VALVE SOLUTIONS FOR

SEMICONDUCTOR PROCESSES

GLOBAL SPECIFICATIONS

Bray®

BRAY.COM

THE HIGH PERFORMANCE COMPANY

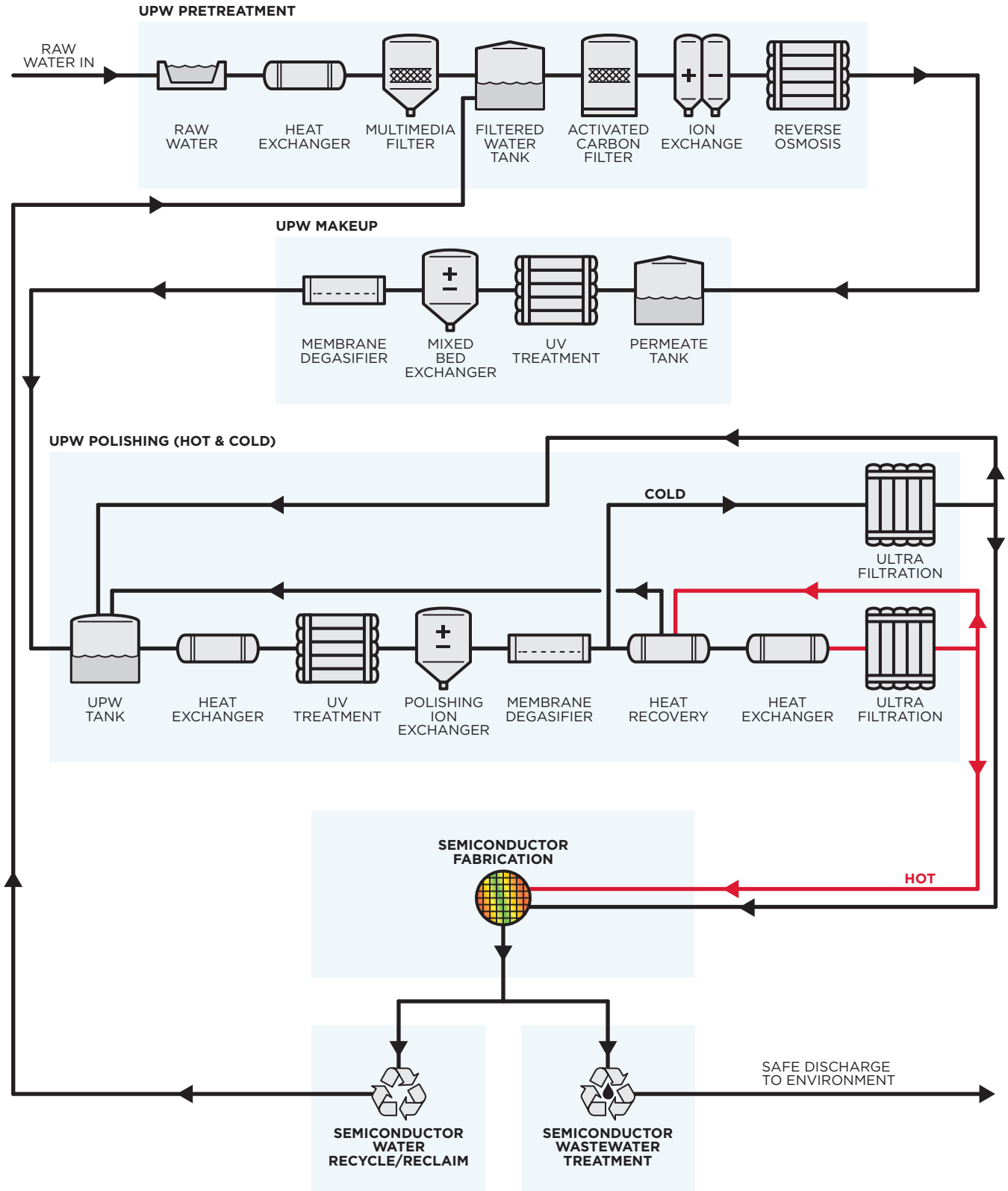
The semiconductor industry, like no other, requires years of trouble-free service without downtime. Reliability is an absolute requirement. Isolation valves must be of the highest quality to provide zero-leakage for all critical services. Control valves, used for balance of plant utilities & services, must perform consistently around the clock to maintain operations.

