



NX Series(IP21/IP00) Spare Parts (Cooling Fan) 및 교체 방법

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1



Fan 80mm Assembly

181B0451

SPR-MEC19669

Main Fan 80mm IP21/IP54 - FR4
- 24VDC
- for NX FR4 / FI4

2



Fan 120mm Assembly

181B0452

SPR-MEC19739

Main Fan 120mm IP21/IP54 - FR5
- 24VDC
- for NXP FR5

3



Fan 150mm Assembly

181B0447

SPR-MEC19680

Main Fan Assembly 150mm
- 24VDC
- for NX FR6 / FI6

4



Fan 150mm Assembly

181B0426

SPR-MEC21711

Main Fan Assembly 150mm
- 24VDC
- for NX FR7 / FI7

5



DC Fan Assembly 48VDC (for FR8)

181B0859

SPR-MEC14723

Main Fan Assembly 48VDC

- 48VDC
- for NX FR8 / FI8

6



Internal Fan 60mm

181B0436

SPR-MEC14730

Internal Fan 60mm 24VDC

- 24VDC
- for NX FR8 / FI8 (168-205A)

7



DC Fan Supply Kit

181B0674

SPR-ELE14724

DC Fan Supply Kit

- 48VDC
- for NX FR8 / FI8

8



NX Maintenance Package FR9

181B2697

- 1Qty 181B0703 DC Main Fan
- 2Qty 181B0069 Internal Fan
80x80x32mm
- 1Qty 181B0619 Internal Fan 24VDC
52mm
- for NXP FR9

9



DC Main Fan (48VDC)

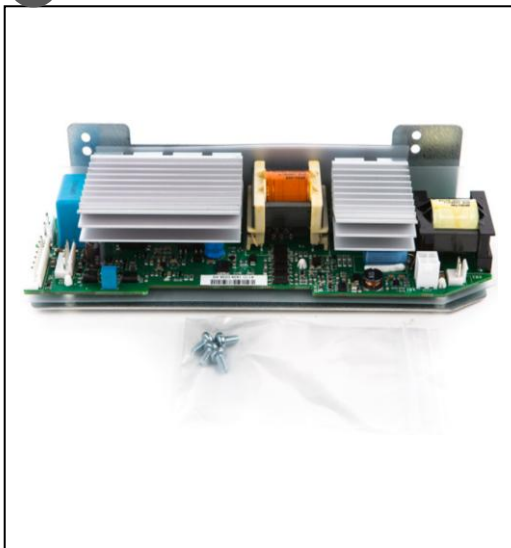
181B0703

SPR-MEC21542

DC Main Fan 48VDC

- 48VDC
- for NX FR9~12 / FI9~12

10



DC Fan Supply (48VDC)

181B0503

SPR-ELE21615

DC Fan Supply

- 48VDC / 240W
- for NX FR9~12 / FI9~12

11



DC Main Fan Assembly (FI)

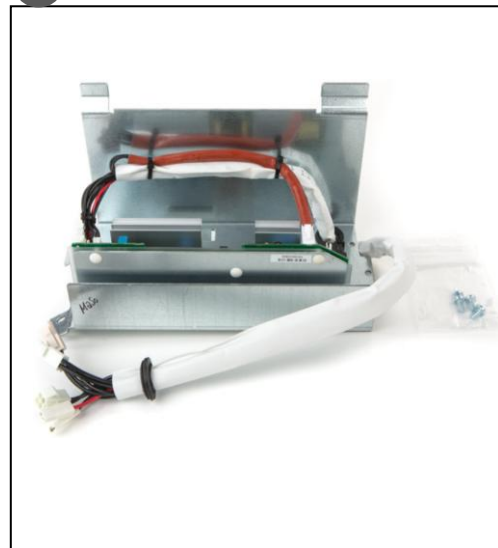
181B0678

SPR-MEC23640

DC Fan Assembly (48VDC)

- 48VDC
- 1Qty 181B0703 DC Main Fan
- for NX FI9~12

12



DC Fan Supply Assembly

181B0767

SPR-MEC23641

DC Fan Assembly (48VDC)

- 48VDC
- 1Qty 181B0503 DC Main Fan
- for NX FI10~13

13



DC Main Fan Assembly (FR)

181B0878

SPR-MEC21570

DC Fan Assembly (48VDC)

- 48VDC
- 1Qty 181B0703 DC Main Fan
- for NXP FR10~12

14



DC Fan Supply Ass. Left (FR10)

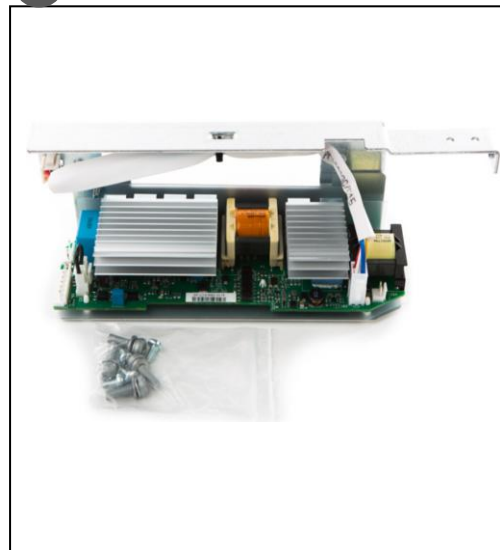
181B0500

SPR-MEC21572

DC Fan Power 48V 240W

- Assembly LEFT FR10
- 48VDC /240W
 - for NXP FR10 / FR12

15



DC Fan Power Ass. Right (FR10)

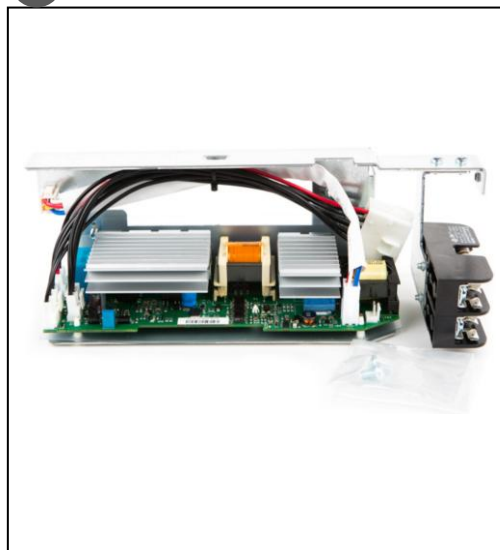
181B0499

SPR-MEC21571

DC Fan Power 48V 240W

- Assembly RIGHT FR10
- 48VDC /240W
 - for NXP FR10 / FR12

16



DC Fan Supply Assembly Kit

181B0727

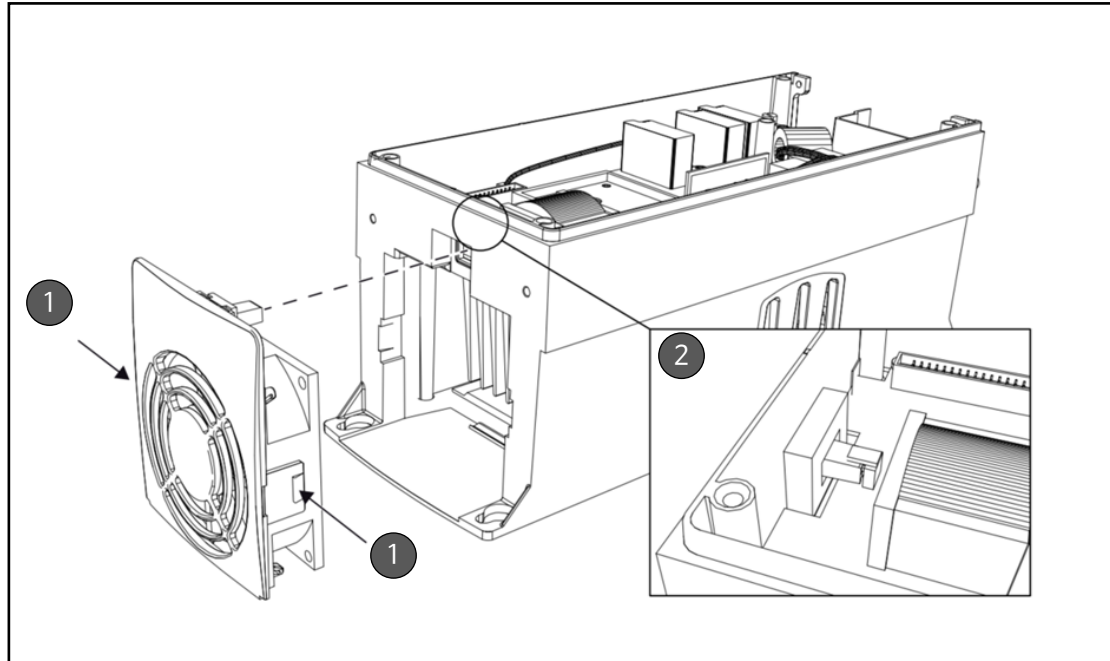
SPR-MEC23668

DC Fan Supply Kit

- 48VDC /240W
- for NXP FR11

2-1. FR4 – FR5 / FI4 Main Fan

- 1) FR4 또는 FR5 Unit의 Main Fan을 분리하려면, Fan 양쪽의 고정 클립을 누른 다음 팬을 당겨서 빼낸다.
- 2) Fan을 다시 설치할 때는 커넥터가 Power Board에 제대로 연결되었는지 확인해야 한다.



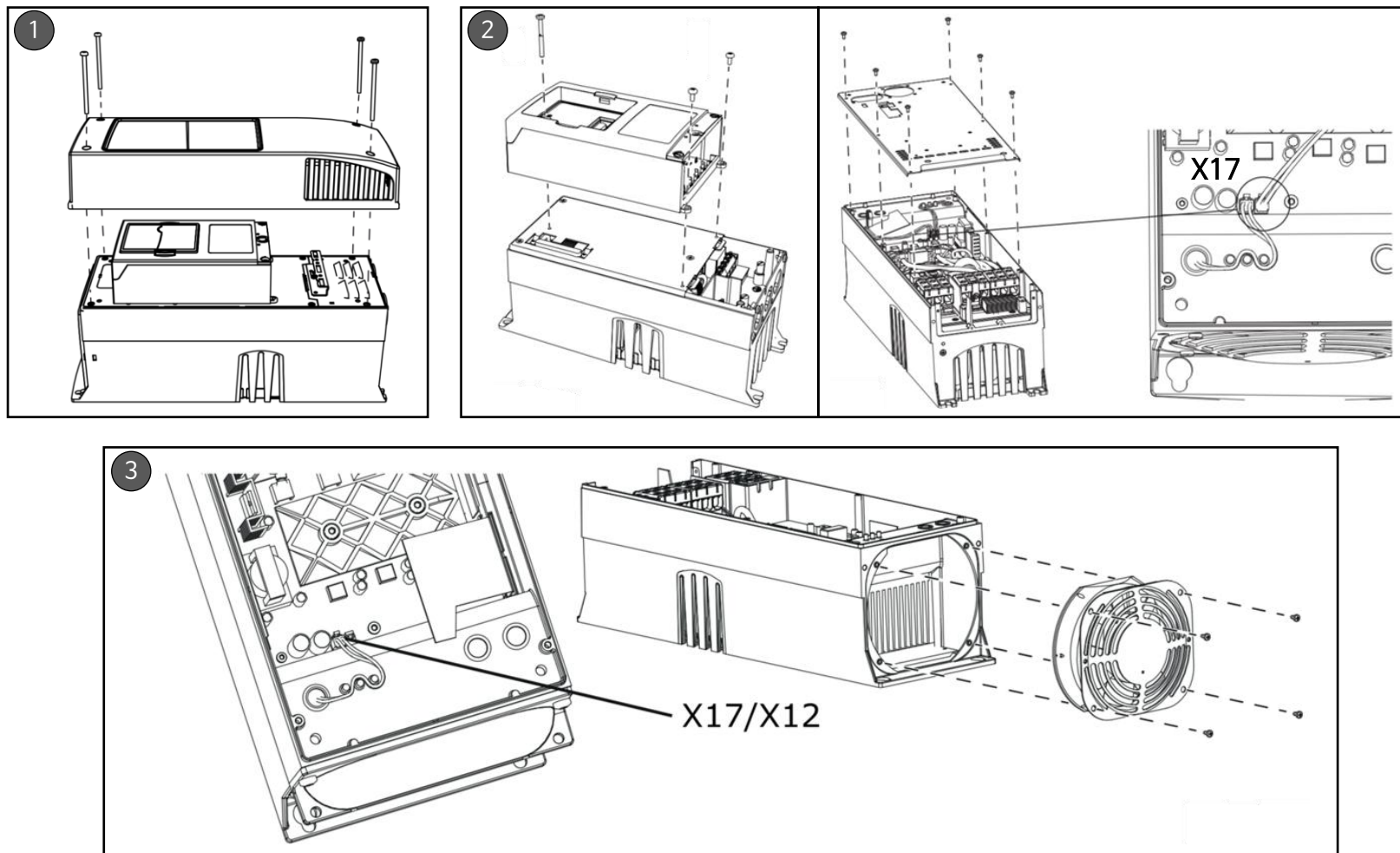
2-2. FR6 / FI6 Main Fan

1) Main Cover를 분리한다.

2) Fan을 분리하기 전에, Fan Cable을 Power Board 커넥터 X17에서 분리한다.
Power Board에 접근하려면, Internal Fan Assembly 또는 Fan Cover Plate를 제거한다.

3) Fan Mounting 나사(M4x8) 4개를 제거하여, Fan을 분리한다.

NOTE : Fan을 다시 연결할 때는 Fan 케이블의 고무 패킹이 제대로 고정되었는지 확인한다.



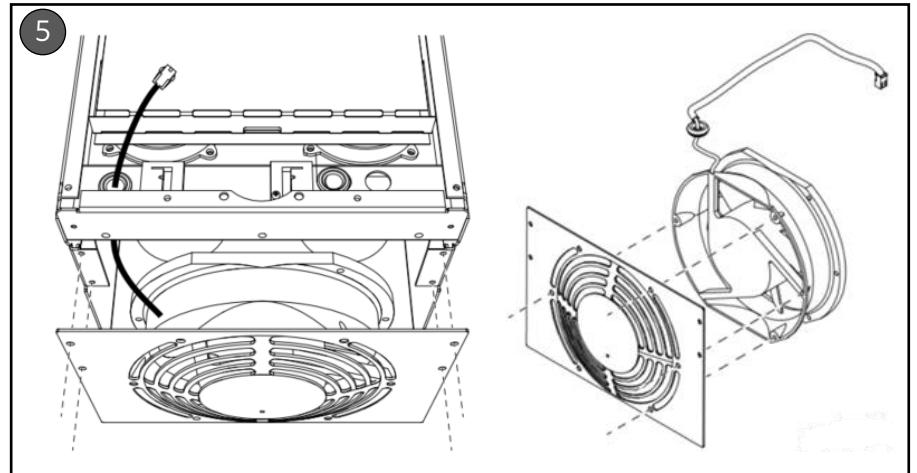
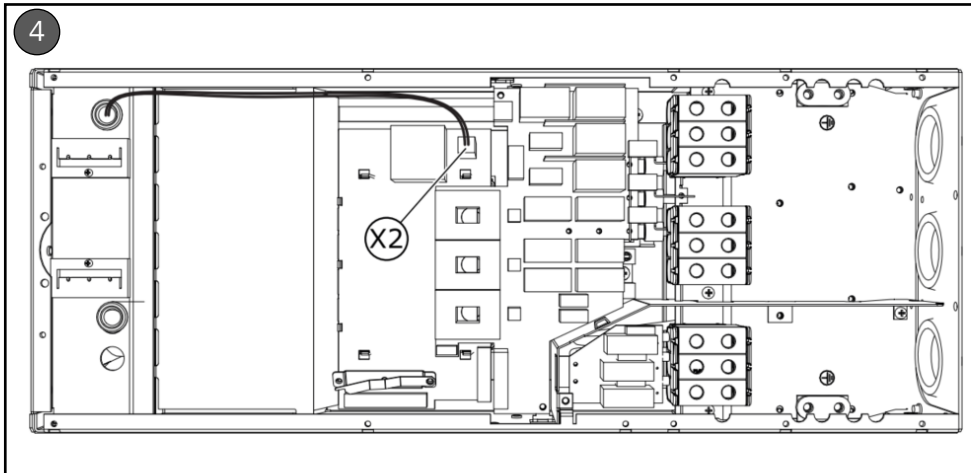
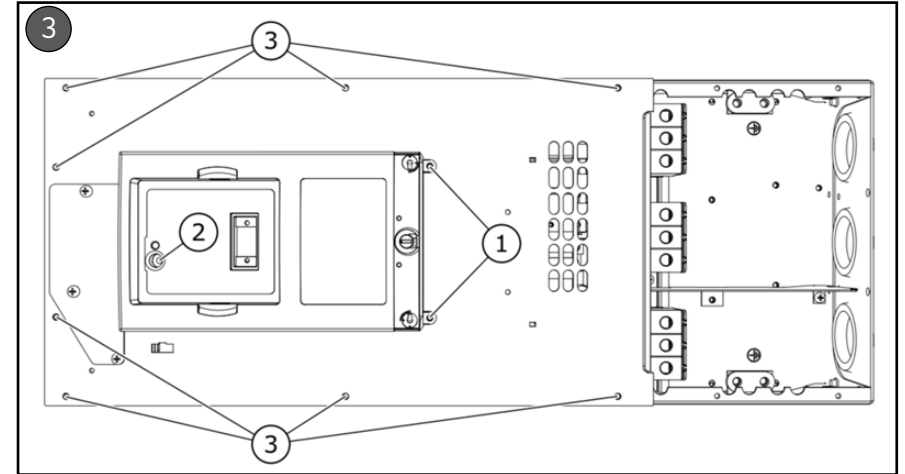
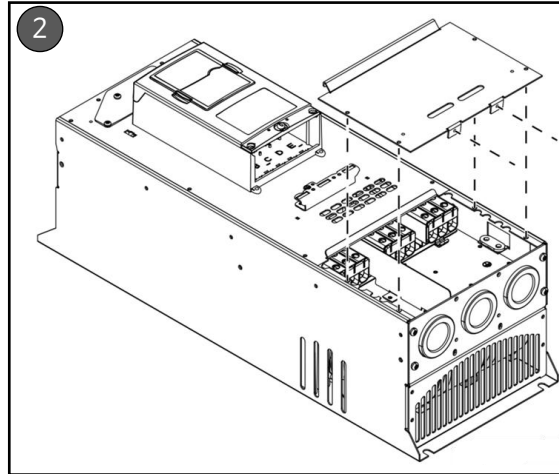
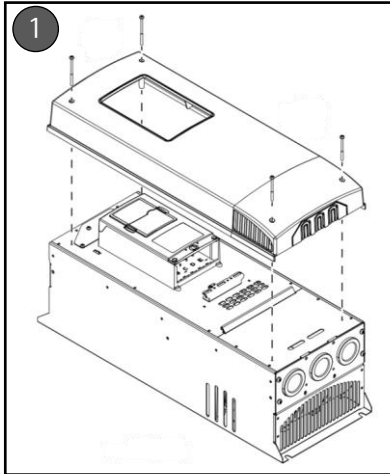
2-3. FR7 / FI7 Main Fan

- 1) Main Cover를 분리한다.
- 2) Connection Cover를 분리한다.
- 3) Control Unit 과 Power Unit Cover를 분리한다.

