Specifications

4216

January 1985
Repl.: September 1983

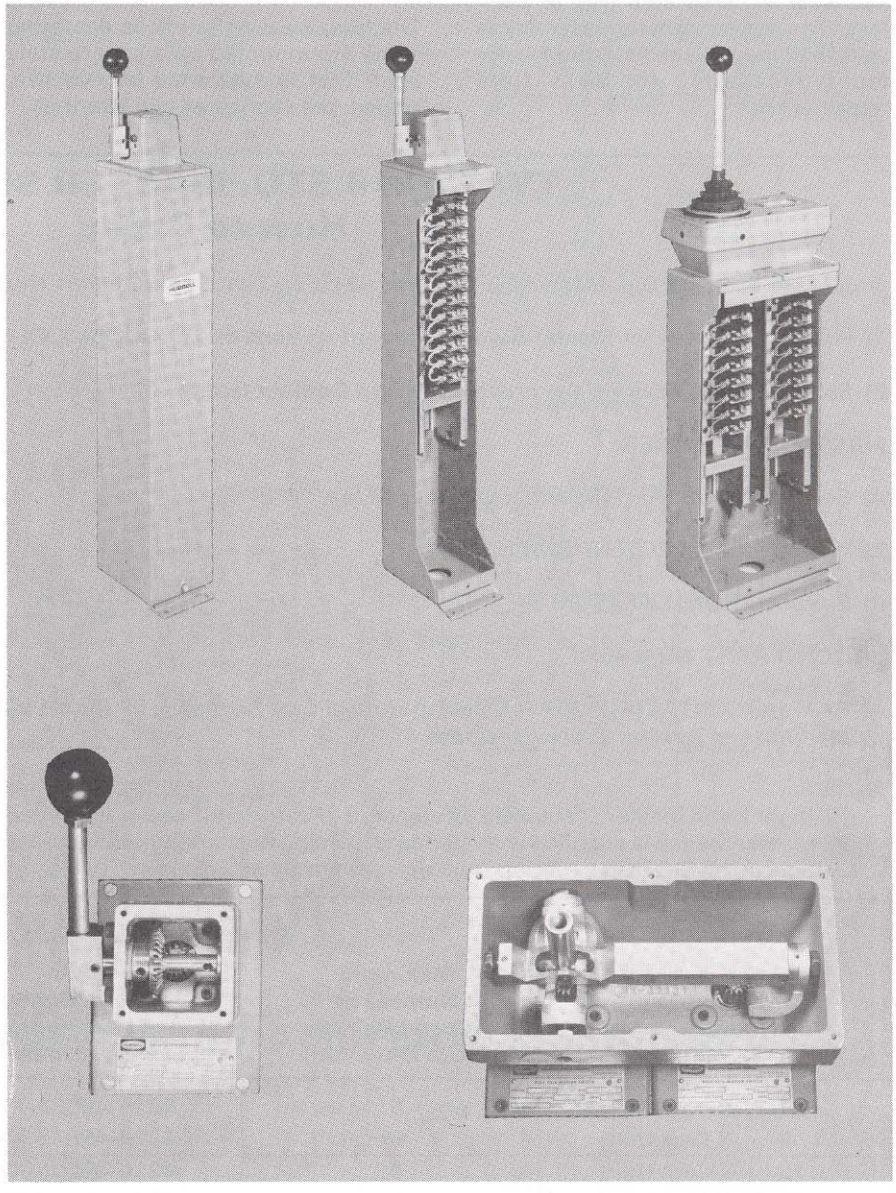
hubbell industrial controls, inc.

CAM OPERATED MASTER SWITCH

EUCLID™ TYPE 4216 HEAVY-DUTY MILL AND CRANE SERVICE

Application

These master switches are of rugged construction to withstand the rough service encountered on applications in the steel mills, such as crane, coal, and ore bridges, blooming and rolling mill auxiliaries, etc., where either floor or desk mounting is required.



