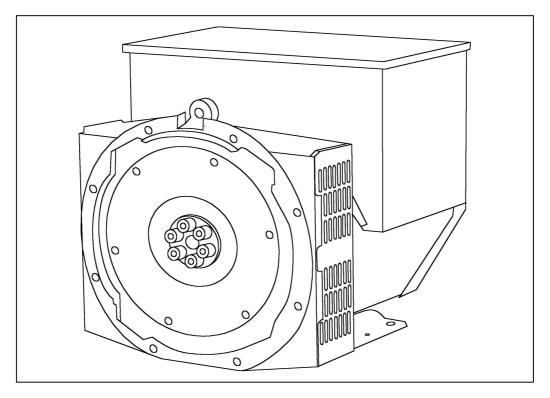


BCA164E - Technical Data Sheet



# BCA164E SPECIFICATIONS & OPTIONS



### STANDARDS

Newage Stamford industrial generators meet the requirements of BS EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359.

Other standards and certifications can be considered on request.

## **VOLTAGE REGULATORS**

### SX460 AVR - STANDARD

With this self excited control system the main stator supplies power via the Automatic Voltage Regulator (AVR) to the exciter stator. The high efficiency semiconductors of the AVR ensure positive build-up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three phase full wave bridge rectifier. This rectifier is protected by a surge suppressor against surges caused, for example, by short circuit.

#### SA465 AVR

The SA465 shares all the features of the SX460, but additionally will support a range of electronic accessories, such as a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

Voltage regulation is improved by use of this AVR.

## WINDINGS & ELECTRICAL PERFORMANCE

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

### **TERMINALS & TERMINAL BOX**

Standard generators are 3-phase reconnectable with 12 ends brought out to the terminals, which are mounted on a cover at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers' wiring and gland arrangements. It has removable panels for easy access.

## SHAFT & KEYS

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation.

### INSULATION/IMPREGNATION

The insulation system is class 'H'.

All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

### QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria 'B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.

Front cover drawing typical of product range.

