

# Auto Crane Company

P.O. BOX 580697 • TULSA, OKLAHOMA 74158-0697  
4707 N. MINGO ROAD • TULSA, OKLAHOMA 74117  
918-836-0463 • TELEX 158108 RAMSEY TUL

## OWNER'S MANUAL 3203 SERIES

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

## 3203 SERIES OWNERS MANUAL

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## AUTO CRANE COMPANY

### INTRODUCTION -3203 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 3203 series for your protection. The material and electrical systems were designed to minimize weight and lengthen durability. The hydraulic components are designed for a 4:1 safety factor. Holding valves are installed on the power versions to prevent the load from dropping if a hose should fail. All hoses have a bursting pressure of 11,000 P.S.I. and a minimum bend radius of 2.5. A 3Ou filter is installed in the hydraulic system to remove dirt and grit that may cause premature failure. The reservoir is protected with a 4Ou filter in the filler cap.

For your convenience the overall dimensions of the 3203 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. A minimum chassis of 8000 lbs. G.V.W.R. with two rear jacklegs (or outriggers) is recommended. Crane side jackleg should extend 45" from centerline of truck chassis.

The 3203 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 on page 2-0. 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 60 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 all warranty claims we receive as promptly as possible. If material or workmanship is involved, immediate corrective action is taken. It 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 and 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 a knowledgeable Customer Service Department. In most cases an 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, a 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 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 needed 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 the Auto Crane Company at the following telephone number: 918 - 836-0463. 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.

# **-IMPORTANT-**

## **SAFETY TIPS AND PRECAUTIONS**

1. Make certain the vehicle meets minimum chassis requirements. (These requirements do not guarantee unit stability.)
2. Make certain the crane is installed per factory specifications. Contact your local Distributor or the Auto Crane factory if any questions arise.
3. Keep the vehicle in as level a position as possible while loading or unloading.
4. **ALWAYS** set the vehicle emergency brake before beginning crane operations
5. **ALWAYS** use outriggers (jacklegs) from vehicle to the ground during crane operation. Insure that they are firmly positioned on solid footings.
6. All load ratings are based on crane capacity, NOT unit stability.
7. **ALWAYS** comply with load chart capacities (centerline of rotation to hoist hook).
8. **NEVER OPERATE THE CRANE NEAR ELECTRICAL POWER LINES.** Auto Crane Company recommends that a crane never be moved any closer to a power line (including telephone lines) than 20 feet at any point.
9. Keep objects and personnel clear of crane path during operation.
10. Keep hoist cable pulled tight at all times.
11. **NEVER** un-reel last wrap of cable from drum.
12. **NEVER** wrap cable around load.
13. **REMEMBER** - in lifting a heavy load, the weight can create enough tipping moment to overturn the vehicle.
14. **NEVER** attempt to lift or drag a load from the side- the boom can fail far below its rated capacity.
15. Oil gears as required.
16. **NEVER** weld, modify, or use unauthorized components on any Auto Crane unit. This will void any warranty or liability. Also failure of the crane may result.
17. An important item which an operator should consider and use properly is the hoist hook. It should be checked on a 30-day basis for distortion or cracks.
18. **NEVER** place a chain link on the tip of the hook and try to lift a load with the hoist.
19. **NEVER** use a sling bar or anything larger than the hook throat which could prevent the hook from closing with the block, thus negating the safety feature.
20. In using a safety hook, **ALWAYS** insure that the hook throat is closed before lifting a load. Proper attention and common sense applied to the use of the hoist hook and various slings will prevent possible damage to material being hoisted and may prevent injury to personnel.
21. **NEVER** hold any pendant Select switch on that will negate safe operating conditions.
22. **ALWAYS** store outriggers (jacklegs) before road travel.

## **LIFE OF WIRELINE**

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 on cable to insure proper spooling.
  - c. Avoid kinks in cable.
  - d. Avoid abrasive action and contact with sharp corners.
4. Frequency of use.

Auto Crane units, 2700 pound rating to 3200 pound rating use 7/32 inch diameter galvanized preformed 7 x 19 aircraft cable. This cable has a working strength, when new, of 5600 pounds. It is recommended when 1600 pound loads are exceeded to use a two part line with a traveling block. This will ensure a 3.5 to 1 safety factor when the cable is new.

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.

## 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. On Auto Crane's larger units, remove pendant control from guard and unwrap cable from boom. 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.**

## MAINTENANCE OF BATTERIES

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.

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°
1.250	-62°
1.200	-16°
1.150	5°
1.100	19°

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 or 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-half 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 one can make on a battery.

Low maintenance batteries should not be used on Auto Cranes or on trucks equipped with Auto Cranes. These batteries are not designed for "deep" discharge.

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 low 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 containers or covers by tightening hold-down figures excessively, yet they must not be so loose that breakage results from a too loose hold-down.

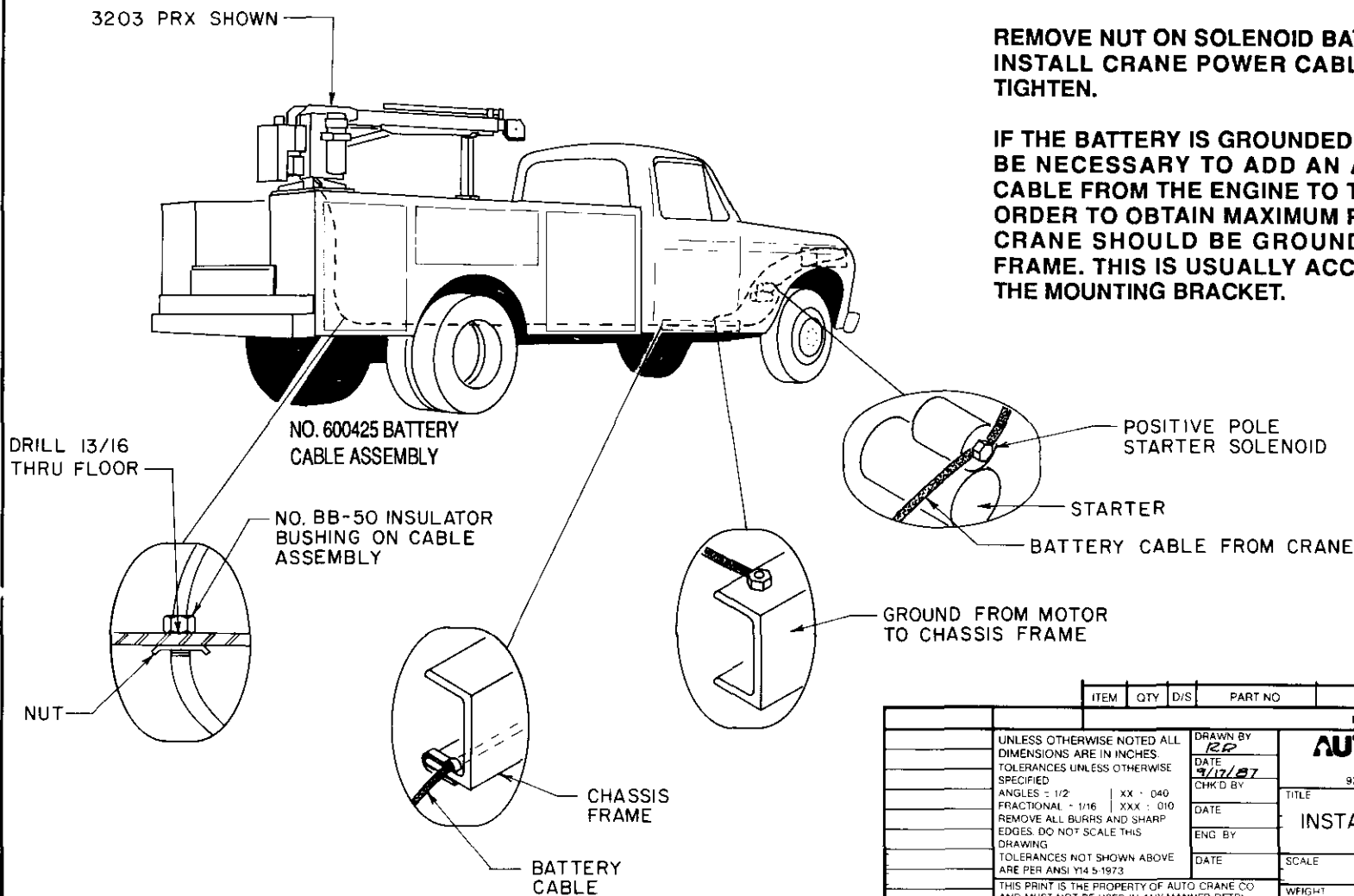
DRILL 13/16 DIAMETER HOLE IN FLOOR. INSTALL CABLE, AND BUSHING WHICH IS FURNISHED ON CABLE, AS SHOWN. WRAP ELECTRICAL TAPE AROUND CABLE SO IT WILL FIT BUSHING SNUG.

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.

REMOVE NUT ON SOLENOID BATTERY TERMINAL POST, INSTALL CRANE POWER CABLE, REPLACE NUT AND TIGHTEN.

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.

3203 PRX SHOWN



ITEM	QTY	D/S	PART NO	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED			DRAWN BY <b>RP</b>	
ANGLES = 1/2			DATE <b>9/17/87</b>	
FRACTIONAL = 1/16			CHKD BY	
XXX = .010			DATE	
REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING			ENG BY	
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973			DATE	
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.			SCALE	SIZE
NEXT ASSY			<b>C</b>	<b>AW-049</b>
			WRIGHT	REVISION
			SHEET <b>1</b> OF <b>1</b>	

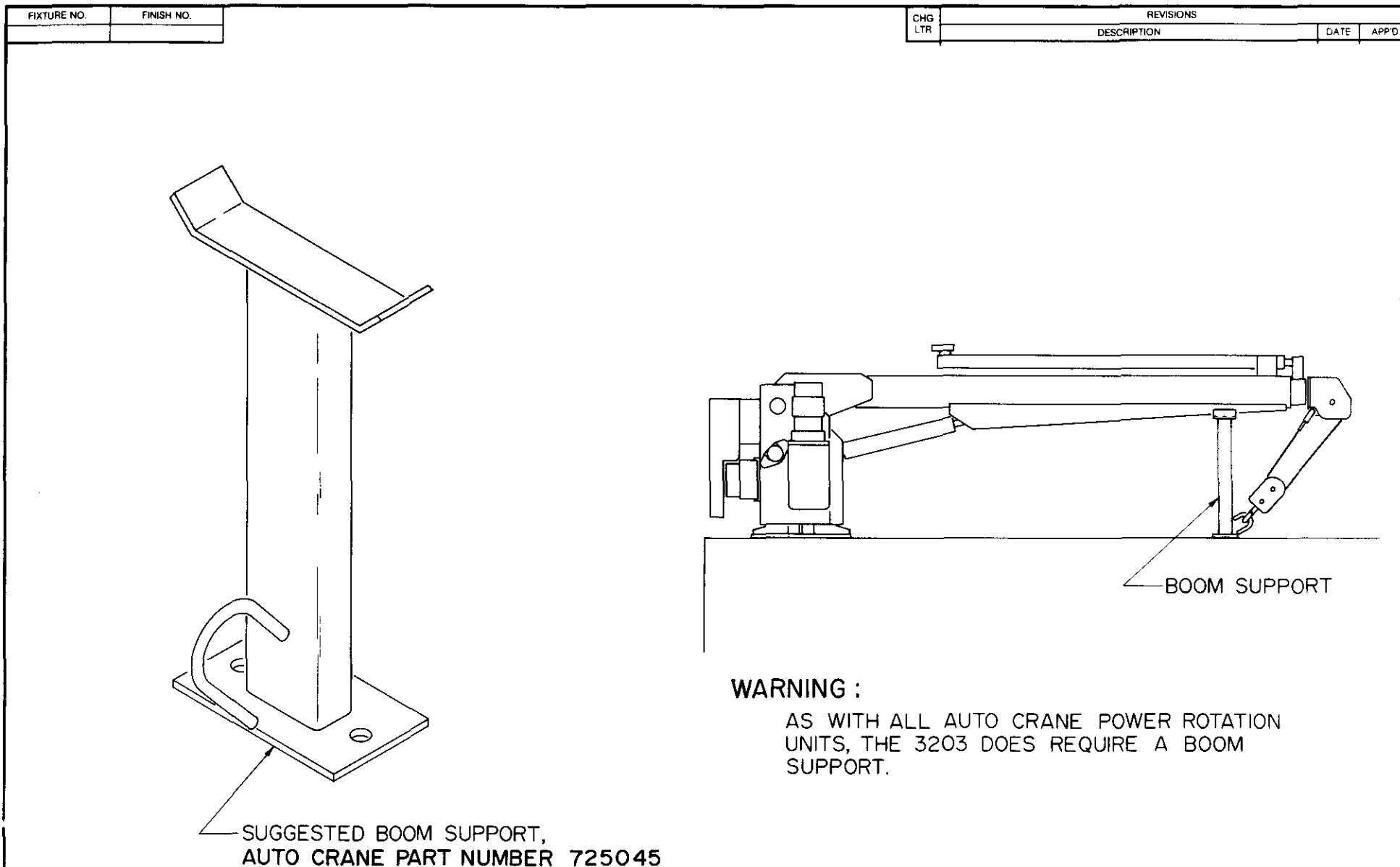
**AUTO CRANE COMPANY**

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

TITLE  
**INSTALLATION BATTERY CABLE**

DRAWING NO  
**AW-049**





ITEM	QTY	D/S	PART NO	DESCRIPTION
LIST OF MATERIAL				
			<b>AUTO CRANE COMPANY</b>	
			P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475	
			TITLE <b>BOOM SUPPORT</b>	
			SCALE <i>1/2" = 1'-0"</i> SIZE <b>C</b> DRAWING NO. <b>AW-050</b> REVISION <i>1</i>	
			WEIGHT SHEET 1 OF 1	

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 <i>RD</i> DATE <i>9/22/87</i> CHK'D BY DATE ENG BY DATE NEXT ASS'Y
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**GENERAL ASSEMBLY 3203-P AW-320301  
7-11-15 BOOM**

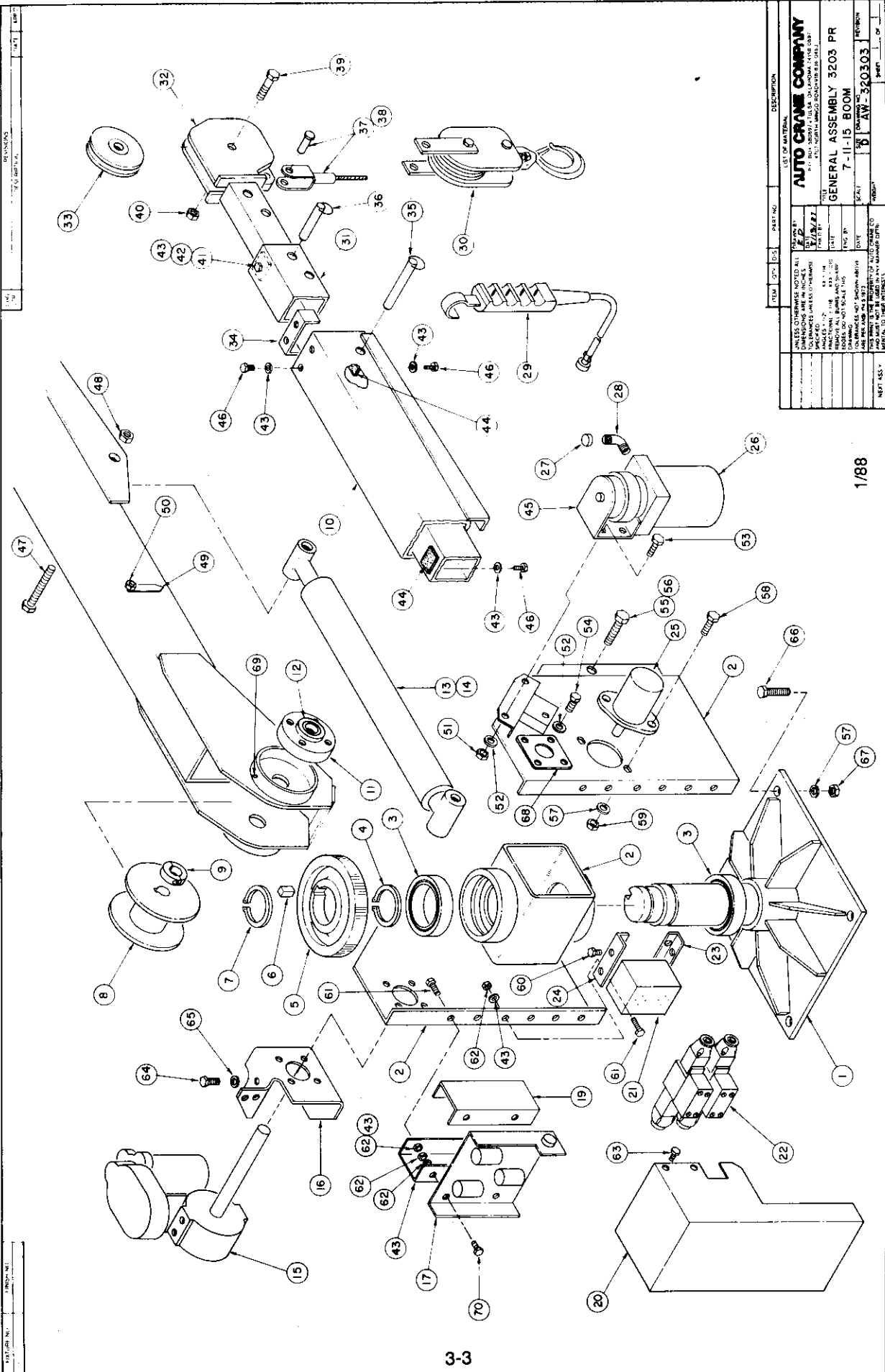
ITEM	QTY.	PART NO.	DESCRIPTION
1	1	330383	QUILL/BASE (PEDESTAL ASS'Y)
2	1	320428	SIDE PLATES/HOUSING
3	2	320330	BEARING, BALL, SEALED
4	1	320332	RING, RETAINING, BEARING
5	1	REF.	BRAKE DRUM
6	1	REF.	KEY 3/4 SQ.
7	1	REF.	SNAP RING
8	1	320379	DRUM
9	2	330468	COLLAR, SPLIT LOCK
10	1	320322	ACTUATOR ASSEMBLY
11	1	320464	ACTUATOR BRACKET
12	1	320454	RELAY PANEL ASSEMBLY
13	2	320411	BOOM PIVOT
14	2	400500	BEARING, BOOM PIVOT
15	1	320320	BOOM CYLINDER
16	1	320319	SEAL KIT
17	1	320432	BOOM, LOWER WELDMENT
18	1	320449	BOOM, MID. MANUAL
19	1	320423	BOOM MANUAL
20	1	227401	SHEAVE ASS'Y (REF. BEARING ONLY 200100)
21	1	320415	BOOM RETAINER, MANUAL
22	1	320391	BOOM RETAINER, MID
23	1	320338	CABLE, ASS'Y (62' STD)
24	1	320339	CABLE, ASS'Y (75', OPTIONAL)
25	1	320327	POSITION PIN
26	1	320328	POSITION PIN
27	1	320433	TRAVELING BLOCK
28	1	320450	PENDANT
29	1	320335	HYD. PUMP & RESERVOIR
30	1	200547	ELL 90° ST. 3/8 NPT
31	1	200545	BREATHING CAP
32	2	480036	PAD NYLATRON
33	1	REF.	KNOB, BRAKE
34	2	REF.	PLATE, KNOB GUIDE
35	1	014304	SCREW HX. HD. 3/4X6 NF GR.5
36	1	018600	NUT, HX. HLF. LK. 3/4 NF
37	4	REF.	SCREW HX. HD. 1/2X 1 1/4 NC
38	8	REF.	WASHER, SP. LK. 1/2 (4 USED FOR CRANE MOUNT)
39	4	REF.	NUT, HX. 1/2 NC
40	8	330394	SCREW HX. HD. 3/8X 1 1/2 NC
41	11	021100	WASHER, SP. LK. 3/8
42	3	008400	SCREW HX. HD. 3/8X3/4 NC
43	3	330372	NUT NX. 3/8 NC
44	4	011200	SCREW HX. HD. 1/2X 2 1/2 NF GR.5
45	4	017702	NUT HX. 1/2 NF
46	1	320368	BEARING, RETAINER
47	11	020200	WASHER, SP. LK. 1/4
48	6	005406	SCREW HX. HD. 1/4X1/2 NF

