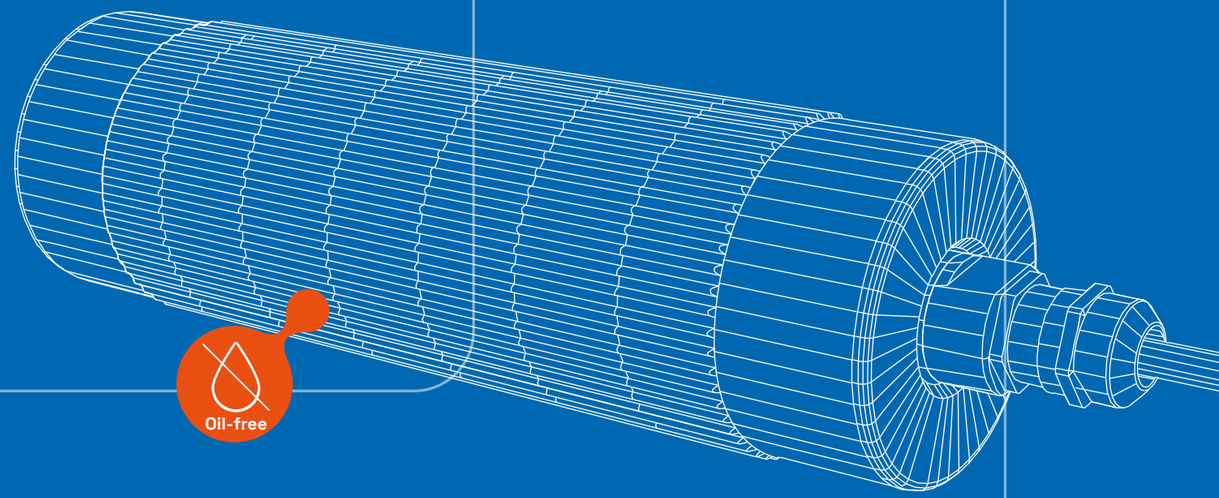
Thanks for your interest

Go to ngi-global.com/drivetech-division




# Synchronous drum motors

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Name change:

# From Momentum Technologies to NGI

In 2022, Momentum Technologies became a part of NGI, a great match between two companies with strong focus on developing and delivering innovative solutions to the growing needs of customers globally through in-depth experience and knowledge network.


To best continue our effort towards strengthen our promises to our highly valued customers and partners, we have made the decision to rebrand Momentum Technologies to NGI effective from February 2024.

> Jan Nygaard, CEO at NGI states: "Our solutions will be consolidated under the separate division NGI DriveTech which we established last year, enabling us to best continue delivering our expertise and innovations to the market."

> Gerhard Froebus, Founder of Momentum Technologies affirms: "I am excited that we are fueling our efforts with leading innovation and expertise by finding exhaustive and holistic solutions based on in-depth experience and knowledge network from which our customers benefit."

To drive and support this new business unit, we have appointed Theis Philip Jensen as the President of DriveTech. Over the past few months, we have expanded our teams in R&D, application engineering, technical sales, and other areas to ensure we are well-re-sourced to service and advise our customers on value-adding solutions and hygiene-optimized drum motors.

> Theis says: "We are looking forward to continuing making a difference and ensure improved food-safety, lower energy consumption and higher motor efficiency. These are critical parameters for our customers, and we're excited about how well our solutions and approach meet our customers' needs."

Jan Nygaard, Gerhard Froebus, Theis Philip Jensen
NGI GmbH
February 2024

Gerhard Froebus, Founder of Momentum Technology (left), and Jan Nygaard, CEO of NGI A/S (right).


President of NGI's DriveTech Division, Theis Philip Jensen.

## Watch video online explaining our synchronous drum motors

The video explains our synchronous drum motors and how they can help improve the hygiene and efficiency of your equipment and machines.

Scan the code and see it at our website www.ngi-global.com

Table of content

# Synchronous oil-free drum motors

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety

## General introduction of our synchonous drum motors

Find cable and feedback options on page 37

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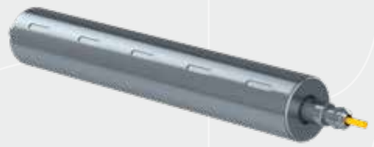

## MTS82

| Special Features | | |
|---|---|---|
| Diameter: | mm | 81 |
| Gear ratio: | | 5 - 160 |
| Rotational Speed: | RPM | 19 - 600 |
| Linear Speed: | m/s | 0,08 - 2,54 |
| Torque: | Nm | 2,9 - 44 |
| Power: | kW | 0,19 / 0,38 |
| Min. shell length: | mm | 260 - 320 |

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## MTS113

| Special Features | | |
|---|---|---|
| Diameter: | mm | 112 |
| Gear ratio: | | 8 - 160 |
| Rotational Speed: | RPM | 19 - 375 |
| Linear Speed: | m/s | 0,11 - 2,20 |
| Torque: | Nm | 4,7 - 44 |
| Power: | kW | 0,19 / 0,38 / 0,72 / 1,01 |
| Min. shell length: | mm | 260 - 350 |

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NGI

## MTS115

| Special Features | | |
|---|---|---|
| Diameter: | mm | 112 |
| Gear ratio: | | 10 - 160 |
| Rotational Speed: | RPM | 19 - 300 |
| Linear Speed: | m/s | 0,11 - 1,77 |
| Torque: | Nm | 22 - 120 |
| Power: | kW | 0,72 / 1,01 |
| Min. shell length: | mm | 320 - 370 |

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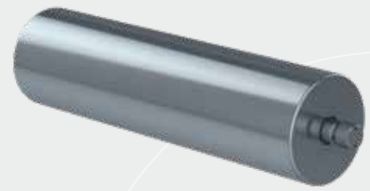

## MTS138

| Special Features | | |
|---|---|---|
| Diameter: | mm | 136 |
| Gear ratio: | | 10 - 160 |
| Rotational Speed: | RPM | 19 - 300 |
| Linear Speed: | m/s | 0,14 - 2,14 |
| Torque: | Nm | 22 - 120 |
| Power: | kW | 0,72 / 1,01 |
| Min. shell length: | mm | 320 - 370 |

25

## MTD138

| Special Features | | |
|---|---|---|
| Diameter: | mm | 136 |
| Gear ratio: | | 10 - 32 |
| Rotational Speed: | RPM | 75 - 300 |
| Linear Speed: | m/s | 0,54 - 2,2 |
| Torque: | Nm | 38 - 120 |
| Power: | kW | 1,50 |
| Min. shell length: | mm | 350 - 360 |

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## MTD139

| Special Features | | |
|---|---|---|
| Diameter: | mm | 136 |
| Gear ratio: | | 32 - 40 |
| Rotational Speed: | RPM | 75 - 94 |
| Linear Speed: | m/s | 0,54 - 0,68 |
| Torque: | Nm | 145 - 180 |
| Power: | kW | 1,50 |
| Min. shell length: | mm | 410 |

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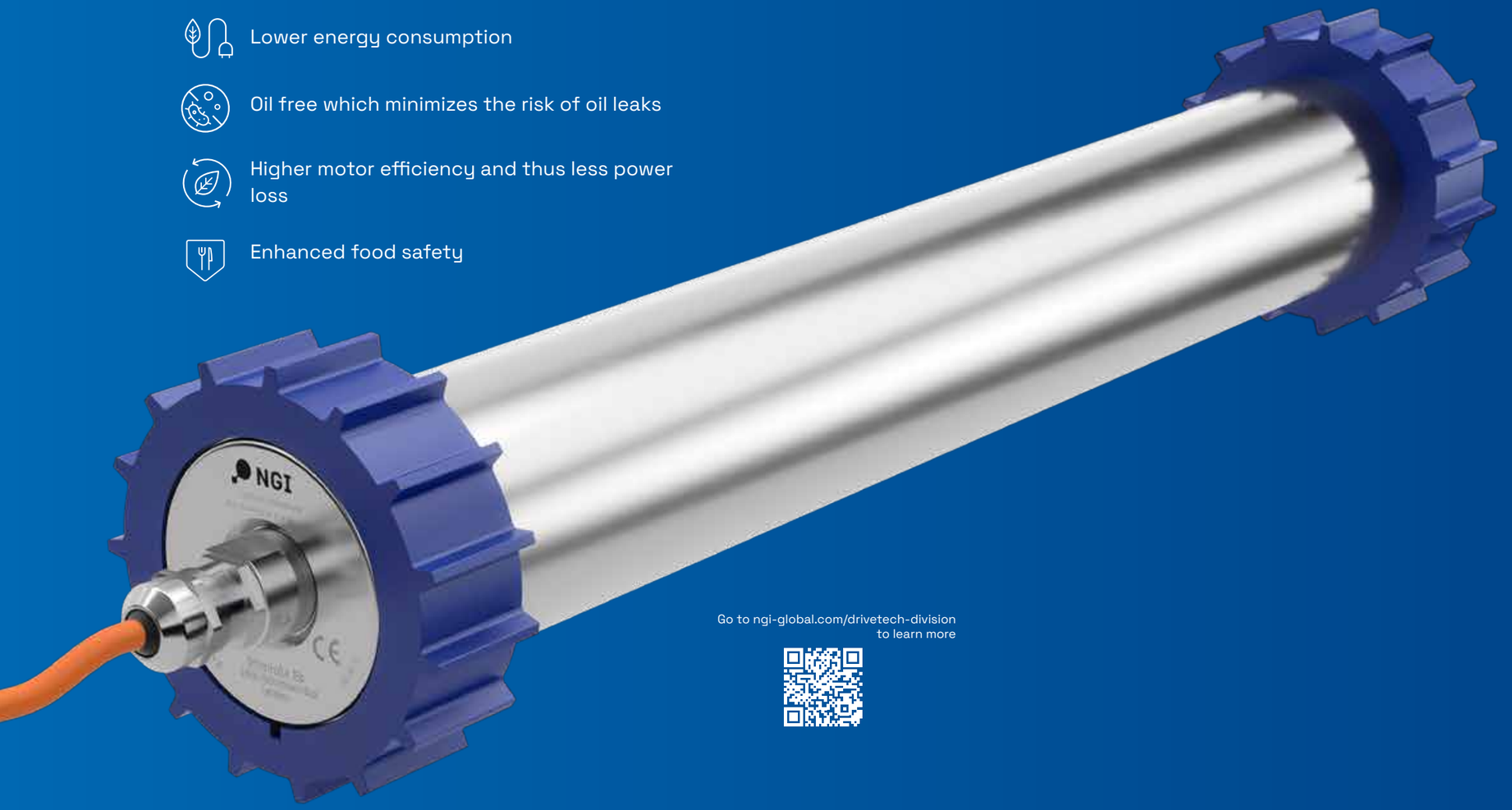
# Synchronous drum Motors

Oil-free

- Lower energy consumption
- Oil free which minimizes the risk of oil leaks
- Higher motor efficiency and thus less power loss
- Enhanced food safety




Go to ngi-global.com/drivetech-division to learn more



## Synchronous drum motors

### Optimize food safety & efficiency with synchronous drum motors

Our oil-free synchronous drum motors have a higher motor efficiency and thus less power loss.

A conventional asynchronous drum motor creates heat causing higher power losses when in use. High power losses are both an economic disadvantage for the end-user as well as a liability to the environment.

Our synchronous motor does not require oil to cool down due to low heat generated from the motor and is therefore the economic and sustainable choice!

Scan the QR code and see our explainer video of our synchronous drum motors!

# We have compared our synchronous drum motor with asynchronous drum motors

Learn about the advantages by using synchronous drum motors in regard to both food safety, efficiency and lower energy consumption!


## Asynchronous drum motor

VS

## Synchronous drum motor


### Needs oil to cool down

The asynchronous motor requires oil to cool down the motor which requires maintenance and can result in an oil leakage. In most cases, the leak is not identified until the engine stops running due to overheating caused by lack of oil. This means that the oil has been transferred into the food, undetected.

