

Innovative Low-cost 6-Axis F/T Sensor

RFT series is a capacitive F/T sensor that can measure the six components of force and torque simultaneously. The sensor has an innovative structure design and a robust calibration algorithm to achieve both of cost competitiveness and reliable performance. It provides users with various interface options to support a wide range of automation and research applications. It also has an internal overload protection to avoid damage from external impact or excessive load.



Capacitive Type

Sensing capacitance variation by structural deformation



High Durability

Mechanical overload protection, no adhesive



Low Cost

Simple structure, simplified fabrication process



Reliable Performance

Immunity to electrical noise, robust calibration, no sensor drift



Easy Installation

All-in-one device with embedded signal processing, interface software support



Various Output Options

RS422, RS232, CAN, USB, and EtherCAT

Customization Service

User defined mechanical interface, Special specification

Applications

Force/torque monitoring & inspection, Force control of industrial robots and service robots, Force sensing in medical or rehabilitation devices, Haptic devices for teleoperation



RFT Series

- Compact Size Type
- Hollow Core Type
- Dust Seal Type
- High Torque Type

SENSOR SPECIFICATIONS

| Sensor Figure | Dimension | | Weight | Data Rate | Load Capacity | | | Resolution | | |
|---------------|-----------|------|--------------|-----------|---------------|-----|------------|------------|-----|------------|
| | ∅ | H | Except Cable | Maximum | Fx, Fy | Fz | Tx, Ty, Tz | Fx, Fy | Fz | Tx, Ty, Tz |
| | mm | mm | g | Hz | N | N | Nm | mN | mN | mNm |
| RFT40-SA01 | 40 | 18.5 | 60 | 200 | 100 | 150 | 2.5 | 200 | 200 | 8 |
| RFT44-SB01 | 44 | 20 | 70 | 200 | 100 | 150 | 2.5 | 200 | 200 | 8 |
| RFT60-HA01 | 60 | 18.5 | 120 | 1,000 | 150 | 200 | 4 | 150 | 200 | 5 |
| RFT64-SB01 | 64 | 20 | 140 | 1,000 | 150 | 200 | 4 | 150 | 200 | 5 |
| RFT76-HA01 | 76 | 18.5 | 200 | 1,000 | 300 | 300 | 10 | 200 | 200 | 8 |
| RFT82-HA02 | 82 | 23 | 260 | 1,000 | 400 | 400 | 20 | 250 | 250 | 10 |
| RFT80-6A01 | 80 | 22 | 210 | 1,000 | 400 | 400 | 20 | 100 | 100 | 5 |

Resolution : The standard deviation of each six components of force and torque for 10second, the data through internal 1st-order low pass filter which has cutoff frequency 100Hz

| Sensor Figure | Dimension | | Hysteresis | | | Overload Capacity | | | | Cross Talk | | |
|---------------|-----------|------|------------|-----|------------|-------------------|-----|-----|------------|------------|----|------------|
| | ∅ | H | Fx, Fy | Fz | Tx, Ty, Tz | Fx, Fy | Fz+ | Fz- | Tx, Ty, Tz | Fx, Fy | Fz | Tx, Ty, Tz |
| | mm | mm | %FS | | | % | | | | %FS | | |
| RFT40-SA01 | 40 | 18.5 | 2 | 0.5 | 1 | 150 | 150 | 300 | 150 | 3 | 3 | 3 |
| RFT44-SB01 | 44 | 20 | 2.5 | 1 | 3 | 150 | 150 | 300 | 150 | 3 | 3 | 3 |
| RFT60-HA01 | 60 | 18.5 | 2.5 | 1 | 1 | 150 | 150 | 300 | 150 | 3 | 3 | 3 |
| RFT64-SB01 | 64 | 20 | 3 | 2 | 2 | 150 | 150 | 300 | 150 | 3 | 3 | 3 |
| RFT76-HA01 | 76 | 18.5 | 2.5 | 1 | 1 | 150 | 150 | 300 | 150 | 3 | 3 | 3 |
| RFT82-HA02 | 82 | 23 | 2.5 | 1 | 1 | 150 | 200 | 400 | 200 | 3 | 3 | 3 |
| RFT80-6A01 | 80 | 22 | 2.5 | 1 | 1 | 150 | 200 | 400 | 200 | 3 | 3 | 3 |

Fz+ : Tensile force, Fz- : Compressive force . The capacity of compressive force is more capacity than the capacity of tensile force

ORDERING INFORMATION



Sensor Feature

- RFT40-SA01 = ø40mm, Solid core, Standard type
- RFT44-SB01 = ø44mm, Solid core, Dust Seal type
- RFT60-HA01 = ø60mm, Hollow core, Standard type
- RFT64-SB01 = ø64mm, Solid core, Dust Seal type
- RFT76-HA01 = ø76mm, Solid core, Standard type
- RFT82-HA02 = ø82mm, Hollow core, High torque type
- RFT80-6A01 = ø80mm, Hollow core, High resolution type

