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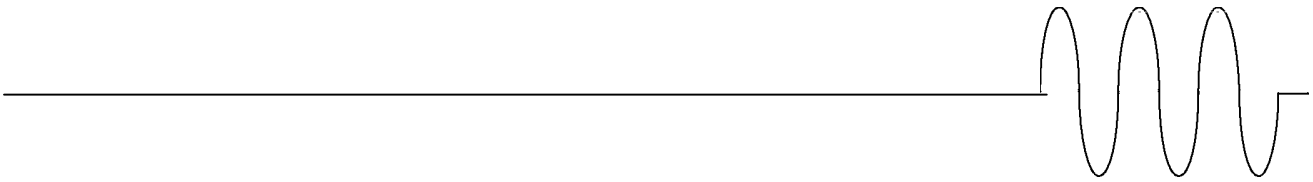
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Find the *SL Industries / MTE RL-01201* at our website: *Click HERE*

MTE Corporation

MTE –Series RL
Line/ load Reactors

USER MANUAL



PART NO. INSTR -011

REL. 050516

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IMPORTANT USER INFORMATION

NOTICE

MTE Series RL Line/Load Reactors are components designed to improve the reliability of adjustable frequency drives, DC drives and a wide variety of other types of power electronic equipment. In addition they provide input line current harmonic mitigation and long lead protection for inverter fed motors. MTE reactors are available in a large number of current ratings and a variety of inductance values. The suitability of a line/load reactor for a specific application must therefore be ultimately determined by the customer. In no event will MTE Corporation assume responsibility or liability for any direct or consequential damages resulting from the use or application of reactors. Nor will MTE Corporation assume patent liability with respect to the use of information, circuits or equipment described in this instruction manual.

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TABLE OF CONTENTS

1. Safety…… 4

2. Introduction 5

3. Model Number Codes..... 6

4. Specifications 7

Altitude Derating Curve 8

Dimensions & Technical Data …….. 9
Open Type ...…….. …… 10
NEMA Type 1 …….. 13

5. Installation Instructions 21

Power Wiring Connection 22

Grounding 23

Typical Connection Diagrams 24

6. Startup…… 25

7. Performance…… 26

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1. IMPORTANT SAFETY INFORMATION

WARNING

ONLY A QUALIFIED ELECTRICIAN CAN CARRY OUT THE ELECTRICAL INSTALLATION OF LINE/LOAD REACTORS

WARNING

High voltage is used in the operation of line/load reactors. Use Extreme caution to avoid contact with high voltage when operating, installing or repairing equipment containing line/load reactors. **INJURY OR DEATH MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED.**

Line/load reactors are used in conjunction with inverters, or other electrical equipment that may feedback lethal voltages. Follow the safety instructions in the equipment used with the reactor in addition to the safety instruction in this manual.

WARNING

The opening of the branch circuit protective device may be an indication that a fault current has been interrupted. To reduce the risk of fire or electrical shock, line/load reactors should be examined and replaced if damaged.

WARNING

An upstream disconnect/protection device must be used as required by the National Electrical Code (NEC).

WARNING

Even if the upstream disconnect/protection device is open, a drive or inverter down stream of the line/load reactor may feed back high voltage to the reactor. The inverter or drive safety instructions must be followed. **INJURY OR DEATH MAY RESULT IF THE DRIVE SAFETY PRECAUTIONS ARE NOT OBSERVED.**

WARNING

The frame of line/load reactors must be grounded at least at one of the reactor's mounting holes.

WARNING

Only spare parts obtained from MTE Corporation or an authorized MTE distributor can be used

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2. INTRODUCTION

This manual was specifically developed to assist in the installation, interconnection and operation of MTE Corporation Series RL Line/Load Reactors

This manual is intended for use by personnel experienced in the operation and maintenance of electronic drives, inverters and similar types of power electronic equipment. Because of the high voltages required by the equipment connected to line/load reactors and the potential dangers presented by rotating machinery, it is essential that all personnel involved in the operation and maintenance of line/load reactors know and practice the necessary safety precautions for this type of equipment. Personnel should read and understand the instructions contained in this manual before installing, operating or servicing line/load reactors and the drive to which the reactor is connected.

Upon Receipt of a Reactor:

MTE Line/load Reactors have been subjected to demanding factory tests before shipment. Carefully inspect the shipping container for damage that may have occurred in transit. Then unpack the filter and carefully inspect for any signs of damage. Save the shipping container for future transport of the reactor.

In the event of damage, please contact and file a claim with the freight carrier involved immediately.

If the equipment is not going to be put into service upon receipt, cover and store the reactor in a clean, dry location. After storage, ensure that the equipment is dry and that no condensation has accumulated on the reactor before applying power.

Repair/Exchange Procedure

MTE Corporation requires a Returned Material Authorization Number before it can accept any reactors that qualify for return or repair. If problems or questions arise during installation, setup, or operation of the filter, please call us for assistance at:

Phone: 1-262-253-8200

FAX: 1-262-253-8222

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3. MODEL NUMBER CODES

Standard RL Reactor model number codes are of the form RL ABCDEF(GHI) with the number coded as outlined below.

Table 1 Model Number Codes

Character	Description	Code
RL- A,B,C,D	Always for Harmonic Compensated Line/Load Reactor Characters A, B, C,(D), designate the Fundamental Current rating of the Reactor using 2 leading zeros (up to 8 Amps), 1 leading zero (12 to 80 Amps), no leading zeros (100 to 950 Amps), and 4-th digit (1,000 Amps and higher)	*Example: 080XXis an 80Amp* Reactor
E	Indicates mechanical configuration	**0** Open **1** or **4** NEMA-1 Std Cabinet **2** NEMA-1, Over size Cabinet **3** NEMA 3R
F	Relative% Impedance number based on 480 Volts	1,2,3,4
G,H,I	Modifications	A Omit Center coil
		B Terminal Modifications
		D Sub. Black Paint for Blue
		T Temperature Switches

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4. SPECIFICATIONS

AGENCY APPROVALS:

UL-508, File E180243 Component Listed (1 amp – 2400 amps)
UL-508, File E180243 UL Listed Nema 1 units (1 amp – 2400 amps) CSA C22.2, File LR29753-13 CR **CSA** Certified (1 amp – 2400 amps) Class N, 200 C, File E66214, Type 200-18, UL Recognized **CE** Marked Insulation System

Inductance Tolerance: +/- 10 %

Current Rating: Refer to motor nameplate: Reactor fundamental amps Equal or Exceed motor FLA

Voltage Rating: Refer to product nameplate Dielectric Strength: 4000 Volts RMS, 5600