### High energy consumption

Asynchronous drum motors must work in oil bath to dissipate the heat generated by the motor inside. Leakage can be caused by excessive belt tensioning: this is a common problem with belting as belts tends to loosen with time and operators are required to increase the tension and it is easy to exceed.

### High heat dissipation

The heat inside asynchronous motors is caused from losses: Iron losses, copper losses & mechanical losses Which results in low efficiency of the motor!

### Single-speed dimensioning

When using asynchronous motors, you will have no or very limited possibility to control the speed of the motor. When changing the rated speed on an asynchronous motor you will decrease the torque provided and therefore will not be able to convey the load.
An asynchronous motor has no torque available at low frequencies.

### Oil-free

Our synchronous motors do not require oil. No oil equals no oil leakage, resulting in a cleaner and safer operation and higher food safety. Oil contamination of conveyed goods is therefore impossible – a perfect match for the food industry.

### Low energy consumption

Our synchronous drum motors means high efficiency as they do not generate excess heat due to a very high efficiency (almost 95% of the energy we provide is turned into motion, and only 5% is lost as heat).

### Low self-heating

Our synchronous motors have a higher efficiency and up to 9 times lower power consumption than asynchronous drum motors due to minimized losses!

### Multi-speed dimensioning

Our synchronous drum motors can convey very slowly or very fast – with continued high torque. This results in many new fields of applications – including quick starts and stops in packaging processes.

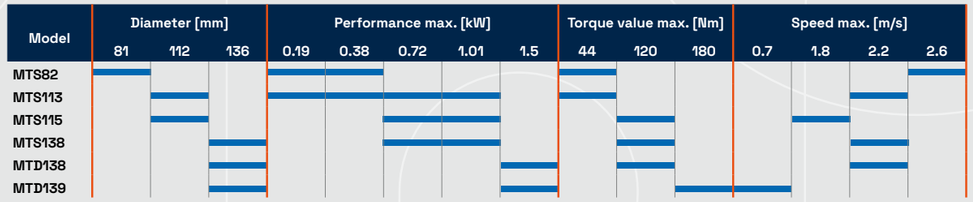
# A quick overview of our synchronous drum motors

Our synchronous drum motors are space-saving, all-in-one components with a motor and transmission system that is maintenance and oil-free and fully protected within the drum.

This increases reliability, reduces operating costs and simplifies integration, and guarantees higher food safety!

Our products are extremely capable, yet simple to use. This promise is reflected in the very design of our products, which are carefully manufactured down to the smallest detail.

**Matrix to find the right model:**




| Motor class | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/s] | Torque [Nm] | Power [kW] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|
| MTS82 | 5 - 160 | 19 - 600 | 0,08 - 2,54 | 2,9 - 44 | 0,19 / 0,38 | 260 - 320 |
| MTS113 - MTS 115 | 8 - 160 | 19 - 375 | 0,11 - 2,2 | 4,6 - 120 | 0,19 / 0,38 / 0,72 / 1,01 | 260 - 370 |
| MTS138, MTD 138, MTD139 | 10 - 160 | 19 - 300 | 0,14 - 2,14 | 22 - 180 | 0,72 / 1,01 / 1,5 | 320 - 410 |

A few of the motors needs to be custom made. Ask your local sales representative!

Snap on sprocket

**Snap on sprocket**
Our own design that makes it easy to “snap on” the gear for selected conveyor belts. It is called a “snap on sprocket”.

Further, we can supply sprockets for all belting types based on your needs.



# NGI Innovation - the Sustainable Way

## Stainless steel - Recyclable materials

80% of our products can be recycled. We are working on initiatives to make this percentage even higher.

## Hygienic seals - Resource saving

Permit easy cleaning and reduce water consumption.

## High Quality - Longer lifetime

Our products are very high quality which means they have a longer lifetime than corresponding components.

## Hygienic design - Protecting consumers

We make sure that the components do not constitute a hygiene risk through innovative and uncompromising design.

CASE STORY

# MAREL
# Marel relies on synchronous drum motors from NGI

MEAT, POULTRY & FISH



NGI

## THE CHALLENGE

With asynchronous drum motors, oil is often used to cool down the motor. The problem with this is that even in a hermetically sealed drum motor, oil is a critical control point in an HACCP concept that should ideally be avoided in a hygienic design.

## THE SOLUTION

Synchronous drum motors has a lower operating temperature and are more energy-efficient compared to asynchronous drum motors. Overall, this is a perfect combination for Marel, as it allows users to achieve maximum productivity while at the same time reducing energy consumption and enhancing the food safety in food processing.

## THE EFFECT

By switching to synchronous drum motors, Andri Sveinsson is intending to significantly reduce the number of variants in the plant. In future, the portfolio he manages will only be a third as large, which will also reduce storage and replacement costs. The streamlined maintenance also limits both the amount of work involved in servicing and the training required.

”The oil-free synchronous drum motors from NGI are among the coolest and most powerful currently available on the market, or at least that’s the opinion of Andri Sveinsson. Hygienic design is extremely important to us. These drum motors are powerful, have low-self-heating, and are dry and robust.

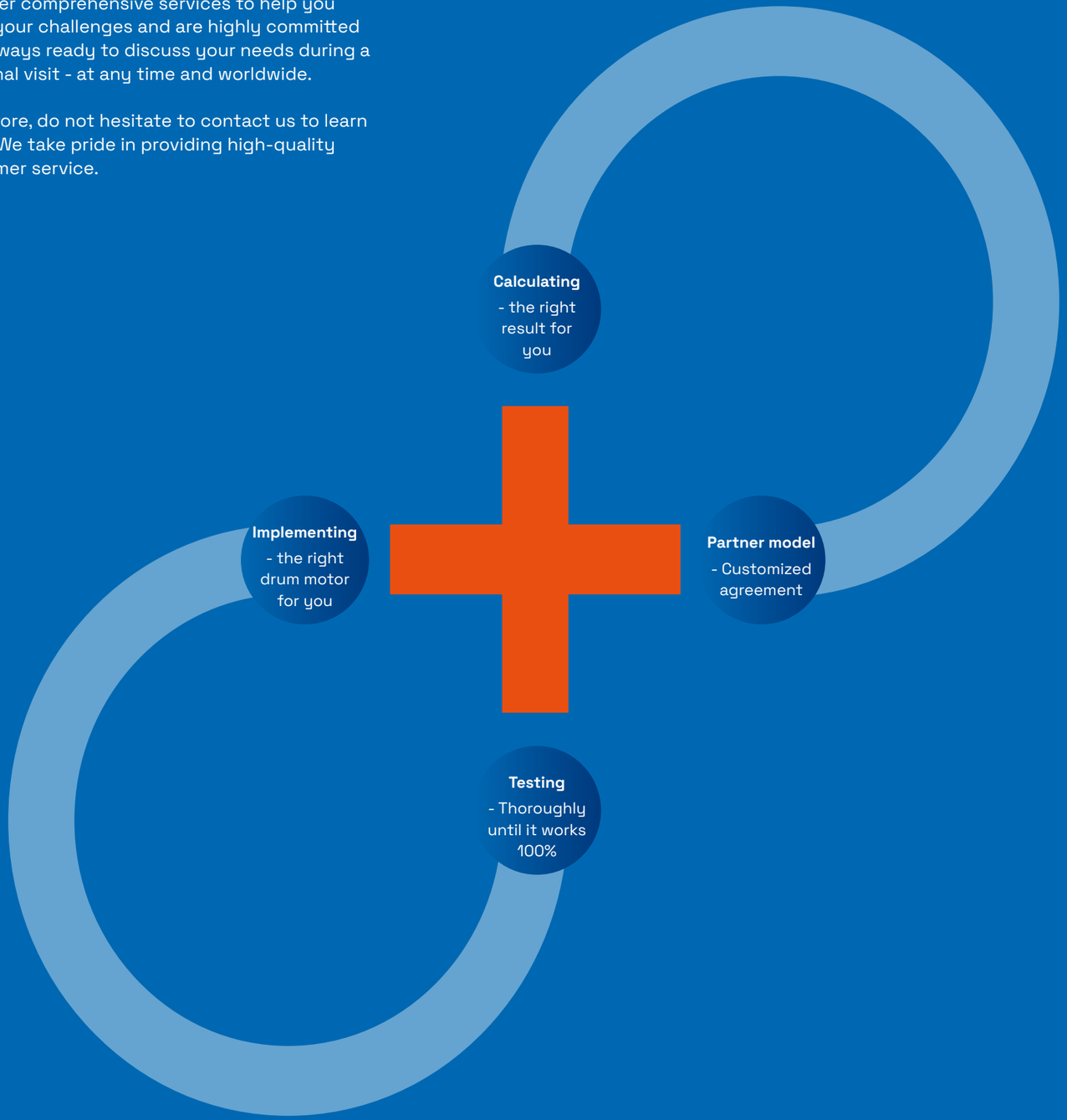
In addition, they reduce the individual components of a machine which makes construction easier. Also, the service from NGI is indeed outstanding and right on the mark.”

Andri Sveinsson
Project Manager for Innovation at Marel.

# Let us help find and implement the right model!

We offer comprehensive services to help you solve your challenges and are highly committed and always ready to discuss your needs during a personal visit - at any time and worldwide.

Therefore, do not hesitate to contact us to learn more! We take pride in providing high-quality customer service.



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## Invitation to innovation

Highly competent sales force

# Drum motor - MTS82 Class

MTS82 synchronous drum motor is space-saving, all-in-one components with a motor and transmission system that is maintenance-free and fully protected within the drum.

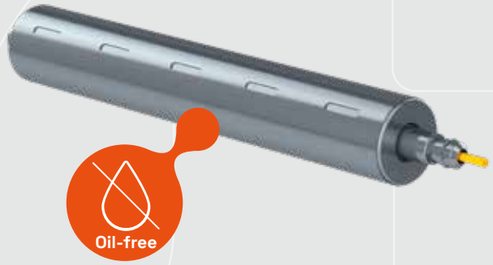
Our drum motors are completely oil-free. Oil contamination of conveyed goods is therefore impossible – a perfect match for food production industries.

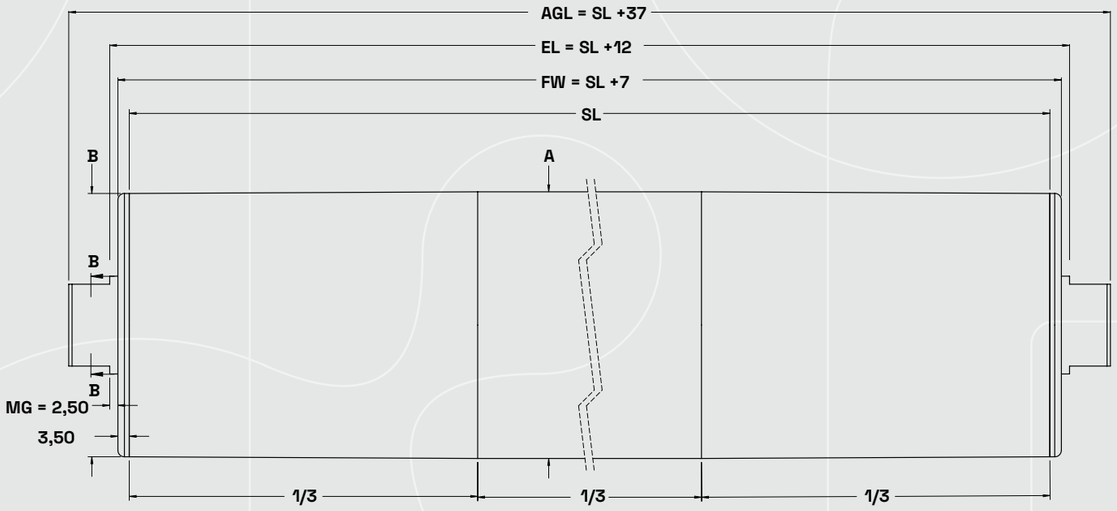
Synchronous drum motors offer the highest electrical efficiencies currently available and are extremely economical.

