

AC MOTOR START ALUMINIUM ELECTROLYTIC CAPACITORS
(Aluminum Body / Bakelite (Phenolic) Body)

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| <i>Scope</i> | Aluminum electrolytic Motor Start Capacitors are used in Single Phase Motors for generating the starting torque by connecting capacitors in series to the starting coil (Auxiliary Winding) of the motor. When motor reaches synchronous speed the capacitor is disconnected from the circuit. The capacitors are meant for Intermittent duty only. |
| <i>Specification</i> | <p>(1) Type – Aluminum Electrolytic</p> <p>(2) Design – Series design with two Etched & Formed Anode foils & common Cathode foil</p> <p>(3) Compliances – (a) Product conform to IEC60252-2 (b) ‘CE’ Approval by TNV (c) ‘RohS’ Approval by TNV (d) ‘UL’ Approval, File no –E485436</p> |
| <i>Working Voltage</i> | <p>(1) 110 / 125 V AC at 50/60 Hz with Surge Voltage 150 / 170 V AC</p> <p>(2) 230 / 250 V AC at 50/60 Hz with Surge Voltage 275 / 300 V AC</p> <p>(3) 330 V AC at 50/60 Hz with Surge Voltage 400 V AC.</p> |
| <i>Capacitance Range</i> | <p>(1) Aluminum Body:</p> <p>(a) 20-30mfd to 780-930mfd in 110/125 V AC</p> <p>(b) 20-30mfd to 280-350mfd in 230/250 V AC</p> <p>(c) 20-30mfd to 150-200mfd in 330 V AC</p> <p>(2) Bakelite (Phenolic) Body:</p> <p>(a) 30-36mfd to 1250-1350mfd in 110/125 V AC</p> <p>(b) 30-36mfd to 360-430mfd in 230/250 V AC</p> <p>(c) 30-36mfd to 200-250mfd in 330 V AC</p> |
| <i>Case Size In mm</i> | <p>(1) Aluminum Body - 35 ϕ \times 55 L Max to 45 ϕ \times 100 L Max</p> <p>(2) Bakelite Body - 35 ϕ \times 70/86 L to 52 ϕ \times 111 L</p> |
| <i>Power Factor</i> | <p>(1) Power factor 50/60Hz, 25°C \pm 5 °C } \leq 6% at rated & surge voltage</p> <p>(2) Power factor 50/60Hz } \leq 12% at Maximum operating temperature</p> <p>Power factor measured by wattmeter, ammeter & voltmeter method.</p> |
| <i>Leakage Current</i> | <p>After 5min charging on application of Dc voltage 1.414 times AC rated voltage.</p> <p>(1) 20 mfd to 250mfd \leq 1mA</p> <p>(2) 251mfd to 500mfd \leq 1.5mA</p> <p>(3) 251mfd up to 1350mfd \leq 2mA</p> |

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| <i>Operating temperature range</i> | - 30°C to +70 °C for UL capacitors +70 °C / +85 °C |
| <i>Damp heat stability (climatic category)</i> | 30/70/21 |
| <i>Operating life</i> | <p>Operating life (Duty cycle test) at 65 °C</p> <p>(1) For 110/125 V AC (Cycle : 1 sec 'ON' 29 sec 'OFF') } 75000 cycles of 30 seconds duration</p> <p>(2) For 230/250 V AC & 330 V AC (Cycle : 1 sec 'ON' 59 sec 'OFF') } 40000 cycles of 60 seconds duration</p> <p>After Duty Cycle test : } Change in capacitance value is within 3%</p> <p>} Change in Power factor is within 12%</p> |
| <i>Shelf Life</i> | 1000 Hour at 70 °C. It is suitable for storage for 1year without deterioration in its Electrical parameters if stored below 40 °C |
| <i>Safety</i> | <p>(1) Insulation Voltage : Capacitors shall be capable of withstanding without breakdown for 60 sec a test between terminal and the case with 2000V sinusoidal AC voltage of 50Hz . If the outer case is metal, the voltage is applied between the outer case & the terminals and if the outer case is insulating material a metal foil is wrapped tightly and round the case and the voltage is applied between the foil and terminal.</p> <p>(2) Insulation Resistance : Minimum 100MΩ between Lead and the Case.</p> <p>(3) Polarity: May be connected in either way.</p> <p>(4) Safety Vent : Safety vent provided in Rubber Bakelite (RB) disc.</p> <p>(5) Over voltage Safety : (a) If 1.2 times rated voltage applied, the capacitor shall fail after 120 Sec (b) If 1.4 times rated voltage applied , the capacitor shall fail after 30 sec</p> <p>(6) Failure Mode. The capacitor shall fail after life (duty cycle) test or continuous rated /over Voltage test by releasing the pressure through safety vent only. Failure mode is in open circuit (P2) without releasing hazardous substances & without catching fire.</p> |
| <i>Guarantee</i> | Product shall be guaranteed for its performance as per IEC 60252-2 |

