

Transformer Disconnects

Class 9070



Merlin Gerin

Square D

Telemecanique

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INTRODUCTION

Transformer disconnects mount inside or outside a control system enclosure and provide power to auxiliary, single-phase loads when the main three-phase disconnect is either ON or OFF. The transformer disconnect is normally wired to the line side of the control panel's main disconnect.

This convenient source of 120 V power can be used for auxiliary or isolated loads, such as panel lighting, portable power tools, and programmable controller equipment.

Units consist of copper-wound transformers, a disconnect switch, and primary and secondary fuse blocks all installed in NEMA 1 or NEMA 12 enclosures.

STANDARD FEATURES

- Meet UL standards—UL listed
Meet CSA standards—cUL listed
- Use Square D, type TF industrial control transformers
 - Rated for 50/60 Hz
 - Trilingual nameplate (English, Spanish, and French)
 - Molded terminal boards 25–5,000 VA
 - Welded core and base plate
 - Type T transformers are designed for various temperature classes:
 - 50–150 VA with a 55° C temperature rise
 - 200–350 VA with an 80° C temperature rise
 - 500–5000 VA with a 115° C temperature rise
 - Separate FINGERSAFE® cover accessory kits may be purchased and installed
 - Rejection-style fuse block connected to primary
 - Secondary fuse block
- Use SQUARE D® disconnect switch
 - 600 Volts
 - 45 amps
 - 100,000 A, short-circuit withstand, integrated rating when protected by Class CC fuses
 - Disconnect can be locked in the OFF position
- Multiple enclosure options to chose from:
 - Standard NEMA 1
 - G1: 250–1000 VA
 - G2: 1500-3000VA
 - G4: 5000 VA
 - Mini NEMA 1
 - G0: 100–500 VA
 - Compact NEMA 1
 - G3: 750–3000 VA; designed to be installed in 12-inch deep, standard boxes
 - NEMA 12
 - A2: 250–3000 VA; standard NEMA 12 option; can be factory modified for NEMA 3R applications
 - A3: 250–2000 VA; NEMA 12 option with special disconnect switch
- Knockouts—conveniently located on NEMA 1 enclosures
- Ground terminal
- External mounting flanges with slotted holes for “Hook and Hang” mounting on NEMA 1 enclosures
- 90° access cover stop



FACTORY-INSTALLED OPTIONS

- Multiple voltage combinations
 - 240 x 480 to 120 (Voltage Code D1)
 - 208 to 120 (Voltage Code D3)
 - 277 to 120 (Voltage Code D4)
 - 600 to 120 (Voltage Code D5)
 - 380 to 110 (Voltage Code D6)
 - 480 to 120 (Voltage Code D9)
 - 415 to 110 (Voltage Code D17)
 - 120 to 120 (Voltage Code D24)
 - 480/575 to 115 (Voltage Code D101); requires special wiring
- 55° C rise transformers (Form C)
 - 9070 type EO transformers
 - Standard on 250VA and below
- Electrostatically shielded transformers (Form E23)
- Additional 1 1/2-inch x 13/32-inch secondary fuse block for multiple secondary circuits (Form F11)
- 5-inch x 13/16-inch, primary fuse block (Form F30)
- Change standard primary fuse holder from:
 - 1-1/2-inch x 13/32-inch to 5-inch x 13/16-inch (Form F31)
 - 5-inch x 13/16-inch to 1-1/2-inch x 13/32-inch (Form F32)
- Enclosure door grounded with wire lead (Form GRD)
- Duplex receptacle; door-mounted
 - One receptacle (Form G13)
 - One Class A, ground fault-protected (GFI) receptacle (Form G14)
 - Two receptacles (Form G16)
- Convert enclosure from NEMA 12 to NEMA 3R (Form N3)
- Pilot light—"ON" red warning light to tell operator that 120 VAC power is ON (Form P1). Option with strain relief (Form P2).

HOW TO ORDER

Specifying a Catalog Number

To Order Specify	Sample Catalog Number					
	Class	Type	VA Rating	Enclosure	Voltage Code	Form(s)
Class number	9070	SK	1000	A2	D1	E23 G13 N3
Type number						
VA rating						
Enclosure						
Voltage code						
Form(s)						

Forms are added after the voltage code in alphabetical order:

For example, to order a 1000 VA, A2 enclosure with the following options:	Use this catalog number:
Electrostatically shielded, duplex receptacle, NEMA 3R	9070SK1000A2D1E23G13N3



