

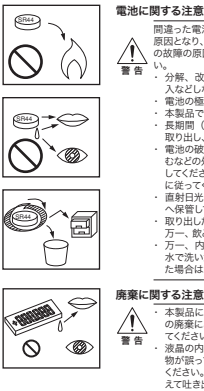
ID-C125X/150X/1025X/1050X

デジマチックインジケーター

User's Manual
No. 99MAH026B
SERIES No. 543

はじめに

ご使用の前にこの取扱説明書をよく読みいただき、各機能を十分にご理解の上、正しく取り扱いください。また、本書を読み終わった後も大切に保管してください。本製品の仕様及び本書の内容は予告なしに変更することがあります。万が一弊社の製造施設に廻り込む不具合がお客様より一年以内に発生した場合、無償修理いたしますのでお求めの販売店、営業所までご連絡ください。

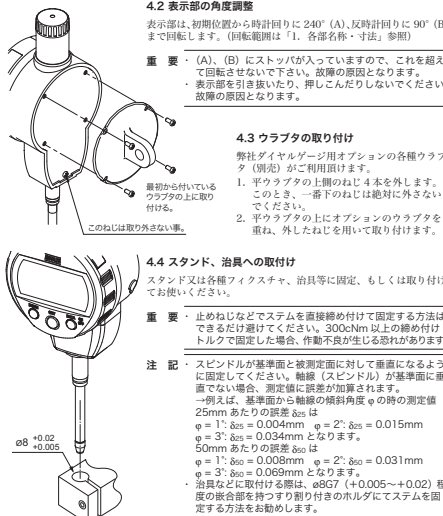


海外移転に関するご注意

本製品は、「外国為替及び外国貿易法」の規制対象品です。本製品やその技術が海外移転する場合は、事前に弊社にご相談ください。

ご使用上の注意

- 重要**
- 落下などの急激なショックを与えず、過度の力を加えないでください。
 - 分解、改造しないでください。
 - 尖ったもの（ドライバー・ボールペンの先など）でキー操作をしないでください。
 - 直射日光のある場所、極端に熱い所・寒い所での使用、保管は避けてください。
 - 生体の多量な汗や高圧の場所では、材料の劣化などによる故障の恐れがあります。
 - 湿気の多い場所での保管、水やクーラーの排水がかかる場所での使用は避けてください。
 - 電極への電圧を過剰に印加した場合、電極部品が破壊される場合があります。
 - ダイヤル・ゲージ・スタンプなどに確実に固定し、振動のない場所ですぐに使用してください。
 - スピンドルに対し垂直な方向の荷重や、ねじりがかかるような使用は避けてください。
 - お手入れの際は、ぬれた柔らかい布・綿棒などをそそぎ、もしは柔らかい布で乾拭きしてください。有機溶剤（シンナー・ベンジン）を使用すると劣化や故障の原因となります。
- 注記**
- 温度変動が大きい場所では、構成部品や固定治具の熱膨張により誤差が生じます。できるだけ温度変動の少ないところで使用してください。また、本製品を異なる温度の場所に移動して使用する際は、十分温度に慣らしてから使用してください。



4.2 表示部の角度調整

表示部は、初期設置から時計回りに 240° (A)、反時計回りに 90° (B) まで回転します。(回転範囲は「1. 各部名称・寸法」参照)

- 重要**
- (A)、(B) にストップが入っていますので、これを超えて回転させないでください。故障の原因となります。
 - 表示部を引抜いた後、押しこんだりしないでください。表示部の破損となります。

4.3 ウラパタの取り付け

- 弊社ダイヤルゲージ用オプションの各種ウラパタ（別売）がご利用いただけます。
- ウラパタの上側のねじ 4 本を外します。このとき、ネジのねじは絶対に外さないでください。
 - ウラパタの上側にオプションのウラパタをねじ、外したねじを取り付けます。

4.4 スタンド、治具への取付け

スタンド又は各種フィクスチャ、治具等に固定、もしくは取り付けてお使いください。

- 重要**
- 止めねじなどでシステムを直接締め付けて固定する方法はできませんのでご注意ください。300Cm 以上のねじ締め付トルクで固定した場合、作動不良が生じる恐れがあります。

