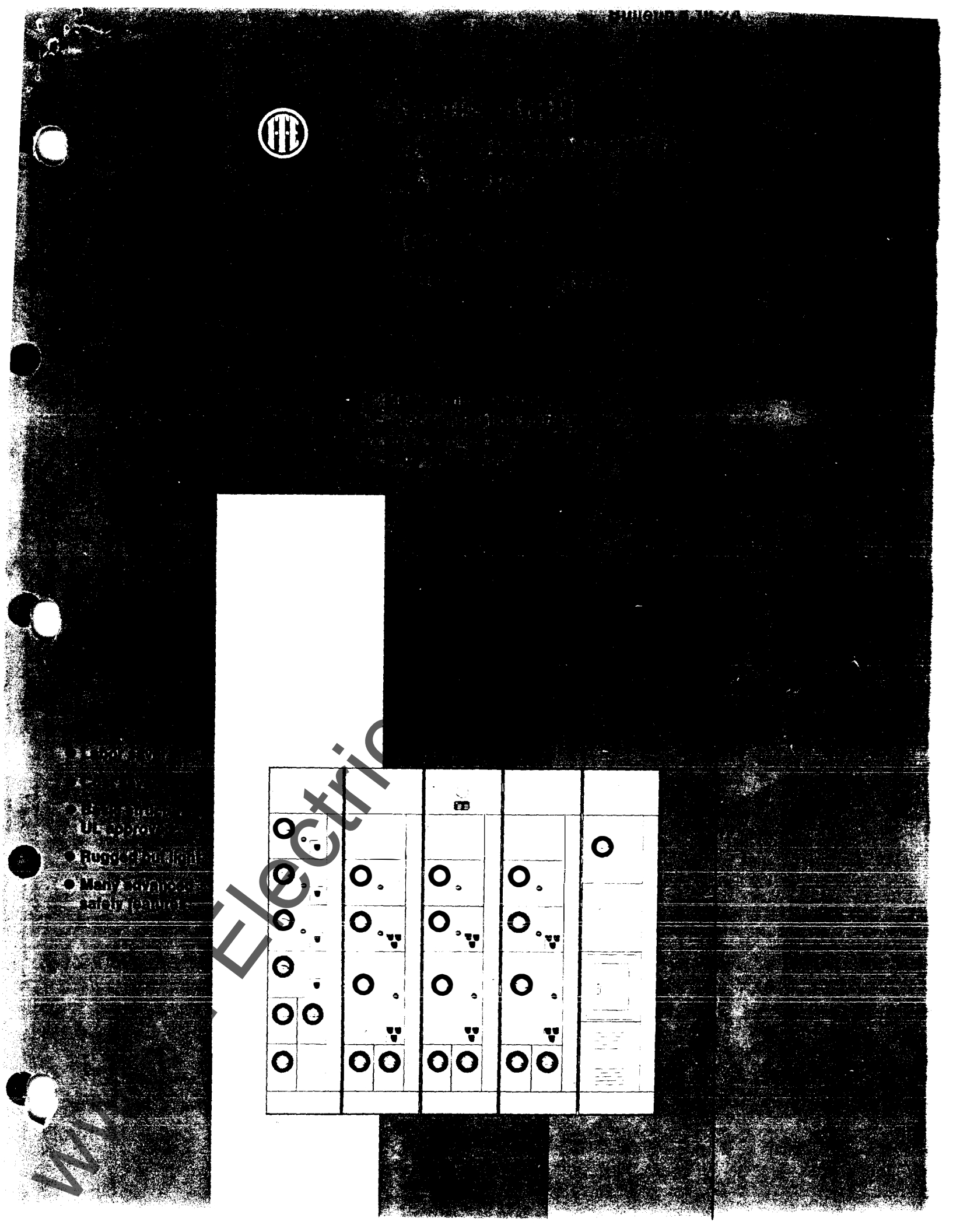
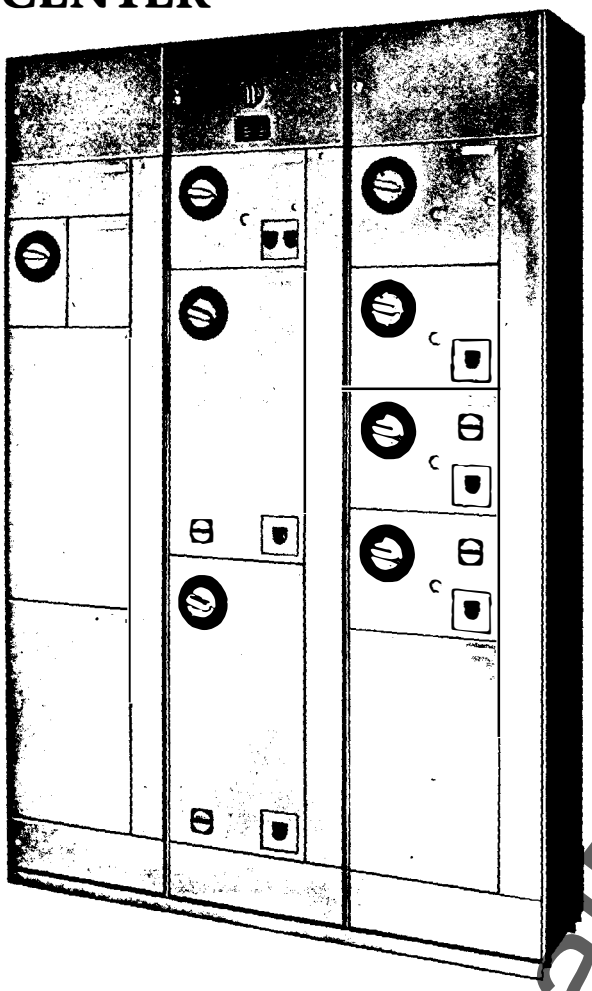


THE SERIES 5600 MOTOR CONTROL CENTER



I-T-E's Series 5600 Motor Control Center is a rugged, modular design combining labor saving features with high electrical ratings and many special safety measures.

The basic pre-engineered structure has Underwriters' Laboratories Inc. approval. Vertical sections, taking up to six combination starter units, are 15 and 20 inches deep for front-of-board mounting, 20 inches deep for back-to-back mounting.

The welded, channel-stiffened design uses 12 and 14 gauge steel in configurations that add up to higher strength than conventional designs.

Safety features include: a non-metallic barrier between the horizontal bus and wireway; insulating barrier between vertical bus and unit compartments; optional barriers between unit compartments and vertical wireway, and between individual compartments.

High capacity bus bars are braced for 22,000 or 42,000 symmetrical amperes. All bus bar connections are made with two bolts. Systems served by a Series 5600 Motor Control Center are quality protected with I-T-E circuit breakers. Dependable protection. Based on 84 years of circuit breaker experience. Starters are the time-proven I-T-E design, delivering the ultimate in ease of installation and maintenance, dependability, simplicity.

I-T-E makes Series 5600 Motor Control Centers in accordance with NEMA 1, NEMA 3 (walk-in and non-walk-in) and NEMA 12 specifications. All in all, Series 5600 means less installation labor and total cost plus a new high in mechanical strength and electrical safety.

SCOPE

Basic Structural Types

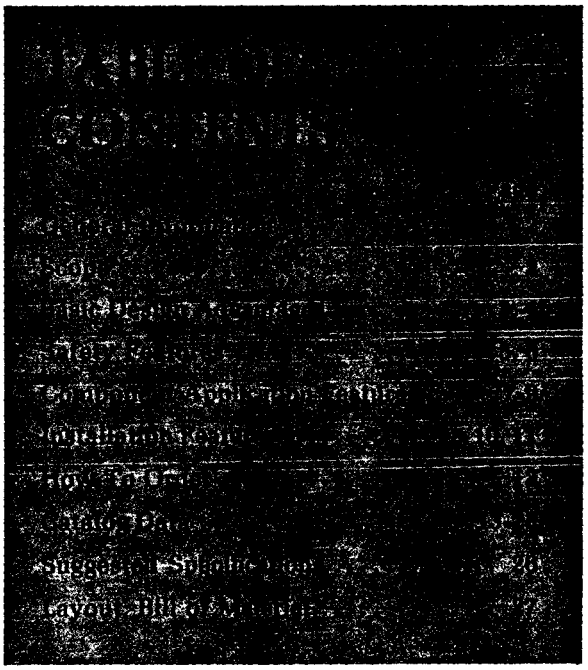
15-inch deep front-of-board
20-inch deep front-of-board
20-inch deep back-to-back

standard 20-inch width for starters up to size 6

- Horizontal bus—600 amperes standard —can be up to 2000 amperes
- Vertical bus—300 amperes standard —can be up to 600 amperes

Enclosure Types

- NEMA Type 1
- NEMA Type 3—walk-in, single sided —walk-in, tunnel —non-walk-in
- NEMA Type 12



BASIC DESIGN ADVANTAGES

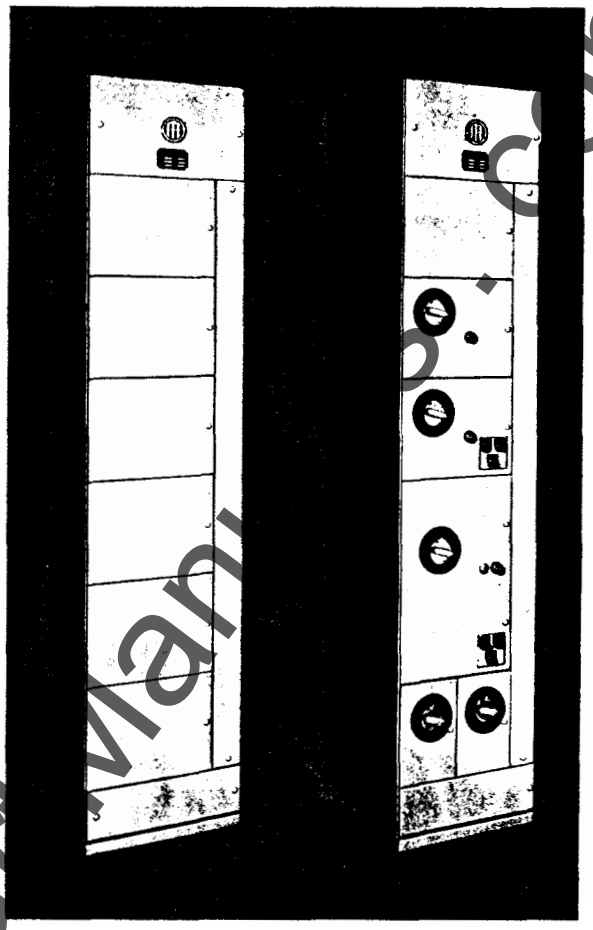
Structural Strength

The design and construction of the Series 5600 Motor Control Center vertical sections are in accord with all applicable NEMA standards and are approved by Underwriters' Laboratories Inc. The basic structure is made with 12-gauge steel with reinforcing channels welded in place. Doors are of 14-gauge steel. The central vertical channel around which each section is built results in even greater strength and rigidity, greater overall ruggedness, than conventional designs using heavier gauge material.

Horizontal bus, top or bottom fed, provides power to vertical bus for unit compartments. Individual control units slide into the vertical sections on snap-in channel brackets and connect to bus with stabs. Breaker handles are mounted on breakers, not on doors—always in control of unit. A screw and pawl device locks each unit in place. Quarter-turn fasteners secure compartment and wireway doors in the closed position. Vertical wireway has a separate door from unit compartments.

Vertical Working Spaces

All standard sections are 20 inches wide, 91½ inches high overall, including 1½ x 3 inch mounting sill. Up to six size 1 combination starter units can be inserted in the 72 inches of vertical mounting height. No operator device is over 78 inches from the floor. While size 1 and 2 starter units use one space module (12 inches of vertical mounting height), other size starters are readily accommodated with 18, 24 and 36 inch compartments. Snap-in brackets are simply repositioned in the basic vertical channel as needed. 100 ampere breakers for lighting can be twin-mounted in 12 inches of vertical height with individual doors.



