





**PT-1500  
Auto Grip Pull Tester  
Operation Manual  
Order No. 63801-9100**










**molex<sup>®</sup>**

- Description
- Operation
- Maintenance

## Safety Warnings and Information

	<p><b>Read and understand</b> all of the instructions and safety information in this manual before operating or servicing this tool.</p> <p style="text-align: center;"><u>Keep this manual available when using this tool.</u></p> <p>Replacement manuals are available for download at no charge at <a href="http://www.molex.com">www.molex.com</a>.</p>
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<b>SAFETY ALERT SYMBOL</b>	
<p>This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.</p>	
 <b>DANGER</b>	<p><b>DANGER:</b> Indicates an imminently hazardous situation which, if not avoided, could result in death or serious injury.</p>
 <b>WARNING</b>	<p><b>WARNING:</b> Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</p>
 <b>CAUTION</b>	<p><b>CAUTION:</b> Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. <b>CAUTION</b> may also be used to alert against unsafe practices associated with events that could lead to personal injury.</p>

	<p> <b>WARNING</b></p> <p><b>Always</b> wear proper eye protection when Operating or servicing this equipment.</p> <p>Failure to wear eye protection could result in serious eye injury from flying debris.</p>		<p> <b>WARNING</b></p> <p><b>Heavy Object</b> To avoid muscle strain or back injury, use lifting aids and proper lifting techniques when removing or replacing. Failure to observe these precautions may result in injury or property damage.</p>
	<p> <b>WARNING</b></p> <p><b>Never</b> operate, service, install, or adjust this machine without proper instruction and without first reading and understanding the instructions in this manual and all applicable press and/or wire processing machine manuals.</p>		<p> <b>WARNING</b></p> <p><b>Do not use</b> compressed air to clean this equipment. The forces created by compressed air can force debris into the tool.</p> <p>Failure to observe these precautions may result in injury or property damage</p>
<p> <b>WARNING!</b></p> <p><b>Do not</b> exceed the capacity of the display module, regardless of whether the display module (force gauge) is on or off, at 230 lbf (105 kgf), the display will flash</p> <p><b>Never</b> exceed the maximum capacity of 440 LBF (200 kgf), or the load cell will be damaged. Avoid shock load.</p> <p>Failure to allow for sufficient overload capacity in the load, structure and mounting elements, may result in property damage, Serious injury, and even death</p>			

 **CAUTION**

- When mounting display module, after recalibration or repair, use M4 mounting screws with a maximum insertion depth of 5mm into the display module.
- Only use mounting hardware supplied.
- Hand tighten wire terminal grip only. Do not use tools
- Do not remove the warranty seal or disassemble the display module. Disassembly will void the warranty.
- **Never** perform any service or maintenance other than as described in this manual.
- **Never** modify, alter or misuse the equipment
- Molex crimp specifications are valid only when used with Molex terminals, applicators and tooling.
- Failure to observe this precaution may result in injury and property damage.

### Tooling Technical Assistance

Molex offers tooling technical assistance for customers who may need some guidance for tooling adjustments. This support can be obtained by calling either of the two numbers listed below and asking for the Molex Tooling Group.

Call Toll Free 1-800-786-6539 (US) 1-630-969-4550 (Global).

This assistance is limited to the operation and set-up of a customer's Molex Tester. Questions with regard to Molex connector products or how to identify the proper tooling and/ or tooling documentation should be directed to your local Molex personnel or Customer Service Representative.

When calling for service on the press a copy of the Tooling Manual and Specific Applicator Tooling Specification Sheet should be present and a person that is familiar with the applicator should be present. Be sure the following information is supplied:

1. Customer name
2. Customer address
3. Person to contact such as (name, title, e-mail, and telephone number)
4. Pull Tester order number
5. Serial number (Lease number also if applicable)
6. Molex Connector product order number
7. Urgency of request
8. Nature of problem

**Molex Application Tooling Group**

2200 Wellington Court  
Lisle, IL 60532, USA  
Tel: +1 (630) 969-4550  
Fax: +1 (630) 505-0049

Visit our Web site at <http://www.molex.com>

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- 2 Setup and Operation
- 3 Maintenance

