

Hitachi Power Tools

SERVICE MANUAL

LIST No.
WR 22SE: E729
Jan. 2015

PRODUCT NAME

Hitachi Impact Wrench

Model **WR 22SE**

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HITACHI

 **Hitachi Koki Co., Ltd.**
Overseas Sales Division

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REPAIR GUIDE

WARNING: Be sure to turn off the power switch and disconnect the power cord plug from the power supply before conducting repair.

1. Precautions on disassembly and reassembly

[Bold] numbers in the description below correspond to the item numbers in the Parts List and exploded assembly diagram for the Model WR 22SE.

Disassembly

1. Disassembly of hammer case (D) ass'y

(1) Removal of hammer case (D) ass'y

Remove the Button Bolt M4 [44] and four Bolts M5 x 45 [3]. Supporting Hammer Case (D) Ass'y [1], tap the tip of the Anvil [9] with a wooden hammer to remove Hammer Case (D) Ass'y [1]. Remove Packing (D) [26] from between Hammer Case (D) Ass'y [1] and Inner Cover (D) [27].

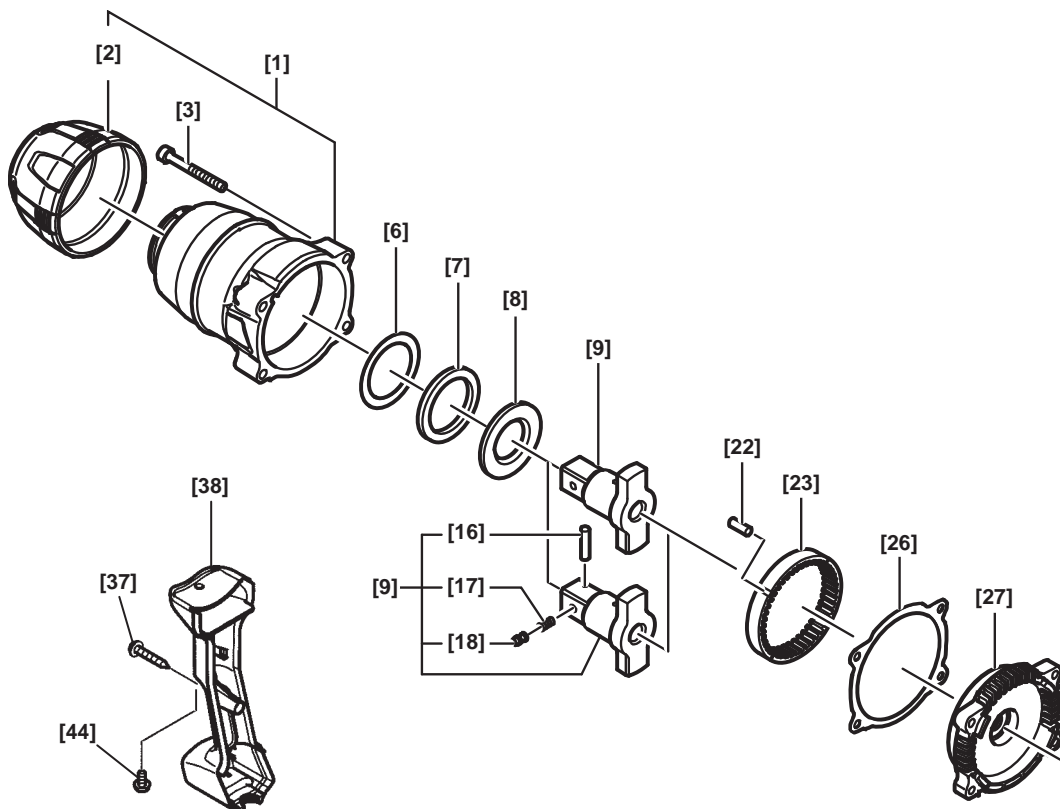
(2) Removal of the anvil

Remove the Anvil [9] from the bearing portion of Hammer Case Ass'y (D) [1].

(3) Removal of the ring gear

Tap the end surface of Hammer Case Ass'y (D) [1] with a wooden hammer to remove the Ring Gear [23]. If the Ring Gear [23] cannot be removed, warm up Hammer Case (D) Ass'y [1] and tap it with a wooden hammer to remove the Ring Gear [23].