15-inch deep space-saving section for front-of-board mounting. *(left)* (20-inch deep front-of-board sections also available.)

20-inch deep back-to-back sections optimize space savings. *(right)*

Indoor, Outdoor, Industrial

I-T-E produces Series 5600 Motor Control Centers in several NEMA types and variations: standard versions of NEMA 1, 3 and 12, plus specials as required.

NEMA 1—general purpose, with oiltight pushbuttons, selector switches, indicator lights, ground relay. Operator's panel and breaker handles are gasketed. Rubber door gaskets when specified.

NEMA 3—outdoor, with all NEMA 1 features plus raintight provisions. Non-walk-in, walk-in single-sided and tunnel double-sided types. Also modular outdoor house.

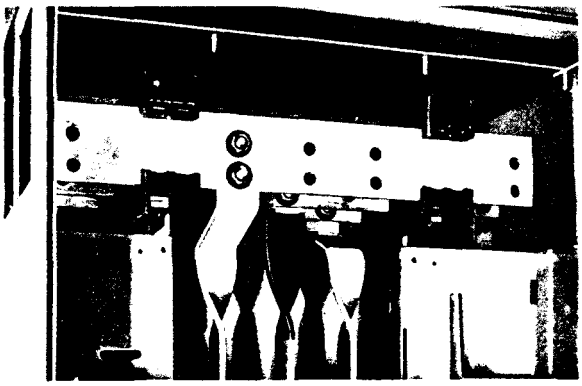
NEMA 12—heavy-duty industrial, with all NEMA 1 features plus gaskets on all compartment and wireway doors, covers and plates. Drip hoods optional.

Bus Bars

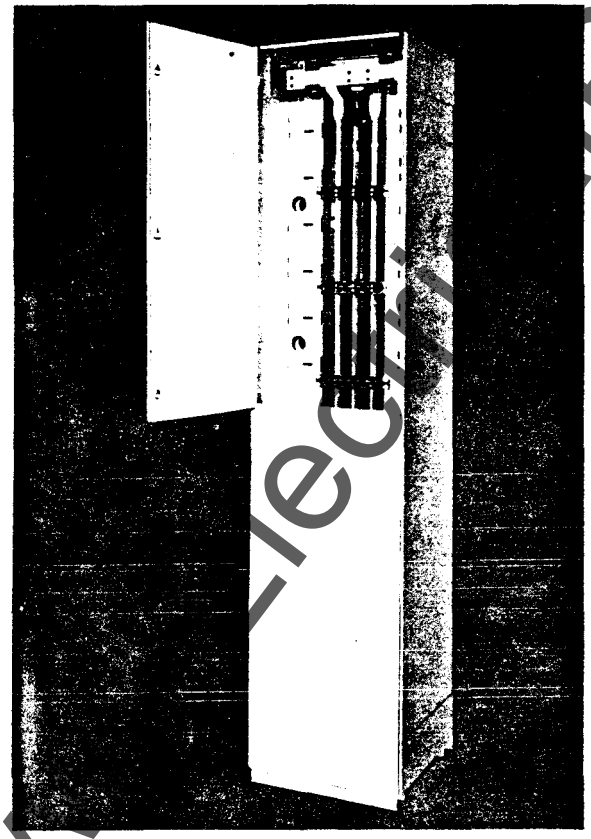
All horizontal and vertical bus meets NEMA and Underwriter's Laboratories standards. Aluminum bus bars with an Alstan 70 tin finish are standard. Silver-plated or tin-plated copper also available.

Standard horizontal bus is rated for 600 amperes (available for up to 2000 amperes). Standard vertical bus is rated for 300 amperes (available for up to 600 amperes). All bus bars isolated from wireways and unit compartments.

Copper ground bus (¼ x 1 or ¼ x 2 inches) mounts in bottom when specified. Bottom-mounted neutral also available. *(see page 9, lower right picture)*



All bus bar joints made with two bolts with Belleville washers to insure permanent tightness.



Rear of 20-inch deep section has two half-height hinged doors. (15-inch deep sections have bolted half-height panels for access to bus.)

Bus Bar Bracing

With today's higher available fault currents, I-T-E has designed extra-strong bus bar bracing for the Series 5600 equipment. Made of reinforced fiber glass polyester, braces for horizontal bus are rated for 42,000 symmetrical amperes of fault current. Vertical bus braces are rated for 22,000 amperes. 42,000 ampere bracing also available for vertical bus.

Bus bar bracing withstands high fault currents, is designed to prevent accumulation of dust or other materials.

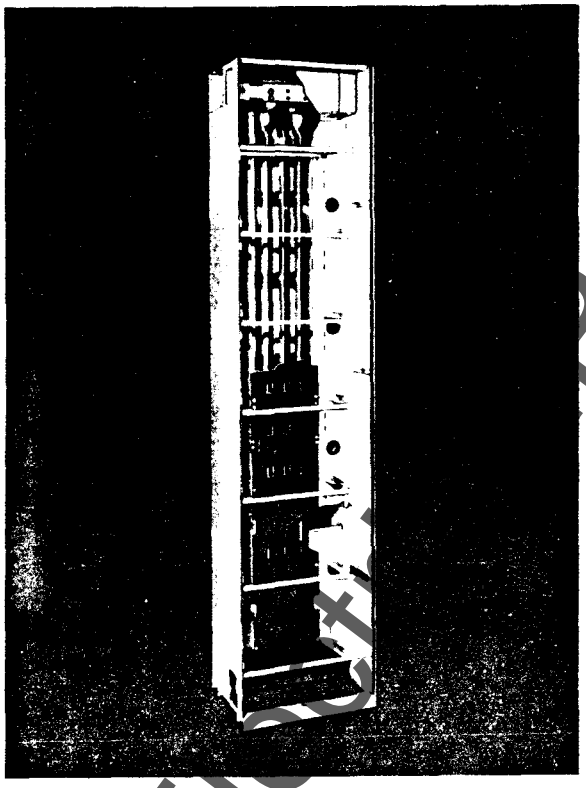
Long-Life Finish

Exterior of Series 5600 Motor Control Center is finished with an epoxy electrostatic dry paint, extremely resistant to scratching and marring. Ten times the usual service life under salt-spray test. Interior metal surfaces are zinc plated for good light reflection, excellent ground contact, inhibition of corrosion.

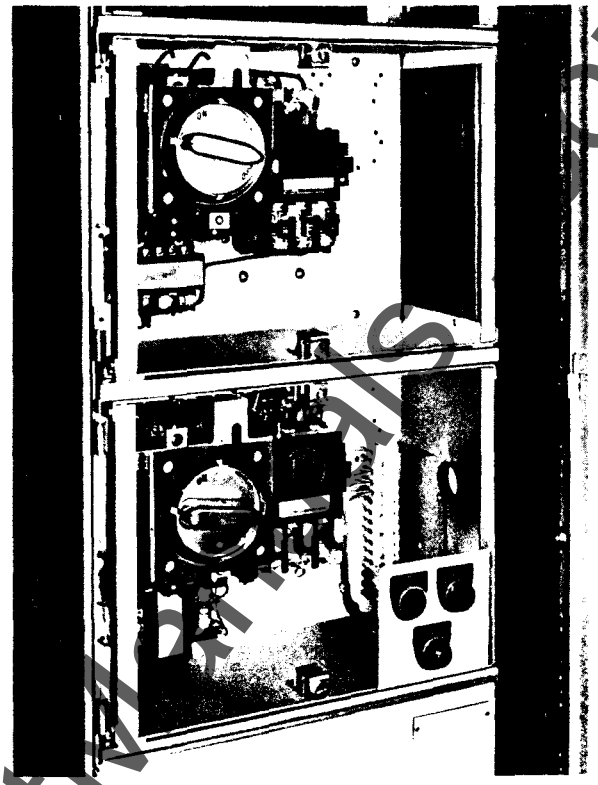
SPECIAL SAFETY FEATURES

I-T-E has gone to greater lengths than any motor control center manufacturer in the past to provide a new standard for safety. Numerous safety barriers and provisions never before available. Maximum safety under all installation, operating and maintenance conditions.

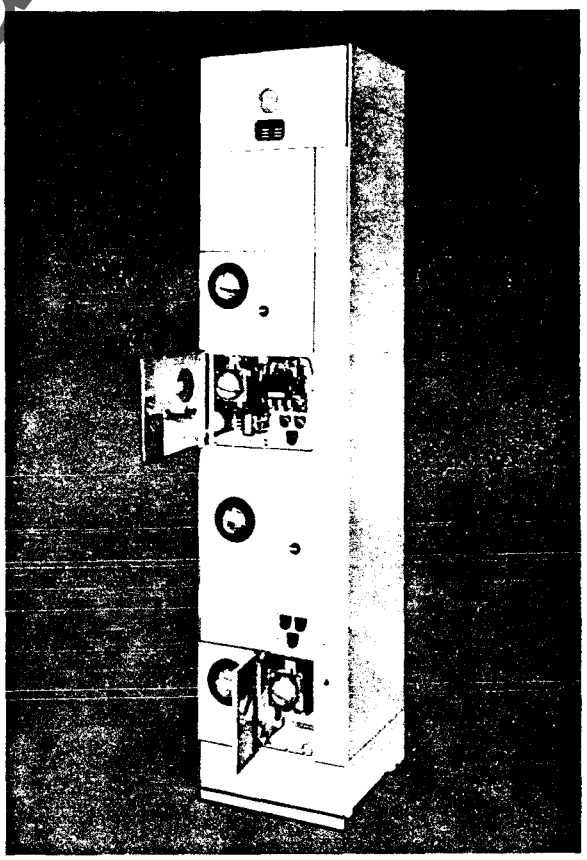
Starting with Underwriters' Laboratories-approved basic structure, I-T-E has added flash barriers, non-metallic shields, separation of control and power wiring, interlocks, many innovations, all designed to allow maximum ease of use while providing maximum personnel and equipment safety.



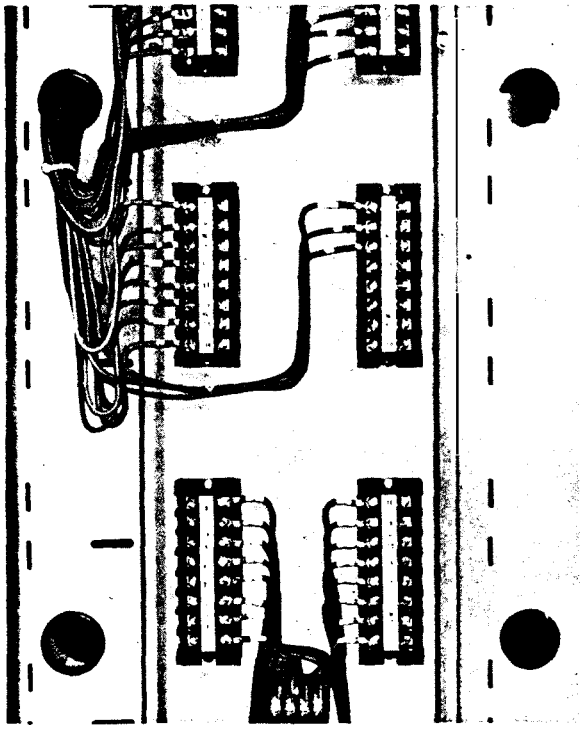
Non-metallic barrier (fiber glass polyester) separates horizontal bus bars and horizontal wireway. Non-metallic sheets run full length of section to form insulating back wall to unit compartments. This isolates vertical bus. One available modification is: apertures for unit stabs with slides which can be slid to the closed position and locked with a single screw when compartments are not in use. No vertical bus exposed in empty compartments. Slides are captive, cannot be misplaced.



