

WAFER® UV System Maintenance & Spares

SAFTEY: Ensure system is electrically isolated and chamber is fully drained before any maintenance work is carried out.

Maintenance Schedule

Maintenance Log

Whenever maintenance work is carried out on the UV system, particularly with reference to lamp changes and cleaning / replacing the quartz, a record should be kept of the work carried out and the lamp run hours noted. This log should be used to monitor general lamp life and to develop accurate frequencies for cleaning and replacing the quartz components.

A maintenance log sheet can be found in the Unit Data-book.

Performance Monitoring

Taking samples from the sample points on the inlet and outlet legs of the UV chamber can be used to monitor the performance of the system. Care should be taken when sampling not to contaminate the sample itself. Poor performance test results can often be traced back to poor sampling techniques.

UV Lamp

Lamp life expectancy is based on continuous use before the output drops to the low UV output threshold level, making replacement necessary. Frequent stop / start operation will reduce lamp life. Please refer to the system Data-book for typical life expectancy of Lamps.

Quartz Cleaning and Replacement

The quartz sleeve should be removed and cleaned at a regular intervals. Please refer to the system Data-book for typical life expectancy of Quartz. The wiper (if fitted) cleaning frequency should be increased if there are excessive deposits on the quartz sleeve or decreased if the sleeve remains very clean.

A change in water quality may necessitate a change in the wiper (if fitted) cleaning frequencies. The quartz sleeve should be removed and cleaned in a soap and water solution. Heavier or stubborn deposits can be removed by soaking in a 5% solution of citric acid or wiping with household vinegar. To remove fingerprints from the quartz sleeve, use surgical spirit and a lint free cloth. Please refer to the system Data-book for typical life expectancy of Quartz.

Seals

It is good practice to replace the seals whenever the quartz sleeve is removed from the chamber.

Control panel

Commissioning often takes place in a dusty environment. The inlet filter mat should be cleaned shortly after commissioning and at regular intervals depending on the cleanliness of the air.

Twistlok System Maintenance

UV Lamp Maintenance

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.



UV Lamp Extraction

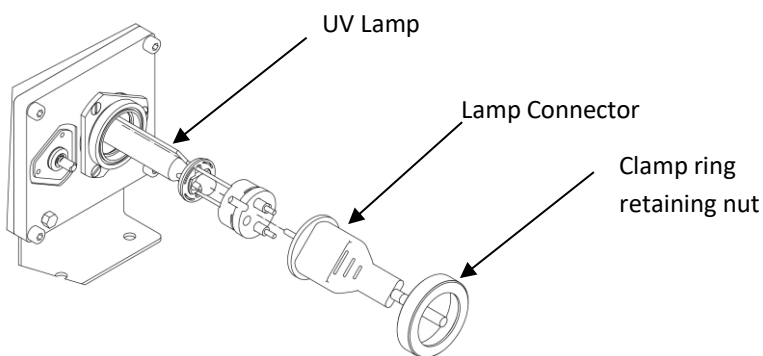
1	Unscrew the clamp ring retaining nut locking the Moulded Twistlok Lamp Connector in place and remove
2	Carefully disconnect the lamp connector from the lamp and remove
3	Twist the lamp until unlocked and carefully extract from the quartz keeping the lamp parallel to the quartz sleeve at all times to avoid damage

UV Lamp Installation

Before inserting a new lamp, ensure all components are clean and dry. Check that all components are mechanically sound and assembled correctly.

Note: Please ensure that no dirt, debris or fingerprints get onto the lamp surface as this will reduce the lamp life

1	Carefully insert the lamp into the quartz sleeve, keeping it parallel with the quartz to avoid damage
2	Twist lamp to lock in place, taking care to ensure the return rods are not pointing towards the UV sensor
3	Carefully connect the lamp connector ensuring that the locking pin is located correctly
4	Fasten the clamp ring retaining nut to lock the moulded Twistlok lamp connector in place
5	Ensure the Lamp hours have been reset via the control panel (see Control Operation section for more details)



The installation of the updated Wafer™ System lamps is orientation sensitive. The points of the triangular lamp cap must line up with the gaps between the internal tabs on the clamp ring, and the lamp should be left with the return rod facing down. See image below for details:



Quartz Sleeve Maintenance

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.

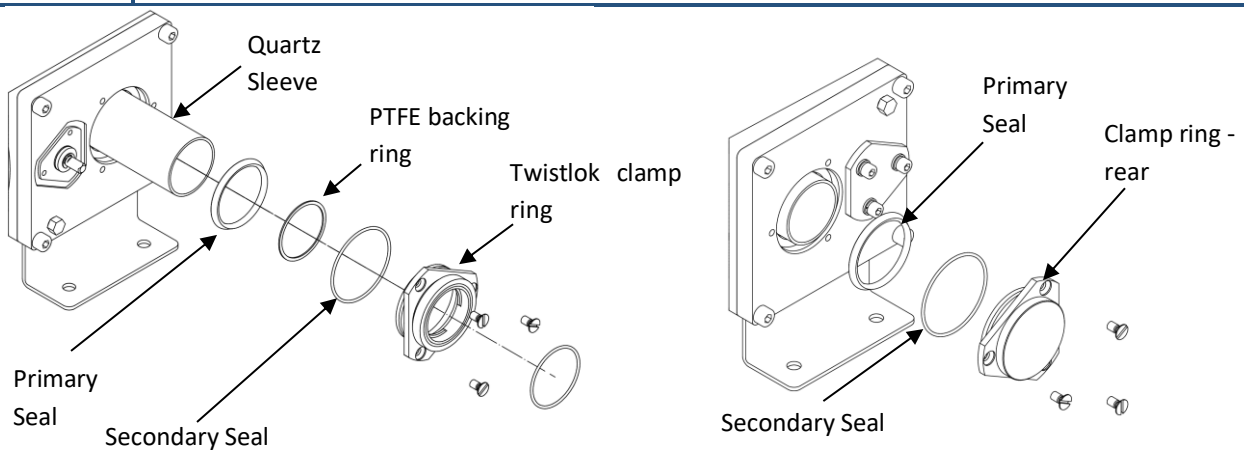


Quartz Sleeve Extraction

1	Follow the UV Lamp Extraction procedure detailed in the previous subsection
2	Remove the clamp ring screws keeping one hand pushing on to the clamp ring (screwed). Carefully remove the clamp ring (screwed) and PTFE backing ring. If the clamp ring seems tightly in place this will be the secondary seal doing its job and this is normal. Gentle twisting of the Twistlok clamp ring should ease extraction.
3	Remove the primary 'O' ring seal
Repeat steps 2 & 3 on the other side of the chamber with the clamp ring – rear.	
Notes: There is no PTFE backing ring with the clamp ring - rear	
5	Carefully remove the quartz sleeve keeping it parallel to avoid damage

