

Manifold for water Unit replacement manual

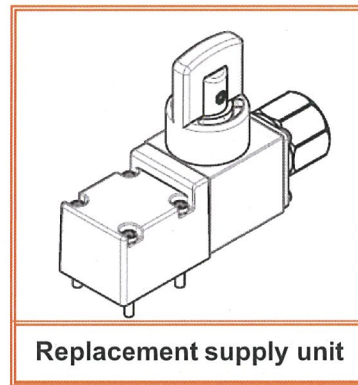
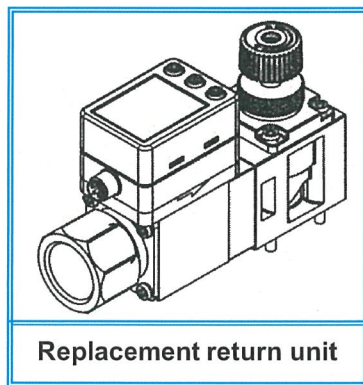
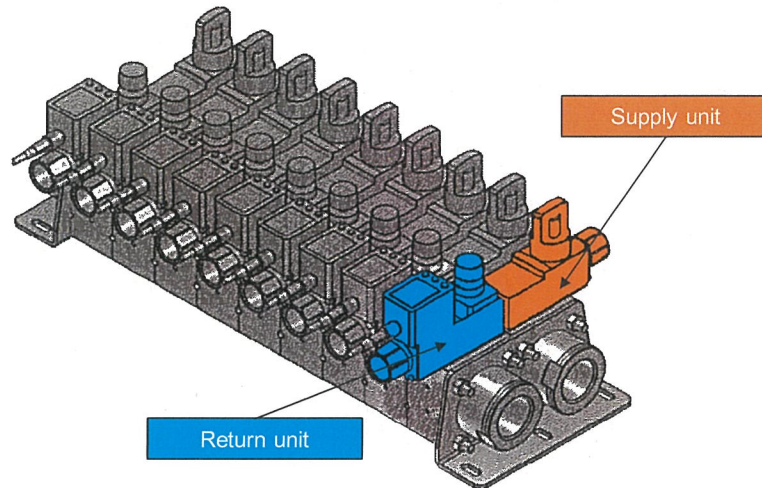
Manifold product number

PF3WB/C/S/R series

SMC Corporation

【Replacement unit part number selection】

This manual describes replacement units used for maintenance repairs of manifold for water.



The method of selecting the replacement unit part number for the manifold product number is shown below.

Target manifold product number

Integrated type (Basic type)	PF3W B 03 D	<input type="text"/>	-W	7	20	P	-04	-A	<input type="text"/>	-M
		①	②	③	④	⑤	⑥	⑦	(⑨)	⑧
Integrated type (Straight type)	PF3W C 03 D	<input type="text"/>	-W	7	20	P	-04	-A	<input type="text"/>	-M
		①	②	③	④	⑤	⑥	⑦	(⑨)	⑧
Remote type (Supply type)	PF3W S 03 D	<input type="text"/>	-W		20		-04			
		①	②		④		⑥			
Remote type (Return type)	PF3W R 03 D	<input type="text"/>	-	7	20	P	-04	-A	<input type="text"/>	-M
		①		③	④	⑤	⑥	⑦	(⑨)	⑧

Replacement unit part number selection

The replacement unit part numbers for each of the manifolds described in Page.1 are as follows.

Please apply the contents of items from ① to ⑧ respectively.

(Please select ⑨ the lead wire option as necessary.)

Replacement unit part number





Replacement Supply unit	ZS-52-	W	20	-	04				
		②	④	①	⑥				

Replacement Return unit	ZS-52-	7	20	P	-	04	-	A	-	M
		③	④	⑤	①	⑥	⑦	⑨	⑧	

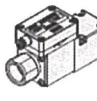

① Thread type

Nil	Rc
N	NPT
F	G

② Supply unit configuration

Symbol	Nil	S	P	W
Flow adjustment valve	-	●	-	●
Stop valve	-	-	●	●
				





③ Flow switch type

5	7
Remote sensor unit	Integrated display
	

④ Rated flow range (Flow range)

