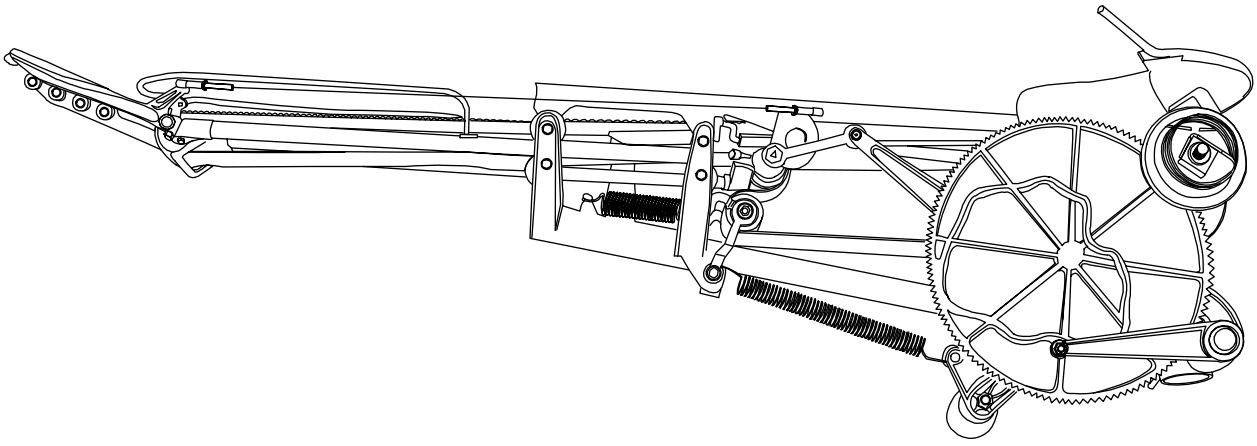
# QubicaAMF 90XL*i* Pinspotter

# PIN DISTRIBUTOR

## Pinspotter Manual Supplement



DISTRIBUTOR 1

400-088-012 Rev. B

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## QubicaAMF TECHNICAL SUPPORT

Technical Support: (International) 804.730.4000 - (Domestic) 1-866-460-7263

QubicaAMF Bowling Products, Inc.
8100 AMF Drive
Mechanicsville, Va. 23111


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# *QubicaAMF*
# 90XL*i* PIN DISTRIBUTOR Manual Rev. B
**400-088-012**

## SUMMARY OF CHANGES

| Change No. | ECR No. |
|---|---|

## List of Effective Pages

| Page | Change No. | Effective Date |
|---|---|---|
| All | Revision A | 11/20/2006 |

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# SAFETY

## General Safety Guidelines

**QubicaAMF believes strongly in its commitment to safety. Proper service and repair are important to the safety of the mechanic as well as the safe, reliable operation of the pinspotters. Please read, understand, and follow all of the recommended safety procedures presented in this manual.**

**The procedures recommended and described in this technical manual are effective methods of performing service and repair. Some of these procedures require the use of tools specially designed for this purpose.**

- **Properly trained personnel should be present whenever maintenance is being performed on a pinspotter.**
- **No unauthorized personnel should be allowed in the pit area.**
- **Keep in mind that the pinspotter performs a series of mechanical motions and electrical actions during each cycle, and that bodily injury could result should personnel enter the machine when power is on. When working on a pinspotter, it is recommended that power also be turned off on adjacent machines.**
- **Remember that safety must remain your first priority at all times.**
- **Safety goggles, ear protection, and steel-toed shoes are recommended whenever any work is being performed on a pinspotter.**
- **Wearing loose clothing or jewelry is NOT RECOMMENDED when operating or maintaining the machinery.**

## Safety Labels and Symbols

It is important to understand the safety labels and symbols used in this manual set. Three of these labels are used to show the relative risk associated with a particular activity or instruction. These labels are shown below in order of decreasing importance. Be aware that taking shortcuts or failing to heed applicable safety information can result in serious injury or damage and can render the pinspotter unsafe for you as well as for others who follow in your place.

**⚠ DANGER** **⚠ WARNING** **⚠ CAUTION**

**⚠ DANGER** indicates a hazardous situation that presents a potentially crippling or life-threatening situation.

**⚠ WARNING** indicates a potentially hazardous situation that could result in serious injury or equipment damage.

**⚠ CAUTION** indicates a potentially hazardous situation that could result in minor to moderate injury if not avoided. It may also be used to alert against potentially unsafe practices.

Other warning labels are conspicuously located on the pinspotter and are designed to warn against possible hazards. These labels, some of which are shown below, are there for your protection. Removing or disregarding these labels can result in serious injury.




– **Refer to the Service Manual before performing maintenance or repair.**

– **Caution! Severe pinching hazard - belts.**

It is also important to understand that the use of these symbols and labels is <u>not</u> all-inclusive because it is impossible to warn of all the possible hazards and consequences that could result from failure to follow these instructions. Trained and competent bowling center mechanics are able to recognize and avoid potentially hazardous situations.

## Guards and Safety Precautions

**All safety guards must be in place before operating the machine.** When maintenance is required, the following steps <u>must be followed:</u>

1. **<u>Disconnect the power plug</u>** before working on the pinspotter.
2. Remove guards only as required to perform the maintenance.
3. Once maintenance is complete, replace all guards.

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# 1.0 INTRODUCTION

## 1.1 How To Use This Manual

This manual is provided for use by trained and authorized bowling center mechanics in conjunction with the adjustment, operation, and maintenance of Distributors installed in QubicaAMF 90XL*i* pinspotters. The purpose of this manual supplement is to consolidate all of the applicable Distributor information into one easy-to-use document making finding the information you need simpler and faster when compared to having the information scattered throughout the pinspotter manual.

This manual does not cover initial installation of the Distributor, but does cover removal and reinstallation of the unit for maintenance and adjustment. Refer to the drawings at the back of this manual for detailed views of the Distributor's construction.

There are six parts to this manual supplement: Safety, Introduction, Operation & Adjustment, Lubrication, Troubleshooting, and Drawings and Parts Lists.

- The Safety section provides information on precautions that should be taken when working in and around the Distributor, including examples of safety labels and symbols used on the pinspotter to indicate potential hazards.

- The Introduction Section outlines the manual.

- The Operation and Adjustment Section gives step-by-step instructions for setting up and adjusting the Distributor, as well as information related to the operation of the unit.

- The lubrication Section provides drawings and information concerning the proper lubrication of the Distributor. Maintaining the Distributor in accordance with this section can help attain maximum component life and trouble-free operation.

- The Drawings and Parts Lists Section is designed to be an invaluable tool for identifying parts and part numbers for maintenance and repair of the unit.

This manual is intended to be a supplement to, and is included with, the QubicaAMF 90XLi Pinspotter Manual Set.

**Refer to the Safety Section of this manual before proceeding with Distributor maintenance.**

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# 2.0 DISTRIBUTOR OPERATION & ADJUSTMENT

## 2.1 Distributor Operation

The distributor transfers pins from the pin elevator wheel to the bin assembly. The distributor is driven by the back end motor through an adjustable clutch to its various positions. A large nylon cam gear (see Figure 2-1) serves a dual purpose:

- The outside of the gear contains a cam that moves the distributor left and right to the various bin locations.
- The inside of the gear has a cam that controls the telescoping action of the front portion of the distributor. Springs keep the cam followers against the cams.

When a pin reaches the top of the elevator wheel, it is deposited on the pan which orients it, bottom first, onto the distributor belt. As the pin reaches the end of the distributor, the weight of the pin causes the trip lever assembly to pivot downward depositing the pin in the bin. The pivot lever also causes the cam gear to index to the next bin position.

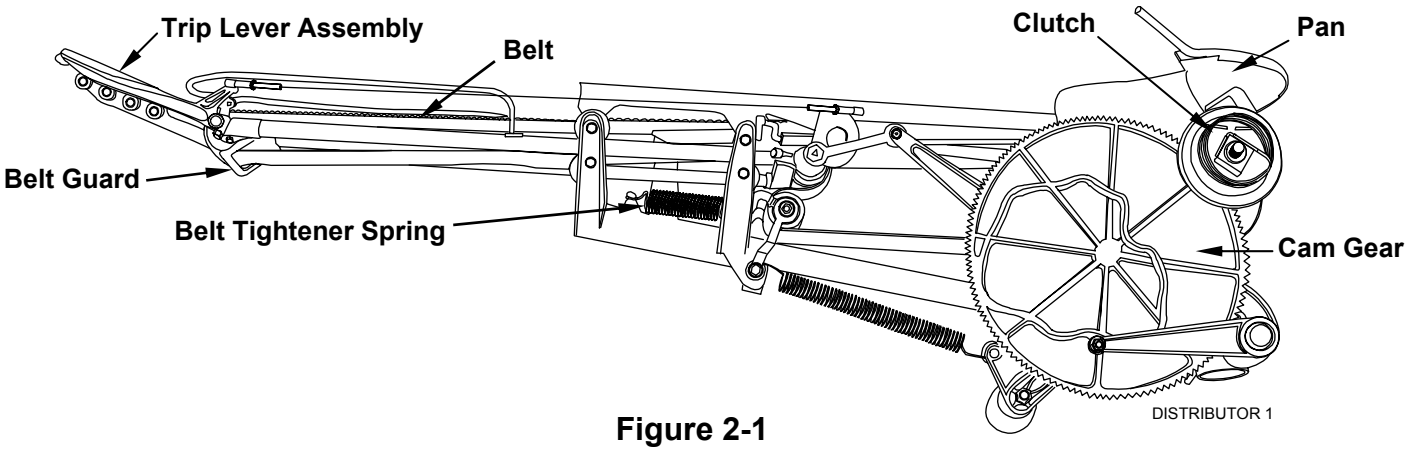



**Figure 2-1**

Proper adjustment of all distributor components is essential for trouble-free operation. Excessively worn parts must also be replaced. Additionally, related assemblies must be correctly adjusted. This includes the pin ejector, pin seating rod, and pin guide rail. The condition of the distributor drive shaft, universal joint, and drive housing as well as a smooth operating pin elevator wheel are also important to trouble-free distributor operation. Also, the inside of the pin wheel should be cleaned regularly to prevent pins from sticking in the wheel pockets.

## 2.2 Distributor Belt Replacement

1. Remove the belt tightener spring (see Figure 2-1).

2. Locate the belt lacing and remove the pin. The distributor belt can now be removed from the distributor.

3. To increase the belt tension, cut off a little from one end of the belt. Belt tightener spring length will increase one-half of the amount cut off the belt. A belt that is a little too long or short can cause pin feeding problems, and the ideal length can vary a little from machine to machine. If replacing a worn belt that has otherwise performed well, make the new belt the same length as the old one.

4. If necessary, prepare a new belt in accordance with Section 2.2.1.

5. Use the Clipper belt lacer part # 088-000-108 to install new clipper lacing on the belt in accordance with Section 2.2.2.

6. Thread the belt onto the distributor keeping one end on the belt runner about a foot behind the trip arm making sure to thread the belt through the belt guard. If necessary, use another distributor as a guide to belt layout. When threaded, bring the two ends together, interlock the lacing, and install the belt pin. The end of the pin can be bent over to keep the pin from working loose.

7. Reinstall the belt tightener spring.

8. Turn the machine on and verify proper operation. If the belt tracks off to one side, turn the machine off, disconnect the belt tightener spring from the distributor casting, and move the end of the spring that is attached to the tracking bracket one notch toward the side the belt was tacking. Reattach the other end of the spring.

