

## موتور دیزل

|                       |               |                          |
|-----------------------|---------------|--------------------------|
| Manufacturer          | Deutz         | تولید کننده              |
| Type                  | BF4M1013E     | تیپ                      |
| Number of cylinders   | 4             | تعداد سیلندر ها          |
| Cylinder arrangement  | in-line       | آرایش سیلندر ها          |
| Cycle                 | 4 stroke      | چرخه                     |
| Aspiration            | Turbo charged | سیستم تنفس               |
| Bore × Stroke , mm    | 105x120       | قطر سیلندر × کورس پیستون |
| Displacement , Liters | 7.15          | جا به جایی               |
| Speed Governor        | Mechanical    | سرعت گاورنر              |
| Cooling System        | LIQUID        | سیستم خنک کننده          |
| Frequency             | 50Hz          | فرکانس                   |
| Starter Motor         | 12V           | استارتر موتور            |

## ژنراتور

|                  |           |             |
|------------------|-----------|-------------|
| Manufacturer     | Mecc Alte | تولید کننده |
| Type             | ECP34-1S  | تیپ         |
| Exciter type     | Brushless | نوع کانتر   |
| Power factor     | 0.8       | ضریب قدرت   |
| Voltage          | 380       | ولتاژ       |
| Frequency        | 50 Hz     | فرکانس      |
| Speed, Rpm       | 1500      | سرعت        |
| Insulation class | H         | کلاس عایق   |
| Protection class | IP21      | کلاس حفاظتی |
| Excitation       | Brushless | سیستم تمریک |

**(DEUTZ BF4M1013E)**

**1.500 R.P.M. 50 Hz**

|                   |           |             |   |               |
|-------------------|-----------|-------------|---|---------------|
| <b>ENGINE</b>     | MAKE      | MODEL       | <b>CONTINUOUS POWER</b><br>PRP norma ISO 8528-1 | <b>85 kVA</b> |
|                   | DEUTZ     | BF4M1013 E  | <b>STAND-BY POWER</b><br>LTP norma ISO 8528-1   | <b>95 kVA</b> |
| <b>ALTERNATOR</b> | MECC-ALTE | ECP 34-1S/4 | <b>400/230 V</b>                                |               |

| VOLTAGE | HZ | PHASE | COS | PRP<br>KVA/KW | LTP<br>KVA/KW | AMPERAGE A |
|---------|----|-------|-----|---------------|---------------|------------|
| 415/240 | 50 | 3     | 0,8 | 85,0/68,0     | 93,5/74,8     | 130,23     |
| 400/230 | 50 | 3     | 0,8 | 85,0/68,0     | 93,5/74,8     | 135,12     |
| 380/220 | 50 | 3     | 0,8 | 85,0/68,0     | 93,5/74,8     | 142,23     |
| 240/139 | 50 | 3     | 0,8 | 85,0/68,0     | 93,5/74,8     | 225,19     |
| 230/133 | 50 | 3     | 0,8 | 85,0/68,0     | 93,5/74,8     | 234,98     |
| 220/127 | 50 | 3     | 0,8 | 85,0/68,0     | 93,5/74,8     | 245,66     |

## ENGINE CHARACTERISTICS/ BF4M1013E

### GENERAL DATA

|                          |            |
|--------------------------|------------|
| POWER PRP (kWm)          | 78.50      |
| POWER LTP (kWm)          | 82.50      |
| No CYLINDERS             | 4          |
| CYLINDERS CAPASITY (L)   | 1.20       |
| DIAMETER PER STROKE (mm) | -          |
| COMPRESSION RATIO        | -          |
| COOLING SYSTEM           | LIQUID     |
| INJECTION                | direct     |
| SUCTION                  | TURBO      |
| SERIES REGULATOR         | Mechanical |
| FLY WHEEL COUPLING       | 3 - 11,5"  |

### LUBRICATION SYSTEM

|                               |      |
|-------------------------------|------|
| OIL CAPACITY (L)              | 11   |
| OIL CONSUMPTION (%)           | 0,30 |
| MIN. ALARM OIL PRESSURE (BAR) | 2,70 |

