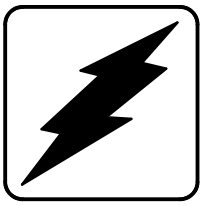
Operation and Installation

Nonautomatic Transfer Switches



Models:

340

KN-Series

Logic:

Relay

Contactor:

30-4000 Amperes

ISO 9001

KOHLER GENERATORS

INTERNATIONALLY REGISTERED

U.S.A. Plant ISO Registered

KOHLER®

POWER SYSTEMS

TP-5585 3/92a

Contents

Safety Precautions & Instructions

A Transfer Switch, like any other electro-mechanical device can pose potential dangers to life and limb if improperly maintained or imprudently operated. The best safeguards against accident are to be ever mindful of the potential dangers and to always use good common sense. In the interest of safety, some general precautions relating to operation of a transfer switch follow. Keep these in mind. This manual contains several types of safety precautions which are explained below. Examples of various precautionary statements used in this manual are also shown.

⚠ DANGER

Danger is used to indicate the presence of a hazard which *will* cause *severe* personal injury, death, or substantial property damage if the warning is ignored.

⚠ WARNING

Warning is used to indicate the presence of a hazard which *can* cause *severe* personal injury, death, or substantial property damage if the warning is ignored.

⚠ CAUTION

Caution is used to indicate the presence of a hazard which *will* or *can* cause *minor* personal injury or property damage if the warning is ignored.

NOTE

Note is used to notify people of installation, operation, or maintenance information which is important but not hazard-related.

HAZARDOUS VOLTAGE/ ELECTRICAL SHOCK

⚠ WARNING

Hazardous voltage.
Can cause severe injury or death.

Disconnect power sources before servicing. Barrier must be installed after adjustments, maintenance, or servicing.

(under 600 Volt)

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Disconnect power sources before servicing. Barrier must be installed after adjustments, maintenance, or servicing.

(600 Volt and above)

⚠ WARNING

Hazardous voltage.
Can cause severe injury or death.

Do not open enclosure until all power sources are disconnected.

(under 600 Volt)

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Do not open enclosure until all power sources are disconnected.

(600 Volt and above)

Hazardous voltage can cause severe injury or death. Disconnect set from load by opening line circuit breaker or by disconnecting generator output leads from transfer switch and heavily taping ends of leads. If high voltage is transferred to load during test, personal injury and equipment damage may result. The GENERATOR SAFEGUARD BREAKER MUST NOT BE USED IN PLACE OF LINE CIRCUIT BREAKER!

Hazardous voltage can cause severe injury or death. The Transfer Switch is energized; proceed with care! High voltage can cause personal injury, damage equipment, or lead to future failures. Remove watch, rings, and jewelry that can cause short circuits.

Hazardous voltage can cause severe injury or death. The Transfer Switch is energized; proceed with care! High Voltage can cause personal injury, damage equipment, or lead to future failures. Remove rings, watches, and jewelry that can cause short circuits. This test should be done only by a qualified electrician. Follow manufacturer's instructions when operating tester.

Hazardous voltage can cause severe injury or death. To prevent the possibility of electrical shock, de-energize the normal power source to be connected to the Transfer Switch before making any line or auxiliary connections.

Hazardous voltage can cause severe injury or death. De-energize both normal and emergency power sources before proceeding. Move Generator Master Switch on controller to OFF position and disconnect battery negative (–) before working on transfer switch! Turn the transfer switch selector switch to the OFF position.

Safety Precautions

Hazardous voltage can cause severe injury or death. Disconnect inner panel harness at in-line connector. This will de-energize circuit board and logic circuitry, but allow transfer switch to continue to supply utility power to necessary lighting and equipment. Hazardous voltage will exist if any accessories mounted to inner panel are NOT wired through and de-energized by harness separation. Such accessories may be at line voltage.

Hazardous voltage can cause severe injury or death. Keep everyone away from the set and take precautions to prevent unqualified personnel from tampering. Have the set and electrical circuits serviced only by qualified technicians. Wiring should be inspected at the recommended interval shown in the service schedule – replace leads that are frayed or in poor condition. Do not operate electrical equipment when standing in water, on wet ground, or when your hands are wet.

Hazardous voltage can cause severe injury or death. Disconnect harness plug before installing any accessories involving connection to transformer assembly primary terminals. Terminals are at line voltage!

NOTE

HARDWARE DAMAGE! Transfer switch may make use of both American standard and metric hardware. Be sure to use the correct size tools to prevent rounding of bolt heads and nuts.

NOTE

A manual operator handle is provided on the Transfer Switch for maintenance purposes only. Return the Transfer Switch to the Normal position. Remove manual operator handle (if used) and store it on the Transfer Switch in the place provided when service is completed.

Ratings

The rating label is attached to the transfer switch. Data relating to each specific switch is included on the nameplate. Unit installation must not exceed the rated capacity of the switch as shown on the nameplate.

For location of the transfer switch in the system see Figure 1. The switch should be as close as possible to the critical electrical loads connected to it.

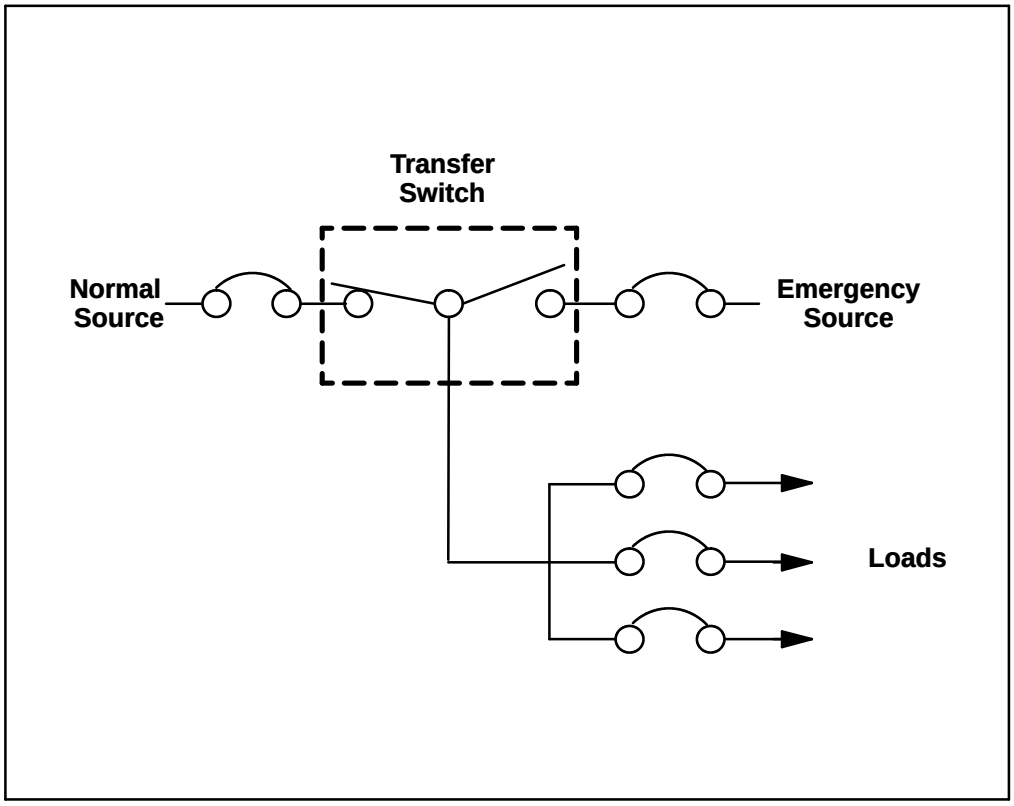


Figure 1. Transfer Switch Location

Installation

Kohler transfer switches are factory wired and tested. Installation requires mounting, connection of utility, load, emergency cables and any auxiliary contact/control circuits. Do not remove protective packing until ready for complete installation. Protect switch at all times from excessive moisture, construction grit, and metal chips.

Unpacking

Carefully unpack or uncrate switch and check for damage. Report any damage immediately to the Kohler Distributor.

Lifting

Any lifting devices must be attached to the switch's mounting holes or lifting eyes only. Do

not lift the switch at any other points. Protect arc barriers from impact at all times.

Mounting

All enclosed switches have the control panel mounted on the cabinet door. For open-type switches, mount the control panel to the right of the transfer switch.

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(under 600 Volt)

Hazardous voltage can cause severe injury or death. De-energize both normal and emergency power sources before proceeding. Move the generator master switch on the controller to the OFF position and disconnect battery negative (–) before working on the transfer switch!

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Disconnect power sources before servicing. Barrier must be installed after adjustments, maintenance, or servicing.

(600 Volt and above)

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Line Connections

Wiring Diagrams are furnished at the back of this manual. Interconnection diagrams (3-pole and 2-pole) are furnished to show actual lead wiring.

All conductors should enter enclosure adjacent to the transfer switch terminals. Protect the transfer switch from metal chips and construction grit at all times. Standard terminal lugs are solderless screw type and will accept the conductor sizes listed on installation drawings.

Do not run cables behind the transfer switch. Cables can be bundled to the side of the switch. Maintain proper electrical clearance between the live metal parts and grounded metal. Use cable spacers provided on 70, 104 and 150-Amp, 600-Volt class switches. Spacers are not required on 240-Volt class switches.

On 225–400-Amp switches, remove the cover shields from the switch to connect power cables to the Emergency lugs and switched neutral lugs (Accessory 36).

Connect source and load conductors to clearly marked contactor terminal lugs. Remove surface oxides from conductors by cleaning with a wire brush. When aluminum conductors are used, apply oxidation inhibitor to conductors. Tighten lugs and carefully wipe

away excess oxidation inhibitor. Tighten cable lugs to the torque specified in the following table.

Note

Application of oxidation inhibitor is required for all aluminum terminations.

Contactor Rated Amps	Tightening Torque inch pounds (Nm)
30 – 104	50 (5.6)
150	200 (22.6)
225 – 400	600 (67.8)
600 – 1200	500 (56.5)
1600 – 4000	Suitable for Bus Bar Lugs

Table: Tightening Torque Values for Lug Connectors

⚠ WARNING

Hazardous voltage.
Can cause severe injury or death.

Do not open enclosure until all power sources are disconnected.

(under 600 Volt)

Hazardous voltage can cause death or severe injury! On 225–400-Amp switches, reinstall the cover shields over the emergency lugs and overlapping neutral (accessory 36) lugs. If these shields are not in place when the switch is energized, the lugs will be exposed. Touching these energized lugs can result in shock, burns, or death.

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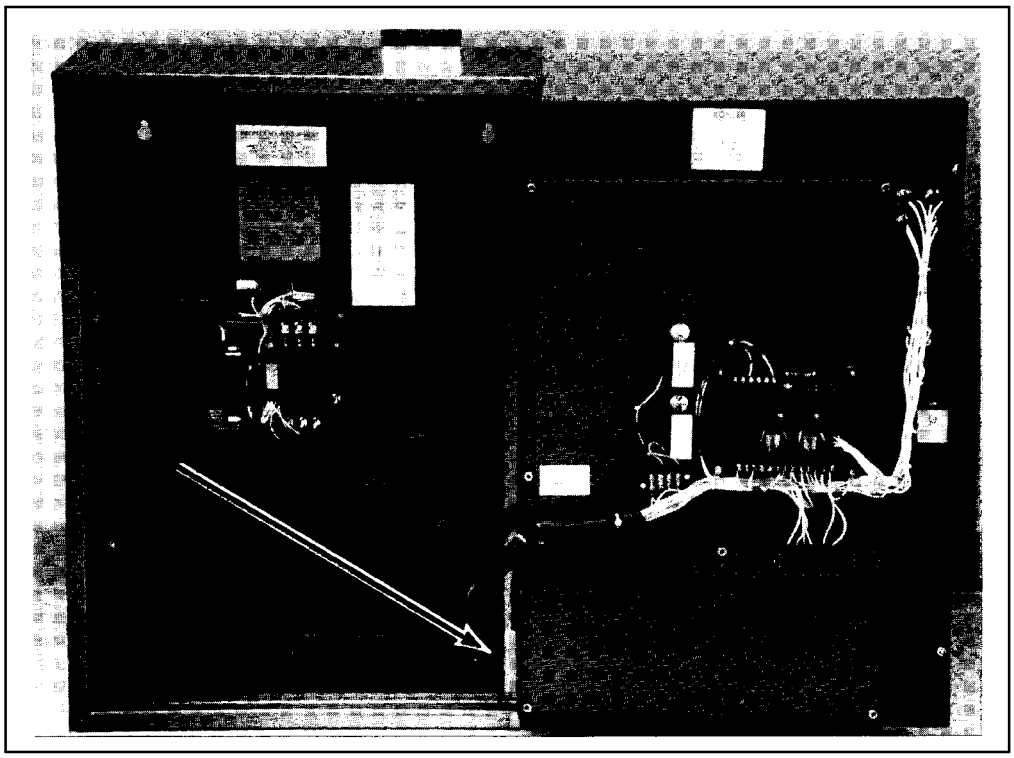


Figure 2. In-Line Disconnect Plug

All internal connections are made at the factory. The transfer switch and the control panel each have their own wire harness. The two harnesses are to be joined together by the in-line disconnect plug. Plug halves are separated for shipment. The plug must be engaged after installation is completed. See Figure 2.

Auxiliary Connections

Connect auxiliary circuit wires to appropriate control panel terminals as shown on the appropriate diagram (see contactor wiring diagrams in the "Wiring Diagrams" section). Any auxiliary contact connections are customer specified and should be shown on the installation's plans. Standard auxiliary contacts include one set closed in the normal position and one set closed in the emergency position. Additional contacts of both types are optional.

Note any optional accessories that may have been furnished on this switch, and make auxiliary connections if necessary.

Engine-Starting Connections

The engine-starting connections are located on the transfer switch contactor. A red decal near the contactor points to engine-start terminals. Engine-start terminal locations are also described on interconnection diagrams in this book. Connect engine-start signal wires to terminals 3 and 4 on the contactor. See Figure 3.