Safety kit, available with all units, provides insulating barrier on side of unit compartment adjacent to vertical wireway, and shelf-type flash barrier under unit.

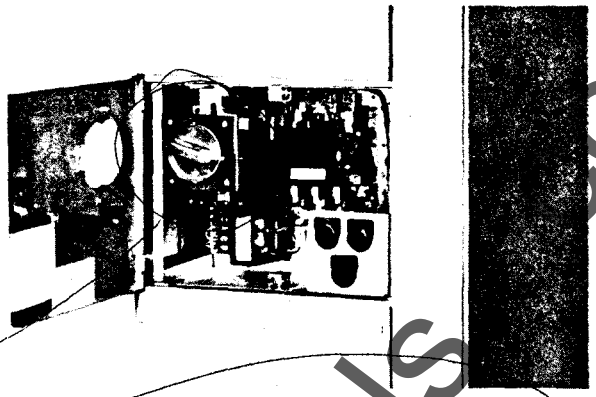


Compartment doors and wireway doors are separate and independent. Working in one space does not expose personnel to live conductors in other.

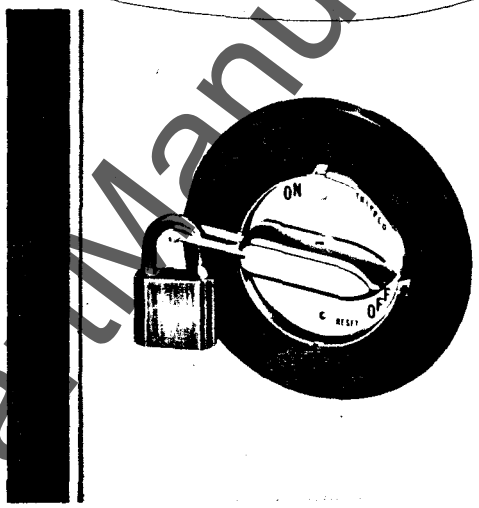


With addition of metal barrier behind vertical bus, control wiring can be separated from power wiring. Run control wiring through 2-inch grommeted holes in structural channel to rear for terminal connection. No need to run wiring over top or under bottom.

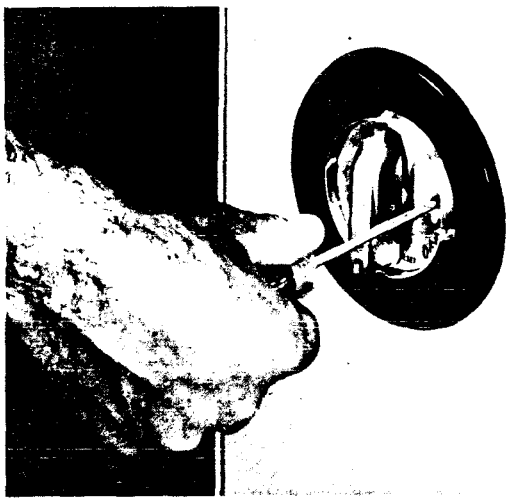
When sections are connected side-by-side, each has a full-depth side panel. Double electrical isolation of sections.



Breaker handle is mounted directly on breaker, not on compartment door. Personnel always have instant control of breaker.

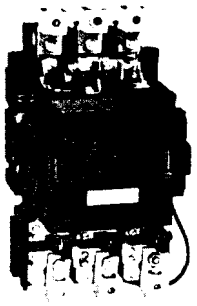


Locking extension on breaker handle assures safety during maintenance. Accepts 3 padlocks with ⅜" hasps. A small web can be knocked out of rim to allow locking in ON position.



Breaker is interlocked with door for basic safety. Screw-driver-operated defeater is provided. Door cannot be opened with circuit breaker ON, nor can circuit breaker be turned ON with door open, unless defeater is used.

I-T-E STARTERS: SIMPLE, TROUBLE-FREE, EASY TO MAINTAIN



Starter Base is rugged, one-piece, self-contained molded housing that functions as the main support for all starter parts. Includes a mounting plate, line and load copper straps and terminals, supporting and extending connections, stationary magnet, and pressure contacts for automatic connection to coil.

Stationary Magnet is spring-loaded to cushion impact. This construction minimizes wear and flattening of pole faces, decreases bounce and contact wear.

Auxiliary Interlock has one normally open and/or one normally closed contact that can be used on independent circuits. Up to three interlock blocks on sizes 00 through 2 (four interlock blocks on sizes 3 and 4 and two on size 5) can be placed at the corners of the starter without increasing size or requiring special insulating barriers.

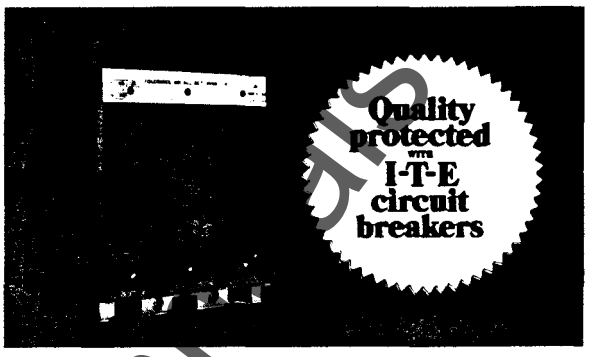
Coil is completely enclosed in hot-molded insulating compound to eliminate all moisture and mechanical problems. Rigid, built-in contacts eliminate need for wired connections, preventing broken or damaged coil leads and insulation-wear. To install or get at the coil, only the cover and contact carrier assembly need be removed.

Overload relay available with or without automatic reset, which can be voided. Straight-through wiring permits easy visual inspection. One-, 2- or 3-phase protection available.

Contact Carrier Assembly is an easy-to-handle, self-contained unit. It houses all contacts, movable and stationary. All contacts are vertically oriented to minimize effects of dust and dirt. Up-front location provides full visibility for contact inspection and easy access for maintenance.

Contact Cover Cap, molded of high-impact, arc-resistant material, clamps firmly in place, keeps out dirt and moisture. The tongue and groove fit of the cover cap means individual arc chambers are formed for each set of contacts. When removed, it provides safety interlock.

I-T-E CIRCUIT BREAKERS: DEPENDABLE, TOP QUALITY



ET Class: thermal-magnetic
ETI Class: magnetic instantaneous-trip-only
Normal Duty, Heavy Duty, Cordon Current Limiting

1. No nuisance interruptions. The I-T-E inverse-time-element prevents tripping of the circuit breaker on harmless momentary overloads. At the same time, it protects against overheating of conductors whether from high currents alone or high currents plus high ambient temperatures.

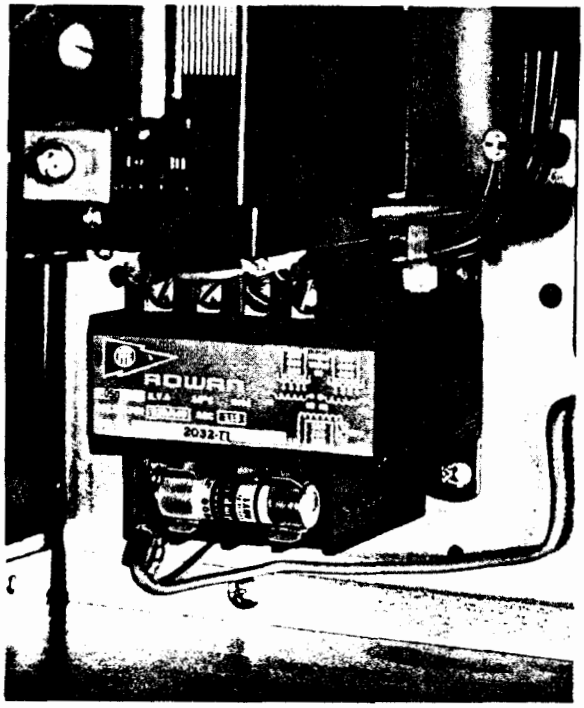
2. Uniform operation. All I-T-E thermal-magnetic molded case breakers are calibrated and inspected for 40°C (104°F) operation before leaving the factory to make sure they open within the specified time interval and at the specified current value. Magnetic instantaneous trip only breakers are insensitive to ambient temperatures. So you know they will operate correctly once they are installed. NEMA test procedures are followed, and most breakers are listed with Underwriters' Laboratories Inc.

3. Adjustable instantaneous trip. Standard on ET breakers rated at 225 A FJ Frame and above. This means you can adjust the instantaneous trip rating of your breaker to meet the requirements of the specific circuit.

4. Interchangeable trip devices. In higher ratings, thermal-magnetic trip units within the continuous ampere ratings of the breaker are interchangeable to permit rating changes without changing the breaker or removing it from its mounting.

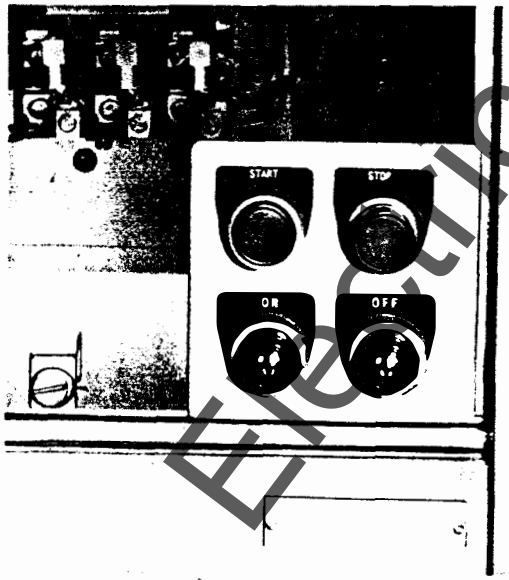
5. Lugs are of solderless connector type and are attached to silverplated terminals which assure low resistance, long-lasting connection.

Control Circuit Transformer



For maximum dependability under extreme ambient conditions, I-T-E uses resin-encapsulated control circuit transformers with a fused secondary as standard.

Pushbuttons, Selector Switches, Indicator Lights

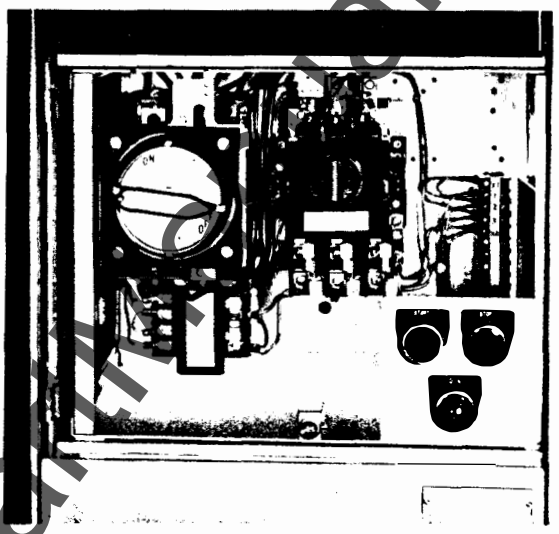


Standard configuration takes up to four pushbuttons, selector switches, Ground Shield relays and indicator lights in any combination. Even more on specials. All are oiltight. All mounted on the structure with a door cutout for access. No loose dangling wires when opening door.

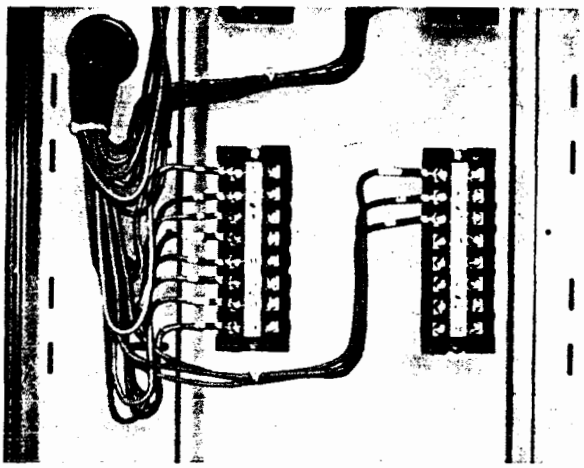
All NEMA Classes of Wiring

With different locations of terminal blocks, Series 5600 Motor Control Centers permit any desired NEMA class and type of control wiring. Terminal block can be in compartment; at top of section, or in rear with wiring through grommeted holes in vertical channel.