9. Run the machine and make any necessary adjustments.

The new grooved distributor belt comes cut to length (116¼" ±1/4" [2953 mm ±6 mm]), is pre-skived and chamfered. All that is necessary is to add the lacing and install. It is always a good idea to verify the overall length needed and to fine-tune the length by trimming as needed before applying the lacing. The lacing will add approximately ¼ inch to the overall length.

**The QubicaAMF 90XL*i* pinspotter distributor uses the following belt components:**

- **088-001-350, Grooved Distributor Belt – precut, skived, and chamfered**
- **088-000-071, Stainless Steel Belt Lacing (2 required per belt)**
- **088-000-070, Notched Belt Lacing Pin**
- **088-000-108, Vise Lacer**

## 2.2.1 Preparing Rough Top Belts

Skiving rough top and other raised surface belting is an important step in achieving maximum benefits and life from belt splices. Clipper's Rough Top Belt Skiver (Fig. 2-2) removes raised surfaces within seconds, leaving a smooth surface for selecting and installing belt fasteners. The Rough Top Belt Skiver is a safe and effective alternative to other methods of removing raised surfaces such as grinding wheels, razor blades or knives. Being a hand held tool, this job can be done virtually anywhere.

**ROUGH TOP BELT SKIVER – QubicaAMF Part # 792-516-021**

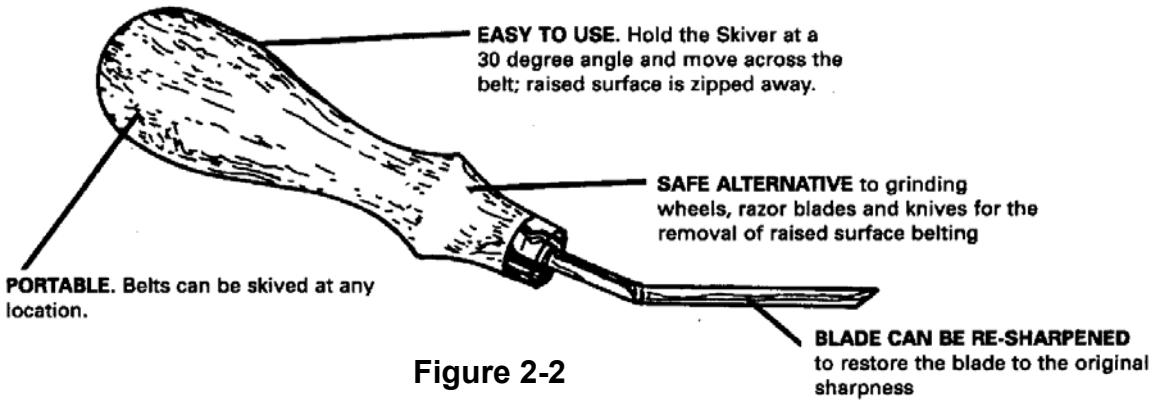



**Figure 2-2**

## Instructions:

1. Place the belt on a solid surface; hold securely with your free hand.

**⚠CAUTION** Keep hand out of the path of the skiver.

2. Hold Skiver at about a 30-degree angle to the belt (Fig. 2-3). Slowly begin cutting into the belt surface just under the raised top.

3. Maintain an even pressure and move Skiver across the belt (Fig. 2-4). If held at proper angle, it will cut through the belt easily.

4. Skive rough top back one inch from each end to allow clearance for lacer jaws during lacing operation.

**To Sharpen:** (Fig 2-5 A & B)

5. Place 1/4" fine stone or emery board in cutting channel. Draw away from tool.

6. After tool is sharp, draw stone across bottom to remove burrs.

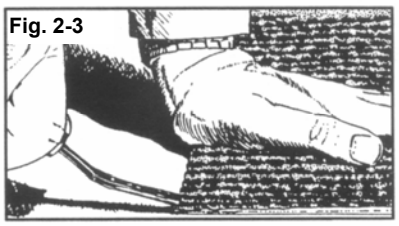


Fig. 2-3


Fig. 2-4

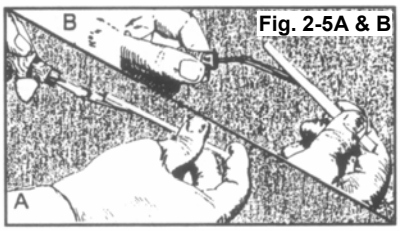


Fig. 2-5A & B

## 2.2.2 Vise Lacer Instructions

The clipper belt lacer is provided to help the center mechanic manufacture replacement distributor belts. The optimum belt length can vary slightly from distributor to distributor. If possible, match the existing belt length. The belt lacing will add approximately 1/4 inch to the overall, installed belt length. One end of the belt should have lacing containing an odd number of individual hooks while the other end should have lacing with an even number of hooks (see Figure 2-7b). To make a belt, proceed as follows:

1. Cut a section of belt material to the appropriate length (approximately 116¼ - 116½ inches). The approximate finished belt length is from 116½ 116¾ inches.

2. Place the open clipper belt lacer (Figure 2-6a) between the jaws of a vise. Remove the guide pin from the hole in the end of the lacer, if installed.

3. Place card of hooks in retainer. Insert lacer pin and remove carding paper.

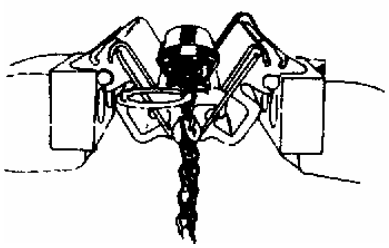


**Figure 2-6a**

4. Insert belt between hook points. For optimal splice, it is recommended to have the bottom side of belt facing the pressure plate.

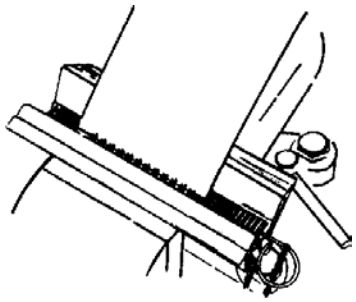


**Figure 2-6b**

5. Close vise as tightly as possible, then release.

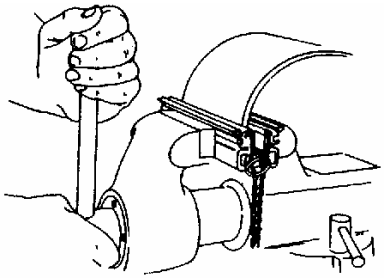


**Figure 2-6c**

6. When complete, remove the lacer pin, and lift the belt out of the lacer.

**NOTE:** If the belt is wider than the vise jaws, perform the following steps:

A. Align belt and lacer with edge of vise jaw.

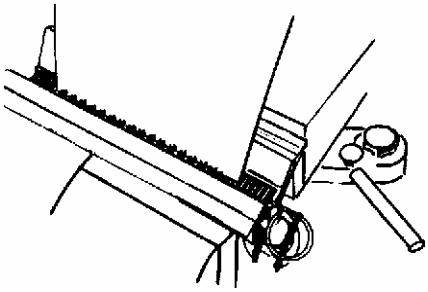


**Figure 2-6d**

B. Complete lacing step 5.

C. Slide tool so next section of the lacer is in contact with the vise jaws and complete step 5 again.

D. Finish with step 6.

## 2.2.3 Identifying A Good Splice

Often not enough emphasis is placed on the proper selection and installation of belt laces. Unfortunately, if improperly installed, the result can be devastating — shortened splice life, added costs, and increased down-time; just to mention a few. Listed below are suggestions, which if followed, will increase your splice longevity.

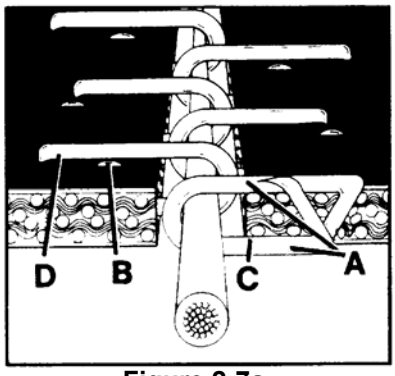



**Figure 2-7a**

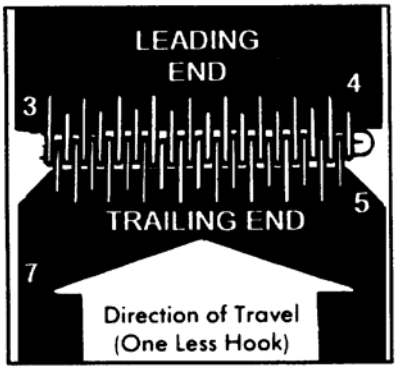



**Figure 2-7b**

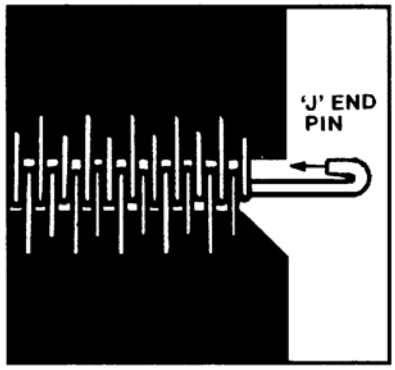



**Figure 2-7c**

**What to look for:**

1. Skive rough top back approximately one inch. Use proper size lacing based on skived belt thickness and pulley diameter. The correct lacing is provided with the distributor belt assembly.
2. Hook is properly sized and clinched when: (Fig. 2-7a)
   - **A**. Hook legs are parallel. Loop should not have a light bulb shape.
   - **B**. Hook points slightly penetrate opposite side of belt (.005 to .015 inches).
   - **C**. 1/3 - 1/2 of the wire diameter is embedded into the belt.
   - **D**. The “Knuckles” of the hook should not be higher than the legs when installed.
3. Leave 1/4 inch on each edge of belt unlaced. This guards against end hooks being pulled out.
4. Use one more hook on leading edge than on trailing edge (Fig. 2-7b).
5. Chamfer the trailing edge. (QubicaAMF’s new grooved belts are already chamfered.)
6. Laces should be uniformly embedded across the entire width of the splice.
7. Edges of the belt should line up when the laced belt ends are connected.
8. Run fingernail across loops of splice. Loops should not move.
9. **It is not necessary to bend the new notched stainless steel pins**, but they can be bent at the ends to form a ‘J’ if desired (Fig. 2-7c).

## 2.3 Distributor Removal

1. Disconnect the drive shaft and universal joint from the distributor drive unit.

2. Remove the lateral drive spring and safety link spring from the base of the distributor (see Figure 2-8).

3. Make sure that the elevator wheel is turned so that a pin bracket is not directly above the orientor pan of the distributor.

4. Lift the distributor assembly upward off the support post. Save the spacer between the support post and the distributor for reuse during distributor installation.

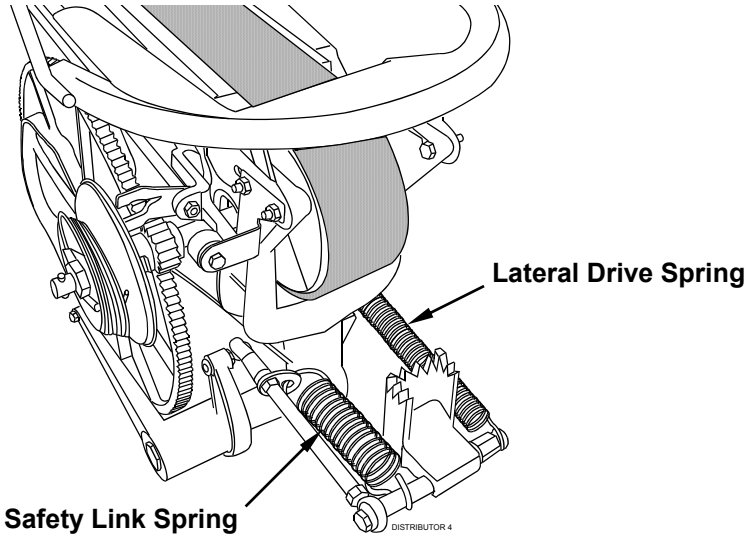



**Figure 2-8**

## 2.4 Distributor Replacement

1. To replace the distributor drive assembly, follow the removal procedure in reverse order. Ensure that only one spacer is installed between the support post and the distributor.

