

# ***CEN-TECH***™

## **SELF-LEVELING CROSS LASER LEVEL**

### **Model 91179**

#### **ASSEMBLY AND OPERATING INSTRUCTIONS**




3491 Mission Oaks Blvd., Camarillo, CA 93011

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**For technical questions and replacement parts, please call 1-800-444-3353**

## Specifications

 <p><b>DANGER</b> <b>LASER RADIATION</b> <b>AVOID DIRECT EYE EXPOSURE</b></p> <p>Maximum Output: &lt;5mW, Wavelength: 651.5 nm ± 18.5 nm CLASS IIIa LASER PRODUCT</p> <p><small>This product complies with 21 CFR 1040.10 and 1040.11</small></p>	Construction	Low Carbon Steel, ABS Housing
	Features	Self-Leveling Cross Line Laser w/Built-in Level Sensor, Pendulum Lock
	Power Supply	"AA" Batteries- Qty. 3 (Included)
	Kit Includes	Manual 360° Rotary Base, Wall Mount, "AA" Batteries, Magnetic Support Bracket, Laser Enhancement Glasses, Nylon Padded Carry Bag

## Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

## Safety Warnings and Precautions

**WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.**

**Read all instructions before using this product!**

1. **Keep work area clean.** Cluttered, damp or wet work areas invite injuries.
2. **Keep children away.** Do not allow children to handle this product. Keep children out of the area during setup and use.
3. **Store idle equipment.** When not in use, this product must be stored in a dry location. Always lock up tools and keep out of reach of children. This is a delicate/precision instrument. Keep clean and dry.
4. **Dress safely.** Nonskid footwear or safety shoes should be used when working with this product. Do not wear loose clothing or jewelry as they can become caught in moving parts.
5. **Use eye protection.** Do not stare into the Laser Beams. It is also recommended, when **installing** this product, to wear ANSI approved impact safety goggles. ANSI approved safety impact eye glasses are available from Harbor Freight Tools. **NEVER** point the laser directly at the eye. Do not point Laser on or indirectly off of reflective surfaces such as Stainless Steel or Aluminum, etc. **THE INCLUDED LASER ENHANCEMENT GLASSES (5) ARE NOT INTENDED TO PROVIDE ANY PROTECTION TO YOUR EYES.** When using this product, you may wear the Laser Enhancement Glasses (5) supplied with this Laser to help make the laser beam more visible.

6. **Do not direct the Laser Beam into the eyes of any person or animal.** This may cause serious injury to the eye. Do not look directly into the beam during operation.
7. **Use the right tool for the job.** There are certain applications for which this product was designed. Do not modify this product and do not use this product for a purpose for which it was not intended.
8. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired or distracted from the job at hand.
9. **Check for damaged parts.** Before using this product, carefully check that it will operate properly and perform its intended function. Check for damaged parts, loose parts, and any other conditions that may affect the operation of this product. Do not disassemble the instrument or attempt to perform any internal servicing. Repair and servicing of this Laser are to be performed only by a qualified service technician.
10. **Do not use this Laser if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not use this product.
11. **Use only batteries of the type recommended-size “AA”.** Do not mix old and new batteries. Do not use different types of batteries. Do not use rechargeable with alkaline batteries.
12. **Make certain to switch the Laser button to the “OFF” position** when adjusting or when changing the batteries.
13. **Remove batteries** if the Laser is not used for a long period of time.

**Note:** Always switch to a fresh set of batteries when tool performance begins to diminish. This is a delicate instrument. Do not drop or jar the Laser.

