TABLE OF CONTENTS
K-DON® LOW-VOLTAGE POWER CIRCUIT BREAKERS

ORDERING INSTRUCTIONS

Refer to Tables in Section 9.2.5, page 1, and supply the following information:

.....(quantity); .....pole K-Don® circuit breaker.
Removable element for drawout mounting; type.....
.....operation; control voltage*.....
.....continuous ampere rating.
.....ampere current-limiting Amp-traps.†
System voltage.....ac, ...cycles.
Catalog number**.....
Price .....each.

.....(quantity); .....pole K-Don drawout cradle;
Catalog number.....
Price .....each.

* Control voltage (if ac, specify frequency) must be given for closing motor, control relay, shunt trip and any other electrical auxiliary device.

** Leave blank space after last digits of catalog number. This space covering the direct acting trip device type and accessories will be filled in by the factory. Type OD-3 dual overcurrent direct acting trip device is standard.

EXAMPLE:

One (1); three-pole K-Don circuit breaker.
Removable element for drawout mounting, K-Don-1600.
Electrical operation; control voltage 115 volt, 60 cycle.
1600 continuous ampere rating.
1600 ampere current-limiting Amp-traps.
System voltage 480 ac, 60 cycles.
Catalog number 1345-1111
Price **(See Section 9.2.5).**

and include

One (1); three-pole K-DON-1600 drawout cradle.
Catalog number 1345-CE
Price **(See Section 9.2.5).**

In addition to completely specifying the required breaker, ordering information should include any unusual conditions concerning application, the required shipping date, the method of shipment desired, and any other considerations that are applicable.

GUIDE SPECIFICATIONS

NOTE: Blank spaces and italics denote information to be supplied by purchaser regarding either:

- ***Choice of alternates.***
- ***Addition of optional features.***

CURRENT LIMITING CIRCUIT BREAKERS

Power circuit breakers shall be.....***pole,*** each pole equipped with a direct acting dual magnetic overcurrent tripping device providing adjustable overcurrent and instantaneous short circuit protection, and a rear mounted Amp-trap current-limiting fuse in series on the line side. In parallel with the Amp-traps shall be anti-single-phasing coils which act on the tripper bar to prevent single phasing. No external tripping power shall be required. All ***(manually, electrically)*** operated breakers shall be equipped with ***(manually, motor)*** charged stored-energy closing mechanism to provide quick make operation.

The breakers shall be of the drawout type, provided with self-aligning disconnecting devices, with the disconnecting fingers mounted on the breaker for ease of maintenance. The drawout mechanism shall hold the circuit breaker rigidly in the fully connected, test and disconnected positions. Interlocks shall be provided that will prevent moving the circuit breaker from the fully-connected, test or disconnected positions unless the breaker is open. Interlocks shall prevent closing the breaker between any of these positions. Current-limiting fuses shall be inaccessible. unless breaker is in completely withdrawn position.

A hasp on the breaker escutcheon shall be provided that can receive up to three padlocks when the breaker is in the open position, positively preventing unauthorized closing or racking of the breaker. A manual trip button and breaker position contact indicator shall be provided on the escutcheon.

The following shall be supplied:

.....K-Don circuit breaker(s), ...ampere maximum continuous current, 200,000 ampere interrupting capacity at .....V ac ***(manually, electrically)*** operated.
.....ampere current-limiting Amp-traps.

† Reg. TM—The Chase-Shawmut Co.

K-DON® CIRCUIT BREAKERS

K-DON-600, K-DON-1600, K-DON-600S, K-DON-1600S AND K-2000, K-3000, K-4000 WITH SEPARATE MOUNTED FUSES

200,000 AMPERE INTERRUPTING · 600 THRU 4000 CONTINUOUS AMPERES

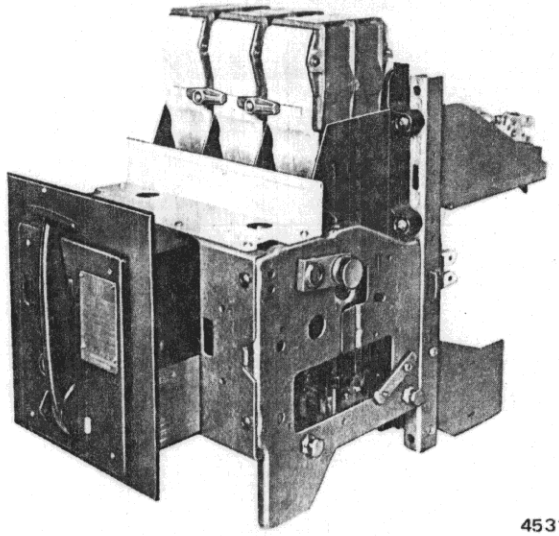
240, 480 AND 600 VOLTS A-C · 2– OR 3–POLE DRAWOUT CONTRUCTION

SAFE-COORDINATED CURRENT LIMITING FAULT PROTECTION FOR HIGH CAPACITY SYSTEMS

GENERAL

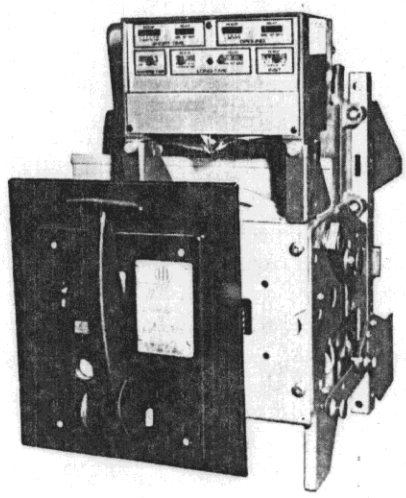
The K-DON circuit breaker is a compact versatile protective device which incorporates all of the features of the K-LINE circuit breaker and the current-limiting characteristics of the Amp-Trap† fuse. It is essentially a K-LINE circuit breaker with K-LINE features such as a choice of electromechanical or solid-state trip device△ manual or electrical stored energy closing, undervoltage trip, shunt trip, auxiliary switches and others. Physically connected in series with the line side at the rear are special purpose Amp-Trap current limiting fuses.

The circuit breaker performs its normal functions of time delay and instantaneous tripping throughout its entire range of interrupting capacity. When properly applied, the fuse takes over protection for currents at or above the circuit breaker short circuit current rating up to 200,000 amperes. For currents within the circuit breaker interrupting capability the fuse will not open unnecessarily thus saving nuisance replacements. This system affords vast flexibility in applying pin-pointed protection to any type of electrical apparatus.



45319

Front view of K-DON-600 manually operated breaker with electro-mechanical overcurrent trip (OD-3)



52281

Front view of K-DON-600 manually operated breaker with solid-state overcurrent trip (SS-3)

FEATURES

Current-limiting protection for high capacity faults.

Instantaneous tripping for medium capacity faults.

Time-delay tripping for medium and low capacity faults.

No single phasing--three phase opening on all type faults through integrally-mounted Anti-Single-Phase device.

Overcurrent trip and Anti-Single-Phase device require no external tripping power.

Choice of electro-mechanical or solid-state overcurrent trip device.

Adjustable long-time, short-time, and instantaneous settings.

Easy mounting of current-limiting fuses.

Electrical and Manual stored energy operation.

Drawout mounting in Urelite® and One-High enclosures or switchgear assemblies.

Absolutely safe maintenance.

