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Outdoor Temperature	Indoor Coil Entering Air Wet Bulb Temperature													
	50	52	54	56	58	60	62	64	66	68	70	72	74	76
50	11	14	16	19	22	25	28	31	34	37	39	42	44	47
55	9	12	14	17	20	23	26	29	32	35	37	40	42	45
60	7	10	12	15	18	21	24	27	30	33	35	38	40	43
65	5	6	10	13	16	19	21	24	27	30	33	36	38	41
70	5	5	7	10	13	16	19	21	24	27	30	33	36	39
75	5	5	5	6	9	12	15	18	21	24	28	31	34	37
80	5	5	5	5	5	8	12	15	18	21	25	28	31	35
85	5	5	5	5	5	6	8	11	15	19	22	26	30	33
90	5	5	5	5	5	5	5	9	13	16	20	24	27	31
95	5	5	5	5	5	5	5	6	10	14	18	22	25	29
100	5	5	5	5	5	5	5	5	8	12	15	20	23	27
105	5	5	5	5	5	5	5	5	5	9	13	17	22	26
110	5	5	5	5	5	5	5	5	5	6	11	15	20	25
115	5	5	5	5	5	5	5	5	5	5	8	14	18	23

Condenser SEER Rating	Typical Subcooling
6 -7	12 - 20
8 - 9	10 - 15
10 - 11	10 - 15
12 - 13	8 - 12
14 - 16	6 - 8

Typical Superheat for TXV

10 to 15 degrees

Acceptable Superheat for High Efficient Units

8 – 28 degrees

Condenser SEER Rating	Typical Cond TD
6 -7	30
8 - 9	25
10 - 11	20
12 - 13	15
14 - 16	10

Required Indoor Airflow Temperature Drop

20%	30%	40%	50%	60%	70%	80%	90%	Relative Humidity
22-25	20-23	18-21	15-19	12-17	11-15	9-14	9-12	Temperature drop

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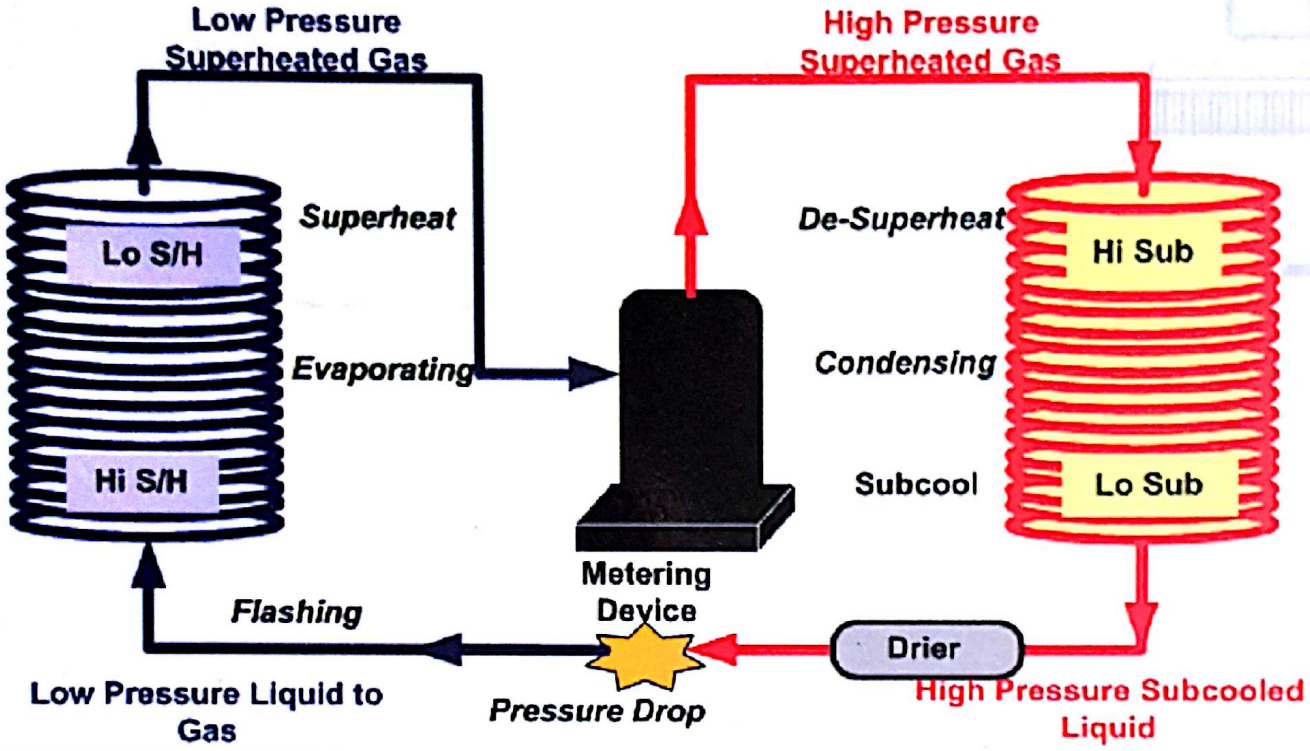

Air Conditioning Checklist ***Unit #*** ____ ***SEER*** ____

Condensing Unit Model #_____ **Serial #**_____
Fixed_____ ----- **OR** ----- **TXV**_____

Determine the Required Readings

Return air Wet Bulb _____ **Relative humidity** _____

Outdoor Temp_____ + ***Req. Cond T.D.***_____ = **Req. Cond Saturation Temp**_____