Class I, Type A
Class I, Type B
Class I, Type C
Class II, Type B
Class II, Type C



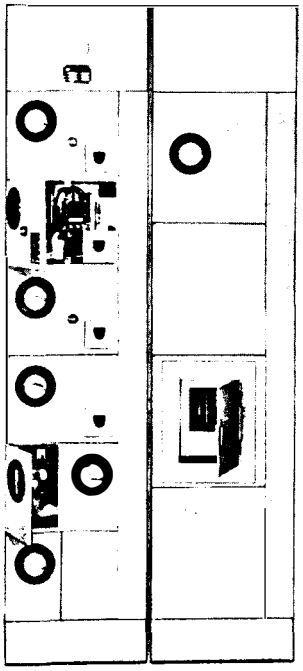
For NEMA Class I, Type B control wiring, terminal block is provided right in unit compartment.



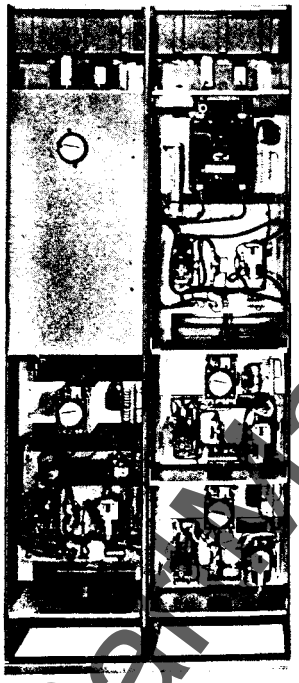
For modified Type C control wiring, terminal block is mounted in rear of control center, with wires running through grommeted holes in structure.

Application Versatility

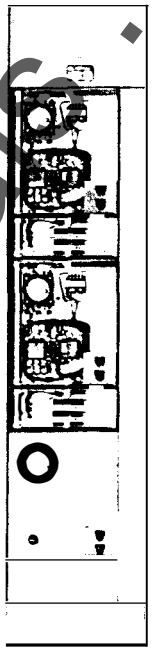
I-T-E Series 5600 Motor Control Centers can be applied for any type of industrial motor controls, utility services, sewage treatment facilities, anywhere that centrally located multiple controls for motors (and/or lighting circuits) are desired. Typical examples are: across-the-line starters, reduced voltage starters, reversing starters, transfer switches, lighting transformers, panelboards, current limiting reactors.



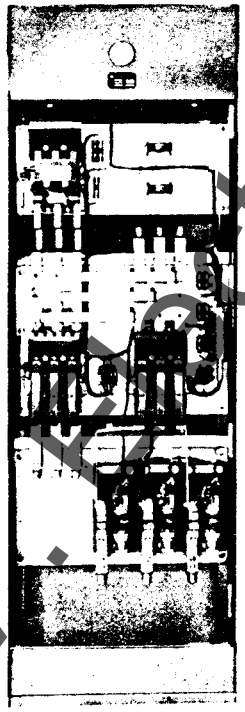
Standard-width sections (20 inches wide) with starters up to size 5. 100-ampere breakers can be installed side by side with barrier between them.



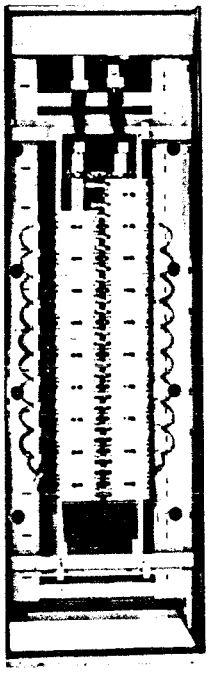
Reduced voltage starter (DC).



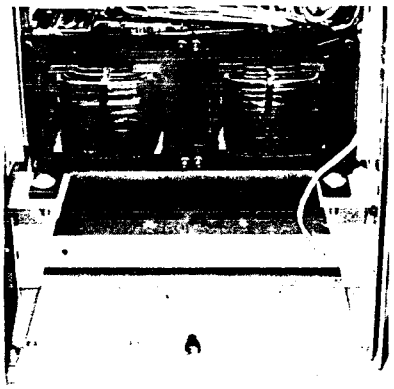
Reversing starter.



Wye-Delta Size 6 starter (special width section).



Panelboard.



Lighting transformer (with ground bus).

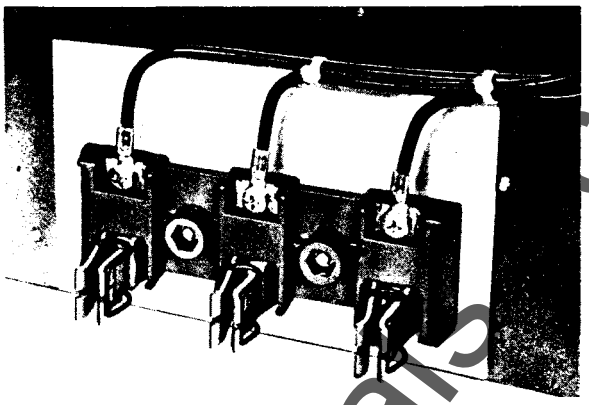
EASY TO INSTALL, REARRANGE, MAINTAIN

In the Series 5600 Motor Control Center, I-T-E has incorporated many new features to provide generous wiring room, easy access to working areas, quick, foolproof insertion of components, simplified means of rearrangement or addition of units. These features all add up to less time and less cost for installation and later work on equipment. Also more reliability, based on simpler work procedures and foolproof methods of connection.

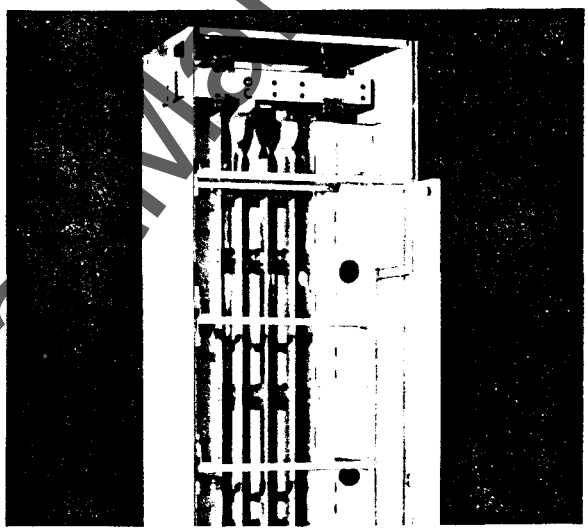
Right from the start, the Series 5600 equipment is less work since as many as five sections are shipped as a single assembly.

Lift-off hinges provide quick, easy access to interior. Also, compartment door hinges are individually bolted to the frame of the section. Therefore, no need to shut down units and remove doors above a unit to be worked on. I-T-E starter design eliminates all internal wiring within the starter itself. Just connect incoming and outgoing leads. Getting at terminal blocks requires loosening just two screws. Quarter-turn fasteners on all compartment and wireway doors cut installation and maintenance time to a minimum.

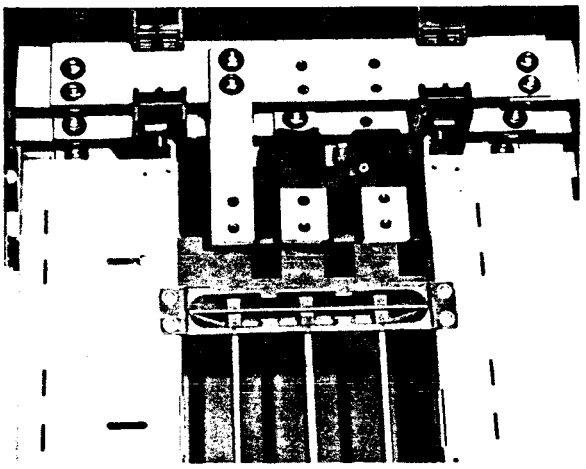
Lifting angle, bolted to section across its entire depth gives complete support to section while moving into place. No distortion or damage to equipment.



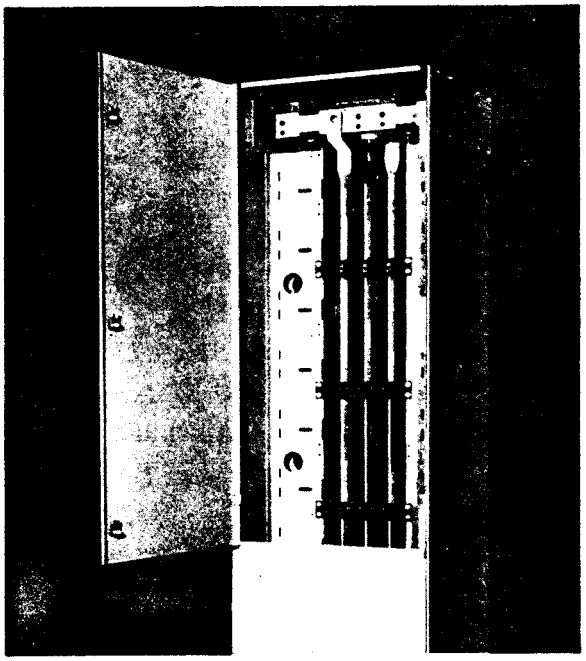
Bifurcated copper stabs, free-floating in all directions, prevent misalignment of unit in section. Stabs are used for units with starters up through size 5. Stab is one piece, which cannot blow apart under fault nor develop hot spots from loose connections.



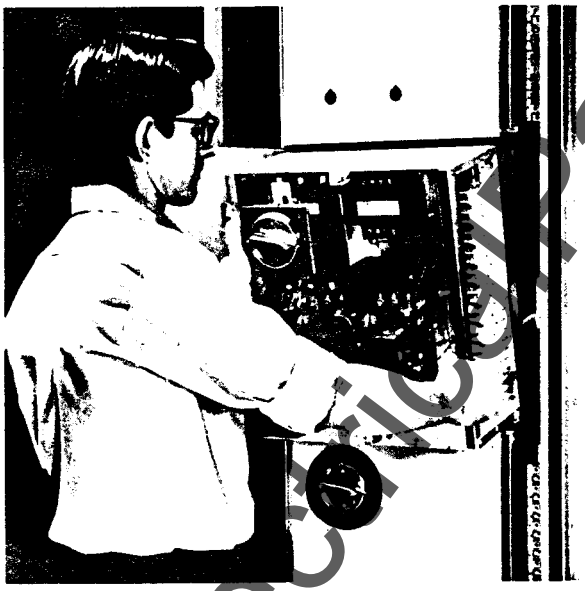
Ample wiring room in compartments and wireways means quick, easy installation and modification.



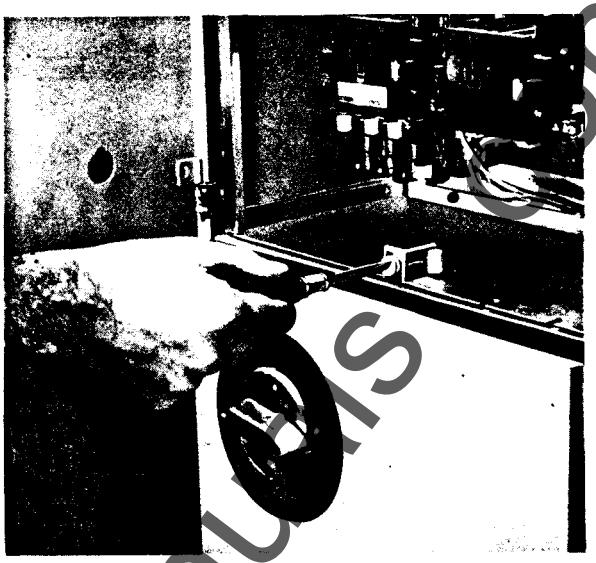
Line kit, available for all sections, includes bus straps with compression lugs. Straps bring incoming power connection down in front or back, or upward into a 15- or 18-inch high pull box. Line kit can also be used for bottom feed.