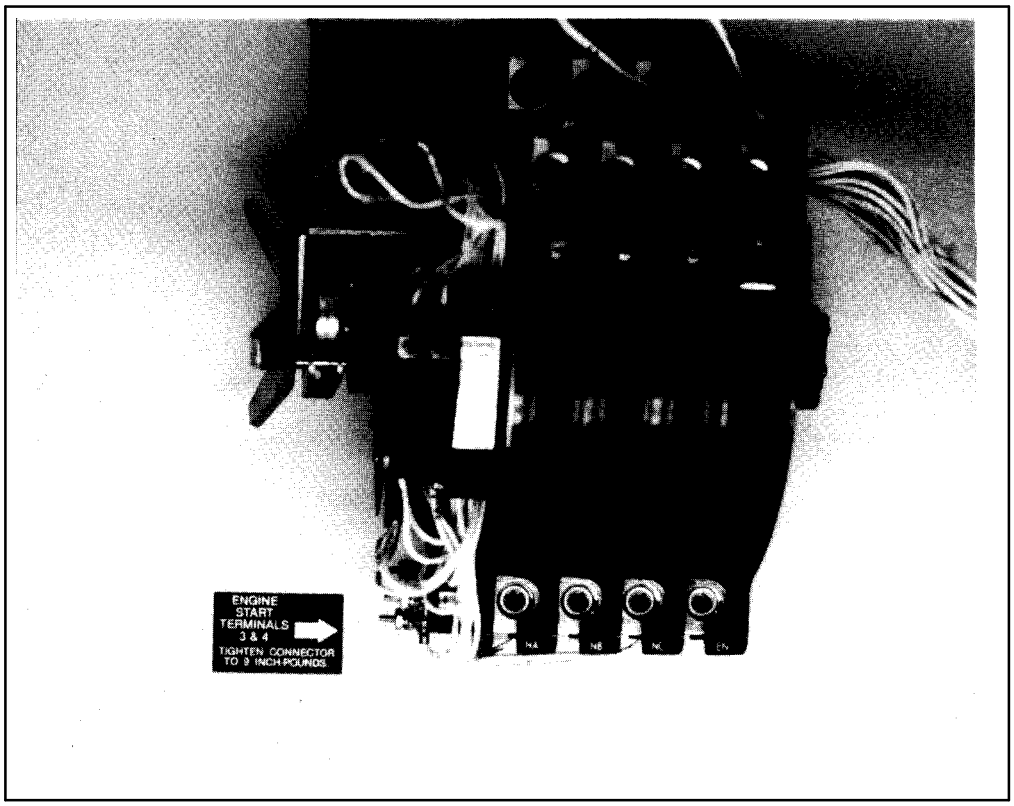


Figure 3. Typical Engine Starting Connections
30–150-Amp Contactor Shown

Functional Tests

Functional Testing consists of three parts: *manual operation, voltage checks and electrical operation.*

Caution

Perform these checks in the order given, in order to avoid damaging the switch.

Read and understand all instructions on installation drawings and labels affixed to the switch. Note any optional accessories that have been furnished with the switch and review their operation.

First, check the transfer switch nameplate for rated voltage. It should be the same as normal line voltage and emergency line voltage as indicated on the generator set nameplate.

Manual Operation Check

1. Perform the manual operation test **before** attempting to electrically test the automatic transfer switch. The intent is to verify that the contactor and all auxiliary switches operate smoothly and that there is no damage from shipping or installation.
2. Open *both* the normal and emergency source circuit breakers.

3. Separate the contactor control in-line disconnect plugs if you have not already done so. See Figure 2.
4. A permanently-mounted handle is provided on 30–150-Amp switches. A detachable manual operator handle is provided on 225–4000-Amp switches. Manual operator handles are to be used for maintenance and inspection purposes only. Select the appropriate switch amperage size below and follow directions for installing the handle. See Figures 4. through 7.

NOTE

A manual operator handle is provided on the transfer switch for maintenance purposes only. Return the transfer switch to the normal position. Remove manual operator handle (if used) and store it on the transfer switch in the place provided when service is completed.

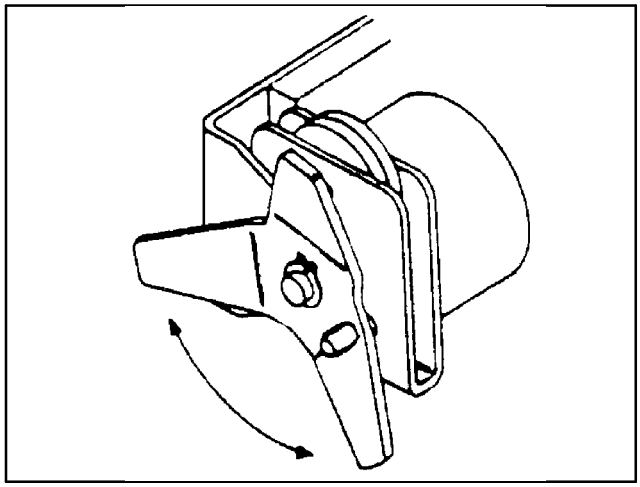


Figure 4. Operating Handle, 30–150-Amp.

For 30–150-Amp Switches: Operate 3-point handle as shown in Figure 4.

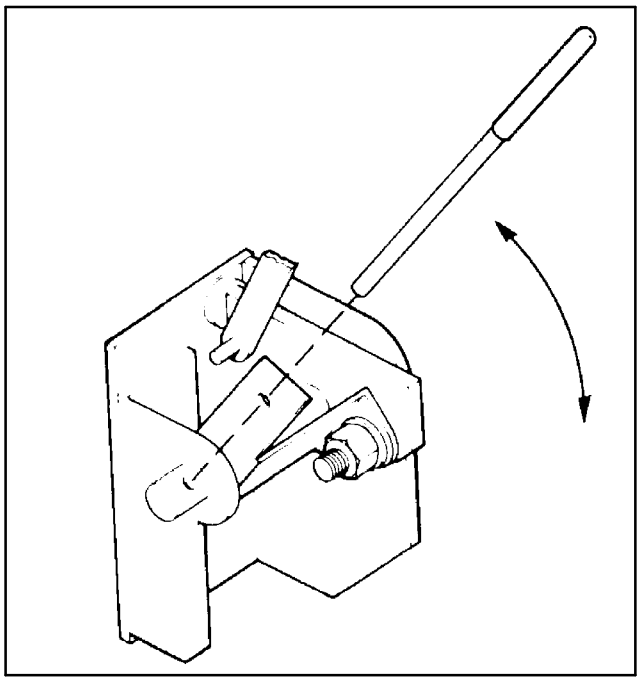


Figure 5. Operating Handle, 225–400-Amp.

For 225–400-Amp Switches: Insert manual handle as shown in Figure 5.

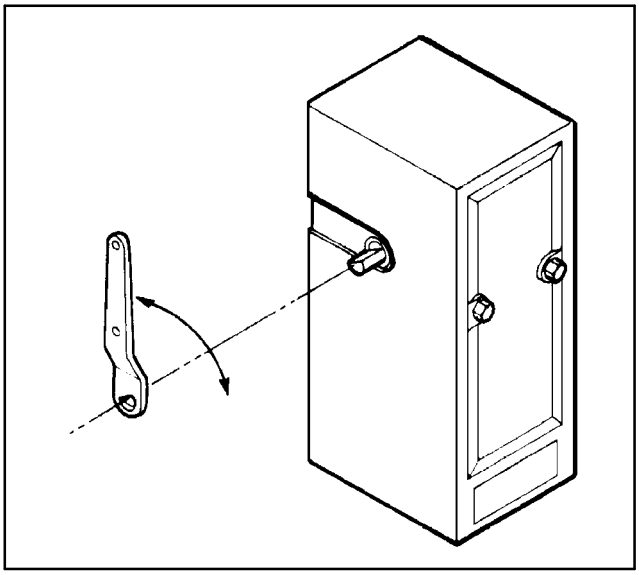


Figure 6. Operating Lever, 600–800-Amp.

For 600–800-Amp Switches: Place the operating handle onto the pivot shaft extension as shown in Figure 6.

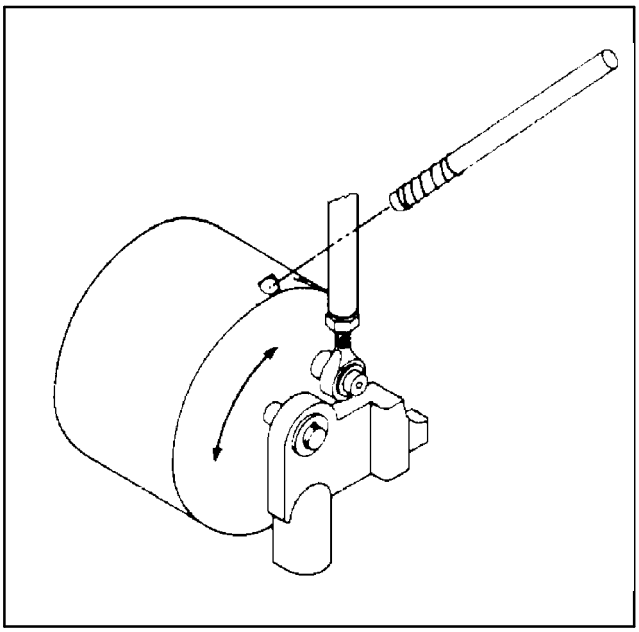


Figure 7. Operating Lever, 1000–4000-Amp.

For 1000–4000-Amp Switches: Insert manual handle into hole provided in rotating weight. See Figure 7.

5. Move the installed handle in the direction shown to manually operate the transfer switch. The switch should operate smoothly and without binding. Return the transfer switch to the normal position. Remove manual operator handle and store it on the transfer switch in the place provided.

⚠ WARNING

Hazardous voltage.
Can cause severe injury or death.

Disconnect power sources before servicing. Barrier must be installed after adjustments, maintenance, or servicing.

(under 600 Volt)

Hazardous voltage can cause severe injury or death. The transfer switch is energized; proceed with care! High voltage can cause personal injury, damage equipment, or lead to future failures. Remove watch, rings, and jewelry that can cause short circuits.

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Disconnect power sources before servicing. Barrier must be installed after adjustments, maintenance, or servicing.

(600 Volt and above)

Hazardous voltage will cause severe injury or death. The transfer switch is energized; proceed with care! High voltage will cause personal injury, damage equipment, or lead to future failures. Remove watch, rings, and jewelry that can cause short circuits.

Voltage Checks

6. Close the normal source circuit breaker.
7. Use an accurate voltmeter to check for proper voltage and phase rotation (phase-to-phase and phase-to-neutral voltages) at the contactor's normal-source terminals.
8. Close the emergency-source circuit breaker.
9. Manually start the generator set using the engine control switch on the generator set controller.
10. Use an accurate voltmeter to check for proper voltage and phase rotation (phase-to-phase and phase-to-neutral voltages) at the contactor's emergency-source terminals.
11. If necessary, adjust the generator voltage regulator following the generator set manufacturer's instructions. Check phase rotation; it should be the same as that of the normal source.
12. Shut down the generator set using the engine control switch on the generator set controller.

Electrical Operation Test

13. Reconnect the contactor control in-line disconnect plugs. See Figure 8.

    The transfer switch should be in the normal position. The following procedure will check the electrical operation of the transfer switch.

14. Open the normal source circuit breaker to start the generator set, or start the generator set at the generator set controller. See Figure 9. The generator set should start after any engine-start time delay set in the transfer switch and/or generator set controller has completed timing.

15. Allow the generator set to stabilize at its rated voltage.

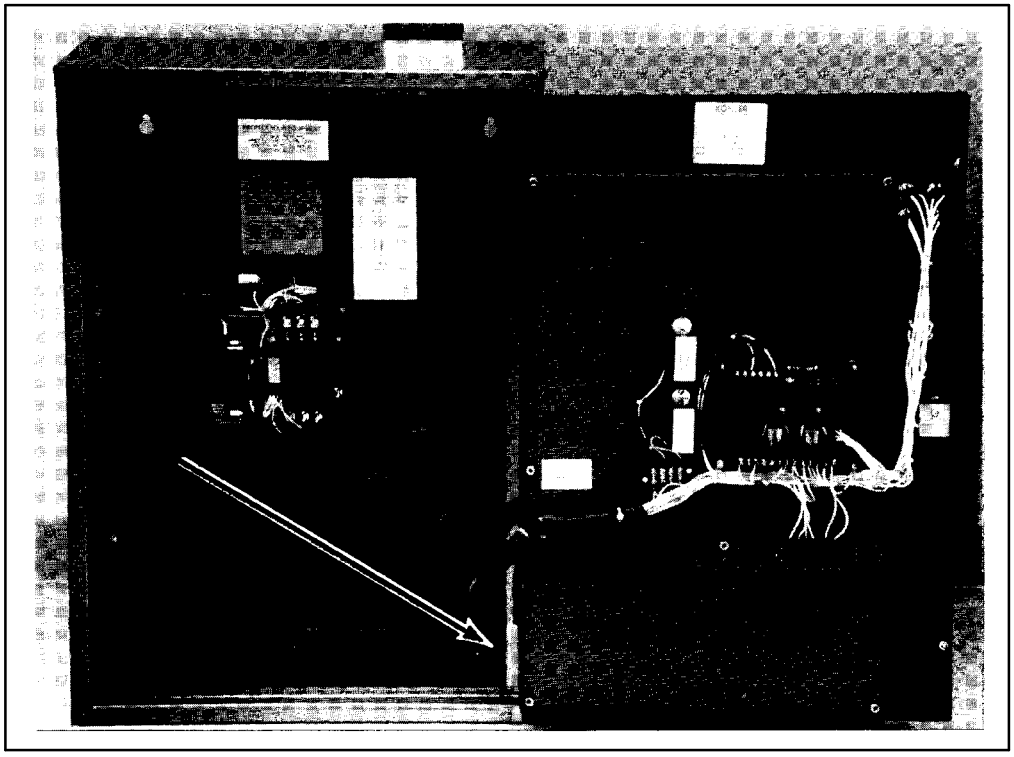


Figure 8. In-Line Disconnect Plug

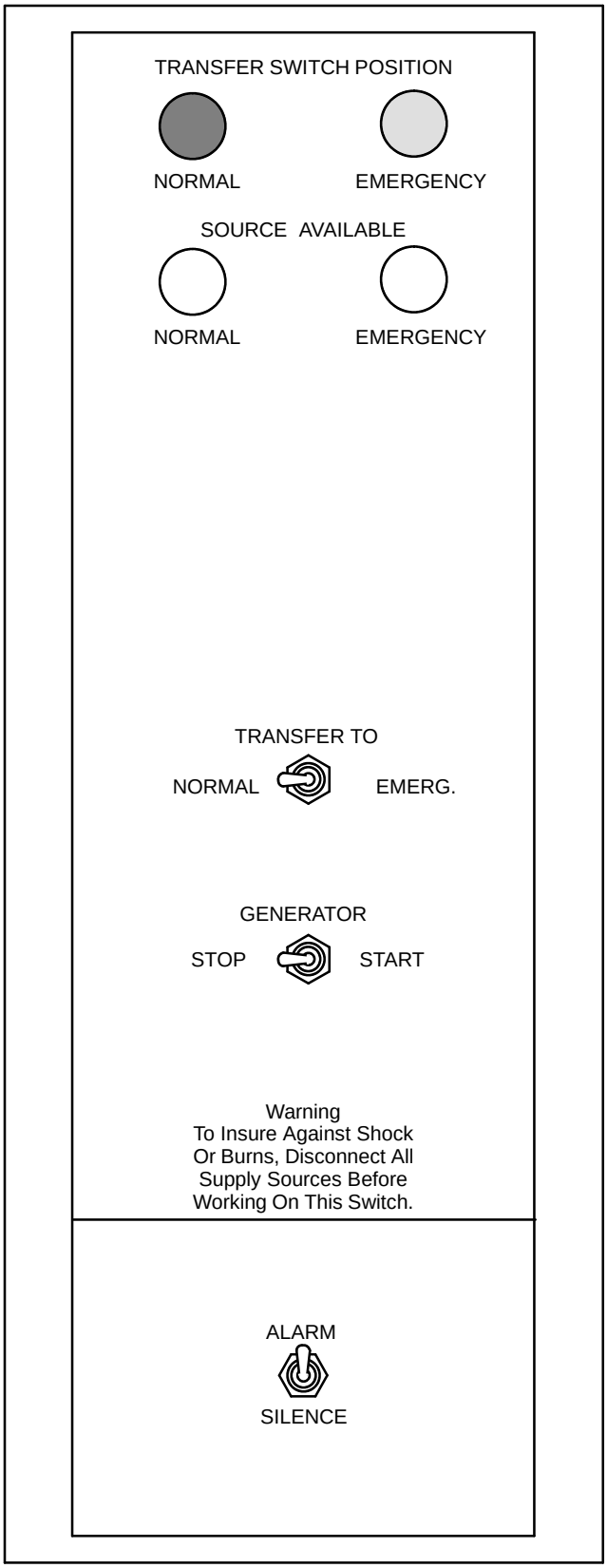


Figure 9. Transfer Switch Control Switches

16. Move the TRANSFER-TO switch to the EMERG. position. The transfer switch should operate to the emergency position with the generator set producing at least 90% of its rated voltage.
17. Reclose the normal-source circuit breaker.
18. Move the TRANSFER-TO switch to the NORMAL position. The transfer switch should operate back to the normal position.
19. Shut down the generator set using the engine control switch on the generator set controller. The generator set will continue to run until any optional cool-down period set in the generator set controller completes timing.

