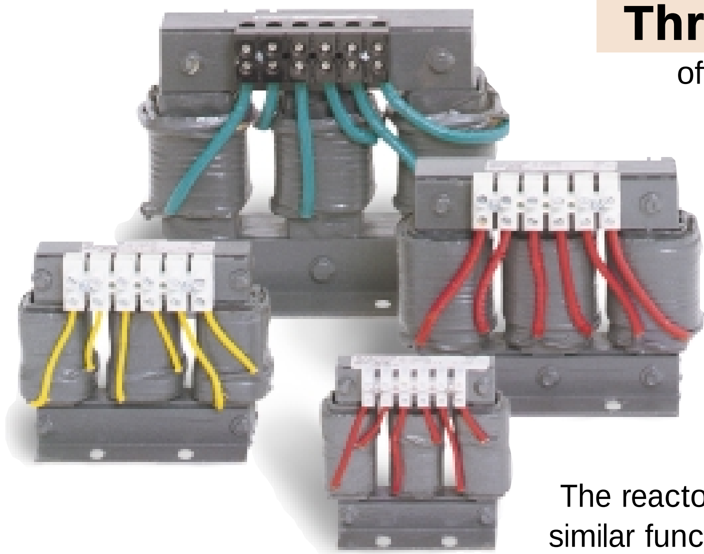


Three Phase Line Reactors

offer an easy and economical solution to a variety of application considerations associated with adjustable speed drive installations. Properly sized reactors can be used to solve or eliminate problems on the input or the output of the motor control. All Baldor three phase reactors are designed with harmonic compensation and rugged construction to provide the extra operating margin you've come to expect from Baldor products.

The reactor acts as a current limiting device and performs a similar function to the familiar DC Choke. The reactor will act as a filter to the power waveform to attenuate electrical noise and unwanted harmonics. When used on the input of a motor control a reduction of over voltage trips and harmonics can be seen. When applied on the output of a motor control, a smoothing of the power waveform to the motor can increase motor efficiency and operating life.

All Baldor three phase reactors can be used on the line power side as a "line reactor" or on the load side of a motor control as a "load reactor". In either case, you can have confidence that you'll get great performance and value from Baldor.

Application and Sizing

Reactors are current rated devices and therefore have an associated impedance value. Impedance is seen as a resistance to current flow. The higher the impedance, the more resistance the reactor will supply to keep the current through the reactor at a constant level. To size a reactor, the total continuous current (full load amps) supplied through the reactor and the impedance desired for the application will need to be determined. For single motor applications, the current will be the nominal continuous operating current or the motor rated current, whichever is lower. For multiple motor applications the current will be the sum of all the nominal continuous operating currents supplied through the reactor. As the following relationship shows, the supplied impedance of a given reactor is reduced as the load current is reduced:

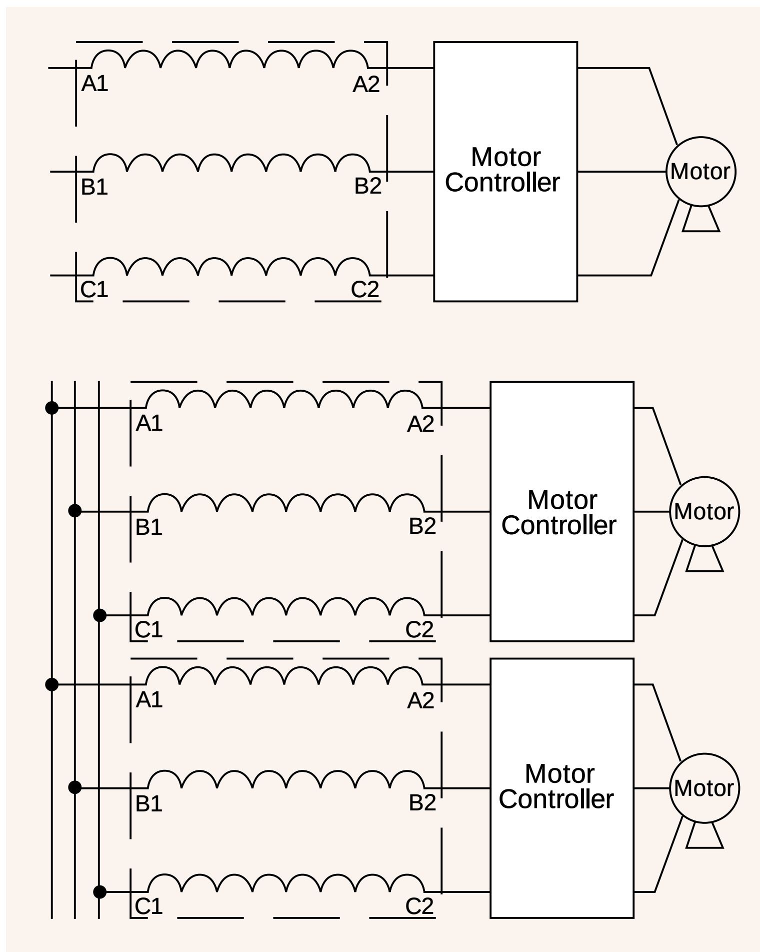
$$\% \text{ Impedance} = \frac{I_{CONT} \times 2\pi \times f \times L \times \sqrt{3}}{V_{LL}} \times 100$$

