

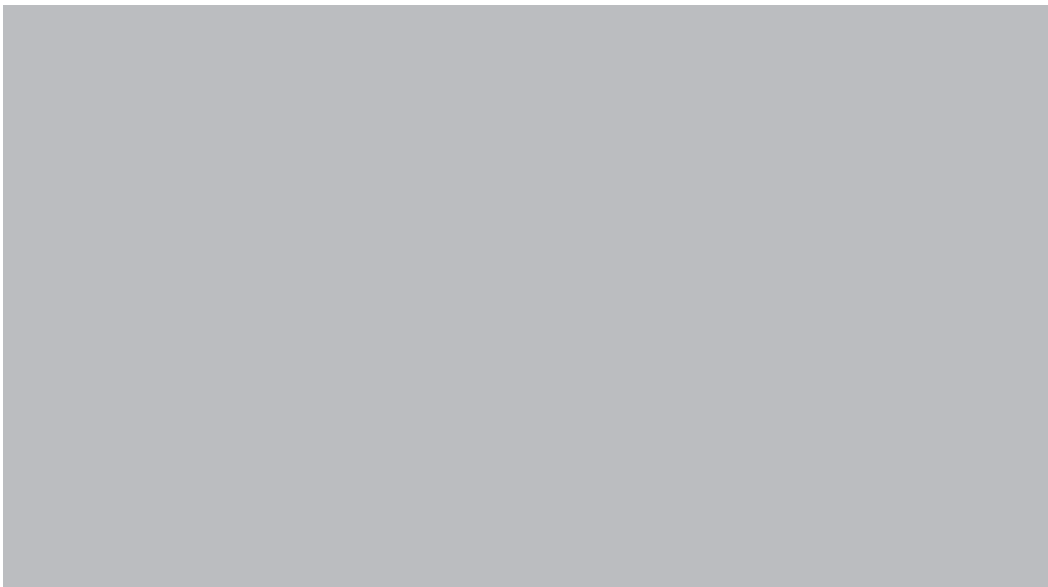


Lovato
Electric, Inc.

Les
SERIES
ENCLOSED
STARTERS

Lovato
electric
ENERGY AND AUTOMATION

TRADITION AND INNOVATION



SINCE 1922

The first LOVATO Electric headquarters was established in Bergamo, Italy, in 1922: the starting point of a great industrial adventure.



ITALIAN DESIGN

A staff of research and industrial design experts, at the Bergamo head office develops innovative and reliable products by taking advantage of the most modern software available on the marketplace.



LEADING-EDGE MANUFACTURING FACILITIES

LOVATO Electric makes its own products with the most advanced technology.



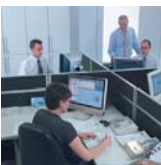
QUALITY AND CERTIFICATIONS

LOVATO Electric products comply with primary international quality standards requirements.



CUSTOMER CARE SERVICES

The Customer Service team offers prompt and professional assistance for products and applications.



INTERNATIONAL PRESENCE

Customer Service provides prompt and professional assistance regarding products and applications. Foreign branches and extensive official sales affiliates represent the reference point for assistance and product distribution in over 100 nations.



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LOVATO ELECTRIC S.P.A.
www.LovatoElectric.com

United Kingdom
LOVATO ELECTRIC LTD
www.lovato.co.uk

Germany
LOVATO ELECTRIC GmbH
www.lovatoelectric.de

Spain
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USA
LOVATO ELECTRIC INC
www.lovatousa.com

Czech Republic
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www.lovatoelectric.pl