Quartz Sleeve Installation

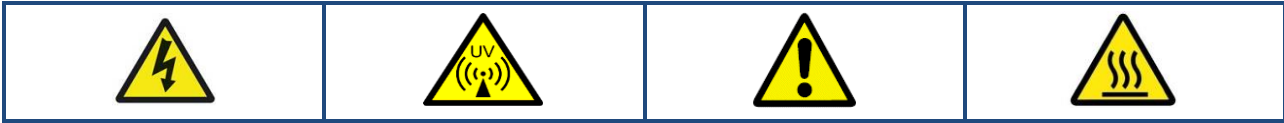
1	Carefully slide the new/cleaned quartz sleeve into the hole in the end flange keeping it parallel so it locates in the cup at the opposite end of the chamber. If an automatic wiping system is installed, ensure the sleeve is gently guided through the wiper ring (this can be aided by applying a little water onto the end of the quartz)
2	Place the primary 'O' ring seal over the quartz sleeve on the rear side of the chamber and locate into the 'O' ring groove. Replace the secondary seal around the clamp ring - rear
3	Place clamp ring - rear onto the end of the sleeve. Apply some pressure on the clamp ring to force it toward the flange. Fasten with the screws finger tight initially. Tighten the screws in a radial pattern. Do not over tighten. Ensure the seal does not leak.
Repeat steps 2 & 3 on the other side of the chamber with the Twistlok clamp ring	
4	Follow the UV Lamp Installation procedure detailed in the previous subsection



UV Sensor Maintenance

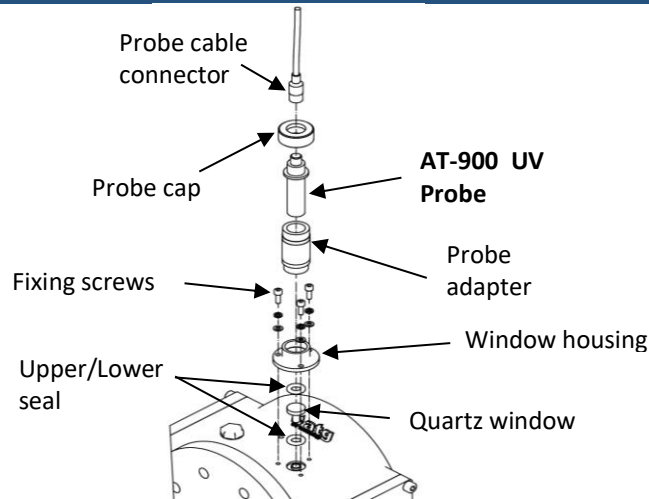
UV Sensor Window Housing Maintenance

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.



UV Sensor Housing Removal		
	AT-463 UV Probe Installed	AT-900 UV Probe Installed
1	Unscrew UV probe cable connector	
2	Unscrew UV probe and remove.	Unscrew UV probe adapter and remove the probe. Unscrew the UV Probe Housing from the window housing.
3	Unscrew the three screws and remove the window housing.	
4	Remove the upper window seal and carefully extract the window. If the window does not easily come out gently twist the window to break the lower seal. Remove the lower O' ring seal.	

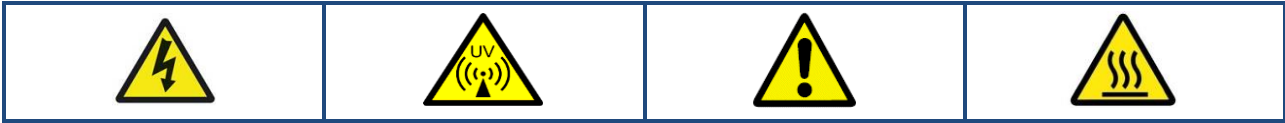
UV Sensor Housing Installation	
AT-900 UV Probe Installed	
Before inserting a new/cleaned validated sensor quartz window, ensure all components are clean and dry. Ensure that no dirt or debris gets onto the UV sensor or quartz window as this may affect readings.	
1	Insert the lower 'O' ring seal. Carefully insert the new quartz window. Insert the upper 'O' ring seal.
2	Replace the window housing, ensuring that the seal is correctly positioned. Install the screws only finger tight initially. Tighten the screws in a radial pattern, each one a quarter turn at a time until tight.
3	Screw the UV Probe Housing onto the window housing. Insert the UV probe and screw the UV adapter to secure the UV probe
4	Connect the UV probe lead and screw down to fasten.



UV Sensor Maintenance

AT 900 Validated Sensor Housing Maintenance

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.



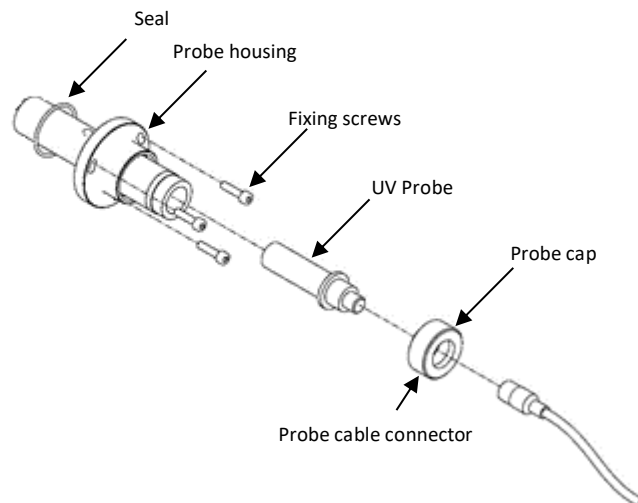
UV Sensor Housing Removal

1	Unscrew UV probe cable connector
2	Unscrew the UV probe cap and remove the UV probe from the housing
3	Unscrew the 3 fixing screws
4	Remove the UV Probe Housing

UV Sensor Housing Installation

Before inserting a new/cleaned validated sensor housing, ensure all components are clean and dry. Ensure that no dirt or debris gets into the UV Sensor quartz thimble or probe housing as this may affect readings.

1	Insert the UV Probe housing, ensuring that the fixing screw holes are inline.
2	Install fixing screws
3	Insert the UV Probe back into the housing, and replace the cap
4	Screw the UV probe cable connector to the UV probe



Automatic Wiper System Maintenance

Wiper Cover and Motor Maintenance

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.

