

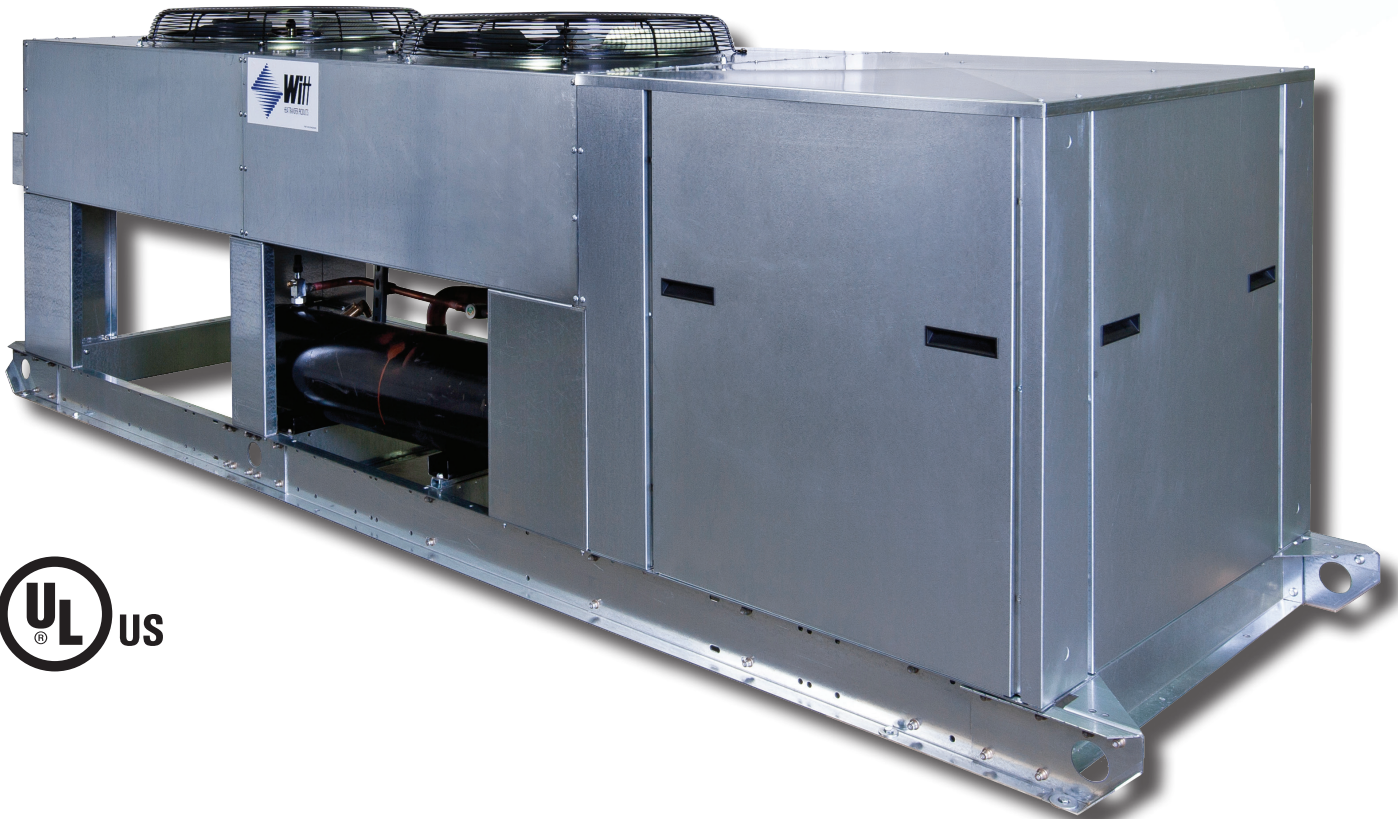


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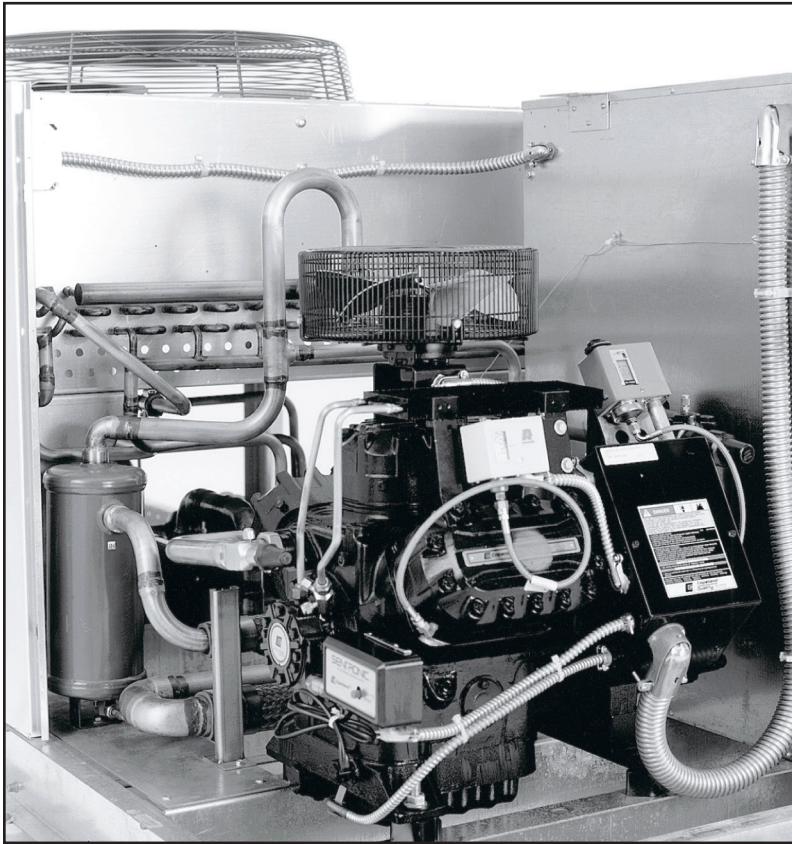
Publication No. WT-WVL-0814A

WV Series

# Air-Cooled Condensing Units 15 through 80 HP

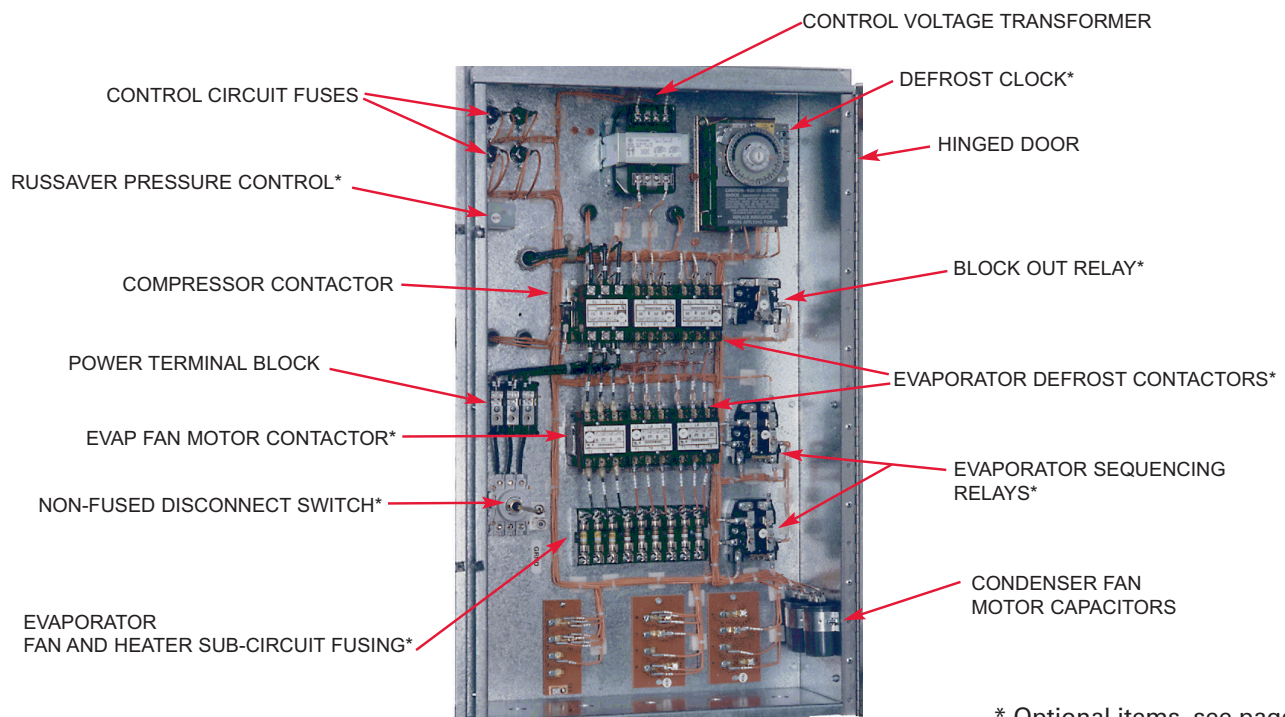


## Air Cooled Condensing Units 15 - 80 HP



The **outdoor housing** of the unit has been designed for the serviceman. Removing only a few screws allows complete removal of the compressor housing top panel, side panel and corner post. This gives the mechanic quick, unrestricted access to the compressor, as well as all controls and components located within the compressor compartment. Or, just a single panel can be removed, depending on the requirements of the service call.