Interface Method

- A = CAN
- B = RS-232
- C = RS-422
- D = USB
- E = EtherCAT (External board)

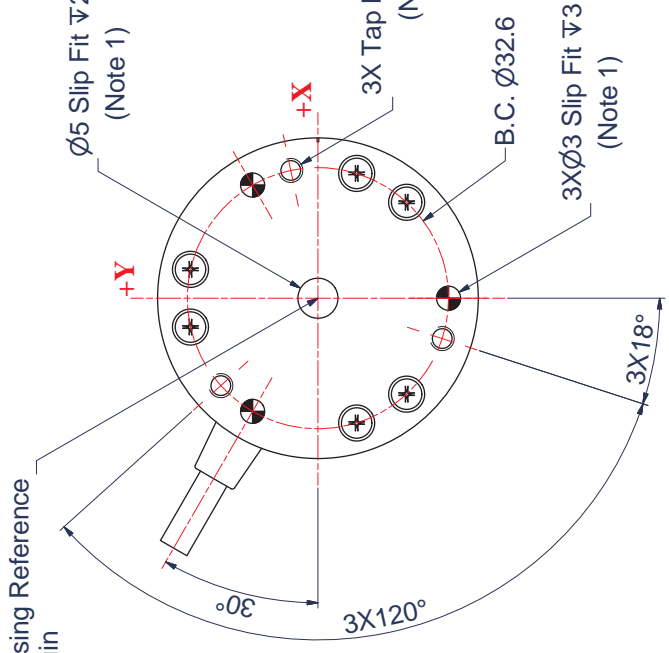
Cable Option

- “ ” = Default, Shielded, General signal cable, 2 meters
- R3 = Shielded, Robot cable, 3 meters
- R5 = Shielded, Robot cable, 5 meters

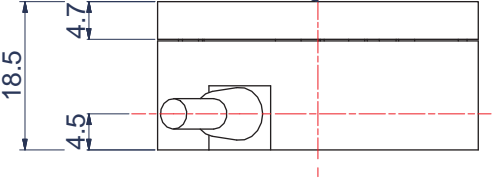
ROBOTOUS INC. Head office & Factory
2nd F, NEX-Center SKnTechnopark 124, Sagimakgol-Ro,
Jungwon-gu, Seongnam-si, Gyeonggi-do, KOREA
Tel:+82-31-606-9918 Fax:82-31-776-2645
Website: www.robotous.com
Contact: support@robotous.com

