



GENERATOR TYPE ECO 32-2L/4

Document : **DS009A/1**

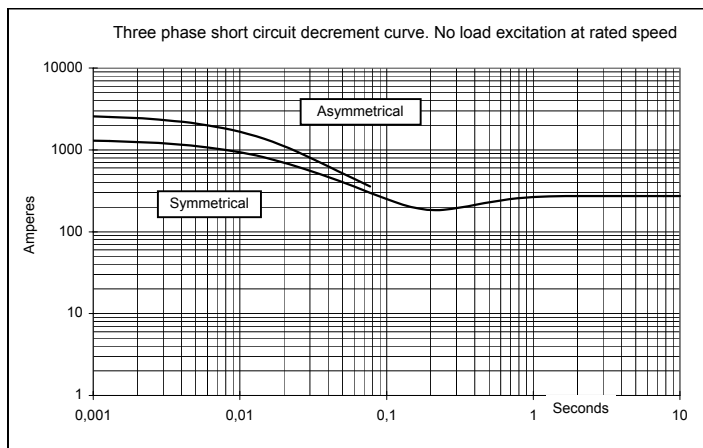
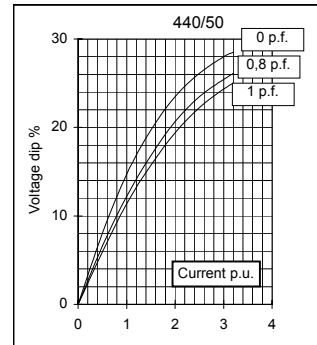
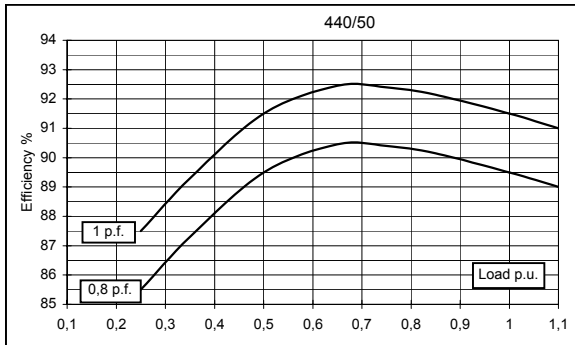
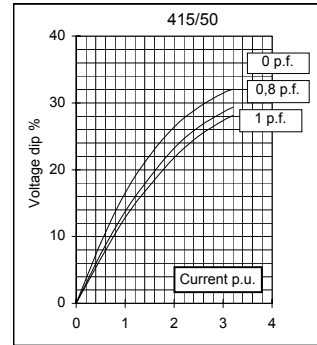
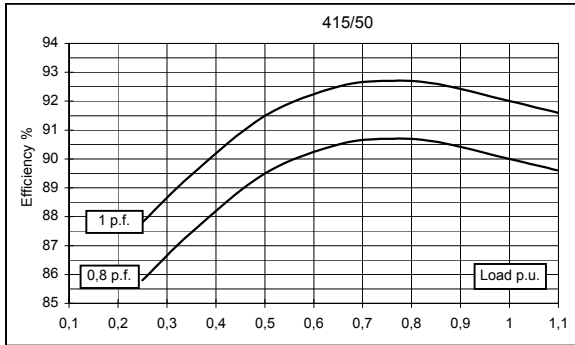
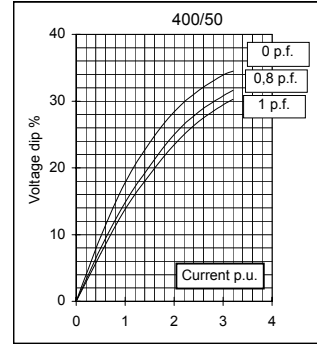
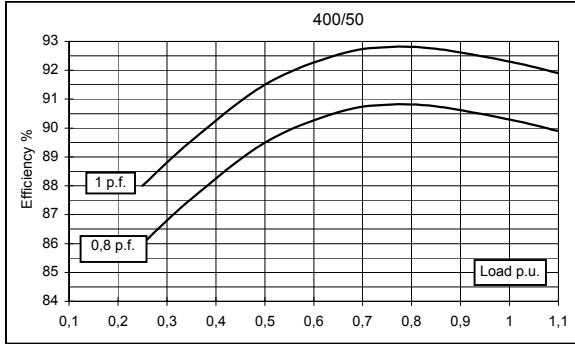
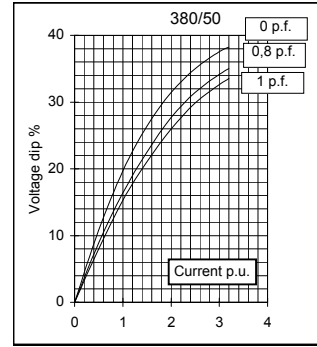
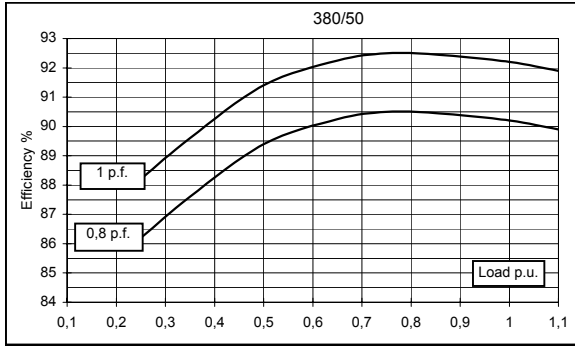
issue 007 date 25/07/2011

