

小型 $\phi 20$ 、高推力900 g で微小な位置決め (25 $\mu\text{m}/1\text{step}$) が可能

リニアステッピングアクチュエータ STEPPING MOTORS

SPS20

SPS20シリーズは、前部軸受けをネジ構造とすることにより回転力を直接推進力に変換できるアクチュエータです。シャフトは回転しながら繰り出しますので先端に鋼球が埋め込まれており、球の先で目標物を押す仕組みとなっております。モータ本体は普通のPM型ステッピングモータですので一般のステッピングモータドライバで駆動できます。また、特性は間欠駆動を前提としたものとなっております。連続で使用する場合の消費電力は1 W (放熱板無し)、5 W (B5判大1 mm厚鉄板取付)を目安としてください。

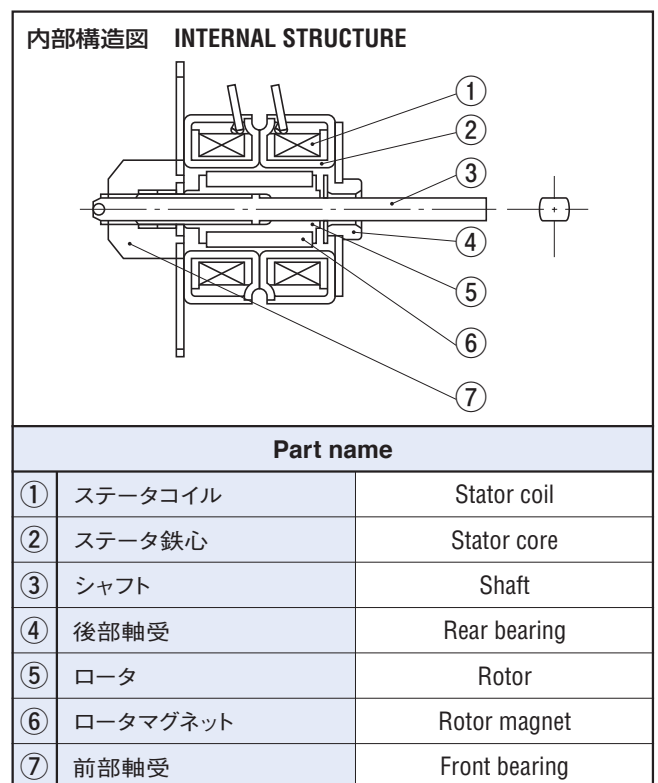
The SPS20 series uses a screw construction in the front shaft, creating an actuator for converting rotational force into linear force. The shaft extends as it rotates, and there is steel ball on the end for pushing the object. The motor is a normal PM stepping motor and can be driven with a standard stepping motor driver. The characteristics assume intermittent driving. Power consumption during continuous operation is about 1 W (without heat sink), 5 W (B5 1 mm steel plate attached).



■特長 FEATURES

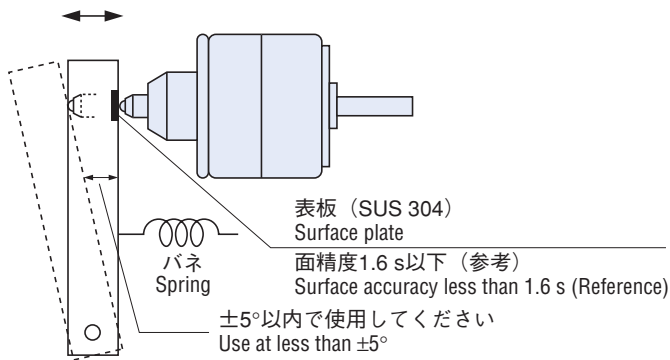
- 精密位置制御が可能 (25 $\mu\text{m}/\text{step}$ 、 $\pm 7 \mu\text{m}$: 初期値)
- 小型・高推力
- 自己保持機能内蔵：電源 off で位置保持が可能
- ソフトランニングが可能
- 比例制御が容易
- RoHS 指令対応

