

# DRUM MOTOR 165LS

165.0Ø 0.11kW - 2.20kW, with steel helical gearbox

## Product description

The drum motor 165LS is able to provide high torques and withstand high radial loads.

### Characteristics

- Salt water resistant aluminum bearing housing
- Three phase AC induction motor
- Dual voltage
- Integral motor protection
- Steel- hardened helical spur gear
- Low noise operation
- Maintenance free
- Lifetime lubrication
- Reversible operation

### Applications

- Conveyors for heavy and frequent use
- Logistics applications
- Airport and postal conveyors
- Warehouse loading conveyors
- Telescopic conveyors
- Agricultural plants
- Manufacturing of food processes
- Modular belts, steel or plastic applications
- Dry, damp and frequent wash applications

## TECHNICAL DATA

### Motor Data

|                                        |                                                          |
|----------------------------------------|----------------------------------------------------------|
| Type of Motor                          | Asynchronous squirrel-cage, IEC 34 (VDE 0530)            |
| Insulation class of motor windings     | Class F, IEC 34 (VDE 0530)                               |
| Derated windings (20% power reduction) | On request for applications without belt                 |
| Voltage                                | 230/400 V ± 5% (IEC 34/38)<br>Special voltage on request |
| Frequency                              | 50/60 Hz                                                 |
| Internal shaft sealing system          | Double-lipped FPM or nitrile rubber, NBR                 |
| Protection rate                        | IP66, IP69 in TS8N Version                               |
| Thermal protection                     | Bimetallic Contact                                       |
| Ambient temperature, 3-phase motor     | -25 to +40 °C                                            |
| General technical data                 |                                                          |
| Max. Roller length (RL)                | 2000 mm                                                  |

All data and values declared in the catalogue refer to operation with a frequency of 50 Hz.



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## Materials

The following drum motor components are available in different versions, as shown in the below chart, with further options for the material type as indicated.

| Components            | Version                           | Material  |       |                 |               |         |
|-----------------------|-----------------------------------|-----------|-------|-----------------|---------------|---------|
|                       |                                   | Aluminium | Steel | Stainless Steel | Brass /Nickel | Polymer |
| Shell                 | Crowned                           |           | Std   | TS8N            |               |         |
|                       | Cylindrical                       |           | Std   | TS8N            |               |         |
|                       | Cylindrical + key (for sprockets) |           | Std   | TS8N            |               |         |
|                       | Special crowns and grooves        |           | Std   | TS8N            |               |         |
| End housing           | Standard                          | Std       |       | TS8N            |               |         |
|                       | With V-grooves                    |           | Std   | TS8N            |               |         |
|                       | With O-grooves                    |           | Std   | TS8N            |               |         |
|                       | With chain sprockets              |           | Std   | TS8N            |               |         |
| Shaft                 | Standard                          |           | Std   | TS8N            |               |         |
|                       | Cross-drilled and threaded, M10   |           | Std   | TS8N            |               |         |
| Electrical connection | Straight connector                |           |       | TS8N            | Std           |         |
|                       | Elbow connector                   |           |       | TS8N            |               | Std     |
|                       | Terminal box                      | Std       |       | TS8N            |               |         |

Please contact Rulmeca for further versions.

**TS8N Version** - End Caps in stainless steel with PTFE lip seals.

## Options

- Rubber Lagging for standard belts
- Profiled lagging for plastic modular belts
- Profiled lagging for thermoplastic belts
- Sprockets for plastic modular belts
- Backstop / Anti run-back bearings
- Electromagnetic brake
- Rectifiers
- Encoder
- Food-grade Oil (EU, FDA and USDA)
- Non-horizontal mounting (more than  $\pm 5^\circ$ )
- Dual speed motor
- Version TS7N - as TS8N but with re-greasable labyrinth seals

## Note

The combination of encoder and electromagnetic brake is not possible.

