

# TOSHIBA

Leading Innovation >>>



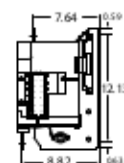
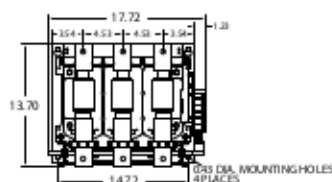
VACUUM CONTACTORS  
LOW & MEDIUM VOLTAGE



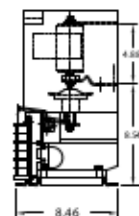
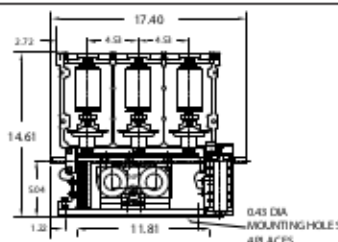
## COMPACT DESIGN, ADVANCED TECHNOLOGY

- **Environment-Resistant:** Ideal for use in high-dust areas. Switching arc is contained within the vacuum bottle, shielding the main contacts.
- **Reduced Maintenance:** Vacuum bottle contacts have long life with virtually no maintenance required.
- **No External Surge Protection:** Special main contact materials minimize chopping current. No surge suppressor is required.
- **Designed for Safety:** High voltage and low voltage parts are completely separated by an insulated barrier (non-flammable molded frame).
- **Electronic Control Drive Unit:** All contacts include electronic control of the operating coil, which offers a wide control voltage of 100 to 240 VAC and 100 to 250 VDC, anti-chopping feature, and reduced power consumption.
- **CV-10H (13.8/15 kV) Contactor:** Rated at 400 A inductive and 450 A thermal and is available in latched and non-latched versions. The CV-10HB is designed for capacitor switching and rated up to 13.8 kV.
- **Designed for Longer Wear:** Unique vertical magnetic arc dispersion system. USA patents on HCV-1KAU, HCV-6KAU, and HCV-6KALU.
- **Compact & Lightweight:** Smaller than air break contactors of equivalent electrical performance.
- **Conformance to International Standards:** Conforms to international industrial standards such as UL, CSA, AS, BS, NEMA, and IEC. Consult factory for each series.
- **Higher Interrupting Performance:** Offers a wide margin of protective coordination with any type of power fuse, resulting in increased electrical safety and reliability.

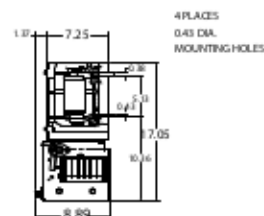
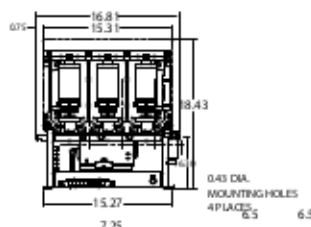
### HCV-1JBU/1KAU



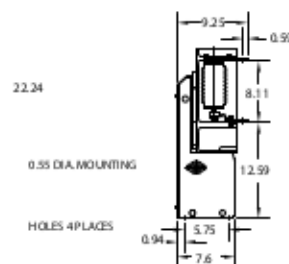
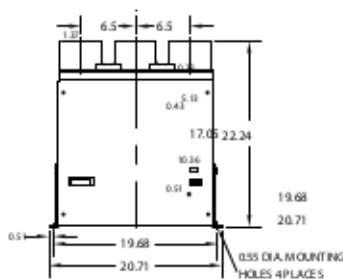
### HCV-5HA