**GENERAL ASSEMBLY 3203-P AW-320301  
7-11-15 BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
49	4	005500	SCREW. HX. HD. 1/4 X 3/4 N.C.
50	4	015900	NUT HX. 1/4 N.C.
51	4	007807	SCREW HX. HD. 5/16 X 3/4 NC
52	4	020600	WASHER SP. LK. 5/16
53	1	330185	SCREW HX. HD. 1 X 5 1/2 NF GR.5
54	1	019106	NUT HLF. LK. 1" NF
55	1	320453	ANGLE INDICATOR
56	1	016300	NUT HX.-LK 1/4 NC
57	1	012200	SCREW HX. HD. 5/8 X 1 3/4 NF GR.5
58	1	019100	NUT HLF. LK. 5/8 NF
59	1	320354	BRACKET, HYD. PUMP
60	2	239000	ZERK, GREASE
61	1	005501	SCREW HX. HD. 1/4 - 28 X 3/4 N.F.
62	2	320500	PENDANT ASSEMBLY

**NOTE:**

ITEMS 27, 28, 38, 44, AND 45  
ARE IN SHIP KIT 320487



**GENERAL ASSEMBLY 3203-PR, AW-320303  
7-11-15 BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	320383	QUILL/BASE (PEDESTAL ASS'Y)
2	1	320428	SIDE PLATES/HOUSING
3	2	320330	BEARING, BALL SEALED
4	1	320332	RING, RETAINING, BEARING
5	1	320334	GEAR, WORM
6	1	800472-001	KEY 3/4 SQ.
7	1	320333	SNAP RING
8	1	320379	DRUM
9	2	320468	COLLAR, SP. LK.
10	1	320432	BOOM LOWER, WELDMENT
11	2	320411	BOOM PIVOT
12	2	400500	BEARING, BOOM PIVOT
13	1	320325	CYLINDER, BOOM
14	1	320319	SEAL KIT, BOOM CYL.
15	1	320322	ACTUATOR ASS'Y
16	1	320464	BRACKET, ACTUATOR
17	1	320447	RELAY PANEL ASSEMBLY
18	1	320395	RELAY PANEL BRACKET (LEFT)
19	1	320396	RELAY PANEL BRACKET (RIGHT)
20	1	320431	COVER
21	1	330306	MANIFOLD
22	1	300204	DIRECTIONAL VALVE ASSEMBLY
23	1	320393	BRACKET, MANIFOLD (BOTTOM)
24	1	320392	BRACKET, MANIFOLD (TOP)
25	1	480027	HYD. ROTATION MOTOR
26	1	320336	HYD. PUMP & RESERVOIR
27	1	200545	BREATHING CAP
28	1	200547	ELL, 90° ST. 3/8 NPT
29	1	320451	PENDANT
30	1	320433	TRAVELING BLOCK
31	1	320449	BOOM, MID. WELDMENT
32	1	320423	BOOM MANUAL, WELDMENT
33	1	227401	SHEAVE ASS'Y (REF. BEARING ONLY 200100)
34	1	320391	BOOM, RETAINER
35	1	320328	POSITION PIN
36	1	320327	POSITION PIN
37	1	320338	CABLE ASS'Y (62' STD.)
38	1	320339	CABLE ASS'Y (75' OPTIONAL)
39	1	012200	SCREW, HX. HD. 5/8X1 3/4 NF GR.5
40	1	018100	NUT HX. 5/8 HF. LK. NF
41	1	005501	SCREW, HX. HD. 1/4X3/4 NF
42	1	320415	RETAINER, BOOM MANUAL
43	17	020200	WASHER 1/4 SP. LK.
44	2	480036	PAD NYLATRON
45	1	320354	BRACKET, HYD. PUMP
46	6	005406	SCREW HX. HD. 1/4X1/2 NF
47	1	330185	SCREW HX. HD. 1X5 1/2 NC GR.5
48	1	019106	NUT 1" HLF. LK.

**GENERAL ASSEMBLY 3203-PR, AW-320303  
7-11-15 BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
49	1	320453	ANGLE INDICATOR
50	1	016300	NUT, 1/4 HX. LK. NC
51	3	008400	SCREW HX. HD. 3/8X3/4 NC
52	11	021100	WASHER 3/8 SP. LK.
53	3	330372	NUT HX. 3/8 NC
54	8	330394	SCREW, 3/8X 1 1/2 NC
55	1	014304	SCREW HX. HD. 3/4X6 NF GR.5
56	1	018600	NUT 3/4 HLF. LK.
57	6	021500	WASHER 1/2 SP. LK. (2 USED ON TURNER ASS'Y)
58	4	REF.	SCREW HX. HD. 1/2X 1 3/4
59	4	REF.	NUT. HX. 1/2 NC
60	4	002614	SCREW HX. HD. 5/16X5/8 NC S.T.
61	8	005601	SCREW HX. HD. 1/4X1 N.C.
62	10	015900	NUT HX. 1/4 N.C.
63	4	002605	SCREW # 12X1/2 S.T.
64	4	007807	SCREW HX. HD. 5/16X3/4 NC
65	4	020600	WASHER 5/16 SP. LK.
66	4	011200	SCREW HX. HD. 1/2X 2 1/2 NF GR.5
67	4	017704	NUT HX. 1/2 NF
68	1	320368	BEARING RETAINER
69	2	239000	ZERK, GREASE
70	2	005500	SCREW 1/4 - 20 X 3/4 N.C.

**NOTE:**

ITEMS 29, 30, 57, 66, AND 67 (QTY 4) ARE  
ARE IN SHIP KIT 320486





**GENERAL ASSEMBLY -3203- PRX AW-320304  
7-11-15 BOOM**

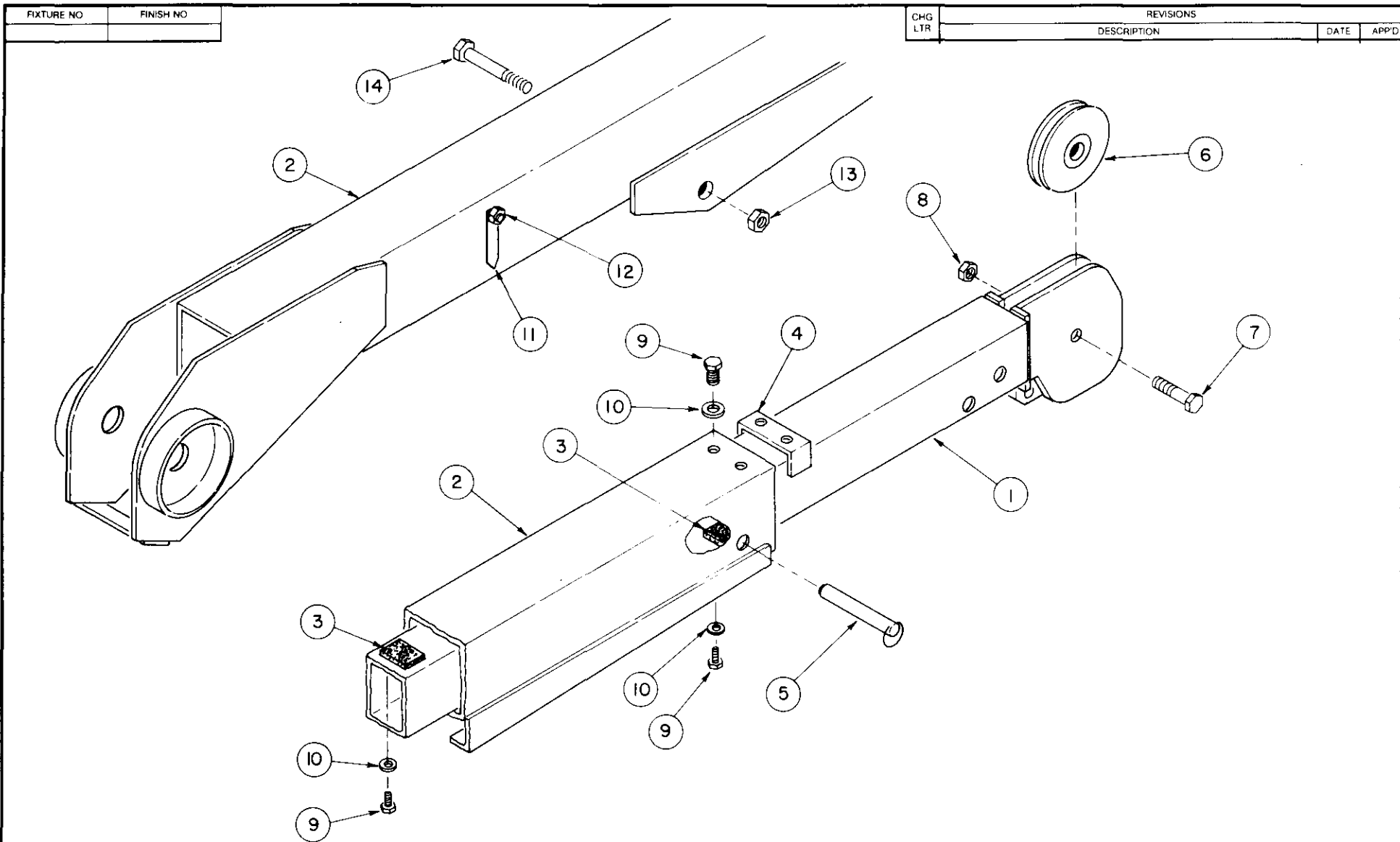
ITEM	QTY.	PART NO.	DESCRIPTION
1	1	320383	QUILL/BASE (PEDESTAL ASS'Y)
2	1	320428	SIDE PLATES/HOUSING
3	2	320330	BEARING, BALL SEALED
4	1	320332	RING, RETAINING BEARING
5	1	320334	GEAR, WORM
6	1	800472-001	KEY 3/4 SQ.
7	1	320333	SNAP RING
8	1	320379	DRUM
9	2	330468	COLLAR, SPLIT LOCK
10	1	320420	BOOM, LOWER, WELDMENT
11	2	320411	BOOM, PIVOT
12	2	400500	BEARING, BOOM PIVOT
13	1	320325	CYLINDER, BOOM
14	1	320319	SEAL KIT BOOM CYL.
15	1	320324	ACTUATOR ASS'Y
16	1	320464	BRACKET, ACTUATOR
17	1	320457	RELAY PANEL ASS'Y
18	1	320395	RELAY PANEL BRACKET (LEFT)
19	1	320396	RELAY PANEL BRACKET (RIGHT)
20	1	320431	COVER
21	1	202710	MANIFOLD
22	1	300204	DIRECTIONAL VALVE ASS'Y
23	1	320393	BRACKET, MANIFOLD (BOTTOM)
24	1	320392	BRACKET, VALVE BANK (TOP)
25	1	480027	HYD. ROTATION MOTOR
26	1	320336	HYD. PUMP & RESERVOIR
27	1	200545	BREATHER CAP
28	1	200547	ELL, 90° ST. 3/8 NPT
29	1	320452	PENDANT
30	1	320433	TRAVELING BLOCK
31	1	202711	CYLINDER, EXTENSION
32	1	330602	SEAL KIT (EXT. CYL.)
33	1	801102	PAD (REF.)
34	1	320453	ANGLE INDICATOR
35	2	480036	PAD, BOOM (NYLATRON)
36	1	320391	RETAINER, MID BOOM
37	1	320327	POSITION PIN
38	1	320338	CABLE ASS'Y (62') STD.
39	1	320339	CABLE ASS'Y (75') OPTIONAL
40	1	320421	BOOM, MID
41	1	320415	RETAINER, BOOM MANUAL
42	1	320423	BOOM MANUAL WITH CROWN
43	1	227401	SHEAVE ASS'Y (REF. BEARING ONLY # 200100)
44	4	007807	SCREW. HX. HD. 5/16 -18 NCX3/4 LG.
45	4	020600	WASHER, SP. LK 5/16
46	4	005500	SCREW HX. HD. 1/4X3/4 N.C.
47	19	020200	WASHER, SP. LK. 1/4
48	12	015900	NUT HX. 1/4 N.C.

**GENERAL ASSEMBLY -3203- PRX AW-320304  
7-11-15 BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
49	8	005604	SCREW HX. HD. 1/4X1" LG. N.C.
50	4	002605	SCREW. MACHINE HX. HD. #12X1/2 S.T.
51	4	002614	SCREW. HX. HD. 5/16X5/8 NC S.T.
52	4	REF.	SCREW. HX. HD. 1/2-13X 1 3/4 LG. NC
53	4	REF.	NUT HX. HD. 1/2-13 NC
54	6	021500	WASHER, SP. LK. 1/2 (2 USED FOR TURNER ASS'Y)
55	1	014304	SCREW, HX. HD. 3/4X6 NF GR.5
56	1	018600	NUT, HLF. LK. 3/4 NF.
57	3	008400	SCREW HX. HD. 3/8-16X3/4 NC GR.8
58	3	330372	NUT, HX. 3/8 NC
59	11	021100	WASHER, SP. LK. 3/8
60	8	330394	SCREW, HX. HD. 3/8-16X 1 1/2 NC
61	1	320354	BRACKET HYD. PUMP
62	2	015017	SCREW, HX. HD. 1X 1 1/8 NC GR.5
63	2	022502	WASHER FLAT 1"
64	1	012200	SCREW. HX. HD. 5/8X 1 3/4 NF GR.5
65	1	018100	NUT, HLF. LK. 5/8 NF
66	1	330057	SCREW, HX. HD. 1" X 4 NC GR.5
67	1	019105	NUT NX. 1" NC
68	6	005406	SCREW, HX. HD. 1/4X1/2 NF
69	2	002905	SET SCREW
70	1	006800	SCREW HX. HD. 1"X6 NF GR.5
71	1	019106	NUT, HLF-LK. 1" NF
72	1	016300	NUT, HX. LK. 1/4 NC
73	4	011200	SCREW, HX. HD. 1/2X 2 1/2 NF GR.5
74	4	017704	NUT HX. 1/2 NF HEAVY
75	1	320368	BEARING RETAINER
76	1	320483	BRACKET, HYD. TUBING
77	2	239000	ZERK, GREASE
78	1	005501	SCREW HX. HD. 1/4 - 28 N.F. X 3/4 LG.

**NOTE:**

ITEMS 29, 30, 54 (QTY. 4), 73 AND 74  
ARE IN SHIP KIT 320485



CHG LTR	REVISIONS		DATE	APP'D
	DESCRIPTION			

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 <b>R.D.</b>	<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475		
				DATE <b>8/13/57</b>			
				CHK'D BY			
				DATE			
				ENG' BY			
				DATE	TITLE <b>GENERAL ASSEMBLY 3203 P, PR OPTIONAL 7-II FT. MANUAL BOOM</b>		
NEXT ASSY				SCALE	SIZE <b>C</b>	DRAWING NO. <b>AW-320300/302</b>	REVISION
				WEIGHT			

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

NEXT ASS'Y

**GENERAL ASSEMBLY 3203 PR, P AW 320300/302  
OPTIONAL 7-11 FT. MANUAL BOOM**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	320422	BOOM, MANUAL WITH CROWN
2	1	320432	BOOM, LOWER WELDMENT
3	2	480036	PAD, NYLATRON
4	1	320391	BOOM RETAINER
5	1	320328	POSITION PIN
6	1	227401	SHEAVE ASS'Y (REF. BEARING ONLY 200100)
7	1	012200	SCREW HX. HD. 5/8X1 3/4 N.F.
8	1	018100	NUT HX. 5/8 N.F.
9	6	005406	SCREW HX. HD. 1/4X1/2 N.F.
10	6	020200	WASHER 1/4 SP. LK.
11	1	320453	ANGLE INDICATOR
12	1	016300	NUT, HX. 1/4 LK. N.C.
13	1	019106	NUT 1" HLF. LK.
14	1	330185	SCREW HX. HD. 1X5 1/2 NC GR.5

REVIEWS		DATE	APP'D
DESCRIPTION			
CHG	LTR		

DRAWN BY <b>L. Lubonks</b>	DATE <b>1-7-88</b>	CHK'D BY	DATE	ENG. BY	DATE
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.					

ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9250 BROKEN ARROW EXPRESSWAY • 918-622-9475				
<b>BRAKE ASSEMBLY 3203 P</b>				
SCALE			SIZE	REVISION
			<b>C</b>	<b>AW-042</b>
DRAWING NO.			SHEET 1 OF 1	

**BRAKE ASSEMBLY 3203-P AW-042**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	013502	SCREW, HX. HD. 5/8 X 8 N.F. GR5
2	1	320507	BRAKE, WRENCH
3	1	320509	SPRING, COMPRESSION
4	1	320506	SPACER
5	2	012197	SCREW HX. HD. 1/2 X 1 1/2 N.C. GR5
6	1	320369	COVER PLATE
7	1	320508	SPACER
8	1	320333	SNAP RING
9	1	800472-001	KEY 3/4 SQ.
10	1	320502	BRAKE BAND ASSEMBLY
11	1	018302	NUT HX. 5/8 N.F. GR5
12	1	320459	BRAKE DRUM
13	4	017701	NUT HX. 1/2 N.C.
14	4	021500	WASHER SP. LK. 1/2
15	1	320495	PLATE, BRAKE GUIDE
16	1	750282	GROMMET
17	2	011510	SCREW HX. HD. 1/2 X 1 1/4 N.C. GR5

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

3-13

BASE PLATE

QUILL

SIDE PLATES

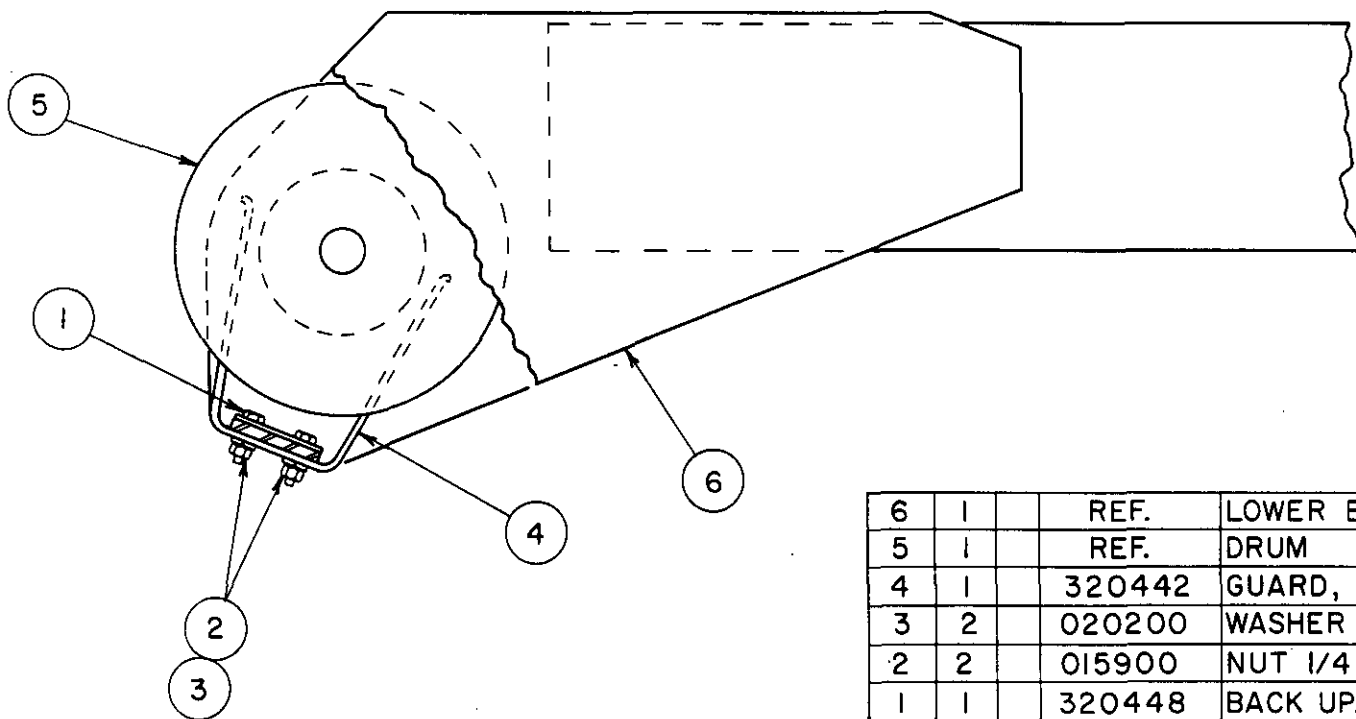
ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
			<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475	
			<b>TWECO ASSEMBLY '3203</b>	
			DRAWN BY <b>R.D.</b> DATE <b>8/11/87</b> CHK'D BY  DATE  ENG. BY  DATE  SCALE <b>1" = 1"</b> WEIGHT	TITLE  DRAWING NO <b>AW-040</b> REVISION  SHEET <b>1</b> OF <b>1</b>
NEXT ASS'Y			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.	

