Mod I Heavy-Duty Terminators 1602085-[ ]

customer manual

TOOLING ASSISTANCE CENTER
1-800-722-1111

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LOC B

SAFETY PRECAUTIONS AVOID INJURY

Safeguards are designed into this application equipment to protect operators and maintenance personnel from most hazards during equipment operation. However, certain safety precautions must be taken by the operator and repair personnel to avoid personal injury, as well as damage to the equipment. For best results, application equipment must be operated in a dry, dust-free environment. Do not operate equipment in a gaseous or hazardous environment.

Carefully observe the following safety precautions before and during operation of the equipment:

- ALWAYS wear appropriate ear protection.
- ALWAYS wear approved eye protection when operating powered equipment.
- ALWAYS keep guard(s) in place during normal operation.
- ALWAYS insert power plug into a properly grounded receptacle to avoid electrical shock.
- ALWAYS turn off the main power switch and disconnect electrical cord from the power source when performing maintenance on the equipment.
- NEVER wear loose clothing or jewelry that may catch in moving parts of the application equipment.
- NEVER insert hands into installed application equipment.
- NEVER alter, modify, or misuse the application equipment.

TOOLING ASSISTANCE CENTER

CALL TOLL FREE 1-800-722-1111 (CONTINENTAL UNITED STATES AND PUERTO RICO ONLY)

The **Tooling Assistance Center** offers a means of providing technical assistance when required.

In addition, Field Service Engineers are available to provide assistance in the adjustment or repair of the application equipment when problems arise which your maintenance personnel are unable to correct.

INFORMATION REQUIRED WHEN CONTACTING THE TOOLING ASSISTANCE CENTER

When calling the Tooling Assistance Center regarding service to equipment, it is suggested that a person familiar with the device be present with a copy of the manual (and drawings) to receive instructions. Many difficulties can be avoided in this manner.

When calling the Tooling Assistance Center, be ready with the following information:

1. Customer name
2. Customer address
3. Person to contact (name, title, telephone number, and extension)
4. Person calling
5. Equipment number (and serial number if applicable)
6. Product part number (and serial number if applicable)
7. Urgency of request
8. Nature of problem
9. Description of inoperative component(s)
10. Additional information/comments that may be helpful

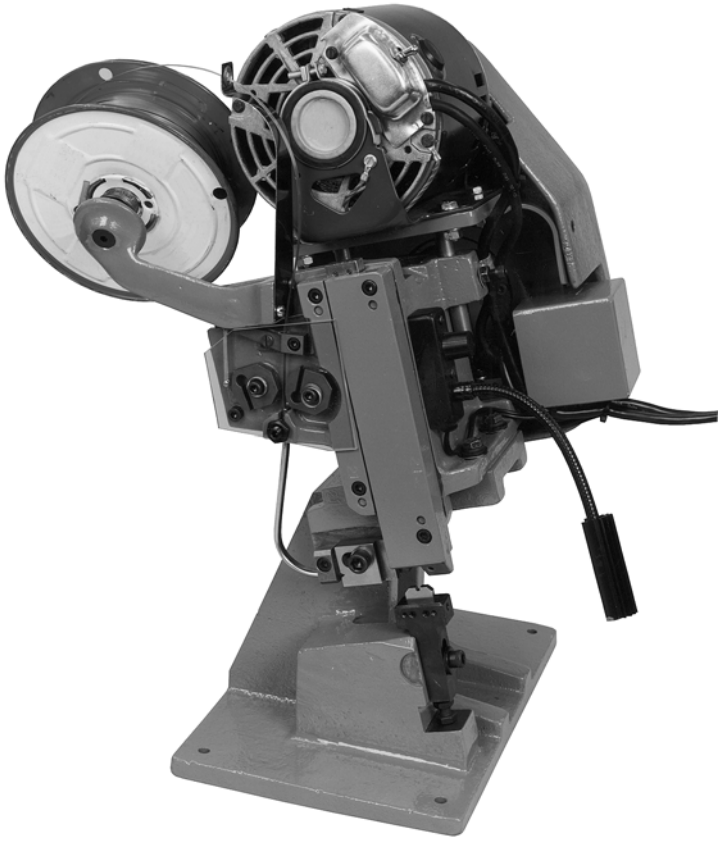


Figure 1

1. INTRODUCTION

Mod I Heavy-Duty Terminator 1602085-[ ] cuts and forms splices from a continuous strip of splice material and crimps the splices onto pre-stripped wire. See Figure 1.

The terminator augments the capabilities of a basic crimping machine by using a continuous band of splice material instead of a pre-formed, terminal strip. Using a continuous band of splice material provides advantages in cost and flexibility, since all of the splice band material is used and application changes can be made using the same material stock.

When reading this manual, pay particular attention to **DANGER, CAUTION, NOTE** statements.

DANGER

Denotes an imminent hazard which may result in moderate or severe injury.

CAUTION

Denotes a condition which may result in product or equipment damage.

NOTE

Highlights special or important information.

Do not attempt to operate the terminator until you have acquainted yourself with these instructions.

Reasons for reissue of this customer manual are provided in Section 9, REVISION SUMMARY.

NOTE

Dimensions in this manual are in metric units [with U.S. customary units in brackets].

NOTE

In addition to this manual, refer to the tool set print, shipped in the terminator documentation package. This drawing lists the application and tooling for specific customer applications.

2. DESCRIPTION

The terminator is made up of two main castings (a base and a drive casting). The castings provide for an unrestricted crimp area on two horizontal axis—left to right and front to back.

The drive head is removable from the base casting. This facilitates integration of the Mod I into an automatic system. The rear end drive consists of a flywheel, a roller clutch, a "V" belt, and a $^{1}/_{3}$ hp motor. The flywheel is supported on the main shaft by two taper roller bearings. The rotary motion of the shaft is translated into linear motion for the former bars and shoes, by two connecting links. This provides the timed relationship within the tooling package which allows the feeding, cutting forming, and crimping operations to be performed simultaneously from the reel of continuous strip. The flywheel is coupled to the shaft through a precision roller clutch. The clutch is a single revolution device. The clutch trip mechanism is activated by an electrical solenoid. The press has a single rear end drive. The crank pin and main shaft are oriented front to rear when facing the tooling side.

Tooling is shown in Figure 2. Refer to the tool set drawing provided with the terminator for the part number (according to the individual application).

