



Largest range.....  
Efficient design.....



Initial cost of Motor

Running cost of Motor

Think long term...  
use BCH IE2/IE3 motors...



BCH ELECTRIC LIMITED



## Range & Features

- **Widest** range, largest in the industry
- **Complete** Range: 0.55 HP to 425 HP
- **Robust** design - **IE2/IE3** versions
- Dynamically balanced rotors
- Corrosion-resistant stator frames and end-bracket hardware
- High efficient stator laminations with superior low loss **CRNGO** steel
- **Inverter Ready\*** standard motors with unique **Dual Coat** copper winding wire
- Designed for 50° C ambient temperature for the entire range.
- Fully tropicalised design for Indian conditions.
- V / F / VF Variation  $\pm 10\%$  / 5% / 10%.
- Class **F** insulation
- Temperature rise restricted to class **B** limit
- Stainless steel rating plate
- **Six terminal** Terminal box across the range
- Various mounting possibilities

- Motor feet **Integral** to stator housing
- Superior aesthetics - RAL-5014 paint shade as standard
- ISI marking
- Manufactured in quality assurance system compliant with ISO 9001
- Customised motor design capability
- Compatible A.C. Drive & Soft Starter range
- Complete range of electromagnetic starters & MCC
  - A single source solution
- Nationwide sales & service network.

### Special Purpose Motors

- Crane duty & Hoist application motors (S2to S7 Duty)
- Brake Motors
- Dual Speed Motors
- Cooling Tower Motors (upto 45 kw upto 12 Poles)
- Inverter Duty Motors
- Motor with Higher poles
- Low Vibration Motors
- Ginning Motors

\* Consult nearest branch office for suitability to specific applications

## Description

### Specification of Catalogue Versions

Description	
Supply voltage	: 415 Volts $\pm 10\%$ , 3 Phase, A. C.
Frequency	: 50 Hz $\pm 5\%$
Combined voltage & frequency variations (absolute sum)	: $\pm 10\%$
Ambient temperature	: 50° C
Altitude	: Up to 1000 meters above MSL
Relative humidity	: Up to 100%
Insulation class	: F
Winding temperature rise	: Designed to operate within class B limit
Duty	: Continuous (S1)
Protection class	: IP 55
Method of cooling	: IC0411 (Standard motors) / IC0416 (Forced cooling)
Motor feet	: Integral to motor housing
Terminal box position	: At Top towards drive end
Shaft Extension	: Single Cylindrical at drive end
Paint shade	: RAL-5014



Complete Product Range

Cast Iron (CI) stator housing:

63-355 frame

Pressure Die Cast Aluminum stator housing : (On Request)

63-132 frame

**BCH IE SERIES :** (As Per IS : 12615-2011, IEC-60034-30 2008)

**IE2/IE3**

Low Voltage 3 Phase TEFC Squirrel Cage Induction Motor

Motors

IE2- Frame Size: 71 to 355 - Rating: 0.37 KW to 315 KW - Pole: 2, 4, & 6

IE3- Frame Size: 71 to 355- Rating: 0.37 KW to 315 KW - Pole: 2,4, & 6

**Bearing arrangement**

Frames up to 180L have sealed bearing which are lubricated for life. Frames 200 & above have re-greasing arrangement as a standard feature

Frame Size	Driving End	Non - Driving End	Regreasing Time (Hrs.)	
			2 pole	4, 6, 8 pole
63	6201ZZ	6201ZZ	-	-
71	6202ZZ	6202ZZ	-	-
80	6204ZZ	6204ZZ	-	-
90S/L	6305ZZ	6205ZZ	-	-
100L	6206ZZ	6206ZZ	-	-
112M	6206ZZ	6206ZZ	-	-
132S/M	6208ZZ	6208ZZ	-	-
160M/L	6309ZZ	6209ZZ	-	-
180M/L	6310ZZ	6210ZZ	-	-
200L	6312	6312	3,500	8,000
225S/M	6313	6313	3,500	8,000
250M	6315	6315	2,500	6,000
280S/M	6317	6317	2,000	5,000
315S/M/L	6319	6319	2,000	4,000

**Terminal Box Data**

Frame Size	Cable Entry Size	Max. Cable Size DOL starting	Max. Cable Size Star-Delta starting	Terminal Stud Size
63-90	1 x 3/4" BSC	3C x 4.00mm <sup>2</sup>	-	M4
100-132	2 x 1" BSC	3C x 10.00mm <sup>2</sup>	2 x 3C x 10.00mm <sup>2</sup>	M5
160-180	2 x 1" BSC	3C x 35.00mm <sup>2</sup>	2 x 3C x 25.00mm <sup>2</sup>	M6
200	2 x 2" BSC	3C x 120.00mm <sup>2</sup>	2 x 3C x 70.00mm <sup>2</sup>	M8
225-250	2 x 2" BSC	3C x 120.00mm <sup>2</sup>	2 x 3C x 70.00mm <sup>2</sup>	M8
280-315	2 x 2 1/2" BSC	3C x 240.00mm <sup>2</sup>	2 x 3C x 150.00mm <sup>2</sup>	M12
355	2 x 3" BSC	3C x 400.00mm <sup>2</sup>	2 x 3C x 300.00mm <sup>2</sup>	M16

Equivalent metric & Pg threadings can also be provided on request



Electrical Performance

IE2 MOTOR

2 Pole

BCH IE2 induction motors suitable for 415 ± 10%, 50 Hz ± 5%, combined ± 10%, 3 phase supply, ambient temperature 50° C, TEFC, Class 'F' insulation, IP-55 protection, continuous rated (S1 duty) with bare shaft & key as per IS:12615-2011 / IEC:60034-1