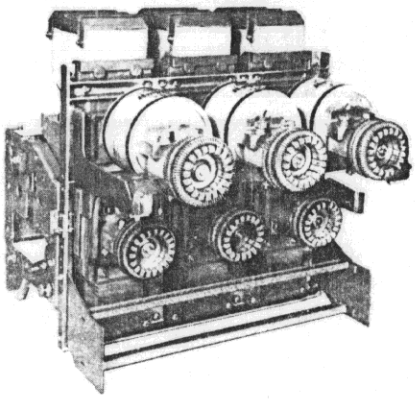
TABLE 1–RATINGS

Circuit Breaker	Frame Size	A-C Voltage	Maximum Continuous Current	Maximum Interrupting Rating Rms Amperes		Range of Circuit Breaker Long-Time Pick-Up Settings	Range of Amp-Trap Continuous Rating*
	Amperes		Amperes	Symmetrical	Asymmetrical	Amperes	Amperes
K-DON-600 & 600S	600	UP TO 600	600	200,000	235,000	40- 600	300-1200
K-DON-1600	1600	UP TO 600	1600	200,000	235,000	120-1600	300-2500
K-DON-1600S	1600	UP TO 600	1600	200,000	235,000	200-1600	600-2500

*Fuse ratings available – 300, 400, 600, 800, 1000, 1200, 1600, 2000, 2500A.

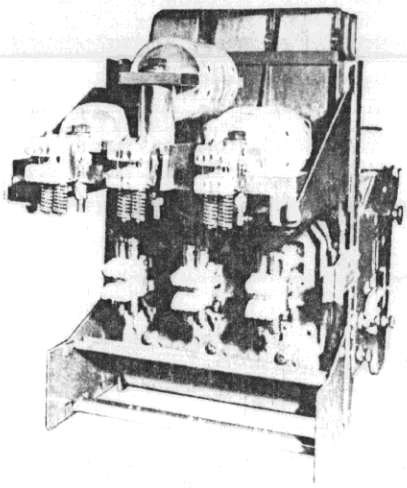
†Reg. TM–The Chase-Shawmut Co.

△For information on POWER-SHIELD™ solid-state trip device, refer to Section 9.1



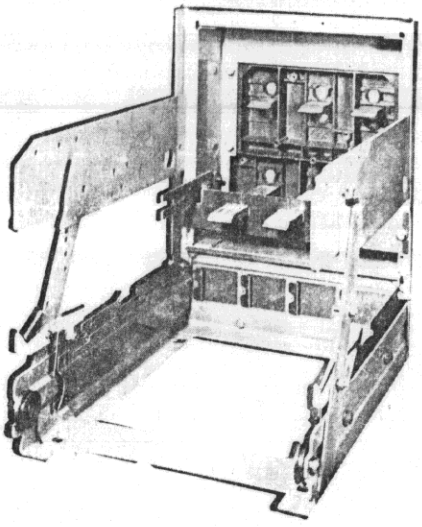
45324

Rear view of K-DON-1600 manually operated breaker with electro-mechanical overcurrent trip (OD-3)



52282

Rear view of K-DON-600 manually operated breaker with solid-state overcurrent trip device (SS-3)



45725

K-DON-600 drawout cradle

INTEGRAL AMP-TRAP FUSE MOUNTING

For all K-DON circuit breakers the current-limiting Amp-Trap fuses are mounted in a horizontal position, and are inaccessible until the breaker is withdrawn from the cradle compartment. In addition, the breaker cannot be withdrawn until it is tripped open. This is a very important safety consideration as it prevents any contact with the fuses until the circuit has been opened and the breaker and fuses isolated from the circuit. Mounting holes are provided so that a wide range of current-limiting fuse sizes can be supplied in accordance with the customer's specific application.

SEPARATE AMP-TRAP FUSE MOUNTING

A drawout fuse unit is available for the separate Amp-Trap fusing of new design I-T-E circuit breakers having frame sizes larger than 1600A. Use with unfused circuit breakers in the field of older design should be discussed with the Switchgear Division. The drawout fuse unit is provided with an Anti-Single-Phase device which must be wired to the shunt trip circuit of the associated circuit breaker. The compartment door of the drawout fuse unit should be interlocked with the circuit breaker by use of a Kirk Key Interlock.

In the case of stationary mounted Amp-Trap fuses, an I-T-E remote mounted Anti-Single-Phase device is recommended.

ANTI-SINGLE PHASE DEVICE

The Anti-Single-Phase device supplied on all 3-pole K-DON circuit breakers is integrally mounted and consists of Anti-Single Phasing coils which are in parallel with the current limiting Amp-Trap fuses. Springloaded linkage operates the circuit breaker trip bar if any of the coils are energized. There is no need for external electrical tripping power. The circuit breaker remains trip free until all blown Amp-Trap fuses are replaced and the device is reset by pushing the target on the circuit breaker's left side subpanel.

Projection of the Anti-Single-Phase device target on subpanel and overcurrent indicator on escutcheon indicates fault current tripping of the K-DON circuit breaker.

DRAWOUT CRADLE

A cradle comprises stationary power and control separable contacts and other drawout mechanisms in a complete jig welded rigid assembly. There is no dependence upon an external frame for any critical alignment.

All K-DON Circuit Breakers and their corresponding cradles can be mounted in a 22½" high compartment thereby allowing four-high construction in a typical 90 inch high board.

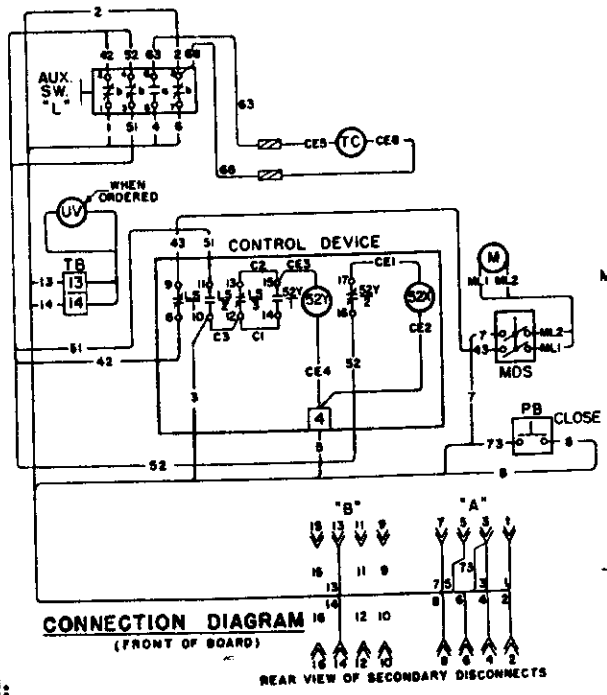
Each cradle has provisions for mounting up to three (3) I-T-E current transformers which are front accessible with the K-DON element removed from the cradle.

