SFP-560A3C SFP-560A3C-FA Maintenance Manual



296-1, Matsuhidai, Matsudo-Shi, Chiba 270-2214 Japan TEL: +81-47-388-6111 FAX: +81-47-388-4477

Safety Precautions

This manual shows the following symbols for proper and safety operation of SFP-560A3C / FA polishing machine and for prevention of damages to the polishing machine. Below explains meanings of each symbol. Please read and have your understanding and follow the instructions indicated by the markings.

G Improper handling with negligence of this precaution may result in death or serious injury.
Improper handling with negligence of this precaution may result in injury or physical damage.

Examples of Symbols



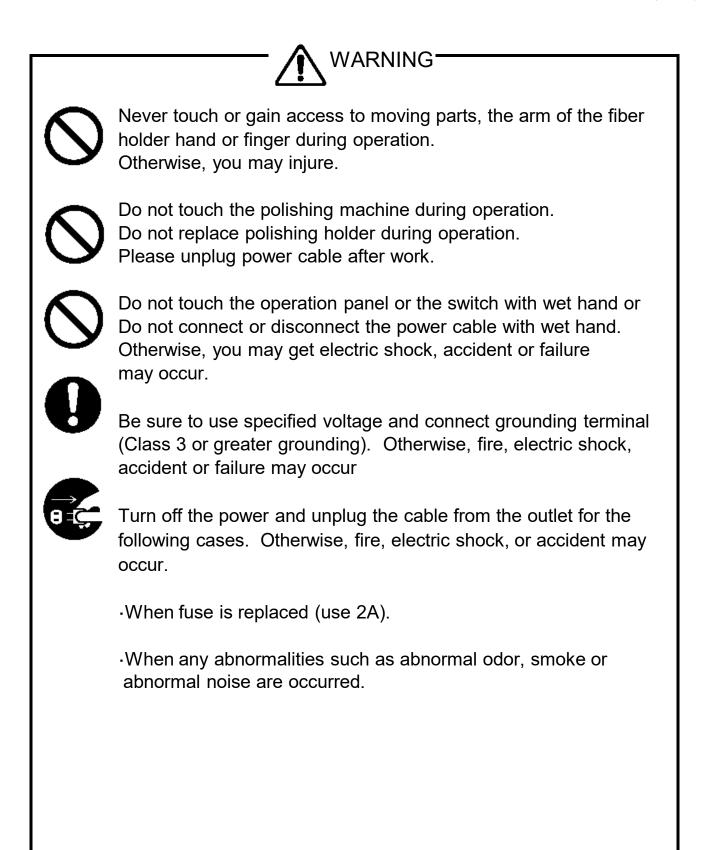
This symbol refers to any caution (including danger and warning). Example in the left shows "Warning or Precaution" for safety.



This symbol refers to any prohibition. Example in the left shows "No disassembly."



This symbol refers "Unplug the power cable from the outlet."





Do not touch Auto clamp when press Start Do not touch Auto clamp during operation. Do not remove cover during operation. Do not touch inside cover during operation.





Never perform the following actions. Otherwise, fire, electric shock, accident or failure may occur.

- \bigcirc
- Please wear proper uniform and safety shoes when you work
- •Please place the polishing machine on flat and rigid work table.
- •Do not place any object on the polishing machine
- Do not place or leave the polishing machine outdoor or at the place here the polishing machine is exposed to water.
- •Be careful not to fall the polishing machine in transport condition.
- •Do not apply shock or drop the polishing machine.
- •Do not place any objects on the power cable.
- •Do not twist or pull the cable strongly.
- •Do not operate the polishing machine in unmanned.
- •Turn off the switch when leaving from the polishing machine.
- •Keep away any flammable substances or explosives from the polishing machine.
- •Do not place any objects within 30cm from the cooling fan.
- Do not put anything inside the polishing machine. This may cause accident or failure.
- •To prevent corrosion, remove any liquid completely from the polishing machine and avoid using and keeping the polishing machine in humid condition.
- Do not blow air into the service trench. Water entering between the turntable, the support ring and the baseplate will cause serious damage to the polishing machine and require repair. Since there is no waterproof function due to the structure, wipe off the surrounding water with a waste cloth.
- Use compressed air that meets the requirements to the polishing machine. Check the operation manual for the required values.



Do not disassemble the polishing machine more than described in the manual.

Seikoh Giken does not assume any responsibility for products manufactured with the polishing machine.

Introduction

-Thank you for purchasing SFP-560A3C / FA Polishing Machine -

This manual covers maintenance procedures for the periodic inspection required for the Polishing Machine. At the periodic inspection or in the event of problems arising, read this manual and familiarize yourself with the machine before maintaining it. Make sure that power is off when performing inspections or maintenance on the machine.