| Electrical Characteristics | | | | | | | | | | |
|---------------------------------------|----------------|--|-------|------|-------|----------------|-------|-------|-------|------|
| Frequency | Hz | 50 | | | | 60 | | | | |
| Voltage (series star) | V | 380 | 400 | 415 | 440 | 415 | 440 | 460 | 480 | |
| Rated power class H | kVA | 60 | 60 | 60 | 50 | 60 | 68 | 72 | 72 | |
| | kW | 48 | 48 | 48 | 40 | 48 | 54,4 | 57,6 | 57,6 | |
| Rated power class F | kVA | 57 | 57 | 57 | 45 | 55 | 65 | 69 | 69 | |
| | kW | 45,6 | 45,6 | 45,6 | 36 | 44 | 52 | 55,2 | 55,2 | |
| 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 | % | 90,2 | 90,3 | 90 | 89,5 | 92,2 | 92,7 | 92,8 | 92,9 |
| (see graph. for details) | 3/4 | % | 90,5 | 90,8 | 90,7 | 90,4 | 92,7 | 92,9 | 93,1 | 93,3 |
| | 2/4 | % | 89,4 | 89,5 | 89,5 | 89,5 | 90,8 | 90,9 | 91 | 91,1 |
| | 1/4 | % | 86,2 | 86 | 85,8 | 85,5 | 87 | 87 | 87 | 87 |
| Reactances (f. l.c.l. F) | Xd | % | 299,2 | 270 | 250,8 | 186,0 | 301,0 | 303,5 | 294,0 | 270 |
| | Xd' | % | 14,18 | 12,8 | 11,89 | 8,82 | 14,27 | 14,39 | 13,94 | 12,8 |
| | Xd'' | % | 7,53 | 6,8 | 6,32 | 4,68 | 7,58 | 7,64 | 7,40 | 6,8 |
| | Xq | % | 117,5 | 106 | 98,5 | 73,0 | 118,2 | 119,1 | 115,4 | 106 |
| | Xq' | % | 117,5 | 106 | 98,5 | 73,0 | 118,2 | 119,1 | 115,4 | 106 |
| | Xq'' | % | 36,6 | 33 | 30,7 | 22,7 | 39,6 | 34,9 | 33,0 | 33 |
| | X ₂ | % | 24,71 | 22,3 | 20,72 | 15,36 | 24,86 | 25,06 | 24,28 | 22,3 |
| | X ₀ | % | 3,32 | 3 | 2,79 | 2,07 | 3,34 | 3,37 | 3,27 | 3 |
| Short Circuit Ratio | Kcc | | 0,48 | 0,60 | 0,70 | 1,30 | 0,35 | 0,40 | 0,48 | 0,60 |
| Time Constants | Td' | sec. | 0,062 | | | | | | | |
| | Td'' | sec. | 0,014 | | | | | | | |
| | Tdo' | sec. | 1,20 | | | | | | | |
| | Tα | sec. | 0,028 | | | | | | | |
| Short Circuit Current Capacity | | % | >300 | | | | >350 | | | |
| Excitation at no load | Amp. | | 0,5 | 0,6 | 0,7 | 1 | 0,3 | 0,4 | 0,45 | 0,6 |
| Excitation at full load | Amp. | | 1,9 | 1,9 | 2,4 | 2,8 | 1,6 | 1,7 | 1,8 | 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 | 0,041 | | | | | | | | |
| Rotor Winding Resistance (20°C) | Ω | 2,861 | | | | | | | | |
| Exciter Resistance (20 °C) | Ω | Rotor : 0,442 | | | | Stator : 11,35 | | | | |
| Heat dissipation at f.l.c.l.H | W | 5215 | 5156 | 5333 | 4693 | 4061 | 4284 | 4469 | 4402 | |
| Telephone Interference | | THF < 2% | | | | TIF < 45 | | | | |
| Radio interference | | EN61000-6-3, EN61000-6-1. For others standards apply to factory | | | | | | | | |
| Waveform Distors.(THD) at f. load | LL/LN % | 3,8 / 3,6 | | | | | | | | |
| Waveform Distors.(THD) at no load | LL/LN % | 3 / 2,9 | | | | | | | | |
| Mechanical characteristics | | | | | | | | | | |
| Protection | | IP 21 (other protection on request) | | | | | | | | |
| DE bearing | | 6312-2RS | | | | | | | | |
| NDE bearing | | 6309-2RS | | | | | | | | |
| Weight of wound stator assembly | kg | 95 | | | | | | | | |
| Weight of wound rotor assembly | kg | 64,5 | | | | | | | | |
| Weight of complete generator | kg | 282 | | | | | | | | |
| Maximum overspeed | rpm | 2250 | | | | | | | | |
| Unbalanced magnetic pull at f.l.c.l.F | kN/mm | 4,7 | | | | | | | | |
| Cooling air requirement | m³/min | 11,8 | | | | 14,5 | | | | |
| Inertia Constant (H) | sec. | 0,104 | | | | 0,125 | | | | |
| Noise level at 1m/7m | dB(A) | 75 / 60 | | | | 79 / 64 | | | | |

