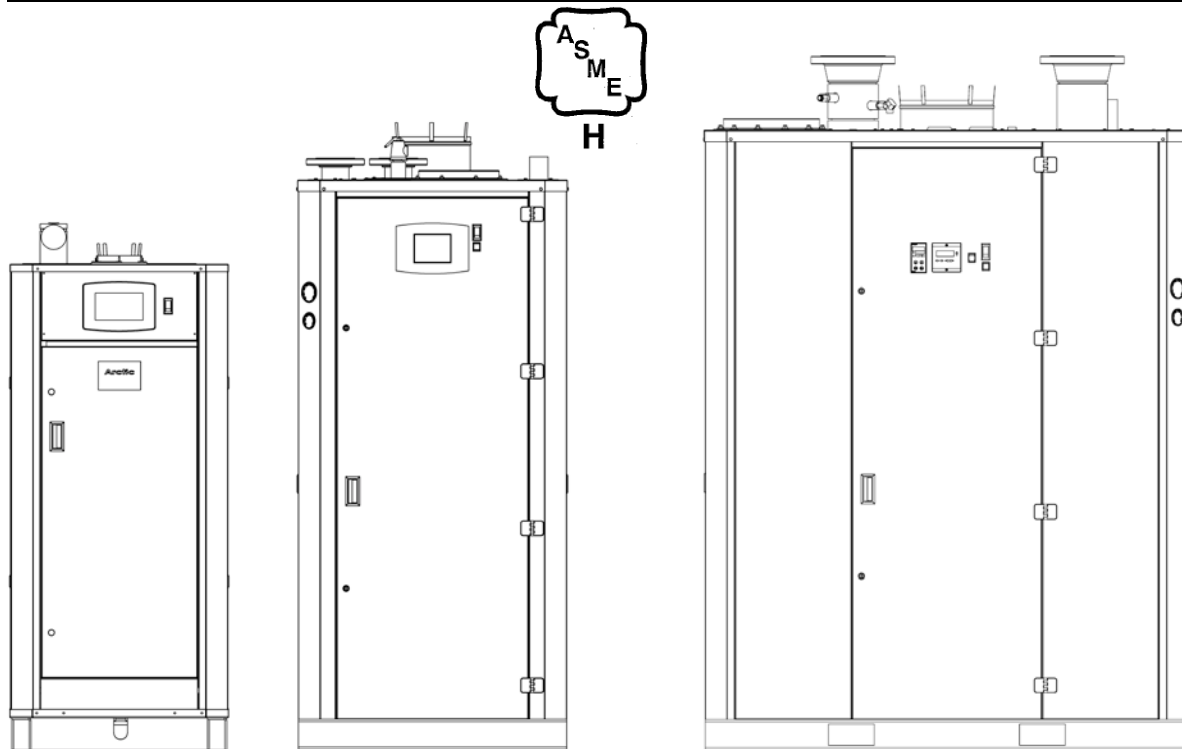


# FREE FLEX

High Efficiency, Low Emission  
 CONDENSING BOILER

## FF1000 – FF6000 PARTS MANUAL



For service and repair to the boiler, call your heating contractor. When seeking information on the boiler from the manufacturer, provide boiler model and serial number as shown on the rating label.

Boiler Model:	Serial Number:
Installation Date:	Type System:
Heating Contractor:	Phone/Email:
Address:	



This manual must only be used by a qualified heating installer/service technician. Read all instructions in this manual before installing. Perform steps in the order given. Failure to comply could result in severe personal injury, death, or substantial property damage.

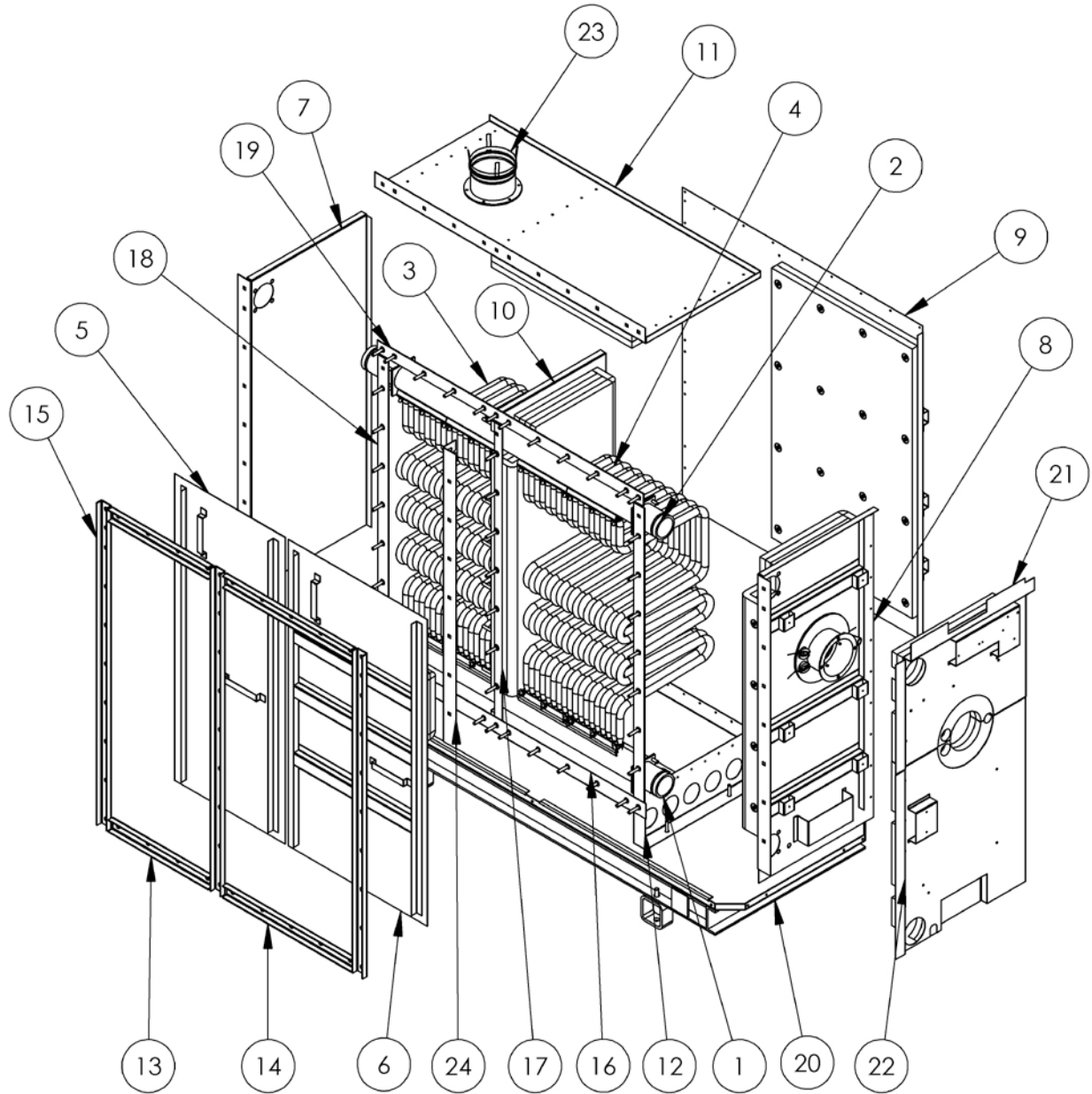


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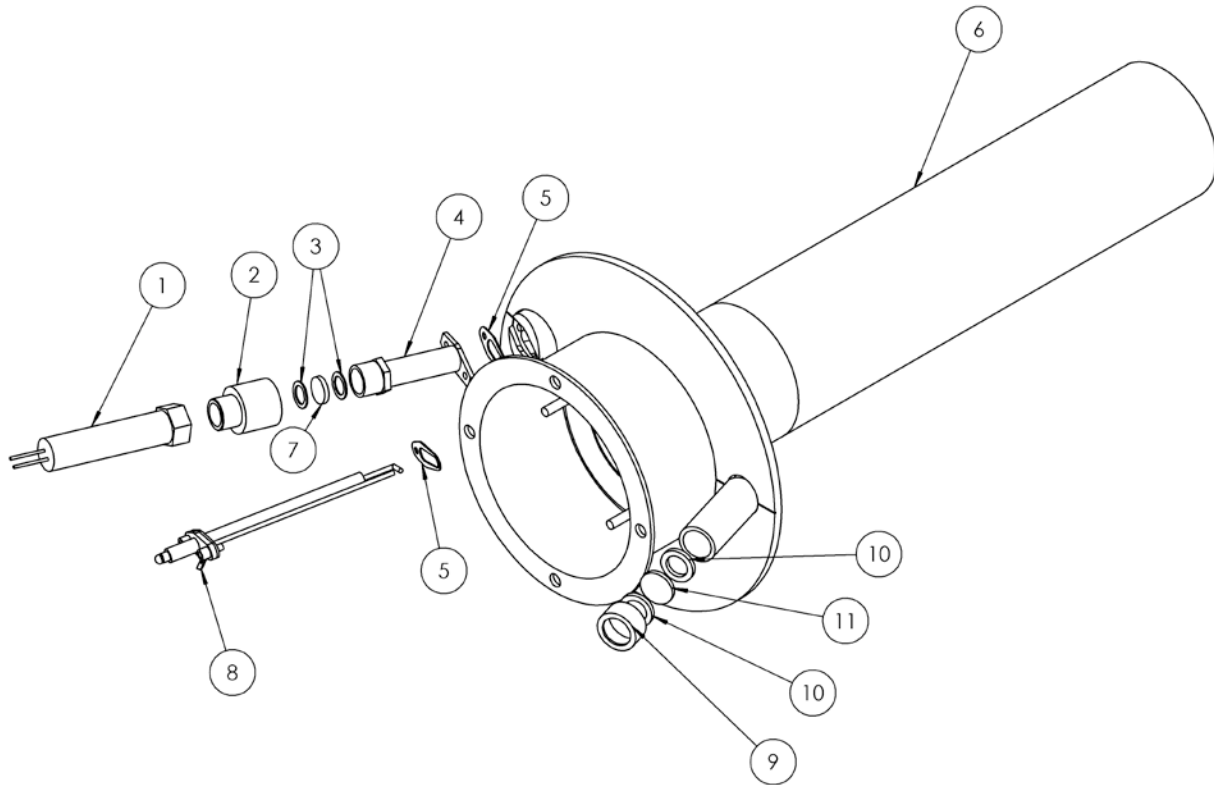
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**1 FF 1000 Parts**

**1.1 Heat Exchanger**



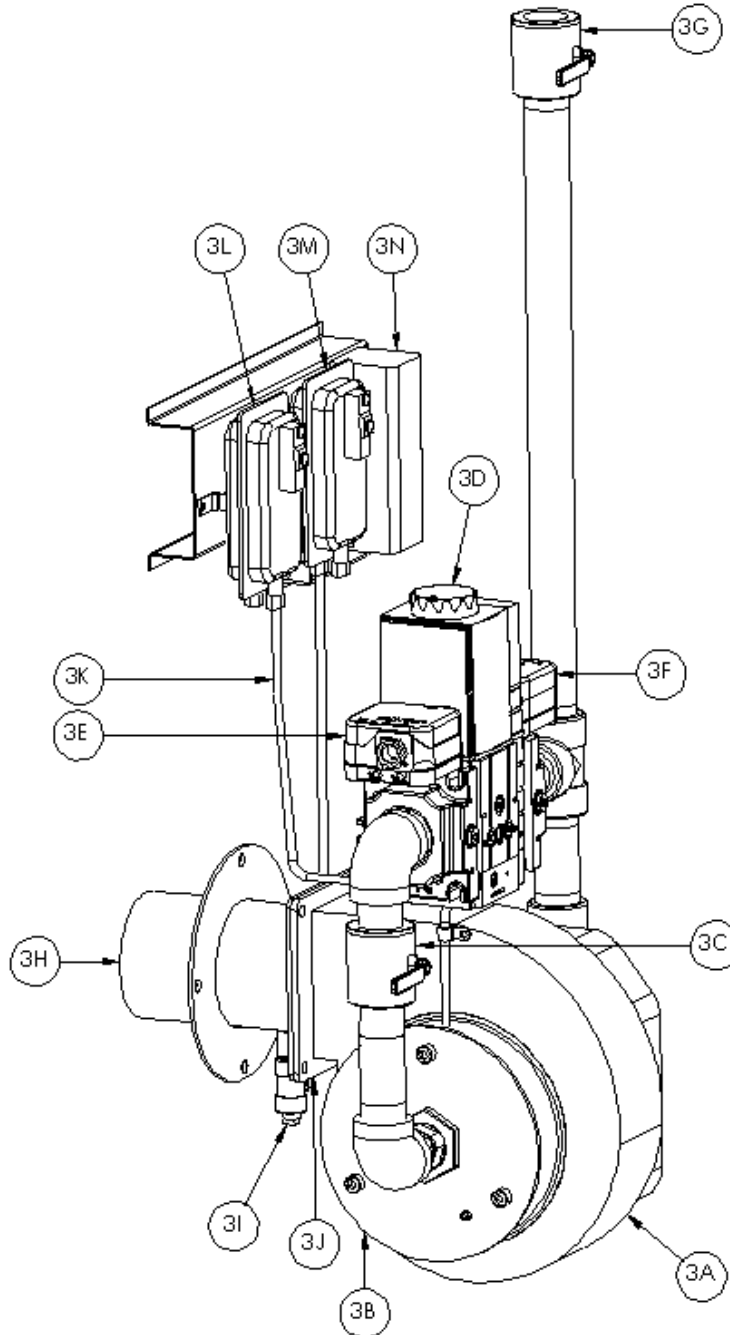
<b>Table 1.1 Heat Exchanger Parts</b>			
Item Number	Description	Quantity	Part Number
1	Lower Header	1	105670-01
2	Upper Header	1	105669-01
3	Convection Tubes Long Return (Yellow Paint)	9	105696-01
	Convection Tubes Short Return (Black Paint)	9	105696-04
4	Furnace Tubes Long Return	9	105696-02
	Furnace Tubes Short Return	9	105696-03
5	Convection Tube Access Door	1	105276-06
6	Furnace Tube Access Door	1	105539-01
7	Flue Collector Rear Panel	1	105277-01
8	Flue Collector Front Panel	1	105538-01
9	Flue Collector Side Panel	1	105540-01
10	Flue Collector Center Panel	1	105537-01
11	Flue Collector Top Panel	1	105541-01
12	Condensate Pan	1	105260-01
13	Horizontal Convection tube Access Door Clamp	2	105263-01
14	Horizontal Furnace Tube Access Door Clamp	2	105262-01
15	Vertical Tube Access Door Clamp	3	105261-01
16	Bottom Reinforcement Plate	1	105281-01
17	Vertical Center Reinforcement Plate	1	105284-01
18	Vertical Side Reinforcement Plates	2	105283-01
19	Top Reinforcement Plate	1	105282-01
20	Boiler Base Assembly	1	T40010
21	Top Vestibule Panel	1	105343-01
22	Bottom Vestibule Panel	1	105343-02
23	E-Z Tab Stack Adapter	1	811EVC006
24	Center Panel Brace	1	105264-01
Not Shown	Black Impregnated Gasket 2-1/2" Wide (Tube Access Doors)	20.5 ft.	105668-02
Not Shown	Black Impregnated Gasket 1" Wide (Flue Collector)	37 ft.	102178-01

**1.2 Burner Assembly**

Item Number	Description	Quantity	Part Number
1	Ultra-Violet (UV) Scanner	1	106684-01
2	Heat Insulator	1	8026217
3	Ultra-Violet (UV) Lens Gasket	2	107031-01
4	Ultra-Violet (UV) Scanner Bracket	1	106685-01
5	Igniter/Scanner Gasket	1	105246-02
6	Burner	1	105618-01
7	Ultra-Violet (UV) Lens	1	107032-01
8	Igniter	1	105678-01
9	Site Glass Bushing	1	105657-01
10	Site Glass Gasket	2	105490-01
11	Site Glass Lens	1	105656-01

