CAT.I01E

ALLIS

MOTOR CONTROL CENTERS

Allis Electric's MCC Type A-S, A-D, are providing highly efficient service in large-scale power, metal and petroleum plants and in numerous general industrial applications as an integrated panel primarily for control of low-voltage motors up to 660V 50/60Hz

FEATURES

1. Personnal safety and ease of maintenance.
2. The sturdy structure resists shock and vibration.
3. Easy mounting of channel bases and interconnection of enclosures.
4. Easy access to unit wrapper when replacing wiring and parts.
5. Easy connection of cables and control wires from outside to unit step terminators.
6. The unit wrappwr is designed to provide ample space for cable entry from the wireway to the unit.
7. Positive stopper in unit drawout mechanism.
8. The guide rails give precise alignment to the unit for accurate stabbing on the vertical bus.
9. At the top center of the unit wrapper is a quarter turn latch which securely holds the unit in the compartment.

10. Doors mounted on removable hinges are provided on all uint compartments,also vertical wire-ways, top horizontal wireways and bottom horizontal wire ways.
11. Overload relay can operate on each unit door by insulated push button without opening the door.
12. Stabs are mounted in a glass reinforced plastic insulation block which totally shrouds each stab and absolutely ensure positive alignment of the stabs with vertical bus.
13. Isolation of the vertical bus compartment from the unit compartments is accomplished by a full height barrier which is molded glass reinforced polyester.
14. The bus system construction has the inherent mechanical strength to withstand fault stresses.
15. Bus braces are molded from a glass reinforced polyester material with high strength.
16. Modular design for all units, plus ample horizontal - bushbar space and master terminal board space.
17. Uniform complement of auxiliary parts in unit.
18. Interchangeable for each unit wrapper with the same phase sequence, not only front side but also rear side.

SPECIFICATIONS & RATINGS

Standards:	CNS3989-C1044, NEMA-ICS-2-322, JEM-1195, IEC-439-1
Rated voltages:	UP TO 660V 50HZ or 60HZ
Horizontal-bus bar rating	UP TO, 3000A
Vertical-bus bar rating:	300A, 400A, 600A,
Bus bar short-circuit withstand	22KA, 30KA, 42KA(SYM.)

UNIT CAPACITY

Starter unit	UP TO 100HP	(Draw-out type)
	Above 100HP	(Fixed type)
Feeder unit	UP to 225A	(Draw-out type)
	ABOVE 400A	(Fixed type)

STRUCTURE

Structure shall be totally enclosed free-standing assemblies, 2350mm high, 630mm wide 550mm deep for front mounted only, and 600mm deep for back to back mounted structures. The structure framework is made of 2.3mm formed steel channels. The sub-frames for the front and rear of each structure are welded. These sub-frames are then bolted to longitudinal members to form the complete frame which is rigid and self-supporting.

Side, back and roof sheets are mounted with screw fasteners for quick and easy removal when desired.

Doors mounted on removable pin hinges are provided on all unit compartments, vertical wireways, top horizontal wireways, and bottom horizontal wireways.

All structure elements are thoroughly cleaned after fabrication and given a phosphatizing treatment to inhibit rust and prime the metal for the finish coating.

