

A.O. SMITH

WATER PRODUCTS COMPANY

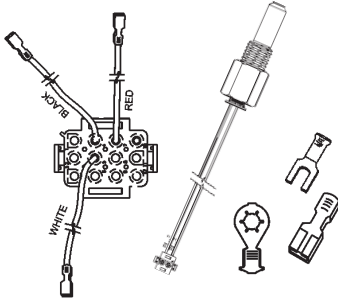
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GAS

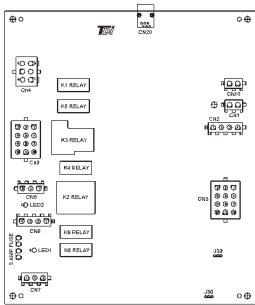
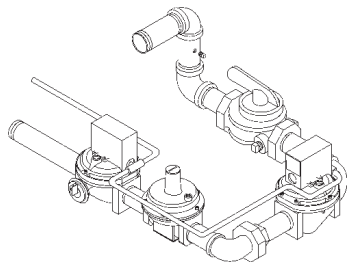
COMMERCIAL POWER BURNER BOILER REPLACEMENT PARTS LIST

COPPER BOILERS FOR HYDRONIC HEATING & HOT WATER SUPPLY
LEGEND MODELS LB/LW: 500, 750 & 1000
SERIES: 300 - 301

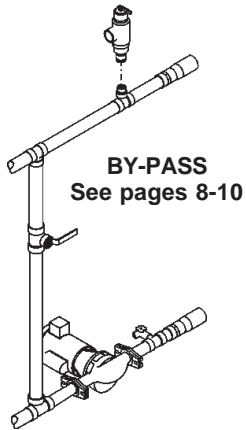
WIRING/HARNESS & PROBES
See page 12



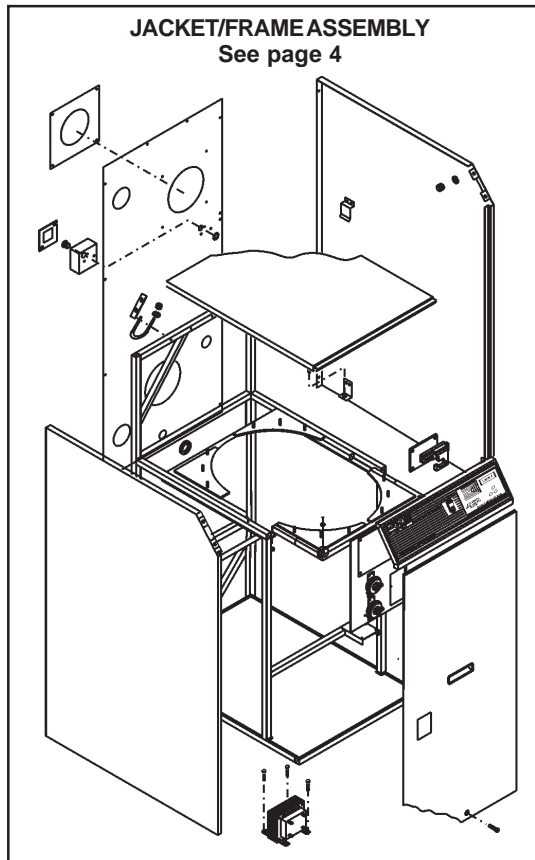
PROPANE GAS TRAIN ASSEMBLY
See pages 8-10



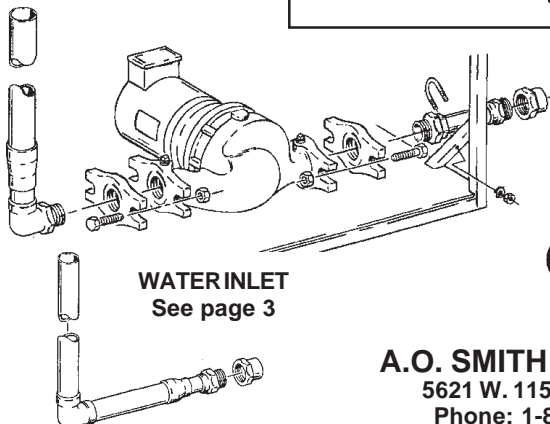
CONTROL BOARD
See page 11



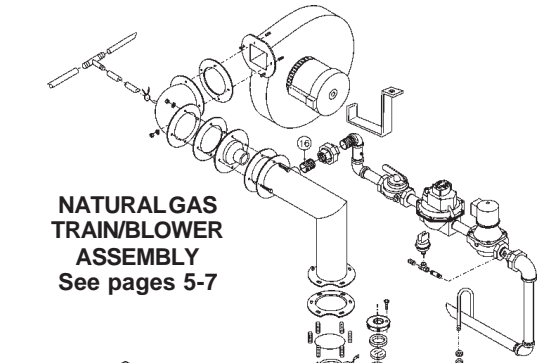
BY-PASS
See pages 8-10



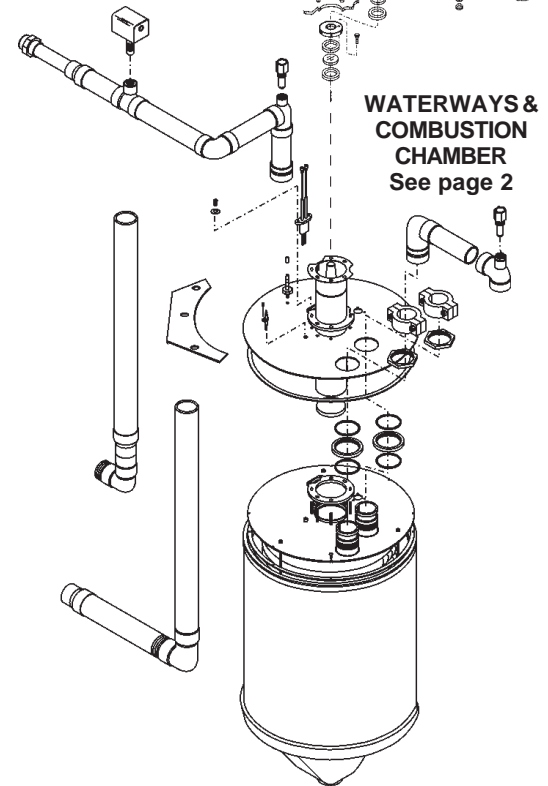
JACKET/FRAME ASSEMBLY
See page 4



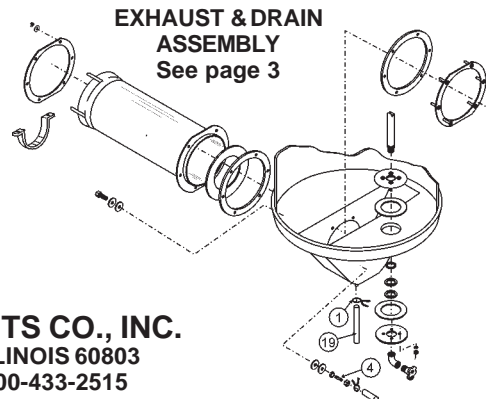
WATER INLET
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NATURAL GAS TRAIN/BLOWER ASSEMBLY
See pages 5-7