DIMENSIONS

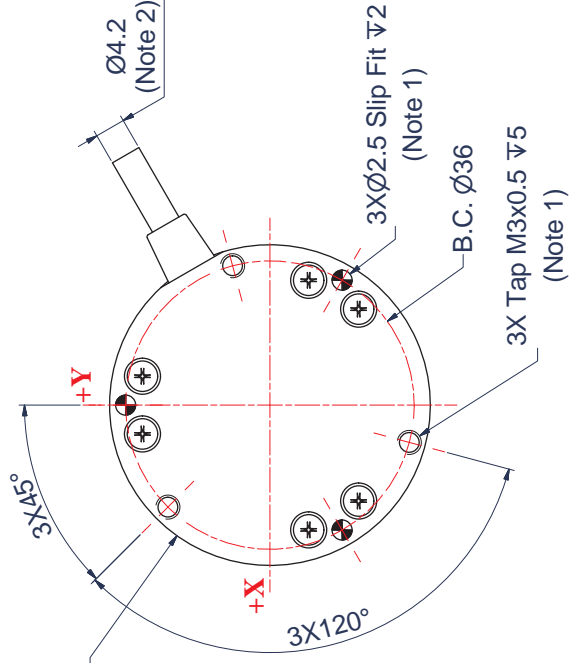
RFT40-SA01



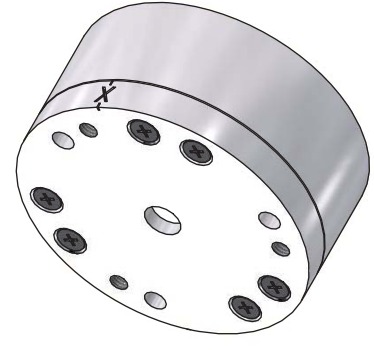
TOP VIEW



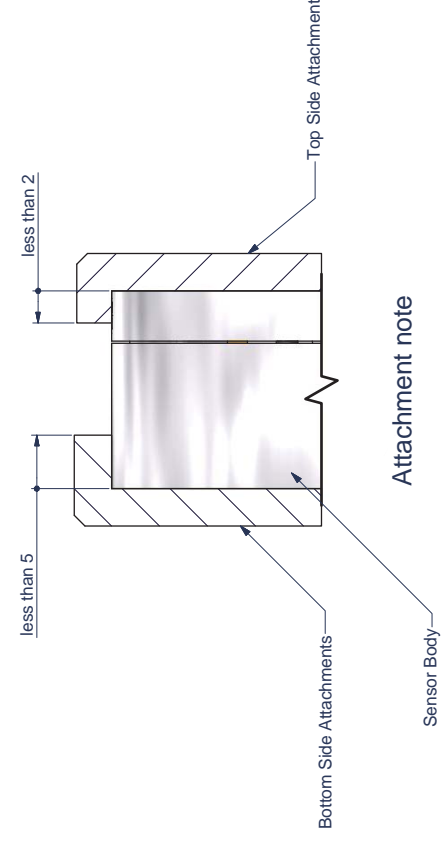
SIDE VIEW



BOTTOM VIEW



ISOMETRIC VIEW



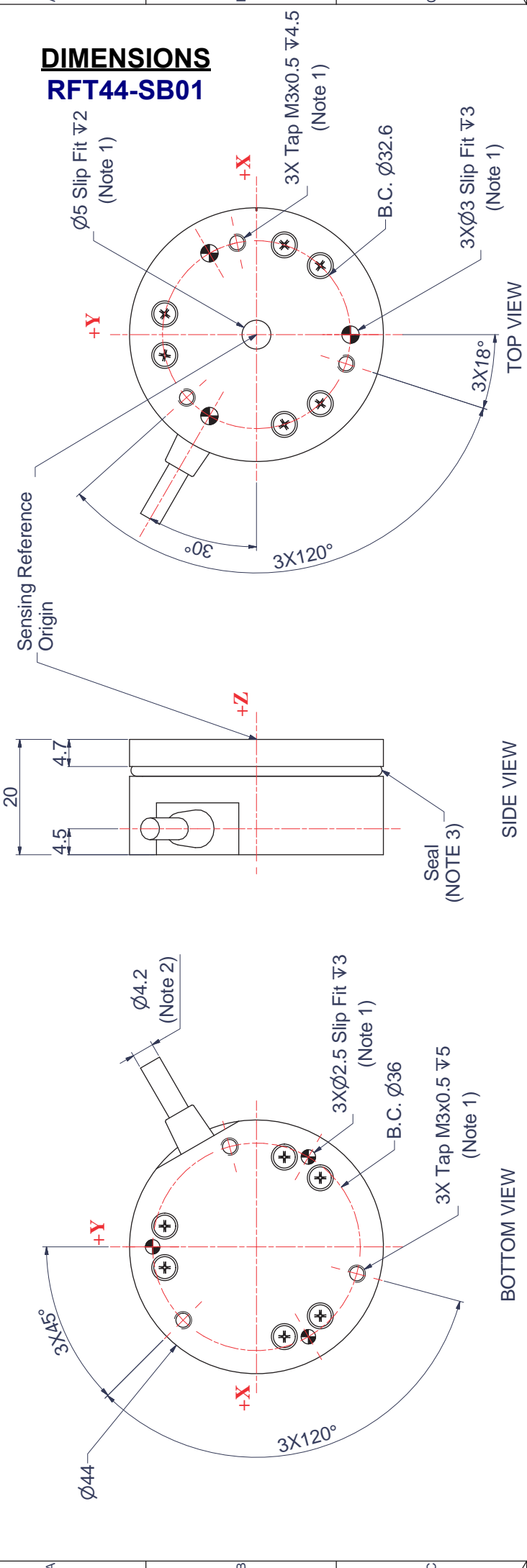
NOTES

1. Do not exceed interface depth, may cause damage.
2. Do not pull on a cable strongly.
3. The housing has been grounded to protect it from external electric noise

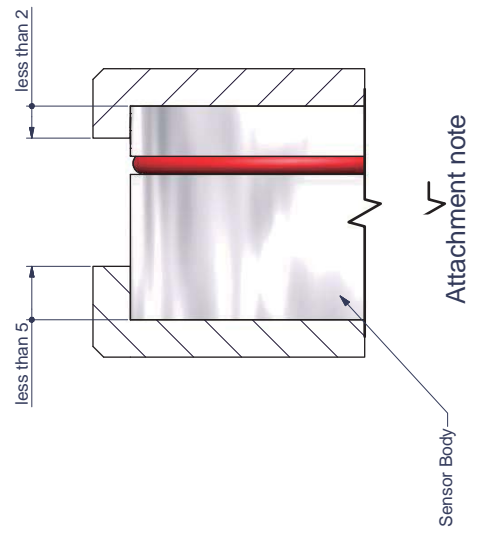
| PROJECTION | DIMENSION | UNIT |
|------------|-----------|------|
| | | mm |

