

INSTRUCTIONS



Carrier

A United Technologies Company

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99TA509609 (for RCD use only)

Instruction Sheet Number: **99TA509609**

Description: COMPRESSOR PROTECTION BOARD CONVERSION KIT

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Part Number: 30HX660012, 30HX660013

SAFETY CONSIDERATIONS

Installing, starting up and servicing air-conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location.

Only trained, qualified installers and service technicians should install, start up, and service this equipment. When working on the equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses and work gloves.



WARNING

To avoid possible electrical shock and personal injury, all power to the unit must be disconnected before working on the unit. Tag all disconnects to alert others that the unit is being worked on.

Introduction

The CPM (Compressor Protection Module) conversion kit is designed to replace the CPM board (Carrier P/N HN67LM100) on 30HXC, 30HXA and 30GX units with CCP board (Comfortlink Compressor Protection Board, Carrier P/N HN67LM103). The supplier of the CPM board has discontinued production. The CCP board is the same as the CPM board in that it monitors the high-pressure status, motor running current and temperature for each compressor. Both the CPM and CCP board controls the motor cooling solenoid valve, oil solenoid valve and compressor contactor. However, CPM board only controls one compressor while the CCP board controls up to two compressors. Figure 1 and 2 shows the CPM and CCP boards.



Figure1 Compressor Protection Module (CPM) - Original HN67LM100



Figure 2 Comfortlink Compressor Protection (CCP) Replacement Part – HN67LM103

A diagram of the CCP board is shown in Fig. 3. The address for each CCP board is set using DIP (Dual In-line Package) switches. For CCP1 (Compressor A1 and B1), DIP switch 1 should be set to OFF (for SIO communication). Switches 2, 3 and 4 should be set to OFF. For CCP2 (compressor A2), switch 1 and 2 should be set to OFF. Switch 3 and 4 should be set to ON. See table 1 for DIP switch setting and table 2 for board connections. The CCP has a reset button located between the DIP switch and the J10 connector.

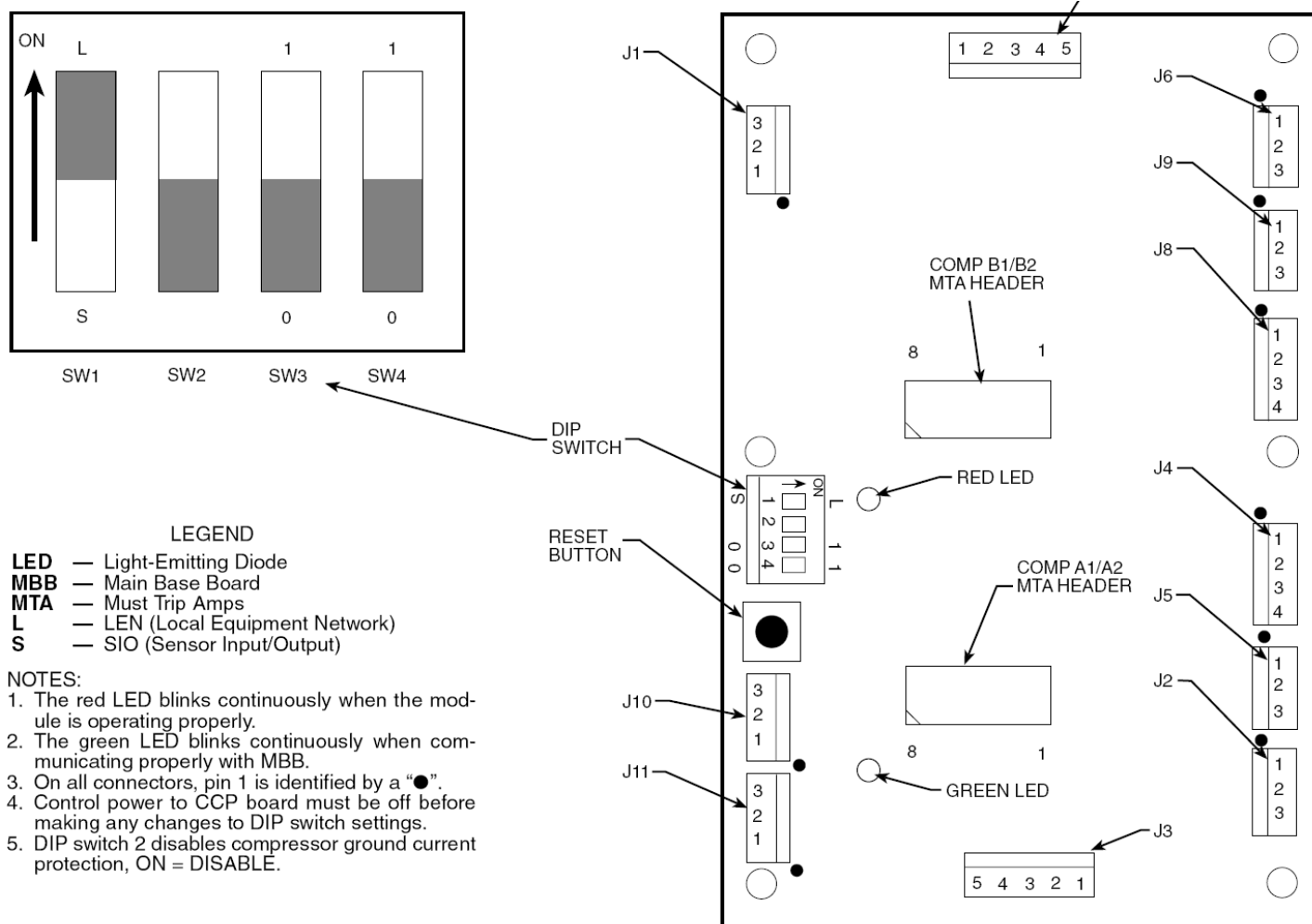


Fig. 3 Comfortlink Compressor Protection (CCP) Board

Table 1– CCP Address DIP Switch Settings

UNIT	CCP1				CCP2			
	1	2	3	4	1	2	3	4
30HXC076-186, 30HXA076-186, 30GX080-176	OFF (S)	OFF	OFF (0)	OFF (0)	-	-	-	-
30HXC206-271, 30HXA206-271	OFF (S)	OFF	OFF (0)	OFF (0)	OFF (S)	OFF	ON (1)	ON (1)

The CCP board communicates on the COMM3 communication bus to the PSIO module. Proper operation of the CCP board can be verified by observing the 2 LEDs located on the board. The red LED blinks at a rate of once every 1 to 2 seconds when the module is powered and operating correctly. If the red LED blinks at a rate of once every 0.5 second, the module fails self diagnostic tests. The green LED blinks when the module is satisfactorily communicating with the PSIO1.

Table 2 – Comfortlink Compressor Protection (CCP) Board Plug Connections

CCP PLUG	DESCRIPTION
J1	24VAC Power Input
J2, J6	Compressor Contactor (s)
J3, J7	High Pressure Switch, Oil and Motor Cooling Solenoids
J4, J8	Current Sensor Input
J5, J9	Compressor Motor Temperature Input
J10, J11	Communication Connections

The PSIO1 will generate an alert when it receives an alarm input from the CCP. The alert is generated in a y.xx format and can be viewed on HSIO-II.

The CCP board has a reset button which when pressed (for a minimum of 1 second) then released will clear Faults. Pressing this button will NOT cause the module to reset or turn off any of its outputs so a tripped compressor can be reset without affecting the operation of other compressors on the board.

The high pressure switch is wired in series with the relay coils of the 8 relays on the CCP. If this switch opens during operation, all relays on the CCP are de-energized and the compressor is stopped. The failure is reported to the PSIO1 and the processor module locks off the compressor from restarting until the alarm is manually reset via HSIO-II. Refer to Controls, Start-up, Operation, Service and Troubleshooting, form 30G,H-5T for additional information.

Check each item for shipping damage. If any damage is found, file a claim with the shipping agent immediately. If any item is missing or appears to be wrong, notify your Carrier distributor.

