AIRFLOW TABLE *R9T96

HEATING AIFLOW																
MODEL	THERMOSTAT CALL	RECOMMENDED LO & HI FIRE SPEEDS	TAP #	EXTERNAL STATIC PRESSURE, (INCHES WATER COLUMN)												
				0.10		0.20		0.30		0.40		0.50		0.60	0.70	0.80
				CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	RISE	CFM	CFM	CFM
*R9T960303AN	W/W1 (LO FIRE)	F01	F01	753	25	708	26	663	28	616	30	568	33	513	470	423
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	880	21	843	22	807	23	768	24	723	26	683	643	590
	W2 (HI FIRE)	F04	F02	915	29	883	30	845	32	809	33	773	34	730	690	650
			F04	880	30	843	32	807	33	768	35	723	37	683	643	590
			F05	1055	25	1022	26	990	27	959	28	930	29	891	858	825
*R9T960403AN	W/W1 (LO FIRE)	F01	F01	733	34	691	36	650	38	602	41	553	45	498	448	402
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	915	27	881	28	846	29	814	31	780	32	737	695	652
	W2 (HI FIRE)	F02	F02	1051	34	1024	35	996	36	966	37	935	38	907	868	836
			F04	915	39	881	40	846	42	814	44	780	46	737	695	652
			F05	1138	31	1114	32	1092	33	1064	33	1035	34	1006	977	947
*R9T960603AN	W/W1 (LO FIRE)	F01	F01	900	40	867	42	830	44	798	46	758	48	718	682	645
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	866	42	830	44	797	46	759	48	717	50	675	634	591
	W2 (HI FIRE)	F02	F02	1292	41	1272	42	1248	43	1227	43	1206	44	1184	1162	1137
			F04	NOT RECOMMENDED HEATING SPEED												
			F05	1223	44	1195	45	1176	45	1149	46	1124	47	1101	1074	1047
*R9T960603BN	W/W1 (LO FIRE)	F01	F01	914	41	864	43	815	46	762	49	704	53	654	604	560
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	960	39	917	41	864	43	812	46	764	49	708	661	614
	W2 (HI FIRE)	F02	F02	1121	48	1083	49	1041	51	996	54	953	56	906	861	818
			F04	NOT RECOMMENDED HEATING SPEED												
			F05	1164	46	1123	47	1084	49	1042	51	1003	53	960	920	871
*R9T960803BN	W/W1 (LO FIRE)	F01	F01	1205	41	1169	43	1131	44	1091	46	1053	47	1014	974	934
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	1152	43	1112	45	1076	46	1035	48	996	50	954	916	868
	W2 (HI FIRE)	F02	F02	1415	50	1385	51	1355	52	1322	54	1291	55	1255	1219	1186
			F04	NOT RECOMMENDED HEATING SPEED												
			F05	1321	54	1287	55	1251	57	1217	58	1181	60	1146	1112	1072
*R9T960804CN	W/W1 (LO FIRE)	F01	F01	1289	39	1234	40	1180	42	1122	44	1058	47	991	917	840
			F03	1297	38	1246	40	1199	42	1142	44	1083	46	1020	949	872
			F04	1194	42	1137	44	1079	46	1014	49	948	52	873	792	712
	W2 (HI FIRE)	F02	F02	1836	39	1784	40	1741	41	1703	42	1664	43	1628	1585	1537
			F04	NOT RECOMMENDED HEATING SPEED												
			F05	1748	41	1696	42	1650	43	1612	44	1574	45	1526	1478	1428
*R9T961004CN	W/W1 (LO FIRE)	F01	F01	1475	42	1421	44	1369	45	1314	47	1260	49	1207	1152	1097
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	1259	49	1197	52	1138	55	1074	58	1015	60	947	885	821
	W2 (HI FIRE)	F02	F02	1791	50	1741	51	1699	52	1652	54	1609	55	1561	1513	1465
			F04	NOT RECOMMENDED HEATING SPEED												
			F05	1710	52	1660	54	1613	55	1583	56	1517	59	1470	1421	1374
*R9T961005CN	W/W1 (LO FIRE)	F04	F01	1259	49	1197	52	1138	55	1074	58	1015	60	947	885	821
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	1347	46	1286	48	1231	51	1172	53	1115	56	1055	995	933
	W2 (HI FIRE)	F02	F02	1791	50	1741	51	1699	52	1652	54	1609	55	1561	1513	1465
			F04	NOT RECOMMENDED HEATING SPEED												
			F05	1921	46	1879	47	1840	48	1791	50	1751	51	1705	1656	1610
*R9T961205DN	W/W1 (LO FIRE)	F04	F01	1766	42	1712	44	1666	45	1612	46	1558	48	1506	1450	1395
			F03	NOT RECOMMENDED HEATING SPEED												
			F04	1684	44	1620	46	1561	48	1499	50	1438	52	1378	1318	1259
	W2 (HI FIRE)	F02	F02	2205	48	2157	49	2110	51	2064	52	2021	53	1974	1925	1879
			F04	NOT RECOMMENDED HEATING SPEED												
			F05	2031	53	1981	54	1933	55	1901	56	1850	58	1799	1750	1702

NOTE:

1. **DEFAULT LOW FIRE HEATING SPEED IS F01**
2. **DEFAULT HIGH FIRE HEATING SPEED IS F02**
3. **DUCT WORK MUST BE SIZED FOR HIGHEST AIRFLOW. IF FURNACE IS PAIRED TO LOW TON OUTDOOR, THE DUCTWORK SHOULD BE SIZED FOR HIGHER HEATING AIRFLOW.**

Airflow Table *R9T96

*D9T960403BN	W/W1 (LO FIRE)	F01	F01	727	34	677	37	623	40	565	44	510	49	455	403	351
			F03	NOT RECOMMENDED HEATING SPEED											
			F04	878	28	839	30	797	31	751	33	701	36	653	607	561
	W2 (HI FIRE)	F02	F02	923	39	882	40	841	42	798	45	752	47	704	660	614
			F04	878	41	839	42	797	45	751	47	701	51	653	607	561
			F05	1106	32	1076	33	1044	34	1010	35	974	37	939	899	860
*D9T960603BN	W/W1 (LO FIRE)	F01	F01	1167	32	1118	33	1069	35	1022	37	974	38	928	877	833
			F03	NOT RECOMMENDED HEATING SPEED											
			F04	NOT RECOMMENDED HEATING SPEED											
	W2 (HI FIRE)	F02	F02	1332	40	1289	41	1245	43	1200	44	1160	46	1120	1081	1036
			F04	NOT RECOMMENDED HEATING SPEED											
			F05	1248	43	1204	44	1159	46	1113	48	1071	50	1028	983	943
*D9T960803BN	W/W1 (LO FIRE)	F01	F01	1167	43	1124	44	1087	46	1040	48	995	50	954	916	869
			F03	NOT RECOMMENDED HEATING SPEED											
			F04	1217	41	1174	42	1130	44	1086	46	1045	48	1003	962	925
	W2 (HI FIRE)	F02	F02	1317	54	1277	56	1240	57	1201	59	1161	61	1122	1081	1045
			F04	NOT RECOMMENDED HEATING SPEED											
			F05	1300	55	1263	56	1225	58	1186	60	1142	62	1099	1062	1023
*D9T961005CN	W/W1 (LO FIRE)	F01	F01	1366	46	1307	48	1248	50	1188	52	1130	55	1069	1007	938
			F03	1295	48	1230	51	1168	53	1105	56	1044	58	981	911	843
			F04	NOT RECOMMENDED HEATING SPEED											
	W2 (HI FIRE)	F02	F02	1833	48	1785	50	1736	51	1688	53	1640	54	1593	1543	1497
			F04	1634	54	1578	56	1525	58	1471	60	1416	62	1363	1311	1265
			F05	2028	44	1994	45	1937	46	1899	47	1863	48	1814	1769	1724