## Accessories

- Mounting brackets
- Idler Pulleys
- Rollers for conveyors
- Frequency Converters

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TECHNICAL DATA DRUM MOTOR 165LS - 3PHASE - 50HZ - STANDARD

| P <sub>N</sub><br>[kW] | np<br>(rpm) | I <sub>r</sub><br>[A] | gs | i     | V <sub>A</sub><br>[m/s] | V <sub>N</sub><br>[m/s] | n <sub>A</sub><br>[min <sup>-1</sup> ] | M <sub>N</sub><br>[Nm] | F <sub>T</sub><br>[N] | RL<br>[mm]          |
|------------------------|-------------|-----------------------|----|-------|-------------------------|-------------------------|----------------------------------------|------------------------|-----------------------|---------------------|
| 0.11                   | 12<br>(470) | 1.7/0.98              | 3  | 75.03 | 0.05                    | 0.05                    | 6                                      | 159                    | 1934                  | min 400<br>max 1800 |
|                        |             |                       |    | 61.56 | 0.07                    | 0.06                    | 8                                      | 131                    | 1587                  |                     |
|                        |             |                       |    | 49.75 | 0.08                    | 0.08                    | 9                                      | 106                    | 1282                  |                     |
|                        |             |                       | 2  | 37.93 | 0.11                    | 0.10                    | 12                                     | 81                     | 978                   |                     |
| 0.37                   | 6<br>(920)  | 2.35/1.35             | 3  | 75.03 | 0.11                    | 0.10                    | 12                                     | 274                    | 3323                  | min 400<br>max 1800 |
|                        |             |                       |    | 61.56 | 0.13                    | 0.13                    | 15                                     | 225                    | 2727                  |                     |
|                        |             |                       |    | 49.75 | 0.16                    | 0.16                    | 18                                     | 182                    | 2203                  |                     |
|                        | 4<br>(1375) | 1.9/1.1               | 3  | 61.56 | 0.19                    | 0.20                    | 22                                     | 150                    | 1824                  | min 350<br>max 1800 |
|                        |             |                       |    | 49.75 | 0.24                    | 0.25                    | 28                                     | 121                    | 1474                  |                     |
|                        |             |                       |    | 37.93 | 0.31                    | 0.32                    | 36                                     | 93                     | 1124                  |                     |
|                        |             |                       |    | 30.05 | 0.39                    | 0.40                    | 46                                     | 73                     | 891                   |                     |
|                        |             |                       | 2  | 23.76 | 0.50                    | 0.50                    | 58                                     | 58                     | 704                   |                     |
|                        |             |                       |    | 19.20 | 0.62                    | 0.63                    | 72                                     | 47                     | 569                   |                     |
|                        |             |                       |    | 14.64 | 0.81                    | 0.80                    | 94                                     | 36                     | 434                   |                     |
| 0.75                   | 6<br>(945)  | 4.65/2.7              | 3  | 11.60 | 1.02                    | 1.00                    | 119                                    | 28                     | 344                   |                     |
|                        | 4<br>(1405) | 3.5/2.0               | 3  | 46.23 | 0.18                    | 0.16                    | 20                                     | 333                    | 4041                  | min 400<br>max 1800 |
|                        |             |                       |    | 61.56 | 0.20                    | 0.20                    | 23                                     | 298                    | 3619                  |                     |
|                        |             |                       |    | 49.75 | 0.24                    | 0.25                    | 28                                     | 241                    | 2925                  |                     |
|                        |             |                       |    | 37.93 | 0.32                    | 0.32                    | 37                                     | 184                    | 2230                  |                     |
|                        |             |                       | 2  | 30.05 | 0.40                    | 0.40                    | 47                                     | 146                    | 1767                  |                     |
|                        |             |                       |    | 23.76 | 0.51                    | 0.50                    | 59                                     | 115                    | 1397                  |                     |
|                        |             |                       |    | 19.20 | 0.63                    | 0.63                    | 73                                     | 93                     | 1129                  |                     |
|                        |             |                       |    | 14.64 | 0.83                    | 0.80                    | 96                                     | 71                     | 861                   |                     |
|                        |             |                       |    | 11.60 | 1.04                    | 1.00                    | 121                                    | 56                     | 682                   |                     |
|                        |             |                       |    |       |                         |                         |                                        |                        |                       |                     |
| 1.10                   | 4<br>(1420) | 4.7/2.7               | 3  | 46.23 | 0.26                    | 0.25                    | 31                                     | 325                    | 3944                  | min 400<br>max 1800 |
|                        |             |                       |    | 37.93 | 0.32                    | 0.32                    | 37                                     | 267                    | 3236                  |                     |
|                        | 2<br>(2830) | 4.1/2.35              | 3  | 61.56 | 0.40                    | 0.40                    | 46                                     | 217                    | 2635                  |                     |
|                        |             |                       |    | 49.75 | 0.49                    | 0.50                    | 57                                     | 175                    | 2130                  |                     |
|                        |             |                       |    | 37.93 | 0.64                    | 0.63                    | 75                                     | 134                    | 1624                  |                     |
|                        |             |                       |    | 30.05 | 0.81                    | 0.80                    | 94                                     | 106                    | 1286                  |                     |
|                        |             |                       | 2  | 23.76 | 1.03                    | 1.00                    | 119                                    | 84                     | 1017                  |                     |
|                        |             |                       |    | 19.20 | 1.27                    | 1.25                    | 147                                    | 68                     | 822                   |                     |
|                        |             |                       |    | 14.64 | 1.67                    | 1.60                    | 193                                    | 52                     | 627                   |                     |
|                        |             |                       |    | 11.60 | 2.10                    | 2.00                    | 244                                    | 41                     | 497                   |                     |
|                        |             |                       |    | 9.43  | 2.59                    | 2.50                    | 300                                    | 33                     | 404                   |                     |
|                        |             |                       |    |       |                         |                         |                                        |                        |                       |                     |

