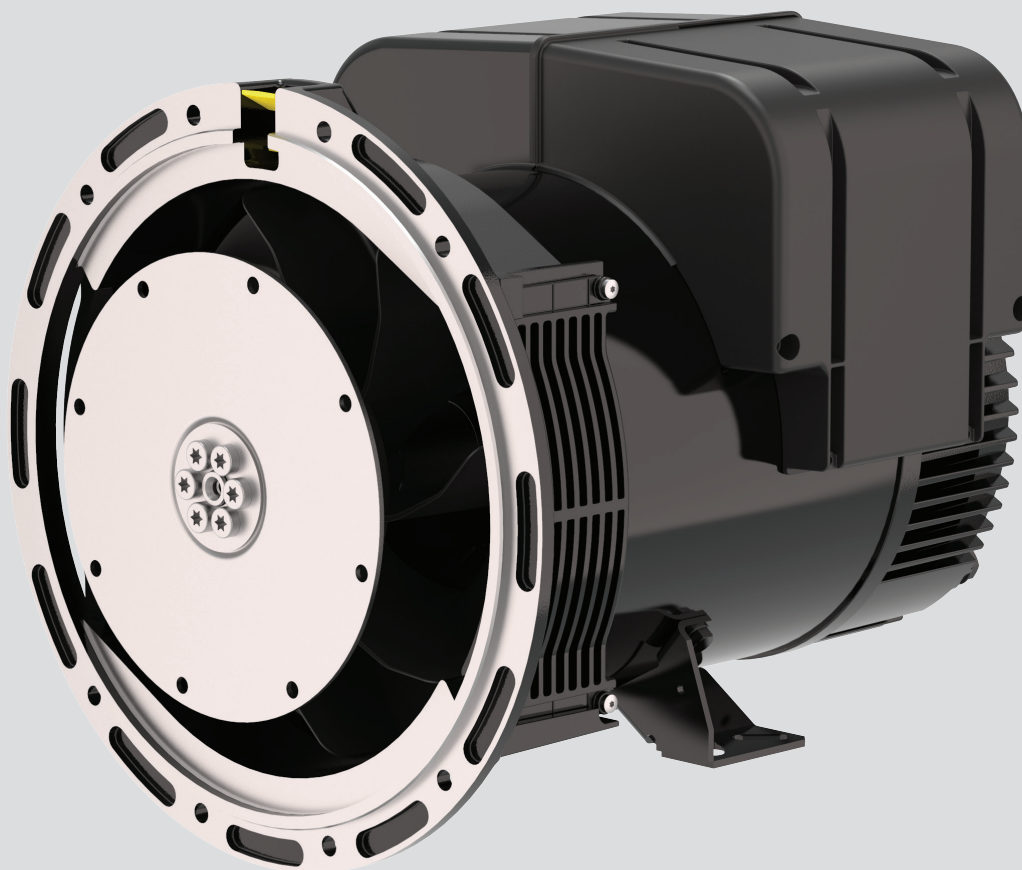




# TAL 040

## Low Voltage Alternator - 4 pole

Three-phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

Dedicated single-phase 10.5 to 16 kVA - 50 Hz / 11.5 to 17.5 kVA - 60 Hz

Electrical and mechanical data

**LEROY-SOMER**™

**Nidec**  
All for dreams

## The best of performance

Nidec Leroy-Somer TAL 040 alternator has been designed to offer you the best power generation performances. With its meticulous design and optimized architecture, the TAL 040 strikes the perfect balance between compactness, reliability, performance and longevity. Whatever your application, the TAL 040 will meet your needs and will adapt to all situations.

## Standards

Nidec Leroy-Somer TAL 040 alternator meets all key international standards and regulations, including IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA C22.2 n°100-14 and UL 1446 (UL 1004 on request). Also compliant with IEC 61000-6-2, IEC 61000-6-3, IEC 61000-6-4, VDE 0875G, VDE 0875N and EN 55011, group 1 class A for European zone. Nidec Leroy-Somer TAL 040 alternator can be integrated in EC marked generator set, and bears EC, EAC and CMIM markings. It is designed, manufactured and marketed in an ISO 9001 and ISO 14001 quality assurance environment.

## Electrical characteristics and performances

- Class H insulation
- Shunt excitation
- Low voltage winding:
  - Three-phase 50 Hz: 220V - 240V and 380V - 415V (440V)  
60 Hz: 208V - 240V and 380V - 480V
  - Single-phase 50 Hz: 115V - 230V  
60 Hz: 120V - 240V
- 4-terminal plates in 6-wire version
- Optimized performance

## Excitation and regulation system

|                        | Excitation system |          |                   | Regulation options |                              |
|------------------------|-------------------|----------|-------------------|--------------------|------------------------------|
|                        | AVR               | SHUNT    | AREP+<br>(option) | ULc/us             | Remote voltage potentiometer |
| Three-phase<br>6-wire  | R120              | Standard |                   |                    |                              |
|                        | R150              | Option   |                   |                    | √                            |
|                        | R180              |          | Standard          |                    | √                            |
|                        | D350              | Option   | Option            | √                  | √                            |
| Three-phase<br>12-wire | R120              | Standard |                   |                    |                              |
|                        | R220              | Option   |                   | √                  | √                            |
|                        | R180              |          | Standard          |                    | √                            |
|                        | D350              | Option   | Option            | √                  | √                            |
| Single-phase           | R121              | Standard |                   |                    | √                            |
|                        | R221              | Option   |                   | √                  | √                            |

## Protection system and options

- Degree of protection: IP 23
- Complete winding protection for non-harsh environment with relative humidity  $\leq 95\%$
- Options:
  - Three-phase 12-wire with 8-terminal plates
  - AREP+ excitation
  - ULc/us
  - Customized painting (unpainted machine as standard)
  - Space heater
  - Flying leads
  - Dedicated single-phase
  - Winding 8 optimized for three-phase 380V / 416V - 60Hz
  - Reinforced winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4 without derating)

## Mechanical construction

- Compact and rugged assembly to withstand engine vibrations
- Steel frame
- Aluminum flanges and shields
- Single-bearing design compatible with most diesel engines
- Greased for life bearings
- Direction of rotation: clockwise and counterclockwise without derating

## Terminal box design

- Easy access to AVR and terminals



# TAL 040 - Three-phase 10 to 20 kVA - 50 Hz / 12.5 to 25 kVA - 60 Hz

## General characteristics

|                                                     |                                           |                                                    |         |         |
|-----------------------------------------------------|-------------------------------------------|----------------------------------------------------|---------|---------|
| Insulation class                                    | H                                         | Excitation system 6-wire                           | SHUNT   | AREP+   |
| Winding pitch                                       | 2/3 (wind.6S - 6-wire / wind.6 - 12-wire) | AVR type                                           | R120    | R180    |
| Number of wires                                     | 6 (12 option)                             | Excitation system 12-wire (option)                 | SHUNT   | AREP+   |
| Protection                                          | IP 23                                     | AVR type                                           | R120    | R180    |
| Altitude                                            | ≤ 1000 m                                  | Voltage regulation (**)                            | ± 1 %   | ± 0.5 % |
| Overspeed                                           | 2250 R.P.M.                               | Total Harmonic Distortion THD (***) in no-load     | < 3.5 % |         |
| Air flow 50 Hz                                      | 0.06 m³/s                                 | Total Harmonic Distortion THD (***) in linear load | < 5 %   |         |
| Air flow 60 Hz                                      | 0.07 m³/s                                 | Waveform: NEMA = TIF (***)                         | < 50    |         |
| AREP+ Short-circuit current = 2.7 In: 5 seconds (*) |                                           | Waveform: I.E.C. = FHT (***)                       | < 2%    |         |

(\*) D350: 10 seconds (\*\*) Steady state (\*\*\*) Total harmonic distortion between phases, no-load or on-load (non-distorting)

