



Empowering you to work smarter

## NTB7L

### BreakFree® Power Tube Bender User Manual



NAVAC Inc.

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**BREAKFREE®**  
CORDLESS SERIES

## Safety Guide

**Warning:** To avoid injury, please read this instruction manual carefully before use.

1. Keep work area as clean as possible to avoid slips, falls or other injury while using tool.
2. Do not operate this or any other tool while under the influence of medications, drugs, or alcohol.
3. Keep this and all other power tools away from minors and any other untrained individuals.
4. Do not attempt to operate this tool with bending tool components from other manufacturers. Use the OEM parts included in the kit to avoid injury, tool destruction and a void warranty.
5. Keep all body parts, appendages, or objects away from moving parts during operation.
6. Product warranty is void if any changes, modifications, or customizations of the tool have taken place.
7. Batteries must be left intact and sealed; in addition to a void warranty, opening lithium-ion batteries may result in severe injury. Dispose of and handle batteries in accordance with local environmental regulations.
8. For troubleshooting faults or technical issues, please refer to table 2 and table 3.

## NTB7L Parts Diagram



Fig. 1

## Technical parameters

|           |   |
|-----------|---|
| Model     | NTB7L                                     |
| Tubing OD | 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 7/8" |
| Dimension | 12.6"x9.8"x7" (325x250x180mm)             |
| Weight    | 13 lbs (5.9 kg)                           |

### Battery pack

|                     |                       |
|---------------------|-----------------------|
| Battery             | 7.4V 2Ah 14.8Wh       |
| Quick Charge        | 30 minutes            |
| Ambient Temperature | 41°F-104°F (5°C-40°C) |

### Charger

|                     |                           |
|---------------------|---------------------------|
| Power Supply        | AC 100-240V (50/60Hz) 50W |
| Output Voltage      | 8.3 V                     |
| Output Current      | 3.5 A                     |
| Ambient Temperature | 41°F-104°F (5°C-40°C)     |

Table 1

## Tube bender operating instructions

### 1. Preparation

Always use the tool for **FRESH SOFT COPPER** tubing. Hard copper tubing will result in failure. Deformed (squished, kinked, oval, etc.), oxidized copper tubing or non-copper tubing will result in failure.

### 2. Crossbar installation

Tighten crossbar screw to lock the crossbar on the tool.

### 3. Battery installation

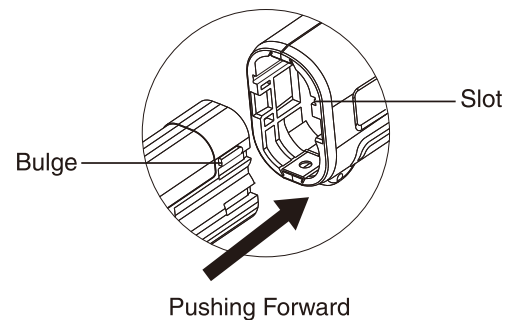


Fig. 2

## Tube bender operating instructions

### 4. Use of tube bender

#### 4.1 Set up tubing size selector, then lock;

Loosen locking nut on tubing size selector, slide it to the desired position: as shown below (①, ②, ③), tighten locking nut on the tubing positioner.

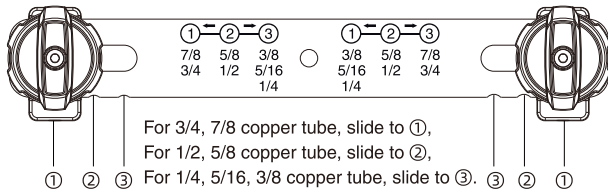


Fig. 3

#### 4.2 Align size notch to copper tube

Turn size selection wheel, let the right size notch facing towards tool body, align tube onto the notches on both sides. **WRONG SIZE NOTCH WILL RESULT IN FAILED BEND, OR FURTHER DAMAGE THE TOOL ITSELF.**

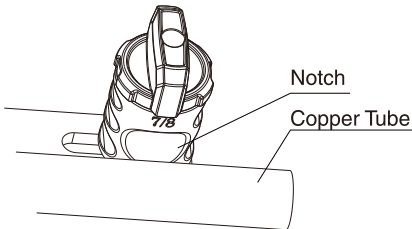


Fig. 4

#### 4.3 Mandrel installation

Choose the correct size mandrel. Allow angle marks facing up. Attach mandrel to the top of the Pushing Head by simply pressing down until you feel the spring latch engages. To disassemble, push mandrel out using two hands, each on one side of the mandrel.