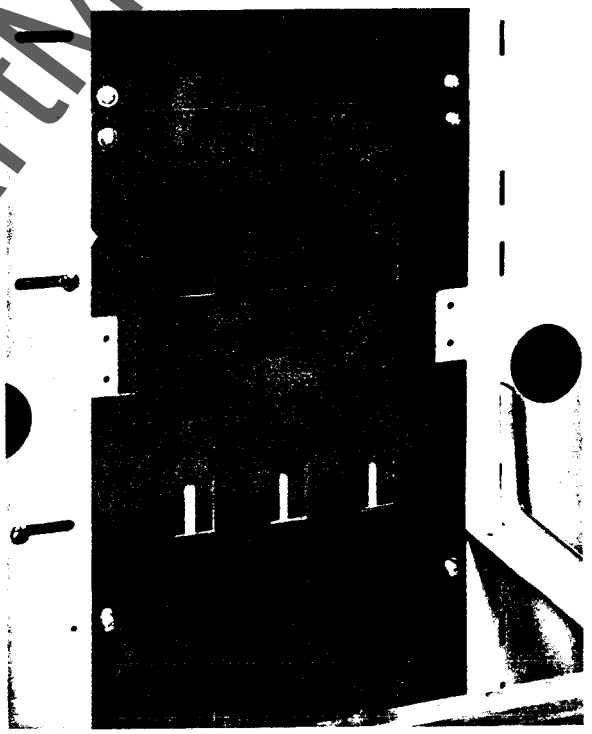
Ends of horizontal bus in all sections are predrilled and tapped, ready for initial installation hookup or future addition of sections.



Slide rails guide unit into compartment easily, with no possibility of shorting or jamming.



Screw and pawl mechanism, located up front for easy access, locks unit in place with stabs fully engaged. Unit can also be padlocked in half-out position for maintenance. Starter units easily removed without removing compartment door.



Central vertical channel contains slots for unit-mounting brackets every six inches. Stab openings in non-metallic bus barrier are also every six inches. Mount units of any height in any desired position. Slide screw to right to close stab opening or to left to open.

WIRING CLASSES AND TYPES

NEMA Standards

Section II, part 322, of the National Electrical Manufacturers Association Standards Publication No. ICS-1970 defines two general classes of Control Centers as follows:

Class I

Those control centers which are essentially a mechanical grouping of motor controllers and/or control assemblies, and which can be handled without system analysis and/or systems engineering.

Individual diagrams of the units only are required. No interlocking between units or with outside devices.

Class II

This classification includes control centers which are basically designed as a complete control system which requires system analysis and engineering, including electrical interlocking between units in the control center or with outside devices where required by the particular installation. The control center manufacturer shall provide a suitable diagram to illustrate operation of the control associated with the control center.

NEMA classes are divided into the following types:

Class I Type A

1. No terminal boards for the load or control connections.

2. Connection diagrams only for each controller or control assembly.

3. Sketches of the overall dimensions of the control centers.

Class I Type B

1. Type B is similar to Type A, except that a unit control terminal board is provided. Unit load terminal boards are also provided for Size 3 controllers or smaller. These terminal boards are mounted on or adjacent to each unit. No load terminal boards for branch circuit breakers and branch fusible switches.

2. Connection diagrams only for each controller or control assembly.

3. Sketches of the overall dimensions of the control centers.

Class I Type C

1. Master section terminal boards including load terminals for Size 3 controllers or smaller, and all control terminals for all controllers or control assemblies in each vertical section are mounted on the stationary structure; also, complete wiring between controllers or control assemblies and their master terminal boards. No load terminal boards for branch circuit breakers and branch fusible switches.

2. No wiring between sections or between any master terminals.

3. No interconnecting between any controllers or control assemblies. All outgoing wires from any unit will be carried to the master terminal board, except wiring for Size 4 controllers or larger.

4. Connection diagram for each controller or control assembly.

5. Sketch of main terminal boards showing general location of terminals.

6. Sketches of the overall dimensions of the control centers.

Class II Type B

1. Unit control terminal board is provided. Unit load terminal blocks are also provided for Size 3 controllers or smaller. These terminal boards are mounted on or adjacent to each unit. No load terminals for branch circuit breakers and branch fusible switches.

2. The necessary interconnecting wiring between control assemblies in the same or other sections.

3. A connection diagram of the complete control center.

4. Sketches of the overall dimensions of the control centers.

Class II Type C

1. Master section terminal boards, including load terminals for Size 3 controllers or smaller, and control terminals for all controllers or control assemblies in each vertical section are mounted on the stationary structure; also, complete wiring between controllers or control assemblies and master terminal boards. No load terminal boards for branch circuit breakers and branch fusible switches.

2. The necessary interconnecting wiring between controllers and control assemblies in the same or other sections.

3. A connection diagram of the complete control center.

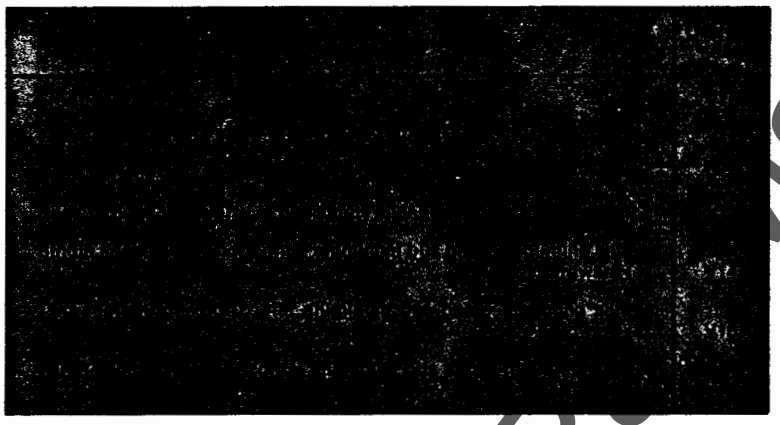
4. Sketches of the overall dimensions of the control centers.

THREE METHODS OF ORDERING TO MEET NEEDS OF ANY JOB

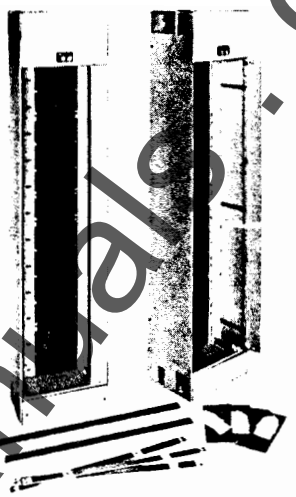
Method 1

1. Order from stock individual sections without units, horizontal bus and mounting sills, plus 1-3 section field assembly kit. Order field installed units from the following pages to match your requirements.

Individual vertical sections with 12 inch top, 6 inch bottom horizontal wireways, without units—includes vertical wireway doors and front wireway covers, with 300 AMP vertical bus. Separate kit includes 600 AMP horizontal bus, mounting sills, necessary hardware.



(1) For copper horizontal bus, change letter A in Catalog Number to C.

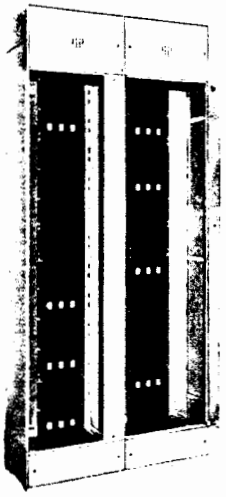


Method 1

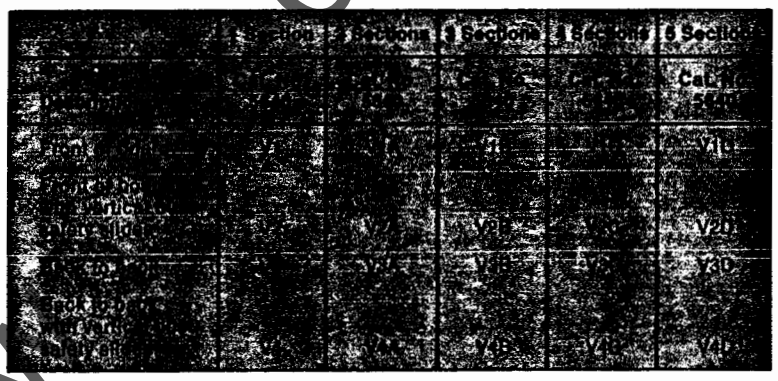
Method 2

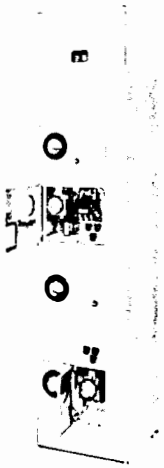
2. Order from stock factory assembled vertical sections less the required units. These units can be scheduled to match your installation requirements. Order field installed units from the following pages.

Factory assembled vertical sections with 12 inch top, 6 inch bottom horizontal wireways, without units includes vertical wireway doors, front wireway covers—600 AMP horizontal—300 AMP vertical bus bars, and mounting sills.



Method 2





Method 3

3. Order from factory complete control center. Assembled with specified units.

Method 3

Combination Starters—Circuit Breaker Type

208-240 VOLT AC FULL VOLTAGE

NON REVERSING	1	½ ¾ 1 1½ 2 3 5 7½	EF	BACBB BBCBB BCCBB BDCBB BECBB BFCBB BGCBB BHCBB	1
	3	20 25 30	EF	BKEBB BLEBB BMEBB	2
	5	60 75 100	JL	BPGBB BQGBB BRGBB	3
REVERSING	2	10 15	EF	R-BIDBB R-BJDBB	1
	4	40 50	FJ	R-BNFBB R-BOFBB	3

TWO-SPEED CONSEQUENT POLE (One Winding)	1	¾ 1 1½ 2 3 5 7½	¾ 1 1½ 2 3 5 —	EF	CP-BBCBB CP-BCCBB CP-BDCBB CP-BECBB CP-BFCBB CP-BGCBB CP-BHCBB	1½
	3	— — 30	15 25 —	EF	CP-BJEBB CP-BLEBB CP-BMEBB	3
	5	— 100	75 —	JL	CP-BQGBB CP-BRGBB	6*
TWO-SPEED SEPARATE WINDING (Two Winding)	2	10 15	10 —	EF	SW-BIDBB SW-BJDBB	1
	4	— 50	40 —	FJ	SW-BNFBB SW-BOFBB	3

208-240 VOLT AC REDUCED VOLTAGE

PART WINDING TWO STEP	1 PW	5 7½ 10 15	EF	PW-BGCBB PW-BHCBB PW-BICBB PW-BJCBB	1½
	2 PW	20 25 30	EF	PW-BKDBB PW-BLDBB PW-BMDBB	1½
	3 PW	40 50 60	FJ	PW-BNEBB PW-BOEBB PW-BPEBB	3
	5 PW	75 100	JL	PW-BQFBB PW-BRFBB	3½
REDUCED VOLTAGE AUTOTRANSFORMER	2	10 15	EF	RV-BIDBB RV-BJDBB	3½*
	3	20 25 30	EF	RV-BKEBB RV-BLEBB RV-BMEBB	4½*
	4	40 50	FJ	RV-BNFBB RV-BOFBB	4½*
	5	60 75 100	JL	RV-BPGBB RV-BQGBB RV-BRGBB	6*§

For 240 Volt Control Type [illegible] change last letter in catalog number to "A".
Catalog numbers are shown for 208/240 Volt coils.
For 120 Volt separate control supply add 1 to last letter in catalog number, e.g. "A" to "B".
When control circuit transformer with 120 Volt secondary is used change next to last letter in catalog number to "A".
*Wired in units. For back-to-back construction bottom two space modules in rear are not available for units when using autotransformer starters.
§20" deep vertical required, 2 spaces in the rear required for autotransformer.