2. Check the timing marks for correct alignment. The distributor must be at the #1 bin position when checking or adjusting. There is a raised bump on the large nylon gear at the base of one of the valleys between the teeth, and a notched tooth on the pinion gear that must be opposite one another for correct timing. The nylon gear is flexible and can be disengaged from the pinion by applying pressure towards the distributor where the gears mesh to allow realignment of the marks.

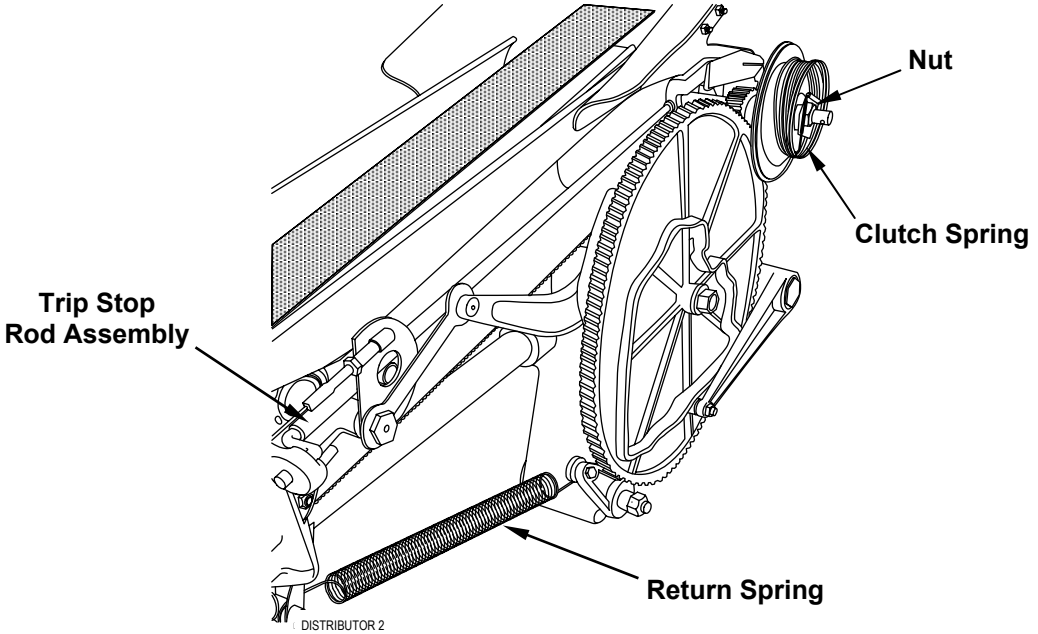



**Figure 2-9**

3. Set the clutch spring tension (Figure 2-9). With the clutch nut finger tight on the shaft, rotate the spring's adjusting clip in the counterclockwise direction until you just start to feel some spring tension. Continue rotating the clip an additional 3/4 turn, and then slide the clip onto the clutch nut. Power up the machine and feed pins.
   a. If the spring is not compressed enough, the distributor will stall between the #6 and #10 positions. Add more tension to correct this condition.
   b. If the distributor hesitates or fails to index, other than mentioned in the previous step, tension must be removed by reducing the spring tension.
   c. Adjust the spring tension one notch at a time, and use the minimum tension that produces acceptable results.

4. When the distributor is at the #1 bin position, the distance between the distributor orientor pan and the elevator wheel should be as close as possible without touching (¼ inch or less) and should not touch during pin wheel and distributor operation. If adjustment is necessary, loosen the orientor pan's mounting bolts and position accordingly.

## 2.5 Distributor Cam Operation

The cam has a timing mark along its outer edge at the base of a valley between two teeth. This bump and a notched tooth on the pinion gear must be aligned for proper timing. See the previous section for instructions on how to realign the cam and pinion gear. The outer face of the large cam is marked for the feed positions of the pins, which are attained as the outer cam follower traces the path laid out by the cam sections. **The pin feed sequence is 1, 3, 2, 4, 7, 8, 5, 6, 10, 9.**

The inside of the cam controls the telescoping of the distributor using cam sections and a cam follower in a manner similar to the operation described in the previous paragraph. During operation, the distributor is forced inward by the action of the inner cam follower, and telescopes outward because of a combination of return spring tension and a moving belt's tendency to straighten out whenever the cam follower's linkage allows it to do so.

## 2.6 Distributor Adjustments

1. Index the trip stop rod (Figure 2-9) to position the distributor at the #1 bin position.

2. Inspect the nylon cam gear and pinion gear to verify that the timing marks are aligned.

3. The distributor should be in line with the #1 and #5 bin positions. To adjust, loosen the jam nut on the hoop weldment end of the safety link rod (see Figure 2-10) and rotate the safety link rod to either increase or decrease the length of the rod to obtain the correct alignment. Tighten the jam nut.

4. Operate the machine and note the pin feed operation at the individual bin pockets. The rod length may have to be readjusted slightly to obtain accurate pin feed.

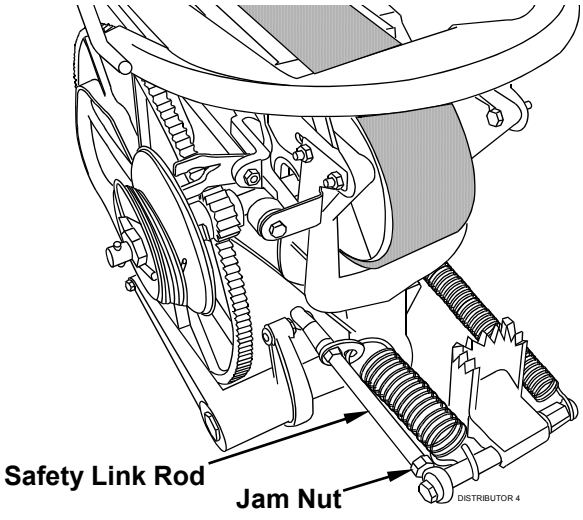



**Figure 2-10**

## 2.7 Distributor Roller Adjustments

1. Starting with the distributor at the #1 bin position and the back end drive motor turned off, telescope the distributor inward so that it is at its minimum length.

2. Position the front lower adjustable roller in its lowest position so that the distance between the roller and the carriage tube is at its maximum. (See Figure 2-11.)

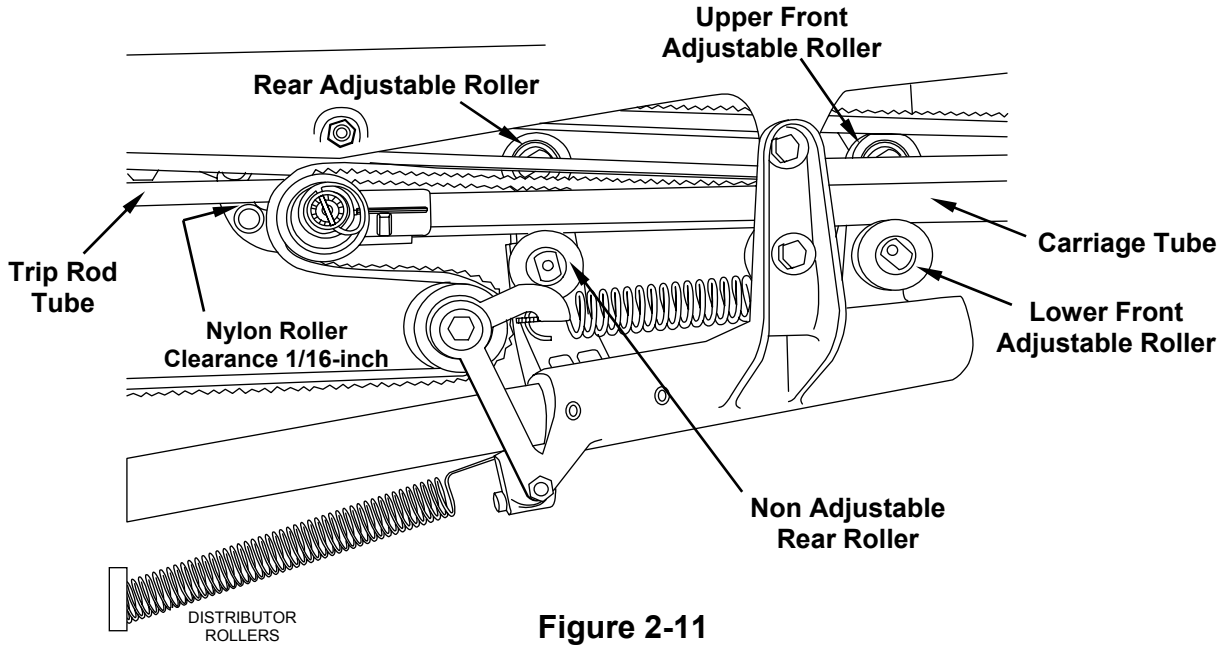



**Figure 2-11**

3. Bring the rear adjustable roller down until there is a noticeable drag against the carriage tube when you turn the roller. (Too much drag could prevent the distributor from extending.)

4. Adjust the upper front adjustable roller until the trip rod tube and carriage tubes are parallel to each other.

5. Position the front lower adjustable roller up until it just makes contact with the carriage tube.

6. Recheck the rear adjustable roller to ensure that it is not exerting too much pressure against the carriage tube. Adjust if necessary.

7. Adjust the length of the cable assembly (Figure 2-12) so that the clearance between the nylon rollers and the trip rod tube is approximately 1/16 inch (Figure 2-11) and is the same in all positions of the distributor.

8. Operate the distributor under power and observe. As necessary, fine-tune the rollers and trip cable.

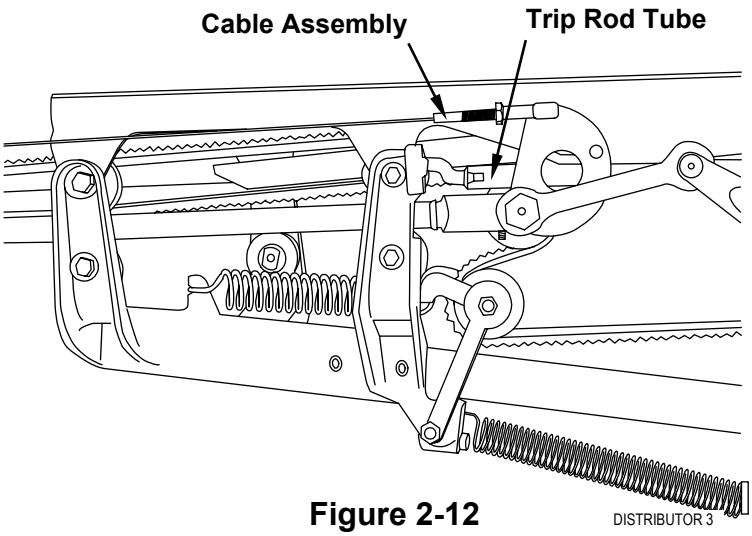



**Figure 2-12**

## 2.8 Distributor Trip Lever

1. Operate the distributor trip lever. Inspect for mechanical binds in the lever and associated linkage. Check that the rollers turn freely.

