ISOTROL
Medical Division of Bender Inc.

SURGICAL FACILITY CENTERS

- **Applications**
  Single phase systems

- **Power Distribution**
  Loadcenter available for plug-on or bolt-on circuit breakers

- **Outlet Devices**
  Up to eight power receptacles and ground jacks

- **Features**
  - two section X-Ray Viewer
  - digital clock/elapsed timer
  - AM/FM stereo with cassette and / or CD player

- **Advanced Technology**
  The BENDER LIM2000plus™ series Line Isolation Monitor (LIM) features self-test, self-calibration and optional load monitoring

- **Standards**
  UL 1047 - Isolated Power Systems

- **Warranty**
  Industry's first 5 year limited warranty

SFC
SURGICAL
FACILITY CENTER

COMMITTED TO EXCELLENCE

Introduction

ISOTROL Type SFC Surgical Facility Centers have been designed to provide isolated power to electrical circuits installed within operating rooms and other electrically susceptible patient care areas. Designed in strict compliance with Underwriters Laboratories Standard UL1047, UL1022 and UL50, the SFC offers the most current technology for all isolated power distribution requirements.

General

The Type SFC typically includes a single phase transformer, a BENDER Line Isolation Monitor (LIM), an reference ground bus, a primary circuit breaker, branch circuit breakers, a section for Hospital Grade Power Receptacles and Hospital Grade Ground Jacks, a two section X-Ray viewer, a Clock and Elapsed Timer and a AM/FM Stereo system with Cassette and/or CD Player. The maximum number of branch circuit breakers that can be used in an SFC is (16) plug-on or (12) bolt-on.

Backbox

Fabricated from 12GA galvanized steel. Outline drawings shown on the following pages of this brochure provide additional dimensional and construction details.

Front Trim

Manufactured from 12GA Type 304 Stainless Steel with a #4 brushed finish, the front trim is fabricated with a 1.625" return flange on all four sides. The front trim contains a door with hidden hinges that covers the loadcenter. The front trim is attached to the backbox by means of a hidden continuous hinge on the left side of the panelboard.

Isolation Transformer

Isolation transformers are available with various primary and secondary single phase voltages. The transformer ratings are given on the isolation transformer data sheet found in ISOTROL's full catalog or by request.

Line Isolation Monitor (LIM)

The BENDER LIM2000plus™ Series Line Isolation Monitor provides a digital/ analog display. The LIM is available in single or three phase models with readout and response values of 2 or 5mA. The LIM2000plus™ has a patented measuring principle and is capable of detecting all combinations of capacitive and resistive faults, including balanced, unbalanced and hybrid faults. The LIM2000plus™ Series LIM contributes less than 35µA to the Total Hazard Current (THC). Available options include load monitoring and RS485 communication. For further information see the LIM2000plus™ series data sheet.

Loadcenter

The loadcenter is an integral part of the SFC. Included is a primary circuit breaker which provides protection for the isolation transformer. All Surgical Facility Centers can accommodate either plug-on (up to 16) or bolt-on (up to 12) circuit breakers.

Line Isolation Monitor
LIM2000plus™

Power Receptacles & Ground Jacks

The Type SFC provides a section for Hospital Grade Power Receptacles and Hospital Grade Ground Jacks. This section can accommodate a maximum of eight (8) power receptacles, (straight blade type, duplex or single and twist-to-lock type) and eight (8) ground jacks.

Reference Ground Bus

The Type SFC Surgical Facility Center is provided with a twenty (20) point reference ground bus to satisfy equipotential requirements and for connection to remote ground jacks, master ground and patient ground modules.

X-Ray Film Viewer

The low profile X-Ray Film Viewer consists of two independently switched sections, each containing four fluorescent tubes.

Digital Clock and Elapsed Timer

The BENDER ZT1491 can operate either as a clock or elapsed timer. The large ultra-bright 2.5", 7 segment LED display is easily read in high ambient light. Settings are entered from a 1 gang station mounted on the front trim.