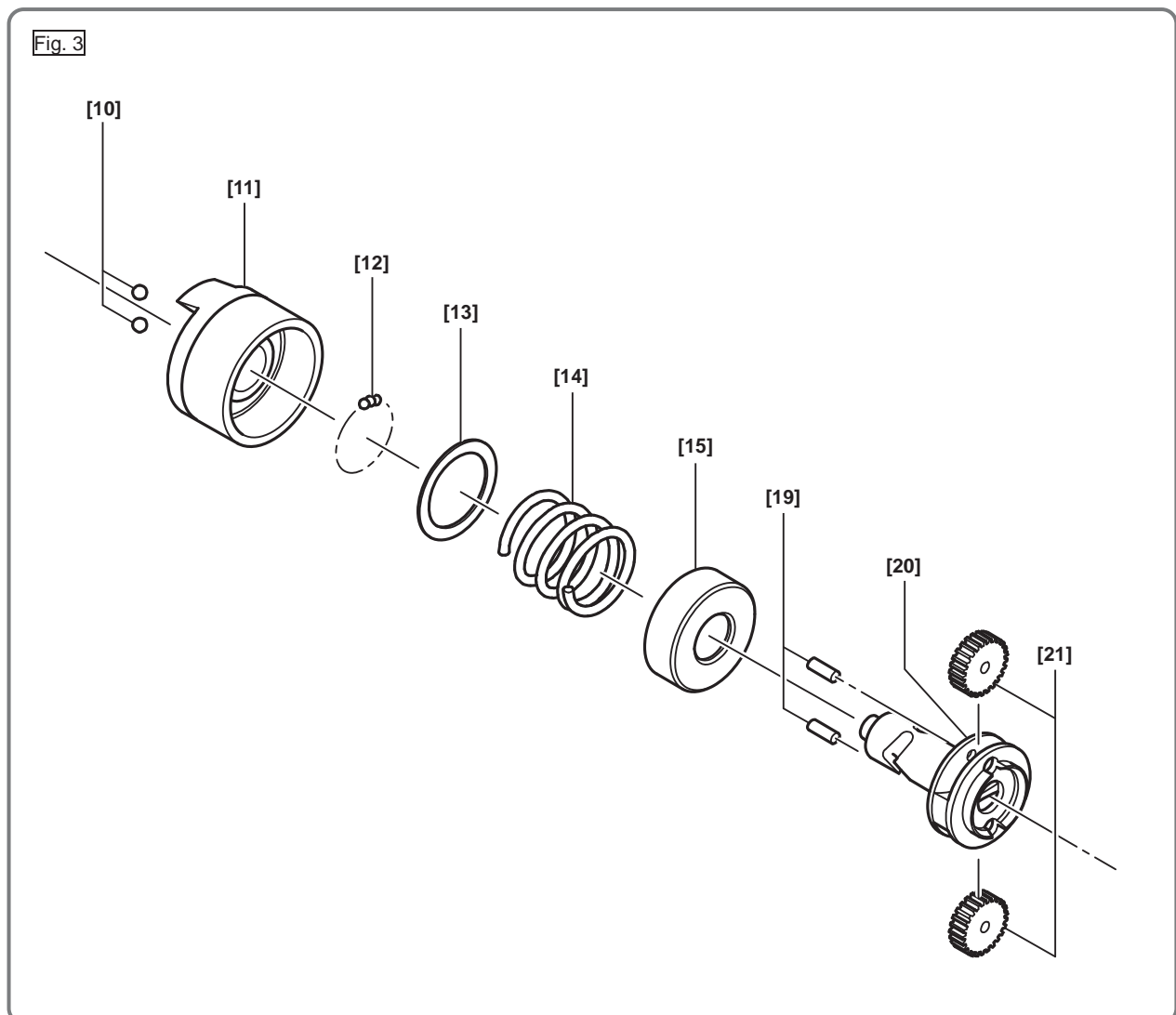
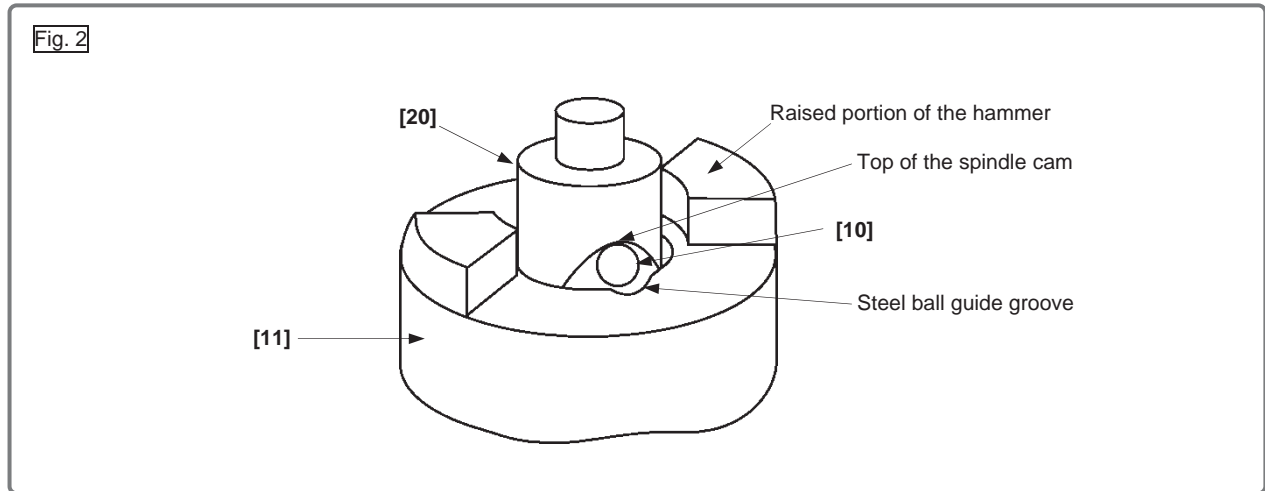
Fig. 1 • Disassembly of hammer case (D) ass'y



2. Removal of the spring

Using a hand press, push down the raised portions of Hammer (D) [11] to compress the Spring [14] fully. In this position, use a small flat-blade screwdriver to extract the two Steel Balls D7.14 [10] from the cam grooves of the Spindle [20] and Hammer (D) [11]. Then slowly release the hand press and remove Hammer (D) [11] from the Spindle [20] to remove the Spring [14].

NOTE: Be careful not to lose the thirty-eight Steel Balls D3.97 [12] and the Hammer Washer [13] mounted between Hammer (D) [11] and the Spring [14].



3. Disassembly of the motor unit

(1) Removal of rotor ass'y (D)

Remove Rotor Ass'y (D) [29] together with Inner Cover (D) [27] from Housing (D) [34].

NOTE: Keep the removed Rotor Ass'y (D) [29] away from iron or other metal because Rotor Ass'y (D) [29] has a magnetic force.

(2) Remove the two Screws D4 x 60 [32], Screw D4 x 35 [37], and two Screws D4 x 16 [46]. Then remove the power supply unit.