Canada
LOVATO ELECTRIC CORP.
www.lovato.ca

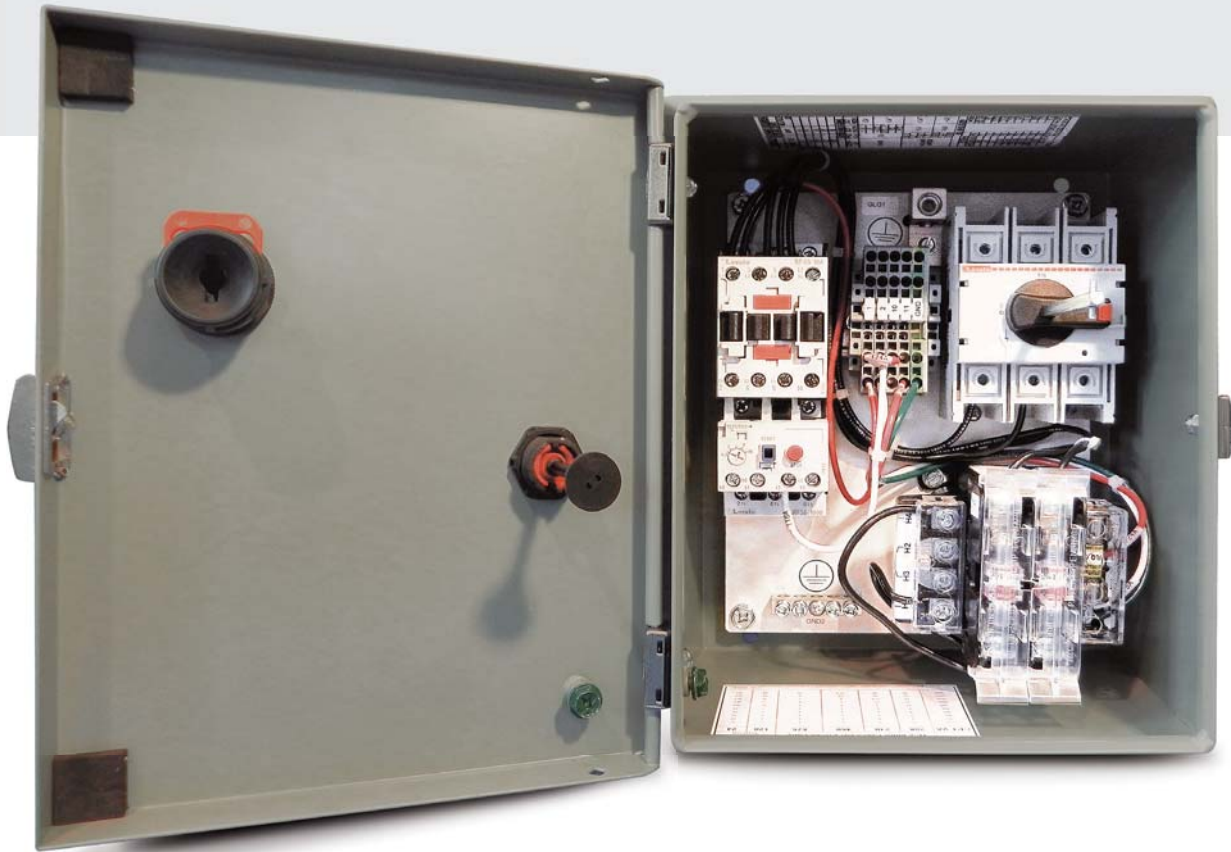
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Les



The **Les** Series features a durable industrial enclosure available with NEMA Type ratings of 1, 3R, 12, 4, 4X. 16 GA steel with seams continuously welded and ground smooth. Die cast hinges with concealed hinge pin system. Quarter turn enclosure latch allows quick entry and proper sealing.

Disconnect options are non-fused disconnect switch, fused disconnect switch and motor circuit protector and includes UL Type 4X operating handle with lockout feature on the enclosure door. Control Power Transformer option includes both primary and secondary fusing as standard.

Actuation options include either 3 Position Selector Switch for Hand-Off-Auto (H-O-A) or Start & Stop Push Buttons rated UL Type 4X. Indication options include Red Pilot Light for "RUN" and Green Pilot Light for "OFF" rated UL Type 4X. Blue reset button with "RESET" marking on cap rated UL Type 4X is provided as standard on all starters.

All **Les** Series products are UL Listed and 100% tested prior to shipment.

Other horsepower solutions and custom configurations are available upon request.

Les
SERIES
FEATURES

DESCRIPTION OF PART NUMBER SYSTEM



Les = LOVATO ENCLOSED STARTER

ENCLOSURE TYPE

1 = NEMA 1	2 = NEMA 12	3 = NEMA 3R	4 = NEMA 4	X = NEMA 4X (STAINLESS STEEL)	P = NEMA 4X (PLASTIC)
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MOTOR VOLTAGE

S120 = SINGLE PHASE, 120V	S230 = SINGLE PHASE, 230V	T208 = THREE PHASE, 208V	T230 = THREE PHASE, 230V	T460 = THREE PHASE, 460V	T575 = THREE PHASE, 575V
------------------------------	------------------------------	-----------------------------	-----------------------------	-----------------------------	-----------------------------

DISCONNECT MEANS

X = NONE	F = FUSED	N = NON-FUSED	M = MOTOR CIRCUIT PROTECTOR
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MOTOR HORSEPOWER

001 = 1 HP	002 = 2 HP	003 = 3 HP	005 = 5 HP	007 = 7.5 HP	010 = 10 HP	015 = 15 HP	020 = 20 HP	025 = 25 HP	030 = 30 HP	040 = 40 HP	050 = 50 HP	060 = 60 HP
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COIL VOLTAGE (60HZ)

024 = 24VAC	120 = 120VAC	208 = 208VAC	230 = 230VAC	460 = 460VAC	575 = 575VAC
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CONTROL TRANSFORMER

000 = NONE	024 = 24VAC SECONDARY	120 = 120VAC SECONDARY
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ACTUATION

X = NONE	H = HAND-OFF-AUTO	P = PUSHBUTTONS FOR START & STOP
----------	-------------------	----------------------------------

INDICATION

X = NONE	R = RED PILOT LIGHT (RUN)	G = GREEN PILOT LIGHT (OFF)
----------	---------------------------	-----------------------------

*ALL Les STARTERS INCLUDE A BLUE "RESET" BUTTON ON THE DOOR AS STANDARD.

EXAMPLE: **LES 1 T460 N 005 120 120 H R** = Les, ENCLOSED STARTER, NEMA TYPE 1 ENCLOSURE, THREE PHASE 460V, NON-FUSED DISCONNECT SWITCH, 5 HP, 120V COIL, CONTROL TRANSFORMER 120V SECONDARY, H-O-A SELECTOR SWITCH, RED PILOT LIGHT (RUN).

The logo for Les, consisting of the letters "Les" in a large, white, serif font. Above the letter "e" are five small white dots arranged in a horizontal line.