Features

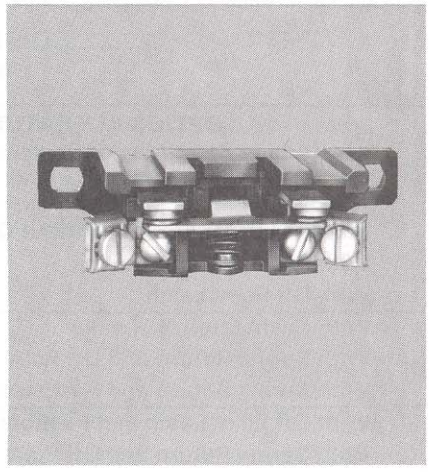
- All components are easily accessible for field service and inspection
- Open type for desk mounting or Nema 1 enclosed
- Positive cam operation
- Sealed, pre-lubricated ball bearings on both ends of main shaft
- Step type or stepless
- Contact blocks are double-break silver alloy contacts with self-cleaning action.
- Up to six (6) speed points in each direction. Five (5) speed points with the Joystick
- Maximum of sixteen (16) circuit combinations
- Flexible handle arrangements, left or right hand operation
- Rugged, mill-duty construction, heavy sheet metal frame with cast aluminum gear housing
- Slim vertical enclosure design offers close grouping of master switches

Optional Features

- Spring return handle
- "Off" point latch
- Pushbutton in handle for auxiliary contact
- Potentiometer assembly

Contact Block

The 4216 Master Switch is designed around a contact block that offers excellent performance as well as installation and maintenance features. These contact blocks employ a phenolic molded material with superior dielectric and mechanical strength. The individual contact blocks are easily replaced without using any special tools or disturbing the adjacent blocks and wiring. Contacts are silver alloy. The contact block design uses a wiping action for self cleaning of the contacts.



Description

Standard Master Switch

These Master Switches are designed for multi-speed control functions on heavy-duty applications with ratings of 600 volts maximum, AC or DC duty, available in either step type or step-less. The entire contact assembly is visible for immediate inspection and is front accessible for easy field replacement.

The contact blocks are easily replaced without disturbing the adjacent blocks or wiring. Two-mounting-screw design of the contact blocks makes circuit variation simple and flexible — meeting a variety of application requirements.

The long wearing phenolic operating cams are mounted on a square steel shaft that is supported by oversize, sealed, pre-lubricated ball bearings.

A bronze bushing is press-fitted into the cam roller which assures fast response to handle movement, and positive contact actuation.

The head design makes it easy to change the handle arrangement from right hand to left hand operation in the field. Also, the gear head can be rotated in 90° increments for additional handle arrangements.

TYPE 4216 STD. MASTER SWITCH
How to Order

Order cam-operated Std. Master Switch, Type 4216, by **Two Separate Part Numbers:**

1) First Part Number for **Master Switch with any options 4216-XXXXX-XXX** (replace the "X" with proper numbers.)

2) Second Part Number for the proper **Cam and Contact Group.**

FIRST PART NUMBER:

A) Select ENCLOSURE Type either OPEN or NEMA TYPE 1.

B) With or without POTENTIOMETER.

C) Select OPTIONAL FEATURES.

SECOND PART NUMBER:

A) CAM and CONTACT GROUP — Select the proper Cam Sequence for the Master Switch; base price of the switch includes the Cam and Contact Group. (see page 4)

NOTES:

A) Right Hand Master is supplied as standard. If Left Hand Master is desired, specify "Left Hand Master."

B) Master Switch is supplied with standard name plate markings as shown on back page of this specification. See table. Specify by MOTION — Hoist; Aux. Hoist; Main Hoist; Bridge or Trolley.

Maximum Number of Circuits	Maximum Number of Speed Points (Each Direction)	Enclosure	
		Open Master Switch	NEMA Type 1 Master Switch
		Basic Switch Part Number	Basic Switch Part Number
6 (6 Cam Unit)	6	4216-49031-XXX	4216-49032-XXX
9 (9 Cam Unit)	6	4216-49033-XXX	4216-49034-XXX
12 (12 Cam Unit)	6	4216-49035-XXX	4216-49036-XXX
16 (16 Cam Unit)	6	4216-49037-XXX	4216-49038-XXX

COMPLETE PART NUMBER With Option Suffix
(Add to Basic Master Switch Part Number)

