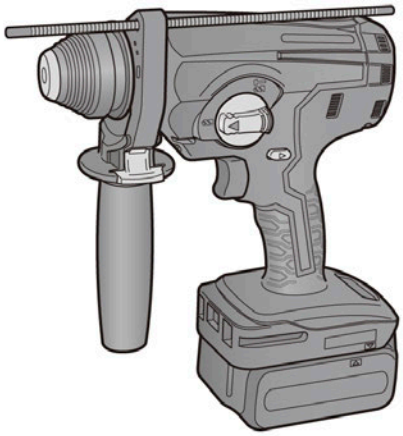
Order No.PTD2212E03CE

Service Manual

Cordless Rotary Hammer



Model No. EY1HD1

Europe

⚠ WARNING

This service manual is strictly meant to be used by experienced professional repair technicians only and is not designed for use by the general public. Products powered by electricity should be serviced and repaired only by experienced professional repair technicians (“Professionals”). Any attempt to service or repair the product by anyone else could result in serious injury and even death. Panasonic shall not be responsible, to the extent permitted by applicable law, for any damages, losses, costs, expenses, death, injury, claims, decree, proceedings, and/or judgment, arising out of, in connection with, or relating to, any use and/or misuse of this service manual by users other than Professionals.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

Table of Contents

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1 Warning

Caution:

- Pb free solder has a higher melting point that standard solder; Typically the melting point is 50 - 70°F (30 - 40°C) higher. Please use a soldering iron with temperature control and adjust it to 750 ± 20°F (400 ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.
- Pb free solder will tend to splash when heated too high (about 1100°F / 600°C).

2 Specifications

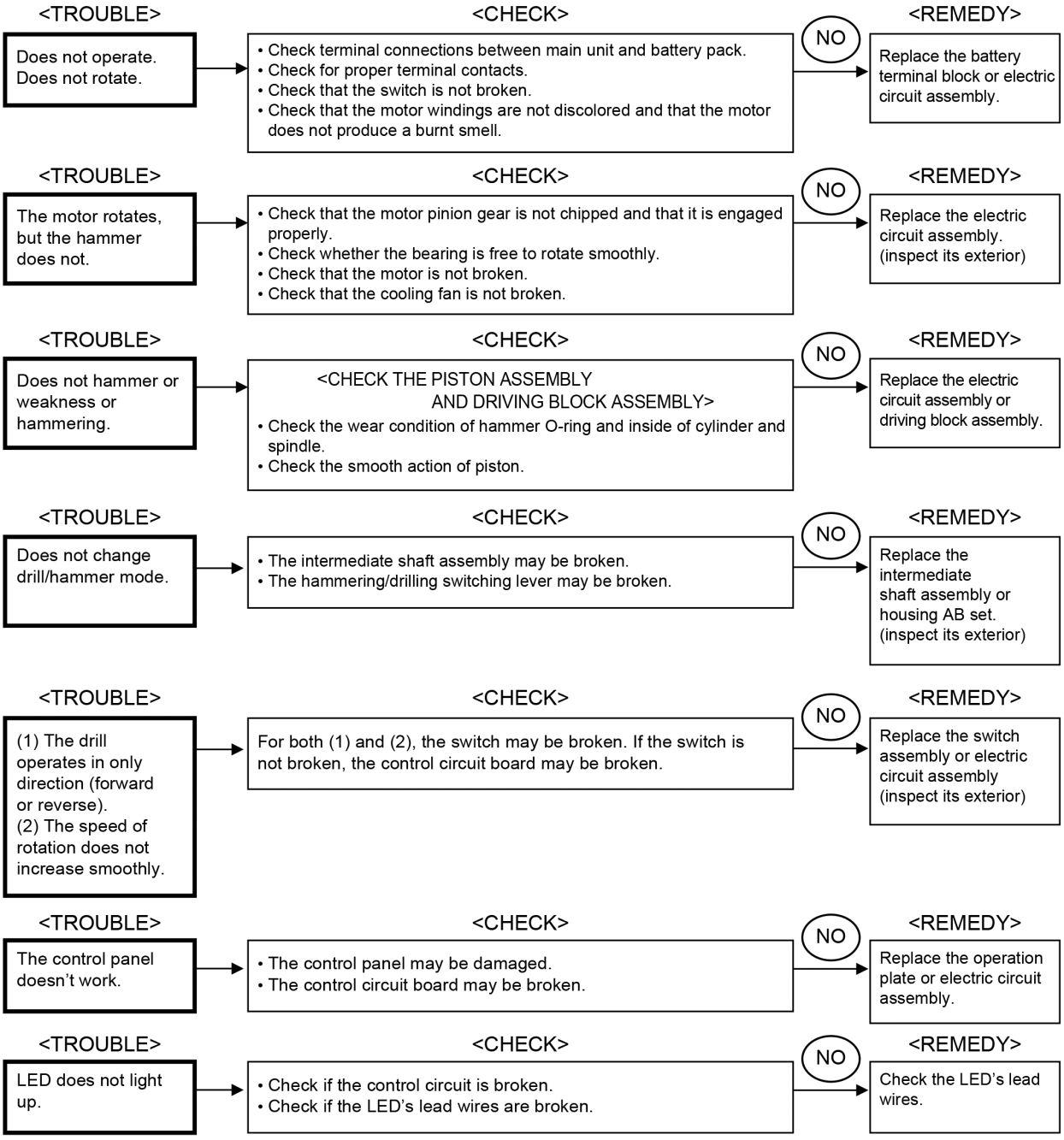
NOTE: Weight indication
Greater than or equal to 1 kg: indicated by 0.05 kg.
Less than 1 kg: indicated by 0.01 kg.

MAIN UNIT

Model No.		EY1HD1	
Motor Voltage		14.4 V DC	18 V DC
Maximum Drilling Diameter	Concrete	ϕ18 mm	
	Steel	ϕ21 mm (Metal hole saw)	
	Wood	ϕ18 mm	
Speed At No Load (RPM)	Low Mode	0 – 700 min^{-1} (rpm)	
	High Mode	0 – 950 min^{-1} (rpm)	
Blows Rate Per Minute (BPM)	Low Mode	0 – 3100 min^{-1} (bpm)	
	High Mode	0 – 4200 min^{-1} (bpm)	
Weight With battery pack:	EY9L47	2.00 kg	—
	EY9L49	2.25 kg	—
	EY9L53	—	2.15 kg
	EY9L54	—	2.40 kg
Overall length		239 mm	

3 Troubleshooting Guide

3.1 Troubleshooting Guide



3.2 Trial Operation (after checking Troubleshooting Guide).

Note:

- If you have any questions concerning operation, refer to the instruction manual and review its description of drill operation.
- If the drill fails to operate as described in the instruction manual, reassemble it and check for any improperly assembled or missing parts.