- Precision position control is possible (25 $\mu\text{m}/\text{step}$, $\pm 7 \mu\text{m}$: initial value)
- Compact, high thrust
- Internal self holding function: Position can be held with power off
- Soft running is possible
- Proportional control is easy
- RoHS compliant

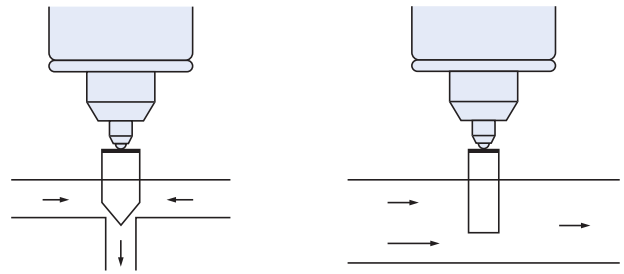


■用途 APPLICATIONS

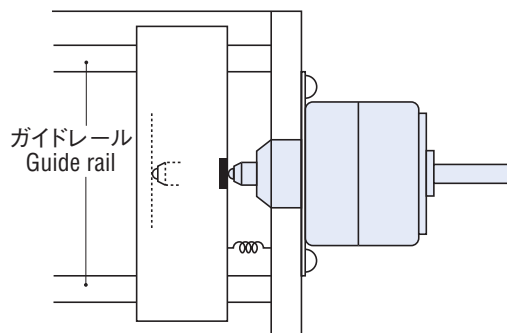
● レバー操作 Lever operation



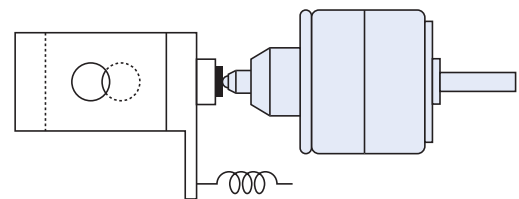
● 流量制御 Flow control



● 精密位置制御 Precision positioning control



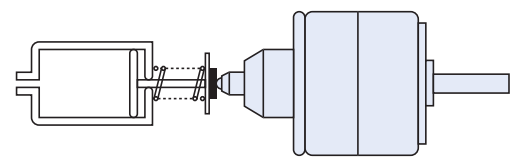
● 孔の開閉 Opening and closing hole



● その他 Others

- プリンタリボンの up/down
- X-Y テーブルの微動
- エアコンの吹出し調整など
- Printer ribbon up/down
- Minute movement of X-Y table
- Airconditioner regulation