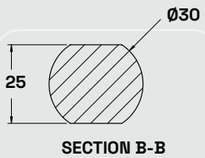
NGI synchronous motors have a higher efficiency and up to 9 times lower power than asynchronous drum motors due to minimized losses!

This increases reliability, reduces operating costs and simplifies integration!.

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety




SECTION B-B

**Explanations:**

AGL = Total length of shaft
SL = Shell length (Reference length / ordering length)
EL = Installation length, inside diameter between side profiles
FW = Face width
MG = Length between drum motor and key

| Type | ØA [mm] | ØB [mm] | Shell length max. [mm] |
|---|---|---|---|
| Crowned | 81,5 | 80,5 | 1200 |
| Cylindrical | 81,0 | 81,0 | 1200 |
| Cylindrical with key | 81,7 | 81,7 | 850 |
| Any other dimensions and any other shell profiles on request | | | |



# Drum motor - MTS82 Class

## Motor Variants MTS82-0,19

| Rated Values refer to the drum shell | | | | | | | |
|---|---|---|---|---|---|---|---|
| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
| 0,19 | 5 | 600 | 155 | 2,6 | 2,9 | 70 | 260 |
| 0,19 | 8 | 375 | 97 | 1,6 | 4,6 | 112 | 260 |
| 0,19 | 12 | 250 | 64 | 1,1 | 6,8 | 165 | 270 |
| 0,19 | 16 | 188 | 48 | 0,81 | 9,0 | 220 | 270 |
| 0,19 | 20 | 150 | 39 | 0,64 | 11 | 275 | 270 |
| 0,19 | 25 | 120 | 31 | 0,52 | 14 | 344 | 270 |
| 0,19 | 32 | 94 | 24 | 0,40 | 18 | 440 | 270 |
| 0,19 | 40 | 75 | 19 | 0,32 | 23 | 550 | 270 |
| 0,19 | 160 | 19 | 5 | 0,08 | 44 | 1.086 | 290 |

Custom gear combinations on requests.

## Motor Variants MTS82-0,38

| Rated Values refer to the drum shell | | | | | | | |
|---|---|---|---|---|---|---|---|
| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
| 0,38 | 5 | 600 | 155 | 2,6 | 5,8 | 141 | 290 |
| 0,38 | 8 | 375 | 97 | 1,6 | 9,2 | 225 | 290 |
| 0,38 | 12 | 250 | 64 | 1,1 | 14 | 330 | 300 |
| 0,38 | 16 | 188 | 48 | 0,81 | 18 | 440 | 300 |
| 0,38 | 20 | 150 | 39 | 0,64 | 23 | 550 | 300 |
| 0,38 | 25 | 120 | 31 | 0,52 | 28 | 688 | 300 |
| 0,38 | 32 | 94 | 24 | 0,40 | 36 | 880 | 300 |
| 0,38 | 40 | 75 | 19 | 0,32 | 40 | 976 | 300 |
| 0,38 | 160 | 19 | 5 | 0,08 | 44 | 1.086 | 320 |

Custom gear combinations on requests.

# Drum motor
# - MTS82 Class

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety

**Available with the following drum motor shells**

We can supply all drum shell profiles also with sprockets as well as rubber sleeves.

- Cylindrical, crowned or conical shells
- Flat, crowned, conical or profiled rubber lining
- Radial grooves for round belts
- Milled guiding grooves and profiles

Many other designs are available, see some examples below.



# Drum motor
# - MTS82 Class

| Possible speed adjustment ranges: | |
|---|---|
| Sensorlees operation with suitable frequency inverter | 1 : 7 to 1 : 300 - (depending on Inverter type) |
| Servo drive and feedback | up to 1 : 10.000 |

| Options lead to an increase in the minimum shell length: | |
|---|---|
| **Option** | **SLmin (with option)** |
| Resolver | Minimum shell lenght $SL_{min}$ + 50 mm |
| SKS36 | Minimum shell lenght $SL_{min}$ + 70 mm |
| SKS36 with hybrid cable | Minimum shell lenght $SL_{min}$ + 120 mm |

| Motor data: | | | |
|---|---|---|---|
| **Rated power** | **kW** | **0,19** | **0,38** |
| Rated speed | rpm | 3.000 | 3.000 |
| Rated frequency | Hz | 150 | 150 |
| Number of pole pairs | | 3 | 3 |
| Wiring | | Y | Y |
| Insulation class | | F | F |
| Supply voltage range | 1 x / 3 x VAC | 200 .. 480 | 200 .. 480 |
| DC Bus voltage range | VDC | 280 .. 680 | 280 .. 680 |
| Rated voltage | 3 x VAC | 181 | 181 |
| Rated torque | Nm | 0,6 | 1,2 |
| Rated current per phase | A | 0,8 | 1,5 |
| Stall torque | Nm | 0,7 | 1,5 |
| Stall current per phase | A | 0,9 | 1,8 |
| Peak torque | Nm | 2,8 | 6,0 |
| Peak current | A | 3,6 | 7,2 |
| Voltage constant | 1.000 V / $min^{-1}$ | 49,6 | 51,7 |
| Torque constant | Nm / $A_{rms}$ | 0,75 | 0,80 |
| Winding resistance (2 phases) | Ω | 26,4 | 9,8 |
| Winding inductance (2 phases) identical to Ld and Lq | mH | 37,6 | 18,6 |
| Electrical time constant | ms | 1,4 | 1,9 |
| Moment of inertia rotor | kg $cm^2$ | 0,22 | 0,41 |
| Anti condensing heating voltage | VDC | 35 | 26 |

**Certifications:**
UL-certified: Yes / Optional
Protection Class: IP66 / IP69K
Efficiency Class: IE4

# Drum motor - MTS113 Class

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This increases reliability, reduces operating costs and simplifies integration!

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- Oil free - minimize the risk of oil leaks
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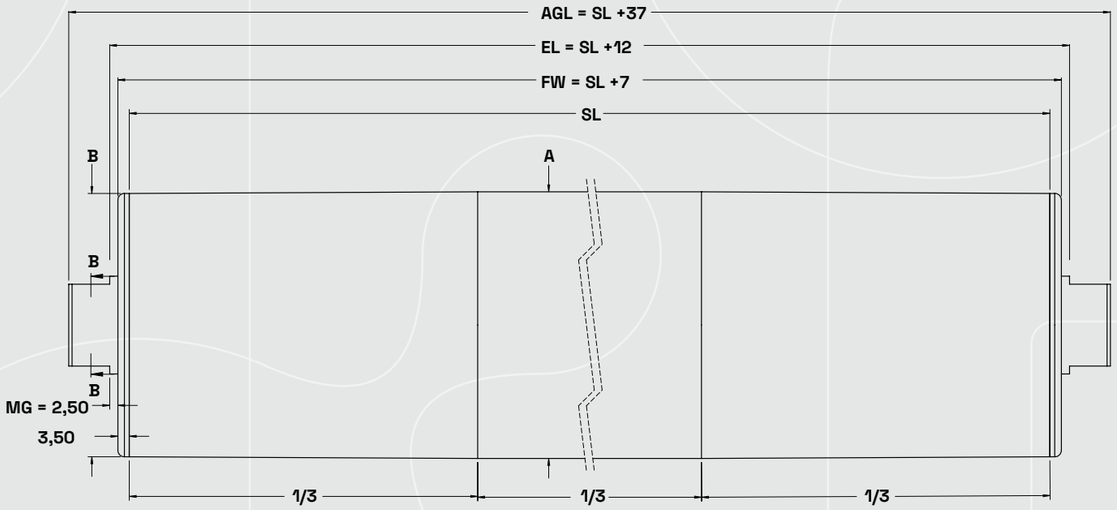
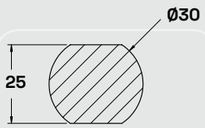



**Explanations:**

AGL = Total length of shaft
SL = Shell length (Reference length / ordering length)
EL = Installation length, inside diameter between side profiles
FW = Face width
MG = Length between drum motor and key

| Type | ØA [mm] | ØB [mm] | Shell length max. [mm] |
|---|---|---|---|
| Crowned | 113,5 | 112 | 1300 |
| Cylindrical | 112 | 112 | 1300 |
| Cylindrical with key | 113 | 113 | 850 |
| Any other dimensions and any other shell profiles on request | | | |



NGI

# Drum motor - MTS113 Class

## Motor Variants MTS113-0,19

Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 0,19 | 8 | 375 | 133 | 2,22 | 4,6 | 82 | 260 |
| 0,19 | 12 | 250 | 89 | 1,48 | 6,8 | 120 | 270 |
| 0,19 | 16 | 188 | 67 | 1,11 | 9,0 | 160 | 270 |
| 0,19 | 20 | 150 | 53 | 0,89 | 11,3 | 200 | 270 |
| 0,19 | 25 | 120 | 43 | 0,71 | 14 | 250 | 270 |
| 0,19 | 32 | 94 | 33 | 0,56 | 18 | 319 | 270 |
| 0,19 | 40 | 75 | 27 | 0,44 | 23 | 399 | 270 |
| 0,19 | 160 | 19 | 7 | 0,11 | 44 | 786 | 290 |

Custom gear combinations on requests.

## Motor Variants MTS113-0,38

Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 0,38 | 8 | 375 | 133 | 2,22 | 9,2 | 163 | 290 |
| 0,38 | 12 | 250 | 89 | 1,48 | 13,5 | 240 | 300 |
| 0,38 | 16 | 188 | 67 | 1,11 | 18 | 319 | 300 |
| 0,38 | 20 | 150 | 53 | 0,89 | 22,6 | 399 | 300 |
| 0,38 | 25 | 120 | 43 | 0,71 | 28 | 499 | 300 |
| 0,38 | 32 | 94 | 33 | 0,56 | 36,1 | 639 | 300 |
| 0,38 | 40 | 75 | 27 | 0,44 | 40 | 708 | 300 |
| 0,38 | 160 | 19 | 7 | 0,11 | 44 | 786 | 320 |

Custom gear combinations on requests.

## Motor Variants MTS113-0,72

Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 0,72 | 8 | 375 | 133 | 2,22 | 17,7 | 313 | 300 |
| 0,72 | 12 | 250 | 89 | 1,48 | 25,9 | 459 | 310 |
| 0,72 | 16 | 188 | 67 | 1,11 | 34,6 | 612 | 310 |
| 0,72 | 20 | 150 | 53 | 0,89 | 43,2 | 765 | 310 |
| 0,72 | 25 | 120 | 42 | 0,70 | 40 | 714 | 310 |
| 0,72 | 32 | 94 | 33 | 0,56 | 44,0 | 779 | 310 |

Custom gear combinations on requests.

## Motor Variants MTS113-1,01

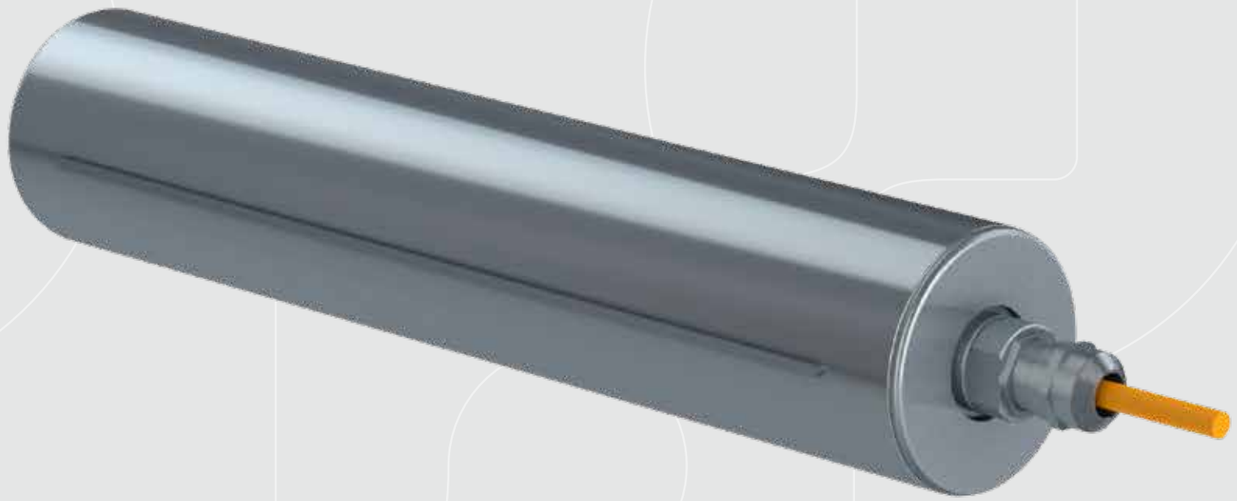
Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 1,01 | 8 | 375 | 133 | 2,22 | 18,0 | 319 | 320 |
| 1,01 | 12 | 250 | 89 | 1,48 | 36,1 | 639 | 330 |
| 1,01 | 16 | 188 | 67 | 1,11 | 44,0 | 779 | 330 |
| 1,01 | 20 | 150 | 53 | 0,89 | 44,0 | 779 | 330 |
| 1,01 | 25 | 120 | 42 | 0,70 | 40 | 714 | 330 |
| 1,01 | 32 | 94 | 33 | 0,56 | 44,0 | 779 | 330 |

Custom gear combinations on requests.