2 Pole, 3000 RPM, IE2

Rated Output		Motor Type	Frame Size	Rated Speed (rpm)	Rated Current (A)	Rated Torque (kg-m)	Efficiency %			Power factor %			Ist/ In	Tst/ Tn	Tpo/ Tn	GD <sup>2</sup> (kgm <sup>2</sup> )	Wt. (kg)
KW	HP						FL	3/4L	1/2FL	FL	3/4L	1/2FL					
0.37	0.50	EC2-270-0202M	71	2810	0.9	0.13	72.2	72.2	70.0	0.79	0.75	0.70	5.0	2.2	2.6	0.0010	8
0.55	0.75	EC2-273-0202M	71	2840	1.3	0.19	74.8	74.8	71.0	0.79	0.75	0.70	5.5	2.3	2.7	0.0014	9
0.75	1.0	EC2-280-0202M	80	2860	1.7	0.26	77.4	77.4	75.0	0.79	0.76	0.72	6.5	2.3	2.7	0.0038	13
1.1	1.5	EC2-283-0202M	80	2860	2.4	0.37	79.6	79.6	76.0	0.80	0.77	0.73	6.5	2.3	2.7	0.0056	15
1.5	2.0	EC2-290-0202M	90S	2880	3.2	0.51	81.3	81.3	77.0	0.80	0.77	0.73	6.5	2.4	2.8	0.0072	19
2.2	3.0	EC2-296-0202M	90L	2890	4.5	0.74	83.2	83.2	80.0	0.82	0.78	0.74	7.0	2.4	2.8	0.0093	22
3.7	5.0	EC2-306-0202M	100L	2900	7.2	1.24	85.5	85.5	82.0	0.84	0.81	0.77	7.0	2.4	2.8	0.0130	30
5.5	7.5	EC2-313-0202M	112M	2905	10.0	1.84	87.0	87.0	84.0	0.88	0.85	0.80	7.0	2.3	2.7	0.0530	58
7.5	10.0	EC2-330-0202M	132S	2925	13.3	2.50	88.1	88.1	85.0	0.89	0.86	0.82	7.0	2.2	2.5	0.0583	58
9.3	12.5	EC2-362-0202M	160M	2930	16.6	3.09	88.8	88.8	85.5	0.88	0.85	0.80	7.0	2.3	2.8	0.1301	103
11.0	15.0	EC2-363-0202M	160M	2935	19.5	3.65	89.4	89.4	86.0	0.88	0.85	0.80	7.0	2.3	2.8	0.1301	103
15.0	20.0	EC2-364-0202M	160M	2940	26.3	4.97	90.3	90.3	86.5	0.88	0.85	0.80	7.0	2.3	2.8	0.1705	120
18.5	25.0	EC2-366-0202M	160L	2940	32.0	6.13	90.9	90.9	87.0	0.88	0.85	0.80	7.0	2.3	2.7	0.1974	125
22.0	30.0	EC2-383-0202M	180M	2945	38.0	7.28	91.3	91.3	88.0	0.89	0.85	0.80	7.0	2.3	2.7	0.3790	163
30.0	40.0	EC2-406-0202M	200L	2955	51.0	9.89	92.0	92.0	89.0	0.89	0.86	0.81	7.0	2.3	2.7	0.5257	246
37.0	50.0	EC2-407-0202M	200L	2960	62.8	12.18	92.5	92.5	89.5	0.89	0.86	0.81	7.0	2.3	2.7	0.5257	248
45.0	60.0	EC2-423-0202M	225M	2960	76.0	14.81	92.9	92.9	90.0	0.89	0.86	0.81	7.0	2.3	2.7	0.9218	376
55.0	75.0	EC2-453-0202M	250M	2965	91.0	18.07	93.2	93.2	90.5	0.90	0.87	0.83	7.0	2.3	2.7	1.0690	369
75.0	100.0	EC2-480-0202M	280S	2975	124.0	24.55	93.8	93.8	91.0	0.90	0.87	0.83	7.0	2.3	2.7	2.9368	570
90.0	120.0	EC2-483-0202M	280M	2975	148.0	29.47	94.1	94.1	91.5	0.90	0.87	0.83	7.0	2.3	2.6	3.3886	592
110.0	150.0	EC2-510-0202M	315S	2980	180.0	35.95	94.3	94.3	91.8	0.90	0.87	0.83	7.0	2.2	2.6	3.9194	750
125.0	170.0	EC2-514-0202M	315M	2980	204.0	40.86	94.6	94.5	92.0	0.90	0.87	0.83	7.0	2.2	2.6	4.6393	780
132.0	180.0	EC2-513-0202M	315M	2980	216.0	43.14	94.6	94.6	92.0	0.90	0.87	0.83	7.0	2.2	2.6	4.6393	780
160.0	215.0	EC2-516-0202M	315L	2985	260.0	52.21	95.0	94.8	92.5	0.90	0.87	0.83	7.0	2.2	2.6	5.5991	930
200.0	270.0	EC2-517-0202M	315L	2985	326.0	65.26	95.0	95.0	93.0	0.90	0.87	0.83	7.0	2.2	2.6	7.0389	965
250.0	335.0	EC2-553-0202M	355M	2985	407.0	81.57	95.0	95.0	93.0	0.90	0.87	0.83	7.0	2.0	2.4	10.0292	1710
315.0	425.0	EC2-557-0202M	355L	2985	512.0	102.78	95.0	95.0	93.0	0.90	0.87	0.83	7.0	2.0	2.4	12.6685	1900



Electrical Performance

IE2 MOTOR

4 Pole

BCH IE2 induction motors suitable for  $415 \pm 10\%$ , 50 Hz  $\pm 5\%$ , combined  $\pm 10\%$ , 3 phase supply, ambient temperature  $50^{\circ}\text{C}$ , TEFC, Class 'F' insulation, IP-55 protection, continuous rated (S1 duty) with bare shaft & key as per IS:12615-2011 / IEC:60034-1