WATERWAYS & COMBUSTION CHAMBER
See page 2



EXHAUST & DRAIN ASSEMBLY
See page 3



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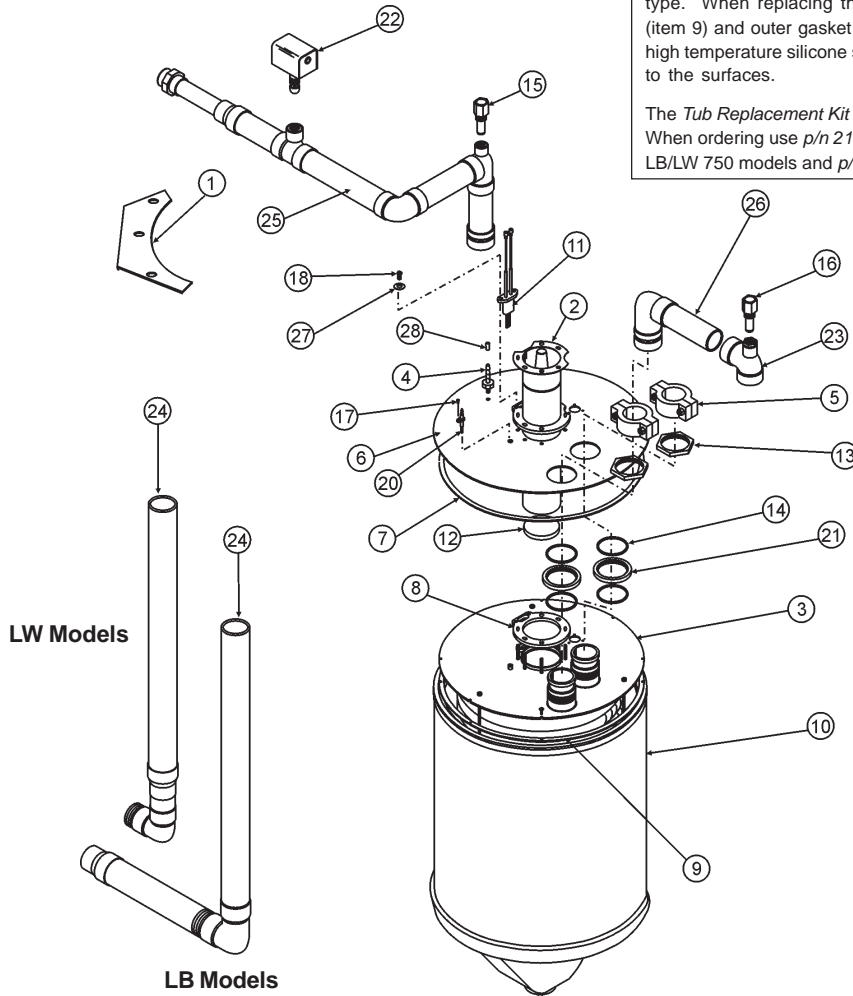
LB/LW WATERWAYS & COMBUSTION CHAMBER PARTS LIST

Item	Description	Model 500	Model 750	Model 1000
1	Bracket	191602	191602	191602
2	Burner and Cone Assembly	191850	191850-1	191850-2
3	Combustion Chamber Assembly	191529-2	191529-3	192129-1
4	Connector, Hose	191765	191765	191765
5	Coupling, Flexible w/Gasket	191780	191780	191780-1
6	Cover, Outer	210408	210408	210404
7	Gasket, Outer	211594-1	211594-1	211594-1
8	Gasket, Burner	191564-1	191564-1	191564-1
9	Gasket, Inner	211594	211594	211594
10	Housing Assembly	211742	211742-1	211742-2
11	Ignitor	<u>192334</u>	<u>192334</u>	<u>192334</u>
12	Insulation, Burner	191618	191618	191618
13	Nut, Manifold	191555	191555	191555-1
14	O-Ring	191556	191556	191556-2
15	Probe, Outlet Temp./ECO	<u>210572</u>	<u>210572</u>	<u>210572</u>
16	Probe, Inlet Temp.	<u>210571</u>	<u>210571</u>	<u>210571</u>
17	Screw, Machine #8-32, 3/8" Long, SST	210444	210444	210444
18	Screw, Machine #8-32, 1" Long SST	191770	191770	191770
*19	Sealer, Silicone Hi-Temp	191482-1	191482-1	191482-1
20	Sensor, Flame	<u>210421</u>	<u>210421</u>	<u>210421</u>
21	Spacer Ring	191554	191554	191554-1
22	Switch, Safety Flow	211480	211480	211480
23	Tee Assembly	191583	191583	192387
24	Tube Assembly, Primary (LW Models)	210900	210900	192388
24	Tube Assembly, Primary (LB Models)	210901	210901	192225
25	Tube Assembly, Outlet	210425	210425	210426
26	Tube Assembly, Secondary	210912	210912	192386
27	Washer, Flat #8 SST	191768	191768	191768
28	Restrictor-Air, Top Cover	191926-1	191926-1	191926-1

*Item Not Illustrated.

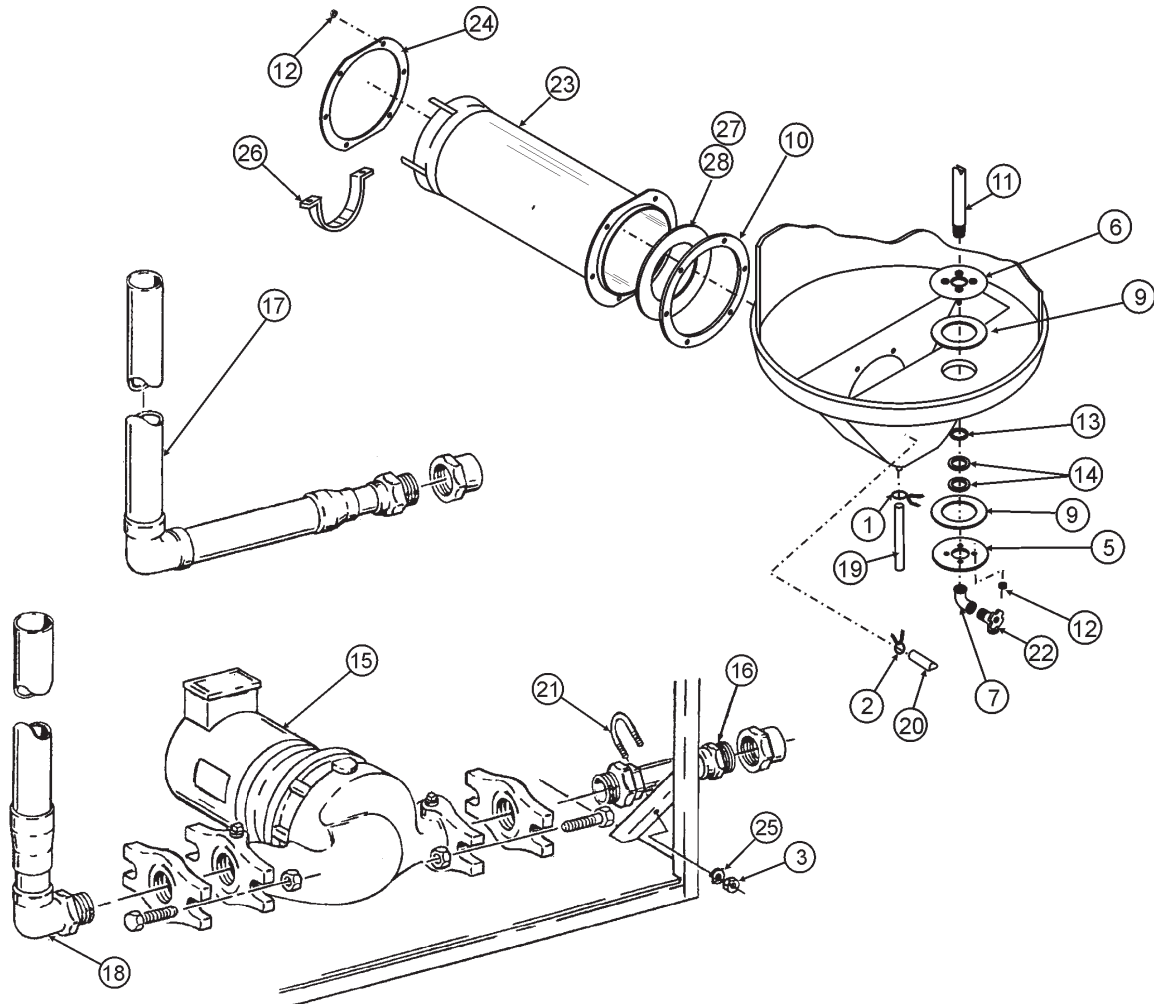
Note: Replacement housing assemblies (item 10) are currently all steel type. When replacing the housing assembly both the inner gasket (item 9) and outer gasket (item 7) must also be replaced. In addition, high temperature silicone sealant (item 19) is required to fix the gaskets to the surfaces.

The *Tube Replacement Kit* is available for replacing housing assemblies. When ordering use *p/n 211742* for LB/LW 500 models, *p/n 211742-1* for LB/LW 750 models and *p/n 211742-2* for LB/LW 1000 models.



