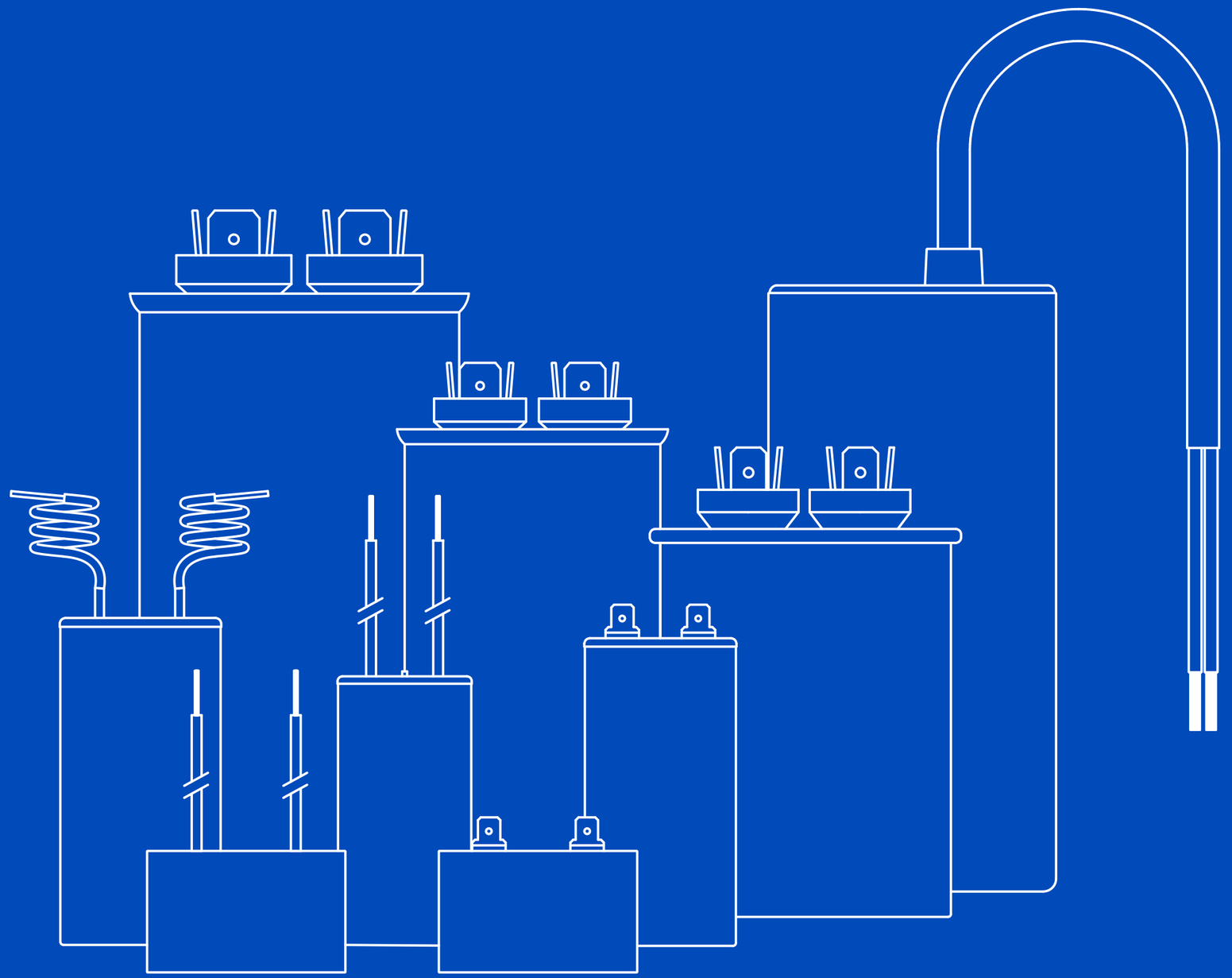
INDTECH®
CAPACITORS
The Reliable Capacitors



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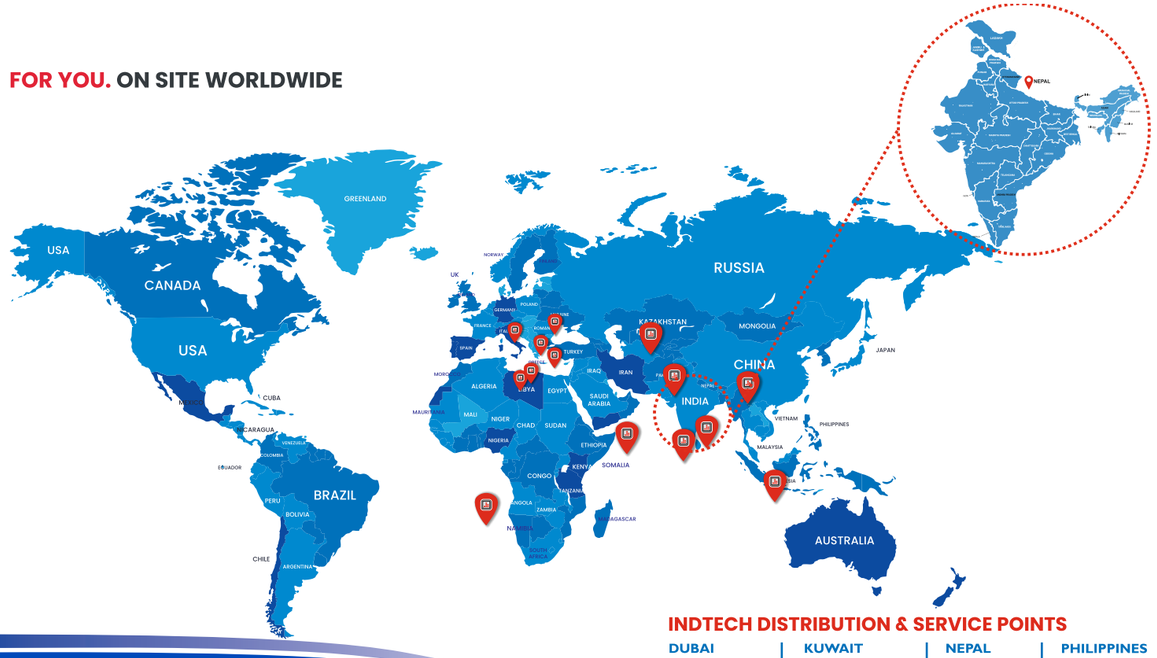
AC Motor Run & Start Capacitors