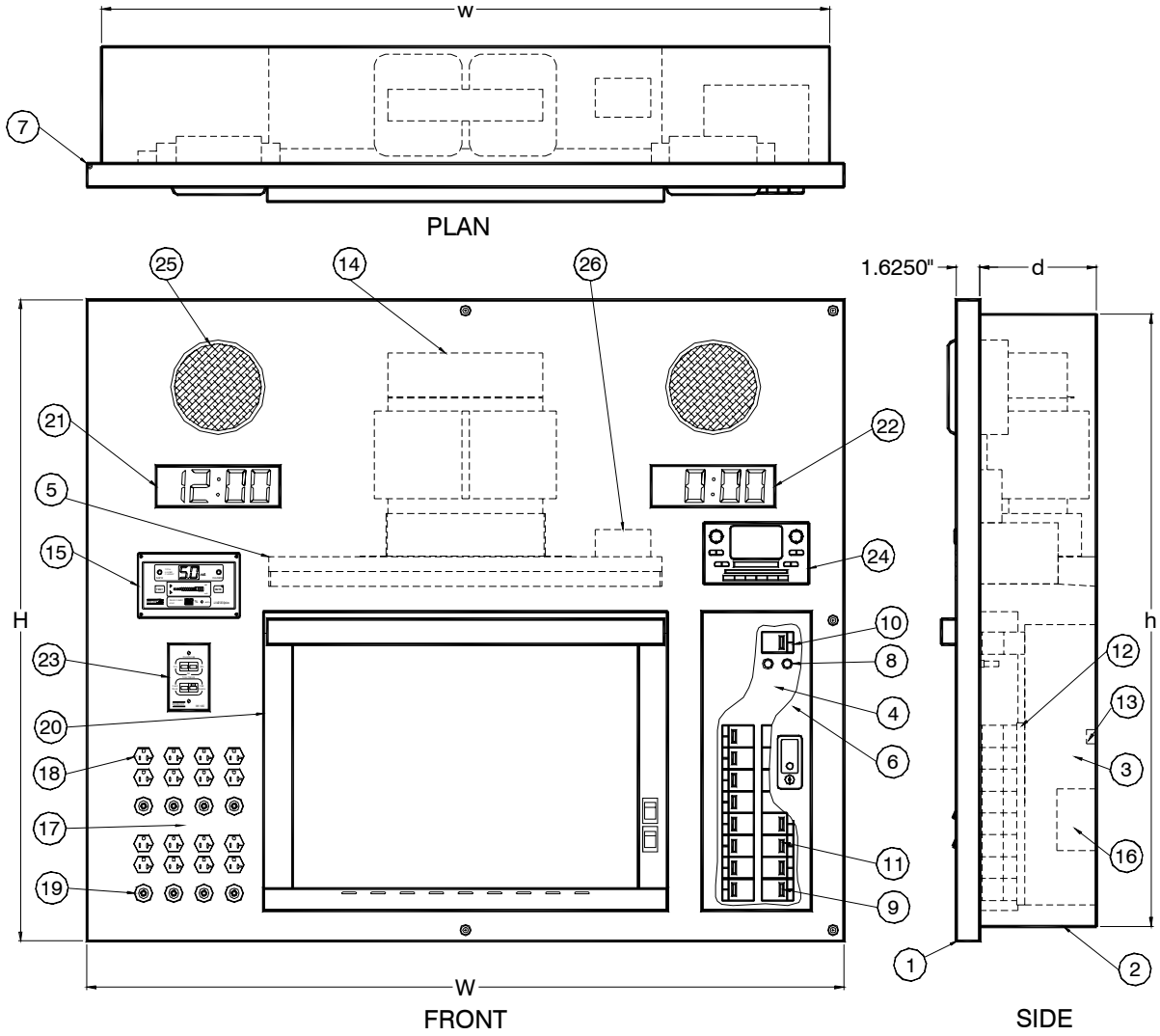
AM/FM Stereo Cassette and/or CD Player

Provides background music for the surgical staff. Comes complete with two 6.5" speakers mounted on the front trim.

Support and Services

- On-site installation inspection and certification services
- System design assistance provided upon request
- Technical support hotline: (800) 833-6834