Where: I_{CONT} = Continuous current through the reactor in Amps RMS
f = Frequency of the AC waveform applied to the reactor
V_{LL} = Line to Line Voltage (Phase to Phase) applied to the reactor
L = Inductance of the reactor windings in milli-henrys

Size on Actual Input Conditions

Verify the reactor supplies desired impedance at actual load current, voltage and line frequency. Notice in the percent impedance relationship, if the line voltage is higher than the reactor rating voltage, the effective impedance will be lower. Similarly, if the load current through the reactor is lower than the reactor rating current, the effective impedance will be lower. Some motor controls will specify a minimum line impedance value to protect the controls power conversion devices. Care should be used in selecting line side reactors that are used to increase the line impedance to provide necessary minimum impedance. Baldor reactors are designed to provide the minimum impedance requirements when used in over-voltage and under-current applications.

Size for Voltage Reduction and Transients

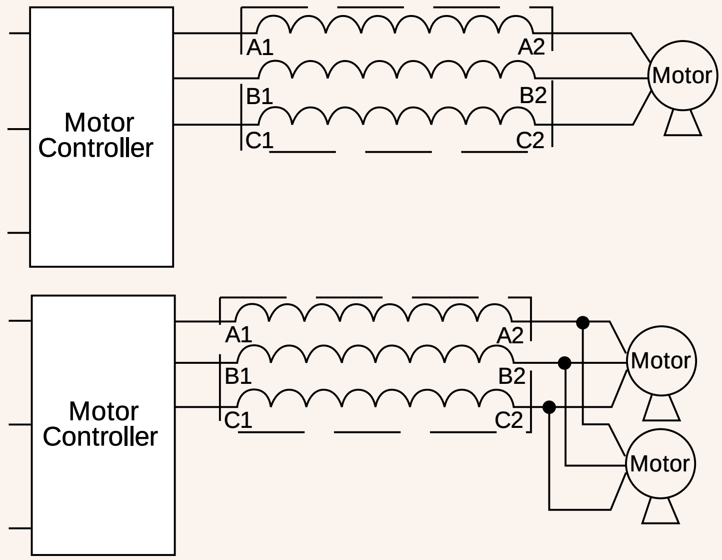


Motor controls that have a relatively low over-voltage threshold will benefit from the use of line side reactors. With today's increased energy demands some utilities are increasing the nominal transmission voltages to provide slightly more power to users without having to generate more energy. As the line voltage creeps up, the instances of over-voltage faults can increase on motor controls.

Line side reactors will reduce the voltage applied to a motor control by the amount of % impedance. For example, a 3% reactor will reduce a 490 Volt AC line to 475 Volts at the motor control terminals. The voltage reduction will effectively increase the voltage margin available before an over-voltage trip can occur on modern motor controls.

Power lines are subjected to voltage distortion that can occur as a result of utility switching or thunderstorms and lightening. The inductive property of a line side reactor provides a smoothing of voltage transients that occur on power lines. The voltage reduction properties coupled with the reactors ability to smooth out voltage transients helps to reduce the instances of motor control faults, which will increase the operating time and effectiveness of your equipment.

Size For Motor Protection



Baldor reactors can also be used on the load side of motor controls to provide additional protection to three phase motors. Modern fast switching motor controls can produce transients that may result in elevated voltages at the terminals of motors. Load reactors can be applied to reduce the transients resulting in increased motor efficiency and operating life. The additional impedance of the load reactor also limits the rate of rise of short circuit currents available to the motor windings to help prevent premature failures during periods of motor overloading. In most cases the load reactor should be placed as close to the motor control as possible.