3.2.1 Assembly.

- Confirm if there is no gap between housing A and B by pinching lead wires.
- Make sure that the battery pack can be attached and detached smoothly.
- Confirm the smooth sliding of bit holder and to hold the firmly.
- Confirm all screws are tightened firmly.

3.2.2 Operation.

- Check whether the tool operates properly in both the forward, reverse and neutral directions.
- Check whether the tool speed increases continuously as the trigger is gradually engaged.
- Press the speed setting button and confirm that the speed mode changes between High and Low and that no abnormal noise or vibration is generated when the main unit starts rotating operation.
- Confirm if the rotation stops when releasing the switch handle.
- Confirm the action when setting the H/D switching lever to Hammering mode.
  - Rotation with hammering may work when the drill bit touches something like concrete or hard type of wood block. And confirm the power.
  - Confirm that hammering stops when the mode is changed to Drilling.
- Press the light button on the operation panel to confirm that the LED light up.
- Install the dust collection system to the main unit and confirm proper operation.
- Put a fully charged battery pack in the main unit and confirm that all three segments of the LED battery level indicator light.
- Confirm smooth movement of the hanging hook and make sure it can be fixed securely in place when it is stored in the main unit.

3.2.3 Integrity.

- Check for the presence of any dirt or foreign matter from the repair process on the outside of the tool.
- Operate the main unit in Hammering mode for about 1 minute and confirm there is no grease leaking from any joint section of the housing.

4 Disassembly and Assembly Instructions

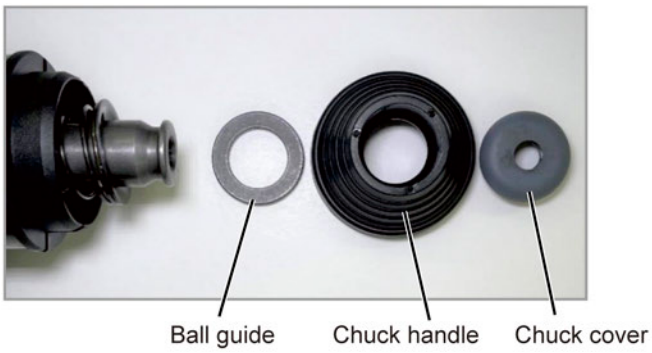
[Strictly observe] Check and understand the disassembly/assembly procedures and exploded view in advance.
[Strictly observe] To reduce the risk of injury, always remove battery pack before removing/installing the tool.
[Strictly observe] Manage all parts and make sure that no parts are left unattached at the time of assembling.
[Note] Work while keeping information on the disassembly process using a digital camera as needed.

4.1 Removing the Chuck handle.

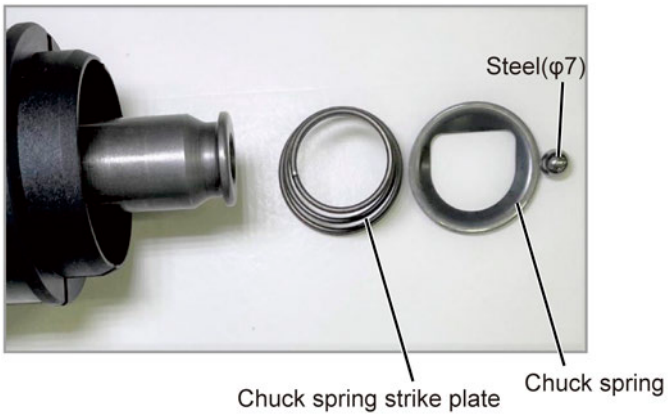
Required tools for disassembly and Assembly.

- Pulley removal tool
- Snap ring plier
- Magnet
- Hand press or cylindrical jig (used for press-fitting)

1. Loosen the chuck handle and take it out from the unit.
2. Remove the chuck cover and ball guide.



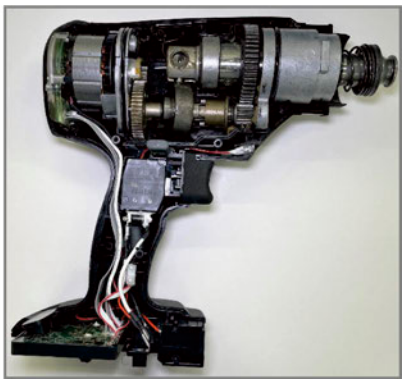
3. Remove the steel and chuck spring strike plate and chuck spring.



4.2 Removing the Housing.

1. Remove 12 screws(3*20) that attach housings.

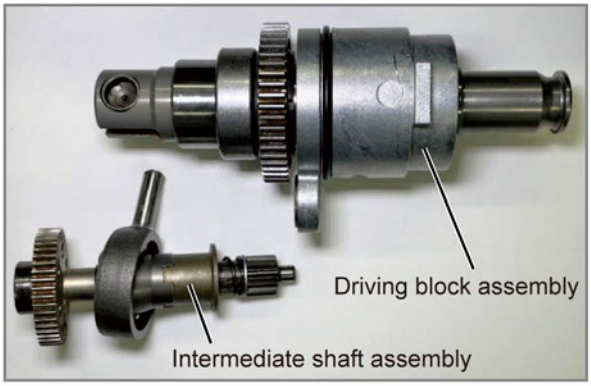
For assembly
Tightening torque value;
1±0.3N•m



NOTE:

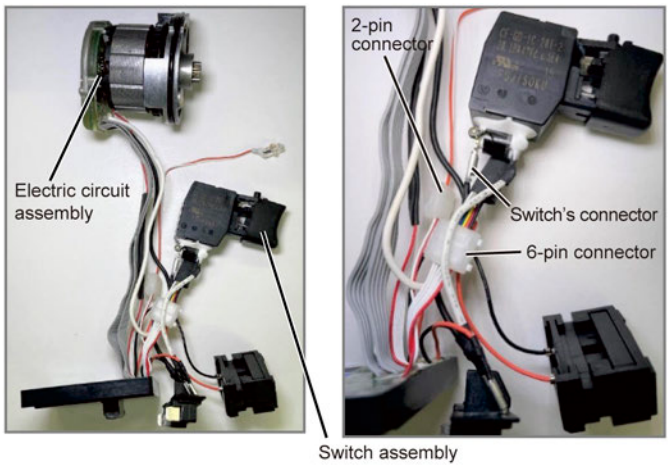
Create a record of the lead wire routing as necessary, for example by taking a picture with a digital camera.