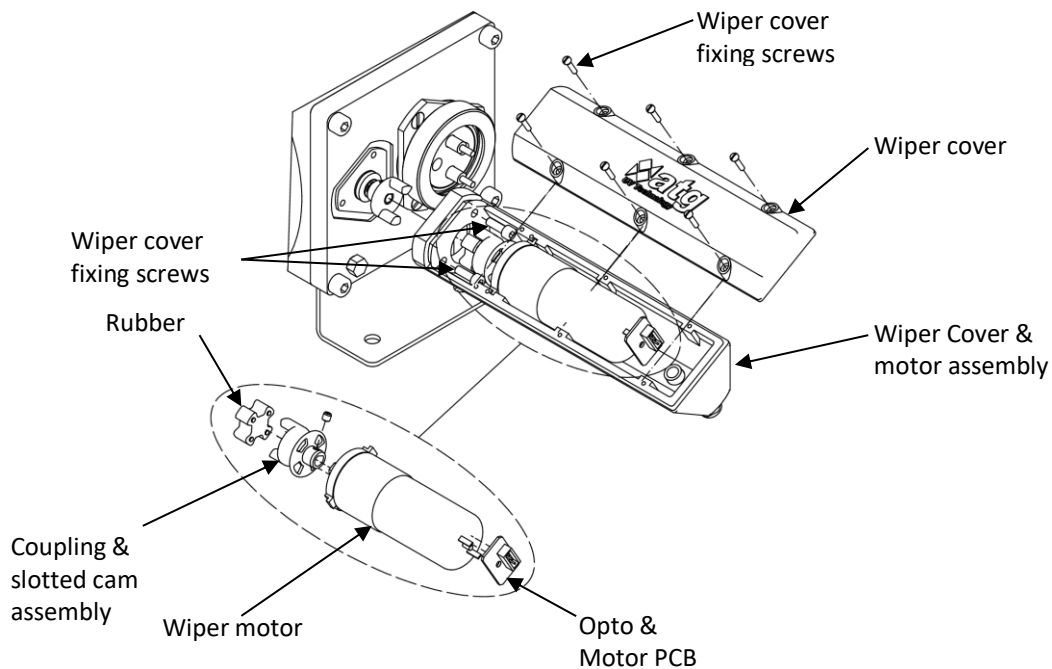


Wiper Cover & Motor Removal

1	Unscrew the wiper cover screws and remove Wiper cover lid
2	Disconnect the electrical connections on the motor, taking note of the cable positions.
3	Unscrew the wiper cover fixing screws and remove wiper motor & cover assembly

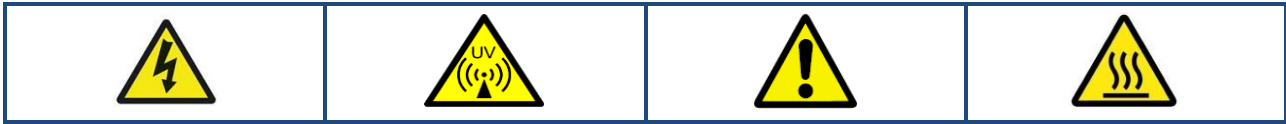
Wiper Motor & Cover Installation

1	Screw the wiper motor & cover in place lining the fixing holes with the holes on the wiper cover. Screw in place using the wiper cover fixing screws Ensure the Sensor Cam coupling is located and mated with the rubber coupling.
2	Re-connect all electrical connections
3	Screw back in place the wiper motor cover lid with the wiper cover screws



Wiper Blade Maintenance

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.

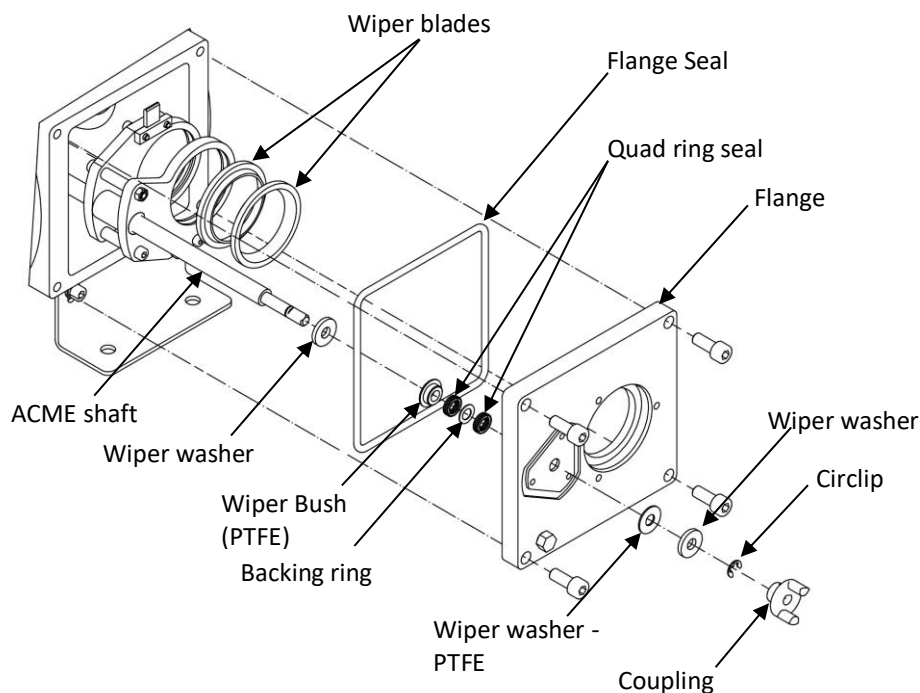


Wiper Blade Removal

1	Remove the motor assembly (refer to Wiper Cover & Motor Removal procedures).
2	Remove the UV Lamps and Quartz sleeve (refer to UV Lamp Extraction, & Quartz Extraction procedures.)
3	Unscrew the flange retaining bolts. This will allow the flange, the wiper carriage & the ACME shaft to be removed.

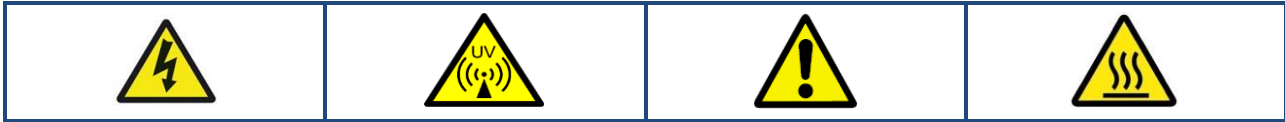
Wiper Blade Installation

1	Replace the old wiper blades with the new blades and fit them accordingly.
2	Slide the drive side flange, the wiper carriage & the AMCE shafts back into the chamber & fix back in place with the flange retaining bolts (check the 'O' seal to see if needs to be replaced).
3	The Quartz Sleeve and UV Lamp should be replaced (refer to UV Lamp installation, & Quartz Installation procedures).
4	Re-fit the wiper motor assembly (refer to Wiper Motor & Cover Installation procedures).
5	If the carriage has not been moved then there should be no need to recalibrate the wiper. If the carriage has been moved, recalibration of the wiper is imperative (refer to Automatic Wiper section of the manual).



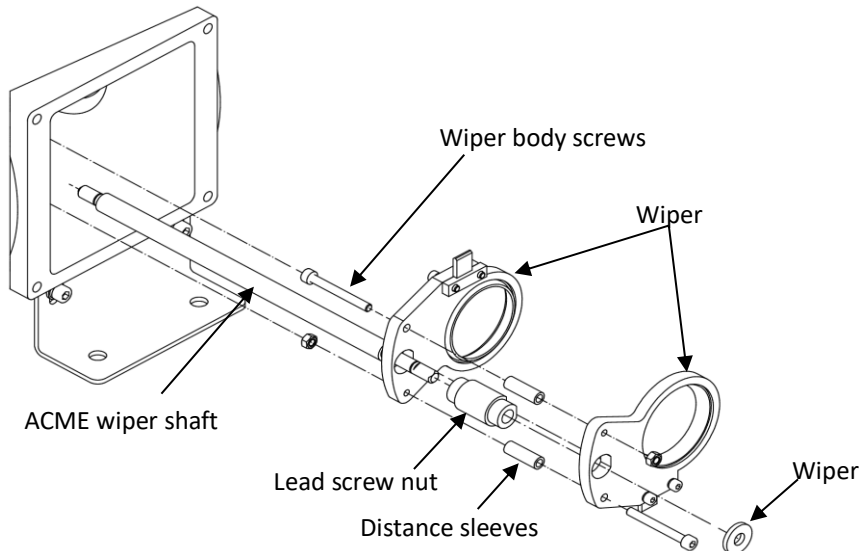
Wiper Body Maintenance (1 Lamp System)

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.