## Ratings 50 Hz - 1500 R.P.M.

| kVA / kW - P.F. = 0.8 |  |                    |      |      |       |      |                    |      |      |       |      |                  |      |      |       |      |                  |      |      |       |      |      |
|-----------------------|--|--------------------|------|------|-------|------|--------------------|------|------|-------|------|------------------|------|------|-------|------|------------------|------|------|-------|------|------|
| Duty / T° C           |  | Continuous / 40 °C |      |      |       |      | Continuous / 40 °C |      |      |       |      | Stand-by / 40 °C |      |      |       |      | Stand-by / 27 °C |      |      |       |      |      |
| Class / T° K          |  | H / 125° K         |      |      |       |      | F / 105° K         |      |      |       |      | H / 150° K       |      |      |       |      | H / 163° K       |      |      |       |      |      |
| Phase                 |  | 3 ph.              |      |      | 1 ph. |      | 3 ph.              |      |      | 1 ph. |      | 3 ph.            |      |      | 1 ph. |      | 3 ph.            |      |      | 1 ph. |      |      |
| Y                     |  | 380V               | 400V | 415V | 440V  |      | 380V               | 400V | 415V | 440V  |      | 380V             | 400V | 415V | 440V  |      | 380V             | 400V | 415V | 440V  |      |      |
| Δ                     |  | 220V               | 230V | 240V |       | 230V | 220V               | 230V | 240V |       | 230V | 220V             | 230V | 240V |       | 230V | 220V             | 230V | 240V |       | 230V |      |
| YY (*)                |  | 200V               |      |      | 220V  |      | 200V               |      |      | 220V  |      | 200V             |      |      | 220V  |      | 200V             |      |      | 220V  |      |      |
| ΔΔ (*)                |  |                    |      |      | 230V  |      |                    |      |      | 230V  |      |                  |      |      | 230V  |      |                  |      |      | 230V  |      |      |
| TAL 040 B             |  | kVA                | 10   | 10   | 10    | 9    | 7                  | 9    | 9    | 9     | 8    | 6.5              | 10.5 | 10.5 | 10.5  | 9.5  | 7.5              | 11   | 11   | 11    | 10   | 7.5  |
|                       |  | kW                 | 8    | 8    | 8     | 7    | 5.5                | 7    | 7    | 7     | 6.5  | 5                | 8.5  | 8.5  | 8.5   | 7.5  | 6                | 9    | 9    | 9     | 8    | 6    |
| TAL 040 C             |  | kVA                | 12.5 | 12.5 | 12.5  | 11   | 9                  | 11.5 | 11.5 | 11.5  | 10   | 8                | 13.5 | 13.5 | 13.5  | 11.5 | 9.5              | 14   | 14   | 14    | 12   | 10   |
|                       |  | kW                 | 10   | 10   | 10    | 9    | 7                  | 9    | 9    | 9     | 8    | 6.5              | 11   | 11   | 11    | 9    | 7.5              | 11   | 11   | 11    | 9.5  | 8    |
| TAL 040 D             |  | kVA                | 15   | 15   | 15    | 13   | 10.5               | 14   | 14   | 14    | 12   | 9.5              | 16   | 16   | 16    | 14   | 11               | 16.5 | 16.5 | 16.5  | 14.5 | 11.5 |
|                       |  | kW                 | 12   | 12   | 12    | 10.5 | 8.5                | 11   | 11   | 11    | 9.5  | 7.5              | 13   | 13   | 13    | 11   | 9                | 13   | 13   | 13    | 11.5 | 9    |
| TAL 040 E             |  | kVA                | 17.5 | 17.5 | 17.5  | 16   | 12.5               | 16   | 16   | 16    | 14.5 | 11.5             | 18.5 | 18.5 | 18.5  | 17   | 13.5             | 19.5 | 19.5 | 19.5  | 17.5 | 14   |
|                       |  | kW                 | 14   | 14   | 14    | 13   | 10                 | 13   | 13   | 13    | 11.5 | 9                | 15   | 15   | 15    | 13.5 | 11               | 15.5 | 15.5 | 15.5  | 14   | 11   |
| TAL 040 F             |  | kVA                | 20   | 20   | 20    | 18   | 14                 | 18   | 18   | 18    | 16.5 | 13               | 21   | 21   | 21    | 19   | 15               | 22   | 22   | 22    | 20   | 15.5 |
|                       |  | kW                 | 16   | 16   | 16    | 14.5 | 11                 | 14.5 | 14.5 | 14.5  | 13   | 10.5             | 17   | 17   | 17    | 15   | 12               | 17.5 | 17.5 | 17.5  | 16   | 12.5 |

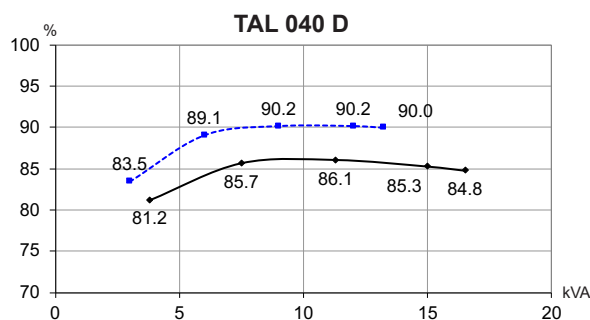
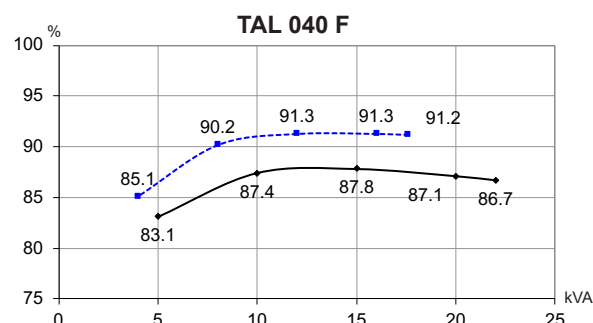
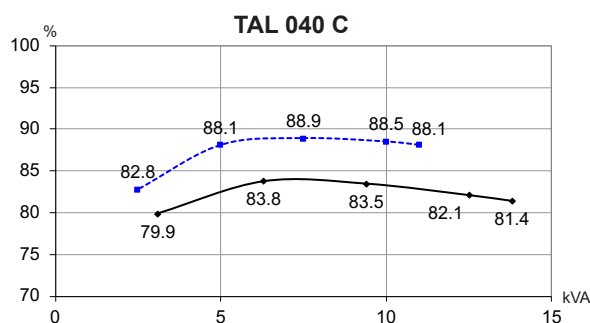
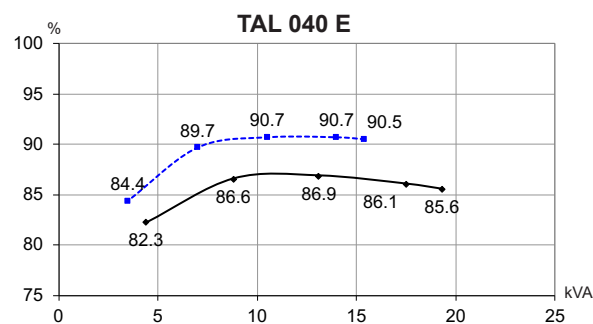
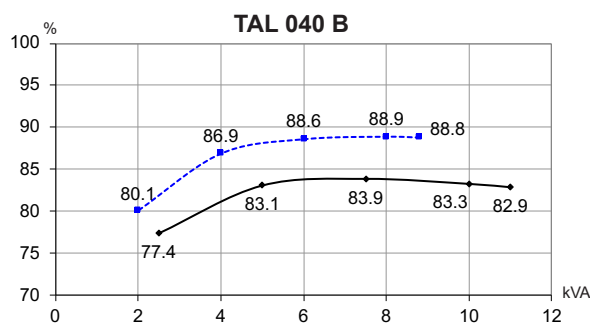
(\*) 12-wire option

