

6100 SERIES SUBSEA ROTARY ACTUATOR

GENERAL SPECIFICATIONS:

- OUTPUT TORQUE: UP TO 2000 FT-LB PEAK (T6 FRAME SIZE)
- OUTPUT SPEED: UP TO 2500 RPM NO-LOAD (T1 FRAME SIZE)
- OUTPUT POWER:
 - UP TO 1.5 KW PEAK AT 48V
 - UP TO 6.0 KW PEAK AT VOLTAGES UP TO 800V^[1]
- INTEGRATED SERVO CONTROL AND MOTOR DRIVER
- INTERNAL PRESSURE COMPENSATOR
- OPTIONAL SPRING-ENGAGED, POWER-OFF BRAKE
- LED SHAFT POSITION INDICATOR RING
- STANDARD CONNECTORS:
 - 9-PIN LOW-PROFILE POWER CONNECTOR
 - 13-PIN LOW-PROFILE COMMS CONNECTOR
- COMMUNICATION PHYSICAL LAYER OPTIONS: RS-232, RS-485, CAN, ETHERNET, ANALOG VOLTAGE CONTROL, AND ANALOG CURRENT CONTROL

OPERATING ENVIRONMENT:

- DESIGNED FOR MISSION-CRITICAL SUBSEA USE
- PRESSURE-BALANCED OIL-FILLED HOUSING
- CORROSION RESISTANT HOUSING MATERIAL OPTIONS
 - STAINLESS STEEL, PASSIVATED
 - ALUMINUM, HARDCOAT ANODIZED
 - TITANIUM
- OPERATIONAL DEPTH RATING: >6000 METERS SEAWATER
- DESIGN PRESSURE: 10,000 psi
- OPERATING TEMPERATURE RANGE: -20°C TO 65°C
- STORAGE TEMPERATURE RANGE: -30°C TO 85°C
- OPERATING VOLTAGE:
 - 48VDC STANDARD (12-55VDC RANGE)
 - UP TO 800V AVAILABLE. CONTACT 2G.^[1]

ONBOARD MOTOR DRIVER AND SERVO SYSTEM:

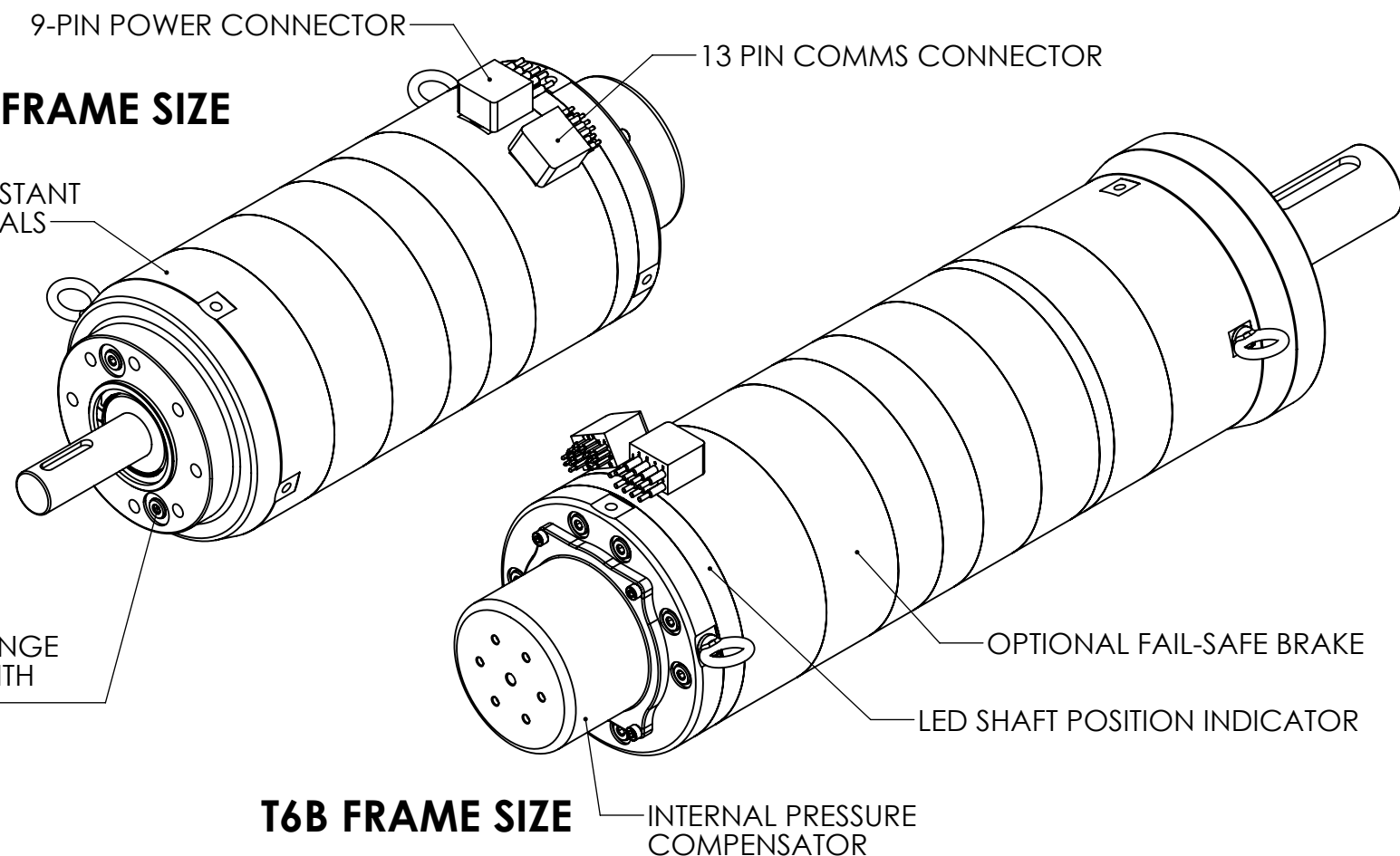
- CLOSED-LOOP POSITION CONTROL WITH PID TUNING
- CONFIGURABLE LIMITS FOR CURRENT, POWER, VELOCITY, AND ACCELERATION
- CONFIGURABLE MOTION PROFILE GENERATOR
- CONTACTLESS NON-WEARING ABSOLUTE POSITION SENSOR
- DOES NOT REQUIRE HOMING
- 0.002° RESOLUTION, 0.2° PRECISION, 1° ACCURACY
- COMMS PROTOCOL: MODBUS & 2G PACKETS
- DEFAULT BAUD RATE: 115200

2G ENGINEERING CAN CUSTOMIZE ANY ACTUATOR TO SUIT YOUR APPLICATION. CERTAIN OPTIONS MAY IMPACT DIMENSIONS, PERFORMANCE, AND LEAD TIME. CONTACT 2G TO CONFIRM SPECIFICATIONS FOR YOUR APPLICATION.

[1] DIMENSIONS & PERFORMANCE OF HIGH-VOLTAGE UNITS MAY DIFFER FROM STANDARD 48V UNITS. CONTACT 2G FOR DETAILS.