NOTE:

1. **Default low fire heating speed is F01**
2. **Default high fire heating speed is F02**
3. **Duct work must be sized for highest airflow. If furnace is paired to low ton outdoor, the ductwork should be sized for higher heating airflow.**

Airflow Table *D9T96

FAN & COOLING AIFLOW													
MODEL	THERMOSTAT CALL	TAP #	EXTERNAL STATIC PRESSURE (INCHES WATER COLUMN)										
			0.10	0.20	0.30	0.40	0.50		0.60		0.70		0.80	
			CFM	CFM	CFM	CFM	CFM	Watts	CFM	Watts	CFM	Watts	CFM	Watts
*R9T960303AN	Y/Y1, Y2, G	F01	753	708	663	616	568	118	513	125	470	131	423	136
		F02	915	883	845	809	773	177	730	182	690	189	650	196
		F03	529	518	461	394	343	75	288	81	223	86	N/A	N/A
		F04	880	843	807	768	723	161	683	168	643	175	590	181
		F05	1055	1022	990	959	930	241	891	249	858	256	825	263
		F06	1101	1072	1040	1010	980	269	949	275	918	283	881	290
		F07	1190	1162	1134	1104	1077	322	1042	328	1013	336	982	345
		F08	1183	1157	1130	1103	1077	322	1047	331	1018	338	988	347
		F09	1229	1206	1178	1153	1128	359	1100	365	1070	372	1042	328
*R9T960403AN	Y/Y1, Y2, G	F01	733	691	650	602	553	111	498	117	448	124	402	130
		F02	1051	1024	996	966	935	240	907	248	868	254	836	262
		F03	665	620	570	517	462	93	407	100	359	104	309	109
		F04	915	881	846	814	780	174	737	180	695	186	652	193
		F05	1138	1114	1092	1064	1035	288	1006	298	977	307	947	313
		F06	887	855	823	790	751	164	705	170	666	176	608	183
		F07	1189	1163	1138	1111	1085	321	1059	331	1032	341	1001	349
		F08	1266	1243	1218	1197	1172	372	1148	383	1123	394	1099	400
		F09	1342	1324	1305	1280	1263	440	1239	452	1216	463	1193	473
*R9T960603AN	Y/Y1, Y2, G	F01	900	867	830	798	758	175	718	182	682	189	645	196
		F02	1292	1272	1248	1227	1206	429	1184	438	1162	447	1137	456
		F03	688	649	603	551	499	104	447	110	405	115	359	120
		F04	866	830	797	759	717	161	675	168	634	175	591	181
		F05	1223	1195	1176	1149	1124	370	1101	381	1074	388	1047	398
		F06	1037	1004	975	950	921	243	886	251	853	258	823	266
		F07	1079	1053	1025	1000	970	271	941	278	911	285	873	292
		F08	1128	1099	1075	1050	1022	300	993	310	965	319	937	326
		F09	1171	1148	1124	1096	1070	330	1045	339	1017	348	988	355
*R9T960603BN	Y/Y1, Y2, G	F01	914	864	815	762	704	150	654	155	604	162	560	168
		F02	1121	1083	1041	996	953	230	906	236	861	245	818	252
		F03	758	696	636	572	512	104	460	110	412	115	N/A	N/A
		F04	960	917	864	812	764	164	708	171	661	179	614	184
		F05	1164	1123	1084	1042	1003	249	960	258	920	268	871	276
		F06	1219	1180	1141	1102	1062	277	1020	286	978	294	940	303
		F07	1273	1240	1207	1171	1128	309	1089	318	1051	327	1012	336
		F08	1307	1270	1235	1198	1160	329	1122	336	1083	346	1043	354
		F09	1427	1390	1362	1327	1297	408	1260	414	1224	423	1193	434
*R9T960803BN	Y/Y1, Y2, G	F01	1205	1169	1131	1091	1053	261	1014	270	974	279	934	289
		F02	1415	1385	1355	1322	1291	394	1255	403	1219	407	1186	417
		F03	696	635	568	500	442	91	390	96	336	101	255	104
		F04	1152	1112	1076	1035	996	239	954	248	916	258	868	267
		F05	1321	1287	1251	1217	1181	328	1146	336	1112	345	1072	355
		F06	901	851	801	746	690	142	638	149	587	154	543	160
		F07	1112	1076	1032	992	949	219	905	228	858	236	819	246
		F08	1290	1252	1215	1182	1143	311	1107	319	1071	329	1032	337
		F09	1471	1440	1409	1377	1347	427	1314	436	1283	446	1247	456
*R9T960804CN	Y/Y1, Y2, G	F01	1289	1234	1180	1122	1058	217	991	226	917	234	840	242
		F02	1836	1784	1741	1703	1664	496	1628	515	1585	528	1537	540
		F03	1297	1246	1199	1142	1083	224	1020	233	949	242	872	250
		F04	1194	1137	1079	1014	948	188	873	197	792	205	712	212
		F05	1748	1696	1650	1612	1574	438	1526	450	1478	462	1428	474
		F06	1451	1399	1354	1309	1256	288	1200	298	1142	306	1077	316
		F07	1587	1534	1489	1445	1406	352	1354	362	1298	372	1244	383
		F08	1683	1633	1589	1546	1502	405	1460	416	1406	428	1355	440
		F09	1919	1890	1846	1807	1771	566	1735	585	1694	600	1650	613

NOTE:

1. **Default speed for fan is F03**
2. **Default speed for low cooling (Y1) / 1 stage (Y) is F04**
3. **Default speed for 2nd stage (Y2) cooling is F05**
4. **Aiflow & wattage data is funace only. Watts may increase if undersized ducting is used.**
5. **Airflows over 1600 cfm require 2 side return or side & bottom return. A minimm 20x25 size filter is required.**