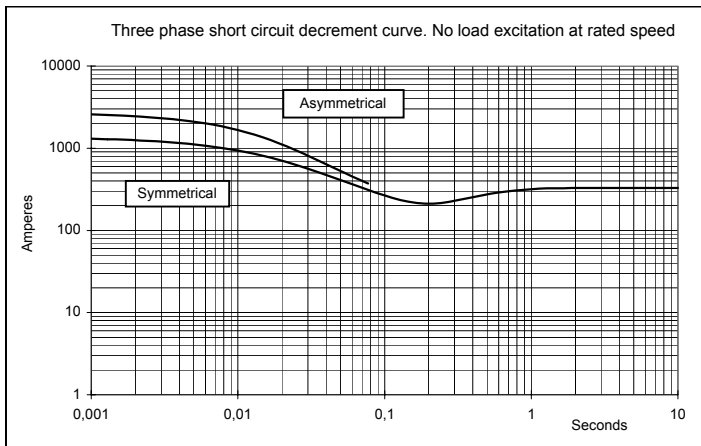
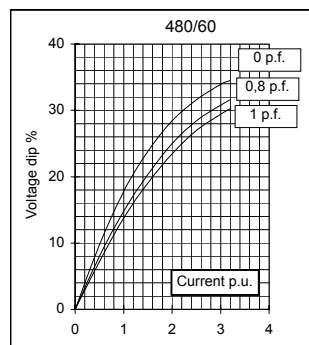
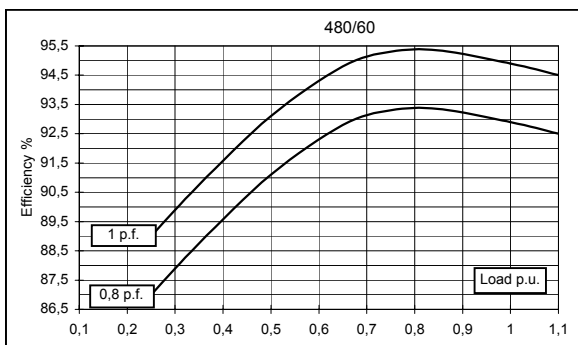
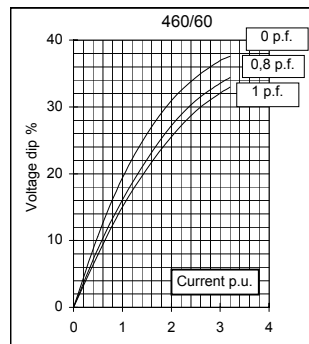
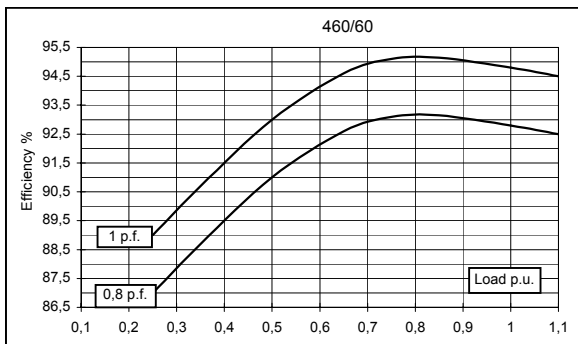
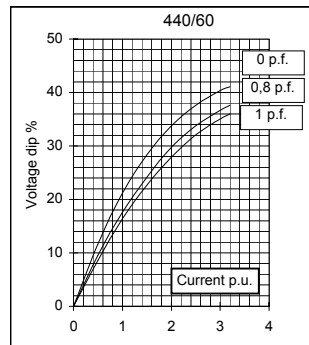