Fig.2 FRONT VIEW OF STRUCTURE

**600m/m deep for back to back mounted.*

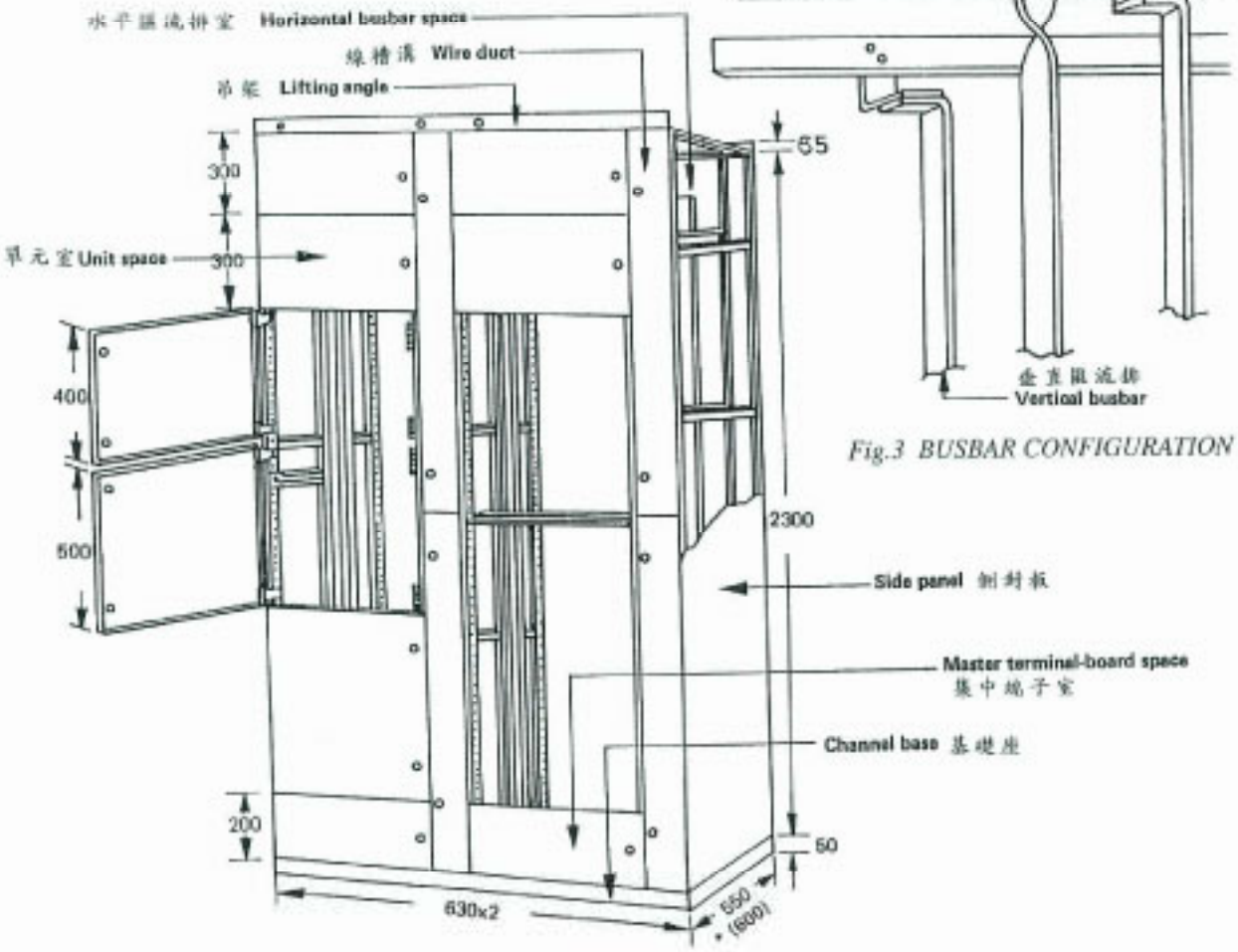


Fig.3 BUSBAR CONFIGURATION

The finish colour is standard colour 5Y 7/1(light gray).

The unit pan forms the top barrier of each unit space. In conjunction with the unit wrapper this provides isolation between adjacent units and wireways. It also provided the lock and test position with lock which is located on the unit wrapper.