4) Fan 케이블을 Power Board 커넥터 X2에서 분리한다.

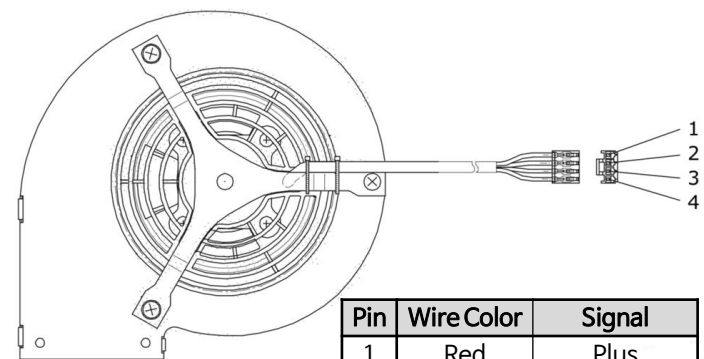
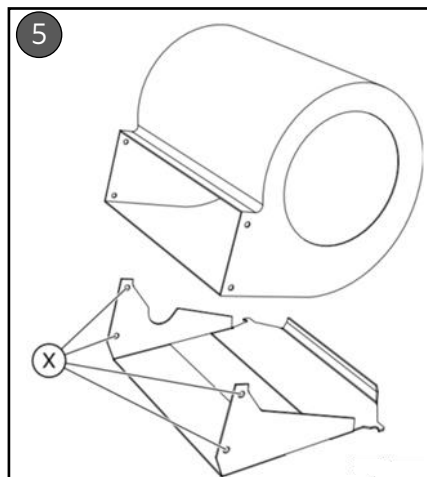
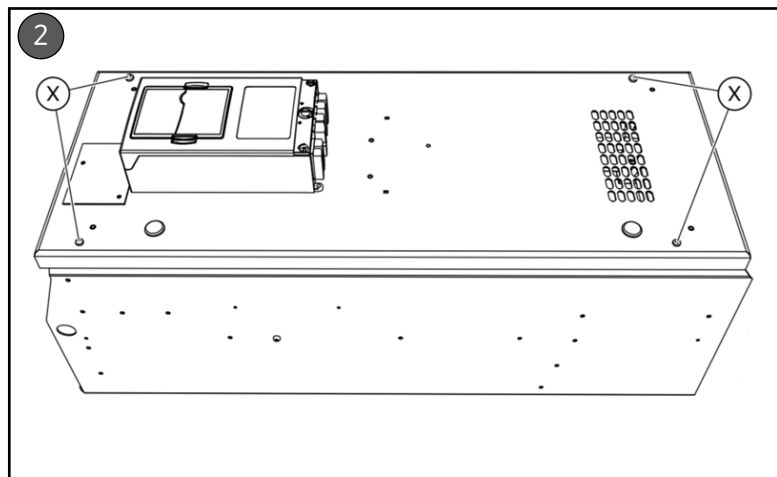
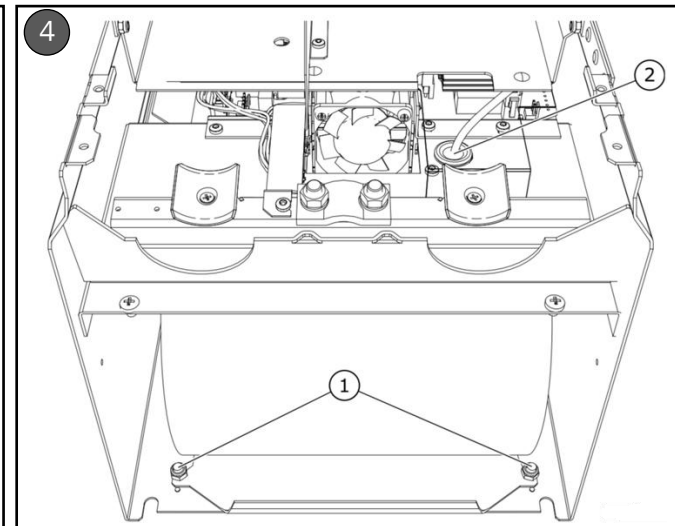
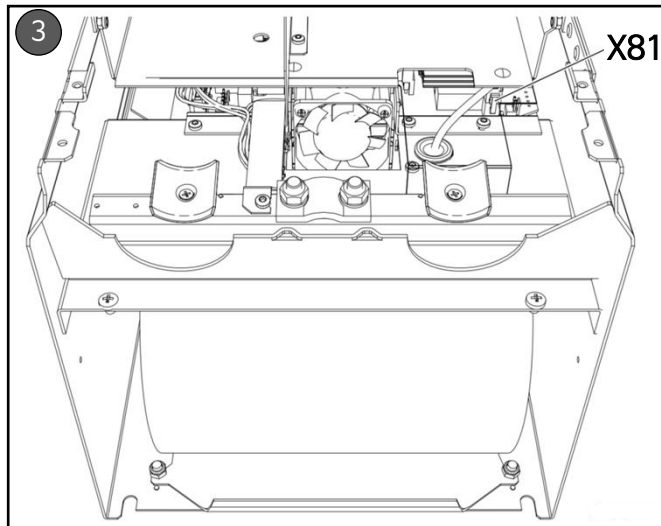
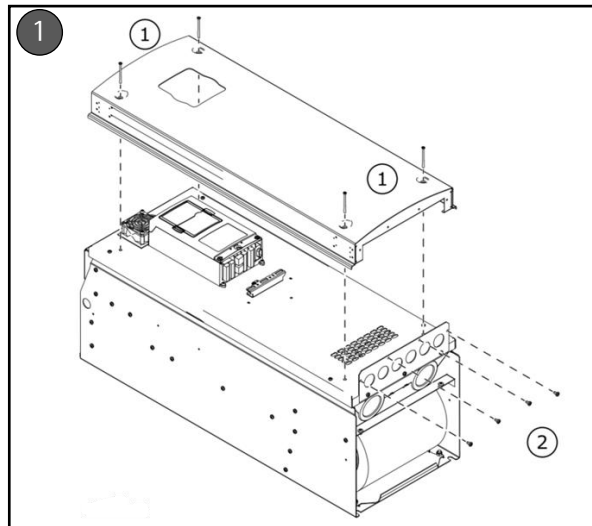
5) Fan Mounting 나사(M4x8) 4개를 제거하여, Fan을 분리한다.

NOTE : Fan을 완전히 빼낸 후, Fan 케이블과 고무 패킹을 조심스럽게 분리한다.



2-4. FR8 / FI8 Main Fan

- 1) Main Cover를 분리한다.
- 2) Power Unit Cover를 Open한다.
- 3) Fan Power Supply Board 커넥터 X81에서 Fan 전원 케이블을 분리한다.
- 4) Main Fan을 고정하는 M6 너트 2개를 제거한 후, Fan Assembly를 분리한다.
NOTE : 또한 Fan 전원 케이블과 고무 패킹을 분리한다.
- 5) Fan Plate를 고정하는 6.3x13 나사 4개를 제거하여 Fan을 분리한다.

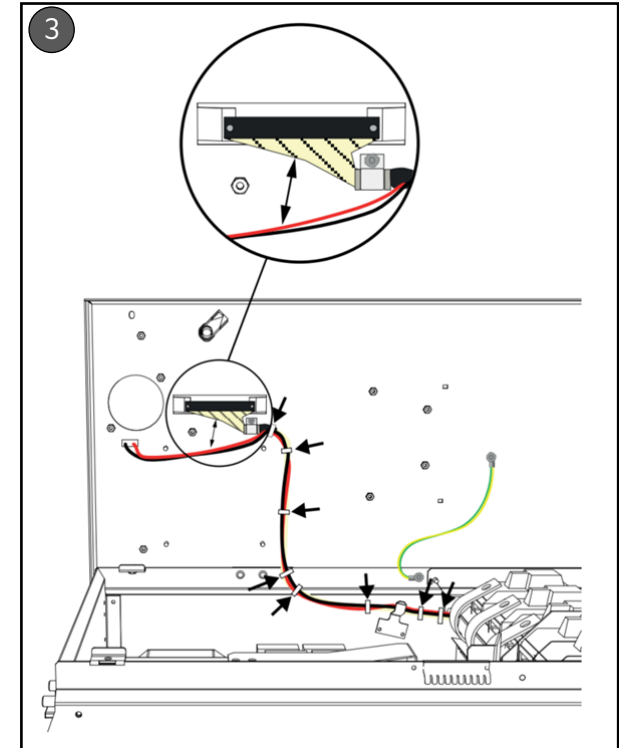
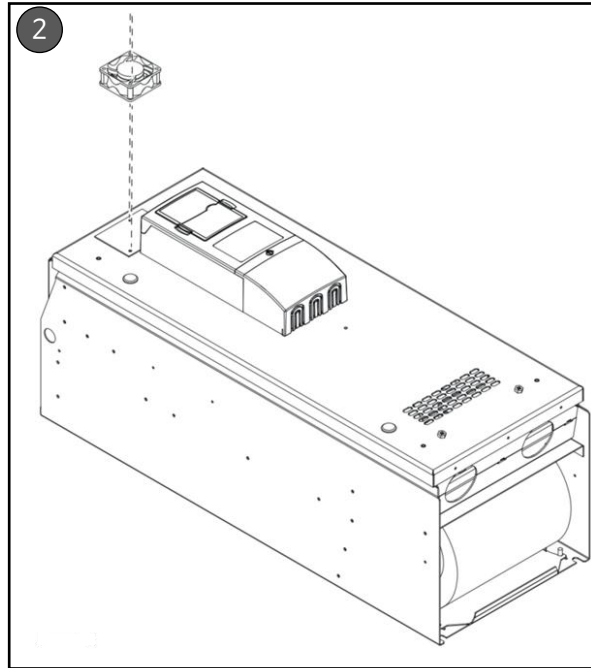
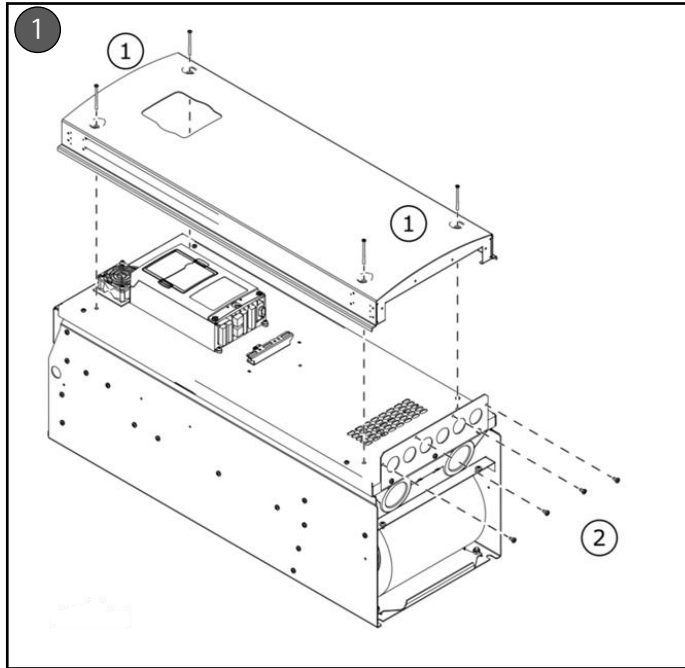


Pin	Wire Color	Signal
1	Red	Plus
2	Yellow	Control Input
3	White	Tach Output
4	Blue	Minus

2-5. FR8 Internal Fan

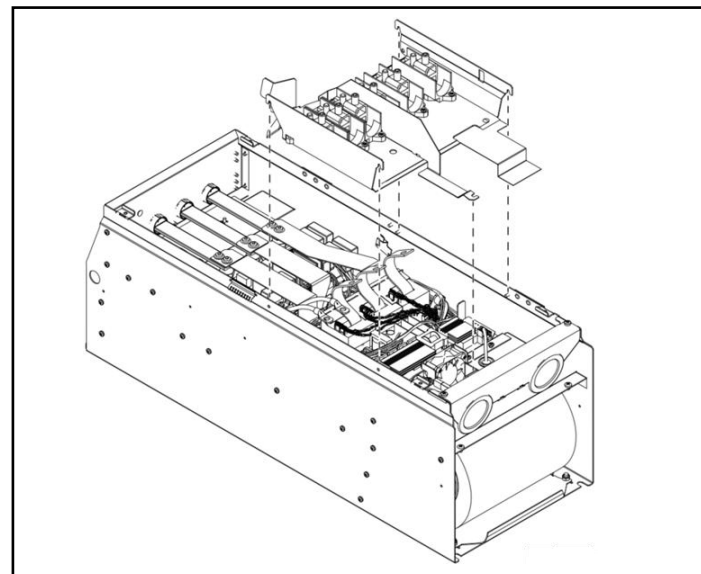
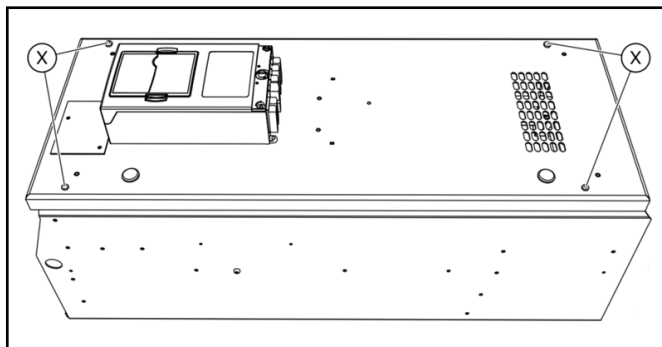
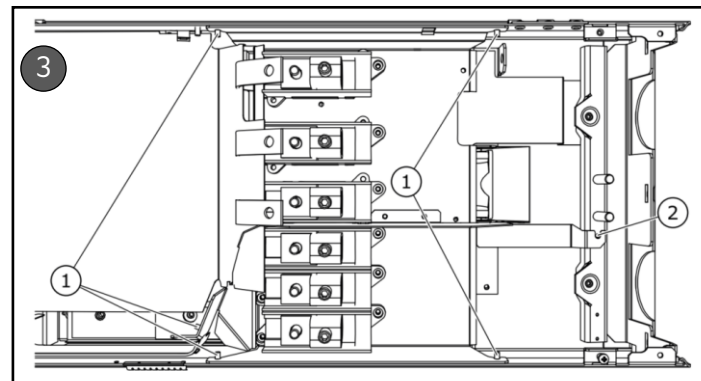
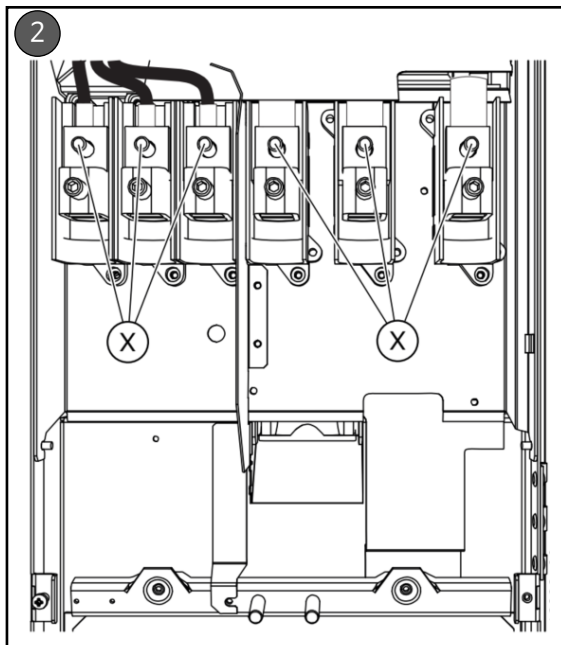
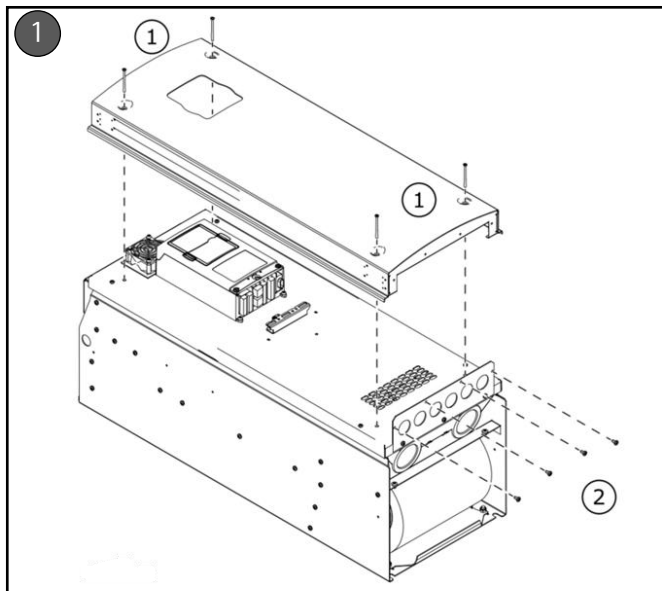
※ only FR8 168A~205A Unit의 경우

- 1) Main Cover를 분리한다.
- 2) Internal Fan 교체를 위해 M4x30 나사 2개를 분리한다.
- 3) Internal Fan 교체를 위해 Fan 케이블을 Power Board 커넥터 X8에서 분리한다.