Table 3A

Kit P/N	Item No.	Item Name	Carrier P/N	Qty.
30HX660012	1	Wiring Harness	30HX404279	1
For two compressor unit One Kit per Unit	2	CCP Board	HN67LM103	1
	3	Current Toroid	See Compressor MTA Punch Outs Table for P/N	2
	4	MTA Header w/removal tool	30GB660001*	2
	5	Instruction Sheet	99TA509609	1
	6	24V Control Schematic Label	30HX504277	1
	7	115V Control Schematic Label	30HX504280	1
	8	Female Quick Connector	HY60AM065	3
	9	Male Quick Connector	HY69DS045	3

Table 3B

Kit P/N	Item No.	Item Name	Carrier P/N	Qty.
30HX660013	1	Wiring Harness	30HX404276	1
For three compressor unit One Kit per Unit**	2	CCP Board	HN67LM103	2
	3	Current Toroid	See Compressor MTA Punch Outs Table for P/N	3
	4	MTA Header w/removal tool	30GB660001*	3
	5	Instruction Sheet	99TA509609	1
	6	24V Control Schematic Label	30HX504277	1
	7	115V Control Schematic Label	30HX504278	1
	8	Female Quick Connector	HY60AM065	4
	9	Male Quick Connector	HY69DS045	4

*Note: Needs to be punched out for the compressor it is for. See Compressor MTA Punch Outs Table at the end of the instruction sheet.

**Note: If 30HX660013 kit is being used for a (3) compressor 30GX unit, an additional harness must be ordered, RCD Part# 30GX660009.

INSTALLATION

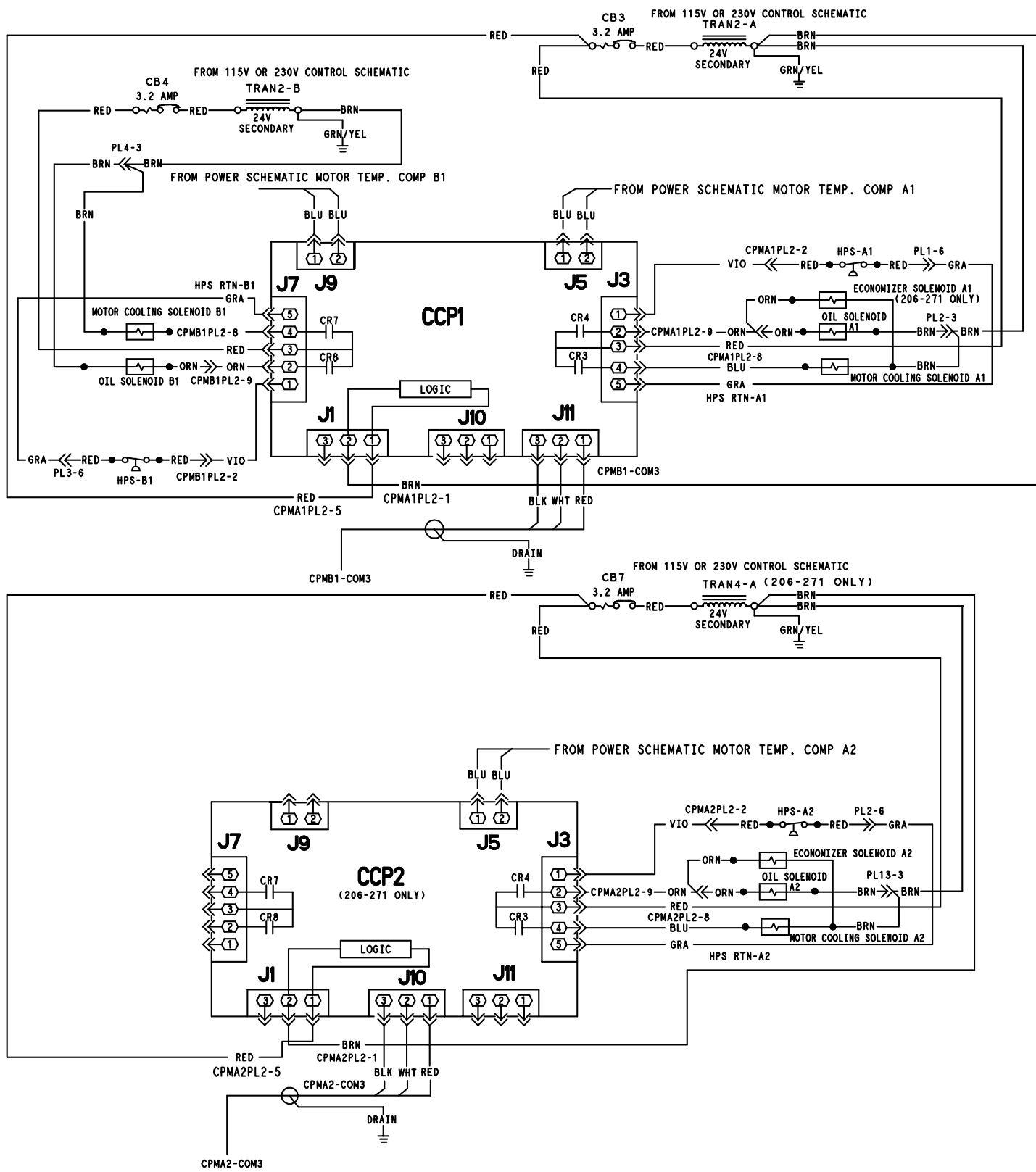
1. Check that all power to the unit is off. Carefully remove all wires from defective module by unplugging the connectors.
2. Remove black/yellow/blue wire from L1/L2/L3 on the board to Fuse4/5/6. Remove CPMA1 from the control box by removing its mounting screws. Save the screws for later use.
3. Follow the same procedure to remove CPMB1 from the control box.

4. Follow the same procedure to remove CPMA2 from the control box.
5. Disconnect power wire from TB1A and remove existing Current Toroid for compressor A1/B1/A2.
6. Remove overload relay OL-A1, OL-B1 and OL-A2. Connect wire marked 95 with wire marked 96.
7. Using Configuration Header Punch Outs and Overload Setting table, configure MTA header (HK35AZ001) for compressor A1, B1 and A2.
8. Set DIP switch on all CCP boards per table 1.
9. Refer to the wiring diagram in appendix A and B for the following wiring.

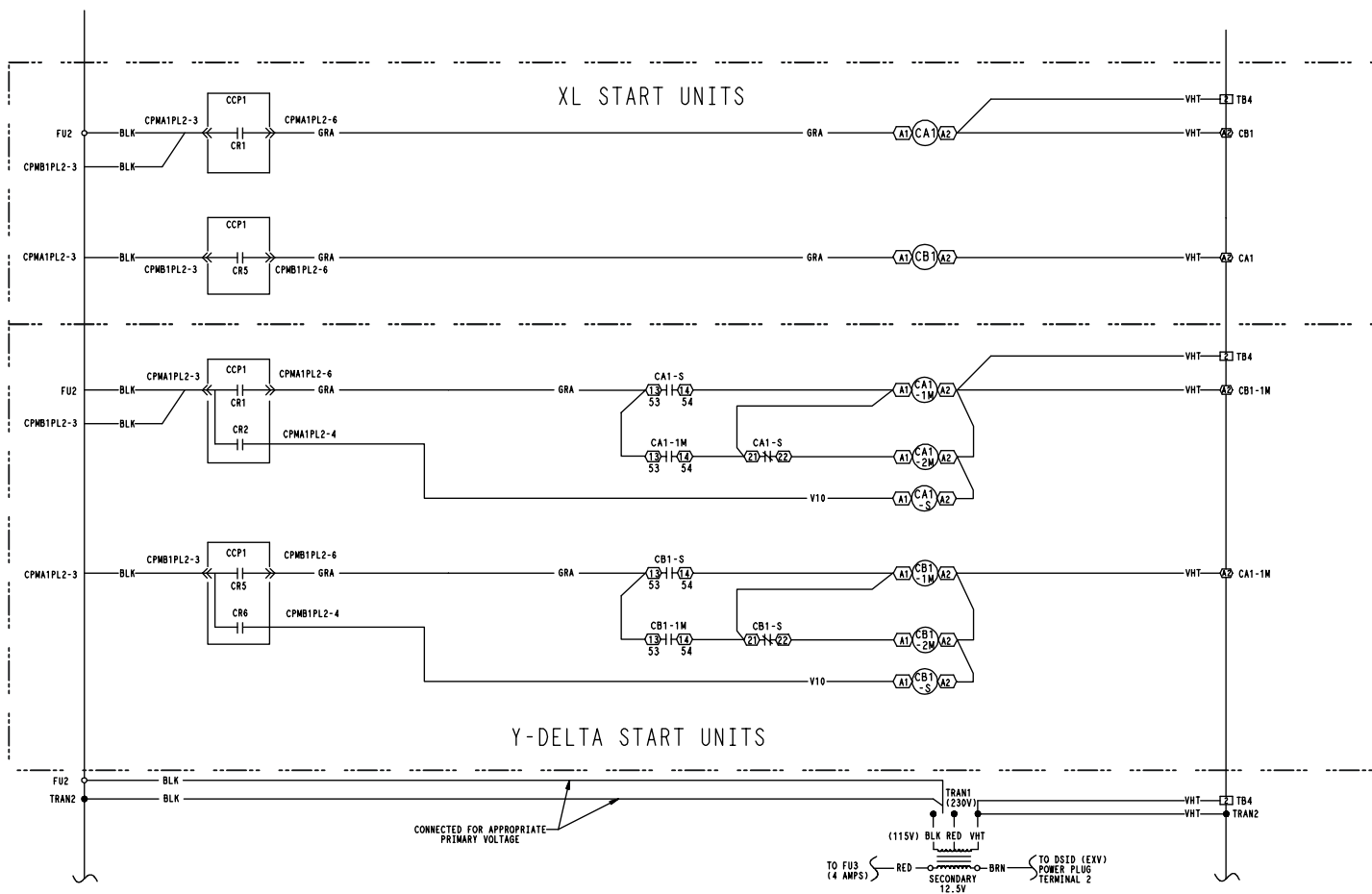
CAUTION:**BE CAREFUL WITH DRILLING. METAL DEBRIS CAN CAUSE SHORT CIRCUIT IN THE ELECTRICAL COMPONENT!**

