

LV-6 (for L=6%) 10-100kvar / 150-500kvar

Rated Voltage (V)	Combined Output (kvar)	Rated Output (kvar)	Rated Frequency (Hz)	Part Number	Rated Current (A)		Dimensions (mm)			Gross mass (kg)
					3300V	6600V	C	F	N	
7020 or 3510	10/12	10.6/12.8	50/60	LV6★CC010R26E	1.75/2.10	0.875/1.05	150	350	-	15
	15/18	16.0/19.1	50/60	LV6★CC015R26E	2.62/3.15	1.31/1.57	150	350	-	15
	20/24	21.3/25.5	50/60	LV6★CC020R26E	3.50/4.20	1.75/2.10	150	350	-	15
	25/30	26.6/31.9	50/60	LV6★CC025R26E	4.37/5.25	2.19/2.62	150	350	-	15
	30/36	31.9/38.3	50/60	LV6★CC030R26E	5.25/6.30	2.62/3.15	170	370	-	16
	50	53.2	60	LV6★C5050R26E	8.75	4.37	220	420	140	19
				LV6★C6050R26E			200	400	120	18
				LV6★C5075R26E			310	510	220	25
	75	79.8	60	LV6★C6075R26E	13.1	6.56	275	475	200	23
				LV6★C5100R26E			375	575	290	30
100	106	60	LV6★C6100R26E	17.5	8.75	335	535	230	27	

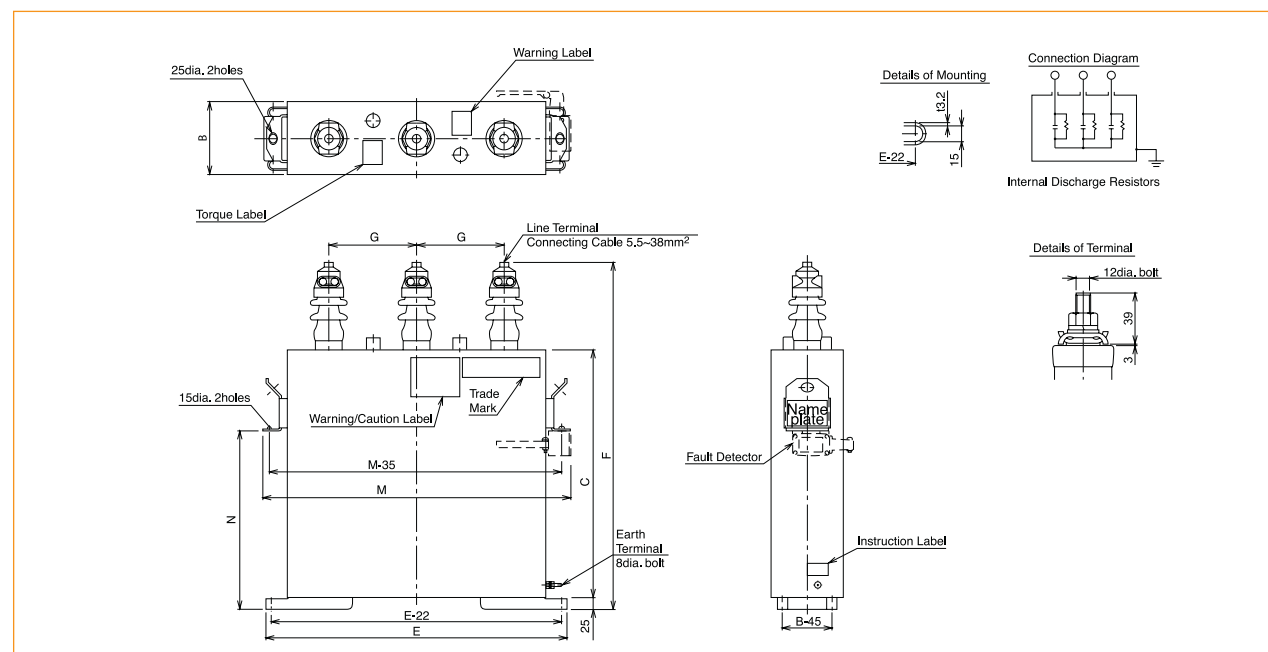
Rated Voltage (V)	Combined Output (kvar)	Rated Output (kvar)	Rated Frequency (Hz)	Part Number	Rated Current (A)		Dimensions (mm)						Gross mass (kg)	
					3300V	6600V	B	C	E	F	G	M		N
7020 or 3510	150	160	50	LV6★C5150R26E	26.2	13.1	150	380	620	590	180	635	250	49
			60	LV6★C6150R26E			150	340	620	550	180	635	220	44
	200	213	50	LV6★C5200R26E	35.0	17.5	150	450	620	660	180	635	320	57
			60	LV6★C6200R26E			150	410	620	620	180	635	270	53
	250	266	50	LV6★C5250R26E	43.7	21.9	150	550	620	760	180	635	370	69
			60	LV6★C6250R26E			150	485	620	695	180	635	340	61
	300	319	50	LV6★C5300R26E	52.5	26.2	150	620	620	830	180	635	450	77
			60	LV6★C6300R26E			150	550	620	760	180	635	370	69
	400	426	50	LV6★C5400R26E	70.0	35.0	180	600	820	810	230	835	440	120
			60	LV6★C6400R26E			180	500	820	710	230	835	330	100
	500	532	50	LV6★C5500R26E	87.5	43.7	180	780	820	990	230	835	500	146
			60	LV6★C6500R26E			180	600	820	810	230	835	440	120