# STAMFORD

# BCA164E

# WINDING 311

CONTROL SYSTEM SER4     SELF EXCITED       VULTAGE REGULATION     x11.5 %     x10.%       SUSTAINED SHORT CIRCUIT     SELF EXCITED MACHINES DO NOT SUSTAIN A SHORT CIRCUIT CURRENT       INSULATION SYSTEM     CLASS H       PROTECTION																
VOLTAGE REGULATION     ± 1.5 %     ± 1.0 %       SUSTAINED SHORT CIRCUIT     SELF EXCITED MACHINES DO NOT SUSTAIN A SHORT CIRCUIT CURRENT       INSULATION SYSTEM     IP23       RATED POWER FACTOR     IP23       STATOR WINDING     DUBLE LAYER CONCENTRIC       WINDING PTCH     TWO THIROS       WINDING READS     0.8       STATOR WIND, RESISTANCE     0.64 Ohms at 22°C       STATOR WID, RESISTANCE     0.64 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.60 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.60 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.60 Ohms BTER PHASE AT 22°C SERIES STAR CONNECTED       EXCITER STATOR RESISTANCE     20 Ohms at 22°C       EXCITER STATOR RESISTANCE     20 Ohms at 22°C       EXCITER STATOR RESISTANCE     20 Ohms at 22°C       WAVEFORM DISTORTION     NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%	CONTROL SYSTEM SER.4	SELF EXCI	TED			1										
SUSTAINED SHORT CIRCUIT     SELF EXCITED MACHINES DO NOT SUSTAIN A SHORT CIRCUIT CURRENT       INSULATION SYSTEM     IP23       RATED POWER FACTOR     0.8       STATOR WINDING     DUBLE LAYER CONCENTRIC       WINDING LEADS     12       STATOR WINDING     IP23       MINDING LEADS     12       STATOR WINDING     IP23       MODING RESISTANCE     0.364 Ohms at 22*C       EXCITER STATOR RESISTANCE     0.460 Ohms at 22*C       EXCITER ROTOR RESISTANCE     0.165 Ohms PER PHASE AT 22*C       EXCITER ROTOR RESISTANCE     0.165 Ohms PER PHASE AT 22*C       EXCITER ROTOR RESISTANCE     0.165 Ohms at 2*C       EXCITER ROTOR RESISTANCE     0.166 Ohms at 2*C       RATIL ROTOR RESISTANCE     2250 RewMin       WEIGHT MOUND ROTOR     1.55% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%	A.V.R.	STANDAR	STANDARD SX460 OPTIONAL SA465													
INSULATION SYSTEM     CLASS H       INSULATION SYSTEM     IP23       RATED POWER FACTOR     0.8       STATOR WINDING     DUBLE LAYER CONCENTRIC       STATOR WINDING     DUBLE LAYER CONCENTRIC       STATOR WINDING ENDS     TWO THIRDS       WINDING LEADS     12       STATOR WDG. RESISTANCE     0.64 Ohms at 22°C       EXCITER STATOR RESISTANCE     OHM STATOR WDG. RESISTANCE       CONTRESISTANCE     OHM STATOR WOLD RESISTANCE       CONTRESISTANCE     OHM STATOR WALL AND CONTRESISTANCE       REFIL SUPPRESSION     BS EN 61000-6-2 & BS EN 61000-6-4. VDE 0875G. VD	VOLTAGE REGULATION	± 1.	5 %	± 1.	0 %											
PROTECTION     IP23       RATED POWER FACTOR	SUSTAINED SHORT CIRCUIT	SELF EXCITED MACHINES DO NOT SUSTAIN A SHORT CIRCUIT CURRENT														
RATED POWER FACTOR     0.8       STATOR WINDING     DOUBLE LAYER CONCENTRIC       WINDING PTCH     TWO THIRDS       STATOR WDG, RESISTANCE     0.354 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED       ROTOR WDG, RESISTANCE     0.354 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED       ROTOR WDG, RESISTANCE     20 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.105 Ohms PER PHASE AT 22°C VERTOR TRESISTANCE       EXCITER STATOR RESISTANCE     0.105 Ohms PER PHASE AT 22°C VERTOR TRESISTANCE       RT.I. SUPPRESION     BS EN 61000-6-24 QDE 08756, VDE VERTOR VDE VERTOR VDE 08756, VDE VERTOR VDE VE	INSULATION SYSTEM	CLASS H														
RATED POWER FACTOR     0.8       STATOR WINDING     DOUBLE LAYER CONCENTRIC       WINDING PTCH     TWO THIRDS       WINDING LEADS     12       STATOR WDG. RESISTANCE     0.364 Ohms PER PHASE AT 22'C SERIES STAR CONNECTED       ROTOR WDG. RESISTANCE     0.64 Ohms at 22'C       EXCITER STATOR RESISTANCE     20 Ohms at 22'C       EXCITER ROTOR RESISTANCE     20 Ohms at 22'C       EXCITER ROTOR RESISTANCE     20 Ohms at 22'C       EXCITER ROTOR RESISTANCE     250 Rev Min       BEARING NON-DRIVE ROM     BALL. 6306 - 24.VDE 0875G, VDE	PROTECTION	IP23														
WINDING PTCH     TWO THIRDS       WINDING LEADS     12       STATOR WDG, RESISTANCE     0.354 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED       ROTOR WDG, RESISTANCE     0.64 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.64 Ohms at 22°C       EXCITER STATOR RESISTANCE     UNITION       REL     Ohms at 22°C       EXCITER STATOR RESISTANCE     UNITION       REL     SUBMER STARCE       EXCITER STATOR RESISTANCE     USES IN STARCE NON-DRIVE END EXCITE STAR CONNECTED INSTORTION       MAXIMUM OVERSPEED     Z250 Rev/Min       EEARING NON-DRIVE END     BALL. 6306 - 2RS. (ISO)       WEIGHT WOUND STATOR     43.8 kg       WEIGHT WOUND STATOR     44.698 kgm <sup>2</sup> SHIPPING WEIGHTS in a crate     141 kg       PACKING CRATE SIZE     50 Hz     50 Hz       COOLING AIR     0.017 res       VOLTAGE SERIES STAR     380/220     400/231     41/18/240     440/254     460/42       VOLTAGE SERIES STAR		0.8														
Image: Normal Leads     12       Stator WDG, RESISTANCE     0.64 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.64 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.64 Ohms at 22°C       EXCITER STATOR RESISTANCE     0.064 Ohms at 22°C       EXCITER ROTOR RESISTANCE     0.064 Ohms at 22°C       WEIGHT WOUND STATOR     NON-DRIVE END       WEIGHT WOUND STATOR	STATOR WINDING	DOUBLE LAYER CONCENTRIC														