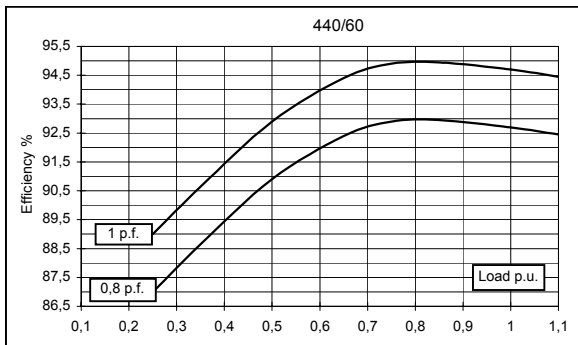
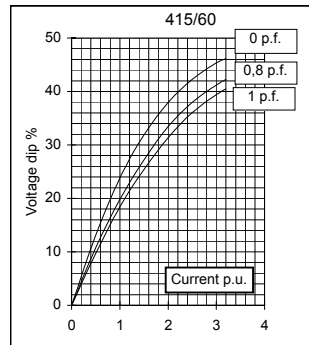
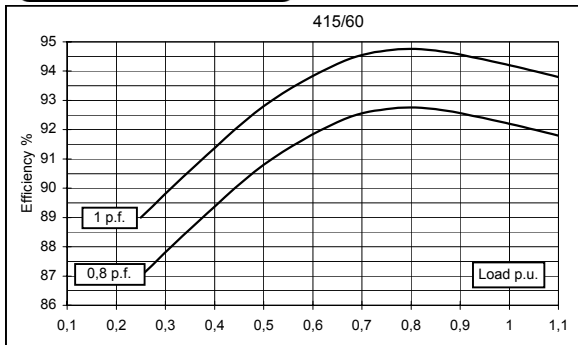
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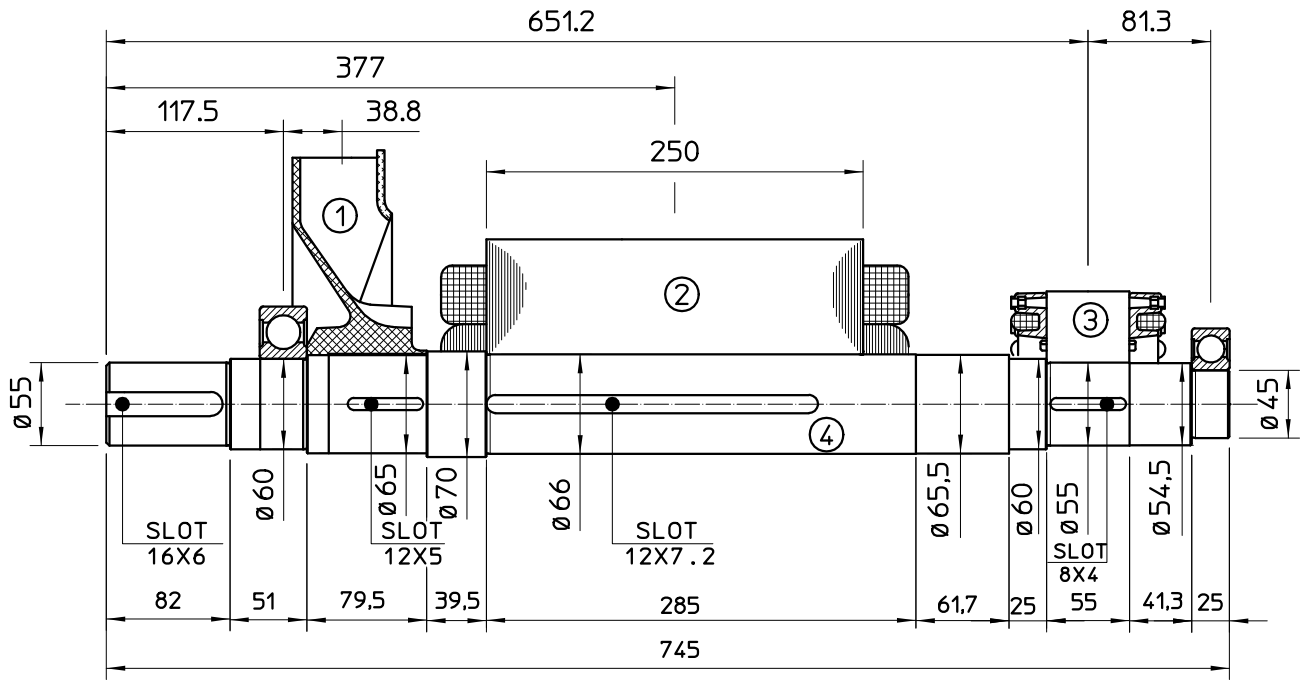
50 Hz