IS:2993 IS:1709 IS:13340 BIS Certified CE REACH RoHS compliant

FOR YOU. ON SITE WORLDWIDE



INDTECH DISTRIBUTION & SERVICE POINTS

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SAUDI ARABIA	SOUTH AFRICA	MALAYSIA	TURKEY
BAHRAIN	SRI LANKA	SINGAPORE	
QATAR	BANGLADESH	AUSTRALIA	

COMMITMENT TO QUALITY

"INDTECH CAPACITORS PVT. LTD. is committed to provide customers with defect free products through our program of continuous improvement. Quality shall, in every case, take precedence over quality."

COMPANY PROFILE

Indtech Capacitors India founded in 1998, ICI produced high performance capacitors, our factory has been developing to employ a working force of over 500 workers and staff, among which 25 are technicians. It covers area of 7,500 sq.m. Fixed assets have reached Rs. 500 million, Owing special production lines with annual production capacity of more than 18 million capacitors. Capacitors have certificates of RoHS, CE, ISI and factory obtained ISO 9001 international quality system.

Indtech Capacitors India apply world reliable production equipment and technology and has invested large amount of money in importing many sets of automatic metal spray machine, automatic resin dispensing machine and laser marking machine from KOREA and other countries and our special production lines have greatly reduced the labour cost to make our capacitors most competitive, and we always pays close attention to international capacitor industry to keep technology, processing and inspection equipment and advanced.

Quality is the life of Indtech Capacitors India. Quality awareness is deeply rooted in our team and strict management system has been enabled us to win long term thrust from customer, "Quality foremost" runs through all business chains with perfect quality guarantee system and quality evaluation system to make sure all procedure including confirmation of production planning and laboratory test, maintenance and servicing of equipment, warehousing of raw material, as well as delivery of finished goods are under careful and strict monitoring.

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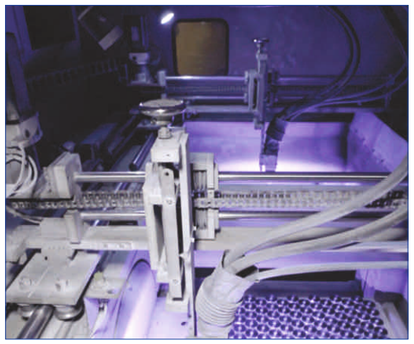
QUALITY POLICY & CERTIFICATES

Create value & Challenge of the future



QUALITY | SERVICE | INNOVATION
RELIABLE | LONG LASTING | VALUE

WIDE RANGE OF MPP FILM & ELECTROLYTIC CAPACITORS

FEATURES OF METALIZED POLYPROPYLENE FILM CAPACITORS

MPP Technology

When it comes to low-voltage power factor correction, MPP Technology (metalized plastic film/polypropylene) has demonstrated that it is currently the most suitable and most economic technology. The thickness of the dielectric differs as a function of voltage rating. The metallization (with zinc and aluminum as its major constituents) and edge enhancement with extra junctions or cross-profile metallization play a significant role in achieving high current handling and stable capacitance at high operating temperatures. Heavy- edged and special film cutting technique (optimized combination of wave and smooth cuts) produces a maximum effective surface for the metal spraying or contacting process (winding design). This results in exceptional surge current capability. The pinching effect on the film edge of the winding – the cause of contact edge problems – is demonstrably eliminated in this way.

Overpressure Sensitive Disconnector (OSD)

Electrical components do not have unlimited useful life; this applies to self-healing capacitors too. As polypropylene-type capacitors seldom produce a pronounced short-circuit, fuses do not offer reliable protection.

All capacitors featured are consequently fitted with a disconnection that responds to over pressure. If numerous electric breakdowns occur at the end of useful life or as the result of thermal or electric overload, the formation of gas produces a fast rise in pressure inside the capacitor case. With cylindrical cases this causes a change in length because of curvature of the lid or stretching of the expansion bead. Expansion beyond a certain degree will separate the internal wires and disconnect from the line. Then the capacitor receives no more energy and the development of gas stops.

To ensure full functionality of an over pressure disconnection,
its elastic elements must not be hindered, i.e.

- Connecting lines must be flexible leads (cables),
- There must be sufficient space for expansion above the connections (stated for the different models),
- Folding beads must not be retained by clamps.