STATOR WGG. RESISTANCE     0.364 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED       ROTOR WGG. RESISTANCE     OPENDE STATOR RESISTANCE       EXCITER STATOR RESISTANCE     SUPPRESION WES RESISTANCE       SUPPRESION     BS EN 61000-6-2 & BS EN 61000-6-4 , VDE 0875G, VDE 0875R refer to factory for others       WAVEFORM DISTORTION     NO LOAD < 1.5% NONDSTORTING BALANCED LINEAR LOAD < 5.0%       MAXIMUM OVERSPEED     Z250 RevIMin       BEARING NON-DRIVE END     BALL. 6306 - 2RS. (ISO)       WEIGHT WOUND STATOR     43.6 kg       WEIGHT WOUND ROTOR     TH4 36 kg       WR'INERTIA     OPENTIVE SOLUTE     SOLUTE       YOUTAGE SERIES STAR     300/220     VOLTAGE SERIES STAR <td>WINDING PITCH</td> <td colspan="11">TWO THIRDS</td>	WINDING PITCH	TWO THIRDS														
ROTOR WDG. RESISTANCE     U-064 Ohms at 22°C       EXCITER STATOR RESISTANCE     20 Ohms at 22°C       EXCITER ROTOR RESISTANCE     U-0105 Ohms PER PHASE AT 22°C       EXCITER ROTOR RESISTANCE     BS EN 61000-62 & BS EN 61000-64. VDE 00750, VDE 00570, VDE 00750, VDE 00570, VDE 000570, VDE 00570, VDE 00570, VDE 000570, VDE 000	WINDING LEADS	12														
ROTOR WDG. RESISTANCE     U-064 Ohms at 22°C       EXCITER STATOR RESISTANCE     20 Ohms at 22°C       EXCITER ROTOR RESISTANCE     U-0105 Ohms PER PHASE AT 22°C       EXCITER ROTOR RESISTANCE     BS EN 61000-62 & BS EN 61000-64. VDE 00750, VDE 00570, VDE 00750, VDE 00570, VDE 000570, VDE 00570, VDE 00570, VDE 000570, VDE 000	STATOR WDG RESISTANCE															
EXCITER STATOR RESISTANCE     20 Ohms al 22°C       EXCITER ROTOR RESISTANCE     0.105 Ohms PER PHASE AT 22°C       EXCITER ROTOR RESISTANCE     DISTORTION     BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N, refer to factory for others       WAVEFORM DISTORTION     NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%       MAXIMUM OVERSPEED     ESEN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N, refer to factory for others       WAVEFORM DISTORTION     NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%       WEIGHT COMP. GENERATOR     ESEN 61000-6-2 & SEN (SIS)       WEIGHT WOUND STATOR     ====================================																
0.105 Ohms PER PHASE AT 22°C       CONTRENSITANCE       0.105 Ohms PER PHASE AT 22°C       R.F.I. SUPPRESSION     BS EN 61000-6-2 & BS EN 61000-6-4. VDE 0875G, VDE 0875N. refer to factory for others       WAVEFORM DISTORTION     NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%       WAVEFORM DISTORTION     NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%       WEIGHT WOUND STATOR     "EXEMPTION       WEIGHT WOUND STATOR     "EXEMPTION       WEIGHT WOUND ATOR     "EXEMPTION       WEIGHT WOUND ROTOR     "EXEMPTION       NOTES HER     "EXEMPTION       SHIPPING WEIGHTS in a crate     "EXEMPTION       PACKING CRATE SIZE     "EVITE-SU       COLTITIN"SEC THE-2%     "EVITE-SU       COLDING AIR     -0.071 m <sup>3</sup> /sec TS cm       COLDING AIR     -0.071 m <sup>3</sup> /sec TS cm       VOLTAGE SERIES STAR     380/220     40/220     20/120     20/120     20/133 <th colspa<="" td=""><td></td><td colspan="9"></td></th>	<td></td> <td colspan="9"></td>															
R.F. I. SUPPRESSION   BS EN 61000-6-2 & BS EN 61000-6-4. VDE 0875G, VDE 0875G, VDE 0875N. refer to factory for others     WAVEFORM DISTORTION   NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%     MAXIMUM OVERSPEED   2250 Rev/Min     BEARING NON-DRIVE END   BALL. 6306 - 2RS. (ISO)     WEIGHT COMP, GENERATOR																
WAVEFORM DISTORTION     NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%       MAXIMUM OVERSPEED     2250 Rev/Min       BEARING NON-DRIVE END     BALL 6306 - 2RS. (ISO)       WEIGHT COMP. GENERATOR     T28 kg       WEIGHT WOUND STATOR	EXCITER ROTOR RESISTANCE	0.105 Ohms PER PHASE AT 22°C														
MAXIMUM OVERSPEED   2250 Rev/Min     BEARING NON-DRIVE END   BALL 6306 - 2RS. (ISO)     WEIGHT COMP. GENERATOR   T28 kg     WEIGHT WOUND STATOR	R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. refer to factory for others														
BEARING NON-DRIVE END     BALL 6306 - 2RS. (ISO)       WEIGHT COMP. GENERATOR	WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%														
WEIGHT COMP. GENERATOR     128 kg       WEIGHT WOUND STATOR     43.6 kg       WEIGHT WOUND ROTOR     44.69 kg       WR <sup>2</sup> INERTIA     0.1568 kgm <sup>2</sup> SHIPPING WEIGHTS in a crate     141 kg       PACKING CRATE SIZE     60 Hz       TELEPHONE INTERFERENCE     THF<2%     0.09 m <sup>3</sup> /sec 191 cfm       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     460/254	MAXIMUM OVERSPEED	2250 Rev/Min														
WEIGHT WOUND STATOR     43.6 kg       WEIGHT WOUND ROTOR     43.6 kg       WEIGHT WOUND ROTOR     40.69 kg       WR² INERTIA     0.1568 kgm²       SHIPPING WEIGHTS in a crate     141 kg       PACKING CRATE SIZE     84 x 59 x 75 (cm)       TELEPHONE INTERFERENCE     THF<2%     60 HZ       COOLING AIR     0.071 m²/sec 150 cfm     0.09 m²/sec 191 cfm       VOLTAGE SERIES STAR     300/201     415/240     440/254     416/240     40/264<	BEARING NON-DRIVE END	BALL. 6306 - 2RS. (ISO)														
WEIGHT WOUND ROTOR     40.69 kg       WR² INERTIA     0.1568 kgm²       SHIPPING WEIGHTS in a crate     141 kg       PACKING CRATE SIZE     84 x 59 x 75 (cm)       60 Hz     50 Hz     60 Hz       TELEPHONE INTERFERENCE     TH<2%     60 Hz       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     460/266     480/277       VOLTAGE SERIES STAR     380/220     400/115     208/120     220/127     208/120     220/127     230/133     240/133       VOLTAGE SERIES DELTA     190/110     200/115     240/120     254/127     240/120     254/127     240/133       VOLTAGE SERIES DELTA     220/110     230/115     240/120     254/127     240/130     240/130       VALUES     20/110     21.4     21.4     21.4 <td>WEIGHT COMP. GENERATOR</td> <td colspan="11">128 kg</td>	WEIGHT COMP. GENERATOR	128 kg														