### VENTILATION SYSTEM

|   |      |
|---|------|
| AIR COOLING FLOW(m <sup>3</sup> /h)     | 5400 |
| COMBUSTION AIR FLOW (m <sup>3</sup> /h) | 285  |

### ELECTRICAL SYSTEM

|              |    |
|--------------|----|
| VDC (V)      | 12 |
| BATTERY (Ah) | 96 |

## ALTERNATOR CHARACTERISTICS/ ECP 34-1S/4

### GENERAL DATA

|                      |       |
|----------------------|-------|
| POWER PRP (kVA)      | 85    |
| POWER LTP (kVA)      | 93,50 |
| EFFICIENCY ALT. 3/4% | 91,90 |
| EFFICIENCY ALT. 4/4% | 91,50 |
| No POLES             | 4     |
| VOLTAGE REGULATOR    | DSR   |
| No WIRES             | 12    |
| INSULATION           | H     |
| Xd (%)               | 325   |
| X'd (%)              | 22,30 |
| X                    | 7,40  |
| DEGREE OF PROTECTION | IP21  |

### GENERATOR SET CONSUMPTION

| % POWER USED | LITRES / HOUR |
|--------------|---------------|
| 50%          | 10            |
| 75%          | 15            |
| 100%         | 21            |

### DIMENSIONS (MM)

| LENGTH | WIDTH | HEIGHT |
|--------|-------|--------|
| 2950   | 1100  | 1759   |

### CAPACITIES

|                          |         |
|--------------------------|---------|
| FUEL TANK (litres)       | 220.00  |
| WEIGHT (kg)              | 1680.00 |
| NOISE LEVEL (dB (A)) 7 m | 64      |



