


MITSUBISHI
MEDIUM VOLTAGE VACUUM CONTACTORS

SERIES

SH-V

 Top Performance and Reliability on Applications
 from 100 to 1500 volts AC


TYPE SH-V VACUUM CONTACTORS UP TO 1500V AC

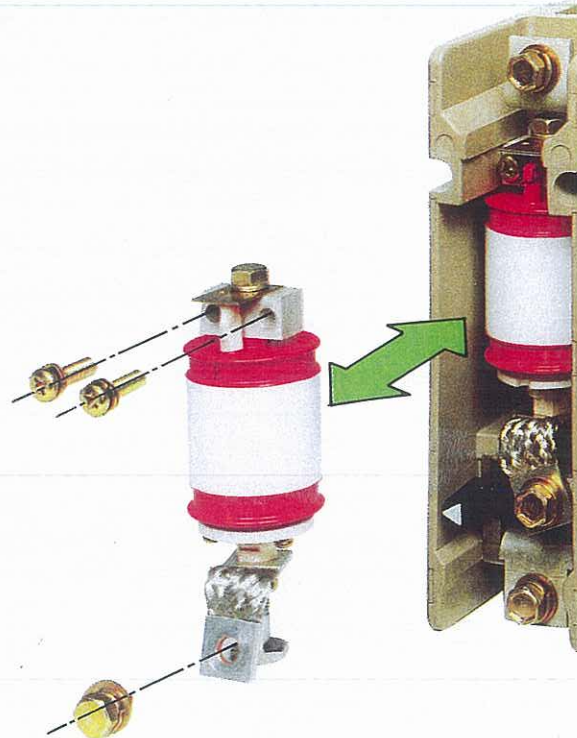
Superior performance is achieved by innovative technology of Medium Voltage Vacuum Bottles.



Type SH-V320



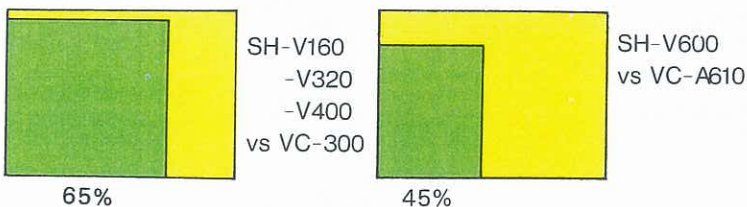
Type SH-V600



FEATURES

Compact Design

Thanks to compactly designed vacuum bottles and a unique operating mechanism, mounting space is greatly reduced.



(Comparing with our Type VC-300 and VC-A610 "Vacuum Contactors".)

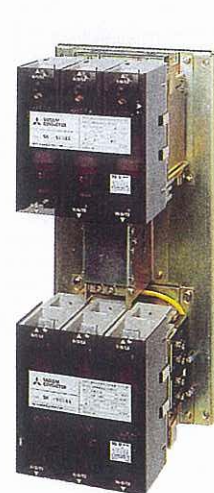
Power Saving and Ultrawide Coil-rating Range

With a newly developed DC holding magnet that is energized from the AC source, coil power requirement is reduced.

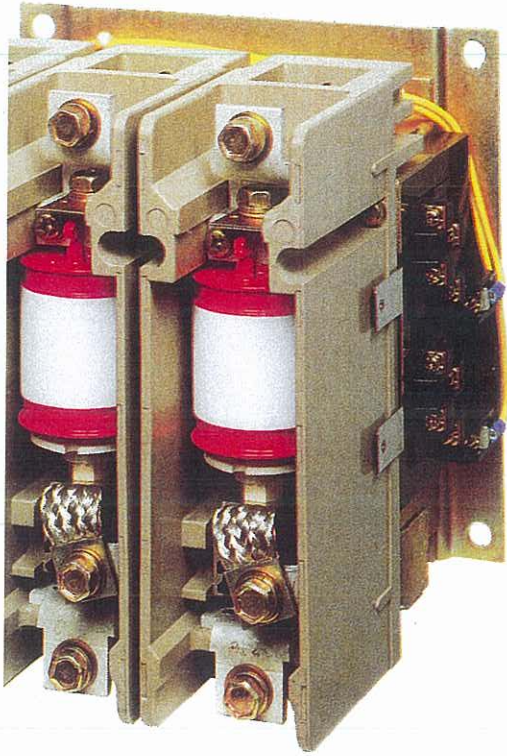
The number of coils has been dramatically reduced. For example, the same coil is used for 200-240V 50/60Hz.

