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REPORT

ON

UNINTERRUPTIBLE POWER SUPPLY EQUIPMENT

MGE UPS Systems Inc.
Costa Mesa, California

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DESCRIPTION

PRODUCT COVERED:

USL, CNL - Uninterruptible Power Supplies Accessories , Models 72-1740XX-XX, where 'X' is any number.

Battery Cabinet Models 72-17402X-XX where 'X' is any number.

Transformer Cabinet 28"W	
Maintenance Bypass Single 28"W	Figure 5
Maintenance Bypass Parallel 28"W	Figure 6
Maintenance Bypass Parallel 42"W	Figure 7
Distribution Cabinet 42"W	Figure 8
Top/Bottom Entry Bypass Fuse Cabinet (65kAIC)	Figure 9

All these models may be followed by additional alphanumeric characters.

GENERAL CHARACTER:

USL indicates that these units were evaluated to the requirements specified in the Standard for Uninterruptible Power Supply Equipment, UL 1778, fourth edition

CNL indicates that these units were additionally evaluated to the requirements specified in the Standard for General Use Power Supplies, Industrial Products, CSA C22.2 No. 107.3-05, second edition.

The equipment has the following features:

Fixed battery & auxiliary cabinets covered by this Report
Remote battery & auxiliary cabinets covered by this Report
These units are intended for such as single to dual input upgrade or single to parallel configuration. PNs are XX-174XXX-XX.

These units are intended for use with the Sierra UPS's covered in volume 1, section 42.

The following cabinets are described:

Battery Cabinet 26"W	Figure 1
Battery Cabinet 32"W	Figure 2
Battery Cabinet 48"W	Figure 3
Transformer Cabinet 28"W	Figure 4
Maintenance Bypass Single 28"W	Figure 5
Maintenance Bypass Parallel 28"W	Figure 6
Maintenance Bypass Parallel 42"W	Figure 7
Distribution Cabinet 42"W	Figure 8
Top/Bottom Entry Bypass Fuse Cabinet (65kAIC)	Figure 9

ELECTRICAL RATINGS:

All Models:

<u>(kVA)</u>	<u>VOLTAGE (V)</u>	<u>CURRENT (I)</u>	<u>PHASE</u>	<u>FREQUENCY</u>
40	208	111	3	60
50	208	138	3	60
60	208	166	3	60
80	208	222	3	60
100	208	277	3	60
130	208	360	3	60
40	220	105	3	60
50	220	129	3	60
60	220	155	3	60
80	220	205	3	60
100	220	260	3	60
130	220	329	3	60
40	480	48	3	60
50	480	60	3	60
60	480	72	3	60
80	480	96	3	60
100	480	120	3	60
130	480	156	3	60
40	600	38	3	60
50	600	47	3	60
60	600	57	3	60
80	600	75	3	60
100	600	95	3	60
130	600	121	3	60

Battery cabinet-

Battery Cabinet Models 72-17402X-XX where 'X' is any number.

72-17402X-XX : up to 432VDC, current rating matches rating of battery breaker.

Auxiliary cabinet model 72-174XXX-XX,

208 to 600 VAC, 3 phase, 3 or 4 wire

The maintenance bypass cabinets may be marked with a short circuit rating of 65,000 Amps at 480 VAC.

MAGNETICS DESCRIPTION

General - Unless otherwise stated, all magnetics are provided with the following: R/C - Systems, Electrical Insulation (OBJY2), type 240A by ONYX constructed as follows;

See Ill 2 for dimensions.

Insulation as follows:

Basic Insulation to Core- min. 0.010 inches Nomex
Interwinding insulation- Min 0.010 inches nomex
Interlayer insulation- min. 0.005 inches
Varnish- 468-2, 3120

ADDITIONAL MARKINGS

These are in addition to those stated in Sec. Gen. See Sec. Gen. for Method of Application.

