CONTACTORS, RELAYS

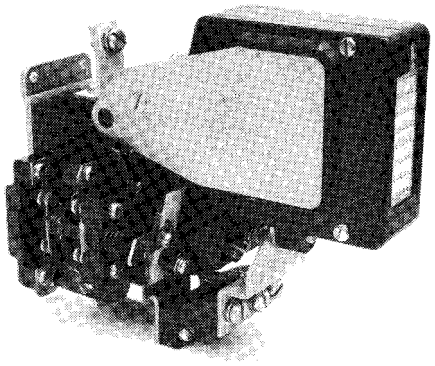


Fig. 1. DS303 Size 3 with auxiliary interlock

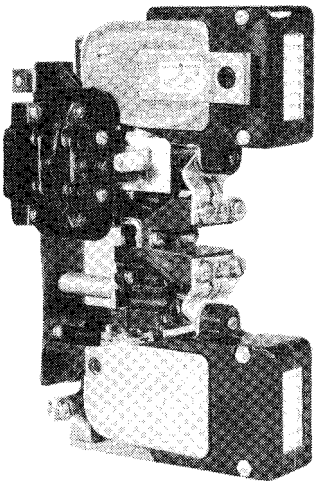


Fig. 2. DS303 Size 1 1NO/1NC poles

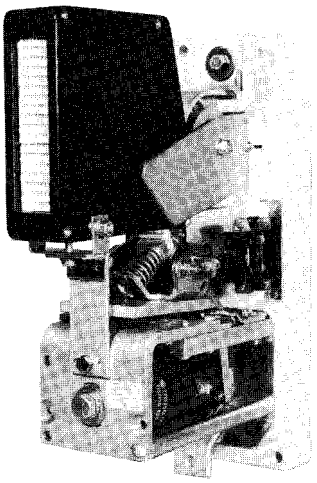


Fig. 3. DS303 Size 6 with auxiliary interlock

WHERE TO USE

Use for heavy duty dc industrial applications such as steel mills, cranes, material handling, rapid transit as well as general-duty machine tool, textile machinery and similar applications. Contactors have a steel base insulated from the electrical circuits. They can be mounted on either metal or insulating panels.

NEMA Size 1-5 are available in various NO and NC pole combinations. Sizes 6-10 available in NO pole only.

Advanced design arc chutes (non-asbestos) provide make or interrupt ratings of up to ten times the contactor ratings for 600-volt applications and four times the contactor ratings for 1000-volt applications. The arc is completely extinguished within the arc chute structure.

Select-contactor ratings on the basis of both dc current-carrying capacity and blow-out ratings. The blowout rating establishes the contactor current rating and interrupting rating. Larger contactors are used because the increased tip gap provides improved interruption on the lower current application.

The function of the blowout coil is to move the arc upward at the same time the contacts are opening, thus forcing the arc away from the tips and into the arc chute at a faster rate.

For no-load operation choose contactors from Step 1 page 5-3. Earlier designs for this application did not contain arc chute or blow-out coil. Contactors listed contain arc chute and blow-out coils and will operate under these same conditions.

For motor and resistive loads choose contactors with the required dc current-carrying capacity as given in the application table on page 5-6.

For resistive and motor loads through 1000-volt motor applications, specify units with maximum blowout ratings listed for each size from Step 1 tables.

For moderately inductive loads, such as motor fields with discharge resistors, select contactors with blowout ratings two to three times rated full-load dc current. The discharge resistor can be permanently connected in parallel with the load or can be connected across the load with a normally closed pole. A contactor with NO and NC pole can be used. The normally open pole will disconnect power. The discharge resistor should not exceed four times the load resistance for 250 volts or two times the load resistance for 600 volts.

For motor and resistive loads, contactors will interrupt ten times blowout rating at 600 volts and four times blowout rating at 1000 volts, maximum. See application table, page 5-6.

For highly inductive loads, such as brake coils without discharge resistors, use two poles in series for opening both sides of the line. For highly inductive loads such as IC9528A106 brakes or equivalent magnets, choose contactors with blowout ratings equal to load current.

Normally closed pole applications. For listed NC devices, only 1.5 times make rating can be obtained. For more severe or larger make ratings of up to 10 times rated current, see IC2800Y105 and Y106, page 5-10.

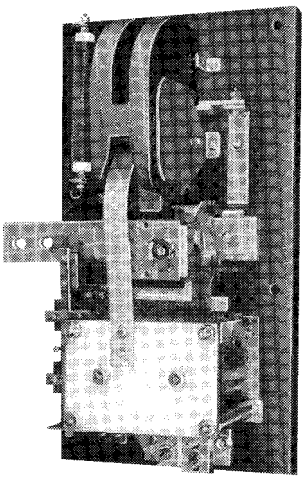


Fig. 4. IC2800Y108 Size 9

Order interlocks either factory-mounted or separately supplied depending upon anticipated use. If applications are known in advance, factory-mounted interlocks can be ordered. If flexibility in application is desired, order interlocks and mounting kits separately and mount as needed. Select voltage range depending on application.

Mechanical interlocks—Mechanical interlocks between two contactors allows only one contactor to close. See page 5-5.

Heavy-duty Contactors

HOW TO ORDER (Cont'd)

By catalog number—Order contactors by complete DS number, where given, including form, coil number and interlock designation (if required). Accessories for ac operation (rectifiers, resistors, auxiliary contactors, etc.) will automatically be supplied as separate items by selection of proper coil number. See examples following.

EXAMPLE: 600-volt open contactor, unit mounted, 25 amp, 1 NO pole, 25-amp blowout (Step 1) 115-volt dc coil (Step 2), with 2 NO interlocks for left-hand mounting (Step 3).

DS303 A1A01EX A003 XF
Select Form Step 1
Coil Number Step 2
Interlock Step 3

EXAMPLE: Same as first example except for 115-volt ac operation and 2 NO interlocks for right-hand mounting.

DS303 A1A01EX A650 XG
Select Form Step 1
Coil Number Step 2
Interlock Step 3

REFERENCES:

See page 5-4.

HOW TO SELECT

Step 1—Select Form (See page 5-9 for coil and interlock suffix)