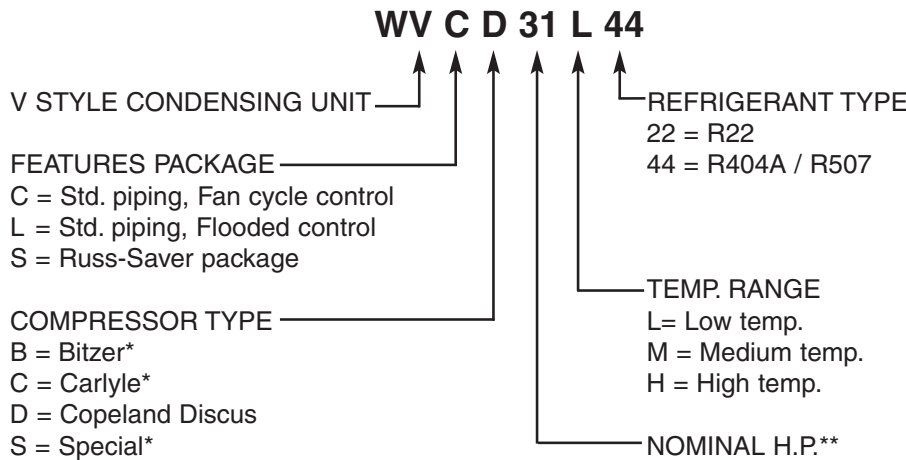
The large control panel has abundant space for the controls you choose. The control layout is done in a logical fashion—easy to understand and work with. Each control and wire is clearly marked with a name or number as shown on the wiring diagram which is permanently affixed to the control panel door.



\* Optional items, see page 3

# Air Cooled Condensing Units 15 - 80 HP

## MODEL NUMBER NOMENCLATURE



NOMINAL COMPRESSOR HP		
SINGLE COMP.	PARALLEL PIPING	DUAL PIPING
25HP	17(2) 7.5 HP	18 (2) 7.5 HP
30HP	21 (2) 10HP	23 (2) 10HP
35HP	24 (2) 12HP	26 (2) 12HP
50HP	31 (2) 15HP	32 (2) 15HP
60HP	44 (2) 22HP	46 (2) 22HP
	51 (2) 25HP	52 (2) 25HP
	54 (2) 27HP	56 (2) 27HP
	61 (2) 30HP	62 (2) 30HP
	71 (2) 35HP	72 (2) 35HP
	81 (2) 40HP	82 (2) 40HP

	FEATURES AT A GLANCE	MODEL		
		VC	VL	VS
<b>ELECTRICAL COMPONENTS</b>	Crankcase heater Oil failure control High - Low pressure control - manual(high)/automatic(low) reset Compressor contactor Control circuit fuses - standard 230/1 Power terminal block	STD	STD	STD
<b>CONDENSER</b>	Copper tubes with Aluminum fins Subcooling circuit Fan motor - with overload protection Fan blade - individually balanced Fan guard - heavy duty resilient wire basket	STD	STD	STD
<b>PIPING COMPONENTS</b>	Suction line vibration eliminator Replaceable core liquid line filter / drier Suction line filter (replaceable core some models) Discharge line vibration eliminator High Pressure control hoses	STD	STD	STD
<b>RECEIVER</b>	Inlet and outlet isolation valves Pressure relief valve	STD	STD	STD
<b>HOUSING</b>	Mill galvanized steel with removable access panels Control panel with hinged door Heavy galvanized steel base rails	STD	STD	STD
<b>LOW AMBIENT CONTROLS</b>	Pressure fan cycling control Flooded condenser Russ-Saver — All ambient energy saver	STD N/A N/A	STD STD N/A	N/A N/A STD
<b>TESTING</b>	UL / CUL listed — all models Leak detection, dielectric and run tests Dry nitrogen holding charge	STD STD STD	STD STD STD	STD STD STD

- OPTIONS:**
- 4 Year extended compressor warranty
  - Air defrost time clock
  - Compressor unloading
  - Copper or coated condenser fins
  - Electric defrost components
  - Evaporator sub circuit fusing
  - Fused or non fused disconnect
  - Heated and insulated receiver

- Hot Gas defrost components
- Liquid line solenoid valve
- Oil Separator
- Crankcase pressure regulator
- Electronic oil safety control
- Stainless steel superhoses
- Suction accumulator

\* Contact factory for details.

## Air Cooled Condensing Units 15 - 80 HP

### WITT-SAVER

The initial cost of quality refrigeration equipment is a substantial investment, but the costs of installation and operation are also formidable. Rising to the challenge, Witt engineers have designed the **WITT-SAVER** system to meet the highest standards of performance and reliability while effectively addressing the problem of these profit-draining costs. These systems are entirely factory pre-selected, consisting of a **WITT-SAVER** condensing unit from this catalog together with the appropriate unit cooler(s), expansion valve(s) and controls.

### REDUCED INSTALLATION COSTS

The installation of a refrigeration system which uses **WITT-SAVER** requires a smaller refrigerant charge than equipment which utilizes other types of low ambient controls. The reduced charge requirements provided by **WITT-SAVER** afford substantial and immediate cost saving benefits.

### REDUCED OPERATING COSTS

The most expensive part of an operating refrigeration system is the cost of energy to run the compressor. Day and night, year after year, the cost of electricity your equipment consumes is **unrelenting**. These dollars are pulled right from your bottom line.

The **WITT-SAVER** system is designed to furnish proper cooling in the summer months, yet still be flexible enough to take advantage of reduced ambient conditions. As the outside air temperature cools, head pressures are allowed to decrease. This results in increased efficiency, less energy usage and substantial savings of your money!

### **WITT-SAVER even saves money during hot weather.**

The sub-cooling loop provided in the condenser of the **WITT-SAVER** condensing unit increases the system efficiency 1/2% for each degree of sub-cooling provided, thereby making the compressor's job easier. Combined with Copeland's energy efficient DISCUS compressors, **WITT-SAVER's** efficiency saves you money during summer operation and even more during the winter months.