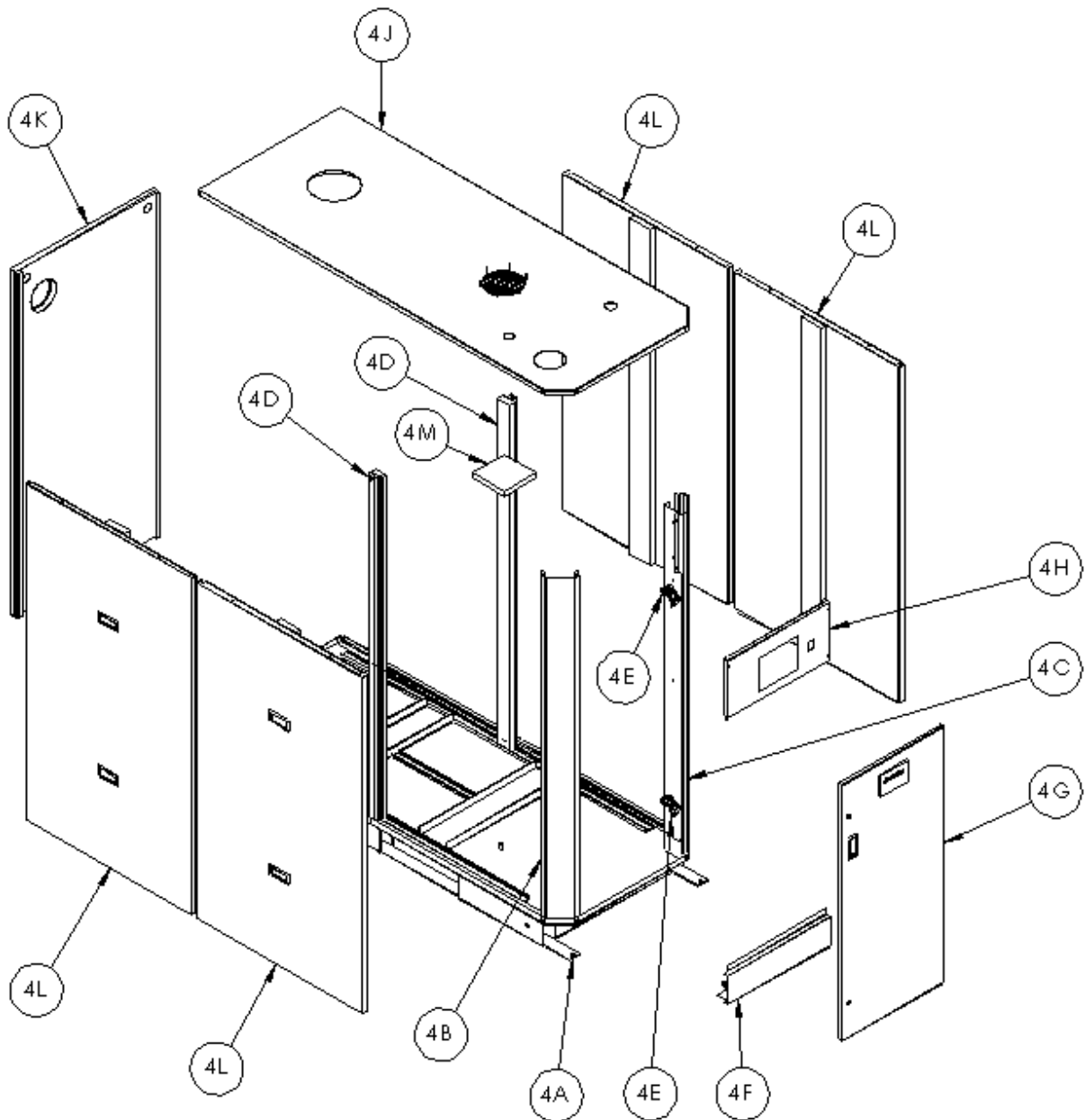
### 1.3 Gas Train and Upper Vestibule Controls

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Item Number	Description	Quantity	Part Number
3A	Blower	1	105326-01
3B	Swirl Plate	1	105327-01
3C	Manual Shut-Off Ball Valve	1	105325-01
3D	Main Gas Valve	1	105330-01
3E	High Gas Pressure Switch	1	105328-01
3F	Low Gas Pressure Switch	1	105329-01
3G	Ball Valve, 1-1/8" Tapping	1	105324-01
3H	Blower Adapter	1	105259-01
3I	1/4"NPT Plug	2	806603599
3J	1/4"NPTx1/4" Tube Compression Fitting	2	822658
3K	Pressure Switch Tubing	3 ft.	92465560
3L	Minimum Air Pressure Switch (Combustion Air)	1	106239-01
3M	Maximum Air Pressure Switch (Blocked Vent)	1	105691-01
3N	Auto-Reset High Limit	1	80160626

### 1.4 Jacket

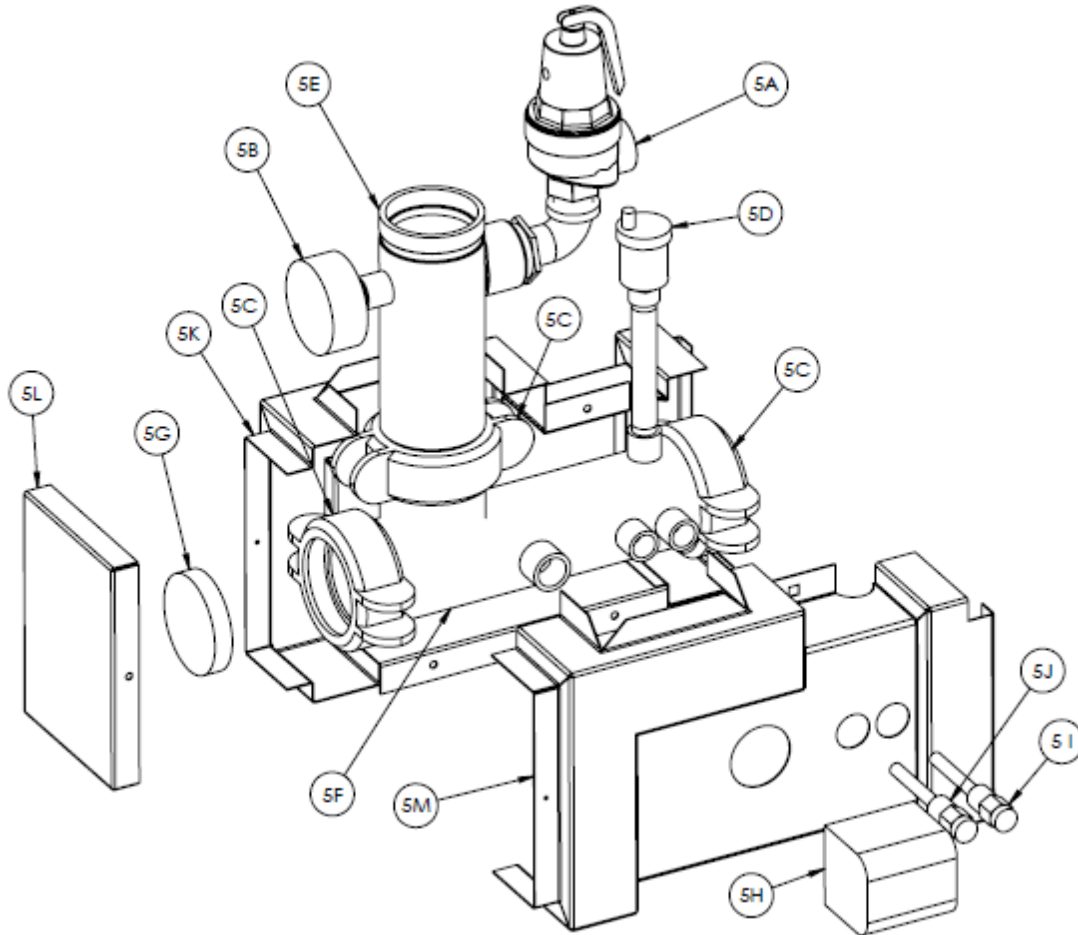




<b>Table 1.4 Jacket</b>			
Item Number	Description	Quantity	Part Number
4A	Base	1	105124-01
4B	Front Left Corner	1	105172-01
4C	Front Right Corner	1	105172-04
4D	Center Rail	1	105176-01
4E	Hinges	2	105714-01
4F	Front Lower Panel	1	105177-01
4G	Front Door	1	105170-04
4H	Front Upper Panel	1	105169-01
4J	Top Panel	1	105174-04
4K	Rear Panel	1	105173-02
4L	Side Door	1	105178-02
4M	Air Intake Filter	1	811SOL0020
Not Shown	Black Strip Gasket	67.5 ft.	105476-01

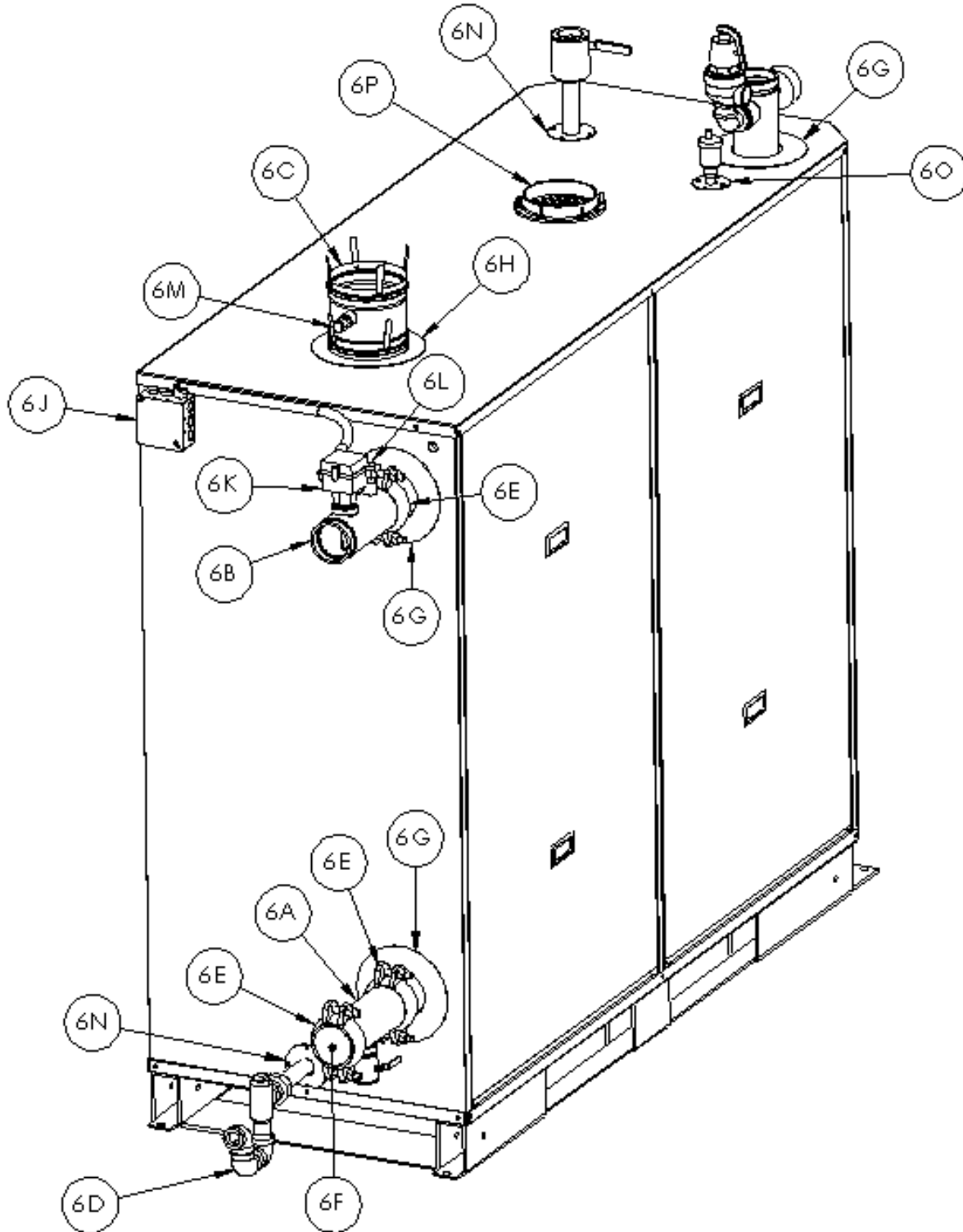
### 1.5 Outlet/Supply Manifold

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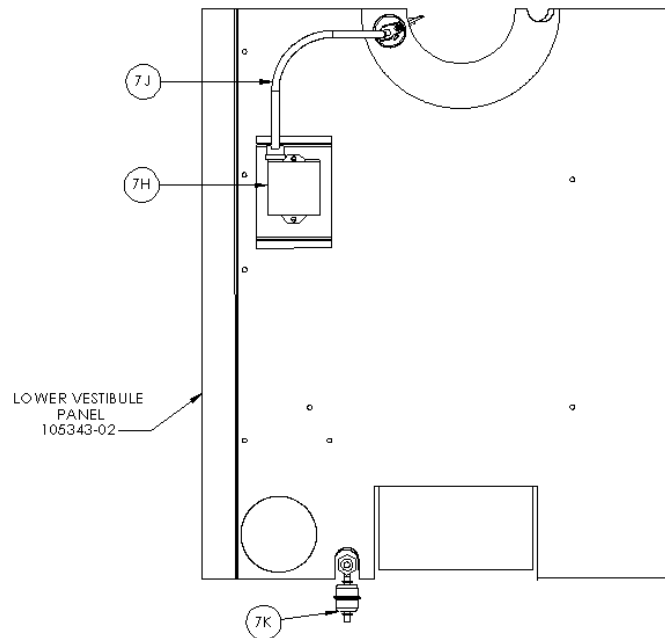
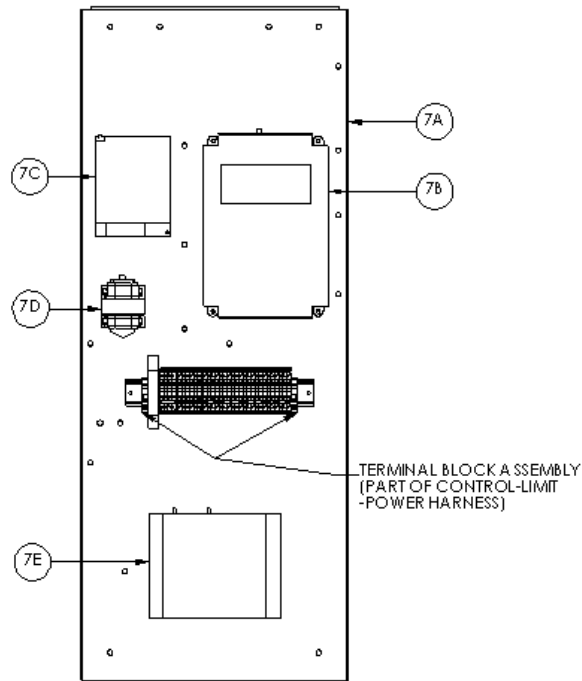
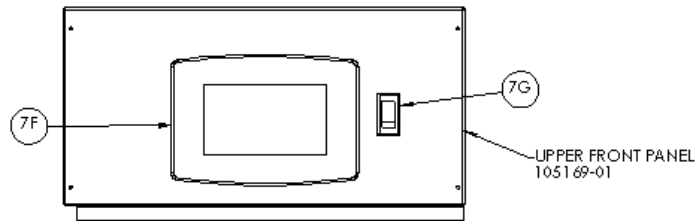
Item Number	Description	Qty.	Part Number						
			Relief Valve Setting						
			30 PSI	50 PSI	60 PSI	75 PSI	100 PSI	125 PSI	150 PSI
5A	Pressure Relief Valve	1	81660338	81660359	81660375	81660374	81660377	81660373	81660378
5B	Temperature/ Pressure Gauge	1	103470-01			103470-02			103470-03
5C	3" Victaulic Coupling	3	104035-02						
5D	1/2"NPT Air Vent	1	102260-01						
5E	Upper Water Outlet/Supply Manifold	1	105381-01						
5F	Top Panel Water Outlet/Supply Manifold	1	105382-01						
5G	3" Cap	1	104035-03						
5H	LWCO Probe	1	80160592						
5I	Immersion Well For Auto-Reset High Limit	1	105684-01						
5J	Brass Immersion Well, Outlet/Supply Water Sensor (10K ohm)	1 each	105684-01 and 105686-01						
5K	Manifold Cover Left Side Assy.	1	105480-02						
5L	Manifold Cover Cap Assy.	1	105480-03						
5M	Manifold Cover Right Side Assy.	1	105480-01						
Not Shown	Optional Remote Header sensor, Immersion Well	1 each	105685-01 and 105684-01						