Volts Peak dv/dt Protection:17,825 volts/microsecond

Maximum Carrier Switching Frequency: 20 KHz

Insulation System Class: N

Ambient temperature: -40°C to +45°C

Storage temperature -40°C to +90°C

Average Temperature Rise: 135°C

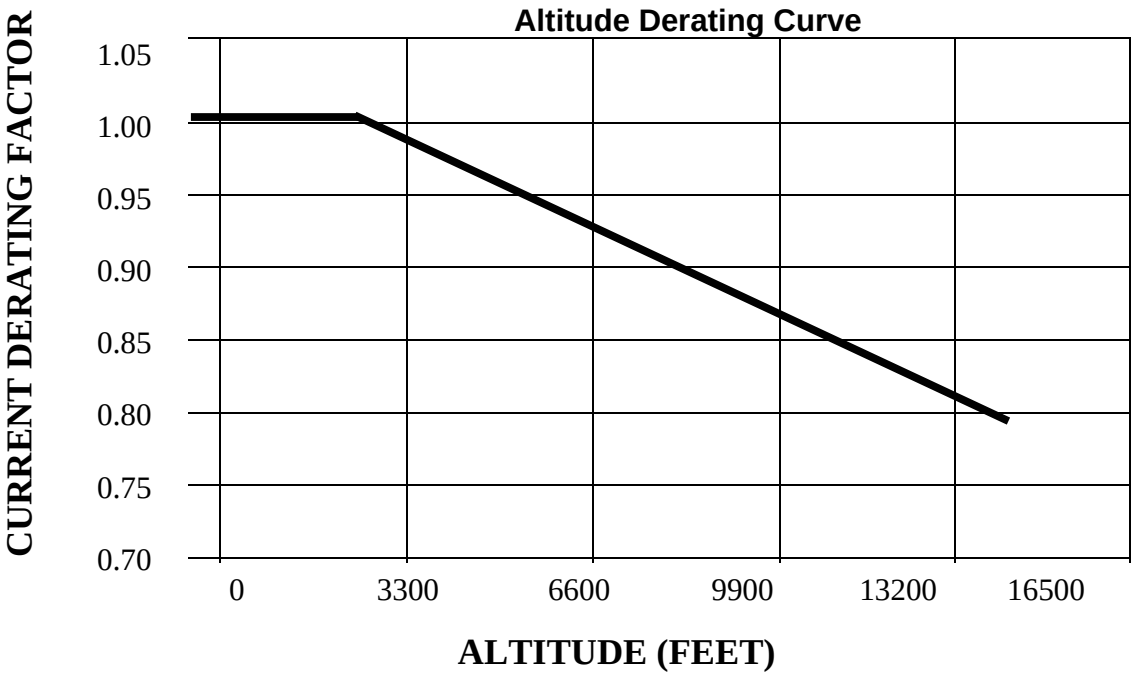
Altitude (See chart 1 for altitude derating curve): 3300 Ft. Max.

Maximum Fundamental Frequency without derating: 60 / 50 Hz consult factory for derating

Color: Royal Blue

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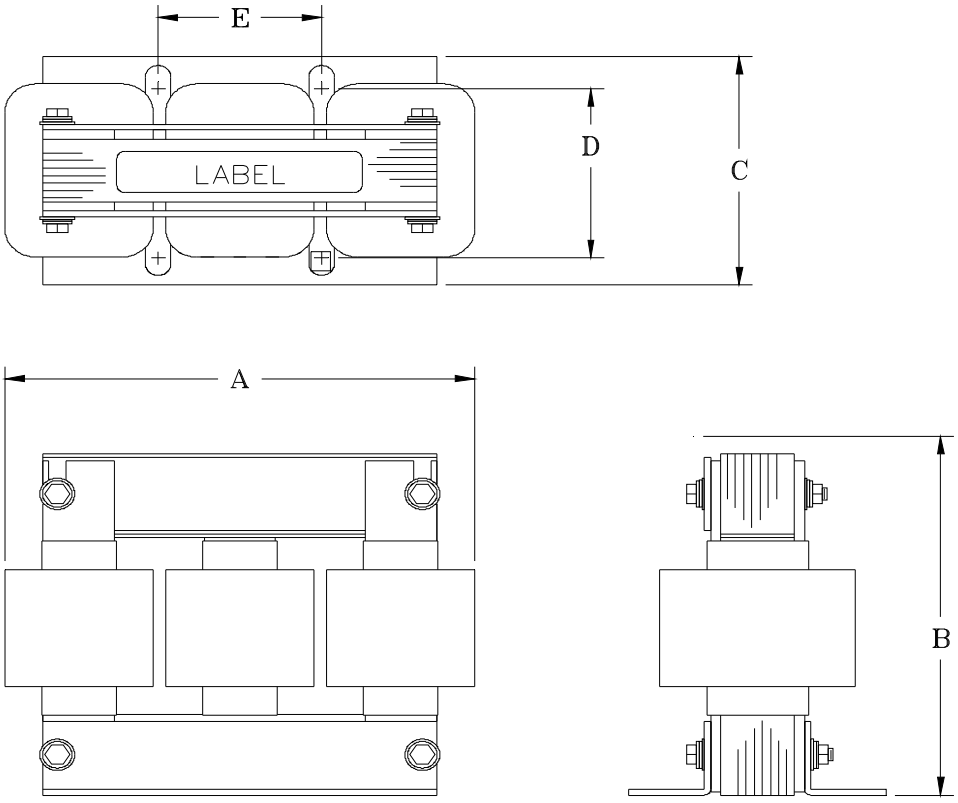
Chart 1



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DIMENSIONS – AC Line / Load Reactors

Standard Type “RL” AC Line / Load Reactors - Open Type



Tables that follow contain reactor dimensions

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DIMENSIONS

Standard Type "RL" AC Line / Load Reactors – Open Type

MTE	A		B		C		D		E		Weight	Mass
Cat. No.	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Lbs	Kg
RL-00201	4.4	112	4.1	104	2.8	71	1.98	50.3	1.44	36.6	4	1.8
RL-00202	4.4	112	4.1	104	2.8	71	1.98	50.3	1.44	36.6	4	1.8
RL-00203	4.4	112	4.1	104	2.8	71	1.98	50.3	1.44	36.6	4	1.8
RL-00204	4.4	112	4.1	104	2.5	64	1.73	43.9	1.44	36.6	3	1.4
RL-00401	4.4	112	4.1	104	2.8	71	1.98	50.3	1.44	36.6	4	1.8
RL-00402	4.4	112	4.1	104	2.8	71	1.98	50.3	1.44	36.6	4	1.8
RL-00403	4.4	112	4.1	104	3.4	86	2.35	59.7	1.44	36.6	5	2.3
RL-00404	4.4	112	4.1	104	3.4	86	2.60	66.0	1.44	36.6	6	2.7
RL-00801	6.0	152	4.8	122	3.0	76	2.10	53.3	2.00	50.8	7	3.2
RL-00802	6.0	152	4.8	122	3.0	76	2.10	53.3	2.00	50.8	8	3.6
RL-00803	6.0	152	4.8	122	3.4	86	2.62	66.5	2.00	50.8	11	5.0
RL-00804	6.0	152	4.8	122	3.4	86	2.48	63.0	2.00	50.8	13	5.9
RL-01201	6.0	152	5.0	127	3.3	84	2.10	53.3	2.00	50.8	9	4.1
RL-01202	6.0	152	5.0	127	3.3	84	2.10	53.3	2.00	50.8	10	4.5
RL-01203	6.0	152	5.0	127	3.9	99	2.75	69.9	2.00	50.8	18	8.2
RL-01801	6.0	152	5.3	135	3.2	81	2.10	53.3	2.00	50.8	9	4.1
RL-01802	6.0	152	5.3	135	3.5	89	2.48	63.0	2.00	50.8	12	5.4
RL-01803	8.1	206	6.1	155	4.0	102	2.60	66.0	3.00	76.2	16	7.3
RL-02501	7.2	183	5.8	147	3.5	89	2.35	59.7	3.00	76.2	11	5.0
RL-02502	7.2	183	5.8	147	3.5	89	2.35	59.7	3.00	76.2	14	6.3
RL-02503	7.2	183	5.8	147	4.3	109	3.10	78.7	3.00	76.2	20	9.1
RL-03501	7.2	183	5.8	147	4.0	102	2.60	66.0	3.00	76.2	14	6.3
RL-03502	7.2	183	5.8	147	4.0	102	2.75	69.9	3.00	76.2	16	7.3
RL-03503	9.0	229	7.4	188	4.7	119	3.16	80.3	3.00	76.2	30	14
RL-04501	9.0	229	7.4	188	4.7	119	3.16	80.3	3.00	76.2	23	10
RL-04502	9.0	229	7.4	188	4.7	119	3.16	80.3	3.00	76.2	28	13
RL-04503	9.0	229	7.3	185	5.3	135	3.66	93.0	3.00	76.2	39	18
RL-05501	9.0	229	7.3	185	5.3	135	3.16	80.3	3.00	76.2	24	11
RL-05502	9.0	229	7.0	178	5.3	135	3.16	80.3	3.00	76.2	27	12
RL-05503	9.0	229	7.0	178	6.0	152	3.91	99.3	3.00	76.2	41	19
RL-08001	10.0	254	8.5	216	6.3	159	3.47	88.1	3.63	92.2	43	20
RL-08002	10.8	274	8.5	216	6.5	165	3.47	88.1	3.63	92.2	51	23
RL-08003	10.8	274	8.5	216	6.8	173	4.16	105.7	3.63	92.2	61	28
RL-10001	10.8	274	8.6	217	5.5	139	3.30	83.8	3.63	92.2	47	21
RL-10002	10.8	274	8.3	210	5.7	144	3.66	93.0	3.63	92.2	51	23
RL-10003	10.8	274	8.3	210	6.2	156	4.16	105.7	3.63	92.2	74	34
RL-13001	9.0	229	7.0	179	4.7	118	3.16	80.3	3.00	76.2	29	13
RL-13002	10.8	274	8.4	213	5.7	144	3.66	93.0	3.63	92.2	57	26
RL-13003	11.0	279	8.5	216	6.2	156	4.16	105.7	3.63	92.2	64	29
RL-16001	10.8	274	8.3	211	5.2	131	3.16	80.3	3.63	92.2	40	18
RL-16002	10.8	274	8.3	211	6.0	152	3.47	88.1	3.63	92.2	50	23
RL-16003	11.5	292	8.5	216	9.0	229	4.69	119.1	3.63	92.2	67	30
RL-20001	10.8	274	8.3	211	6.0	152	4.16	105.7	3.63	92.2	48	22
RL-20002	10.8	274	8.3	211	8.3	210	4.41	112.0	3.63	92.2	67	30
RL-20003	10.8	274	8.3	211	9.0	229	5.91	150.1	3.63	92.2	100	45
RL-25001B1	10.8	274	8.3	211	9.0	229	4.19	106.4	3.63	92.2	68	31
RL-25002B1	14.4	366	11.4	290	10.0	254	5.16	131.1	4.60	116.8	106	48
RL-25003B1	14.4	366	11.2	284	11.3	286	5.82	147.8	4.60	116.8	140	63