Multiple motor applications can also benefit from the use of load reactors. A single reactor can be sized to permit the total current draw of all the motors connected to the motor control. To provide maximum protection to the motor windings, one reactor per motor should be considered in shared controller applications. In both cases the reactor should be located as close to the motor control as possible.

Optional Protective Enclosures

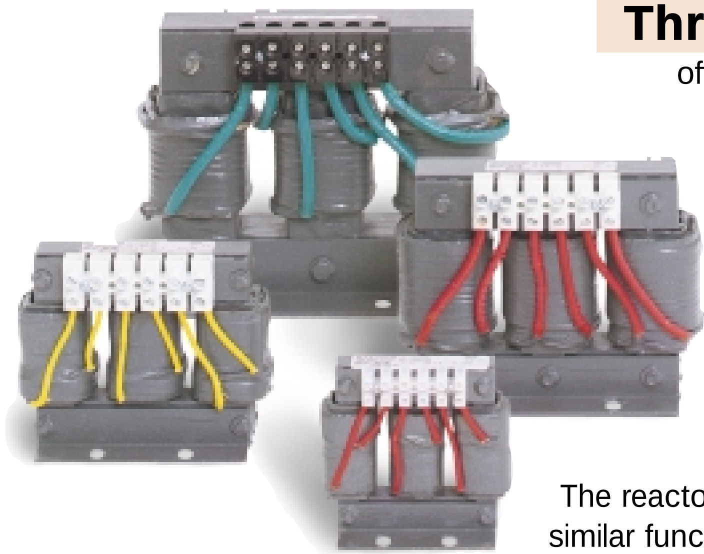
Baldor offers a complete line of enclosures to provide NEMA 1 protection to line or load reactors. Smaller reactors can be wall mounted while larger and heavier reactors should be floor mounted.

REACTOR ENCLOSURES

Enclosure Catalog No.	To Fit LRAC Catalog No.	Mounting Type	Weight (lbs)	Dimensions (In) Height	Width	Depth
LRENC-8	LRAC002-4XX, LRAC008-12XX LRAC01801, LRAC01802	Wall	7	10	8	6
LRENC-13	LRAC01803, LRAC025-35XX LRAC045-80XX	Floor	34	15	13	13
LRENC-15	LRAC110-200XTB LRAC100-160XX	Floor	45	16	15	13
LRENC-20S	LRAC200-500XX, LRAC250-950ACB	Floor	50	19	20	20