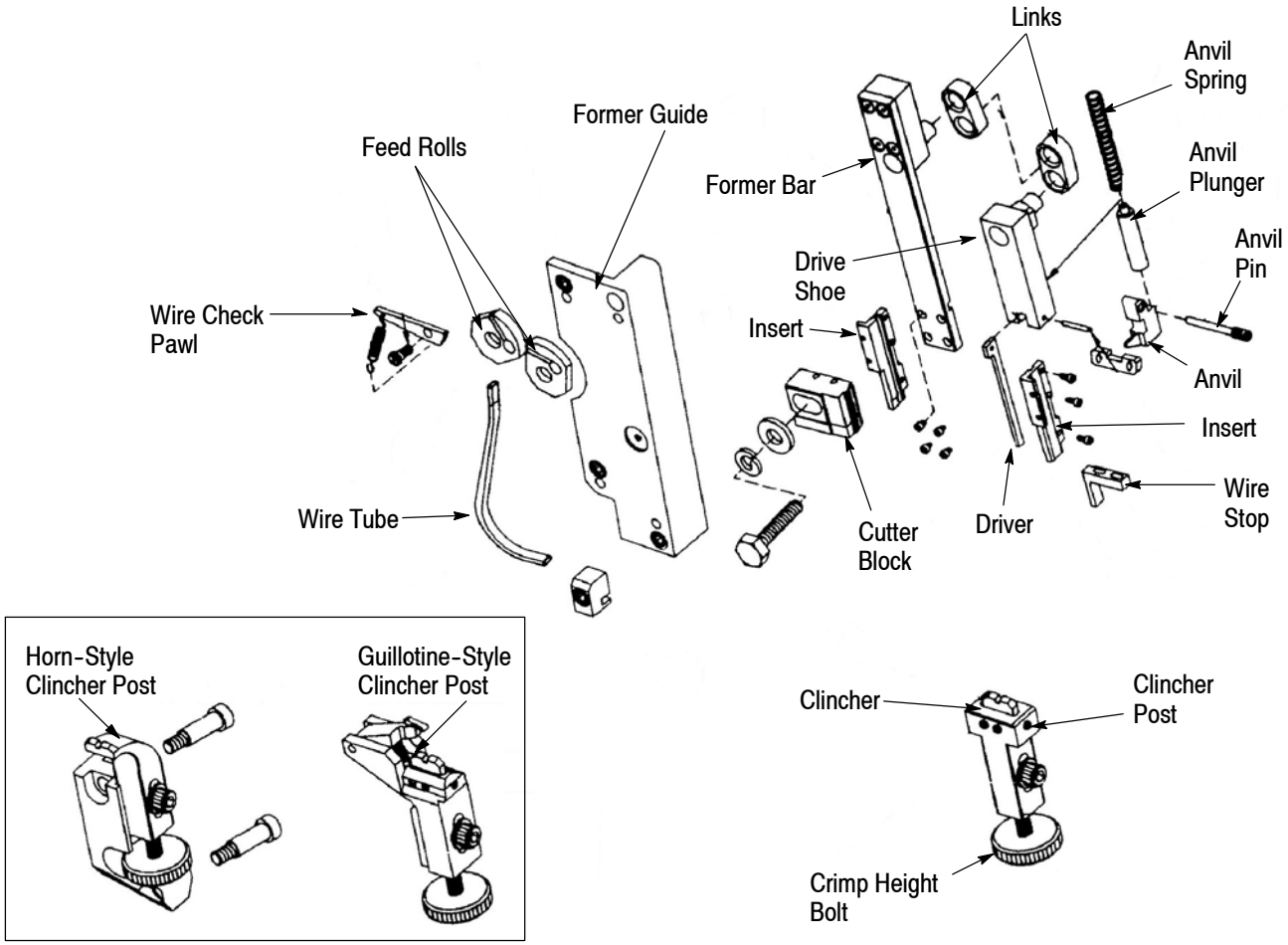


Figure 2

2.1. Clutch Assembly (See Figure 3)

The clutch employs the principle of wedging rollers between a *driver* member (the clutch race) and a *driven* member (the clutch's cam).

The race is keyed to the flywheel and the cam is keyed to the shaft. The rollers are moved into or out of driving contact by a clutch trip cam. Tension springs are used to rotate the cage from the disengaged to the wedged position. Upon engagement of the clutch, the trip lever rides on the outer contour (trip cam) of the cage until it contacts the stop dog on the trip cam. At this point, the driven shaft continues to rotate an additional 15 degrees to release the rollers from the wedge position. The clutch is prevented from double cycling by a latch lifter assembly. which uncouples the trip lever from the first 90 degrees of shaft rotation.

NOTE

The clutch should be kept clean and free from foreign materials. The clutch is shipped with a thin film of SAE 10 oil on the rollers, cage and cam. Periodic lubrication is necessary. Refer to the Section 6, PREVENTIVE MAINTENANCE.

If, for any reason, the main shaft is manually rotated (refer to Paragraph 4.3), be sure that the trip lever and the anti back-up pawl are in proper engagement. Be sure the clutch is fully disengaged.