# Drum motor
# - MTS113 Class

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety

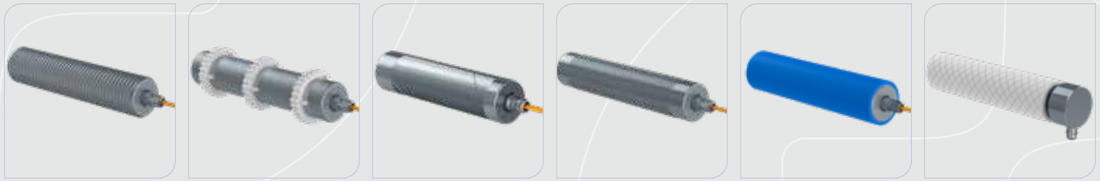


**Available with the following Drum motor shells**

We can supply all drum shell profiles also with sprockets as well as rubber sleeves.

- Cylindrical, crowned or conical shells
- Flat, crowned, conical or profiled rubber lining
- Radial grooves for round belts
- Milled guiding grooves and profiles

Many other designs are available, see some examples below.





# Drum motor
# - MTS113 Class

| Possible speed adjustment ranges: | |
|---|---|
| Sensorlees operation with suitable frequency inverter | 1 : 7 to 1 : 300 - (depending on Inverter type) |
| Servo drive and feedback | up to 1 : 10.000 |

| Options lead to an increase in the minimum shell length: | |
|---|---|
| **Option** | **SLmin (with option)** |
| Resolver | Minimum shell lenght $SL_{min}$ + 50 mm |
| SKS36 | Minimum shell lenght $SL_{min}$ + 70 mm |
| SKS36 with hybrid cable | Minimum shell lenght $SL_{min}$ + 120 mm |

| Motor data: | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Rated power** | **kW** | **0,19** | **0,38** | **0,72** | **0,72** | **1,01** | **1,01** |
| Rated speed | rpm | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| Rated frequency | Hz | 150 | 150 | 150 | 150 | 150 | 150 |
| Number of pole pairs | | 3 | 3 | 3 | 3 | 3 | 3 |
| Wiring | | Y | Y | Y | Y | Y | Y |
| Insulation class | | F | F | F | F | F | F |
| Supply voltage range | 1 x / 3 x VAC | 200 .. 480 | 200 .. 480 | 200 .. 240 | 380 .. 480 | 200 .. 240 | 380 .. 480 |
| DC Bus voltage range | VDC | 280 .. 680 | 280 .. 680 | 280 .. 340 | 540 .. 680 | 280 .. 340 | 540 .. 680 |
| Rated voltage | 3 x VAC | 181 | 181 | 181 | 320 | 181 | 320 |
| Rated torque | Nm | 0,6 | 1,2 | 2,3 | 2,3 | 3,2 | 3,2 |
| Rated current per phase | A | 0,8 | 1,5 | 2,6 | 1,6 | 3,7 | 2,1 |
| Stall torque | Nm | 0,7 | 1,5 | 2,8 | 2,8 | 3,5 | 3,5 |
| Stall current per phase | A | 0,9 | 1,8 | 3,1 | 1,8 | 3,9 | 2,2 |
| Peak torque | Nm | 2,8 | 6,0 | 11,2 | 11,2 | 14,0 | 14,0 |
| Peak current | A | 3,6 | 7,2 | 12,4 | 7,2 | 15,6 | 8,8 |
| Voltage constant | 1.000 V / $min^{-1}$ | 49,6 | 51,7 | 54,3 | 95,3 | 55,0 | 97,5 |
| Torque constant | Nm / $A_{rms}$ | 0,75 | 0,80 | 0,88 | 1,44 | 0,86 | 1,52 |
| Winding resistance (2 phases) | Ω | 26,4 | 9,8 | 4,6 | 14,2 | 2,8 | 9,0 |
| Winding inductance (2 phases) identical to Ld and Lq | mH | 37,6 | 18,6 | 11,8 | 36,2 | 8,4 | 26,0 |
| Electrical time constant | ms | 1,4 | 1,9 | 2,6 | 2,5 | 3,0 | 2,9 |
| Moment of inertia rotor | kg $cm^2$ | 0,22 | 0,41 | 1,40 | 1,40 | 1,93 | 1,93 |
| Anti condensing heating voltage | VDC | 35 | 26 | 23 | 40 | 19 | 34 |

**Certifications:**
UL-certified: Yes / Optional
Protection Class: IP66 / IP69K
Efficiency Class: IE4

# Drum motor - MTS115 Class

MTS115 synchronous drum motor is space-saving, all-in-one components with a motor and transmission system that is maintenance-free and fully protected within the drum.

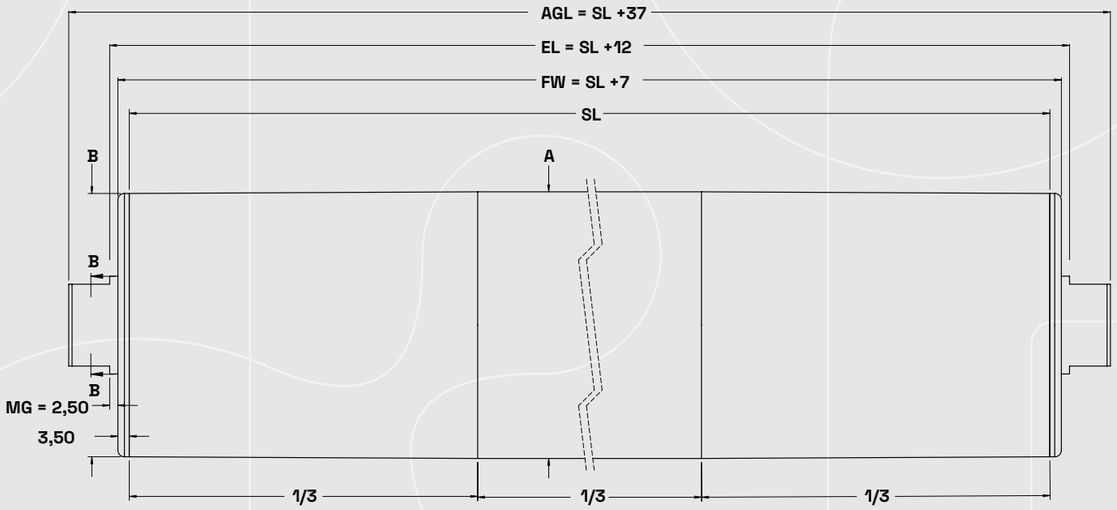
Our drum motors are completely oil-free. Oil contamination of conveyed goods is therefore impossible – a perfect match for food production industries.

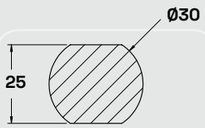
Synchronous drum motors offer the highest electrical efficiencies currently available and are extremely economical.

NGI synchronous motors have a higher efficiency and up to 9 times lower power than asynchronous drum motors due to minimized losses!

This increases reliability, reduces operating costs and simplifies integration!

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety


**Explanations:**

AGL = Total length of shaft
SL = Shell length (Reference length / ordering length)
EL = Installation length, inside diameter between side profiles
FW = Face width
MG = Length between drum motor and key

| Type | ØA [mm] | ØB [mm] | Shell length max. [mm] |
|---|---|---|---|
| Crowned | 113,5 | 112 | 1300 |
| Cylindrical | 112 | 112 | 1300 |
| Cylindrical with key | 113 | 113 | 850 |
| Any other dimensions and any other shell profiles on request | | | |



# Drum motor - MTS115 Class

## Motor Variants MTS115-0,72

Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 0,72 | 10 | 300 | 106 | 1,77 | 22 | 391 | 320 |
| 0,72 | 16 | 188 | 67 | 1,11 | 35 | 612 | 330 |
| 0,72 | 20 | 150 | 53 | 0,89 | 43 | 765 | 330 |
| 0,72 | 32 | 94 | 33 | 0,56 | 69 | 1224 | 330 |
| 0,72 | 40 | 75 | 27 | 0,44 | 86 | 1531 | 330 |
| 0,72 | 160 | 19 | 6,7 | 0,11 | 120 | 2124 | 350 |

Custom gear combinations on requests.

## Motor Variants MTS115-1,01

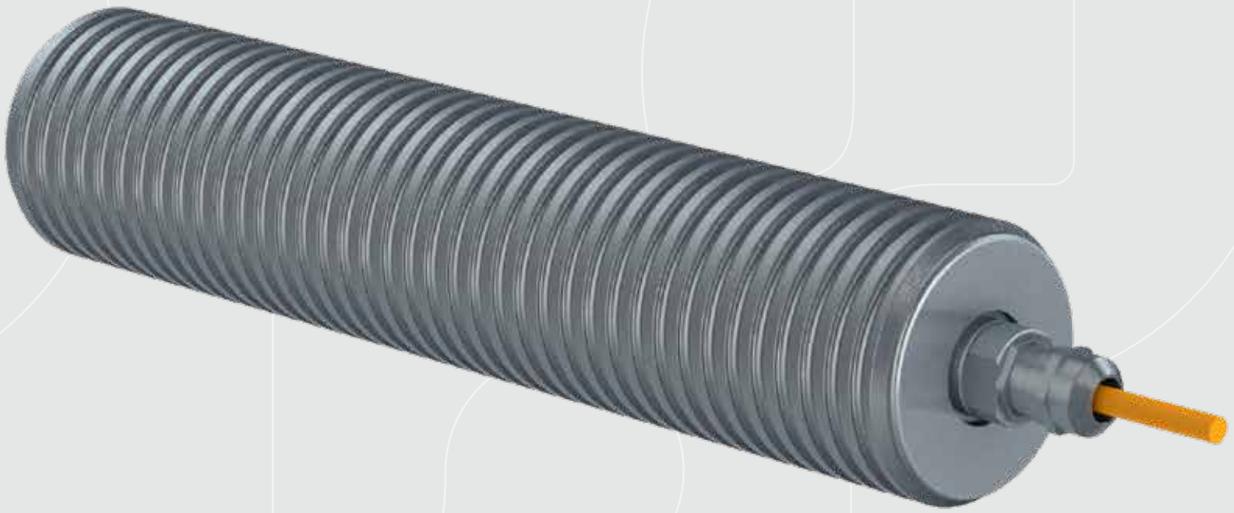
Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 1,01 | 10 | 300 | 106 | 1,77 | 31 | 544 | 340 |
| 1,01 | 16 | 188 | 67 | 1,11 | 48 | 852 | 350 |
| 1,01 | 20 | 150 | 53 | 0,89 | 60 | 1065 | 350 |
| 1,01 | 32 | 94 | 33 | 0,56 | 96 | 1704 | 350 |
| 1,01 | 40 | 75 | 27 | 0,44 | 110 | 1947 | 350 |
| 1,01 | 160 | 19 | 6,7 | 0,11 | 120 | 2124 | 370 |

Custom gear combinations on requests.