04	0.5~4L/min
20	2~16L/min
40	5~40L/min

⑤ Return unit configuration

Symbol	Nil	S	P	W
Flow adjustment valve	-	●	-	●
Stop valve	-	-	●	●
				

⑥ Port size

Symbol	Port size	Flow range		
		04	20	40
03	3/8	●	●	-
04	1/2	-	●	●
06	3/4	-	-	●

⑦ Flow switch output specifications

Type	Symbol	OUT1	OUT2		Temperature sensor
		Flow rate/ Temperature ^{*5}	Flow rate	Temperature	
Remote sensor unit	1	Analog 1 to 5 V	—	—	None
	2	Analog 4 to 20 mA	—	—	
	1T	Analog 1 to 5 V	—	Analog 1 to 5 V	Yes
	2T ^{*1}	Analog 4 to 20 mA	—	Analog 4 to 20 mA	
Integrated display	A	NPN	NPN	—	None
	B	PNP	PNP	—	
	C	NPN	Analog 1 to 5 V	—	
	D	NPN	Analog 4 to 20 mA	—	
	E	PNP	Analog 1 to 5 V	—	
	F	PNP	Analog 4 to 20 mA	—	
	G ^{*1}	NPN	External input ^{*2}	—	
	H ^{*1}	PNP	External input ^{*2}	—	
	AT	NPN	(NPN) $\xrightarrow{+3}$ NPN		Yes
	BT	PNP	(PNP) $\xrightarrow{+3}$ PNP		
	CT	NPN	(Analog 1 to 5 V) $\xrightarrow{+3}$ Analog 1 to 5 V		
	DT	NPN	(Analog 4 to 20 mA) $\xrightarrow{+3}$ Analog 4 to 20 mA		
	ET	PNP	(Analog 1 to 5 V) $\xrightarrow{+3}$ Analog 1 to 5 V		
	FT	PNP	(Analog 4 to 20 mA) $\xrightarrow{+3}$ Analog 4 to 20 mA		
Integrated display (IO-Link compatible ^{*4})	L ^{*1}	IO-Link/ Switch output (N/P)	—		None
	L2 ^{*1}	IO-Link/ Switch output (N/P)	Switch output (N/P)		
	LT	IO-Link/ Switch output (N/P)	—		Yes
	L2T ^{*1}	IO-Link/ Switch output (N/P)	Switch output (N/P)		

※To use a remote sensor unit in combination with a remote monitor (PF3W3 series), select analog output of 1 to 5 V of flow rate (output symbol "1" or "1T").

*1 Made to order

*2 External input : The accumulated value, peak value, and bottom value can be reset.

*3 For units with temperature sensor, only OUT2 can be set as either temperature output or flow rate output.

Setting when shipped is for temperature output.

*4 Only integrated display type is suitable for IO-Link.

*5 OUT1 is applicable for temperature only for LT or L2T (IO-Link compatible with temperature sensor).

⑧ Flow switch unit specifications

Type	Symbol	Instantaneous flow	Accumulated flow	Temperature
Remote sensor unit	Nil	L/min	-	℃
	G ^{*1}	L/min (gal/min)	-	℃ (°F)
Integrated display	M	L/min	L	℃
	G ^{*1}	gal/min	gal	℃
	F ^{*1}	gal/min	gal	°F
	J ^{*1}	L/min	L	°F
Integrated display (IO-Link compatible)	Nil ^{*1}	gal/min	gal	℃
	M	L/min	L	℃

※Under the New Measurement Act, units other than SI cannot be used in Japan.

• Remote sensor unit : Nil

• Integrated display : M

• Integrated display (IO-Link compatible) : M

Reference : 1[L/min] ⇔ 0.2642[gal/min]

1[gal/min] ⇔ 3.785[L/min]

°F = 9/5℃ + 32

*1 Made to order

⑨ Lead wire for flow switch (Option)

Symbol	Lead wire (Option)	Switch type	
		5	7
Nil	with lead wire with M8 connector (3m)	●	●
N	without lead wire	●	●
Q	with M12-M8 conversion lead wire (0.1m)	-	●

SMC 【Replacement method and procedure】

The replacement method and procedure for the supply unit / return unit of our digital flow switch/manifold are shown below. The warranty is not provided if the product is disassembled or replaced.

For details on how to handle each part, product warranty, and disclaimer, please refer to the instruction manual.

[*] varies depending on the specifications and the part number of the manifold and unit.

