

SECTION 15093
CHECK VALVES
Addendum No. 3

PART 1 - GENERAL

1-1. SCOPE. This section covers the furnishing of check valves as specified herein and as indicated in the Check Valve Schedule.

Piping, pipe supports, insulation, and accessories that are not an integral part of the valves or are not specified herein are covered in other sections.

1-2. GENERAL. Equipment furnished under this section shall be fabricated and assembled in full conformity with Drawings, Specifications, engineering data, instructions, and recommendations of the equipment manufacturer unless exceptions are noted by Engineer.

Valves shall be furnished with all necessary parts and accessories indicated on the Drawings, specified, otherwise required for a complete, properly operating installation and shall be the latest standard products of a manufacturer regularly engaged in the production of valves. Valves furnished under this section shall tolerate the water quality as described in the section 13025 Low Pressure RO System.

1-2.01. General Equipment Stipulations. The General Mechanical and Equipment Provisions section shall apply to all equipment furnished under this section. If requirements in this specification differ from those in the General Mechanical and Equipment Provisions section, the requirements specified herein shall take precedence.

1-2.02. Temporary Number Plates. Each check valve with an identifying number listed in the Check Valve Schedule, shall be tagged or marked in the factory with the identifying number.

1-2.03. Identification. Valves specified herein shall be tagged in accordance with the Equipment and Valve Identification section.

1-3. SUBMITTALS. Complete drawings, details, and specifications covering the valves and their appurtenances shall be submitted in accordance with the General Conditions, Section F-29 Equipment and Material section. Included in the submittal shall be drawings by the valve manufacturer to indicate the position of the valve actuator and valve shaft.

PART 2 – PRODUCTS

2-1. CONSTRUCTION.

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2-1.01. Valves VC-1. Not used.

2-1.02. Valves VC-2.

VC-2	Rating	Class 125
Water service	Code	AWWA C508
Threaded ends	Type	Horizontal swing, threaded bonnet
2 inch [25 mm] or smaller pipe	Body/Bonnet	
	Trim	ASTM B62 bronze
	Seat	Bronze, regrinding
	Disc	Bronze
	Hinge Pins	Manufacturer's standard
	End Connection	Threaded
	Temp. Limitations	-20 to 212°F [-29 to 100°C]
	Manufacturers	Stockham "B-321", Walworth "Fig 3406"

2-1.03. Valves VC-3. Not used.

2-1.04. Valves VC-4. Not used.

2-1.05. Valves VC-5. Not used.

2-1.06. Valves VC-6. Not used.

2-1.07. Valves VC-7. Not used.

2-1.08. Valves VC-8.

<p>VC-8</p> <p>Low pressure clear water service</p> <p>3 through 12 inch [75 through 300 mm] pipe</p>	<p>Rating</p> <p>Type</p> <p>Body</p> <p>Trim</p> <p>Seat Ring</p> <p>Disc</p> <p>Springs/Hinge Pins/Stops</p> <p>Bearings</p> <p>End Connection</p> <p>Temp. Limitations</p> <p>Manufacturers</p>	<p>Class 125</p> <p>Dual disc wafer</p> <p>ASTM A126, Class B, cast iron</p> <p>Buna-N</p> <p>ASTM B148 Alloy 952, aluminum bronze</p> <p>Stainless steel</p> <p>Teflon</p> <p>Plain, installed between ASME B16.1, Class 125, flat faced flanges</p> <p>-20 to 225°F [-29 to 107°C] intermittent, 0 to 180°F [-18 to 82°C] continuous</p> <p>Marlin "Wafer Check 125HZNSF", Stockham "WG-970", "Duo-Chek II 12HMP", Apco Valve and Primer "9000AR1F"</p>
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2-1.09. Valves VC-9. Not used.

2-1.10. Valves VC-10. Not used.

2-1.11. Valves VC-11.

