 5/18 - 18 X 3 1/2 GR.5
8	2	018100	NUT, HX HLF. LK. 5/8 - 18
9	2	023600	5/16 WIRE ROPE THIMBLE
10	2	023400	1/4 WIRE ROPE CLAMP
11	2	023500	5/16 WIRE ROPE CLAMP
12	1	013504	SCREW HX. 5/8 - 18 X 5 GR.5
13	1	800067-001	SPACER
14	2	012501	SCREW HX. 5/8 - 18 X 2 1/2 GR.5
15	88'	800529	CABLE HOIST 1/4"
16	1	200263	CABLE GUIDE ASSEMBLY
17	1	200161	SWIVEL BLOCK
18	1	012203	SCREW HX. 5/8 - 18 X 1 1/4 GR.5
19	1	240224	PAD, LOCKING
20	2	007400	SCREW HX. 5/16 - 18 X 1" GR.5
21	2	020600	WASHER, SP. LK. 5/16
22	2	020901	WASHER, FLAT 5/16
23	1	240242	COVER, ACCESS
24	4	002006	SCREW HX. SL. S.T. # 10 X 1/2
25	4	241173	HOSE ASS'Y HYD.
26	2	241170	ADAPTER, BULKHEAD 9/16 - 18 37°
27	1	241166	CYLINDER, HYD. WITH HARDWARE
28	4	634400	TIE CABLE
29	1	360042	ADAPTER 9/16 - 18 O-RING
30	2	020200	WASHER SP. LK. 1/4
31	2	005800	SCREW HX. HD. 1/4 - 20 X 1 1/2 GR.5
32	1	330412	HOLDING VALVE
33	1	241168	TEE, 9/16 37° RUN, 9/16 - 18 O-RING
34	1	330087	LINE ASS'Y HYD.
35	1	200876	ADAPTER 9/16 - 18 JIC/ 9/16 - 18 ORB
36	1	019106	NUT HX. LK. 1" N.F. CP
37	1	241214	PIN
38	1	241213	RETAINING RING
39	1	330601	SEAL KIT (FOR CYLINDER 241166)

**NOTE:**

1. TO CONVERT A 10' - 16' MANUAL EXTENSION BOOM TO A 10' - 16' POWER EXTENSION, ORDER KIT NUMBER 240281 (FOR 12/24 VOLT UNITS), OR KIT 330536 (FOR 220/24 110/24 VOLT UNITS).





**EXTENDABLE BOOM - HYD. AW-240257  
14' - 20' BOOM**

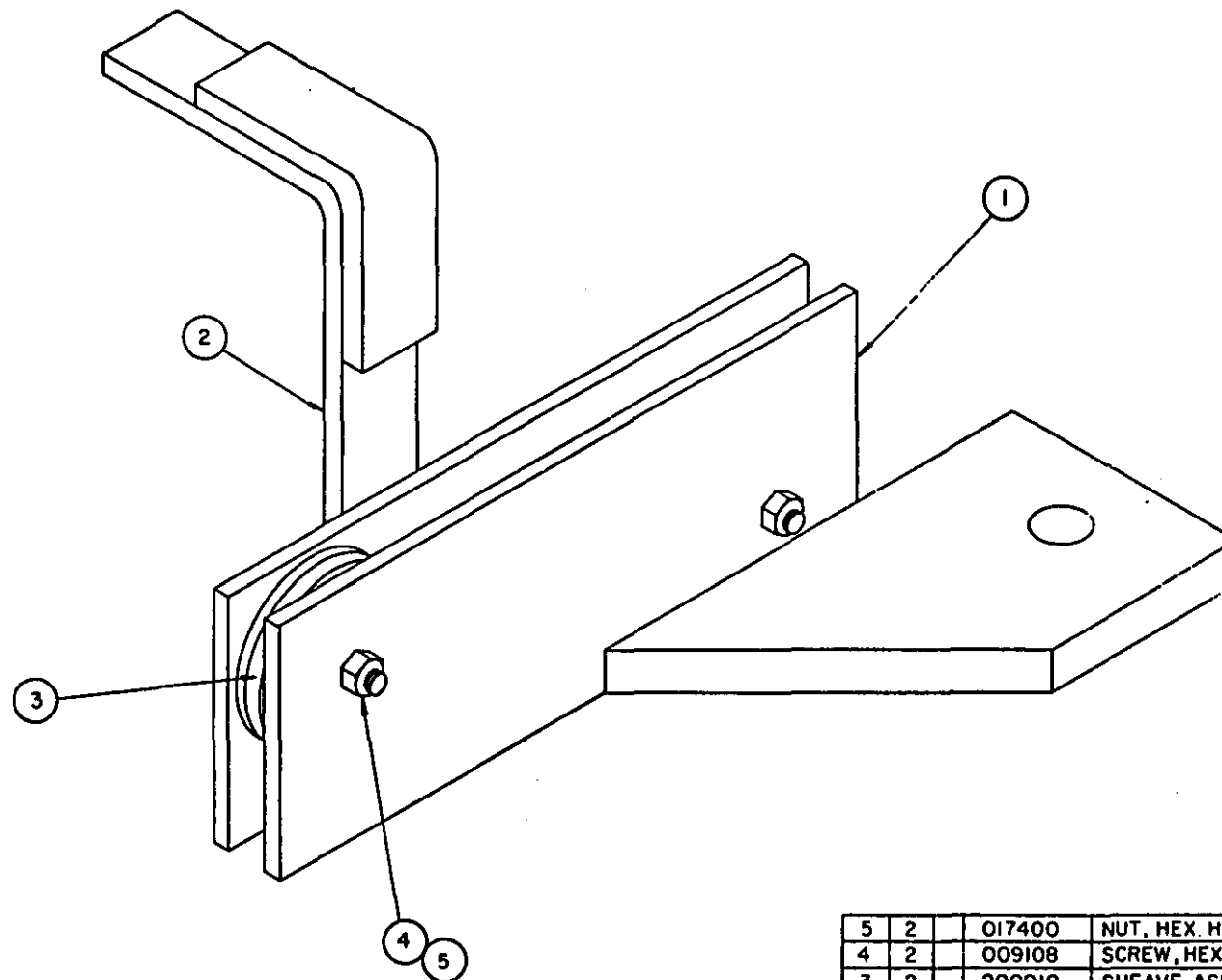
ITEM	QTY.	PART NO.	DESCRIPTION
1	6	240241	SHEAVE (BEARING 200100)
2	120'	800530	CABLE, BOOM 5/16"
3	1	240259	LOWER BOOM
4	1	330110	BOOM, UPPER
5	3	227401	SHEAVE (BEARING 200100)
6	1	233504	CROSS SHEAVE
7	1	012900	SCREW 5/18 - 18 X 3 1/2 GR.5
8	2	018100	NUT, HX HLF. LK. 5/8 - 18
9	2	023600	5/16 WIRE ROPE THIMBLE
10	2	023400	1/4 WIRE ROPE CLAMP
11	2	023500	5/16 WIRE ROPE CLAMP
12	1	013504	SCREW HX. 5/8 - 18 X 5 GR.5
13	1	800067-001	SPACER
14	2	012501	SCREW HX. 5/8 - 18 X 2 1/2 GR.5
15	92'	800529	CABLE HOIST 1/4"
16	1	200263	CABLE GUIDE ASSEMBLY
17	1	200161	SWIVEL BLOCK
18	1	012203	SCREW HX. 5/8 - 18 X 1 1/4 GR.5
19	1	240224	PAD, LOCKING
20	2	007400	SCREW HX. 5/16 - 18 X 1" GR.5
21	2	020600	WASHER, SP. LK. 5/16
22	2	020901	WASHER, FLAT 5/16
23	1	240242	COVER, ACCESS
24	4	002006	SCREW HX. SL. S.T. # 10 X 1/2
25	2	241173	HOSE ASS'Y HYD.
26	2	241170	ADAPTER, BULKHEAD 9/16 - 18, 37°
27	1	241166	CYLINDER, HYD. WITH HARDWARE
28	4	634400	TIE CABLE
29	1	360042	ADAPTER 9/16 - 18 O-RING
30	2	020200	WASHER SP. LK. 1/4
31	2	005800	SCREW HX. HD. 1/4 - 20 X 1 1/2 GR.5
32	1	330412	HOLDING VALVE
33	1	241168	TEE, 9/16 37° RUN, 9/16 - 18 O-RING
34	1	330087	LINE ASS'Y HYD.
35	1	200876	ADAPTER 9/16 - 18 JIC/ 9/16 - 18 ORB
36	1	019106	NUT HX. LK. 1" N.F. CP
37	1	241214	PIN
38	1	241213	RETAINING RING
39	1	330601	SEAL KIT (FOR CYLINDER 241166)
40	2	241172	HOSE HYD.

**NOTES:**

1. TO CONVERT A 14' - 20' MANUAL EXTENSION BOOM TO A 14' - 20' POWER EXTENSION BOOM ORDER KIT NUMBER 240280 (FOR 12/24 VOLT UNITS), OR KIT 330535 (FOR 220/24, 110/24 VOLT UNITS).

0'0'8-9

FIGURE NO.	FINISH NO.	CHG	REVISIONS	DATE	APP'D
		LTR	DESCRIPTION		

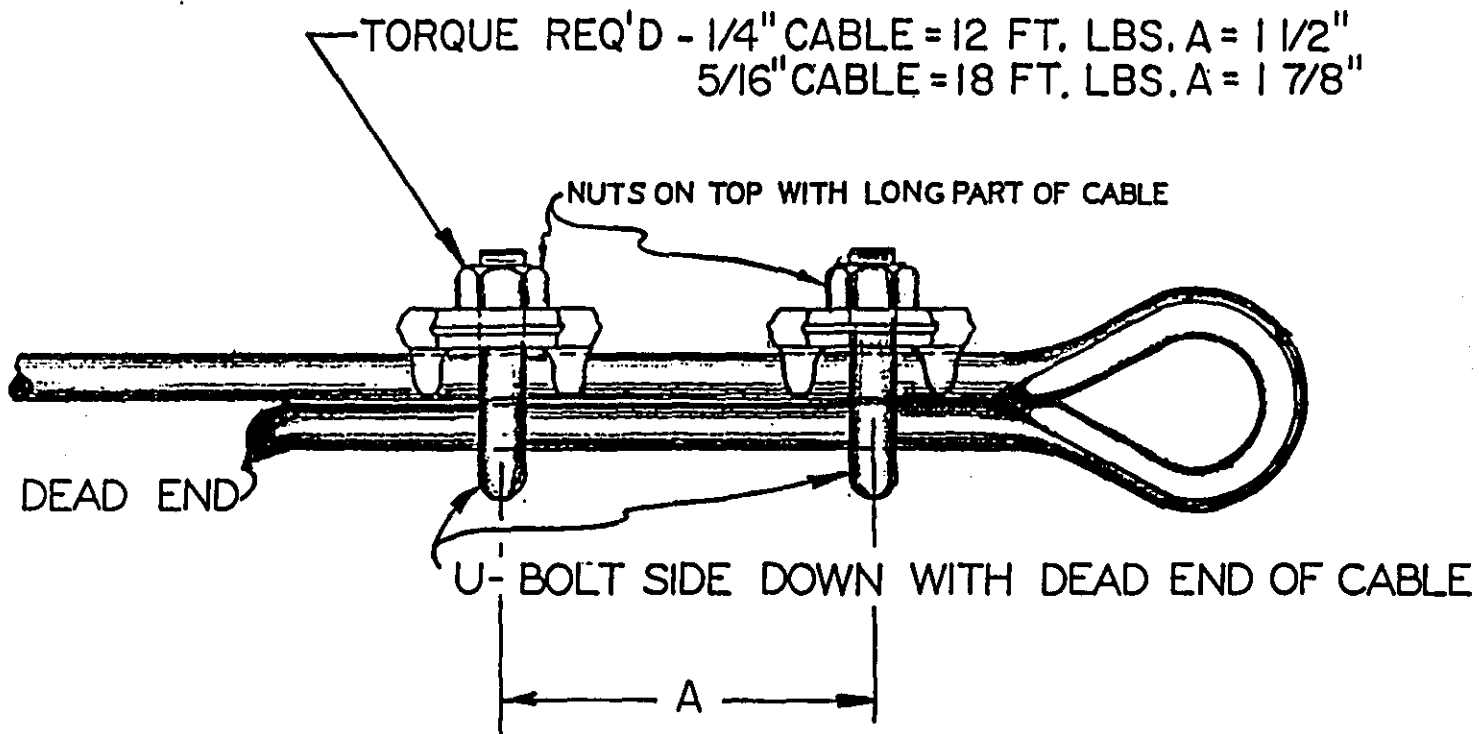


5	2	017400	NUT, HEX. HLF LK. 3/8 N FCP
4	2	009108	SCREW, HEX. HD 3/8 X 1 1/4 N FCPG5
3	2	200910	SHEAVE ASSEMBLY
2	1	240265	SHEAVE PLATE
1	1	240264	SHEAVE PLATE

ITEM	QTY	PART NO.	DESCRIPTION
5	2	017400	NUT, HEX. HLF LK. 3/8 N FCP
4	2	009108	SCREW, HEX. HD 3/8 X 1 1/4 N FCPG5
3	2	200910	SHEAVE ASSEMBLY
2	1	240265	SHEAVE PLATE
1	1	240264	SHEAVE PLATE

QUANTITY	LIST OF MATERIAL
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES	<b>AUTO CRANE COMPANY</b>
TOLERANCES UNLESS OTHERWISE SPECIFIED	701 BURN ROAD • TULLA, OH 44130-1000
ANGLES: 1/2" XX° 40'	5700 BROKEN ARROW DRIVE • TULLA, OH 44130
FRACTIONAL: 1/16 XXX° 010'	
REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING	TITLE
TOLERANCES NOT SHOWN ABOVE ARE PER AMS Y10.5 1973	CABLE GUIDE ASSEMBLY
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THE COMPANY	SCALE: ~ SIZE: C DRAWING NO: AW-240263 WEIGHT: 3.81

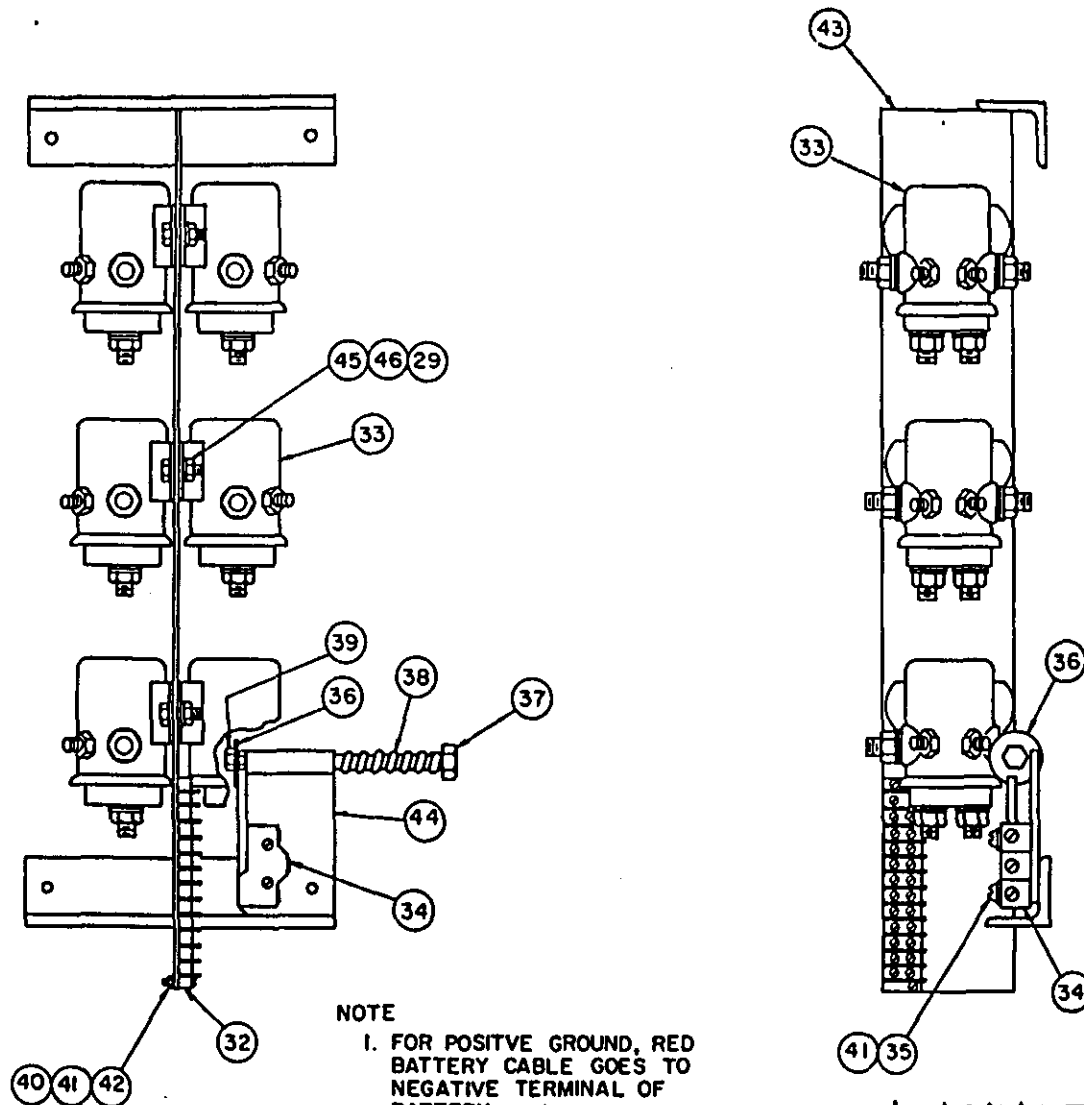


REVISIONS			AUTO CRANE CO. TULSA, OKLAHOMA		
NO.	DATE	BY	INSTALLATION OF CABLE CLAMP		
1			DRAWN BY CATES	SCALE FULL	MATERIAL NOTED
2			CHK'D	DATE 3-8-72	DRAWING NO.
3			TRACED	APP'D	M-124