NEMA 1 Transformer Disconnects



G1

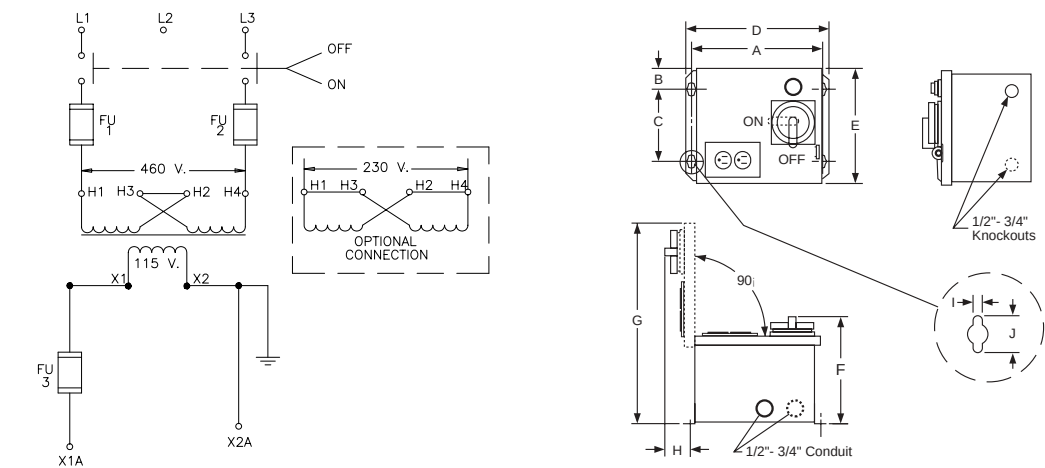


G2

NEMA 1 TRANSFORMER DISCONNECTS

Standard NEMA 1 Offering (G1 and G2)

- Voltage 240 x 480 to 120 (D1)
- 250–3000 VA
 - Square D disconnect switch (V3) 45 A, 600 V, 100,000 AIC rating when protected with Class CC fuses
- Fuse block requires:
 - 1-1/2-inch x 13/32-inch rejection-style primary fuses
 - 1-1/2-inch x 13/32-inch secondary fuses
- Ground terminal
- Conveniently located 1/2-inch to 3/4-inch knockouts
- External mounting flanges with slotted holes for “Hook and Hang” mounting
- 90° access cover stop



Enclosure Dimensions

VA	Enclosure	A	B	C	D	E	F	G	H	I	J
250–1000	G1	10.8	1.7	6.0	11.8	9.4	8.96	16.81	2.09	.32	.32
1500–3000	G2	13.8	1.7	10	14.8	13.4	12.21	23.06	2.09	1.0	1.0

Factory Available Options for Standard 9070 SK Units (Enclosures G1 and G2)

Option – Description	Factory Modification Form
Special voltages	Change voltage code from D1 to appropriate D code
55° C rise transformer	C
Electrostatically shielded transformer	E23
Additional 1 1/2-inch x 13/32-inch secondary fuse block	F11
Primary fuse block – 5-inch x 13/16-inch *	F30
Duplex receptacle, door-mounted	G13
Class A, GFI, duplex receptacle, door-mounted	G14
Two duplex receptacles, door-mounted *	G16
“ON” red warning pilot light	P1
“ON” red warning pilot light, with strain relief	P2

* Available on G2 enclosures only. If required on 250–1000 VA, change G1 to G2 in catalog number.

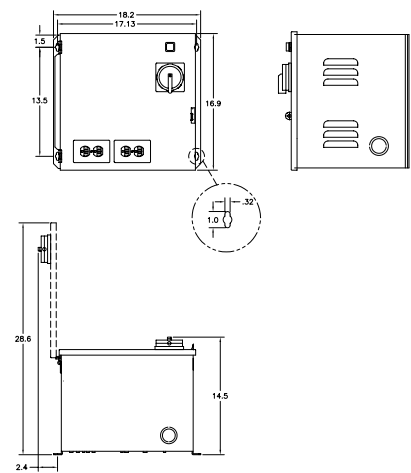
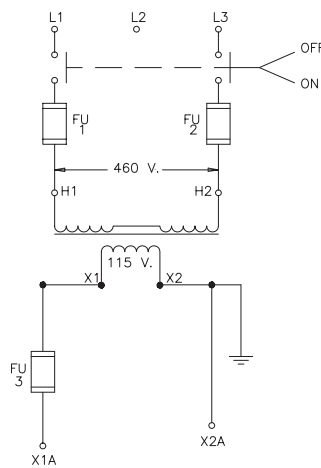
NEMA 1 Transformer Disconnects



G4

Standard NEMA 1 Offering (G4)

- Voltage 480 to 120 (D9)
- 5000 VA
 - Square D disconnect switch (V3) 45 A, 600 V, 100,000 AIC rating when protected with Class CC fuses
- Fuse block requires:
 - 1-1/2-inch x 13/32 rejection-style primary fuses
 - 3-inch x 3/4-inch secondary fuses
- Ground terminal
- Conveniently located 1/2-inch to 3/4-inch knockouts
- External mounting flanges with slotted holes for “Hook and Hang” mounting
- 90° access cover stop
- 60 Hz only



Factory Available Options for Standard 9070 SK Units (Enclosure G4)

