PHOENIX PHASE CONVERTERS

USER MANUAL

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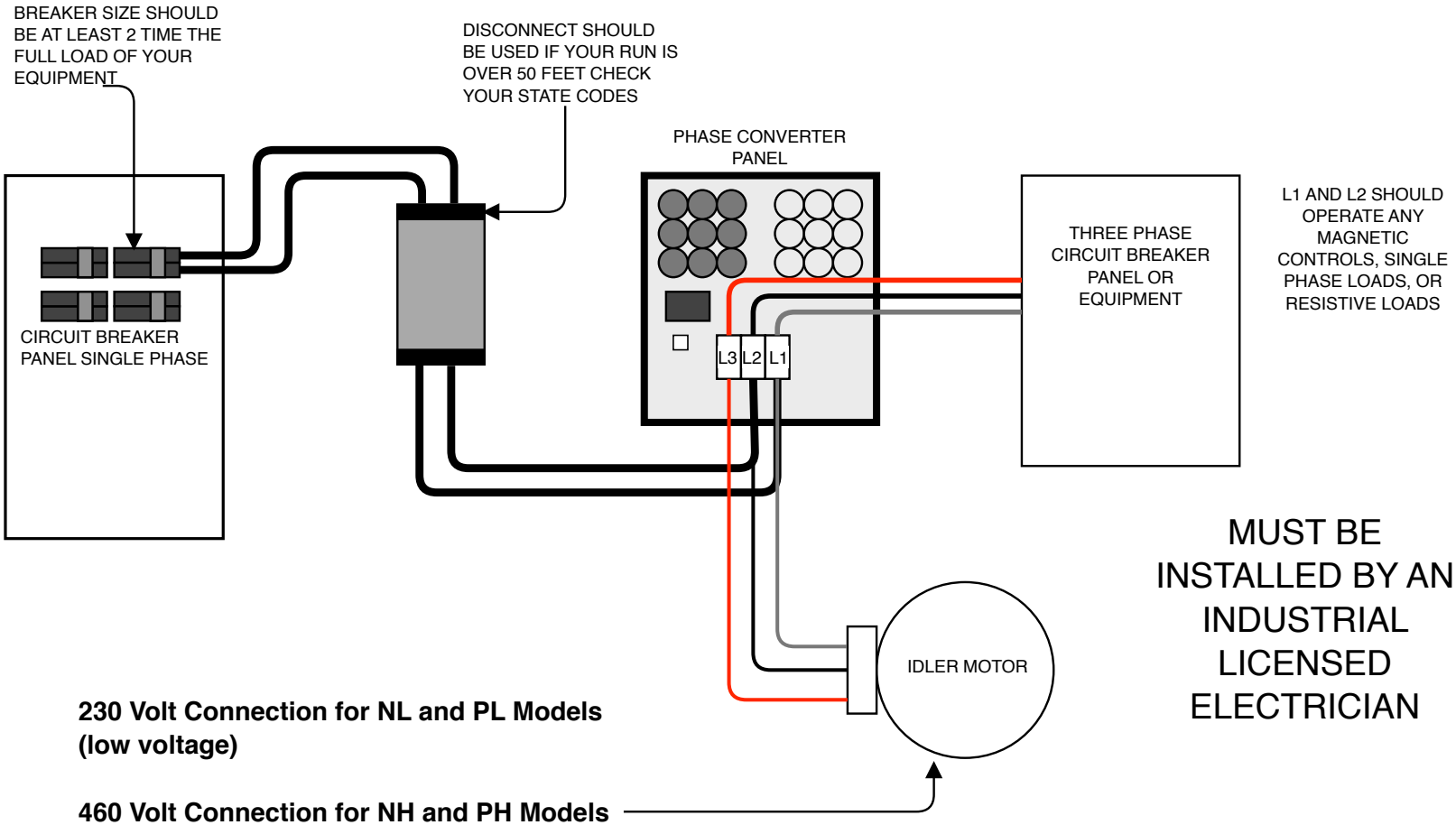
NL and NH - MODEL ONLY

Phase Converters WITHOUT a start and stop button on the front lid.



MUST BE INSTALLED BY AN INDUSTRIAL LICENSED ELECTRICIAN

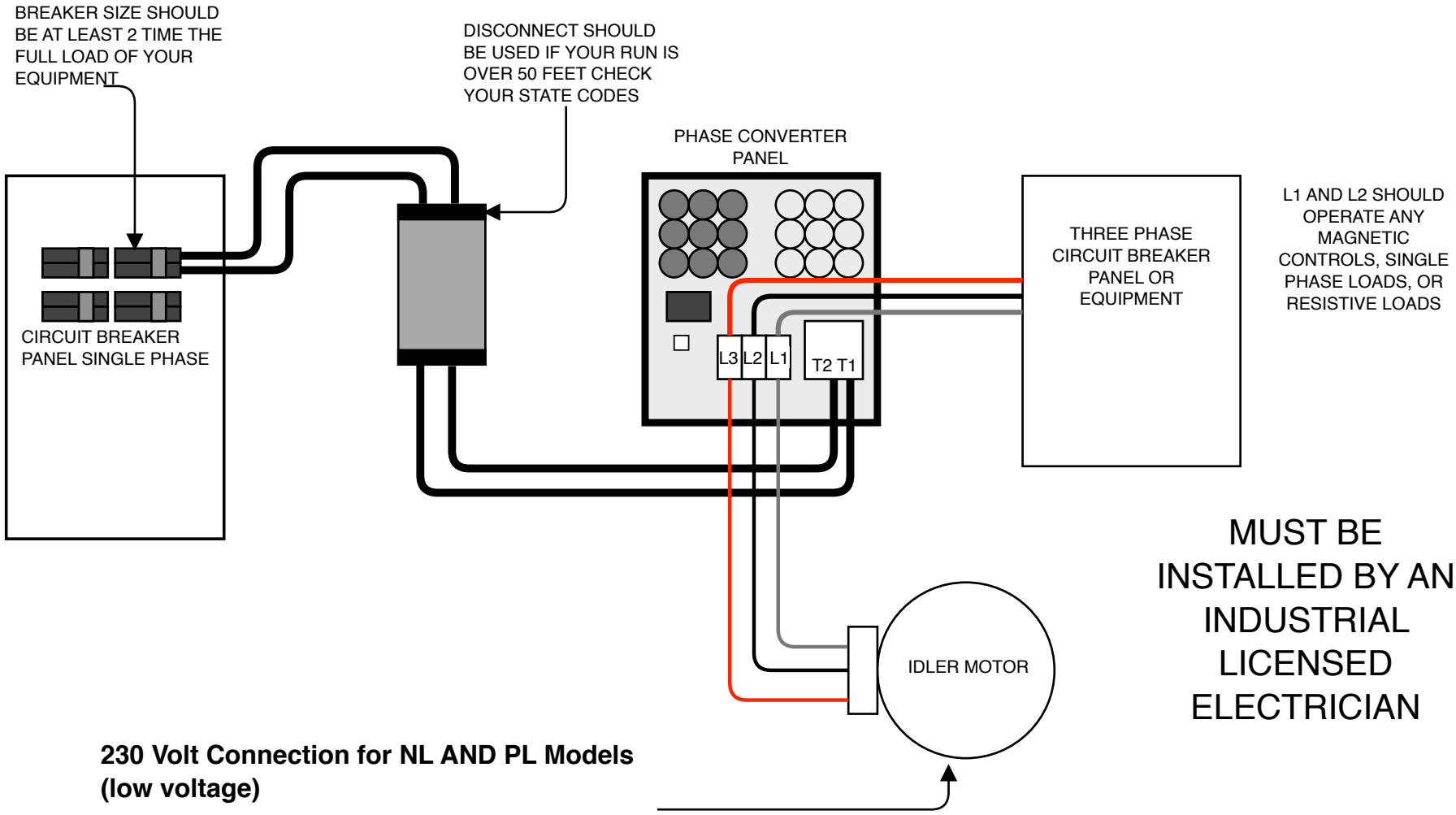
230 Volt Connection for NL and PL Models (low voltage)

460 Volt Connection for NH and PH Models (high voltage)

Diagrams are located on the name plate.

PL and PH - MODEL ONLY

Phase Converters WITH a start and stop button on the front lid.



MUST BE INSTALLED BY AN INDUSTRIAL LICENSED ELECTRICIAN

230 Volt Connection for NL AND PL Models (low voltage)

460 Volt Connection for NL AND PL Models (high voltage)

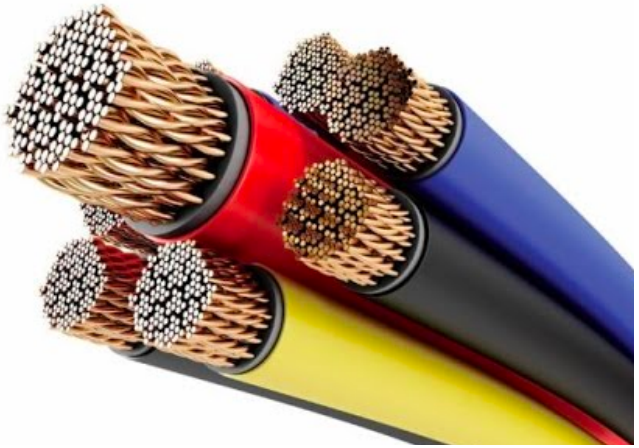
Diagrams are located on the name plate.

Wire And Breaker Size Guide

230 VOLT MODELS ONLY

Idler Horsepower	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Minimum Breaker Size	10	15	20	20	30	40	40	50	60	80	100	125	150
Maximum Breaker Size	25	30	40	40	80	100	125	150	200	250	300	350	400
Single Phase Wire Size	10	8	8	6	4	4	2	2	1/0	2/0	3/0	4/0	300
Idler Motor Wire Size	10	10	10	8	8	6	4	3	3	2	1	1/0	2/0

Increase Wire Size For Every 50 Feet And Round Up - For Breakers Use 2 Times the Full Load of the Equipment



Important Guide Lines Of Installation

1. Make sure you have enough power to start the phase converter, check with your local electric company to see what size transformer you have on the pole. The Transformer KVA Number should be higher than the phase converter HP number

2. You must use an Industrial Licensed Electrician

3. All loads including transformers must be disconnected or in the off position before starting the phase converter each time.

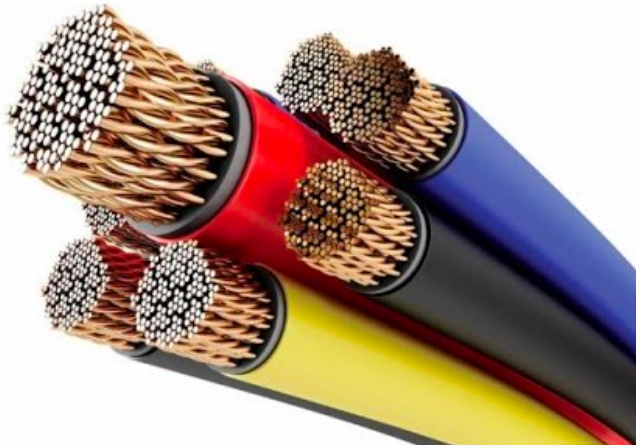
4. Magnetic controls, single phase loads, or resistive loads must be energized by L1 and L2.