4.3 Removing the Driving block assembly and Intermediate shaft assembly form the Housing.

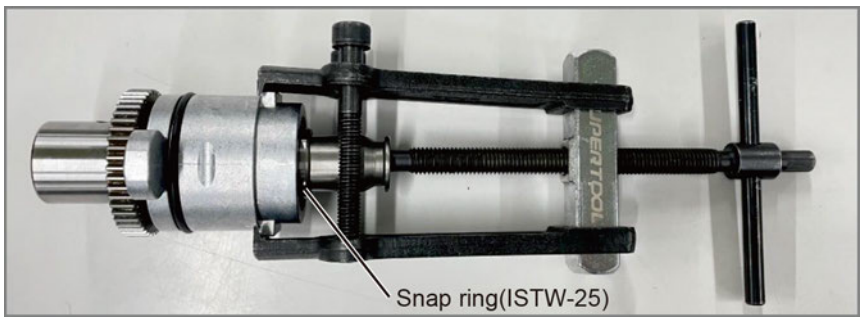


4.4 Removing the electric circuit assembly and switch assembly from the housing.

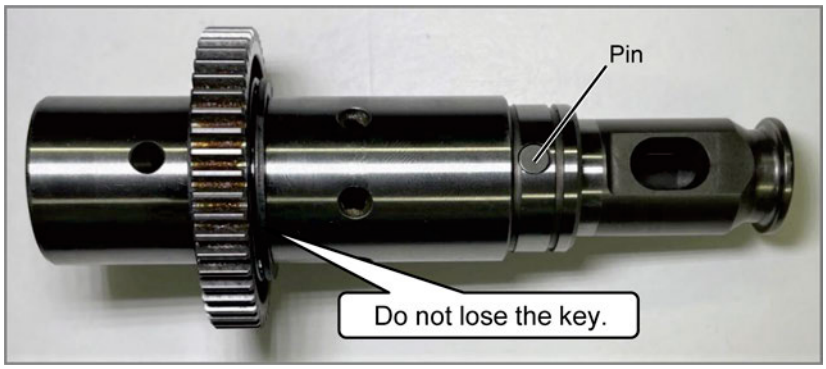
1. Removing the electric circuit assembly and switch assembly from the housing.
2. Disconnect the switch's connector.
3. Remove the connector(6-pin/2-pin) covers.



4.5 Disassembly points for driving block assembly.

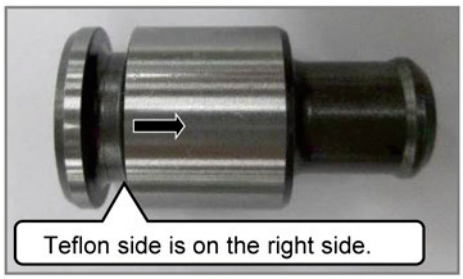


1. Remove the ISTW-25 snap ring by using the snap ring plier, then dismount the cylinder from the gear case using the pulley removal tool.
2. Remove the pins by using a magnet.
3. Remove the ISTW-28 snap rings by using the snap ring plier, and then dismount the power gear.

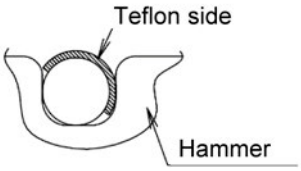


4.6 Assembly points.

It is easier to assemble if the switching handle is set to Hammering mode.



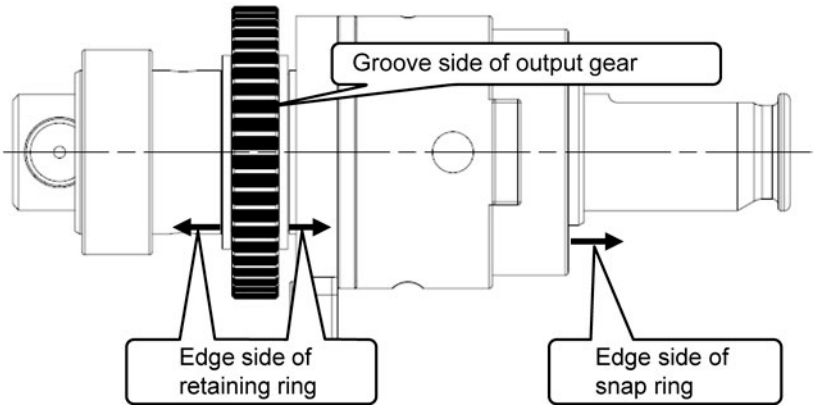
*Be careful of direction of O-ring.



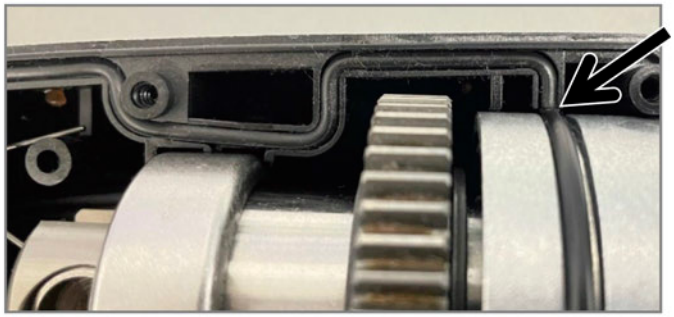
After applying grease, cover the bottom hole on the piston with a finger, install the hammer and press it with fingers. Then, release the fingers and confirm that the hammer is pushed outward by the internal air pressure.

Use a hand press or a cylindrical jig similar to the one shown below for press-fitting the cylinder into the gear case.

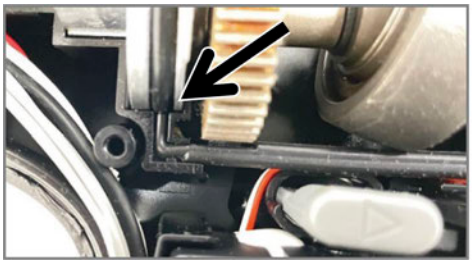
Take note of the installation directions of the retaining ring and output gear. (Install the retaining ring in the direction that minimizes detachment possibility.)