Fig.4 REAR VIEW OF STRUCTURE FRAMEWORK

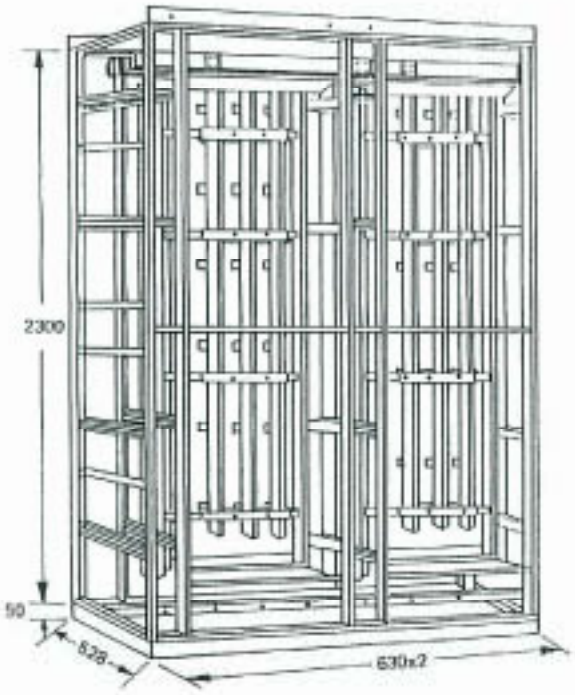


Fig.5 SIDE VIEW

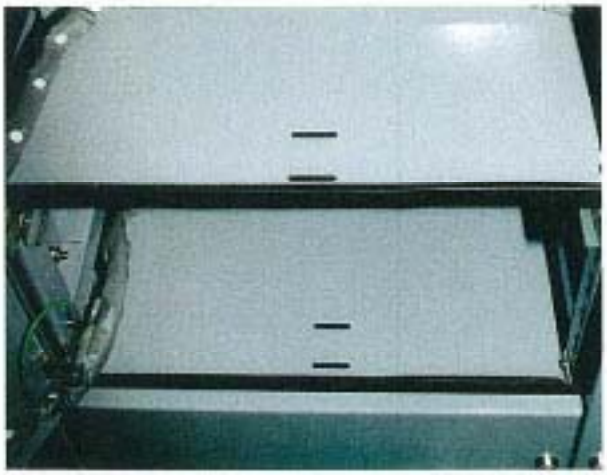


Fig.6 UNIT PAN

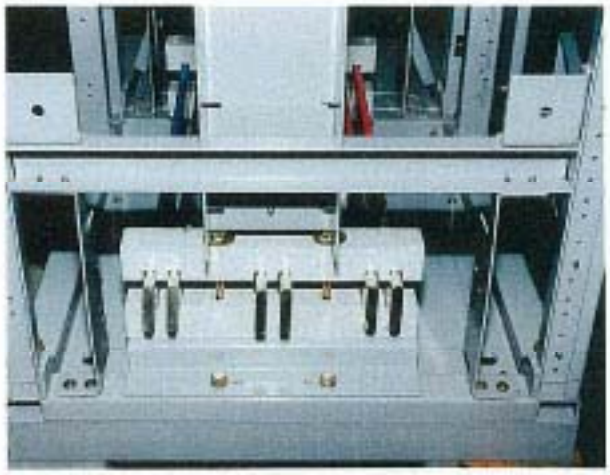


Fig.7 CONNECTION OF SUBFRAME AND MAIN FRAMEWORK

VERTICAL WIREWAY

A vertical wireway is provided in each vertical structure. Located on the right side, it extends over the full height of the structure. The width of the wireway is 130mm. Supports are provided at suitable intervals to secure all wiring and cables. The wireway opening is covered by two doors, top and bottom. The doors open opposite to the unit doors for maximum accessibility. The doors are mounted on removable pin hinges for quick detachment and are secured in the closed position by two fasteners.

Fig.8 VERTICAL WIREWAY

HORIZONTAL WIREWAY

The top horizontal wireway is 200mm or 300mm high and the bottom horizontal wireway is 300mm or 200mm high as order specifies. The top horizontal wireway extends over the full width of each struture and the bottom horizontal wireway extends over the depth of the structure.

This provides unlimited wiring space. All horizontal wireway openings are covered by doors for increased accessibility. Each door is mounted with removable pin hinges to allow quick detachment and securely closed with a fastener.