1. DC Circuit, Remote Battery Supply - Identified "DC," "direct current" or by the DC symbol - see Sec. Gen., ILL. 1.
2. AC Circuits, Fixed Units - Identified to indicate alternating current, frequency or frequency-range or the AC symbol - see Sec. Gen., ILL. 1.
3. Polyphase Units - The number of phases for AC input or output are marked on all units
4. User Operated Handles, Knobs or Buttons - Operating positions are identified.
5. Copper/Aluminum Conductor Markings, Fixed Units - Field wiring terminals for the AC input or output, and DC circuit are marked:

"Use Copper Conductors Only."

6. Grounding Terminals, Pressure Wire Connector Type, Fixed Units - Field wiring terminals for connection of equipment-grounding conductors are identified by:
 - A. "G," "GR," "GND," "Ground," "Grounding" or the ground symbol - see Sec. Gen., ILL. 1 -- on or adjacent to connector or on a wiring diagram provided on unit, or
 - B. A marking on wiring diagram attached to unit.

7. Grounded Conductor Terminal - Those for AC input or output are identified by white metallic plated coating or information on the wiring diagram attached to unit.

Field Wiring Grounded Conductor Leads - Those for grounded AC input or output are white or natural gray color.

Grounding Electrode Terminal - Marked "Grounding Electrode Terminal."

8. Pressure-Wire Terminal Tightening Torque - Those used for AC input or output, and battery supply, are marked adjacent to field wiring terminals: "Refer to the instruction manual for the tightening torque"

9. Polarity Identification, Remote Battery Supply" - "Positive" and "Negative", or the signs "+" for positive and "-" for negative, or color coding red for a positive lead and black for a negative lead, are provided for remote battery supply connections.

Disconnect On/Off Positions - "On" and "Off", or the symbols -- shown in ILL. 1 of Sec. Gen. are marked on or adjacent to disconnect device(s), if provided, for the output AC and output DC power circuits.

Short Circuit current ratings - Units built with KAIC construction as described in the following pages may be marked with a maximum short circuit current rating of 65, 000 A at 480 VAC. Rating marked on the equipment shall not exceed the short circuit rating marked on any installed circuit breaker or device.

CAUTIONARY MARKINGS

The following cautionary markings are provided:

1. Multiple Power Sources - "CAUTION - Risk of electric shock - This unit receives power from more than one source - Disconnection of AC source is required to de-energize this unit before servicing." If marking is located on inside of unit, it is visible with any cover or panel opened or removed.
2. UPS Having Internal Battery - "CAUTION - Risk of electric shock - hazardous live parts inside this unit are energized from the battery supply even when the input AC power is disconnected." If marking is located on inside of unit, it is visible with any cover or panel opened.
3. Fuses - Marking provided for all fuses specifying ampere, voltage and AC or DC rating. In addition, the following is provided: "WARNING - To reduce the risk of fire, replace only with same type and rating of fuse." Located adjacent to fuses. For more than one fuse, a single marking together with a drawing identifying the fuses may be used.
4. Battery Supplies Over 60 V - "DANGER - Risk of electric shock. Do not touch uninsulated battery terminals." Located outside of unit or inside adjacent to batteries.
5. Units with bottom openings are provided with the following marking:
"SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY"

The instruction manual shall include important safety instructions as detailed in 74.1.2. The statement "IMPORTANT SAFETY INSTRUCTIONS," and the statement "SAVE THESE INSTRUCTIONS " shall precede the list. The word "CAUTION " shall be entirely in upper case letters.

The information described in below as appropriate, shall be provided for a UPS, a remote battery supply/cabinet assembly, and a maintenance bypass cabinet assembly. A single installation manual may be used for a UPS investigated in combination with a remote battery supply/cabinet or maintenance bypass cabinet assembly. The information contained in (c) - (ae) may be marked on the unit in lieu of providing it in the instruction manual

IMPORTANT SAFETY INSTRUCTIONS

a) SAVE THESE INSTRUCTIONS - This manual contains important instructions for Models _____ (blank space is to be filled in with appropriate model numbers) that should be followed during installation and maintenance of the UPS and batteries.

a) Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries.