# GENERATOR TYPE ECP 34-1S/4 A

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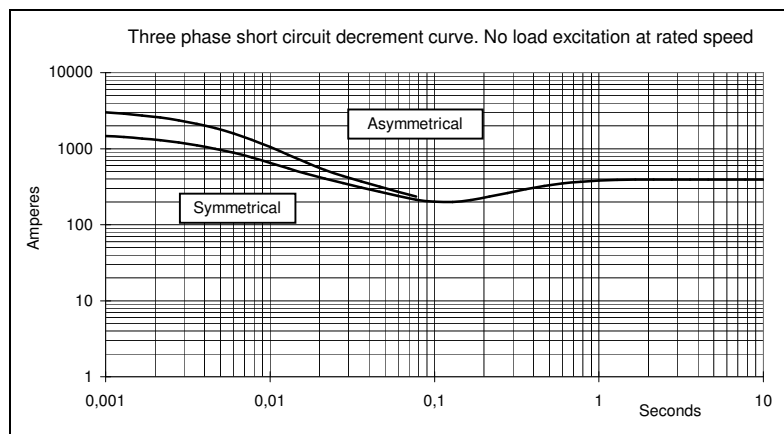
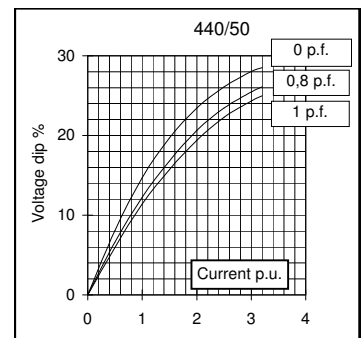
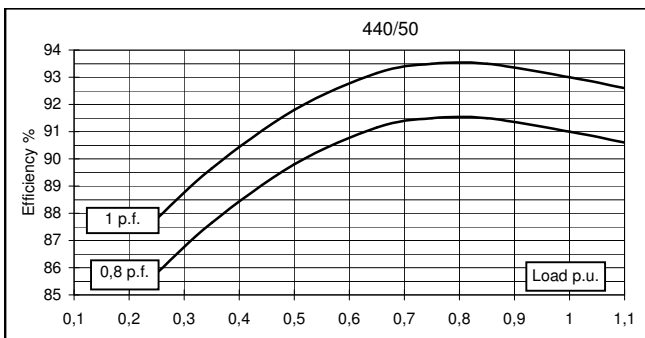
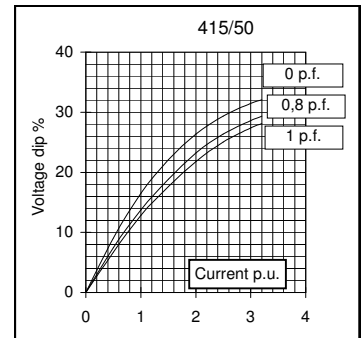
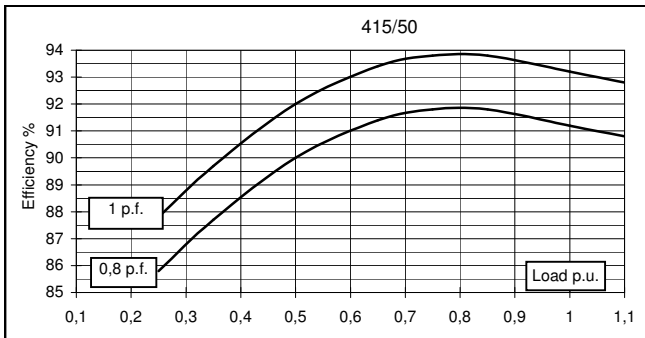
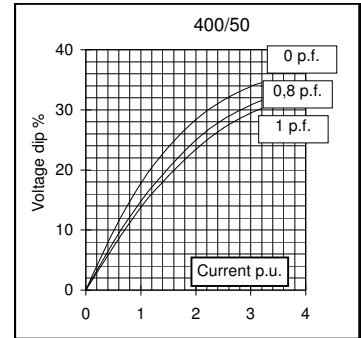
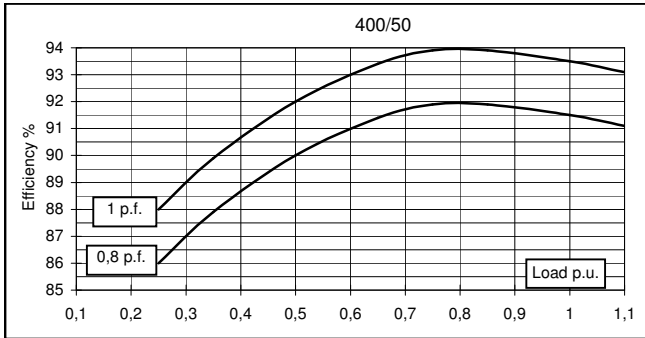
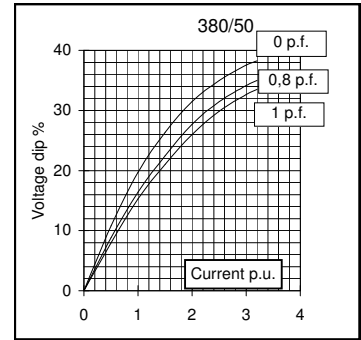
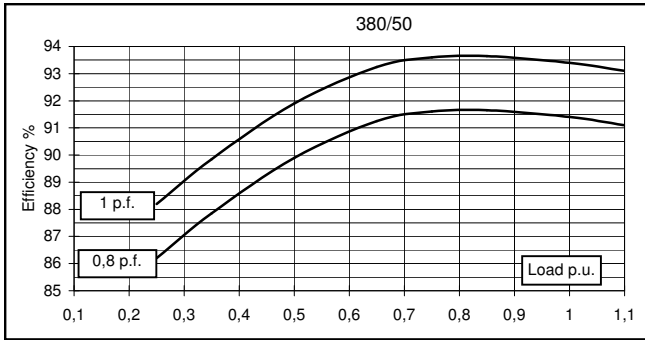
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| Electrical Characteristics           |                     |  |   |       |       |       |                |       |       |       |
|--------------------------------------|---------------------|--|---|-------|-------|-------|----------------|-------|-------|-------|
| Frequency                            | Hz                  | 50   |   |       |       | 60    |                |       |       |       |
| Voltage (series star)                | V                   | 380  | 400   | 415   | 440   | 415   | 440            | 460   | 480   |       |
| Rated power class H                  | kVA                 | 85   | 85  | 85    | 70    | 95    | 102            | 102   | 102   |       |
|                                      | kW                  | 68   | 68  | 68    | 56    | 76    | 81,6           | 81,6  | 81,6  |       |
| Rated power class F                  | kVA                 | 77   | 77  | 77    | 63    | 85,5  | 92             | 92    | 92    |       |
|                                      | kW                  | 61,6   | 61,6  | 61,6  | 50,4  | 68,4  | 73,6           | 73,6  | 73,6  |       |
| Regulation with DSR                  |                     | ±1 % with any power factor and speed variations between -5% +30% |   |       |       |       |                |       |       |       |
| Insulation class                     |                     | H  |   |       |       |       |                |       |       |       |
| Execution                            |                     | Brushless  |   |       |       |       |                |       |       |       |
| Stator winding                       |                     | 12 ends  |   |       |       |       |                |       |       |       |
| Rotor                                |                     | with damping cage  |   |       |       |       |                |       |       |       |
| Efficiencies class H                 | 4/4                 | %  | 91,4  | 91,5  | 91,2  | 91    | 92,7           | 93,2  | 93,3  | 93,4  |
| (see graph. for details)             | 3/4                 | %  | 91,6  | 91,9  | 91,8  | 91,5  | 93,3           | 93,5  | 93,6  | 93,8  |
|                                      | 2/4                 | %  | 89,9  | 90    | 90    | 89,8  | 91,5           | 91,6  | 91,7  | 91,8  |