NEMA Size	8 hr Open Rating Amp Dc †	Poles	Blowout Coil Rating Amp, DC ‡		Maximum 600 volts	601-1000 volts (1250 Volts - refer to GE)
			NO Pole	NC Pole	**DS303 Form**	**DS303 Form**
1	25	1 NO	10		**A1A01DX. . .**	**B1A01DX. . .**
		1 NO	25		**A1A01EX. . .**	**B1A01EX. . .**
		1 NC		10	**A1B01XD. . .**	**B1B01XD. . .**
		1 NC		25	**A1B01XE. . .**	**B1B01XE. . .**
		1 NO 1NC	25	25	**A1D01EE. . .**	**B1D01EE. . .**
2	50	1 NO	50		**A2A01FX. . .**	**B2A01FX. . .**
		1 NC		50	**A2B01XF. . .**	**B2B01XF. . .**
		2 NO	10		**A2C01DX. . .**	**B2C01DX**
		2 NO	25		**A2C01EX. . .**	**B2C01EX. . .**
		2 NO	50		**A2C01FX. . .**	**B2C01FX. . .**
		1 NO 1 NC	50	50	**A2D01FF. . .**	**B2D01FF. . .**
3	100	1 NO	50		**A3A01FX. . .**	**B3A01FX. . .**
		1 NO	100		**A3A01GX. . .**	**B3A01GX. . .**
		1 NC		100	**A3B01XG. . .**	**B3B01XG. . .**
		2 NO	100		**A3C01GX. . .**	**B3C01GX. . .**
		1 NO 1 NC	100	100	**A3D01GG. . .**	**B3D01GG. . .**
		2 NO 2 NC	50	50	**A3F01FF. . .**	**B3F01FF. . .**
		2 NO 2 NC	100	100	**A3F01GG. . .**	**B3F01GG. . .**
4	150	1 NO	150		**A4A01HX. . .**	**B4A01HX. . .**
		1 NC		150	**A4B01XH. . .**	**B4B01XH. . .**
		2 NO	150		**A4C01HX. . .**	**B4C01HX. . .**
		1 NO 1 NC	150	150	**A4D01HH. . .**	**B4D01HH. . .**
5	300	1 NO	300		**A5A01JX. . .**	**B5A01JX. . .**
		1 NC		300	**A5B01XJ. . .**	**B5B01XJ**
		2 NO	300		**A5C01JX. . .**	**B5C01JX. . .**
		1 NO 1 NC	300	300	**A5D01JJ. . .**	**B5D01JJ. . .**
					600 Volts—Front-connected	600 Volts—Back-connected
6	600	1 NO	600		**A6A01KX. . .**	**A6A02KX. . .**
7	900	1 NO	900		**A7A01LX. . .**	**A7A02LX. . .**
					750 Volts—Front-connected	750 Volts—Back-connected
6	600	1 NO	600		**F6A01KX. . .**	**F6A02KX. . .**
7	900	1 NO	900		**F7A01LX. . .**	**F7A02LX. . .**
					600 Volts—Front-connected Mounted	600 Volts—Back-connected Mounted
					IC2800 Form	IC2801 Form
8	1350*	1 NO	1500		**Y107A. . .**	**AX126G. . .****
9	2500	1 NO	2500		**Y108A. . .**	**AY142G. . .****
10	3250	1 NO	3250		**Y130A. . .**	**AY300G. . .**
					750 Volts—Front-connected Mounted	750 Volts—Back-connected Mounted
					IC2800 Form	IC2801 Form
8	1350*	1 NO	1500		**Y107AA. . . (1000 Volts)**	**AX1. . .****
9	2500	1 NO	2500		**Y108S. . . (1000 Volts)**	**AY1XX. . .****
10	3250	1 NO	3250		**Y130. . .**	**AY300G. . .**
	6000	1 NO	6000		**AY3XX (1000 Volts)**	**AY301G (1000 Volts)**

* Non-NEMA rating 1500 amperes.

† For purposes of contactor selection, 8-hr rating is synonymous with continuous rating.

‡ The function of the blowout coil is to move the arc upward at the same time the contacts are opening, thus forcing the arc away from the tips and into the arc chute at a faster rate.

** Back connected—Unmounted forms are IC28001178 and IC28001180.

Heavy-duty Contactors

HOW TO SELECT (Cont'd)

Step 2—Add Coil Number‡ (See Page 5-9 for other voltages)

NEMA Size	Poles	Dc Operation**								Ac Operation§				AC Operationϕ			
		115/120 Volts	230/250 Volts	500 Volts	550 Volts	38 Volts	62/68 Volts	80 Volts	100 Volts	115 Volts	230 Volts	460 Volts	575 Volts	115 Volts	230 Volts	460 Volts	575 Volts
1-7	DS303 Forms	**A003**	**A002**	**A004**	**A005**	**A013λ**	**A016**	**A019**	**A021**	**A650**	**A651**	**A652**	**A653**	**A680**	**A681**	**A682**	–
8	Listed Forms	**102**	**103**	**107¶**	**106△**	**N/A**	**N/A**	**N/A**	**N/A**	**650**	**651**	**652**	**653**	–	–	–	–
9-10	Listed Forms	**101**	**102**	**130**	**104**	**N/A**	**N/A**	**N/A**	**N/A**	**650**	**651**	**652**	**653**	–	–	–	–

N/A = Not Available
‡ Coil terminals on right. Left-side mounting available on request.
§ Includes rectifier and resistor, see page 5-7.
**** For other DC coil voltage, see page 5-9**
ϕ Includes rectifier only. Resistor not used.
¶ For 500, 550 volts.
△ For 600 volts only.
λ 38 volt form with 50% pickup voltage is A713

Step 3—Add Interlock Designation

Drive Systems-S(A60000)

NEMA Size	Interlock Arrangement		Application Notes	0-48 V Dc+	49-600 V Dc 0-600 V Ac
	Left-hand Side	Right-hand Side		Designation λ	Designation λ
1-5 **6-7Θ**	1 NO, 1 NC 2 NO 2 NC	. . . . 1 NO, 1 NC 2 NO 2 NC	Left-hand mounting preferred with coil terminals on right	**DH**-Special **DF**-Special **DK**-Special **DJ**-Special **DG**-Special **DL**-Special	**XH** **XF** **XK** **XJ**-Special **XG**-Special **XL**-Special
2ϕ, 3Ψ **4-7**	2 NO 2 NC 1 NO, 1 NC 2 NO 2 NO 1 NO,1 NC	2 NO 2 NC 2 NC 1 NO, 1 NC 2 NC 1 NO, 1 NC	Coil Terminals on right	**DM**-Special **DS**-Special **DR**-Special **DN**-Special **DP**-Special . . .	**XM**-Special **XS**-Special **XR**-Special **XN** **XP** **XT**
8-10	2 NO, 2 NC 4 NO, 4 NC	. . . . . . 2 NO, 2 NC 4 NO, 4 NC	2 NC contacts in series required to insert series resistor	. . . .	**W** **S** **BW** **BS**

ϕ 2 NO pole Size 2 only.
Ψ 1 NO 2 NO pole Size 3. (Can accept only 1 interlock for 0-48v Dc)
λ Interlock less cover. .00 Two contacts equal one interlock. Order by description.
+ 48-volt interlocks have special tips for making circuits at minimums of 500 millivolts and 0.018 amperes.

Interlock contact arrangement—Interlock contacts can be changed by the purchaser from normally open to normally closed and vice versa, if necessary. To insure proper clearance on NO-NC forms, locate NC contact furthest from plunger head.

Time rating of normally closed contactors (IC2800 contactors)—coils of contactors with normally closed poles are for intermittent duty only.The coils can be energized 30 percent of the time but no more than 10 minutes continuously or 20 minutes continuously if only once out of three hours time. For continuous operation refer to company.

REFERENCES

Instruction Book
DS303 ..... GEK-83756
IC2800 Y107, Y108 ..... GEH-751
Y130,
1178, 1180, 1181
Y106 ..... GEH-3057

RENEWAL PARTS

DS303 A1, B1 ..... GEF-4647
A2,B2 4648
A3,B3 4649
A4,B4 4650
A5,B5 4651
A6 6050
A7 6051
IC2800 Y107 ..... GEF-4606
Y108 4607
1178 4324
1180 4343
Y106 ..... GEF-4126

Heavy-duty Contactors

Step 4—Specify Interference Interlocks (when necessary to interference-interlock two adjacent contactors)

NEMA Size	Poles	Interference Interlock	Contactor Spacing (in.) Center Line to Center Line
2	2 NO	**6923809G12**	6 5/8
3	1 NO, 1 NC, 1 NO-1 NC	**6923809G14**	4 1/2
	2 NO	**6923809G12**	6 5/8
4	1 NO, 1 NC, 1 NO-1 NC	**6923809G8**	5 1/2
	2 NO	**6923809G12**	6 5/8
5	1 NO, 1 NC, 1 NO-1 NC	**6923809G8**	5 1/2
	2 NO	**6923809G12**	6 5/8
6 or 7	1 NO	**4969078G2-obsolete**	6 1/2
8 or 9	1 NO	. . .	Refer to Company

NOTE: Mechanical interlocks are used as a supplement to electrical interlocks when required for additional protection. When mechanical interlocks are used, the electrical interlocks must be mounted on the outside of each contactor.
Contactor spacing is horizontal distance between center lines of contactors. For additional combinations refer to Company.
*When used with contactors containing base mounted suppressors, refer to factory.