Outline Drawing for SFC
Single Phase 3 to 10kVA

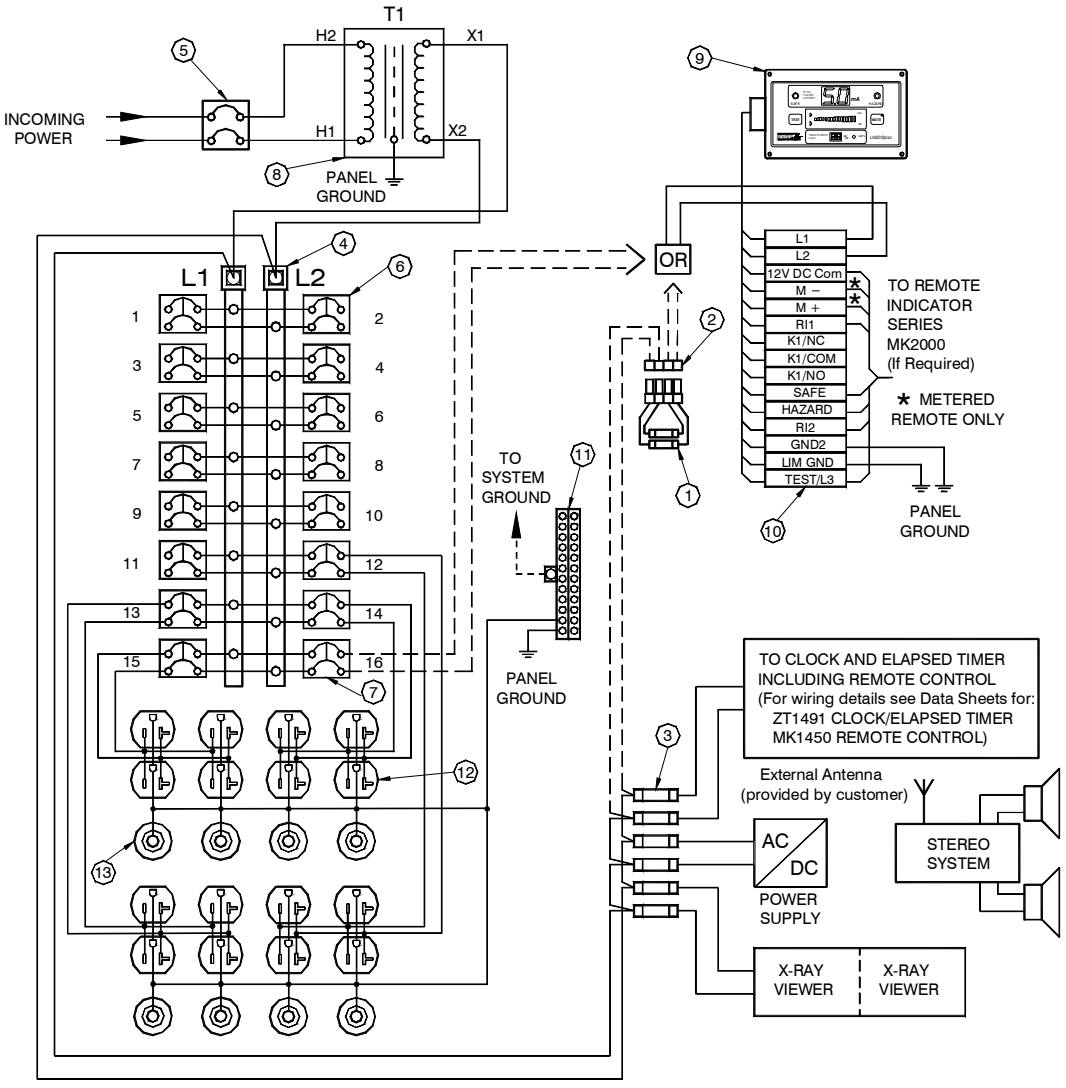


BACKBOX DESIGNATION	TRANSFORMER kVA SIZE	DIMENSION				
		h	w	d	H	W
E	3, 5, 7.5, 10	42"	50"	8"	44"	52"

***CALL FACTORY FOR OTHER CONFIGURATIONS**

1 Stainless Steel Front Trim
2 Backbox, Galvanized Steel
3 Circuit Breaker Subchassis
4 Circuit Breaker Deadfront
5 Transformer Shelf
6 Stainless Steel Door w/ Lock
7 Front Trim Hinge
8 LIM Fuses
9 LIM Circuit Breaker, 2P (Oprtional)
10 Main Circuit Breaker, 2P
11 Branch Circuit Breaker, 2P
12 Loadcenter
13 Fuses for Internal Equipment
14 Isolation Transformer, 1Ph
15 Line Isolation Monitor (LIM), 1Ph
16 Ground Bus
17 Receptacle and Ground Jack Section
18 Hospital Grade Power Receptacles
19 Hospital Grade Ground Jacks
20 Double X-Ray Film Viewer
21 Digital Clock
22 Digital Elapsed Timer
23 Clock / Elapsed Timer Remote Control
24 Stereo System
25 Stereo Speakers
26 Power Supply for Stereo System

Wiring Diagram for SFC
Single Phase 3 to 10kVA



1 LIM Fuses
2 LIM Fuses Disconnect
3 Fuses for Internal Equipment
4 Loadcenter
5 Main Circuit Breaker, 2P
6 Branch Circuit Breaker, 2P
7 LIM Circuit Breaker, 2P (Optional)
8 Isolation Transformer, 1Ph
9 Line Isolation Monitor (LIM), 1Ph
10 LIM Connector Plate
11 Ground Bus
12 Hospital Grade Power Receptacles
13 Hospital Grade Ground Jacks

Selection Guide for Surgical Facility Centers (Type SFC)

When selecting the Surgical Facility Center for your application, use the Product Code below. If you have any questions or need further assistance, please call us using our toll-free number: (800) 833-6834.