4 Pole, 1500 RPM, IE2

Rated Output		Motor Type	Frame Size	Rated Speed (rpm)	Rated Current (A)	Rated Torque (kg-m)	Efficiency %			Power factor %			$I_{st} / I_n$	$T_{st} / T_n$	$T_{po} / T_n$	GD <sup>2</sup> (kgm <sup>2</sup> )	Wt. (kg)
KW	HP						FL	3/4L	1/2FL	FL	3/4L	1/2FL					
0.37	0.5	EC2-273-0402M	71	1390	1	0.26	70.1	70.1	65	0.73	0.67	0.58	6	1.9	2.3	0.0022	9
0.55	0.75	EC2-280-0402M	80	1420	1.4	0.38	75.1	75.1	71	0.73	0.67	0.58	6	1.9	2.3	0.0038	13
0.75	1	EC2-283-0402M	80	1425	1.7	0.51	79.6	79.6	75	0.77	0.7	0.63	6	2.5	3	0.0062	17
1.1	1.5	EC2-290-0402M	90S	1430	2.4	0.75	81.4	81.4	80	0.78	0.73	0.65	6	2.5	3	0.0093	20
1.5	2	EC2-296-0402M	90L	1430	3.2	1.02	82.8	82.8	81	0.79	0.74	0.65	6	2.4	2.8	0.0134	25
2.2	3	EC2-306-0402M	100L	1440	4.4	1.49	84.3	84.3	82.5	0.83	0.76	0.65	6.5	2.4	2.8	0.0182	28
3.7	5	EC2-313-0402M	112M	1445	7.1	2.49	86.3	86.3	85	0.84	0.8	0.68	7	2.4	2.8	0.0404	45
5.5	7.5	EC2-330-0402M	132S	1450	10.5	3.69	87.7	87.7	86	0.83	0.79	0.72	7	2.4	2.8	0.0676	57
7.5	10	EC2-333-0402M	132M	1450	14.1	5.04	88.7	88.7	87	0.83	0.79	0.72	7	2.2	2.6	0.1013	66
9.3	12.5	EC2-363-0402M	160M	1455	17.5	6.23	89.3	89.3	87.5	0.83	0.8	0.72	7	2.2	2.6	0.1696	100
11	15	EC2-364-0402M	160M	1455	20.5	7.36	89.8	89.8	88	0.83	0.8	0.72	7	2.2	2.6	0.1874	105
15	20	EC2-366-0402M	160L	1455	27.5	10.04	90.6	90.6	89	0.84	0.8	0.73	7	2.2	2.6	0.2573	123
18.5	25	EC2-383-0402M	180M	1460	33.5	12.34	91.2	91.2	90.5	0.84	0.8	0.74	7	2.3	2.6	0.3601	156
22	30	EC2-386-0402M	180L	1460	40	14.68	91.6	91.6	90.5	0.84	0.8	0.74	7	2.3	2.6	0.4359	172
30	40	EC2-406-0402M	200L	1465	54	19.95	92.3	92.3	91	0.84	0.8	0.74	7	2.3	2.6	0.9602	254
37	50	EC2-420-0402M	225S	1470	65	24.52	92.7	92.7	91.5	0.85	0.83	0.77	7	2.3	2.6	1.4552	335
45	60	EC2-423-0402M	225M	1475	78	29.72	93.1	93.1	92	0.86	0.83	0.77	7	2.3	2.6	1.6299	370
55	75	EC2-453-0402M	250M	1480	94	36.2	93.5	93.5	93	0.87	0.84	0.79	7	2.3	2.6	2.5271	410
75	100	EC2-480-0402M	280S	1482	128	49.29	94	94	93.5	0.87	0.84	0.79	7	2.2	2.5	3.9994	590
90	120	EC2-483-0402M	280M	1482	152	59.15	94.2	94.2	93.5	0.87	0.84	0.8	7	2.2	2.5	4.7993	610
110	150	EC2-510-0402M	315S	1485	187	72.15	94.5	94.5	93.7	0.87	0.84	0.8	7	2.2	2.5	8.1503	790
125	170	EC2-514-0402M	315M	1485	215	81.99	94.6	94.6	93.8	0.86	0.84	0.8	7	2.2	2.5	9.7803	820
132	180	EC2-513-0402M	315M	1485	226	86.58	94.7	94.7	94	0.86	0.84	0.8	7	2.2	2.5	9.7803	820
160	215	EC2-516-0402M	315L	1485	272	104.94	94.9	94.9	94.2	0.86	0.84	0.8	7	2.2	2.5	11.8549	990
200	270	EC2-517-0402M	315L	1485	336	131.18	95.1	95.1	94.6	0.87	0.84	0.8	7	2.2	2.5	14.8187	1000
250	335	EC2-553-0402M	355M	1488	420	163.64	95.1	95.1	94.6	0.87	0.84	0.78	7	2	2.4	15.9163	1740
315	425	EC2-557-0402M	355L	1488	527	206.19	95.1	95.1	94.6	0.87	0.84	0.78	7	2	2.4	20.7282	1980



## Electrical Performance

### IE2 MOTOR

### 6 Pole

BCH IE2 induction motors suitable for  $415 \pm 10\%$ ,  $50 \text{ Hz} \pm 5\%$ , combined  $\pm 10\%$ , 3 phase supply, ambient temperature  $50^\circ \text{C}$ , TEFC, Class 'F' insulation, IP-55 protection, continuous rated (S1 duty) with bare shaft & key as per IS:12615-2011 / IEC:60034-1

6 Pole, 1000 RPM, IE2																	
Rated Output		Motor Type	Frame Size	Rated Speed (rpm)	Rated Current (A)	Rated Torque (kg-m)	Efficiency %			Power factor %			Ist / In	Tst / Tn	Tpo/ Tn	GD <sup>2</sup> (kgm <sup>2</sup> )	Wt. (kg)
KW	HP						FL	3/4L	1/2FL	FL	3/4L	1/2FL					
0.37	0.50	EC2-280-0602M	80	925	1.0	0.39	69.0	69.0	64.0	0.75	0.65	0.54	4.5	1.9	2.2	0.0049	12
0.55	0.75	EC2-283-0602M	80	930	1.5	0.58	72.9	72.9	67.0	0.70	0.63	0.52	4.5	2.2	2.6	0.0063	13
0.75	1.0	EC2-290-0602M	90S	935	2.0	0.78	75.9	75.9	73.0	0.69	0.63	0.52	5.0	2.1	2.5	0.0122	20
1.1	1.5	EC2-296-0602M	90L	935	2.7	1.15	78.1	78.1	74.0	0.73	0.68	0.54	5.0	2.1	2.5	0.0176	24
1.5	2.0	EC2-306-0602M	100L	945	3.4	1.55	79.8	79.8	77.0	0.77	0.70	0.56	5.5	2.1	2.5	0.0269	28
2.2	3.0	EC2-313-0602M	112M	950	4.8	2.26	81.8	81.8	78.5	0.78	0.71	0.58	6.0	2.1	2.5	0.0467	39
3.7	5.0	EC2-330-0602M	132S	950	7.6	3.79	84.3	84.3	80.0	0.80	0.74	0.62	6.0	2.2	2.6	0.0991	60
5.5	7.5	EC2-333-0602M	132M	955	11.0	5.61	86.0	86.0	83.0	0.81	0.76	0.62	6.5	2.2	2.6	0.1312	68
7.5	10.0	EC2-363-0602M	160M	960	14.6	7.61	87.2	87.2	84.0	0.82	0.77	0.65	7.0	2.2	2.6	0.2897	100
9.3	12.5	EC2-366-0602M	160L	965	18.0	9.39	88.0	88.0	85.0	0.82	0.77	0.65	7.0	2.1	2.5	0.3802	117
11.0	15.0	EC2-367-0602M	160L	970	21.0	11.05	88.7	88.7	86.0	0.82	0.77	0.65	7.0	2.1	2.5	0.4164	124
15.0	20.0	EC2-386-0602M	180L	970	29.0	15.06	89.7	89.7	86.5	0.80	0.75	0.65	7.0	2.1	2.5	0.5949	170
18.5	25.0	EC2-406-0602M	200L	975	35.6	18.48	90.4	90.4	87.0	0.80	0.75	0.65	7.0	2.1	2.5	1.1642	238
22.0	30.0	EC2-407-0602M	200L	975	42.0	21.98	90.9	90.9	87.5	0.80	0.75	0.65	7.0	2.1	2.5	1.2854	255
30.0	40.0	EC2-423-0602M	225M	975	56.0	29.97	91.7	91.7	88.0	0.81	0.77	0.66	7.0	2.1	2.4	2.0583	372
37.0	50.0	EC2-453-0602M	250M	980	68.0	36.77	92.2	92.2	89.0	0.82	0.79	0.70	7.0	2.1	2.4	2.5127	390
45.0	60.0	EC2-480-0602M	280S	983	80.0	44.59	92.7	92.7	89.4	0.84	0.81	0.73	7.0	2.1	2.4	5.2502	570
55.0	75.0	EC2-483-0602M	280M	983	98.0	54.50	93.1	93.1	89.7	0.84	0.81	0.73	7.0	2.2	2.4	5.8335	590
75.0	100.0	EC2-510-0602M	315S	986	133.0	74.09	93.7	93.7	90.0	0.84	0.81	0.73	7.0	2.2	2.4	7.2611	750
90.0	120.0	EC2-513-0602M	315M	986	159.0	88.90	94.0	94.0	92.0	0.84	0.81	0.74	7.0	2.1	2.4	8.5948	780
110.0	150.0	EC2-516-0602M	315L	986	192.0	108.66	94.3	94.3	92.0	0.85	0.82	0.75	7.0	2.1	2.4	10.3731	960
125.0	170.0	EC2-518-0602M	315L	987	215.0	123.35	94.4	94.4	92.5	0.86	0.83	0.76	7.0	2.1	2.4	12.4477	985
132.0	180.0	EC2-517-0602M	315L	987	227.0	130.26	94.6	94.6	93.0	0.86	0.83	0.76	7.0	2.1	2.4	12.4477	985
160.0	215.0	EC2-550-0602M	355S	988	280.0	157.73	94.8	94.8	94.0	0.84	0.82	0.75	7.0	2.1	2.4	18.2762	1660
200.0	270.0	EC2-553-0602M	355M	988	345.0	197.17	95.0	95.0	94.5	0.85	0.82	0.75	7.0	2.1	2.4	21.0176	1830
250.0	335.0	EC2-557-0602M	355L	988	433.0	246.46	95.0	95.0	94.5	0.85	0.82	0.75	7.0	2.1	2.4	26.5005	2020