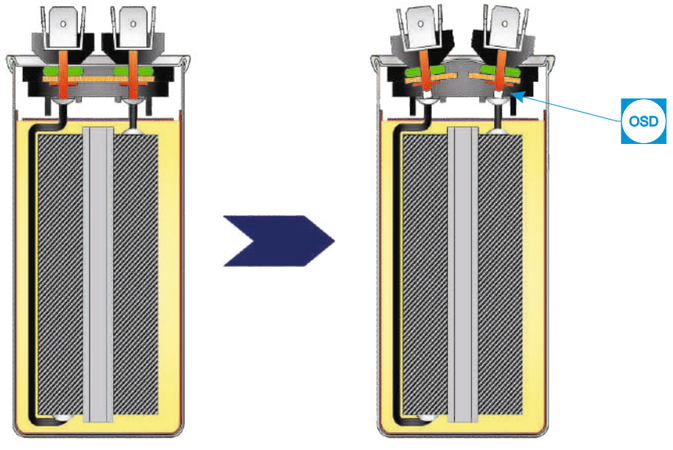


Fig. 1

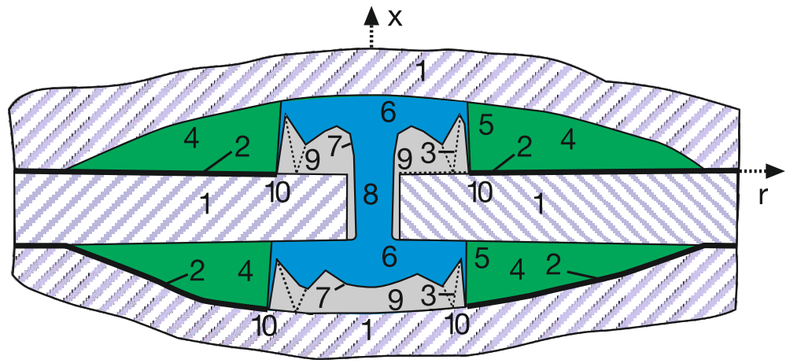
Self Healing

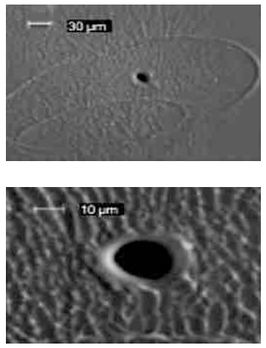
An electric breakdown is possible in the capacitor film due to electric or mechanical over stress. Due to this a small area of metallization will get evaporated and the capacitor will continue to be in service. Continuation of these phenomena will reduce the capacitance value as well as life of the capacitor over a period of time.

Self-healing is a process by which the capacitor restores mitself in the event of a fault in the dielectric which can happen during high overloads, voltage transients, etc.

When insulation break down, a short duration arc is formed. The intense heat generated by this arc causes the metallization in the vicinity of the arc to vaporise.

Simultaneously it re-insulates the electrodes and maintains the operation and integrity of the capacitor.





1. Dielectric
2. Metalized electrodes
3. Material displacing shock wave
4. Air gap with metal vapor
5, 6. Plasma zone
7. Boundary layer between gas phase dielectric and plasma
8. Breakdown channel
9. Gas phase dielectric
10. Zone of displaced metalization and dielectric (isolating region)

Triple safety system

Self-healing technology, over pressure disconnection and polyurethane impregnation technology contribute to reliable and safe PFC capacitor products.

Polyurethane Resin

The active winding elements are heated and then dried for a defined period. In this way air and moisture are extracted from the inner capacitor, and oxidation of the electrodes as well as partial discharges are avoided. Afterwards capacitors are filled with polyurethane hermetically sealed in cases (e.g. aluminum). The elaborate process ensures excellent capacitance stability and long service life.

High Temperature Capability

The low loss of MPP film combined with the superior thermal conducting properties of polyurethane permits operation at temperatures up to 80 °C hot spot temperature.

Metalized Polypropylene Film Capacitor

MOTOR RUN PLASTIC PRESSFIT CAPACITORS - MRP

Range: 0.5 to 120 MFD, Aluminium & Plastic Body Dry Type

Main Features:

Applied voltage: 450V AC, 50/60Hz. Low dissipation factor, small inherent temperature rise. Excellent self-healing stability, safety and high voltage withstand, etc.

Applications:

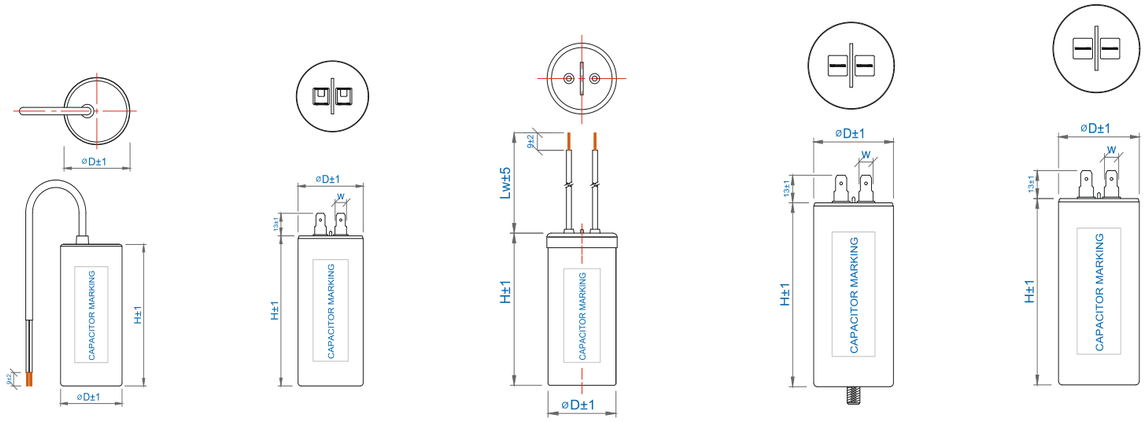
MPP (Metallized Polypropylene) motor run capacitors are widely used in various applications due to their excellent characteristics and reliability, i.e. Water pump, air conditioner, submersible pumps, household electric appliances etc. to start and run single-phase AC electric motors in alternating current usage.

