

Actuator

MD53

MD53 is designed to be used for fitness equipment, such as treadmills. There are preset limit switches included and POT that serves as an option to support customer control. In addition, this model is available with either 36VDC or 24VDC input voltage.



Features and Options

Main applications: Fitness equipment, industry

Standard features:

- Input voltage: 36V DC / 24V DC
- Max. load: 3500N (Push) / 2000N (Pull)
- Max. speed at no load: 10.5mm/sec (Typical value)
- Speed at full load: 8.5mm/sec (Typical value @ 3500N Loaded)
- Stroke: 100 ~ 300mm
- Noise level: ≤ 60 dB
- Color: Black
- Thermostat protection: 70°C
- Preset limit switches
- Duty cycle: 10%, max. 2 min. continuous operation in 20 min.
- Operating ambient temperature: -20°C ~ +65°C
- Storage ambient temperature: -25°C ~ +65°C
- Power cord length: 750mm, straight

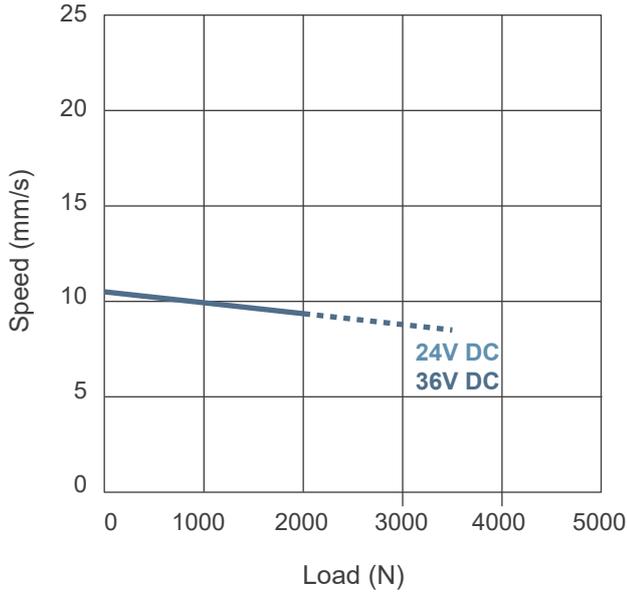
Options:

- Analog positioning feedback with Potentiometer (POT)

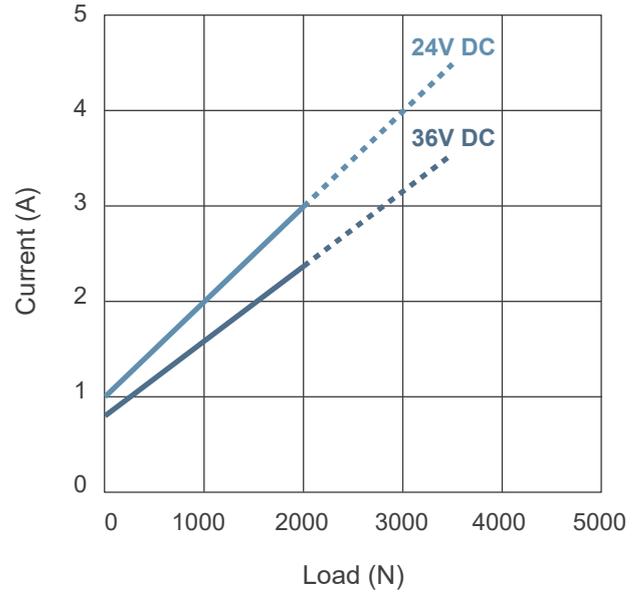
Performance Data

| Model No. | Max. load (N) | | Typical speed (mm/s) * | | Typical current (A) * | | | |
|---------------------|---------------|------|------------------------|-----------|-----------------------|-----|-----------|-----|
| | Push | Pull | No load | Full load | No load | | Full load | |
| | | | | | 24V | 36V | 24V | 36V |
| MD53-XX-XXX.XXX-CXX | 3500 | 2000 | 10.5 | 8.5 | 1.0 | 0.8 | 4.5 | 3.5 |