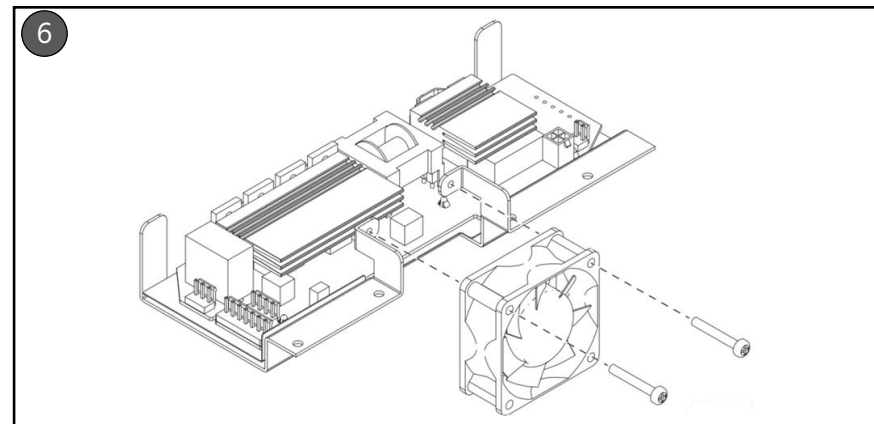
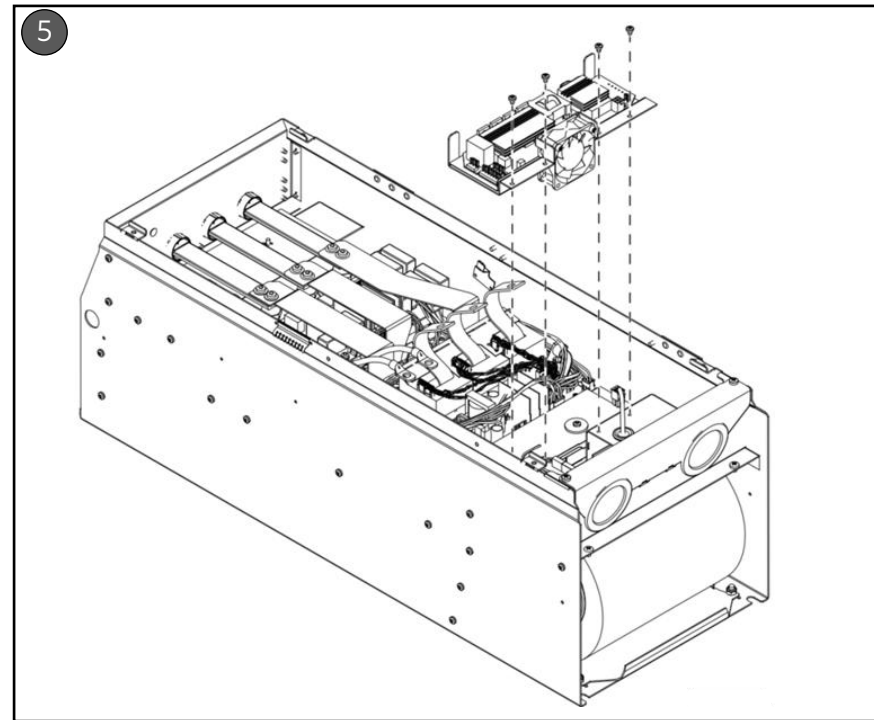
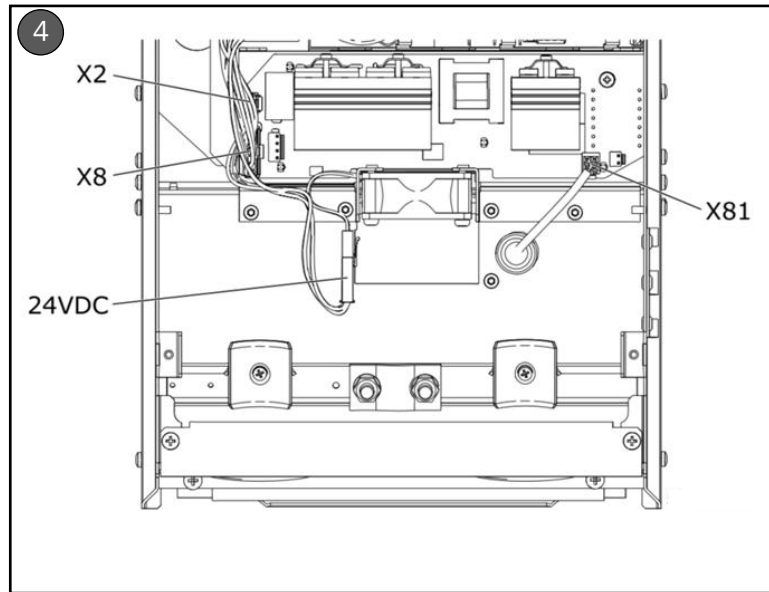


2-6. FR8 / FI8 Fan Power Supply

- 1) Fan Power Supply에 접근하기 위해, Main Cover를 분리하고, Power Unit Cover를 Open한다.
- 2) Main Terminal에서 Touch Cover를 분리한다.
- 3) Main Terminal Assembly를 분리한다.
① M4 나일론 너트 5개 풀기, ② M4x8 나사 1개(only FR8) 풀기
- 4) Fan Power Supply에서 모든 케이블을 분리한다.
- Fan Supply Wire(X81), DC Supply Wire(X2), Fan Control Wire(X8)
- 5) Fan Power Supply Assembly를 분리한다.
- 6) Fan Power Supply Assembly에서 Internal Fan을 분리한다.

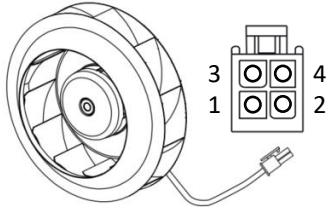


2-6. FR8 / FI8 Fan Power Supply

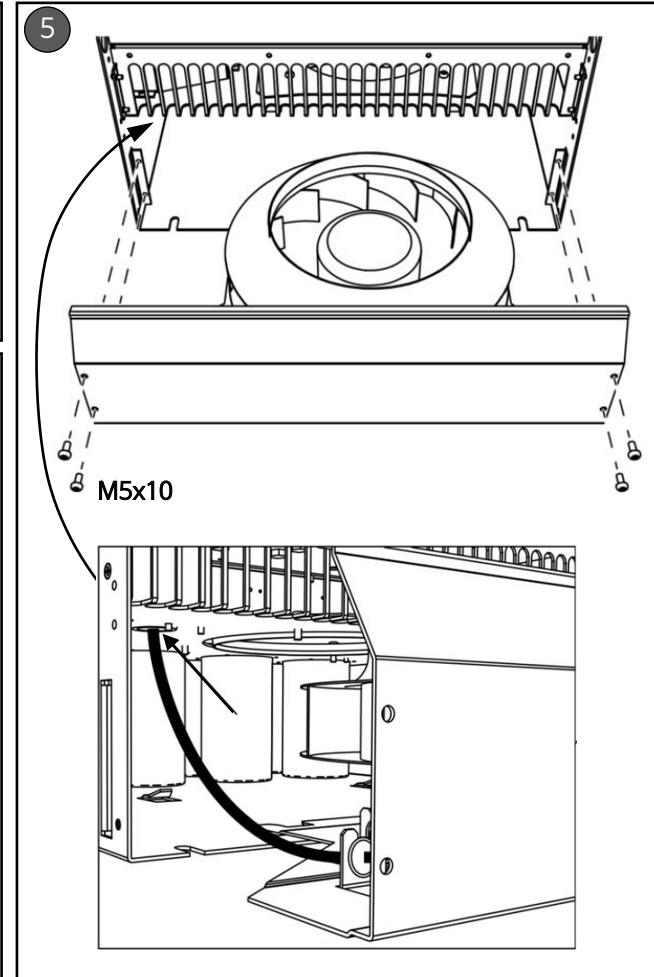
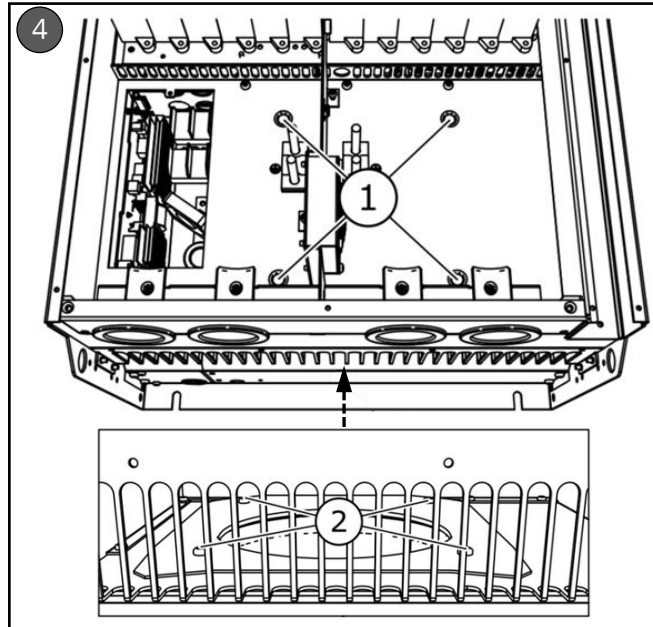
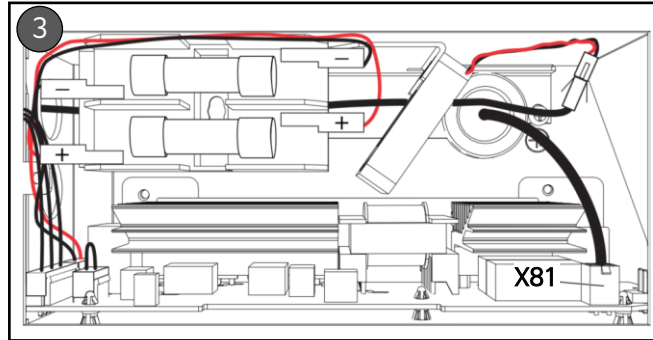
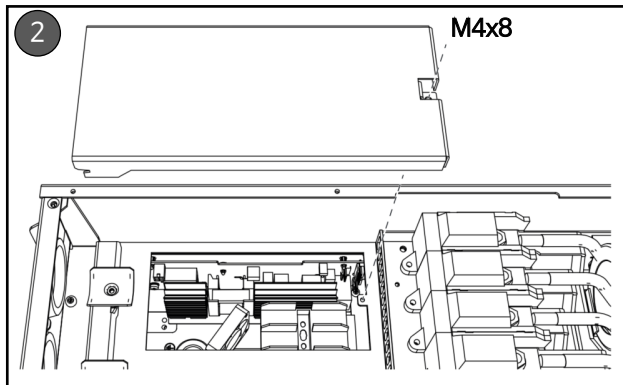
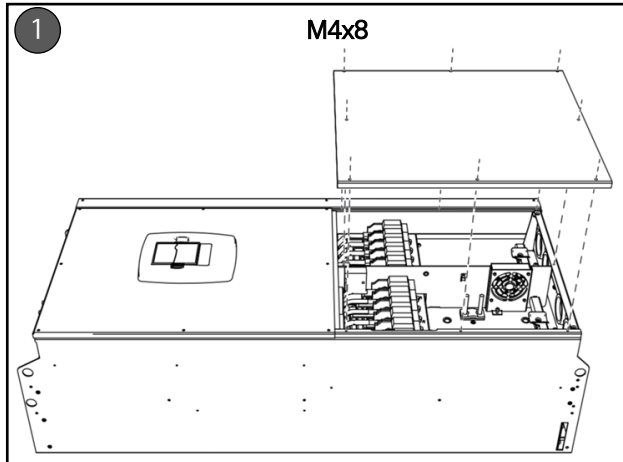


2-7. FR9 Main Fan

- 1) Drive Connection Cover를 분리한다.
- 2) Fan Power Supply Cover를 분리한다.
- 3) Fan Power Supply Board 커넥터 X81로부터 Fan Power Supply Cable을 분리한다.
- 4) Fan Inlet Cone 고정나사에 접근하기 위해 고무 패킹을 분리한다.
나사 4개를 풀어 Inlet Cone이 약간 올라오도록 한다.
- 5) Fan 고정 나사 4개를 제거한 후, Fan을 분리한다.
Fan Power Supply 케이블과 고무 패킹을 분리한다.



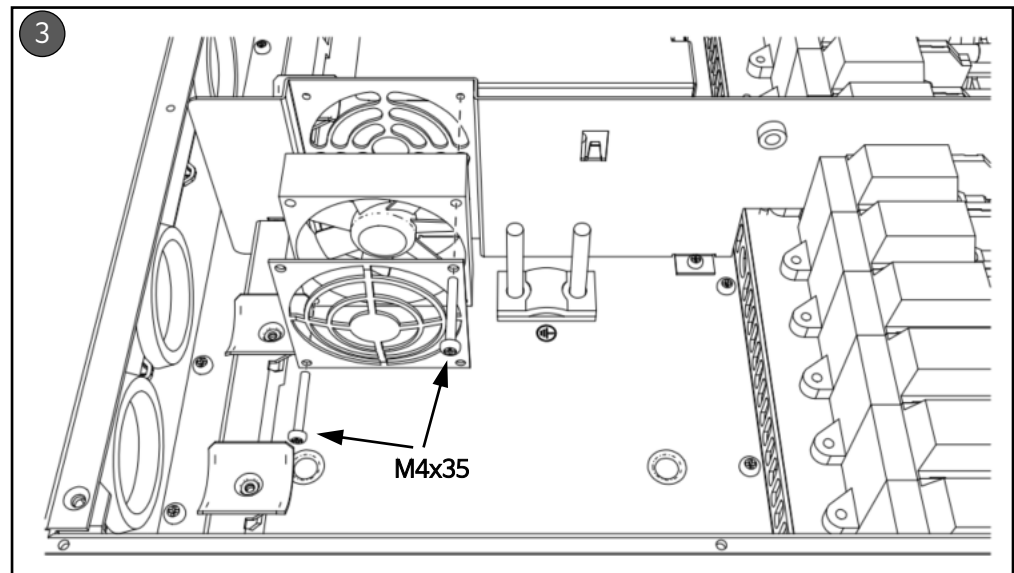
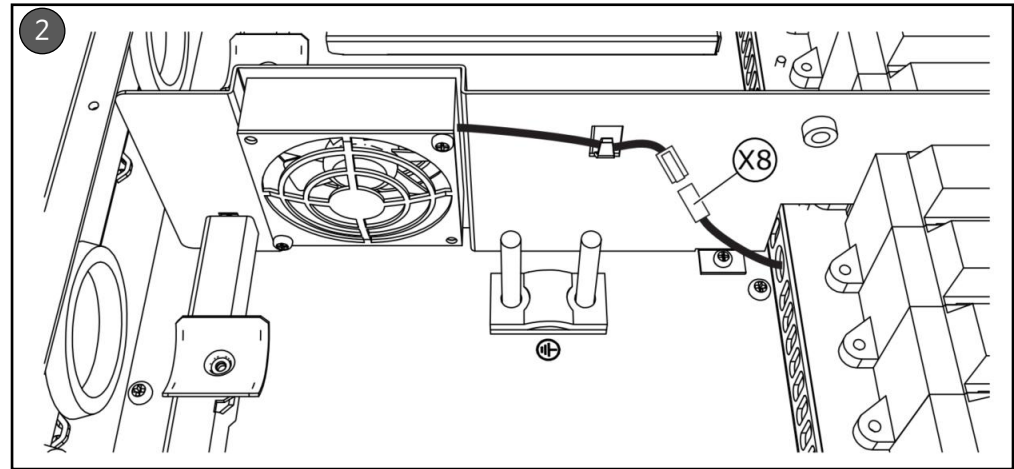
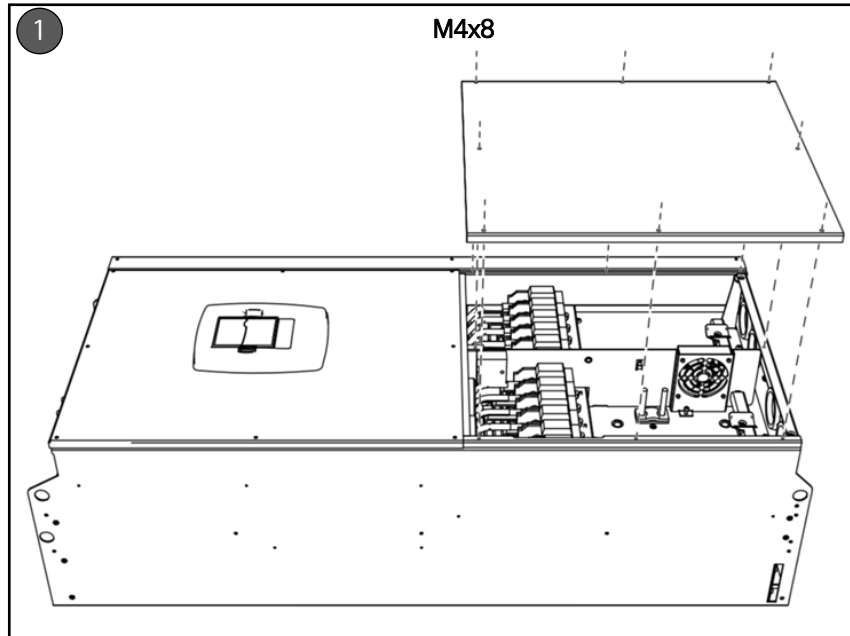
Pin	Color	Signal
1	Red	Plus
2	Yellow	Control Input
3	White	Tach Output
4	Blue	Minus