10. Install new Current Toroid for compressor A1, B1 and A2 (new Current Toroid 30GX502786 or 30GX504711 must be used with CCP board HN67LM103).
 11. Re-connect power wire from TB1A.
 12. Install the CCP board for compressor A1, B1 and A2 in the control box.
 13. Cut the red wire for high pressure switch off load side of CB3 (leave about 6" wire on CB3). Add female quick connector (HY60AM065) and connect to the wire marked HPS RTN-A1.
 14. Add male quick connector (HY69DS045) on the wire from load side of CB3 and connect to the wire marked CB3 in the harness.
 15. Connect other wires on the conversion wiring harness for compressor A1 to the wiring harness on the unit, matching label on the wire.
- NOTE: If a 30GX (3) compressor unit is being serviced, DO NOT use wire harnesses labeled SN-A1 to CCP1-J4, SN-A2 to CCP2-J4, or SN-B1 to CCP1-J8. Use wiring kit 30GX660009 to make these connections.
16. Plug in connectors for compressor A1 on the wiring harness to CCP1.
 17. Cut the red wire for high pressure switch off load side of CB4 (leave about 6" wire on CB4). Add female quick connector (HY60AM065) and connect to the wire marked HPS RTN-B1.
 18. Add male quick connector (HY69DS045) on the wire from load side of CB4 and connect to the wire marked CB4 in the harness.
 19. Connect other wires on the conversion wiring harness for compressor B1 to the wiring harness on the unit, matching label on the wire.
 20. Plug in connectors for compressor B1 on the wiring harness to CCP1.
 21. Cut the red wire for high pressure switch off load side of CB8 (leave about 6" wire on CB8). Add female quick connector (HY60AM065) and connect to the wire marked HPS RTN-A2.
 22. Add male quick connector (HY69DS045) on the wire from load side of CB8 and connect to the wire marked CB8 in the harness.
 23. Connect other wires on the conversion wiring harness for compressor A2 to the wiring harness on the unit, matching label on the wire.

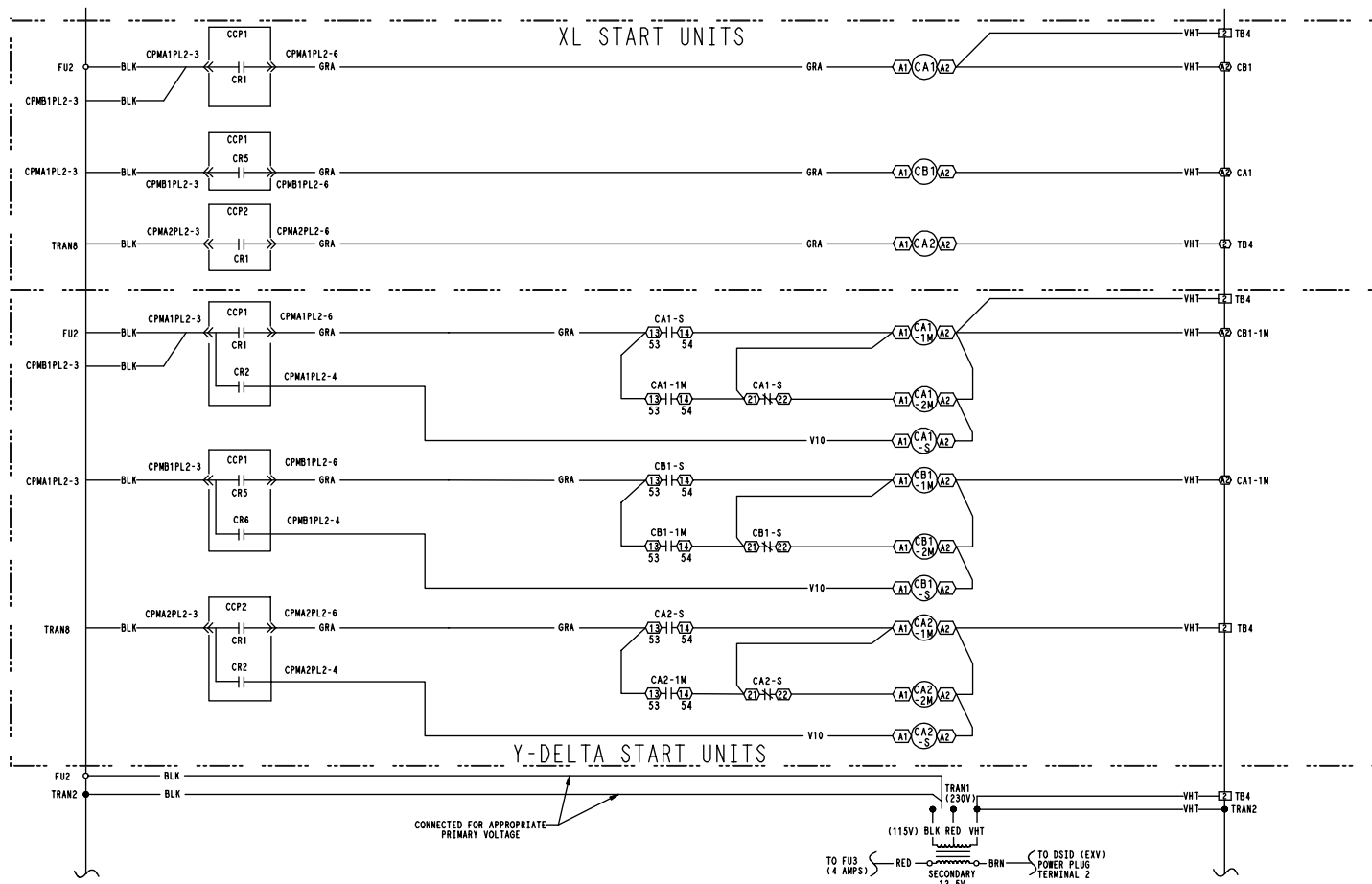
24. Plug in connectors for compressor A2 on the wiring harness to CCP2.
25. Tie any wires not used on the unit.
26. Check and make sure all the wires are in the right place.
27. Check the output of battery in the PSIO module. If the output is 3.5V or less, the battery is near the end of life. Replace battery (Carrier P/N CECO 120803-1).
28. Turn on power to the unit.
29. Download PSIO software and unit configuration data. Use software version 15 or higher and select TI configuration during download process.
30. Use unit control interface and Compressor Protection Module Configuration Punch-out and Must Trip Amps Table to verify proper compressor must trip amps (MTA) configuration. If the values do not match those in the table, verify that the configuration headers have been properly punched out.
31. Affix control schematic label 30HX504277 and 30HX504278 or 30HX504280 next to unit control schematic.
32. The installation is completed.