### TWECO ASSEMBLY 3203, AW-040

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	320436	BRACKET, TWECO UPPER
2	1	320488	POWER CABLE ASS'Y (POWER CABLE ONLY 600425)
3	2	011510	SCW. HX. HD. 1/2X1 1/4 NC
4	2	021500	WASHER SP. LK. 1/2
5	2	005401	SCW. HX. HD. 1/4X5/8 NC
6	2	020200	WASHER 1/4 SP. LK.
7	2	002900	SCW. SET 1/4X3/8 NC
8	1	REF.	CONNECTOR, TWECO MALE (REFER TO RELAY ASSEMBLY)
9	1	000115	CLIP
10	1	002615	SCREW 1/4X3/8 SELF TAP.

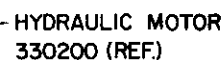


FIXTURE NO.	FINISH NO.	CHG	REVISIONS	
		LTR	DESCRIPTION	DATE APP'D



6	1		REF.	LOWER BOOM
5	1		REF.	DRUM
4	1		320442	GUARD, CABLE RETAINER
3	2		020200	WASHER 1/4 SP. LK.
2	2		015900	NUT 1/4 NC
1	1		320448	BACK UP, CABLE RETAINER
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 DETRIMENTAL TO THEIR INTERESTS.		DRAWN BY <i>R.D.</i>	<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475
		DATE 12-18-87	
		CHK'D BY	TITLE CABLE RETAINER ASSEMBLY
		DATE	SCALE <i>[Signature]</i>
		ENG. BY	SIZE B
DATE	DRAWING NO. AW-041		
WEIGHT	REVISION <i>[Signature]</i>		
NEXT ASS'Y		SHEET 1 OF 1	



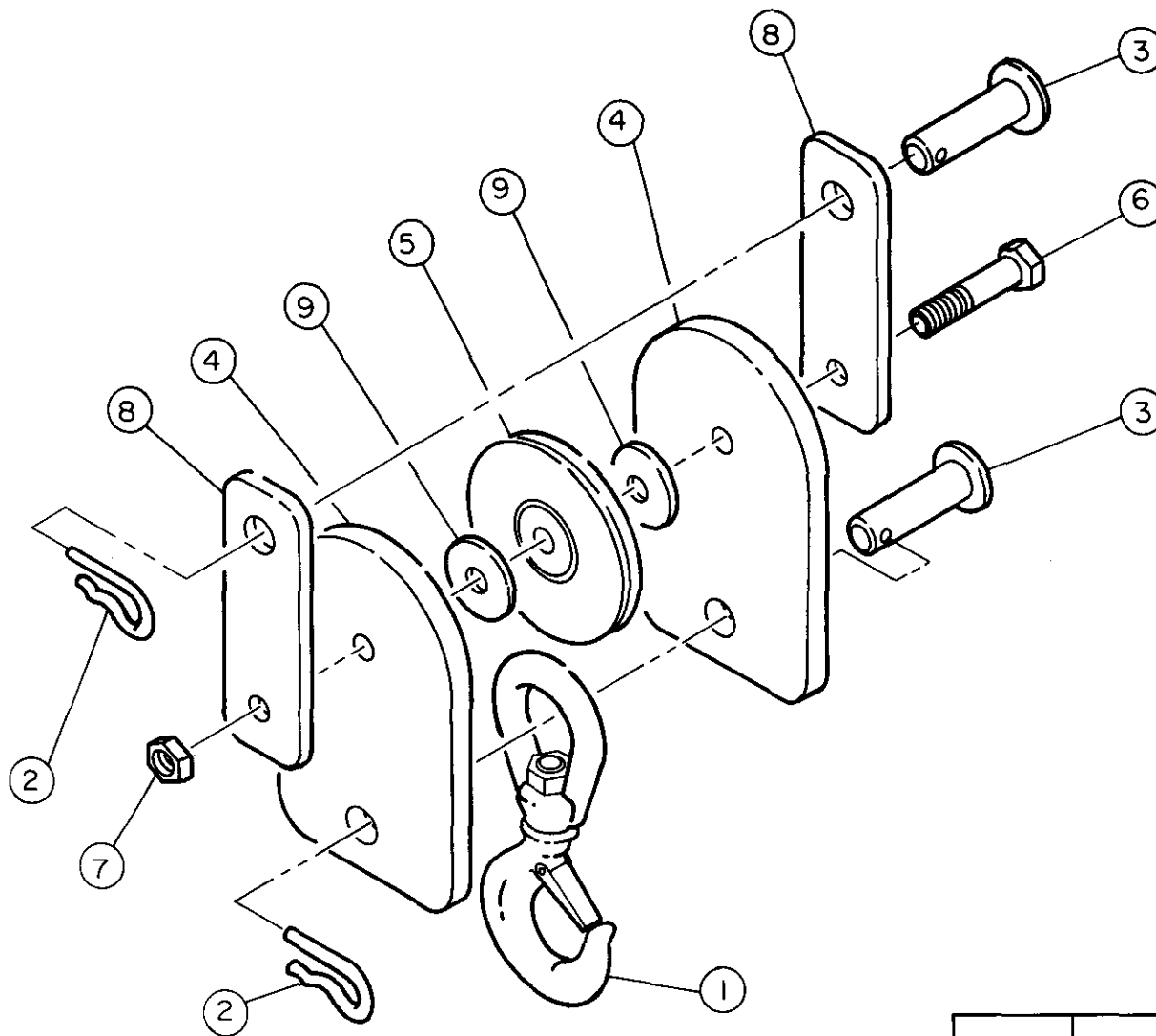
		ITEM	D/S	PART NO.	DESCRIPTION	
	QUANTITY				LIST OF MATERIAL	
	UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED: ANGLES: 1/2" .XX ± .40 FRACTIONAL: 1/16 .XX ± .010 REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973	DRAWN BY <i>Donistors</i>		<b>AUTO CRANE COMPANY</b> P.O. BOX 46548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475		
		DATE <i>3-9-82</i>				
		CHK'D BY				
		DATE				
				TITLE		
				TURNER ASSEMBLY (HYD.)		
			DATE	SCALE	SIZE	DRAWING NO.
				~	C	AW-005
				WEIGHT	REVISION	
					SHEET <u>1</u> OF <u>1</u>	
NEXT ASS'Y						
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.						

# TURNER ASSEMBLY (HYD.) AW-005

ITEM	QTY.	PART NO.	DESCRIPTION
1	4	017701	NUT, HX. 1/2 NC
2	4	021500	WASHER, SP. LK. 1/2
3	1	330484	SPACER
4	2	011603	SCREW, 1/2 NCX1 3/4 GR.5
5	1	330420	SHAFT ASSEMBLY
6	2	330486	SEAL, OIL
7	2	330485	BEARING
8	1	330472	HOUSING
9	2	010201	SCREW 1/2 NCX1 1/2 GR.5
10	1	239300	ZERK, GREASE
11	1	330483	SPACER
12	1	019000	NUT, HX. 7/8-14 NF CP G5

FIXTURE NO.	FINISH NO.

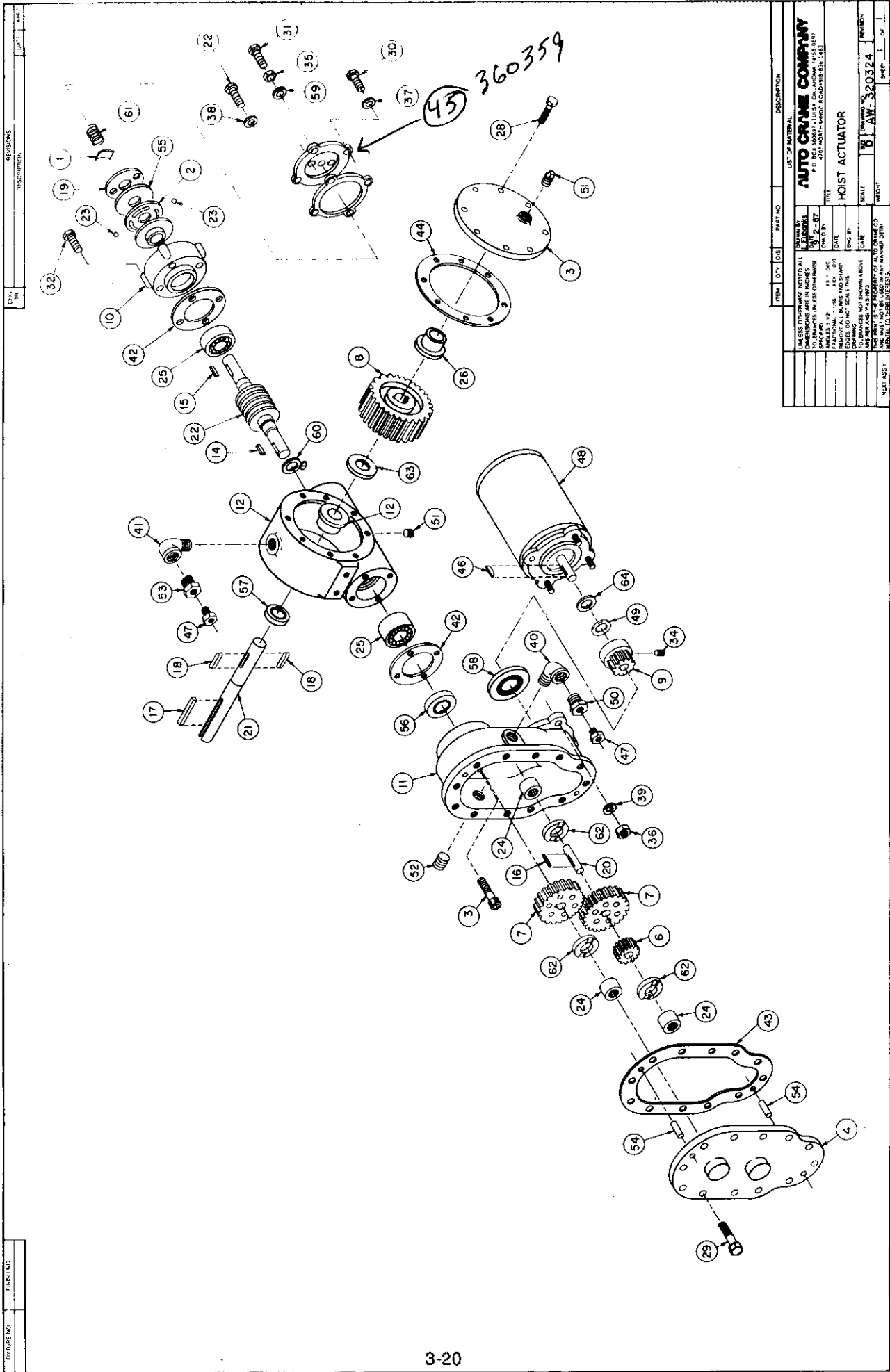
CHG LTR	REVISIONS		
	DESCRIPTION	DATE	APP'D



ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475				
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			DRAWN BY <b>LEWISMAN</b> DATE <b>7-25-87</b> 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>TRAVELING BLOCK ASSEMBLY</b> SCALE <b>1/2</b> SIZE <b>C</b> DRAWING NO. <b>AW-320433</b> REVISION <b>-</b>	
NEXT ASS'Y			WEIGHT	
			SHEET <b>1</b> OF <b>1</b>	

### TRAVELING BLOCK ASSEMBLY AW-320433

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	100309	SWIVEL HOOK
2	2	360124	HITCH PIN
3	2	320434	PIN, BLOCK
4	2	320403	BLOCK, TRAVELING
5	1	200909	SHEAVE ASS'Y WITH BEARING
6	1	013512	SCW. HX. HD. 5/8 X 3 1/2 N.C.
7	1	018200	NUT HX. HL. - LK. 5/8 N.C.
8	2	320404	BLOCK
9	2	330100	WASHER FLAT



ITEM	QTY	UNIT	SHEET NO.	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN INCHES.				
TOLERANCES UNLESS OTHERWISE SPECIFIED:				
FRACTIONS: 1/16, 1/8, 3/16, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4, 2 1/2, 2 3/4, 3, 3 1/4, 3 1/2, 3 3/4, 4, 4 1/4, 4 1/2, 4 3/4, 5, 5 1/4, 5 1/2, 5 3/4, 6, 6 1/4, 6 1/2, 6 3/4, 7, 7 1/4, 7 1/2, 7 3/4, 8, 8 1/4, 8 1/2, 8 3/4, 9, 9 1/4, 9 1/2, 9 3/4, 10, 10 1/4, 10 1/2, 10 3/4, 11, 11 1/4, 11 1/2, 11 3/4, 12, 12 1/4, 12 1/2, 12 3/4, 13, 13 1/4, 13 1/2, 13 3/4, 14, 14 1/4, 14 1/2, 14 3/4, 15, 15 1/4, 15 1/2, 15 3/4, 16, 16 1/4, 16 1/2, 16 3/4, 17, 17 1/4, 17 1/2, 17 3/4, 18, 18 1/4, 18 1/2, 18 3/4, 19, 19 1/4, 19 1/2, 19 3/4, 20, 20 1/4, 20 1/2, 20 3/4, 21, 21 1/4, 21 1/2, 21 3/4, 22, 22 1/4, 22 1/2, 22 3/4, 23, 23 1/4, 23 1/2, 23 3/4, 24, 24 1/4, 24 1/2, 24 3/4, 25, 25 1/4, 25 1/2, 25 3/4, 26, 26 1/4, 26 1/2, 26 3/4, 27, 27 1/4, 27 1/2, 27 3/4, 28, 28 1/4, 28 1/2, 28 3/4, 29, 29 1/4, 29 1/2, 29 3/4, 30, 30 1/4, 30 1/2, 30 3/4, 31, 31 1/4, 31 1/2, 31 3/4, 32, 32 1/4, 32 1/2, 32 3/4, 33, 33 1/4, 33 1/2, 33 3/4, 34, 34 1/4, 34 1/2, 34 3/4, 35, 35 1/4, 35 1/2, 35 3/4, 36, 36 1/4, 36 1/2, 36 3/4, 37, 37 1/4, 37 1/2, 37 3/4, 38, 38 1/4, 38 1/2, 38 3/4, 39, 39 1/4, 39 1/2, 39 3/4, 40, 40 1/4, 40 1/2, 40 3/4, 41, 41 1/4, 41 1/2, 41 3/4, 42, 42 1/4, 42 1/2, 42 3/4, 43, 43 1/4, 43 1/2, 43 3/4, 44, 44 1/4, 44 1/2, 44 3/4, 45, 45 1/4, 45 1/2, 45 3/4, 46, 46 1/4, 46 1/2, 46 3/4, 47, 47 1/4, 47 1/2, 47 3/4, 48, 48 1/4, 48 1/2, 48 3/4, 49, 49 1/4, 49 1/2, 49 3/4, 50, 50 1/4, 50 1/2, 50 3/4, 51, 51 1/4, 51 1/2, 51 3/4, 52, 52 1/4, 52 1/2, 52 3/4, 53, 53 1/4, 53 1/2, 53 3/4, 54, 54 1/4, 54 1/2, 54 3/4, 55, 55 1/4, 55 1/2, 55 3/4, 56, 56 1/4, 56 1/2, 56 3/4, 57, 57 1/4, 57 1/2, 57 3/4, 58, 58 1/4, 58 1/2, 58 3/4, 59, 59 1/4, 59 1/2, 59 3/4, 60, 60 1/4, 60 1/2, 60 3/4, 61, 61 1/4, 61 1/2, 61 3/4, 62, 62 1/4, 62 1/2, 62 3/4, 63, 63 1/4, 63 1/2, 63 3/4, 64, 64 1/4, 64 1/2, 64 3/4.				
DRAWN BY: <b>AUTO CRANE COMPANY</b>				
CHECKED BY: <b>P. J. MURPHY</b>				
DATE: <b>10-1-67</b>				
SCALE: <b>1" = 1"</b>				
TITLE: <b>HOIST ACTUATOR</b>				
SHEET: <b>1</b> OF <b>1</b>				
PART NO.: <b>AW-320324</b>				
THIS DRAWING IS THE PROPERTY OF AUTO CRANE CO. AND IS NOT TO BE REPRODUCED OR COPIED WITHOUT THE WRITTEN PERMISSION OF AUTO CRANE CO.				

# **HOIST ACTUATOR AW-320324**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	360367	SPRING, FLAT
2	1	360331	PLATE, CAM
3	1	300041	COVER, GEAR HOUSING
4	1	300042	COVER, SPUR GEAR HOUSING
5	1	360450	COVER, BRAKE
6	1	300043	GEAR, IDLER
7	2	300044	GEAR, SPUR
8	1	300045	GEAR, WORM R.H.
9	1	300046	GEAR, PINION
10	1	360336	HOUSING, BRAKE
11	1	300047	HOUSING, SPUR GEAR
12	1	300048	HOUSING, GEAR
13	1	360339	HUB, BRAKE
14	1	300049	KEY SQ. END 3/16 X 3/16 X 1/2 LG.
15	1	360341	KEY RD. END 3/16 X 3/16 X 1" LG.
16	1	300050	KEY SQ. END 3/16 X 3/16 X 1 9/16 LG.
17	1	800479-001	KEY SQ. END 1/4 X 1/4 X 2 3/4 LG.
18	2	300052	KEY RD. END 5/16 X 5/16 X 15/16 LG.
19	1	360342	PLATE, RETAINER
20	1	300053	SHAFT, SPUR GEAR
21	1	320323	SHAFT, OUTPUT
22	1	320312	WORM R.H.
23	2	360345	BALL
24	3	300056	BEARING, NEEDLE
25	2	300057	BEARING, BALL
26	1	300058	BUSHING
27	1	300059	BUSHING
28	10	320313	CAPSCREW 1/4 - 20 X 3/4 HX. HD. NYLOCK HVY PATCH GR.5
29	12	005500	CAPSCREW 1/4 - 20 X 3/4 HX. HD. GR.5
30	4	005604	CAPSCREW 1/4 - 20 X 1, HX. HD. GR.5
31	1	320311	CAPSCREW 3/8 - 16 NC X 1 1/2 HX. HD. ALL THRD.
32	4	320310	CAPSCREW 1/4 - 20 X 1 BUTTON HD.
33	4	300060	CAPSCREW 1/4 - 20 X 1 3/4 SOC. HD. LOC.-WEL.
34	1	300061	SETSCREW 1/4 - 20 X 5/16 HX. SOC. LOC.-WEL.
35	1	360353	NUT - HX. JAM 3/8 - 16 NC
36	3	071012	NUT HX. 3/8 - 24 NF REG. C.P.
37	4	360354	LOCKWASHER 1/4 MED SECT. C.P.
38	2	360455	WASHER FLAT 1/4 ALUM.
39	3	021100	LOCKWASHER 3/8 MED. SECT. C.P.
40	1	320314	ELBOW 90° 3/8 - 18 NPT BOTH ENDS
41	1	320315	ELBOW 90° 1/4 - 18 NPT BOTH ENDS
42	2	300062	GASKET BEARING
43	1	300063	GASKET, SPUR GEAR HOUSING
44	1	300064	GASKET, GEAR HOUSING COVER
45	1	<del>360359</del>	GASKET, BRAKE COVER
46	1	360065	KEY WOODRUFF
47	2	300066	FITTING, RELIEF
48	1	300067	MOTOR 12V