Excellent Interrupting Capacity against Short-Circuit Current

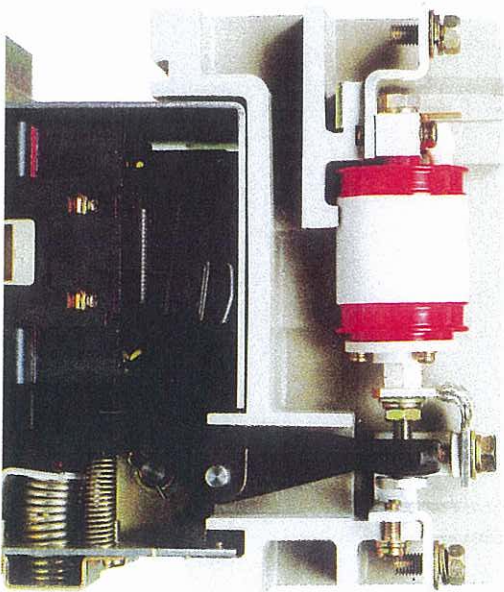
The maximum interrupting current (CO five times) is
 SH-V160, V320, V400 : 4kA
 SH-V600 : 5kA



Type SH-2XV400



Type SH-V160



Type SH-V160

High Insulation Strength

The withstand voltage for 1 minute and impulse withstand voltage are 6.5kV, and 15kV respectively. By using insulation barriers (optional, except with Type SH-V600), withstand voltage for 1 minute can be increased up to 16kV, and short-circuit current of 4kA at 3.6kV, can be interrupted.

A maximum of 4NO + 4NC contacts are available.

2NO+2NC contacts are provided as a standard and an additional 2NO+2NC contact block can be added.

Easy Inspection and Maintenance

Since the vacuum switches are located up front, checking of contacts for wear can be easily made. The vacuum switches can be replaced without disconnecting cables.

Surge Absorber is not Required

Since the contacts are made of special material that suppresses current chopping to a minimum level, a surge absorber is not required.

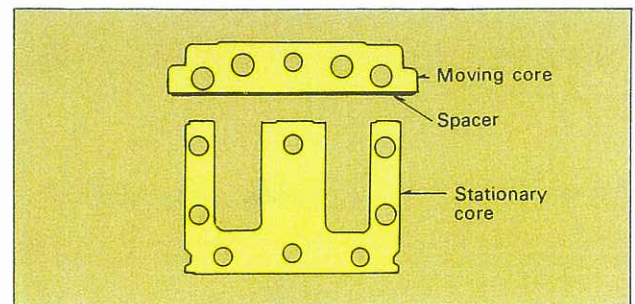
(See contact ratings)

Total Suppression of Humming Noise

The DC excitation system ensures absolute freedom from electromagnetic humming noise.

Superior Core Design

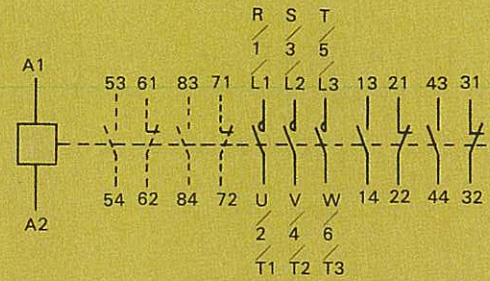
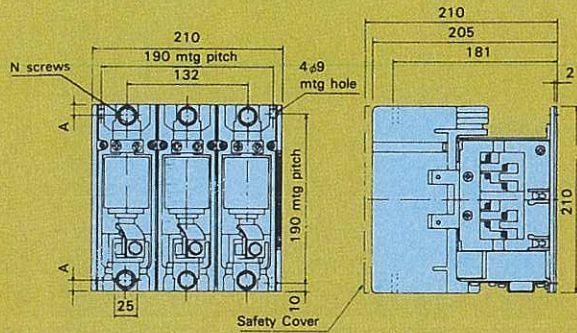
The gap that suppresses the residual magnetism in the iron core is shielded with a stainless-steel plate. This will not wear out even under frequent cycling, ensuring a long service life.



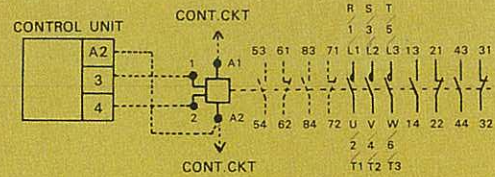
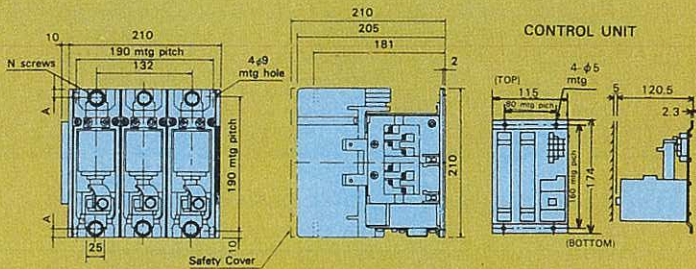
OUTLINE DIMENSIONS

