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MS31 OPERATION MANUAL

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SAFETY INSTRUCTIONS

Please read these instructions carefully. Failure to follow these instructions could result in severe injury.

1. Before using the tool, read the entire operation manual thoroughly.
2. Always wear safety glasses and face protection when operating the tool.
3. Always wear protective gloves when handling strapping.
4. Always use only  replacement parts from an authorized dealer.

These tools are designed for use with high tensile strapping and all parts are manufactured or treated for these extreme conditions. Performance of your tool will be affected if any other parts are used, which may cause injury.

SPECIFICATIONS

| | |
|--------------|-------------------|
| Weight: | 9.8 lbs. (4.4 kg) |
| Base Length: | 4.2" (105 mm) |
| Base Width: | 2.4" (60 mm) |
| Height: | 4.2" (105 mm) |

Strapping Qualities:

Designed for use with regular duty strapping (107,000 psi / 750 N / mm²) to high tensile strapping (156,000 psi / 1100 N / mm²).

| Model Number | Strap Width | Strap Thickness |
|--------------|--------------|----------------------------------|
| MS31-1 | 3/4" (19 mm) | .025"-.031" (0.635 mm - 0.80 mm) |

This tool is **not** designed to be used with strapping below .025" (0.635 mm) thickness or above .031" (0.80mm) thickness.

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OPERATING INSTRUCTIONS

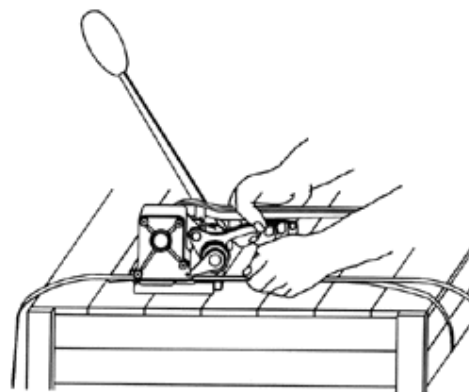
A

Place strapping tightly around the package and hold in place with left hand.

Take tool with right hand and pull the feedwheel lever towards the sealing lever.

Insert both portions of the strap with left hand into the sealing section.

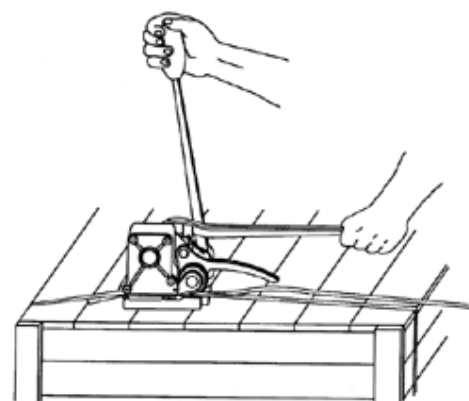
Release the feedwheel lever and make certain strapping is held by strap guide.



B

Hold tool firmly with left hand on the sealing lever.

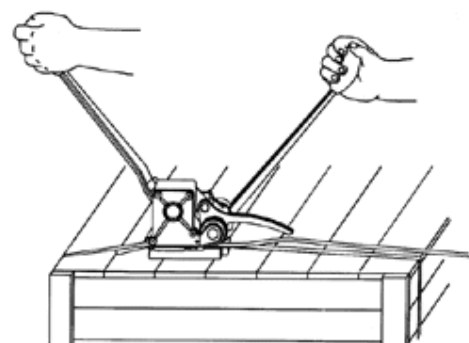
With right hand move the tension lever forward and backward until the desired tension is obtained.



C

Place right hand firmly on the tension lever for supporting the tool.

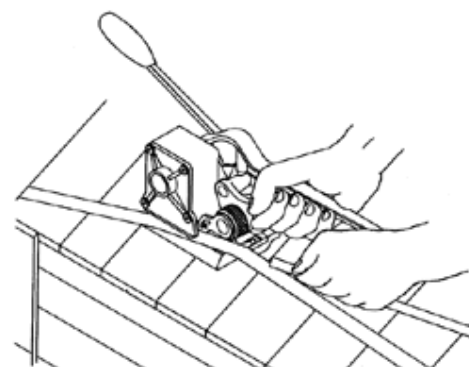
With left hand push the sealing lever forward until it reaches the stop.



D

Move the sealing lever back to its original position.

To release the tool, with right hand pull the feedwheel lever towards the sealing lever, pushing the lever to the left, away from the sealing section.



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MAINTENANCE

Clean the sealing section regularly with compressed air to remove any dust and particles. Lubricate the die (position 16) and punch (position 25) daily with a thin grade of oil. This will reduce friction and extend the life of the tool as well as the parts. Spray the entire tool daily with a rust preventative, this will prevent any rust formation.

