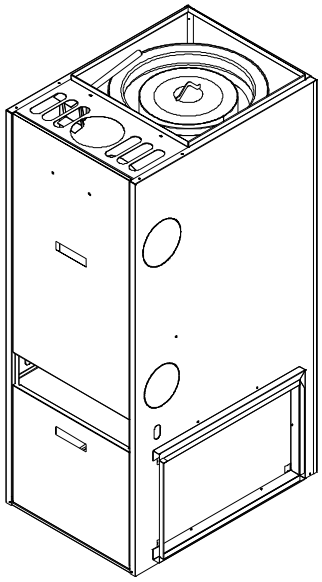
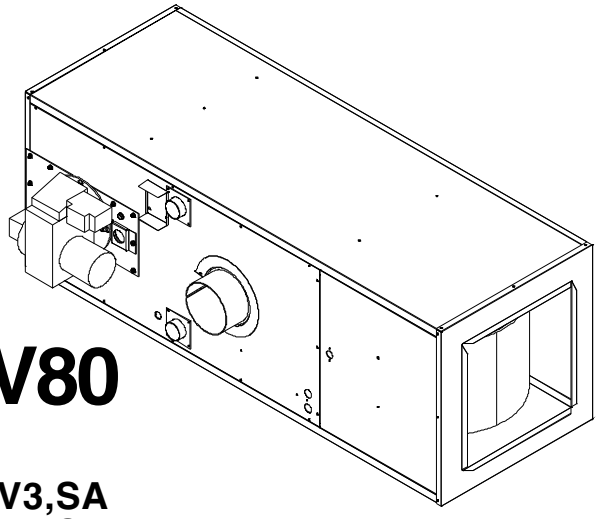
Vertical Highboy, Lowboy Front Flue, Lowboy Rear Flue, Downflow/Horizontal Oil-Fired Furnace





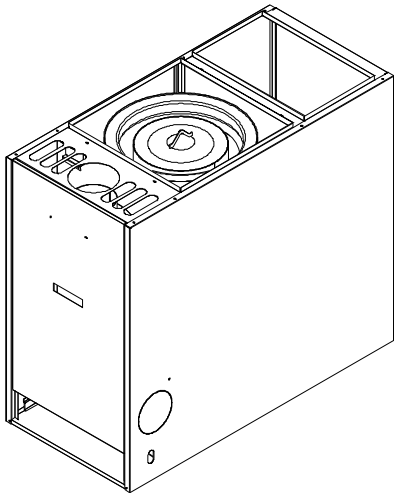
XP80 / XV80

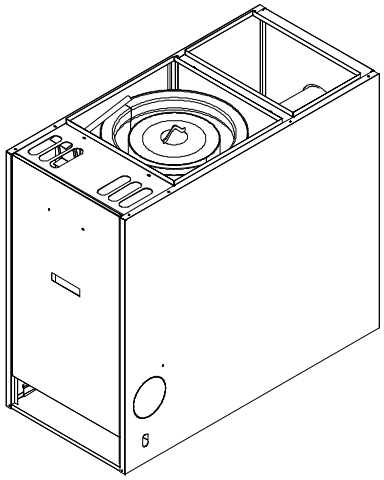
Highboy Vertical
THV1M087A936,V3,SA
THV1M087A948,V5,SA

Downflow/Horizontal Front Flue
TDF1M087A936,V3,SA
TDF1M087A948,V5,SA

Lowboy Front Flue
TLF1M087A936,V3,SA
TLF1M087A948,V5,SA

Lowboy Rear Flue
TLR1M087A936,V3,SA
TLR1M087A948,V5,SA





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General Features

Oil Furnace Models
Central heating oil furnace models are designed to meet U.L.standards and are certified by ETL. Limit setting and rating data were established and approved under standard rating conditions using U.L.

Safe Operation
Oil furnace models ship with Beckett Burners that utilize cad cells for flame sensing and a safety lockout feature to prevent excess oil buildup in the combustion chamber if ignition fails. The burner also includes a valve delay on cycle and clean cut solenoid valve for smooth ignition.

Quick Heating
Durable, cycle tested, hot rolled, 13 gauge steel heat exchanger quickly transfers heat to provide warm conditioned air to the structure.

Burner
Model AF Beckett Burner with valve delay on & "clean-cut" oil pump for safety and efficient combustion.

Controls
Proven fan limit control for reliable operation is adjustable to avoid cold drafts. The oil furnace fan center is rated at 40VA for use with a cooling system and accessories.

Air Delivery
Multispeed, direct drive blower motor, has sufficient airflow for most heating and cooling requirements, will switch from heating to cooling speeds on demand from room Comfort Control. Variable speed models tailor air flow for varied cooling capacities.

Styling
Heavy gauge, steel cabinet construction with powder paint for attractive appearance and durability. The heat exchanger section of the cabinet is completely lined with foil faced fiberglass insulation and the blower compartment includes a sound reduction insulation. This results in quiet and efficient operation due to the excellent acoustical and insulating qualities of fiberglass. A bottom pan is built into the blower compartment with alternate back, left side or right side return air connection provision.

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Contents

Features and Benefits

XP 80 / XV80 STANDARD EQUIPMENT

- Up to 85.0% Annual Fuel Utilization Efficiency (AFUE)
- 13 gauge hot rolled steel wrap around heat exchanger for durability
- Beckett Flame Retention Burner operates cleanly and quietly
- Burner features include primary control with interrupted ignition for reliability, pre-purge and clean cutoff solenoid valve for smooth ignition
- Burner and controls factory wired
- Dual clean out ports for quick access and easy cleaning
- Direct drive, permanently lubricated, 4 speed blower motor on XP models
- Variable speed blower motors on XV models
- Insulated blower compartment
- Slide out blower assembly for quick cleaning and service accessibility
- Filter rack with cleanable filter (Highboy & Lowboy Models only)
- Preformed ceramic fiber combustion chamber for higher efficiencies and more complete combustion
- 40 VA control transformer for add on cooling
- Heavy gauge, painted steel cabinet
- Recessed door handles for easy removal of Highboy & Lowboy Furnace doors
- Lowboy models available with front or rear flue
- Highboy models with top or right side venting
- Downflow/Horizontal model field convertible from downflow to right or left horizontal
- 6” Left and Right side fresh air knockouts (Highboy & Lowboy Models only)
- Barometric draft regulator included
- Heat exchanger cabinet section lined with foil faced insulation

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Features and Benefits

OPTIONAL EQUIPMENT

Downflow Subbase - TDF1M087A936, 948SA	BAYSUB10ABASEA	[ ]
Trim Kit - Horizonatal Right Vent - Top Cover and Vent Trim Ring - THV1M087A936, 948SA	BAYTRM10AVENTA	[ ]
Comfort Control, Prog.,7Day, 1-Stage Htg. / Clg.	TCONT800AS11AA	[ ]
Comfort Control, Prog.,7Day, 3 Htg. / 2 Clg.	TCONT802AS32DA	[ ]
Comfort Control, Prog.,7Day, 3 Htg. / 2 Clg w/dehumidification.	TCONT803AS32DA	[ ]
Comfort Control, Prog.,5/1/5 Day, 1-Stage Htg. / Clg.	TCONT600AF11MA	[ ]
Comfort Control, Prog.,5/1/5 Day, 2 Htg. / 2 Clg.	TCONT602AF22MA	[ ]
Comfort Control, Mechanical 1-Stage Htg. / Clg.①	BAY28X182	[ ]
Comfort Control, Mechanical 2-Stage Htg. / Clg ①	BAY28X183	[ ]
Subbase Auto / Manual Changeover - BAY28X183	BAY28X184	[ ]
Subbase Auto Changeover - BAY28X182, 183	BAY28X187	[ ]
Add-on Heat Pump Kit	TAYPLUS103A	[ ]
Bonnet Comfort Control-(required with TAYPLUS103A)	THT1248	[ ]

① Requires subbase with isolated RC & RH terminals.

General Data

Oil Fired Furnace Specifications												
Model	**THV1M087A936 & 948SA**				**TLF1M087A936 & 948SA TLR1M087A936 & 948SA**				**TDF1M087A936 & 948SA**			
Type	**Upflow - Highboy**				**Upflow - Lowboy**				**Downflow - Horizontal**			
Heat input Rate (BTUH):	**140,000**	**119,000**	**105,000**	**84,000**	**140,000**	**119,000**	**105,000**	**84,000**	**140,000**	**119,000**	**105,000**	**84,000**
Nominal Thermal Efficiency (%):	**83.6**				**84.2**				**83.8**			
Heating Capacity (BTUH):	**114,000**	**98,000**	**87,000**	**70,000**	**114,000**	**98,000**	**87,000**	**70,000**	**114,000**	**98,000**	**87,000**	**70,000**
Nominal Temperature Rise (deg. F):	**85**				**85**				**85**			
Minimum AFUE (I.C.S.) Rating (%):	**THV1M087A936SA - 82.9% THV1M087A948SA - 82.6%**				**TLF1M087A936SA - 82.9% TLF1M087A948SA - 82.7% TLR1M087A936SA - 85.0% ** TLR1M087A948SA - 82.4%**				**TDF1M087A936SA - 84.8% TDF1M087A948SA - 82.6%**			
Burner Specifications:	**R.W. Beckett Pressure Atomizing Type, Model AF**				**R.W. Beckett Pressure Atomizing Type, Model AF**				**R.W. Beckett Pressure Atomizing Type, Model AF**			
Air Tube Length (in.):	**5.875, Effective**				**5.875, Effective**				**5.875, Effective**			
Burner Head Type:	**Fixed, Flame Retention**				**Fixed, Flame Retention**				**Fixed, Flame Retention**			
Fuel Type:	**# 2 Distillate (Domestic Heating Oil)**				**# 2 Distillate (Domestic Heating Oil)**				**# 2 Distillate (Domestic Heating Oil)**			
Nozzle Rating For Beckett AF (GPH):	**1.00**	**0.85**	**0.75**	**0.60**	**1.00**	**0.85**	**0.75**	**0.60**	**1.00**	**0.85**	**0.75**	**0.60**
Spray Angle (deg.):	**80**				**80**				**80**			
Spray Pattern:	**Hollow**				**Hollow**				**Hollow**			
Oil Pump Pressure (PSIG):	**130**				**130**				**130**			
Ignition Control Type:	**Interrupted, Direct Spark**				**Interrupted, Direct Spark**				**Interrupted, Direct Spark**			
Pre / Post Purge Feature(s):	**Yes / no**				**Yes / no**				**Yes / no**			
Automatic Oil Solenoid Valve:	**Yes**				**Yes**				**Yes**			
Blower Drive:	**Direct**				**Direct**				**Direct**			
	THV1M087A936SA		**THV1M087A948SA**		**TLF1M087A936SA TLR1M087A936SA**		**TLF1M087A948SA TLR1M087A948SA**		**TDF1M087A936SA**		**TDF1M087A948SA**	
Diameter x Width (in.):	**10 x 9**		**11 x 11**		**10 x 9**		**10 x 9**		**10 x 9**		**11 x 9**	
No. Used:	**1**		**1**		**1**		**1**		**1**		**1**	
Speeds (no.):	**4**		**4**		**4**		**4**		**4**		**4**	
CFM vs in. w.g.:	**See Fan Performance Table**				**See Fan Performance Table**				**See Fan Performance Table**			
Motor HP:	**1/2**		**3/4**		**1/2**		**3/4**		**1/2**		**3/4**	
R.P.M.:	**1075**		**1130**		**1075**		**1130**		**1075**		**1130**	
Volts / Ph. / Hz.:	**120 / 60 / 1**				**120 / 60 / 1**				**120 / 60 / 1**			
Filter Furnished?:	**Yes**				**Yes**				**No**			
Type Recommended:	**Throwaway**				**Throwaway**				**Throwaway**			
No. - Size x Thick:	**1 - 16 x 25 x 1**				**2 - 10 x 20 x 1**				**Not Supplied**			
Vent - Size (in.):	**6**				**6**				**6**			
Gross Heat Exchanger Area (sq. ft.):	**27.8**				**27.8 (Front Flue) / 30.0 (Rear Flue)**				**27.8**			
Suply / Return Size (in. x in.):	**See Outline Drawing**				**See Outline Drawing**				**See Outline Drawing**			
Combustion Chamber Type:	**Preformed, Refactory (Ceramic Fiber Matrix Material)**				**Preformed, Refactory (Ceramic Fiber Matrix Material)**				**Preformed, Refactory (Ceramic Fiber Matrix Material)**			
Total Current (amps.):	**12.1**		**19.8**		**12.1**		**19.8**		**12.1**		**19.8**	
Max. Fuse Size (amps.):	**15**		**30**		**15**		**30**		**15**		**30**	
Dimensions uncrated (in.):	**H X W X D 58 X 22.25 X 31**				**H X W X D 41.5 X 22.25 X 47**				**H X W X D 22.25 X 61.25 X 22.25**			
Weight Shipping (lbs.) / Net (lbs.)	**260 / 250**				**300 / 290**				**280 / 270**			
** **Energy Star**												