WR*INERTIA     0.1568 kgm²       SHIPPING WEIGHTS in a crate     141 kg       PACKING CRATE SIZE     141 kg       PACKING CRATE SIZE     141 kg       PACKING CRATE SIZE     50 kg       TELEPHONE INTERFERENCE     TH<2%     60 Hz       COOLING AIR     0.09 m³/sec 191 cfm       VOLTAGE SERIES STAR     380/220     400/231     416/240     440/254     460/266     480/277       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     460/266     480/277       VOLTAGE SERIES STAR     380/220     420/120     254/127     280/133     240/133       VOLTAGE SERIES DELTA     220/110     231/13     240/120     254/127     260/133     277/138       VA DIR AXIS SYNCHRONOUS     1.781     1.60       VA DIR AXIS SUBTRANSIENT     0.162     0.111     0.133	WEIGHT WOUND STATOR	43.6 kg														
SHIPPING WEIGHTS in a crate     141 kg       PACKING CRATE SIZE     84 x 59 x 75 (cm)       TELEPHONE INTERFERENCE     THF<2%     60 Hz       COOLING AIR     0.071 m³/sec     150 cfm     0.09 m³/sec     160 Hz       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     460/266     480/277       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     460/266     480/277       VOLTAGE SERIES STAR     380/220     400/120     220/127     200/127     200/127     200/127     200/120     254/127     266/133     277/138       VALUES     21.4     21.4     21.4     21.4     21.4     21.4     21.4     21.4     21.4     21.4     21.4     21.4     21.4     21.4 <th colsp<="" td=""><td>WEIGHT WOUND ROTOR</td><td colspan="12">40.69 kg</td></th>	<td>WEIGHT WOUND ROTOR</td> <td colspan="12">40.69 kg</td>	WEIGHT WOUND ROTOR	40.69 kg													
PACKING CRATE SIZE     84 x 59 x 75 (cm)       60 Hz     60 Hz       TELEPHONE INTERFERENCE     THF<2%     TIF<50 HZ       COOLING AIR     0.071 m³/sec     101/000     101/000     101/000     101/000     101/000     460/266     480/270       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     460/266     480/277       VOLTAGE SERIES STAR     380/220     400/131     220/110     200/115     280/120     220/127     280/120     220/127     280/120     240/120     254/127     266/133     277/138       VALUES     Z11/4     Z1.4     Z1.4     Z1.4     Z1.4     Z1.4     Z1.4     Z1.4     Z1.7     Z40/120     Z54/127     Z66/133     Z77/138       X/4 DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     Z.178     Z.043     1.870     1.717       X/3 DIR. AXIS SUBTRANSIENT     0.116     0.165     0.097     0.111     0.192	WR <sup>2</sup> INERTIA	0.1568 kgm <sup>2</sup>														
50 Hz     60 Hz       TELEPHONE INTERFERENCE     THF<2%     TIF<50       COOLING AIR     0.071 m³/sec 150 cfm     0.09 m³/sec 191 cfm       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     460/266     480/277       VOLTAGE PARALLEL STAR     190/110     200/115     20/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     220/127     28/120     28/120     28/120     28/120     28/120 <th 2<="" colspan="3" td=""><td>SHIPPING WEIGHTS in a crate</td><td colspan="12">· · · · · · · · · · · · · · · · · · ·</td></th>	<td>SHIPPING WEIGHTS in a crate</td> <td colspan="12">· · · · · · · · · · · · · · · · · · ·</td>			SHIPPING WEIGHTS in a crate	· · · · · · · · · · · · · · · · · · ·											
TELEPHONE INTERFERENCE     THF<2%     TIF<50       COOLING AIR     0.071 m³/sec 150 cfm     0.09 m³/sec 191 cfm       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     416/240     440/254     460/266     480/277       VOLTAGE SERIES STAR     190/110     200/115     208/120     220/127     208/120     220/127     230/133     240/138       VOLTAGE SERIES DELTA     220/110     230/115     240/120     254/127     240/120     254/127     266/133     277/138       KVA BASE RATING FOR REACTANCE     21.4     21.4     21.4     16.6     26.1     27.4     27.4     27.4       Xd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS RANSIENT     0.179     0.162     0.173     0.220     0.207     0.189     0.174       X'q QUAD. AXIS REACTANC	PACKING CRATE SIZE				84 x 59 x	x 75 (cm)										
COOLING AIR     0.071 m³/sec 150 cfm     0.09 m³/sec 191 cfm       VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     416/240     440/254     460/266     480/277       VOLTAGE PARALLEL STAR     190/110     200/115     208/120     220/127     208/120     220/127     230/133     240/138       VOLTAGE SERIES DELTA     220/110     230/115     240/120     254/127     240/120     254/127     266/133     277/138       KVA BASE RATING FOR REACTANCE     21.4     21.4     21.4     16.6     26.1     27.4     27.4     27.4       Xd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SUBTRANSIENT     0.116     0.105     0.097     0.111     0.130     0.119     0.110       X'q QUAD. AXIS REACTANCE     0.885     0.799     0.742     0.881     1.077     1.011     0.925     0.849       X''q QUAD. AXIS SUBTRANSIENT     0.200     0.181     0.168     0.192     0.243			50	Hz			60	Hz								
