

**Three-phase roller table motors  
with squirrel-cage rotor  
for the application  
at the frequency converters  
Series A21O, A20O, ARB, ARC**

**Product summary**



**VEM motors GmbH**



## Introduction

Roller table motors are special driving elements for the rolling mill industry. Particularly in case of working and conveying roller tables, these motors are subject to extremely hard electrical and mechanical requirements.

This fact results from the very different modes of operation and cases of load with their variants such as continuous duty, intermittent duty and short-time duty as well as starting duty, electrical braking duty and reversing duty.

The motors must be up to operative overloads (e.g. blockings caused through jammed rolled material). VEM roller table motors of the classical type series ARB 22 – 65 have proved their functional efficiency and operational reliability for decades under partially extreme environmental conditions.

Starting from these experiences, VEM has developed various variants of roller table motors adapted to the conditions of the modern drive engineering in the frequency converter operation.



**Application in the run-out roller table**



**Geared roller table motors**

**Approach roller table rocker bar furnace**

The windings of these motors are specially designed for the converter feeding.

In contrast to the classical roller table design with a soft torque characteristic curve and long blocking periods, the roller table motors designed for converter feeding have a hard torque characteristic curve being typical of double squirrel-cage rotors. So, a correct synchronism with varying loads will be obtained in case of group drives. That's the condition for a good rolling quality.

For the mechanical design are available the robust constructions in grey cast iron of the type series K21R/K20R with horizontal / vertical cooling ribs in non-ventilated design, the type series A21O/A20O or the construction of the type series ARB and ARC basing on ring-type ribbed housings.

In case of converter feeding, the operating speeds can be adapted to the drive requirements perfectly.

As the control ranges are mainly in the lower frequency range, we recommend a project-oriented winding adaption and the application of frequency converters with automatic voltage increase or field-oriented control.

The enclosed operating data sheets have been worked out for the rough project planning. They are basing on the mode of operation S3-25% duty cycle and on the arrangement of the winding in temperature class F. A delivery in temperature class H is possible as option. It can be used, particularly in case of the mode of operation S5, for raising the switching frequency.



**Converter-controlled working roller table**

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## **Motor Selection Data**

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## **Constructive Selection Data**

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## Standards and specifications

The motors comply with the relevant standards and specifications and in particular with the following:

| Title                                                                                                                                 | DIN EN / DIN VDE     | IEC                |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|
| Rotating electrical machines, rating and performance                                                                                  | DIN EN 60034-1/11.95 | IEC 34-1<br>IEC 85 |
| Rotating electrical machines, methods for determining losses and efficiency                                                           | DIN EN 60034-2       | IEC 34-2           |
| Totally enclosed three-phase induction motors with squirrel-cage, type IM B3                                                          | DIN 42673            | (IEC 72)           |
| Totally enclosed three-phase induction motors with squirrel-cage, type IM B5, IM B35 and IM B14                                       | DIN 42677            | (IEC 72)           |
| Rotating electrical machines, terminal markings and direction of rotation                                                             | DIN VDE 0530 part 8  | IEC 34-8           |
| Rotating electrical machines, symbols for types of construction and mounting                                                          | DIN EN 60034-7       | IEC 34-7           |
| Rotating electrical machines built-in thermal protection                                                                              |                      | IEC 34-11          |
| Rotating electrical machines, methods of cooling                                                                                      | DIN EN 60034-6       | IEC 34-6           |
| Rotating electrical machines, classification of degrees of protection                                                                 | DIN VDE 0530 part 5  | IEC 34-5           |
| Rotating electrical machines, mechanical vibrations of certain machines with shaft height 56 mm and higher                            | DIN VDE 0530 part 14 | IEC 34-14          |
| Cylindrical shaft ends for rotating electrical machines                                                                               | DIN 748 part 3       | IEC 72             |
| Rotating electrical machines, noise limits                                                                                            | DIN EN 60034-9       | IEC 34-9           |
| Rotating electrical machines, starting performance of single-speed three-phase cage induction motors for voltages up to 660 V, 50 cps | DIN EN 60034-12      | IEC 34-12          |
| IEC standard voltages                                                                                                                 | DIN IEC 38           | IEC 38             |

Furthermore, VEM motors comply with various foreign specifications which have been adapted to the IEC 34-1.

|             |             |              |               |
|-------------|-------------|--------------|---------------|
| NF C 51     | France      | NBNC 51-101  | Belgium       |
| ÖVE M10     | Austria     | CEI 2-3, V1  | Italy         |
| SS 426 0101 | Sweden      | NEK-IEC 34-1 | Norway        |
| SEV 3009    | Switzerland | BS 5000      | Great Britain |
|             |             | BS 4999      |               |

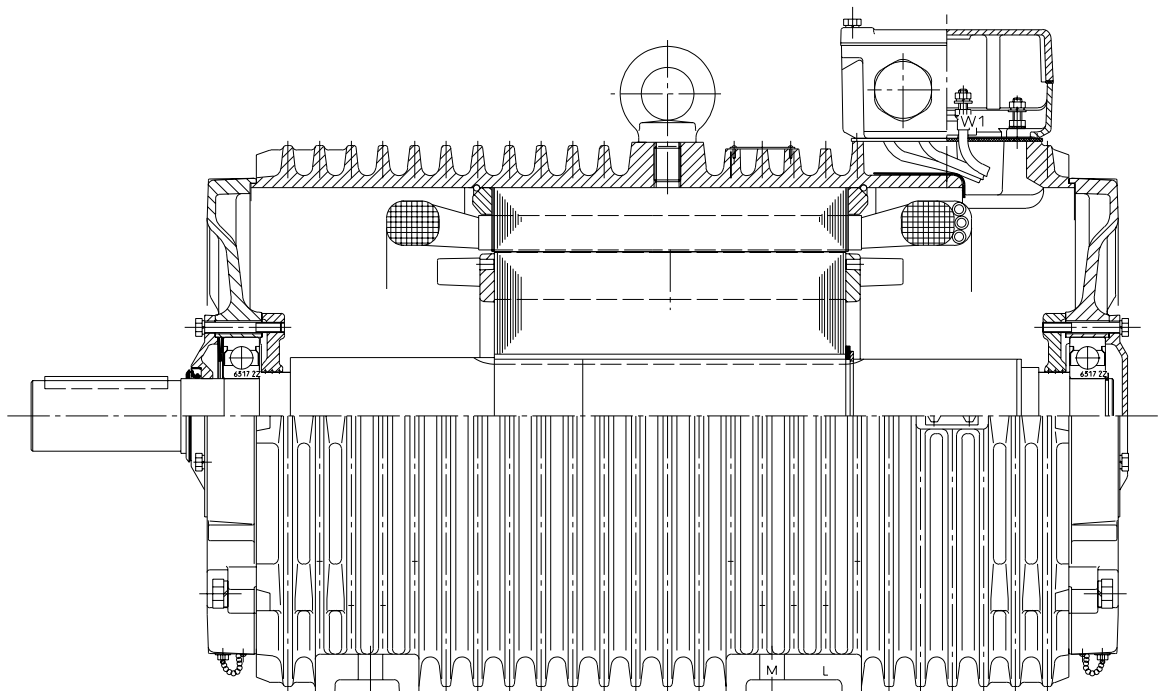
For these standards and specifications are valid the following admissible limits of temperature rise with type of cooling IC 410:

| Specifications        | Cooling air temperature | Admissible limit of temperature rise in K<br>(measuring according to rise-of-resistance method)<br>Insulation class |    |    |     |     |
|-----------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------|----|----|-----|-----|
|                       |                         | A                                                                                                                   | E  | B  | F   | H   |
| DIN EN 60034-1/ 11.95 | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |
| IEC 34-1              | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |
| Great Britain BS      | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |
| Italy CEI             | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |
| Sweden SEN            | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |
| Norway NEK            | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |
| Belgium NBN           | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |
| France NF             | 40                      | 65                                                                                                                  | 75 | 85 | 110 | 130 |

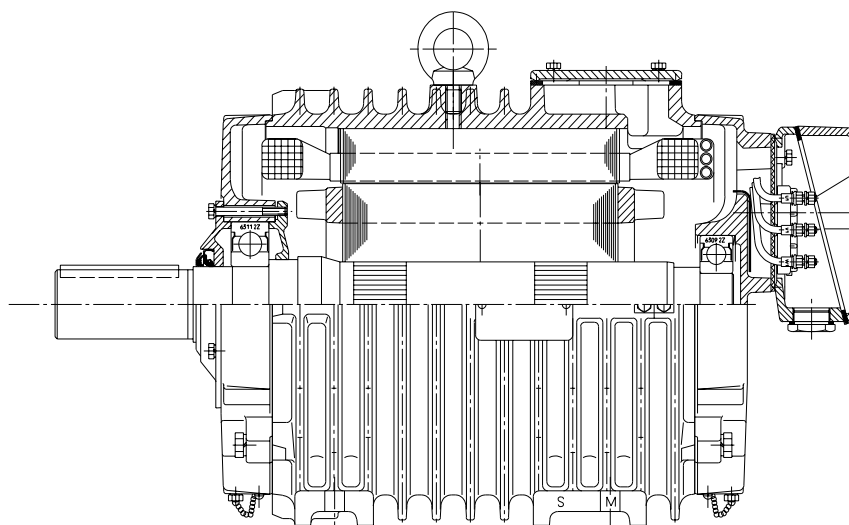
## Constructive Design

Generally, the motors are delivered in a robust grey cast iron version. In case of the easy type series A21O, A20O, the housings are provided with horizontal / vertical cooling ribs and in case of the heavy type series ARB, ARC they are provided with ribs arranged across the axial direction. The housings have a high mechanical resistance and a very good thermal capacity. In case of the type series A21O, A20O, the connection box can be executed on the top, right or left, analogous to the standard motor series K21R, K20R. In case of the type series ARB the connection box is placed on the right and in case of the type series ARC it can be delivered as option so that it is arranged on the non-driving side at the top or at the non-driving side end shield.

| Shaft height  | Type series  | Material for   |             |      | Foot mounting |
|---------------|--------------|----------------|-------------|------|---------------|
|               |              | Housings       | End shields | Feet |               |
| 132 up to 280 | A21O, W/A21O | Grey cast iron |             |      | bolted-on     |
| 315           |              |                |             |      | cast-on       |
| 355           | A22O, W      |                |             |      |               |
| 132 up to 250 | ARC          |                |             |      | bolted-on     |
| 280 up to 355 | A20O, W      |                |             |      | cast-on       |
| 22 up to 65   | ARB          |                |             |      | bolted-on     |



Sectional view type series ARC, terminal box arrangement on the top



Sectional view type series ARC, terminal box arrangement on the non-driven end shield

## Cooling

The motors are designed in type of cooling IC 410, non-ventilated, with surface cooling.

## Vibration characteristics

The admissible vibration intensities of electric motors are specified in DIN VDE 0530 part 14.

The vibration intensity stage N (normal) is achieved or is below limit by VEM motors in the basic version. On demand, the vibration intensity stages R (reduced) and S (special) can be delivered in dependence on the type at extra charge.

All rotors are dynamically balanced with the complete key inserted. This balancing is documented on the rating plate with the letter F after the Motor Number.

## Bearing arrangement / bearing lubrication

VEM motors are equipped with antifriction bearings of well-known manufacturers. The bearings have a nominal service life of at least 20.000 hours for maximum permissible load conditions. For motors without additional axial loading, the nominal service life is 40.000 hours for direct coupling.

The antifriction bearing types are shown in the bearing arrangement tables.

The bearing lubrication (use of lubricants and lubrication periods) is adapted to the operating conditions existing in each case.

## Use of cylindrical roller bearings

Cylindrical roller bearings can be used as option. Using cylindrical roller bearings („heavy bearing arrangement“), relatively high radial forces or masses can be supported at the motor shaft end. Examples : belt drives, pinions or heavy couplings.

The minimum radial force at the shaft end must be a quarter of the permissible radial force. Account must be taken of the permissible shaft end loading. Both values are to be taken from the loading diagrams.

### **Important to note:**

**Radial forces below the minimum value can lead to bearing damages within a few hours. Test runs in no-load state are only permissible for a short period.**

## Bearing loading and shaft end loading

By reason of the international standardization of asynchronous motors, the dimensioning of bearing arrangement and shaft is only variable within limits, so that there has been selected a constructive optimum.

## Admissible shaft end loading

The size of the permissible shaft end loading is determined by the following principle main criteria:

- permissible bending of the shaft
- shaft end fatigue strength
- bearing service life

A nominal bearing service life of 20.000 hours will be taken as a basis.

The following is preset as loading scheme:

$F_r$  = radial shaft end loading

$F_a$  = axial shaft end loading

$l$  = length of the shaft end

$x$  = distance of the application point for  $F_r$  from the shaft shoulder

The type-related data for the permissible axial shaft end loading  $F_a$  and the permissible radial shaft end loading  $F_{r0,5}$  (at the application point  $x : l = 0,5$ ),  $f_{r1,0}$  (at the application point  $x : l = 1,0$ ) for the basic version and for the heavy bearing arrangement in horizontal and vertical mounting position of the motor are specified in the tables of the main catalogue. Data for ARB and ARC on inquiry.

The given permissible forces are valid for practically vibration-free mounting of the motors.

The loadings  $F_r$  and  $F_a$  are generally dependent on the used transmission elements, i.e. on the axial and radial forces arising from these transmission elements incl. their weights.

The calculation of the forces is done by using formulas of mechanics, e.g. for belt pulleys

$$F_r = 2 \cdot 10^7 \cdot \frac{P}{n \cdot D} \cdot c$$

with

$F_r$  = radial force in N

P = rated motor output in kW (transmission output)

n = nominal motor speed

D = belt pulley diameter in mm

c = pretension factor as stated by the belt manufacturer

In practice, the radial force  $F_r$  does not always act at  $x : l = 0,5$ . The conversion of the permissible radial force within the range  $x : l = 0,5$  up to  $x : l = 1,0$  can be done by linear interpolation.

If the calculated shaft loadings exceed the permissible ones, then the drive elements must be changed. Among others, there will be the following possibilities:

- selection of a larger belt pulley diameter
- use of V-belts instead of flat belts
- selection of another pinion diameter or skew angle of the toothing
- selection of another coupling version etc.

Generally, care should be taken that the resulting load application point of F will not be outside the shaft end.

## Paint finish

### Normal finish

- Adapted for group of climates „world wide“ according to IEC 721-2-1  
Non-weather-protected location in corrosive chemical and sea atmosphere, short time up to 100 % of relative air humidity with temperatures up to +35 °C, continuously up to 98 % of relative air humidity with temperatures up to +30 °C.

Finish system

- synthetic-resin zincphosphate primary coat, layer thickness  $\geq 30 \mu\text{m}$
- intermediate coat on two-component base, layer thickness  $\geq 30 \mu\text{m}$
- finish coat: two-component coating varnish, layer thickness  $\geq 30 \mu\text{m}$

Standard colour

RAL 7031 blue-grey

Further special coating systems

- version for excessive thermal stresses
- version for excessive chemical and radiation stresses
- special finish upon customer's request

## Shaft ends

As specified in IEC 34-7, the definition of the motor ends is as follows:

### D-end (DS):

Drive end of the motor (Driving side)

### N-end (NS):

Non-driving end (opposite end to the drive end) (Non-driving side)

Threaded center bores according to DIN 332, sheet 1 and sheet 2, form DS.

The keys and the key slots are designed according to DIN 6885, sheet 1, form A. The lengths of the keys are corresponding to DIN 748, part 3, draft Dec. 1991.

Threads for press-on and dismantling device:

| Shaft end diameters | Thread |
|---------------------|--------|
| over 28 – 38 mm     | M12    |
| over 38 – 50 mm     | M16    |
| over 50 – 85 mm     | M20    |
| over 85 – 130 mm    | M24    |

The motors are always supplied with the key fitted.

The second shaft end can transmit the full nominal output with coupling output. The power transmission capability through belt service, chain service or pinion service for the second shaft end is available on request. The slotted driving elements, such as belt pulleys or couplings, are to be balanced with a balance quality grade of at least G 6.3 according to DIN ISO 1949, part 1, with machined slot on smooth mandrel.

## Design voltage and design frequency

In the basic version, the motors are supplied for following design voltages:

|                      |        |
|----------------------|--------|
| 230/400 V $\Delta/Y$ | 50 cps |
| 400/690 V $\Delta/Y$ | 50 cps |
| 690 V $\Delta$       | 50 cps |
| 460 V $\Delta$       | 60 cps |

The motors can run, without changing the design output, in mains, in which the voltage at nominal frequency deviates from the nominal value up to  $\pm 5\%$  (design voltage range A). At design voltage, in these mains the frequency can deviate by  $\pm 2\%$  from the nominal value.

The above mentioned standard voltages according to DIN IEC 38 are taken as the design point.

Special voltages and frequencies upon customer's request.

## Design voltage range, design frequency range

(Special design)

Motors to be used for mains voltage as specified in DIN IEC 38 with the total tolerance of  $\pm 10\%$  are to be selected according to the corresponding design voltage listed in the technical tables. The design voltage range limited by  $U_u$  and  $U_o$  is also given here.

If the motors are supplied with voltages between 95 % and 105 % of the design voltage range – this corresponds to the respective mains voltage value according to DIN IEC 38 with  $\pm 10\%$  – already at the voltage and frequency limits of the design range and without taking into account the tolerances, the maximum permissible temperature-rise limit of the stator winding may be exceeded by approx. 10 K according to DIN EN 60034-1/11.95.

## Design output

The design output applies for continuous operation as specified in DIN EN 60034-1/11.95 at a coolant temperature of 40 °C and a site altitude of  $\leq 1000$  m above M.S.L., operating frequency of 50 cps and design voltage. The type series have thermal reserves which permit, depending on types, the following continuous loads:

- up to 10 % above the design output at 40 °C coolant temperature
- design output up to 50 °C coolant temperature
- design output up to 2.500 m site altitude

These conditions can only be applied alternatively. The output must be reduced when being coupled two of them.

## Motor torque

The design torque in Nm given at the motor shaft is calculated by

$$M = 9550 \cdot \frac{P}{n}$$

with P = design output in kW  
n = speed in r.p.m.

In the Motor Selection Data tables, starting torque, pull-up torque and pull-out torque are given as multiple of the design torques.

If the voltage deviates from its design point, the torques change about quadratically. The classified characteristics of the torque behaviours are given in the Motor Selection Data tables of the main catalogue.

## Ambient temperature

All VEM motors in the basic version can be used at ambient temperatures from  $-35\text{ °C}$  up to  $+40\text{ °C}$ .

## Overload capacity

In compliance with DIN EN 60034-1, all motors can be exposed to the following overload conditions:

- 1,5 times the rated current for 2 min.
  - 1,6 times the rated torque for 15 s (1,5 times for  $I_A/I_N < 4,5$ )
- Both conditions apply to design voltage and design frequency.

## Design efficiency and design power factor

The efficiency  $\eta$  and the power factor  $\cos \varphi$  are stated in the Motor Selection Data lists.

## Re-starting with residual field and phase opposition

A re-starting after mains failure against 100 % residual field is possible for all motors.

## Motor protection

The following motor protection variants are available on request:

- motor protection with PTC temperature sensors in the stator winding
- bimetallic temperature sensor as NC contact or NO contact in the stator winding
- resistance thermometer for monitoring the winding or bearing temperature on request

## Special duty types

In the catalogue are additionally specified motor selection data for the project planning of special duty types such as S3, S5, S9. The selection must be done according to the effective torque  $M_{\text{eff}}$  (in which must be included the maximum torque  $M_{\text{max}}$ ).

In addition is to be checked that the maximally required impact torque must be lower than or equal to the maximum torque.

Special duty types for intermittent duty, short-time duty or electrical braking procedures are possible on request.

### **Note:**

***We make all efforts to better our products.***

***Versions, technical data and figures could be changed therefore.***

***They are always not binding before written confirmation by the supplier factory.***

## Tolerances – Electrical parameters

Following tolerances are permitted according to DIN EN 60034-1/11.95:

|                                                       |                                                                                          |
|-------------------------------------------------------|------------------------------------------------------------------------------------------|
| Efficiency (with indirect calculation)                | $-0,15 (1-\eta)$ at $P_N \leq 50 \text{ kW}$<br>$-0,1 (1-\eta)$ at $P_N > 50 \text{ kW}$ |
| Power factor                                          | $\frac{1-\cos \varphi}{6}$ at least 0,02<br>at most 0,07                                 |
| Slip<br>(at rated-load operating temperature)         | $\pm 20 \%$ at $P_N \geq 1 \text{ kW}$                                                   |
| Starting current<br>(in the planned starting circuit) | + 20 %<br>without limiting downwards                                                     |
| Starting torque                                       | - 15 % and + 25 %                                                                        |
| Pull-up torque                                        | - 15 %                                                                                   |
| Pull-out torque                                       | - 10 % (with the application of this tolerance<br>$M_k/M$ at least 1,6)                  |
| Moment of inertia                                     | $\pm 10 \%$                                                                              |

These tolerances are permissible for the values assured for three-phase asynchronous motors, taking the necessary manufacturing tolerances and material variations of the used raw materials into account. The standard contains the following notes to that:

1. A guarantee for all or any of the values shown in the table is not mandatory.  
In tenders, the guaranteed values for which permissible deviations should apply must be expressly specified.  
The permissible variations must correspond to those stated in the table.
2. There is pointed to the distinctions concerning the definition „Guarantee“. In some countries, distinction is drawn between guaranteed values and typical or declared values.
3. If a permissible deviation applies only in one direction, then the value in the other direction is not limited.

