# SPECIFIC REQUIREMENTS POWER APPARATUS AND EQUIPMENT NUMBERING AND LETTERING GENERAL EQUIPMENT REQUIREMENTS 

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## 1. GENERAL

1.01 This section covers the specific requirements for size and location for numbering and lettering power apparatus and equipment. It supplements the common requirements covered in section 800-613-150.
1.02 This section is reissued to make changes which are listed under reasons for reissue at the end of this section.
1.03 The exact location of the characters may be varied to best advantage unless locating dimensions are given. Apparatus for which designations are shown at the top (or bottom) may have these designations placed at the hottom (or top) if the associated equipment drawing so indicates. Similarly. designations shown at the left or right side may be placed on the opposite side if so indicated on the drawing.
1.04 Groun, subgroup, functional, and numerical designations shall be stamped with 3/16-inch characters on rear of power rectifiers, power apparatus panels, fuse panels, and mounting plates unless otherwise specified or unless lack of space makes the use of 1/8-inch characters necessary. Where reference is made to other RSPS in this section, the $3 / 16$-inch characters specified above shall be used instead of the sizes specified in the related BSPs.
(a) Designations may be applied on front or rear of panels or on equipment and apparatus by rubher stamping or by using a silk screen. When the silk screen method is used, the characters shall be the same size and style as those achieved by rubher stamping. Elsewhere in this section both methods will be referred to as stampina.
1.05 Stampings shown on vertical center lines, as in Fig. 17. for equipment mounted either so high or so low that designations cannot easily be seen from the normal seeing position shall be moved to the left (if practicable, otherwise to the right) sufficiently for the designation to clear the center line of the equipment to insure good visibility. This shall not be followed where there would be possibility of confusing the designation with nearby apparatus. as in the case of closely mounted alarm fuses. Location of designations so close to apparatus that they are shielded by the apparatus when viewed from normal viewing position should be avoided. When stamping designations on the rear of power equipments with surfacetype wiring, it is impracticable in some cases to prevent wiring from obscuring the designations.
1.06 Descriptive information shown in brackets [] or off panel is not to be stamped. In general, markings provided by the manufacturer are not shown on the accompanying figures, or when shown, are so indicated.
1.07 A circuit functional designation such as 48 V BAT may be reduced and BAT only used if the omitted part of the functional designation is a repetition of the bay designation. (See Fig. 50.)

## 2.__SPECIFIC REQUIREMENTS

A. Alternators
2.01 See 2.58 through 2.60.

## B.__Ammeter Shunts

2.02 For a small ammeter shunt mounted on a block, put designation on face or edge of block or shunt. (See Fig. 1.) If the shunt is of large size. place the designation on the shunt as shown in Fig. 2 in horizontal position when space permits.


Fig. 1 - Ammeter Shunt Mounted on Block


Fig. 2 - Ammeter Shunt Mounted on Bus Bars

## $\Gamma$ c. Appliance outlets

2.03 The voltage designation for appliance outlets (other than those mounted in frame base), which supply more than 120 volts, shall be stamped in $3 / 16-i n c h$ red characters on the front or side of the outlet as indicated on ED-81770-10.

## D. Batteries

2.04 General: Apply a group designation for each battery or group of cells arranged for individual connection and for each string of permanently paralleled cells in the battery or group. The group designation should be at an easily seen location near the main aisle end of the string.

regular cells and em cells in different rows

Fig. 3 - Floor-Mounted Tank Storage Cells
2.05 Apply a combined numerical and specific designation, for example, 3 P for each pilot cell.
2.06 The lowest-numbered cell shall be at the end of the battery with potential nearest ground, except that if the ground connection can be changed from one polarity to the other by switching, the lowest-numbered cell shall be at the positive end.
2.07 Floor-Mounted Tank_Batteries: Designate each cell on the main aisle only in the location shown in Fig. 3.
2.08 Cells Mounted on_stands_or_Racks or in cabinets, rncluding_counter cells: Designate on the main aisle side only except when mounted on a douhle row, in which case, designate the cells on their respective aisle sides. (See Fig. 4.) In the case of two-row cabinets accessible from one side only, place the designations for the back row on the inside rear wall. In the case of two-tier, two-row stands with one row per tier on wall side, stamp on front edge of shelf the designations for both rows of cells mounted thereon with the designations for the cells in the rear row above the desionations for the cells in the front row (see Fig. 5).