|                                      | 1/4                 | %  | 86,2  | 86    | 85,8  | 85,8  | 87,7           | 87,7  | 87,7  | 87,5  |
| Reactances (f. l.cl. F)              | Xd                  | %  | 360,1   | 325   | 301,9 | 221,2 | 404,9          | 386,8 | 353,9 | 325   |
|                                      | Xd'                 | %  | 24,7  | 22,3  | 20,7  | 15,2  | 27,8           | 26,5  | 24,3  | 22,3  |
|                                      | Xd''                | %  | 8,2   | 7,4   | 6,9   | 5,0   | 9,2            | 8,8   | 8,1   | 7,4   |
|                                      | Xq                  | %  | 188,9   | 170,5 | 158,4 | 116,0 | 212,4          | 202,9 | 185,6 | 170,5 |
|                                      | Xq'                 | %  | 188,9   | 170,5 | 158,4 | 116,0 | 212,4          | 202,9 | 185,6 | 170,5 |
|                                      | Xq''                | %  | 32,7  | 29,5  | 27,4  | 20,1  | 36,8           | 35,1  | 32,1  | 29,5  |
|                                      | X <sub>2</sub>      | %  | 21,3  | 19,2  | 17,8  | 13,1  | 23,9           | 22,8  | 20,9  | 19,2  |
|                                      | X <sub>0</sub>      | %  | 4,0   | 3,6   | 3,3   | 2,5   | 4,5            | 4,3   | 3,9   | 3,6   |
| Short Circuit Ratio                  | Kcc                 |  | 0,45  | 0,50  | 0,62  | 1,07  | 0,35           | 0,40  | 0,45  | 0,50  |
| Time Constants                       | Td'                 | sec.   | 0,04192   |       |       |       |                |       |       |       |
|                                      | Td''                | sec.   | 0,00575   |       |       |       |                |       |       |       |
|                                      | Tdo'                | sec.   | 1,50  |       |       |       |                |       |       |       |
|                                      | Tα                  | sec.   | 0,0154  |       |       |       |                |       |       |       |
| Short Circuit Current Capacity       |                     | %  | >300  |       |       |       | >350           |       |       |       |
| Excitation at no load                | Amp.                |  | 0,4   | 0,5   | 0,7   | 1     | 0,2            | 0,3   | 0,4   | 0,7   |
| Excitation at full load              | Amp.                |  | 2,2   | 2,3   | 2,5   | 2,8   | 1,9            | 2     | 2,1   | 2,2   |
| Overload (long-term)                 |                     | %  | 1 hour in a 6 hours period 110% rated load                      |       |       |       |                |       |       |       |
| Overload per 20 sec.                 |                     | %  | 300   |       |       |       |                |       |       |       |
| Stator Winding Resistance (20 °C)    | Ω                   |  | 0,03  |       |       |       |                |       |       |       |