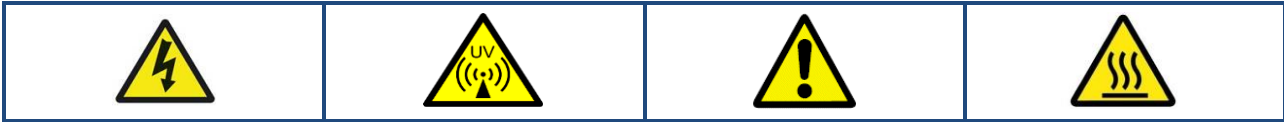
Wiper Carriage Removal	
1	Remove the Motor assembly (refer to Wiper Cover & Motor Removal & Wiper Bearing & Seal Removal procedures)
2	Remove the UV Lamps & Quartz Sleeve (refer to UV Lamp Extraction & Quartz Sleeve Extraction procedures).
3	Unscrew the flange retaining bolts. This will allow the flange, the wiper carriage & the ACME shaft to be removed.
4	Remove the Wiper carriage from the Wiper shaft.
5	Unscrew the Wiper body screws to release the Lead screw nut and Wiper carriages

Wiper Body Installation	
1	Replace Lead Screw Nut (if required).
2	Line up the Wiper Carriage and Lead Screw Nut Fixing Ring with the Leads screw nut and screw together with the wiper body screws.
3	Screw the Wiper Assembly back onto the Wiper Shaft.
4	Re-calibration of the wiper is required after Wiper body removal (refer to Automatic Wiper section).



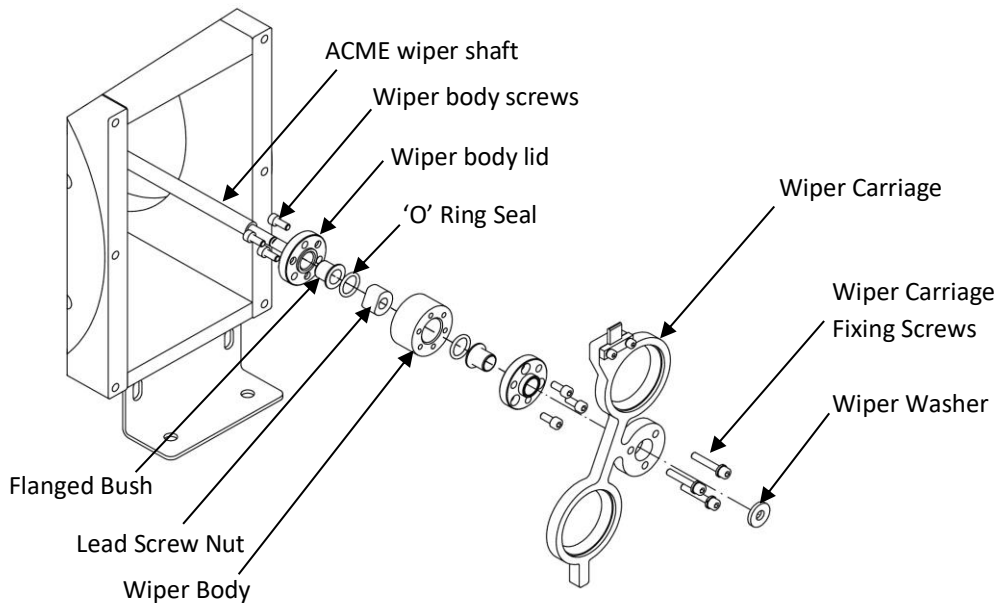
Wiper Body Maintenance (2-4 Lamp System)

Please refer to the Health & Safety Section at beginning of the manual for Symbol explanations. These are to be adhered to when carrying out the following maintenance procedures.



Wiper Carriage Removal	
1	Remove the Motor assembly (refer to Wiper Cover & Motor Removal & Wiper Bearing & Seal Removal procedures)
2	Remove the UV Lamps & Quartz Sleeve (refer to UV Lamp Extraction & Quartz Sleeve Extraction procedures).
3	Unscrew the flange retaining bolts. This will allow the flange, the wiper carriage & the ACME shaft to be removed.
4	Remove the Wiper carriage from the Wiper shaft.
5	Unscrew the wiper carriage from one side of the wiper body lid. Remove one side of the wiper body lid by removing the wiper body screws.

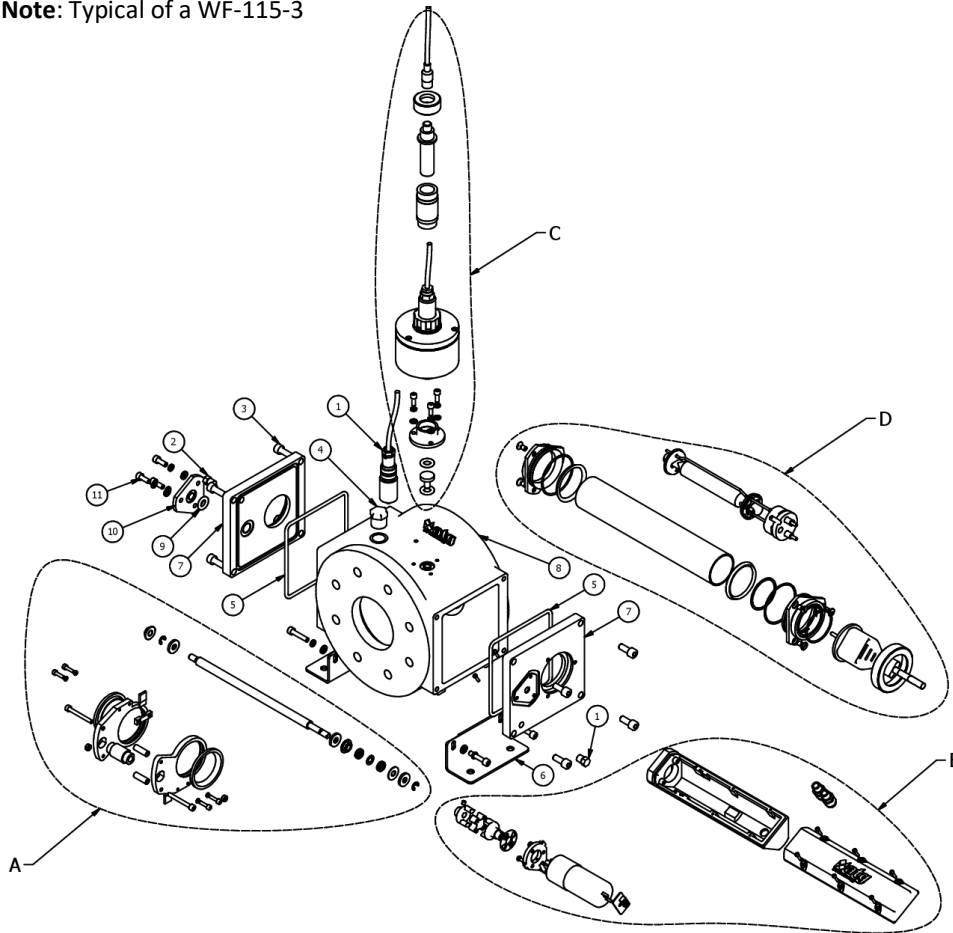
Wiper Body Installation	
1	Replace Lead Screw Nut (if required) and insert inside the Wiper Body.
2	Screw in place both Wiper Body Lid's on either side of the Wiper Body ensuring the O'Ring Seal and flanged bush are between.
3	Screw in the place Wiper Carriage onto one side of the Wiper Lid.
4	Screw the Wiper Assembly back onto the Wiper Shaft, ensuring to clip the circlips back in place on the ends of the shaft.
4	Re-calibration of the wiper is required after Wiper body removal (refer to Automatic Wiper section).