DIMENSIONS

RFT44-SB01



ISOMETRIC VIEW



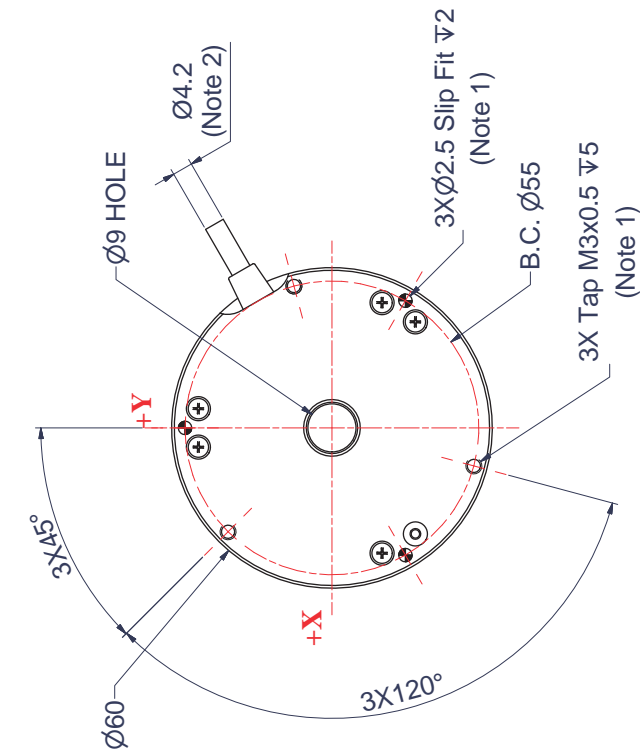
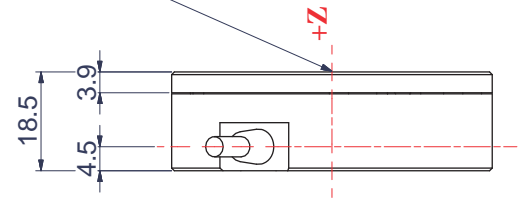
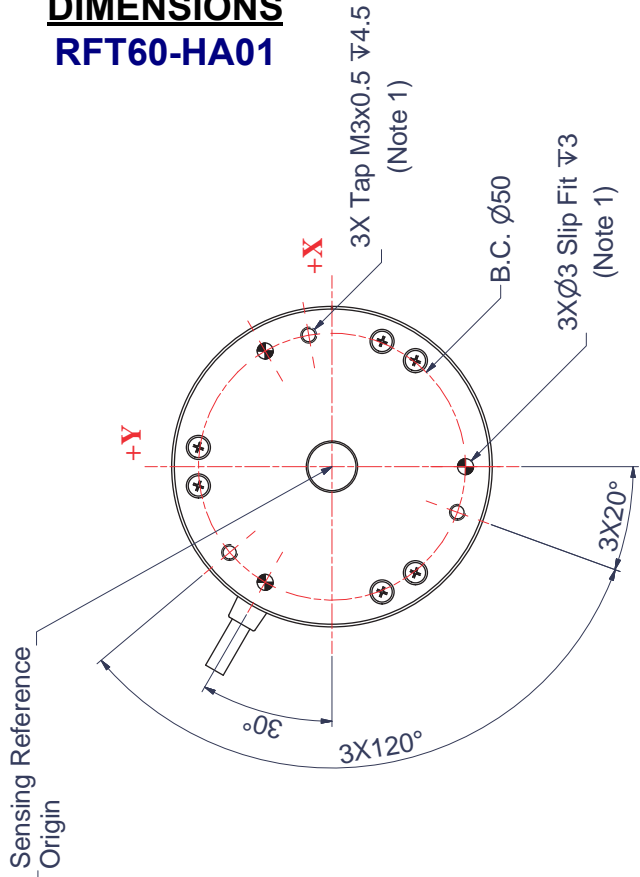
NOTES

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2. Do not pull on a cable strongly.
3. Do not take off a seal
If seal is taken off, sensor loses the characteristic
4. The housing has been grounded to protect it from external electric noise