See www.mtecorp.com "Line load Reactors" for current dimensions and CAD details

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DIMENSIONS

Standard Type "RL" AC Line / Load Reactors – Open Type

MTE Cat. No.	A Inches	A mm	B Inches	B mm	C Inches	C mm	D Inches	D mm	E Inches	E mm	Weight Lbs	Mass Kg
RL-32001B1	14.4	366	11.4	288	10.0	254	5.16	131.1	4.60	116.8	110	50
RL-32002B1	14.4	366	11.3	286	10.5	267	5.88	149.4	4.60	116.8	125	57
RL-32003B1	15.0	381	11.3	286	13.0	330	7.13	181.1	4.60	116.8	190	86
RL-40001B1	14.5	368	11.3	286	10.0	254	5.16	131.1	4.60	116.8	100	45
RL-40002B1	15.5	394	11.3	286	12.1	307	6.76	171.7	4.60	116.8	155	70
RL-40003B1	15.5	394	11.3	286	14.5	368	7.26	184.4	4.60	116.8	200	91
RL-50001	15.5	394	11.5	291	10.5	267	5.50	139.7	4.60	116.8	120	54
RL-50002	15.5	394	11.5	292	15.0	381	6.76	171.7	4.60	116.8	180	82
RL-50003	15.5	394	11.5	292	14.8	375	9.76	247.9	4.60	116.8	290	132
RL-60001	15.5	394	11.5	292	13.0	330	5.26	133.6	4.60	116.8	160	73
RL-60002	15.5	394	11.0	279	13.0	330	8.00	203.2	4.60	116.8	210	95
RL-60003	15.5	394	11.4	290	15.5	394	9.26	235.2	4.60	116.8	290	132
RL-75001	22.0	559	16.5	419	11.5	291	6.63	168.4	7.20	182.9	200	91
RL-75002	22.0	559	16.5	419	14.0	356	8.01	203.5	7.20	182.9	310	141
RL-75003	22.0	559	16.8	425	18.0	457	9.26	235.2	7.20	182.9	400	181
RL-85001	20.3	514	16.8	425	12.0	305	7.60	193.0	7.20	182.9	320	145
RL-85002	22.0	559	16.8	425	15.0	381	8.00	203.2	7.20	182.9	380	172
RL-85003	22.5	572	16.8	427	18.0	457	9.00	228.6	7.20	182.9	460	209
RL-100001	21.6	549	16.8	425	14.5	368	7.26	184.4	7.20	182.9	320	145
RL-100002	20.3	514	16.8	425	14.0	356	8.50	215.9	7.20	182.9	420	190
RL-100003	20.3	514	16.8	425	15.0	381	10.76	273.3	7.20	182.9	625	283
RL-120001	22.5	572	17.0	432	15.0	381	11.00	279.4	7.20	182.9	425	193
RL-120002	22.5	572	17.0	432	18.0	457	10.76	273.3	7.20	182.9	545	247
RL-120003	22.5	572	17.0	432	18.0	457	11.00	279.4	7.20	182.9	690	313
RL-140001	22.0	559	17.0	432	22.0	559	11.00	279.4	7.20	182.9	500	227
RL-140002	22.0	559	17.0	432	22.0	559	11.00	279.4	7.20	182.9	630	286
RL-140003	22.0	559	17.0	432	22.0	559	11.00	279.4	7.20	182.9	850	385
RL-150001	22.0	559	17.0	432	22.0	559	11.00	279.4	7.20	182.9	635	288
RL-150002	22.0	559	17.0	432	22.0	559	11.00	279.4	7.20	182.9	675	306
RL-150003	22.0	559	17.0	432	22.0	559	11.00	279.4	7.20	182.9	900	408

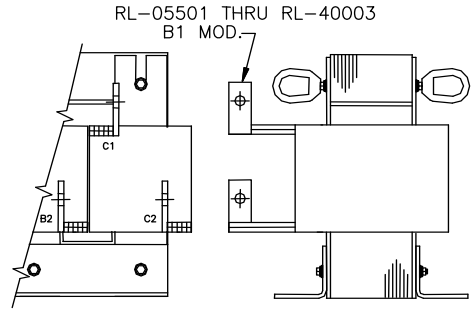
See www.mtecorp.com "Line load Reactors" for current dimensions and CAD details

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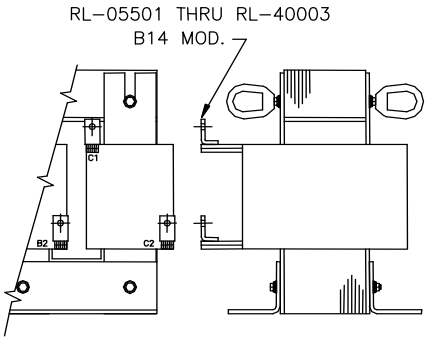
PRODUCT MODIFICATIONS