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**SINGLE PHASE
120VAC (S120)
UP TO 5HP**



Les

HP @ 120V	NEMA Type 1
1	LES 1 S120 X 001
2	LES 1 S120 X 002
3	LES 1 S120 X 003
5	LES 1 S120 X 005

HP @ 120V	NEMA Type 12
1	LES 2 S120 X 001
2	LES 2 S120 X 002
3	LES 2 S120 X 003
5	LES 2 S120 X 005

HP @ 120V	NEMA Type 3R
1	LES 3 S120 X 001
2	LES 3 S120 X 002
3	LES 3 S120 X 003
5	LES 3 S120 X 005

HP @ 120V	NEMA Type 4
1	LES 4 S120 X 001
2	LES 4 S120 X 002
3	LES 4 S120 X 003
5	LES 4 S120 X 005

HP @ 120V	NEMA Type 4X (SS)
1	LES X S120 X 001
2	LES X S120 X 002
3	LES X S120 X 003
5	LES X S120 X 005

HP @ 120V	NEMA Type 4X (P)
1	LES P S120 X 001
2	LES P S120 X 002
3	LES P S120 X 003
5	LES P S120 X 005

*COMPLETE ORDER CODE WITH COIL VOLTAGE DIGIT 024 = 24VAC / 120 = 120VAC

EXAMPLE: **LES 1 S120 X 001 120** = Les, NEMA 1, SINGLE PHASE, 120V, 1HP, 120VAC COIL

Les

**SINGLE PHASE
230VAC (S230)
UP TO 10HP**



HP @ 230V	NEMA Type 1
1	LES 1 S230 X 001
2	LES 1 S230 X 002
3	LES 1 S230 X 003
5	LES 1 S230 X 005
7.5	LES 1 S230 X 007
10	LES 1 S230 X 010

HP @ 230V	NEMA Type 12
1	LES 2 S230 X 001
2	LES 2 S230 X 002
3	LES 2 S230 X 003
5	LES 2 S230 X 005
7.5	LES 2 S230 X 007
10	LES 2 S230 X 010

HP @ 230V	NEMA Type 3R
1	LES 3 S230 X 001
2	LES 3 S230 X 002
3	LES 3 S230 X 003
5	LES 3 S230 X 005
7.5	LES 3 S230 X 007
10	LES 3 S230 X 010

HP @ 230V	NEMA Type 4
1	LES 4 S230 X 001
2	LES 4 S230 X 002
3	LES 4 S230 X 003
5	LES 4 S230 X 005
7.5	LES 4 S230 X 007
10	LES 4 S230 X 010

HP @ 230V	NEMA Type 4X (SS)
1	LES X S230 X 001
2	LES X S230 X 002
3	LES X S230 X 003
5	LES X S230 X 005
7.5	LES X S230 X 007
10	LES X S230 X 010

HP @ 230V	NEMA Type 4X (P)
1	LES P S230 X 001
2	LES P S230 X 002
3	LES P S230 X 003
5	LES P S230 X 005
7.5	LES P S230 X 007
10	LES P S230 X 010

*COMPLETE ORDER CODE WITH COIL VOLTAGE DIGIT 024 = 24VAC / 120 = 120VAC / 230 = 230VAC

EXAMPLE: **LES 1 S230 X 001 230** = LES, NEMA 1, SINGLE PHASE, 230V, 1HP, 230VAC COIL

**THREE PHASE
208VAC (T208)
UP TO 30HP**



HP @ 208V	NEMA Type 1
1	LES 1 T208 X 001
2	LES 1 T208 X 002
3	LES 1 T208 X 003
5	LES 1 T208 X 005
7.5	LES 1 T208 X 007
10	LES 1 T208 X 010
15	LES 1 T208 X 015
20	LES 1 T208 X 020
25	LES 1 T208 X 025
30	LES 1 T208 X 030

HP @ 208V	NEMA Type 12
1	LES 2 T208 X 001
2	LES 2 T208 X 002
3	LES 2 T208 X 003
5	LES 2 T208 X 005
7.5	LES 2 T208 X 007
10	LES 2 T208 X 010
15	LES 2 T208 X 015
20	LES 2 T208 X 020
25	LES 2 T208 X 025
30	LES 2 T208 X 030

HP @ 208V	NEMA Type 3R
1	LES 3 T208 X 001
2	LES 3 T208 X 002
3	LES 3 T208 X 003
5	LES 3 T208 X 005
7.5	LES 3 T208 X 007
10	LES 3 T208 X 010
15	LES 3 T208 X 015
20	LES 3 T208 X 020
25	LES 3 T208 X 025
30	LES 3 T208 X 030

HP @ 208V	NEMA Type 4
1	LES 4 T208 X 001
2	LES 4 T208 X 002
3	LES 4 T208 X 003
5	LES 4 T208 X 005
7.5	LES 4 T208 X 007
10	LES 4 T208 X 010
15	LES 4 T208 X 015
20	LES 4 T208 X 020
25	LES 4 T208 X 025
30	LES 4 T208 X 030

HP @ 208V	NEMA Type 4X (SS)
1	LES X T208 X 001
2	LES X T208 X 002
3	LES X T208 X 003
5	LES X T208 X 005
7.5	LES X T208 X 007
10	LES X T208 X 010
15	LES X T208 X 015
20	LES X T208 X 020
25	LES X T208 X 025
30	LES X T208 X 030

