

# Motor Selection with Examples

## A) Electrical requirements

The performance charts are type-specific and show the motor's maximum output for the associated frequency (speed). This always requires a particular winding configuration. The motors are then selected based on the operating requirements.

### 1) Fixed speed

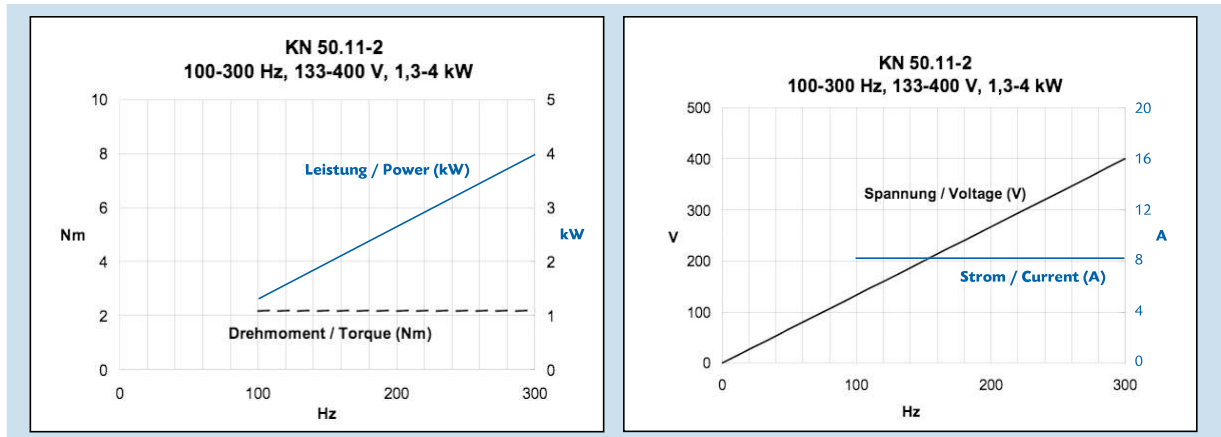
Example: 4 kW desired at 18,000 rpm  
Results in Type KN 50.11-2 on p. 6, column 300 Hz

### 2) Variable-speed operation

Here, the required output is assigned to a given frequency.  
Example: 4 kW desired for a speed range of 6,000 to 18,000 rpm  
This request may require various motor configurations, e.g.,

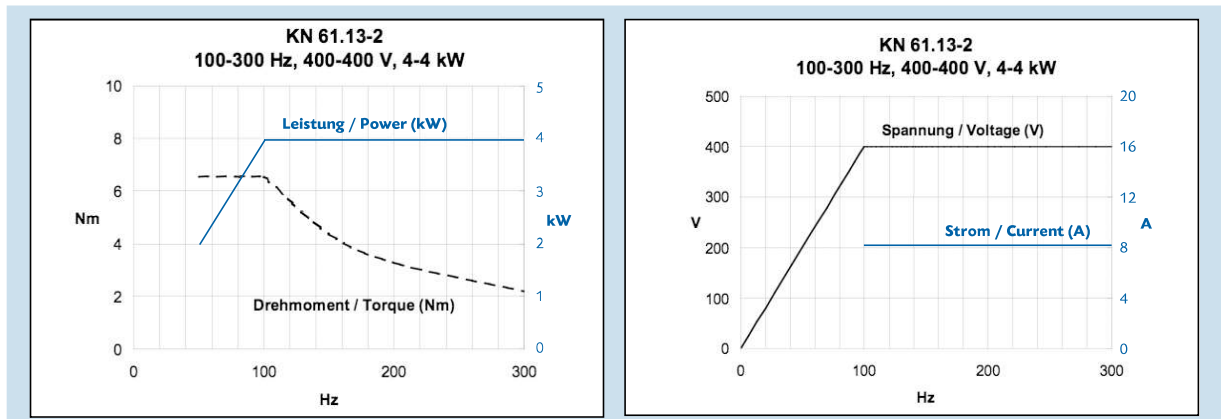
#### 2.1) Maximum output is required at 18,000 rpm and output may fall off below that.

**"Constant torque"** operating mode  
results in type KN 50.11-2 on p. 6, column 300 Hz with the following characteristics:



#### 2.2) Max. output is already required at 6,000 rpm, without output increase up to 18,000 rpm.

**"Constant output"** operating mode now  
results in a bigger motor, Type KN 61.13-2 on p. 6, column 100 Hz with the following characteristics:



## B) Mechanical requirements

For a given motor-size, the bearing limits the maximum possible shaft diameter. If the required shaft end is bigger, then a bigger motor must be selected than needed in terms of output. This shall be verified on a case-by-case basis. The indicated maximum shaft diameters do not correspond to the basic models. The associated maximum speed depends on the bearing and application. Further inquiry is necessary. The drawings depicted here are non-binding; all dimensions are in mm. The valid drawings are provided with the order confirmation.