Speed VS. Load



Current VS. Load



Push / Pull Load — Push Load - - -

Remarks:

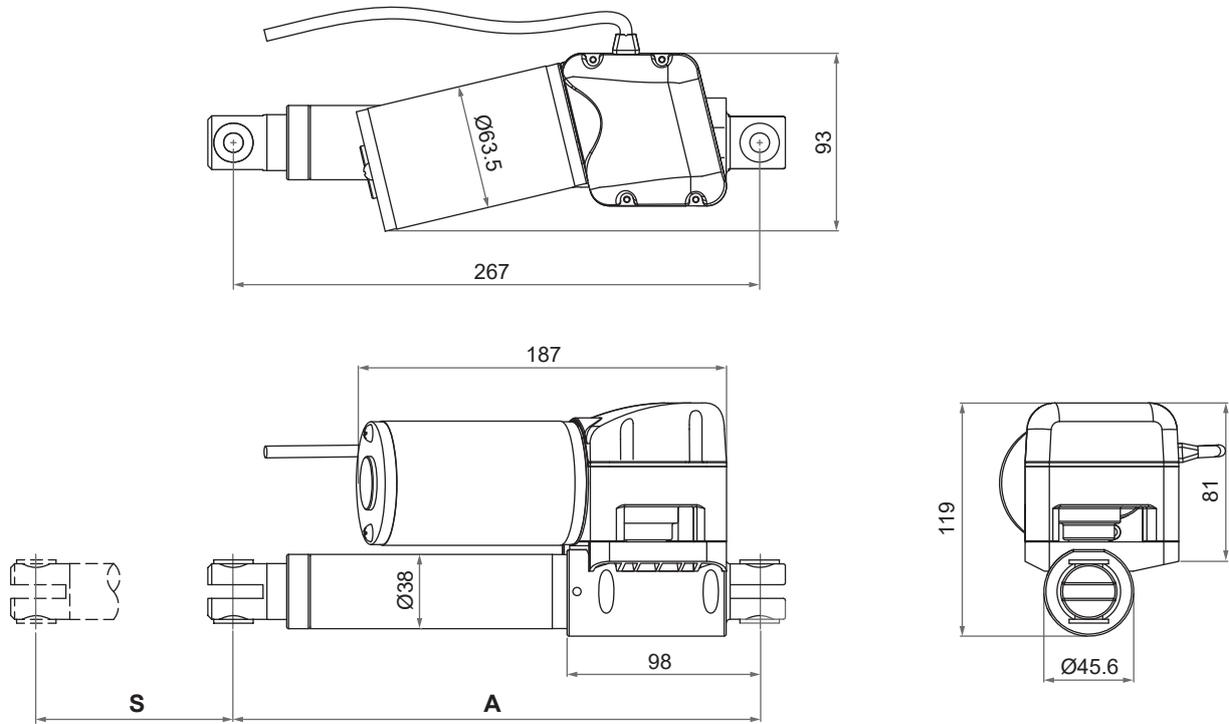
* The typical speed or typical current means the average value neither upper limit nor lower limit, which measured under room temperature and stable power. The performance curves are made with typical values.

Dimensions

• Extended length = S + A

| Stroke (S) | 100 | 150 | 200 | 250 | 300 |
|---|-----|-----|-----|-----|-----|
| Retracted Length (A) (tolerance: ±5mm) | 267 | 317 | 367 | 417 | 467 |

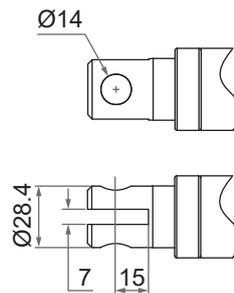
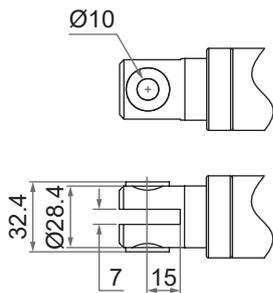
• 2D drawing