Fig. 2

Technical Specification

Capacitance Range	0.5-120 µF
Rated Voltage Un	220-550V AC
Rated Frequency Hz	50/ 60 Hz
Capacitance Tolerance	±5%
Climatic Category	-45/85/21°C
Dissipation Factor (at 50Hz-60Hz and 20°C)	≤0.0020 (100Hz, 20°C)
Test Voltage between Terminals	2x Un for 2 sec
Test Voltage between Terminal and Case	2x Un + 1000V ac for 2 sec (≥2kV ac)
Reference Standard/Approval	IS 2993:1998/ IEC 60252, CE, RoHS

PRODUCT RANGE_DIMENSIONAL DRAWINGS & TABLE



Rated Capacitance µF	250 V AC			440 V AC/ 450 V AC		
	øD x H (mm) 1	øD x H (mm) 2	øD x H (mm) 3	øD x H (mm) 1	øD x H (mm) 2	øD X H (mm) 3
1	28x46	-	-	28x46	-	-
1.5	28x46	-	-	28x46	-	-
2	28x46	-	-	28x46	-	-
2.5	27x51	28x46	28x54	27x51	28x46	28x54
2.65	27x55	30x55	-	27x55	30x55	-
3	25x46	28x52	30x54	25x46	28x52	30x54
3.15	27x51	28x46	28x54	27x51	28x46	28x54
4	28x52	30x55	35x55	28x52	30x55	35x55
5	35x52	35x72	-	35x52	35x75	-
6	35x52	35x72	-	35x52	35x75	-
7	30x57	35x72	-	30x57	35x75	-
8	30x57	35x72	-	30x57	35x75	-
10	30x57	35x55	35x72	30x57	35x55	35x72
12.5	35x55	35x72	-	35x55	35x75	-
15	35x55	35x72	40x72	35x55	35x75	40x72
20	35x72	40x95	45x95	35x75	40x95	45x95
22.5	40x72	-	-	40x72	-	-
25	35x72	40x95	45x95	35x72	40x95	45x95
30	40x72	40x95	45x95	40x72	40x95	45x95
36	35x95/ 40x95	45x95	45x120	45x95	45x120	50x95
40	35x95/ 40x95	45x95	45x120	40x94	45x95	45x120
45	40x95	45x95	45x120	45x95	50x118	-
50	40x95	45x95	50x120	45x95	50x95	50x120
60	40x95	45x95	50x120	45x95	50x95	-
72	45x95	55x95	55x125	50x95	55x95	55x125
80	50x95	-	-	50x95	-	-
86	50x95	-	-	50x95	-	-
90	55x95	55x125	-	55x95	55x125	-
100	55x95	55x125	-	55x95	55x125	-

Metalized Polypropylene Film Capacitor

SINGLE/DUAL MOTOR RUN

Burst Proof Seamed Capacitors - (MBS & DBS)

Main Features:

Burst proof series P2 Type, Low dissipation factor, small inherent temperature rise. Excellent self-healing stability, safety and high voltage withstand, Safe tip plated terminals, Non PCB encapsulation etc.

Applications:

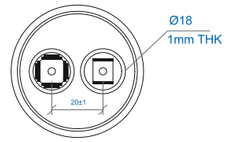
Run starting in household electric appliances air conditioners, Furnaces, compressors, refrigerator which demand 50/60 Hz AC power supply have safe protection construction.

Fig. 3

Climatic Category	Rated Voltage	Testing Voltage T-T	Testing Voltage T-C	Capacitance Tolerance	Dissipation Factor
-25/+85/21 -40/+85/21	• 450V AC	2x Rated Voltage for 2 sec	• ≥2000V AC for 2 sec	• ±5%	• ≤ 0.002 (100Hz)

Capacitance Range	Dimension (mm)		• Reference Standard	Certification	• Filling Compound	• Safety • Grade
	Dia, Ø	• Height				
1.0 MFD - 100.0 MFD	Ø40 - Ø63	55- 130	IS 2993 : 1998 EN60252-1	BIS, CE, RoHS	Polyurethane Gel Resin	• P2/S2

PRODUCT RANGE & DIMENSIONAL DRAWINGS & TABLE



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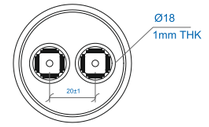

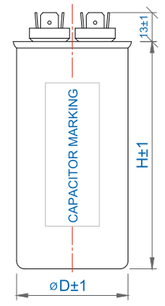

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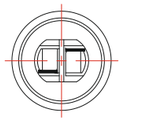

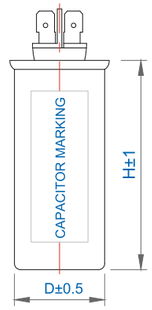

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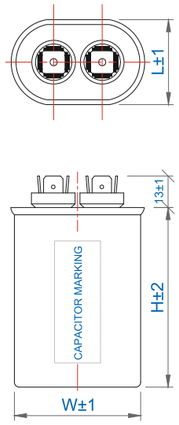