## Tolerances – Mechanical parameters

| Dimensional short sign according to DIN 42939 | Meaning of the dimension                                                                          | Fit or tolerance                                    |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| a                                             | spacing of housing foot fixing holes in axial direction                                           | $\pm 1 \text{ mm}$                                  |
| a <sub>1</sub>                                | diameter or width across corner of the flange                                                     | - 1 %                                               |
| b                                             | spacing of housing foot fixing holes across the axial direction                                   | $\pm 1 \text{ mm}$                                  |
| b <sub>1</sub>                                | diameter of the centering shoulder of the attachment flange                                       | up to diameter 230 mm j6<br>from diameter 250 mm h6 |
| d, d <sub>1</sub>                             | diameter of the shaft end (cylindrical)                                                           | up to diameter 48 mm k6<br>from diameter 55 mm m6   |
| e <sub>1</sub>                                | pitch circle diameter of the attachment flange                                                    | $\pm 0,8 \text{ mm}$                                |
| f, g                                          | largest width of the motor (without terminal box)                                                 | + 2 %                                               |
| h                                             | shaft height (lower edge foot up to centre of shaft end)                                          | up to 250 mm -0,5<br>over 250 mm -1                 |
| k, k <sub>1</sub>                             | overall length of the motor                                                                       | + 1 %                                               |
| l                                             | $\leq \varnothing$ shaft end 55 mm<br>$\geq \varnothing$ shaft end 60 mm                          | - 0,3 mm<br>- 0,5 mm                                |
| p                                             | overall height of the motor (lower edge foot, housing or flange up to highest point of the motor) | + 2 %                                               |
| s, s <sub>1</sub>                             | diameter of the fixing holes of the foot or of the flange                                         | + 3 %                                               |
| t, t <sub>1</sub>                             | lower edge of shaft end up to upper edge of key                                                   | + 0,2 mm                                            |
| u, u <sub>1</sub>                             | width of the key                                                                                  | h9                                                  |
| w <sub>1</sub> , w <sub>2</sub>               | distance between centre of first fixing hole up to shaft shoulder or flange attachment surface    | $\pm 3,0 \text{ mm}$                                |
|                                               | distance shaft shoulder up to flange attachment surface, fixed bearing D-end                      | $\pm 0,5 \text{ mm}$                                |
|                                               | distance shaft shoulder up to flange attachment surface                                           | $\pm 3,0 \text{ mm}$                                |
|                                               | motor weight                                                                                      | - 5 up to + 10 %                                    |

**Three-phase motors with squirrel-cage rotor, series A21O/A20O and A21W/A20W**

non-ventilated with surface cooling, type of cooling IC 410

mode of operation S1, continuous duty, temperature class F,

degree of protection IP55 for A21O/A20O, IP56 for A21W/A20W, 50 cps

| Type<br>A21O<br>A21W                        | A20O<br>A20W | P<br>kW | n<br>r.p.m. | $\eta$<br>% | $\cos \varphi$<br>– | I<br>400 V<br>A | $I_A/I$<br>– | $M_A/M$<br>– | $M_K/M$<br>– | J<br>kgm <sup>2</sup> | m<br>kg |
|---------------------------------------------|--------------|---------|-------------|-------------|---------------------|-----------------|--------------|--------------|--------------|-----------------------|---------|
| Synchronous speed 3000 rpm – 2-pole version |              |         |             |             |                     |                 |              |              |              |                       |         |
| 132 SX2                                     | 112 M2       | 3,0     | 2895        | 89,5        | 0,91                | 5,7             | 7,4          | 2,0          | 2,8          | 0,0110                | 57      |
| 160 M2                                      | 132 M2       | 4,0     | 2900        | 91,0        | 0,94                | 7,2             | 7,3          | 1,7          | 2,9          | 0,0258                | 81      |
| 160 MX2                                     | 160 S2       | 5,5     | 2935        | 91,5        | 0,93                | 9,9             | 7,8          | 1,9          | 2,9          | 0,0575                | 118     |
| 160 L2                                      | 160 M2       | 7,5     | 2935        | 92,5        | 0,93                | 13,2            | 8,1          | 2,1          | 3,0          | 0,0675                | 134     |
| 180 M2                                      | 180 S2       | 8,8     | 2935        | 92,5        | 0,93                | 19,3            | 7,7          | 2,0          | 2,6          | 0,1050                | 165     |
| 200 L2                                      | 180 M2       | 12,0    | 2940        | 93,5        | 0,93                | 21,0            | 8,1          | 2,0          | 2,7          | 0,1280                | 195     |
| 200 LX2                                     | 200 M2       | 15,0    | 2945        | 92,5        | 0,92                | 25,5            | 7,7          | 1,7          | 2,5          | 0,1930                | 255     |
| 225 M2                                      | 200 L2       | 18,5    | 2945        | 93,0        | 0,92                | 31              | 8,0          | 1,8          | 2,6          | 0,2200                | 290     |
| 250 M2                                      | 225 M2       | 22,0    | 2955        | 93,5        | 0,92                | 37              | 8,1          | 1,9          | 2,6          | 0,3750                | 360     |
| 280 S2                                      | 250 S2       | 32,0    | 2965        | 93,5        | 0,93                | 53              | 8,9          | 1,9          | 2,7          | 0,6500                | 490     |
| 280 M2                                      | 250 M2       | 40,0    | 2965        | 94,0        | 0,93                | 66              | 9,0          | 1,9          | 2,7          | 0,6750                | 510     |
| 315 S2                                      | 280 S2       | 49,0    | 2970        | 94,0        | 0,93                | 81              | 8,8          | 1,6          | 2,7          | 1,2100                | 720     |
| 315 M2                                      | 280 M2       | 59,0    | 2970        | 94,5        | 0,93                | 97              | 9,2          | 1,7          | 2,8          | 1,4400                | 800     |
| 315 MX2                                     | 315 S2       | 70,0    | 2970        | 95,0        | 0,94                | 114             | 9,6          | 1,9          | 2,7          | 1,7600                | 980     |
| 315 MY2                                     | 315 M2       | 90,0    | 2975        | 95,5        | 0,94                | 145             | 8,7          | 2,0          | 2,7          | 2,8200                | 1170    |
| 315 L2                                      | 315 L2       | 120,0   | 2980        | 96,0        | 0,94                | 192             | 9,7          | 2,5          | 2,7          | 3,6600                | 1460    |
| 315 LX2                                     | 315 LX2      | 145,0   | 2980        | 96,0        | 0,94                | 232             | 9,7          | 2,7          | 2,7          | 4,4300                | 1630    |

## Synchronous speed 1500 rpm – 4-pole version

|         |         |       |      |      |      |       |      |     |     |        |      |
|---------|---------|-------|------|------|------|-------|------|-----|-----|--------|------|
| 132 S4  | 112 M4  | 2,3   | 1440 | 88,0 | 0,87 | 4,6   | 7,5  | 2,5 | 3,0 | 0,0150 | 50   |
| 132 M4  | 132 S4  | 3,0   | 1445 | 89,0 | 0,86 | 5,9   | 6,6  | 2,2 | 2,3 | 0,0280 | 69   |
| 160 M4  | 132 M4  | 4,4   | 1455 | 90,0 | 0,86 | 8,4   | 7,0  | 2,0 | 2,8 | 0,0350 | 86   |
| 160 L4  | 160 S4  | 5,5   | 1465 | 91,5 | 0,89 | 10,4  | 7,7  | 2,5 | 3,0 | 0,0780 | 120  |
| 180 M4  | 160 M4  | 8,0   | 1465 | 92,0 | 0,89 | 14,8  | 7,5  | 2,4 | 2,9 | 0,0900 | 136  |
| 180 L4  | 180 S4  | 8,8   | 1470 | 93,0 | 0,89 | 16,1  | 8,5  | 2,4 | 2,9 | 0,1380 | 170  |
| 200 L4  | 180 M4  | 11,0  | 1470 | 93,0 | 0,88 | 20,2  | 8,5  | 2,5 | 2,9 | 0,1680 | 200  |
| 225 S4  | 200 M4  | 15,0  | 1475 | 92,5 | 0,88 | 26,5  | 7,8  | 2,0 | 2,4 | 0,2750 | 270  |
| 225 M4  | 200 L4  | 18,5  | 1475 | 92,5 | 0,88 | 33,0  | 7,6  | 2,0 | 2,4 | 0,3130 | 300  |
| 250 M4  | 225 M4  | 22,0  | 1475 | 93,0 | 0,89 | 38,5  | 7,7  | 2,1 | 2,5 | 0,5250 | 375  |
| 280 S4  | 250 S4  | 32,0  | 1480 | 93,5 | 0,89 | 56,0  | 8,2  | 2,3 | 2,5 | 0,9500 | 520  |
| 280 M4  | 250 M4  | 40,0  | 1480 | 94,0 | 0,89 | 69,5  | 8,5  | 2,5 | 2,5 | 1,1000 | 580  |
| 315 S4  | 280 S4  | 50,0  | 1480 | 94,0 | 0,89 | 86,0  | 8,9  | 2,3 | 2,5 | 1,9600 | 740  |
| 315 M4  | 280 M4  | 60,0  | 1480 | 94,5 | 0,89 | 103,0 | 9,1  | 2,4 | 2,6 | 2,2700 | 840  |
| 315 MX4 | 315 S4  | 70,0  | 1480 | 94,5 | 0,89 | 121,0 | 9,9  | 2,7 | 2,8 | 2,7300 | 1000 |
| 315 MY4 | 315 M4  | 95,0  | 1485 | 96,0 | 0,91 | 158,0 | 9,0  | 2,3 | 2,5 | 4,8200 | 1200 |
| 315 L4  | 315 L4  | 132,0 | 1485 | 96,0 | 0,91 | 219,0 | 9,1  | 2,4 | 2,6 | 5,9300 | 1450 |
| 315 LX4 | 315 LX4 | 150,0 | 1485 | 96,0 | 0,90 | 252,0 | 10,0 | 2,8 | 2,9 | 6,8200 | 1630 |

**Three-phase motors with squirrel-cage rotor, series A21O/A20O and A21W/A20W**

non-ventilated with surface cooling, type of cooling IC 410

mode of operation S1, continuous duty, temperature class F,

degree of protection IP55 for A21O/A20O, IP56 for A21W/A20W, 50 cps

| Type<br>A21O<br>A21W                        | A20O<br>A20W | P<br>kW | n<br>r.p.m. | $\eta$<br>% | $\cos \varphi$<br>– | I<br>400 V<br>A | $I_A/I$<br>– | $M_A/M$<br>– | $M_K/M$<br>– | J<br>kgm <sup>2</sup> | m<br>kg |
|---------------------------------------------|--------------|---------|-------------|-------------|---------------------|-----------------|--------------|--------------|--------------|-----------------------|---------|
| Synchronous speed 1000 rpm – 6-pole version |              |         |             |             |                     |                 |              |              |              |                       |         |
| 132 S6                                      | 112 M6       | 1,5     | 960         | 82,5        | 0,78                | 3,5             | 7,0          | 2,9          | 3,6          | 0,0180                | 46      |
| 132 M6                                      | 112 MX6      | 1,9     | 960         | 84,5        | 0,79                | 4,3             | 7,7          | 3,4          | 3,7          | 0,0230                | 53      |
| 132 MX6                                     | 132 S6       | 2,6     | 960         | 86,0        | 0,85                | 5,4             | 6,5          | 2,7          | 2,8          | 0,0430                | 70      |
| 160 M6                                      | 132 M6       | 3,5     | 960         | 87,0        | 0,84                | 7,1             | 7,2          | 3,1          | 3,2          | 0,0530                | 86      |
| 160 L6                                      | 160 S6       | 4,8     | 965         | 89,0        | 0,88                | 9,1             | 7,4          | 2,7          | 3,0          | 0,1130                | 114     |
| 180 L6                                      | 160 M6       | 6,5     | 970         | 90,0        | 0,88                | 12,3            | 7,8          | 3,0          | 3,2          | 0,1450                | 136     |
| 200 L6                                      | 180 S6       | 7,6     | 975         | 91,0        | 0,88                | 14,3            | 7,5          | 2,4          | 3,2          | 0,2280                | 175     |
| 200 LX6                                     | 180 M6       | 9,5     | 975         | 91,0        | 0,92                | 17,1            | 7,7          | 2,4          | 3,2          | 0,2680                | 200     |
| 225 M6                                      | 200 M6       | 12,5    | 970         | 90,5        | 0,90                | 22,0            | 6,5          | 1,9          | 2,5          | 0,4430                | 265     |
| 250 M6                                      | 225 M6       | 16,5    | 975         | 91,5        | 0,89                | 29,5            | 6,8          | 2,0          | 2,6          | 0,8250                | 360     |
| 280 S6                                      | 250 S6       | 22,0    | 980         | 92,0        | 0,88                | 39,5            | 6,6          | 2,0          | 2,4          | 1,2800                | 465     |
| 280 M6                                      | 250 M6       | 27,0    | 980         | 92,5        | 0,88                | 48,0            | 7,1          | 2,2          | 2,6          | 1,4800                | 520     |
| 315 S6                                      | 280 S6       | 37,0    | 985         | 93,0        | 0,89                | 65,0            | 7,4          | 2,0          | 2,4          | 2,6300                | 690     |
| 315 M6                                      | 280 M6       | 44,0    | 985         | 93,5        | 0,89                | 76,5            | 7,8          | 2,2          | 2,5          | 3,3300                | 800     |
| 315 MX6                                     | 315 S6       | 48,0    | 985         | 93,5        | 0,89                | 84,0            | 8,6          | 2,5          | 2,7          | 3,6000                | 880     |
| 315 MY6                                     | 315 M6       | 75,0    | 985         | 94,0        | 0,89                | 130,0           | 8,0          | 2,2          | 2,5          | 6,0000                | 1050    |
| 315 L6                                      | 315 L6       | 90,0    | 985         | 95,0        | 0,90                | 153,0           | 7,9          | 2,2          | 2,4          | 6,6700                | 1250    |
| 315 LX6                                     | 315 LX6      | 110,0   | 985         | 95,0        | 0,90                | 187,0           | 8,6          | 2,4          | 2,6          | 8,6000                | 1460    |

## Synchronous speed 750 rpm – 8-pole version

|         |         |      |     |      |      |       |     |     |     |        |      |
|---------|---------|------|-----|------|------|-------|-----|-----|-----|--------|------|
| 132 S8  | 112 M8  | 1,1  | 720 | 77,5 | 0,66 | 3,3   | 5,5 | 2,8 | 3,5 | 0,0180 | 46   |
| 132 M8  | 112 MX8 | 1,5  | 715 | 79,5 | 0,70 | 4,1   | 5,3 | 2,6 | 3,1 | 0,0230 | 53   |
| 160 M8  | 132 S8  | 1,8  | 720 | 83,5 | 0,72 | 4,5   | 5,3 | 2,6 | 3,0 | 0,0430 | 70   |
| 160 MX8 | 132 M8  | 2,5  | 720 | 84,0 | 0,74 | 6,0   | 5,0 | 2,3 | 2,7 | 0,0530 | 86   |
| 160 L8  | 160 S8  | 3,6  | 725 | 86,5 | 0,79 | 8,0   | 5,4 | 2,3 | 2,9 | 0,1130 | 114  |
| 180 L8  | 160 M8  | 5,0  | 725 | 87,5 | 0,79 | 11,0  | 5,5 | 2,3 | 2,8 | 0,1450 | 136  |
| 200 L8  | 180 S8  | 6,5  | 725 | 89,0 | 0,81 | 13,8  | 6,1 | 2,2 | 2,8 | 0,2280 | 175  |
| 225 S8  | –       | 7,5  | 730 | 89,5 | 0,80 | 15,9  | 6,5 | 2,4 | 3,0 | 0,4400 | 265  |
| 225 M8  | 200 M8  | 9,0  | 730 | 90,0 | 0,81 | 18,0  | 5,9 | 1,8 | 2,6 | 0,4400 | 265  |
| 250 M8  | 225 M8  | 13,0 | 735 | 90,0 | 0,81 | 26,0  | 5,9 | 1,9 | 2,5 | 0,8250 | 360  |
| 280 S8  | 250 S8  | 17,5 | 735 | 91,0 | 0,76 | 36,5  | 6,1 | 2,0 | 2,7 | 1,3500 | 465  |
| 280 M8  | 250 M8  | 22,0 | 735 | 91,0 | 0,76 | 46,0  | 6,3 | 2,1 | 2,8 | 1,5500 | 520  |
| 315 S8  | 280 S8  | 28,0 | 735 | 92,0 | 0,79 | 55,5  | 6,8 | 2,1 | 2,4 | 2,6300 | 690  |
| 315 M8  | 280 M8  | 35,0 | 740 | 92,0 | 0,80 | 68,5  | 6,8 | 2,1 | 2,4 | 3,3300 | 800  |
| 315 MX8 | 315 S8  | 37,0 | 740 | 92,5 | 0,80 | 72,5  | 7,2 | 2,2 | 2,6 | 3,6000 | 880  |
| 315 MY8 | 315 M8  | 55,0 | 740 | 93,0 | 0,82 | 104,0 | 7,3 | 2,1 | 2,4 | 6,0000 | 1050 |
| 315 L8  | 315 L8  | 68,0 | 740 | 93,5 | 0,82 | 128,0 | 7,6 | 2,2 | 2,5 | 6,7600 | 1250 |
| 315 LX8 | 315 LX8 | 85,0 | 740 | 94,0 | 0,82 | 159,0 | 7,7 | 2,3 | 2,5 | 8,6000 | 1430 |

**Three-phase motors with squirrel-cage rotor, series ARC**

non-ventilated with surface cooling, type of cooling IC 410

mode of operation S1, continuous duty, temperature class F

| Type<br>ARC                                 | P     | n      | $\eta$ | $\cos \varphi$ | I          | $I_A/I$ | $M_A/M$ | $M_K/M$ | J                | m    |
|---------------------------------------------|-------|--------|--------|----------------|------------|---------|---------|---------|------------------|------|
|                                             | kW    | r.p.m. | %      | –              | 400 V<br>A | –       | –       | –       | kgm <sup>2</sup> | kg   |
| Synchronous speed 1500 rpm – 4-pole version |       |        |        |                |            |         |         |         |                  |      |
| 112 M4                                      | 2,3   | 1440   | 88,0   | 0,87           | 4,6        | 7,5     | 2,5     | 3,0     | 0,0150           | 50   |
| 132 S4                                      | 3,0   | 1445   | 89,0   | 0,86           | 5,9        | 6,6     | 2,2     | 2,3     | 0,0280           | 69   |
| 132 M4                                      | 4,4   | 1455   | 90,0   | 0,86           | 8,4        | 7,0     | 2,0     | 2,8     | 0,0350           | 86   |
| 160 S4                                      | 5,5   | 1465   | 91,5   | 0,89           | 10,4       | 7,7     | 2,5     | 3,0     | 0,0780           | 120  |
| 160 M4                                      | 8,0   | 1465   | 92,0   | 0,89           | 14,8       | 7,5     | 2,4     | 2,9     | 0,0900           | 136  |
| 180 S4                                      | 8,8   | 1470   | 93,0   | 0,89           | 16,1       | 8,5     | 2,4     | 2,9     | 0,1380           | 170  |
| 180 M4                                      | 11,0  | 1470   | 93,0   | 0,88           | 20,2       | 8,5     | 2,5     | 2,9     | 0,1680           | 200  |
| 200 M4                                      | 15,0  | 1475   | 92,5   | 0,88           | 26,5       | 7,8     | 2,0     | 2,4     | 0,2750           | 270  |
| 200 L4                                      | 18,5  | 1475   | 92,5   | 0,88           | 33,0       | 7,6     | 2,0     | 2,4     | 0,3130           | 300  |
| 225 M4                                      | 22,0  | 1475   | 93,0   | 0,89           | 38,5       | 7,7     | 2,1     | 2,5     | 0,5250           | 375  |
| 250 S4                                      | 32,0  | 1480   | 93,5   | 0,89           | 56,0       | 8,2     | 2,3     | 2,5     | 0,9500           | 520  |
| 250 M4                                      | 40,0  | 1480   | 94,0   | 0,89           | 69,5       | 8,5     | 2,5     | 2,5     | 1,1000           | 580  |
| 280 S4                                      | 50,0  | 1480   | 94,0   | 0,89           | 86,0       | 8,9     | 2,3     | 2,5     | 1,9600           | 740  |
| 280 M4                                      | 60,0  | 1480   | 94,5   | 0,89           | 103,0      | 9,1     | 2,4     | 2,6     | 2,2700           | 840  |
| 315 M4                                      | 70,0  | 1480   | 94,5   | 0,89           | 121,0      | 9,9     | 2,7     | 2,8     | 2,7300           | 1000 |
| 315 MX4                                     | 95,0  | 1485   | 96,0   | 0,91           | 158,0      | 9,0     | 2,3     | 2,5     | 4,8200           | 1200 |
| 315 L4                                      | 132,0 | 1485   | 96,0   | 0,91           | 219,0      | 9,1     | 2,4     | 2,6     | 5,9300           | 1450 |
| 315 LX4                                     | 150,0 | 1485   | 96,0   | 0,90           | 252,0      | 10,0    | 2,8     | 2,9     | 6,8200           | 1630 |

**Three-phase motors with squirrel-cage rotor, series ARC**

non-ventilated with surface cooling, type of cooling IC 410

mode of operation S1, continuous duty, temperature class F

| Type<br>ARC                                 | P     | n      | $\eta$ | $\cos \varphi$ | I<br>400 V | $I_A/I$ | $M_A/M$ | $M_K/M$ | J                | m    |
|---------------------------------------------|-------|--------|--------|----------------|------------|---------|---------|---------|------------------|------|
|                                             | kW    | r.p.m. | %      | –              | A          | –       | –       | –       | kgm <sup>2</sup> | kg   |
| Synchronous speed 1000 rpm – 6-pole version |       |        |        |                |            |         |         |         |                  |      |
| 112 M6                                      | 1,5   | 960    | 82,5   | 0,78           | 3,5        | 7,0     | 2,9     | 3,6     | 0,0180           | 46   |
| 112 MX6                                     | 1,9   | 960    | 84,5   | 0,79           | 4,3        | 7,7     | 3,4     | 3,7     | 0,0230           | 53   |
| 132 S6                                      | 2,6   | 960    | 86,0   | 0,85           | 5,4        | 6,5     | 2,7     | 2,8     | 0,0430           | 70   |
| 132 M6                                      | 3,5   | 960    | 87,0   | 0,84           | 7,1        | 7,2     | 3,1     | 3,2     | 0,0530           | 86   |
| 160 S6                                      | 4,8   | 965    | 89,0   | 0,88           | 9,1        | 7,4     | 2,7     | 3,0     | 0,1130           | 114  |
| 160 M6                                      | 6,5   | 970    | 90,0   | 0,88           | 12,3       | 7,8     | 3,0     | 3,2     | 0,1450           | 136  |
| 180 S6                                      | 7,6   | 975    | 91,0   | 0,88           | 14,3       | 7,5     | 2,4     | 3,2     | 0,2280           | 175  |
| 180 M6                                      | 9,5   | 975    | 91,0   | 0,92           | 17,1       | 7,7     | 2,4     | 3,2     | 0,2680           | 200  |
| 200 M6                                      | 12,5  | 970    | 90,5   | 0,90           | 22,0       | 6,5     | 1,9     | 2,5     | 0,4430           | 265  |
| 225 M6                                      | 16,5  | 975    | 91,5   | 0,89           | 29,5       | 6,8     | 2,0     | 2,6     | 0,8250           | 360  |
| 250 S6                                      | 22,0  | 980    | 92,0   | 0,88           | 39,5       | 6,6     | 2,0     | 2,4     | 1,2800           | 465  |
| 250 M6                                      | 27,0  | 980    | 92,5   | 0,88           | 48,0       | 7,1     | 2,2     | 2,6     | 1,4800           | 520  |
| 280 S6                                      | 37,0  | 985    | 93,0   | 0,89           | 65,0       | 7,4     | 2,0     | 2,4     | 2,6300           | 690  |
| 280 M6                                      | 44,0  | 985    | 93,5   | 0,89           | 76,5       | 7,8     | 2,2     | 2,5     | 3,3300           | 800  |
| 315 M6                                      | 48,0  | 985    | 93,5   | 0,89           | 84,0       | 8,6     | 2,5     | 2,7     | 3,6000           | 880  |
| 315 MX6                                     | 75,0  | 985    | 94,0   | 0,89           | 130,0      | 8,0     | 2,2     | 2,5     | 6,0000           | 1050 |
| 315 L6                                      | 90,0  | 985    | 95,0   | 0,90           | 153,0      | 7,9     | 2,2     | 2,4     | 6,6700           | 1250 |
| 315 LX6                                     | 110,0 | 985    | 95,0   | 0,90           | 187,0      | 8,6     | 2,4     | 2,6     | 8,6000           | 1460 |