## Ratings 60 Hz - 1800 R.P.M.

| kVA / kW - P.F. = 0.8 |     |                    |      |      |       |      |                    |      |      |       |      |                  |      |      |       |      |                  |      |      |       |      |
|-----------------------|-----|--------------------|------|------|-------|------|--------------------|------|------|-------|------|------------------|------|------|-------|------|------------------|------|------|-------|------|
| Duty / T° C           |     | Continuous / 40 °C |      |      |       |      | Continuous / 40 °C |      |      |       |      | Stand-by / 40 °C |      |      |       |      | Stand-by / 27 °C |      |      |       |      |
| Class / T° K          |     | H / 125° K         |      |      |       |      | F / 105° K         |      |      |       |      | H / 150° K       |      |      |       |      | H / 163° K       |      |      |       |      |
| Phase                 |     | 3 ph.              |      |      | 1 ph. |      | 3 ph.              |      |      | 1 ph. |      | 3 ph.            |      |      | 1 ph. |      | 3 ph.            |      |      | 1 ph. |      |
| Y                     |     | 380V               | 416V | 440V | 480V  |      | 380V               | 416V | 440V | 480V  |      | 380V             | 416V | 440V | 480V  |      | 380V             | 416V | 440V | 480V  |      |
| Δ                     |     | 220V               | 240V |      |       | 240V | 220V               | 240V |      |       | 240V | 220V             | 240V |      |       | 240V | 220V             | 240V |      |       | 240V |
| YY (*)                |     | 208V               | 220V | 240V |       |      | 208V               | 220V | 240V |       |      | 208V             | 220V | 240V |       |      | 208V             | 220V | 240V |       |      |
| ΔΔ (*)                |     |                    |      |      |       | 240V |                    |      |      |       | 240V |                  |      |      |       | 240V |                  |      |      |       | 240V |
| TAL 040 B             | kVA | 10                 | 11   | 11.5 | 12.5  | 9    | 9                  | 10   | 10.5 | 11.5  | 8    | 10.5             | 11.5 | 12   | 13.5  | 9.5  | 11               | 12   | 12.5 | 14    | 10   |
|                       | kW  | 8                  | 9    | 9    | 10    | 7    | 7                  | 8    | 8.5  | 9     | 6.5  | 8.5              | 9    | 9.5  | 11    | 7.5  | 9                | 9.5  | 10   | 11    | 8    |
| TAL 040 C             | kVA | 12.5               | 13.5 | 14.5 | 15.5  | 11.5 | 11.5               | 12.5 | 13   | 14    | 10.5 | 13.5             | 14.5 | 15.5 | 16.5  | 12   | 14               | 15   | 16   | 17    | 12.5 |
|                       | kW  | 10                 | 11   | 11.5 | 12.5  | 9    | 9                  | 10   | 10.5 | 11    | 8.5  | 11               | 11.5 | 12.5 | 13    | 9.5  | 11               | 12   | 13   | 13.5  | 10   |
| TAL 040 D             | kVA | 15                 | 16.5 | 17.5 | 19    | 13   | 13.5               | 15   | 16   | 17.5  | 12   | 16               | 17.5 | 18.5 | 20    | 14   | 16.5             | 18   | 19.5 | 21    | 14.5 |
|                       | kW  | 12                 | 13   | 14   | 15    | 10.5 | 11                 | 12   | 13   | 14    | 9.5  | 13               | 14   | 15   | 16    | 11   | 13               | 14.5 | 15.5 | 17    | 11.5 |
| TAL 040 E             | kVA | 17.5               | 19   | 20   | 22    | 14.5 | 16                 | 17.5 | 18   | 20    | 13   | 18.5             | 20   | 21   | 23.5  | 15.5 | 19.5             | 21   | 22   | 24    | 16   |
|                       | kW  | 14                 | 15   | 16   | 17.5  | 11.5 | 13                 | 14   | 14.5 | 16    | 10.5 | 15               | 16   | 17   | 19    | 12.5 | 15.5             | 17   | 17.5 | 19    | 13   |
| TAL 040 F             | kVA | 20                 | 22   | 23   | 25    | 16   | 18                 | 20   | 21   | 23    | 14.5 | 21               | 23.5 | 24.5 | 26.5  | 17   | 22               | 24   | 25.5 | 27.5  | 17.5 |
|                       | kW  | 16                 | 17.5 | 18.5 | 20    | 13   | 14.5               | 16   | 17   | 18.5  | 11.5 | 17               | 19   | 19.5 | 21    | 13.5 | 17.5             | 19   | 20.5 | 22    | 14   |

(\*) 12-wire option

## Efficiencies 400 V - 50 Hz (— P.F.: 0.8) (..... P.F.: 1)



## Reactances (%). Time constants (ms) - Class H / 400 V

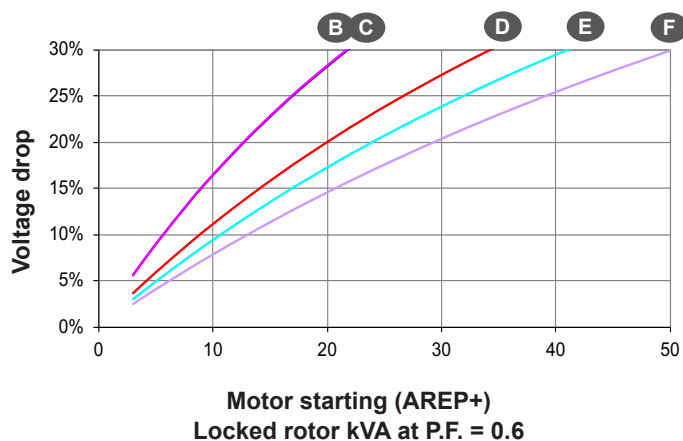
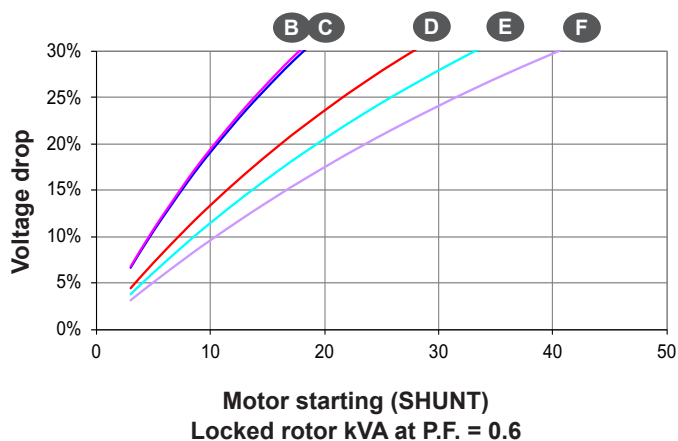
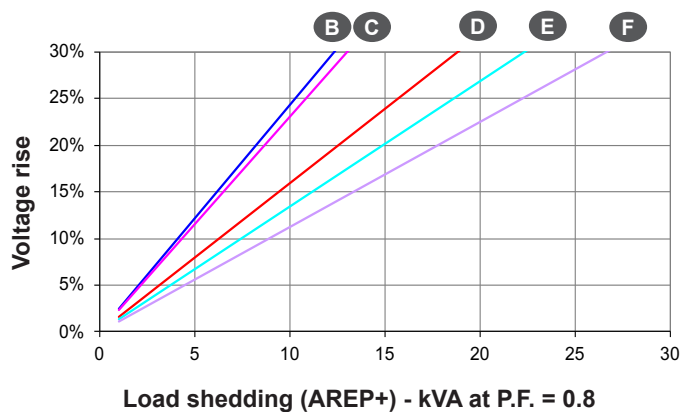
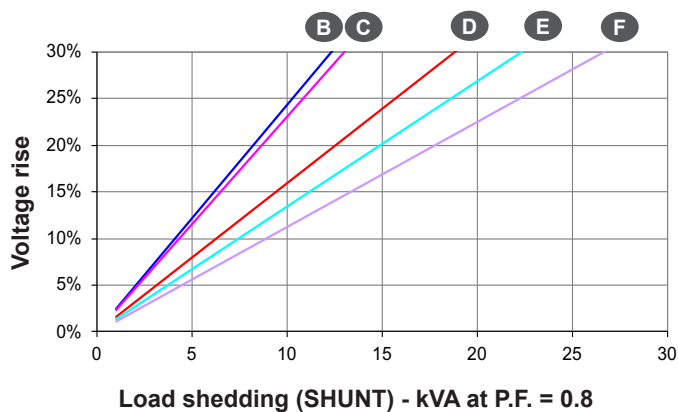
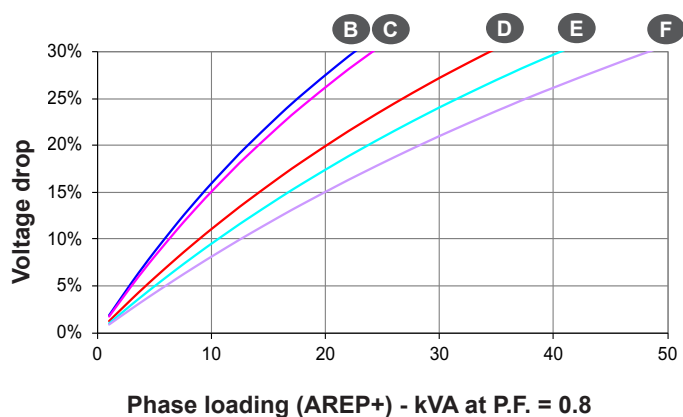
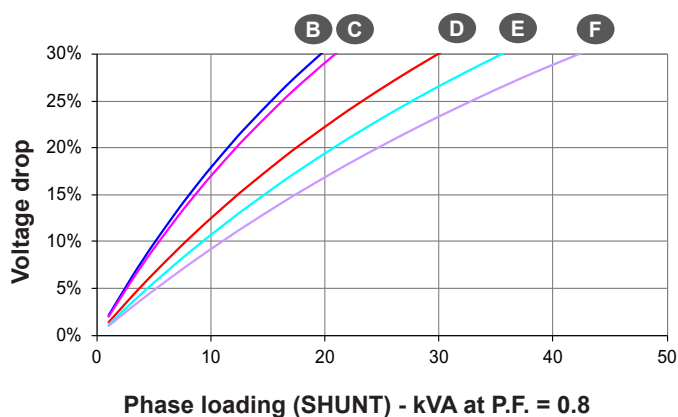
|                                                              | B     | C     | D     | E     | F     |
|--------------------------------------------------------------|-------|-------|-------|-------|-------|
| <b>Kcc</b> Short-circuit ratio                               | 0.7   | 0.56  | 0.6   | 0.6   | 0.61  |
| <b>Xd</b> Direct-axis synchronous reactance unsaturated      | 167   | 209   | 190   | 195   | 193   |
| <b>Xq</b> Quadrature-axis synchronous reactance unsaturated  | 85    | 106   | 97    | 99    | 98    |
| <b>T'do</b> No-load transient time constant                  | 719   | 719   | 837   | 878   | 926   |
| <b>X'd</b> Direct-axis transient reactance saturated         | 17.2  | 21.5  | 16.8  | 16.4  | 15.4  |
| <b>T'd</b> Short-circuit transient time constant             | 74    | 74    | 74    | 74    | 74    |
| <b>X''d</b> Direct-axis subtransient reactance saturated     | 8.6   | 10.7  | 8.4   | 8.2   | 7.7   |
| <b>T''d</b> Subtransient time constant                       | 7     | 7     | 7.4   | 7     | 7     |
| <b>X''q</b> Quadrature-axis subtransient reactance saturated | 16.1  | 20.1  | 16.8  | 16.8  | 16.2  |
| <b>Xo</b> Zero sequence reactance                            | 0.71  | 0.89  | 0.7   | 0.68  | 0.64  |
| <b>X2</b> Negative sequence reactance saturated              | 12.36 | 15.45 | 12.66 | 12.55 | 12.01 |
| <b>Ta</b> Armature time constant                             | 11    | 11    | 11    | 11    | 11    |