Exception: The instruction manual need not contain instructions for user replacement of batteries in accordance with 74.1.2 (y).

b) When replacing batteries, replace with the same type and number

c) CAUTION - Do not dispose of battery or batteries in a fire. The battery may explode.

d) CAUTION - Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

e) CAUTION - A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:

1) Remove watches, rings, or other metal objects.

2) Use tools with insulated handles.

3) Wear rubber gloves and boots.

4) Do not lay tools or metal parts on top of batteries.

5) Disconnect charging source prior to connecting or disconnecting battery terminals.

6) Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source of ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if such grounds are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded supply circuit).

MODEL 72-17402X-XX FIG. 1

BATTERY CABINET ASSEMBLY #1(26 inch wide)

General - The general construction shall be as described, unless otherwise specified. Represents all models

1. Frame - Galvanized steel, 1-1/2 in. by 1-1/2 in. Overall max 26 in. wide by 31-1/2 in. deep by 75 in. high. Secured with rivets.
2. Door - min 0.075 in thick painted formed sheet metal, max 26 in. by 71 in. by 0.9 inch. Secured with hinges.
3. Side Panel - None or two provided, min 0.060 in. thick painted formed sheet metal, max 32 by 71 by 1/4 in. overall. Secured to frame with screws. (When no panels provided intended to be assembled in field.)
4. Rear Panel - (Not shown), min 0.060 in thick painted formed sheet metal, max 26 by 71 by 1/4 inches. Secured to frame with screws.
5. Top Panel - min 0.060 in thick formed sheet metal, max 26 by 31-1/2 inches. Secured to frame with screws.
6. Top Panel Conduit - min 0.060 in thick formed sheet metal, max 14-9/16 by 7-3/4 inches. Secured to frame with screws.
7. Dead Front - (Not shown), min 0.064 galvanized steel, max 22 by 67 inches. Secured to frame with screws.
8. Circuit Breaker - Listed. One provided, rated 175 A, 500 V dc.
9. Busbars - Two provided, L-shape, Copper, min 1/4 in. by 2 in. Secured by R/C(QEUY2) standoff insulators to steel plate attached to frame.
10. Busbar Ground - One provided, L-shape, Copper, min 1/4 in., by 3 in. Secured to frame by bolts and nuts.
11. Side Barrier -(optional- provided when unit is intended to be attached to adjacent enclosure , otherwise side panels provided) min 0.060 galvanized steel, max 27-3/8 by 64 inches. Secured to frame with screws.
12. Conduit Panel Bottom - min 0.079 in., 6.0 by 10.0 inches. Secured to the frame with screws.
13. Cables #2 Awg provided.

14. Battery - R/C (BAZR2), up to thirty-six provided

<u>Manufacturer</u>	<u>Type</u>	<u>AH</u>	<u>V</u>
GNB	S12V285F	70	12
GNB	S12V300F	69	12
GNB	S12V370F	87	12
GNB	S12V500F	131	12
Energysys	12HR300FR	65	12
Energysys	12HR400FR	86	12
Energysys	12HR500FR	119	12
C & D Technologies	UPS12-300MR	75	12
C & D Technologies	UPS12-400MR	98	12
C & D Technologies	UPS12-500MR	132	12
C & D Technologies	UPS12-270FR	69	12
C & D Technologies	UPS12-370FR	85	12
C & D Technologies	UPS12-475FR	122	12
ENERSYS	NPX150R	40	12
ENERSYS	PHX12-370FR	85	12
ENERSYS	PHX12-475FR	122	12
ENERSYS	HX300-12FR	65	12
ENERSYS	HX400-12FR	86	12
ENERSYS	HX500-12FR	119	12
CSB	HRL-12280WFR	65	12
CSB	HRL-12390WFR	86	12
CSB	HRL-12500WFR	119	12

MODEL 72-17402X-XX FIG. 2

BATTERY CABINET ASSEMBLY #2(32 inch wide)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Battery cabinet assembly.