Fig.9 HORIZONTAL WIREWAY

BUS BAR SYSTEM

HORIZONTAL BUS

Horizontal three-phase busbars extend through the enclosures located in the top or bottom. They provide three-phase power distribution from the incoming line or primary disconnect device to each vertical structure in an assembly. The bus bars are mounted in a vertical plane, edge to edge. This mounting produces an exceptionally strong asseembly able to withstand high fault current stresses.

Standard horizontal bus bracing is 30KA RMS symmetrical amperes. Bus braces are molded from a glass reinforced polyester material with high strength which is non-tracking and impervious to moisture and other adverse atmospheric operating conditions.

The buses can be tin or silver plated or un-plated, the temperature rise will be compliance with International standards.

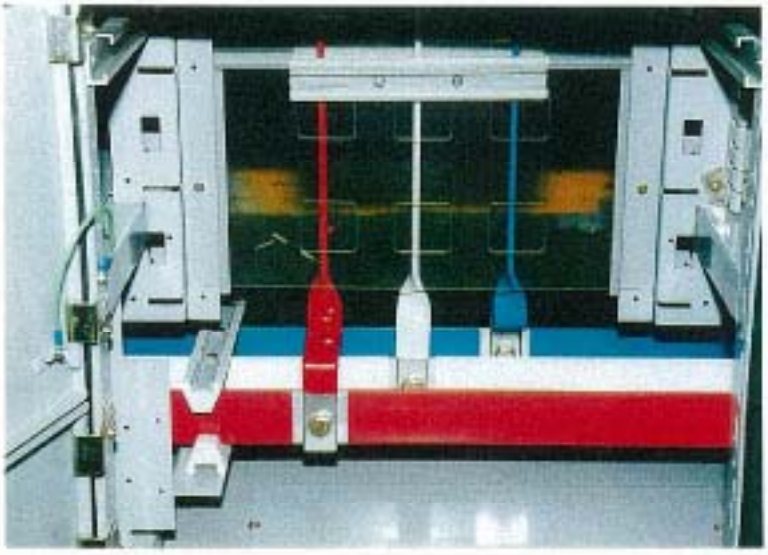
The joints between the horizontal busbars of the enclosures are jointed together for shipping, and those between the horizontal and vertical busbars are held with steel bolts, washers and nuts.

VERTICAL BUS

The vertical bus provides three-phase power distribution from the main horizontal bus to the vertical compartments. Bus brances provide high reliability for connection between the vertical busbars and the floating grip of the unit under short-circuit conditions. Bus braces are molded from a glass-reinforced polyester material which is the same as main horizontal bus braces. Isolation of the vertical bus compartment from the unit compartments is accomplished by a full height barrier which is provided as standard. This is a single sheet of glass-reinforced polyester with cut-outs to allow the unit stabs to engage the vertical bus. For back to back mounted structures, there are two groups of vertical bus separately used for front and rear unit wrappers. This means any front or rear unit wrappers could be interchangeable with the same phase sequence.