# Air Cooled Condensing Units 15 - 80 HP

## WITT-SAVER

### ENERGY SAVINGS CALCULATIONS

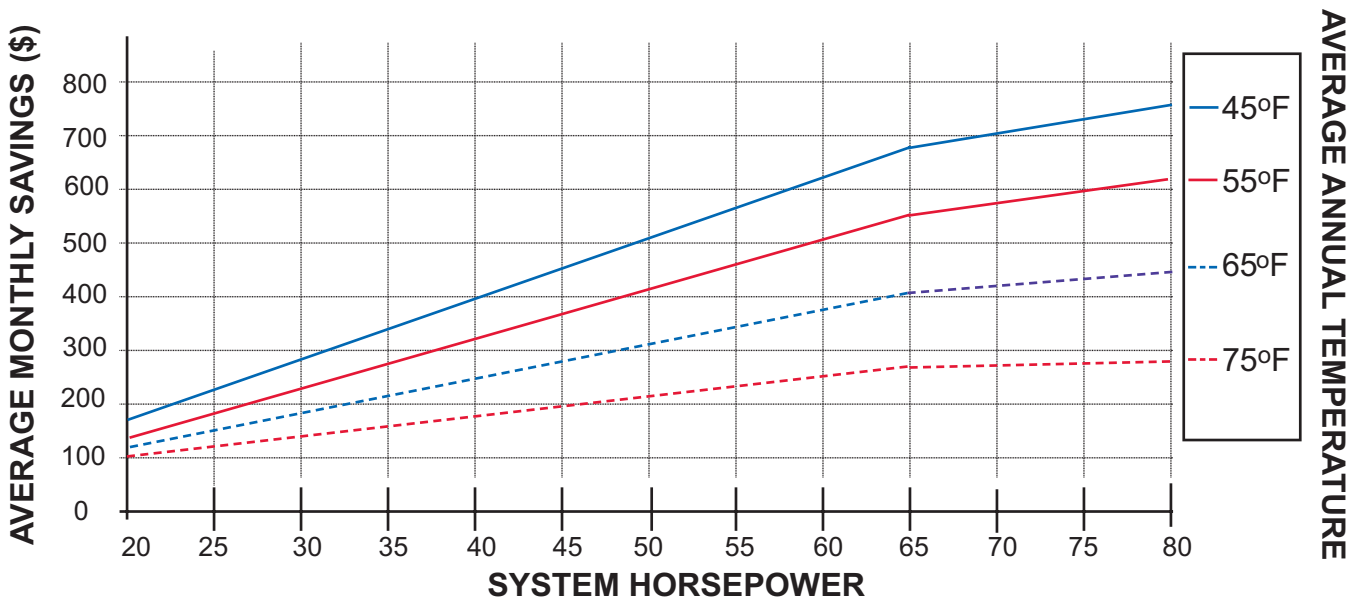
To estimate your average monthly savings:

- 1) Select a WITT-SAVER system that meets your refrigeration requirements.
- 2) Determine the Average Annual Outdoor Air Temperature from the table below.
- 3) Using the Projected Monthly Savings graph, locate the system nominal horsepower at the bottom of the graph.
- 4) Go straight up to the appropriate Annual Average Outdoor Temperature curve, then go horizontally to the left to determine your Estimated Monthly Savings.
- 5) To calculate your Estimated Monthly Savings for energy costs other than \$0.10 KWH, divide the Estimated Monthly Savings by 0.10 and multiply the result by your local electric utility rate.
- 6) To determine your Estimated Yearly Savings, multiply the Estimated Monthly Savings by 12.

### AVERAGE ANNUAL OUTDOOR AIR TEMPERATURE

STATE & STATION	ANNUAL AVG. °F	STATE & STATION	ANNUAL AVG. °F	STATE & STATION	ANNUAL AVG. °F	STATE & STATION	ANNUAL AVG. °F
AL Mobile	70	IA Des Moines	50	NM Albuquerque	60	VT Burlington	45
AK Juneau	40	KS Wichita	55	NY Buffalo	45	VA Richmond	60
AZ Phoenix	70	KY Louisville	55	NY New York	55	WA Seattle	50
AR Little Rock	60	LA New Orleans	70	NC Charlotte	60	WV Charleston	55
CA Los Angeles	60	ME Portland	45	ND Bismarck	45	WI Milwaukee	45
CA San Francisco	55	MD Baltimore	55	OH Cleveland	50	WY Cheyenne	45
CO Denver	50	MA Boston	50	OK Oklahoma City	60	CANADA	
CT Hartford	50	MI Detroit	50	OR Portland	55	ALB Calgary	40
DE Wilmington	55	MN Sault St. Marie	40	PA Philadelphia	50	B.C. Vancouver	50
D.C. Washington	55	MS Jackson	65	RI Providence	50	MAN Winnipeg	35
FL Jacksonville	70	MO St. Louis	55	SC Columbia	65	N.B. St. John	45
FL Miami	75	MT Great Falls	45	SD Sioux Falls	45	N.F. St. John's	40
GA Atlanta	60	NE Omaha	50	TN Nashville	60	N.S. Halifax	45
HI Honolulu	75	NV Reno	50	TX Dallas	65	ONT Toronto	45
ID Boise	50	NH Concord	45	TX El Paso	65	QUE Montreal	45
IL Chicago	50	NJ Atlantic City	55	UT Salt Lake City	50	YUK Dawson	25

### WITT-SAVER PROJECTED MONTHLY SAVINGS @ \$0.10/ KWH



# Air Cooled Condensing Units 15 - 80 HP

## PERFORMANCE DATA – MBH

## High & Medium Temperature

90° F. Ambient

Model WV*D	Compressor		Suction Temperature – °F									
	QTY	Model	+45°	+40°	+35°	+30°	+25°	+20°	+10°	0°	-10°	
<b>SINGLE COMPRESSOR UNITS</b>												
20H22	1	4DB-R20ME	276.6	244.8	223.8	201.7	179.5	160.6	123.8	—	—	
20M44	1	4DB-R20ME	265.8	248.0	230.2	211.6	193.0	176.0	142.8	114.3	92.9	
25H22	1	4DH-R22ME	308.1	274.8	252.1	223.7	203.2	181.9	140.6	—	—	
25M44	1	4DH-R22ME	292.1	268.0	251.8	228.0	212.1	192.9	157.0	125.9	101.7	
30H22	1	4DJ-R28ME	349.0	322.2	289.2	262.8	244.3	221.4	172.2	—	—	
30M44	1	4DJ-R28ME	347.6	317.3	295.0	266.8	246.6	224.1	182.6	146.2	114.8	
35H22	1	6DH-R35ME	448.1	409.0	368.8	333.5	306.2	276.4	216.9	—	—	
35M44	1	6DH-R35ME	443.7	405.0	374.2	339.0	311.7	283.1	231.2	186.0	147.2	
40H22	1	6DJ-R40ME	518.1	479.3	431.0	393.4	363.8	330.1	259.6	—	—	
40M44	1	6DJ-R40ME	513.9	469.8	471.7	430.4	397.1	362.3	297.7	240.9	192.2	
50H22	1	8DP-R56ME	622.8	577.8	529.1	478.6	436.1	394.7	304.7	—	—	
60H22	1	8DS-R67ME	712.4	642.1	555.0	517.0	487.0	441.1	348.4	—	—	

<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>												
17H22 / 18H22*	2	(2) 3DA-R10ME	272.2	248.4	226.3	185.8	167.4	134.3	—	—	—	
17M44 / 18M44*	2	(2) 3DA-R10ME	256.5	233.5	218.4	196.9	183.3	167.0	137.0	115.1	87.5	
21H22 / 23H22*	2	(2) 3DB-R12ME	317.3	290.0	264.5	218.4	197.5	160.3	—	—	—	
21M44 / 23M44*	2	(2) 3DB-R12ME	309.4	282.0	262.6	237.5	220.3	200.9	165.2	133.7	105.7	
24H22 / 26H22*	2	(2) 3DF-R15ME	364.7	334.8	303.1	251.6	226.3	182.5	—	—	—	
24M44 / 26M44*	2	(2) 3DF-R15ME	363.4	333.3	311.2	283.2	263.1	240.6	199.1	162.0	129.4	
31H22 / 32H22*	2	(2) 3DS-R17ME	420.5	385.3	352.0	291.0	263.1	212.2	—	—	—	
31M44 / 32M44*	2	(2) 3DS-R17ME	421.0	385.4	357.8	325.0	300.2	273.7	225.2	182.4	145.2	
41H22 / 42H22*	2	(2) 2DB-R40ME	537.0	487.4	442.3	400.8	359.3	321.1	250.2	—	—	
41M22 / 42M22*	2	(2) 2DB-R40ME	527.8	493.4	459.0	422.3	385.5	351.4	285.8	228.8	185.5	
51H22 / 52H22*	2	(2) 4DH-R22ME	603.9	550.1	501.1	406.8	364.2	281.5	—	—	—	
51M44 / 52M44*	2	(2) 4DH-R22ME	584.1	539.8	503.5	459.9	424.2	385.7	314.0	251.7	203.1	
61H22 / 62H22*	2	(2) 4DJ-R28ME	706.9	646.5	592.9	489.1	443.2	331.3	—	—	—	
61M44 / 62M44*	2	(2) 4DJ-R28ME	695.2	638.6	589.9	537.5	493.1	448.2	365.2	292.4	229.6	
71H22 / 72H22*	2	(2) 6DH-R35ME	901.4	821.0	749.8	614.2	554.7	428.7	—	—	—	
71M44 / 72M44*	2	(2) 6DH-R35ME	888.1	814.6	749.1	682.5	623.9	566.7	462.7	372.2	294.6	
81H22 / 82H22*	2	(2) 6DJ-R40ME	1048.3	960.4	880.9	729.6	661.8	509.2	—	—	—	
81M44 / 82M44*	2	(2) 6DJ-R40ME	1101.7	1017.6	941.5	863.1	792.7	723.1	594.3	480.8	383.7	