Fig. 4 • Disassembly of the motor unit

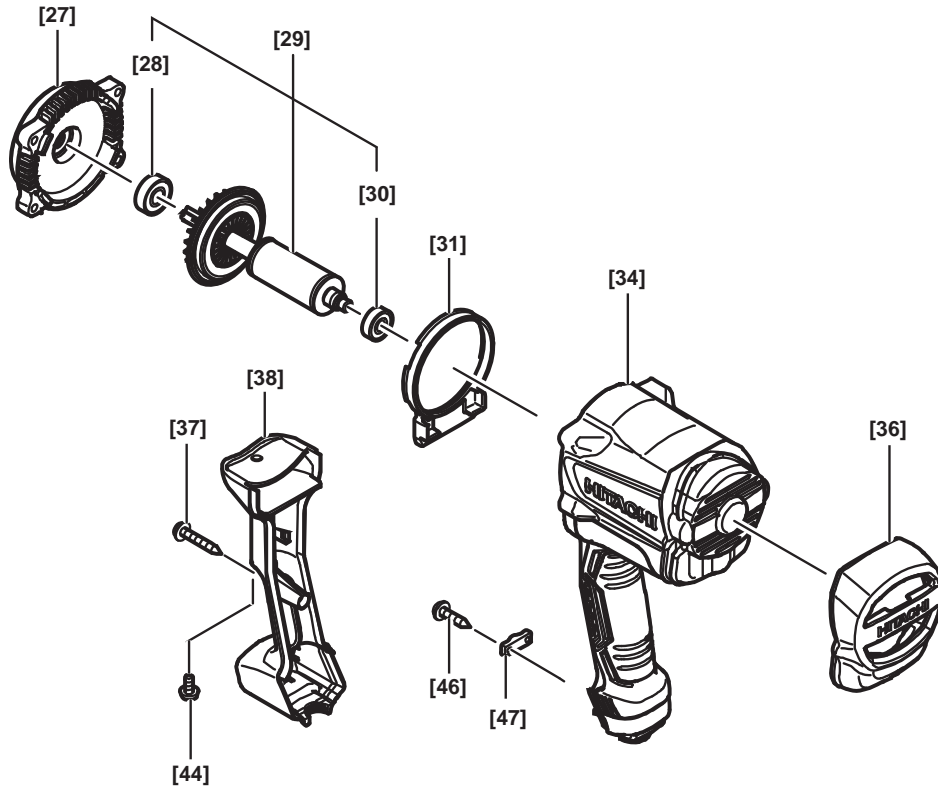
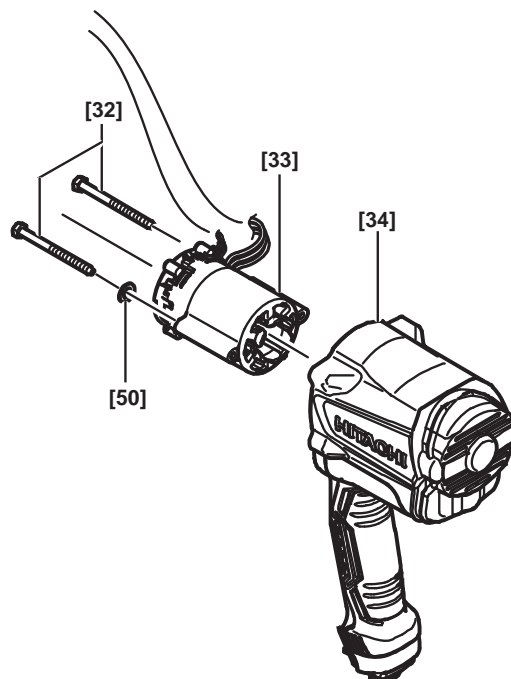


