

TECHNICAL INFORMATION



PRODUCT

P 1 /19

Models No. ▶ HP2050, HP2050F, HP2051, HP2051F

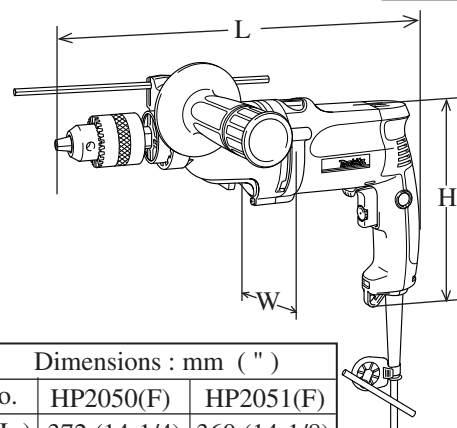
Description ▶ 2 Speed Hammer Drills 20mm

CONCEPT AND MAIN APPLICATIONS

Makita new 700W class hammer drills with extra low vibration level, yet with superior working performance has just been released.

The features and benefits are :

- * Slim and smart shape hammer drills, yet loaded with torque limiter
- * Extra-low vibration level for comfortable and less fatigue operation
- * Model HP2050F and HP2051F are equipped with built-in job light
- * HP2051 and HP2051F are equipped with keyless drill chucks.



Dimensions : mm (")		
Model No.	HP2050(F)	HP2051(F)
Length (L)	372 (14-1/4)	360 (14-1/8)
Height (H)	220 (8-5/8)	
Width (W)	70 (2-3/4)	

► Specification

Voltage (V)	Current (A)	Cycle (Hz)	Continuous Rating (W)		Max. Output(W)
			Input	Output	
110	6.9	50 / 60	720	360	660
120	6.6	50 / 60	720	360	660
220	3.4	50 / 60	720	360	660
230	3.3	50 / 60	720	360	660
240	3.2	50 / 60	720	360	660

Model No.			HP2050.	HP2050F	HP2051	HP2051F.	
No load speed : (min -1= rpm)	(High)	0 - 2,900					
	(Low)	0 - 1,200					
Blows per min. : (min -1= bpm)	(High)	0 - 58,000					
	(Low)	0 - 24,000					
Keyless chuck			No	No	Yes	Yes	
Chuck ability : mm (")			1.5 - 13.0 (1/16 - 1/2)				
Drilling capacity : mm (")	Concrete	(High)	20 (3/4)				
		(Low)	20 (3/4)				
	Steel	(High)	8 (5/16)				
		(Low)	13 (1/2)				
	Wood	(High)	25 (1)				
		(Low)	40 (1-9/16)				
LED job light			No	Yes	No	Yes	
Reverse switch			Yes				
Protection from electric shock			by double insulation				
Cord length : m (ft)			2.5 (8.2)				
Net weight :Kg (lbs)			2.3 (5.1)				

► Standard equipment

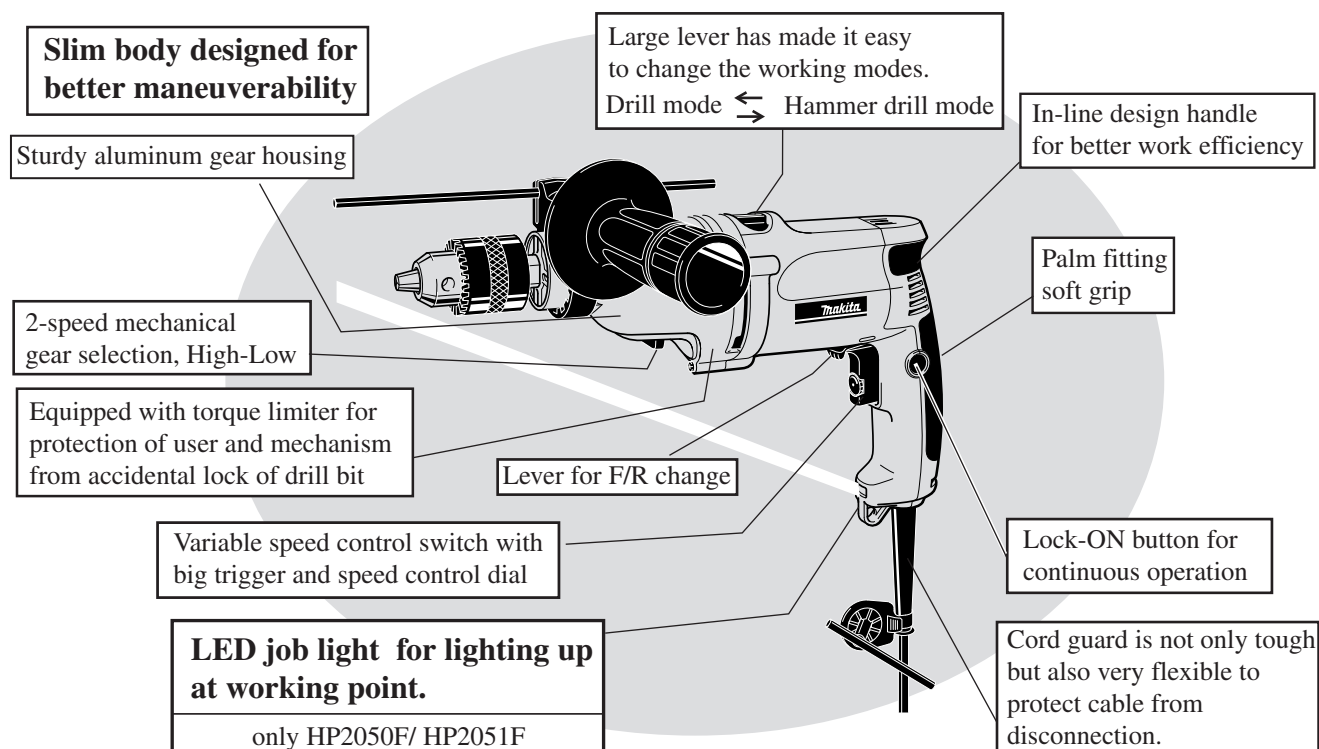
- * Chuck key S-13 (only for HP2050 and hP2050F) 1 pc.
- * Key holder (only for HP2050 and hP2050F) 1 pc.
- * Depth guide 1 pc.
- * Side grip set 1 pc.
- * Plastic carrying case 1 pc.

< Note > The standard equipment for the tool shown may differ from country to country.

► Optional accessories

- * TCT. drill bit 5 - 19mm
- * Drill bit for metal 13mm
- * Drill bit for wood 40mm
- * Center drill bit for hole saw 16 - 90mm
- * Metal borer 14 - 35mm
- * Depth guide
- * Wrench 9
- * Blow-out bulb
- * Keyless drill chuck
- * Drill chuck set
- * Side grip set
- * Type 43 drill stand
- * Chuck key S-13 (for HP2050, HP2050F)

► Features and benefits



► Comparison of products

Model No. Specifications			MAKITA				A	
			HP2050 (F)	HP2051 (F)	HP2032	HP2033	A1	A2
Power Input : W			720		720		705	705
No load speed : (min -1= rpm)	(High)		0 - 2,900		0 - 2,900		0 - 2,400	0 - 3,000
	(Low)		0 - 1,200		0 - 850		0 - 1,000	0 - 1,000
Blows per min. : (min -1= bpm)	(High)		0 - 58,000		0 - 32,000		0 - 48,000	0 - 57,000
	(Low)		0 - 24,000		0 - 9,400		0 - 20,000	0 - 19,000
Keyless chuck			No	Yes	No	Yes	Yes	Yes
Drilling capacity	Concrete : mm (")		20 (3/4)		20 (3/4)		16 (5/8)	20 (3/4)
	Steel : mm (")	(High)	8 (5/16)		8 (5/16)		8 (5/16)	8 (5/16)
		(Low)	13 (1/2)		13 (1/2)		13 (1/2)	13 (1/2)
	Wood : mm (")	(High)	25 (1)		25 (1)		20 (3/4)	20 (3/4)
		(Low)	40 (1-9/16)		40 (1-9/16)		30 (1-3/16)	30 (1-3/16)
Torque limiter			Yes		No		Yes	Yes
LED job light			Yes (only F type)		No		No	No
Vibration in hammer drill mode (blowing direction) : m/s2 *			6.0		7.0		6.3	11.3
Noise level in hammer drill mode : dB(A)			97		98		96	98
Protection from electric shock			By double insulation				By double insulation	
Dimensions	Length : mm (")		372 (14-1/4)	360 (14-1/8)	370 (14-1/2)	368 (14-1/8)	350 (13-3/4)	345 (13-5/8)
	Width : mm (")		70 (2-3/4)		75 (2-15/16)		65 (2-9/16)	72 (2-13/16)
	Height : mm (")		220 (8-5/8)		195 (7-5/8)		185 (7-1/4)	190 (7-1/2)
Cord length : m (ft)			2.5 (8.2)		2.5 (8.2)		2.5 (8.2)	2.5 (8.2)
Net weight :Kg (lbs)			2.3 (5.1)		2.5 (5.5)		2.6 (5.8)	2.3 (5.1)

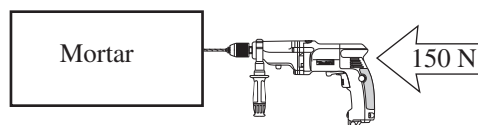
* measured by MAKITA under the loaded condition

► Comparison of working rate

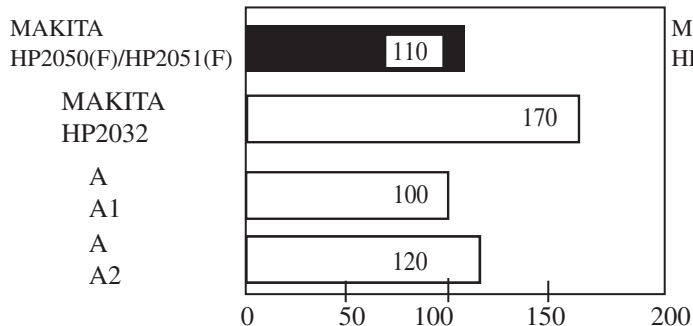
Numbers in chart below are relative values when the capacities of A's A1 at 100.