\* See Page 3 for Nomenclature

† Total Unit Capacity is shown

# Air Cooled Condensing Units 15 - 80 HP

## PERFORMANCE DATA – MBH

## High & Medium Temperature

95° F. Ambient

Model WV*D	Compressor		Suction Temperature – °F								
	QTY	Model	+45°	+40°	+35°	+30°	+25°	+20°	+10°	0°	-10°
<b>SINGLE COMPRESSOR UNITS</b>											
20H22	1	4DB-R20ME	267.2	236.8	216.5	195.2	173.9	155.7	122.7	—	—
20M44	1	4DB-R20ME	253	236.0	218.9	201.3	183.7	167.1	135.7	108.6	88.1
25H22	1	4DH-R22ME	297.9	266.0	243.8	216.3	196.7	176.1	139.5	—	—
25M44	1	4DH-R22ME	277.6	254.5	239.3	216.5	201.6	183.3	149.2	119.6	96.6
30H22	1	4DJ-R28ME	338.3	312.6	280.1	254.3	236.5	214.3	166.2	—	—
30M44	1	4DJ-R28ME	330.1	301.1	280.1	253.1	234.1	212.8	173.4	138.8	109.0
35H22	1	6DH-R35ME	434.1	397.0	357.3	323.2	297.0	268.2	210.4	—	—
35M44	1	6DH-R35ME	422.1	385.1	356.0	322.3	296.5	269.3	219.9	176.9	140.0
40H22	1	6DJ-R40ME	500.3	464.4	416.8	380.8	352.8	320.0	252.1	—	—
40M44	1	6DJ-R40ME	524.1	482.0	447.9	408.5	377.1	344.0	282.7	228.7	182.5
50H22	1	8DP-R56ME	604.4	561.1	498.7	456.8	422.8	382.5	294.1	—	—
60H22	1	8DS--R67ME	690.7	627.7	572.6	518.5	472.4	427.7	370.1	—	—

<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>											
17H22 / 18H22*	2	(2) 3DA-R10ME	263.2	240.2	218.8	179.6	161.8	129.8	—	—	—
17M44 / 18M44*	2	(2) 3DA-R10ME	243.3	221.3	207.2	186.6	173.9	158.4	129.9	109.2	83.0
21H22 / 23H22*	2	(2) 3DB-R12ME	306.8	280.4	255.8	211.2	191.0	155.0	—	—	—
21M44 / 23M44*	2	(2) 3DB-R12ME	294.1	267.9	249.6	225.5	209.4	190.9	157.0	127.0	100.4
24H22 / 26H22*	2	(2) 3DF-R15ME	354.1	321.0	292.9	244.1	218.4	176.2	—	—	—
24M44 / 26M44*	2	(2) 3DF-R15ME	345.1	316.3	295.5	268.7	249.8	228.4	189.0	153.8	122.8
31H22 / 32H22*	2	(2) 3DS-R17ME	406.6	372.6	340.4	281.4	254.4	205.2	—	—	—
31M44 / 32M44*	2	(2) 3DS-R17ME	400.5	366.5	340.4	309.0	285.6	260.4	214.2	173.5	138.1
41H22 / 42H22*	2	(2) 2DB-R40ME	518.4	470.7	427.2	386.9	346.6	310.1	241.0	—	—
41M22 / 42M22*	2	(2) 2DB-R40ME	503.0	470.0	436.9	401.6	366.2	333.7	271.1	217.1	176.1
51H22 / 52H22*	2	(2) 4DH-R22ME	584.0	532.0	484.6	393.4	352.2	272.2	—	—	—
51M44 / 52M44*	2	(2) 4DH-R22ME	555.2	512.9	478.6	436.9	403.2	366.6	298.4	239.2	193.0
61H22 / 62H22*	2	(2) 4DJ-R28ME	683.6	625.2	573.4	473.0	428.6	320.4	—	—	—
61M44 / 62M44*	2	(2) 4DJ-R28ME	660.2	606.2	560.2	510.2	468.2	425.6	346.8	277.6	218.0
71H22 / 72H22*	2	(2) 6DH-R35ME	871.7	794.0	725.1	594.0	536.4	414.6	—	—	—
71M44 / 72M44*	2	(2) 6DH-R35ME	844.2	774.1	712.0	648.5	593.0	538.6	439.8	353.8	280.0
81H22 / 82H22*	2	(2) 6DJ-R40ME	1013.8	928.8	851.9	705.6	640.0	492.4	—	—	—
81M44 / 82M44*	2	(2) 6DJ-R40ME	1048.2	968.0	895.8	821.0	754.2	688.0	565.4	457.4	365.0

\* See Page 3 for Nomenclature

† Total Unit Capacity is shown

# Air Cooled Condensing Units 15 - 80 HP

## PERFORMANCE DATA — MBH

## High & Medium Temperature

100° F Ambient

Model WV*D	Compressor		Suction Temperature — °F								
	QTY	Model	+45°	+40°	+35°	+30°	+25°	+20°	+10°	0°	-10°
<b>SINGLE COMPRESSOR UNITS</b>											
20H22	1	4DB-R20ME	257.9	228.5	208.8	188.5	168.2	150.7	115.8	—	—
20M44	1	4DB-R20ME	241.3	224.6	207.8	191.5	175.1	159.1	129.2	103.7	83.9
25H22	1	4DH-R22ME	287.5	257.2	235.4	208.8	190.1	170.2	131.3	—	—
25M44	1	4DH-R22ME	264.3	242.1	227.9	206.0	192.0	174.6	142.1	113.9	92.0
30H22	1	4DJ-R28ME	327.4	303.0	270.9	245.9	228.8	207.0	160.2	—	—
30M44	1	4DJ-R28ME	313.6	285.9	266.1	240.3	222.4	202.2	164.8	131.9	103.6
35H22	1	6DH-R35ME	420.2	385.1	345.9	312.9	287.9	260.0	204.1	—	—
35M44	1	6DH-R35ME	402.3	366.8	339.3	307.0	282.6	256.7	209.6	168.6	133.5
40H22	1	6DJ-R40ME	482.4	448.9	402.4	368.0	341.6	310.0	244.6	—	—
40M44	1	6DJ-R40ME	499.0	458.8	426.5	388.8	359.0	327.5	269.2	217.8	173.8
50H22	1	8DP-R56ME	585.7	544.2	483.0	442.2	409.4	370.2	284.8	—	—
60H22	1	8DS-R67ME	669.5	604.8	555.1	502.8	458.5	414.5	326.0	—	—

<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>											
17H22 / 18H22*	2	(2) 3DA-R10ME	254.0	231.8	211.2	188.3	173.4	156.2	125.3	—	—
17M44 / 18M44*	2	(2) 3DA-R10ME	232.2	211.0	197.7	177.9	166.0	151.2	124.0	104.2	79.2
21H22 / 23H22*	2	(2) 3DB-R12ME	296.1	270.6	246.9	221.4	203.9	184.4	149.6	—	—
21M44 / 23M44*	2	(2) 3DB-R12ME	280.0	254.9	237.7	214.6	199.4	181.8	149.5	121.0	95.6
24H22 / 26H22*	2	(2) 3DF-R15ME	342.0	311.7	282.4	255.0	235.5	210.6	169.8	—	—
24M44 / 26M44*	2	(2) 3DF-R15ME	327.9	300.4	280.8	255.1	237.4	217.0	179.6	146.2	116.7
31H22 / 32H22*	2	(2) 3DS-R17ME	392.4	359.6	328.5	296.1	271.6	245.5	198.1	—	—
31M44 / 32M44*	2	(2) 3DS-R17ME	381.7	349.1	324.5	294.4	272.2	248.2	204.2	165.4	131.7
41H22 / 42H22*	2	(2) 2DB-R40ME	499.5	452.9	411.3	372.6	333.8	298.9	232.0	—	—
41M22 / 42M22*	2	(2) 2DB-R40ME	480.7	448.2	415.7	382.2	348.7	317.6	257.9	206.9	167.7
51H22 / 52H22*	2	(2) 4DH-R22ME	563.6	513.4	467.7	419.7	379.7	339.9	262.7	—	—
51M44 / 52M44*	2	(2) 4DH-R22ME	529.2	488.7	456.2	416.3	384.3	349.4	284.4	228.0	184.0
61H22 / 62H22*	2	(2) 4DJ-R28ME	659.7	603.4	553.4	501.0	456.5	413.6	309.2	—	—
61M44 / 62M44*	2	(2) 4DJ-R28ME	629.9	578.2	534.5	486.6	446.7	406.1	330.9	264.9	208.0
71H22 / 72H22*	2	(2) 6DH-R35ME	841.2	766.3	699.8	632.6	573.3	517.7	400.1	—	—
71M44 / 72M44*	2	(2) 6DH-R35ME	804.6	737.6	678.6	617.9	565.2	513.3	419.2	337.2	266.9
81H22 / 82H22*	2	(2) 6DJ-R40ME	978.4	896.3	822.1	747.6	681.0	617.6	475.2	—	—
81M44 / 82M44*	2	(2) 6DJ-R40ME	997.9	921.4	852.9	781.5	718.0	655.0	538.3	435.5	347.5