Fig. 4 - Storage Cells on Two-Tier, One-Row Stand


Fig. 5 - Storage cells on Two-Tier. Two-Row stand
With One Row per Tier on wall side
2.09 Single-Cell_Units: Apply a numerical designation for each cell as in Fig. 4.
2. 10 Multicell Units: Apply a numerical designation for the first and last cells in each unit and also for pilot cell. (See Fig. 6.7. 8, and 9.)
2.11 Cells in Boxes or Trays: Apply a numerical designation for the first and last cells in each tray. If the box contains more than one group of cells, number the first and last cell of each group and use brackets on the outside to indicate each group. (See Fig. 7. 8, and 9.)
2.12 Dry Cell Batteries: (See Fig. 10 and 11.)

Fig. 6 - Multicell Battery Units on Relay Rack or Metal Stand

Fig. 7 - Multicell Battery Units in Metal Cabinet


Fig. 8 - Storage Cells in Boxes or Trays on Relay Rack


Fig. 9 - Storage Cells in Boxes or Trays on Metal Stand


RELAY RACK MOUNTING OR INTERIOR OF
LIBRARY CABINET DRAWER


DRAWER IN LIBRARY TYPE CABINET

Fig. 10 - Dry Cells - No. 6 Type


Fig. 11 - Dry Batteries - Block Type

Ed Bellis
2. 13 Designate bells per Fig. 39. For subscriber sets, see section 800-613-155 and 1.04.

## F.__Bus Bars and Connecting_Leads

2.14 Designate bus bar battery risers at emergency cell switch bay to indicate the battery with which they are associated. Designate bus bar connections to emergency or countercells with the type and number of the cell. (See Fig. 12.1
2. 15 Where identification is not evident. leads terminated on battery ground bus bars and at the central $\rightarrow$ office ground (with the exception of the $\rightarrow$ A lead) shall be designated with number plates as shown in Fig. 13 to agree with the designation shown on the circuit.


Fig. 13 - Cable Risers at Ground Bus Bar of Fuse Bays, Battery Distributing Fuseboards, MDF, CDF, or Protector Frames
$\Gamma 2.16$ Instead of the number plate, the lead at the central office ground from the principal equipment room ground bar shall have a p-411719 tag. This comes already stamped, "Do not disconnect lead." When more than one A lead terminates on the ground electrode, the tags should be further identified as to offices served, or the floor on which the $A$ lead terminates. Stamp in 3/16-inch characters on the back of the $L$ tag.


Fig. 14 - Ground Bus Bar at Power Board
2. 17 Where identification is not evi-
dent, designate leads at ground bus bars, other than those mentioned in 2.15 and 2.16 , with a specific (if space permits) or a numerical designation as in fig. 14 if the bus bar is of sufficient width. Where space is not available, place the stamping on the panel if the designation can be readily associated with the lead. In other cases, designate the lead with a number plate (see Fig. 13) to agree with the designation shown on the circuit. Multiple leads need not have different numbers.

## G. Cabinets, Panels, and Subpanels

2.18 See Fig. 15. for typical arrangements of designations on cabinets, panels, subpanels, and covers. The associated equipment drawing will show designations to be placed on the cover and/or on the panel in their approximate location. Also, see Section 800-613-159 and 1.04.

## H. Capacitors

2. 19 See panel assembly, Fia. 49. Designate on terminal side only unless isolated from the other apparatus in the same circuit, in which case, designate on both sides.
2.20 For telephone-type capacitors, see Section 800-613-151 and 1.04.

