

Standard
Asynchronous
Drum Motors
138i

INTERROLL DRUM MOTOR 138i

Strong powerful drive for conveyors with high-duty cycles

Product Description

- Applications** The drum motor is a real all-round component because of its wide power and speed range.
- ✓ Conveyors with high-duty cycles
 - ✓ Transport conveyors
 - ✓ Logistics applications
 - ✓ Airport check-in conveyors
 - ✓ Mobile conveyors
 - ✓ Food processing
 - ✓ Steel or plastic modular belt applications
 - ✓ Dry, wet and wash-down applications
- Characteristics**
- ✓ Salt-water-resistant aluminium end housings
 - ✓ 3-phase AC induction motor
 - ✓ Dual voltage
 - ✓ Integral thermal motor protection
 - ✓ Steel-hardened helical spur gear
 - ✓ Low noise
 - ✓ Maintenance-free
 - ✓ Lifetime lubricated
 - ✓ Reversible
 - ✓ Reinforced shaft for SL above 900 mm

Technical Data

| Electrical data | |
|---|--|
| Motor type | Asynchronous squirrel cage motor, IEC 34 (VDE 0530) |
| Insulation class of motor windings | Class F, IEC 34 (VDE 0530) |
| Voltage | 230/400 V ±5 % (IEC 34/38) Most international voltages and frequencies can be supplied on request |
| Frequency | 50 Hz |
| Internal shaft sealing system | Double-lipped, FPM |
| Protection rate | IP66 |
| Thermal protection (see p 245) | Bi-metal switch |
| Operating modes (see p 230) | S1 |
| Ambient temperature, 3-phase motor (see p 207) | +5 to +40 °C |
| Ambient temperature, 3-phase motor for applications with positive drive belts, or without belts (see p 207) | +5 to +25 °C |
| General technical data | |
| Max. shell length SL | 1,600 mm |

Order Information

Please refer to the Configurator at the end of the catalogue..

Material Versions

You can choose the following versions of drum body components and electrical connection. The versions depend on the material of the components.

| Component | Version | Material | | | | |
|----------------------|--|-----------|------------|-----------------|----------------|----------------|
| | | Aluminium | Mild steel | Stainless steel | Brass / Nickel | Techno-polymer |
| Shell | Crowned | | ✓ | ✓ | | |
| | Cylindrical | | ✓ | ✓ | | |
| | Cylindrical + key, for using sprockets | | ✓ | ✓ | | |
| End housing | Standard | ✓ | | ✓ | | |
| | With grooves or chain sprockets | ✓ | | ✓ | | |
| Shaft | Standard | | ✓ | ✓ | | |
| | Cross-drilled thread, M8 | | ✓ | ✓ | | |
| External seal | Galvanised labyrinth | | ✓ | | | |
| | Stainless steel labyrinth | | | ✓ | | |
| Electrical connector | Straight connector | | | ✓ | ✓ | |
| | Elbow connector | | | ✓ | | ✓ |
| | Terminal box | ✓ | | ✓ | | ✓ |

Please contact your Interroll customer consultant for further versions.

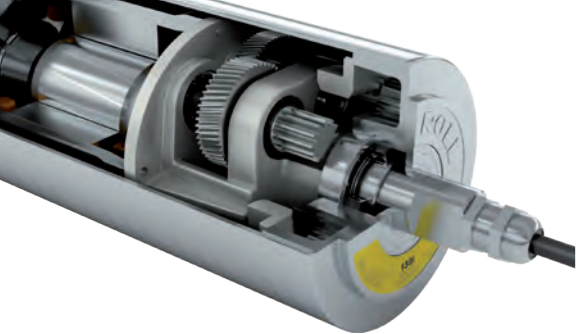
Options

- Lagging for friction drive belts, see p 128
- Lagging for plastic modular belts, see p 134
- Lagging for positive drive solid homogeneous belts, see p 138
- Multiprofile for positive drive solid homogeneous belts, see p 140
- Sprockets for plastic modular belts, see p 142
- Backstops, see p 150
- Balancing, see p 151
- Electromagnetic brakes and rectifiers, see p 152
- Feedback Devices, see p 158
- Food-grade oil (EU, FDA), see p 256
- Low temperature oil, see p 256
- Labyrinth with FPM, see p 248
- cULus safety certifications, see p 251
- Non-horizontal mounting (more than ± 5°), see p 231

Note: Combination of encoder and electromagnetic brake is not possible.