HP @ 208V	NEMA Type 4X (P)
1	LES P T208 X 001
2	LES P T208 X 002
3	LES P T208 X 003
5	LES P T208 X 005
7.5	LES P T208 X 007
10	LES P T208 X 010
15	LES P T208 X 015
20	LES P T208 X 020
25	LES P T208 X 025
30	LES P T208 X 030

*COMPLETE ORDER CODE WITH COIL VOLTAGE DIGIT 024 = 24VAC / 120 = 120VAC / 208 = 208VAC

EXAMPLE: **LES 1 T208 X 001 208** = Les, NEMA 1, THREE PHASE, 208V, 1HP, 208VAC COIL

Les

**THREE PHASE
230VAC (T230)
UP TO 30HP**



HP @ 230V	NEMA Type 1
1	LES 1 T230 X 001
2	LES 1 T230 X 002
3	LES 1 T230 X 003
5	LES 1 T230 X 005
7.5	LES 1 T230 X 007
10	LES 1 T230 X 010
15	LES 1 T230 X 015
20	LES 1 T230 X 020
25	LES 1 T230 X 025
30	LES 1 T230 X 030

HP @ 230V	NEMA Type 12
1	LES 2 T230 X 001
2	LES 2 T230 X 002
3	LES 2 T230 X 003
5	LES 2 T230 X 005
7.5	LES 2 T230 X 007
10	LES 2 T230 X 010
15	LES 2 T230 X 015
20	LES 2 T230 X 020
25	LES 2 T230 X 025
30	LES 2 T230 X 030

HP @ 230V	NEMA Type 3R
1	LES 3 T230 X 001
2	LES 3 T230 X 002
3	LES 3 T230 X 003
5	LES 3 T230 X 005
7.5	LES 3 T230 X 007
10	LES 3 T230 X 010
15	LES 3 T230 X 015
20	LES 3 T230 X 020
25	LES 3 T230 X 025
30	LES 3 T230 X 030

HP @ 230V	NEMA Type 4
1	LES 4 T230 X 001
2	LES 4 T230 X 002
3	LES 4 T230 X 003
5	LES 4 T230 X 005
7.5	LES 4 T230 X 007
10	LES 4 T230 X 010
15	LES 4 T230 X 015
20	LES 4 T230 X 020
25	LES 4 T230 X 025
30	LES 4 T230 X 030

HP @ 230V	NEMA Type 4X (SS)
1	LES X T230 X 001
2	LES X T230 X 002
3	LES X T230 X 003
5	LES X T230 X 005
7.5	LES X T230 X 007
10	LES X T230 X 010
15	LES X T230 X 015
20	LES X T230 X 020
25	LES X T230 X 025
30	LES X T230 X 030

HP @ 230V	NEMA Type 4X (P)
1	LES P T230 X 001
2	LES P T230 X 002
3	LES P T230 X 003
5	LES P T230 X 005
7.5	LES P T230 X 007
10	LES P T230 X 010
15	LES P T230 X 015
20	LES P T230 X 020
25	LES P T230 X 025
30	LES P T230 X 030

*COMPLETE ORDER CODE WITH COIL VOLTAGE DIGIT 024 = 24VAC / 120 = 120VAC / 230 = 230VAC

EXAMPLE: **LES 1 T230 X 001 230** = LES, NEMA 1, THREE PHASE, 230V, 1HP, 230VAC COIL

**THREE PHASE
460VAC (T460)
UP TO 60HP**



Les

HP @ 460V	NEMA Type 1
1	LES 1 T460 X 001
2	LES 1 T460 X 002
3	LES 1 T460 X 003
5	LES 1 T460 X 005
7.5	LES 1 T460 X 007
10	LES 1 T460 X 010
15	LES 1 T460 X 015
20	LES 1 T460 X 020
25	LES 1 T460 X 025
30	LES 1 T460 X 030
40	LES 1 T460 X 040
50	LES 1 T460 X 050
60	LES1 T 460 X 060

HP @ 460V	NEMA Type 12
1	LES 2 T460 X 001
2	LES 2 T460 X 002
3	LES 2 T460 X 003
5	LES 2 T460 X 005
7.5	LES 2 T460 X 007
10	LES 2 T460 X 010
15	LES 2 T460 X 015
20	LES 2 T460 X 020
25	LES 2 T460 X 025
30	LES 2 T460 X 030
40	LES 2 T460 X 040
50	LES 2 T460 X 050
60	LES 2 T460 X 060

HP @ 460V	NEMA Type 3R
1	LES 3 T460 X 001
2	LES 3 T460 X 002
3	LES 3 T460 X 003
5	LES 3 T460 X 005
7.5	LES 3 T460 X 007
10	LES 3 T460 X 010
15	LES 3 T460 X 015
20	LES 3 T460 X 020
25	LES 3 T460 X 025
30	LES 3 T460 X 030
40	LES 3 T460 X 040
50	LES 3 T460 X 050
60	LES 3 T460 X 060