FIXTURE NO	FINISH NO

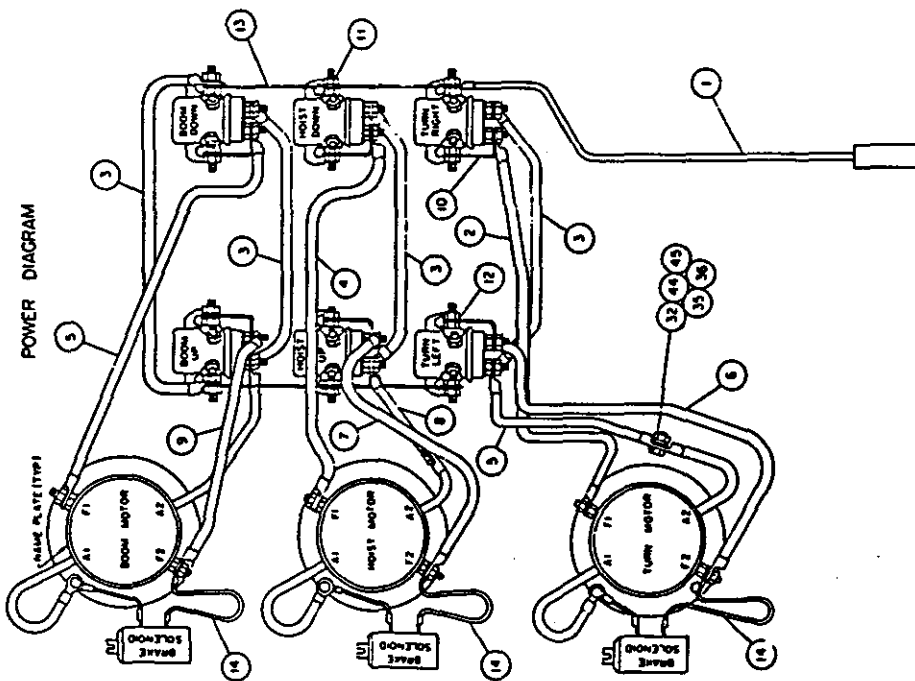
CHG	REVISIONS	DATE	APPD
LTR	DESCRIPTION		



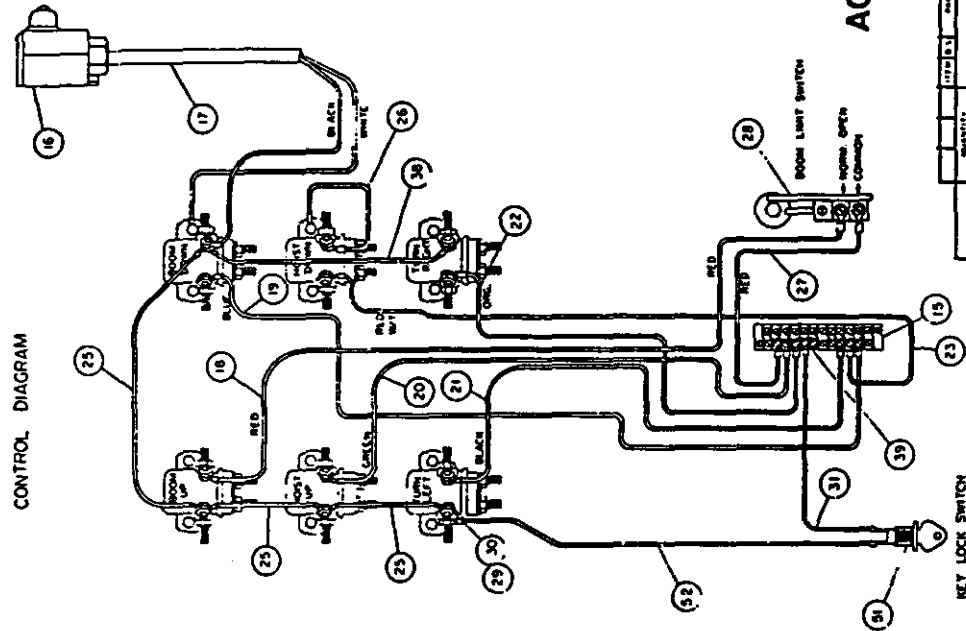
ITEM	QTY	D/S	PART NO	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9180 BROKEN ARROW EXPRESSWAY • 918-627-8475				
RELAY PANEL ASSEMBLY				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED ANGLES ± 1/2° FRACTIONAL ± 1/16 REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER AMS Y14 5-1973 THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.		DRAWN BY DATE CHG'D BY DATE ENG BY DATE		
NEXT ASSY		SCALE WEIGHT SIZE C DRAWING NO. AW-676108 REVISION		
SHEET 2 OF 2				

# RELAY PANEL ASSEMBLY - AW-676106

ITEM	QTY.	PART NO.	DESCRIPTION
1	3	622316	CONDUCTOR
2	4	600304	CONDUCTOR
3	1	622310	CONDUCTOR
4	1	622306	CONDUCTOR
5	1	622321	CONDUCTOR
6	1	600316	CONDUCTOR
7	1	622326	CONDUCTOR
8	1	622331	CONDUCTOR
9	6	658300	BUS BAR
10	2	658500	BUS BAR
11	36	REF.	5/16 N.F. CAD PL. HLF. NUT
12	24	020700	5/16 LOCKWASHER INT. LK.
13	3	660000	BRAKE LEAD ASSEMBLY
14	1	640700	SWITCH, PENDANT LOCK
15	3	660406	CONDUCTOR (BLACK W/T)
16	1	REF.	CONDUCTOR
17	1	660223	CONDUCTOR (BLUE)
18	1	660226	CONDUCTOR (RED)
19	1	659904	CONDUCTOR (WHITE)
20	1	660229	CONDUCTOR (GREEN)
21	1	660218	CONDUCTOR (RED W/T)
22	1	660415	CONDUCTOR (BLACK)
23	1	660206	CONDUCTOR (BLACK)
24	1	660230	CONDUCTOR (ORANGE)
25	1	660310	CONDUCTOR (RED)
26	24	REF.	#10 - 32 HX. NUT, CAD. PL.
27	12	020001	#10 LOCKWASHER CAD. PL.
28			
29	6	020200	WASHER, SP. LK. 1/4
30	1	REF.	CONDUCTOR (RED)
31	1	660312	CONDUCTOR (WHITE)
32	1	635200	TERMINAL BOARD
33	6	200182	RELAY, 12 V.
34	1	654100	SWITCH
35	2	000404	SCREW RD. SLT. HD. # 6-32 X 5/8 LG.
36	1	020900	5/16 X 1 1/4 O.D. FENDER WASHER
37	1	007808	5/16 - 18 N.C. X 6" HX. HD. SCREW
38	1	301401	SPRING
39	2	016500	5/16 - 18 N.C. HX. NUT
40	2	000602	#6-32 N.C. X 1" RD. HD. MACH. SCREW
41	4	019600	#6 LOCKWASHER
42	2	015400	NUT HX. # 6-32
43	1	305401	PANEL BRACKET MEMBER
44	1	654000	BOOM, LIMIT BRACKET
45	6	005901	SCREW, HX. HD. 1/4 - 20 N.C. X 1/2" LG.
46	6	015900	NUT HX. 1/4 - 20 N.C.
47	4	663100	CABLE TIE (NOT SHOWN)
48	2	663200	CABLE TIE (NOT SHOWN)
49			
50	1	REF.	CONDUCTOR (BLACK W/T)



POWER DIAGRAM



CONTROL DIAGRAM

# AC APPLICATIONS

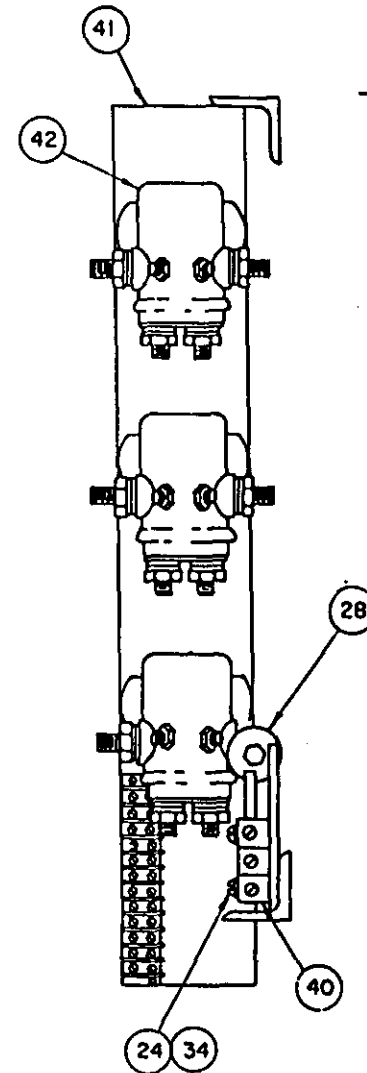
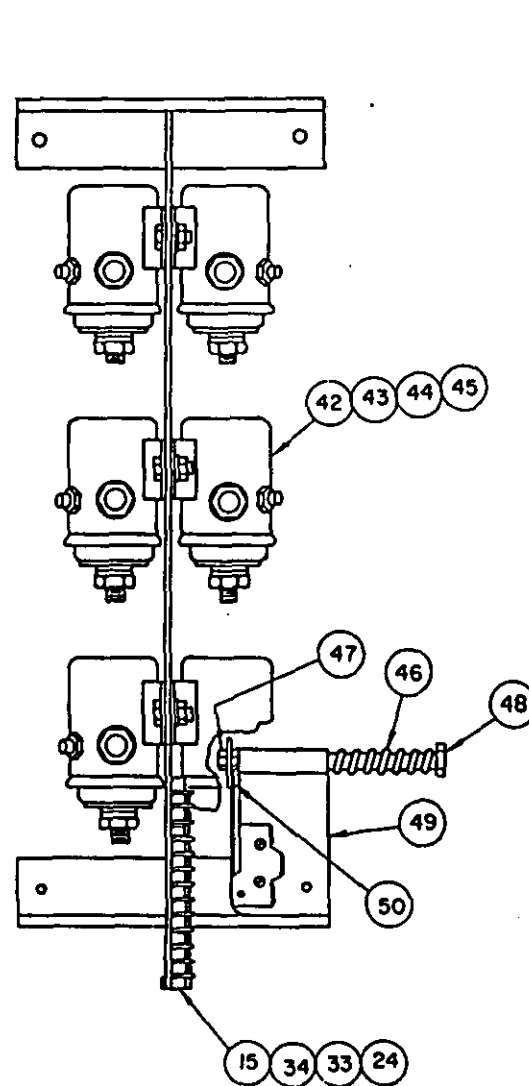
QUANTITY	ITEM NO.	DESCRIPTION
1	1	WIRING DIAGRAM 220/24 VOLTS
1	2	WIRING DIAGRAM 110/24 VOLTS
1	3	WIRING DIAGRAM 220/24 VOLTS
1	4	WIRING DIAGRAM 110/24 VOLTS
1	5	WIRING DIAGRAM 220/24 VOLTS
1	6	WIRING DIAGRAM 110/24 VOLTS
1	7	WIRING DIAGRAM 220/24 VOLTS
1	8	WIRING DIAGRAM 110/24 VOLTS
1	9	WIRING DIAGRAM 220/24 VOLTS
1	10	WIRING DIAGRAM 110/24 VOLTS
1	11	WIRING DIAGRAM 220/24 VOLTS
1	12	WIRING DIAGRAM 110/24 VOLTS
1	13	WIRING DIAGRAM 220/24 VOLTS
1	14	WIRING DIAGRAM 110/24 VOLTS
1	15	WIRING DIAGRAM 220/24 VOLTS
1	16	WIRING DIAGRAM 110/24 VOLTS
1	17	WIRING DIAGRAM 220/24 VOLTS
1	18	WIRING DIAGRAM 110/24 VOLTS
1	19	WIRING DIAGRAM 220/24 VOLTS
1	20	WIRING DIAGRAM 110/24 VOLTS
1	21	WIRING DIAGRAM 220/24 VOLTS
1	22	WIRING DIAGRAM 110/24 VOLTS
1	23	WIRING DIAGRAM 220/24 VOLTS
1	24	WIRING DIAGRAM 110/24 VOLTS
1	25	WIRING DIAGRAM 220/24 VOLTS
1	26	WIRING DIAGRAM 110/24 VOLTS
1	27	WIRING DIAGRAM 220/24 VOLTS
1	28	WIRING DIAGRAM 110/24 VOLTS
1	29	WIRING DIAGRAM 220/24 VOLTS
1	30	WIRING DIAGRAM 110/24 VOLTS
1	31	WIRING DIAGRAM 220/24 VOLTS
1	32	WIRING DIAGRAM 110/24 VOLTS
1	33	WIRING DIAGRAM 220/24 VOLTS
1	34	WIRING DIAGRAM 110/24 VOLTS
1	35	WIRING DIAGRAM 220/24 VOLTS

8/88



7-2.1.0

FIXTURE NO		FINISH NO		CHG		REVISIONS		DATE		APP'D	
LTR						DESCRIPTION					



QUANTITY		ITEM	D/S	PART NO	DESCRIPTION
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES TOLERANCES UNLESS OTHERWISE SPECIFIED		LIST OF MATERIAL			
ANGLES: 1 P		DRAWN BY			
FRACTIONAL: 1/16		DATE			
REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING		CHK'D BY			
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5, 1973		DATE			
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND SHOULD NOT BE USED IN ANY MANNER OTHER THAN THAT FOR WHICH IT WAS DESIGNED		TNG BY			
		DATE			
		SCALE			
		SIZE			
		DRAWING NO			
		REVISION			
		WEIGHT			

**AUTO CRANE COMPANY**  
P.O. BOX 45448 • TULSA, OKLAHOMA 74145  
9700 BROKEN ARROW EXPRESSWAY • 918-477-9475

RELAY PANEL ASSEMBLY

SCALE ~ SIZE C DRAWING NO AW-699012 REVISION

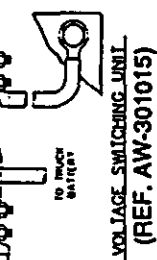
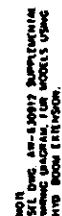
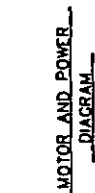
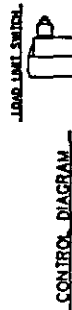
SHEET 2 OF 2

# RELAY ASSEMBLY - AW-699012

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	614230	CONDUCTOR
2	1	622331	CONDUCTOR
3	4	600304	CONDUCTOR
4	1	622321	CONDUCTOR
5	2	622318	CONDUCTOR
6	1	622326	CONDUCTOR
7	1	622316	CONDUCTOR
8	1	622304	CONDUCTOR
9	1	622310	CONDUCTOR
10	6	658300	CONDUCTOR
11	28	016800	5/16 N.F. CAD. PL. HALF NUT
12	28	020700	5/16 INTERNAL SHAKEPROOF LOCKWASHER
13	2	658500	RELAY CONDUCTOR
14	3	660000	BRAKE LEAD ASS'Y
15	1	635200	TERMINAL BOARD
16	1	646900	SWITCH
17	1	655636	CONDUCTOR ASS'Y
18	1	660226	CONDUCTOR
19	1	660223	CONDUCTOR
20	1	660229	CONDUCTOR
21	1	660206	CONDUCTOR
22	1	660230	CONDUCTOR
23	1	660218	CONDUCTOR
24	4	019600	#6 SPLIT LOCKWASHER
25	3	660406	CONDUCTOR
26	1	659904	CONDUCTOR
27	1	660310	CONDUCTOR
28	1	659700	BOOM LIMIT SWITCH
29	16	015600	#10-32 CAD. PL. HX. NUT
30	16	020001	#10 CAD. PL. LOCKWASHER
31	1	660312	CONDUCTOR
32	2	005901	1/4 X 1/2 CAD. PL. CAPSCREW
33	2	015400	NUT HX. #6-32
34	4	000404	SCREW RD. SLOT HD. #6-32 X 5/8
35	4.5"	800589	ELECT. INSULATION PUTTY
36	90"	800580	BLK. VINYL ELECT. TAPE
37	17	634401	CABLE TIE (MEDIUM)
38	1	660417	CONDUCTOR (BLK W/T)
39	1	636600	JUMPER BAR
40	1	654100	SWITCH
41	1	305401	PANEL, BRACKET
42	6	650524	RELAY 24V
43	6	005401	SCREW, HX. HD. 1/4 - 20 X 5/8"
44	8	015900	NUT, HX. HD. 1/4 - 20 X 1/2"
45	8	020200	WASHER SPLIT LOCK 1/4
46	1	301401	SPRING
47	2	016500	5/16 - 18 N.C. HX. NUT
48	1	008000	5/16 - 18 N.C. X 6" HX. CAPSCREW
49	1	654000	BOOM LIMIT BRACKET
50	1	020900	5/16 FENDER WASHER 1 1/4 O.D.