Electrical Performance

IE3 Motor

2 Pole

BCH IE3 induction motors suitable for 415 ± 10%, 50 Hz ± 5%, combined ± 10%, 3 phase supply, ambient temperature 50°C, TEFC, Class 'F' insulation, IP-55 protection, continuous rated (SI duty) with bare shaft & key as per IS:12615-2011 / IEC:60034-1

2 Pole, 3000 RPM, IE3

Rated Output		Motor Type	Frame Size	Rated Speed (rpm)	Rated Curr. (A)	Rated Torque (kgm)	Efficiency %			Power factor %			I <sub>st</sub> /I <sub>n</sub>	T <sub>st</sub> /T <sub>n</sub>	T <sub>po</sub> /T <sub>n</sub>	GD <sup>2</sup> (kgm <sup>2</sup> )	Wt. (kg)
KW	HP						FL	3/4L	1/2FL	FL	3/4L	1/2FL					
0.37	0.50	EC3-270-0202M	71	2810	0.9	0.13	75.5	75.5	72.0	0.76	0.69	0.57	6.5	2.1	2.5	0.0010	8
0.55	0.75	EC3-273-0202M	71	2840	1.25	0.19	78.1	78.1	75.5	0.78	0.74	0.60	7.0	2.2	2.6	0.0014	9
0.75	1.0	EC3-280-0202M	80	2860	1.6	0.26	80.7	80.7	78.0	0.81	0.76	0.63	7.0	2.1	2.5	0.0049	15
1.1	1.5	EC3-283-0202M	80	2860	2.2	0.37	82.7	82.7	80.0	0.84	0.80	0.72	7.0	2.1	2.5	0.0062	17
1.5	2.0	EC3-290-0202M	90S	2850	3.0	0.51	84.2	84.2	84.0	0.83	0.81	0.75	7.0	2.5	3.0	0.0052	20
2.2	3.0	EC3-296-0202M	90L	2870	4.3	0.75	85.9	85.9	84.5	0.83	0.81	0.75	7.7	2.5	3.0	0.0068	23
3.7	5.0	EC3-306-0202M	100L	2890	6.8	1.25	87.8	87.8	85.0	0.86	0.83	0.77	7.7	2.5	3.0	0.0168	32
5.5	7.5	EC3-313-0202M	112M	2945	9.8	1.82	89.2	89.2	87.0	0.88	0.86	0.82	7.7	2.5	3.0	0.0583	58
7.5	10.0	EC3-330-0202M	132S	2945	13.0	2.48	90.1	90.1	89.5	0.89	0.87	0.84	7.7	2.5	3.0	0.0716	65
9.3	12.5	EC3-362-0202M	160M	2935	16.0	3.09	90.7	90.7	89.5	0.89	0.86	0.81	7.7	2.3	2.8	0.1700	115
11.0	15.0	EC3-363-0202M	160M	2940	19.0	3.64	91.2	91.2	90.0	0.88	0.86	0.79	7.7	2.3	2.8	0.1700	117
15.0	20.0	EC3-364-0202M	160M	2935	25.5	4.98	91.9	91.9	90.9	0.89	0.87	0.80	7.7	2.3	2.8	0.2040	123
18.5	25.0	EC3-366-0202M	160L	2935	31.0	6.14	92.4	92.4	91.4	0.90	0.87	0.81	7.7	2.3	2.8	0.2312	135
22.0	30.0	EC3-383-0202M	180M	2940	37.0	7.29	92.7	92.7	91.5	0.89	0.87	0.81	7.7	2.2	2.7	0.2585	172
30.0	40.0	EC3-406-0202M	200L	2955	49.5	9.89	93.3	93.3	92.2	0.90	0.88	0.84	7.7	2.0	2.5	0.5257	250
37.0	50.0	EC3-407-0202M	200L	2955	60.5	12.20	93.7	93.7	92.5	0.91	0.89	0.85	7.7	2.2	2.6	0.5257	253
45.0	60.0	EC3-423-0202M	225M	2960	72.5	14.81	94.0	94.0	93.0	0.92	0.90	0.86	7.7	2.3	2.7	0.8450	382
55.0	75.0	EC3-453-0202M	250M	2960	89.0	18.10	94.3	94.3	93.0	0.91	0.90	0.86	7.0	2.0	2.5	1.0690	373
75.0	100.0	EC3-480-0202M	280S	2965	121.5	24.64	94.7	94.7	93.5	0.91	0.90	0.86	7.0	2.0	2.8	2.9368	570
90.0	120.0	EC3-483-0202M	280M	2965	145.0	29.56	95.0	95.0	94.0	0.91	0.89	0.84	7.0	2.0	2.8	2.9368	592
110.0	150.0	EC3-510-0202M	315S	2975	177.0	36.01	95.2	95.2	94.0	0.91	0.90	0.86	7.0	1.9	2.6	4.6393	780
125.0	170.0	EC3-514-0202M	315M	2975	201.0	40.92	95.3	95.3	94.0	0.91	0.90	0.86	7.7	2.0	2.6	4.6393	780
132.0	180.0	EC3-513-0202M	315M	2975	212.0	43.22	95.4	95.4	94.2	0.91	0.90	0.87	7.5	1.9	2.6	4.6393	780
160.0	215.0	EC3-516-0202M	315L	2975	257.0	52.38	95.6	95.6	94.0	0.91	0.90	0.88	7.5	1.9	2.6	5.4392	965
200.0	270.0	EC3-517-0202M	315L	2975	320.0	65.48	95.8	95.8	94.5	0.91	0.90	0.87	7.5	2.0	2.6	5.5991	965
250.0	335.0	EC3-553-0202M	355M	2980	403.0	81.71	95.8	95.8	94.0	0.90	0.88	0.84	7.5	1.9	2.6	8.9735	1710
315.0	425.0	EC3-557-0202M	355L	2980	506.0	102.96	95.8	95.8	94.0	0.90	0.88	0.84	7.5	2.0	2.6	10.0292	1900