VOLTAGE SERIES STAR     380/220     400/231     415/240     440/254     440/254     460/266     480/277       VOLTAGE PARALLEL STAR     190/110     200/115     208/120     220/127     208/120     220/127     230/133     240/138       VOLTAGE SERIES DELTA     220/110     230/115     240/120     254/127     266/133     277/138       KVA BASE RATING FOR REACTANCE VALUES     21.4     21.4     21.4     16.6     26.1     27.4     27.4     27.4       Xd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'' d DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     0.720     0.207     0.189     0.174       X'' d DIR. AXIS SUBTRANSIENT     0.162     0.150     0.173     0.220     0.207     0.189     0.174       X'' d QUAD. AXIS REACTANCE     0.885     0.799     0.742     0.851     1.077     1.011     0.925     0.849       X'' q QUAD. AXIS SUBTRANSIENT     0.200     0.181     0.168     0.192	TELEPHONE INTERFERENCE		THF	<2%		TIF<50										
VOLTAGE PARALLEL STAR     190/110     200/115     208/120     220/127     208/120     220/127     230/133     240/138       VOLTAGE SERIES DELTA     220/110     230/115     240/120     254/127     240/120     254/127     266/133     277/138       kVA BASE RATING FOR REACTANCE     21.4     21.4     21.4     16.6     26.1     27.4     27.4     27.4       Xd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SUBTRANSIENT     0.116     0.105     0.097     0.111     0.139     0.130     0.119     0.110       X'' QUAD. AXIS REACTANCE     0.885     0.799     0.742     0.851     1.077     1.011     0.925     0.849       X''' QUAD. AXIS SUBTRANSIENT     0.200     0.181     0.168     0.192     0.243     0.228     0.209     0.192       X'' QUAD. AXIS SUBTRANSIENT	COOLING AIR		0.071 m³/s	ec 150 cfm		0.09 m³/sec 191 cfm										
VOLTAGE SERIES DELTA     220/110     230/115     240/120     254/127     240/120     254/127     266/133     277/138       kVA BASE RATING FOR REACTANCE VALUES     21.4     21.4     21.4     21.4     16.6     26.1     27.4     27.4     27.4     27.4       Xd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SUBTRANSIENT     0.179     0.162     0.150     0.173     0.220     0.207     0.189     0.174       X''d QUAD. AXIS REACTANCE     0.885     0.799     0.742     0.851     1.077     1.011     0.925     0.849       X''q QUAD. AXIS SUBTRANSIENT     0.200     0.181     0.168     0.192     0.243     0.228     0.209     0.192	VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277							
KVA BASE RATING FOR REACTANCE VALUES     21.4     21.4     21.4     21.4     16.6     26.1     27.4     27.4     27.4       Xd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS SYNCHRONOUS     0.179     0.162     0.150     0.173     0.220     0.207     0.189     0.174       X''d DIR. AXIS SUBTRANSIENT     0.116     0.105     0.097     0.111     0.139     0.130     0.119     0.110       X'' QUAD. AXIS SUBTRANSIENT     0.200     0.181     0.168     0.192     0.243     0.228     0.209     0.192       X'' QUAD. AXIS SUBTRANSIENT     0.200     0.181     0.168     0.192     0.243     0.228     0.209     0.192       X'' QUAD. AXIS SUBTRANSIENT     0.072     0.065     0.060     0.068     0.083     0.076     0.069       X'' LEAKAGE REACTANCE     0.077 </td <td>VOLTAGE PARALLEL STAR</td> <td>190/110</td> <td>200/115</td> <td>208/120</td> <td>220/127</td> <td>208/120</td> <td>220/127</td> <td>230/133</td> <td>240/138</td>	VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138							
VALUES     21.4     21.4     21.4     10.0     20.1     21.4     21.4     21.4       Xd DIR. AXIS SYNCHRONOUS     1.781     1.607     1.493     1.712     2.178     2.043     1.870     1.717       X'd DIR. AXIS TRANSIENT     0.179     0.162     0.150     0.173     0.220     0.207     0.189     0.174       X''d DIR. AXIS SUBTRANSIENT     0.116     0.105     0.097     0.111     0.139     0.130     0.119     0.110       X'' q QUAD. AXIS REACTANCE     0.885     0.799     0.742     0.851     1.077     1.011     0.925     0.849       X'' q QUAD. AXIS REACTANCE     0.885     0.799     0.742     0.851     1.077     1.011     0.925     0.849       X'' q QUAD. AXIS SUBTRANSIENT     0.200     0.181     0.168     0.192     0.243     0.228     0.209     0.192       XL LEAKAGE REACTANCE     0.072     0.065     0.060     0.068     0.083     0.076     0.069       X2 NEGATIVE SEQUENCE     0.169     0.152     0.141 <t< td=""><td>VOLTAGE SERIES DELTA</td><td>220/110</td><td>230/115</td><td>240/120</td><td>254/127</td><td>240/120</td><td>254/127</td><td>266/133</td><td>277/138</td></t<>	VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138							
X'd DIR. AXIS TRANSIENT   0.179   0.162   0.150   0.173   0.220   0.207   0.189   0.174     X''d DIR. AXIS SUBTRANSIENT   0.116   0.105   0.097   0.111   0.139   0.130   0.119   0.110     X''d DIR. AXIS SUBTRANSIENT   0.116   0.105   0.097   0.111   0.139   0.130   0.119   0.110     X''q QUAD. AXIS REACTANCE   0.885   0.799   0.742   0.851   1.077   1.011   0.925   0.849     X''q QUAD. AXIS SUBTRANSIENT   0.200   0.181   0.168   0.192   0.243   0.228   0.209   0.192     XL LEAKAGE REACTANCE   0.072   0.065   0.060   0.068   0.088   0.083   0.076   0.069     X2 NEGATIVE SEQUENCE   0.169   0.152   0.141   0.162   0.197   0.185   0.169   0.155     X0 ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     REACTANCES ARE SATURATED   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED   1''d TRANSIENT TIME CONST.   0.04 s   0.4 s   1''d 0.0.5 s<		21.4	21.4	21.4	16.6	26.1	27.4	27.4	27.4							