Fig.10 BUSBAR SYSTEM

Fig.11 HORIZONTAL AND VERTICAL BUSES

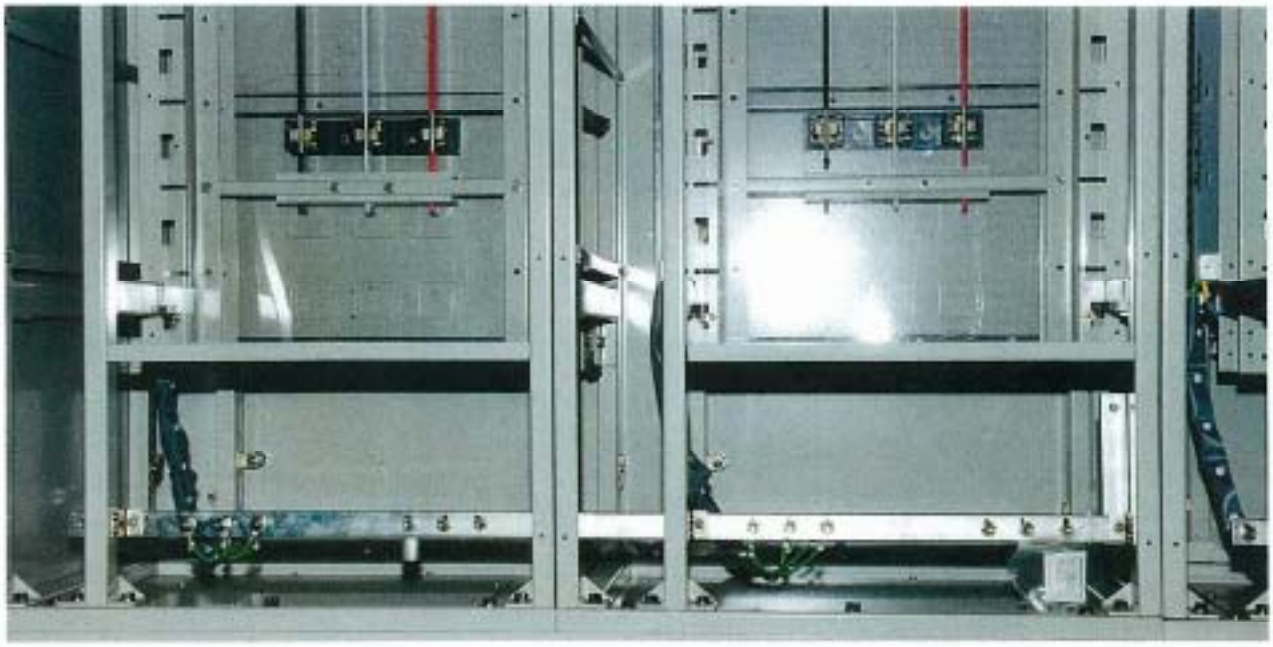


GROUND BUS

Ground bus is available in 5t x 30W (in mm) copper. Mounting is across the bottom of each vertical structure in the horizontal wireway. The bus can also be mounted across the top.

Fig.12 GROUND BUS MOUNTED ON THE TOP

Fig.13 GROUND BUS MOUNTED ON THE BOTTOM



CONTROL & LOAD TERMINATIONS

For Type A wiring, each unit is assembled and devices interwired. Terminal blocks are not supplied and control and load wiring is internal to the unit.

For Type B wiring, control wires are terminated at blocks within the unit. Refer to the discussion of units for types of terminal blocks available.

For Type C wiring, control and load wires are extended from the unit terminal blocks to master terminal blocks located at the top or bottom of any vertical structures. Master terminal blocks are fixed at the horizontal wireway at the top or at the bottom.

Fig.14 MASTER TERMINAL-BLOCKS ON THE BOTTOM

INCOMING LINE

Refer to the top horizontal wireway space 200 or 300mm and the bottom horizontal wireway space 300 or 200 mm, incoming cables can enter from either the top or the bottom of the control center. Incoming cables entering from the top of center can be terminated on the horizontal bus or can be connected to a main breaker. Incoming cables entering from the bottom of the structure can be brought up the vertical wireway and connected to a main breaker, or terminated on the main horizontal bus. They also can be terminated on the bottom of the vertical bus in that structure according to the situation.