2-8. FR9 Internal Fan – Divider Fan

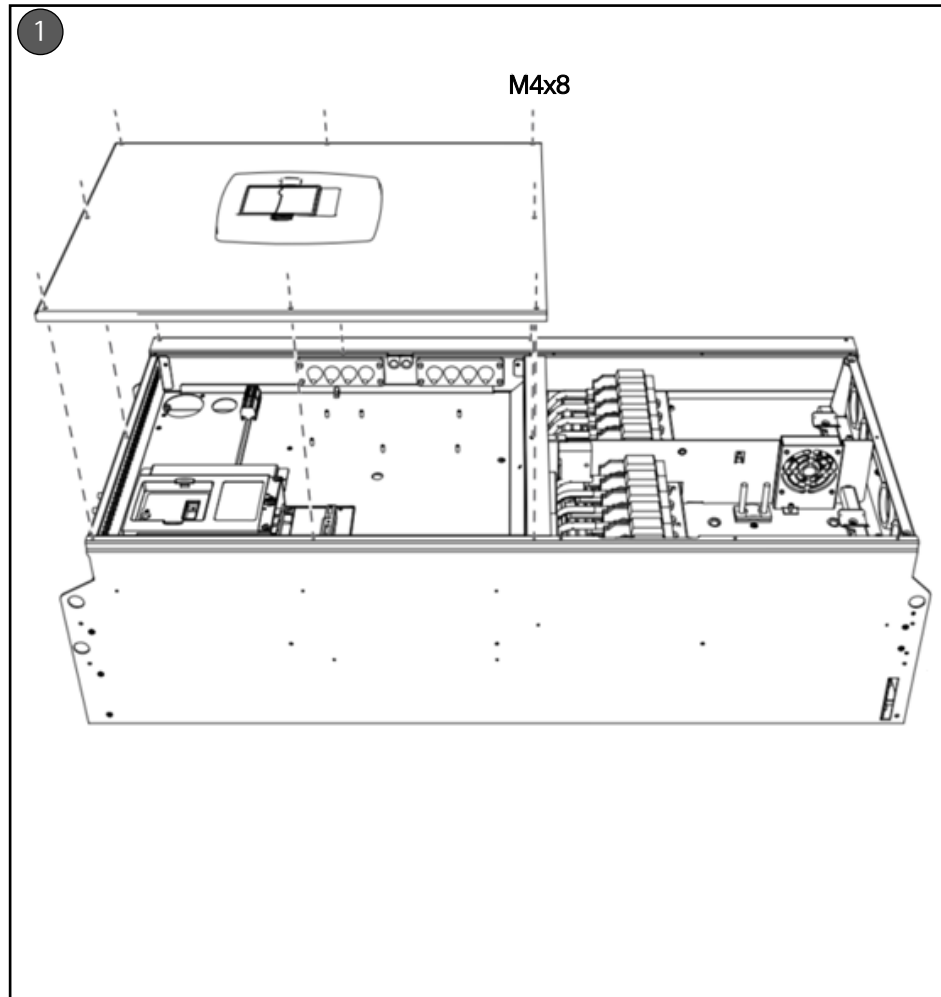
- 1) Drive Connection Cover를 분리한다.
- 2) Power Board Wire X8로 부터 Internal Fan Wire를 분리한다.

- 3) Internal Fan 고정 나사 2개를 분리한다.
- 4) Terminal EMC Cover에서 Internal Fan을 분리한다.

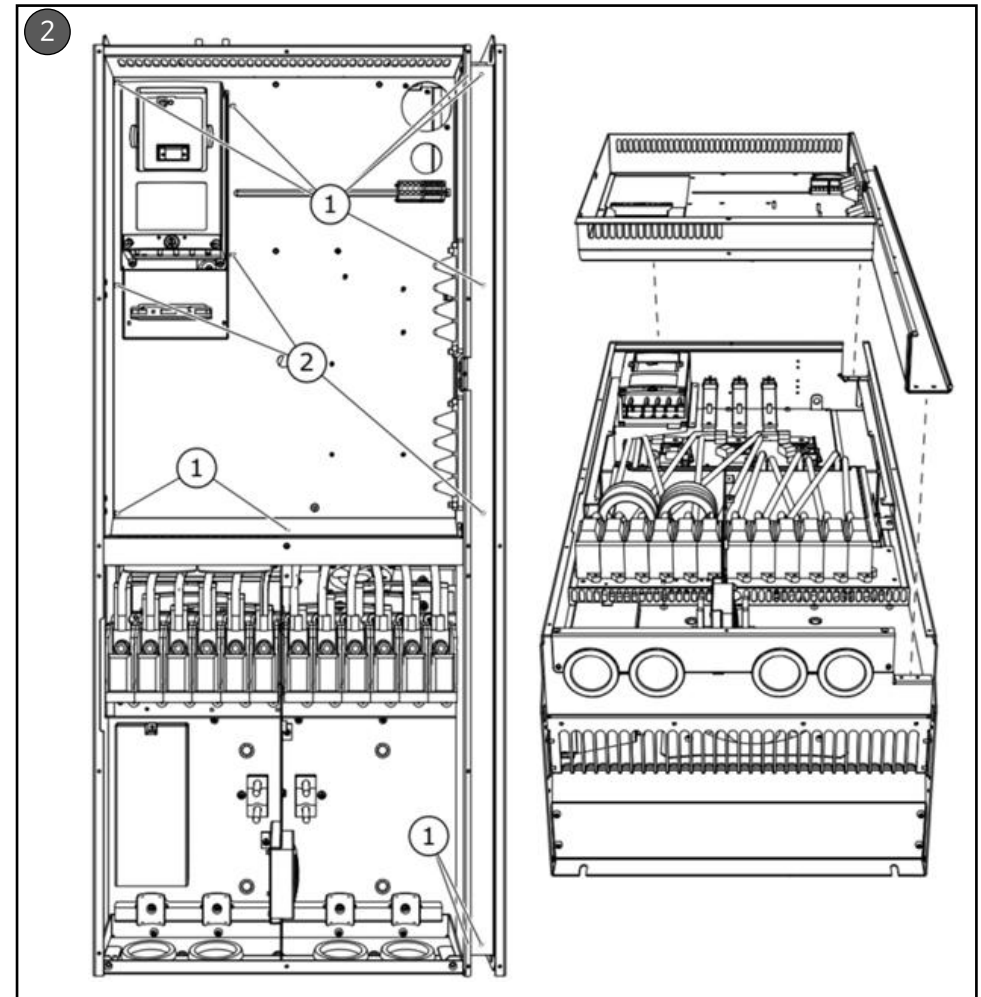


2-9. FR9 Internal Fan – Board Fan

1) Main Cover를 분리한다. (8개 M4x8)

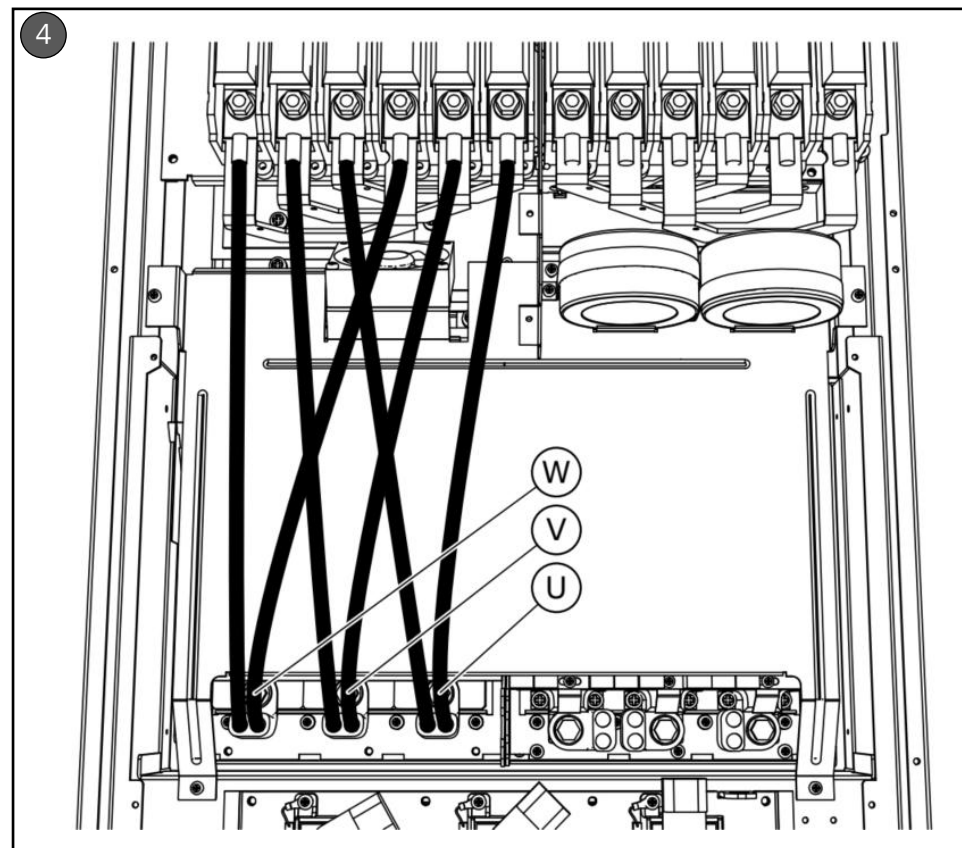
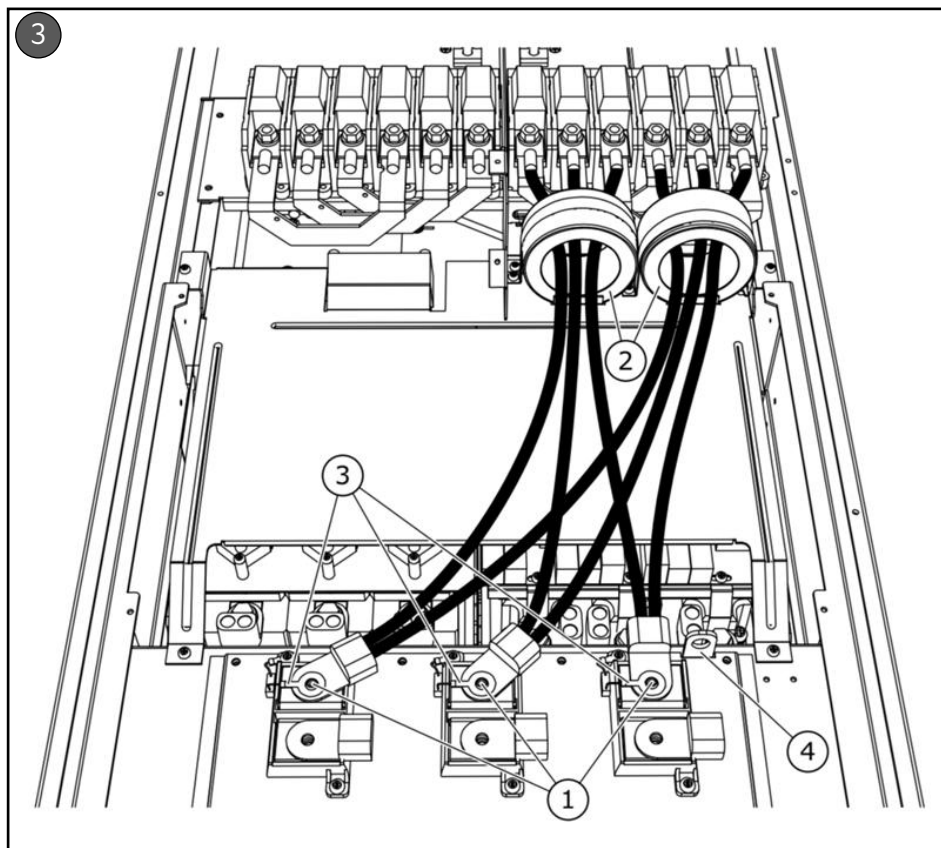


2) Control Frame을 분리한다. (12개 M4x8)



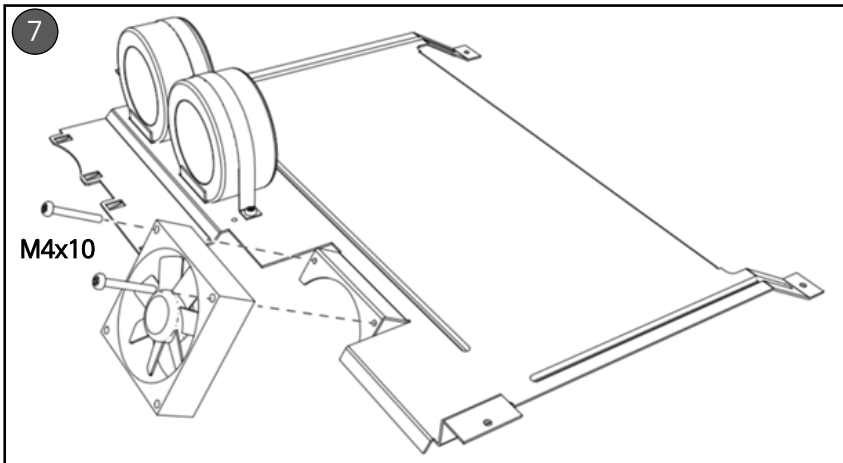
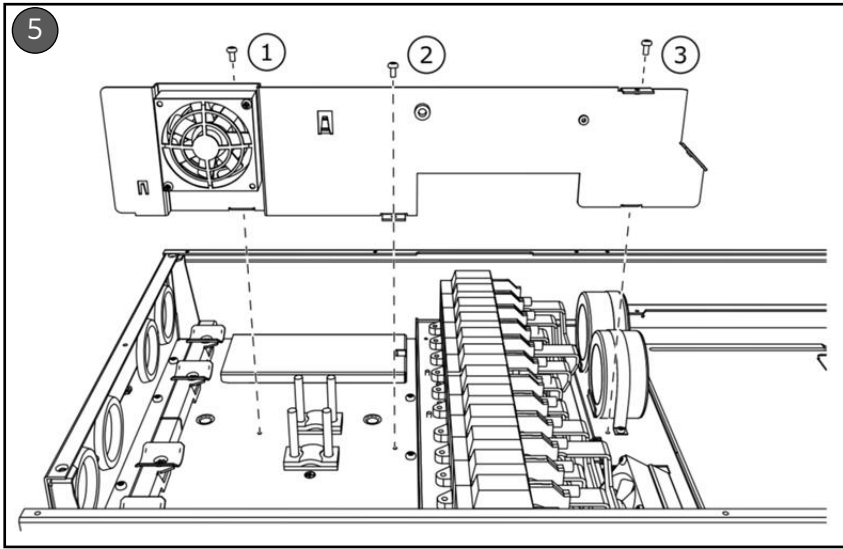
2-9. FR9 Internal Fan – Board Fan

- 3) ① AC Choke에서 Input Cable을 분리한다.
② EMC level H units 안쪽으로 케이블을 다시 연결할 때
케이블이 Ferrite Ring에 닿지 않도록 주의 한다.
③ EMC level H/L units에서 Choke Capacitors가
케이블 장착 나사에 장착되었는지 확인한다.
④ L1 케이블 커넥터가 Lifting Ring에 닿지 않도록 해야 한다.
- 4) Motor Cable을 Power Module에서 분리한다. (3개 M8x16)
Power Module에 다시 연결할 때는 Phase W → Phase V → Phase U
순서로 연결한다.