HOW TO SELECT INTERLOCKS FOR STOCKING OR FIELD MODIFICATION (A + B)

Step A—Select Interlock Contact Blocks

Circuit Arrangement	48 V and Below Dc	49-600 V Dc, 0-600 V Ac
	Contact Block	Contact Block
2 NO 2 NC 1 NO, 1 NC	**IC2956A205A** **IC2956A205B** **IC2956A205C**	**IC2956A200A** **IC2956A200B** **IC2956A200C**

Step B—Select Mounting Kit (One required per contact block)

Contactor		Left-hand Mounting—Coil terminals on right (Preferred location)	Right-hand Mounting—Coil terminals on left
NEMA Size	Main Poles	Mounting Kit*	Mounting Kit*
1	All	**IC2956A202J**	**IC2956A202K**
2	1 NO 1 NC 1 NO, 1 NC	**IC2956A202J**	**IC2956A202K**
2, 3	2 NO	**IC2956A202G**	**IC2956A202H**
3	1 NO 1 NC 1 NO, 1 NC	**IC2956A202C**	**IC2956A202D**
4, 5	1 NO 1 NC 1 NO, 1 NC	**IC2956A202E**	**IC2956A202F**
4, 5	2 NO	**IC2956A202G**	**IC2956A202H**
6, 7	1 NO	**IC2956A203L**	**IC2956A203L**

*For interlock blocks on both sides, refer to company.

Heavy-duty Contactors

CONTACTOR RATINGS (NORMALLY OPEN POLES ONLY)

NEMA Size	Carry (open ratings in Amperes) 600 or 1000 Volts Dc				Make Amperes of 600 or 1000 Volts Dc‡		Interrupt Amperes Dc Motor Circuit	
	8-hr†	60-min	30-min	10-min	NEMA	Maximum	600 Volts	1000 Volts
1	25	30	38	50	100	250	250	100
2	50	67	75	100	200	500	500	200
3	100	133	150	180	400	1000	1000	400
4	150	200	225	300	600	1500	1500	600
5	300	400	450	600	1200	3000	3000	1200
6	600	800	900	1200	2400	6000	6000	. . .
7	900	1200	1350	1800	3600	9000	9000	. . .
8	1350*	2000	2250	3000	5400	9000	Four times	. . .
9	2500	3350	3750	5000	10000	15000	blowout	. . .
10	3250	. . .	. . .	. . .	NA	15000	rating	. . .

* Non-NEMA rating 1500 amperes.
† For purposes of contactor selection, 8-hr rating is synonymous with continuous rating.
‡ NEMA standard is 4 times 8-hr rating at 600-volts maximum.
Interlock ratings—Same as for relays, page 5-20.

APPLICATION (MOTOR AND RESISTIVE LOADS)§

NEMA Size	Motor Horsepower				Resistive Heating Loads kW	
	Reduced-voltage Starting Line Contactor			Crane Duty: 30 Min, 60 Min Mill Duty: 60 Min		
	115/120 V	230/240/250 V	500/550 V	230/240/250 V	115/120 V	230 V
1	3	5	5	7.5	2.5	5.0
2	5	10	20	15	5.2	10.4
3	10	25	50	35	10.4	20.8
4	20	40	75	55	15.5	31.0
5	40	75	150	110	31.0	62.0
6	75	150	300	225	62.0	124.0
7	110	225	450	330	. . .	. . .
8	175	350	700	500	. . .	. . .
9	300	600	1200	1000	. . .	. . .

§ For guidance only. Motor full-load amperes must not exceed contactor rating.
Horsepower ratings—Select contactors on the basis of highest horsepower of which a motor is rated (or operated if operated at a service-factor rating).
Intermediate accelerating contactors—Select units such that the 8-hour rating will not be less than 0.25 times the accelerating peak.

CONTROL POWER REQUIREMENTS

NEMA Size	Poles	Number of Contactors	Current Requirements-Amperes Volts Dc				Burden-Volt Amperes§ Volts Ac		
			115/120	230/240/250	500	550	115	230	460
1 & 2	1 NO	1	0.133	0.076	0.069	0.071	20.0	18.5	26.0
	1 NC	1	0.133	0.076	0.069	0.071	20.0	18.5	26.0
	1 NO-1 NC	1	0.133	0.076	0.069	0.071	20.0	18.5	26.0
2	2 NO	1	0.320	0.173	0.087	0.069	58.0	60.0	63.0
3	1 NO	1	0.135	0.083	0.038	0.028	33.0	34.5	38.8
	1 NC	1	0.135	0.083	0.038	0.028	33.0	34.5	38.8
	1 NO-1 NC	1	0.135	0.083	0.038	0.028	33.0	34.5	38.8
	2 NO	1	0.320	0.173	0.087	0.069	58.0	60.0	63.0
4 & 5	1 NO	1	0.320	0.173	0.087	0.069	58.0	60.0	63.0
	1 NC	1	0.320	0.173	0.087	0.069	58.0	60.0	63.0
	2 NO	1	0.320	0.173	0.087	0.069	58.0	60.0	63.0
	1 NO-1 NC	1	0.320	0.173	0.087	0.069	58.0	60.0	63.0
6 & 7	1 NO	1	48 watts						
8 & 9	1 NO	1	500 watts pickup, 180 watts holding						

§ **Volt-ampere burden** includes power requirements of rectifier, series resistor.

Dc Contactors-General Information

ACCESSORIES (Supplied for separate mounting. See below for dimensions)

NEMA Sizes 1-5 (DS303 only. Included in contactor price)

NEMA Size	Poles	Volts	Series Resistor, Cat. No. 68A7004-	Rectifier
1 & 2	1 NO 1 NC 1 NO, 1 NC	500 dc 550 dc 115 ac, 25, 50, 60 Hertz-"A650" 230 ac, 25, 50, 60 Hertz-"A651" 460 ac, 25, 50, 60 Hertz-"A652" 575 ac, 25, 50, 60 Hertz-"A653"	A50E4000DA-TH A50E5000DA-TH A50E200DA-TH A50E500DA-TH A50E4000DA-TH A50E6500DA-TH	. . . . . . IC3500A403C2 IC3500A403C6 IC3500A403C5 IC3500A403C8
2 & 3	2 NO	115 ac, 25, 50, 60 Hertz-"A650" 230 ac, 25, 50, 60 Hertz-"A651" 460 ac, 25, 50, 60 Hertz-"A652" 575 ac, 25, 50, 60 Hertz-"A653"	A50E25DA-TH A50E150DA-TH A50E750DA-TH A50E750DA-TH	IC3500A403C2 IC3500A403C6 IC3500A403C5 IC3500A403C8
3	1 NO 1 NC 1 NO, 1 NC	115 ac, 25, 50, 60 Hertz-"A650" 230 ac, 25, 50, 60 Hertz-"A651" 460 ac, 25, 50, 60 Hertz-"A652" 575 ac, 25, 50, 60 Hertz-"A653"	A50E150DA-TH A50E500DA-TH A50E2000DA-TH . . .	IC3500A403C2 IC3500A403C6 IC3500A403C5 IC3500A403C8
4 & 5	1 NO 1 NC 1 NO, 1 NC 2 NO	115 ac, 25, 50, 60 Hertz-"A650" 230 ac, 25, 50, 60 Hertz-"A651" 460 ac, 25, 50, 60 Hertz-"A652" 575 ac, 25, 50, 60 Hertz-"A653"	A50E25DA-TH A50E150DA-TH A50E750DA-TH A50E750DA-TH	IC3500A403C2 IC3500A403C6 IC3500A403C5 IC3500A403C8