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General Data

Oil Fired Furnace Specifications												
Model	**THV1M087A9V3 & 9V5SA**				**TLF1M087A9V3 & 9V5SA TLR1M087A9V3 & 9V5SA**				**TDF1M087A9V3 & 9V5SA**			
Type	**Upflow - Highboy**				**Upflow - Lowboy**				**Downflow - Horizontal**			
Heat input Rate (BTUH):	**140,000**	**119,000**	**105,000**	**84,000**	**140,000**	**119,000**	**105,000**	**84,000**	**140,000**	**119,000**	**105,000**	**84,000**
Nominal Thermal Efficiency (%):	**83.6**				**84.2**				**83.8**			
Heating Capacity (BTUH):	**114,000**	**98,000**	**87,000**	**70,000**	**114,000**	**98,000**	**87,000**	**70,000**	**114,000**	**98,000**	**87,000**	**70,000**
Nominal Temperature Rise (deg. F):	**85**				**85**				**85**			
Minimum AFUE (I.C.S.) Rating (%):	**THV1M087A9V3SA - 82.9% THV1M087A9V5SA - 82.6%**				**TLF1M087A9V3SA - 82.9% TLF1M087A9V5SA - 82.7% TLR1M087A9V3SA - 85.0% ** TLR1M087A9V5SA - 82.4%**				**TDF1M087A9V3SA - 84.8% TDF1M087A9V5SA - 82.6%**			
Burner Specifications:	**R.W. Beckett Pressure Atomizing Type, Model AF**				**R.W. Beckett Pressure Atomizing Type, Model AF**				**R.W. Beckett Pressure Atomizing Type, Model AF**			
Air Tube Length (in.):	**5.875, Effective**				**5.875, Effective**				**5.875, Effective**			
Burner Head Type:	**Fixed, Flame Retention**				**Fixed, Flame Retention**				**Fixed, Flame Retention**			
Fuel Type:	**# 2 Distillate (Domestic Heating Oil)**				**# 2 Distillate (Domestic Heating Oil)**				**# 2 Distillate (Domestic Heating Oil)**			
Nozzle Rating For Beckett AF (GPH):	**1.00**	**0.85**	**0.75**	**0.60**	**1.00**	**0.85**	**0.75**	**0.60**	**1.00**	**0.85**	**0.75**	**0.60**
Spray Angle (deg.):	**80**				**80**				**80**			
Spray Pattern:	**Hollow**				**Hollow**				**Hollow**			
Oil Pump Pressure (PSIG):	**130**				**130**				**130**			
Ignition Control Type:	**Interrupted, Direct Spark**				**Interrupted, Direct Spark**				**Interrupted, Direct Spark**			
Delay valve on / Post Purge Feature:	**Yes / no**				**Yes / no**				**Yes / no**			
Automatic Oil Solenoid Valve:	**Yes**				**Yes**				**Yes**			
Blower Drive:	**Direct**				**Direct**				**Direct**			
	THV1M087A9V3SA		**THV1M087A9V5SA**		**TLF1M087A9V3SA TLR1M087A9V3SA**		**TLF1M087A9V5SA TLR1M087A9V5SA**		**TDF1M087A9V3SA**		**TDF1M087A9V5SA**	
Diameter x Width (in.):	**10 x 9**		**12 x 9**		**10 x 9**		**11 x 9**		**10 x 9**		**12 x 9**	
No. Used:	**1**		**1**		**1**		**1**		**1**		**1**	
Speeds (no.):	**Variable**		**Variable**		**Variable**		**Variable**		**Variable**		**Variable**	
CFM vs in. w.g.:	**See Fan Performance Table**				**See Fan Performance Table**				**See Fan Performance Table**			
Motor HP:	**1/2**		**1**		**1/2**		**1**		**1/2**		**1**	
Volts / Ph. / Hz.:	**120 / 60 / 1**				**120 / 60 / 1**				**120 / 60 / 1**			
Filter Furnished?:	**Yes**				**Yes**				**No**			
Type Recommended:	**Hi Velocity**				**Hi Velocity**				**Hi Velocity**			
No. - Size x Thick:	**1 - 16 x 25 x 1**				**2 - 10 x 20 x 1**				**Not Supplied**			
Vent - Size (in.):	**6**				**6**				**6**			
Gross Heat Exchanger Area (sq. ft.):	**27.8**				**27.8 (Front Flue) / 30.0 (Rear Flue)**				**27.8**			
Suply / Return Size (in. x in.):	**See Outline Drawing**				**See Outline Drawing**				**See Outline Drawing**			
Combustion Chamber Type:	**Preformed, Refactory (Ceramic Fiber Matrix Material)**				**Preformed, Refactory (Ceramic Fiber Matrix Material)**				**Preformed, Refactory (Ceramic Fiber Matrix Material)**			
Total Current (amps.):	**13.5**		**18.8**		**13.5**		**18.8**		**13.5**		**18.8**	
Max. Fuse Size (amps.):	**15**		**30**		**15**		**30**		**15**		**30**	
Dimensions uncrated (in.):	**H X W X D 58 X 22.25 X 31**				**H X W X D 41.5 X 22.25 X 47**				**H X W X D 22.25 X 61.25 X 22.25**			
Weight Shipping (lbs.) / Net (lbs.)	**260 / 250**				**300 / 290**				**280 / 270**			
** Energy Star												

General Data

Furnace Model:	**All**
Burner Model:	**R.W. Beckett, AF**
Standard Nozzle:	**Delavan, 0.75 GPH / 80 deg. angle / hollow cone**
Oil Pump Pressure (PSIG):	**130**
Burner Head Type:	**F3**
Head / Turbulator Setting:	**"Z" = 1.125 in.**
Air Band Setting:	**Fully-closed**
Air Shutter / Damper Setting:	**5**
Overfire Draft (in. W.G.):	**0.02**
Smoke Spot, Maximum (Bacharach Scale):	**# 1**
Carbon Dioxide, CO_2, Maximum (%):	**13**
Carbon Dioxide, CO_2, Minimum (%):	**12***
Carbon Monoxide, CO (PPM)	**0**
Oil Solenoid Valve Equipped:	**YES**
Delay valve on Time (sec):	**15 sec.**
Postpurge Time (sec):	**None**
Ignition Type:	**Interrupted**

Oil Burner Application and Specifications

*** When operating these furnaces at the lowest input rate (84,000 BTUH), the carbon dioxide (CO_2) value may not be able to be adjusted above 12%. This is normal and does not necessarily indicate a problem.**

High Limit Comfort Control Setting (deg. F.):	230 (highboy / lowboy models) 190 (horizontal / downflow model)
Fan "On" Setting (deg. F.):	130
Fan "Off" Setting (deg. F.):	100
Standard Fan Speed as shipped	Low, Orange Wire to "L" Terminal

Standard Furnace Fan / Limit Control and Speed Settings

Performance Data

Furnace Airflow (CFM) vs. External Static Pressure (in. WC)								
Model	Speed Tap	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Highboy THV1M087A936SA	High	1508	1468	1407	1345	1278	1202	1120
	Med-High	1420	1361	1310	1242	1176	1096	1019
	Med-Low	1308	1263	1220	1174	1103	1031	953
	Low	1189	1150	1113	1072	1009	936	870
Highboy THV1M087A948SA	High	1974	1913	1854	1766	1695	1621	1547
	Med-High	1694	1643	1589	1534	1477	1406	1339
	Med-Low	1413	1384	1348	1315	1280	1235	1184
	Low	1166	1144	1127	1105	1076	1027	983
Lowboy Front Flue TLF1M087A936SA	High	1688	1648	1595	1522	1447	1373	1309
	Med-High	1372	1331	1290	1246	1200	1146	1079
	Med-Low	1173	1156	1134	1108	1082	1043	989
	Low	999	993	975	956	931	888	807
Lowboy Front Flue TLF1M087A948SA	High	1920	1822	1730	1649	1564	1483	1397
	Med-High	1620	1572	1511	1443	1376	1311	1224
	Med-Low	1358	1339	1309	1264	1216	1167	1098
	Low	1103	1106	1080	1056	1023	981	858
Lowboy Rear Flue TLR1M087A936SA	High	1669	1599	1541	1475	1409	1329	1231
	Med-High	1410	1345	1299	1246	1184	1127	1171
	Med-Low	1196	1184	1149	1111	1066	1023	938
	Low	1007	1004	985	963	915	845	749
Lowboy Rear Flue TLR1M087A948SA	High	1844	1771	1694	1612	1538	1451	1355
	Med-High	1622	1545	1484	1419	1356	1274	1172
	Med-Low	1366	1330	1303	1247	1187	1124	1046
	Low	1110	1107	1091	1068	1031	973	887
Downflow/Horizontal TDF1M087A936SA	High	1616	1550	1482	1406	1347	1231	1144
	Med-High	1447	1397	1343	1284	1209	1127	1043
	Med-Low	1320	1274	1228	1176	1111	1043	950
	Low	1166	1139	1107	1064	1017	955	871
Downflow/Horizontal TDF1M087A948SA	High	1901	1837	1790	1714	1648	1584	1496
	Med-High	1615	1572	1521	1468	1412	1355	1308
	Med-Low	1355	1342	1311	1273	1230	1183	1133
	Low	1116	1105	1084	1058	1038	1001	955