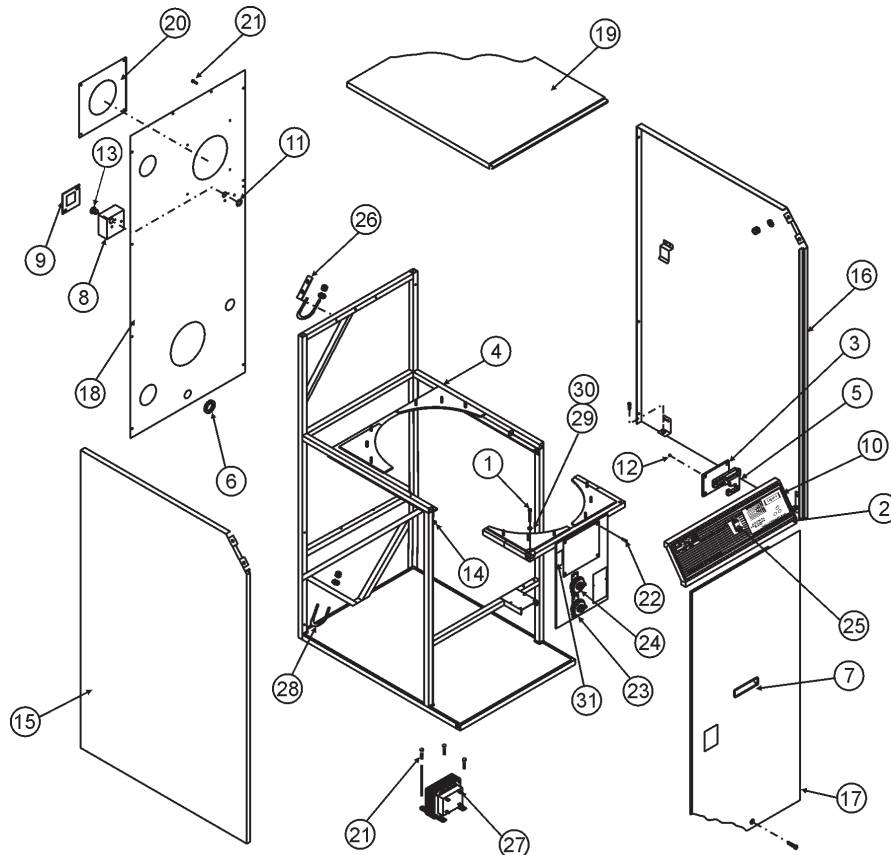
LB/LW EXHAUST, DRAIN & WATER INLET ASSEMBLY PARTS LIST

Item	Description	Model 500	Model 750	Model 1000
1	Clamp, Hose (Large)	191794-1	191794-1	191794-1
2	Clamp, Hose (Small)	191794-3	191794-3	191794-3
3	Nut, Hex	191817-1	191817-1	191817-1
5	Drain, Flange	191620	191620	191620
6	Drain, Flange Assembly	191625	191625	191625
7	Elbow	191664	191664	191664
9	Gasket, Drain	191622	191622	191622
10	Gasket, Vent	191683	191683	191683-1
11	Nipple	20373-15	20373-15	20373-18
12	Nut, Hex 1/4" (Serrated)	210226	210226	210226
13	O-Ring	191556-1	191556-1	191556-1
14	Plate, Drain Seal	191626	191626	191626
15	Pump Assembly, Circulator (LW Models)	211611	211612	211538
16	Tube Assembly, Inlet (LW Models)	210897-1	210897-2	192308
17	Tube Assembly, Primary (LB Models)	210901	210901	192225
18	Tube Assembly, Primary (LW Models)	210900	210900	192388
19	Tubing, Condensate	191746-24	191746-24	191746-24
20	Tubing, Pressure	191562-26	191562-26	191562-26
21	U-Bolt Assembly	191938	191938	191938
22	Valve Drain	26273	26273	26273
23	Vent Assembly	210499	210499	210494
24	Vent Flange	191685-4	191685-4	191685-5
25	Washer, Plain	76820-18	76820-18	76820-18
26	Vent Support, Bracket (1000 Model Only)	-	-	192194
27	Vent, Restricting Ring (500 Model Only)	191923-2	-	-
28	Vent, Restricting Ring (Series 301 LP)	-	-	191923-1



LB/LW JACKET/FRAME ASSEMBLY

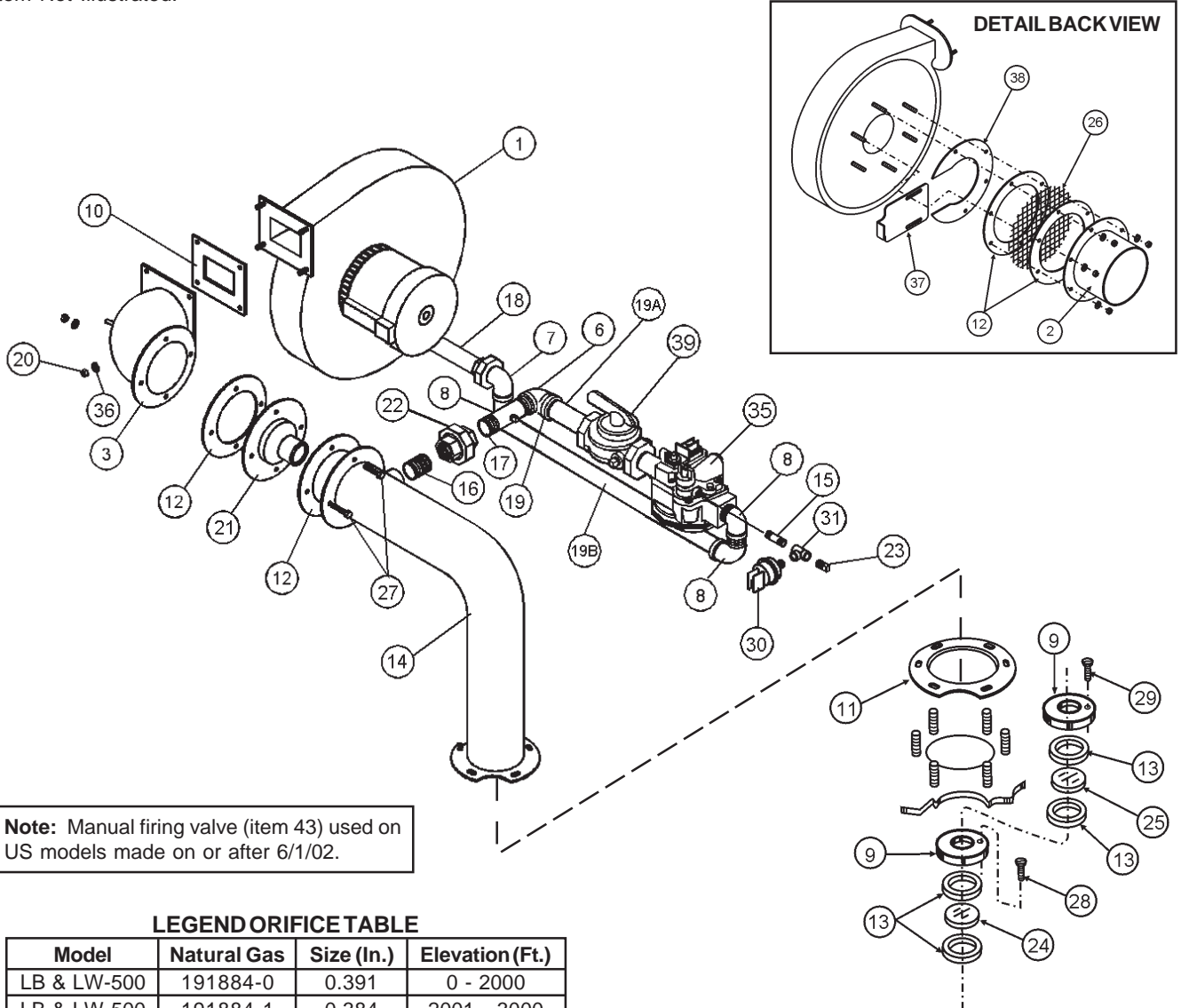
Item	Description	Model 500	Model 750	Model 1000
1	Bolt, Machine 5/16" - 18	191358-1	191358-1	191358-2
2	Control Panel Assembly	210601-1	210601-1	210601
3	Display Board	210219	210219	210219
4	Frame Assembly	210495	210495-1	210501-1
5	Gasket, Dispaly	210130	210130	210130
6	Grommet	97591	97591	97591
7	Handle	191802	191802	191802
8	Junction Box Assembly	190438-1	190438-1	190438-1
9	Junction Box Cover	2233	2233	2233
10	Label, Control Panel	210561	210561	210561-1
11	Locknut, Star	1953	1953	1953
12	Locknut #6 -32	210207	210207	210207
13	Nipple, Chase	41994	41994	41994
14	Nut, Lock Hex 5/16" - 18 (1000 Model Only)			97896
15	Panel Assembly, Left Side	191796-1	191796-1	191796-3
16	Panel Assembly, Right Side	191796	191796	191796-2
17	Panel, Lower Front	191805	191805	191805-1
18	Panel, Rear (Natural)	191748	191748-1	192191
	Panel Rear (Propane)	191748	191748-4	210020
19	Panel, Top Cover	191609	191609	191609-1
20	Plate, Rear Cover (1000 Model Only)			210214
21	Screw, Hex Head 5/16"	210125	210125	210125
22	Screw, Hex Head #6-32	210206	210206	210206
23	Switch, Blower Prover	191666	191666	191666
24	Switch, Blocked Flue	191667	191667	191667
25	Switch, Rocker	191665	191665-1	191665-1
26	Support Bracket (Propane Only)		210019	210017
27	Transformer (75VA)	192528	192528	
	Transformer (100VA)			210449
28	U-Bolt Assembly (Water way)	191938	191938	191938
29	Washer, Flat	191359	191359	191359
30	Washer, Lock	191480	191480	191480
31	Switch, Relay		211546	211546
32	Blower Speed Control	191922		
33	Control Bracket Assembly	210902	210902-3	192167-2



