



AB-I De-ion circuit breakers

15 to 600 amperes

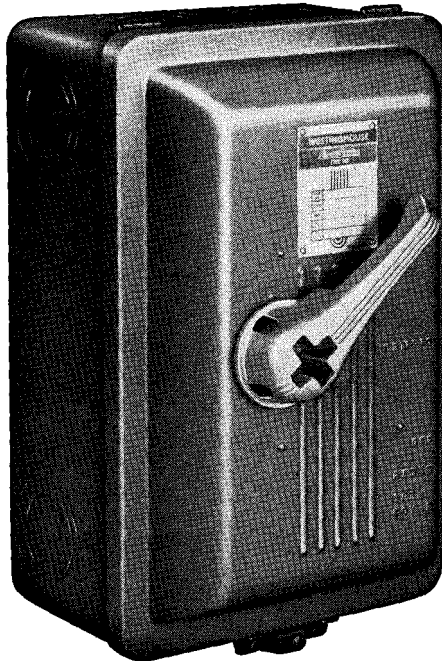
quick
selector
section

30-200

page 1

120 to 600 volts a-c, 125 to 250 volts d-c
2, 3, 4 pole • advantages, enclosures

for protection of light and power circuits



Type AB-I nofuse De-ion® circuit breakers are fuseless protective devices that protect insulated conductors from the effects of over-current and short circuits. They permit temporary light overloads, but will trip instantly when a heavy overload develops.

These circuit breakers are widely used for the protection of circuits in industrial plants, commercial buildings, apartment houses, or any place where fuses, fused switches, and similar protective devices would be used.

advantages

● **De-ion arc quenchers** Instantly extinguishes arcs and makes contacts last many times longer.

● **low maintenance costs** Eliminates calls to replace fuses. Over-center toggle mechanism provides Quick-Make—Quick-Break action. This feature and the De-ion arc quencher, reduces arcing and burning of contacts.

● **saves space** Requires approximately 40% less mounting space than conventional fusible safety switches. Operating handle in front permits close banking of units.

● **low watts loss** Electrically welded connections provide lower resistance than riveted and bolted joints of fusible equipment. Silver alloy contacts help maintain low resistance throughout breaker life.

● **accurate positive action** Breakers are individually calibrated and tested. Thermal elements are sealed at factory to prevent tampering.

● **better motor protection** Overload on any pole opens all poles through insulated common trip bar. Single pole cannot open as in fusible equipment and cause single phasing of polyphase motors. Trip free handle prevents breaker from being held closed on overloads or short circuits.

● **inverse time-delay protection** Provided by bi-metal thermal tripping element in all breakers, except the oil-immersed type, magnetic only trip and De-ion circuit interrupters.

enclosures

with and without neutral

material	description	NEMA
sheet steel	dust resisting	IA
cast iron	water & dust tight	III-IV-V
cast iron	class I, explosion proof	VII
cast iron	class II, explosion proof	IX
sheet steel	surface and flush with neutral	I & IB
sheet steel	supplementary flush & surface mounting	I & IB
sheet steel	raintight	III
oil immersed	class I, explosion proof or corrosion resisting	VIII or XI

All sheet steel enclosures are Bonderized before applying the final baked enamel. The Bonderizing process minimizes corrosion by providing a secure anchor for the final finish.

Supersedes quick selector section 30-200, pages 1 through 10, dated March 15, 1954

May 28, 1954

mailed to: E42-1H; D63-1D; C26-1B; DAK

for standard terms and conditions of sale
refer to selling policy 30-000



AB-I De-ion circuit breakers

15 to 600 amperes

supplementary types
catalog symbols • ordering information

page 2

interchangeable trip units The 100 ampere G, the 225 ampere K and 600 ampere L frame Nofuze AB-I breakers are built with trip units that are removable and interchangeable within each frame size having the same number of poles. This feature is particularly desirable to the industrial or commercial user whose circuit loading may change.

AB-I breakers with 100 ampere rating are available in E, F, and G frame size. The E frame offers price and space advantages but is limited in application by its interrupting capacity and voltage rating. For greater interrupting capacity and higher voltage ratings, the F or G frame should be used. The G frame is a heavy duty breaker that is especially suitable for hard usage, frequent operation, and severe operating conditions. The interchangeable trip unit of the G frame provides greater flexibility for those applications where change in circuit loading is anticipated. In addition, the instantaneous magnetic setting of the G frame trip may be varied to take care of a number of surge conditions.

AB-I breakers with solid neutrals, in NEMA I enclosures, complete with pilot light, are available in surface and flush mounting for use as service entrance equipment. Where neutrals are required in a NEMA IA enclosure, it will be supplied in a standard unit.

For AB-I's requiring a neutral, the neutral is considered to be a pole. For example, an SJ-3222-I consists of a 2 pole unit breaker plus a solid neutral.

Non-automatic De-ion circuit interrupters provide high interrupting capacity and are used where overload protection is not necessary.

Automatic De-ion circuit interrupters are available with adjustable magnetic trip only where load limiting or equipment protection is required.

Oil immersed instantaneous magnetic trip are also available where corrosive vapors or explosive vapors are present. Not listed by Underwriters.

For detail of unit breakers, see price list 29-060.

Underwriters' Laboratories, Inc., listed

Type AB-I circuit breakers are listed by Underwriters' Laboratories, Inc., except all 50-amp trip E frame, 1, 2 and 3-pole, 125-volt a-c, 250-volt a-c, 125/250-volt d-c, in NEMA types III, IV, and V enclosures and all magnetic trip only AB-I's.

Cast enclosures for Class I, Group D hazardous locations are listed with the following modifications:

*catalog voltage rating	*U. L. listed voltage rating
250 V. a-c—125-250 V. d-c	125/250 V. a-c or d-c
600 V. a-c—250 V. d-c	250 V. a-c or d-c
600 V. a-c	250 V. a-c or d-c

*The U.L. voltage ratings do not agree with the catalog a-c voltage ratings, because the laboratories are not equipped to make tests at these higher ratings on explosion-proof equipment. The unit breakers however, are listed by the U.L. at these higher voltages.

how to interpret AB-I catalog symbols

prefix letters		numbers			suffix letters
enclosure	frame size	no. poles	voltage	trip rating*	modifications
D. =Dust Resisting Sheet Steel I. =Water & Dust Tight Cast Iron S. =Sheet Steel with screw on cover X. =Explosion Resisting Class I, Group D Y. =Explosion Resisting Class II, Groups E, F and G O. =Oil Immersed, Class I, Group D R. =Raintight Sheet Steel	A =100-amp E Frame B =100-amp G Frame C =225-amp K Frame D =600-amp L Frame F =100-amp F Frame J =225-amp J Frame Q =50-amp Quicklag	1 =1 Pole 2 =2 Poles 3 =3 Poles 4 =4 Poles	1 =125 a-c-d-c 2 =250 a-c 125/250 d-c 6 =600 a-c 250 d-c	05 =5-amp 10 =10-amp 15 =15-amp 20 =20-amp 25 =25-amp 31 =30-amp 35 =35-amp 41 =40-amp 50 =50-amp 70 =70-amp 90 =90-amp 11 =100-amp 12 =125-amp 16 =150-amp 17 =175-amp 21 =200-amp 22 =225-amp 26 =250-amp 27 =275-amp 30 =300-amp 32 =325-amp 36 =350-amp 40 =400-amp 45 =450-amp 51 =500-amp 55 =550-amp 60 =600-amp	F =Flush Mounting G =Grounded Neutral I =Insulated Groundable Neutral NA =Non-automatic De-ion Circuit Interrupter A =Adjustable Magnetic Trip only. NAE =Non-Automatic De-ion Circuit Interrupter, 100 Amp. Frame 250 volts only.

‡ 50-100 ampere range—interchangeable trip unit.

‡ 15-100 ampere range—non-interchangeable trip unit.

‡ 125/250 volts means 125 volts to ground unless otherwise noted.

‡ When used on magnetic trip only breakers this indicates the normal current carrying capacity.

‡ For hub size prefix letters, refer to Outdoor Service Controls, Page 6.

example 1: SJ-3222-IF—Flush mounted sheet steel, NEMA type IB, "J" frame with non-interchangeable trip unit, 3 pole solid neutral, 240 volt a-c, 120/240 volt a-c, 125/250 volt d-c, 225 ampere trip.

example 2: XA-3220—Explosion-resisting Class I Group D enclosure, 100-amp "E" frame, 3 pole, 125/240 volt d-c, 250 volt a-c, 20 amperes trip.

when ordering, specify:

(1) Quantity, (2) Catalog Number, (3) Amperes, (4) Voltage, (5) Number of Poles, (6) Type Enclosure.

Also specify any special feature or accessory needed for your application.

for dimensions See dimension sheets 30-230.

note: application of thermal breakers—where it is definitely known that AB-I breakers will be applied at other than normal ambients (25°C.), see application data

AB-I De-ion circuit breakers

100 ampere

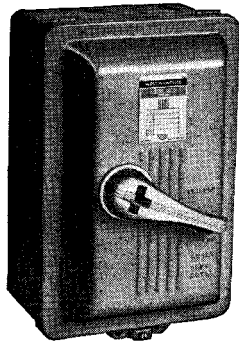
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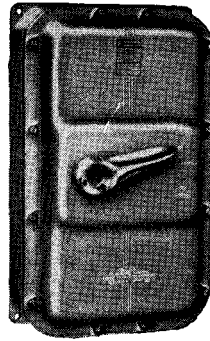
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E, F, frames • non-interchangeable trip

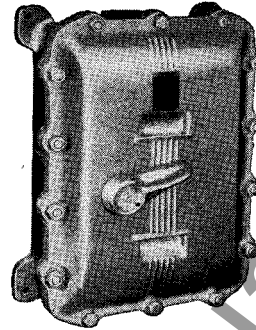
G frame • interchangeable trip unit



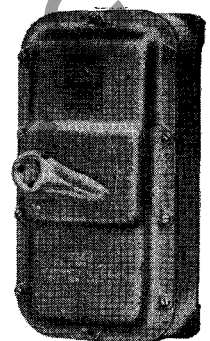
dust resisting
NEMA 1A



water and dust tight
NEMA III, IV, V



for hazardous
locations NEMA VII



for hazardous
locations NEMA IX

100 ampere

E and F frames non-interchangeable trip units G frame interchangeable trip units

use	amp rating †	dust resisting sheet steel (NEMA type 1A)			water and dust tight cast iron (NEMA types III, IV, V)			for hazardous locations cast iron			class I group D (NEMA type VII)			class II groups E, F & G (NEMA type IX)		
		catalog no.	list price	wt.◊	catalog no.	list price	wt.◊	catalog no.	list price	wt.◊	catalog no.	list price	wt.◊	catalog no.	list price	wt.◊

E frame 2-pole, insulated groundable neutral—120 volt a-c, 125 volt d-c

11	15	DA-2115-I	\$ 24.00	11	IA-2115-I	\$ 58.00	17	XA-2115-I	\$ 68.00	30	use class I group D (see column to left)
	20	DA-2120-I	24.00		IA-2120-I	58.00		XA-2120-I	68.00		
	30	DA-2131-I	24.00		IA-2131-I	58.00		XA-2131-I	68.00		
	40	DA-2141-I	24.00		IA-2141-I	58.00		XA-2141-I	68.00		
	50	DA-2150-I	24.00		IA-2150-I	58.00		XA-2150-I	68.00		