\* See Page 3 for Nomenclature

† Total Unit Capacity is shown



# Air Cooled Condensing Units 15 - 80 HP

## PERFORMANCE DATA – MBH

## High & Medium Temperature

110° F Ambient

Model WV*D	Compressor		Suction Temperature — °F								
	QTY	Model	+45°	+40°	+35°	+30°	+25°	+20°	+10°	0	-10
<b>SINGLE COMPRESSOR UNITS</b>											
20H22	1	4DBNR20ME	240.0	211.6	192.9	174.6	156.2	140.7	108.4	—	—
20M44	1	4DBNR20ME	205.1	190.6	176.1	162.4	148.6	135.1	109.8	88.5	71.3
25H22	1	4DH-R22ME	266.2	238.8	218.0	193.3	176.6	158.0	121.6	—	—
25M44	1	4DH-R22ME	224.9	205.4	193.9	174.6	163.3	148.5	120.9	96.9	78.3
30H22	1	4DJ-R28ME	305.1	282.9	252.1	228.5	212.9	192.4	148.2	—	—
30M44	1	4DJ-R28ME	269.4	245.0	228.6	205.9	191.1	173.7	141.5	113.3	89.0
35H22	1	6DH-R35ME	392.0	360.8	323.1	292.6	270.0	244.0	192.1	—	—
35M44	1	6DH-R35ME	346.2	315.1	292.0	263.6	243.2	220.9	180.4	145.1	114.8
40H22	1	6DJ-R40ME	445.9	418.0	373.3	342.3	319.2	290.4	230.2	—	—
40M44	1	6DJ-R40ME	427.2	392.2	365.1	332.3	307.4	280.4	230.5	186.4	148.8
50H22	1	8DP-R56ME	547.8	509.6	451.2	413.0	382.7	345.7	365.2	—	—
60H22	1	8DS-R67ME	628.1	569.0	521.0	471.9	430.8	389.5	304.7	—	—

<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>											
17H22 / 18H22*	2	(2) 3DA-R10ME	237.0	216.3	197.1	175.5	161.8	145.8	117.0	—	—
17M44 / 18M44*	2	(2) 3DA-R10ME	198.3	179.6	168.9	151.4	141.8	129.1	105.9	89.0	67.7
21H22 / 23H22*	2	(2) 3DB-R12ME	276.3	252.5	230.4	206.4	190.3	172.1	139.6	—	—
21M44 / 23M44*	2	(2) 3DB-R12ME	238.3	216.3	202.2	182.0	169.7	154.7	127.2	102.9	81.4
24H22 / 26H22*	2	(2) 3DF-R15ME	312.8	287.0	262.3	235.4	216.4	195.3	157.4	—	—
24M44 / 26M44*	2	(2) 3DF-R15ME	281.7	257.5	241.2	218.6	203.9	186.4	154.3	125.6	100.3
31H22 / 32H22*	2	(2) 3DS-R17ME	366.2	335.6	306.5	276.0	253.5	229.1	184.9	—	—
31M44 / 32M44*	2	(2) 3DS-R17ME	328.5	299.9	279.2	300.8	330.3	300.3	244.4	196.0	158.1
41H22 / 42H22*	2	(2) 4DB-R20ME	446.1	419.8	381.2	345.1	309.0	277.3	215.8	—	—
41M44 / 42M44*	2	(2) 4DB-R20ME	414.4	385.6	356.8	328.5	300.2	272.3	220.4	177.4	143.7
51H22 / 52H22*	2	(2) 4DH-R22ME	525.9	479.1	436.4	391.4	354.3	317.2	245.1	—	—
51M44 / 52M44*	2	(2) 4DH-R22ME	454.8	419.4	392.0	357.2	330.3	300.3	244.4	196.0	158.1
61H22 / 62H22*	2	(2) 4DJ-R28ME	615.6	563.0	516.4	467.2	426.0	385.9	288.5	—	—
61M44 / 62M44*	2	(2) 4DJ-R28ME	542.7	497.6	460.5	418.7	384.9	349.9	285.1	228.2	179.2
71H22 / 72H22*	2	(2) 6DH-R35ME	784.9	715.0	653.0	590.0	534.9	483.1	373.3	—	—
71M44 / 72M44*	2	(2) 6DH-R35ME	688.1	630.2	580.3	527.8	483.3	439.0	358.5	288.4	228.2
81H22 / 82H22*	2	(2) 6DJ-R40ME	912.9	836.3	767.1	697.3	635.4	576.3	443.4	—	—
81M44 / 82M44*	2	(2) 6DJ-R40ME	849.1	783.4	725.6	664.3	611.0	557.3	458.0	370.5	295.7

\* See Page 3 for Nomenclature

† Total Unit Capacity is shown

# Air Cooled Condensing Units 15 - 80 HP

## PERFORMANCE DATA – MBH

## Low Temperature

### 90° F. Ambient

Model WV*D	Compressor		Suction Temperature – °F						
	QTY	Model	-5°	-15°	-20°	-25°	-30°	-35°	-40°
<b>SINGLE COMPRESSOR UNITS</b>									
27L22	1	6DH-F93KE	142.8	126.2	111.7	97.2	84.6	72.1	49.0
27L44	1	6DH-F93KE	173.7	143.0	128.8	114.7	102.1	89.4	66.9
30L22	1	6DJ-F11ME	166.7	147.3	130.6	113.9	99.8	85.7	59.4
30L44	1	6DJ-F11ME	200.9	165.0	148.4	131.7	117.0	102.3	77.1
<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>									
44L22 / 46L22*	1	(2) 4DJ-F76KE	239.8	210.0	185.3	160.5	140.2	119.9	82.3
44L44 / 46L44	1	(2) 4DJ-F76KE	274.1	226.9	205.3	183.7	164.9	146.1	113.7
54L22 / 56L22*	1	(2) 6DH-F93KE	285.3	252.4	228.7	205.0	174.5	144.1	98.0
54L44 / 56L44	1	(2) 6DH-F93KE	346.5	285.1	256.9	228.7	203.5	178.3	133.3
61L42 / 62L22	1	(2) 6DJ-F11ME	333.4	294.6	261.2	227.8	199.6	171.4	118.7
61L44 / 62L44	1	(2) 6DJ-F11ME	402.1	330.3	297.0	263.5	234.2	204.8	154.2

### 95° F. Ambient

Model WV*D	Compressor		Suction Temperature – °F						
	QTY	Model	-5°	-15°	-20°	-25°	-30°	-35°	-40°
<b>SINGLE COMPRESSOR UNITS</b>									
27L22	1	6DH-F93KE	136.0	120.3	106.5	92.7	80.7	68.7	46.7
27L44	1	6DH-F93KE	164.8	135.6	122.2	108.8	96.8	84.8	63.4
30L22	1	6DJ-F11ME	158.9	140.4	124.5	108.6	95.2	81.7	56.6
30L44	1	6DJ-F11ME	190.9	156.8	141.0	125.1	111.2	97.2	73.2
<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>									
44L22 / 46L22*	1	(2) 4DJ-F76KE	228.6	200.2	176.6	153.0	134.5	115.7	78.5
44L44 / 46L44	1	(2) 4DJ-F76KE	260.3	215.4	194.9	174.4	156.6	138.7	107.9
54L22 / 56L22*	1	(2) 6DH-F93KE	272.0	240.6	218.0	195.4	166.4	137.4	93.4
54L44 / 56L44	1	(2) 6DH-F93KE	329.6	271.2	244.4	217.6	193.6	169.6	126.8
61L42 / 62L22	1	(2) 6DH-F11ME	317.8	280.8	249.0	217.2	190.3	163.4	113.2
61L44 / 62L44	1	(2) 6DH-F11ME	381.8	313.6	282.0	250.2	222.4	194.4	146.4