T4S FRAME SIZE

CORROSION-RESISTANT
HOUSING MATERIALS





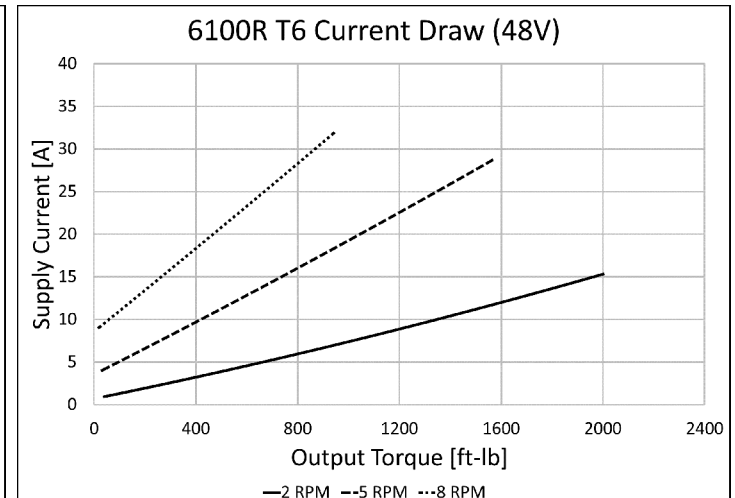
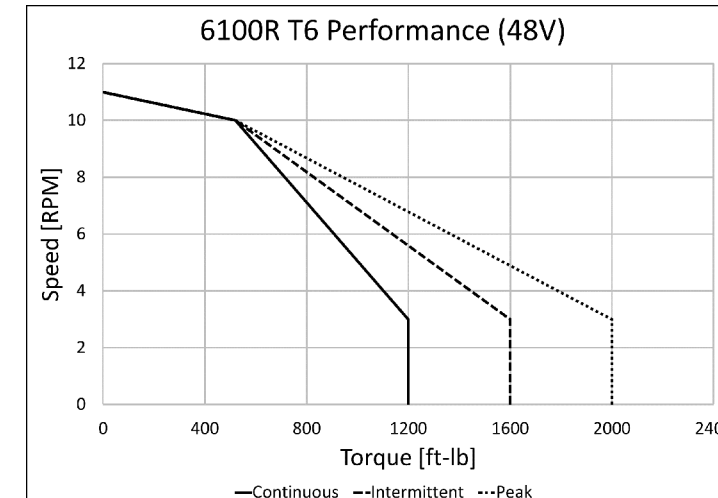
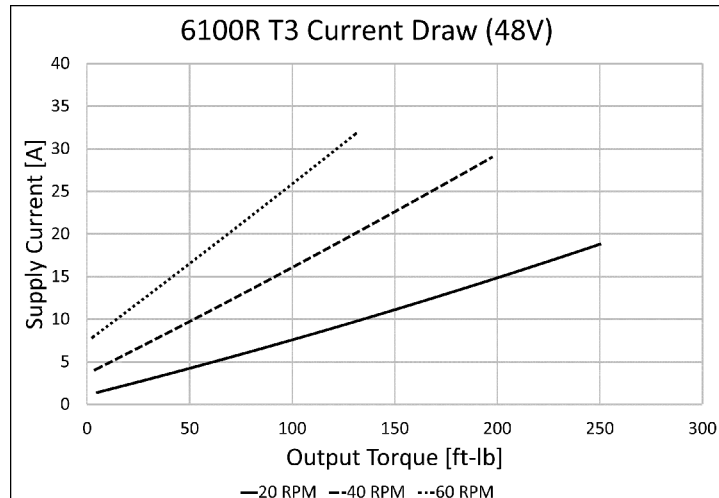