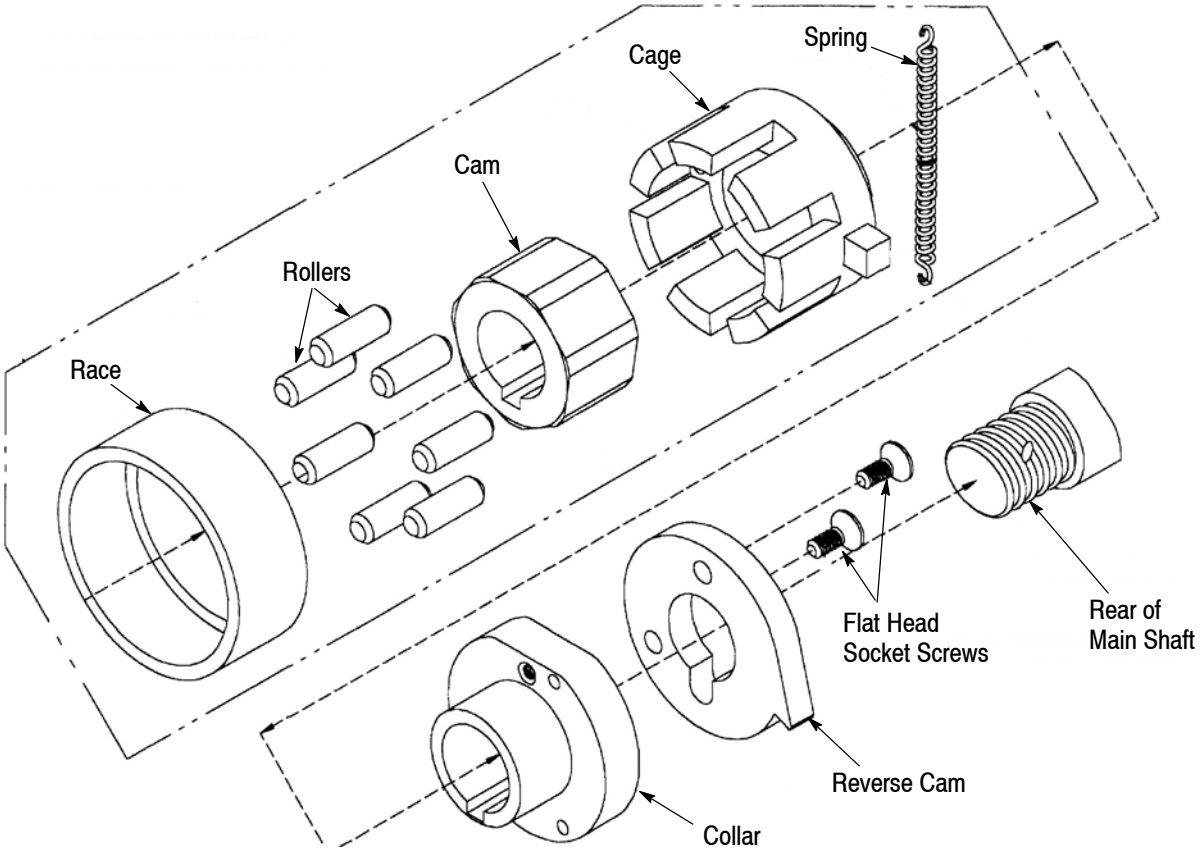


Figure 3

2.2. Clutch Solenoid and Trip Assembly (See Figure 4)

The clutch solenoid controls the clutch engagement when it is electrically activated. When the solenoid coil is de-energized (footswitch released), the trip lever is held in engagement with the trip cam's dog by means of an extension spring. The anti back-up pawl should be engaging the clutch's back stop insert. The gaps between the solenoid's plunger and body and the latch and latch lifter have been set at the factory. These gaps should be checked periodically (and adjusted if necessary).

DANGER

It is essential that the solenoid's plunger and trip lever assembly operate freely. Any hesitation in their operation could cause sluggish engagement and disengagement of the clutch. This is a potentially dangerous condition where the terminator could double cycle or trip at an unexpected time.

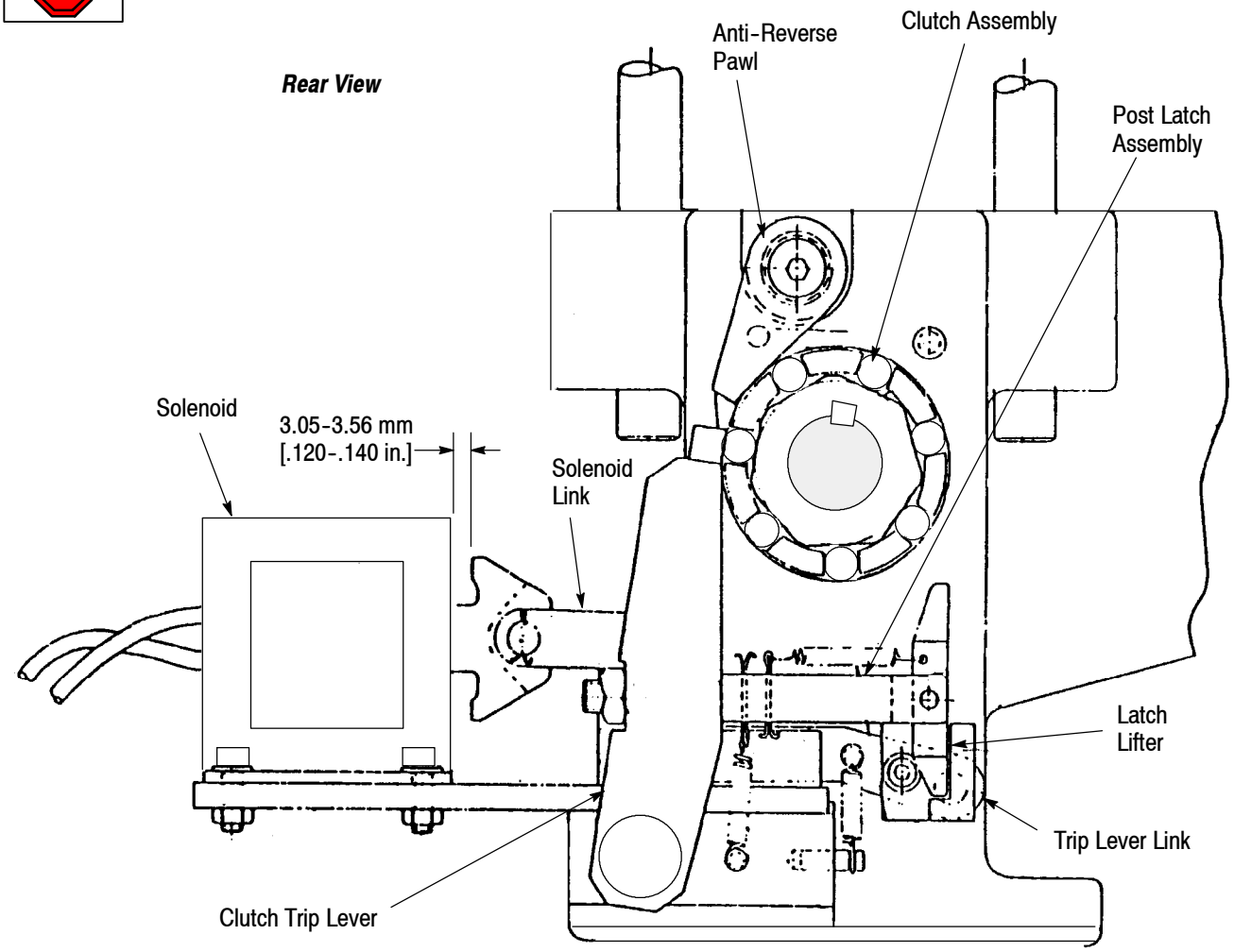


Figure 4

2.3. Specifications

Specifications for the terminator is as follows:

Electrical	115 Vac, 60 Hz, Single phase for 1602085-1, -2, and -5
	230 Vac, 50 Hz, Single Phase for 1602085-6
Motor	1/6 Hp, 1725 RPM for 1602085-1, -2, and -5
	.15 kW, 1400 RPM for 1602085-6
Height	508 mm [20 in.]
Weight	60.55 kg [125 lb]
Wire Range of Base Module	Dependant upon tooling set
Physical Environment (Temperature)	5 to 40°C [41 to 104°F]
Relative Humidity	Less than 95% (Non-condensing)
Transportation and Storage	Store in a clean, dry environment after coating all surfaces lightly with a rust preventing oil.

3. RECEIVING INSPECTION AND INSTALLATION

3.1. Receiving Inspection

The terminator is thoroughly inspected during and after assembly. A final series of inspections is made to insure the proper functioning before packaging and shipping.

However, damage may occur during shipment. Remove the terminator from the crate and carefully inspect the terminator for damage. If damage is evident, file a claim against the carrier and notify TE Connectivity immediately.

After uncrating, set the machine on a convenient (sturdy) table or bench. The terminator is stable, consequently tie-downs are un-necessary. However, tie-down slots are provided on the base.

To avoid personal injury, be sure power to the terminator is turned "off" and disconnected.

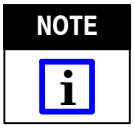
3.2. Installation

With the power disconnected, remove the terminator from the packaging and install the field kit. After the field kit (tooling is installed) the terminator will be ready for operation,

3.3. Considerations Affecting Placement of Terminator

Do not attempt to operate the terminator until you have acquainted yourself with this manual.

Place the machine on a sturdy table or bench capable of supporting the weight of approximately 60.55 kg [125 lb].