**Warning:** The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

# Identification of Parts

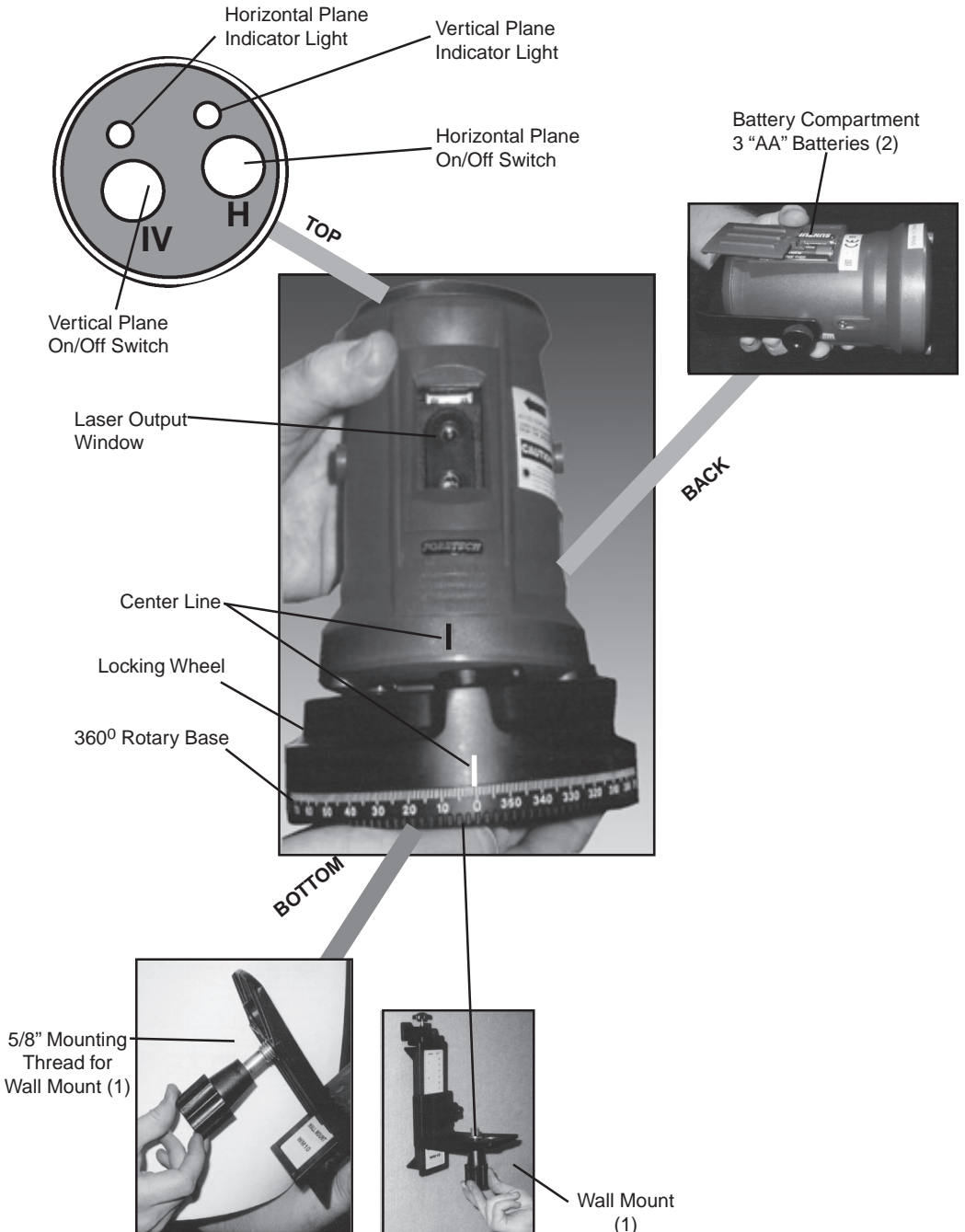


Figure A

## Features

- Independent laser diodes emit clear and precise red laser lines
- Magnetic damping compensator stabilizes quickly
- Alarm sounds when out of leveling range
- Use horizontal (level) and vertical (plumb) lines together, or separately
- Broad  $\pm 5^\circ$  self-leveling range
- Bearing pendulum compensator offers strong rigidity
- Pendulum lock protects the internal structure during transportation and storage
- Unit includes various accessories

Accuracy	Level beam: .08" at 33'
	Horizontal plane (end to end) $\pm 2\text{mm}$ at 16' line length
	Vertical plane (end to end) $\pm 3\text{mm}$ at 16' line length
Line Length	Approx. 46' at 33' target distance
Fan Angle	Approx. $70^\circ$
Working Range	Up to 65.5', dependent upon illumination of working area
Laser Source	Two separate laser diodes
Self-leveling Range	$\pm 5^\circ$
Self-leveling Speed	<6 seconds
Operating Time	24 hours of continuous use
Power	3 X "AA" Alkaline Batteries
Size	3.5" Diameter X 5.9" Height
Weight	1.543 Lbs.
Out-of-level Alert	Built-in
Pendulum Lock	Built-in

# Unpacking

When unpacking, check to make sure the parts shown on the cover of this manual are included. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual.