## Electrical Performance

### IE3 Motor

### 4 Pole

BCH IE3 induction motors suitable for  $415 \pm 10\%$ ,  $50 \text{ Hz} \pm 5\%$ , combined  $\pm 10\%$ , 3 phase supply, ambient temperature  $50^\circ\text{C}$ , TEFC, Class 'F' insulation, IP-55 protection, continuous rated (SI duty) with bare shaft & key as per IS:12615-2011 / IEC:60034-1

4 Pole, 1500 RPM, IE3																	
Rated Output		Motor Type	Frame Size	Rated Speed (rpm)	Rated Current (A)	Rated Torque (kg-m)	Efficiency %			Power factor %			I <sub>st</sub> /I <sub>n</sub>	T <sub>st</sub> /T <sub>n</sub>	T <sub>po</sub> /T <sub>n</sub>	GD <sup>2</sup> (kgm <sup>2</sup> )	Wt. (kg)
KW	HP						FL	3/4L	1/2FL	FL	3/4L	1/2FL					
0.37	0.50	EC3-273-0402M	71	1420	1.0	0.25	73.0	73.0	68.0	0.71	0.63	0.50	5.0	2.2	2.6	0.0028	11
0.55	0.75	EC3-280-0402M	80	1430	1.3	0.37	78.0	78.0	74.0	0.75	0.66	0.53	6.0	2.2	2.6	0.0049	15
0.75	1.0	EC3-283-0402M	80	1430	1.6	0.51	82.5	82.5	78.0	0.79	0.75	0.64	6.5	2.6	3.0	0.0062	17
1.1	1.5	EC3-290-0402M	90S	1430	2.3	0.75	84.1	84.1	81.5	0.79	0.75	0.64	6.5	2.5	3.0	0.0093	20
1.5	2.0	EC3-296-0402M	90L	1435	3.1	1.02	85.3	85.3	83.0	0.79	0.75	0.64	6.5	2.5	3.0	0.0134	25
2.2	3.0	EC3-306-0402M	100L	1440	4.3	1.49	86.7	86.7	84.0	0.82	0.78	0.67	7.5	2.5	3.0	0.0237	34
3.7	5.0	EC3-313-0402M	112M	1450	7.5	2.49	88.4	88.4	85.5	0.78	0.69	0.60	7.5	2.5	3.0	0.0497	45
5.5	7.5	EC3-330-0402M	132S	1455	10.5	3.68	89.6	89.6	87.0	0.81	0.76	0.65	7.5	2.5	3.0	0.0811	60
7.5	10.0	EC3-333-0402M	132M	1455	14.2	5.02	90.4	90.4	88.0	0.81	0.76	0.66	7.5	2.5	3.0	0.1081	68
9.3	12.5	EC3-363-0402M	160M	1460	16.5	6.20	91.0	91.0	90.0	0.86	0.82	0.73	7.5	2.5	2.8	0.2369	107
11.0	15.0	EC3-364-0402M	160M	1460	19.8	7.34	91.4	91.4	90.2	0.85	0.80	0.72	7.5	2.3	2.6	0.2396	107
15.0	20.0	EC3-366-0402M	160L	1460	26.2	10.01	92.1	92.1	91.4	0.86	0.82	0.74	7.5	2.4	2.7	0.3032	132
18.5	25.0	EC3-383-0402M	180M	1465	32.8	12.30	92.6	92.6	91.6	0.85	0.81	0.73	7.5	2.4	2.7	0.3790	165
22.0	30.0	EC3-386-0402M	180L	1465	38.5	14.63	93.0	93.0	92.0	0.85	0.81	0.73	7.5	2.3	2.6	0.4359	180
30.0	40.0	EC3-406-0402M	200L	1470	52.5	19.88	93.6	93.6	92.5	0.85	0.81	0.73	7.5	2.5	2.8	0.9987	276
37.0	50.0	EC3-420-0402M	225S	1470	63.5	24.52	93.9	93.9	93.0	0.86	0.83	0.76	7.5	2.3	2.6	1.3970	370
45.0	60.0	EC3-423-0402M	225M	1475	77.8	29.72	94.2	94.2	93.2	0.85	0.82	0.75	7.5	2.5	2.8	1.6299	390
55.0	75.0	EC3-453-0402M	250M	1482	92.0	36.15	94.6	94.6	94.0	0.88	0.86	0.80	7.5	2.5	2.8	2.3466	410
75.0	100.0	EC3-480-0402M	280S	1482	125.0	49.29	95.0	95.0	94.2	0.88	0.85	0.77	7.5	2.2	2.5	4.1594	610
90.0	120.0	EC3-483-0402M	280M	1482	150.0	59.15	95.2	95.2	94.0	0.88	0.85	0.77	7.5	2.2	2.5	5.1192	640
110.0	150.0	EC3-510-0402M	315S	1485	183.0	72.15	95.4	95.4	94.4	0.88	0.85	0.77	7.0	2.0	2.4	10.3731	775
125.0	170.0	EC3-514-0402M	315M	1485	205.0	81.99	95.5	95.5	94.5	0.89	0.87	0.80	7.5	2.2	2.5	11.8549	950
132.0	180.0	EC3-513-0402M	315M	1485	216.0	86.58	95.6	95.6	94.5	0.89	0.87	0.82	7.5	2.2	2.5	11.8549	950
160.0	215.0	EC3-516-0402M	315L	1485	260.0	104.94	95.8	95.8	94.5	0.89	0.87	0.81	7.5	2.2	2.5	13.0404	980
200.0	270.0	EC3-517-0402M	315L	1485	326.0	131.18	96.0	96.0	95.0	0.89	0.87	0.81	7.5	2.2	2.5	15.4114	1020
250.0	335.0	EC3-553-0402M	355M	1485	412.0	163.97	96.0	96.0	95.0	0.88	0.85	0.77	7.5	2.0	2.5	15.9163	1740
315.0	425.0	EC3-557-0402M	355L	1486	519.0	206.47	96.0	96.0	95.0	0.88	0.85	0.77	7.5	2.0	2.5	19.9879	1980