Bray offers a full line of valves, actuators, and controls ideally suited for all stages of water purification, waste treatment, recycling, and water reclamation processes in semiconductor manufacturing facilities. Our products play a critical role in ensuring proper flow control & isolation. as well as reliable operation and consistency.

OUR PRODUCTS
IN SEMICONDUCTOR MANUFACTURING

				PROCESS																		
				UPW PRETREATMENT						UPW MAKEUP				UPW POLISHING								
PRODUCT	BRAND	TYPE	MODEL	RAW WATER	HEAT EXCHANGER	MULTIMEDIA FILTER	ACTIVATED CARBON FILTER	ION EXCHANGE	REVERSE OSMOSIS	PERMEATE	UV TREATMENT	MIXED BED EXCHANGER	MEMBRANE DEGASIFIER	HEAT EXCHANGER	UV TREATMENT	POLISHING ION EXCHNAGER	MEMBRANE DEGASIFIER	HEAT RECOVERY	ULTRA FILTRATION	WATER RECLAMATION	UTILITIES: HVAC, WATER, GLYCOL, AIR	GAS: NITROGEN, OXYGEN
BUTTERFLY VALVES	Amresist	PFA Lined	Acris							■	■	■	■	■	■	■	■	■	■	■		
		Resilient Seated	Isoria	■	■	■	■	■	■													
	Bray	Resilient Seated	Series 30/31	■	■	■	■	■	■												■	
			Series 3W/3L	■	■	■	■	■	■												■	
			Series 36/36H	■	■	■	■	■	■												■	
		High Performance	McCannalok	■	■	■	■	■	■												■	■
BALL VALVES	Flow-Tek	3-piece	Triad	■	■	■	■	■	■												■	■
			Series 7000	■	■	■	■	■	■												■	■
		Flanged (2-piece)	Series F/RF	■	■	■	■	■	■											■	■	■
ROTARY CONTROL VALVES	Bray	Segmented Ball	Series 19/19L	■	■	■	■	■	■												■	■

SEMICONDUCTOR FABRICATION



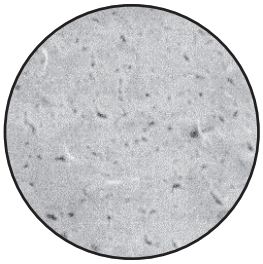
ADVANTAGES OF PFA LINERS

While both PTFE and PFA fluoropolymer materials have been adopted for use in semiconductor manufacturing, PFA materials are superior when used in hot/cold wet process in manufacturing the next-generation of sub-10nm microchips.

FIRST, the one-step injection molded PFA manufacturing process is inherently less likely to introduce contaminants into the component being formed than is the compressed dry powder PTFE sintering dry process sequence.

PFA Process

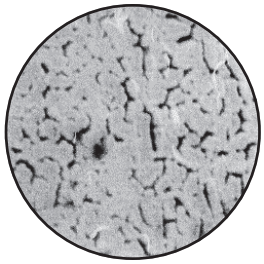
Starts as pellets.



10,000X magnification shows minimal voids or air pockets.

PTFE Process

Starts as powder.

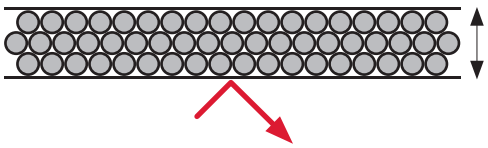


10,000X magnification shows significant voids and air pockets.

SECONDLY, due to it's inherent smooth and non-porous surface finish, the PFA material is a superior candidate for preventing particle shedding.

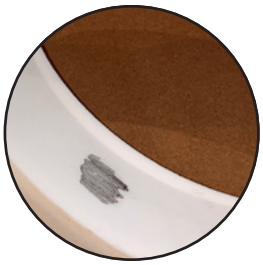
PFA Material

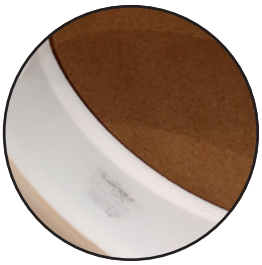
Demonstration:
When marker is applied to PFA material, it does not seep into surface, and wipes away cleanly due to the non-porous finish.



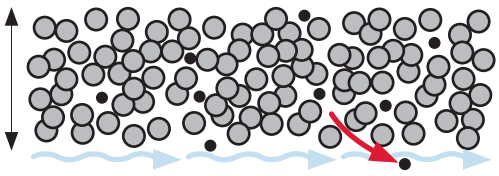
Cross-section of PFA material.
Dense material creates effective barrier to chemical migration, cold flowing, and particle shedding.