<p>VC-11</p> <p>Low pressure clear water service</p> <p>14 inch [350 mm] and larger pipe</p>	<p>Rating</p> <p>Type</p> <p>Body</p> <p>Trim</p> <p>Seat Ring</p> <p>Disc</p> <p>Springs/Hinge Pins/Stops</p> <p>Bearings</p> <p>End Connection</p> <p>Temp. Limitations</p> <p>Manufacturers</p>	<p>Class 125</p> <p>Dual disc wafer</p> <p>ASTM A126, Class B, cast iron or ductile iron</p> <p>Buna-N</p> <p>ASTM B148 Alloy 952, aluminum bronze</p> <p>Stainless steel</p>
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	<p>Teflon Plain, installed between ASME B16.1, Class 125, flat faced flanges -20 to 225°F [-29 to 107°C] intermittent, 0 to 180°F [-18 to 82°C] continuous</p> <p>Marlin “Wafer Check 125HZNSF”, “Duo-Chek II Figure 12HMP”, Apco Valve and Primer “9000AR1F”</p>
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2-1.12. Valves VC-12.

<p>VC-12 High pressure clear water service 14 inch [350 mm] and larger pipe lines</p>	<p>Rating Type Body Trim Seat Ring Disc Springs/Hinge Pins/Stops Bearings End Connection Temp. Limitations Manufacturers</p>	<p>250 psig Dual disc wafer ASTM A126, Class B, cast iron Buna-N ASTM B148 Alloy 952, aluminum bronze or ductile iron with bronze trim AISI Type 316 stainless steel Teflon Plain, installed between ASME B16.1, Class 250, raised faced flanges -20 to 225°F [-29 to 107°C] intermittent, 0 to 180°F [-18 to 82°C] continuous Marlin “Wafer Check 250HZNSR”, “Duo-Chek II Figure 25HMF”, Apco Valve and Primer “9000AR1R”</p>
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2-1.13. Valves VC-13.

VC-17	Rating	150 psig nonshock
Service as specified in Miscellaneous Plastic Pipe, Turbing, and Accessories section. PVC or CPVC pipe Socket ends 3 inch and smaller PVC or CPVC pipe	Type	Ball check, true union
	Body	PVC or CPVC, material shall match pipe material
	Trim	
	Ball	PVC or CPVC, material shall match pipe material
	Seat	Viton or EPDM
	Seals	Viton or EPDM
	End Connection	Socket
	Temp. Limitations	0 to 140°F
	Manufacturers	Hayward Plastics Products "Ball Check Valve", Nibco "Chemtrol True Union Ball Check Valve", Spears Manufacturing Co. "True Union 2000 Industrial Series 4500 Ball Check Valves".

2-1.14. Valves VC-14. Not used.

2-1.14. Valves VC-15. Not used.

2-1.16. Valves VC-16.

VC-16	Rating	150 psig nonshock
Liquid Ammonium Sulfate (316 SS) Sodium Hydroxide (316 SS) Sodium Hypochlorite (Hastelloy C) as indicated on the drawings	Type	Lift check (Disc)
	Body	316 Stainless Steel Hastelloy C
	Trim	
	Disk	316 Stainless Steel or Hastelloy C
	Seat	316 Stainless Steel or Hastelloy C
	Gasket	316 Stainless Steel or Hastelloy C, Spiral Wound
	End Connection	Threaded
	Temp. Limitations	1,200 °F at 600 psig
	Manufacturers	CheckAll Valve "Series UN-3", or approved equal.

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2 inch and smaller carbon steel or hastelloy c piping.	
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2-1.17. Valves VC-17. Not used.

VC-17	Rating	100 psig nonshock
Chemical piping vacuum relief service	Type	Diaphragm, two piece
	Body	PVC
PVC or CPVC pipe	Trim	Diaphragm
	Diaphragm	Chemical resistant
	End Connection	Threaded
	Temp. Limitations	0 to 140°F
	Manufacturers	Plast-O-Matic "Series CKM Check Valves" or "Series VB Vacuum Breakers"

2-1.18. Valves VC-18. Not used.