2. As a pin transfers from the distributor belt onto the trip lever, the weight of the pin causes the lever to pivot downward as the pin is deposited in the bin. Afterwards, the trip lever returns to the up position from the force of a spring located at the rear of the carriage tube (see Figure 2-13). This tripping and resetting action actuates the trip rod allowing the distributor to index to the next bin position. The spring tension is factory set for 1/2 turn. Too much spring tension would prevent the trip lever from deflecting causing the distributor to fail to index.

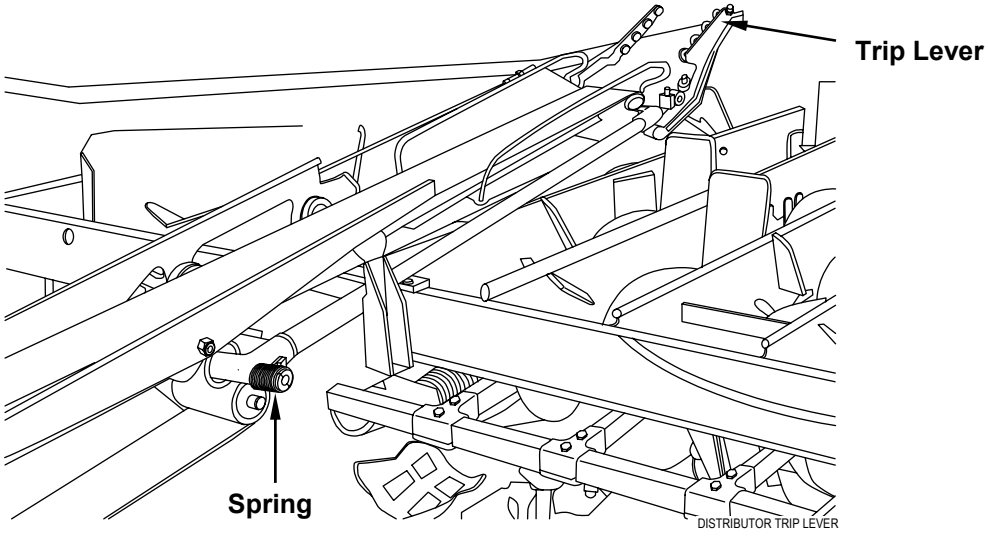



**Figure 2-13**

# 3.0 LUBRICATION INSTRUCTIONS

## 3.1 LUBRICATION

Lubrication is one of the most important items in the proper operation and maintenance of the distributor. Care must be taken to ensure that lubricants are applied correctly. Avoid excessive lubrication to minimize the possibility of transmitting lubricants to the bowler. Before lubricating exposed parts or surfaces, it is important that the old lubricant first be removed. It is also very important to clean the distributor as you lubricate.

This section of the manual shows the points of lubrication, the correct lubricants to use, and the frequency of lubrication for each part of the distributor that requires lubrication.

## 3.2 LUBRICANT SYMBOLS

**OILING:** Items indicated by a number within a square [1] require oiling. Use SAE #10 oil as the lubricant.

**GREASING:** Items indicated by a number within a circle (1) require greasing. Use a multi-purpose grease (Bearing Guard #2) as the lubricant.

### 3.3 DISTRIBUTOR DRIVE - Figure 3-1

1 Trip support casting bearings (2 places): apply 2 drops of oil every 3 months.

2 Pinion gear access holes (2 places): apply 1 drop of oil in each hole every 3 months.

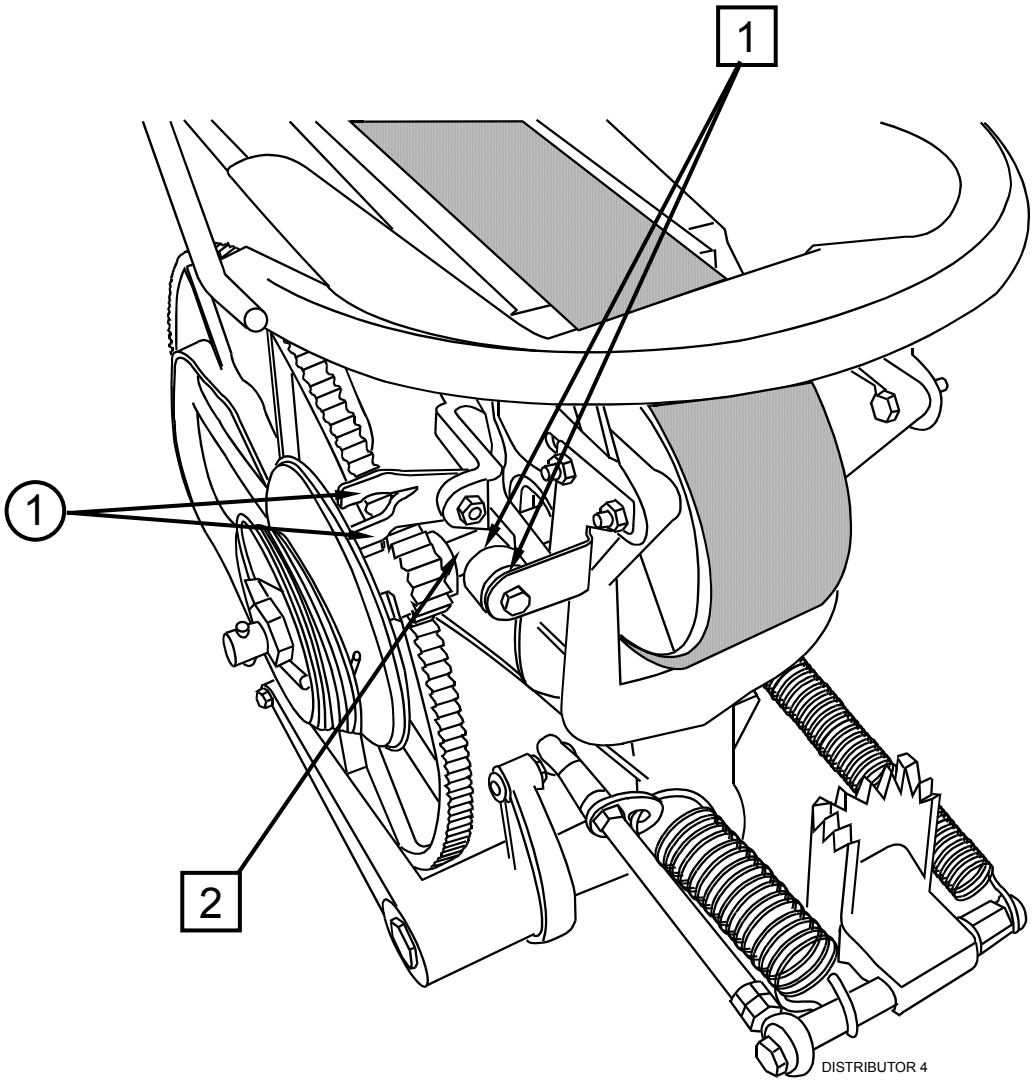



**Figure 3-1**

① Stop blades (2 places): apply grease to the back surfaces every 3 months.

## 3.4 DISTRIBUTOR - Figure 3-2

1 Trip lever rollers (8 places): apply 1 drop of oil every 3 months.

2 Trip lever bushings (2 places): apply 1 drop of oil every 3 months.

3 Carriage tubes (4 places): apply a light film of oil every 3 months along the top and bottom of each tube.

4 Distributor clutch assembly (1 place): disassemble, clean, lubricate, and adjust every 3 months.

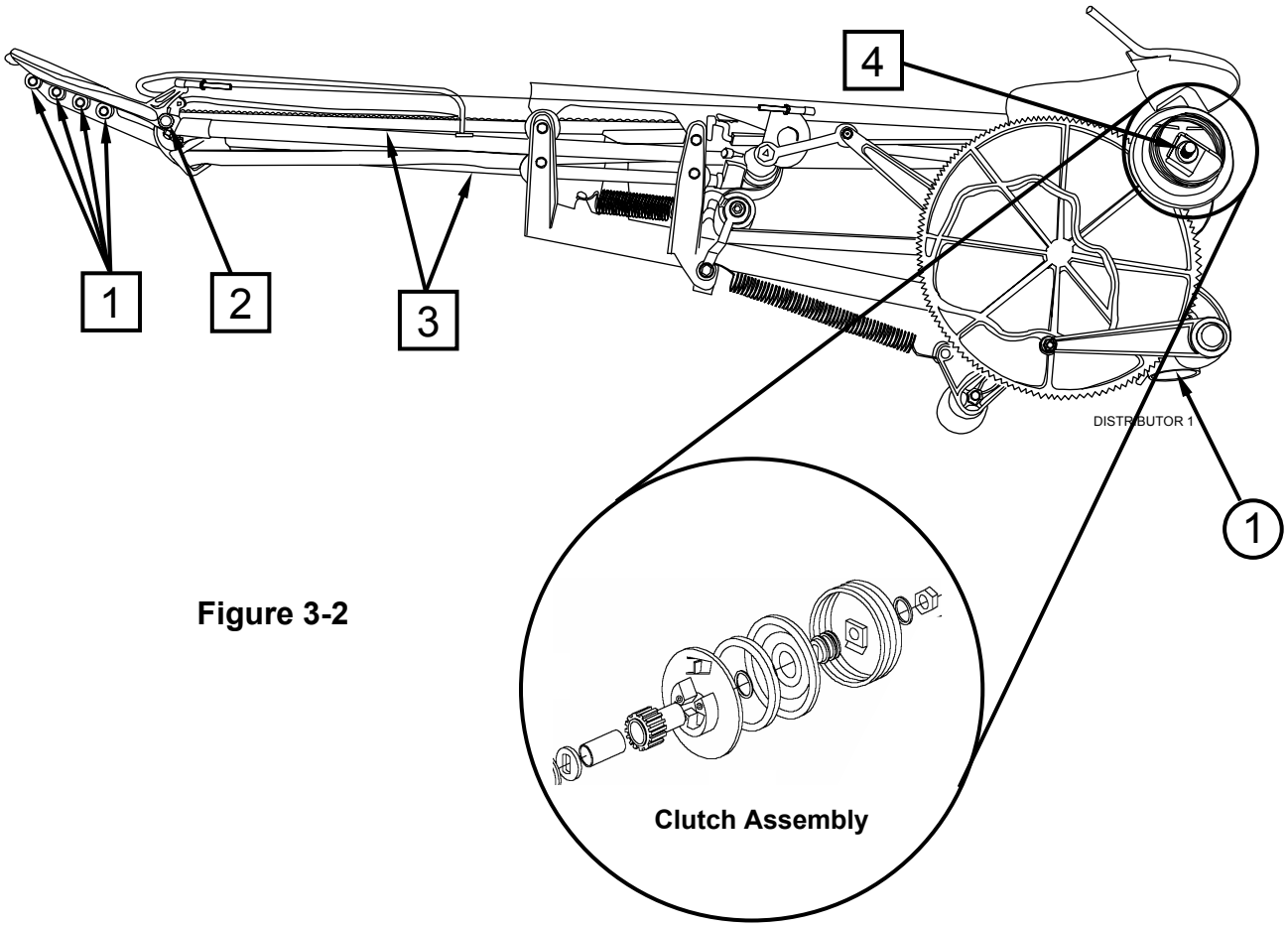



**Figure 3-2**

(1) Distributor support bearings (2 places): remove distributor and grease bearings once a year.

## 3.5 DISTRIBUTOR - Figure 3-3

1. Trip rod (front) (6 places): 1 drop of oil every 2 months.
2. Trip rocker arm (2 places): apply 1 drop of oil to each side every 3 months.
3. Roller tracking bracket (3 places): 1 drop of oil every 2 months.