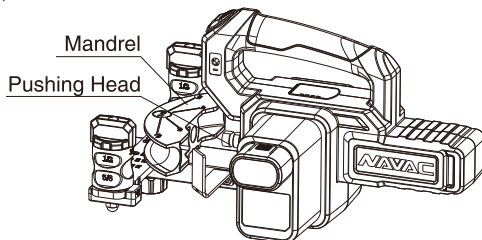


Fig. 5

## Tube bender operating instructions

### 4.4 Bend tube

Press power switch to turn the tool on. When the indicator light is green, hold the copper tube with one hand, put it into tube notch so it's well fit. Use the other hand to push the control button forward.

**Warning:** Avoid physical contact with moving parts of the tool when bending.

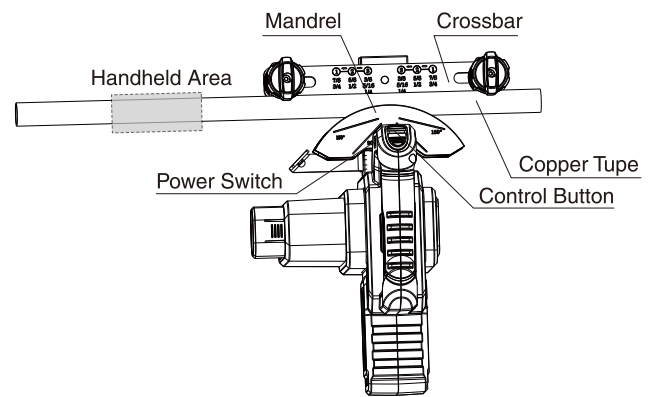


Fig. 6

The copper tube will be bent to 90° when bender stops automatically. To bend other angles, refer to angle marks on mandrel.

### 5. Release tube

Pull control button backward, mandrel will back up. Tube will be pushed out automatically.

### 6. Standby

6.1 After bending, tap Power Switch, turn tool to standby mode.

6.2 Tool will automatically enter power saving mode, indicator light will go out if no operation in 5 minutes.

**Reverse bender (\*Reverse bender is sold separately)**

1. Lock reverse bend retaining block using **Screw A** onto tube bender, press appropriately sized Mandrel with angle mark side facing down into the reverse bend retaining block.
2. Lock crossbar onto reverse bend retaining block, then insert it into the pushing head and lock it with **Screw B**.
3. Slide tubing size selector into the right position (refer to 4.1). Select desired notch size on tube size selector facing toward mandrel, put copper tube into size notch on both side, then start to reverse bend.

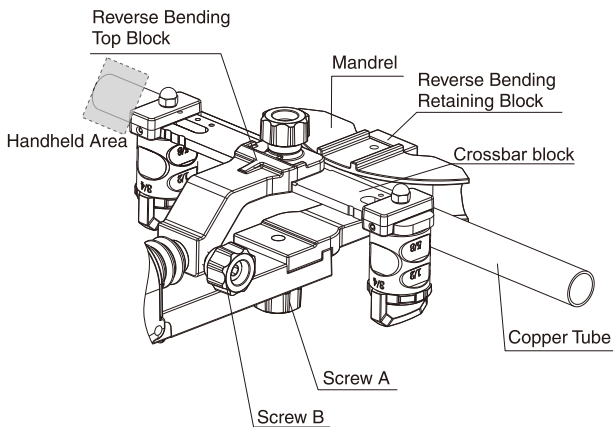


Fig. 7

**Charging**

1. Press down battery release tabs to remove battery.

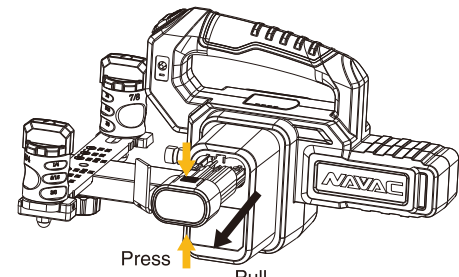


Fig. 8

2. Insert battery into the charger notch.

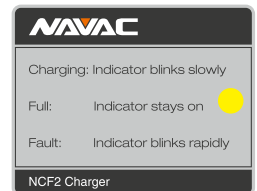
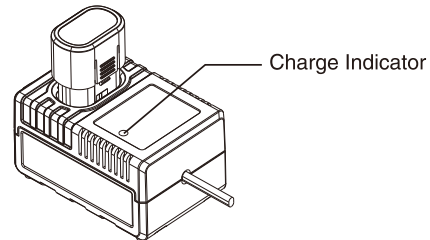