Accessories

- Mounting brackets, see p 168
- Idler pulleys, see p 178 to p 183
- Conveyor rollers, see p 188
- IFI - IP55 Frequency Inverter, see p 122



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Product Range

The following tables give an overview of the possible motor versions. When ordering, please specify the version in accordance with the configurator at the end of the catalogue.

All data and values in this catalogue refer to 50 Hz operation.

Motor versions

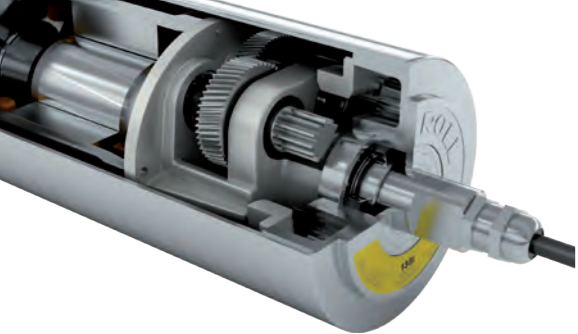
Mechanical data for 3-phase motors

| P _N kW | np | gs | i | v m/s | n _A min ⁻¹ | M _A Nm | F _N N | SL _{min} mm |
|----------------------|----|----|-------|----------|-------------------------------------|----------------------|---------------------|-------------------------|
| 0.090 | 12 | 3 | 72.55 | 0.041 | 5.7 | 136.7 | 1,981 | 300 |
| 0.180 | 8 | 3 | 72.55 | 0.068 | 9.4 | 165.8 | 2,403 | 300 |
| | | | 40.91 | 0.121 | 16.7 | 96.0 | 1,391 | 300 |
| 0.250 | 6 | 3 | 72.55 | 0.091 | 12.5 | 173.1 | 2,508 | 300 |
| 0.370 | 4 | 3 | 72.55 | 0.133 | 18.5 | 174.4 | 2,527 | 300 |
| | | | 61.85 | 0.157 | 21.7 | 150.1 | 2,175 | 300 |
| | | | 49.64 | 0.195 | 27.0 | 121.4 | 1,760 | 300 |
| | | | 40.91 | 0.237 | 32.8 | 100.9 | 1,463 | 300 |
| | | | 34.00 | 0.285 | 39.4 | 83.9 | 1,216 | 300 |
| | | | 30.55 | 0.317 | 43.9 | 75.4 | 1,092 | 300 |
| | | | 25.39 | 0.381 | 52.8 | 62.8 | 910 | 300 |
| | | 2 | 20.22 | 0.479 | 66.3 | 50.5 | 732 | 300 |
| | | | 16.67 | 0.581 | 80.4 | 42.0 | 608 | 300 |
| | | | 12.44 | 0.778 | 107.7 | 31.4 | 455 | 300 |
| | | | 10.00 | 0.968 | 134.0 | 25.3 | 366 | 300 |
| 0.550 | 2 | 3 | 72.55 | 0.281 | 39.0 | 122.9 | 1,780 | 300 |
| | | | 61.85 | 0.330 | 45.7 | 105.7 | 1,532 | 300 |
| | | | 49.64 | 0.411 | 56.9 | 85.6 | 1,240 | 300 |
| | | | 40.91 | 0.499 | 69.1 | 71.1 | 1,031 | 300 |
| | | | 34.00 | 0.601 | 83.1 | 59.1 | 856 | 300 |
| | | | 25.39 | 0.804 | 111.3 | 44.3 | 641 | 300 |
| | | 2 | 20.22 | 1.010 | 139.7 | 35.6 | 516 | 300 |
| | | | 16.67 | 1.225 | 169.6 | 29.6 | 428 | 300 |
| | | | 12.44 | 1.641 | 227.1 | 22.1 | 321 | 300 |
| | | | 10.00 | 2.042 | 282.6 | 17.8 | 258 | 300 |
| 0.750 | 4 | 3 | 34.00 | 0.293 | 40.6 | 164.9 | 2,390 | 350 |
| | | | 30.55 | 0.327 | 45.2 | 148.1 | 2,147 | 350 |
| | | | 25.39 | 0.393 | 54.4 | 123.5 | 1,790 | 350 |
| | | 2 | 20.22 | 0.493 | 68.3 | 99.3 | 1,438 | 350 |
| | | | 16.67 | 0.599 | 82.9 | 82.5 | 1,195 | 350 |
| | | | 12.44 | 0.802 | 111.0 | 61.8 | 895 | 350 |
| | | | 10.00 | 0.998 | 138.1 | 49.6 | 719 | 350 |
| 1.000 | 2 | 3 | 49.64 | 0.404 | 55.9 | 158.2 | 2,293 | 350 |
| | | | 40.91 | 0.490 | 67.8 | 131.5 | 1,906 | 350 |
| | | | 34.00 | 0.590 | 81.6 | 109.3 | 1,584 | 350 |
| | | | 25.39 | 0.790 | 109.3 | 81.9 | 1,186 | 350 |
| | | 2 | 20.22 | 0.992 | 137.2 | 65.8 | 953 | 350 |
| | | | 16.67 | 1.203 | 166.5 | 54.7 | 792 | 350 |
| | | | 12.44 | 1.611 | 223.0 | 40.9 | 593 | 350 |
| | | | 10.00 | 2.005 | 277.5 | 32.9 | 477 | 350 |