\* See Page 3 for Nomenclature

† Total Unit Capacity is shown

# Air Cooled Condensing Units 15 - 80 HP

## PERFORMANCE DATA – MBH

Low Temperature

100° F. Ambient

Model WV*D	Compressor		Suction Temperature – °F						
	QTY	Model	-5°	-15°	-20°	-25°	-30°	-35°	-40°
<b>SINGLE COMPRESSOR UNITS</b>									
27L22	1	6DH-F93KE	129.2	114.3	101.2	88.1	76.7	65.3	44.4
27L44	1	6DH-F93KE	157.3	129.4	116.6	103.8	92.4	80.9	60.5
30L22	1	6DJ-F11ME	151.0	133.4	118.3	103.2	90.4	77.6	53.8
30L44	1	6DJ-F11ME	181.8	149.3	134.3	119.1	105.9	92.6	69.7
<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>									
44L22 / 46L22*	1	(2) 4DJ-F76KE	217.2	190.2	167.8	145.4	127.0	108.6	74.6
44L44 / 46L44	1	(2) 4DJ-F76KE	247.3	204.7	185.2	165.7	148.8	131.8	102.6
54L22 / 56L22*	1	(2) 6DH-F93KE	258.4	228.6	207.1	185.6	131.1	130.5	88.7
54L44 / 56L44	1	(2) 6DH-F93KE	314.2	258.5	233.0	207.4	184.6	161.7	120.9
61L42 / 62L22	1	(2) 6DJ-F11ME	301.9	266.8	236.6	206.3	180.7	155.2	107.5
61L44 / 62L44	1	(2) 6DJ-F11ME	363.5	298.6	268.5	238.2	211.8	185.1	139.4

110° F. Ambient

Model WV*D	Compressor		Suction Temperature – °F						
	QTY	Model	-5°	-15°	-20°	-25°	-30°	-35°	-40°
<b>SINGLE COMPRESSOR UNITS</b>									
27L22	1	6DH-F93KE	122.4	108.3	95.9	83.4	72.6	61.8	42.0
27L44	1	6DH-F93KE	134.4	110.6	99.6	88.7	78.9	69.2	51.7
30L22	1	6DJ-F11ME	143.0	126.4	112.1	97.7	85.6	73.5	50.9
30L44	1	6DJ-F11ME	154.7	127.1	114.3	101.4	90.1	78.8	59.3
<b>TWO COMPRESSOR UNITS - SINGLE AND DUAL CIRCUIT †</b>									
44L22 / 46L22*	1	(2) 4DJ-F76KE	205.7	180.2	159.0	137.7	120.3	102.9	70.7
44L44 / 46L44	1	(2) 4DJ-F76KE	212.5	175.8	159.1	142.4	127.8	113.2	88.1
54L22 / 56L22*	1	(2) 6DH-F93KE	244.8	216.5	196.2	175.9	149.8	123.7	84.1
54L44 / 56L44	1	(2) 6DH-F93KE	270.3	222.4	200.5	178.5	158.8	139.1	104.0
61L42 / 62L22	1	(2) 6DJ-F11ME	268.0	242.0	218.5	195.0	171.0	147.1	101.9
61L44 / 62L44	1	(2) 6DJ-F11ME	311.2	255.6	229.9	204.0	181.3	158.5	119.4

\* See Page 3 for Nomenclature

† Total Unit Capacity is shown

# Air Cooled Condensing Units 15 - 80 HP

## Electrical Data

## Single-Compressor Units

Model Number WV*D	Compressor Data		230/3/60					460/3/60				
	Nom HP	Model Number	Compressor		Cond Fans	Total Unit	MCA†	Compressor		Cond Fans	Total Unit	MCA†
			RLA	LRA	RLA	Amps†		RLA	LRA	RLA	Amps†	
<b>20H22</b>	20	4DB-R20ME	64.7	374	12.8	78.5	94	32.4	187	6.4	39.8	47
<b>20M44</b>	20	4DB-R20ME	64.7	374	12.8	78.5	94	32.4	187	6.4	39.8	47
<b>25H22</b>	25	4DH-R22ME	94.9	428	8.0	103.9	127	47.4	214	6.4	52.4	64
<b>25M44</b>	25	4DH-R22ME	94.9	428	8.0	103.9	127	47.4	214	6.4	52.4	64
<b>27L22</b>	27	6DH-F93KE	72.4	450	12.8	86.2	104	36.2	225	6.4	43.6	52
<b>27L44</b>	27	6DH-F93KE	72.4	450	12.8	86.2	104	36.2	225	6.4	43.6	52
<b>30H22</b>	30	4DJ-R28ME	98.7	470	12.8	111.7	136	49.4	235	6.0	56.4	68
<b>30M44</b>	30	4DJ-R28ME	98.7	470	12.8	111.7	136	49.4	235	6.0	56.4	68
<b>30L22</b>	30	6DJ-F11ME	85.8	470	12.8	99.6	121	42.9	235	6.4	50.3	61
<b>30L44</b>	30	6DJ-F11ME	85.8	470	12.8	99.6	121	42.9	235	6.4	50.3	61
<b>35H22</b>	35	6DH-R35ME	132.1	565	12.0	145.1	178	66.0	283	6.0	73.0	89
<b>35M44</b>	35	6DH-R35ME	132.1	565	12.0	145.1	178	66.0	283	6.0	73.0	89
<b>40H22</b>	40	6DJ-R40ME	142.3	594	12.0	168.9	190	71.2	297	6.0	78.2	95
<b>40M44</b>	40	6DJ-R40ME	142.3	594	12.0	168.9	190	71.2	297	6.0	78.2	95
<b>50H22</b>	50	8DP-R56ME	161.5	1070	25.6	188.1	228	80.8	535	12.8	94.6	114
<b>60H22</b>	60	8DS-R67ME	201.3	1070	25.6	227.9	278	100.6	535	12.8	114.4	139

† Minimum circuit ampacity—Does not include evaporator electrical loads.

\* See Page 3 for Nomenclature

# Air Cooled Condensing Units 15 - 80 HP

## Electrical Data

## Two-Compressor Units

Model Number WV*D	Compressor Data		230/3/60					460/3/60				
	Nom HP	Model Number	Compressor		Cond Fans	Total Unit	MCA	Compressor		Cond Fans	Total Unit	MCA
			RLA	LRA	RLA	Amps†		RLA	LRA	RLA	Amps†	
17H22 / 18H22	15	(2) 3DA-R10ME	73.6	430	12.8	87.4	96	35.8	212	6.4	43.2	47
17M44 / 18M44	15	(2) 3DA-R10ME	73.6	430	12.8	87.4	96	35.8	212	6.4	43.2	47
21H22 / 23H22	20	(2) 3DB-R12ME	78.2	430	12.8	92.0	101	35.8	212	6.4	43.2	47
21M44 / 23M44	20	(2) 3DB-R12ME	78.2	430	12.8	92.0	101	35.8	212	6.4	43.2	47
24H22 / 26H22	24	(2) 3DF-R15ME	86.4	550	12.8	100.2	110	42.4	276	6.4	49.8	55
24M44 / 26M44	24	(2) 3DF-R15ME	86.4	550	12.8	100.2	110	42.4	276	6.4	49.8	55
31H22 / 32H22	30	(2) 3DS-R17ME	107.0	550	19.2	127.2	140	52.1	276	9.6	62.7	69
31M44 / 32M44	30	(2) 3DS-R17ME	107.0	550	19.2	127.2	140	52.1	276	9.6	62.7	69
41H22 / 42H22	40	(2) 4DB-R20ME	129.4	748	25.6	156.0	172	64.8	374	12.8	78.6	86
41M44 / 42M44	40	(2) 4DB-R20ME	129.4	748	25.6	156.0	172	64.8	374	12.8	78.6	86
44L22 / 46L22	44	(2) 4DJ-F76KE	115.4	748	19.2	135.6	150	57.6	374	9.6	68.2	75
44L44 / 46L44	44	(2) 4DJ-F76KE	115.4	748	19.2	135.6	150	57.6	374	9.6	68.2	75
51H22 / 52H22	50	(2) 4DH-R22ME	189.8	856	25.6	216.4	240	94.8	428	12.8	108.6	120
51M44 / 52M44	50	(2) 4DH-R22ME	189.8	856	25.6	216.4	240	94.8	428	12.8	108.6	120
54L22 / 56L22	54	(2) 6DH-F93K4E	144.8	900	19.2	165.0	183	72.4	450	9.6	83.0	92
54L44 / 56L44	54	(2) 6DH-F93K4E	144.8	900	19.2	165.0	183	72.4	450	9.6	83.0	92
61H22 / 62H22	60	(2) 4DJ-R28ME	197.4	940	25.6	244.0	248	98.8	470	12.8	112.6	124
61M44 / 62M44	60	(2) 4DJ-R28ME	197.4	940	25.6	244.0	248	98.8	470	12.8	112.6	124
61L22 / 62L22	60	(2) 6DJ-F11ME	171.6	940	19.2	191.8	213	85.8	470	9.6	96.4	107
61L44 / 62L44	60	(2) 6DJ-F11ME	171.6	940	19.2	191.8	213	85.8	470	9.6	96.4	107
71H22 / 72H22	70	(2) 6DH-R35ME	264.2	1130	38.4	303.6	336	132.0	566	19.2	152.2	168
71M44 / 72M44	70	(2) 6DH-R35ME	264.2	1130	38.4	303.6	336	132.0	566	19.2	152.2	168
81H22 / 82H22	80	(2) 6DJ-R40ME	284.6	1188	38.4	324.0	359	142.6	594	19.2	162.8	180
81M44 / 82M44	80	(2) 6DJ-R40ME	284.6	1188	38.4	324.0	359	142.6	594	19.2	162.8	180