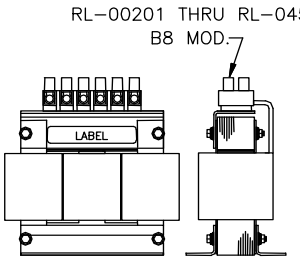
Type “RL” AC Line / Load Reactors

“B1” Terminal Modification



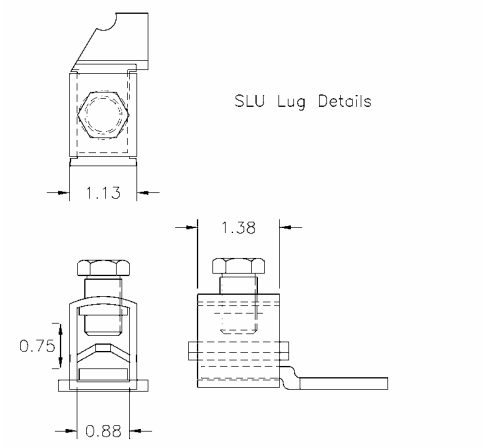
“B14” Terminal Modification

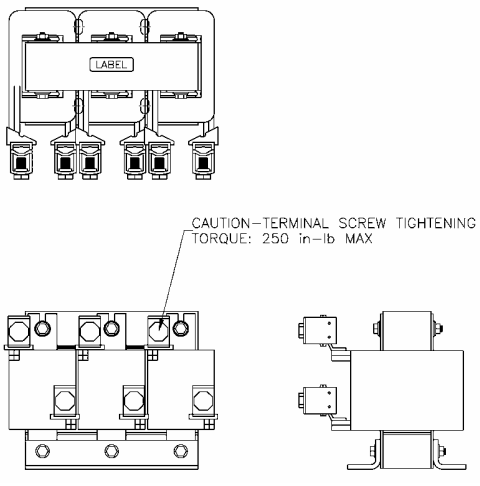




“B8” Terminal Modification

“SLU” Lug Option





Single Wire Range: 00 – 500 MCM
Stranding Class “B”& “C” only

Shown On RL-25001

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MECHANICAL DATA

Standard Type "RL" AC Line / Load Reactors – NEMA 1

Catalog Number	Cabinet Number	Weight Lbs	Mass Kg
RL-00211	CAB-8	11	5
RL-00212	CAB-8	11	5
RL-00213	CAB-8	11	5
RL-00214	CAB-8	10	5
RL-00411	CAB-8	11	5
RL-00412	CAB-8	11	5
RL-00413	CAB-8	12	6
RL-00414	CAB-8	13	6
RL-00811	CAB-8	14	7
RL-00812	CAB-8	15	7
RL-00813	CAB-8	18	8
RL-00814	CAB-8	20	9
RL-01211	CAB-8	16	7
RL-01212	CAB-8	17	8
RL-01213	CAB-8	25	11
RL-01811	CAB-8	16	7
RL-01812	CAB-8	19	9
RL-01813	CAB-13V	47	21
RL-02511	CAB-13V	42	19
RL-02512	CAB-13V	45	21
RL-02513	CAB-13V	49	22
RL-03511	CAB-13V	45	21
RL-03512	CAB-13V	47	22
RL-03513	CAB-13V	61	23
RL-04511	CAB-13V	54	25
RL-04512	CAB-13V	59	27
RL-04513	CAB-13V	70	32
RL-05511	CAB-13V	55	25
RL-05512	CAB-13V	58	27
RL-05513	CAB-13V	72	33
RL-08011	CAB-13V	74	34
RL-08012	CAB-13V	82	37
RL-08013	CAB-13V	86	39
RL-10011	CAB-13V	78	36
RL-10012	CAB-13V	86	39
RL-10013	CAB-13V	105	48
RL-13011	CAB-13V	60	27
RL-13012	CAB-13V	88	40
RL-13013	CAB-13V	95	43
RL-16011	CAB-13V	71	32
RL-16012	CAB-13V	81	37
RL-16013	CAB-13V	98	45
RL-20011	CAB-13V	79	36

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MECHANICAL DATA

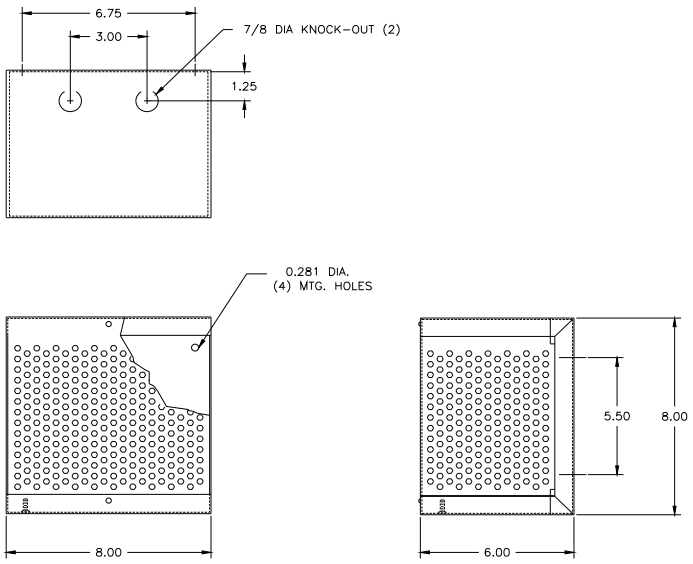
Standard Type "RL" AC Line / Load Reactors – NEMA 1

Catalog	Cabinet	Weight	Mass
Number	Number	Lbs	Kg
RL-20012	CAB-13V	**98**	45
RL-20013	CAB-13V	**131**	60
RL-25011B1	CAB-13V	**99**	45
RL-25012B1	CAB-17V	**151**	69
RL-25013B1	CAB-17V	**185**	84
RL-32011B1	CAB-17V	**155**	70
RL-32012B1	CAB-17V	**170**	77
RL-32013B1	CAB-17V	**235**	107
RL-40011B1	CAB-17V	**145**	66
RL-40012B1	CAB-17V	**200**	91
RL-40013B1	CAB-17V	**245**	111
RL-50011	CAB-17V	**165**	75
RL-50012	CAB-17V	**225**	102
RL-50013	CAB-17V	**335**	152
RL-60011	CAB-17V	**205**	93
RL-60012	CAB-17V	**255**	116
RL-60013	CAB-17V	**335**	152
RL-75041	CAB-30B	**283**	129
RL-75042	CAB-30B	**393**	179
RL-75043	CAB-30B	**483**	220
RL-85041	CAB-30B		
RL-85042	CAB-30B		
RL-85043	CAB-30B		
RL-100041	CAB-30B		
RL-100042	CAB-30B		
RL-100042	CAB-30B		
RL-100043	CAB-30B		
RL-120041	CAB-30B		
RL-120042	CAB-30B		
RL-120043	CAB-30B		
RL-140041	CAB-42C		
RL-140042	CAB-42C		
RL-150021	CAB-42C		
RL-150042	CAB-42C		
RL-150043	CAB-42C		
RL-180041	CAB-42C		
RL-180042	CAB-42C		
RL-180043	CAB-42C		
RL-210041	CAB-42C		
RL-210042	CAB-42C		
RL-210043	CAB-42C		