Wire And Breaker Size Guide

>> 460 VOLT MODELS ONLY <<

Idler Horsepower	3	5	7.5	10	15	20	25	30	40	50	60	75	100
Minimum Breaker Size		10	10	15	15	20	20	25	30	40	50	80	75
Maximum Breaker Size		15	20	25	40	50	60	75	100	125	150	175	200
Single Phase Wire Size		8	8	8	6	8	4	4	1	2	2	2/0	2/0
Idler Motor Wire Size		10	10	8	8	8	6	6	4	4	4	2	2

Increase Wire Size For Every 50 Feet And Round Up - For Breakers Use 2 Times the Full Load of the Equipment



Important Guide Lines Of Installation

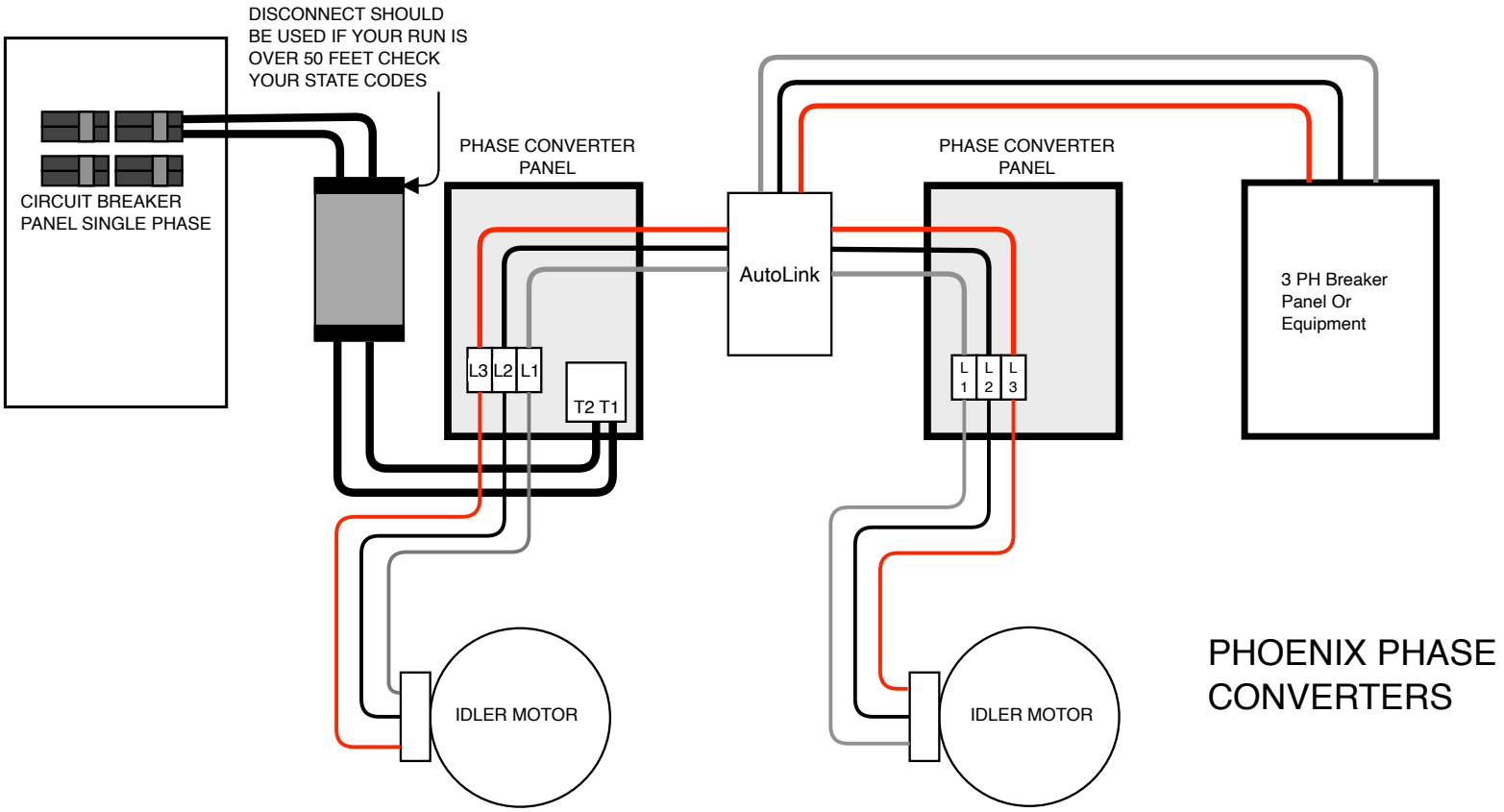
1. Make sure you have enough power to start the phase converter, check with your local electric company to see what size transformer you have on the pole. The Transformer KVA Number should be higher than the phase converter HP number

2. You must use an Industrial Licensed Electrician

3. All loads including transformers must be disconnected or in the off position before starting the phase converter each time.

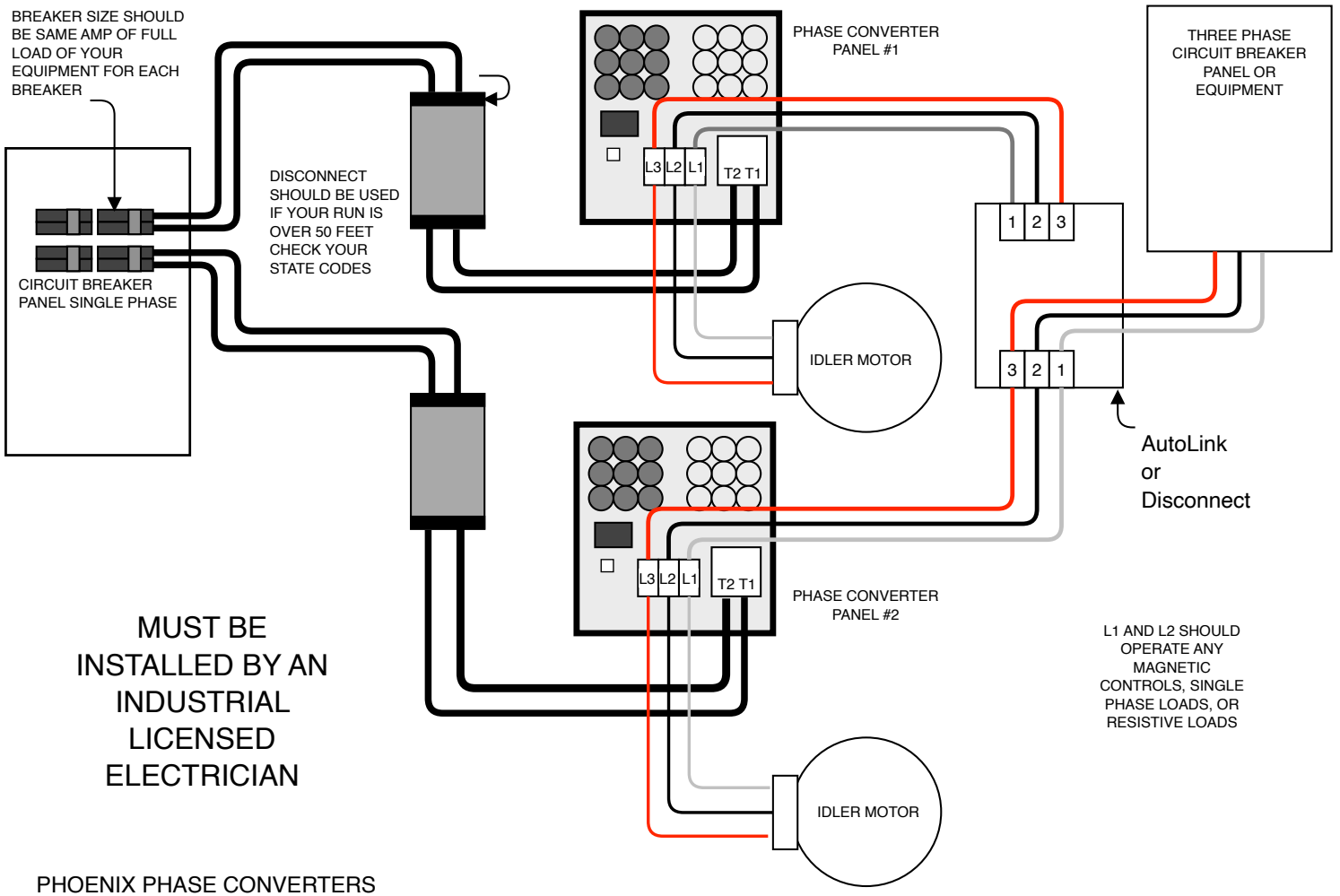
4. Magnetic controls, single phase loads, or resistive loads must be energized by L1 and L2.

Pairing two phase converters together with a Disconnect or AutoLink Box second phase converter self starting.



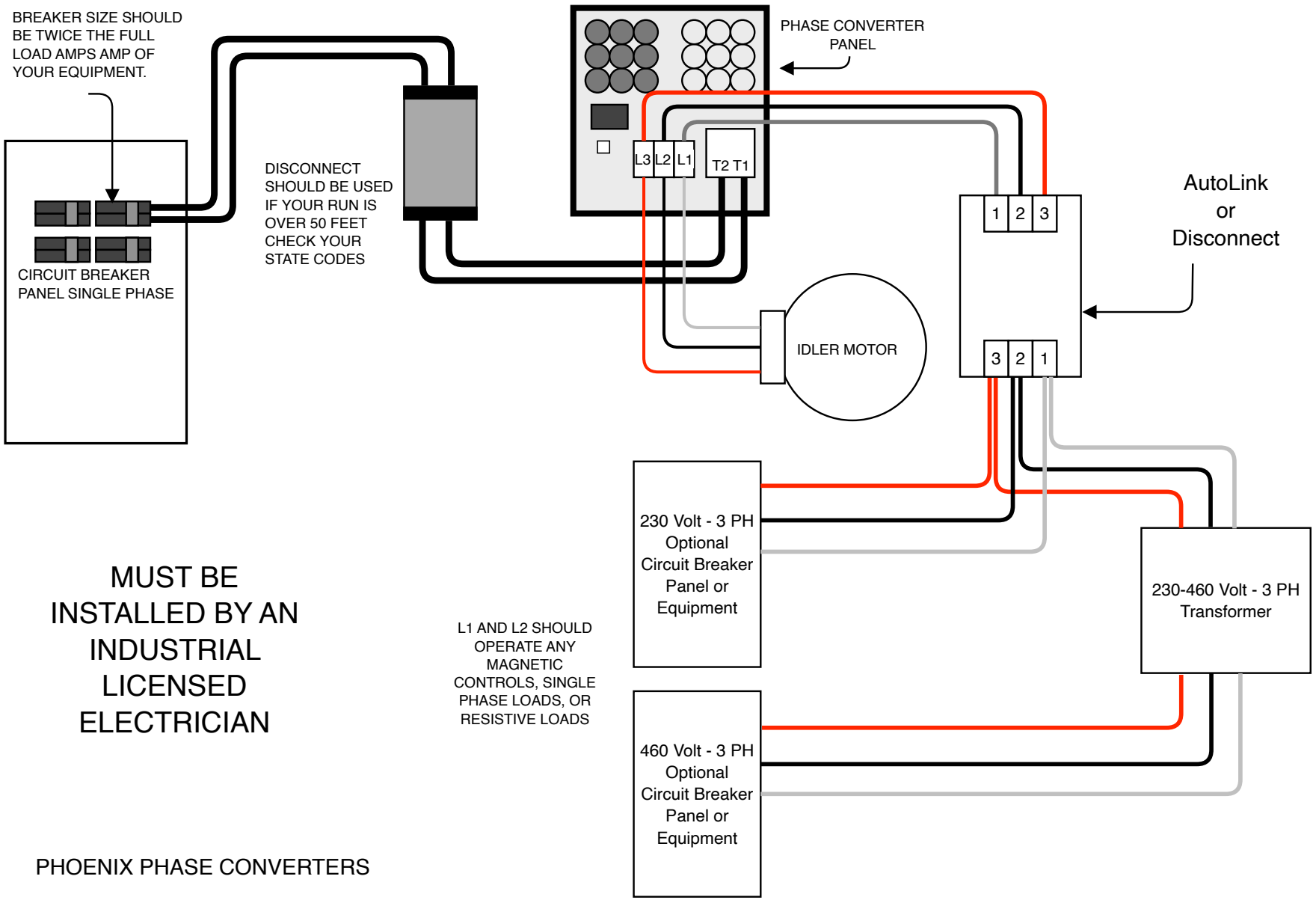
We recommend to use one of our AutoLink Boxes to pair two phase converters together, it will pair the phase converters together automatically, or you can turn the second phase converter off with a push of a button in the diagram above the second phase converter will automatically start one the first one is started manually. It is important that you use the proper wire sizes for both converters.

Pairing two phase converters together with a Disconnect or AutoLink Box.



This is the best recommend install to pair two or more phase converters together, smaller breakers are used in the drawing, also bringing the appropriate wire size to each phase converters is easier.

PL Model using a AutoLink or disconnect to a transformer.