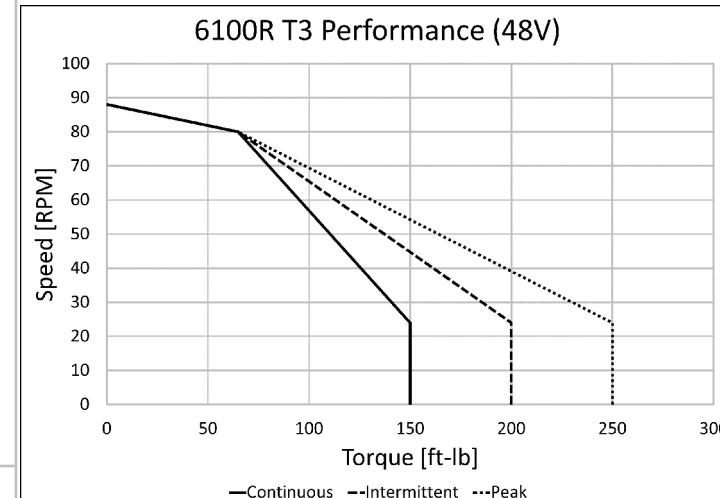
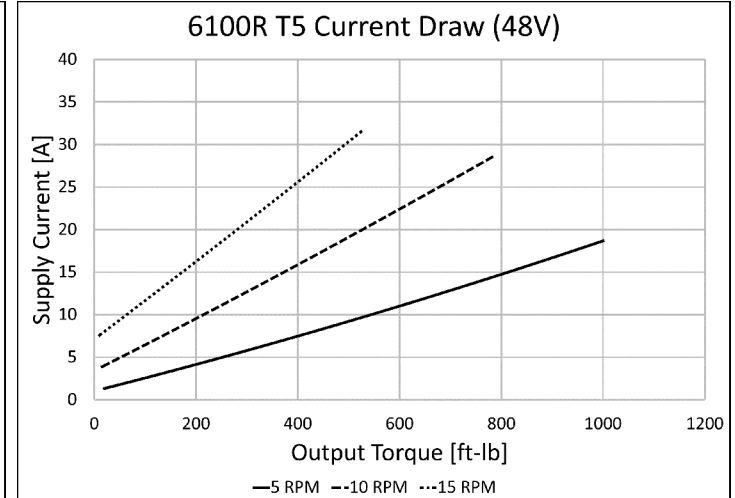
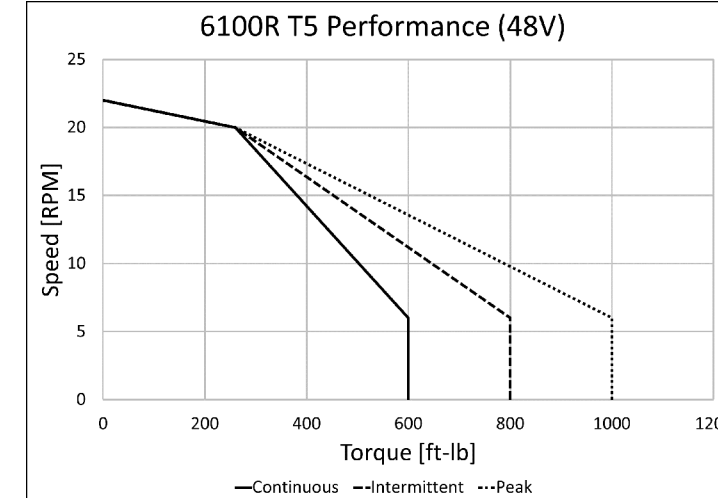
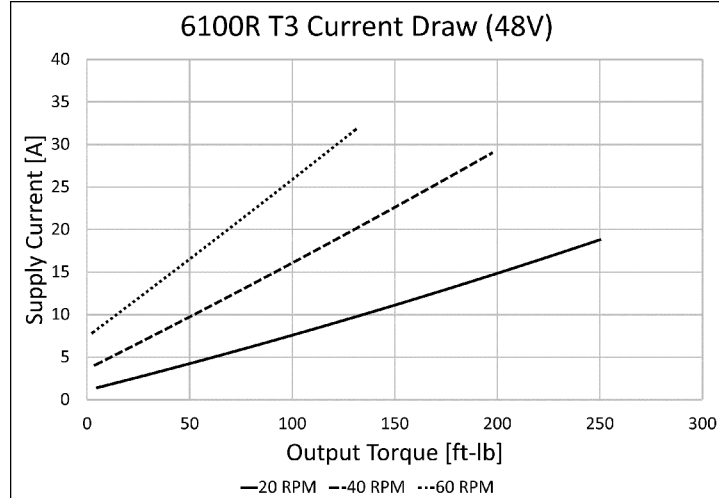
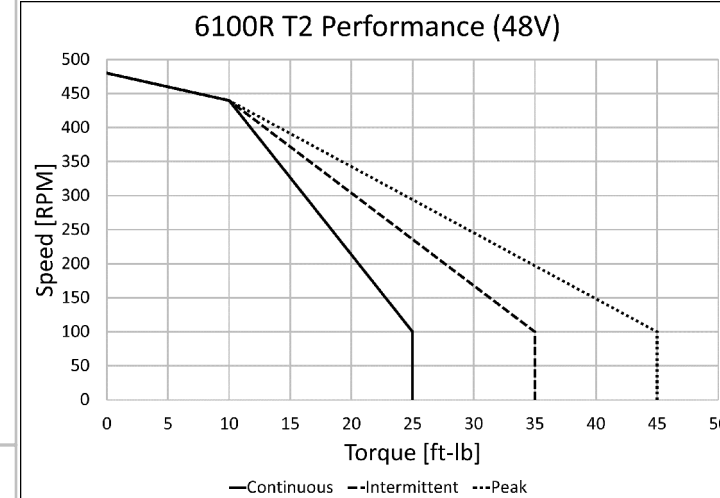