## Synchronous speed 750 rpm – 8-pole version

|         |      |     |      |      |       |     |     |     |        |      |
|---------|------|-----|------|------|-------|-----|-----|-----|--------|------|
| 112 M8  | 1,1  | 720 | 77,5 | 0,66 | 3,3   | 5,5 | 2,8 | 3,5 | 0,0180 | 46   |
| 112 MX8 | 1,5  | 715 | 79,5 | 0,70 | 4,1   | 5,3 | 2,6 | 3,1 | 0,0230 | 53   |
| 132 S8  | 1,8  | 720 | 83,5 | 0,72 | 4,5   | 5,3 | 2,6 | 3,0 | 0,0430 | 70   |
| 132 M8  | 2,5  | 720 | 84,0 | 0,74 | 6,0   | 5,0 | 2,3 | 2,7 | 0,0530 | 86   |
| 160 S8  | 3,6  | 725 | 86,5 | 0,79 | 8,0   | 5,4 | 2,3 | 2,9 | 0,1130 | 114  |
| 160 M8  | 5,0  | 725 | 87,5 | 0,79 | 11,0  | 5,5 | 2,3 | 2,8 | 0,1450 | 136  |
| 180 S8  | 6,5  | 725 | 89,0 | 0,81 | 13,8  | 6,1 | 2,2 | 2,8 | 0,2280 | 175  |
| 180 M8  | 7,5  | 730 | 89,5 | 0,80 | 15,9  | 6,5 | 2,4 | 3,0 | 0,4400 | 265  |
| 200 M8  | 9,0  | 730 | 90,0 | 0,81 | 18,0  | 5,9 | 1,8 | 2,6 | 0,4400 | 265  |
| 225 M8  | 13,0 | 735 | 90,0 | 0,81 | 26,0  | 5,9 | 1,9 | 2,5 | 0,8250 | 360  |
| 250 S8  | 17,5 | 735 | 91,0 | 0,76 | 36,5  | 6,1 | 2,0 | 2,7 | 1,3500 | 465  |
| 250 M8  | 22,0 | 735 | 91,0 | 0,76 | 46,0  | 6,3 | 2,1 | 2,8 | 1,5500 | 520  |
| 280 S8  | 28,0 | 735 | 92,0 | 0,79 | 55,5  | 6,8 | 2,1 | 2,4 | 2,6300 | 690  |
| 280 M8  | 35,0 | 740 | 92,0 | 0,80 | 68,5  | 6,8 | 2,1 | 2,4 | 3,3300 | 800  |
| 315 M8  | 37,0 | 740 | 92,5 | 0,80 | 72,5  | 7,2 | 2,2 | 2,6 | 3,6000 | 880  |
| 315 MX8 | 55,0 | 740 | 93,0 | 0,82 | 104,0 | 7,3 | 2,1 | 2,4 | 6,0000 | 1050 |
| 315 L8  | 68,0 | 740 | 93,5 | 0,82 | 128,0 | 7,6 | 2,2 | 2,5 | 6,7600 | 1250 |
| 315 LX8 | 85,0 | 740 | 94,0 | 0,82 | 159,0 | 7,7 | 2,3 | 2,5 | 8,6000 | 1430 |

**Three-phase motors with squirrel-cage rotor, series A210, A200 and ARC**

non-ventilated with surface cooling, IC 410, for application at frequency converter

project planning data for the intermittent duty calculation / motor pre-selection

modes of operation S3/S5, temperature class F,

degree of protection IP55, design frequency 50 cps

| A210                                        | A200    | ARC     | P <sub>eff</sub><br>kW | M <sub>eff</sub><br>Nm | I <sub>eff</sub><br>400 V<br>A | n<br>referred to<br>r.p.m. | η<br>referred to P <sub>eff</sub><br>% | cos φ<br>— | M <sub>max</sub><br>(max 10 s)<br>Nm | M <sub>max</sub> /M <sub>eff</sub> | I<br>referred to M <sub>max</sub><br>A | η<br>% | cos φ<br>— | J<br>kgm <sup>2</sup> | m<br>kg |
|---------------------------------------------|---------|---------|------------------------|------------------------|--------------------------------|----------------------------|----------------------------------------|------------|--------------------------------------|------------------------------------|----------------------------------------|--------|------------|-----------------------|---------|
| Synchronous speed 1500 rpm – 4-pole version |         |         |                        |                        |                                |                            |                                        |            |                                      |                                    |                                        |        |            |                       |         |
| 132 S4                                      | 112 M4  | 112 M4  | 2,3                    | 15,0                   | 6,3                            | 1475                       | 80,0                                   | 0,65       | 47                                   | 3,1                                | 14                                     | 81,0   | 0,90       | 0,0150                | 50      |
| 132 M4                                      | 132 S4  | 132 S4  | 3,0                    | 20,0                   | 12,2                           | 1485                       | 75,0                                   | 0,50       | 61                                   | 3,1                                | 20                                     | 84,0   | 0,81       | 0,0280                | 69      |
| 160 M4                                      | 132 M4  | 132 M4  | 4,4                    | 30,0                   | 13,1                           | 1480                       | 79,0                                   | 0,60       | 93                                   | 3,1                                | 28                                     | 84,0   | 0,87       | 0,0350                | 86      |
| 160 L4                                      | 160 S4  | 160 S4  | 5,5                    | 35,0                   | 15,7                           | 1487                       | 82,0                                   | 0,60       | 105                                  | 3,0                                | 32                                     | 87,5   | 0,85       | 0,0780                | 120     |
| 180 M4                                      | 160 M4  | 160 M4  | 8,0                    | 50,0                   | 20,0                           | 1485                       | 86,0                                   | 0,67       | 150                                  | 3,0                                | 44                                     | 87,5   | 0,87       | 0,0900                | 136     |
| 180 L4                                      | 180 S4  | 180 S4  | 8,8                    | 57,0                   | 23,0                           | 1485                       | 86,0                                   | 0,63       | 175                                  | 3,1                                | 51                                     | 89,5   | 0,85       | 0,1380                | 170     |
| 200 L4                                      | 180 M4  | 180 M4  | 11,0                   | 70,0                   | 28,0                           | 1488                       | 86,0                                   | 0,65       | 215                                  | 3,1                                | 61                                     | 90,0   | 0,85       | 0,1680                | 200     |
| 225 S4                                      | 200 M4  | 200 M4  | 15,0                   | 100,0                  | 35,0                           | 1489                       | 88,0                                   | 0,68       | 307                                  | 3,1                                | 87                                     | 91,1   | 0,85       | 0,2750                | 270     |
| 225 M4                                      | 200 L4  | 200 L4  | 18,5                   | 120,0                  | 54,0                           | 1490                       | 86,5                                   | 0,57       | 367                                  | 3,1                                | 109                                    | 91,5   | 0,82       | 0,3130                | 300     |
| 250 M4                                      | 225 M4  | 225 M4  | 22,0                   | 141,0                  | 48,0                           | 1475                       | 89,6                                   | 0,72       | 425                                  | 3,0                                | 119                                    | 92,5   | 0,86       | 0,5250                | 375     |
| 280 S4                                      | 250 S4  | 250 S4  | 32,0                   | 205,0                  | 66,5                           | 1492                       | 91,6                                   | 0,74       | 624                                  | 3,0                                | 173                                    | 93,5   | 0,86       | 0,9500                | 520     |
| 280 M4                                      | 250 M4  | 250 M4  | 40,0                   | 256,0                  | 81,5                           | 1492                       | 92,2                                   | 0,76       | 778                                  | 3,0                                | 216                                    | 93,7   | 0,86       | 1,1000                | 580     |
| 315 S4                                      | 280 S4  | 280 S4  | 50,0                   | 320,0                  | 112,0                          | 1495                       | 93,5                                   | 0,68       | 968                                  | 3,0                                | 269                                    | 95,0   | 0,85       | 1,9600                | 740     |
| 315 M4                                      | 280 M4  | 280 M4  | 60,0                   | 385,0                  | 119,0                          | 1492                       | 93,7                                   | 0,77       | 1169                                 | 3,0                                | 330                                    | 94,0   | 0,84       | 2,2700                | 840     |
| 315 MX4                                     | 315 S4  | 315 M4  | 70,0                   | 450,0                  | 137,0                          | 1490                       | 93,3                                   | 0,77       | 1330                                 | 3,0                                | 370                                    | 94,0   | 0,85       | 2,7300                | 1000    |
| 315 MY4                                     | 315 M4  | 315 MX4 | 95,0                   | 610,0                  | 184,0                          | 1490                       | 94,7                                   | 0,78       | 1780                                 | 2,9                                | 480                                    | 95,0   | 0,87       | 4,8200                | 1200    |
| 315 L4                                      | 315 L4  | 315 L4  | 132,0                  | 845,0                  | 146,0                          | 1495                       | 96,3                                   | 0,78       | 2040                                 | 2,4                                | 541                                    | 95,5   | 0,88       | 5,9300                | 1450    |
| 315 LX4                                     | 315 LX4 | 315 LX4 | 160,0                  | 1020,0                 |                                |                            |                                        |            | 3060                                 |                                    |                                        |        |            | 6,8200                | 1630    |
| Synchronous speed 1000 rpm – 6-pole version |         |         |                        |                        |                                |                            |                                        |            |                                      |                                    |                                        |        |            |                       |         |
| 132 S6                                      | 112 M6  | 112 M6  | 1,5                    | 15,0                   | 5,1                            | 979                        | 71,6                                   | 0,59       | 45                                   | 3,0                                | 10                                     | 74,1   | 0,84       | 0,0180                | 46      |
| 132 M6                                      | 112 MX6 | 112 MX6 | 1,9                    | 18,5                   | 7,4                            | 982                        | 70,2                                   | 0,52       | 57                                   | 3,1                                | 13                                     | 77,0   | 0,82       | 0,0230                | 53      |
| 132 MX6                                     | 132 S6  | 132 S6  | 2,6                    | 25,0                   | 10,3                           | 989                        | 67,4                                   | 0,46       | 79                                   | 3,2                                | 17                                     | 78,5   | 0,83       | 0,0430                | 70      |
| 160 M6                                      | 132 M6  | 132 M6  | 3,5                    | 34,0                   | 14,3                           | 991                        | 73,0                                   | 0,48       | 103                                  | 3,0                                | 24                                     | 83,6   | 0,77       | 0,0530                | 86      |
| 160 L6                                      | 160 S6  | 160 S6  | 4,8                    | 47,0                   | 12,3                           | 985                        | 80,1                                   | 0,69       | 145                                  | 3,1                                | 29                                     | 82,8   | 0,87       | 0,1130                | 114     |
| 180 L6                                      | 160 M6  | 160 M6  | 6,5                    | 63,0                   | 21,1                           | 987                        | 77,1                                   | 0,56       | 195                                  | 3,1                                | 40                                     | 84,0   | 0,84       | 0,1450                | 136     |
| 200 L6                                      | 180 S6  | 180 S6  | 7,6                    | 74,0                   | 19,2                           | 988                        | 82,0                                   | 0,68       | 228                                  | 3,1                                | 44                                     | 85,6   | 0,87       | 0,2280                | 175     |
| 200 LX6                                     | 180 M6  | 180 M6  | 9,5                    | 92,0                   | 23,0                           | 989                        | 84,6                                   | 0,70       | 283                                  | 3,1                                | 54                                     | 87,2   | 0,87       | 0,2680                | 200     |
| 225 M6                                      | 200 M6  | 200 M6  | 12,5                   | 121,0                  | 26,8                           | 987                        | 87,2                                   | 0,76       | 373                                  | 3,1                                | 69                                     | 88,7   | 0,88       | 0,4430                | 265     |
| 250 M6                                      | 225 M6  | 225 M6  | 16,5                   | 160,0                  | 34,7                           | 990                        | 89,2                                   | 0,76       | 496                                  | 3,1                                | 92                                     | 89,6   | 0,88       | 0,8250                | 360     |
| 280 S6                                      | 250 S6  | 250 S6  | 22,0                   | 212,0                  | 43,8                           | 991                        | 89,2                                   | 0,81       | 540                                  | 2,5                                | 100                                    | 90,7   | 0,88       | 1,2800                | 465     |
| 280 M6                                      | 250 M6  | 250 M6  | 27,0                   | 260,0                  | 54,5                           | 992                        | 89,8                                   | 0,80       | 706                                  | 2,7                                | 130                                    | 91,3   | 0,88       | 1,4800                | 520     |
| 315 S6                                      | 280 S6  | 280 S6  | 37,0                   | 356,0                  | 72,5                           | 994                        | 92,9                                   | 0,79       | 1075                                 | 3,0                                | 195                                    | 93,1   | 0,88       | 2,6300                | 690     |
| 315 M6                                      | 280 M6  | 280 M6  | 44,0                   | 423,0                  | 88,5                           | 995                        | 93,0                                   | 0,77       | 1265                                 | 3,0                                | 232                                    | 93,4   | 0,87       | 3,3300                | 800     |
| 315 MX6                                     | 315 S6  | 315 M6  | 48,0                   | 460,0                  | 106,0                          | 995                        | 91,0                                   | 0,70       | 1608                                 | 3,5                                | 298                                    | 92,8   | 0,86       | 3,6000                | 880     |
| 315 MX6                                     | 315 M6  | 315 MX6 | 75,0                   | 722,0                  | 140,0                          | 994                        | 94,4                                   | 0,82       | 1945                                 | 2,7                                | 353                                    | 93,9   | 0,87       | 6,0000                | 1050    |
| 315 L6                                      | 315 L6  | 315 L6  | 90,0                   | 867,0                  | 167,0                          | 993                        | 94,8                                   | 0,82       | 2140                                 | 2,5                                | 382                                    | 94,4   | 0,88       | 6,6700                | 1250    |
| 315 LX6                                     | 315 LX6 | 315 LX6 | 100,0                  | 960,0                  |                                |                            |                                        |            | 2800                                 | 2,9                                |                                        |        |            | 8,6000                | 1460    |

A110 ... horizontal/vertical cooling ribs

ARC ... ring-type ribs

**Three-phase motors with squirrel-cage rotor, series A210, A200 and ARC**

non-ventilated with surface cooling, IC 410, for application at frequency converter

project planning data for the intermittent duty calculation / motor pre-selection

modes of operation S3/S5, temperature class F,

degree of protection IP55, design frequency 50 cps

| A210                                       | A200    | ARC     | P <sub>eff</sub><br>kW | M <sub>eff</sub><br>Nm | I <sub>eff</sub><br>400 V<br>A | n<br>referred to<br>r.p.m. | η<br>referred to P <sub>eff</sub><br>% | cos φ<br>— | M <sub>max</sub><br>(max 10 s)<br>Nm | M <sub>max</sub> /M <sub>eff</sub> | I<br>referred to<br>A | η<br>referred to M <sub>max</sub><br>% | cos φ<br>— | J<br>kgm <sup>2</sup> | m<br>kg |
|--------------------------------------------|---------|---------|------------------------|------------------------|--------------------------------|----------------------------|----------------------------------------|------------|--------------------------------------|------------------------------------|-----------------------|----------------------------------------|------------|-----------------------|---------|
| Synchronous speed 750 rpm – 8-pole version |         |         |                        |                        |                                |                            |                                        |            |                                      |                                    |                       |                                        |            |                       |         |
| 132 S8                                     | 112 M8  | 112 M8  | 1,1                    | 14,5                   | 4,5                            | 730                        | 69,7                                   | 0,51       | 38                                   | 2,6                                | 7                     | 72,0                                   | 0,78       | 0,0180                | 46      |
| 132 M8                                     | 112 MX8 | 112 MX8 | 1,5                    | 19,5                   | 5,7                            | 728                        | 72,2                                   | 0,53       | 54                                   | 2,8                                | 9                     | 72,3                                   | 0,81       | 0,0230                | 53      |
| 160 M8                                     | 132 S8  | 132 S8  | 1,8                    | 23,5                   | 6,4                            | 734                        | 73,6                                   | 0,55       | 57                                   | 2,4                                | 10                    | 77,5                                   | 0,77       | 0,0430                | 70      |
| 160 MX8                                    | 132 M8  | 132 M8  | 2,5                    | 32,5                   | 9,0                            | 734                        | 76,0                                   | 0,53       | 87                                   | 2,7                                | 15                    | 78,6                                   | 0,77       | 0,0530                | 86      |
| 160 L8                                     | 160 S8  | 160 S8  | 3,6                    | 47,0                   | 12,0                           | 738                        | 76,7                                   | 0,56       | 117                                  | 2,5                                | 20                    | 81,0                                   | 0,78       | 0,1130                | 114     |
| 180 L8                                     | 160 M8  | 160 M8  | 5,0                    | 65,0                   | 14,5                           | 735                        | 81,0                                   | 0,61       | 174                                  | 2,7                                | 29                    | 82,0                                   | 0,79       | 0,1450                | 136     |
| 200 L8                                     | 180 S8  | 180 S8  | 6,5                    | 84,0                   | 20,0                           | 740                        | 80,3                                   | 0,57       | 257                                  | 3,1                                | 41                    | 84,0                                   | 0,81       | 0,2280                | 175     |
|                                            | 180 M8  | 180 M8  | 7,5                    | 97,0                   | 21,5                           | 739                        | 83,0                                   | 0,59       | 316                                  | 3,3                                | 49                    | 86,0                                   | 0,82       | 0,4400                | 265     |
| 225 S8                                     |         |         | 7,5                    | 97,0                   | 21,5                           | 739                        | 83,0                                   | 0,59       | 316                                  | 3,3                                | 49                    | 86,0                                   | 0,82       | 0,4400                | 265     |
| 225 M8                                     | 200 M8  | 200 M8  | 9,0                    | 115,0                  | 22,5                           | 740                        | 86,8                                   | 0,65       | 390                                  | 3,4                                | 57                    | 87,0                                   | 0,84       | 0,4400                | 265     |
| 250 M8                                     | 225 M8  | 225 M8  | 13,0                   | 165,0                  | 36,5                           | 743                        | 86,3                                   | 0,58       | 480                                  | 2,9                                | 74                    | 88,8                                   | 0,80       | 0,8250                | 360     |
| 280 S8                                     | 250 S8  | 250 S8  | 17,5                   | 225,0                  | 42,0                           | 745                        | 88,3                                   | 0,68       | 590                                  | 2,6                                | 90                    | 89,8                                   | 0,81       | 1,3500                | 465     |
| 280 M8                                     | 250 M8  | 250 M8  | 22,0                   | 280,0                  | 61,5                           | 745                        | 87,4                                   | 0,60       | 715                                  | 2,6                                | 114                   | 90,7                                   | 0,77       | 1,5500                | 520     |
| 315 S8                                     | 280 S8  | 280 S8  | 28,0                   | 360,0                  | 68,0                           | 745                        | 91,5                                   | 0,65       | 1040                                 | 2,9                                | 159                   | 91,8                                   | 0,79       | 2,6300                | 690     |
| 315 M8                                     | 280 M8  | 280 M8  | 35,0                   | 450,0                  | 81,0                           | 742                        | 92,2                                   | 0,67       | 1320                                 | 2,9                                | 195                   | 91,6                                   | 0,81       | 3,3300                | 800     |
| 315 MX8                                    | 315 S8  | 315 M8  | 37,0                   | 475,0                  | 94,0                           | 746                        | 90,5                                   | 0,61       | 1685                                 | 3,5                                | 252                   | 92,3                                   | 0,80       | 3,6000                | 880     |
| 315 MY8                                    | 315 M8  | 315 MX8 | 55,0                   | 710,0                  | 113,0                          | 741                        | 93,6                                   | 0,75       | 2100                                 | 3,0                                | 306                   | 91,1                                   | 0,82       | 6,0000                | 1050    |
| 315 L8                                     | 315 L8  | 315 L8  | 68,0                   | 875,0                  | 145,0                          | 745                        | 94,4                                   | 0,71       | 2140                                 | 2,4                                | 309                   | 94,1                                   | 0,82       | 6,7600                | 1250    |
| 315 LX8                                    | 315 LX8 | 315 LX8 | 80,0                   | 1030,0                 |                                |                            |                                        |            | 3060                                 | 3                                  |                       |                                        |            | 8,7100                | 1430    |