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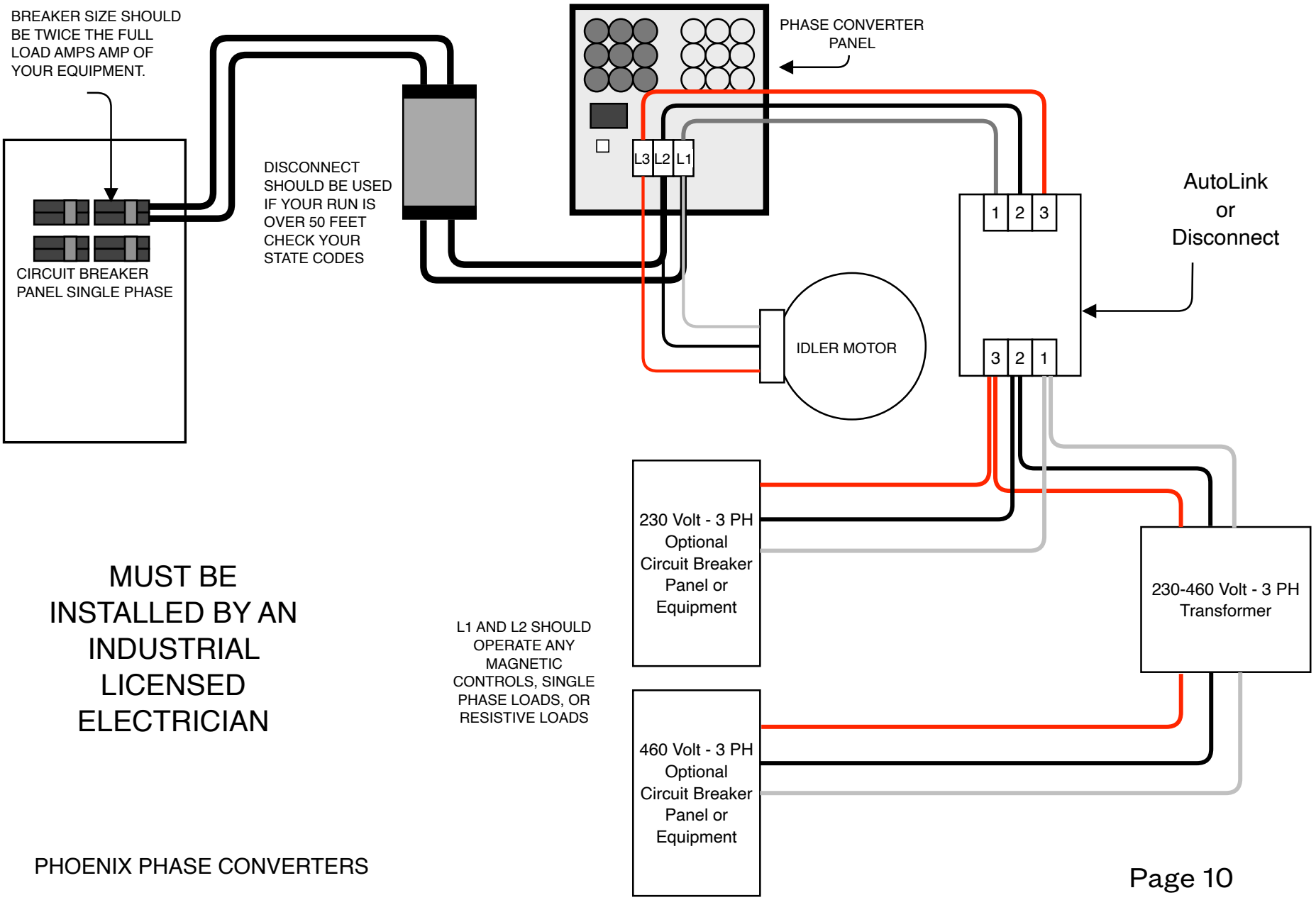
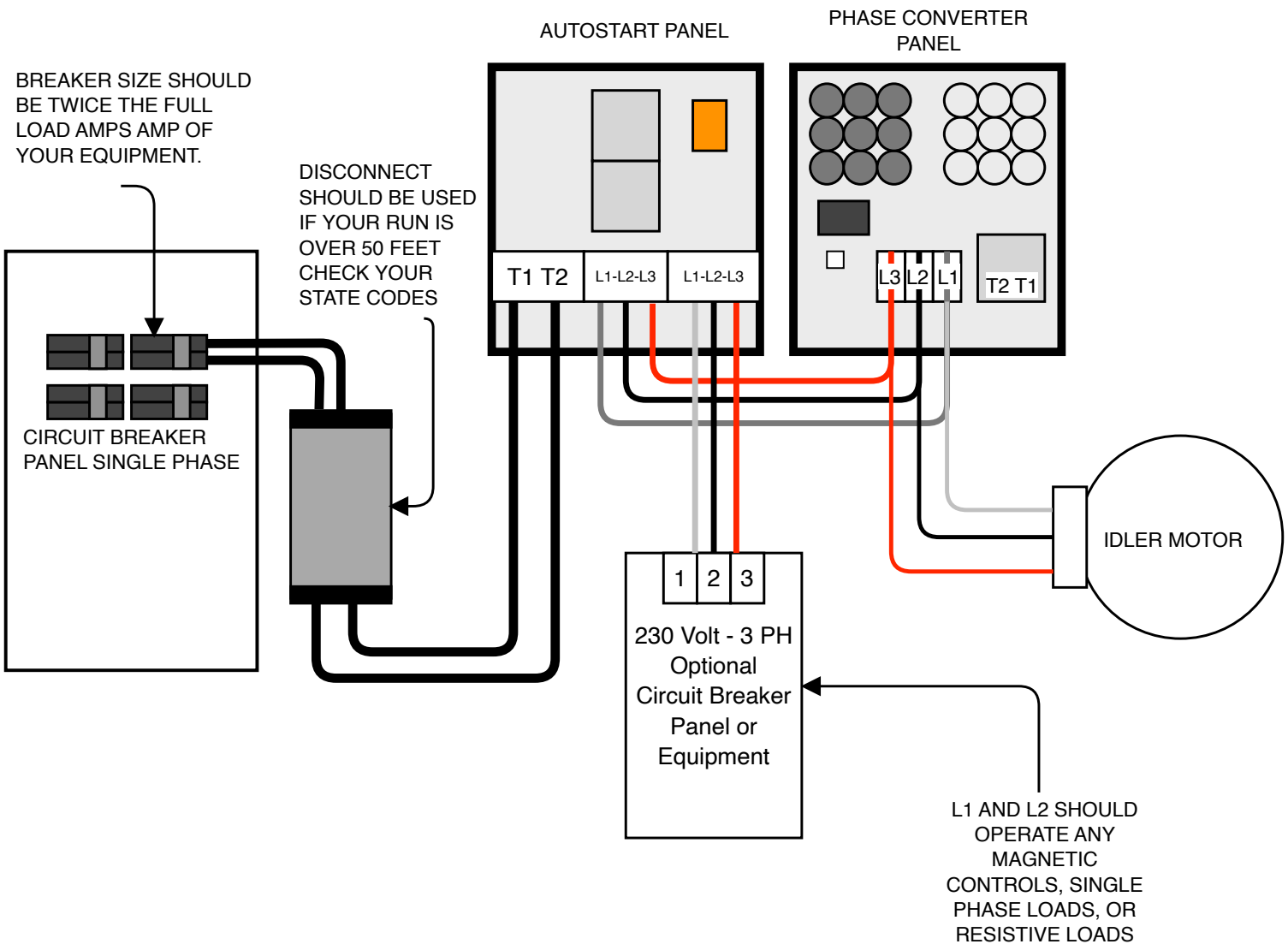
NL Model using a AutoLink or disconnect to a transformer.



MUST BE INSTALLED BY AN INDUSTRIAL LICENSED ELECTRICIAN

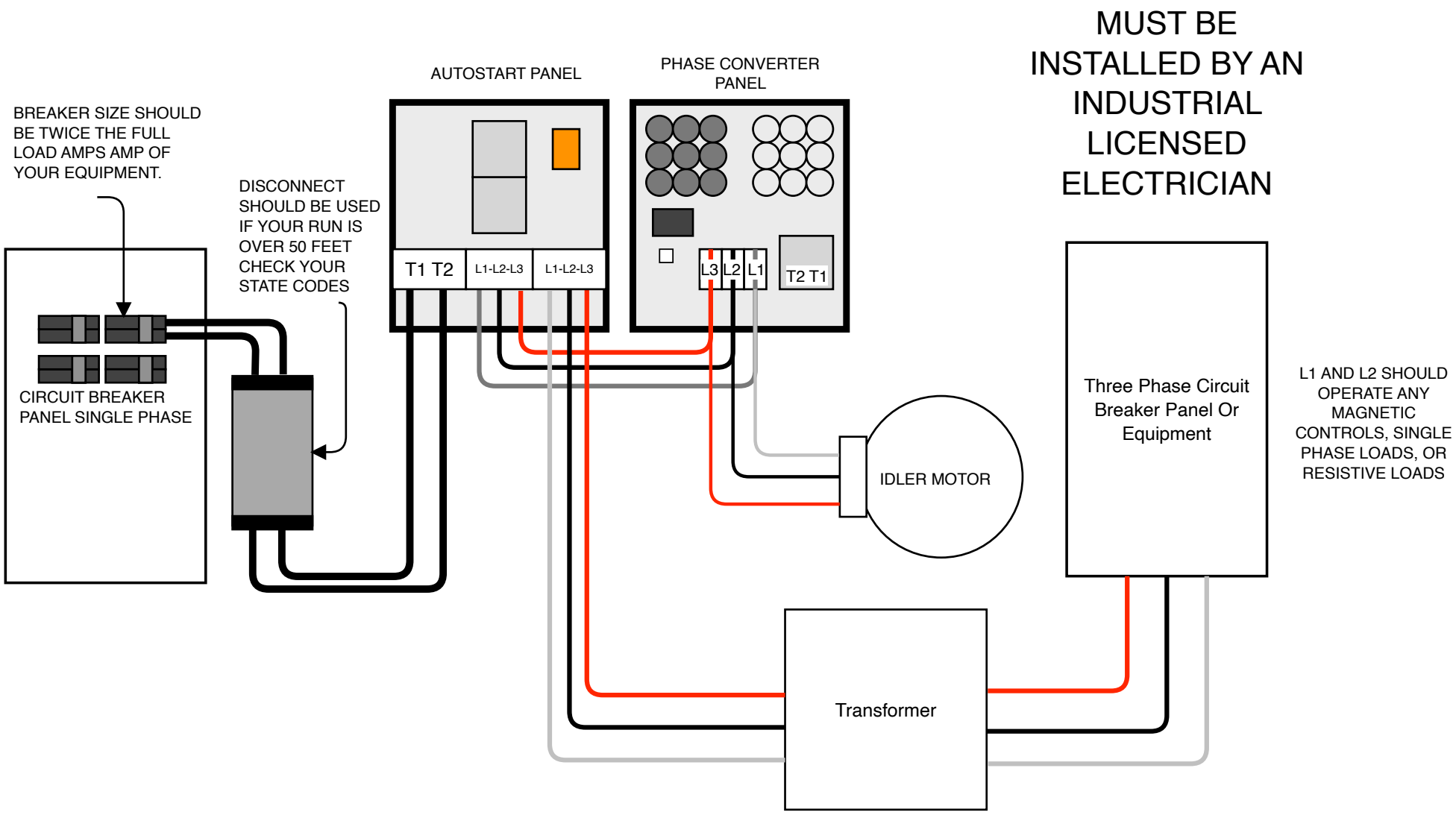
L1 AND L2 SHOULD OPERATE ANY MAGNETIC CONTROLS, SINGLE PHASE LOADS, OR RESISTIVE LOADS