## Other class H / 400 V data

|                                                                                |             |             |             |             |             |
|--------------------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>io (A)</b> No-load excitation current SHUNT/AREP+                           | 0.77 / 1.06 | 0.77 / 1.06 | 0.76 / 1.03 | 0.75 / 1.03 | 0.72 / 0.98 |
| <b>ic (A)</b> On-load excitation current SHUNT/AREP+                           | 1.94 / 2.65 | 2.30 / 3.14 | 2.05 / 2.79 | 2.06 / 2.80 | 1.95 / 2.66 |
| <b>uc (V)</b> On-load excitation voltage SHUNT/AREP+                           | 23.7 / 17.1 | 28 / 20.2   | 24.9 / 17.9 | 24.9 / 18   | 23.6 / 17   |
| <b>ms</b> Response time ( $\Delta U = 20\%$ transient)                         | 500         | 500         | 500         | 500         | 500         |
| <b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT* | 18.3        | 18.3        | 28          | 33.6        | 40.8        |
| <b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP+* | 22          | 22          | 34          | 41          | 50          |
| <b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>   | 18          | 20.5        | 17.8        | 17.5        | 16.9        |
| <b>%</b> Transient $\Delta U$ (on-load 4/4) AREP+ - P.F.: 0.8 <sub>LAG</sub>   | 16          | 18.2        | 15.8        | 15.6        | 15.1        |
| <b>W</b> No-load losses                                                        | 461         | 461         | 540         | 590         | 645         |
| <b>W</b> Heat dissipation                                                      | 1597        | 2172        | 2063        | 2255        | 2352        |

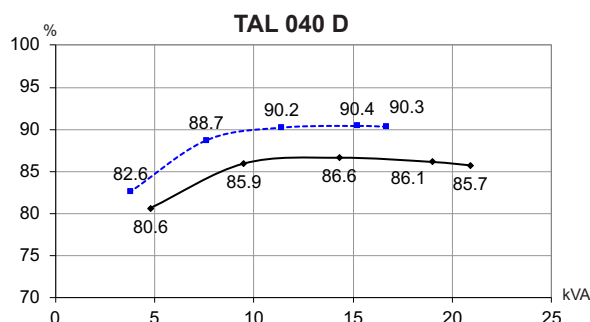
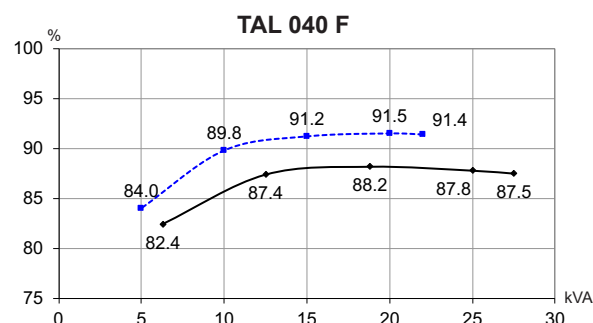
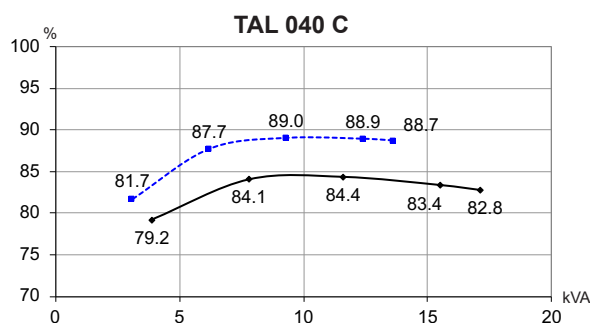
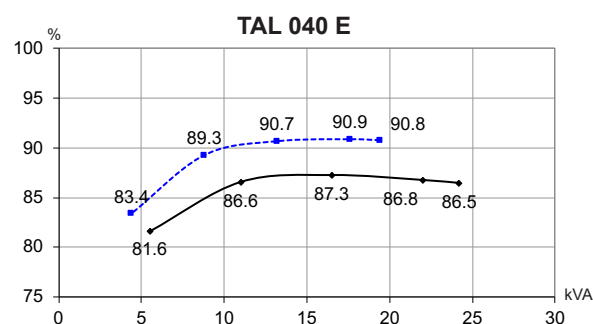
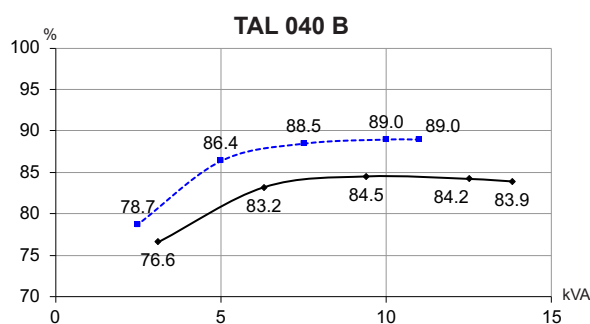
\* P.F. = 0.6

## Transient voltage variation 400V - 50 Hz



- For a starting P.F. other than 0.6, the starting kVA must be multiplied by  $K = \text{Sine P.F.} / 0.6$
- For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by  $(400/U)^2$  or  $(230/U)^2$ .