Spare Parts

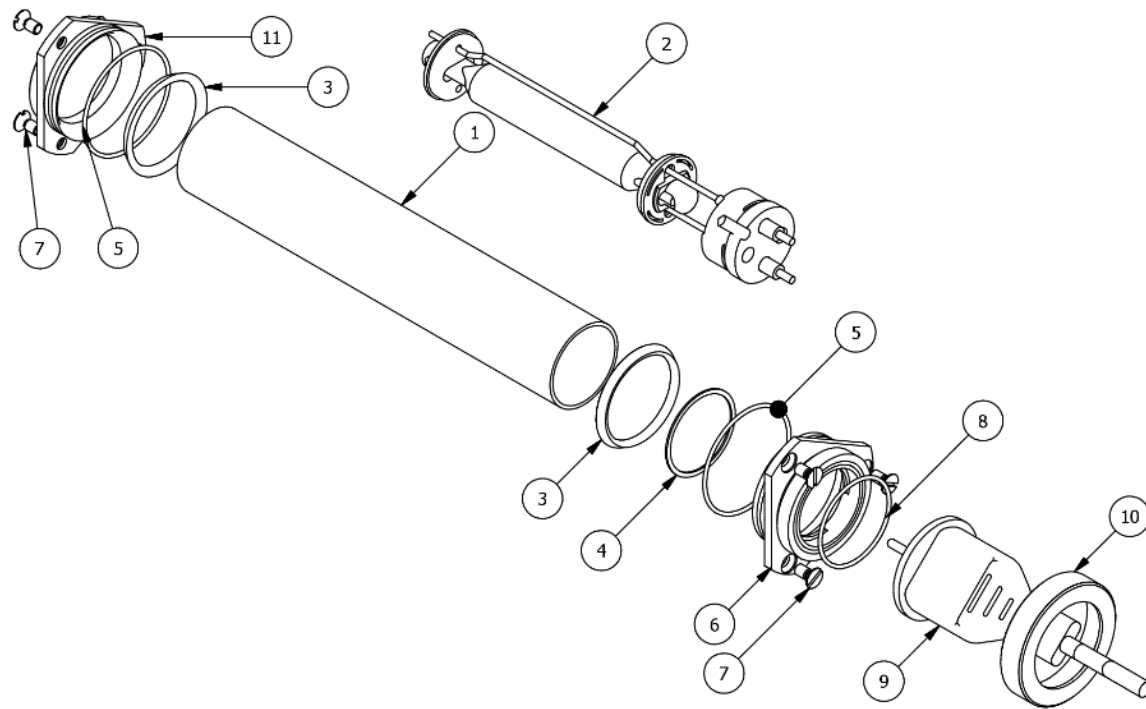
General Assembly

Note: Typical of a WF-115-3



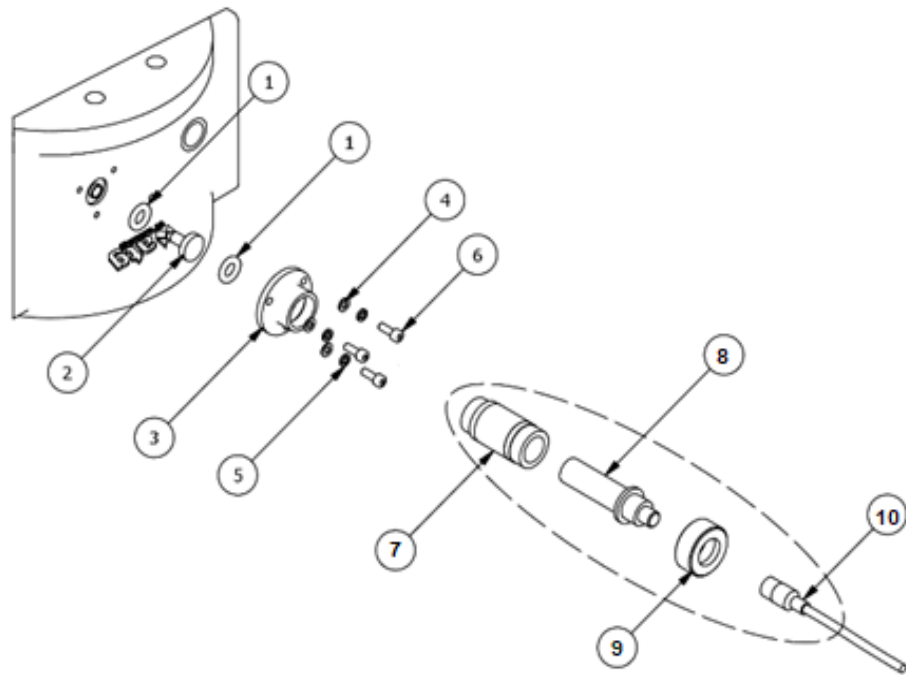
ITEM	PART NO.	DESCRIPTION
A	Automatic Wiper Carriage Assembly	
B	Automatic/Manual Wiper Drive Assembly	
C	UV Sensor Assembly	
D	Lamp & Quartz Assembly	
Note: some sizes of parts in this assembly may vary according to chamber size		
1	W2T873075	AT-487 PT100 Temperature Probe
2	-	Hex Head Plug
3	-	Flange Retaining bolts
4	-	NPT Stopping Plug
5	Refer to Maintenance Spares List	EPDM 'O' Ring
6	-	Chamber Feet
7	-	Chamber Flange
8	-	Chamber Body
9	Refer to Maintenance Spares List	EPDM 'O' Ring Window Seal
10	W2T873805	Wiper Blanking Plate
11	-	M6 x 16 Sckt Head