LB/LW NATURAL GAS TRAIN/BLOWER ASSEMBLY- MODEL 500

Item	Description	Model 500	Item	Description	Model 500
1	Blower	211613	20	Nut, Hex 1/4"	170272
2	Blower Adapter Assembly	191645	21	Orifice, Air	192737
3	Blower Manifold Assembly	191832	22	Orifice, Union (See Orifice Table Below)	
*4	Bracket, Blower	191773	23	Plug, 1/8" Pipe	3348
*5	Clamp, Hose	191794	24	Port, Observation Lower	191572
6	Elbow, 1"	1630	25	Port, Observation Upper	191572-1
7	Elbow, Union 1"	2482-1	26	Screen, Air Inlet	192041
8	Elbow, Street 1"	190763	27	Screw, Cap 1/4"	190960-2
9	Flange, Observation Port	191573	28	Srew, Flathead #8-32 x 1/2"	191542
10	Gasket, Blower	191623	29	Screw, Flathead #8-32 x 3/4"	191542-1
11	Gasket, Burner	191564	30	Switch, Low Pressure	191149-1
12	Gasket, Manifold	191565	31	Tee, 1/8"	40119
13	Gasket, Port (1/8" Thick)	191576	*32	Tee, Union	191633
14	Manifold Assembly	191610	*33	Tubing, Pressure	191562
15	Nipple, Close 1/8"	191147-1	*34	U-Bolt Assembly	191938-1
16	Nipple, Close Stainless	191772	35	Valve, Main Gas	191956
17	Nipple, Tapped	86397-11	36	Washer, Lock 1/4"	1006
18	Nipple, 1" x 9 1/2"	86397	37	Shutter, Blower	211694
19	Nipple, 1" x 2"	1177	38	Flange, Shutter	211695
19A	Nipple, Pipe 1"x2 1/2"	1179	39	Manual Firing Valve	3423-4
19B	Nipple, Pipe 1"x14 1/2"	86397-6			

*Item Not Illustrated.



Note: Manual firing valve (item 43) used on US models made on or after 6/1/02.

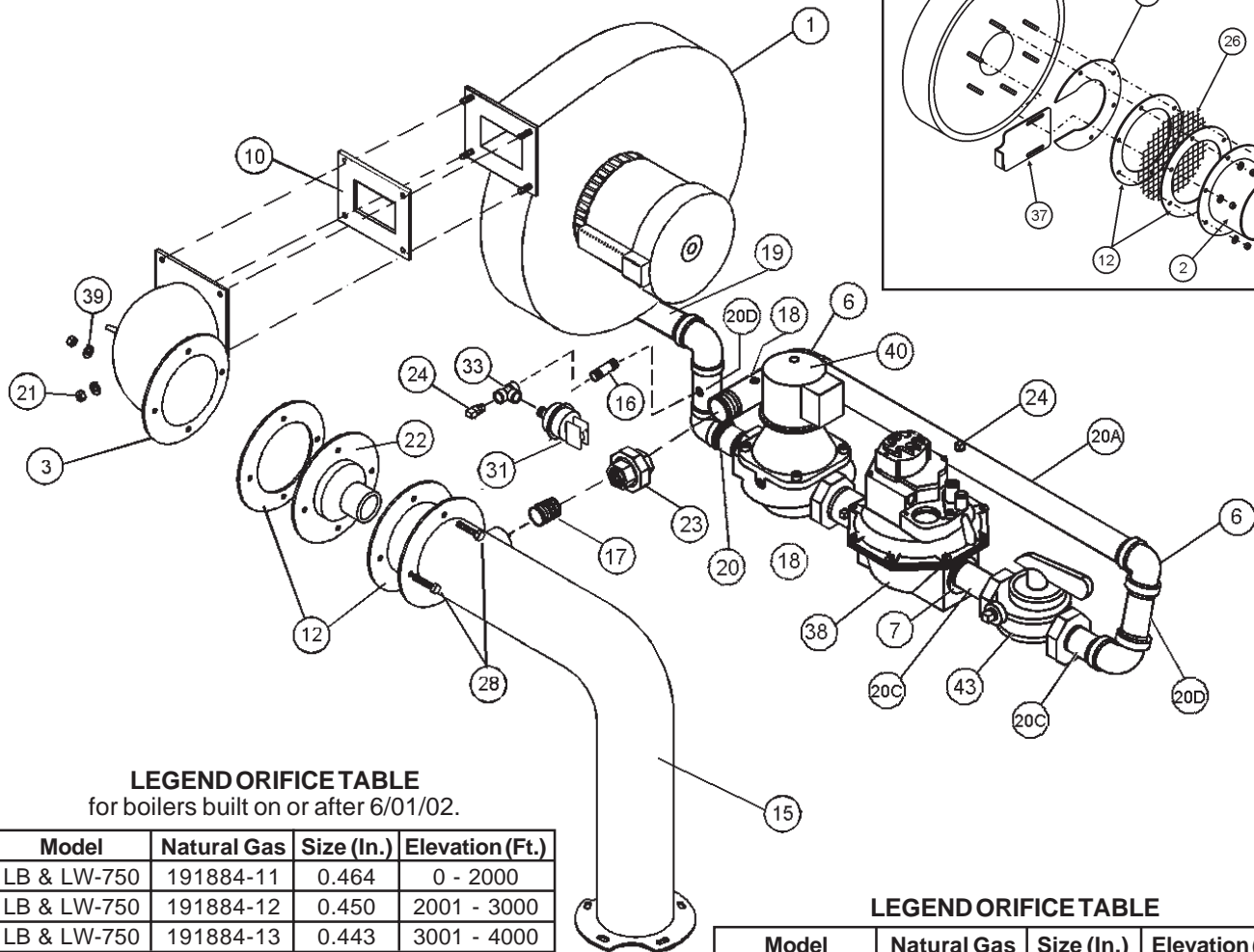
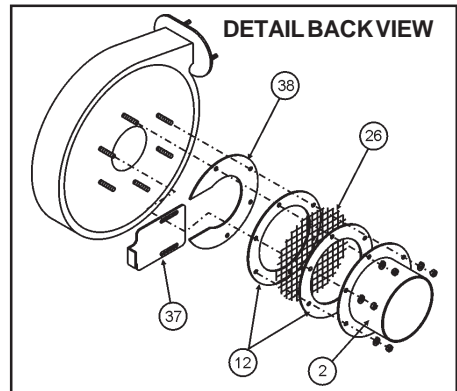
LEGEND ORIFICE TABLE

Model	Natural Gas	Size (In.)	Elevation (Ft.)
LB & LW-500	191884-0	0.391	0 - 2000
LB & LW-500	191884-1	0.384	2001 - 3000
LB & LW-500	191884-2	0.374	3001 - 4000

LB/LW NATURAL GAS TRAIN/BLOWER ASSEMBLY- MODEL 750

Item	Description	Model 750	Item	Description	Model 750
1	Blower	211614	21	Nut, Hex 1/4"	170272
2	Blower Adapter Assembly	191645	22	Orifice, Air	192737-1
3	Blower Manifold Assembly	191832	23	Orifice, Union (See Orifice Table Below)	
*4	Bracket, Blower	191773	24	Plug, 1/8" Pipe	3348
*5	Clamp, Hose	191794	*25	Port, Observation Lower	191572
6	Elbow, 1"	1630	*26	Port, Observation Upper	191572-1
7	Face Bushing 1"x1 1/4"	99376	27	Screen, Air Inlet	192041
*9	Flange, Observation Port	191573	*28	Screw, Cap 1/4"	190960-2
10	Gasket, Blower	191623	*29	Screw, Flathead #8-32 x 1/2"	191542
*11	Gasket, Burner	191564	*30	Screw, Flathead #8-32 x 3/4"	191542-1
12	Gasket, Manifold	191565	31	Switch, Low Pressure	191149-1
*13	Gasket, Port (1/8" Thick)	191576-1	33	Tee, 1/8"	40119
*14	Gasket, Port (1/16" Thick)	191576	*34	Tee, Union	191633
15	Manifold Assembly	191610	*35	Tubing, Pressure	191562
16	Nipple, Close 1/8"	191147-1	*36	Tubing, Top Cover Assembly	191925
17	Nipple, Close Stainless	191772	*37	U-Bolt Assembly	191938-1
18	Nipple, 1x4 1/2" with Tap	86397-14	38	Valve, Main Gas	78481-3
19	Nipple, 1" x 9 1/2"	86397	*39	Washer, Lock 1/4"	1006
20	Nipple, 1" x 2"	1177	40	Valve, Solenoid Gas	192189
20A	Nipple, 1"x15 1/2"	86397-13	41	Shutter, Blower	211694
20B	Nipple, 1 1/4" x 2"	86505-29	42	Flange, Shutter	211695
20C	Nipple, 1"xClose	1342	43	Manual Firing Valve	3423-4
20D	Nipple, 1"x4"	86397-7			

*Item Not Illustrated.



