

Essential Skills Application: Oil Burner Mechanic (Technician)

Essential Skill: Document Use

Document Use refers to tasks that involve the reading and interpreting of documents to find the information you need - or putting information in where it is needed – in a variety of documents such as lists, forms, charts, technical drawings.

Application #1

One size does not fit all! In servicing or repairing equipment the technician is required to not only determine the problem with equipment that needs repair or replacing but also to determine the correct parts to be used. In this instance the blower motor on the oil-fired forced air furnace has burned out and the furnace is not heating the house. Oil Burner Mechanics and Technicians need to know the model and make of the furnace in order to determine what size blower motor the manufacturers specifications call for. They would use documents such as the attached product specifications supply chart to identify the correct replacement blower motor.

Task

Using the specification chart supplied locate the properly sized blower motor required for a belted blower for a model NFL-118 Oil Furnace.

Need help? *Locate the furnace model number by identifying the 'Model' in the left hand column and following the row until you reach NFL 118. Save your spot.*

Follow the left hand column down until you locate the 'blower motor' – follow the row until you are under the model number column previously identified. (A=1/3 HP)

SPECIFICATIONS: OIL FORCED AIR SERIES

NV2 Models same as NL2 or with 3/4 HP 5 Speed Direct Drive & G12-10 Blower for 5 Ton AC

Model	NL2-77	NL2-89	NL2-101	NL2-118	NL3-121	NL3-149	NL3-160	NL3-177
B.T.U.H. Input	90,610	104,550	118,490	139,400	139,400	174,250	188,190	209,100
B.T.U.H. Output	77,000	89,000	101,000	118,000	121,000	149,000	160,000	177,000
Firing Rate - USGPH	.65	.75	.85	1.00	1.00	1.25	1.35	1.50
Flue Draft	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.
Burner	Aero: HF-US-2X or Beckett: AFG or Carlin: EZ1				Aero: HF-US-3 or Beckett: AFG or Carlin: EZ1			
Nozzle	.65	.75	.85	1.00	1.00	1.25	1.35	1.50
Burner	Riello: 40F3				Riello: 40F5			
Nozzle	.60	.65	.75	.85	.85	1.00	1.10	1.25
CFM at 20" & 50" W.C. Static Pressure	1100	1200	1350	1500	1500	1800	1950	2100
Blower	10"	10"	10"	10"	12"	12"	12"	12"
@ 20" W.C. Static Pressure at 85 Temp. Rise	<ul style="list-style-type: none"> Blower Motor Motor Pulley Fan Pulley 							
@ 50" W.C. Static Pressure at 85 Temp. Rise	<ul style="list-style-type: none"> Blower Motor Motor Pulley Fan Pulley 							
Direct Drive Blower	G10-8	G10-8	G10-8	G10-8	N/A	N/A	N/A	N/A
@ 2 & 5" W.C. S.P. at 85 TR	1100 CFM	1200 CFM	1350 CFM	1500 CFM	N/A	N/A	N/A	N/A
4 Speed Blower Motor	1/2 HP	1/2 HP	1/2 HP	1/2 HP	N/A	N/A	N/A	N/A
AC Rating (tons)	3.5	3.5	3.5	3.5	5	5	5	5
Filter	(2) 16 x 24	(2) 16 x 24	(2) 16 x 24	(2) 16 x 24	1-16 x 25 1-20 x 25	1-16 x 25 1-20 x 25	1-16 x 25 1-20 x 25	1-16 x 25 1-20 x 25
Shipping Weight	350 lbs.	350 lbs.	350 lbs.	350 lbs.	400 lbs.	400 lbs.	400 lbs.	400 lbs.

Model	NLF-77	NLF-89	NLF-101	NLF-118	NMR-77	NMR-89	NMR-101	NMR-118
B.T.U.H. Input	90,610	104,550	118,490	139,400	90,610	104,550	118,490	139,400
B.T.U.H. Output	77,000	89,000	101,000	118,000	77,000	89,000	101,000	118,000
Firing Rate - USGPH	.65	.75	.85	1.00	.65	.75	.85	1.00
Flue Draft	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.	.02 W.C.
Burner	Aero: HF-US-2X or Beckett: AFG or Carlin: EZ1				Aero: HF-US-2X or Beckett: AFG or Carlin: EZ1			
Nozzle	.65	.75	.85	1.00	.65	.75	.85	1.00
Burner	Riello: R40.3				Riello: R40.3			
Nozzle	.60	.65	.75	.85	.60	.65	.75	.85
CFM at 20" & 50" W.C. Static Pressure	1025	1200	1300	1400	1025	1150	1250	1350
Belted Drive Blower	10"	10"	10"	10"	10"	10"	10"	10"
@ 20" W.C. Static Pressure at 85 Temp. Rise	<ul style="list-style-type: none"> Blower Motor Motor Pulley Fan Pulley 							
@ 50" W.C. Static Pressure at 85 Temp. Rise	<ul style="list-style-type: none"> Blower Motor Fan Pulley 							
Direct Drive Blower	G10-8	G10-8	G10-8	G10-8	G10-8	G10-8	G10-8	G10-8
@ 2 & 5" W.C. S.P. at 85 TR	1025 CFM	1200 CFM	1300 CFM	1400 CFM	1025 CFM	1150 CFM	1250 CFM	1350 CFM
4 Speed Blower Motor	1/2 HP	1/2 HP	1/2 HP	1/2 HP	1/2 HP	1/2 HP	1/2 HP	1/2 HP
AC Rating (tons)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Filter	(2) 16 x 24	(2) 16 x 24	(2) 16 x 24	(2) 16 x 24	(1) 16 x 24 (1) 12 x 24	(1) 16 x 24 (1) 12 x 24	(1) 16 x 24 (1) 12 x 24	(1) 16 x 24 (1) 12 x 24
Shipping Weight	330 lbs.	330 lbs.	330 lbs.	330 lbs.	295 lbs.	295 lbs.	295 lbs.	295 lbs.