HP @ 460V	NEMA Type 4
1	LES 4 T460 X 001
2	LES 4 T460 X 002
3	LES 4 T460 X 003
5	LES 4 T460 X 005
7.5	LES 4 T460 X 007
10	LES 4 T460 X 010
15	LES 4 T460 X 015
20	LES 4 T460 X 020
25	LES 4 T460 X 025
30	LES 4 T460 X 030
40	LES 4 T460 X 040
50	LES 4 T460 X 050
60	LES 4 T460 X 060

HP @ 460V	NEMA Type 4X (SS)
1	LES X T460 X 001
2	LES X T460 X 002
3	LES X T460 X 003
5	LES X T460 X 005
7.5	LES X T460 X 007
10	LES X T460 X 010
15	LES X T460 X 015
20	LES X T460 X 020
25	LES X T460 X 025
30	LES X T460 X 030
40	LES X T460 X 040
50	LES X T460 X 050
60	LES X T460 X 060

HP @ 460V	NEMA Type 4X (P)
1	LES P T460 X 001
2	LES P T460 X 002
3	LES P T460 X 003
5	LES P T460 X 005
7.5	LES P T460 X 007
10	LES P T460 X 010
15	LES P T460 X 015
20	LES P T460 X 020
25	LES P T460 X 025
30	LES P T460 X 030
40	LES P T460 X 040
50	LES P T460 X 050
60	LES P T460 X 060

*COMPLETE ORDER CODE WITH COIL VOLTAGE DIGIT 024 = 24VAC / 120 = 120VAC / 460 = 460VAC

EXAMPLE: **LES 1 T460 X 001 460** = LES, NEMA 1, THREE PHASE, 460V, 1HP, 460VAC COIL

Les

**THREE PHASE
575VAC (T575)
UP TO 60HP**



HP @ 575V	NEMA Type 1
1	LES 1 T575 X 001
2	LES 1 T575 X 002
3	LES 1 T575 X 003
5	LES 1 T575 X 005
7.5	LES 1 T575 X 007
10	LES 1 T575 X 010
15	LES 1 T575 X 015
20	LES 1 T575 X 020
25	LES 1 T575 X 025
30	LES 1 T575 X 030
40	LES 1 T575 X 040
50	LES 1 T575 X 050
60	LES 1 T575 X 060

HP @ 460V	NEMA Type 12
1	LES 2 T575 X 001
2	LES 2 T575 X 002
3	LES 2 T575 X 003
5	LES 2 T575 X 005
7.5	LES 2 T575 X 007
10	LES 2 T575 X 010
15	LES 2 T575 X 015
20	LES 2 T575 X 020
25	LES 2 T575 X 025
30	LES 2 T575 X 030
40	LES 2 T575 X 040
50	LES 2 T575 X 050
60	LES 2 T575 X 060

HP @ 575V	NEMA Type 3R
1	LES 3 T575 X 001
2	LES 3 T575 X 002
3	LES 3 T575 X 003
5	LES 3 T575 X 005
7.5	LES 3 T575 X 007
10	LES 3 T575 X 010
15	LES 3 T575 X 015
20	LES 3 T575 X 020
25	LES 3 T575 X 025
30	LES 3 T575 X 030
40	LES 3 T575 X 040
50	LES 3 T575 X 050
60	LES 3 T575 X 060

HP @ 575V	NEMA Type 4
1	LES 4 T575 X 001
2	LES 4 T575 X 002
3	LES 4 T575 X 003
5	LES 4 T575 X 005
7.5	LES 4 T575 X 007
10	LES 4 T575 X 010
15	LES 4 T575 X 015
20	LES 4 T575 X 020
25	LES 4 T575 X 025
30	LES 4 T575 X 030
40	LES 4 T575 X 040
50	LES 4 T575 X 050
60	LES 4 T575 X 060

HP @ 575V	NEMA Type 4X (SS)
1	LES X T575 X 001
2	LES X T575 X 002
3	LES X T575 X 003
5	LES X T575 X 005
7.5	LES X T575 X 007
10	LES X T575 X 010
15	LES X T575 X 015
20	LES X T575 X 020
25	LES X T575 X 025
30	LES X T575 X 030
40	LES X T575 X 040
50	LES X T575 X 050
60	LES X T575 X 060

HP @ 575V	NEMA Type 4X (P)
1	LES P T575 X 001
2	LES P T575 X 002
3	LES P T575 X 003
5	LES P T575 X 005
7.5	LES P T575 X 007
10	LES P T575 X 010
15	LES P T575 X 015
20	LES P T575 X 020
25	LES P T575 X 025
30	LES P T575 X 030
40	LES P T575 X 040
50	LES P T575 X 050
60	LES P T575 X 060

*COMPLETE ORDER CODE WITH COIL VOLTAGE DIGIT 024 = 24VAC / 120 = 120VAC / 575 = 575VAC

EXAMPLE: **LES 1 T575 X 001 575** = LES, NEMA 1, THREE PHASE, 575V, 1HP, 575VAC COIL

UL TYPE DESIGNATION

It is based on protection against ingress of solid foreign objects and ingress of water as IEC IP ratings but also items as corrosions and construction details. Designation includes the following:

INDOOR NON-HAZARDOUS LOCATIONS										
Against the following environmental conditions:	TYPE OF ENCLOSURE									
	1	2	4	4X	5	6	6P	12	12K	13
Incidental contact with the enclosed equipment	■	■	■	■	■	■	■	■	■	■
Falling dirt	■	■	■	■	■	■	■	■	■	■
Falling liquid and light splashing		■	■	■	■	■	■	■	■	■
Circulating dust, lint, fibres and flyings			■	■	■	■	■	■	■	■
Hosedown and splashing water			■	■		■	■			
Oil and coolant seepage								■	■	■
Oil or coolant spraying and splashing										■
Corrosive agents				■						■
Occasional temporary submersion									■	■
Occasional prolonged submersion										■

OUTDOOR NON-HAZARDOUS LOCATIONS							
Against the following environmental conditions:	TYPE OF ENCLOSURE						
	1	2	4	4X	5	6	6P
Incidental contact with the enclosed equipment	■	■	■	■	■	■	■
Rain, snow and sleet ¹	■	■	■	■	■	■	■
Sleet ²			■				
Windblown dust, lint, fibres and flyings	■		■	■	■	■	■
Hosedown				■	■	■	■
Corrosive agents					■		■
Occasional temporary submersion						■	■
Occasional prolonged submersion							■

¹ External operating mechanisms are not required to be operable when the enclosure is ice covered.

² External operating mechanisms are operable when the enclosure is ice covered.

NEMA Enclosure Types

The purpose of this document is to provide general information on the definitions of NEMA Enclosure Types to architects, engineers, installers, inspectors and other interested parties. [For more detailed and complete information, NEMA Standards Publication 250-2003, "Enclosures for Electrical Equipment (1000 Volts Maximum)" should be consulted. This Standards Publication as well as all other NEMA publications are available from IHS @ 800 854-7179 or <http://www.global.ihs.com>]

Definitions

[from NEMA 250-2003]

In Non-Hazardous Locations, the specific enclosure Types, their applications, and the environmental conditions they are designed to protect against, when completely and properly installed, are as follows:

Type 1

Type 1 Enclosures constructed for indoor use to provide a degree of protection to personnel against access to hazardous parts and to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt).

Type 3R

Type 3R Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow); and that will be undamaged by the external formation of ice on the enclosure.

Type 4

Type 4 Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); and that will be undamaged by the external formation of ice on the enclosure.

Type 4X

Type 4X Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); that provides an additional level of protection against corrosion; and that will be undamaged by the external formation of ice on the enclosure.

Type 12

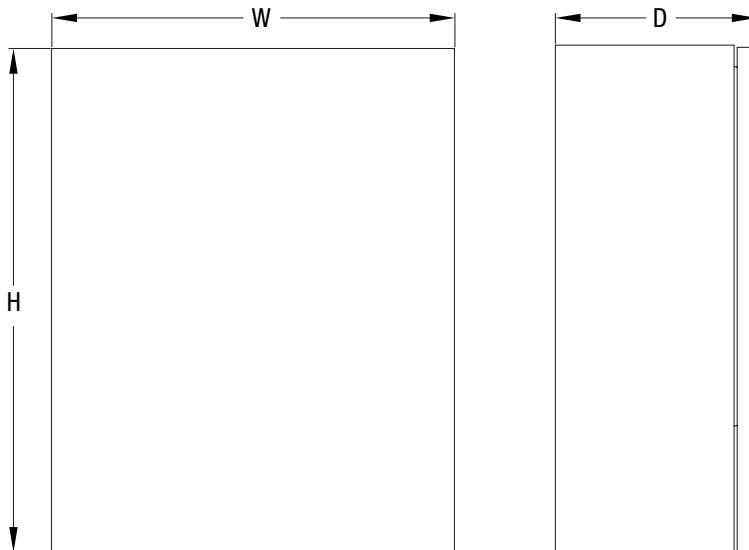
Type 12 Enclosures constructed (without knockouts) for indoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and circulating dust, lint, fibers, and flyings); and to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (dripping and light splashing).

Les

APPROXIMATE DIMENSIONS

Box Enclosure front-view

Box Enclosure side-view



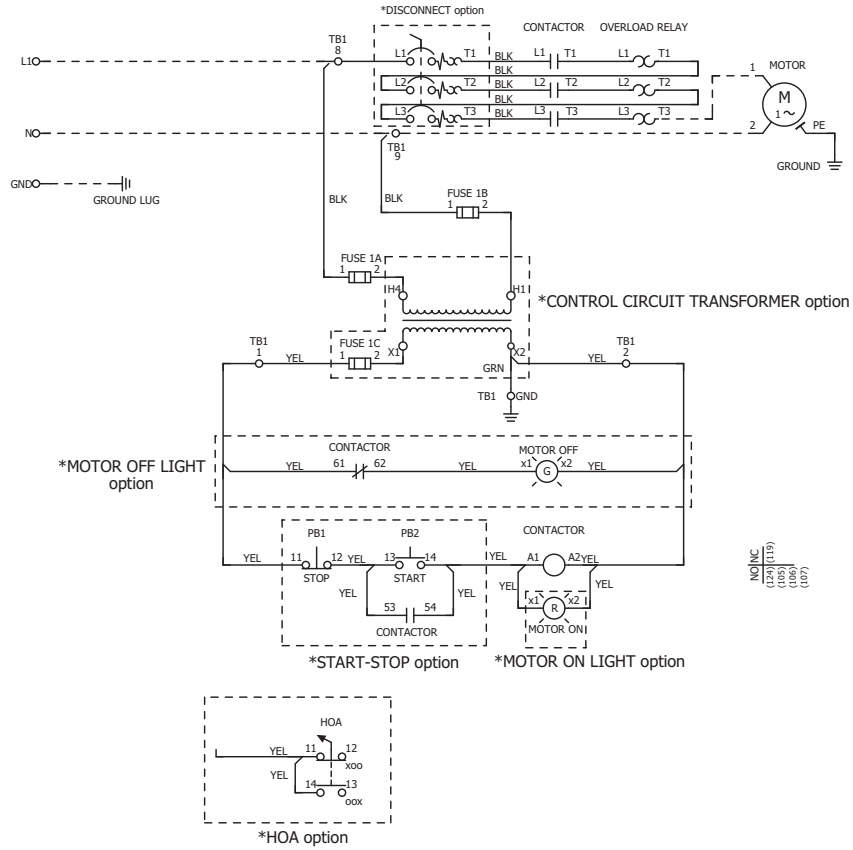
Les APPROXIMATE DIMENSIONS FOR ENCLOSURE TYPES 1, 3R, 4, 4X, 12