2-pole, 240 volt a-c—125/250 volt d-c

11	15	DA-2215	38.00	13	IA-2215	67.00	17	XA-2215	83.00	31	use class I group D (see column to left)
	20	DA-2220	38.00	13	IA-2220	67.00		XA-2220	83.00		
	30	DA-2231	38.00	13	IA-2231	67.00		XA-2231	83.00		
	40	DA-2241	38.00	13	IA-2241	67.00		XA-2241	83.00		
	50	DA-2250	38.00	13	IA-2250	67.00		XA-2250	83.00		
	70	DA-2270	59.00	15	IA-2270	133.00		XA-2270	149.00		
	90	DA-2290	59.00	15	IA-2290	133.00		XA-2290	149.00		
	100	DA-2211	59.00	15	IA-2211	133.00		XA-2211	149.00		

3-pole, 240 volt a-c—125/250 volt d-c

11	15	DA-3215	49.00	14	IA-3215	101.00	28	XA-3215	117.00	61	YA-3215	\$101.00	27
	20	DA-3220	49.00	14	IA-3220	101.00		XA-3220	117.00		YA-3220	101.00	
	30	DA-3231	49.00	14	IA-3231	101.00		XA-3231	117.00		YA-3231	101.00	
	40	DA-3241	49.00	14	IA-3241	101.00		XA-3241	117.00		YA-3241	101.00	
	50	DA-3250	49.00	14	IA-3250	101.00		XA-3250	117.00		YA-3250	101.00	
	70	DA-3270	70.00	16	IA-3270	145.00		XA-3270	161.00		YA-3270	145.00	
	90	DA-3290	70.00	16	IA-3290	145.00		XA-3290	161.00		YA-3290	145.00	
	100	DA-3211	70.00	16	IA-3211	145.00		XA-3211	161.00		YA-3211	145.00	

F frame 2-pole, 600 volt a-c—250 volt d-c

11	15	DF-2615	70.00	19	IF-2615	129.00	61	XF-2615	145.00	109	YF-2615	129.00	60
	20	DF-2620	70.00	19	IF-2620	129.00		XF-2620	145.00		YF-2620	129.00	
	30	DF-2631	70.00	18	IF-2631	129.00		XF-2631	145.00		YF-2631	129.00	
	40	DF-2641	70.00	18	IF-2641	129.00		XF-2641	145.00		YF-2641	129.00	
	50	DF-2650	70.00	18	IF-2650	129.00		XF-2650	145.00		YF-2650	129.00	
	70	DF-2670	87.00	20	IF-2670	181.00		XF-2670	196.00		YF-2670	181.00	
	90	DF-2690	87.00	20	IF-2690	181.00		XF-2690	196.00		YF-2690	181.00	
	100	DF-2611	87.00	20	IF-2611	181.00		XF-2611	196.00		YF-2611	181.00	

3-pole, 600 volt a-c

11	15	DF-3615	84.00	20	IF-3615	143.00	64	XF-3615	159.00	128	YF-3615	143.00	61
	20	DF-3620	84.00	20	IF-3620	143.00		XF-3620	159.00		YF-3620	143.00	
	30	DF-3631	84.00	20	IF-3631	143.00		XF-3631	159.00		YF-3631	143.00	
	40	DF-3641	84.00	20	IF-3641	143.00		XF-3641	159.00		YF-3641	143.00	
	50	DF-3650	84.00	20	IF-3650	143.00		XF-3650	159.00		YF-3650	143.00	
	70	DF-3670	103.00	23	IF-3670	196.00		XF-3670	212.00		YF-3670	196.00	
	90	DF-3690	103.00	23	IF-3690	196.00		XF-3690	212.00		YF-3690	196.00	
	100	DF-3611	103.00	23	IF-3611	196.00		XF-3611	212.00		YF-3611	196.00	

G frame 2-pole, 600 volt a-c—250 volt d-c

11	50	DB-2650	104.00	31	IB-2650	233.00	85	XB-2650	269.00	210	YB-2650	233.00	84
	70	DB-2670	104.00		IB-2670	233.00		XB-2670	269.00		YB-2670	233.00	
	90	DB-2690	104.00		IB-2690	233.00		XB-2690	269.00		YB-2690	233.00	
	100	DB-2611	104.00		IB-2611	233.00		XB-2611	269.00		YB-2611	233.00	

3-pole, 600 volt a-c

11	50	DB-3650	129.00	34	IB-3650	258.00	95	XB-3650	294.00	215	YB-3650	269.00	100
	70	DB-3670	129.00		IB-3670	258.00		XB-3670	294.00		YB-3670	269.00	
	90	DB-3690	129.00		IB-3690	258.00		XB-3690	294.00		YB-3690	269.00	
	100	DB-3611	129.00		IB-3611	258.00		XB-3611	294.00		YB-3611	269.00	

■ 125-250 volts or 125/250 volts means 125 volts to ground unless otherwise noted
 † 25 and 35 ampere ratings are available on special order
 ◊ approximate shipping weight, pounds

prices effective March 15, 1954 and are subject to change without notice
 discount symbol A selling policy 30-000



AB-I De-ion circuit breakers

225 and 600 ampere

J frame • non-interchangeable trip
K, L frames • interchangeable trip

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225 ampere J and K frames

use	amp rating	dust resisting sheet steel (NEMA type IA)			water and dust tight cast iron (NEMA types III, IV, V)			for hazardous locations cast iron		
		catalog no.	list price	wt. ◊	catalog no.	list price	wt. ◊	class I group D (NEMA type VII)	class II groups E, F & G (NEMA type IX)	

J frame, non-interchangeable trip units • 2-pole, 600 volt a-c—250 volt d-c

11 33 11	70 90	DJ-2670 DJ-2690	\$189.00 189.00	30	IJ-2670 IJ-2690	▲ ▲	XJ-2670 XJ-2690	▲ ▲	YJ-2670 YJ-2690	▲ ▲
	100 125	DJ-2611 DJ-2612	189.00 189.00		IJ-2611 IJ-2612	▲ ▲	XJ-2611 XJ-2612	▲ ▲	YJ-2611 YJ-2612	▲ ▲
	150 175	DJ-2616 DJ-2617	189.00 189.00		IJ-2616 IJ-2617	▲ ▲	XJ-2616 XJ-2617	▲ ▲	YJ-2616 YJ-2617	▲ ▲
	200 225	DJ-2621 DJ-2622	189.00 189.00		IJ-2621 IJ-2622	▲ ▲	XJ-2621 XJ-2622	▲ ▲	YJ-2621 YJ-2622	▲ ▲

3-pole, 600 volt a-c

	70	DJ-3670	227.00	35	IJ-3670	▲		XJ-3670	▲		YJ-3670	▲
	90	DJ-3690	227.00		IJ-3690	▲		XJ-3690	▲		YJ-3690	▲
	100	DJ-3611	227.00		IJ-3611	▲		XJ-3611	▲		YJ-3611	▲
	125	DJ-3612	227.00		IJ-3612	▲		XJ-3612	▲		YJ-3612	▲
	150	DJ-3616	227.00		IJ-3616	▲		XJ-3616	▲		YJ-3616	▲
	175	DJ-3617	227.00		IJ-3617	▲		XJ-3617	▲		YJ-3617	▲
	200	DJ-3621	227.00		IJ-3621	▲		XJ-3621	▲		YJ-3621	▲
	225	DJ-3622	227.00		IJ-3622	▲		XJ-3622	▲		YJ-3622	▲

K frame, interchangeable trip units • 2-pole, 600 volt a-c—250 volt d-c

	70	DC-2670	234.00	77	IC-2670	\$399.00	205	XC-2670	\$441.00	450	YC-2670	\$399.00	220
	90	DC-2690	234.00		IC-2690	399.00		XC-2690	441.00		YC-2690	399.00	
	100	DC-2611	234.00		IC-2611	399.00		XC-2611	441.00		YC-2611	399.00	
	125	DC-2612	234.00		IC-2612	399.00		XC-2612	441.00		YC-2612	399.00	
	150	DC-2616	234.00		IC-2616	399.00		XC-2616	441.00		YC-2616	399.00	
	175	DC-2617	234.00		IC-2617	399.00		XC-2617	441.00		YC-2617	399.00	
	200	DC-2621	234.00		IC-2621	399.00		XC-2621	441.00		YC-2621	399.00	
	225	DC-2622	234.00		IC-2622	399.00		XC-2622	441.00		YC-2622	399.00	

3-pole, 600 volt a-c

	70	DC-3670	281.00	83	IC-3670	446.00	210	XC-3670	488.00	455	YC-3670	446.00	220
	90	DC-3690	281.00		IC-3690	446.00		XC-3690	488.00		YC-3690	446.00	
	100	DC-3611	281.00		IC-3611	446.00		XC-3611	488.00		YC-3611	446.00	
	125	DC-3612	281.00		IC-3612	446.00		XC-3612	488.00		YC-3612	446.00	
	150	DC-3616	281.00		IC-3616	446.00		XC-3616	488.00		YC-3616	446.00	
	175	DC-3617	281.00		IC-3617	446.00		XC-3617	488.00		YC-3617	446.00	
	200	DC-3621	281.00		IC-3621	446.00		XC-3621	488.00		YC-3621	446.00	
	225	DC-3622	281.00		IC-3622	446.00		XC-3622	488.00		YC-3622	446.00	

600 ampere L frame, interchangeable trip units

2-pole, 600 volt a-c—250 volt d-c

	225	DD-2622	562.00	180	ID-2622	1031.00	745	XD-2622	1143.00	840	use class I group D (see column to left)
	250	DD-2626	562.00		ID-2626	1031.00		XD-2626	1143.00		
	275	DD-2627	562.00		ID-2627	1031.00		XD-2627	1143.00		
	300	DD-2630	562.00		ID-2630	1031.00		XD-2630	1143.00		
	325	DD-2632	562.00		ID-2632	1031.00		XD-2632	1143.00		
	350	DD-2636	562.00		ID-2636	1031.00		XD-2636	1143.00		
	400	DD-2640	562.00		ID-2640	1031.00		XD-2640	1143.00		
	450	DD-2645	562.00		ID-2645	1031.00		XD-2645	1143.00		
	500	DD-2651	562.00		ID-2651	1031.00		XD-2651	1143.00		
	550	DD-2655	562.00		ID-2655	1031.00		XD-2655	1143.00		
	600	DD-2660	562.00		ID-2660	1031.00		XD-2660	1143.00		

3-pole, 600 volt a-c

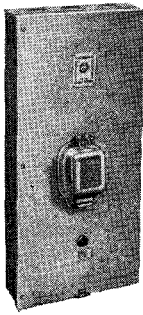
	225	DD-3622	687.00	185	ID-3622	1156.00	750	XD-3622	1268.00	845	use class I group D (see column to left)
	250	DD-3626	687.00		ID-3626	1156.00		XD-3626	1268.00		
	275	DD-3627	687.00		ID-3627	1156.00		XD-3627	1268.00		
	300	DD-3630	687.00		ID-3630	1156.00		XD-3630	1268.00		
	325	DD-3632	687.00		ID-3632	1156.00		XD-3632	1268.00		
	350	DD-3636	687.00		ID-3636	1156.00		XD-3636	1268.00		
	400	DD-3640	687.00		ID-3640	1156.00		XD-3640	1268.00		
	450	DD-3645	687.00		ID-3645	1156.00		XD-3645	1268.00		
	500	DD-3651	687.00		ID-3651	1156.00		XD-3651	1268.00		
	550	DD-3655	687.00		ID-3655	1156.00		XD-3655	1268.00		
	600	DD-3660	687.00		ID-3660	1156.00		XD-3660	1268.00		