## Synchronous speed 600 rpm – 10-pole version

|          |          |          |      |       |  |  |                   |  |      |     |  |  |  |        |      |
|----------|----------|----------|------|-------|--|--|-------------------|--|------|-----|--|--|--|--------|------|
| 132 S10  | 112 M10  | 112 M10  | 0,6  |       |  |  | values on request |  |      |     |  |  |  | 0,0180 | 46   |
| 132 M10  | 112 MX10 | 112 MX10 | 0,8  |       |  |  | values on request |  |      |     |  |  |  | 0,0230 | 53   |
| 160 M10  | 132 S10  | 132 S10  | 1,1  |       |  |  | values on request |  |      |     |  |  |  | 0,0430 | 70   |
| 160 MX10 | 132 M10  | 132 M10  | 1,5  |       |  |  | values on request |  |      |     |  |  |  | 0,0530 | 86   |
| 160 L10  | 160 S10  | 160 S10  | 2,8  | 45,0  |  |  | values on request |  | 135  | 3,0 |  |  |  | 0,1130 | 114  |
| 1100 L10 | 160 M10  | 160 M10  | 3,0  | 50,0  |  |  | values on request |  | 150  | 3,0 |  |  |  | 0,1450 | 136  |
| 200 L10  | 180 S10  | 180 S10  | 4,5  | 75,0  |  |  | values on request |  | 225  | 3,0 |  |  |  | 0,2280 | 175  |
|          | 180 M10  | 180 M10  | 6,5  | 110,0 |  |  | values on request |  | 330  | 3,0 |  |  |  | 0,4400 | 265  |
| 225 M10  | 200 M10  | 200 M10  | 8,5  | 140,0 |  |  | values on request |  | 420  | 3,0 |  |  |  | 0,4400 | 265  |
| 250 M10  | 225 M10  | 225 M10  | 11,0 | 180,0 |  |  | values on request |  | 540  | 3,0 |  |  |  | 0,8250 | 360  |
| 280 S10  | 250 S10  | 250 S10  | 13,5 | 220,0 |  |  | values on request |  | 660  | 3,0 |  |  |  | 1,3500 | 465  |
| 280 M10  | 250 M10  | 250 M10  | 17,0 | 280,0 |  |  | values on request |  | 840  | 3,0 |  |  |  | 1,5500 | 520  |
| 315 S10  | 280 S10  | 280 S10  | 22,5 | 360,0 |  |  | values on request |  | 1080 | 3,0 |  |  |  | 2,6300 | 690  |
| 315 M10  | 280 M10  | 280 M10  | 27,5 | 450,0 |  |  | values on request |  | 1350 | 3,0 |  |  |  | 3,3300 | 800  |
| 315 MX10 | 315 M10  | 315 MX10 | 37,5 | 600,0 |  |  | values on request |  | 1800 | 3,0 |  |  |  | 3,6000 | 880  |
| 315 L10  | 315 L10  | 315 L10  | 45,0 | 730,0 |  |  | values on request |  | 2190 | 3,0 |  |  |  | 6,7600 | 1250 |
| 315 LX10 | 315 LX10 | 315 LX10 | 55,0 | 890,0 |  |  | values on request |  | 2670 | 3,0 |  |  |  | 8,6000 | 1460 |

A110 ... horizontal/vertical cooling ribs

ARC ... ring-type ribs

**Three-phase motors with squirrel-cage rotor, series A110, A100 and ARC**

non-ventilated with surface cooling, IC 410, for application at frequency converter

project planning data for the intermittent duty calculation / motor pre-selection

modes of operation S3/S5, temperature class F,

degree of protection IP55, design frequency 50 cps

| A210                                        | A200     | ARC      | P <sub>eff</sub> | M <sub>eff</sub> | I <sub>eff</sub>  | n                     | η                                 | cos φ | M <sub>max</sub> | M <sub>max</sub> /M <sub>eff</sub> | I | η                                 | cos φ | J                | m    |
|---------------------------------------------|----------|----------|------------------|------------------|-------------------|-----------------------|-----------------------------------|-------|------------------|------------------------------------|---|-----------------------------------|-------|------------------|------|
|                                             |          |          | kW               | Nm               | 400 V<br>A        | referred to<br>r.p.m. | referred to P <sub>eff</sub><br>% | —     | (max 10 s)<br>Nm |                                    | A | referred to M <sub>max</sub><br>% | —     | kgm <sup>2</sup> | kg   |
| Synchronous speed 500 rpm – 12-pole version |          |          |                  |                  |                   |                       |                                   |       |                  |                                    |   |                                   |       |                  |      |
| 132 S12                                     | 112 M12  | 112 M12  | 0,4              | 7,5              | values on request |                       |                                   |       | 23               | 3,0                                |   |                                   |       | 0,0180           | 46   |
| 132 M12                                     | 112 MX12 | 112 MX12 | 0,6              | 10,0             | values on request |                       |                                   |       | 30               | 3,0                                |   |                                   |       | 0,0230           | 53   |
| 160 M12                                     | 132 S12  | 132 S12  | 0,8              | 15,0             | values on request |                       |                                   |       | 45               | 3,0                                |   |                                   |       | 0,0430           | 70   |
| 160 MX12                                    | 132 M12  | 132 M12  | 1,1              | 20,0             | values on request |                       |                                   |       | 60               | 3,0                                |   |                                   |       | 0,0530           | 86   |
| 160 L12                                     | 160 S12  | 160 S12  | 1,5              | 30,0             | values on request |                       |                                   |       | 90               | 3,0                                |   |                                   |       | 0,1130           | 114  |
| 160 L12                                     | 160 M12  | 160 M12  | 2,8              | 55,0             | values on request |                       |                                   |       | 165              | 3,0                                |   |                                   |       | 0,1450           | 136  |
| 200 L12                                     | 180 S12  | 180 S12  | 3,0              |                  | values on request |                       |                                   |       |                  |                                    |   |                                   |       | 0,2280           | 175  |
|                                             | 180 M12  | 180 M12  | 4,5              | 90,0             | values on request |                       |                                   |       | 270              | 3,0                                |   |                                   |       | 0,4400           | 265  |
| 225 M12                                     | 200 M12  | 200 M12  | 6,5              | 130,0            | values on request |                       |                                   |       | 390              | 3,0                                |   |                                   |       | 0,4400           | 265  |
| 250 M12                                     | 225 M12  | 225 M12  | 8,5              | 170,0            | values on request |                       |                                   |       | 510              | 3,0                                |   |                                   |       | 0,8250           | 360  |
| 280 S12                                     | 250 S12  | 250 S12  | 10,0             | 200,0            | values on request |                       |                                   |       | 600              | 3,0                                |   |                                   |       | 1,3500           | 465  |
| 280 M12                                     | 250 M12  | 250 M12  | 12,0             | 235,0            | values on request |                       |                                   |       | 705              | 3,0                                |   |                                   |       | 1,5500           | 520  |
| 315 S12                                     | 280 S12  | 280 S12  | 18,5             | 360,0            | values on request |                       |                                   |       | 1080             | 3,0                                |   |                                   |       | 2,6300           | 690  |
| 315 M12                                     | 280 M12  | 280 M12  | 22,5             | 440,0            | values on request |                       |                                   |       | 1320             | 3,0                                |   |                                   |       | 3,3300           | 800  |
| 315 MX12                                    | 315 M12  | 315 M12  | 27,5             | 550,0            | values on request |                       |                                   |       | 1650             | 3,0                                |   |                                   |       | 3,6000           | 880  |
| 315 L12                                     | 315 L12  | 315 L12  | 37,5             | 730,0            | values on request |                       |                                   |       | 2190             | 3,0                                |   |                                   |       | 6,7600           | 1250 |
| 315 LX12                                    | 315 LX12 | 315 LX12 | 45,0             | 880,0            | values on request |                       |                                   |       | 2640             | 3,0                                |   |                                   |       | 8,6000           | 1460 |

A110 ... horizontal/vertical cooling ribs

ARC ... ring-type ribs

**Three-phase roller table motors with squirrel-cage rotor, series ARB**

non-ventilated with surface cooling, modes of operation S 1, continuous duty

temperature class H, degree of protection IP 44 / IP 54, 50 cps

| Type      | P   | n      | I <sub>a</sub> | B                            |                              | M <sub>a</sub> | tk   | J                | m   |
|-----------|-----|--------|----------------|------------------------------|------------------------------|----------------|------|------------------|-----|
|           | kW  | r.p.m. | b. 400 V<br>A  | IP 44<br>kgm <sup>2</sup> /h | IP 54<br>kgm <sup>2</sup> /h | Nm             | min  | kgm <sup>2</sup> | kg  |
| ARB 22/4  | 1,1 | 1330   | 12             | 200                          | 150                          | 22,5           | 7,0  |                  |     |
| ARB 22/6  | 0,8 | 850    | 7              | 330                          | 250                          | 18,5           | 13,0 | 0,0140           | 60  |
| ARB 22/8  | 0,6 | 650    | 7              | 480                          | 370                          | 22,5           | 20,0 |                  |     |
| ARB 33/4  | 2,2 | 1430   | 37             | 260                          | 200                          | 56,0           | 4,0  |                  |     |
| ARB 33/6  | 1,5 | 940    | 21             | 570                          | 440                          | 53,0           | 10,0 |                  |     |
| ARB 33/8  | 1,1 | 690    | 13             | 740                          | 580                          | 42,0           | 14,0 | 0,0430           | 90  |
| ARB 33/10 | 0,8 | 530    | 8              | 1100                         | 860                          | 28,0           | 40,0 |                  |     |
| ARB 33/12 | 0,4 | 460    | 7              | 1600                         | 1200                         | 29,0           | 55,0 |                  |     |
| ARB 54/6  | 5,5 | 930    | 76             | 1400                         | 1000                         | 240,0          | 5,5  |                  |     |
| ARB 54/8  | 4,0 | 680    | 49             | 1700                         | 1300                         | 190,0          | 5,5  |                  |     |
| ARB 54/10 | 3,0 | 555    | 36             | 2600                         | 2000                         | 170,0          | 18,0 |                  |     |
| ARB 54/12 | 2,2 | 450    | 24             | 4000                         | 3100                         | 140,0          | 27,0 | 0,2330           | 200 |
| ARB 54/16 | 1,1 | 340    | 18             | 5100                         | 4000                         | 115,0          | 30,0 |                  |     |
| ARB 54/24 | 0,8 | 190    | 12             | 7000                         | 5400                         | 100,0          | 80,0 |                  |     |
| ARB 54/12 | 2,5 | 440    | 26             | 3000                         | 2300                         | 135            | 10,0 | 0,2330           | 200 |
| -6        | 4,0 | 920    | 43             | 750                          | 600                          | 100            | 2,2  |                  |     |
| ARB 65/8  | 5,5 | 700    | 67             | 2450                         | 1900                         | 210            | 10,0 |                  |     |
| ARB 65/10 | 4,0 | 560    | 58             | 3600                         | 2800                         | 250            | 7,5  |                  |     |
| ARB 65/12 | 3,0 | 455    | 32             | 5100                         | 4000                         | 200            | 20,0 | 0,5750           | 290 |
| ARB 65/16 | 2,2 | 350    | 33             | 8500                         | 6600                         | 200            | 28,5 |                  |     |
| ARB 65/24 | 1,5 | 210    | 25             | 13500                        | 10600                        | 175            | 50,0 |                  |     |
| ARB 65/12 | 3,7 | 460    | 43             | 5200                         | 4000                         | 210            | 12,0 | 0,5750           | 290 |
| -6        | 5,0 | 950    | 41             | 1500                         | 1100                         | 170            | 3,5  |                  |     |

## Constructive Selection Data

### Three-phase motors with squirrel-cage rotor for roller table gears, types A21O

non-ventilated with surface cooling, type of cooling IC 410, degree of protection IP55

| Type |     |           | Tolerance b1 |     |     |     | Tolerance d |    |    |    | Tolerance d1 |    |    |     | Tolerance h |     |   |     |     |     |      |      |
|------|-----|-----------|--------------|-----|-----|-----|-------------|----|----|----|--------------|----|----|-----|-------------|-----|---|-----|-----|-----|------|------|
|      |     |           | a            | a1  | b   | b1  | c           | c1 | d  | d1 | e            | e1 | f  | f1  | g           | g1  | h |     |     |     |      |      |
|      |     |           | B            | P   | A   | N   | HA          | LA | D  | DA | BB           | M  | AB | T   | AC          | -   | H |     |     |     |      |      |
|      |     |           |              |     |     |     | -           |    |    | -  |              | -  |    |     |             |     |   | -   |     |     |      |      |
| A21O | 132 | S2        | 140          | 300 | 216 | 230 | j6          | 16 | 12 | 38 | k6           | 32 | k6 | 180 | 265         | 256 | 4 | 216 | 178 | 132 | -0,5 | 397  |
| A21O | 132 | SX2       | 140          | 300 | 216 | 230 | j6          | 16 | 12 | 38 | k6           | 32 | k6 | 180 | 265         | 256 | 4 | 216 | 178 | 132 | -0,5 | 417  |
| A21O | 132 | S4,6,8    | 140          | 300 | 216 | 230 | j6          | 16 | 12 | 38 | k6           | 32 | k6 | 180 | 265         | 256 | 4 | 216 | 178 | 132 | -0,5 | 397  |
| A21O | 132 | M4        | 178          | 300 | 216 | 230 | j6          | 16 | 12 | 38 | k6           | 38 | k6 | 218 | 265         | 256 | 4 | 257 | 200 | 132 | -0,5 | 421  |
| A21O | 132 | MX6       | 178          | 300 | 216 | 230 | j6          | 16 | 12 | 38 | k6           | 38 | k6 | 218 | 265         | 256 | 4 | 257 | 200 | 132 | -0,5 | 420  |
| A21O | 132 | M6,8      | 178          | 300 | 216 | 230 | j6          | 16 | 12 | 38 | k6           | 32 | k6 | 218 | 265         | 256 | 4 | 216 | 178 | 132 | -0,5 | 417  |
|      |     |           |              |     |     |     |             |    |    |    |              |    |    |     |             |     |   |     |     |     |      |      |
| A21O | 160 | M2,4,6,8  | 210          | 350 | 254 | 250 | h6          | 18 | 13 | 42 | k6           | 38 | k6 | 257 | 300         | 296 | 5 | 257 | 200 | 160 | -0,5 | 498  |
| A21O | 160 | MX8       | 210          | 350 | 254 | 250 | h6          | 18 | 13 | 42 | k6           | 38 | k6 | 257 | 300         | 296 | 5 | 257 | 200 | 160 | -0,5 | 498  |
| A21O | 160 | MX2       | 210          | 350 | 254 | 250 | h6          | 18 | 13 | 42 | k6           | 42 | k6 | 257 | 300         | 296 | 5 | 312 | 242 | 160 | -0,5 | 502  |
| A21O | 160 | L2,4,6,8  | 254          | 350 | 254 | 250 | h6          | 18 | 13 | 42 | k6           | 42 | k6 | 301 | 300         | 296 | 5 | 312 | 242 | 160 | -0,5 | 540  |
|      |     |           |              |     |     |     |             |    |    |    |              |    |    |     |             |     |   |     |     |     |      |      |
| A21O | 180 | M2        | 241          | 350 | 279 | 250 | h6          | 20 | 13 | 48 | k6           | 48 | k6 | 288 | 300         | 328 | 5 | 350 | 261 | 180 | -0,5 | 562  |
| A21O | 180 | M4        | 241          | 350 | 279 | 250 | h6          | 20 | 13 | 48 | k6           | 42 | k6 | 288 | 300         | 328 | 5 | 312 | 242 | 180 | -0,5 | 540  |
| A21O | 180 | L4        | 279          | 350 | 279 | 250 | h6          | 20 | 13 | 48 | k6           | 48 | k6 | 326 | 300         | 328 | 5 | 350 | 261 | 180 | -0,5 | 607  |
| A21O | 180 | L6,8      | 279          | 350 | 279 | 250 | h6          | 20 | 13 | 48 | k6           | 42 | k6 | 326 | 300         | 328 | 5 | 312 | 242 | 180 | -0,5 | 540  |
|      |     |           |              |     |     |     |             |    |    |    |              |    |    |     |             |     |   |     |     |     |      |      |
| A21O | 200 | L2,4,6,8  | 305          | 400 | 318 | 300 | h6          | 22 | 15 | 55 | m6           | 48 | k6 | 360 | 350         | 372 | 5 | 350 | 261 | 200 | -0,5 | 614  |
| A21O | 200 | LX6       | 305          | 400 | 318 | 300 | h6          | 22 | 15 | 55 | m6           | 48 | k6 | 360 | 350         | 372 | 5 | 350 | 261 | 200 | -0,5 | 614  |
| A21O | 200 | LX2       | 305          | 400 | 318 | 300 | h6          | 22 | 15 | 55 | m6           | 55 | m6 | 360 | 350         | 372 | 5 | 390 | 300 | 200 | -0,5 | 643  |
|      |     |           |              |     |     |     |             |    |    |    |              |    |    |     |             |     |   |     |     |     |      |      |
| A21O | 225 | S4,8      | 286          | 450 | 356 | 350 | h6          | 25 | 16 | 60 | m6           | 55 | m6 | 343 | 400         | 413 | 5 | 390 | 300 | 225 | -0,5 | 640  |
| A21O | 225 | M2        | 311          | 450 | 356 | 350 | h6          | 25 | 16 | 55 | m6           | 55 | m6 | 368 | 400         | 413 | 5 | 390 | 300 | 225 | -0,5 | 680  |
| A21O | 225 | M4        | 311          | 450 | 356 | 350 | h6          | 25 | 16 | 60 | m6           | 55 | m6 | 368 | 400         | 413 | 5 | 390 | 300 | 225 | -0,5 | 710  |
| A21O | 225 | M6,8      | 311          | 450 | 356 | 350 | h6          | 25 | 16 | 60 | m6           | 55 | m6 | 368 | 400         | 413 | 5 | 390 | 300 | 225 | -0,5 | 640  |
|      |     |           |              |     |     |     |             |    |    |    |              |    |    |     |             |     |   |     |     |     |      |      |
| A21O | 250 | M2        | 349          | 550 | 406 | 450 | h6          | 28 | 18 | 60 | m6           | 55 | m6 | 412 | 500         | 471 | 5 | 440 | 326 | 250 | -0,5 | 737  |
| A21O | 250 | M4,6,8    | 349          | 550 | 406 | 450 | h6          | 28 | 18 | 65 | m6           | 55 | m6 | 412 | 500         | 471 | 5 | 440 | 326 | 250 | -0,5 | 737  |
|      |     |           |              |     |     |     |             |    |    |    |              |    |    |     |             |     |   |     |     |     |      |      |
| A21O | 280 | S2        | 368          | 550 | 457 | 450 | h6          | 32 | 18 | 65 | m6           | 65 | m6 | 431 | 500         | 522 | 5 | 490 | 388 | 280 | -1,0 | 800  |
| A21O | 280 | S4,6,8    | 368          | 550 | 457 | 450 | h6          | 32 | 18 | 75 | m6           | 65 | m6 | 431 | 500         | 522 | 5 | 490 | 388 | 280 | -1,0 | 800  |
| A21O | 280 | M2        | 419          | 550 | 457 | 450 | h6          | 32 | 18 | 65 | m6           | 65 | m6 | 482 | 500         | 522 | 5 | 490 | 388 | 280 | -1,0 | 846  |
| A21O | 280 | M4,6,8    | 419          | 550 | 457 | 450 | h6          | 32 | 18 | 75 | m6           | 65 | m6 | 482 | 500         | 522 | 5 | 490 | 388 | 280 | -1,0 | 846  |
|      |     |           |              |     |     |     |             |    |    |    |              |    |    |     |             |     |   |     |     |     |      |      |
| A21O | 315 | S2        | 406          | 660 | 508 | 550 | h6          | 44 | 22 | 65 | m6           | 65 | m6 | 503 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 875  |
| A21O | 315 | S4,6,8    | 406          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 503 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 905  |
| A21O | 315 | M2        | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 65 | m6           | 65 | m6 | 554 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 930  |
| A21O | 315 | M4,6,8    | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 554 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 960  |
| A21O | 315 | MX2       | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 65 | m6           | 65 | m6 | 554 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 1010 |
| A21O | 315 | MX4       | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 554 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 1040 |
| A21O | 315 | MX6,8     | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 554 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 960  |
| A21O | 315 | MX10,12   | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 554 | 600         | 590 | 6 | 550 | 420 | 315 | -1,0 | 960  |
| A21O | 315 | MY2       | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 65 | m6           | 65 | m6 | 573 | 600         | 590 | 6 | 610 | 487 | 315 | -1,0 | 1135 |
| A21O | 315 | MY4,6,8   | 457          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 573 | 600         | 590 | 6 | 610 | 487 | 315 | -1,0 | 1165 |
| A21O | 315 | L2 *)     | 508          | 660 | 508 | 550 | h6          | 44 | 22 | 65 | m6           | 65 | m6 | 624 | 600         | 590 | 6 | 610 | 487 | 315 | -1,0 | 1255 |
| A21O | 315 | L4,6,8 *) | 508          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 624 | 600         | 590 | 6 | 610 | 487 | 315 | -1,0 | 1285 |
| A21O | 315 | LX2 *)    | 508          | 660 | 508 | 550 | h6          | 44 | 22 | 65 | m6           | 65 | m6 | 624 | 600         | 590 | 6 | 610 | 487 | 315 | -1,0 | 1355 |
| A21O | 315 | LX4 *)    | 508          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 624 | 600         | 590 | 6 | 610 | 487 | 315 | -1,0 | 1385 |
| A21O | 315 | LX6,8 *)  | 508          | 660 | 508 | 550 | h6          | 44 | 22 | 80 | m6           | 70 | m6 | 624 | 600         | 590 | 6 | 610 | 487 | 315 | -1,0 | 1285 |

Tolerance for counter parts: H7

2nd shaft end only for direct coupling

\*) Type of construction IM B5 non-deliverable

Special equipment relubricating facility:

flat grease nipple M10x1 DIN 3404,  
grease outlet opposite to flat grease nipple

Special equipment relubricating facility  
non-deliverable for A21O 132S, SX2, M6, M8 and A21O 160 M, MX8