CPM CONVERSION KIT CONTROL SCHEMATIC (24V)



CPM CONVERSION KIT CONTROL SCHEMATIC (115/230V) 2 COMPRESSOR



CPM CONVERSION KIT CONTROL SCHEMATIC (115/230V) 3 COMPRESSOR

Appendix A

Model Number	Voltage	Compressor MTA Punch Outs			Compressor MTA			Toroid Part Number A = 30GX502786 B = 30GX504711			Overload Settings		
		A1	A2	B1	A1	A2	B1	A1	A2	B1	A1	A2	B1
30GX-080---1	575-60	1,2,3,6,7,8	-	1,2,3,5,6,7,8	98	-	82	A	-	A	85	-	71
30GX-080---2	380-60	1,2,5,6,7	-	1,2,4,5,7	148	-	124	A	-	A	128	-	107
30GX-080---5	208/230-60	1,4,8	-	1,3,6,7,8	270	-	226	A	-	A	234	-	195
30GX-080---6	460-60	1,2,4,5,7,8	-	1,2,3,6,8	122	-	102	A	-	A	106	-	88
30GX-080---8	230-50	1,4,5	-	1,3,5,6,7	256	-	212	A	-	A	223	-	183
30GX-080---9	380/415-50	1,2,5,7	-	1,2,4,5	156	-	128	A	-	A	135	-	111
30GX-090---1	575-3-60	1,2,4,5,6	-	1,2,3,5,6,7,8	120	-	82	A	-	A	103	-	71
30GX-090---2	380-3-60	1,3,4,5,6,7	-	1,2,4,5,7	180	-	124	A	-	A	156	-	107
30GX-090---5	208/230-3-60	2,3,4,6	-	1,3,5,7,8	328	-	226	B	-	A	285	-	195
30GX-090---6	460-3-60	1,2,5,6,7	-	1,2,3,6,8	148	-	102	A	-	A	129	-	88
30GX-090---8	230-3-50	2,3,4,5,6,8	-	1,3,5,6,7	310	-	212	A	-	A	269	-	183
30GX-090---9	380/415-3-50	1,3,4,5,7	-	1,2,4,5	188	-	128	A	-	A	163	-	111
30GX-105---8	230-3-50	2,3,5,6	-	1,3,8	344	-	238	B	-	A	299	-	207
30GX-105---9	380/415-3-50	1,3,4	-	1,2,4	208	-	144	A	-	A	181	-	125
30GX-106---1	575-3-60	1,2,4,6,8	-	1,2,3,5,7	134	-	92	A	-	A	116	-	80
30GX-106---2	380-3-60	1,3,4,7,8	-	1,2,4,7	202	-	140	A	-	A	175	-	120
30GX-106---5	208/230-3-60	2,3	-	1,4,5,8	368	-	254	B	-	A	320	-	220
30GX-106---6	460-3-60	1,2,6	-	1,2,4,5,6,7,8	168	-	114	A	-	A	145	-	100
30GX-106---8	230-3-50	2,3,5,6	-	1,3,8	344	-	238	B	-	A	299	-	207
30GX-106---9	380/415-3-50	1,3,4	-	1,2,4	208	-	144	A	-	A	181	-	125
30GX-115---1	575-3-60	1,2,6,7,8	-	1,2,3,5,7	162	-	92	A	-	A	141	-	80
30GX-115---2	380-3-60	1,4,5,6,8	-	1,2,4,7	246	-	140	A	-	A	213	-	120
30GX-115---5	208/230-3-60	3,4,5	-	1,4,5,8	448	-	254	B	-	A	390	-	220
30GX-115---6	460-3-60	1,3,4,7	-	1,2,4,5,6,7,8	204	-	114	A	-	A	176	-	100
30GX-115---8	230-3-50	2,6,7,8	-	1,3,8	418	-	238	B	-	A	363	-	207
30GX-115---9	380/415-3-50	1,4,5,8	-	1,2,4	254	-	144	A	-	A	220	-	125
30GX-125---1	575-3-60	1,2,6,7,8	-	1,2,3,8	162	-	110	A	-	A	141	-	96
30GX-125---2	380-3-60	1,4,5,6,8	-	1,2,6	246	-	168	A	-	A	213	-	145
30GX-125---5	208/230-3-60	3,4,5	-	2,3,4,5,6,7,8	448	-	306	B	-	A	390	-	265
30GX-125---6	460-3-60	1,3,4,7	-	1,2,4,7,8	204	-	138	A	-	A	176	-	120
30GX-125---8	230-3-50	2,6,7,8	-	1,5	418	-	288	A	-	A	363	-	250
30GX-125---9	380/415-3-50	1,4,5,8	-	1,2,8	254	-	174	A	-	A	220	-	151
30GX-136---1	575-3-60	1,2,6,7,8	-	1,2,4,6,8	162	-	134	A	-	A	141	-	116
30GX-136---2	380-3-60	1,4,5,6,8	-	1,3,4,7,8	246	-	202	A	-	A	213	-	175
30GX-136---5	208/230-3-60	3,4,5	-	2,3	448	-	368	B	-	B	390	-	320
30GX-136---6	460-3-60	1,3,4,7	-	1,2,6	204	-	168	A	-	A	176	-	145
30GX-136---8	230-3-50	2,6,7,8	-	2,3,5,6	418	-	344	B	-	B	363	-	299
30GX-136---9	380/415-3-50	1,4,5,8	-	1,3,4	254	-	208	A	-	A	220	-	181
30GX-150---8	230-3-50	2,3,5,6	-	4,6	344	-	520	B	-	B	299	-	451
30GX-150---9	380/415-3-50	1,3,4	-	2,3,4,5,7,8	208	-	314	A	-	A	181	-	273
30GX-151---1	575-3-60	1,3,4,6,8	-	1,2,4,6,8	198	-	134	A	-	A	172	-	116
30GX-151---2	380-3-60	1,7	-	1,3,4,7,8	300	-	202	A	-	A	260	-	175
30GX-151---5	208/230-3-60	6,7,8	-	2,3	546	-	368	B	-	B	475	-	320
30GX-151---6	460-3-60	1,4,5,6	-	1,2,6	240	-	168	A	-	A	215	-	145
30GX-160---8	230-3-50	2,6,7,8	-	4,6	418	-	520	B	-	B	363	-	451
30GX-160---9	380/415-3-50	1,4,5,8	-	2,3,4,5,7,8	254	-	314	A	-	A	220	-	273
30GX-161---1	575-3-60	1,3,4,6,8	-	1,2,6,7,8	198	-	162	A	-	A	172	-	141
30GX-161---2	380-3-60	1,7	-	1,4,5,6,8	300	-	246	A	-	A	260	-	213
30GX-161---5	208/230-3-60	6,7,8	-	3,4,5	546	-	448	B	-	B	475	-	390
30GX-161---6	460-3-60	1,4,5,6	-	1,3,4,7	248	-	204	A	-	A	215	-	176
30GX-161---8	230-3-50	4,6	-	2,6,7,8	520	-	418	B	-	B	451	-	363