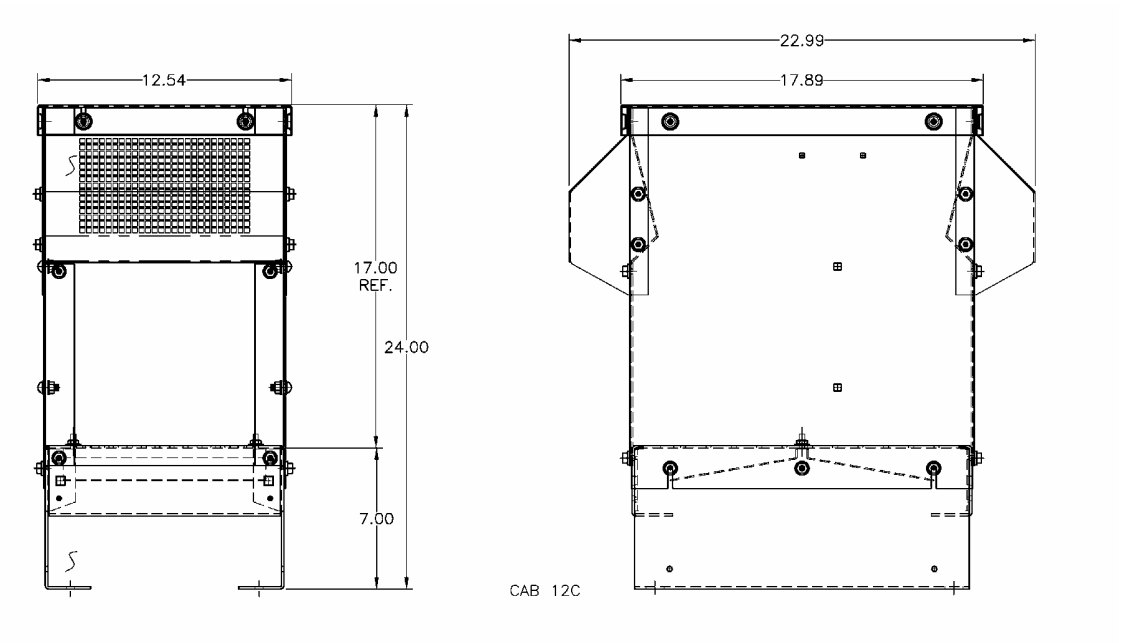
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ENCLOSURE DIMINSIONS

Top conduit entry recommended for NEMA 1 enclosed reactors.



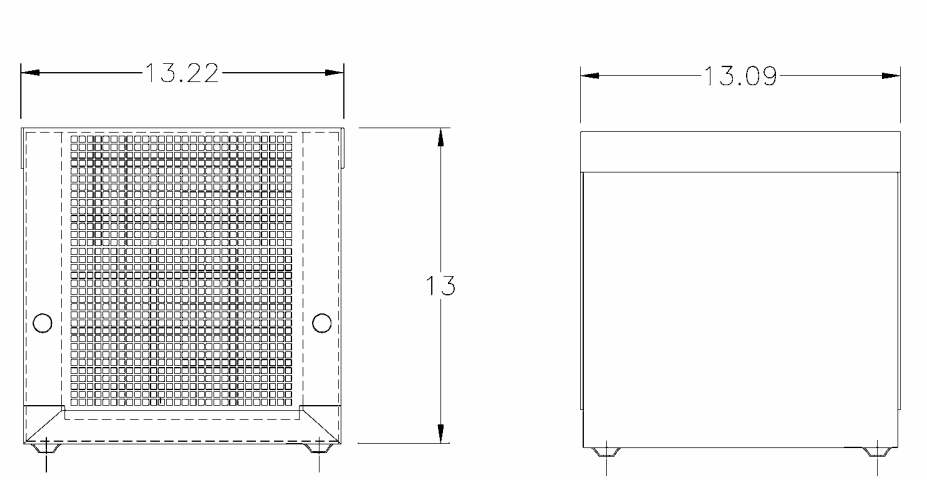
CAB-8



CAB-12C

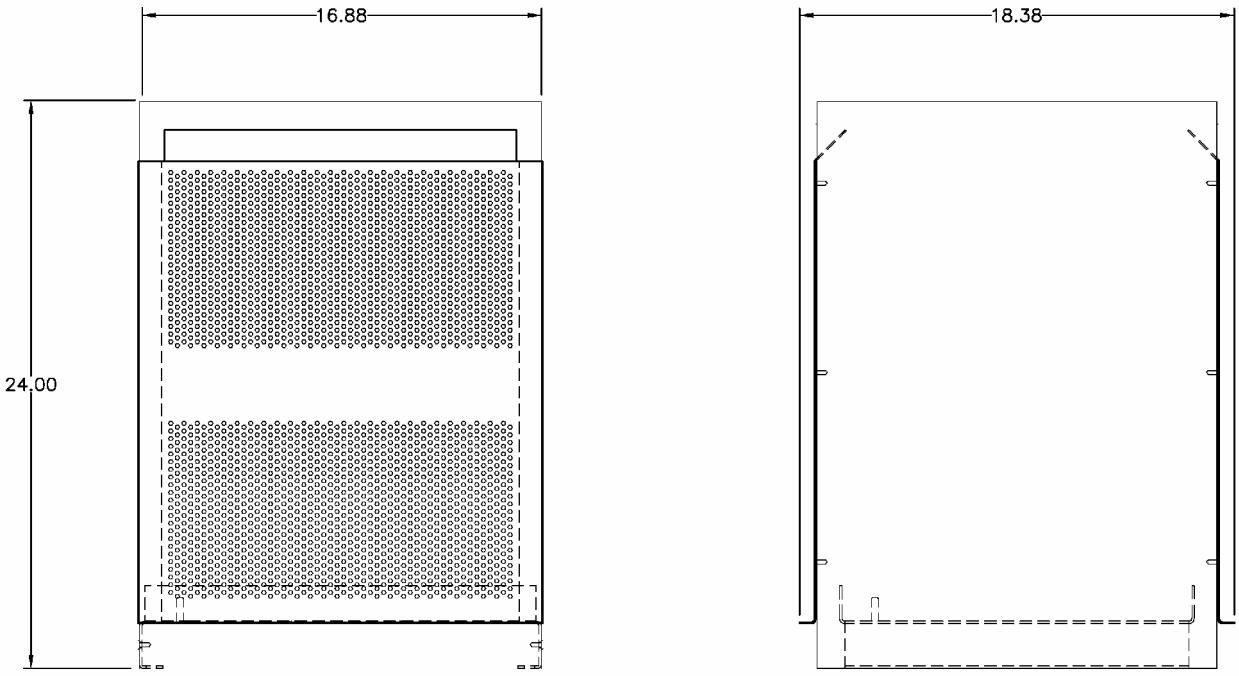
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ENCLOSURE DIMENSIONS



Note: Cover not fixed use side cable entry.