## Section 1

### General Description

- 1.1 Description
- 1.2 Features
- 1.3 Technical Specifications
- 1.4 Delivery Check
- 1.5 Tools

## General Description

### 1.1 Description

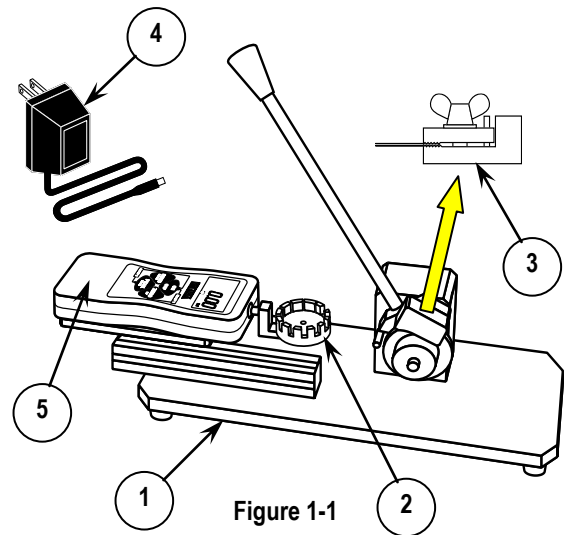
The PT-1500 Auto Grip Pull Tester, order no. 63801-9100, is a manual, lever-operated digital pull tester for checking pull strength of crimped terminals. The tester is designed to automatically grip the wire as the hand lever is pulled down.

The unit is complete with display module, two multi-terminal grips, pull tester frame, and an AC adapter/charger for the display module. It has a 3-point, NIST certification.

#### Principal Mechanical Parts of the Auto Grip Pull Tester

See Figure 1-1

1. 63801-9100 PT-1500 Pull Tester assembly
2. 63801-9101 Multi-terminal grip
3. 63801-9102 Clamp type terminal grip
4. 63801-9103 A.C. adapter / charger, 120 VAC  
63801-9105 A.C. adapter / charger, 230 VAC
5. 63801-9104 Display module



### 1.2 Features

- Single-stroke, ergonomic pull-down motion
- Automatically grips sample wire as lever is pulled
- Grips wire diameters up to 0.23" (8-30 AWG)
- Lbf, kgf, and Newton units are push-button selectable
- Digimatic and analog outputs
- Display module is easily removed for recalibration or repair
- Runs on internal rechargeable batteries or AC adapter (120 or 230 VAC)
- NIST Calibration Certificate included

### 1.3 Technical Specification

**Dimensions** See Figure 1-2

Width: 475.0 to 5.45.0mm (18.70 to 21.45")  
(Depending on the handle position)

Depth: 150.00mm (5.90")

Height: 400.0mm (15.74")

#### Weight

10.88kg (24 lbs)

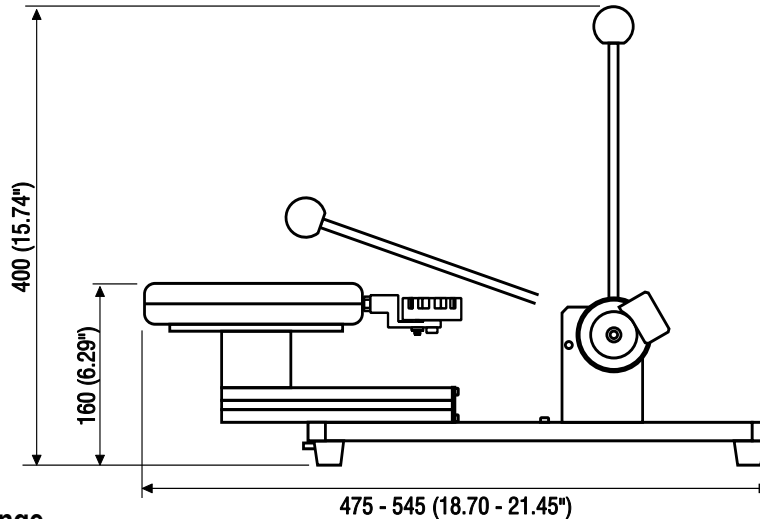
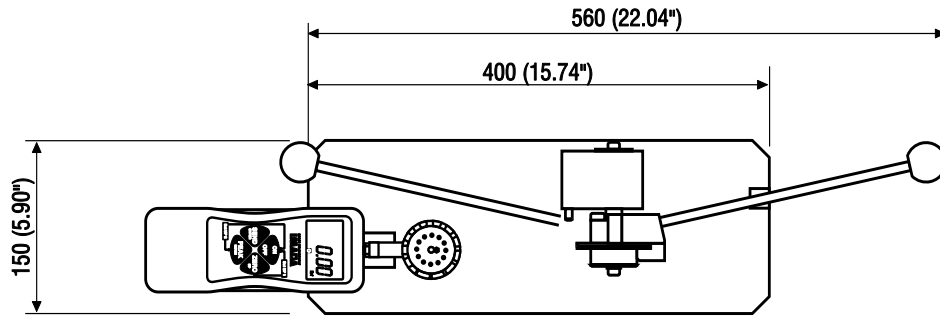