Testing conditions

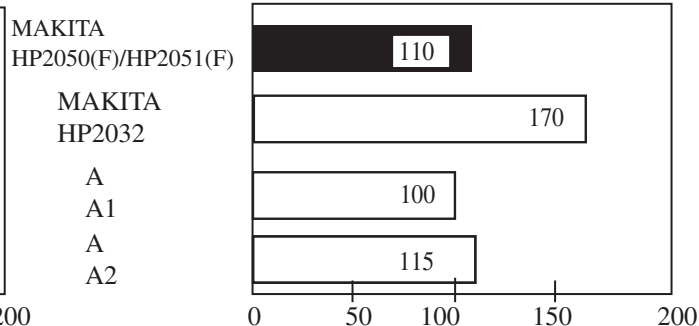
- * Work piece : Mortar
- * Pressure added to the products : 150 N



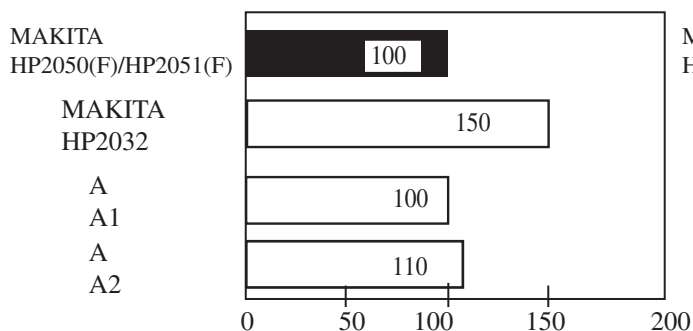
* When hammer drilling with ϕ 8mm (5/16") bit



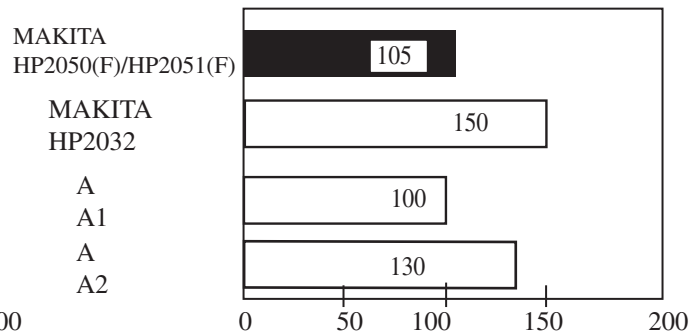
* When hammer drilling with ϕ 12.5mm (1/2") bit



* When hammer drilling with ϕ 16mm (5/8") bit

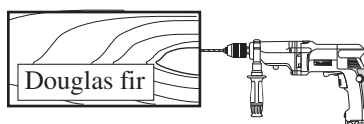


* When hammer drilling with ϕ 19mm (3/4") bit



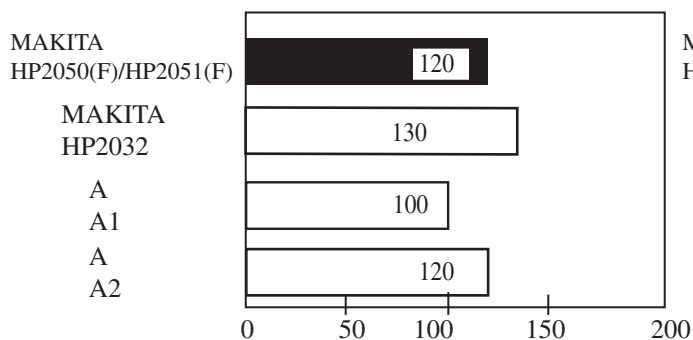
Testing conditions

- * Work piece : Douglas fir (Wood)



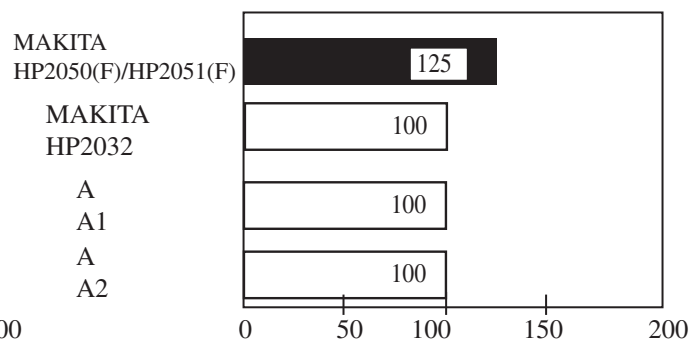
* Working mode : Drill / High Speed

* When hammer drilling with : ϕ 24 mm (15/16") bit



* Working mode : Drill / Low Speed

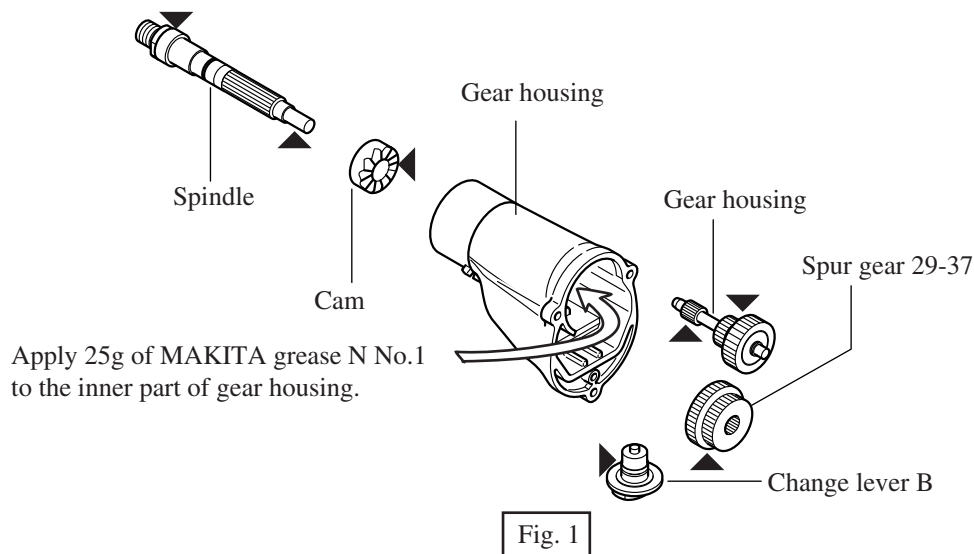
* When hammer drilling with ϕ 36mm (1-7/16") bit



► Repair

< 1 > Lubrication

Apply MAKITA grease N No.1 to the following portions marked with black triangle to protect parts and machine from unusual abrasion. See Fig. 1.



< 2 > Assembling and disassembling

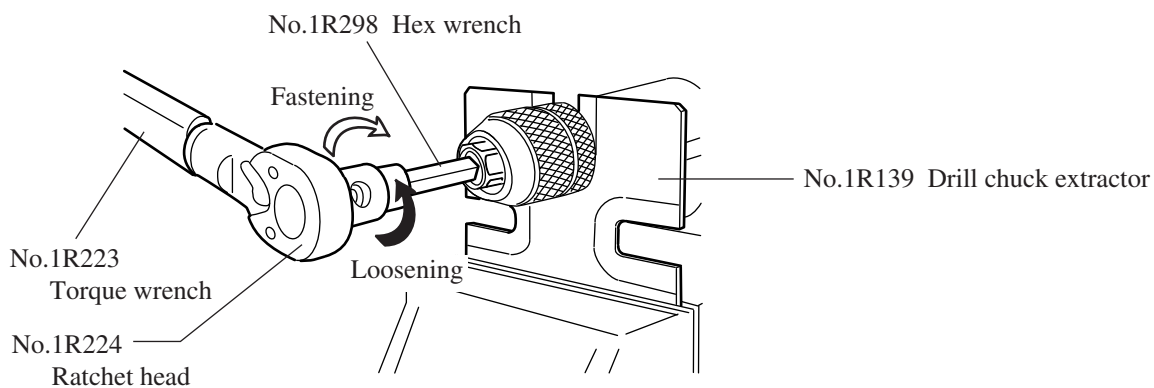
(1) Disassembling drill chuck See Fig. 2.