1. Frame - Galvanized steel, 1-1/2 in. by 1-1/2 in. Overall max 32 in. wide by 31-1/2 in. deep by 75 in. high. Secured with rivets.
2. Door - (Not shown), min 0.075 in. thick painted formed sheet metal, max 32 in. by 71 in. by 0.9 inch. Secured with hinges.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panel - (Not shown), min 0.060 in thick painted formed sheet metal, max 32 by 71 by 1/4 inches. Secured to frame with screws.
5. Top Panel - min 0.060 in thick formed sheet metal, max 32 by 31-1/2 inches. Secured to frame with screws.
6. Top Panel Conduit - Same as Figure 1, item 6.
7. Dead Front - (Not shown), min 0.064 galvanized steel, max 28 by 67 inches. Secured to frame with screws.
8. Circuit Breaker - Listed. One provided, rated up to 250 A, 500 V dc.
9. Busbars - Same as Figure 1, item 9.
10. Busbar Ground - Same as Figure 1, item 10.
11. Side Barrier- Same as Figure 1, item 11.
12. Conduit Panel Bottom - Same as Figure 1, item 12.
13. Cables - 1/0 copper provided.
14. Battery - Same as Figure 1, item 14.

MODEL 72-17402X-XX FIG. 3

BATTERY CABINET ASSEMBLY #3(48 inch wide)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Battery cabinet assembly.

1. Frame - Galvanized steel, 1-1/2 in. by 1-1/2 in. Overall max 48 in. wide by 31-1/2 in. deep by 75 in. high. Secured with rivets.
2. Doors - (Not shown) min 0.075 in thick painted formed sheet metal, max 26 in. by 71 in. by 0.9 inch for left door; max 22 in. by 71 in. by 0.9 inch for right door. Secured with hinges.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panel - (Not shown), Two provided, min 0.060 in thick painted formed sheet metal, max 23-3/4 by 71 by 1/4 inches. Secured to frame with screws.
5. Top Panel - min 0.060 in thick formed sheet metal, max 48 by 31-1/2 inches. Secured to frame with screws. 56 percent opening.
6. Top Panel Conduit - Same as Figure 1, item 6.
7. Dead Front - (Not shown), One provided, min 0.064 galvanized steel, max 19 by 67 inches. Secured to frame with screws.
8. Circuit Breaker - Listed. One provided, rated 400 A, 500 V dc.
9. Busbars - Two provided, Copper, min 1/4 in., max 3 by 7-1/2 in.
10. Busbar Ground - One provided, Copper, min 1/4 in., max 2 by 2 in.
11. Side Barrier- Same as Figure 1, item 11.
12. Conduit Panel Bottom - min 0.079 in., 12-1/4 by 22-3/8 inches. Secured to the frame with screws.
13. Cables - 4/0 copper provided.
14. Battery - Same as Figure 1, item 14.

MODEL 72-17404X-XX FIG. 4

TRANSFORMER CABINET ASSEMBLY (28inch wide W)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Transformer cabinet assembly.

1. Frame - Galvanized steel, 1-1/2 in. by 1-1/2 in. Overall max 28 in. wide by 31-1/2 in deep by 75 in. high. Secured with rivets.
2. Front Panel - (Not shown), min 0.060 in thick painted formed sheet metal, max 27 in. by 71 in. by 1 inch. Secured with hinges. 45 percent vented openings measure 0.39 by 4.65 in.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panel - (Not shown), min 0.060 in thick painted formed sheet metal, max 28 by 71 by 1/4 inches. Secured to frame with screws. 45 percent vented openings measure 0.39 by 4.65 in.
5. Top Panel - Two provided. Min 0.075 in thick formed sheet metal, max 9-5/8 by 28 inches. Secured to frame with screws. 56 percent opening. Vent size 2 by 0.31_in.
6. Top Panel Conduit - min 0.075 in thick formed sheet metal, max 11 by 28 inches. Secured to frame with screws.
7. Busbars - Up to 7 provided(for input, bypass, output, ground), Copper, min 3/8 in by 1-1/4.
8. Busbar Neutral - Copper, min 1/4 in., max 3 by 8-1/2 inches with 8 holes of 0.53 in. diameter for connection.
9. Side Barriers- min 0.060 galvanized steel, max 27-3/8 by 64 inches. Secured to frame with screws.
10. Conduit Panel Bottom - min 0.079 in., 11-1/4 by 18 inches. Secured to the frame with screws.
11. Transformer (T1(input), T3(output),or T2(bypass)) - One or two provided. See construction details transformers..