Separate AutoStart Panel and Phase Converter Panel Connection

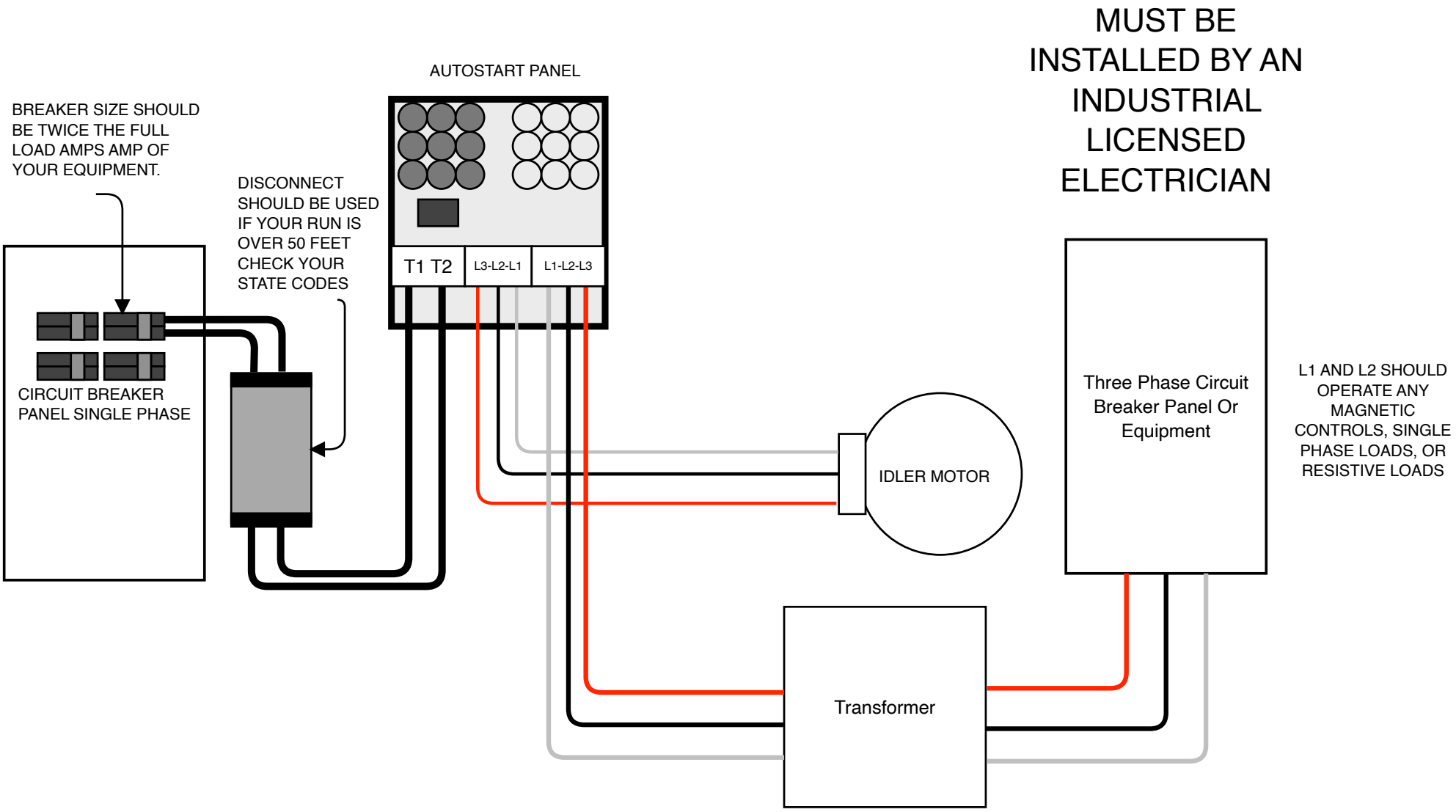


MUST BE INSTALLED BY AN INDUSTRIAL LICENSED ELECTRICIAN

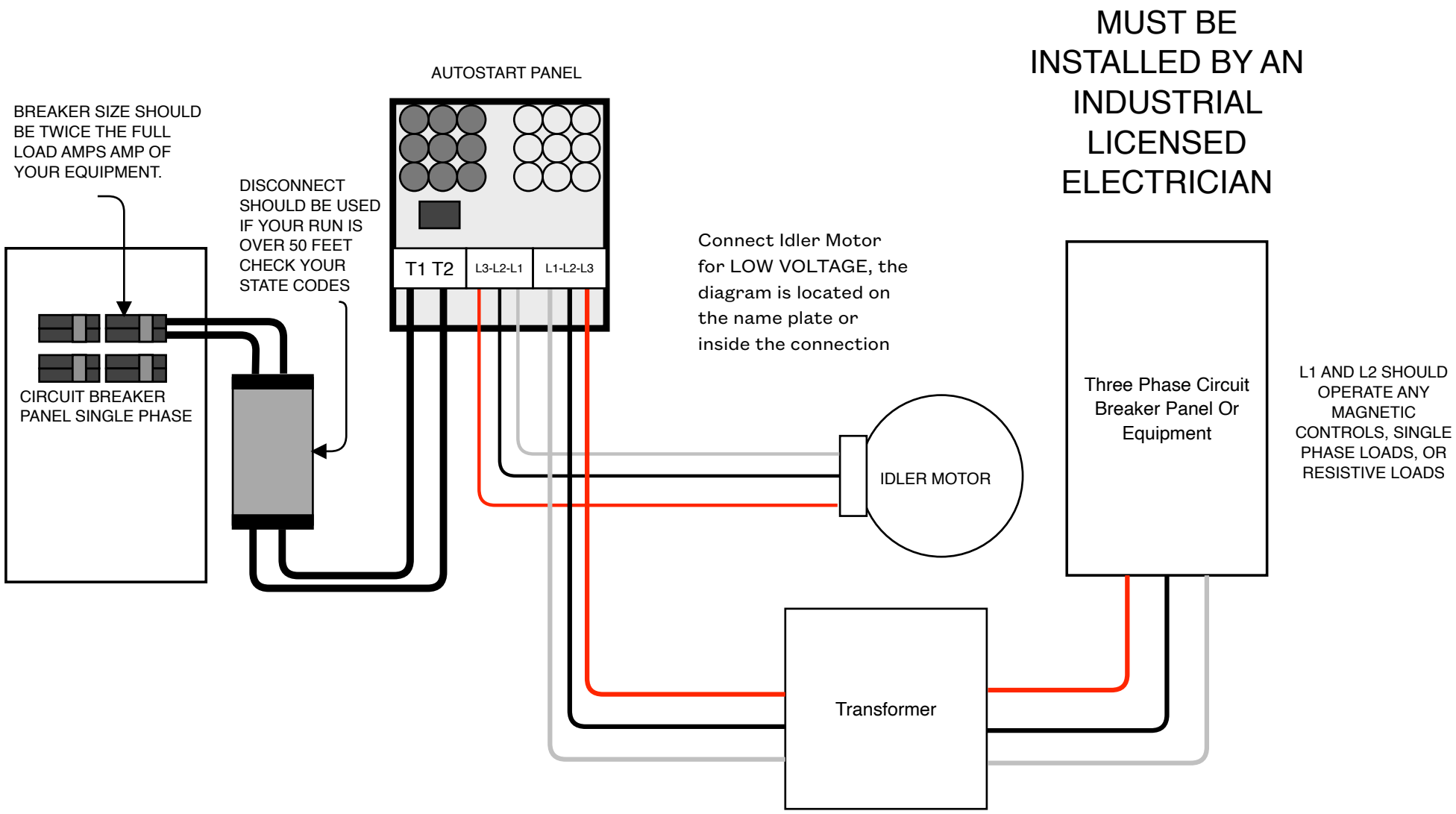
Separate AutoStart Panel, Phase Converter Panel, and Transformer Connection



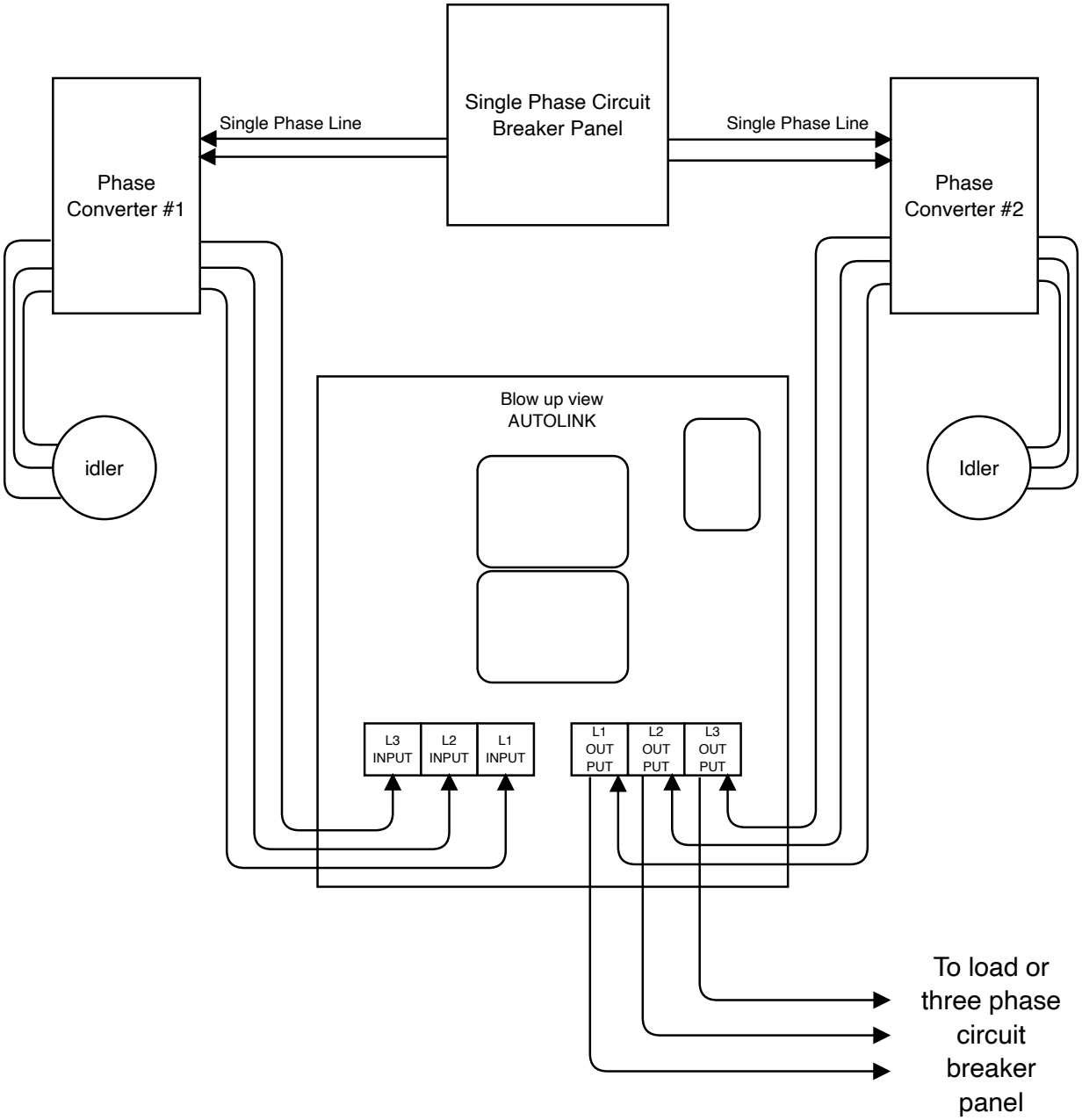
AutoStart Phase Converter with Transformer Connection