### HCV-6KAU



### CV-10H



# VACUUM CONTACTORS

## > SPECIFICATIONS

| CONTACTOR MODEL                                                   |                         | HCV-1JBU                                       | HCV-1KAU                     | HCV-5HA                                               | HCV-5HAL* | CV-10HA(L)                                                               | CV-10HB(L)       | HCV-6KAU                                            | HCV-6KALU* |
|-------------------------------------------------------------------|-------------------------|------------------------------------------------|------------------------------|-------------------------------------------------------|-----------|--------------------------------------------------------------------------|------------------|-----------------------------------------------------|------------|
| Rated Voltage                                                     |                         | 208 to 1500 V                                  |                              | 2400/4200/6900 V (7.2 kV Max)                         |           | 12/15 kV                                                                 | 12/13.8 kV (Max) | 2400V/4200/6900 V (7.2 kV Max)                      |            |
| Rated Operational Current                                         |                         | 600 A                                          | 720 A                        | 400 A                                                 |           | 400 A                                                                    |                  | 720 A                                               |            |
| Rated Thermal Current                                             |                         | 600 A                                          | 720 A                        | 450 A                                                 |           |                                                                          |                  | 800 A                                               |            |
| Interrupting Current                                              |                         | 42,000 A                                       |                              | 7000 A (4.5 kA at 7.2 kV)                             |           | 4000/5000 A                                                              | 5000 A           | 7200 A                                              |            |
| Peak Withstand Current                                            |                         | —                                              | 85 kA (Peak)                 | 15.8 kA                                               |           | 12.5 kA                                                                  |                  | 20 kA                                               |            |
| Short-Circuit Making/<br>Breaking Current per IEC<br>60470 (2000) |                         | 6000 A<br>(100 Times)                          | 7200 A<br>(100 Times)        | 6300 A                                                |           | 4000/5000 A                                                              | 5000 A           | 8000 A                                              |            |
|                                                                   |                         | 6000 A<br>(25 Times)                           | 7200 A<br>(25 Times)         | O for Three Minutes; CO for Three Minutes             |           |                                                                          |                  |                                                     |            |
| Class E1 MVA                                                      |                         | —                                              |                              | 25/50 (36/60)                                         |           | 120                                                                      |                  | 30/60/85                                            |            |
| Class E2 MVA                                                      |                         | —                                              |                              | 200/400/570                                           |           | 1200                                                                     |                  | 200/400/600                                         |            |
| Withstand Overload Current                                        |                         | 3600 A for 30<br>Seconds                       | 4320 A for 30<br>Seconds     | 2400 A for 30 Seconds                                 |           | 1920 A for 30 Seconds                                                    |                  | 4320 A for 30 Seconds                               |            |
|                                                                   |                         | 6000 A for Two<br>Seconds                      | 7200 A for Two<br>Seconds    | 4000 A for 12 Seconds                                 |           | —                                                                        |                  | —                                                   |            |
|                                                                   |                         | 9000 A for One<br>Second                       | 10,800 A for One<br>Second   | 6300 A for Two Seconds                                |           | 8000 A for One Secvnd                                                    |                  | 10,800 A for One Second                             |            |
|                                                                   |                         | 30,000 A for 0.05<br>Seconds                   | 36,000 A for 0.05<br>Seconds | —                                                     |           | —                                                                        |                  |                                                     |            |
| Overcurrent Strength<br>(Peak Value)                              |                         | —                                              |                              | —                                                     |           | See Coordination Below                                                   |                  | 85 kA (Peak)                                        |            |
| Coordination with Current-<br>Limiting Fuses                      |                         | 50 kA                                          | 45 kA                        | —                                                     |           | Prospective Short-Circuit Current<br>50 kA; Cut-Off Current 36 kA (Peak) |                  | —                                                   |            |
| Switching Frequency                                               |                         | 1200/Hour                                      |                              | 1200/Hour                                             | 300/Hour  | 300/Hour (Latched-Type 120/Hour)                                         |                  | 600/Hour                                            | 300/Hour   |
| Mechanical Life**                                                 |                         | 2.5M                                           |                              | 2.5M                                                  | 250K      | 250K                                                                     |                  | 1M                                                  | 200K       |
| Electrical Life**                                                 |                         | 500K                                           |                              | 250K                                                  | 250K      | 100K                                                                     |                  | 200K                                                |            |
| Impulse Withstand                                                 |                         | 15 kV                                          |                              | 60 kV                                                 |           | 75 kV (95/110 kV with SA)                                                |                  | 60 kV                                               |            |
| Dielectric Strength                                               |                         | 5.5 kV for One Minute                          |                              | 22 kV for One Minute                                  |           | 36 kV for One Minute                                                     |                  | 22 kV for One Minute                                |            |