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ADJUSTMENTS

TO ADJUST SEALING DEPTH

Loosen nut (position 31), adjust hexagon socket set screw (position 44) with a hexagon key, turn counterclockwise to increase sealing depth, or turn clockwise to decrease sealing depth, retighten nut.

TO ADJUST CLEARANCE BETWEEN THE FEEDWHEEL (POSITION 5) AND GRIPPER (POSITION 26)


The clearance between the feedwheel and the gripper should be .020" (.51 mm). If the clearance is more or less than this, it must be adjusted.

To reduce the clearance: loosen nut (position 31A), turn hexagon socket set screw (position 30) counterclockwise with a ball hexagon key, re-tighten nut.

To increase the clearance: loosen nut (position 31A), turn hexagon socket set screw (position 30) clockwise with a ball hexagon key, re-tighten nut.

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REPLACEMENT OF PARTS

Note: If you are not familiar with the following replacement procedures, please contact your authorized  dealer for a demonstration or for service.

To Replace The Feedwheel (Position 5)

1. Remove external retaining ring (position 3).
2. Remove tensioning assembly (consisting of tension lever (position 11) and feedwheel shaft (position 2)).
3. Install new feedwheel with the "O" and "I" marking facing the strap guide (position 4), reinstall tensioning assembly observing the key way position during assembly.
4. Reposition strap guide onto the protruding feedwheel shaft.
5. Reinstall external retaining ring.

To Replace The Gripper (Position 26)

Note: The gripper is held in a nonadjustable position with spring tension pin (position 27).

1. To remove gripper, use drift pin matching the dimension of the spring tension pin (position 27) and drive the tension pin into the tool base, until the gripper comes loose from its position.
2. Lift feedwheel lever (position 7) to access gripper.
3. Clean cavity area and add one drop of a thin grade of oil in the cavity.
4. To install new gripper, place the gripper into the cavity of the tool base. Reinstall the spring tension pin and drive it into the hole of the tool base, until it is flush with the tool base.

To Replace The Knife (Position 17)

1. Remove housing cover (position 50), by removing 4 hexagon socket shoulder screws (position 48).
2. With pliers, pull knife from slot on die and knife block (position 13).
3. Install new knife observing spring tension pin (position 18) aligns with same slot on die and knife block.
4. Make sure area is clean and well greased with white grease.
5. **Important: Make certain that the roller (position 57) is in its position.**
6. Reinstall housing cover, then reinstall hexagon socket shoulder screws with a drop of Loctite* No. 222 on the thread of each screw.

To Replace The Punch (Position 25)

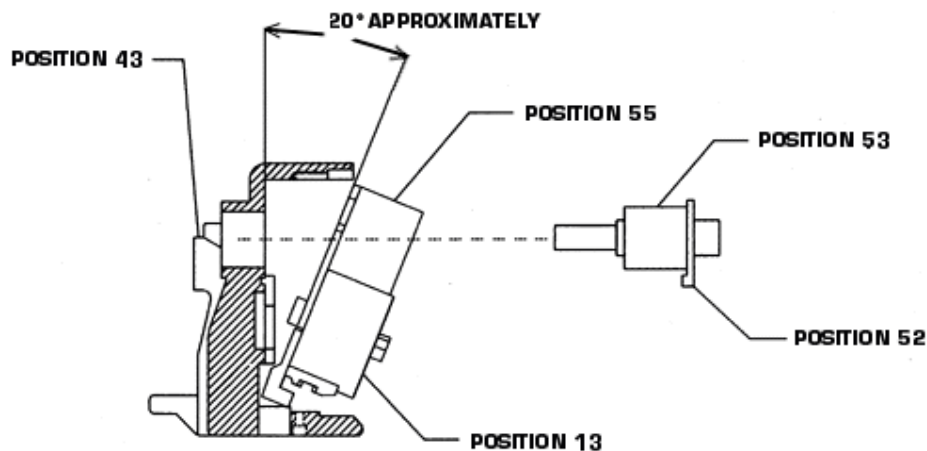
1. Remove 2 cheese head machine screws (position 24A) located on the underside of the tool base.
2. Remove punch, clean area, replace with new punch, then reinstall cheese head machine screws with a drop of Loctite* No. 222 on the thread of each screw.