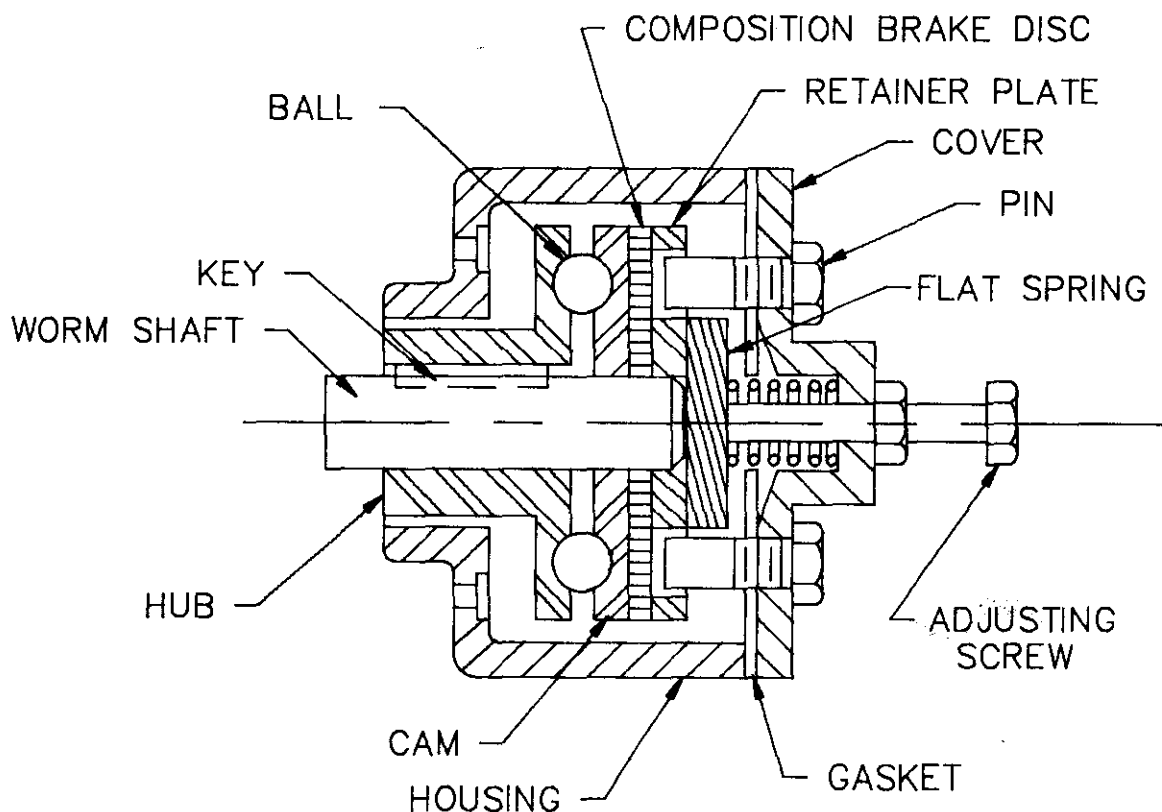
# HOIST ACTUATOR AW-320324

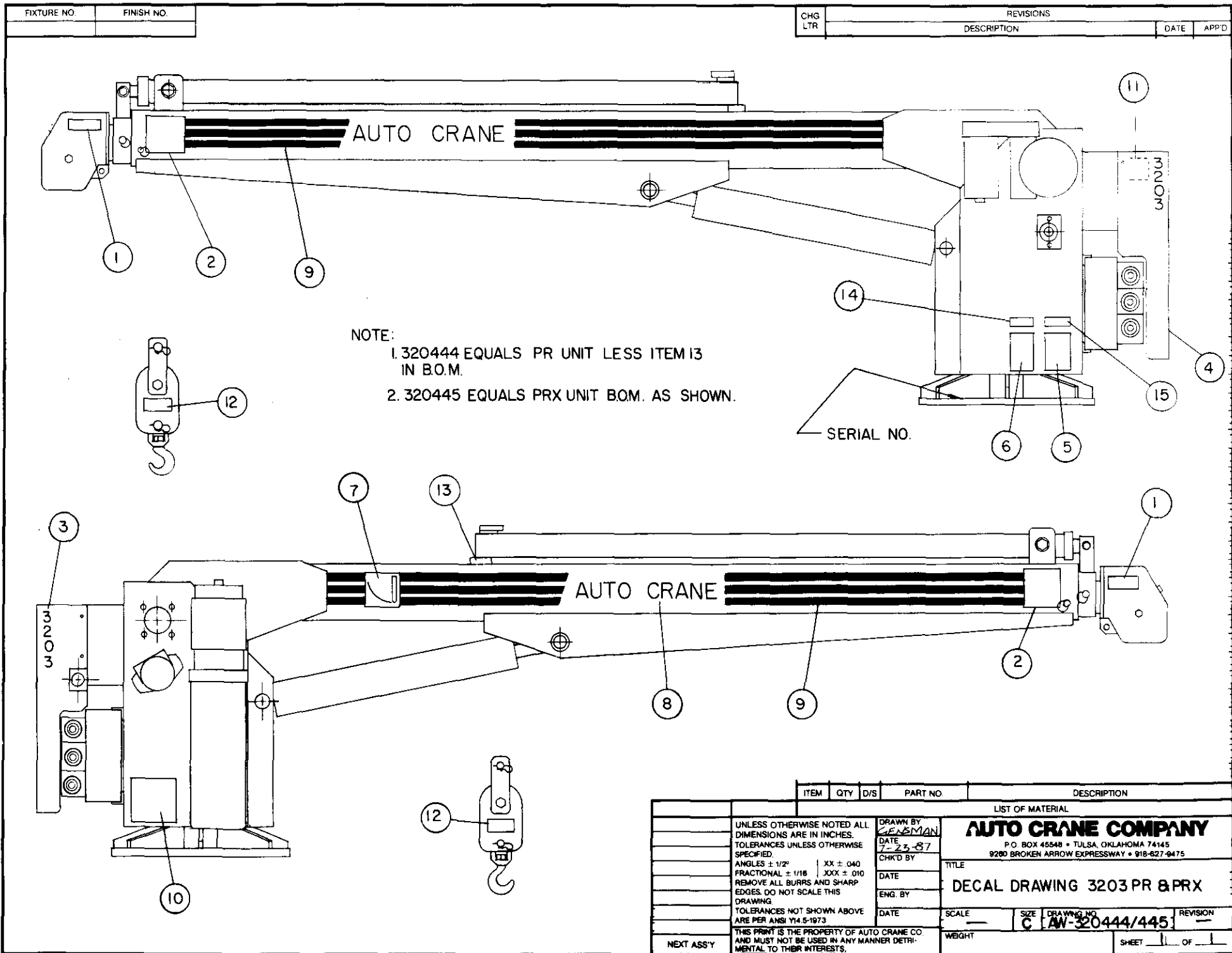
ITEM	QTY.	PART NO.	DESCRIPTION
49	1	300068	O-RING 1" O.D. X 1/8 THK.
50	1	300069	REDUCER 3/8 - 18 NPT - 1/8 - 27 NPT
51	2	300070	PLUG, PIPE 1/4 - 18 NPT SQ. HD.
52	1	300073	PLUG, PIPE 3/8 - 18 NPT HX. SOC. HEADLESS
53	1	300074	REDUCER 1/4 - 18 NPT - 1/8 - 27 NPT
54	2	300075	PIN - DOWEL
55	1	360364	PLATE - THRUST
56	1	300076	SEAL OIL 3/4 I.D. X 1 1/4 O.D. X 1/4 THK.
57	1	300077	SEAL OIL 1 1/4 I.D. X 1 3/4 O.D. X 1/4 THK.
58	1	300078	SEAL OIL 1 1/2 I.D. X 2 1/4 O.D. X 5/16 THK.
59	1	360371	SEAL THREAD
60	1	300079	RING - SNAP
61	1	360368	SPRING
62	3	300080	WASHER - THRUST
63	1	300081	WASHER - THRUST
64	1	300082	WASHER FIBER



## AUTOMATIC SAFETY BRAKE ASSEMBLY (OIL COOLED) HOIST

1. Winch has right hand worm and gear and spools over drum; use number one slots for brake balls.
2. Install brake hub on winch worm with key.
3. Assemble balls in cam using hard grease to hold balls in place.
4. Install cam and balls, fitting balls in slots on hub.
5. Install brake disc.
6. Install retainer.
7. Install flat spring in brake housing cover (arch down).
8. Install brake housing cover, fitting pins in slots on spring and holes in retainer.
9. Test brake by shifting winch to UP then DOWN to see if brake is working in proper rotation. If not, remove brake and locate brake balls in opposite set of slots.
10. Adjust to suit by tightening or loosening screw on outside of cover. When proper adjustment is obtained, secure screw with jam nut.





ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
			<b>AUTO CRANE COMPANY</b>	
			P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9200 BROKEN ARROW EXPRESSWAY • 918-627-9475	
			TITLE	
			DECAL DRAWING 3203 PR & PRX	
			SCALE	
			SIZE	
			DRAWING NO.	
			C 14W-320444/445	
			REVISION	
			WEIGHT	
			SHEET 1 OF 1	

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: <b>GENSMAN</b> DATE: <b>7-23-87</b> CHK'D BY: DATE: ENG. BY: DATE: NEXT ASSY:
---	---

# **DECAL DRAWING 3203 PR & 3203 PRX AW-320444/320445**

ITEM	QTY.	PART NO.	DESCRIPTION
1	2	040517	DECAL, STAY CLEAR
2	2	040529	DECAL, DANGER ELECT.
3	2	320317	DECAL, 3203
4	1	040622	DECAL, AC LOGO
5	1	040579	DECAL, WORK RULES
6	1	040580	DECAL, DANGER MUST
7	1	320318	DECAL, ANGLE IND.
8	2	040624	DECAL, A/C
9	6.5'	040620	DECAL, STRIPING
10	1	320321	DECAL, LOAD CHART
11	1	040552	DECAL, RELAY
12	2	040630	DECAL, DANGER STAY CLEAR
13	1	801102	RUBBERPAD, ADHESIVE
14	1	330622	DECAL, SERIAL NO.
15	1	040587	DECAL, WIRING LOAD SENSOR

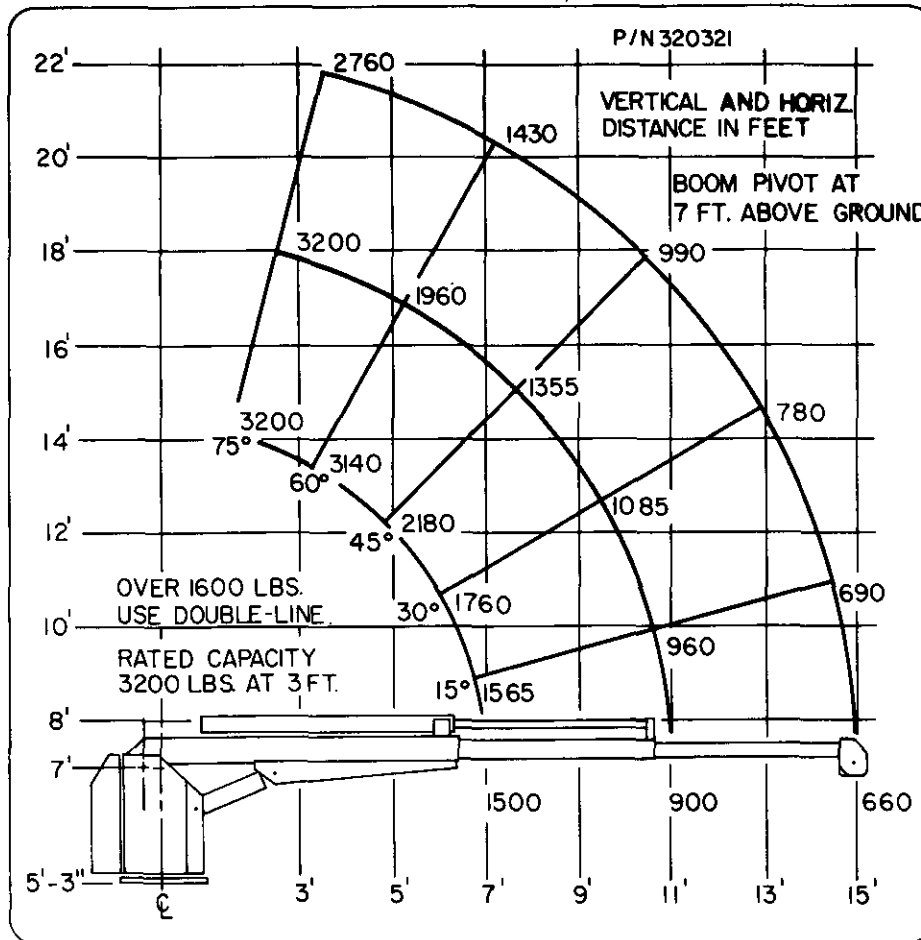
FIXTURE NO.	FINISH NO.	CHG LTR	REVISIONS	DATE	APP'D																																				
		DESCRIPTION																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">ITEM</th> <th style="width: 5%;">QTY</th> <th style="width: 5%;">D/S</th> <th style="width: 20%;">PART NO</th> <th style="width: 45%;">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td colspan="5" style="text-align: center;">LIST OF MATERIAL</td> </tr> <tr> <td colspan="5" style="text-align: center;"><b>AUTO CRANE COMPANY</b></td> </tr> <tr> <td colspan="5" style="text-align: center;">P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9200 BROKEN ARROW EXPRESSWAY • 918-627-9475</td> </tr> <tr> <td colspan="3">           DRAWN BY <b>KENSMA</b>            DATE <b>7-27-87</b>            CHK'D BY            DATE            ENG BY            DATE         </td> <td colspan="2">           TITLE  <b>DECAL DRAWING 3203P</b> </td> </tr> <tr> <td colspan="3">           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.         </td> <td colspan="2">           SCALE            SIZE <b>C</b> DRAWING NO. <b>AW 320446</b> REVISION            WEIGHT            SHEET 1 OF 1         </td> </tr> <tr> <td colspan="5">NEXT ASSY</td> <td></td> </tr> </tbody> </table>						ITEM	QTY	D/S	PART NO	DESCRIPTION	LIST OF MATERIAL					<b>AUTO CRANE COMPANY</b>					P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9200 BROKEN ARROW EXPRESSWAY • 918-627-9475					DRAWN BY <b>KENSMA</b> DATE <b>7-27-87</b> CHK'D BY DATE ENG BY DATE			TITLE <b>DECAL DRAWING 3203P</b>		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.			SCALE SIZE <b>C</b> DRAWING NO. <b>AW 320446</b> REVISION WEIGHT SHEET 1 OF 1		NEXT ASSY					
ITEM	QTY	D/S	PART NO	DESCRIPTION																																					
LIST OF MATERIAL																																									
<b>AUTO CRANE COMPANY</b>																																									
P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9200 BROKEN ARROW EXPRESSWAY • 918-627-9475																																									
DRAWN BY <b>KENSMA</b> DATE <b>7-27-87</b> CHK'D BY DATE ENG BY DATE			TITLE <b>DECAL DRAWING 3203P</b>																																						
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NEXT ASSY																																									

# DECAL DRAWING 3203-P, AW-320446

ITEM	QTY.	PART NO.	DESCRIPTION
1	2	040517	DECAL, STAY CLEAR
2	2	040529	DECAL, DANGER ELECT.
3	2	320317	DECAL,3203
4	1	040622	DECAL, A.C. LOGO
5	1	040579	DECAL, WORK RULES
6	1	040580	DECAL, DANGER MUST
7	1	320318	DECAL, ANGLE IND.
8	2	040624	DECAL, A.C.
9	6.5'	040620	DECAL, STRIPING
10	1	320321	DECAL, LOAD CHART
11	1	040552	DECAL, RELAY
12	2	040630	DECAL, DANGER STAY CLEAR
13			
14	1	330622	DECAL, SERIAL NO.
15	1	040587	DECAL, WIRING LOAD SENSOR

FIXTURE NO.	FINISH NO.

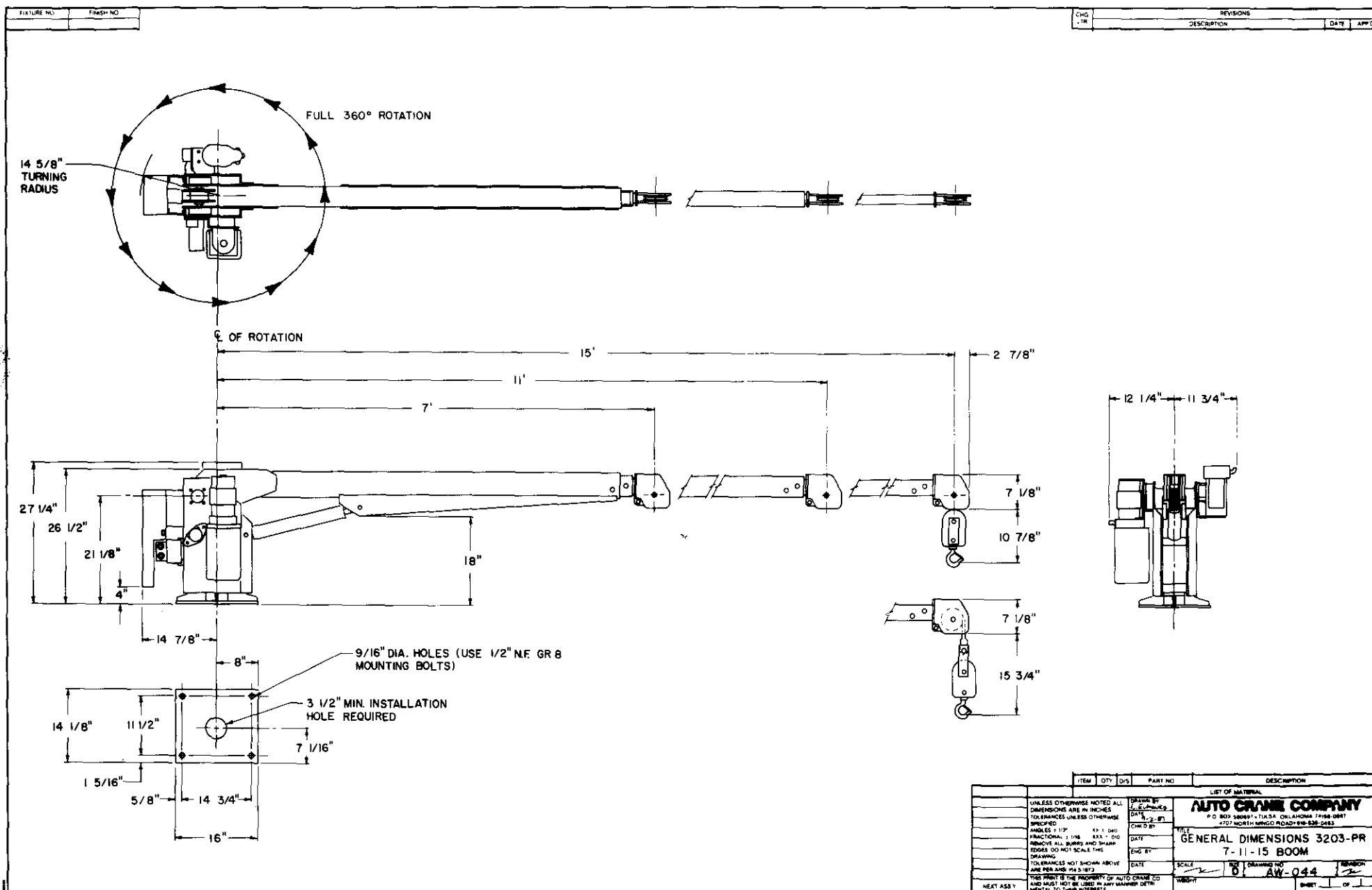
CHG	REVISIONS		DATE	APP'D
LTR	DESCRIPTION			



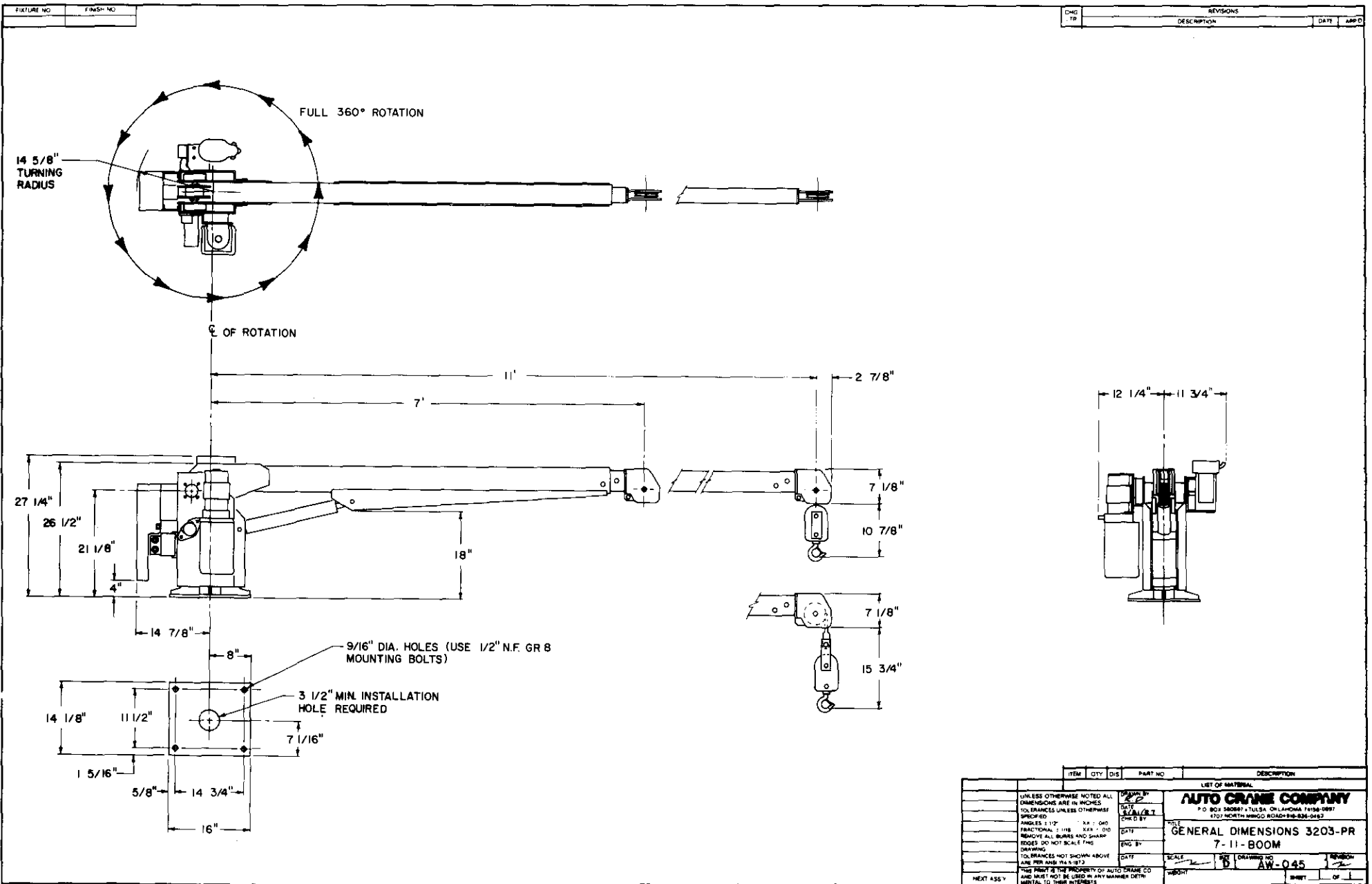
QUANTITY	ITEM	D/S	PART NO.	DESCRIPTION
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED. ANGLES: 1/2" .XX" .040 FRACTIONAL: 1/16 .XXX" .010 REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING. TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5 1973				
DRAWN BY <b>KENSMAN</b> DATE <b>5-2-67</b> CHK'D BY <b>EIC</b> DATE <b>5-2-67</b> ENG. BY		LIST OF MATERIAL <b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918 627 9475		
TITLE <b>3203 LOAD CHART</b>		SCALE <b>C</b>		
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.		DRAWING NO. <b>AW-320321</b>		
NEXT ASSY		SHEET <b>1</b> OF <b>1</b>		