Electrical Performance

IE3 Motor

6 Pole

BCH IE3 induction motors suitable for  $415 \pm 10\%$ ,  $50 \text{ Hz} \pm 5\%$ , combined  $\pm 10\%$ , 3 phase supply, ambient temperature  $50^\circ\text{C}$ , TEFC, Class 'F' insulation, IP-55 protection, continuous rated (S1 duty) with bare shaft & key as per IS:12615-2011 / IEC:60034-1

6 Pole, 1000 RPM, IE3																	
Rated Output		Motor Type	Frame Size	Rated Speed (rpm)	Rated Current (A)	Rated Torque (kg-m)	Efficiency %			Power factor %			Ist/In	Tst/Tn	Tpo/Tn	GD <sup>2</sup> (kgm <sup>2</sup> )	Wt. (kg)
KW	HP						FL	3/4L	1/2FL	FL	3/4L	1/2FL					
0.37	0.50	EC3-280-0602M	80	925	1.05	0.39	71.9	71.9	68.0	0.68	0.63	0.50	5.0	1.8	2.3	0.0049	15
0.55	0.75	EC3-283-0602M	80	925	1.45	0.58	75.9	75.9	70.0	0.70	0.62	0.50	5.0	2.0	2.4	0.0083	16
0.75	1.0	EC3-290-0602M	90S	930	1.9	0.79	78.9	78.9	74.0	0.70	0.62	0.50	5.0	2.2	2.6	0.0135	24
1.1	1.5	EC3-296-0602M	90L	940	2.7	1.14	81.0	81.0	76.0	0.70	0.62	0.50	5.5	2.2	2.6	0.0190	25
1.5	2.0	EC3-306-0602M	100L	945	3.3	1.55	82.5	82.5	80.0	0.77	0.71	0.60	6.0	2.2	2.6	0.0336	34
2.2	3.0	EC3-313-0602M	112M	955	4.7	2.24	84.3	84.3	82.0	0.77	0.71	0.60	6.5	2.2	2.8	0.0630	44
3.7	5.0	EC3-330-0602M	132S	960	7.5	3.75	86.5	86.5	84.0	0.79	0.72	0.63	7.5	2.4	2.8	0.1321	68
5.5	7.5	EC3-333-0602M	132M	960	11.0	5.58	88.0	88.0	86.0	0.79	0.72	0.63	7.5	2.6	3.0	0.1487	70
7.5	10.0	EC3-363-0602M	160M	960	14.0	7.61	89.1	89.0	88.0	0.84	0.79	0.69	7.5	2.0	2.4	0.3718	108
9.3	12.5	EC3-366-0602M	160L	965	17.0	9.39	89.7	89.7	88.5	0.85	0.80	0.70	7.5	2.0	2.4	0.4759	122
11.0	15.0	EC3-367-0602M	160L	970	20.2	11.05	90.3	90.3	89.0	0.84	0.79	0.69	7.5	2.0	2.3	0.5503	128
15.0	20.0	EC3-386-0602M	180L	972	27.0	15.03	91.2	91.2	90.0	0.85	0.81	0.71	7.5	2.2	2.5	0.7437	180
18.5	25.0	EC3-406-0602M	200L	978	34.4	18.42	91.7	91.7	90.3	0.82	0.77	0.67	7.5	2.6	3.0	1.2654	246
22.0	30.0	EC3-407-0602M	200L	980	41.5	21.87	92.2	92.2	90.7	0.80	0.76	0.66	7.5	2.7	3.0	1.5185	268
30.0	40.0	EC3-423-0602M	225M	982	55.7	29.76	92.9	92.9	91.8	0.81	0.76	0.66	7.5	2.6	2.9	1.8378	380
37.0	50.0	EC3-453-0602M	250M	982	66.0	36.70	93.3	93.3	92.0	0.84	0.81	0.72	7	2.2	2.5	2.6988	410
45.0	60.0	EC3-480-0602M	280S	984	79.0	44.54	93.7	93.7	92.5	0.85	0.82	0.75	7	2.3	2.5	4.8613	590
55.0	75.0	EC3-483-0602M	280M	984	95.0	54.44	94.1	94.1	93.2	0.86	0.84	0.77	7	2.3	2.5	5.8335	600
75.0	100.0	EC3-510-0602M	315S	986	131.0	74.09	94.6	94.6	93.5	0.84	0.81	0.73	7	2.3	2.4	8.5948	780
90.0	120.0	EC3-513-0602M	315M	986	156.0	88.90	94.9	94.9	94.0	0.85	0.81	0.73	7	2.3	2.4	10.3731	960
110.0	150.0	EC3-516-0602M	315L	987	194.0	108.55	95.1	95.1	94.0	0.83	0.79	0.69	7.5	2.5	2.5	11.8549	1000
125.0	170.0	EC3-518-0602M	315L	987	218.0	123.35	95.2	95.2	94.0	0.84	0.8	0.71	7.5	2.5	2.5	11.8549	1000
132.0	180.0	EC3-517-0602M	315L	988	228.0	130.13	95.4	95.4	94.5	0.84	0.81	0.72	7.5	2.5	2.5	14.2259	1030
160.0	215.0	EC3-550-0602M	355S	990	276.0	157.41	95.6	95.6	95.0	0.84	0.81	0.72	7	2	2.4	23.759	2020
200.0	270.0	EC3-553-0602M	355M	990	347.0	196.77	95.8	95.8	95.0	0.84	0.8	0.71	7	2.2	2.4	23.759	2020
250.0	335.0	EC3-557-0602M	355L	989	430.0	246.21	95.8	95.8	95.0	0.84	0.81	0.73	7	2	2.4	26.5005	2040