| PROJECTION | DIMENSION | UNIT |
|------------|-----------|------|
| | | mm |

DIMENSIONS

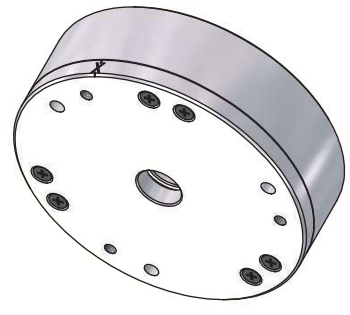
RFT60-HA01



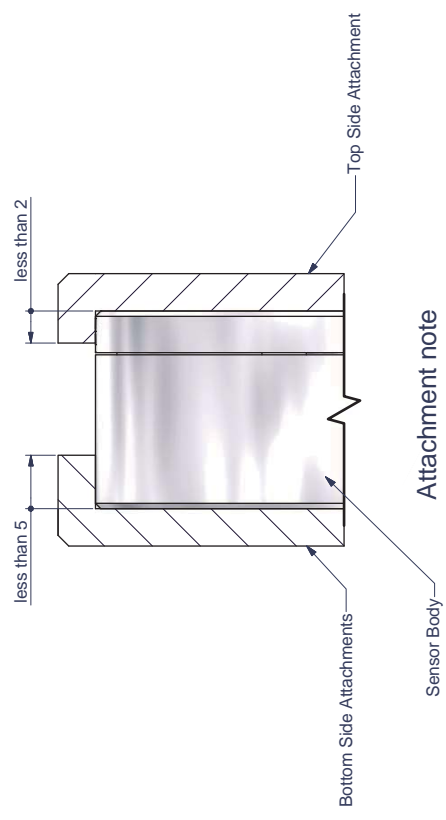
TOP VIEW

SIDE VIEW

BOTTOM VIEW



ISOMETRIC VIEW



Attachment note

Sensor Body

Bottom Side Attachments

Top Side Attachment

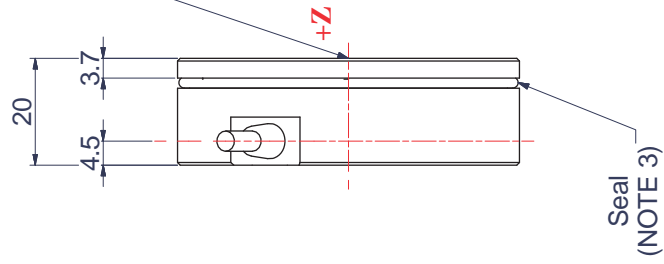
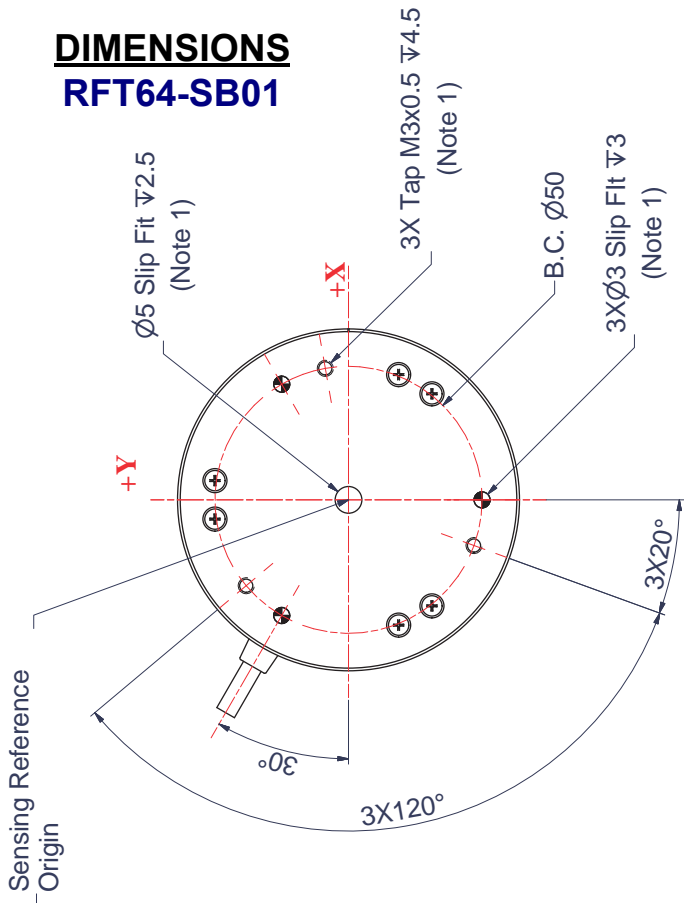
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| PROJECTION | DIMENSION | UNIT |
|------------|-----------|------|
| | | mm |

