



# YCWS (HFC-407C) 50 HZ WATER COOLED LIQUID CHILLERS

INSTALLATION, OPERATION AND  
MAINTENANCE

New Release

Form 201.24-NM2.1 (202)

## YCWS WATER COOLED LIQUID CHILLERS YCWS0313SB – 0663SB (ADDENDUM FOR HFC-407C MODELS)



00546VIP

**(267 kW THROUGH 735 kW)**

50 HERTZ  
STYLE B  
REFRIGERANT TYPE: HFC-407C



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*This addendum addresses only specification changes pertaining to YCWS units using HFC-407C as a refrigerant. For all other information, refer to Form 201.24-NM2. Please note that electrical data and motor protection dip switch settings are different between R22 and HFC-407C models and that information is contained in this addendum.*



*Units using HFC-407C are shipped with a 10 lb. (4.5 Kg) holding charge in the refrigerant system. The system charge must be added during unit installation.*

## NOMENCLATURE

# YCWS0313SB50YBA

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	
BASE PRODUCT TYPE				NOMINAL CAPACITY				UNIT DESIGNATOR	REFRIGERANT	VOLTAGE/STARTER			DESIGN / DEVELOPMENT LEVEL		
Y	C	W	S	#	#	#	#	S	B	5	0	Y	B	A	
: YORK : Chiller : Water Cooled S : Screw				kW				Standard Unit	:R-407C	:Wye-Delta			:Design Series F :Engineering Change or PIN Level		
				: 0313: 0373: 0423 : 0503: 0563: 0613 : 0663											

## MICROPANEL DIP SWITCH SETTINGS

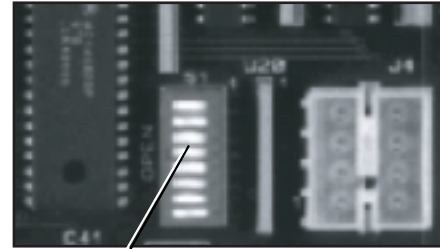
Refer to 201.24-NM2, Section 4.7 for Micropanel dip switch settings, **except for Switch 3**. Follow the instructions below to ensure Switch 3 is properly set for HFC-407C operation.

### SWITCH 3: Refrigerant

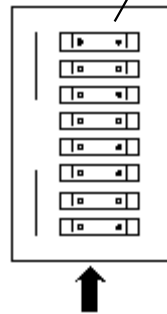
Open: = 407C



*The R-407C mode (switch open) MUST be selected. The closed position MUST NOT be selected. Incorrect selection of this switch may cause serious damage to the chiller.*



LD06630



“OPEN” Position:  
Left side of switch  
pushed in

“CLOSED” Position:  
Right side of switch  
pushed in

ENLARGED PHOTOGRAPH OF DIP SWITCHES ON MICROPROCESSOR BOARD

## MOTOR PROTECTION DIP SWITCH SETTINGS

### STAR DELTA OPEN TRANSITION STARTING – 380-415V/50 HZ

YCWS	SYSTEM	SYSX MOTOR CURRENT = 100% FLA	SYSXMP INPUT VOLTAGE = 125% FLA	107% FLA	AMP SET	DIP SWITCH SETTINGS ON							
						-FMP LEFT = 1				RIGHT = 0			
						1	6	3	1	8	4	2	1
0313	1 & 2	65	.95	70	40	0	0	1	0	1	0	0	0
0373	1	65	.95	70	40	0	0	1	0	1	0	0	0
	2	90	1.31	96	56	0	0	1	1	1	0	0	0
0423	1 & 2	90	1.31	96	56	0	0	1	1	1	0	0	0
0503	1	90	1.31	96	56	0	0	1	1	1	0	0	0
	2	108	1.57	116	67	0	1	0	0	0	0	1	1
0563	1 & 2	108	1.57	116	67	0	1	0	0	0	0	1	1
0613	1	108	1.57	116	67	0	1	0	0	0	0	1	1
	2	130	1.89	139	80	0	1	0	1	0	0	0	0
0663	1 & 2	132	1.92	141	81	0	1	0	1	0	0	0	1

## ELECTRICAL DATA

### MULTI POINT POWER SUPPLY (SEE 201.24-NM2, FIG. 12, PAGE 30)

(Each of the two field provided power supply circuits individually protected with branch circuit protection. Field connections to factory provided Terminal Block (std), Non-Fused Disconnects (opt) or individual system Circuit Breakers (opt) in each of the two motor control centers.)