To Replace The Die (Position 16)

1. Remove housing cover (position 50), by removing 4 hexagon socket shoulder screws (position 48).
2. Remove sealing lever (position 47) by loosening hexagon socket cap screw (position 46).
3. Remove woodruff key (position 1).
4. Remove eccentric shaft (position 53).
5. Remove the total internal assembly by tilting it at a 20 degree angle (see diagram below) and pull out with pliers by eccentric shaft plunger (position 55), at the same time making sure to hold internal assembly together with other hand, exposing die on the underside of the die and knife block (position 13).
6. Remove 3 cheese head machine screws (position 15).
7. Remove die, clean area, and replace with new die, then reinstall cheese head machine screws with a drop of Loctite* No. 222 on the thread of each screw.
8. To reinstall the internal assembly follow the installation of internal assembly instructions below.
9. Reinstall the eccentric shaft observing its relative position to the cam (position 34).
10. The cam lever (position 52) must engage with its tip into the cavity of the cam. The components should align together and operate smoothly, please do not force the parts together.
11. Make sure area is clean and well greased with white grease.
12. **Important: Make certain that the roller (position 57) is in its position.**
13. Reinstall housing cover, then reinstall hexagon socket shoulder screws with a drop of Loctite* No. 222 on the thread of each screw.
14. Reinstall woodruff key and sealing lever.

*Loctite is a registered trademark of the Loctite Corporation.

Removal of Internal Assembly MS31



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Installation of Internal Assembly MS31

Figure 1A

Place the cam as per drawing, with the long width sitting flat in the die and knife block. Add white grease throughout. Then place the eccentric shaft plunger on top of the cam and fasten by pushing the connection pin, position 19, (making sure the groove on this pin is facing the outside of the die and knife block) through hole in die and knife block and into like hole on eccentric shaft plunger.

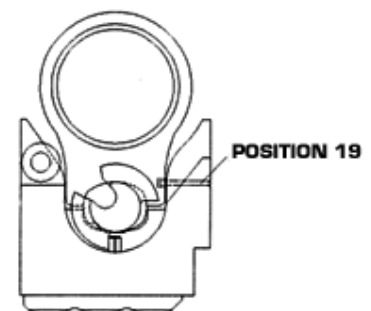
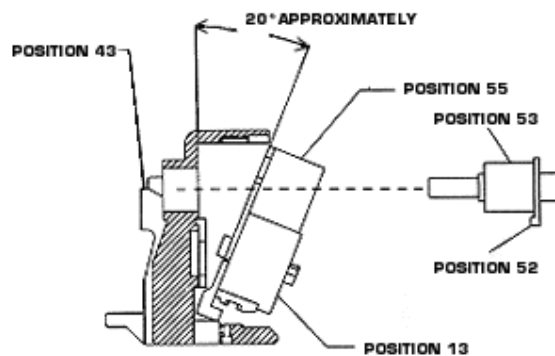
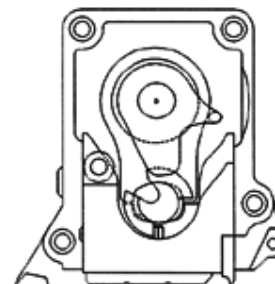


Figure 1B

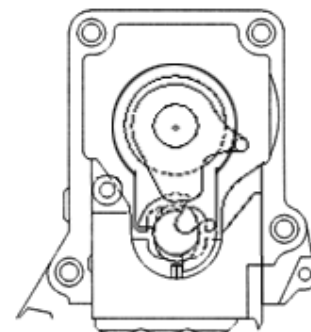
Tilt the internal assembly approximately 20 degrees and place into housing making sure the back up hook is sitting in its slot in the housing.

**Figure 1C**

Make sure the cam lever is attached to the eccentric shaft. Then push it through the hole of eccentric shaft plunger and the housing until it is flush.

**Figure 1D**

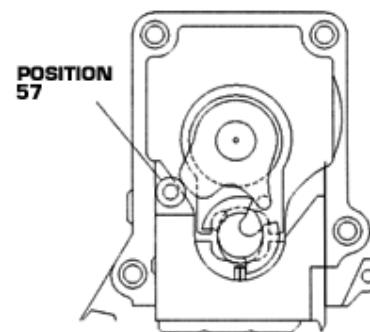
Turn the cam with pliers in a clockwise direction until it sits in position shown in this drawing.

**Figure 1E**

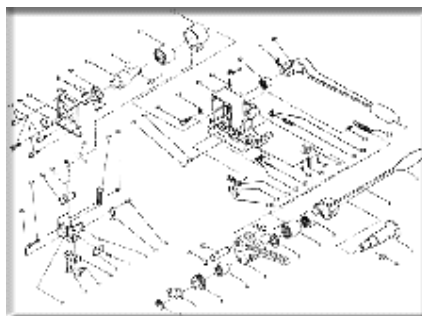
Turn cam lever in a clockwise direction with fingers until it sits in front of the cavity of the cam.

Important: Make certain that the roller (position 57) is in its position.

Then install the housing cover and the sealing lever making sure they sit properly and operate smoothly, do not force.