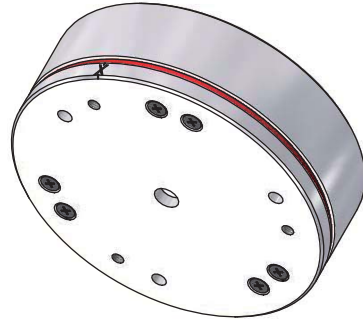
DIMENSIONS

RFT64-SB01

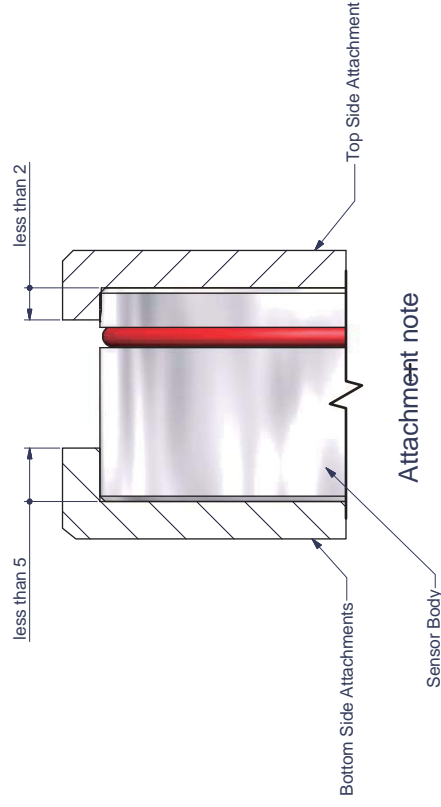


TOP VIEW

SIDE VIEW



ISOMETRIC VIEW



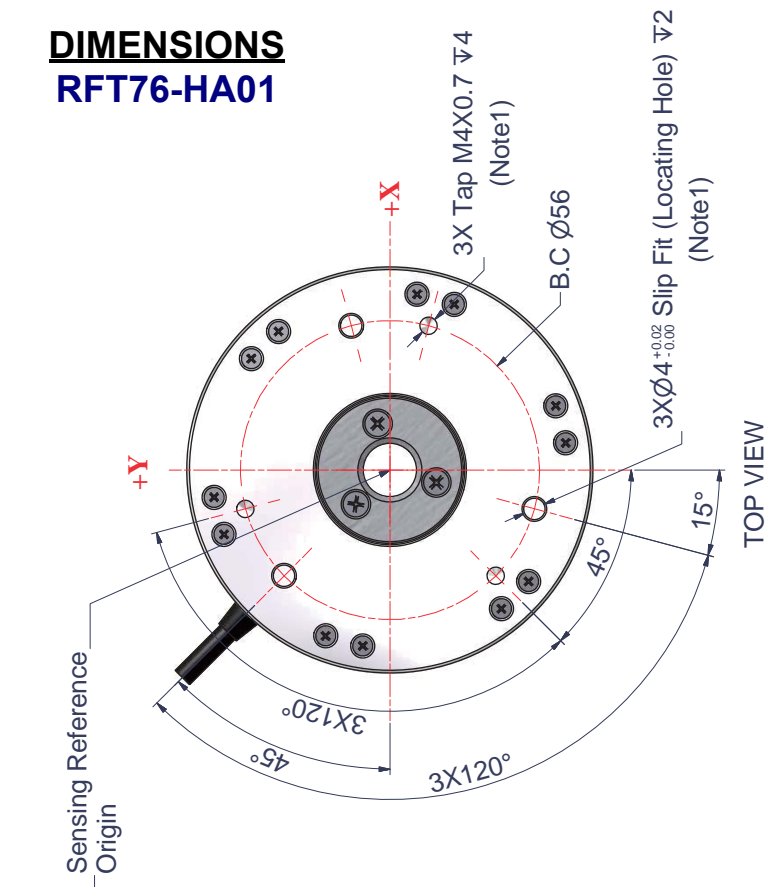
NOTES

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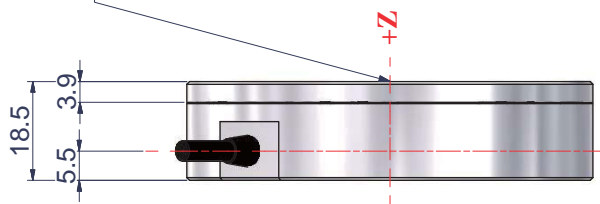
| PROJECTION DIMENSION | UNIT |
|----------------------|------|
| | mm |