Figure 1-2

**63801-9100 Range**

(Resolution)  $\pm 0.2\%$  F.S.  $\pm 1$  LSD

Model	Capacity (Resolution)		
	Pound-force	Kilogram-force	Newton
63801-9100	220.0 (0.1 lbf)	100.0 (0.1 kgf)	1000 (1N)

**1.4 Delivery Check**

Carefully remove the assembly from its shipping container and determine that the following items are included in the package.

Description	Quantity
63801-9100 Pull Tester assembly	1
63801-9102 Clamp type terminal grip	1
63801-9103 A.C. Adapter / charger (120 VAC) or	1
63801-9105 A.C. Adapter / charger (230 VAC)	1
TM-638019100 Operation Manual	1

**1.5 Tools**

The following tools are recommended for set up and maintaining the tester:

- ✓ Open end wrench, 10mm
- ✓ Hex wrench, 5mm



## Section 2

### Set-Up and Operation

- 2.1 Display Module Operation
- 2.2 LCD Display
- 2.3 Installation
- 2.4 General Operation
- 2.5 Removing the Display Module
- 2.6 Settings and Functions



Read the following instructions before attempting to operate the Auto Grip Pull Tester.

## 2.1. Display Module Operation

See Figure 2-1.

### Display

To set the measurement units to pound-force (lbf), kilogram-force (kgf), or Newtons (N), follow the steps below:

1. Turn off the display module.
2. Hold the ZERO button and press the ON/OFF button once.
3. Press the ZERO button to change to the desired units.
4. Push the SEND button to select.
5. The newly selected units will stay as the default.

### On / Off Button

Power ON, capacity is displayed. After 10 minutes, unit powers down if no key is pressed.

### Peak Button

Press to activate the Peak mode.

### Send Button

Transmits display value.

### Zero Button

Tares weight of attachment and resets peak value.

### Measuring Shaft

Attach any of the included standard attachments or optional special attachments to measure tension.

### Charger Port

Recharge the internal NiMH battery or connect directly to an AC power supply by using one of the included AC charger / adapters, appropriate for your local electrical requirements. (See Figure 1.1).

### RS-232 Port

For data transmission to the external device.

## 2.2 LCD Display

See figure 2-2.

### Compression Icon

Indicates the compression measurement.

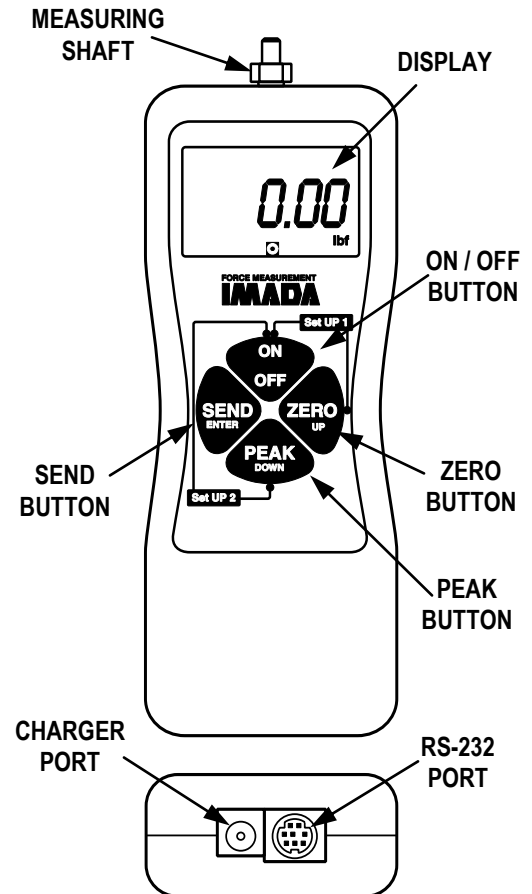


Figure 2-1

**Tension Icon**

Indicates the tension measurement, (used for crimp pulls).