MODEL 72-17405X-XX FIG. 5

MAINTENANCE BYPASS SINGLE CABINET ASSEMBLY (28 inch wide)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Maintenance Bypass single cabinet assembly.

Units may or may not be provided with short circuit current ratings. Units with short circuit ratings are provided with parts marked for KAIC units.

1. Frame - Same as Figure 4, item 1.
2. Door - min 0.075 in thick painted formed sheet metal, max 28 in. by 71 in. by 0.9 inch. Secured with hinges.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panel - Same as Figure 4, item 4 vents may or may not be provided.
5. Top Panel - Same as Figure 4, item 5.
6. Top Panel Conduit - Same as Figure 4, item 6.
7. Busbars - Six provided (for input, output), Copper, min 3/8 in., max 2 by 9-1/4.

Alternate: min 1/4 in., max 2 in. by 9-1/4 inches.

8. Busbars - Up to four provided (for neutral, ground and battery), Copper, min 1/4 in., max 4 by 4-1/2 inches with 4 holes of 0.44 in. diameter for connection.
9. Side Barriers - Optional. Same as Figure 4, item 9.
10. Conduit Panel Bottom - Same as Figure 4, item 10.
11. Mechanical Interlock (KA, KB) - Two provided. (Interlock maintenance bypass breaker and inverter output). Interlock consist of piece of metal attached to cover over breaker that prevent both breakers from being in the on position at the same time.
12. Electrical Interlock (KS) - One provided. (Interlock maintenance bypass switch, (Q3BP) and inverter output). Contact Block - Listed, 2PDT, rated 600V ac.

Solenoid - R/C (VAIU2) Not for cUL certified models, Catalog number 2HD by Guardian Electric. Rated 120 V, 60 Hz.

Alternate -R/C (VAIU2,VAIU8) Type D by Deltrol. Rated 120V, 60Hz.

13. Circuit Breaker (CB1, CB2, CB3, CB8) -UL Listed, CSA certified. Max four provided, rated 100 A to 600 A, 600 V ac. Short circuit rating not less than rating on unit.
14. Fuse (F1, F2) - Up to two provided. UL Listed, cUL or CSA certified. Rated 0.6 A, 600 V ac.
15. Fuse Holder - r/C(IZLT2) CSA certified Up to two provided. Rated 20 A, 600 V AC, by Bussmann, type HPS.
16. Control Transformer (T4) - Optional. UL Listed, cUL or CSA approved. Rated minimum 50VA, 480/600 V-120 V.
17. Control Terminal Block (TB11) - R/C(XCFR2,XCFR8)One provided. Rated 250 V AC by Cinch, type 4-141.
Alternate: Magnum/Bussmann TB200-04
 MARATHON 204
 MARATHON SPECIAL/KUL 671-4
18. Transformer (T1, T2 or T3) - Optional. One provided, up to 80kVA. Described in Magnetics section.
19. Busbar Bypass - Optional. Up to 6 provided. Copper, min 3/8 in., max 2 by 9-1/4 inches.
Alternate: min 1/4 in., max 2 by 9-1/4 inches.
20. Bypass Fuse (F1-F3) - R/C (JFHR2), CSA certified .Optional. Three provided. Rated 630 A, 700 V, by Bussmann, type 170M4016.
Alternate: Rated 450 A, 700 V, by Bussmann, type 170M4013.