OPTIONAL FEATURES (Add to Basic Master Switch Part Number and List Price)	Without Potentiometer Assembly	With Potentiometer Assembly
	Add Suffix to Basic Switch Part Number	Add Suffix to Basic Switch Part Number
Standard Basic Switch **Without Options**	-001	-009
With Spring Return Handle	-002	-010
With Off Point Latch	-003	-011
With Pushbutton in Handle	-004	-012
With Spring Return and Off Point Latch	-005	-013
With Spring Return and Pushbutton in Handle	-006	-014
With Off Point Latch and Pushbutton in Handle	-007	-015
With Spring Return and Off Point Latch and Pushbutton in Handle	-008	-016

Description

Joystick Master Switch

The Joystick Master combines two Standard 4216 Master Switches into a common enclosure for operation by one handle. Moving the handle toward and away from the operator activates one of the master switch units. Moving the handle crosswise operates the other master switch unit. Both master switch units can be operated simultaneously by moving the operating handle in a circular motion.

The contact blocks and all the features of the standard master switch are incorporated into the Joystick Master. (Except a "pushbutton in handle" option is not available.)

The Standard Joystick Master Switch comes without spring return handle and without off point latch. It is recommended that normally the master switch be ordered with the spring return handle option.

TYPE 4216 JOYSTICK MASTER SWITCH
How to Order

Order cam-operated Joystick Master Switch, Type 4216, by **Three Separate Part Numbers:**

1) First Part Number for **Master Switch with any options 4216-XXXXX-XXX** (replace the "X" with proper numbers.)

2) Second Part Number for the proper **Cam and Contact Group for Motion A.**

3) Third Part Number for the proper **Cam and Contact Group for Motion B.**

FIRST PART NUMBER:

A) Select ENCLOSURE Type either OPEN or NEMA TYPE 1.

B) With or without POTENTIOMETER.

C) Select OPTIONAL FEATURES.

SECOND & THIRD PART NUMBERS:

A) CAM and CONTACT GROUP — Select the proper Cam Sequence for each motion; base price of the switch includes the Cam and Contact Group. (see page 4)

NOTES:

A) Right Hand Master is supplied as standard. If Left Hand Master is desired, specify "Left Hand Master."
B) Standard Handle and Cover Arrangement is supplied unless "Optional Handle and Cover Arrangement" is specified.
C) Master Switch is supplied with standard name plate markings as shown on page 5 of this specification. Specify drive designation and direction for motions "A" and "B".

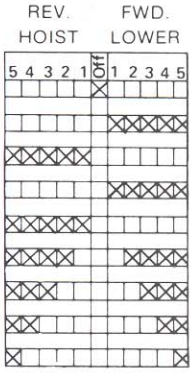
Maximum Number of Circuits	Maximum Number of Speed Points (Each Direction)	Enclosure	
		Open Type Joystick Master Switch Basic Switch Part Number	NEMA Type 1 Enclosed Joystick Master Switch Basic Switch Part Number
12 (Two 6 Cam Units)	5	4216-49051-XXX	4216-49052-XXX
18 (Two 9 Cam Units)	5	4216-49053-XXX	4216-49054-XXX
24 (Two 12 Cam Units)	5	4216-49055-XXX	4216-49056-XXX
32 (Two 16 Cam Units)	5	4216-49057-XXX	4216-49058-XXX

COMPLETE PART NUMBER With Option Suffix
(Add to Basic Master Switch Part Number)

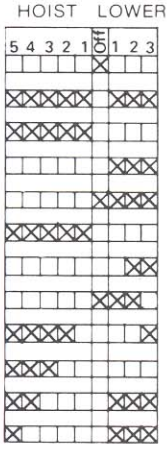
OPTIONAL FEATURES (Add to Basic Master Switch Part Number and List Price)	Without Potentiometer Assembly	With Two Potentiometer Assemblies (One On Each Cam Unit)
	Add Suffix to Basic Switch Part Number	Add Suffix to Basic Switch Part Number
Standard Basic Switch Without Options	-001	-005
With Spring Return Handle	-002	-006
With Off Point Latch	-003	-007
With Spring Return and Off Point Latch	-004	-008