This completes functional tests of the transfer switch.

Switch Position & Source Indicators

External control switches and indicators are shown in Figure 10.

Transfer Switch Position Lamps

Normal Lamp (green): Lights to show that the Transfer switch is in the normal position with the normal source available.

Emergency Lamp (red): Lights to show that the transfer switch is in the emergency position with the emergency source available.

Source Available Lamps

Normal Lamp (white): Lights to show that normal source voltage is present, but not necessarily at proper voltage and frequency.

Emergency Lamp (white): Lights to show that emergency source voltage is present, but not necessarily at proper voltage and frequency.

Control Switches

"Transfer To" Normal-Emergency

Normal Position: signals control to cause transfer to normal source. A voltage detector circuit will allow transfer only if voltage is at least 90% of nominal.

Emergency Position: signals control to cause transfer to emergency source. A voltage detector circuit will allow transfer only if voltage is 90% of nominal.

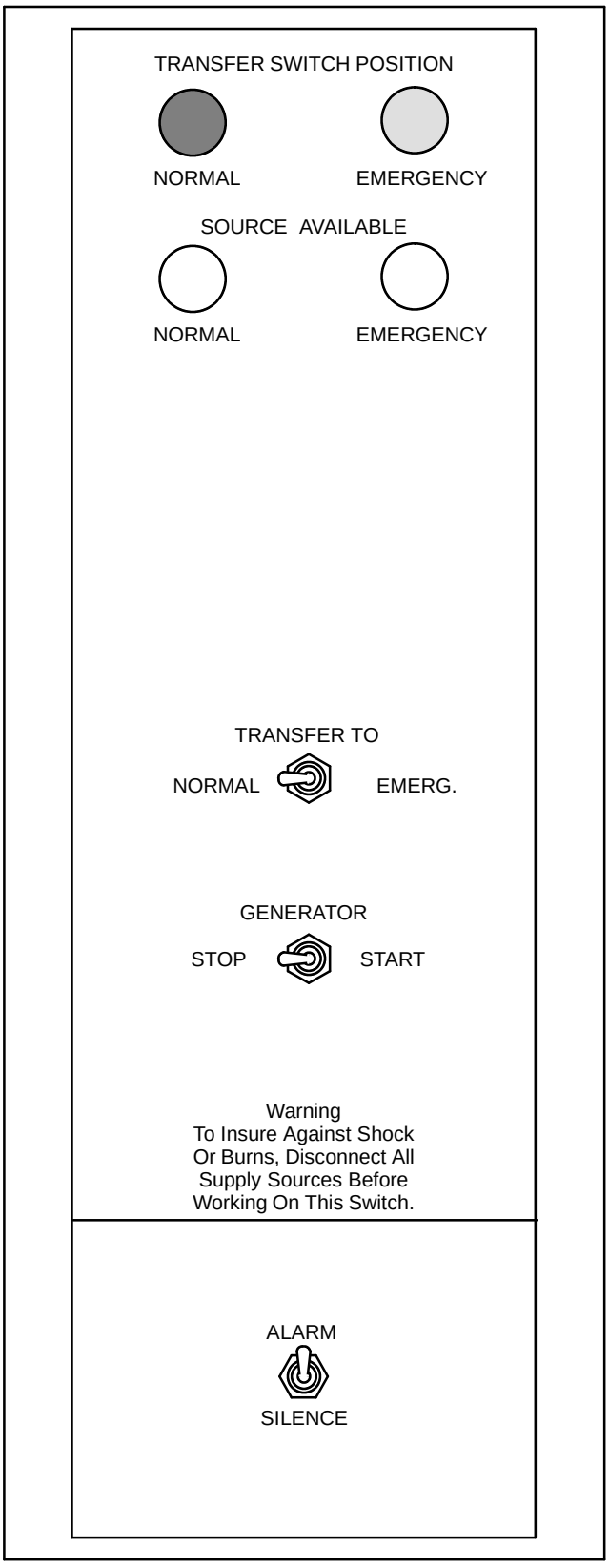


Figure 10. Transfer Switch Control Switches

Generator Stop-Start (if equipped)

Stop Position: Opens the generator set remote-start circuit, signaling the generator set to shut down, provided that the normal source is available with at least 90% of rated voltage. The generator set will continue to run until any cool-down period set in the generator set controller has completed timing.

Start Position: Closes the generator set remote start circuit, signaling the generator set to start.

Alarm Silence Switch (if equipped)

The transfer switch may be equipped with an optional audible alarm that sounds when the transfer switch is in the emergency position. Moving the alarm silence switch to the silence position will shut off the alarm.

⚠ WARNING

Hazardous voltage.
Can cause severe injury or death.

Disconnect power sources before servicing. Barrier must be installed after adjustments, maintenance, or servicing.

(under 600 Volt)

Hazardous voltage can cause severe injury or death. De-energize both normal and emergency power sources before proceeding. Move the generator master switch on controller to OFF position and disconnect battery negative (–) before working on the transfer switch!

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Disconnect power sources before servicing. Barrier must be installed after adjustments, maintenance, or servicing.

(600 Volt and above)

Hazardous voltage will cause severe injury or death. De-energize both normal and emergency power sources before proceeding. Move the generator master switch on controller to OFF position and disconnect battery negative (–) before working on the transfer switch!

Transfer Switch Operation

Normal Power Loss

1. Upon loss of normal power, the white normal-source-available lamp will go out. If the transfer switch is not equipped with an engine-start time delay (TDES accessory KA-02), the generator set must be started manually. If necessary, start the generator set at the generator set controller or a remote engine control switch.

If the transfer switch is equipped with an engine-start time delay, the generator set will be signaled to start.

Note that any engine-start time delay set in the generator set's controller must complete

timing before the generator set will crank and start.

Engine-start time delays available in the transfer switch have possible settings shown in the following table.

Accessory Number	Setting Range
KA-02-A	3–20 Seconds
KA-02-E	3 Seconds, fixed
KA-02-F	20–240 Seconds
KA-02-G	0.5–6 Seconds
KA-02-H	3–30 Minutes

Table: Engine-Start Time delay Setting Ranges

2. The white emergency-source-available lamp will light when emergency source voltage is available. Allow the generator set to reach at least 90% of its rated voltage.
3. Move the transfer-to switch to the EMERG. position. A voltage-detector circuit will allow transfer to emergency only if generator voltage is at least 90% of nominal. When the transfer switch operates to the emergency position, the red transfer switch position lamp will light and load will be connected to the generator.

Normal Power Return

1. The white normal-source-available lamp will light when normal power returns. Check normal-source meters (if equipped) to see that normal-source voltage and frequency are at least 90% of nominal.
2. When the normal source voltage has stabilized at a minimum of 90% of nominal, move the transfer-to switch to the NORMAL position.
3. A voltage-detector circuit will allow transfer to normal only if normal source voltage is at least 90% of nominal. When the transfer switch operates to the normal position, the green transfer switch position lamp will light and load will be connected to the normal source.
4. If the transfer switch is equipped with an engine-start time delay, the generator set will be signaled to stop. If not, stop the generator set using the switch at the generator set controller or a remote engine control switch.

Note that any optional engine-cooldown time delay set in the generator set's controller must complete timing before the generator set will stop.

Notes

Wiring Diagrams & Drawings

Interconnection Diagrams

30–800-Amp,1-phase, 2-wire Interconnection Diagram	ADV-5454
30–800-Amp,1-phase, 3-wire Interconnection Diagram	ADV-5455
30–800-Amp, 3-phase 3 & 4-wire Interconnection Diagram	ADV-5456
1000–4000-Amp, 3-phase, 4-wire Interconnection Diagram	ADV-5268

Enclosure Dimensions

Enclosure Dimensions	30–150-Amp	ADV-5238 sheet 1
Enclosure Dimensions	225–400-Amp	ADV-5238 sheet 2
Enclosure Dimensions	600–800-Amp	ADV-5238 sheet 3
Enclosure Dimensions	1000–1200-Amp	ADV-5448 sheet 1
Enclosure Dimensions	1600–4000-Amp	ADV-5448 sheet 2

Contactor Wiring

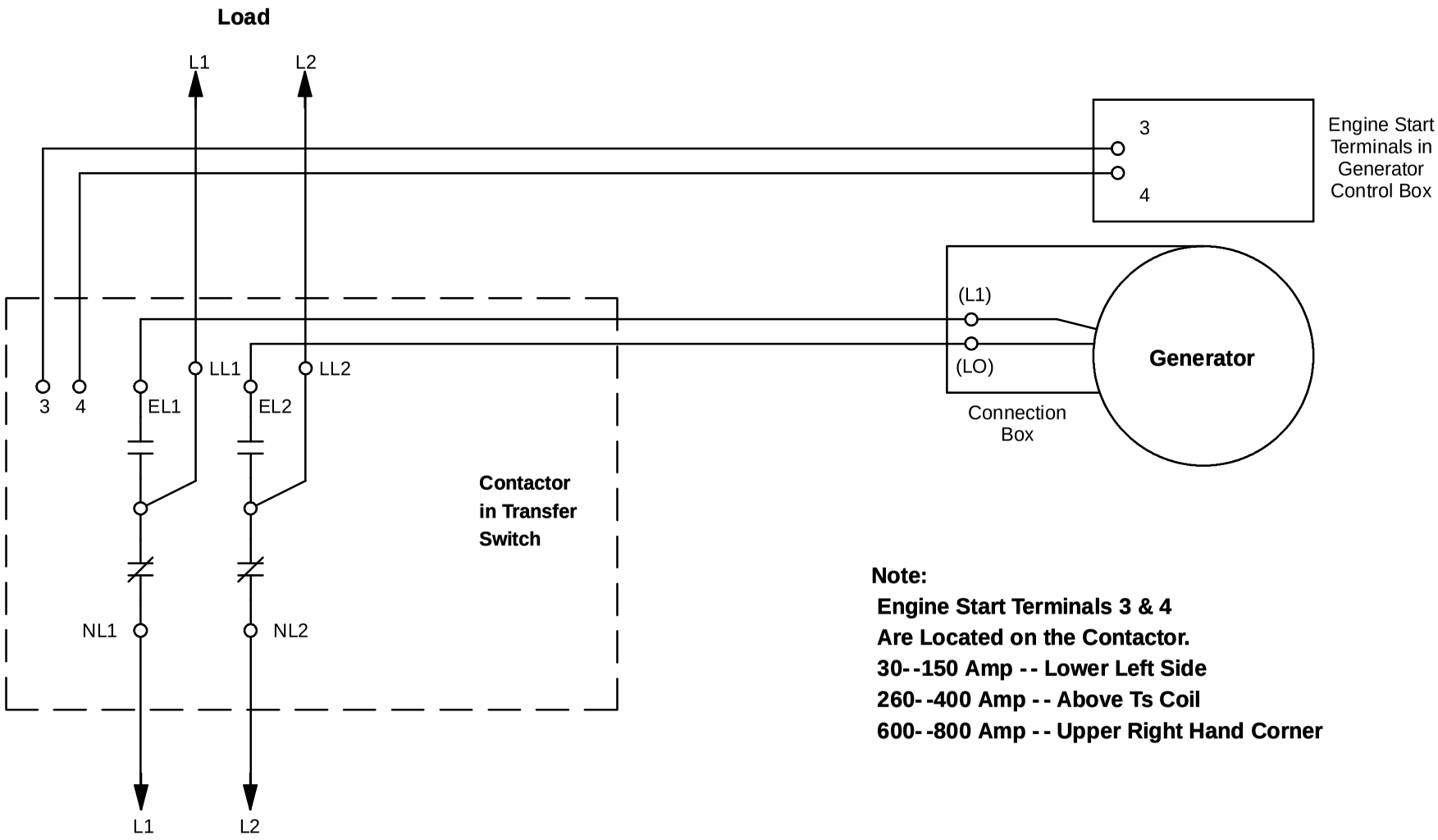
2-Pole Contactor Wiring	294859 sheet 1
3-Pole Contactor Wiring	294859 sheet 2

Schematics

1-Phase, 2-Pole, 2 or 3 wire	320495
1-Phase, 3-Pole, 3-Wire	320496
3-Phase, 4-Pole, 4-Wire with overlapping neutral	320497