Option – Description	Factory Modification Form
Special voltages	Change voltage code from D1 to appropriate D code
Electrostatically shielded transformer	E23
Additional 1 1/2-inch x 13/32-inch secondary fuse block	F11
Primary fuse block – 5-inch x 13/16-inch *	F30
Duplex receptacle, door-mounted	G13
Class A, GFI, duplex receptacle, door-mounted	G14
Two duplex receptacles, door-mounted *	G16
“ON” red warning pilot light	P1
“ON” red warning pilot light, with strain relief	P2



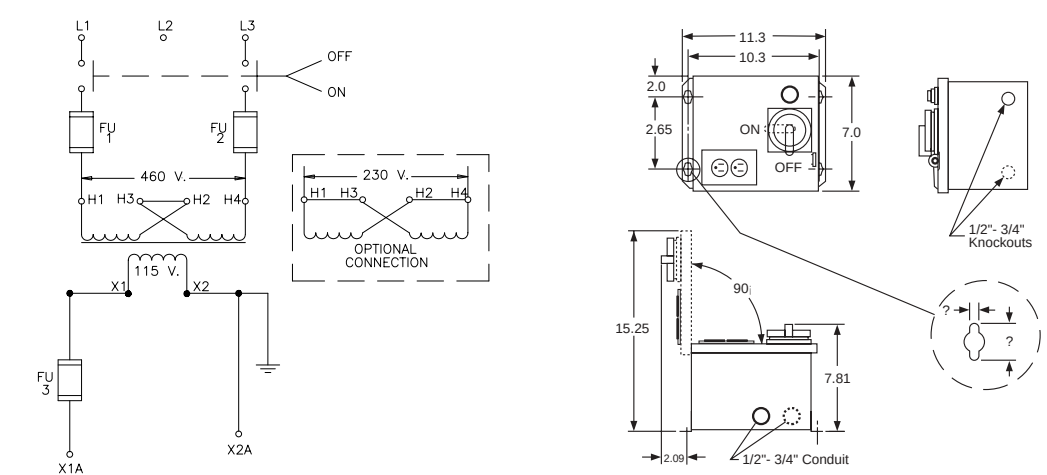
NEMA 1 Transformer Disconnects



G0

Mini NEMA 1 Offering (G0)

- Voltage 240 x 480 to 120 (D1)
- 100–500 VA
 - Square D disconnect switch (V3) 45 A, 600 V, 100,000 AIC rating when protected with Class CC fuses
- Fuse block requires:
 - 1-1/2-inch x 13/32-inch rejection-style primary fuses
 - 1-1/2-inch x 13/32-inch secondary fuses
- Ground terminal
- Conveniently located 1/2-inch to 3/4-inch knockouts
- External mounting flanges with slotted holes for “Hook and Hang” mounting
- 90° access cover stop



Factory Available Options for Mini 9070 SK Units (Enclosure G0)

Option – Description	Factory Modification Form
Special voltages	Change voltage code from D1 to appropriate D code
Electrostatically shielded transformer	E23
Additional 1 1/2-inch x 13/32-inch secondary fuse block	F11
Duplex receptacle, door-mounted	G13
Class A, GFI, duplex receptacle, door-mounted	G14
“ON” red warning pilot light	P1
“ON” red warning pilot light, with strain relief	P2



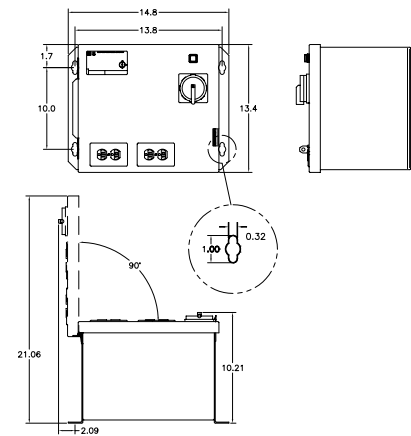
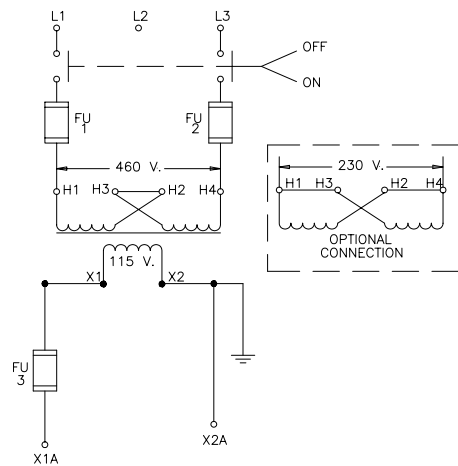
NEMA 1 Transformer Disconnects



G3

New Compact NEMA 1 Offering (G3)

- Voltage 240 x 480 to 120 (D1)
- 750–3000 VA
 - Square D disconnect switch (V3) 45 A, 600 V, 100,000 AIC rating when protected with Class CC fuses
- Fuse block requires:
 - 1-1/2-inch x 13/32-inch rejection-style primary fuses (750–1000 VA)
 - 5-inch x 13/16-inch rejection-style primary fuses (1500–3000 VA)
 - 1-1/2-inch x 13/32-inch secondary fuses
- Ground terminal
- Conveniently located 1/2-inch to 3/4-inch knockouts
- External mounting flanges with slotted holes for “Hook and Hang” mounting
- 90° access cover stop designed to be installed in standard 12-inch control panel