- 注記**
- スピンドルが基準面と被測定面に対して垂直になるように固定してください。軸線（スピンドル）が基準面に垂直でない場合、測定値に誤差が加算されます。
 - 誤差は、基準面から軸線の傾斜角度 ϕ の時の測定値 25mm あたりの誤差 δ は
 $\phi = 1^\circ: \delta \approx 0.004\text{mm}$ $\phi = 2^\circ: \delta \approx 0.015\text{mm}$
 $\phi = 3^\circ: \delta \approx 0.034\text{mm}$ となります。
 - 50mm あたりの誤差 δ は
 $\phi = 1^\circ: \delta \approx 0.008\text{mm}$ $\phi = 2^\circ: \delta \approx 0.031\text{mm}$
 $\phi = 3^\circ: \delta \approx 0.069\text{mm}$ となります。
 - 治具などに取付ける際は、 $\phi 87^{+0.005}_{-0.005}$ の孔にダイヤルを固定する方法をお勧めします。

4.5 リフティングノブ（別売）の取付け

- リフティングノブ（別売）がご利用いただけます。
- 本製品のキャップを反時計方向に回して外します。
 - スピンドルが明らかにならないように、ウェスなどを介してプライヤーで固定し、リフティングノブをスピンドル上端のねじ (M2.5) に取り付けます。この時、スピンドルは上端に押し付けてください。
 - リフティングノブのキャップを回してプライヤー上端に固定します。
- 重要**
- 取り外したキャップは紛失しないように保管してください。リフティングノブのキャップを固定しない状態で使用する、内部部品を損傷させる恐れがあります。
 - リフティングノブを取り付けない場合は、必ずキャップを取り付けてください。内部部品や測定物を損傷する恐れがあります。
 - ホコリや油、ミストのある場所では使用しないでください。作動不良や故障が生じる恐れがあります。

4.6 リリース（別売）の取付け

- リリース（別売）がご利用いただけます。
- リリースを取り付け穴のゴムキャップを取り外し、リリースを穴の奥までしっかりねじ込みます。

- 重要**
- 取り外したゴムキャップは紛失しないように保管してください。
 - ゴムキャップを取り付ける際にはねじ込むように取り付けます。
 - リリースを取り付けられない場合は、必ずゴムキャップを取り付けてください。
 - リリース以外のものを差し込んだり、過剰に力がかかると故障する恐れがあります。
 - リリースが壊れた状態でスピンドルを上させると、内部部品を損傷させる恐れがあります。

4.7 測定子の交換

弊社ダイヤルゲージ用オプションの各種特殊測定子・縦尺ロッドがご利用いただけます。品揃えはカタログをご覧ください。

- 重要**
- スピンドルが何もない様に、スピンドルをウェスなどを介してプライヤーで固定し、第 4.5 項「リフティングノブ」をさし込み、測定子を回して取り外し・取り付けます。
 - 上記作業の際はスピンドルの固定を行わないでください。故障する恐れがあります。
 - 測定子と測定面に伴い、外観寸法・測定力の変化、測定方向の制約が生じる場合があります。また測定値に測定子の影響（フック測定時のねじり、ロー測定子のねじりなど）が反映します。

5. データ出力

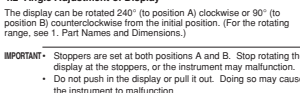
5.1 ケーブルの接続

- 接続ケーブル（別売）を用いて、デジマチックミニプロセッサ DP-1VR 等のデータ処理装置に接続し、測定値の転送や集計、記録を行うことができます。
- 出力コネクタのキャップを取り外し、接続ケーブルでデータ処理装置と接続してください。
 - ケーブルは奥までしっかり差し込んでください。
- 重要**
- 取り外したキャップは、紛失しないように保管してください。
 - 接続ケーブルを使用しない場合は必ずキャップを取り付けてください。