SYSTEM #1							
CHILLER MODELS	VOLT CODE HZ	MIN <sup>(1)</sup> CIR. MCA	MIN NF DISC SW	MIN DUAL FUSE	MAX DUAL FUSE MAX CB	RLA	Y-D LRA
YCWS0313SB	-50	100	82	100	125	59	183
YCWS0373SB		100	82	100	125	58	183
YCWS0423SB		150	113	150	200	79	241
YCWS0503SB		150	113	150	200	76	241
YCWS0563SB		150	135	175	225	97	294
YCWS0613SB		150	135	175	225	97	294
YCWS0663SB		200	165	200	250	117	294

## INCOMING WIRE RANGE SELECTIONS

### MULTI POINT WIRING SYSTEM #1

CHILLER MODEL	VOLT CODE	TERM BLK	TERMINAL BLK CUSTOMER GROUND	N-F DISC	N-F DISC SW CUSTOMER GROUND	CKT. BRKER	CKT.BRKR CUSTOMER GROUND
YCWS0313SB	-50	#6 -1/0 AWG	# 8 - 2/0 AWG	# 14 - 1/0 AWG	# 8 - 2/0 AWG	#14 - 1/0 AWG	# 8 - 2/0 AWG
YCWS0373SB		#6 -1/0 AWG	# 8 - 2/0 AWG	# 14 - 1/0 AWG	# 8 - 2/0 AWG	#14 - 1/0 AWG	# 8 - 2/0 AWG
YCWS0423SB		#6 -1/0 AWG	# 8 - 2/0 AWG	#4 - 300 KCM	# 8 - 2/0 AWG	#4 - 300 KCM	# 8 - 2/0 AWG
YCWS0503SB		#6 -1/0 AWG	# 8 - 2/0 AWG	#4 - 300 KCM	# 8 - 2/0 AWG	#4 - 300 KCM	# 8 - 2/0 AWG
YCWS0563SB		#2 -4/0 AWG	# 8 - 2/0 AWG	#4 - 300 KCM	# 8 - 2/0 AWG	#4 - 300 KCM	# 6 - 1/0 AWG
YCWS0613SB		#2 -4/0 AWG	# 8 - 2/0 AWG	#4 - 300 KCM	# 8 - 2/0 AWG	#4 - 300 KCM	# 6 - 1/0 AWG
YCWS0663SB		#2 -4/0 AWG	# 8 - 2/0 AWG	#4 - 300 KCM	# 6 - 1/0 AWG	#4 - 300 KCM	# 6 - 1/0 AWG

## ELECTRICAL DATA

SYSTEM #2							
CHILLER MODELS	VOLT CODE HZ	MIN <sup>(1)</sup> CIR. MCA	MIN NF DISC SW	MIN DUAL FUSE	MAX DUAL FUSE MAX CB	RLA	Y-D LRA
YCWS0313SB	-50	100	82	100	125	59	183
YCWS0373SB		150	113	150	200	77	241
YCWS0423SB		150	113	150	200	79	241
YCWS0503SB		150	135	175	225	98	294
YCWS0563SB		150	135	175	225	97	294
YCWS0613SB		150	163	200	250	118	294
YCWS0663SB		200	165	200	250	117	294

