

Powering Business Worldwide

ET4040 Crimp Machine

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Safety Instructions

WARNING

Failure to follow Eaton process and product instructions and limitations could lead to premature hose assembly failures, resulting in property damage, serious injury or death.

Weatherhead® fitting tolerances are engineered to match Weatherhead hose tolerances. The use of Weatherhead fittings on hose supplied by other manufacturers and/or the use of Weatherhead hose fittings supplied by other manufacturers, may result in the production of unreliable and unsafe hose assemblies and is neither recommended nor authorized by Eaton.

Read and understand the operator's manual before attempting to operate any equipment.

Eaton hereby disclaims any obligation or liability (including incidental and consequential damages) arising from breach of contract, warranty, or tort (under negligence or strict liability theories) should Weatherhead hose, fittings or assembly equipment be used with the hose, fittings or assembly equipment supplied by another manufacturer, or in the event that product instructions for each specified hose assembly are not followed.

Safety Instructions

1. Prevent unauthorized operation. Do not permit anyone to operate this equipment unless they have read and thoroughly understand this manual.
2. Wear safety glasses.
3. Avoid pinch points. Do not rest your hand on the crimp ring. Keep your hands clear of all moving parts. Do not allow anyone, other than the operator, close to the equipment while it is in operation.
4. Maintain dies with care. Dies used in the ET4040 crimp machine are hardened steel, offering the best combination of strength and wear resistance for long life. Hardened dies are generally brittle and care should be taken to avoid any sharp impact. Never strike a die with a hardened instrument.
5. Use only specified Weatherhead products. Make hose assemblies using only Weatherhead hose and fittings specified for this assembly equipment.
6. Verify correct crimp diameters. Check and verify correct crimp diameters of all fittings after crimping. Do not put any hose assemblies into service if the crimp diameters do not meet Weatherhead crimp specifications.
7. Make sure all dies are completely in place and the cage is positioned properly on the pressure plate.
8. Do not over pressurize. Do not exceed the 10,000 psi hydraulic pressure supplied to the machine. This setting is preset at the factory and should not require adjustment.

Note: All components used to connect the pump and crimp cylinder must meet the criteria set forth in the Material Handling Institute Specification #IJ100 for hydraulic jacking applications.
9. Die change. Do not insert/remove dies while the power is on.
10. Secure the equipment to a stable work surface. Prior to operation, secure the crimp machine to a stable work surface to prevent the equipment from tipping.
11. Unplug the power supply when not in use.
12. Keep work area clean. Cluttered areas and benches invite accidents.

Specifications

Specifications

Electrical Requirements

ET4040-115	110 to 120-Volt AC single phase 60 Hz circuit with a minimum of 25 amps
ET4040-230	208 to 230-Volt AC single phase 50/60 Hz circuit with a minimum of 15 amps

Crimp Machine Dimensions

Width	29 inches
Depth	28 inches
Height	45 inches
Weight	825 pounds

Production Capacity

All Weatherhead braided and spiral hydraulic hoses which use Z, U or 430U, 4SP or 6SP hose ends

Setup and Installation

1. Mount your Weatherhead ET4040 crimp machine to the floor using the holes provided in the corners of the crimp machine base.
2. Remove the plug from the hydraulic reservoir vent port and replace it with the vent cap that is supplied with the unit.

CAUTION: Failure to do so will cause cavitation and damage to the pumping mechanism. Hand tighten the vent cap.
3. CAUTION: Provide electrical service with a dedicated circuit (per the crimp machine electrical requirements) in order to eliminate the possibility of a low-voltage situation.
4. Never use an extension cord. Always plug the unit directly into the power outlet.

Accessories

Components of ET4040-009 Machine and Tooling Package

Part Number	Description	Sizes Crimped	
		430U	4SP/6SP
ET4040-115	ET4040-115 crimp machine		
ET1295-001	2-Piece Master Die Cage		
ET1295TP-0001	Magnetic handle to capture die sets		
ET1295C-0027	Hanging rack for die insert (2pcs.)		
ET1295DC-M150S	"Z" series hose fitting die inserts		
ET1295DC-M180S	"Z" series hose fitting die inserts		
ET4040DC-M210S	"Z" and "430U" series hose fitting die inserts	-6	
ET1295DC-M240S	"Z" series hose fitting die inserts		
ET4040DC-M280S	"Z" and "430U" series hose fitting die inserts	-8, -10	
ET4040DC-M320S	"Z" and "430U" series hose fitting die inserts	-12	
ET1295DC-M370S	"Z" series hose fitting die inserts		
ET4040DC-M420S	"Z" and "430U" series hose fitting die inserts	-16	
ET4040DC-M465S	"Z" and "430U" series hose fitting die inserts	-20	
ET4040DC-M520S	"Z" and "430U" series hose fitting die inserts	-20	
ET1295DC-M550S	"Z" series hose fitting die inserts		
ET4040DC-M570S	"Z" and "430U" series hose fitting die inserts	-24	
ET4040DC-M690S	"Z" and "430U" series hose fitting die inserts	-32	
ET1295DC-82S	4SP/6SP series hose fitting die inserts		4SP12
ET1295DC-46S	4SP/6SP series hose fitting die inserts		4SP16
ET1295DC-14S	4SP/6SP series hose fitting die inserts		4SP20
ET1295DC-20S	4SP/6SP series hose fitting die inserts		4SP24
ET1295DC-23S	4SP/6SP series hose fitting die inserts		4SP32
ET1295DC-15S	4SP/6SP series hose fitting die inserts		6SP20
ET1295DC-16S	4SP/6SP series hose fitting die inserts		6SP24
ET1295DC-21S	4SP/6SP series hose fitting die inserts		6SP32

ET4040-009 Machine and Tooling Package

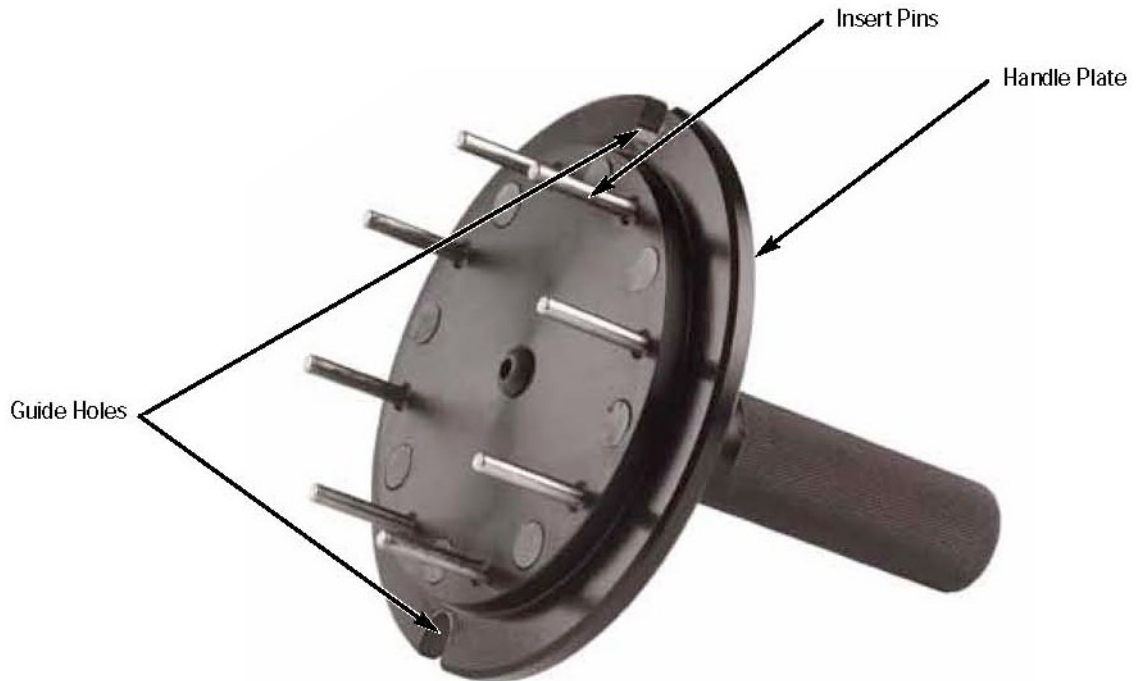
Includes master die cage assembly (2 piece), all M-Series die inserts, all 4SP/6SP die inserts, and insertion handle components and 2 side-hanging racks to hold die sets.