NEMA Sizes 6-9 (Included in contactor price)

Contactor Size	Volts	Rectifier‡		Series Resistor		Holding Resistor		Aux. Contactorλ	
		Cat. No.	Qty	Cat. No.	Qty	Cat. No. 68A7004	Qty	**CR2810**	Qty
Ac Operation—60 Hertz									
6 & 7	115 230 460	**IC3500A403C2** **IC3500A403C6** **IC3500A403C5**	1 1 1	. . . **IC9033E2S8¶** **IC9033A2Y5§**	. . . 1 1	. . . .	. . . .	**A14AC2** **A14AC3** **A14AC4**	1 1 1
8	115 230* 460*	**IC3500A403C2** **IC3500A403C6** **IC3500A403C5**	1 1 1	. . . . . . **68A7004-A100G100EA-TH**	 1	**A100G125EA-TH** **A100G500EA-TH** **A100G1500EA-TH**	1 1 1	**A14AC2** **A14AC3** **A14AC4**	1 1 1
9	115	**IC3500A403C2**	1	. . .	. . .	**A100G10EA-TH** **A100G25EA-TH**	1† 1†	**A14C2**	1
	230*	**IC3500A403C6**	1	. . .	. . .	**A100G75EA-TH** **A100G10EA-TH**	2† 1†	**A14C3**	1
	460*	**IC3500A403C5**	1	. . .	. . .	**A100G250EA-TH** **A100E150EA-TH**	2† 1†	**A14C4**	1
Dc Operation									
8*	115/120	. . .	. . .	. . .	. . .	**A100G100EA-TH**	1	. . .	. . .
8*	230/250	. . .	. . .	. . .	. . .	**A100G500EA-TH**	1	. . .	. . .
8*	500/550	. . .	. . .	. . .	. . .	**A100G1500EA-TH**	1	. . .	. . .
9*	115/120	. . .	. . .	. . .	. . .	**A100G25EA-TH**	2	. . .	. . .
9*	230/250	. . .	. . .	. . .	. . .	**A100G100EA-TH**	2	. . .	. . .
9*	500	. . .	. . .	. . .	. . .	**A100G350EA-TH**	2	. . .	. . .
9*	550	. . .	. . .	. . .	. . .	**A100G500EA-TH**	2	. . .	. . .

* Two normally closed interlock circuits needed on Size 8 and 9 contactors to insert holding resistor in coil circuit.

¶ Set slider at 250 ohms.

§ Tap at 750 ohms.

† Resistors connected in series.

‡ Rectifiers have built-in transient protection.

λ Auxiliary contactor used to open both sides of rectifier.

ACCESSORY DIMENSIONS (In inches)

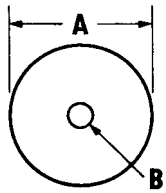


Fig. 4A. Mounting requirements for resistor

Resistor Form	Stud Length	Stud Dia B	Depth Front of Base	Resistor Dia A
IC9033A2, E2	9 3/8	5/16	8 5/8	2 1/16
68A7004A50E B50E	7 3/4	1/4	6 3/4	1 1/8
68A7004A100G B100G	8 3/4	1/4	9 3/4	1 1/8

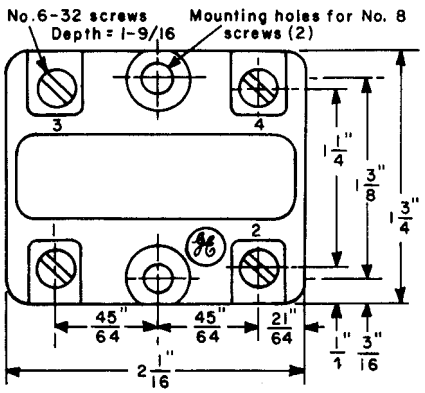


Fig. 4B. Rectifiers IC3500A403C

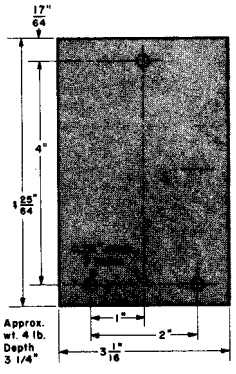
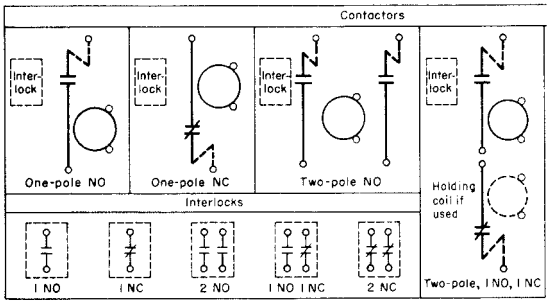


Fig. 4C. CR2810A14AC Auxiliary Contactor

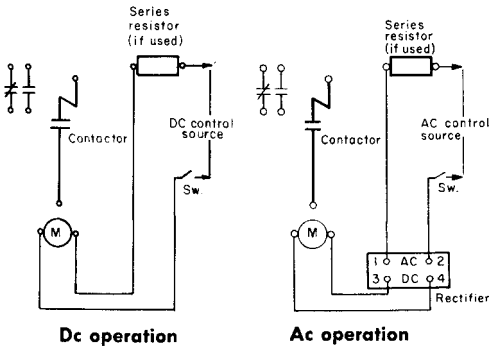
CONTACTORS, RELAYS

Heavy-duty Contactors

WIRING SYMBOLS (FRONT VIEW)



TYPICAL DIAGRAM



MOUNTING DIMENSIONS

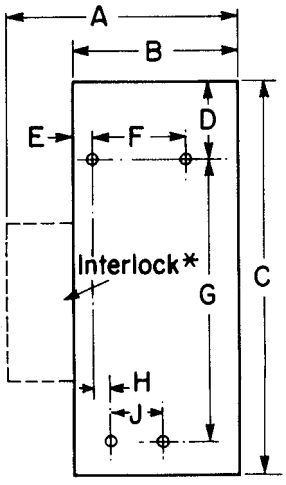


Fig. 5.
*Interlocks shown are left-hand mounted. Coil terminals on right.

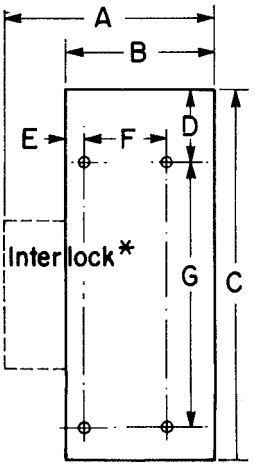


Fig. 6.