Airflow Table *D9T96

*R9T961004CN	Y/Y1, Y2, G	F01	1475	1421	1369	1314	1260	307	1207	317	1152	326	1097	337
		F02	1791	1741	1699	1652	1609	482	1561	493	1513	504	1465	516
		F03	924	846	767	684	606	124	529	130	463	136	398	142
		F04	1259	1197	1138	1074	1015	218	947	226	885	236	821	244
		F05	1710	1660	1613	1583	1517	427	1470	440	1421	451	1374	462
		F06	1592	1536	1486	1436	1383	363	1331	373	1281	383	1233	393
		F07	1627	1574	1524	1474	1423	382	1370	392	1320	403	1271	414
		F08	1921	1879	1840	1791	1751	577	1705	588	1656	604	1610	617
		F09	2026	1981	1929	1901	1858	659	1819	677	1773	685	1733	701
*R9T961005CN	Y/Y1, Y2, G	F01	1259	1197	1138	1074	1015	218	947	226	885	236	821	244
		F02	1791	1741	1699	1652	1609	482	1561	493	1513	504	1465	516
		F03	1176	1108	1044	980	913	188	845	197	779	206	718	213
		F04	1347	1286	1231	1172	1115	247	1055	256	995	265	933	275
		F05	1921	1879	1840	1791	1751	577	1705	588	1656	604	1610	617
		F06	1446	1404	1335	1280	1226	291	1171	300	1117	309	1062	319
		F07	1618	1567	1510	1460	1413	379	1364	390	1312	401	1262	411
		F08	2009	1964	1918	1886	1852	656	1811	671	1759	676	1722	693
		F09	2161	2122	2084	2048	2010	739	1973	755	1940	776	1914	796
*R9T961205DN	Y/Y1, Y2, G	F01	1766	1712	1666	1612	1558	387	1506	401	1450	412	1395	425
		F02	2205	2157	2110	2064	2021	679	1974	694	1925	709	1879	726
		F03	1118	1035	952	860	750	149	663	156	590	165	519	171
		F04	1684	1620	1561	1499	1438	345	1378	358	1318	371	1259	383
		F05	2031	1981	1933	1901	1850	541	1799	556	1750	570	1702	585
		F06	1220	1145	1070	995	907	177	811	187	725	194	651	201
		F07	1357	1311	1243	1175	1107	223	1021	233	932	243	861	254
		F08	1906	1877	1828	1778	1726	474	1674	487	1622	501	1568	515
		F09	2454	2396	2347	2296	2250	889	2202	905	2157	922	2113	941
*D9T960403BN	Y/Y1, Y2, G	F01	727	677	623	565	510	101	455	106	403	111	351	116
		F02	923	882	841	798	752	159	704	165	660	172	614	177
		F03	632	574	510	448	388	80	332	85	277	89	234	93
		F04	878	839	797	751	701	146	653	151	607	157	561	162
		F05	1106	1076	1044	1010	974	243	939	250	899	256	860	263
		F06	1188	1156	1123	1091	1062	290	1029	296	998	302	964	309
		F07	1237	1205	1174	1145	1115	317	1081	324	1050	332	1016	341
		F08	1281	1252	1222	1195	1163	347	1134	357	1104	362	1071	369
		F09	1382	1354	1327	1302	1276	418	1246	424	1219	432	1190	439
*D9T960603BN	Y/Y1, Y2, G	F01	1167	1118	1069	1022	974	237	928	246	877	252	833	259
		F02	1332	1289	1245	1200	1160	327	1120	335	1081	343	1036	353
		F03	680	609	532	460	397	85	337	90	252	94	201	97
		F04	903	839	783	719	661	139	601	144	546	150	497	155
		F05	1248	1204	1159	1113	1071	280	1028	290	983	299	943	306
		F06	963	907	852	803	745	160	689	166	639	173	587	179
		F07	1393	1348	1309	1267	1230	368	1189	375	1152	383	1116	391
		F08	1450	1407	1366	1330	1290	409	1251	412	1221	421	1186	430
		F09	1468	1436	1393	1359	1323	418	1285	427	1248	436	1210	445
*D9T960803BN	Y/Y1, Y2, G	F01	1167	1124	1087	1040	995	250	954	258	916	264	869	272
		F02	1317	1277	1240	1201	1161	336	1122	344	1081	350	1045	360
		F03	733	669	606	543	482	99	424	104	372	109	300	115
		F04	1217	1174	1130	1086	1045	274	1003	282	962	289	925	297
		F05	1300	1263	1225	1186	1142	322	1099	331	1062	339	1023	348
		F06	919	872	820	764	711	149	658	156	605	162	553	168
		F07	1126	1085	1042	998	953	234	910	241	866	249	824	255
		F08	1375	1341	1301	1264	1226	375	1189	382	1154	391	1118	402
		F09	1440	1402	1366	1330	1295	414	1260	423	1224	430	1187	439
*D9T961005CN	Y/Y1, Y2, G	F01	1366	1307	1248	1188	1130	255	1069	264	1007	273	938	282
		F02	1833	1785	1736	1688	1640	509	1593	519	1543	529	1497	540
		F03	1295	1230	1168	1105	1044	227	981	236	911	244	843	252
		F04	1634	1578	1525	1471	1416	382	1363	391	1311	400	1265	411
		F05	2028	1994	1937	1899	1863	683	1814	690	1769	702	1724	713
		F06	1773	1721	1671	1621	1571	465	1521	474	1470	485	1421	495
		F07	1908	1860	1813	1766	1720	569	1672	581	1624	591	1578	602
		F08	1965	1919	1873	1829	1783	617	1736	627	1688	637	1643	648
		F09	2096	2053	2014	1973	1931	726	1890	736	1849	752	1803	758

NOTE:

1. **Default speed for fan is F03**
2. **Default speed for low cooling (Y1) / 1 stage (Y) is F04**
3. **Default speed for 2nd stage (Y2) cooling is F05**
4. **Aiflow & wattage data is funace only. Watts may increase if undersized ducting is used.**
5. **Airflows over 1600 cfm require 2 side return or side & bottom return. A minimm 20x25 size filter is required.**

Normal Sequence of Operation

Power Up

Upon being powered up, the control board will perform internal and polarity checks. The control will display I d L, idle mode until a call from the thermostat is received.

Continuous Fan Mode Speed Selection

When a 24 vac signal is present on the G terminal, the blower motor will operate on selected continuous blower speed. The EAC-H will also be energized as long as the blower motor is energized.

When the R to G circuit is opened, the blower motor will shut down if no other function requires blower motor operation.

To change the main blower speed in circulation mode, follow the following steps:

1. Press left or right switch until LED displays "F S d ". Press center switch and the LED will display the selected speed number as Fxx (xx: Blower speed number from 01 to 09). SP3 is default speed for circulation.
2. The control will display an available speed number every time Left/Right switches are pressed. All 9 speeds are available for circulation.
3. Press the center button to select the desired speed. The control will immediately apply that speed setting.

THERMOSTAT CALL	AVAILABLE SPEEDS
G	F01
	F02
	F03 (DEFAULT)
	F04
	F05
	F06
	F07
	F08
	F09

HEATING MODE SPEED SELECTION

To change the main blower speed in HEATING mode, follow the following steps:

1. Press left or right button till LED displays "gA1 "(for single stage HEATING) or "gA2 "(for Two stage HEATING). Press center button and LED will display the selected speed number as Fxx (xx: Blower speed number).
2. The control shall rotate available speed number every time Left/Right switches are pressed. Table below shows the available speeds for Low & High heat mode.
3. When the center switch is pressed, the current displayed speed shall be selected, and control shall apply the newly selected speed in next heating call.

Note: Always refer to the Heating Chart to choose from available heating speeds.