KIRK KEY INTERLOCK

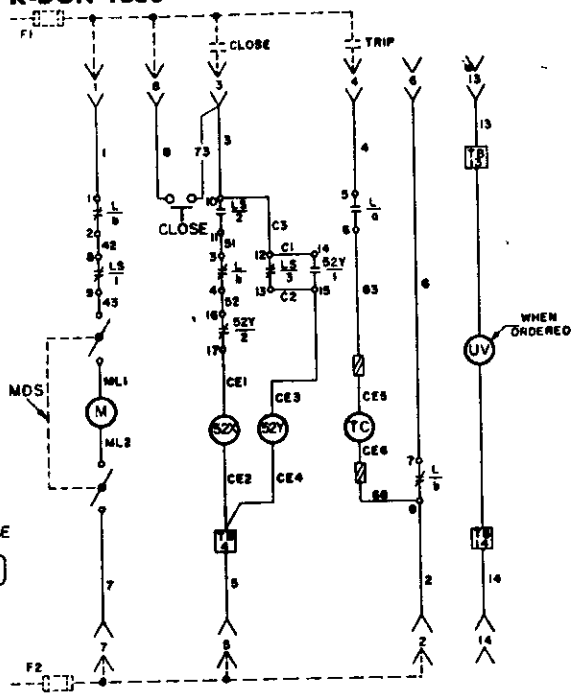
A Kirk Key interlock system permits operation of the circuit breaker only in a pre-arranged sequence. Consequently, the interlock has found major use as a safety device to provide safe working conditions, the prevention of unauthorized equipment operation, and to protect against damage to expensive and complex industrial machinery.

ELECTRICAL DIAGRAM

FOR K-DON® CIRCUIT BREAKERS (Drawout Type)
ELECTRICALLY OPERATED WITH SHUNT TRIP AND 4-CONTACT AUXILIARY SWITCH
K-DON-600 AND K-DON-1600



CONNECTION DIAGRAM
(FRONT OF BOARD)



SCHEMATIC DIAGRAM

Legend:

LS/1, LS/3	Limit-switch contacts closed when springs are discharged, open when springs are charged.
LS/2	Limit-switch contacts open when springs are discharged, closed when springs are charged.
52X	Latch release coil.
52Y	Control coil.
52Y/1	Lockout-relay contact, normally open.
52Y/2	Lockout-relay contact, normally closed.
MDS	Motor disconnect switch.

List of Abbreviations:

a	Contact open when breaker is open.
b	Contact closed when breaker is open.
CE	Coil Ends.
ML	Motor Leads—with plug connections.
TB	Terminal Block points.
TC	Shunt Trip.
UV	Undervoltage.

Notes:

1. Dotted lines indicate customers equipment and wiring.
2. Breaker wired with No. 14–19 stranded wire.

SEQUENCE OF OPERATION

Charging

The closing springs must be fully charged before an electrical closing operation can be performed. The springs are automatically charged when the following conditions exist:

1. MDS closed and control power available.
2. Charging springs discharged.
3. Breaker main contacts open.

LS/1 and a "b" contact energize the motor which charges the springs until they reach the fully charged position when LS/1 de-energizes the motor and the closing latch arrests the closing springs.

Closing

The breaker is electrically closed by the operation of 52X which releases the closing latch and allows the fully charged springs to close the breaker. 52X is energized by remote or local close switch, 52Y/2, LS/2 and a "b" contact.

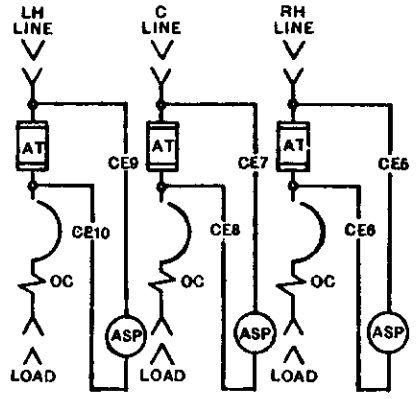
52Y limits 52X to a single operation each time remote or local close switches are operated on both momentary and maintained control schemes.

Tripping

The breaker may be electrically tripped by either the TC, UV or Anti-Single-Phase Device. Shunt tripping occurs when the TC is energized by the remote trip switch and an "a" contact. Undervoltage tripping occurs when the voltage applied to the UV is reduced to a predetermined value. Anti-Single-Phase Device tripping occurs when an anti-single phasing coil is energized (see Auxiliary Wiring Diagram on page 100).

AUXILIARY WIRING DIAGRAM

K-DON-600 AND K-DON-1600 ANTI-SINGLE-PHASE DEVICE



Notes:

1. Anti-Single-Phasing Device wired with #14—3000 volt insulation wire.
2. For two-pole assembly wire as shown, except omit Anti-Single-Phasing Device and C pole.

List of Abbreviations:

AT Amp-trap† fuse.

ASP Anti-Single-Phasing Device. When Amp-trap is blown, Anti-Single-Phasing Device trips circuit breaker which remains trip free until all blown fuses are replaced and target is pushed to reset.

OC Direct-Acting Trip Device.

ELECTRICAL CHARACTERISTICS OF CONTROL DEVICES

TABLE 2—CLOSING AND TRIPPING CURRENTS, VOLTAGES AND RANGES

Breaker	Nominal Control Voltage	Average Closing Motor Current Amperes	Shunt Trip Current Amperes	Closing Relay Current Amperes		Closing Circuit Voltage Range	Shunt Trip Circuit Voltage Range	Recommended Control Fuse Size (F 1 & F 2)
				Anti-Pump	Release			
K-Don-600 K-Don-1600	115 V ac 60 cycle	10.	6.5	.15	1.5	95–125	50–125	10A
	230 V ac 60 cycle	5.	1.15	.075	.75	190–250	190–250	10A
	48 V dc	25.	3.14	.11	1.33	35–50	28–60	15A
	125 V dc	10.	1.3	.06	.7	90–130	70–140	10A
	250 V dc	5.	.65	.03	.3	180–260	140–280	10A

CONTROL POWER TRANSFORMERS

The K-DON-600 and K-DON-1600 motor-operated circuit breakers are furnished for use with only two a-c control voltage ratings—115 and 230 volts, single phase. If any other control voltage such as 380, 460 or 550 volts is to be used, then a control transformer is required.

TABLE 3—RECOMMENDED CONTROL TRANSFORMER SIZE

Circuit Breaker	KVA of Transformer	Preferred Secondary Voltage
K-Don-600	0.10	115 V
K-Don-1600	0.25	115 V

The transformer ratings given above are based upon the requirements of charging one circuit breaker at one time. If more than one breaker is to be charged at the same time from one control transformer then consideration must be given to the use of a larger transformer.

It is recommended that the primary circuit of the control transformer be fused. The fusing must be adequate to interrupt the maximum available power of the supply source. If the supply source is taken from the main primary bus, then current limiting fuses are recommended.

The secondary of the transformer is connected to the closing and tripping circuit of the circuit breaker.