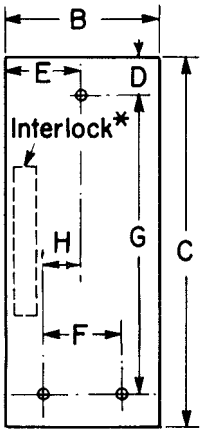
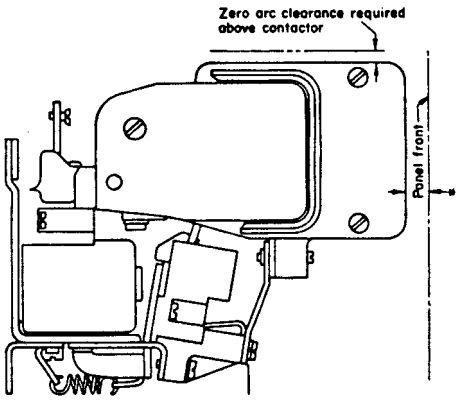


Fig. 7.

ARC CLEARANCES

Minimum arc clearances in front and above contactor arc chutes when used on 1000-volt maximum motor circuits)



	NEMA Size		
	1-5	6-7	8-9
Insulated surface	0.5″	1.8″	4.0″
Non-insulated surface	1.0″	3.0″	8.0″

*** Insulation 1/8-inch electrical-class polyester insulation or equivalent.**

NEMA Size	IC303A or IC303B Form	Figure No.	Dimensions in Inches												Weight Approx. Lbs.
			A	B	C	D	E	F	G	H	J	Depth	Mounting Base Thickness	Mounting Base Hole diameter	
1	—1A01DX, EX	5	3 1/4	2 1/4	5 3/8	1 5/8	1/4	2 11/32	3 1/2	11/16	—	6 1/2	1/16	13/64	4
	—1B01XD, XE	6	3 1/4	2 1/4	8 5/8	1/4	1/4	2 11/32	6 1/2	—	—	6 1/2	3/32	13/64	4
	—1D01EE	6	3 1/4	2 1/4	9 3/4	1 5/8	1/4	2 11/32	6 1/2	—	—	6 1/2	3/32	13/64	6
2	—2A01EX, FX	5	3 1/4	2 1/4	5 3/8	1 5/8	1/4	2 11/32	3 1/2	11/16	—	6 1/2	1/16	13/64	4
	—2B01XF	6	3 1/4	2 1/4	8 5/8	1/4	1/4	2 11/32	6 1/2	—	—	6 1/2	3/32	13/64	4
	—2C01DX, EX, FX	6	4 3/4	4 1/2	7 3/4	2 3/8	1/4	4	4 5/8	1 1/16	1 7/8	9 5/8	1/8	5/16	8
	—2D01FF	6	3 1/4	2 3/4	9 3/4	1 5/8	1/4	2 11/32	6 1/2	—	—	6 1/2	3/32	13/64	6
3	—3A01FX, GX	5	3 3/4	2 5/8	6 1/2	1 5/8	1/4	1 1/2	4 1/2	1/4	—	8	1/8	13/64	6
	—3B01XG	6	3 3/4	2 5/8	10 1/2	11/32	1/4	1 1/2	8 17/32	—	—	8	1/8	13/64	6
	—3C01GX	5	4 3/4	4 1/2	7 3/4	2 3/8	1/4	4	4 5/8	1 1/16	1 7/8	9 5/8	1/8	5/16	15
	—3D01GG	6	3 3/4	2 5/8	11 25/32	1 5/8	1/4	1 1/2	8 17/32	—	—	8	1/8	13/64	12
	—3F01FF, GG	6	—	6 1/8	12 13/16							9 5/8	1/8		24
4	—4A01HX	5	4 3/4	4 1/2	8 3/4	3 1/16	1/4	4	5 5/16	1 1/16	1 7/8	10 7/8	1/8	5/16	16
	—4B01XH	6	4 3/4	4 1/2	13 1/2	1 11/16	1/4	4	8 9/16	—	—	10 7/8	1/8	5/16	16
	—4C01HX	7	—	5 5/8	9 1/4	1 3/4	2 13/16	1 7/8	6 23/32	15/16	—	10 7/8	1/8	5/16	21
	—4D01HH	6	4 3/4	4 1/2	15 3/4	3 1/4	1/4	4	9 1/4	—	—	10 7/8	1/8	5/16	20
5	—5A01JX	5	4 3/4	4 1/2	8 3/4	3 1/16	1/4	4	5 5/16	1 1/16	1 7/8	10 7/8	1/8	5/16	16
	—5B01XJ	6	4 3/4	4 1/2	13 1/2	1 11/16	1/4	4	8 9/16	—	—	10 7/8	1/8	5/16	16
	—5C01JX	7	—	5 5/8	9 1/4	1 3/4	2 13/16	1 7/8	6 23/32	15/16	—	10 7/8	1/8	5/16	21
	—5D01JJ	6	4 3/4	4 1/2	15 3/4	3 1/4	1/4	4	9 1/4	—	—	10 7/8	1/8	5/16	20
6	—6A01KX	7	—	5 3/8	16	1/2	11/16	4	15	—	—	12 3/16	1 5/16	7/16	37
7	—7A01LX	7	—	5 3/8	16	1/2	11/16	4	15	—	—	12 3/16	1 5/16	7/16	37

MOUNTING DIMENSIONS Size 8, 9, and 10

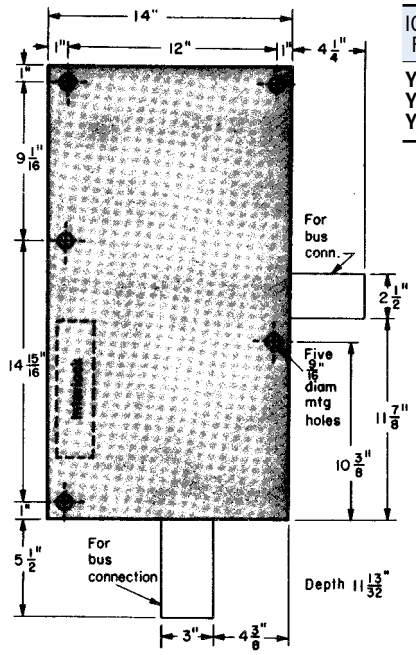


Fig. 8. Unit-mounted

IC2800 Form	A	B	Depth	Weight
Y107	5 ½	4 ⅜	11 13⁄32	150
Y108	7	5 ⅝	12 31⁄32	170
Y130	7	5 ⅝	12 31⁄32	180