# Drum motor
# - MTS115 Class

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety

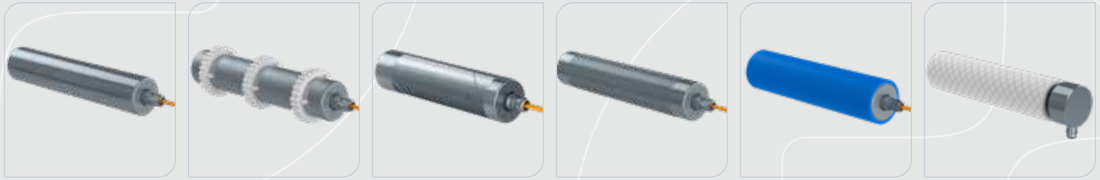


**Available with the following Drum motor shells**

We can supply all drum shell profiles also with sprockets as well as rubber sleeves.

- Cylindrical, crowned or conical shells
- Flat, crowned, conical or profiled rubber lining
- Radial grooves for round belts
- Milled guiding grooves and profiles

Many other designs are available, see some examples below.





# Drum motor
# - MTS115 Class

| Possible speed adjustment ranges: | |
|---|---|
| Sensorlees operation with suitable frequency inverter | 1 : 7 to 1 : 300 - (depending on Inverter type) |
| Servo drive and feedback | up to 1 : 10.000 |

| Options lead to an increase in the minimum shell length: | |
|---|---|
| **Option** | **SLmin (with option)** |
| Resolver | Minimum shell lenght $SL_{min}$ + 50 mm |
| SKS36 | Minimum shell lenght $SL_{min}$ + 70 mm |
| SKS36 with hybrid cable | Minimum shell lenght $SL_{min}$ + 120 mm |

| Motor data: | | | | | |
|---|---|---|---|---|---|
| **Rated power** | **kW** | **0,72** | **0,72** | **1,01** | **1,01** |
| Rated speed | rpm | 3.000 | 3.000 | 3.000 | 3.000 |
| Rated frequency | Hz | 150 | 150 | 150 | 150 |
| Number of pole pairs | | 3 | 3 | 3 | 3 |
| Wiring | | Y | Y | Y | Y |
| Insulation class | | F | F | F | F |
| Supply voltage range | 1 x / 3 x VAC | 200 .. 240 | 380 .. 480 | 200 .. 240 | 380 .. 480 |
| DC Bus voltage range | VDC | 280 .. 340 | 540 .. 680 | 280 .. 340 | 540 .. 680 |
| Rated voltage | 3 x VAC | 181 | 320 | 181 | 320 |
| Rated torque | Nm | 2,3 | 2,3 | 3,2 | 3,2 |
| Rated current per phase | A | 2,6 | 1,6 | 3,7 | 2,1 |
| Stall torque | Nm | 2,8 | 2,8 | 3,5 | 3,5 |
| Stall current per phase | A | 3,1 | 1,8 | 3,9 | 2,2 |
| Peak torque | Nm | 11,2 | 11,2 | 14,0 | 14,0 |
| Peak current | A | 12,4 | 7,2 | 15,6 | 8,8 |
| Voltage constant | 1.000 V / $min^{-1}$ | 54,3 | 95,3 | 55,0 | 97,5 |
| Torque constant | Nm / $A_{rms}$ | 0,88 | 1,44 | 0,86 | 1,52 |
| Winding resistance (2 phases) | Ω | 4,6 | 14,2 | 2,8 | 9,0 |
| Winding inductance (2 phases) identical to Ld and Lq | mH | 11,8 | 36,2 | 8,4 | 26,0 |
| Electrical time constant | ms | 2,6 | 2,5 | 3,0 | 2,9 |
| Moment of inertia rotor | kg $cm^2$ | 1,40 | 1,40 | 1,93 | 1,93 |
| Anti condensing heating voltage | VDC | 23 | 40 | 19 | 34 |

**Certifications:**
UL-certified: Yes / Optional
Protection Class: IP66 / IP69K
Efficiency Class: IE4

# Drum motor - MTS138 Class

MTS138 synchronous drum motor is space-saving, all-in-one components with a motor and transmission system that is maintenance-free and fully protected within the drum.

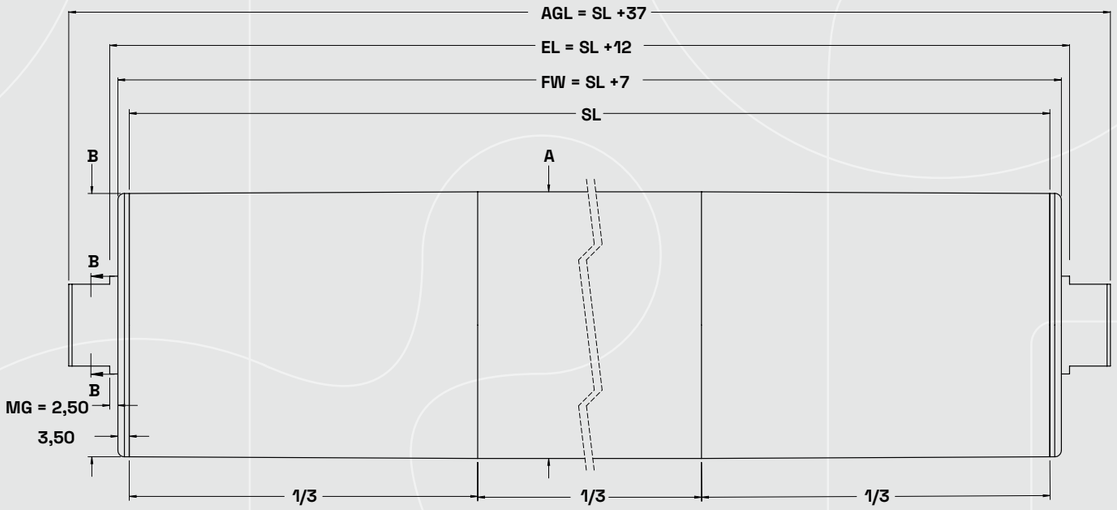
Our drum motors are completely oil-free. Oil contamination of conveyed goods is therefore impossible – a perfect match for food production industries.

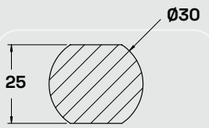
Synchronous drum motors offer the highest electrical efficiencies currently available and are extremely economical.

NGI synchronous motors have a higher efficiency and up to 9 times lower power than asynchronous drum motors due to minimized losses!

This increases reliability, reduces operating costs and simplifies integration!

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety


**Explanations:**

AGL = Total length of shaft
SL = Shell length (Reference length / ordering length)
EL = Installation length, inside diameter between side profiles
FW = Face width
MG = Length between drum motor and key

| Type | ØA [mm] | ØB [mm] | Shell length max. [mm] |
|---|---|---|---|
| Crowned | 138 | 136 | 1500 |
| Cylindrical | 136 | 136 | 1500 |
| Cylindrical with key | 137 | 137 | 850 |
| Any other dimensions and any other shell profiles on request | | | |



# Drum motor - MTS138 Class

## Motor Variants MTS138-0,72

Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 0,72 | 10 | 300 | 130 | 2,17 | 22,1 | 320 | 320 |
| 0,72 | 16 | 188 | 81 | 1,35 | 34,6 | 501 | 330 |
| 0,72 | 20 | 150 | 65 | 1,08 | 43,2 | 627 | 330 |
| 0,72 | 32 | 94 | 41 | 0,68 | 69,2 | 1003 | 330 |
| 0,72 | 40 | 75 | 33 | 0,54 | 86,5 | 1253 | 330 |
| 0,72 | 160 | 19 | 8 | 0,14 | 120 | 1.765 | 350 |

Custom gear combinations on requests.

## Motor Variants MTS138-1,01

Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 1,01 | 10 | 300 | 130 | 2,17 | 31,0 | 445 | 340 |
| 1,01 | 16 | 188 | 81 | 1,35 | 48,1 | 698 | 350 |
| 1,01 | 20 | 150 | 65 | 1,08 | 60,2 | 872 | 350 |
| 1,01 | 32 | 94 | 41 | 0,68 | 96,3 | 1395 | 350 |
| 1,01 | 40 | 75 | 33 | 0,54 | 110 | 1594 | 350 |
| 1,01 | 160 | 19 | 8 | 0,14 | 120 | 1.765 | 370 |

Custom gear combinations on requests.

# Drum motor
# - MTS138 Class

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
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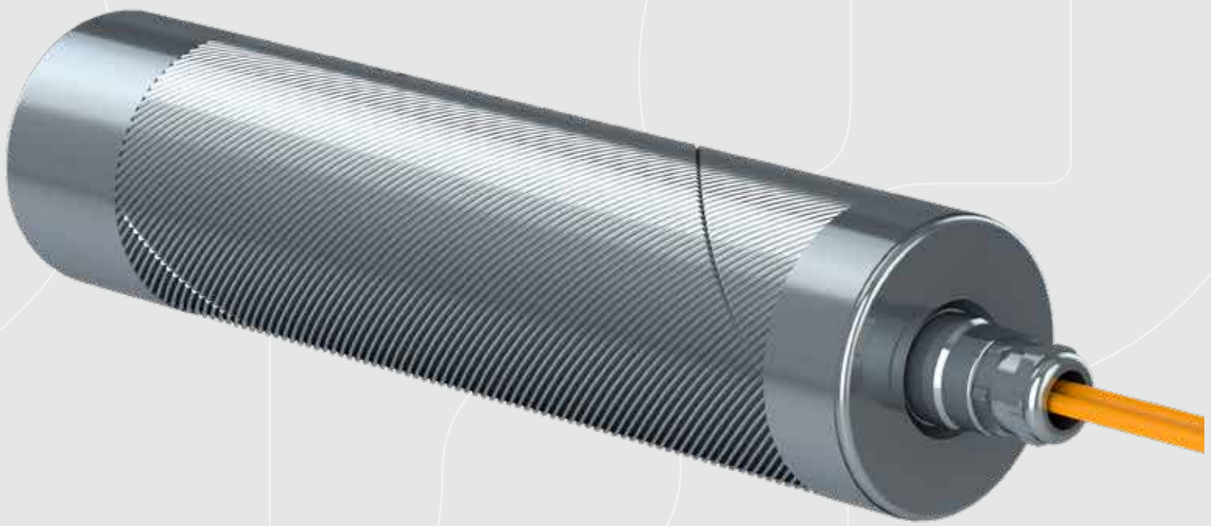
- Enhanced food safety

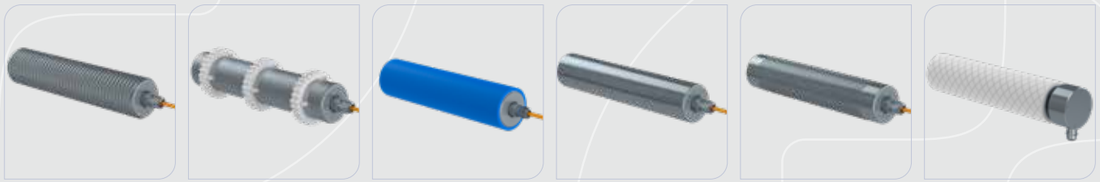


**Available with the following Drum motor shells**

We can supply all drum shell profiles also with sprockets as well as rubber sleeves.

- Cylindrical, crowned or conical shells
- Flat, crowned, conical or profiled rubber lining
- Radial grooves for round belts
- Milled guiding grooves and profiles

Many other designs are available, see some examples below.