ITEM		QTY	DZ	PART NO	DESCRIPTION
					LIST OF MATERIAL
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES DIMENSIONS ARE IN P.S.D. DIMENSIONS SPECIFIED ANGLES 7.5° PS 1.5° FUNCTIONAL TYPING PS 1.5° SPECIFIED ALL BURRS AND SHARP EDGES MUST BE REMOVED DIMENSIONS NOT SCALE TO THIS DRAWING TOLERANCES NOT SHOWN ABOVE ARE PER MILS PER AMS 1913					DRAWN BY <b>ED</b> CHECKED BY <b>W. L. B. / 127</b> DATE <b>6-15-77</b> BY <b>ED</b> DATE <b>6-15-77</b> SCALE <b>1" = 1'-0"</b> WEIGHT <b>100 LBS</b> DRAWING NO. <b>AW-0473</b> REVISION <b>2</b>
THE MATERIAL SPECIFIED ON THIS DRAWING IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE REUSED IN ANY MANNER OTHER THAN THAT SPECIFIED HEREON.					
NEXT ASY					







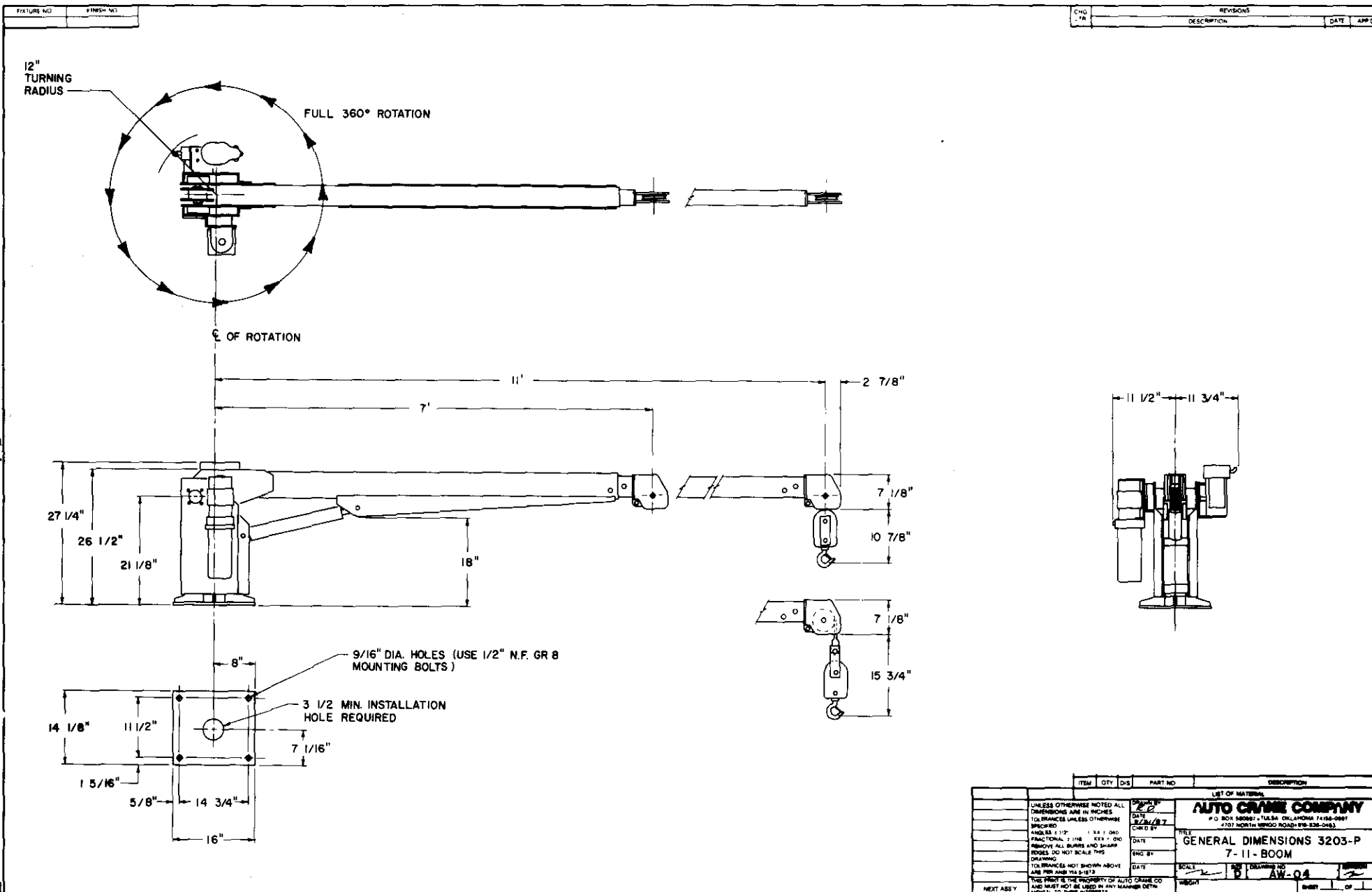
ITEM	QTY	DIS	PART NO.	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES				
TOLERANCES UNLESS OTHERWISE SPECIFIED				
ANGLES 1:12				
FUNCTIONAL 1:16				
REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING				
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.13-72				
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.				
NEXT ASSY				

<b>AUTO CRANE COMPANY</b> P.O. BOX 580871 • TALLAHASSEE, FLORIDA 32308-0871 1707 NORTH WING ROAD • TAMPA, FL 33613	<b>GENERAL DIMENSIONS 3203-PR</b> <b>7-11-BOOM</b> SCALE: 1" = 1'-0" DRAWING NO. <b>AW-045</b> REVISION: 1
--	--



5-4



ITEM	QTY	DWG	PART NO.	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES				
TOLERANCES UNLESS OTHERWISE SPECIFIED				
ANGLES ± 1°				
FRACTIONS ± 1/16				
REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING				
TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973				
THIS DRAWING IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER WITHIN THE COMPANY WITHOUT PERMISSION				
NEXT ASSY				
DRAWN BY: J. B. DATE: 8/24/87				
CHECKED BY: DATE: 8/24/87				
SCALE: 1" = 1'-0"				
WEIGHT: 12 LBS				
SHEET 1 OF 1				

LIST OF MATERIAL

UNLESS OTHERWISE NOTED ALL

DIMENSIONS ARE IN INCHES

TOLERANCES UNLESS OTHERWISE

SPECIFIED

ANGLES ± 1°

FRACTIONS ± 1/16

REMOVE ALL BURRS AND SHARP

EDGES. DO NOT SCALE THIS

DRAWING

TOLERANCES NOT SHOWN ABOVE

ARE PER ANSI Y14.5-1973

THIS DRAWING IS THE PROPERTY OF AUTO CRANE CO.

AND MUST NOT BE USED IN ANY MANNER WITHIN

THE COMPANY WITHOUT PERMISSION

NEXT ASSY

DRAWN BY: J. B. DATE: 8/24/87

CHECKED BY: DATE: 8/24/87

SCALE: 1" = 1'-0"

WEIGHT: 12 LBS

SHEET 1 OF 1

12

AW-04

GENERAL DIMENSIONS 3203-P

7-11-BOOM

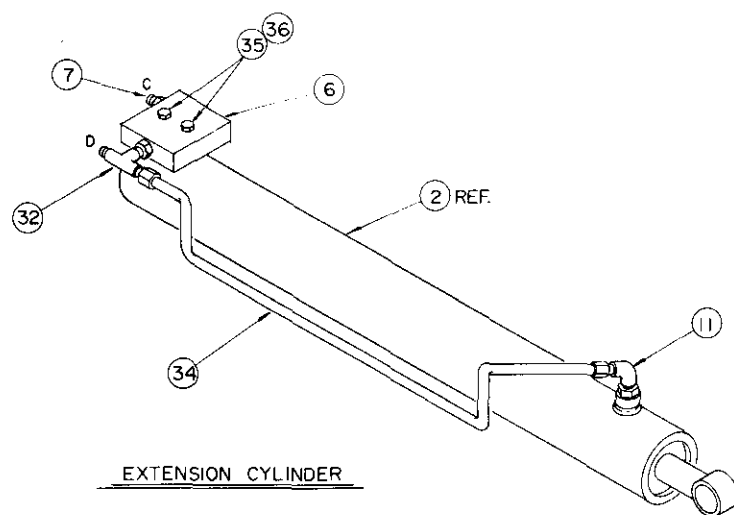
AUTO CRANE COMPANY

P.O. BOX 580897 • TULSA, OKLAHOMA 74158-0897

4707 NORTH WINDY ROAD • P.O. BOX 528 • OKLAHOMA

FIGURE NO.	FINISH NO.

CHG.	REVISIONS	DATE	APP.
1	DESCRIPTION		



EXTENSION CYLINDER

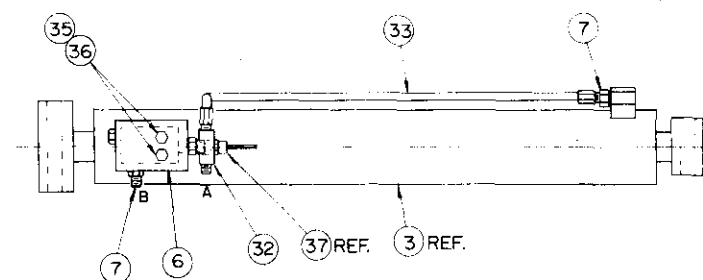
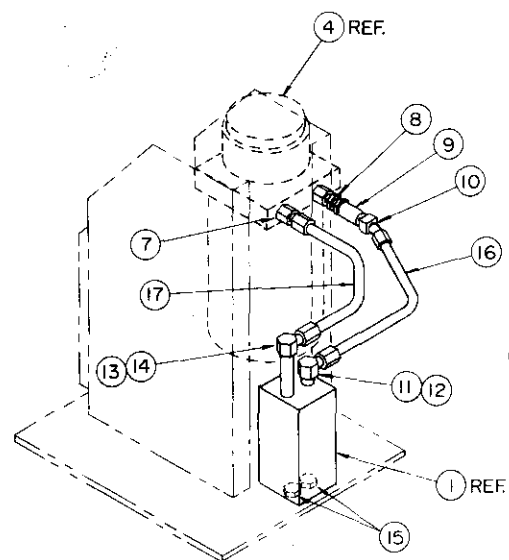
BOOM CYLINDER  
BOTTOM VIEW

FIGURE 3

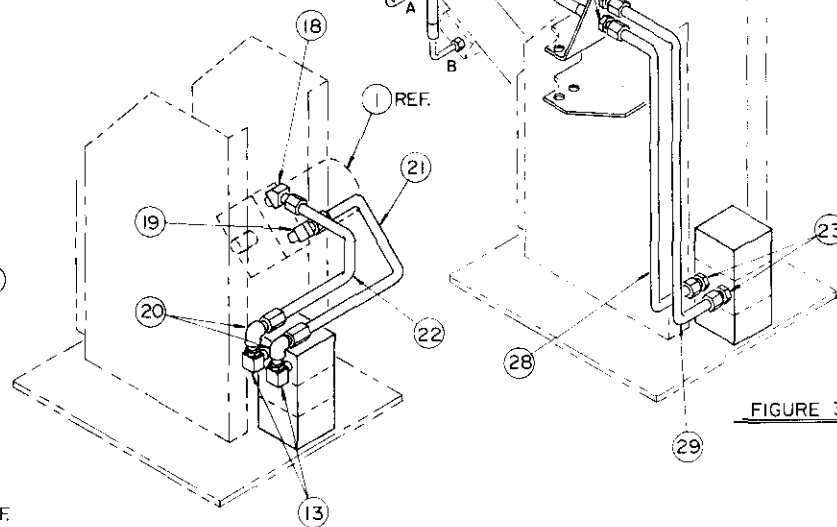


FIGURE 2

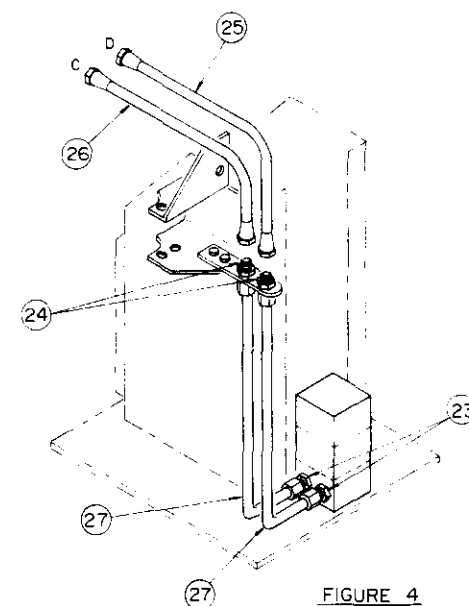


FIGURE 4

FIGURE 1

1/88

ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES				
TOLERANCES UNLESS OTHERWISE SPECIFIED				
ANGLES 1° ± .001				
FRACTIONAL ± .001				
REMOVE ALL BURRS AND SHARP EDGES DO NOT SCALE THIS DRAWING				
TOLERANCES NOT SHOWN ARE PER ASME Y14.5-1973				
THIS DRAWING IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER OTHER THAN TO THEIR INSTRUMENTS				
NEXT ASSY				
DRAWN BY: R. DAY				
CHKD BY: J. R. DAY				
DATE: 7-24-87				
ENG BY: DATE: SCALE: 1:1				
DRAWING NO. AW-038				
SHEET 1 OF 1				

AUTO CRANE COMPANY

P.O. BOX 380974 TULSA, OKLAHOMA 74158-0974

4707 NORTH ARROW ROAD (918) 838-1143

HYDRAULICS - 3203 - PRX

DRAWING NO. AW-038

SHEET 1 OF 1

# HYDRAULICS - 3203 PRX AW-038

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	202710	MANIFOLD (REF)
2	1	202711	CYLINDER, EXTENSION (REF)
3	1	320325	CYLINDER, BOOM (REF)
4	1	320336	HYD. PUMP AND RESERVOIR (REF)
5	1	480027	HYD. MOTOR (ROTATION) REF.
6	2	330412	COUNTERBALANCE VALVE
7	4	200876	ADAPTER
8	1	320347	ADAPTER-6 ORB/1/4 NPT
9	1	202743	STRAINER
10	1	320349	ELL 45°1/4 NPT (M)/-6 JIC
11	2	241175	ELL 90° -6ORB/-6 JIC
12	1	330058	REDUCER -10 ORB/-6 ORP
13	3	330272	ELL 90° - 8ORB/-6 JIC
14	1	330274	REDUCER -10 ORB/-8 ORP
15	2	330072	PLUG, HX. HD. -10 ORB
16	1	320408	HYD. TUBE ASS'Y
17	1	320409	HYD. TUBE ASS'Y
18	1	320350	ELL, 45° 1/2 NPT (M)/-6 JIC
19	1	202759	ELL, 90° 1/2 NPT (M)/-6 JIC
20	2	480194	ELL, 90° -6 SWIVEL /-6 JIC
21	1	320407	HYD. TUBE ASS'Y
22	1	320410	HYD. TUBE ASS'Y
23	4	202756	ADAPTER3/4 O-RING / 9/16 JIC
24	4	241170	BULKHEAD UNION
25	1	320473	HYD. HOSE ASS'Y
26	1	320466	HYD. HOSE ASS'Y
27	1	320489	HYD. TUBE ASS'Y
28	1	320490	HYD. TUBE ASS'Y
29	1	320491	HYD. TUBE ASS'Y
30	1	320472	LOAD SENSOR ASS'Y
31	2	320467	HYD. HOSE ASS'Y
32	2	241168	TEE -6 ORB/ -6 JIC (TWO ENDS)
33	1	320469	HYD. TUBE ASS'Y
34	1	330275	HYD. TUBE ASS'Y
35	4	020200	WASHER SP. LK. 1/4
36	4	005810	SCREW HX. HD. 1/4-20X 1 3/4 LG.
37	1	320472	LOAD SENSOR ASS'Y (REF.)