Model Number	Voltage	Compressor MTA Punch Outs			Compressor MTA			Toroid Part Number A = 30GX502786 B = 30GX504711			Overload Settings		
		A1	A2	B1	A1	A2	B1	A1	A2	B1	A1	A2	B1
30GX-161---9	380/415-3-50	2,3,4,5,7,8	-	1,4,5,8	314	-	254	A	-	A	273	-	220
30GX-175---8	230-3-50	4,6	-	4,6	520	-	520	B	-	B	451	-	451
30GX-175---9	380/415-3-50	2,3,4,5,7,8	-	2,3,4,5,7,8	314	-	314	A	-	A	273	-	273
30GX-176---1	575-3-60	1,3,4,6,8	-	1,3,4,6,8	198	-	198	A	-	A	172	-	172
30GX-176---2	380-3-60	1,7	-	1,7	300	-	300	A	-	A	260	-	260
30GX-176---5	208/230-3-60	6,7,8	-	6,7,8	546	-	546	B	-	B	475	-	475
30GX-176---6	460-3-60	1,4,5,6	-	1,4,5,6	248	-	248	A	-	A	215	-	215
30GX-205---8	230-3-50	2,6,7,8	1,3,8	4,6	418	238	520	B	A	B	363	207	451
30GX-205---9	380/415-3-50	1,4,5,8	1,2,4	2,3,4,5,7,8	254	144	314	A	A	A	220	125	273
30GX-206---1	575-3-60	1,3,4,6,8	1,2,3,5,7	1,2,6,7,8	198	92	162	A	A	A	172	80	141
30GX-206---2	380-3-60	1,7	1,2,4,7	1,4,5,6,8	300	140	246	A	A	A	260	120	213
30GX-206---5	208/230-3-60	6,7,8	1,4,5,8	3,4,5	546	254	448	B	A	B	475	220	390
30GX-206---6	460-3-60	1,4,5,6	1,2,4,5,6,7,8	1,3,4,7	248	114	204	A	A	A	215	100	176
30GX-225---8	230-3-50	4,6	1,5	4,6	520	288	520	B	A	B	451	250	451
30GX-225---9	380/415-3-50	2,3,4,5,7,8	1,2,8	2,3,4,5,7,8	314	174	314	A	A	A	273	151	273
30GX-226---1	575-3-60	1,3,4,6,8	1,2,3,8	1,3,4,6,8	198	110	198	A	A	A	172	96	172
30GX-226---2	380-3-60	1,7	1,2,6	1,7	300	168	300	A	A	A	260	145	260
30GX-226---5	208/230-3-60	6,7,8	2,3,4,5,6,7,8	6,7,8	546	306	546	B	A	B	475	265	475
30GX-226---6	460-3-60	1,4,5,6	1,2,4,7,8	1,4,5,6	248	138	248	A	A	A	215	120	215
30GX-226---8	230-3-50	4,6	1,5	4,6	520	288	520	B	A	B	451	250	451
30GX-226---9	380/415-3-50	2,3,4,5,7,8	1,2,8	2,3,4,5,7,8	314	174	314	A	A	A	273	151	273
30GX-250---8	230-3-50	4,6	2,6,7,8	4,6	520	418	520	B	B	B	451	363	451
30GX-250---9	380/415-3-50	2,3,4,5,7,8	1,4,5,6	2,3,4,5,7,8	314	254	314	A	A	A	273	220	273
30GX-251---1	575-3-60	1,3,4,6,8	1,3,4,6,8	1,2,6,7,8	198	198	162	A	A	A	172	172	141
30GX-251---2	380-3-60	1,7	1,7	1,4,5,6,8	300	300	246	A	A	A	260	260	213
30GX-251---5	208/230-3-60	6,7,8	6,7,8	3,4,5	546	546	448	B	B	B	475	475	390
30GX-251---6	460-3-60	1,4,5,6	1,4,5,6	1,3,4,7	248	248	204	A	A	A	215	215	176
30GX-265---1	575-3-60	1,3,4,6,8	1,3,4,6,8	1,3,4,6,8	198	198	198	A	A	A	172	172	172
30GX-265---2	380-3-60	1,7	1,7	1,7	300	300	300	A	A	A	260	260	260
30GX-265---5	208/230-3-60	6,7,8	6,7,8	6,7,8	546	546	546	B	B	B	475	475	475
30GX-265---6	460-3-60	1,4,5,6	1,4,5,6	1,4,5,6	248	248	248	A	A	A	215	215	215
30GX-265---8	230-3-50	4,6	4,6	4,6	520	520	520	B	B	B	451	451	451
30GX-265---9	380/415-3-50	2,3,4,5,7,8	2,3,4,5,7,8	2,3,4,5,7,8	314	314	314	A	A	A	273	273	273
30HXA076---1	575-3-60	1,2,3,5,6,7,8	-	1,2,3,5,6,7,8	82	-	82	A	-	A	71	-	71
30HXA076---2	380-3-60	1,2,4,5,7	-	1,2,4,5,7	124	-	124	A	-	A	107	-	107
30HXA076---3	346-3-50	1,2,4,7	-	1,2,4,7	140	-	140	A	-	A	122	-	122
30HXA076---5	208/230-3-60	1,3,6,7,8	-	1,3,6,7,8	226	-	226	A	-	A	195	-	195
30HXA076---6	460-3-60	1,2,3,6,8	-	1,2,3,6,8	102	-	102	A	-	A	88	-	88
30HXA076---8	230-3-50	1,3,5,6,7	-	1,3,5,6,7	212	-	212	A	-	A	183	-	183
30HXA076---9	380/415-3-50	1,2,4,5	-	1,2,4,5	128	-	128	A	-	A	111	-	111
30HXA086---1	575-3-60	1,2,3,6,7,8	-	1,2,3,5,6,7,8	98	-	82	A	-	A	85	-	71
30HXA086---2	380-3-60	1,2,5,6,7	-	1,2,4,5,7	148	-	124	A	-	A	128	-	107
30HXA086---3	346-3-50	1,2,7,8	-	1,2,4,7	170	-	140	A	-	A	148	-	122
30HXA086---5	208/230-3-60	1,4,8	-	1,3,6,7,8	270	-	226	A	-	A	234	-	195
30HXA086---6	460-3-60	1,2,4,5,7,8	-	1,2,3,6,8	122	-	102	A	-	A	106	-	88
30HXA086---8	230-3-50	1,4,5	-	1,3,5,6,7	256	-	212	A	-	A	223	-	183
30HXA086---9	380/415-3-50	1,2,5,7	-	1,2,4,5	156	-	128	A	-	A	135	-	111
30HXA096---1	575-3-60	1,2,4,5,6	-	1,2,3,5,6,7,8	120	-	82	A	-	A	103	-	71
30HXA096---2	380-3-60	1,3,4,5,6,7	-	1,2,4,5,7	180	-	124	A	-	A	156	-	107
30HXA096---3	346-3-50	1,3,4,8	-	1,2,4,7	206	-	140	A	-	A	179	-	122
30HXA096---5	208/230-3-60	2,3,4,6	-	1,3,6,7,8	328	-	226	B	-	A	285	-	195
30HXA096---6	460-3-60	1,2,5,6,7	-	1,2,3,6,8	148	-	102	A	-	A	129	-	88
30HXA096---8	230-3-50	2,3,4,5,6,8	-	1,3,5,6,7	310	-	212	A	-	A	269	-	183
30HXA096---9	380/415-3-50	1,3,4,5,7	-	1,2,4,5	188	-	128	A	-	A	163	-	111