The SFP-560A3C / FA has Auto clamp function, and the polishing holder is clamped automatically. This function offers extra convenience in operation but also requires extra safety precaution. Please be sure to keep hands off from the Auto clamp when press Start as described on the WARNING on Page 3. Touching the Auto clamp with hands or fingers when press Start and during polishing may result in serious injury. In case of emergency, press the Emergency button.

About maintenance

This manual covers maintenance of the SFP-560A3C / FA when used in accordance with SFP-560A3C / FA Polishing Machine Operating Manual. Read the Operating Manual and the Polishing Process Manual along with this manual also. Please contact us or our authorized agents if you have any question or problem not covered by this manual.

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1. Inspection

1.1 Performance inspection

For your first time of use after purchase or any time during your use, please conduct the following checking procedures when problem arising.

The checking procedure also covers inspection of electric parts.

- Connection of power cable
 Please be sure SFP-560A3C / FA's electric specification complies with the local power source
- Power switch ON

When you turn on the power, please be sure touch panel beeps and cooling fan starts working

Touch panel

Please be sure the touch panel displays clearly and functions without any problems



- During polishing
 - Please be sure that the turntable revolves and rotates
 - Please be sure emergency stop works
 - Please be sure cooling fan operates
 - Please be sure the Auto clamp functions
- Power switch OFF
 - Touch panel power becomes also off
 - Cooling fan stops running?

2. Periodic Inspection and Maintenance

Critical points in a principle of polishing with SFP-560A3C / FA polishing machine are followings. Thus periodic maintenance is designed to focus on these points.

- 1 Turntable's up and down motion
- 2 Polishing track of ferrule by revolution and rotation of the turntable
- 3 Pressure control by distance between the clamp posts on the four corners& the turntable and ferrule protrusion length of ferrules from the bottom surface of polishing holder

Read and familiarize with the followings before inspection. Please use Seikoh Giken grease (P/N: FP-GS) for all SFP series polishing machines wherever grease is necessary to use.

On the touch panel of SFP-560A3C / FA, after a certain number of hours passed, "Maintenance" screen appears during operation of machine. Then, press the maintenance button or open "Main Menu" screen. Different inspection / maintenance will be required according to the "Maintenance" screen. Confirm the instructions in the "Maintenance" screen appeared and perform the inspection / maintenance of the polishing machine.



!!! CAUTION !!!

Make sure the power cable is unplugged while inspection / maintenance.

- 2-1 Grease check in contact area and drive unit (Once a month or every 100 driving hours) Remove the Turntable and check the drive unit if grease is properly applied. See Detail 2-1.
- 2-2: Grease check in the teeth of 80T gear

(Once every 6 months or 500 driving hours) Apply the grease (FP-GS) on teeth of the 80Tgear and contacting area between the 80T gear and the Baseplate. See Detail 2-2.

2-3: Grease check in the Auto clamp unit (Once every 6 months or 500 driving hours) Apply the grease (FP-GS) on connecting and moving area of the Auto clam unit See Detail 2-3

2-4: Height check between the Clamping posts and the Turntable (Once every 6 months or 500 driving hours)
*The space between each Clamping post and the Turntable: 5.5+/-0.02mm See Detail 2-4.

2-5: Fan filter cleaning

(Once every 6 months or 1000-2000 polishing hours)Check cleanliness of the Fan filterSee Detail 2-5

2-6: Battery replacement for the PLC

When message for the battery replacement is appeared on the Touch panel,please follow instruction and replace.See Detail 2-6

2-7: Drain of the air regulator

(Once a week) Check for the water and exhaust if water is accumulated. See Detail 2-7



2-8: Water resistance rubber ring

(Once a year)

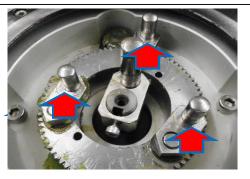
Check the water resistance rubber ring in the service trench if the rubber ring is damaged, See Detail 2-8

Detail 2-1: Grease check in contact area and drive unit

Grease check in the contact area and drive unit– once a month or every 100 driving hours. The Turntable can be removed as it is lifted up. Next, remove, the Position plate, the Eccentric support plate and the Resin washers on the 80T gear. And then, clean up the removed parts. Next, apply grease (P/N: FP-GS) as per the following instruction.

Apply the grease on insertion holes of the Eccentric support plate and contacting areas of the Eccentric support plate.





And then, place the resin washers (3pcs) and also apply the grease on the contacting areas of the washers and place the Position plate.





Apply the grease on the top protruded area of the Support ring and tip of the Eccentric support plate and drive plate (4 areas). After the greasing, place the Turntable and rotate it manually by hand then the grease is also spread and applied on the back side of the Turntable automatically.



Detail 2-2: Grease check in the teeth of 80T gear

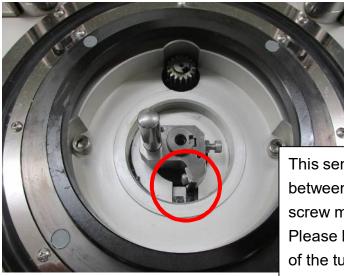
Grease check in the teeth of the 80T gear– once every 6 months or 500 driving hours. Remove the 90T gear as follows.