1. Hold the flat portion of spindle with No.1R139 "drill chuck extractor" which is fixed with vise.
2. Insert No.1R298 "hex wrench" into drill chuck and grip it firmly with drill chuck.
3. Turn No.1R298 "hex wrench" anti-clockwise, with No.1R223 "torque wrench" to which No.1R224 "ratchet head" is attached. Then, drill chuck can be disassembled from spindle.

In case of broken drill chuck, it may be impossible to grip hex wrench with drill chuck.
If so, firmly grip drill chuck with pipe wrench. And turn the pipe wrench anti-clockwise.
So, the drill chuck can be disassembled.

(2) Assembling drill chuck See Fig. 2.

1. Preset the torque level of No.1R223 "torque wrench" to 35.7N.m - 45.9N.m (350kgf.cm - 450kgf.cm).
2. Hold the flat portion of spindle with No.1R139 "drill chuck extractor" which is fixed with vise.
3. Insert No.1R298 "hex wrench" into drill chuck and grip it firmly with drill chuck.
4. Turn No.1R298 "hex wrench" clockwise, with No.1R223 "torque wrench" to which No.1R224 "ratchet head" is attached. Then, drill chuck can be assembled to spindle.



► Repair

(3) Disassembling gear section See Fig. 3.

1. Separate gear housing cover from gear housing.
2. Pull out lock plate.
3. Then change lever B, pin, rack 12 with change plate B and spur gear 29-37 can be disassembled from gear housing.

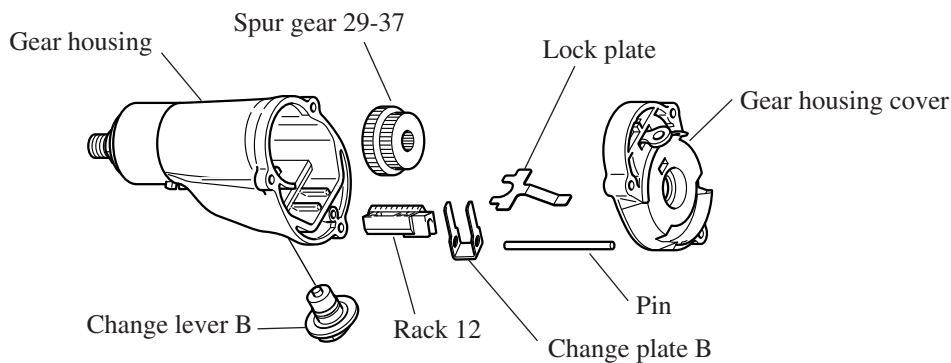


Fig. 3

(4) Assembling gear section

1. Assemble the spindle section to gear housing as illustrated Fig. 4 below.

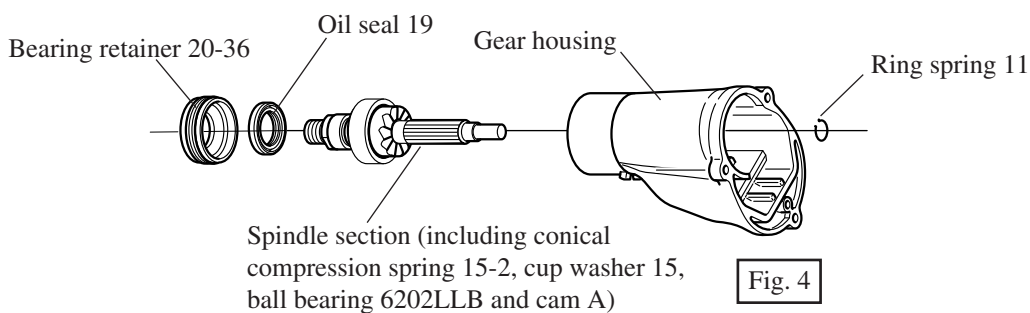


Fig. 4

When assembling bearing retainer 20-36 and oil seal 19, refer to "(6) Assembling bearing retainer 20-36 and oil seal 19" at page 7.

2. Insert change plate B into rack 12 as illustrated Fig. 5 right.

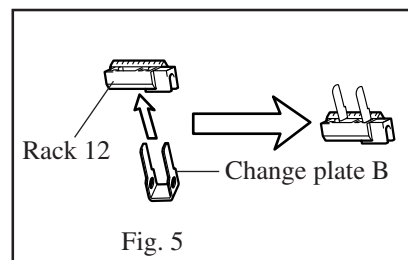


Fig. 5

3. Set the above assembled one to spur gear 29-37 as illustrated Fig. 6 right.

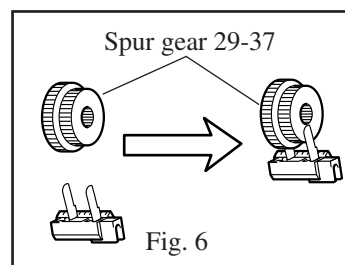


Fig. 6

4. Make sure that leaf spring is assembled in gear housing in advance. If not, assemble it. Assemble spur gear 29-37 to spindle and at the same time, assemble rack 12 w/ change plate B to gear housing as illustrated in Fig. 7 right.

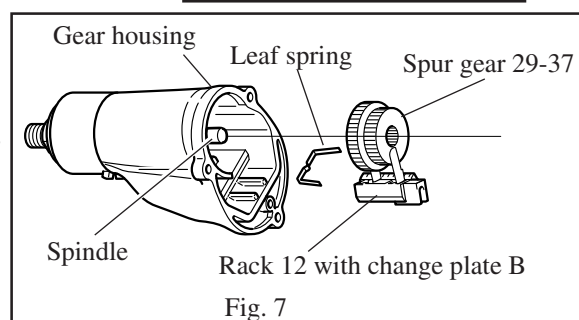
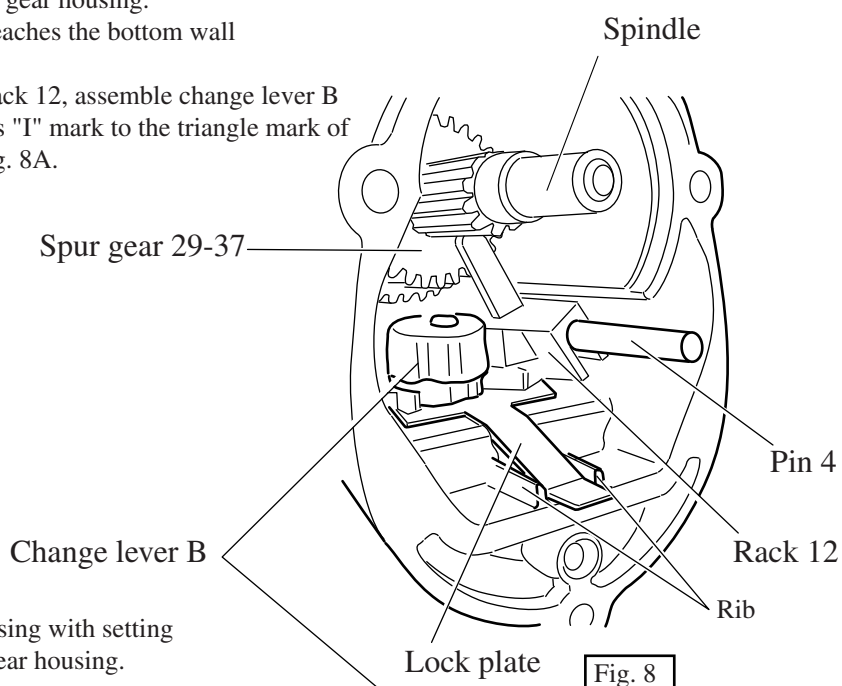


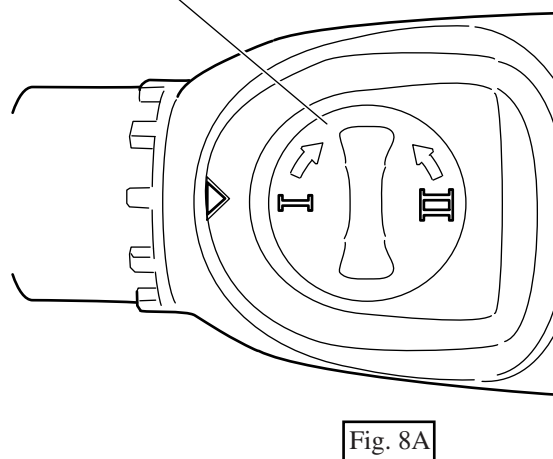
Fig. 7

► Repair

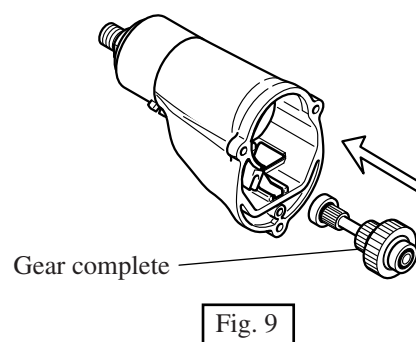
4. Insert pin 4 through rack 12 into gear housing.
And then, rush rack 12 until it reaches the bottom wall of gear housing. See Fig. 8.
Keeping the above position of rack 12, assemble change lever B to gear housing with aligning its "I" mark to the triangle mark of gear housing. See Fig. 8 and Fig. 8A.