## Operating Instructions

A Tripod may also be used with the Cross Line Laser (not included).

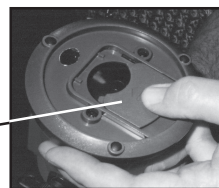
1. After removing the Laser from the Carrying Bag (4), insert the three "AA" Batteries (2) into the battery compartment according to the polarity symbols shown in the Battery Compartment. Close the Battery Compartment door. **See Figure A.**
2. Release the Pendulum Lock on the bottom of the Laser, by sliding the "door" to the center. **See Figure B.**



**Figure A**

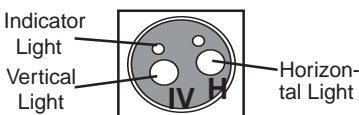
(2)  
3 "AA" Batteries

Pendulum  
Lock "door"  
(bottom of Laser)



**Figure B**

3. Be sure to set the Laser on as flat a surface as possible. The self-leveling range of the Laser is within  $\pm 5^\circ$ . The Laser will work properly if it is positioned within its self-leveling range.
4. Press the button on the top of the unit to switch "ON". Either button will turn on the red indicator light. The "H" Button is for the horizontal line and the "IV" button is for the vertical line. **See Figure C.**



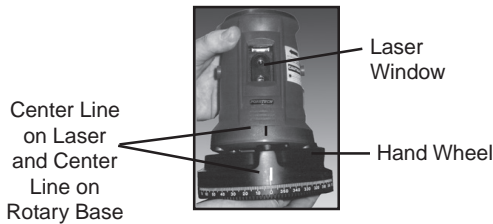
**Figure C**

5. For safety reasons, after you have pushed either horizontal or vertical buttons to switch "ON", there will be a delay of one second before the Laser beam is emitted. This delay will not happen when pressing the second button. If the Laser Beam blinks, it means it is still locked or NOT within the leveling range.
6. Allow 4-6 seconds for the horizontal and vertical Laser lines to be stabilized. After stabilization, the Laser lines can be used for measurement reference. Laser lines may swing slightly due to vibration from surroundings.

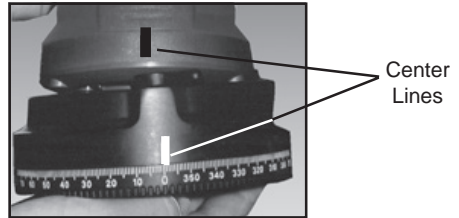
## How to Use the Rotary Base:

1. Loosen the Hand Wheel and put the Laser unit on the Rotary Base. Adjust so that the “center line” under the Laser Window is aligned with the “center line” of the Rotary Base. Tighten the Hand Wheel. Recognize the rotating range according to the graduation aiming at the “center line.”

**See Figures D & E.**



**Figure D**



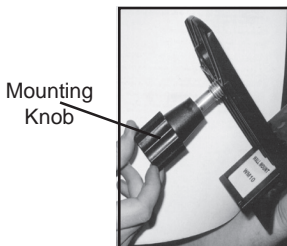
**Figure E**

2. Rotating Base has a 360° scale. Set at desired increments for measuring, i.e. tiles for flooring, cabinet installation, wainscoting and wallpapering, bathroom tiling, putting up pictures, aligning shelves, window framing, etc.

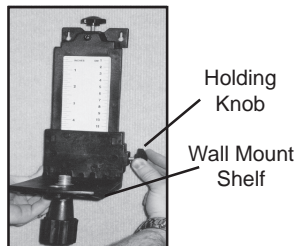
**See Figure E.**

## To Use the Wall Mount:

1. Fix the Wall Mount (1) to the wall with screws (not included). Be sure the holes drilled for the mounting of the screws are level and that the wall is solid and there are no hidden electrical wires that may interfere. Leave the screws extended from the wall by about 1/4” so you can slip the Wall Mount (1) on and off the wall. Use the Adjustment Knob to choose measurements. **See Figure G.** You can also use the Magnetic Bracket (3) (not shown) for hanging from a steel beam or shelf.
2. Set the Hand Wheel, Rotary Base and Laser (assembled) on the shelf of the Wall Mount (1). Use the Mounting Knob for the Wall Mount (1) and thread it through the shelf and into the threaded hole on the bottom of the Laser/ Rotary Base assembly. Adjust laser level to proper height. Lock it in place with the Holding Knob on the side of the Wall Bracket. **See Figure F, G & H.**