Lamp & Quartz Assembly



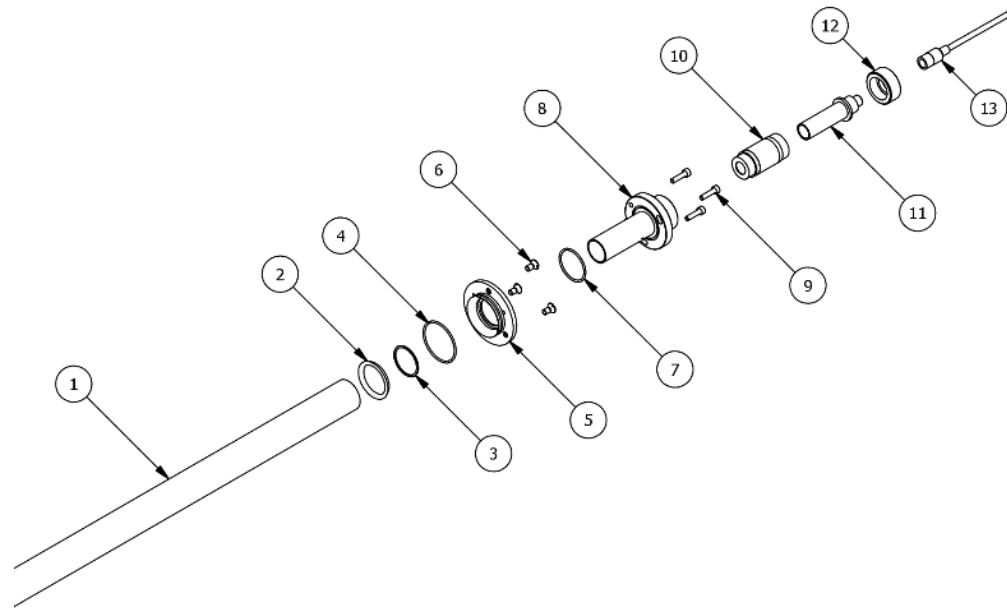
ITEM	PART NO.	DESCRIPTION
1	Refer to Maintenance Spares List	Quartz Sleeve
2	Refer to Maintenance Spares List	UV Lamp
3	Refer to Maintenance Spares List	EPDM 'O' Ring (Primary)
4	Refer to Maintenance Spares List	PTFE Clamp Ring Gasket
5	Refer to Maintenance Spares List	EPDM 'O' Ring (Secondary)
6	W2T873826	Clamp Ring - Screwed - Q49 - 5mm Seal
7	-	M6 x 12 Slotted CSunk flat head screw
8	W2T874291	EPDM 'O' Ring
9	-	Moulded Twistlok Lamp Connector
10	W2T873828	Clamp Ring - Screwed Retainer - Q49
11	W2T873827	Clamp Ring - Rear - Q49

UV Window Assembly



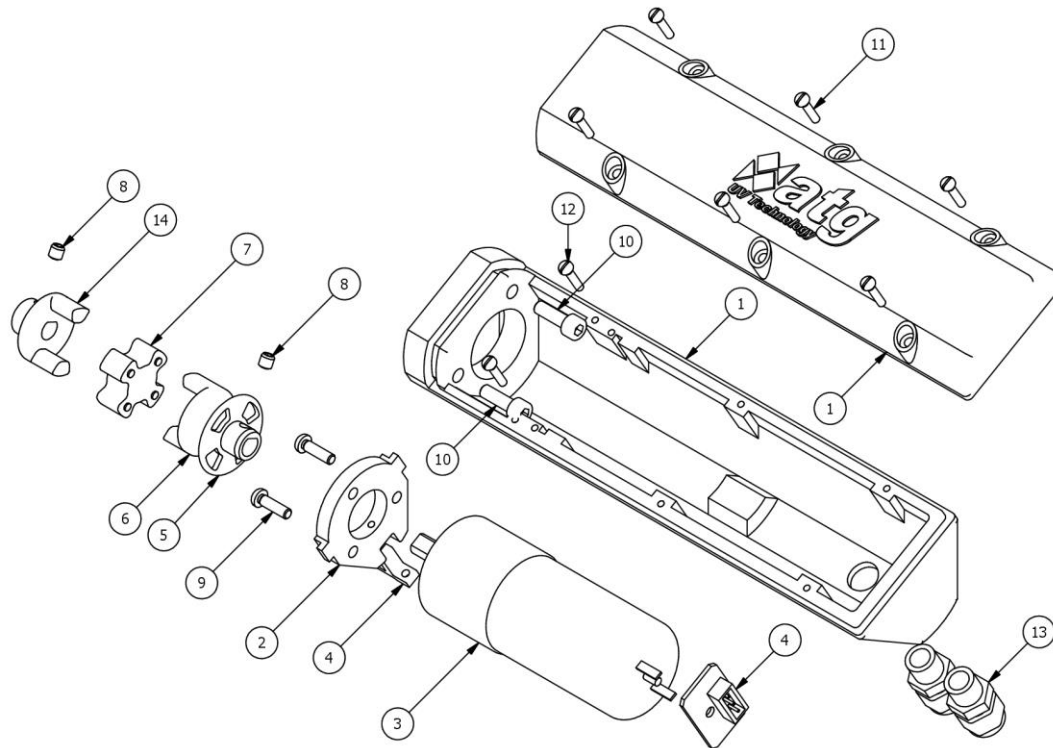
ITEM	PART NO.	DESCRIPTION
1	Refer to Maintenance Spares List	EPDM 'O' Ring
2	Refer to Maintenance Spares List	Quartz Window (Top Hat)
3	W2T873968	UV Probe Housing - Loose Section
4	-	M5 Washer
5	-	M5 Spring washer
6	-	M5 x 14 Sckt head
AT 900 Validated UV Probe		
7	W2T873971	Probe Adaptor Base
8	Refer to Data-book	AT 900 Validated UV Probe (ONORM)
9	W2T873972	Probe Adaptor Cap
10	-	Probe Connector & cable

UV Sleeve Assembly (For WF-230-10 & WF-430-12 ONLY)