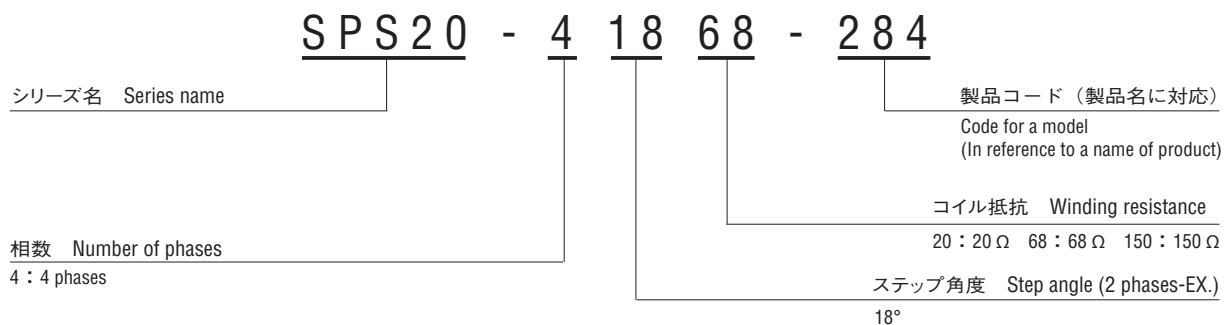
● ポンプ Pump



SPS20

STEPPING MOTORS

型式表示 PART NUMBER DESIGNATION



型式一覧表 LIST OF PART NUMBERS

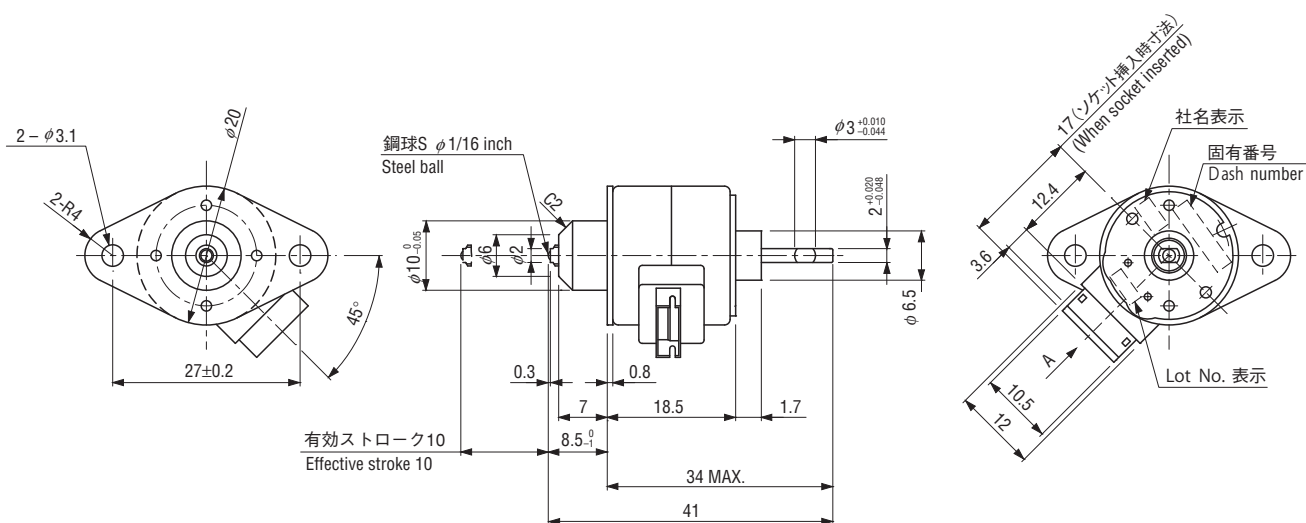
| シリーズ Series | コイル抵抗 Winding resistance | | |
|-----------------------|--------------------------|-----------------|------------------|
| | 20 Ω | 68 Ω | 150 Ω |
| 高負荷タイプ High load type | SPS20-41820-368 | SPS20-41868-285 | SPS20-418150-288 |

※ ご注文際には、上記型式をご確認ください。
Verify the above part numbers when placing orders.