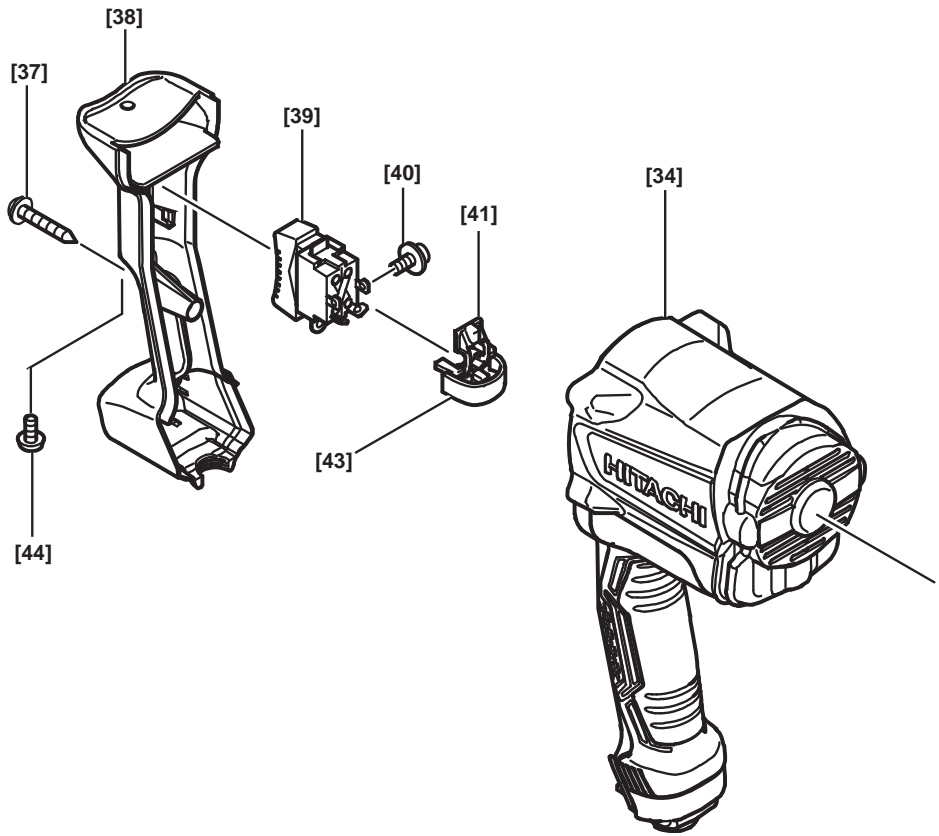
Fig. 5



4. Removal of the switch

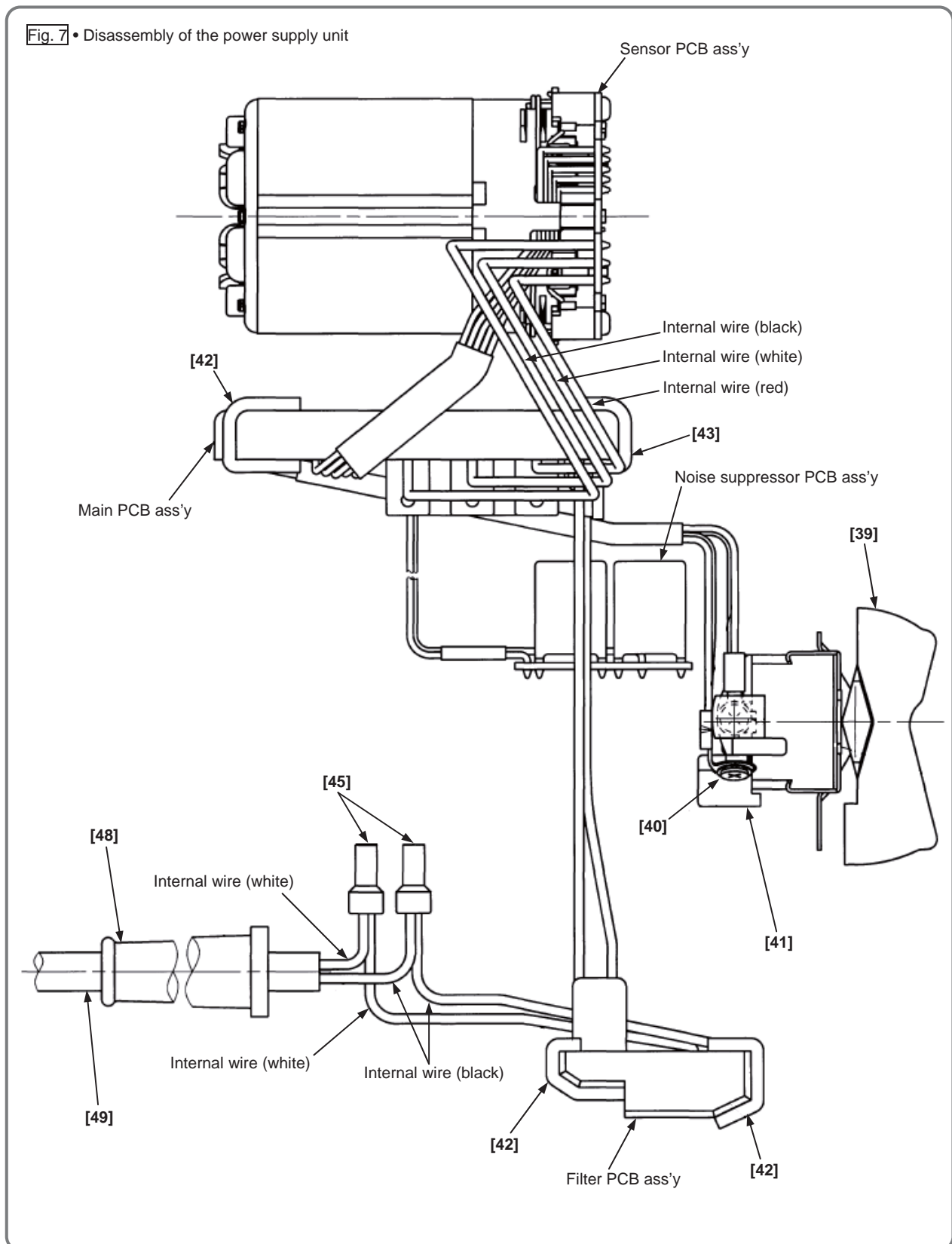
Remove the four Screws M3.5 x 5 [40] from the Switch [39] and remove the Switch Adapter [41]. Then remove the Switch [39].

Fig. 6 • Removal of the switch



5. Disassembly of the power supply unit

- (1) Remove the four Screws M3.5 x 5 [40] from the Switch [39].
- (2) Hold the Switch Adapter [41] and slowly pull it out.

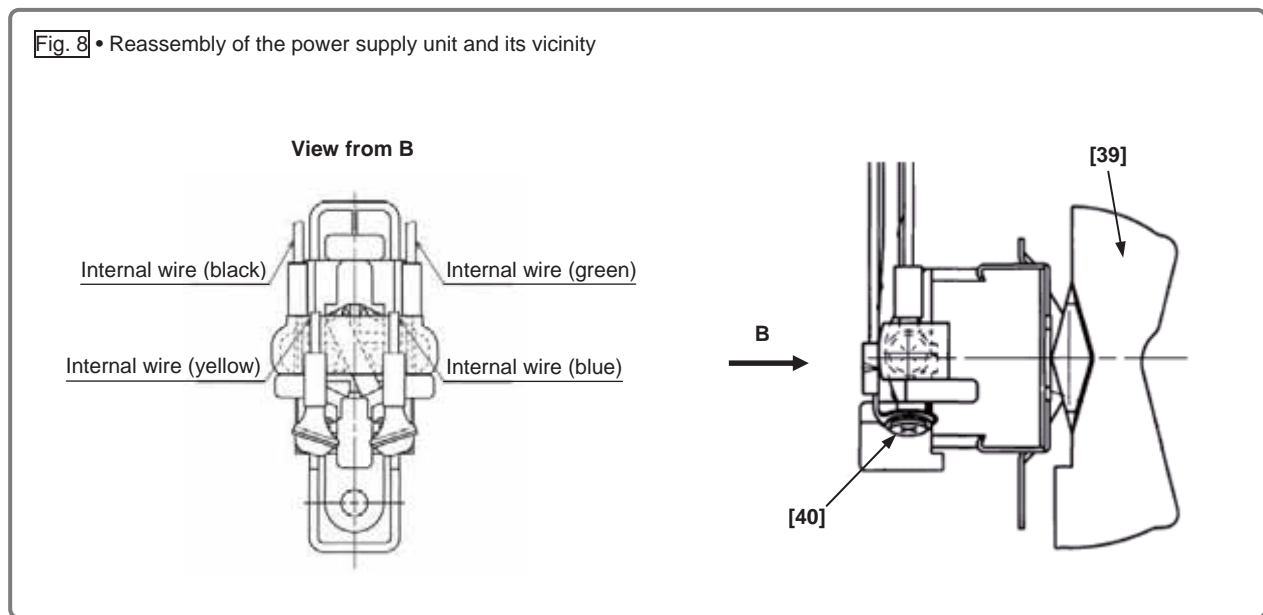


Reassembly

Perform reassembly by reversing the disassembly procedure. However, special attention should be given to the following items.