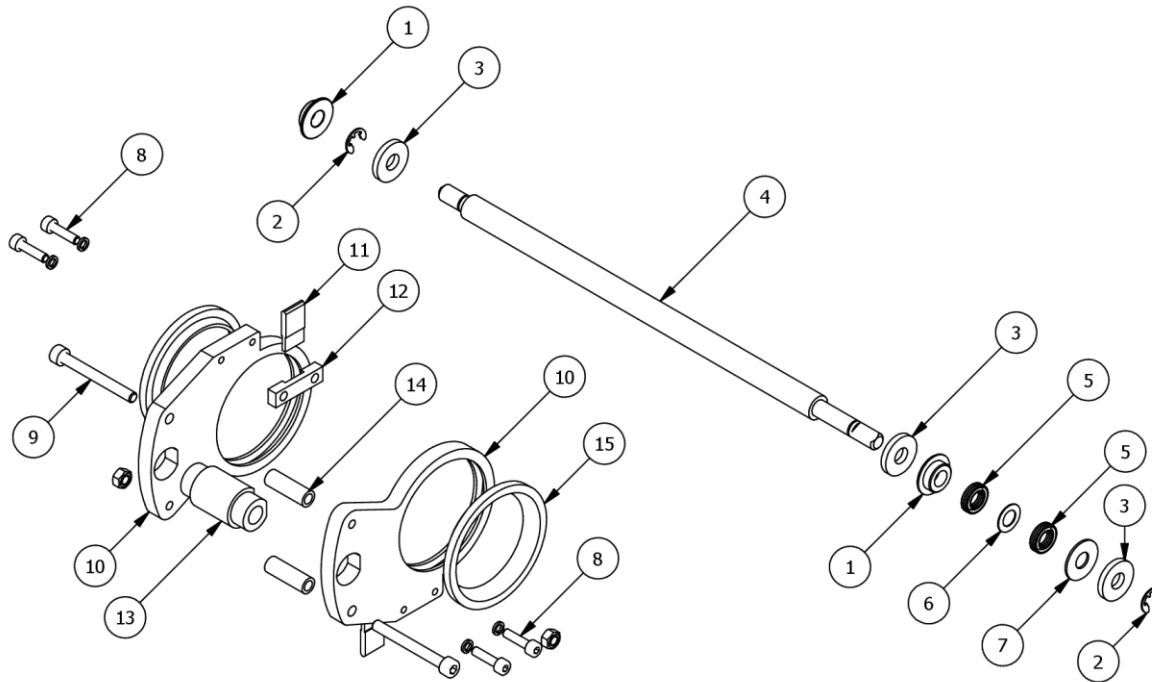
ITEM	PART NO.	DESCRIPTION
1	Refer to Maintenance Spares List*	UV Quartz Thimble
2	Refer to Maintenance Spares List	EPDM 'O' Ring (Primary)
3	Refer to Maintenance Spares List	PTFE Clamp Ring Gasket
4	Refer to Maintenance Spares List	EPDM 'O' Ring (Secondary)
5	W2T873600	QTH-36 Clamp Ring for UV Sensor
6	-	M6 x 12 Slotted CSunk flat head screw
7	W2T874269	EPDM 'O' Ring
8	W3T469393	UV Validated Probe Housing
9	-	M5 x 20 Sckt Head Bolt
10	W2T873971	UV Validated Probe Adaptor (Base)
11	Refer to Data-book	Validated UV Probe (ONORM)
12	W2T873972	Validated UV Probe Adaptor Cap
13	-	UV Probe Connector and Cable

Automatic Wiper Drive Assembly



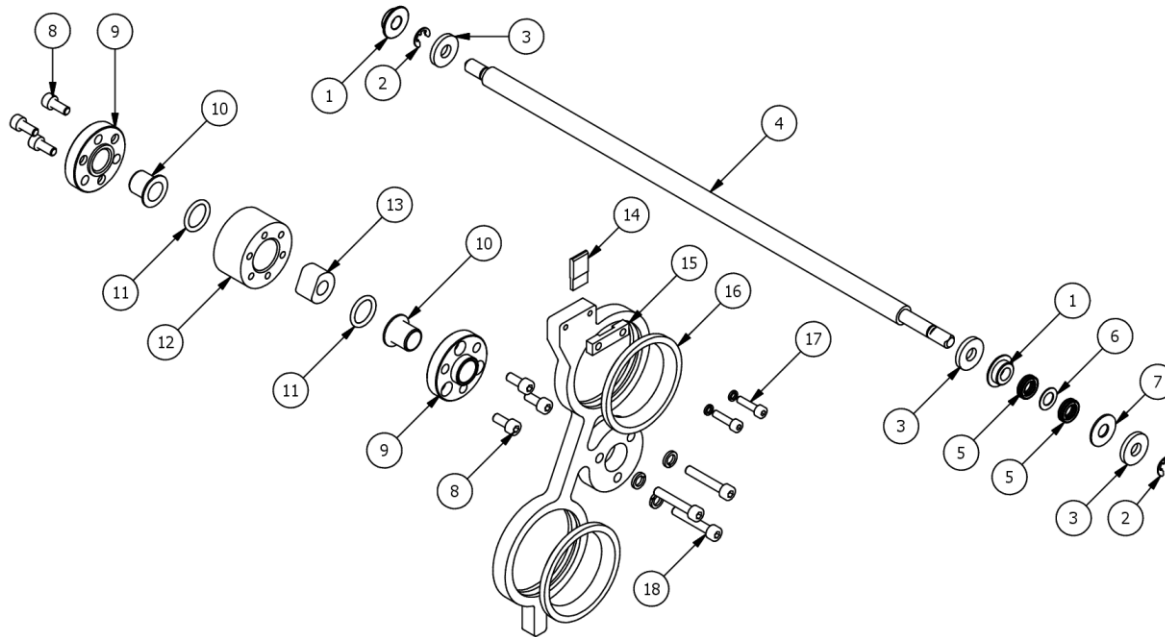
ITEM	PART NO.	DESCRIPTION
1	W2T873784 & W2T873785	Wiper Motor Body & Lid
2	W2T873783	Motor Housing Mount
3	W2T874493	Wiper Motor
4	W2T873069	ATUV-1150 - Opto Pulse Counter
5	W2T873767	12mm Shaft - Sensor Cam
6	W2T873766	12mm Shaft - Coupling Motor
7	W2T873730	Wiper Motor Rubber Coupling
8	-	M5 x 5 Grub screw
9	-	M4 x 12 Pan head screws
10	-	M5 x 25 Sckt Head Screw
11	-	M3.5 x 13 self-tapping screws
12	-	M3.5 x 9.5 self-tapping screws
13	-	M12 Gland
14	W2T873765	12mm Shaft - Coupling Shaft

Single-Lamp Automatic Wiper Carriage Assembly



ITEM	PART NO.	DESCRIPTION
1	Refer to Maintenance Spares List	Wiper Bush (PTFE) - WF
2	W2T873769	12mm Shaft - Wiper External Eclip
3	W2T873758	12mm Shaft - Wiper Washer
4	-	ACME Wiper Shaft
5	Refer to Maintenance Spares List	Nitrile Quad Ring
6	Refer to Maintenance Spares List	PTFE Backing Ring
7	Refer to Maintenance Spares List	PTFE - Wiper Washer
8	-	M4 x 16 Sckt Head
9	-	M5 x 45 Sckt Head
10	-	Wiper Carriage
11	Refer to Maintenance Spares List	Window Wiper Flap
12	W2T873559	Window Wiper Flap Fixing Bracket
13	Refer to Maintenance Spares List	Lead Screw Nut
14	W2T873676	Wiper Carriage Plate Distance Sleeve
15	Refer to Maintenance Spares List	49-Dia Wiper Rings