Two eye-bolts only in case of type of construction IM V1 from A21O 180 M2, L4

## Type Series A210

## Dimensions

| Table 1: Mechanical properties of 2024-T3 aluminum alloy |     |     |    |    |     |           |           |     |       |    |    |      |      |    |    |     |     |     |     |     |              |                                 |
|----------------------------------------------------------|-----|-----|----|----|-----|-----------|-----------|-----|-------|----|----|------|------|----|----|-----|-----|-----|-----|-----|--------------|---------------------------------|
| Mechanical Properties                                    |     |     |    |    |     |           |           |     |       |    |    |      |      |    |    |     |     |     |     |     | hole pattern | relubricating facility possible |
| k1                                                       | l   | l1  | m  | n  | o   | p (IM B3) | p (IM B5) | q   | r     | s  | s1 | t    | t1   | u  | u1 | w1  | w2  | A   | x   | z   |              |                                 |
| LC                                                       | E   | EA  | BA | AA | -   | HD        | HD        | -   | -     | K  | S  | GA   | GC   | F  | FA | C   | CA  | -   | -   | -   | -            |                                 |
| 486                                                      | 80  | 80  | 55 | 50 | 106 | 310       | 328       | 291 | Pg 21 | 12 | 14 | 41   | 35   | 10 | 10 | 89  | 97  | 108 | 155 | 145 | 4L           | no                              |
| 506                                                      | 80  | 80  | 55 | 50 | 126 | 310       | 328       | 291 | Pg 21 | 12 | 14 | 41   | 35   | 10 | 10 | 89  | 117 | 108 | 155 | 145 | 4L           | no                              |
| 486                                                      | 80  | 80  | 55 | 50 | 106 | 310       | 328       | 291 | Pg 21 | 12 | 14 | 41   | 35   | 10 | 10 | 89  | 97  | 108 | 155 | 145 | 4L           | no                              |
| 506                                                      | 80  | 80  | 55 | 50 | 112 | 332       | 350       | 308 | Pg 21 | 12 | 14 | 41   | 41   | 10 | 10 | 89  | 79  | 114 | 155 | 145 | 4L           | yes                             |
| 506                                                      | 80  | 80  | 55 | 50 | 112 | 332       | 350       | 308 | Pg 21 | 12 | 14 | 41   | 41   | 10 | 10 | 89  | 79  | 114 | 155 | 145 | 4L           | yes                             |
| 506                                                      | 80  | 80  | 55 | 50 | 126 | 310       | 328       | 291 | Pg 21 | 12 | 14 | 41   | 35   | 10 | 10 | 89  | 79  | 108 | 155 | 145 | 4L           | no                              |
|                                                          |     |     |    |    |     |           |           |     |       |    |    |      |      |    |    |     |     |     |     |     |              |                                 |
| 554                                                      | 110 | 80  | 60 | 55 | 160 | 360       | 375       | 338 | Pg 21 | 15 | 18 | 45   | 41   | 12 | 10 | 108 | 46  | 135 | 155 | 145 | 4L           | no                              |
| 554                                                      | 110 | 80  | 60 | 55 | 160 | 360       | 375       | 338 | Pg 21 | 15 | 18 | 45   | 41   | 12 | 10 | 108 | 46  | 135 | 155 | 145 | 4L           | no                              |
| 625                                                      | 110 | 110 | 60 | 55 | 142 | 402       | 417       | 360 | Pg 29 | 15 | 18 | 45   | 45   | 12 | 12 | 108 | 87  | 138 | 192 | 165 | 4L           | yes                             |
| 663                                                      | 110 | 110 | 60 | 55 | 180 | 402       | 417       | 360 | Pg 29 | 15 | 18 | 45   | 45   | 12 | 12 | 108 | 81  | 138 | 192 | 165 | 4L           | yes                             |
|                                                          |     |     |    |    |     |           |           |     |       |    |    |      |      |    |    |     |     |     |     |     |              |                                 |
| 689                                                      | 110 | 110 | 65 | 62 | 166 | 441       | 436       | 396 | Pg 29 | 15 | 18 | 51,5 | 51,5 | 14 | 14 | 121 | 107 | 147 | 192 | 165 | 4L           | yes                             |
| 663                                                      | 110 | 110 | 65 | 62 | 180 | 422       | 417       | 360 | Pg 29 | 15 | 18 | 51,5 | 45   | 14 | 12 | 121 | 81  | 138 | 192 | 165 | 4L           | yes                             |
| 734                                                      | 110 | 110 | 65 | 62 | 211 | 441       | 436       | 396 | Pg 29 | 15 | 18 | 51,5 | 51,5 | 14 | 14 | 121 | 114 | 147 | 192 | 165 | 4L           | yes                             |
| 663                                                      | 110 | 110 | 65 | 62 | 180 | 422       | 417       | 360 | Pg 29 | 15 | 18 | 51,5 | 45   | 14 | 12 | 121 | 43  | 138 | 192 | 165 | 4L           | yes                             |
|                                                          |     |     |    |    |     |           |           |     |       |    |    |      |      |    |    |     |     |     |     |     |              |                                 |
| 730                                                      | 110 | 110 | 70 | 70 | 218 | 461       | 461       | 396 | Pg 29 | 19 | 18 | 59   | 51,5 | 16 | 14 | 133 | 72  | 147 | 192 | 165 | 4L           | yes                             |
| 730                                                      | 110 | 110 | 70 | 70 | 218 | 461       | 461       | 396 | Pg 29 | 19 | 18 | 59   | 51,5 | 16 | 14 | 133 | 72  | 147 | 192 | 165 | 4L           | yes                             |
| 759                                                      | 110 | 110 | 70 | 70 | 208 | 500       | 500       | 435 | Pg 36 | 19 | 18 | 59   | 59   | 16 | 16 | 133 | 101 | 168 | 212 | 207 | 4L           | yes                             |
|                                                          |     |     |    |    |     |           |           |     |       |    |    |      |      |    |    |     |     |     |     |     |              |                                 |
| 760                                                      | 140 | 110 | 75 | 75 | 205 | 525       | 525       | 465 | Pg 36 | 19 | 18 | 64   | 59   | 18 | 16 | 149 | 75  | 168 | 212 | 207 | 8L           | yes                             |
| 800                                                      | 110 | 110 | 75 | 75 | 245 | 525       | 525       | 435 | Pg 36 | 19 | 18 | 59   | 59   | 16 | 16 | 149 | 120 | 168 | 212 | 207 | 8L           | yes                             |
| 830                                                      | 140 | 110 | 75 | 75 | 245 | 525       | 525       | 465 | Pg 36 | 19 | 18 | 64   | 59   | 18 | 16 | 149 | 120 | 168 | 212 | 207 | 8L           | yes                             |
| 760                                                      | 140 | 110 | 75 | 75 | 205 | 525       | 525       | 465 | Pg 36 | 19 | 18 | 64   | 59   | 18 | 16 | 149 | 80  | 168 | 212 | 207 | 8L           | yes                             |

**Threaded center bores in the shaft end DIN 332-DS:**

at diameter 11 up to 13 M4

at diameter 14 up to 16 M5

at diameter 17 up to 21 M6

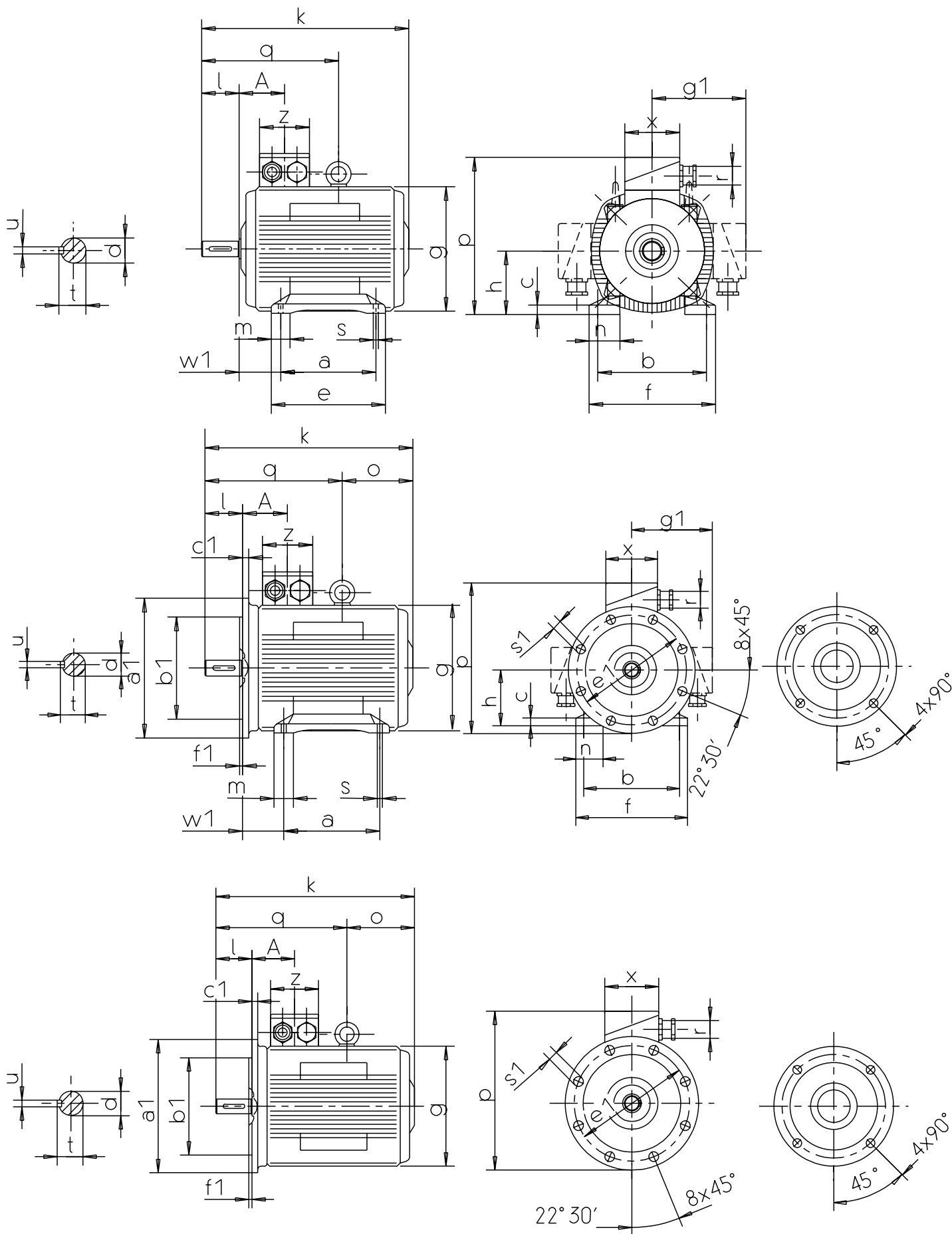
at diameter 22 up to 24 M8

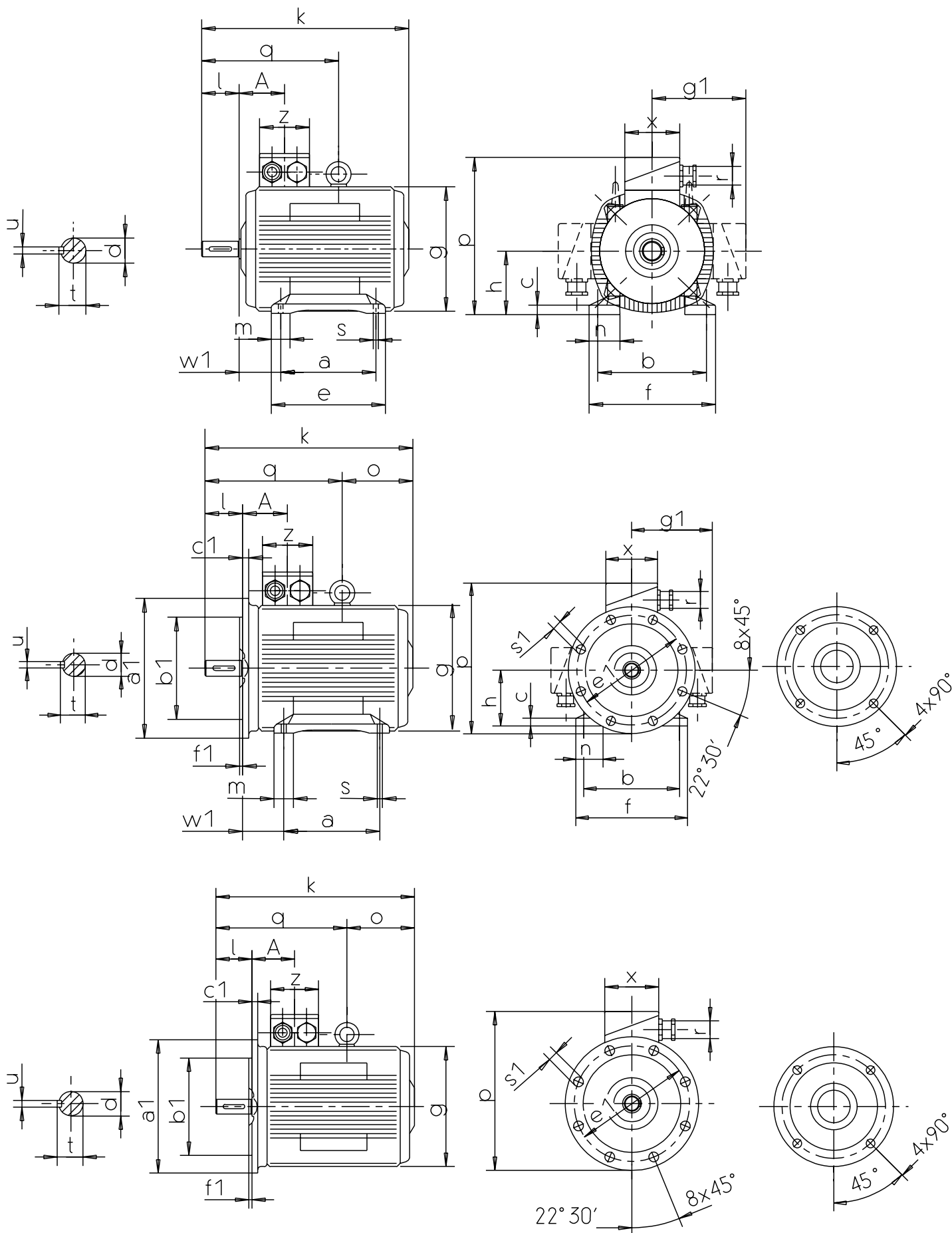
at diameter 25 up to 30 M10

at diameter 31 up to 38 M12

at diameter 39 up to 50 M16

at diameter 51 up to 85 M20





## Constructive Selection Data

### Three-phase motors with squirrel-cage rotor, types A200

with surface cooling, type of cooling IC 410, degree of protection IP55

|      |              | Tolerance b1 |     |     |     |     |    | Tolerance d |    |    |    | Tolerance d1 |     |     |     | Tolerance h |     |     |      |      |  |
|------|--------------|--------------|-----|-----|-----|-----|----|-------------|----|----|----|--------------|-----|-----|-----|-------------|-----|-----|------|------|--|
| —    | —            | a            | a1  | b   | b1  |     | c  | c1          | d  |    | d1 |              | e   | e1  | f   | f1          | g   | h   |      |      |  |
| Type |              | B            | P   | A   | N   | —   | HA | LA          | D  | —  | DA | —            | BB  | M   | AB  | T           | AC  | H   | —    |      |  |
| A200 | 112 M2       | 140          | 140 | 300 | 190 | 230 | h6 | 15          | 13 | 32 | k6 | 32           | k6  | 172 | 265 | 226         | 4   | 217 | 112  | −0,5 |  |
| A200 | 112 M4, 6, 8 |              | 300 | 190 | 230 | h6  | 15 | 13          | 32 | k6 | 32 | k6           | 172 | 265 | 226 | 4           | 217 | 112 | −0,5 | 397  |  |
| A200 | 112 MX6, 8   |              | 140 | 300 | 190 | 230 | h6 | 15          | 13 | 32 | k6 | 32           | k6  | 172 | 265 | 226         | 4   | 217 | 112  | −0,5 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 132 S        |              | 140 | 350 | 216 | 250 | h6 | 15          | 13 | 38 | k6 | 38           | k6  | 218 | 300 | 256         | 5   | 258 | 132  | −0,5 |  |
| A200 | 132 M        |              | 178 | 350 | 216 | 250 | h6 | 15          | 13 | 38 | k6 | 38           | k6  | 218 | 300 | 256         | 5   | 258 | 132  | −0,5 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 160 S2       |              | 178 | 400 | 254 | 300 | h6 | 18          | 15 | 42 | k6 | 42           | k6  | 257 | 350 | 296         | 5   | 313 | 160  | −0,5 |  |
| A200 | 160 S4, 6, 8 |              | 178 | 400 | 254 | 300 | h6 | 18          | 15 | 48 | k6 | 42           | k6  | 257 | 350 | 296         | 5   | 313 | 160  | −0,5 |  |
| A200 | 160 M2       |              | 210 | 400 | 254 | 300 | h6 | 18          | 15 | 42 | k6 | 42           | k6  | 257 | 350 | 296         | 5   | 313 | 160  | −0,5 |  |
| A200 | 160 M4, 6, 8 |              | 210 | 400 | 254 | 300 | h6 | 18          | 15 | 48 | k6 | 42           | k6  | 257 | 350 | 296         | 5   | 313 | 160  | −0,5 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 180 S2       |              | 203 | 450 | 279 | 350 | h6 | 20          | 15 | 48 | m6 | 48           | k6  | 288 | 350 | 328         | 5   | 351 | 180  | −0,5 |  |
| A200 | 180 S4, 6, 8 |              | 203 | 450 | 279 | 350 | h6 | 20          | 15 | 55 | m6 | 48           | k6  | 288 | 350 | 328         | 5   | 351 | 180  | −0,5 |  |
| A200 | 180 M2       |              | 241 | 450 | 279 | 350 | h6 | 20          | 15 | 48 | m6 | 48           | k6  | 288 | 350 | 328         | 5   | 351 | 180  | −0,5 |  |
| A200 | 180 M4, 6, 8 |              | 241 | 450 | 279 | 350 | h6 | 20          | 15 | 55 | m6 | 48           | k6  | 288 | 350 | 328         | 5   | 351 | 180  | −0,5 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 200 M2       |              | 267 | 450 | 318 | 350 | h6 | 22          | 16 | 55 | m6 | 55           | m6  | 360 | 400 | 372         | 5   | 390 | 200  | −0,5 |  |
| A200 | 200 M4, 6, 8 |              | 267 | 450 | 318 | 350 | h6 | 22          | 16 | 60 | m6 | 55           | m6  | 360 | 400 | 372         | 5   | 390 | 200  | −0,5 |  |
| A200 | 200 L2       |              | 305 | 450 | 318 | 350 | h6 | 22          | 16 | 55 | m6 | 55           | m6  | 360 | 400 | 372         | 5   | 390 | 200  | −0,5 |  |
| A200 | 200 L4, 6, 8 |              | 305 | 450 | 318 | 350 | h6 | 22          | 16 | 60 | m6 | 55           | m6  | 360 | 400 | 372         | 5   | 390 | 200  | −0,5 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 225 M2       |              | 311 | 550 | 356 | 450 | h6 | 25          | 18 | 65 | m6 | 55           | m6  | 368 | 500 | 413         | 5   | 440 | 225  | −0,5 |  |
| A200 | 225 M4, 6, 8 |              | 311 | 550 | 356 | 450 | h6 | 25          | 18 | 65 | m6 | 55           | m6  | 368 | 500 | 413         | 5   | 440 | 225  | −0,5 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 250 S2       |              | 311 | 550 | 406 | 450 | h6 | 28          | 18 | 75 | m6 | 65           | m6  | 374 | 500 | 469         | 5   | 490 | 250  | −0,5 |  |
| A200 | 250 S4, 6, 8 |              | 311 | 550 | 406 | 450 | h6 | 28          | 18 | 75 | m6 | 65           | m6  | 374 | 500 | 469         | 5   | 490 | 250  | −0,5 |  |
| A200 | 250 M2,6,8   |              | 349 | 550 | 406 | 450 | h6 | 28          | 18 | 75 | m6 | 65           | m6  | 412 | 500 | 469         | 5   | 490 | 250  | −0,5 |  |
| A200 | 250 M4       |              | 349 | 550 | 406 | 450 | h6 | 28          | 18 | 75 | m6 | 65           | m6  | 412 | 500 | 469         | 5   | 490 | 250  | −0,5 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 280 S2       |              | 368 | 660 | 457 | 550 | h6 | 40          | 22 | 80 | m6 | 70           | m6  | 431 | 600 | 522         | 6   | 550 | 280  | −1,0 |  |
| A200 | 280 S4, 6, 8 |              | 368 | 660 | 457 | 550 | h6 | 40          | 22 | 80 | m6 | 70           | m6  | 431 | 600 | 522         | 6   | 550 | 280  | −1,0 |  |
| A200 | 280 M2       |              | 419 | 660 | 457 | 550 | h6 | 40          | 22 | 80 | m6 | 70           | m6  | 482 | 600 | 522         | 6   | 550 | 280  | −1,0 |  |
| A200 | 280 M4, 6, 8 |              | 419 | 660 | 457 | 550 | h6 | 40          | 22 | 80 | m6 | 70           | m6  | 482 | 600 | 522         | 6   | 550 | 280  | −1,0 |  |
|      |              |              |     |     |     |     |    |             |    |    |    |              |     |     |     |             |     |     |      |      |  |
| A200 | 315 S2       |              | 406 | 660 | 508 | 550 | h6 | 44          | 22 | 75 | m6 | 70           | m6  | 554 | 600 | 590         | 6   | 550 | 315  | −1,0 |  |
| A200 | 315 S4       |              | 406 | 660 | 508 | 550 | h6 | 44          | 22 | 90 | m6 | 70           | m6  | 554 | 600 | 590         | 6   | 550 | 315  | −1,0 |  |
| A200 | 315 S6, 8    |              | 406 | 660 | 508 | 550 | h6 | 44          | 22 | 90 | m6 | 70           | m6  | 554 | 600 | 590         | 6   | 550 | 315  | −1,0 |  |
| A200 | 315 M2       |              | 457 | 660 | 508 | 550 | h6 | 44          | 22 | 75 | m6 | 75           | m6  | 622 | 600 | 590         | 6   | 616 | 315  | −1,0 |  |
| A200 | 315 M4, 6, 8 |              | 457 | 660 | 508 | 550 | h6 | 44          | 22 | 90 | m6 | 70           | m6  | 622 | 600 | 590         | 6   | 616 | 315  | −1,0 |  |
| A200 | 315 L2       |              | 508 | 660 | 508 | 550 | h6 | 44          | 22 | 75 | m6 | 75           | m6  | 624 | 600 | 590         | 6   | 616 | 315  | −1,0 |  |
| A200 | 315 L4, 6, 8 |              | 508 | 660 | 508 | 550 | h6 | 44          | 22 | 90 | m6 | 75           | m6  | 624 | 600 | 590         | 6   | 616 | 315  | −1,0 |  |

Tolerance for counter parts: H7

2nd shaft end only for direct coupling

Special equipment relubricating facility:  
flat grease nipple with head diameter 10 mm  
Grease outlet opposite to flat grease nipple