5. Assemble lock plate to gear housing with setting its tail portion between ribs of gear housing.



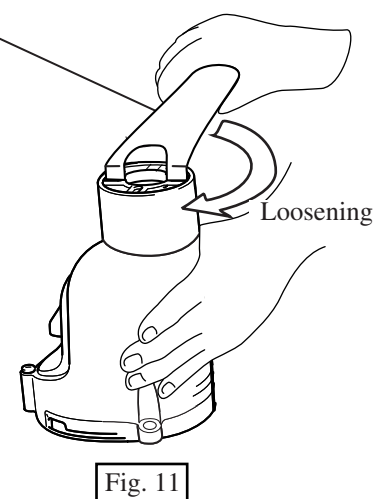
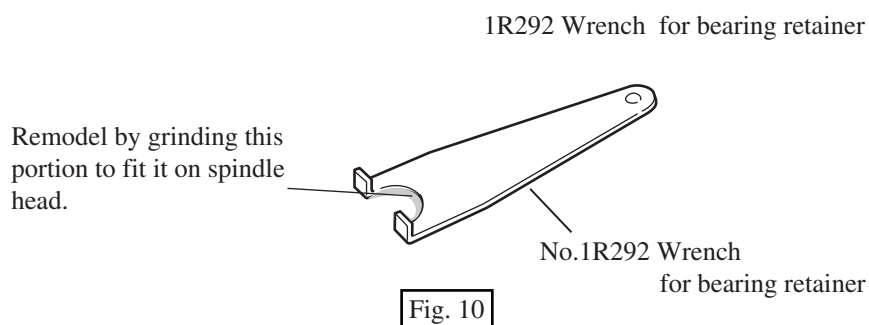
5. Assemble gear complete to the gear housing as illustrated in Fig. 9.



► Repair

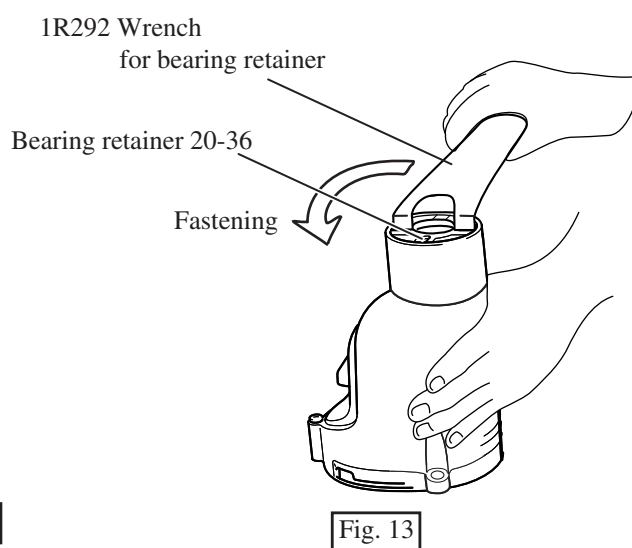
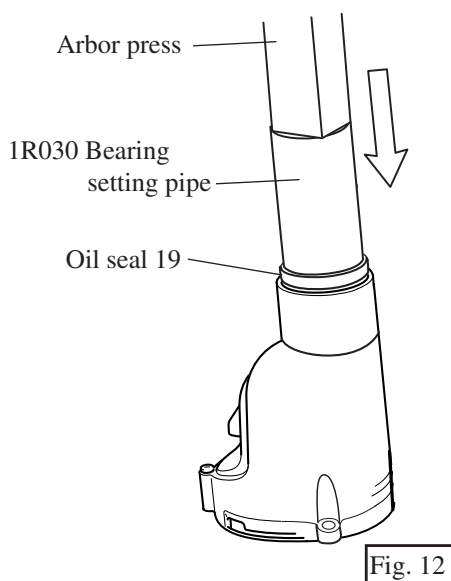
(5) Disassembling bearing retainer 20-36 and oil seal 19

1. Remodel the top portion of No.1R292 "wrench for bearing retainer" by grinding, in order to fit it on the spindle head. See Fig. 10.
2. Turn 1R292 "wrench for bearing retainer" clockwise. Then bearing retainer 20-36 can be removed from gear housing. See Fig. 11. And then, take off oil seal 19 with flat head screwdriver.



(6) Assembling bearing retainer 20-36 and oil seal 19

1. Apply MAKITA grease N No.1 to oil seal, and assemble oil seal 19 pressing with arbor press. See Fig. 12.
<Note in assembling>
Oil seal has to be always replaced with fresh one. Because it is easily deformed,when disassembling. Fig. 12
2. Assemble bearing retainer 20-36 with No.1R292 "wrench for bearing retainer" by turning it anti-clockwise. See Fig. 13.



► Repair

(7) Disassembling cam A

1. After removing bearing retainer 20-36 and oil seal 19, disassemble ring spring 11 from spindle. And disassemble spindle section by pulling out from the drill chuck side of gear housing as illustrated in Fig 14.

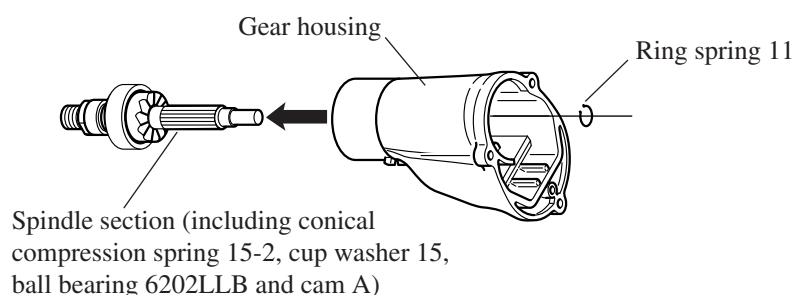


Fig. 14

2. Accept ball bearing 6202 LLB with 1R232 "pipe 30", and press spindle with arbor press. So, cam A, ball bearing 6202LLB, cup washer 15 and conical compression spring 15-24 can be separated from spindle as illustrated in Fig. 15.

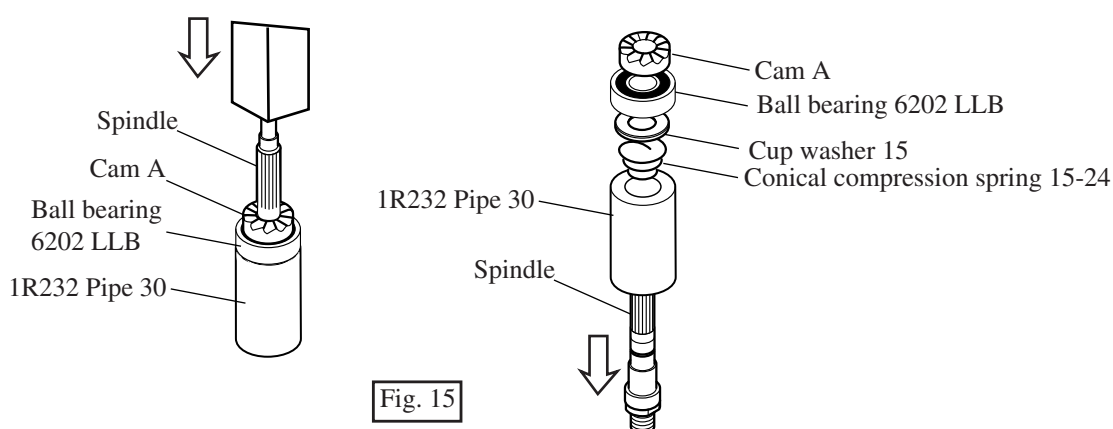


Fig. 15

(8) Assembling cam A

1. Assemble conical compression spring 15-24 and cup washer 15 to spindle. When assembling, they have to be assembled as illustrated in Fig. 16A.