Multi-Lamp Automatic Wiper Carriage Assembly



ITEM	PART NO.	DESCRIPTION
1	Refer to Maintenance Spares List	Wiper Bush (PTFE) - WF
2	-	15mm Circlips
3	W2T873758	12mm Shaft - Wiper Washer
4	-	ACME Wiper Shaft
5	Refer to Maintenance Spares List	Nitrile Quad Ring
6	Refer to Maintenance Spares List	PTFE Backing Ring
7	Refer to Maintenance Spares List	PTFE - Wiper Washer
8	-	M5 x 10 Sckt Head Bolt
9	W2T873756	12mm Shaft - Wiper Body Lid
10	W2T873708	12mm - Flanged Bush
11	W2T874255	EPDM 'O' Ring
12	W2T873755	12mm Shaft - Wiper Body
13	Refer to Maintenance Spares List	Lead Screw Nut
14	Refer to Maintenance Spares List	Window Wiper Flap
15	W2T873559	Window Wiper Flap Fixing Bracket
16	Refer to Maintenance Spares List	49-Dia Wiper Rings
17	-	M4 x 16 Sckt Head
18	-	M5 x 40 Sckt Head Bolt

Maintenance Spares List

ITEM	PART NO.	DESCRIPTION	WF-115-3	WF-115-4	WF-125-6	WF-215-6	WF-215-8	WF-225-8	WF-230-10	WF-430-12
General Assembly										
5	W2T874371	EPDM 'O' Ring 150 x 4	2	2						
5	W2T874372	EPDM 'O' Ring 228 x 4.5			2	2	2	2		
5	W2T874373	EPDM 'O' Ring 273 x 4							2	
5	W2T874272	EPDM 'O' Ring 302 x 4								2
9	W2T874326	EPDM 'O' Ring 13 x 3.5 Window Seal (QWS-20)	1	1	1	1	1	1	1	1
Lamp & Quartz Assembly										
1	W2T874113*	Quartz Sleeve (QSL 49X270)	1	1						
1	W2T874114*	Quartz Sleeve (QSL 49X385)			1	2	2	2		
1	W2T874149*	Quartz Sleeve QSL-49 x 525							2	4
2	W2T873500	1.5kW MP Ballast Lamp	1	1						
2	W2T873501	1.5kW MP Ballast Lamp				2	2			
2	W2T875335	2.5kW MP Ballast Lamp			1			2		
2	W2T873502	3.0kW MP Ballast Lamp							2	4
3	W2T874279	EPDM 'O' Ring 49 x 5.0 V70	2	2	2	4	4	4	4	4
4	W2T874359	PTFE Clamp Ring Gasket (49.5 x 44.5 x 1)	1	1	1	2	2	2	2	2
5	W2T874283	EPDM 'O' Ring 59 x 2.0	2	2	2	4	4	4	4	4
UV Window Assembly										
1	W2T874326	EPDM 'O' Ring 13 x 3.5 Window Seal (QWS-20)	2	2	2	2	2	2	2	2
2	W2T874235	VERIFIED Quartz Window QWI-20 x 15 x 5	1	1	1	1	1	1	1	1
UV Sleeve Assembly										
1	W3T480279	Quartz Sleeve QSL-36 x 524							2	4
2	W2T874270	EPDM 'O' Ring 36 x 5.0 V70							1	2
3	W2T874358	PTFE Clamp Ring Gasket							1	2
4	W2T874278	EPDM 'O' Ring 46 x 2.0 V70							1	2
Single lamp Automatic Wiper Carriage Assembly										
1	W2T873809	Wiper Bush (PTFE) - WF	2	2	2					
5	W2T874361	Nitrile Quad Ring 7.52 x 3.53	2	2	2					
6	W2T874362	PTFE Backing Ring 13.9OD x 8.1ID x 0.5Thk	1	1	1					
7	W2T874374	PTFE - Wiper Washer	1	1	1					
11	W2T873557	14x3 Window Wiper Flap	2	2	2					
13	W2T873674	SP Wiper Carriage Lead Screw Nut	1	1	1					
15	W2T874343	49-Dia Wiper Rings in 80 Shore EPDM	1	1	1					

ITEM	PART NO.	DESCRIPTION	WF-115-3	WF-115-4	WF-125-6	WF-215-6	WF-215-8	WF-225-8	WF-230-10	WF-430-12
Multi-Lamp Automatic Wiper Carriage Assembly										
1	W2T873809	Wiper Bush (PTFE) - WF				2	2	2	2	2
5	W2T874361	Nitrile Quad Ring 7.52 x 3.53				2	2	2	2	2
6	W2T874362	PTFE Backing Ring 13.9OD x 8.1ID x 0.5Thk				1	1	1	1	1
7	W2T874374	PTFE - Wiper Washer				1	1	1	1	1
13	W2T873757	12mm Shaft - Lead Screw Nut				1	1	1	1	1
14	W2T873557	14x3 Window Wiper Flap				1	1	1	1	1
16	W2T874343	49-Dia Wiper Rings in 80 Shore EPDM				2	2	2	2	4

* Standard part shown. For non-standard options, please refer to the Data-book to confirm

Preventative Maintenance Kits

PM P/N	PART NO.	DESCRIPTION	WF-115-3	WF-115-4	WF-125-6	WF-215-6	WF-215-8	WF-225-8	WF-230-10	WF-430-12
W3T564893	W2T873500	1.5kW MP BALLAST LAMP 200V 7.5A	1	1						
	W2T874113	QUARTZ SLEEVE (QSL-49 X 270) WF	1	1						
	W2T874235	VERIFIED QUARTZ WINDOW QWI-20 X 15 X 5	1	1						
	W3T564828	WIPER / SEAL KIT, WFR, 1L, 3-4"	1	1						
W3T564894	W2T875335	2.5kW MP BALLAST LAMP 330V 7.5A			1					
	W2T874114	Quartz Sleeve (QSL-49 x 385) WF			1					
	W2T874235	VERIFIED QUARTZ WINDOW QWI-20 X 15 X 5			1					
	W3T564829	WIPER / SEAL KIT, WFR, 1L, 6"			1					
W3T564895	W2T873501	1.5kW MP BALLAST LAMP 200V 7.5A (Long)				2	2			
	W2T874114	Quartz Sleeve (QSL-49 x 385) WF				2	2			
	W2T874235	VERIFIED QUARTZ WINDOW QWI-20 X 15 X 5				1	1			
	W3T564830	WIPER / SEAL KIT, WFR, 2L, 6-8"				1	1			
W3T564896	W2T875335	2.5kW MP BALLAST LAMP 330V 7.5A						2		
	W2T874114	Quartz Sleeve (QSL-49 x 385) WF						2		
	W2T874235	VERIFIED QUARTZ WINDOW QWI-20 X 15 X 5						1		
	W3T564830	WIPER / SEAL KIT, WFR, 2L, 6-8"						1		
W3T564897	W2T873502	3.0kW MP BALLAST LAMP 400V 7.5A							2	
	W2T874149	QUARTZ SLEEVE QSL-49 x 525							2	
	W3T480279	QUARTZ SLEEVE QSL-36 X 524							1	
	W3T564881	WIPER / SEAL KIT, WFR, 2L, 10", EB							1	
W3T564898	W2T873502	3.0kW MP BALLAST LAMP 400V 7.5A								4
	W2T874149	QUARTZ SLEEVE QSL-49 x 525								4
	W3T480279	QUARTZ SLEEVE QSL-36 X 524								2
	W3T564882	WIPER / SEAL KIT, WFR, 4L, 12", EB								1