Fig. 9

## Troubleshooting

### 1. Electrical Failures

| Problem                                 | Possible Cause                 | Solution                                     |
|---|--------------------------------|--|
| Work indicator one flash one off        | Short circuit                  | Contact the manufacturer or dealer to repair |
| Work indicator two flash one off        | ID detection failure           | Check the battery or ID pin position         |
| Work indicator three flash one off      | Battery temperature protection | Wait for the battery to cool down or heat up |
| Work indicator four flash one off       | Overcurrent protection         | Reboot                                       |
| Work indicator five flash one off       | Motor temperature protection   | Waiting for the motor to cool down           |
| Work indicator six flash one off        | Limit switch protection        | Contact the manufacturer or dealer to repair |
| Charger indicator light flashes rapidly | Battery or charger failure     | Contact the manufacturer or dealer to repair |

Table 2

### 2. Other Failures

| Problem  | Possible Cause   | Solution   |
|--|--|--|
| Bender does not run or stops while operating when power switch and operation button is pressed | Low battery power  | Charge   |
|  | Line or motor failure  | Contact the manufacturer or dealer to repair                           |
| Copper tube deformation, fracture, poor angle  | The selected tubing size selector notch does not match the copper tube | Select a suitable tubing size selector notch                           |
|  | The selected mandrel does not match the copper tube                    | Select a suitable mandrel  |
|  | The selected gear on the crossbar does not match the copper tube       | Follow the instructions on the crossbar to select the appropriate gear |
|  | Tubing size selector is not locked                                     | Lock the tubing size selector  |
|  | The bent copper tube is hard copper tube                               | Use the tool for FRESH SOFT COPPER tubing.                             |

Table 3



Empowering you to work smarter

BreakFree™ Power Tube Expander  
**NTE11L**  
User Manual



Failure to follow warnings could  
result in death or serious injury.

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## CONTENTS

|   |    |
|---|----|
| Structure and Technical Parameters .....      | 01 |
| Operation Instructions for Tube Expander..... | 02 |
| 1. Tube Expansion.....                        | 02 |
| 2. Pressure Relief.....                       | 03 |
| 3. Illumination.....                          | 03 |
| 4. Charge.....                                | 04 |
| 5. Oil Change.....                            | 05 |
| Lubrication .....                             | 06 |
| Caution.....                                  | 06 |

### Safety Guide

**Caution:** Read this manual thoroughly before using.

- Keep the working area clean and tidy.
- Do not operate while under the influence of alcohol.
- Keep children and untrained people from using.
- Use original parts and auxiliary.
- Long time using may overheat its motor which activate overheat protection.
- Temperature higher than 158°F (70°C) or lower than 41°F (5°C) may activate the motor overheat or subcooled protection.
- Don't dismantle NTE11L at random which may void warranty.
- Product is warranted against defects in materials and workmanship for two years from the date of purchase.
- Dispose the battery according to local regulations.
- Pending patent.

### Structure



Fig.1

### Technical Parameters

|                   |  |
|-------------------|--|
| Model             | NTE11L                                   |
| Tube OD           | 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1-1/8" |
| Power             | DC motor                                 |
| Cone Speed        | 120 RPM                                  |
| Battery Capacity  | Up to 200 expansions per charge          |
| Time to Expanding | Complete an expansion in 12 seconds      |
| Dimension         | 8.2"x2.6"x9.8" (209x67x249mm)            |
| Weight            | 3.4 lbs                                  |

#### Battery pack

|                     |                       |
|---------------------|-----------------------|
| Battery             | 7.4V 2Ah 14.8Wh       |
| Quick Charge        | 30 minutes            |
| Ambient Temperature | 41°F-104°F (5°C-40°C) |