Mechanical data for 3-phase motors (Motors for applications with positive drive belts or no belts)

| P _N kW | np | gs | i | v m/s | n _A min ⁻¹ | M _A Nm | F _N N | SL _{min} mm |
|----------------------|----|----|-------|----------|-------------------------------------|----------------------|---------------------|-------------------------|
| 0.074 | 12 | 3 | 72.55 | 0.041 | 5.7 | 112.5 | 1,654 | 300 |
| 0.149 | 8 | 3 | 72.55 | 0.067 | 9.4 | 137.4 | 2,020 | 300 |
| 0.207 | 6 | 3 | 72.55 | 0.090 | 12.7 | 141.9 | 2,087 | 300 |
| 0.306 | 4 | 3 | 72.55 | 0.133 | 18.6 | 143.0 | 2,103 | 300 |
| | | | 49.64 | 0.194 | 27.2 | 99.6 | 1,465 | 300 |
| | | | 40.91 | 0.235 | 33.0 | 82.8 | 1,217 | 300 |
| | | | 34.00 | 0.283 | 39.7 | 68.8 | 1,012 | 300 |
| | | | 30.55 | 0.315 | 44.2 | 61.8 | 909 | 300 |
| | | | 25.39 | 0.379 | 53.2 | 51.5 | 758 | 300 |
| | | 2 | 20.22 | 0.475 | 66.8 | 41.4 | 609 | 300 |
| | | | 16.67 | 0.577 | 81.0 | 34.4 | 506 | 300 |
| | | | 12.44 | 0.772 | 108.5 | 25.8 | 379 | 300 |
| 0.455 | 2 | 3 | 72.55 | 0.277 | 39.0 | 101.6 | 1,494 | 300 |
| | | | 61.85 | 0.325 | 45.7 | 87.4 | 1,286 | 300 |
| | | | 49.64 | 0.405 | 56.9 | 70.8 | 1,040 | 300 |
| | | | 40.91 | 0.492 | 69.1 | 58.8 | 865 | 300 |
| | | | 34.00 | 0.592 | 83.1 | 48.9 | 719 | 300 |
| | | | 25.39 | 0.793 | 111.3 | 36.6 | 538 | 300 |
| | | 2 | 20.22 | 0.995 | 139.7 | 29.4 | 433 | 300 |
| | | | 16.67 | 1.207 | 169.6 | 24.4 | 359 | 300 |
| | | | 12.44 | 1.617 | 227.1 | 18.3 | 269 | 300 |
| | | | 10.00 | 2.012 | 282.6 | 14.7 | 216 | 300 |
| 0.620 | 4 | 3 | 34.00 | 0.292 | 41.0 | 134.8 | 1,983 | 350 |
| | | | 30.55 | 0.325 | 45.7 | 121.1 | 1,781 | 350 |
| | | | 25.39 | 0.391 | 55.0 | 101.0 | 1,485 | 350 |
| | | 2 | 20.22 | 0.491 | 69.0 | 81.2 | 1,194 | 350 |
| | | | 16.67 | 0.596 | 83.7 | 67.4 | 992 | 350 |
| | | | 12.44 | 0.798 | 112.1 | 50.5 | 743 | 350 |
| | | | 10.00 | 0.993 | 139.5 | 40.6 | 597 | 350 |
| 0.826 | 2 | 3 | 49.64 | 0.396 | 55.6 | 131.4 | 1,932 | 350 |
| | | | 40.91 | 0.481 | 67.5 | 109.2 | 1,606 | 350 |
| | | | 34.00 | 0.578 | 81.2 | 90.7 | 1,334 | 350 |
| | | | 25.39 | 0.775 | 108.8 | 68.0 | 999 | 350 |
| | | 2 | 20.22 | 0.973 | 136.6 | 54.6 | 803 | 350 |
| | | | 16.67 | 1.180 | 165.7 | 45.4 | 667 | 350 |
| | | | 12.44 | 1.580 | 221.9 | 34.0 | 500 | 350 |
| | | | 10.00 | 1.967 | 276.2 | 27.3 | 402 | 350 |