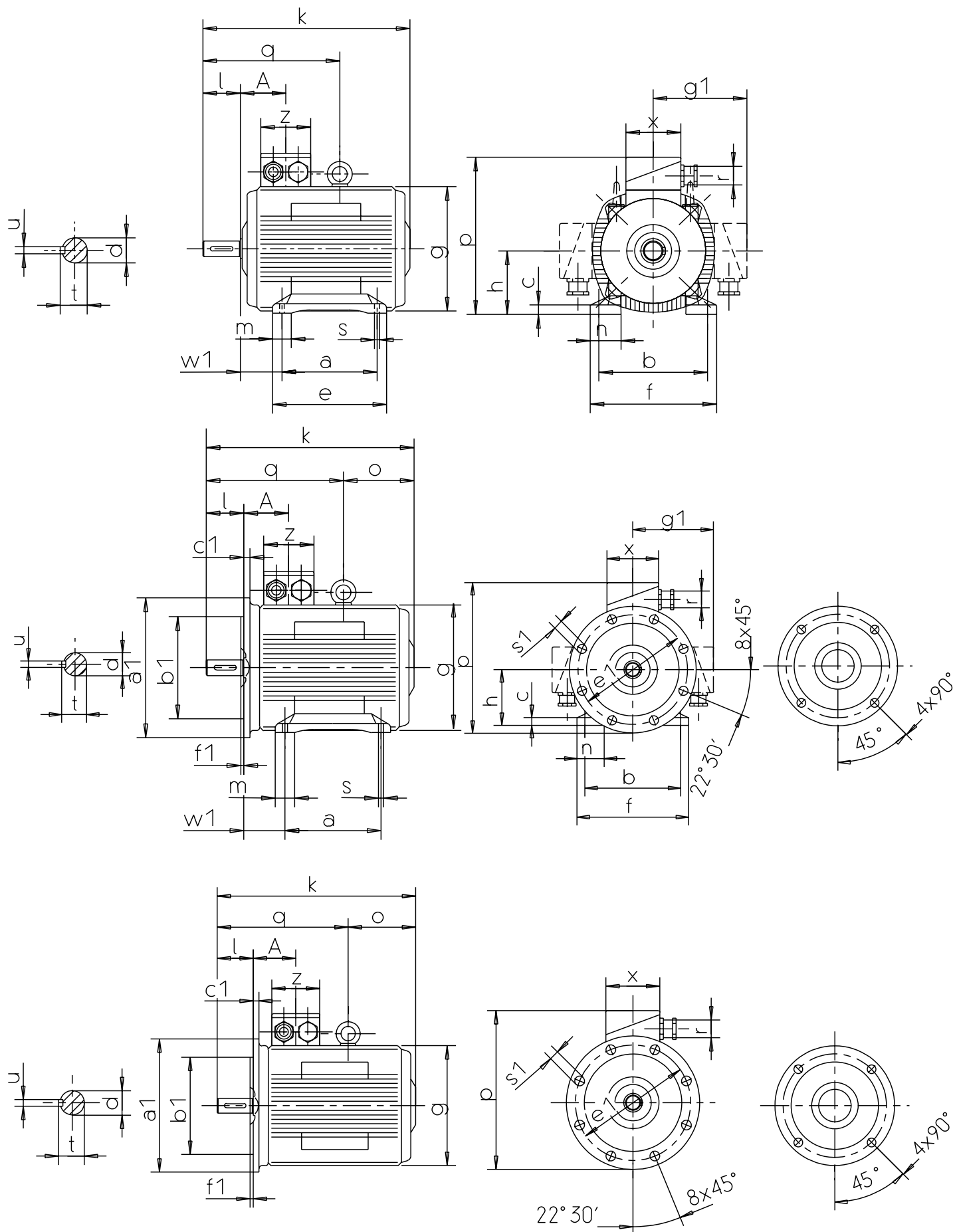
### Threaded center bores in the shaft end DIN 332-DS:

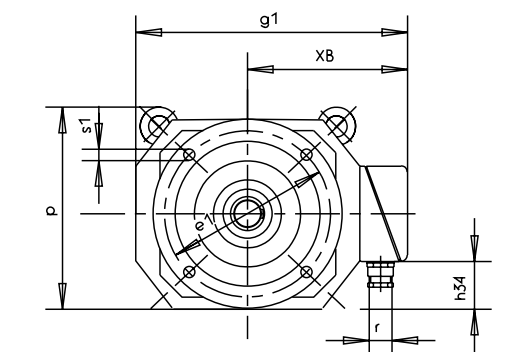
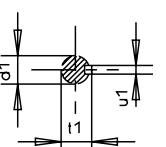
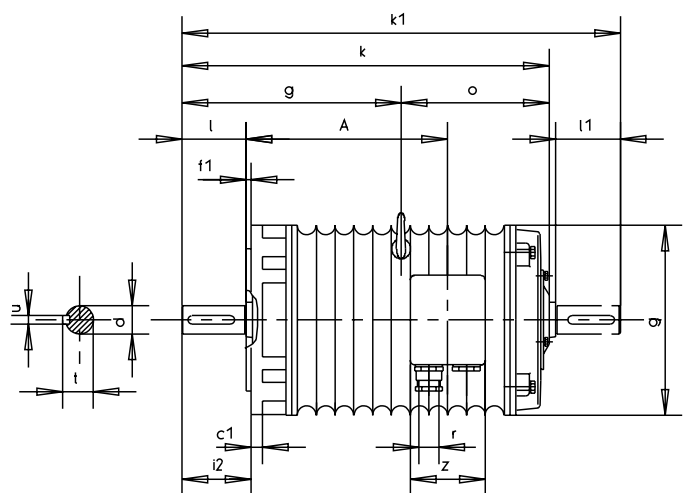
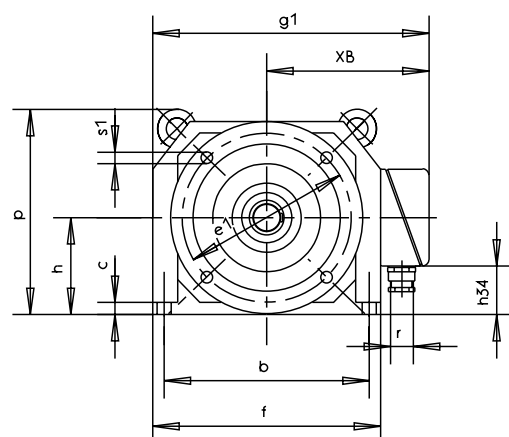
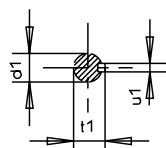
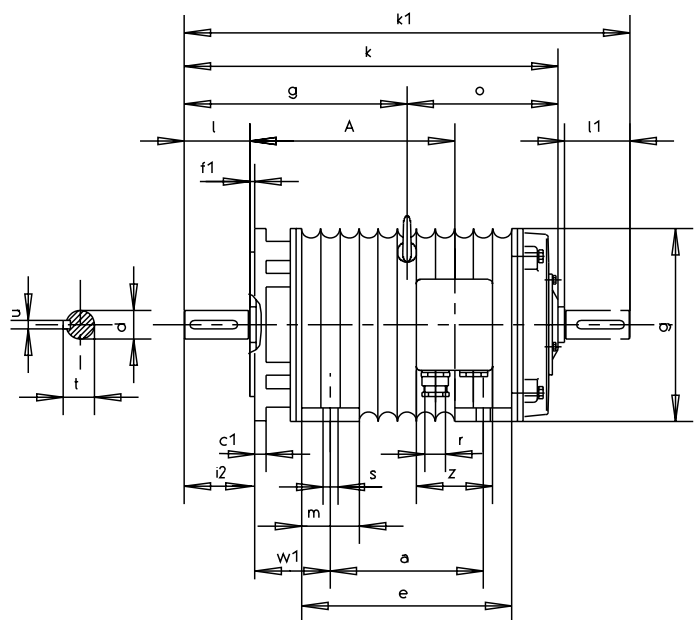
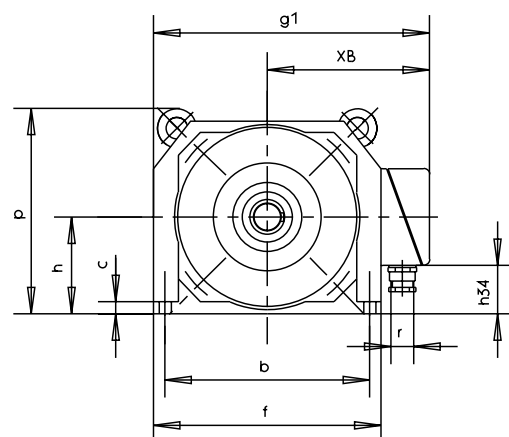
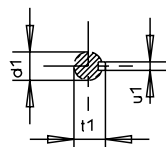
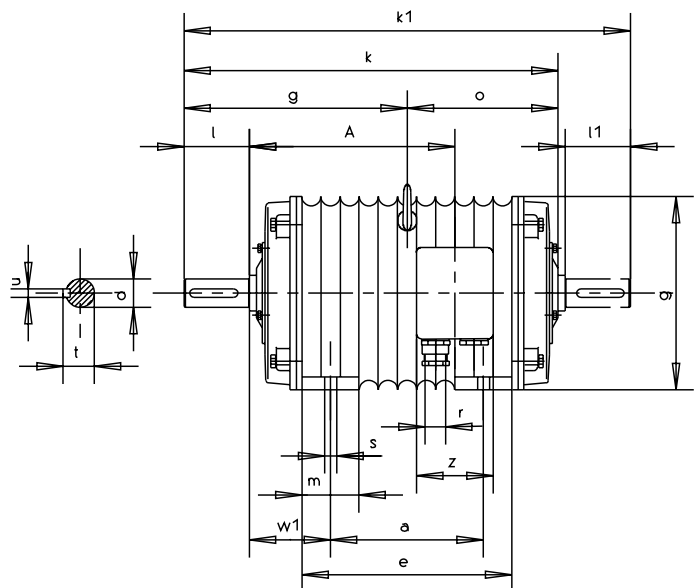
at diameter 31 up to 38 M12  
at diameter 39 up to 50 M16  
at diameter 51 up to 85 M20

## Type series A200

## Dimensions

| Hole pattern |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
|--------------|------|-----|-----|-----|-----|----------|----------|-----|-------|-------|----|----|------|------|----|----|-----|-----|-----|-------|-------|----|
| k            | k1   | l   | l1  | m   | n   | p (M B3) | p (M B5) | q   | o     | r     | s  | s1 | t    | t1   | u  | u1 | w1  | w2  | A   | x (l) | z (l) |    |
| L            | LC   | E   | EA  | BA  | AA  | HD       | HD       | -   | -     | -     | K  | S  | GA   | GC   | F  | FA | C   | CA  | -   | -     | -     | -  |
| 417          | 506  | 80  | 80  | 42  | 45  | 292      | 330      | 291 | 126   | Pg 21 | 12 | 14 | 35   | 35   | 10 | 10 | 70  | 136 | 108 | 155   | 145   | 4L |
| 486          | 80   | 80  | 42  | 45  | 292 | 330      | 291      | 106 | Pg 21 | 12    | 14 | 35 | 35   | 10   | 10 | 70 | 116 | 108 | 155 | 145   | 4L    |    |
| 417          | 506  | 80  | 80  | 42  | 45  | 292      | 330      | 291 | 126   | Pg 21 | 12 | 14 | 35   | 35   | 10 | 10 | 70  | 136 | 108 | 155   | 145   | 4L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 420          | 506  | 80  | 80  | 47  | 50  | 332      | 375      | 308 | 112   | Pg 21 | 12 | 18 | 41   | 41   | 10 | 10 | 89  | 117 | 114 | 155   | 145   | 4L |
| 498          | 554  | 80  | 80  | 47  | 50  | 332      | 375      | 308 | 160   | Pg 21 | 12 | 18 | 41   | 41   | 10 | 10 | 89  | 127 | 114 | 155   | 145   | 4L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 502          | 625  | 110 | 110 | 56  | 55  | 390      | 430      | 360 | 142   | Pg 29 | 15 | 18 | 51,5 | 45   | 14 | 12 | 108 | 119 | 138 | 192   | 165   | 4L |
| 502          | 625  | 110 | 110 | 56  | 55  | 390      | 430      | 360 | 142   | Pg 29 | 15 | 18 | 51,5 | 45   | 14 | 12 | 108 | 119 | 138 | 192   | 165   | 4L |
| 540          | 663  | 110 | 110 | 56  | 55  | 390      | 430      | 360 | 180   | Pg 29 | 15 | 18 | 51,5 | 45   | 14 | 12 | 108 | 125 | 138 | 192   | 165   | 4L |
| 540          | 663  | 110 | 110 | 56  | 55  | 390      | 430      | 360 | 180   | Pg 29 | 15 | 18 | 51,5 | 45   | 14 | 12 | 108 | 125 | 138 | 192   | 165   | 4L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 562          | 689  | 110 | 110 | 65  | 62  | 441      | 486      | 396 | 166   | Pg 29 | 15 | 18 | 59   | 51,5 | 16 | 14 | 121 | 145 | 147 | 192   | 165   | 4L |
| 562          | 689  | 110 | 110 | 65  | 62  | 441      | 486      | 396 | 166   | Pg 29 | 15 | 18 | 59   | 51,5 | 16 | 14 | 121 | 145 | 147 | 192   | 165   | 4L |
| 607          | 734  | 110 | 110 | 65  | 62  | 441      | 486      | 396 | 211   | Pg 29 | 15 | 18 | 59   | 51,5 | 16 | 14 | 121 | 152 | 147 | 192   | 165   | 4L |
| 607          | 734  | 110 | 110 | 65  | 62  | 441      | 486      | 396 | 211   | Pg 29 | 15 | 18 | 59   | 51,5 | 16 | 14 | 121 | 152 | 147 | 192   | 165   | 4L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 640          | 760  | 110 | 110 | 70  | 70  | 500      | 525      | 435 | 205   | Pg 36 | 19 | 18 | 64   | 59   | 18 | 16 | 133 | 140 | 168 | 212   | 207   | 8L |
| 670          | 790  | 140 | 110 | 70  | 70  | 500      | 525      | 465 | 205   | Pg 36 | 19 | 18 | 64   | 59   | 18 | 16 | 133 | 140 | 168 | 212   | 207   | 8L |
| 680          | 800  | 110 | 110 | 70  | 70  | 500      | 525      | 435 | 245   | Pg 36 | 19 | 18 | 64   | 59   | 18 | 16 | 133 | 142 | 168 | 212   | 207   | 8L |
| 710          | 830  | 140 | 110 | 70  | 70  | 500      | 525      | 465 | 245   | Pg 36 | 19 | 18 | 64   | 59   | 18 | 16 | 133 | 142 | 168 | 212   | 207   | 8L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 707          | 827  | 110 | 110 | 75  | 75  | 551      | 601      | 450 | 257   | Pg 36 | 19 | 18 | 69   | 59   | 18 | 16 | 149 | 147 | 177 | 212   | 207   | 8L |
| 737          | 857  | 140 | 110 | 75  | 75  | 551      | 601      | 480 | 257   | Pg 36 | 19 | 18 | 69   | 59   | 18 | 16 | 149 | 147 | 177 | 212   | 207   | 8L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 800          | 947  | 140 | 140 | 84  | 84  | 638      | 663      | 541 | 259   | Pg 42 | 24 | 18 | 79,5 | 69   | 20 | 18 | 168 | 188 | 206 | 280   | 242   | 8L |
| 800          | 947  | 140 | 140 | 84  | 84  | 638      | 663      | 541 | 259   | Pg 42 | 24 | 18 | 79,5 | 69   | 20 | 18 | 168 | 188 | 206 | 280   | 242   | 8L |
| 800          | 947  | 140 | 140 | 84  | 84  | 638      | 663      | 541 | 259   | Pg 42 | 24 | 18 | 79,5 | 69   | 20 | 18 | 168 | 150 | 206 | 280   | 242   | 8L |
| 846          | 993  | 140 | 140 | 84  | 84  | 638      | 663      | 541 | 305   | Pg 42 | 24 | 18 | 79,5 | 69   | 20 | 18 | 168 | 196 | 206 | 280   | 242   | 8L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 905          | 1058 | 170 | 140 |     | 88  | 722      | 750      | 546 | 329   | Pg48  | 24 | 22 | 85   | 74,5 | 22 | 20 | 190 | 190 | 211 | 280   | 242   | 8L |
| 905          | 1058 | 170 | 140 |     | 88  | 722      | 750      | 576 | 329   | Pg48  | 24 | 22 | 85   | 74,5 | 22 | 20 | 190 | 190 | 211 | 280   | 242   | 8L |
| 960          | 1113 | 170 | 140 |     | 88  | 722      | 750      | 546 | 384   | Pg48  | 24 | 22 | 85   | 74,5 | 22 | 20 | 190 | 194 | 211 | 280   | 242   | 8L |
| 960          | 1113 | 170 | 140 |     | 88  | 722      | 750      | 576 | 384   | Pg48  | 24 | 22 | 85   | 74,5 | 22 | 20 | 190 | 194 | 211 | 280   | 242   | 8L |
|              |      |     |     |     |     |          |          |     |       |       |    |    |      |      |    |    |     |     |     |       |       |    |
| 1010         | 1163 | 140 | 140 |     | 132 | 654      | 772      | 546 | 464   | Pg 48 | 28 | 22 | 79,5 | 74,5 | 20 | 20 | 216 | 248 | 211 | 315   | 242   | 8L |
| 1040         | 1193 | 170 | 140 |     | 132 | 654      | 772      | 576 | 464   | Pg 48 | 28 | 22 | 95   | 74,5 | 25 | 20 | 216 | 248 | 211 | 315   | 242   | 8L |
| 960          | 1113 | 170 | 140 |     | 132 | 574      | 772      | 576 | 384   | Pg 48 | 28 | 22 | 95   | 74,5 | 25 | 20 | 216 | 168 | 211 | 315   | 242   | 8L |
| 1135         | 1288 | 140 | 140 | 120 | 110 | 630      | 772      | 636 | 499   | Pg 48 | 28 | 22 | 79,5 | 79,5 | 20 | 20 | 216 | 322 | 230 | 315   | 296   | 8L |
| 1165         | 1318 | 170 | 140 | 120 | 110 | 630      | 772      | 666 | 499   | Pg 48 | 28 | 22 | 95   | 79,5 | 25 | 20 | 216 | 322 | 230 | 315   | 296   | 8L |
| 1255         | 1408 | 140 | 140 | 120 | 110 | 750      | 772      | 756 | 499   | Pg 48 | 28 | 22 | 79,5 | 79,5 | 20 | 20 | 216 | 391 | 230 | 315   | 296   | 8L |
| 1285         | 1438 | 170 | 140 | 120 | 110 | 750      | 772      | 786 | 499   | Pg 48 | 28 | 22 | 95   | 79,5 | 25 | 20 | 216 | 391 | 230 | 315   | 296   | 8L |





Constructive Selection Data

Three-phase motors with squirrel-cage rotor for heavy roller tables, types ARB 22-65  
with surface cooling, type of cooling IC 410, continuous duty S1 and mode of operation S5/S7

| —      | —    | a   | a1  | b   | b1  | Tolerance b1 | c  | c1 | d  | Tolerance d1 | e   | e1  | f   | f1 | g   | g1  | h34 | Tolerance h | k1  |
|--------|------|-----|-----|-----|-----|--------------|----|----|----|--------------|-----|-----|-----|----|-----|-----|-----|-------------|-----|
| Type   | Size | B   | P   | A   | N   | —            | HA | LA | D  | —            | BB  | M   | AB  | T  | AC  | —   | —   | —           | LC  |
| ARB 22 | 132  | 178 | 195 | 216 | 130 | j6           | 20 | 12 | 24 | k6           | 242 | 165 | 268 | 4  | 194 | 180 | 87  | −0,5        | 538 |
| ARB 33 | 125  | 250 | 250 | 230 | 180 | j6           | 25 | 16 | 28 | k6           | 335 | 215 | 280 | 4  | 236 | 210 | 79  | −0,5        | 616 |
| ARB 54 | 170  | 270 | 300 | 320 | 230 | j6           | 32 | 16 | 38 | k6           | 360 | 265 | 390 | 4  | 330 | 245 | 105 | −0,5        | 758 |
| ARB 65 | 200  | 315 | 350 | 370 | 250 | j6           | 32 | 20 | 48 | k6           | 392 | 300 | 450 | 5  | 380 | 280 | 125 | −0,5        | 910 |

Tolerance for counter parts: H7  
2nd shaft end only for direct coupling

Relubricating facility:  
Flat grease nipple with head diameter 10 mm,  
grease outlet opposite to flat grease nipple

Threaded center bores in the shaft end DIN 332-DS:

at diameter 31 up to 38 M12  
at diameter 39 up to 48 M16

Three-phase motors with squirrel-cage rotor, types ARC  
with surface cooling, type of cooling IC 410, degree of protection IP55

|      |           | a   | a1  | b   | b1  | Tolerance b1 | c  | c1 | d  | Tolerance d | e   | e1  | f   | f1 | g   | h   | Tolerance h |
|------|-----------|-----|-----|-----|-----|--------------|----|----|----|-------------|-----|-----|-----|----|-----|-----|-------------|
| Type |           | B   | P   | A   | N   | —            | HA | LA | D  | —           | BB  | M   | AB  | T  | AC  | H   | —           |
| ARC  | 112 M, MX | 140 | 300 | 190 | 230 | h6           | 15 | 13 | 32 | k6          | 172 | 265 | 226 | 4  | 217 | 112 | −0,5        |
| ARC  | 132 S     | 140 | 350 | 216 | 250 | h6           | 15 | 13 | 38 | k6          | 218 | 300 | 256 | 5  | 258 | 132 | −0,5        |
| ARC  | 132 M     | 178 | 350 | 216 | 250 | h6           | 15 | 13 | 38 | k6          | 218 | 300 | 256 | 5  | 258 | 132 | −0,5        |
| ARC  | 160 S     | 178 | 400 | 254 | 300 | h6           | 18 | 15 | 48 | k6          | 257 | 350 | 296 | 5  | 313 | 160 | −0,5        |
| ARC  | 160 M     | 210 | 400 | 254 | 300 | h6           | 18 | 15 | 48 | k6          | 257 | 350 | 296 | 5  | 313 | 160 | −0,5        |
| ARC  | 180 S     | 203 | 450 | 279 | 350 | h6           | 20 | 15 | 55 | m6          | 288 | 350 | 328 | 5  | 351 | 180 | −0,5        |
| ARC  | 180 M     | 241 | 450 | 279 | 350 | h6           | 20 | 15 | 55 | m6          | 288 | 350 | 328 | 5  | 351 | 180 | −0,5        |
| ARC  | 200 M     | 267 | 450 | 318 | 350 | h6           | 22 | 16 | 60 | m6          | 360 | 400 | 372 | 5  | 390 | 200 | −0,5        |
| ARC  | 200 L     | 305 | 450 | 318 | 350 | h6           | 22 | 16 | 60 | m6          | 360 | 400 | 372 | 5  | 390 | 200 | −0,5        |
| ARC  | 225 M     | 311 | 550 | 356 | 450 | h6           | 25 | 18 | 65 | m6          | 368 | 500 | 413 | 5  | 440 | 225 | −0,5        |
| ARC  | 250 S     | 311 | 550 | 406 | 450 | h6           | 28 | 18 | 75 | m6          | 374 | 500 | 469 | 5  | 490 | 250 | −0,5        |
| ARC  | 250 M     | 349 | 550 | 406 | 450 | h6           | 28 | 18 | 75 | m6          | 412 | 500 | 469 | 5  | 490 | 250 | −0,5        |
| ARC  | 280 S     | 368 | 660 | 457 | 550 | h6           | 40 | 22 | 80 | m6          | 431 | 600 | 522 | 6  | 550 | 280 | −1,0        |
| ARC  | 280 M     | 419 | 660 | 457 | 550 | h6           | 40 | 22 | 80 | m6          | 482 | 600 | 522 | 6  | 550 | 280 | −1,0        |
| ARC  | 315 M, MX | 457 | 660 | 508 | 550 | h6           | 44 | 22 | 80 | m6          | 622 | 600 | 590 | 6  | 616 | 315 | −1,0        |
| ARC  | 315 L, LX | 508 | 660 | 508 | 550 | h6           | 44 | 22 | 80 | m6          | 624 | 600 | 590 | 6  | 616 | 315 | −1,0        |