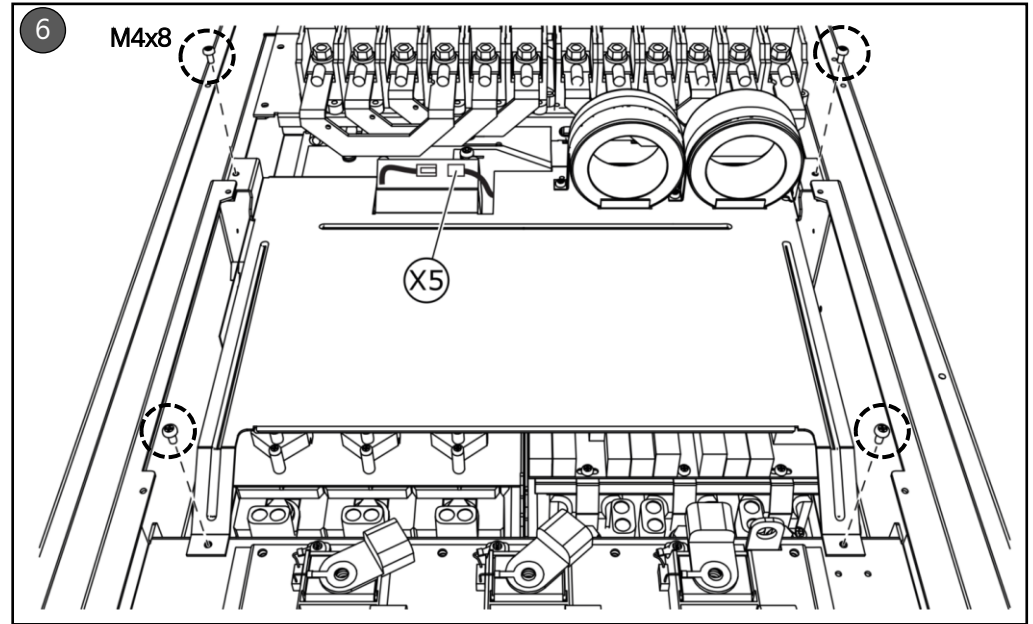
2-9. FR9 Internal Fan – Board Fan

5) Divider Internal Fan Wire를 분리하고,
Terminal EMC Cover를 분리한다. (3개 M4x8 장착 나사)



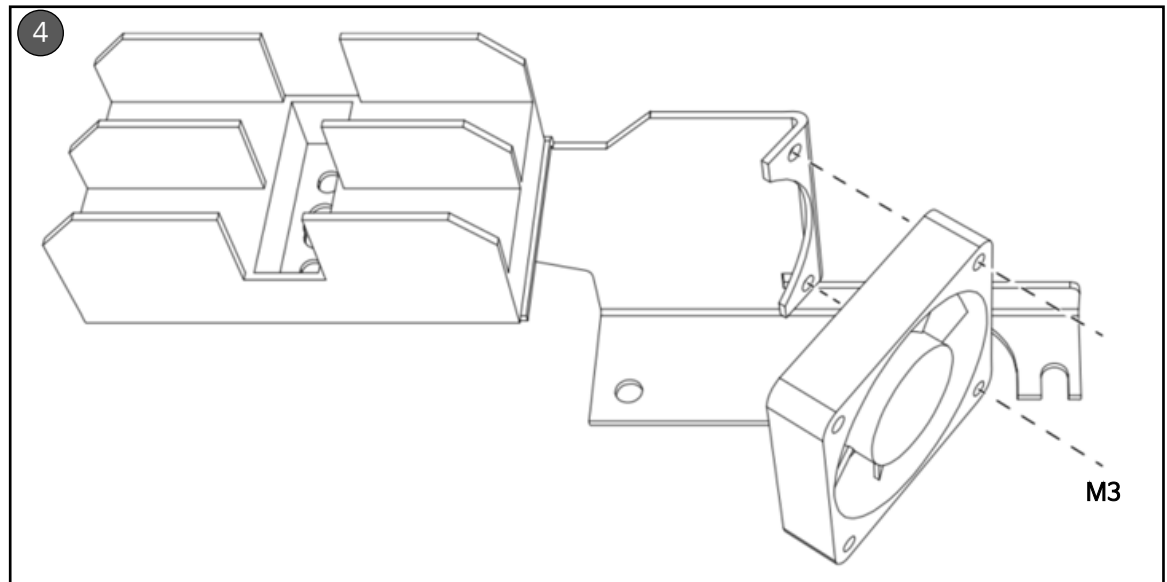
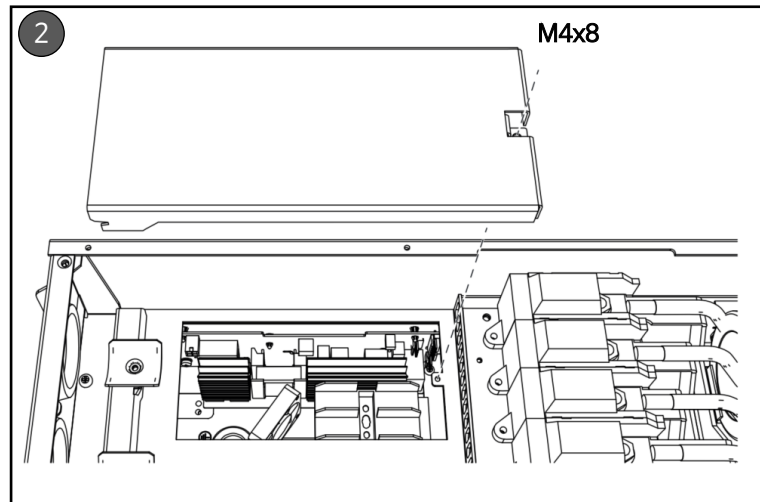
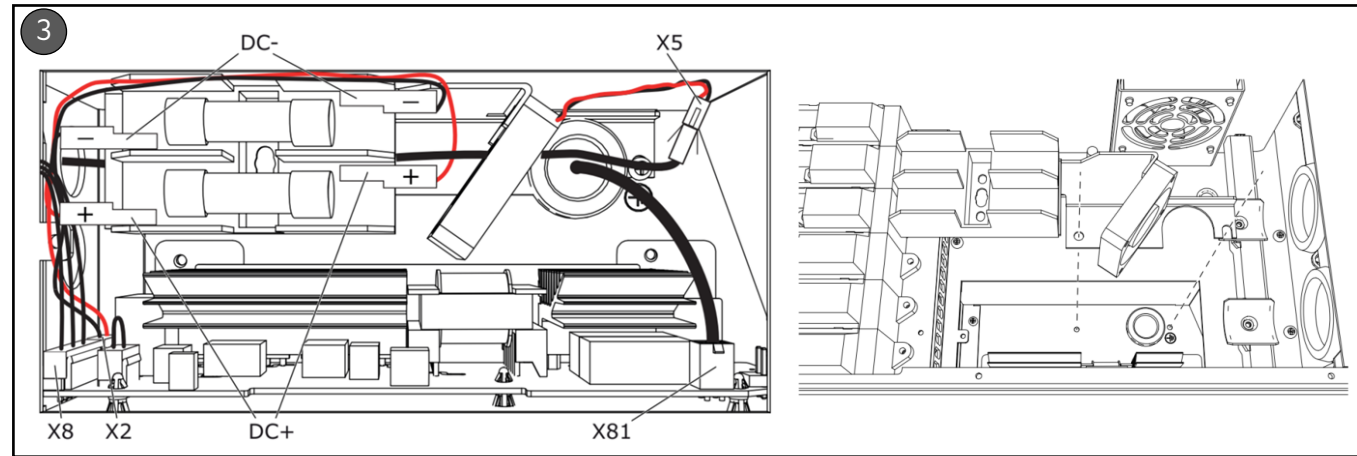
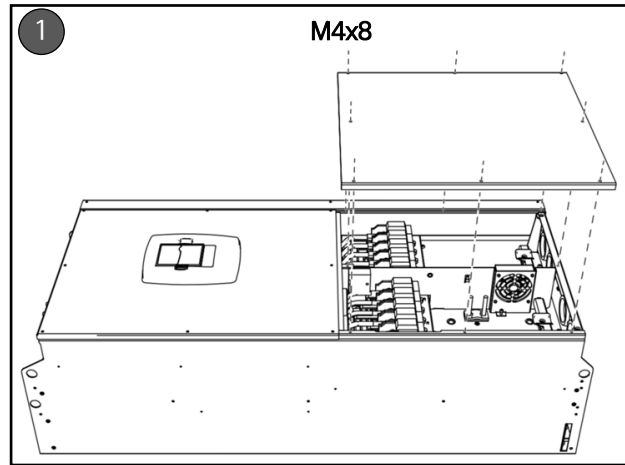
6) Board Internal Fan Wire를 Power Board Wire X5로 부터 분리하고,
Power Unit EMC Cover를 분리한다. (4개 M4x8)

7) Power Unit EMC Cover에서 Board Internal Fan을 분리한다. (2개 M4x10)



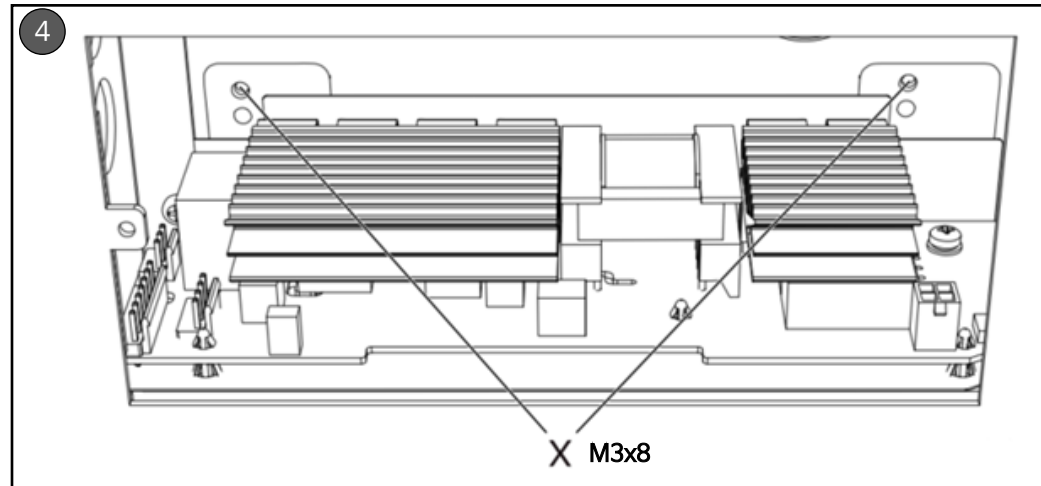
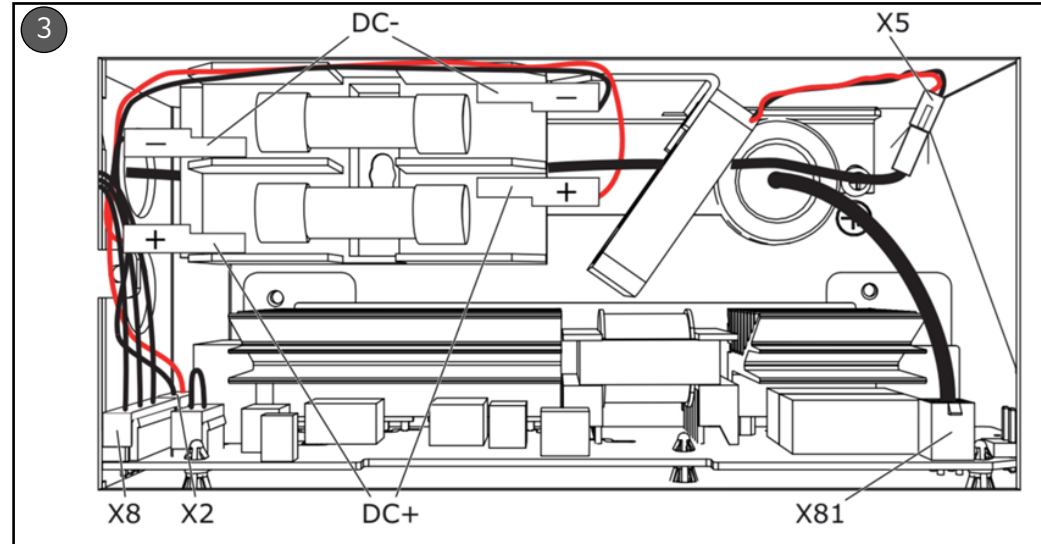
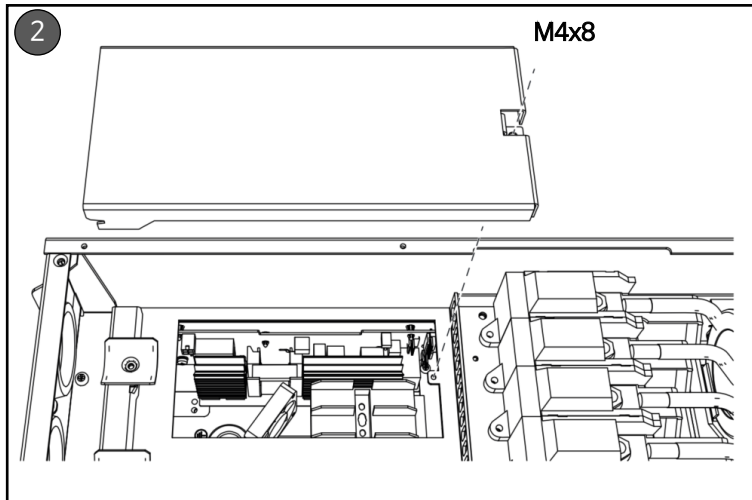
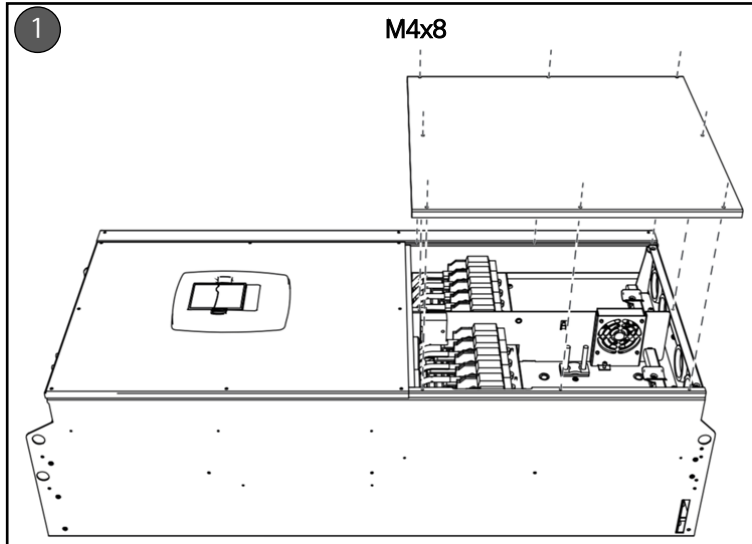
2-10. FR9 Internal Fan – Fan Power Supply Fan

- 1) Drive Connection Cover를 분리한다.
- 2) Fan Power Supply Cover를 분리한다.
- 3) Fuse Base Assembly를 분리한다.
- 4) Fuse Base Assembly에서 Internal Fan을 분리한다. (2개 M3)