Target product number example : PF3WB09BF-P720S-04-LT-M [*]

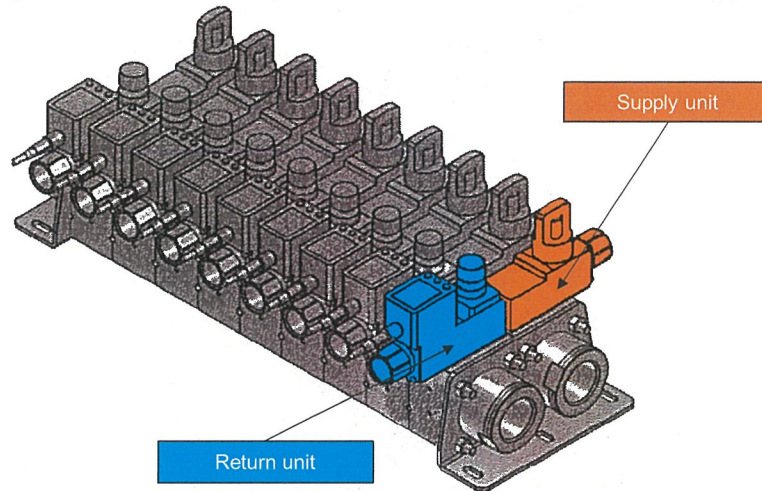


Fig 1. Manifold product appearance

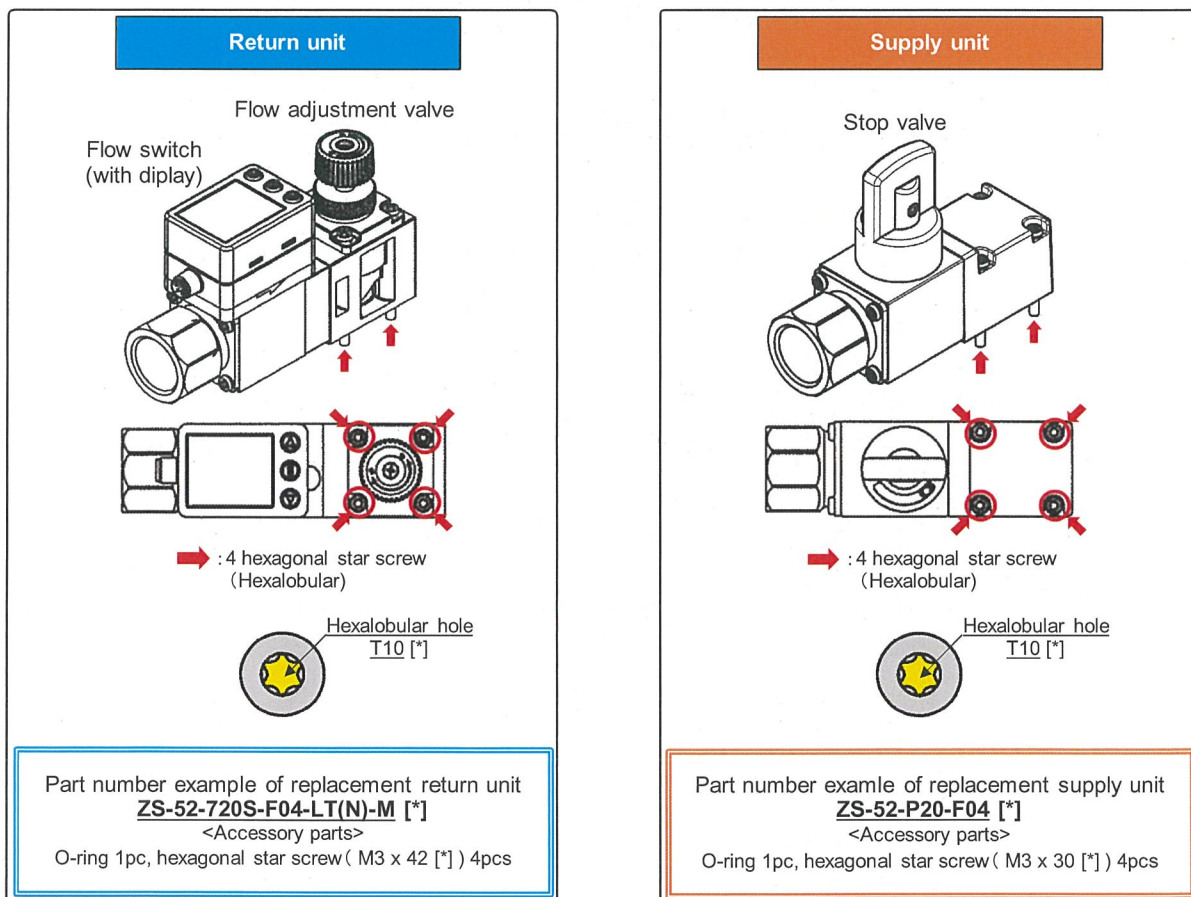


Fig 2. Supply / Return unit and replacement screw



【Replacement method and procedure】

※Do not use an electric screwdriver, as it may cause screw seizure.

Step 1 Be sure to drain water and residual pressure beforehand.
(Preparation)

Step 1 Loosen the 4 screws on the top of each unit and remove each unit and O-ring.
(Disassembly) Note) Be sure to remove the O-ring, as it may stick to the manifold base and remain.
Note) In the case of unit configuration : S/W, the handle may separate, so be sure to hold the valve body when removing it.

Step 2 Set the O-ring attached to each replacement unit in the O-ring groove on the manifold base, and set the replacement unit at the position where the O-ring fits.
(Reassembly) Note) Be careful when handling the O-ring as it may cause water leakage if it is assembled with dust or foreign matter attached.
Note) There is also an O-ring groove on the bottom of the valve body and the adapter of the replacement unit.

Step 3 Secure it to the manifold base with the four screws attached to each replacement unit. As for
(Reassembly) the screw tightening method, temporary tightening is performed in the order of 1 to 4 (with 3 or more screw peaks applied), and the tightening torque is **0.70 to 0.77 [N·m] [*]** in the same order of 1 to 4 and finally 1 is tightened again.
Note) After re-tightening, make sure that the screw head does not float.
Note) The screw length for the return unit is 42mm [*], and the screw length for the supply unit is 30mm [*].