THERMOSTAT CALL	AVAILABLE SPEEDS
W/W1	F01 (DEFAULT)
	F03
	F04
W2	F02 (DEFAULT)
	F04
	F05

Heating Mode

Call for 1st Stage Heat

- On a call for heat, the thermostat contacts close & the control board receives 24 vac on the W1 terminal.
- The control board microcomputer runs its self-check routine.
- The control verifies the limit switch is closed (24 vac on Pin 8 of the 12 Pin connector).
- The control verifies that pressure switch circuit is open (0 vac on Pin 5).
- The control module performs a gas valve circuitry check to verify gas valve relay state and presence of no voltage at the valve.
- The system will energize the Induced draft blower.
- The pre-purge period begins once the low fire pressure switch is detected closed. (24 vac on Pin 5).
- After the completion of pre-purge, the control will energize the igniter.
- After completion of the igniter warm-up period:
- The gas valve is energized.
- The igniter is de-energized as soon as flame is sensed.
- After 30 seconds the indoor blower is energized on heating speed.
- When using a single-stage heating thermostat the furnace will transition to 2nd stage gas heat by either a fixed time or auto mode, depending on menu selections made by the installer.
- The inducer motor is enabled at high speed.
- Closure of the second stage pressure switch will energize the high fire stage of the gas valve.
- The 2nd stage gas heat speed of the indoor blower is energized

-When the thermostat is satisfied;

- The gas valve is de-energized.
- The inducer remains energized for the post purge period (15 seconds).
- The indoor blower runs for the selected off delay period (90 seconds by default, adjustable from 30 – 180 seconds).

Call for 2nd Stage Heat During 1st Stage Heat Operation

- The control board receives a 24 vac signal on the W2 terminal.
- The inducer motor is enabled at high speed.
- Closure of the second stage pressure switch will energize the high fire stage of the gas valve.
- The 2nd stage gas heat speed of the indoor blower is energized.

Note: A call for second stage without a call for first stage will be ignored.

COOLING MODE SPEED SELECTION

To change the main blower speed in COOLING mode, follow the following steps:

1. Press left or right button till LED displays “AC1 “(for single stage COOLING) or “AC2 “(for Two stage COOLING). Press center button and LED will display the selected speed number as Fxx (xx: Blower speed number from 1 to 9).
2. The control shall rotate available speed number every time Left/Right switches are pressed. All 9 speeds are available for both Single and Two Stage cooling.
3. When the center switch is pressed, the current displayed speed shall be selected, and control shall apply the newly selected speed in next cooling call.

THERMOSTAT CALL	AVAILABLE SPEEDS
Y/Y1	F01
	F02
	F03
	F04 (DEFAULT)
	F05
	F06
	F07
	F08
	F09

SINGLE STAGE COOLING SPEED TABLE FOR 2 STAGE IFC

THERMOSTAT CALL	AVAILABLE SPEEDS
Y2	F01
	F02
	F03
	F04
	F05 (DEFAULT)
	F06
	F07
	F08
	F09

TWO STAGE COOLING SPEED TABLE FOR 2 STAGE IFC

Cooling Mode

Low Stage Cooling Mode Sequence:

On a call for low stage cooling, the Y/Y1 or Y/Y1 and G thermostat contacts close signaling the furnace control board with 24 vac. on Y/Y1 or Y/Y1 and G terminals.

- The 7-Segment will display the cool mode; 1 A C
- The compressor and condenser fan are energized.
- The circulator fan is energized at low cool speed after a cool on delay. The electronic air cleaner will also be energized. After the thermostat is satisfied, the compressor and condenser fan are de-energized and the Cool Mode Fan Off Delay period begins.
- Following the Cool Mode Fan Off Delay period, the cool circulator and air cleaner relay are de-energized.

2nd Stage Cooling Mode Sequence:

On a call for 2nd stage cooling, the Y2 or Y2 and G thermostat contacts close signaling the furnace control board with 24 vac. on Y2 or Y2 and G terminals.

- The 7-Segment will display the cool mode; 2 A C
- The compressor and condenser fan are energized.
- The circulator fan is energized at cool speed after a cool on delay. The electronic air cleaner will also be energized.
- After the thermostat is satisfied, the compressor and condenser fan are de-energized and the Cool Mode Fan Off Delay period begins.
- Following the Cool Mode Fan Off Delay period, the cool circulator and air cleaner relay are de-energized.

Operational Checks

The burner flames should be inspected with the burner compartment door installed. Flames should be stable, quiet, soft, and blue (dust may cause orange tips but they must not be yellow). Flames should extend directly outward from the burners without curling, floating, or lifting off. Flames must not impinge on the sides of the heat exchanger firing tubes.

Safety Circuit Description

WARNING

DO NOT BYPASS SAFETY DEVICES.

A number of safety circuits are employed to ensure safe and proper furnace operation. These circuits serve to control any potential safety hazards and serve as inputs in the monitoring and diagnosis of abnormal function. These circuits are continuously monitored during furnace operation by the integrated control module.

Integrated Control Module

The integrated control module will display furnace status including faults, mode of operation and air flow, on three seven segment displays.

Primary Limit

The primary limit control is located on the partition panel and monitors heat exchanger compartment temperatures. It is a normally-closed (electrically), automatic reset, temperature-activated sensor. The limit guards against overheating as a result of insufficient conditioned air passing over the heat exchanger.

Auxiliary Limit

The auxiliary limit controls are located on or near the circulator blower and monitors blower compartment temperatures. They are a normally-closed (electrically), automatic reset, temperature-activated sensor. These limits guard against overheating as a result of insufficient conditioned air passing over the heat exchanger.

Rollout Limit

The rollout limit controls are mounted on the burner/manifold assembly and monitor the burner flame. They are normally-closed (electrically), manual-reset sensors. These limits guard against burner flames not being properly drawn into the heat exchanger.

Pressure Switches

The pressure switches are normally-open (closed during operation) negative air pressure-activated switches. They monitor the airflow (combustion air and flue products) through the heat exchanger via pressure taps located on the induced draft blower and the coil front cover. These switches guard against insufficient airflow (combustion air and flue products) through the heat exchanger and/or blocked condensate drain conditions.

Flame Sensor

The flame sensor is a probe mounted to the burner/manifold assembly which uses the principle of flame rectification to determine the presence or absence of flame.

Troubleshooting

Electrostatic Discharge (ESD) Precautions

Use the following precautions during furnace installation and servicing to protect the integrated control module from damage. By putting the furnace, the control, and the person at the same electrostatic potential, these steps will help avoid exposing the integrated control module to electrostatic discharge. This procedure is applicable to both installed and uninstalled (ungrounded) furnaces.

1. Disconnect all power to the furnace. Do not touch the integrated control module or any wire connected to the control prior to discharging your body's electrostatic charge to ground.
2. Firmly touch a clean, unpainted, metal surface of the furnace away from the control. Any tools held in a person's hand during grounding will be discharged.
3. Service integrated control module or connecting wiring following the discharge process in step 2. Use caution not to recharge your body with static electricity; (i.e., do not move or shuffle your feet, do not touch ungrounded objects, etc.). If you come in contact with an ungrounded object, repeat step 2 before touching control or wires.
4. Discharge your body to ground before removing a new control from its container. Follow steps 1 through 3 if installing the control on a furnace. Return any old or new controls to their containers before touching any ungrounded object.

Diagnostic Chart

Refer to the *Troubleshooting Chart* in the back of this manual for assistance in determining the source of unit operational problems.