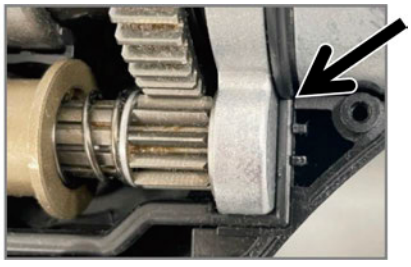


The rubber of seal A and the O-ring must be in firm contact with each other. (If there is a gap between them, grease will leak out.)



The rubber of seal B and the O-ring must be in firm contact with each other. (If there is a gap between them, grease will leak out.)

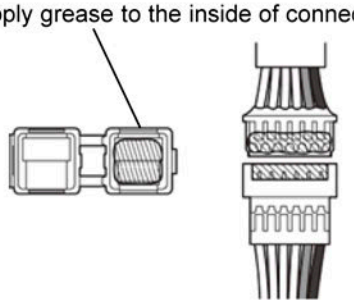




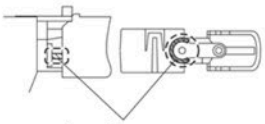
4.7 Applying grease.

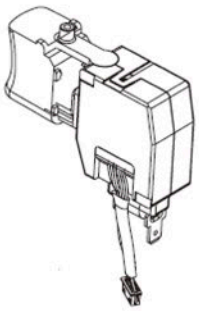
Apply grease (PERMALUB)

Apply grease to the inside of connector.

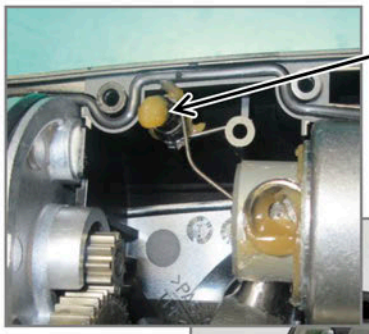


Apply grease to the 2-pin and 6-pin male connectors and the outer surfaces of the connectors.

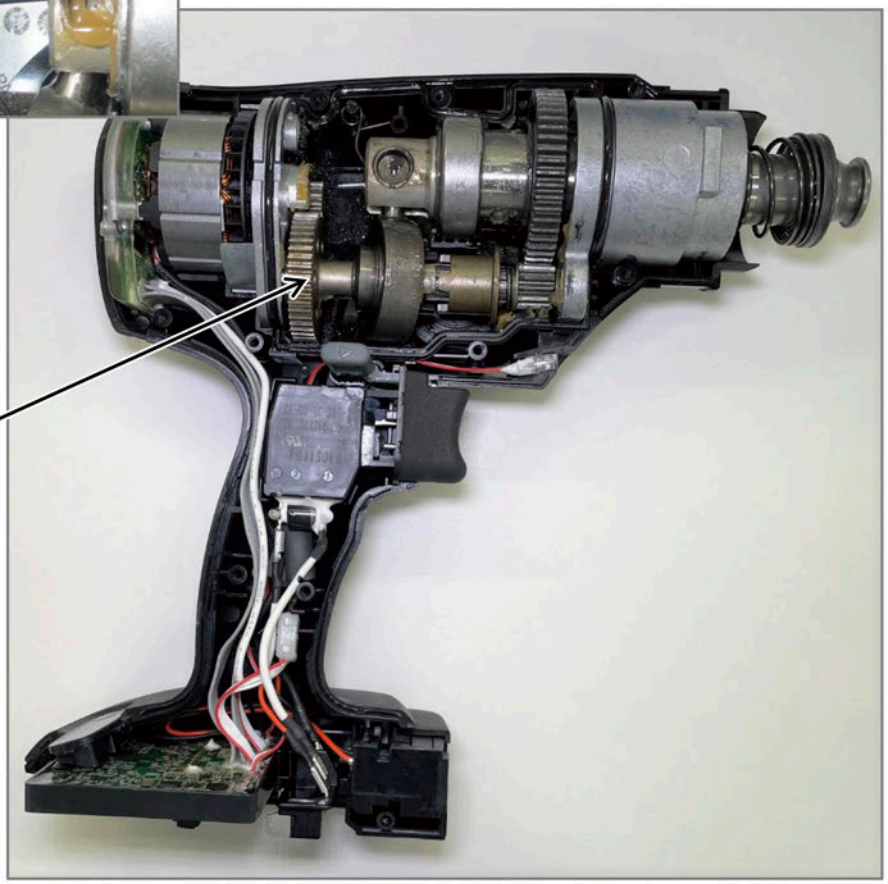




- Apply grease to the outer circumference of the forward/reverse switching part.
- Apply grease to the upper surface of the forward/reverse switching part.
- Apply grease to the entire circumference of the shaft.

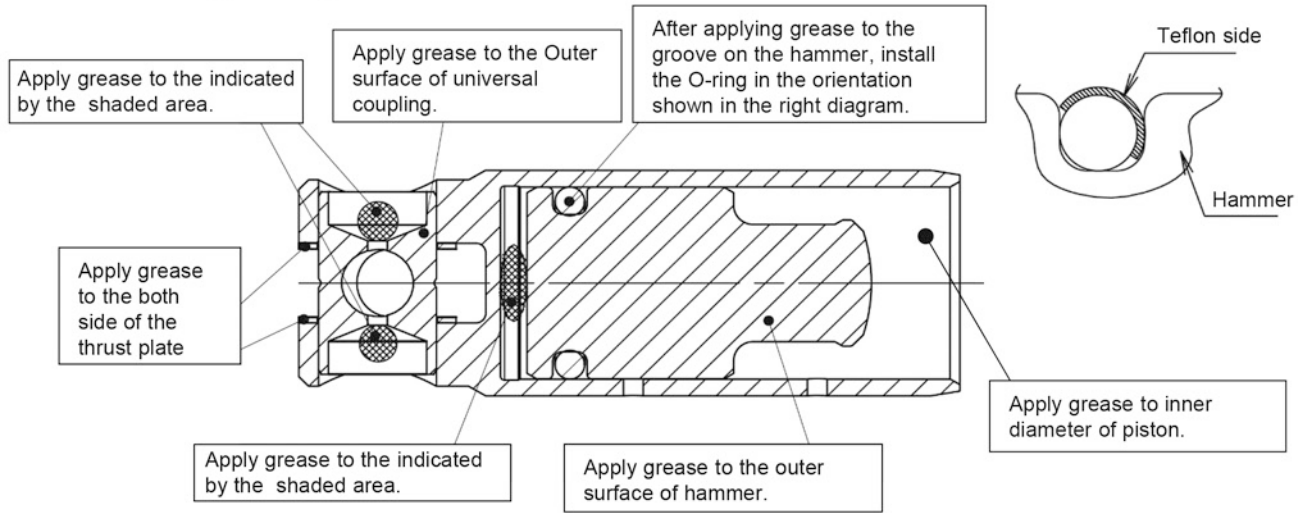


Apply grease to the inside of the coil of the piston push spring.