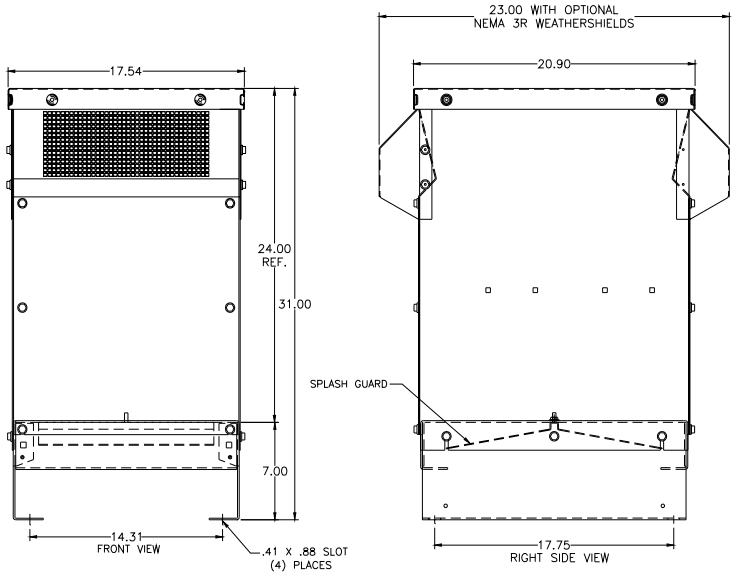
CAB-13V



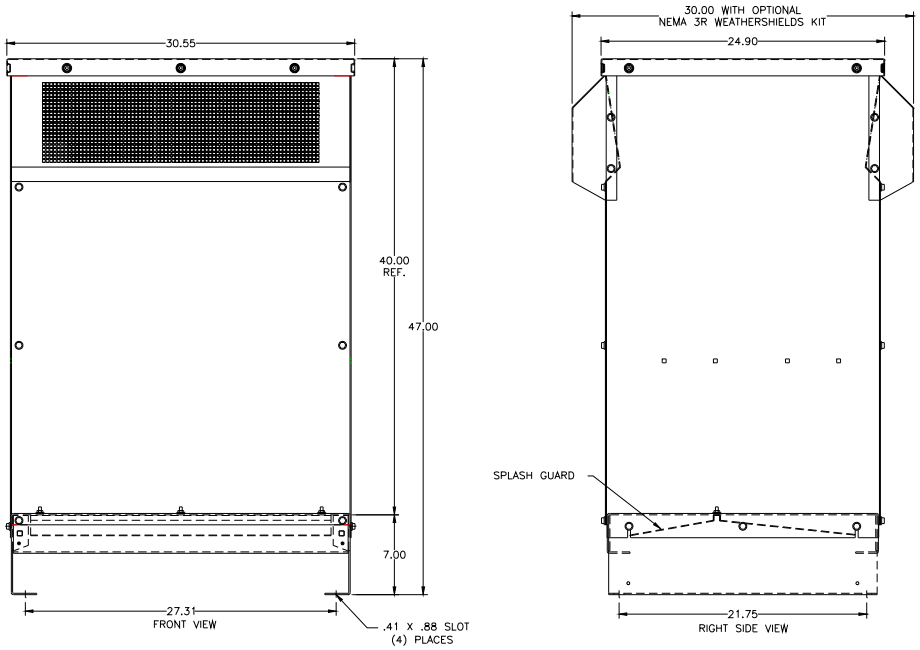
CAB-17V

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ENCLOSURE DIMENSIONS



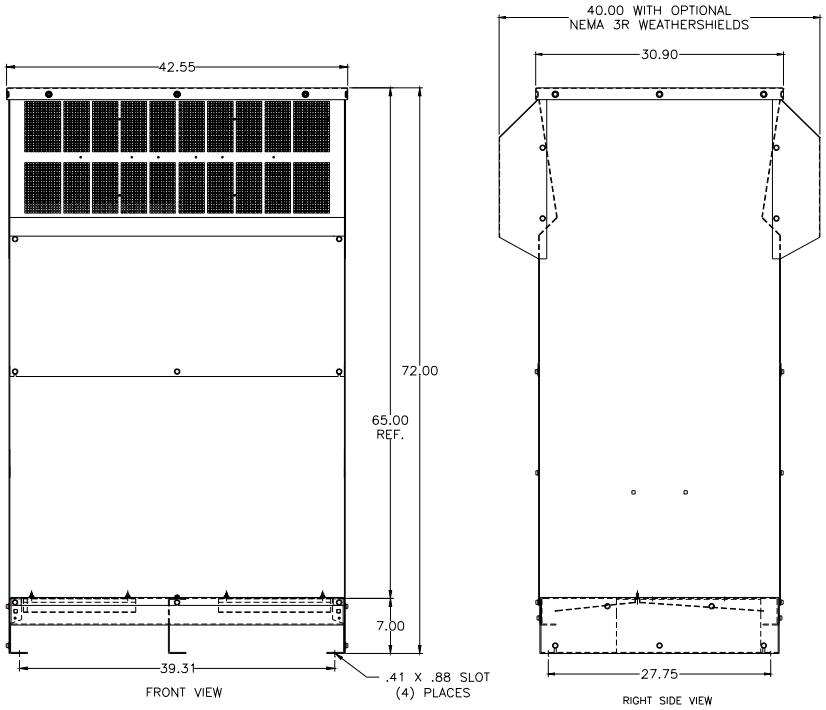
CAB-17C



CAB-30B

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ENCLOSURE DIMENSIONS



CAB-42C

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TECHNICAL DATA

Standard Type "RL" AC Line / Load Reactors

Catalog Number	Watts Loss	Terminal Data			Weight Mass			Fund	Max
		Type	Wire Range(AWG)	Torque (in – lbs)	lbs	Kg	mH	Amps	Amps
RL-00201	8	TB	22 – 14	4.5	4	2	12	2	3
RL-00202	12	TB	22 – 14	4.5	4	2	20	2	3
RL-00203	16	TB	22 – 14	4.5	4	2	32	2	3
RL-00204	11	TB	22 – 14	4.5	3	2	6	2	3
RL-00401	15	TB	22 – 14	4.5	4	2	3	4	6
RL-00402	20	TB	22 – 14	4.5	4	3	6.5	4	6
RL-00403	20	TB	22 – 14	4.5	5	2	9	4	6
RL-00404	21	TB	22 – 14	4.5	6	3	12	4	6
RL-00801	20	TB	22 – 14	4.5	7	4	1.5	8	12
RL-00802	29	TB	22 – 14	4.5	8	4	3	8	12
RL-00803	26	TB	22 – 14	4.5	11	5	5	8	12
RL-00804	28	TB	22 – 14	4.5	13	6	7.5	8	12
RL-01201	26	TB	22 – 5	16	9	4	1.25	12	18
RL-01202	31	TB	22 – 5	16	10	5	2.5	12	18
RL-01203	41	TB	22 – 5	16	18	9	4.2	12	18
RL-01801	36	TB	22 – 5	16	9	4	0.8	18	27
RL-01802	43	TB	22 – 5	16	12	6	1.5	18	27
RL-01803	43	TB	22 – 5	16	16	8	2.5	18	27
RL-02501	48	TB	22 – 5	16	11	5	0.5	25	37.5
RL-02502	52	TB	22 – 5	16	14	7	1.2	25	37.5
RL-02503	61	TB	22 – 5	16	18	9	1.8	25	37.5
RL-03501	49	TB	22 – 5	16	14	7	0.4	35	52.5
RL-03502	54	TB	22 – 5	16	16	8	0.8	35	52.5
RL-03503	54	TB	18 – 4	20	30	14	1.2	35	52.5
RL-04501	54	TB	18 – 4	20	23	10	0.3	45	67.5
RL-04502	62	TB	18 – 4	20	28	13	0.7	45	67.5
RL-04503	65	TB	18 – 4	20	39	18	1.2	45	67.5
RL-05501	64	Box	6 – 1/0	6-4(45) & 2-0(50)	24	11	0.25	55	82.5
RL-05502	67	Box	6 – 1/0	6-4(45) & 2-0(50)	27	12	0.5	55	82.5
RL-05503	71	Box	6 – 1/0	6-4(45) & 2-0(50)	41	18	0.85	55	82.5
RL-08001	82	Box	6 – 1/0	6-4(45) & 2-0(50)	43	19	0.2	80	120
RL-08002	86	Box	6 – 1/0	6-4(45) & 2-0(50)	51	23	0.4	80	120
RL-08003	96	Box	6 – 1/0	6-4(45) & 2-0(50)	55	25	0.7	80	120

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TECHNICAL DATA (cont'd)