**Figure F**



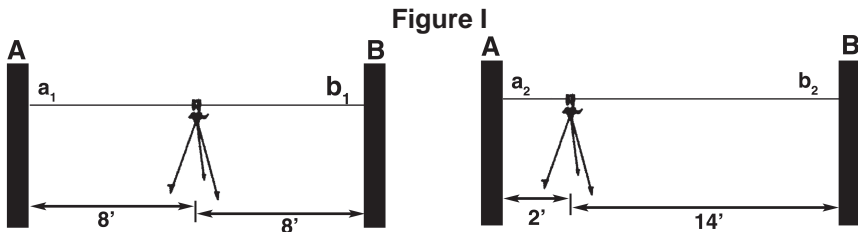
**Figure G**



**Figure H**

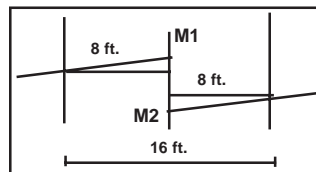
## Level Beam Accuracy:

1. Set up the instrument with the Wall Mount (1) or Tripod (not included), centered between two walls approximately 16 ft. apart. Please ensure the Rotary Base is approximately on level.
2. Press both the horizontal and vertical buttons to project a laser cross on wall A. Mark point  $a_1$  at the intersection of the beams. Turn the cross line laser  $180^\circ$  and repeat on wall B, marking point  $b_1$  at the intersection of the beams. **See Figure I.**
3. Move the instrument to the point 2 ft. from wall A and repeat step 2, marking the intersections as  $a_2$  and  $b_2$ .
4. Measuring the distance between  $a_1$  and  $a_2$  as  $|a_1 - a_2|$ , and  $b_1$ , and  $b_2$  as  $|b_1 - b_2|$ .
5. If  $\frac{|a_1 - a_2| \cdot |b_1 - b_2|}{16} < 1\text{mm}$ , the accuracy is within tolerance. Otherwise, return the instrument to a qualified technician for repair.



## Horizontal Beam Level Accuracy (End to End)

1. Set up the instrument with the Wall Mount (1) or Tripod (not included), approximately 16 ft. from the wall. Please ensure the Rotary Base is in approximately level.
2. Press both the horizontal and vertical buttons to project a laser cross on the wall, mark point  $M_1$  8 ft. from the intersection of the beams on the horizontal beam. **See Figure J.**
3. Turn the instrument until the vertical beam has moved 16.4 ft. to the right side, and mark  $M_2$  8 ft. from the intersection of the beams on the horizontal line.
4. Measure the distance between  $M_1$  and  $M_2$ . **See Figure J.**
5. If the distance is less or equal to 2mm, the accuracy is within tolerance. Otherwise, take the instrument to a qualified technician for repair.



**Figure J**



## Vertical Beam Level Accuracy (End to End)

1. Set up the instrument with the Wall Mount (1) or Tripod (not included), approximately 16 ft. from the wall. (The wall should be at least 16-1/2 ft. high). Please ensure the Rotary Base is approximately level.
2. Press both the horizontal and vertical buttons to project a laser cross on the wall, mark point A 8 ft. above the intersection of the beams on the vertical beam.
3. Regarding A as a starting point and nail one end of a string with plumb bob (not included) on A. The length of the string should be over 16 ft..
4. Mark  $M_1$  8 ft. from point A on the string.
5. Mark  $M_2$  8 ft. above the intersection of the beams on the vertical line.
6. Measure the distance between  $M_1$  and  $M_2$ .
7. If the distance is less or equal to 10 ft., the accuracy is within tolerance. Otherwise, take the instrument to a qualified technician for repair.