Wiring Diagrams

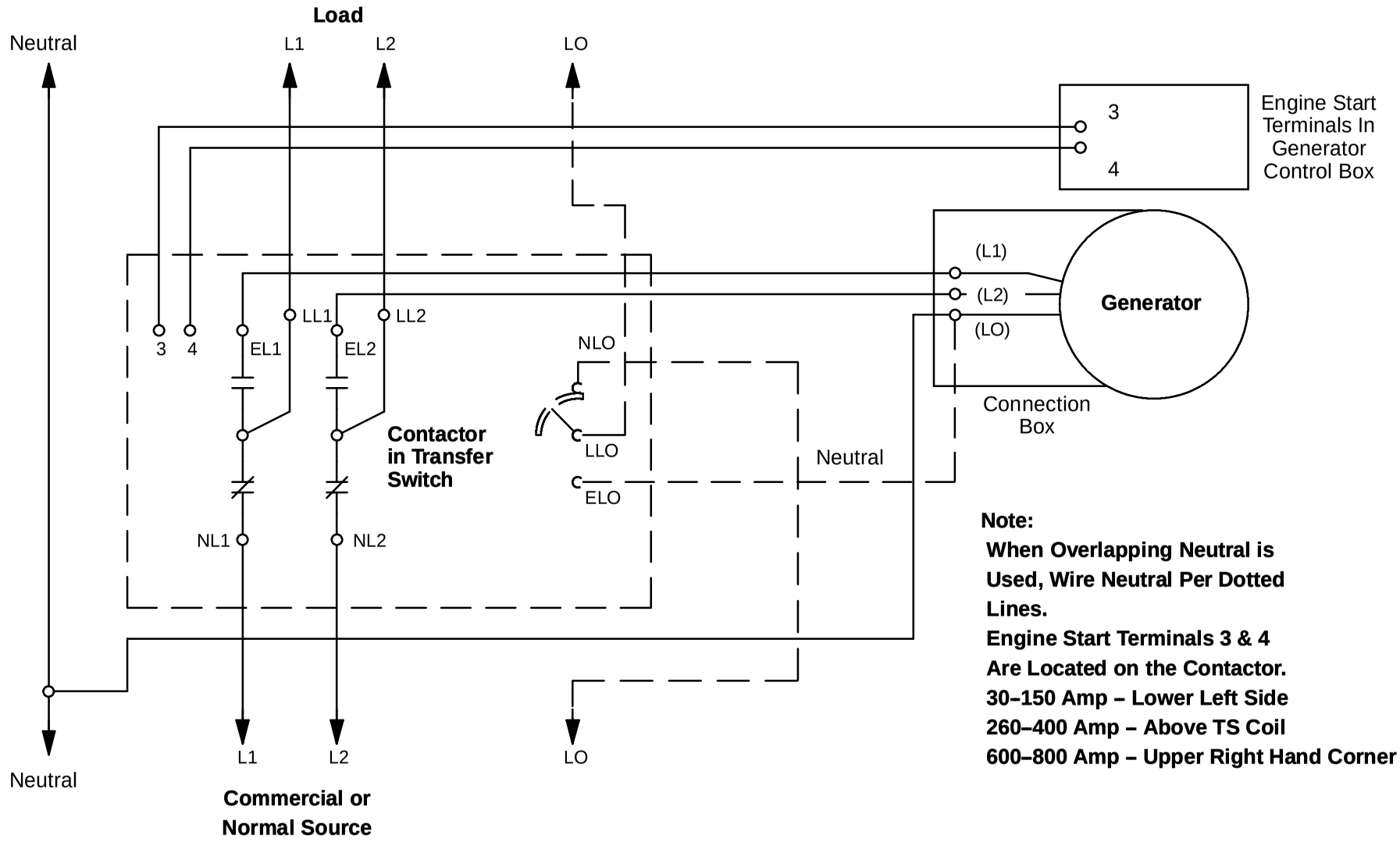
NEMA 1	297820
NEMA 3R & 12	294861



Note:
Engine Start Terminals 3 & 4
Are Located on the Contactor.
30--150 Amp -- Lower Left Side
260--400 Amp -- Above Ts Coil
600--800 Amp -- Upper Right Hand Corner

1-Phase, 2-Wire

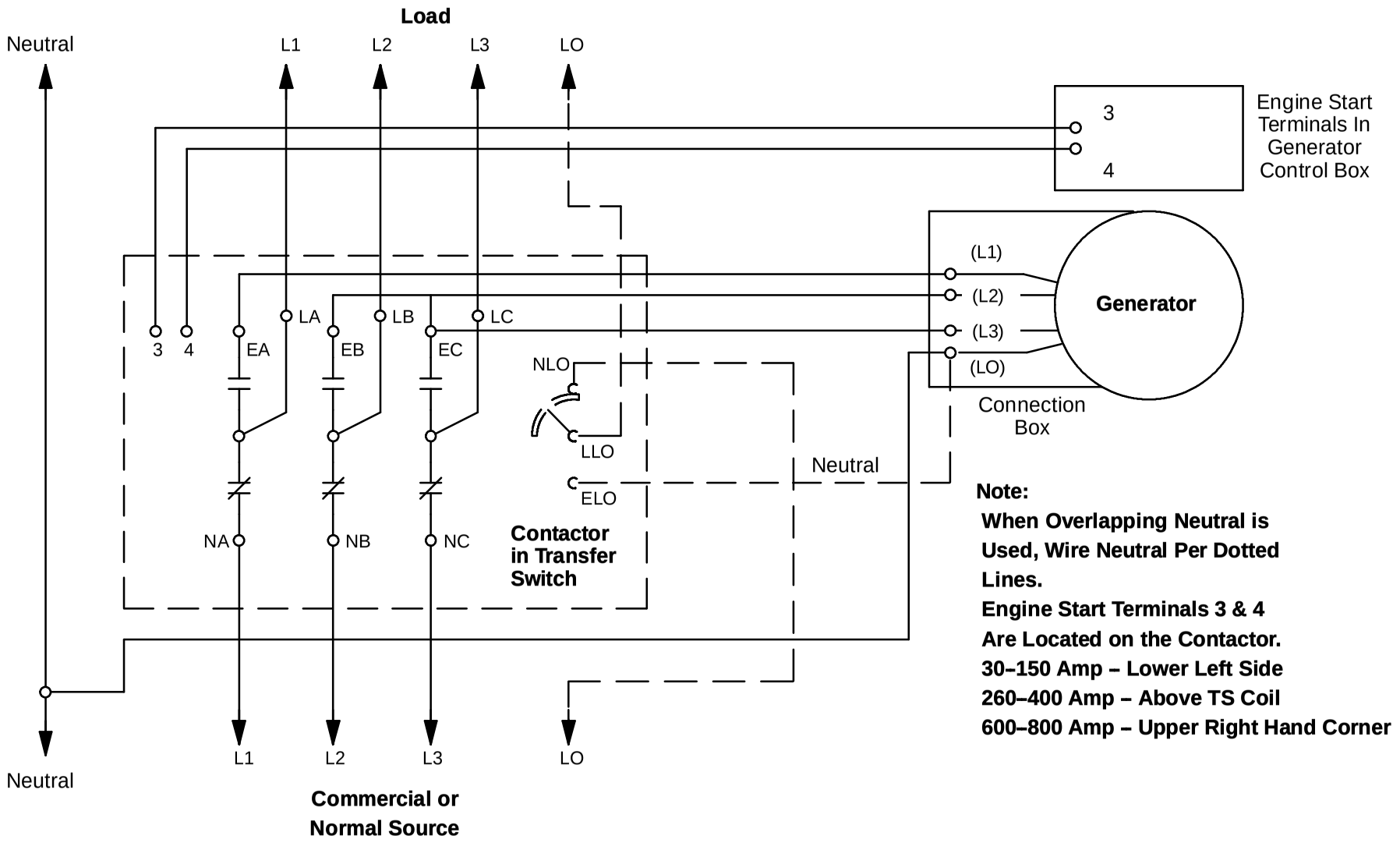
Diagram, Interconnection ADV-5454



Note:
When Overlapping Neutral is Used, Wire Neutral Per Dotted Lines.
Engine Start Terminals 3 & 4 Are Located on the Contactor.
30–150 Amp – Lower Left Side
260–400 Amp – Above TS Coil
600–800 Amp – Upper Right Hand Corner

1-Phase, 3-Wire

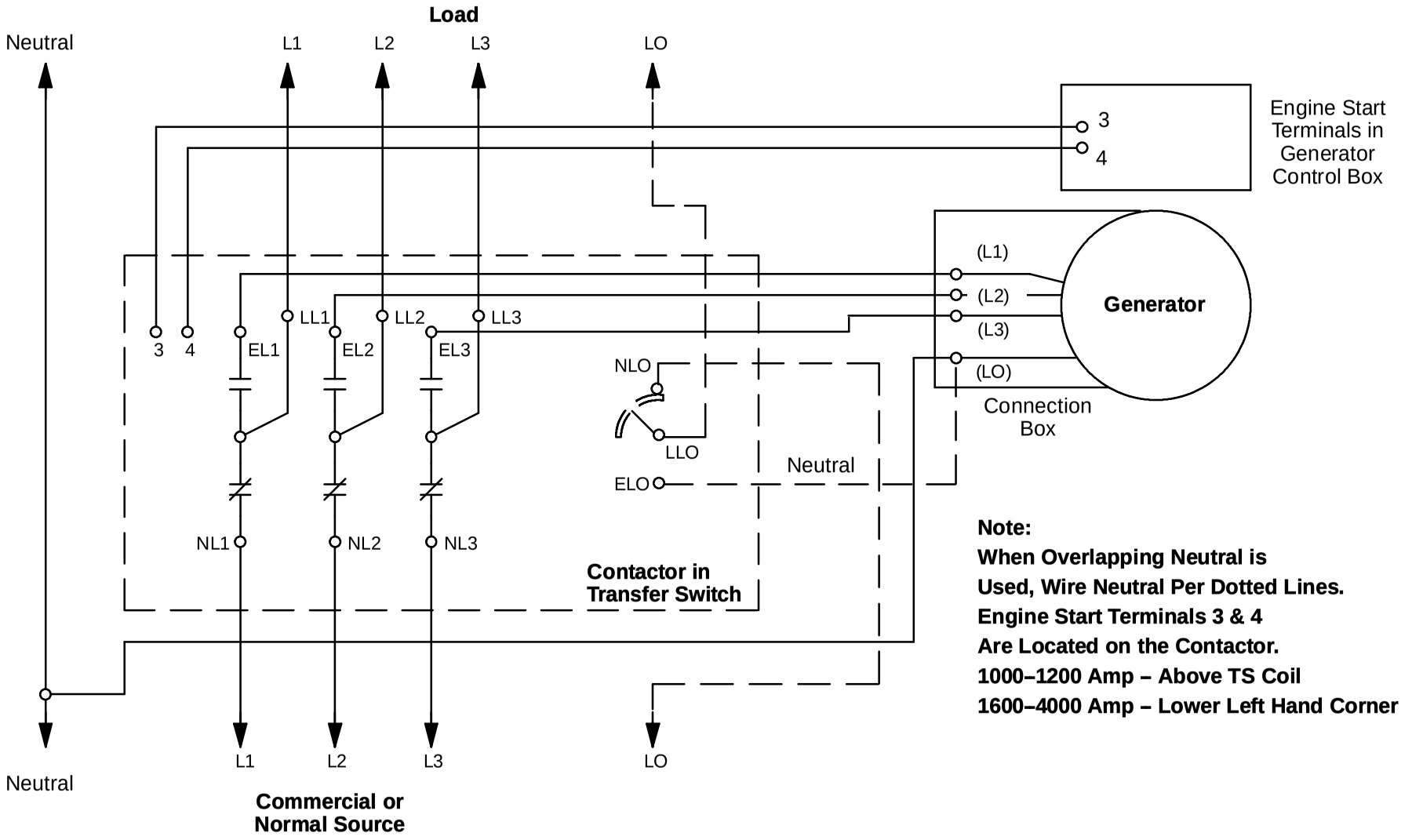
Diagram, Interconnection ADV- -5455



Note:
When Overlapping Neutral is Used, Wire Neutral Per Dotted Lines.
Engine Start Terminals 3 & 4 Are Located on the Contactor.
30–150 Amp – Lower Left Side
260–400 Amp – Above TS Coil
600–800 Amp – Upper Right Hand Corner

3-Phase, 3 & 4-Wire

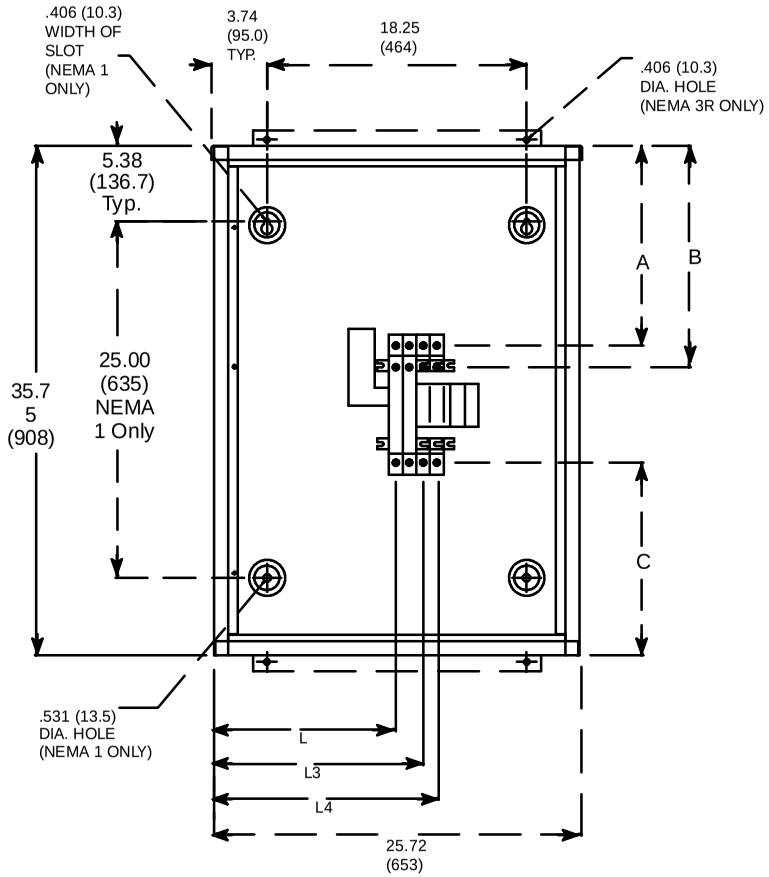
Diagram, Interconnection ADV- -5456

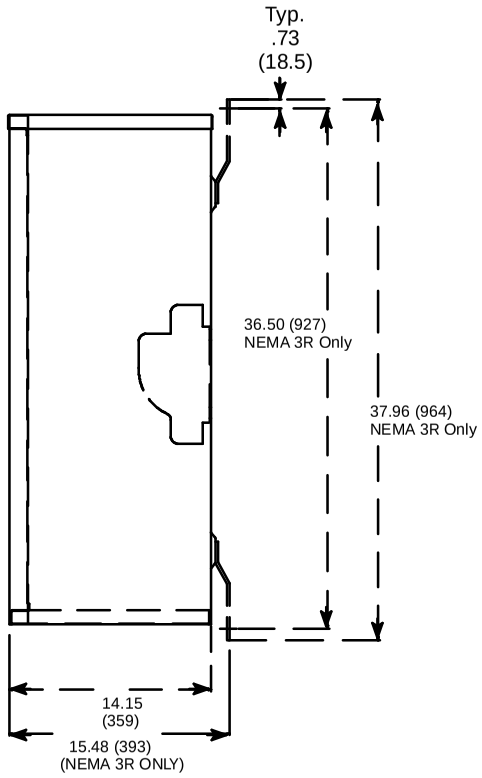


Note:
When Overlapping Neutral is Used, Wire Neutral Per Dotted Lines.
Engine Start Terminals 3 & 4 Are Located on the Contactor.
1000–1200 Amp – Above TS Coil
1600–4000 Amp – Lower Left Hand Corner

1000–4000-Amp
3-Phase, 3 & 4-Wire

Diagram, Interconnection ADV–5268





RATING	A	B	C	L	L3	L4
30,70,104 AMP	14.38 (365)	15.50 (394)	14.50 (368)	11.00 (279)	12.46 (316)	13.19 (335)
150 AMP	14.25 (362)	15.88 (403)	13.38 (340)	12.30 (312)	14.22 (361)	15.18 (386)