LV-6 (for L=13%) 10-500kvar

Rated Voltage (V)	Combined Output (kvar)	Rated Output (kvar)	Rated Frequency (Hz)	Part Number	Rated Current (A)		Dimensions (mm)			Gross mass (kg)
					3300V	6600V	C	F	N	
7590 or 3790	10/12	11.5/13.8	50/60	LV6★CC010R13E	1.75/2.10	0.875/1.05	150	350	-	15
	15/18	17.2/20.7	50/60	LV6★CC015R13E	2.62/3.15	1.31/1.57	150	350	-	15
	20/24	23.0/27.6	50/60	LV6★CC020R13E	3.50/4.20	1.75/2.10	150	350	-	15
	25/30	28.7/34.5	50/60	LV6★CC025R13E	4.37/5.25	2.19/2.62	150	350	-	15
	30/36	34.5/41.4	50/60	LV6★CC030R13E	5.25/6.30	2.62/3.15	170	370	-	16
	50	57.5	60	LV6★C5050R13E	8.75	4.37	250	450	170	21
				LV6★C6050R13E			210	410	130	19
	75	86.2	60	LV6★C5075R13E	13.1	6.56	335	535	230	27
				LV6★C6075R13E			310	510	220	25
	100	115	60	LV6★C5100R13E	17.5	8.75	440	640	330	33
				LV6★C6100R13E			360	560	240	28
	150	172	60	LV6★C5150R13E	26.2	13.1	400	610	270	51
				LV6★C6150R13E			360	570	220	47
	200	230	60	LV6★C5200R13E	35.0	17.5	510	720	370	64
				LV6★C6200R13E			430	640	270	54
	250	287	60	LV6★C5250R13E	43.7	21.9	590	800	430	73
				LV6★C6250R13E			520	730	370	65
	300	345	60	LV6★C5300R13E	52.5	26.2	690	900	450	85
LV6★C6300R13E				590			800	430	73	
400	460	60	LV6★C5400R13E	70.0	35.0	680	890	450	135	
			LV6★C6400R13E			540	750	390	108	
500	575	60	LV6★C5500R13E	87.5	43.7	840	1050	550	165	
			LV6★C6500R13E			720	930	500	142	

Note : The asterisk ★ denotes voltage. 33 and 66 represent 3300V and 6600V respectively.