#### Charger

|                     |                           |
|---------------------|---------------------------|
| Power Supply        | AC 100-240V (50/60Hz) 50W |
| Output Voltage      | 8.4V                      |
| Output Current      | 3.5A                      |
| Ambient Temperature | 41°F-104°F (5°C-40°C)     |

Table 1

## Operating Instructions for Tube Expander

## 1. Tube Expansion

1.1 Deburr and anneal copper tube (Note1: Soft tube doesn't need to be annealed)

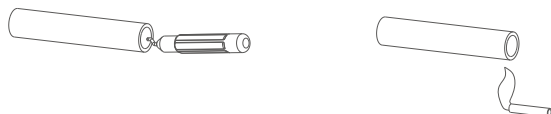


Fig.2

1.2 Insert copper tube onto expander head, press start button to operate.  
The expander stops automatically after expansion is completed.

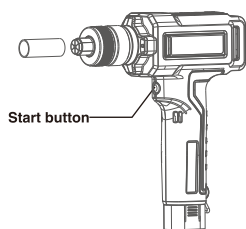


Fig.3

(If you accidentally press start button during operation, expander will stop working, press start button again to restore tube expansion operation)  
(Note2: if start button is pressed but expander doesn't respond, manually release pressure by pushing pressure release button and then press start button again)

## Operating Instructions for Tube Expander

## 2. Pressure Relief

2.1. Automatic pressure relief

Expansion pressure will be relieved automatically after tube expansion process is completed.

2.2. Manual pressure relief

Manual pressure relief push button is to be used only when expander is running abnormally (pressure relief button is shown in the figure below). When pressure relief is needed, push this button in the direction of arrow to release pressure.

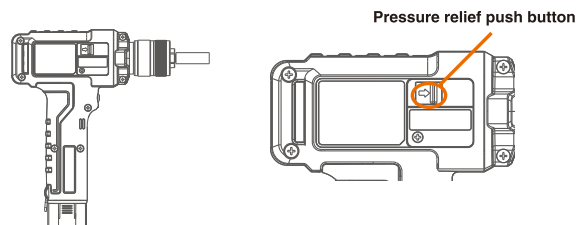


Fig.4

## 3. Illumination

3.1 Click light button to turn on light.

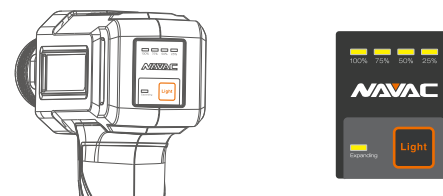


Fig.5



## Operating Instructions for Tube Expander

## 4. Charge

4.1 Press tabs on both sides of battery to remove it.

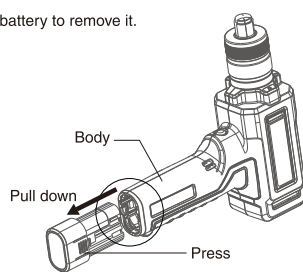


Fig.6

4.2 Make sure the battery pack is connected properly.

## Charging

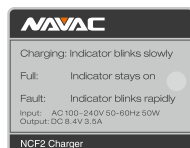
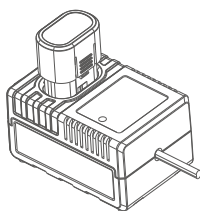


Fig.7

4.3 Place back the battery pack.

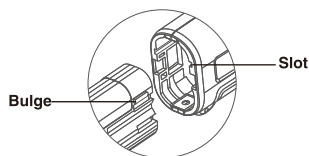


Fig.8

## Operating Instructions for Tube Expander

## 5. Oil Change

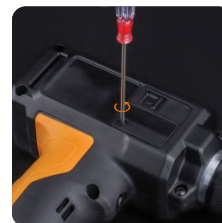
To ensure the excellent performance of the expander, replace hydraulic oil every 1 year or every 6000 expansions.

## 5.1 How to change oil:

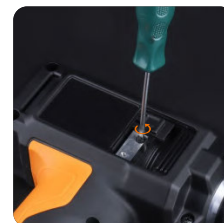
- 1). Put cone sleeve on the oil bottle cone, and then the O-ring.
- 2). Unscrew the small screw of oil change cover and remove it.
- 3). Use flat head screwdriver to unscrew the refueling plug (clean up dust near the refueling hole to prevent dust from falling into).
- 4). Turn expander upside down, press the exhaust pressure plate, drain old oil from expander, turn expander over, lay expander flat. (Dispose of used oil properly).
- 5). Press the exhaust pressure plate while inserting oil bottle into the refueling hole.
- 6). Loosen the exhaust pressure plate. After the exhaust pressure plate returns to its original position, press it repeatedly until no more bubbles get in oil bottle.
- 7). Pull away oil bottle, put back refueling plug screw, screw oil change cover back on expander.