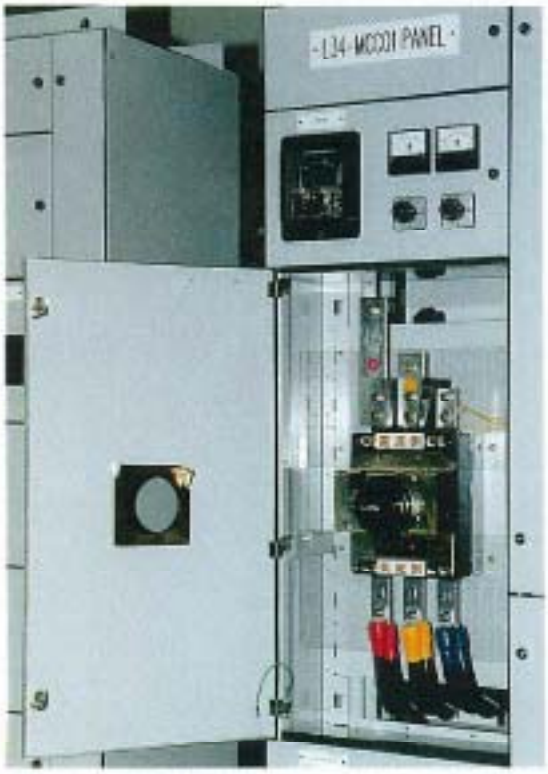


Fig.15 "INCOMING" ENTER FROM THE TOP

UNIT CONSTRUCTION

Each unit is designed into basic modular heights with the smallest unit 300mm high in layout.

All units of the same height are interchangeable if desired.

Fig.16 UNIT ARRANGEMENT

UNIT DOOR

Each unit compartment shall be provided with an individual front door. Unit doors are formed of 2.0 or 1.6 mm steel with a 20 mm width flange on all four sides. The flange adds rigidity to the door and provides a surface to contain door gasketing when applied.

The doors will open opposite to wireway doors permitting optimum access to the unit compartment. The doors are mounted on removable pin hinges. This permits quick removal of any door in a vertical structure without disturbing adjacent doors. Each door is provided with a minimum of one fastener. They securely hold the door in the closed position, yet allow quick and easy access to the unit when required.

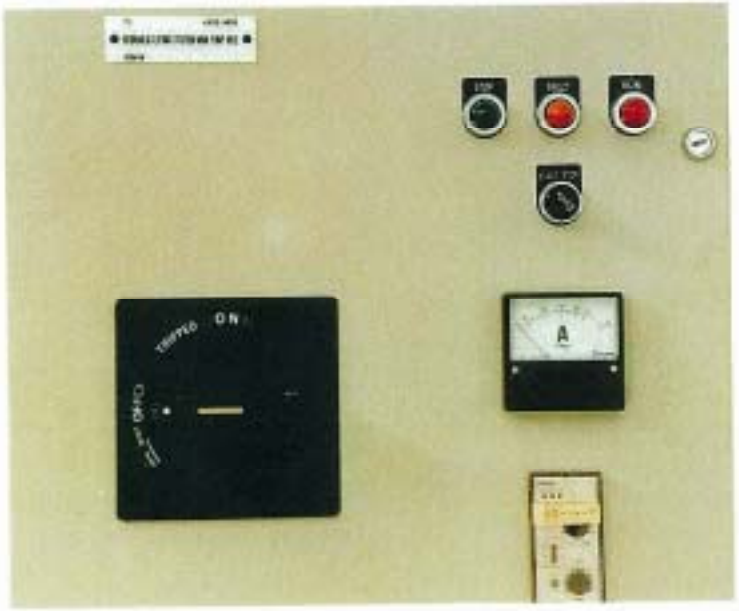


Fig.17 UNIT DOOR

UNIT WRAPPER

Fig.18 UNIT WRAPPER AND PARTS ARRANGEMENT

The unit wrapper is fabricated of 1.6mm steel. After fabrication, it is cleaned and given a rust inhibiting phosphatizing treatment. The unit wrapper provides three sides of a rugged steel shell and the mounting base for the unit components.

The smallest unit measures 420mm wide, 192mm deep and 270mm high, a maximum height of 870mm.

The unit wrapper is designed to provide ample space for cable entry from the wireway to the unit.