REACTOR SPECIFICATIONS

Catalog Number	Rated Amp	Inductance	Watts Loss	Weight lbs.	Weight kg	Dimensions Height in.	Height mm	Width in.	Width mm	Depth in.	Depth mm	Terminal	Optional Enclosure
LRAC00201	2A	12.0mH	7.5	4	2	4	102	4.4	112	2.8	71	Screw	LRENC-8
LRAC00202	2A	20.0mH	11.3	4	2	4	102	4.4	112	2.9	74	Screw	LRENC-8
LRAC00401	4A	3.0mH	14.5	4	2	4	102	4.4	112	2.9	74	Screw	LRENC-8
LRAC00402	4A	6.5mH	20	4	2	4	102	4.4	112	2.9	74	Screw	LRENC-8
LRAC00403	4A	9.0mH	20	5	2	4	102	4.4	112	3.1	79	Screw	LRENC-8
LRAC00404	4A	12.0mH	21	6	3	4	102	4.4	112	3.6	91	Screw	LRENC-8
LRAC00801	8A	1.5MH	19.5	7	3	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC00802	8A	3.0MH	29	8	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC00803	8A	5.0mH	25.3	11	5	4.8	122	6	152	3.4	86	Screw	LRENC-8
LRAC00804	8A	7.5mH	28	13	6	4.8	122	6	152	3.4	86	Screw	LRENC-8
LRAC01201	12A	1.25mH	26	9	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC01202	12A	2.5mH	31	10	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC01203	12A	4.2mH	41	18	8	4.8	122	6	152	3.7	94	Screw	LRENC-8
LRAC01801	18A	0.8mH	36	9	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC01802	18A	1.5mH	43	12	5	4.8	122	6	152	3.4	89	Screw	LRENC-8
LRAC01803	18A	2.5mH	43	16	7	5.7	145	7.2	183	3.8	97	Screw	LRENC-13
LRAC02501	25A	0.5mH	48	11	5	5.6	142	7.2	183	3.4	86	Screw	LRENC-13
LRAC02502	25A	1.2mH	52	14	6	5.6	142	7.2	183	3.4	86	Screw	LRENC-13
LRAC02503	25A	2.0mH	61	18	8	5.7	145	7.2	183	3.8	97	Screw	LRENC-13
LRAC03501	35A	0.4mH	49	14	6	5.6	142	7.2	183	3.8	97	Screw	LRENC-13
LRAC03502	35A	0.8mH	54	16	7	5.7	145	7.2	183	3.8	97	Screw	LRENC-13
LRAC03503	35A	1.2mH	54	30	13	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC04501	45A	0.3mH	54	23	10	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC04502	45A	0.7mH	62	28	13	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC04503	45A	1.2mH	65	39	17	7	178	9	229	5.3	135	Screw	LRENC-13
LRAC05501	55A	0.25mH	64	24	11	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC05502	55A	0.5mH	67	27	12	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC05503	55A	0.85mH	71	41	18	7	178	9	229	5.6	142	Screw	LRENC-13
LRAC08002	80A	0.4mH	220	32	14	8.25	210	9	229	5.3	135	Screw	LRENC-13
LRAC080BTB	80A	0.138mH	105	23	10	6.89	175	8.12	206	4.25	108	Screw	LRENC-15
LRAC10003	100A	0.45mH	108	74	33	8.4	213	10.8	274	6.3	160	Bus Bar	LRENC-15
LRAC110ACB2	110A	0.2mH	140	55	25	9.5	241	10.24	260	8.18	208	Bus Bar	LRENC-15
LRAC110BCB	110A	0.1mH	95	26	12	6.89	175	8.88	226	4.25	108	Bus Bar	LRENC-15
LRAC13003	130A	0.3mH	128	64	29	8.4	213	10.8	274	7.25	184	Bus Bar	LRENC-15
LRAC130ACB2	130A	0.17mH	150	57	26	9.5	241	10.24	260	8.18	208	Bus Bar	LRENC-15
LRAC130BCB	130A	0.085mH	117	33	15	8.5	216	9.88	251	4.75	121	Bus Bar	LRENC-15
LRAC16002	160A	0.15mH	149	50	22	8.4	213	10.8	274	6	152	Bus Bar	LRENC-15
LRAC16003	160A	0.23mH	138	67	30	8.4	213	10.8	274	7.13	181	Bus Bar	LRENC-15
LRAC160ACB2	160A	0.13mH	300	55	25	9.5	241	10.24	260	8.18	208	Bus Bar	LRENC-15
LRAC160BCB	160A	0.069mH	127	47	21	9.5	241	10.56	268	8.25	210	Bus Bar	LRENC-15
LRAC20003	200A	0.185mH	146	100	45	10.5	267	10.8	274	9.35	237	Bus Bar	LRENC-20S
LRAC200ACB	200A	0.11mH	340	67	30	9.5	241	11.24	260	8.58	218	Bus Bar	LRENC-15
LRAC25003	250A	0.15mH	219	140	63	14	356	14.4	366	11.35	288	Bus Bar	LRENC-20S
LRAC250ACB	250A	0.088mH	261	91	41	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC360ACB	360A	0.061mH	380	98	44	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC32003	320A	0.125mH	351	190	85	14	356	14.4	366	13	330	Bus Bar	LRENC-20S
LRAC40002	400A	0.06mH	333	155	69	14	356	15.5	394	11.5	292	Bus Bar	LRENC-20S
LRAC40003	400A	0.105mH	293	200	90	14	356	15.5	394	14.5	368	Bus Bar	LRENC-20S
LRAC420ACB	420A	0.053mH	400	100	45	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC480ACB	480A	0.046mH	392	110	49	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC50003	500A	0.085mH	422	290	130	14	356	15.5	394	14.75	375	Bus Bar	LRENC-20S
LRAC600ACB	600A	0.037mH	493	151	68	12.38	314	13.44	341	10.25	260	Bus Bar	LRENC-20S
LRAC750ACB	750A	0.029mH	515	283	127	17.25	438	16.94	430	10.25	260	Bus Bar	LRENC-20S
LRAC850ACB	850A	0.026mH	569	290	130	17.25	438	16.94	430	10.25	260	Bus Bar	LRENC-20S
LRAC950ACB	950A	0.023mH	686	295	132	17.25	438	16.94	430	10.25	260	Bus Bar	LRENC-20S