Performance Data

TLR/F1M087A9V3SA OIL FURNACE COOLING AND HEATING AIRFLOW AND POWER VS. EXTERNAL STATIC PRESSURE WITH FILTER

	OUTDOOR UNIT SIZE (TONS)	AIRFLOW SETTING	DIP SWITCH SETTING					EXTERNAL STATIC PRESSURE				
			SW 1	SW 2	SW 3	SW 4		0.1	0.3	0.5	0.7	0.9
COOLING	3.5	Low (350 CFM/TON)	OFF	OFF	OFF	ON	CFM	1093	1120	1120	1113	1091
							WATTS	183	267	340	413	471
		Normal (400 CFM/TON)	OFF	OFF	OFF	OFF	CFM	1254	1296	1296	1284	1244
							WATTS	262	382	467	552	608
		High (450 CFM/TON)	OFF	OFF	ON	OFF	CFM	1259	1300	1306	1298	1250
							WATTS	271	375	472	557	609
	3**	Low (350 CFM/TON)	ON	OFF	OFF	ON	CFM	940	919	900	881	862
							WATTS	154	207	254	310	371
		Normal** (400 CFM/TON)	ON	OFF	OFF	OFF	CFM	1057	1060	1049	1037	1015
							WATTS	213	291	352	409	468
		High (450 CFM/TON)	ON	OFF	ON	OFF	CFM	1217	1211	1196	1179	1151
							WATTS	300	387	461	525	582
	2.5	Low (350 CFM/TON)	OFF	ON	OFF	ON	CFM	788	775	761	714	674
							WATTS	104	152	197	239	284
		Normal (400 CFM/TON)	OFF	ON	OFF	OFF	CFM	904	880	868	840	818
							WATTS	145	194	240	290	348
		High (450 CFM/TON)	OFF	ON	ON	OFF	CFM	1007	1001	987	978	962
							WATTS	181	248	302	357	417
	2	Low (350 CFM/TON)	ON	ON	OFF	ON	CFM	634	607	585	542	493
							WATTS	67	99	142	181	218
		Normal (400 CFM/TON)	ON	ON	OFF	OFF	CFM	541	682	808	929	1030
							WATTS	85	127	173	218	260
		High (450 CFM/TON)	ON	ON	ON	OFF	CFM	817	805	792	748	710
							WATTS	113	162	206	249	300

	AIRFLOW SETTING	DIP SWITCH SETTING			EXTERNAL STATIC PRESSURE				
		SW 7	SW 8		0.1	0.3	0.5	0.7	0.9
HEATING	LOW (920 CFM)	ON	ON	CFM	804	791	792	780	761
				WATTS	100	146	198	256	307
	MEDIUM LOW (1145 CFM)	OFF	ON	CFM	985	991	988	987	964
				WATTS	146	221	283	346	393
	MEDIUM HIGH** (1290 CFM)	ON	OFF	CFM	1107	1111	1127	1129	1122
				WATTS	192	272	355	428	498
	HIGH (1500 CFM)	OFF	OFF	CFM	1293	1330	1332	1324	1319
				WATTS	291	407	495	582	661

NOTES:
1. **FACTORY SETTING.
2. CONTINUOUS FAN SETTING: HEATING OR COOLING AIRFLOW IS APPROXIMATELY 50% OF SELECTED COOLING VALUE.
3. FOR VARIABLE SPEED: LOW SPEED AIRFLOWS ARE APPROXIMATELY 30% OF LISTED VALUES.
4. LOW 350 CFM/TON IS RECOMMENDED FOR VARIABLE SPEED APPLICATION FOR COMFORT & HUMID CLIMATE SETTING: NORMAL IS 400 CFM/TON: HIGH 450 CFM/TON IS FOR DRY CLIMATE SETTING.

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Performance Data

TLR/F1M087A9V5SA OIL FURNACE COOLING AND HEATING AIRFLOW AND POWER VS. EXTERNAL STATIC PRESSURE WITH FILTER

	OUTDOOR UNIT SIZE (TONS)	AIRFLOW SETTING	DIP SWITCH SETTING					EXTERNAL STATIC PRESSURE				
			SW 1	SW 2	SW 3	SW 4		0.1	0.3	0.5	0.7	0.9
COOLING	5**	Low (350 CFM/TON)	OFF	OFF	OFF	ON	CFM	1539	1548	1533	1527	1525
							WATTS	438	573	674	761	866
		Normal ** (400 CFM/TON)	OFF	OFF	OFF	OFF	CFM	1756	1759	1766	1740	1722
							WATTS	635	790	970	1055	1180
		High (450 CFM/TON)	OFF	OFF	ON	OFF	CFM	1948	1958	1927	1852	1780
							WATTS	870	1063	1215	1240	1255
	4	Low (350 CFM/TON)	ON	OFF	OFF	ON	CFM	1198	1216	1223	1223	1221
							WATTS	237	322	403	493	565
		Normal (400 CFM/TON)	ON	OFF	OFF	OFF	CFM	1396	1434	1425	1401	1406
							WATTS	339	464	565	631	741
		High (450 CFM/TON)	ON	OFF	ON	OFF	CFM	1572	1577	1570	1574	1575
							WATTS	467	588	708	816	922
	3.5	Low (350 CFM/TON)	OFF	ON	OFF	ON	CFM	1056	1053	1047	1048	1046
							WATTS	172	251	304	375	445
		Normal (400 CFM/TON)	OFF	ON	OFF	OFF	CFM	1200	1216	1237	1231	1226
							WATTS	232	326	425	494	575
		High (450 CFM/TON)	OFF	ON	ON	OFF	CFM	1363	1407	1405	1388	1381
							WATTS	317	449	552	625	712
	2.5	Low (350 CFM/TON)	ON	ON	OFF	ON	CFM	774	754	741	728	705
							WATTS	95	138	183	233	289
		Normal (400 CFM/TON)	ON	ON	OFF	OFF	CFM	863	875	861	859	826
							WATTS	111	177	228	284	334
		High (450 CFM/TON)	ON	ON	ON	OFF	CFM	962	971	969	951	935
							WATTS	140	208	270	320	383

	AIRFLOW SETTING	DIP SWITCH SETTING			EXTERNAL STATIC PRESSURE				
		SW 7	SW 8		0.1	0.3	0.5	0.7	0.9
HEATING	LOW (920 CFM)	ON	ON	CFM	804	791	792	780	761
				WATTS	100	146	198	256	307
	MEDIUM LOW (1145 CFM)	OFF	ON	CFM	985	991	988	987	964
				WATTS	146	221	283	346	393
	MEDIUM HIGH ** (1290 CFM)	ON	OFF	CFM	1107	1111	1127	1129	1122
				WATTS	192	272	355	428	498
	HIGH (1500 CFM)	OFF	OFF	CFM	1293	1330	1332	1324	1319
				WATTS	291	407	495	582	661

NOTES:
1. **FACTORY SETTING.
2. CONTINUOUS FAN SETTING: HEATING OR COOLING AIRFLOW IS APPROXIMATELY 50% OF SELECTED COOLING VALUE.
3. FOR VARIABLE SPEED: LOW SPEED AIRFLOWS ARE APPROXIMATELY 30% OF LISTED VALUES.
4. LOW 350 CFM/TON IS RECOMMENDED FOR VARIABLE SPEED APPLICATION FOR COMFORT & HUMID CLIMATE SETTING: NORMAL IS 400 CFM/TON: HIGH 450 CFM/TON IS FOR DRY CLIMATE SETTING.

Performance Data

THV1M087A9V3SA OIL FURNACE COOLING AND HEATING AIRFLOW AND POWER VS. EXTERNAL STATIC PRESSURE WITH FILTER

	OUTDOOR UNIT SIZE (TONS)	AIRFLOW SETTING	DIP SWITCH SETTING					EXTERNAL STATIC PRESSURE				
			SW 1	SW 2	SW 3	SW 4		0.1	0.3	0.5	0.7	0.9
COOLING	3.5	Low (350 CFM/TON)	OFF	OFF	OFF	ON	CFM	1127	1147	1148	1138	1117
							WATTS	229	295	356	413	470
		Normal (400 CFM/TON)	OFF	OFF	OFF	OFF	CFM	1278	1293	1297	1293	1272
							WATTS	321	398	469	536	597
		High (450 CFM/TON)	OFF	OFF	ON	OFF	CFM	1301	1320	1323	1315	1287
							WATTS	336	419	493	558	611
	3**	Low (350 CFM/TON)	ON	OFF	OFF	ON	CFM	969	993	1004	997	968
							WATTS	152	213	272	329	377
		Normal ** (400 CFM/TON)	ON	OFF	OFF	OFF	CFM	1132	1145	1147	1136	1106
							WATTS	225	289	350	405	460
		High (450 CFM/TON)	ON	OFF	ON	OFF	CFM	1264	1253	1270	1260	1241
							WATTS	308	369	441	502	562
	2.5	Low (350 CFM/TON)	OFF	ON	OFF	ON	CFM	802	836	829	802	789
							WATTS	98	150	199	238	280
		Normal (400 CFM/TON)	OFF	ON	OFF	OFF	CFM	910	942	949	941	918
							WATTS	132	189	244	300	346
		High (450 CFM/TON)	OFF	ON	ON	OFF	CFM	1048	1077	1083	1072	1041
							WATTS	185	251	311	368	419
	2	Low (350 CFM/TON)	ON	ON	OFF	ON	CFM	669	677	669	663	642
							WATTS	67	107	146	184	220
		Normal (400 CFM/TON)	ON	ON	OFF	OFF	CFM	749	781	772	751	731
							WATTS	85	134	179	217	254
		High (450 CFM/TON)	ON	ON	ON	OFF	CFM	837	868	862	841	829
							WATTS	111	162	211	255	300

	AIRFLOW SETTING	DIP SWITCH SETTING			EXTERNAL STATIC PRESSURE				
		SW 7	SW 8		0.1	0.3	0.5	0.7	0.9
HEATING	LOW	ON	ON	CFM	857	882	883	858	843
				WATTS	115	167	219	263	307
	MEDIUM LOW	OFF	ON	CFM	1061	1086	1092	1080	1051
				WATTS	196	261	321	378	430
	MEDIUM HIGH **	ON	OFF	CFM	1198	1205	1197	1193	1172
				WATTS	272	337	395	458	517
	HIGH	OFF	OFF	CFM	1280	1295	1297	1287	1265
				WATTS	330	407	476	538	596

NOTES:
1. **FACTORY SETTING.
2. CONTINUOUS FAN SETTING: HEATING OR COOLING AIRFLOW IS APPROXIMATELY 50% OF SELECTED COOLING VALUE.
3. FOR VARIABLE SPEED: LOW SPEED AIRFLOWS ARE APPROXIMATELY 30% OF LISTED VALUES.
4. LOW 350 CFM/TON IS RECOMMENDED FOR VARIABLE SPEED APPLICATION FOR COMFORT & HUMID CLIMATE SETTING: NORMAL IS 400 CFM/TON: HIGH 450 CFM/TON IS FOR DRY CLIMATE SETTING.