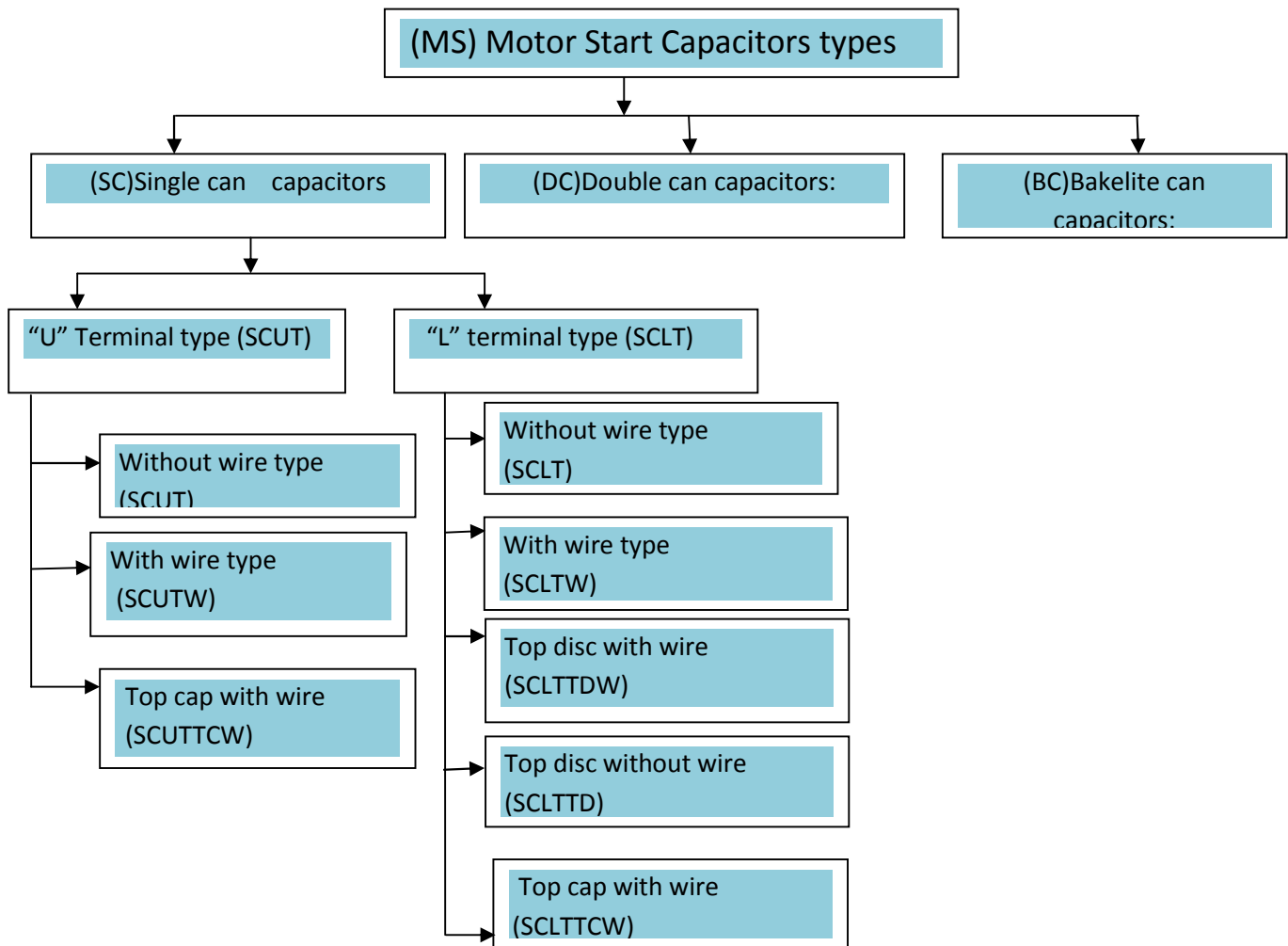
Table showing Case Size & Micro Farad values for 110/125 V AC 230/250 V AC 330 V AC