DIMENSIONS (mm)



(Notes) 1. To assemble two or more capacitors, secure the spacing of 80mm or more between the units for the combined output of 150-300kvar and 100mm or more for 400-500kvar.
2. Permissible limit for bulge (one side) in case is 20mm for combined output of 150-300kvar and 25mm for 400-500kvar.



MEDIUM VOLTAGE POWER CAPACITOR TYPE LV-6



The most reliable capacitor for medium voltage power system

● APPLICABLE STANDARD :

JIS C 4902-1 or IEC60871-1

● OPERATING CONDITIONS

- | | |
|------------------------|--|
| 1. Installation | Indoor and Outdoor |
| 2. Ambient temperature | -20°C - +50°C |
| 3. Altitude | Not exceeding 2,000 meters above sea level |
| 4. Loss rate | 0.025% or below |

● TYPE AND RATINGS

- | | |
|-----------------------|---------------------------------|
| 1. Type | LV-6 |
| 2. Rated voltage | 3,300V to 22,000V |
| 3. Combined output | 10kvar to 600kvar |
| 4. Rated frequency | 50Hz or 60Hz |
| 5. Phase | Three (3) phase or Single phase |
| 6. Designed life span | 20 years (Not Warranty Value) |

MEDIUM VOLTAGE POWER CAPACITOR TYPE LV-6

MEDIUM VOLTAGE POWER CAPACITOR

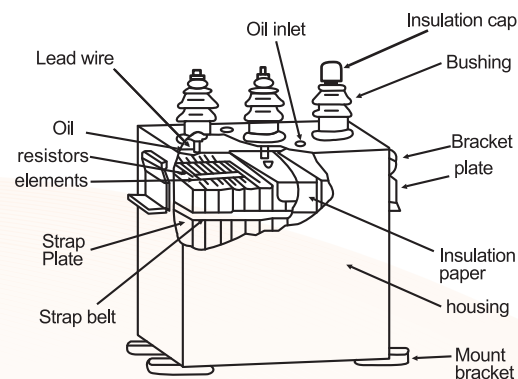
Type LV-6 medium voltage power factor correction capacitor employs the plastic film only having superior dielectric strength and utilize the electrodes of unique construction, achieving low loss (as low as approx. 1/3 of our conventional capacitors) and significantly high allowable current.

-Internal structure

Type LV-6 oil filled medium voltage power capacitor is enclosed by welded thin steel-sheet case to adapt to the filler oil expansion/compression.

Bushings are made of porcelain insulator, which are sealed by pressure bonding.

*Larger kvar products are sealed by soldering.



FEATURES

① Extremely low loss to save energy

The use of all plastic film dielectrics and proprietary electrode construction has reduced the loss of film itself to approximately 1/3 of our conventional design, offering significant saving in capacitor operation cost.

② Higher safety factor for temperature against harmonics

Temperature rise has been reduced considerably (to approximately 1/2 of our conventional design) due to lower loss, providing a higher safety factor for temperature against overload caused by harmonic currents. In addition, the capacitor can be operated at up to 50°C (temperature class B) due to lower temperature rise during operation.

③ Enhanced allowable current

The proprietary extended foil construction has enhanced greatly the capability to handle inrush current appearing when the capacitor is switched on or off.

④ Superior reliability

The use of polypropylene film dielectrics with excellent electrical performances has enhanced dielectric strength and reliability.

⑤ Fault detector (MDA-1) for 150kvar or more

The fault detector is free of leaks to provide high reliability, with its simple construction to facilitate maintenance and easy mounting.

EXTREMELY LOWER FAILURE RATE "20 FIT"

Type LV-6 medium voltage capacitor is designed 20 FIT of failure rate.

(What is FIT?)

FIT is unit for expressing the expected failure rate of semiconductors and other electronic devices. One FIT equals one failure per billion (10⁹) hours (once in about 114,155 years) and is statistically projected from the results of accelerated test procedures.