ET1295C-0027 Machine Mounted Die Insert Holder Rack

Magnetic Insertion Handle

**Insert Handle
Figure 3**



CAUTION

THIS PRODUCT CONTAINS RARE-EARTH MAGNETS.

Products containing rare-earth magnets must be handled with care. Rare-earth magnets are very powerful and can accelerate at great speeds toward each other and toward ferrous (iron based) material. When these magnets come together quickly, they can shatter and break sending particles at high speed. These magnets can also pinch strongly if allowed to come together against the skin or body part. Users must wear leather gloves and safety glasses with side shields when handling rare-earth magnets or products with rare-earth magnets.

Individuals with pacemakers or internal medical devices must not handle rare-earth magnets or products containing rare-earth magnets. Studies have shown that magnetic fields can affect the operation of these

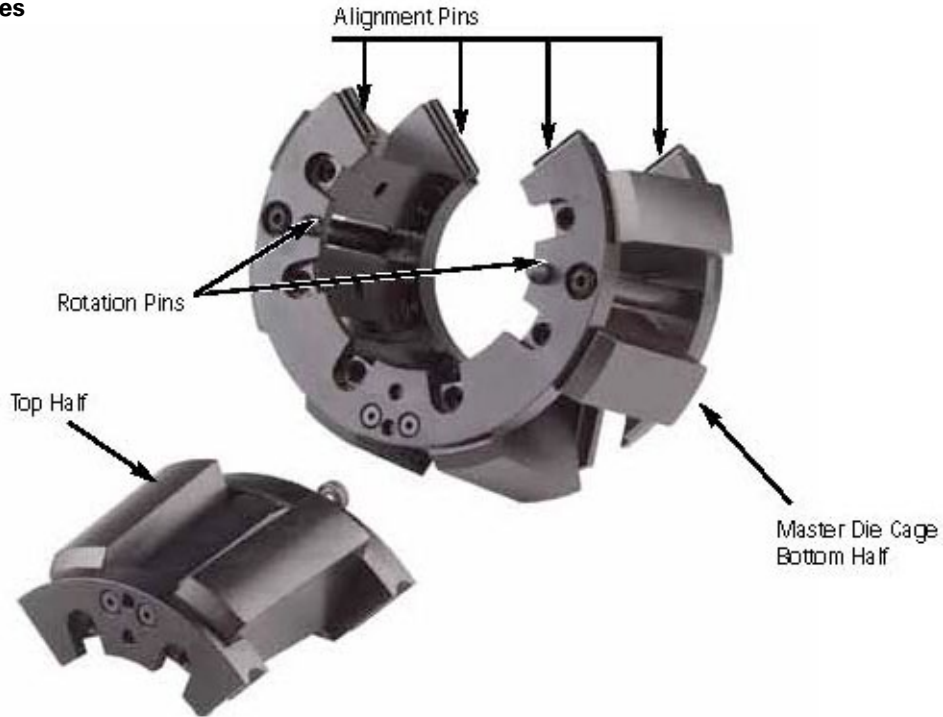
devices. Rare-earth magnets must be kept at a safe distance from individuals with these devices. The Rare-Earth Magnetics Association is not aware of any positive or negative health effects from handling rare-earth magnets. However as a precaution, it is recommend that pregnant women not handle or be near rare-earth magnets or products containing rare-earth magnets.

Areas with rare-earth magnets or with products containing rare-earth magnets must be posted with a warning sign alerting persons with pacemakers or other internal medical devices and women who may be pregnant to stay out of the area.



Master Die Cage

**Master Die Cage Halves
(2-Piece Assembly)
Figure 1**



**Master Die Cage
Back Side
(2-Piece Assembly)
Figure 2**



Operating Instructions

Loading and Unloading 2-Piece Master Die Cage

To load the die cage, press and hold the RETRACT switch until the crimp cylinder reaches the "full retract" position and stops. The 2-piece Master die cage halves (Figures 1 & 2) may be inserted or removed in this position. (See Figure 3.) NOTE: To minimize cycle time during normal operation, the Weatherhead ET4040 crimp machine can be programmed to stop retracting before it has fully retracted. This reduces the crimping cycle time. The die cage halves may not be able to be removed. Pressing and holding RETRACT will always bring the cylinder to the full retract position. See detailed instructions on Pages 10-14.

CAUTION: Figure 4 shows a die cage that is installed improperly. When inserted properly, the cage halves are flush against the pressure plate. If the die cage halves are at an angle to the pressure plate, lift up and realign properly.

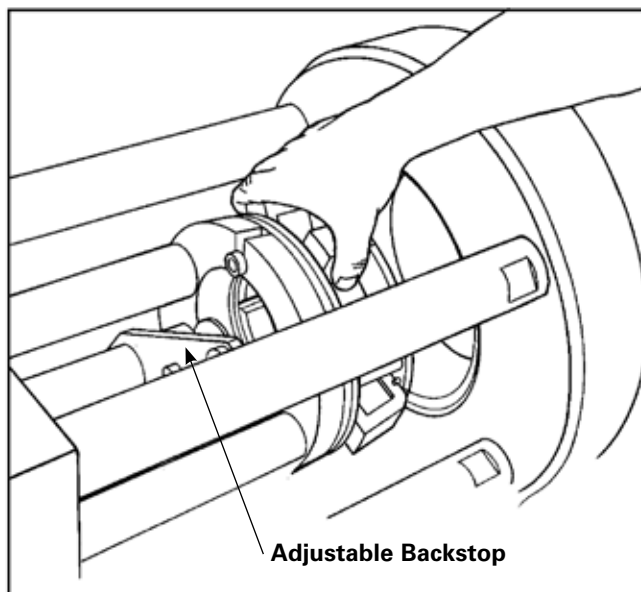


Figure 3

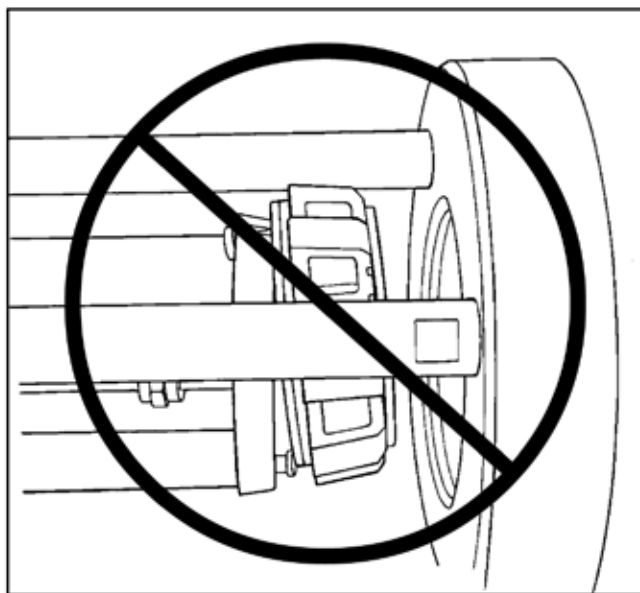


Figure 4

Operating the Keypad (Figure 5)