## Efficiencies 480 V - 60 Hz (— P.F.: 0.8) (..... P.F.: 1)



## Reactances (%). Time constants (ms) - Class H / 480 V

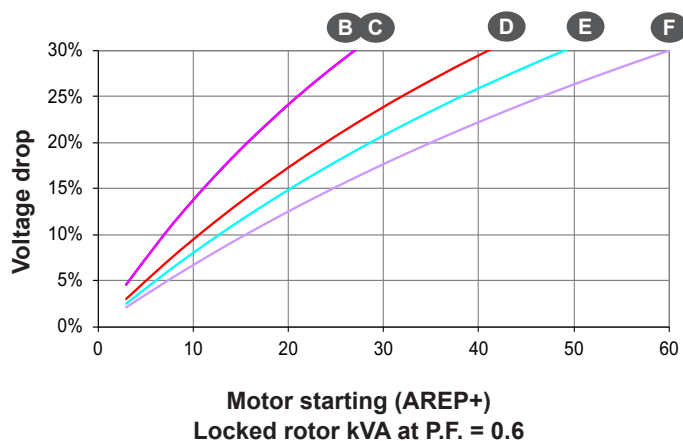
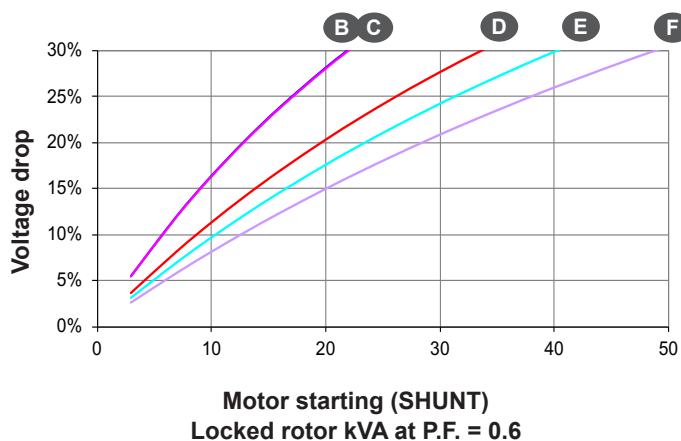
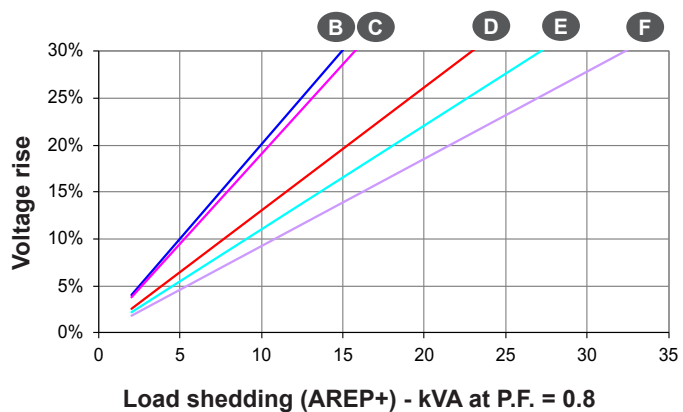
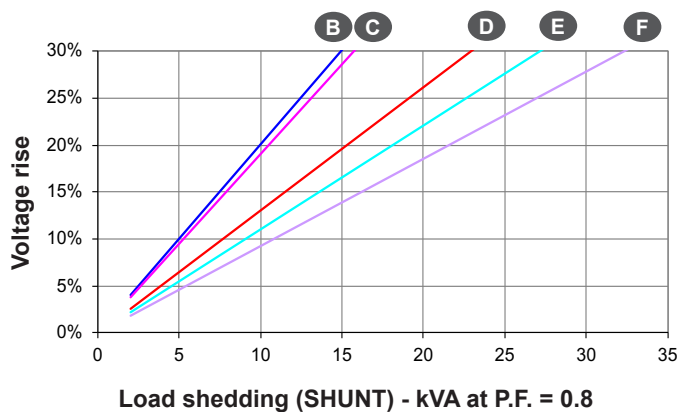
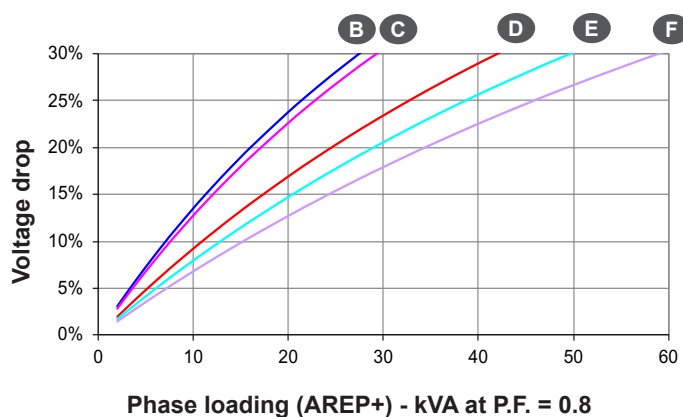
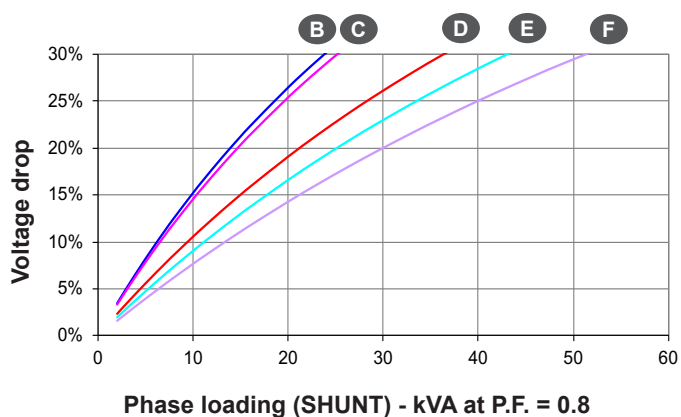
|             |                                                   | B     | C     | D     | E     | F     |
|-------------|---------------------------------------------------|-------|-------|-------|-------|-------|
| <b>Kcc</b>  | Short-circuit ratio                               | 0.67  | 0.54  | 0.57  | 0.57  | 0.58  |
| <b>Xd</b>   | Direct-axis synchronous reactance unsaturated     | 174   | 216   | 201   | 204   | 201   |
| <b>Xq</b>   | Quadrature-axis synchronous reactance unsaturated | 88    | 110   | 102   | 104   | 102   |
| <b>T'do</b> | No-load transient time constant                   | 719   | 719   | 837   | 878   | 926   |
| <b>X'd</b>  | Direct-axis transient reactance saturated         | 17.9  | 22.2  | 17.8  | 17.2  | 16.1  |
| <b>T'd</b>  | Short-circuit transient time constant             | 74    | 74    | 74    | 74    | 74    |
| <b>X''d</b> | Direct-axis subtransient reactance saturated      | 8.9   | 11.1  | 8.9   | 8.6   | 8     |
| <b>T''d</b> | Subtransient time constant                        | 7     | 7     | 7.4   | 7     | 7     |
| <b>X''q</b> | Quadrature-axis subtransient reactance saturated  | 16.7  | 20.7  | 17.8  | 17.6  | 16.9  |
| <b>Xo</b>   | Zero sequence reactance                           | 0.74  | 0.92  | 0.74  | 0.71  | 0.67  |
| <b>X2</b>   | Negative sequence reactance saturated             | 12.87 | 15.96 | 13.36 | 13.15 | 12.51 |
| <b>Ta</b>   | Armature time constant                            | 11    | 11    | 11    | 11    | 11    |