### 1.6 Miscellaneous External Components



<b>Table 1.6 Miscellaneous External Components</b>			
Item Number	Description	Quantity	(Quantity) Part Number
6A	Lower Rear Manifold	1	105384-01
6B	Water Inlet/Return Manifold	1	105383-01
6C	Exhaust Stack	1	105697-01
6D	Condensate Trap	1	105432-01
6E	3" Victaulic Coupling	3	104035-02
6F	3" Cap	1	104035-03
6G	Water Inlet/Return and Outlet/Supply Manifold Trim Ring and Gasket	3 each	105211-02 and 8205644
6H	Vent Outlet Trim Ring and Gasket	1 each	105211-01 and 105486-01
6J	J-box and J-box Cover	1 each	8136056 and 8136027
6K	Water Flow Switch	1	105687-01
6L	Brass Immersion Well, Inlet/Return Temperature Sensor 10Kohm	1 each	105684-01 and 105685-01
6M	St Steel Immersion Well, Stack Temperature Sensor	1 each	105683-01 and 105686-01
6N	1" Pipe Trim Ring and Gasket	2 each	105211-04 and 8205652
6O	Air Vent Trim Ring and Gasket	1 each	105211-05 and 105693-01
6P	Air Intake Ring and Gasket	1 each	81156106 and 82056106

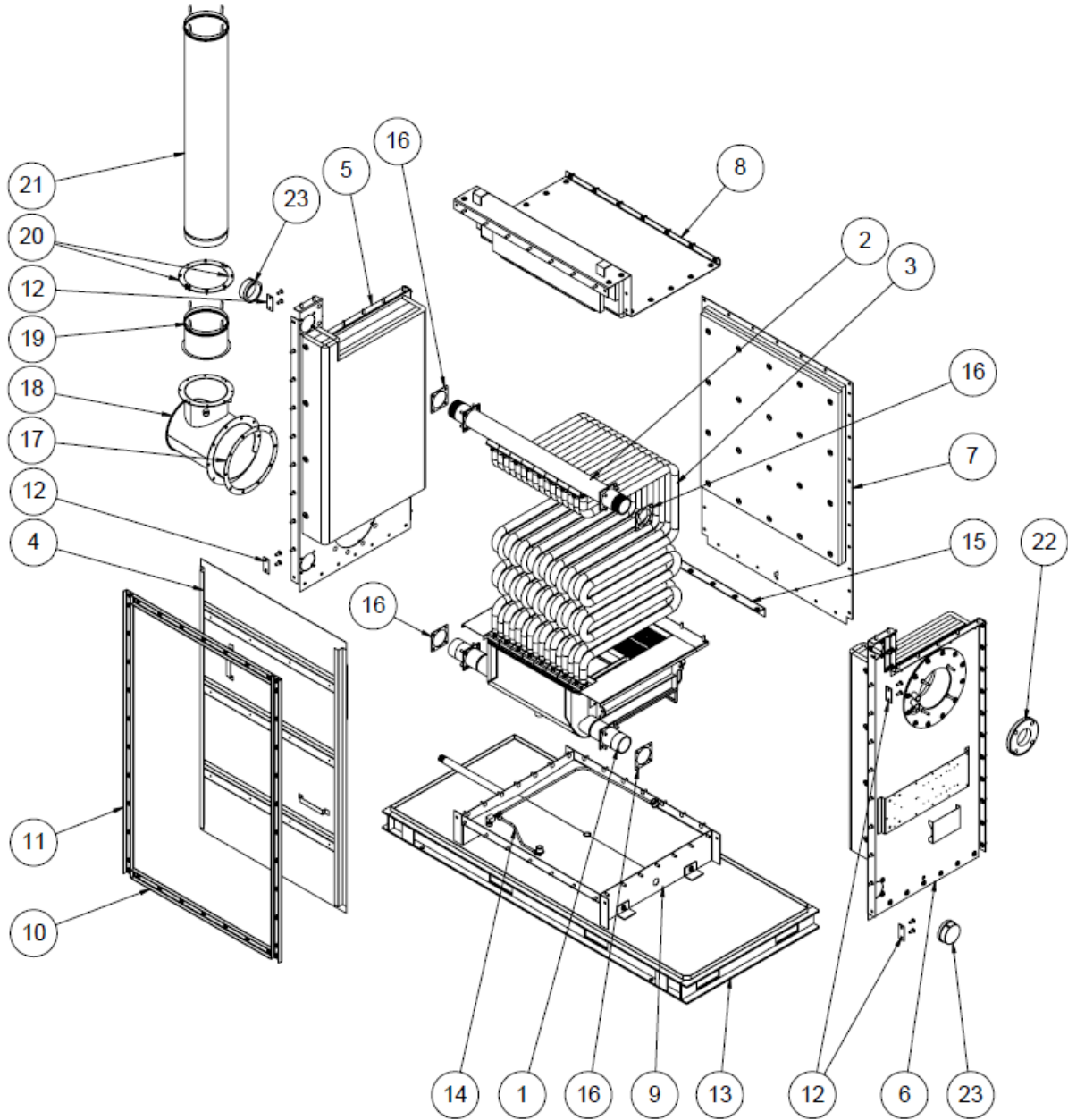
### 1.7 Controls



<b>Table 1.7 Controls</b>			
Item Number	Description	Quantity	Part Number
7A	Control Panel	1	105171-01
7B	Concert Boiler Control	1	105681-01
7C	24VDC Transformer	1	105680-01
7D	120/24V Step-down Transformer	1	801600502
7E	Low Water Cut-Off Reset Box	1	80160591
7F	Display	1	105682-01
7G	On/Off Switch	1	105658-01
7H	Ignition Transformer	1	80160208
7J	Ignition Cable	1	105218-01
7K	Blocked Condensate Switch	1	105659-01
Not Shown	Control-Limit-Power Harness	1	105660-01
Not Shown	Communication-Sensing Harness	1	105661-01
Not Shown	Line-Flow Harness	1	105662-01
Not Shown	Display Power Harness	1	105663-01

**2 FF1500 – FF3000 Parts**

**2.1 Heat Exchanger**

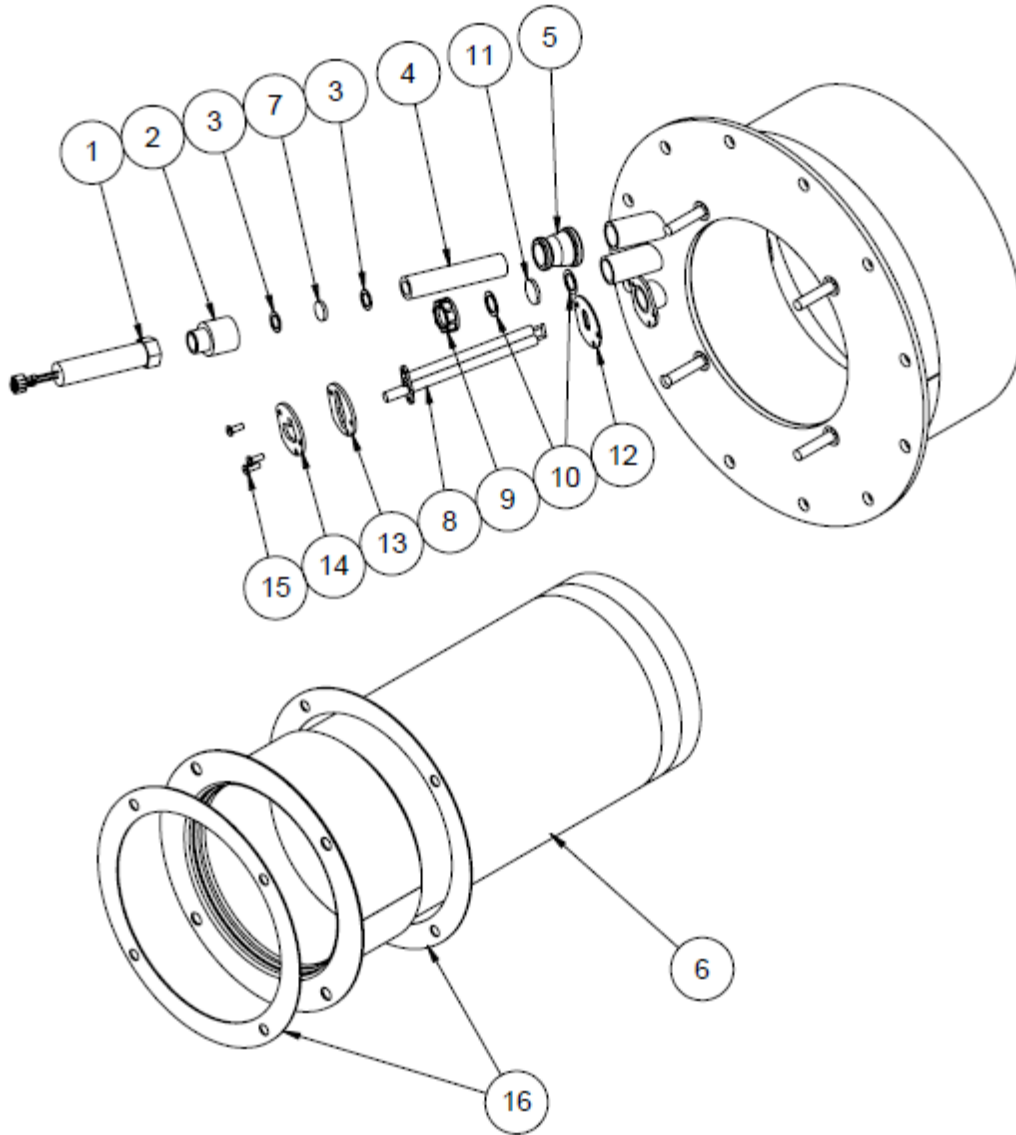




Item Number	Description	FF1500-2000		FF2500-3000	
		Quantity	Part Number	Quantity	Part Number
1	Heat Exchanger	1	T20013	1	T20017
2	Upper Header	1	P40237	1	T40033
3	Furnace Tubes Long Return	8	T30030	12	T30030
	Furnace Tubes Short Return	8	T30031	12	T30031
4	Furnace Tube Access Door	1	P40231	1	T40030
5	Flue Collector Rear Panel	1	P40230	1	P40230
6	Flue Collector Front Panel	1	P40227	1	P40227
7	Flue Collector Side Panel	1	T40013	1	T40037
8	Flue Collector Top Panel	1	P40228	1	T40035
9	Condensate Pan	1	P40224	1	T40034
10	Horizontal Furnace Tube Access Door Clamp	2	P30260.37	2	P30260.49
11	Vertical Furnace Tube Access Door Clamp	2	P30260.65	2	P30260.65
12	Flue Collector Flange Connector	4	P30271	4	P30271
13	Boiler Base Assembly	1	T40028	1	T40032
14	Heat Exchanger Drain Tube Assembly	1	T40136	1	T40137
15	Heat Exchanger Rear Flange	1	T30051	1	T30052
16	Upper Header / Heat Exchanger Gasket	4	P30254	4	P30254
17	Stack Adapter to Flue Collector Gasket	1	T20090	1	T20090
18	Stack Adapter	1	T40012	1	T40038
19	Double Flange Stack Adapter	1	T20105	1	T20106
20	Double Flange Stack Adapter Retainer	2	T30282	2	T30283
21	Saf-T Vent EZ Seal Single Wall Gas Vent	1	T20116	1	T20117
22	3" x 150 lb. Threaded Pipe Flange	1	104045-01	1	104045-01
23	3" Pipe Cap	2	806603589	2	806603589
Not Shown	Low Temperature Sealant (Between Stack Adapter & Double Flange Stack Adapter)	N/A	107650-01	N/A	107650-01
Not Shown	Black Impregnated Gasket 2-1/2" Wide (Tube Access Doors)	17.5 ft.	105668-02	19.5 ft.	105668-02
Not Shown	Black Impregnated Gasket 1" Wide (Flue Collector)	30 ft.	102178-01	33 ft.	102178-01

## 2.2 Burner Assembly

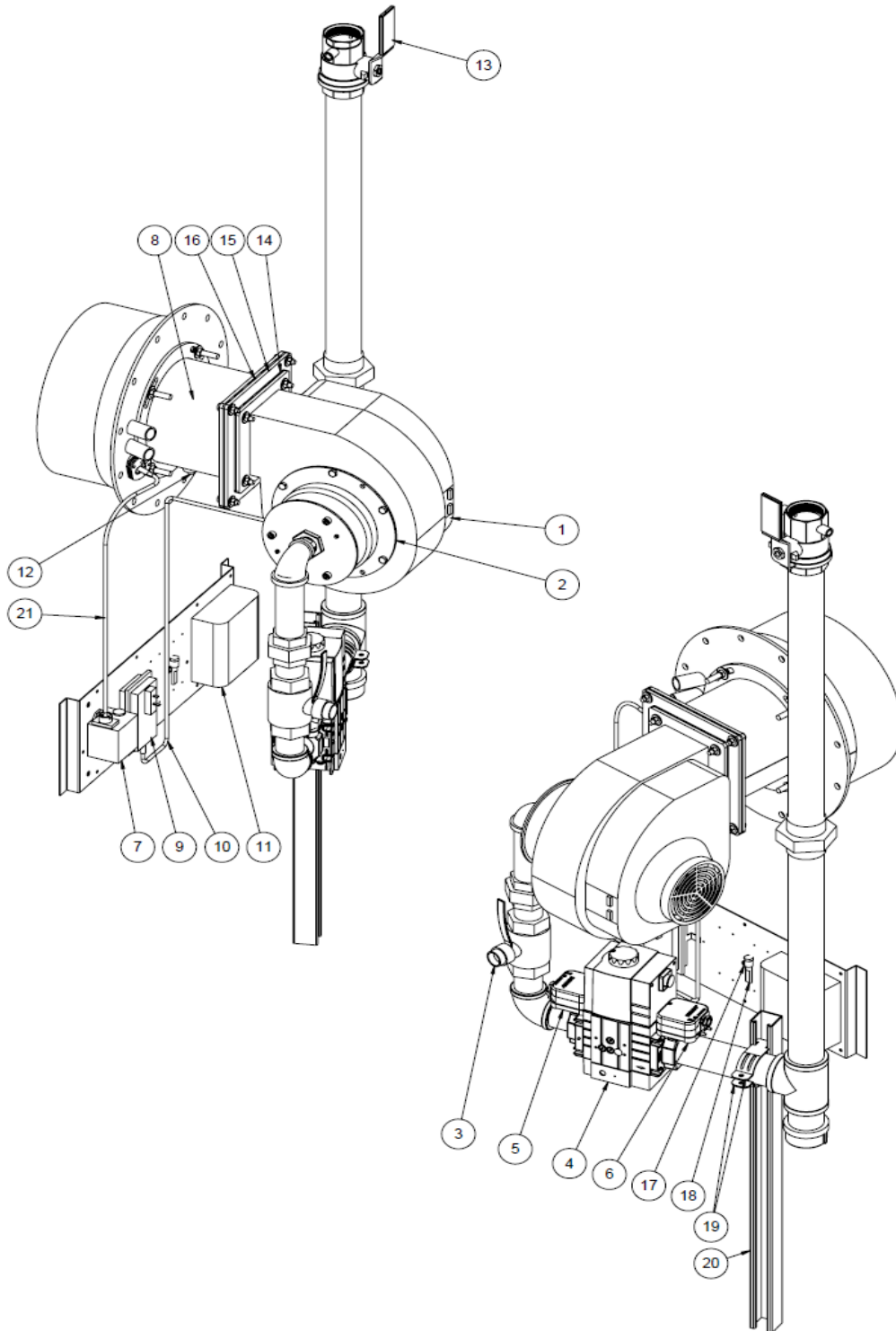
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<b>Table 2.2 Burner Assembly</b>			
Item Number	Description	Quantity	Part Number
1	Ultra-Violet (UV) Scanner	1	106684-01
2	Heat Insulator	1	8026217
3	Ultra-Violet (UV) Lens Gasket	2	T20073
4	Pipe Nipple	1	806600456
5	Reducer Coupling	1	22191
6	FF1500 Burner	1	T40045
	FF2000 Burner		T40043
	FF2500 Burner		T40044
	FF3000 Burner		T40042
7	Ultra-Violet (UV) Lens	1	107031-01
8	Igniter	1	105678-01
9	Site Glass Bushing	1	T20006
10	Site Glass Gasket	2	T20005
11	Site Glass Lens	1	T20004
12	Igniter Gasket	1	T20046
13	Igniter Adapter Plate	1	T30060
14	Igniter Retainer	1	T30059
15	Machine Screw	3	108590-01
16	Burner Gasket	2	P20243