# RELAY ASSEMBLY - AW-699012 CONT'D

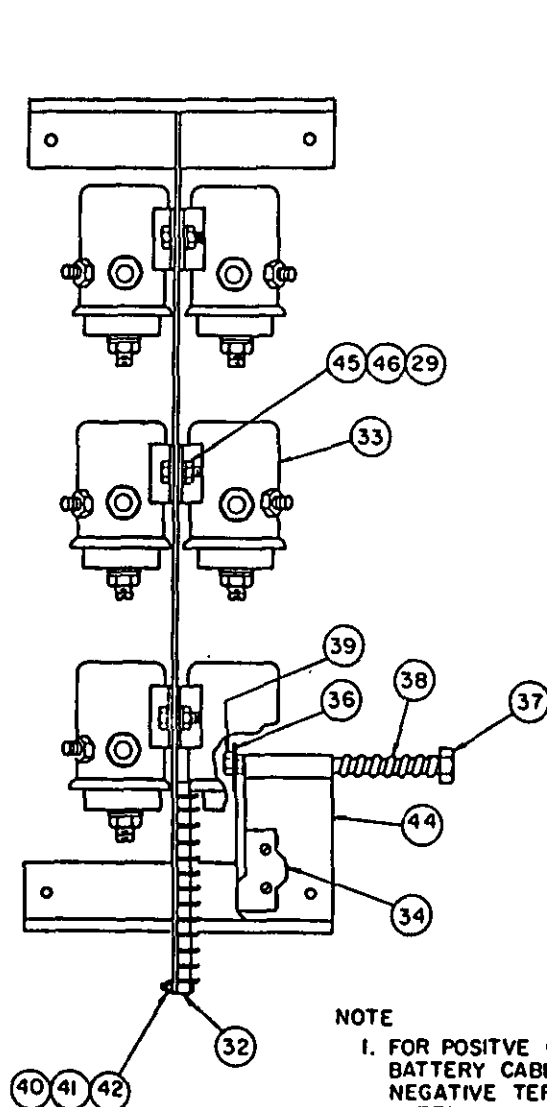
ITEM	QTY.	PART NO.	DESCRIPTION
51	1	640700	SWITCH, PENDANT LOCK
52	1	660240	CONDUCTOR



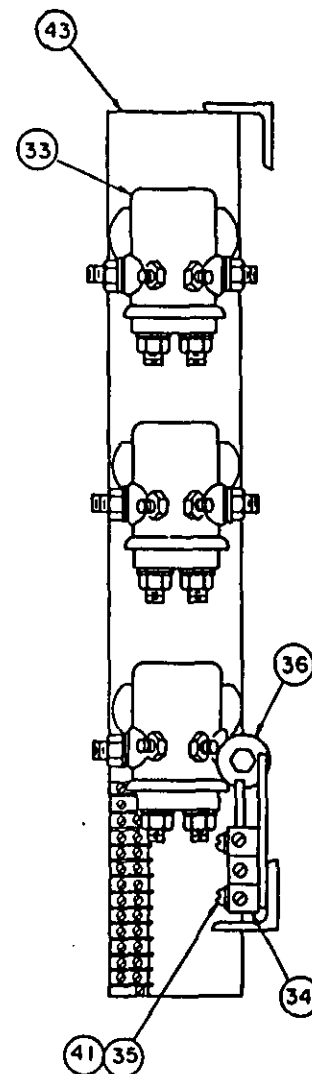
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FIXTURE NO	FINISH NO	CHG LTR	REVISIONS		
			DESCRIPTION	DATE	APP'D



NOTE  
1. FOR POSITIVE GROUND, RED BATTERY CABLE GOES TO NEGATIVE TERMINAL OF BATTERY



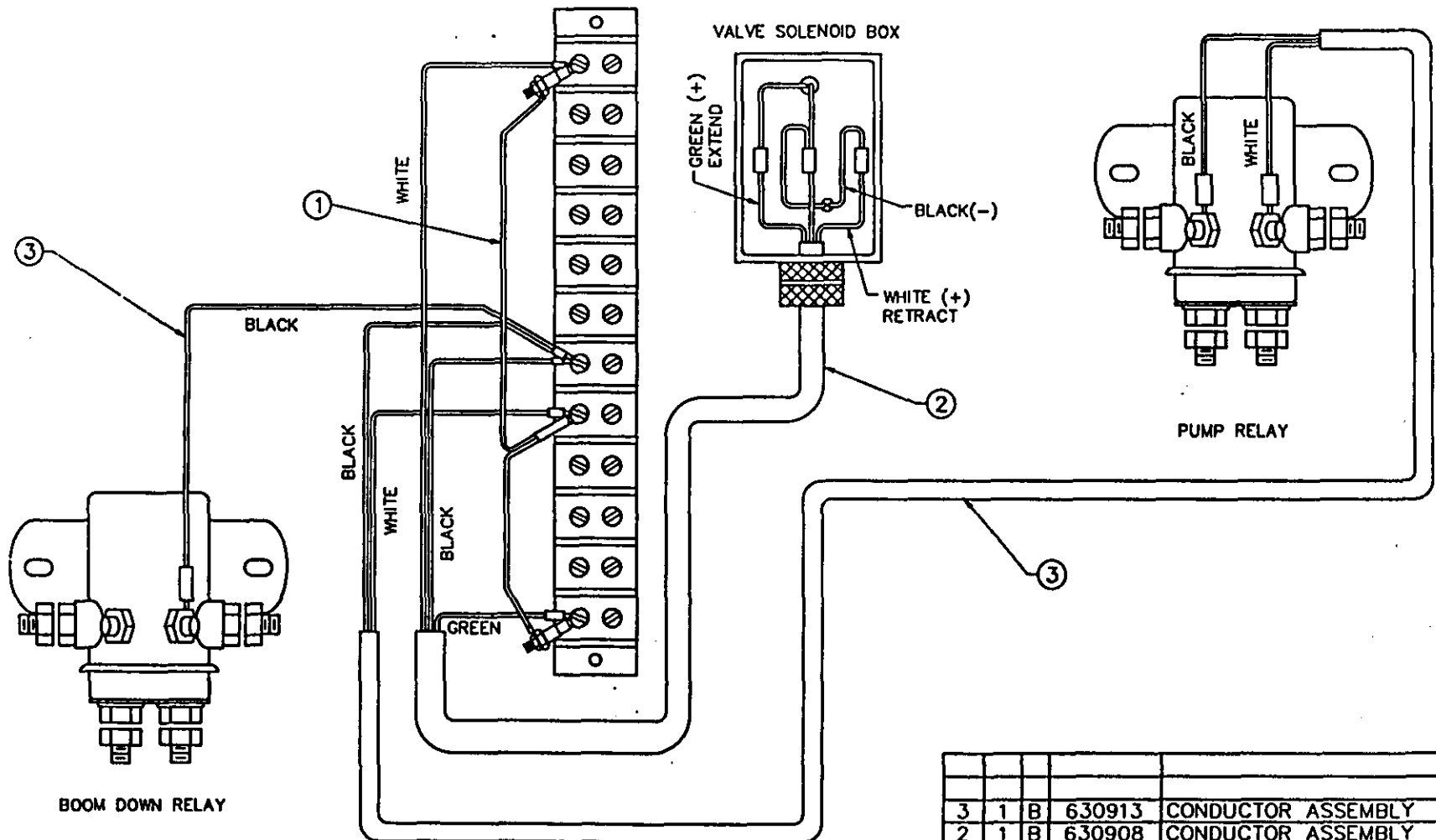
ITEM	QTY	DVS	PART NO	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 45500 • EL PASO, TEXAS 79901 9760 SPUR 104 NORTH • SPRINGDALE • 910 627 9071				
<b>RELAY PANEL ASSEMBLY</b>				
DRAWN BY		DATE		SCALE
CHK'D BY		DATE		SIZE
ENG BY		DATE		REVISION
THIS PRINT IS THE PROPERTY OF AUTO CRANE COMPANY AND MUST NOT BE USED IN ANY MANNER OR FOR REPRODUCTION WITHOUT THEIR INTERESTS		AW-676105		2 OF 2..

# RELAY PANEL ASSEMBLY - AW-676105

ITEM	QTY.	PART NO.	DESCRIPTION
1	2	622316	CONDUCTOR
2	4	600304	CONDUCTOR
3	2	622310	CONDUCTOR
4	1	622306	CONDUCTOR
5	1	622321	CONDUCTOR
6	1	600316	CONDUCTOR
7	2	622326	CONDUCTOR
8	1	622331	CONDUCTOR
9	6	658300	BUS BAR
10	2	658500	BUS BAR
11	36	016800	5/16 N.F. CAD PL. HALF NUT
12	24	020700	5/16 LOCKWASHER INT. LK.
13	3	660000	BRAKE LEAD ASSEMBLY
14			
15	3	660406	CONDUCTOR (BLACK W/TR)
16	1	655636	CONDUCTOR
17	1	660223	CONDUCTOR (BLUE)
18	1	660226	CONDUCTOR (RED)
19	1	659904	CONDUCTOR (WHITE)
20	1	660229	CONDUCTOR (GREEN)
21	1	660218	CONDUCTOR (RED W/TR)
22	1	660415	CONDUCTOR (BLACK)
23	1	660206	CONDUCTOR (BLACK)
24	1	660230	CONDUCTOR (ORANGE)
25	1	660310	CONDUCTOR (RED)
26	24	015600	#10-32 HX. NUT CAD. PL. INT.
27	12	020001	#10 LOCKWASHER CAD. PL.
28			
29	6	020200	WASHER SP. LK. 1/4
30			
31	1	330664	CONDUCTOR (RED)
32	1	635200	TERMINAL BOARD
33	6	200182	RELAY 12 VOLT
34	1	654100	SWITCH
35	2	000404	SCREW RD. SLT. HD. #6-32 X 5/8" LG.
36	1	020900	5/16 X 1 1/4 O.D. FENDER WASHER
37	1	007808	5/16 - 18 N.C. X 6" HX. HD. SCREW
38	1	301401	SPRING
39	2	016500	5/16 N.C. HX. NUT
40	2	000602	#6-32 N.C. X 1" RD. HD. MACH. SCREW
41	4	019600	#6 LOCKWASHER
42	2	015400	#6-32 HX. NUT
43	1	305401	PANEL BRACKET MEMBER
44	1	654000	BOOM LIMIT BRACKET
45	6	005901	SCREW HEX. HD. 1/4 - 20 N.C. X 1/2"
46	6	015900	1/4 - 20 N.C. HX. NUT
47	4	663100	CABLE TIE (NOT SHOWN)
48	2	663200	CABLE TIE (NOT SHOWN)
49			
50	1	660406	CONDUCTOR (BLACK W/TR)

FIXTURE NO.	FINISH NO.

CHG LTR	REVISIONS		DATE	APP'D
	DESCRIPTION			



BOOM DOWN RELAY

VALVE SOLENOID BOX

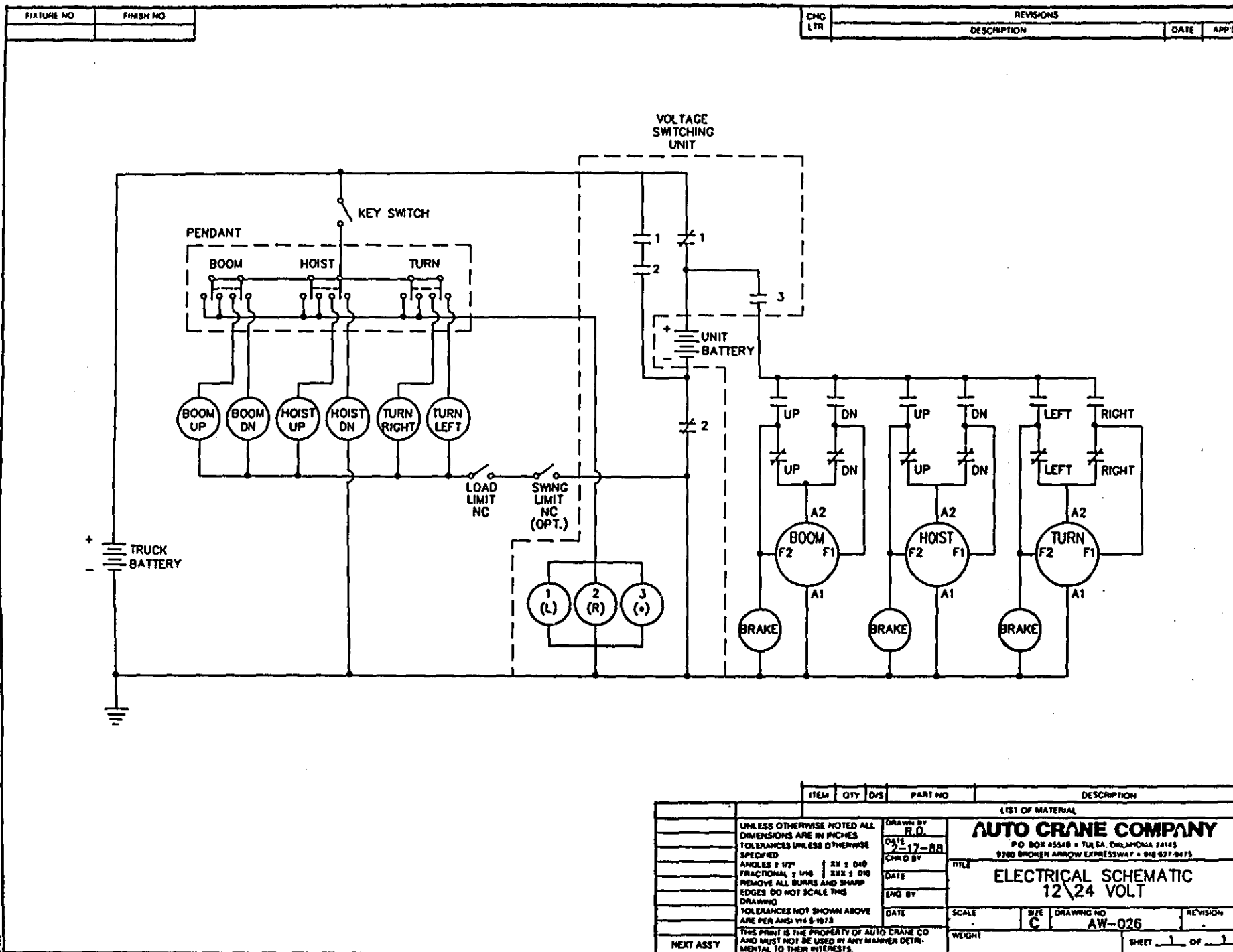
PUMP RELAY

ITEM	QTY	DIS	PART NO.	DESCRIPTION
3	1	B	630913	CONDUCTOR ASSEMBLY
2	1	B	630908	CONDUCTOR ASSEMBLY
1	1	B	630907	CONDUCTOR ASSEMBLY

UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED ANGLES ± 1/2° FRACTIONAL ± 1/16 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973 THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THE COMPANY.		DRAWN BY RD		<b>AUTO CRANE COMPANY</b> P.O. BOX 49648 • TULSA, OKLAHOMA 74115 9280 BROKEN ARROW EXPRESSWAY • 918-427-9475	
		DATE 3-30-88			
CHECKED BY DATE		DATE		TITLE SUPPLEMENTAL WIRING DIAGRAM FOR HYD. BOOM EXTENSION	
END BY DATE		SCALE C		DRAWING NO. AW-630912	
WEIGHT		SHEET 1 OF 1		REVISION	

7-4.0.0

7-5.0.0



ITEM	QTY	D/S	PART NO	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9280 BROKEN ARROW EXPRESSWAY • 918-427-9475				
<b>ELECTRICAL SCHEMATIC</b> <b>12/24 VOLT</b>				
SCALE		SIZE	DRAWING NO	REVISION
		C	AW-026	
WEIGHT		SHEET 1 OF 1		

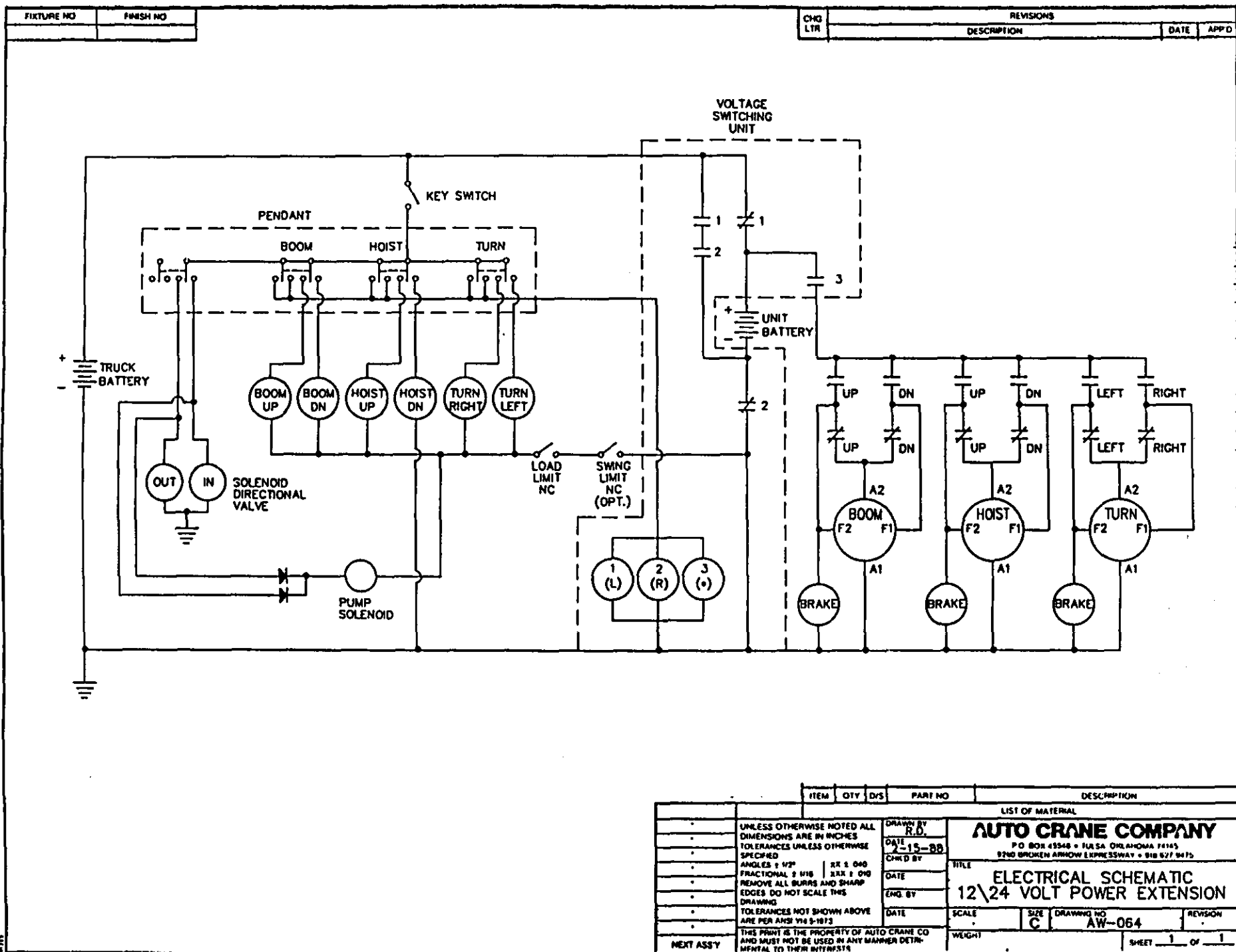
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES  
 TOLERANCES UNLESS OTHERWISE SPECIFIED  
 ANGLES 1/2" 1/4" 1/8" 1/16"  
 FRACTIONAL 1/8" 1/4" 3/8" 1/2" 5/8" 3/4" 7/8" 1"  
 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING  
 TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973  
 THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.