PTFE Material





Demonstration:
When marker is applied to PTFE material, it seeps into pores, and does not wipe away cleanly due to the porous finish.



Cross-section of PTFE material.
Porous material creates less effective barrier to chemical migration, cold flowing, and particle shedding.

FINALLY, PFA raw materials are now being monitored to a SEMI standard to ensure cleanliness. There is no comparable standard at the present time to monitor the cleanliness of PTFE powder, and none is anticipated.

BUTTERFLY VALVES

Amresist Acris

PFA LINED (2-PIECE BODY)

Size Range
NPS 1 to 24 | DN 25 to 600

Temperature Range
-20°F to 320°F | -29°C to 160°C

Pressure Rating
Up to 150 psi | Up to 10 bar

Body Style
Wafer | Lug

- PFA has been widely used by the semiconductor industry for many years. PFA tubing has chemical resistance & flexibility that make it uniquely valuable for the movement of chemicals & UPW to the tools & at POU.
- Amresist harnesses PFA's flexibility in the Acris butterfly to work in combination with an elastomer back up liner. The Acris PFA lined butterfly valve can maintain zero leakage performance. Amresist valves can be found in many FABs today exceeding 30 years of trouble-free service in UPW.
- PFA Teflon's tight molecular structure allows the ACRIS butterfly valve to rinse up quicker as it has no voids to trap contamination that could leach into UPW through time.
- The Acris PFA lined butterfly valve, at full rated pressure, maintains zero leakage with the downstream flange removed. Equipment can easily be maintained while the system is under pressure.

Amresist Isoria

RUBBER LINED (2-PIECE BODY)

Size Range
NPS 1½ to 40 | DN 40 to 1000

Temperature Range
14°F to 230°F | -10°C to 110°C

Pressure Rating
150 psi to375 psi | 10 bar to 25 bar

Body Style
Wafer | Lug | Semi-Lug | Flanged

- ISORIA rubber lined butterfly valves are uniquely designed for make-up water in the FABs central utility building.
- The spherical molded hub areas of the liner mate with the spherical machined hubs of the disc providing an even compression as the primary hub seal. The liner thickness is greater on the back side of the hub area to create additional compression while still maintaining the mated spherical shapes, and adds additional sealing compression around the shaft
- An integral elastomer backing ring anchors the liner into a matching machined body groove. The locked liner remains in position during valve cycles.
- Standard valves can be downstream dismantled at the full rated pressure of the valve. Equipment can then be easily isolated and maintained while the system is under pressure.

Series 30/31

RESILIENT SEATED (1-PIECE BODY)

Size Range
NPS 2 to 20 | DN 50 to 500

Temperature Range
-20°F to 400°F | -29°C to 204°C

Maximum Allowable Operating Pressure
Up to 175 psi | Up to 12 bar

Body Style
Wafer | Lug

- The Bray Series 30 wafer and 31 Lugged body butterfly valves are used extensively thorough the HVAC, air handling temperature control systems and utilities and RO systems for pre-filtration.
- Spherically machines disc edge, trough shaft and internal Double "D" connections ensure a strong disc/shaft connection where only the disc surface and seat are in contact with the media providing years of trouble-free operations.
- Tongue and groove seat design can be used under full pressure or vacuum, EPDM material is peroxide cured in order to keep it's resiliency and torque profile over time compared to typical sulphur cured EPDM.

Series 3W/3L

RESILIENT SEATED (MOLDED-IN SEAT)

Size Range
NPS 2 to 24 | DN 50 to 600

Temperature Range
-20°F to 250°F | -29°C to 121°C

Pressure Rating
NPS 2 to 12: to 175 psi | DN 50 to 300: to 12 bar
NPS 14 to 24: to 175 psi | DN 350 to 600: to 10.3 bar

Body Style
Wafer | Lug

- The Bray Series 3W wafer and 3L lugged body resilient seated valve is a state of the art evolution of the S30/31 and are used extensively thorough the HVAC, air handling temperature control systems and utilities and RO systems for pre-filtration.
- With molded-in seat design and improved torque reduction characteristics for ease of automation and full dead-end pressure ratings up to 250PSI with one flange removed.
- It continues to offer all the features of the S30/31 except has a permanent molded seat in the body
- ISO 5211 actuator mounting plate adapts standard Bray S92/93 actuation packages as well as manual operators.