Model	NH3-77	NH3-89	NH3-101
B.T.U.H. Input	90,610	104,550	118,490
B.T.U.H. Output	77,000	89,000	101,000
Firing Rate U.S.G.P.H.	.65	.75	.85
Flue Draft	.02 W.C.	.02 W.C.	.02 W.C.
Burner	AERO: HF-US-2X or BECKETT: AFG or CARLIN: EZ-1		
Delevan 70 A or Monarch 70 NS	.65	.75	.85
Burner	RIELLO: 40F3		
Delevan 60 B or Monarch 60 R	.60	.65	.75
CFM at 20" & 50" W.C. Static Pressure	900	1,000	1,100
Blower	9"	9"	9"
Belt Drive Models	<ul style="list-style-type: none"> Blower Motor Motor Pulley 		
@ 20" W.C. Static Pressure	<ul style="list-style-type: none"> Fan Pulley Belt Size 		
@ 50" W.C. Static Pressure	<ul style="list-style-type: none"> Fan Pulley Belt Size 		
Direct Drive	<ul style="list-style-type: none"> Blower Motor 4 Speed Blower Motor AC Rating (tons) Filter (Qty.) Shipping Weight (lbs.) 		

Model	LFR -63	LFR -75	LFR -88	LFR -66	LFR -80	LFR -89	LFR -72	LFR -87	LFR -78	LFR -90
B.T.U.H. Input	71,094	85,034	101,762	75,276	93,398	101,368	85,034	101,762	90,610	104,550
B.T.U.H. Output	63,000	75,000	88,000	66,000	81,000	89,000	73,000	87,000	78,000	90,000
Firing Rate - USGPH	0.51	0.61	0.73	0.54	0.67	0.73	0.61	0.73	0.65	0.75
Flue Draft (W.C.)	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04
Burner	Riello F40 F3 Riello BF3			Beckett AFG 70 MM			Carlin EZ-1		Aero SSV -12-5	
Nozzle	0.40	0.50	0.60	0.40	0.50	0.55	0.50	0.60	0.65	0.75
Direct Drive Blower	10"	10"	10"	10"	10"	10"	10"	10"	10"	10"
CFM at 20" & 50" W.C. at 85 Temp. Rise	750	875	1000	750	875	1000	875	1000	875	1000
4 Speed Blower Motor	1/3 HP	1/3 HP	1/3 HP	1/3 HP	1/3 HP	1/3 HP	1/3 HP	1/3 HP	1/3 HP	1/3 HP
AC Rating (tons)	3	3	3	3	3	3	3	3	3	3
Filter	20 x 25	20 x 25	20 x 25	20 x 25	20 x 25	20 x 25	20 x 25	20 x 25	20 x 25	20 x 25
Shipping Weight (lbs)	250	250	250	250	250	250	250	250	250	250

- LFR, NV3 and NV2 models approved for Sealed Balance Flue (SVS)
- Optional 5 tons available on NV2 model
- NH3-4 Models have 3/4 HP Direct Drive with G12-7 Blower for 4 Tons AC

Essential Skills Application: Oil Burner Mechanic (Technician)

Application #2

Oil Burner Mechanics and Technicians use the skill of Document Use often as they are called upon to understand and interpret drawings related to equipment. The diagram below would be referred to in trying to isolate the problem with a furnace that is not providing heat. They are required to understand and interpret this wiring diagram of a furnace and the working components.

Task: Using the wiring diagram for an oil furnace below, locate the following components of the furnace: Burner Motor, Ignition Transformer, Cad Cell, Fan Motor, Oil Burner Primary Control, Room Thermostat. Following the Wiring Diagram determine which of the components would fail to operate if the furnace problem (fault) was that the limit control switch (limit sw) was stuck open and the burner of the furnace ceased to operate.

(Answer: *Locate the Limit sw and follow the wire. This way you will determine that these are the components that will be non-functioning: Burner Motor, Ignition Transformer, Cad Cell, Oil Burner Primary Control, Room Thermostat*)