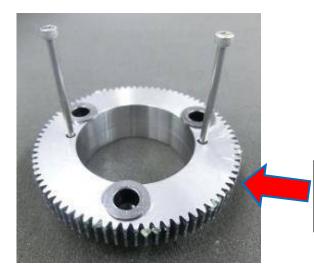
Evenly tighten 2pcs of the Maintenance tool of the M3 socket head screw to the 80T gear. As the screws are tighten, the gear is lifted up and can be removed.

For SFP-560A3C-FA, which equipped with the homing function, this work must be done after returning the turntable to the home position.

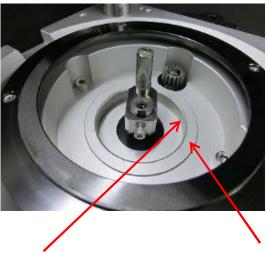
If work is performed without the homing, the screw used to remove the 80T gear may interfere with the sensor and damage it.



This sensor is used for homing. Contact between this sensor and the removal screw may cause the sensor malfunction. Please be sure to perform the origin return of the turntable before starting work.



Apply the grease in the teeth of the 80T gear.



Apply the grease on sidewall and upper surface of the baseplate where the 80T gear contacts with.

After applying the grease, place the 80T gear into the Baseplate by mating with the 16Tgear.

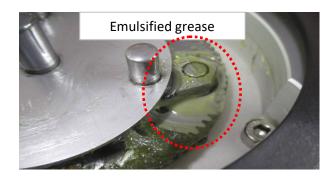
Do not apply the grease other than the Sidewall and the Upper surface.

Sidewall

Upper surface

Grease condition check

If the grease is emulsified, moisture may have entered the grease. In addition, water may have entered between the Turntable, Support ring and Baseplate.



Prohibited Action

- Blowing compressed air to the service trench is prohibited even the water resistance rubber ring is installed.
- Because of the structure, there is no waterproof function around the service trench, so wipe off the surrounding water with a waste cloth.
- · Although guards are installed inside, they do not completely protect against water, so never use





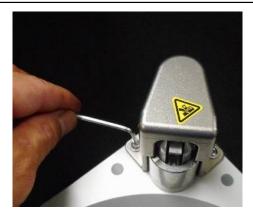
If the above becomes worse, the spline shaft will corrode and the polisher will stop working



Detail 2-3: Grease check in the Auto clamp unit

1) Prepare a hex wrench, a small flat-blade screwdriver, radio pliers, and 12mm and 17mm wrenches.

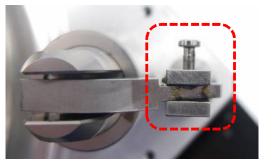
2) Remove the Auto clamp cover to expose the clamping unit.







3) Use a flat-blade screwdriver to remove the E-ring attached to the knuckle joint; the E-ring should be facing down for removal as it may scatter and be lost.



4) After removing the E-ring, remove the fulcrum pin for the knuckle joint. 5) Use the small flat head screw driver to remove the E-ring fixing the fulcrum pin for the clamper. Please be sure to remove the E-ring toward bottom so that you can prevent scattering the E-ring.

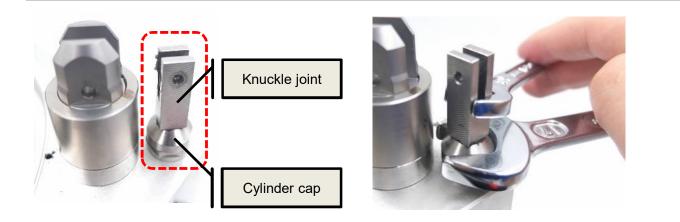




6) After the removal of the E-ring, you can pull out the fulcrum pin and the clamper can be removed.

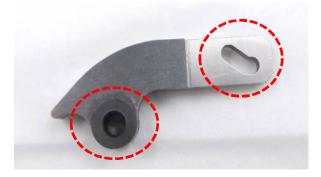


7) If the knuckle joint is loose, use a wrench to retighten it. Tool size for the cylinder cap at the bottom of the knuckle joint is 17 mm and the knuckle joint is 12 mm. After turning the cylinder cap to the lower part of the screw, fasten both.



8) Clean the clamper base, the clamper and the knuckle joint with tissue, etc. Then apply some grease to the contacting area of the clamper.





9) Reassemble after greasing is completed. Place the clamper back on the clamper base. Wipe off any excess grease.