**Unit Indicator**

Displays selected measuring unit. Display pound-force (lbf), kilogram-force (kgf) or Newtons (N).

**Battery Icon**

Flashes when gauge needs to be recharged.

**GO/NO GO Indicator**

- Under low set point
- Between low and high set point
- + Over high set point

**Negative Sign**

Will displayed when measuring tension.

**Peak Icon**

Will displays continuously when peak mode is active.

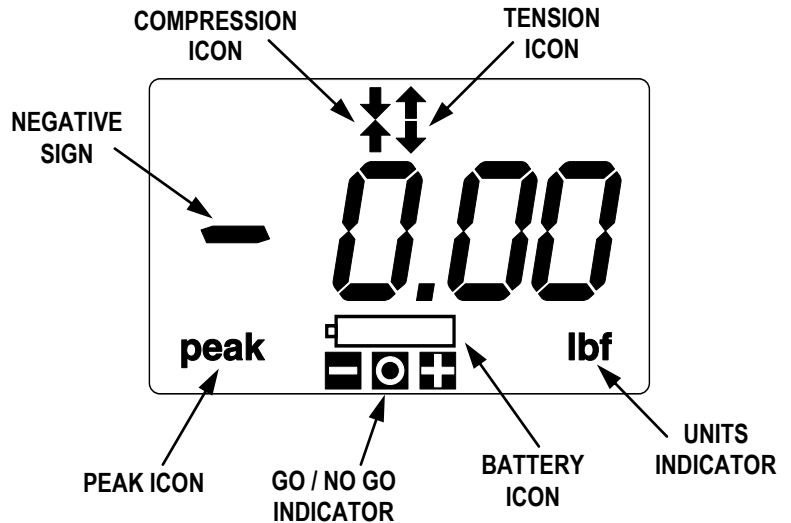


Figure 2-2

**2.3 Installation**

See Figure 2-3

1. Place the Auto grip Pull Tester securely on a stable work surface.
2. To adjust clearance between the two wire gripping fixtures if necessary, loosen the cap screw on the display-module mounting bracket. Adjust the position and the re-tighten the cap screw.
3. To remove the grip, use a 10mm open-end wrench to hold the hex nut while turning the grip counter-clockwise (CW). Installation is the reverse of removal but do not over tighten the grip on the display module.
4. Connect the appropriate AC adapter (120 or 230 VAC included) to the display module and plug it into an AC outlet or use the internal rechargeable battery.

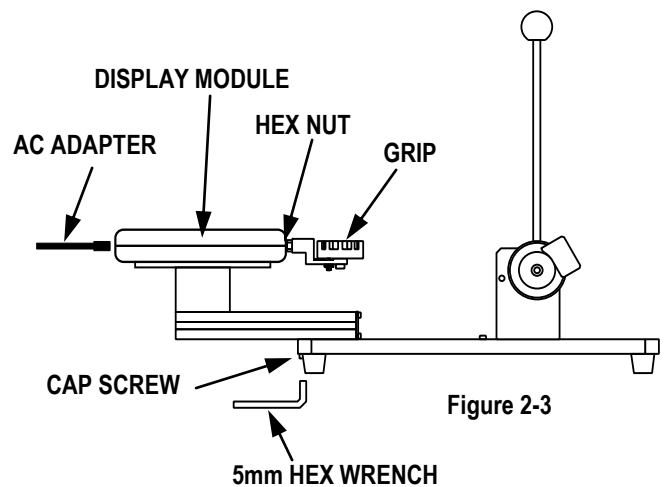


Figure 2-3

**2.4 General Operation**

See figure 2-4

1. Press the **ON/OFF** button to turn on the display module on, press the **PEAK** button to enter the peak measuring mode.
2. If using the ring wire terminal grip, turn the turret to select an appropriate aperture and bring the hand lever forward. See Figure A.
3. Insert the sample so that the wire terminal is held in place by the grip. If necessary, press the **ZERO** button to reset. See Figure B.