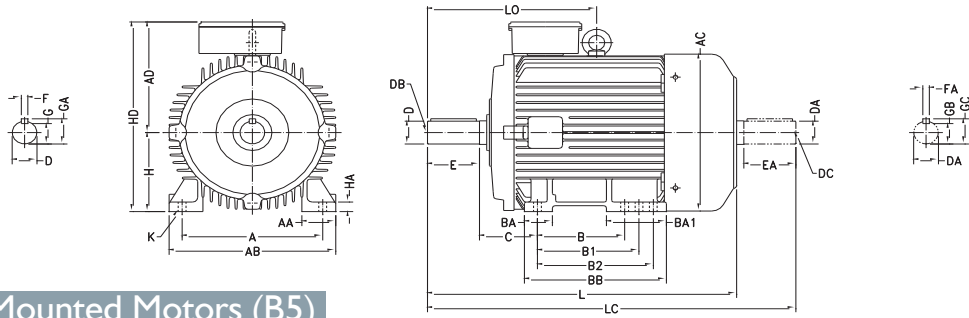


MECHANICAL DIMENSIONS - STANDARD, IE2 & IE3 MOTORS

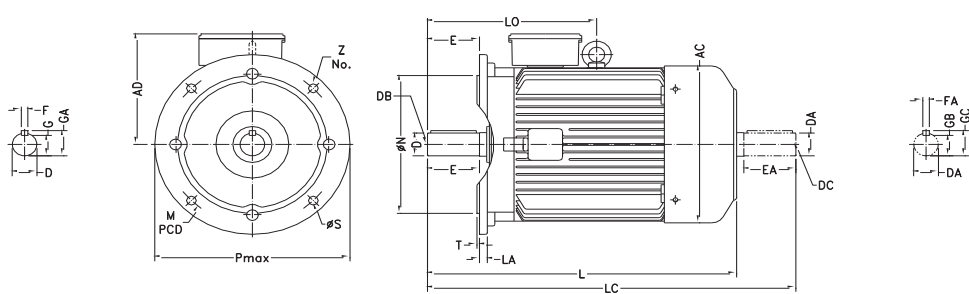
Frame Size	Motor Type	Pole	General			Foot mounted motors (B3)													Flange mounted motors (B5)					DE Shaft					NDE \$ Shaft									
			L	LC	LO	AC	AD	A	B	B1	B2	C	H	K	AA	AB	BB	BA	BA1	HA	HD	P max	M PCD	øN	øS	Z No.	T	LA	D	DB	E	F	GA	G	DA	DC	EA	FA
280S/M	TC2/EC2/EC3	2	1040	1195	590	543	426	457	368	419	190	280	24	100	557	483	90	145	42	706	550	500	450	19	5	18	65	M20	140	18	69	58	65	M20	140	18	69	58
280SX/MX	EC2/EC3	4.6																																				
315S/M	TC2/EC2/EC3	2	1155	1332	611	621	460	508	406	457	216	315	28	112	620	533	100	151	46	775	660	600	550	8	23	65	M20	140	18	69	58	65	M20	140	18	69	58	
315L	EC2/EC3	4.6	1318	1505	666																																	406
315SX/MX	TC2	4.6, 6	1185	1392	641	621	460	508	406	457	216	315	28	112	620	533	100	151	46	775	660	600	550	8	23	80	M20	140	18	69	58	65	M20	140	18	69	58	
315LX	EC2/EC3	4.6																																				1348
355S/M/L	TC2/EC2/EC3	2	1492	1647	748	701	586	610	500	560	630	254	355	28	130	730	770	160	270	50	941	800	740	680	24	6	75	M24	140	20	80	68	65	M24	140	18	69	58
355SX/MX/LX	EC2/EC3	4.6	1522	1707	778																																	

- Note: 1) Suffix "X" denotes motors other than 2 pole motors.
- 2) all Flange dimensions conforms to IS: 2223.
- 3) "\$" Shaft dimensions on NDE side may be different for 2P motors. Please contact nearest sales office for details.

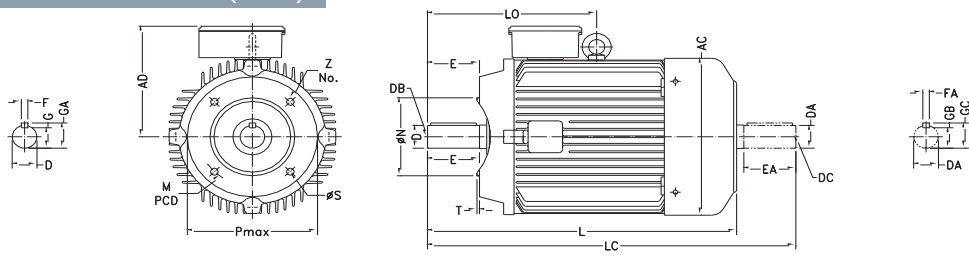
Foot Mounted Motors (B3)



Flange Mounted Motors (B5)



Face Mounted Motors (B14)



- Power Control Products
- Starters & Submersible Pump Starters
- Industrial Enclosures
- Industrial Products
- Wires & Cables
- Motor Control Products
- Customised Solution
- Automation



## BCH ELECTRIC LIMITED

Visit us at : [www.bchindia.com](http://www.bchindia.com)

**Corporate Office :** 1105, New Delhi House, 27, Barakhamba Road, New Delhi-110 001 Tel. : 91-11-23316029/3610/6539/43673100 Fax : 91-11-23715247

**CIN :** U31103WB1965PLC026427, Customercare No. 1800-103-9262, E-mail : [marketing@bchindia.com](mailto:marketing@bchindia.com)

**Registered Office :** Block 1E, 216, Acharya Jagadish Chandra Bose Road, Kolkata - 700 017

**Works 1 :** 20/4, Mathura Road, Faridabad -121 006 (Haryana) Tel. : 0129-4063000/4293000 Fax : 0129-2304016

**Works 2 :** 64-68, Sector-7, IIE, Pant Nagar, Rudrapur, Udham Singh Nagar - 263 153 (Uttarakhand) Tel. : 05944-250214/16 Fax : 05944-250215

### Sales Offices :

**Ahmedabad**  
103, Aaron,  
Nr. SBI Lughudiyug branch,  
Behind Sakar-1  
Gandhigram Railway station,  
Ellis bridge, Ahmedabad - 380006  
**Tel. : 079-26589719**  
E-mail : [ahmedabad@bchindia.com](mailto:ahmedabad@bchindia.com)

**Bangalore**  
2nd Floor, 130/5,  
K.H. Road (Double road),  
Bangalore - 560 027  
Tel. : 080-22273478/41144878/  
41144879  
Fax : 080-22236759  
E-mail : [bangalore@bchindia.com](mailto:bangalore@bchindia.com)

**Bhubaneswar**  
Mallick Commercial  
Complex Plot No.: A/69, unit - 3  
Bhubaneswar - 751 001  
**Tel. : 0674-2380988**  
E-mail : [bhubaneswar@bchindia.com](mailto:bhubaneswar@bchindia.com)