Lifting the front of the terminator to an angle not exceeding 20 degrees (without hold downs) may be convenient for some operators.

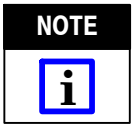
4. OPERATION

4.1. Splice Reel Loading

1. Mount the reel of splice material onto the spool arm assembly so that the material unwinds clockwise.

2. Attach the three-finger spring and shaft collar to retain the spring. Mount the spool so that it is under slight spring pressure (just enough pressure to prevent unreeling). Too much spring pressure or drag on the spool arm can cause underfeeding.

4.2. Splice Threading and Feeding



Feed rollers must be in the neutral position to enable wire to pass through.

1. Insert an (clean cut) end of splice material through the hole in the wire guide spring.

2. Thread the splice material through the wire check assembly after releasing wire check pawl. Push the pawl upward to release it.

3. Pass splice material between feed rolls into wire tube opening.

4. Push the splice material through the wire tube until it enters the slot in cutter block. Continue feeding the material until it stops against the insert.

4.3. Hand Cycling

To avoid personal injury, be sure to disconnect terminator power prior to hand cycling the terminator.

The terminator should be hand cycled when:

- checking for proper feed of splice material;
- checking for a clean cut of the splice material;
- visually inspecting proper forming of the spice; and
- checking the free turnover of the terminator.

To hand cycle the terminator, proceed as follows.

1. Unplug the terminator and remove the flywheel cover. The flywheel cover is secured by several bolts.
2. Release the clutch by reaching above and behind the flywheel and pushing the trip lever to the left. This will engage the clutch and the flywheel will now turn the main shaft.
3. Rotate the flywheel *away* from the solenoid assembly (counterclockwise when facing the rear of the terminator):
   a. Observe the splice material feeding under the inserts until it contacts the wire stop.
   b. Note an increase in the torque required to turn the flywheel during the cutting and forming process ($^1/_2$-inch holes are provided in the flywheel for leverage bars).
   c. Note a decrease in torque during the transfer of the “U” shape into the clincher.
   d. Note another increase in torque as the crimp is fully compressed.
   e. An audible “click” will indicate the end of the cycle. In addition to the audible “click,” the flywheel will begin to turn freely.

NOTE

In order to fully disengage the clutch, it is necessary to rotate the main shaft. Rotate the lock nut at the end of the shaft a few degrees in the same direction (counterclockwise) which you were rotating the full flywheel until the anti back-up pawl is in full engagement with the back stop insert. Rotate the nut until there is an audible “click”. NOTE THAT THIS SHOULD REQUIRE HAND FORCE ONLY.

   f. Remove the crimped splice wire connector from the clincher.

CAUTION

To avoid damage to tooling, never cycle the terminator manually or under power with a formed connector in the clincher.

4.4. Power-Cycling (Production Operation)

1. Connect the power. Plug the terminator into the proper electrical outlet.

NOTE

Check the motor, solenoid, and relay rating if using the machine outside the continental U.S.

2. Verify that all guards are in place and the clutch is disengaged.
3. Toggle the power switch to the “on” position.
4. Insert the parts or wires to be joined into the clincher die. When used, ALWAYS place place magnet wire OVER the bare lead wire in the clincher.

DANGER

To avoid personal injury, be sure to keep fingers out of the immediate clinching area.

5. Step on the footswitch to cycle the terminator. The switch can be held momentarily or continuously. DO NOT double-cycle the footswitch with the clincher/post installed.
6. Remove the crimped splice wire connector from the clincher.

CAUTION

Continuously cycling the machine without splice material will prematurely wear out the clincher and the driver.

5. TROUBLESHOOTING

When all the settings are correct, the splices should appear as shown:  . Continue production operation.

5.1. Improper Splices

Improper splices occur occasionally and can be easily corrected. Refer to Figure 5 for examples of improper and proper appearance.

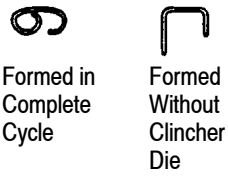
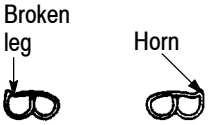
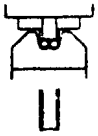
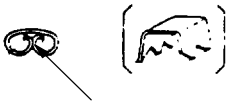
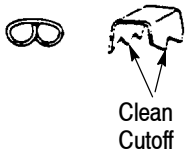
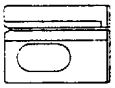
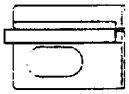
IMPROPER APPEARANCE OF SPLICE	CAUSE	SOLUTION	PROPER APPEARANCE OF SPLICE
	Underfeeding of the: Feed Rollers Spool Spring Wire Check	Adjust feed rollers. Loosen spring pressure or drag on product spool. Make sure product is located in groove of wire check assembly and held in place by the check pawl under spring tension.	
	Clincher die not aligned with driver blade Chipped or broken driver blade tip	Adjust clincher centrality. Replace driver.	
	Improper loading or holding of workpiece into clinching die. Splice cannot surround wire.	Be sure proper tooling is used or retrain operator.	
	Too much in clincher die.	Check recommendation. You are exceeding the capability of the tooling.	
	Improper shearing of product. Cutter block is not properly aligned with matching insert of former assembly.	Hand cycle until tooling is in the lowest position. Then loosen bolt holding cutter block. Remove block and clean matching surface on insert. Now (with finger pressure) push cutter block against former assembly and secure in place.	
Excessive brass dust or chips falling from tooling and accumulating on the clincher die.	Worn cutting edges on cutter block or insert.	Replace cutter block or insert.	—
Non-symmetric splice or splice pops out.	Spring steel shim in cutter block not in place. 	Remove cutter blade and place shim in groove. 	

Figure 5

5.2. Improper Feed

Figure 6 contains examples of improper feed.

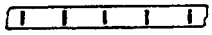
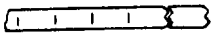
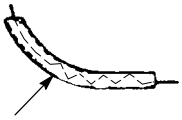
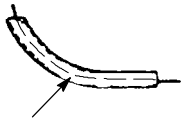
IMPROPER FEED			
IMPROPER APPEARANCE OF SPLICE	**CAUSE**	**SOLUTION**	**PROPER APPEARANCE OF SPLICE**
	No feed due to a kink or bend in the product strip.	Remove the product strip, cut off the defective section, reload the strip, and adjust the feed rollers.	
	Overfeeding (skid marks on product strip).	Adjust the feed roller until it is overfeeding slightly.	 A 0.51-mm [.02-in.] overfeed is preferable in many cases.
 Wire Tube	Product strip is backing up in the wire tube.	Adjust the feed roller so that it is no longer causing the strip to back up.	 Wire Tube

Figure 6

5.3. Loose Connection

Figure 7 contains an example of a loose connection.