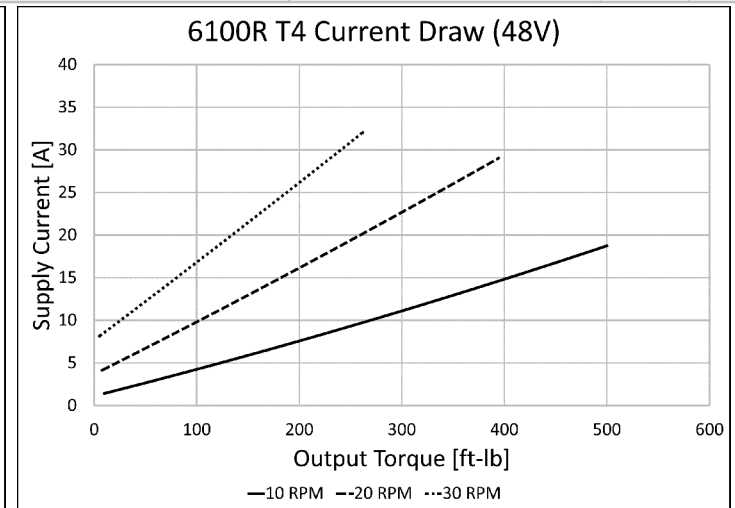
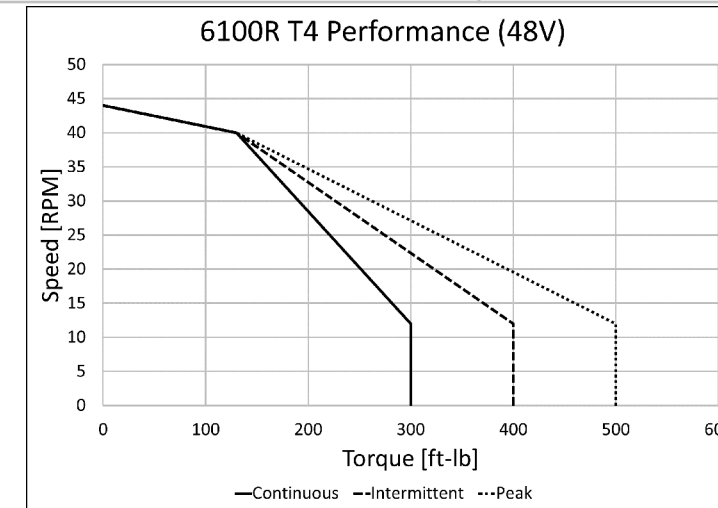
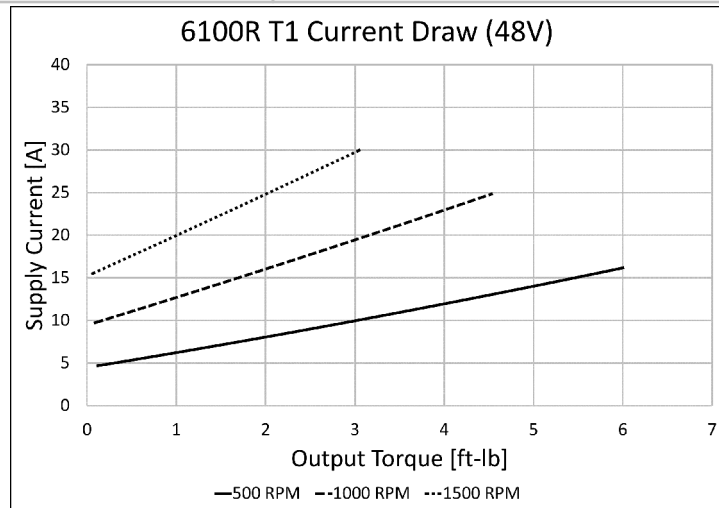
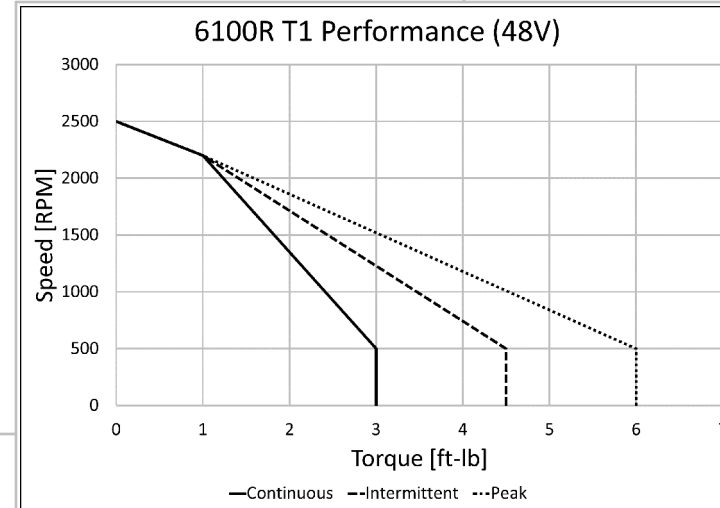
T6B FRAME SIZE