Req. Superheat_____ ***Req. Subcooling***_____ ***Req. Indoor T.D.***_____

Operating Pressures and Temperatures

Suction Pressure	_____	_____	**Head Pressure**	_____	_____
Suction line Tem	_____	_____	**Cond. Saturation Temp**	_____	_____
-			-		
Evap. Saturation Temp	_____	_____	**Liquid line Temp**	_____	_____
=			=		
Superheat	_____	_____	**Subcooling**	_____	_____

Indoor conditions

Return air Temp	_____	_____	**Beginning weight**	_____	_____
-			-		
Supply air Temp	_____	_____	**Ending Weight**	_____	_____
=			=		
Actual Indoor T.D	_____	_____	**Amount added / recovered**	_____	_____

Refrigerant Log

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Pressure Temperature Chart

Temp. F	Pressure		Temp. F	Pressure	
	R22	R410A		R22	R410A
0	24.0	48.2	33	58.8	103.6
1	24.8	49.5	34	60.1	105.7
2	25.6	50.9	35	61.5	107.9
3	26.5	52.2	36	62.8	110.0
4	27.3	53.6	37	64.2	112.2
5	28.2	55.0	38	65.6	114.4
6	29.1	56.4	39	67.1	116.7
7	30.0	57.9	40	68.5	118.9
8	30.9	59.3	41	70.0	121.2
9	31.8	60.8	42	71.5	123.6
10	32.8	62.3	43	73.0	125.9
11	33.7	63.9	44	74.5	128.3
12	34.7	65.4	45	76.0	130.7
13	35.7	67.0	46	77.6	133.2
14	36.7	68.6	47	79.2	135.6
15	37.7	70.2	48	80.8	138.2
16	38.7	71.9	49	82.4	140.7
17	39.8	73.5	50	84.0	143.3
18	40.9	75.2	55	92.6	156.6
19	41.9	77.0	60	101.6	170.7
20	43.0	78.7	65	111.2	185.7
21	44.1	80.5	70	121.4	201.5
22	45.3	82.3	75	132.2	218.2
23	46.4	84.1	80	143.6	235.9
24	47.6	85.9	85	155.7	254.6
25	48.8	87.8	90	168.4	274.3
26	49.9	89.7	95	181.8	295.0
27	51.2	91.6	100	195.9	316.9
28	52.4	93.5	105	210.8	339.9
29	53.6	95.5	110	226.4	364.1
30	54.9	97.5	115	242.7	389.6
31	56.2	99.5	120	259.9	416.4
32	57.5	101.6	125	277.9	444.5

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Fixed Metering

	Suction Pressure	Head Pressure	Superheat	Subcool	Comp. Amps	Indoor TD
Low charge	↓	↓	↑	↓	↓	↓
Over charge	↑	↑	↓	↑	↑	Norm ↓
Low indoor air flow	↓	Norm ↓	↓	Norm ↑	Norm ↓	↑
Dirty condenser	↑	↑	↓	↓	↑	↓
Mild refrigerant restriction	↓	Norm	↑	Norm ↑	↓	↓
Severe refrigerant restriction	↓	Norm ↑	↑	↓	↓	↓
Oversized piston	Norm ↑	Norm ↓	↓	↓	↓	↓
High R/A temp	↑	↑	↑	Norm ↓	↑	↓

TXV Systems

Underfeed / Restricted Valve Bulb Lost charge	↓	Norm ↑	↑	↑	↑	↓
Overfeed/ Loose Bulb Bulb Uninsulated	↑	↓	↓	↓	↓	↓
Low charge Slightly	Norm	↓	Norm	↓	↓	Norm
Over charge Slightly	Norm	↑	Norm	↑	↑	Norm

$$CFM = \frac{\text{Volts x Amps x 3.413}}{\Delta T \times 1.08} \quad \text{Or} \quad \frac{\text{Cu. Ft. x BTU/cu.ft. x Measured burner eff}}{\Delta T \times 1.08}$$

400 CFM per ton of cooling (Nominal)

12,000 BTU per ton of cooling

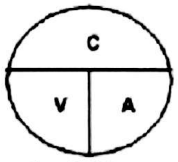
$$\text{Input Cu. Ft.} = \frac{\text{3600 x smallest dial size}}{\text{\# seconds for one revolution}}$$

BTU Sensible Output = CFM X TD X 1.08

Total Heat = (H1 – H2) x 4.5 x CFM

H1 = Return air wet bulb (converted to enthalpy)

H2 = Supply air wet bulb (converted to enthalpy)



C = CFM
V= Velocity FPM
A= Area sq ft

W.B.	Enthalpy	W.B.	Enthalpy
40	15.23	60	26.46
41	15.70	61	27.15
42	16.17	62	27.85
43	16.66	63	28.57
44	17.15	64	29.31
45	17.65	65	30.06
46	18.16	66	30.83
47	18.68	67	31.62
48	19.21	68	32.42
49	19.75	69	33.25
50	20.30	70	34.09
51	20.86	71	34.95
52	21.44	72	35.83
53	22.02	73	36.74
54	22.62	74	38.61
56	23.84	76	39.57
57	24.48	77	40.57
58	25.12	78	41.58
59	25.80	79	42.62

$$\text{Operating Run Capacitance} = \frac{\text{2650 x I (Amps of the start winding)}}{\text{E (Volts across the capacitor}}$$

1 Watt = 3.413 BTU

1 Kilowatt = 3,413 BTUs

746 Watts = 1 Horsepower

Kilo = 1000

Milli = .001