NGI

# Drum motor
# - MTS138 Class

| Possible speed adjustment ranges: | |
|---|---|
| Sensorlees operation with suitable frequency inverter | 1 : 7 to 1 : 300 - (depending on Inverter type) |
| Servo drive and feedback | up to 1 : 10.000 |

| Options lead to an increase in the minimum shell length: | |
|---|---|
| **Option** | **SLmin (with option)** |
| Resolver | Minimum shell lenght $SL_{min}$ + 50 mm |
| SKS36 | Minimum shell lenght $SL_{min}$ + 70 mm |
| SKS36 with hybrid cable | Minimum shell lenght $SL_{min}$ + 120 mm |

| Motor data: | | | | | |
|---|---|---|---|---|---|
| **Rated power** | **kW** | **0,72** | **0,72** | **1,01** | **1,01** |
| Rated speed | rpm | 3.000 | 3.000 | 3.000 | 3.000 |
| Rated frequency | Hz | 150 | 150 | 150 | 150 |
| Number of pole pairs | | 3 | 3 | 3 | 3 |
| Wiring | | Y | Y | Y | Y |
| Insulation class | | F | F | F | F |
| Supply voltage range | 1 x / 3 x VAC | 200 .. 240 | 380 .. 480 | 200 .. 240 | 380 .. 480 |
| DC Bus voltage range | VDC | 280 .. 340 | 540 .. 680 | 280 .. 340 | 540 .. 680 |
| Rated voltage | 3 x VAC | 181 | 320 | 181 | 320 |
| Rated torque | Nm | 2,3 | 2,3 | 3,2 | 3,2 |
| Rated current per phase | A | 2,6 | 1,6 | 3,7 | 2,1 |
| Stall torque | Nm | 2,8 | 2,8 | 3,5 | 3,5 |
| Stall current per phase | A | 3,1 | 1,8 | 3,9 | 2,2 |
| Peak torque | Nm | 11,2 | 11,2 | 14,0 | 14,0 |
| Peak current | A | 12,4 | 7,2 | 15,6 | 8,8 |
| Voltage constant | 1.000 V / $min^{-1}$ | 54,3 | 95,3 | 55,0 | 97,5 |
| Torque constant | Nm / $A_{rms}$ | 0,88 | 1,44 | 0,86 | 1,52 |
| Winding resistance (2 phases) | Ω | 4,6 | 14,2 | 2,8 | 9,0 |
| Winding inductance (2 phases) identical to Ld and Lq | mH | 11,8 | 36,2 | 8,4 | 26,0 |
| Electrical time constant | ms | 2,6 | 2,5 | 3,0 | 2,9 |
| Moment of inertia rotor | kg $cm^2$ | 1,40 | 1,40 | 1,93 | 1,93 |
| Anti condensing heating voltage | VDC | 23 | 40 | 19 | 34 |

**Certifications:**
UL-certified: No
Protection Class: IP66 / IP69K
Efficiency Class: IE4

# Drum motor
# - MTD138 Class

MTD138 synchronous drum motor is space-saving, all-in-one components with a motor and transmission system that is maintenance-free and fully protected within the drum.

Our drum motors are completely oil-free. Oil contamination of conveyed goods is therefore impossible – a perfect match for food production industries.

Synchronous drum motors offer the highest electrical efficiencies currently available and are extremely economical.

NGI synchronous motors have a higher efficiency and up to 9 times lower power than asynchronous drum motors due to minimized losses!

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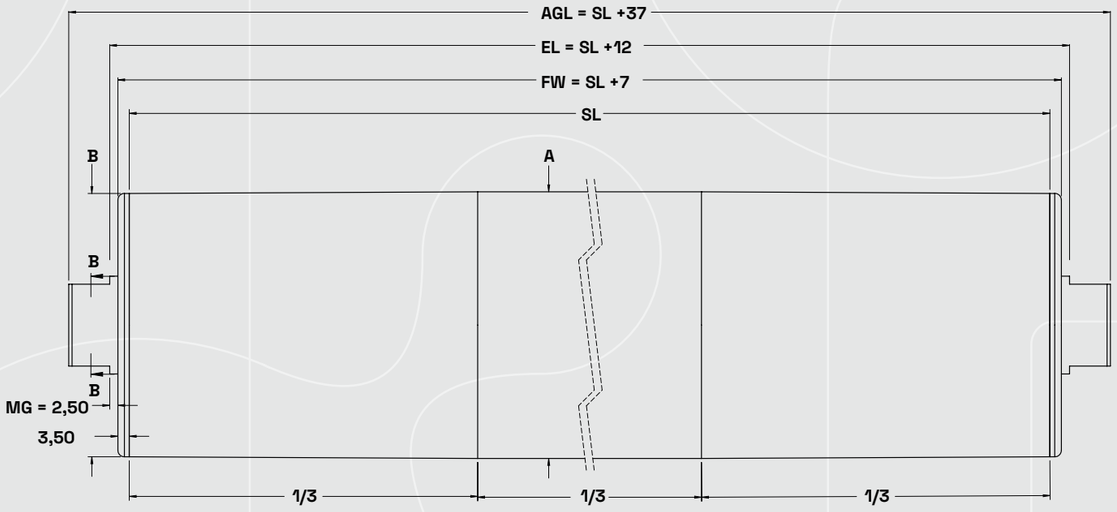


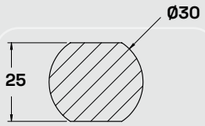


**Explanations:**

AGL = Total length of shaft
SL = Shell length (Reference length / ordering length)
EL = Installation length, inside diameter between side profiles
FW = Face width
MG = Length between drum motor and key

| Type | ØA [mm] | ØB [mm] | Shell length max. [mm] |
|---|---|---|---|
| Crowned | 138 | 136 | 1500 |
| Cylindrical | 136 | 136 | 1500 |
| Cylindrical with key | 137 | 137 | 850 |
| Any other dimensions and any other shell profiles on request | | | |



NGI

# Drum motor
# - MTD138 Class

## Motor Variants MTD138-1,5

| Rated Values refer to the drum shell | | | | | | | |
|---|---|---|---|---|---|---|---|
| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
| 1,50 | 10 | 300 | 130 | 2,2 | 38 | 551 | 350 |
| 1,50 | 16 | 188 | 81 | 1,4 | 73 | 1064 | 360 |
| 1,50 | 20 | 150 | 65 | 1,1 | 92 | 1330 | 360 |
| 1,50 | 32 | 94 | 41 | 0,68 | 120 | 1739 | 360 |

Custom gear combinations on requests.

# Drum motor
# - MTD138 Class

- Lower energy consumption
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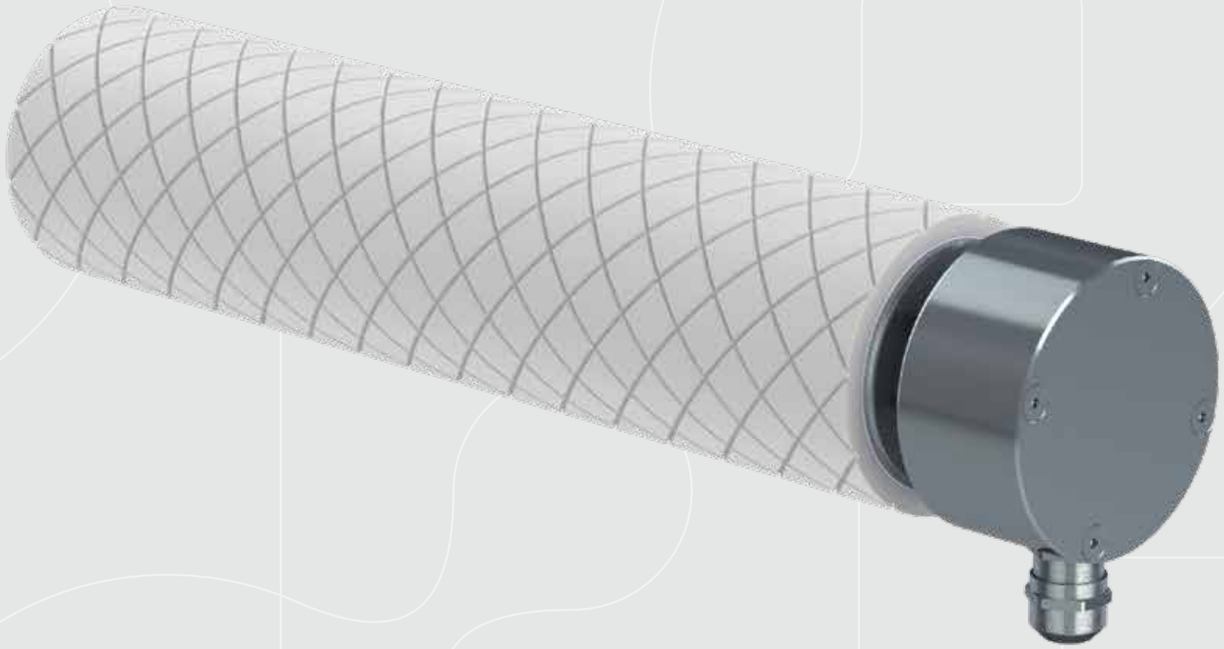

**Available with the following Drum motor shells**

We can supply all drum shell profiles also with sprockets as well as rubber sleeves.

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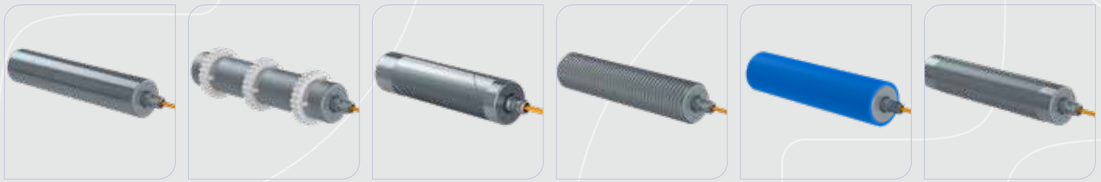



# Drum motor
# - MTD138 Class

| Possible speed adjustment ranges: | |
|---|---|
| Sensorlees operation with suitable frequency inverter | 1 : 7 to 1 : 300 - (depending on Inverter type) |
| Servo drive and feedback | up to 1 : 10.000 |

| Options lead to an increase in the minimum shell length: | |
|---|---|
| **Option** | **SLmin (with option)** |
| Resolver | Minimum shell lenght $SL_{min}$ + 50 mm |
| SKS36 | Minimum shell lenght $SL_{min}$ + 70 mm |
| SKS36 with hybrid cable | Minimum shell lenght $SL_{min}$ + 120 mm |

| Motor data: | | | |
|---|---|---|---|
| **Rated power** | **kW** | **1,50** | **1,5** |
| Rated speed | rpm | 3.000 | 3.000 |
| Rated frequency | Hz | 150 | 150 |
| Number of pole pairs | | 3 | 3 |
| Wiring | | Y | Y |
| Insulation class | | F | F |
| Supply voltage range | 1 x / 3 x VAC | 200 .. 240 | 380 .. 480 |
| DC Bus voltage range | VDC | 280 .. 340 | 540 .. 680 |
| Rated voltage | 3 x VAC | 171 | 318 |
| Rated torque | Nm | 4,8 | 4,8 |
| Rated current per phase | A | 6,1 | 3,3 |
| Stall torque | Nm | 5,0 | 5,0 |
| Stall current per phase | A | 6,2 | 3,3 |
| Peak torque | Nm | 12,5 | 12,5 |
| Peak current | A | 15,5 | 8,3 |
| Voltage constant | 1.000 V / $min^{-1}$ | 51,2 | 100,5 |
| Torque constant | Nm / $A_{rms}$ | 0,78 | 1,45 |
| Winding resistance (2 phases) | Ω | 1,9 | 7,1 |
| Winding inductance (2 phases) identical to Ld and Lq | mH | 12,5 | 43,0 |
| Electrical time constant | ms | 6,5 | 6,0 |
| Moment of inertia rotor | kg $cm^2$ | 1,73 | 1,73 |
| Anti condensing heating voltage | VDC | 18 | 36 |

**Certifications:**
UL-certified: No
Protection Class: IP66 / IP69K
Efficiency Class: IE4

# Drum motor - MTD139 Class

MTD139 synchronous drum motor is space-saving, all-in-one components with a motor and transmission system that is maintenance-free and fully protected within the drum.

Our drum motors are completely oil-free. Oil contamination of conveyed goods is therefore impossible – a perfect match for food production industries.

Synchronous drum motors offer the highest electrical efficiencies currently available and are extremely economical.