LEGEND ORIFICE TABLE
for boilers built on or after 6/01/02.

Model	Natural Gas	Size (In.)	Elevation (Ft.)
LB & LW-750	191884-11	0.464	0 - 2000
LB & LW-750	191884-12	0.450	2001 - 3000
LB & LW-750	191884-13	0.443	3001 - 4000

Note: Manual firing valve (item 43) used on US models made on or after 6/1/02.

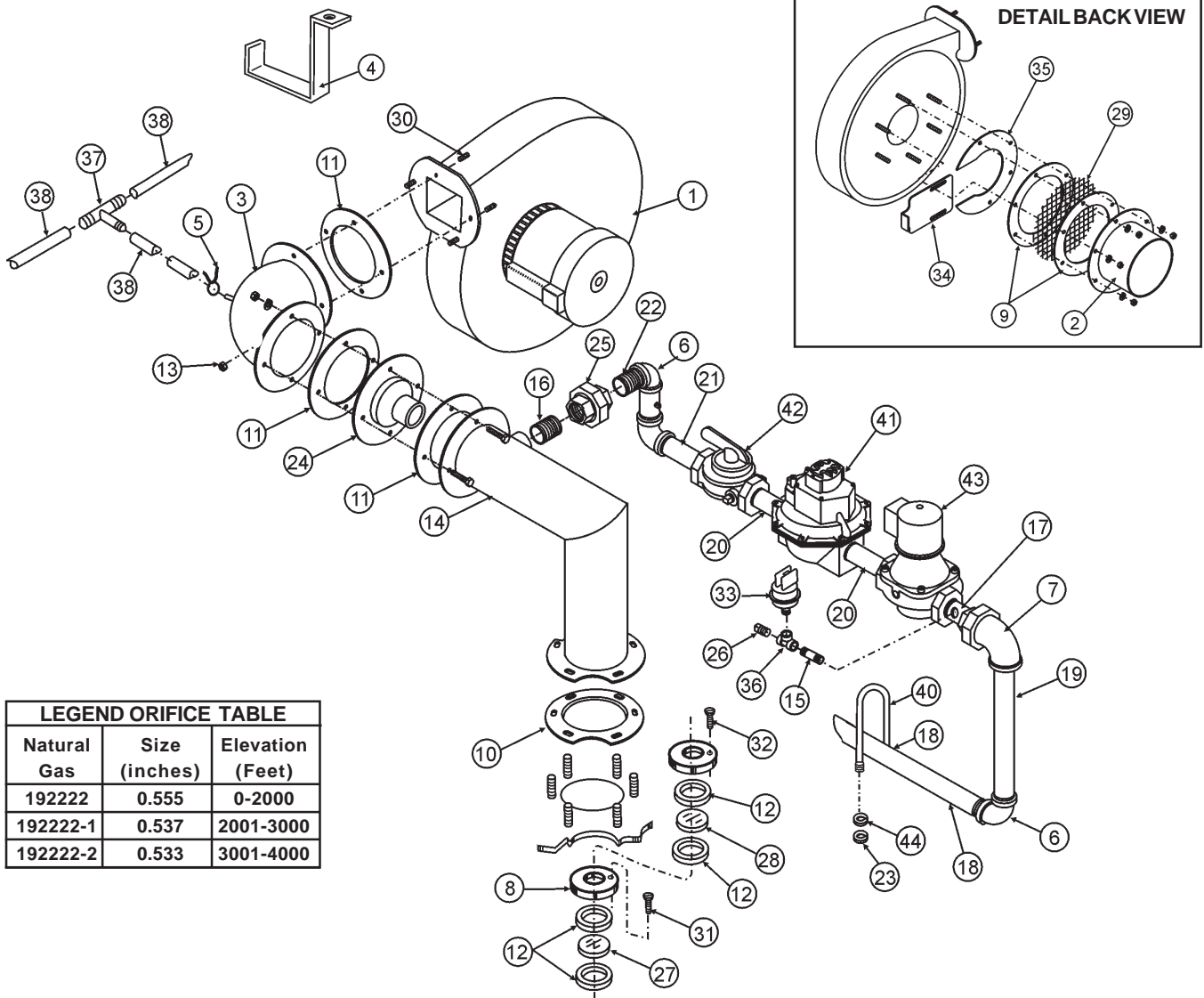
LEGEND ORIFICE TABLE

Model	Natural Gas	Size (In.)	Elevation (Ft.)
LB & LW-750	191884-3	0.484	0 - 2000
LB & LW-750	191884-5	0.469	2001 - 3000
LB & LW-750	191884-7	0.461	3001 - 4000

LB/LW NATURAL GAS TRAIN/BLOWER ASSEMBLY - MODEL 1000

Item	Description	Model 1000	Item	Description	Model 1000
1	Blower	192195	24	Orifice, Air (Series 300 - Nat. Gas)	192737-3
2	Blower Adapter Assembly	192215-1	24	Orifice, Air (Series 30211 - L.P. Gas)	192737-2
3	Blower Manifold Assembly	192217	25	Orifice, Union (See Orifice Table Below)	
4	Bracket, Blower	210214	26	Plug, 1/8" Pipe	3348
5	Clamp, Hose	191794-3	27	Port, Observation Lower	191572
6	Elbow, 1-1/4"	192216	28	Port, Observation Upper	191572-1
7	Elbow, Union 1-1/4"	86506-1	29	Screen, Air Inlet	192220-1
8	Flanged Observation Port	191573	30	Screw, Cap 1/4"	190960-2
9	Gasket, Blower Air Inlet	192213	31	Srew, Flathead #8-32 x 1/2"	191542
10	Gasket, Burner	191564	32	Screw, Flathead #8-32 x 3/4"	191542-1
11	Gasket, Manifold	191565	33	Switch, Low Pressure	191149-1
12	Gasket, Port (1/8" Thick)	191576	34	Shutter, Blower	192593
13	Nut, Hex 1/4", Serrated	210226	35	Shutter Flange	192592
14	Manifold Assembly - Air/Gas	192309	36	Tee, 1/8"	40119
15	Nipple, Close 1/8"	191147-3	37	Tee, Pressure	191633
16	Nipple, Close Stainless	191772-1	38	Tubing, Pressure	191562
17	Nipple, Tapped	86505-3	40	U-Bolt Assembly (Gas Train)	191938-3
18	Nipple, 1-1/4" x 38-1/2"	86505-28	41	Valve, Main Gas	78481-3
19	Nipple, 1-1/4" x 28-3/4"	86505-27	42	Valve, Firing	3423-3
20	Nipple, 1-1/4" x 2"	86505	43	Valve, Solenoid Gas	192189
21	Nipple, 1-1/4" x 3"	86505-2	44	Washer, Plain	76820-18
22	Nipple, 1-1/4" x 4"	86505-6	42	Manual, Shut-off Valve	211695
23	Nut, Hex 1/4"	191817-1			

*Item Not Illustrated.