VC-18	Rating	3000 psig
Chemical piping vacuum relief service	Type	Vacuum Breaker, Universal Low Pressure
	Body	316 Stainless Steel
2 inch and smaller steel pipe	Trim	Seat
	Seat	Chemically resistant
	End Connection	Threaded
	Temp. Limitations	700°F
	Manufacturers	Check-All Valves "UN-3-100-SS-E" or equal

2-1.19. Valves VC-19. Not used.

2-1.20. Valves VC-20.

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VC-20	Rating	Class 150
RO system services	Type	Dual disc wafer
	Body	A351-CF8M, 316 Stainless steel
	Trim	
	Seat	TFE or EPDM
2 inch and larger pipe	Disc	A351-CF8M, 316 Stainless steel
	Hinge Pins/Stops	A351-CF8M, 316 Stainless steel
	Springs	A351-CF8M, 316 Stainless steel TFE
	Bushings	
	End Connection	Flanged, ASME B16.5, Class 150 diameter and drilling
	Temp. Limitations	-20 to 212°F
	Manufacturers	Mueller Steam Speciality, "Model 74", Techno "Style 5053"

2-1.21. Valves VC-21.

VC-21	Rating	150 psig nonshock
Hydrogen dilution air (blower discharge)	Type	Ball check, true union
	Body	CPVC, material shall match pipe material
	Trim	
	Ball	CPVC, material shall match pipe material
	Seat	Viton
Flange ends	Seals	Viton
	End Connection	Flange
	Temp. Limitations	0 to 140°F
6 inch CPVC pipe	Manufacturers	Hayward Plastics Products "Ball Check Valve", or approved equal.

2-1.22. Valves VC-22.

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VC-22 Submerged Duckbill Check Valve	Design Backpressure	28 feet
	Body and Gasket	Neoprene
	Mounting clamps and hardware	316 Stainless steel
	Design Capacity	Min: 3.45 mgd Max: 22.06 mgd
	Manufacturers	Tideflex "Series TF-2" or approved equal.

2-1.23. Valves VC-23.

VC-23 RO Concentrate 2 inch and larger pipe	Rating	Class 150
	Type	Dual disc wafer
	Body	Duplex Stainless Steel
	Trim	
	Seat	Buna-N or EPDM
	Disc	Duplex Stainless Steel
	Hinge Pins/Stops	Duplex Stainless Steel
	Springs	Duplex Stainless Steel TFE
	Bushings	
	End Connection	Flanged, ASME B16.5, Class 150 diameter and drilling
	Temp. Limitations	-20 to 212°F
Manufacturers	Crane "Duo-Chek High Performance Non-Slam Check Valve" or approved equal	

2-1.22. Shop Coatings. All ferrous metal surfaces of valves and accessories, both interior and exterior, shall be shop coated for corrosion protection. The valve manufacturer's standard coating will be acceptable, provided it is functionally equivalent to the specified coating.

Coating Materials

Coal Tar Epoxy

High-build coal tar epoxy; Ameron
"Amercoat 78HB Coal Tar Epoxy",
Carboline "Bitumastic 300 M", Tnemec

"46H-413 Hi-Build Tneme-Tar", or
Sherwin-Williams "Hi-Mil Sher-Tar Epoxy".

Epoxy Enamel (for liquid service) Ameron "Amerlock 400 High-Solids Epoxy
Coating", Carboline "Carboguard®891", or
Tnemec "Series N140 Pota-Pox Plus".

Rust-Preventive Compound As recommended by the manufacturer.

Surfaces To Be Coated

Unfinished Surfaces

Interior Surfaces

Liquid Service Epoxy enamel.

Exterior Surfaces of Valves To
Be Buried, Submerged, or
Installed in Manholes or Valve
Vaults Asphalt varnish or coal tar epoxy.

Exterior Surfaces of All Other
Valves Universal primer.

Polished or Machined Surfaces Rust-preventive compound.

Actuators and Accessories Universal primer.

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PART 3 – EXECUTION

3-1. INSTALLATION. Materials furnished under this section shall be installed in accordance with Valve Installation section.