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Performance Data

THV1M087A9V5SA OIL FURNACE COOLING AND HEATING AIRFLOW AND POWER VS. EXTERNAL STATIC PRESSURE WITH FILTER

	OUTDOOR UNIT SIZE (TONS)	AIRFLOW SETTING	DIP SWITCH SETTING					EXTERNAL STATIC PRESSURE				
			SW 1	SW 2	SW 3	SW 4		0.1	0.3	0.5	0.7	0.9
COOLING	5**	Low (350 CFM/TON)	OFF	OFF	OFF	ON	CFM	1609	1616	1620	1623	1632
							WATTS	543	642	737	836	936
		Normal ** (400 CFM/TON)	OFF	OFF	OFF	OFF	CFM	1841	1835	1820	1807	1779
							WATTS	818	925	1020	1110	1181
		High (450 CFM/TON)	OFF	OFF	ON	OFF	CFM	2040	1978	1915	1864	1810
							WATTS	1142	1161	1178	1204.08	1215.44
	4	Low (350 CFM/TON)	ON	OFF	OFF	ON	CFM	1277	1296	1301	1314	1311
							WATTS	287	370	446	531	604
		Normal (400 CFM/TON)	ON	OFF	OFF	OFF	CFM	1494	1501	1504	1492	1493
							WATTS	440	530	615	690	776
		High (450 CFM/TON)	ON	OFF	ON	OFF	CFM	1661	1659	1657	1665	1657
							WATTS	595	689	782	890	979
	3.5	Low (350 CFM/TON)	OFF	ON	OFF	ON	CFM	1094	1103	1122	1125	1124
							WATTS	195	258	332	402	473
		Normal (400 CFM/TON)	OFF	ON	OFF	OFF	CFM	1277	1304	1305	1317	1312
							WATTS	288	374	449	532	606
		High (450 CFM/TON)	OFF	ON	ON	OFF	CFM	1477	1470	1470	1472	1461
							WATTS	428	504	586	673	745
	3	Low (350 CFM/TON)	ON	ON	OFF	ON	CFM	866	893	893	886	879
							WATTS	115	172	228	287	346
		Normal (400 CFM/TON)	ON	ON	OFF	OFF	CFM	1081	1096	1106	1104	1101
							WATTS	189	255	322	387	458
		High (450 CFM/TON)	ON	ON	ON	OFF	CFM	1213	1244	1269	1275	1266
							WATTS	253	340	425	500	573

	AIRFLOW SETTING	DIP SWITCH SETTING			EXTERNAL STATIC PRESSURE				
		SW 7	SW 8		0.1	0.3	0.5	0.7	0.9
HEATING	LOW	ON	ON	CFM	864	895	899	899	879
				WATTS	111	169	224	239	334
	MEDIUM LOW	OFF	ON	CFM	1052	1064	1059	1057	1061
				WATTS	174	238	296	359	431
	MEDIUM HIGH **	ON	OFF	CFM	1162	1185	1202	1205	1211
				WATTS	226	302	378	450	526
	HIGH	OFF	OFF	CFM	1377	1397	1396	1399	1401
				WATTS	353	445	520	604	688

NOTES:
1. **FACTORY SETTING.
2. CONTINUOUS FAN SETTING: HEATING OR COOLING AIRFLOW IS APPROXIMATELY 50% OF SELECTED COOLING VALUE.
3. FOR VARIABLE SPEED: LOW SPEED AIRFLOWS ARE APPROXIMATELY 30% OF LISTED VALUES.
4. LOW 350 CFM/TON IS RECOMMENDED FOR VARIABLE SPEED APPLICATION FOR COMFORT & HUMID CLIMATE SETTING: NORMAL IS 400 CFM/TON: HIGH 450 CFM/TON IS FOR DRY CLIMATE SETTING.

Performance Data

TDF1M087A9V3SA OIL FURNACE COOLING AND HEATING AIRFLOW AND POWER VS. EXTERNAL STATIC PRESSURE WITH FILTER

	OUTDOOR UNIT SIZE (TONS)	AIRFLOW SETTING	DIP SWITCH SETTING					EXTERNAL STATIC PRESSURE				
			SW 1	SW 2	SW 3	SW 4		0.1	0.3	0.5	0.7	0.9
COOLING	3.5	Low (350 CFM/TON)	OFF	OFF	OFF	ON	CFM	1215	1243	1235	1227	1211
							WATTS	232	303	371	442	507
		Normal (400 CFM/TON)	OFF	OFF	OFF	OFF	CFM	1375	1389	1414	1417	1364
							WATTS	290	378	492	571	600
		High (450 CFM/TON)	OFF	OFF	ON	OFF	CFM	1375	1389	1414	1417	1364
							WATTS	290	378	492	571	600
	3**	Low (350 CFM/TON)	ON	OFF	OFF	ON	CFM	992	1048	1065	1068	1044
							WATTS	141	218	277	348	406
		Normal ** (400 CFM/TON)	ON	OFF	OFF	OFF	CFM	1173	1229	1235	1226	1206
							WATTS	189	288	358	438	498
		High (450 CFM/TON)	ON	OFF	ON	OFF	CFM	1358	1361	1375	1374	1340
							WATTS	295	353	452	548	607
	2.5	Low (350 CFM/TON)	OFF	ON	OFF	ON	CFM	836	879	872	863	839
							WATTS	81	148	197	254	313
		Normal (400 CFM/TON)	OFF	ON	OFF	OFF	CFM	938	1000	1006	1014	992
							WATTS	114	187	250	321	384
		High (450 CFM/TON)	OFF	ON	ON	OFF	CFM	1085	1135	1145	1148	1115
							WATTS	156	234	312	386	433
	2	Low (350 CFM/TON)	ON	ON	OFF	ON	CFM	690	705	699	677	649
							WATTS	65	107	155	198	235
		Normal (400 CFM/TON)	ON	ON	OFF	OFF	CFM	782	813	818	801	760
							WATTS	79	134	184	231	279
		High (450 CFM/TON)	ON	ON	ON	OFF	CFM	853	920	911	901	885
							WATTS	88	163	216	278	327

	AIRFLOW SETTING	DIP SWITCH SETTING			EXTERNAL STATIC PRESSURE				
		SW 7	SW 8		0.1	0.3	0.5	0.7	0.9
HEATING	LOW	ON	ON	CFM	864	913	919	910	892
				WATTS	94	161	220	281	337
	MEDIUM LOW	OFF	ON	CFM	1103	1148	1159	1151	1117
				WATTS	175	253	324	404	462
	MEDIUM HIGH **	ON	OFF	CFM	1267	1292	1298	1301	1289
				WATTS	245	329	417	489	553
	HIGH	OFF	OFF	CFM	1375	1389	1414	1417	1364
				WATTS	290	378	492	571	600

NOTES:
1. **FACTORY SETTING.
2. CONTINUOUS FAN SETTING: HEATING OR COOLING AIRFLOW IS APPROXIMATELY 50% OF SELECTED COOLING VALUE.
3. FOR VARIABLE SPEED: LOW SPEED AIRFLOWS ARE APPROXIMATELY 30% OF LISTED VALUES.
4. LOW 350 CFM/TON IS RECOMMENDED FOR VARIABLE SPEED APPLICATION FOR COMFORT & HUMID CLIMATE SETTING: NORMAL IS 400 CFM/TON: HIGH 450 CFM/TON IS FOR DRY CLIMATE SETTING.

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Performance Data

TDF1M087A9V5SA OIL FURNACE COOLING AND HEATING AIRFLOW AND POWER VS. EXTERNAL STATIC PRESSURE WITH FILTER

	OUTDOOR UNIT SIZE (TONS)	AIRFLOW SETTING	DIP SWITCH SETTING					EXTERNAL STATIC PRESSURE				
			SW 1	SW 2	SW 3	SW 4		0.1	0.3	0.5	0.7	0.9
COOLING	5**	Low (350 CFM/TON)	OFF	OFF	OFF	ON	CFM	1665	1665	1684	1665	1675
							WATTS	522	621	747	830	939
		Normal ** (400 CFM/TON)	OFF	OFF	OFF	OFF	CFM	1884	1895	1905	1895	1863
							WATTS	751	884	1040	1120	1230
		High (450 CFM/TON)	OFF	OFF	ON	OFF	CFM	2147	2087	2025	1960	1880
							WATTS	1170	1190	1220	1230	1250
	4	Low (350 CFM/TON)	ON	OFF	OFF	ON	CFM	1274	1289	1334	1348	1348
							WATTS	271	334	429	545	637
		Normal (400 CFM/TON)	ON	OFF	OFF	OFF	CFM	1490	1516	1533	1541	1549
							WATTS	377	495	600	672	796
		High (450 CFM/TON)	ON	OFF	ON	OFF	CFM	1715	1715	1715	1724	1715
							WATTS	575	671	769	879	1020
	3.5	Low (350 CFM/TON)	OFF	ON	OFF	ON	CFM	1132	1168	1186	1186	1186
							WATTS	192	266	350	424	495
		Normal (400 CFM/TON)	OFF	ON	OFF	OFF	CFM	1291	1302	1332	1372	1372
							WATTS	263	357	449	547	646
		High (450 CFM/TON)	OFF	ON	ON	OFF	CFM	1486	1518	1542	1565	1565
							WATTS	388	503	609	711	809
	3	Low (350 CFM/TON)	ON	ON	OFF	ON	CFM	972	1005	1021	1015	999
							WATTS	119	201	265	331	405
		Normal (400 CFM/TON)	ON	ON	OFF	OFF	CFM	1110	1142	1148	1154	1154
							WATTS	180	260	329	404	488
		High (450 CFM/TON)	ON	ON	ON	OFF	CFM	1254	1268	1290	1318	1318
							WATTS	238	318	405	528	607

	AIRFLOW SETTING	DIP SWITCH SETTING			EXTERNAL STATIC PRESSURE				
		SW 7	SW 8		0.1	0.3	0.5	0.7	0.9
HEATING	LOW	ON	ON	CFM	871	876	894	890	871
				WATTS	104	155	221	282	336
	MEDIUM LOW	OFF	ON	CFM	1051	1081	1104	1104	1087
				WATTS	160	229	306	380	445
	MEDIUM HIGH **	ON	OFF	CFM	1178	1213	1247	1247	1260
				WATTS	219	285	389	466	550
	HIGH	OFF	OFF	CFM	1389	1421	1442	1473	1483
				WATTS	311	415	519	627	715

NOTES:
1. **FACTORY SETTING.
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3. FOR VARIABLE SPEED: LOW SPEED AIRFLOWS ARE APPROXIMATELY 30% OF LISTED VALUES.
4. LOW 350 CFM/TON IS RECOMMENDED FOR VARIABLE SPEED APPLICATION FOR COMFORT & HUMID CLIMATE SETTING: NORMAL IS 400 CFM/TON: HIGH 450 CFM/TON IS FOR DRY CLIMATE SETTING.

Performance Data

CFM vs. Temperature Rise														
Model	**Heating Capacity**													
		800	**900**	**1000**	**1100**	**1200**	**1300**	**1400**	**1500**	**1600**	**1700**	**1800**	**1900**	**2000**
Highboy THV1M087A936SA THV1M087A9V3SA	70,000		72	65	59	54	50	46	43					
	87,000		90	81	73	67	62	58	54					
	98,000		101	91	82	76	70	65	60					
	114,000		117	106	96	88	81	75	70					
Highboy THV1M087A948SA THV1M087A9V5SA	70,000			65	59	54	50	46	43	41	38	36	34	32
	87,000			81	73	67	62	58	54	50	47	45	42	40
	98,000			91	82	76	70	65	60	57	53	50	48	45
	114,000			106	96	88	81	75	70	66	62	59	56	53
Lowboy Front Flue TLF1M087A936SA TLF1M087A9V3SA	70,000		72	65	59	54	50	46	43	41				
	87,000		90	81	73	67	62	58	54	50				
	98,000		101	91	82	76	70	65	60	57				
	114,000		117	106	96	88	81	75	70	66				
Lowboy Front Flue TLF1M087A948SA TLF1M087A9V5SA	70,000		72	65	59	54	50	46	43	41	38	36	34	
	87,000		90	81	73	67	62	58	54	50	47	45	42	
	98,000		101	91	82	76	70	65	60	57	53	50	48	
	114,000		117	106	96	88	81	75	70	66	62	59	56	
Lowboy Rear Flue TLR1M087A936SA TLR1M087A9V3SA	70,000	81	72	65	59	54	50	46	43	41	38			
	87,000	101	90	81	73	67	62	58	54	50	47			
	98,000	113	101	91	82	76	70	65	60	57	53			
	114,000	Not allowed	117	106	96	88	81	75	70	66	62			
Lowboy Rear Flue TLR1M087A948SA TLR1M087A9V5SA	70,000		72	65	59	54	50	46	43	41	38	36		
	87,000		90	81	73	67	62	58	54	50	47	45		
	98,000		101	91	82	76	70	65	60	57	53	50		
	114,000		117	106	96	88	81	75	70	66	62	59		
Downflow/Horizontal TDF1M087A936SA TDF1M087A9V3SA	70,000		72	65	59	54	50	46	43	41				
	87,000		90	81	73	67	62	58	54	50				
	98,000		101	91	82	76	70	65	60	57				
	114,000		117	106	96	88	81	75	70	66				
Downflow/Horizontal TDF1M087A948SA TDF1M087A9V5SA	70,000			65	59	54	50	46	43	41	38	36	34	
	87,000			81	73	67	62	58	54	50	47	45	42	
	98,000			91	82	76	70	65	60	57	53	50	48	
	114,000			106	96	88	81	75	70	66	62	59	56	