Model Number	Voltage	Compressor MTA Punch Outs			Compressor MTA			Toroid Part Number A = 30GX502786 B = 30GX504711			Overload Settings		
		V-Hz	A1	A2	B1	A1	A2	B1	A1	A2	B1	A1	A2
30HXA106---1	575-3-60	1,2,4	-	1,2,3,5,6,7,8	144	-	82	A	-	A	125	-	71
30HXA106---2	380-3-60	1,3,5,7,8	-	1,2,4,5,7	218	-	124	A	-	A	190	-	107
30HXA106---3	346-3-50	1,4,5,7,8	-	1,2,4,7	250	-	140	A	-	A	217	-	122
30HXA106---5	208/230-3-60	2,4	-	1,3,6,7,8	400	-	226	B	-	A	347	-	195
30HXA106---6	460-3-60	1,3,4,5,6,7	-	1,2,3,6,8	180	-	102	A	-	A	157	-	88
30HXA106---8	230-3-50	2,4,5,6	-	1,3,5,6,7	376	-	212	B	-	A	326	-	183
30HXA106---9	380/415-3-50	1,3,6,7	-	1,2,4,5	228	-	128	A	-	A	198	-	111
30HXA116---1	575-3-60	1,2,4	-	1,2,3,6,7,8	144	-	98	A	-	A	125	-	85
30HXA116---2	380-3-60	1,3,5,7,8	-	1,2,5,6,7	218	-	148	A	-	A	190	-	128
30HXA116---3	346-3-50	1,4,5,6,8	-	1,2,7,8	250	-	170	A	-	A	217	-	148
30HXA116---5	208/230-3-60	2,4	-	1,4,8	400	-	270	B	-	A	347	-	234
30HXA116---6	460-3-60	1,3,4,5,6,7	-	1,2,4,5,7,8	180	-	122	A	-	A	157	-	106
30HXA116---8	230-3-50	2,4,5,6	-	1,4,5	376	-	256	B	-	A	326	-	223
30HXA116---9	380/415-3-50	1,3,6,7	-	1,2,5,7	228	-	156	A	-	A	198	-	135
30HXA126---1	575-3-60	1,2,4	-	1,2,4,5,6	144	-	120	A	-	A	125	-	103
30HXA126---2	380-3-60	1,3,5,7,8	-	1,3,4,5,6,7	218	-	180	A	-	A	190	-	156
30HXA126---3	346-3-50	1,4,5,7,8	-	1,3,4,8	250	-	206	A	-	A	217	-	179
30HXA126---5	208/230-3-60	2,4	-	2,3,4,6	400	-	328	B	-	B	347	-	285
30HXA126---6	460-3-60	1,3,4,5,6,7	-	1,2,5,6,7	180	-	148	A	-	A	157	-	129
30HXA126---8	230-3-50	2,4,5,6	-	2,3,4,5,6,8	376	-	310	B	-	A	326	-	269
30HXA126---9	380/415-3-50	1,3,6,7	-	1,3,4,5,7	228	-	188	A	-	A	198	-	163
30HXA136---1	575-3-60	1,2	-	1,2,4,5,6	176	-	120	A	-	A	153	-	103
30HXA136---2	380-3-60	1,4,7,8	-	1,3,4,5,6,7	266	-	180	A	-	A	231	-	156
30HXA136---3	346-3-50	2,3,4,5,6,7,8	-	1,3,4,8	306	-	206	A	-	A	266	-	179
30HXA136---5	208/230-3-60	3,6,8	-	2,3,4,6	486	-	328	B	-	B	423	-	285
30HXA136---6	460-3-60	1,3,5,7	-	1,2,5,6,7	220	-	148	A	-	A	191	-	129
30HXA136---8	230-3-50	3,4,8	-	2,3,4,5,6,8	462	-	310	B	-	A	401	-	269
30HXA136---9	380/415-3-50	1,5,6	-	1,3,4,5,7	280	-	188	A	-	A	243	-	163
30HXA146---1	575-3-60	1,2	-	1,2,4	176	-	144	A	-	A	153	-	125
30HXA146---2	380-3-60	1,4,7,8	-	1,3,5,7,8	266	-	218	A	-	A	231	-	190
30HXA146---3	346-3-50	2,3,4,5,6,7,8	-	1,4,5,7,8	306	-	250	A	-	A	266	-	217
30HXA146---5	208/230-3-60	3,6,8	-	2,4	486	-	400	B	-	B	423	-	347
30HXA146---6	460-3-60	1,3,5,7	-	1,3,4,5,6,7	220	-	180	A	-	A	191	-	157
30HXA146---8	230-3-50	3,4,8	-	2,4,5,6	462	-	376	B	-	B	401	-	326
30HXA146---9	380/415-3-50	1,5,6	-	1,3,6,7	280	-	228	A	-	A	243	-	198
30HXA161---1	575-3-60	1,3,4,6,8	-	1,2,4,6,8	198	-	134	A	-	A	172	-	116
30HXA161---2	380-3-60	1,7	-	1,3,4,7,8	300	-	202	A	-	A	260	-	175
30HXA161---3	346-3-50	2,3,4,5	-	1,3,6,7	344	-	228	B	-	A	299	-	199
30HXA161---5	208/230-3-60	6,7,8	-	2,3	546	-	368	B	-	B	475	-	320
30HXA161---6	460-3-60	1,4,5,6	-	1,2,6	248	-	168	A	-	A	215	-	145
30HXA161---8	230-3-50	4,6	-	2,3,5,6	520	-	344	B	-	B	451	-	299
30HXA161---9	380/415-3-50	2,3,4,5,7,8	-	1,3,4	314	-	208	A	-	A	273	-	181
30HXA171---1	575-3-60	1,2,6,7,8	-	1,3,4,6,8	162	-	198	A	-	A	141	-	172
30HXA171---2	380-3-60	1,4,5,6,8	-	1,7	246	-	300	A	-	A	213	-	260
30HXA171---3	346-3-50	1,5,6,8	-	2,3,5,6	278	-	344	A	-	B	241	-	299
30HXA171---5	208/230-3-60	3,4,5	-	6,7,8	448	-	546	B	-	B	390	-	475
30HXA171---6	460-3-60	1,3,4,7	-	1,4,5,6	204	-	248	A	-	A	176	-	215
30HXA171---8	230-3-50	2,6,7,8	-	4,6	418	-	520	B	-	B	363	-	451
30HXA171---9	380/415-3-50	1,4,5,8	-	2,3,4,5,7,8	254	-	314	A	-	A	220	-	273
30HXA186---1	575-3-60	1,3,4,6,8	-	1,3,4,6,8	198	-	198	A	-	A	172	-	172
30HXA186---2	380-3-60	1,7	-	1,7	300	-	300	A	-	A	260	-	260
30HXA186---3	346-3-50	2,3,5,6	-	2,3,5,6	344	-	344	B	-	B	299	-	299
30HXA186---5	208/230-3-60	6,7,8	-	6,7,8	546	-	546	B	-	B	475	-	475
30HXA186---6	460-3-60	1,4,5,6	-	1,4,5,6	248	-	248	A	-	A	215	-	215
30HXA186---8	230-3-50	4,6	-	4,6	520	-	520	B	-	B	451	-	451