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Application and Sizing

Reactors are current rated devices and therefore have an associated impedance value. Impedance is seen as a resistance to current flow. The higher the impedance, the more resistance the reactor will supply to keep the current through the reactor at a constant level. To size a reactor, the total continuous current (full load amps) supplied through the reactor and the impedance desired for the application will need to be determined. For single motor applications, the current will be the nominal continuous operating current or the motor rated current, whichever is lower. For multiple motor applications the current will be the sum of all the nominal continuous operating currents supplied through the reactor. As the following relationship shows, the supplied impedance of a given reactor is reduced as the load current is reduced:

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Size on Actual Input Conditions

Verify the reactor supplies desired impedance at actual load current, voltage and line frequency. Notice in the percent impedance relationship, if the line voltage is higher than the reactor rating voltage, the effective impedance will be lower. Similarly, if the load current through the reactor is lower than the reactor rating current, the effective impedance will be lower. Some motor controls will specify a minimum line impedance value to protect the controls power conversion devices. Care should be used in selecting line side reactors that are used to increase the line impedance to provide necessary minimum impedance. Baldor reactors are designed to provide the minimum impedance requirements when used in over-voltage and under-current applications.

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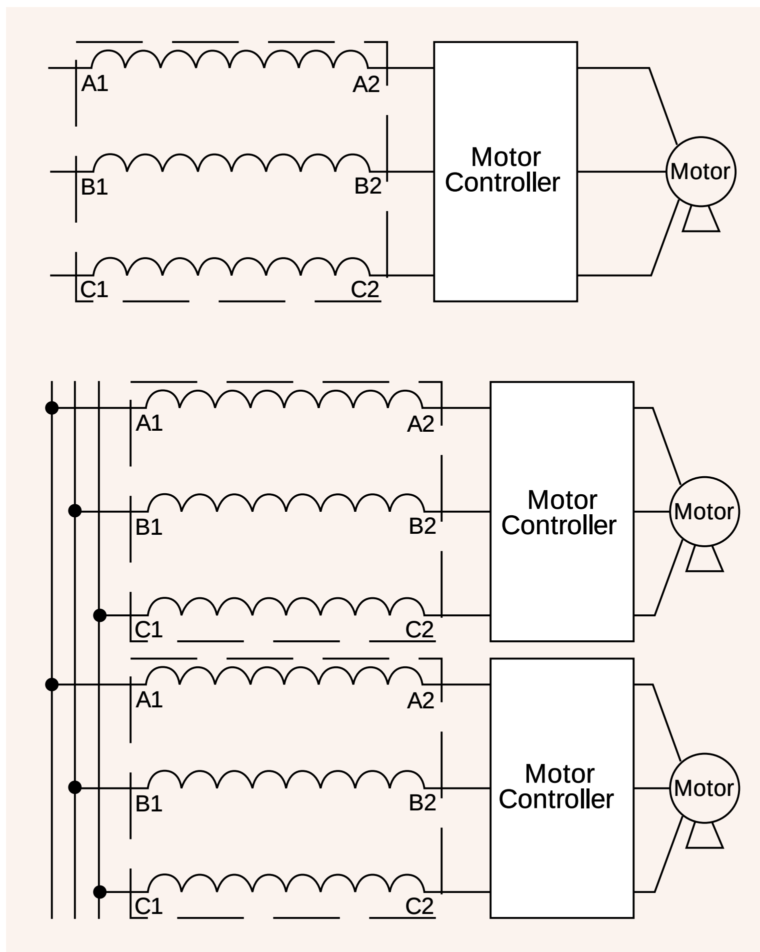