LEGEND ORIFICE TABLE

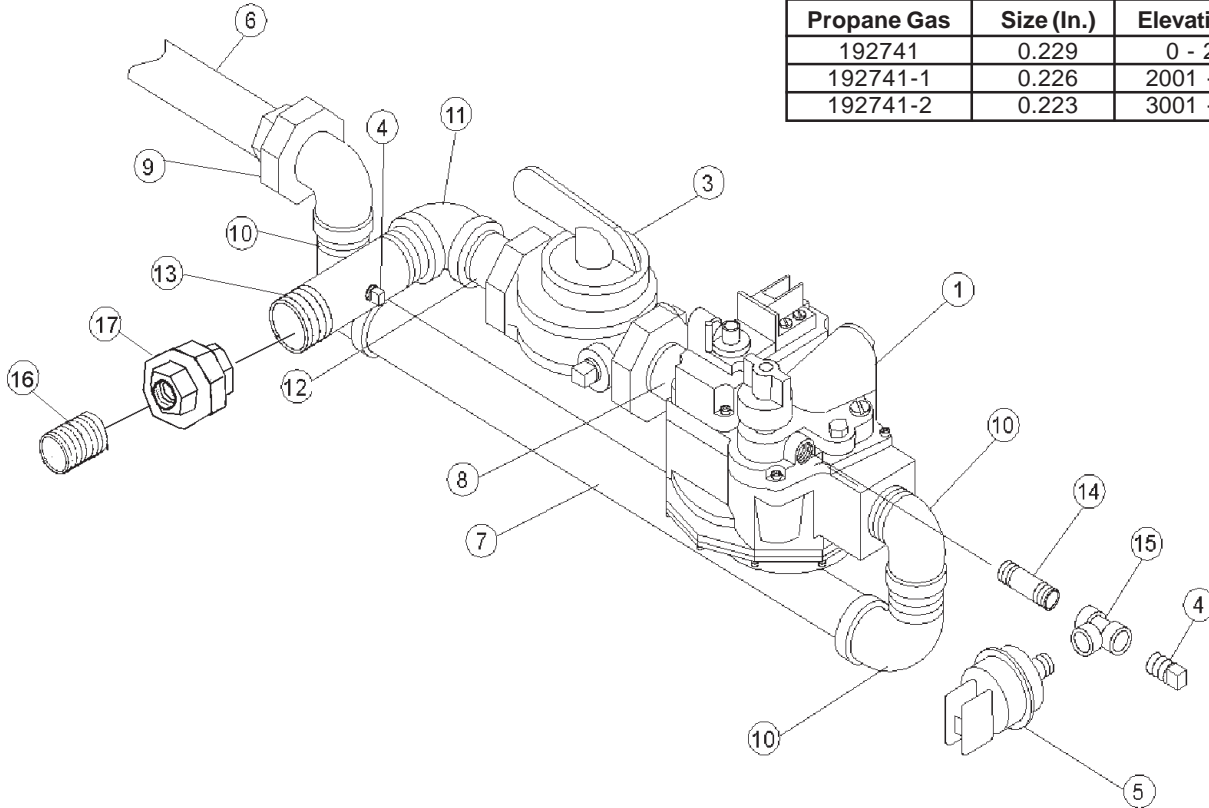
Natural Gas	Size (inches)	Elevation (Feet)
192222	0.555	0-2000
192222-1	0.537	2001-3000
192222-2	0.533	3001-4000

LB/LW PROPANE GAS TRAIN ASSEMBLY - MODEL 500

Item	Description	Model 500	Item	Description	Model 500
1	Valve, Main Gas	191956-1	10	Elbow, 90° Street, 1"	190763
2	Regulator, LP	- - - -	11	Elbow, 90°, 1"	1630
3	Valve, Manual Shut-Off	3423-4	12	Nipple, 1"	1179
4	Pipe Plug	3348	13	Nipple, 1"	86397-11
5	Switch, Low Gas Pressure	191149-3	14	Nipple, 1/8"	191147-1
6	Nipple, 1"	86397	15	Tee, 1/8"	40119
7	Nipple, 1"	85397-6	16	Nipple, Close Stainless	191772
8	Nipple, 1"	1177	17	Orifice, Union	See Orifice Table Below
9	Elbow, Union, 1"	2482-1			

LB/LW 500 ORIFICE TABLE

Propane Gas	Size (In.)	Elevation (Ft.)
192741	0.229	0 - 2000
192741-1	0.226	2001 - 3000
192741-2	0.223	3001 - 4000

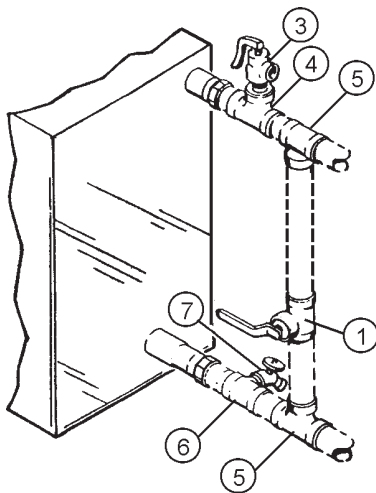


On LB models the circulating pump must be between the boiler inlet and the bypass (see figure below). LW models have pump mounted inside the jacket.

LB/LW BY-PASS PARTS LIST - MODEL 500

Item	Description	Model 500
1	Ball Valve	191935
2	Hex Reducing Bushing LW Models (for use w/Relief Valve)	91940-1
3	Relief valve:	
	LB Model	210451
	LW Model	98883-3
4	Tee, 2" x 2" x 1"	78685-2
5	Tee, 2"	191584
6	Tee, 2" x 2" x 2"	78685-4
7	Valve, Drain	26273
*8	Valve, Manual Shutoff	- - - -
*9	Orifice, Gas Assembly (See Orifice Table)	
*10	Tube, Condensate	191746-120
*11	Strap, Cable	99592-2

*Item Not Illustrated.