Tolerance for counter parts: H7  
2nd shaft end only for direct coupling

Special equipment relubricating facility:  
flat grease nipple with head diameter 10 mm,  
grease outlet opposite to flat grease nipple

Type series ARB and ARC

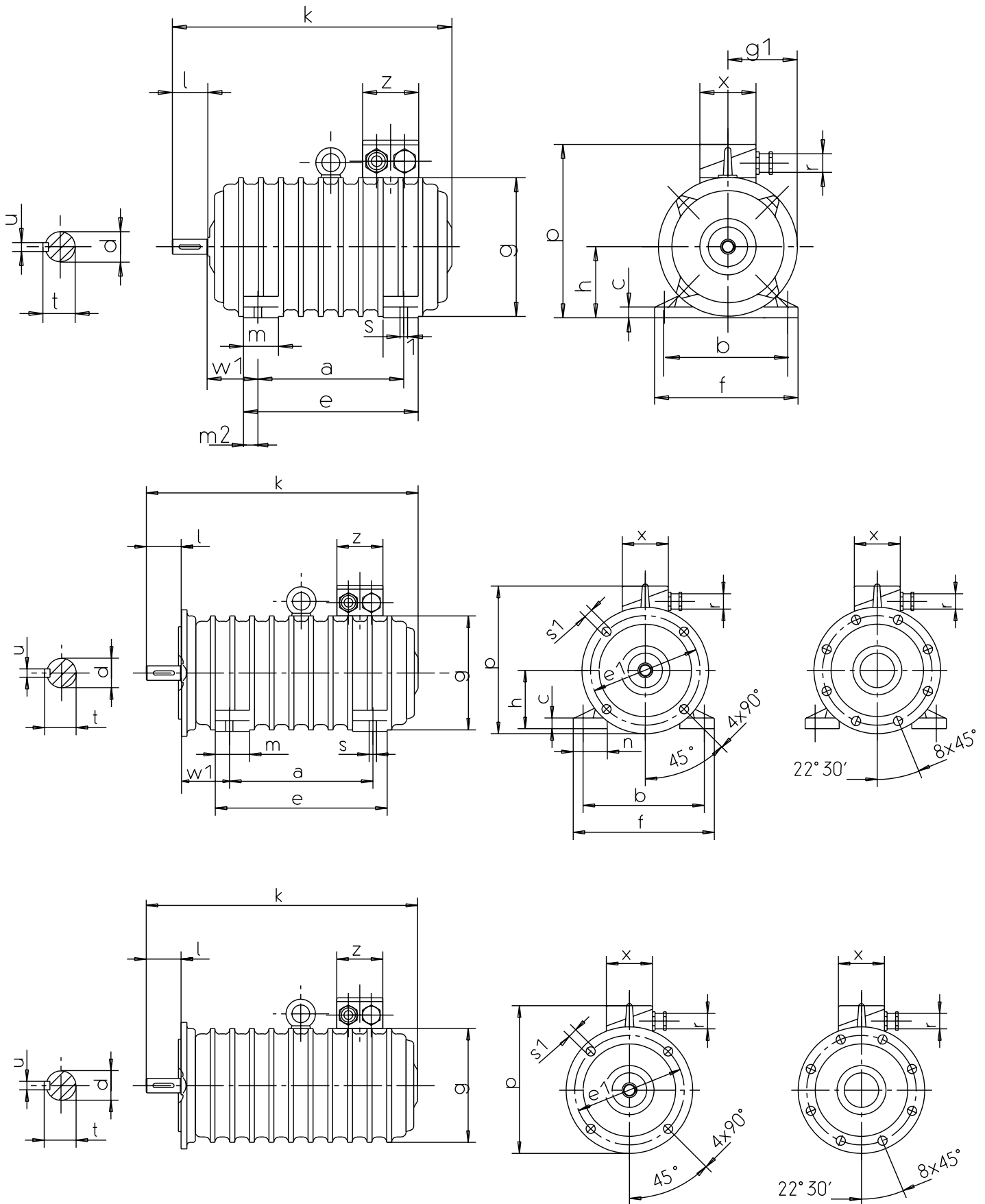
Dimensions

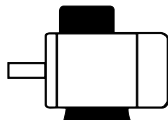
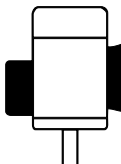
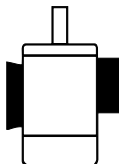
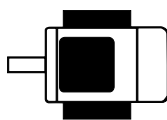
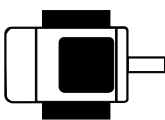
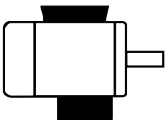
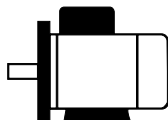
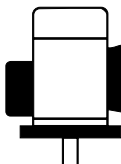
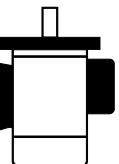
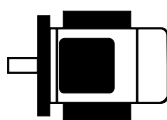
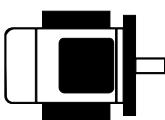
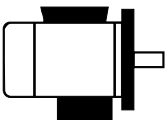
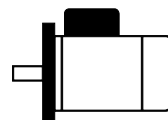
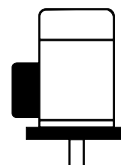
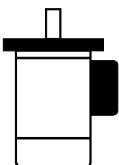
| l   | l1  | m  | o   | p   | p(l) | r    | s1 | t  | t1 | u  | u1 | w1    | w2  | A   | x   | Hole pattern | Relubricating facility possible |
|-----|-----|----|-----|-----|------|------|----|----|----|----|----|-------|-----|-----|-----|--------------|---------------------------------|
| E   | EA  | BA | —   | HD  | HD   | —    | S  | GA | GC | F  | FA | C     | CA  | —   | —   | —            | —                               |
| 50  | 50  | 64 | 217 | 245 | 224  | Pg21 | 14 | 27 | 27 | 8  | 8  | 130   | 130 | 294 | 130 | 4L           | yes                             |
| 60  | 60  | 85 | 243 | 266 | 284  | Pg22 | 14 | 31 | 31 | 8  | 8  | 123   | 123 | 347 | 130 | 4L           | yes                             |
| 80  | 80  | 90 | 281 | 361 | 362  | Pg23 | 18 | 41 | 41 | 10 | 10 | 164   | 164 | 421 | 130 | 4L           | yes                             |
| 110 | 110 | 77 | 315 | 400 | 427  | Pg24 | 23 | 52 | 52 | 14 | 14 | 187,5 | 188 | 485 | 130 | 4L           | yes                             |

| k    | l   | m   | p (IM B3) | p (IM B5) | r     | s  | s1 | t    | u  | w1  | w2  | x   | z   | Hole pattern |
|------|-----|-----|-----------|-----------|-------|----|----|------|----|-----|-----|-----|-----|--------------|
| L    | E   | BA  | HD        | HD        | —     | K  | S  | GA   | F  | C   | CA  | —   | —   | —            |
| 417  | 80  | 42  | 292       | 330       | Pg 21 | 12 | 14 | 35   | 10 | 70  | 136 | 155 | 145 | 4L           |
| 498  | 80  | 47  | 332       | 375       | Pg 21 | 12 | 18 | 41   | 10 | 89  | 165 | 155 | 145 | 4L           |
| 498  | 80  | 47  | 332       | 375       | Pg 21 | 12 | 18 | 41   | 10 | 89  | 127 | 155 | 145 | 4L           |
| 535  | 110 | 60  | 390       | 430       | Pg 29 | 15 | 18 | 51,5 | 14 | 108 | 152 | 192 | 165 | 4L           |
| 535  | 110 | 60  | 390       | 430       | Pg 29 | 15 | 18 | 51,5 | 14 | 108 | 120 | 192 | 165 | 4L           |
| 614  | 110 | 65  | 441       | 486       | Pg 29 | 15 | 18 | 59   | 16 | 121 | 186 | 192 | 165 | 4L           |
| 614  | 110 | 65  | 441       | 486       | Pg 29 | 15 | 18 | 59   | 16 | 121 | 148 | 192 | 165 | 4L           |
| 710  | 140 | 70  | 500       | 525       | Pg 36 | 19 | 18 | 64   | 18 | 133 | 180 | 212 | 207 | 8L           |
| 710  | 140 | 70  | 500       | 525       | Pg 36 | 19 | 18 | 64   | 18 | 133 | 142 | 212 | 207 | 8L           |
| 727  | 140 | 75  | 551       | 601       | Pg 36 | 19 | 18 | 69   | 18 | 149 | 132 | 212 | 207 | 8L           |
| 835  | 140 | 84  | 638       | 663       | Pg 42 | 24 | 18 | 79,5 | 20 | 168 | 224 | 280 | 242 | 8L           |
| 835  | 140 | 84  | 638       | 663       | Pg 42 | 24 | 18 | 79,5 | 20 | 168 | 186 | 280 | 242 | 8L           |
| 955  | 170 | 100 | 700       | 750       | Pg 48 | 24 | 22 | 85   | 22 | 190 | 240 | 280 | 242 | 8L           |
| 955  | 170 | 100 | 700       | 750       | Pg 48 | 24 | 22 | 85   | 22 | 190 | 189 | 280 | 242 | 8L           |
| 1248 | 170 | 120 | 757       | 772       | Pg 48 | 28 | 22 | 85   | 22 | 216 | 418 | 280 | 242 | 8L           |
| 1248 | 170 | 120 | 757       | 772       | Pg 48 | 28 | 22 | 85   | 22 | 216 | 367 | 280 | 242 | 8L           |

Threaded center bores in the shaft end DIN 332-DS:

at diameter 31 up to 38 M12  
at diameter 39 up to 50 M16  
at diameter 51 up to 90 M20



| Types                                                                                                                                                                                                 | Basic Type of Construction                                                                                                           | Derived Types of Construction                                                                                                        |                                                                                                                                            |                                                                                                                    |                                                                                                                     |                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| A21O 132-225<br>A20O 112-200<br>A21O 250-315MY <sup>1)</sup><br>A20O 225-315M <sup>1)</sup><br>A21O/A20O 315L,LX <sup>4)</sup><br><br>ARB 22-65<br>ARC 112-280 <sup>1)</sup><br>ARC 315 <sup>4)</sup> | IM B3<br>IM 1001<br>                               | IM V5<br>IM 1011<br>                               | IM V6<br>IM 1031<br>                                     | IM B6<br>IM 1051<br>            | IM B7<br>IM 1061<br>            | IM B8<br>IM 1071<br>            |
|                                                                                                                                                                                                       | IM B35 <sup>2)</sup><br>IM 2001 <sup>2)</sup><br> | IM V15 <sup>2)</sup><br>IM 2011 <sup>2)</sup><br> | IM V36 <sup>2) 3)</sup><br>IM 2031 <sup>2) 3)</sup><br> | —<br>IM 2051 <sup>2)</sup><br> | —<br>IM 2061 <sup>2)</sup><br> | —<br>IM 2071 <sup>2)</sup><br> |
|                                                                                                                                                                                                       | IM B5<br>IM 3001<br>                              | IM V1<br>IM 3011<br>                              | IM V3 <sup>3)</sup><br>IM 3031 <sup>3)</sup><br>        |                                                                                                                    |                                                                                                                     |                                                                                                                     |

Basic types of construction could be used in all derived types of construction.

Exceptions:

<sup>1)</sup> For the types of construction IM V5, IM V6, IM B6, IM B7, IM B8 further inquiries are necessary

<sup>2)</sup> On request

<sup>3)</sup> This type of construction must be ordered directly because of additional water-return hole in the flange end shield.

<sup>4)</sup> Not available in IM B5 and IM V3.

## Basic version

| Type |     |                 | Antifriction bearing | D-end  |        |             |             | N-end                |        |             |      | Figure |    | Fixed bearing |
|------|-----|-----------------|----------------------|--------|--------|-------------|-------------|----------------------|--------|-------------|------|--------|----|---------------|
|      |     |                 |                      | V-ring | γ-ring | Wave washer | Disk spring | Antifriction bearing | V-ring | Wave washer |      | DS     | NS |               |
| A21R | 132 | S, SX2,M6,8     | 6208 2RS C3          | -      | -      | 80          | -           | 6207 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A21R | 132 | M4,MX6          | 6308 2RS C3          | -      | -      | 90          | -           | 6308 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A21R | 160 | M,MX8           | 6309 2RS C3          | -      | -      | 100         | -           | 6308 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A21R | 160 | MX2, L          | 6310 2RS C3          | -      | -      | 110         | -           | 6309 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A21R | 180 | M4, L6, 8       | 6310 2RS C3          | -      | -      | 110         | -           | 6309 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A21R | 180 | M2, L4          | 6310 C3              | 50A    | -      | 110         | -           | 6310 C3              | 50A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 200 | L, LX6          | 6312 C3              | 60A    | -      | -           | 130         | 6310 C3              | 50A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 200 | LX2             | 6312 C3              | 60A    | -      | -           | 130         | 6312 C3              | 60A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 225 | M2              | 6312 C3              | 60A    | -      | -           | 130         | 6312 C3              | 60A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 225 | S4, 8, M4,6,8,  | 6313 C3              | 65A    | -      | -           | 140         | 6312 C3              | 60A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 250 | M2              | 6313 C3              | 65A    | -      | -           | 140         | 6313 C3              | 65A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 250 | M4,6,8          | 6314 C3              | 70A    | -      | -           | 150         | 6313 C3              | 65A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 280 | S2,M2           | 6314 C3              | 70A    | -      | -           | 150         | 6314 C3              | 70A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 280 | S4,6,8,M4,6,8   | 6316 C3              | 80A    | -      | -           | 170         | 6314 C3              | 70A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 315 | S2,M2           | 6316 C3              | 80A    | -      | -           | 170         | 6316 C3              | 80A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 315 | S4,6,8,M4,6,8   | 6317 C3              | 80A    | -      | -           | 180         | 6316 C3              | 80A    | -           | 2/3  | 2/4    |    | N-end         |
| A21R | 315 | MX2             | 6317 C3              | -      | RB85   | -           | 180         | 6316 C3              | 80A    | -           | 2/25 | 2/23   |    | N-end         |
| A21R | 315 | MX4,6,8         | 6220 C3              | -      | RB100  | -           | 180         | 6316 C3              | 80A    | -           | 2/25 | 2/23   |    | N-end         |
| A21R | 315 | MY2             | 6317 C3              | -      | RB85   | -           | 180         | 6317 C3 *)           | 85A    | -           | 2/18 | 2/16   |    | N-end         |
| A21R | 315 | MY4,6,8         | 6320 C3              | -      | RB100  | -           | 215         | 6317 C3 *)           | 85A    | -           | 2/18 | 2/16   |    | N-end         |
| A21R | 315 | L2, LX2         | 6317 C3              | -      | RB85   | -           | 180         | 6317 C3 *)           | 85A    | -           | 2/18 | 2/16   |    | N-end         |
| A21R | 315 | L4,6,8, LX4,6,8 | 6320 C3              | -      | RB100  | -           | 215         | 6317 C3 *)           | 85A    | -           | 2/18 | 2/16   |    | N-end         |

\*) For vertical types of construction Q317 C3; figures 2/18, 2/17

A21R 315 MX; MY; L; LX as standard with relubricating facility

| Type |     |                | Antifriction bearing | D-end  |        |             |             | N-end                |        |             |      | Figure |    | Fixed bearing |
|------|-----|----------------|----------------------|--------|--------|-------------|-------------|----------------------|--------|-------------|------|--------|----|---------------|
|      |     |                |                      | V-ring | γ-ring | Wave washer | Disk spring | Antifriction bearing | V-ring | Wave washer |      | DS     | NS |               |
| A20R | 112 | M2,4,6,8       | 6207 2RS C3          | -      | -      | 72          | -           | 6207 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A20R | 112 | MX6,8          | 6207 2RS C3          | -      | -      | 72          | -           | 6207 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A20R | 132 | S, M           | 6308 2RS C3          | -      | -      | 90          | -           | 6308 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A20R | 160 | S, M           | 6310 2RS C3          | -      | -      | 110         | -           | 6309 2RS C3          | -      | -           | 2/1  | 2/2    |    | without       |
| A20R | 180 | S2, M2         | 6310 C3              | 50A    | -      | 110         | -           | 6310 C3              | 50A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 180 | S4,6,8; M4,6,8 | 6312 C3              | 60A    | -      | -           | 130         | 6310 C3              | 50A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 200 | M2, L2         | 6312 C3              | 60A    | -      | -           | 130         | 6312 C3              | 60A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 200 | M4,6,8; L4,6,8 | 6313 C3              | 65A    | -      | -           | 140         | 6312 C3              | 60A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 225 | M2             | 6313 C3              | 65A    | -      | -           | 140         | 6313 C3              | 65A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 225 | M4,6,8         | 6314 C3              | 70A    | -      | -           | 150         | 6313 C3              | 65A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 250 | S2, M2         | 6314 C3              | 70A    | -      | -           | 150         | 6314 C3              | 70A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 250 | S4,6,8; M4,6,8 | 6316 C3              | 80A    | -      | -           | 170         | 6314 C3              | 70A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 280 | S2,M2          | 6316 C3              | 80A    | -      | -           | 170         | 6316 C3              | 80A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 280 | S4,6,8; M4,6,8 | 6317 C3              | 80A    | -      | -           | 180         | 6316 C3              | 80A    | -           | 2/3  | 2/4    |    | N-end         |
| A20R | 315 | S2             | 6317 C3              | -      | RB85   | -           | 180         | 6316 C3              | 80A    | -           | 2/25 | 2/23   |    | N-end         |
| A20R | 315 | S4,6,8         | 6220 C3              | -      | RB100  | -           | 180         | 6316 C3              | 80A    | -           | 2/25 | 2/23   |    | N-end         |
| A20R | 315 | M2; L2         | 6317 C3              | -      | RB85   | -           | 180         | 6317 C3 *)           | 85A    | -           | 2/18 | 2/16   |    | N-end         |
| A20R | 315 | M4,6,8; L4,6,8 | 6320 C3              | -      | RB100  | -           | 215         | 6317 C3 *)           | 85A    | -           | 2/18 | 2/16   |    | N-end         |

\*) For vertical types of construction Q317 C3; figures 2/15, 2/17

A20R 315 S,M,L as standard with relubricating facility

## Relubricating facility

| Type |     |                 | Antifriction bearing | D-end   |                                               |                   |             | N-end                |         | DS  | Figure |      | Fixed bearing |
|------|-----|-----------------|----------------------|---------|-----------------------------------------------|-------------------|-------------|----------------------|---------|-----|--------|------|---------------|
|      |     |                 |                      | V-ring  | γ-ring                                        | Wave washer       | Disk spring | Antifriction bearing | V-ring  |     | NS     |      |               |
| A21R | 132 | S, SX2,M6,8     |                      |         | at the D-end for reasons of design impossible |                   |             |                      |         |     |        |      |               |
| A21R | 132 | M4,MX6          |                      |         | at the D-end for reasons of design impossible |                   |             |                      |         |     |        |      |               |
| A21R | 160 | M,MX8           |                      |         | at the D-end for reasons of design impossible |                   |             |                      |         |     |        |      |               |
| A21R | 160 | MX2, L          | *)                   | 6310 C3 | 50A                                           | –                 | 110         | –                    | 6309 C3 | 45A | 2/11   | 2/12 | N-end         |
| A21R | 180 | M4, L6, 8       | *)                   | 6310 C3 | 50A                                           | –                 | 110         | –                    | 6309 C3 | 45A | 2/11   | 2/12 | N-end         |
| A21R | 180 | M2, L4          | *)                   | 6310 C3 | 50A                                           | –                 | 110         | –                    | 6310 C3 | 50A | 2/11   | 2/12 | N-end         |
| A21R | 200 | L, LX6          | *)                   | 6312 C3 | 60A                                           | –                 | –           | 130                  | 6310 C3 | 50A | 2/11   | 2/12 | N-end         |
| A21R | 200 | LX2             | *)                   | 6312 C3 | 60A                                           | –                 | –           | 130                  | 6312 C3 | 60A | 2/11   | 2/12 | N-end         |
| A21R | 225 | M2              |                      | 6312 C3 |                                               | RB60              | –           | 130                  | 6312 C3 | 60A | 2/25   | 2/26 | N-end         |
| A21R | 225 | S4, 8, M4,6,8,  |                      | 6313 C3 |                                               | RB65              | –           | 140                  | 6312 C3 | 60A | 2/25   | 2/26 | N-end         |
| A21R | 250 | M2              |                      | 6313 C3 |                                               | RB65              | –           | 140                  | 6313 C3 | 65A | 2/25   | 2/26 | N-end         |
| A21R | 250 | M4,6,8          |                      | 6314 C3 |                                               | RB70              | –           | 150                  | 6313 C3 | 65A | 2/25   | 2/26 | N-end         |
| A21R | 280 | S2,M2           |                      | 6314 C3 |                                               | RB70              | –           | 150                  | 6314 C3 | 70A | 2/25   | 2/26 | N-end         |
| A21R | 280 | S4,6,8,M4,6,8   |                      | 6316 C3 |                                               | RB80              | –           | 170                  | 6314 C3 | 70A | 2/25   | 2/26 | N-end         |
| A21R | 315 | S2,M2           |                      | 6316 C3 |                                               | RB80              | –           | 170                  | 6316 C3 | 80A | 2/25   | 2/26 | N-end         |
| A21R | 315 | S4,6,8,M4,6,8   |                      | 6317 C3 |                                               | RB85              | –           | 180                  | 6316 C3 | 80A | 2/25   | 2/26 | N-end         |
| A21R | 315 | MX2             |                      |         |                                               | see basic version |             |                      |         |     |        |      |               |
| A21R | 315 | MX4,6,8         |                      |         |                                               | see basic version |             |                      |         |     |        |      |               |
| A21R | 315 | MY2             |                      |         |                                               | see basic version |             |                      |         |     |        |      |               |
| A21R | 315 | MY4,6,8         |                      |         |                                               | see basic version |             |                      |         |     |        |      |               |
| A21R | 315 | L2, LX2         |                      |         |                                               | see basic version |             |                      |         |     |        |      |               |
| A21R | 315 | L4,6,8, LX4,6,8 |                      |         |                                               | see basic version |             |                      |         |     |        |      |               |