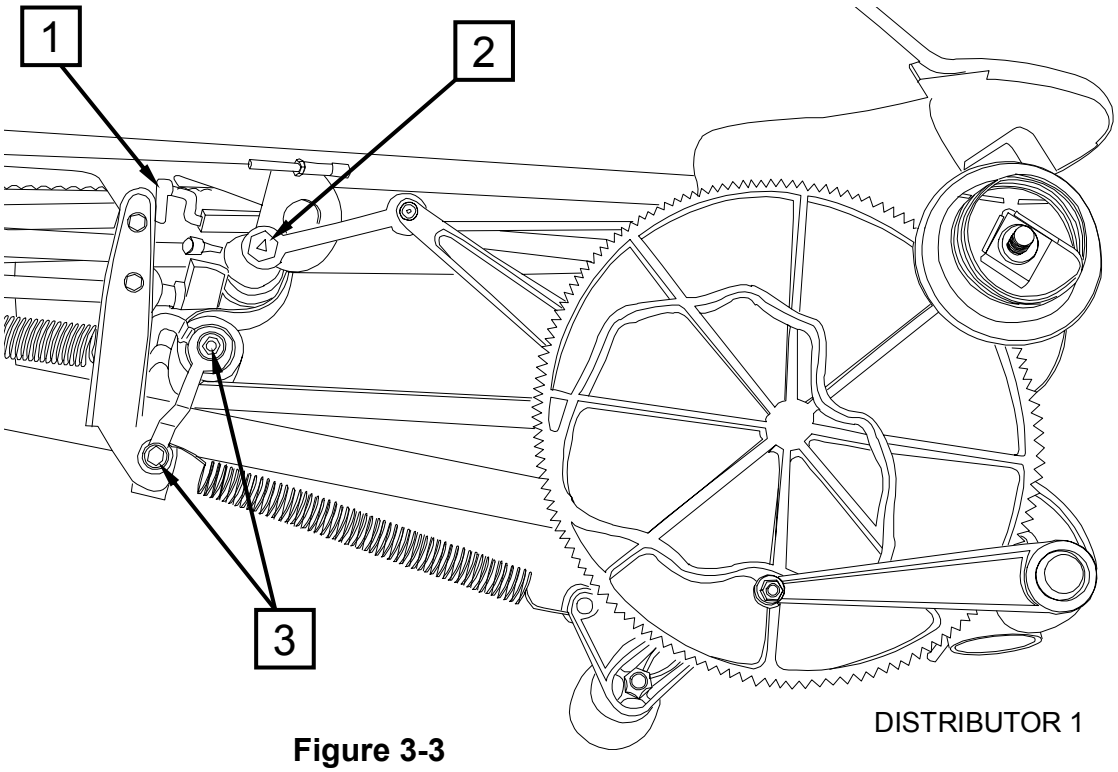
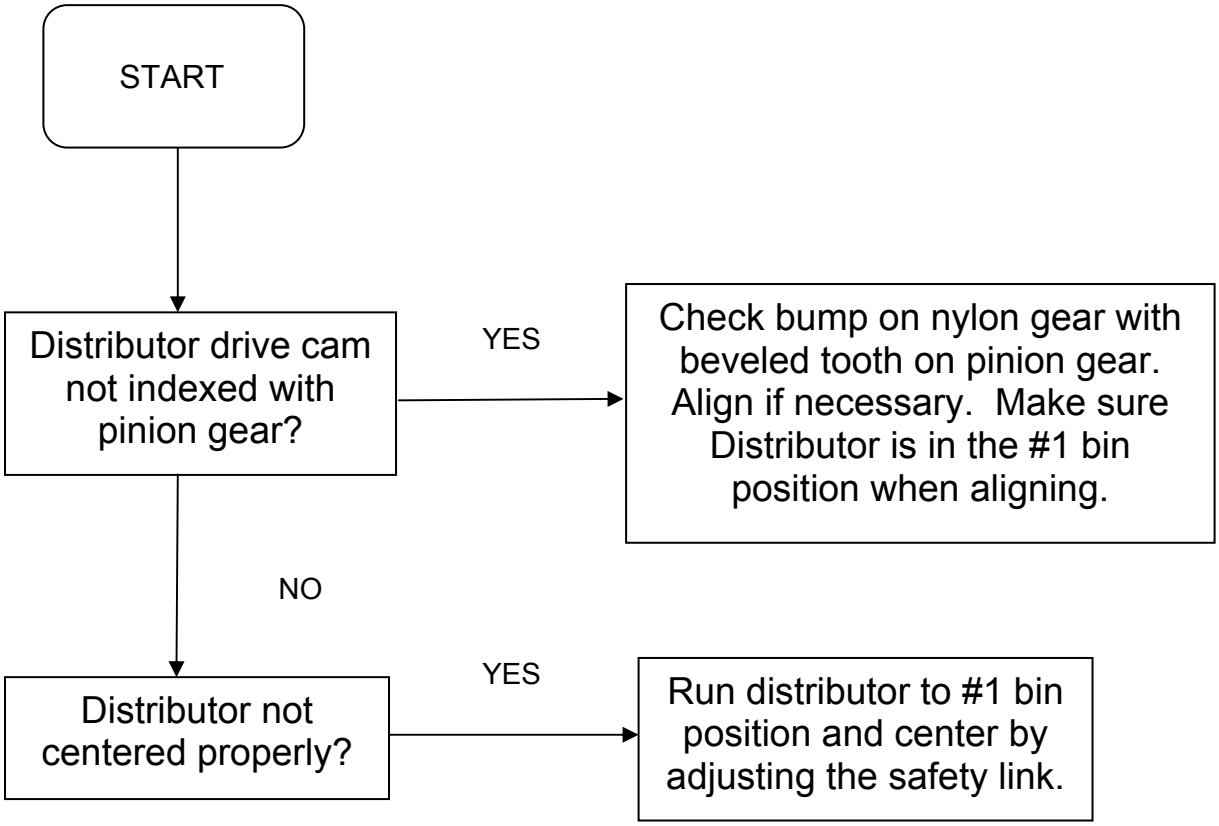