Standard Type "RL" AC Line / Load Reactors

Catalog	Watts Loss	Terminal Data			Weight	Mass	mH	Fund	Max
Number	(watts)	Type	Wire Range(AWG)	Wire Range(AWG)	lbs	Kg		Amps	Amps
RL-10001	94	Box	6 – 1/0	6-4(45) & 2-0(50)	47	21	0.15	100	150
RL-10002	84	Box	6 – 1/0	6-4(45) & 2-0(50)	51	23	0.3	100	150
RL-10003	108	Box	6 – 1/0	6-4(45) & 2-0(50)	74	33	0.45	100	150
RL-13001	108	Box	2 – 4/0	150	29	13	0.1	130	195
RL-13002	180	Box	2 – 4/0	150	57	26	0.2	130	195
RL-13003	128	Box	2 – 4/0	150	64	29	0.3	130	195
RL-16001	116	Box	2 – 4/0	150	40	18	0.075	160	240
RL-16002	149	Box	2 – 4/0	150	50	22	0.15	160	240
RL-16003	138	Box	2 – 4/0	150	67	31	0.23	160	240
RL-20001	124	Box	2 – 4/0	150	48	22	0.055	200	300
RL-20002	168	Box	2 – 4/0	150	67	31	0.11	200	300
RL-20003	146	Box	2 – 4/0	150	100	46	0.185	200	300
RL-25001B1	154	Tab	Copper Tab	Not Applicable	68	31	0.045	250	375
RL-25002B1	231	Tab	Copper Tab	Not Applicable	106	49	0.09	250	375
RL-25003B1	219	Tab	Copper Tab	Not Applicable	140	64	0.15	250	375
RL-32001B1	224	Tab	Copper Tab	Not Applicable	110	50	0.04	320	480
RL-32002B1	264	Tab	Copper Tab	Not Applicable	125	57	0.075	320	480
RL-32003B1	351	Tab	Copper Tab	Not Applicable	190	86	0.125	320	480
RL-40001B1	231	Tab	Copper Tab	Not Applicable	100	46	0.03	400	560
RL-40002B1	333	Tab	Copper Tab	Not Applicable	155	71	0.06	400	560
RL-40003B1	293	Tab	Copper Tab	Not Applicable	200	91	0.105	400	560
RL-50001	266	Tab	Copper Tab	Not Applicable	120	55	0.025	500	700
RL-50002	340	Tab	Copper Tab	Not Applicable	180	82	0.05	500	700
RL-50003	422	Tab	Copper Tab	Not Applicable	290	132	0.085	500	700
RL-60001	307	Tab	Copper Tab	Not Applicable	160	73	0.02	600	840
RL-60002	414	Tab	Copper Tab	Not Applicable	210	96	0.04	600	840
RL-60003	406	Tab	Copper Tab	Not Applicable	290	132	0.065	600	750
RL-75001	427	Tab	Copper Tab	Not Applicable	200	91	0.015	750	1050
RL-75002	630	Tab	Copper Tab	Not Applicable	310	141	0.029	750	1050
RL-75003	552	Tab	Copper Tab	Not Applicable	400	182	0.048	750	938
RL-85001	798	Tab	Copper tab	Not Applicable	313	143	0.015	850	1063
RL-85002	930	Tab	Copper tab	Not Applicable	370	168	0.027	850	1063
RL-85003	1133	Tab	Copper tab	Not Applicable	454	207	0.042	850	1063
RL-90001	860	Tab	Copper tab	Not Applicable			0.013	900	1125
RL-90002	1020	Tab	Copper tab	Not Applicable			0.025	900	1125
RL-90003	1365	Tab	Copper tab	Not Applicable			0.04	900	1125
RL-100001	940	Tab	Copper tab	Not Applicable	350	159	0.011	1000	1250
RL-100002	1090	Tab	Copper tab	Not Applicable	409	186	0.022	1000	1250
RL-100003	1500	Tab	Copper tab	Not Applicable	589	268	0.038	1000	1250
RL-120001	980	Tab	Copper tab	Not Applicable	385	175	0.009	1200	1500
RL-120002	1130	Tab	Copper tab	Not Applicable	440	200	0.019	1200	1500
RL-120002	1550	Tab	Copper tab	Not Applicable	604	275	0.03	1200	1500
RL-140001		Tab	Copper tab	Not Applicable			0.008	1400	1750
RL-140002	1523	Tab	Copper tab	Not Applicable	522	238	0.016	1400	1750
RL-140003	1680	Tab	Copper tab	Not Applicable	627	285	0.027	1400	1750
RL-150001	1432	Tab	Copper tab	Not Applicable	551	251	0.008	1500	1875
RL-150002	1671	Tab	Copper tab	Not Applicable	630	287	0.015	1500	1875
RL-150003	1815	Tab	Copper tab	Not Applicable	680	309	0.025	1500	1875

Contact factory for higher ratings.

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5. INSTALLATION INSTRUCTIONS

Open Line/Load Reactor Installation

MTE line/load reactors are available in open construction and in NEMA 1 enclosures. Open reactors are designed for mounting within an appropriate electrical equipment enclosure. Reactors rated 300 amperes RMS and under are designed for mounting in both a vertical and horizontal position. Larger reactors must be mounted in a horizontal position typically on the floor of the enclosure. Include the power dissipation of the reactor along with all the other components located in the enclosure to determine the internal temperature rise and cooling requirements of the enclosure.

Reactors may be located in any region of the enclosure where the ambient temperature does not exceed 45 degrees C. Allow a minimum side clearances of four (4) inches and vertical clearances of six (6) inches for proper heat dissipation and access. Do not locate the reactor next to resistors or any other component with operating surface temperatures above 125 degree C.

Select a well ventilated, dust-free area away from direct sunlight, rain or moisture. Do not install in or near a corrosive environment. Avoid locations where the reactor will be subjected to excessive vibrations.

NEMA 1 Enclosed Line/Load Reactor Installation

Top conduit entry recommended for NEMA 1 enclosed reactor.

MTE line/load reactors mounted in enclosures with part number, CAB-8, are designed for wall mounting. All other enclosures are designed for floor mounting.

WARNING

MTE NEMA 1 enclosure is designed for floor mounting must be mounted with the enclosure base horizontal for proper ventilation. Wall mounting a floor mounted enclosure with the base against the wall will cause the reactor to over heat resulting in equipment damage.

Allow a minimum side, front, and back clearances of twelve (12) inches and vertical clearances of eighteen (18) inches for proper heat dissipation and access. Do not locate the enclosure next to resistors or any other component with operating surface temperatures above 125 degree C.

Select a well ventilated, dust-free area away from direct sunlight, rain or moisture where the ambient temperature does not exceed 40 degrees C.

Do not install in or near a corrosive environment.

Avoid locations where the reactor will be subjected to excessive vibrations.

Where desirable, enclosures may be mounted on vibration isolating pads to reduce audible noise. Standard vibration control pads made from neoprene or natural rubber and selected for the weight of the enclosed reactor are effective.

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Power Wiring Connection

WARNING

Input and output power wiring to the reactor should be performed by authorized personnel in accordance with the NEC and all local electrical codes and regulations.

Verify that the power source to which the reactor is to be connected is in agreement with the nameplate data on the reactor. A fused disconnect switch or circuit breaker should be installed between the reactor and its source of power in accordance with the requirements of the NEC and all local electrical codes and regulations. Refer to the drive, inverter, or other electrical equipment user manual for selection of the correct fuse rating and class.

The reactor is suitable for use on a circuit capable of delivering not more than 65,000 rms symmetrical amperes at 480 volts when protected by Bussman type JJS, KTK, KTK-R, SPP or T class fuses.

Reactor are designed for use with copper conductors with a minimum temperature rating of 75 degrees C. Table 2 lists the wire range and terminal torque requirements for the power input and output connections by reactor part number.