\*) degree of protection IP 54

| Type |     |                |    | Antifriction bearing | D-end  |                   |             |             | N-end                |        | Figure |      | Fixed bearing |
|------|-----|----------------|----|----------------------|--------|-------------------|-------------|-------------|----------------------|--------|--------|------|---------------|
|      |     |                |    |                      | V-ring | γ-ring            | Wave washer | Disk spring | Antifriction bearing | V-ring | DS     | NS   |               |
| A20R | 112 | M2,4,6,8       | *) | 6207 C3              | -      | -                 | 72          | -           | 6207 C3              | -      | 2/11   | 2/12 | N-end         |
| A20R | 112 | MX6,8          | *) | 6207 C3              | -      | -                 | 72          | -           | 6207 C3              | -      | 2/11   | 2/12 | N-end         |
| A20R | 132 | S,M            | *) | 6308 C3              | -      | -                 | 90          | -           | 6308 C3              | -      | 2/11   | 2/12 | N-end         |
| A20R | 160 | S,M            | *) | 6310 C3              | -      | -                 | 110         | -           | 6309 C3              | -      | 2/11   | 2/12 | N-end         |
| A20R | 180 | S2,M2          | *) | 6310 C3              | -      | -                 | 110         | -           | 6310 C3              | -      | 2/11   | 2/12 | N-end         |
| A20R | 180 | S4,6,8; M4,6,8 | *) | 6312 C3              | -      | -                 | -           | 130         | 6310 C3              | -      | 2/11   | 2/12 | N-end         |
| A20R | 200 | M2,L2          |    | 6312 C3              | -      | RB60              | -           | 130         | 6312 C3              | 60A    | 2/25   | 2/26 | N-end         |
| A20R | 200 | M4,6,8; L4,6,8 |    | 6313 C3              | -      | RB65              | -           | 140         | 6312 C3              | 60A    | 2/25   | 2/26 | N-end         |
| A20R | 225 | M2             |    | 6313 C3              | -      | RB65              | -           | 140         | 6313 C3              | 65A    | 2/25   | 2/26 | N-end         |
| A20R | 225 | M4,6,8         |    | 6314 C3              | -      | RB70              | -           | 150         | 6313 C3              | 65A    | 2/25   | 2/26 | N-end         |
| A20R | 250 | S2,M2          |    | 6314 C3              | -      | RB70              | -           | 150         | 6314 C3              | 70A    | 2/25   | 2/26 | N-end         |
| A20R | 250 | S4,6,8; M4,6,8 |    | 6316 C3              | -      | RB80              | -           | 170         | 6314 C3              | 70A    | 2/25   | 2/26 | N-end         |
| A20R | 280 | S2,M2          |    | 6316 C3              | -      | RB80              | -           | 170         | 6316 C3              | 80A    | 2/25   | 2/26 | N-end         |
| A20R | 280 | S4,6,8; M4,6,8 |    | 6317 C3              | -      | RB80              | -           | 180         | 6316 C3              | 80A    | 2/25   | 2/26 | N-end         |
| A20R | 315 | S2             |    |                      |        | see basic version |             |             |                      |        |        |      |               |
| A20R | 315 | S4,6,8         |    |                      |        | see basic version |             |             |                      |        |        |      |               |
| A20R | 315 | M2; L2         |    |                      |        | see basic version |             |             |                      |        |        |      |               |
| A20R | 315 | M4,6,8; L4,6,8 |    |                      |        | see basic version |             |             |                      |        |        |      |               |

\*) degree of protection IP 54

## Special version „heavy bearing arrangement“ VL

| Type |     |                    | D-end                |        |        | N-end                |        |  | Figure |      | Fixed bearing |
|------|-----|--------------------|----------------------|--------|--------|----------------------|--------|--|--------|------|---------------|
|      |     |                    | Antifriction bearing | V-ring | γ-ring | Antifriction bearing | V-ring |  | DS     | NS   |               |
| A21R | 132 | S, SX2,M6,8 VL     | NU 208 E             | 40A    | –      | 6207 RS C3           | –      |  | 2/14   | 2/21 | N-end         |
| A21R | 132 | M4,MX6 VL          | NU 308 E             | 40A    | –      | 6308 RS C3           | –      |  | 2/14   | 2/21 | N-end         |
| A21R | 160 | M, MX8 VL          | NU 309 E             | 45A    | –      | 6308 RS C3           | –      |  | 2/14   | 2/21 | N-end         |
| A21R | 160 | MX2, L VL          | NU 310 E             | 50A    | –      | 6309 RS C3           | –      |  | 2/5    | 2/21 | N-end         |
| A21R | 180 | M4, L6, 8 VL       | NU 310 E             | 50A    | –      | 6309 RS C3           | –      |  | 2/5    | 2/21 | N-end         |
| A21R | 180 | M2, L4 VL          | NU 310 E             | 50A    | –      | 6310 C3              | 50A    |  | 2/5    | 2/10 | N-end         |
| A21R | 200 | L, LX6 VL          | NU 312 E             | 60A    | –      | 6310 C3              | 50A    |  | 2/5    | 2/10 | N-end         |
| A21R | 200 | LX2 VL             | NU 312 E             | 60A    | –      | 6312 C3              | 60A    |  | 2/5    | 2/10 | N-end         |
| A21R | 225 | M2 VL              | NU 312 E             | –      | RB60   | 6312 C3              | 60A    |  | 2/22   | 2/23 | N-end         |
| A21R | 225 | S4, 8, M4,6,8 VL   | NU 313 E             | –      | RB65   | 6312 C3              | 60A    |  | 2/22   | 2/23 | N-end         |
| A21R | 250 | M2 VL              | NU 313 E             | –      | RB65   | 6313 C3              | 65A    |  | 2/22   | 2/23 | N-end         |
| A21R | 250 | M4,6,8 VL          | NU 314 E             | –      | RB70   | 6313 C3              | 65A    |  | 2/22   | 2/23 | N-end         |
| A21R | 280 | S2,M2 VL           | NU 314 E             | –      | RB70   | 6314 C3              | 70A    |  | 2/22   | 2/23 | N-end         |
| A21R | 280 | S4,6,8,M4,6,8 VL   | NU 316 E             | –      | RB80   | 6314 C3              | 70A    |  | 2/22   | 2/23 | N-end         |
| A21R | 315 | S2,M2 VL           | NU 316 E             | –      | RB80   | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A21R | 315 | S4,6,8,M4,6,8 VL   | NU 317 E             | –      | RB85   | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A21R | 315 | MX2 VL             | NU 317 E             | –      | RB85   | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A21R | 315 | MX4,6,8 VL         | NU 2220 E            | –      | RB100  | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A21R | 315 | MY2 VL             | NU 317 E             | –      | RB85   | 6317 C3 *)           | 85A    |  | 2/15   | 2/16 | N-end         |
| A21R | 315 | MY4,6,8 VL         | NU 320 E             | –      | RB100  | 6317 C3 *)           | 85A    |  | 2/15   | 2/16 | N-end         |
| A21R | 315 | L2, LX2 VL         | NU 317 E             | –      | RB85   | 6317 C3 *)           | 85A    |  | 2/15   | 2/16 | N-end         |
| A21R | 315 | L4,6,8, LX4,6,8 VL | NU 320 E             | –      | RB100  | 6317 C3 *)           | 85A    |  | 2/15   | 2/16 | N-end         |

\*) For vertical types of construction Q317 C3; Figures 2/15, 2/17  
from size 225 for heavy bearing arrangement as standard with relubricating facility

| Type |     |                   | D-end                |        |        | N-end                |        |  | Figure |      | Fixed bearing |
|------|-----|-------------------|----------------------|--------|--------|----------------------|--------|--|--------|------|---------------|
|      |     |                   | Antifriction bearing | V-ring | γ-ring | Antifriction bearing | V-ring |  | DS     | NS   |               |
| A20R | 112 | M2,4,6,8 VL       | NU 207 E             | 40A    | –      | 6207 RS C3           | –      |  | 2/14   | 2/21 | N-end         |
| A20R | 112 | MX6,8 VL          | NU 207 E             | 40A    | –      | 6207 RS C3           | –      |  | 2/14   | 2/21 | N-end         |
| A20R | 132 | S,M VL            | NU 308 E             | 40A    | –      | 6308 RS C3           | –      |  | 2/14   | 2/21 | N-end         |
| A20R | 160 | S,M VL            | NU 310 E             | 50A    | –      | 6309 RS C3           | –      |  | 2/5    | 2/21 | N-end         |
| A20R | 180 | S2,M2 VL          | NU 310 E             | 50A    | –      | 6310 C3              | 50A    |  | 2/5    | 2/10 | N-end         |
| A20R | 180 | S4,6,8; M4,6,8 VL | NU 312 E             | 60A    | –      | 6310 C3              | 50A    |  | 2/5    | 2/10 | N-end         |
| A20R | 200 | M2,L2 VL          | NU 312 E             | –      | RB60   | 6312 C3              | 60A    |  | 2/22   | 2/23 | N-end         |
| A20R | 200 | M4,6,8; L4,6,8 VL | NU 313 E             | –      | RB65   | 6312 C3              | 60A    |  | 2/22   | 2/23 | N-end         |
| A20R | 225 | M2 VL             | NU 313 E             | –      | RB65   | 6313 C3              | 65A    |  | 2/22   | 2/23 | N-end         |
| A20R | 225 | M4,6,8 VL         | NU 314 E             | –      | RB70   | 6313 C3              | 65A    |  | 2/22   | 2/23 | N-end         |
| A20R | 250 | S2,M2 VL          | NU 314 E             | –      | RB70   | 6314 C3              | 70A    |  | 2/22   | 2/23 | N-end         |
| A20R | 250 | S4,6,8; M4,6,8 VL | NU 316 E             | –      | RB80   | 6314 C3              | 70A    |  | 2/22   | 2/23 | N-end         |
| A20R | 280 | S2,M2 VL          | NU 316 E             | –      | RB80   | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A20R | 280 | S4,6,8; M4,6,8 VL | NU 317 E             | –      | RB85   | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A20R | 315 | S2 VL             | NU 317 E             | –      | RB85   | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A20R | 315 | S4,6,8 VL         | NU 2220 E            | –      | RB100  | 6316 C3              | 80A    |  | 2/22   | 2/23 | N-end         |
| A20R | 315 | M2; L2 VL         | NU 317 E             | –      | RB85   | 6317 C3 *)           | 85A    |  | 2/15   | 2/16 | N-end         |
| A20R | 315 | M4,6,8; L4,6,8 VL | NU 320 E             | –      | RB100  | 6317 C3 *)           | 85A    |  | 2/15   | 2/16 | N-end         |

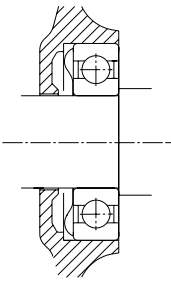
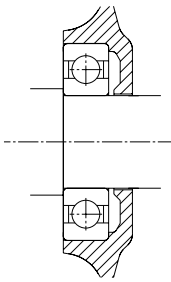
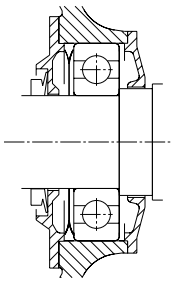
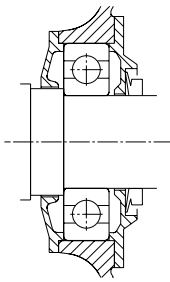
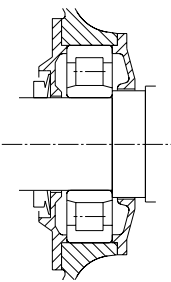
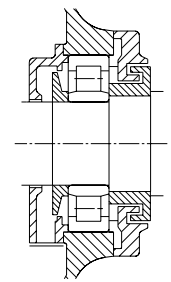
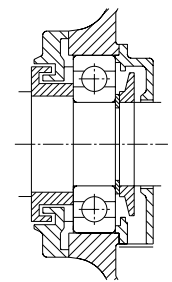
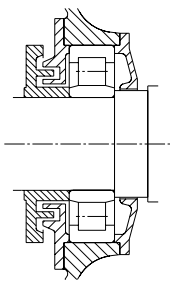
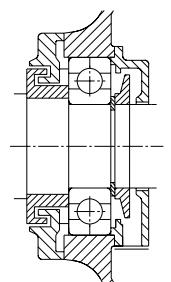
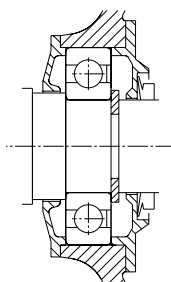
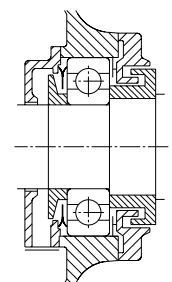
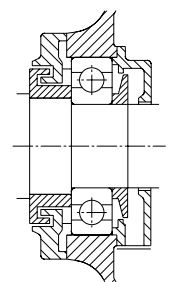
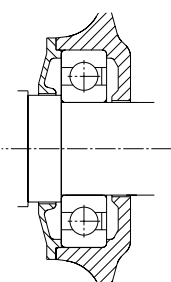
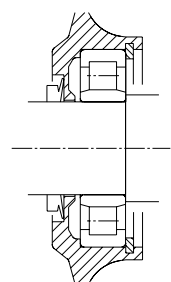
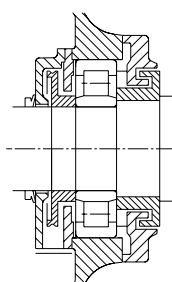
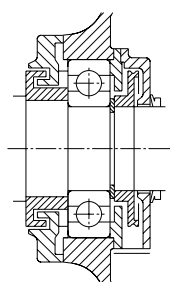
\*) For vertical types of construction Q317 C3; Figures 2/15, 2/17  
from size 200 for heavy bearing arrangement as standard with relubricating facility

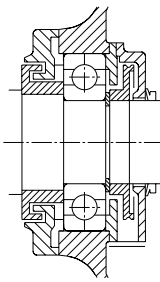
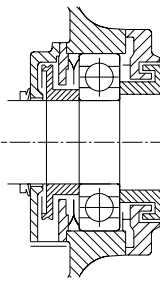
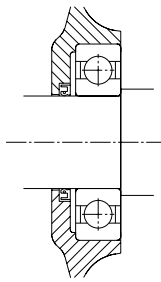
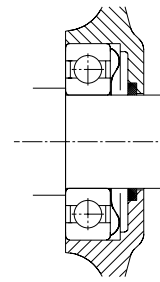
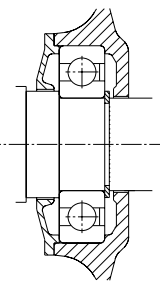
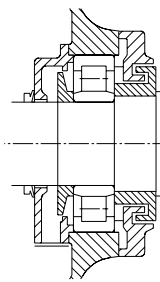
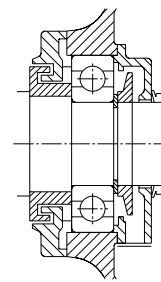
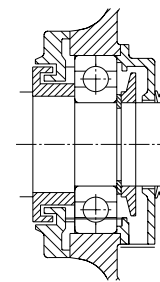
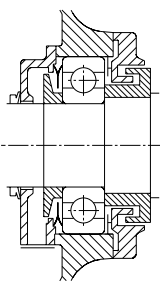
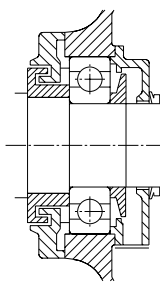
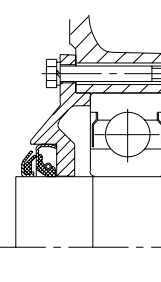
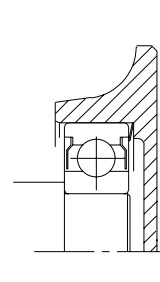
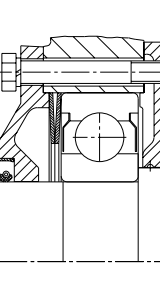
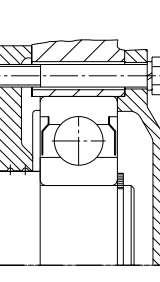
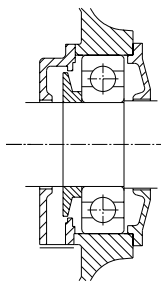
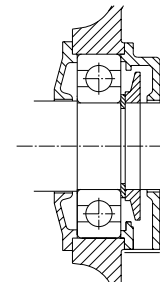
## Basic version

| Type |     |       | D-end                |                  |             |             | N-end                |  | Figure |      |               |
|------|-----|-------|----------------------|------------------|-------------|-------------|----------------------|--|--------|------|---------------|
|      |     |       | Antifriction bearing | Stefa-KOMBI-ring | Wave washer | Disk spring | Antifriction bearing |  | DS     | NS   | Fixed bearing |
| ARC  | 112 | M, MX | 6207 2Z C3           | 351              | 72          |             | 6207 2Z C3           |  | 2/27   | 2/28 | without       |
| ARC  | 132 | S,M   | 6308 2Z C3           | 401              | 90          | –           | 6308 2Z C3           |  | 2/27   | 2/28 | without       |
| ARC  | 160 | S,M   | 6310 2Z C3           | 501              | 110         | –           | 6310 2Z C3           |  | 2/27   | 2/28 | without       |
| ARC  | 180 | S, M  | 6312 2Z C3           | 601              | –           | 130         | 6312 2Z C3           |  | 2/29   | 2/30 | N-end         |
| ARC  | 200 | S, M  | 6313 2Z C3           | 651              | –           | 140         | 6313 2Z C3           |  | 2/29   | 2/30 | N-end         |
| ARC  | 225 | M     | 6314 2Z C3           | 702              | –           | 150         | 6314 2Z C3           |  | 2/29   | 2/30 | N-end         |
| ARC  | 250 | S, M  | 6316 2Z C3           | 801              | –           | 170         | 6316 2Z C3           |  | 2/29   | 2/30 | N-end         |
| ARC  | 280 | S, M  | 6317 2Z C3           | 851              | –           | 180         | 6317 2Z C3           |  | 2/29   | 2/30 | N-end         |
| ARC  | 315 | M, MX | 6317 2Z C3           | 851              | –           | 180         | 6317 2Z C3           |  | 2/29   | 2/30 | N-end         |
| ARC  | 315 | L, LX | 6317 2Z C3           | 851              | –           | 215         | 6317 2Z C3           |  | 2/29   | 2/30 | N-end         |

## Basic version

| Type |    | D-end      |  | N-end      |  | Figure |      | Fixed bearing |
|------|----|------------|--|------------|--|--------|------|---------------|
|      |    |            |  |            |  | DS     | NS   |               |
| ARB  | 22 | 6306 S1 C5 |  | 6310 S1 C5 |  | 2/31   | 2/32 | N-end         |
| ARB  | 33 | 6306 S1 C5 |  | 6310 S1 C5 |  | 2/31   | 2/32 | N-end         |
| ARB  | 54 | 6306 S1 C5 |  | 6310 S1 C5 |  | 2/31   | 2/32 | N-end         |
| ARB  | 65 | 6306 S1 C5 |  | 6310 S1 C5 |  | 2/31   | 2/32 | N-end         |

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |
| Figure 2/1                                                                          | Figure 2/2                                                                          | Figure 2/3                                                                           | Figure 2/4                                                                            |
|  |  |  |  |
| Figure 2/5                                                                          | Figure 2/6                                                                          | Figure 2/7                                                                           | Figure 2/8                                                                            |
|  |  |  |  |
| Figure 2/9                                                                          | Figure 2/10                                                                         | Figure 2/11                                                                          | Figure 2/12                                                                           |
|  |  |  |  |
| Figure 2/13                                                                         | Figure 2/14                                                                         | Figure 2/15                                                                          | Figure 2/16                                                                           |

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |
| Figure 2/17                                                                         | Figure 2/18                                                                         | Figure 2/19                                                                          | Figure 2/20                                                                           |
|  |  |  |  |
| Figure 2/21                                                                         | Figure 2/22                                                                         | Figure 2/23                                                                          | Figure 2/24                                                                           |
|  |  |  |  |
| Figure 2/25                                                                         | Figure 2/26                                                                         | Figure 2/27                                                                          | Figure 2/28                                                                           |
|  |  |  |  |
| Figure 2/29                                                                         | Figure 2/30                                                                         | Figure 2/31                                                                          | Figure 2/32                                                                           |

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synchronous speed 3000, 1500, 1000, 750 rpm

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- variable voltage design
- motors with built-on star-delta switch
- explosion protected motors in version EEx e, EEx d and Ex nA
- motors for use onboard of ships
- dairy version
- force-ventilated motors for converter feeding
- versions with thermal winding protection
- higher degrees of protection up to IP 67 S
- Built-in motors 0,06 - 90 kW

**Geared motors**

- spur-gearred motors
- spur-worm geared motors
- variable speed geared motors

**Asynchronous motors**  
from size 400, degree of protection IP 55,  
low voltage version  
squirrel-cage or slipring rotor above 500 kW  
with mechanical and electrical modifications

**Single-phase asynchronous motors**  
size 56 - 112  
squirrel-cage rotor, IP 55  
with run capacitor, 0,06 - 3,0 kW

**Frequency converters and soft-starters for three-phase asynchronous motors**

- frequency converters for variable-speed three-phase drives 0,25 - 500 kW
- soft-starters for variable-speed three-phase drives 0,75 - 500 kW

**Special three-phase motors**  
for drives on

- cranes in metallurgical plants up to 400 kW
- cranes and winches in the shipbuilding industry 0,12 - 300 kW
- roller tables up to 160 kW

**Appliance motors**

- Three-phase motors for special applications
- Built-in motors, eg. for refrigerating

**Three-phase asynchronous generators**

- 4 - 500 kVA

**Compact Drives**

- with integrated frequency inverter sizes 80 - 180, self-cooled or Forced-cooled design  
vector control to 7,5 kW  
Field-oriented control 5,5 bis 22 kW



# We get things moving

## VEM motors GmbH



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