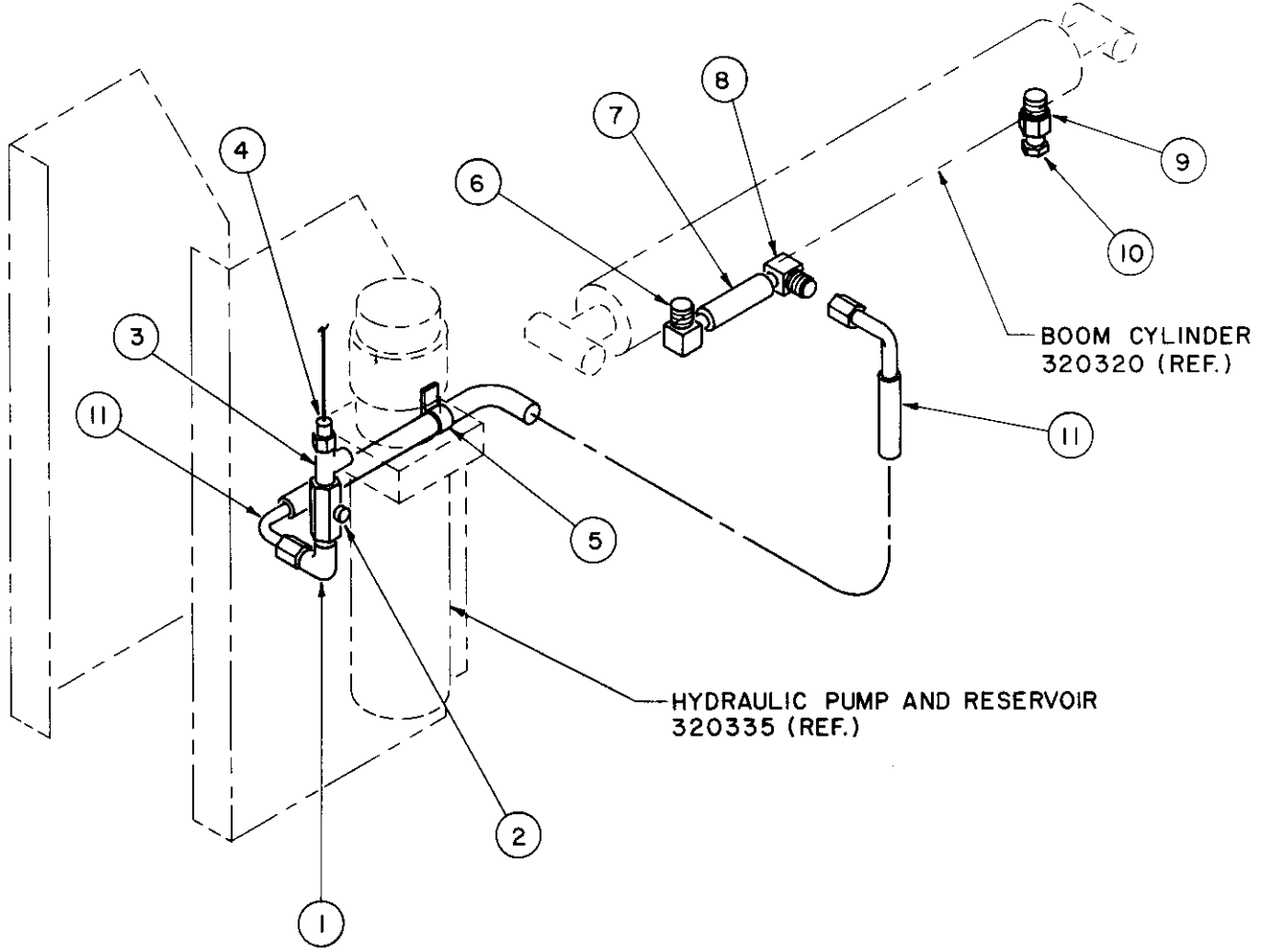
# HYDRAULICS - 3203 - PR, AW-039

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	330306	MANIFOLD (REF.)
2	1	320325	BOOM CYLINDER (REF.)
3	1	320336	HYD. PUMP (REF.)
4	1	480027	MOTOR, HYD. ROTATION (REF.)
5	3	200876	ADAPTER, -6 ORB/ -6 JIC
6	1	320347	ADAPTER, -6 ORB/ 1/4 NPT
7	1	202743	STRAINER
8	1	320349	ELL, 45° 1/4 NPT/ (M)/ -6 JIC
9	1	330274	REDUCER, -10 ORB/ -8 ORP
10	3	330272	ELL, 90°, -8 ORB/ -6 JIC
11	1	330058	REDUCER, -6 ORP
12	1	241175	ELL 90°, -6 ORB/ -6 JIC
13	2	330072	PLUG, -10 ORB HX. HD.
14	1	320409	HYD. TUBE ASS'Y
15	1	320408	HYD. TUBE ASS'Y
16	2	480194	ELL, 90° -6 SWIVEL/-6 JIC
17	1	320350	ELL, 45°, 1/2 NPT/-6 JIC
18	1	202759	ELL, 90° 1/2 NPT/ -6 JIC
19	1	320410	HYD. TUBE ASS'Y
20	1	320407	HYD. TUBE ASS'Y
21	2	202756	ADAPTER 3/4 O-RING / 9/16 JIC
22	2	241170	BULKHEAD FITTING
23	1	320490	HYD. TUBE ASS'Y
24	1	320491	HYD. TUBE ASS'Y
25	2	320467	HYD. HOSE ASS'Y
26	1	320412	VALVE, COUNTER BALANCE
27	1	241168	TEE, -6 ORB 1-6 JIC (TWO ENDS)
28	2	005810	SCW. HX. HD. 1/4-20X1 3/4 LG. NC
29	2	020200	WASHER, SP. LK. 1/4
30	1	320472	LOAD SENSOR
31	1	320469	HYD. TUBE ASS'Y

6-4

FIXTURE NO.	FINISH NO.

CHG LTR	REVISIONS	DATE	APP'D
	DESCRIPTION		



HYDRAULIC PUMP AND RESERVOIR  
320335 (REF.)

BOOM CYLINDER  
320320 (REF.)

ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9290 BROKEN ARROW EXPRESSWAY • 918-627-9475				
DRAWN BY			TITLE	
DATE			HYDRAULICS 3203 - P	
CHK'D BY			REVISION	
DATE				
ENG. BY				
DATE				
SCALE			SIZE	DRAWING NO.
			C	AW-048
WEIGHT			SHEET 1 OF 1	

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.

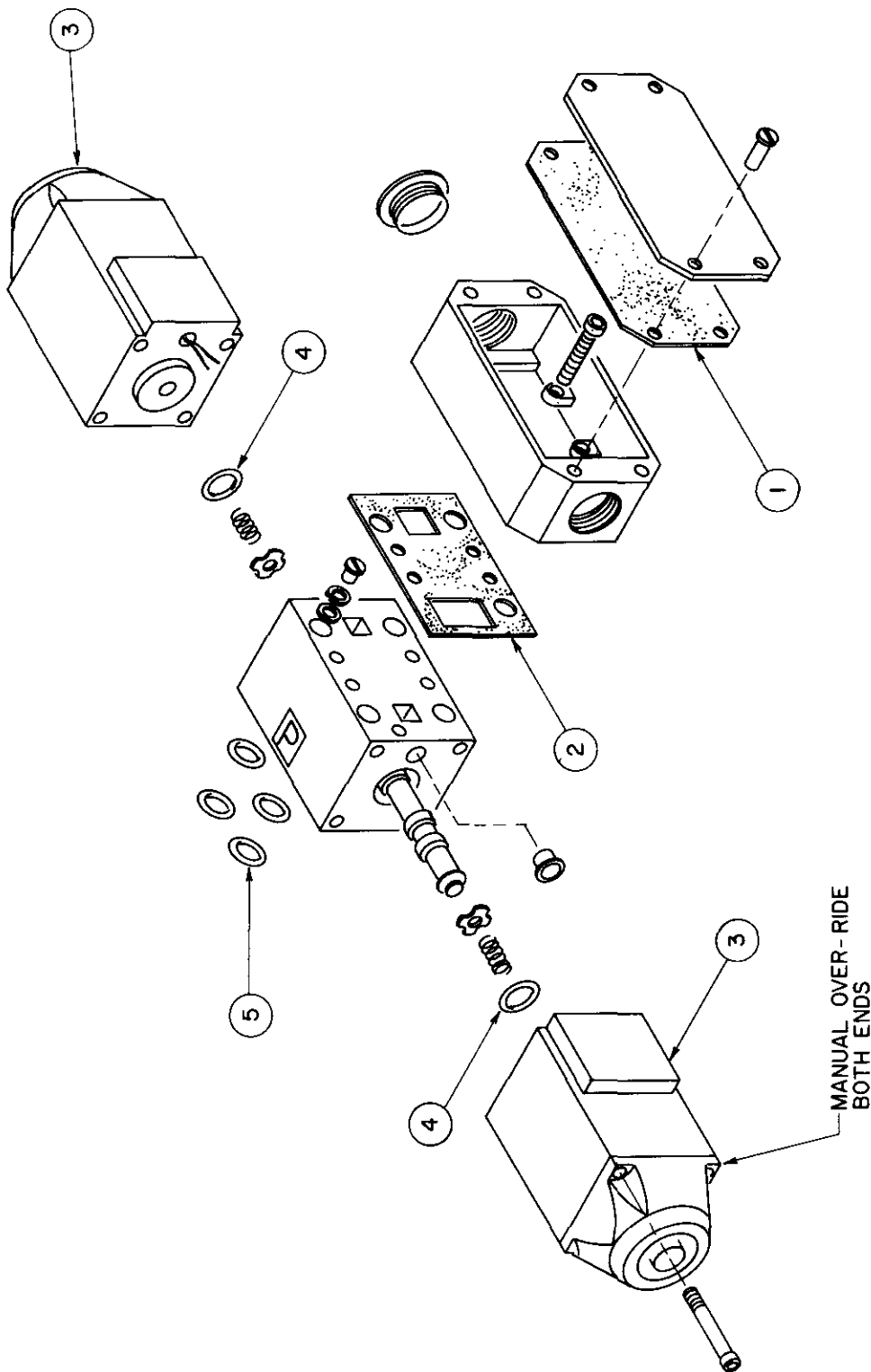
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.



### HYDRAULIC ASSEMBLY 3203-P AW-048

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	320342	ELL 90° -6 ORB/-6 JIC
2	1	320343	FLOW REGULATOR
3	1	320344	TEE
4	1	320470	LOAD SENSOR
5	1	083803	CLAMP HOSE, -6
6	1	320370	ELL 90°, -6 ORB/3/8 MALE NPT
7	1	301103	VELOCITY FUSE
8	1	330596	ELL 90° -6 NPT FEM./-6 JIC
9	1	320340	ADAPTER -6 ORB
10	1	330584	BREATHING FILTER
11	1	320465	HOSE ASSEMBLY

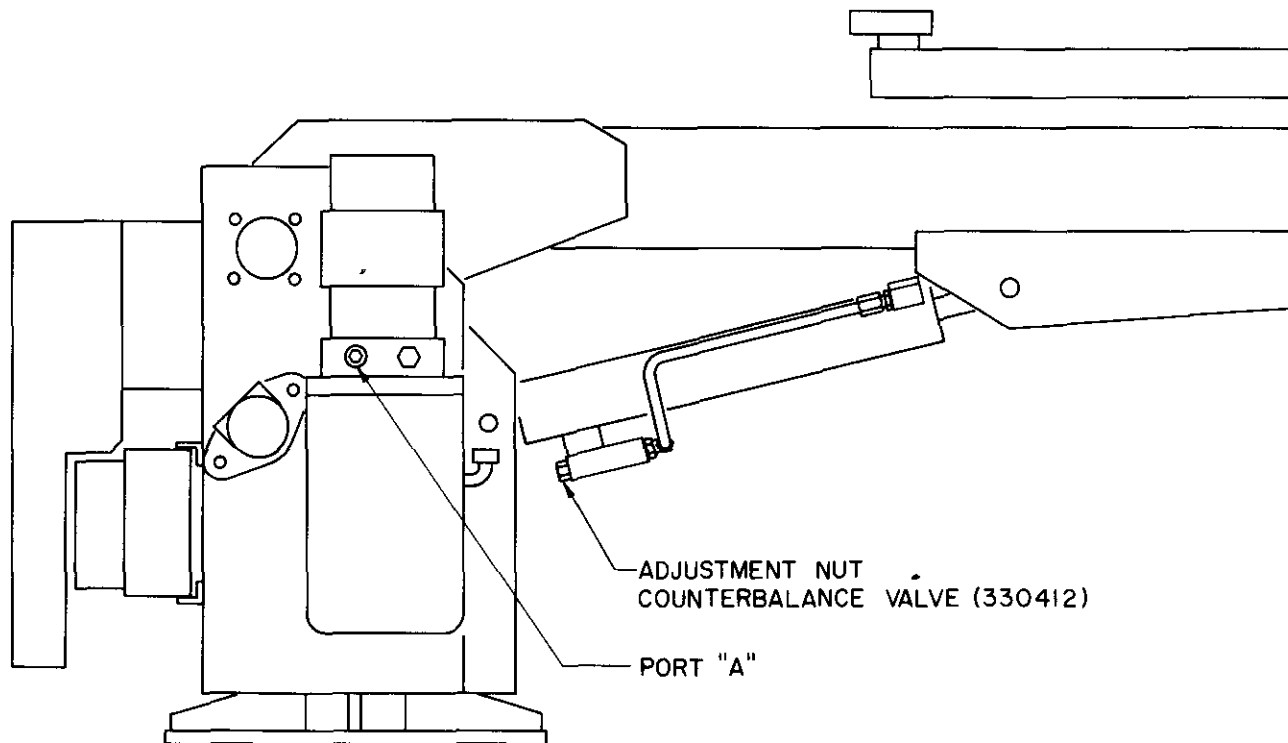
FIXTURE NO.	FINISH NO.	CHG LTR	REVISIONS	DATE	APP'D



ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED: FRACTIONAL $\pm 1/16$ ANGLES $\pm 1/2^\circ$ DECIMAL $\pm 0.00$ 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				
DRAWN BY <b>RZ</b> DATE <b>4/18/87</b> CHK'D BY DATE ENG. BY DATE				
SCALE <b>C</b> DRAWING NO. <b>AW-300204</b> REVISION <b>1</b> OF <b>1</b>				
WEIGHT				
TITLE <b>DIRECTIONAL VALVE ASSEMBLY</b>				
P.O. BOX 45348 • TULSA, OKLAHOMA 74114 9200 BROOKER ARROW EXPRESSWAY • 918-627-9475				
AUTO CRANE COMPANY				

# **DIRECTIONAL VALVE ASSEMBLY, AW-300204**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	310300	GASKET
2	1	310301	GASKET
3	2	310302	SOLENOID D.C.
4	2	310303	O-RING
5	4	310304	O-RING

ADJUSTMENT NUT  
COUNTERBALANCE VALVE (330412)

PORT "A"

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			DRAWN BY <i>RP</i> DATE <i>7/22/87</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.			TITLE <b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 3260 BROKEN ARROW EXPRESSWAY • 918-627-9475 <b>ADJUSTMENT - COUNTERBALANCE VALVE</b>	
NEXT ASS'Y			SCALE C	DRAWING NO <b>AW-051</b> REVISION SHEET <u>1</u> OF <u>1</u>

## 3203 SERIES HYDRAULICS TROUBLESHOOTING

The hydraulic system of the 3203 power version is electrically operated and requires a minimum of 12V for satisfactory performance. The hydraulic pump is single rotation with a pressure relief setting 2100 P.S.I. The systems is designed to engage the pump only when a hydraulic function is selected.

### PROBLEM

### SOLUTION

PUMP WILL NOT RUN

Check voltage to pump; if voltage is above 12 volts and the pump is well grounded, replace pump. If voltage is below 12V, check battery and power leads. If no voltage to pump, remove relay panel cover and check relay. (See Electrical Troubleshooting)

PUMP RUN BUT FUNCTION  
WILL NOT WORK

1. If boom extend, boom down, or hoist up fails, and other function operate, check for improper crane loading. An overload condition sensed by the hydraulic system causes these functions to become inoperable. If loading is correct, see overload system trouble shooting.
2. A manual override is on each end of the directional valves on the 3203. If the pump is operating, and pushing the manual override in does not operate the selected function, check pump pressure. If the function does operate, remove directional valve cover (320431) and check for loose wire, low voltage or bad ground. If the above items check out all right, replace directional valve. If the problem is traced to no voltage at the directional valve, remove pendant and with the switch engaged check for an open circuit with an ohmmeter. If the circuit is open, check for broken wiring or bad switch.

HYDRAULIC "CHATTER"

When a hydraulic function is engaged and causes the crane to "chatter", check for loose wire, low voltage at directional valve, or low pump pressure.

## COUNTERBALANCE VALVE SETTING

### CAUTION:

**IF COUNTERBALANCE VALVE IS REPLACED, IT MUST HAVE CORRECT PRESSURE SETTING BEFORE CRANE IS IN SAFE WORKING CONDITION.**

### TO SET VALVE:

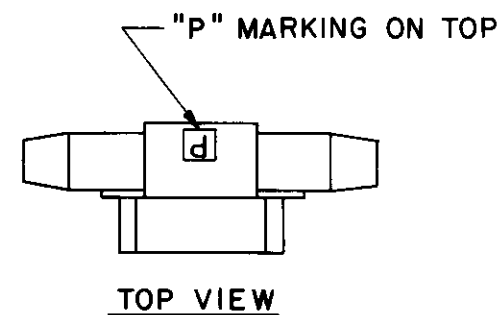
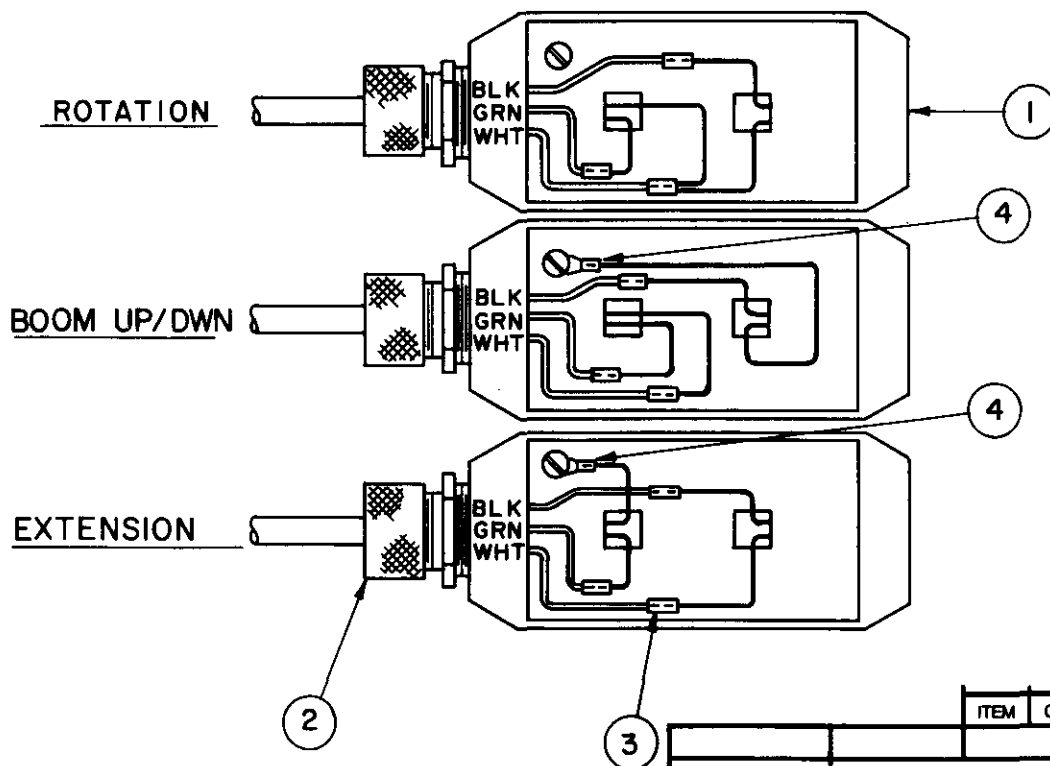
To set counterbalance valve (330412 - Ref. page 6-8), remove plug (5/16" Allen wrench) from port "A" of hydraulic pump. Replace with pressure gauge of 2500 psi minimum.

**IMPORTANT:** No load must be on crane; booms must not be extended.

After installed, boom up until boom cylinder is fully extended. Next, boom down at approximately 2 second intervals while reading pressure gauge. Loosen nut at rear of valve and adjust 3/16" Allen screw and tighten nut. Proceed again until pressure reading is a constant 1000 psi. If valve is not set and boom is down, boom up and try again.

Note: 3203PRX extendable boom cylinder (202711) requires no adjustment to counterbalance valve if replaced.

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



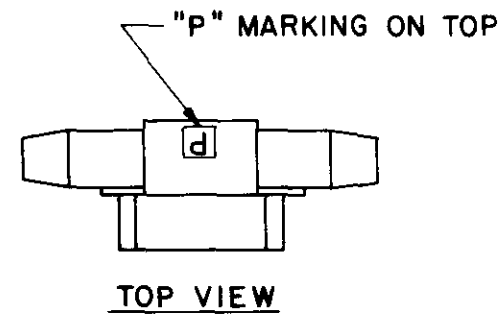
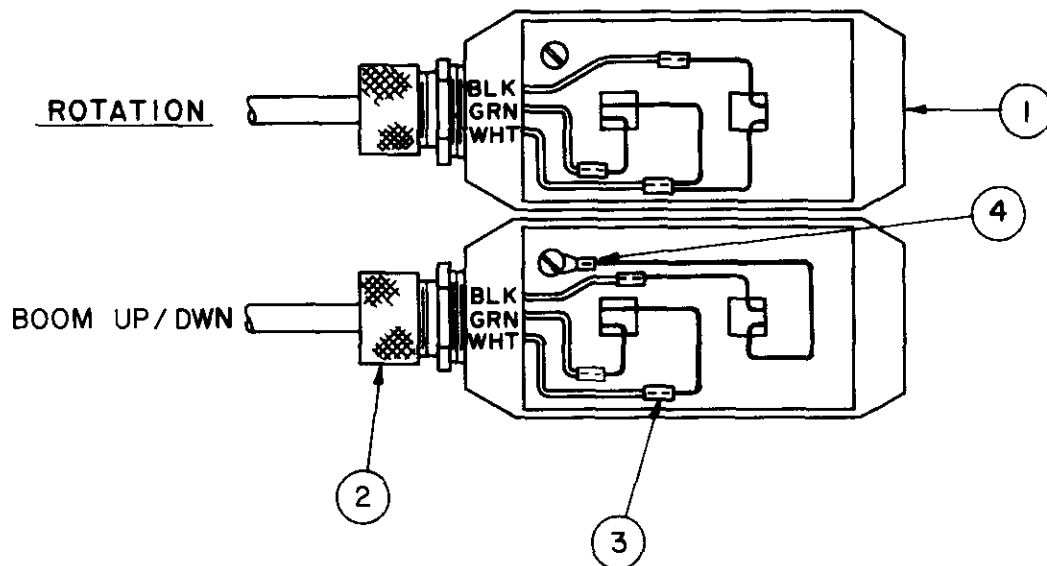
ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9280 BROKEN ARROW EXPRESSWAY • 918-627-9475				TITLE <b>WIRING DIAGRAM, SOLENOID VALVES</b> <b>3203 - PRX</b>
UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS 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			DRAWN BY <i>R.D.</i> DATE <b>9/10/87</b> CHK'D BY  DATE  ENG. BY  DATE  SCALE  WEIGHT	SIZE <b>B</b> DRAWING NO. <b>AW-320480</b> REVISION  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 THEIR INTERESTS.				