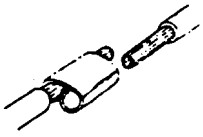
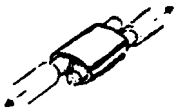
LOOSE CONNECTION			
IMPROPER APPEARANCE OF SPLICE	**CAUSE**	**SOLUTION**	**PROPER APPEARANCE OF SPLICE**
	Too little die compression may result in poor electrical conductivity and tensile strength. The clincher is mal-adjusted. Wrong tooling size is being used for the application or wires are too small. Improper thickness of product band.	Adjust the clincher by turning the calibration screw clockwise. Contact the Tooling Assistance Center for the tooling recommendation. Contact the Tooling Assistance Center for product recommendation.	

Figure 7

5.4. Lead Wire or Component Damage

Figure 8 contains an example of a lead wire damage.

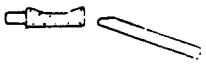
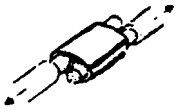
LEAD WIRE OR COMPONENT DAMAGE			
IMPROPER APPEARANCE OF SPLICE	**CAUSE**	**SOLUTION**	**PROPER APPEARANCE OF SPLICE**
	Clincher is adjusted to tightly. Improper thickness of product strip. Excessive or improper operator handling.	Adjust the clincher by turning the calibration screw counterclockwise. Contact the Tooling Assistance Center for the recommended product strip. Retrain the operator.	

Figure 8

5.5. Splice Popping Out of Terminator

Figure 9 contains an example of a splice popping out of a terminator.

SPLICE POPPING OUT OF TERMINATOR			
IMPROPER APPEARANCE OF SPLICE	**CAUSE**	**SOLUTION**	**PROPER APPEARANCE OF SPLICE**
	Anvil spring is too weak. Splice band too brittle. Anvil too narrow. In some instances, the splice will pop ONLY when cycled manually.	Remove at least 1.83 m [6 ft] of splice material, or replace entire roll. Contact the Tooling Assistance Center for the product strip recommendations and specifications. Replace the anvil assembly if necessary.	

Figure 9

5.6. Terminator Jam Failure

Refer to Figure 10 for cause and solution of a terminator that is jammed or will not turn over.

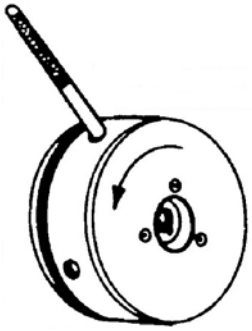
TERMINATOR JAM FAILURE	
CAUSE	**SOLUTION**
A formed splice was left in the clincher die and a new splice was forced on top.	Turn Power Off Immediately!  Insert actuating lever into flywheel and release the jam by rotating the flywheel counterclockwise. Hand-cycle the terminator and remove the damaged connector and wires, cleaning the clincher die.
Too much in clincher die.	Perform the same procedure as described above. Check with the Tooling Assistance Center for the recommendations and specifications.
Frozen flywheel bushing.	Remove, clean, oil, and replace flywheel.
Frozen former and driver link.	Remove former guide plate and tooling, dry out links. Replace.
Main shaft misaligned. Former and driver links bang against the tooling or casting.	Return terminator to TE.

Figure 10

5.7. Double, No, or Occasional Tripping

Figure 11 contains troubleshooting information concerning terminator tripping.

PROBLEM	CAUSE	SOLUTION
Double tripping	- Stuck solenoid plunger. - Defective foot switch.	- Replace coil assembly in clutch. - Replace foot switch.
No or occasional tripping	- Defective clutch solenoid assembly. - Defective foot switch.	- Replace clutch solenoid assembly. - Replace foot switch.

Figure 11

5.8. Driver Blade Damage

Figure 12 contains driver blade damage and the proper appearance.

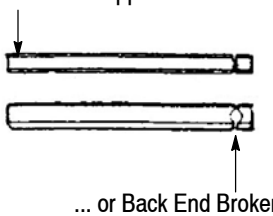
DRIVER BLADE			
IMPROPER APPEARANCE	CAUSE	SOLUTION	PROPER APPEARANCE
Front End Chipped  ... or Back End Broken	Too much compression or excessively worn driver. Improper tooling alignment. Operator negligence.	Contact the Tooling Assistance Center. Adjust tooling alignment. Retrain the operator.	

Figure 12

5.9. Clincher Problems

Figure 13 contains troubleshooting information concerning a sticking clincher.

PROBLEM	CAUSE	SOLUTION
Sticking clincher	Improper tooling adjustment.	Refer to appropriate tooling adjustments.
	Splice material and clincher require spraying.	Apply appropriate mold release agent.
	Worn or chipped clincher die.	Replace clincher die.
	Misaligned clincher.	Refer to appropriate tooling adjustments.
	Incorrect temper of splice material.	Remove at least 1.83 m [6 ft] of splice material, or replace the entire roll.

Figure 13

Clincher Centrality

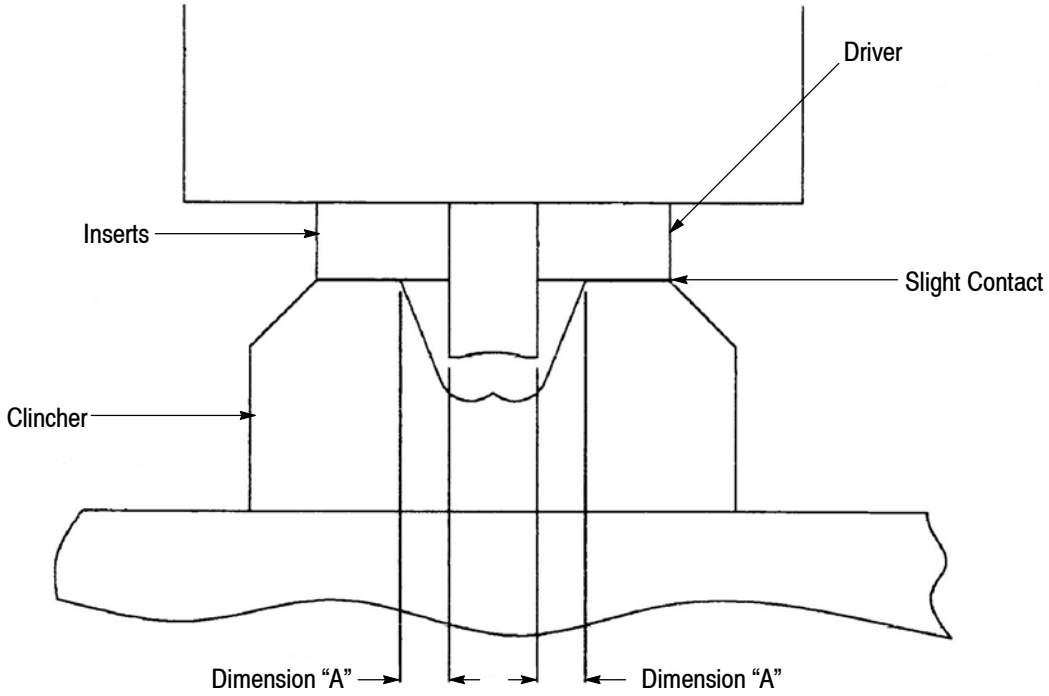


Figure 14

6. ADJUSTMENTS

6.1. Clincher and Crimp Height

Centrality and crimp height have been pre-set to specifications for your desired CMA range. In case you change the CMA range and desire a tighter or looser crimp, or if the clincher is replaced, it will be necessary to adjust the clincher as described in Paragraph 6.1,A. Refer to Figure 14.