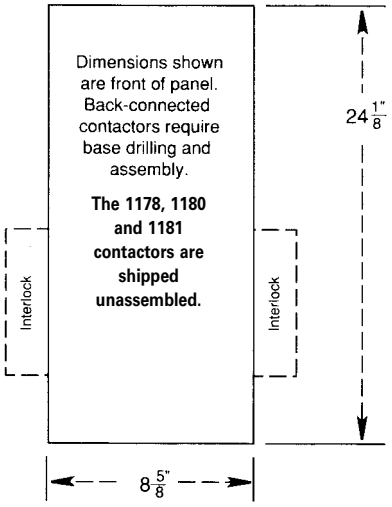


Fig. 9. Back-connected

IC2800 Form	Depth	Weight
1178	9 11⁄32	130
1180	10 29⁄32	150
1181	10 29⁄32	160

IC2801—DIMENSIONS

All forms—refer to Company

Cross Reference Data IC2800 To DS303 Contactors†

COIL DATA*

	DS303	IC2800							
Coil Volts	All Forms	1607 1608 1609	1612–14 1620–23 1625	1617 1618 1619	1170 Y100	1172 Y101	1174 Y102	1176 Y103	EA600 EA900
230/250	**A002**	2	2	2	2	2	2	2	2
115/120	**A003**	3	3	3	3	3	3	3	3
475/500	**A004**	37	4	4	5	5	5	5	5
550	**A005**	38	5	5	6	6	7	6	6
600	**A006**	19	5	5	6	6	20	6	6
6	**A007**			17	54	26		20	
12	**A008**	12	18	18	16	16	21		38
18/20	**A009**	30	6	30		23	16		40
24	**A010**	18	13	15	9	19	11	11	41
28	**A011**		26		20	25	27	18	42
32	**A012**	10	10	9	12	12	12	9	7
38	**A013**	32	20	35	15				
48/50	**A014**	14	9	6	8	9	14	16	10
55/60	**A015**	44	56						
62/68	**A016**	9	14	16	4	4	6	4	11
74	**A017**		35						
78	**A018**		15	11	7	8	4	7	12
80	**A019**	7				6			
90	**A020**	13	7	22		14	37		
100	**A021**		31	23		22	9	27	13
135	**A022**		25			29			
150	**A023**	8	11	10		15	17		
165	**A024**		30						
180/190	**A025**	43	21			11	8		
200	**A026**			12					
275	**A027**	20	28	21	55	27	19	17	
300	**A028**	50	12	13	10		24	10	4
350	**A029**	40							
380	**A030**		8						
440	**A031**	39		26	17	18	23	19	

AUXILIARY INTERLOCKS*

LEFT HAND MOUNTING (Preferred)

Contacts	DS303	IC2800			
	All Forms	All 1600's	Y100 to Y104	1170 to 1177	EA600 EA900
1NO/1NC	XH	H	B	B	B
2NO	XF	B or F	C	C	C
2NC	XK	D or K	D	D	D

RIGHT HAND MOUNTING

Contacts	DS303	IC2800			
	All Forms	All 1600's	Y100 to Y104	1170 to 1177	EA600 EA900
1NO/1NC	XJ	J	E	E	E
2NO	XG	C or J	F	F	F
2NC	XL	E or L	G	G	G

* For other coil # or interlock forms, refer to company.

† See GEP-345D, page 5-3.

Data subject to change without notice

Replacement General Duty and Mill Duty Contactors

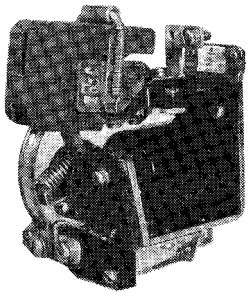


Fig. 10. IC28001607

WHERE TO USE

Use for general dc industrial control such as machine-tool control, textile-machinery control and similar applications. Contactors have a steel base insulated from the electrical circuits. They can be mounted on either metal or insulating panels.

The 25 and 50 amp NO contactors above are to be used where exact replacement of the obsolete line of contactors is required. The contactor uses a non-asbestos arc chute and will provide make/interrupt ratings of 4 times the 8-hour rating of the NO pole. No other pole configurations are available. See DS303, page 5-2.

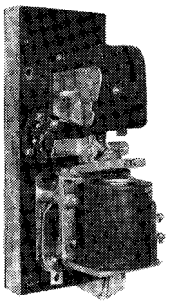


Fig. 11. IC2800Y105

WHERE TO USE

Use for crane, metal-rolling mill and all other heavy industry dc control. Contactors are available mounted or unmounted in either front- or back-connected forms. Use unit-mounted, front-connected form for mounting on metal or insulating panels. Use unmounted back-connected form for assembly directly on your own insulating panel.

Select sizes according to motor horsepower and time rating. Use forms with blowout rating for dc power interruption.

Time rating of normally closed contactors—Coils of contactors with normally closed poles are for intermittent duty only. The coils can be energized 30 percent of the time but not more than 10 minutes continuously or 20 minutes continuously if only once out of three hours time. For continuous operation refer to company.

HOW TO ORDER

Order by complete IC number including form letter, coil number, and interlock designation or by description if new application.

MOUNTING DIMENSIONS (FRONT VIEW)

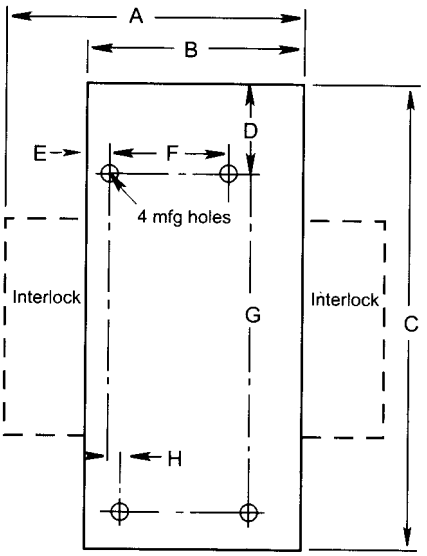


Fig. 12.

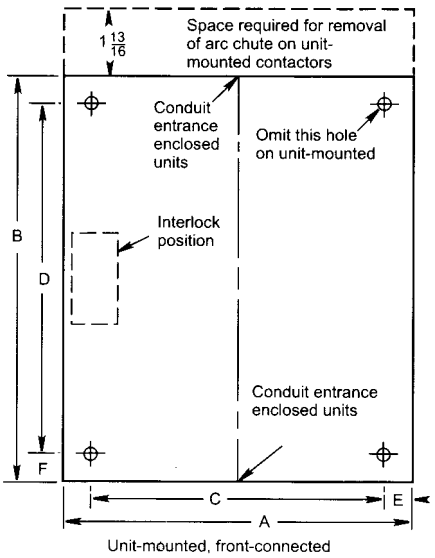


Fig. 13.

REPLACEMENT GENERAL DUTY AND MILL DUTY CONTACTORS

IC2800 Form*	Available Coil # Suffix**	Available Interlock Suffix**
1607CD	2, 3, 52, 55	F, G, H
CE		F, G, H
CF		F, G, H
1617CF	OBS-Use DS303	B thru H
CE	OBS-Use DS303	B thru H
CC	OBS-Use DS303	B thru H
CB	OBS-Use DS303	B thru H
Y105A, AE	26, 30, 33	B thru G
Y106A, AC	2 thru 38	B thru G
1173N†	2 thru 40	B thru G
1175R†	2 thru 38	B thru G

**Refer to company for other suffixes.
†Back connected.

IC2800 Form	Approx Wt in Lb	Fig. No.	Dimensions in Inches										
			A	B	C	D	E	F	G	H	Depth	Mounting Foot Thickness	Mounting Foot Hole Diam
1607CD, CE, CF	2 ½	12	3 5/32	2 ¼	5 5/16	1 9/16	13/32	1	3 ½	0	4 ⅛	1/16	¼
1617CB, CC, CE, CF	3 ½	12	3 21/32	2 ⅝	6 5/16	1 7/16	5/16	1 ½	4 ½	¼	5 ⅝	3/32	¼
Y105	23	13	6 ⅜	16 ½	5	12	11/16	¾			7 11/16	1 9/16	7/16
Y106	48	13	8 ⅜	20	7	16	11/16	1			10 13/16	1 9/16	⅝
1173N	15	12	5 ¼	4 ¼	12 ¾						6 ¾	overall depth	10 ¾
1175R	30	12	5 ⅝	5 ⅜	17 ⅝						8 ⅜		13 ⅝