The unshaded area is the recommended operating range for HEATING comfort

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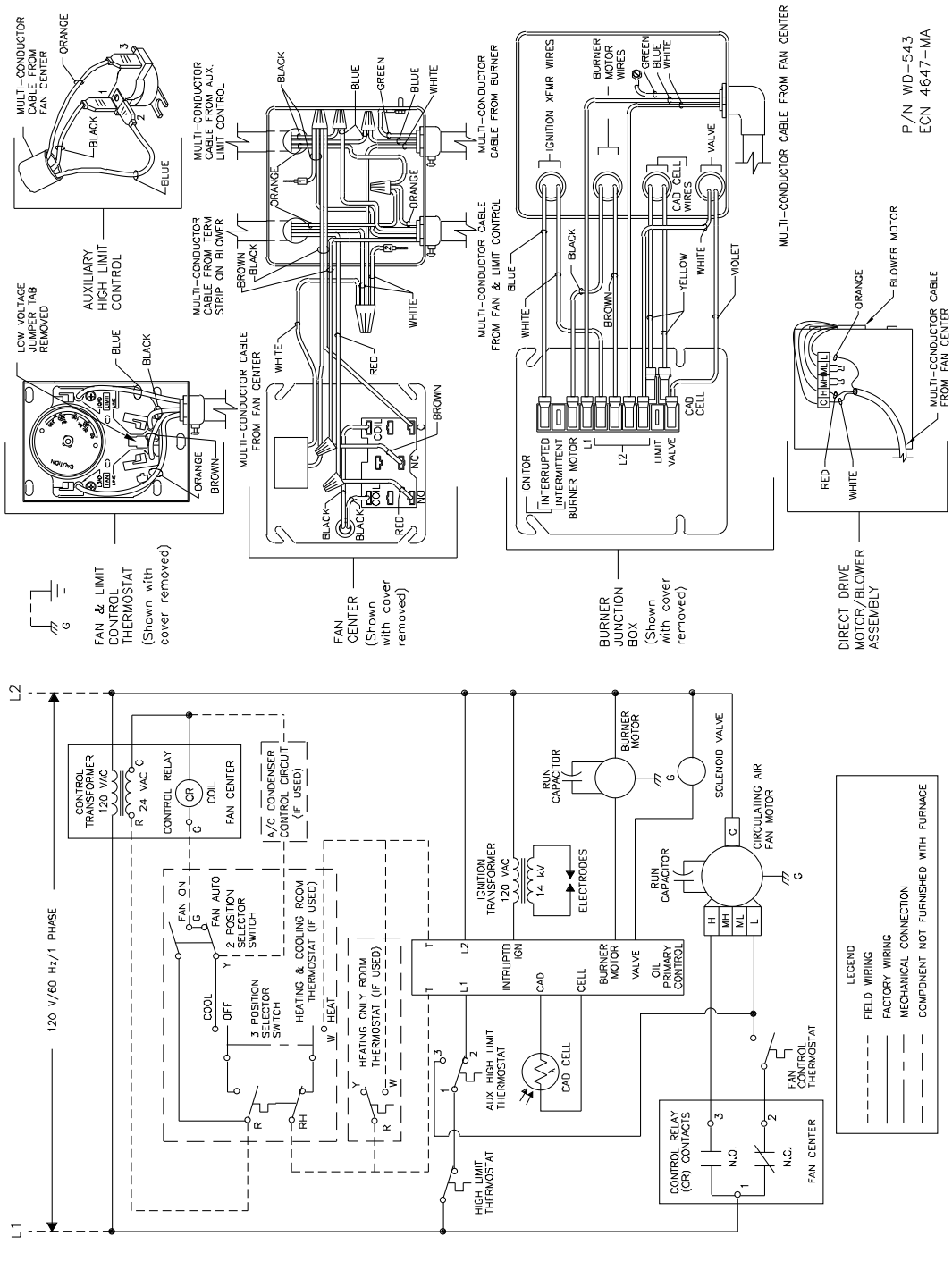
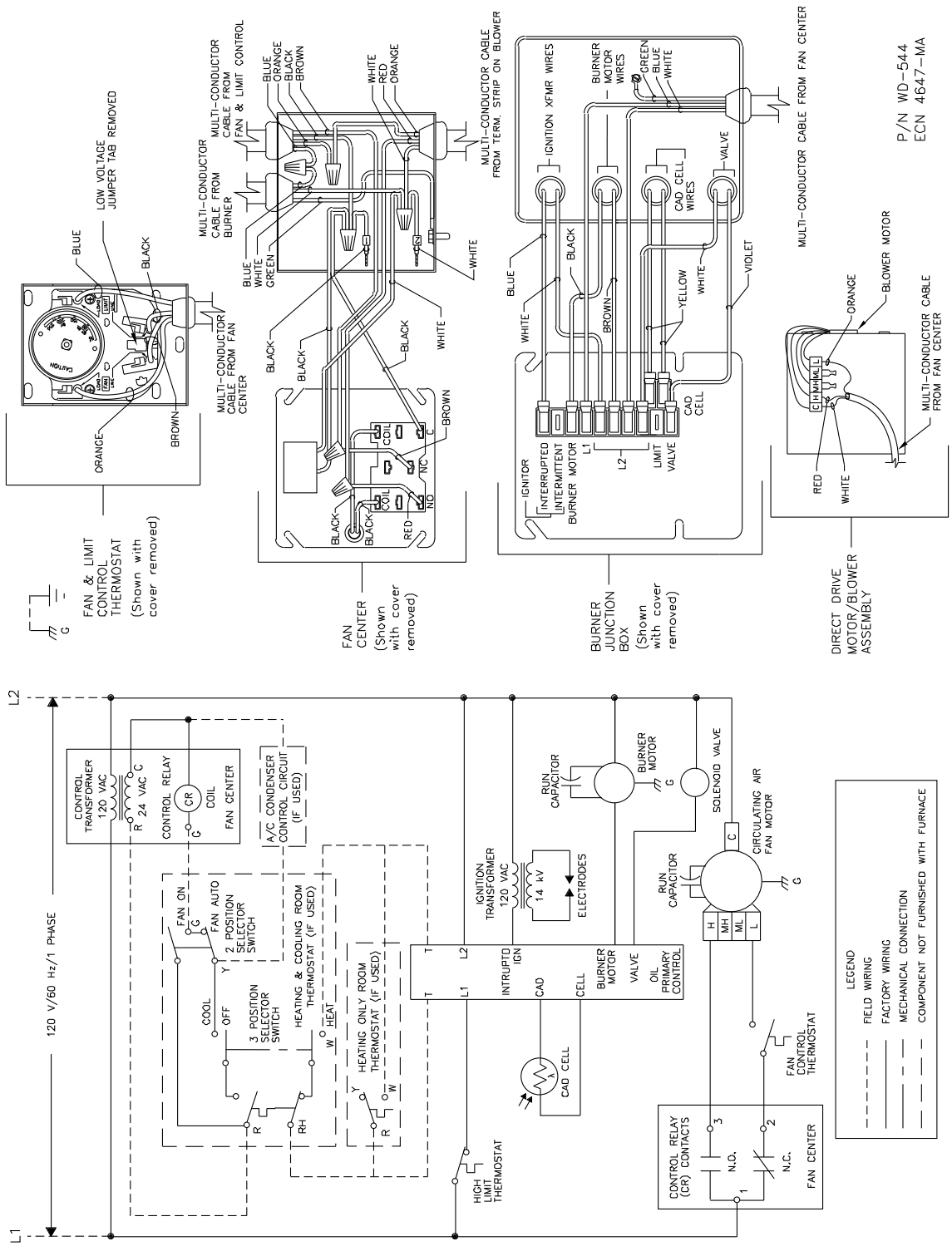
Electrical Data