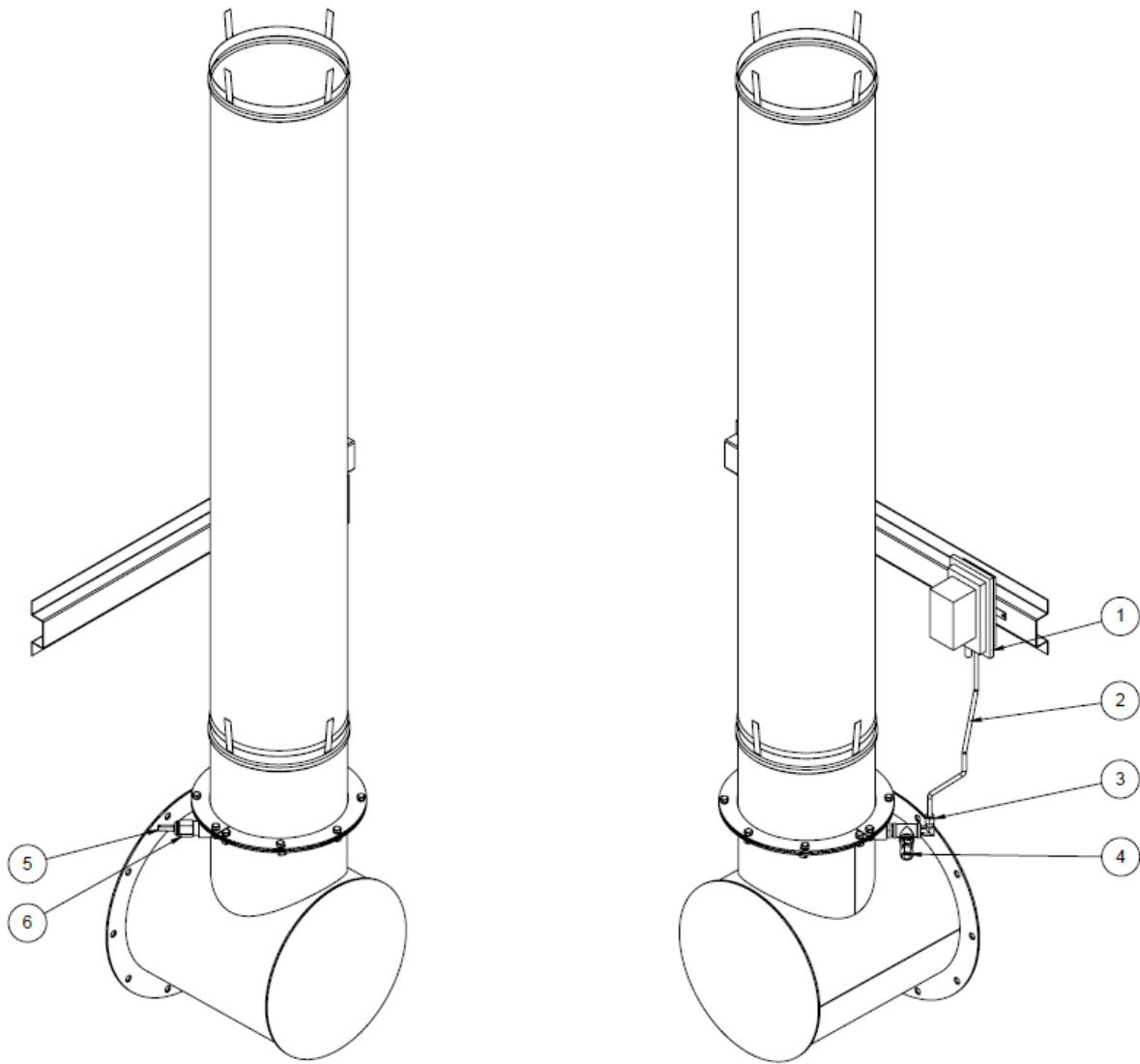
## 2.3 Gas Train and Flue Collector Controls

### 2.3.1 Front Gas Train and Flue Collector Controls



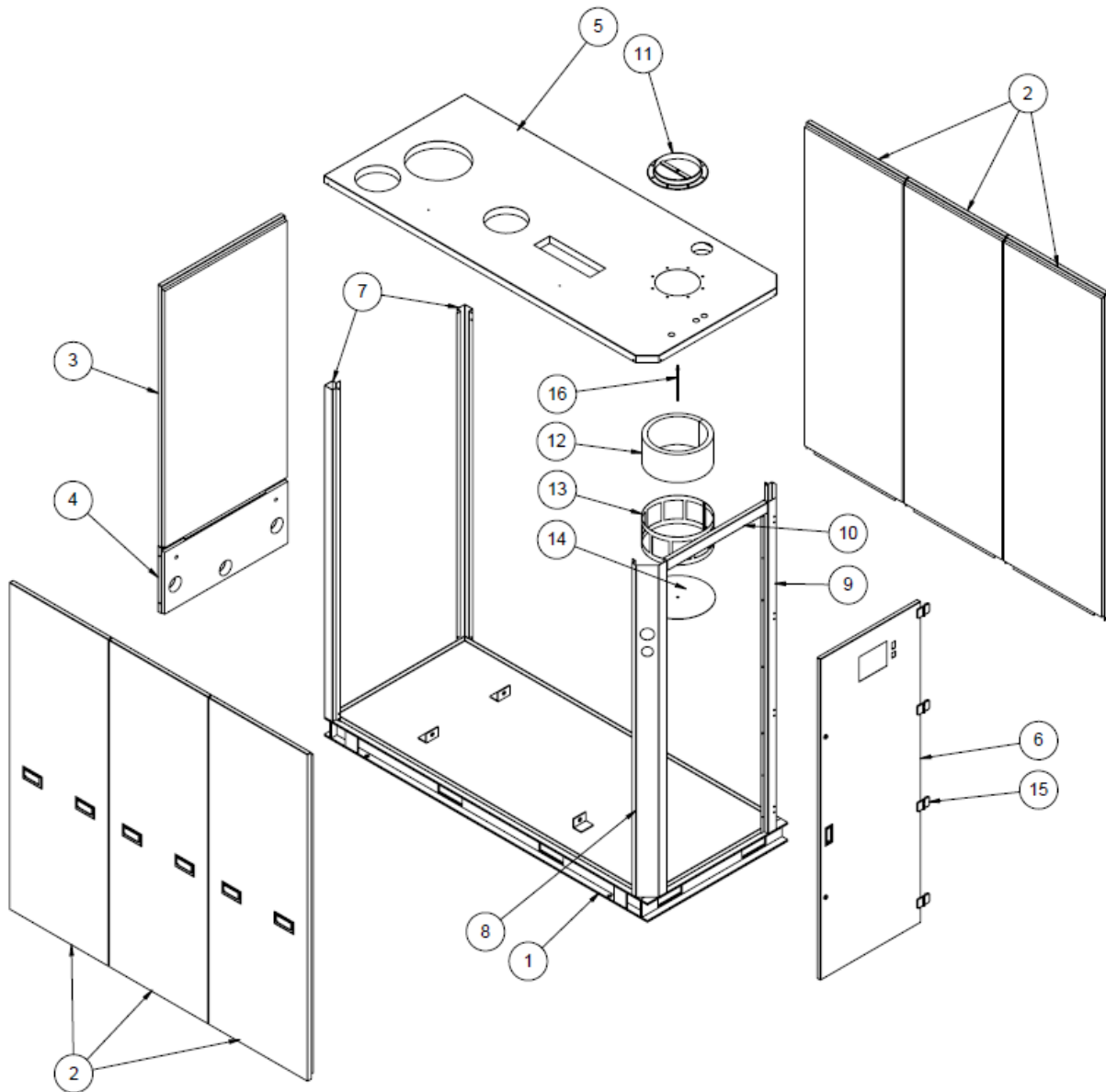
Item Number	Description	FF1500		FF2000		FF2500-3000	
		Qty.	Part Number	Qty.	Part Number	Qty.	Part Number
1	Blower	1	T20082	1	P20011	1	P20011
2	Swirl Plate	1	P20288	1	107475-01	1	P20271
3	Manual Shut-Off Ball Valve	1	806603042	1	806603042	1	806603042
4	Main Gas Valve	1	107563-01	1	107563-01	1	107563-01
5	High Gas Pressure Switch	1	105328-01	1	105328-01	1	105328-01
6	Low Gas Pressure Switch	1	105329-01	1	105329-01	1	105329-01
7	Ignition Transformer	1	80160208	1	80160208	1	80160208
8	Blower Adapter	1	T40125	1	T40017	1	T40017
9	Fixed Differential Air Pressure Switch	1	106239-01	1	106239-01	1	106239-01
10	Fixed Differential Air Pressure Switch Tubing	2.92 ft	92465560	2.88 ft	92465560	2.88 ft	92465560
11	LWCO	1	28344.3	1	28344.3	1	28344.3
12	1/4" NPT Plug	1	806603599	1	806603599	1	806603599
13	Ball Valve, 2-1/8" Tappings	1	822698	1	822698	1	822698
14	Blower Gasket	1	T20088	1	P20075	1	P20075
15	Blower Adapter Plate	1	T30152	0	N/A	0	N/A
16	Blower Adapter Plate Gasket	1	T20087	0	N/A	0	N/A
17	Thermal Fuse Clamp	1	106364-01	1	106364-01	1	106364-01
18	Thermal Fuse	1	106340-01	1	106340-01	1	106340-01
19	Support Strut Clamp	2	P20070	2	P20070	2	P20070
20	Support Strut	1	P30155.28	1	P30155.28	1	P30155.28
21	Ignition Cable	1	105218-01	1	105218-01	1	105218-01

### 2.3.2 Rear Flue Collector Controls



Item Number	Description	Quantity	Part Number
1	Adjustable Differential Pressure Switch	1	22051
2	Adjustable Differential Pressure Switch Tubing to Stack	1.21 ft	92465560
3	1/4" NPT x 1/4" Tube Compression Fitting 90° Elbow	1	8236046
4	1/4" NPT x 3/8" Tube Compression Fitting	1	70660165
5	Stack Temperature Sensor	1	105686-01
6	Stainless Steel Immersion Well	1	105683-01

## 2.4 Jacket

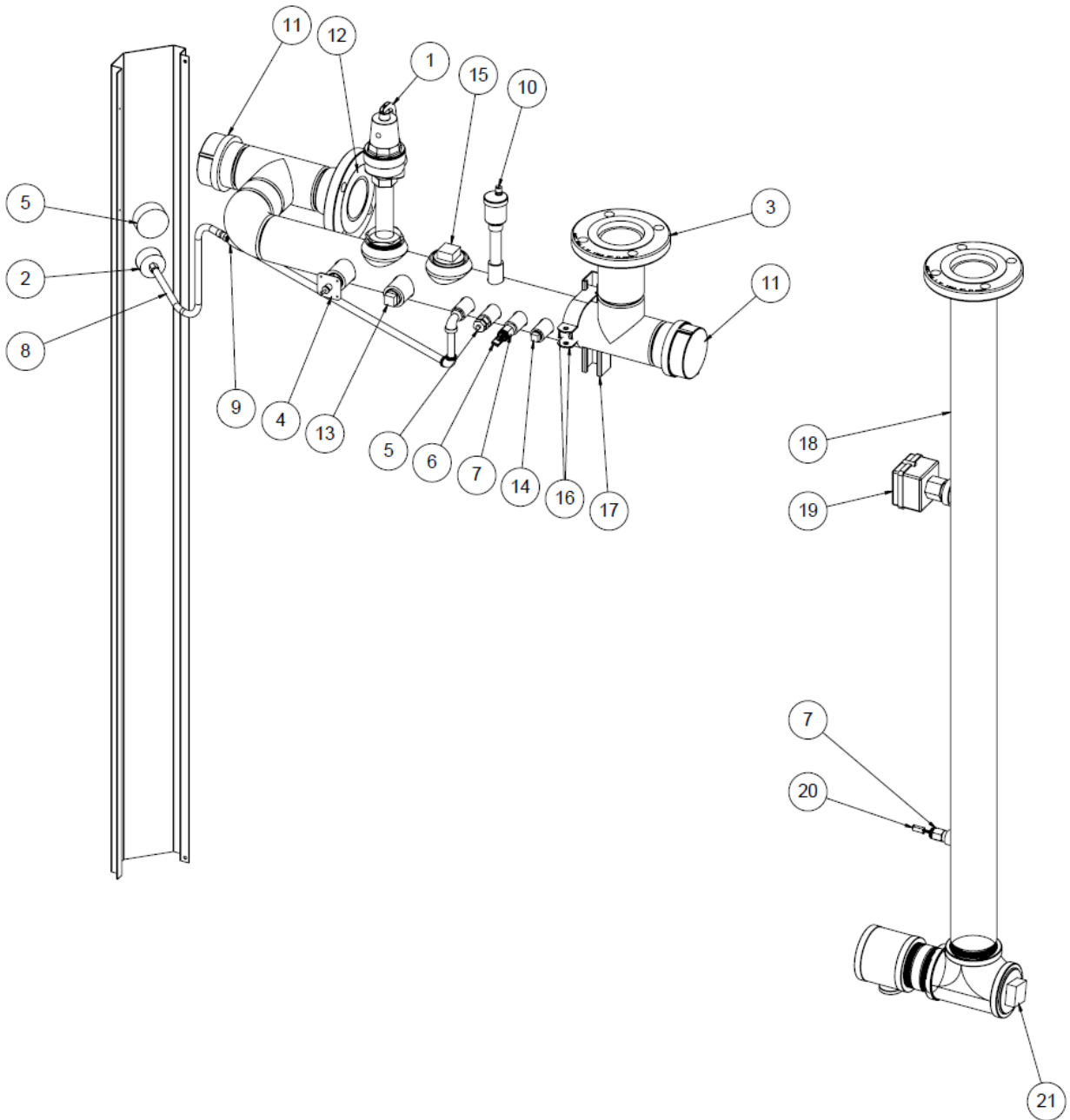


<b>Table 2.4 Jacket</b>					
Item Number	Description	FF1500-2000		FF2500-3000	
		Quantity	Part Number	Quantity	Part Number
1	Base	1	T40028	1	T40032
2	Side Door	6	T40050	6	T40051.P
3	Rear Panel	1	T40052.P	1	T40052.P
4	Rear Lower Panel	1	T40243	1	T40243
5	Top Panel	1	T40244	1	T40245
6	Front Door	1	T40025	1	T40025
7	Rear Corner (Orange)	2	T30140	2	T30140
	Rear Corner (Silver)		T30140.FF		T30140.FF
8	Front Left Corner (Orange)	1	T30032	1	T30032
	Front Left Corner (Silver)		T30032.FF		T30032.FF
9	Front Right Corner (Orange)	1	T30033	1	T30033
	Front Right Corner (Silver)		T30033.FF		T30033.FF
10	Front Door Top Bar (Orange)	1	T30035	1	T30035
	Front Door Top Bar (Silver)		T30035.FF		T30035.FF
11	Air Intake Angle Ring	1	T40072	1	T40073
12	Air Intake Filter	1	T30167	1	T30167
13	Air Intake Filter Retainer	1	T30166	1	T30166
14	Air Intake Filter Cover	1	T30168	1	T30168
15	Hinges	4	P20044	4	P20044
16	Air Intake Filter Mount Stud	1	T30178	1	T30178