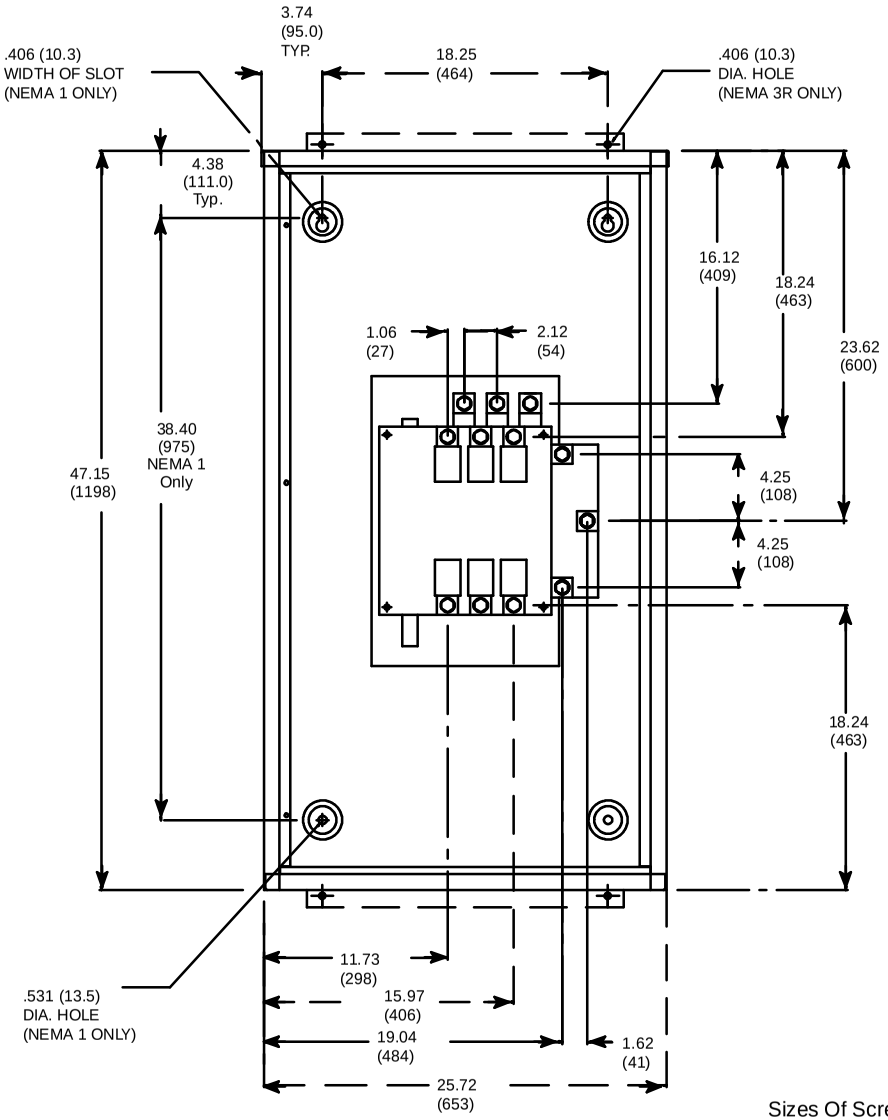
Sizes Of Screw Type Terminals
For External Power Connections

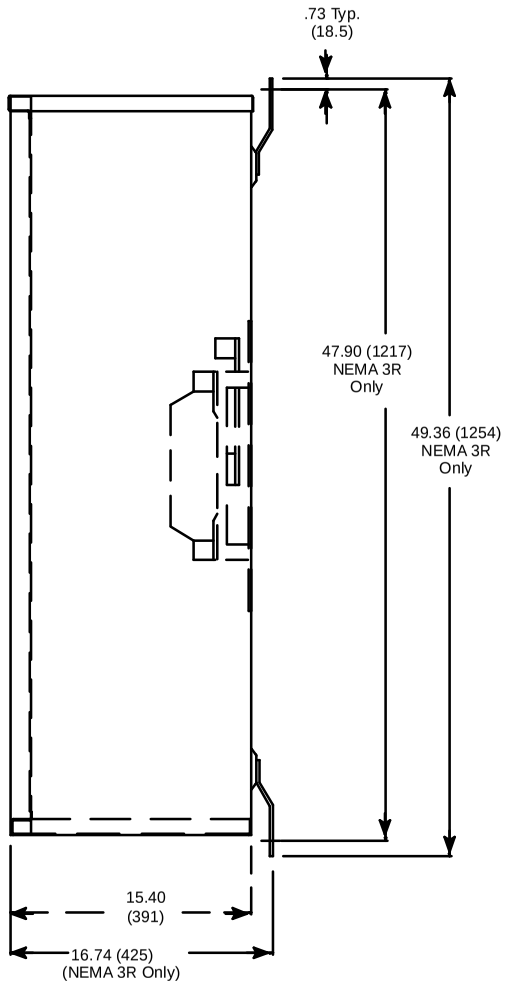
Switch Rating (AMPS)	Range Of AL- -CU Wire Size
30	One #14 To #6 AWG
70	One #14 To 1/0 AWG
104	One #14 To 2/0 AWG
150	One #8 To 3/0 AWG

Notes:
1. Numbers In Parentheses Are Millimeters
2. Dimensions Are For Reference Only.

Enclosure Dimensions
30 - - 150-Amp

ADV- -5238a



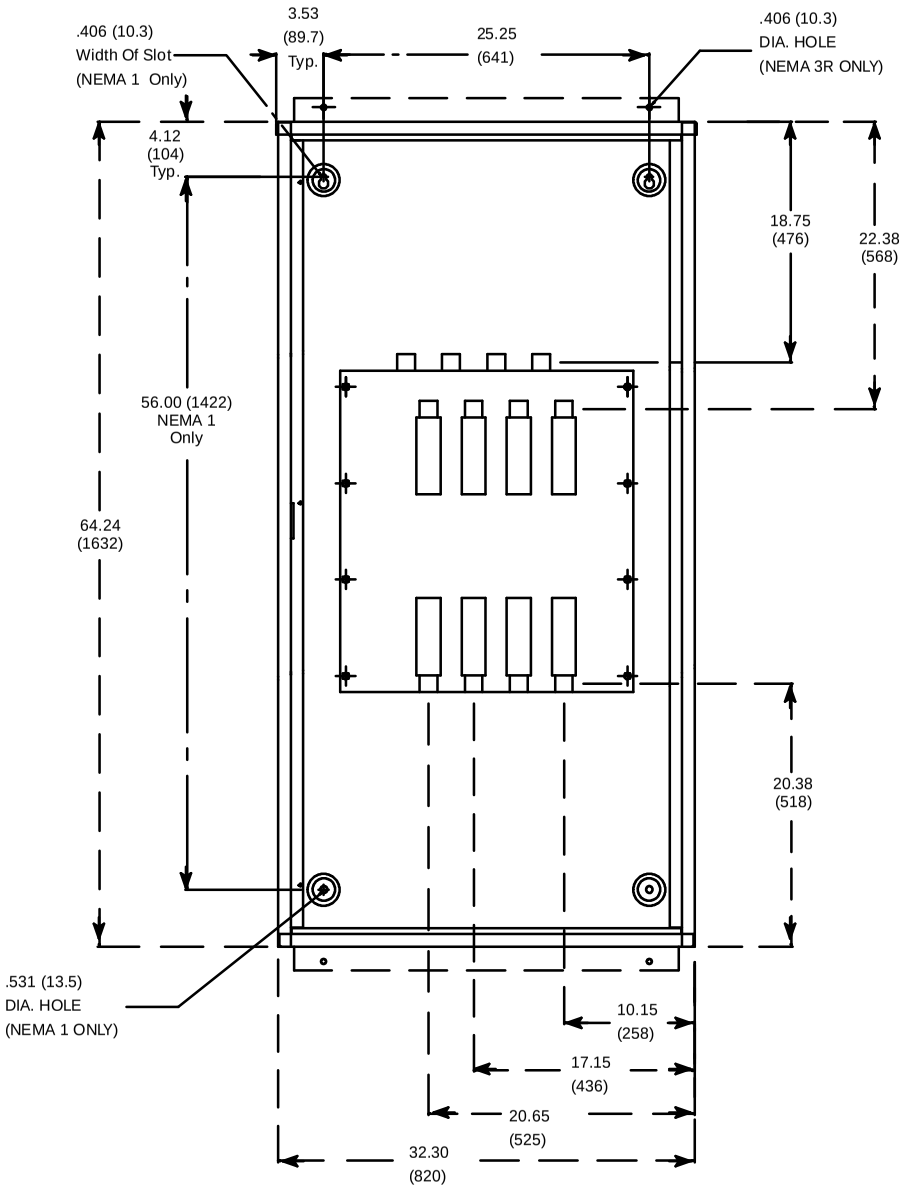


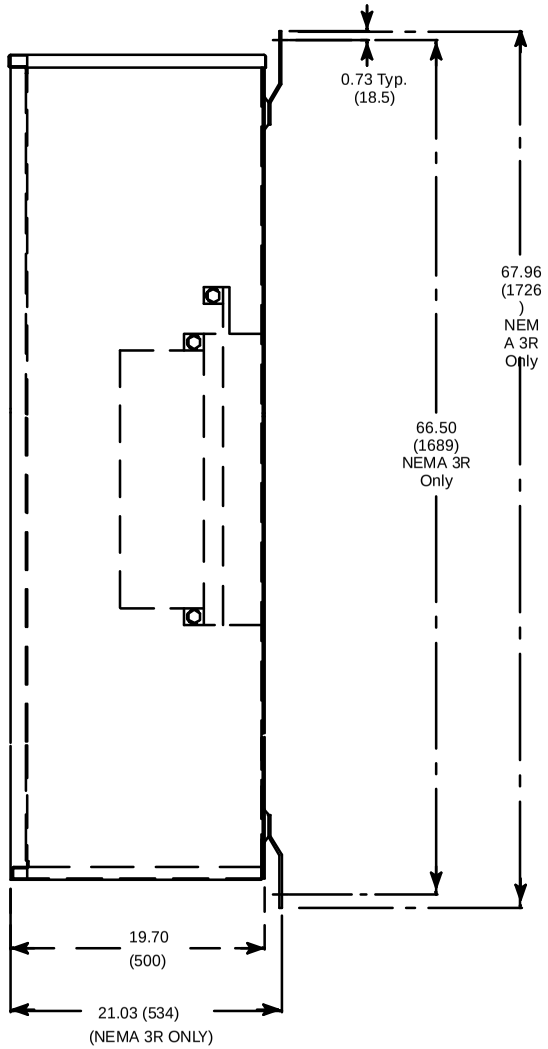
Sizes Of Screw Type Terminal
For External Power Connections

Switch Rating (AMPS)	Range Of Al- -Cu Wire Size
225- -400	Two #1/0 AWG TO 250 MCM Or One #4 AWG TO 600 MCM

Note:
1. Numbers In Parentheses Are Millimeters.
2. Dimensions Are For Reference Only.

Enclosure Dimensions
NEMA 1
225 - - 400-Amp
ADV-5238b





Size Of Screw Type Terminal
For External Power Connections

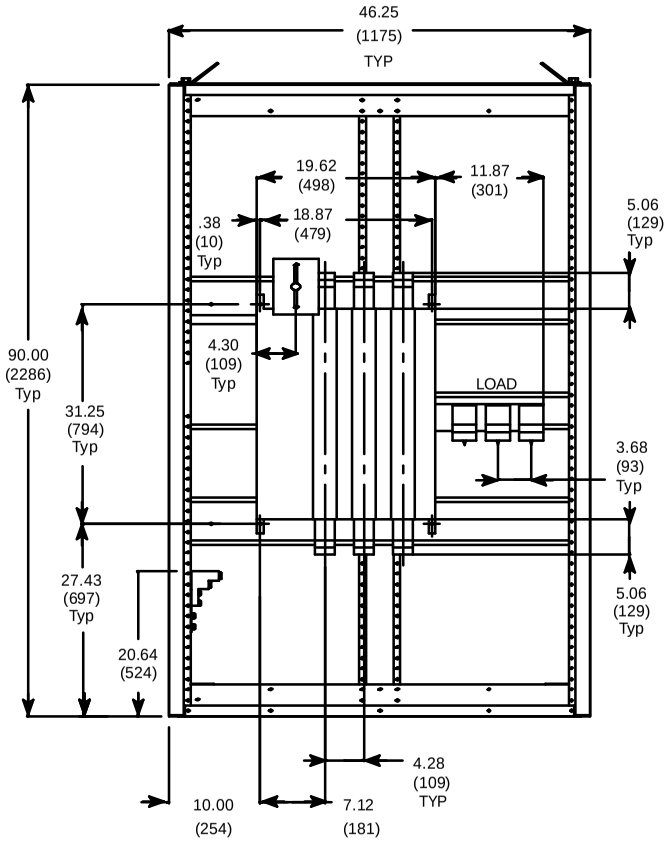
Switch Rating (Amps)	Range Of Al--cu Wire Size
600 & 800	Three #2 Awg To 600 Mcm

Notes:

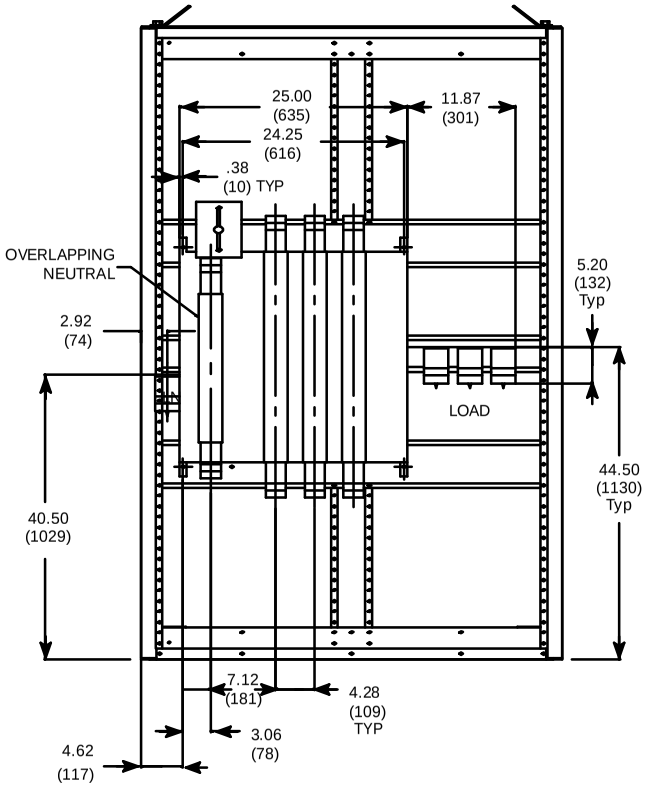
1. Numbers In Parentheses Are Millimeters.
2. Dimensions Are For Reference Only.