X"d DIR. AXIS SUBTRANSIENT   0.116   0.105   0.097   0.111   0.139   0.130   0.119   0.110     Xq QUAD. AXIS REACTANCE   0.885   0.799   0.742   0.851   1.077   1.011   0.925   0.849     X"q QUAD. AXIS SUBTRANSIENT   0.200   0.181   0.168   0.192   0.243   0.228   0.209   0.192     X_L LEAKAGE REACTANCE   0.072   0.065   0.060   0.068   0.088   0.083   0.076   0.069     X_2 NEGATIVE SEQUENCE   0.169   0.152   0.141   0.162   0.197   0.185   0.169   0.155     X_0 ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     X_0 ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     X_0 ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     Y_0 ZERO SEQUENCE   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED <td>Xd DIR. AXIS SYNCHRONOUS</td> <td>1.781</td> <td>1.607</td> <td>1.493</td> <td>1.712</td> <td>2.178</td> <td>2.043</td> <td>1.870</td> <td>1.717</td>	Xd DIR. AXIS SYNCHRONOUS	1.781	1.607	1.493	1.712	2.178	2.043	1.870	1.717							
Xq QUAD. AXIS REACTANCE   0.885   0.799   0.742   0.851   1.077   1.011   0.925   0.849     X"q QUAD. AXIS SUBTRANSIENT   0.200   0.181   0.168   0.192   0.243   0.228   0.209   0.192     XL LEAKAGE REACTANCE   0.072   0.065   0.060   0.068   0.088   0.083   0.076   0.069     X2 NEGATIVE SEQUENCE   0.169   0.152   0.141   0.162   0.197   0.185   0.169   0.155     Xo ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     Xo ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     Xo ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     YO ZERO SEQUENCE   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATE   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATE   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATE   VI''''''''''''''''''''''''''''''''''''	X'd DIR. AXIS TRANSIENT	0.179	0.162	0.150	0.173	0.220	0.207	0.189	0.174							
X"q QUAD. AXIS SUBTRANSIENT   0.200   0.181   0.168   0.192   0.243   0.228   0.209   0.192     X_L LEAKAGE REACTANCE   0.072   0.065   0.060   0.068   0.088   0.083   0.070   0.069     X_ NEGATIVE SEQUENCE   0.169   0.152   0.141   0.162   0.197   0.185   0.169   0.155     X_ ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     X_ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     X_ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     X_ZERO SEQUENCE   0.077   0.069   0.065   0.073   0.094   0.088   0.081   0.074     X_ZERO SEQUENCE   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATE   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATE   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATE     T'd SUB-TRANSTIME CONST.   0.005 s   0.04 s   S   S   S   S     T'd O.C. FIELD TIME CONST.   0.0	X"d DIR. AXIS SUBTRANSIENT	0.116	0.105	0.097	0.111	0.139	0.130	0.119	0.110							
XL LEAKAGE REACTANCE     0.072     0.065     0.060     0.068     0.088     0.083     0.076     0.069       X2 NEGATIVE SEQUENCE     0.169     0.152     0.141     0.162     0.197     0.185     0.169     0.155       X0 ZERO SEQUENCE     0.077     0.069     0.065     0.073     0.094     0.088     0.081     0.074       REACTANCES ARE SATURATED     VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED     VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED     Tid TRANSIENT TIME CONST.     0.02 s     VALUES SATURATED     VALUES SATURATED SATURATED     VALUES SATURATED	Xq QUAD. AXIS REACTANCE	0.885	0.799	0.742	0.851	1.077	1.011	0.925	0.849							
X2 NEGATIVE SEQUENCE     0.169     0.152     0.141     0.162     0.197     0.185     0.169     0.155       X0 ZERO SEQUENCE     0.077     0.069     0.065     0.073     0.094     0.088     0.081     0.074       REACTANCES ARE SATURATED     VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED     VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED     T'd TRANSIENT TIME CONST.     0.073     0.094     0.088     0.081     0.074       T'd SUB-TRANSTIME CONST.     VALUES ARE VER UNIT AT RATING AND VOLTAGE INDICATED S     0.025 s     0.025 s     0.0155 s     VALUES ARE VER UNIT AT RATING AND VOLTAGE INDICATED       T'd SUB-TRANSTIME CONST.     VALUES ARE VER UNIT AT RATING AND VOLTAGE INDICATED S     0.025 s     VALUES ARE VER UNIT AT RATING AND VOLTAGE INDICATED S       T'd O.C. FIELD TIME CONST.     VALUES ARE VER UNIT AT RATING AND VOLTAGE INDICATED S     0.04 s     VALUES ARE VER UNIT AT RATING AND VOLTAGE INDICATED S	X"q QUAD. AXIS SUBTRANSIENT	0.200	0.181	0.168	0.192	0.243	0.228	0.209	0.192							
X0 ZERO SEQUENCE     0.077     0.069     0.065     0.073     0.094     0.088     0.081     0.074       REACTANCES ARE SATURATED     VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED     VALUE ARE PER UNIT AT RATING AND VOLTAGE INDICATED     VALUE ARE PER UNIT A		0.072		0.060	0.068	0.088	0.083	0.076	0.069							
REACTANCES ARE SATURATED   VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED     T'd TRANSIENT TIME CONST.   0.02 s     T'd SUB-TRANSTIME CONST.   0.005 s     T'do O.C. FIELD TIME CONST.   0.4 s     Ta ARMATURE TIME CONST.   0.006 s	X2 NEGATIVE SEQUENCE	0.169	0.152			0.197		0.169	0.155							
T'd TRANSIENT TIME CONST.0.02 sT'd SUB-TRANSTIME CONST.0.005 sT'do O.C. FIELD TIME CONST.0.4 sTa ARMATURE TIME CONST.0.006 s																
T"d SUB-TRANSTIME CONST.     0.005 s       T'do O.C. FIELD TIME CONST.     0.4 s       Ta ARMATURE TIME CONST.     0.006 s																
T'do O.C. FIELD TIME CONST. 0.4 s   Ta ARMATURE TIME CONST. 0.006 s	T'd TRANSIENT TIME CONST.	0.02 s														
Ta ARMATURE TIME CONST. 0.006 s	T"d SUB-TRANSTIME CONST.															
SHORT CIRCUIT RATIO 1/Xd																
	SHORT CIRCUIT RATIO				1/.	Xd										