Dwg.4

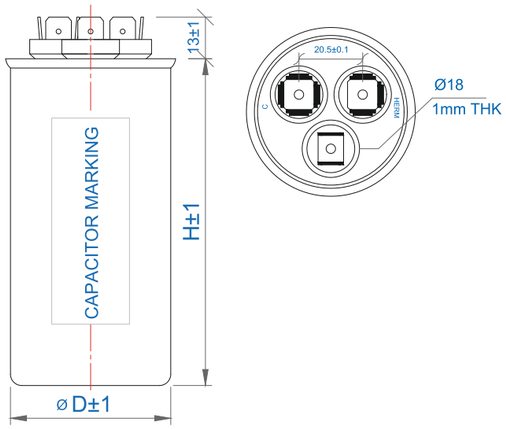
CAPACITOR DIMENSIONS

Rated capacitance µF	2+4 Fast-on Pin øD x H (mm) Dwg.1	4+4 Fast-on Pin øD x H (mm) Dwg.2	Double Fast-on Pin øD x H (mm) Dwg.3	2+4/ 4+4 Fast-on Pin L x W x H (mm) Dwg.4
3	40x72	40x72	30x72	31x51x55
5	40x72	40x72	30x72	31x51x55
6	40x72	40x72	30x72	31x51x55
7.5	40x72	40x72	35x72	31x51x75
10	40x72	40x72	35x72	31x51x75
12	40x72	40x72	35x72	31x51x75
12.5	40x72	40x72	35x72	31x51x75
15	40x72	40x72	35x72	31x51x75
20	40x72	40x72	40x72	-
25	40x72	40x72	40x72	-
30	40x72/ 45x102	40x72/ 45x102	40x72	-
35	45x102	45x102	-	-
36	45x102	45x102	-	-
40	45x102	45x102	-	-
45	45x102	45x102	-	-
50	45x102/ 50x102	45x102/ 50x102	-	-
55	50x102	50x102	-	-
60	50x102	50x102	-	-
65	50x120	50x120	-	-
75	50x120/ 55x120	50x120/ 55x120	-	-
80	55x120	55x120	-	-

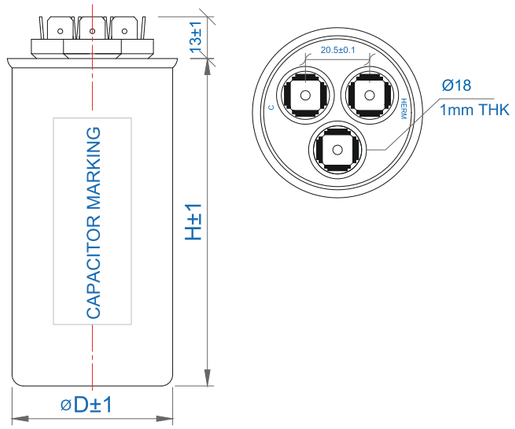
Metalized Polypropylene Film Capacitor

DUAL MOTOR RUN

Burst Proof Seamed Capacitors - (DBS)



Dwg.1



Dwg.2

Fig. 4

Capacitance Range	Dimension (mm)		Reference Standard	Certification	Filling Compound	Safety Grade
	Dia, ø	Height				
25+2MFD - 80+6MFD	ø40 - ø60	72 - 130	IEC 252, EN60252-1	CE, RoHS	Gel Resin Filled	P2 or S2

DIMENSIONAL : TABLE

Rated capacitance uF	2 + 4 + 4 METAL TOP (450V AC) Dwg.1		4 + 4 + 4 METAL TOP (450V AC)Dwg.2	
	øD x H (mm) 1	øD x H (mm) 2	øD x H (mm) 1	øD x H (mm) 2
25+2	45x102	50x102	45x102	50x102
25+4	45x102	50x102	45x102	50x102
25+5	45x102	50x102	45x102	50x102
25+6	45x102	50x102	45x102	50x102
30+2	45x102	50x102	45x102	50x102
30+2.5	45x102	50x102	45x102	50x102
30+4	45x102	50x102	45x102	50x102
30+5	45x102	50x102	45x102	50x102
30+6	45x102	50x102	45x102	50x102
35+2	45x102	50X102	45X102	50x102
35+4	45x102	50X102	45x102	50x102
35+5	45x102	50X102	45x102	50x102
35+6	45x102	50X102	45x102	50x102
36+2	45x102	50X102	45x102	50x102
36+2.5	45x102	50X102	45x102	50x102
36+4	45x102	50X102	45x102	50x102
36+5	45x102	50X102	45x102	50x102
36+6	45x102	50X102	45x102	50x102
40+2	45x102	50X102	45x102	50x102
40+2.5	45x102	50X102	45x102	50x102
40+4	45x102	50X102	45x102	50x102
40+5	45x102	50X102	45x102	50x102
40+6	45x102	50X102	45x102	50X102
45+2	45x102	50X102	45x102	50x102
45+2.5	45x102	50X102	45x102	50x102
45+4	45x102	50X102	45x102	50x102
45+5	45x102	50X102	45x102	50x102
45+6	45X102	50X102	45X102	50x102
50+2	50X102	50X120	50x102	50x120
50+2.5	50x102	50x120	50x102	50x120
50+4	50x102	50x120	50x102	50x120
50+5	50x102	50x120	50x102	50x120
50+6	50x102	50x120	50x102	50x120
54+4	50x102	50x120	50x102	50x120
55+2	50x120	-	50x120	-
55+2.5	50x120	-	50x120	-
55+4	50x120	-	50x120	-
55+5	50x120	-	50x120	-
55+6	50x120	-	50x120	-
55+7.5 to 55+10	50x120	-	50x120	-
60+2 to 60+10	50x120	-	50x120	-
65+5	50x120	-	50x120	-

Metalized Polypropylene Film Capacitor

FAN APPLICATION SERIES (OIL-FILLED & DRY TYPE)

ALUMINIUM & PLASTIC BODY

Main Features:

Low dissipation factor, small inherent temperature rise. Excellent self-healing stability, safety and high voltage withstand, etc.

Applications:

To start and run single phase motors in alternating current usage. i.e Ceiling & Table Fans, Pedestal & Wall Fans, Industrial Fans, Exhaust Fans & Air Coolers.