| Rotor Winding Resistance (20 °C)     | Ω                   |  | 2,477   |       |       |       |                |       |       |       |
| Exciter Resistance (20 °C)           | Ω                   |  | Rotor : 0,410   |       |       |       | Stator : 15,28 |       |       |       |
| Heat dissipation at f.l.cl.H         | W                   |  | 6398  | 6317  | 6561  | 5538  | 5985           | 5954  | 5860  | 5766  |
| Telephone Interference               |                     |  | THF < 2%  |       |       |       | TIF < 40       |       |       |       |
| Radio interference                   |                     |  | EN61000-6-3, EN61000-6-2. For others standards apply to factory |       |       |       |                |       |       |       |
| Waveform Distors.(THD) at f. load    | LL/LN %             |  | 1,6 / 1,8   |       |       |       |                |       |       |       |
| Waveform Distors.(THD) at no load    | LL/LN %             |  | 2,9 / 3   |       |       |       |                |       |       |       |
| <b>Mechanical characteristics</b>    |                     |  |   |       |       |       |                |       |       |       |
| Protection                           |                     |  | IP 21 ( other protection on request )                           |       |       |       |                |       |       |       |
| DE bearing                           |                     |  | 6314.2RS  |       |       |       |                |       |       |       |
| NDE bearing                          |                     |  | 6311.2RS  |       |       |       |                |       |       |       |
| Weight of wound stator assembly      | kg                  |  | 97  |       |       |       |                |       |       |       |
| Weight of wound rotor assembly       | kg                  |  | 63  |       |       |       |                |       |       |       |
| Weight of complete generator         | kg                  |  | 331   |       |       |       |                |       |       |       |
| Maximun overspeed                    | rpm                 |  | 2250  |       |       |       |                |       |       |       |
| Unbalanced magnetic pull at f.l.cl.F | kN/mm               |  | 4,9   |       |       |       |                |       |       |       |
| Cooling air requirement              | m <sup>3</sup> /min |  | 19,3  |       |       |       | 23             |       |       |       |
| Inertia Constant (H)                 | sec.                |  | 0,111   |       |       |       | 0,133          |       |       |       |
| Noise level at 1m/7m                 | dB(A)               |  | 79 / 65   |       |       |       | 83 / 69        |       |       |       |