Standard AC Master Switch Applications

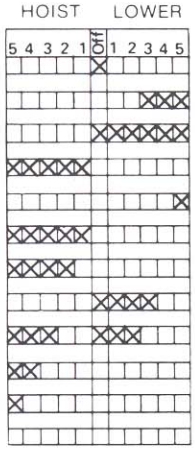
CAM AND CONTACT GROUPS



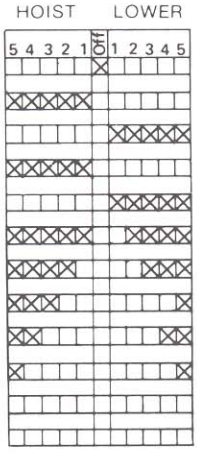
PART NUMBER 49011-003
9 CAM UNIT FOR USE WITH
TYPE 4010, TRAVEL BULL 4012,
HOIST, 5 PT



PART NUMBER 49012-002
12 CAM UNIT FOR USE WITH
TYPE 4011, HOIST, 5 PT



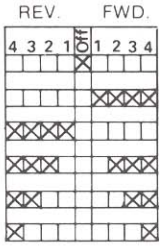
PART NUMBER 49012-003
2 CAM UNIT FOR USE WITH
TYPE 4013, HOIST, 5 PT



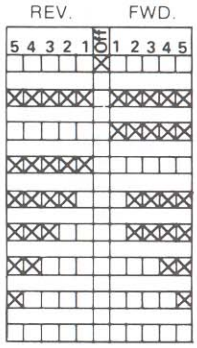
PART NUMBER 49012-004
12 CAM UNIT FOR USE WITH
TYPE 4014, HOIST, 5 PT

Standard DC Master Switch Applications

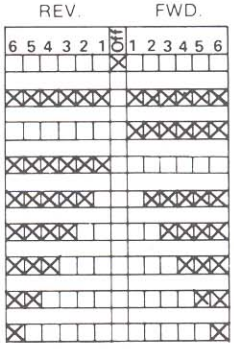
CAM AND CONTACT GROUPS



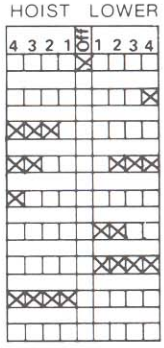
PART NUMBER 49010-005
6 CAM UNIT FOR USE WITH
TYPE 4120, TRAVEL, 4 PT



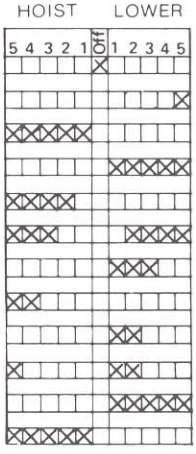
PART NUMBER 49011-001
9 CAM UNIT FOR USE WITH
TYPE 4110, TRAVEL, 5 PT



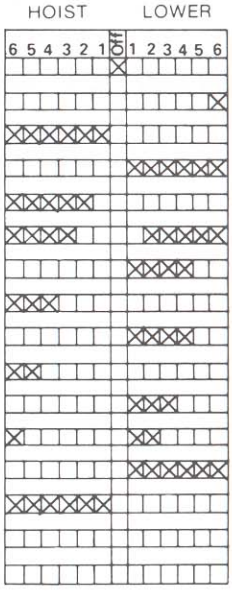
PART NUMBER 49011-005
9 CAM UNIT FOR USE WITH
TYPE 4110, TRAVEL, 6 PT



PART NUMBER 49011-002
9 CAM UNIT FOR USE WITH
TYPE 4121, HOIST, 4 PT



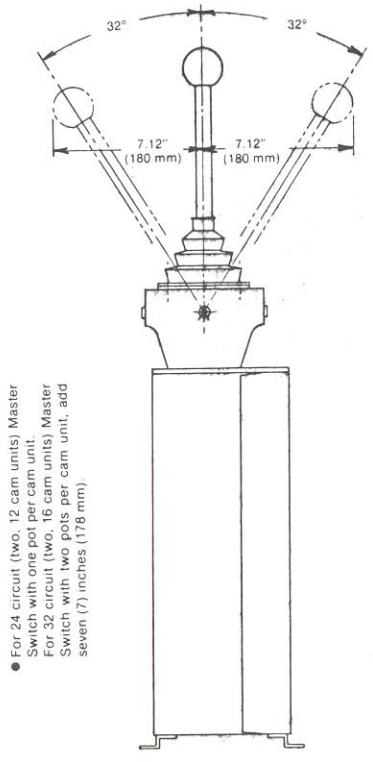
PART NUMBER 49012-001
12 CAM UNIT FOR USE WITH
TYPE 4015 & 4111, HOIST, 5 PT