DRAWN BY  
 R.D.  
 DATE  
 2-17-88  
 CHK'D BY  
 DATE  
 ENG BY  
 DATE

NEXT ASSY

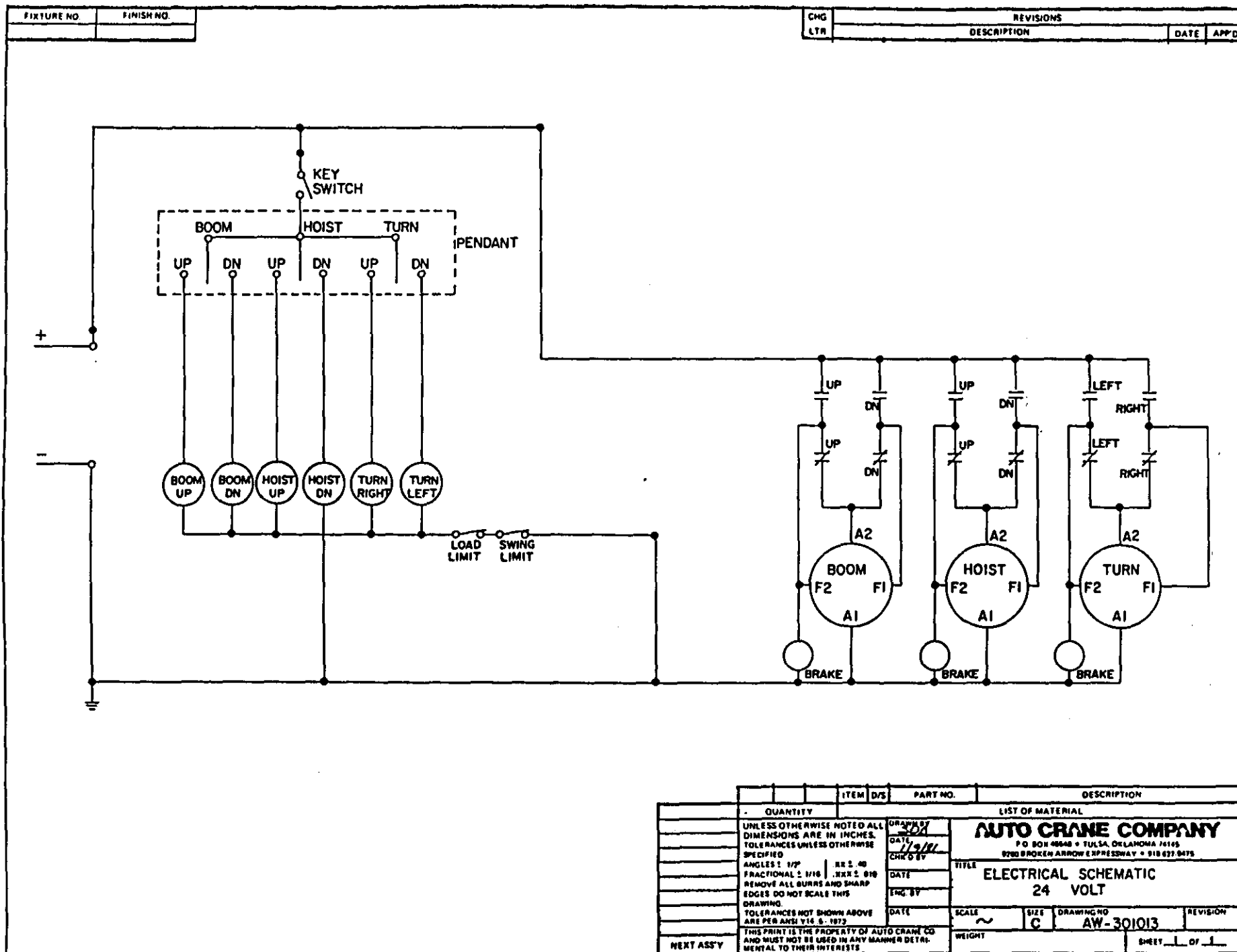


7-6.0.0

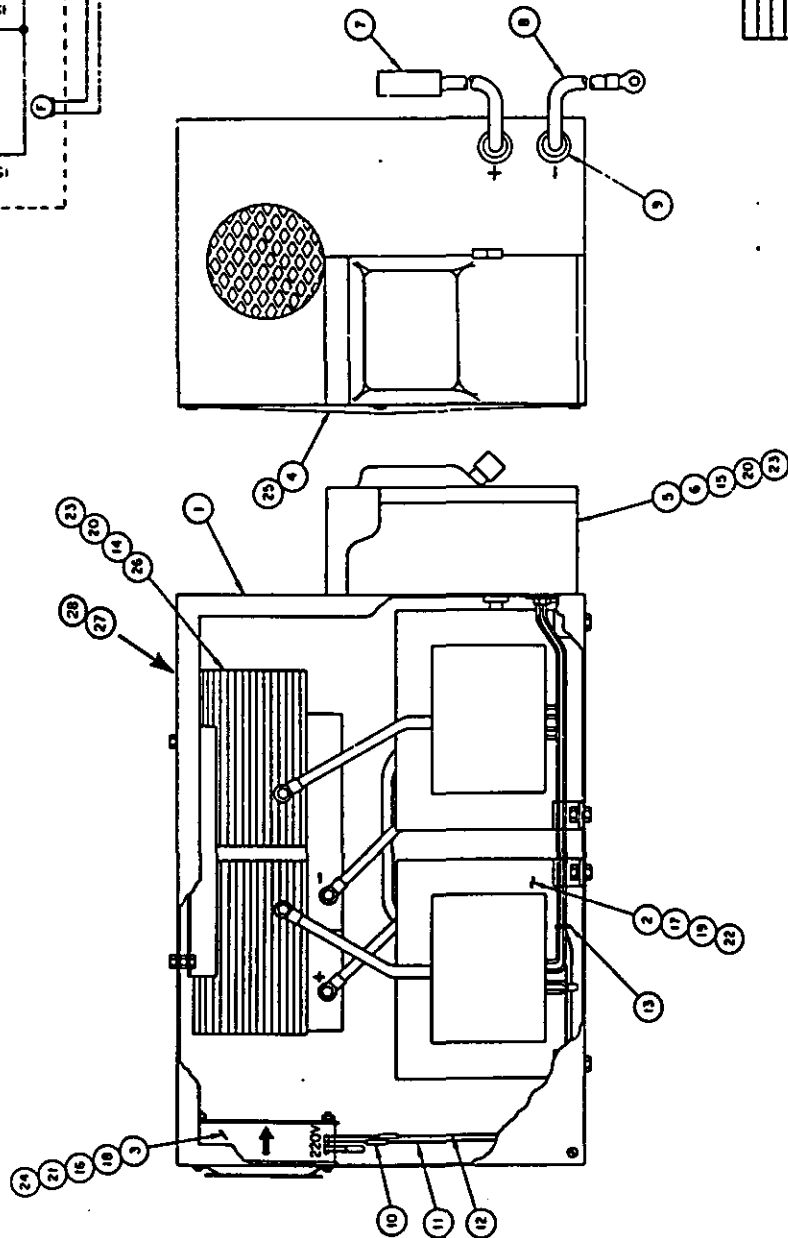
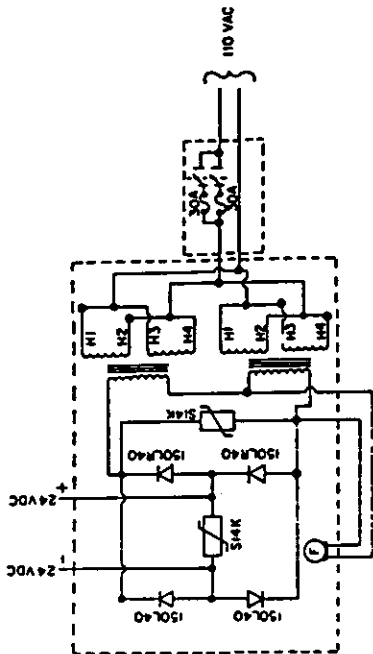


ITEM	QTY	D/S	PART NO	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES TOLERANCES UNLESS OTHERWISE SPECIFIED ANGLES ± 1/2° FRACTIONAL ± .015 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973 THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS				
DRAWN BY R.D.		DATE 7-15-88		
CHKD BY		DATE		
ENG. BY		DATE		
NEXT ASSY		DATE		
<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9740 BROKEN ARROW EXPRESSWAY • BIR 627 9475				TITLE <b>ELECTRICAL SCHEMATIC</b> <b>12/24 VOLT POWER EXTENSION</b>
SCALE	SIZE	DRAWING NO	REVISION	WEIGHT
	C	AW-064		
SHEET 1 OF 1				

7-7.0.0



QUANTITY	ITEM	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P O BOX 4848 • TULSA, OKLAHOMA 74105 9700 BROKEN ARROW EXPRESSWAY • 918 627-8475				
<b>ELECTRICAL SCHEMATIC</b> <b>24 VOLT</b>				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED ANGLES 1/2" XX 1/4" FRACTIONAL 1/16 .XXX 1/8 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973 THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS		DRAWN BY DATE CHK'D BY DATE ENG BY DATE		
NEXT ASS'Y		SCALE	SIZE	DRAWING NO.
		WEIGHT	C	AW-301013
				REVISION
				SHEET 1 OF 1



28	1	040808	DECAL 110 V
27	1	330070-001	DECAL VOLT. CONV.
26	1	699023	RECTIFIER 24 VOLT
25	10	000006	SCREW, HI SL HD #10 ST-A
24	4	019400	NUT, HEX 1/8 NCCP
23	11	019300	NUT, HEX 1/4 NCCP
22	8	016300	NUT, HEX 5/16 NCCP
21	4	019800	WASHER, SPLK 1/4 CP
20	11	020200	WASHER, SPLK 1/4 CP
19	8	020400	WASHER, SPLK 5/16 CP
18	1	699022	GUARD, FINGER
17	8	007402	SCREW, HI HD 5/16 NCCP X 5/8
16	4	000606	SCREW, HI HD 5/16 NCCP X 1/2
15	3	003901	SCREW, HI HD 1/4 NCCP 63 X 1/2
14	4	005500	SCREW, HI HD 1/4 NCCP 63 X 3/4
13	6	683200	TIE, CABLE
12	1	800990-003	WIRE, ELEC 18 GA BNL
11	1	800990-000	WIRE, ELEC 18 GA BNL
10	2	000302	SPLICE, 2RB 14
9	3	619201	GROMMET, SNAP-IN
8	1	330006	CONDUCTOR
7	1	330007	POWER CABLE
6	2	699014	FUSE, CARTRIDGE-30A
5	1	699013	BOLT, FUSE
4	1	699020	COVER, VOLTAGE CONVERTER
3	1	530397	FAN, ELECTRIC
2	1	699018	TRANSFORMER SET
1	1	699019	HOUSING, VOLTAGE CONVERTER

REV	DATE	DESCRIPTION
1	10/15/68	10/15/68

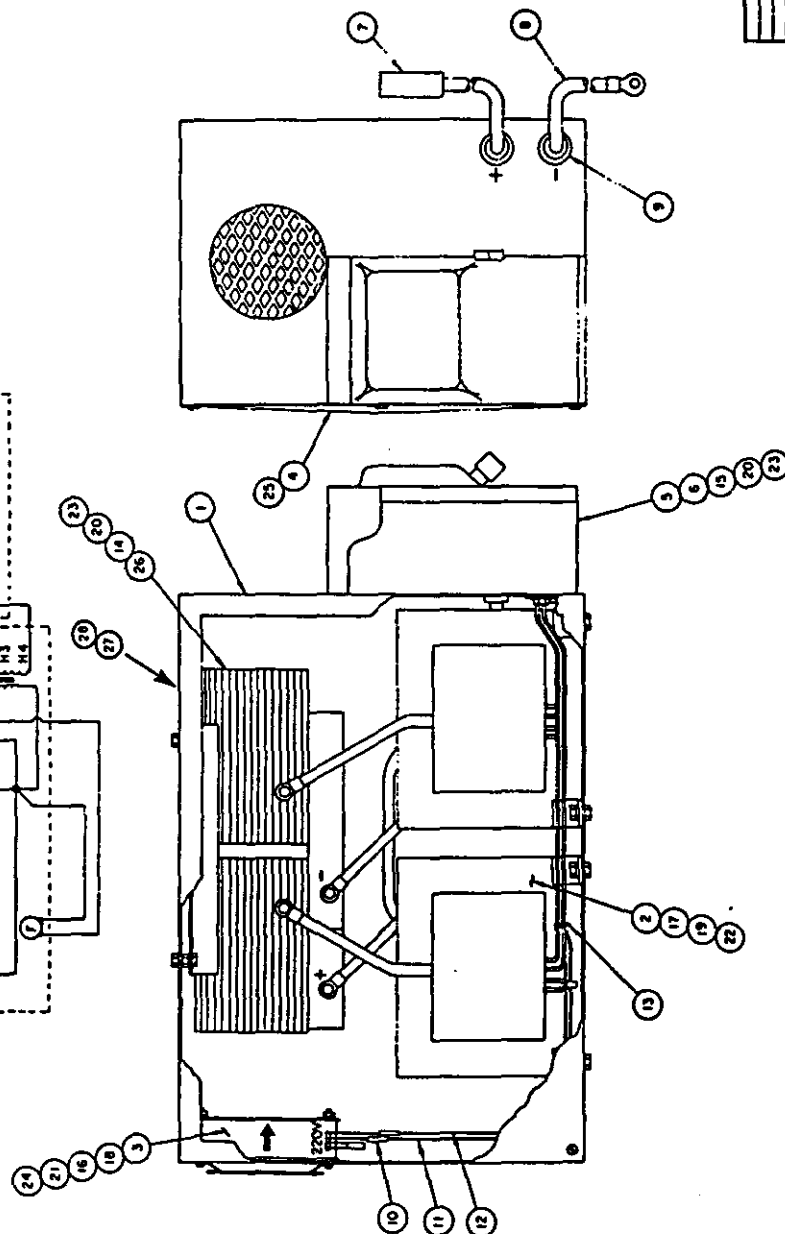
AUTO CRANE COMPANY

VOLTAGE CONVERTER ASSEMBLY

REV 1

DATE 10/15/68

DESCRIPTION 10/15/68



28	1	#00011-001	DECAL, VOLT CONV.
27	1	040808	DECAL, DANGER 220 V.
26	1	698023	RECTIFIER 24 VOLT
25	10	020006	SCREW, M 3L MD #10 ST-A
24	4	015400	NUT, M2.5 X6 NCCP
23	11	019300	NUT, M2.5 X6 NCCP
22	8	016300	NUT, M2.5 X6 NCCP
21	4	019600	WASHER, SPLR 5/16 CP
20	11	020200	WASHER, SPLR 1/4 CP
19	10	020600	WASHER, SPLR 5/16 CP
18	1	698032	GEARD, FINGER
17	1	007402	SCREW, M MD 3/16 NCCP 3 X 5/8
16	17	000608	SCREW, M MD #6 NCCP X 2
15	3	003901	SCREW, M MD 1/4 NCCP 63 X 1/2
14	4	005300	SCREW, M MD 1/4 NCCP 63 X 3/4
13	6	643200	THE CABLE
12	1	000990-003	WIRE, ELCC 16 GA BKN
11	1	000990-000	WIRE, ELCC 16 GA BLK
10	2	000302	SPLICE, 2RB 14
9	3	619201	GROMMET, SNAP-IN
8	1	330006	CONDUCTOR
7	1	330007	POWER CABLE
6	2	699014	FUSE, CARTRIDGE .30A
5	1	699013	ROX FUSE
4	1	699020	COVER, VOLTAGE CONVERTER
3	1	330397	PAN, ELCCIN
2	1	699016	TRANSFORMER SET
1	1	699019	HOUSING, VOLTAGE CONVERTER

[illegible]



## TROUBLE SHOOTING THE VOLTAGE CONVERTER

PROBLEM	PROCEDURE
No Output Voltage	Turn unit on with the lever on the fuse box. Check fuses in the fuse box. Check power to the fuse box; it should be 110 volts (or 220 volts). Check inside the converter to see if the transformer output leads are connected. Check all the diodes to see if they are burned open.
Low voltage output	Check input voltage. The 110 volt unit requires a minimum of 110 volts. The 220 volt unit requires a minimum of 210 volts. Check to be sure you do not have a 220 volt unit in place of a 110 volt unit. Check the transformer output to ground. it should be 24-34 volts ac.
High Output Voltage	Check input line voltage. The 110 volt unit takes a maximum of 120 volts and the 220 volt unit takes a maximum of 240 volts. Check to be sure a 110 volt unit has not been substituted for a 220 volt unit.
AC Voltage on Converter Output	There is a bad diode in the bridge. Remove diodes and check for polarity and current blocking.

## VOLTAGE CHECK

### 220/24 CONVERTER

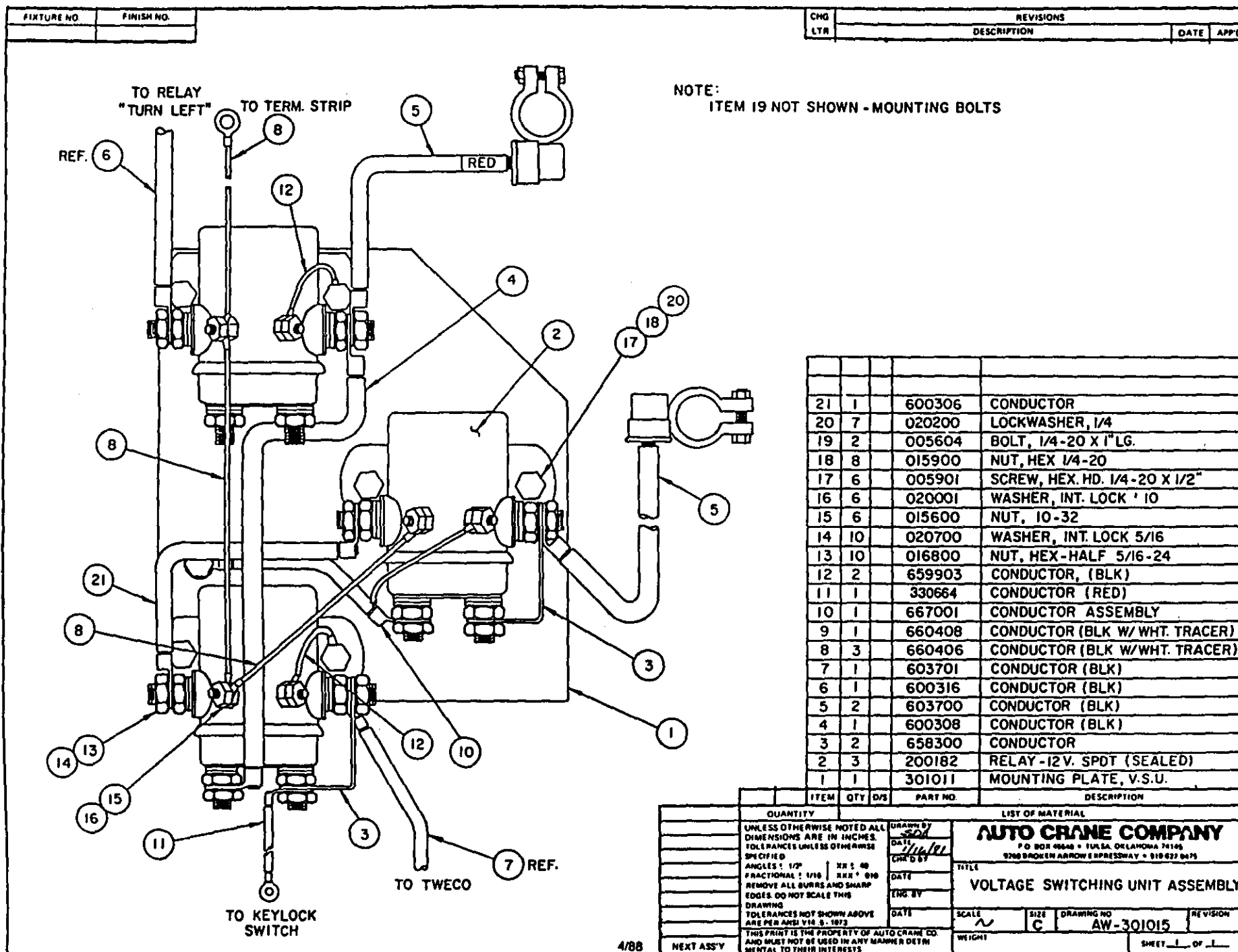
1. Connect 220V leads to generator or other 220V source.
2. Check voltage across top of fuses in fuse box rectifier. Voltage should be 220VAC  $\pm$  5%. If voltage is above 230 or below 210 check voltage at source.
3. If voltage in Step (2) is correct, close fuse box and turn on rectifier.
4. Check rectifier output. Voltage on D.C. output leads should read 24 to 34 V.D.C. unloaded.
5. Turn rectifier off.
6. Connect DC leads to crane.
7. Turn rectifier on.
8. Connect voltmeter positive lead to hoist motor stud F2 (Stud that brake lead connects to) and negative lead to crane case ground. With 2000 lb. load on crane, hoist (with 3 line block). Start hoist in up condition. Voltmeter should read 22 to 28 VDC.