A. Clincher

1. Pull the splice material out of the feed roll area after lifting the wire check pawl (to prevent the band of splice material from unraveling).

2. Loosen the two set screws retaining the clinchers and the two set screws which align the clincher horizontally.

3. Hand-cycle the terminator until the driver is at its lowest possible position (BDC) while centering the contour of clincher. The "A" dimensions (shown in Figure 14) should be equal.

4. Tighten the horizontal screws ***evenly*** after lowering the post slightly and rechecking the symmetry of the driver-clincher relationship.

5. Tighten the retaining screws after visually checking the alignment of the driver-clincher relationship.

NOTE

Some tooling also has the inserts fit into the clincher. Follow the same instructions as those for the driver.

6. Set the crimp height as described in Paragraph 6.1,B.

B. Crimp Height

There are two crimp heights for operation:

— **"Loaded Crimp Height" (LCH)** is measured *with* conductors of the wire strand in the formed terminal wire barrel.

— **"Unloaded Crimp Height" (ULCH)** is the height of the splice *without* conductors in the formed splice.

To adjust the crimp height, proceed as follows:

1. Pull back the splice material until it clears the feed rollers but is still held by the check pawl.
2. Loosen the clincher post bolt until it is only finger tight.
3. Hand-cycle the terminator until the inserts are in the lowest possible position
4. Loosen the lock nut and turn the crimp height bolt (see Figure 2) up or down a few degrees at a time until the top surface of the clincher lightly touches the bottom of the inserts (see Figure 14).
5. Tighten the lock nut and complete the cycle by hand.
6. Tighten the clincher post bolt.
7. Hand-cycle the terminator again and verify that no excessive pressure is exerted on the clincher by the inserts

CAUTION

Serious damage to the terminator and tooling will result if there is too little clearance and impact is made with the clincher. Likewise, too much clearance, depending on the tooling size used, can impede the transfer of the "U" shaped clip from the inserts into the clincher.

8. Adjust the splice material feed as follows:

   a. If the splice material is *overfeeding* (results in material buckling), loosen the inboard feed roll socket screw, turn the feed roll (slightly) counterclockwise, and lock the socket screw.

NOTE

Rotation of 5 degrees changes the feed approximately 1.27 mm [.050 in.].

   b. If the splice material is underfeeding (results in short splice blanks), loosen the inboard feed roll socket screw, turn the feed roll clockwise, and lock the socket screw.

   c. Hand-cycle the terminator to check the feed. The feed should come to rest against the wire stop without buckling.

9. Power cycle the machine and measure the unloaded crimp height (ULCH). If the reading is too high, contact TE—the clincher may require modification. If the reading is too low, lower the clincher post by the difference (no more than 0.254 mm [.010 in.]). See Figure 15.

NOTE

The crimp height dimensions are to be maintained within ± 0.051 mm [± .002 in.]. Use a blade type micrometer to eliminate false readings from angled relief or burrs that may exist.

10. Make a crimp of the actual application and measure the loaded crimp height (LCH). If this reading can be achieved for all the various applications listed on the tool set print (see the documentation package) but not the ULCH then ignore the ULCH. Should the ULCH be attained but not the LCH, then the application or splice wire size is not correct. However, if neither can be achieved, consult TE to review the tooling size and application.

NOTE

If the loaded crimp height (LCH) for one application of those listed is obtained, then all the applications for the given set-up will be correct. Do not attempt to run any other applications other than those listed on the tool set print (refer to the terminator documentation package).

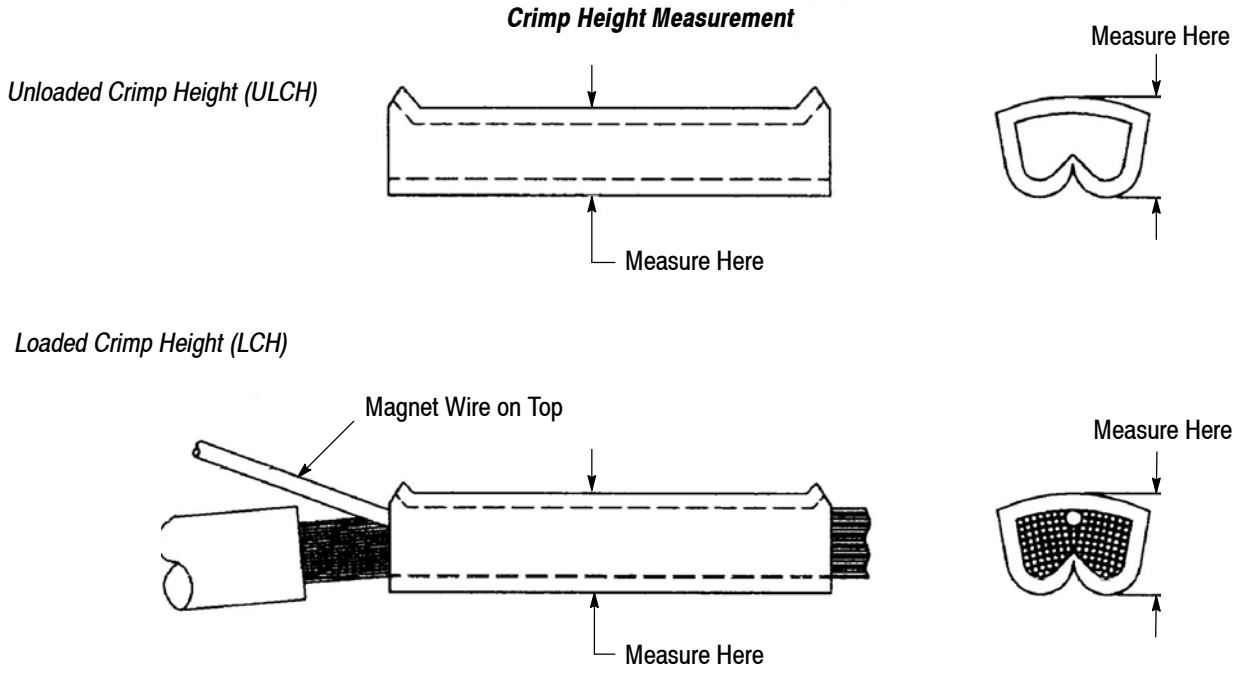


Figure 15

NOTE

Disconnect the power to the terminator and listen for the audible "click" when the trip lever engages in the clutch.

6.2. Clutch Solenoid and Trip Assembly

The clutch solenoid and trip assembly prevent the terminator from double-cycling if the operator depresses the footswitch for longer than required to complete on cycle of operation. This mechanism is pre-set at the factory. If a problem occurs, check and adjust the posi-latch assembly to achieve a gap from 3.05 to 3.56 mm [.120 to .140 in.] in the solenoid link. Refer to Figure 16.