**Chandigarh (Panchkula)**  
Sco-129, Iind Floor,  
Mdc, Sector-5 Panchkula,  
Haryana-134 109  
**Tel. : 0172-5078957 / 5049905**  
Fax : 0172-5048905  
E-mail : [chandigarh@bchindia.com](mailto:chandigarh@bchindia.com)

**Chennai**  
Flat No. 3A, 3rd Floor,  
Sree Apartments,  
No.508, TTK Road,  
Alwarpet, Chennai 600 018  
Tel. : 044-24337046, 24337047  
Fax : 044-24337047  
E-mail : [chennai@bchindia.com](mailto:chennai@bchindia.com)

**Coimbatore**  
87, Dr. Nanjappa Road,  
Coimbatore - 641 018  
Tel. : 0422-2305311  
Fax : 0422-2302599  
E-mail : [coimbatore@bchindia.com](mailto:coimbatore@bchindia.com)

**Dehradun**  
8, Co-operative Industrial Estate,  
Patel Nagar, Dehradun-248001  
E-mail : [dehradun@bchindia.com](mailto:dehradun@bchindia.com)

**Faridabad**  
20/4, Mathura Road,  
Faridabad - 121 006 (Haryana)  
Telfax : 0129-4293009  
E-mail : [faridabad@bchindia.com](mailto:faridabad@bchindia.com)

**Hyderabad**  
1-8-303/48/13/102, Arya One,  
2nd Floor, P. G. Road,  
Secunderabad - 500 003  
Tel. : 040-66206263/27890306  
Fax : 040-66207273  
E-mail : [hyderabad@bchindia.com](mailto:hyderabad@bchindia.com)

**Indore**  
330-331, Indraprastha Tower,  
3rd Floor, 6, M.G. Road,  
Indore - 452 001  
**Tel. : 0731-2510011**  
Fax : 0731-2510012  
E-mail : [indore@bchindia.com](mailto:indore@bchindia.com)

**Jaipur**  
25, Hathroi, Gopalbari,  
Jaipur - 302 001  
**Tel. : 0141-2363521**  
Fax : 0141-2363521  
E-mail : [jaipur@bchindia.com](mailto:jaipur@bchindia.com)

**Jamshedpur**  
3rd Floor, Aastha Trade Centre,  
'Q' Road, Bistupur,  
Jamshedpur - 831 001  
**Tel. : 0657-2321097/2321481**  
E-mail : [jamshedpur@bchindia.com](mailto:jamshedpur@bchindia.com)

**Kolkata**  
Block 1E, 216,  
Acharya Jagadish Chandra Bose Road,  
Kolkata - 700 017  
**Tel. : 033-22871728**  
E-mail : [kolkata@bchindia.com](mailto:kolkata@bchindia.com)

**Lucknow**  
Madan Plaza, 3rd Floor,  
14, Station Road,  
Lucknow - 226 001  
**Tel. : 0522-4025597/4025997**  
Fax : 0522-4025997  
E-mail : [lucknow@bchindia.com](mailto:lucknow@bchindia.com)

**Ludhiana**  
S.C.O.- 18, 2nd Floor,  
Feroze Gandhi Market,  
Ludhiana - 140 001  
**Tel. : 0161-5021807/5022808**  
Fax : 0161-5021807  
E-mail : [ludhiana@bchindia.com](mailto:ludhiana@bchindia.com)

**Mumbai**  
A-151, Mittal Tower,  
Nariman Point,  
Mumbai - 400 021  
**Tel. : 022-22822947/22850162**  
Fax : 022-22822858  
E-mail : [mumbai@bchindia.com](mailto:mumbai@bchindia.com)

**Nagpur**  
Flat No. F-01, 1st Floor,  
Baldeo Apartment,  
Behind Railway Station, Bajera  
Nagpur (M.S.) - 440018  
E-mail : [nagpur@bchindia.com](mailto:nagpur@bchindia.com)

**New Delhi**  
801, Akash Deep Building,  
26A, Barakhamba Road,  
New Delhi - 110 001  
**Tel. : 011-23313878/66307065**  
Fax : 011-23739230  
E-mail : [delhi@bchindia.com](mailto:delhi@bchindia.com)

**Pune**  
8, Sarosh Bhavan,  
16-B/1, Dr. Ambedkar Road,  
Pune - 411 001  
**Tel. : 020-26052590**  
Telefax : 020-26135224  
E-mail : [pune@bchindia.com](mailto:pune@bchindia.com)

**Raipur**  
2nd Floor, Building No. B-234,  
Indira Gandhi Vyvasayik Parisar,  
Pandri, Raipur - 492 004  
**Tel. : 0771-4020213**  
Fax : 0771-2582980  
E-mail : [raipur@bchindia.com](mailto:raipur@bchindia.com)

**Trichy**  
2B, Kannagi Street,  
Ayyappa Nagar, K.K.Nagar  
Trichy - 620 021, Tamilnadu  
**Tel. : 0431-4040497**  
E-mail : [trichy@bchindia.com](mailto:trichy@bchindia.com)

**Vadodara**  
301, Third Floor, "Florence Classic",  
10, Ashapuri Co-Op. Hsg. Soc. Ltd., Opp. VUDA Housing,  
Near Cow Circle, Akota, Vadodara - 390 020  
**Tel. : 0265-2345068/2345069**  
Telefax : 0265-2345068,  
E-mail : [vadodara@bchindia.com](mailto:vadodara@bchindia.com)

### Other Branch Locations

**Bhubaneswar :** [bhubaneswar@bchindia.com](mailto:bhubaneswar@bchindia.com), **Cochin :** [cochin@bchindia.com](mailto:cochin@bchindia.com), **Gurgaon :** [gurgaon@bchindia.com](mailto:gurgaon@bchindia.com), **Guwahati :** [guwahati@bchindia.com](mailto:guwahati@bchindia.com), **Hospet :** [hospet@bchindia.com](mailto:hospet@bchindia.com),

**Hubli :** [hubli@bchindia.com](mailto:hubli@bchindia.com), **Madurai :** [madurai@bchindia.com](mailto:madurai@bchindia.com), **Vishakapatnam :** [vizag@bchindia.com](mailto:vizag@bchindia.com), **Surat :** [surat@bchindia.com](mailto:surat@bchindia.com)

### Resident Engineer Locations

Baddi	Gurgaon	Madurai	Rajahmundry
Bardhaman	Haridwar	Muzaffarnagar	Salem
Bhilai	Hubli	Nagpur	Surat
Bhubaneswar	Hospet	Nashik	Udaipur
Cochin	Jodhpur	Patna	Vapi
Dehradun	Kakinada	Puducherry	Vishakhapatnam
Durgapur	Kota	Rajkot	Warangal

Since product improvement is a continuous process, the data furnished in this brochure may undergo revision without prior notice.