▲ refer to nearest Westinghouse representative
◊ approximate shipping weight, pounds

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discount symbol A selling policy 30-000

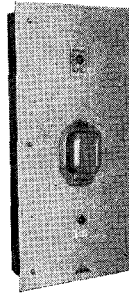
E, F, J, K and L frames
NEMA I • NEMA IB

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surface mounted • NEMA I sheet steel □

These AB-I breakers are supplied with a neutral and can be used as service entrance devices. They are approved by the Underwriters' Laboratories, Inc., as suitable for use as service equipment. They are equipped with screw-on covers for flush mounting. The handle extends through the cover, and is protected by an auxiliary flap cover which can be padlocked or sealed. They come equipped with pilot light and bull's eye.



flush mounted • NEMA IB sheet steel

AB-I breakers with solid neutrals

use	amp rating ↓	NEMA I surface mtg.		NEMA IB flush mtg.		use	amp rating ↓	NEMA I surface mtg.		NEMA IB flush mtg.	
		catalog number	list price	catalog number	list price			catalog number	list price	catalog number	list price
100 amp E frame—insulated groundable neutral 240 volt a-c, 120/240 volt a-c, 125/250 volt d-c □											
3-pole solid neutral 	15	SA-3215-I	\$ 44.00	SA-3215-IF	\$ 44.00	4-pole solid neutral 	15	SA-4215-I	\$ 56.00	SA-4215-IF	\$ 56.00
	20	SA-3220-I	44.00	SA-3220-IF	44.00		20	SA-4220-I	56.00	SA-4220-IF	56.00
	30	SA-3231-I	44.00	SA-3231-IF	44.00		30	SA-4231-I	56.00	SA-4231-IF	56.00
	40	SA-3241-I	44.00	SA-3241-IF	44.00		40	SA-4241-I	56.00	SA-4241-IF	56.00
	50	SA-3250-I	44.00	SA-3250-IF	44.00		50	SA-4250-I	56.00	SA-4250-IF	56.00
	70	SA-3270-I	68.00	SA-3270-IF	68.00		70	SA-4270-I	80.00	SA-4270-IF	80.00
	90	SA-3290-I	68.00	SA-3290-IF	68.00		90	SA-4290-I	80.00	SA-4290-IF	80.00
	100	SA-3211-I	68.00	SA-3211-IF	68.00		100	SA-4211-I	80.00	SA-4211-IF	80.00
100 amp F frame—insulated groundable neutral 240 volt a-c, 120/240 volt a-c, 125/250 volt d-c □											
3-pole solid neutral 	70	SF-3270-I	96.00	SF-3270-IF	96.00	4-pole solid neutral 	70	SF-4270-I	112.00	SF-4270-IF	112.00
	90	SF-3290-I	96.00	SF-3290-IF	96.00		90	SF-4290-I	112.00	SF-4290-IF	112.00
	100	SF-3211-I	96.00	SF-3211-IF	96.00		100	SF-4211-I	112.00	SF-4211-IF	112.00
225 amp J frame—insulated groundable neutral 240 volt a-c, 120/240 volt a-c, 125/250 volt d-c □											
3-pole solid neutral 	70	SJ-3270-I	203.00	SJ-3270-IF	203.00	4-pole solid neutral 	70	SJ-4270-I	240.00	SJ-4270-IF	240.00
	90	SJ-3290-I	203.00	SJ-3290-IF	203.00		90	SJ-4290-I	240.00	SJ-4290-IF	240.00
	100	SJ-3211-I	203.00	SJ-3211-IF	203.00		100	SJ-4211-I	240.00	SJ-4211-IF	240.00
	125	SJ-3212-I	203.00	SJ-3212-IF	203.00		125	SJ-4212-I	240.00	SJ-4212-IF	240.00
	150	SJ-3216-I	203.00	SJ-3216-IF	203.00		150	SJ-4216-I	240.00	SJ-4216-IF	240.00
	175	SJ-3217-I	203.00	SJ-3217-IF	203.00		175	SJ-4217-I	240.00	SJ-4217-IF	240.00
	200	SJ-3221-I	203.00	SJ-3221-IF	203.00		200	SJ-4221-I	240.00	SJ-4221-IF	240.00
	225	SJ-3222-I	203.00	SJ-3222-IF	203.00		225	SJ-4222-I	240.00	SJ-4222-IF	240.00
225 amp K frame—insulated groundable neutral 240 volt a-c, 120/240 volt a-c, 125/250 volt d-c □											
3-pole solid neutral 	70	SC-3270-I	248.00	SC-3270-IF	248.00	4-pole solid neutral 	70	SC-4270-I	295.00	SC-4270-IF	295.00
	90	SC-3290-I	248.00	SC-3290-IF	248.00		90	SC-4290-I	295.00	SC-4290-IF	295.00
	100	SC-3211-I	248.00	SC-3211-IF	248.00		100	SC-4211-I	295.00	SC-4211-IF	295.00
	125	SC-3212-I	248.00	SC-3212-IF	248.00		125	SC-4212-I	295.00	SC-4212-IF	295.00
	150	SC-3216-I	248.00	SC-3216-IF	248.00		150	SC-4216-I	295.00	SC-4216-IF	295.00
	175	SC-3217-I	248.00	SC-3217-IF	248.00		175	SC-4217-I	295.00	SC-4217-IF	295.00
	200	SC-3221-I	248.00	SC-3221-IF	248.00		200	SC-4221-I	295.00	SC-4221-IF	295.00
	225	SC-3222-I	248.00	SC-3222-IF	248.00		225	SC-4222-I	295.00	SC-4222-IF	295.00
600 amp L frame—grounded neutral 240 volt a-c, 120/240 volt a-c, 125/250 volt d-c □											
3-pole grounded neutral 	225	SD-3222-G	580.00	SD-3222-GF	580.00	4-pole grounded neutral 	225	SD-4222-G	705.00	SD-4222-GF	705.00
	250	SD-3226-G	580.00	SD-3226-GF	580.00		250	SD-4226-G	705.00	SD-4226-GF	705.00
	275	SD-3227-G	580.00	SD-3227-GF	580.00		275	SD-4227-G	705.00	SD-4227-GF	705.00
	300	SD-3230-G	580.00	SD-3230-GF	580.00		300	SD-4230-G	705.00	SD-4230-GF	705.00
	325	SD-3232-G	580.00	SD-3232-GF	580.00		325	SD-4232-G	705.00	SD-4232-GF	705.00
	350	SD-3236-G	580.00	SD-3236-GF	580.00		350	SD-4236-G	705.00	SD-4236-GF	705.00
	400	SD-3240-G	580.00	SD-3240-GF	580.00		400	SD-4240-G	705.00	SD-4240-GF	705.00
	450	SD-3245-G	580.00	SD-3245-GF	580.00		450	SD-4245-G	705.00	SD-4245-GF	705.00
	500	SD-3251-G	580.00	SD-3251-GF	580.00		500	SD-4251-G	705.00	SD-4251-GF	705.00
	550	SD-3255-G	580.00	SD-3255-GF	580.00		550	SD-4255-G	705.00	SD-4255-GF	705.00
	600	SD-3260-G	580.00	SD-3260-GF	580.00		600	SD-4260-G	705.00	SD-4260-GF	705.00

□ Lower voltage is the voltage to ground unless otherwise indicated
▲ 25 and 35 ampere ratings available on special order

table of approximate shipping weights, pounds

	100-amp E frame	100-amp F frame	225-amp J frame	225-amp K frame	600-amp L frame
3-pole	12	17	48	75	130
4-pole	14	20	53	80	135

For AB-I's requiring a neutral, the neutral is considered to be a pole. For example, an SJ-3222-I consists of a 2 pole unit breaker plus a solid neutral.



AB-I De-ion circuit breakers

15 to 225 amperes

Quicklag, E, F, J and K frames
raintight • hub size additions

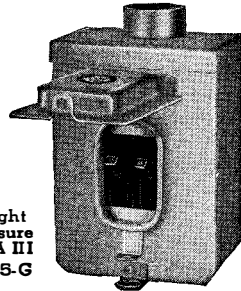
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outdoor service centers

with Quicklag, E, F, J, and K frame breakers
2, 3 and 4 pole, 15 to 225 amperes



raintight
enclosure
NEMA III
RFH-4211-I



raintight
enclosure
NEMA III
QRE-25001-55-G

Westinghouse outdoor service control centers employing the Quicklag breaker or the heavy duty E, F, J, and K frame circuit breakers inside a weatherproof sheet steel NEMA type III enclosure, serves as main disconnect and overcurrent protection for feeder circuits. These units are listed by Underwriters' Laboratories, Inc. and accepted by REA as service entrance equipment.

These control centers are adaptable for farmstead wiring where the meter and service control can be mounted on a yard pole. Where pole metering is not feasible or not permitted, these control centers can usually be mounted with the meter on the outside of a building.

50 ampere frame Quicklag, raintight*

use	ampere rating	catalog no.	list price
2-wire—120 volt a-c			
	1-35 SP	QRE-25010-66-G	\$15.70
3-wire—120/240 volt a-c +			
	42-35 SP	QRE-25001-66-G	20.40
	42-50 SP	QRE-25001-55-G	20.40

* Can also be furnished with 15, 20, 30 or 40 ampere breakers. Specify "similar to catalog numbers above except (rating desired)". These devices are normally supplied with 1/4" hub but are available with 1/4" nipple at the same price.

† These breakers arranged for 2-pole common mechanical operation and independent trip.

+ 120/240 volts means 120 volts to ground unless otherwise noted.