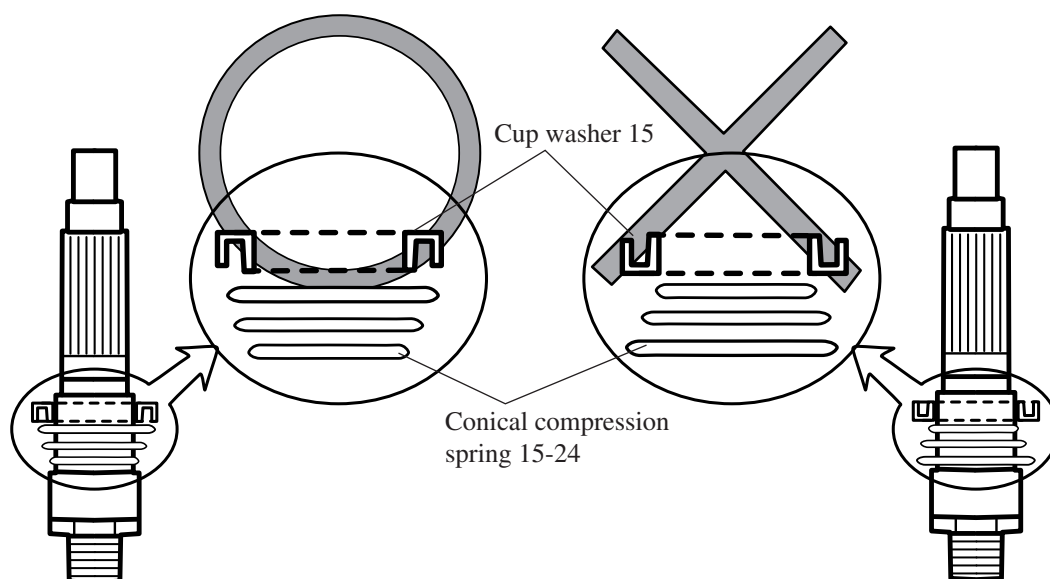


Fig. 16A

Fig. 16B

► Repair

2. Put the spindle on 1R035 "bearing setting plate" and assemble ball bearing 6202LLB and cam A to the spindle by pressing with arbor press as illustrated in Fig. 17.

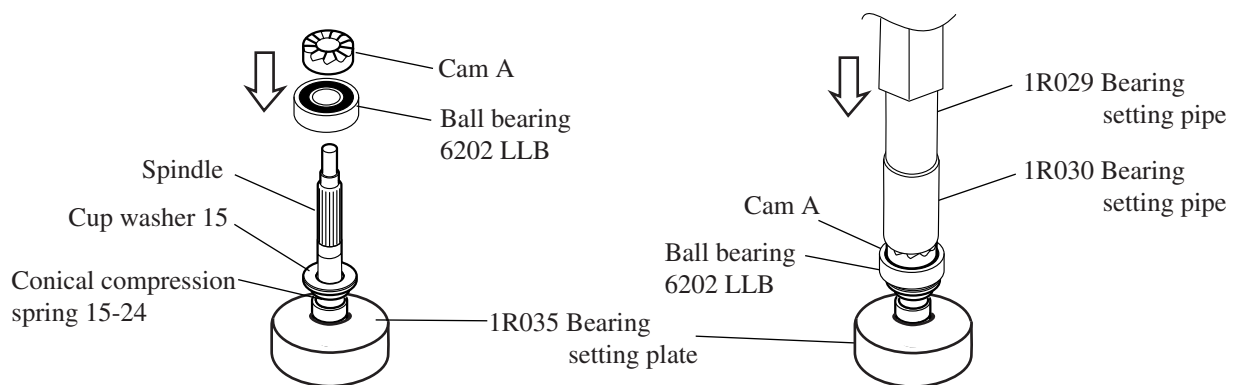

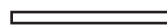






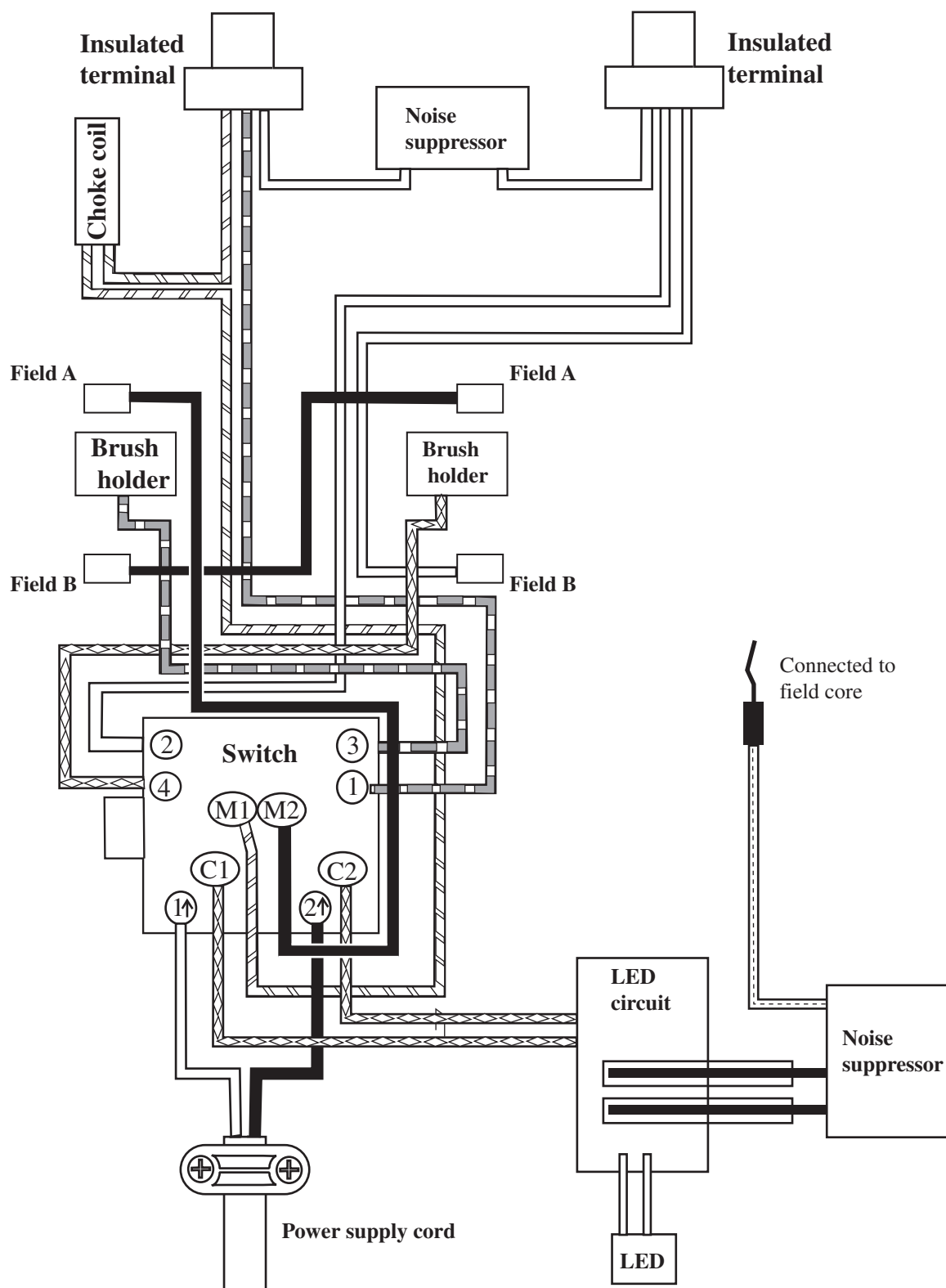
Fig. 17

► Circuit diagram

HP2050F and HP2051F (equipped with flash light)

For Europe, High voltage area






Color index of lead wires	
Black	
White	
Red	
Orange	
Blue	
Transparent	

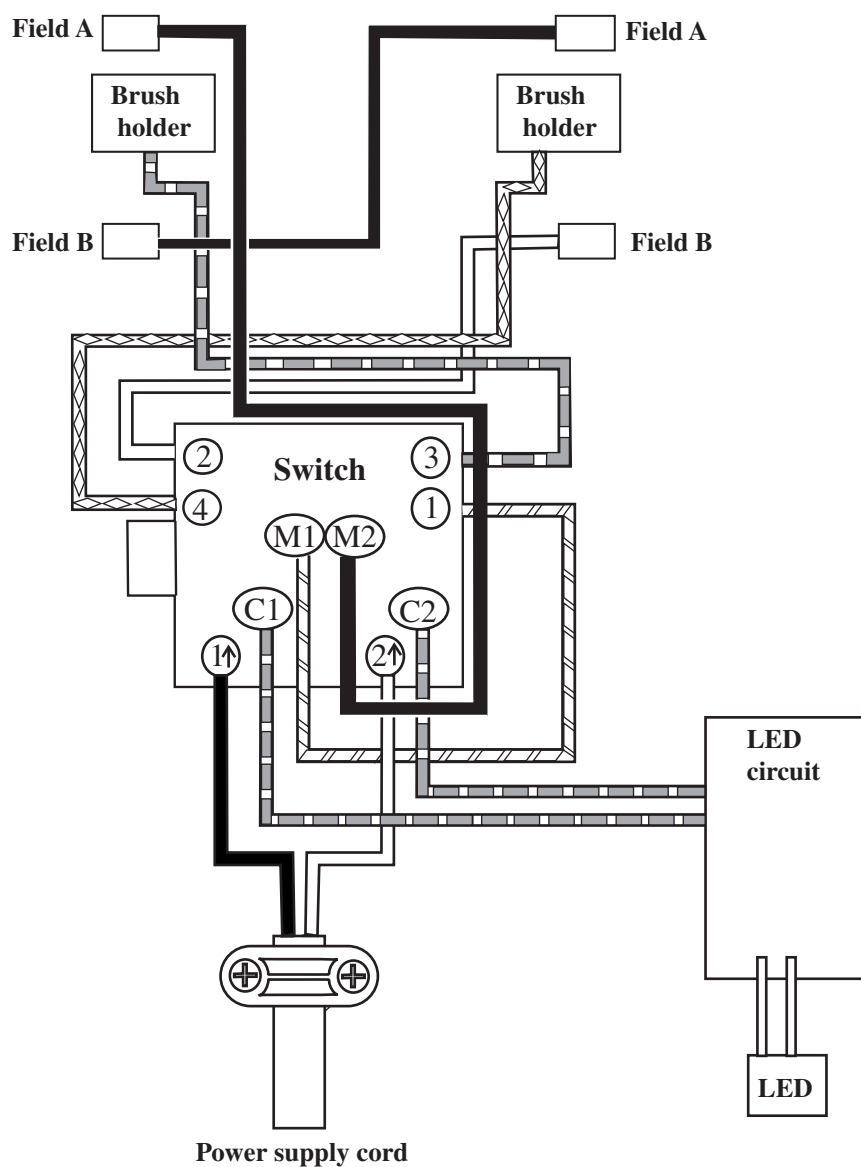


► Circuit diagram

HP2050F and HP2051F (equipped with flash light)