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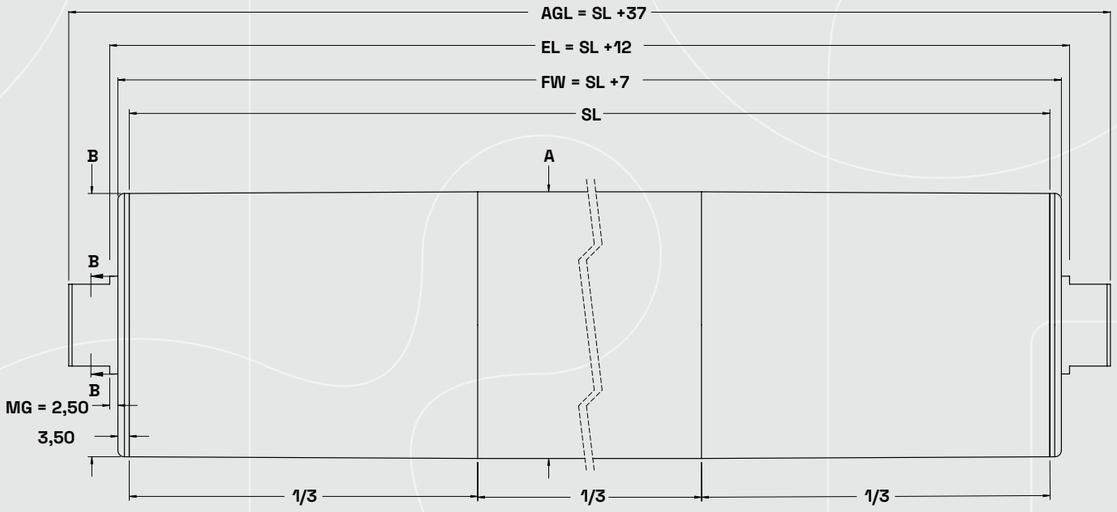
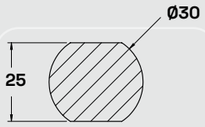
- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety


**Explanations:**

AGL = Total length of shaft
SL = Shell length (Reference length / ordering length)
EL = Installation length, inside diameter between side profiles
FW = Face width
MG = Length between drum motor and key

| Type | ØA [mm] | ØB [mm] | Shell length max. [mm] |
|---|---|---|---|
| Crowned | 138 | 136 | 1500 |
| Cylindrical | 136 | 136 | 1500 |
| Cylindrical with key | 137 | 137 | 850 |
| Any other dimensions and any other shell profiles on request | | | |



NGI

# Drum motor - MTD139 Class

## Motor Variants MTD139-1,5

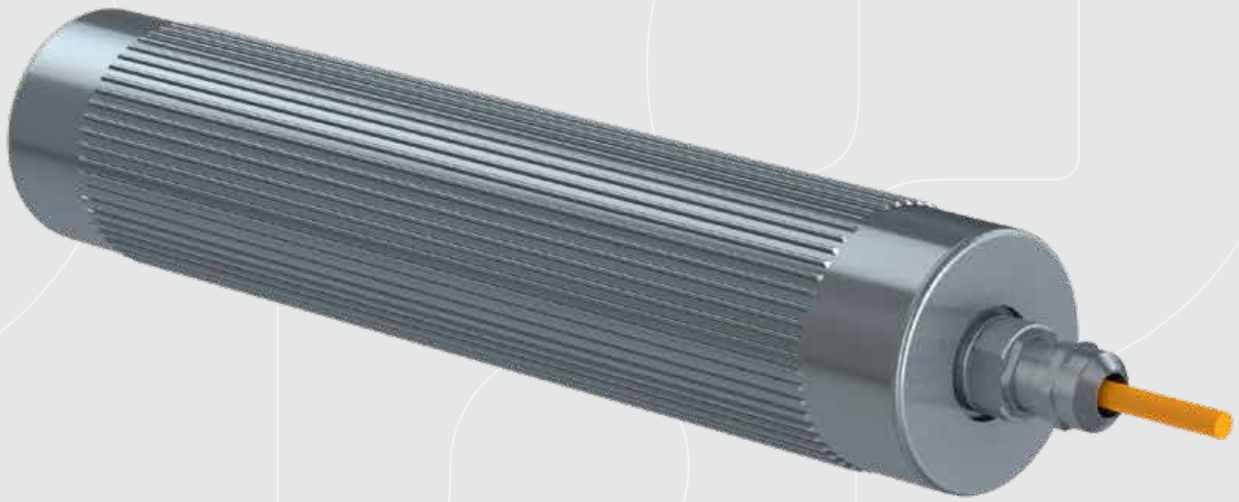
Rated Values refer to the drum shell

| Power [kW] | Gear ratio [i] | Rotational Speed [RPM] | Linear Speed [m/min.] | Linear Speed [m/s] | Torque [Nm] | Belt pull [N] | Min. Shell Length [mm] |
|---|---|---|---|---|---|---|---|
| 1,50 | 32 | 94 | 41 | 0,68 | 145 | 2084 | 410 |
| 1,50 | 40 | 75 | 33 | 0,54 | 180 | 2605 | 410 |

Custom gear combinations on requests.

# Drum motor
# - MTD139 Class

- Lower energy consumption
- Oil free - minimize the risk of oil leaks
- Higher motor efficiency
- Enhanced food safety

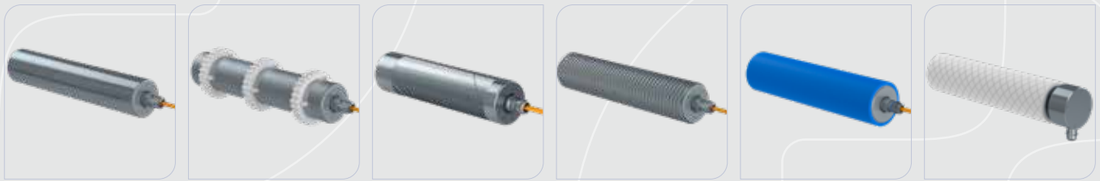


**Available with the following Drum motor shells**

We can supply all drum shell profiles also with sprockets as well as rubber sleeves.

- Cylindrical, crowned or conical shells
- Flat, crowned, conical or profiled rubber lining
- Radial grooves for round belts
- Milled guiding grooves and profiles

Many other designs are available, see some examples below.





# Drum motor
# - MTD139 Class

| Possible speed adjustment ranges: | |
|---|---|
| Sensorlees operation with suitable frequency inverter | 1 : 7 to 1 : 300 - (depending on Inverter type) |
| Servo drive and feedback | up to 1 : 10.000 |

| Options lead to an increase in the minimum shell length: | |
|---|---|
| **Option** | **SLmin (with option)** |
| Resolver | Minimum shell lenght $SL_{min}$ + 50 mm |
| SKS36 | Minimum shell lenght $SL_{min}$ + 70 mm |
| SKS36 with hybrid cable | Minimum shell lenght $SL_{min}$ + 120 mm |

| Motor data: | | | |
|---|---|---|---|
| **Rated power** | **kW** | **1,5** | **1,5** |
| Rated speed | rpm | 3.000 | 3.000 |
| Rated frequency | Hz | 150 | 150 |
| Number of pole pairs | | 3 | 3 |
| Wiring | | Y | Y |
| Insulation class | | F | F |
| Supply voltage range | 1 x / 3 x VAC | 200 .. 240 | 380 .. 480 |
| DC Bus voltage range | VDC | 280 .. 340 | 540 .. 680 |
| Rated voltage | 3 x VAC | 171 | 318 |
| Rated torque | Nm | 4,8 | 4,8 |
| Rated current per phase | A | 6,1 | 3,3 |
| Stall torque | Nm | 5,0 | 5,0 |
| Stall current per phase | A | 6,2 | 3,3 |
| Peak torque | Nm | 12,5 | 12,5 |
| Peak current | A | 15,5 | 8,3 |
| Voltage constant | 1.000 V / $min^{-1}$ | 51,2 | 100,5 |
| Torque constant | Nm / $A_{rms}$ | 0,78 | 1,45 |
| Winding resistance (2 phases) | Ω | 1,9 | 7,1 |
| Winding inductance (2 phases) identical to Ld and Lq | mH | 12,5 | 43,0 |
| Electrical time constant | ms | 6,5 | 6,0 |
| Moment of inertia rotor | kg $cm^2$ | 1,73 | 1,73 |
| Anti condensing heating voltage | VDC | 18 | 36 |

**Certifications:**
UL-certified: No
Protection Class: IP66 / IP69K
Efficiency Class: IE4

# Cable specifications

## Cable specifications

| Power cable < 5m | |
|---|---|
| Construction | 4 x 0,50 mm² + (2 x 0,25 mm²)C shielded |
| Voltage | 600 V (0,5 mm²) |
| Sheath material | PUR (TPE-U) |
| Outer diameter | 7,6 mm (max. 7,9 mm) |
| Sheath colour | orange (similar to RAL 2003) |
| Temperature range (fixed in place) | - 50°C to + 105°C |
| Minimum bending radius (fixed in place) | 7,5 x D |
| Flame retardant | Yes |
| Halogen free | Yes |
| Oil resistant | Yes |
| UL | AWM STYLE 21928 / 11559 105°C 600 V |

| Power cable ≥ 5m | |
|---|---|
| Construction | 4 x 0,75 mm² + (2 x 0,34 mm²)C shielded |
| Voltage | 600 V (0,5 mm²) |
| Sheath material | PUR (TPE-U) |
| Outer diameter | 7,6 mm (max. 7,9 mm) |
| Sheath colour | orange (similar to RAL 2003) |
| Temperature range (fixed in place) | - 50°C to + 105°C |
| Minimum bending radius (fixed in place) | 7,5 x D |
| Flame retardant | Yes |
| Halogen free | Yes |
| Oil resistant | Yes |
| UL | AWM STYLE 21928 / 11559 105°C 600 V |

| Colour assignment power | Signal / Function |
|---|---|
| Black / 1 | U |
| Black / 2 | V |
| Black / 3 | W |
| Green-yellow | PE |
| Brown | KTY (+) or PTC |
| White | KTY (-) or PTC |

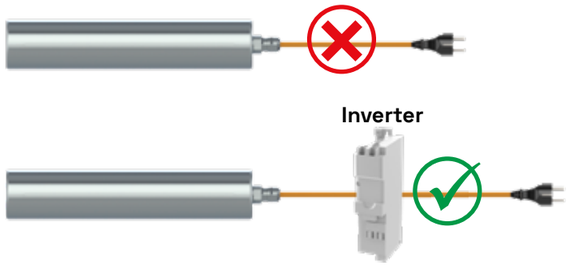
| Pin assignment Power / Option: Terminal Box | Signal / Function |
|---|---|
| L1 | U |
| L2 | V |
| L3 | W |
| M5x8 Screw | PE |
| KTY+ / 5 | KTY (+) or PTC |
| KTY- / 6 | KTY (-) or PTC |



# Option Feedbacksystem

## Characteristics - Inverter

MTS drum motors have an inverter between the electrical socket and the drum motor in order to avoid overload of the electrical circuits in the initial starting phase. The MTS drum motors runs at 150 Hz as standard, the frequency inverter enables the motor to run at various speeds.