Combination Starters—Circuit Breaker Type

480-600 VOLT AC FULL VOLTAGE

	NEMA Size	Max. H.P.	Frame Size	Catalog No. Plus Letters for Type	Wire Size
NON REVERSING	1	¾ 1 1½ 2 3 5 7½ 10	EF	DBCKB DCCKB DDCKB DECKB DFCKB DGCKB DHCKB DICKB	1
	3	30 40 50	EF	DMEKB DNEKB DOEKB	2
	5	125 150 200	JL	DSGKB DTGKB DUGKB	3
	7	600	KM	DZIKB	6*†
REVERSING	2	15 20 25	EF	R-DJDKB R-DKDKB R-DLDKB	1
	4	60 75 100	FJ	R-DPFKB R-DQFKB R-DRFKB	3
	6	400	KM	R-DYHKB	6***
TWO-SPEED CONSEQUENT POLE (One Winding)	1	¾ 1 1½ 2 3 5 7½ 10	EF	CP-DBCKB CP-DCCKB CP-DDCKB CP-DECKB CP-DFCKB CP-DGCKB CP-DHCKB CP-DICKB	1½
	3	— 30 — 50	EF	CP-DLEKB CP-DMEKB CP-DNEKB CP-DOEKB	3
	5	— 200	JL	CP-DTGKB CP-DUGKB	6*
	7	— 600	KM	CP-DXIKB CP-DZIKB	6*‡
TWO-SPEED SEPARATE WINDING (Two Winding)	2	— — 25	EF	SW-DIDKB SW-DKDKB SW-DLDKB	1
	4	— 100	FJ	SW-DQFKB SW-DRFKB	3
	6	— 400	KM	SW-DWHKB SW-DYHKB	6***

480-600 VOLT AC REDUCED VOLTAGE

Type of Starter	NEMA Size	Max. H.P.	Frame Size	Catalog No. Plus Letters for Type	Wire Size
PART WINDING 2 STEP	1 PW	5 7½ 10 15 20	EF	PW-DGCKB PW-DHCKB PW-DICKB PW-DJCKB PW-DKCKB	1½
	2 PW	25 30 40 50	EF	PW-DLEKB PW-DMEKB PW-DNEKB PW-DOEKB	3
	3 PW	60 75 100	FJ	PW-DPEKB PW-DQEKB PW-DREKB	3
	4 PW	125 150 200	JL	PW-DSFKB PW-DTFKB PW-DUFKB	4½*
	5 PW	400	KM	PW-DYGKB	6*
	6 PW	600	KM	PW-DZHKB	6*
REDUCED VOLTAGE AUTO-TRANSFORMER	2	15 20 25	EF	RV-DJDKB RV-DKDKB RV-DLDKB	3½*
	3	30 40 50	EF	RV-DMEKB RV-DNEKB RV-DOEKB	3
	4	60 75 100	FJ	RV-DPFKB RV-DQFKB RV-DRFKB	4½*
	5	125 150 200	JL	RV-DSGKB RV-DTGKB RV-DUGKB	6*
	6	250 300 400	KM	RV-DVHKB RV-DWHKB RV-DXHKB	6†*
	7	500 600	KM	RV-DYIKB RV-DZIKB	6*

For field installed Type "A" change last letter in catalog number to "A".

Catalog numbers are shown with 480 Volt coils.

For 120 Volt separate control change next to last letter in catalog number to "A".

When control circuit transformer with 120 Volt secondary is used change next to last letter in catalog number to "A".

§24" wide vertical required. Rear not available for units.

†20" deep, 30" wide vertical required. Rear not available for units.

‡20" deep, 54" wide vertical required. Rear not available for units.

*Wired in units.

***30" wide vertical required. Rear not available for units.

≠20" deep vertical required. For back-to-back construction bottom two space modules in rear not available for unit when using auto-transformer starters.

Overload Heater Application Data

Overload heaters are not normally supplied with Control Centers. Where heaters are specified with motor full load currents, specific heaters for the motor will be included. Where the horsepower only is specified, the table below is used for overload heater sizing.

CURRENT RATING OF THREE PHASE, 60 Hz, A-C INDUCTION MOTORS

¼	1800	1.92	0.96	0.48	0.38
	1200	2.32	1.16	0.58	0.46
	900	2.90	1.45	0.73	0.58
½	1200	4.14	2.07	1.04	0.83
	900	5.80	2.90	1.45	1.16
1	3600	5.50	2.75	1.38	1.10
	1800	6.10	3.05	1.53	1.22
	1200	7.08	3.54	1.77	1.42
	900	7.48	3.74	1.87	1.50
2	3600	11.1	5.56	2.78	2.22
	1800	11.5	5.76	2.88	2.30
	1200	12.7	6.35	3.18	2.54
	900	14.4	7.21	3.61	2.88
5	3600	25.4	12.7	6.34	5.08
	1800	26.4	13.2	6.60	5.28
	1200	28.2	14.1	7.05	5.64
	900	31.2	15.6	7.80	6.24
10	3600	49.0	24.5	12.3	9.8
	1800	50.4	25.2	12.6	10.1
	1200	53.2	26.6	13.3	10.6
	900	57.8	28.9	14.5	11.6
	600	67.6	33.8	16.9	13.5
20	3600	98	49.0	24.5	19.6
	1800	101	50.5	25.3	20.2
	1200	103	51.7	25.9	20.6
	900	109	54.6	27.3	21.8
	600	123	61.5	30.8	24.6
30	1800	146	72.8	36.4	29.2
	1200	154	77.1	38.6	30.8
	900	159	79.4	39.7	31.8
	600	176	87.9	43.9	35.2
40	1800	196	98	49.0	39.2
	1200	198	99	49.5	39.6
	900	208	104	52.0	41.6
	600	226	113	56.5	45.2
60	1800	—	143	71.5	57.2
	1200	—	148	74.0	59.2
	900	—	151	75.5	60.4
	600	—	162	81.0	64.8
100	1800	—	233	116	93.2
	1200	—	239	120	95.6
	900	—	245	123	98.0
	600	—	257	128	103
	450	—	290	145	116
150	1800	—	346	173	138
	1200	—	350	175	140
	900	—	363	182	145
	720	—	376	188	150
	600	—	378	189	151
	450	—	418	209	166
250	1800	—	572	286	229
	1200	—	580	290	232
	900	—	604	302	242
	720	—	625	312	250
	600	—	630	315	252
	450	—	630	315	252
	360	—	676	338	270
400	1800	—	910	455	364
	1200	—	933	466	373
	600	—	955	477	382
	450	—	1000	500	400
	360	—	1050	523	418

NOTE: When installing a Motor Control Center, check the information on the order to be sure that the installed motors match those used for heater sizing.

Class G30 Heater Selection Tables

1.15 service factor 40°C rise	As specified from tables	One size larger than specified for each 15°C difference	One size smaller than specified for each 15°C difference

The current at which heaters will trip the overload relay with the knob at 100% mark in an ambient of 40°C is 1.25 times the minimum full-load motor current in the table. Heaters so selected give 125% protection.

NEMA SIZE 1 STARTERS

G30T6	.32	.35	.32	.34	.29	.31
G30T7	.36	.39	.35	.38	.32	.34
G30T8	.40	.43	.39	.42	.35	.37
G30T9	.44	.46	.43	.45	.38	.41
G30T10	.47	.50	.46	.49	.42	.45
G30T16	.89	.98	.87	.96	.79	.87
G30T17	.99	1.08	.97	1.06	.88	.96
G30T18	1.09	1.17	1.07	1.14	.97	1.04
G30T19	1.18	1.29	1.15	1.25	1.05	1.11
G30T20	1.30	1.42	1.26	1.39	1.12	1.24
G30T26	2.31	2.53	2.27	2.47	2.03	2.20
G30T27	2.54	2.78	2.48	2.73	2.21	2.44
G30T28	2.79	3.13	2.74	3.07	2.45	2.74
G30T29	3.14	3.49	3.08	3.41	2.75	3.05
G30T30	3.50	4.04	3.42	3.84	3.06	3.47
G30T36	6.40	7.24	6.07	6.89	5.55	6.29
G30T37	7.25	8.17	6.90	7.79	6.30	7.04
G30T38	8.18	9.15	7.80	8.71	7.05	7.85
G30T39	9.16	10.1	8.72	9.74	7.86	8.81
G30T40	10.2	11.3	9.75	11.0	8.82	9.84
G30T46	17.5	19.6	16.7	18.7	14.8	16.7
G30T47	19.7	21.2	18.8	20.1	16.8	18.0
G30T48	21.3	22.2	20.2	22.2	18.1	19.4
G30T49	22.3	26.5	22.3	25.4	19.5	21.6
G30T50	26.6	29.5	25.5	28.2	21.7	24.3

NEMA SIZE 2

Heater Cat. No.	FULL-LOAD MOTOR CURRENT — AMPS				Heater Cat. No.	FULL-LOAD MOTOR CURRENT — AMPS			
	3 Overload Relay		Quick-Trip Relay			3 Overload Relay		Quick-Trip Relay	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
G30T36	6.42	7.22	6.16	6.94	G30T46	16.7	18.3	16.1	17.7
G30T37	7.23	7.86	6.95	7.56	G30T47	18.4	19.2	17.8	18.4
G30T38	7.87	8.92	7.57	8.55	G30T48	19.3	22.2	18.5	21.3
G30T39	8.93	10.0	8.56	9.71	G30T49	22.3	25.2	21.4	24.2
G30T40	10.1	11.5	9.72	10.6	G30T50	25.3	28.2	24.3	27.1
G30T44	14.7	15.2	14.1	14.7	G30T54	37.7	41.0	36.3	39.4
G30T45	15.3	16.6	14.8	16.0	G30T55	41.1	47.0	39.5	45.1
					G30T56	47.1	50.0	45.2	50.3

NEMA SIZE 3

G30T46	20.8	23.9	19.2	21.5
G30T47	24.0	26.3	21.6	24.7
G30T48	26.4	27.9	24.8	25.3
G30T49	28.0	32.7	25.4	30.3
G30T54	50.4	53.0	46.5	51.0
G30T55	53.1	63.0	51.1	59.0
G30T56	63.1	68.7	59.1	63.9
G30T57	68.8	75.1	64.0	70.4

NEMA SIZE 4

G30T51	35.2	39.9	32.8	37.6
G30T52	40.0	45.5	37.7	40.7
G30T53	45.6	50.3	40.8	46.4
G30T54	50.4	52.6	46.5	49.6
G30T55	52.7	61.5	49.7	57.4
G30T61	102.0	113.9	95.3	103.9
G30T62	114.0	126.4	104.0	114.9
G30T63	126.5	135.4	115.0	129.9
G30T64	135.5	150.0	130.0	133.9
G30T65	—	—	134.0	150.0

NEMA SIZE 5

Heater Cat. No.	FULL-LOAD MOTOR CURRENT — AMPS			
	3 Overload Relay		Quick-Trip Relay	
	Min.	Max.	Min.	Max.
G30T27	84	92	79	87
G30T28	93	103	88	97
G30T29	104	113	98	107
G30T30	114	127	108	120
G30T36A	205	226	194	214
G30T37	227	250	215	236
G30T38	251	269	237	254
G30T39	270	300	255	284
G30T40	—	—	285	300

MAIN BREAKERS—LARGE AIR TYPE—600 VOLTS A-C

Includes breaker element, any necessary mounting accessories, incoming-line cable terminations of required size and enclosure with desired size of vertical rise bus up to 600 AMP for K-600 and 1600 AMP for K-1600. Accessories for electrically operated breakers such as control transformers, control switch, indicating lights, etc., are not included.