P<sub>N</sub> Nominal mechanical power  
 np Number of poles  
 rpm Actual rotor rpm at full load  
 I<sub>r</sub> Amperage (230/400V) at full load  
 gs Gear stages  
 i Gear ratio

V<sub>A</sub> Theoretical actual belt (tangential) speed at full load\*  
 V<sub>N</sub> Nominal belt (tangential) speed  
 n<sub>A</sub> Revolutions of shell at full load\*  
 M<sub>N</sub> Nominal Torque at full load  
 F<sub>T</sub> Belt pull (tangential force) on shell at full load\*

RL Reference length  
 \* Valid for unlagged shells / values can deviate at partly or no load conditions

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165.0Ø 0.11kW - 2.20kW, with steel helical gearbox

TECHNICAL DATA DRUM MOTOR 165LS - 3PHASE - 50HZ - STANDARD

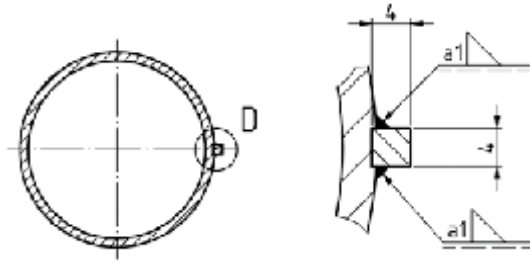
| $P_N$<br>[kW] | np<br>(rpm) | $I_f$<br>[A] | gs | i     | $V_A$<br>[m/s] | $V_N$<br>[m/s] | $n_A$<br>[min <sup>-1</sup> ] | $M_N$<br>[Nm] | $F_T$<br>[N] | RL<br>[mm]          |
|---------------|-------------|--------------|----|-------|----------------|----------------|-------------------------------|---------------|--------------|---------------------|
| 1.50          | 2<br>(2850) | 5.8/3.35     | 3  | 46.23 | 0.53           | 0.50           | 62                            | 221           | 2680         | min 400<br>max 1800 |
|               |             |              |    | 37.93 | 0.65           | 0.63           | 75                            | 181           | 2199         |                     |
|               |             |              |    | 30.05 | 0.82           | 0.80           | 95                            | 143           | 1742         |                     |
|               |             |              | 2  | 23.76 | 1.03           | 1.00           | 120                           | 113           | 1377         |                     |
|               |             |              |    | 19.20 | 1.28           | 1.25           | 148                           | 92            | 1113         |                     |
|               |             |              |    | 14.64 | 1.68           | 1.60           | 195                           | 70            | 849          |                     |
|               |             |              |    | 11.60 | 2.12           | 2.00           | 246                           | 55            | 672          |                     |
|               |             |              |    | 9.43  | 2.61           | 2.50           | 302                           | 45            | 547          |                     |
|               |             |              |    | 7.80  | 3.15           | 3.15           | 365                           | 37            | 452          |                     |
|               |             |              |    |       |                |                |                               |               |              |                     |
| 2.20          | 2<br>(2860) | 8.15/4.7     | 3  | 46.23 | 0.53           | 0.50           | 62                            | 323           | 3916         | min 430<br>max 1800 |
|               |             |              |    | 37.93 | 0.65           | 0.63           | 75                            | 265           | 3213         |                     |
|               |             |              |    | 30.05 | 0.82           | 0.80           | 95                            | 210           | 2546         |                     |
|               |             |              |    | 24.43 | 1.01           | 1.00           | 117                           | 170           | 2070         |                     |
|               |             |              |    | 20.21 | 1.22           | 1.25           | 142                           | 141           | 1712         |                     |
|               |             |              | 2  | 14.64 | 1.69           | 1.60           | 195                           | 102           | 1240         |                     |
|               |             |              |    | 11.60 | 2.13           | 2.00           | 247                           | 81            | 983          |                     |
|               |             |              |    | 9.43  | 2.62           | 2.50           | 303                           | 66            | 799          |                     |
|               |             |              |    | 7.80  | 3.16           | 3.15           | 367                           | 54            | 661          |                     |
|               |             |              |    |       |                |                |                               |               |              |                     |