† Minimum circuit ampacity—Does not include evaporator electrical loads.

\* See Page 3 for Nomenclature

# Air Cooled Condensing Units 15 - 80 HP

## Physical Data

Model Number WV*D	Compressor Data		Cond. Fan Qty	Rcvr. Cap. @ 90%	Dimen Drwg.	Dimensional Data					Approx. Ship Wgt. Lbs.
	Total Unit HP	Model				Approx. Overall Dimensions (In.)			Connection Size - ODS		
						L	W	A	Liq.	Suct.	
<b>SINGLE COMPRESSOR MODELS</b>											
20H22	20	4DB-R20ME	2	106	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	1925
20M44	20	4DB-R20ME	2	94	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	1925
25H22	25	4DH-R22ME	2	144	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	2000
25M44	25	4DH-R22ME	2	94	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	2000
27L22	27	6DH-F93KE	2	145	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	2000
27L44	27	6DH-F93KE	2	128	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	2000
30H22	30	4DJ-R28ME	2	182	A	150 3/4	45 3/4	41 1/2	1 1/8	2 1/8	2140
30M44	30	4DJ-R28ME	2	162	A	150 3/4	45 3/4	41 1/2	1 1/8	2 1/8	2140
30L22	30	6DT-F11ME	2	145	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	2065
30L44	30	6DT-F11ME	2	128	A	150 3/4	45 3/4	41 1/2	7/8	2 1/8	2065
35H22	35	6DH-R35ME	3	220	B	198 3/4	45 3/4	41 1/2	1 1/8	2 1/8	2385
35M44	35	6DH-R35ME	3	195	B	198 3/4	45 3/4	41 1/2	1 1/8	2 1/8	2385
40H22	40	6DJ-R40ME	3	295	B	198 3/4	45 3/4	41 1/2	1 1/8	2 1/8	2525
40M44	40	6DJ-R40ME	3	262	B	198 3/4	45 3/4	41 1/2	1 1/8	2 1/8	2525
50H22	50	8DP-R56ME	4	295	E	150 3/4	90 3/4	41 1/2	1 1/8	2 5/8	3500
60H22	60	8DS-R67ME	4	416	E	150 3/4	90 3/4	41 1/2	1 1/8	2 5/8	3710
<b>TWO COMPRESSOR MODELS - SINGLE CIRCUIT (Parallel Compressors)</b>											
17H22	15	(2) 3DA-R10ME	2	144	C	185	45 3/4	75 3/4	7/8	2 1/8	2450
17M44	15	(2) 3DA-R10ME	2	128	C	185	45 3/4	75 3/4	7/8	2 1/8	2450
21H22	20	(2) 3DB-R12ME	2	144	C	185	45 3/4	75 3/4	7/8	2 1/8	2575
21M44	20	(2) 3DB-R12ME	2	128	C	185	45 3/4	75 3/4	7/8	2 1/8	2575
24H22	25	(2) 3DF-R15ME	2	182	C	185	45 3/4	75 3/4	1 1/8	2 1/8	2750
24M44	25	(2) 3DF-R15ME	2	162	C	185	45 3/4	75 3/4	1 1/8	2 1/8	2750
31H22	30	(2) 3DS-R17ME	3	220	D	233	45 3/4	75 3/4	1 1/8	2 1/8	3050
31M44	30	(2) 3DS-R17ME	3	195	D	233	45 3/4	75 3/4	1 1/8	2 1/8	3200
41H22	40	(2) 4DB-R20ME	3	295	C	233	45 3/4	75 3/4	1 1/8	2 1/8	3200
41M44	40	(2) 4DB-R20ME	3	262	C	233	45 3/4	75 3/4	1 1/8	2 1/8	3200
44L22	40	(2) 4DT-F76KE	3	220	D	233	45 3/4	75 3/4	1 1/8	3 1/8	2800
44L44	40	(2) 4DT-F76KE	3	195	D	233	45 3/4	75 3/4	1 1/8	3 1/8	2800
51H22	50	(2) 4DH-R22ME	4	295	E	150 3/4	90 3/4	41 1/2	1 1/8	2 5/8	3500
51M44	50	(2) 4DH-R22ME	4	262	E	150 3/4	90 3/4	41 1/2	1 1/8	2 5/8	3500
54L22	50	(2) 6DH-F93K4E	3	295	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3280
54L44	50	(2) 6DH-F93K4E	3	262	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3280
61H22	60	(2) 4DH-R28ME	4	416	E	150 3/4	90 3/4	41 1/2	1 5/8	2 5/8	3710
61M44	60	(2) 4DH-R28ME	4	370	E	150 3/4	90 3/4	41 1/2	1 5/8	2 5/8	3710
61L22	60	(2) 6DJ-F11ME	3	295	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3580
61L44	60	(2) 6DJ-F11ME	3	262	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3580
71H22	70	(2) 6DH-R35ME	6	416	F	198 3/4	90 3/4	41 1/2	1 5/8	3 1/8	4340
71M44	70	(2) 6DH-R35ME	6	370	F	198 3/4	90 3/4	41 1/2	1 5/8	3 1/8	4340
81H22	80	(2) 6DJ-R40ME	6	500	F	198 3/4	90 3/4	41 1/2	1 5/8	3 1/8	4750
81M44	80	(2) 6DJ-R40ME	6	445	F	198 3/4	90 3/4	41 1/2	1 5/8	3 1/8	4750

\* See Page 3 for Nomenclature

See Pages 15 and 16 for Drawings A thru F

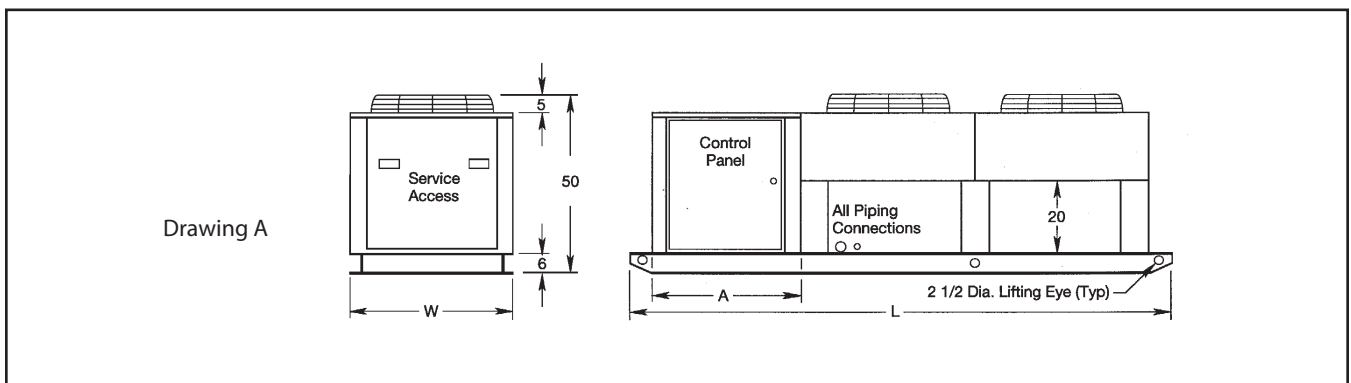
# Air Cooled Condensing Units 15 - 80 HP