4. Thread the wire between the gripper and the cylinder which is attached to the end of the hand lever. See Figure C.
5. Slowly pull the hand lever back to automatically grip the wire and pull off the terminal. See Figure D.

**NOTE:** Pull the lever slowly and steadily to insure consistent readings.

6. Read the result from the display module and press the **ZERO** button to reset for the next test.

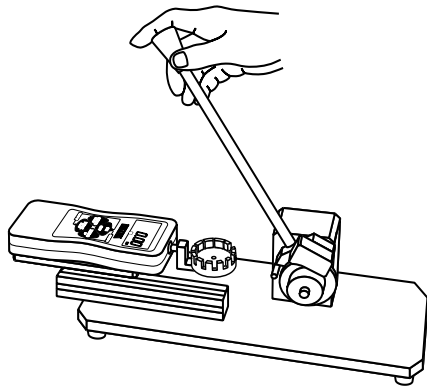


Figure A

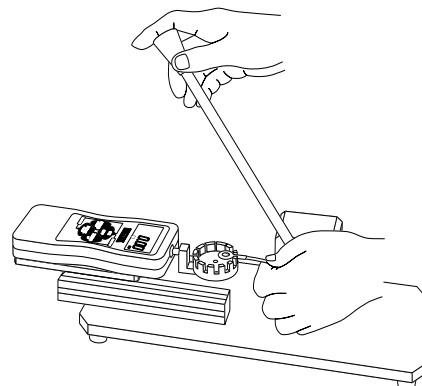


Figure B

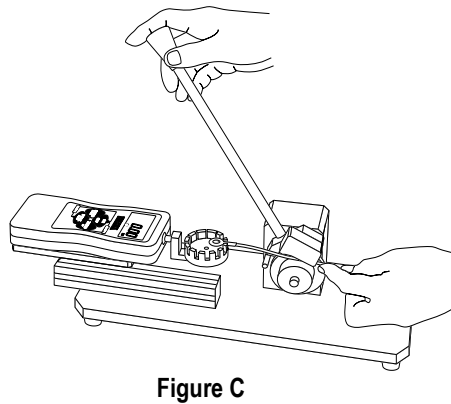


Figure C

Figure 2-4

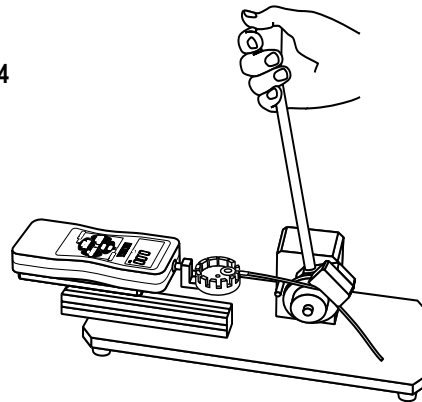


Figure D

## 2.5 Removing the Display Module

See Figure 2-5

The display module can be easily removed for recalibration or repair. To do this:

1. Loosen the cap screw on the display module mounting bracket and slide the mounting bracket off the base. Remove the (4) M4 Phillips screws from the back of the mounting plate.
2. Remove the display module.

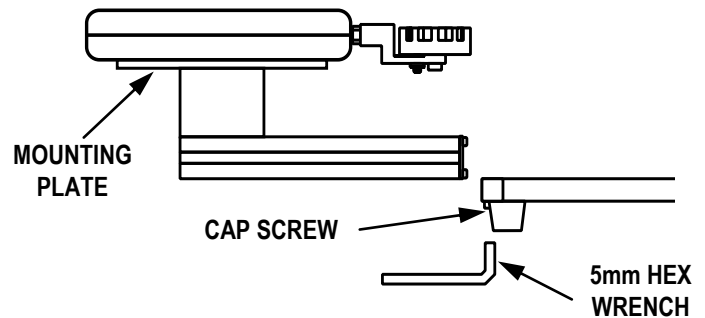


Figure 2-5

## 2.6 Settings and Functions

### RS-232C Bi-directional Interface Functions (See Chart below)

Connect the gauge to an external data receiving device, with the optional RS-232C cable (Order No. 63801-9151). See Optional Cables and Software below.