For other countries







Color index of lead wires	
Black	
White	
Red	
Orange	
Blue	

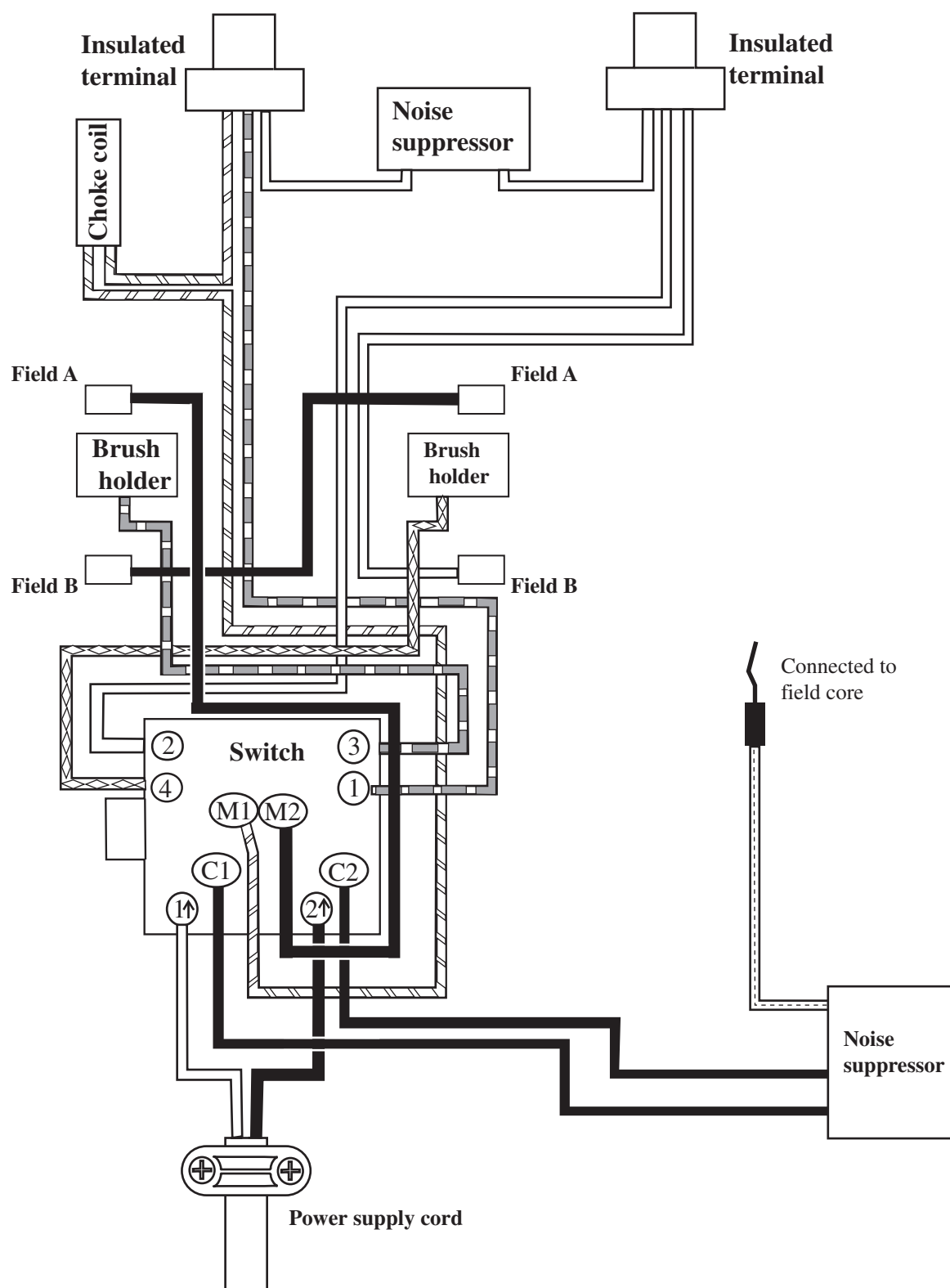


► Circuit diagram

HP2050 and HP2051 (without flash light)

For Europe, High voltage area







Color index of lead wires	
Black	
White	
Red	
Orange	
Blue	
Transparent	

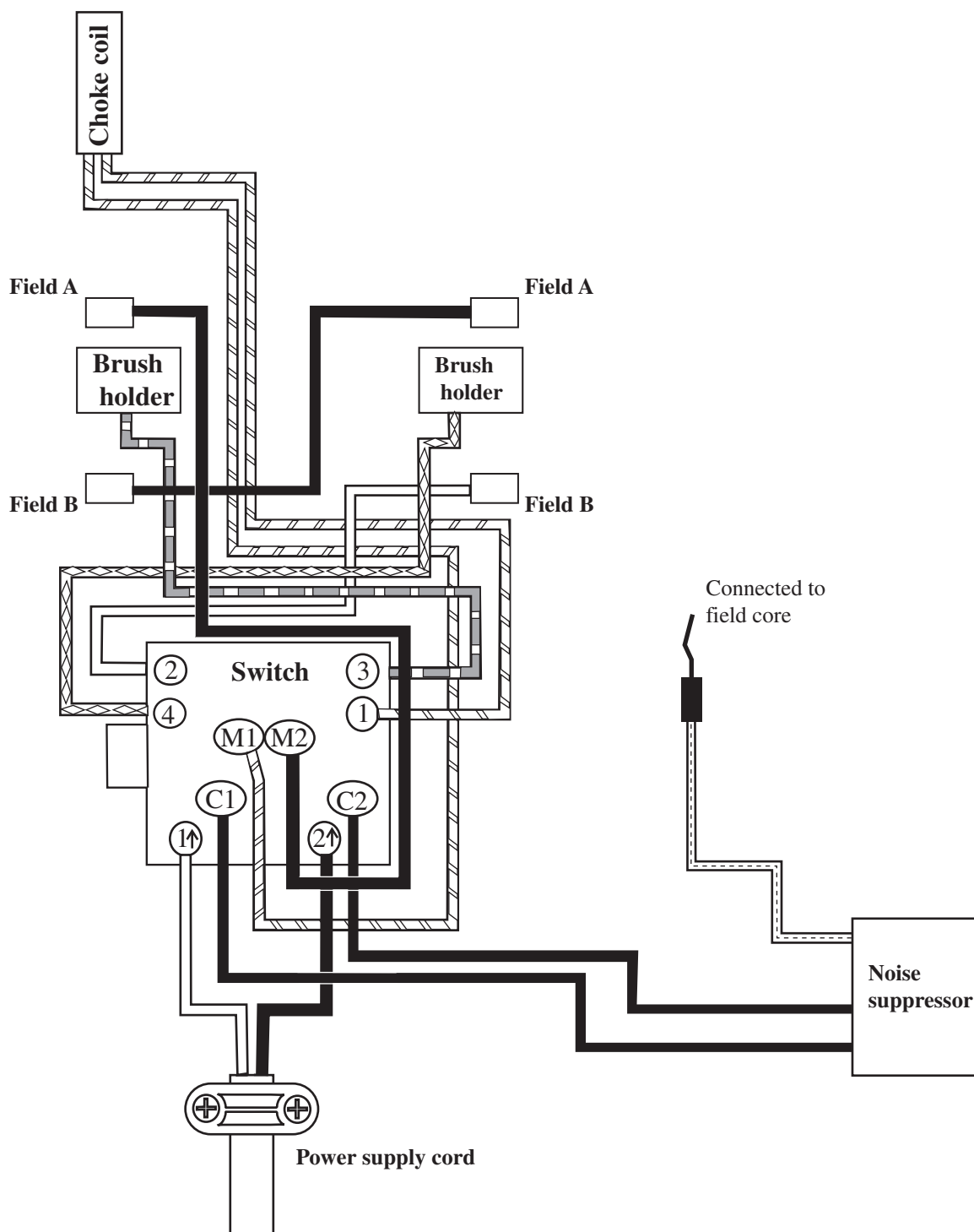


► Circuit diagram

HP2050 and HP2051 (without flash light)