600--800 Amp Transfer Switch Enclosure Mounting

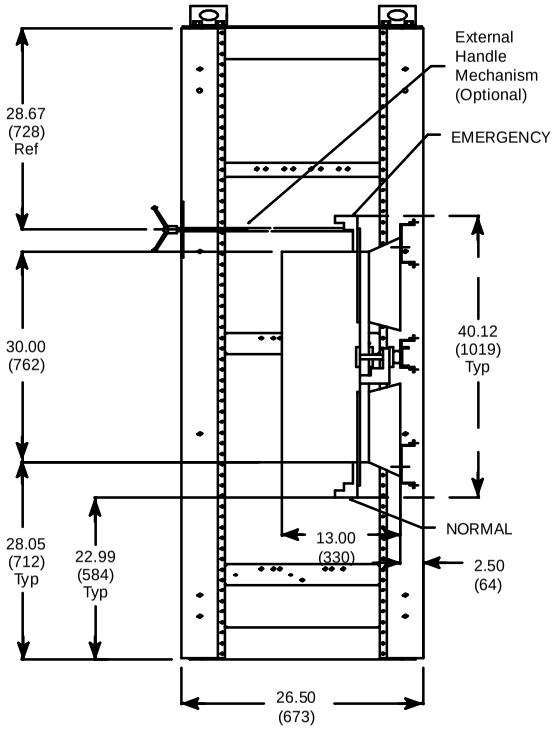
ADV-5238c

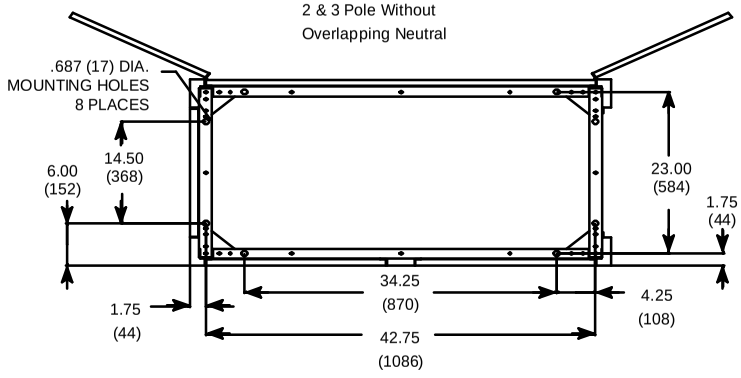


2 & 3 Pole Without
Overlapping Neutral



2 & 3 Pole With
Overlapping Neutral





Bottom View

NOTES:

NEMA Type 1 - - General Purpose, Indoor, Floor Supported.

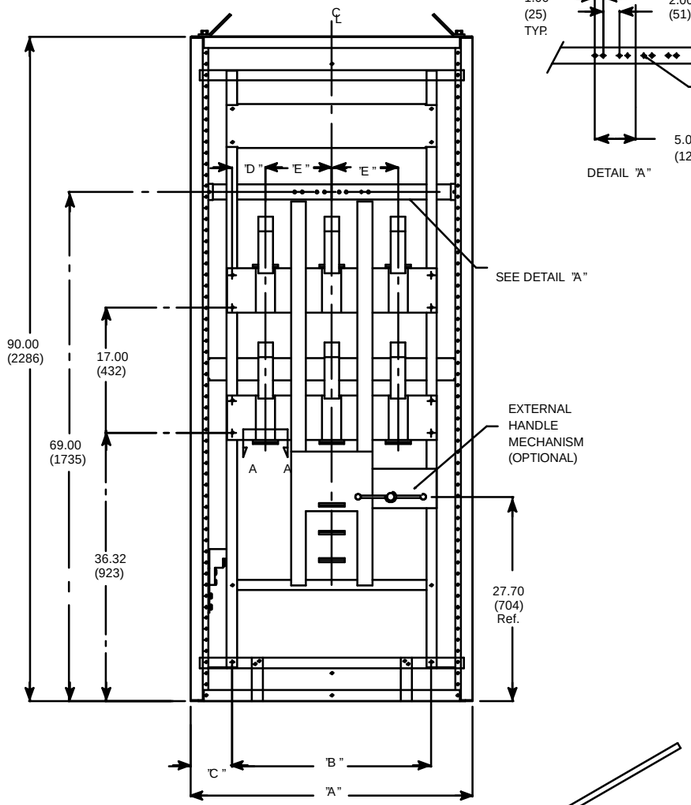
1. Free Standing, Frame Construction.
2. Removable Doors, Key Locking Handle. Two Doors With Single Center Latch.
3. Sides, Top, And Back Removable. Open Bottom.
4. Provisions For Lifting.
5. Enclosures Constructed In Accordance With UL Standard 508 (Ansi C33.76- -1971) As Referenced In UL Standard 1008.
6. Use Operator's Manual. Refer To This Publication Prior To Installation And Operation Of The Switch.

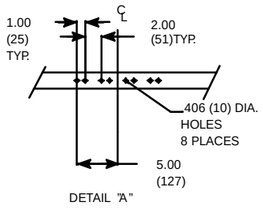
Dimensions In ( ) Are Millimeter Equivalents.

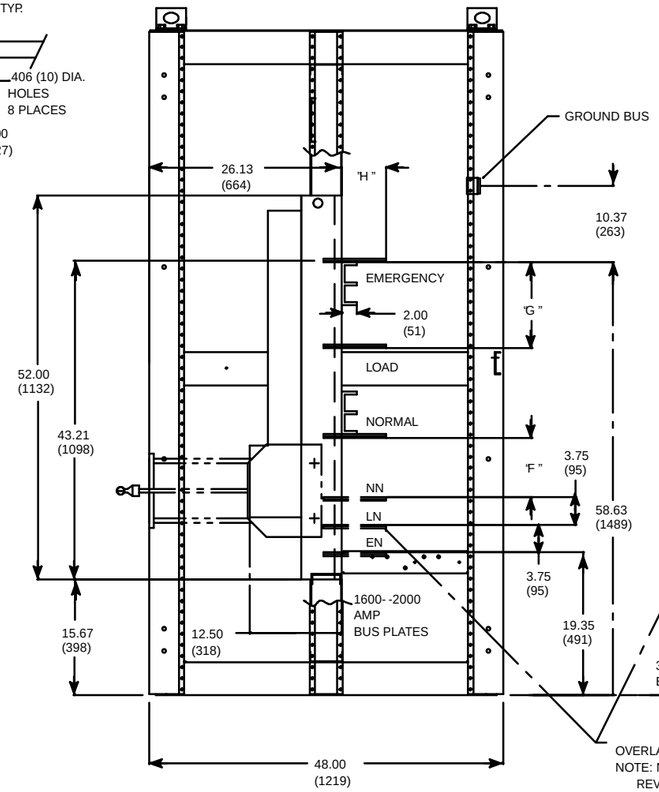
Size Of UL Listed Solderless Screw Type Terminals For External Power Connections. Four # 2 AWG To 600 MCM AL- -CU Wire.

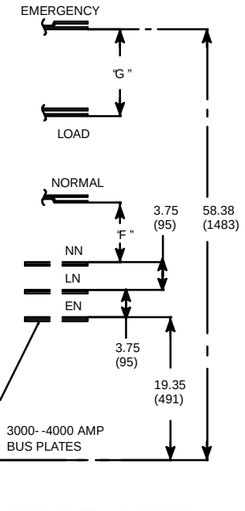
1000 - - 1200-Amp
2 & 3 Pole With
Overlapping Neutral

ADV-5448a

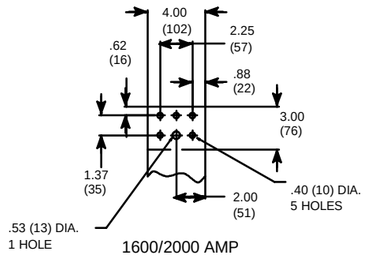




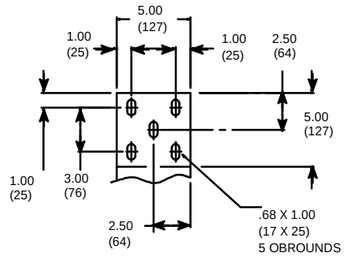




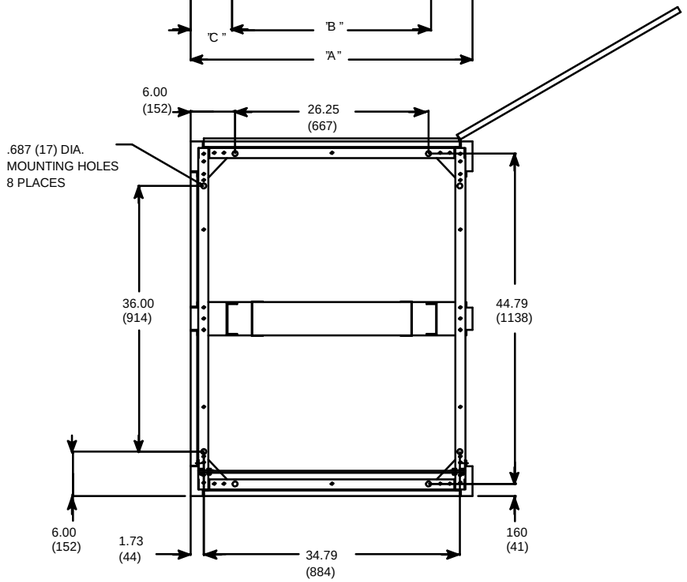
OVERLAPPING NEUTRAL ACCESSORY
NOTE: NORMAL & EMERGENCY BUS
REVERSED AS SHOWN.



1600/2000 AMP



3000 AMP



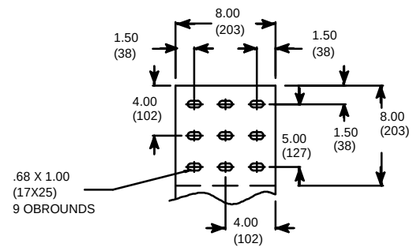
AMP SIZE	DIMENSIONS							
	A	B	C	D	E	F	G	H
1600 & 2000	38.25 (972)	27.00 (686)	5.63 (143)	4.50 (114)	9.00 (229)	7.65 (194)	11.62 (295)	6.00 (152)
3000	48.25 (1226)	30.00 (762)	9.12 (232)	5.00 (127)	10.00 (254)	7.15 (182)	1175 (298)	10.00 (254)
4000	48.25 (1226)	39.00 (991)	4.62 (117)	6.50 (165)	13.00 (330)	7.15 (182)	1175 (298)	13.00 (330)

NOTES:

NEMA Type 1 -- General Purpose, Indoor, Floor Supported

1. Free Standing, Frame Construction.
2. Removable Doors, Key Locking Handle. Single Door Hinged On Right With Single Center Latch For 1600--2000 Amps.
3. Sides, Top, And Back Removable. Open Bottom.
4. Provisions For Lifting.
5. Enclosures Constructed In Accordance With UL Standard 508 (ANSI C33.76--1971) As Referenced In UL Standard 1008.
6. The Transfer Switch Unit Is Mounted On The Inside Back Surface And The Accessory Control Panel Mounted On The Inside Door Surface. Both Units Are Terminated By A Quick Disconnect Plug Located On The Inside Of The Door.
7. Use Operator's Manual. Refer To This Publication Prior To Installation And Operation Of The Switch.

Dimensions In ( ) Are Millimeter Equivalents.