All gauge functions can be duplicated from a remote location by using the RS-232C interface.

All commands must be sent in uppercase ASCII character format followed by [Enter].

Signal level: RS-232C, 8 data bits, 1 stop bit, and no parity bit.

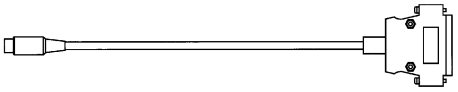
Baud rate: 19200 bps.

RS-232C Interface Functions (Upper case ASCII format)		
Command	Function	Response* [ ]
K [Enter]	Select "kgf/gf" units	R [Enter] executed [ ] E [Enter] error*
N [Enter]	Select "N" units	
O [Enter]	Select "lbf/ozf" units	
P [Enter]	Select peak mode	
T [Enter]	Select real time mode	
Z [Enter]	Tare Display [ ]	
Q [Enter]	Turn off power [ ]	
EHHHLLLL [Enter]**	Set high/low set points(4 digit) HHHH=High, LLLL=Low [ ]	EHHHLLLL [Enter]** set point values (4 digit) HHHH=High, LLLL=Low [ ]
E [Enter]**	Read high/low set points	[value][units][mode][Enter]
D [Enter]	Transmit display data	

\*E [Enter] response if the command is not accepted.  
[ ]\*\*Ignore decimal point for high low set points

### Optional Cables and Software

To capture and analyze the peak data from the force gauge, a running log of all the data is displayed along with a chart. Calculate max/min, average, and standard deviation.

Order No.	Description	Type
63801-9150	Software, Data Acquisition.	
63801-9151	RS-232C cable (10', 9 pin female)	
63801-9152	RS-232C to USB Adapter	

### Recharging NI-MH Battery

1. To maximize the life of the battery, power is shut off after 10 minutes of non-use. Automatic shut off is bypassed when used with the AC adapter/charger.
2. Battery icon will flash when the gauge needs to be recharged.
3. Turn off power. Only use one of the AC adapter / chargers provided, 63801-9103 for 120VAC, 63801-9105 for 230VAC. Plug into the correct AC output. It takes 10 hours to charge fully.
4. When the gauge is turned off, make sure the AC adapter/charger is disconnected to avoid overcharging.

## Section 3

### Maintenance

3.1 Cleaning

3.2 Calibration

### 3.1 Cleaning



**CAUTION:** Always disconnect power supply before all maintenance

The Auto Grip Pull Tester maintenance will increase instrument life and produce a consistent, crimp strength measurement capability. The following procedure should be followed at the end of each operation.