DIMENSIONS

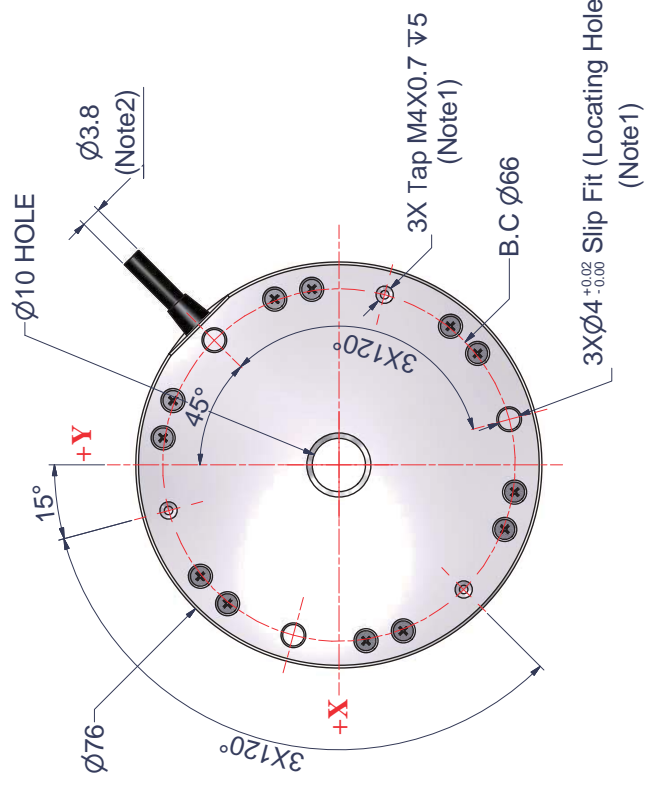
RFT76-HA01



TOP VIEW



SIDE VIEW



BOTTOM VIEW



ISOMETRIC VIEW

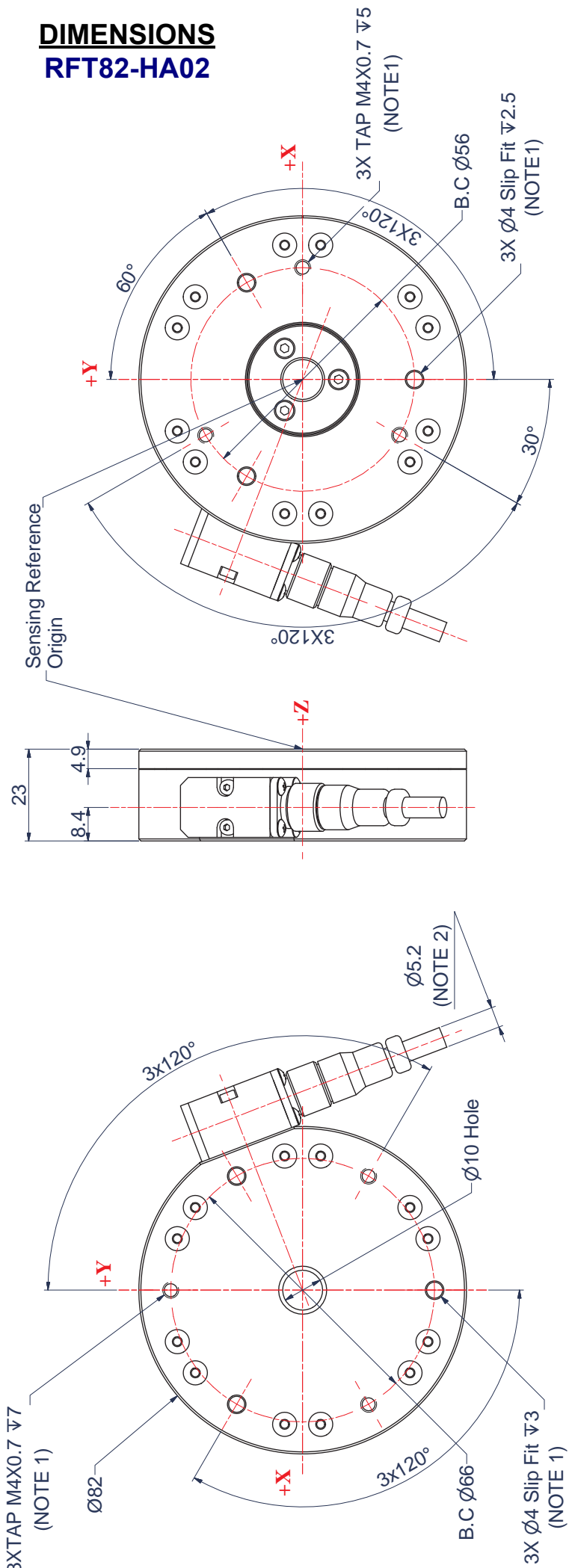
NOTES

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| PROJECTION | DIMENSION | UNIT |
|------------|-----------|------|
| | | mm |