60 Hz

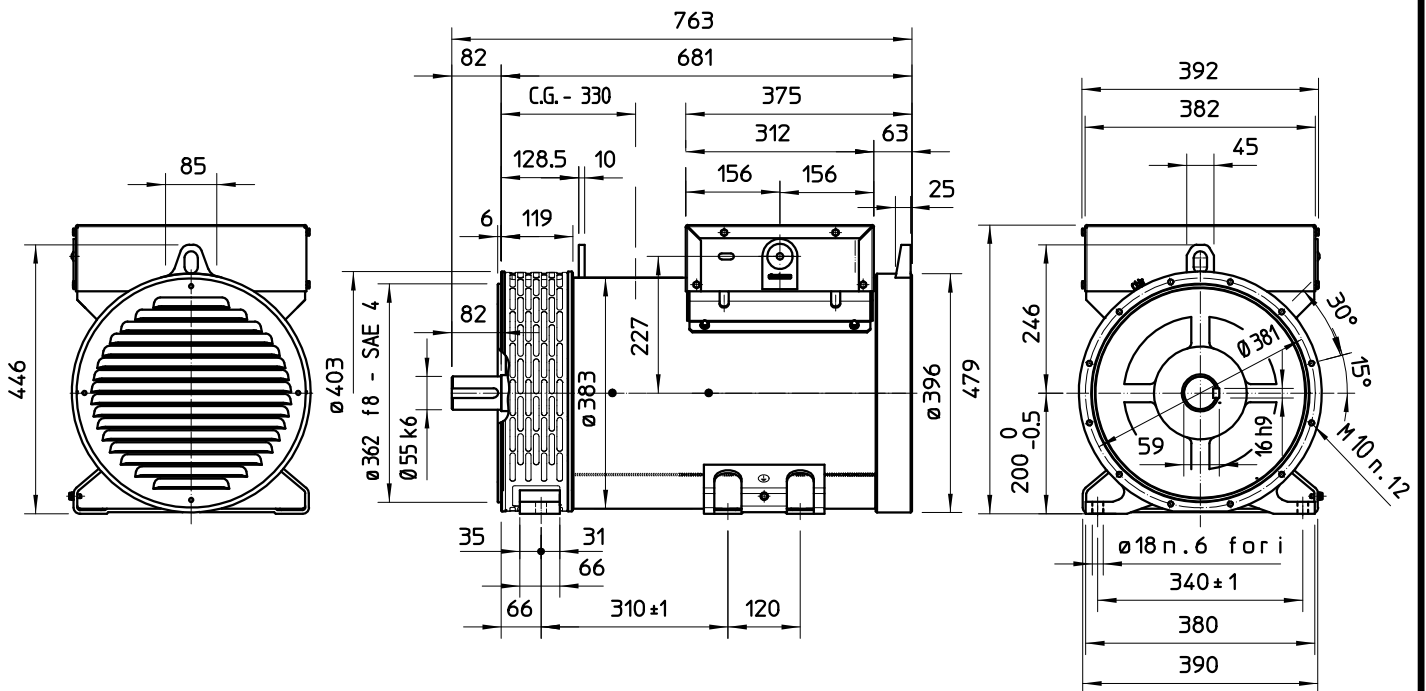


TWO BEARING MOMENTS OF INERTIA



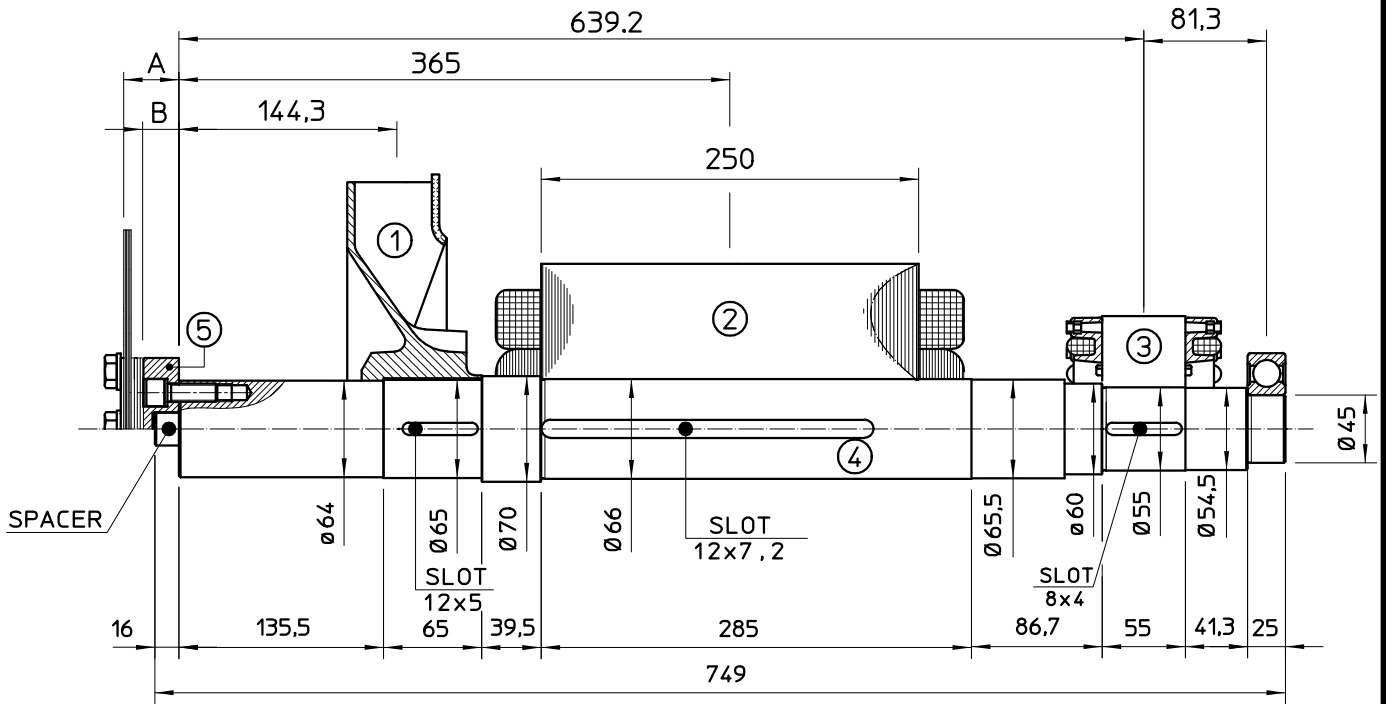
| POS. | COMPONENT | WEIGHT (kg) | J (kgm ²) |
|-------|------------|-------------|-----------------------|
| 1 | FAN | 2.3 | 0.0224 |
| 2 | MAIN ROTOR | 64.5 | 0.4579 |
| 3 | EX. ROTOR | 7 | 0.016 |
| 4 | SHAFT | 17.3 | 0.0067 |
| TOTAL | | 91.1 | 0.503 |

TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

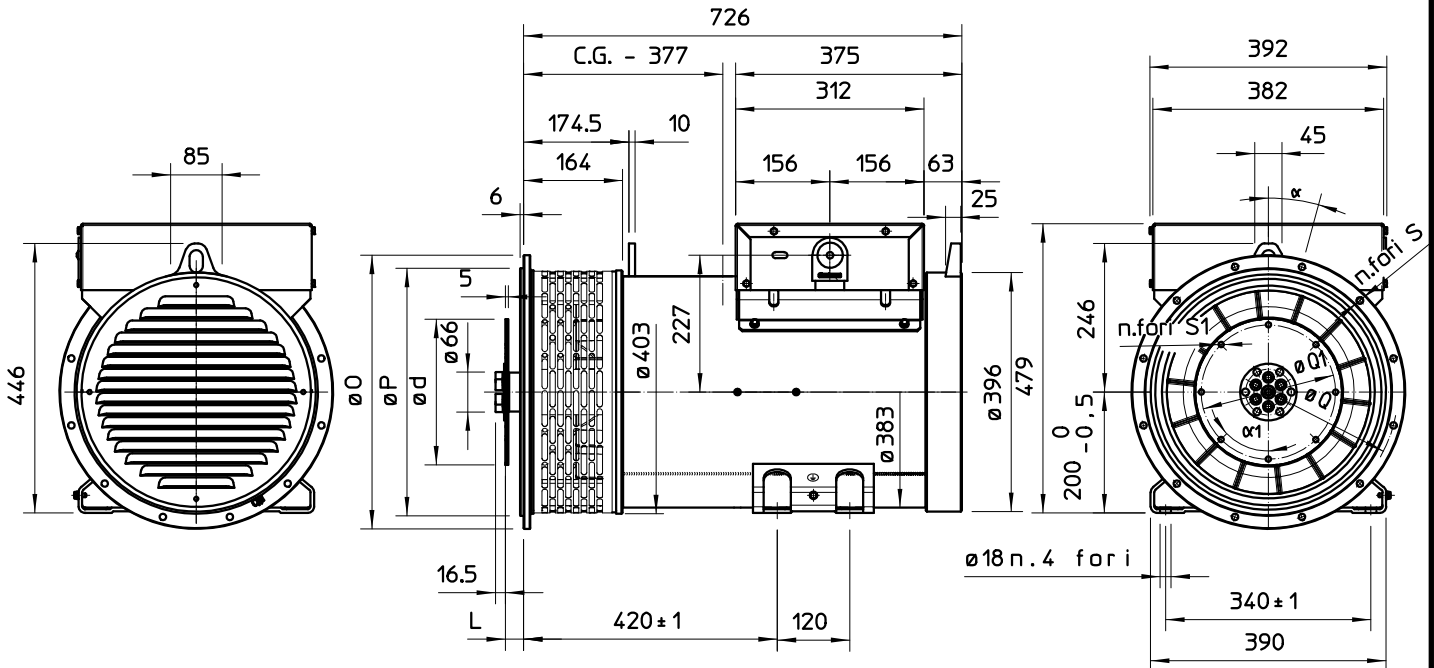
SINGLE BEARING MOMENTS OF INERTIA



| POS. | COMPONENT | WEIGHT (kg) | J (kgm ²) |
|-------|------------|-------------|-----------------------|
| 1 | FAN | 2.3 | 0.0224 |
| 2 | MAIN ROTOR | 64.5 | 0.4579 |
| 3 | EX. ROTOR | 7 | 0.016 |
| 4 | SHAFT | 17.6 | 0.0090 |
| TOTAL | | 91.4 | 0.5053 |

| SAE N° | SHAFTS COUPLING FLEX PLATE | | | |
|--------|----------------------------|------|-----------|--------------------|
| | A | B | WEIGHT kg | J kgm ² |
| 5 | 5 | 2.5 | 1.74 | 0.0084 |
| 6.5 | 5 | 2.5 | 2.1 | 0.013 |
| 7.5 | 36.6 | 28.1 | 3.9 | 0.02 |
| 8 | 28.6 | 21.6 | 4.47 | 0.038 |
| 10 | 11.5 | 11.5 | 4.51 | 0.059 |

SINGLE BEARING DIMENSIONS



| SAE N. | FLANGIA / FLANGE BRIDE / FLANSCH | | | | | |