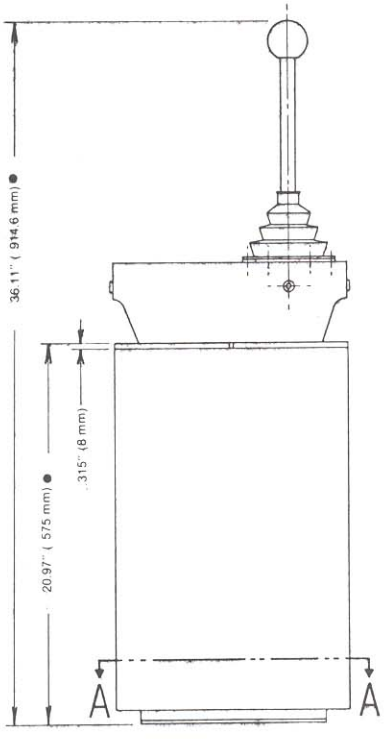
PART NUMBER 49013-001
16 CAM UNIT FOR USE WITH
TYPE 4111, HOIST, 6 PT

APPROXIMATE DIMENSIONS: JOYSTICK MASTER

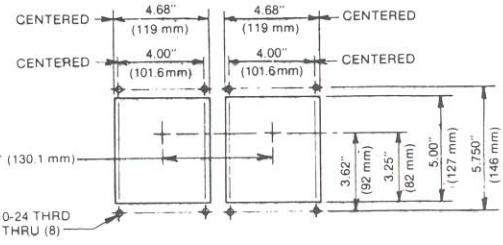
ENCLOSED

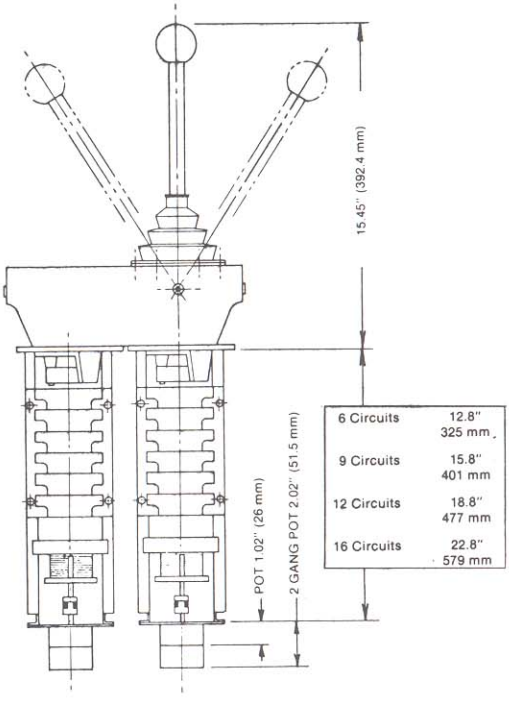


● For 24 circuit (two, 12 cam units) Master Switch with one pot per cam unit. For 32 circuit (two, 16 cam units) Master Switch with two pots per cam unit, add seven (7) inches (178 mm).



OPEN

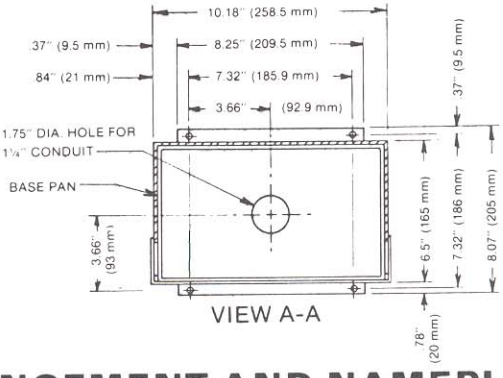




6 Circuits	12.8" 325 mm
9 Circuits	15.8" 401 mm
12 Circuits	18.8" 477 mm
16 Circuits	22.8" 579 mm

STANDARD NAMEPLATE MARKINGS*	
MOTIONS	DIRECTIONS
HOIST	LOWER - HOIST
AUX. HOIST	LOWER - HOIST
MAIN HOIST	LOWER - HOIST
BRIDGE	FWD. REV.
TROLLEY	FWD. REV.