## I.__Circuit_Breakers

2.21 Designate as shown for power relays, Fig. 39. Also, see panel assemblies, Fig. 50 and 51.

## J.__Coils_- Induction $\quad$ Loading_ and Repeating

2.22 Apparatus of this type is designated on terminal side only unless isolated from the other apparatus in the same circuit, in which case it should be designated on both sides.


EQUIPMENT WITHOUT NAMEPLATE

Fig. 15 - Typical Locations for Group Designations on Cabinets, Panels, and/or on Common Covers
2.23 For repeating coils, see section 800-613-154 and 1.04.
2.24 For telephone-type induction coils, see section 800-613-152 and for loading coils, refer to Section 800-613-153. Also, see 1.04.
K. Compensators- Starting
2.25 Designate motor starting compensators as shown for starters in Fig. 36.
L. Connecting_Blocks
2.26 Connecting blocks on the power board will have the number stamped adjacent to the first and last terminal and each intermediate terminal whose number is a multiple of five, as in Fig. 16. Functional designations may be stamped on the barrier between terminals or on the marker strip. (See Fig. 49.) Also, see Section 800-613-151 and 1.04.

## M. Contactors

2.27 Designate contactors according to Fig. 39.

## N.__Controllers

2.28 For voltage controllers, see voltage relay and automatic emergency cell switch in Fig. 50. For motor starters, see Fig. 36.
O. _ Countercells
2.29 See $2.07,2.08$, and Fig. 4 and 5.
P._-Exhausters_and_Fans
2.30 See 2.58 and 2.60 .


Fig. 16 - Connecting Block

## Q.-- Fuses, Fuse_Panels_ and Fuse

2.31 For National Electrical Code cart-ridge-type fuses, see Fig. 17 through 21 and 25 through 27. The capacity of each fuse shall be stamped parallel to the fuse. The capacity designation shall contain the designation $F N$ (for example, 10 AMP FN) if a multiple element (time delay) fuse is $\leftarrow$ used. The FN may follow or be located below the AMP designation. Stamp group designations at the top, if possible, but if sufficient space is not available or reading would be difficult, they may be placed on the side or below the fuses. If fuses, other than SAFTOFUSE units, are associated with a circuit of more than 150 volts to ground, the voltage and class of service shall be stamped immediately above or below the fuses.


Fig. 17 - Cartridge-Type Fuse on Posts


Fig. 18 - Cartridge-Type Fuses, Fuse- Fig. 19 - Discharge Fuses and Switch
trons, or Fustats in Fuse


Fig. 20 - End Guard Power Fuse Mounting


Fig. 21 - KS-14473 Fuse Mounting



Fig. 23 - Alarm-Type Fuses
2.32 In the case of designations consisting of or including battery voltages, the nominal voltage shall be used, such as 24 V , 48 V , i 30 V , unless otherwise designated. Where an established voltage is not used, mark for 2 volts per storage cell or $1-1 / 2$ volts per dry cell.
2.33 For link fuses, refer to Fig. 22 and panel assembly Fig. 50. The capacity of each fuse shall be stamped parallel to the fuse, and if a cover is provided, on the cover in a horizontal position. When a single cover is placed over two link fuses, the fuse size shall be stamped on the cover over each fuse.
2.34 For alarm-type fuses including the $70-t y p e$ and other telephone-type fuses, see Section 800-613-152 and 1.04, also assembly Fig. 50. Alarm fuses used on circuits 90 volts and higher, such as 35J, 35 K , and similar arc restricting types, should have the code of the fuse stamped immediately following or under the capacity designation and in the same size and color. (See Fig. 23 and 26.)
2.35 The arbitrary number assigned to alarm fuses, when they are not located adjacent to associated cartridge fuse, shall be the same as the number assigned to the cartridge fuse. (See Fig. 50.)
2.36 For fuse panels exclusive to power plants, see Fig. 19, 25, 26, and 28. Fig. 19 shows typical designations at an equalizing center on floor 2 where one fused circuit supplies aisles 1 to 9. The floor number is used only as a final identification between two or more fuse panels which are otherwise identical. If the entire floor is supplied from one circuit, the aisle numbers are omitted. A blank panel is shown in Fig. 24 and a storage panel for spare fuses in Fig. 27. When space does not permit, the 3/8-inch designations may be reduced to $3 / 16$ inch. All designations on the front of a fuseboard or panel, except capacity, shall be duplicated on the rear of the board unless 7 otherwise modified by applicable specifications and drawings. For a fuse, ل panel on a typical automatic control panel, see Fig. 50. For fuses located on end guards of line-ups of frames with decentralized fusing, see Fig. 20.