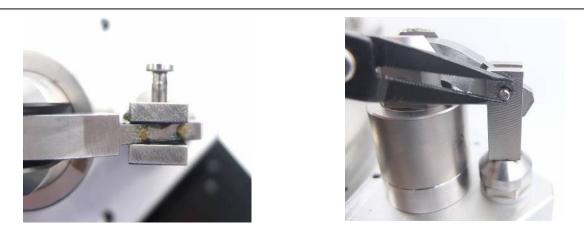


10) Reinsert the fulcrum pin to the clamper base and secure it with the E-ring using radio pliers.





11) Re-insert the fulcrum pin to the knuckle joint side, and secure the pin with the E-ring using radio pliers.

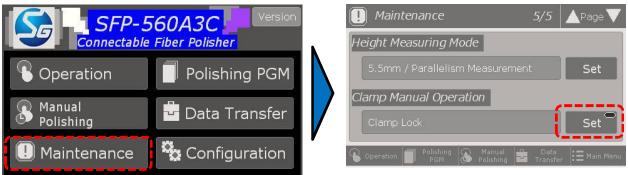


12) After the Auto clamp unit maintenance is done, operate the clamp manually to check if the clamp moves smoothly. In order to operate the clamp manually, log in as administrator at fist and then it permits to operate manually under the Maintenance menu. Pressing Set moves the auto clamp cylinder up and down. Below shows detailed instruction photos.

Log in as Administrator

SFP-5	60A3C	с <mark>р</mark> (Configuration	1/4	
Connectable	Fiber Polisher	Secu	rity		
Operation	Polishing PGM	St	atus	L	.ogged Off
Manual Polishing	Data Transfer		dministrator	Log On	Log Off
I Maintenance	Configuration	↓	ration Polishing (Manual De Polishing 🖬 Tran	ata Isfer 🔚 Main Menu

Operates the clamp manually for the checking (long press)





12) Put back the Auto clamp covers with hex screw after the checking is done.

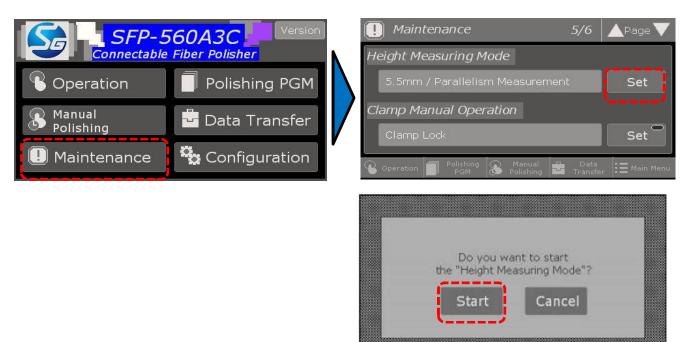
Detail 2-4: Height check

Dimension check for the height between the Clamp rod and the Turntable

- Every 6 months or 500 driving hours

To start the height check, first of all, please engage the Turntable in the Height measurement mode as instructed below.

This feature raise the Turntable for the 5.5mm height measurement position

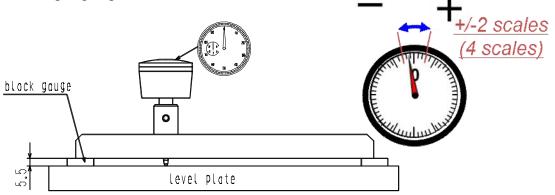


Tool

We provide the height gauge P/N "FP-HG55+BG (THM-550)" for this inspection purpose as the optional tool.

Reference

Prepare the height gauge with 5.5mm block gauge as shown below and set the scale of the height gauge to ZERO.

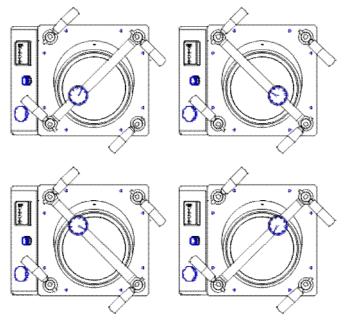


Measurement

Place the gauge on the clamping posts diagonally and check each four posts.

Make sure that the space on each point is within the specification of 5.50mm+/-0.02mm. At the scale indication, the specification value is 0 (Zero)+/-2.

If the measurement result is out of this specification at the scale indication, adjust the spacer in accordance with the followings.



Adjustment

If the space between the Clamping posts and the Turntable is out of the specification value, adjust Spacers in accordance with the following procedure.



1) Loosen the set screw and remove the Auto clamp cover

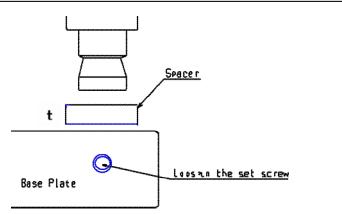


2) Use a flathead screwdriver to remove theE-ring and the fulcrum pin



3) Once the E-ring is removed, the knuckle joint and the clamper are disassembled. Next, loosen the hex socket screws on the side of the baseplate and remove the clamp post, and remove the spacer as well.

4) Measure the thickness of the spacer, t.