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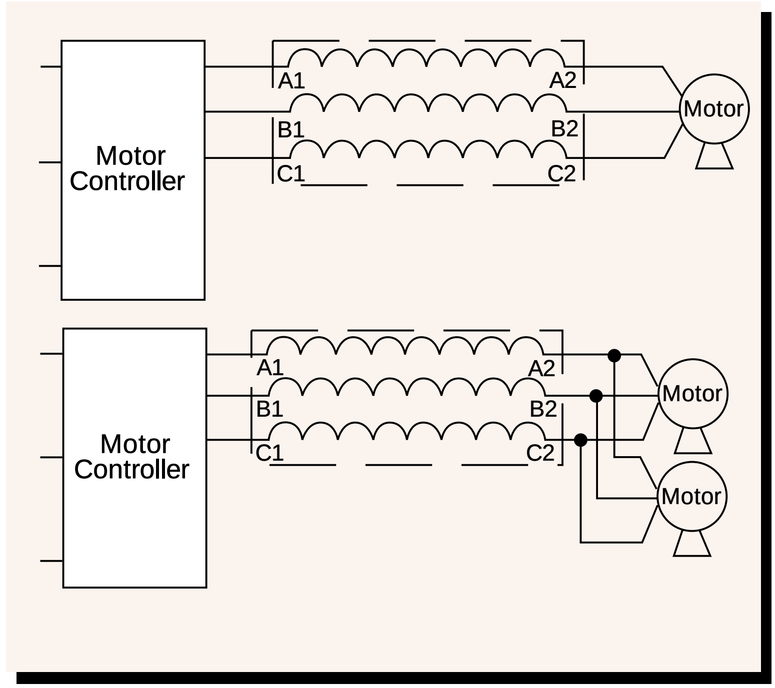
Size For Motor Protection



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Optional Protective Enclosures

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REACTOR ENCLOSURES

Enclosure Catalog No.	To Fit LRAC Catalog No.	Mounting Type	Weight (lbs)	Dimensions (In)		
				Height	Width	Depth
LRENC-8	LRAC002-4XX, LRAC008-12XX LRAC01801, LRAC01802	Wall	7	10	8	6
LRENC-13	LRAC01803, LRAC025-35XX LRAC045-80XX	Floor	34	15	13	13
LRENC-15	LRAC110-200XTB LRAC100-160XX	Floor	45	16	15	13
LRENC-20S	LRAC200-500XX, LRAC250-950ACB	Floor	50	19	20	20