## Other class H / 480 V data

|               |                                                                     |             |             |             |             |             |
|---------------|---------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>io (A)</b> | No-load excitation current SHUNT/AREP+                              | 0.77 / 1.06 | 0.77 / 1.06 | 0.76 / 1.03 | 0.75 / 1.02 | 0.72 / 0.98 |
| <b>ic (A)</b> | On-load excitation current SHUNT/AREP+                              | 1.97 / 2.69 | 2.33 / 3.17 | 2.10 / 2.86 | 2.10 / 2.86 | 1.97 / 2.69 |
| <b>uc (V)</b> | On-load excitation voltage SHUNT/AREP+                              | 24.1 / 17.4 | 28.4 / 20.5 | 25.6 / 18.5 | 25.5 / 18.4 | 24 / 17.3   |
| <b>ms</b>     | Response time ( $\Delta U = 20\%$ transient)                        | 500         | 500         | 500         | 500         | 500         |
| <b>kVA</b>    | Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT* | 21.9        | 22          | 33.6        | 40.3        | 48.9        |
| <b>kVA</b>    | Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*  | 27          | 27          | 41          | 49          | 60          |
| <b>%</b>      | Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub> | 18.4        | 20.9        | 18.3        | 18          | 17.3        |
| <b>%</b>      | Transient $\Delta U$ (on-load 4/4) AREP+ - P.F.: 0.8 <sub>LAG</sub> | 16.4        | 18.5        | 16.3        | 16          | 15.4        |
| <b>W</b>      | No-load losses                                                      | 643         | 643         | 755         | 825         | 904         |
| <b>W</b>      | Heat dissipation                                                    | 1866        | 2464        | 2447        | 2654        | 2763        |

\* P.F. = 0.6

## Transient voltage variation 480V - 60 Hz

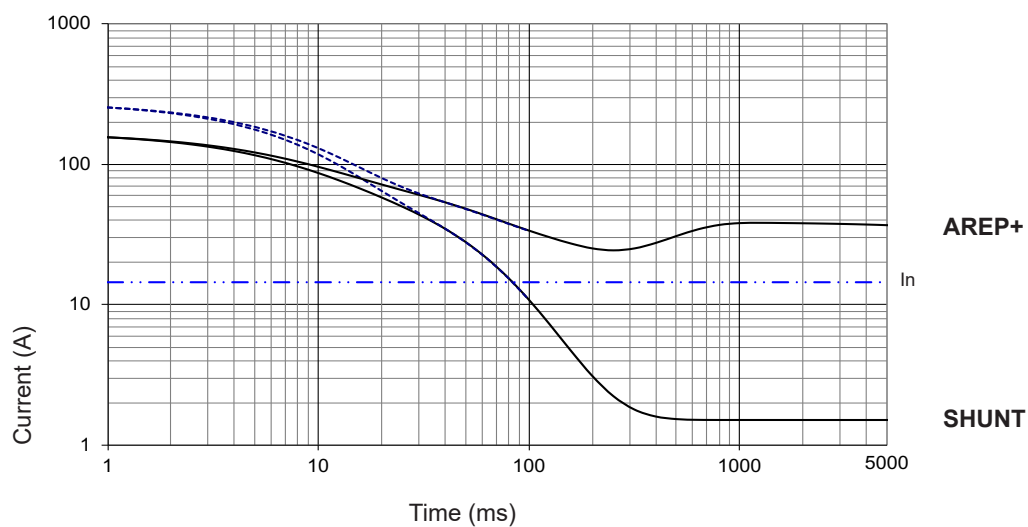


- For a starting P.F. other than 0.6, the starting kVA must be multiplied by  $K = \text{Sine P.F.} / 0.6$
- For voltages other than 480V (Y), 277V (Δ), 240V (YY) at 60 Hz, then kVA must be multiplied by  $(480/U)^2$  or  $(277/U)^2$  or  $(240/U)^2$ .

## 3-phase short-circuit curves at no load and rated speed (star connection Y)

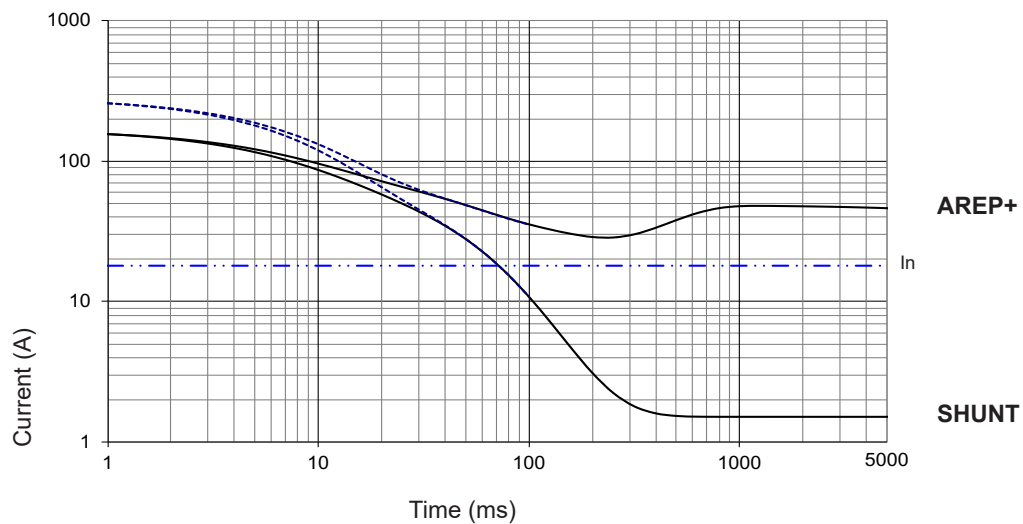
### TAL 040 B

Symmetrical —  
Asymmetrical - - -



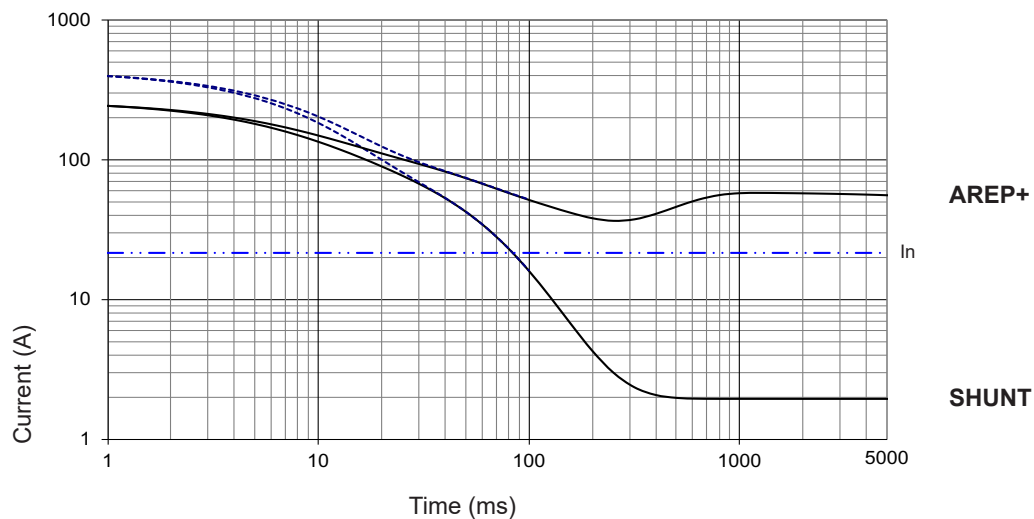
### TAL 040 C

Symmetrical —  
Asymmetrical - - -



### TAL 040 D

Symmetrical —  
Asymmetrical - - -



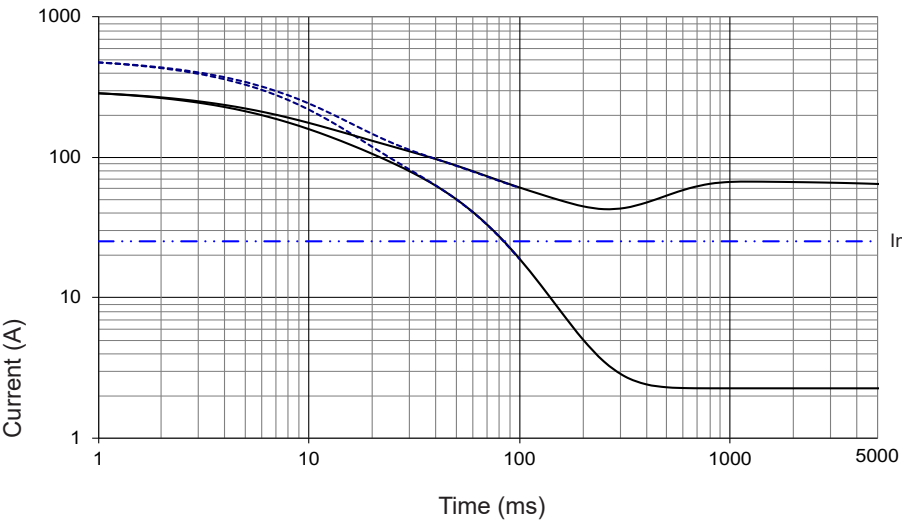
### Influence due to connection

For ( $\Delta$ ) connection, use the following multiplication factor:  
- Current value x 1.732.