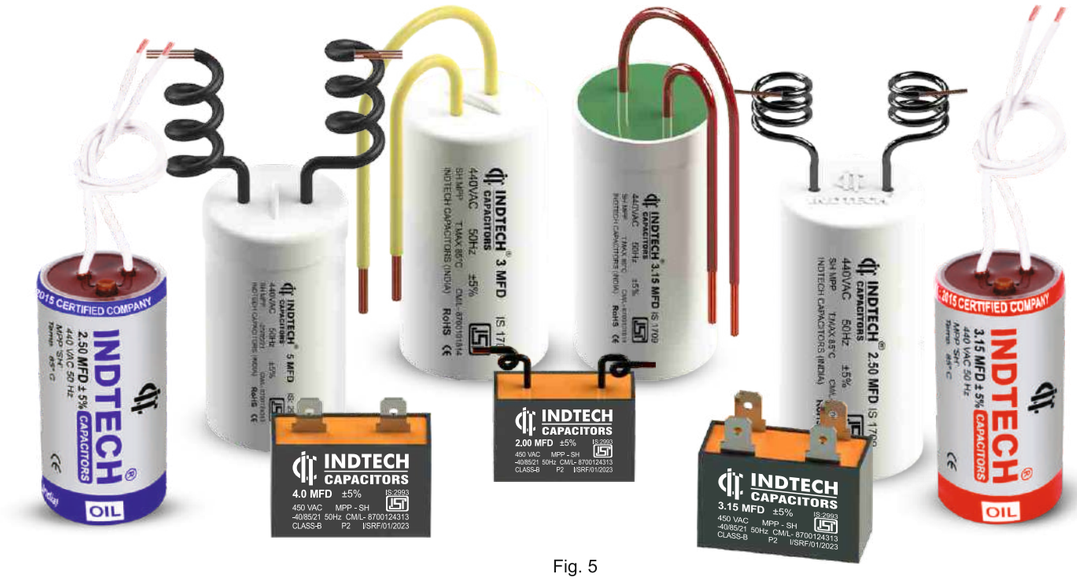
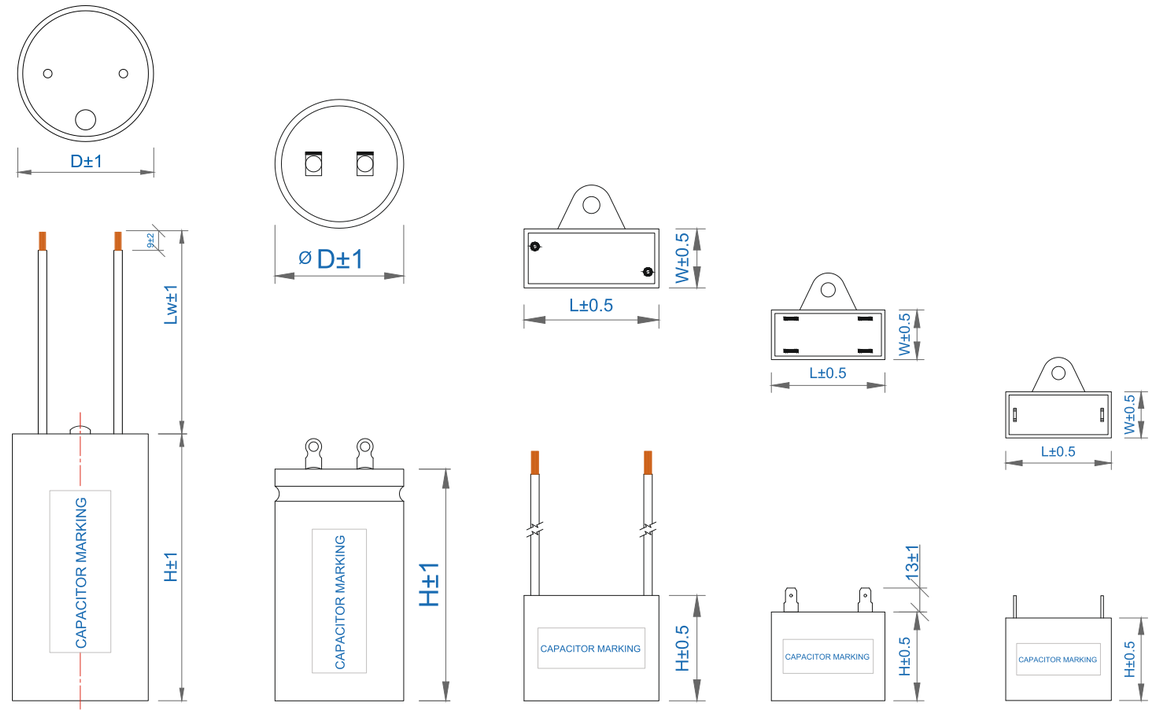


Fig. 5

Technical Specifications:

» Capacitance range: 1.0 MFD ~ 4.0 MFD
» Rated Voltage: 250 ~ 450V AC
» Rated Frequency: 50-60Hz
» Capacitance tolerance: ±5%
» Dissipation factor: ≤0.0020 (100Hz)
» Terminals: PVC Insulated lead free Multistrand copper wire & Single/Double Fast on-Pin Type Terminals
» Dielectric: Metallized Polypropylene Film
» Operating Temperature: T.MAX 85°C / -25 +85°C
» Standards & Approvals: IS 1709 : 1984, CE Certified, RoHS