## 2.5 Inlet/Return and Outlet/Supply Manifold

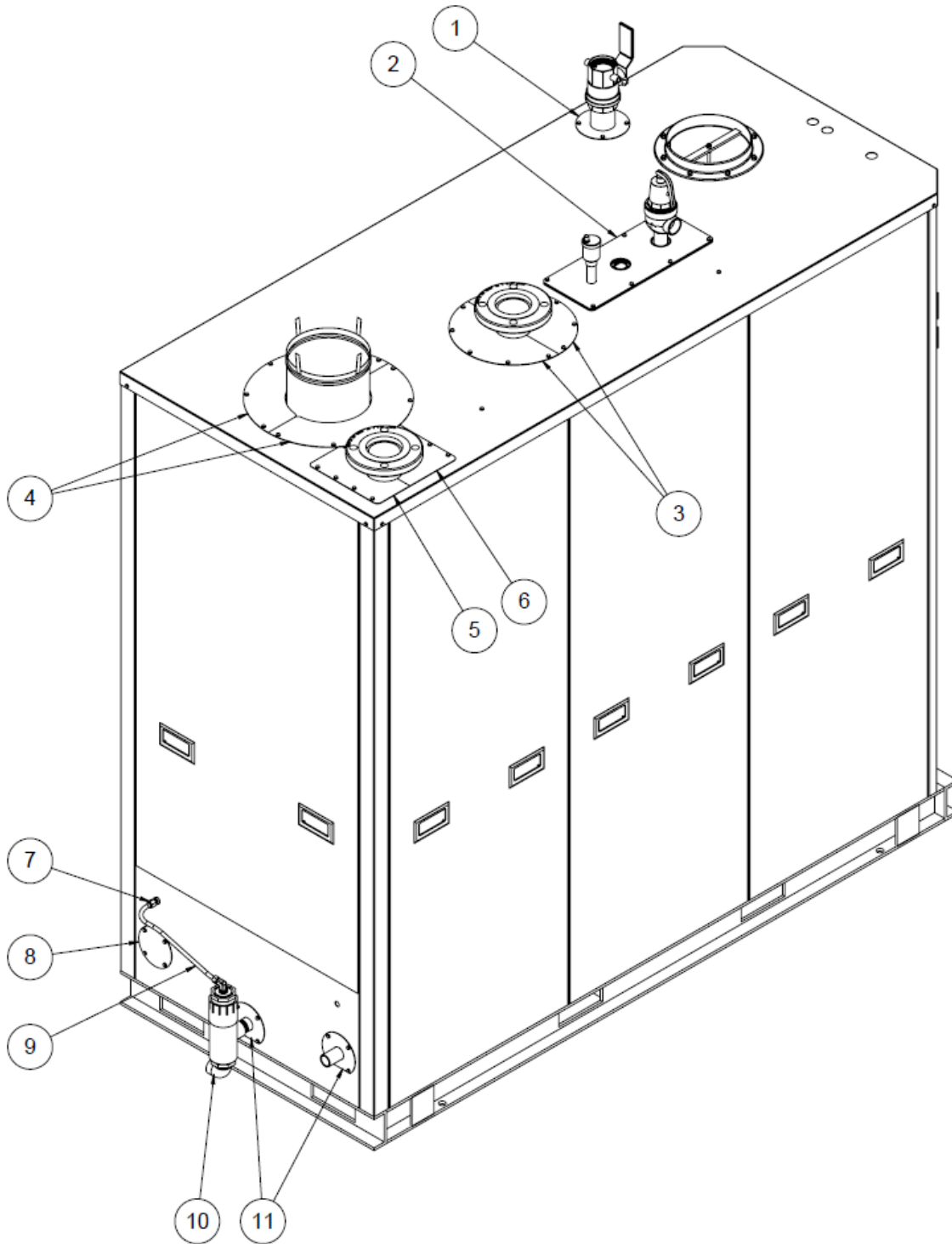
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Item Number	Description	Qty.	Part Number						
			Relief Valve Setting						
			30 PSI	50 PSI	60 PSI	75 PSI	100 PSI	125 PSI	150 PSI
1	FF1500 Relief Valve	1	81660338	81660362	81660375	81660374	81660377	81660373	81660378
	FF2000 Relief Valve	1	81660334	81660362	81660376	81660374	81660377	81660373	81660378
	FF2500 Relief Valve	1	81660334	81660357	81660376	81660389	81660377	81660373	81660378
	FF3000 Relief Valve	1	81660335	81660357	81660379	81660389	81660381	81660373	81660378
2	Pressure Gauge	1	107187-01		107187-02		107187-03		
3	Upper Water Outlet/Supply Manifold	1	P40133						
4	LWCO Probe	1	28344.3						
5	Temperature Gauge and Probe	1	P20287						
6	Outlet/Supply Water Sensor (10Kohm)	1	105686-01						
7	Brass Immersion Well	2	105684-01						
8	1/4" Braided Hose	1	P20110						
9	Ball Valve	1	822758						
10	1/2" NPT Air Vent	1	102260-01						
11	3" Pipe Cap	2	806603589						
12	3" Pipe Flange Gasket	1	29196						
13	1" Pipe Plug	1	806603501						
14	1/2" Pipe Plug	1	806603507						
15	2" Pipe Plug	1	806603511						
16	Support Strut Clamp	2	P20070						
17	Support Strut	1	P30155.8						
18	Lower Water Inlet/Return Manifold	1	P40239						
19	Water Flow Switch	1	105687-01						
20	Inlet/Return Temperature Sensor (10K ohm)	1	105685-01						
21	3" Pipe Plug	1	806603514						

## 2.6 Miscellaneous External Components

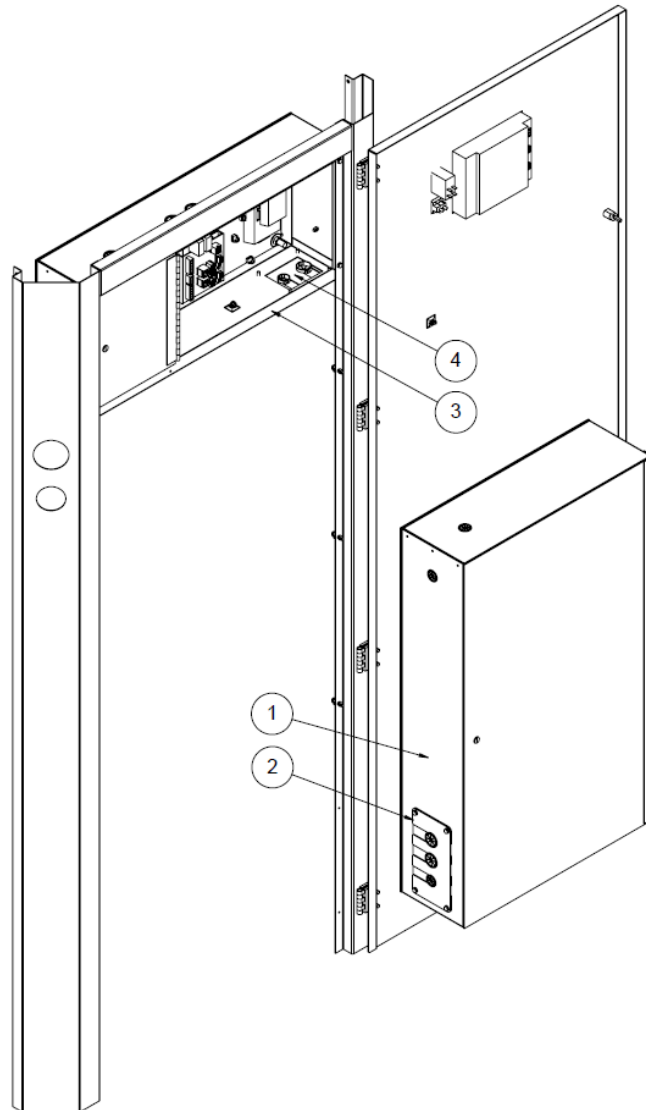
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Item Number	Description	FF1500-2000		FF2500-3000	
		Quantity	Part Number	Quantity	Part Number
1	2" Pipe Trim Ring	1	P30299.P	1	P30299.P
2	Air Vent & 3/4" Relief Valve Trim Plate	1	T20081.P	1	T20081.P
	Air Vent & 1" Relief Valve Trim Plate		T20080.P		T20080.P
	Air Vent & 1-1/4" Relief Valve Trim Plate		T20032.P		T20032.P
	Air Vent & 1-1/2" Relief Valve Trim Plate		T20031.P		T20031.P
3	Outlet/Supply Trim Ring	2	P30292.P	2	P30292.P
4	Stack Trim Ring	2	T20019.P	2	T20018.P
5	Inlet/Return Rear Trim Plate	1	P30311.P	1	P30311.P
6	Inlet/Return Front Trim Plate	1	P30293.P	1	P30293.P
7	3/8" Tube x 3/8" Tube Bulkhead Fitting	1	T20047	1	T20047
8	Unused Drain Pipe Hole Cover	1	T20138	1	T20138
9	Flue Gas Ball Trap to Bulkhead Fitting Tubing	1.17ft	92465546	1.17ft	92465546
10	Flue Gas Ball Trap Assembly	1	P40206	1	P40206
11	1" Pipe Trim Ring	2	T20040.P	2	T20040.P
Not Shown	Bulkhead Fitting to Stack Fitting Tubing	2.83 ft	92465546	2.83 ft	92465546

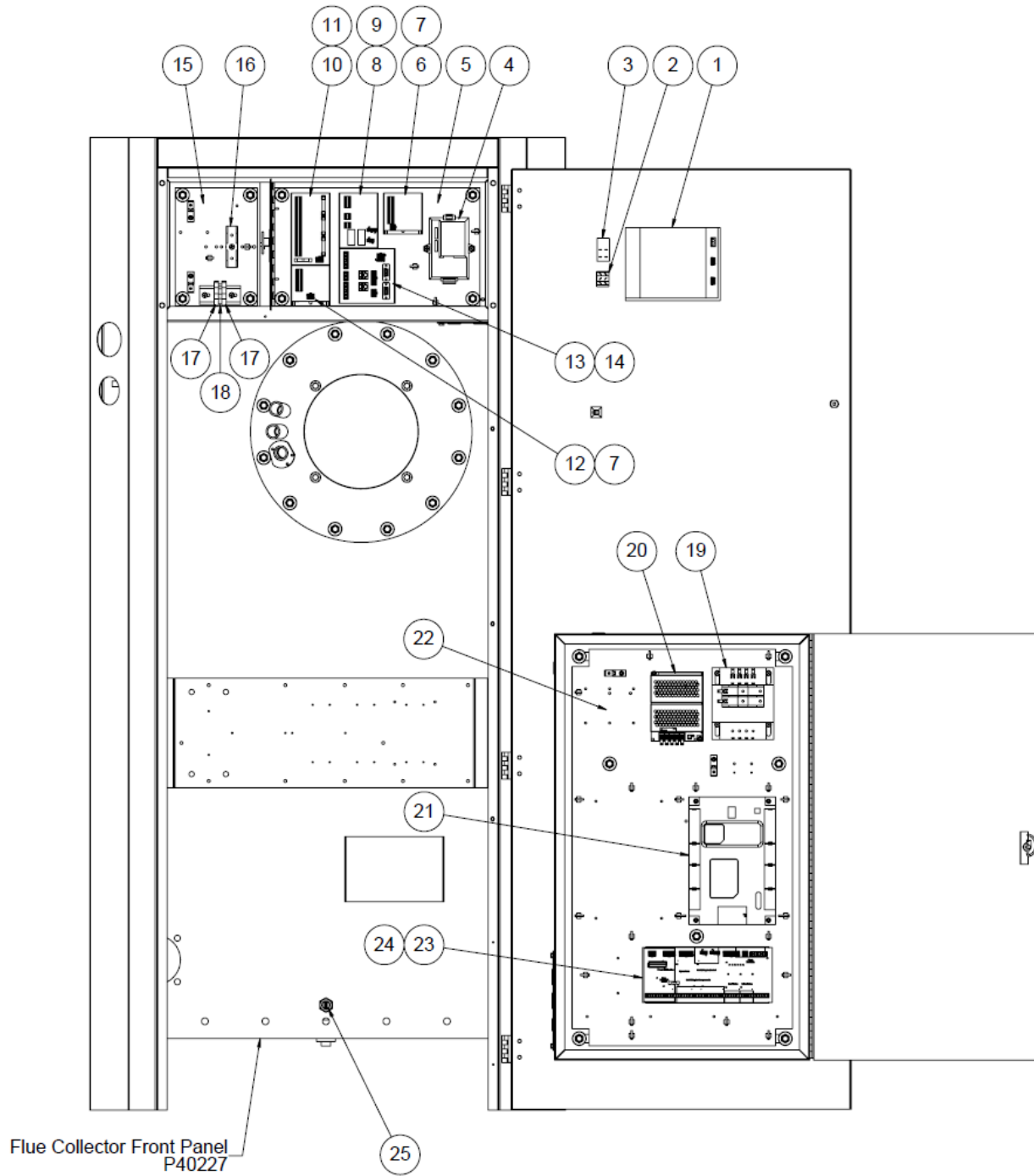
## 2.7 Controls

### 2.7.1 Control Panels



Item Number	Description	Quantity	Part Number
1	Control Panel	1	T40054
2	Control Panel Knockouts Trim Plate	2	T30187
3	PCB Control Panel	1	T40056
4	PCB Control Panel Knockouts Trim Plate	2	T30188

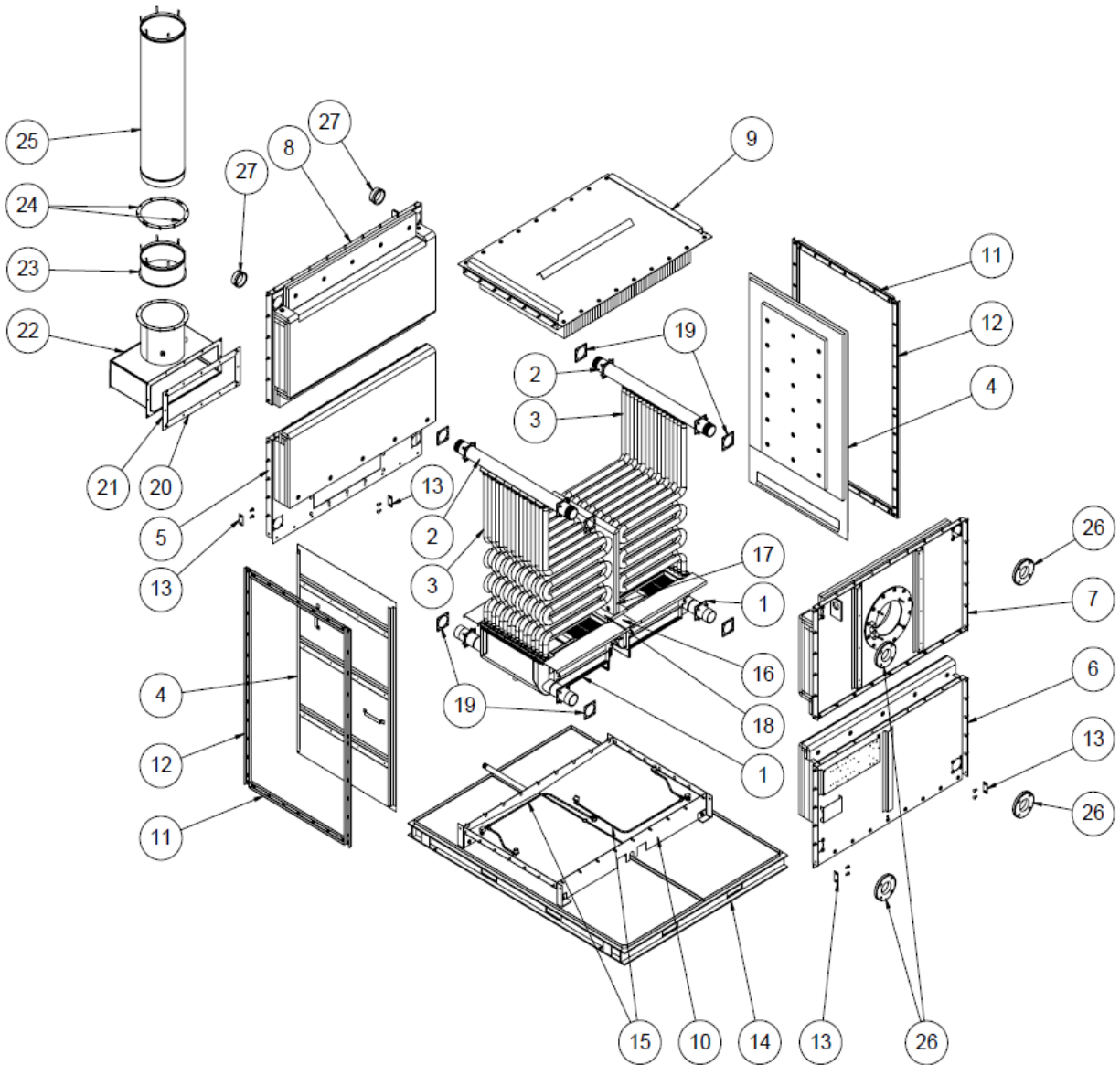
## 2.7.2 Control Panel Components



Item Number	Description	Quantity	Part Number
1	Display	1	105682-01
2	On/Off Switch	1	105658-01
3	Reset Switch	1	P20276
4	Protonode	1	106432-01
5	PCB Control Panel Wiring Insert	1	T30072
6	PCB-03	1	106697-01
7	Snap-track, 2-3/4" Wide x 2-3/4" Long	2	107252-01
8	PCB-05	1	106699-01
9	Snap-track, 2-3/4" Wide x 4" Long	1	107253-01
10	PCB-02	1	106165-01
11	Snap-track, 2-3/4" Wide x 5-1/4" Long	1	107250-01
12	PCB-04	1	106698-01
13	PCB-06	1	106166-01
14	Snap-track, 4" Wide x 4" Long	1	107254-01
15	PCB Control Panel Wiring Insert (High Voltage)	1	T30073
16	Fuse Block, 1-Pole	1	T20159
	Fuse Block, 2-Pole		P20053.2
	Fuse Block, 3-Pole		P20053
17	End Anchor (only with 1-Pole Fuse Block)	2	99992.62
18	Terminal Block, White (only with 1-Pole Fuse Block)	1	99992.66
19	208-230-460V/120V Transformer	1	P20062
20	24VDC Transformer	1	105680-01
21	Concert Boiler Control	1	105681-01
22	Control Panel Wiring Insert	1	T30067
23	PCB-01	1	106164-01
24	Snap-track, 4" Wide x 9-1/2" Long	1	107249-01
25	Blocked Condensate Switch	1	105659-01
Not Shown	Main Wiring Harness	1	T20126.13
Not Shown	Display Communication & Power Harness	1	T20126.5
Not Shown	Protonode (Bacnet) Communication Harness	1	T20126.9
	Protonode (Lonworks) Communication Harness		T20126.15