CONTACT ARRANGEMENTS

KEYS	TYPE	SH-V160	SH-V320,-V400
N		M8	M10
A		10	12.5

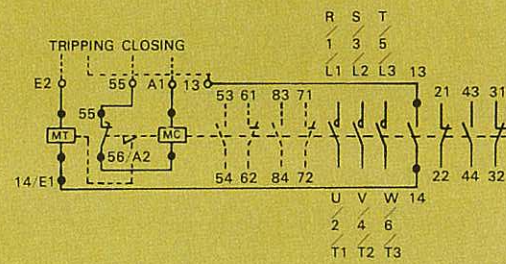
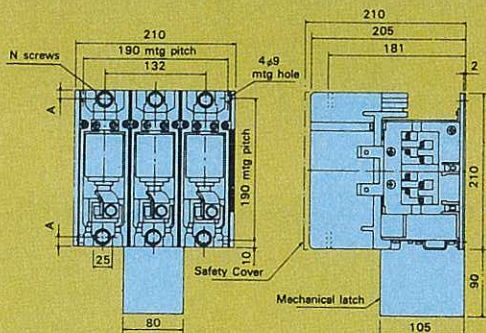


KEYS	TYPE	SHD-V160	SHD-V320,-V400
N		M8	M10
A		10	12.5

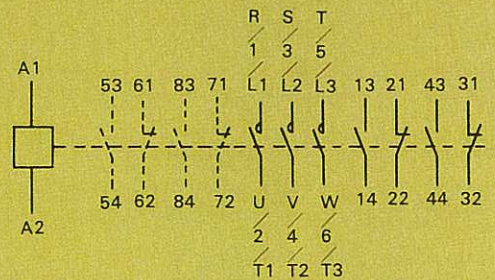
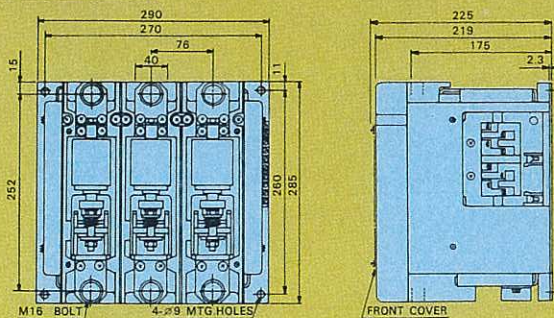


Notes (1) Wires shown dotted are user connected.
 (2) Control unit must be mounted on a vertical surface as shown in lefthand figure.

KEYS	TYPE	SHL(D)-V160	SHL(D)-V320,-V400
N		M8	M10
A		10	12.5



SH-V600



TYPES AND RATINGS

1. Contact Ratings

Frame Size			V160	V320	V400	V600
Type Designation	AC operated		SH-V160	SH-V320	SH-V400	SH-V600
	DC operated		SHD-V160	SHD-V320	SHD-V400	---
	Mechanically latched (3)		SHL(D)-V160	SHL(D)-V320	SHL(D)-400	---
Rated operating capacity	Three phase motor (1)	240V	55(180)	90(320)	115(400)	160(630)
		440V	110(180)	200(320)	250(400)	300(630)
		660V	160(180)	315(320)	400(400)	500(630)
	Category AC3 kW(A)	1,000V	225(160)	450(320)	550(400)	750(600)
		1,500V	315(160)	700(320)	800(400)	1,000(600)
		Three phase capacitor	240V	50(150)	75(250)	100(300)
KVAR(A)	440V	100(150)	150(250)	200(300)	400(580)	
	1,000V	250(150)	300(200)	300(200)	---	
	1,500V	350(150)	500(200)	500(200)	---	
Resistive load Category AC1 (A)			200	350	450	750
Continuous current (A) I _{th}			200	350	450	750
Short circuit interrupting current (A)			4,000			5,040
Withstand current for short time (kA)	for 2 seconds		4			6
	for 10 milliseconds		33			
Rated operating current of aux. contacts (A)	Category AC 11	240VAC	5			
		480VAC	3			
		660VAC	3			
Rated insulation voltage (V)	Category DC 11	110VDC	1.2			
		220VDC	0.2			
			1,500 (2)			1,500

- Notes (1) A surge absorber is required for motors less than 5.5kw only.
 (2) When barriers(optional)are used, the rated insulation voltage can be increased to 3,600V.(Except Type SH-V600)
 (3) SHL.....AC operated SHLD.....DC operated.

