THREE PHASE SUBMERSIBLE PUMP STARTERS

BCH ELECTRIC LIMITED
Submersible Pump Starters

BCH Submersible Pump Starters.

BCH make Submersible Pump Motor Starter Panels provide complete solution for the operation & protection requirements of Submersible Pump Motors. These are extremely compact in size and elegant in looks.

Panel are available in two models,

a) ECONOMY
b) PREMIUM (Having provision for short circuit protection)

Features

• Heavy duty 4 pole NHD Contactor with moulded coil
• Direct on line : upto 24 A relay rating
• Star Delta: upto 135 A relay rating
• Wide band operating coil
• Protections: Phase failure, Phase imbalance, Phase reversal
• Short Circuit Protection through MCB (In Premium models)
• Ammeter and Voltmeter
• Voltmeter with phase selector switch
• On/Off and Trip indications

<table>
<thead>
<tr>
<th>TECHNICAL DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference Standard</td>
</tr>
<tr>
<td>Operating Voltage</td>
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<tr>
<td>Insulation Voltage</td>
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<tr>
<td>AC3 Current Rating</td>
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<tr>
<td>Enclosure Category</td>
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<tr>
<td>On Time Delay</td>
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</tbody>
</table>

Note:
- The material of Fuse wire should be electrolytic tough pitched (ETP) copper (tinned).
**Contactor:**

The contactors used in starters are NHD and Citation. This contactors confirms to IEC 60947-4-1 and have many distinctive features such as:

- High grade moulding which reduces tracking and prolong operational life.
- Precision ground magnet frame and armature surfaces ensure consistent quiet operation.
- Exposed metals are treated for corrosion resistance.
- Low bounce and weld resistant contacts of silver cadmium oxide.
- Contactors can be inspected and maintained without disturbing adjacent wiring or altering contactor mounting positions.
- Coil is totally encapsulated in resin resisting moisture, corrosive atmosphere and damage while handling.
- Mechanical interlocking is provided between Star and Delta Contactors in case of Starter ratings 40HP and above.

**Electronic Agro Timer:**

Solid state Star to Delta change over timer is used with the range of 1 - 100 seconds, It is suitable for operation at low voltage as well.

It resets fast and the timing is not affected by variation in Ambient temperature and voltage.

**Overload Relay :**

**Overload Protection:** The relay fitted in the starter protects the motor from operational overload as per relevant standards established for the protection of motors. The range of current setting on any relay is between 100% to 160% of its minimum setting.

**Single Phasing Protection :** The relay offers protection against single phasing through its sensitive differential mechanism in excess of the requirements of specification IEC 60947-4-1 and trips when it carries in healthy phases 0.9 times the minimum current setting, regardless of the value to which the current adjustment lever is set. Full protection is provided on single phasing under varying operational loads up to 50% of the full load rating of the motor. No protection is required below this value.

**Protection against unbalanced voltage :** The relay allows minor imbalance in voltage conditions in the three phases within the limits motors are designed to withstand. Beyond these limits, the relay trips and protects the motor

- Excellent temperature compensation between -10°C and +80°C (+55°C max. ambient).
- Facility for selection of either manual or automatic resetting of the trip switch.
- Snap-on cover to prevent inadvertent alteration to the setting of current adjustment or to the manual/auto lever.
- Test facility for tripping relay manually for checking of the circuit and wiring.

**Auto Unit :**

The auto unit in BCH submersible panel primarily detects the presence or absence of all three phase. It has ON time delay of 5-10 Seconds. It activates an electro mechanical switch to stop the motor when:

a. Any of the phase are missing
b. Phase imbalance is present
c. Phase sequence is not proper

It has inbuilt single phase protection feature as well
Spare Parts:

### Spare Parts for Citation SPS DOL & Star Delta Starters

1. Contact kit for NHD '00' Contactor (16A) : SP90A1
2. Contact kit for NHD '0' Contactor (25A) : SP90B1
3. Contact kit for NHD '01' Contactor (32A) : SP90D1
4. Contact kit for NHD '1' Contactor (40A) : SP90C1
5. Magnet coil (260 - 400V) for (16A & NN0N 25A) : SP90MCG
6. Magnet coil (380 - 415V) FOR (16A & 25A) : SP90MCN
7. Magnet coil (230 - 360V) : SP90MCNV
9. 3 Position Auto - Manual selector switch : CPAMS-3P
11. Overload Relay : MC305ANA3#
12. Ammeter (0-10....60A), size 72 X 72 CLASS 2.5 : CPAM10
13. Ammeter (0-15....90A), size 72 X 72 CLASS 2.5 : CPAM15
14. Ammeter (0-25....150A), size 72 X 72 CLASS 2.5 : CPAM25
15. Voltmeter (0-500V), size 72 X 72 CLASS 2.5 : CPVM500
16. Voltmeter selector switch : CPVSS
17. Single Phase Preventer (auto switch) for starter cat code CPEYA** & CPPYNA**
   - SPP 380 - 415V with 5-10 second ON delay : NCPYAUZ-5S
   - SPP 380 - 415V with 5 minute ON delay : NCPYAUZ-5M
   - SPP 230 - 400V with 5-10 second ON delay : NCPYAUZ-5S
   - SPP 230 - 400V with 5 minute ON delay : NCPYAUZ-5M
18. Single Phase Preventer (auto switch) for starter cat code CPEANA** & CPPANA**
   - SPP 380 - 415V with 5-10 second ON delay : NCPAUN-5S
   - SPP 380 - 415V with 5 minute ON delay : NCPAUN-5M
   - SPP 230 - 400V with 5-10 second ON delay : NCPAUN-5S
   - SPP 230 - 400V with 5 minute ON delay : NCPAUN-5M
19. 3 way 40A terminal block : CPTB340

### Spare Parts for Citation SPS Star Delta Starters

- Ammeter (0-50....300A), size 72 X 72 CLASS 2.5 : CPAM50
- Auxiliary contact block 1NO + 1 NC : 001CB11
- Auxiliary contact block 2NO : 001CB20
- Auxiliary contact block 2NC : 001CB02
- Star to Delta Change over Timer : SPSATG
- 3 way 60A terminal block : CPTB360
- 6 way 60A terminal block : CPTB660
- 6 way 40A terminal block : CPTB640
## Citation Submersible DOL Motor Starter Panels:

<table>
<thead>
<tr>
<th>Sl. No.</th>
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<th>Cat code of SPS with SPP (2 Position switch Auto/Manual switch ) Economy &amp; Premium Models</th>
<th>Cat code of SPS without SPP Economy Model</th>
<th>Relay range (A)</th>
<th>Ammeter range (Suppressed scale) (A)</th>
<th>MCB Rating (‘C’ Type ) for Premium Model (A)</th>
<th>Max. Back up HRC fuse rating (A)</th>
<th>Fuse wire Size**</th>
<th>Recommended Cable size in Sq. mm</th>
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<tbody>
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</table>

Note:

a) In cat code ‘*’ is to be replaced with
1. G for control voltage 260-400V (Only for 16A NN0N 25A )
2. N for control voltage 380-415V
3. LV for control voltage 230-360V (Only for 16A NN0N 25A )

b) ‘**’—the material fuse wire should be electrolytic tough pitched (ETP) copper tinned.

‘#’ 7th alphabet in spare list Relay cat code it denotes relay range.

## Citation Submersible-Star Delta Motor Starters:

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<thead>
<tr>
<th>Sl. No.</th>
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</tr>
</tbody>
</table>
Submersible Pump Starters

OVERALL DIMENSIONS

ECONOMY VERSION

PREMIUM VERSION
Submersible Pump Starters

PREMIUM VERSION
WITH 3 POSITION SELECTOR SWITCH

ECONOMY VERSION
WITH 2 POSITION AUTO/MANUAL SWITCH
ECONOMY VERSION
WITH 3 POSITION AUTO/MANUAL SWITCH
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Nagpur
Surat
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Gurgaon
Kota
Rajkot
Warangal

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