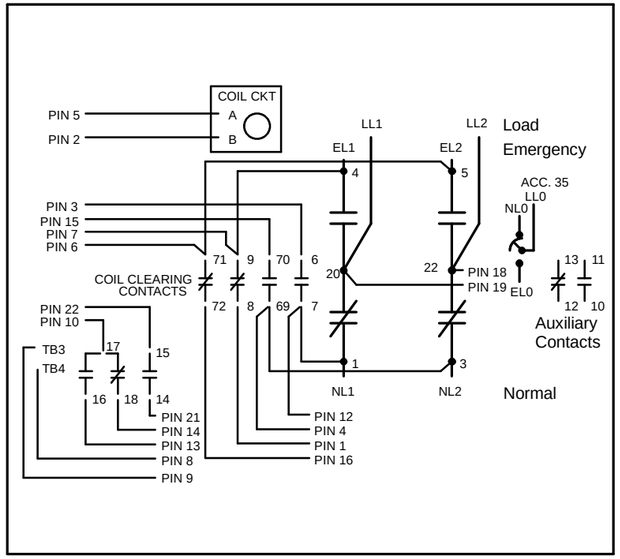
4000 AMP

VIEW A -- A
3 EXPLODED VIEWS

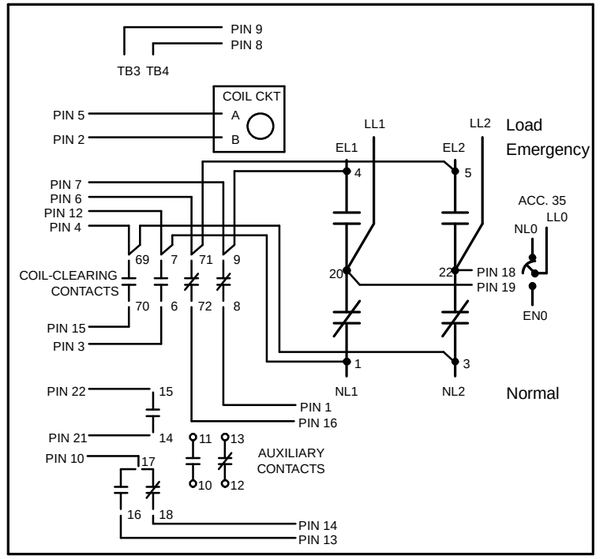
Enclosure Dimensions
1600-4000 Amp

Sheet 2 of 2

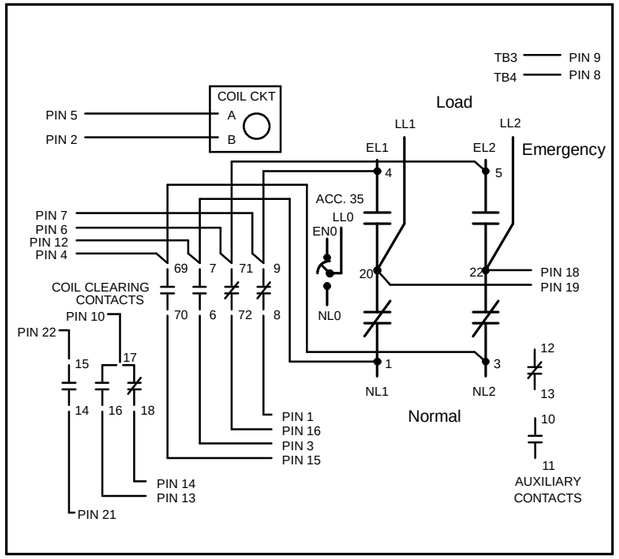
ADV-5448b



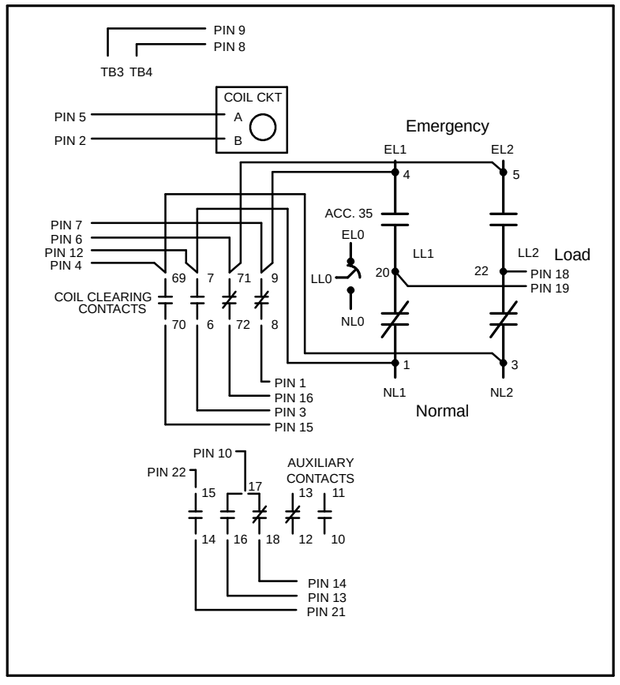
30, 70, 104 & 150-Amp



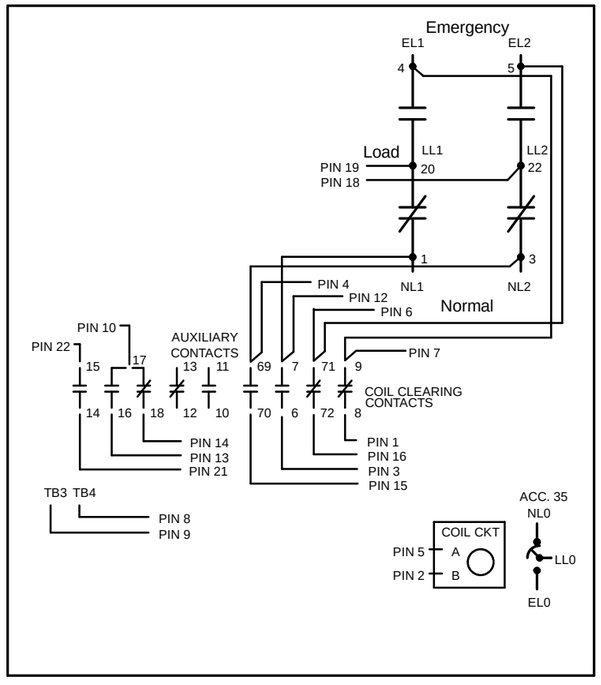
225, 260 & 400-Amp



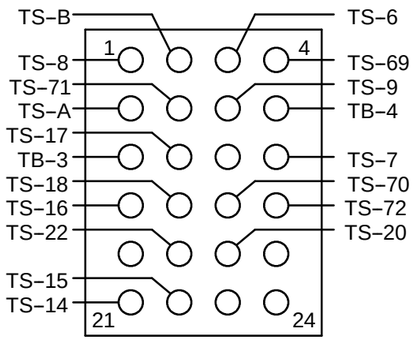
600 & 800-Amp



1000 & 1200-Amp



1600, 2000, 2500, 3000, 4000-Amp



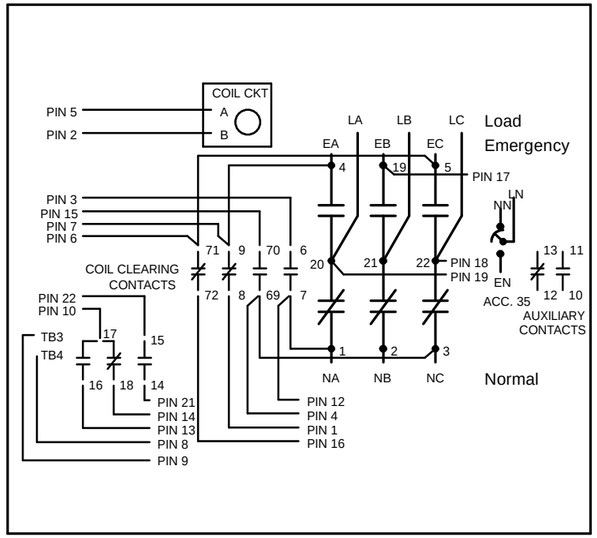
Disconnect Plug

Notes:
Switch Shown in Normal Position
Stranded #20 Wires on 30–150a
And Stranded #16 Awg on 225–4000a
TB3 & TB4 are Engine Start Terminals

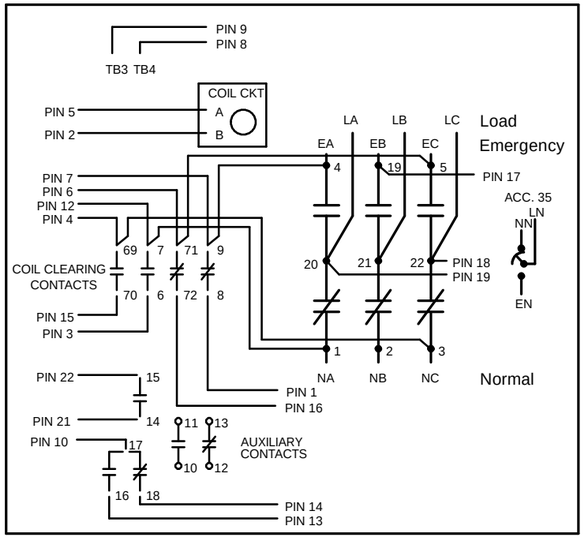
Contactor Wiring Diagram
2-Pole

Sheet 1 of 2

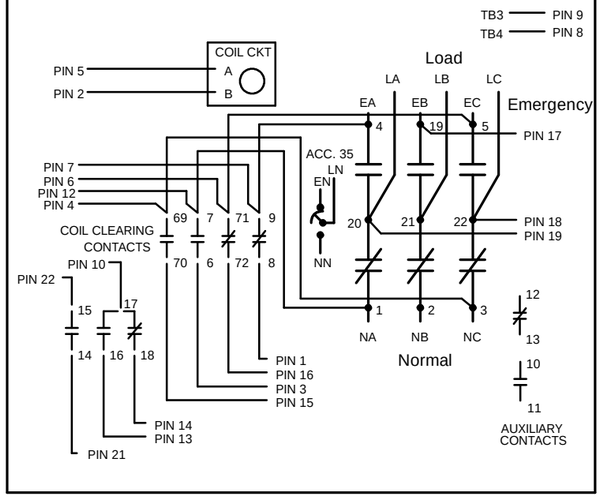
294859a



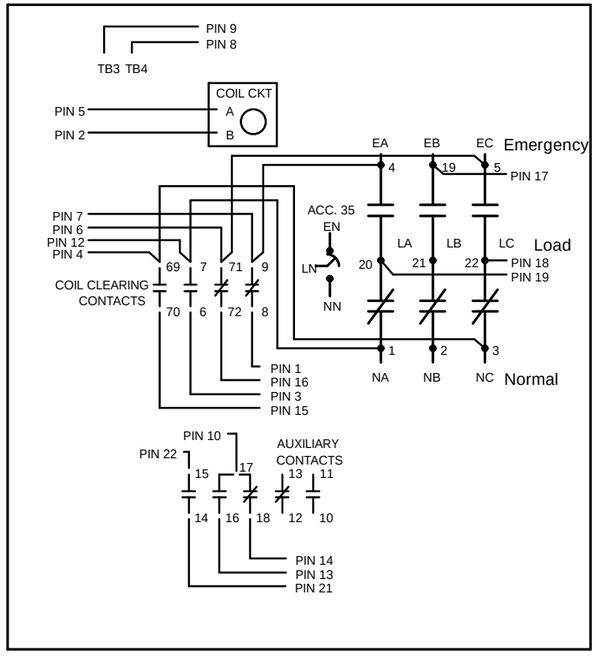
30, 70, 104 & 150-Amp



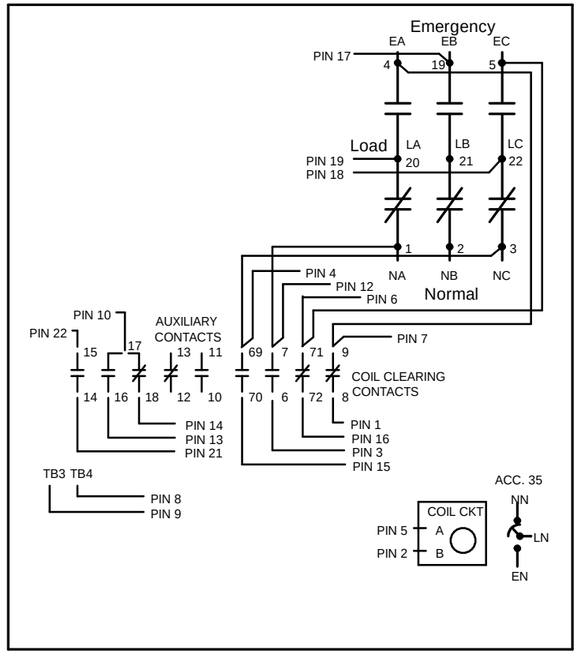
225, 260 & 400-Amp



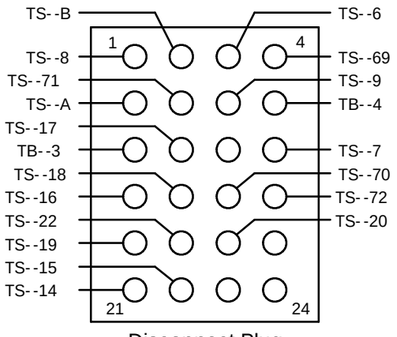
600 & 800-Amp



1000 & 1200-Amp



1600, 2000, 2500, 3000, 4000-Amp



Disconnect Plug

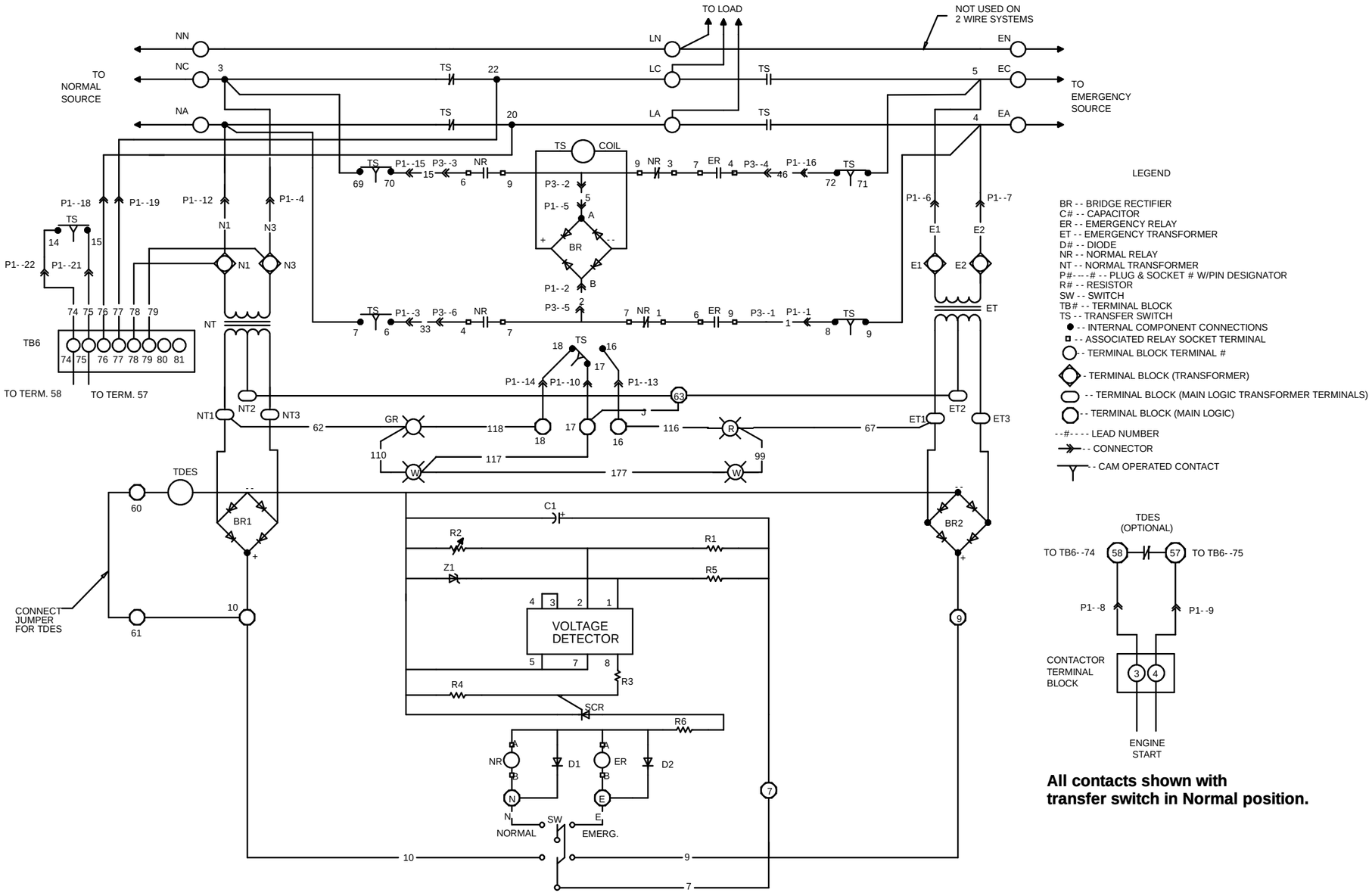
Notes:

Switch Shown In Normal Position
Stranded #20 Wires on 30- -150a
and Stranded #16 AWG on 225- -4000A
TB3 & TB4 are Engine Start Terminals

Contactor Wiring Diagram
3-Pole

Sheet 2 of 2

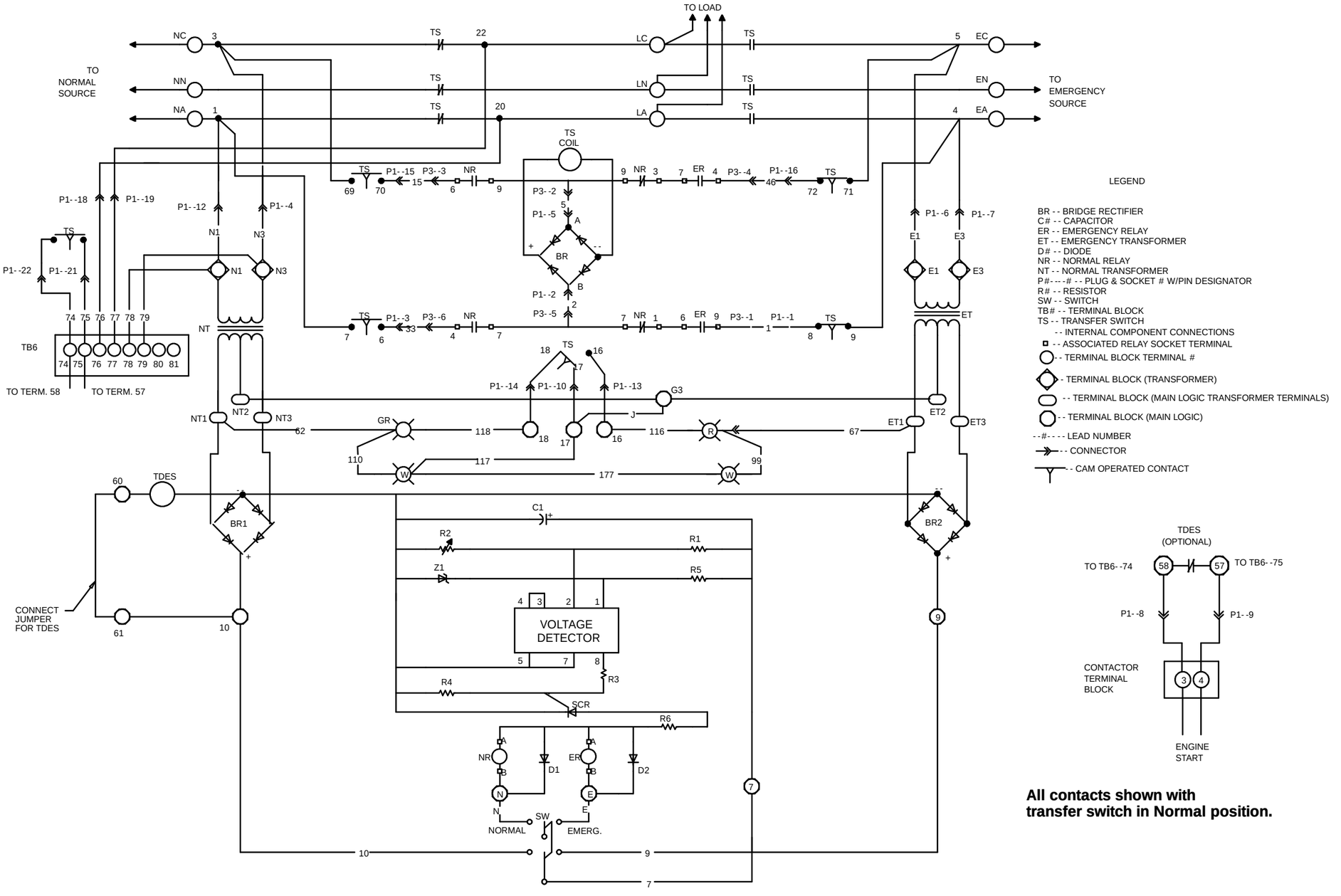
294859b



All contacts shown with transfer switch in Normal position.