3-phase short-circuit curves at no load and rated speed (star connection Y)

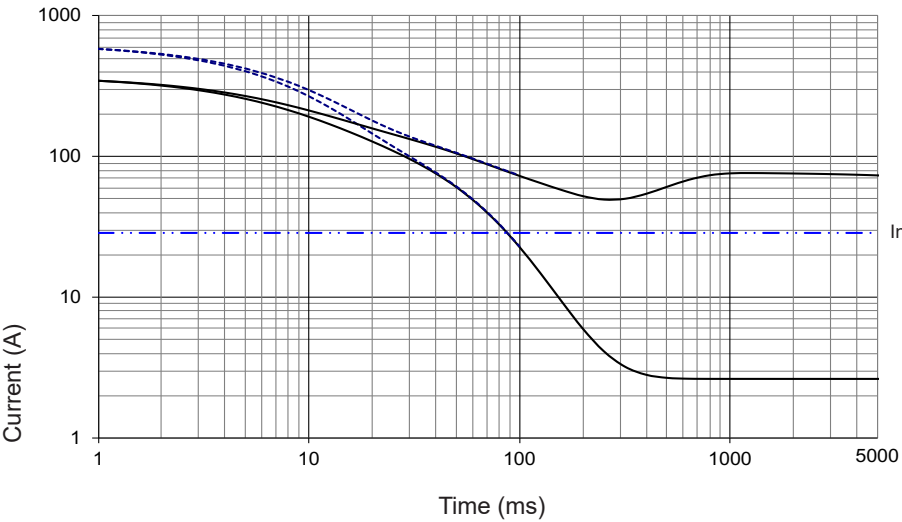
TAL 040 E

Symmetrical —  
Asymmetrical - - -



TAL 040 F

Symmetrical —  
Asymmetrical - - -



**Influence due to short-circuit**  
Curves are based on a three-phase short-circuit.  
For other types of short-circuit,  
use the following multiplication factors.

|                          | 3 - phase | 2 - phase L / L | 1 - phase L / N |
|--------------------------|-----------|-----------------|-----------------|
| Instantaneous (max.)     | 1         | 0.87            | 1.3             |
| Continuous               | 1         | 1.5             | 2.2             |
| Maximum duration (AREP+) | 1         | 1.5             |                 |

## General characteristics

|                  |                                       |                                                   |         |
|------------------|---------------------------------------|---------------------------------------------------|---------|
| Insulation class | H                                     | Excitation system                                 | SHUNT   |
| Winding pitch    | 2/3 (wind. M)                         | AVR type                                          | R121    |
| Number of wires  | 4                                     | Voltage regulation (*)                            | ± 1 %   |
| Protection       | IP 23                                 | Total Harmonic Distortion THD (**) in no-load     | < 3.5 % |
| Altitude         | ≤ 1000 m                              | Total Harmonic Distortion THD (**) in linear load | < 5 %   |
| Overspeed        | 2250 R.P.M.                           | Waveform: NEMA = TIF (**)                         | < 100   |
| Air flow         | 0.06 m³/s (50 Hz) / 0.07 m³/s (60 Hz) | Waveform: I.E.C. = FHT (**)                       | < 2 %   |

(\*) Steady state (\*\*) Total harmonic distortion between phases, no-load or on-load (non-distorting)

## Ratings / Efficiencies 50 Hz - 1500 R.P.M.

| kVA / kW - P.F. = 1(*)                                                                          |                    |            |       |                  |                  |      |
|-------------------------------------------------------------------------------------------------|--------------------|------------|-------|------------------|------------------|------|
| Duty / T° C                                                                                     | Continuous / 40 °C |            |       | Stand-by / 40 °C | Stand-by / 27 °C |      |
| Class / T° K                                                                                    | H / 125° K         | F / 105° K |       | H / 150° K       | H / 163° K       |      |
| Serie (SE)     | 230 V              | η %        | 230 V | 230 V            | 230V             | η %  |
| Parallel (PA)  | 115 V              | η %        | 115 V | 115 V            | 115 V            | η %  |
| TAL 040 C                                                                                       | 10.5               | 82.4       | 9.5   | 11               | 11.5             | 81.2 |
| TAL 040 C1                                                                                      | 12                 | 84.5       | 11    | 12.5             | 13               | 83.7 |
| TAL 040 D                                                                                       | 13                 | 85.4       | 12    | 14               | 14.5             | 84.7 |
| TAL 040 E                                                                                       | 14.5               | 86.3       | 13    | 15.5             | 16               | 85.6 |
| TAL 040 F                                                                                       | 16                 | 87.3       | 14.5  | 17               | 17.5             | 86.7 |

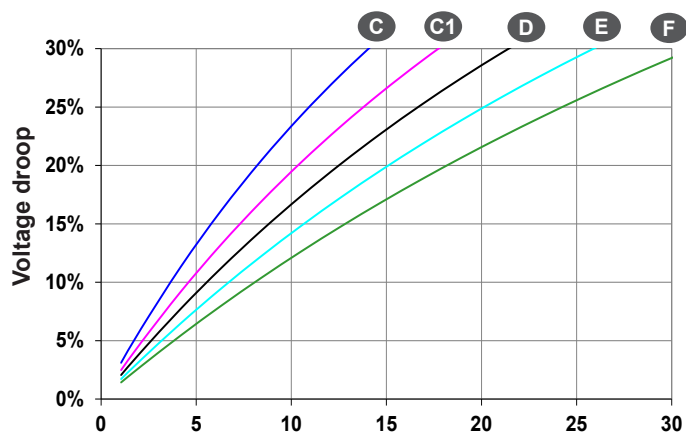
(\*) For P.F. 0.8: derating 15%

## Ratings / Efficiencies 60 Hz - 1800 R.P.M.

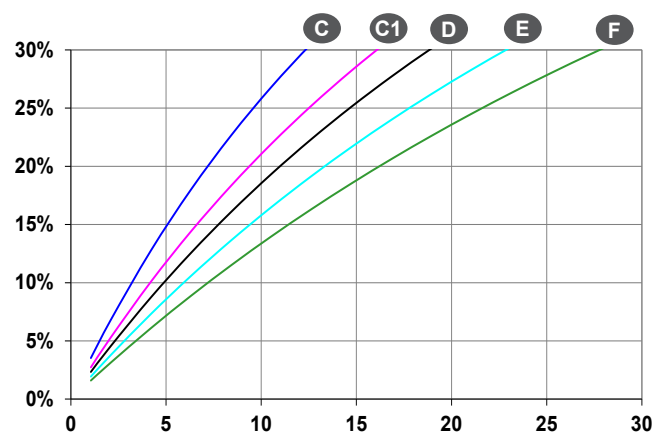
| kVA / kW - P.F. = 1(*)                                                                            |                    |            |       |                  |                  |      |
|---------------------------------------------------------------------------------------------------|--------------------|------------|-------|------------------|------------------|------|
| Duty / T° C                                                                                       | Continuous / 40 °C |            |       | Stand-by / 40 °C | Stand-by / 27 °C |      |
| Class / T° K                                                                                      | H / 125° K         | F / 105° K |       | H / 150° K       | H / 163° K       |      |
| Serie (SE)     | 240 V              | η %        | 240 V | 240 V            | 240V             | η %  |
| Parallel (PA)  | 120 V              | η %        | 120 V | 120 V            | 120 V            | η %  |
| TAL 040 C                                                                                         | 11.5               | 82.6       | 10.5  | 12               | 12.5             | 81.7 |
| TAL 040 C1                                                                                        | 13.5               | 84.2       | 12.5  | 14.5             | 15               | 83.4 |
| TAL 040 D                                                                                         | 14.5               | 85         | 13    | 15.5             | 16               | 84.3 |
| TAL 040 E                                                                                         | 16                 | 85.9       | 14.5  | 17               | 17.5             | 85.3 |
| TAL 040 F                                                                                         | 17.5               | 86.9       | 16    | 18.5             | 19.5             | 86.3 |