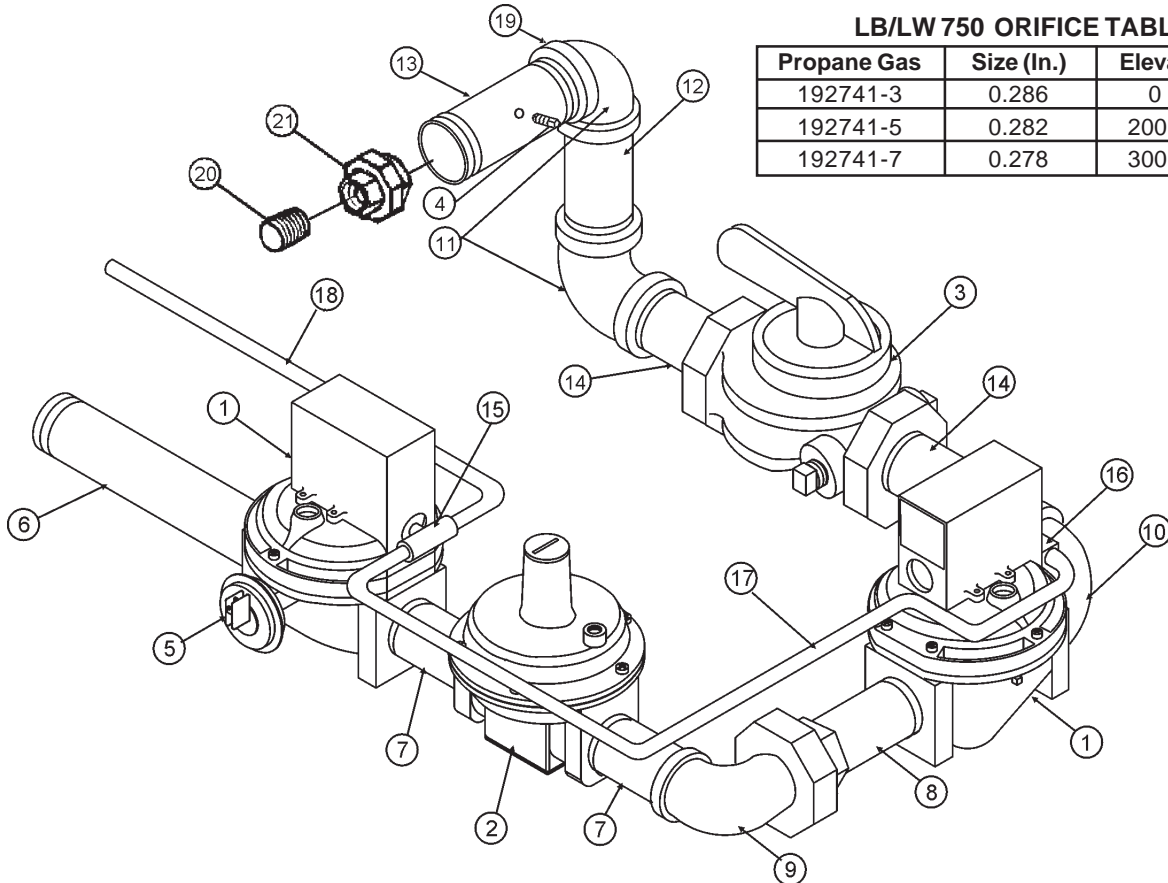


LB/LW PROPANE GAS TRAIN ASSEMBLY - MODEL 750

Item	Description	Model 750	Item	Description	Model 750
1	Valve, Main Gas	77780	12	Nipple, 1-1/4"	86505-3
2	Regulator, LP	192460	13	Nipple, 1-1/4"	86397-11
3	Valve, Manual Shut-Off	3423-3	14	Nipple, 1-1/4"	86505-4
4	Pipe Plug	3348	15	Tee, 1/8"	192465
5	Switch, Low Gas Pressure	191149-3	16	Connector, Angle 1/8"	1578
6	Nipple, 1-1/4"	86505-8	17	Bleeder, Tube	210016
7	Nipple, 1-1/4"	86505-2	18	Bleeder, Tube	192461
8	Nipple, 1-1/4"	86505-10	19	Bushing, 1" x 1-1/4"	99376
9	Elbow, Union, 1-1/4"	86506	20	Nipple, Close Stainless	191772
10	Elbow, 90° Street, 1-1/4"	94516	21	Orifice, Union	See Orifice Table Below
11	Elbow, 90°, 1-1/4"	192216			

LB/LW 750 ORIFICE TABLE

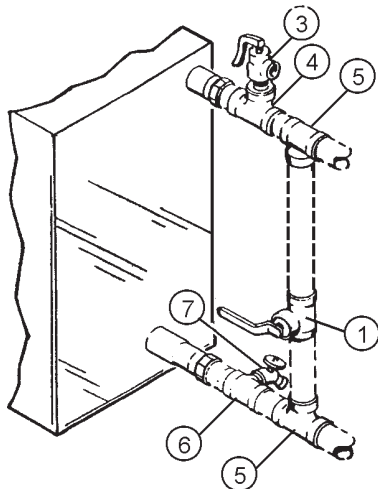
Propane Gas	Size (In.)	Elevation (Ft.)
192741-3	0.286	0 - 2000
192741-5	0.282	2001 - 3000
192741-7	0.278	3001 - 4000



On LB models the circulating pump must be between the boiler inlet and the bypass (see figure below). LW models have pump mounted inside the jacket.

LB/LW BY-PASS PARTS LIST - MODEL 750

Item	Description	Model 750
1	Ball Valve	191935
2	Hex Reducing Bushing LW Models (for use w/Relief Valve)	91940-1
3	Relief valve:	
	LB Model	210451-1
	LW Model	98883-3
4	Tee, 2" x 2" x 1"	78685-2
5	Tee, 2"	191584
6	Tee, 2" x 2" x 2"	78685-4
7	Valve, Drain	26273
*8	Valve, Manual Shutoff	3423-3
*9	Orifice, Gas Assembly (See Orifice Table)	
*10	Tube, Condensate	191746-120
*11	Strap, Cable	99592-2
	*Item Not Illustrated.	

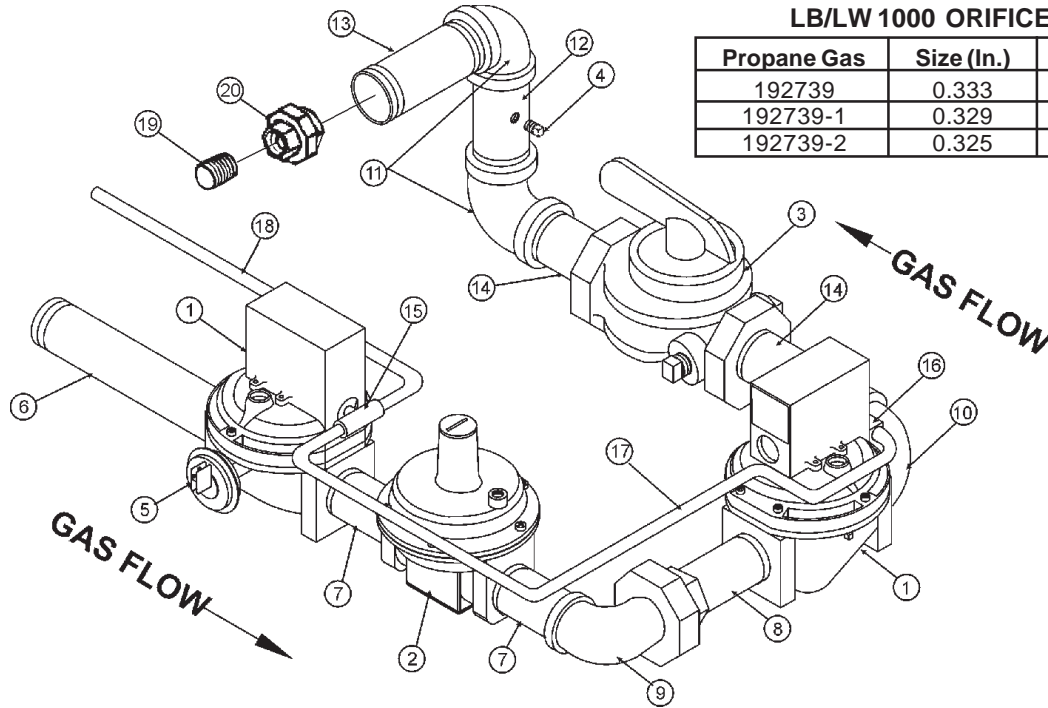


LB/LW PROPANE GAS TRAIN ASSEMBLY - MODEL 1000

Item	Description	Part No.	Item	Description	Part No.
1	Valve, Main Gas, LP 300 Series	77780	10	Elbow, 90 Street 1-1/4"	94516
2	Regulator, LP 301 Series	192460	11	Elbow, 90 1-1/4"	192216
3	Valve, Firing	3423-3	12	Nipple, 1-1/4" w/Tapping	86505-32
4	Pipe Plug	3348	13	Nipple, 1-1/4"	86505-6
5	Switch, Low Gas Pressure	191149-3	14	Nipple, 1-1/4"	86505-4
6	Nipple, 1-1/4"	86505-13	15	Tee, 1/8" NPT Branch	192465
7	Nipple, 1-1/4"	86505-2	16	Connector, Angle 1/8"	1578
8	Nipple, 1-1/4"	86505-17	17	Bleeder, Tube	210016
9	Elbow, Union 1-1/4"	86506	18	Bleeder, Tube	192461
			19	Nipple, Close Stainless	191772-1
			20	Orifice, Union	See Orifice Table Below

LB/LW 1000 ORIFICE TABLE

Propane Gas	Size (In.)	Elevation (Ft.)
192739	0.333	0 - 2000
192739-1	0.329	2001 - 3000
192739-2	0.325	3001 - 4000

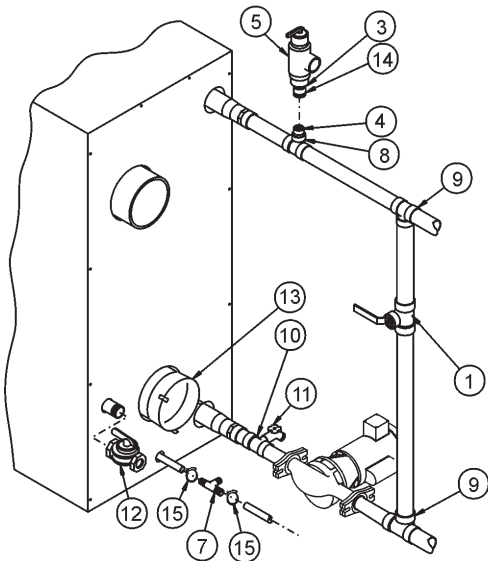


On LB models the circulating pump must be between the boiler inlet and the bypass (see figure below). LW models have pump mounted inside the jacket.

