Chapter 11

SPECIFICATIONS

11.1 Furnace Specifications 11-2

11.2 Fuse List 11-3

11.3 Average 3-ph Current at Temperature 11-4

11.4 Average 1-ph Current at Temperature 11-5

LCI Furnaces DIVISION OF LOCHABER CORNWALL INC
CONTINUOUS BELT IR FURNACE

EQUIPMENT SPECIFICATIONS

DOC NBR: STD - 802-101401-01 R2
MODEL: LA-306 STD & HIGH POWER
SERIAL NBR: ALL SIZE A SHT 1 OF 1

Equipment Model

Model	Base Equipment	Control Zones	Furnace Heated Length	Nominal Furnace Belt Width
LA-306	Continuous Belt Controlled Atmosphere Furnace	3	30 in 762 mm	6.0 in 152 mm

Equipment Arrangement

Phase	Process	Max	Length	Process Gas	Temperature (typ)
Phase 1	IR Furnace, 3 Zones	1000 °C	30 in 762 mm	CDA, N2, FG	450-950 C
Phase 2	Gas Convective Cooling, Exterior Fan Heat Removal (includes transition tunnel)		15 in 381 mm	CDA or N2	350-40 C

Process Sections

Function	Name	Location	Length	Process Gas	Temperature (typ)
Product Load	Load Station	Entrance load area	15.0 in 381 mm	none	ambient
IR Furnace	Entr Baffle/Entrance Stack with Educt	Entrance barrier	15.00 in 381 mm	CDA or N2	80-250 C
	Zone 1	Furnace chamber 1	7.5 in 191 mm	N2 or FG	80-975 C
	Zone 2	Furnace chamber 1	15.0 in 381 mm	N2 or FG	80-975 C
	Zone 3	Furnace chamber 1	7.5 in 191 mm	N2 or FG	80-975 C
Cooling Section	Trans Tunnel	Heat/cool barrier	15 in 381 mm	none	360 °C
	Gas Convection Cooling	Cooling section	30 in 762 mm	N2	55-360 C
Product Unload	Unload Station	Exit unload area	15.0 in 381 mm	none	ambient
	Frame Adjustment		1.0 in 25 mm		
	Total		121.0 in 3073 mm		

Process Gas (If Single Gas combine GAS1 & GAS2. Dual Gas: GAS 2 = CDA, N2 or FG to furnace heating zones, GAS1=N2 or CDA to all except zones)

	Actual Conditons		Typical 425 C CDA operation		Typical 950 C, low O2 operation		Max (all flowmeters open)	
Furnace Replenishment Rate			2.0 rep/min		5.0 rep/min		2.8 rep/min	
	Temp °C	Press psi	Typical scfh	Min Flow sL/m	Typical scfh	Typical sL/m	scfh	Max Compressor sL/m
Gas1 Supply	21	70	148	70	370	175	838	395
TOTAL PROCESS GAS			179	85	440	208	1,213	572

Exhaust Gas

	Temp °C	Press in H_2O	Typical scfh	Min Flow sL/m	Typical scfh	Typical sL/m	scfh	Maximum Exhaust sL/m
GAS 1 & 2, MIX	200	6	179	85	334	158	348	164

Cabinet Ventilation

Cabinet Ventilation Fans (vent to room or exhaust system)	Flowrate	550 cfm	930 m3/h	550 cfm	930 m3/h
	Temperature	<86°F	<30°C	<122°F	<50°C
Control Cabinet Ventilation Fans (vents to room)	Flowrate	212 cfm	360 m3/h	212 cfm	360 m3/h
	Temperature	<86°F	<30°C	<104°F	<40°C

Transport System

Belt width	6.0 in 152.4 mm	Belt Edge Heater(s):	none
Belt type	Balanced spiral weave		
Product height	2 in (50.8 mm) above belt level.	Baffle plate clearance: 0.5" above belt	
Belt speed range	1-20 ipm or 2-40 ipm	25-500 mm/m or 50-500 mm/min	
Conveyor height	36.0 in +/- 1.5 in adjustable	914.4 mm +/-38.1 mm	adjustable