1. The DISPLAY shows the three-digit setting that will determine the crimp diameter. The DISPLAY number itself is a relative number, not a crimp diameter. The ratio of crimp diameter change to the DISPLAY change is 1 to 1. For example, if you crimp a fitting at a setting of 250, and the crimp diameter is .014 inch too large, you will need to decrease the DISPLAY by 014 to $(250-014) = 236$. A display of 236 should produce the correct crimp diameter.
2. The STORE button is used to store the DISPLAY reading in any of the 10 numbered keys. The green light next to the STORE button will illuminate when you are working in the STORE mode.
3. The ENTER button is used to put any three-digit number into the DISPLAY. The green light next to the ENTER button will illuminate when you are working in the ENTER mode.
4. The numbered keys have two functions:
 - a. In the ENTER mode, their numeric value is put into the DISPLAY.
 - b. In the STORE mode, they act as 10 different memory locations in which to store a DISPLAY setting.

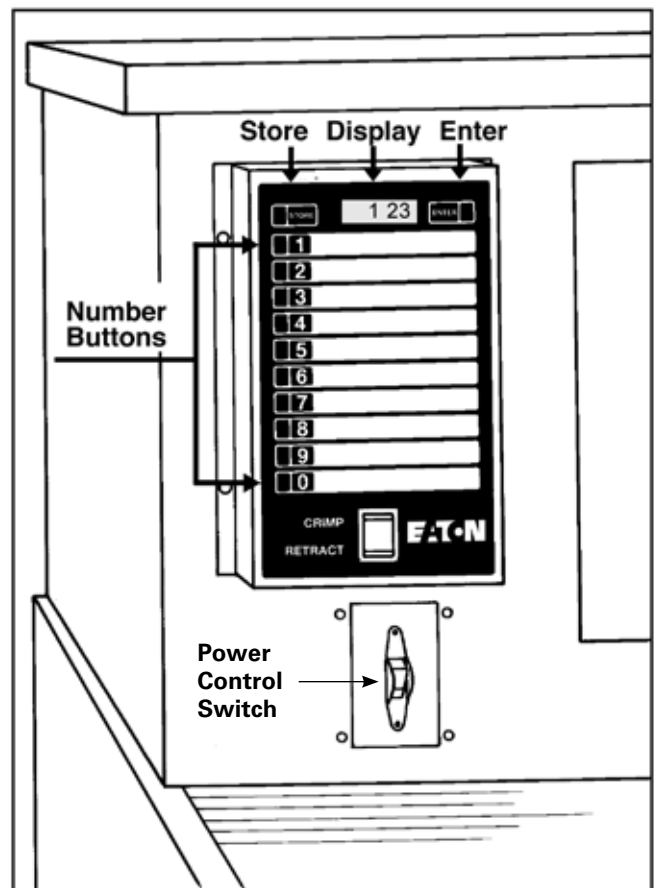


Figure 5 – Keypad

Operating Instructions

Entering a Number into the DISPLAY

1. Turn the power control switch below the keypad to the ON position. The DISPLAY will illuminate to show that the power is on.
2. Press the ENTER button. (The green light next to the ENTER button will illuminate.)
3. Press three number buttons. (If more than five seconds elapse between pressing the number buttons, the DISPLAY reverts back to its previous setting.) After the third number is pressed, the DISPLAY will remain and the green light next to the ENTER button will turn off.
4. The ET4040 is now ready to crimp to the DISPLAY setting.

Storing a Number from the DISPLAY as a Preset

1. Enter a three-digit number as described in the procedure above.
2. Press the STORE button. (The green light next to the STORE button will illuminate.)
3. Press and hold down any one of the 10 numerical buttons for three seconds. (After three seconds, the green light next to the pressed button will illuminate, indicating that the DISPLAY has been stored to that button.)

Recalling a Preset into the DISPLAY

1. Make sure that the STORE and ENTER lights are off. (If one is on, it will go off in five seconds if the keypad is left untouched.)
2. Press the numeric button that has the stored setting for a given hose and fitting style. That setting will then be seen in the DISPLAY, and the light next to the numeric button will illuminate.

Programmable Retract Stop*

1. Using the Crimp/Retract switch, place the cylinder in the position where you want it to stop during retraction.
2. Press and hold the ENTER button until the green light next to the button turns off (approximately three seconds). The cylinder will now automatically stop retracting at this position until another position is set or until the crimp machine is shut off.

Note: Pressing and holding the RETRACT switch will allow the cylinder to fully retract. This will not change or erase the programmable retract stop.

Note: Turning the crimp machine off and back on erases the programmable retract stop position.

Adjustable Backstop (Figure 3)

1. Turn off the power to the machine.
2. Insert the die cage.
3. Loosen the thumbscrew on the backstop.
4. Place the fitting against the locator cone. Pushing it too hard will compress the spring, which will affect the accuracy of the position.
5. Slide the backstop to the desired position.
6. Tighten the thumbscrew.
7. Turn the power on.

* In order to reduce cycle time this feature allows for limiting retraction of the cylinder. This is particularly helpful when assembling multiple hose assemblies.

Crimping Procedures



WARNING: Maintain clear distance from all moving parts.

Crimping Procedure

Refer to the current Weatherhead Crimp Specifications for complete and detailed crimp specification information for each hose and fitting style.

1. Retract the cylinder by pressing the RETRACT switch until the cylinder is fully retracted. Select the proper die inserts from current Weatherhead Crimp Specifications. Load the die inserts into the master die cage. (See pages 11-13.)
2. Press the proper PRESET button or key in a value to the DISPLAY. (See page 7 for keypad operating instructions.)
3. Position the fitting in the crimp die set according to the corresponding figure shown in Figure 5.
4. To crimp the fitting, press the CRIMP switch or footswitch. The die cage will advance until the fitting is fully crimped (Figures 6 & 7). It will then automatically begin to retract, signifying that the crimp is complete. Release the crimp switch or footswitch. The cylinder will automatically retract and stop at the "full retract" position (or at the programmable retract position, if it has been set).

Hint: Retraction can be halted at any point by momentarily pressing the RETRACT switch or footswitch.