NEXT ASS'Y

**WIRING DIAGRAM-SOLENOID VALVES 3203-PRX  
AW-320480**

ITEM	QTY.	PART NO.	DESCRIPTION
1	3	300204	SOLENOID VALVE (REF.)
2	3	642908	CORD CONNECTOR
3	9	001102	TERMINAL, WIRE
4	2	000300	TERMINAL WIRE

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



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			<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9280 BROKEN ARROW EXPRESSWAY • 918-627-9475	
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO. AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.			<b>WIRING DIAGRAM, SOLENOID VALVES 3203 - PR</b>	
DRAWN BY <i>R.P.</i> DATE <i>9/10/87</i> CHK'D BY DATE ENG. BY DATE			SCALE <i>1/2"</i> SIZE <b>B</b> DRAWING NO. <b>AW-320481</b> REVISION	
NEXT ASS'Y			WEIGHT SHEET <i>1</i> OF <i>1</i>	

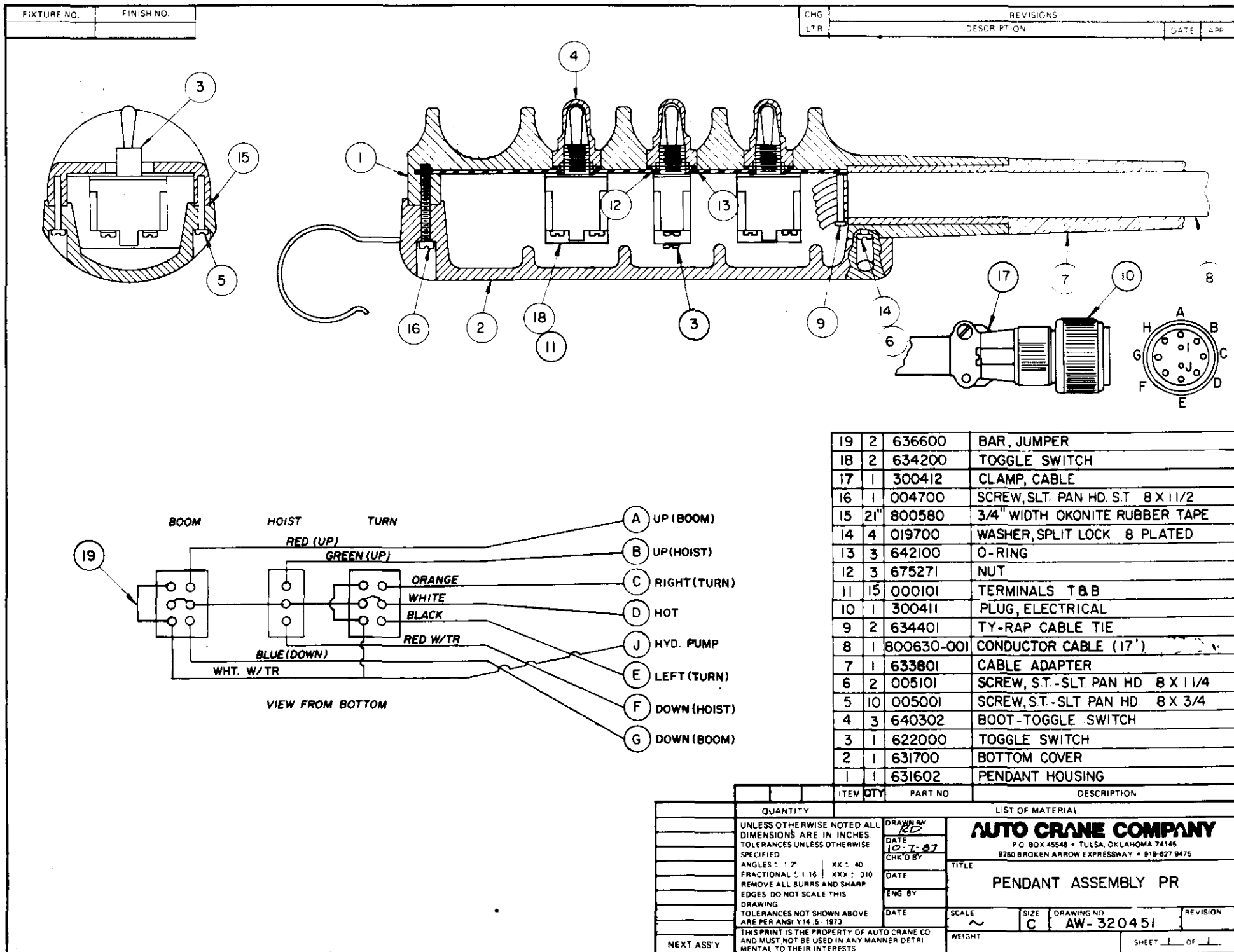


**WIRING DIAGRAM, SOLENOID VALVES 3202-PR  
AW-320481**

ITEM	QTY.	PART NO.	DESCRIPTION
1	2	300204	SOLENOID VALE (REF.)
2	2	642908	CORD CONNECTOR
3	6	001102	TERMINAL WIRE, SPLICE
4	1	000300	TERMINAL, WIRE

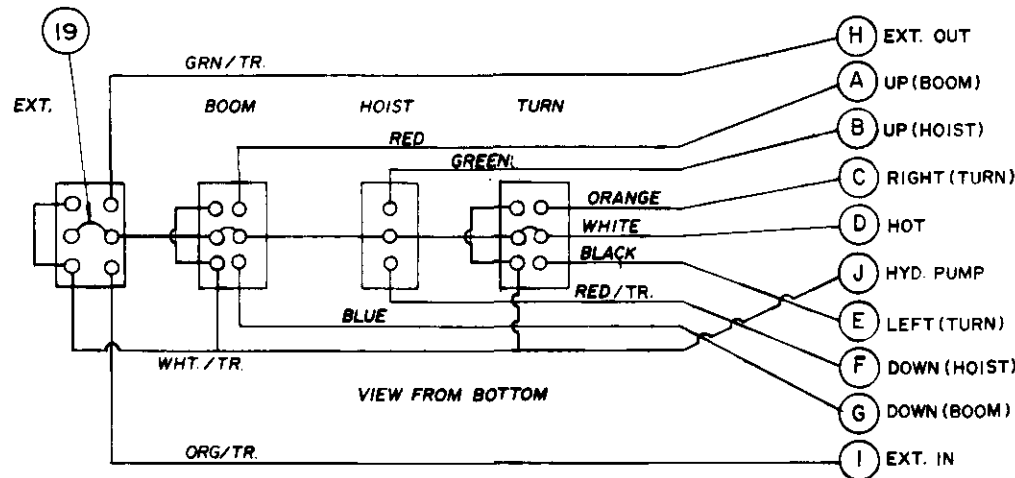
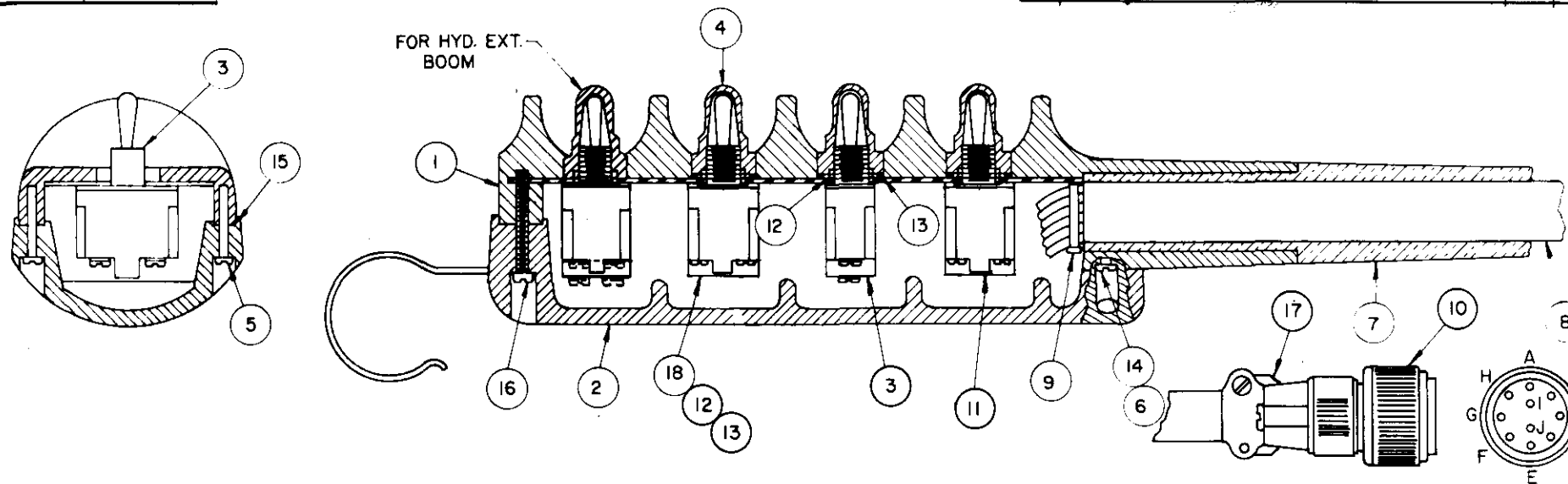
FIXTURE NO.	FINISH NO.	CHG LTR	REVISIONS	DATE	APP'D															
			DESCRIPTION																	
		13	7	000101	TERMINALS, STAKON															
		12	1	642907	CONNECTOR, CORD															
		11	2	622000	SWITCH, TOGGLE															
		10	1	300411	PLUG, CONNECTOR															
		9	1	800629-001	CABLE, CONDUCTOR (17')															
		8	2	640302	BOOT															
		7	1	300412	CLAMP, CABLE															
		6	4	001205	SCREW															
		5	1	642905	COVER															
		4	1	642909	DIAPHRAGM															
		3	1	642903	BASE, SUPPORT															
		2	1	016400	LOCKNUT, 1/2"															
		1	1	642901	BOX, PENDANT															
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ITEM</th> <th>QTY</th> <th>D/S</th> <th>PART NO.</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td colspan="5">LIST OF MATERIAL</td> </tr> <tr> <td colspan="5"> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED.</p> <p>ANGLES <math>\pm 1/2^\circ</math>   .XX <math>\pm .40</math></p> <p>FRACTIONAL <math>\pm 1/16</math>   .XXX <math>\pm .010</math></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> </div> <div style="width: 50%;"> <p><b>AUTO CRANE COMPANY</b></p> <p>P.O. BOX 45548 • TULSA, OKLAHOMA 74145</p> <p>9260 BROKEN ARROW EXPRESSWAY • 918-627-9475</p> <p>TITLE: <b>PENDANT ASSEMBLY 3203-P</b></p> <p>SCALE: ~ SIZE: B DRAWING NO: <b>AW-320450</b> REVISION: _____</p> <p>WEIGHT: _____ SHEET: 1 OF 1</p> </div> </div> </td> </tr> </tbody> </table>				ITEM	QTY	D/S	PART NO.	DESCRIPTION	LIST OF MATERIAL					<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED.</p> <p>ANGLES <math>\pm 1/2^\circ</math>   .XX <math>\pm .40</math></p> <p>FRACTIONAL <math>\pm 1/16</math>   .XXX <math>\pm .010</math></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> </div> <div style="width: 50%;"> <p><b>AUTO CRANE COMPANY</b></p> <p>P.O. BOX 45548 • TULSA, OKLAHOMA 74145</p> <p>9260 BROKEN ARROW EXPRESSWAY • 918-627-9475</p> <p>TITLE: <b>PENDANT ASSEMBLY 3203-P</b></p> <p>SCALE: ~ SIZE: B DRAWING NO: <b>AW-320450</b> REVISION: _____</p> <p>WEIGHT: _____ SHEET: 1 OF 1</p> </div> </div>				
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<p><b>GREEN "UP"</b></p> <p><b>BLACK "BOOM UP"</b> (B)</p> <p><b>RED "HOT"</b> (D)</p> <p><b>BLUE "BOOM DOWN"</b> (G)</p> <p><b>BROWN "DOWN"</b> (F)</p>			<p><b>AUTO CRANE COMPANY</b>            P.O. BOX 45548 • TULSA, OKLAHOMA 74145            9260 BROKEN ARROW EXPRESSWAY • 918-627-9475</p> <p><b>TITLE</b> PENDANT ASS'Y 3203 P</p> <p><b>SCALE</b>    <b>SIZE</b> B    <b>DRAWING NO.</b> AW320500    <b>REVISION</b></p> <p><b>WEIGHT</b>    <b>SHEET</b> 1 <b>OF</b> 1</p>																																																														
<p>NEXT ASS'Y</p>			<p>1/88</p>																																																														



FIXTURE NO.	FINISH NO.

CHG	REVISIONS	DATE	APP'D
LTR	DESCRIPTION		

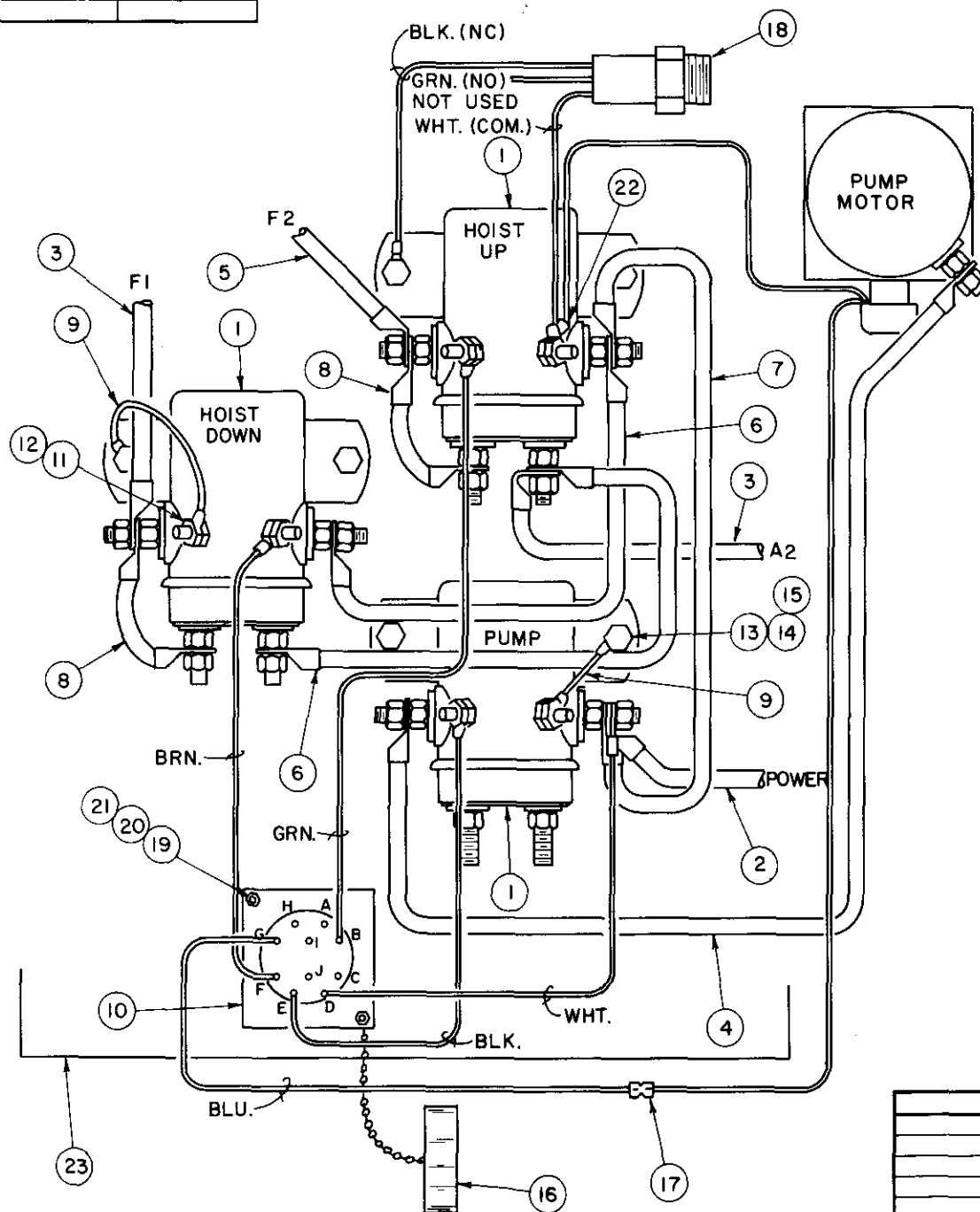


19	3	636600	BAR, JUMPER
18	3	634200	TOGGLE SWITCH
17	1	300412	CLAMP, CABLE
16	1	004700	SCREW, SLT. PAN HD. S.T. 8 X 1 1/2
15	21	800580	3/4" WIDTH OKONITE RUBBER TAPE
14	4	019700	WASHER, SPLIT LOCK 8 PLATED
13	4	642100	O-RING
12	4	675271	NUT
11	24	000101	TERMINALS T & B
10	1	300411	PLUG, ELECTRICAL
9	2	634401	TY-RAP CABLE TIE
8	1	800632-007	CONDUCTOR CABLE (17')
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	4	640302	BOOT-TOGGLE SWITCH
3	1	622000	TOGGLE SWITCH
2	1	631700	BOTTOM COVER
1	1	631601	PENDANT HOUSING

ITEM	QTY	PART NO.	DESCRIPTION
19	3	636600	BAR, JUMPER
18	3	634200	TOGGLE SWITCH
17	1	300412	CLAMP, CABLE
16	1	004700	SCREW, SLT. PAN HD. S.T. 8 X 1 1/2
15	21	800580	3/4" WIDTH OKONITE RUBBER TAPE
14	4	019700	WASHER, SPLIT LOCK 8 PLATED
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12	4	675271	NUT
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5	10	005001	SCREW, S.T.-SLT. PAN HD. 8 X 3/4
4	4	640302	BOOT-TOGGLE SWITCH
3	1	622000	TOGGLE SWITCH
2	1	631700	BOTTOM COVER
1	1	631601	PENDANT HOUSING

QUANTITY	LIST OF MATERIAL
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.	<b>AUTO CRANE COMPANY</b> P.O. BOX 45648 • TULSA, OKLAHOMA 74146 9280 BROKEN ARROW EXPRESSWAY • 918-627-9475 <b>PENDANT ASSEMBLY PRX</b> SCALE: ~ SIZE: C DRAWING NO: AW-320452 REVISION: SHEET 1 OF 1

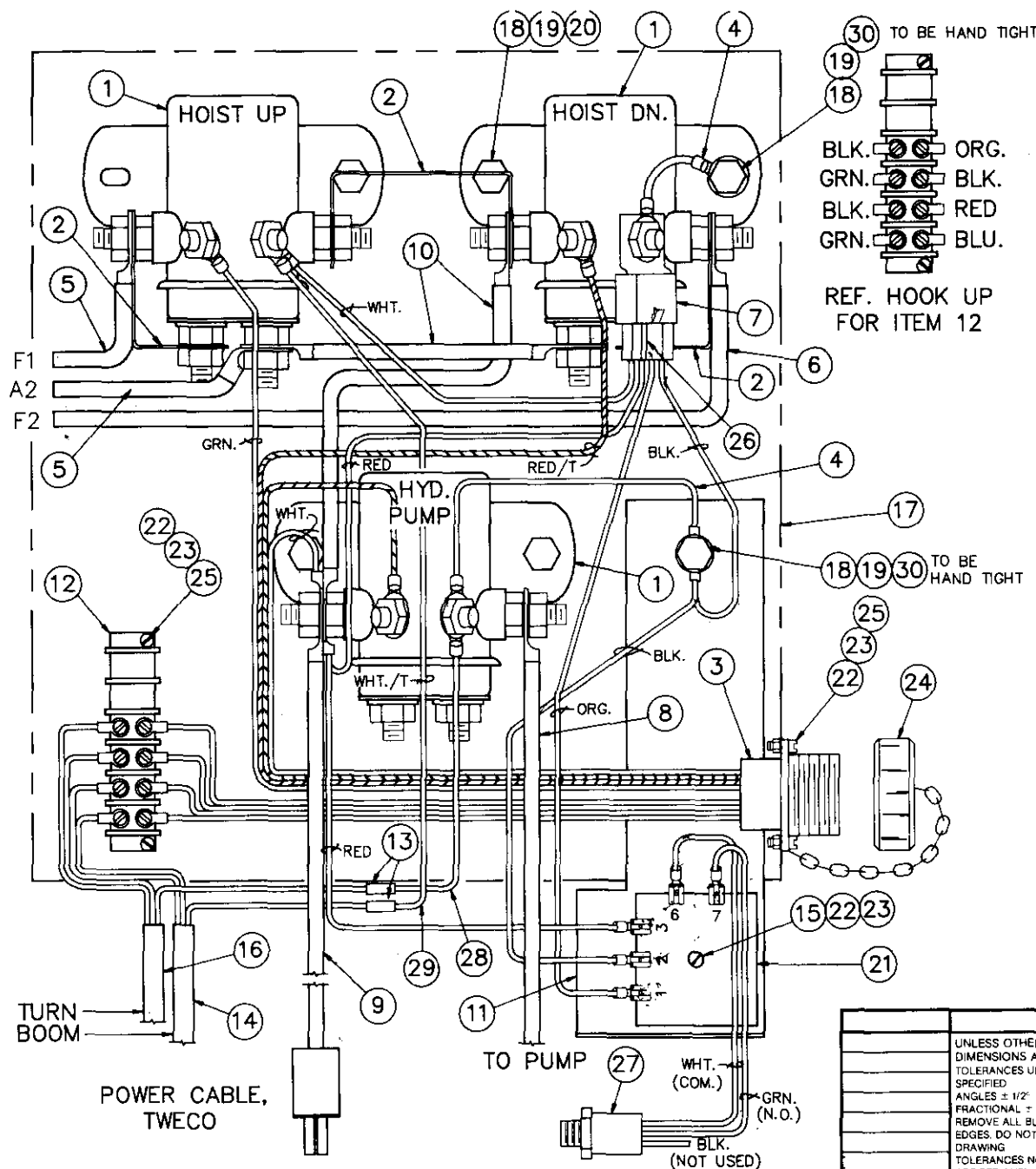
FIXTURE NO.	FINISH NO.