### 110/24 CONVERTER

1. Connect 110V leads to generator or other 110V source.
2. Check voltage from top of fuses to buss bar in bottom of box. Voltage should be 110V  $\pm$  5%. If voltage is above 116V check voltage at source.  
NOTE: Fuses are connected in parallel; checking from the top of either fuse to buss bar will give the same voltage.
3. If voltage in Step (2) is correct, close fuse box and turn on rectifier.
4. Check rectifier output. Voltage on D.C. output leads should read 24 to 34 VDC unloaded.
5. Turn rectifier off.
6. Connect DC leads to crane.
7. Turn rectifier on.
8. Connect voltmeter positive lead to hoist motor stud F2 (Stud that brake lead connects to) and negative lead to crane case ground. With 2000 lb. load on crane, hoist (with 3 line block). Start hoist in up condition. Voltmeter should read 22 to 28 VDC.

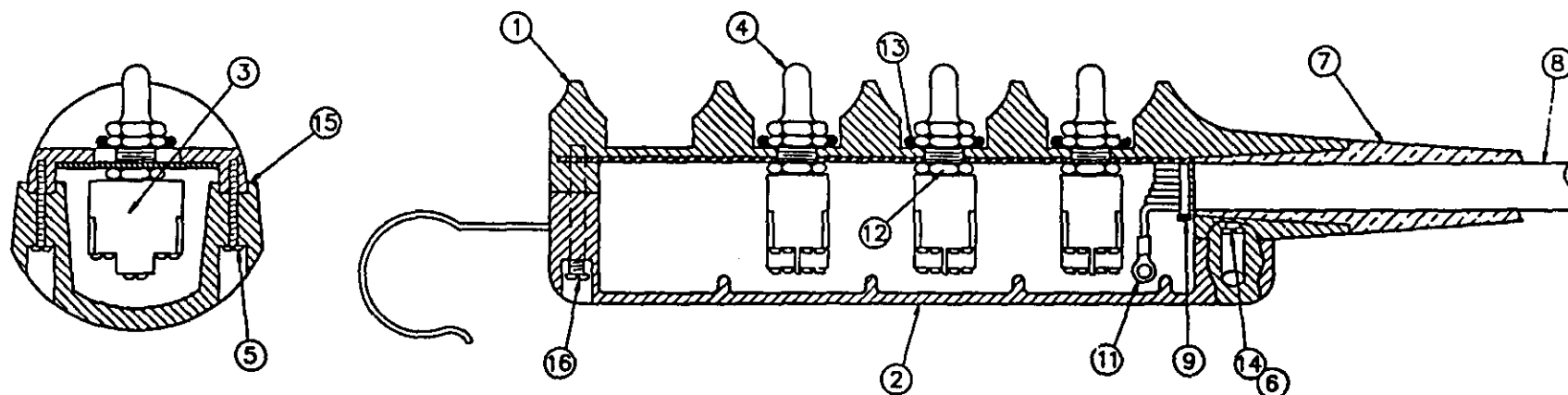


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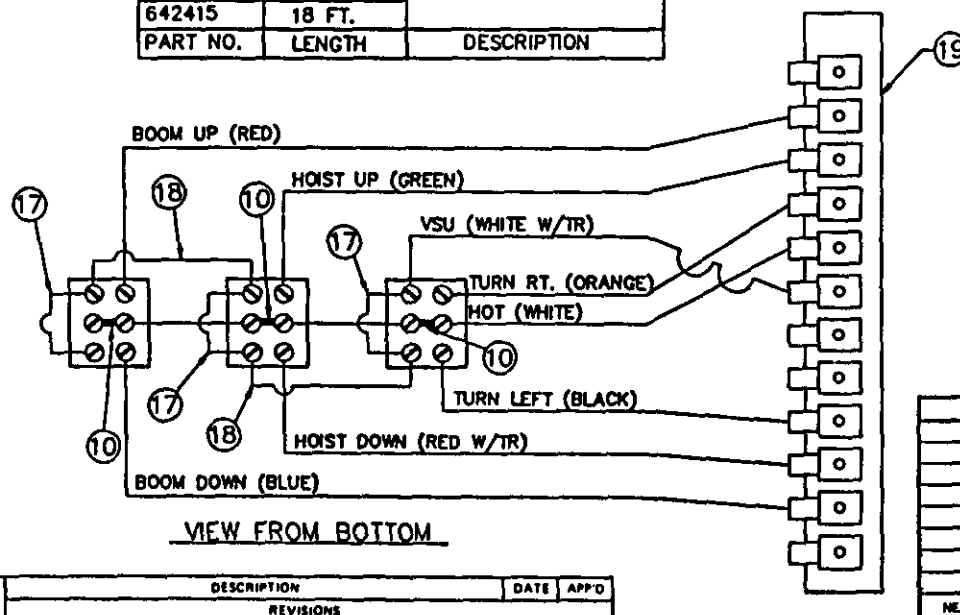




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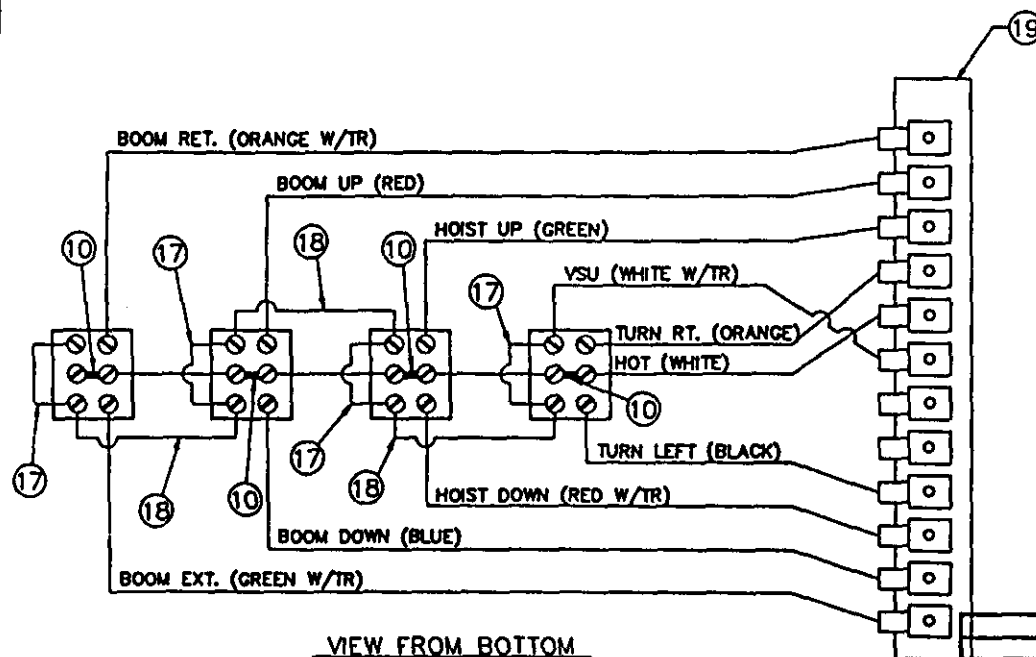
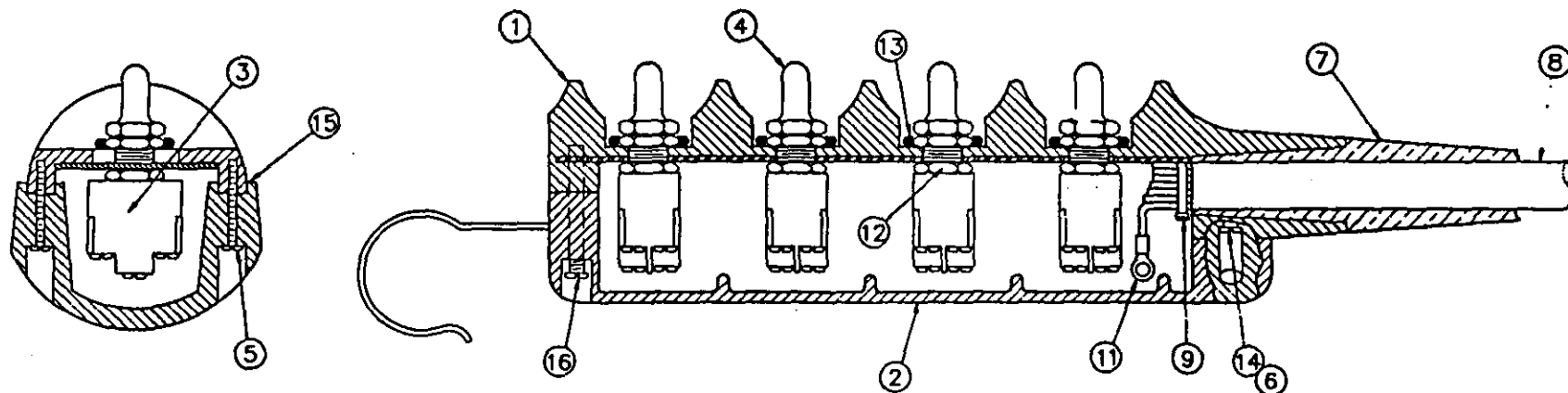


642423	26 FT.	CONDUCTOR CABLE
642450	53 FT.	
642440	43 FT.	
642437	40 FT.	
642430	33 FT.	
642426	29 FT.	
642420	23 FT.	
642415	18 FT.	
PART NO.	LENGTH	DESCRIPTION



19	1	•	635301	TERMINAL STRIP
18	2	•	622347	CONDUCTOR ASSY 3 1/8 LG.
17	3	•	622346	CONDUCTOR ASSY 2 1/8 LG.
16	1	•	004700	SCREW ST. SLT. PAN HD 8 X 1 1/2
15	21	•	800580	3/4" WIDE OKONITE RUBBER TAPE
14	3	•	019700	WASHER SPLIT LOCK 8 PLATED
13	3	•	642100	O-RING
12	3	•	675271	NUT
11	8	•	000101	TERMINALS T & B
10	3	•	636600	JUMPER
9	2	•	634401	TY-RAP CABLE TIE
8	1	•	800630	CONDUCTOR CABLE (23') STD.
7	1	•	633801	CABLE ADAPTER
6	2	•	005101	SCREW ST. SLT. PAN HD 8 x 1 1/4
5	10	•	005001	SCREW ST. SLT. PAN HD 8 x 3/4
4	3	•	640302	BOOT-TOGGLE SWITCH
3	3	•	634200	TOGGLE SWITCH
2	1	•	631700	BOTTOM COVER
1	1	•	631602	PENDANT HOUSING

ITEM	QTY	DVS	PART NO	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES				
TOLERANCES UNLESS OTHERWISE SPECIFIED				
ANGLES 90°				
FRACTIONAL - 1/16 1/8 1/4 3/8 1/2 3/4 1 1 1/2 2 3 4 6 8 10 12 16 20 24 30 36 48 60 72 96 120 144 180 240 300 360 480 600 720 960 1200 1440 1800 2400 3000 3600 4800 6000 7200 9600 12000 14400 18000 24000 30000 36000 48000 60000 72000 96000 120000 144000 180000 240000 300000 360000 480000 600000 720000 960000 1200000 1440000 1800000 2400000 3000000 3600000 4800000 6000000 7200000 9600000 12000000 14400000 18000000 24000000 30000000 36000000 48000000 60000000 72000000 96000000 120000000 144000000 180000000 240000000 300000000 360000000 480000000 600000000 720000000 960000000 1200000000 1440000000 1800000000 2400000000 3000000000 3600000000 4800000000 6000000000 7200000000 9600000000 12000000000 14400000000 18000000000 24000000000 30000000000 36000000000 48000000000 60000000000 72000000000 96000000000 120000000000 144000000000 180000000000 240000000000 300000000000 360000000000 480000000000 600000000000 720000000000 960000000000 1200000000000 1440000000000 1800000000000 2400000000000 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19	1	•	635301	TERMINAL STRIP
18	3	•	622347	CONDUCTOR ASSY 3 1/8 LG.
17	4	•	622346	CONDUCTOR ASSY 2 1/8 LG
16	1	•	004700	SCREW ST. SLT. PAN HD 8 X 1 1/2
15	21"	•	800580	3/4" WDE OKONITE RUBBER TAPE
14	3	•	019700	WASHER SPLIT LOCK 8 PLATED
13	4	•	642100	O-RING
12	4	•	675271	NUT
11	10	•	000101	TERMINALS T & B
10	4	•	636600	JUMPER
9	2	•	634401	TY-RAP CABLE TIE
8	1	•	800632-002	CONDUCTOR CABLE (26')
7	1	•	633801	CABLE ADAPTER
6	2	•	005101	SCREW ST. SLT. PAN HD 8 x 1 1/4
5	10	•	005001	SCREW ST. SLT. PAN HD 8 x 3/4
4	4	•	640302	BOOT-TOGGLE SWITCH
3	4	•	634200	TOGGLE SWITCH
2	1	•	631700	BOTTOM COVER
1	1	•	631601	PENDANT HOUSING
ITEM	QTY	DVS	PART NO	DESCRIPTION

## LIST OF MATERIAL

**AUTO CRANE COMPANY**  
P.O. BOX 88887 • ULSA, UTAH 84308  
6707 NORTH WING ROAD • 810 836 8462

**PENDANT ASSEMBLY**  
( 4 FUNCTION PENDANT )

SCALE:  SIZE:  DRAWING NO: **AW-480799** REV:

WEIGHT:  SHEET:  OF:

UNLESS OTHERWISE NOTED ALL  
DIMENSIONS ARE IN INCHES  
TOLERANCES UNLESS OTHERWISE  
SPECIFIED

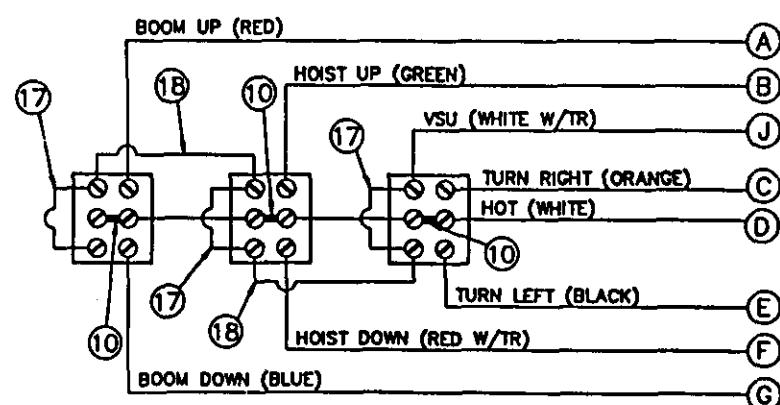
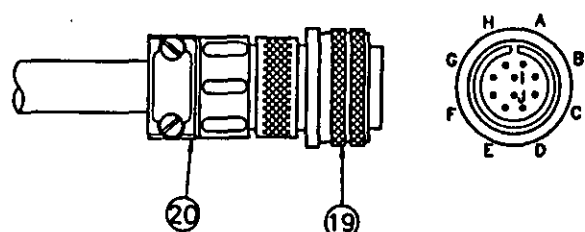
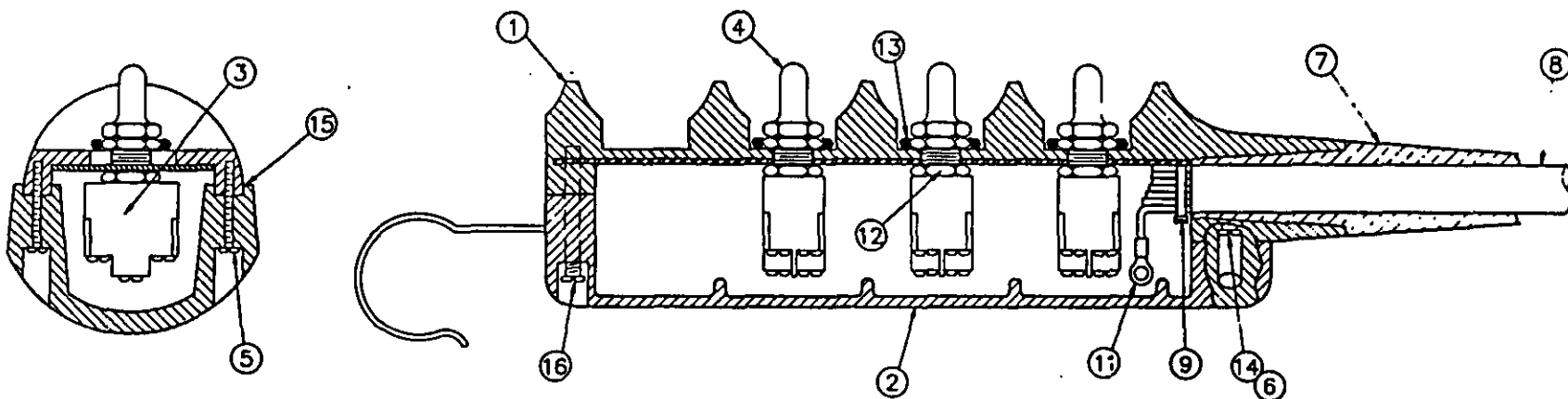
ANGLES: 2 MIN. | RE: 2 DEG  
FRACTIONAL: 1/16 | RE: 1/32  
REMOVE ALL BURRS AND SHARP  
EDGES DO NOT SCALE THIS  
DRAWING  
TOLERANCES NOT SHOWN ABOVE  
ARE PER ANSI Y14.5-1973

THIS PRINT IS THE PROPERTY OF AUTO CRANE CO  
AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL  
TO THEIR INTERESTS.