1. Reassembly of the power supply unit and its vicinity

- (1) Perform wiring according to the connecting diagram on page 9 when replacing the Switch [39] or Stator Controller (D) Set [33] with new one.
- (2) Connect the internal wires of Stator Controller (D) Set [33] to the Switch [39] paying attention to the colors of the internal wires. Then secure them with the four Screws M3.5 x 5 [40].
- (3) Be careful not to get the internal wires caught in the power supply unit.



2. Reassembly of the impact mechanism

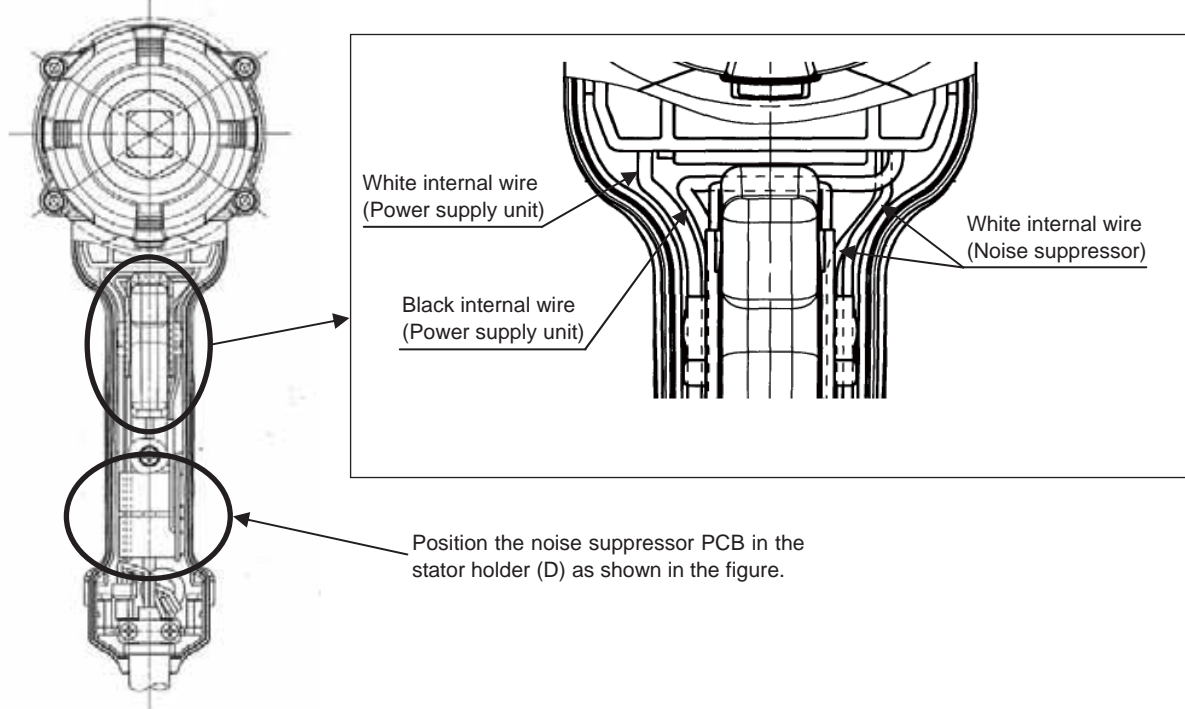
- (1) Mount the Hammer Washer [13], Spring [14], Spring Seat [15], and Spindle [20] in this order into Hammer (D) [11], which contains the thirty-eight Steel Balls D3.97 [12].
- (2) Match the peak of the cam groove of the Spindle [20] with the steel ball insertion groove of Hammer (D) [11]. Use a hand press or similar tool to press the raised portion of Hammer (D) [11] so as to compress the Spring [14] until it contacts the Spindle [20], and then hold it there.
- (3) Put the two Steel Balls D7.14 [10] in the steel ball insertion groove. Check that the Steel Balls D7.14 [10] are in the cam groove, and then release the hand press.
- (4) Mount the Idle Gear Set (2 pcs.) [21] and the two Gear Shafts [19] on the Spindle [20].

3. Reassembly of the main body

- (1) Secure the stator to Housing (D) [34] with the two Screws D4 x 60 [32] and insert the controller PCB ass'y (D) into the lower portion of the stator.
- (2) Mount the Cord Clip [47] with its protrusion toward the cord, and then secure it with the two Screws D4 x 16 [46].
- (3) Position the internal wires under the Switch [39].

NOTE: Position the internal wire of the noise suppressor PCB on the right, and the internal wire of the power supply PCB on the left. Position the green and yellow internal wires of the switch on the right, and the blue and black internal wires on the left. Then insert the Switch [39].

Fig. 9 • Reassembly of the main body



(4) Mount Rotor Ass'y (D) [29] and Fan Guide (D) [31] to Housing (D) [34].

NOTE: Be careful of the direction of Fan Guide (D) [31].

(5) Secure Handle Cover (D) [38] to Housing (D) [34] with the Screw D4 x 35 [37].

(6) Mount Metal (E) [25] and Packing (D) [26] to Inner Cover (D) [27].