If the relay contacts have burned out or are worn, replace the relay.

6.3. "V" Belt Tension

Belt tension is correct when it deflects approximately 3 mm [.12 in.] with light finger pressure at the center of the belt between the flywheel and motor sheave.

Tension is adjusted by moving the motor mount assembly either up or down after loosening the locking screws engaging the pylons through the main frame.

1. Remove the machine cover.
2. Locate and loosen the adjustment screws along side the edge of the main drive casting.
3. Adjust the motor position by:
   a. raising the motor to tighten the belt.
   b. lowering the motor to loosen the belt.
4. Tighten the adjustment screws.
5. Replace the machine cover.

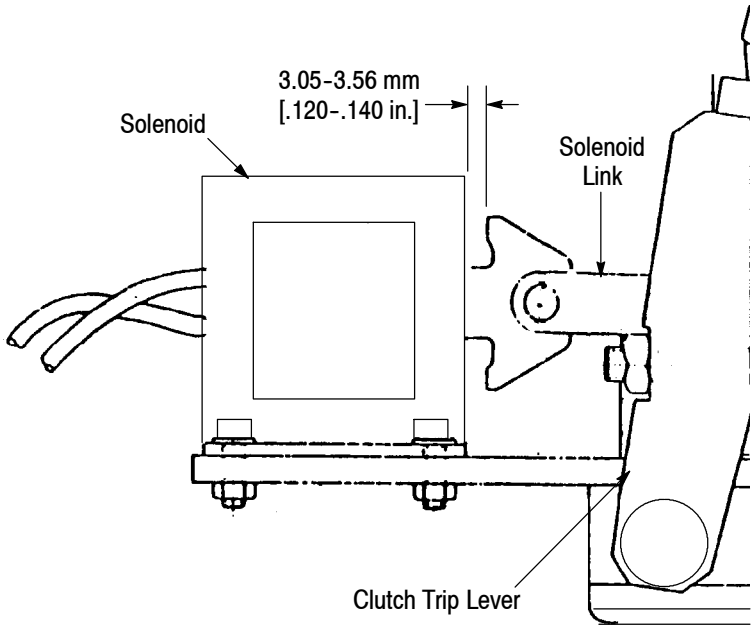


Figure 16

7. PREVENTIVE MAINTENANCE

It is recommended that a regular preventive maintenance schedule be established and followed.

7.1. Daily

1. Clean splice material dust accumulation around the tooling.
2. Wipe of the terminator with a clean rag.
3. Maintain proper tension on the splice material spool.

7.2. 15,000-Cycle Maintenance

1. Check the crimp heights. Refer to Paragraph 6.1,B and Figure 15.
2. Check the clincher centrality and wear. Refer to Paragraph 6.1,A and Figure 14.
3. Check for driver tip wear.
4. Check the feed stroke. Refer to Step 8 of Paragraph 6.1,B.

7.3. Weekly (50,000 Cycles)

1. Using Molykote BR-2 Plus lubricant (or similar), grease the former guide, former bar, and link journals at the grease fittings.
2. Lubricate the clutch, rollers, cage and cam.
   a. Remove the clutch, rollers, cage and cam and wash them in solvent to remove old film.
   b. Apply a thin film of SAE 10 oil to all surfaces.
3. Lubricate the motor according to the manufacturer's instructions.

7.4. Yearly (150,000 Cycles)

This maintenance is to be performed yearly, or after every 150,000 cycles, whichever occurs first.

1. Lubricate the main shaft bearings.

Molykote is a trademark.

a. Use solvent to remove existing grease.

b. Pack the bearings with Molykote BR-2 Plus grease.

2. Lubricate the flywheel bearings.

a. Use solvent to remove existing grease.

b. Pack the bearings with Molykote BR-2 Plus grease.

3. Check the lubrication of the clutch and the motor (refer to Paragraph 7.3 for lubrication instructions).

8. REPLACEMENT AND REPAIR

NOTE

When removing and/or installing tooling, be sure to move the clincher post. Do NOT alter the height adjustment screw setting.

NOTE

After completing the installation/replacement procedures, check the blank length and or "U" form by hand-cycling the terminator prior to installing the clincher post. Be sure to verify the clincher centrality and crimp height after installing the clincher post.

8.1. Former Bar and Drive Shoe Assembly Removal and Installation

DANGER

To avoid personal injury, be sure to turn "off" the terminator and disconnect machine power.

A. Former Bar and Drive Shoe Assembly Removal

1. Pull splice material back two or three inches (until it clears the feed rollers but is still held by the check pawl).

2. Hand cycle the terminator until the former bar is at top dead center.

3. Remove former guide cover. The cover is retained by several socket head cap screws.

4. Slide the cutter block away from inserts by loosening the socket head cap screw retaining screw.

5. Pull the former bar and drive shoe assemblies away from the casting.

NOTE

Note that these assemblies are supported vertically by the drive links that should remain on the main shaft eccentric pin. The links are identical and can be mounted forward or backward.

B. Former Bar and Drive Shoe Assembly Installation

1. Position the drive shoe link (link nearest the gear pointing downwards) vertically.

2. The former bar link must be pointing upward with the vacant hole at approximately the 11 o'clock position.

3. Install the former bar and drive shoe assembly over the links.

4. Fasten the former guide cover in position.

5. Hand-cycle the terminator to complete the rotation.

6. Slide the cutter block against the insert, hold with hand pressure against the insert, and tighten the retaining bolt.

7. Hand-cycle the terminator to check for binding.

8. Load wire into the tooling according to Paragraphs 4.1 and 4.2.

9. If the anvil is removed, check the blank length. The blank length is equivalent to the dimension across the inserts (a straight cut length of splice material, not formed). If the anvil is installed, check for straight, even legs on the "U"-formed strip. A kink near the end could indicate the cutter block is not installed correctly or that there are worn cutting surfaces. Refer to Section 5, TROUBLESHOOTING.

8.2. Anvil Removal and Installation

DANGER

To avoid personal injury, be sure to turn "off" the terminator and disconnect machine power.

A. Removal

1. Pull splice material back by 50.8 to 76.2 mm [2 to 3 in.]
2. Hand cycle the former bar to the top-dead-center position.
3. Remove the slotted anvil pin.
4. Remove the anvil spring, plunger and anvil.

B. Installation

NOTE

Before installing the anvil, hand-cycle and check the blank length. The blank length is equivalent to the dimension across the inserts (a straight cut length of non-formed splice material).

1. Insert anvil spring, then the plunger into the opening in the casting. Hold all these items in position while placing the anvil in position behind and over the retainer plate.
2. Install the anvil pin while locating the anvil hole.
3. Tighten the anvil pin.
4. Hand-cycle the terminator and check for straight legs on the "U" form. An offset leg could indicate that the anvil blade is not central to the inserts. Refer to Section 5, TROUBLESHOOTING.

8.3. Clutch Removal and Installation

A. Removal

1. Remove main cover and motor belt.
2. Make certain that the clutch is fully disengaged by turning the nut (by hand) on the rear of main shaft counterclockwise as far as possible.
3. Remove cotter pin and retaining nut on main shaft.