Alternate: Rated 250 A, 700 V, by Bussmann, type 170M4009.
21. Conductor Bracing instructions- provided for KAIC models -See Ill 1.

MODEL 72-17406X-XX FIG. 6

MAINTENANCE BYPASS PARALLEL CABINET ASSEMBLY (28"W)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Maintenance Bypass parallel cabinet assembly.

Units may or may not be provided with short circuit current ratings. Units with short circuit ratings are provided with parts marked for KAIC units.

1. Frame - Same as Figure 4, item 1.
2. Door - Same as Figure 5, item 2.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panel - Same as Figure 4, item 4 vents may or may not be provided.
5. Top Panel - Same as Figure 4, item 5.
6. Top Panel Conduit - Same as Figure 4, item 6.
7. Busbars - Same as Figure 5, item 7.
8. Busbars - Same as Figure 5, item 8.
9. Side Barriers- Optional. Same as Figure 4, item 9.
10. Conduit Panel - Same as Figure 4, item 10.
11. Mechanical Interlock (KA, KB) - Same as Figure 5, item 11.
12. Electrical Interlock (KS) - Same as Figure 5, item 12.
13. Circuit Breaker (CB1, CB2, CB11, CB12) - Listed. Up to four provided, with two rated up to 500 A, 600 V ac, and two up to 200 A, 600 V ac.
14. Fuse (F1,F2) - Same as Figure 5, item 14.
15. Fuse Holder - Same as Figure 5, item 15.
16. Control Transformer (T1) - Same as Figure 5, item 16.
17. Control Terminal Block(TB11) - Optional. Same as Figure 5, item 17.

Control Terminal Block (TB2, TB3) -R/C(XCFR2,XCFR8)or CSA certified - Two provided. Rated min 250 V AC, min 14 AWG.

18. Bracket Three Cables Support - Two provided for KAIC, min 0.135 stainless steel, min 5 by 10-1/2 inches. Secured with rivets.
19. Bracket Single Cable Support - Two provided for KAIC, min 0.135 stainless steel, min 5-1/2 by 4-3/4 inches. Secured with rivets.
20. Bracket Mounting Rail - One provided for KAIC, min 0.108 galvanized steel, min 2-1/2 by 26-1/2 inches. Secured with rivets.
21. Bracket Support Rail Cable - Two provided for KAIC (in rear), min 0.108 galvanized steel, min 2-1/2 by 26-1/2 inches. Secured with rivets.

MODEL 72-17407X-XX FIG. 7

MAINTENANCE BYPASS PARALLEL CABINET ASSEMBLY (42 inch wide)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Maintenance Bypass parallel cabinet assembly.

1. Frame - Galvanized steel, 1-1/2 in. by 1-1/2 in. Overall max 42 in. wide by 31-1/2 in. deep by 75 in. high. Secured with rivets.
2. Doors - (Not shown), min 0.075 in thick painted formed sheet metal, max 15 in. by 71 in. by 0.9 inch for left door; max 26-5/8 in. by 71 in. by 0.9 inch for right door. Secured with hinges.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panel - min 0.064 in thick painted formed sheet metal, max 26 in. by 71 in. by 1/4 inch for left; max 16 in. by 71 in. by 1/4 inch for right.
5. Top Panel Front - min 0.060 in thick formed sheet metal, max 42 by 15-5/8 inches. Secured to frame with screws. 56 percent opening.
6. Top Panel Rear Conduit- min 0.075 in thick formed sheet metal, max 42 by 15-5/8 inches. Secured to frame with screws.
7. Busbars - Up to 6 provided(for input, output), Copper, min 1/4 in., max 4 by 9 in.
8. Busbar Ground - One provided, Copper, min 1/4 in., max 4 by 10 in.
9. Conduit Panel Bottom - min 0.079 in thick formed sheet metal, max 10-1/4 by 30 inches. Secured to frame with screws.
10. Meter -UL, cUL Listed, rated 600 V ac.
11. Mechanical Interlock (KA, KB) - Same as Figure 5, item 11.
12. Electrical Interlock (KS) - Same as Figure 5, item 12.
13. Circuit Breaker (CB1, CB2, CB11-CB16) - UL Listed, CSA Approved. Up to eight provided, with two rated up to 800 A, 600 V ac, and two to six up to 200 A, 600 V ac. Bolted to frame and connected with cables.