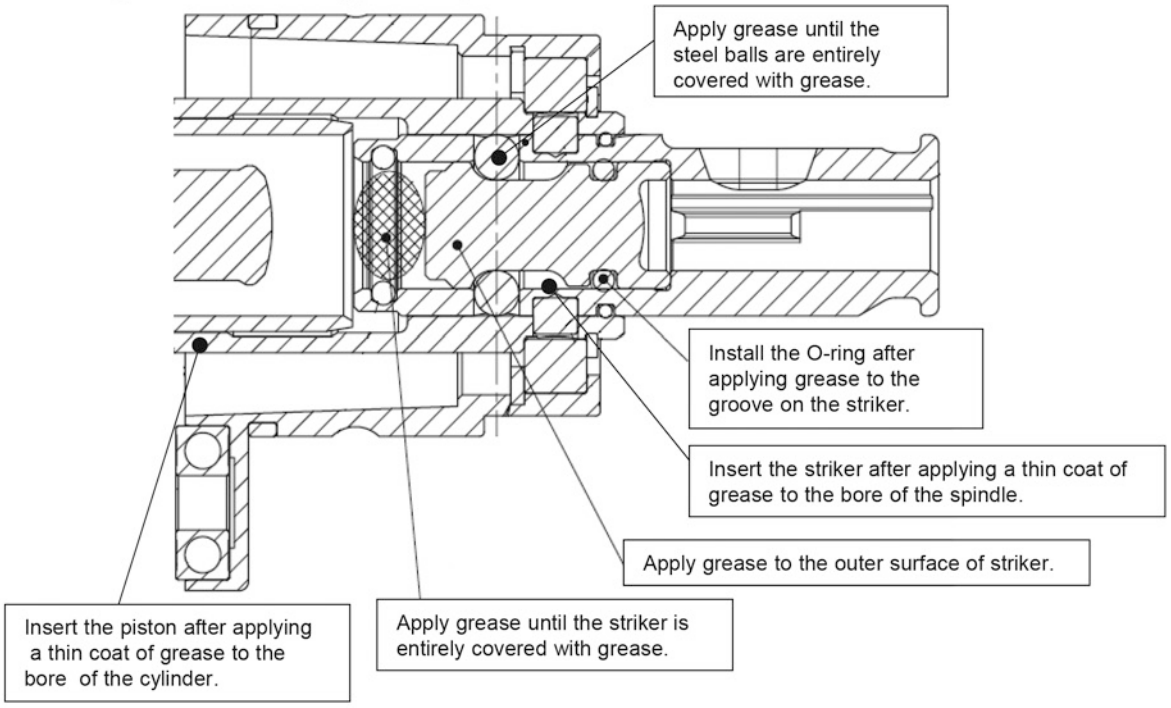


Apply grease to the entire circumference until all gear grooves are filled with grease.

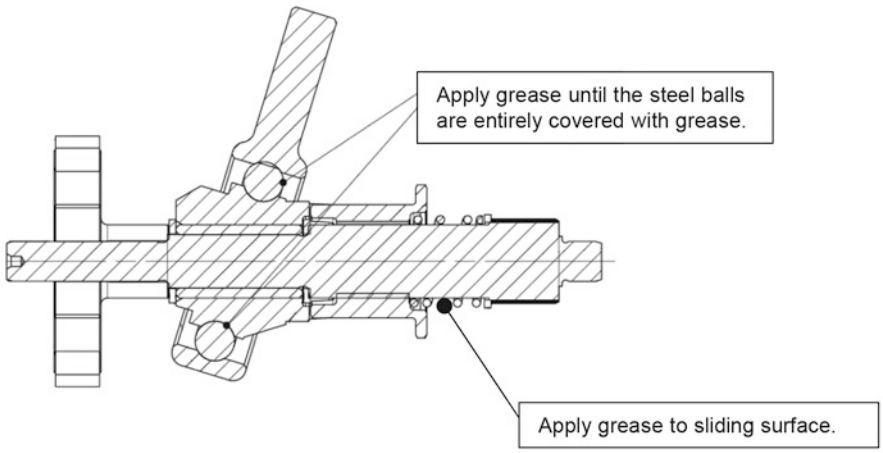
Piston assembly(ASG22)



Driving block assembly(ASG22)

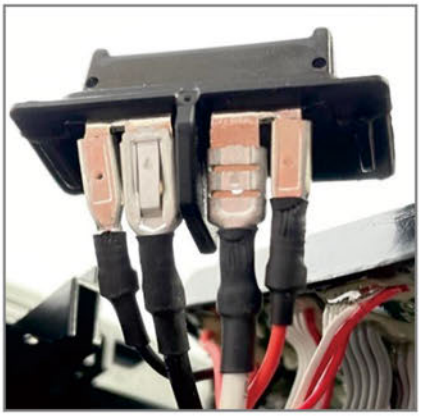


Intermediate shaft assembly(ASG22)

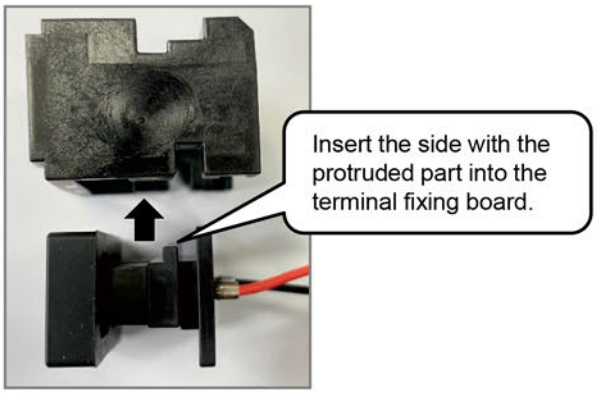


4.8 Wiring and Assembly Points.

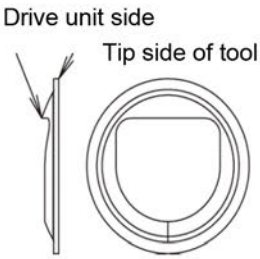
Route the lead wires like the below picture.