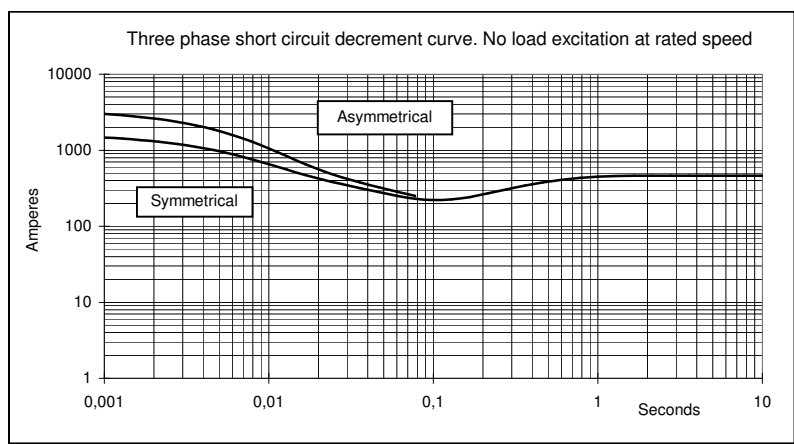
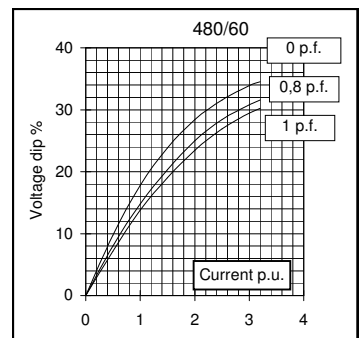
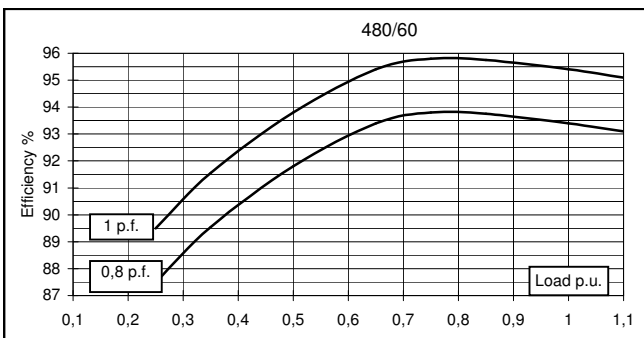
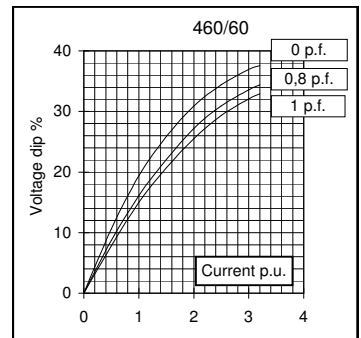
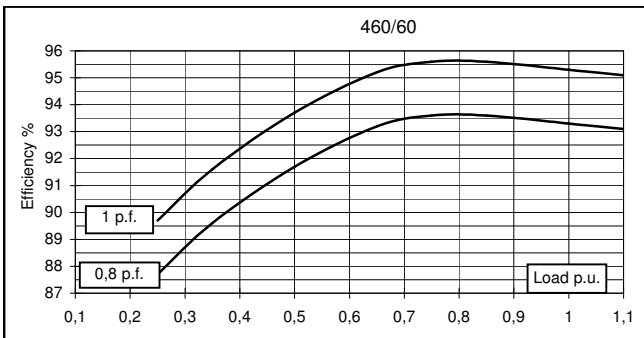
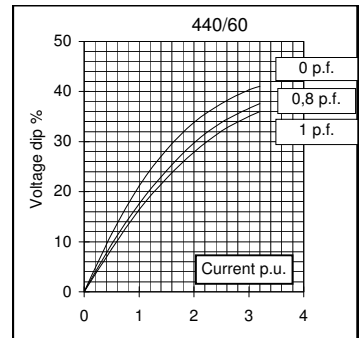
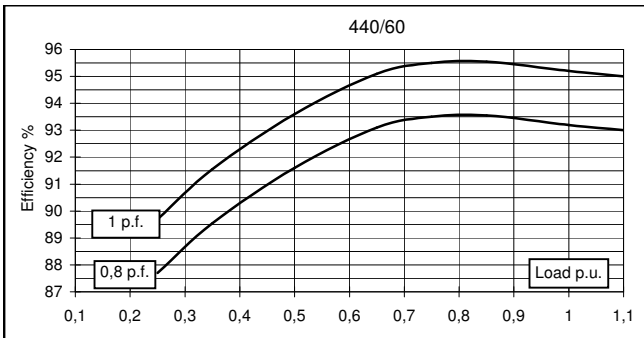
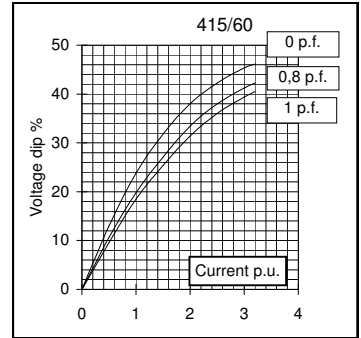
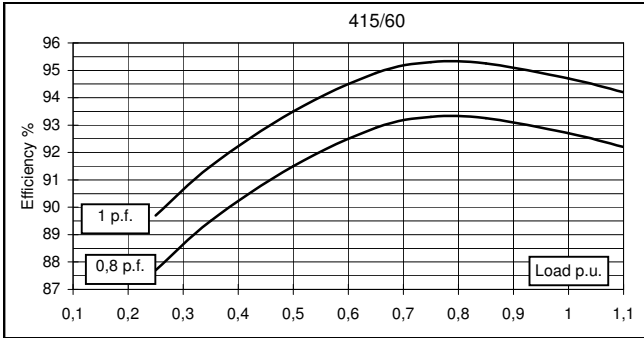
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**50 Hz**