For Great Britain, low voltage

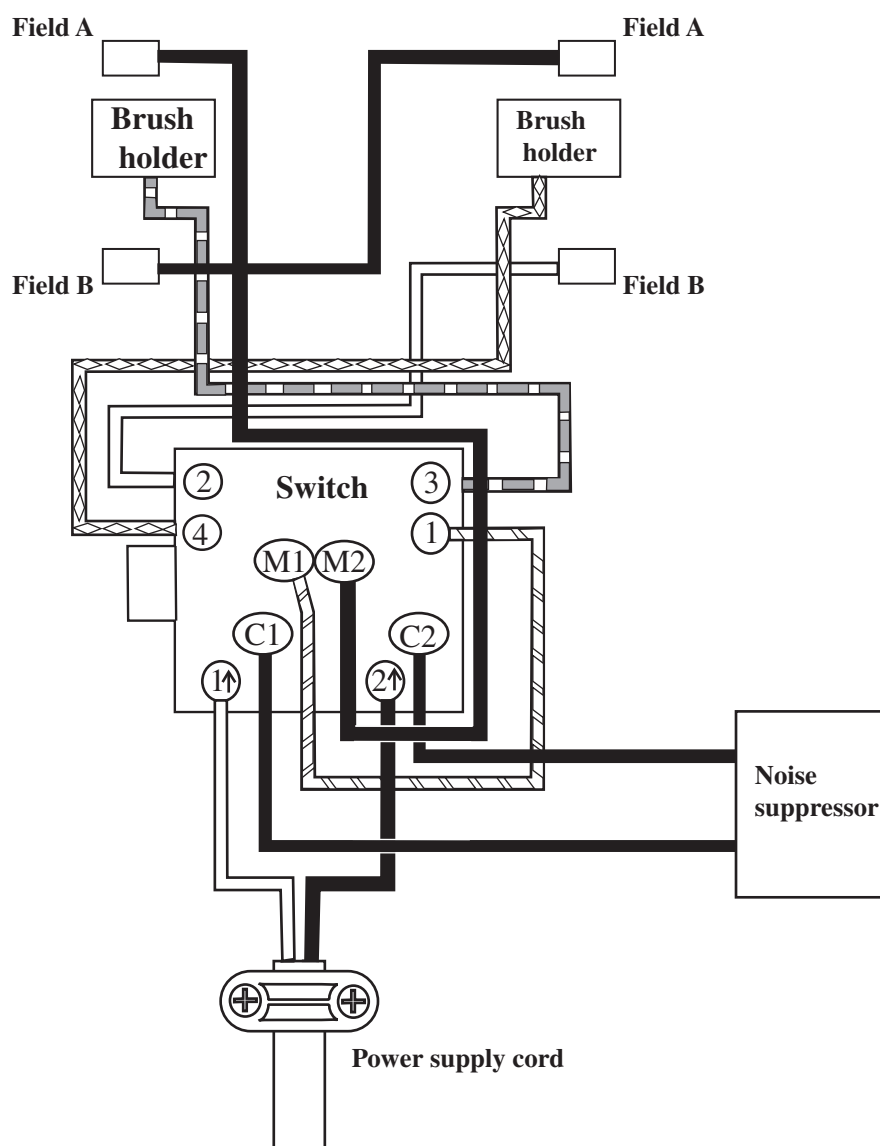
Color index of lead wires	
Black	
White	
Red	
Orange	
Blue	
Transparent	



► Circuit diagram

HP2050 and HP2051 (without flash light)
For other countries

Color index of lead wires	
Black	
White	
Red	
Orange	
Blue	



► Wiring diagram

HP2050F and HP2051F (equipped with flash light)

For Europe, High voltage area

The electrical parts marked with * have to be set in the illustrated position.

Fix the following lead wires with this lead holder.

- * Switch lead wire (red) for connecting to insulated terminal
- * Choke coil lead wire (orange) for connecting to insulated terminal

* Choke coil

Fix field lead wire (black) for connecting to switch, with lead holder.

Brush holder

Fix the following lead wires with this lead holder.

- * Switch lead wire (red) for connecting to brush holder
- * Lead wire (black) connecting field terminals A and B

Fix the lead wires passed through this portion, with lead holder

Noise suppressor

LED circuit

Fix the lead wires (white) of LED circuit, with lead holder. See Fig. A.

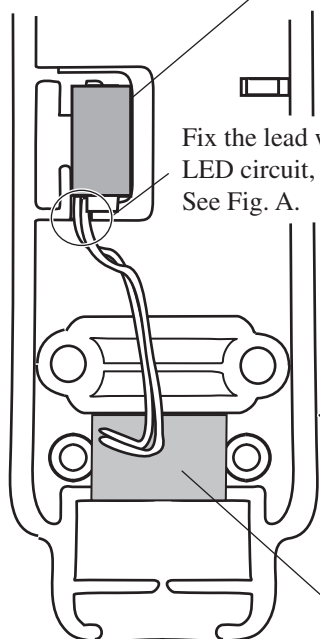


Fig. A

LED

* Noise suppressor

* Insulated terminal

Fix the following lead wires with this lead holder.

- * Grounding lead wire (transparent) for connecting to field core
- * Field lead wire (white) for connecting to insulated terminal

Brush holder

Fix Lead wire (black) connecting field terminals A and B, with lead holder.

Fix the following lead wires with this lead holder.

- * Switch lead wire (blue) for connecting to brush holder
- * Field lead wire (white) for connecting to insulated terminal

Fix with lead holder the lead wires passed through this portion

Switch

Fig. B

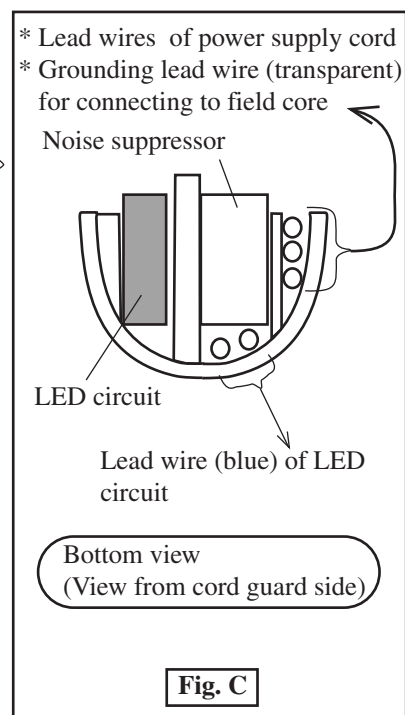
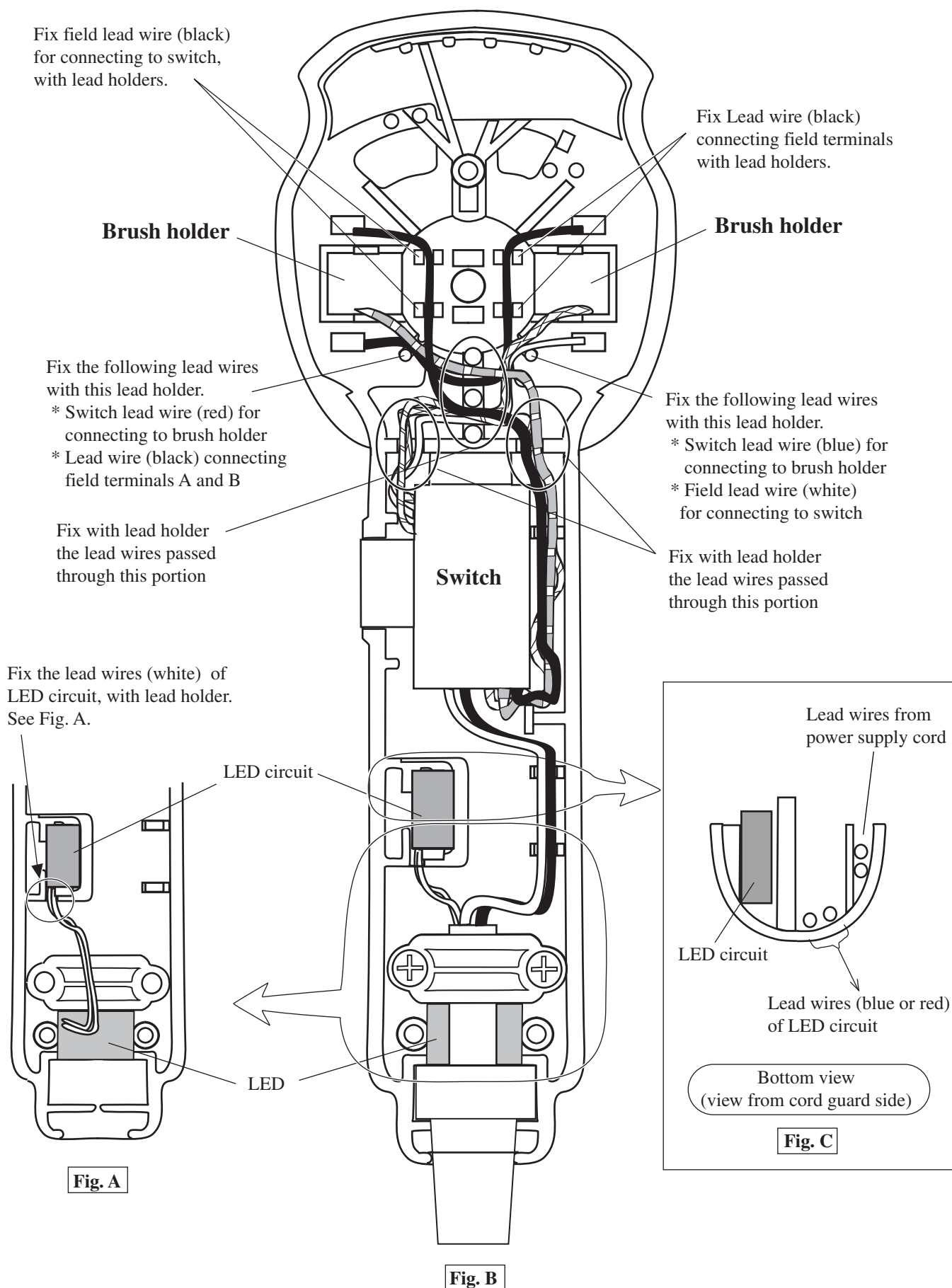