BCA164E

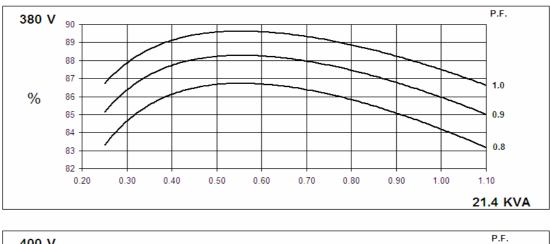


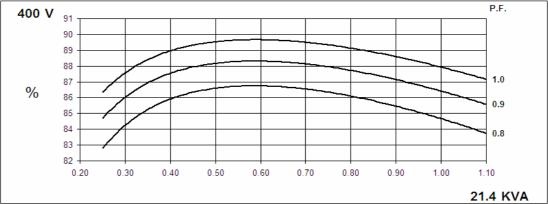
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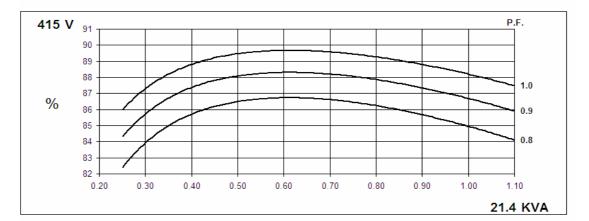
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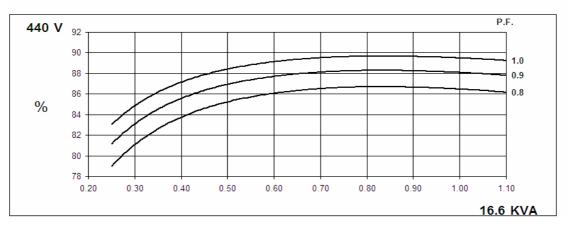
Winding 311