| Closing Time (120 VAC)                                            |                         | 60 to 80 ms                                    |                              | 75 to 100 ms                                          |           | 120 to 145 ms                                                            |                  | 80 to 100 ms                                        |            |
| Opening Time (120 VAC)                                            |                         | 50 to 65 ms                                    |                              | 20 to 30 ms                                           |           | 80 to 90 ms                                                              | 30 to 40 ms      | 40 to 55 ms                                         |            |
| Arcing Time                                                       |                         | 10 ms or Less                                  |                              |                                                       |           |                                                                          |                  |                                                     |            |
| Pick-Up Voltage                                                   |                         | 70% (Cold) to 85% (Hot)                        |                              | 70% (Cold) to 85% (Hot) AC or DC                      |           |                                                                          |                  |                                                     |            |
| Drop-Out Voltage                                                  |                         | 20% or More of Rated Control<br>Voltage (Cold) |                              | 40% (Cold) to 50% (Hot) AC or DC                      |           |                                                                          |                  |                                                     |            |
| Tripping Voltage                                                  |                         | —                                              |                              | <60% of Coil Rating (Cold) DC                         |           |                                                                          |                  |                                                     |            |
| Control<br>Voltage                                                | Standard                | 100 to 240 VAC/VDC                             |                              | 120 VAC at 50/60 Hz                                   |           | 100 to 240 VAC/100 to 250 VDC                                            |                  | 115 to 240 VAC/125 to 250 VDC                       |            |
|                                                                   | Optional                | —                                              |                              | 240 VAC/125 VDC/250 VDC                               |           | —                                                                        |                  | -                                                   |            |
| Control<br>Circuit<br>Burden                                      | Closing                 | 1080 VA                                        |                              | 5.4 A Peak at 120 VAC; 670 VA (AC)<br>to 700 W (DC)   |           | 7.2 A Peak at 120 VAC; 864 VA (AC)<br>to 900 W (DC)                      |                  | 6 to 7.0 A at 120 VAC; 840 VA (AC)<br>to 875 W (DC) |            |
|                                                                   | Holding                 | 50 VA                                          |                              | 0.12 A Average at 120 VAC; 85 VA<br>(AC) to 85 W (DC) |           | 0.16 A Average at 120 VAC; 80 VA<br>(AC) to 90 W (DC)                    |                  | 0.8 to 1.0 A at 120 VAC; 48 VA                      |            |
|                                                                   | Tripping*               | —                                              |                              | 4.8 A Peak at 125 VDC                                 |           |                                                                          |                  |                                                     |            |
| Auxiliary<br>Contact<br>Ratings                                   | Arrangement             | 3NO-3NC                                        |                              | 3NO-3NC                                               | 2NO-2NC   | 4NO-2NC<br>(Latched-Type 2NO-1NC)                                        |                  | 3NO-3NC                                             | 2NO-2NC    |
|                                                                   | Current                 | 10 A (A600)                                    |                              |                                                       |           |                                                                          |                  |                                                     |            |
|                                                                   | Voltage                 | 48 to 600 V                                    |                              |                                                       |           |                                                                          |                  |                                                     |            |
|                                                                   | AC                      | 720 VA with 0.35 Power Factor                  |                              |                                                       |           |                                                                          |                  |                                                     |            |
|                                                                   | DC                      | 60 W (L/R 150 ms)                              |                              |                                                       |           |                                                                          |                  |                                                     |            |
| Application<br>Conditions                                         | Altitude (No<br>Derate) | Lower than 3300 Feet (1000 Meters)             |                              |                                                       |           |                                                                          |                  |                                                     |            |
|                                                                   | Ambient                 | -5 to 40°C                                     |                              |                                                       |           |                                                                          |                  |                                                     |            |
|                                                                   | Relative<br>Humidity    | 45 to 95% Non-Condensing                       |                              |                                                       |           |                                                                          |                  |                                                     |            |
|                                                                   | Vibration               | Maximum 20 Hz at 1G                            |                              |                                                       |           |                                                                          |                  |                                                     |            |
|                                                                   | Shock                   | Maximum 30G                                    |                              |                                                       |           |                                                                          |                  |                                                     |            |
| Weight in lbs. (kg)                                               |                         | 59.5 (27)                                      | 61.7 (28)                    | 43 (19.5)                                             | 44 (20)   | 88 (40)                                                                  | 91 (41)          | 60 (27)                                             | 62 (28)    |