NEXT ASSY

CHG LTR	DESCRIPTION	DATE	APP'D
	REVISIONS		

7-16.0.0



VIEW FROM BOTTOM

20	1	300412	CLAMP, CABLE
19	1	300411	PLUG, ELECTRICAL
18	2	622347	CONDUCTOR ASSY 3 1/8 LG.
17	3	622346	CONDUCTOR ASSY 2 1/8 LG.
16	1	004700	SCREW ST. SLT. PAN HD 8 X 1 1/2
15	21	800580	3/4" WIDE OKONITE RUBBER TAPE
14	3	019700	WASHER SPLIT LOCK 8 PLATED
13	3	642100	O-RING
12	3	675271	NUT
11	8	000101	TERMINALS T & B
10	3	636600	JUMPER
9	2	634401	TY-RAP CABLE TIE
8	1	800630	CONDUCTOR CABLE (23') STD.
7	1	633801	CABLE ADAPTER
6	2	005101	SCREW ST. SLT. PAN HD 8 x 1 1/4
5	10	005001	SCREW ST. SLT. PAN HD 8 x 3/4
4	3	640302	BOOT-TOGGLE SWITCH
3	3	634200	TOGGLE SWITCH
2	1	631700	BOTTOM COVER
1	1	631602	PENDANT HOUSING

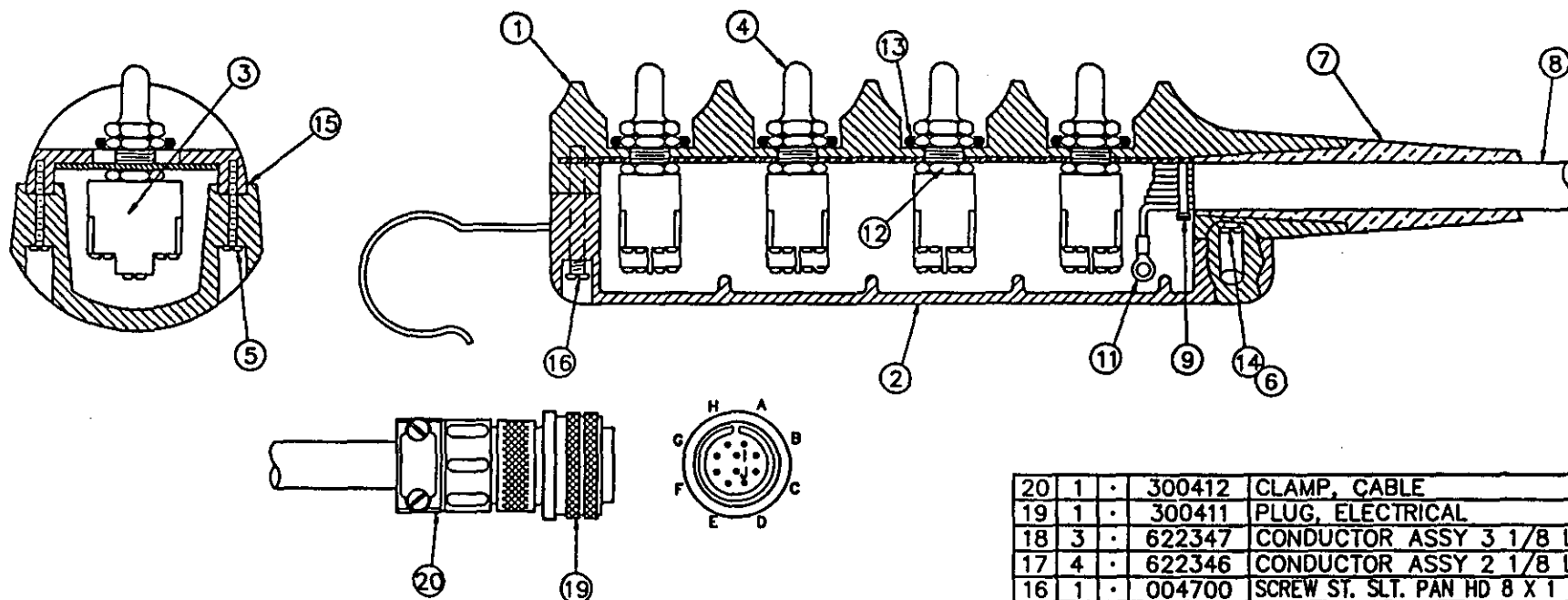
ITEM	QTY	DVS	PART NO	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES				
TOLERANCES UNLESS OTHERWISE SPECIFIED				
ANGLES ± 1°				
FRACTIONAL ± 1/16				
REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING				
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973				
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS				
DRAWN BY			DATE	
CHKD BY			DATE	
ENG BY			DATE	
SCALE			SIZE	
WEIGHT			DRAWING NO	
NEXT ASSY			REVISION	

**AUTO CRANE COMPANY**  
P.O. BOX 58087 • TULSA, OKLAHOMA 74158-0887  
4707 NORTH MINGO ROAD • 918-236-0463

**PENDANT ASSEMBLY**  
**( 3 FUNCTION REMOVABLE )**

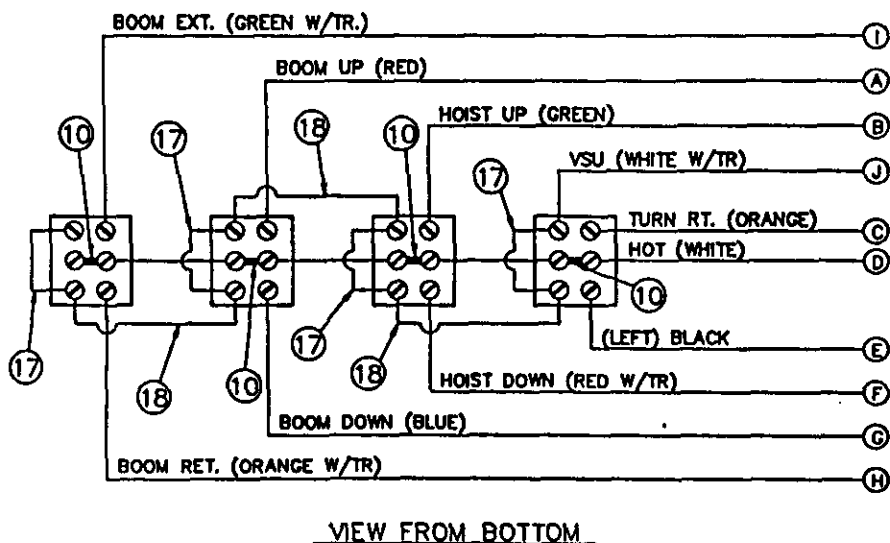
SCALE **C** SIZE **AW-480400** REVISION  
SHEET **1** OF **1**

CHG	DESCRIPTION	DATE	APP'D
LTR	REVISIONS		



20	1	•	300412	CLAMP, CABLE
19	1	•	300411	PLUG, ELECTRICAL
18	3	•	622347	CONDUCTOR ASSY 3 1/8 LG.
17	4	•	622346	CONDUCTOR ASSY 2 1/8 LG
16	1	•	004700	SCREW ST. SLT. PAN HD 8 X 1 1/2
15	21"	•	800580	3/4" WIDE OKONITE RUBBER TAPE
14	4	•	019700	WASHER SPLIT LOCK 8 PLATED
13	4	•	642100	O-RING
12	4	•	675271	NUT
11	10	•	000101	TERMINALS T & B
10	4	•	636600	JUMPER
9	2	•	634401	TY-RAP CABLE TIE
8	1	•	800632-004	CONDUCTOR CABLE (27')
7	1	•	633801	CABLE ADAPTER
6	2	•	005101	SCREW ST. SLT. PAN HD 8 x 1 1/4
5	10	•	005001	SCREW ST. SLT. PAN HD 8 x 3/4
4	4	•	640302	BOOT-TOGGLE SWITCH
3	4	•	634200	TOGGLE SWITCH
2	1	•	631700	BOTTOM COVER
1	1	•	631601	PENDANT HOUSING

ITEM	QTY	D/S	PART NO	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES TOLERANCES UNLESS OTHERWISE SPECIFIED				
ANGLES ± 1/2° XX ± .040 FRACTIONAL ± 1/16 XXX ± .010 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973				
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.				
DRAWN BY RD			DATE 1-14-88	
CHK'D BY			DATE	
ENG BY			DATE	
SCALE			SIZE	
WEIGHT			DRAWING NO	
NEXT ASSY			AW-480800	
			REVISION	
			SHEET 1 OF 1	

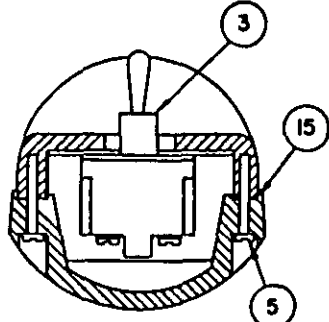
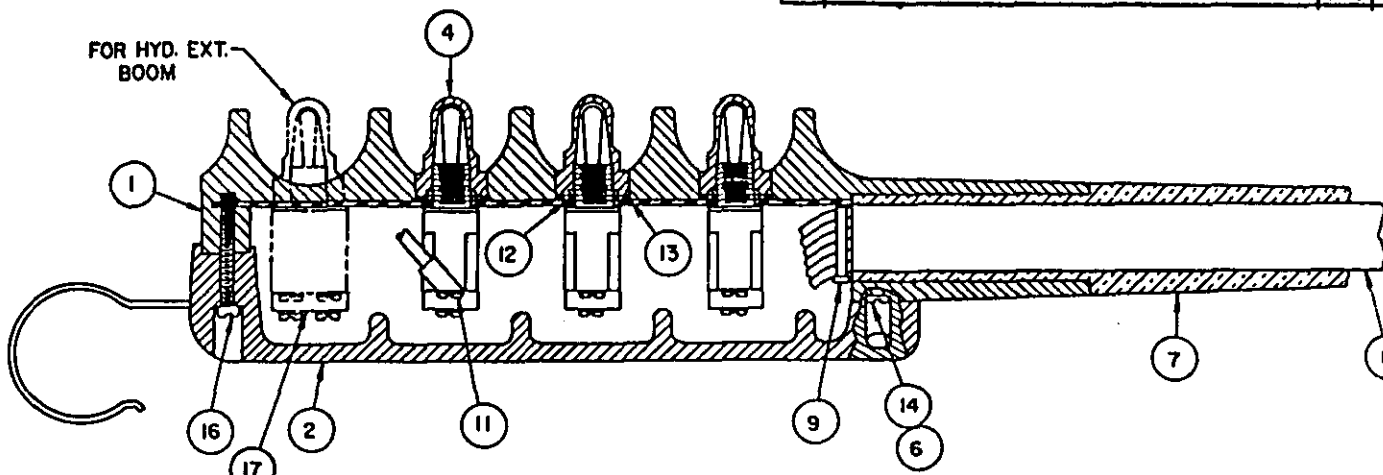


VIEW FROM BOTTOM

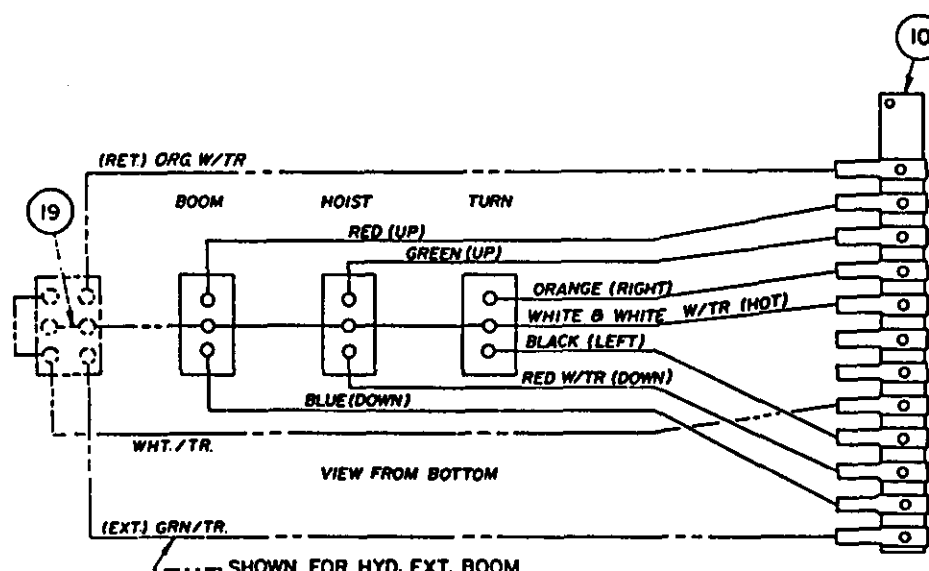
CHG	DESCRIPTION	DATE	APP'D
LTR	REVISIONS		

FIXTURE NO.	FINISH NO.
-------------	------------

REVISEMENTS	
DESCRIPTION	DATE

FOR HYD. EXT. BOOM



VIEW FROM BOTTOM

----- SHOWN FOR HYD. EXT. BOOM

19	1	636600	JUMPER BAR
18	5	660302	CONDUCTOR
17	1	634200	TOGGLE SWITCH
8	1	800632-002	CONDUCTOR CABLE (26')

ADDITIONAL ITEMS REQ'D FOR HYD. EXT. BOOM

16	1	004700	SCREW, SLT. PAN HD. S.T. 8 X 1 1/2
21	1	800580	3/4" WIDTH OKONITE RUBBER TAPE
14	4	019700	WASHER, SPLIT LOCK 8 PLATED
13	3	642100	O-RING
12	3	675271	NUT
11	11	000101	TERMINALS T&B
10	1	635301	TERMINAL STRIP (90°)
9	2	634401	TY-RAP CABLE TIE
8	1	800630	CONDUCTOR CABLE (23') STD.
7	1	633801	CABLE ADAPTER
6	2	005101	SCREW, S.T.-SLT. PAN HD 8 X 1 1/4
5	10	005001	SCREW, S.T.-SLT. PAN HD. 8 X 3/4
4	3	640302	BOOT-TOGGLE SWITCH
3	3	622000	TOGGLE SWITCH
2	1	631700	BOTTOM COVER
1	1	631602	PENDANT HOUSING

QTY	ITEM	QTY	PART NO	DESCRIPTION
1	16	1	004700	SCREW, SLT. PAN HD. S.T. 8 X 1 1/2
21	15	21	800580	3/4" WIDTH OKONITE RUBBER TAPE
4	14	4	019700	WASHER, SPLIT LOCK 8 PLATED
4	13	3	642100	O-RING
4	12	3	675271	NUT
19	11	11	000101	TERMINALS T&B
1	10	1	635301	TERMINAL STRIP (90°)
2	9	2	634401	TY-RAP CABLE TIE
8	8	1	800630	CONDUCTOR CABLE (23') STD.
1	7	1	633801	CABLE ADAPTER
2	6	2	005101	SCREW, S.T.-SLT. PAN HD 8 X 1 1/4
10	5	10	005001	SCREW, S.T.-SLT. PAN HD. 8 X 3/4
4	4	3	640302	BOOT-TOGGLE SWITCH
3	3	3	622000	TOGGLE SWITCH
1	2	1	631700	BOTTOM COVER
1	1	1	631602	PENDANT HOUSING

UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES

FULL RANGES UNLESS OTHERWISE SPECIFIED

ANGLES: 1/2" R.R. 0°

FRACTIONAL: 3/16 R.R. 0°

REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING

TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973

THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THE COMPANY.

DATE: 11/1/60

BY: CHD

DATE: 11/1/60

BY: CHD

DATE: 11/1/60

BY: CHD

**AUTO CRANE COMPANY**

P.O. BOX 9640 • TULSA, OKLAHOMA 74106

2700 BRUCKEN ARROW SPRINGWAY • 918 631 9415

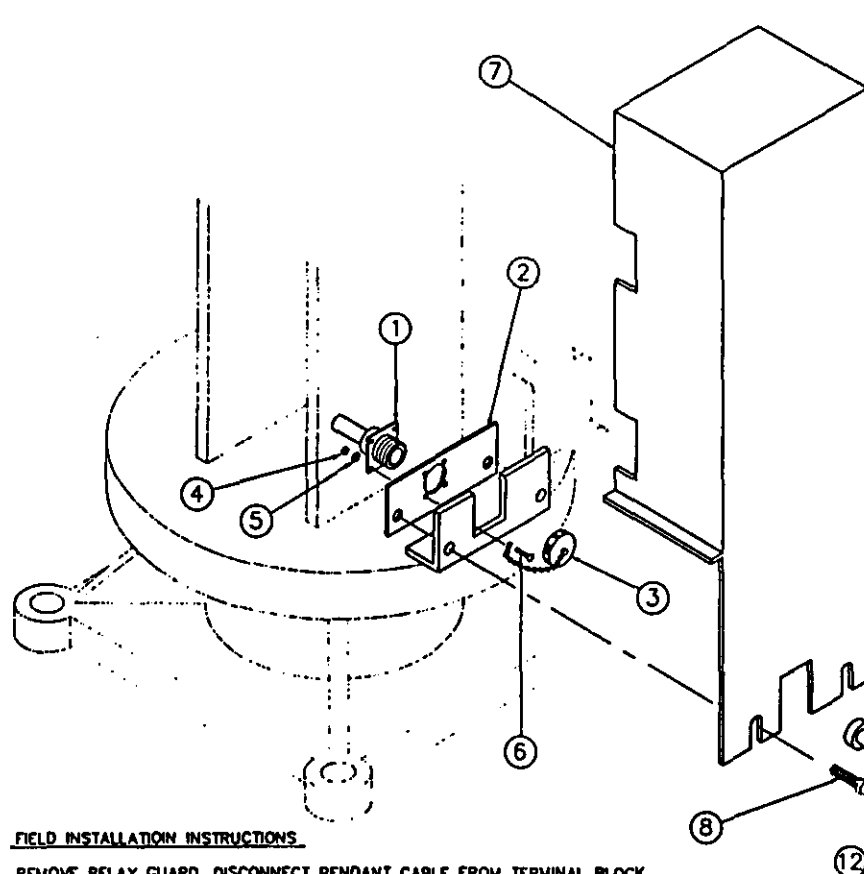
**PENDANT ASSEMBLY**

220/24

SCALE: ~ SIZE: C DRAWING NO: 243045 REVISION: 1

AW-642420

7-19.0.0

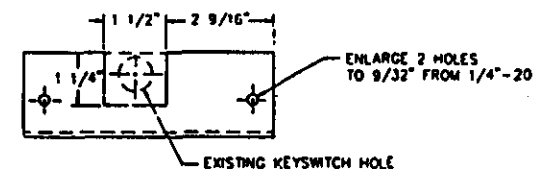
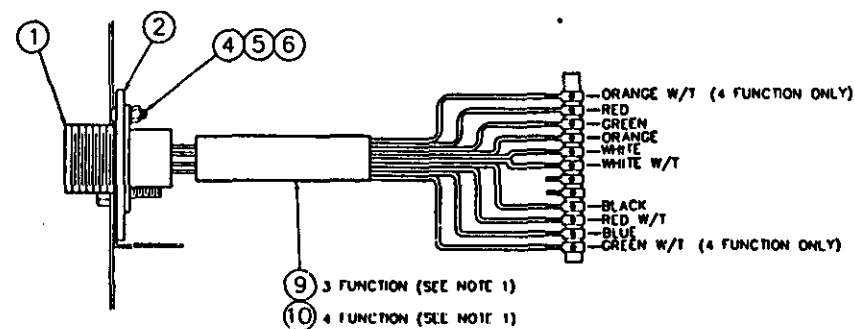


# FIELD INSTALLATION INSTRUCTIONS

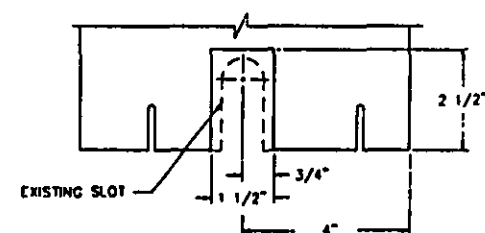
1. REMOVE RELAY GUARD. DISCONNECT PENDANT CABLE FROM TERMINAL BLOCK.
2. REMOVE WIRES FROM KEYSWITCH AND SPLICE WIRES TOGETHER FROM KEYSWITCH.
3. CUT NOTCH AND ENLARGE 1/4"-20 TAPPED HOLES (SEE DETAIL "A").
4. ENLARGE KEYSWITCH SLOT IN RELAY GUARD (SEE DETAIL "B").
5. ATTACH TERMINAL STRIP OF PENDANT CONDUCTOR ASSEMBLY (ITEM 9 OR 10) TO TERMINAL BLOCK OF RELAY PANEL. (SEE AW-676105).
6. ATTACH CONDUCTOR AND MOUNTING PLATE TO GUARD BRACKET WITH (2) 1/4"-20 UNC X 3/4" SCREWS. LEAVE SCREWS LOOSE ENOUGH FOR THICKNESS OF RELAY GUARD TO FIT BETWEEN HEAD OF SCREWS AND GUARD BRACKET.
7. INSTALL RELAY GUARD AND TIGHTEN SCREWS.
8. ATTACH PENDANT.