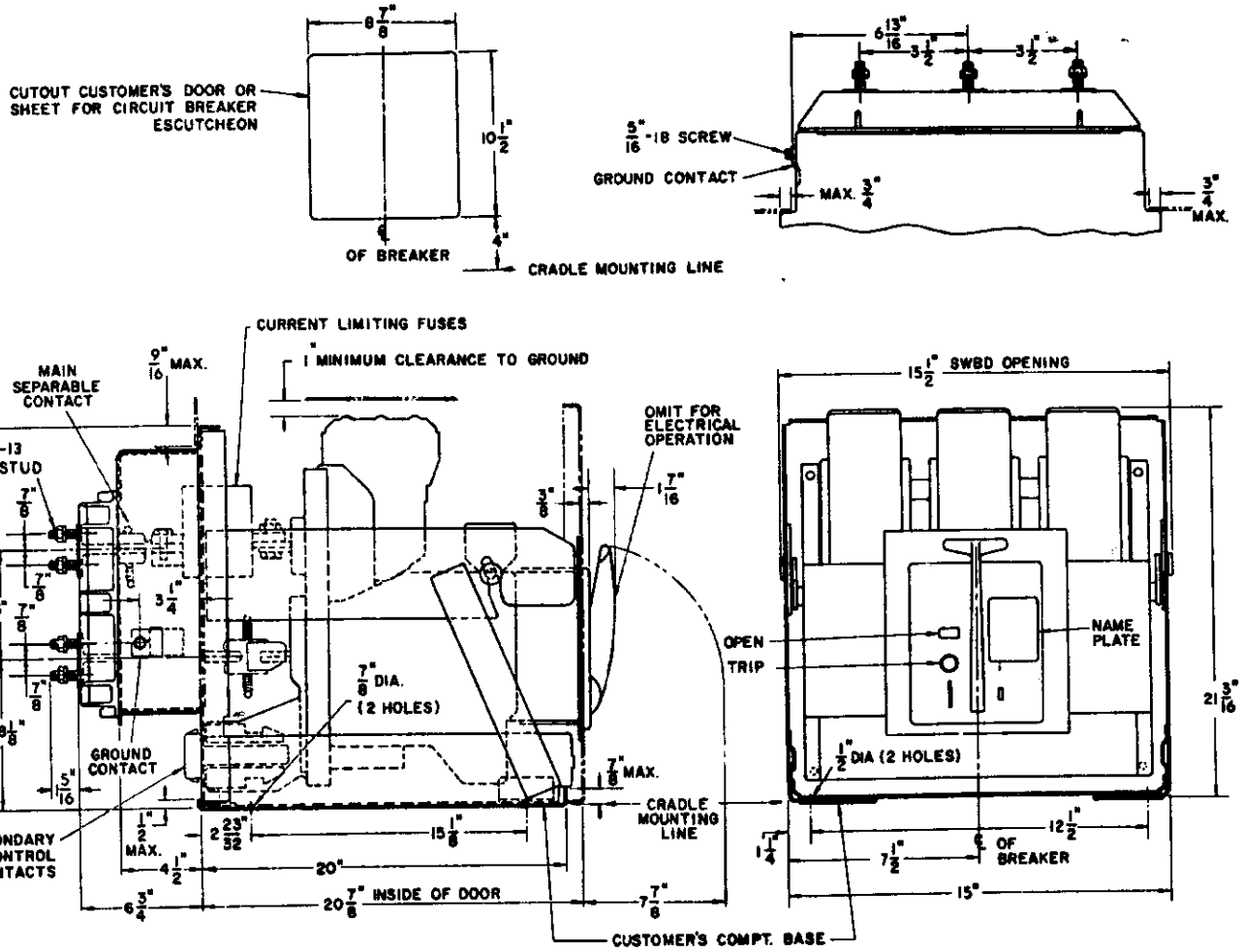
If control transformers are required, they must be mounted remote from the circuit breaker since no space is available for mounting on the circuit breaker.

† Reg. TM—The Chase-Shawmut Co.