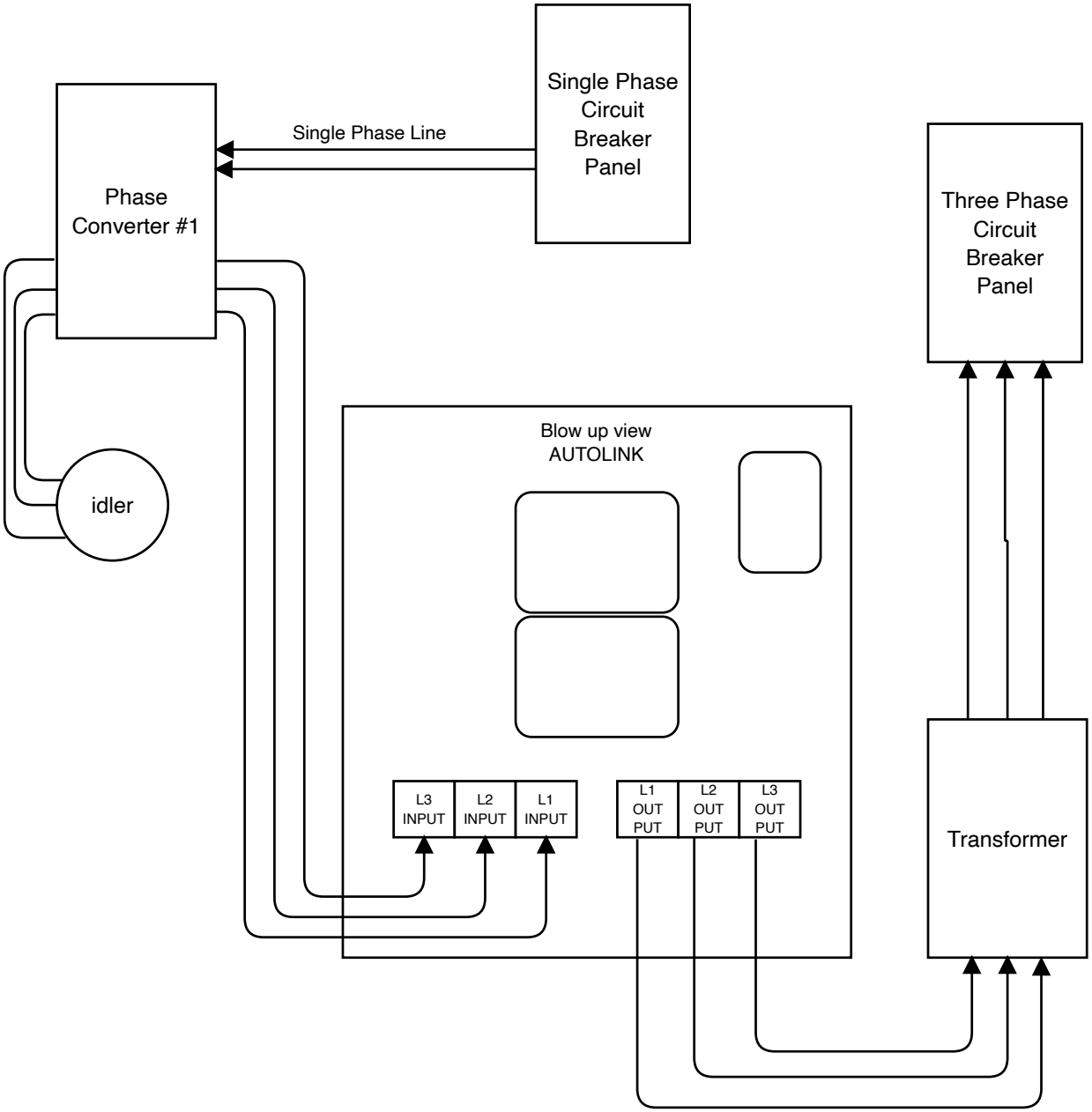
AutoStart Phase Converter Diagram



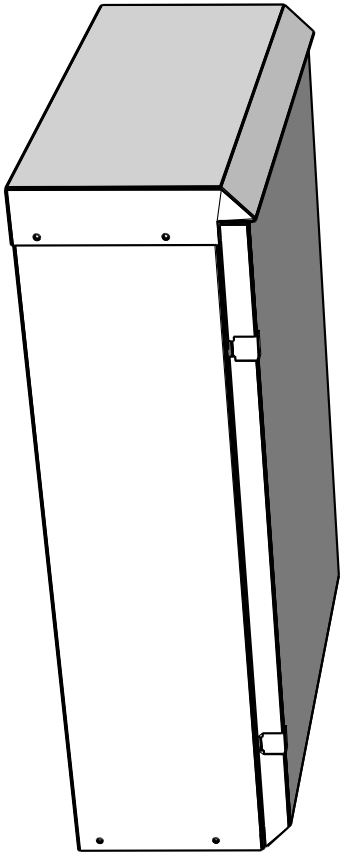
Connection Diagram of the AutoLink, connecting two phase converters together

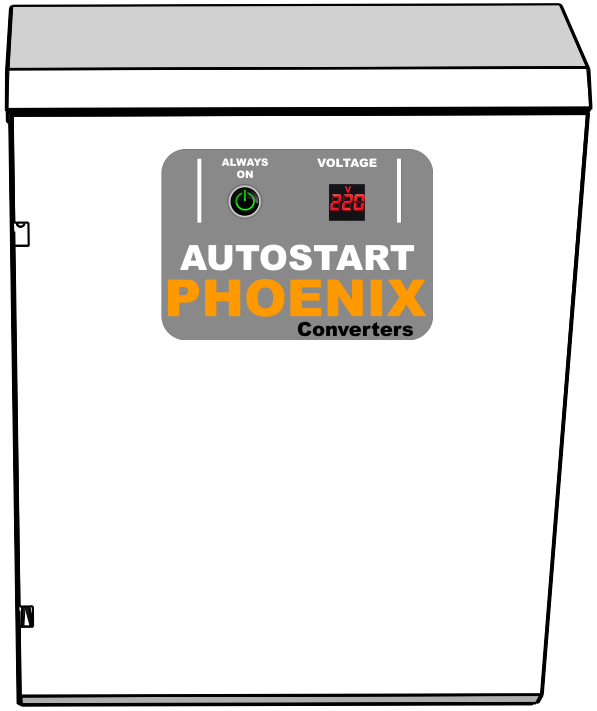


Connection Diagram of the AutoLink, connecting a phase converter with a transformer



Phase Converter Panel Dimensions

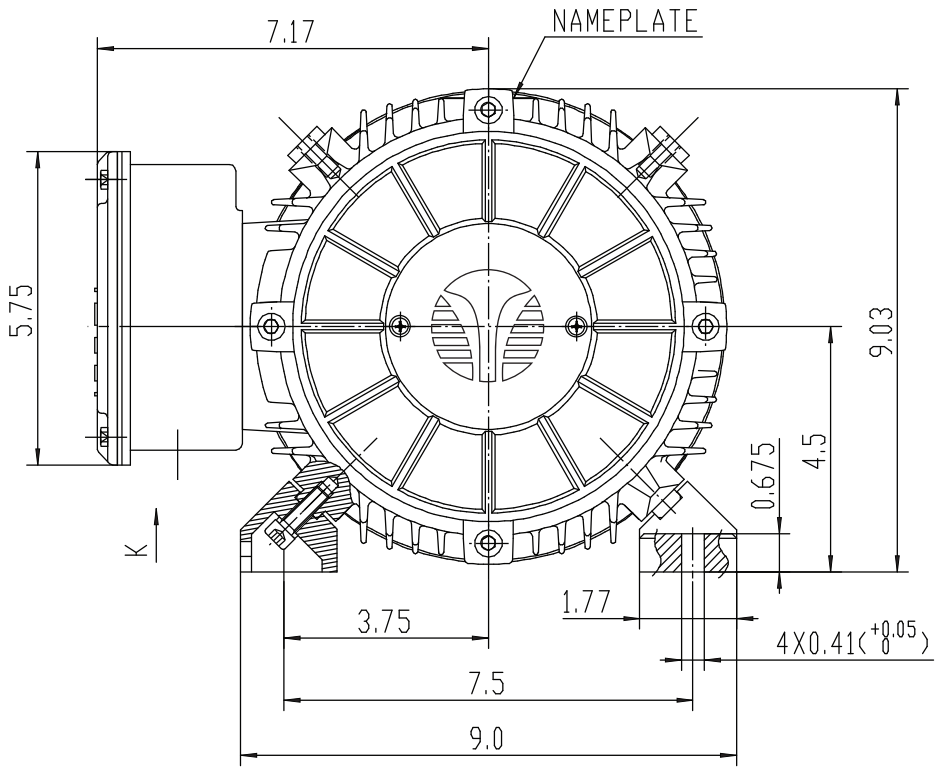


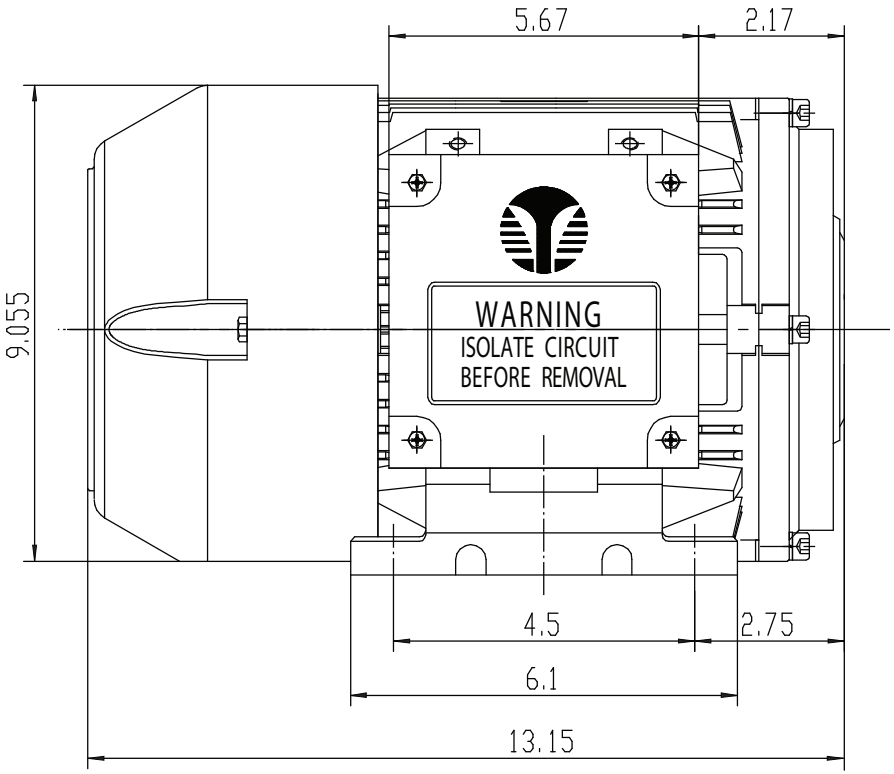


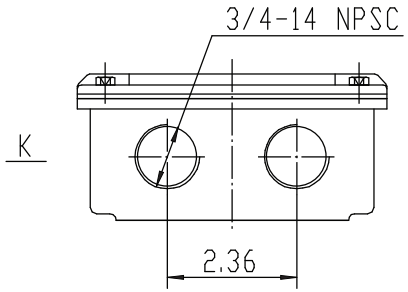
HP	HEIGHT	WIDTH	DEPTH	WEIGHT
2-3-5	12	12	4	8
7.5-10-15-20	19.5	12	6	15
25-30-40	23	18	8	35
50-60	26	26	8.5	62
75-100	32	32	8	110

NOTE: Due to COVID-19, box dimensions and colors could vary as we are using more than a couple resources to fill the demand of our orders.