PRODUCT RANGE, DIMENSIONAL DRAWINGS & TABLE



Rated Value (µF)	ØDxH (mm) AL Body	ØDxH (mm) Plastic Body	L x W x H (mm) Plastic Epoxy top	Termination	Construction
1.00 MFD	27x46	28x46/52	32x15x25	Wire/ Pin	Oil Filled / Dry
1.50 MFD	27x46	28x46/52	32x15x25	Wire/ Pin	Oil Filled / Dry
1.70 MFD	27x46	28x46/52	32x15x25	Wire/ Pin	Oil Filled / Dry
1.75 MFD	27x46	28x46/52	32x15x25	Wire/ Pin	Oil Filled / Dry
1.80 MFD	27x51	28x46/52	32x15x25	Wire/ Pin	Oil Filled / Dry
1.85 MFD	27x51	28x46/52	32x15x25	Wire/ Pin	Oil Filled / Dry
2.00 MFD	27x51	28x46/52	32x15x25	Wire/ Pin	Oil Filled / Dry
2.25 MFD	27x51	28/30x52	32x14x25	Wire/ Pin	Oil Filled / Dry
2.50 MFD	27x51	28/30x52	32x14x25	Wire/ Pin	Oil Filled / Dry
3.15 MFD	27x51	28/30x52	38x18x25	Wire/ Pin	Oil Filled / Dry
3.50 MFD	27/30x51	28/30x52	38x18x25	Wire/ Pin	Oil Filled / Dry
4.00 MFD	27/30x51	28/30x52	38x18x25	Wire/Pin	Oil Filled / Dry

*Oil filled construction available in Aluminium body only, Capacitor size can be customized to customer requirements.

Metalized Polypropylene Film Capacitor

DUAL CAPACITORS WASHING MACHINE

Aluminium & Plastic Body

Main Features:

Low dissipation factor, small inherent temperature rise. Excellent self-healing stability, safety and Low voltage withstand, etc.

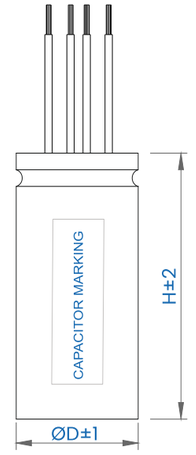
Applications :

Cylindrical capacitors that are Plastic or Aluminium cased with PVC wire as terminals, filled with resin (resin sealed configurations) or press fit with moulded plastic. These are popular in semi-automatic washing machines.

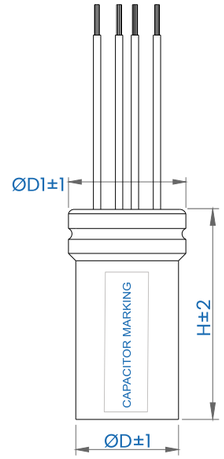
Fig. 6

Capacitance Range	5.3+2.1 to 12+6 µF
Rated Voltage µn	450V AC
Rated Frequency Hz	50Hz
Capacitance Tolerance	±5%
Climatic Category	-25 to 85°C
Dissipation Factor (at 50Hz-60Hz and 20°C)	≤0.002 (100Hz, 20°C)
Test Voltage between Terminals	2x µn for 2 sec
Test Voltage between Terminal and Case	2x µn + 1000V AC for 2 sec (≥2kV AC) Metal type container only.
Reference Standard	IS 2993:1998, IEC252

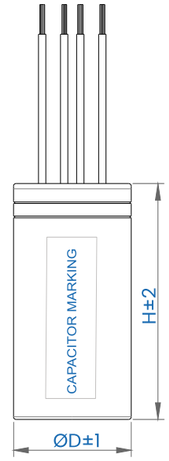
DIMENSIONAL DRAWINGS & TABLE



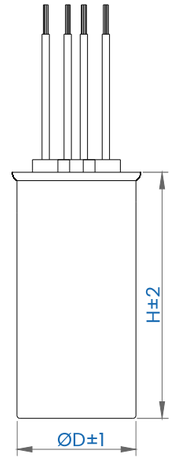
Dwg-1
PP Dry Type



Dwg-2
PP Dry Type



Dwg-3
AL Epoxy Top



Dwg-4
AL Burst Proof

Rated Capacitance Cn (Mfd)	ØD x H Dwg-1	ØD/ØD1 x H Dwg-2	ØD x H Dwg-3	ØD X H Dwg-4
5.3+2.1	40x80	35/40x60	40x80	40x72
6+6	40x80	35/40x60	40x80	40x72
7+3.5	40x80	35/40x60	40x80	40x72
7.3+2.1	40x80	35/40x60	40x80	40x72
8+4	40x80	35/40x60	40x80	40x72
8+5	40x80	35/40x60	40x80	40x72
8+6	40x80	35/40x60	40x80	40x72
9+4	40x80	35/40x60	40x80	40x72
9+4.5	40x80	35/40x60	40x110	40x72
9+5	40x80	35/40x60	40x110	40x72
9+6	40x80	35/40x60	40x110	40x72
9.5+4	40x80	35/40x60	40x110	40x72
10+4	40x80	35/40x60	40x110	40x72
10+5	40x80	35/40x60	40x110	40x72
10+6	40x80	35/40x60	40x110	40x72
11+4	40x80	35/40x60	40x110	40x72
11+4.5	40x80	35/40x60	40x110	40x72
11+5	40x80	35/40x60	40x110	40x72
11+6	40x80	35/40x60	40x110	40x72
12+4	40x80	35/40x60	40x110	40x102
12+5	40x80	35/40x60	40x110	40x102
12+6	40x80	35/40x60	40x110	40x102

MOTOR START CAPACITORS

Metalized Polypropylene Film & Electrolyte Capacitors

Main Features:

- Round plastic case and Aluminium sealed case with PVC sleeve.
- Voltage from 110V AC to 275V AC.

Applications:

Start Capacitors are used during the motor start-up phase to provide rotating torque and is disconnected once the motor reaches a pre-determined speed.