Refer to Figure 4 for typical electrical diagrams describing the application of reactors in both line and load applications. For reactors supplied as a component part of a drive system or a component part of power electronic apparatus follow the interconnection diagram supplied by the System Engineer.

Where desirable, a flexible conduit connection to the reactor enclosure should be made to reduce audible noise.

WARNING

Failure to connect reactors supplied as a component part of a drive system or other power electronic system according to the system interconnection diagram supplied by the System Engineer will result in equipment damage, injury, or death.

WARNING

If a line reactor or a line reactor and a load reactor are used with a drive equipped with a bypass circuit, the reactors must be removed from the motor circuit in the bypass mode. Damage to the motor and other equipment will result if this warning is not observed.

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Grounding

A stud is provided on enclosed reactors for grounding the enclosure. The enclosure must be grounded. Open reactors must be grounded at the designated grounding terminal or the reactor mounting holes if no designated grounding terminal is provided.

WARNING

The frame of line/load reactors must be grounded at the designated grounding terminal or one of the reactor mounting holes if no designated grounding terminal is provided. The enclosure of reactors supplied in enclosures must be grounded. INJURY OR DEATH MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED.

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Figure 4 –Typical Connection Diagrams

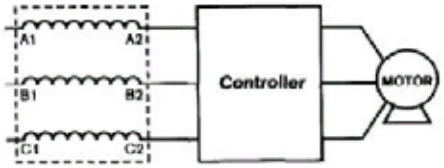


Fig 4a LINE Reactor
Connects between power source and VFD

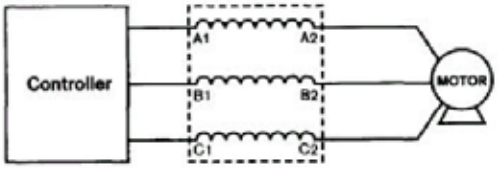


Fig. 4b LOAD Reactor
Connects between ASD and load (motor)

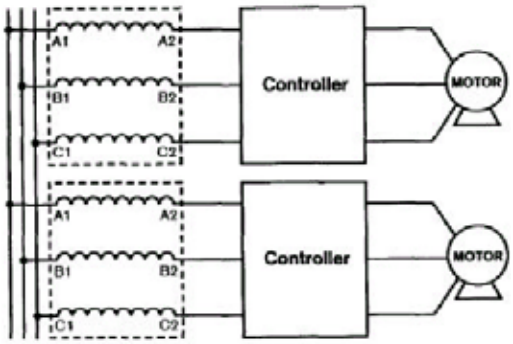
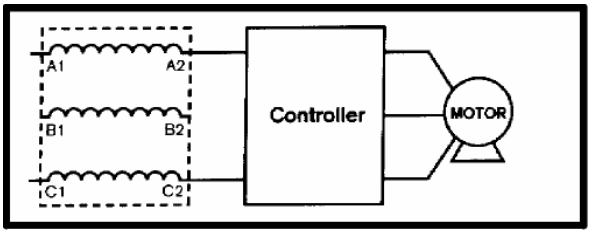


Fig 4c Use individual Line Reactors for multiple drives connected to a common power source

Figure 5.Single Phase connection diagram.

Standard three phase reactors may be used for single phase applications. Refer to application note AN0102 for proper selection. Application Notes are available on our website at www.mtecorp.com.



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6. STARTUP

Safety Precautions

Before startup, observe the following warnings and instructions:

WARNING

A Reactor is at line potential when the Reactor is connected to the utility. This voltage is extremely dangerous and may cause death or severe injury if you come in contact with it.

WARNING

High voltage is used in the operation of line/load reactors. Use Extreme caution to avoid contact with high voltage when operating, installing or repairing equipment containing line/load reactors. Line/load reactors are used in conjunction with inverters, or other electrical equipment that may feedback lethal voltages.

Follow the safety instructions in the equipment used with the reactor in addition to the safety instruction in this manual**.**

INJURY OR DEATH MAY RESULT IF SAFETYPRECAUTIONS ARE NOT OBSERVED.

Sequence of Operation

1. Read and follow safety precautions.
2. After installation, ensure that:
   - All Reactor ground terminals are connected to ground.
   - Power wiring to the utility, drive and motor is in accordance with the interconnection diagrams supplied by the System Engineer.
3. Check that moisture has not condensed on the Reactor. If moisture is present, do not proceed with startup until the moisture has been removed.

4. Proceed with startup according to the instructions provided by the system supplier.

WARNING

Reactors are a component part of an electrical system. Do not proceed with startup until the system startup instructions provided by the System Engineer are understood and followed. Injury, death and damage to equipment may result if the system startup instructions are not followed.

WARNING

Use extreme caution to avoid contact with line voltage when checking for power. INJURY OR DEATH MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED.

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PRODUCT Performance

Standard Type "RL" AC Line / Load Reactors

AUDIBLE NOISE: Guard-AC Line/Load Reactors offer low noise operation. Core and coil construction, flux density control, harmonic compensation as well as our epoxy impregnation process assure minimal audible noise radiation. Although our reactors are typically "quiet", waveforms vary by drive type and application and therefore reactor audible noise may vary by application. Noise levels may be affected by type of motor and motor conductor as well as motor conductor length.
Typical audible noise levels for units selected from our catalog by HP rating are:

2 thru 12 amps	55 dBA
18 thru 100 amps	65 dBA
130 thru 400 amps	70 dBA
500 thru 1200 amps	75 dBA

Service Factor: Guard-AC reactors are compensated for the additional currents and high frequencies caused by the presence of harmonics. The reactor fundamental current rating indicates the typical full load motor current. Standard reactors rated 2 amps thru 400 amps offer a full 1.5 service factor rating which allows them to carry overload current up to 150% of their fundamental rating when applied as an input line reactor. Since the nameplate ratings of motor drives (ASD) varies widely by manufacturer, this helps to assure that the reactor maximum current rating is compatible with the nameplate current rating on the ASD. Units rated above 400 amps to 750 amps have service factors of 1.25 or higher. The service factor rating compensates for ASD manufacturer variances in motor drive current ratings and for harmonic currents. Nominal inductance is assured all the way up to the service factor current rating.

PWM / IGBT PROTECTION: Guard-AC reactors are protected against the high peak voltage and fast rise time voltage pulses associated with PWM waveforms. The dielectric strength is 4000 volts rms and Guard-AC reactors meet the ratings of an inverter duty motor (NEMA MG-1, part 31). For convenience, they can be located either at the motor or at the drive.

HARMONIC ATTENUATION: Our unique harmonic compensation assures maximum circuit inductance in the presence of complex waveforms and can be relied upon to minimize input total harmonic current distortion (THID). Additionally it offers superior absorption of transient voltage spikes. Our standard reactors will typically reduce 6-pulse rectifier input current harmonics to the following levels at full load operating conditions:

3% reactor alone	45% or less THID
5% reactor alone	35% or less THID
3% AC reactor + 3% DC link choke	33% or less THID
5% AC reactor + 3% DC link choke	28% or less THID

(DC link choke inductance is basis of % ac impedance).

Reactor Surface Temperature: MTE RL reactors are optimized incorporating UL approved insulation and flux technology designed to operate at temperatures up to 200°C. Surface temperatures greater than 160°C at nominal ambient are considered hot. Reactors used for output filtering will tend to run hotter from higher harmonics. Excessive Long motor leads can resonate and produce additional heat. 8 KHz inverter switching frequency will push the reactor temperature even higher. To reduce RL operating temperatures and minimize motor dV/dT terminal voltage set the inverter frequency to 2KHz. Additional reactor heating will occur if added output capacitance sets up an undesirable resonance. MTE does not recommend using the RL reactors with supplemental filter capacitors.

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