K-600	Manual	50,000	35,000	56LA6M	2½
K-600	Electric	50,000	35,000	56LA6E	

(1) Switchboard section accommodates two K-600 breakers or one K-1600. Instruments, instrument transformers and small control apparatus other than plug-in units, can be mounted in top of section.

(2) Add letters "DO" to catalog number for drawout construction.

(3) SWITCHBOARD SECTION, similar to NEMA 1 section in appearance is included when ordering. Height is 90 inches and depth is 36 inches for K-600 and 40 inches for K-1600 Breakers, width is 20 inches for K-600 and 26 inches for K-1600 Breakers. Busses are braced for 50,000 RMS symmetrical amperes.

MOLDED CASE CIRCUIT BREAKERS—INCOMING LINE AND FEEDER UNITS (2)

ET	2	EF	100	DXM	1 (1)
		EF	150	DXN-96	1 (1)
		FJ	225	DXN	1½
		JL	225	DXN-97	1½
		JL	400	DXO	2
		KM	600	DXP	2½
		KM	800	DXQ	2½
ETH	2	HE	100	DXM-28	1 (1)
Cordon	2	CE	100	DXM-28A	1 (1)
		CJ	225	DXN-28A	2½

(1) Two units can be installed vertically, each with a door in one space module, separated by a barrier.

(2) Main breakers may be cable or bus connected to the motor control center bus at the option of I-T-E Imperial Corporation.

(3) Thermal magnetic breakers supplied as standard, specify continuous AMP rating with catalog number.

General Note: Breakers 400 AMP and above are wired in units. Order factory installed.

LIGHTING PANELS*

Number of Circuits	Space Modules
12	1½
24	2
36	3

*Main lug only.

DRY-TYPE TRANSFORMERS

KVA Size	Space Modules
1.0	1
3.0	1
15.0	2*
25.0	2*
9.0	1½
15.0	1½ *

*20" deep vertical required. Rear not available for units.

CURRENT LIMITING REACTORS(1)

Maximum Continuous Amperes	Maximum Impedance Available	Space Modules

(1) For reducing a maximum of 100,000 amperes available short circuit current to 25,000 or 15,000 amperes ac r.m.s. asymmetrical amperes). Substituted for main lug compartments.

(2) Unit requires 20" deep section.

(3) Unit requires 28" wide by 20" deep section.

POWER FACTOR CORRECTION CAPACITORS

KVAR	Max. H.P.	240 Volt Space Modules	480 Volt Space Modules

*20" deep vertical required. Rear not available for units.

INCOMING LINE APPARATUS

INCOMING LINE LUGS When specified on the order, tin plated mechanical pressure type lugs will be provided for customer attachment to the horizontal bus in any section; which will accept a maximum of one 250MCM copper or aluminum conductor per phase.	56SC1	NR
INCOMING LINE SECTION with Main Horizontal Bus Extended for Cable Terminations at Top		
Indoor 20X20X91½"*	56LS1	6
Indoor 15X20X91½"*	56LS2	6
Weatherproof (NEMA 3 Non-Walk-In)	56LS3	6
TRANSITION SECTION		
For connection to I-T-E low voltage switchgear or transformer	56TS1	6
For connection to low voltage switchgear or transformers, manufactured by others	56TS2	6
[illegible]	56BC1	NR
[illegible]	56BC2	NR
THROAT CONNECTIONS (Maximum length 24 inches)		
Indoor connection to I-T-E equipment	56TC1	NR
Indoor connection to other manufacturers' equipment	56TC2	NR
Weatherproof connection to I-T-E equipment	56TC3	NR
Weatherproof connection to equipment manufactured by others	56TC4	NR

*Includes 1½" high by 3" wide mounting sill.

MODIFICATIONS OF STANDARD CONTROL UNITS

Description of Item		Cat. No. (1)	Space Modules
AC CONTROL RELAY	2 NO	41	NR
2 TO 4 POLES	2 NC	42	NR
	1 NO-1 NC	43	NR
	3 NO	44	NR
	2 NO-1 NC	45	NR
	1 NO-2 NC	46	NR
	3 NC	47	NR
	4 NO	48	(2)
	3 NO-1 NC	49	(2)
	2 NO-2 NC	50	(2)
	1 NO-3 NC	51	(2)
	4 NC	52	(2)
SUBSTITUTE ETH for ETI BREAKERS			
HE for EF, Size 1-3		28	NR
JL-225 for FJ, Size 4		28	1(3)
HJ for JL-400, Size 5		28	NR
UNIT SAFETY PACKAGE (includes flash barriers on wireway side of unit and barriers on shelves)		27	NR
NEMA 1A Field Installed Unit		56	NR
NEMA 12 Field Installed Unit		57	NR
CONTROL TRANSFORMER, with secondary fuse		6	NR
100 va. extra capacity, any size		7	NR
PUSHBUTTONS			
1—Unit; start or stop, etc.		4	NR
2—Unit; start, stop, etc.		1	NR
3—Unit; forward, reverse, stop, etc.		3	NR
INDICATING LIGHT, oil-tight; includes interlock		5	NR
COMPELLING RELAY, compels starting in lowest speed of a multi-speed starter		13	NR
ENGRAVED PLASTIC NAMEPLATES			
3¼ x ¾		67	NR
any other size, per unit		67A	NR

(1) To be added to field installed catalog number.
(2) May require additional space in some units; consult factory.
(3) Add additional section space as indicated to standard unit height.

GENERAL NOTE: NR—Not Required.

BUS BAR MODIFICATIONS

Standard vertical and horizontal bus is tin plated aluminum ALSTAN-70 process.	
Horizontal Bus—Tin Plated Aluminum	
600 Amp Standard	
1000 Amp Optional	102
1600 Amp Optional	103
Horizontal Bus—Tin Plated Copper	
600 Amp Optional	104
1200 Amp Optional	88
2000 Amp Optional	105
Horizontal Bus—Silver Plated Copper	
600 Amp Optional	106
1200 Amp Optional	107
2000 Amp Optional	108
Vertical Bus Increased to 600 Amp	109

Ground Bus—¼ x 1" in Bottom of Section	92
Neutral Bus—½ Capacity, on Insulators in Bottom of Section	93

ENCLOSURE MODIFICATIONS

NEMA 1, Optional 20 inch depth, front of board mounting only	111
NEMA 1A, Gaskets furnished on unit doors only	—
NEMA 2, Drip shield at top of section	112
NEMA 12, Dust-tight construction with gaskets on all covers and doors	80
Top Pullbox, 15 inches high, for increasing cable entrance area	—

Safety Slides	—

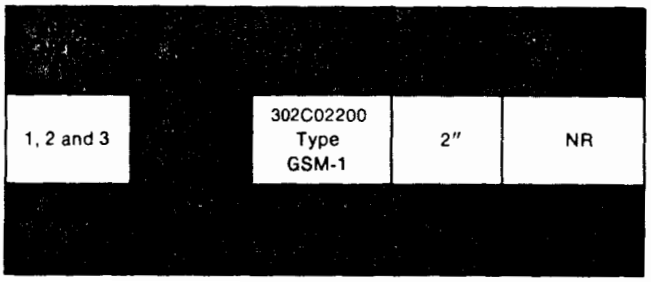
ACCESSORIES—FIELD ADDED

Horizontal Bus Links and Hardware to connect complete sections		V5
Blank Door, 6"		V7
Blank Door, 24"		V9
Ground Bus Kits	1 Section	V21
	2 Sections	V22
	3 Sections	V23
	Connection Kit	V24

*To be added to vertical section catalog numbers.
Catalog code numbers apply to method I and II only.
Order by description for factory assembled (Method III).

Items without catalog code numbers—order by description.

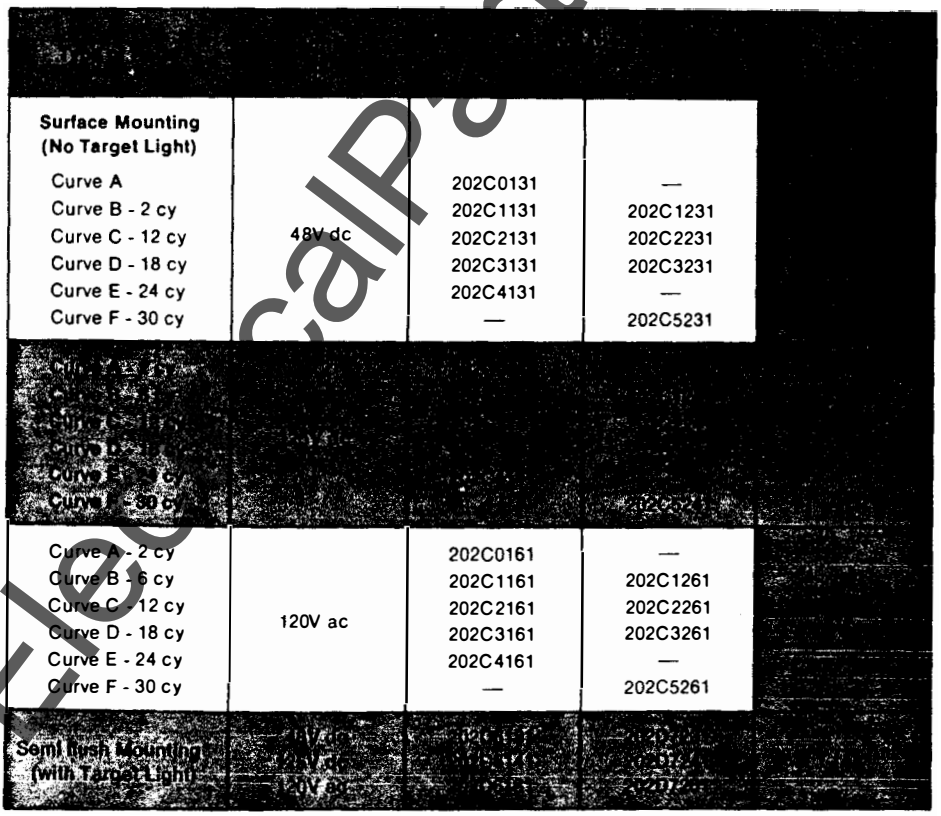
TYPE GRM-NC GROUND RELAYS AND GSM SENSORS



1, 2 and 3	302C02200 Type GSM-1	2″	NR

GROUND SENSORS—TYPE GS

GROUND RELAYS—TYPE GR



Surface Mounting (No Target Light)			
Curve A	48V dc	202C0131	—
Curve B - 2 cy		202C1131	202C1231
Curve C - 12 cy		202C2131	202C2231
Curve D - 18 cy		202C3131	202C3231
Curve E - 24 cy		202C4131	—
Curve F - 30 cy		—	202C5231
[illegible]			
Curve A - 2 cy	120V ac	202C0161	—
Curve B - 6 cy		202C1161	202C1261
Curve C - 12 cy		202C2161	202C2261
Curve D - 18 cy		202C3161	202C3261
Curve E - 24 cy		202C4161	—
Curve F - 30 cy		—	202C5261
Semi flush Mounting (with Target Light)	[illegible]	[illegible]	[illegible]

*Includes 2, 6, 12, 18 & 24 cycle tap selected curves on 5–50A.
6, 12 & 18 cycle tap selected curves on 200–2000A.
(for 30 cycle curve in drawout relay consult factory)

Curves may be found in I-T-E Bulletin 18.1.3-3A Application Guide.

ΔCombination starter Units larger than S/4 do not require Additional Space Modules when used with 5″ sensor and GR relay. Add shunt trip to circuit breaker devices. Not applicable for branch feeder switches that cannot be tripped remotely.

▲Required only when relay is mounted in separate compartment.

TELEMATIC® AUTOMATIC TRANSFER UNITS

Rating Amperes	Cat. No.	Space Modules**
3-Pole 3φ 3W, 3φ 4W		

*Out at 70% normal V. In at 90%.
**400A through 1200A transfer units require 24" wide section.
1600A and 2000A transfer units require 36" wide section.