ELECTRICAL DIAGRAMS FOR PSC 4 SPEED BLOWER DOWNFLOW / HORIZONTAL FURNACES



Electrical Data

ELECTRICAL DIAGRAMS FOR PSC 4 SPEED BLOWER HIGHBOY & LOWBOY FURNACES



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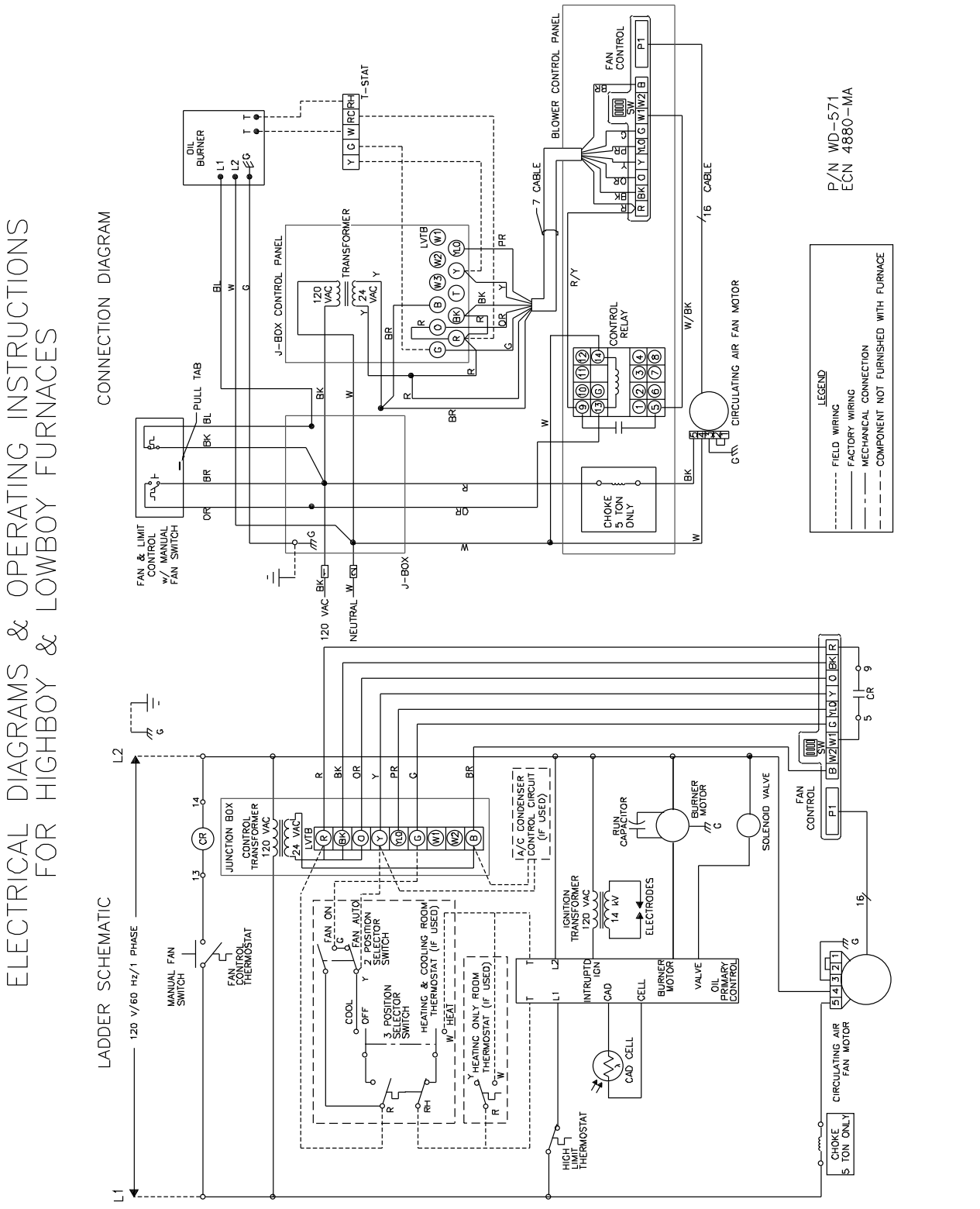
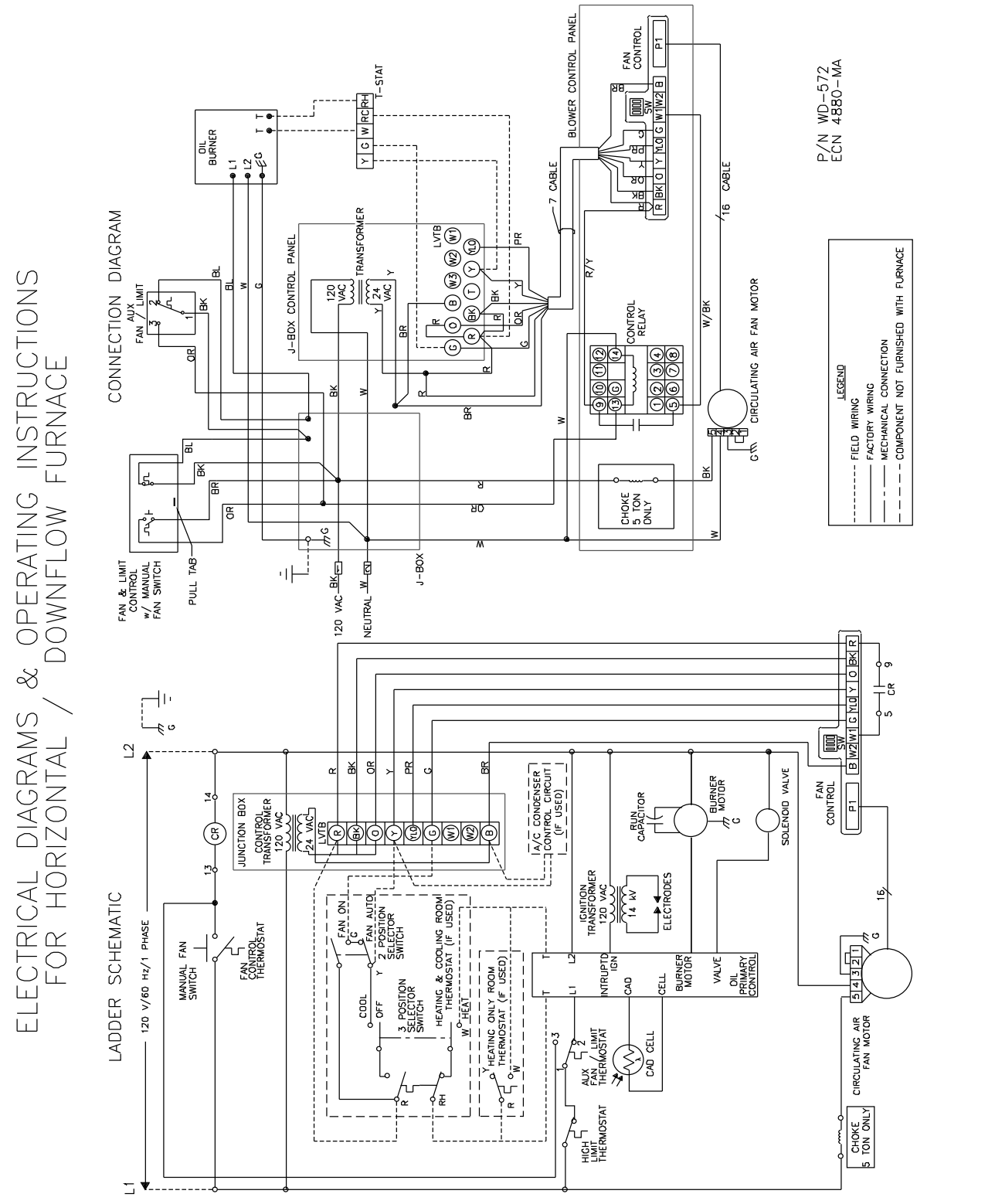
Electrical Data



Electrical Data



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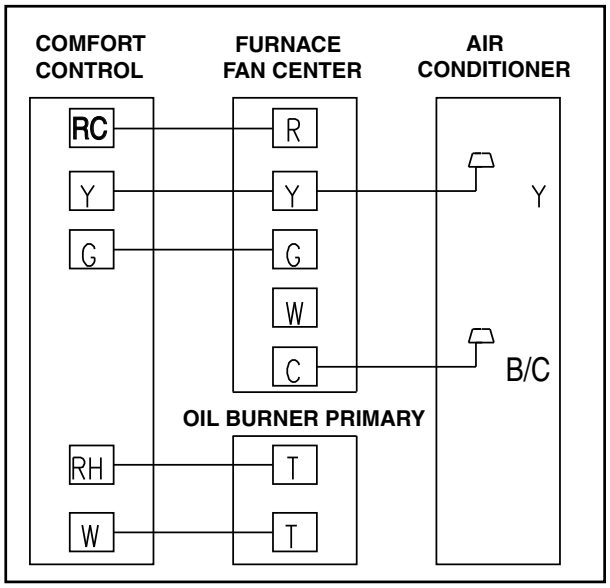
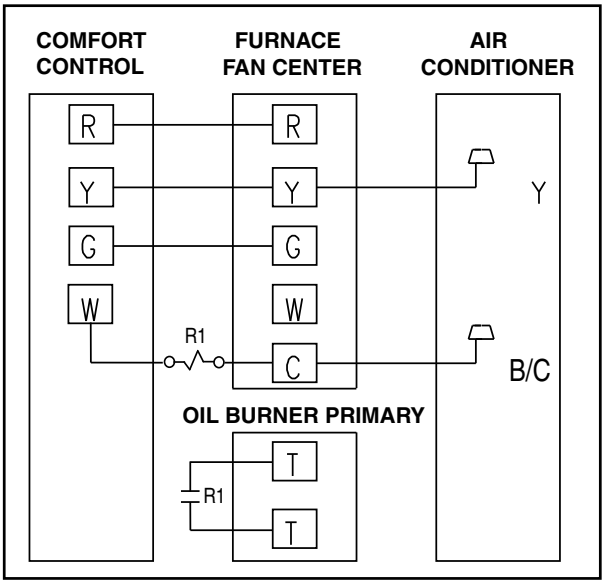
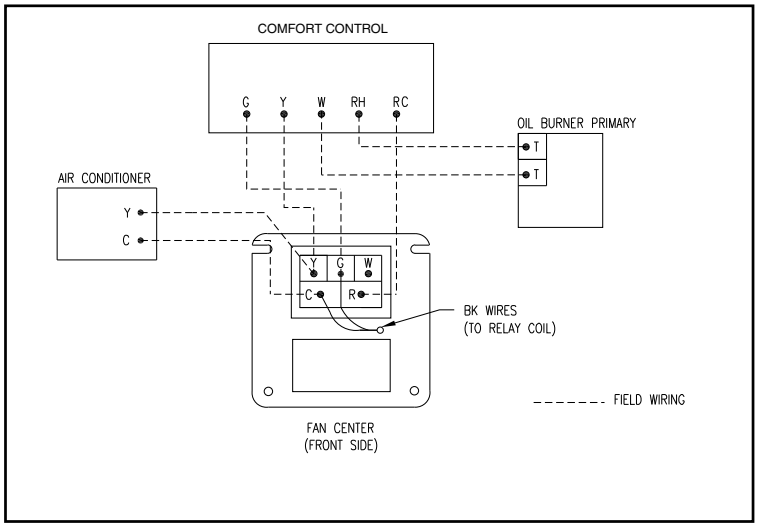
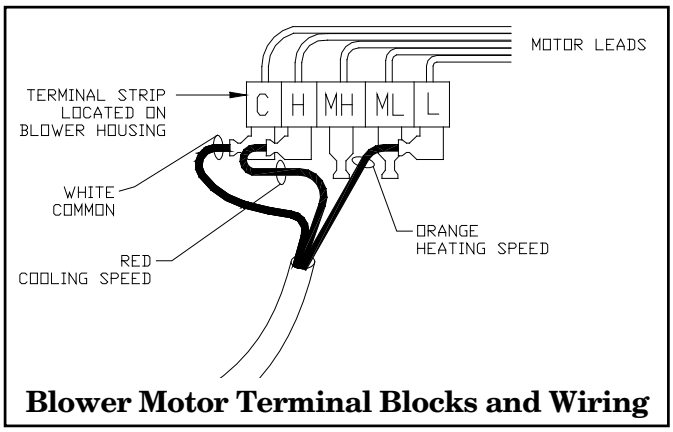
Field Wiring