Model Number	Voltage	Compressor MTA Punch Outs			Compressor MTA			Toroid Part Number A = 30GX502786 B = 30GX504711			Overload Settings		
		V-Hz	A1	A2	B1	A1	A2	B1	A1	A2	B1	A1	A2
30HXA186---9	380/415-3-50	2,3,4,5,7,8	-	2,3,4,5,7,8	314	-	314	A	-	A	273	-	273
30HXA206---1	575-3-60	1,2,6,7,8	1,2,3,5,7	1,3,4,6,8	162	92	198	A	A	A	141	80	172
30HXA206---2	380-3-60	1,4,5,6,8	1,2,4,7	1,7	246	138	300	A	A	A	213	120	260
30HXA206---3	346-3-50	1,5,6,8	1,2,5,8	2,3,5,6	278	158	344	A	A	B	241	137	299
30HXA206---5	208/230-3-60	3,4,5	1,4,5,8	6,7,8	448	254	546	B	A	B	390	220	475
30HXA206---6	460-3-60	1,3,4,7	1,2,4,5,6,7,8	1,4,5,6	204	116	248	A	A	A	176	100	215
30HXA206---8	230-3-50	2,6,7,8	1,3,8	4,6	418	238	520	B	A	B1	363	207	451
30HXA206---9	380/415-3-50	1,4,5,8	1,2,4	2,3,4,5,7,8	254	144	314	A	A	A	220	125	273
30HXA246---1	575-3-60	1,3,4,6,8	1,2,4,6,8	1,3,4,6,8	198	134	198	A	A	A	172	116	172
30HXA246---2	380-3-60	1,7	1,3,4,7,8	1,7	300	202	300	A	A	A	260	175	260
30HXA246---3	346-3-50	2,3,5,6	1,3,6,7	2,3,5,6	344	228	344	B	A	B	299	199	299
30HXA246---5	208/230-3-60	6,7,8	2,3	6,7,8	546	368	546	B	B	B	475	320	475
30HXA246---6	460-3-60	1,4,5,6	1,2,6	1,4,5,6	248	168	248	A	A	A	215	145	215
30HXA246---8	230-3-50	4,6	2,3,5,6	4,6	520	344	520	B	B	B	451	299	451
30HXA246---9	380/415-3-50	2,3,4,5,7,8	1,3,4	2,3,4,5,7,8	314	208	314	A	A	A	273	181	273
30HXA261---1	575-3-60	1,3,4,6,8	1,2,6,7,8	1,3,4,6,8	198	162	198	A	A	A	172	141	172
30HXA261---2	380-3-60	1,7	1,4,5,6,8	1,7	300	246	300	A	A	A	260	213	260
30HXA261---3	346-3-50	2,3,5,6	1,5,6,8	2,3,5,6	344	278	344	B	A	B	299	241	299
30HXA261---5	208/230-3-60	6,7,8	3,4,5	6,7,8	546	448	546	B	B	B	475	390	475
30HXA261---6	460-3-60	1,4,5,6	1,3,4,7	1,4,5,6	248	204	248	A	A	A	215	176	215
30HXA261---8	230-3-50	4,6	2,6,7,8	4,6	520	418	520	B	B	B	451	363	451
30HXA261---9	380/415-3-50	2,3,4,5,7,8	1,4,5,8	2,3,4,5,7,8	314	254	314	A	A	A	273	220	273
30HXA271---1	575-3-60	1,3,4,6,8	1,3,4,6,8	1,3,4,6,8	198	198	198	A	A	A	172	172	172
30HXA271---2	380-3-60	1,7	1,7	1,7	300	300	300	A	A	A	260	260	260
30HXA271---3	346-3-50	2,3,5,6	2,3,5,6	2,3,5,6	344	344	344	B	B	B	299	299	299
30HXA271---5	208/230-3-60	6,7,8	6,7,8	6,7,8	546	546	546	B	B	B	475	475	475
30HXA271---6	460-3-60	1,4,5,6	1,4,5,6	1,4,5,6	248	248	248	A	A	A	215	215	215
30HXA271---8	230-3-50	4,6	4,6	4,6	520	520	520	B	B	B	451	451	451
30HXA271---9	380/415-3-50	2,3,4,5,7,8	2,3,4,5,7,8	2,3,4,5,7,8	314	314	314	A	A	A	273	273	273
30HXC076---1	575-3-60	1,2,3,4,5,6	-	1,2,3,4,5,6	56	-	56	A	-	A	50	-	50
30HXC076---2	380-3-60	1,2,3,5,6,7	-	1,2,3,5,6,7	84	-	84	A	-	A	73	-	73
30HXC076---3	346-3-50	1,2,3,5	-	1,2,3,5	96	-	96	A	-	A	83	-	83
30HXC076---5	208/230-3-60	1,2,5,7,8	-	1,2,5,7,8	154	-	154	A	-	A	133	-	133
30HXC076---6	460-3-60	1,2,3,4,6,8	-	1,2,3,4,6,8	70	-	70	A	-	A	60	-	60
30HXC076---8	230-3-50	1,2,4	-	1,2,4	144	-	144	A	-	A	125	-	125
30HXC076---9	380/415-3-50	1,2,3,5,6	-	1,2,3,5,6	88	-	88	A	-	A	76	-	76
30HXC086---1	575-3-60	1,2,3,4,6,7	-	1,2,3,4,5,6	68	-	56	A	-	A	58	-	50
30HXC086---2	380-3-60	1,2,3,6,8	-	1,2,3,5,6,7	102	-	84	A	-	A	88	-	73
30HXC086---3	346-3-50	1,2,4,5,6,7	-	1,2,3,5	116	-	96	A	-	A	101	-	83
30HXC086---5	208/230-3-60	1,3,4,5,7,8	-	1,2,5,7,8	186	-	154	A	-	A	161	-	133
30HXC086---6	460-3-60	1,2,3,5,6,7	-	1,2,3,4,6,8	84	-	70	A	-	A	73	-	60
30HXC086---8	230-3-50	1,2	-	1,2,4	176	-	144	A	-	A	152	-	125
30HXC086---9	380/415-3-50	1,2,3,7,8	-	1,2,3,5,6	106	-	88	A	-	A	92	-	76
30HXC096---1	575-3-60	1,2,3,5,6,7,8	-	1,2,3,4,5,6	82	-	56	A	-	A	71	-	50
30HXC096---2	380-3-60	1,2,4,5,7	-	1,2,3,5,6,7	124	-	84	A	-	A	108	-	73
30HXC096---3	346-3-50	1,2,4,7	-	1,2,3,5	140	-	96	A	-	A	122	-	83
30HXC096---5	208/230-3-60	1,3,6,7,8	-	1,2,5,7,8	226	-	154	A	-	A	197	-	133
30HXC096---6	460-3-60	1,2,3,6	-	1,2,3,4,6,8	104	-	70	A	-	A	89	-	60
30HXC096---8	230-3-50	1,3,5,6,7	-	1,2,4	212	-	144	A	-	A	183	-	125
30HXC096---9	380/415-3-50	1,2,4,5	-	1,2,3,5,6	128	-	88	A	-	A	111	-	76
30HXC106---1	575-3-60	1,2,3,6,7	-	1,2,3,4,5,6	100	-	56	A	-	A	86	-	50
30HXC106---2	380-3-60	1,2,5,6,8	-	1,2,3,5,6,7	150	-	84	A	-	A	130	-	73
30HXC106---3	346-3-50	1,2,6	-	1,2,3,5	168	-	96	A	-	A	146	-	83
30HXC106---5	208/230-3-60	1,5,6,7,8	-	1,2,5,7,8	274	-	154	A	-	A	238	-	133
30HXC106---6	460-3-60	1,2,4,5,7	-	1,2,3,4,6,8	124	-	70	A	-	A	108	-	60