| | |
|-------------------|-------------------------------------|
| P _N | Rated power |
| np | Number of poles |
| gs | Gear stages |
| i | Gear ratio |
| v | Rated velocity of the shell |
| n _A | Rated revolutions of the drum shell |
| M _A | Rated torque of drum motor |
| F _N | Rated belt pull of drum motor |
| SL _{min} | Min. shell length |



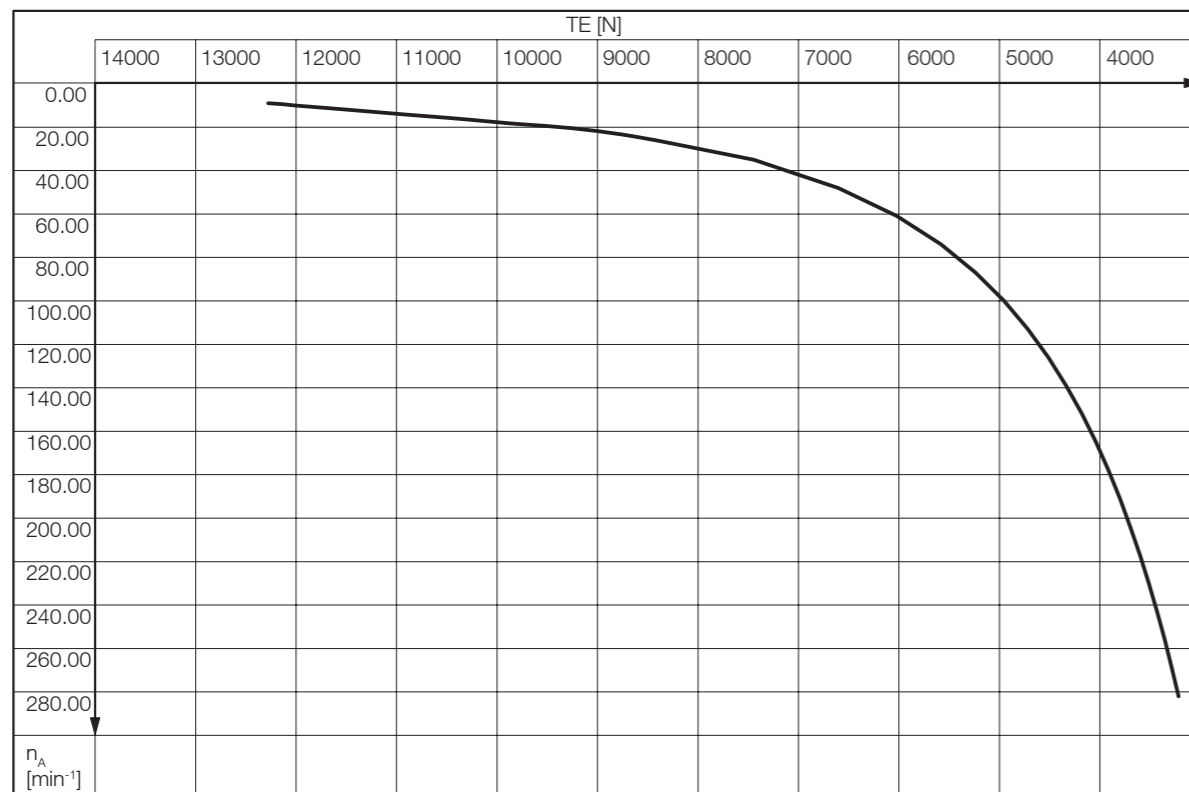
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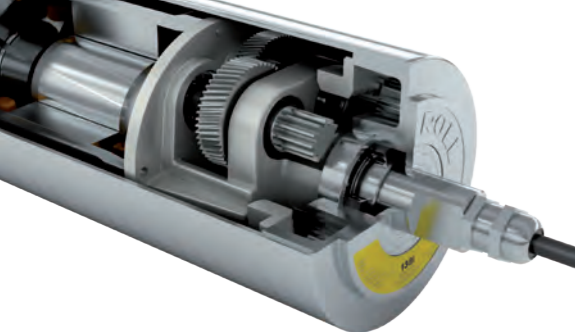
Strong powerful drive for conveyors with high-duty cycles