Factory Available Options for Compact 9070 SK Units (Enclosure G3)

Option – Description	Factory Modification Form
Special voltages	Change voltage code from D1 to appropriate D code
Electrostatically shielded transformer	E23
Additional 1 1/2-inch x 13/32-inch secondary fuse block	F11
Duplex receptacle, door-mounted	G13
Class A, GFI, duplex receptacle, door-mounted	G14
Two duplex receptacles, door-mounted *	G16
“ON” red warning pilot light	P1
“ON” red warning pilot light, with strain relief	P2



NEMA 12 Transformer Disconnects

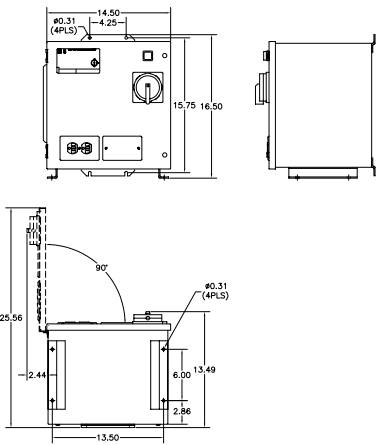
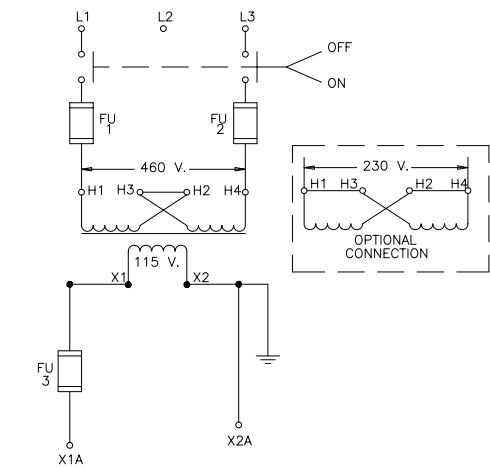


A2

NEMA 12 TRANSFORMER DISCONNECTS

Standard NEMA 12 Offering (A2)

- Voltage 240 x 480 to 120 (D1)
- 250–3000 VA
 - Square D disconnect switch (V3) 45 A, 600 V, 100,000 AIC rating when protected with Class CC fuses
- Fuse block requires:
 - 1-1/2-inch x 13/32-inch rejection-style primary fuses
 - 1-1/2-inch x 13/32-inch secondary fuses
- Ground terminal
- 90° access cover stop



Factory Available Options NEMA 12 (Enclosure A2)

Option – Description	Factory Modification Form
Special voltages	Change voltage code from D1 to appropriate D code
55° C rise transformer	C
Electrostatically shielded transformer	E23
Additional 1 1/2-inch x 13/32-inch secondary fuse block	F11
Primary fuse block—5-inch x 13/16-inch	F30
Duplex receptacle, door-mounted	G13
Class A, GFI, duplex receptacle, door-mounted	G14
Two duplex receptacles, door-mounted	G16
Convert to NEMA 3R enclosure	N3
“ON” red warning pilot light	P1
“ON” red warning pilot light, with strain relief	P2



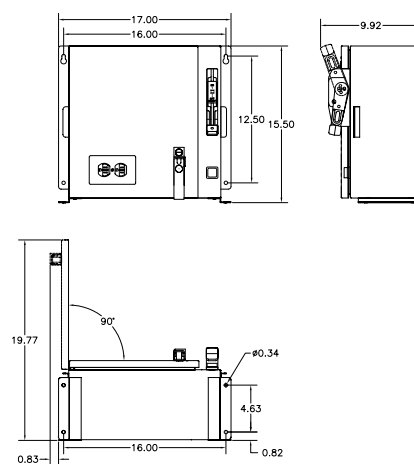
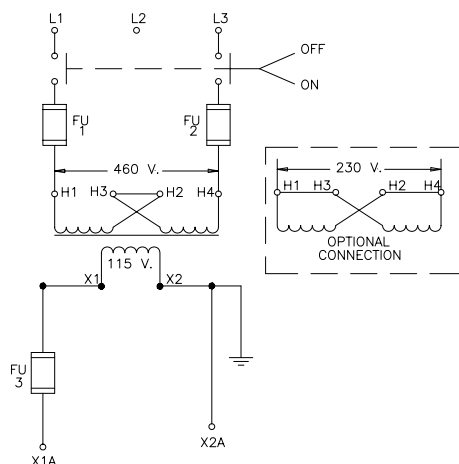
NEMA 12 Transformer Disconnects



A3

New NEMA 12 Offering (A3)