### INCOMING WIRE RANGE SELECTIONS (CONT.) MULTI POINT WIRING SYSTEM #2

CHILLER MODEL	VOLT CODE	TERM BLK	TERMINAL BLK CUSTOMER GROUND	N-F DISC	N-F DISC SW CUSTOMER GROUND	CKT. BRKER	CKT.BRKR CUSTOMER GROUND
YCWS0313SB	-50	#6 - 1/0 AWG	#8 - 2/0 AWG	#14 - 1/0 AWG	#8 - 2/0 AWG	#14 - 1/0 AWG	#8 - 2/0 AWG
YCWS0373SB		#6 - 1/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#8 - 2/0 AWG	#4 - 300 KCM	#8 - 2/0 AWG
YCWS0423SB		#6 - 1/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#8 - 2/0 AWG	#4 - 300 KCM	#8 - 2/0 AWG
YCWS0503SB		#2 - 4/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#8 - 2/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG
YCWS0563SB		#2 - 4/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#8 - 2/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG
YCWS0613SB		#2 - 4/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#8 - 2/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG
YCWS0663SB		#2 - 4/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG

## SINGLE-POINT POWER SUPPLY (SEE 201.24-NM2 FIGS. 13 & 14, PAGE 30 & 31)

(One field provided power supply circuit to the control panel. Field connections to factory provided Terminal Blocks (opt) or Non-Fused Disconnect (opt). Individual system Circuit Breakers, Non-Fused Disconnects or Class 'J' Fuse/Fuse Blocks in each motor control center.)

CHILLER MODELS	VOLT CODE HZ	MIN <sup>(1)</sup> CIR. MCA	MIN N/F DISC SW	MIN DUAL FUSE	MAX DUAL FUSE MAX CB	SYSTEM #1		SYSTEM #2	
						RLA	Y-D LRA	RLA	Y-D LRA
YCWS0313SB	-50	146	150	175	200	59	183	59	183
YCWS0373SB		178	200	225	250	58	183	77	241
YCWS0423SB		203	250	250	250	79	241	79	241
YCWS0503SB		225	250	300	300	76	241	98	294
YCWS0563SB		243	250	300	350	97	294	97	294
YCWS0613SB		271	400	350	400	97	294	118	294
YCWS0663SB		297	400	350	400	117	294	117	294

## INCOMING WIRE RANGE SELECTIONS SINGLE-POINT POWER SUPPLY

SYSTEM #1 & SYSTEM #2					
CHILLER MODEL	VOLT CODE HZ	TERM BLK	TERM BLK CUST. GROUND	N/F DISC SW	N/F DISC SW CUST. GROUND
YCWS0313SB	-50	#2 - 4/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG
YCWS0373SB		#2 - 4/0 AWG	#8 - 2/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG
YCWS0423SB		#2 - 300 KCM	#6 - 1/0 AWG	#4 - 300 KCM	#6 - 1/0 AWG
YCWS0503SB		#2 - 300 KCM	#6 - 1/0 AWG	#6 - 350 KCM	#6 - 1/0 AWG
YCWS0563SB		#2 - 300 KCM	#6 - 1/0 AWG	250 - 500 KCM	#4 - 3/0 AWG
YCWS0613SB		#2/0 - 500 KCM	#4 - 3/0 AWG	250 - 500 KCM	#4 - 3/0 AWG
YCWS0663SB		#2/0 - 500 KCM	#4 - 3/0 AWG	250 - 500 KCM	#4 - 3/0 AWG