Fig. C

► Wiring diagram

HP2050F and HP2051F (equipped with flash light)

For other countries



► Wiring diagram

HP2050 and HP2051 (without flash light)

For Europe, High voltage area

The electrical parts marked with * have to be set in the illustrated position.

Fix the following lead wires with this lead holder.

- * Switch lead wire (red) for connecting to insulated terminal
- * Choke coil lead wire (orange) for connecting to insulated terminal

* Choke coil

Fix field lead wire (black) for connecting to switch, with lead holder.

Brush holder

Fix the following lead wires with this lead holder.

- * Switch lead wire (red) for connecting to brush holder
- * Lead wire (black) connecting field terminals A and B

Fix with lead holder the lead wires passed through this portion

* Noise suppressor

* Insulated terminal

Fix the following lead wires with this lead holder.

- * Grounding lead wire (transparent) for connecting to field core
- * Field lead wire (white) for connecting to insulated terminal

Brush holder

Fix Lead wire (black) connecting field terminals A and B, with lead holder.

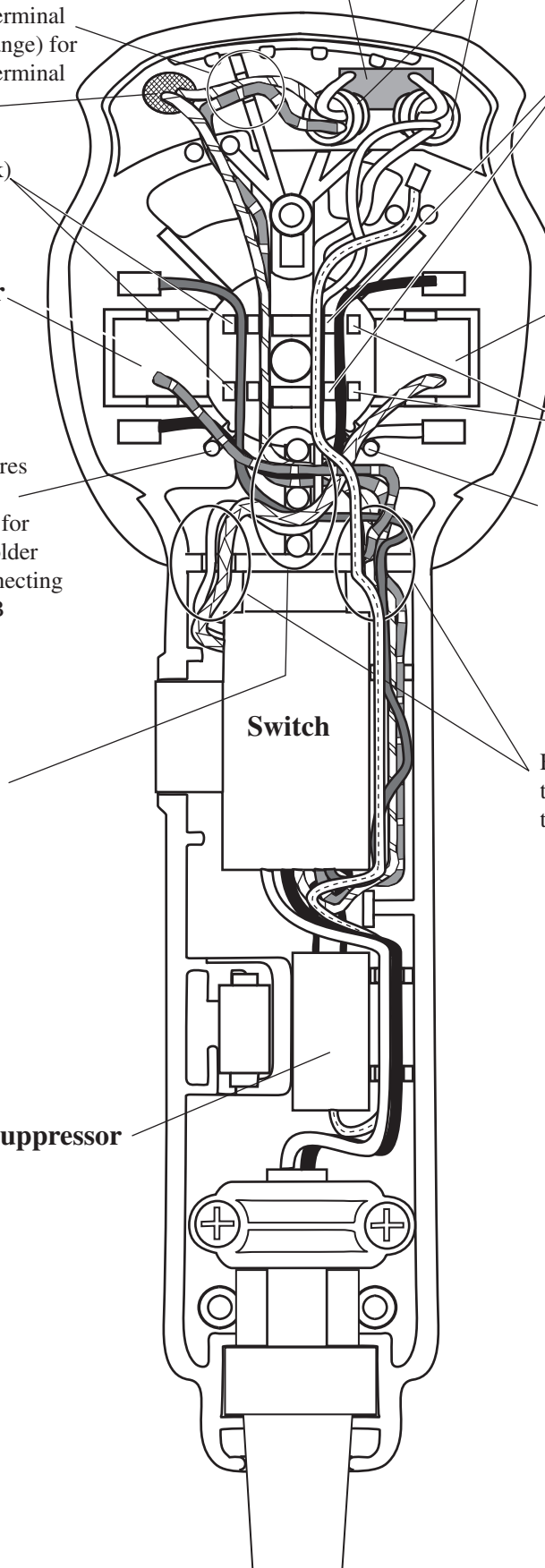
Fix the following lead wires with this lead holder.

- * Switch lead wire (blue) for connecting to brush holder
- * Field lead wire (white) for connecting to insulated terminal

Fix with lead holder the lead wires passed through this portion

Switch

Noise suppressor



► Wiring diagram

HP2050 and HP2051 (without flash light)

For Great Britain, low voltage

Choke coil

Set choke coil in the position illustrated.

Fix field lead wire (black) for connecting to switch, with lead holder.

Brush holder

Fix the following lead wires with this lead holder.

- * Switch lead wire (red) for connecting to brush holder
- * Lead wire (black) connecting field terminals A and B

Fix with lead holder the lead wires passed through this portion

Noise suppressor

Fix choke coil lead wire (orange) with lead holders.

Fix grounding lead wire (transparent) for connecting to field core, with lead holder.

Brush holder

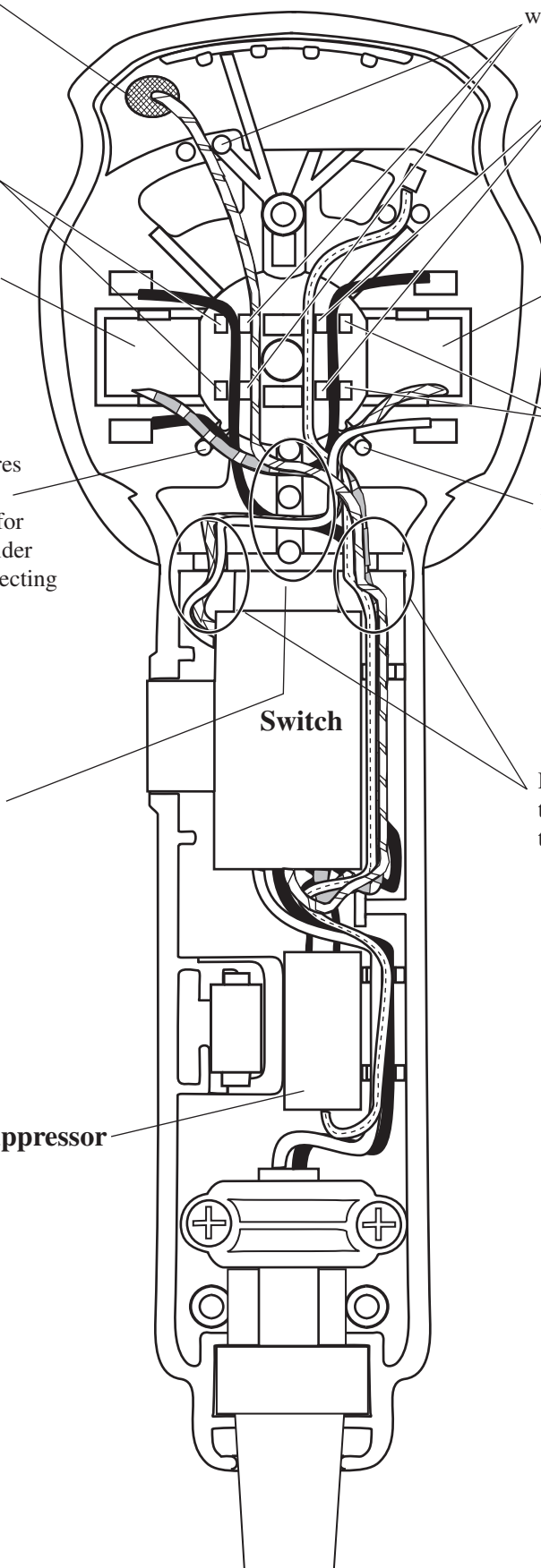
Fix Lead wire (black) connecting field terminals A and B, with lead holder.

Fix the following lead wires with this lead holder.

- * Switch lead wire (blue) for connecting to brush holder
- * Field lead wire (white) for connecting to switch

Fix with lead holder the lead wires passed through this portion

Switch



► Wiring diagram

HP2050 and HP2051 (without flash light)

For other countries