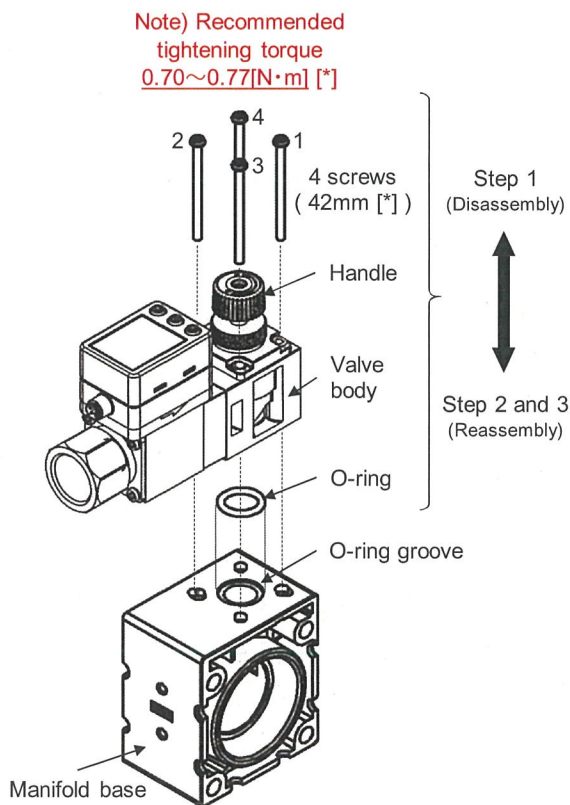


Fig 3. Replacement of return unit

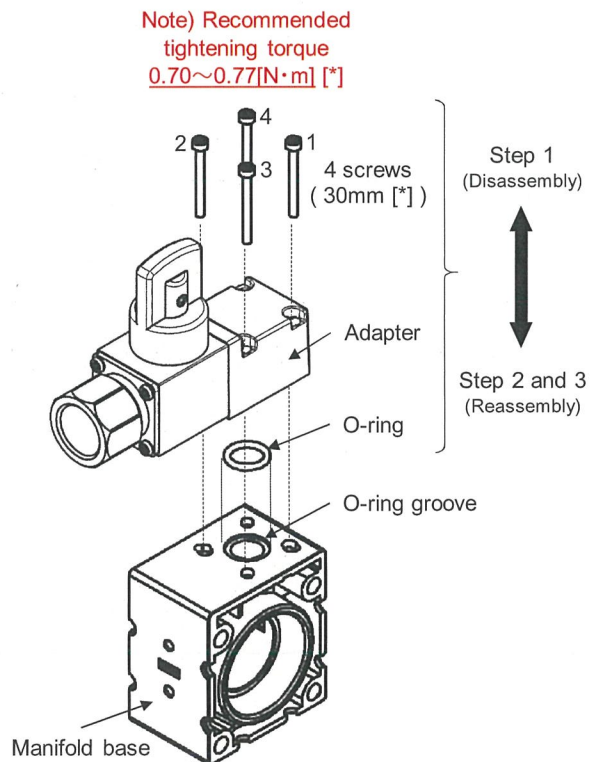


Fig 4. Replacement of supply unit

Step 4 Be sure to check that there is no water leakage before using.
(Confirmation)



- There are 4 types of replacement screw specifications depending on the "Flow range" and "Unit configuration". Please refer to Table 1.

example1) unit part number : ZS-52-P 04-03 ⇒ type: ① / screw: M3×30 (hexalobular hole: T10), torque: 0.70~0.77[N·m]

example2) unit part number : ZS-52-740 S-06-A-M ⇒ type: ④ / screw: M4×53 (hexalobular hole: T20), torque: 1.65~1.80[N·m]

- There are 4 types of screw mounting pitch depending on the "Flow range" and "Unit configuration". Please refer to Table 1.

Since the mounting pitch is different, it is not possible to replace the unit to change these types.

The following unit specifications cannot be changed and replaced.

● Flow range : Change of [4L/min, 16L/min] ⇔ [40L/min]

● Unit configuration : Change of [Nil, P] ⇔ [S, W]

example1) manifold product number : PF3WS03D-04-03 ⇒ replacement unit part number: ZS-52-04-03 / type: ①

***** Exchangeable

manifold product number : PF3WS03D-04-03 ⇒ specification change unit part number: ZS-52-S 04-03 / type: ②

***** Not exchangeable

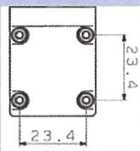
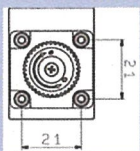
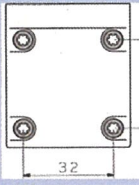