5. Verify the correct crimp diameter.

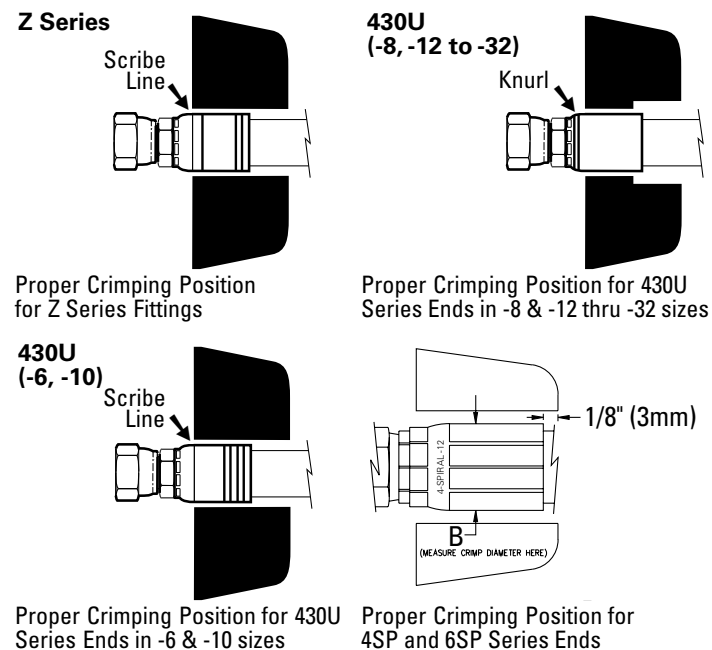


Figure 5 – Proper Crimp Positions

Procedure for determining a target setting

Enter the number "500" into the DISPLAY, and start the crimping process. If the dies crimp the fitting, measure the crimp diameter and decrease the DISPLAY setting by the same amount that you wish to decrease the crimp diameter. If the dies don't touch the fitting, lower the DISPLAY setting by 050 to "450" and crimp the fitting again. If that still isn't enough, continue to reduce the DISPLAY setting by 050 increments until the dies make contact with the fitting. Then, measure the crimp diameter and decrease the DISPLAY setting by the same amount that you wish to decrease the crimp diameter.

Example:

If a display setting of "250"—using H28008 with Z Series—produces a crimp diameter of 1.004 inches, subtract the crimp specification (0.990 inches) from the diameter that you measured ($1.004 - 0.990 = 0.014$). Then, subtract "014" from the DISPLAY setting ($250 - 014 = 236$), and change the DISPLAY to "236." Crimp the fitting again, and measure the crimp diameter. If the crimp diameter is still too large, repeat this process.

Note: Record the setting for future reference.

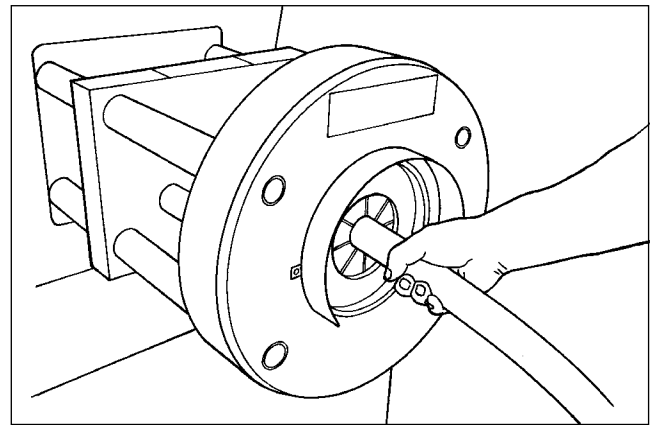


Figure 6

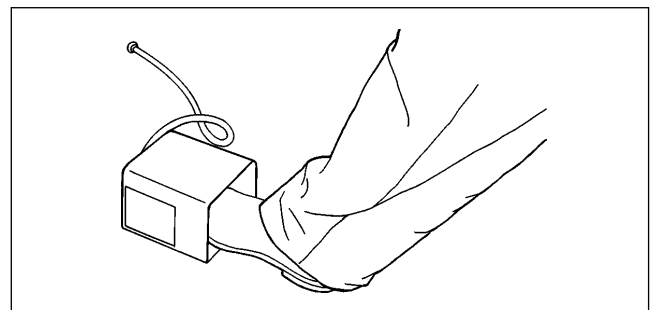


Figure 7

Loading Master Die Cage

**Bottom Half Insertion
Figure 6**

Master Die Cage Bottom Half



Step 1

Completely retract crimp machine. Insert the bottom half of the master die cage onto the pressure plate, aligning the two guide slots on the master die cage back plate with the two shoulder bolts on the pressure plate.

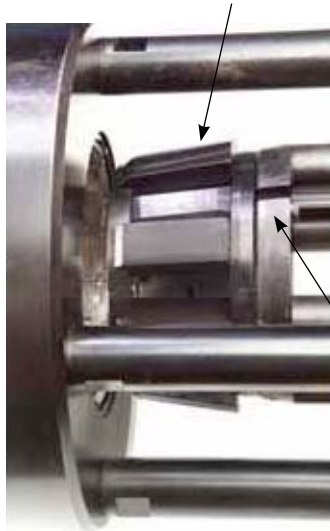
Pressure Plate

WARNING

Do not attempt to insert or remove dies while the power is on or the machine is in operation.

**Top Half Insertion
Figure 7**

Master Die Cage Top Half



Step 2

Insert the top half of the master die cage onto the bottom half of the master die cage and the pressure plate, aligning the shoulder pin on the master die cage with the slot on the pressure plate.

Shoulder Pin Slot

WARNING

Ensure the alignment pins (see figure 3 on page 7) on the bottom half of the master die cage are fully seated in the alignment slots in the top half of the master die cage and pressed up against the pressure plate.

Loading Die Inserts

Installation Instructions for Master Die Cage Inserts

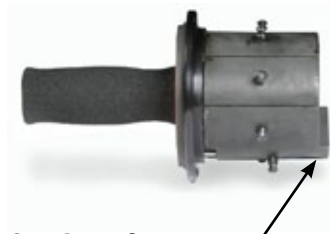


Loading Die Inserts

Step 1

1. Select desired die inserts from master die cage storage rack.
2. After insert tool locator pins and magnets engage with die inserts, rotate insertion tool to the right (clockwise) to disengage inserts from rack.

3. Rotate tool enough to remove inserts from rack, but do not lock tool to dies.



Caution: See note.

Step 2

1. **⚠ Caution:** When inserting dies into master die cage, make sure inserts are fully engaged with the magnets on the insertion tool.



Step 3

1. Retract crimp head fully prior to inserting die inserts.



Step 4

1. Insert the dies through the front of the machine through the crimp ring.

Loading Die Inserts



Loading Die Inserts

Step 5

1. Align the guide holes on the handle plate with the guide pins located on the front plate of the master die cage.
2. Ensure the handle plate is pressed flat against the front plate of the master die cage.

3. Rotate the insertion tool handle to the right (clockwise) to lock the insertion tool and die inserts to the master die cage.



Step 6

1. After insertion, from the rear of the master die cage look closely at die inserts to confirm they are engaged with the magnets on the insertion tool.



Step 7

1. Enter a setting of 180 on the touch pad prior to advancing the crimp head.
2. **⚠ Caution:** Failure to follow Steps 7 through 10 can result in die insert pins breaking.



Step 8

1. Advance crimp head fully by depressing the crimp button until dies bottom out and head stops forward motion.

Loading Die Inserts



Loading Die Inserts

Step 9

1. Rotate insertion tool to the left (counter clockwise) to disengage insertion handle from guide pins on the front of the master die cage.



Step 10

1. Remove the insertion tool by pulling straight out from the crimp head.



Step 11

1. Retract the crimp head fully by utilizing the retract button.
2. The machine is ready for crimping.

Removing Die Inserts

Removal Instructions for Master Die Cage Inserts



Removing Die Inserts

Step 1

1. Enter a setting of 180 on the touch pad prior to advancing the crimp head.
2. Advance crimp head fully by depressing the crimp button until dies bottom out and head stops forward motion.



Step 2

1. Align guide pins on master die cage with insertion tool.
2. Ensure the handle plate is pressed flat against the front plate of the master die cage.
3. Rotate the insertion tool handle to the right (clockwise) to lock the insertion tool and die inserts to the master die cage.