### NOTES: (for Electrical Data on pages 4, 5 & 6)

- Minimum Circuit Ampacity (MCA) is based on 125% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit, per N.E.C. Article 430-24. If the optional Factory-mounted Control Transformer is provided, add the following MCA values to the electrical tables for the system providing power to the transformer: -50, add 5 amps;
- The minimum recommended disconnect switch is based on 115% of the rated load amps for all loads included in the circuit, per N.E.C. Article 440.
- Minimum fuse size is based upon 150% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit to avoid nuisance trips at start-up due to lock rotor amps. It is not recommended in applications where brown outs, frequent starting and stopping of the unit, and/or operation at ambient temperatures in excess of 35°C (95°F) is anticipated.
- Maximum fuse size is based upon 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit, per N.E.C. Article 440-22.
- Circuit breakers supplied by third party vendors must be certified by local electrical standards. Maximum size is based on 225% of the rated load amps for the largest motor plus 100% of the rated load amps for all other loads included in the circuit.
- The "INCOMING WIRE RANGE" is the minimum and maximum wire size that can be accommodated by the unit wiring lugs. The (2) preceding the wire range indicates the number of termination points available per phase of the wire range specified. Actual wire size and number of wires per phase must be determined based on the National Electrical Code, using copper connectors only. Field wiring must also comply with local codes.
- A ground lug is provided for each compressor system to accommodate a field grounding conductor per N.E.C. Table 250-95. A control circuit grounding lug is also supplied.
- The supplied disconnect is a "Disconnecting Means" as defined in the N.E.C. 100, and is intended for isolating the unit for the available power supply to perform maintenance and troubleshooting. This disconnect is not intended to be a Load Break Device.
- Field Wiring by others which complies to the National Electrical Code & Local Codes.

# PHYSICAL DATA

## SI

MODEL YCWS	0313SB	0373SB	0423SB	0503SB	0563SB	0613SB	0663SB
<b>General Unit Data</b>							
Nominal Unit Capacity (kW)	264.0	317.8	375.8	443.4	501.3	545.4	587.0
Number of Independent Refrigerant Circuits	2	2	2	2	2	2	2
Refrigerant Charge, R-407C, Ckt 1/Ckt. 2 (kgs.)	36.3/36.3	36.3/47.6	47.6/47.6	47.6/52.2	52.2/52.2	52.2/59.0	59.0/59.0
Oil Charge, Ckt. 1/Ckt. 2, (l)	7.6/7.6	7.6/15.1	15.1/15.1	15.1/15.1	15.1/15.1	15.1/15.1	15.1/15.1
Shipping Weight (kg.)	2525.6	2780.1	2879.4	3365.2	3426.4	3805.2	3858.3
Operating Weight (kg.)	2758.0	3098.0	3249.0	3801.0	3862.0	4268.0	4321.0
<b>Compressors, Semi-Hermetic Twin Screw</b>							
Quantity per Chiller	2	2	2	2	2	2	2
Nominal Size, Ckt. 1/Ckt. 2 kW	147.6/147.6	147.6/217.9	317.9/317.9	217.9/274.1	274.1/274.1	274.1/333.9	333.9/333.9
<b>Condenser - Code</b>							
	<b>D</b>	<b>D</b>	<b>D</b>	<b>F</b>	<b>F</b>	<b>H</b>	<b>H</b>
Water Volume (l)	98.4	98.4	98.4	106.0	106.0	113.6	113.6
Maximum Water Side Pressure (barg)	10.3	10.3	10.3	10.3	10.3	10.3	10.3
Maximum Refrigerant Side Pressure (barg)	22.8	22.8	22.8	22.8	22.8	22.8	22.8
Maximum Condenser Water Flow Rate (l/s)	42.9	42.9	42.9	50.5	50.5	75.7	75.7
Minimum Condenser Water Flow Rate (l/s)	11.7	11.7	11.7	18.0	18.0	18.9	18.9
Water Nozzle Connection Size, (inches)	4	4	4	5	5	6	6
<b>Evaporator, Direct Expansion - Code</b>							
	<b>E</b>	<b>H</b>	<b>H</b>	<b>K</b>	<b>K</b>	<b>M</b>	<b>M</b>
Water Volume (l.)	143.8	181.7	181.7	227.1	227.1	265.0	265.0
Maximum Water Side Pressure (barg)	10.3	10.3	10.3	10.3	10.3	10.3	10.3
Maximum Refrigerant Side Pressure (barg)	16.2	16.2	16.2	16.2	16.2	16.2	16.2
Maximum Evaporator Water Flow Rate (l/s)	12.3	8.8	8.8	15.5	15.5	19.9	19.9
Minimum Evaporator Water Flow Rate (l/s)	33.7	33.7	33.7	43.9	43.9	50.7	50.7
Water Nozzle Connection Size, (inches)	6	8	8	8	8	8	8