Calculate the required thickness of the spacer, with the former measurement result of the spacer, t, in accordance with the following expression.

Required thickness of the spacer =

Measured value (space between the Turntable and the Camping post)

+ the thickness of the present spacer, t

Example:

Space between the turntable and clamp rod: 4-scales to minus (-0.04mm) and the thickness of the present spacer, t: 9.00mm, then Required thickness of the spacer = (-0.04mm) + 9.00mm = 8.96mm Repeat this procedure for all four clamping posts. When you order the spacer, please designate the thickness of spacer.

Detail 2-5: Fan filter cleaning

(Every six months or 1,000 - 2,000 driving hours, check filter cleanliness)

Remove the front guard from the notches of the four sides and then remove a media filter inside. Please do not stretch the media filter when you wash it or it may be torn up. Also, do not set the media filter when it is wet. It may cause damage to the inner circuit.

The media filter loses its ability to collect dust with long-term use. Thus, we recommend changing the media filter once a year.

Front guard attached

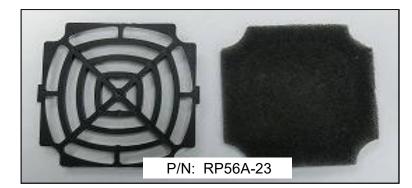


The guard removed



The filter removed







No use of the filter introduces contaminations in the air into the housing of the polishing machine that leads to malfunction of the inside mechanical units.

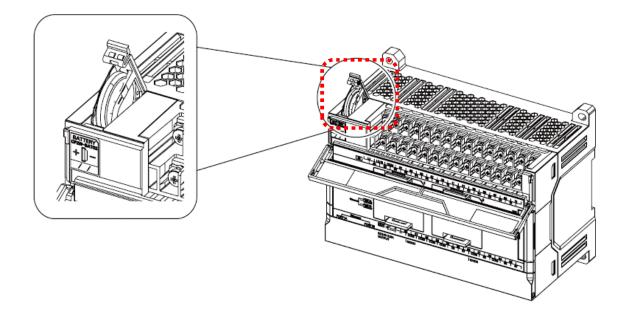
Detail 2-6 Battery replacement for PLC

When the battery become time for replacement, the following message is appeared.



We recommend battery is sourced locally. PLC battery : OMRON P/N: CP2W-BAT02 or battery type: CR2032

Also, please be noted, replacement shall be done within one week after the message AL2 "Low battery" is appeared. For replacement work, the polishing machine shall be turned off power for more than 30 minutes before replacement work starts. But during the work, power must be off and power cable must be unplugged during the replacement work. The replacement work shall be done within 5 minutes. Below indicates battery location in PLC.



Detail 2-7: Drain of the air regulator

Check the water in the drain once a week before starting, and if the water is confirmed, discharge the water and also check compressed air quality

If the water is confirmed in the drain, please immediately check the quality of your compressed air in use. For the required compressed air specification, refer the Operation Manual (P11). Overfilling the water will cause it to enter the polishing machine and cause malfunction. If damaged, the polishing machine will be in malfunction or stop working. The cost of repairs, round-trip fares, loaner machine, etc. required for such repairs will not be covered by the warranty and will be paid by the customer.







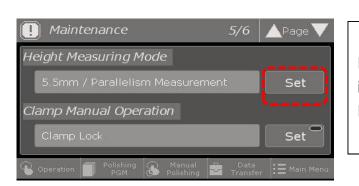
Gradually loosen the screw to discharge. Please note that it may come out vigorously.



Detail 2-8: Water resistance rubber ring

Once a year, check the condition of the water resistance rubber ring on the service trench if it is damaged or torn. If damaged or torn, please replace the rubber ring as per the following instruction.





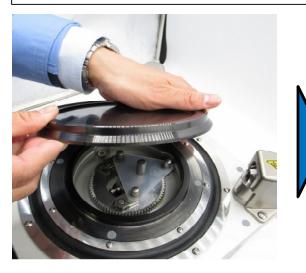
Water resistance rubber ring

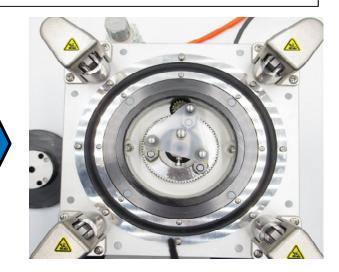
1) Raise the Turntable position by the Height Measurement Mode as instructed on the Detail 2-4 of the Height Measurement





2) Remove the Turntable

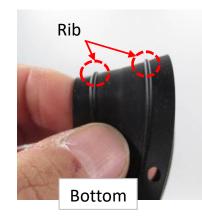






6) Prepare a replacement Rubber ring (P/N: RP55A2-01). The Rubber ring has direction; a side with ribs (protrusions) goes bottom side.