**3 FF3500 – FF6000 Parts**

**3.1 Heat Exchanger**

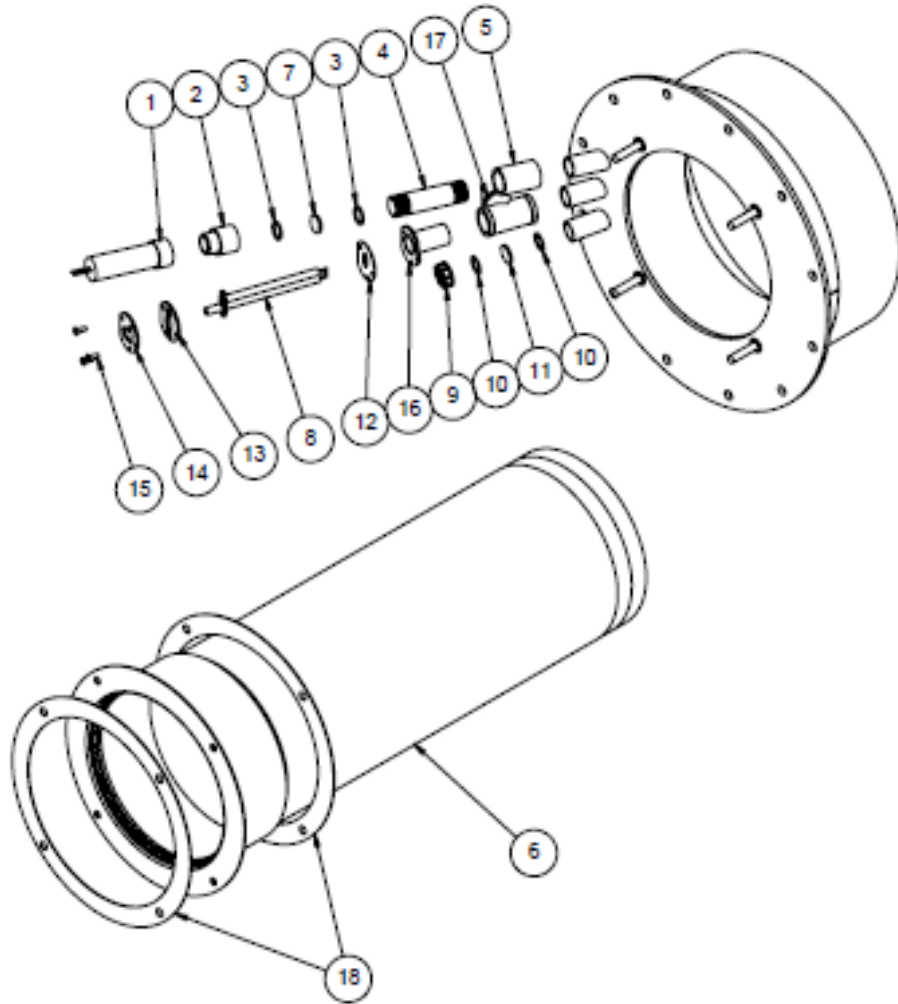




Item Number	Description	FF3500-4000		FF4500-6000	
		Qty.	Part Number	Qty.	Part Number
1	Heat Exchanger	2	T20013	2	T20017
2	Upper Header	2	P40237	2	T40033
3	Furnace Tubes Long Return	16	T30079	24	T30079
	Furnace Tubes Short Return	16	T30080	24	T30080
4	Furnace Tube Access Door	2	T40098	2	T40119
5	Flue Collector Rear Lower Panel	1	T40079	1	T40079
6	Flue Collector Front Lower Panel	1	T40077	1	T40077
7	Flue Collector Front Upper Panel	1	T40078	1	T40078
8	Flue Collector Rear Upper Panel	1	T40080	1	T40080
9	Flue Collector Top Panel	1	T40099	1	T40111
10	Condensate Pan	1	T40082	1	T40113
11	Horizontal Furnace Tube Access Door Clamp	4	P30260.37	4	P30260.49
12	Vertical Furnace Tube Access Door Clamp	4	T30120	4	T30120
13	Flue Collector Flange Connector	4	P30271	4	P30271
14	Boiler Base Assembly	1	T40075	1	T40109
15	Heat Exchanger Drain Tube Assembly	2	T40136	2	T40137
16	Heat Exchanger Connector Plate	1	T30049	1	T30050
17	Flue Collector Center Divider	1	T40076	1	T40116
18	Flue Collector Center Divider Base Insulation	1.5 sq. ft.	24529	2 sq. ft.	24529
19	Upper Header / Heat Exchanger Gasket	8	P30254	8	P30254
20	Stack Adapter to Flue Collector Horizontal Gasket	2	T20114.H	2	T20114.H
21	Stack Adapter to Flue Collector Vertical Gasket	2	T20114.V	2	T20114.V
22	Stack Adapter	1	T40092	1	T40074
23	Double Flange Stack Adapter	1	T20107	1	T20108
24	Double Flange Stack Adapter Retainer	2	T30284	2	T30285
25	Saf-T Vent EZ Seal Single Wall Gas Vent	1	T20118	1	T20119
26	3" x 150 lb. Threaded Pipe Flange	4	104045-01	4	104045-01
27	3" Pipe Cap	2	806603589	2	806603589
Not Shown	Low Temperature Sealant (Between Stack Adapter & Double Flange Stack Adapter)	N/A	107650-01	N/A	107650-01
Not Shown	Black Impregnated Gasket 2-1/2" Wide (Tube Access Doors)	36.5 ft.	105668-02	40.5 ft.	105668-02
Not Shown	Black Impregnated Gasket 1" Wide (Flue Collector)	29.5 ft.	102178-01	29.5 ft.	102178-01

### 3.2 Burner Assembly

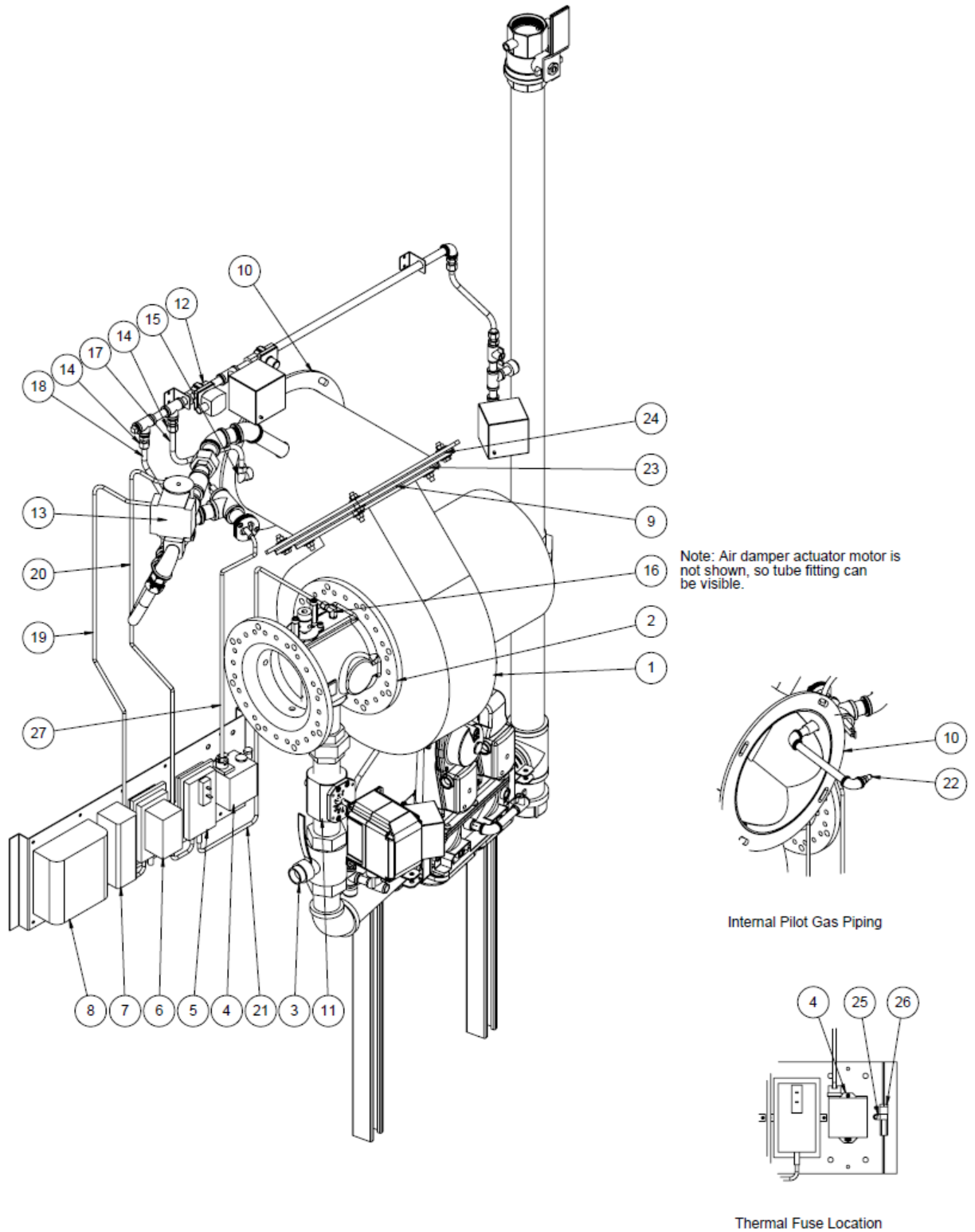
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<b>Table 3.2 Burner Assembly</b>			
Item Number	Description	Quantity	Part Number
1	Ultra-Violet (UV) Scanner	1	T20153
2	Heat Insulator	1	T20034
3	Ultra-Violet (UV) Lens Gasket	2	T20005
4	Pipe Nipple	1	806600014
5	Pipe Coupling	1	806602534
6	FF3500 Burner	1	P40023
	FF4000 Burner		T40127
	FF5000 Burner		T40128
	FF6000 Burner		T40129
7	Ultra-Violet (UV) Lens	1	T20152
8	Igniter	1	105678-01
9	Site Glass Bushing	1	T20006
10	Site Glass Gasket	2	T20005
11	Site Glass Lens	1	T20004
12	Igniter Gasket	1	T20046
13	Igniter Adapter Plate	1	T30060
14	Igniter Retainer	1	T30059
15	Machine Screw	3	108590-01
16	Igniter Mount	1	T40196
17	Pipe Tee	1	806601052
18	Burner Gasket	2	T20064

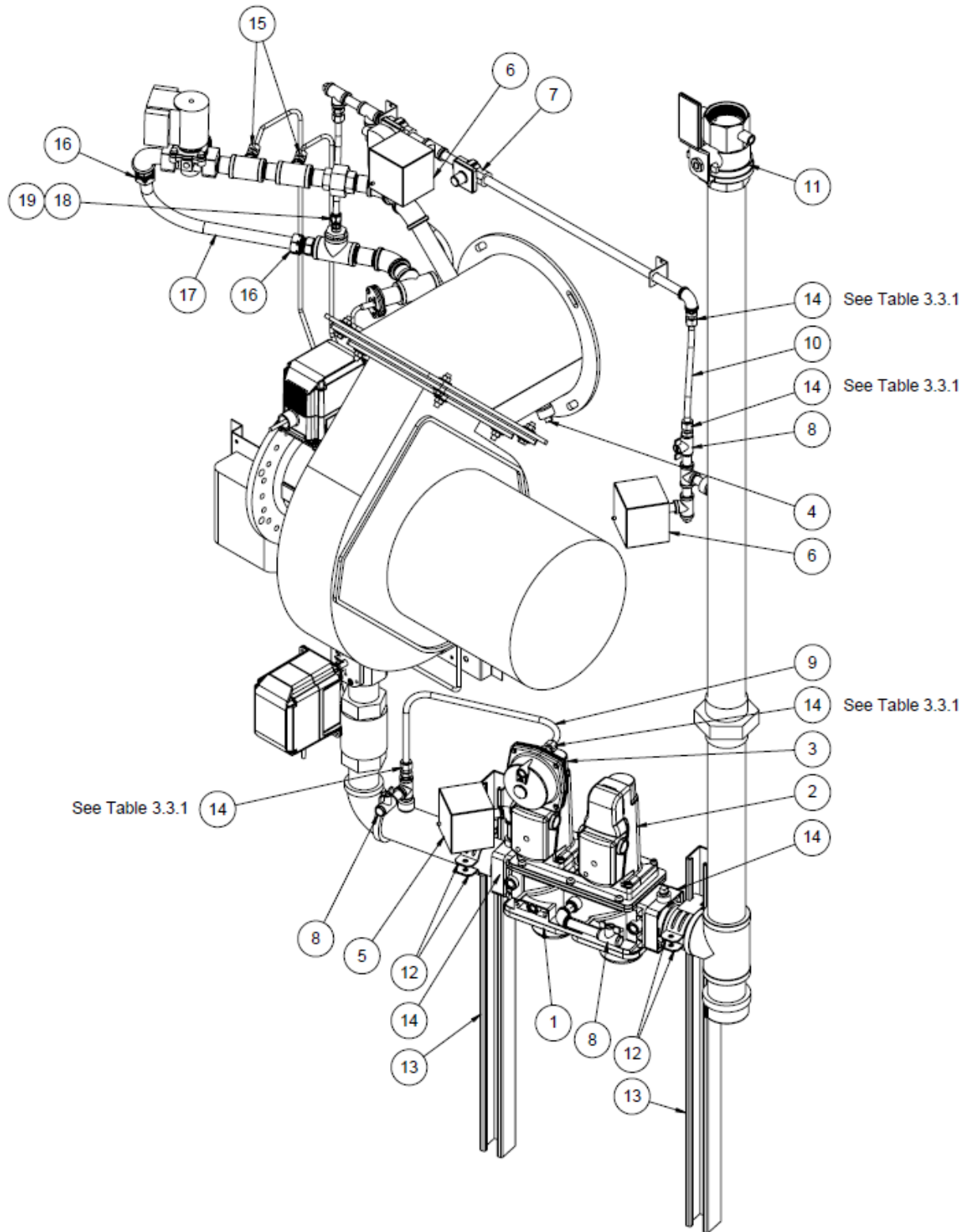
### 3.3 Gas Train and Flue Collector Controls