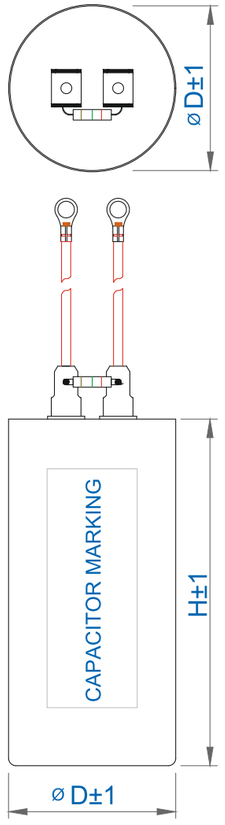
Aluminium Electrolytic and MPP AC Motor Start Capacitors are mainly used for starting single phase AC motor with rated voltage of 110-370VAC & frequency of 50/60 Hz.

Fig. 7

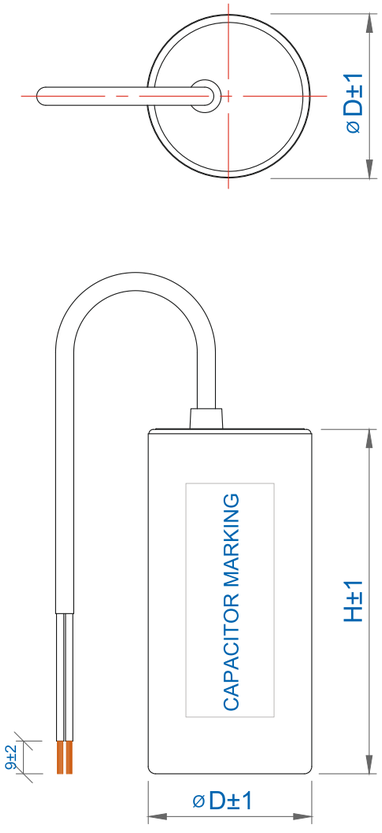
TECHNICAL SPECIFICATIONS

Capacitance Range	40/60 mfd to 200/250 mfd
Rated Voltage µn	230V AC/ 275V AC
Rated Frequency Hz	50Hz
Capacitance Tolerance	±5%
Climatic Category	-25 to 85°C
Dissipation Factor (at 50Hz-60Hz and 20°C)	≤0.002 (100Hz, 20°C)
Test Voltage between Terminals	2x µn for 2 sec
Test Voltage between Terminal and Case	2x µn + 1000V AC for 2 sec (≥2kV AC)
Reference Standard	IS 2993:1998, IEC252

PRODUCT RANGE, DIMENSIONAL DRAWINGS & TABLE



Dwg-1



Dwg-2

Rated capacitance uF	MOTOR START - MPP		MOTOR START - ELECTROLYTE	
	øD x H (mm) 1	Construction	øD x H (mm) 2	Construction
40/60	45x95	PP/AL Dry type	35x61	AL Electro-liquid
60/80	45x95	PP/AL Dry type	35x75	AL Electro-liquid
80/100	45x95	PP/AL Dry type	40x75	AL Electro-liquid
100/120	45x95	PP/AL Dry type	40x75	AL Electro-liquid
120/150	45x95	PP/AL Dry type	40x75	AL Electro-liquid
150/200	50x95	PP/AL Dry type	45x102	AL Electro-liquid
200/250	50x95	PP/AL Dry type	50x100	AL Electro-liquid

Tests for Capacitors as per Indian Standard Specifications

Application	Fans (440 V)	Motors (440 V)	Lighting (250 V)
IS No.	1709-1984	2993-1998	1569-1976
AV HV test between terminals	1.5 x Vn for 10s	2 x Vn for 10s	1.5 x Vn for 10s
Test voltage AC RMS	660V	880V	375V
AC HV test terminals and case	2000V for 1 min	2000V for 1 min	2000V for 1 min
Capacitance	±5%	±5%	±10%
Tan δ max.	0.002	0.002	not specified
Endurance test	1.25 Vn x 500 h	1.25 Vn x 300 to 3000 h as per category	1.25 Vn x 500 h

Note : For tests as per IS:2993, current calculation for 440 V rated capacitors work out as under :

Cn (µF)	Amp. at 880V	Single phase supply current amp at 220 V AC	Load at 400V primary
10	2.8	11.2	6.2
20	5.6	22.4	12.3
30	8.4	34	18.5
36	10.1	40.5	22.5

Guidline Values for capacitor selection for motors

Motor power rating (kW)	Capacitor output selection
up to 3.9	~55% of nominal motor power
4.0 - 4.9	2
5.0 - 5.9	2.5
6.0 - 7.9	3
8.0 - 10.9	4
11.0 - 13.9	5
14.0 - 17.9	6
18.0 - 21.9	7.5
22.0 - 29.9	10
30.0 and above	~35% of nominal motor power

Applications

Motor Run Plastic Pressfit Capacitors - MPP

- Washing Machines
- Water Pump
- Air Conditioner
- Submersible Pumps
- Houshold Electric Appliances, etc.

Dual/ Single Motor Run Burst Proof Seamed Capacitors - (MBS & DBS)

- Run Starting in Household Electric Appliances
- Air Conditioners
- Refrigerator

Fan Applications Series (Oil & Dry type)

- To Start & run single phase motors in AC current usage

Dual Capacitors Washing Machine

- Widely used in washing machines

Motor Start Capacitors

- AC Motor 50/60Hz
- Refrigerator Compressors
- All types of AC single-phase Motor.

Our Brochures:
Power Capacitors & Key Components for "Reactive Power Compensation" are available for energy cost reducing & safe electronic drive applications.

Our Other Products:
- DC-Link & Snubber Capacitors
- PFC Capacitors
- Reactive Power Controller
- Filter Circuit Reactors
- Capacitor Duty Contactors
- Thyristor Module