14. Fuse (F1-F2) - Two provided. Same as Figure 5, item 14.
Fuse (F3-F6) - Four provided. Listed. Rated 0.25 A, 600 V ac
15. Fuse Holder - Six provided. Same as Figure 5, item 15.
16. Current Transformers (CT1-CT3) - R/C(XODW2,XODW8) installed on insulated wires

Three provided. Rated 1000:5 A, 600 V, by WICC, series MW or by ITT, series 7Axxx-102.
Alternate- Rated 750:5 A, 600 V, by WICC (E100575), series MW.
Alternate- Rated 750:5 A, 600 V, by ITT (E93779) CSA LR89403, series 7Axxx-751.
Alternate- Rated 250:5 A, 600 V, by WICC, series MW.
Alternate- Rated 250:5 A, 600 V, by ITT, series 7Axxx-251.
17. Control Terminal Block (TB1, TB11)- Two provided. Same as Figure 5, item 17.
18. Control Terminal Block (TB2, TB3)- Two provided. Same as Figure 6, item 18.

MODEL 72-17403X-XX FIG. 8

DISTRIBUTION CABINET ASSEMBLY (42"W)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Distribution cabinet assembly.

1. Frame - Galvanized steel, 1-1/2 in. by 1-1/2 in. Overall max 42 in. wide by 31-1/2 in deep by 75 in. high. Secured with rivets.
2. Doors - (Not shown), min 0.075 in thick painted formed sheet metal, max 15 in. by 71 in. by 1 inch for left door; max 26-5/8 in. by 71 in. by 1 inch for right door. Secured with hinges.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panels - min 0.060 in thick painted formed sheet metal, max 26 in. by 71 in. by 1/4 inch for left panel; max 16 in. by 71 in. by 1/4 inch for right panel. Secured with screws.
5. Top Panel Rear - min 0.060 in thick painted formed sheet metal, max 16 by 42 inches. Secured to frame with screws. 56 percent opening.
6. Top Panel Conduits - Three provided. Min 0.075 in thick painted formed sheet metal, max 16 by 16 inches, and two max 16 by 10 inches. Secured to frame with screws.
7. Dead Front Top - (Not shown), min 0.064 galvanized steel, max 11 by 39 inches. Secure to frame with screws.
8. Dead Front Middle - (Not shown), min 0.064 galvanized steel, max 13 by 40 inches. Secure to frame with hinges.
9. Dead Front Lower - (Not shown), min 0.064 galvanized steel, max 17 by 39 inches. Secure to frame with screws.
10. Busbar Ground - Listed. Manufactured by General Electric Co., Part number 343L62TG10.

Alternate - Manufactured by General Electric Co., Part number 139C3687G4
11. Busbar Ground - Copper, min 1/4 in. by 1 in. by 28-1/2 inches.
12. Busbar Neutral - Optional. Up to two provided. Copper, min 1/4 in. by 3 in. by 11 inches.
13. Side Barrier - Optional. Same as Figure 4, item 9.