Schematic Diagram
1-phase, 2-pole, 2- or 3-wire

320495



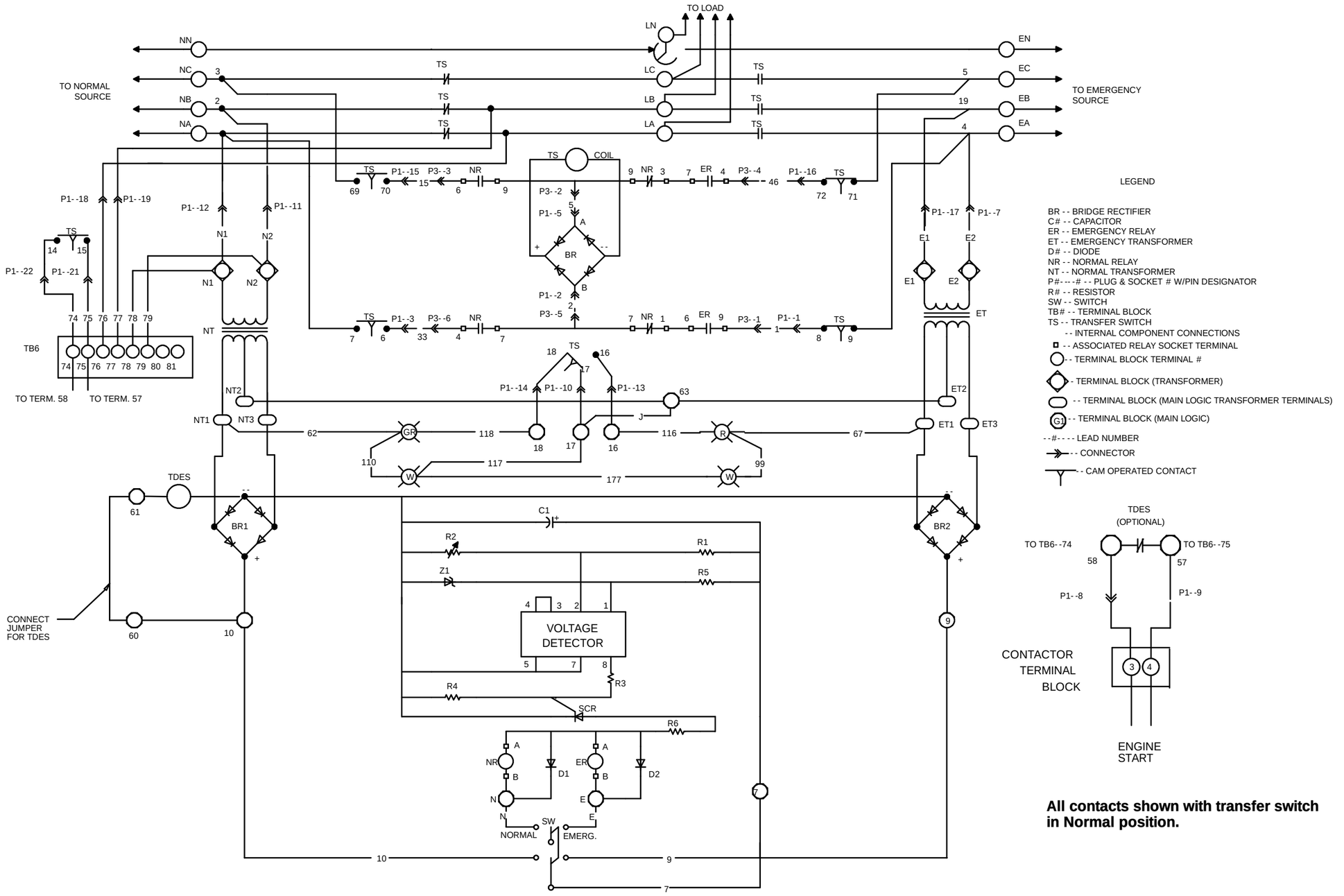
LEGEND

BR - - BRIDGE RECTIFIER
C# - - CAPACITOR
ER - - EMERGENCY RELAY
ET - - EMERGENCY TRANSFORMER
D# - - DIODE
NR - - NORMAL RELAY
NT - - NORMAL TRANSFORMER
P#- - -# - - PLUG & SOCKET # W/PIN DESIGNATOR
R# - - RESISTOR
SW - - SWITCH
TB# - - TERMINAL BLOCK
TS - - TRANSFER SWITCH
- - INTERNAL COMPONENT CONNECTIONS
- - ASSOCIATED RELAY SOCKET TERMINAL
- - TERMINAL BLOCK TERMINAL #
- TERMINAL BLOCK (TRANSFORMER)
- - TERMINAL BLOCK (MAIN LOGIC TRANSFORMER TERMINALS)
- - TERMINAL BLOCK (MAIN LOGIC)
- -#- - - - LEAD NUMBER
- - CONNECTOR
- - CAM OPERATED CONTACT

All contacts shown with transfer switch in Normal position.

Schematic Diagram
1-phase, 3-pole, 3-wire

320496

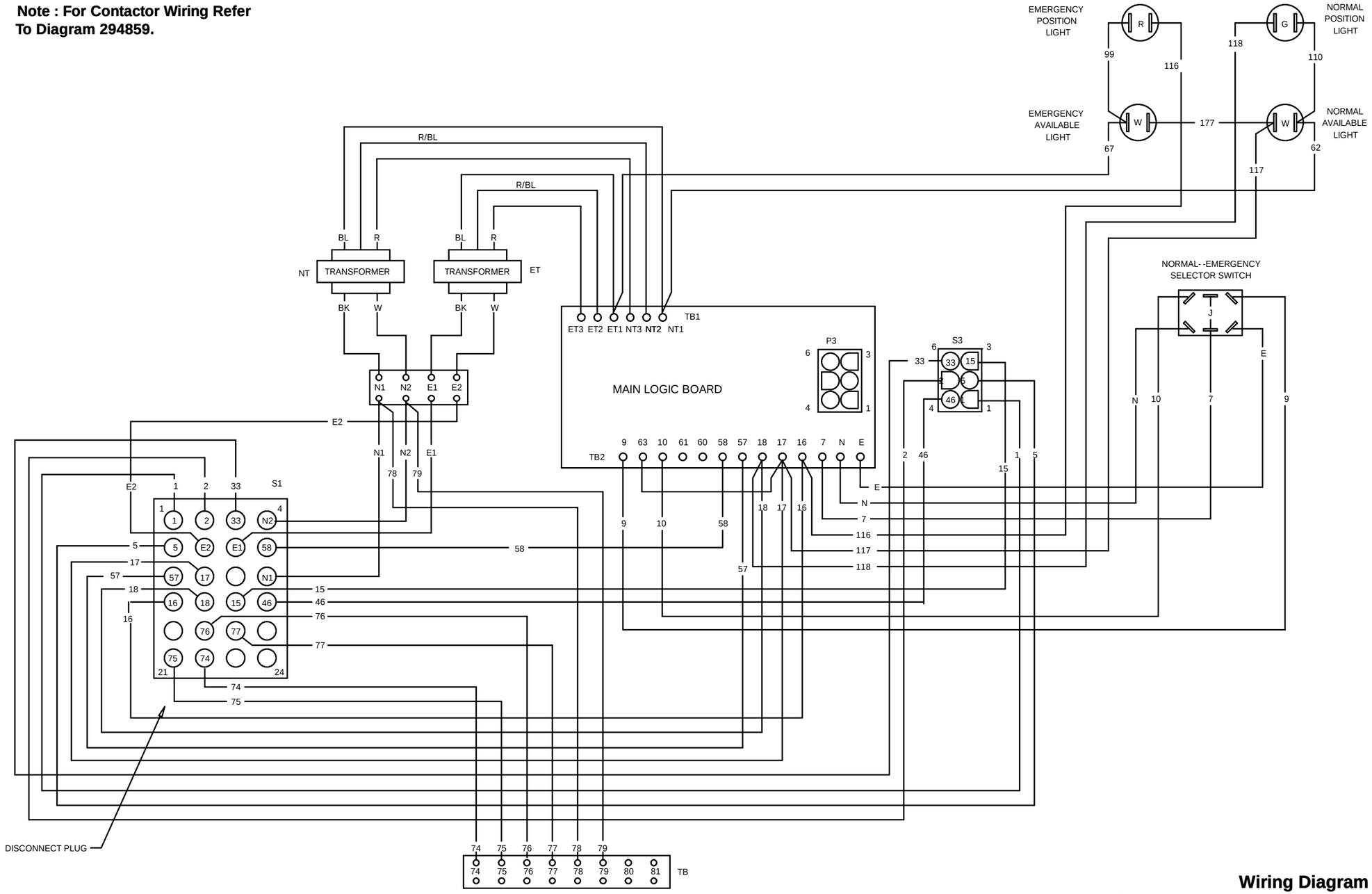


All contacts shown with transfer switch in Normal position.

Schematic Diagram
3-phase, 4-pole
4-wire w/Overlapping Neutral

320497

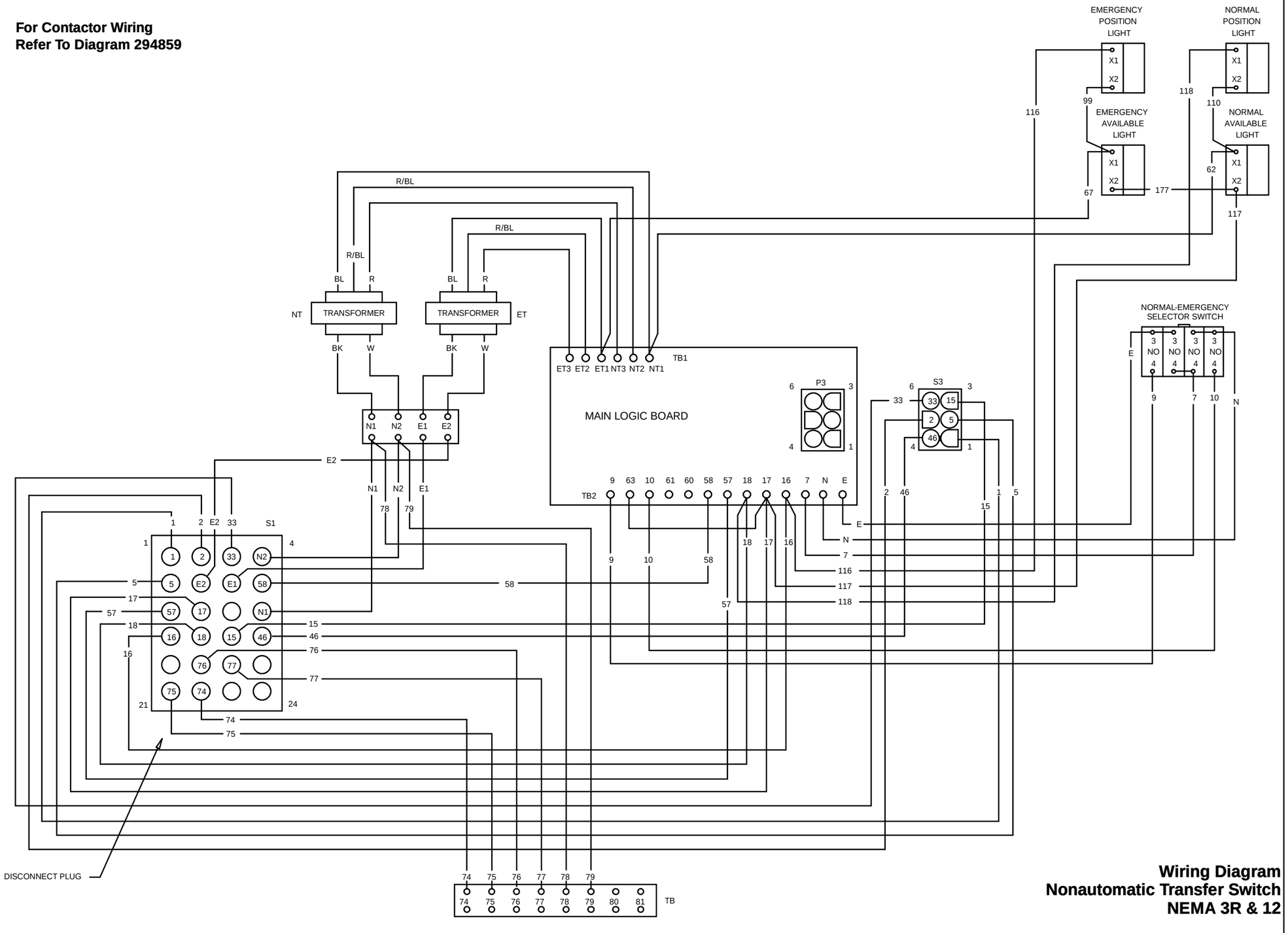
Note : For Contactor Wiring Refer To Diagram 294859.



Wiring Diagram
Nonautomatic Transfer Switch
NEMA 1

297820

For Contactor Wiring
Refer To Diagram 294859



Wiring Diagram
Nonautomatic Transfer Switch
NEMA 3R & 12

294861

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KOHLER CO. Kohler, Wisconsin 53044
Phone 920-565-3381, Web site www.kohlergenerators.com
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Kohler® Power Systems
Asia Pacific Headquarters
7 Jurong Pier Road
Singapore 619159
Phone (65)264-6422, Fax (65)264-6455

TP-5585 3/92a