E, F, J and K frame, raintight • with hub†

ampere rating	2 pole, no neutral				3 pole, solid neutrals*				3 pole, no neutral				4 pole, solid neutrals*			
	use	catalog number	list price	wt.◇	use	catalog number	list price	wt.◇	use	catalog number	list price	wt.◇	use	catalog number	list price	wt.◇
non-interchangeable trip units—100 ampere E frame 240 volt a-c, 120/240 volt a-c—125/250 volt d-c ●																
15	E	RAE-2215	\$ 55.00	15	E	RAE-3215-I	\$ 61.00	17	E	RAE-3215	\$ 62.00	25	E	RAE-4215-I	\$ 68.00	26
20		RAE-2220	55.00		E	RAE-3220-I	61.00		E	RAE-3220	62.00		E	RAE-4220-I	68.00	
30		RAE-2231	55.00		E	RAE-3231-I	61.00		E	RAE-3231	62.00		E	RAE-4231-I	68.00	
40		RAE-2241	55.00		E	RAE-3241-I	61.00		E	RAE-3241	62.00		E	RAE-4241-I	68.00	
50		RAE-2250	55.00		E	RAE-3250-I	61.00		E	RAE-3250	62.00		E	RAE-4250-I	68.00	
70		RAH-2270	70.00		E	RAH-3270-I	80.00		E	RAH-3270	79.00		E	RAH-4270-I	88.00	
90		RAH-2290	70.00		E	RAH-3290-I	80.00		E	RAH-3290	79.00		E	RAH-4290-I	88.00	
100	RAH-2211	70.00	E	RAH-3211-I	80.00	E	RAH-3211	79.00	E	RAH-4211-I	88.00					
non-interchangeable trip units—100 ampere F frame 600 volt a-c—125/250 volt d-c ●																
70	F	RFH-2670	105.00	20	F	RFH-3270-I	114.00	21	F	RFH-3670	125.00	25	F	RFH-4270-I	134.00	26
90		RFH-2690	105.00		F	RFH-3290-I	114.00		F	RFH-3690	125.00		F	RFH-4290-I	134.00	
100		RFH-2611	105.00		F	RFH-3211-I	114.00		F	RFH-3611	125.00		F	RFH-4211-I	134.00	
non-interchangeable trip units—225 ampere J frame 600 volt a-c—125/250 volt d-c ●																
125	J	RJX-2612	202.00	32	J	RJX-3212-I	215.00	33	J	RJX-3612	239.00	36	J	RJX-4212-I	253.00	37
150		RJX-2616	202.00		J	RJX-3216-I	215.00		J	RJX-3616	239.00		J	RJX-4216-I	253.00	
175		RJX-2617	202.00		J	RJX-3217-I	215.00		J	RJX-3617	239.00		J	RJX-4217-I	253.00	
200		RJX-2621	202.00		J	RJX-3221-I	215.00		J	RJX-3621	239.00		J	RJX-4221-I	253.00	
225		RJX-2622	202.00		J	RJX-3222-I	215.00		J	RJX-3622	239.00		J	RJX-4222-I	253.00	
interchangeable trip units—225 ampere K frame 600 volt a-c—125/250 volt d-c ●																
125	K	RCX-2612	247.00	70	K	RCX-3212-I	261.00	72	K	RCX-3612	293.00	75	K	RCX-4212-I	307.00	77
150		RCX-2616	247.00		K	RCX-3216-I	261.00		K	RCX-3616	293.00		K	RCX-4216-I	307.00	
175		RCX-2617	247.00		K	RCX-3217-I	261.00		K	RCX-3617	293.00		K	RCX-4217-I	307.00	
200		RCX-2621	247.00		K	RCX-3221-I	261.00		K	RCX-3621	293.00		K	RCX-4221-I	307.00	
225		RCX-2622	247.00		K	RCX-3222-I	261.00		K	RCX-3622	293.00		K	RCX-4222-I	307.00	

■ This insulated groundable neutral can be grounded if necessary.

⊙ Lower voltage is the voltage to ground unless otherwise indicated.

⊙ Pipe plug will be furnished if hub is not required. Reducer will be furnished if smaller hub size is required.

◇ approximate shipping weight, pounds.

hub size additions:

top hub size	prefix	list price addition	top hub size	prefix	list price addition	top hub size	prefix	list price addition
1 1/4" nipple	E	\$2.25	1 1/2"	G	\$3.75	2 1/2"	W	\$5.35
	EE	2.25	2"	H	3.75	3"	X	8.00

⊙ Add to above prices when hub other than that indicated in catalog number is required.

* REA standard hub: 2 1/2" for the F frame and 3" for the K frame.

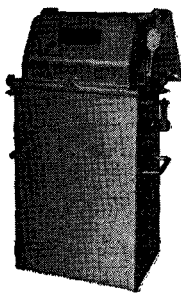
prices effective March 15, 1954 and are subject to change without notice

discount symbol A selling policy 30-000

oil immersed • non-automatic
adjustable magnetic trip

oil immersed circuit breakers

• with instantaneous magnetic trip only



oil-immersed
NEMA VIII or XI

Type ABI-O oil-immersed breakers are for use on circuits 600 volts a-c and below in locations requiring protection against corrosive or hazardous atmospheres. A 6" head of oil should be maintained above the terminals.

3 pole, 600 volt a-c—for hazardous locations

catalog number	frame size	contin. ampere rating	magnetic trip setting amperes†	oil capacity, gals.	list price* without oil	approx. wt.
OF-3611-A	F	100	4450 to 1200	8	\$ 328.00	142
OB-3611-A	G	100	4650 to 2200	8	382.00	148
OC-3622-A	K	225	4600 to 2250	17	553.00	260
OD-3660-A	L	600	41100 to 4000	22	1022.00	298

† Magnetic trip adjustable in this range.

‡ If other settings or ratings are required, refer to nearest sales office; 2 pole breakers also available.

* Weight of oil is 7 lbs. per gallon.

accessory items	style number	list price
tank lifting device.....	1418 363	\$242.00
Wemco C oil, per gallon.....	....	2.00

circuit interrupters Δ • non-automatic

Circuit interrupters provide high interrupting capacity and are used as a manual disconnecting device. They do not provide overload or short circuit protection. These interrupters can be used wherever a non-fused switch may be applied.



NEMA IA
enclosure

frame	ampere ratings	dust-resisting sheet steel (NEMA type IA)			water and dust tight cast iron (NEMA types III, IV and V)			for hazardous locations—cast iron class I, group D (NEMA type VII)			class II, groups E, F & G (NEMA type IX)		
		catalog number	list price	wt.◇	catalog number	list price	wt.◇	catalog number	list price	wt.◇	catalog number	list price	wt.◇
2 pole—240 volt a-c—125/250 volt d-c													
E	50	DA-22NA	\$ 38.00	13	IA-22NA	\$ 67.00	17	XA-22NA	\$ 83.00	31	YA-22NA	.....	...
E	100	DA-22NAE	59.00	14	IA-22NAE	.....	...	XA-22NAE	.....	...	YA-22NAE	.....	...
3 pole—240 volt a-c—125/250 volt d-c													
E	50	DA-32NA	49.00	14	IA-32NA	101.00	28	XA-32NA	117.00	61	YA-32NA	\$101.00	27
E	100	DA-32NAE	70.00	15	IA-32NAE	.....	...	XA-32NAE	.....	...	YA-32NAE	.....	...
2 pole—600 volt a-c—250 volt d-c													
F	100	DF-26NA	75.00	16	IF-26NA	168.00	61	XF-26NA	184.00	111	YF-26NA	168.00	60
K	225	DC-26NA	195.00	77	IC-26NA	360.00	205	XC-26NA	402.00	450	YC-26NA	360.00	220
L	600	DD-26NA	447.00	180	ID-26NA	874.00	745	XD-26NA	946.00	840	.....	.....	...
3 pole—600 volt a-c													
F	100	DF-36NA	88.00	18	IF-36NA	182.00	64	XF-36NA	197.00	128	YF-36NA	182.00	61
K	225	DC-36NA	230.00	83	IC-36NA	395.00	210	XC-36NA	437.00	455	YC-36NA	395.00	220
L	600	DD-36NA	534.00	185	ID-36NA	961.00	750	XD-36NA	1033.00	845	.....	.....	...

Δ For use as a manual disconnecting device. Overload or short circuit protection not provided.

◇ 125/250 and 125-250 voltage ratings shown in this Catalog are for use where voltage to ground does not exceed 125 volts.

◇ Approximate shipping weight, pounds.

adjustable magnetic trip only

continuous ampere rating	approximate trip setting amperes		dust-resisting sheet steel (NEMA type IA)			water and dust tight cast iron (NEMA types III, IV, V)			for hazardous locations—cast iron					
	minimum	maximum	catalog no.	list price	wt.◇	catalog no.	list price	wt.◇	class I, group D (NEMA type VII)			class II, groups E, F & G (NEMA type IX)		
									catalog no.	list price	wt.◇	catalog no.	list price	wt.◇
2 pole—600 volts a-c—250 volts d-c														
5	5	15	DF-2605-A	\$ 70.00	18	IF-2605-A	\$129.00	61	XF-2605-A	\$145.00	109	YF-2605-A	\$129.00	60
10	12	35	DF-2610-A	70.00		IF-2610-A	129.00		XF-2610-A	145.00		YF-2610-A	129.00	
25	30	80	DF-2625-A	70.00		IF-2625-A	129.00		XF-2625-A	145.00		YF-2625-A	129.00	
50	70	180	DF-2650-A	70.00		IF-2650-A	129.00		XF-2650-A	145.00		YF-2650-A	129.00	
70	100	270	DF-2670-A	87.00		IF-2670-A	181.00		XF-2670-A	196.00		YF-2670-A	181.00	
100	170	480	DF-2611-A▲	87.00		IF-2611-A▲	181.00		XF-2611-A▲	196.00		YF-2611-A▲	181.00	
3 pole—600 volts a-c														
5	5	15	DF-3605-A	84.00	23	IF-3605-A	143.00	64	XF-3605-A	159.00	128	YF-3605-A	143.00	61
10	12	35	DF-3610-A	84.00		IF-3610-A	143.00		XF-3610-A	159.00		YF-3610-A	143.00	
25	30	80	DF-3625-A	84.00		IF-3625-A	143.00		XF-3625-A	159.00		YF-3625-A	143.00	
50	70	180	DF-3650-A	84.00		IF-3650-A	143.00		XF-3650-A	159.00		YF-3650-A	143.00	
70	100	270	DF-3670-A	103.00		IF-3670-A	196.00		XF-3670-A	212.00		YF-3670-A	196.00	
100	170	480	DF-3611-A▲	103.00		IF-3611-A▲	196.00		XF-3611-A▲	212.00		YF-3611-A▲	196.00	

Δ Also available with trip range from 450 to 1200 amperes. (Specify on order—similar to DF-2611-A except this setting, at same price).

◇ Approximate shipping weight, pounds.



AB-I De-ion circuit breakers dimensions

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dimensions • additions • weights
special attachments

circuit breaker dimensions, additions

dimensions and weights of enclosures (approx.)

frame size	ampere range	poles	width	height	depth
NEMA type IA • sheet steel • indoor					
50 ▲	15 to 50 E	2-3	7 $\frac{1}{2}$	12 $\frac{3}{4}$	6 $\frac{7}{16}$
100 ▲	70 to 100 E	2-3	8 $\frac{1}{2}$	13 $\frac{1}{8}$	7 $\frac{9}{16}$
100 ▲	15 to 50 F	2-3	7 $\frac{1}{2}$	16 $\frac{1}{4}$	7 $\frac{3}{8}$
100 ▲	70 to 100 F	2-3	8 $\frac{1}{2}$	18	7 $\frac{7}{8}$
100 ▲	50 to 100 G	2-3	12	18	7 $\frac{3}{8}$
225 ▲	70 to 225 I	2-3	13 $\frac{3}{8}$	19 $\frac{3}{8}$	9 $\frac{7}{16}$
225 ▲	70 to 225 K	2-3	14 $\frac{1}{2}$	27 $\frac{1}{8}$	11 $\frac{1}{2}$
600 ▲	225 to 600 L	2-3	18 $\frac{3}{8}$	41 $\frac{1}{8}$	13 $\frac{3}{4}$

NEMA type III only—raintight • sheet steel					
50 ▲	15 to 50 E	2, 3 SN, 4SN	6 $\frac{1}{2}$	11 $\frac{5}{8}$	4 $\frac{7}{8}$
100 ▲	70 to 100 E	2, 3 SN, 4SN	7 $\frac{1}{4}$	13 $\frac{1}{8}$	4 $\frac{7}{8}$
100 ▲	70 to 100 F	2, 3 SN, 4SN	9 $\frac{3}{4}$	17 $\frac{1}{4}$	6
225 ▲	125 to 225 I	2, 3 SN, 4SN	6 $\frac{11}{16}$	21 $\frac{1}{8}$	6 $\frac{11}{16}$
225 ▲	125 to 225 K	2, 3 SN, 4SN	12 $\frac{3}{4}$	26 $\frac{1}{8}$	6 $\frac{11}{16}$