Aluminum Case (single case)

| MFD VALUES | 110/125 V AC | 230/250 V AC | 330 V AC |
|------------|------------------|--------------|-------------|
| | Case Size(in mm) | | |
| 20-30 | 35 φ ×55 L | 35 φ ×55 L | 35 φ ×56 L |
| 40-60 | 35 φ ×55 L | 35 φ ×55 L | 35 φ ×56 L |
| 50-63 | 35 φ ×55 L | 35 φ ×55 L | 35 φ ×56 L |
| 60-80 | 35 φ ×55 L | 35 φ ×55 L | 40 φ ×75 L |
| 80-100 | 35 φ ×55 L | 35 φ ×75 L | 40 φ ×100 L |
| 100-120 | 35 φ ×55 L | 35 φ ×75 L | 40 φ ×100 L |
| 120-150 | 35 φ ×75 L | 40 φ ×75 L | 40 φ ×100 L |
| 150-200 | 35 φ ×75 L | 40 φ ×100 L | 45 φ ×100 L |
| 200-250 | 35 φ ×75 L | 40 φ ×100 L | ----- |
| 280-350 | 40 φ ×75 L | 45 φ ×100 L | ----- |
| 360-430 | 40 φ ×75 L | ----- | ----- |
| 450-520 | 40 φ ×75 L | ----- | ----- |
| 530-630 | 45 φ ×75 L | ----- | ----- |
| 640-780 | 45 φ ×75 L | ----- | ----- |
| 780-930 | 45 φ ×100 L | ----- | ----- |

Bakelite Case (Without cap)














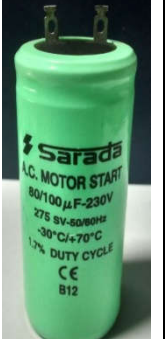


| MFD values for deferent voltage ratings | | | Case Size(in mm) |
|---|---------------------------|----------------------------|------------------|
| 110/125 V AC | 230/250 V AC | 330 V AC | |
| 30/36mfd to 150/200 mfd | 30/36mfd to 90/110 mfd | 30/36 mfd to 50/6 3mfd | 36 φ × 70/86 L |
| 200/250mfd to 430/480 mfd | 110/135mfd to 135/165 mfd | 63/72 mfd to 90/110 mfd | 46 φ × 86 L |
| 530/630 mfd to 780/930 mfd | 165/200mfd to 360/430 mfd | 110/135 mfd to 165/200 mfd | 46 φ × 111L |
| 950/1050 mfd to 1250/1350mfd | 430/500mfd to 520/610 mfd | 200 mfd to 250 mfd | 52 φ × 111 L |



Note:

- 1) All the above types with 'UL' marking capacitors available.
- 2) Capacitors type with wire is available: without connectors or with connectors.
- 3) 3 types' connectors are available: lug type, eyelet type, flag type.
- 4) Single can "U" terminal type (SCUT) are available with resistor / without resistor.

Photos

| SCUT TOP VEIW | SCUTW TOP VEIW | SCUTCW TOP VEIW | SCLT TOP VEIW | SCLTW TOP VEIW | SCLTTD TOP VEIW | SCLTTDW TOP VEIW | SCLTTCW TOP VEIW |
|--|---|---|---|--|---|---|---|
|  |  |  |  |  |  |  |  |
| FRONT VEIW | FRONT VEIW | FRONT VEIW | FRONT VEIW | FRONT VEIW | FRONT VEIW | FRONT VEIW | FRONT VEIW |
|  |  |  |  |  |  |  |  |

| (DC)Double can capacitors: | (BC)Bakelite can capacitors: | 'UL' Mark Capacitor (for Export under multi listed Name) | 'UL' marked capacitors: |
|--|---|--|---|
| TOP VEIW | TOP VEIW | TOP VEIW | TOP VEIW |
|  |  |  |  |
| FRONT VEIW | FRONT VEIW | FRONT VEIW | FRONT VEIW |
|  |  |  |  |