LOW VOLTAGE HOOK UP DIAGRAMS FOR OIL FURNACE & SINGLE STAGE COOLING PSC 4 SPEED MOTORS







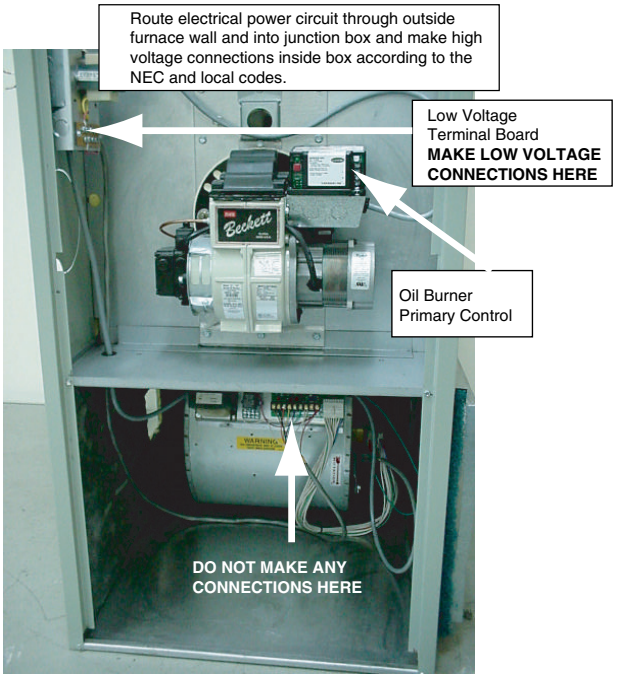


Blower Motor Terminal Blocks and Wiring

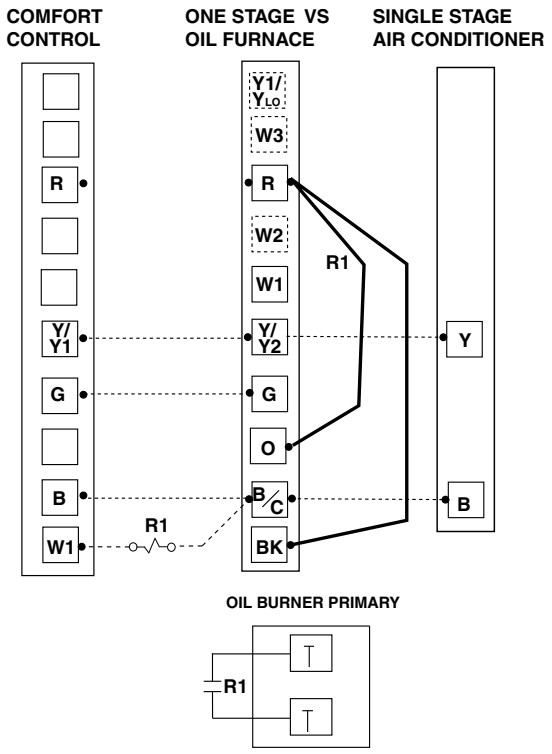
Field Wiring

VARIABLE SPEED LOW VOLTAGE HOOK UP DIAGRAMS FOR OIL FURNACE AND SINGLE STAGE COOLING

VARIABLE SPEED V3, V5 LOW VOLTAGE WIRING CONNECTIONS LOCATIONS



VARIABLE SPEED OIL FURNACE SINGLE STAGE COOLING



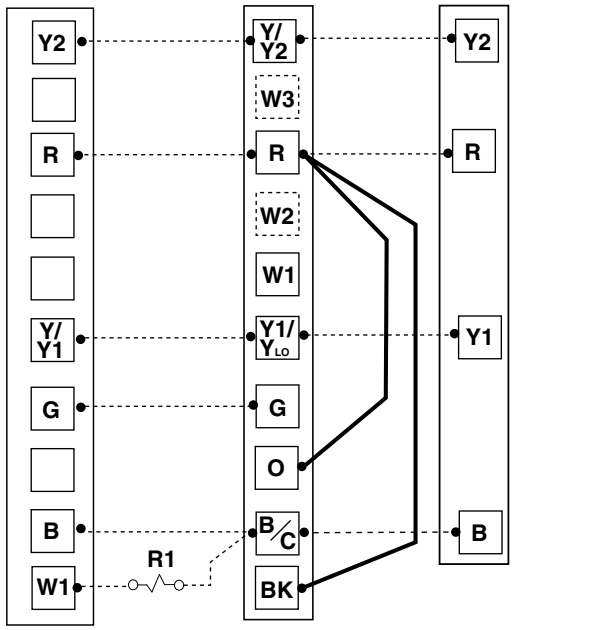
"R" to "O" and "R" to "BK" are Factory Installed Jumpers

Pub. No. 22-1757-08

Field Wiring

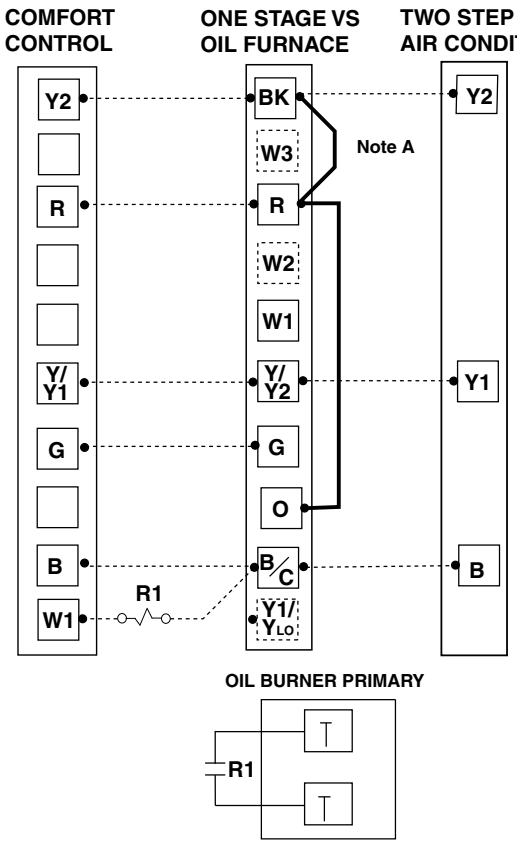
VARIABLE SPEED LOW VOLTAGE HOOK UP DIAGRAMS FOR OIL FURNACE AND TWO STAGE / STEP COOLING

VARIABLE SPEED OIL FURNACE TWO STAGE COOLING WITH 24V RELAY



"R" to "O" and "R" to "BK" are Factory Installed Jumpers

VARIABLE SPEED OIL FURNACE TWO STEP COOLING WITH 24V RELAY



Note A - Cut/remove the factory installed "R" to "BK" jumper at the indoor unit.

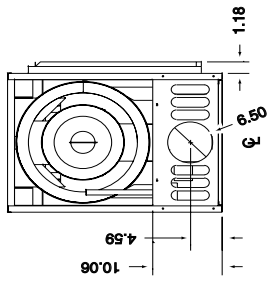
"R" to "O" and "R" to "BK" are Factory Installed Jumpers

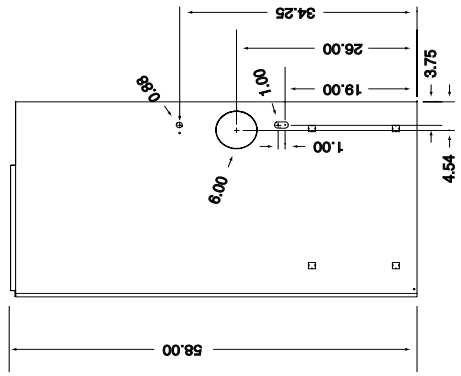
Dimensions

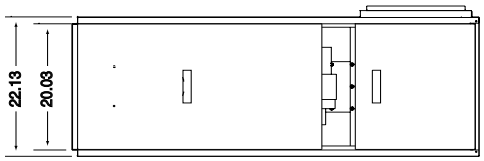
THV1M087A936, 48, V3, V5SA OUTLINE DRAWING

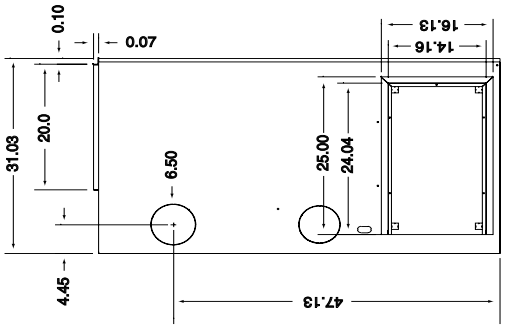
(ALL DIMENSIONS ARE IN INCHES)

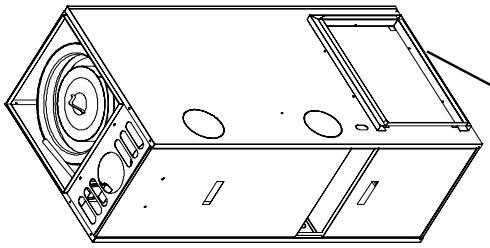
MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS	
Furnace casing sides and rear	3"
Front furnace casing to closet door1	8"
Furnace flue pipe / vent connector	9"
Furnace casing top	3"
Supply air plenum (any side)	3"
Supply air ducts within 6 feet of the furnace.	3"











* NOTE: Filter Frame Shipped unassembled & packed in blower compartment

Highboy Vertical

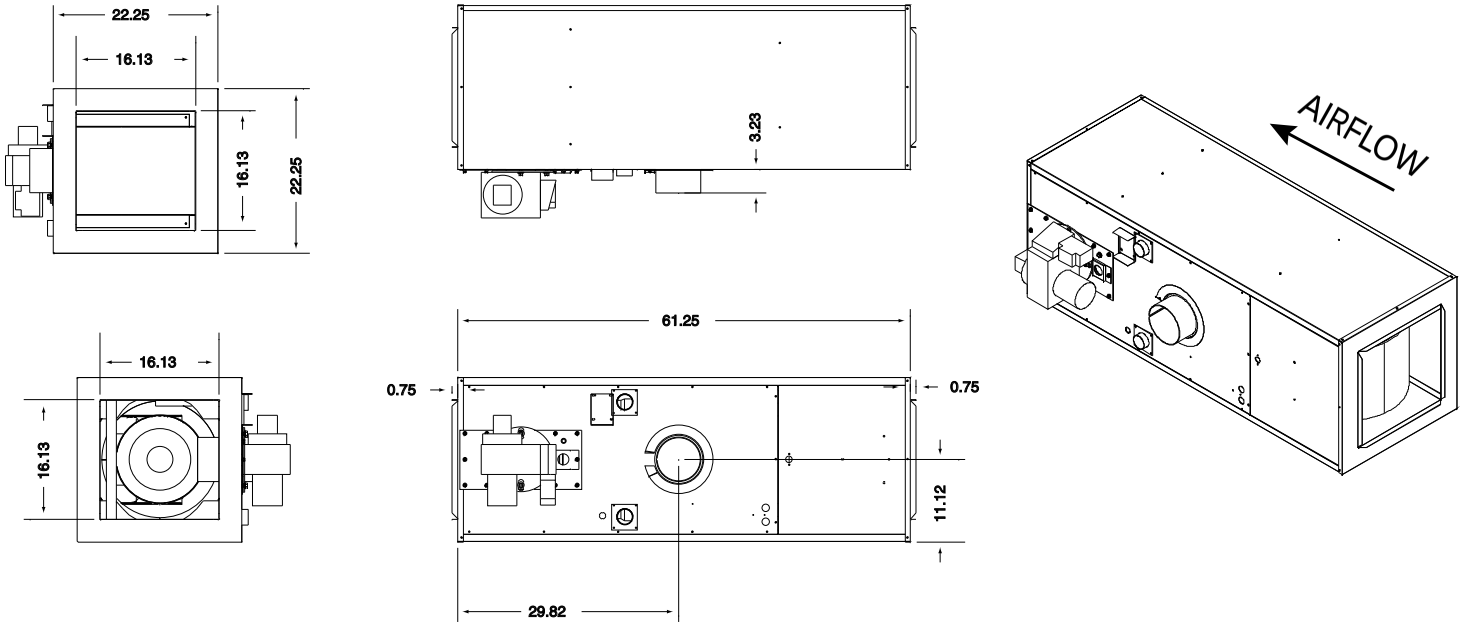
Pub. No. 22-1757-08

TDF1M087A936, 48, V3, V5SA OUTLINE DRAWING

(ALL DIMENSIONS ARE IN INCHES)

MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS	
Furnace casing sides and rear	3"
Front furnace casing to closet door1	8"
Furnace flue pipe / vent connector	9"
Furnace casing top	3"
Supply air plenum (any side)	3"
Supply air ducts within 6 feet of the furnace.	3"

Notes:
1 The Horizontal / Downflow model requires 22" from the front casing of the furnace to the closet door.
2 Adequate clearance from the supply end surface of the furnace casing to combustible materials are provided by the design of the accessory mounting base when used with the Horizontal / Downflow furnace model applied in the Downflow configuration.