External Lockout

- A control lockout resulting from an external fault sensed by the control, such as an unsuccessful recycle or retry period, or a limit trip. Once in External Lockout, the control will shut down for a period of one hour before attempting another trial for ignition.

Internal Lockout

- A failure internal to the control board.

Fault Recall

Retrieving Fault Codes

Resetting From Lockout

Furnace lockout results when a furnace is unable to achieve ignition after three attempts during a single call for heat. It is characterized by a non-functioning furnace and a one flash diagnostic LED code. If the furnace is in “lockout”, it can be reset in any of the following ways.

1. Automatic reset. The integrated control module will automatically reset itself and attempt to resume normal operations following a one hour lockout period.
2. Manual power interruption. Interrupt 115 volt power to the furnace for 1 - 20 seconds.
3. Manual thermostat cycle. Lower the thermostat so that there is no longer a call for heat then reset to previous setting. Interrupt thermostat signal to the furnace for 1 - 20 seconds.

NOTE: If the condition which originally caused the lockout still exists, the control will return to lockout. Refer to the *Troubleshooting Chart* for aid in determining the cause.

Maintenance

WARNING

HIGH VOLTAGE
To avoid personal injury or death due to electrical shock, disconnect electrical power before performing any service or maintenance.



Annual Inspection

The furnace should be inspected by a qualified installer, or service agency at least once per year. This check should be performed at the beginning of the heating season. This will ensure that all furnace components are in proper working order and that the heating system functions appropriately. Pay particular attention to the following items. Repair or service as necessary.

- Flue pipe system. Check for blockage and/or leakage. Check the outside termination and the connections at and internal to the furnace.
- Heat exchanger. Check for corrosion and/or buildup within the heat exchanger passageways.
- Burners. Check for proper ignition, burner flame, and flame sense.
- Drainage system. Check for blockage and/or leakage. Check hose connections at and internal to furnace.
- Wiring. Check electrical connections for tightness and/or corrosion. Check wires for damage.
- Filters.
- R-32 Sensor Wire. Check R-32 sensor wire connection for tightness and check wire for damage.

WARNING

HIGH VOLTAGE
TO AVOID ELECTRICAL SHOCK, INJURY OR DEATH, DISCONNECT ELECTRICAL POWER BEFORE PERFORMING ANY MAINTENANCE. IF YOU MUST HANDLE THE IGNITER, HANDLE WITH CARE. TOUCHING THE IGNITER ELEMENT WITH BARE FINGERS, ROUGH HANDLING OR VIBRATION COULD DAMAGE THE IGNITER RESULTING IN PREMATURE FAILURE. ONLY A QUALIFIED SERVICER SHOULD EVER HANDLE THE IGNITER.



Filters

Filter Maintenance

Improper filter maintenance is the most common cause of inadequate heating or cooling performance. Filters should be cleaned (permanent) or replaced (disposable) every two months or as required. When replacing a filter, it must be replaced with a filter of the same type and size.

CAUTION

TO ENSURE PROPER UNIT PERFORMANCE, ADHERE TO THE FILTER SIZES GIVEN IN THE RECOMMENDED MINIMUM FILTER SIZE TABLE OR SPECIFICATION SHEET APPLICABLE TO YOUR MODEL.

Filter Removal

Depending on the installation, differing filter arrangements can be applied. Filters can be installed in either the central return register or a side panel external filter rack (upflow only). A media air filter or electronic air cleaner can be used as an alternate filter. Follow the filter sizes given in the Recommended Minimum Filter size table to ensure proper unit performance.

To remove filters from an external filter rack in an upright upflow installation, follow the directions provided with external filter rack kit.

Horizontal Unit Filter Removal

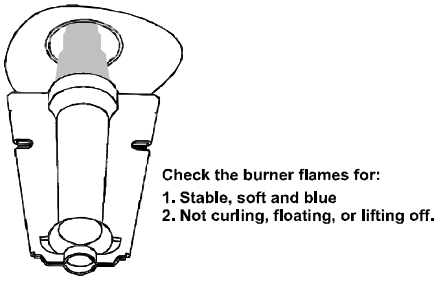
Filters in horizontal installations are located in the central return register or the ductwork near the furnace.

To remove:

1. Turn OFF electrical power to furnace.
2. Remove filter(s) from the central return register or ductwork.
3. Replace filter(s) by reversing the procedure for removal.
4. Turn ON electrical power to furnace.

Media Air Filter or Electronic Air Cleaner Removal

Follow the manufacturer’s directions for service.



Burner Flame
Figure 49

Burners

Visually inspect the burner flames periodically during the heating season. Turn on the furnace at the thermostat and allow several minutes for flames to stabilize, since any dislodged dust will alter the flames normal appearance. Flames should be stable, quiet, soft, and blue (dust may cause orange tips but they must not be yellow). They should extend directly outward from the burners without curling, floating, or lifting off. Flames must not impinge on the sides of the heat exchanger firing tubes.

Induced Draft and Circulator Blowers

The bearings in the induced draft blower and circulator blower motors are permanently lubricated by the manufacturer. No further lubrication is required. Check motor windings for accumulation of dust which may cause overheating. Clean as necessary.

Condensate Trap and Drain System (Qualified Servicer Only)

Annually inspect the drain tubes, drain trap, and field-supplied drain line for proper condensate drainage. Check drain system for hose connection tightness, blockage, and leaks. Clean or repair as necessary.

Flame Sensor (Qualified Servicer Only)

Under some conditions, the fuel or air supply can create a nearly invisible coating on the flame sensor. This coating acts as an insulator causing a drop in the flame sense signal. If the flame sense signal drops too low the furnace will not sense flame and will lock out. The flame sensor should be carefully cleaned by a qualified servicer using steel wool.

Before Leaving an Installation

- Cycle the heating, cooling and fan only operations to verify each operation is working properly.
- Review the Owner's Manual with the homeowner and discuss proper furnace operation and maintenance.
- Leave literature packet near furnace.

Repair and Replacement Parts

- When ordering any of the listed functional parts, be sure to provide the furnace model, manufacturing, and serial numbers with the order.
- Although only functional parts are shown in the parts list, all sheet metal parts, doors, etc. may be ordered by description.
- Parts are available from your distributor.