Code A - Basic Designation
SFC: Surgical Facility Center

Code B - Transformer Power Rating
3: 3kVA 5: 5kVA 7: 7.5kVA 10: 10kVA X: Special kVA

Code C - Transformer Primary Voltage
A: 120V B: 208V C: 240V D: 277V E: 480V G: 220V H: 110V X: Special Voltage

Code D - Transformer Secondary Voltage
A: 120V B: 208V C: 240V G: 220V H: 110V X: Special Voltage

Code E - Phases
1: 1 Phase

Code F - Loadcenter - Manufacturer and Size
C1: Cutler Hammer 12 Positons Plug-On & Bolt-On
C2: Cutler Hammer 16 Positions Plug-On
CX: Cutler Hammer Lug-to-Lug Circuit Breakers (No Loadcenter)
S1: SquareD 12 Positions Plug-On & Bolt-On
S2: SquareD 16 Positions Plug-On & Bolt-On
SX: SquareD Lug-to-Lug Circuit Breakers (No Loadcenter)
G1: General Electric 14 Positions Plug-On
G2: General Electric 16 Positions Plug-On
GX: General Electric Lug-to-Lug Circuit Breakers (No Loadcenter)

Code G - Quantity of Branch Circuit Breakers
The quantity of branch circuit breakers

Code H - Circuit Breaker Type
P: Plug-on B: Bolt-on L: Lug-to-lug

Code I - Number of Circuit breaker Openings in Deadfront (Must be less than or equal to Loadcenter positions)

Code J - Quantity of Ground Jacks
Maximum of 8 Ground Jacks

Code K - Quantity of Power Receptacles
Maximum of 8 Power receptacles

Code L - Type of Power Receptacle
The designation S1, S2, SM, D1, D2, DM, T1, T2 or TM

		SINGLE			DUPLEX			TWIST-TO-LOCK		
Type		S1	S2	SM	D1	D2	DM	T1	T2	TM
Voltage		125V	250V	SPECIAL	125V	250V	SPECIAL	125V	250V	SPECIAL
Hubbell	Style#	HBL8310R	HBL5461I		HBL8300HR	HBL8400I		HBL23000HG	HBL2320A	
	Color	Red	Ivory		Red	Ivory		Black	Black	
NEMA#		5-20R	6-20R		5-20R	6-20R		n/a	L6-20R	

Notes:
- Above receptacles are 2P/3W, 20A, single phase
- If the SFC contains several types of receptacles, the product code will be expanded by adding multiple blocks of Codes K and L
- Other receptacles are available

Code M - Stereo System
0: None 1: AM/FM Radio 2: AM/FM Radio and Cassette Player 3: AM/FM Radio and CD Player
4: AM/FM Radio, Cassette and CD Player

Code N - Clock and Elapsed Time
Y: Yes N: No

Code O - Backbox Sizes (Height x Width x Depth)
E: 42" x 50" x 8" X: Special

Call the factory for additional equipment or custom requirements

Example for ISOTROL type SFC Product Code

SFC	-	7	B	A	1	-	C2	/	12	P	12	-	4	-	6	D2	-	3	Y	-	E
Code A		Code B	Code C	Code D	Code E		Code F		Code G	Code H	Code I		Code J		Code K	Code L		Code M	Code N		Code O

Suggested Specification for ISOTROL Type SFC Sugical Facility Centers

Furnish and install ISOTROL Type SFC Surgical Facility Center in the locations shown on the architectural/electrical drawings. The SFC shall be UL Listed and labeled as an assembly. The Type SFC shall consist of the following:

Backbox
Shall be semi-flush mounted and shall be fabricated from 12GA galvanized steel.