Electrical System	Single Phase				3-Phase			
Voltage (as configured)	208 Vac	220 Vac	230 Vac	240 Vac	208 Vac	220 Vac	380 Vac	415 Vac
Frequency, Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60
HIGH POWER CONFIGURATION								
Power, maximum, kW	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
Current, maximum, A	83.4	78.8	75.4	72.3	48.1	45.5	45.5	41.7
Power, kW @ 425 C	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
Current, A @ 425 C	49.5	46.8	44.7	42.9	28.6	27.0	27.0	24.7
STANDARD POWER CONFIGURATION								
Power, maximum, kW	14.0	14.3	14.6	15.0	14.0	14.3	14.3	15.0
Current, maximum, A	67.3	65.2	63.7	62.3	38.9	37.7	37.7	36.0
Power, kW @ 950 C	5.8	5.9	6.0	6.2	5.8	5.9	5.9	6.2
Current, A @ 950 C	27.8	26.9	26.3	25.7	16.1	15.6	15.6	14.8

Materials of Construction

Heating Chamber	304 Stainless steel	Cooling	Aluminum, aircraft	Belt	Nichrome V, 80%Ni,20%Cr, <1% Fe
Baffle & Eductor	304 Stainless steel	Belt support	Quartz rod, Quartz tube	Frame	Steel, epoxy or powder coated
Heating element	Quartz, near infrared	Belt Return	UHMW-PE	Cover Panels	18GA steel, epoxy coated

Furnace Dimensions

	Length	Width	Height (floor to stack)	Furnace Sect	Coolg Sectn	Total Net Wt
U.S.	121 in	25 in	80 in +/- 1.5 in	1100 LB	none	1100 LB
Metric	3.1 m	64 cm	203 cm +/- 3.8 cm	500 kg	none	500 kg

Standard Conditions	Pressure	14.7 psia	101.3 kPa	Temperature	70 °F	21 °C

LCI Furnaces DIVISION OF LOCHABER CORNWALL INC	DATA SHEET	DOC NBR: STD 802-101529 R1
	IR FURNACE SYSTEM BASE FUSE LIST	MODEL: LA-306 APVL SLB 5/8/13
		SERIAL NBR: ALL PRNT 19Jun13
SPECIFICATIONS		DATE: 05/08/13 SHT 1 of 1

STANDARD LA-306

Safety Enclosure (TR0, basic control)		
Fuse Label	**Size (A)**	**Comments**
FA	5	24 Vac control, AGC
FB	4	117 Vac power, AGC
1 Phase or 3 Phase, 208-240 Vac Operation (* for 3 Phase only)		
F1	4	To TR0 & CNTL1, L1 leg, KTK
F2	4	To TR0 & CNTL2*, L2 leg, KTK
F3*	4	To CNTL3*, L3 leg, KTK
3 Phase, 380-415 Vac Operation		
F1	1	To CNTL1, L1 leg, KTK
F2	3	To TR0 & CNTL2, L2 leg, KTK
F3	3	To TR0 & CNTL3, L3 leg, KTK

Power Distribution Panel		
Fuse Label	**Size (A)**	**Comments**
FE	1	Zone Controller 1, 117 Vac, AGC
EF	1	Zone Controller 2, 117 Vac, AGC
FG	1	Zone Controller 3, 117 Vac, AGC
FH	1	Belt Speed Readout, 117 Vac, AGC
FJ	2	PLC Power Supply, 117 Vac, AGC

Belt Motor Controller		
Fuse Label	**Size (A)**	**Comments**
Line Fuse	15	On control board, ABC (ceramic)
Motor Fuse	1.5 or 2	On control board, varies w/ motor, ABC

Heating Lamp/Edge Heat SCR Fuses (all KTK)		
Fuse Label	**Size (A)**	**Comments**
F30	20.0	Zone 1 Top, 208-240 Vac, KTK
F31	20.0	Zone 1 Bottom, 208-240 Vac, KTK
F32	20.0	Zone 2 Top, 208-240 Vac, KTK
F33	20.0	Zone 2 Bottom, 208-240 Vac, KTK
F34	20.0	Zone 3 Top, 208-240 Vac, KTK
F35	20.0	Zone 3 Bottom Top, 208-240 Vac, KTK