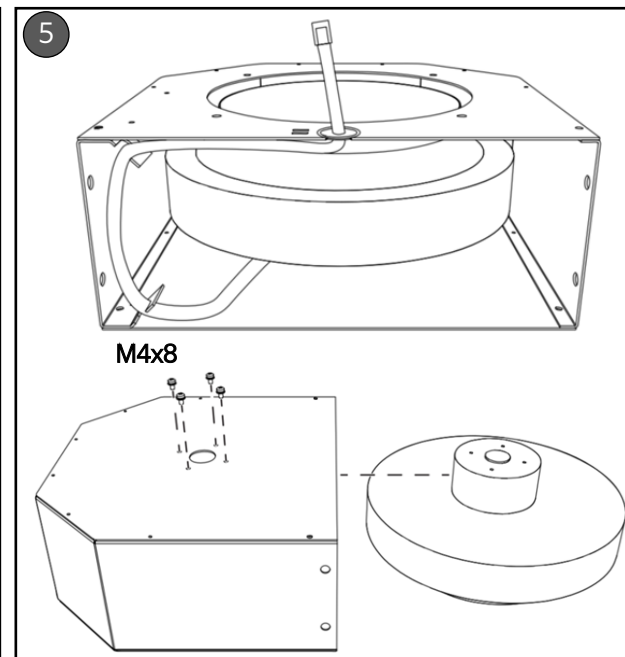
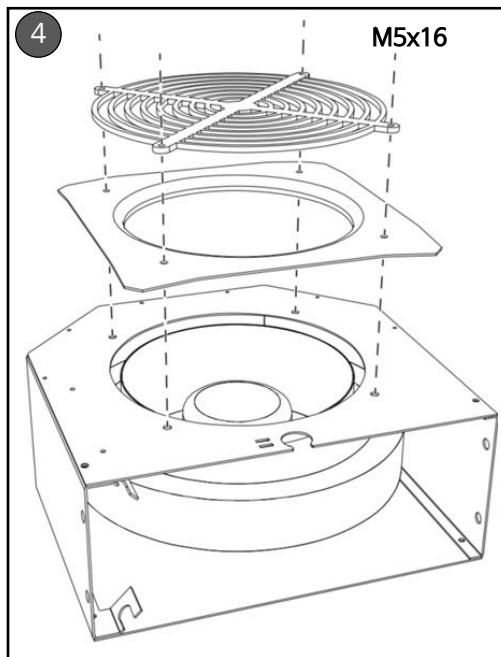
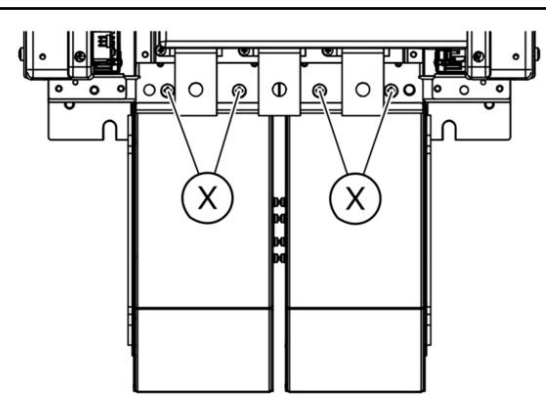
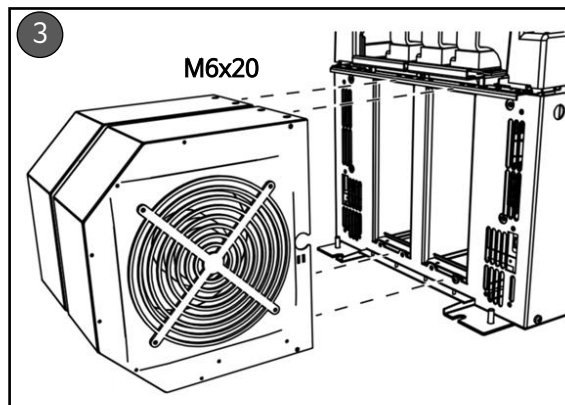
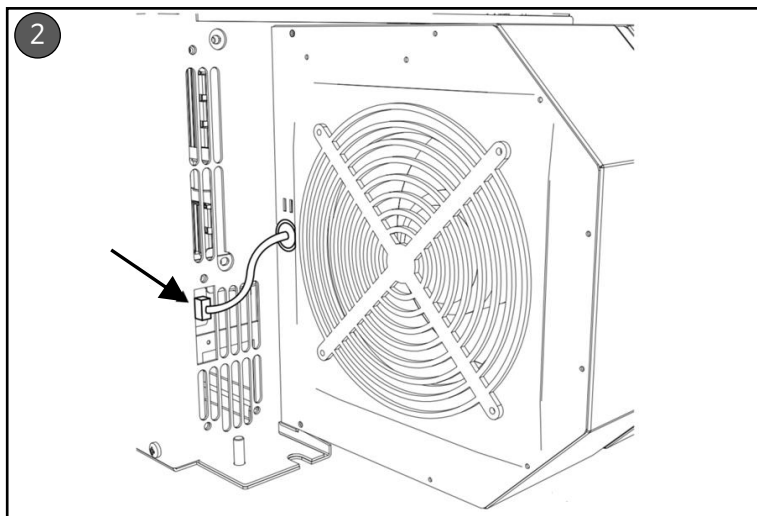
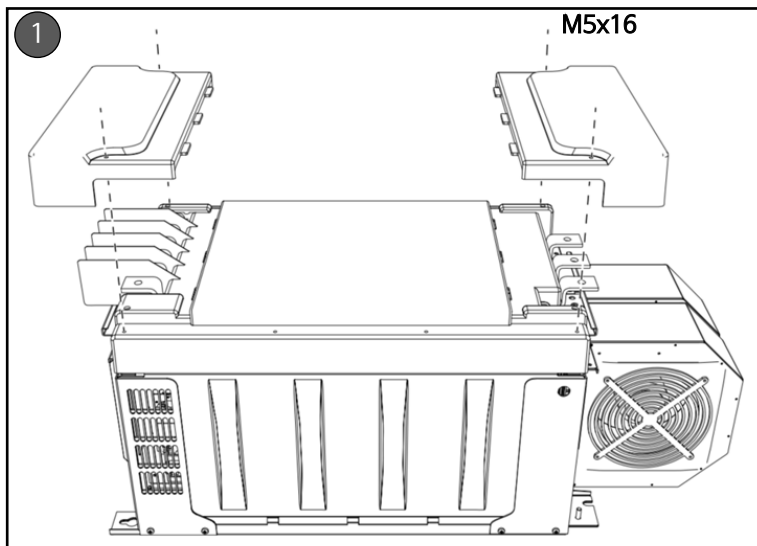
2-11. FR9 Fan Power Supply

- 1) Drive Connection Cover를 분리한다.
- 2) Fan Power Supply Cover를 분리한다.
- 3) Fan Power Supply에 연결된 모든 Wire(X81, X2, X8)를 분리한다.
- 4) Fan Power Supply 고정 나사(2개 M4x8)를 분리한 후, Fan Power Supply를 약간 옆으로 돌려서 빼낸다.



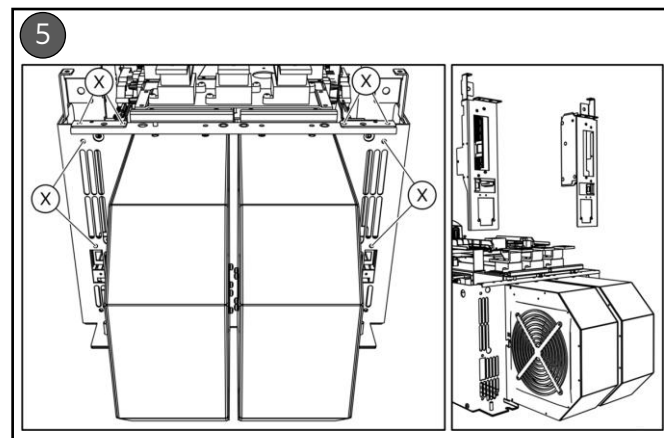
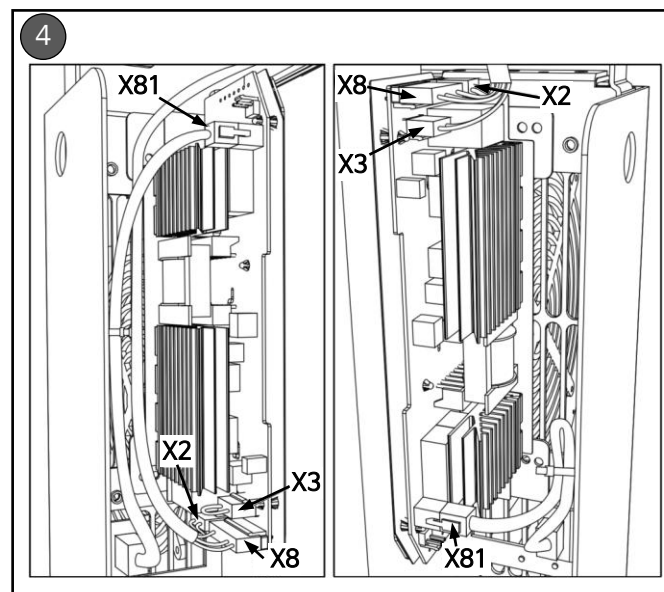
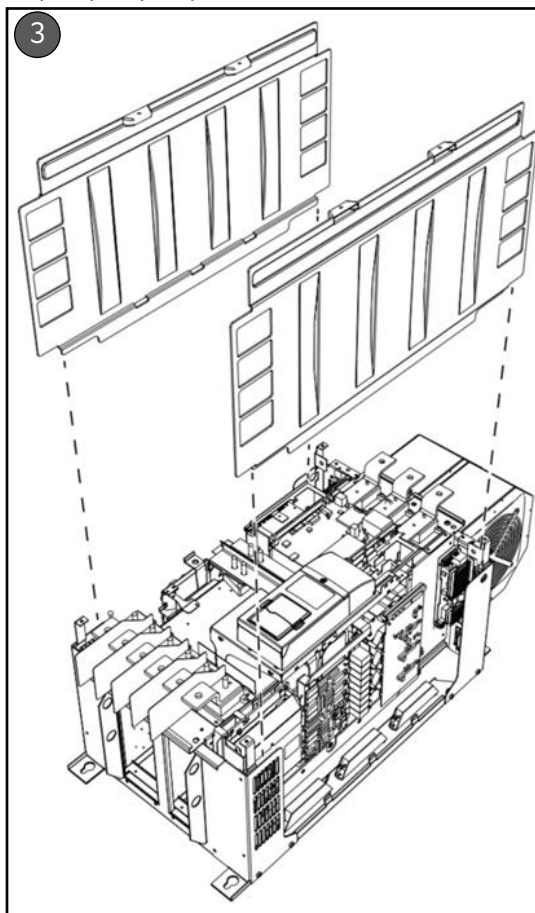
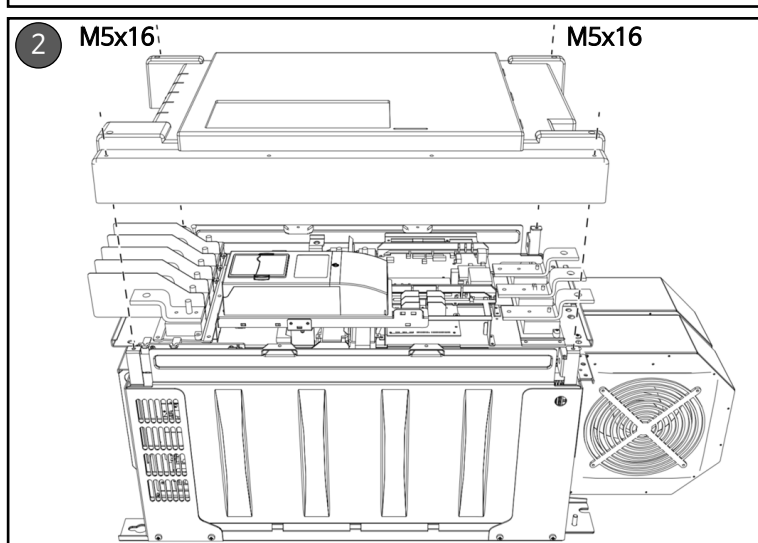
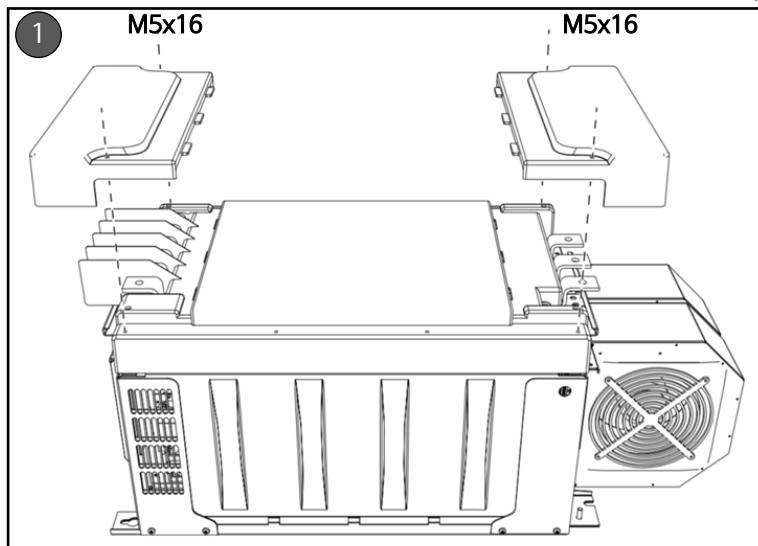
2-12. FR10 / FR12 Main Fan

- 1) Drive 하단부 Connection Cover를 분리한다.
- 2) Fan Power Supply Wire 커넥터를 분리한다.
- 3) 4개 고정 나사를 분리하고, Fan Assembly를 분리한다.
- 4) 4개 고정 나사를 분리하여, Fan 흡입구 보호대를 분리한다.
- 5) 4개 고정 나사를 분리하여, 팬 하우징으로 부터 팬을 분리한다.



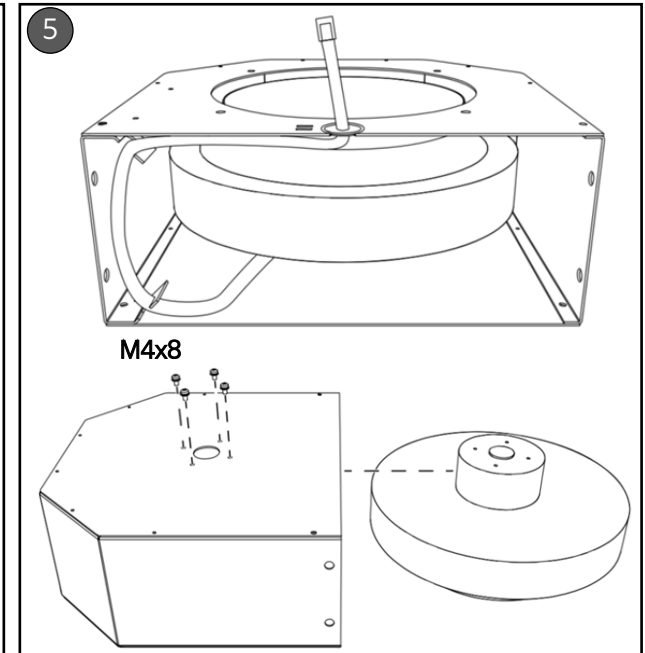
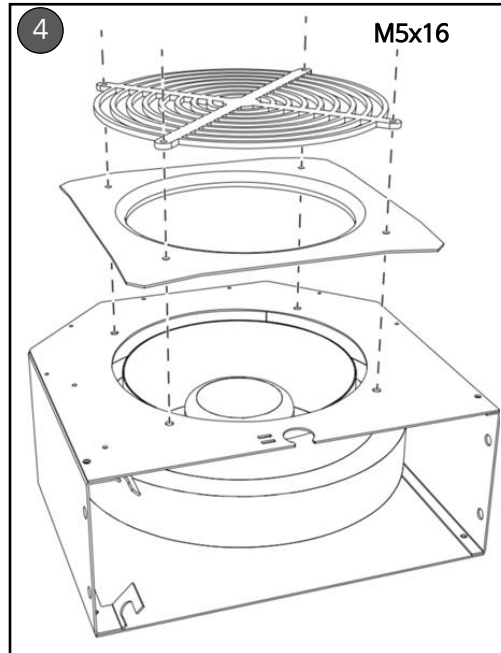
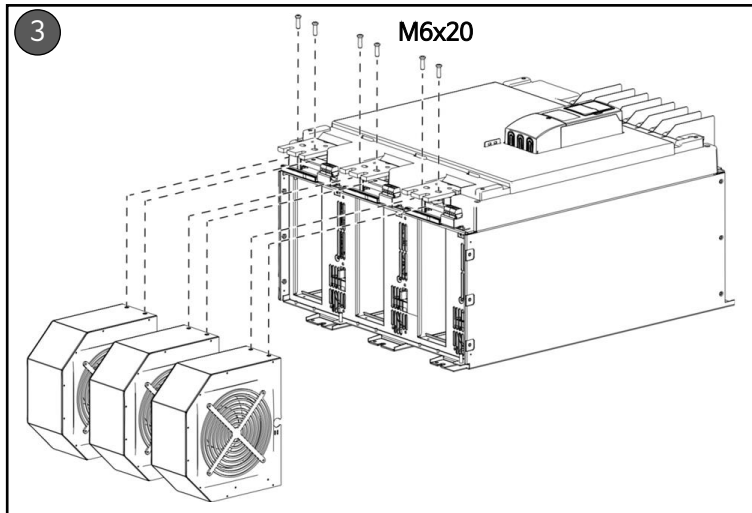
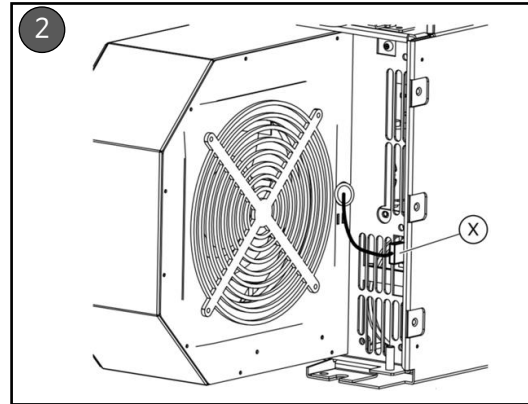
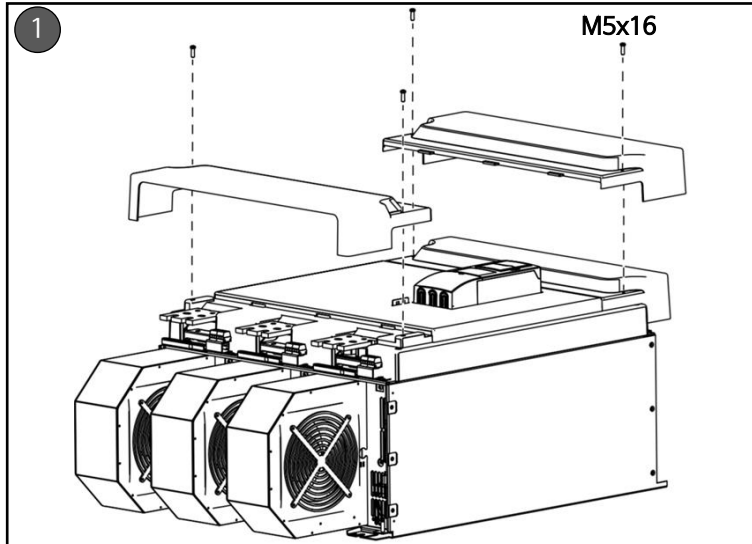
2-13. FR10 / FR12 Fan Power Supply

- 1) Drive 상/하단부 Connection Cover를 분리한다.
- 2) Front Cover를 분리한다.
- 3) 좌/우측 Side Cover를 분리한다.
- 4) 좌/우측 Fan Supply와 연결된 커넥터를 모두 분리한다.
(X81, X2, X8, X3)
- 5) 8개 고정 나사(M5x10)를 분리하여,
Fan Supply Assembly를 분리한다.