Step 3

1. Retract the crimp head fully by utilizing the retract button.



Step 4

1. Rotate insertion tool to the left (counter clockwise) to disengage insertion handle from guide pins on the front of the master die cage.
2. Pull insertion handle outward to remove die inserts.

Calibration



WARNING: Maintain clear distance from all moving parts.

Calibration Procedure

The calibration procedure below will calibrate the Weatherhead crimp machine to the original factory setting. While new machines are calibrated at the factory and will be ready to use upon receipt, this procedure should be followed if the crimp machine has been disassembled or has had components replaced. The procedure requires the use of an ET1295DC-M180S die cage and a -4 and a -8 Z Series fitting.

NOTE: While in the calibration mode, follow the instructions precisely, and press the keys deliberately. If a mistake is made, the calibration procedure must be started over by turning the machine off and then on again.

1. Insert an ET1295DC-M180S die cage.
 2. Press the STORE and ENTER buttons simultaneously, and then release. Both button lights will now illuminate and will remain lit until the calibration procedure is finished.
 3. Input the value of "275" using the keypad.
 4. Center a Z Series -4 fitting (without a hose) in the die cage, holding the socket or fitting in place with a pencil or other suitable tool. Crimp the socket by pressing the crimp switch or footswitch until the machine retracts by itself, indicating a completed cycle. Allow the die cage to retract to the "full retract" position.
 5. Using a micrometer, measure the crimp diameter. The preferred method is to use the average of the four pairs of indentations.
 6. Locate the crimp diameter in Table A, below. Using the keypad, enter in the three-digit DISPLAY reading that corresponds to the crimp diameter.
7. Input in the value of "675" using the keypad.
 8. Center a Z Series -8 fitting (without a hose) in the die cage, holding the socket or fitting in place with a pencil or other suitable tool. Crimp the socket by pressing the crimp switch or footswitch until the machine retracts by itself, indicating a completed cycle. Allow the die cage to retract to the full retract position.
 9. Repeat steps 5 and 6 at left, using Table B for the -8 socket.
 10. After the three-digit DISPLAY reading in Step 9 is entered, the machine will automatically exit the calibration mode.

Calibration Example

Crimp a Z Series -4, and measure the four crimp diameters around the socket. For example, the diameters measure .692, .693, .694 and .694 inches, to obtain the average diameter, add the four diameters, and divide that sum total by 4.

$$\frac{(.692+.693+.694+.694)}{4} = \frac{2.773}{4} = 0.69325 = 0.693$$

(round to nearest thousandth)

Look at the crimp diameter column in Table A and find your average diameter. If it falls between two numbers, as this one does, interpolate the desired setting. In this case, you would enter 258. If your crimp diameter is .690, you would enter 255; if it is .697, you would enter 262.

Crimp a Z Series -8, and measure the four crimp diameters around the socket. This time, let's say that the diameters measure 1.113, 1.115, 1.114 and 1.115 inches. Obtain the average diameter by adding the four diameters and dividing that sum total by 4.

$$\frac{(1.113+1.115+1.114+1.115)}{4} = \frac{4.457}{4} = 1.11425 = 1.114$$

(round to nearest thousandth)

Table A for -4

Crimp Diameter	Display Reading
0.670	235
0.680	245
0.690	255
0.700	265
0.710	275
0.720	285
0.730	295
0.740	305

Table B for -8

Crimp Diameter	Display Reading
1.070	635
1.080	645
1.090	655
1.100	665
1.110	675
1.120	685
1.130	695
1.140	705

Look at the crimp diameter column in Table B and find your average diameter. If it falls between two numbers, as this one does, interpolate the desired setting. In this case, you would enter 679. If your crimp diameter is 1.110, you would enter 675; if it is 1.119, you would enter 684.

Maintenance

Maintenance Intervals

Die Cage Lubrication

Every 50 crimps	Relube sliding surfaces of dies
Every 500 crimps	Remove old grease and relube
Every 1000 crimps	Die cage maintenance

Crimp Ring Maintenance

Every 500 crimps	Remove old grease and relube
Every 2000 crimps	Remove old grease, inspect for wear or damage and relube if OK.

Cylinder Plate Bushing Maintenance

Every 2000 crimps	Remove old grease, inspect for wear or damage and relube if OK.
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Use NEVER•SEEZ lubricant (Weatherhead Part Number FT1092).

Maintenance Procedures

Machine Maintenance Procedure

1. Sliding surfaces must be kept free of dirt and other abrasive materials.
2. All exposed black metal surfaces should be coated occasionally with a light film of oil to prevent corrosion.
3. Periodically check the oil level in the fluid reservoir of the hydraulic power unit. Maintain the oil level according to the indicator on top of the reservoir. Add ENERPAC hydraulic oil as needed.

Note: Completely retract the crimp ring when checking the oil level.

Maintenance Procedure

Die Cage Maintenance Procedures

1. Lubricate the die cage. For maximum service, die surfaces require lubrication at 50-crimp intervals with NEVER•SEEZ (Weatherhead Part Number FT1092). FT1092 is an eightounce container that will provide sufficient lubricant for about 5,000 crimps.
Periodically remove NEVER•SEEZ residue that has built up on the sides of the dies and in the crimp ring during the crimping process. Do not allow contaminated NEVER•SEEZ to come into contact with the dies. (This can cause dies to stick to the crimp insert.) NEVER•SEEZ residue becomes contaminated with metal and plating chips and airborne contaminants, which can cause premature wear of the dies and crimp ring.
2. Die cage maintenance should be performed at 1000-crimp intervals or every six months, whichever occurs first. Die cages should be free of grease and debris and inspected for worn or damaged components.
 - a. The sliding surface of the dies should appear smooth with no apparent galling. Galled dies must be replaced. Individual dies in a cage can be replaced without replacing all dies.
 - b. Replace springs that show any sign of damage or collapse such as those which are shorter than the other springs.
 - c. The spring plate should appear smooth with no apparent galling. Galled spring plates must be replaced.
 - d. Inspect remaining components, and replace those that are badly worn.

Reassemble components, and liberally apply NEVER•SEEZ to the die surface which slides along the spring plate. Torque the die cage bolts to 50 in.-lbs.

Ensure that all dies slide in and out freely.

Warning: Removal of the cylinder and hydraulic power unit from a crimp machine that is not secured to the floor will cause reduced stability.

Troubleshooting Tips

Remember: The electric motor only runs during the crimping process. The motor energizes when the crimp/ retract switch or footswitch is pressed and de-energizes when the cylinder has retracted.