Belt Tension



Note: To get the right value of the maximum allowed belt tension, first find the maximum allowed TE value for the drum motor RPM. For motors with SL > 1,250 mm, check if the maximum allowed TE value for the SL is lower. In this case, use the lower value as maximum allowed TE value.

| | |
|-------|-------------------------------------|
| TE | Belt Tension |
| n_A | Rated revolutions of the drum shell |
| SL | Shell length |



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Electrical data for 3-phase motors (Standard motors)

| P_N kW | np | U_N V | I_N A | $\cos \varphi$ | η | J_R kgcm ² | I_S/I_N | M_S/M_N | M_P/M_N | M_B/M_N | R_M Ω | $U_{SH \text{ delta}}$ V DC | $U_{SH \text{ star}}$ V DC |
|-------------|----|------------|------------|----------------|--------|----------------------------|-----------|-----------|-----------|-----------|-------------------|--------------------------------|-------------------------------|
| 0.090 | 12 | 230 | 1.14 | 0.40 | 0.49 | 9.3 | 3.0 | 1.15 | 1.15 | 1.68 | 92.0 | 21 | - |
| | | 400 | 0.66 | 0.40 | 0.49 | 9.3 | 3.0 | 1.15 | 1.15 | 1.68 | 92.0 | - | 36 |
| 0.180 | 8 | 230 | 1.21 | 0.64 | 0.58 | 9.3 | 2.6 | 1.10 | 1.10 | 1.55 | 64.0 | 25 | - |
| | | 400 | 0.70 | 0.64 | 0.58 | 9.3 | 2.6 | 1.10 | 1.10 | 1.55 | 64.0 | - | 43 |
| 0.250 | 6 | 230 | 1.30 | 0.72 | 0.67 | 9.3 | 3.0 | 1.35 | 1.35 | 1.75 | 44.0 | 21 | - |
| | | 400 | 0.75 | 0.72 | 0.67 | 9.3 | 3.0 | 1.35 | 1.35 | 1.75 | 44.0 | - | 36 |
| 0.370 | 4 | 230 | 1.68 | 0.79 | 0.70 | 5.6 | 3.3 | 1.55 | 1.55 | 1.95 | 26.5 | 18 | - |
| | | 400 | 0.97 | 0.79 | 0.70 | 5.6 | 3.3 | 1.55 | 1.55 | 1.95 | 26.5 | - | 30 |
| 0.550 | 2 | 230 | 2.25 | 0.80 | 0.76 | 3.5 | 5.5 | 3.20 | 3.20 | 3.65 | 11.4 | 10 | - |
| | | 400 | 1.30 | 0.80 | 0.76 | 3.5 | 5.5 | 3.20 | 3.20 | 3.65 | 11.4 | - | 18 |
| 0.750 | 4 | 230 | 3.29 | 0.80 | 0.71 | 9.9 | 3.4 | 2.10 | 2.10 | 2.45 | 9.7 | 13 | - |
| | | 400 | 1.90 | 0.80 | 0.71 | 9.9 | 3.4 | 2.10 | 2.10 | 2.45 | 9.7 | - | 22 |
| 1.000 | 2 | 230 | 4.16 | 0.80 | 0.75 | 6.2 | 5.4 | 3.40 | 3.40 | 3.95 | 5.4 | 9 | - |
| | | 400 | 2.40 | 0.80 | 0.75 | 6.2 | 5.4 | 3.40 | 3.40 | 3.95 | 5.4 | - | 16 |