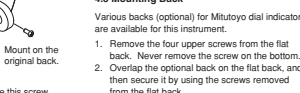
5.2 出力コネクタ



5.3 Output format



5.4 Timing Chart



5.5 Error Messages and Corrective Measures

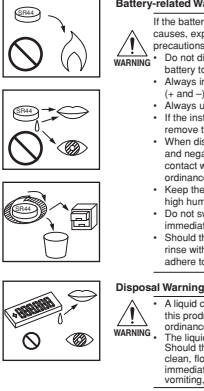
- ABS composition error**
- If this error occurs while the spindle is stopped, the internal sensor may have malfunctioned. When this error is displayed and then soon disappears during spindle movement, this is not the result of an instrument malfunction but just due to internal processing.
- Low voltage**
- The battery has depleted.
- Display overflow**
- The measured value exceeds the number of displayable digits.
- Sensor contamination detection error**
- Contamination in the detector unit due to temperature difference or condensation due to some other cause is present.
- Preset value setting error (Normal measurement)**
- The preset value for normal measurement exceeds the number of displayable digits.
- Preset value setting error (Calculation measurement)**
- The preset value for calculation measurement exceeds the number of displayable digits.
- Tolerance limit error**
- The tolerance limit value is set with the upper limit value being smaller than the lower limit value.
- Upper limit value setting error**
- The upper limit value exceeds the number of displayable digits.
- Lower limit value setting error**
- The lower limit value exceeds the number of displayable digits.
- Calculation coefficient setting error**
- The calculation coefficient is set to 0.0000.

ID-C125X/150X/1025X/1050X

Digimatic Indicator

User's Manual
No. 99MAH026B
SERIES No. 543

To take full advantage of this product, read this manual thoroughly first. After reading it, retain this manual for future reference. The product specifications and the information in this manual are subject to change without notice. Warranty: Should the Mitutoyo Digimatic Indicator prove defective in workmanship or material, within one year from the date of original purchase, it will be repaired or replaced, at our option, free of charge upon return to us, with return shipping prepaid by the user. For details, please contact the Mitutoyo office where you made your purchase.



Export Control Compliance

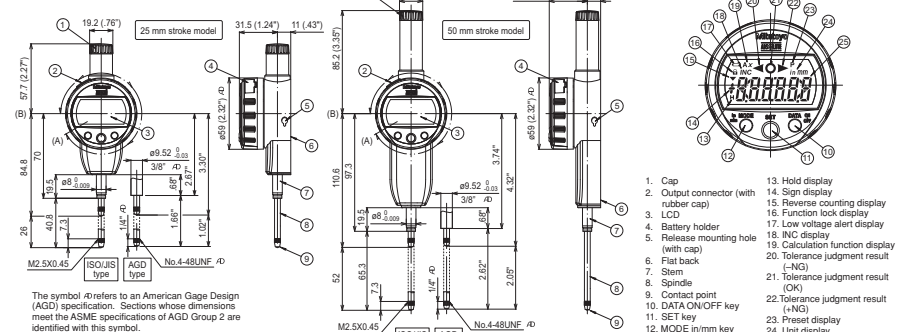
The goods, technologies or software described herein may be subject to National or International, or Japanese Export Controls. To export directly or indirectly such matter without due approval from the appropriate authorities may therefore be a breach of export control regulations and the law.

Cautions on use

Observe the following precautions to avoid instrument failure or malfunction.

- IMPORTANT**
- Do not strike the instrument or allow it to be struck.
 - Do not drop it or apply excessive force to it.
 - Do not disassemble or modify the instrument.
 - Do not press the keys with a pointed object (such as screwdriver or ballpoint pen).
 - Do not use or store the instrument under direct sunlight, or in an excessively hot or cold environment.
 - Be alert for malfunction due to material deterioration if it is used in an environment with low or high atmospheric pressure.
 - Do not store the instrument in a high-humidity environment.
 - Do not use the instrument where it could be splashed with coolant.
 - Do not use high-voltage equipment, such as an electric marking pen, near the instrument. Electronic parts may be damaged by such equipment. Be alert for malfunction if it is used in the vicinity of electrical noise.
 - Secure the instrument with a fixture such as a dial gage stand in a vibration-free environment.
 - Do not subject the spindle to a vertical load or torsion.
 - Wipe stains from the instrument panel by using a soft cloth or a cotton swab that is dry or moistened with diluted neutral detergent. Do not use an organic solvent such as thinner and benzene, which may cause the instrument panel to deform or malfunction.
- NOTE**
- Be alert for measurement errors caused by thermal expansion of the component parts and the fixtures, resulting from a significant temperature fluctuation. Use the instrument in a temperature-controlled room that has minimum temperature fluctuation. Allow sufficient time for the instrument to thermally stabilize if it is moved to an environment with a different temperature.