3 HP and 5 HP Idler Motor Dimensions and Weight



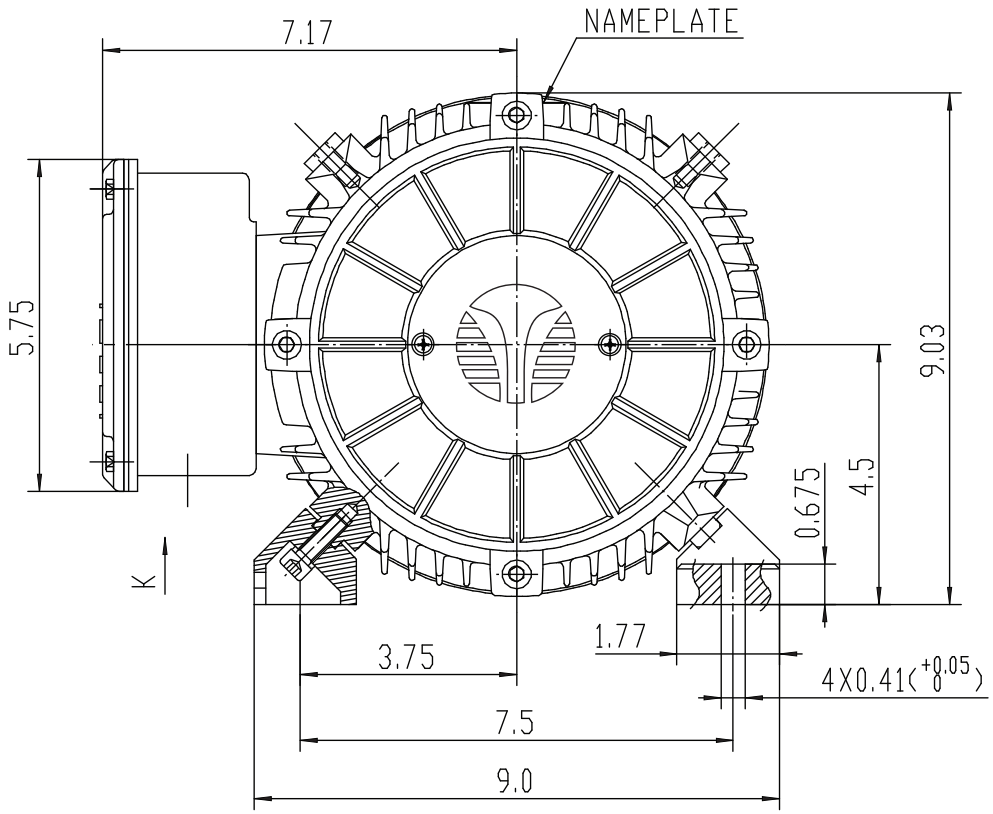


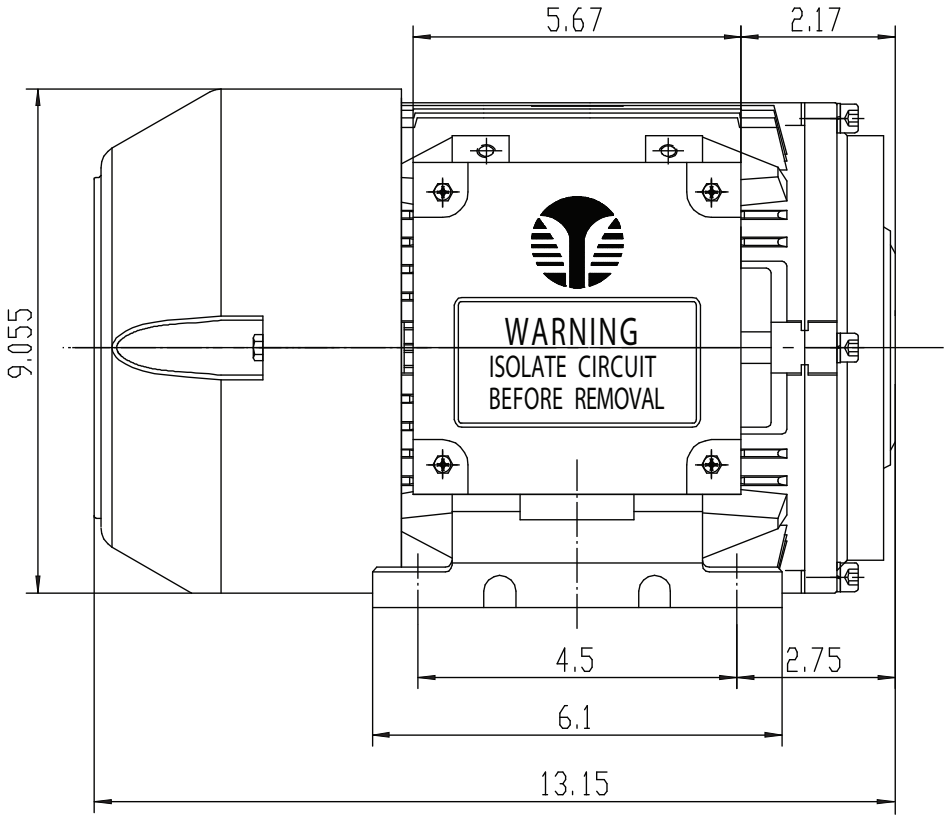


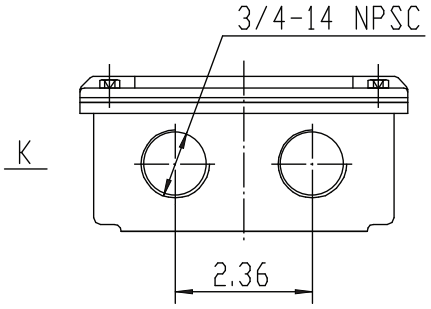
Weight: 3 HP = 94.815 lbs

Weight: 5 HP = 110.25 lbs

7.5 HP Idler Motor Dimensions and Weight

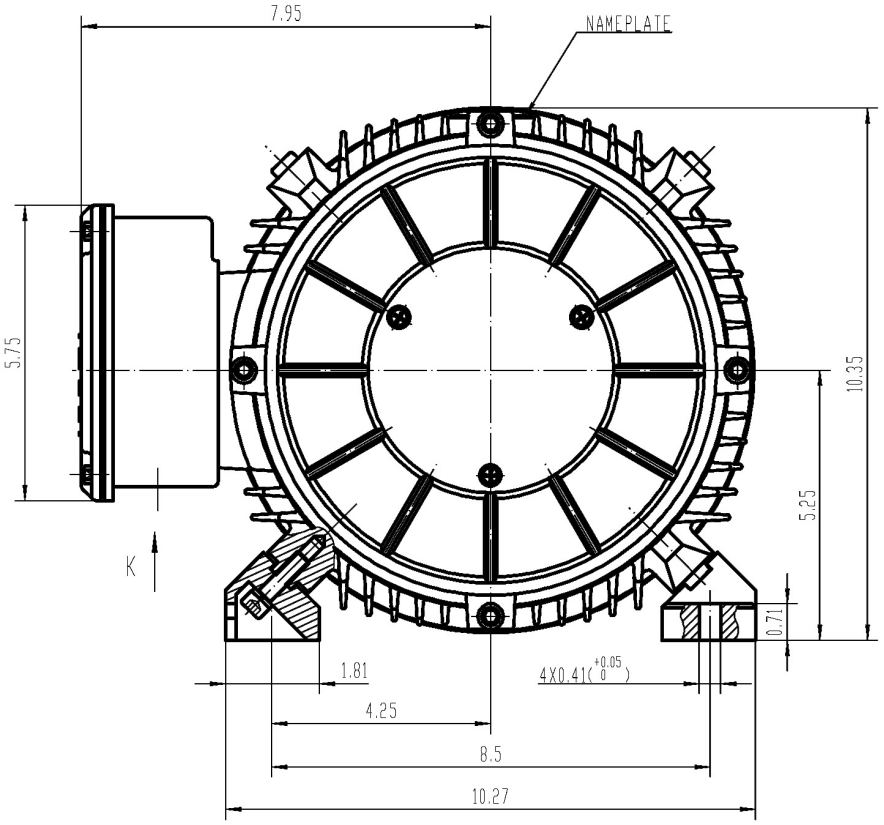


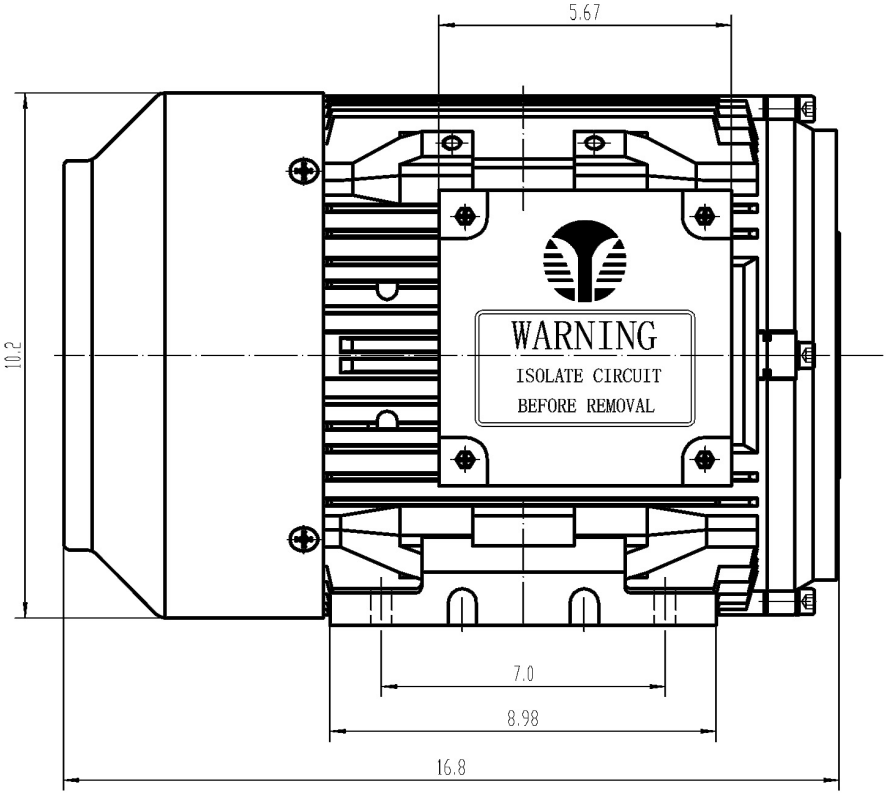


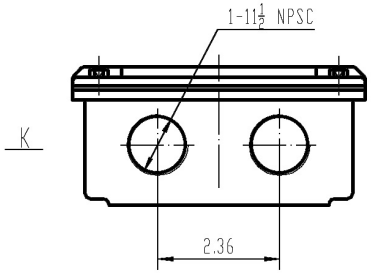


Weight: 158.76 lbs

10 HP Idler Motor Dimensions and Weight

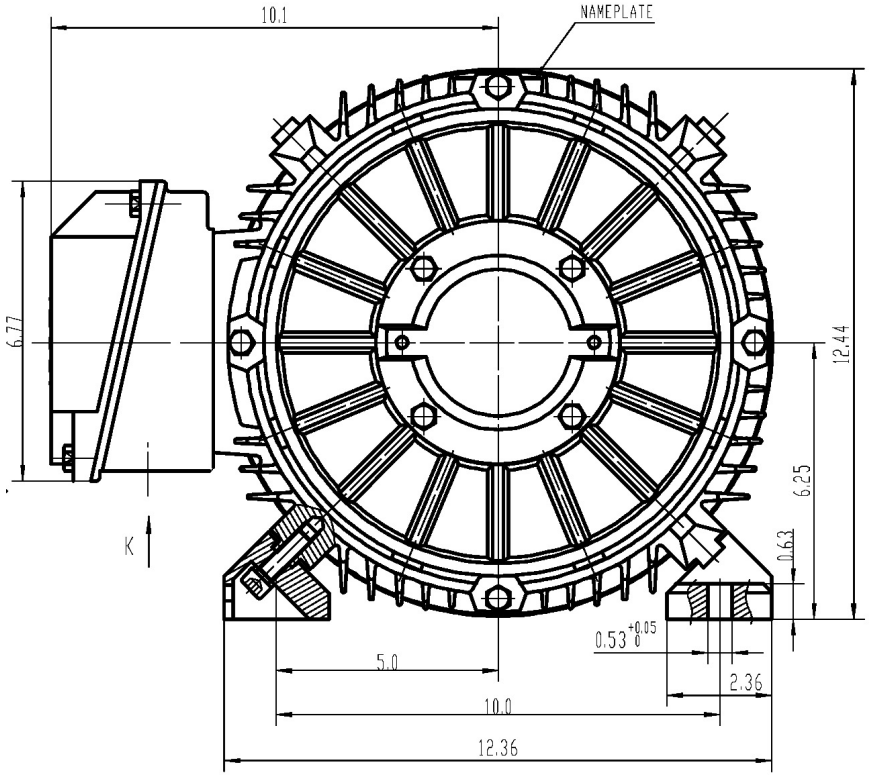


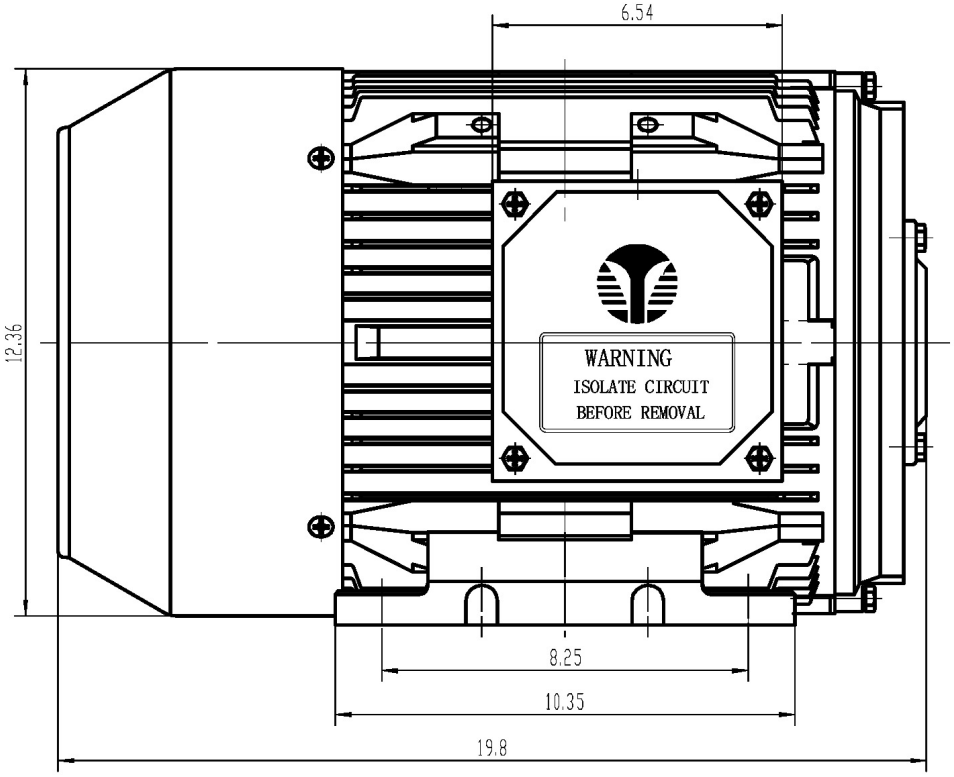


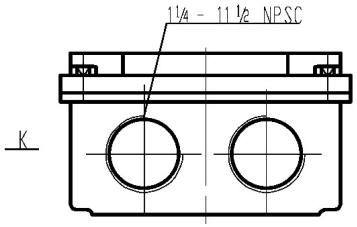


Weight: 181.9 lbs

15 HP and 20 HP Idler Motor Dimensions and Weight



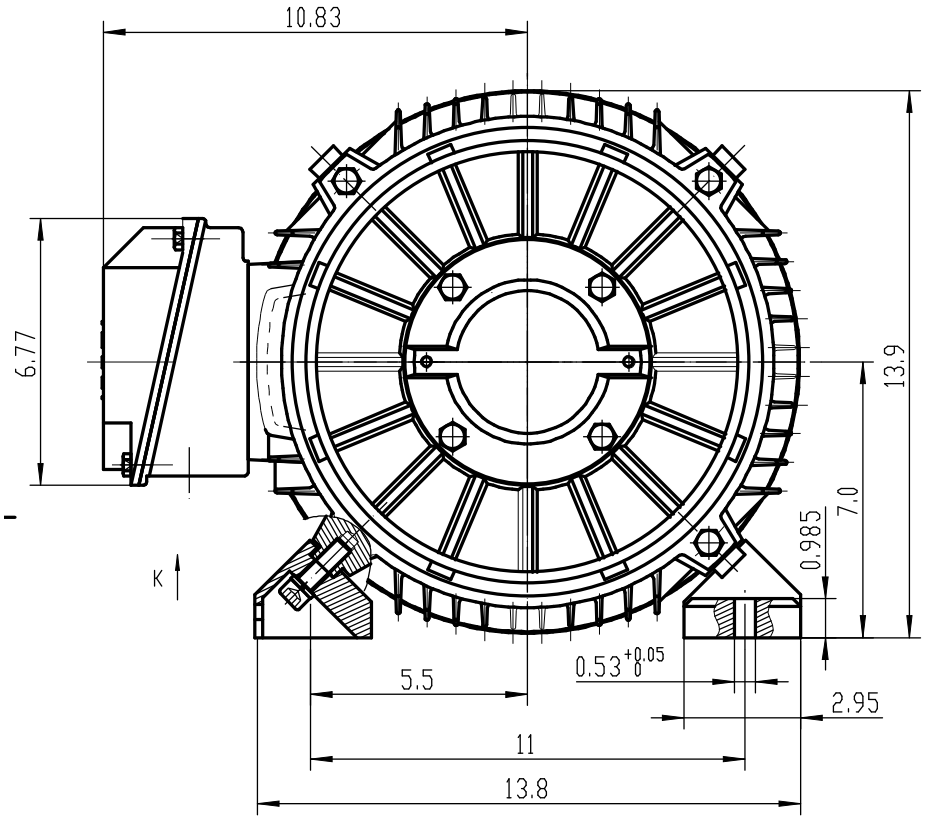


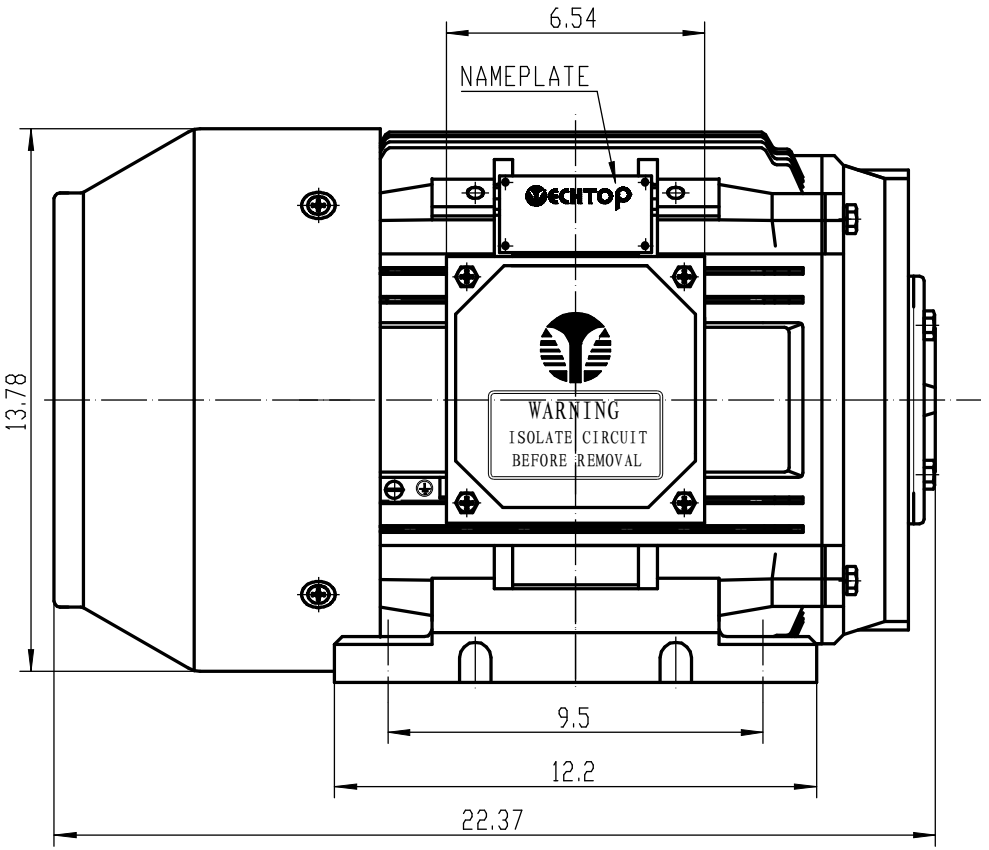


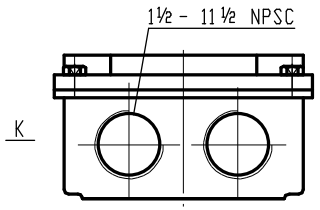
Weight: 15 HP = 278.9 lbs

Weight: 15 HP = 330.75 lbs

25 HP and 30 HP Idler Motor Dimensions and Weight



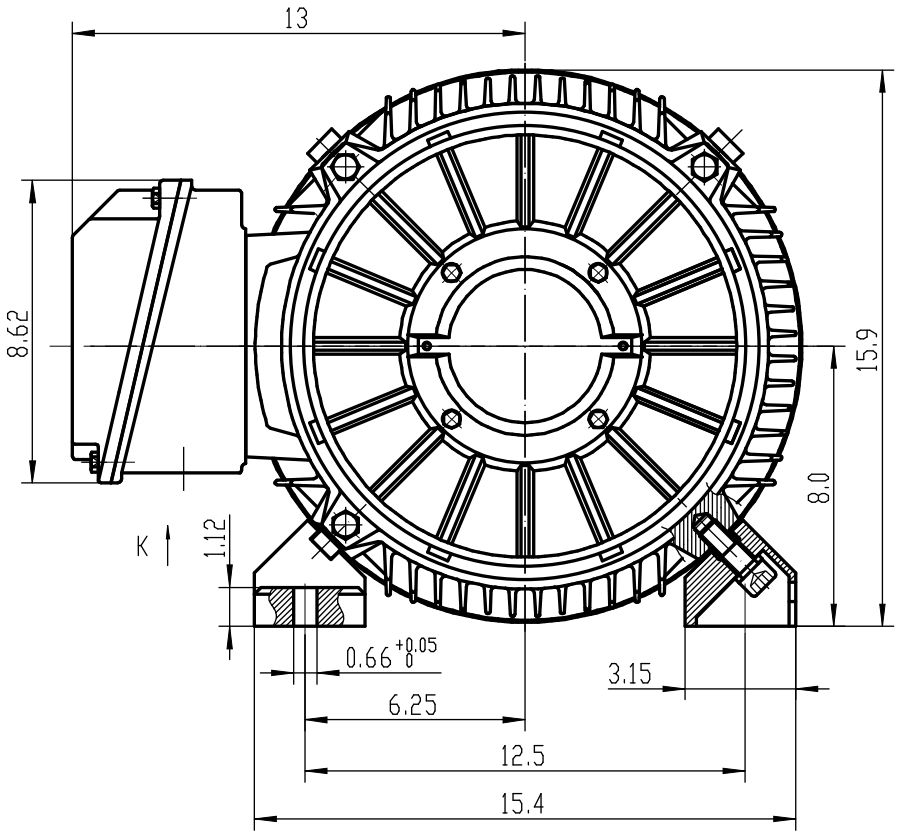


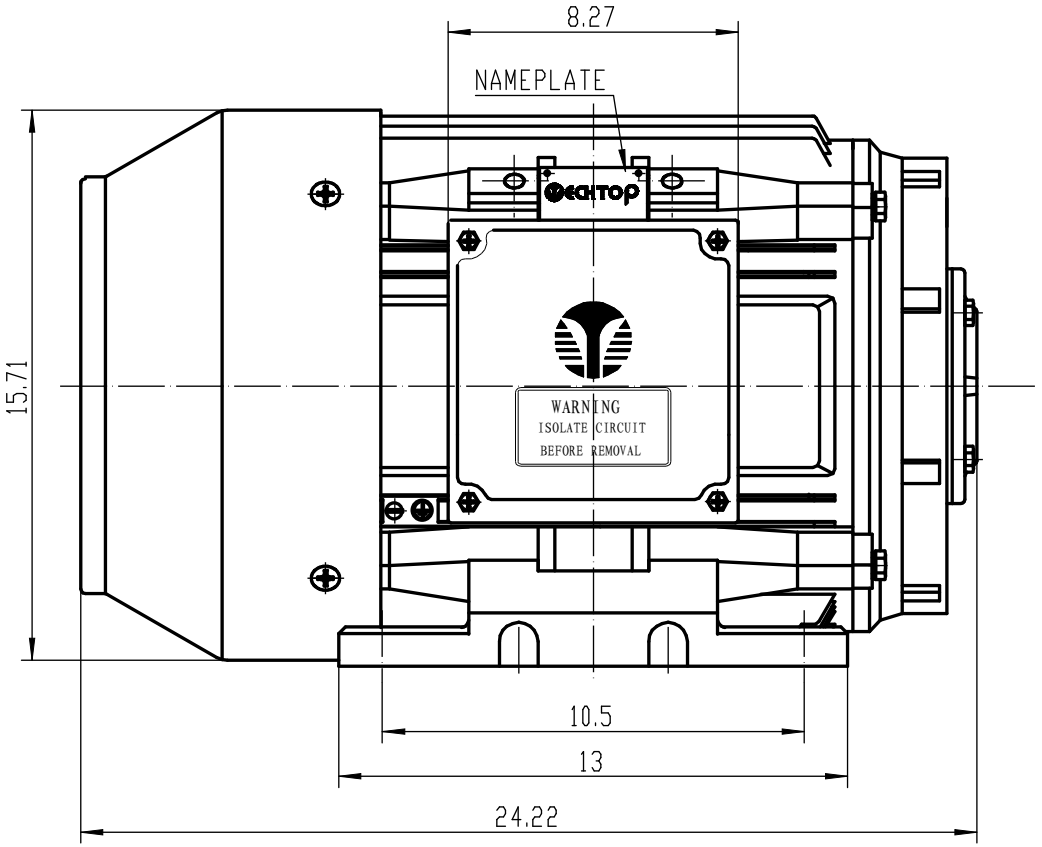


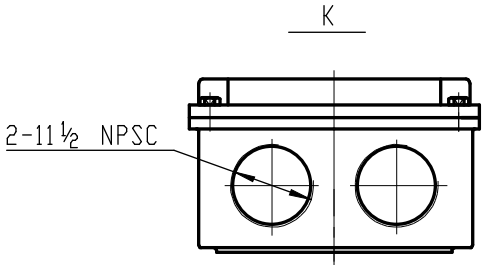
Weight: 25 HP = 330.75

Weight: 30 HP = 396.9 lbs

40 HP and 50 HP Idler Motor Dimensions and Weight



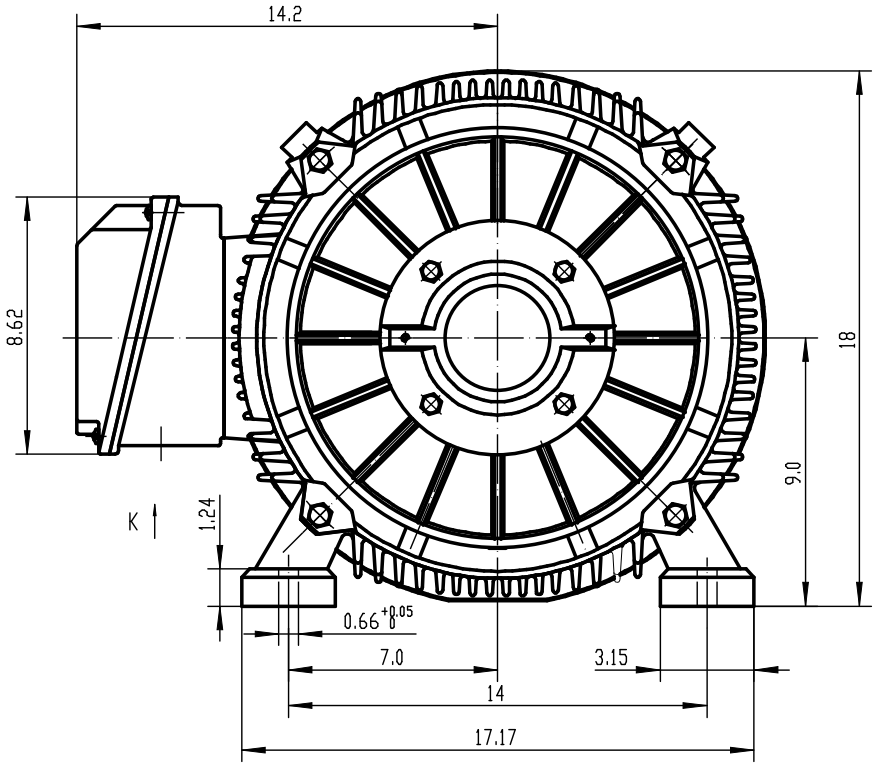


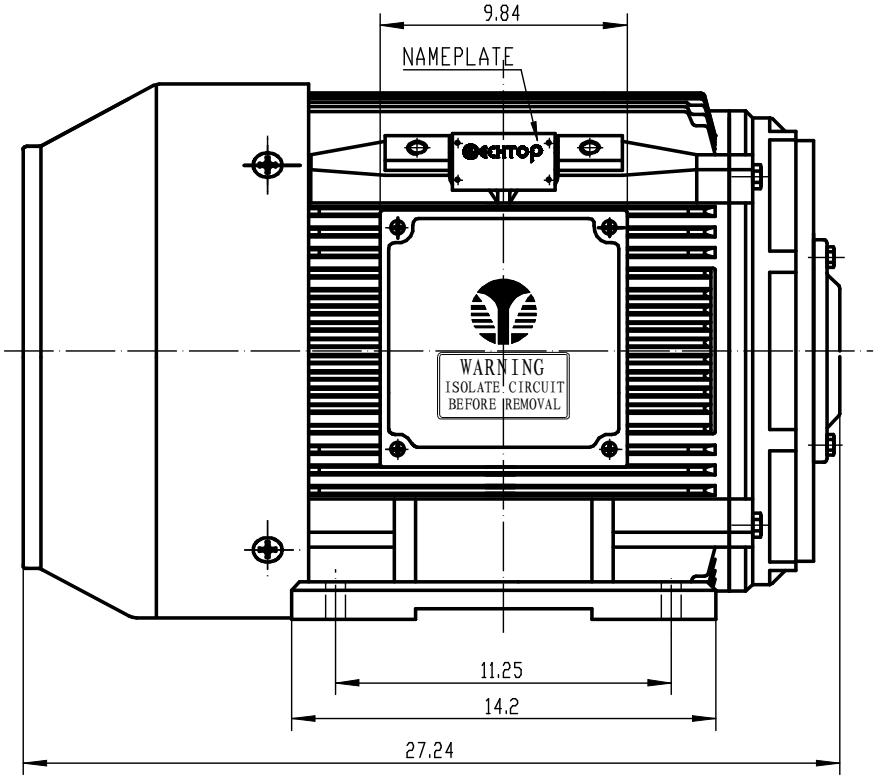


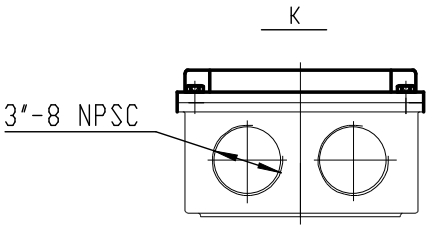
Weight: 40 HP = 539.1 lbs

Weight: 50 HP = 600.8 lbs

60 HP and 75 HP Idler Motor Dimensions and Weight







Weight: 60 HP = 782.75 lbs

Weight 75 HP = 873.18 lbs

Three phase motor chart, wire size, conduit, Transformer size if required to change voltage.

	220-240 VOLTS				440-480 VOLTS			
HORSEPOWER	WIRE SIZE	CONDUIT SIZE IN INCHES	FULL LOAD AMPS	KVA TRANSFORMER REQUIRED	WIRE SIZE	CONDUIT SIZE IN INCHES	FULL LOAD AMPS	KVA TRANSFORMER REQUIRED
1	12	3/4	3.6	3	12	3/4	1.0	3
2	12	3/4	6.8	6	12	3/4	3.4	6
3	10	3/4	9.6	6	12	3/4	4.8	6
5	10	3/4	15.2	9	12	3/4	7.6	9
7.5	8	3/4	21	15	12	3/4	11.5	15
10	8	3/4	27	15	12	3/4	14	15
15	6	1	42	30	10	3/4	21	30
20	4	1	52	30	10	3/4	28	30
25	4	1.5	68	45	8	1	34	45
30	3	1.5	80	45	8	1	40	45
40	1	1.5	104	75	6	1	52	75
50	1/0	2	130	75	4	1.5	65	75
60	3/0	2	154	75	3	1.5	77	75
75	250kcmil	2.5	192	112.5	1	1.5	96	112.5
100	350kcmil	3	248	112.5	2/0	2	124	112.5

Useful common charts, transformer amps, converter resistive load amps, HVAC LRA to size to converter HP required.

3 PHASE TRANSFORMER AMPERES			
KVA	**208 AMPS**	**240 AMPS**	**480 AMPS**
3	8.4	7.2	3.1
6	16.7	14.4	7.22
9	27.8	24.1	12
15	41.6	36.1	18
30	83.3	72.2	36.1
45	125	108.4	54.2
75	208.2	180.4	90.2
112.5	312.5	271.6	135.3
150	416.3	360.8	180.4
225	625	541.9	270.7

PHASE CONVERTER SIZE TO A RESISTIVE LOAD, HEATING ELEMENTS, WELDERS, ECT.	
CONVERTER HP	**230 VOLTS AMPS**
2	4
3	5
5	7
7.5	10
10	14
15	22
20	28
25	35
30	42
40	56
50	70
60	84
75	105
100	135

LRA (LOCKED ROTOR AMPS) MOSTLY USED TO SIZE A CONVERTER TO HVAC UNITS		
HP	LRA (460)	CONVERTER HP REQUIRED
1	30 (15)	3
2	50 (25)	5
3	64 (32)	7.5
5	92 (46)	15
7.5	127 (63)	20
10	162 (81)	25