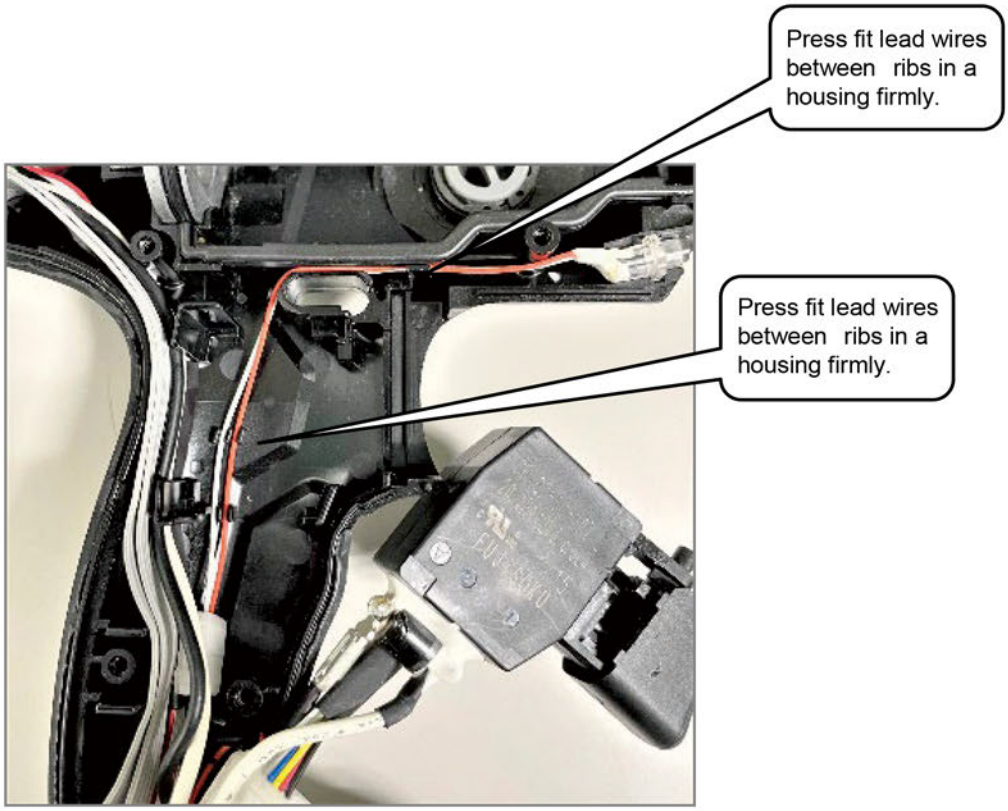
Confirm the direction of battery terminal base.

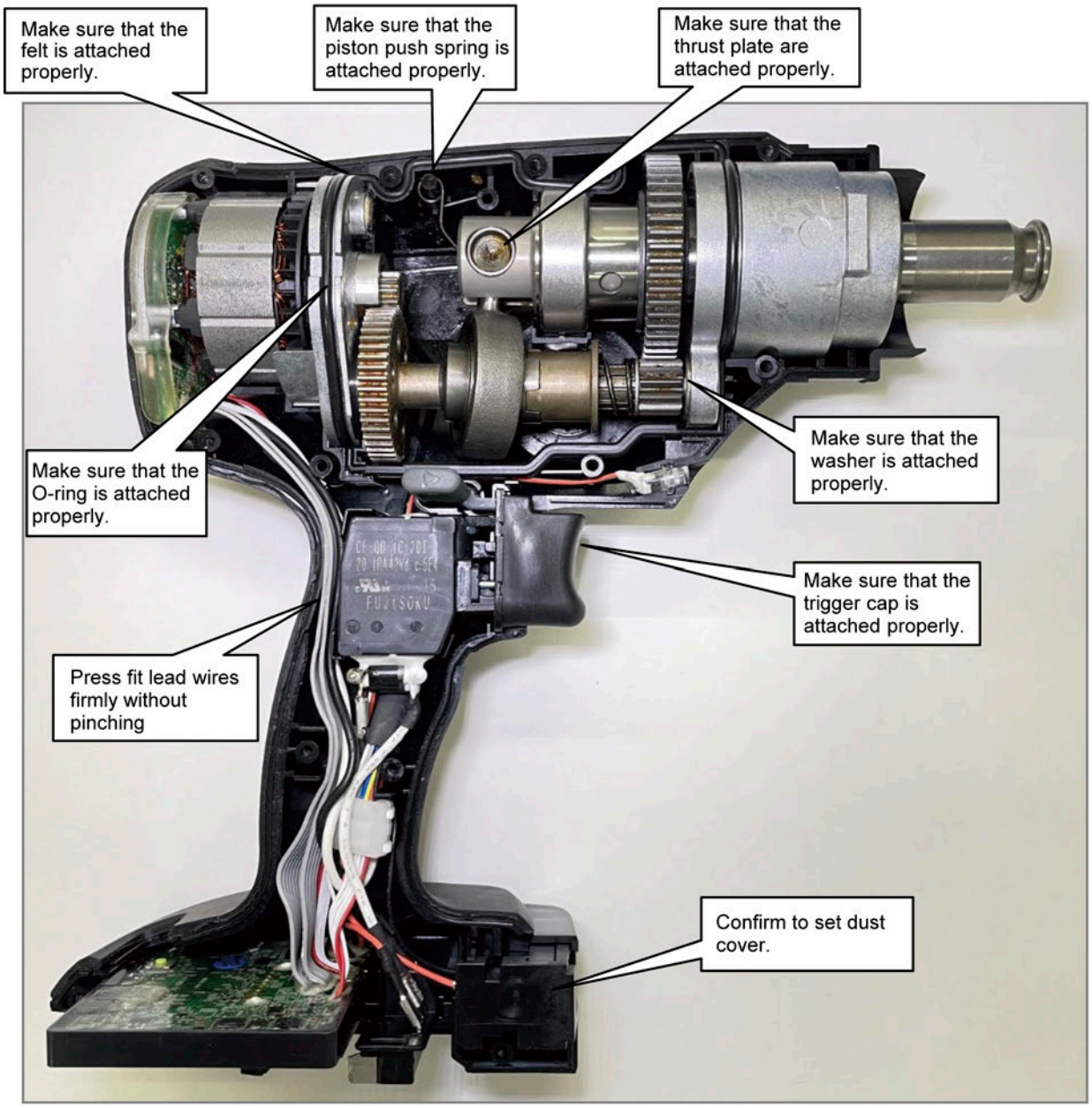


Make sure that the chuck spring strike plate is installed in the correct direction.