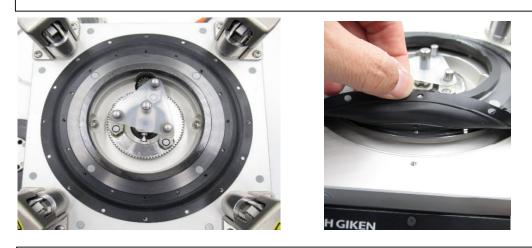




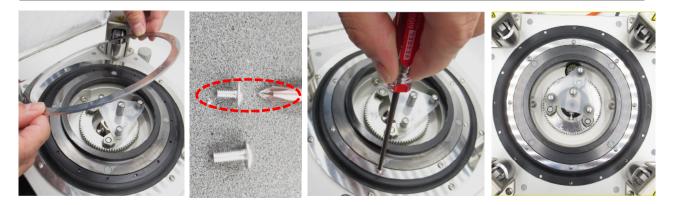


7) Place the Rubber ring and make sure the side with ribs goes bottom side and each rib is sit into the groove on the Baseplate and the Support ring.

The rubber ring has 16 screw holes but use only 8 of them. Please be sure 8 screw holes in the Rubber ring are aligned with the screw holes in the Baseplate and the Support ring. The Baseplate and Support ring have 8 screw holes each.

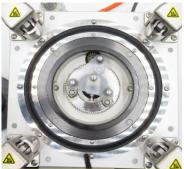


8) Place the I/D setting ring on the Support ring and screw 8pcs of M2.5 x 5 Truss Head Phillips screws (shorter one) in diagonally opposite manner. Excessive tightening torque may damage the screw and the screw hole. Please tighten within the torque range of 0.3 to 0.5N•m



9) Place the O/D setting ring on the Baseplate and screw 8pcs of M3 x 8 Truss Head Phillips screws (longer) in diagonally opposite manner. Excessive tightening torque may damage the screw and the screw hole. Please tighten within the torque range of 0.3 to 0.5N•m





3. Treatment for Unusual Conditions

CAUTION

Make sure the power cable is unplugged during inspection and maintenance.

If the Turntable doesn't move smoothly during operation, please check the following points. The turntable and the position plate can be removed as they are lifted up.

3-1 Wear of Knock pin for Eccentric drive plate

When outer diameter of the Knock pin for the Eccentric drive plate becomes 9.9mm or less, then the Eccentric drive plate shall be replaced with new one.

3-2 Wear of Knock pin for Eccentric support plate

When outer diameter of the Knock pin for eccentric support plate becomes 7.9mm or less, then the Eccentric support plate shall be replaced with new one.

3-3 Loose Eccentric drive plate

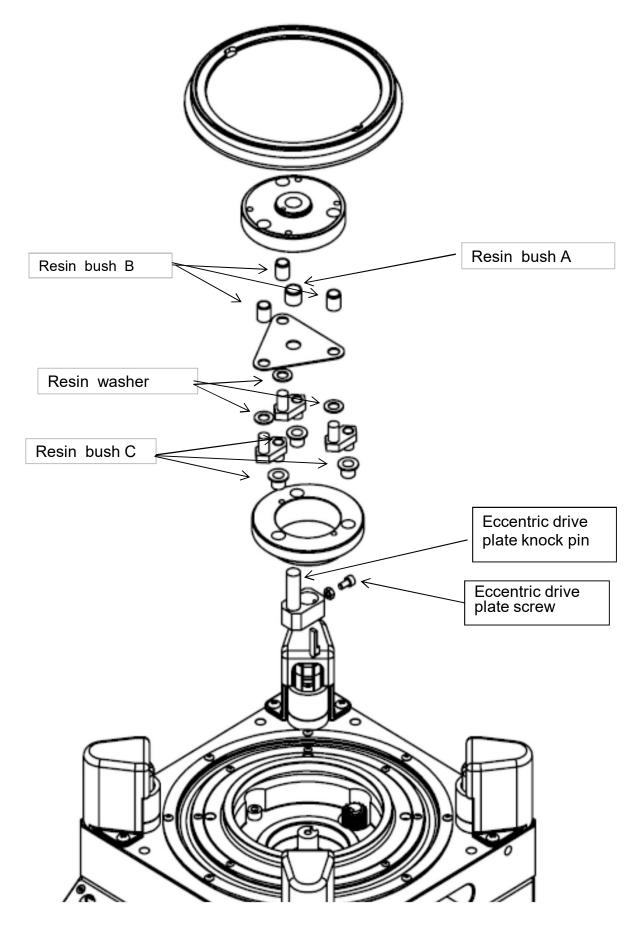
When Eccentric drive plate screw is loose, tighten the screw with the hex wrench (3mm). Also, be sure that the surface of the Eccentric drive plate shall be 3 to 4mm lower than the top of gear head shaft.