15	232 (116)	40
20	290 (146)	50
25	365 (182)	60
30	436 (217)	80
40	580 (290)	100

KVA, KW to Volts amps chart.

KVA	KW	208V	220V	240V	440V	480V
8	**6.3**	17.5	16.5	15.2	8.3	8.1
9.4	**7.5**	26.1	24.7	22.6	12.3	11.3
12.5	**10**	34.7	33	30.1	16.6	15.1
18.7	**15**	52	49.5	45	24.9	22.5
25	**20**	69.5	66	60.2	33.2	24
31.3	**25**	87	82.5	75.5	41.5	37.8
37.5	**30**	104	99	90.3	49.8	45.2
50	**40**	139	132	120	66.5	60
62.5	**50**	173	165	152	83	81
75	**60**	208	198	181	99.6	91
93.8	**75**	261	247	226	123	113
100	**80**	278	264	240	133	120
125	**100**	347	330	301	166	150
156	**125**	433	4134	375	208	188
187	**150**	520	495	450	249	225
219	**175**	608	527	527	289	264
250	**200**	694	660	601	332	301

Troubleshooting and help videos

PROBLEM	SOLUTION	LINK TO VIDEO	QR CODE TO VIDEO		
Phase converter doesn't want to start, moves slow, growls.	The single line is mostly likely the cause of this. If it is dropping in voltage the phase converter won't start. It could be because of a bad connection, too long of wire, too small of wire, or your service is weak. You can also add start capacitors to make up for your voltage drop in some cases.	https://phoenixphaseconverters.com/tv.php **Also Check** Check the 2 pole contactor pulling in. https://www.youtube.com/watch?v=rsfiozxlB3o **Add an additional start capacitor** https://www.youtube.com/watch?v=6g-yPkAHWHw	Trouble shooting video	Checking the contractor	Adding a capacitor
Capacitor failed.	Run Capacitors (Silver in color) usually don't ever fail, the start capacitors can, usually if you start and stop too frequently, or your voltage is dropping either when you start the phase converter or the equipment you are running with the phase converter. We need to check the voltages, also check the 2 pole contactor and see if they are fused together	Checking the 2 pole contactor link. https://www.youtube.com/watch?v=zRrBsoo_At0 Checking the voltage. (VIDEO COMING SOON)			
Checking the voltage I get 120 on L1 and 120 on L2 and 220 on L3. Why?	All phase converter will output a delta voltage, this is normal. Click on the link to see the video on how to check the voltage. From phase to phase you should get 230 all the way across depending on your input voltage.	https://www.youtube.com/watch?v=0GpoUAkQBFc			
The phase converter panel makes a buzzing noise.	Normally when that happens there is dust or debri inside the contactor. There is two metal plates that pull together by a magnetic coil, if there is anything inbetween, the plates will vibrate. Please watch the video on how to fix this issue.	https://www.youtube.com/watch?v=EeEkcVZ2qc4			

PROBLEM	SOLUTION	LINK TO VIDEO	QR CODE TO VIDEO		
My amps are not balanced after the phase converter going to my equipment.	This is perfectly normal, you have a phase converter load on the single phase line (L1 and L2) and on your three phase equipment is on (L1, L2 and L3), your equipment is getting even amps, the phase converter is drawing L1 and L2 to have higher amps because of its load	There isn't a video on this section	N/A		