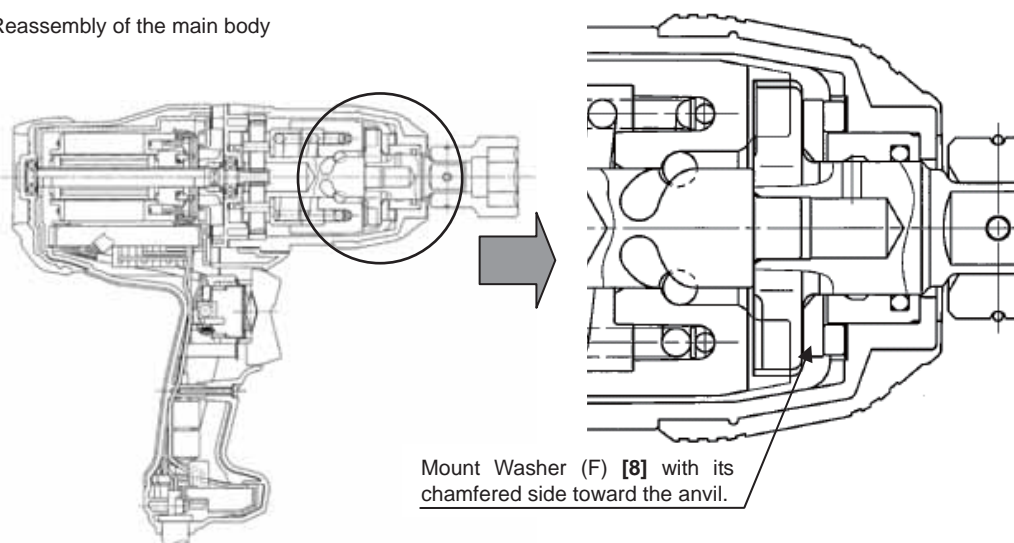
NOTE: Do not mount Packing (D) [26] upside down.

(7) Mount Washer (E) [24] and Ring Gear [23] to the impact mechanism and mount it to Inner Cover (D) [27].

NOTE: Mount the Ring Gear [23] with its protrusion toward the hammer case.

(8) Mount Washer (F) [8] to the Anvil [9]. Apply a small amount of grease to the Needle Roller [22] and mount it to the Ring Gear [23].

Fig. 10 • Reassembly of the main body



(9) Insert Washer (D) [6] and Damper (D) [7] into Hammer Case (D) Ass'y [1] and secure it with the four Bolts M5 x 45 [3].

(10) Secure Handle Cover (D) [38] and Hammer Case (D) Ass'y [1] with the Button Bolt M4 [44].

Application of lubricant

(1) Apply Nippeco SEP-3A grease (Code No. 930035 (100 g)/930038 (2.5 kg)) to the following:

- Pinion tooth flanks of Rotor Ass'y (D) [29]
- Tooth flanks of the Ring Gear [23]
- Two Gear Shafts [19]
- Tooth flanks and inner circumference of the Idle Gear Set (2 pcs.) [21]

(2) Apply Doubrex 251 grease to the following:

- Between Hammer (D) [11] and Spring Seat [15]
- Inside of Hammer Case (D) Ass'y [1]
- Spindle [20]: Cam groove, sliding portion, and engaging portions with the Anvil [9] and Metal (E) [25]
- Cam groove and raised portions of Hammer (D) [11]
- Anvil [9]: 13 mm dia. hole, sliding portion with Washer (F) [8], claw, and sliding portion with the O-ring
- Two Steel Balls D7.14 [10]
- Thirty-eight Steel Balls D3.97 [12]
- Both end surfaces of Washer (D) [6] and Damper (D) [7]

Screw tightening torque

- Seal Lock Hex. Socket Hd. Bolt M5 x 45 [3] ----- 7.8 ± 1.5 N•m (80 ± 15 kgf•cm)
- Tapping Screw (W/Flange) D4 x 35 (Black) [37] ----- 2.0 ± 0.5 N•m (20 ± 5 kgf•cm)
- Hex. Hd. Tapping Screw D4 x 60 [32] ----- 2.0 ± 0.5 N•m (20 ± 5 kgf•cm)
- Button Bolt M4 [44] ----- 1.8 ± 0.4 N•m (18 ± 4 kgf•cm)
- Tapping Screw (W/Flange) D4 x 16 [46] ----- 2.0 ± 0.5 N•m (20 ± 5 kgf•cm)

Checking after reassembly

Check the following after reassembly:

- (1) Operate the Switch [39] and check that the switch moves smoothly and the switch operations (ON, OFF, forward and reverse) are normal.
- (2) Press the Switch [39] in "R" direction and slowly release the switch. Check that the switch returns to the original position. Then press the Switch [39] in "L" direction and slowly release the switch. Check that the switch returns to the original position.
- (3) Check that the rotational direction of Anvil [9] matches the direction of rotation made when you press the Switch [39]. When the Switch [39] is set to the "R" position, the Anvil [9] must rotate clockwise as viewed from the rear (opposite to the Anvil [9].)

Insulation test

On completion of reassembly after repair, measure the insulation resistance and conduct the dielectric strength test between the plug pins and the outside metallic parts such as the Anvil [9].