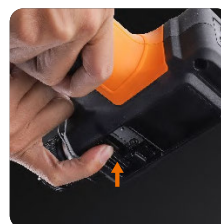
1



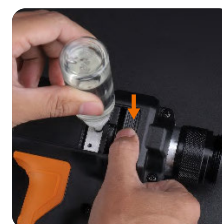
2



3



4



5



6

Fig.9

Add appropriate amount of grease to the cone hole of expander head regularly to avoid expander head from being stuck or unable to reset during the expansion process due to poor lubrication.



1. Put expander back into its box after work to prevent water and dust from entering expander.
2. If expander is used continuously for long time, it may trigger temperature protection, the indicator will flash 5 times. Wait until expander cools down for a while, after temperature drop back, you can use it again.
3. Expander will power off automatically if no activity for 20 seconds.
4. Use the dedicated oil bottle and hydraulic oil for oil change/refill to avoid damage to expander.
5. This expander is designed for soft copper tubes. If hard copper tube is used, tube must be annealed before operation, otherwise tube will not expand or will split. Hard copper tube that is not annealed will damage the tools and invalidate the warranty.
6. If abnormal shutdown occurs during operation, please follow below procedures:
  - a. Push manual pressure release button to release the pressure;
  - b. Remove and re-plug battery pack;
  - c. Start expander again to see if the problem is solved;
  - d. If problem is not solved, please contact NAVAC Technical Support.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.



Cordless Power Flaring Tool  
**NEF6LM**  
User Manual



Failure to follow warnings could  
result in death or serious injury.

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## Contents

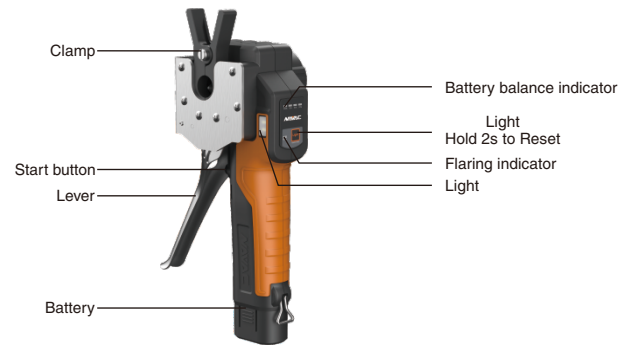
|   |    |
|---|----|
| Structure and Technical Parameters..... | 01 |
| Operation Instruction.....              | 03 |
| Troubleshooting.....                    | 05 |
| Exploded View and Parts List.....       | 06 |

### Safety Guide

**Caution:** Read this manual thoroughly before using.

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- Do not operate while under the influence of alcohol.
- Keep children and untrained people from using.
- Use original parts and auxiliary.
- Long time using may overheat its motor which activate overheat protection.
- Temperature higher than 158°F (70°C) or lower than 41°F (5°C) may activate the motor overheat or subcooled protection.
- Don't dismantle NEF6LM at random which may void warranty.
- Product is warranted against defects in materials and workmanship for two years from the date of purchase.
- Dispose the battery according to local regulations.
- Pending patent.

### Structure



### Technical Parameters

|                  |                                  |
|------------------|----------------------------------|
| Model            | NEF6LM                           |
| Tubing Type      | Copper                           |
| Tubing OD        | 1/4", 3/8", 1/2", 5/8", 3/4"     |
| Power            | DC motor                         |
| Cone Speed       | 120 RPM                          |
| Battery Capacity | Up to 100 flares per charge      |
| Time to Flare    | Complete a flare in < 30 seconds |
| Dimension        | 10"x4"x4" (265x101x100mm)        |
| Weight           | 2.9 lbs (1.3kg)                  |

#### Battery pack

|                     |                       |
|---------------------|-----------------------|
| Battery             | 7.4V 2Ah 14.8Wh       |
| Quick Charge        | 30 minutes            |
| Ambient Temperature | 41°F-104°F (5°C-40°C) |