## After Using Laser

1. Detach Laser from Wall Mount (1) or Tripod (not included).
2. Switch off both laser lines, horizontal and vertical. Check to see indicator light is off.
3. Lock Pendulum Lock by sliding the door from the center position. After use the Pendulum Lock should be locked before the instrument is put away in the Carrying Bag (4). **See Figure B.**

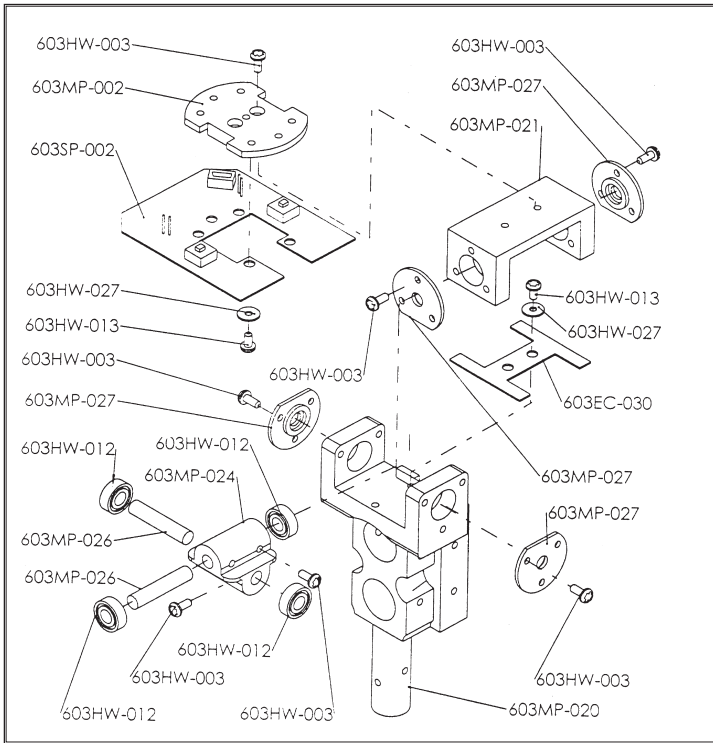
Note: When the Pendulum Lock is unlocked, do not shake or strike the instrument, otherwise the mechanism inside could be damaged.

**Warning: Always make certain the Laser is OFF before adjusting or changing batteries.**

**To change the batteries**, remove the Battery Cover, (see figure A), and insert three new "AA" Batteries. Follow the polarity symbols so that the positive and negative ends of the batteries match the diagram. Do not mix old and new batteries. Remove batteries when storing Laser.