## NOTES:

1. FOR ADDITIONAL WIRING INFORMATION SEE AW-676105 AND AW-630912.
2. FOR 3 FUNCTION REMOVABLE PENDANT KIT, ORDER PART NUMBER 330665
3. FOR 4 FUNCTION, (POWER EXTENSION), REMOVABLE PENDANT KIT ORDER PART NUMBER 330669
4. ITEMS 9, AND 10, REMOVABLE PENDANT CONDUCTOR ASSEMBLIES, COME WITH ITEMS 1 THROUGH 6.



DETAIL "A"  
MODIFICATION TO GUARD BRACKET

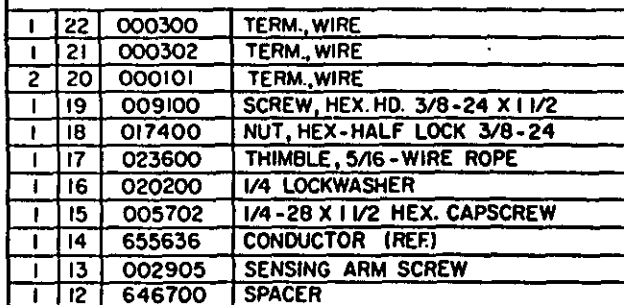


DETAIL "B"  
MODIFICATION TO RELAY GUARD

ITEM NO.				QUANTITY			
1	2	3	4	5	6	7	8
AW-676105				AW-630912			
AW-676105				AW-630912			
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# REMOVABLE PENDANT KIT AW-066

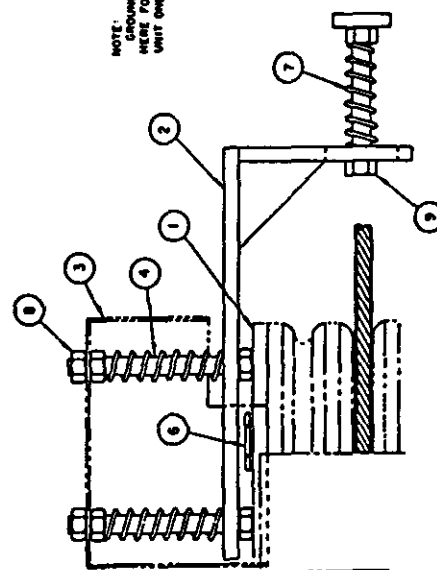
ITEM	QTY.	PART NO.	DESCRIPTION
1	1	300410	RECEPTACLE, REMALE, 10 PIN
2	1	330661	RECEPTACLE, MOUNT PLATE
3	1	300413	CAP RECEPTACLE
4	2	015400	NUT, HEX #6-32
5	2	019600	WASHER SP. LK. #6
6	2	000603	SCREW, RD. HD. #6-32 X 1/2"
7	1	330660	GUARD, RELAY PANEL
8	2	REF.	CAPSCREW HX. 1/4 X 3/4" LG.
9	1	330662	REMOVABLE PENDANT CONDUCTOR ASS'Y (3 FUNCTION)
10	1	330663	REMOVABLE PENDANT CONDUCTOR ASS'Y (4 FUNCTION)
11	1	480400	PENDANT ASS'Y (3 FUNCTION REMOVABLE)
12	1	480800	PENDANT ASS'Y (4 FUNCTION REMOVABLE)



1	11	023700	1/8 X 3/4 ROLL PIN
1	10	650205	SENSING ARM
1	9	009800	3/8 NF X 3 1/2 CAPSCREW
2	8	017400	3/8 NF HALF-LOCK NUT
1	7	241105	BRACKET
1	6	642908	CLAMP
1	5	241147	GUARD
1	4	646900	SWITCH
1	3	013301	5/8 NF X 7 1/2 CAPSCREW (REF)
1	2	018100	5/8 NF HALF-LOCK NUT (REF)
1	1	100801	CLEVIS

QUANTITY		ITEM	D/S	PART NO	DESCRIPTION
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED		<b>AUTO CRANE COMPANY</b> P O BOX 4846 • TULSA, OKLAHOMA 74115 9700 BROKEN ARROW EXPRESSWAY • 918 627 9476			
ANGLES: 1/2°		DRAWN BY <i>308</i> DATE <i>11/1/80</i> CHK'D BY	TITLE <b>LOAD LIMIT SWITCH ASSEMBLY</b>		
FRACTIONAL: 1/16		DATE ENG BY	SCALE ~		
REMOVE ALL BUMPS AND SHARP EDGES DO NOT SCALE THIS DRAWING		DATE	SIZE C	DRAWING NO <b>AW-241138</b>	REVISION
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 1973		WEIGHT	SHEET <u>1</u> OF <u>1</u>		
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THE COMPANY.					
NEXT ASS'Y					





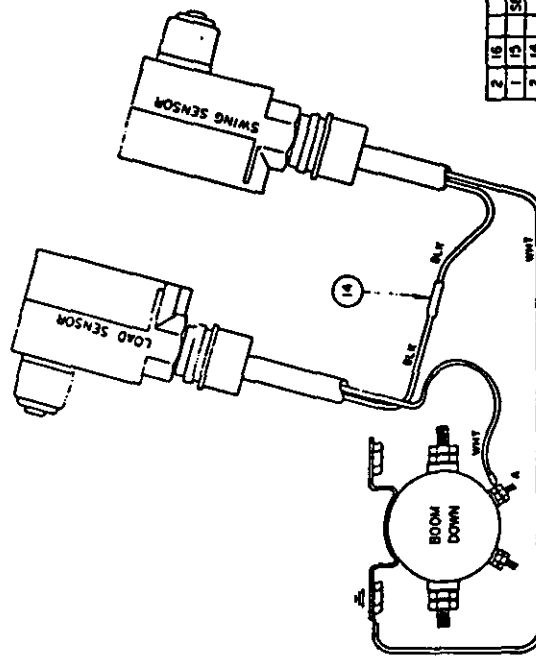
NOTE:  
GROUND WIRE BE9962M SPLICED  
HERE FOR 24V VOLTAGE SWITCHING

**STEP ONE**

TO CONNECT LOAD LIMIT SWITCH, RUN WHITE  
LEAD TO TERMINAL-A ON BOOM DOWN RELAY  
AND ATTACH BLACK LEAD TO BLACK LEAD  
FROM SWING SENSOR

**Site Two**

CONNECT WHITE LEAD FROM SWING SENSOR  
TO GROUND AS SHOWN.



... AUTO CRANE PART NO. 659628 (REF)

**Wielki**      **perłowiec**

[illegible]

20 FT	650104
17 FT	650103
14 FT	650102
12 FT	650101
9 FT	650100

[illegible]

12/22/2011	11/11/2011	0	AW-650000	12/22/2011	11/11/2011
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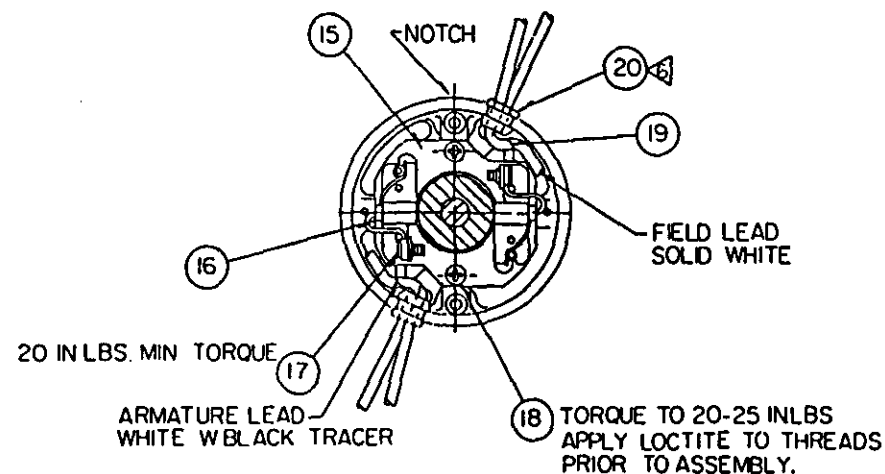
SWING LIMIT SENSOR ASSEMBLY



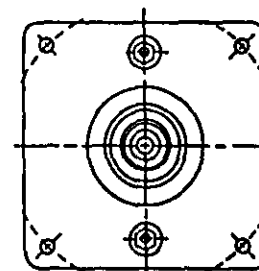
# MOTOR, ELECTRIC AW-300105

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	300174	SEAL
2	1	300251	SPRING, FLAT
3	1	300252	BALL BEARING
4	2	300253	SCREW, #10 X 3-1/8
5	4	300254	LOCKWASHER
6	1	300255	RETAINING RING
7	1	300256	BAFFLE
8		(REF)	LOCTITE 404
9	1	300257	FIELD ASSEMBLY
10	1	(REF)	ARMATURE ASSEMBLY
11		(REF)	SYLASTIC
12	4	300260	LOCKWASHER, EXT. TOOTH
13	1	300261	BRUSH CARD ASSY.
14	1	300262	BALL BEARING
15	6	300263	SCREW, #8 X 3/8
16	2	200264	LOCKWASHER
17	1	300265	GUARD, BRUSH
18	1	300266	INSULATOR, GUARD
19	1	(REF)	NAMEPLATE
20	1	300267	HOUSING, BRUSH END
21	1	300268	HOUSING, PLAIN END
22	2	300269	SCREW, #10 X 2-3/4
23	4	300270	WASHER, STEEL
24	4	300271	WASHER, PHENOLIC
25	6	300272	LOCKWASHER
26	2	300273	SCREW, 1/4 - 20
27	4	300274	NUT, 1/4 - 20
28	4	300275	WASHER, FIBER
29	2	300276	BUSHING
30	2	300277	LEAD ASSEMBLY
31		(REF)	GREASE
32	2	309100	BRUSH MOTOR
33	2	300116	SPRING, MOTOR

WHEN ORDERING MOTOR PARTS, PLEASE SPECIFY MODEL.



SECTION A-A

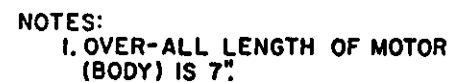


- |   |  | ITEM  | D/S  | PART NO | DESCRIPTION |
|---|--|---|--|---------|-------------|
| QUANTITY  |  | LIST OF MATERIAL  |  |         |             |
| UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED<br>ANGLES: 1/2"     .XXX .40<br>FRACTIONAL: 1/16     .XXX .010<br>REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING<br>TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 - 1973 |  | DRAWN BY<br><b>GENSMAN</b><br>DATE<br><b>11-5-86</b><br>CHK'D BY  | <b>AUTO CRANE COMPANY</b><br><br>TITLE<br><b>MOTOR 750 "S" MSX DUMORE</b><br><br>SCALE     SIZE     DRAWING NO     REVISION<br><b>C</b> <b>AW 300105-001</b> _____ |         |             |
|   |  | DATE  |  |         |             |
|   |  | ENG BY  |  |         |             |
|   |  | DATE  |  |         |             |
| NEXT ASSY   |  | THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.<br>WEIGHT     SHEET: 1 of 1 |  |         |             |

**MOTOR 750 "S" MSX DUMORE AW-300105-001**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	300551	ARMATURE ASS'Y
2	1	300552	FIELD ASS'Y
3			
4	1	300554	HOUSING, BRUSH END
5	1	300555	CYL./BAFFLE ASS'Y
6	1	300556	HOUSING PLAIN END
7	1	300557	SEAL
8	1	300558	SPRING, LOADING
9	1	300559	BALL BEARING
10	2	300560	NUT, KEPS 10-32
11	1	300561	BALL BEARING
12	1	300562	COVER
13	2	300563	SPACER
14	2	300564	SCREW 8-32
15	1	300565	BRUSH CARD ASS'Y
16	2	300566	CARBON BRUSH ASS'Y
17	2	300567	SCREW, SEMS 8-32
18	2	300568	SCREW, SEMS 10-32
19	2	300569	LEAD ASSEMBLY
20	2	300570	RUBBER GROMMET
21	2	300571	STUD 10-32 X 7.5
22	1	300572	NAMEPLATE
23	2	300573	LOCKWASHER INT.

12/86



	QUANTITY	ITEM D/S	PART NO.	DESCRIPTION
	UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED ANGLES : 1/2°   .002 ± .00 FRACTIONAL 1/16   .002 ± .00 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 - 1973	DRAWN BY <b>GARY MAN</b> DATE <b>10-29-86</b> CHK'D BY  DATE  ENG. BY  DATE	<b>AUTO CRANE COMPANY</b>   <b>MOTOR MSI (6027)</b>	TITLE
NEXT ASS'Y			SCALE —	SIZE <b>C</b>
			WEIGHT	REVISION <b>AW 300105-002</b>
				SHEET 1 OF 1

**7-24.0.0**

MOTOR MSI (6027) AW-300105 - 002

ITEM	QTY.	PART NO.	DESCRIPTION
1	4	300451	NUT
2	6	300452	WASHER, LOCK
3	4	300453	WASHER, FLAT
4	4	300454	INSULATOR, MOTOR
5	2	300455	SCREW, HEX-HD
6	6	300456	INSULATOR, MOTOR
7	1	300457	COVER, END - MOTOR
8	2	300458	WASHER, LOCK
9	2	300459	SCREW
10	2	300460	GROMMET, INSULATOR
11	2	300461	LEAD, MOTOR
12	1	300462	HOUSING, MOTOR
13	1	300463	STATOR - 12V
14	2	300464	SCREW
15	2	300465	BRUSH, MOTOR
16	1	300466	BRACKET, MOTOR
17	2	300467	WASHER, LOCK
18	2	300468	SCREW
19	1	300469	BEARING
20	1	300470	ARMATURE - 12V
21	1	300471	BEARING
22	1	300472	SPRING, MOTOR
23	1	300473	HEAD, MOTOR
24	2	300474	SCREW, MOTOR
25	1	300475	SEAL, MOTOR
26	2	300476	SPRING, MOTOR
27	1	300477	DECAL, MOTOR
28	1	300478	SHIM

7-25.0.0

FIXTURE NO.	FINISH NO.	CHG	REVISIONS																																														
		LTR	DESCRIPTION	DATE	APP'D																																												
		<p><b>NOTE:</b></p> <p>IF MOTOR LOSES POWER IT MAY BE BECAUSE THE BRUSHES HAVE BECOME TIGHT IN THE BRUSH HOLDER. TO CORRECT THIS CONDITION, FOLLOW THE INSTRUCTIONS BELOW: REF. MOTOR AW-300105</p> <p><b>STEP INSTRUCTIONS</b></p> <ol style="list-style-type: none"> <li>1. DISCONNECT MOTOR LEADS.</li> <li>2. REMOVE BAND (P/N 300162) BY LOOSENING SCREW (P/N 300161).</li> <li>3. RAISE BRUSH SPRING (P/N 300165) WITH SCREWDRIVER AND REMOVE BRUSHES (P/N 300164).</li> <li>4. DRESS FACE OF BRUSHES LIGHTLY WITH FILE.</li> </ol> <p>ASSEMBLE IN REVERSE SEQUENCE AND TEST.</p>																																															
<p>7/84</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">ITEM</th> <th style="width: 5%;">D/S</th> <th style="width: 15%;">PART NO.</th> <th style="width: 70%;">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;"><b>QUANTITY</b></td> </tr> <tr> <td colspan="4" style="text-align: center;"><b>LIST OF MATERIAL</b></td> </tr> <tr> <td colspan="4"> <p>UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED.</p> <p>ANGLES: 1/2" .XX ± .40 FRACTIONAL: 1/16" .XXX ± .010</p> <p>REMOVE ALL BURRS AND SHARP EDGES (DO NOT SCALE THIS DRAWING).</p> <p>TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 1973</p> <p>THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.</p> </td> </tr> <tr> <td colspan="2">DRAWN BY <i>Armstrong</i></td> <td colspan="2">DATE 7-24-84</td> </tr> <tr> <td colspan="2">CHK'D BY</td> <td colspan="2">DATE</td> </tr> <tr> <td colspan="2">DATE</td> <td colspan="2">ENG. BY</td> </tr> <tr> <td colspan="2">DATE</td> <td colspan="2">SCALE ~</td> </tr> <tr> <td colspan="2">SIZE B</td> <td colspan="2">DRAWING NO. AW-008</td> </tr> <tr> <td colspan="2">WEIGHT</td> <td colspan="2">REVISION</td> </tr> <tr> <td colspan="2">SHEET 1 OF 1</td> <td colspan="2"></td> </tr> </tbody> </table>				ITEM	D/S	PART NO.	DESCRIPTION	<b>QUANTITY</b>				<b>LIST OF MATERIAL</b>				<p>UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED.</p> <p>ANGLES: 1/2" .XX ± .40 FRACTIONAL: 1/16" .XXX ± .010</p> <p>REMOVE ALL BURRS AND SHARP EDGES (DO NOT SCALE THIS DRAWING).</p> <p>TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 1973</p> <p>THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.</p>				DRAWN BY <i>Armstrong</i>		DATE 7-24-84		CHK'D BY		DATE		DATE		ENG. BY		DATE		SCALE ~		SIZE B		DRAWING NO. AW-008		WEIGHT		REVISION		SHEET 1 OF 1			
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## TROUBLESHOOTER – 6006