3-4 Replacement of Resin Bushings for preventive maintenance In order to keep the drive unit in good operation, we recommend replacing the following parts in every 500 driving hours. See Fig 1

Resin bush A	(1pc / machine)
Resin bush B	(3pcs / machine)
Resin washer	(3pcs / machine)
Resin bush C	(3pcs / machine)

Also Note that the eccentric drive plate should be re-tighten during the same maintenance period (every 500 hours of operation).

Figure 1:



4 Pressure Measurement and Auto-Calibration for Pressure Unit

The Turntable revolves and rotates while keeping parallelism against polishing holder. For proper turntable operation, maintaining good parallelism and pressure force are important. For the parallelism, check heights between the Clamp rod and the Turntable, which is explained on the Section 2-3. For the pressure force check and calibration, we use the Pressure calibration jig (P/N : FP-PG56) as shown below. The Pressure calibration jig is equipped with a load cell. During measurements, the jig records the polishing machine's pressure force intended to apply and actual pressure values measured by the load cell and then compare.





- 4-1 Purpose of the Pressure calibration jig
 - 1 To measure pressure force from the turntable with load cell to verify the turntable's polishing pressure is accurate.
 - 2 To calibrate the turntable pressure force to correct pressure force.

4-2 How to set up the Pressure calibration jig

- 1 When the power is on, place the Pressure calibration jig onto the polishing machine and clamp all 4 clamping posts.
- 2 Connect the connector to the inlet located back side of SFP-560A3C / FA as shown below.



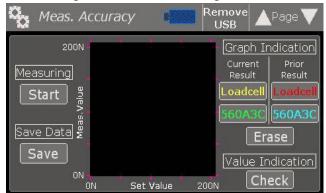
3 As soon as the connector is connected to the inlet, Auto Calibration menu is automatically booted up on the touch panel.

o Calibratio			
	lig Coefficier	t <u>3014</u>	
	Lower	Upper	Set
EA-DA	1500	5500	
LC-AD	18.6	184.0	
EA-AD	1475	5445	

4 Then, please enter the Jig Coefficient value indicated on the top box of the Pressure calibration jig. Jig coefficient is peculiar for each Pressure calibration jig. Now setup of the Pressure calibration jig is done.

4-3 How to measure

1 Press Page down arrow and go to the Measurement page.



2 Press Start to start measurements of the pressure range between 10N to 200N (20 measurements in total).

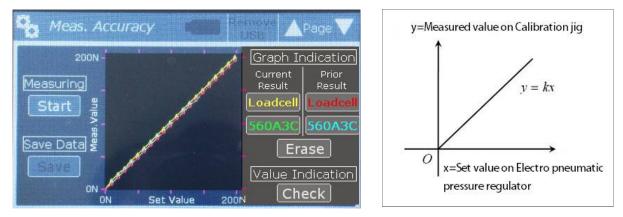


continue to the next page

3 After the measurements are done, you can compare results between the Pressure measurement jig (load cell) and SFP-560A3C / FA and also between present measurement results and previous measurement results. You can see the results both on graph and table. Below is results shown by the graph.

Color coding:

Current Pressure measurement jig (load cell) result:YellowCurrent SFP-560A3C / FA pressure value results:GreenPrevious Pressure measurement jig (load cell) result:RedPrevious SFP-560A3C / FA pressure value results:Blue



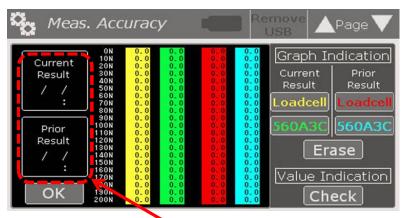
X-axis = SFP-560A3C / FA's input pressure values

Y-axis = Pressure measurement jig's measured values

When all 4 colors of the lines are on the same trace, then the polisher's

pressure control is correct

By pressing Check, you can also confirm the each measurement results on the table.



Indicate date of current and previous measurements

If the measured values between load cell and polisher are 1.5 N apart in the range of 100 N or less, please perform the calibration described in the next section.

4-4 Calibration mode

Please go back to the previous page and press Set to start calibration.



The calibration is done in 1 minute.

After the calibration is done, you can go to the measurement mode and verify.

After finish using the jig, pull out the connector and the monitor goes back to normal operation mode.