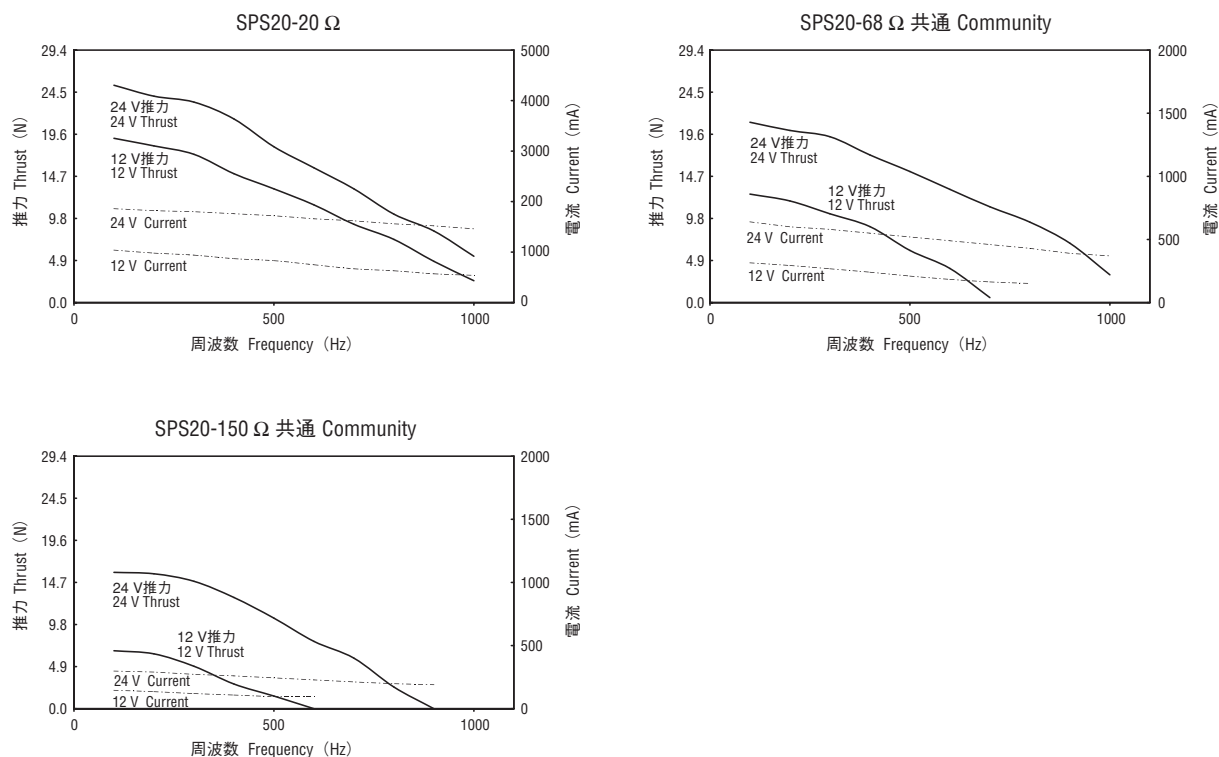
外形寸法図 OUTLINE DIMENSIONS

(Unit: mm)

SPS20 共通 Outline dimensions are common in SPS20 series.



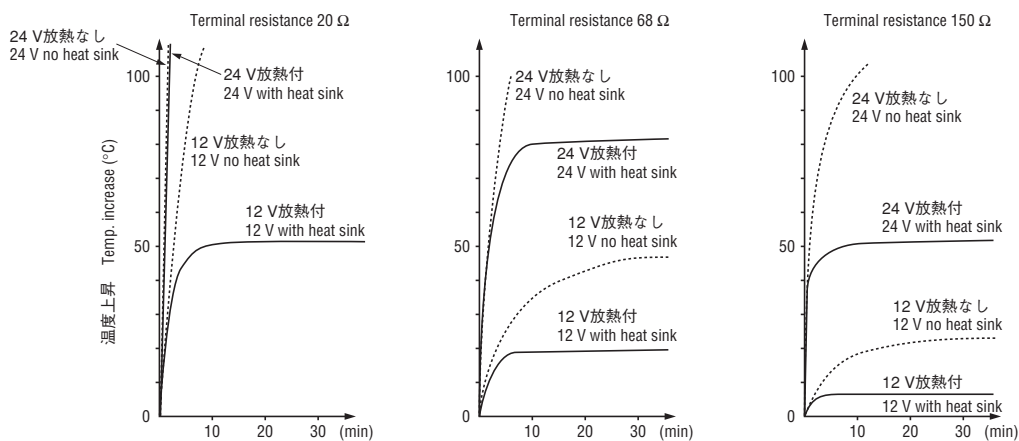
■特性図 (参考値) PERFORMANCE CURVES (Reference values)



※ 特性は実測値です。保証値ではありません。
These performance curves show actual value, not guaranteed value.