LES VERSION	HP RANGE	X = NO DISCONNECT	F = FUSED DISCONNECT	N = NON-FUSED DISCONNECT	M = MOTOR CIRCUIT PROTECTOR
S120	1HP-2HP	10" H X 8" W X 6" D	20" H X 16" W X 10" D	10" H X 8" W X 6" D	12" H X 10" W X 8" D
S120	3HP-5HP	12" H X 10" W X 8" D	20" H X 16" W X 10" D	12" H X 10" W X 8" D	12" H X 10" W X 8" D
S230	1HP-5HP	10" H X 8" W X 6" D	20" H X 16" W X 10" D	10" H X 8" W X 6" D	12" H X 10" W X 8" D
S230	7.5HP-10HP	12" H X 10" W X 8" D	20" H X 16" W X 10" D	12" H X 10" W X 8" D	12" H X 10" W X 8" D
T208	1HP-10HP	10" H X 8" W X 6" D	20" H X 16" W X 10" D	10" H X 8" W X 6" D	12" H X 10" W X 8" D
T208	15HP-30HP	12" H X 10" W X 8" D	20" H X 16" W X 10" D	12" H X 10" W X 8" D	12" H X 10" W X 8" D
T230	1HP-10HP	10" H X 8" W X 6" D	20" H X 16" W X 10" D	10" H X 8" W X 6" D	12" H X 10" W X 8" D
T230	15HP-30HP	12" H X 10" W X 8" D	20" H X 16" W X 10" D	12" H X 10" W X 8" D	12" H X 10" W X 8" D
T460	1HP-20HP	10" H X 8" W X 6" D	20" H X 16" W X 10" D	10" H X 8" W X 6" D	12" H X 10" W X 8" D
T460	25HP-60HP	12" H X 10" W X 8" D	20" H X 16" W X 10" D	12" H X 10" W X 8" D	12" H X 10" W X 8" D
T575	1HP-30HP	10" H X 8" W X 6" D	20" H X 16" W X 10" D	10" H X 8" W X 6" D	12" H X 10" W X 8" D
T575	30HP-60HP	12" H X 10" W X 8" D	20" H X 16" W X 10" D	12" H X 10" W X 8" D	12" H X 10" W X 8" D