\* - Latched-type.

\*\* - Maximum required test. Actual life under normal conditions is greater.

# VACUUM CONTACTORS

## > LOW VOLTAGE APPLICATIONS

| Model Number                      | HCV-1JBU  | HCV-1KAU     |
|-----------------------------------|-----------|--------------|
| Rated Voltage                     | 1500 V    | 1500 V       |
| Rated Current                     | 600 A     | 720 A        |
| Rated Frequency                   | 50/60 Hz  |              |
| Three-Phase Motor                 | 208 V     | 200 HP       |
|                                   | 230 V     | 250 HP       |
|                                   | 380 V     | 300 HP       |
|                                   | 460 V     | 450 HP       |
|                                   | 575 V     | 600 HP       |
|                                   | 762/796 V | 700 HP       |
|                                   | 1500 V    | 900 HP       |
| Three-Phase Capacitor             | 240 V     | 1600 HP      |
|                                   | 480 V     | 200 kVAR     |
|                                   | 600 V     | 500 kVAR     |
|                                   | 1500 V    | 600 kVAR     |
| Single- & Three-Phase Transformer | 120 V     | 1400 kVAR    |
|                                   | 120 V     | 1500 kVAR    |
|                                   | 120 V     | 1 φ 60 kVA   |
|                                   | 120 V     | 3 φ 75 kVA   |
|                                   | 230 V     | 100 kVA      |
|                                   | 230 V     | 130 kVA      |
|                                   | 230 V     | 1 φ 120 kVA  |
|                                   | 230 V     | 3 φ 140 kVA  |
|                                   | 277 V     | 200 kVA      |
|                                   | 277 V     | 240 kVA      |
|                                   | 277 V     | 1 φ 150 kVA  |
|                                   | 277 V     | 3 φ 170 kVA  |
| Discharge Lighting                | 460 V     | 260 kVA      |
|                                   | 460 V     | 290 kVA      |
|                                   | 460 V     | 1 φ 240 kVA  |
|                                   | 460 V     | 3 φ 280 kVA  |
|                                   | 575 V     | 400 kVA      |
|                                   | 575 V     | 480 kVA      |
|                                   | 762/796 V | 320 kVA      |
|                                   | 762/796 V | 350 kVA      |
|                                   | 762/796 V | 1 φ 560 kVA  |
|                                   | 762/796 V | 3 φ 600 kVA  |
|                                   | 1500 V    | 400 kVA      |
|                                   | 1500 V    | 460 kVA      |
|                                   | 1500 V    | 1 φ 800 kVA  |
|                                   | 1500 V    | 3 φ 900 kVA  |
|                                   | 1500 V    | 1 φ 1400 kVA |
|                                   | 1500 V    | 3 φ 1500 kVA |