  <u>Functional Parts List:</u>

  Auxiliary Limit Switch
  Blower Cutoff
  Blower Housing
  Blower Motor
  Blower Mounting Bracket
  Blower Wheel
  Door Switch
  Flame Sensor
  Gas Manifold
  Gas Valve
  Heat Exchanger
  Igniter
  Induced Draft Blower
  Integrated Control Module
  Natural Gas Orifice
  Pressure Switch
  Primary Limit Switch
  Propane Gas Orifice
  Rollout Limit Switch
  Transformer

2 STAGE STATUS CODES

Menu Description	LED Display		Notes
	Main Menu	Option Menu	
Active Alarm menu	**Er r**	**Exx**	(xx: code numbers)
Last 10 Faults	**F10**	**Exx**	(xx: code numbers)
Code Release Number	**Cr**	CR Number	
Reset to Factory Default	**r Fd**	**yes, no**	
Blower Speed for Continuous Fan Mode	**FSd**	**Fxx**	(xx: Blower Speed Number F01, F02..)
Blower Speed for 1st Stage Compressor Mode	**AC1**	**Fxx**	(xx: Blower Speed Number F01, F02..)
Blower Speed for 2nd Stage Compressor Mode	**AC2**	**Fxx**	(xx: Blower Speed Number F01, F02..)
Cool On Delay	**Cnd**	Delay, Seconds	Default set at 7 Secs, Adjustments can be made in 7 Secs increments from 0 to 35 Secs
Cool Off Delay	**Cf d**	Delay, Seconds	Default set at 65 Secs, Adjustments can be made in 5 Secs increments from 0 to 120 Secs
Fan Speed for Low-Stage Gas Heat Mode	**gA1**	**Fxx**	(xx: Blower Speed Number F01, F02..)
Fan Speed for High-Stage Gas Heat Mode	**gA2**	**Fxx**	(xx: Blower Speed Number F01, F02..)
Gas Heat On Delay	**gnd**	Delay, Seconds	Default set at 30 Secs, Adjustments can be made in 5 Secs increments from 5 to 30 Secs
Gas heat Off Delay	**gFd**	Delay, Seconds	Default set at 90 Secs, Adjustments can be made in 30 Secs increments from 30 to 180 Secs
Automatic Heat Staging - For Two Stage Control	**AHS**	no, 10, 20, 30, 60, AUt	Refer to Section " CHANGING HEATING MODE SETTING"
A2L Function Verification	**A2u**	**yes, no**	Refer to the R-32 Information Section
A2L Function Enabled	**A2E**	**yes, no**	Refer to the R-32 Information Section

Mode	Main Menu
Idle	**I dL**
Continuous Fan	**FAn**
Compressor Cooling, Low Stage	**1AC**
Compressor Cooling, High Stage	**2AC**
Gas Heat, Low Stage	**gH1**
Gas Heat, High Stage	**gH2**
OEM test Mode	**EOL**

TROUBLESHOOTING CHART

Symptom	LED Status	Fault Description	Corrective Actions
Normal operation	I dL	Normal operation	None
Furnace fails to operate	EE0	Furnace lockout due to an excessive number of ignition “retries” (3 total) Failure to establish flame Loss of flame after establishment	Locate and correct gas interruption Check front cover pressure switch operation and verify proper drainage (hose, wiring, contact operation), correct if necessary Replace or realign igniter Check flame sense signal, clean sensor if coated or oxidized Check flue piping for blockage, proper length, elbows, and termination Verify proper induced draft blower performance
Furnace fails to operate	EE1	Pressure switch circuit is closed at start of heating cycle Pressure switch contacts sticking Short in pressure switch circuit wiring	Replace low stage pressure switch Repair short in wiring
Induced draft blower runs continuously with no furnace operation	EE2	Pressure switch circuit is not closed Pressure switch hose blocked pinched, or connected improperly Blocked flue and/or inlet air pipe, blocked drain system or weak induced draft blower Incorrect pressure switch set point or malfunctioning switch contacts Loose or improperly connected wiring	Inspect pressure switch hose, repair/replace if necessary Inspect flue and/or inlet air piping for blockage, proper length, elbows, and termination Check drain system, correct as necessary Check induced draft blower performance, correct as necessary Check pressure switch operation, replace as needed Tighten or correct wiring connection
Circulator blower runs continuously No furnace operation	EE3	Primary limit circuit is open Insufficient conditioned air over the heat exchanger Blocked filters, restrictive ductwork, improper circulator blower speed, or failed circulator blower motor Loose or improperly connected wiring in high limit circuit	Check filters and ductwork for blockage Clean filters or remove obstruction Check circulator blower speed and performance Correct speed or replace blower motor if necessary Tighten or correct wiring connection

TO VIEW & CLEAR FAULT CODES

Press either the Left or Right switch until F10 is displayed.
Press the center switch to view stored faults.
Press and hold the center switch for 5 to 30 seconds.
All stored faults will be erased, and the display will flash - - - three times and return to F10.

TROUBLESHOOTING CHART

Symptom	LED Status	Fault Description	Corrective Actions
Induced draft blower and circulator blower runs continuously No furnace operation	EE4	Flame sensed with no call for heat Short to ground in flame sense circuit Lingering burner flame Slow closing gas valve	Correct short at flame sensor or in flame sensor wiring Check for lingering or lazy flame Verify proper operation of gas valve
No furnace operation	EE5	Open fuse Short in low voltage wiring	Replace fuse Locate and correct short in low voltage wiring
Normal furnace operation	EE6	Flame sense micro amp signal is minimal Flame sensor is coated/oxidized Flame sensor incorrectly positioned in burner fame Lazy burner flame due to improper gas pressure or combustion air	Clean flame sensor if coated or oxidized Inspect for proper flame sensor alignment Check inlet air piping for blockage, proper length, elbows, and termination Compare current gas pressure to rating plate and adjust as needed
Furnace fails to operate	EEL	Problem with igniter circuit Improperly connected or shorted igniter Poor unit ground Igniter relay fault on integrated control module	Check and correct wiring from integrated control module to igniter Diagnose and replace shorted igniter as needed Verify and correct unit ground wiring if needed Check igniter output from control, replace if necessary
Furnace fails to operate on high stage; furnace operates normally on low stage Induced draft blower operating	EE8	High stage pressure switch circuit is closed at start of heating cycle. High stage pressure switch contacts sticking Shorts in pressure switch circuit wiring	Diagnose and replace high stage pressure switch if needed Repair short in wiring
Furnace fails to operate on high stage; furnace operates normally on low stage Induced draft blower operating	EE9	High stage pressure switch circuit is not closed	Inspect pressure switch hose, repair/replace if necessary Inspect flue and/or inlet air piping for blockage, proper length, elbows, and termination Check drain system, correct as necessary Check induced draft blower performance, correct as necessary Tighten or correct wiring connection
Furnace fails to operate	EEA	Polarity of 115 volt AC is reversed Poor unit ground	Correct polarity, check and correct wiring if necessary Verify proper ground, correct if necessary
Furnace fails to operate	EEb	Gas valve is not energized when it should be External Gas Valve Error	Check wiring in gas valve circuit Replace integrated control board