■温度特性 TEMPERATURE CHARACTERISTICS

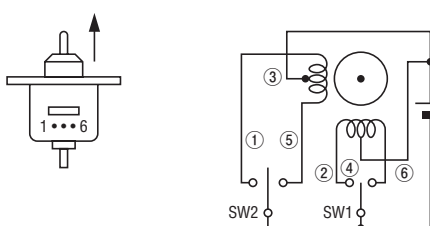
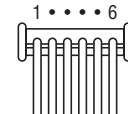
(at 500 Hz·2 phases-EX., Heat sink 180 mm × 255 mm × 1 mm steel plate)



SPS20

STEPPING MOTORS

標準仕様 STANDARD SPECIFICATIONS

| 項目 Item | SPS20 | | | 備考 Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------------|--------------|---------------------------------|--|-----|-----|--|--|--|---|---|---|---|---|----|--|----|--|---|--|----|----|--|---|--|----|--|----|---|----|--|--|----|---|----|--|----|--|
| | 41820-368 | 41868-285 | 418150-288 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 相数/励磁方式 Number of phases / Excitation | 4 / 2 相ユニポーラ 2 phases unipolar | | | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1回転ステップ数 Steps | 20 | | | 2 phases-EX. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| スクリューピッチ Screw pitch | 0.5 mm | | | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ステップサイズ Step size | 25 μ m | | | 2 phases-EX. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| コイル抵抗 Winding resistance | 20 Ω | 68 Ω | 150 Ω | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 許容スラスト荷重 Allowable thrust | 49 N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 推力 Thrust | 7.85 N | | | 参考値 Reference value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 電圧 Voltage | 特性図参照 Refer to PERFORMANCE CURVES | | | 初期実力値 Initial strength value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 電流 Current | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 引入推力 Pull-in thrust | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 脱出推力 Pull-out thrust | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 温度上昇 Temperature increase | 温度特性表参照 Refer to TEMPERATURE CHARACTERISTICS | | | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 絶縁抵抗 Insulation resistance | 30 M Ω minimum | | | DC500 V | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 絶縁耐力 Dielectric strength | 500 Vrms | | | AC, 1 min | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 機械的ストローク Effective mechanical stroke | 12 mm | | | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 有効ストローク Effective stroke | 10 mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 使用温度範囲 Operating temperature range | 0 ~ 50 $^{\circ}$ C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 保存温度範囲 Storage temperature range | -30 ~ 60 $^{\circ}$ C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 寿命 Life | 100万サイクル 1 million cycles | | | 参考値 Reference value ※1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7.4 Nにて at a load of 7.4 N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 質量 Net weight | Approx. 45 g | | | — | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 結線図 Wiring diagram |  <p>1 → 4 の時シャフト前進 (矢印) When excitation is in order the motor shaft moves ahead.</p> <table border="1" data-bbox="909 1724 1212 1926"> <thead> <tr> <th></th> <th>SW1</th> <th>SW2</th> <th></th> <th></th> </tr> <tr> <th></th> <th>⑥</th> <th>②</th> <th>⑤</th> <th>①</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>ON</td> <td></td> <td>ON</td> <td></td> </tr> <tr> <td>2</td> <td></td> <td>ON</td> <td>ON</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td>ON</td> <td></td> <td>ON</td> </tr> <tr> <td>4</td> <td>ON</td> <td></td> <td></td> <td>ON</td> </tr> <tr> <td>1</td> <td>ON</td> <td></td> <td>ON</td> <td></td> </tr> </tbody> </table> <p>専用コネクタ 日本圧着端子製造(株) 06ZR-8M または、ZHR-6 Connector Made by J.S.T. Mfg. Co., Ltd</p>  | | | | | SW1 | SW2 | | | | ⑥ | ② | ⑤ | ① | 1 | ON | | ON | | 2 | | ON | ON | | 3 | | ON | | ON | 4 | ON | | | ON | 1 | ON | | ON | |
| | SW1 | SW2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ⑥ | ② | ⑤ | ① | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | ON | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | ON | | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | ON | | | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | ON | | ON | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

※1：寿命は使用条件により大幅に変わりますので、ご確認の上ご使用下さい。
Life depends on greatly how to use it. Please use after confirmation to us.