example2) manifold product number : PF3WR03D-540 W-04-1 ⇒ replacement unit part number: ZS-52-540 W-04-1 / type: ④

***** Exchangeable

manifold product number : PF3WR03D-540 W-04-1 ⇒ specification change unit part number: ZS-52-520 W-04-1 / type: ②

***** Not exchangeable

Table1 : Unit type depending on specifications
(Replacement screw specifications / Screw mounting pitch)

Unit type		①	②	③	④
Unit specifications	Flow range	04(4L/min) / 20(16L/min)		40(40L/min)	
	Unit configuration	Nil / P	S / W	Nil / P	S / W
Replacement screw specifications	Replacement screw	M3×30	M3×42	M4×35	M4×53
	Hexalobular hole	T10		T20	
	Recommended tightening torque	0.70~0.77[N·m]		1.65~1.80[N·m]	
Screw mounting pitch					

- A name plate is pasted to the replacement unit to identify the replacement part. Please refer to Fig. 5 for the pasting position.

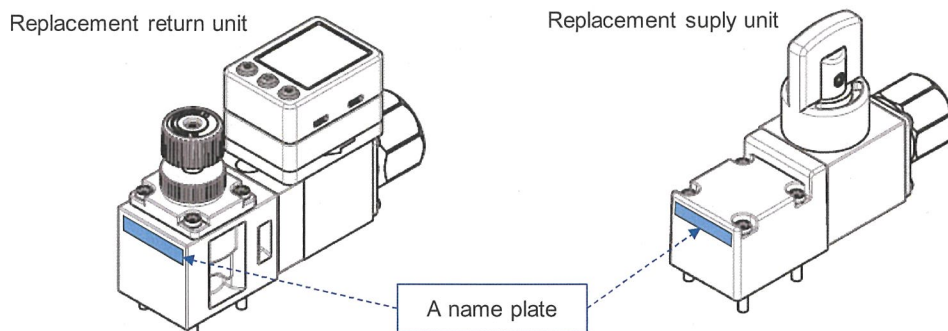


Fig 5. Replacement unit name plate pasting position



- The replacement return unit cannot be used for supply purposes because the flow switch has restrictions on the direction of fluid flow.
- It is recommended to replace the unit in the horizontal manifold mounting posture.
In the vertical mounting posture, the O-ring may fall during the replacement work.
Be careful not to forget to install the O-ring. Also, be sure to check that there is no water leakage before using.