The unit wrapper has a minimum of four mounting points, two on each side, which support the unit in the structure. They engage guide rails located near the top of each unit space. This mounting point guide rail system produces minimum friction and allows unit to be inserted and withdrawn easily. The guide rails also give precise alignment to the unit for accurate stabbing on the vertical bus.

At the top center of the unit wrapper is a quarter turn latch which securely holds the unit in the compartment.

The latch can only be engaged when the stabs are fully mated with the vertical bus. Upon release of the latch the unit can be partially withdrawn such that the stabs are disengaged from the vertical bus. In this position the latch can be re-engaged to prevent the unit from being returned to the fully stabbed position or from being removed from the structure. The latch can be padlocked in this position to ensure the stabs remain disengaged during maintenance.

Fig.19 GUIDE ROLLER DEVICE

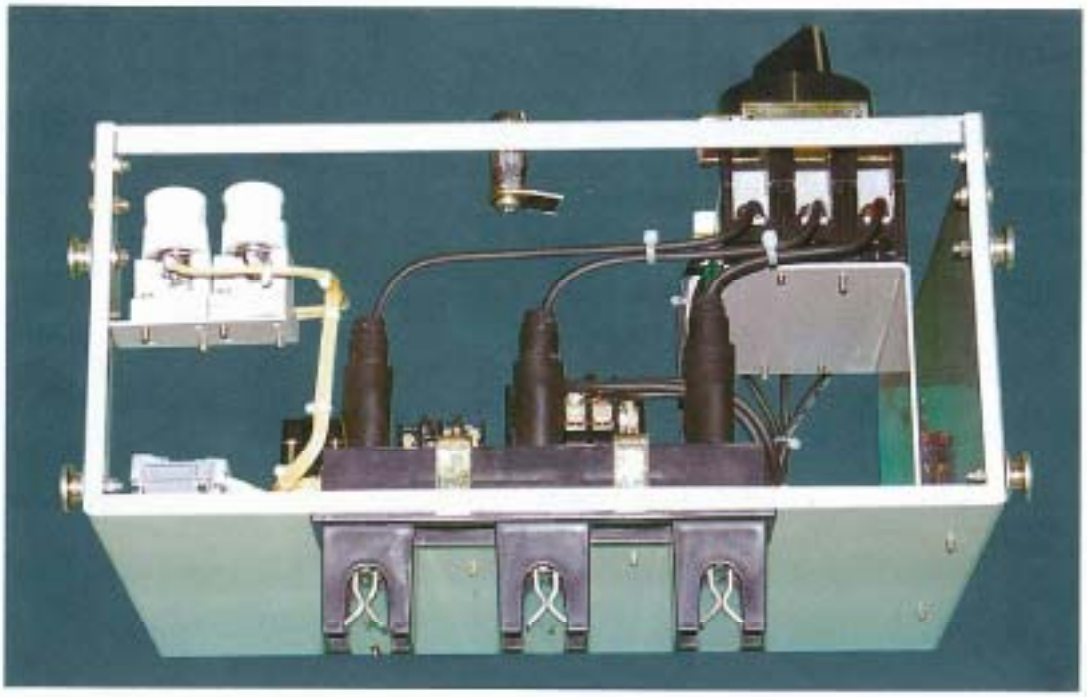


Fig.20 STAR ASSEMBLY

OTHER PARTS

STAB ASSEMBLY

Two component copper alloy stab incorporates the ultimate in mechanical simplicity to provide precise control of contact pressure on the bus. This assures a positive connection permits easy unit insertion and withdrawal. Self aligning stabs are mounted in a glass reinforced plastic insulation block which totally shrouds each stab and absolutely ensures positive alignment of the stabs with the vertical bus. The insulation block is also an integral part of the phase to phase isolation system.

GUIDE RAIL

The guide rails provide precise alignment of the unit stabs on the vertical bus.