- Voltage 240 x 480 to 120 (D1)
- Door and handle can be locked with one lock
- 250–2000 VA
 - Square D disconnect switch (V3) 45 A, 600 V, 100,000 AIC rating when protected with Class CC fuses
- Fuse block requires:
 - 5-inch x 13/16-inch rejection-style primary fuses
 - 1-1/2-inch x 13/32-inch secondary fuses
- Ground terminal
- 90° access cover stop



Factory Available Options NEMA 12 (Enclosure A3)

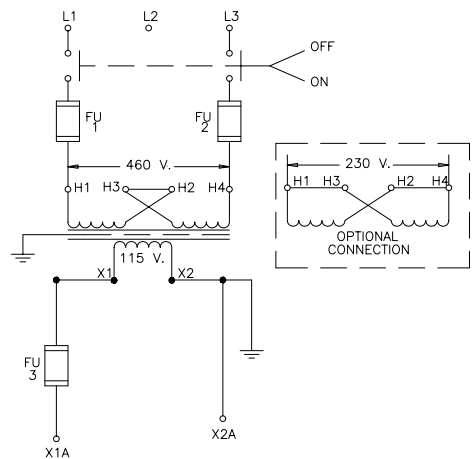
Option – Description	Factory Modification Form
Special voltages	Change voltage code from D1 to appropriate D code
Electrostatically shielded transformer	E23
Additional 1 1/2-inch x 13/32-inch secondary fuse block	F11
Primary fuse block—1-1/2-inch x 13/32-inch	F32
Duplex receptacle, door-mounted	G13
Class A, GFI, duplex receptacle, door-mounted	G14
Convert to NEMA 3R enclosure	N3
"ON" red warning pilot light	P1
"ON" red warning pilot light, with strain relief	P2



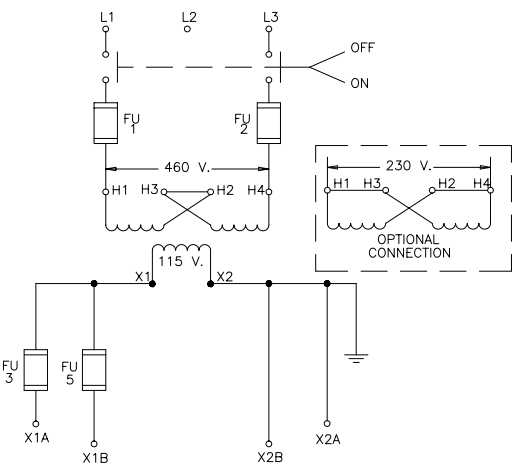
WIRING DIAGRAMS

Diagrams for Factory Modifications

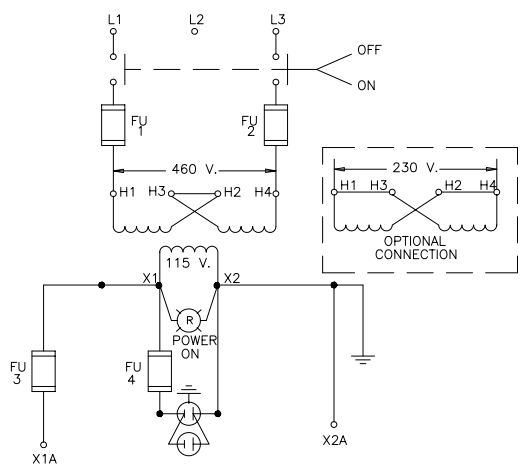
Electrostatically shielded (E23)



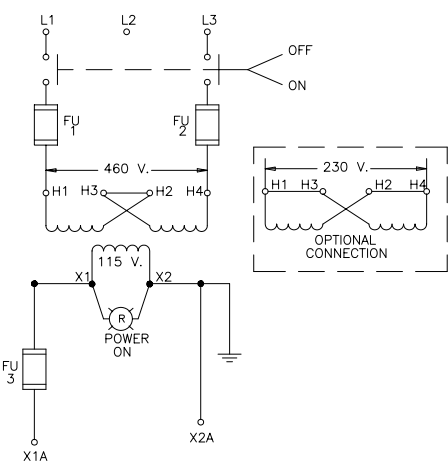
Additional secondary fuse block (F11)



Duplex receptacle (G13)

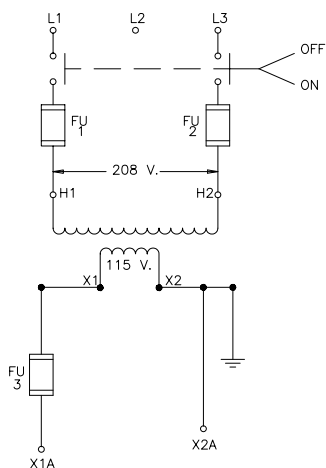


"ON" red warning light (P1 or P2)