#### 3.3.1 Left Side – Gas Train, Pilot and Flue Collector Controls



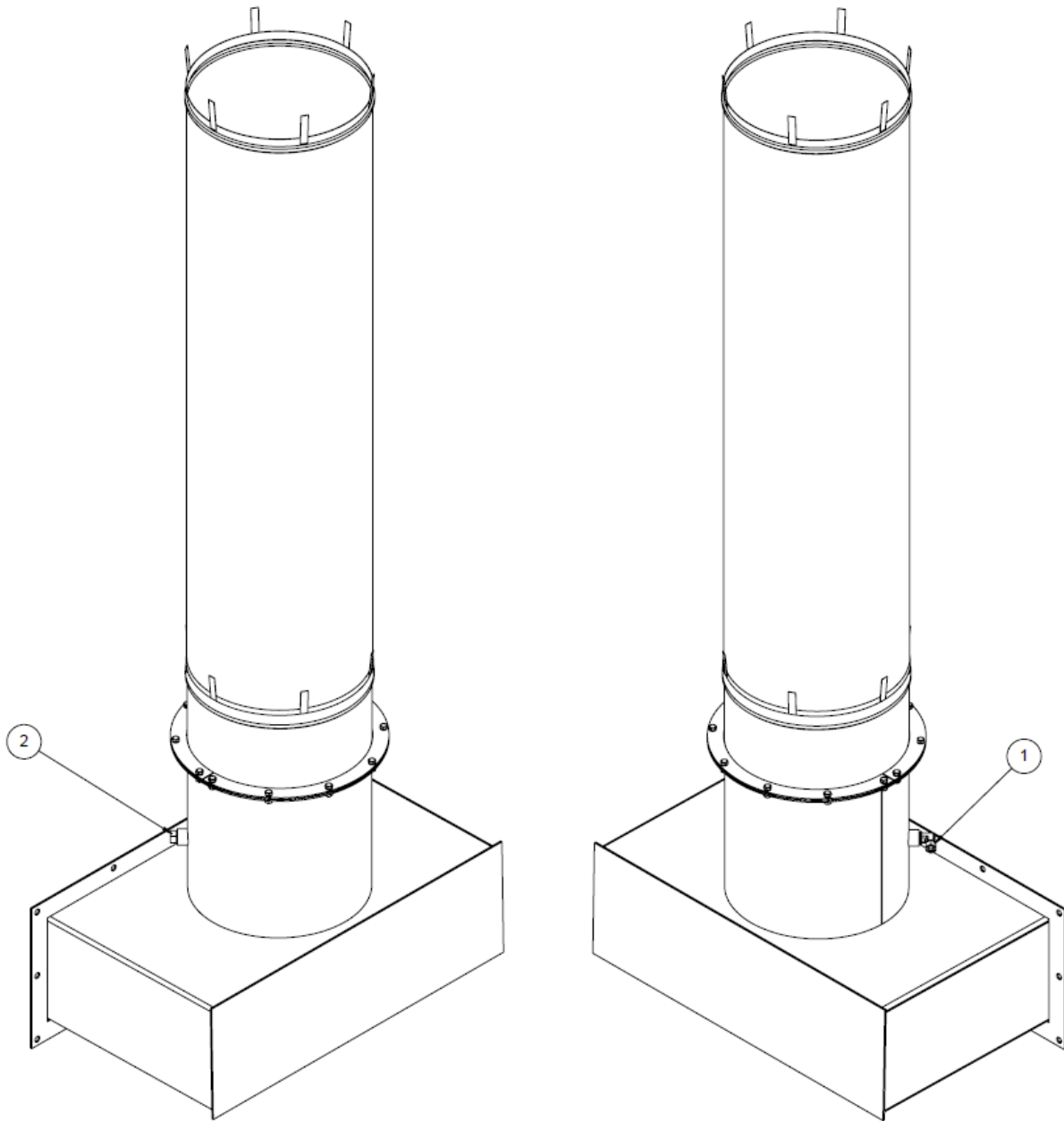
Item Number	Description	FF3500-4000		FF4500-6000	
		Quantity	Part Number	Quantity	Part Number
1	Blower	1	P20197	1	T20065
			P20201		
2	Air Damper	1	T20162	1	T20163
3	Manual Shut-Off Ball Valve	1	806603042	1	806603016
4	Ignition Transformer	1	80160208	1	80160208
5	Fixed Differential Pressure Switch	1	106239-01	1	106239-01
6	Adjustable Differential Pressure Switch	1	22051	1	22051
7	High Limit Aquastat with Manual Reset	1	296021.5	1	296021.5
8	LWCO	1	28344.3	1	28344.3
9	Blower Adapter Plate	1	T30181	0	N/A
10	Blower Adapter	1	T40167	1	T40095
11	Butterfly Gas Valve	1	T20066	1	P20284
12	Pilot Valve	1	822670	1	822670
13	Solenoid Valve	1	816602071	1	816602071
14	1/4" NPT x 3/8" Tube Compression Fitting	6	70660165	6	70660165
15	1/4" NPT x 3/8" Tube Compression Fitting 90° Elbow	1	24168.1	1	24168.1
16	1/4" NPT x 1/4" Tube Compression Fitting 90° Elbow	1	8236046	1	8236046
17	Pilot Gas Train Outlet Tubing to Blower Adapter	1.05 ft	92465546	1.05 ft	92465546
18	Pilot Gas Train Outlet Tubing to Igniter	.75 ft	92465546	.75 ft	92465546
19	Adjustable Differential Pressure Switch Tubing to Pilot Air Train	3.75 ft	92465560	3.75 ft	92465560
20	Fixed Differential Pressure Switch Tubing to Pilot Air Train	3.75 ft	92465560	3.75 ft	92465560
21	Fixed Differential Pressure Switch Tubing to Air Damper	2.96 ft	92465560	2.88 ft	92465560
22	Internal Pilot Gas Orifice	1	P30165	1	P30165
23	Blower Gasket	1	P20075	1	T20063
24	Blower Adapter Plate Gasket	1	T20124	0	N/A
25	Thermal Fuse Clamp	1	106364-01	1	106364-01
26	Thermal Fuse	1	106340-01	1	106340-01
27	Ignition Cable	1	105218-01	1	105218-01

### 3.3.2 Right Side – Gas Train, Pilot and Flue Collector Controls



Item Number	Description	FF3500-4000		FF4500-6000	
		Quantity	Part Number	Quantity	Part Number
1	Double Body Gas Valve	1	816634051	1	816634051
2	Gas Valve Actuator with Proof of Closure Switch	1	81663407	1	81663407
3	Pressure Regulating Gas Valve Actuator	1	81663410	1	81663410
4	1/4" NPT Plug	1	806603599	1	806603599
5	High Gas Pressure Switch	1	28173.1	1	28173.1
6	Low Gas Pressure Switch	2	28170.1	2	28170.1
7	Regulator	1	8226009	1	8226009
8	Ball Valve	3	822758	3	822758
9	Gas Sensing Tubing	1.54 ft.	92465546	1.67 ft.	92465546
10	Pilot Gas Train Inlet Tubing	.59 ft.	92465546	.59 ft.	92465546
11	Ball Valve, Two 1/8" Tappings	1	822698	1	822698
12	Support Strut Clamp	4	P20070	4	P20070
13	Support Strut	2	P30155.28	2	P30155.28
14	Double Body Gas Valve Flange	2	104623-02	2	104623-02
15	1/4" NPT x 1/4" Tube Compression Fitting	2	822658	2	822658
16	3/4" NPT x 3/4" Tube Compression Fitting	2	24173	2	24173
17	Pilot Air Train Tubing	1.21 ft.	P10026	1.21 ft.	P10026
18	Pilot Gas Orifice Fitting	1	T30293	1	T30293
19	Pilot Gas Orifice	1	T30295	1	T30295

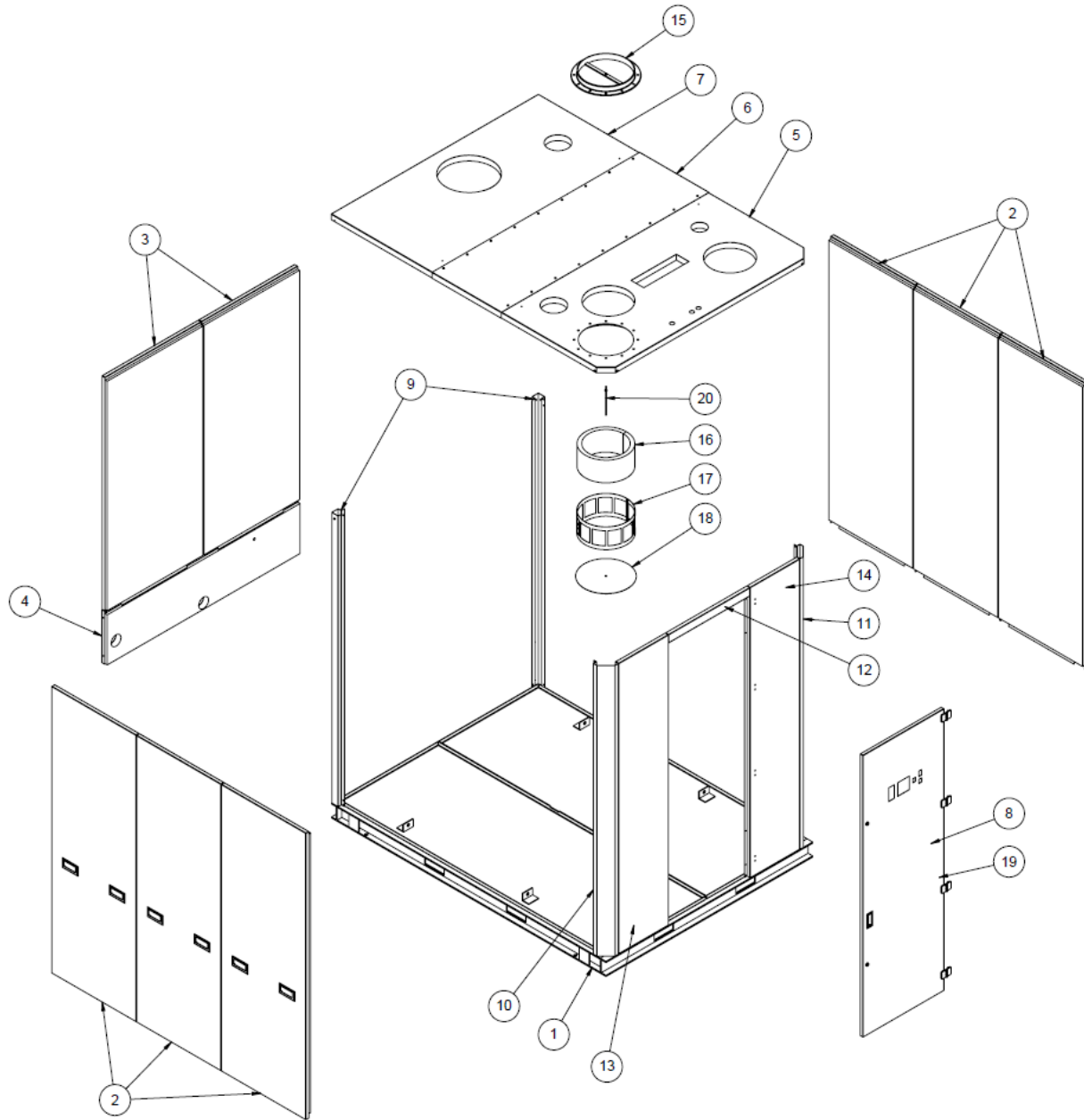
### 3.3.3 Rear Flue Collector



Item Number	Description	Quantity	Part Number
1	1/2" NPT x 3/8" Tube Compression Fitting 90° Elbow	1	P20216
2	Stainless Steel 1/2" Pipe Plug	1	106530-01



### 3.4 Jacket



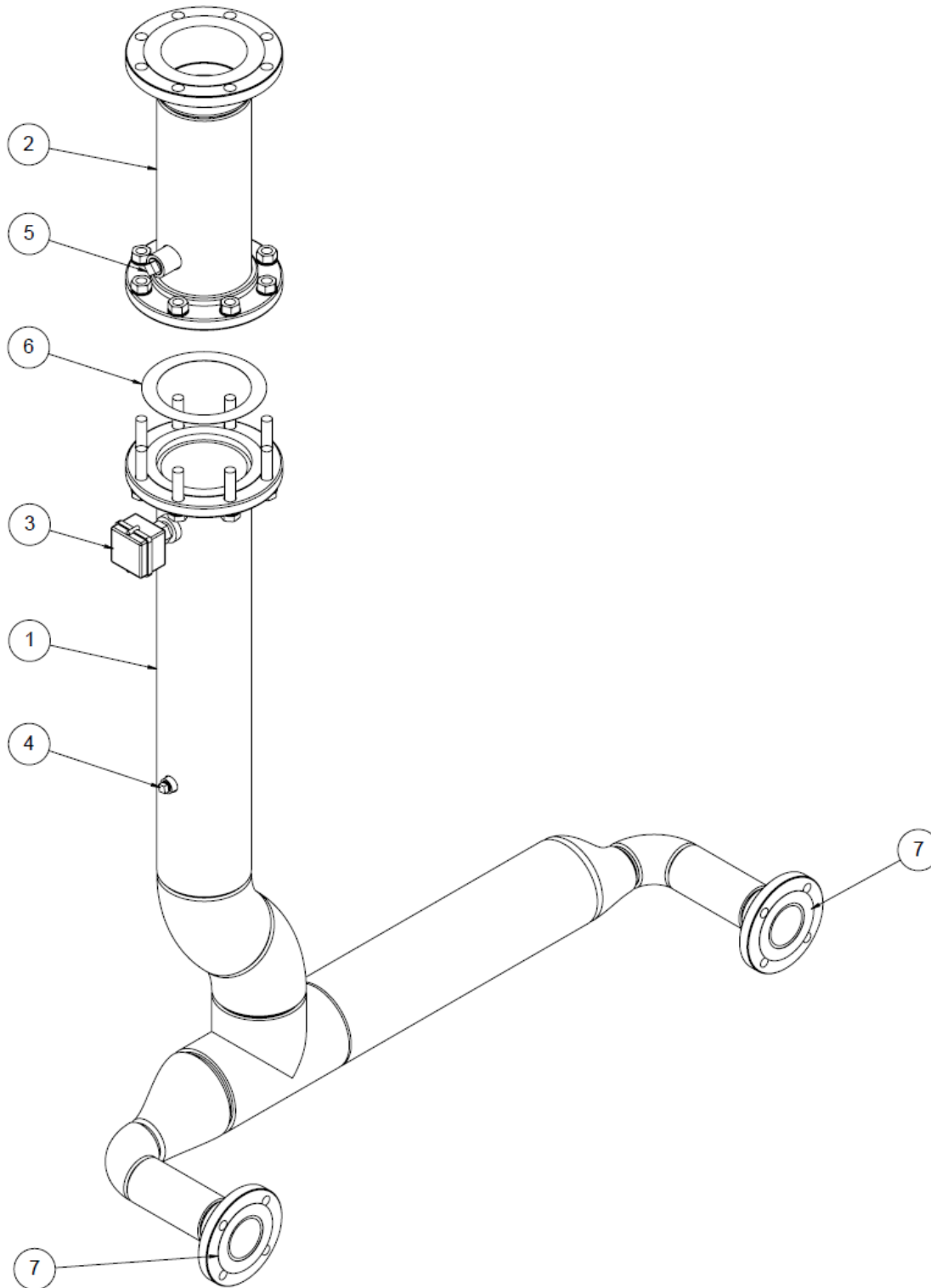
Item Number	Description	FF3500-4000		FF4500-6000	
		Quantity	Part Number	Quantity	Part Number
1	Base	1	T40075	1	T40109
2	Side Door	6	T40103	6	T40123
3	Rear Panel	2	T40090	2	T40090
4	Rear Lower Panel	1	T40248	1	T40248
5	Top Front Panel	1	T40249	1	T40304
6	Top Center Panel	1	T40250	1	T40251
7	Top Rear Panel	1	T40252	1	T40253
8	Front Door	1	T40318	1	T40318
9	Rear Corner (Orange)	2	T30147.0	2	T30147.0
	Rear Corner (Silver)		T30147.S		T30147.S
10	Front Left Corner (Orange)	1	T30211.0	1	T30211.0
	Front Left Corner (Silver)		T30211.S		T30211.S
11	Front Right Corner (Orange)	1	T30096.0	1	T30096.0
	Front Right Corner (Silver)		T30096.S		T30096.S
12	Front Door Top Bar (Orange)	1	T30035	1	T30035
	Front Door Top Bar (Silver)		T30035.FF		T30035.FF
13	Front Left Panel	1	T40254	1	T40254
14	Front Right Panel	1	T40255	1	T40255
15	Air Intake Angle Ring	1	T40165	1	T40166
16	Air Intake Filter	1	T30172	1	T30173
17	Air Intake Filter Retainer	1	T30171	1	T30169
18	Air Intake Filter Cover	1	T30174	1	T30175
19	Hinges	4	P20044	4	P20044
20	Air Intake Filter Mount Stud	1	T30178	1	T30178