CAUTION

Do NOT remove the flywheel completely. The rollers will fall out.

4. Pull back on flywheel until the clutch rollers become exposed sufficiently to wrap a thin wire or cord around the cage and rollers.

NOTE

Sometimes a cord or rubber band will be left from the factory installation and can be used for this purpose.

5. Remove rear bearings and washer.
6. Remove flywheel.
7. Remove inner bearings and washer.

8. The roller clutch is only keyed to the main shaft (see Figure 17). Pull the roller clutch assembly from main shaft.

B. Installation

1. Before installing, carefully inspect all parts of the clutch assembly and replace any worn parts.

2. Install roller clutch making sure that the dogs are seated against appropriate stops and lubricate with a thin film of SAE 10 oil. The clutch should be in a completely disengaged position.

CAUTION

Do not allow grease from the flywheel bearings to work into the roller clutch. Contaminating the rollers with grease will cause malfunctions within the roller clutch and serious terminator and tooling damage could occur.

3. Install inner washer and bearings.

4. Install flywheel.

CAUTION

Do not install flywheel completely at this point. Push the flywheel approximately halfway on the rollers. Then remove the cord or thin wire wrapped around cage and rollers. Now install flywheel completely.

5. Install the outer bearings and washer.

6. Install (but do NOT tighten) the retaining nut.

7. Set bearings pre-load. The retaining nut should be tightened only to the point where all axial and radial play is removed between the flywheel and the clutch.

8. Align the slots in the retaining nut with the hole in shaft and install the cotter pin.

8.4. Cutter Block Removal and Installation

A. Removal

The cutter block is held by a socket head cap screw and washer. To remove the cutter block, remove the socket head cap screw and washer.

B. Installation

Position the cutter block in the tooling module keyway and against the insert. Be sure the cutter block engages insert. Otherwise a poor cut-off will occur. Use hand pressure on the cutter block (towards the insert) while tightening the large socket head cap screw.

8.5. Driver Replacement

1. Remove the former bar and drive shoe assembly as described in Paragraph 8.1,A.

2. Push the driver retaining pin approximately two-thirds of the way out of drive shoe.

3. Remove and replace the driver. Reinstall the driver pin. Make certain pin is not protruding from either side of drive shoe.

8.6. Main Shaft Removal and Installation

A. Removal

1. Remove former bar and drive shoe assembly as described in Paragraph 8.1,A.

2. Remove the flywheel and bearings.

3. Remove the brake shoe and anti-back-up pawl after disengaging the tension springs.

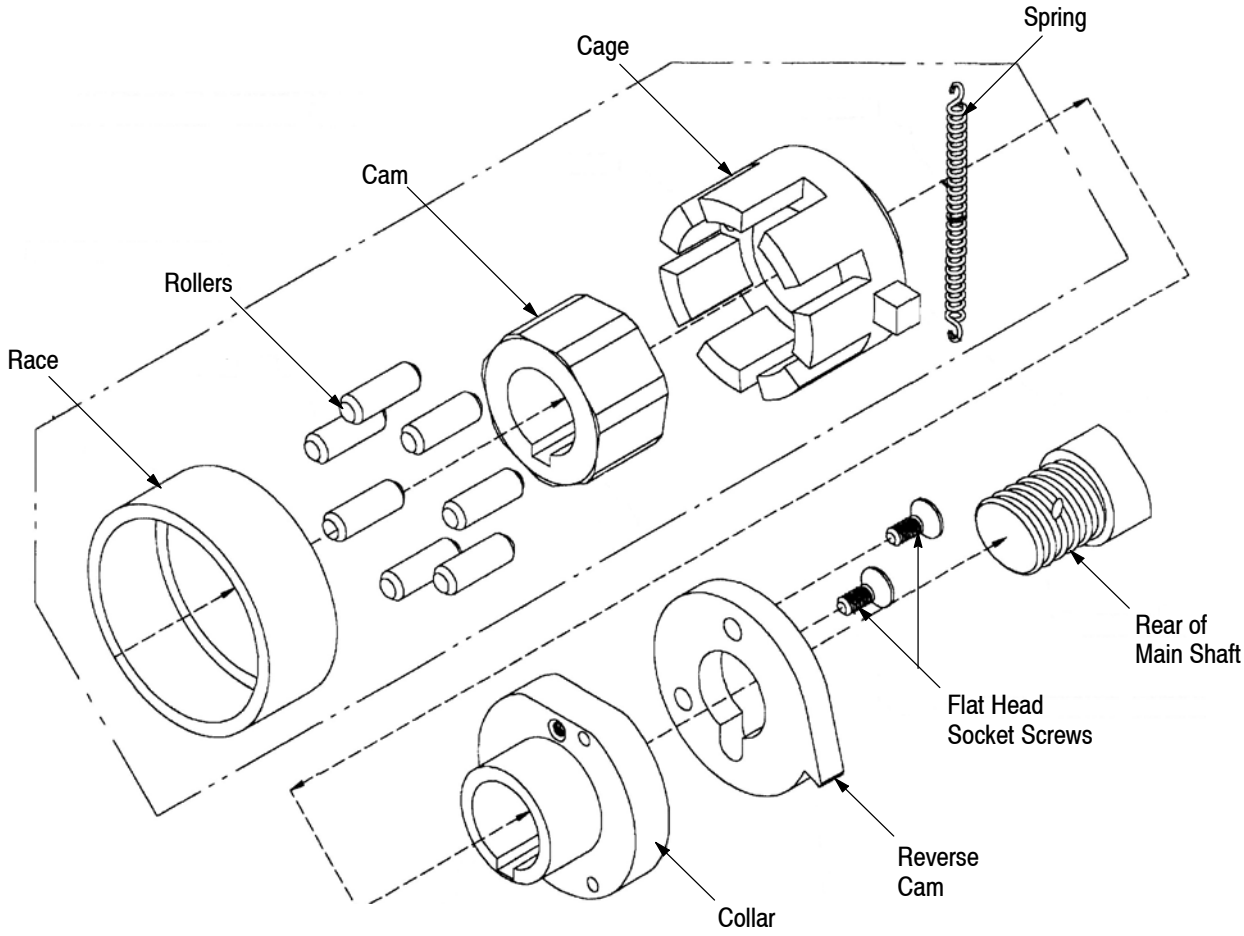


Figure 17

4. Remove the clutch as follows:
   a. Remove the roller retainer.
   b. Pull outward on the clutch cam. Slide the cam off the key and shaft.
   c. Remove filling collar and roller cage as an *assembly*.

CAUTION

*Note position of **springs** in case of removal.*

   d. Remove the key from the shaft.

5. Remove the shaft by removing the tooling module from the side of the terminator. Pull outward on the shaft.

B. Installation

Reverse the above procedures after cleaning and lubricating the bearing and the clutch.

9. REVISION SUMMARY

Revisions to this customer manual include:

- Changed company logo
- Updated customer manual to corporate requirements