Model Number	Voltage	Compressor MTA Punch Outs			Compressor MTA			Toroid Part Number A = 30GX502786 B = 30GX504711			Overload Settings		
		V-Hz	A1	A2	B1	A1	A2	B1	A1	A2	B1	A1	A2
30HXC106---8	230-3-50	1,4,5,8	-	1,2,4	254	-	144	A	-	A	220	-	125
30HXC106---9	380/415-3-50	1,2,5,7,8	-	1,2,3,5,6	154	-	88	A	-	A	133	-	76
30HXC116---1	575-3-60	1,2,3,6,7	-	1,2,3,4,6,7	100	-	68	A	-	A	86	-	58
30HXC116---2	380-3-60	1,2,5,6,8	-	1,2,3,6,8	150	-	102	A	-	A	130	-	88
30HXC116---3	346-3-50	1,2,6	-	1,2,4,5,6,7	168	-	116	A	-	A	146	-	101
30HXC116---5	208/230-3-60	1,5,6,7,8	-	1,3,4,5,7,8	274	-	186	A	-	A	238	-	161
30HXC116---6	460-3-60	1,2,4,5,7	-	1,2,3,5,6,7	124	-	84	A	-	A	108	-	73
30HXC116---8	230-3-50	1,4,5,8	-	1,2	254	-	176	A	-	A	220	-	152
30HXC116---9	380/415-3-50	1,2,5,7,8	-	1,2,3,7,8	154	-	106	A	-	A	133	-	92
30HXC126---1	575-3-60	1,2,3,6,7	-	1,2,3,5,6,7,8	100	-	82	A	-	A	86	-	71
30HXC126---2	380-3-60	1,2,5,6,8	-	1,2,4,5,7	150	-	124	A	-	A	130	-	108
30HXC126---3	346-3-50	1,2,6	-	1,2,4,7	168	-	140	A	-	A	146	-	122
30HXC126---5	208/230-3-60	1,5,6,7,8	-	1,3,6,7,8	274	-	226	A	-	A	238	-	197
30HXC126---6	460-3-60	1,2,4,5,7	-	1,2,3,6	124	-	104	A	-	A	108	-	89
30HXC126---8	230-3-50	1,4,5,8	-	1,3,5,6,7	254	-	212	A	-	A	220	-	183
30HXC126---9	380/415-3-50	1,2,5,7,8	-	1,2,4,5	154	-	128	A	-	A	133	-	111
30HXC136---1	575-3-60	1,2,4,5,6	-	1,2,3,5,6,7,8	120	-	82	A	-	A	103	-	71
30HXC136---2	380-3-60	1,3,4,5,6,7	-	1,2,4,5,7	180	-	124	A	-	A	156	-	108
30HXC136---3	346-3-50	1,3,4,7	-	1,2,4,7	204	-	140	A	-	A	177	-	122
30HXC136---5	208/230-3-60	2,3,4,6	-	1,3,6,7,8	328	-	226	B	-	A	285	-	197
30HXC136---6	460-3-60	1,2,5,6,7	-	1,2,3,6	148	-	104	A	-	A	129	-	89
30HXC136---8	230-3-50	2,3,4,5,6,7	-	1,3,5,6,7	308	-	212	A	-	A	267	-	183
30HXC136---9	380/415-3-50	1,3,4,5,7,8	-	1,2,4,5	186	-	128	A	-	A	162	-	111
30HXC146---1	575-3-60	1,2,4,5,6	-	1,2,3,6,7	120	-	100	A	-	A	103	-	86
30HXC146---2	380-3-60	1,3,4,5,6,7	-	1,2,5,6,8	180	-	150	A	-	A	156	-	130
30HXC146---3	346-3-50	1,3,4,7	-	1,2,6	204	-	168	A	-	A	177	-	146
30HXC146---5	208/230-3-60	2,3,4,6	-	1,5,6,7,8	328	-	274	B	-	A	285	-	238
30HXC146---6	460-3-60	1,2,5,6,7	-	1,2,4,5,7	148	-	124	A	-	A	129	-	108
30HXC146---8	230-3-50	2,3,4,5,6,7	-	1,4,5,8	308	-	254	A	-	A	267	-	220
30HXC146---9	380/415-3-50	1,3,4,5,7,8	-	1,2,5,7,8	186	-	154	A	-	A	162	-	133
30HXC161---1	575-3-60	1,2,4,6,7,8	-	1,2,3,5,7,8	130	-	90	A	-	A	112	-	78
30HXC161---2	380-3-60	1,3,4,6,7	-	1,2,4,6	196	-	136	A	-	A	170	-	117
30HXC161---3	346-3-50	1,3,5,7	-	1,2,5,6	220	-	152	A	-	A	192	-	132
30HXC161---5	208/230-3-60	2,3,6,8	-	1,4,5,6,8	358	-	246	B	-	A	310	-	214
30HXC161---6	460-3-60	1,2,6,7,8	-	1,2,3	162	-	112	A	-	A	140	-	97
30HXC161---8	230-3-50	2,4,5,7	-	1,3,6,7	332	-	228	B	-	A	289	-	198
30HXC161---9	380/415-3-50	1,3,4,7,8	-	1,2,4,7,8	202	-	138	A	-	A	175	-	120
30HXC171---1	575-3-60	1,2,3,7	-	1,2,4,6,7,8	108	-	130	A	-	A	94	-	112
30HXC171---2	380-3-60	1,2,6,7	-	1,3,4,6,7	164	-	196	A	-	A	142	-	170
30HXC171---3	346-3-50	1,3,4,5,6,8	-	1,3,5,7	182	-	220	A	-	A	158	-	192
30HXC171---5	208/230-3-60	1,7,8	-	2,3,6,8	298	-	358	A	-	B	259	-	310
30HXC171---6	460-3-60	1,2,4,6	-	1,2,6,7,8	136	-	162	A	-	A	117	-	140
30HXC171---8	230-3-50	1,5,6,7,8	-	2,3,4,7	274	-	332	A	-	B	237	-	289
30HXC171---9	380/415-3-50	1,2,6,8	-	1,3,4,7,8	166	-	202	A	-	A	144	-	175
30HXC186---1	575-3-60	1,2,4,6,7,8	-	1,2,4,6,7,8	130	-	130	A	-	A	112	-	112
30HXC186---2	380-3-60	1,3,4,6,7	-	1,3,4,6,7	196	-	196	A	-	A	170	-	170
30HXC186---3	346-3-50	1,3,5,7	-	1,3,5,7	220	-	220	A	-	A	192	-	192
30HXC186---5	208/230-3-60	2,3,6,8	-	2,3,6,8	358	-	358	B	-	B	310	-	310
30HXC186---6	460-3-60	1,2,6,7,8	-	1,2,6,7,8	162	-	162	A	-	A	140	-	140
30HXC186---8	230-3-50	2,3,4,7	-	2,3,4,7	332	-	332	B	-	B	289	-	289
30HXC186---9	380/415-3-50	1,3,4,7,8	-	1,3,4,7,8	202	-	202	A	-	A	175	-	175
30HXC206---1	575-3-60	1,2,3,7	1,2,3,4,5,8	1,2,4,6,7,8	108	62	130	A	A	A	94	53	112
30HXC206---2	380-3-60	1,2,6,7	1,2,3,5,7	1,3,4,6,7	164	92	196	A	A	A	142	80	170
30HXC206---3	346-3-50	1,3,4,5,6,8	1,2,3,6	1,3,5,7	182	104	220	A	A	A	158	90	192
30HXC206---5	208/230-3-60	1,7,8	1,2,6	2,3,6,8	298	168	358	A	A	B	259	145	310

Model Number	Voltage	Compressor MTA Punch Outs			Compressor MTA			Toroid Part Number A = 30GX502786 B = 30GX504711			Overload Settings		
		A1	A2	B1	A1	A2	B1	A1	A2	B1	A1	A2	B1
30HXC206---6	460-3-60	1,2,4,6	1,2,3,4,7	1,2,6,7,8	136	76	162	A	A	A	117	66	140
30HXC206---8	230-3-50	1,5,6,7,8	1,2,5,7	2,3,4,7	274	156	332	A	A	B	237	135	289
30HXC206---9	380/415-3-50	1,2,6,8	1,2,3,5,8	1,3,4,7,8	166	94	202	A	A	A	144	82	175
30HXC246---1	575-3-60	1,2,4,6,7,8	1,2,3,5,7,8	1,2,4,6,7,8	130	90	130	A	A	A	112	78	112
30HXC246---2	380-3-60	1,3,4,6,7	1,2,4,6	1,3,4,6,7	196	136	196	A	A	A	170	117	170
30HXC246---3	346-3-50	1,3,5,7	1,2,5,6	1,3,5,7	220	152	220	A	A	A	192	132	192
30HXC246---5	208/230-3-60	2,3,6,8	1,4,5,6,8	2,3,6,8	358	246	358	B	A	B	310	214	310
30HXC246---6	460-3-60	1,2,6,7,8	1,2,3	1,2,6,7,8	162	112	162	A	A	A	140	97	140
30HXC246---8	230-3-50	2,3,4,7	1,3,6,7	2,3,4,7	332	228	332	B	A	B	289	198	289
30HXC246---9	380/415-3-50	1,3,4,7,8	1,2,4,7,8	1,3,4,7,8	202	138	202	A	A	A	175	120	175
30HXC261---1	575-3-60	1,2,4,6,7,8	1,2,3,7	1,2,4,6,7,8	130	108	130	A	A	A	112	94	112
30HXC261---2	380-3-60	1,3,4,6,7	1,2,6,7	1,3,4,6,7	196	164	196	A	A	A	170	142	170
30HXC261---3	346-3-50	1,3,5,7	1,3,4,5,6,8	1,3,5,7	220	182	220	A	A	A	192	158	192
30HXC261---5	208/230-3-60	2,3,6,8	1,7,8	2,3,6,8	358	298	358	B	A	B	310	259	310
30HXC261---6	460-3-60	1,2,6,7,8	1,2,4,6	1,2,6,7,8	162	136	162	A	A	A	140	117	140
30HXC261---8	230-3-50	2,3,4,7	1,5,6,7,8	2,3,4,7	332	274	332	B	A	B	289	237	289
30HXC261---9	380/415-3-50	1,3,4,7,8	1,2,6,8	1,3,4,7,8	202	166	202	A	A	A	175	144	175
30HXC271---1	575-3-60	1,2,4,6,7,8	1,2,4,6,7,8	1,2,4,6,7,8	130	130	130	A	A	A	112	112	112
30HXC271---2	380-3-60	1,3,4,6,7	1,3,4,6,7	1,3,4,6,7	196	196	196	A	A	A	170	170	170
30HXC271---3	346-3-50	1,3,5,7	1,3,5,7	1,3,5,7	220	220	220	A	A	A	192	192	192
30HXC271---5	208/230-3-60	2,3,6,8	2,3,6,8	2,3,6,8	358	358	358	B	B	B	310	310	310
30HXC271---6	460-3-60	1,2,6,7,8	1,2,6,7,8	1,2,6,7,8	162	162	162	A	A	A	140	140	140
30HXC271---8	230-3-50	2,3,4,7	2,3,4,7	2,3,4,7	332	332	332	B	B	B	289	289	289
30HXC271---9	380/415-3-50	1,3,4,7,8	1,3,4,7,8	1,3,4,7,8	202	202	202	A	A	A	175	175	175