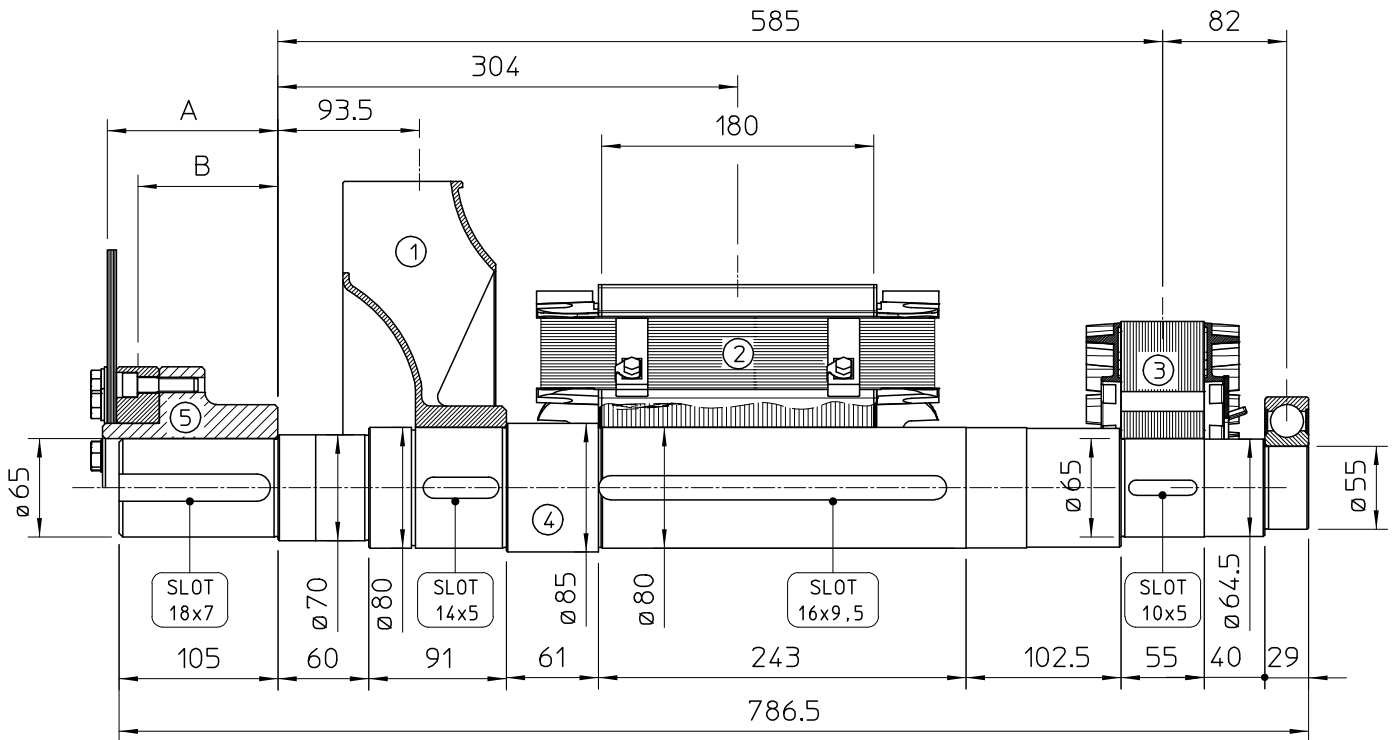
## 60 Hz







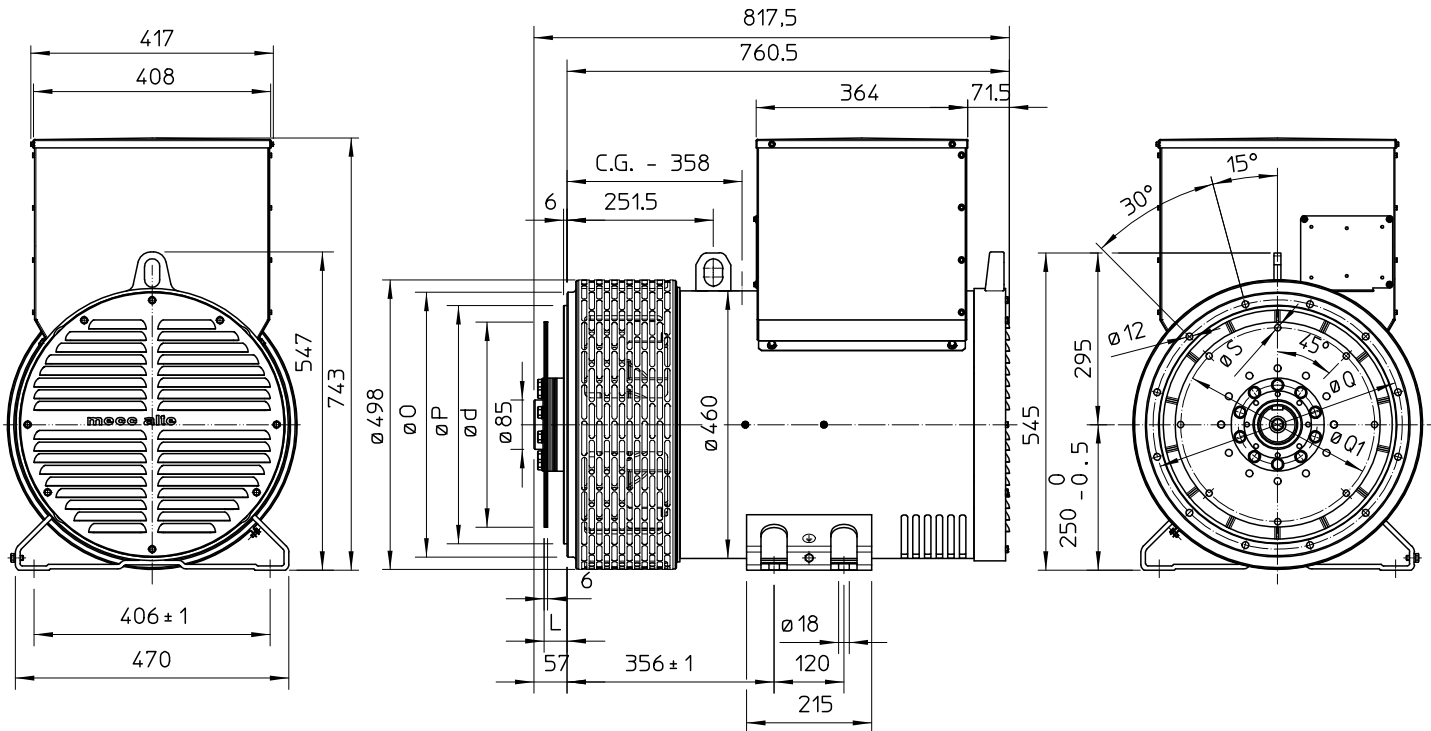
### SINGLE BEARING MOMENTS OF INERTIA



| POS.  | COMPONENT  | WEIGHT (kg) | J (kgm <sup>2</sup> ) |
|-------|------------|-------------|-----------------------|
| 1     | FAN        | 3.6         | 0.0451                |
| 2     | MAIN ROTOR | 64.8        | 0.5847                |
| 3     | EX. ROTOR  | 14.5        | 0.0874                |
| 4     | SHAFT      | 26.8        | 0.0196                |
| TOTAL |            | 109.7       | 0.7368                |

| SAE N° | 5     |      | SHAFTS COUPLING FLEX PLATE |                    |
|--------|-------|------|----------------------------|--------------------|
|        | A     | B    | WEIGHT kg                  | J kgm <sup>2</sup> |
| 10     | 112.8 | 35.6 | 13.5                       | 0.0770             |
| 11 1/2 | 98.6  | 71.5 | 12.4                       | 0.0956             |
| 14     | 84.4  | 68.6 | 14.8                       | 0.2360             |

### SINGLE BEARING DIMENSIONS



| SAE N. | FLANGIA / FLANGE BRIDE / FLANSCH |       |       |
|--------|----------------------------------|-------|-------|
|        | O                                | P     | Q     |
| 3      | 451                              | 409.6 | 428.6 |
| 2      | 489                              | 447.7 | 466.7 |
| 1      | 552                              | 511.2 | 530.2 |

| SAE N. | GIUNTI A DISCHI / DISC COUPLING DISCQUE DE MONOPALIER / SCHEIBENKUPPLUNG |        |        |    |
|--------|--|--------|--------|----|
|        | L  | d      | Q1     | S  |
| 10     | 53.8   | 314.32 | 295.27 | 11 |
| 11 1/2 | 39.6   | 352.42 | 333.37 | 11 |
| 14     | 25.4   | 466.72 | 438.15 | 14 |

C.G.= GRAVITY CENTER