14. Conduit Plates Bottom - Three provided. Min 0.064 galvanized steel, max 8 by 9 inches, and two 9 by 15-1/2 inches. Secure to frame with screws.
15. Output Distribution Submain Circuit Breaker - Optional. Listed. Up to 2 provided, rated up to 250A maximum, 600 V.
16. Output Distribution Mainframe Circuit Breaker - Optional. Listed. Up to 8 provided, rated up to 250A maximum, 600 V.
17. Output Distribution Panel - Optional. (QEUY2, QEUY8) Rated 225 A, 240 V ac. manufactured by Square D Company, Type NQOD. Panelboards are provided with distribution breakers as marked on panelboard interior.
 - Alternate - (QEUY2), Listed, open-type panelboards, rated 225 A, 240 V ac.
 - Alternate - Unlisted Component: Manufactured by Square D Co. Similar to Listed, Component (QEUY), without Deadfront. Rated 225 A, 240 V ac, Type NQOD, with last letter N, (designating without Deadfront panel).
 - Alternate - Same as above, except Square D Company, Type NQOM442L225-1.
 - Alternate - Same as above, except Square D Company, Type NQOM442L225-2.
 - Alternate - Same as above, except Square D Company, Type NQO342L225.
 - Alternate - Same as above, except Square D Company, Type QON342L225-2.
 - Alternate - Same as above, except Square D Company, Type QON342L225.
 - Alternate - Manufactured by General Electric Co., Type LNLAB or LNLTQ.
 - Alternate - Manufactured by General Electric Co., Type ALL3422MTXAXB4N2.
 - Alternate - Manufactured by General Electric Co., Type ALL3422NT.
 - Alternate - Manufactured by General Electric Co., Type AQL3422MTXAXB4N2.
 - Alternate - Manufactured by General Electric Co., Type ALL3422NT.
 - Alternate - Manufactured by Cutler-Hammer, Type 4242INT3225B.
 - Alternate - Manufactured by Cutler-Hammer, Type PL1B426B2A.
 - Alternate - Same as above, except Westinghouse Electric, Type 42DML3225.
 - Alternate - Same as above, except Siemens Incorporated, Type LPB424L.

18. Output Branch Circuit Breaker - Optional. Listed, rated 240 V, 5 A to 100 A. One to forty-two provided per Output Distribution Panel, Item 17. Breakers are of the types that are marked for use in the panel board provided.
19. Output Distribution Filler Plates - Optional. One to forty-two provided per Output Distribution Panel, Item 17. Type QOFP by SquareD.
20. Transformer (T1, T2, or T3) - Optional. One provided. Described in Magnetics section.
21. Branch Current Monitor (BCM) - Optional. Listed. Two (2) per panel board.
22. Fuse holder - Optional. One provided. Listed, rated 600V, 30A.
23. Fuse - Optional. One provided. Listed, 1A, 600V.
24. Barrier - provided by between panelboard sections.
25. INPUT BREAKER (optional)- UL Listed, CSA Approved - rated up to 600 Amps, voltage rating equal to rating of assembly.

MODEL 72-174000-XX FIG. 9

TOP/BOTTOM ENTRY BYPASS FUSE ASSEMBLY (16 inch wide)

General - The general construction shall be as described, unless otherwise specified. Represents overall front view of the Bypass fuse cabinet assembly.

1. Frame - Galvanized steel, 1-1/4 in. by 3-1/4 in. Overall max 16 in. wide by 31-1/2 in. deep by 75 in. high. Secured with rivets. Top frame provided with 56 percent ventilation. Openings measure 2 by 0.31 in.
2. Front Panel - (Not shown), min 0.060 in thick painted formed sheet metal, max 16 in. by 71 in. by 0.9 inch. Secured with hinges.
3. Side Panel - Same as Figure 1, item 3.
4. Rear Panel - (Not shown), min 0.060 in thick painted formed sheet metal, max 16 by 71 by 1/4 inches. Secured to frame with screws.
5. Top Panel Conduit - min 0.060 in thick formed sheet metal, max 11 by 20-1/4 inches. Secured to frame with screws.
6. Bypass Fuse (F1-F3) - Optional. Same as Figure 5, item 20.
7. Busbars - Up to 11 provided (for input, bypass, output, battery), Copper, min 1/4 in., max 5 by 5 by 1 in.
8. Busbar Ground - One provided, Copper, min 1/4 in., max 5 by 5 by 1 in.
9. Conduit Panel Bottom - One provided, min 0.079 in., 11-1/4 by 20 inches. Secured to the frame with screws.