LB/LW BY-PASS PARTS LIST - MODEL 1000

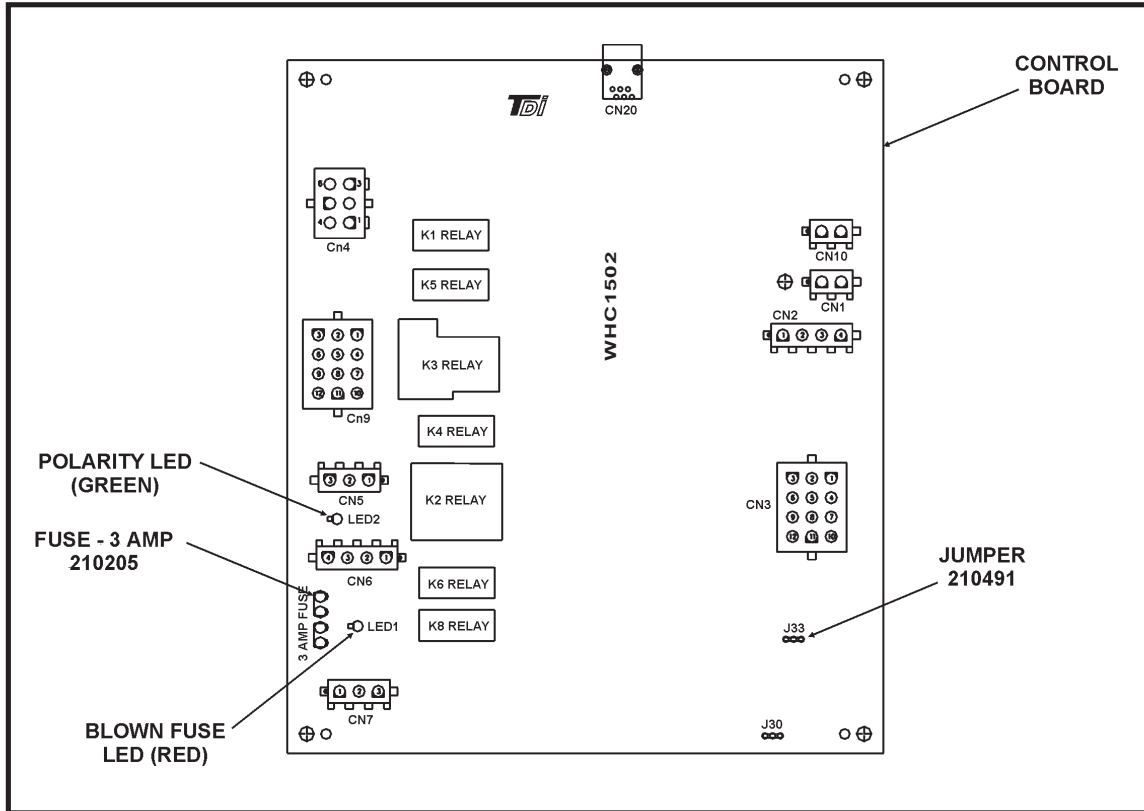
Item	Description	Part No.
1	Ball Valve	191935
*2	Tank/Pump Kit (LW Models)	210625
3	Hex Reducing Bushing (LB Model)	91940-8
4	Flush Bushing (LB Model)	192163-2
5	Relief Valve (LW Model)	98883-3
	Relief Valve (LB Model)	210451-2
6	Strap, Cable (not shown)	99592-2
7	Tee, Condensate	192040-1
8	Tee (For use w/relief valve):	
	LW Model	78685-4
	LB Model	191584
9	Tee 2"x2"x2"	191584
10	Tee 2"x2"x3/4"	78685-4
11	Valve, Drain	26273
12	Valve, Manual Shutoff	3423-3
13	Vent Patch Assembly	192161
14	Nipple (For use w/relief valve)	
	LW Model	20373-12
	LB Model	92706-4
15	Clamp, Hose	191794-1

*Item Not Illustrated.



LB/LW CONTROL BOARD WHC 1502

Part Number 210128



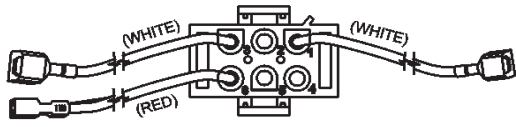
LB/LW WIRING CHART

COLOR	GAUGE	PART NUMBER ***
White	14	41974
Black	14	99650
Green	14	41972
White	16	86580
Black	16	86578
Green	16	69058
White	18	170595
Black	18	170596
Green	18	170606
Blue	18	191719
Red	18	170603
Yellow	18	170604
Brown	18	170890
White/Red	18	191700
White/Yellow	18	191702
White/Black	18	191699
Black/White	18	191694
Yellow/Blue	18	191708
Red/Green	18	191717

*** Use dash number to indicate length of wire.
 Example: 20 inch long red wire would be expressed as 170603-20.

LB/LW WIRING AND HARNESS ASSEMBLY

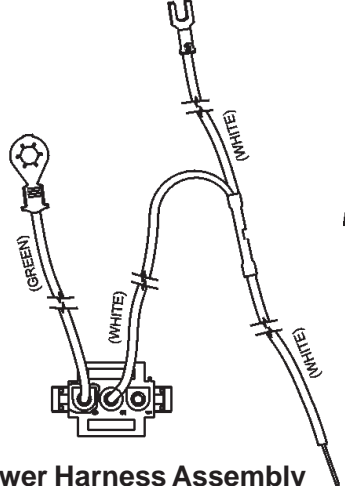
78468	99593-6	78469	191673	42573	210091	210152	99599-2
22-16 Ga.	16-14 Ga.	22-18 Ga.		#10 Stud			22-18 Ga.



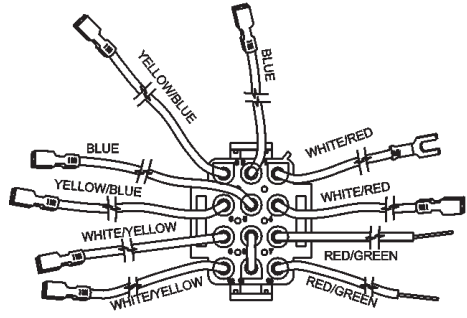
**Ignition
Harness Assembly
210575**



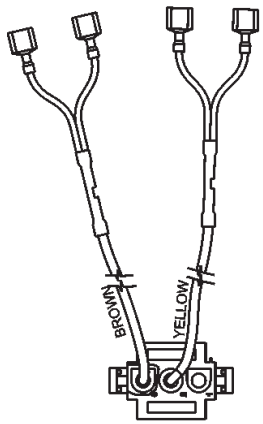
**Tank Probe
Harness Assembly
210604**



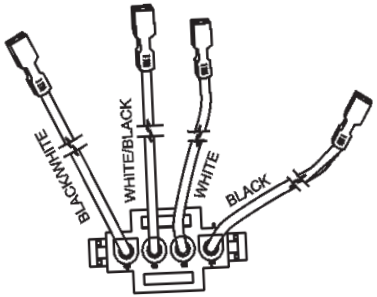
**Power Harness Assembly
210579-1
(-0 On -500 Models Only)**



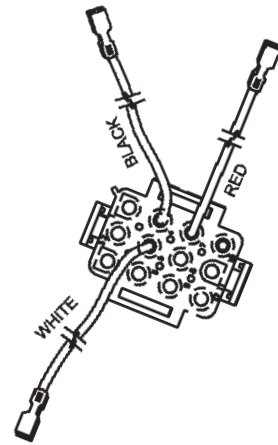
**Pressure Flow Switch
Harness Assembly
210576**



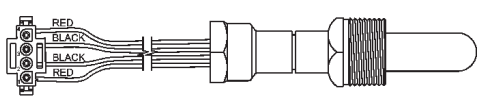
**Gas Valve Harness Assembly
210574-1 (Propane)
210574-2 (Nat. & Prop. Model 500)**



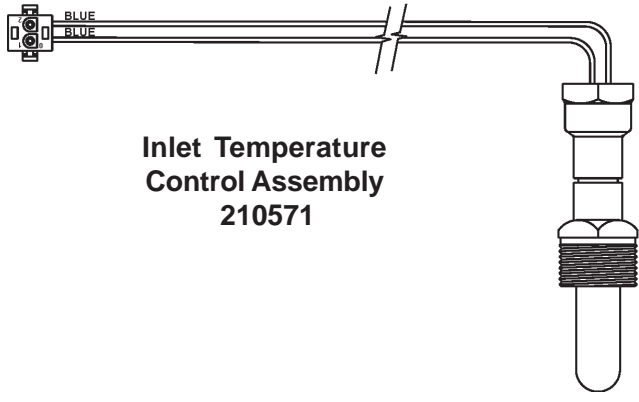
**Transformer
Harness Assembly
210578 (Model 1000)
211330 (Models 500 & 750)**



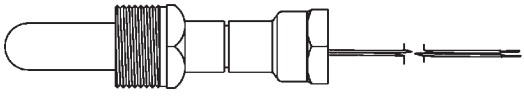
**Blower
Harness Assembly
210609 (Model 1000)**



**Outlet Temperature
Control/ECO Assembly
210572**



**Inlet Temperature
Control Assembly
210571**



**Tank Probe (LW Models)
211541-1**



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