HIGH POWER LA-306

Safety Enclosure (TR0, basic control)		
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FA	5	24 Vac control, AGC
FB	4	117 Vac power, AGC
1 Phase or 3 Phase, 208-240 Vac Operation (* for 3 Phase only)		
F1	4	To TR0 & CNTL1, L1 leg, KTK
F2	4	To TR0 & CNTL2*, L2 leg, KTK
F3*	4	To CNTL3*, L3 leg, KTK
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F1	1	To CNTL1, L1 leg, KTK
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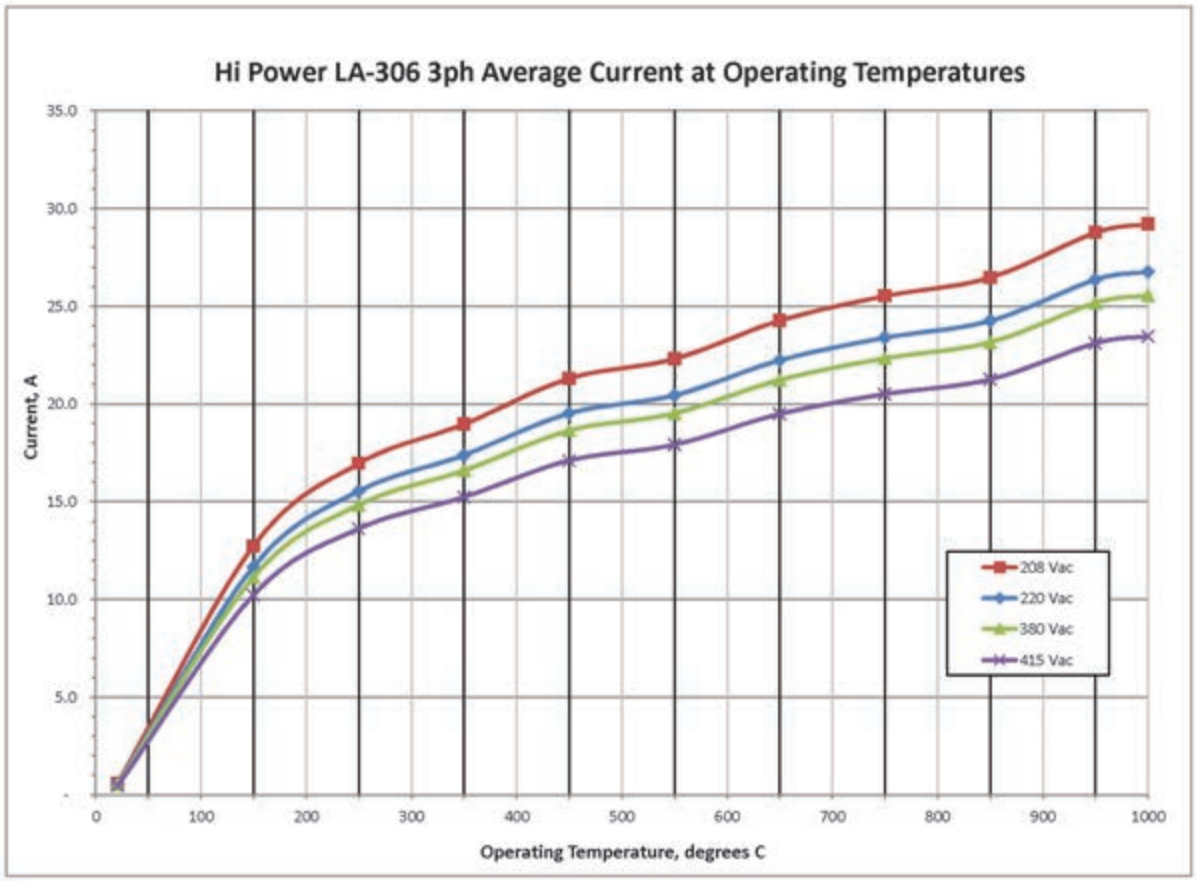
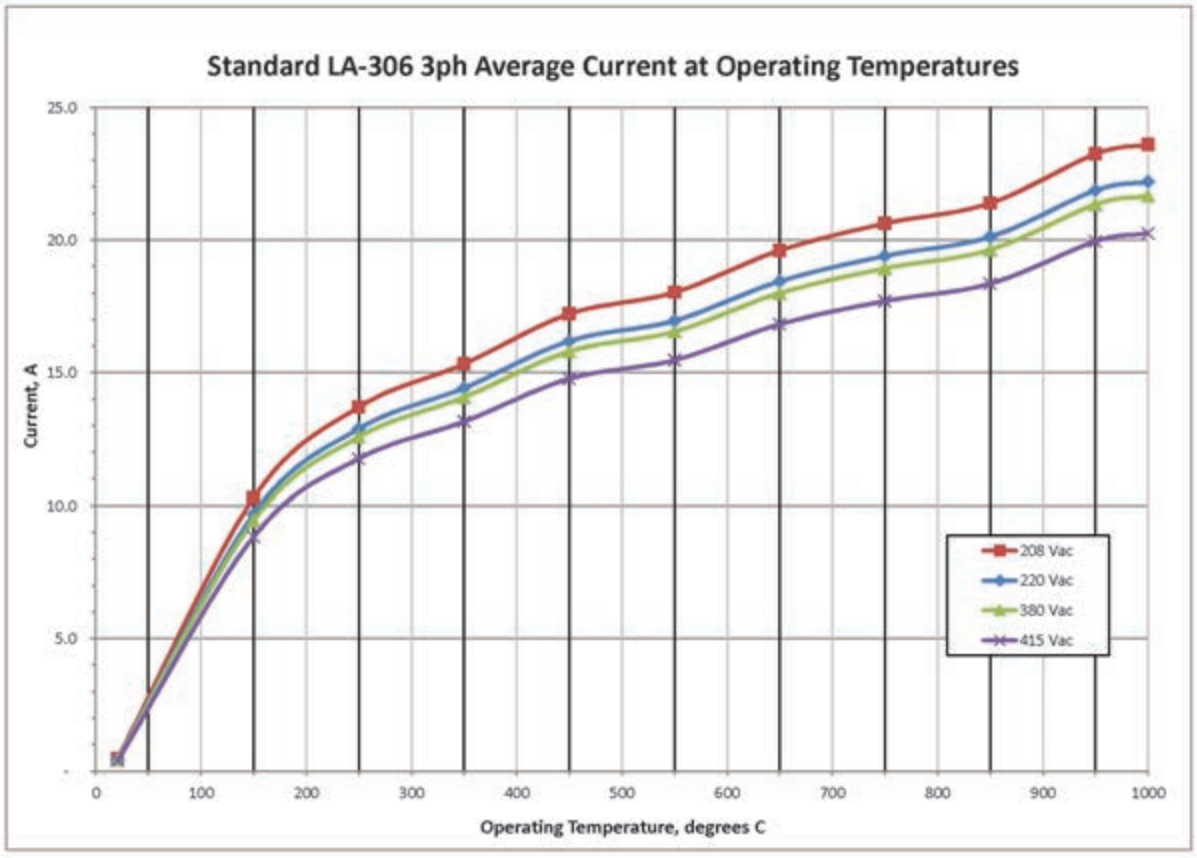
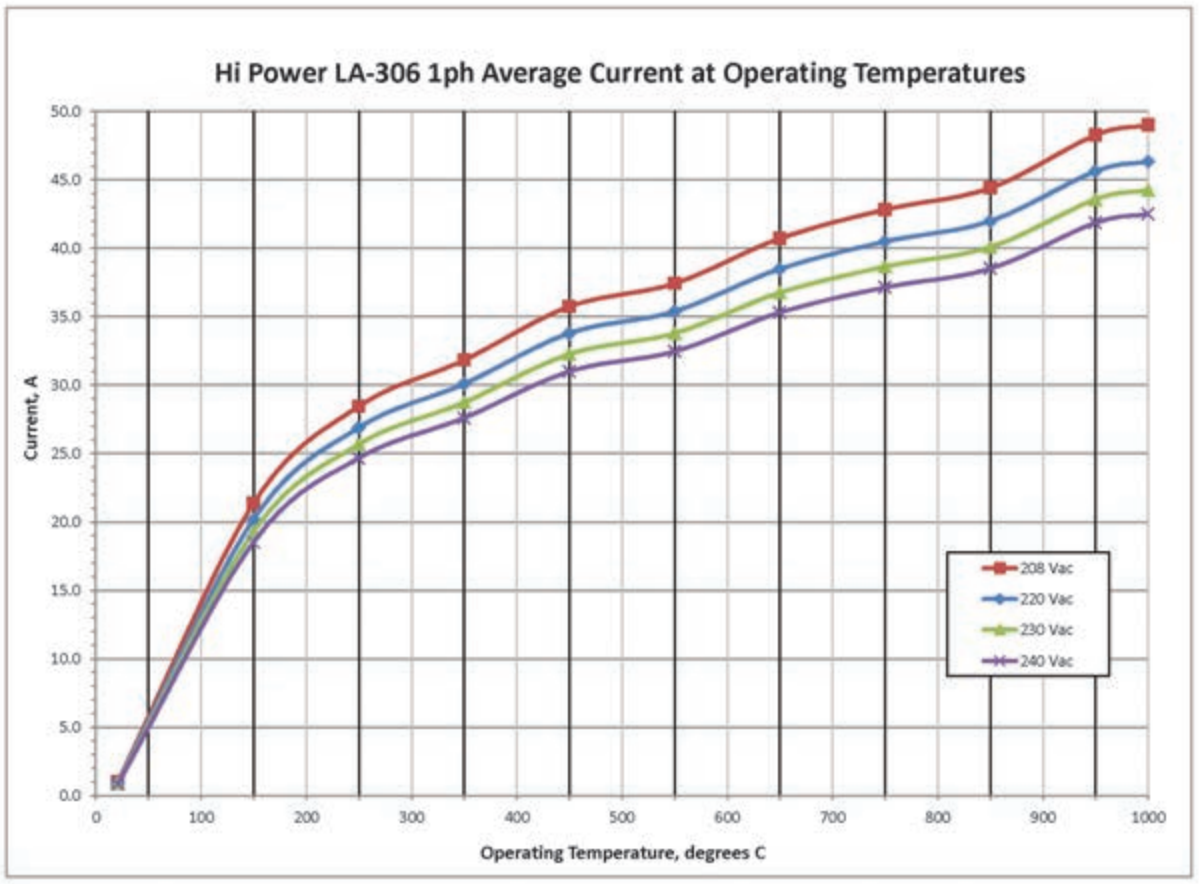
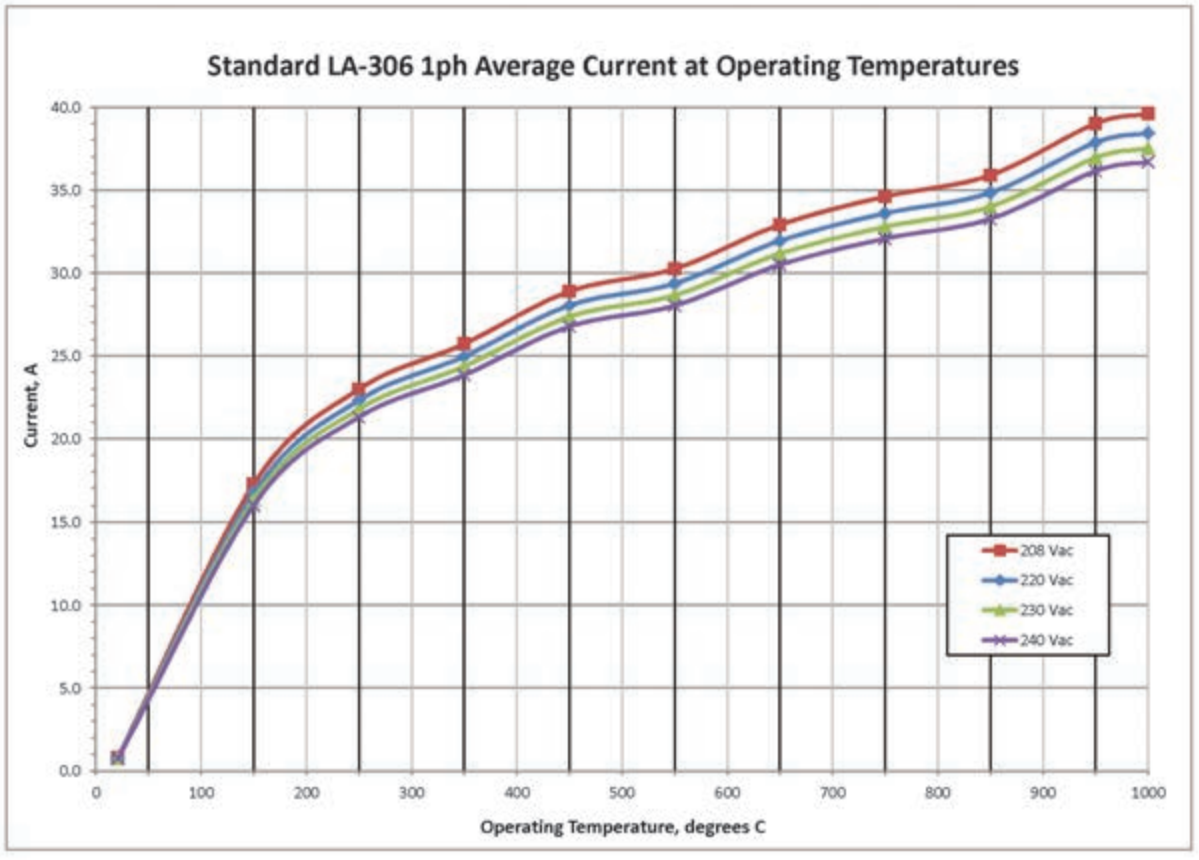
F31	20.0	Zone 1 Bottom, 208-240 Vac, KTK
F32	25.0	Zone 2 Top, 208-240 Vac, KTK
F33	25.0	Zone 2 Bottom, 208-240 Vac, KTK
F34	20.0	Zone 3 Top, 208-240 Vac, KTK
F35	20.0	Zone 3 Bottom Top, 208-240 Vac, KTK





Expected three phase current draw when stabilized at various temperatures.





Expected single phase current draw when stabilized at various temperatures.