### 3.5 Inlet/Return and Outlet/Supply Manifold

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#### 3.5.1 Inlet/Return Manifold

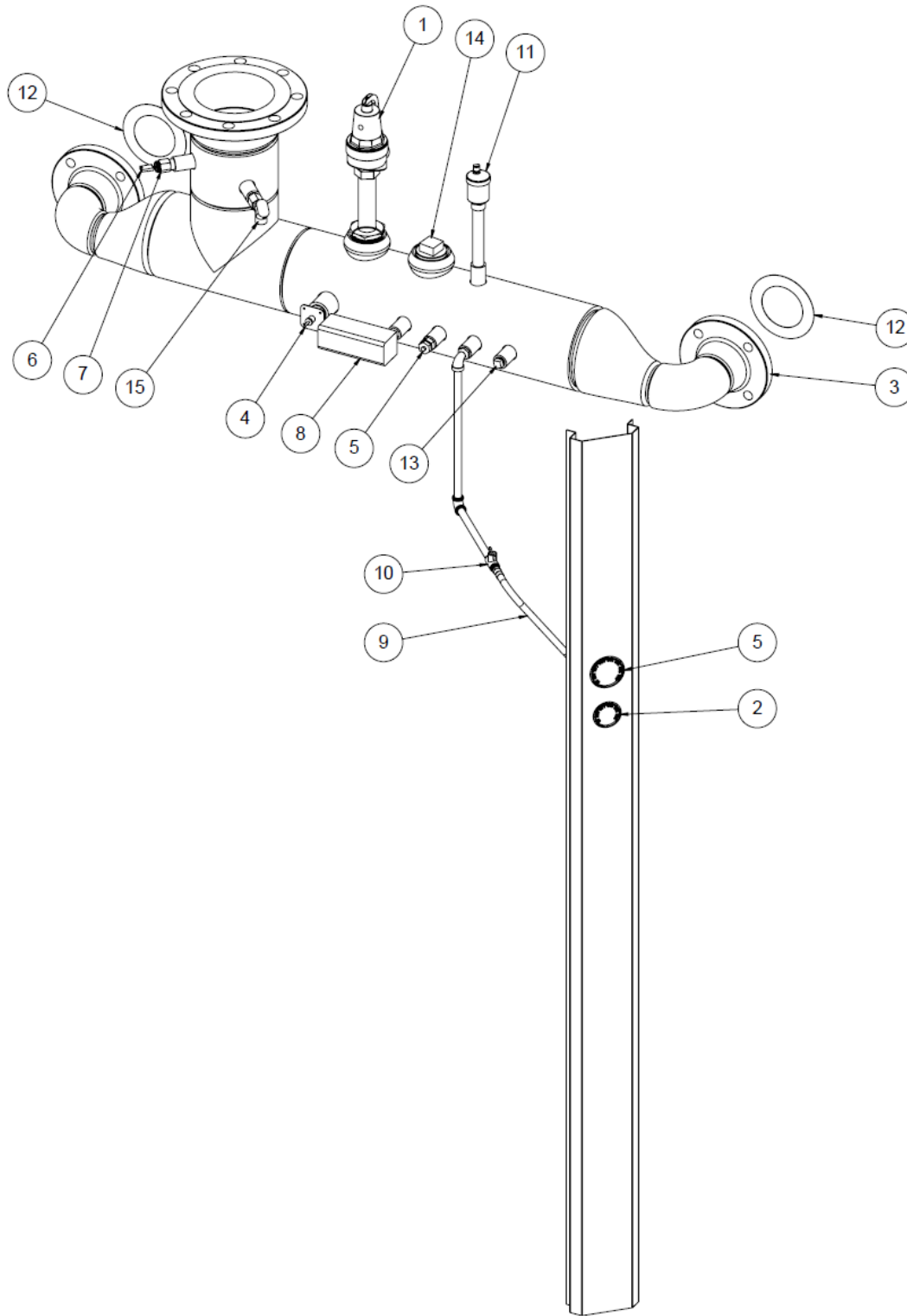
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Item Number	Description	Quantity	Part Number
1	Lower Water Inlet/Return Manifold	1	T40094
2	Dutchman	1	T40338
3	Water Flow Switch	1	105687-01
4	Brass Immersion Well	1	105684-01
5	½" Pipe Plug	1	806603507
6	1" Pipe Plug	1	806603501
7	6" Pipe Flange Gasket	1	29199
8	3" Pipe Flange Gasket	2	29196

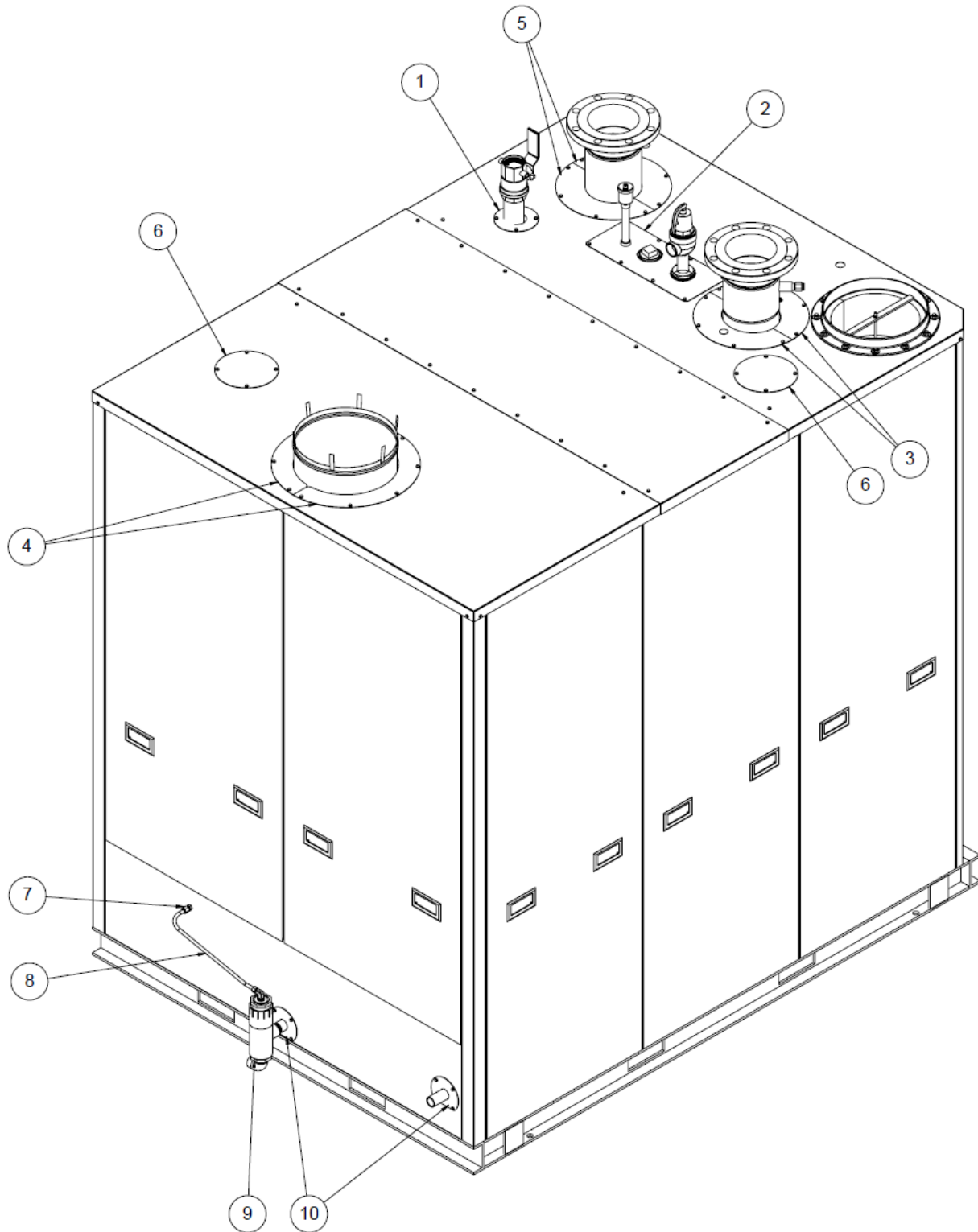
### 3.5.2 Outlet/Supply Manifold

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Item Number	Description	Qty	Part Number						
			Relief Valve Setting						
			30 PSI	50 PSI	60 PSI	75 PSI	100 PSI	125 PSI	150 PSI
1	FF3500 Relief Valve	1	262326	262321	262322	262323	262314	262315	262307
	FF4000 Relief Valve	1	262331	262321	262322	262323	262314	262315	262316
	FF4500 Relief Valve	1	262331	262328	262322	262323	295687	262315	262316
	FF5000 Relief Valve	1	262331	262328	262329	262323	295687	262315	262316
	FF5500 Relief Valve	1	262331	262328	262329	262323	295687.1	93996.125	262316
	FF6000 Relief Valve	1	262331	262333	262329	262330	295687.1	93996.125	262316
2	Pressure Gauge	1	P20064	P20096			P20036		
3	Upper Water Outlet Manifold	1	T40088						
4	LWCO Probe	1	28344.3						
5	Temperature Gauge and Probe	1	P20287						
6	Outlet Water Sensor (10Kohm)	1	105686-01						
7	Brass Immersion Well	1	105684-01						
8	Operator Aquastat	1	80160646						
9	1/4" Braided Hose	1	P20110						
10	Ball Valve	1	822758						
11	1/2" NPT Air Vent	1	102260-01						
12	3" Pipe Flange Gasket	2	29196						
13	1/2" Pipe Plug	1	806603507						
14	2" Pipe Plug	1	806603511						
15	Outlet Water Sensor with Well	1	294444.2						

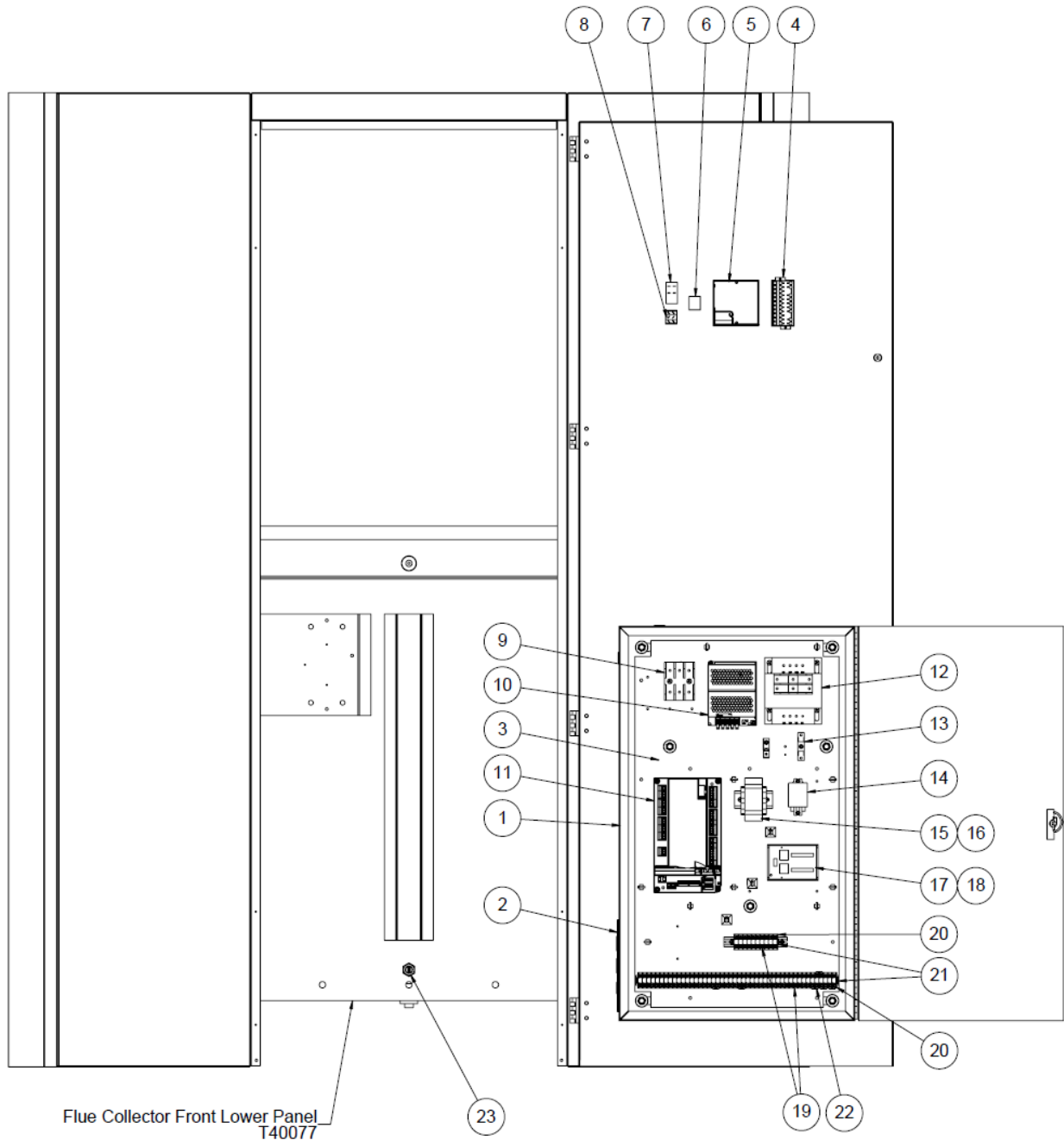
### 3.6 Miscellaneous External Components



Item Number	Description	FF3500-4000		FF4500-6000	
		Quantity	Part Number	Quantity	Part Number
1	2" Pipe Trim Ring	1	P30299.P	1	P30299.P
2	Air Vent & Relief Valve Trim Plate	1	T20139	1	T20139
3	Outlet/Supply Trim Ring	2	T20177	2	T20177
4	Stack Trim Ring	2	T20069	2	T20086
5	Inlet/Return Trim Ring	2	T20068	2	T20068
6	Lifting Lug Access Hole Cover	2	T20164	2	T20164
7	3/8" Tube x 3/8" Tube Bulkhead Fitting	1	T20047	1	T20047
8	Flue Gas Ball Trap to Bulkhead Fitting Tubing	1.46 ft	92465546	1.46 ft	92465546
9	Flue Gas Ball Trap Assembly	1	P40206	1	P40206
10	1" Pipe Trim Ring	2	T20040.P	2	T20040.P
Not Shown	Bulkhead Fitting to Stack Fitting Tubing	3.04 ft	92465546	3.04 ft	92465546



### 3.7 Controls



<b>Table 3.7 Controls</b>			
Item Number	Description	Quantity	Part Number
1	Control Panel	1	T40054
2	Control Panel Knockouts Trim Plate	2	T30187
3	Control Panel Wiring Insert	1	T30067
4	Universal Control	1	106203-01
5	Display	1	T20172
6	Rocker Switch	1	P20133
7	On/Off Switch	1	105658-01
8	Reset Switch	1	P20276
9	Fuse Block, 3-Pole	1	P20053
10	24VDC Transformer	1	105680-01
11	Control Unit	1	T20170
12	208-230-460V/120V Transformer	1	P20062
13	Fuse Block, 1-Pole	1	P20202
14	Relay	1	28434
15	Modbus Module	1	267403
16	End Anchor	2	99992.62
17	Low Voltage PCB	1	107533-01
18	Snap-track, 2-3/4" Wide x 4" Long	1	107253-01
19	Terminal Block	56	25520
20	Terminal Block End Barrier	2	25526
21	Retainer Clip	4	25524
22	Jumper	6	25521
23	Blocked Condensate Switch	1	105659-01