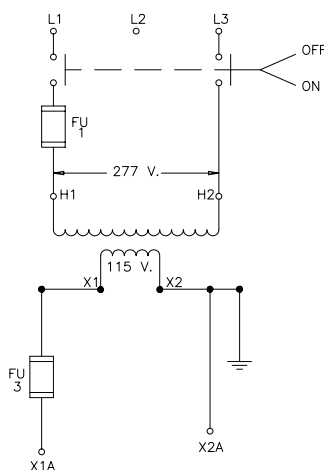


Special Voltage Options

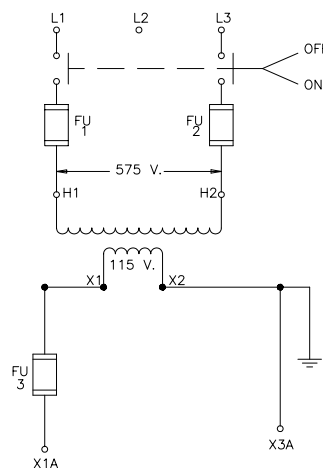
208 to 120, Voltage Code D3



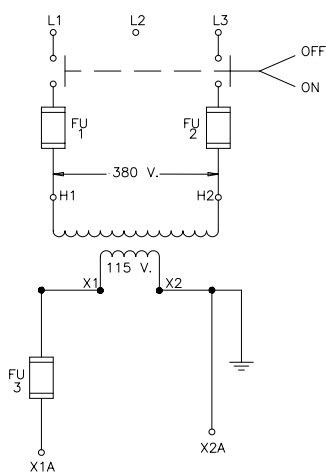
277 to 120, Voltage Code D4



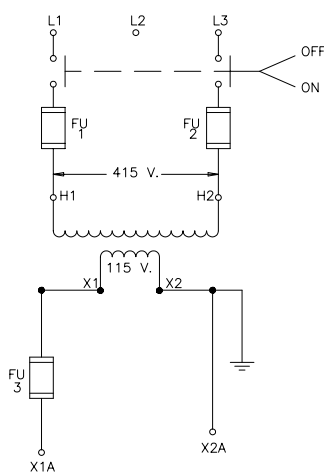
575 to 120, Voltage Code D5



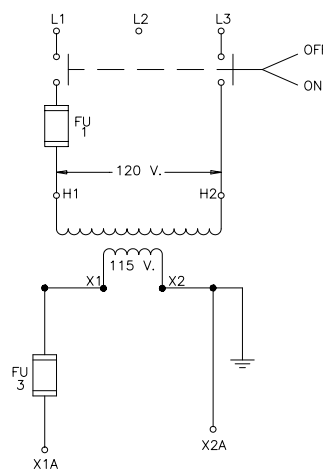
380 to 110, Voltage Code D6



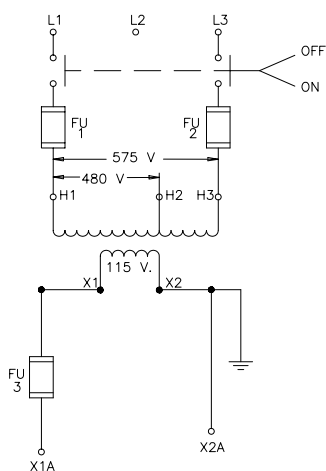
415 to 115, Voltage Code D17



120 to 120, Voltage Code D24



480/575 to 120, Voltage Code D101



Voltage Code D101 also includes the following features:

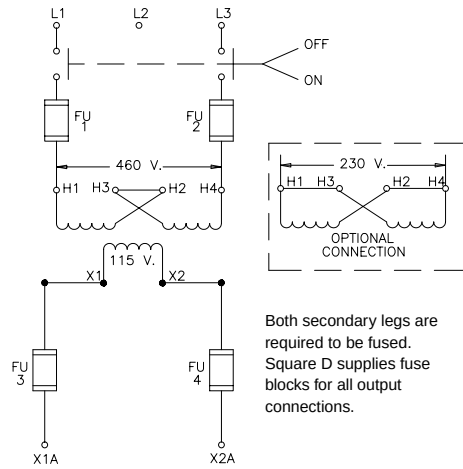
- Ring lugs for all terminations
- Wire color combinations:
 - Black 480
 - Red Hot 120
 - White Neutral 120
- Wires labeled per GM specification

Wiring Diagrams

Ungrounded Secondaries

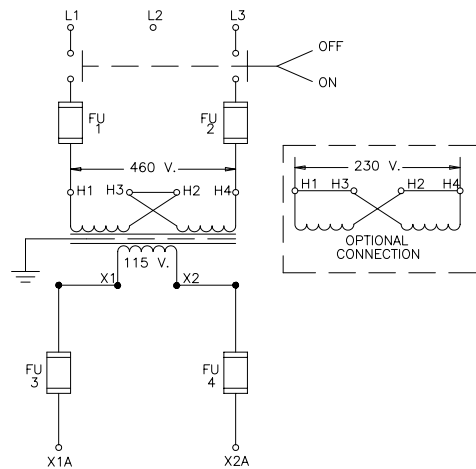
Square D offers all transformer disconnects with ungrounded 120 V secondaries. Please contact your local Square D field office for part numbers and pricing.