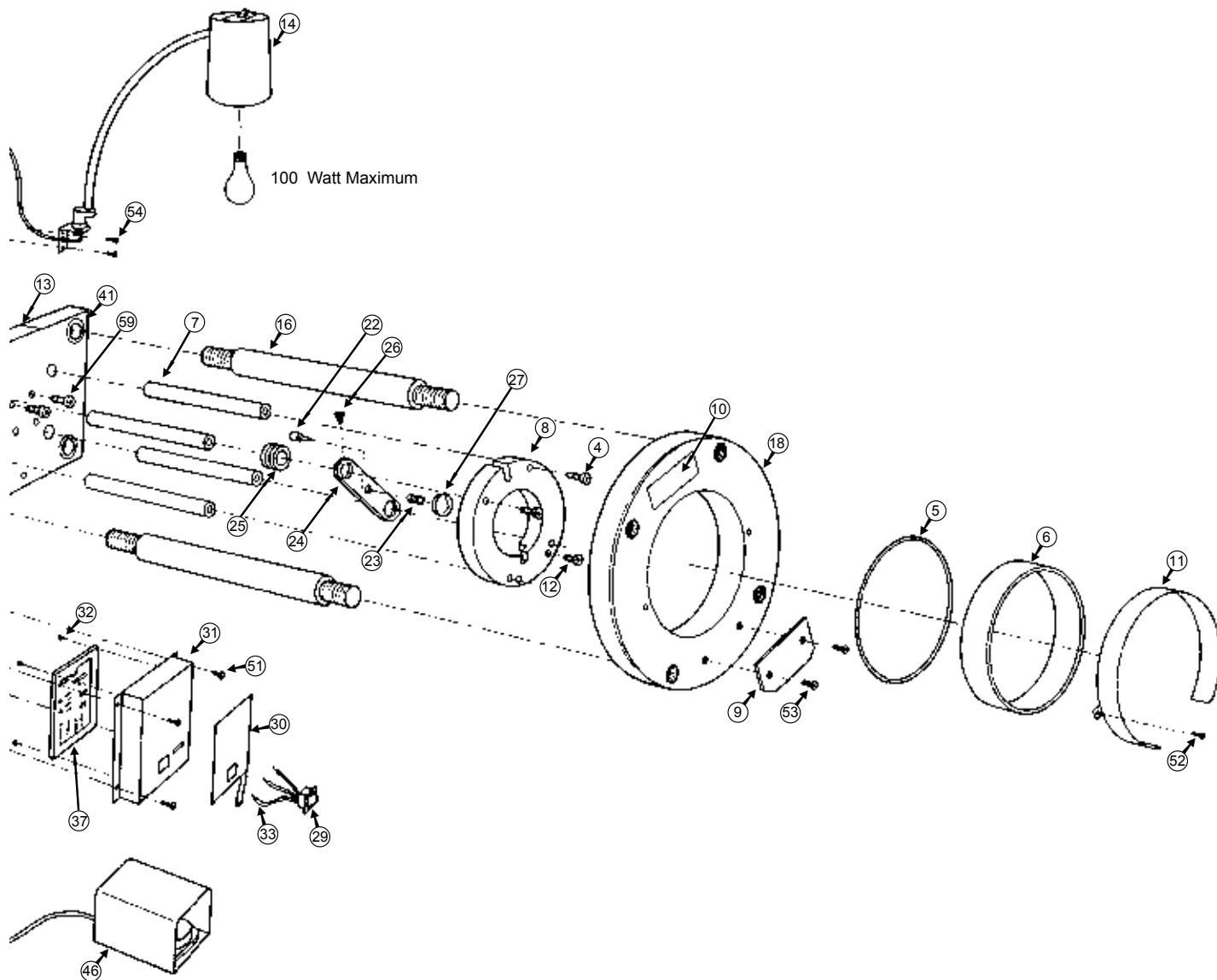
Symptom	Possible	Cause Corrective Action
Pump will not start	<ul style="list-style-type: none"> No power or wrong voltage 	<ul style="list-style-type: none"> Make sure that the unit is plugged in. Make sure that the power source is on. Make sure that the power voltage is correct. Check for loose wires on the circuit board. Check for loose wires on the CRIMP switch.
Motor stalls under load	<ul style="list-style-type: none"> Low voltage 	<ul style="list-style-type: none"> Verify that the branch circuit conforms to the electrical specifications on Page 4 of this manual. Remove any extension cords.
Electric valve will not operate	<ul style="list-style-type: none"> No power or wrong voltage Low voltage 	<ul style="list-style-type: none"> Check for loose wires on the circuit board. Check for loose wires on the CRIMP switch. Make sure that the power voltage is correct.
Pump fails to build pressure	<ul style="list-style-type: none"> External leak in system Internal leak in pump Internal leak in valve Internal leak in system component 	<ul style="list-style-type: none"> Wipe away spilled oil, and locate the source of leak. If the hose assembly is leaking, tighten or replace it. If the pump or cylinder is leaking, refer to the ENERPAC Repair Parts Sheets. Slight oil seepage of the cylinder is normal.
Pump builds less than full pressure	<ul style="list-style-type: none"> Relief valve set low External system leak Internal leak in pump Internal leak in valve Internal leak in system component 	<ul style="list-style-type: none"> Refer to the ENERPAC Repair Parts Sheets for possible adjustment or leakage repair.
Pump builds full pressure, but cylinder does not move	<ul style="list-style-type: none"> Tie rods may be binding 	<ul style="list-style-type: none"> Replace the tie rods.
Cylinder will not return	<ul style="list-style-type: none"> Flow to cylinder blocked Valve malfunction Restricted/blocked Tie rods may be binding Die cage may be binding 	<ul style="list-style-type: none"> Refer to the ENERPAC Repair Parts Sheets. Refer to the ENERPAC Repair Parts Sheet for valve or cylinder repair. Replace the tie rods. Check the die cage and crimp ring for damage, and repair or replace them if necessary. Lubricate the die cage per the maintenance procedures on Page 16. Lubricate the tie rod bushings per the maintenance procedures on Page 16.
Crimp diameters change	<ul style="list-style-type: none"> Incorrect hose/fitting combination Incorrect die cage Die cage or crimp insert damage Transducer is loose Loose crimp machine components External damage to crimp machine Insufficient lubrication on dies 	<ul style="list-style-type: none"> Verify the correct hose/fitting combination. Verify the correct die cage. Repair or replace the damaged components. Tighten the transducer and brackets, and then recalibrate them if necessary. Tighten any loose bolts or screws Lubricate the die cage per the maintenance procedures on Page 16. Lubricate the tie rod bushings per the maintenance procedures on Page 16.
DISPLAY blinks	<ul style="list-style-type: none"> Loose or broken wires 	<ul style="list-style-type: none"> Tighten any wires that may have become loose on the circuit board, pump electrical enclosure, or CRIMP switch.

If the symptom appears to be solely pump or cylinder related, refer to the ENERPAC Repair Parts Sheets.

Any electrical checks must be done by a qualified electrician.

Refill oil reservoir with ENERPAC premium hydraulic oil only (ENERPAC P/N H-F-101).