DIMENSIONS

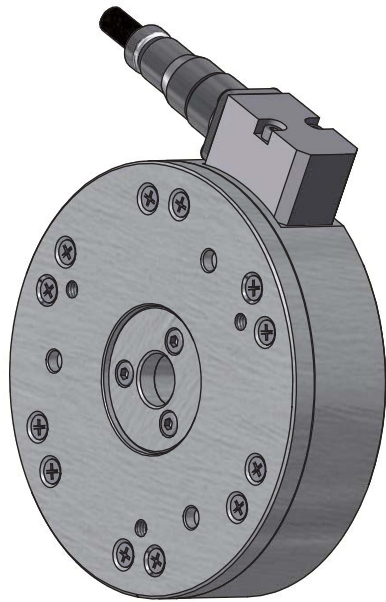
RFT82-HA02



TOP VIEW

SIDE VIEW

BOTTOM VIEW



ISOMETRIC VIEW

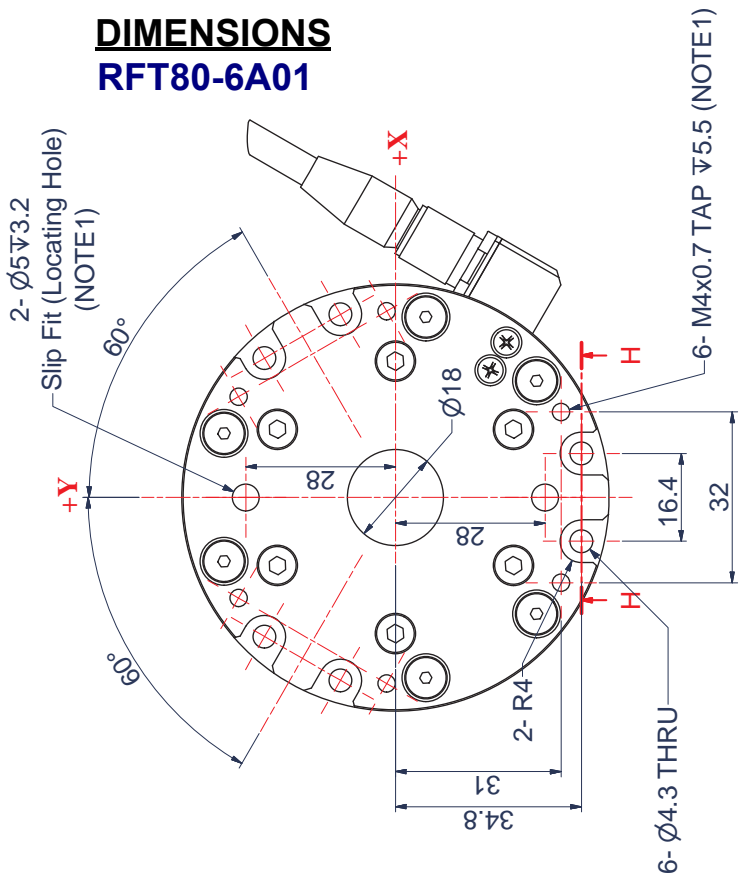
NOTES

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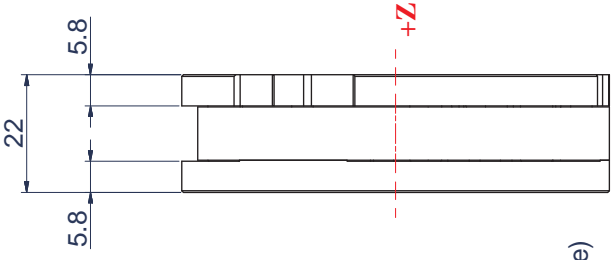
| PROJECTION | DIMENSION | UNIT |
|------------|-----------|------|
| | | mm |

DIMENSIONS

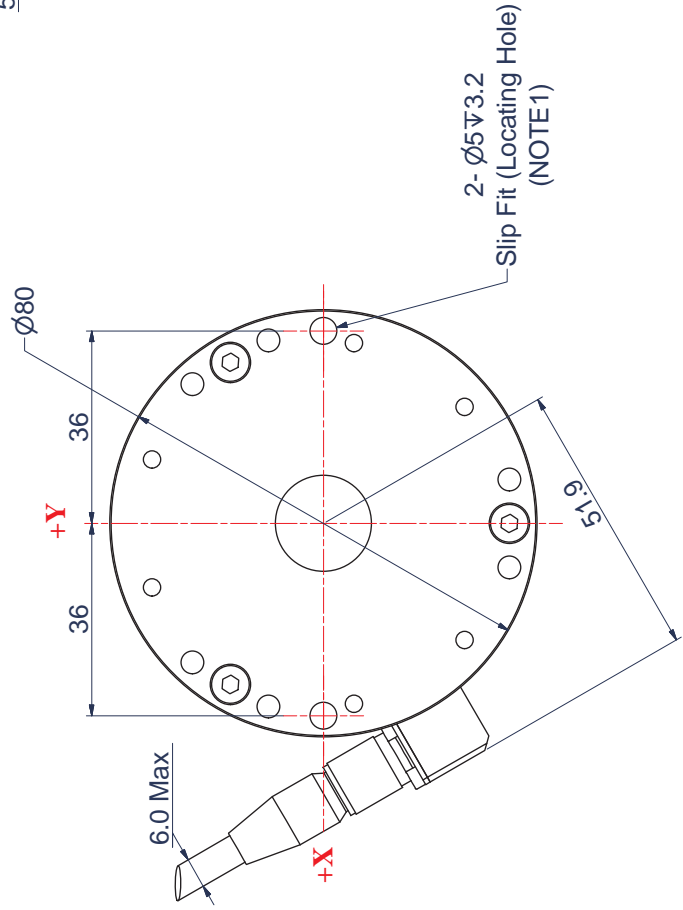
RFT80-6A01



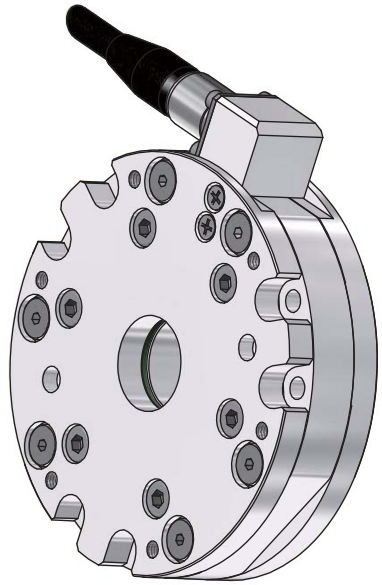
TOP VIEW



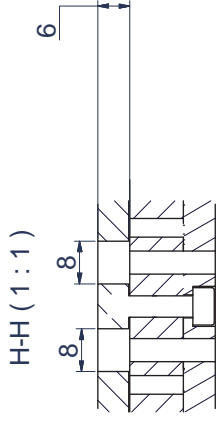
SIDE VIEW



BOTTOM VIEW



ISOMETRIC VIEW



H-H (1:1)

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| PROJECTION | DIMENSION | UNIT |
|------------|-----------|------|
| 1st Angle | | mm |