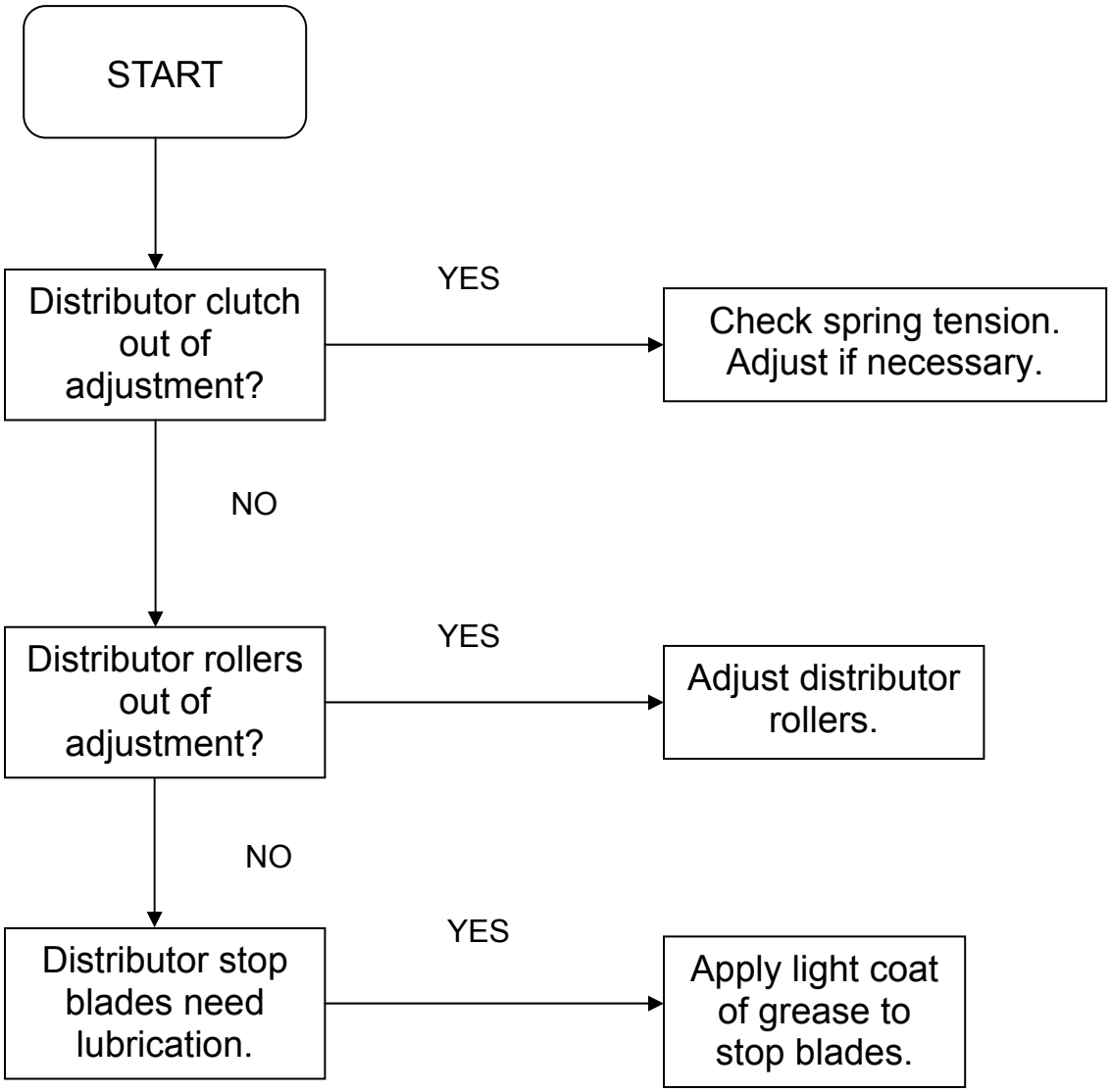

**Figure 3-3**

# 4.0 TROUBLESHOOTING

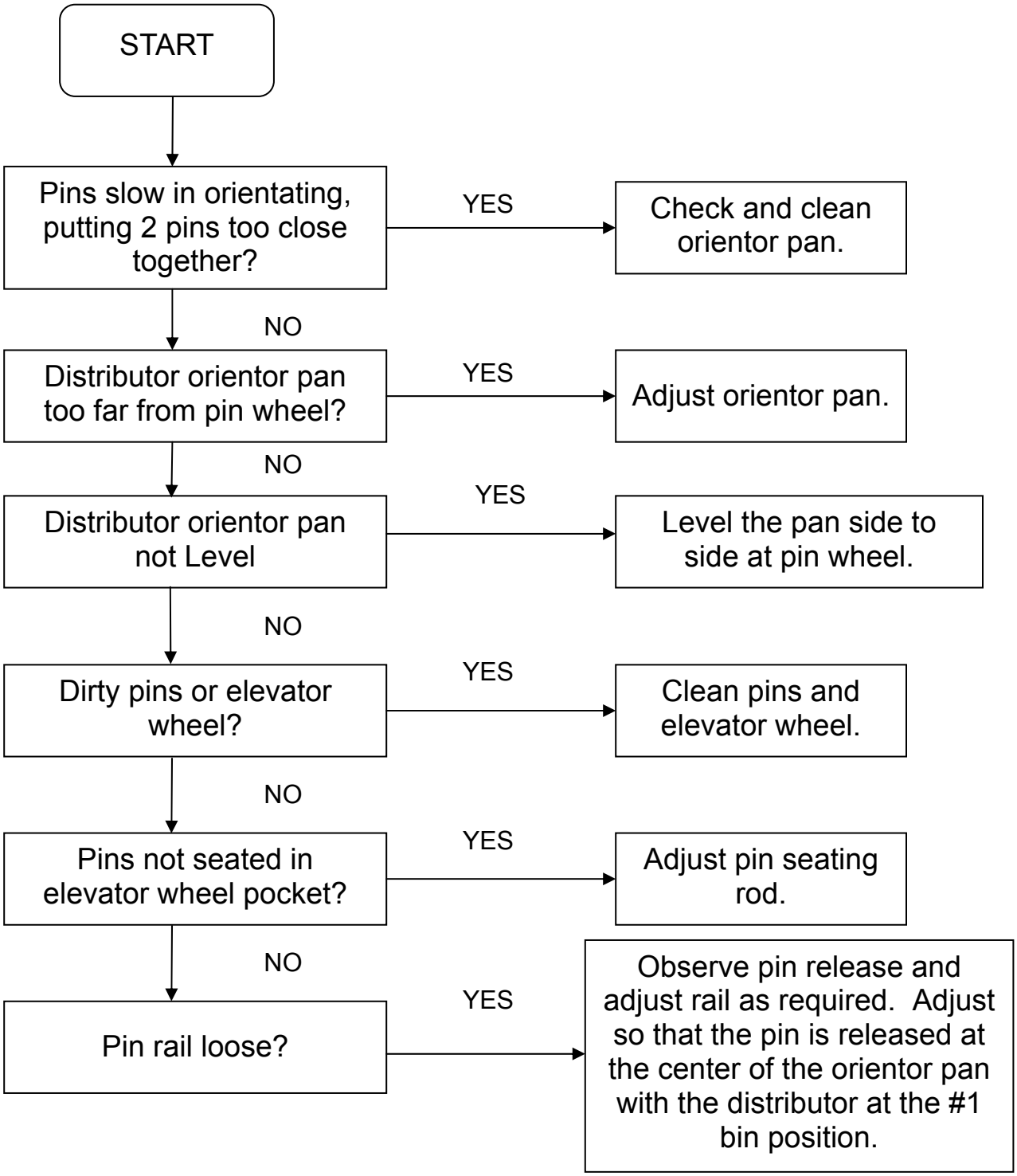
## 4.1 PROBLEM: Distributor does not feed pins at correct bin position.



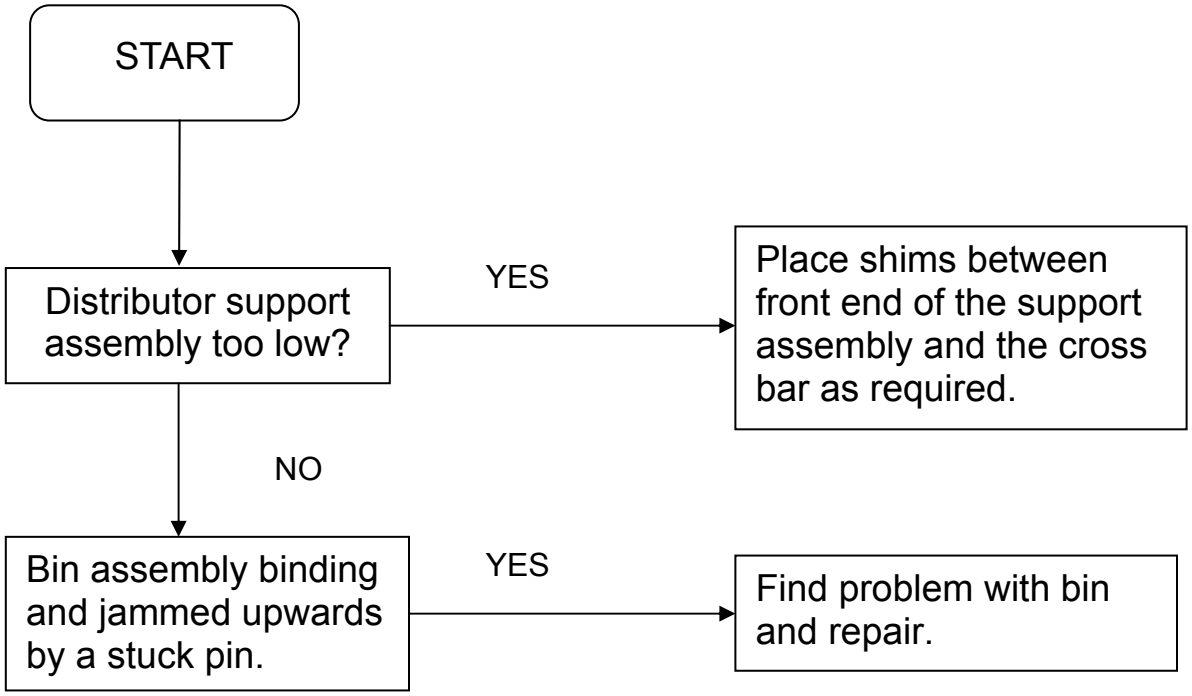
**4.2 PROBLEM: Pins feed into bin continuously at one bin position or too many pins in one bin location.**



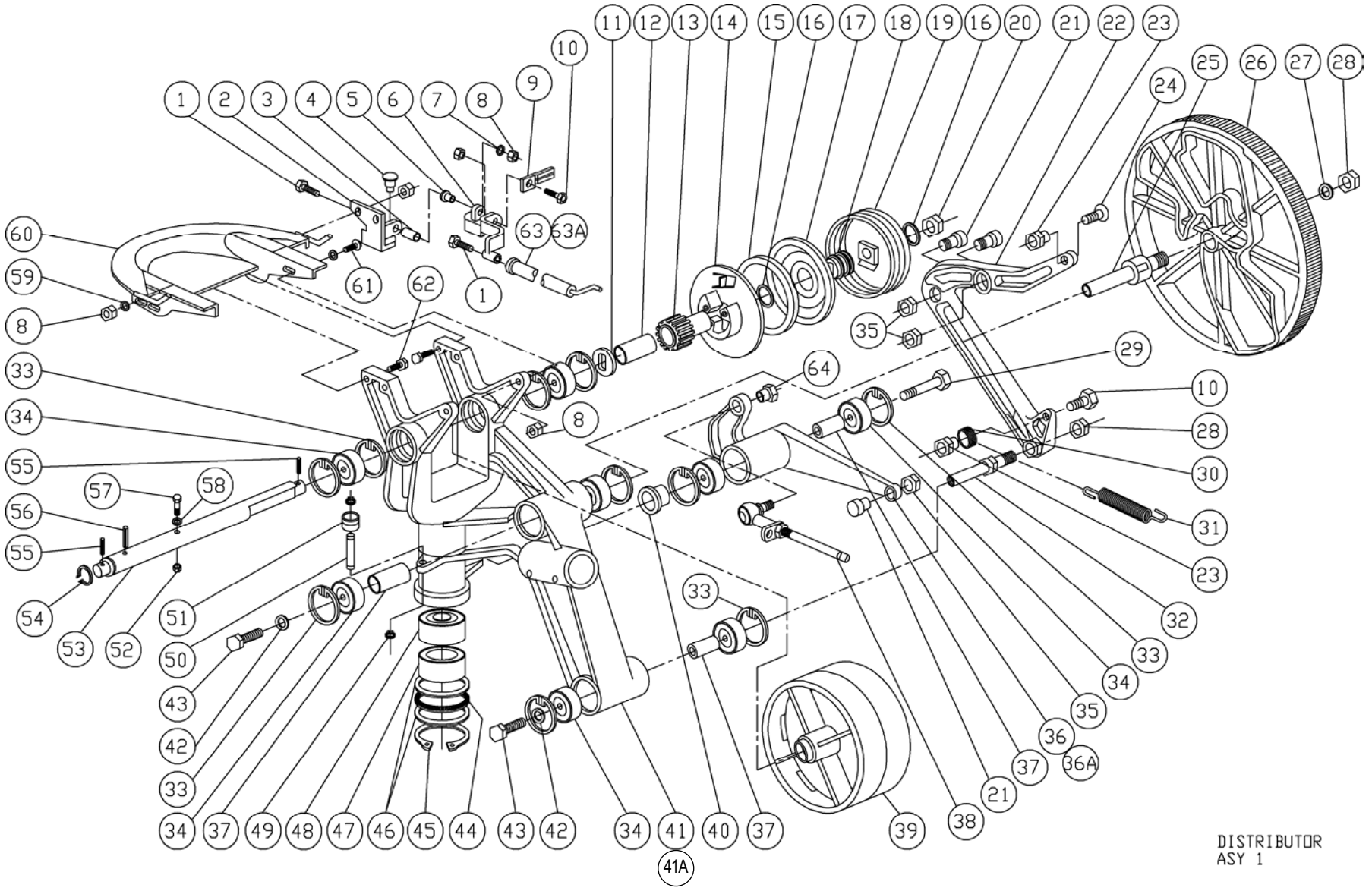
**4.3 PROBLEM: Pins delivered head end first to bin pockets.**