2. Coil Ratings

Applicable voltage	Coil designation	Frame size		
		V160, V320, V400		V600
		Standard	Quick(QM) opening operation	
100~127V 50/60Hz	AC100V	○	○	○
200~240V 50/60Hz	AC200V	○	○	○
260~350V 50/60Hz	AC300V	○	---	---
380~440V 50/60Hz	AC400V	○	---	---
460~550V 50/60Hz	AC500V	○	---	---
100~110V DC	DC100V	○	---	---
200~220V DC	DC200V	○	---	---

○ : Available --- : Not available

3. Technical Data

Frame Size			V160	V320	V400	V600
Mechanical life (million operations) (1)	Mechanism		2.5			
	Vacuum bottle		1			0.5
Electrical life (million operations)	Category AC3 (2)		0.5			0.25
	Capacitor load		0.1			
Permissible ambient temperature (°C)			-10 to 55			
Coil voltage tolerance			0.85 to 1.1 times rated coil voltage			
Coil consumption	AC operated	Inrush (VA)	550			1,150
		Sealed (VA)	45			55
		Watts	5.2			7.5
	DC operated	Inrush (VA)	500			---
		Sealed (VA)	40			---
	Mechanically latched	Inrush (VA)	550			---
Operating time (milliseconds)	Closing	Opening	40			65
		Opening	130 (50) ⁽³⁾			80
Make and break current capacity			Make: 10 times AC3 rated operating current, Break: 8 times			
Switching frequency (Operations/hour)			1,200			
Vibration & Shock			Vibration: 10-55Hz 2g, Shock 5g (Sine wave pulse)			
Conductor size (mm ²)	Main terminals		5.5~100	14~200	14~200	70~325
	Control terminals		1~2.5			

- Notes (1) Mechanical life of the latched type is 0.25 million operations.
 (2) 0.25 million operations for latched type.
 (3) Value in parentheses shows opening time of type SH-V□QM

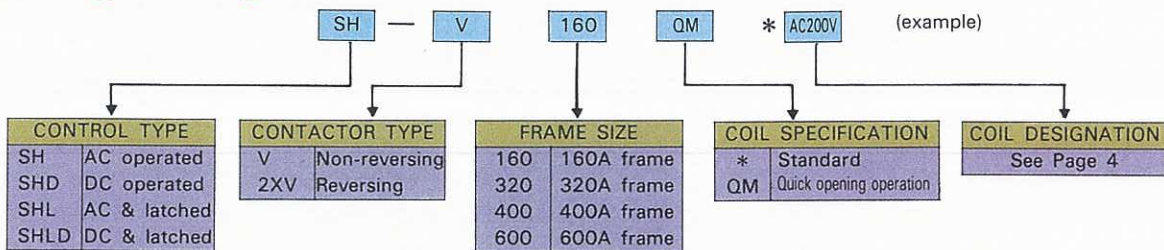
UL Recognized and CSA Certified Ratings



Type	Continuous Current Rating (A)	Maximum Horsepower Rating 3 Phase			
		Full load current must not exceed "Continuous Current Rating"			
		200 ~ 208V	220 ~ 240V	440 ~ 480V	550 ~ 600V
SH-V160	200	60	60	150	150
SH-V320	350	100	125	250	300
SH-V400	450	125	150	350	400
SH-V600	610	200	250	500	600

- Notes (1) Auxiliary contact rating code:A600
 (2) AC operated (Standard) only.
 (3) SH-V600 is under application for CSA certification.

Ordering Designation



- Notes (1) * symbol means blank spacs.
 (2) Control and style availability:

Frame size	160A	320A	400A	600A
AC operated	○	○	○	○ **
DC operated	○	○	○	—
AC & latched	○	○	○	—
DC & latched	○	○	○	—
Non-reversing	○	○	○	○ **
Reversing	○	○	○	—
Quick opening operation	○ **	○ **	○ **	—

○ : Available — : Not available

** : Coil designations of AC100V and AC200V are only available.

Spare Parts & Accessories

Frame size	Coil Part Number ¹	Main Contact Part Number	Auxiliary Contacts Part Number (1NO 1NC)	Vacuum Tube Gauge Part Number
SH-V160	SH-V160COIL AC.....V	SH-V160TUBES ²	UA-AXVV1	SH-V160GAUGE
SH-V320		SH-V320TUBES ²		
SH-V400		SH-V400TUBES ²		
SH-V600		SH-V600TUBES ²		

- Notes: 1. See page 4 for Coil Designation.
 2. Set of three vacuum bottles supplied.