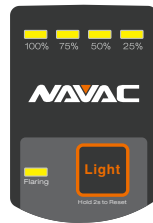
#### Charger

|                     |                           |
|---------------------|---------------------------|
| Power Supply        | AC 100-240V (50/60Hz) 50W |
| Output Voltage      | 8.4V                      |
| Output Current      | 3.5A                      |
| Ambient Temperature | 41°F-104°F (5°C-40°C)     |

Table 1

**Light/Hold 2s to Reset Button:**

- Press to show battery life.
- Press to turn on/off the light.
- Press 2 seconds to reset (draw back) the cone.

**Operation Instruction****1. Get the copper placed.**

- Open the clamp by pressing the legs and insert the tubing.
- Use the baffle to set the correct depth of the tubing.

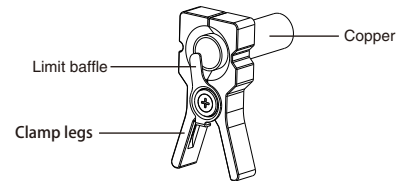


Figure 1

**2. Get the clamp placed.**

- Keep the lever open and put in the clamp. A locked lever resists the clamp being placed.
- Push the lever inward to lock the clamp.

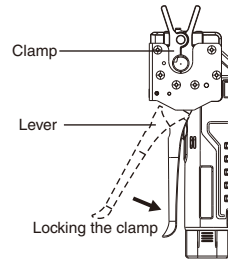


Figure 2

**Caution:**  
Make sure hash marks lineup. Otherwise it may cause a defective flare and damage the clamp.

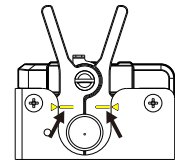


Figure 3

**3. Press the START button to flare.****Caution:**

- Don't open the lever during flaring, otherwise the automatic flaring stops.
- If it happens, press the reset button 2 seconds to draw back the cone.
- Make sure the clamp is still horizontally placed.
- Press inward the lever to lock the clamp again.
- Press the start button to reflare.

**4. It takes less than 30 seconds to complete a flare automatically.**

- After the flaring indicator turns off, open the lever.
- Remove the clamp and tubing.

Battery Charge

1. Charge battery when the last indicator flashes which means low battery.

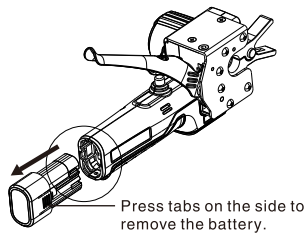


Figure 4

2. Make sure the battery pack is connected properly.

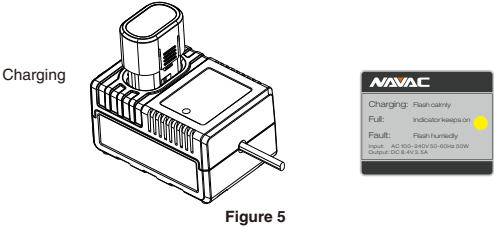


Figure 5

3. Place back the battery pack.

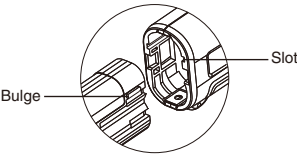


Figure 6

Troubleshooting

| Problem   | Possible cause                             | Solution                               |
|---|--|--|
| Flaring indicator flashes once cyclically.        | Short circuit.                             | Contact NAVAC TechSupport.             |
| Flaring indicator flashes twice cyclically.       | Battery ID not recognized.                 | Use an original battery.               |
| Flaring indicator flashes three times cyclically. | Overheat or subcooled of the battery pack. | Cool down or warm up the battery pack. |
| Flaring indicator flashes four times cyclically.  | Overload. Or the cone cannot be reset.     | Contact NAVAC TechSupport.             |
| It does not flare or it stops during flaring.     | Low battery balance.                       | Charge the battery.                    |
|   | Motor or circuit board failure.            | Contact NAVAC TechSupport.             |
|   | Dirty on the batter connections.           | Clean the connections.                 |
| The copper flare is too small.                    | Lever's locking is loose.                  | Tighten the lever. (Figure 7)          |
|   | Copper does not touch the baffle.          | Make them contact.                     |
|   | Copper not deburred.                       | Debur the copper.                      |