NEMA types III, IV, V • water and dust-tight NEMA type IX • class II, groups E, F and G locations					
50 ▲	15 to 50 E	1-2	5 $\frac{3}{4}$	9 $\frac{7}{8}$	5 $\frac{3}{4}$
50 ▲	15 to 50 E	3	9 $\frac{3}{8}$	9 $\frac{3}{8}$	6 $\frac{7}{16}$
100 ▲	15 to 50 F	2-3	8 $\frac{1}{2}$	16 $\frac{1}{2}$	7 $\frac{11}{32}$
100 ▲	70 to 100 F	2-3	8 $\frac{1}{2}$	18 $\frac{3}{8}$	7 $\frac{3}{8}$
100 ▲	50 to 100 G	2-3	12 $\frac{1}{2}$	19 $\frac{1}{8}$	7 $\frac{1}{8}$
225 ▲	70 to 225 K	2-3	17	30	9 $\frac{5}{8}$
600 ▲	225 to 600 L	2-3	23 $\frac{1}{2}$	47	19 $\frac{1}{8}$

NEMA type VII • class I, group D hazardous locations					
50 ▲	15 to 50 E	1-2	6 $\frac{1}{2}$	10 $\frac{3}{8}$	6
50 ▲	15 to 50 E	3	9 $\frac{3}{8}$	11 $\frac{1}{8}$	7 $\frac{1}{8}$
100 ▲	15 to 50 F	2-3	9 $\frac{3}{8}$	16 $\frac{1}{8}$	7 $\frac{1}{8}$
100 ▲	70 to 100 F	2-3	9 $\frac{3}{8}$	19 $\frac{1}{8}$	8 $\frac{3}{8}$
100 ▲	50 to 100 G	2-3	15 $\frac{3}{8}$	20 $\frac{3}{8}$	7 $\frac{7}{8}$
225 ▲	70 to 225 K	2-3	20 $\frac{1}{2}$	30 $\frac{1}{2}$	14 $\frac{7}{8}$
600 ▲	225 to 600 L	2-3	23 $\frac{1}{2}$	47	19 $\frac{1}{8}$

NEMA I and IB • general purpose supplementary line							
frame size	ampere range	poles	width		height		depth
			flush	surface	flush	surface	
50 ▲	15 to 50 E	2 SN	6 $\frac{1}{2}$	5 $\frac{3}{8}$	11 $\frac{1}{2}$	10 $\frac{1}{16}$	4 $\frac{1}{4}$
50 ▲	15 to 50 E	2	8 $\frac{1}{8}$	6 $\frac{1}{8}$	12 $\frac{3}{8}$	11 $\frac{3}{8}$	4 $\frac{1}{4}$
50 ▲	15 to 50 E	3	8 $\frac{1}{8}$	7 $\frac{1}{8}$	12 $\frac{3}{8}$	11 $\frac{3}{8}$	4 $\frac{1}{4}$

NEMA type IB • sheet steel • indoor					
50 ▲	15 to 100 E	3SN-4SN	8 $\frac{1}{2}$	14	4 $\frac{3}{4}$
100 ▲	70 to 100 F	3SN-4SN	8 $\frac{1}{2}$	18 $\frac{3}{8}$	5 $\frac{1}{2}$
225 ▲	70 to 225 K	3SN-4SN	13 $\frac{1}{8}$	29 $\frac{1}{2}$	6 $\frac{1}{8}$
600 ▲	225 to 600 L	3SN-4SN	16 $\frac{1}{8}$	39 $\frac{1}{2}$	9
100 ▲	70 to 100 E	3SN-4SN	8 $\frac{1}{2}$	14	4 $\frac{3}{4}$
100 ▲	70 to 100 F	3SN-4SN	8 $\frac{1}{2}$	18 $\frac{3}{8}$	5 $\frac{1}{2}$
225 ▲	70 to 225 I	3SN-4SN	14 $\frac{1}{8}$	20 $\frac{1}{8}$	6 $\frac{1}{8}$
225 ▲	70 to 225 K	3SN-4SN	13 $\frac{3}{8}$	29 $\frac{3}{8}$	6 $\frac{1}{8}$

▲ non-interchangeable trip △ interchangeable trip
For non-automatic circuit interrupters see above listings for standard AB-I units for the same voltage and current ratings.

solderless terminals furnished on AB-I circuit breakers

breaker rating	wire size		
frame	trip amperes	maximum	minimum
50 amp E frame	15-30 40-50	8 4	14 14
100 amp E frame	70-100	0	6
100 amp F frame	15-100	0	14
100 amp G frame	50-100	0	6
225 amp I frame	150-225	350 MCM	6
225 amp K frame	70-100 125-200 225	0 250 MCM 350 MCM	6 6 4
600 amp L frame	125-350 400-500 550-600	500 MCM two 350 MCM two 500 MCM	1 two 2/0 two 300 MCM

prices effective March 15, 1954 and are subject to change without notice
discount symbol A selling policy 30-000

additions: special finishes for AB-I enclosures.

frame size	aluminum finish or zinc chromate primer* list price
E frame	\$ 7.30
F-G frame	15.30
J-K frame	19.30
L frame	36.00

* primer can be supplied with standard Westinghouse finish or left for customers' finish.

† for other finishes, refer to Headquarters

add for special drilling and tapping of cast enclosures

conduit size 1/4-inch and below—list price per hole \$7.30
conduit size 1/2-inch to 3-inch—list price per hole \$15.30
conduit size 3 1/2-inch or over—list price per hole \$22.60

add for insulated groundable neutrals

for 3-wire, add to 2 pole price
for 4-wire, add to 3 pole price
E (50 amp) \$6.00 list J-K (225 amp) \$13.00 list
E-F (100 amp) 9.00 list L (600 amp) 17.00 list

additions for special attachments*

♦shunt trip (including leads and cut-off switch).....\$59.00 list
♦low voltage trip (including leads and external resistors when required—instantaneous non-adjustable).....\$59.00 list
ground current limiter.....\$59.00 list
♦electrical operation (including motor mechanism and special sheet steel enclosures. Does not include control switch, shunt trip or auxiliary switch).....\$306.00 list
♦reverse current attachment operates on as little as 10% reversal of current.....\$156.00 list
♦bell alarm.....\$24.00 list

auxiliary switches These internally-mounted switches are used to open and close relays or control circuits as the breaker operates and to operate indicating lights in remote locations. The capacity of these switches at 120 volts a-c is 10 amps.; at 600 volts a-c, 2 amps.

"A" contacts are closed when the breaker is closed.

"B" contacts are open when the breaker is closed.

Specify "A" and/or "B" contacts; DO NOT order by "normally-open" or "normally-closed".

	list addition
for E breaker:	
1-A and 1-B contacts (2, 3 pole frames).....	\$10.00
2-A and 2-B contacts (3 pole frame only).....	20.00
for F breaker:	
1-A and 1-B contacts (2, 3 pole frames).....	24.00
2-A and 2-B contacts (3 pole frame only).....	48.00
for G, J, K, L breakers:	
2 contacts—1-A and 1-B.....	24.00
2 contacts—2-A's or 2-B's.....	33.00
3 contacts—Combination of A's and B's (not available on 2-pole G).....	42.00
4 contacts—Combination of A's and B's (not available on 2-pole G or K).....	48.00

* where more contacts desired, contact headquarters sales
♦ for breakers on which these are available, refer to price list 29-060
† important to specify voltage and frequency when ordering these special attachments

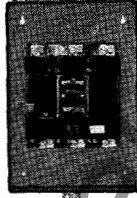
pilot light renewal (bulb included)

	volts	style no.	list price
	110	1253 040	\$6.65
	250	1253 041	6.65
	460	1246 296	6.65
	600	1246 297	6.65
bull's eye		style 781 832	list price \$1.30
neon bulb		style 1246 300	list price .95

ratings • descriptions
ordering information

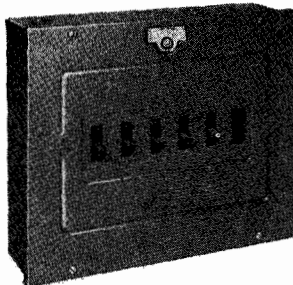
DE-ION® circuit breakers

Westinghouse AB breakers, in addition to passing Underwriters' Laboratories, Inc., interrupting tests, are also given an interrupting rating based on NEMA test procedure. Both of these ratings are shown in the following table.

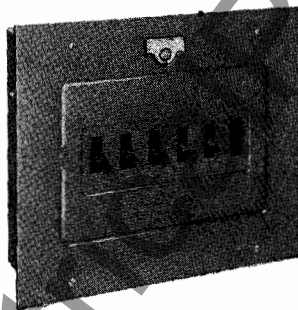
	 E 1, 2, 3 Pole	 F 2, 3, 4 Pole	 G 2, 3, 4 Pole	 J 2, 3 Pole	 K 2, 3, 4 Pole	 L 2, 3 Pole
Ampere Ratings (U.L. Listed)	15 100	15 100	40 100	70 225	70 225	125 600
A-C Voltage Ratings	120 (277+) 240 240	600	600	600	600	600
D-C Voltage Rating	125 125/250 125/250	250	250	250	250	250
Underwriters' Laboratories Interrupting Ratings—Amps.	5,000 10,000+	10,000	10,000	10,000	10,000	10,000
Interrupting Ratings—Amps. A-C—Based on NEMA Test Procedures	5,000 10,000+	600 VAC 15,000 240 VAC 20,000	15,000 20,000	15,000 25,000	25,000 30,000	25,000 40,000

*Single pole 15 and 20 ampere ratings for 277/480 volts a-c circuits.

De-ion loadcenters



surface mounted



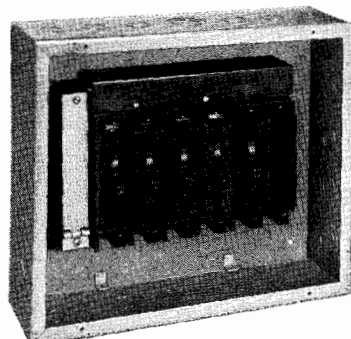
flush mounted

Nofuze De-ion loadcenters are designed for control and protection of motor circuits, branch circuit distribution and industrial lighting circuits where a heavy duty "quick-make", "quick-break" circuit breaker is needed.

The AB De-ion circuit breakers used in these loadcenters may be arranged in any combination of ratings and poles up to a maximum of 10 single poles.



2-circuit



6-circuit

two to ten circuits

The 2, 3 and 4 wire devices are shipped completely assembled with circuit breakers in place.

Box and circuit breakers for the 4, 6, 8 and 10 circuit loadcenters are shipped separately. The box includes the cover, mounting pan, flexible bus and other details required to mount the circuit breakers. The bottom pan on which circuit breakers are mounted is drilled to accommodate one, two or three-pole breakers since all breakers regardless of rating have uniform pole spacing and mounting details.