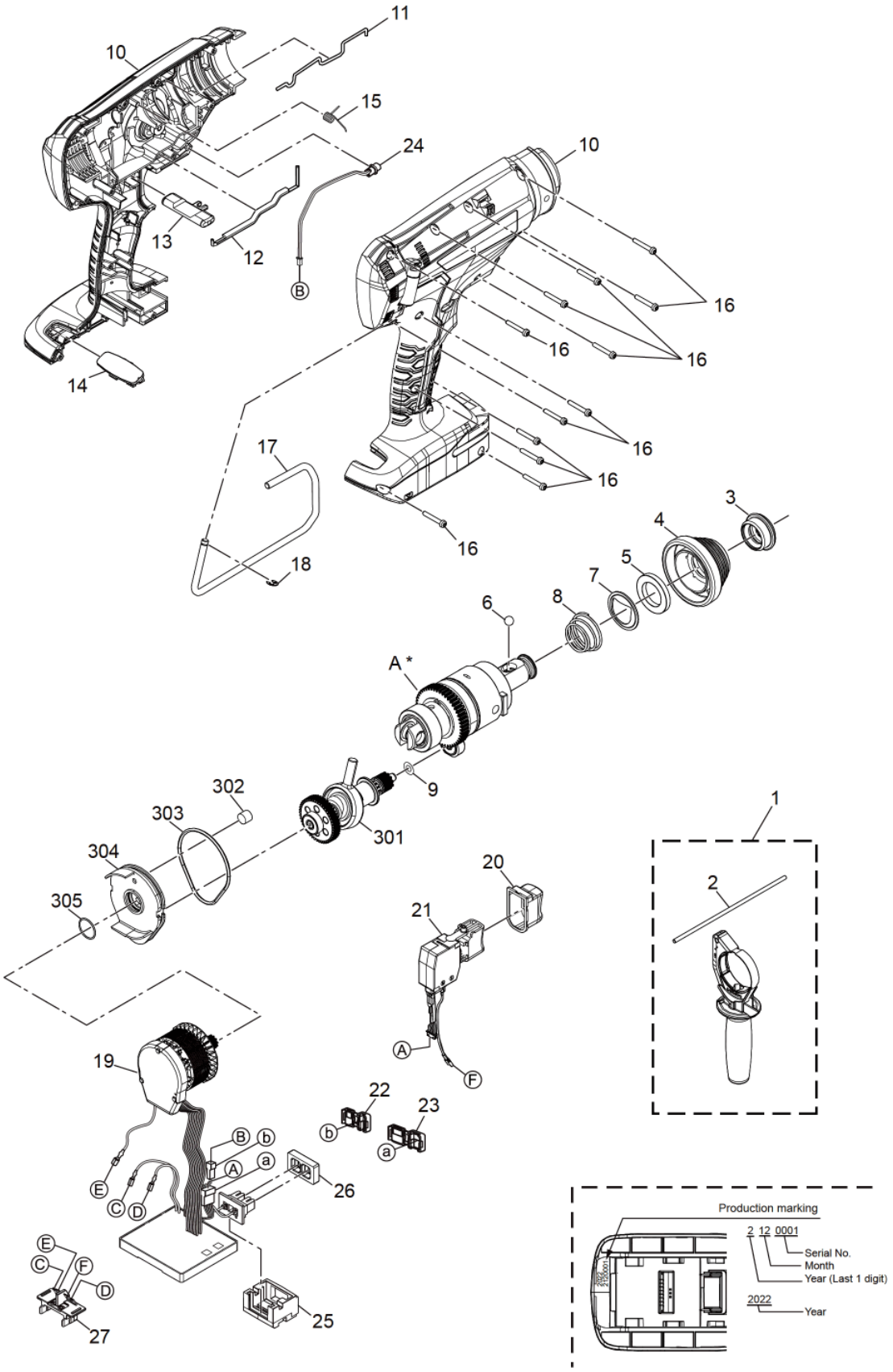
E-ring must be installed with the edge side facing upward.