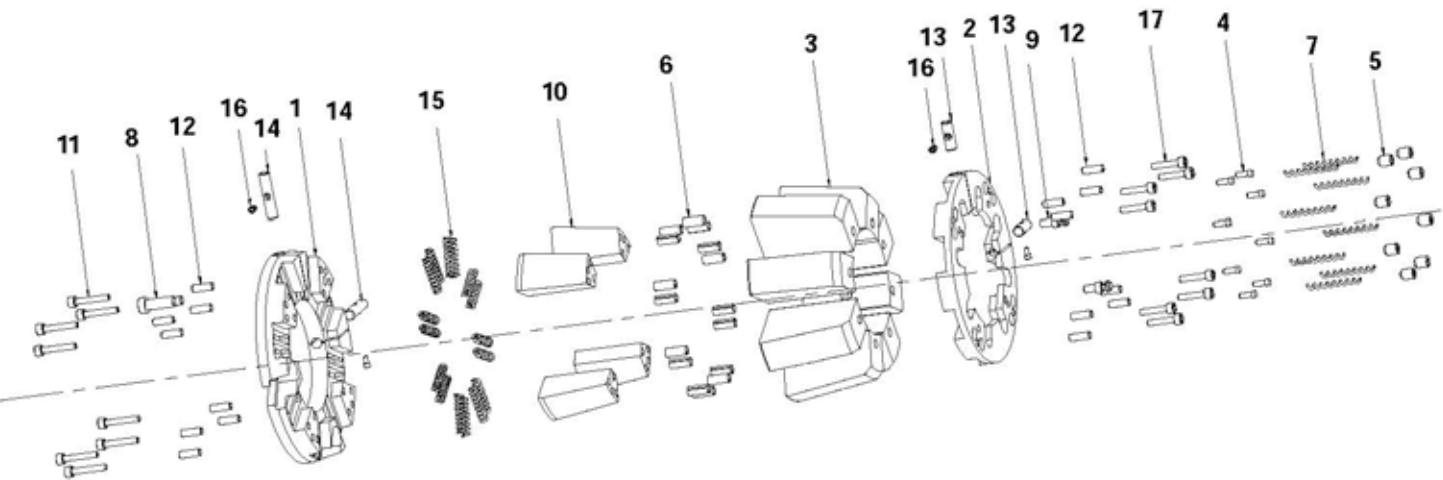
Crimp Machine Components



Detail	Part Number	Description	Qty
33	FT1380-3-31	Insulated Wire	3
34	FT1390-3-1	Hydraulic Power Unit 115VAC 60HZ	1
35	FT1390-3-2	Hydraulic Cylinder	1
36	FT1390-3-3	Cylinder Adapter	1
37	FT1390-3-4	Control Card	1
38	FT1390-3-5	Transducer (includes clips and rod adapter)	1
39	ET4040C-0004	Base (includes electrical box)	1
40	FT1390-3-7	Transducer Rod Extension	1
41	FT1390-3-8	Push Block	1
42	FT1390-3-9	Cylinder Mounting Plate	1
43	FT1390-3-10	Transducer Bracket	1
44	FT1390-3-14	Compression Connector	3
45	FT1390-3-15	Compression Connector	1
46	FT1390-3-16	Foot Switch	1

Detail	Part Number	Description	Qty
47	FT1390-3-17	Hydraulic Power Unit 208-240VAC 50/60HZ	1
48	FT1390-3-18	Locknut	4
50	FT1390-3-6-2	Rear Panel	2
51	222003-1-8-6S	#8-32 X .38 SHCS	8
52	FF9339-0108-06S	#8-32 X .38 BHCS	2
53	FF90258-0110-06S	#10-32 X .38 FHCS	2
54	FF9156-0110-08S	#10-32 X .50 BHCS	2
55	FF9197-06-08S	3/8-16 X .50 SHSS	1
56	222003-6-12S	3/8-16 X 0.75 SHCS	10
57	222003-6-40S	3/8-16 X 2.50 SHCS	4
58	222003-8-56S	1/2-13 X 3.50 SHCS	2
59	222003-6-32S	3/8-16 X 2.00 SHCS	4
60	222003-1-10-6S	#10-24 x .38 SHCS	2
	FT1092	NEVER-SEEZ (not shown)	1

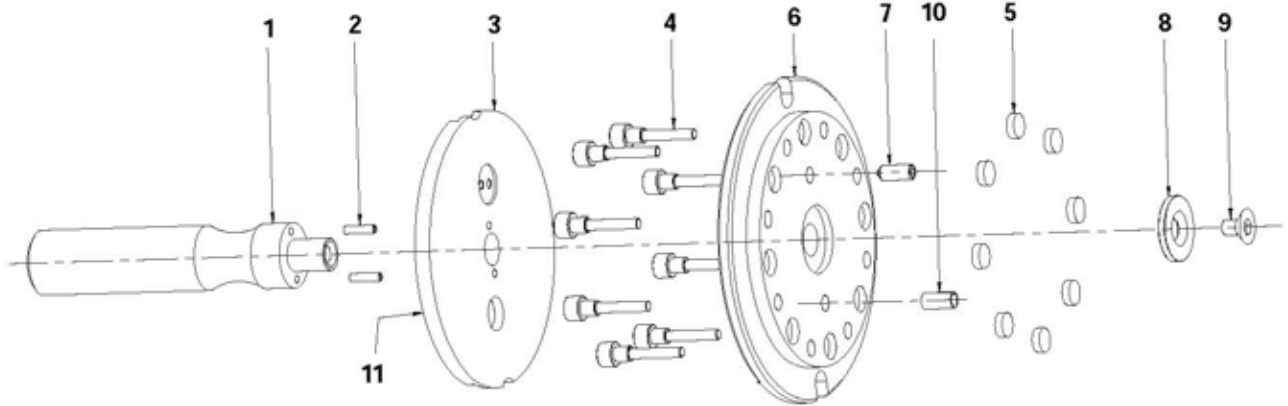
Master Die Cage Components



ET1295-001 (2-Piece Assembly)

Detail	QTY	Part Number	Description
1	1	ET1295C-0006	Back Plate (Split)
2	1	ET1295C-0007	Front Plate (Split)
3	8	ET1295C-0001	Master Die
4	8	ET1295C-0003	Plunger Pin
5	8	ET1295C-0004	Set Screw
6	16	120-70188-46	Roll Pin
7	8	ET1295C-0005	Spring
8	1	FT1209-2-9-5	Shoulder Screw
9	2	ET1295C-0012	Rotation Pin
10	4	ET1295C-0009	Connecting Block
11	8	FF9339-04-20S	Cap Screw
12	16	ET1295C-0017	Dowel Pin
13	2	ET1295C-0011	Front Locating Pin
14	2	ET1295C-0010	Rear Locating Pin
15	16	ET1295C-0013	Spring
16	4	222003-1-6-6S	Cap Screw
17	8	FF9339-04-12S	Cap Screw