I push the start button and nothing happens.	Try pushing the stop button first, if so then the button is upside down on the back part of it. Next make sure the small controls wires have a good connection, then measure the voltage on you input power and see if you have voltage there.	There isn't a video on this section	N/A		
Equipment runs backward.	Simply reverse any two power wires going to your equipment, make sure any magnetic contractors or single phase loads are powered by your single phase line (L1 and L2)	There isn't a video on this section	N/A		
Machine doesn't start or run	Check the voltage at the machine, if there is the correct voltage there then contact the manufacture of the equipment you are trying to run. If there isn't any voltage but the phase converter is running at full speed then there is a connection issue with the wire.	There isn't a video on this section	N/A		

	Description	QR code to link	Weblink
	50 MFD - 370 Volts Run - Titan Pro		https://www.phoenixphaseconverters.com/Shop/default/start-capacitor-1.html
	270-324 MFD - 220 Volts Start Capacitor		https://www.phoenixphaseconverters.com/Shop/default/start-capacitor.html
	Start and Stop panel mounted push button		https://www.phoenixphaseconverters.com/Shop/default/start-and-stop-button-with-indicating-led.html
	Voltage Meter Display - Panel Mounted 0 to 500 AC		https://www.phoenixphaseconverters.com/Shop/default/voltage-meter-0-to-500-volts-ac.html

	Two Pole Contactor 230 Volts - 30 Amps		https://www.phoenixphaseconverters.com/Shop/default/two-pole-contactor-230-volts-30-amps.html
	Potential Relay 90-66		https://www.phoenixphaseconverters.com/Shop/default/potential-relay-90-66.html
	9 X 50 Mfd Run Capacitor Holder		https://www.phoenixphaseconverters.com/Shop/default/9-x-50-mfd-run-capacitor-holder.html
	75 Amp - 3 Pole - 230 Volt Coil - Contactor		https://www.phoenixphaseconverters.com/Shop/default/75-amp-3-pole-230-volt-coil-contactor.html
	90 Amp - 3 Pole - 230 Volt Coil - Contactor		https://www.phoenixphaseconverters.com/Shop/default/75-amp-3-pole-230-volt-coil-contactor-1.html

	Push Button and Mag Starter Kits-5 HP		https://www.phoenixphaseconverters.com/Shop/default/push-button-and-mag-starter-kits-5-hp.html
	Push Button And Mag Starter Kits-10 Hp		https://www.phoenixphaseconverters.com/Shop/default/push-button-and-mag-starter-kits-10-hp.html
	Wireless Pushbutton kit for 25 to 40 HP Phase Converter 230 volts		https://www.phoenixphaseconverters.com/Shop/default/wireless-remote-contactor-start-stop-230-volts-60-hp-rotary-phase-converter-1.html
	Wireless Pushbutton kit for 50 to 60 HP Phase Converter 230 volts		https://www.phoenixphaseconverters.com/Shop/default/wireless-remote-contactor-start-stop-230-volts-60-hp-rotary-phase-converter-2.html