20 years = 24 hrs/day x 365 days/year x 20 years = 175,200 hrs

Failure rate % in 20 years = 175,200 hrs x 0.000002%/hr.

= 0.35%/20 years

*Type LV-6 is designed life span for 20 years.

PROTECTION OF MEDIUM VOLTAGE CAPACITOR

Medium voltage power capacitor can be said to be a static apparatus with extremely high reliability. However, overheat, burning out, short circuit or case rupture may occur, should a capacitor fail due to service conditions including overvoltage and excessive harmonics. Therefore, it is required that capacitor be protected against failure. Protection should be coordinated with failure characteristics of capacitor equipment and the following protections are recommended.

Rated Equipment Output	Recommended Protection
10kvar - 100kvar / 150kvar - 500kvar	Current limiting fuses & thermal sensors
150kvar - 500kvar	Fault Detector (MDA-1), current limiting fuses & thermal sensor

(Notes) 1. For recommended rated current of fuses, refer to the recommendation of the fuse manufacturers.
2. Install fuses at the power supply side of series reactors.
3. Capacitor rated at 200kvar or more can be supplied with double star connection.

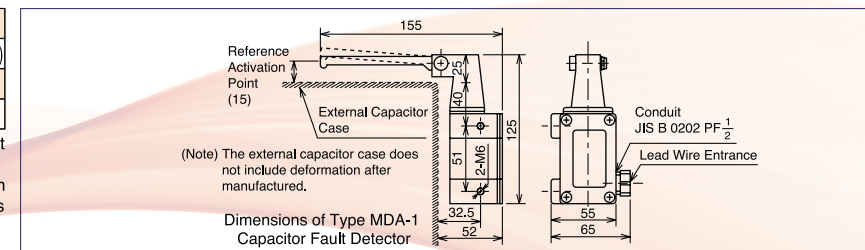
FAULT DETECTORS (MDA-1)

Large kvar capacitor will develop a zone where the case rupture can not be protected by current limiting fuses if the breakdown will last for a long time. Conveniently, it is known that the larger the capacitor kvar or for capacitor with star connection, the more the case bulges. Type MDA-1 fault detector will sense the bulge in case to protect the case rupture. Excessive bulge in the case caused by failure in the capacitor will activate the micro switch which will then generate the signal to trip a circuit breaker.



Type of Contact	1a+1b			
Contact Voltage(V)	125(AC)	250(AC)	110(DC)	220(DC)
Contact Capacity Current(A)	10	10	5	5
Dielectric Strength	2000VAC, 1 minute			

(Notes) 1. The currents are momentary when the circuit breaker is tripped.
2. The fault detector is packed separately from the capacitor. Mount it when the capacitor is installed.



TYPICAL CONNECTION OF FAULT DETECTOR TO CIRCUIT BREAKER

Breaker Trip Method	Connection of fault detector to breaker	Remark
Voltage Trip Method		The fault detector is connected direct to a trip coil

SELECTION OF RATED VOLTAGE AND CAPACITOR

-JIS C 4902 strongly recommends series reactor with L=6% to be installed for power capacitor with a rated voltage rise by a reactor swell. Accordingly, the capacitor terminal voltage should be 106% to the source voltage for capacitor with L=6%, and 115% with L=13% reactor.

The capacitor voltage can be calculated by the following formula.

$$\text{Capacitor voltage} = \frac{1}{1 - \frac{\text{reactance}(\%)}{100}} \times \text{Source voltage}$$

-The rated capacity of capacitor would be defined as the output capacity as a phase advancer equipment, which consists of the capacitor and the series reactor, by adding the series reactor capacity. The rated capacity and the output capacity may be defined by the following formula.

$$\text{Rated capacity} = \frac{1}{1 - \frac{\text{reactance}(\%)}{100}} \times \text{Rated output capacity}$$