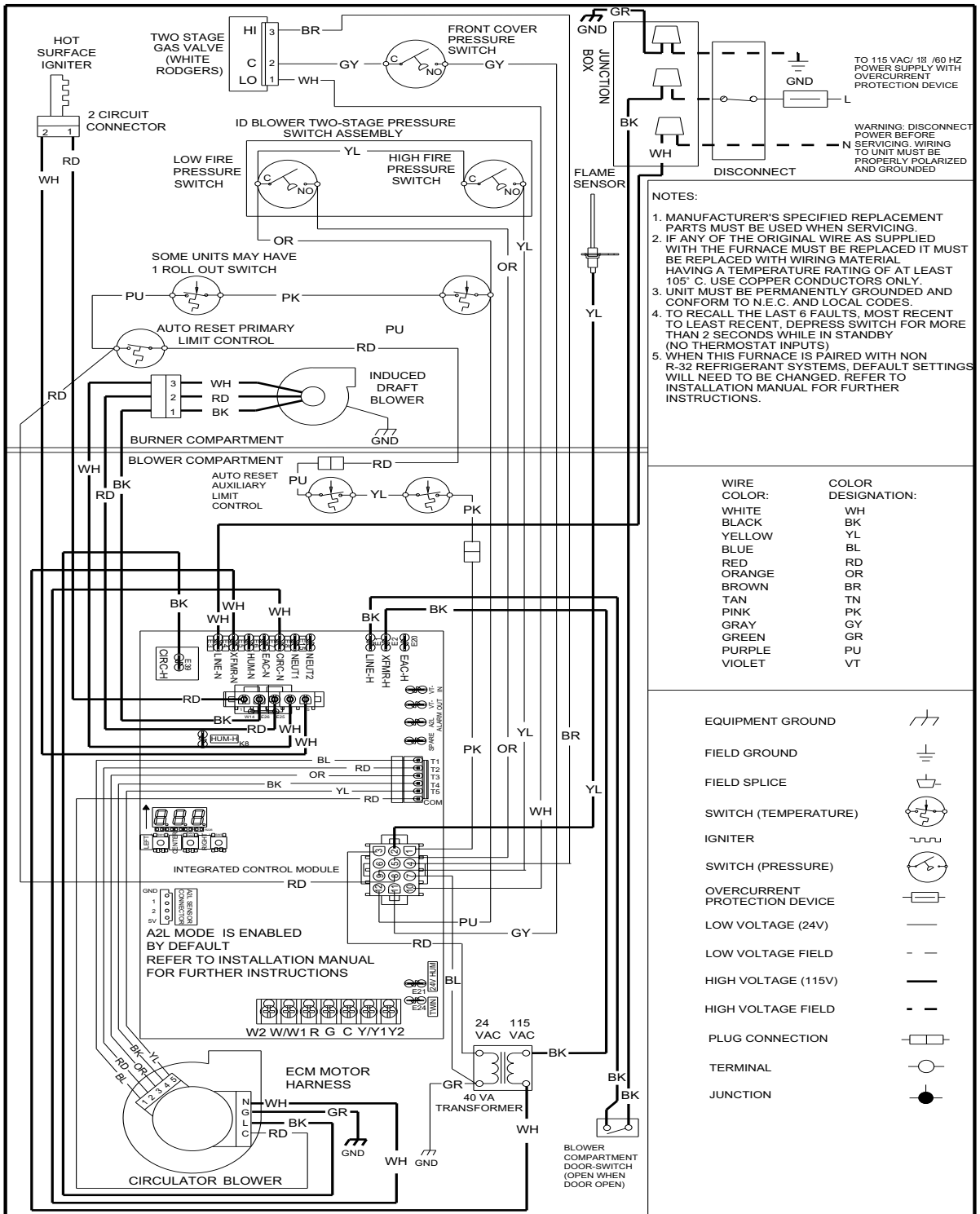
TROUBLESHOOTING CHART

Symptom	LED Status	Fault Description	Corrective Actions
Furnace fails to operate	EEC	Gas valve is energized when it should not be	Check wiring in gas valve circuit
		Internal gas valve error	Replace integrated control board
Furnace fails to operate. Integrated control module LED display provides no signal	None	No 115 power to furnace or no 24 volt power to integrated control module.	Restore high voltage power to furnace and integrated control module.
		Blown fuse or tripped circuit breaker	Correct condition which caused fuse to open, replace fuse
		Integrated control module is non-functional	Replace non-functional integrated control module.
Furnace fails to operate	E10	Grounding fault Poor neutral connection	Verify neutral wire connection to furnace & continuity to ground source
Furnace fails to operate	E11	Open roll out switch	Check for correct gas pressure Check for correct burner alignment Check for and correct burner restriction
Furnace fails to operate	EEn	Ignitor Open	Check for Ignitor wiring. Replace Damaged Ignitor
Furnace fails to operate	EEJ	Inducer relay Error	Replace integrated control board
Twinning feature not working	EEH	TWIN Error	Check for wiring connections. Replace integrated control board
Furnace fails to operate	EEE	Internal Faults or IRQ Loss in Control Board	Replace integrated control board
Furnace fails to operate and goes to hard lockout	EbL	Main blower motor is consuming very little current after heat on delay, below an expected value	Check for loose motor wiring connections. Verify if the blower motor voltage, amps and proper speed setting. If blower motor is not operating correctly, replace the motor.
Furnace fails to operate and goes to hard lockout	EbU	Main blower motor is consuming too much current during inducer pre-purge, above an expected value.	Verify wiring connections to and from motor are not loose. Verify that line voltage wires to the control and the main blower motor are not reversed at the control.
Furnace stops heating and only the fan is operating	EAF	Furnace has lost communication with the R-32 sensor and the furnace is in mitigation mode.	Furnace may not be paired with an R-32 cooling unit. Refer to the R-32 Information Section. Verify wire connection to R-32 sensor is not loose. Verify that the R-32 sensor wire is not damaged. Replace R-32 Sensor.
Furnace stops heating and only the fan is operating	EAL	R-32 sensor has detected a refrigerant leak and furnace is in mitigation mode.	Investigate the indoor coil for a refrigerant leak. Furnace will resume normal operation once a leak is not detected and the 5 minute delay period is over.
Furnace stops heating and only the fan is operating	EAS	R-32 sensor has detected a fault and the furnace is in mitigation mode.	Investigate the R-32 sensor. Replace the R-32 sensor.
Furnace stops heating and only the fan is operating	Ear	A2L relay in the furnace control board has detected a fault and the furnace is in mitigation mode.	Investigate A2L relay. Cycle power on the furnace. Replace integrated control board.

WIRING DIAGRAM

HIGH VOLTAGE!
Disconnect ALL power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury or death.

WARNING



NOTES:

1. MANUFACTURER'S SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
2. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE FURNACE MUST BE REPLACED IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105° C. USE COPPER CONDUCTORS ONLY.
3. UNIT MUST BE PERMANENTLY GROUNDED AND CONFORM TO N.E.C. AND LOCAL CODES.
4. TO RECALL THE LAST 6 FAULTS, MOST RECENT TO LEAST RECENT, DEPRESS SWITCH FOR MORE THAN 2 SECONDS WHILE IN STANDBY (NO THERMOSTAT INPUTS)
5. WHEN THIS FURNACE IS PAIRED WITH NON R-32 REFRIGERANT SYSTEMS, DEFAULT SETTINGS WILL NEED TO BE CHANGED. REFER TO INSTALLATION MANUAL FOR FURTHER INSTRUCTIONS.