Electrical data for 3-phase motors (Motors for applications with positive drive belts or no belts)

| P_N kW | np | U_N V | I_N A | $\cos \varphi$ | η | J_R kgcm ² | I_S/I_N | M_S/M_N | M_P/M_N | M_B/M_N | R_M Ω | $U_{SH \text{ delta}}$ V DC | $U_{SH \text{ star}}$ V DC |
|-------------|----|------------|------------|----------------|--------|----------------------------|-----------|-----------|-----------|-----------|-------------------|--------------------------------|-------------------------------|
| 0.074 | 12 | 230 | 0.94 | 0.40 | 0.49 | 9.3 | 2.7 | 1.16 | 0.99 | 1.32 | 110.0 | 21 | - |
| | | 400 | 0.55 | 0.40 | 0.49 | 9.3 | 2.7 | 1.16 | 0.99 | 1.32 | 110.0 | - | 36 |
| 0.149 | 8 | 230 | 0.94 | 0.64 | 0.61 | 9.3 | 2.4 | 1.32 | 1.16 | 1.40 | 98.0 | 29 | - |
| | | 400 | 0.55 | 0.64 | 0.61 | 9.3 | 2.4 | 1.32 | 1.16 | 1.40 | 98.0 | - | 52 |
| 0.207 | 6 | 230 | 1.10 | 0.68 | 0.69 | 9.3 | 2.7 | 1.40 | 1.24 | 1.40 | 47.8 | 18 | - |
| | | 400 | 0.64 | 0.68 | 0.69 | 9.3 | 2.7 | 1.40 | 1.24 | 1.40 | 47.8 | - | 31 |
| 0.306 | 4 | 230 | 1.26 | 0.79 | 0.77 | 5.6 | 3.0 | 1.34 | 1.16 | 1.49 | 33.1 | 16 | - |
| | | 400 | 0.73 | 0.79 | 0.77 | 5.6 | 3.0 | 1.34 | 1.16 | 1.49 | 33.1 | - | 29 |
| 0.455 | 2 | 230 | 2.12 | 0.72 | 0.74 | 3.5 | 5.0 | 2.38 | 1.98 | 2.56 | 14.1 | 11 | - |
| | | 400 | 1.23 | 0.72 | 0.74 | 3.5 | 5.0 | 2.38 | 1.98 | 2.56 | 14.1 | - | 19 |
| 0.620 | 4 | 230 | 2.66 | 0.79 | 0.73 | 9.9 | 3.1 | 1.07 | 1.40 | 1.24 | 11.8 | 12 | - |
| | | 400 | 1.55 | 0.79 | 0.73 | 9.9 | 3.1 | 1.07 | 1.40 | 1.24 | 11.8 | - | 22 |
| 0.826 | 2 | 230 | 3.13 | 0.81 | 0.81 | 6.2 | 4.9 | 1.90 | 1.74 | 2.07 | 6.8 | 9 | - |
| | | 400 | 1.82 | 0.81 | 0.81 | 6.2 | 4.9 | 1.90 | 1.74 | 2.07 | 6.8 | - | 15 |

| | |
|------------------------|--|
| P_N | Rated power |
| np | Number of poles |
| U_N | Rated voltage |
| I_N | Rated current |
| $\cos \varphi$ | Power factor |
| η | Efficiency |
| J_R | Rotor moment of inertia |
| I_S/I_N | Ratio of starting current to rated current |
| M_S/M_N | Ratio of starting torque to rated torque |
| M_P/M_N | Ratio of pull-up torque to rated torque |
| M_B/M_N | Ratio of break-down torque to rated torque |
| R_M | Phase resistance |
| $U_{SH \text{ delta}}$ | Preheating voltage in delta connection |
| $U_{SH \text{ star}}$ | Preheating voltage in star connection |