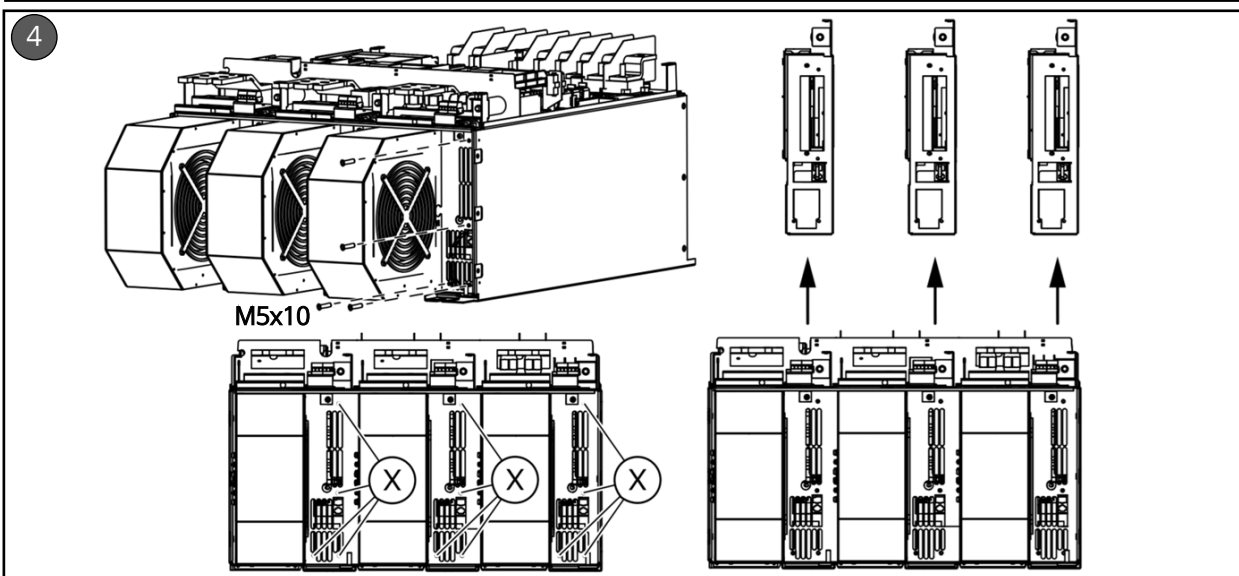
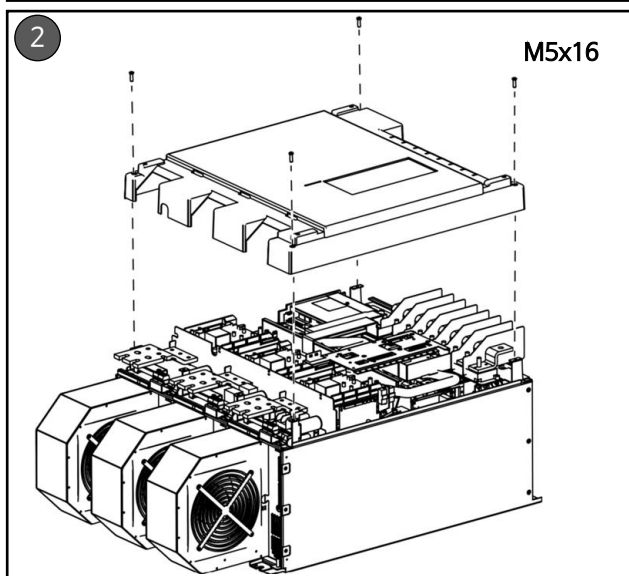
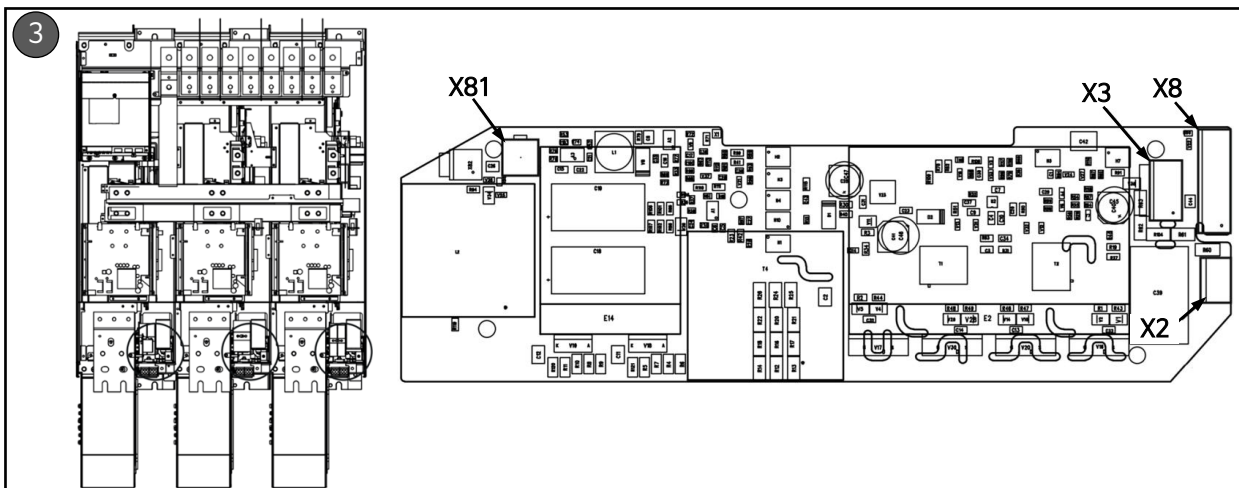
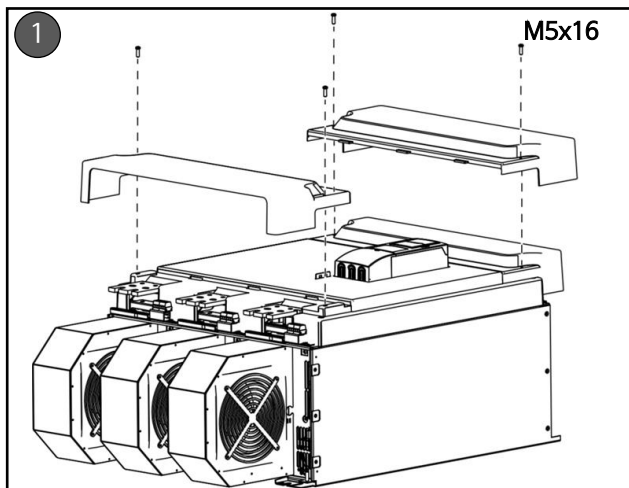
2-14. FR11 Main Fan

- 1) Drive 하단부 Connection Cover를 분리한다.
- 2) Fan Power Supply Wire 커넥터를 분리한다.
- 3) 6개 고정 나사를 분리하고, Fan Assembly를 분리한다.
- 4) 4개 고정 나사를 분리하여, Fan 흡입구 보호대를 분리한다.
- 5) 4개 고정 나사를 분리하여, 팬 하우징으로 부터 팬을 분리한다.



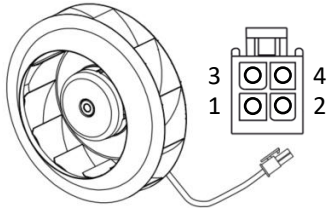
2-15. FR11 Fan Power Supply

- 1) Drive 상/하단부 Connection Cover를 분리한다.
- 2) Main Cover를 분리한다.
- 3) Fan Supply와 연결된 커넥터를 모두 분리한다.
(X81, X2, X8, X3)
- 4) 고정 나사를 분리하여,
Fan Supply Assembly를 분리한다.

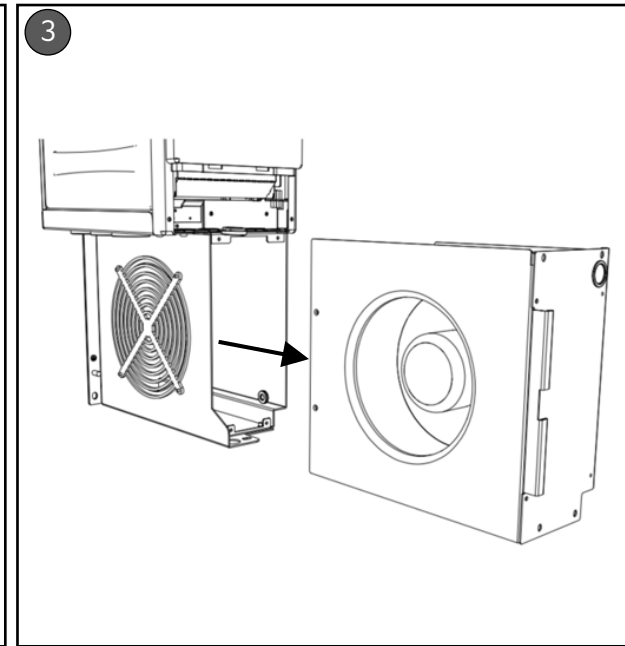
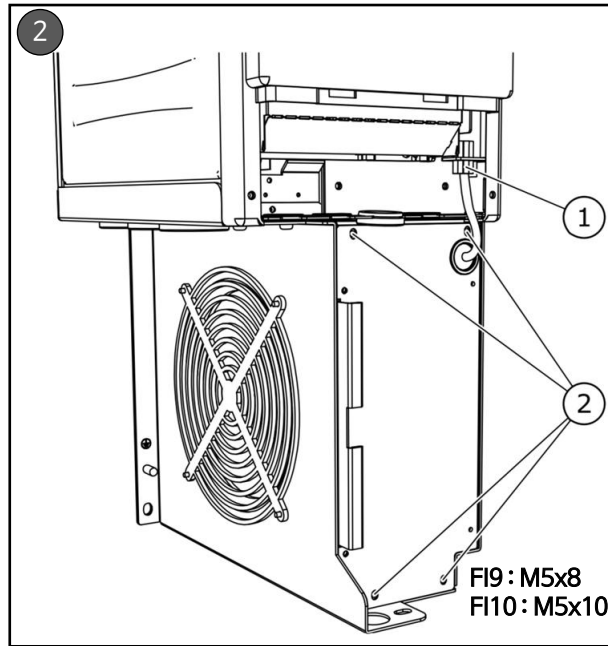
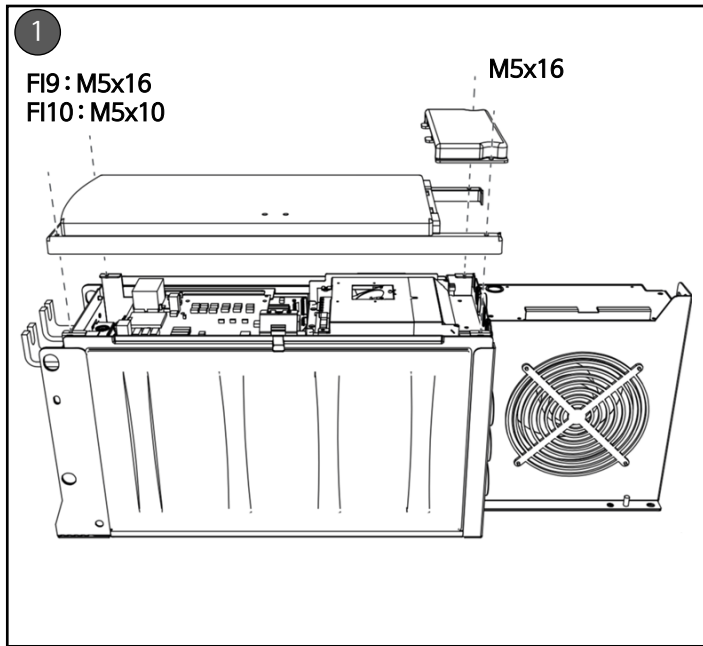


2-16. FI9-FI12 Main Fan

- 1) Drive Connection Cover를 분리한다. 2) Fan Supply Cable 커넥터를 분리한 후 고정 나사 4개를 제거한다. 3) Fan Assembly를 빼낸다.

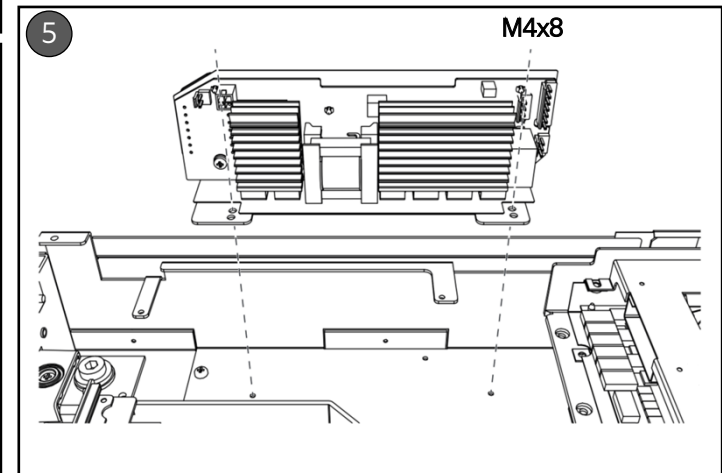
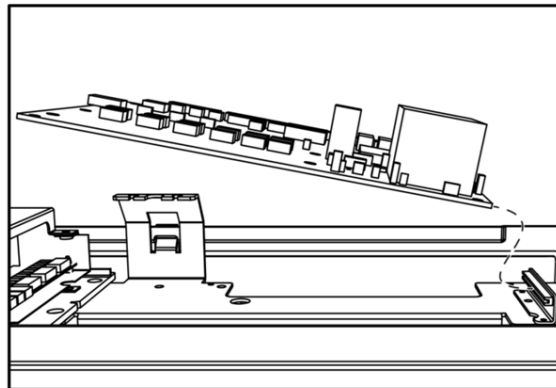
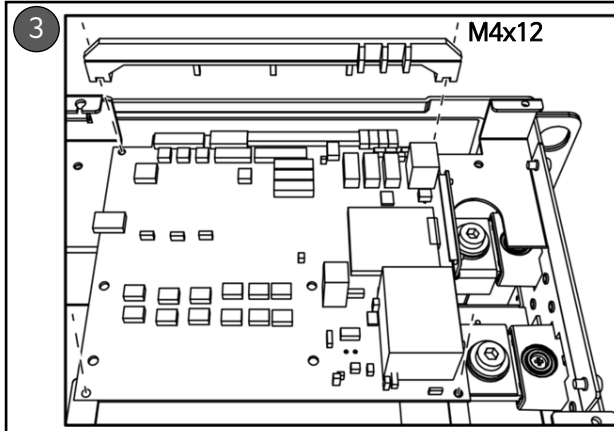
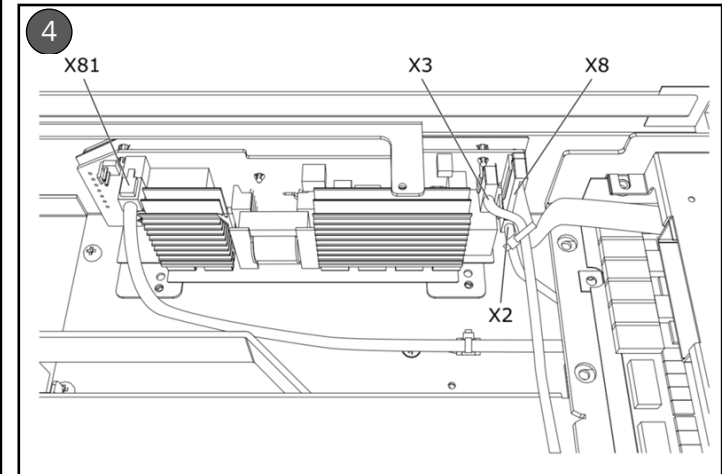
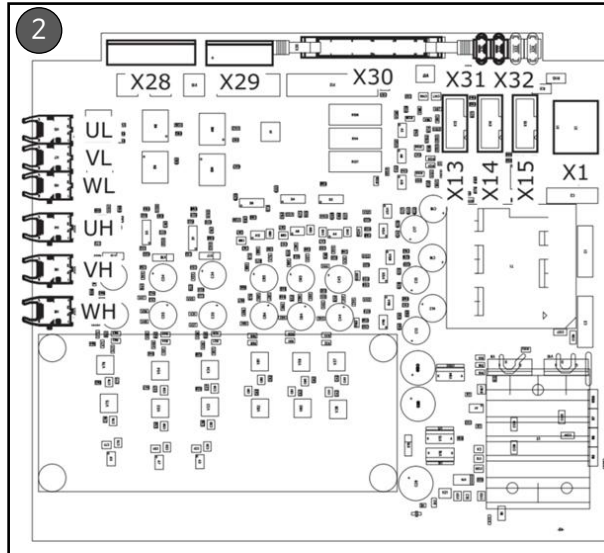
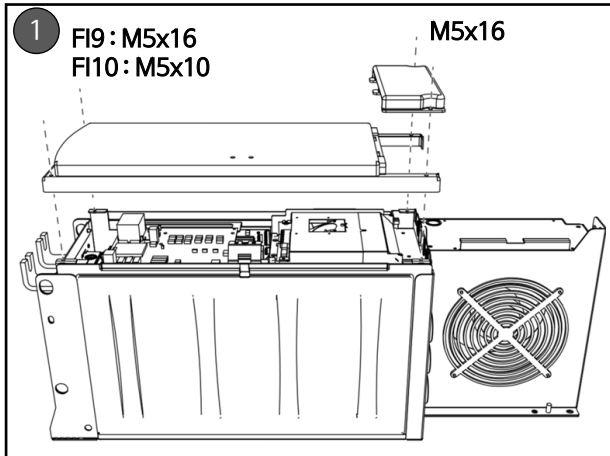