Charger

|                                      |                  |                      |
|--------------------------------------|------------------|----------------------|
| Charger indicator flashes hurriedly. | Battery damaged. | Try another battery. |
|--------------------------------------|------------------|----------------------|

Table 2

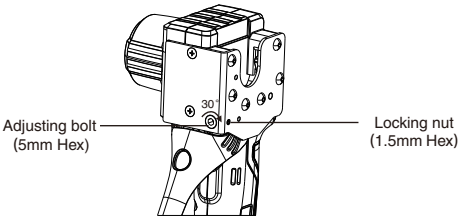


Figure 7

**Caution:**

- To tighten the lock, loose the locking nut first.
- Then turn the bolt clockwise 30 degree each time to check the tightness.
- Don't turn clockwise too much each time because it may over-tight the lever and cause damage.

Exploded View

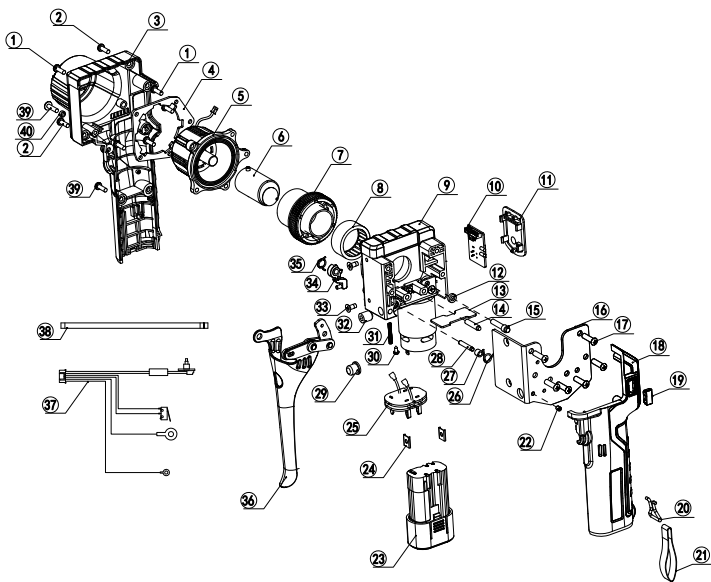


Figure 8

Spare Parts List

| Ref No. | Part No. | Item                 |
|---------|----------|----------------------|
| 1       | PNEF1    | Screw                |
| 2       | PNEF2    | Screw                |
| 3       | PNEF3    | Right Cover          |
| 4       | PNEF4    | Plate                |
| 5       | PNEF5    | Chamber Assembly     |
| 6       | PNEF6    | Axis Assembly        |
| 7       | PNEF7    | Turbine Bushing      |
| 8       | PNEF8    | Bearing              |
| 9       | PNEF9    | Transmission Chamber |
| 10      | PNEF10   | Circuit Board        |
| 11      | PNEF11   | Display Panel        |
| 12      | PNEF12   | Bushing              |
| 13      | PNEF13   | Subplate             |
| 14      | PNEF14   | Stop Pin             |
| 15      | PNEF15   | Pin                  |
| 16      | PNEF16   | Front Cover          |
| 17      | PNEF17   | Screw                |
| 18      | PNEF18   | Cover                |
| 19      | PNEF19   | LED Plate            |
| 20      | PNEF20   | Ring                 |
| 21      | PNEF21   | Strap                |
| 22      | PNEF22   | Screw                |
| 23      | PNEF23   | Battery Pack         |
| 24      | PNEF24   | Dead Plate           |
| 25      | PNEF25   | Circuit Board        |
| 26      | PNEF26   | Spring               |
| 27      | PNEF27   | Bushing              |
| 28      | PNEF28   | Pin                  |
| 29      | PNEF29   | Button               |
| 30      | PNEF30   | Screw                |
| 31      | PNEF31   | Spring               |
| 32      | PNEF32   | Screw                |
| 33      | PNEF33   | Screw                |
| 34      | PNEF34   | Switch               |
| 35      | PNEF35   | Spring               |
| 36      | PNEF36   | Lever                |
| 37      | PNEF37   | Circuit              |
| 38      | PNEF38   | Wire                 |
| 39      | PNEF39   | Screw                |
| 40      | PNEF40   | Bushing              |

Table 3