(\*) For P.F. 0.8: derating 15%

## Starting motor 230V - 50Hz

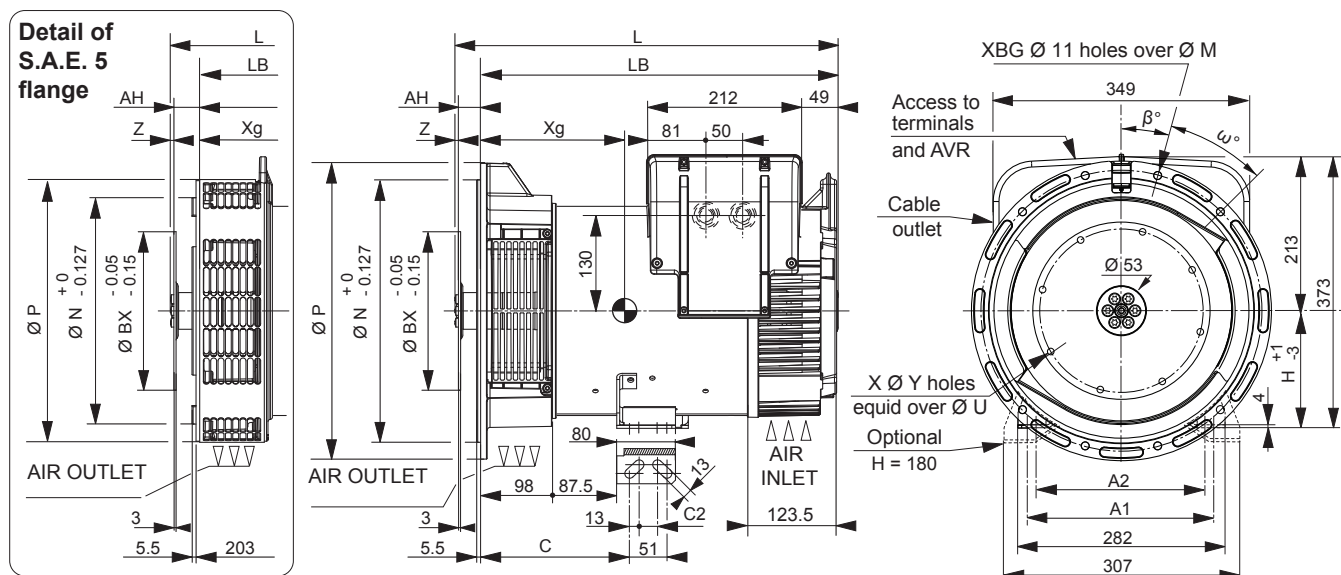


## Starting motor 240V - 60Hz



Locked rotor kVA at PF : 0.9

## Single-bearing dimensions



| Dimensions (mm) and weight |         |     |     |             |
|----------------------------|---------|-----|-----|-------------|
| Type                       | L maxi* | LB  | Xg  | Weight (kg) |
| TAL 040 B                  | 469     | 407 | 186 | 73          |
| TAL 040 C                  | 469     | 407 | 186 | 73          |
| TAL 040 C1                 | 469     | 407 | 196 | 80          |
| TAL 040 D                  | 499     | 437 | 204 | 87          |
| TAL 040 E                  | 499     | 437 | 221 | 92          |
| TAL 040 F                  | 519     | 457 | 221 | 102         |

\* L maxi = LB + AH maxi + Z

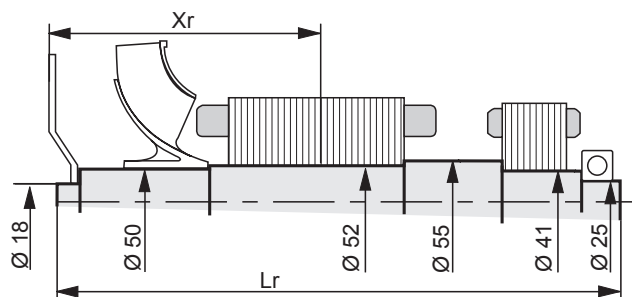
| Flange (mm) |     |        |        |     |               |                |
|-------------|-----|--------|--------|-----|---------------|----------------|
| S.A.E.      | P   | N      | M      | XBG | $\beta^\circ$ | $\omega^\circ$ |
| 5           | 358 | 314.32 | 333.38 | 8   | 22°30'        | 45°            |
| 4           | 408 | 361.95 | 381    | 8*  | 15°           | 30°            |
| 3           | 460 | 409.58 | 428.62 | 8*  | 15°           | 30°            |
| -           | -   | -      | -      | -   | -             | -              |

\* Four lateral holes removal on S.A.E. 3 and 4

| Shaft height (mm) |          |        | Coupling   |   |   |   |
|-------------------|----------|--------|------------|---|---|---|
| H                 | Standard | Option | Flange     | 3 | 4 | 5 |
|                   | 160      | 180    | Flex plate |   |   |   |
| Feet length       |          |        | 11 1/2     | x | - | - |
| C                 | 203      | 238    | 10         | x | x | - |
| C2                | 25       | 22     | 8          | x | x | - |
| A1                | 254      | 279    | 7 1/2      | - | x | x |
| A2                | 230      | -      | 6 1/2      | - | x | x |

| Flex plate (mm) |        |        |   |    |      |   |
|-----------------|--------|--------|---|----|------|---|
| S.A.E.          | BX     | U      | X | Y  | AH   | Z |
| 11 1/2          | 352.42 | 333.38 | 8 | 11 | 39.6 | 0 |
| 10              | 314.32 | 295.28 | 8 | 11 | 53.8 | 0 |
| 8               | 263.52 | 244.48 | 6 | 11 | 62   | 0 |
| 7 1/2           | 241.3  | 222.25 | 8 | 9  | 30.2 | 6 |
| 6 1/2           | 215.9  | 200.02 | 6 | 9  | 30.2 | 6 |

## Torsional analysis data



| Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²) |            |     |      |       |            |     |      |       |          |     |      |       |           |     |      |       |
|------------------------------------------------------------------------------------------------------------|------------|-----|------|-------|------------|-----|------|-------|----------|-----|------|-------|-----------|-----|------|-------|
| Flex plate                                                                                                 | S.A.E. 6 ½ |     |      |       | S.A.E. 7 ½ |     |      |       | S.A.E. 8 |     |      |       | S.A.E. 10 |     |      |       |
| Type                                                                                                       | Xr         | Lr  | M    | J     | Xr         | Lr  | M    | J     | Xr       | Lr  | M    | J     | Xr        | Lr  | M    | J     |
| TAL 040 B                                                                                                  | 211.7      | 428 | 25.5 | 0.078 | 211.7      | 428 | 25.7 | 0.080 | 243.5    | 428 | 26   | 0.085 | 238.3     | 428 | 26.5 | 0.096 |
| TAL 040 C                                                                                                  | 211.7      | 428 | 25.5 | 0.078 | 211.7      | 428 | 25.7 | 0.080 | 243.5    | 428 | 26   | 0.085 | 238.3     | 428 | 26.5 | 0.096 |
| TAL 040 C1                                                                                                 | 221.7      | 428 | 27.9 | 0.087 | 221.7      | 428 | 28.1 | 0.089 | 253.5    | 428 | 28.4 | 0.094 | 248.3     | 428 | 28.9 | 0.105 |
| TAL 040 D                                                                                                  | 229.2      | 458 | 30.3 | 0.094 | 229.2      | 458 | 30.5 | 0.096 | 261      | 458 | 30.8 | 0.100 | 255.8     | 458 | 31.3 | 0.112 |
| TAL 040 E                                                                                                  | 236.7      | 458 | 32.2 | 0.100 | 236.7      | 458 | 32.4 | 0.103 | 268.5    | 458 | 32.7 | 0.107 | 263.3     | 458 | 33.2 | 0.119 |
| TAL 040 F                                                                                                  | 246.7      | 478 | 35.3 | 0.110 | 246.7      | 478 | 35.4 | 0.113 | 278.5    | 478 | 35.7 | 0.117 | 273.3     | 478 | 36.2 | 0.129 |

**NOTE :** Dimensions are for information only and may be subject to modifications. The torsional analysis of the transmission is imperative. All values are available upon request.

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