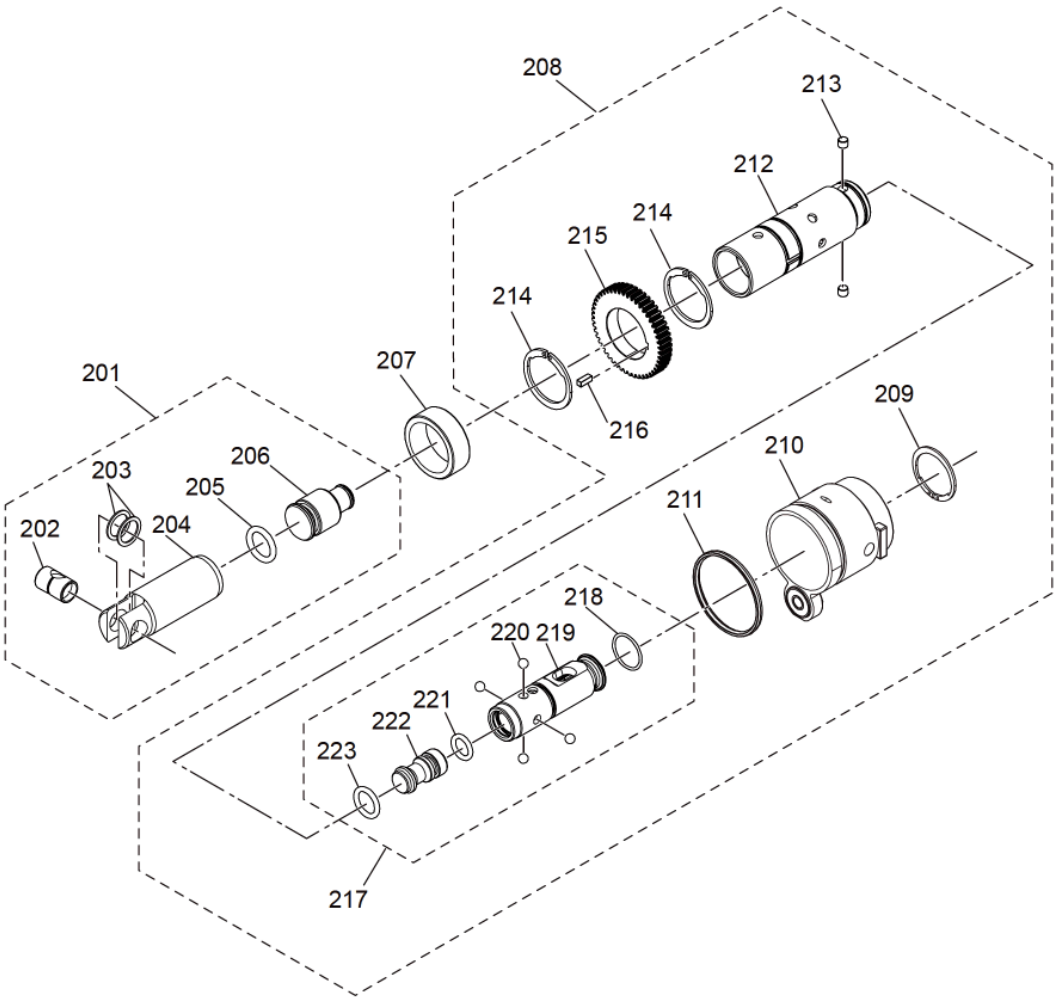

Make sure that the felt is attached properly.
Make sure that the piston push spring is attached properly.
Make sure that the thrust plate are attached properly.
Make sure that the O-ring is attached properly.
Make sure that the washer is attached properly.
Make sure that the trigger cap is attached properly.
Press fit lead wires firmly without pinching
Confirm to set dust cover.

5 Exploded View and Replacement Parts List

Model No. : EY1HD1 Exploded View1



Model No. : EY1HD1 Exploded View2



Model No. : EY1HD1 Parts List

Change	Safe	Ref.No.	Part No.	Part Name & Description	Quantity	Remarks
EY1HD1						
		1	WEY1HD1F7001	AUXILIARY HANDLE	1	
		2	WEY1HD1F7101	DEPTH GAUGE	1	
		3	WEY6813H3116	CHUCK COVER	1	
		4	WEY6813K3127	CHUCK HANDLE	1	
		5	WEY6813L0427	BALL GUIDE	1	
		6	WEY6813L1916	STEEL BALL	1	
		7	WEY6813L0437	CHUCK SPRING STRIKE PLATE	1	
		8	WEY6813L0916	CHUCK SPRING	1	
		9	WEY1HD1L6001	WASHER	1	
		10	WEY1HD1K3002	HOUSING AB SET	1	
		11	WEY1HD1L9001	SEAL A	1	
		12	WEY1HD1L9101	SEAL B	1	
		13	WEY1PD1H3101	F/R SELECTOR HANDLE	1	
		14	WEY1HD1L3001	OPERATION PLATE	1	
		15	WEY1HD1L6101	PISTON PUSH SPRING	1	
		16	WEY1HD1L6201	DELTA TP SCREW	12	(12PCS/PK), (3*20)
		17	WEY1HD1L3101	BENDING HOOK	1	
		18	WEY45A8K0467	RETAINING RING	1	
		19	WEY1HD1L2001	ELECTRIC CIRCUIT ASSEMBLY	1	
		20	WEY1HD1L3201	TRIGGER CAP	1	
		21	WEY75A8L2007	SWITCH ASSEMBLY	1	
		22	WEY75A8W3117	CONNECTOR COVER 2P	1	
		23	WEY75A8W3127	CONNECTOR COVER 6P	1	
		24	WEY1PD1L2301	LED BLOCK	1	
		25	WEY1HD1L3301	TERMINAL FIXING BASE	1	
		26	WEY1HD1L3401	TERMINAL DUST COVER	1	
		27	WEY75A7K2157	BATTERY TERMINAL ASSEMBLY	1	
		201	WEY1HD1L4001	PISTON ASSEMBLY	1	
		202	WEY1HD1L1601	UNIVERSAL COUPLING	1	
		203	WEY6812L0846	THRUST PLATE	2	(2PCS/PK)
		204	WEY1HD1L1001	PISTON	1	
		205	WEY6803L0977	O RING	1	
		206	WEY1HD1L1101	HAMMER	1	
		207	WEY1HD1S1001	BEARING	1	
		208	WEY1HD1L4101	DRIVING BLOCK ASSEMBLY	1	
		209	WEY6813L0477	SNAP RING	1	(ISTW-25)
		210	WEY1HD1L0001	GEAR CASE	1	
		211	WEY1HD1K0901	O-RING	1	(JASO-2042)
		212	WEY1HD1L1201	CYLINDER	1	
		213	WEY6813L0907	PIN	2	(2PCS/PK)
		214	WEY1HD1L6301	SNAP RING	2	(ISTW-28),(2PCS/PK)
		215	WEY1HD1L1301	POWER GEAR	1	
		216	WEY1HD1L6401	KEY	1	
		217	WEY1HD1L4201	SPINDLE ASSEMBLY	1	
		218	WEY6813L0317	O RING	1	
		219	WEY1HD1L1401	SPINDLE	1	
		220	WEY6813L1926	STEEL BALL	4	(5PCS/PK), (Fai 5)
		221	WEY6813L0327	O RING	1	
		222	WEY1HD1L1501	STRIKER	1	
		223	WEY6813L0347	O RING	1	
		301	WEY1HD1L4301	INTERMEDIATE SHAFT ASSEMBLY	1	
		302	WEY7881F0247	FELT	1	
		303	WEY1HD1K0911	O-RING	1	(JASO-2053)
		304	WEY1HD1L0101	BASE PLATE	1	
		305	WEY1HD1K0921	O-RING	1	
		-	WEY1HD1L8002	OPERATING INSTRUCTIONS	1	
		-	WEY003W8957	GREASE (PERMALUB)	1	
		-	WEY6811X5537	GREASE (ASG-22)	1	