Fused Secondary Legs

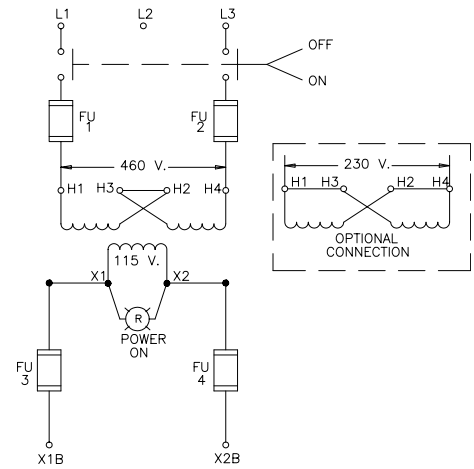


Options available with the ungrounded secondary

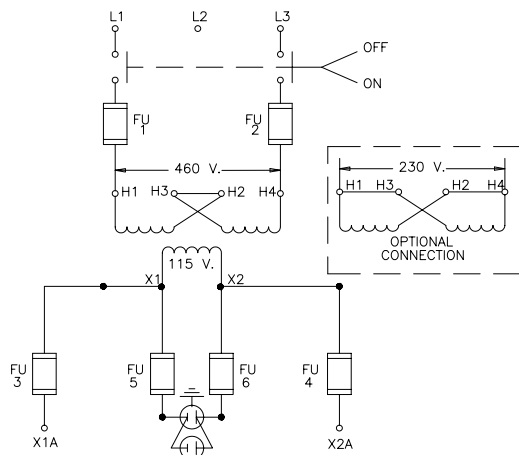
Electrostatically shielded transformer



"ON" red warning light



Duplex receptacle



NOTE: The duplex receptacle is an ungrounded neutral circuit to be used for portable PC power only. It should not be used as a power source for any other equipment.



Cross Reference to Old Part Numbers

Old Square D Number	Old Square D Number	New Square D Number
SK5271M	SK250G1	MN100G0D1
SK5271N	SK250G1	MN250G0D1
SK5271Q,R	SK250G1	MN250G1D1
SK5271SJ	SK250G1	MN500G1D1
SK5271T,K	SK250G1	MN750G1D1
SK5271U	SK250G1	MN1000G0D1
SK5271V	SK250G2	MN1500G2D1
SK5271W	SK250G2	MN2000G2D1
SK5271X	SK250G2	MN3000G2D1
SK5271X	SK250G2	MN3000G2D1

FREQUENTLY ASKED QUESTIONS

Q: What is the main application for the device?

A: To supply auxiliary 120 Volts when de-energizing a control panel. Basically the equipment's features eliminate the need for extension cords. They provide internal lighting for the panel, a receptacle for portable PC power, a receptacle for maintenance equipment, and power to the PLC for re-programming.

Q: Who are the major users of transformer disconnects?

A: The automotive industry is the major user of these devices.

Q: Can the devices be field-modified?

A: No. Due to UL and CSA filing, the 9070 SK units must be factory-modified with special features.

Q: What special features are usually required?

A: Each automotive customer requires different features to be supplied on their unit. Square D is aware of each customer's requirements, and Product Support can help with determining the proper part number for your application.

Q: When would a customer require an ungrounded 120 Volts?

A: The ungrounded circuits are used in conjunction with electrostatically shielded transformers for powering sensitive equipment.

Q: Can receptacles be included on the ungrounded units?

A: Yes. Duplex receptacles use an ungrounded neutral circuit. They are used for portable PC power only; they cannot be used as a power source for any other equipment.



TECHNICAL INFORMATION

Primary Fusing To Meet NEC Code

VA	120 Volts			240 Volts			480 Volts			600 Volts		
	Primary Current Amperes	Fuse Rating w/ Secondary Protection	Fuse Rating w/o Secondary Protection	Primary Current Amperes	Fuse Rating w/ Secondary Protection	Fuse Rating w/o Secondary Protection	Primary Current Amperes	Fuse Rating w/ Secondary Protection	Fuse Rating w/o Secondary Protection	Primary Current Amperes	Fuse Rating w/ Secondary Protection	Fuse Rating w/o Secondary Protection
25	0.21	1/2	1/2	0.10	1/4	1/4	0.05	1/8	1/3	0.04	1/10	1/10
50	0.41	1	1	0.21	1/2	1/2	0.10	2/10	2/10	0.05	2/10	2/10
75	0.63	1-1/2	1-1/2	0.31	6/10	6/10	0.15	3/10	3/10	0.13	3/10	3/10
100	0.83	2	2	0.42	1	1	1.21	1/2	1/2	0.17	4/10	4/10
150	1.25	3	3	0.63	1-1/2	1-1/2	0.31	6/10	6/10	0.25	6/10	6/10
200	1.67	4	4	0.83	2	2	0.42	1	1	0.33	8/10	8/10
250	2.06	5	3-2/10	1.04	2-1/2	2-1/2	0.52	1-1/2	1-1/4	0.42	1	1
300	2.50	6-1/4	4	1.25	3	3	0.63	2	1-1/2	0.50	1-1/3	1-1/3
350	2.92	7	4-1/2	1.45	3-1/2	3-1/2	0.73	2-1/2	1-8/10	0.56	1-4/10	1-4/10
500	4.17	10	5-1/4	2.03	5	3-2/10	1.04	3	2-1/2	0.83	2	2
750	6.25	15	10	3.13	7-1/2	5	1.55	3-1/2	3-1/2	1.25	3	3
1000	6.33	20	12	4.17	10	6-1/4	2.05	5	3-2/10	1.67	4	4
1500	12.50	N/A	15	6.25	15	10	3.13	7-1/2	5	2.50	6-1/4	4
2000	13.66	N/A	20	8.33	20	12	4.17	10	6-1/4	3.33	8	5
3000	N/A	N/A	N/A	12.50	N/A	15	6.25	15	10	5.00	12	6.25
5000	N/A	N/A	N/A	N/A	N/A	N/A	10.42	25	15	8.33	20	12