An insulating cover consisting of a piece of angle Micarta® of sufficient length is supplied to enclose all live terminals on the line side of the 4, 6, 8 and 10 breaker enclosures.

flexible bus

Flexible bus of 60 ampere capacity which is furnished with the box can be connected for 2-wire, 120 volt; 3-wire and 4-wire, 120/240 volt or 3 phase, 240 volt a-c.

enclosures and covers

Enclosures and covers have a bonderized coating which is integral with the metal itself. It provides a secure anchor for the final gray enamel finish and minimizes corrosion.

flush or surface mounting

These heavy duty De-ion loadcenters are available for flush or surface mounting. They can be installed anywhere in the building nearest center of the load which they serve. This effects maximum savings in installation and operation costs by reducing the length of wire runs and consequent voltage drop in branch circuits.

when ordering, specify:

2, 3 or 4 wire devices,

Style number and description (flush or surface mounting and ampere rating). These devices are completely assembled at the factory with breakers in place. See table I, page 10.

4-6-8 or 10 circuit loadcenters,

Each component part must be ordered separately. See tables II and III, page 10.

method of shipment for loadcenters

Circuit breakers, boxes, covers and blanking buttons are shipped in separate packages.



De-ion loadcenters

2, 3, 4, 6, 8 and 10 circuits

surface and flush mounts
tables of styles and breakers

page 10

2, 3 and 4 wire devices[▲] table I

2 wire

use	no. and capacity of breakers	style number		list price	wt. ◇
		surface	flush		
2 wire solid neutral • 120 volt a-c, 125 volt d-c					
2 pole grd. insulated neutral 	1—15 SP	1301 568	1301 553	\$18.20	8
	1—20 SP	1301 569	1301 554	18.20	
	1—30 SP	1470 950	1470 947	18.20	
	1—40 SP	1531 964	1531 961	18.20	
	1—50 SP	1301 572	1301 557	18.20	

2 wire no neutral • 125-250 volt d-c, 240 volt a-c					
2 pole 	1—15 DP	1301 573	1301 558	31.00	10
	1—20 DP	1301 574	1301 559	31.00	
	1—30 DP	1470 949	1470 946	31.00	
	1—40 DP	1531 963	1531 960	31.00	
	1—50 DP	1301 577	1301 562	31.00	

3 wire

use	no. and capacity of breakers	style number		list price	wt. ◇
		surface	flush		
3 wire solid neutral • 120/240 volt a-c, 125/250 volt d-c					
2 SP-grd. insulated neutral 	2—15 SP	1420 554	1420 549	\$33.00	11
	2—20 SP	1420 555	1420 550	33.00	
	2—30 SP	1513 070	1513 069	33.00	
	2—40 SP	1531 974	1531 973	33.00	
	2—50 SP	1420 558	1420 553	33.00	

3 wire no neutral • 125-250 volt d-c, 240 volt a-c					
3 pole 	1—15 TP	1301 578	1301 563	44.00	12
	1—20 TP	1301 579	1301 564	44.00	
	1—30 TP	1470 948	1470 945	44.00	
	1—40 TP	1531 962	1531 959	44.00	
	1—50 TP	1301 582	1301 567	44.00	

▲ Listed by Underwriters' Laboratories, Inc.

‡ 125-250 and 125/250 volt ratings shown are for use where voltage to ground does not exceed 125 volts. If neutral is required, add \$5.80 list each.

■ If a combination of this rating is desired, order "similar to style number except (rating desired)."

◊ Approximate shipping weight, pounds.

4-6-8 or 10 circuit loadcenter* table II

2, 3 or 4 wire solid neutral • 125/250 volts • a-c or d-c

number of poles	list price complete loadcenters with single pole AB breakers‡	box only			flush or surface covers only			
		style number	list price	wt. ◊	flush cover style number	surface cover style number	list price	wt. ◊
4	\$ 61.00	1107 165	\$18.00	9	1107 295	1107 294	\$3.20	3
6	82.00	1107 166	18.00	11	1107 297	1107 296	3.20	4
8	108.00	1107 167	23.00	14	1107 299	1107 298	4.00	5
10	130.00	1107 168	23.00	17	1107 301	1107 300	4.00	6

♣ Not listed by Underwriters' Laboratories, Inc.

‡ Price includes box, cover, neutral bus, etc.

◊ Approximate shipping weight, pounds.

type AB, E frame circuit breakers table III

ampere rating ▲	single pole		2 pole		3 pole	
	style number	omission price each breaker ◆	style number	price addition when substituting for 2, 1 pole breakers	style number	price addition when substituting for 3, 1 pole breakers ◆
15	1532 372	\$9.00	1532 382	\$4.70	1532 392	\$6.50
□ 15	1631 958	□	1532 383	4.70	1532 393	6.50
20	1532 373	9.00	1532 384	4.70	1532 394	6.50
□ 20	1631 959	□	1532 385	4.70	1532 395	6.50
30	1532 374	9.00	1532 386	4.70	1532 396	6.50
40	1532 375	9.00				
50	1532 376	9.00				

■ Used only in 4, 6, 8 and 10 circuit breaker enclosures.

□ These ratings are for use on 277 volt a-c fluorescent lighting. When substituted in place of the existing breakers in the loadcenters listed in tables I and II, add \$2.60 for each breaker needed.

◆ Price includes cost of required blanking buttons style number 683 477.

▲ 25 and 35 ampere ratings available on special order.

note: Application of thermal circuit breakers where it is definitely known that breakers will be applied at other than normal ambients (25 C), see application data.

application data

thermal circuit breakers and fusible devices

The primary function of an overcurrent protective device for conductors is to guard the conductor against overheating. The current-carrying ability of a conductor is limited by the temperature at which its insulation may be operated safely. The operating temperature is the sum of the ambient temperature plus the temperature rise due to loss in the conductor. To limit this total temperature, the National Electrical Code requires that conductor be derated at ambient temperatures above 30 C, the amount of derating depending upon the type of insulation used.

The ideal overcurrent protective device is one which likewise must be derated at elevated ambient temperatures and one in which the derating closely parallels the derating of the protected conductor. This applies to fuses as well as to circuit breakers.

Operating on the thermal principle, all thermal breakers are affected by changes in ambient temperature, thereby taking into account the decrease in conductor capacity at elevated ambient temperatures.

In applying overcurrent devices, either circuit breakers or fuses which depend upon heat for their operation, it must be remembered that such devices are calibrated at an ambient temperature specified by the Underwriters' Laboratories. In the case of circuit breakers this is 25 C (77 F). For other ambient temperatures the current rating of thermal breakers varies from the rating at 25 C ambient.

While thermal circuit breakers are tested by the Underwriters' Laboratories at 25 C ambient, and are tested individually and in the open they are seldom actually applied in this manner. They are usually mounted in individual enclosures, combination linestarters, panelboards, or enclosed switchboards. In applying enclosed protective devices of the thermal type, consideration must be given not only to the ambient temperature in which the enclosure is mounted, but also to the temperature within the enclosure itself.

It is impossible to provide a simple derating factor that will cover accurately the various enclosures. The increase in temperature inside the enclosure is caused by several factors—such as the losses in the device itself, losses in other apparatus and conductors within the enclosure. In the case of a panelboard, variables are introduced by the number of circuits, gutter space and number of conductors in the cabinet.

When the conductors are selected, good engineering practice dictates that the capacity of the conductor be at least 125% of full load current. The National Electrical Code requires this for individual motor branch circuits and for other branch circuits supplying continuous loads.

Application: The panelboard standards (42-82) of the National Electrical Manufacturers Association recommend that circuits be loaded to not exceed 70% of the protective device rating. This means that in panelboards the conductor and overcurrent protective device rating should be not less than 142% of the load. For fusible safety switches, the Underwriters' Laboratories, Inc. require that all switches be marked—"continuous load current not to exceed 80% of the rating of the fuses employed in other than motor circuits". If the practices recommended above are followed, Westinghouse thermal breakers will in normal applications operate satisfactorily in an enclosure with normal outside ambient temperatures, provided a breaker is selected having a rating equal to that of the conductor. The factor of 125% in the case of individually enclosed breakers or 142% in the case of panelboards will in general take care of the difference in ambient temperatures inside and outside the enclosure. Therefore, enclosed breakers should be applied using these factors and the ambient temperatures outside the enclosure. Enclosed thermal protective devices should not be mounted in direct sun or other exceptionally warm locations where additional heat will be absorbed into the enclosure, unless special consideration is given to derating. Such cases and also cases where additional heat producing devices are mounted within the enclosure, should be referred to nearest region Office.

for further details, refer to application data 29-060.

table 1—allowable current-carrying capacities of conductors in amperes

‡ Not more than three conductors in raceway or cable (based on room temperature of 30° C, 86° F).

size AWG MCM	CM table 18 NEC	(1) rubber types R, RW RU (14-6)	(2)	(3)	(4)	(5)	(6)
		T & TW (thermo- plastic) 14-4/O	types RH	types TA, V & AVB	types AVA, AVL	types AI (14A- 8) & AIA	types A (14-8) & AA
14	4,107	15	15	25	30	30	30
12	6,530	20	20	30	35	40	40
10	10,380	30	30	40	45	50	55
8	16,510	40	45	50	60	65	70
6	26,250	55	65	70	80	85	95
4	41,740	70	85	90	105	115	120
3	52,640	80	100	105	120	130	145
2	66,370	95	115	120	135	145	165
1	83,690	110	130	140	160	170	190
0	105,500	125	150	155	190	200	225
00	133,100	145	175	185	215	230	250
000	167,800	165	200	210	245	265	285
0000	211,600	195	230	235	275	310	340
250	250,000	215	255	270	315	335	...
300	300,000	240	285	300	345	380	...
350	350,000	260	310	325	390	420	...
400	400,000	280	335	360	420	450	...
500	500,000	320	380	405	470	500	...
600	600,000	355	420	455	525	545	...
700	700,000	385	460	490	560	600	...
750	750,000	400	475	500	580	620	...
800	800,000	410	490	515	600	640	...
900	900,000	435	520	555	...	...	...
1,000	1,000,000	455	545	585	680	730	...
1,250	1,250,000	495	590	645	...	...	...
1,500	1,500,000	520	625	700	785	...	...
1,750	1,750,000	545	650	735	...	...	...
2,000	2,000,000	560	665	775	840	...	...

‡ More than three conductors in a raceway or cable: Table 1 gives the allowable current-carrying capacity for not more than three conductors in a raceway or cable. If the number of conductors in a raceway or cable is from 4 to 6, the allowable current-carrying capacity of each conductor shall be reduced to 80 per cent of the value in the table 1. If the number of conductors in a raceway or cable is from 7 to 9, the allowable current-carrying capacity of each conductor shall be reduced to 70 per cent of the values in table 1.

table 2—correction factor for allowable current carrying capacities of conductors for room temperatures over 30° C

degrees		column no.1					
C	F	(1)	(2)	(3)	(4)	(5)	(6)
40	104	.82	.88	.90	.94	.95	...
45	113	.71	.82	.85	.90	.92	...
50	122	.58	.75	.80	.87	.89	...
55	131	.41	.67	.74	.83	.86	...
60	140	...	.58	.67	.79	.83	.91
70	158	...	.35	.52	.71	.76	.87
75	167	...	...	.43	.66	.72	.86
80	176	...	...	.30	.61	.69	.84
90	194	...	...	...	.50	.61	.80
100	212	...	...	...	...	.51	.77
120	248	...	...	...	...	...	.69
140	284	...	...	...	...	...	.59

‡ Column numbers refer to column numbers in table 1 (i.e., column 2 is for type RH wire.)