ಬಿ.ಇ.ಪಿ.ಎಲ್. ಸಂಸ್ಥೆಯ ಗುಣಮಟ್ಟದ ನೀತಿ

ಉತ್ತಮ ಗುಣಮಟ್ಟವುಳ್ಳ ಕೃಷಾಸಿಟರ್‌ಗಳನ್ನು ಗ್ರಾಹಕರ ನಿರೀಕ್ಷೆಯ ಅನುಗುಣವಾಗಿ ಉತ್ಪಾದನೆ ಮತ್ತು ತಲುಪಿಸುವ ವಿಲ್ಲಾ ಕಾರ್ಯಗಳೊಂದಿಗೆ ಗುಣಮಟ್ಟ ನಿರ್ವಹಿಸುವ ವಿಧಾನದ ನೈಪುಣ್ಯತೆಯನ್ನು ಉತ್ತಮಗೊಳಿಸುವುದರೊಂದಿಗೆ ನಿರಂತರವಾಗಿ ಮುಂದುವರಿಸುವ ನಿರ್ಧಾರವನ್ನು ಹೊಂದಿರುತ್ತದೆ.

QUALITY POLICY

T.E.P.L IS COMMITTED TO MANUFACTURE AND SUPPLY OF ELECTROLYTIC CAPACITORS THAT MEET CUSTOMER'S EXPECTATIONS AND ACHIEVE EXCELLENCE IN ALL ACTIVITIES AND CONTINUALLY IMPROVE THE PERFORMANCE OF THE QMS.



24.12.2011

G.D. SARDA
CHIEF EXECUTIVE OFFICER

ENVIRONMENTAL POLICY

M/s. TRISHALA ELECTROLYTICS PVT.LTD. is committed to continual improvement in its Environmental performance through:

- Compliance with legislative requirements.
- Prevention of pollution of reduces impact of air, water & soil.
- Conservation of natural resources for sustainable development.
- Substitution of chemicals which are not eco-friendly.
- Education, training and Motivation of personal to carry out their tasks an environmental responsible manner.
- Plantation of trees for ecological balance.

Regular reviews and audit of the Environmental Management System.



24 -12-2013

G.D.SARDA
CHIEF EXECUTIVE OFFICER

Company certifications



BUREAU VERITAS
Certification

TRISHALA ELECTOLYTICS PVT. LTD.

Sarada
Capacitors

A-111, INDUSTRIAL ESTATE, RAJAJINAGAR, BANGALORE - 560 044,
KARNATAKA, INDIA

Bureau Veritas Certification certify that the Management System of the above organization has been audited and found to be in accordance with the requirements of the management system standard detailed below

Standard

ISO 9001:2008

Scope of certification

MANUFACTURE OF:

1. ALUMINIUM ELECTROLYTIC CAPACITORS IN PROFESSIONAL, INDUSTRIAL AND NON-POLAR GRADE FOR UPS, INVERTERS, BATTERY CHARGERS, SMPS, POWER SUPPLIES, HIGH ENERGY DISCHARGE WELDING EQUIPMENT, RAILWAYS AND DEFENCE APPLICATIONS
2. ALUMINIUM ELECTROLYTIC MOTOR START CAPACITORS FOR SINGLE PHASE, NORMAL AND HEAVY DUTY MOTORS, SUBMERSIBLE PUMPS, ELEVATORS AND COMPRESSOR FOR AIR CONDITIONERS, REFRIGERATORS AND AIR COOLERS

Original cycle start date: 05 November 2004
 Expiry date of previous cycle: 04 February 2017
 Recertification Audit date: 01 February 2017
 Recertification cycle start date: 06 February 2017

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on: **14 September 2018**

Certificate No. IND17.3820N/Q Version: 1 Revision date: 06 February 2017

[Signature]

Certification Authority
Ramesh KOREGAVE
Director, CERTIFICATION
South Asia Region



Local office: "Manah Centre" 5th Floor, Krishanlal Marwah Marg, Opp. Ansa Industrial Estate, Off Sakinaka Road, Anandhi Estate, Mumbai - 400 072, India

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization.
To check this certificate validity please call +91 22 6996 9300.



Transparent
Neutral Veritas

CE COMPLIANCE CERTIFICATE

Report No: 160507019101

This is to Certify that the Quality System of

Trishala Electrolytics Pvt. Ltd.