IC2800C300

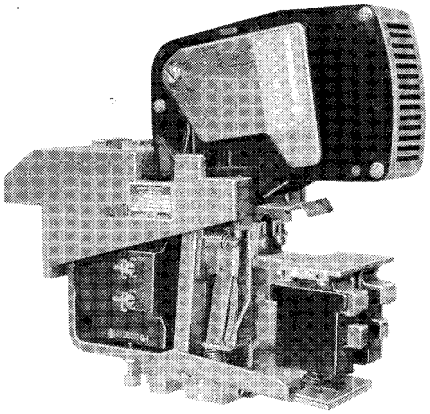


Fig. 14. IC2800C300A

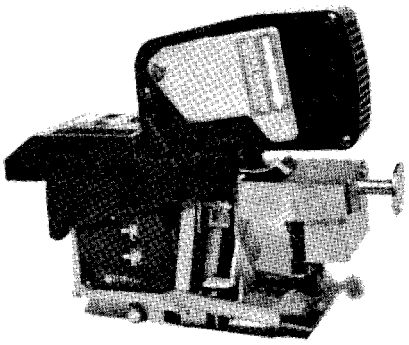


Fig. 15. IC2800C300E with manual latch mechanism

WHERE TO USE

For use in 1000-volt dc circuits such as are found in oil well drilling, material handling, crane control, uninterruptible power supplies, and transportation equipment. These contactors are used in equipments where it is desired to reduce current ratings by going to higher voltages. These contactors are specially designed for applications with low make and interrupting requirements, without jogging.

Select contactors ratings on basis of dc current carrying capacities and interlock requirements.

Overcurrent power circuit. A special form (C300C) is available with an overcurrent power circuit to prevent the contactor from opening under a heavy overload current in excess of the designed interruption rating.

Manual Latch. The C300E form utilizes a manual operator to close and latch the power contacts if control power is not available to operate the coil. This will eliminate the need for the addition of a knife switch where applicable codes or standards require manual operation in the event of loss of control power or coil failure.

Step 1-Select Form

8-hr Open Rating (Amp)‡	Poles	Interlocks 49-600 Volts Dc†	IC2800 Form
1250	1NO	1NO, 1NC	**C300A*E**
1250	1NO	2NO, 2NC	**C300A*J**
1250	1NO	2NO, 2NC	**C300C*J**
1250	1NO	2NO, 2NC	**C300E*J**

‡ For purposes of contactor selection, 8-hr rating is synonymous with continuous rating.

References:
Instruction Book.....GEH4468
Renewal Parts.....GEF4605

* Insert coil number
37 volts dc—121
74 volts dc—122
108 volts dc—123
125 volts dc—124
250 volts dc—125

† Designation:
2-circuit form is front accessible
4-circuit form is side accessible
Other contact arrangements available on request.

NOTES: Max make current—5000 amps; Max break current—2000 amps at 500 volts; Max interrupting capacity—1000 kW.

OUTLINE DRAWING

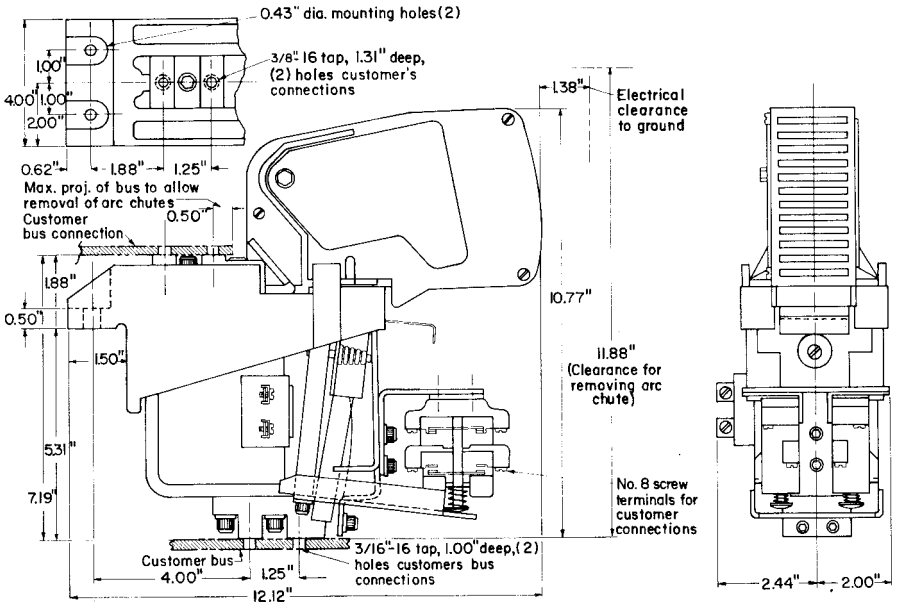


Fig. 16. IC2800C300

IC2800B310, A501, Y109, Y110

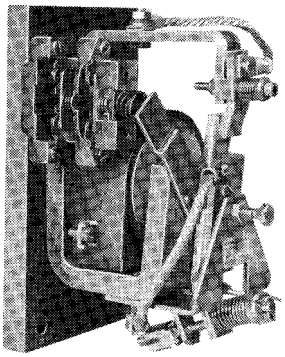


Fig. 17. IC2800B310

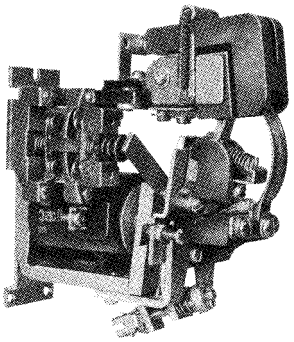


Fig. 18. IC2800A501

WHERE TO USE

Normally Open

IC2800B310 contactors are used where time-delay opening of power circuits such as dc motor loads and resistor loads are required. They are normally open, single-pole contactors constructed with copper-jacketed coils which provide time delay on dropout. The contactors are front-connected and can be mounted on either insulating or noninsulating panels.

Normally Closed

Used to short-out resistance steps in starting dc motors. Contactors are normally closed, without blowouts, and are not designed to interrupt power.

Pick-up is instantaneous. Time-delay dropout results from use of a copper-jacketed coil and adjustment of this time delay is obtained by using a non-magnetic armature shim. Time delay of IC2800A501 contactors can be adjusted over a narrow range by the armature spring. Time delay of IC2800Y109 contactor can be adjusted over a wide range by a sliding shim.

Mount contactors on either metal or insulating panels. Make connections from the front.

Enclosed rating—0.9 times the 8-hour, open-ampere rating of the contactor.

HOW TO SELECT—NORMALLY OPEN

Step 1—Select Form

8-hr Open Rating (Amp) 600 V Max*	Poles	Blowout Rating (Amp)	IC2800 Form
50	1 NO	2 5 10 25 50	**B310N-Obsolete** **B310L** **B310K** **B310J** **B310H**

*For purposes of contactor selection, 8-hr rating is synonymous with continuous rating.