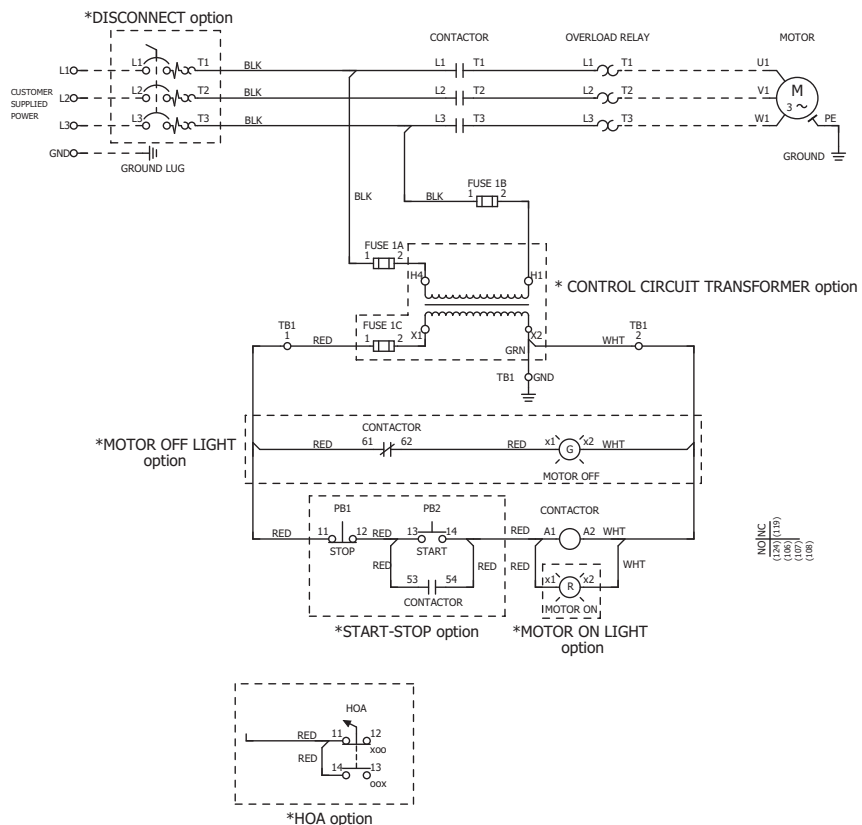
* APPROXIMATE DIMENSIONS FOR TYPE 4X PLASTIC "P" ARE AVAILABLE UPON REQUEST

WIRING DIAGRAMS

SINGLE PHASE NON-REVERSING STARTERS



THREE PHASE NON-REVERSING STARTERS



POWER RATINGS

THREE-PHASE		Rated motor current								
		200V	230V	220-240V	380-415V	400V	440-480V	500V	550-600V	690V
[HP]	[kW]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]	[A]
-	0.37	-	1.9	-	-	1.1	-	0.88	-	0.64
1/2	-	2.5	-	2.2	1.3	-	1.1	-	0.9	-
-	0.55	-	2.6	-	-	1.5	-	1.2	-	0.87
3/4	-	3.7	-	3.2	1.8	-	1.6	-	1.3	-
1	-	4.8	-	4.2	2.3	-	2.1	2	1.7	-
-	0.75	-	3.3	-	-	1.9	-	1.5	-	1.1
-	1.1	-	4.7	-	-	2.7	-	2.2	-	1.6
1-1/2	-	6.9	-	6	3.3	-	3	-	2.4	-
2	-	7.8	-	6.8	4.3	-	3.4	-	2.7	-
-	1.5	-	6.3	-	-	3.6	-	2.9	-	2.1
-	2.2	-	5.5	-	-	4.9	-	3.9	-	2.8
3	-	-	11.3	-	-	6.5	-	5.2	-	3.8
-	4	-	15	-	-	8.5	-	6.8	-	4.9
5	-	17.5	-	15.2	9.7	-	7.6	-	6.1	-
-	5.5	-	20	-	-	11.5	-	9.2	-	6.7
7-1/2	-	25.3	-	22	14	-	11	-	9	-
10	-	32.2	-	28	18	-	14	-	11	-
-	7.5	-	27	-	-	15.5	-	12.4	-	8.9
-	11	-	38	-	-	22	-	17.6	-	12.8
15	-	48	-	42	27	-	21	-	17	-
20	-	62.1	-	54	34	-	27	-	22	-
-	15	-	51	-	-	29	-	23	-	17
-	18.5	-	61	-	-	35	-	28	-	21
25	-	78.2	-	68	44	-	34	-	27	-
-	22	-	72	-	-	41	-	33	-	24
30	-	92	-	80	51	-	40	-	32	-
40	-	120	-	104	66	-	52	-	41	-
-	30	-	96	-	-	55	-	44	-	32
-	37	-	115	-	-	66	-	53	-	39
50	-	150	-	130	83	-	65	-	52	-
60	-	177	-	154	103	-	77	-	62	-
-	45	-	140	-	-	80	-	64	-	47
-	55	-	169	-	-	97	-	78	-	57
75	-	221	-	192	128	-	96	-	77	-
100	-	285	-	248	165	-	124	-	99	-
-	75	-	230	-	-	132	-	106	-	77
-	90	-	278	-	-	160	-	128	-	93
125	-	359	-	312	208	-	156	-	125	-
-	110	-	340	-	-	195	-	156	-	113
150	-	414	-	360	240	-	180	-	144	-
-	132	-	400	-	-	230	-	184	-	134
200	-	552	-	480	320	-	240	-	192	-
-	160	-	487	-	-	280	-	224	-	162
250	-	-	-	604	403	-	302	-	242	-
-	200	-	609	-	-	350	-	280	-	203
300	-	-	-	722	482	-	361	-	289	-
-	250	-	748	-	-	430	-	344	-	250
350	-	-	-	828	560	-	414	-	336	-
400	-	-	-	954	636	-	477	-	382	-
-	315	-	940	-	-	540	-	432	-	313
450	-	-	-	1030	-	-	515	-	412	-
-	355	-	1061	-	-	610	-	488	-	354
500	-	-	-	1180	786	-	590	-	472	-

SINGLE-PHASE	Rated motor current	
	[A] at 120V	[A] at 240V
1/10	3	1.5
1/8	3.8	1.9
1/6	4.4	2.2
1/4	5.8	2.9
1/3	7.2	3.6
1/2	9.8	4.9
3/4	12.8	6.9
1	16	8
1-1/2	20	10
2	24	12
3	34	17
5	56	28
7-1/2	80	40
10	100	50
15	135	68

The information in the chart has been obtained from the IEC/EN 60947-4-1 standards. The kW ratings are preferred rated values according to IEC 60072-1 (primary series) at 50/60Hz while Horsepower and corresponding current values are according to UL 508 Industrial Control Standard at 60Hz.

The full load current values listed are for motors running at standard speeds with normal torque characteristics. Motors which are non-standard, such as low speed, high torque or other special applications may have higher full load currents.

Caution: For accurate and reliable motor protection, motor nameplate current should be used to obtain actual motor full load amps for all motors. The information given is for indication and reference purposes only.



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