A-111, Industrial Estate, Rajajinagar, Bangalore - 560044,
Karnataka India

Complies with the requirements of EC Directive
For the Product

"ELECTROLYTIC AC MOTOR START CAPACITORS - SARADA BRAND"
"Aluminum Body (Single Can & Double Can) Bakelite Body (With & Without Top Cover),
Voltage Range - 110V AC to 330V AC, Capacitance Range: 20Mfd to 1,350Mfd"

This certificate of compliance is based on the Technical File of the above mentioned product. Technical Report and Documentation are at the Organization's Disposal. This is to certify that the Product is in conformity with all revision of

COUNCIL DIRECTIVE LOW VOLTAGE DIRECTIVE 2006/95/EC, ELECTROMAGNETIC COMPATIBILITY 2004/108/EC
in last amended revision, referred to as the

"COUNCIL DIRECTIVE LVD 2006/95/EC, ELECTROMAGNETIC COMPATIBILITY 2004/108/EC
REGULATIONS APPLIED ACC. TO HARMONIZED STANDARDS IEC / EN 60252-2"

This certificate does not imply assessment of the series-production of the product and does not permit the use of TUV Certification Private Limited's mark of conformity.

| | |
|---------------------------|----------------------------|
| Initial Registration Date | 18 th Apr. 2015 |
| Issue Date | 06 th May. 2016 |
| Valid Until | 05 th May. 2019 |

To check validity of the certificate please
visit www.isoindia.org or call at given numbers

CE

Director
TUV Certification Pvt Ltd.
HO: 537-B/187-B, Amber Vihar, Near Central Bank of India, Keshav Nagar, Sitapur Road, Lucknow- 226020 (UP) India
Ph.: +91-522-2756327-328, +91-9935002382, Fax: +91-522-2759881, email: info@isoindia.org, www.isoindia.org

* Validity of this certificate is subject to continued compliance of the manufacturer and Client against the requirements without any delay. In case of any failure or delay for any reason which may affect the certificate, suspension, withdrawal of this certificate, may be applied by the TUV. Please certification representative inform the issuer of this certificate and the applicable concerned rules and regulatory compliance, respectively. This certificate remains property of TUV Certification Pvt. Ltd. and is not to be re-used.

CERTIFICATE OF COMPLIANCE

| | |
|--------------------|------------------|
| Certificate Number | 20170306-E485436 |
| Report Reference | E485436-20170303 |
| Issue Date | 2017-MARCH-06 |

Issued to: Trishala Electrolytics Pvt Ltd
A-111
Rajajinagar Industrial Estate
Bangalore KA 560044 INDIA

This is to certify that representative samples of COMPONENT - CAPACITORS, ELECTROLYTIC
See Addendum page

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 810, Standard for Capacitors
Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark:  may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.

[Signature]

Ramesh KOREGAVE, Director South American Certification Program



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RoHS COMPLIANCE CERTIFICATE

The certification body, **RICH CERTIFICATIONS** hereby certifies that the Technical documentation of the products, drawn by the applicant, is in compliance with

RoHS Directive 2011 / 65 /EU

| | |
|-----------------------------------|--|
| Certificate No | : 1705243101 |
| Manufacturer | : TRISHALA ELECTROLYTICS PVT.LTD |
| Manufacturer Address | : A-111, Industrial Estate, Rajaji Nagar, Bangalore - 560 044, Karnataka, India. |
| Product | : DC Aluminum Electrolytic Capacitors & Aluminum Electrolytic AC Motor start Capacitors. |
| Initial Certification Date | : 24 th May 2014 First Surveillance Due: 24 th April 2018 |
| Current Certification Date | : 24 th May 2017 |
| Valid until | : 23 rd May 2020 Second Surveillance Due: 24 th April 2019 |

The certificate of compliance is based on the Technical Construction file of the above mentioned products only. The product liability rests with manufacturer or his representative.

To check the validity of the certificate, please visit www.richcertifications.in



Rich Certifications

[Signature]

Authorized Signature



RoHS



ISA

This certificate remains the property of RC to whom it must be return on request. The certificate doesn't provide the certified organization with immunity from legal obligations. I

No 2, B Block First Floor, Prashant Manse Apartments 28, Mainimgalji Street, East Tamburam, Chennai - 600 059
E Mail: info@richcertifications.in, Ph: 72000 99280 / 99405 34751