Step 2—Add Time-delay and Voltage Designation

(Select time delay so that the desired delay falls in the middle of the time-delay range, as nearly as possible)

Time Delay in Seconds		Designation			
		Dc Operation			
Without Interlock	With Two-circuit Interlocks	115/120 V	230/240/250 V	500 V	550/600 V
0.4—0.6 0.5—0.8 0.75—1.25 1.0—1.4 1.3—1.6	0.3—0.45 0.4—0.6 0.6—0.9 0.75—1.1 1.0—1.2	**X203** **R203** **B203** **F203** **E203**	**X202** **R202** **B202** **F202** **E202**	**X204** **R204** **B204** **F204** **E204**	**X205** **R205** **B205** **F205** **E205**

Step 3—Add Interlock Designation

Number Interlock Circuits	Designation
None	. . .
2 NO	**D**
1 NO, 1 NC	**C**
2 NC	**B**

HOW TO SELECT—NORMALLY CLOSED

Step 1—Select Form

8-hr Open Rating (Amp) †	Poles	Time Delay (Seconds)	Volts	Interlock Arrangement	Intermittent Coil IC2800 Form	Continuous Coil IC2800 Form
100	1 NC	See Step 2	115/120	2 NO 1 NO, 1 NC 2 NC	**A501A*23D** **A501A*23C** **A501A*23B**	**A501A*53D** **A501A*53C** **A501A*53B**
			230/240/250	2 NO 1 NO, 1 NC 2 NC	**A501A*24D** **A501A*24C** **A501A*24B**	**A501A*54D** **A501A*54C** **A501A*54B**
			500	2 NO 1 NO, 1 NC 2 NC	**A501A*27D** **A501A*27C** **A501A*27B**	**A501A*57D** **A501A*57C** **A501A*57B**
			550	2 NO 1 NO, 1 NC 2 NC	**A501A*28D** **A501A*28C** **A501A*28B**	**A501A*58D** **A501A*58C** **A501A*58B**
150	1 NC	Adjustable 0.75–3.0	115/120 230/240/250 500 or 550	2 NO 1 NO, 1 NC 2 NO 1 NO, 1 NC 2 NO 1 NO, 1 NC	**Y109B2** **Y109A2** **Y109B3** **Y109A3** **Y109B4** **Y109A4**	
300	1 NC	See Step 3	115/120 230/240/250 500 or 550	2 NO 1 NO, 1 NC 2 NO 1 NO, NC 2 NO 1 NO, 1 NC	**Y110*4** **Y110*4** **Y110*2** **Y110*2** **Y110*13** **Y110*13**	

ACCESSORIES

See page 5-13.

TIME-DELAY DESIGNATION*

See Step 2 and 3 on page 5-13.

† For purposes of contactor selection, 8-hr rating is synonymous with continuous rating.

IC2800A501, Y109, Y110

Step 2—Insert Time-delay Designation—A501 only

Timing Range in Seconds		Designation
Intermittent Coil Operation	Continuous Coil Operation (Requires holding resistor)	
0.34—0.59	0.17—0.295	**Y**-Obsolete
0.48—0.88	0.24—0.44	**X**-Obsolete
0.63—1.30	0.32—0.65	**R**
1.05—2.14	0.53—1.07	**B**
1.86—3.24	0.93—1.62	**F**
2.60—4.80	1.30—2.40	**C**-Obsolete
5.80—7.60	2.90—3.80	**E**-Obsolete
6.50—8.50	3.25—4.25	**D**-Obsolete

Insert Time-delay Designation—Y110 only

Timing Range in Seconds		Designation
Intermittent Coil Operation	Interlock	
0.7—0.9	1 NO, 1 NC	**C**-Obsolete
0.8—1.0	1 NO, 1 NC	**D**
0.8—1.0	2 NO	**E**-Obsolete
1.2—3.0	1 NO, 1 NC	**F**
1.2—3.0	2 NO	**G**-Obsolete

Interlock contacts—Interlock contacts can be changed by the Purchaser from normally open to normally closed, and vice versa.
Interlock contact ratings—Refer to page 5-20.

MOUNTING DIMENSIONS

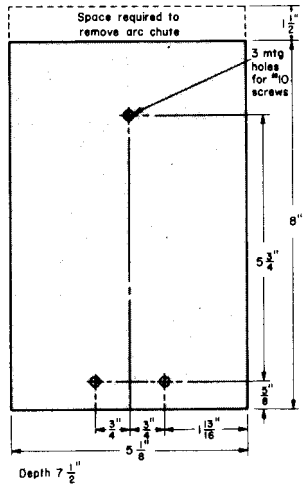


Fig. 19. IC2800B310

MOUNTING DIMENSIONS

IC2800 Form	Dimensions in Inches						
	A	B	C	D	E	F	Depth
Y109	8 1/2	4 5/8	3 1/2	1/2	6	1	**6 1/8**
Y110	10 1/2	6 1/8	4 3/4	3/4	7 1/4	1 1/4	**7 1/8**

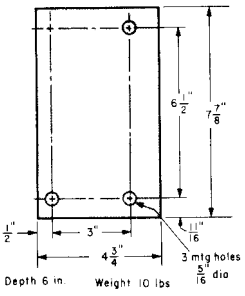


Fig. 20. IC2800A501

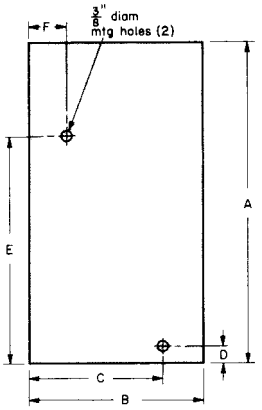


Fig. 21. IC2800Y109 and Y110

HOW TO ORDER

Order by complete IC number including form, time delay designation and coil number, and interlock designation.

Example: *To order a 50-amp, 600-volt dc contactor with 115-volt dc control, two NO interlocks, a blowout rating of 10 amp and a time delay of 0.5 seconds, specify contactor IC2800B310KR203D.*

IC2800 B310K — Select Form Step 1
R203 — Time-delay and Coil Number Step 2
D — Interlock Step 3

Example: *To order 100-amp, 550-volt dc control continuously rated, two NC interlocks and time delay of 1.0 seconds, specify contactor as follows:*

IC2800A501A F 58 B
- B — Interlock letter
- 58 — Coil number including holding resistor
- F — Time-delay letter
- IC2800A501A — Basic contactor form

Example: *To order a 300-amp, 230-volt dc contactor, two NO interlocks, a time delay of 1.2 seconds, specify contactor IC2800 Y110G4*

IC2800 Y110 — Select Form Step 1
G — Time-delay and Interlock Step 2
4 — Voltage Step 1

ACCESSORIES—Supplied for Separate mounting. See page 5-7 for dimensions.

Holding Resistor (A501A Continuous duty)

Volts	Resistor Cat. No. 68A7004
115/120	**A50E250DA-TH**
230/240/250	**A50E1000DA-TH**
500	**A50E4000DA-TH**
550	**A50E5000DA-TH**

Continuous duty—For continuous duty of IC2800A501A, one NC interlock must be used to place holding resistor in circuit after pickup.

References:

Instruction Book

IC2800B310 ..... GEH 3098
IC2800A501 ..... GEH 3087
IC2800Y109, Y110 ..... GEH 3088

Renewal Parts

IC2800 B310 ..... GEF 4179
A501 ..... GEF 4130
Y109,110 ..... GEF 4603