Insulation resistance: 7 MΩ or more

Dielectric strength: 2,500 V for 1 minute ----- 110 V to 120 V

4,000 V for 1 minute ----- 220 V to 240 V

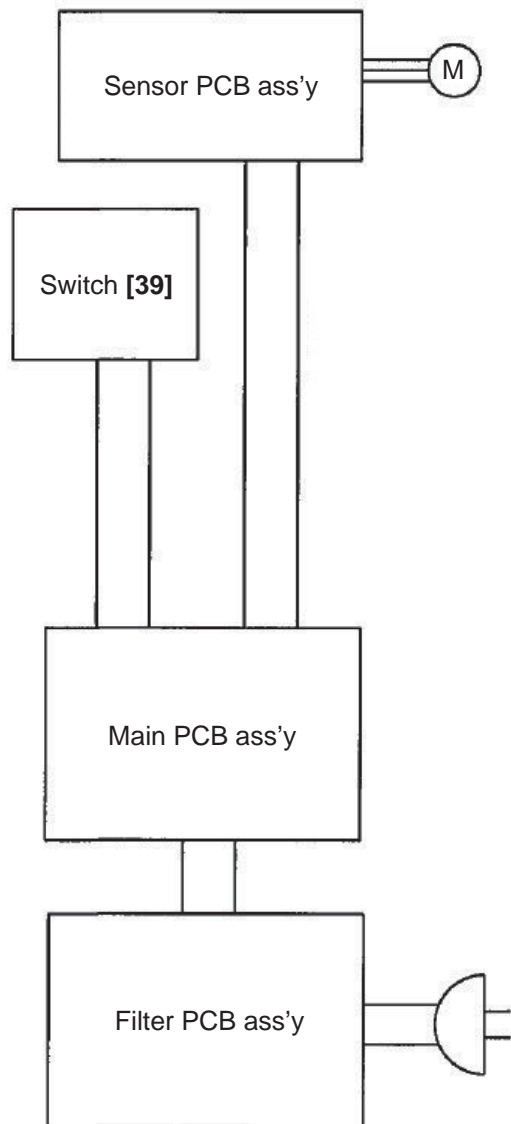
No-load current

After no-load operation for 30 minutes, the no-load current value should be as follows.

Voltage	110 V	120 V	220 V	230 V	240 V
Current max.	3.5 A	3.5 A	1.5 A	1.5 A	1.5 A

Connecting diagram

Fig. 11 • Connecting diagram



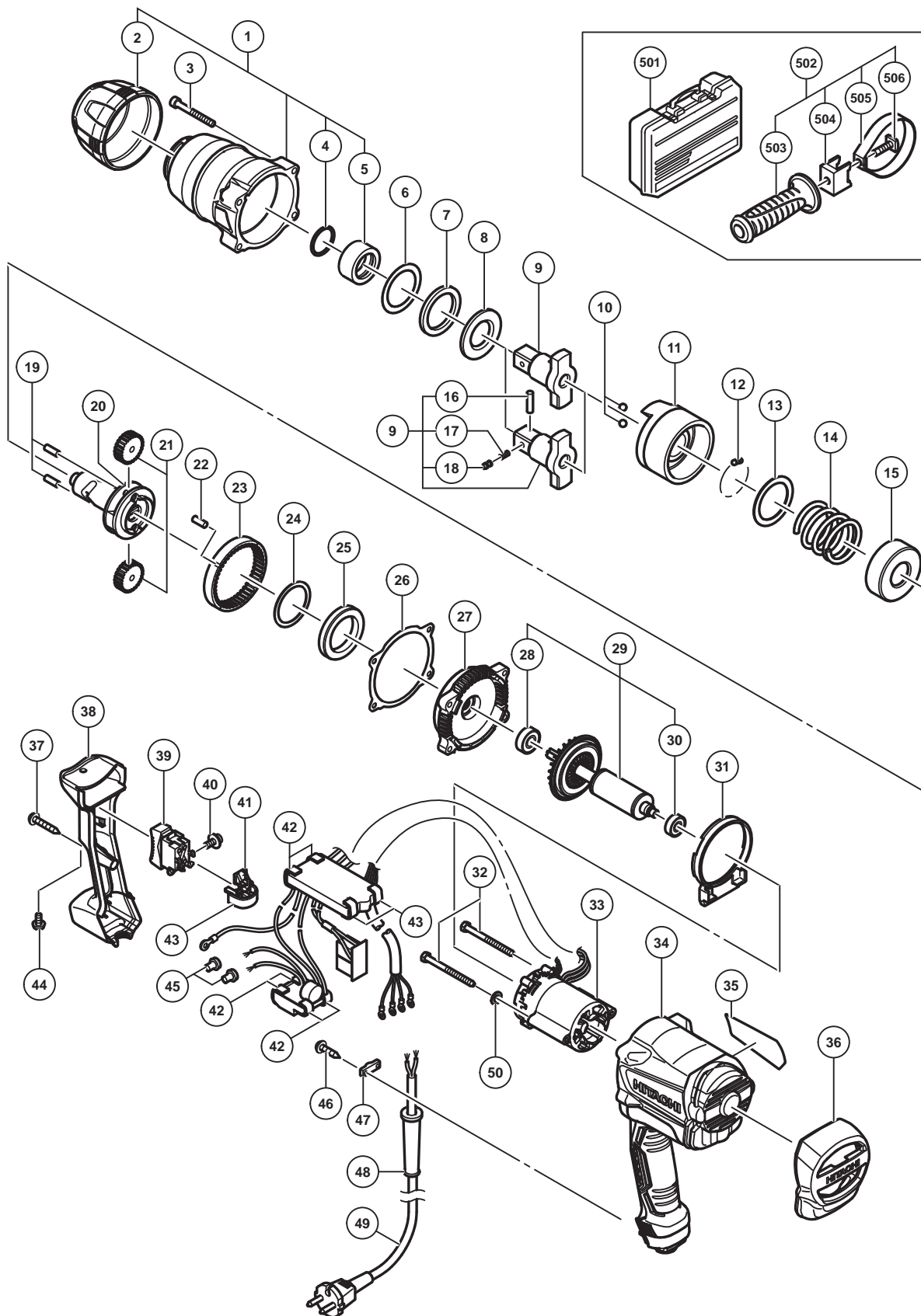
STANDARD REPAIR TIME (UNIT) SCHEDULE

MODEL	Fixed	Variable	10	20	30	40	50	60 min.
WR 22SE		Work Flow						
			Handle Cover (D) Switch Adapter Cord Armor	Switch Cord	Rotor Ass'y (D) Ball Bearing (6000DD) Ball Bearing (608VV) Inner Cover (D)	Housing (D) Stator Controller (D) Set		
	General Assembly				Hammer (D) Steel Ball D7.14 x 2 Steel Ball D3.97 x 10 Spring Spring Seat	Spindle Idle Gear Set Gear Shaft x 2		
		Tail Bumper (D)			Hammer Case (D) Ass'y O-ring Anvil Ring Gear			