DIMENSIONS

Dwg. S-16734—Rev. 1

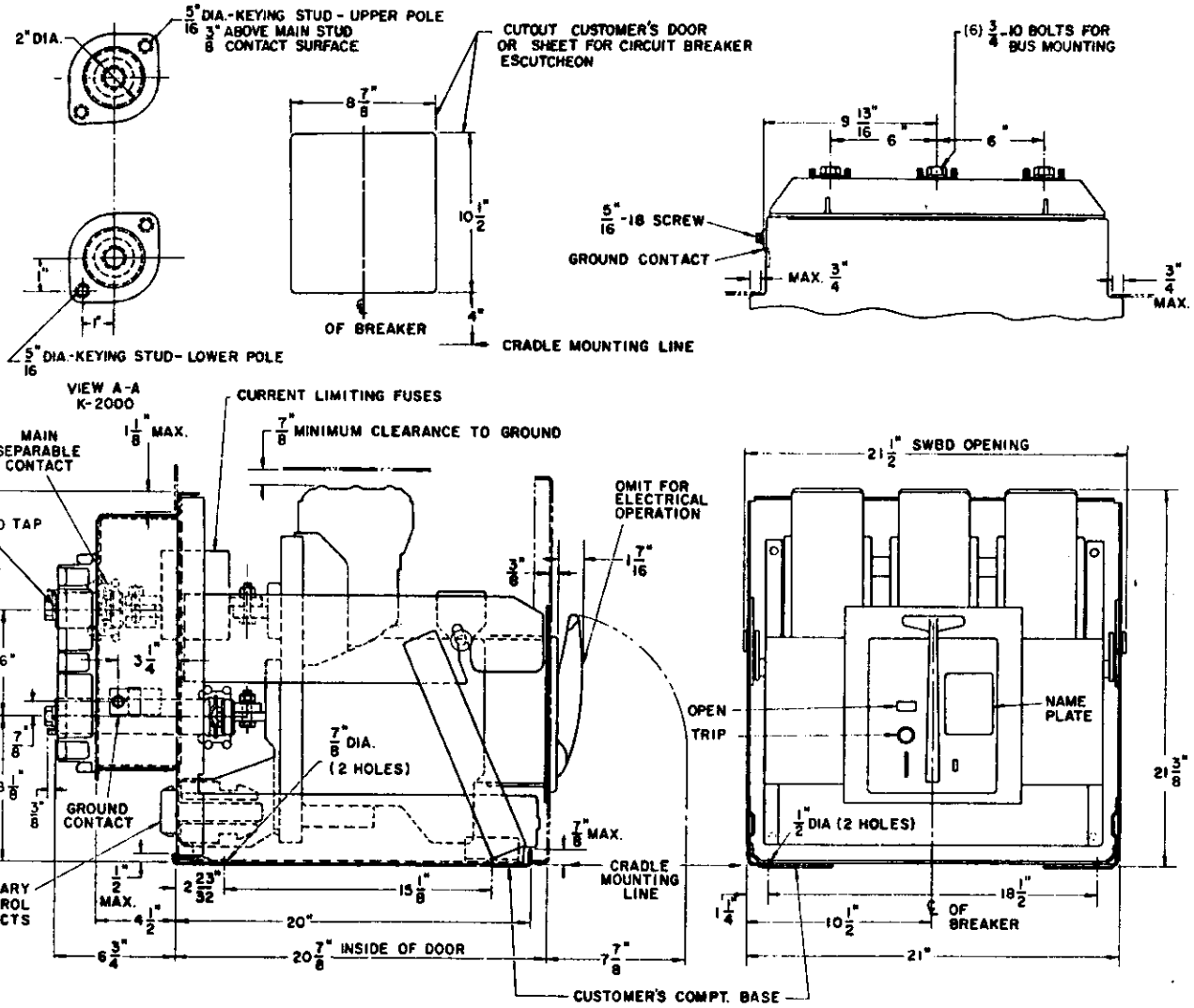
K-DON®-600
DRAWOUT CRADLE



Dwg. S-16735—Rev. 1

DIMENSIONS

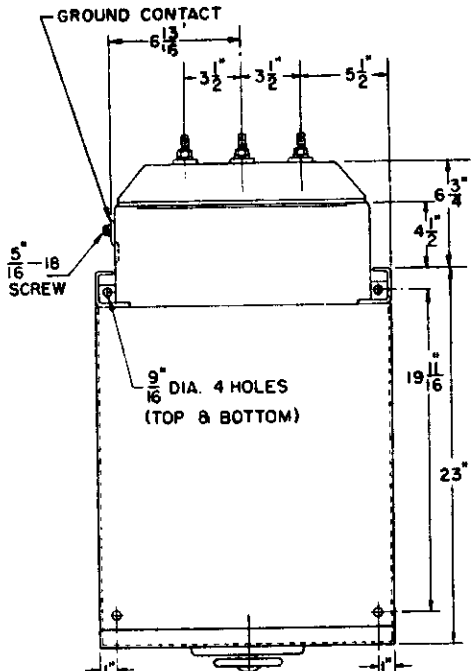
K-DON-1600
DRAWOUT CRADLE



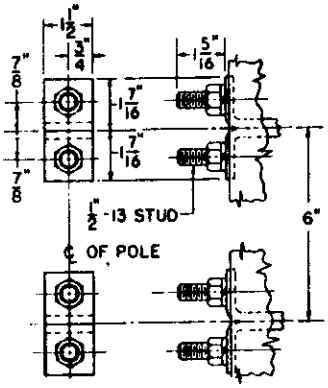
Dwg. S-16813 Rev. 0

DIMENSIONS

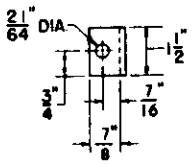
K-DON®-600
ONE-HIGH DRAWOUT UNIT



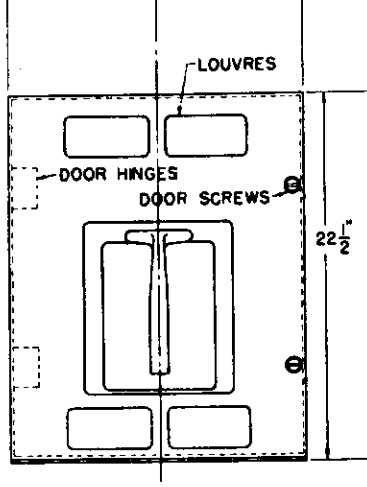
TOP VIEW



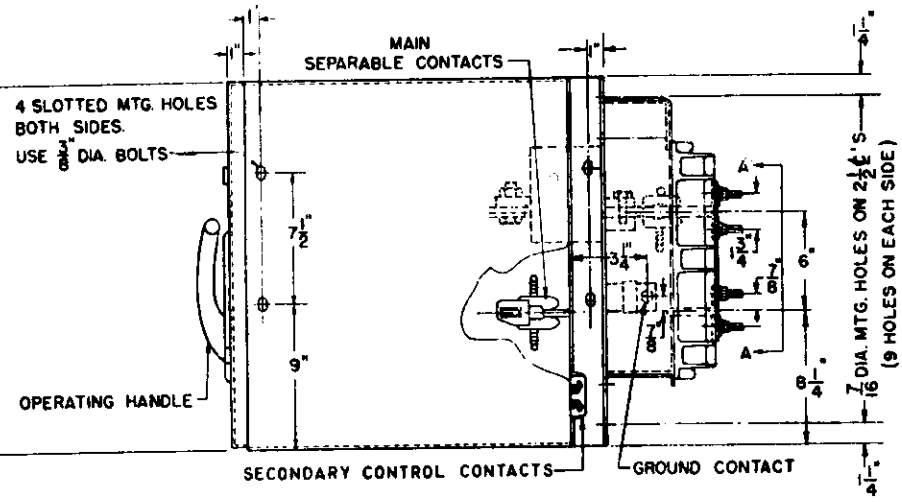
VIEW A-A



GROUND BUS CONNECTION



FRONT VIEW



SIDE VIEW

GENERAL INFORMATION

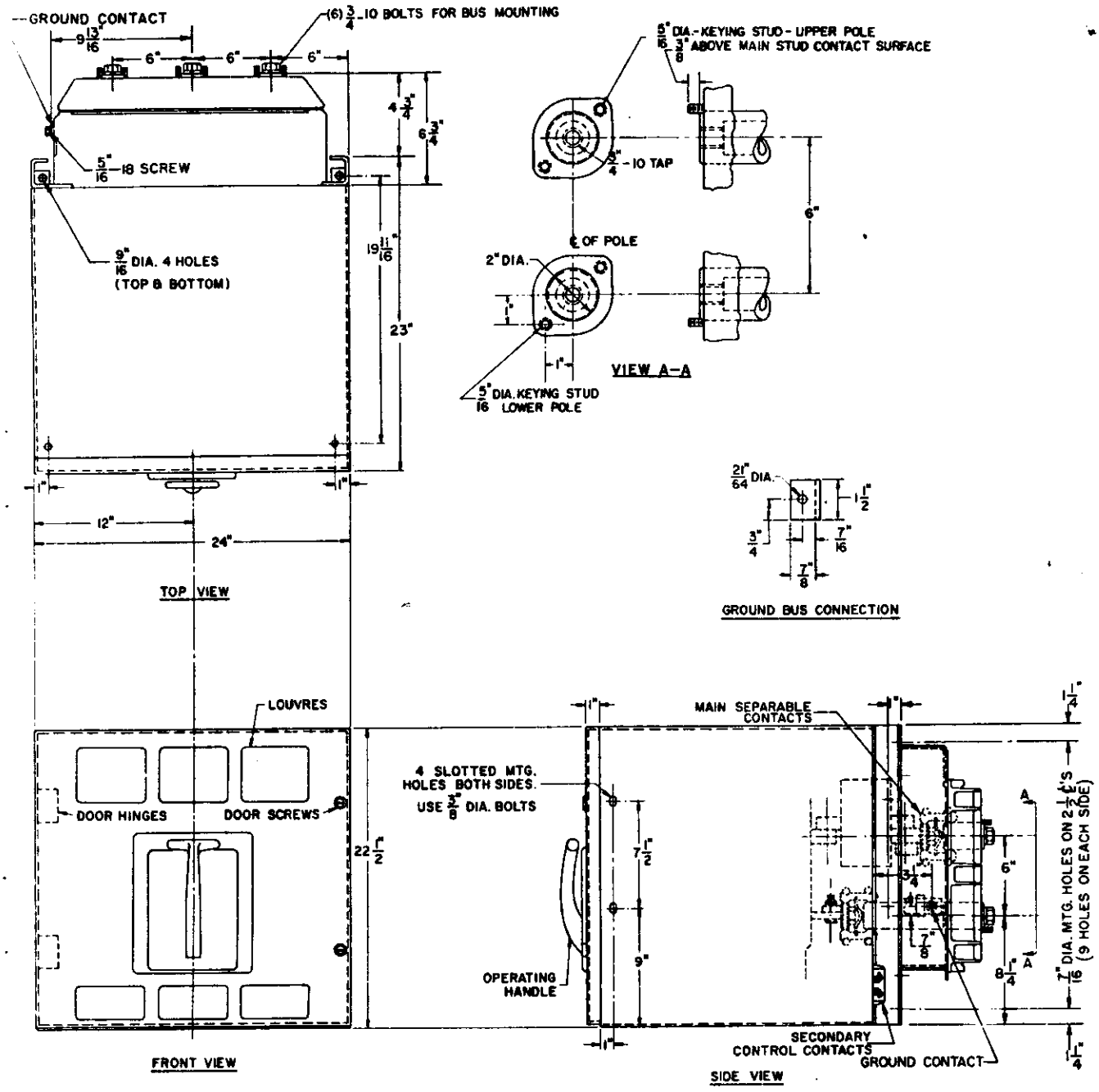
ARRANGEMENT OF CIRCUIT BREAKER POLES:
THREE POLE AS SHOWN, TWO POLE - CENTER POLE OMITTED.
FINISH: LIGHT GRAY.