|--------|-------------------------------------|-------|-------|----|------------------|----|
| | O | P | Q | S | N. FORI HOLES N° | α |
| 5 | 356 | 314.3 | 333.4 | 11 | 8 | 45 |
| 4 | 403 | 362 | 381 | 11 | 12 | 30 |
| 3 | 451 | 409.6 | 428.6 | 11 | 12 | 30 |
| 2 | 490 | 447.7 | 466.7 | 11 | 12 | 30 |
| 1 | 552 | 511.2 | 530.2 | 11 | 12 | 30 |

| SAE N. | GIUNTI A DISCHI / DISC COUPLING DISCQUE DE MONOPALIER / SCHEIBENKUPPLUNG | | | | | |
|--------|---|------|--------|----|------------------|----|
| | d | L | Q1 | S1 | N. FORI HOLES N° | α1 |
| 6 1/2 | 215.9 | 30.2 | 200 | 9 | 6 | 60 |
| 7 1/2 | 241.3 | 30.2 | 222.25 | 9 | 8 | 45 |
| 8 | 263.52 | 62 | 244.47 | 11 | 6 | 60 |
| 10 | 314.32 | 53.8 | 295.27 | 11 | 8 | 45 |
| 11 1/2 | 352.42 | 39.6 | 333.37 | 11 | 8 | 45 |

C.G.= GRAVITY CENTER