AB-I De-ion circuit breakers

application data

page 12

table 3—number of conductors in conduit or tubing

rubber covered, types RF-32, R, RH, RW and RU Thermoplastic, types TF, T and TW

size AWG MCM	number of conductors in one conduit or tubing								
	1	2	3	4	5	6	7	8	9
inside diameter in inches									
18	1/2	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4
16	1/2	1/2	1/2	1/2	1/2	1/2	1/2	3/4	3/4
14	1/2	1/2	1/2	1/2	1/2	1/2	1	1	1 1/4
12	1/2	1/2	1/2	1/2	1/2	1 1/4	1 1/4	1 1/4	1 1/4
10	1/2	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
8	1/2	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
6	1/2	1	1	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
4	1/2	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2
3	1/2	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2
2	1/2	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2
1	1/2	1 1/4	1 1/4	1 1/2	1 1/2	2	2	2 1/2	2 1/2
0	1	1 1/2	2	2 1/2	2 1/2	2 1/2	3	3	3 1/2
000	1	1 1/2	2	2 1/2	2 1/2	2 1/2	3	3	3 1/2
0000	1 1/4	2	2 1/2	3	3	3	3 1/2	3 1/2	4
250	1 1/4	2 1/2	2 1/2	3	3	3 1/2	4	4 1/2	4 1/2
300	1 1/4	2 1/2	2 1/2	3	3	3 1/2	4	4 1/2	4 1/2
350	1 1/4	3	3	3 1/2	3 1/2	4	4 1/2	5	5
400	1 1/4	3	3	3 1/2	3 1/2	4	4 1/2	5	5
500	1 1/2	3	3	3 1/2	4	4 1/2	5	5	6

† see footnote under table 1.

† Where a service run of conduit or electrical metallic tubing does not exceed 50 feet in length and does not contain more than the equivalent of two quarter bends from end to end two No. 4 insulated and one No. 4 bare conductors may be installed in 1-inch conduit or tubing.

table 4—selection of circuit breaker and fuse sizes for motor branch circuits† listed by motor full load current—

recommended rating of branch circuit breaker based on 20 seconds accelerating time†																			
full load current of motor in amps	motors: single phase squirrel-cage synchronous			motors: squirrel-cage synchronous			motors: wound rotor direct current			full load current of motor in amps	motors: single phase squirrel-cage synchronous			motors: squirrel-cage synchronous			motors: wound rotor direct current		
	starters: full voltage reduced voltage (reactor and resistor)			starters: auto-transformer squirrel-cage [high reactance (no code marking)]							starters: full voltage reduced voltage (reactor and resistor)			starters: auto-transformer squirrel-cage [high reactance (no code marking)]					
	max. fuse amps.	max. bkr. amps.	recom. bkr. amps.	max. fuse amps.	max. bkr. amps.	recom. bkr. amps.	max. fuse amps.	max. bkr. amps.	recom. bkr. amps.		max. fuse amps.	max. bkr. amps.	recom. bkr. amps.	max. fuse amps.	max. bkr. amps.	recom. bkr. amps.	max. fuse amps.	max. bkr. amps.	recom. bkr. amps.
1	15	15	15	15	15	15	15	15	15	58	175	150	100	120	125	100	90	100	100
2	15	15	15	15	15	15	15	15	15	60	200	150	100	120	125	100	90	100	100
3	15	15	15	15	15	15	15	15	15	62	200	175	100	125	125	100	100	100	100
4	15	15	15	15	15	15	15	15	15	64	200	175	100	150	150	100	100	100	100
5	15	15	15	15	15	15	15	15	15	66	200	175	125	150	150	100	100	100	100
6	20	15	15	15	15	15	15	15	15	68	225	175	125	150	150	125	110	125	125
7	25	20	15	20	15	15	15	15	15	70	225	175	125	150	150	125	110	125	125
8	25	20	20	20	20	15	15	20	15	72	225	200	125	150	150	125	110	125	125
9	30	30	20	25	20	20	15	20	15	74	225	200	125	150	150	125	125	125	125
10	30	30	30	25	20	20	15	20	15	76	250	200	125	175	175	125	125	125	125
12	40	30	30	30	30	20	20	20	20	78	250	200	125	175	175	125	125	125	125
14	45	40	40	35	30	30	25	20	20	80	250	200	125	175	175	125	125	125	125
16	50	40	40	40	40	30	25	30	30	82	250	225	150	175	175	125	125	125	125
18	60	50	50	45	40	40	30	30	30	84	250	225	150	175	175	150	150	150	150
20	60	50	50	50	40	40	30	40	30	86	300	225	150	175	175	150	150	150	150
22	70	70	50	60	50	40	35	40	40	88	300	225	150	200	200	150	150	150	150
24	80	70	50	60	50	50	40	40	40	90	300	225	150	200	200	150	150	150	150
26	80	70	50	70	70	50	40	40	40	92	300	250	150	200	200	150	150	150	150
28	90	70	70	70	70	50	45	50	50	94	300	250	150	200	200	150	150	150	150
30	90	100	70	70	70	50	45	50	50	96	300	250	150	200	200	150	150	150	150
32	100	100	70	70	60	50	50	50	50	98	300	250	150	200	200	150	150	150	150
34	110	100	70	70	70	70	60	70	70	100	300	250	175	200	200	150	150	150	150
36	110	100	100	80	100	70	60	70	70	105	350	300	175	225	225	175	175	175	175
38	125	100	100	80	100	70	60	70	70	110	350	300	175	225	225	175	175	175	175
40	125	100	100	80	100	70	60	70	70	115	350	300	175	250	250	175	175	175	175
42	125	125	100	90	100	70	70	70	70	120	400	300	200	250	250	200	200	200	200
44	125	125	100	90	100	70	70	70	70	125	400	350	200	250	250	200	200	200	200
46	150	125	100	100	100	100	70	70	70	130	400	350	200	300	300	200	200	200	200
48	150	125	100	100	100	100	80	100	100	135	450	350	225	300	300	225	225	225	225
50	150	125	100	100	100	100	80	100	100	140	450	350	225	300	300	225	225	225	225
52	175	150	100	110	125	100	80	100	100	145	450	400	225	300	300	225	225	225	225
54	175	150	100	110	125	100	90	100	100	150	450	400	225	300	300	225	225	225	225
56	175	150	100	120	125	100	90	100	100										

NOTE: For unfused disconnects to be used on motor circuits see Article 440.3, NEC 1953.

† Adapted from 1953 N.E. Code, chapter 10. See table in Quick Selector Section 2223, page 28, for proper terminal ampere rating of motor.

† Applications having unusually long starting period or frequent starting, refer to nearest Westinghouse representative for proper breaker size.

application data

table 5

h.p. average ampere ratings • up to 50 h.p.

h.p.	single phase a-c motors					3-phase, 60-cycle a-c induction motors					3-phase synchronous motors			
	syn. speed rpm	current in amperes				syn. speed rpm	current in amperes				percent effi- ciency	amps at 100% p.f.		
		110 volts	220 volts	440 volts	550 volts		110 volts	220 volts	440 volts	550 volts		220 volts	440 volts	550 volts
1/8	3600	2.52	1.26	0.63	0.50	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1800	2.80	1.40	0.70	0.56	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1200	3.40	1.70	0.85	0.68	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/4	3600	2.70	1.35	0.68	0.54	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1800	3.00	1.50	0.75	0.60	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1200	3.60	1.80	0.90	0.72	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/4	3600	3.60	1.80	0.90	0.72	1800	1.92	0.96	0.48	0.38	.....	.....	.....	.....
	1800	4.12	2.06	1.03	0.83	1200	2.32	1.16	0.58	0.46	.....	.....	.....	.....
	1200	5.50	2.75	1.38	1.10	900	2.90	1.45	0.73	0.58	.....	.....	.....	.....
1/2	3600	4.50	2.25	1.13	0.90	1800	2.32	1.16	0.58	0.47	.....	.....	.....	.....
	1800	5.00	2.50	1.25	1.00	1200	2.86	1.43	0.72	0.58	.....	.....	.....	.....
	1200	6.00	3.00	1.50	1.20	900	3.50	1.75	0.88	0.71	.....	.....	.....	.....
1/2	1200	7.16	3.58	1.80	1.44	1200	4.14	2.07	1.04	.83	.....	.....	.....	.....
	900	10.0	5.02	2.50	2.00	900	5.80	2.90	1.45	1.16	.....	.....	.....	.....
3/4	1800	8.06	4.04	2.02	1.62	1800	4.66	2.33	1.17	.93	.....	.....	.....	.....
	1200	9.86	4.94	2.48	1.98	1200	5.70	2.85	1.43	1.14	.....	.....	.....	.....
	900	11.9	5.96	2.98	2.38	900	6.90	3.45	1.73	1.38	.....	.....	.....	.....
1	3600	9.5	4.76	2.38	1.90	3600	5.50	2.75	1.38	1.10	.....	.....	.....	.....
	1800	10.6	5.28	2.64	2.12	1800	6.10	3.05	1.53	1.22	.....	.....	.....	.....
	1200	12.3	6.12	3.06	2.46	1200	7.08	3.54	1.77	1.42	.....	.....	.....	.....
1 1/2	900	12.9	6.48	3.24	2.60	900	7.48	3.74	1.87	1.50	.....	.....	.....	.....
	3600	14.4	7.22	3.62	2.90	3600	8.34	4.17	2.09	1.67	.....	.....	.....	.....
	1800	14.8	7.40	3.70	2.96	1800	8.56	4.28	2.14	1.71	.....	.....	.....	.....
2	1200	16.8	8.40	4.20	3.36	1200	9.70	4.85	2.43	1.94	.....	.....	.....	.....
	900	20.0	10.10	5.04	4.02	900	11.60	5.81	2.91	2.32	.....	.....	.....	.....
2	3600	19.2	9.6	4.82	3.84	3600	11.1	5.56	2.78	2.22	.....	.....	.....	.....
	1800	20.0	10.0	4.98	3.98	1800	11.5	5.76	2.88	2.30	.....	.....	.....	.....
	1200	22.0	11.0	5.50	4.40	1200	12.7	6.35	3.18	2.54	.....	.....	.....	.....
3	900	25.0	12.5	6.24	4.98	900	14.4	7.21	3.61	2.88	.....	.....	.....	.....
	3600	27.2	13.6	6.82	5.44	3600	15.7	7.87	3.94	3.14	.....	.....	.....	.....
	1800	28.8	14.3	7.18	5.74	1800	16.6	8.29	4.14	3.32	.....	.....	.....	.....
5	1200	30.8	15.4	7.72	6.16	1200	17.8	8.92	4.46	3.56	.....	.....	.....	.....
	900	35.4	17.6	8.80	7.08	900	20.4	10.20	5.09	4.08	.....	.....	.....	.....
5	3600	44.0	22.0	11.0	8.80	3600	25.4	12.7	6.34	5.08	81.0	12	6	4.8
	1800	45.6	22.8	11.4	9.14	1800	26.4	13.2	6.60	5.28	.....	.....	.....	.....
	1200	48.8	24.4	12.2	9.76	1200	28.2	14.1	7.05	5.64	.....	.....	.....	.....
7 1/2	900	54.0	27.0	13.5	10.8	900	31.2	15.6	7.80	6.24	.....	.....	.....	.....
	3600	66.4	33.2	16.6	13.3	3600	38.4	19.2	9.6	7.68	82.0	18	9	7.2
	1800	67.0	33.4	16.8	13.4	1800	38.6	19.3	9.7	7.72	.....	.....	.....	.....
10	1200	70.2	35.2	17.6	14.0	1200	40.6	20.3	10.2	8.12	.....	.....	.....	.....
	900	82.4	41.2	20.6	16.5	900	47.6	23.8	11.9	9.51	.....	.....	.....	.....
	3600	84.8	42.4	21.2	17.0	3600	49.0	24.5	12.3	9.8	83.0	23.5	11.8	9.5
15	1800	87.2	43.6	21.8	17.5	1800	50.4	25.2	12.6	10.1	.....	.....	.....	.....
	1200	92.0	46.0	23.0	18.3	1200	53.2	26.6	13.3	10.6	.....	.....	.....	.....
	900	100	50.0	25.0	20.0	900	57.8	28.9	14.5	11.6	.....	.....	.....	.....
20	600	117	58.4	29.2	23.4	600	67.6	33.8	16.9	13.5	.....	.....	.....	.....
	3600	127	63.4	31.8	25.4	3600	73.4	36.7	18.4	14.7	85.0	34.5	17.3	14
	1800	132	66.0	33.0	26.4	1800	76.2	38.1	19.1	15.2	.....	.....	.....	.....
25	1200	138	69.0	34.6	27.6	1200	79.8	39.9	20.0	16.0	.....	.....	.....	.....
	900	145	72.6	36.4	29.0	900	83.8	41.9	21.0	16.8	.....	.....	.....	.....
	600	176	83.6	41.8	33.4	600	96.6	48.3	24.2	19.3	.....	.....	.....	.....
30	3600	170	84.8	42.4	34.0	3600	98	49.0	24.5	19.6	86.0	45.5	23	18.5
	1800	175	87.4	43.8	35.0	1800	101	50.5	25.3	20.2	.....	.....	.....	.....
	1200	178	89.4	44.8	35.6	1200	103	51.7	25.9	20.6	.....	.....	.....	.....
40	900	189	94.6	47.2	37.8	900	109	54.6	27.3	21.8	.....	.....	.....	.....
	600	212	106	53.4	42.6	600	123	61.5	30.8	24.6	.....	.....	.....	.....
	3600	204	102	51.2	40.8	3600	118	59.2	29.6	23.6	87.0	56	28	22.5
50	1800	216	108	54.3	43.2	1800	125	62.7	31.3	25.0	.....	.....	.....	.....
	1200	224	112	56.0	44.6	1200	129	64.7	32.3	25.8	.....	.....	.....	.....
	900	234	117	58.3	46.8	900	135	67.4	33.7	27.0	.....	.....	.....	.....
60	600	250	125	62.4	49.8	600	144	71.9	35.9	28.8	.....	.....	.....	.....
	3600	252	126	63.0	50.6	3600	146	72.8	36.4	29.2	88.0	67	33.5	27
	1800	266	133	66.7	53.4	1800	154	77.1	38.6	30.8	.....	.....	.....	.....
80	1200	276	138	68.7	55.0	1200	159	79.4	39.7	31.8	.....	.....	.....	.....
	900	304	152	76.1	61.0	900	176	87.9	43.9	35.2	.....	.....	.....	.....
	600	340	170	85.0	67.8	600	196	98	49.0	39.2	89.0	88	44	35
100	1800	344	172	86.0	68.6	1800	198	99	49.5	39.6	.....	.....	.....	.....
	1200	360	180	90.0	72.0	1200	208	104	52.0	41.6	.....	.....	.....	.....
	900	392	196	98.0	78.2	900	226	113	56.5	45.2	.....	.....	.....	.....
125	600	418	209	105	83.8	600	242	121	60.5	48.4	89.5	110	55	44
	1800	422	211	106	84.6	1800	244	122	61.0	48.8	.....	.....	.....	.....
	1200	440	220	110	88.0	1200	254	127	63.5	50.8	.....	.....	.....	.....
150	900	478	239	120	95.4	900	276	138	69.0	55.2	.....	.....	.....	.....