WIRE COLOR:	COLOR DESIGNATION:
WHITE	WH
BLACK	BK
YELLOW	YL
BLUE	BL
RED	RD
ORANGE	OR
BROWN	BR
TAN	TN
PINK	PK
GRAY	GY
GREEN	GR
PURPLE	PU
VIOLET	VT

EQUIPMENT GROUND
FIELD GROUND
FIELD SPLICE
SWITCH (TEMPERATURE)
IGNITER
SWITCH (PRESSURE)
OVERCURRENT PROTECTION DEVICE
LOW VOLTAGE (24V)
LOW VOLTAGE FIELD
HIGH VOLTAGE (115V)
HIGH VOLTAGE FIELD
PLUG CONNECTION
TERMINAL
JUNCTION

ERROR CODE STATUS READ CODES FROM LEFT TO RIGHT	SEVEN SEGMENT DISPLAY Seg#3	Seg#2	Seg#1
INTERNAL FAULTS OR IRQ LOSS	E	E	E
LOCKOUT DUE TO EXCESSIVE RETRIES RECYCLE	E	E	0
LOW STAGE PRESSURE SWITCH STUCK CLOSED	E	E	1
LOW STAGE PRESSURE SWITCH OPEN	E	E	2
OPEN HIGH LIMIT SWITCH	E	E	3
FLAME DETECTED WHEN NO FLAME SHOULD BE PRESENT	E	E	4
OPEN FUSE	E	E	5
LOW FLAME SIGNAL	E	E	6
IGNITOR RELAY FAULT	E	E	L
HIGH STAGE PRESSURE SWITCH STUCK CLOSED	E	E	8
HIGH STAGE PRESSURE SWITCH OPEN	E	E	9
REVERSED LINE POLARITY OR GROUNDING ERROR	E	E	A
INTERNAL GAS VALVE ERROR	E	E	b
EXTERNAL GAS VALVE ERROR	E	E	C
OPEN ROLLOUT SWITCH	E	1	1
IGNITOR OPEN	E	E	n
INDUCER RELAY ERROR	E	E	J

ERROR CODE STATUS READ CODES FROM LEFT TO RIGHT	SEVEN SEGMENT DISPLAY Seg#3	Seg#2	Seg#1
TWIN ERROR	E	E	H
GROUNDING ERROR	E	1	0
LOW CIRCULATOR CURRENT	E	b	L
CIRCULATOR CURRENT UNEXPECTED	E	b	U
A2L COMMUNICATION ALARM	E	A	F
A2L LEAKAGE ALARM	E	A	L
A2L INTERNAL ALARM	E	A	S
A2L RELAY ALARM	E	A	r

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Wiring is subject to change. Always refer to the wiring diagram on the unit for the most up-to-date wiring.

Special Instructions for Products Installed in the State of Massachusetts

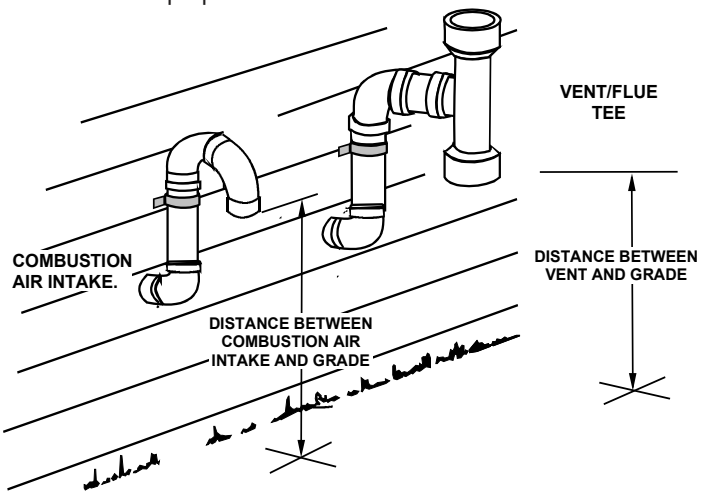
For all side wall horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

1. INSTALLATION OF CARBON MONOXIDE DETECTORS. At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gasfitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gasfitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors
   a. In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.
   b. In the event that the requirements of this subdivision can not be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.
2. APPROVED CARBON MONOXIDE DETECTORS. Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/UL 2034 listed and IAS certified.
3. SIGNAGE. A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) inch in size, **"GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS".**
4. INSPECTION. The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.08(2)(a)1 through 4.

EXEMPTIONS

The following equipment is exempt from 248 CMR 5.08(2)(a)1 through 4:

1. The equipment listed in Chapter 10 entitled "Equipment Not Required To Be Vented" in the most current edition of NFPA 54 as adopted by the Board; and
2. Product Approved side wall horizontally vented gas fueled equipment installed in a room or structure separate from the dwelling, building or structure used in whole or in part for residential purposes.



(c) MANUFACTURER REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM PROVIDED. When the manufacturer of Product Approved side wall horizontally vented gas equipment provides a venting system design or venting system components with the equipment, the instructions provided by the manufacturer for installation of the equipment and the venting system shall include:

3. Detailed instructions for the installation of the venting system design or the venting system components; and
4. A complete parts list for the venting system design or venting system.

(d) MANUFACTURER REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM NOT PROVIDED. When the manufacturer of a Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for venting the flue gases, but identifies "special venting systems", the following requirements shall be satisfied by the manufacturer:

5. The referenced "special venting system" instructions shall be included with the appliance or equipment installation instructions; and
6. The "special venting systems" shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instructions.

(e) A copy of all installation instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or all venting design instructions shall remain with the appliance or equipment at the completion of the installation.

START-UP CHECKLIST

Furnace					
	Model Number	_____			
	Serial Number	_____			
ELECTRICAL					
Line Voltage (Measure **L1 to N** and **N to Ground** Voltage)	L - N	_____			
	N - G	_____			
Secondary Voltage (Measure Transformer Output Voltage)	R - C	_____			
Blower Amps		_____			
BLOWER EXTERNAL STATIC PRESSURE					
Return Air Static Pressure		_____	IN. W.C.		
Supply Air Static Pressure		_____	IN. W.C.		
Total External Static Pressure (Ignoring +/- from the reading above, add total here)		_____	IN. W.C.		
TEMPERATURES					
Return Air Temperature (Dry bulb / Wet bulb)		_____	DB °F	_____	WB °F
Cooling Supply Air Temperature (Dry bulb / Wet bulb)		_____	DB °F	_____	WB °F
Heating Supply Air Temperature		_____	DB °F		
Temperature Rise		_____	DB °F		
Delta T (Difference between Supply and Return Temperatures)		_____	DB °F		
GAS PRESSURES					
Gas Inlet Pressure		_____	IN. W.C.		
Gas Manifold Pressure (Low Fire)		_____	IN. W.C.		
Gas Manifold Pressure (High Fire)		_____	IN. W.C.		
Gas Type (NG) = Natural Gas / (LP) = Liquid Propane		_____			
Additional Checks					
Check wire routings for any rubbing		_____			
Check for kinked pressure switch tubing.		_____			
Check flue elbow for alignment and clamp tightness.		_____			
Check screw tightness on blower wheel.		_____			
Check factory wiring and wire connections.		_____			
Check product for proper clearances as noted by installation instructions		_____			
Check R-32 sensor wire is connected properly (if applicable)		_____			
°F to °C formula: (°F - 32) divided by 1.8 = °C **°C to °F formula: (°C multiplied by 1.8) + 32 = °F**					

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CUSTOMER FEEDBACK
We are very interested in all product comments.
Please fill out the feedback form on one of the following links:
Goodman® Brand Products: (http://www.goodmanmfg.com/about/contact-us).
Amana® Brand Products: (http://www.amana-hac.com/about-us/contact-us).
You can also scan the QR code on the right for the product brand you purchased to be directed to the feedback page.

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