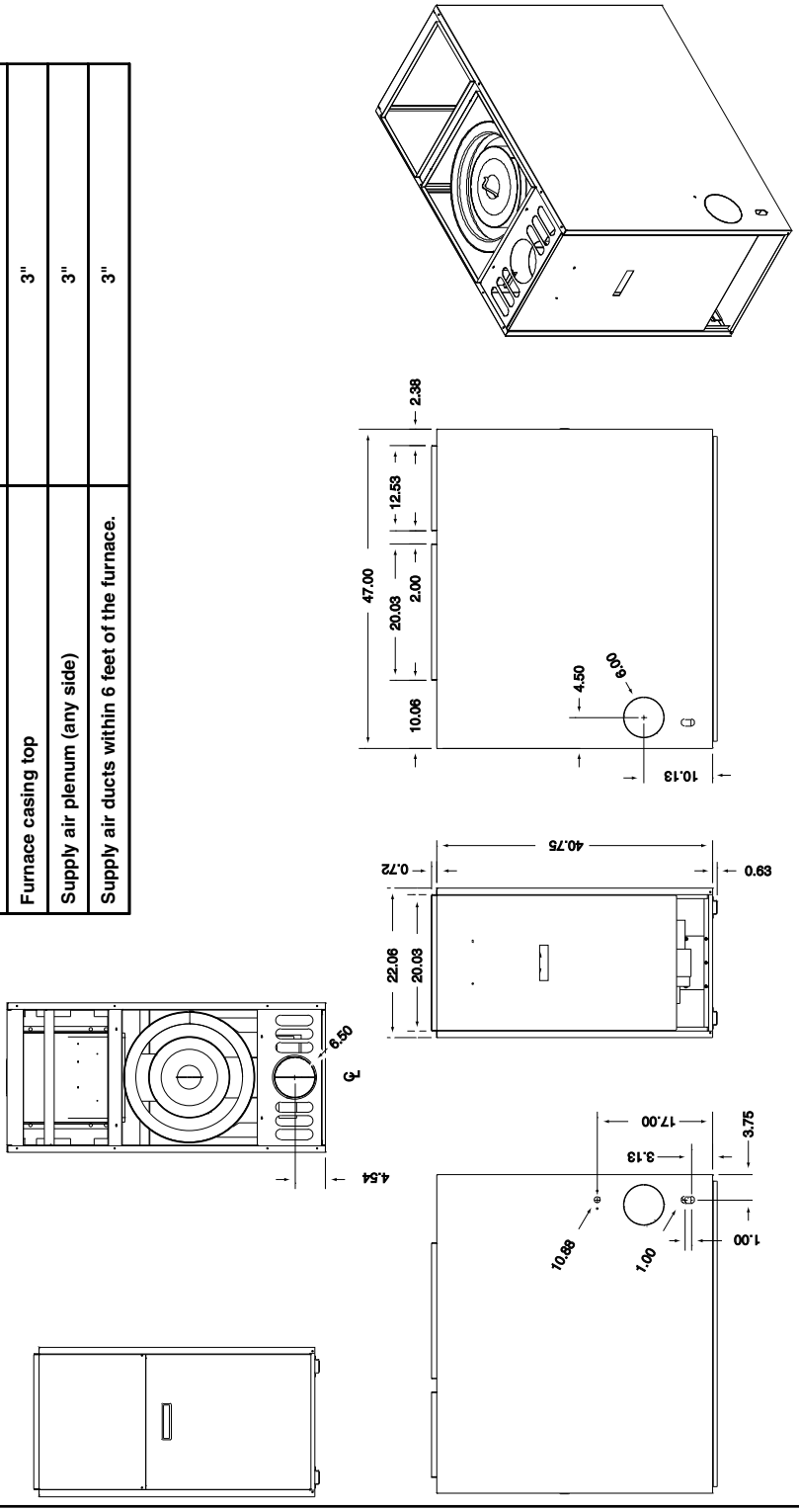
Downflow / Horizontal - Front Flue

Dimensions

TLF1M087A936, 48, V3, V5SA OUTLINE DRAWING

(ALL DIMENSIONS ARE IN INCHES)

MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS	
Furnace casing sides and rear	3"
Front furnace casing to closet door1	8"
Furnace flue pipe / vent connector	9"
Furnace casing top	3"
Supply air plenum (any side)	3"
Supply air ducts within 6 feet of the furnace.	3"



Lowboy - Front Flue

Pub. No. 22-1757-08

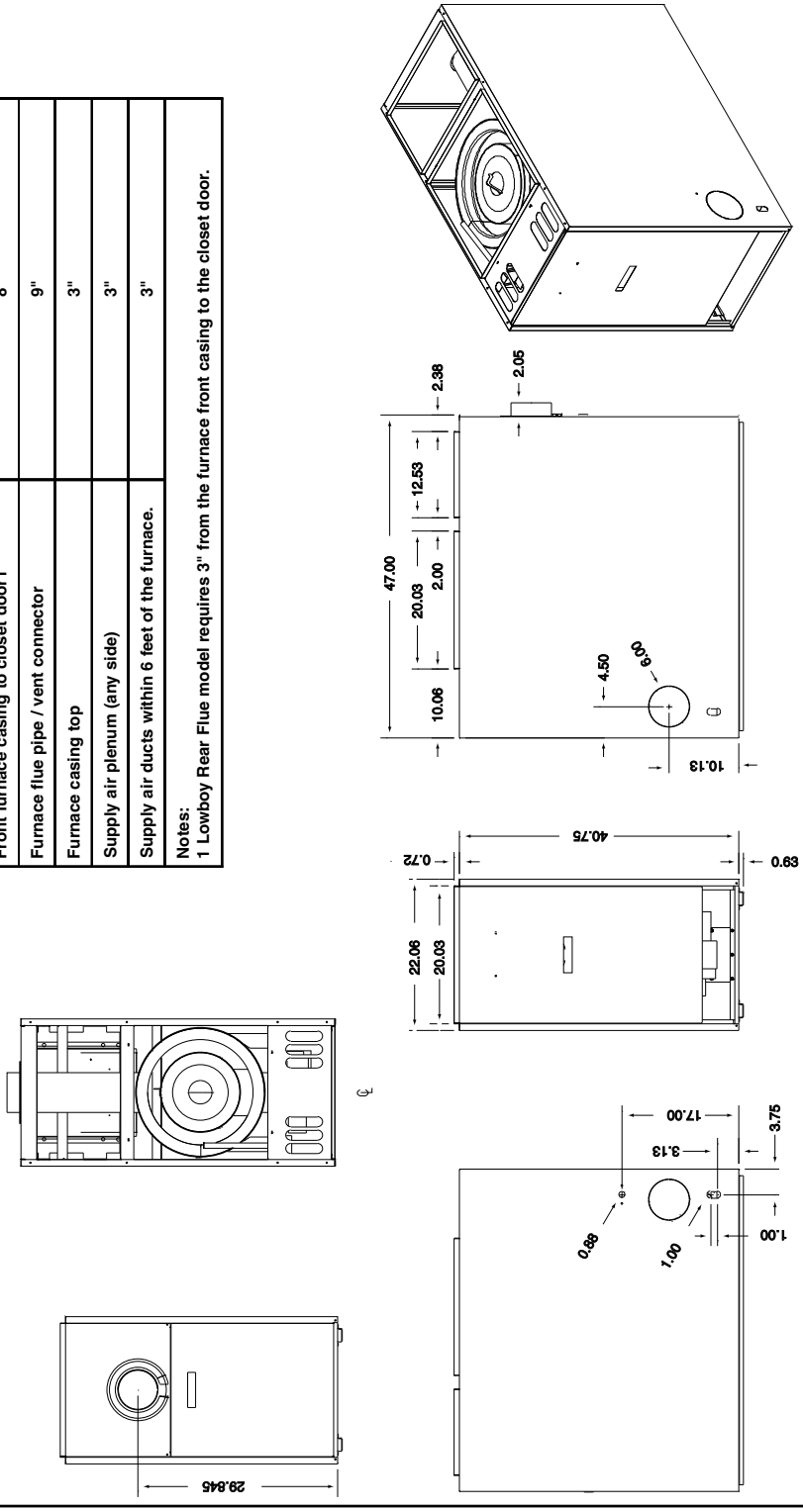
Dimensions

TLR1M087A936, 48, V3, V5SA OUTLINE DRAWING

(ALL DIMENSIONS ARE IN INCHES)

MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS	
Furnace casing sides and rear	3"
Front furnace casing to closet door1	8"
Furnace flue pipe / vent connector	9"
Furnace casing top	3"
Supply air plenum (any side)	3"
Supply air ducts within 6 feet of the furnace.	3"

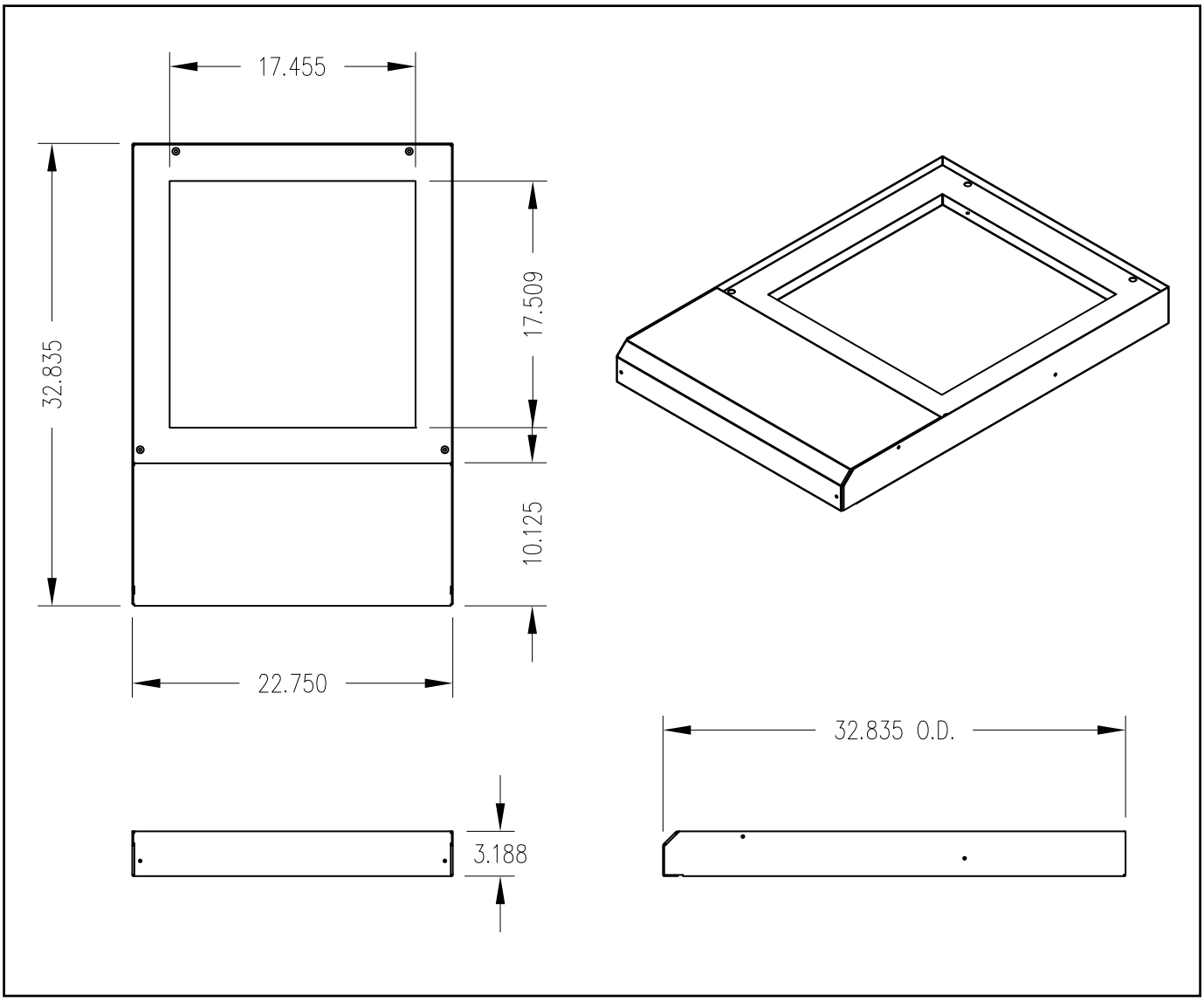
Notes:
1 Lowboy Rear Flue model requires 3" from the furnace front casing to the closet door.



Lowboy Rear Flue

BAYSUB10ABASEAA DIMENSIONS

Downflow Furnace Combustible
Surface-Mounting Base



Trane
6200 Troup Highway
Tyler, TX 75707
www.trane.com