Die Insert Installation Tool Components

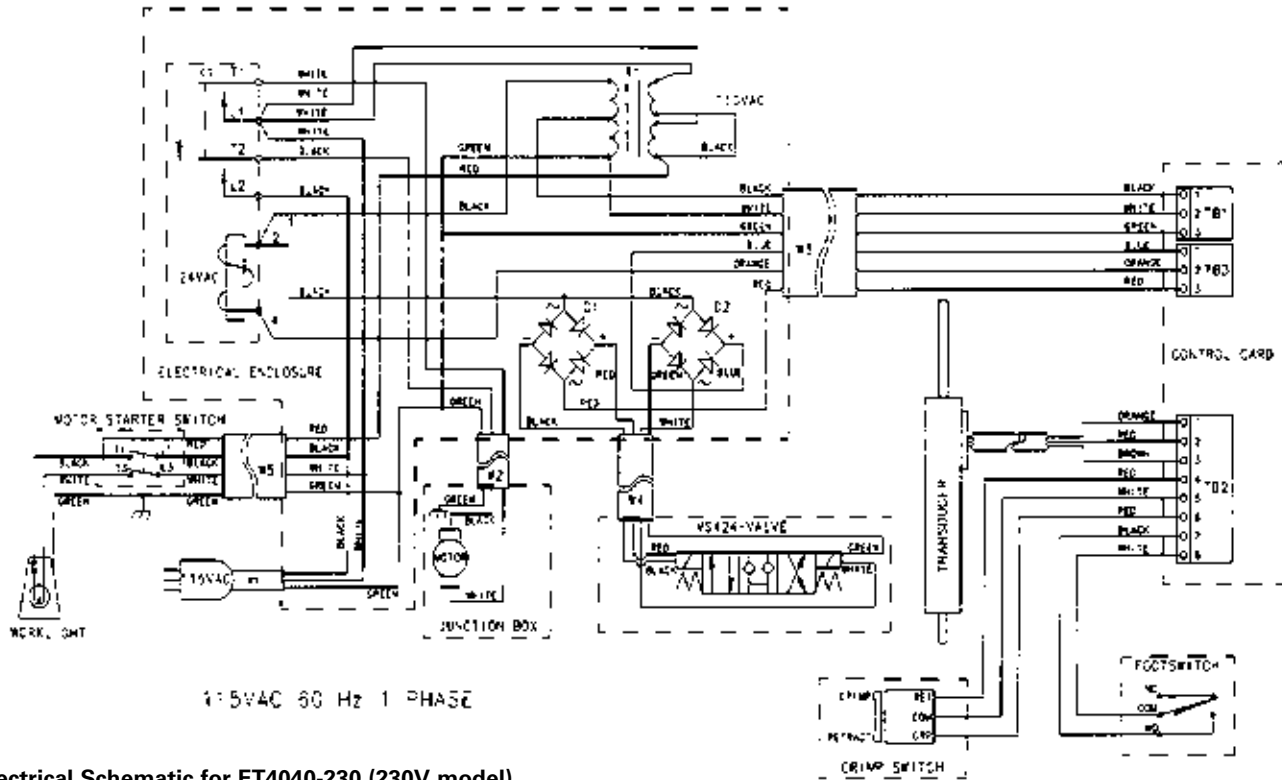


ET1295TP-0001 Install Tool

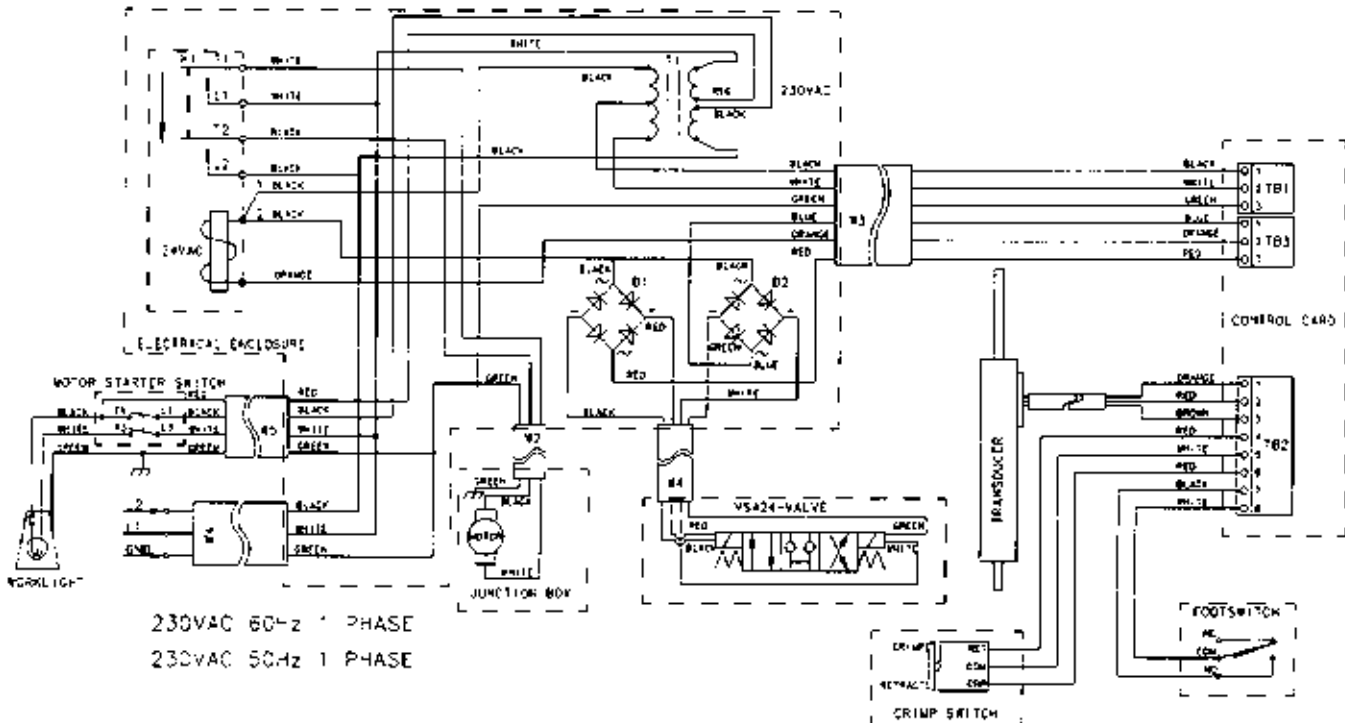
Detail	QTY	Part Number	Description
1	1	ET1295C-0014	Handle
2	2	120-70188-11	Roll Pin
3	1	ET1295C-0018	Lock Plate
4	8	ET1295C-0016	Install Pin
5	8	ET1295C-0023	Disc Magnets
6	1	ET1295C-0015	Installation Plate
7	1	ET1295C-0020	Spring Plunger
8	1	ET1295C-0019	Washer
9	1	FT1243-3-23	Cap Screw
10	1	120-70188-30	Roll Pin
11	1	E-EQCR-TE014-E	Warning Decal

Electrical Schematics

Electrical Schematic for ET4040-115 (115V model)



Electrical Schematic for ET4040-230 (230V model)

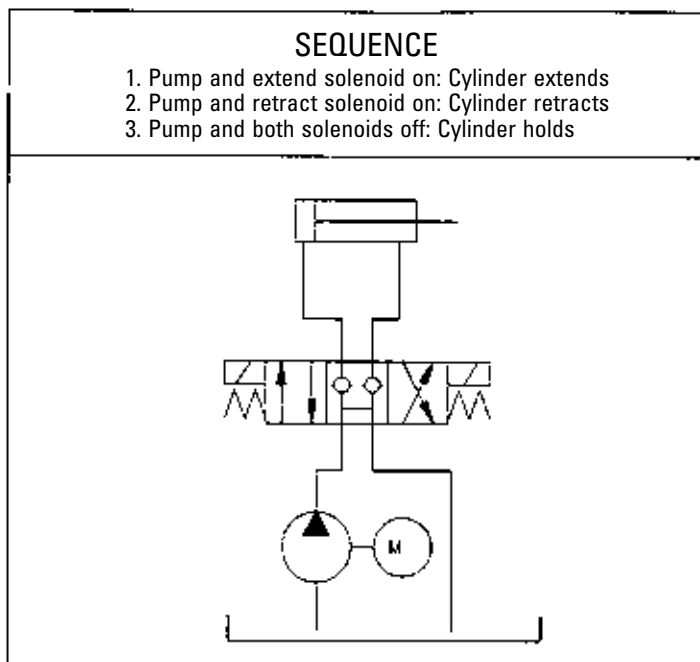


Electrical Schematics

Terminal Block	Pin Number	Voltage	Wire Color	Description
TB1	1	+12V AC	Black	From transformer
TB1	2	+0V AC	White	From transformer
TB1	3	None	Green	To earth ground
TB2	1	+4.04V DC	Orange	To transducer
TB2	2	+4.04 to 0.04V DC*	Red	To transducer
TB2	3	+0.04V DC	Brown	To transducer
TB2	4	+5V DC	Red	Crimp switch
TB2	5	0V DC	White	Switch common
TB2	6	+5V DC	Red	Retract switch
TB2	7	+5V DC	Black	Footswitch
TB2	8	0V DC	White	Footswitch common
TB3	1	+24V AC	Blue	To retract solenoid
TB3	2	+24V AC	Orange	To motor contractor
TB3	3	+24V AC	Red	To advance solenoid

*The voltage at TB2 pin 2 varies between 4.04V DC and 0.04V DC, depending on the position of the cylinder.

Hydraulic Schematic



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