ELECTRIC TOOL PARTS LIST

■ IMPACT WRENCH Model WR 22SE

2015-1-20
(E1)



PARTS

WR 22SE

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
1	337849	HAMMER CASE (D) ASS'Y	1	INCLUD.2,4,5
2	337850	BUMPER (D)	1	
3	323994	SEAL LOCK HEX. SOCKET HD. BOLT M5 X 45	4	
4	971028	O-RING (P-28)	1	
5	337851	METAL (F)	1	
6	338357	WASHER (D)	1	
7	338356	DAMPER (D)	1	
8	337848	WASHER (F)	1	
* 9	324013	ANVIL (A)	1	
* 9	324021	ANVIL (B) ASS'Y	1	INCLUD.16-18 FOR AUS,USA,CAN
10	959151	STEEL BALL D7.14 (10 PCS.)	2	
11	338358	HAMMER (D)	1	
12	959155	STEEL BALL D3.97 (10 PCS.)	38	
13	324004	HAMMER WASHER	1	
14	324002	SPRING	1	
15	324001	SPRING SEAT	1	
* 16	949507	ROLL PIN D2 X 14 (10 PCS.)	1	FOR AUS,USA,CAN
* 17	992571	SPRING	1	FOR AUS,USA,CAN
* 18	992572	PLUNGER	1	FOR AUS,USA,CAN
19	971016	GEAR SHAFT	2	
20	324003	SPINDLE	1	
21	318448	IDLE GEAR SET (2 PCS.)	2	
22	991449	NEEDLE ROLLER	1	
23	985303	RING GEAR	1	
24	337847	WASHER (E)	1	
25	337846	METAL (E)	1	
26	337842	PACKING (D)	1	
27	337845	INNER COVER (D)	1	
28	6000DD	BALL BEARING 6000DDCMPS2L	1	
29	360990	ROTOR ASS'Y (D)	1	INCLUD.28,30
30	333945	BALL BEARING 608VV	1	
31	337844	FAN GUIDE (D)	1	
32	960108	HEX. HD. TAPPING SCREW D4 X 60	2	
* 33	340897C	STATOR CONTROLLER (D) SET 110V	1	
* 33	340897D	STATOR CONTROLLER (D) SET 120V-127V	1	
* 33	340897E	STATOR CONTROLLER (D) SET 220V-230V	1	
* 33	340897F	STATOR CONTROLLER (D) SET 240V	1	
34	338355	HOUSING (D)	1	
35		NAME PLATE	1	
36	337843	TAIL BUMPER (D)	1	
37	303694	TAPPING SCREW (W/FLANGE) D4 X 35 (BLACK)	1	
38	337841	HANDLE COVER (D)	1	
39	337202	SWITCH	1	
40	980060	MACHINE SCREW (W/WASHER) M3.5 X 5	4	
41	323768	SWITCH ADAPTER	1	
42	338354	CUSHION RUBBER 45 X 10 X 3	6	
43	338353	CUSHION RUBBER 30 X 10 X 3	3	
44	338500	BUTTON BOLT M4	1	
45	959140	CONNECTOR 50091 (10 PCS.)	2	
46	984750	TAPPING SCREW (W/FLANGE) D4 X 16	2	

STANDARD ACCESSORIES

WR 22SE

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
501	338326	CASE	1	
502	338327	SIDE HANDLE ASS'Y	1	INCLUD.503-506
503	330209	SIDE HANDLE	1	
504	323775	HANDLE HOLDER	1	
505	338498	HANDLE RING	1	
506	980903	SQUARE BOLT M8	1	

OPTIONAL ACCESSORIES

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS
601	874535	EXTENSION BAR ASS'Y (SQUARE) 19.0MM X 150L	1	INCLUD.602,603
602	874524	SOCKET RING	1	
603	874525	SOCKET PIN	1	
604	955088	UNIVERSAL JOINT ASS'Y	1	INCLUD.602,603
605	955091	UNIVERSAL JOINT PIN	1	
606	986004	ADAPTER ASS'Y 12.7MM	1	INCLUD.602,603
607	874527	HEX. SOCKET ASS'Y 23MM X 55L	1	INCLUD.602,603
608	874528	HEX. SOCKET ASS'Y 24MM X 55L	1	INCLUD.602,603
609	874529	HEX. SOCKET ASS'Y 26MM X 55L	1	INCLUD.602,603
610	874530	HEX. SOCKET ASS'Y 27MM X 55L	1	INCLUD.602,603
611	874532	HEX. SOCKET ASS'Y 30MM X 55L	1	INCLUD.602,603
612	874523	HEX. SOCKET ASS'Y 32MM X 55L	1	INCLUD.602,603
613	874533	HEX. SOCKET ASS'Y 35MM X 55L	1	INCLUD.602,603
614	874534	HEX. SOCKET ASS'Y 36MM X 55L	1	INCLUD.602,603
615	955028	HEX. SOCKET ASS'Y (LONG) 17MM X 60L	1	INCLUD.602,603
616	955029	HEX. SOCKET ASS'Y (LONG) 19MM X 60L	1	INCLUD.602,603
617	955030	HEX. SOCKET ASS'Y (LONG) 21MM X 60L	1	INCLUD.602,603
618	955031	HEX. SOCKET ASS'Y (LONG) 22MM X 60L	1	INCLUD.602,603
619	955033	HEX. SOCKET ASS'Y (LONG) 24MM X 60L	1	INCLUD.602,603
620	955034	HEX. SOCKET ASS'Y (LONG) 26MM X 85L	1	INCLUD.602,603
621	955035	HEX. SOCKET ASS'Y (LONG) 27MM X 85L	1	INCLUD.602,603
622	955037	HEX. SOCKET ASS'Y (LONG) 30MM X 85L	1	INCLUD.602,603
623	955038	HEX. SOCKET ASS'Y (LONG) 32MM X 100L	1	INCLUD.602,603
624	955092	HEX. SOCKET ASS'Y (LONG) 36MM X 100L	1	INCLUD.602,603