AUTOMATIC TRANSFER SWITCHES

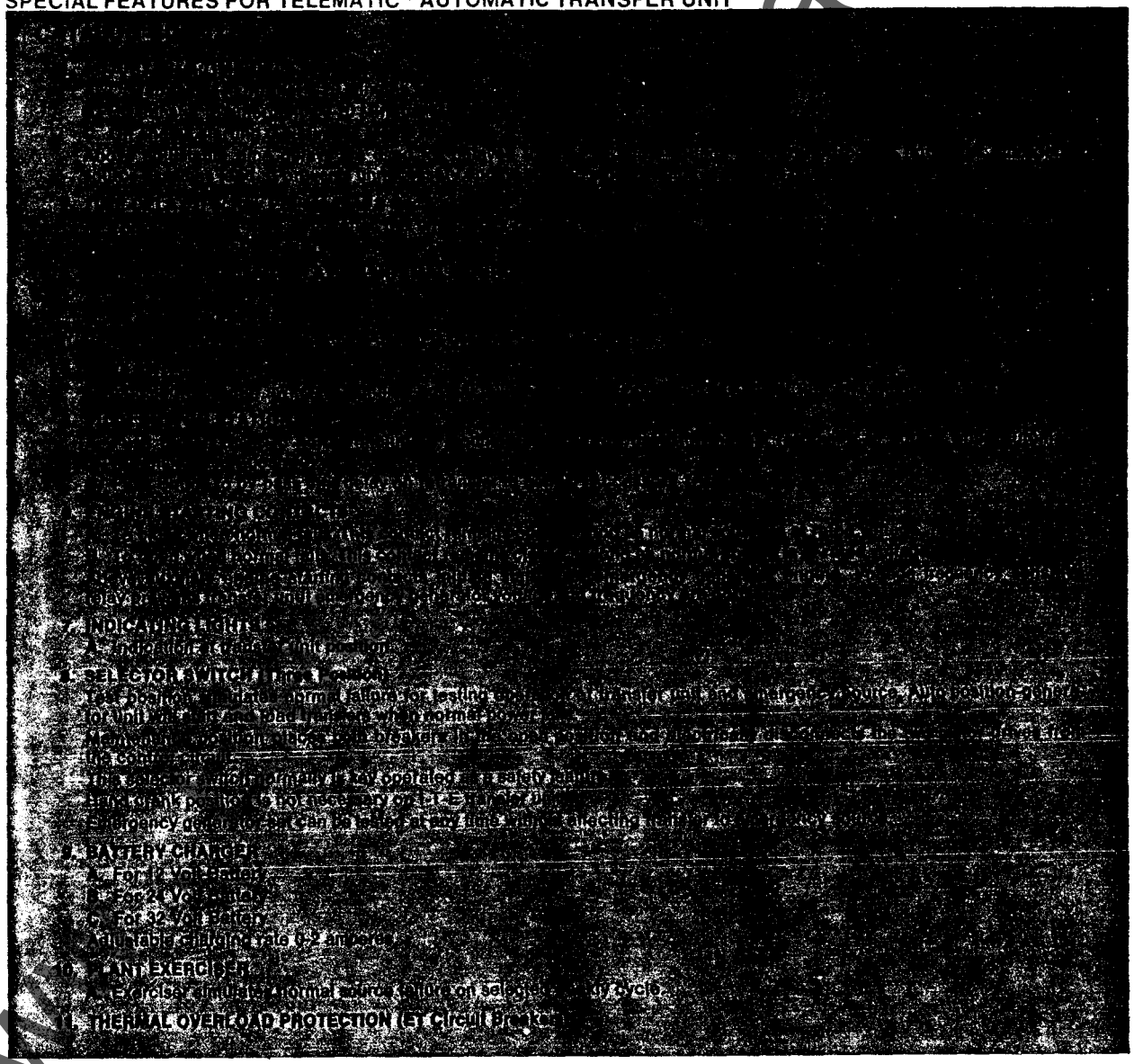
(Asco Bulletin 906-105)

Full Relay Protection for 3φ 4W Systems

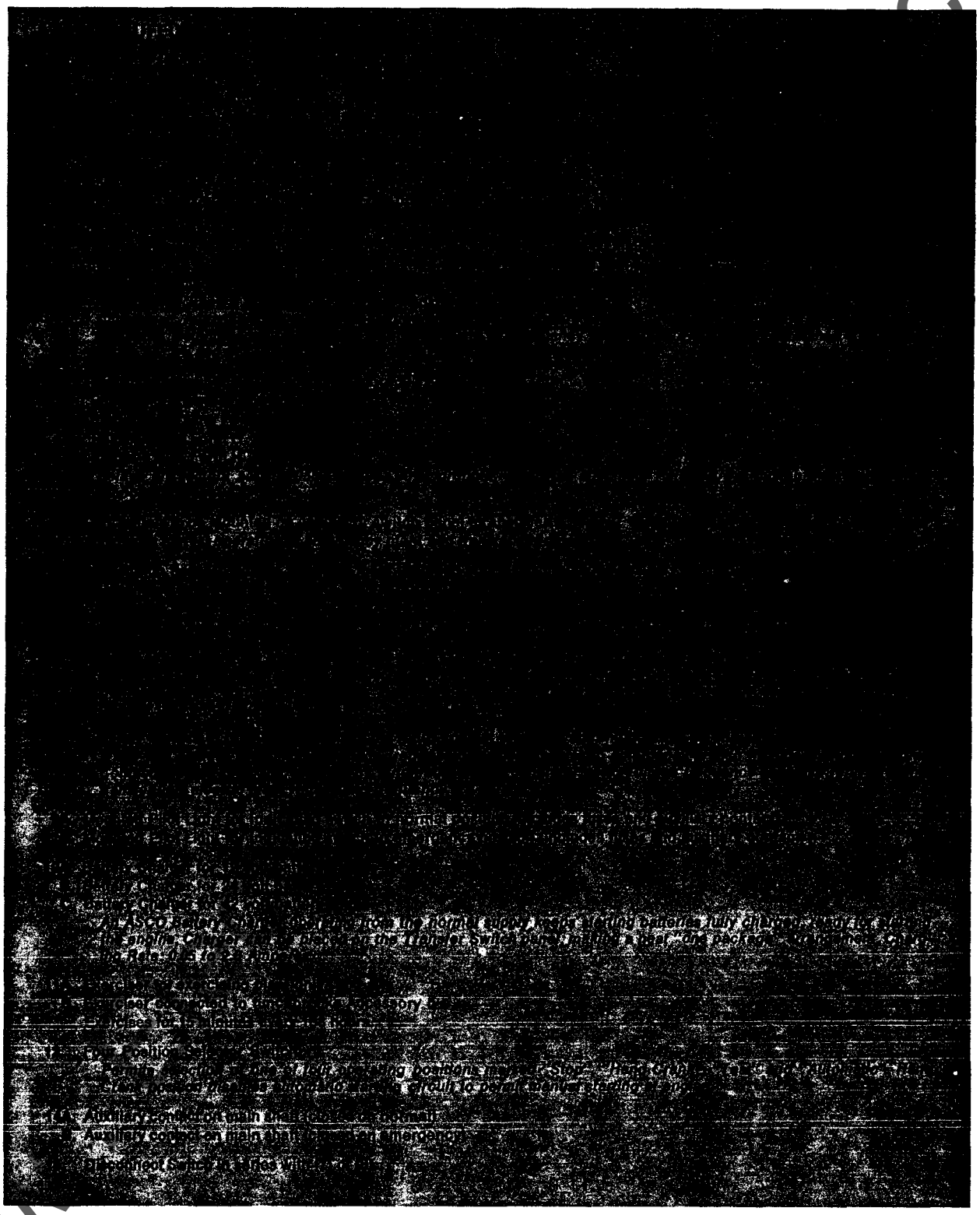
Amperes	Cat. No.	Space Modules	Frame Width	Notes

NOTES:
1. Front connected line, back connected load.
2. Back connected line and load.
3. Accessories 1A and 4 included.
4. Rear of section not available for units.

SPECIAL FEATURES FOR TELEMATIC® AUTOMATIC TRANSFER UNIT



ACCESSORY FEATURES FOR AUTOMATIC TRANSFER SWITCHES (ASCO BULLETIN 906–105)



I-T-E SERIES 5600 MOTOR CONTROL CENTER

Suggested Specifications

By completely detailing the Motor-Control Center, the purchaser can be assured that he will receive what he desires and the factory can process the order without delay. This information should include, but not necessarily be restricted to that outlined.

This specification covers a complete (indoor) (outdoor) Motor-Control Center. The voltage shall be (208/220) (480) (575) volts, 3 phase, (60 cycle) (50 cycle) (25 cycle).

Incoming Line Section

The incoming line shall enter the (left) (right) section at the (top) (bottom) (other specified) and shall be (cable) (bus) connected. The cable will consist of (Number_____) (size_____) conductors. (If bus, give specific details.)

A main disconnect (is) (is not) required. If required, this will be a circuit breaker rated_____amperes of the_____type.

Wiring

The Motor-Control Center shall be wired NEMA (class I) (class II) type (A) (B) (C). If type C, the master terminal blocks shall be located at the (top) (bottom) of each section.

Enclosures

The enclosures shall be formed steel, free standing, with doors and removable covers for full access. The enclosure shall be NEMA type (1) (1A) (12) (3 non walk-in) (3 walk-in). The Control Units shall be mounted (front only) (back to back) in each section. If front only, the control centers (will) (will not) be mounted against a wall surface. The basic structure shall be listed by Underwriters' Laboratories Inc.

The horizontal bus shall be rated (600) (1000) (1200) (1600) (2000) amperes. The vertical bus shall be rated (300) (600) amperes. Mechanical fault bracing of the buses shall be (22,000) (42,000) RMS symmetrical amperes. A ground bus (is) (is not) required. All bus bar joints shall be made with two bolts. A neutral bus of one half main bus capacity (is) (is not) required. Horizontal bus shall be separated from wireways by a non-metallic barrier. Unit compartments shall be separated from bus and wireways by non-metallic barriers. The barrier between the vertical bus and unit compartments shall have safety slides to cover stab apertures when not in use. The enclosure shall be finished with ASA 61 epoxy finish. (Space heaters, thermostats, bottom plates, exterior lighting, cross-aisle bus or second door for walk-in construction, may be specified if required.)

Combination Starters

Combination starters shall be circuit breaker type. Instantaneous-trip only type shall be supplied.

The starter coil shall be rated (120) (208/220) (480) (other) volts. The voltage source will be (line) (individual control transformers) (common control transformer). If control transformer is required, the transformer shall have (no fuses) (primary fuses) (one secondary fuse) and encapsulated coils.

The starters shall be equipped with (two) (three) overload relays. (Specify required modifications—pushbuttons, selector switches, pilot lights, extra auxiliary contacts, control relays, etc.—as required. Wiring diagrams should be prepared to indicate application of these devices.)

The following basic information on each motor controllers should be included in specifications or pertinent engineering drawings:

1. Motor Horsepower including full load amperes and rpm.

2. Motor application (reversing or non-reversing; 2-speed consequent-pole; reduced voltage-type, etc.).

3. Nameplate engraving for each individual circuit.

Feeder Circuit Breakers

Feeder protective devices shall be circuit breakers. Specify frame and trip size.

Detail other apparatus as required.

A wiring diagram should be furnished where available, or a description of control circuit requirements for each starter or type of starter should be supplied. Complete schematic wiring diagram should be provided on NEMA Class II control centers; or unit wiring diagrams plus a description of inter-lock and inter-connection requirements.

Future Units

Future units (specify by type, size and quantity desired) shall be equipped for addition of units without modification of bus or enclosure. Openings shall be closed with hinged doors.

NEMA 3 ENCLOSURE