Dwg. S-16814—Rev. 1

DIMENSIONS

K-DON-1600

ONE-HIGH DRAWOUT UNIT



GENERAL INFORMATION

ARRANGEMENT OF CIRCUIT BREAKER POLES:
THREE POLE AS SHOWN, TWO POLE - CENTER POLE OMITTED.

FINISH:
LIGHT GRAY.

SELECTION AND APPLICATION OF K-DON® CIRCUIT BREAKERS

The following step by step procedure is to be used as a guide for proper circuit breaker and fuse selection.

A. CIRCUIT-BREAKER SELECTION

1—Determine the system short-circuit capacity in symmetrical rms amperes.

2—Determine from Table 4, columns 3, 4 and 5 respectively the approximate continuous current rating and the time delay and instantaneous overcurrent trip settings.

3—Select from Table 5 or Table 5S*, columns 1, 2, 3 and 4 respectively the breaker frame size, coil rating, long-time and instantaneous pickup settings as follows:

(a) The coil rating of the electro-mechanical overcurrent trip device or the solid state ampere tap setting should be equal to or greater than the value determined in Table 4, column 3.

(b) When there is a choice of breaker frame size the larger will provide maximum flexibility in case of load growth.

(c) Time delay setting should be set at a value nearest to that determined in Table 4, column 4.

(d) Instantaneous setting should be set at a value nearest to that determined in Table 4, column 5. However, this value may have to be adjusted downward to coordinate with Amp-Trap† to be selected in step B.

*NOTE: Table 5 is to be used for K-DON breakers with electro-mechanical overcurrent trip devices; Table 5S is for K-DON breakers with solid-state overcurrent trip device.

TABLE 4△

① Type of Application		② Purpose of Circuit Breaker	③ Continuous Current Rating of Circuit Breaker	④ Settings of Overcurrent Trip Device: Time Delay	⑤ Settings of Overcurrent Trip Device: Instantaneous
Service entrance (general)		(a) To protect source transformer windings from overheating, due to overload of fault current flow. (b) To protect circuit conductors from effects of overcurrent flow. (c) To provide safe and rapid means for connecting and disconnecting of load circuit.	Based upon 125% of the transformer current rating	125% of the transformer current rating	1000% of circuit breaker current rating
Service feeder (general)		(a) To protect circuit conductors from effects of overcurrent flow. (b) To protect connected electrical equipment from effects of fault current flow.	Based upon 115% of estimated load current	115% of estimated load current	1000% of circuit breaker current rating
BRANCH CIRCUITS (GENERAL)	Individual motor circuit	(a) To protect motor windings from overheating due to overcurrent or fault current flow. (b) To protect circuit conductors and other connected electrical equipment from overload or fault current flow. (c) To provide safe and rapid means of connecting and disconnecting motor circuit.	Based upon 115% of rated full load current of motor	115% of rated full load current of motor	1000% of circuit breaker current rating
	Group motor circuit	(a) To protect circuit conductors from overheating. (b) To protect circuit conductors, motor windings and other connected electrical equipment from fault current flow. (c) To provide safe and rapid means of connecting and disconnecting common motor circuit from supply source.	Based upon 115% of largest motor full load current plus sum of other motor currents	100% of circuit breaker current rating	1000% of circuit breaker current rating
	Combined motor and lighting circuit	(a) To protect circuit conductors from overheating. (b) To protect circuit conductors, motor windings and other connected electrical equipment from fault current flow. (c) To provide safe and rapid means of connecting and disconnecting common load circuit from supply source.	Based upon 115% of largest motor full load current plus sum of other motor and lighting load currents	100% of circuit breaker current rating	1000% of circuit breaker current rating
	Lighting circuit	(a) To protect circuit conductors from effects of overload or fault current flow. (b) To provide safe and rapid means of connecting and disconnecting lighting circuit from supply source.	Based upon 125% of estimated maximum lighting current	100% of circuit breaker current rating	1000% of circuit breaker current rating

△ Table 4 is applicable to K-DON circuit breakers equipped with electro-mechanical or solid-state overcurrent trip devices.

† Reg. TM—The Chase-Shawmut Co.

SELECTION AND APPLICATION OF K-DON® CIRCUIT BREAKERS (Cont'd.)

B. AMP-TRAP SELECTION

Table 5 or 5S is to be used for selecting the correct fuse sizes to coordinate with the instantaneous setting of the overload device to provide proper coordination between the circuit breaker and fuse. It was developed to provide the greatest range of coordination possible, taking advantage of maximum fuse sizes whose let-thru current can be withstood by the circuit breaker.

Figure 1 is a second aid in the selection of the proper Amp-Trap fuse sizes. However, Fig. 1 is not to be used as the only criterion if, as in the case of molded case circuit breakers, there is an I^2t limitation in the equipment to be protected by the fuse.

There are two basic considerations in selecting an Amp-Trap fuse size.

1—The peak let-thru current must not exceed 2.3 times the symmetrical short-circuit withstand of the equipment to be protected by the K-DON circuit breaker.

a. If the equipment protected by the circuit breaker has a symmetrical short-circuit withstand rating at least equal to that of the circuit breaker, * fuse size selection may be made by using Table 5 or 5S.

b. If the equipment protected by the circuit breaker has a symmetrical short-circuit withstand rating less than the circuit breaker, Fig. 1 must be used to determine the maximum fuse size.

Draw a vertical line on Fig. 1 representing the available symmetrical RMS amperes. Establish the intersection of this line with the peak amperes that the equipment is capable of withstanding. The fuse size represented by the fuse let-thru curve passing below this intersection is the maximum fuse size that should be used. Of course, the smallest fuse size, consistent with coordination, provides the best protection.

2—The second consideration is that the fuse size coordinates with the circuit breaker overload time-current characteristic. Proper application of Table 5 or 5S and their associated notes will assure coordination and, therefore, avoid needless fuse replacements for current levels within the interrupting rating of the breaker.

For application using special instantaneous settings, a breaker-fuse coordination curve should be drawn.

Fuse curves are normally plotted with time as the ordinate and current in amperes as the abscissa. However, the abscissa of overcurrent device time-current curves is ratio of actual current to current tap or to coil rating or to pickup setting. There are so many combinations of settings as to render it completely impractical to publish general coordination curves for fuses and overcurrent trip devices.

When it is desired to plot specific coordination curves, the following procedure is suggested.

a. Replot the overcurrent device curve using actual amperes as the abscissa based on pickup settings selected. The curves may be moved right or left to accommodate settings not plotted on published curves. A transparent overlay is helpful in this procedure.

b. Enter the fuse melting time-current curve from Figure 2 on this newly plotted overcurrent device curve and examine for proper coordination.

c. When fuse size is dictated by protection needs, the fuse curve should be plotted first and the overcurrent device settings are then determined by trial and error, by replotting the overcurrent device curves. It is recommended that the Switchgear Division be consulted whenever applications such as these are encountered.

NOTES:

1— Maximum allowable fuse sizes listed in Tables 5 and 5S are based on an available RMS symmetrical short-circuit current of 200kA. If available current is less than 200kA larger fuse sizes may be used based on let-thru of Fig. 1 as illustrated in the following table:

Frame Size	600	600	1600
Avail. KA	130	85	100
Max. Fuse Size-Amps.	1600	2000	3000

2— When fused circuit breaker are used on high inrush circuits such as motor starting, for extended periods, the maximum allowable fuse size from Tables 5 and 5S should be used regardless of instantaneous setting. Otherwise these fuses and other unblown fuses, after a short-circuit, may have melting times less than "when new". In this case, fuse replacement should be considered if the coordination is critical.