REACTOR SPECIFICATIONS

Catalog Number	Rated Amp	Inductance	Watts Loss	Weight lbs.	Weight kg	Height in.	Height mm	Width in.	Width mm	Depth in.	Depth mm	Terminal	Optional Enclosure
LRAC00201	2A	12.0mH	7.5	4	2	4	102	4.4	112	2.8	71	Screw	LRENC-8
LRAC00202	2A	20.0mH	11.3	4	2	4	102	4.4	112	2.9	74	Screw	LRENC-8
LRAC00401	4A	3.0mH	14.5	4	2	4	102	4.4	112	2.9	74	Screw	LRENC-8
LRAC00402	4A	6.5mH	20	4	2	4	102	4.4	112	2.9	74	Screw	LRENC-8
LRAC00403	4A	9.0mH	20	5	2	4	102	4.4	112	3.1	79	Screw	LRENC-8
LRAC00404	4A	12.0mH	21	6	3	4	102	4.4	112	3.6	91	Screw	LRENC-8
LRAC00801	8A	1.5MH	19.5	7	3	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC00802	8A	3.0MH	29	8	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC00803	8A	5.0mH	25.3	11	5	4.8	122	6	152	3.4	86	Screw	LRENC-8
LRAC00804	8A	7.5mH	28	13	6	4.8	122	6	152	3.4	86	Screw	LRENC-8
LRAC01201	12A	1.25mH	26	9	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC01202	12A	2.5mH	31	10	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC01203	12A	4.2mH	41	18	8	4.8	122	6	152	3.7	94	Screw	LRENC-8
LRAC01801	18A	0.8mH	36	9	4	4.8	122	6	152	3.1	79	Screw	LRENC-8
LRAC01802	18A	1.5mH	43	12	5	4.8	122	6	152	3.4	89	Screw	LRENC-8
LRAC01803	18A	2.5mH	43	16	7	5.7	145	7.2	183	3.8	97	Screw	LRENC-13
LRAC02501	25A	0.5mH	48	11	5	5.6	142	7.2	183	3.4	86	Screw	LRENC-13
LRAC02502	25A	1.2mH	52	14	6	5.6	142	7.2	183	3.4	86	Screw	LRENC-13
LRAC02503	25A	2.0mH	61	18	8	5.7	145	7.2	183	3.8	97	Screw	LRENC-13
LRAC03501	35A	0.4mH	49	14	6	5.6	142	7.2	183	3.8	97	Screw	LRENC-13
LRAC03502	35A	0.8mH	54	16	7	5.7	145	7.2	183	3.8	97	Screw	LRENC-13
LRAC03503	35A	1.2mH	54	30	13	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC04501	45A	0.3mH	54	23	10	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC04502	45A	0.7mH	62	28	13	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC04503	45A	1.2mH	65	39	17	7	178	9	229	5.3	135	Screw	LRENC-13
LRAC05501	55A	0.25mH	64	24	11	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC05502	55A	0.5mH	67	27	12	7	178	9	229	4.8	122	Screw	LRENC-13
LRAC05503	55A	0.85mH	71	41	18	7	178	9	229	5.6	142	Screw	LRENC-13
LRAC08002	80A	0.4mH	220	32	14	8.25	210	9	229	5.3	135	Screw	LRENC-13
LRAC080BTB	80A	0.138mH	105	23	10	6.89	175	8.12	206	4.25	108	Screw	LRENC-15
LRAC10003	100A	0.45mH	108	74	33	8.4	213	10.8	274	6.3	160	Bus Bar	LRENC-15
LRAC110ACB2	110A	0.2mH	140	55	25	9.5	241	10.24	260	8.18	208	Bus Bar	LRENC-15
LRAC110BCB	110A	0.1mH	95	26	12	6.89	175	8.88	226	4.25	108	Bus Bar	LRENC-15
LRAC13003	130A	0.3mH	128	64	29	8.4	213	10.8	274	7.25	184	Bus Bar	LRENC-15
LRAC130ACB2	130A	0.17mH	150	57	26	9.5	241	10.24	260	8.18	208	Bus Bar	LRENC-15
LRAC130BCB	130A	0.085mH	117	33	15	8.5	216	9.88	251	4.75	121	Bus Bar	LRENC-15
LRAC16002	160A	0.15mH	149	50	22	8.4	213	10.8	274	6	152	Bus Bar	LRENC-15
LRAC16003	160A	0.23mH	138	67	30	8.4	213	10.8	274	7.13	181	Bus Bar	LRENC-15
LRAC160ACB2	160A	0.13mH	300	55	25	9.5	241	10.24	260	8.18	208	Bus Bar	LRENC-15
LRAC160BCB	160A	0.069mH	127	47	21	9.5	241	10.56	268	8.25	210	Bus Bar	LRENC-15
LRAC20003	200A	0.185mH	146	100	45	10.5	267	10.8	274	9.35	237	Bus Bar	LRENC-20S
LRAC200ACB	200A	0.11mH	340	67	30	9.5	241	11.24	260	8.58	218	Bus Bar	LRENC-15
LRAC25003	250A	0.15mH	219	140	63	14	356	14.4	366	11.35	288	Bus Bar	LRENC-20S
LRAC250ACB	250A	0.088mH	261	91	41	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC360ACB	360A	0.061mH	380	98	44	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC32003	320A	0.125mH	351	190	85	14	356	14.4	366	13	330	Bus Bar	LRENC-20S
LRAC40002	400A	0.06mH	333	155	69	14	356	15.5	394	11.5	292	Bus Bar	LRENC-20S
LRAC40003	400A	0.105mH	293	200	90	14	356	15.5	394	14.5	368	Bus Bar	LRENC-20S
LRAC420ACB	420A	0.053mH	400	100	45	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC480ACB	480A	0.046mH	392	110	49	12.38	314	13.44	341	9	229	Bus Bar	LRENC-20S
LRAC50003	500A	0.085mH	422	290	130	14	356	15.5	394	14.75	375	Bus Bar	LRENC-20S
LRAC600ACB	600A	0.037mH	493	151	68	12.38	314	13.44	341	10.25	260	Bus Bar	LRENC-20S
LRAC750ACB	750A	0.029mH	515	283	127	17.25	438	16.94	430	10.25	260	Bus Bar	LRENC-20S
LRAC850ACB	850A	0.026mH	569	290	130	17.25	438	16.94	430	10.25	260	Bus Bar	LRENC-20S
LRAC950ACB	950A	0.023mH	686	295	132	17.25	438	16.94	430	10.25	260	Bus Bar	LRENC-20S