## > MEDIUM VOLTAGE APPLICATIONS

| Model Number                           |               | HCV-5HA(L)<br>(400 A) | CV-10HA(L)<br>(400 A) | CV-10HB(L)<br>(320 A Continuous, 230 A Breaking) | HCV-6KA(L)<br>U (720 A) |
|----------------------------------------|---------------|-----------------------|-----------------------|--------------------------------------------------|-------------------------|
| 0.8 PF Induction/<br>Synchronous Motor | 2.2 to 2.5 kV | 1750 HP               | —                     | N/A                                              | 2500 HP                 |
|                                        | 3 to 3.3 kV   | 2250 HP               | —                     |                                                  | 3000 HP                 |
|                                        | 4 to 5 kV     | 3000 HP               | —                     |                                                  | 4500 HP                 |
|                                        | 6 to 6.6 kV   | 4500 HP               | —                     |                                                  | 6000 HP                 |
|                                        | 6.9 to 7.2 kV | —                     | 3500 HP               |                                                  | —                       |
|                                        | 11 to 12 kV   | —                     | 5500 HP               |                                                  | —                       |
|                                        | 13.8 kV       | —                     | 7000 HP               |                                                  | —                       |
| 1.0 PF Synchronous Motor               | 2.2 to 2.5 kV | 2000 HP               | —                     | N/A                                              | 2500 HP                 |
|                                        | 3 to 3.3 kV   | 2500 HP               | —                     |                                                  | 3000 HP                 |
|                                        | 4 to 5 kV     | 3500 HP               | —                     |                                                  | 4500 HP                 |
|                                        | 6 to 6.6 kV   | 5000 HP               | —                     |                                                  | 6000 HP                 |
|                                        | 6.9 to 7.2 kV | —                     | 4000 HP               |                                                  | —                       |
|                                        | 11 to 12 kV   | —                     | 6000 HP               |                                                  | —                       |
|                                        | 13.8 kV       | —                     | 7500 HP               |                                                  | —                       |
| Three-Phase Transformer                | 2.2 to 2.5 kV | 1500 kVA              | —                     | N/A                                              | 2500 kVA                |
|                                        | 3 to 3.3 kV   | 2000 kVA              | —                     |                                                  | 3500 kVA                |
|                                        | 4 to 5 kV     | 3000 kVA              | —                     |                                                  | 4500 kVA                |
|                                        | 6 to 6.6 kV   | 4000 kVA              | —                     |                                                  | 7000 kVA                |
|                                        | 6.9 to 7.2 kV | —                     | 3000 kVA              |                                                  | —                       |
|                                        | 11 to 12 kV   | —                     | 5500 kVA              |                                                  | —                       |
|                                        | 13.8 kV       | —                     | 6500 kVA              |                                                  | —                       |
| Three-Phase Capacitor                  | 2.2 to 2.5 kV | 1500 kVAR             | N/A                   | 1500 kVAR                                        | 2000 kVAR               |
|                                        | 3 to 3.3 kV   | 2000 kVAR             |                       | 2000 kVAR                                        |                         |
|                                        | 4 to 5 kV     | 2000 kVAR             |                       | 2000 kVAR                                        |                         |
|                                        | 6 to 6.6 kV   | 2000 kVAR             |                       | 3000 kVAR                                        |                         |
|                                        | 6.9 to 7.2 kV | —                     |                       | 3000 kVAR                                        |                         |
|                                        | 10 to 13.8 kV | —                     |                       | 5000 kVAR                                        |                         |
|                                        | 11 to 12 kV   | —                     |                       | —                                                |                         |
|                                        | 13.8 kV       | —                     |                       | —                                                |                         |
|                                        |               |                       |                       | —                                                |                         |
|                                        |               |                       |                       | —                                                |                         |

### APPLICABLE INDUSTRIES

- Aggregate
- Mining
- Oil & Gas
- Pulp & Paper
- Steel
- Utility/Power Generation
- Water/Wastewater

### APPLICABLE APPLICATIONS

- Pumps
- Conveyors
- Transformers



### TOSHIBA TRANSMISSION & DISTRIBUTION DIVISION

- Motor Controls
- Vacuum Contactors
- Vacuum Circuit Breakers

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