## THREE PHASE EFFICIENCY CURVES







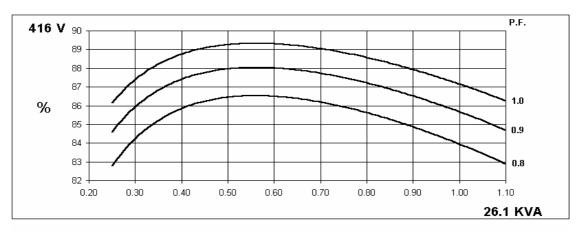


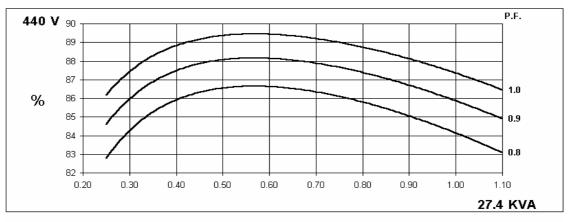


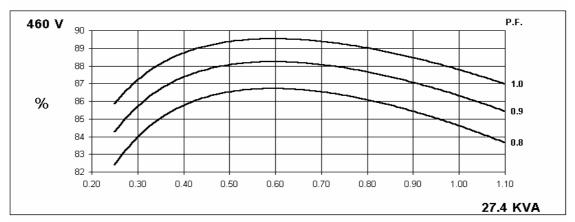
Winding 311

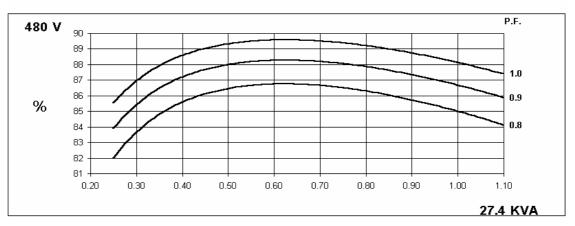
60 Hz

## THREE PHASE EFFICIENCY CURVES







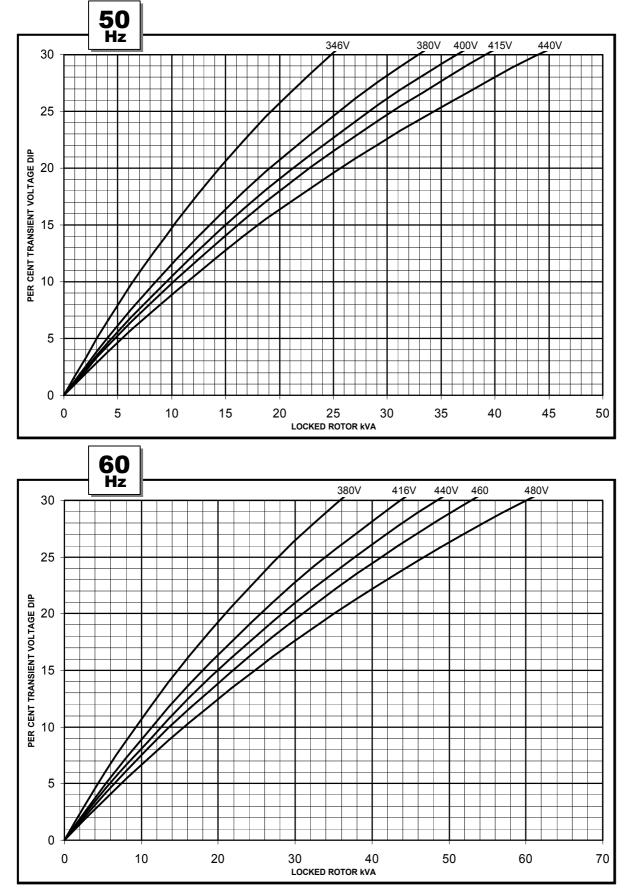


# BCA164E



Winding 311

## Locked Rotor Motor Starting Curve





BCA164E

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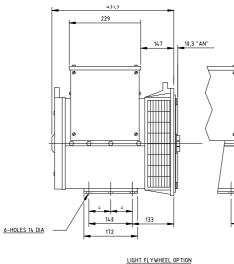
# **BCA164E**



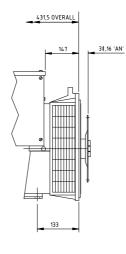
## Winding 311 / 0.8 Power Factor

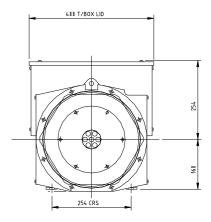
RATINGS																	
	Class - Temp Rise	Cont. F - 105/40°C			Cont. H - 125/40°C			Standby - 150/40°C				Standby - 163/27°C					
50	Series Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
Hz	Parallel Star (V)	190	200	208	220	190	200	208	220	190	200	208	220	190	200	208	220
	Series Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	19.0	19.0	19.0	14.7	21.4	21.4	21.4	16.6								
	kW	15.2	15.2	15.2	11.8	17.1	17.1	17.1	13.3		N1/A						
	Efficiency (%)	85.2	85.5	85.8	86.7	84.2	84.7	85.0	86.5	N/A			N/A				
	kW Input	17.8	17.8	17.7	13.6	20.3	20.2	20.1	15.4								
60	Series Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
Hz	Parallel Star (V)	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Series Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	23.8	25.0	25.0	26.7	26.1	27.4	27.4	27.4	N/A							
	kW	19.0	20.0	20.0	21.4	20.9	21.9	21.9	21.9				N/A				
	Efficiency (%)	84.8	85.0	85.3	85.2	84.0	84.1	84.6	85.0	N/A							
	kW Input	22.5	23.5	23.4	25.1	24.9	26.1	25.9	25.8								

## DIMENSIONS



483 OVERALL 198 -21,34 'AN 184,5 HEAVY FLYWHEEL OPTION





'G DRIVE' OPTION



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