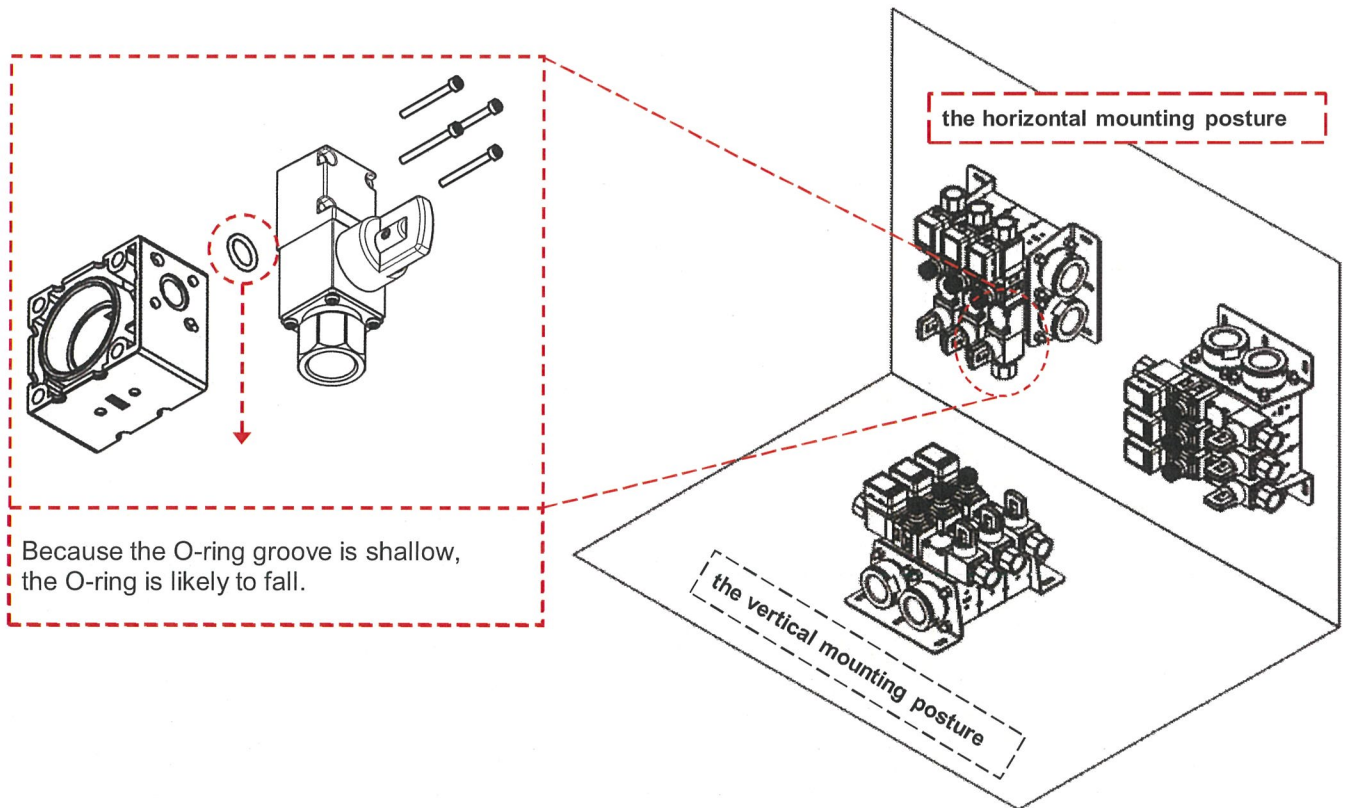


Fig 6. Fall of the O-ring in vertical manifold mounting posture

- Manifold for water Replacement unit can not be used for other products or applications.
Disassembly and reassembly for unit replacement, and disassembly use for other products and uses are all out of warranty.