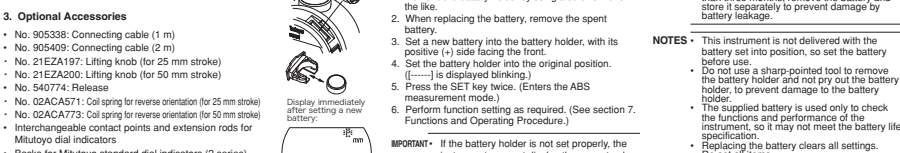
1. Part Names and Dimensions



| Model Name | ID-C125XB | ID-C125MB | ID-C125XB | ID-C125MB | ID-C125MB | ID-C125XB | ID-C125MB | ID-C125XB | ID-C125MB | ID-C125XB | ID-C125MB |
|-------------------------------|---|---|---|---|---|---|---|---|---|---|---|
| Code No. | 543-47B | 543-47B | 543-47B | 543-47B | 543-47B | 543-47B | 543-47B | 543-47B | 543-47B | 543-47B | 543-47B |
| Measuring range | 25.4mm | 25.4mm | 25.4mm | 25.4mm | 25.4mm | 25.4mm | 25.4mm | 25.4mm | 25.4mm | 25.4mm | 25.4mm |
| Resolution | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm | 0.001/0.01mm |
| Overall ¹ | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm | Within 0.003mm |
| Hysteresis ¹ | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm |
| Repeatability ¹ | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm | Within 0.002mm |
| Stem | ø8mm | ø8mm | ø8mm | ø8mm | ø8mm | ø8mm | ø8mm | ø8mm | ø8mm | ø8mm | ø8mm |
| Contact point | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) | Carbide (M2.5x0.45) |
| Measuring force | ±1.8N | ±1.8N | ±1.8N | ±1.8N | ±1.8N | ±1.8N | ±1.8N | ±1.8N | ±1.8N | ±1.8N | ±1.8N |
| Plunger direction | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal | Up to direction in which spindle is horizontal |
| Protection level ² | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) | IP2 (in factory shipment state) |
| CE marking | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) | EN1326-1:2006 (immunity test requirement: Class A / Emission limit: Class B) |
| Power supply | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) | SR44 silver oxide battery (1 pc., No. 938882; battery life: about 7000 hours in continuous service) |
| Scale | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder | Electrostatic capacitance absolute encoder |
| Operating range | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C | 0 to 40°C, storage: -10 to 60°C |
| Weight | 190g | 190g | 190g | 190g | 190g | 190g | 190g | 190g | 190g | 190g | 190g |

- 2. Specifications**
- Model Name** ID-C125XB ID-C125MB ID-C125XB ID-C125MB ID-C125MB ID-C125XB ID-C125MB ID-C125XB ID-C125MB ID-C125XB ID-C125MB
- Code No.** 543-47B 543-47B 543-47B 543-47B 543-47B 543-47B 543-47B 543-47B 543-47B 543-47B 543-47B
- Measuring range** 25.4mm 25.4mm 25.4mm 25.4mm 25.4mm 25.4mm 25.4mm 25.4mm 25.4mm 25.4mm 25.4mm
- Resolution** 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm 0.001/0.01mm
- Overall¹** Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm Within 0.003mm
- Hysteresis¹** Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm
- Repeatability¹** Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm Within 0.002mm
- Stem** ø8mm ø8mm ø8mm ø8mm ø8mm ø8mm ø8mm ø8mm ø8mm ø8mm ø8mm
- Contact point** Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45) Carbide (M2.5x0.45)
- Measuring force** ±1.8N ±1.8N ±1.8N ±1.8N ±1.8N ±1.8N ±1.8N ±1.8N ±1.8N ±1.8N ±1.8N
- Plunger direction** Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal Up to direction in which spindle is horizontal
- Protection level²** IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state) IP2 (in factory shipment state)
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- Scale** Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder Electrostatic capacitance absolute encoder
- Operating range** 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C 0 to 40°C, storage: -10 to 60°C
- Weight** 190g 190g 190g 190g 190g 190g 190g 190g 190g 190g 190g
- Standard accessories** User's Manual, Quick Reference Manual, inspection certificate, warranty, SR44 battery (1 pc.), lifting lever (137693), WEEE guide

- ¹: During normal measurement at 20°C, excluding quantizing error (±1 count)
- ²: The protection level (IP: International Protection) is indicated according to IEC 60529 and JIS C 0920 standards.
- ³: When no data processing unit is connected.



ID-C125X/150X/1025X/1050X

Digimatic Indicator

User's Manual
No. 99MAH026B
SERIES No. 543