C. APPLYING LOW-VOLTAGE POWER CIRCUIT BREAKERS WITH SEPARATELY MOUNTED CURRENT LIMITING FUSES

(Note that this applies to the K-2000, K-3000 and K-4000 only. Lower rated breakers (not K-225) will be coordinated in the same manner as the K-DON breakers in Tables 5 or 5S.

The interrupting capability of the proper combination of low-voltage power circuit breakers and current limiting fuses is appreciably higher than the capability of the circuit breaker alone. The following guidelines are offered for combining Chase-Shawmut Amp-Trap current limiting fuses, NEMA Class L, with modern I-T-E low voltage power circuit breakers:

1—Avoid or at least minimize overlap of time-current characteristics (fuse vs overcurrent device) at currents less than the circuit breaker interrupting rating to keep needless fuse blowing to a minimum. Adding a short-time element often helps to obtain coordination.

2—The total clearing time of the fuse must be equal to or less than the total clearing time of the circuit breaker at a current equal to the interrupting rating of the circuit breaker at the voltage of the application.

3—The peak let-through current of the fuse must not exceed 2.3 times the withstand rating of the circuit breaker.◊

4—The fuses should preferably be on the source side of the circuit breaker. When this is not possible, the two should be located as close as practical to each other, and the installation should minimize the exposure to a fault between the breaker and the fuse.

The Switchgear Division should be consulted before adding fuses to circuit breakers already in the field since these circuit breakers may antedate the modern rating structure upon which these rules are based.

NOTE:

In order to obtain selective protection when fuses are applied in series, it is necessary that the fuse nearer the source have a current rating at least two times that of the fuse nearer the load, providing that both fuses are Chase-Shawmut Class L. The two times ratio applied to fuse ratings up to 2000A but for fuse ratings of 2500A to 6000A the ratio may be reduced to 1½ times.

◊ K2000 — 85,000A, Sym.
K3000 — 130,000A, Sym.
K4000 — 130,000A, Sym.

*K-DON-600, 42,000A Sym; K-DON-1600, 65,000A Sym.

TABLE 5 (ELECTRO-MECHANICAL)

Breaker Frame Size	Breaker Coil Rating, A	Long-Time Pickup Settings, A	Instantaneous Pickup Settings, A	Coordinating Fuse Size, A (See Note 1) Min.	Max.
1	2	3	4	5	
K-DON-600	70	40, 50, 60, 70 or 90	250	300	600
			500	300	600
			750	300	600
			1100	300	600
	125	70, 90, 100 125 or 160	450	300	800
			800	300	800
			1200	400	800
			1900	600	800
	225	120, 150, 175, 200, 225 or 285	750	300	1200
			1500	400	1200
			2400	600	1200
			3400	1000	1200
	400	250, 300, 350, 400 or 500	1250	400	1200
			2000	600	1200
			4000	1200	1200
			6000	See Note 2	
	600	400, 500, 600or 750*	2500	800	1200
			4000	1200	1200
			6000	See Note 2	
			9000	See Note 2	
K-DON-1600	225	120, 150, 175, 200, 225 or 285	750	300	1600
			1500	400	1600
			2400	600	1600
			3400	1000	1600
	400	250, 300, 350, 400 or 500	1250	400	2500
			2000	600	2500
			4000	1200	2500
			6000	1600	2500
	800	400, 500, 600, 800 or 1000	2500	800	2500
			5000	1600	2500
			8000	2500	2500
			12000	See Note 2	
	1600	800, 1000, 1200,1600 or 2000*	5000	2500	2500
			10000	2500	2500
			16000	See Note 2	
			24000	See Note 2	

*Setting above coil rating is available for coordination, if needed, but is not thermally self protecting.

TABLE 5S (SOLID STATE)

Breaker Frame Size		Breaker AMPERE TAP Settings, A	Long-Time Pickup Settings, (X Ampere Tap) A	Instantaneous Pickup Settings, (X Ampere Tap) A	Coordinating Fuse Size, A (See Note 1) Min.	Max.
1		2	3	4	5	
K-DON-600S	SENSOR RANGE	50, 70, 100	0.8, 0.9 1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	300	1200
		150	0.8, 0.9 1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	300 400	1200 1200
		225	0.8, 0.9 1.0, 1.1 or 1.2	4, 5, 6, 8, 10, or 12	400 600	1200 1200
	SENSOR RANGE	250	0.8, 0.9, 1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	600 800	1200 1200
		400	0.8, 0.9, 1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	800 1000	1200 1200
		600	0.8, 0.9 1.0, 1.1† or 1.2†	4, 5, 6, 8, 10 or 12	1200	1200 See Note 2
K-DON-1600S	SENSOR RANGE	250	0.8,0.9,1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	600 800	2500 2500
		400	0.8, 0.9, 1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	800 1000	2500 2500
		600	0.8, 0.9, 1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	1200 1600	2500 2500
	SENSOR RANGE	600	0.8, 0.9, 1.0, 1.1 or 1.2	4, 5, 6, 8, 10 or 12	1200 1600	2500 2500
		1000	0.8,0.9,1.0 1.1 or 1.2	4, 5, 6, 8, 10 or 12	2000 2500	2500 2500
		1600	0.8, 0.9, 1.0, 1.1† or 1.2†	4, 5, 6, 8, 10 or 12	2500	2500 See Note 2

†Setting above maximum ampere tap rating is available for coordination, if needed, but is not thermally self protecting.

NOTES TO TABLES 5 & 5S

1– The minimum fuse size column indicates the minimum fuse size that will coordinate with the instantaneous trip setting directly along side it at the 100% long-time pickup setting. Even though a lower fuse size might appear to coordinate by use of minimum or intermediate time bands or lower instantaneous setting or lower long-time pickup setting, a fuse size lower than listed is not recommended.

2– The maximum fuse for the frame size will not coordinate with the instantaneous trip setting listed. (See Note 4)

3– The instantaneous setting selected should not be less than five nor more than fifteen times the long-time pickup setting selected.

4– When the selected settings and indicated fuse size will not coordinate, the following applies:
   a. Determine the degree of overlap by drawing a breaker-fuse coordination curve.
   b. If the degree of overlap is not deemed critical, (low probability of needless fuse blowing) accept the overlap.
   c. If the degree of overlap is deemed critical, utilize a short-time delay element in conjunction with the long-time and instantaneous elements to achieve coordination.

5– For the solid state device the coordinating fuse size is based on the ampere tap setting. If a higher tap setting is planned for future load growth, the maximum fuse size for the sensor range should be used to maintain proper coordination.

bles 6 and 6S can be used along with the notes of Table 5 and 5S to assure coordination. Table 6 is to be used when applying separately fused circuit breakers with electro-mechanical overcurrent trips; Table 6S is for separately fused circuit breakers with solid-state overcurrent trip device.