Fig. 24 - Blank Panel Used for Identifying BDFB


Fig. 25 - Cartridge-Type Fuse Panel


Fig. 26 - Fuse Panel With Cartridge- and Alarm-Type Fuses


Fig. 27 - Spare Fuse Panel for NEC Fuses and 10 B Fuse Holder for AlarmType Fuses
2.37 Fuse cabinets: Power distributing fuse cabinets shall have the name and number of the cabinet and voltage and type of service stamped in abbreviated form on the trim above the door, or if no room in the case of small cabinets, on the door itself. Examples of these designations are PWR DISTR SERV CAB 001208 V AC 60 HZ 3 PH 4 W . Use $3 / 4$-inch characters unless small size of wall cabinet makes it necessary to use $3 / 8$ inch. The cabinet number shall consist of three or four digits, the first digit or first two digits to designate the floor number and the last two digits to designate the number of cabinet on floor. Typical cabinets are shown in Fig. 29 and 30. Stamp the name of the circuit with which each set of fuses is associated, the fuse capacity in amperes, and also the fuse position


Fig. 28 - KS-19392 Fuse Panel
number (all shown on the job information), with 3/16-inch characters on the wiring gutter covers which form the inner side walls of the fuse block compartment unless cabinet is equipped with a designation chart, in which case the designation chart listing fuse positions, fuse capacity in amperes, and name of circuit associated with the fuse shall be mounted on the inside of the fuse cabinet door. The fuse position 7 number shall be stamped on the designation card on front of fusehead. Where the maximum fuse capacity appears on the fuse head designation card, it shall be crossed out and the position number stamped in its place. In some cases it may be more convenient to reverse the card and stamp the position on the blank side.


Fig. 29 - Power Distributing Service Fuse Cabinet Two Bays - Floor-Mounted KS-5774 Type (Two Doors Not Shown)


Fig. 30 - Power Distributing Service Fuse Cabinet -wall-Mounted - KS-5774 or KS-15727 Type
2.38 Front-connected Switchboards. Switch and Fuse_units: Switchboards shall have the name and number of the switchboard, voltage, and type of service stamped on the top filler strip. or on the front coverplate as necessary. The switchboard number shall consist of three or four digits, the first digit or
first two digits to designate the floor number and the last two digits to designate the number of switchboard on floor. Examples of these designations are PNR DISTR SERV CAB 001208 V AC 60 Hz 3 PH 4 W. Tyoical switchboards with their associated disconnect switch and fuse units are shown in Fig. 31, 32, and 33.


Fig. 31 - Power Distributing Service Switch and Fuse Switchboard - KS-15699 Type


Fig. 32 - Power Distributing Service Switch and Fuse Switchboard - KS-15619 Type (A\&M Only)


Fig. 33 - Power Distributing Service Switch and Fuse Switchboard - KS-15697 Type


Fig. 34 - Handwheel and Field Rheostat

## R-__Generators

2.39 See 2.58 through 2.60 .

## S. Handwheels

2.40 For handwheels of machines arranged for automatic regulation, see 2.56 and Fig. 34.

## T. Inductors

2.41 For inductors, refer to section 800-613-152 and 1.04. The 206-type inductors must be stamped odd or even or $A$ or $B$ depending on the way the fuse panel to which the coil leads connect is marked. The equipment drawing must indicate these markings. Inductors on a panel are shown in Fig. 49.