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MS31 DIAGRAM

[Click here to view larger image](#)

This Diagram is available in a Portable Document Format (PDF) file. To view it, you need to have Adobe Acrobat Reader version 4.0 installed on your system. Acrobat

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MS31 PARTS LIST

| Position | Part Number | Part Name | Parts per Tool |
|----------|-------------|---|----------------|
| 1,1A | ZR-0001 | Woodruff Key | 2 |
| 2 | ZR-0002 | Feedwheel Shaft | 1 |
| 3 | ZR-0003 | External Retaining Ring | 1 |
| 4 | ZR-0006 | Strap Guide 3/4" (19 mm) | 1 |
| 5 | ZR-0074 | Feedwheel 31 | 1 |
| 6 | ZR-0008 | Roller Bearing | 1 |
| 7 | ZR-0009 | Feedwheel Lever | 1 |
| 8 | ZR-0010 | Washer | 1 |
| 9 | ZR-0011 | Roller Clutch and Bearing Assembly | 1 |
| 10 | ZR-0012 | Roller Clutch | 1 |
| 11 | ZR-0013 | Tension Lever | 1 |
| 12 | ZR-0014 | Handle | 2 |
| 13 | ZR-0067 | Die and Knife Block 31 | 1 |
| 14 | ZR-0016 | Dowel Pin | 3 |
| 15 | ZR-0017 | Cheese Head Machine Screw | 3 |
| 16 | ZR-0068 | Die 31 | 1 |
| 17 | ZR-0069 | Knife 31 (includes ZR-0021) | 1 |
| 18 | ZR-0021 | Spring Tension Pin | 1 |
| 19 | ZR-0022 | Connection Pin | 1 |
| 20 | ZR-0023 | Back Up Hook | 1 |
| 21 | ZR-0024 | Spring Tension Pin | 2 |
| 22 | ZR-0025 | External Retaining Ring | 2 |
| 23 | ZR-0026 | Shaft | 1 |
| 24,24A | ZR-0033 | Cheese Head Machine Screw | 4 |
| 25 | ZR-0071 | Punch 31 | 1 |
| 26 | ZR-0031 | Gripper | 1 |
| 27 | ZR-0032 | Spring Tension Pin | 1 |
| 28 | ZR-0034 | Spring Tension Pin | 2 |
| 29 | ZR-0037 | Strap Stop Front 3/4" , 1 1/4" (19mm, 32mm) | 1 |
| 30 | ZR-0038 | Hexagon Socket Set Screw | 1 |
| 31, 31A | ZR-0039 | Nut | 2 |
| 32 | ZR-0040 | Extension Spring | 1 |
| 33 | ZR-0041 | Hexagon Socket Cap Screw | 1 |
| 34 | ZR-0042 | Cam | 1 |
| 35 | ZR-0043 | Ball | 1 |
| 36 | ZR-0044 | Compression Spring | 1 |
| 37 | ZR-0045 | Die Block Back Up | 1 |
| 38 | ZR-0046 | Spring Tension Pin | 1 |
| 39 | ZR-0047 | Spacer | 1 |

| | | | |
|----|----------|--|---|
| 40 | ZR-0048 | Pin | 1 |
| 41 | ZR-0051 | Strap Stop Rear 3/4" (19 mm) | 1 |
| 42 | ZR-0052 | Nut | 1 |
| 43 | ZR-0072 | Housing MS31 | 1 |
| 44 | ZR-0054 | Hexagon Socket Set Screw | 1 |
| 45 | ZR-0055 | Roller Bearing | 1 |
| 46 | ZR-0056 | Hexagon Socket Cap Screw | 1 |
| 47 | ZR-0057 | Sealing Lever | 1 |
| 48 | ZR-0058 | Hexagon Socket Shoulder Screw | 4 |
| 49 | ZR-0059 | Roller Bearing | 1 |
| 50 | ZR-0060 | Housing Cover | 1 |
| 51 | ZR-0061 | Cheese Head Machine Screw | 2 |
| 52 | ZR-0078 | Cam Lever | 1 |
| 53 | ZR-0063A | Eccentric Shaft 31 | 1 |
| 54 | ZR-0064 | Roller Bearing | 1 |
| 55 | ZR-0065 | Eccentric Shaft Plunger (includes ZR-0043, ZR-0044, ZR-0064, ZR-0075) | 1 |
| 56 | ZR-0075 | Spring Tension Pin | 1 |
| 57 | ZR-0076 | Roller | 1 |
| 58 | ZR-0077 | Roller Pin | 1 |
| 59 | ZR-0028 | Dowel Pin | 1 |
| -- | ZR-0073 | Operation Manual and Parts List for MS31 Series Tools | 1 |

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