TABLE 6 (ELECTRO-MECHANICAL)

Breaker Frame Size	Breaker Coil Rating, A	Long-Time Pickup Settings, A	Instantaneous Pickup Settings, A	Coordinating Fuse Size (See Table 5, Note 1) Min.	Max.
K-2000	2000	1200, 1600, 1800, 2000 or 2500*	10,000	3000	3000
			15,000	See Note A	
			20,000	See Note A	
			30,000	See Note A	
K-3000	3000	1600, 2000, 2500, 3000 or 3800*	10,000	4000	6000
			20,000	6000	6000
			28,000	See Table 5, Note 2	
			36,000	See Table 5, Note 2	
K-4000	4000	2000,3000, 3500, 4000 or 5000*	20,000	6000	6000
			30,000	See Table 5, Note 2	
			40,000	See Table 5, Note 2	
			48,000	See Table 5, Note 2	

*Setting above coil rating is available for coordination, if needed, but is not thermally self protecting.

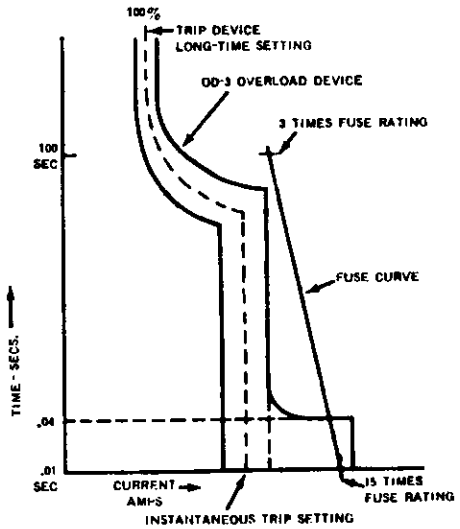
NOTES:
A. Maximum fuse sizes listed are based on an available RMS symmetrical short-circuit current of 200kA. However, if the available current is only 115kA, a 4000A fuse may be used with the K-2000 breaker frame size for coordination with a higher instantaneous setting.

TABLE 6S (SOLID-STATE)

Breaker Frame Size		Breaker AMP-ERE TAP Set. A	Long-Time Pickup Settings, (X Ampere Tap) A	Instantaneous Pickup Settings, (X Ampere Tap) A	Coordinating Fuse Size (See Table 5, Note 1) Min.	Max.
K-2000S	SENSOR RANGE	800	0.8, 0.9,	4,5,6,8,10,12	2000	3000
		1200	1.0, 1.1†	4,5,6,8,10,12	3000	3000
		2000	or 1.2†	4,5,6	3000	3000
		2000		8,10,12	See Note A	
K-3000S		2000	0.8, 0.9	4,5,6,8,10,12	5000	6000
		3000	1.0, 1.1†	4,5,6,8	6000	6000
		3000	or 1.2†	10,12	See Table 5, Note 2	
K-4000S		3000	0.8, 0.9,	4,5,6,8	6000	6000
		3000	1.0, 1.1†	10,12	See Table 5, Note 2	
		4000	or 1.2†	4,5,6	6000	6000
		4000		8,10,12	See Table 5, Note 2	

†Setting above maximum ampere tap rating is available for coordination, if needed, but is not thermally self protecting.

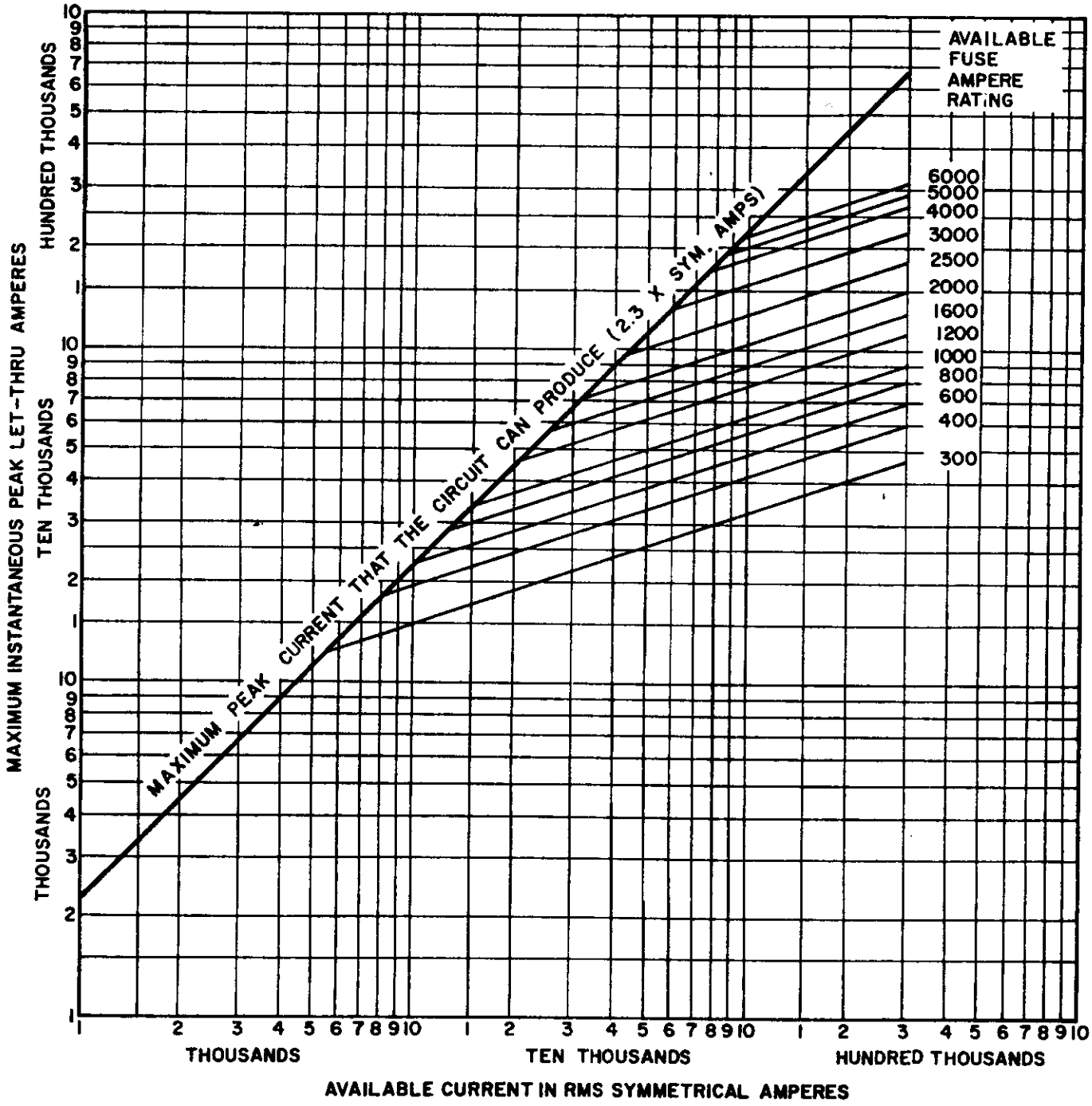
NOTES:
A. Maximum fuse sizes listed are based on an available RMS symmetrical short-circuit current of 200kA. However, if the available current is only 115kA, a 4000A fuse may be used with the K-2000S breaker frame size for coordination with a higher instantaneous setting.



Typical Breaker Amp-Trap Coordination Curve

SPECIAL PURPOSE AMP-TRAP FUSES
MAXIMUM PEAK LET-THRU CURRENT CHARACTERISTICS
300 - 6000 AMPERES • 600 VOLTS

FIGURE 1



SPECIAL PURPOSE AMP-TRAP FUSES
MELTING TIME-CURRENT CHARACTERISTIC CURVES
300 - 6000 AMPERES • 600 VOLTS

FIGURE 2