## U. Instruments

### 2.42 Designate electrical indicating instrument per Fig. 35 and 50.


front
REAR


## V.__Meters

2.43 Designate meters as shown in Fig.
35 and 50 .

Fig. 35 - Switchboard-Type Meters and Electrical Measuring Instruments
W.__Motors
2.44 See 2.58 and 2.59.
X.
2.45 For motor starters and compensators, see Fig. 36. Large starters such as floor mounted or cabinet type should have 3/4-inch designations; small starters such as rack or wall mounted should have $3 / 8$ inch.


Fig. 36 - Motor Starter

## Y___Panels_and Subpanels

2.46 See 2.17.
Z.__Panel Assemblies
2.47 For typical panels, see Fig. 49 through 51.
$\Gamma_{\text {AA. Power Board }}$
2.48 Each power board bay shall be numbered. The bay number shall be located on face of floor angle on both front and rear. If there is not floor angle, it shall be stamped on face of bottom panel or door and if the board has double doors on face of left-hand door. If there is no bottom panel or $\leftrightarrow$ door, stamp on rear of top angle. Says

Pare numbered in accordance with relay rack line-up system per 2.01 in Section 800-610-156. Each line-up of power board or isolated bay is given a line-up number. Each bay in a line-up shall be stamped with the complete line-up designation. Generator control bays adjacent to $M-G$ sets and $f l o o r-m o u n t e d ~ r e c t i f i e r s ~$ are not numbered in accordance with this $\rightarrow$ system. (See Fig. 50.)

## AB.__Peactors

2.49 Designate reactors per Fig. 37.


Fig. 37 - Reactor or Transformer

## AC. Rectifiers

2.50 See Fig. 38. On J-specification rectifiers with removable and/or hinged covers, stamp J-specification number and $S D$ number on panel or chassis preferably on maintenance side.

## AD. Regulators

2.51 Desianate regulators as shown in Fig. 36 for motor starters.

AE._Relays
2.52 For power relays, see Fig. 39. For relays on panels, see Fia. 49 through 51.


Fig. 38 - Rectifiers



Fig. 40 - Resistor - Bracket or Cage Mounted
2.56 At rheostat handwheels for machines arranged for automatic regulation, the positions of pointers for both battery and emergency cell charge shall be marked on the front of the board as shown in Fig. 34. Mark rheo$\rightarrow$ stat flange as shown.

AG. Pinging Machines

### 2.57 See 2.58 through 2.63.

## AH. Rotating Machines

2.58 The functional designation for motors, generators. exciters, alternators, motor-driven interrupters, rotary converters, exhausters, fans,
etc, when mounted on the floor or on a table shall be placed on the aisle side in an easily observable location similar to Fig. 41 and 42. With floor-mounted machines use $3 / 4$-inch designations, and for machines on tables the size shall be 3/8 inch. For a machine, panel or shelf mounted, use $3 / 8$ inch. (See Fig. 49.) If this conflicts with numbering called for in machine $K S$ specifications, the size provided by the specification shall be used. (If number plates are provided, this designation will not be stamped.)


Fig. 41 - Motors and Generators - Floor Mounted


Fig. 42 - Ringing M-G Set With High- and Low-speed Interrupters Table Mounted
2.59 Machines which may start automati= cally, with the exception of those covered by the specifications listed in Table $A$, shall be designated in a conspicuous location (usually adjacent to the functional designation) with the caution DANGEP AUTO START unless there is a caution plate giving this information. Characters shall be the same size as those of the functional designation. They shall be stamped in black on a rectangular. vermillion background. si>e of background will be governed by the size of the characters stamped thereon. Where a set has two or more units, for example, motor and generator, the caution should be placed on the generator rather than the motor, since the generator has a more suitable surface for stamping. The "conspicuous location" requirement should be met in all cases. (See Fig. 41 and 42.)