■ For high torque squirrel cage motors, the ampere ratings will be at least 10% greater than the values given.

For 25-cycle motors, the current in most cases, will be equivalent to the current of a 60-cycle motor having the same number of poles, i. e., for 1500 R.P.M., 25 cycles, use data for 3600 R.P.M., 60 cycles; for 750 R.P.M., 25 cycles, use data for 1800 R.P.M., 60 cycles; etc. This rule will be found quite accurate for 25-cycle motors above 500 R.P.M. For motors 500 R.P.M. or less, particularly the smaller sizes below 20 H.P., the current will be somewhat higher (5% to 15%) than the equivalent 60-cycle motor.

For 2 phase ampere multiply the values in the table by .866. The current on the common line of a 2 phase 3 wire system is about 1.4 times the 2 phase values.

▲ Amperes given above are based on an average efficiency for given H. P. at all speeds. For instance, 25 H. P. amperes are based on 87% efficiency for all speeds and 1000 H. P. on 95% efficiency for all speeds.

For 2 Phase Amperes multiply values in table by .866.

For 80% P. F. (leading or lagging) amperes multiply 100% P. F. values by 1.25.



AB-I De-ion circuit breakers

application data

page 14

table 5—continued from page 13

h.p.	average ampere ratings • over 50 h.p.								
	3-phase, 60-cycle a-c induction motors ■					3-phase synchronous motors ▲			
	syn. speed rpm	current in amperes				percent effi- ciency	amps at 100% p.f.		
		110 volts	220 volts	440 volts	550 volts		220 volts	440 volts	550 volts
60	1800		143	71.5	57.2	90.0	131	66	53
	1200	.....	148	74.0	59.2				
	900	.....	151	75.5	60.4				
	600	.....	162	81.0	64.8				
	450	.....	162	81.0	64.8				
75	1800		178	89.0	71.2	91.0	162	81	65
	1200	.....	181	90.5	72.4				
	900	.....	187	93.5	74.8				
	600	.....	199	99.5	79.6				
	450	.....	199	99.5	79.6				
100	1800		233	116	93.2	91.5	214	107	86
	1200	.....	239	120	95.6				
	900	.....	245	123	98.0				
	600	.....	257	128	103				
	450	.....	290	145	116				
125	1800		289	144	115	91.5	268	134	107
	1200	.....	298	149	119				
	900	.....	305	153	122				
	720	.....	314	157	126				
	600	.....	320	160	128				
150	1800		346	173	138	92.0	320	160	128
	1200	.....	350	175	140				
	900	.....	363	182	145				
	720	.....	376	188	150				
	600	.....	378	189	151				
200	1800		460	230	184	92.0	426	213	171
	1200	.....	466	233	186				
	900	.....	490	245	196				
	720	.....	494	247	197				
	600	.....	498	249	199				
250	1800		528	264	211	92.5	526	263	212
	1200	.....	572	286	229				
	900	.....	580	290	232				
	720	.....	604	302	242				
	600	.....	625	312	250				
300	1800		630	315	252	92.5	636	318	255
	1200	.....	630	315	252				
	900	.....	676	338	270				
	720	.....	685	342	274				
	600	.....	696	348	278				
400	1800		722	361	289	93.5	840	420	336
	1200	.....	722	361	289				
	900	.....	722	361	289				
	720	.....	760	380	304				
	600	.....	760	380	304				
500	1800		830	415	332	94.0	1045	523	418
	1200	.....	910	455	364				
	900	.....	933	466	373				
	720	.....	955	477	382				
	600	.....	1000	500	400				
	1800		1050	523	418				
	1200	.....	1160	578	462				
	900	.....	1120	560	448				
	720	.....	1180	590	472				
	600	.....	1200	602	482				
	450	.....	1320	658	526				
	360	.....	1320	658	526				

table 6

h.p.	ratings of d-c motors in full load amperes		
	115 volts	230 volts	550 volts
1/8	1.4	.7	.3
1/6	1.8	.9	.4
1/4	2.3	1.2	.5
1/2	4.5	2.3	1.0
3/4	6.5	3.3	1.4
1	8.4	4.2	1.7
1 1/2	12.5	6.3	2.6
2	16.1	8.3	3.4
3	24.0	12.3	5.0
4	32	16.1	6.6
5	40	19.8	8.2
7 1/2	58	28.7	12.0
10	75	38	16.0
12 1/2	94	47	19.5
15	112	56	23.0
20	148	74	30
25	185	92	38
30	220	110	45
35	257	128	53
40	294	146	61
45	330	163	68
50	364	180	75
60	436	215	90
75	540	268	111
90	648	322	132
100	720	357	146
125	890	443	184
150	1060	528	220
175	1240	617	257
200	1415	705	295

■ For high torque squirrel cage motors, the ampere ratings will be at least 10% greater than the values given.

For 25-cycle motors, the current in most cases, will be equivalent to the current of a 60-cycle motor having the same number of poles, i. e., for 1500 R.P.M., 25 cycles, use data for 3600 R.P.M., 60 cycles; for 750 R.P.M., 25 cycles, use data for 1800 R.P.M., 60 cycles; etc. This rule will be found quite accurate for 25-cycle motors above 500 R.P.M. For motors 500 R.P.M. or less, particularly the smaller sizes below 20 H.P., the current will be somewhat higher (5% to 15%) than the equivalent 60-cycle motor.

For 2 phase ampere multiply the values in the table by .866. The current on the common line of a 2 phase 3 wire system is about 1.4 times the 2 phase values.

▲ Amperes given above are based on an average efficiency for given H. P. at all speeds. For instance, 25 H. P. amperes are based on 87% efficiency for all speeds and 1000 H. P. on 95% efficiency for all speeds.

For 2 phase amperes multiply values in table by .866.

For 80% P. F. (leading or lagging) amperes multiply 100% P. F. values by 1.25.

table 7—maximum rating or setting of motor-branch-circuit protective devices for motors

**with code letter on motor
indicating locked rotor kva**

**without code letter on motor
indicating locked rotor kva**

type of motor	percent of full-load current			type of motor	percent of full-load current		
	fuse rating ●	circuit breaker setting			fuse rating ●	circuit breaker setting	
		instan- taneous type	time limit type			instan- taneous type	time limit type
all A-C single-phase and polyphase squirrel-cage and synchronous motors with full-voltage, resistor or reactor starting:				single-phase, all types	300	...	250
Code Letter A	150	...	150	squirrel-cage and synchronous (full-voltage, resistor and reactor starting)	300	...	250
Code Letter B to E	250	...	200	squirrel-cage and synchronous (auto-transformer starting):			
Code Letter F to V	300	...	250	Not more than 30 amperes	250	...	200
				More than 30 amperes	200	...	200
all A-C squirrel cage and synchronous motors with auto-transformer starting:				high-reactance squirrel-cage:			
Code Letter A	150	...	150	Not more than 30 amperes	250	...	250
Code Letter B to E	200	...	200	More than 30 amperes	200	...	200
Code Letter F to V	250	...	200	wound-rotor	150	...	150
				direct-current:			
				Not more than 50 H.P.	150	250	150
				More than 50 H.P.	150	175	150

● See also table 20, columns 7, 8, 9 and 10 of National Electric Code.

For certain exceptions to the values specified see sections 4342 and 4349 of N.E.C. The values given in the last column also cover the ratings of non-adjustable time-limit types of circuit breakers which may also be modified as in section 4342.

Synchronous motors of the low-torque low-speed type (usually 450 rpm or lower) such as are used to drive reciprocating compressors, pumps, etc., which start up unloaded, do not require a fuse rating or circuit-breaker setting in excess of 200 percent of full-load current.