**4.4 PROBLEM: Distributor front end hits bin during pin feed.**



# Drawings and Parts Lists

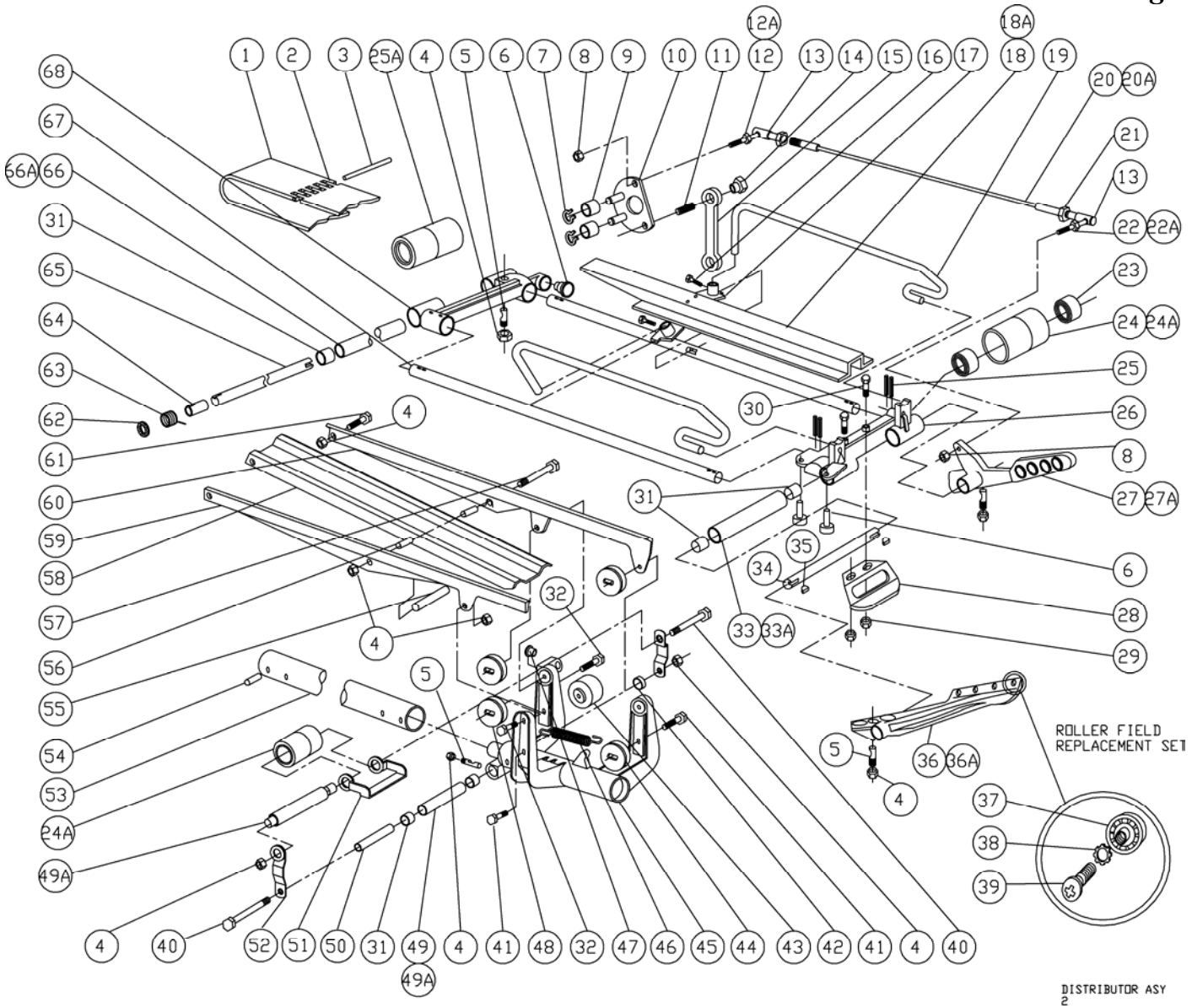

DISTRIBUTOR
ASY 1

# DISTRIBUTOR ASSEMBLY 1

## *QubicaAMF 90XLi PINSPOTTER*

| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|
| 1 | 2 | 809-849-165 | SCREW, HEX, ¼ - 20 X 1 |
| 2 | 1 | 070-006-084 | TRIP STOP SUPPORT BRACKET |
| 3 | 1 | 070-006-685 | PIVOT |
| 4 | 1 | 070-006-142 | BUMPER |
| 5 | 1 | 701-712-097 | BEARING, .375 BORE |
| 6 | 1 | 090-006-665 | TRIP SUPPORT CASTING ASSEMBLY |
| 7 | 1 | 000-026-865 | WASHER |
| 8 | 7 | 844-049-002 | NUT, STOVER LOCK, ¼ - 20 |
| 9 | 1 | 070-006-691 | STOP BLADE |
| 10 | 2 | 809-849-125 | SCREW, HEX, ¼ - 20 X ¾ |
| 11 | 1 | 070-007-376 | THRUST WASHER |
| 12 | 1 | 070-006-676 | SLEEVE |
| 13 | 1 | 070-006-686 | PINION GEAR ASSEMBLY |
| 14 | 1 | 070-006-692 | CLUTCH PLATE ASSEMBLY |
| 15 | 1 | 070-006-126 | FRICTION DISC |
| 16 | 2 | 070-006-121 | WASHER, DISTRIBUTOR CLUTCH |
| 17 | 1 | 070-006-130 | CLUTCH PLATE |
| 18 | 1 | 070-006-125 | WORM |
| 19 | 1 | 070-006-128 | SPRING ASSEMBLY |
| 20 | 1 | 835-582-002 | NUT, HEX JAM, 5/8 - 18 |
| 21 | 3 | 070-006-071 | CAM FOLLOWER |
| 22 | 1 | 070-006-051 | ARM |
| 23 | 3 | 000-022-173 | NUT, SPECIAL |
| 24 | 1 | 808-849-100 | SCREW, FLAT HD HEX SOCKET ¼ - 20 X 5/8 |
| 25 | 1 | 070-006-061 | CAM SUPPORT SHAFT |
| 26 | 1 | 070-006-149 | INDEXING CAM |
| 27 | 1 | 070-006-121 | WASHER |
| 28 | 2 | 844-073-002 | NUT, STOVER LOCK, 1/2 - 13 |
| 29 | 1 | 070-006-048 | BOLT, SPECIAL |
| 30 | 2 | 070-006-111 | SLEEVE |
| 31 | 1 | 070-006-034 | SPRING, LINEAR |
| 32 | 1 | 070-006-049 | SHAFT ARM |
| 33 | 10 | 919-000-600 | RETAINING RING |
| 34 | 8 | 000-024-679 | BEARING |
| 35 | 3 | 844-049-002 | NUT, STOVER LOCK, ¼ - 20 |

| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|
| 36 | 1 | 070-006-052 | DRIVE ARM |
| 36A | 1 | 070-007-119 | DRIVE ARM ASSY (includes: 33, 34, 36 & 37) |
| 37 | 3 | 070-006-064 | BEARING SPACER |
| 38 | 1 | 090-005-262 | ROD LINK ASSEMBLY |
| 39 | 1 | 070-006-666 | PULLEY, DISTRIBUTOR DRIVE BELT |
| 40 | 1 | 070-006-065 | RACE CLAMP |
| 41 | 1 | see 41A | CASTING |
| 41A | 1 | 070-006-136 | CASTING ASSEMBLY (incl: 33, 34, 37, 41, 44 45, 46, 47, & 48 |
| 42 | 2 | 948-761-112 | WASHER, 11/16 X 11/32 X 1/16 |
| 43 | 2 | 809-857-080 | SCREW, HEX, 5/16 – 18 X ½ |
| 44 | 1 | 070-006-074 | BEARING, NEEDLE THRUST, 1.252 X 1.917 |
| 45 | 1 | 919-004-200 | RETAINING RING |
| 46 | 2 | 070-006-073 | THRUST WASHER |
| 47 | 1 | 070-006-076 | NEEDLE BEARING, OPEN END |
| 48 | 1 | 070-006-075 | NEEDLE BEARING, CLOSED END |
| 49 | 2 | 919-005-300 | RETAINING RING |
| 50 | 1 | 070-006-082 | SPRING POST PIN |
| 51 | 1 | 000-026-081 | SPRING POST SLEEVE |
| 52 | 1 | 840-039-002 | NUT, FLEX LOCK, 10 – 24 |
| 53 | 1 | 070-006-077 | SHAFT |
| 54 | 2 | 919-005-600 | RETAINING RING |
| 55 | 2 | 913-437-140 | SPRING PIN, 3/16 X 7/8 |
| 56 | 1 | 914-037-206 | SPRING PIN, 3/16 X 1-1/4 |
| 57 | 1 | 810-239-240 | SCREW, SOCKET HEAD CAP, 10-24 X 1½ |
| 58 | 1 | 948-745-082 | WASHER, 7/32 X ½ X 1/16 |
| 59 | 6 | 948-753-102 | WASHER, 5/8 X 9/32 X 1/16 |
| 60 | 1 | 090-003-077 | ORIENTOR PAN |
| 61 | 2 | 808-549-200 | SCREW, BUTTON HEAD, 1/4 - 20 X 1-1/2 |
| 62 | 4 | 809-849-205 | SCREW, HEX, ¼ - 20 X 1¼ |
| 63 | 1 | 090-006-663 | TRIP STOP ROD ASSEMBLY |
| 63A | 1 | 090-006-668 | TRIP STOP ROD & SUPPORT CASTING ASSEMBLY (includes 5, 6, 62, & 63) |
| 64 | 1 | 070-006-069 | NUT, SPECIAL |