$P_N$  Nominal mechanical power  
 np Number of poles  
 rpm Actual rotor rpm at full load  
 $I_f$  Amperage (230/400V) at full load  
 gs Gear stages  
 i Gear ratio  
 $V_A$  Theoretical actual belt (tangential) speed at full load\*  
 $V_N$  Nominal belt (tangential) speed  
 $n_A$  Revolutions of shell at full load\*

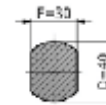
$M_N$  Nominal Torque at full load  
 $F_T$  Belt pull (tangential force) on shell at full load\*  
 RL Reference length  
 \* Valid for unlugged shells / values can deviate at partly or no load conditions

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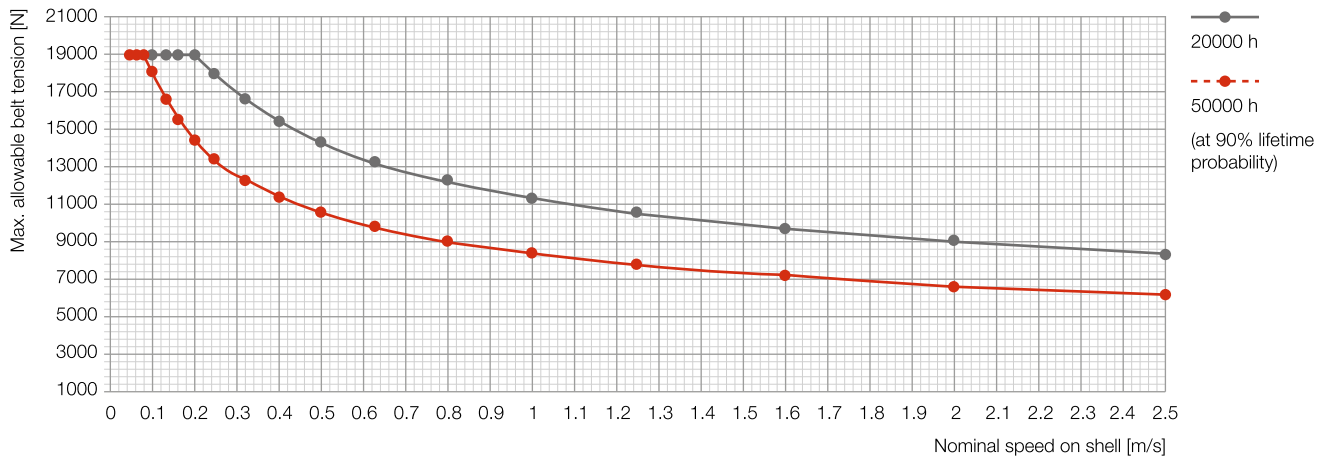


Drum motor with key 4x4



Standard shaft

## Belt tension diagrams



For the right allowable belt tension value please check the accordant nominal speed on the drum motor shell.