## Basic Model

**Housing:** Aluminum  
**Bearing shield:** Aluminum  
**Impregnation:** Vacuum technology  
**Protection class:** IP 54

## Model KN 20 V 30

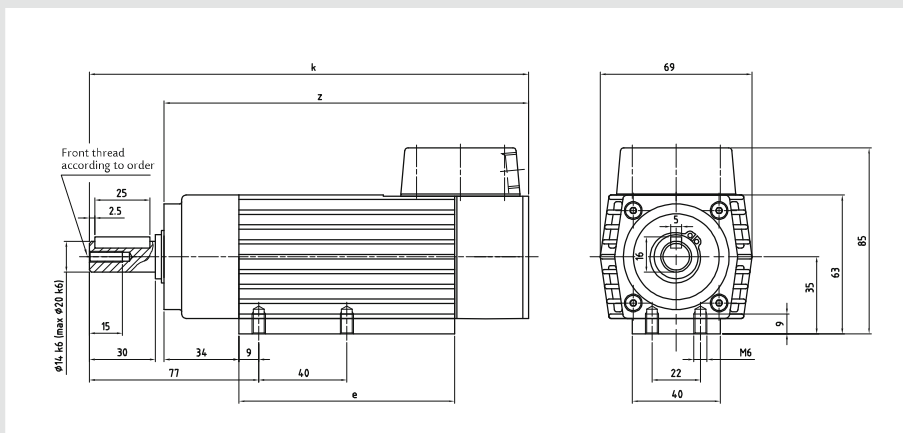
Type	Weight [kg]	Rated output [kW]					
		S1					
		100 Hz 6,000 rpm	150 Hz 9,000 rpm	200 Hz 12,000 rpm	300 Hz 18,000 rpm	400 Hz 24,000 rpm	500 Hz 30,000 rpm
KN 21.05-2	1.8	-	0.15	0.2	0.32	0.4	0.4
KN 22.08-2	2.1	-	0.24	0.32	0.5	0.6	0.6
KN 23.10-2	2.9	-	0.3	0.4	0.6	0.7	-
V 30.06-2	2.7	0.2	0.3	0.42	0.6	0.65	0.65
V 31.09-2	3.4	0.3	0.45	0.65	0.9	1.0	1.0

Only available with single-bearing

Values in table pertain to the drawings depicted below.  
The maximum shaft diameter or customer-specific designs can influence the values.

### KN 20 Single-bearing

#### Drawing MS 151

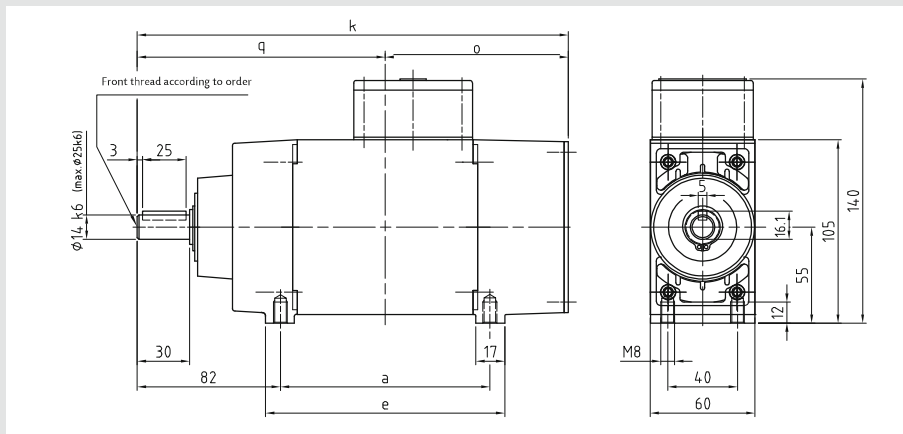


Type	e	k	z
KN 21.05	98	200	166
KN 22.08	133	235	201
KN 23.10	153	255	221

Max. shaft diameter 20 mm

### V 30 Single-bearing

#### Drawing MS 132



Type	a	e	k	o	q
V 30	90	108	217	90	127
V 31	120	138	247	105	142

Max. shaft diameter 25 mm