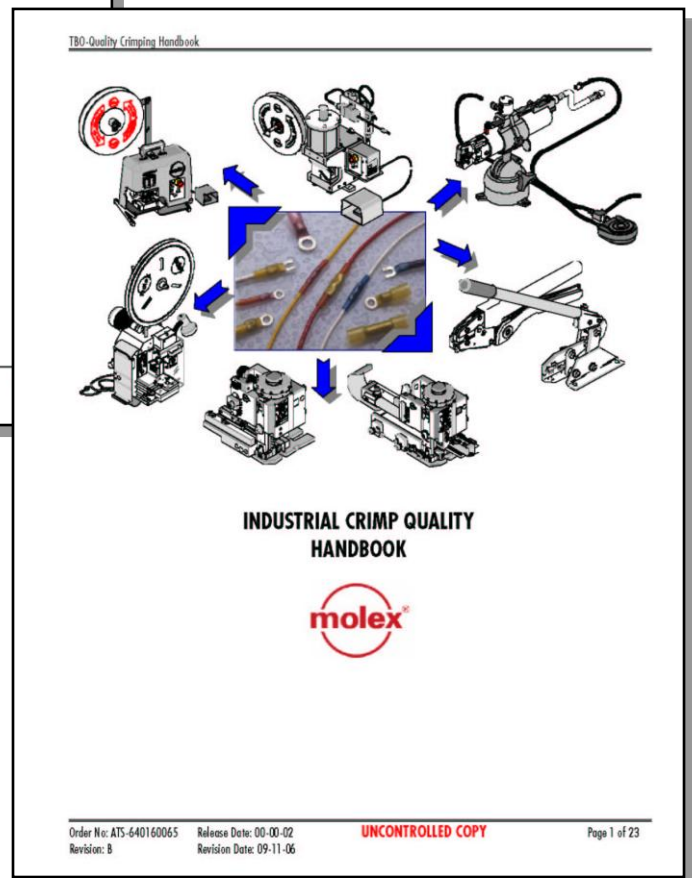
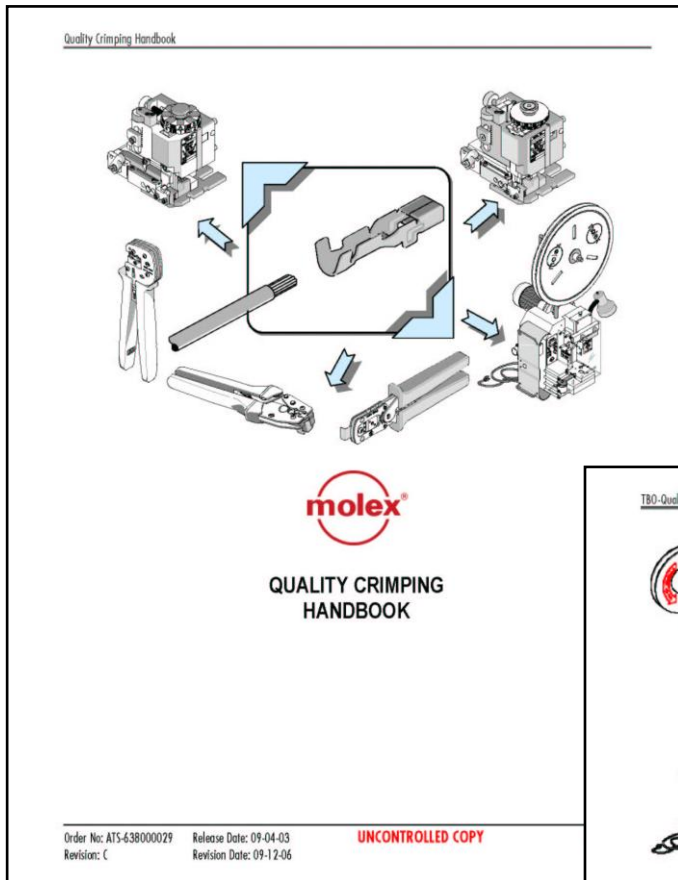
1. Always disconnect the power supply from this tool when not in use.
2. For efficient operation, the Auto Grip Pull Tester should be cleaned daily. Use a soft bristle brush to remove debris from critical areas such as the terminal grip and clamp.

### 3.2 Calibration

The display module should be calibrated on a regular schedule (usually annually). Molex does not offer a Calibration service for the display module. A local calibration service should be used.

## For more information use the Quality Crimping Handbook And Industrial Crimping Handbook

There is no charge for these books, they can be found on the Molex Website ([www.molex.com](http://www.molex.com)) or contact you local Molex sales engineer





## 2 YEAR WARRANTY

(RESTRICTIONS APPLY)

Molex warrants its products to the original purchaser to be free from defects in workmanship and material under normal use and proper maintenance for two years (one year for adapters, attachments, batteries, and cables) from original purchase. This warranty shall not be effective if the product has been subject to overload, shock load, misuse, negligence, accident, or repairs attempted by others than Molex.

During the warranty period, we will, at our option, either repair or replace defective products. Please call our customer service department for a return authorization number and return the defective product to us with freight prepaid.

The foregoing warranty constitutes the SOLE AND EXCLUSIVE WARRANTY, and we hereby disclaim all other warranties, express, statutory or implied, applicable to the products and/or software, including but not limited to all implied warranties of merchantability, fitness, non-infringement, results, accuracy, security and freedom from computer virus. In no event shall Molex be liable for any incidental, consequential or punitive damages in connection with the use of its products and/or software.



**CAUTION:** To prevent injury, wear eye protection when using this tool.

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