TABLE A
Machines which may start automatically which do not require the caution sign DANGER AUTO START

| KS-5068 | KS-5458 |
| :--- | :--- |
| KS-5319-04 | KS-5492-01 |
| KS-5362 | KS-15634 |
| KS-5376-01 | KS-15757 |
| KS-5430-01 | KS-15804 |
| Small clock motor-driven timers or <br> interrupters. |  |
| Motor-driven variable voltage trans- <br> formers in rectifiers, or in 505C or <br> $505 D ~ p o w e r ~ p l a n t s . ~$ |  |
| Motor-driven rheostats in generator <br> bays. |  |

2.60 Engine Sets: Engines are usually not designated, except those which may start automatically; in those cases, caution signs shall be stamped in accordance with 2.59. Engine-driven generators and alternators are designated similarly to those which are motor driven.

## AI. Starters

2.61 See 2.45.

## AJ. Static-Ringing Generators

2. 62 Static-ringing generators shown in Fig. 43 have designations similar to those of the rotating type. This figure also shows the inverted rotary converter which serves as reserve generator.


STATIC RINGING GENERATOR


RESERVE INVERTED ROTARY CONVERTER

Fig. 43 - Small Ringing Machines - Panel Mounted - Static-Ringing Generator and Inverted Rotary Converter

## AK. Switches

2.63 For enclosed power service transfer switches, see Fia. 44.
2.64 For ringing machine transfer switches, see Fig. 45. On the inside of the box, designate the circuit connection for each set of switch points.


Fig. 44 - Transfer Switch for Power Service


COVER IN PLACE


Fig. 45 - Transfer Switch for Ringing Machine
2. 65 For snap or toggle switches, see Fig. 46 and 47. Other arrangements on panels are shown in Fig. 50 and 51.
2.66 For pushbutton switches, see panel assemblies, Fig. 50 and 51.
2.67 For manually operated knife switches, see Fig. 48. For a horizontal switch, see Fig. 51.


Fig. 46 - Togale Switch


Fig. 47 - Knife Switch
2. 68 For automatically operated switches, see Fig. 50. Caution signs shall be stamped in a conspicuous location when such switches are not under a cover.
2.69 AC plug-in switch and fuse units for bus duct equipment shall have the fuse capacity stamped with 3/16-inch characters on the outside and inside of the cover. Place designations as close to the hinged end of cover as possible and orient the characters on the inside of the cover so as to be readable when the cover is open.


Fig. 48 - Knife Switches Manually Operated

## AL.__Terminal_Strips

AM. Transformers
2.71 See Fig. 37.

AN. Varistors
2.72 Designate varistors as for relays in 2.52. 2.53. and Fig. 50. Also, see section $800-613-155$ and 1.04.


Fig. 49 - Typical Converter Panel


Fig. 50 - Typical Emergency Control Bay Equipment


Fig. 51 - Typical Generator Control Switchboard - 2 Bays

REASONS FOR REISSUE

1. To include requirements for appliance outlets in table of contents and 2.03.
2. To revise Fig. 4 and 5 to identify battery stand code and group number.
3. To reword 2.15 and 2.16 (2.14 and 2.15 of previous issue).
4. To revise Fig. 14 to indicate specific group designation stamping.
5. To revise Fig. 15 to include additional stamping information.
6. To revise 2.31 to specify multiple element (time delay) fuses instead of dual element fuses.
7. To revise Fig. 20 to show corrected group designation stamping.
8. To revise Fig. 21 to show additional stamping on both front and rear of fuse mounting.
9. To revise Fig. 25 to add stamping size where two lines of functional designations are required.
10. To add Fig. 28 covering KS-19392 fuse panel.
11. To revise 2.36 to clarify when stamping on both front and rear of the fuseboard is required.
12. To revise 2.37. Fig. 29, and Fig. 30 to specify fuse position number instead of fuse capacity on fusehead designation card.
13. To revise Fig. 34 to relocate functional designation stamping on rear flange of rheostat.
14. To delete the figures for panelmounted interrupters (Fig. 42, 43, and 44 of previous issue).
15. To revise 2.48 to add information covering power board stamping where no bottom panel or door is provided.
16. To revise 2.56 to relocate functional designation stamping on rear flange of rheostat.