• Front connector type

1: Metal with plastic bushing

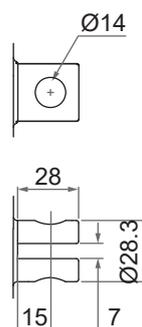
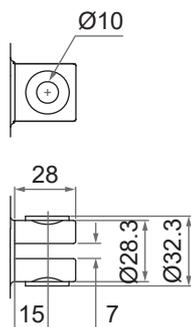
2: Metal



• Rear connector type

1: Metal with plastic bushing

2: Metal



Unit: mm

Compatibility

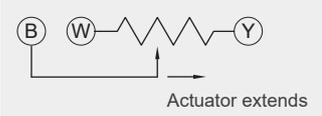
| Product | Model | MD53 spec |
|------------|-------|-----------|
| Controller | CI72 | Standard |

Wiring with Flying Leads

• Basic, without positioning feedback.

| | Wire color | Definition | Descriptions |
|-------------|------------|------------|--|
| Power wires | Red | DC power | <ul style="list-style-type: none"> • 24V or 36V • Connect red wire to "Vdc +" & black wire to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it. |
| | Black | | |

• With Potentiometer (POT) absolute positioning feedback

| | Wire color | Definition | Descriptions | | | | | | | | | | | | | | |
|--------------|------------|------------|---|-------------------------------|-------------------------------|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Power wires | Red | DC power | <ul style="list-style-type: none"> • 24V or 36V • Connect red wire to "Vdc +" & black wire to "Vdc -" of DC power to extend the actuator. Switch the polarity of DC input to retract it. | | | | | | | | | | | | | | |
| | Black | | | | | | | | | | | | | | | | |
| Signal wires | Yellow | Vin | Input voltage 70V max. | | | | | | | | | | | | | | |
| | Blue | POT output | <p>1. Potentiometer specification:</p> <ul style="list-style-type: none"> - 10K ohm, 10 turns. - Tolerance $\pm 5\%$ <p>2. Output voltage: The voltage (resistance) between blue and white increases linearly from about 0 when the actuator extends, and decreases when it retracts.</p>  <p>3. For the combination of motor type and stroke, the resistance between blue and white wires is as follows:</p> <table border="1" data-bbox="751 1682 1310 1951"> <thead> <tr> <th>Stroke (mm)</th> <th>Resistance ($\pm 22\Omega$)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> </tr> <tr> <td>100</td> <td>428</td> </tr> <tr> <td>150</td> <td>642</td> </tr> <tr> <td>200</td> <td>856</td> </tr> <tr> <td>250</td> <td>785</td> </tr> <tr> <td>300</td> <td>879</td> </tr> </tbody> </table> | Stroke (mm) | Resistance ($\pm 22\Omega$) | 0 | 0 | 100 | 428 | 150 | 642 | 200 | 856 | 250 | 785 | 300 | 879 |
| | | | Stroke (mm) | Resistance ($\pm 22\Omega$) | | | | | | | | | | | | | |
| | 0 | 0 | | | | | | | | | | | | | | | |
| 100 | 428 | | | | | | | | | | | | | | | | |
| 150 | 642 | | | | | | | | | | | | | | | | |
| 200 | 856 | | | | | | | | | | | | | | | | |
| 250 | 785 | | | | | | | | | | | | | | | | |
| 300 | 879 | | | | | | | | | | | | | | | | |
| White | GND | | | | | | | | | | | | | | | | |

Ordering Key

MD53 - 24 - 267 - 367 - C 1 1 - POT - 2

| | |
|--|---|
| Input voltage | 24: 24V DC 36: 36V DC |
| Retracted length (Refer to Page 3) | XXX |
| Extended length (Refer to Page 3) | XXX |
| Front connector type | 1: Metal with plastic bushing 2: Metal |
| Rear connector type | 1: Metal with plastic bushing 2: Metal |
| Positioning feedback | Blank: None POT: Potentiometer |
| Cable length | 2: 750mm straight |

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