Cable Specifications

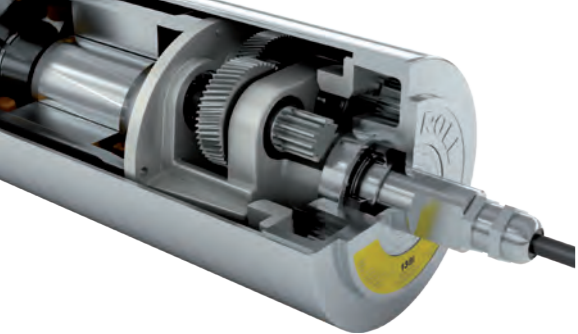
Available cables for connectors (see also p 252):

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

Available length: 1 / 3 / 5 / 10 m

Connection Diagrams

For connection diagrams, see Planning Section on p 260.



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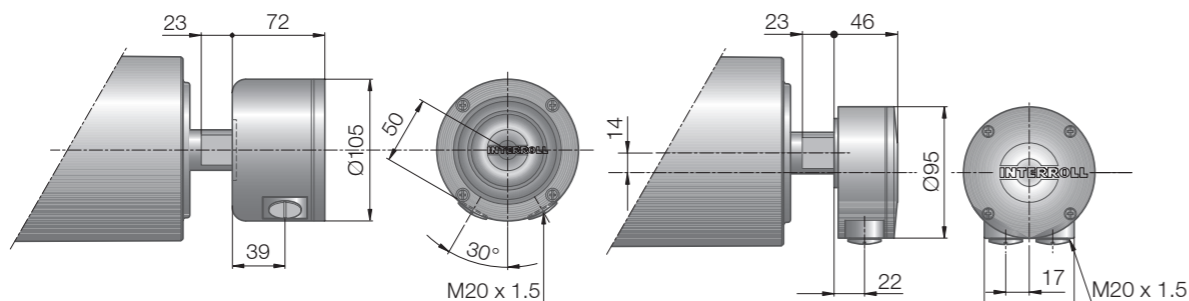


Fig.: Terminal box, technopolymer

Fig.: Terminal box, aluminium

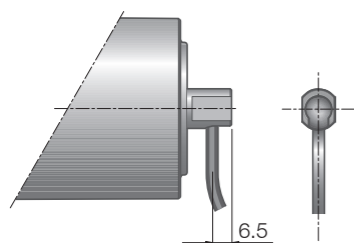


Fig.: Cable slot connector

Shafts for fixing

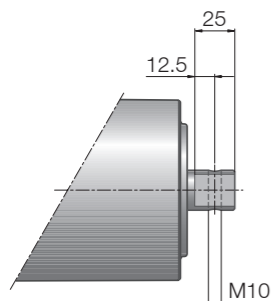


Fig.: Shaft, cross-drilled and threaded

The following options increase the minimum length of the drum motor.

| Option | Min. SL with option mm |
|----------------------|---------------------------|
| Brake | Min. SL + 50 |
| Encoder | Min. SL + 50 |
| Cable slot connector | Min. SL + 50 |

Standard drum motor lengths and their weights:

| Shell length SL in mm | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Average weight in kg | 14.50 | 15.70 | 16.90 | 18.10 | 19.30 | 20.50 | 21.70 | 22.90 | 24.10 | 25.30 | 26.50 | 27.70 |
| Shell length SL in mm | 900 | 950 | 1,000 | 1,050 | 1,100 | 1,150 | 1,200 | 1,250 | 1,300 | 1,350 | 1,400 | 1,450 |
| Average weight in kg | 28.90 | 33.11 | 34.43 | 35.75 | 37.07 | 38.39 | 39.71 | 41.03 | 42.35 | 43.67 | 44.99 | 46.31 |
| Shell length SL in mm | 1,500 | 1,550 | 1,600 | | | | | | | | | |
| Average weight in kg | 47.63 | 48.95 | 50.27 | | | | | | | | | |

Min. length with
option

Standard length
and weight