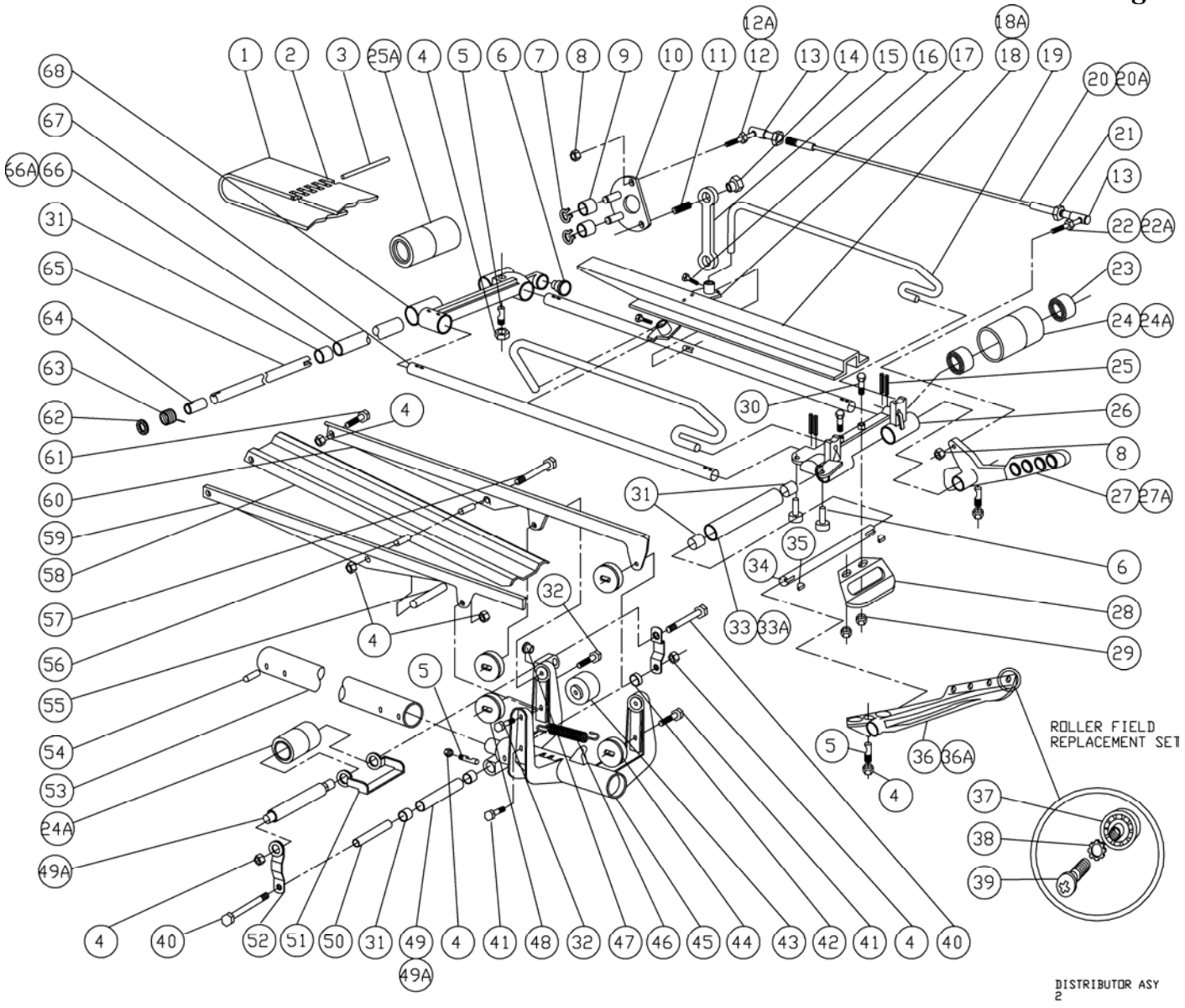

ROLLER FIELD
REPLACEMENT SET
DISTRIBUTOR ASY
2

# DISTRIBUTOR ASSEMBLY 2

## *QubicaAMF 90XLi PINSPOTTER*

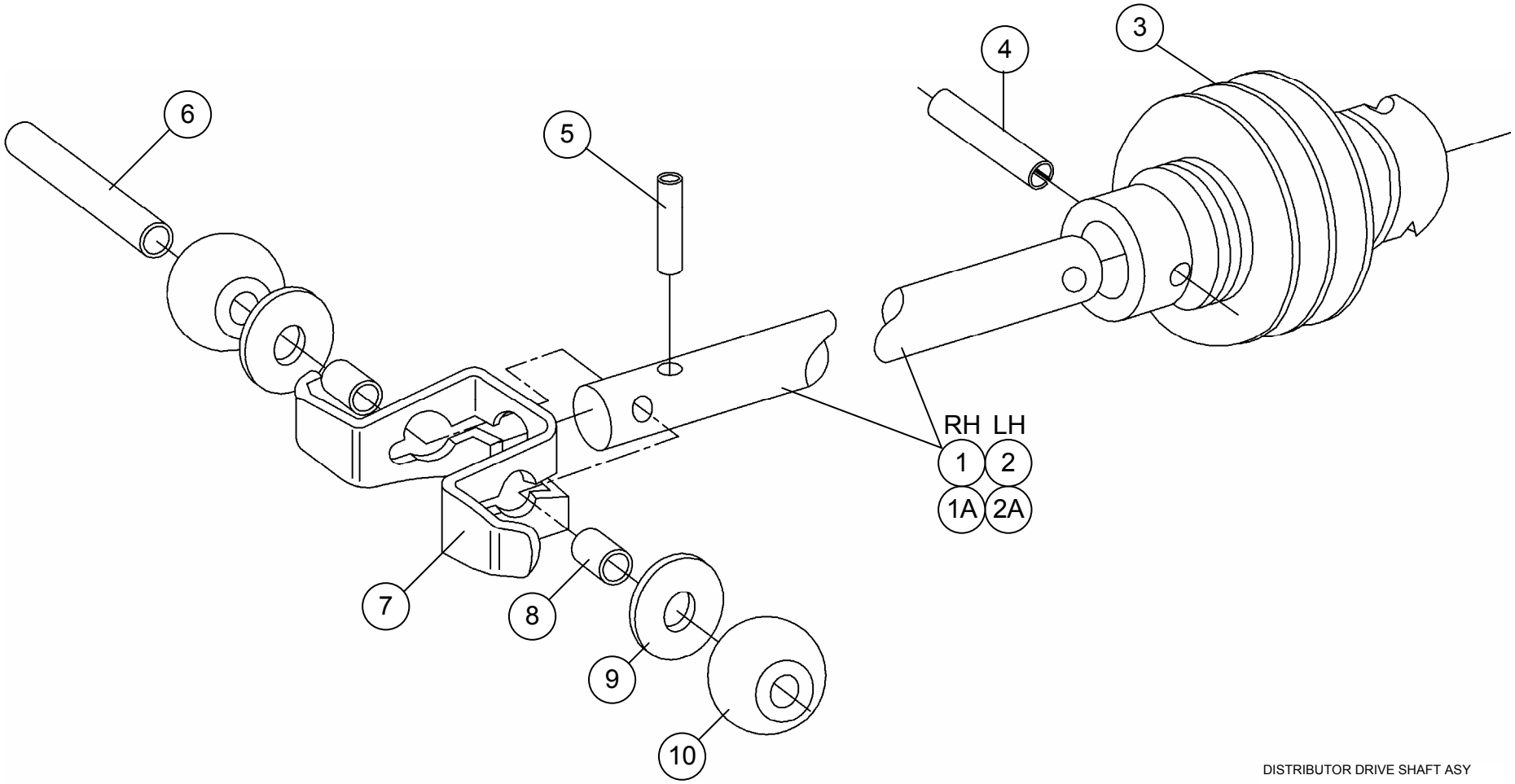
| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | see 1A | BELT |
| 1A | 1 | 070-006-757 | BELT ASSEMBLY (includes items 1, 2, & 3) |
| 2 | 2 | 070-006-036 | BELT LACING |
| 3 | 1 | 070-006-037 | BELT PIN |
| 4 | 17 | 844-049-002 | NUT, STOVER LOCK, ¼ - 20 |
| 5 | 5 | 070-006-116 | CLAMP STUD |
| 6 | 3 | 070-006-142 | BUMPER |
| 7 | 2 | 919-005-600 | RETAINING RING |
| 8 | 1 | 840-040-002 | NUT, FLEX LOCK, THIN, 10 - 32 |
| 9 | 2 | 070-001-857 | NYLON ROLLER |
| 10 | 1 | 070-006-661 | TRIP ROCKER ARM WELDMENT |
| 11 | 1 | 807-249-160 | SETSCREW, SOCKET HEAD, ¼ - 20 X 1 |
| 12 | 1 | 090-004-110 | BALL HEAD STUD |
| 12A | 1 | 070-011-172 | BALL JOINT ASSEMBLY (includes 12 & 13) |
| 13 | 2 | 090-004-112 | SHELL & CLIP ASSEMBLY |
| 14 | 1 | 000-022-173 | NUT, SPECIAL |
| 15 | 1 | 070-006-029 | CONNECTING LINK |
| 16 | 2 | 806-249-060 | SETSCREW, SQUARE HEAD, ¼-20 X 3/8 |
| 17 | 1 | 070-006-007 | SUPPORT WELDMENT |
| 18 | 1 | see 18A | BELT RUNNER, FRONT |
| 18A | 1 | 070-006-009 | BELT RUNNER SUPPORT ASSY (incl. 17 & 18) |
| 19 | 2 | 070-006-013 | PIN GUIDE |
| 20 | 1 | 070-011-171 | CABLE |
| 20A | 1 | 070-011-170 | DISTRIBUTOR CABLE ASSEMBLY, (incl. 12, 13, 19, 21, & 22) |
| 21 | 2 | 835-550-002 | NUT, HEX JAM, ¼ - 28 |
| 22 | 1 | 090-004-111 | BALL HEAD STUD |
| 22A | 1 | 070-011-173 | BALL JOINT ASSEMBLY (includes 13 & 22) |

| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|
| 23 | 6 | 000-024-679 | BEARING |
| 24 | 3 | see 24A | IDLER CARRIAGE PULLEY |
| 24A | 3 | 070-006-011 | PULLEY ASSEMBLY (includes 23 & 24) |
| 25 | 8 | 913-437-140 | SPRING PIN, .187 X 7/8 |
| 26 | 1 | 070-006-055 | CARRIAGE, FRONT |
| 27 | 1 | see 27A | TRIP ARM, R.H. |
| 27A | 1 | 070-006-015 | TRIP ARM ASSY (R.H.) (#27 & factory rollers) |
| 28 | 1 | 070-006-137 | BELT GUARD |
| 29 | 2 | 840-039-002 | NUT, FLEX LOCK, 10 - 24 |
| 30 | 2 | 810-239-160 | SCREW, SOCKET HEAD CAP, 10-24 X 1 |
| 31 | 8 | 900-106-081 | SLEEVE BEARING, .378 X 1/2 |
| 32 | 5 | 809-849-125 | SCREW, HEX, ¼ - 20 X ¾ |
| 33 | 1 | see 33A | TUBE |
| 33A | 1 | 070-006-021 | TUBE ASSEMBLY, FRONT (includes 31 & 33) |
| 34 | 1 | 070-006-014 | SHAFT |
| 35 | 2 | 907-000-100 | KEY |
| 36 | 1 | see 36A | TRIP ARM, L.H. |
| 36A | 1 | 070-006-016 | TRIP ARM ASSY (L.H.) (#36 & factory rollers) |
| 37 | 10 | 000-026-251 | ROLLER BEARING, THREADED (field replacement) |
| 38 | 10 | 957-100-002 | WASHER, EXTERNAL LOCK, # 10 |
| 39 | 10 | 813-540-082 | SCREW, TRUSS HEAD, 10 - 32 X ½ |
| 40 | 2 | 809-849-605 | SCREW, HEX, ¼ - 20 X 3¾ |
| 41 | 6 | 809-849-165 | SCREW, HEX, ¼ - 20 X 1 |
| 42 | 1 | 070-006-111 | SPRING POST SLEEVE |
| 43 | 1 | 701-849-124 | BALL BEARING, ¼ - 20 THREADED BORE |
| 44 | 3 | 070-006-118 | BEARING, GROOVED, ECCENTRIC |


ROLLER FIELD
REPLACEMENT SET
DISTRIBUTOR ASY
2

| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|
| 45 | 1 | see 45A | CARRIAGE SUPPORT CASTING |
| 45A | 1 | 070-006-688 | CARRIAGE SUPPORT ASSY (incl: 45 & 47) |
| 46 | 1 | 000-026-031 | BELT TIGHTENER SPRING |
| 47 | 1 | 701-710-098 | BEARING, UNIBALL |
| 48 | 1 | 070-006-117 | BEARING, GROOVED, CONCENTRIC |
| 49 | 2 | 070-006-107 | BELT TIGHTENER TUBE |
| 49A | 2 | 070-006-105 | TUBE ASSEMBLY (includes 31, 49 & 50) |
| 50 | 2 | 070-006-108 | SPACER |
| 51 | 1 | 070-006-106 | TRACKING BRACKET |
| 52 | 2 | 070-006-109 | ROLLER ASSEMBLY LINK |
| 53 | 1 | 070-006-120 | CARRIAGE SUPPORT TUBE |
| 54 | 4 | 913-464-280 | SPRING PIN, 3/8 X 1¾ |
| 55 | 1 | 070-006-139 | INNER SPACER |
| 56 | 2 | 070-006-140 | OUTER SPACER |
| 57 | 1 | 809-849-885 | SCREW, HEX, ¼ - 20 X 5½ |
| 58 | 1 | 070-006-042 | BELT RUNNER, REAR |
| 59 | 1 | 070-006-103 | SUPPORT GUIDE, L.H. |
| 60 | 1 | 070-006-104 | SUPPORT GUIDE R.H. |
| 61 | 2 | 808-549-200 | SCREW, BUTTON HEAD, ¼ - 20 X 1-1/4 |
| 62 | 1 | 919-006-800 | RETAINING RING |
| 63 | 1 | 070-006-035 | SPRING |
| 64 | 1 | 070-006-019 | SPRING COLLAR |
| 65 | 1 | 070-006-659 | SHAFT |
| 66 | 1 | see 66A | TUBE, MIDDLE |
| 66A | 1 | 070-006-683 | TUBE ASSEMBLY, MIDDLE (incl: 31 & 66) |
| 67 | 2 | 070-006-004 | TUBE |
| 68 | 1 | 070-006-672 | CARRIAGE CASTING, REAR |

| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|


6
5
4
3
RH LH
1 2
1A 2A
7
8
9
10
DISTRIBUTOR DRIVE SHAFT ASY

# DISTRIBUTOR DRIVE SHAFT ASSEMBLY

***QubicaAMF 90XLi PINSPOTTER***

| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 090-002-018 | SHAFT, R.H. MACHINE |
| 1A | 1 | 090-006-102 | DISTRIBUTOR DRIVE SHAFT ASSY – R.H. (Includes items 1 & 3 through 10) |
| 2 | 1 | 090-002-017 | SHAFT L.H. MACHINE |
| 2A | 1 | 090-006-103 | DISTRIBUTOR DRIVE SHAFT ASSY – L.H. (Includes items 2 through 10) |
| 3 | 1 | 070-007-586 | UNIVERSAL JOINT |
| 4 | 1 | 913-437-160 | SPRING PIN, .187 X 1 |
| 5 | 1 | 913-423-120 | SPRING PIN, .125 X ¾ |
| 6 | 1 | 908-048-480 | DOWEL PIN, 1/4 X 3 |
| 7 | 1 | 090-002-034 | BALL BEARING RETAINER |
| 8 | 2 | 722-501-070 | SPACER |
| 9 | 2 | 000-029-073 | WASHER |
| 10 | 2 | 090-002-019 | BALL |

| ITEM | QTY | PART # | DESCRIPTION |
|---|---|---|---|