3-2. VALVE SCHEDULE

Location	Tag Number	Size	Type of Valve	Service Code(2)	Ends(1)
Contractor Supplied Valves					
Forebay	VCK-0055	24	VC-11	ROF	F
Forebay	VCK-0057	20	VC-11	RW	F
Transfer Pump Discharge – Perris I	VCK-1060	20	VC-11	ROF	F
Transfer Pump Discharge	VCK-1010	16	VC-11	ROF	F
Transfer Pump Discharge	VCK-1020	16	VC-11	ROF	F
Transfer Pump Discharge	VCK-1030	16	VC-11	ROF	F
Transfer Pump Discharge	VCK-1040	16	VC-11	ROF	F
Forebay Influent – Duck Bill	VCK-0105	16	VC-22	ROF	C
Forebay Influent – Duck Bill	VCK-0106	16	VC-22	ROF	C
Forebay Influent – Duck Bill	VCK-0107	16	VC-22	ROF	C
Forebay Influent – Duck Bill	VCK-0108	16	VC-22	ROF	C
RO Cleaning to RO CIP Tank	VCK-1625	10	VC-20	CIPCR	F
Decarbonator 2 Influent – Transfer Pump Discharge	VCK-2041	16	VC-11	ROB	F
Decarbonator 2 Influent – Forebay Bypass	VCK-2042	16	VC-11	ROB	F
Finished Water Pump No. 1	VCK-2210	10	VC-8	FW	F
Finished Water Pump No. 2	VCK-2220	10	VC-8	FW	F

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Location	Tag Number	Size	Type of Valve	Service Code(2)	Ends(1)
Finished Water Pump No. 3	VCK-2230	14	VC-11	FW	F
Finished Water Pump No. 4	VCK-2240	14	VC-11	FW	F
Brine Pump No. 1	VCK-9115	12	VC-23	ROC	F
Brine Pump No. 2	VCK-9125	12	VC-23	ROC	F
Brine Pump No. 3	VCK-9135	12	VC-23	ROC	F
ROSS Supplied Valves					
RO Feed Pump No. 1 Discharge	VCK-1210	*	VC-20	ROF	F
RO Feed Pump No. 2 Discharge	VCK-1220	*	VC-20	ROF	F
RO Feed Pump No. 3 Discharge	VCK-1230	*	VC-20	ROF	F
ROU 1 Permeate	VCK-1414	*	VC-20	ROP	F or L
ROU 1 CIP Permeate Return	VCK-1415	*	VC-20	CIPPR	F or L
ROU 2 Permeate	VCK-1424	*	VC-20	ROP	F or L
ROU 2 CIP Permeate Return	VCK-1425	*	VC-20	CIPPR	F or L
ROU 3 Permeate	VCK-1434	*	VC-20	ROP	F or L
ROU 3 CIP Permeate Return	VCK-1435	*	VC-20	CIPPR	F or L
ROU 1 Concentrate	VCK-1516	*	VC-23	ROC	F or L
ROU 2 Concentrate	VCK-1526	*	VC-23	ROC	F or L
ROU 3 Concentrate	VCK-1536	*	VC-23	ROC	F or L
CIP Pump 1 Discharge	VCK-1610	*	VC-20	CIP	F or L
CIP Pump 2 Discharge	VCK-1620	*	VC-20	CIP	F or L

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Location	Tag Number	Size	Type of Valve	Service Code(2)	Ends(1)
RO Flush Pump 1 Discharge	VCK-1703	*	VC-20	ROFL	F or L
RO Flush Pump 2 Discharge	VCK-1705	*	VC-20	ROFL	F or L

*Valve characteristics to be determined by equipment manufacturer in Shop Drawing Submittal.

(1) Abbreviations for valve ends are as indicated:

C: 316 SS Clamp

F: Flanged

L: Lugged

MJ: Mechanical Joint

(2) See Instrumentation Drawings for service code definitions.

END OF SECTION