Pin	Color	Signal
1	Red	Plus
2	Yellow	Control Input
3	White	Tach Output
4	Blue	Minus



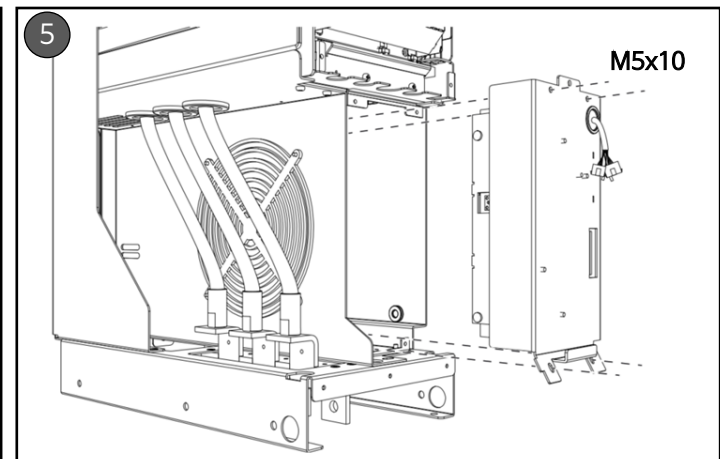
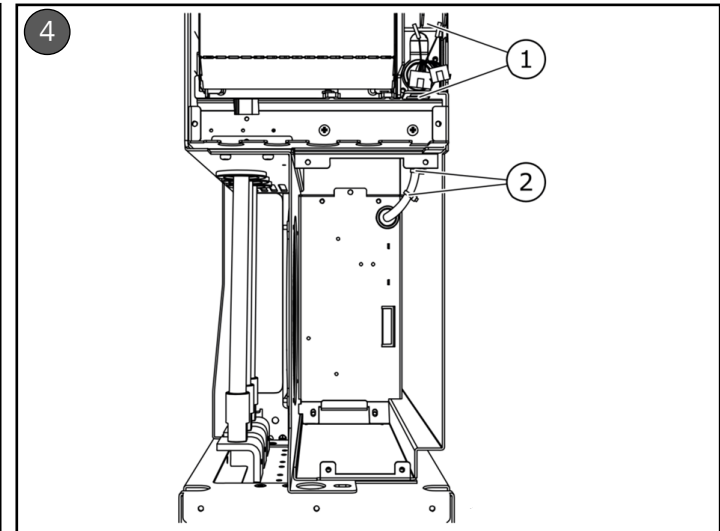
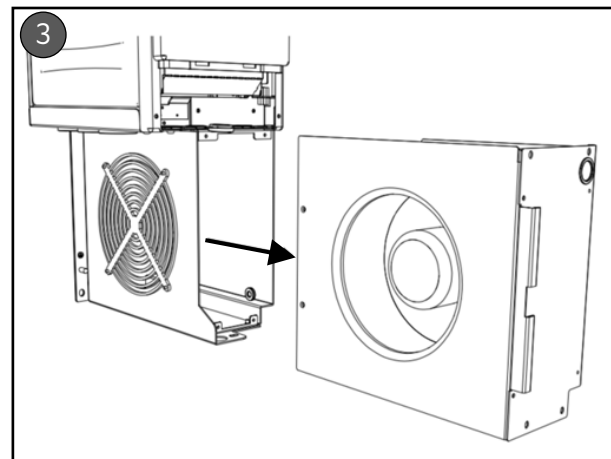
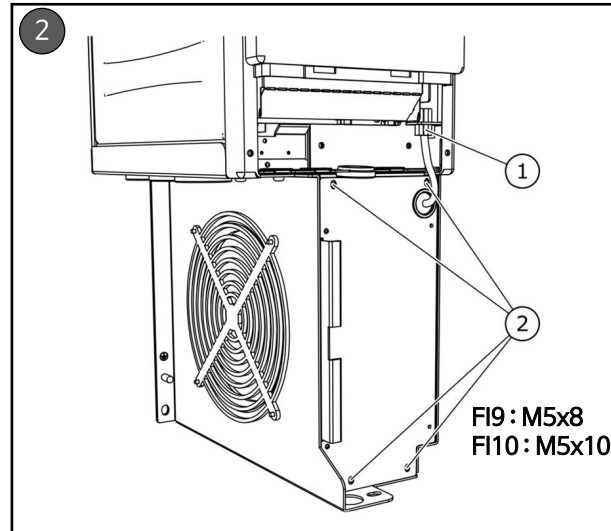
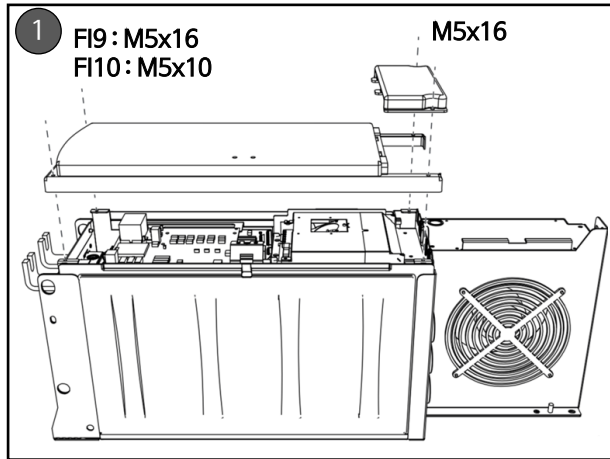
2-17. FI9 Fan Power Supply

- 1) Drive Front Cover와 Connection Cover를 분리한다.
- 2) Driver Board에 연결된 모든 커넥터를 분리한다.
 - Optical Fibers (UL, VL, WL, UH, VH, WH)
 - Current Measurement Cable (X13, X14, X15, X32)
 - Measurement Board Flat Cable (X30, X31)
 - Gate Driver Wire (X28, X29)
 - Driver Power Supply Wires (X1)
- 3) Driver Board 고정 나사 4개를 분리한 후, 커넥터 홀더를 분리하고, Driver Board를 들어 올린다.
- 4) Fan Power Supply에 연결된 모든 커넥터를 분리한다.
 - Fan Supply Wire X81, DC Supply Wire X2, Fan Control Wire X8, Fan Feedback Wire X3
- 5) 고정 나사 2개를 분리한 후, Fan Power Supply를 빼낸다.



2-18. FI10-FI12 Fan Power Supply

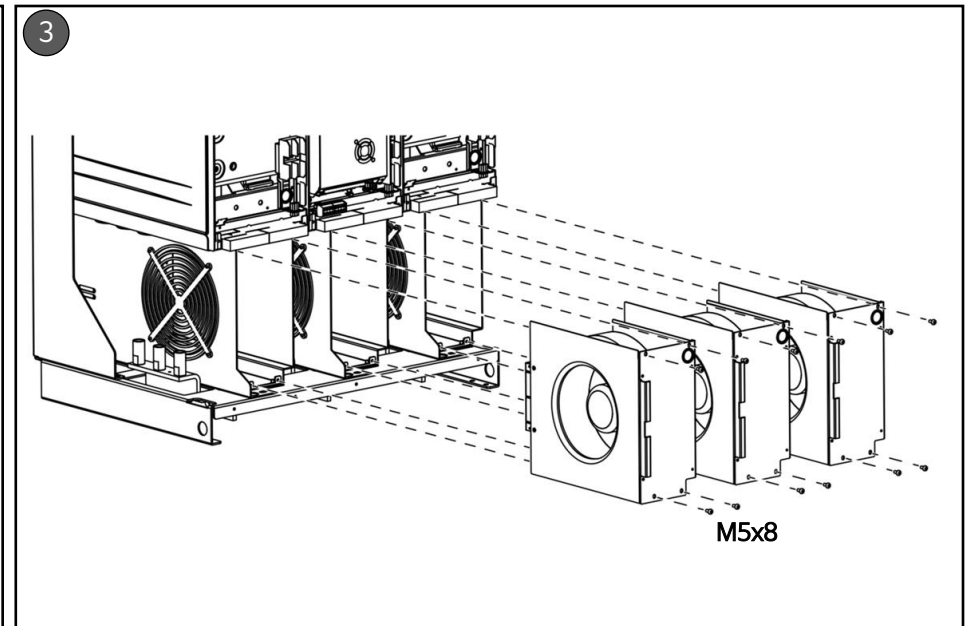
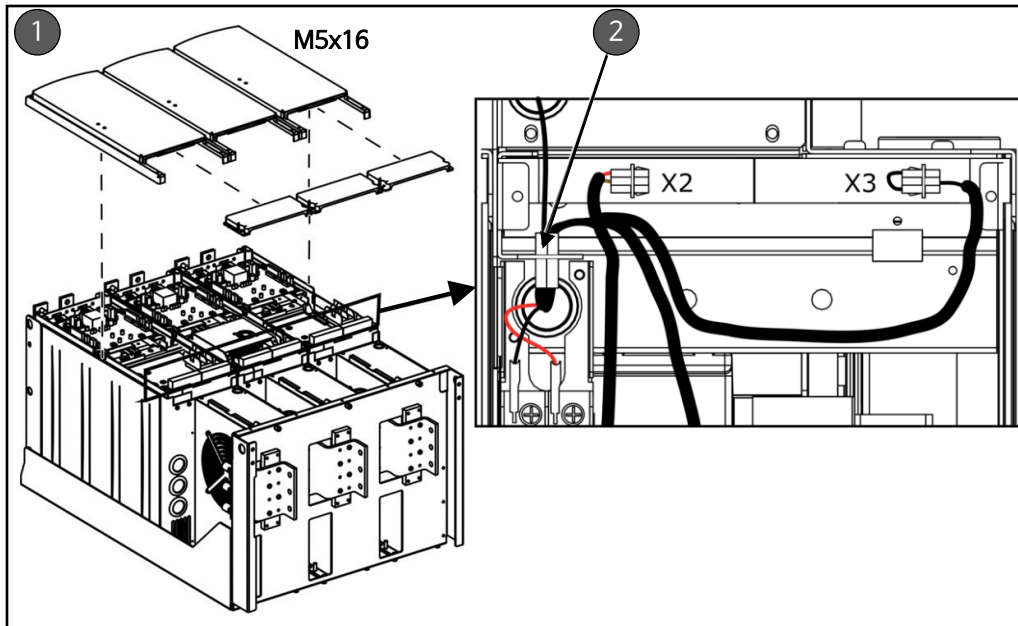
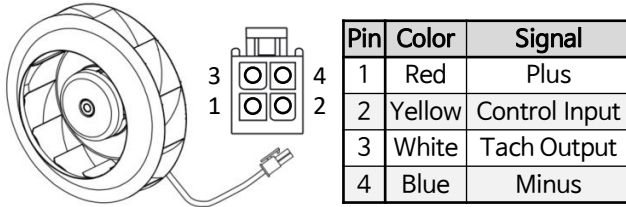
- 1) Drive Connection Cover를 분리한다.
- 2) Fan Supply Cable 커넥터를 분리한 후 고정 나사 4개를 제거한다.
- 3) Fan Assembly를 빼낸다.
- 4) Fuse Base와 커넥터 홀더에서 커넥터를 분리한 후, 케이블 타이 2개를 자른 다음, 케이블을 고무 패킹 구멍을 통해 빼낸다.
- 5) 고정 나사 4개를 분리한 후, Fan Power Supply Assembly를 빼낸다.



2-19. FI13 Main Fan

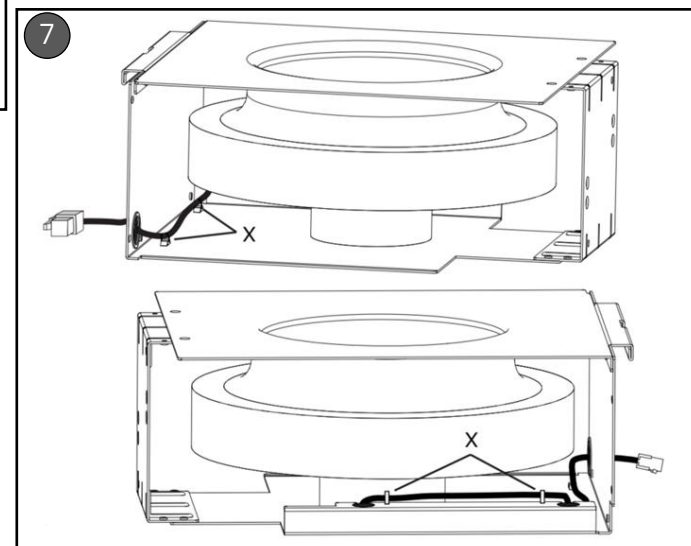
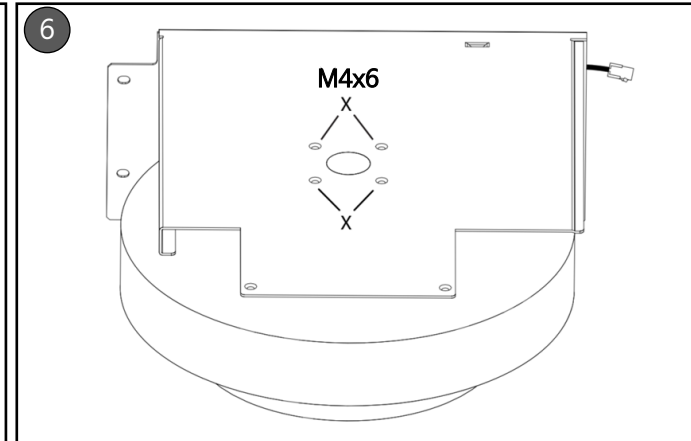
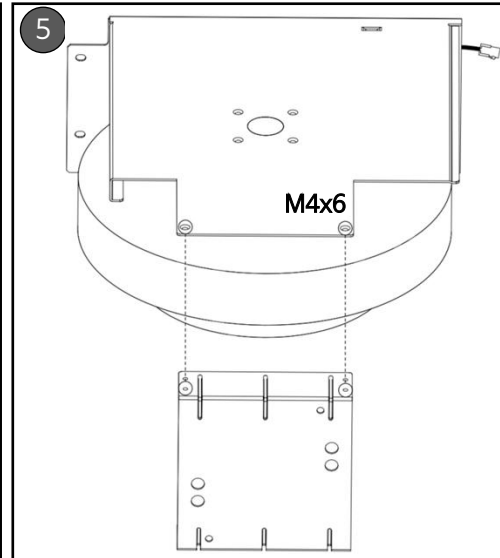
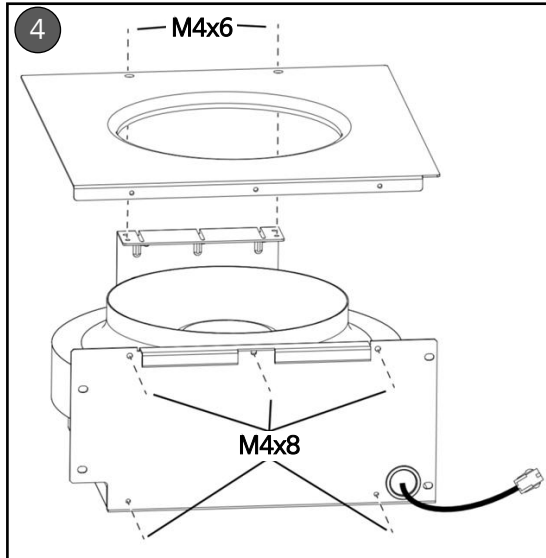
- 1) Drive Connection Cover를 분리한다. 2) Extension Wire 커넥터로 부터 Fan Supply Wire를 분리한다.

- 3) 고정 나사를 분리하여, Fan Assembly를 분리한다.



2-19. FI13 Main Fan

- 4) Fan 흡기구를 분리한다. 5) Assembly로 부터 Fan 하부 지지대를 분리한다. 6) Fan Support Plate로 부터 Fan을 분리한다. 7) Cable ties를 제거한 후 Fan Supply Cable을 분리한다.



2-20. FI13 Fan Power Supply

- 1) Drive Connection Cover를 분리한다.
- 2) Extension Wire 커넥터로 부터 Fan Supply Wire를 분리한다.
- 3) Fan Assembly를 빼낸다.
- 4) 커넥터 Holder로 부터 2개의 Fan Power Supply 케이블을 분리하고, Fuse Base로 부터 DC Wire를 분리한다.
- 5) Fan Power Supply 케이블을 Frame으로 부터 분리하기 위해 Cable ties를 제거한다.
- 6) 고정 나사를 제거한 후, Fan Power Supply Assembly를 빼낸다.