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STANDARD WEIGHT DATA DRUM MOTOR 165LS

| P <sub>N</sub>  | np | Standard weight [kg] for standard RL [mm] |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------------|----|-------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                 |    | 350                                       | 400  | 450  | 500  | 550  | 600  | 650  | 700  | 750  | 800  | 850  | 900  | 950  | 1000 |
| 0.11            | 12 | ---                                       | 30.0 | 31.5 | 33.0 | 34.0 | 35.0 | 36.0 | 37.5 | 39.0 | 40.0 | 41.0 | 42.5 | 44.0 | 45.0 |
|                 | 6  | ---                                       | 30.0 | 31.5 | 33.0 | 34.0 | 35.0 | 36.0 | 37.5 | 39.0 | 40.0 | 41.0 | 42.5 | 44.0 | 45.0 |
| 0.37            | 4  | 26.0                                      | 28.0 | 29.5 | 31.0 | 32.0 | 33.0 | 34.0 | 35.5 | 37.0 | 38.0 | 39.0 | 40.5 | 42.0 | 43.0 |
|                 | 6  | ---                                       | 33.0 | 34.5 | 36.0 | 37.0 | 38.0 | 39.0 | 40.5 | 42.0 | 43.0 | 44.0 | 45.5 | 47.0 | 48.0 |
| 0.75            | 4  | ---                                       | 31.0 | 32.5 | 34.0 | 35.0 | 36.0 | 37.0 | 38.5 | 40.0 | 41.0 | 42.0 | 43.5 | 45.0 | 46.0 |
|                 | 6  | ---                                       | 34.0 | 35.5 | 37.0 | 38.0 | 39.0 | 40.0 | 41.5 | 43.0 | 44.0 | 45.0 | 46.5 | 48.0 | 49.0 |
| 1.10            | 2  | ---                                       | 33.0 | 34.5 | 36.0 | 37.0 | 38.0 | 39.0 | 40.5 | 42.0 | 43.0 | 44.0 | 45.5 | 47.0 | 48.0 |
|                 | 4  | ---                                       | 34.0 | 35.5 | 37.0 | 38.0 | 39.0 | 40.0 | 41.5 | 43.0 | 44.0 | 45.0 | 46.5 | 48.0 | 49.0 |
| 1.50            | 2  | ---                                       | 34.0 | 35.5 | 37.0 | 38.0 | 39.0 | 40.0 | 41.5 | 43.0 | 44.0 | 45.0 | 46.5 | 48.0 | 49.0 |
|                 | 4  | ---                                       | 37.0 | 37.5 | 38.0 | 39.0 | 40.0 | 41.0 | 42.5 | 44.0 | 45.0 | 46.0 | 47.5 | 49.0 | 50.0 |
| 2.20            | 2  | ---                                       | 37.0 | 37.5 | 38.0 | 39.0 | 40.0 | 41.0 | 42.5 | 44.0 | 45.0 | 46.0 | 47.5 | 49.0 | 50.0 |
| idler (UT165LS) | -  | 12.5                                      | 14.0 | 15.5 | 17.0 | 18.5 | 20.0 | 21.5 | 23.0 | 24.5 | 26.0 | 27.5 | 29.0 | 30.5 | 32.0 |

## Cable specification

Available cable options:

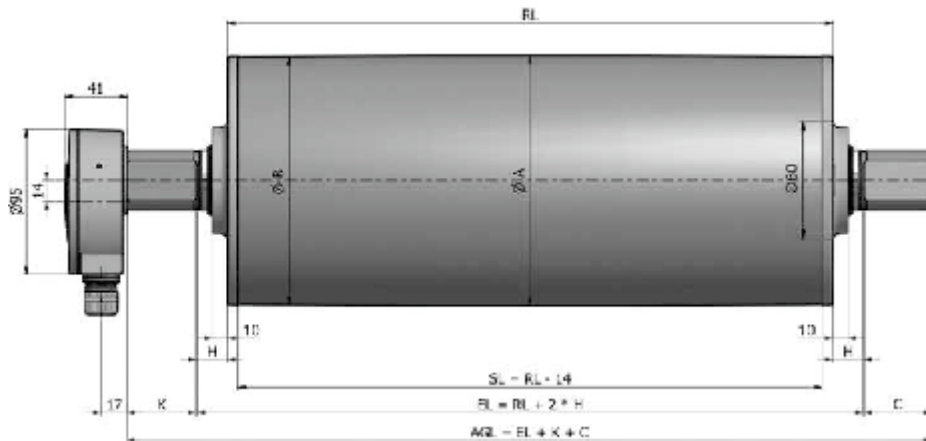
- Standard, screened
- Standard, unscreened
- Halogen-free, screened
- Halogen-free, unscreened

Available lengths: 1/3/5 m.

## Min. length with option

The following options increase the minimum length of the drum motor

| Option      | RL min with option mm |
|-------------|-----------------------|
| Brake       | RL min. + 50 mm       |
| Encoder SKF | RL min. + 0 mm        |
| Encoder RLS | RL min. + 50 mm       |



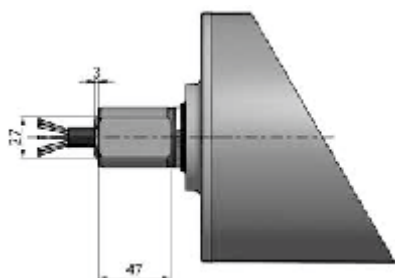
Drum motor with terminal box in aluminium

| Drum shell shape     | ØA [mm] | ØB [mm] |
|----------------------|---------|---------|
| Crowned              | 165.0   | 163.5   |
| Cylindrical          | 164.75  | 164.75  |
| Cylindrical with key | 162.0   | 162.0   |

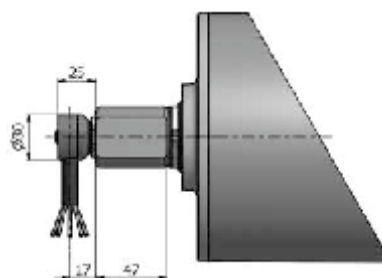
| Shaft dimension | Width across flats [mm] | H [mm] | K [mm] | C [mm] |
|-----------------|-------------------------|--------|--------|--------|
| Ø40mm           | 30.0                    | 20.0   | 47.0   | 45.0   |

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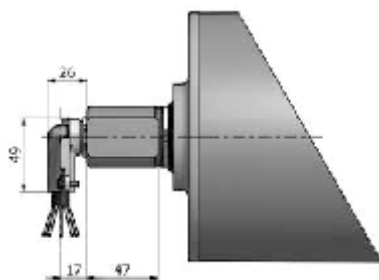
165.0Ø 0.11kW - 2.20kW, with steel helical gearbox



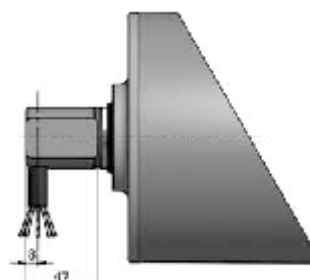
Straight connector in brass or stainless steel



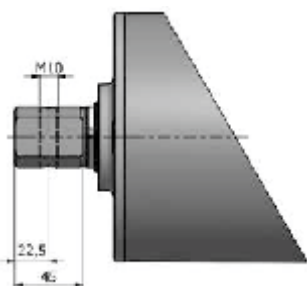
Elbow connector in stainless steel



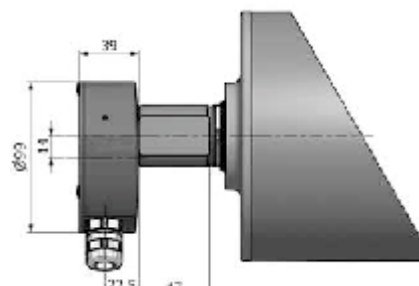
Elbow connector in aluminium



Cable slot 90° with threaded shaft



Cross-drilled and threaded shaft



Terminal box in stainless steel