**Warning:** This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code § 25249.5, *et seq.*)

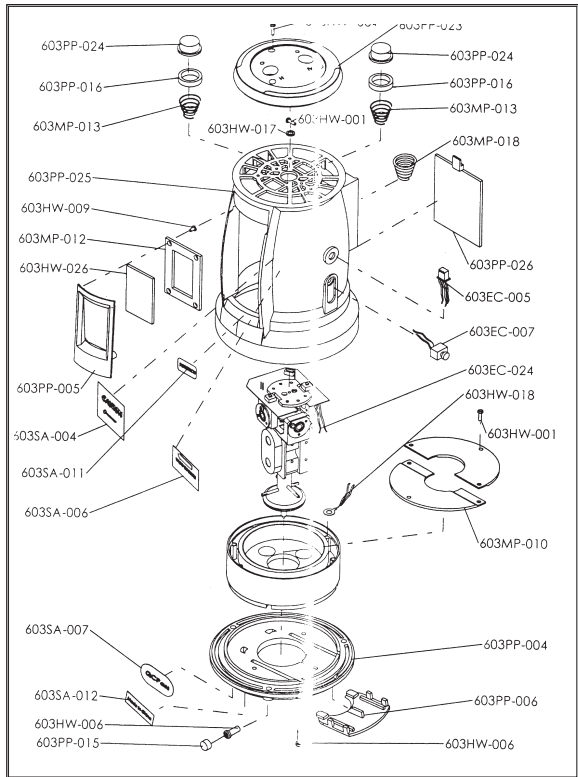
## Swing Mechanism Assembly



## Swing Mechanism Parts List

Parts No.	Name of Parts	Qty.	Application-Remarks
603MP-002	Connecting plate	1 pce	
603SP-002	Upper PCB unit	1 pce	
603HW-027	Fiber washers	6 pcs	For screws (603HW-013)
603HW-013	Screws	6 pcs	Fix upper PCB unit(603SP-002) with connecting plate(603MP-002): 4 pcs Fix nether PCB(603EC-030) with metal holder(603MP-020): 2 pcs
603MP-021	Upper bearing mounting	1 pce	
603MP-027	Bearing covers	4 pcs	
603HW-003	Screws	18 pcs	Fix bearing cover(603MP-027) with upper bearing mounting (603MP-021) and metal holder (603MP-020): 12 pcs Fix connecting plate(603MP-002) with upper bearing mounting(603MP-021): 2 pcs Fix shaft coupling(603MP-024) with shaft(603MP-026): 4 pcs
603EC-030	Nether PCB	1 pce	
603MP-020	Metal holder	1 pce	
603MP-024	Shaft coupling	1 pce	
603MP-026	Shafts	2 pcs	
603HW-012	Bearings	4 pcs	

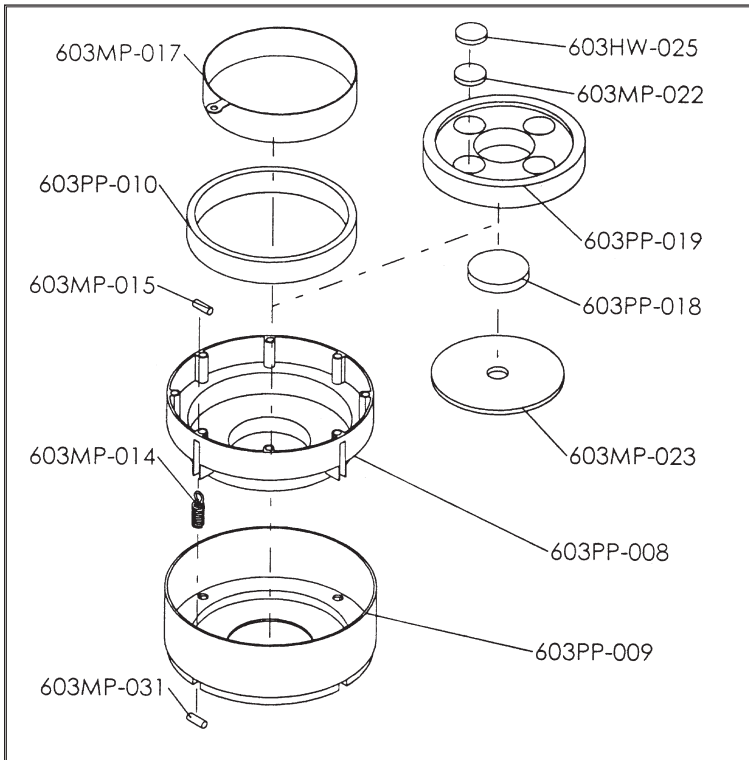
# Body Parts Assembly



## Laser Body Parts List

Parts No.	Name of Parts	Qty.	Application-Remarks
603HW-001	Screws	9 pcs	Fix top cover(603PP-023) with body(603PP-025); 3 pcs Fix iron cover(603MP-010) with supporting plate(603MP-009); 4 pcs Fix connecting plate(603MP-002) with body(603PP-025)
603PP-023	Top cover	1 pce	
603PP-024	Push buttons	2 pcs	
603PP-016	Button washers	2 pcs	
603MP-013	Button springs	2 pcs	
603HW-017	Washers	2 pcs	For screw(603HW-003)
603HW-009	Screws	4 pcs	Fix glass holddown frame (603MP-012) with glass cover (603PP-005)
603MP-012	Glass holddown frame	1 pce	
603HW-026	Glass	1 pce	
603PP-005	Glass cover	1 pce	
603PP-025	Body	1 pce	
603MP-018	Battery terminal piece	1 set	
603EC-007	Socket	1 pce	
603EC-005	Power line assembly	1 pce	
603PP-026	Battery cover	1 pce	
603SA-004	Laser safety label	1 pce	
603SA-006	Laser direction label	1 pce	
603SA-011	Brand name plate	1 pce	
603EC-024	Connecting wires	4 pcs	Connecting upper PCB unit (603SP-002) with nether PCB (603EC-030)
603MP-010	Iron cover	1 pce	
603HW-018	Alarm wire washer	1 pce	
603PP-004	Bottom cap	1 pce	
603HW-006	Screws	5 pcs	Fix bottom cap(603PP-004) with body(603PP-025); 3 pcs Fix bottom cap(603PP-004) with supporting plate(603MP-009); 2 pcs
603PP-006	Slide block	1 pce	
603SA-007	"QC PASS" label	1 pce	
603SA-012	"Made In China" label	1 pce	
603PP-015	Particles	3 pcs	