PROBLEM	CAUSE
Charging	Incorrect hookup of V.S.U., bad ground to truck chassis, bad battery not staying charged, not running, truck regulator or alternator problem.
Crane will operate on hoist down only.	Lost ground to other relays. Load limit switch kicked out.
Crane operates two functions at same time such as hoist up, turn right, boom down, turn right, etc.	Broken wire in pendant, head shorting to other terminals, function relay has stuck in operate position.
Boom will not go up	Boom limit switch not adjusted properly or broken, boom up relay stuck, broken wire in pendant, boom up switch is bad.
Crane will not operate in any single motor function such as boom down, hoist down, hoist up, turn right, turn left	Excluding boom limit switch, same as above; also check leads and motor brushes. Ground lost to any relay or all relays.
Crane will not operate at all	Check to make sure battery is connected in crane, power cable is connected to truck battery, key lock switch is turned on and properly connected, make sure of ground between crane and truck frame. Make sure battery in truck is connected. Check V.S.U. connection. Check grounds or relays and check load limit switch.
Motor or motors will not run	Check leads on motor; check brushes; broken wires in pendant, broken toggle switch, stuck relays. Check or see if motor or motors are getting 24 volts; if not check V.S.U. Check to see if both batteries are connected. Burned up fields and armatures also cause this.
Relays not functioning properly or stuck	Check relays using ohm meter. Relay should be closed on bottom end, open top end, use 12 volts to operate relays. Positive on one small post and negative on the other. This is top end when energized continuity should disappear at bottom and appear at top. When disconnected continuity should reappear at bottom. (Essex relay 200220)
Crane running slow – starts out good, then dies out	Battery in truck or crane or both is bad or low. Crane not grounded to truck chassis. Make sure motor and battery in truck are grounded to chassis relay in V.S.U. stuck or not grounded good. Connections on battery corroded not making good contact. Alternator or voltage regulator bad on truck; this causes battery not to fully charge.

## PROBLEM

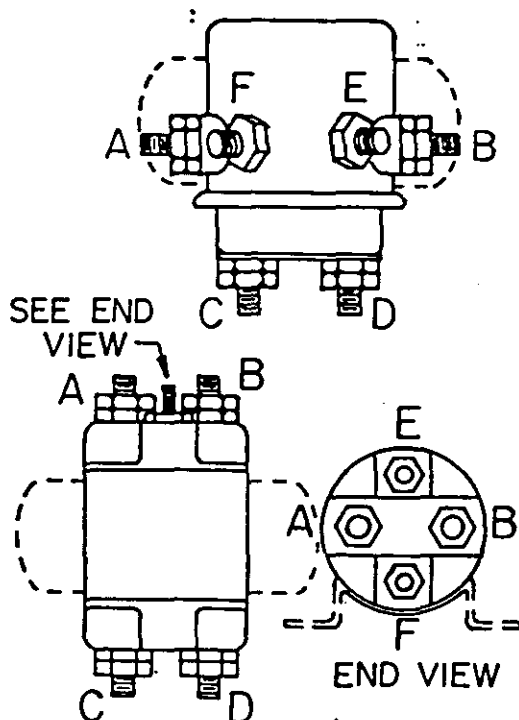
Pendant (or remote control) not operating crane properly

## CAUSE

Broken toggle switches in control head; broken wires in control head or cable; control cable broken or not connected properly to terminal bar; wires from terminal bar to relays not connected or broken.

Bad ground circuit on relays  
hoist up, boom up, boom down,  
turn right, turn left

Loose connections on relays, load limit switch, diode, can cause crane not to operate properly; For example, when you try to operate more than one function at once, operation will work but the second will not. But each function will operate separately.



## HOW TO CHECK RELAY:

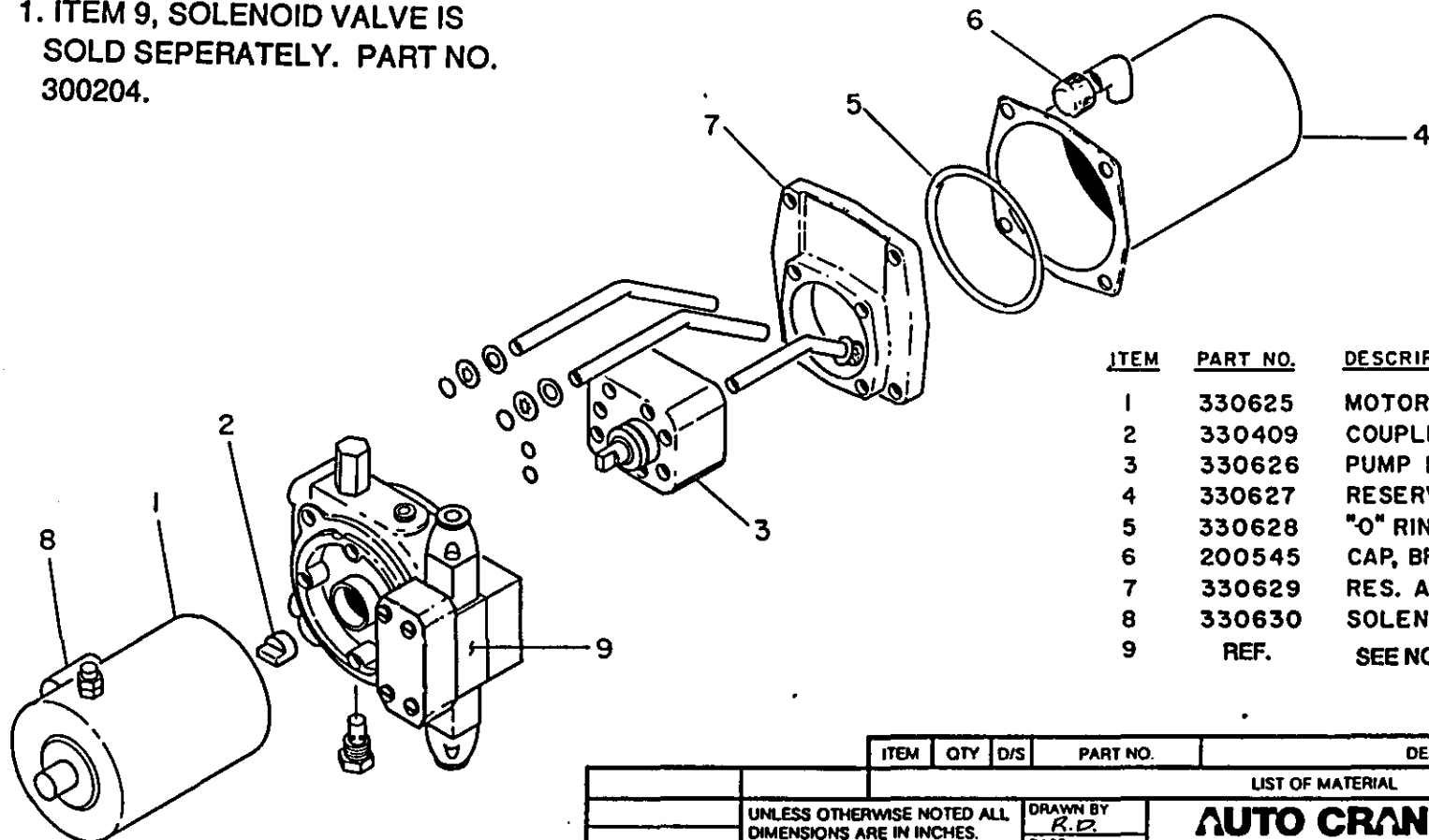
To check a relay on this or any Auto Crane product is the same. The difference being in physical appearance. Shown at left are two types of relays Auto Crane uses. Our relays are normally closed across the bottom posts (C&D). When activated, they will open across (C&D) and close across (A&B). To activate these relays, use 12V positive and 12V negative wires and place them on posts (F&E). You may place 12V+ on post F or E as long as you place 12V on the remaining post (F&E) using a ohm meter or test light. Check across posts (A&B). You should get an ohm reading or your test light should be on when you have the relay activated. With the relay still activated check across posts (C&D). You should have no ohm reading or test light at this point with relay activated. (At this point, disconnect 12V+ and 12V- from posts (F&E). This should let relay return to its normal position. Using your ohm meter or test light again, check the relay across posts (A&B). If relay is working correctly, you should have no reading at all. Then check across posts (C&D). You should have an ohm reading or test light should be on. If you get the above results, relay is okay. If you get any variation in the above explanation on the relay you are checking, check the relay again. If it still shows a difference, the relay is bad and should be replaced.

**NOTE** - The above explanation is with relays completely disconnected from all wires on motor circuits and ground wires. These circuits can give you false readings sometimes.

1-0-1-8

**NOTE:**

1. ITEM 9, SOLENOID VALVE IS  
SOLD SEPERATELY. PART NO.  
300204.

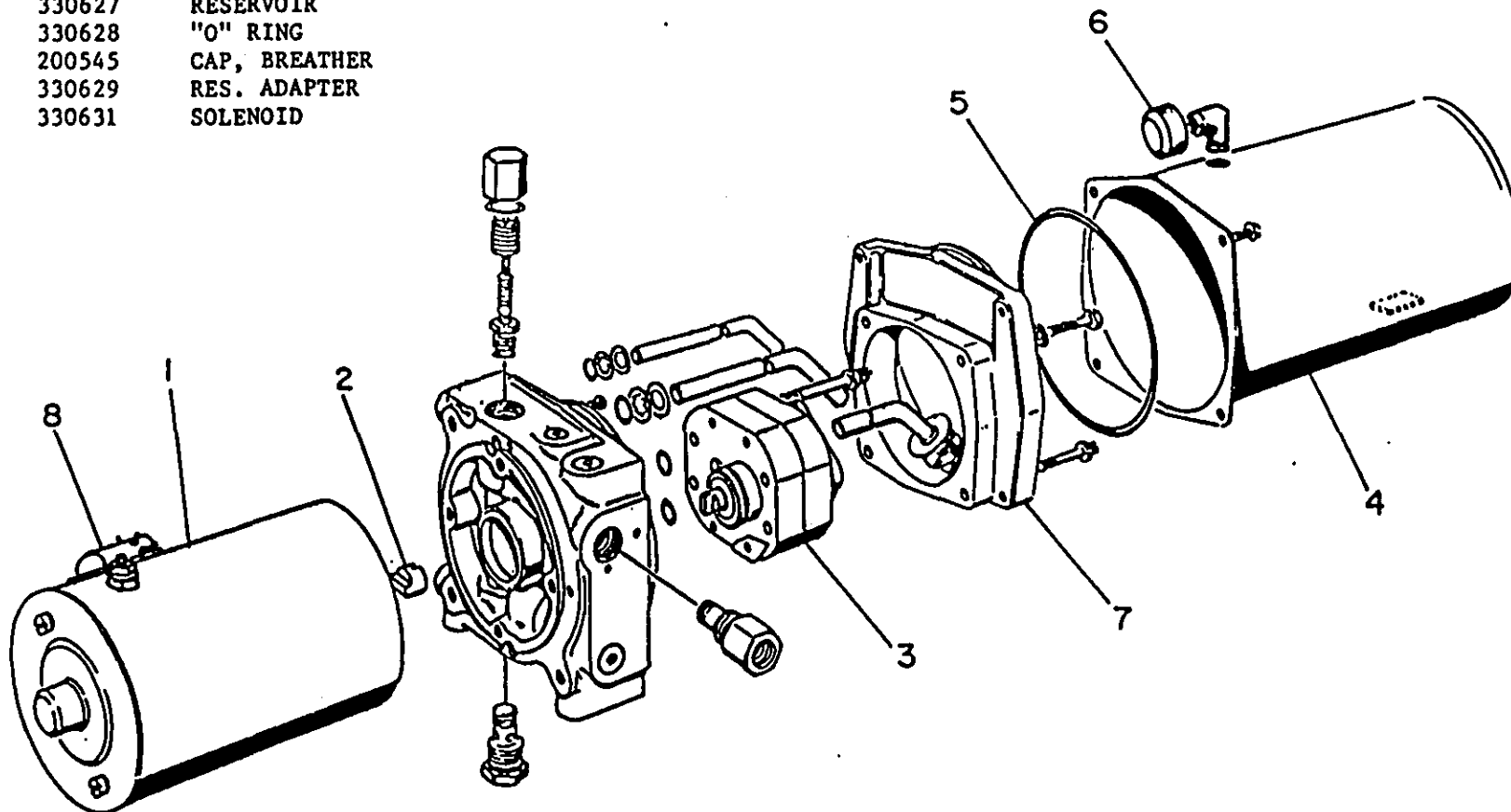


ITEM	PART NO.	DESCRIPTION
1	330625	MOTOR, PUMP
2	330409	COUPLING
3	330626	PUMP KIT
4	330627	RESERVOIR
5	330628	"O" RING
6	200545	CAP, BREATHER
7	330629	RES. ADAPTER
8	330630	SOLENOID
9	REF.	SEE NOTE 1

ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 580697 • TULSA, OKLAHOMA 74158 0697 4707 NORTH MINGO ROAD • 918 836-0463				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED: ANGLES $\pm 1/2^\circ$   XX $\pm 0.40$ FRACTIONAL $\pm 1/16$   XXX $\pm 0.10$ REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973			DRAWN BY <i>R.D.</i> DATE <i>6-22-88</i> CHK'D BY DATE ENG. BY DATE	
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRI- MENTAL TO THEIR INTERESTS.			TITLE <b>HYDRAULIC PUMP</b> SCALE SIZE <b>B</b> DRAWING NO <b>AW-330607</b> REVISION	
NEXT ASS'Y			WEIGHT	
			SHEET _____ OF _____	

CHG	DESCRIPTION	DATE	APP'D
LTR	REVISIONS		

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6	200545	CAP, BREATHER
7	330629	RES. ADAPTER
8	330631	SOLENOID



NOTE:  
1. FOR RECTIFIED UNITS.

## AUTO CRANE COMPANY

P.O. BOX 45548 • TULSA, OKLAHOMA 74145  
9260 BROKEN ARROW EXPRESSWAY • 918-627-9475

TITLE

HYDRAULIC PUMP

SCALE

~

SIZE

A

DRAWING NO.

AW-330608

REVISION



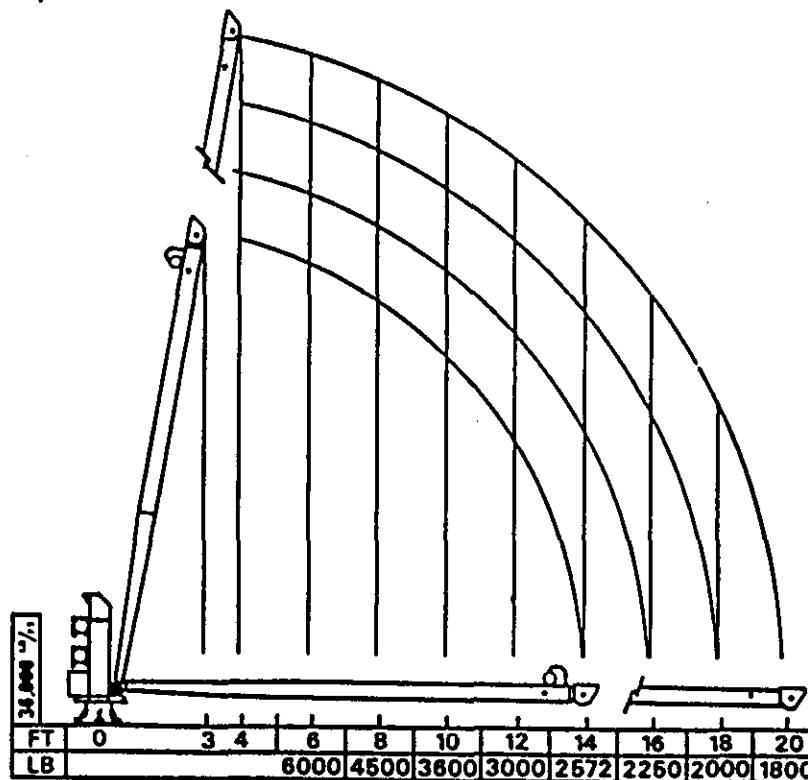
CHG  
LTR

REVISIONS

DESCRIPTION

DATE

APP'D



ITEM

QTY

D/S

PART NO.

DESCRIPTION

LIST OF MATERIAL

UNLESS OTHERWISE NOTED ALL  
DIMENSIONS ARE IN INCHES.  
TOLERANCES UNLESS OTHERWISE  
SPECIFIED.

ANGLES  $\pm 1/2^\circ$  | .XX  $\pm .040$   
FRACTIONAL  $\pm 1/16$  | .XXX  $\pm .010$   
REMOVE ALL BURRS AND SHARP  
EDGES. DO NOT SCALE THIS  
DRAWING.  
TOLERANCES NOT SHOWN ABOVE  
ARE PER ANSI Y14.5-1973

THIS PRINT IS THE PROPERTY OF AUTO CRANE CO.  
AND MUST NOT BE USED IN ANY MANNER DETRI-  
MENTAL TO THEIR INTERESTS.

DRAWN BY

DATE

CHK'D BY

DATE

ENG. BY

DATE

**AUTO CRANE COMPANY**

P.O. BOX 580697 • TULSA, OKLAHOMA 74158-0697  
4707 NORTH MINGO ROAD • 918-836-0463

TITLE

LOAD CHART

SCALE

SIZE

DRAWING NO.

REVISION

A

AW-040611

WEIGHT

SHEET 1 OF 1

NEXT ASS'Y

9-2.0.0

88150C

10-1.0.0