## Physical Data

Model Number WV*D	Compressor Data		Cond. Fan Qty	Rcvr. Cap. @ 90%	Dimensional Data						Approx. Ship Wgt. Lbs.
	Total Unit HP	Model			Dimen Drwg.	Approx. Overall Dimensions (In.)			Connection Size - ODS		
						L	W	A	Liq.	Suct.	
TWO COMPRESSOR MODELS - Dual circuit (Separate Compressors)											
18H22	15	(2) 3DA-R10ME	2	(2) 62	C	185	45 3/4	75 3/4	(2) 7/8	(2) 1-3/8	2450
18M44	15	(2) 3DA-R10ME	2	(2) 55	C	185	45 3/4	75 3/4	(2) 7/8	(2) 1-5/8	2450
23H22	20	(2) 3DB-R12ME	2	(2) 62	C	185	45 3/4	75 3/4	(2) 7/8	(2) 1-5/8	2575
23M44	20	(2) 3DB-R12ME	2	(2) 55	C	185	45 3/4	75 3/4	(2) 7/8	(2) 1-5/8	2575
26H22	25	(2) 3DF-R15ME	2	(2) 62	C	185	45 3/4	75 3/4	(2) 7/8	(2) 1-5/8	2650
26M44	25	(2) 3DF-R15ME	2	(2) 55	C	185	45 3/4	75 3/4	(2) 7/8	(2) 1-5/8	2650
32H22	30	(2) 3DS-R17ME	3	(2) 106	D	233	45 3/4	75 3/4	(2) 7/8	(2) 1-5/8	3050
32M44	30	(2) 3DS-R17ME	3	(2) 94	D	233	45 3/4	75 3/4	(2) 7/8	(2) 1-5/8	3050
42H22	40	(2) 4DB-R20ME	3	(2) 106	D	233	45 3/4	75 3/4	(2) 7/8	(2) 2-1/8	3200
42M44	40	(2) 4DB-R20ME	3	(2) 94	D	233	45 3/4	75 3/4	(2) 7/8	(2) 2-1/8	3200
46L22	40	(2) 4DJ-F76KE	3	(2) 106	D	233	45 3/4	75 3/4	1 1/8	3 1/8	2800
46L44	40	(2) 4DJ-F76KE	3	(2) 97	D	233	45 3/4	75 3/4	1 1/8	3 1/8	2800
52H22	50	(2) 4DH-R22ME	4	(2) 144	E	150 3/4	90 3/4	41 1/2	(2) 7/8	(2) 2-1/8	3500
52M44	50	(2) 4DH-R22ME	4	(2) 131	E	150 3/4	90 3/4	41 1/2	1 1/8	2 5/8	3500
56L22	50	(2) 6DH-F93KE	3	(2) 147	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3280
56L44	50	(2) 6DH-F93KE	3	(2) 131	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3280
62H22	60	(2) 4DJ-R28ME	4	(2) 413	E	150 3/4	90 3/4	41 1/2	(2) 1-1/8	(2) 2-1/8	3710
62M44	60	(2) 4DJ-R28ME	4	(2) 185	E	150 3/4	90 3/4	41 1/2	1 5/8	2 5/8	3710
62L22	60	(2) 6DJ-F11ME	3	(2) 147	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3580
62L44	60	(2) 6DJ-F11ME	3	(2) 131	D	233	45 3/4	75 3/4	1 1/8	3 1/8	3580
72H22	70	(2) 6DH-R35ME	6	(2) 413	F	198 3/4	90 3/4	41 1/2	(2) 1-1/8	(2) 2-1/8	4340
72M44	70	(2) 6DH-R35ME	6	(2) 185	F	198 3/4	90 3/4	41 1/2	1 5/8	3 1/8	4340
82H22	80	(2) 6DJ-R40ME	6	(2) 250	F	198 3/4	90 3/4	41 1/2	(2) 1-1/8	(2) 2-1/8	4750
82M44	80	(2) 6DJ-R40ME	6	(2) 222	F	198 3/4	90 3/4	41 1/2	1 5/8	3 1/8	4750

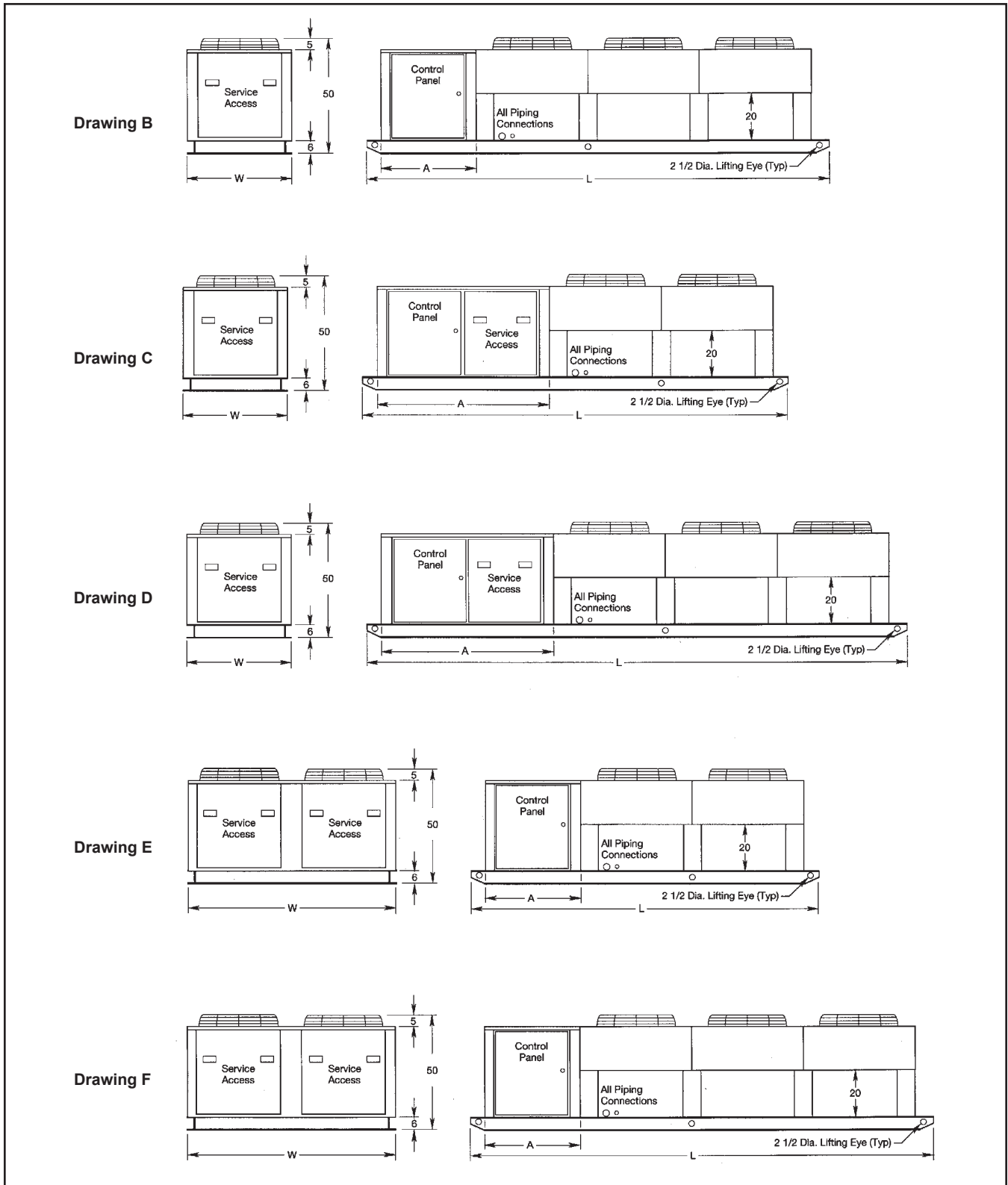
\* See Page 3 for Nomenclature

See Pages 15 and 16 for Drawings A thru F



# Air Cooled Condensing Units 15 - 80 HP

## Dimensional Drawings



\* All dimensions are in inches.

Due to continuing product development, specifications are subject to change without notice.