CHG	REVISIONS	DATE	APP'D
LTR	DESCRIPTION		

23	1	320468	PANEL, RELAY
22	1	000300	TERMINAL, WIRE RB-14-10
21	2	000404	SCREW, RD. HD. 6-32 X 5/8
20	2	015400	NUT HX 6-32
19	2	019600	WASHER LK. 6
18	1	REF.	LOAD SENSOR
17	1	REF.	TERMINAL WIRE
16	1	300413	CAP, RECEPTACLE
15	6	005601	SCREW HX 1/4-20 X 1 CP
14	6	015900	NUT HX 1/4-20 CP
13	6	020200	WASHER 1/4 SP LK
12	6	020001	WASHER 10 INT. LK.
11	6	015600	NUT HX 10-32
10	1	320471	RECEPTACLE ASS'Y
9	2	659904	CONDUCTOR
8	2	600303	CONDUCTOR
7	1	600306	CONDUCTOR
6	2	600304	CONDUCTOR
5	1	622325	CONDUCTOR
4	1	622327	CONDUCTOR
3	2	622323	CONDUCTOR
2	1	330258	POWER CABLE (MALE TWECO)
1	3	200182	RELAY

UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN INCHES. TOLERANCES UNLESS OTHERWISE SPECIFIED:		DRAWN BY R.D.		DATE 8/13/87		CHK'D BY		TITLE RELAY ASSEMBLY 3203 P	
ANGLES ± 1/2°		XX ± .040		DATE		ENG. BY		SCALE	
FRACTIONAL ± 1/16		XXX ± .010		DATE		ENG. BY		SIZE C	
REMOVE ALL BURRS AND SHARP EDGES. DO NOT SCALE THIS DRAWING.		TOLERANCES NOT SHOWN ABOVE ARE PER ANSI Y14.5-1973.		DATE		ENG. BY		DRAWING NO. AW-320454	
THIS PRINT IS THE PROPERTY OF AUTO CRANE CO AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THEIR INTERESTS.		NEXT ASS'Y		DATE		ENG. BY		REVISION	
								WEIGHT	
								SHEET 1 OF 1	



30	2	A	005500	SCREW, 1/4-20 X 3/4 G5
29	1	A	320366	CONDUCTOR
28	1	A	320365	CONDUCTOR
27	1	A	320472	LOAD SENSOR ASS'Y (REF.)
26	1	B	320358	PLUG, DROP OUT RELAY
25	4	A	000404	SCREW, #6-32 x 5/8
24	1	A	300413	CAP, RECEPTACLE
23	5	A	019600	WASHER, SPLK. #6
22	5	A	015400	NUT, HEX. #6-32
21	1	A	320351	RELAY, SOLID STATE TIMING
20	4	A	005901	SCREW, 1/4-20 x 1/2 G5
19	6	A	020200	WASHER, SPLK 1/4
18	6	A	015900	NUT, 1/4-20
17	1	C	330249	BRACKET, RELAY PANEL
16	1	B	330259	CONDUCTOR ASS'Y-TURN(14")
15	1	A	002602	SCREW, #6-32 x 1 1/2
14	1	B	330261	CONDUCTOR ASS'Y-BOOM(16")
13	2	A	001102	SPLICE, TERMINAL WIRE
12	1	A	635203	BOARD, TERMINAL
11	1	C	320479	PLATE, RELAY PANEL
10	2	A	600304	CONDUCTOR
9	1	B	330258	TWECO, CONNECTOR ASS'Y (REF.)
8	1	A	330257	CONDUCTOR
7	1	A	320355	RELAY, DROP OUT
6	1	A	622324	CONDUCTOR
5	2	A	622323	CONDUCTOR
4	2	A	659904	CONDUCTOR
3	1	B	330256	RECEPTICAL ASS'Y
2	3	A	658300	CONDUCTOR
1	3	B	200182	RELAY

ITEM	QTY	D/S	PART NO.	DESCRIPTION
LIST OF MATERIAL				
DRAWN BY: L. CUBANKS				
DATE: 10-23-87				
CHK'D BY:				
DATE:				
ENG BY:				
DATE:				
SCALE:				
SIZE: C				
DRAWING NO: AW320447				
REVISION: C				
SHEET 1 OF 1				

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.

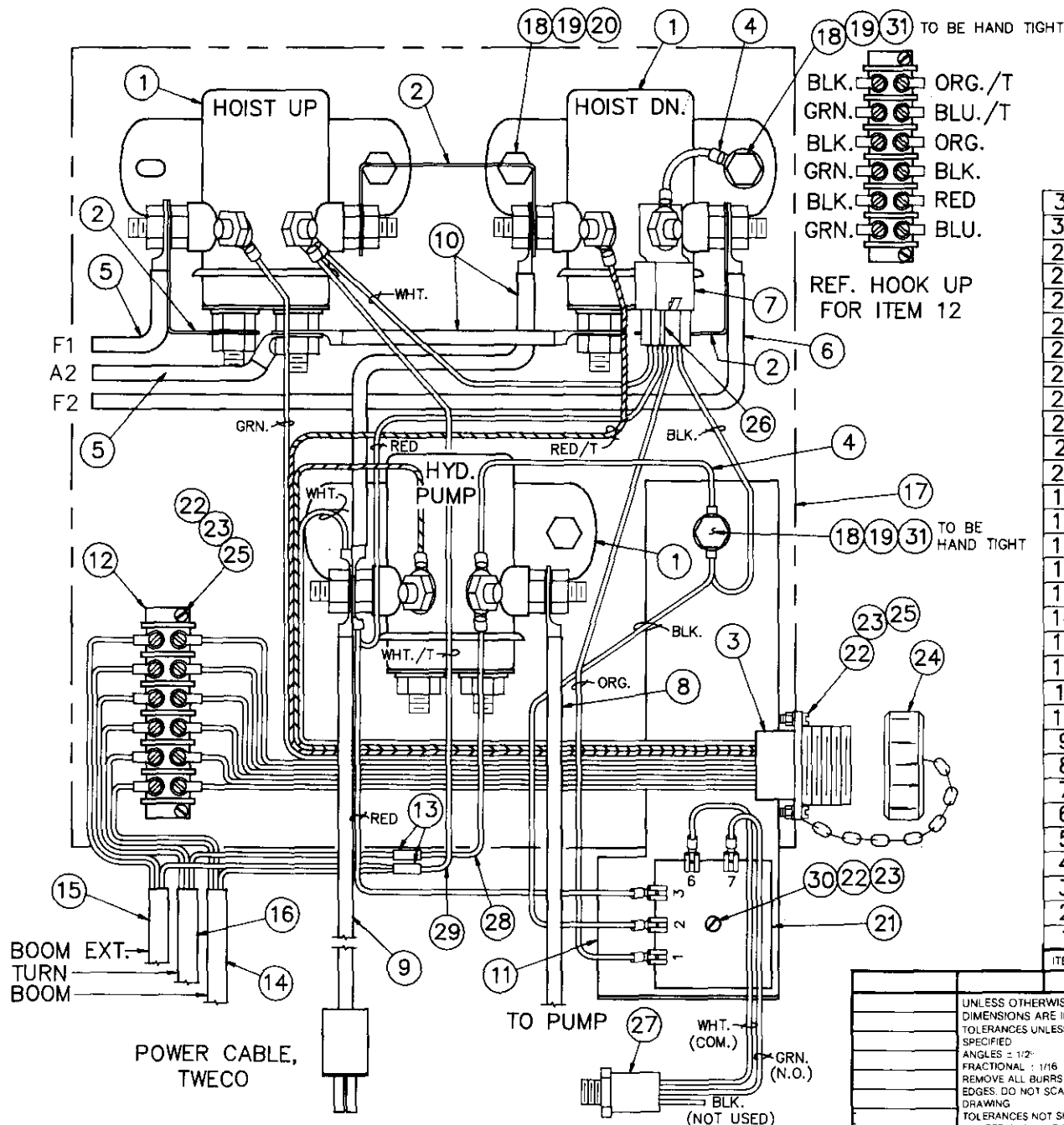
NEXT ASS'Y

**AUTO CRANE COMPANY**  
P.O. BOX 4554B • TULSA, OKLAHOMA 74145  
9280 BROKEN ARROW EXPRESSWAY • 918-627-9475

**RELAY ASSEMBLY - 3203 PR**

FIXTURE NO.	FINISH NO.

CHG LTR	REVISIONS	DATE	APPD
	DESCRIPTION		



ITEM	QTY	D/S	PART NO.	DESCRIPTION
31	2	A	005500	SCREW, 1/4-20 x 3/4 G5
30	1	A	002602	SCREW, #6-32 x 1 1/2
29	1	A	320366	CONDUCTOR
28	1	A	320365	CONDUCTOR
27	1	A	320472	LOAD SENSOR ASS'Y (REF.)
26	1	B	320358	PLUG, DROP OUT RELAY
25	4	A	000404	SCREW, #6-32 x 5/8
24	1	A	300413	CAP, RECEPTACLE
23	5	A	019600	WASHER, SPLK. #6
22	5	A	015400	NUT, HEX. #6-32
21	1	A	320351	RELAY, SOLID STATE TIMING
20	4	A	005901	SCREW, 1/4-20 x 1/2 G5
19	6	A	020200	WASHER, SPLK 1/4
18	6	A	015900	NUT, 1/4-20
17	1	C	330249	BRACKET, RELAY PANEL
16	1	B	330259	CONDUCTOR ASS'Y-TURN(14")
15	1	B	330260	CONDUCTOR ASS'Y-BOOM EXT.(18")
14	1	B	330261	CONDUCTOR ASS'Y-BOOM(16")
13	2	A	001102	SPLICE, TERMINAL WIRE
12	1	A	635203	BOARD, TERMINAL
11	1	C	320479	PLATE, RELAY PANEL
10	2	A	600304	CONDUCTOR
9	1	B	330258	TWECO, CONNECTOR ASS'Y (REF)
8	1	A	330257	CONDUCTOR
7	1	A	320355	RELAY, DROP OUT
6	1	A	622324	CONDUCTOR
5	2	A	622323	CONDUCTOR
4	2	A	659904	CONDUCTOR
3	1	B	330256	RECEPTICAL ASS'Y
2	3	A	658300	CONDUCTOR
1	3	B	200182	RELAY

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 L. EUBANKS DATE 10-23-87 CHK'D BY DATE ENG BY DATE		<b>AUTO CRANE COMPANY</b> P.O. BOX 45548 • TULSA, OKLAHOMA 74145 9260 BROKEN ARROW EXPRESSWAY • 918-627-9475	
NEXT ASS'Y		TITLE <b>RELAY ASSEMBLY - 3203 PRX</b>	
SCALE		SIZE <b>C</b>	DRAWING NO. <b>AW320457</b>
WEIGHT		REVISION <b>C</b>	SHEET <b>1</b> OF <b>1</b>



## 3203 SERIES ELECTRICAL TROUBLESHOOTING

### PROBLEM

1. CRANE WILL NOT HOIST UP.  
CRANE WILL NOT HOIST DOWN.  
PUMP MOTOR WILL NOT RUN

### CAUSE

Bad relay, crane not grounded properly, power cable not connected to 12V power source. Bad switch in pendant, broken wire in pendant connector on pendant not plugged together properly, wire on relay not in proper place, lead wires to motor not connected properly, or battery failure.

### SOLUTION

Problems can be solved by replacing bad relay, grounding the crane properly to the truck chassis, connecting the power cable properly to 12V+ power source, switch in pendant can be replaced, cord in remote control can be replaced check connector on cord to make sure of contact of all the prongs on it are plugged together correctly, make sure wires on relays are according to the wiring print supplied with each new crane in the owner book and also wires going to motor are connected properly.

---

### PROBLEM

CRANE RUNS UP OR DOWN ANY TIME  
POWER SOURCE IS CONNECTED.

### CAUSE

Relay stuck in run position which will let crane run up or down any time 12V power source is connected. Wires shorted together in remote control. Lead or cable can also cause this problem. Wires jumped across relay in wrong place can cause crane to run all the time.

### SOLUTION

Problem can be solved by checking the relays and replacing the bad one or removing jumper wires from the relays of replacing the remote control cord or switch.

---

### PROBLEM

CRANE WILL NOT HOIST UP  
CRANE WILL NOT EXTEND OUT  
CRANE WILL NOT BOOM DOWN

### CAUSE

Crane improperly loaded

### SOLUTION

- A. Boom extend in until moment load is reduced, and overload system is reset.
- B. Hoist down to reduce moment load and reset overload system.

### CAUSE

Overload system malfunction

### SOLUTION

See overload system trouble shooting

## OVERLOAD SYSTEM 3203 PR & PRX

The Overload System on the 3203 PR, PRX cranes consists of a PRESSURE SWITCH, connected to the main boom cylinder, a SOLID STATE TIME DELAY RELAY, and a DROPOUT RELAY.

The normally open circuit of the PRESSURE SWITCH is used to initiate the SSTD relay.

The SOLID STATE TIME DELAY RELAY is used to delay operation of the dropout relay, both on and off.

The DROPOUT RELAY carries the picking circuit for boom down, extend out (PRX), and hoist up.

**\*NOTE!** When the overload system is activated, these three functions will not operate until the system is reset!

To RESET OVERLOAD SYSTEM; 1) lower the load using the hoist and reposition the boom before raising, or 2) lower the load using the hoist and reduce the load before raising, or 3) extend in using the boom extension (PRX only) until system resets.

---

## OVERLOAD SYSTEM TROUBLESHOOTING

CONDITION	CAUSE
OVERLOAD SYSTEM DOES NOT OPERATE.	Loss of power
	SOLUTION
	Check all wiring to insure 12 VDC is applied to terminals 3 & 86. Check terminals 2 & 30 for proper grounding.
	CAUSE
	Loose wiring
	SOLUTION
	Tighten all terminals.
	CAUSE
	Dropout Relay failure
	SOLUTION
	A. Remove plug and check resistance between terminals 85 and 86. If value is zero or infinite, replace relay. Normal coil resistance is 55 to 75 Ohms.
	B. Check for zero resistance between terminals 30 and 87a. If more than zero, replace Dropout Relay.
	CAUSE
	Pressure Switch failure
	SOLUTION
	With leads removed from terminals 6 and 7 on SSTD Relay, and crane overloaded (2400psi + cylinder pressure), resistance between leads should be less than one ohm. If not, replace pressure switch.

CONTINUED

# OVERLOAD SYSTEM TROUBLESHOOTING (CONTINUED)

CONDITION	CAUSE
OVERLOAD SYSTEM DOES NOT OPERATE.	SOLID STATE TIME DELAY RELAY FAILURE

## SOLUTION

Remove leads from terminals, 1, 6, and 7. Install a 12 VDC light bulb, 12 watt or less, between terminals 3 and 1. With metal probe make contact between terminals 6 and 7. The bulb should light within 2 seconds. Remove the probe (break contact) and the light should turn off within 2 seconds. If not, replace SSTD RELAY. **NOTE:** 12 VDC power must be applied to terminal 3, and terminal 2 must be grounded before above test procedure is valid.

## SOLID STATE TIME DELAY RELAY Test Procedure - not installed

With an ohm meter, test resistance between terminals as shown in figure A.

Between 1 and 2	1.2M ohm - 1.7M ohm resistance
Between 1 and 3:	1.2M ohm - 1.7M ohm resistance
Between 2 and 3:	5K ohm - 7K ohm resistance
Between 6 and 7:	14K ohm - 16K ohm resistance

If any of the resistances fall outside the limits shown, the relay has failed. This test should be used only if the light bulb test cannot be made.

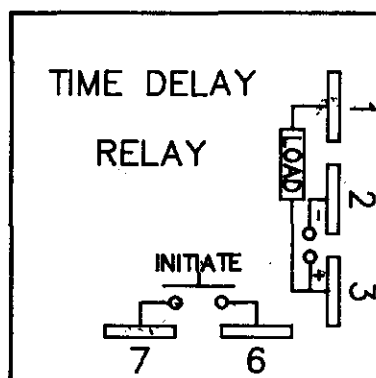
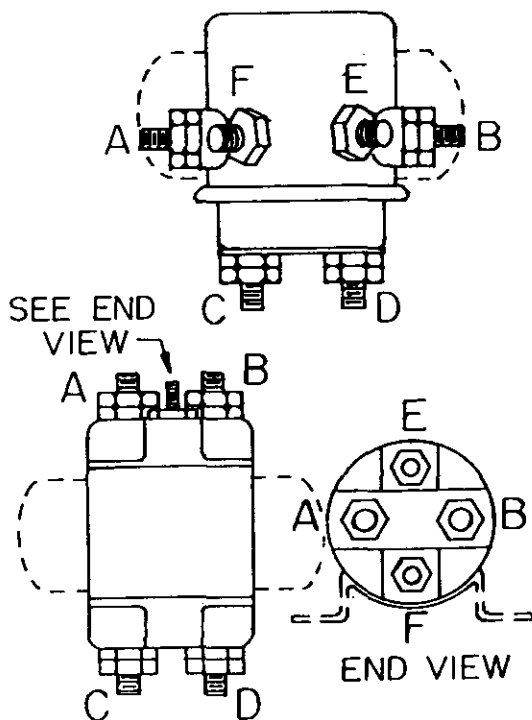


FIGURE A

## 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 an 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.



## **AUTO CRANE COMPANY**

P. O. BOX 581510 • TULSA, OKLAHOMA 74158

# Limited Warranty

Auto Crane will warranty to consumer for a period of twelve months from date of purchase that each new Auto Crane product it sells will be free under normal use and service, from defects in material and workmanship. Date of purchase will be honored as either date of purchase by distributor or his date of sale of the product as substantiated by Distributor Delivery Report.

Obligation of Auto Crane under this warranty is limited to replacement or repair of parts that appear to manufacturer after review and / or inspection to be defective. This warranty does not obligate Auto Crane to bear the cost of labor or transportation charges in connection with the replacement or repair of defective parts. Responsibility for customer's claims arising from misapplication, abuse, misuse or alteration of equipment or parts lies with the distributor or user and no warranty obligation is assumed in the circumstances by Auto Crane.

Auto Crane will in no event be liable for any consequential damages or contingent liabilities arising out of the failure of any Auto Crane product or parts to operate properly.

Auto Crane makes no warranty in respect to component accessories, same being subject to the warranties of their respective manufacturers.

If field service, at the request of buyer, is rendered and fault is found not to be with Auto Crane's product, the buyer shall pay the time and expense of the field representative. Claims for service labor or other expenses that have been incurred by the buyer without approval or authorization of Auto Crane will not be accepted.

AUTO CRANE COMPANY IS UNDER NO OBLIGATION TO EXTEND THIS WARRANTY TO ANY CUSTOMER FOR WHICH AN AUTO CRANE WARRANTY REGISTRATION CARD HAS NOT BEEN COMPLETED AND MAILED TO AUTO CRANE COMPANY WITHIN FIFTEEN (15) DAYS AFTER DATE OF PURCHASE.