BUTTERFLY VALVES

Series 36

RESILIENT SEATED (1-PIECE BODY)

Size Range
NPS 22 to 120 | DN 550 to 3000

Temperature Range
-20°F to 400°F | -29°C to 204°C

Maximum Allowable Operating Pressure
Up to 150 psi | Up to 10 bar

Body Style
Flanged

Series 36H

RESILIENT SEATED (1-PIECE BODY)

Size Range
NPS 24 to 60 | DN 600 to 1500

Temperature Range
-20°F to 250°F | -29°C to 121°C

Maximum Allowable Operating Pressure
Up to 232 psi | Up to 16 bar

Body Style
Flanged

Series 41

HIGH PERFORMANCE

Size Range
NPS 2 to 66 | DN 50 to 1500

Temperature Range
-320°F to 842°F | -196°C to 450°C

Pressure Rating
ASME Class 150, 300, 600
PN 10, 16, 25, 40, 63, 100

Body Style
Wafer | Lug | Double Flanged

BALL VALVES

Series 19/19L

SEGMENTED CONTROL VALVE

Size Range
NPS 1 to 16 | DN 25 to 400

Temperature Range
-50°F to 500°F (-46°C to 260°C)

Pressure Rating
ASME Class 150, 300, 600
PN 10, 16, 25, 40

End Connection
Flanged | Flangeless (Wafer)

Triad

3-PIECE

Size Range
NPS ¼ to 4 | DN 8 to 100

Temperature Range
-50°F to 550°F (-46°C to 287°C)

Maximum Allowable Operating Pressure
Up to 2200 psi CWP | Up to 151 bar

End Connection
Flanged | Threaded | Butt Weld (+ Extended) | Socket Weld (+ Extended)

Series RF15/RF30,
Series F15/F30

FLANGED

Size Range
NPS ½ to 12 | DN 15 to 300

Temperature Range
-50°F to 650°F (-46°C to 343°C)

Pressure Rating
ASME Class 150, 300 | PN 10 to 40

End Connection
Flanged | Butt Weld | Socket Weld | Threaded

Series 7000/8000

3-PIECE

Size Range
NPS ¼ to 12 | DN 8 to 300

Temperature Range
-50°F to 550°F (-46°C to 287°C)

Maximum Allowable Operating Pressure
NPS ¼ to 4: 1000 psi CWP | DN 8 to 100: 69 bar
NPS 6 to 12: 400 psi CWP | DN 150 to 300: 27 bar

End Connection
Flanged | Threaded | Butt Weld (+ Extended) | Socket Weld (+ Extended)

ACTUATORS

Series 98

PNEUMATIC SCOTCH YOKE

Torque Output Range
2,744 to 885,100 lb-in
(310 to 100,000 Nm)

Temperature Range
-50°F to 300°F (-46°C to 149°C)

Pressure Ratings
40 to 150 psi (2.8 to 10.3 bar)

Series 98H

HYDRAULIC SCOTCH YOKE

Torque Output Range
1,629 to 885,100 lb-in
(187 to 100,000 Nm)

Temperature Range
-20°F to 212°F (-29°C to 100°C)

Pressure Ratings
500 to 3000 psi (35 to 207 bar)

Series 92/93

PNEUMATIC RACK & PINION

Torque Output Range
Up to 44,130 lb-in (Up to 4,986 Nm)

Temperature Range
-40°F to 350°F (-40°C to 149°C)

Pressure Ratings
Up to 140 psi (Up to 10 bar)

Series 70

ELECTRIC

Torque Output Range
300 to 18,000 lb-in (34 to 2034 Nm)

Temperature Range
-20°F to 150°F (-29°C to 65°C)

Voltages
120, 230 VAC 50/60 Hz, 1-Phase |
24V: AC/DC

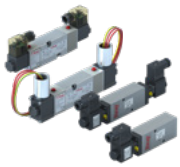
CONTROLS

VALVE STATUS MONITOR
Series 5A | 5B | 5C

PROXIMITY SENSOR
Series 54

SMART POSITIONER
Series 6A

PNEUMATIC POSITIONER
Series 6P



SOLENOID
Series 60 | 63

FILTER REGULATOR
Series 55

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

VISIT **BRAY.COM** TO LEARN MORE ABOUT BRAY PRODUCTS AND LOCATIONS NEAR YOU.

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