Front Trim
Shall be fabricated from 12GA Type 304 Stainless Steel with #4 brushed finish. The circuit breaker section shall be accessible from a door, with hidden hinges, that is flush with the front trim. The door shall contain a flush lock that can be opened without a key when unlocked; all SFCs shall be keyed alike. The front trim shall be fabricated with a 1.625" return flange on all sides. There shall be a hidden continuous vertical hinge on the left side to allow easy access to all components. The front trim shall contain a cut out for the Clock, the Elapsed Timer, the Stereo System, the X-Ray Film Viewer and the Line Isolation Monitor (LIM) which shall remain visible at all times. The front trim shall be held securely closed by a minimum of (5) #10-32 x 1" Stainless Steel Oval Head Phillips machine screws and five (5) #10 Stainless Steel finishing washers.

Isolation Transformer
Shall be single phase, 50 or 60 Hz with primary and secondary voltages as indicated on the drawings. The transformer shall be manufactured using class H-rated insulation. It shall have an electrostatic shield between the primary and secondary windings which shall be grounded to the enclosure. The transformer core shall be a stacked design, securely clamped. Core and coil shall be vacuum impregnated, with a final wrap of insulating material. The core and coils shall be isolated from the enclosure by means of isolation mounts.
Total leakage current to ground from transformer secondary winding shall be in compliance with UL1047, Tables 30.1 and 30.2. Maximum sound level of transformer: 25dB for 5kVA units or less, 30dB for 7.5kVA units, and 35dB for 10kVA units. Temperature rise limited to 115 degree C above ambient under full load conditions. Transformer shall be UL or Recognized as a component, for the voltages, amperage, and kVA rating required.

Line Isolation Monitor
Shall be a BENDER LIM2000plus™ Series Line Isolation Monitor with a solid state modular assembly utilizing the dynamic principle of constantly monitoring the impedance between each circuit conductor and ground and shall provide a visual and audible indications of a first fault condition.
The LIM shall be capable of detecting all combinations of capacitive and resistive faults, including balanced, unbalanced and hybrid faults. The total hazard current shall be set at the factory to either 2 mA or 5 mA, and shall be field adjustable to either milliamp.
The LIM shall contain a continuous display (digital / analog), an audible alarm device which shall sound in the event of a hazard condition and a visual indication of the system status. A green LED shall indicate "SAFE" status, a red LED shall indicate "HAZARD" status, and an amber LED shall indicate that the audible alarm feature is in the "MUTE" mode. A "TEST" button shall be provided so the functions of the LIM can be tested by hospital personnel. The meter, indicating lamps and "TEST" button shall all be flush with the face of the LIM and shall be protected by a rugged Lexan front foil. Remote indicator connections shall also be provided.
The LIM shall contain overload protection with an automatic reset feature. It shall be possible to order the LIM with an optional RS485 communication port. The LIM shall be UL Recognized as a component.

Primary Circuit Breaker
Shall be two-pole sized in accordance with NFPA 70 (NEC) based on the transformer primary voltage and kVA rating as shown on the contract documents, and shall be full size, thermal magnetic type, minimum 10kAIC.

Secondary Branch Circuit Breakers
Shall be two-pole, ampacities, and quantities based on the contract drawings. Sized in accordance with NFPA 70 (NEC) and UL1047 Standards. Shall be full size, thermal magnetic type with a minimum 10kAIC.

Reference Ground Bus
Shall contain a minimum of one (1) #4-2/0 main lug and nineteen (19) #14-4 grounding lugs.

Power Receptacles
Shall be UL Listed/Recognized Hospital Grade specification and/or NEMA configuration with ampacity, voltage, color, and quantities in accordance with contract drawings

Ground Jacks
Shall be UL Listed for hospital application as well as green in color and provide quantities in accordance with the contract drawings.

Dual X-Ray Film Illuminator
Shall be a two section general purpose hospital type with Stainless Steel trim. Each section shall be independently controlled by means of a two-pole panel mounted switch. The illuminator shall be provided with low leakage ballasts.

Digital Clock and Elapsed Timer
A separate digital clock and elapsed timer shall be provided as a part of the SFC. The digital display for both the clock and elapsed timer shall consist of four 2.5" high ultra-bright digits. The elapsed timer shall be actuated from a Code Blue signal or a control station mounted on the front trim. The digital clock and elapsed timer shall be BENDER ZT1491 with a BENDER Model MK1450 control station.

AM/FM Stereo Cassette and/or CD Player
The unit shall be modular and consist of a high quality cassette tape and/or CD player. Two 6.5" high quality speakers shall be provided for the stereo system.

Our Address

BENDER / ISOTROL
700 Fox Chase
Coatesville, PA 19320
Phone: 800-833-6834
610-383-9655
Fax: 610-383-7100
E-mail: isotrol@bender.org

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