Notes:

1. Recommended fuse sizes per NEC article 450-3.
2. Transformers with primary only, select protection at 125%. If standard size rating is not available, select next higher rating.
3. Transformers with primary only and current rating less than 9 A, select protection less than 167%.
4. Transformers with primary only and current rating less than 2A, select protection less than 300%.
5. Transformers with primary and secondary, select primary protection at no more than 250% and secondary at 125%. If a standard size rating is not available, go to next higher rating.

Fuse Sizing, Description, and Catalog Number (by Manufacturer)

Size	Description	Manufacturer		
		Bussman	Littlefuse	Gould-Shawmut
1-1/2 x 13/52 inch Midget Fuse	Time Delay, Rejection-type, Class CC	FNO-R LP-CC	KLMR KLDR	ATDR ATQR ATMR
1-1/2 x 13/52 inch Midget Fuse	Time Delay	FNM, FNQ	FLQ, FLM, FLA	ATQ, TRM, QM
1-1/4 x 1/4 inch	Time Delay	TDC-11, MDL, MDQ, MDA	3AG, 313/315 3AB, 323/325	GDL
5 x 13/16 inch	Time Delay	FRS-R	FLSR	TRS
3 x 3/4	On time	NON	NLN	OT

Notes:

1. These fuses are not supplied by Square D.
2. This table is provided for primary fusing recommendation only. Secondary fusing must be specified by the customer.
3. All primary fuse options offered by Square D require rejection-type fuses.



PRICING

NEMA Type 1

Voltage Rating	Catalog Number	List Price	Discount Schedule
100	9070MN100G0D1	\$ 417	CP1
250	9070MN250G0D1	464	CP1
	9070MN250G1D1	422	CP1
500	9070MN500G0D1	511	CP1
	9070SK500G1D1	464	CP1
750	9070MN750G1D1	522	CP1
	9070SK750G3D1	601	CP1
1000	9070MN1000G1D1	686	CP1
	9070SK1000G3D1	789	CP1
1500	9070SK1500G2D1	1,015	CP1
	9070SK1500G3D1	1,168	CP1
2000	9070SK2000G2D1	1,154	CP1
	9070SK2000G3D1	1,328	CP1
3000	9070SK3000G2D1	1,464	CP1
	9070SK3000G3D1	1,684	CP1
5000	9070SK5000G4D1	2,564	CP1

NEMA Type 12

Voltage Rating	Catalog Number	List Price	Discount Schedule
250	9070SK250A2D1	\$ 1,023	CP1
	9070SK250A3D1	1,100	CP1
500	9070SK500A2D1	1,066	CP1
	9070SK500A3D1	1,146	CP1
750	9070SK750A2D1	1,129	CP1
	9070SK750A3D1	1,214	CP1
1000	9070SK1000A2D1	1,161	CP1
	9070SK1000A3D1	1,248	CP1
1500	9070SK1500A2D1	1,277	CP1
	9070SK1500A3D1	1,373	CP1
2000	9070SK2000A2D1	1,361	CP1
	9070SK2000A3D1	1,463	CP1
3000	9070SK3000A2D1	1,699	CP1

Factory Modifications

Description	Form	List Price Adder
Special voltage	Change voltage code	\$ 211
55° C rise transformer	C	106
Electrostatically shielded transformer	E23	100
Additional 1 1/2-inch x 13/32-inch secondary fuse block	F11	37
Replace 1 1/2-inch x 13/32-inch primary fuse holder with 5-inch x 13/16-inch primary fuse holder	F31	80
Replace 5-inch x 13/16-inch primary fuse holder with 1 1/2-inch x 13/32-inch primary fuse holder	F32	80
Increase enclosure size	Change G1 to G2	106
Duplex receptacle, door mounted	G13	100
Class A, GFI, duplex receptacle, door mounted	G14	222
Two duplex receptacles, door mounted	G16	201
Convert NEMA 12 enclosure to NEMA 3R	N3	34
"ON" red warning pilot light	P1	53
"ON" red warning pilot light, with strain relief	P2	58



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