## Option: Motor feedback

MTS drum motors can be supplied with either resolver or encoder type SKS36, ECI 1119 or type EDS35:

## Resolver

| Resolver | |
|---|---|
| Number of poles | 2 |
| Input frequency | 10 kHz |
| Input voltage | 7 $Vr_{ms}$ |
| Connection | Signal cable 6 x 0,14 qmm, shielded |

| Cable specifications / Resolver cable | |
|---|---|
| Construction | 3 x 2 x 0,14 mm² shielded |
| Sheath material | PVC |
| Outer diameter | 5,8 mm |
| Sheath colour | Grey (RAL 7032) |
| Temperature range (fixed in place) | - 40 °C to + 80 °C |
| Minimum bending radius (fixed in place) | 6 x D |
| Flame retardant | Yes |
| Halogen free | Yes |
| Oil resistant | Yes |
| UL | No |

| Colour assignment resolver cable | Signal / Function |
|---|---|
| White | REF + |
| Brown | REF - |
| Green | SIN + |
| Yellow | SIN - |
| Pink | COS + |
| Grey | COS - |

# Option Feedbacksystem

## SKS36

| SKS36 | |
|---|---|
| Number of Sin / Cos Periods per revolution | 128 |
| Number of absolute revolutions | 1 (single turn) |
| Resolution | 4096 |
| Communication interface | HIPERFACE |
| Supply voltage | 7 to 12 V DC |
| Connection | 2-Cable solution, Hybrid cable |

Note: Motor data plate storage on SKS36 for PACDrive 3. Empty storage on request.

| Cable specifications / SKS36 cable / 2-Cable solution | |
|---|---|
| Construction | 4 x 2 x 0,15 mm² shielded |
| Sheath material | PUR (TPE-U) |
| Outer diameter | 5,3 mm |
| Sheath colour | Black |
| Temperature range (fixed in place) | - 30 °C to + 90 °C |
| Minimum bending radius (fixed in place) | 5 x D |

| Colour assignment SKS36 | Signal / Function |
|---|---|
| Grey | DATA + |
| Green | DATA - |
| White | SIN + |
| Brown | REF SIN |
| Pink | COS + |
| Black | REF COS |
| Red | US (8 V DC) |
| Blue | GND (0 V DC) |

| Cable specifications / SKS36 cable / Hybrid cable | |
|---|---|
| Construction | Power 4x0,5 + 2x0,5 Signal 3x(2x)0,14+2x0,34 |
| Voltage | 1000V peak |
| Sheath material | PUR |
| Outer diameter | 11,1mm |
| Sheath colour | grey (similar to RAL 7001) |
| Temperature range (fixed in place) | - 25°C to + 80°C |
| Minimum bending radius (fixed in place) | 5 x D |
| Flame retardant | Yes |
| Halogen free | Yes |
| Oil resistant | Yes |
| UL | AWM STYLE 20910 (80°C) |



# Option Feedbacksystem

| Colour assignment / SKS36 / Hybrid cable | Signal / Function |
|---|---|
| Black / 1 | U |
| Black / 2 | V |
| Black / 3 | W |
| green-yellow | PE |
| Black / 7 | KTY (+) or PTC |
| Black / 8 | KTY (-) or PTC |
| Yellow | DATA + |
| Green | DATA - |
| White | SIN + |
| Brown | REF SIN |
| Pink | COS + |
| Grey | REF COS |
| Red | US (8 V DC) |
| Blue | GND (0 V DC) |

## EDS35

| EDS35 | |
|---|---|
| Resolution per turn | 24 bit |
| Number of absolute detectable turns | 1 |
| Measuring step per turn | 16.777.216 |
| Communication interface | HIPERFACE DSL |
| Connection | Hybrid cabel, Terminal Box |

| Cable specifications / EDS35 / Hybrid cable | |
|---|---|
| Construction | RCB-4x1,0+(2x0,126mm²)-PUR-9-S-000 |
| Voltage | 1000V |
| Sheath material | PUR |
| Outer diameter | 9mm +-0,3 |
| Sheath colour | orange |
| Temperature range (fixed in place) | - 50°C to + 105°C |
| Minimum bending radius (fixed in place) | 7,5 x D |
| Flame retardant | Yes |
| Halogen free | Yes |
| Oil resistant | Yes |
| UL | AWM Style 21223 80°C 1000V |

| Colour assignment / Cable specifications / EDS35 / Hybrid cable | Signal / Function |
|---|---|
| Black / 1 | U |
| Black / 2 | V |
| Black / 3 | W |
| Green-yellow | PE |
| blue | GND / DSL |
| white | +US / DSL+ |

# Option Feedbacksystem

## ECI1119

| ECI1119 | |
|---|---|
| Resolution per turn | 19 bit |
| Number of absolute detectable turns | 1 |
| Measuring step per turn | 524.288 |
| Communication interface | EnDat 2.2 |
| Connection | Hybrid cable |

| Cable specifications / ECI1119 / Hybrid cable | |
|---|---|
| Construction | Power 4x0,5 + 2x0,5 Signal 3x(2x)0,14+2x0,34 |
| Voltage | 1000V peak |
| Sheath material | PUR |
| Outer diameter | 11,1mm |
| Sheath colour | grey (similar to RAL 7001) |
| Temperature range (fixed in place) | - 25°C to + 80°C |
| Minimum bending radius (fixed in place) | 5 x D |
| Flame retardant | Yes |
| Halogen free | Yes |
| Oil resistant | Yes |
| UL | AWM STYLE 20910 (80°C) |

| Colour assignment / ECI1119 / Hybrid cable | Signal / Function |
|---|---|
| Black / 1 | U |
| Black / 2 | V |
| Black / 3 | W |
| Green-yellow | PE |
| brown Sensor | UP |
| white Sensor | 0 V |
| grey | DATA |
| pink | DATA |
| green | CLOCK |
| yellow | CLOCK |

Other feedback systems on request e.g. EnDat 2.2 or incremental encoder.



# Thermal protection and material variants

## Thermal protection

The MTS drum-motor is fitted, as standard, with a KTY84-130 thermal sensor. If necessary, we can also offer a PTC thermal sensor. The temperature sensor must be monitored by an external circuit, such as a frequency convertor which switches off the power supply to the motor, if the maximum temperature is exceeded.

| KTY84-130, technical data | |
|---|---|
| Measurement range | - 40 °C to + 300 °C |
| Reference resistance | 1.000 Ohm |
| Reference temperature | 100 °C |
| Tolerance | +/- 3 % |
| Measurement current | 2 mA |

Optionally it is possible to fit a PTC sensor.
Not every Inverter type can monitor KTY thermal protection, most of Inverters types operate with PTC.

| PTC, technical Data | |
|---|---|
| Operating voltage range | 2,5 to 24 V DC |
| Maximum permissible operating voltage | 30 V DC |

| Resistance at switching temperature | |
|---|---|
| - 20 °C to $T_{REF}$ - 20 K | < 250 Ω |
| $T_{REF}$ - 5 K | ≤ 550 Ω |
| $T_{REF}$ + 5 K | ≥ 1.330 Ω |
| $T_{REF}$ + 15 K | ≥ 4.000 Ω |

## Constructions / Material variants

| Component | Variants | Standard | Option |
|---|---|---|---|
| Shell | Crowned | Steel 1.0038 | Stainless steel 1.4301 |
| | Cylindrical | Steel 1.0038 | Stainless steel 1.4301 |
| | Cylindrical with key | Steel 1.0038 | Stainless steel 1.4301 |
| [Other materials on request] | Variants: Any profiled drum shell design, knurling (length depending) | | |
| | Flat rubber lagging | NBR, shore 50 - 90. Colour: blue or white | |
| | Profiled rubber lagging | NBR, shore 50 - 90. Colour: blue or white | |
| Shaft | D = 30 / SW = 25 / SFL = 12,5 | Stainless steel 1.4305 | |
| | Alternative design on request | Stainless steel 1.4305 | |
| Cover | Laser engreaved name plate | Stainless steel 1.4305 | |
| Labyrinth seal | | Galvanised steel | Stainless steel 1.4301 |
| Electrical connection | Straight cable gland | Brass | Stainless steel 1.4305 |
| | Elbow cable gland | Stainless steel 1.4305 | |
| | Terminal box | Stainless steel 1.4305 | |
| | Cable with connection plugs on request | | |

# Tested frequency converters / servo drives

Our drum motors have been tested with the following frequency converters and servo drives. This does not limited our capabilities to these drives.

| | Driver / VFD closed loop | | VFD / sensorless |
|---|---|---|---|
| **Manufacturer** | **Type** | **Geber / Sensor** | **Type** |
| ABB | | | ACSM1 |
| Rockwell / Allen Bradley | Kinetix 5700 | Encoder<br>Resolver with converter | AB Powerflex 525 |
| Beckhoff | AX5000<br>AX8000 | Resolver, SKS36<br>EDS35 | AX5000<br>AX8000 |
| Bonfiglioli | | | AGILE |
| B&R | | | ACOPOS Sinverter P74 |
| Danfoss | VLT FC 302 | Resolver | VLT FC 2800<br>VLT FC 302 |
| Emerson | Unidrive M700 | Encoder | Unidrive M600 |
| Festo | | | CMMT-AS |
| Hitachi | | | WJ200 |
| Invertek | | | Optidrive E3<br>Optidrive P2 |
| KEB | Combivert F5<br><br>Combivert S6 | Resolver<br><br>Resolver / Encoder | Combivert F5 SCL<br>Combivert G6<br>Combivert S6 |
| Lenze | i950 series<br><br><br>8400 Top Line | Resolver<br>Encoder<br>Encoder<br>Resolver | i500 series<br>8400 State Line<br>8400 Motec |
| Nord | | | SK 215E<br>SK 500 P |
| Omron | | | MX2<br>V1000 |
| Schneider Electric | ATV 340<br>LXM 32 / 52 / 62<br>ILD | Resolver<br>SKS 36<br>SKS 36 | ATV 320<br>ATV 340<br>LXM 62+ |
| SEW | Movidrive B | Resolver, SKS36 | Movitrac LTP-B<br>Movitrac LTE-B* |
| Siemens | Sinamics 120 | Resolver | Sinamics G120 |
| Yaskawa | | | A1000 |

* Only for continuous motion

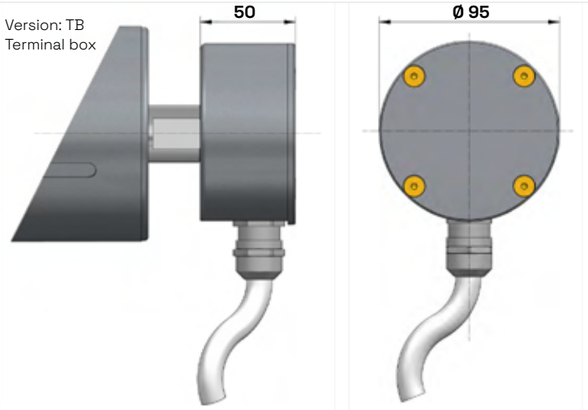


# Technical data

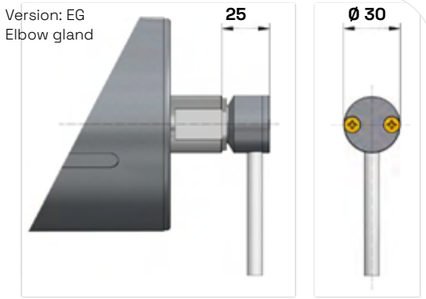
Cable connection, dimensions cable connection and constructions/material variants are the same for all drum motor classes.

## Cable Connection

Version: TB
Terminal box

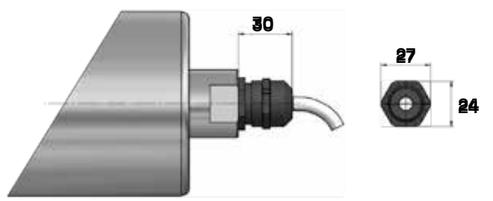



Version: EG
Elbow gland




Elbow Gland only available for sensorless and the solution is IP66.

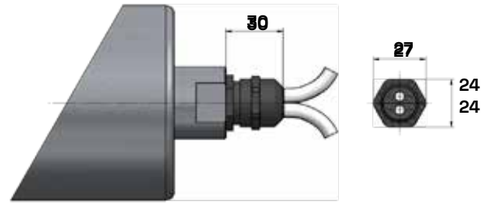
## Dimensions Cable Connection




Version: CG
EMV cable gland, straight

Cable lengths > 10 m on request

**Hybrid cable is possible.**




Version: CGT
Cable gland, straight, for 2 cables
(Option motor feedback)

| Operating temperature range of our drum motor | |
|---|---|
| Standard when operating with belt | +5 °C to +40 °C |
| Optional low temperature range | to -25 °C lower temperature on request |
| Optional high temperature range | to +70 °C |