Fig.21 GUIDE RAIL

Fig.22 HANDLE MECHANISM

Fig.23 ALLIS BUS BRACE

HANDLE MECHANISM

The handle mechanism is a device with three positions: ON OFF and TRIPPED. It is mounted securely by the wrapper and breaker to eliminate alignment problems and to provide a positive indication of the breaker position, even with the door open.

The handle mechanism provides several safety features. In the "ON" or "TRIPPED" position an interlock prevents the unit door from being opened. To insure that units are not energized accidentally or by unauthorized personnel, the handle mechanism can be padlocked in the "OFF" position.

ORDERING INFORMATION

SPAEC REQUIRED FOR MCC UNIT

STARTER UNIT:440V,480V

NON-REVERSING	SIZE 1	10 HP	3X	DRAW-OUT TYPE
	SIZE 2	25 HP	3X	
	SIZE 3	50 HP	4.5X	
	SIZE 4	100 HP	6X	
	SIZE 5	200 HP	9X	FIXED TYPE
REVERSING	SIZE 1	10 HP	3X	DRAW-OUT TYPE
	SIZE 2	25 HP	4.5X	
	SIZE 3	50 HP	6X	
	SIZE 4	100 HP	9X	
	SIZE 5	200 HP	14X	FIXED TYPE
TWO SPEED TWO WINDING	SIZE 1	10/7.5 HP	4.5X	DRAW-OUT TYPE
	SIZE 2	25/20 HP	5X	
	SIZE 3	50/40 HP	6X	
	SIZE 4	100/75 HP	6X	
	SIZE 5	200/150 HP	14X	FIXED TYPE
TWO SPEED ONE WINDING	SIZE 1	10/7.5 HP	4.5X	DRAW-OUT TYPE
	SIZE 2	25/20 HP	5X	DRAW-OUT TYPE
	SIZE 3	50/40 HP	9X	DRAW-OUT TYPE
	SIZE 4	100/75 HP	9X	
	SIZE 5	200/150 HP	18X	FIXED TYPE

THE REDUCED VOLTAGE STARTER DESIGNS ARE NOT INCLUDED

FEEDER UNIT

100A	3X	DRAW-OUT TYPE
225A	4.5X	
400A	6X	FIXED TYPE
600A	8X	

NOTE:

A.PER X EQUALS 100MM.

B.a/b HP RATING a USED FOR CONSTANT OR VARIABLE TORQUE, RATING b USED FOR CONSTANT HORSEPOWER.

C.EACH MCC VERTICAL SECTION HAS 18X TOTALLY TO ACCOMODATE MCC UNIT.

D.A SEPARATE VERTICAL SECTION WILL ACCOMODATE INCOMING CIRCUIT BREAKER, METERING AND ACCESSORIES, OPERATING AND STANDBY CONTROL TRANSFORMERS, ETC.

CONSTRUCTION

Enclosure	☐Indoor	☐Outdoor type	☐Other specialty (_____)	
Unit mounting	☐Front only	☐Back to back		
Horizontal bus	☐Copper			
	☐600A	☐800A	☐1000A	☐1200A ☐_____ and located in the
	☐Top	☐Bottom		
Vertical bus	☐Copper			
	☐300A	☐400A	☐600A	☐_____A
Ground conductor	☐Provide	☐Don't provide		
Neutral bus	☐Provide	☐Don't provide		
Incoming lines				
Cable size	_____ mm2 per phase		_____ MCM per phase	
Cable entry	☐Top	☐Bottom	☐Other (_____)	
Service	_____V	_____Hz	_____ phase_____wires	
Control circuit	_____V	_____Hz		
Wiring	☐CLASS I	☐CLASSII		
	☐Type A	☐Type B	☐Type C	
If Type C, master terminal blocks shall be located at the			☐top	☐bottom of each section
Finish	☐Polyester powder (Outdoor use)		☐ANSI #61	
			☐Munsell 5Y 7/1	☐Munsell N7
			☐TPIA #36	☐RAL 7032

ISO 9000 Certificated Manufacturer

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