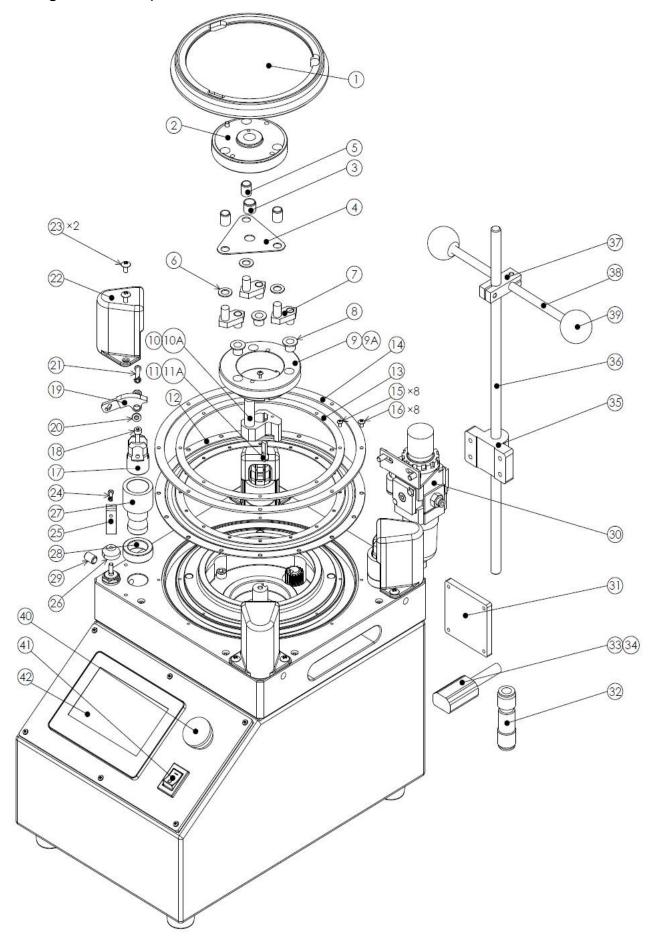
5. Mechanical Structure

5-1 Parts List

	Part No.	Description	Qty/set
1	RP56A3C-01	Turntable(Three-groove)	1
2	RP56A-02	Bush holder	1
3	RP56A-03	Resin bush A	1
4	RP55C-04	Position plate	1
5	RP56A-05	Resin bush B	3
6	RP55C-06	Resin washer	3
7	RP56A-07	Eccentric support plate (including knock pin)	3
8	RP56A-08	Resin bush C	3
9	RP56A-09	80T gear	1
9A	RP56A3C-02	80T gear (for A3C-FA)	1
10	RP56A-10	Eccentric drive plate (including knock pin)	1
10A	RP56A3C-03	Eccentric drive plate (including knock pin) for A3C-FA	1
11	RP56A-25	Key for the Eccentric drive plate	1
11A	RP56A3C-08	Key for the Eccentric drive plate for A3C-FA	1
12	RP56A2-01	Water resistance rubber ring	1
13	RP56A2-02	I.D setting ring (including M2.5 x 5 screw x 8pcs)	1
14	RP56A2-03	O.D setting ring (including M3 x 8 screw x 8pcs)	1
15	RP56A2-04	M2.5 x 5 truss head Phillips screw	8
16	RP56A2-05	M3 x 8 truss head Phillips screw	8
17	RP56A2C-01	Clamper base	4
18	RP56A2C-02	M4 x 12 set screw for the Clamper base	4
19	RP56A2C-04	Clamper	4
20	RP56A2C-05	Resin washer for the Clamper	8
21	RP56A2C-06	Fulcrum pin for clamper base (including E-ring x 1pc per pin)	4
22	RP56A2C-07	Auto clamp cover (including screws)	4
23	RP56A2C-08	M4 x 8 truss head Phillips screw	8
24	RP56A3C-04	Fulcrum pin for Knuckle joint (including E-ring x 1pc per pin)	4
25	RP56A3C-05	Knuckle joint	4
26	RP56A3C-06	Cylinder cap	4
27	RP55C-11	Clamp rod	4
28	RP56A-21	Adjustment spacer	4
29	RP55C-57	M8-L13.2 hex socket set screw (ball type)	4

	Part No.	Description	Qty/set
30	RP56A-22	Air regulator (including screws)	1
31	RP56A-23	Media filter	1
32	RP56A-24	Check valve (air backflow prevention)	1
33	RP55-30	Power cable	1
34	RP55-56	2A amp fuse	1
35	RP55C-36	Cable rod stand (M4-L15 hex socket head screw)	1
36	RP55C-37	Cable support rod A	1
37	RP55C-38	Strut clamp	1
38	RP55C-39	Cable support rod B	1
39	RP55C-40	Cable hook	2
40	RP55C-31	Emergency stop switch	1
41	RP56A-32	Power switch	1
42	RP56A3C-07	Touch panel of Ethernet type	1

5-2 Figure of Components



6. Recommended Packing Procedure to Return SFP-560A Series Polisher

Please use the original polisher box and upper and lower inner cushions to minimize damage to the polisher during return shipping.

6-1 Original box composing parts Inner bottom cushion Inner top cushion Inner carton box Outer box (common) (for Auto clamp type) (common) (common) + or Double carton type Thin layer but Inner top cushion water protective thick box (for Manual clamp type)

6-2 Packing procedure

- 1) Use turntable tie strap and protect the turntable (IMPORTANT)
- The turntable should be positioned in rear side for better fitting with the Top cushion 2) Place the Inner bottom cushion into the Inner carton box



4) Place the Inner top cushion on the polishing machine and seal the Inner carton box







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