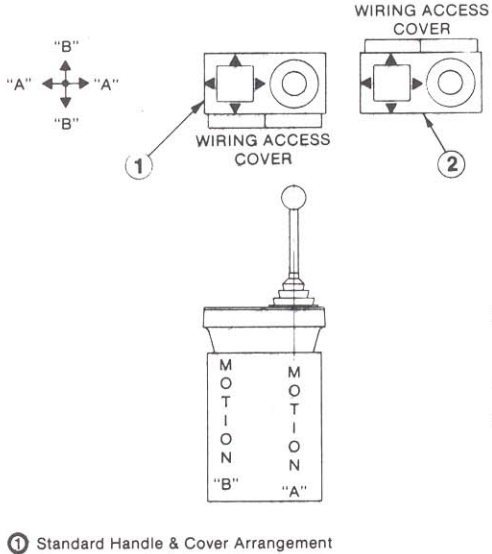
*OTHER MARKINGS AVAILABLE UPON REQUEST.



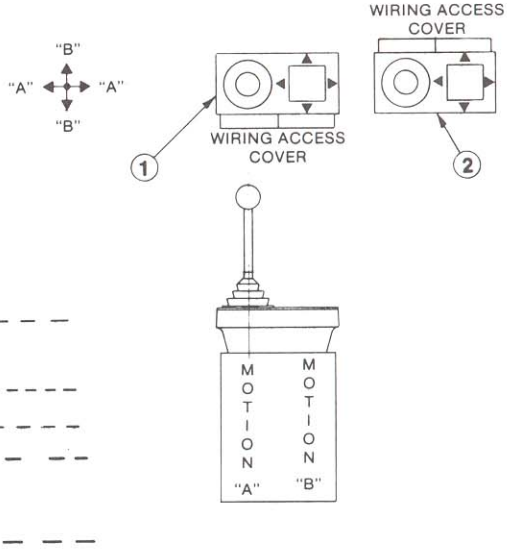
VIEW A-A

HANDLE ARRANGEMENT AND NAMEPLATE MARKINGS

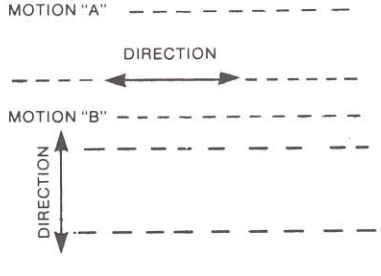
LEFT HAND JOYSTICK MASTER SWITCH



RIGHT HAND JOYSTICK MASTER SWITCH



NAMEPLATE MARKINGS

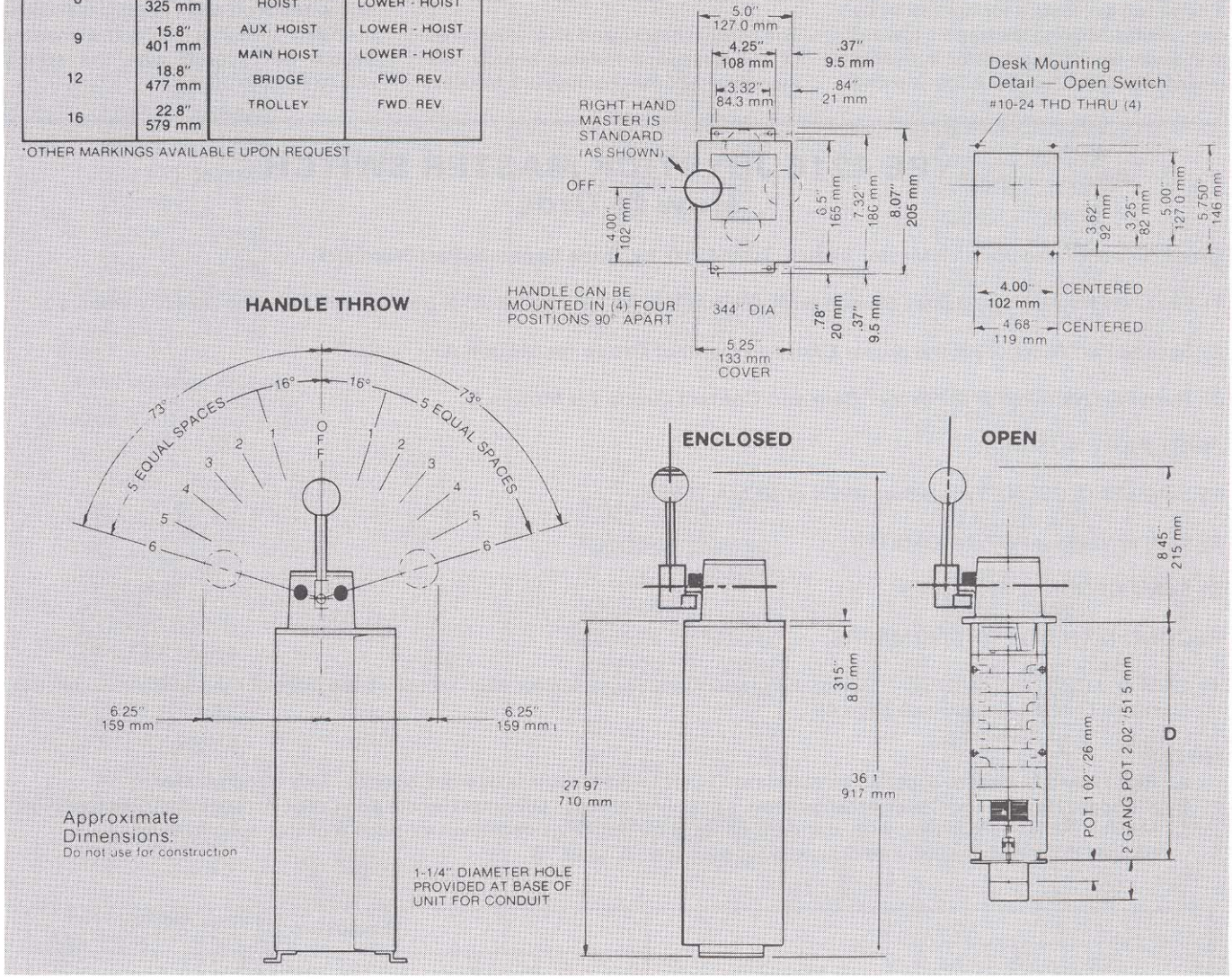


① Standard Handle & Cover Arrangement
② Optional Handle & Cover Arrangement

Approximate Dimensions:

Maximum Number of Circuits	OPEN MASTER FRAME D	STANDARD NAME PLATE MARKINGS *	
		MOTIONS	DIRECTIONS
6	12.8" 325 mm	HOIST	LOWER - HOIST
9	15.8" 401 mm	AUX. HOIST	LOWER - HOIST
12	18.8" 477 mm	MAIN HOIST	LOWER - HOIST
16	22.8" 579 mm	BRIDGE	FWD. REV.
		TROLLEY	FWD. REV.

*OTHER MARKINGS AVAILABLE UPON REQUEST



Electrical Ratings

Electrical Contacts are rated in accordance with NEMA Standard ICS-2-125
(B600 and N600 Table Rating)

AC	Maximum Continuous Amperes	Maximum Make and Break Current — Amperes							
		120V		240V		480V		600V	
		Make	Break	Make	Break	Make	Break	Make	Break
B600	5	30	3	15	1.5	7.5	.75	6	6

DC	Maximum Continuous Amperes	Maximum Make and Break Current — Amperes					
		125V		250V		301V to 600V	
		Make	Break	Make	Break	Make	Break
N600	10	2.2	2.2	1.1	1.1	0.4	0.4

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