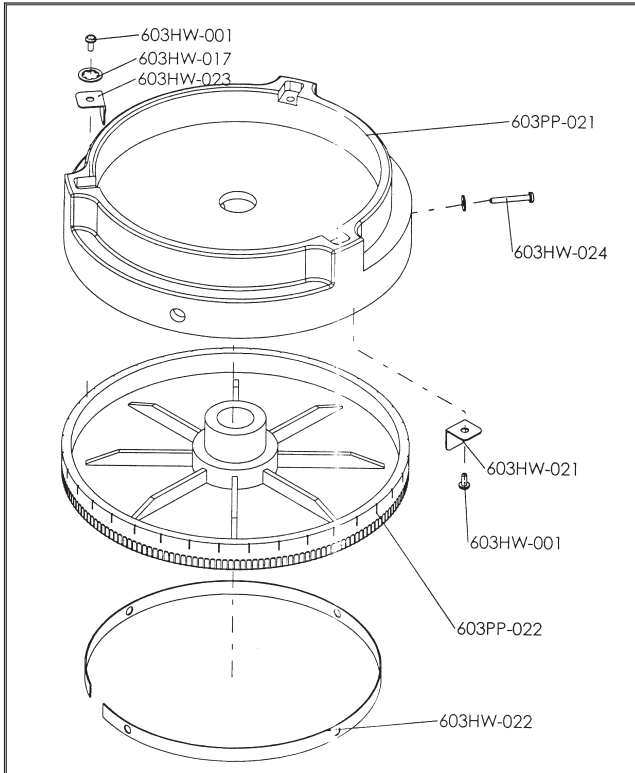
## Magnetic Damping Device Assembly



## Magnetic Damping Parts List

Parts No.	Name of Parts	Qty.
603MP-017	Conducting copper ring	1 pce
603PP-010	Rubber shock absorber	1 pce
603MP-022	Packing pieces	4 pcs
603HW-025	Magnetic pieces	4 pcs
603PP-019	Fixed plate	1 pce
603PP-018	Rubber plate	1 pce
603MP-023	Magnetic conducting iron	1 pce
603PP-008	Moving plate	1 pce
603PP-009	Supporting plate	1 pce
603MP-014	Springs	4 pcs
603MP-031	Nether pins	4 pcs
603MP-015	Upper pins	4 pcs

## Rotary Base Assembly



## Rotary Base Assembly Parts List

Parts No.	Name of Parts	Qty.	Application-Remarks
603PP-021	Upper plate	1 pce	
603PP-022	Base plate	1 pce	
603HW-024	Screws	3 pcs	Fix upper plate(603PP-021) with base plate(603PP-022)
603HW-001	Screws	4 pcs	Fix flat spring(603HW-023) with upper plate(603PP-021): 3 pcs Fix locating spring(603HW-021) with base plate(603PP-022): 1 pce
603HW-023	Flat springs	3 pcs	
603HW-021	Locating spring	1 pce	
603HW-022	Locating ring	1 pce	
603HW-017	Washers	3 pcs	

## Additional Parts List

PART #	DESCRIPTION	QTY
1	Wall Mount	1
2	Double "AA" Batteries (not shown below)	3
3	Magnetic Bracket	1
4	Carrying Bag	1
5	Laser Enhancement Glasses	1



### Maintenance

Clean with a soft, dry cloth. Do not use solvents or chemicals to clean Cross Line Laser output window. Keep out of harsh, rainy conditions. Do not use a dryer or fire to dry this instrument. Always put the Cross Line Laser into the Carrying Bag (4) when not in use. This is a precise and delicate instrument. Handle with care

#### PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS DIAGRAM IN THIS MANUAL AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER NOR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

**NOTE:** Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

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