INTERNAL PRESSURE
COMPENSATOR

RATED TORQUE (48VDC)

| FRAME SIZE | RATED TORQUE (48VDC) | | |
|------------|----------------------|--------------|-------------|
| | CONTINUOUS | INTERMITTENT | PEAK |
| - | ft-lbf [Nm] | ft-lbf [Nm] | ft-lbf [Nm] |
| T1 | 3.0 [4.1] | 4.5 [6.1] | 6.0 [8.1] |
| T2 | 25 [34] | 35 [47] | 45 [61] |
| T3 | 150 [203] | 200 [271] | 250 [339] |
| T4 | 300 [407] | 400 [542] | 500 [678] |
| T5 | 600 [813] | 800 [1085] | 1000 [1356] |
| T6 | 1200 [1627] | 1600 [2169] | 2000 [2712] |

| | | | | | |
|--|---|---|------|---|------------------|
| MATERIAL: - | UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN INCHES - DIMENSIONS IN [] ARE IN mm - TOLERANCES: DECIMALS: .X ±.05 .XX ±.015 .XXX ±.005 ANGULAR: MACHINED: ±0.5° OTHER: ±2° - THREAD DEPTHS ON TAPPED HOLES ARE MINIMUMS - TAP DRILL DIAMETERS ARE REFERENCE - MAX FILLET RADIUS ON INSIDE SHARP CORNERS: 0.005 - BREAK ALL SHARP EDGES 0.010 MAX AND REMOVE BURRS - SURFACE FINISH: ≤63 Ra (µin) | INITIALS | DATE |  2G ENGINEERING WWW.2G-ENG.COM 608-825-4799 | |
| MATERIAL COMMENTS: | | DRAWN | DJF | | 04/03/2025 |
| FINISH: | | APPROVED | DJF | | 04/03/2025 |
| PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF 2G ENGINEERING. ANY DISTRIBUTION OR REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF 2G ENGINEERING IS PROHIBITED. | | TITLE: 6100 SERIES ROTARY ACTUATOR | | DWG. NO. 6100R | |
| SIZE B THIRD ANGLE PROJECTION  | | SCALE: 1:4 | | | REV. A |
| INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009 | | SHEET 1 OF 10 | | | |



ALL CHARTS SHOW PERFORMANCE AT 48VDC.
CONTACT 2G FOR OPERATION AT OTHER VOLTAGES.

MATERIAL:
-

MATERIAL COMMENTS:

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 - BREAK ALL SHARP EDGES 0.010 MAX AND REMOVE BURRS
 - SURFACE FINISH: ≤63 Ra (µin)

| | |
|--------------|------------|
| INITIALS | DATE |
| DRAWN DJF | 04/03/2025 |
| APPROVED DJF | 04/03/2025 |

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SIZE **B** THIRD ANGLE PROJECTION

INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009

2G ENGINEERING
 WWW.2G-ENG.COM 608-825-4799

TITLE: **6100 SERIES ROTARY ACTUATOR**

DWG. NO. **6100R** SCALE: 1:4 SHEET 2 OF 10

D

C

B

A

D

C

B

A

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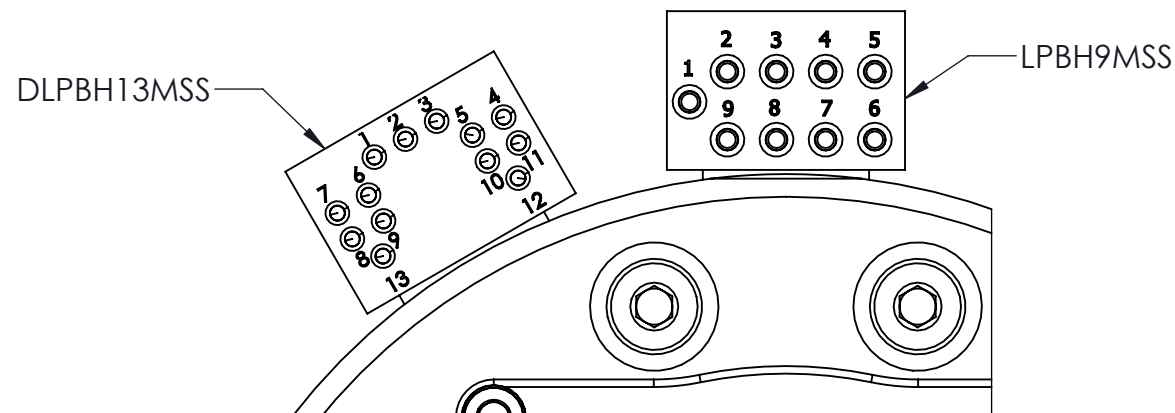
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3

2

1

| SERIES | | FRAME SIZE | | BRAKE ^[1] | | HOUSING MATERIAL | | OUTPUT SHAFT [SEE TABLE] | | COMMUNICATION | | VOLTAGE ^[2] | |
|--------|--------|------------|-------------------------|----------------------|---------------|------------------|-------------------|-----------------------------|---------------------|---------------|--|------------------------|------------------------------------|
| 6100R | SUBSEA | T1 | F07 FLANGE DIRECT DRIVE | S | WITHOUT BRAKE | SS | STAINLESS STEEL | KA0070 | T1, T2, T3 STANDARD | 13S | RS-232, RS-485, ETHERNET, ANALOG VOLTAGE & CURRENT | 01 | 48 VDC NOMINAL, 12-55 VDC RANGE |
| | | T2 | F07 FLANGE SINGLE STAGE | B | WITH BRAKE | AL | ANODIZED ALUMINUM | KB0084 | T4 STANDARD | | | 12 | 300 VDC NOMINAL, 100-450 VDC RANGE |
| | | T3 | F07 FLANGE STANDARD | | | TI | TITANIUM | KC0102 | T5 STANDARD | | | | |
| | | T4 | F10 FLANGE STANDARD | | | | | KD0128 | T6 STANDARD | | | | |
| | | T5 | F12 FLANGE STANDARD | | | | | | | | | | |
| | | T6 | F14 FLANGE STANDARD | | | | | | | | | | |



| PIN ASSIGNMENTS 13 PIN COMMS CONNECTOR MACARTNEY SUBCONN DLPBH13MSS | |
|---|----------------------------------|
| PIN | 13S |
| 1 | ANALOG INPUT |
| 2 | COMMS GND |
| 3 | ANALOG OUTPUT |
| 4 | RS-232 TX |
| 5 | RS-232 RX |
| 6 | RS-485 + (CAN HI) ^[3] |
| 7 | RS-485 - (CAN LO) ^[3] |
| 8 | ETHERNET TX+ |
| 9 | ETHERNET TX- |
| 10 | ETHERNET RX+ |
| 11 | ETHERNET RX- |
| 12 | COMMS SHIELD |
| 13 | COMMS SHIELD |

| PIN ASSIGNMENTS 9 PIN POWER CONNECTOR MACARTNEY SUBCONN LPBH9MSS | |
|--|--------------------|
| PIN | ALL CONFIGURATIONS |
| 1 | CHASSIS GROUND |
| 2 | VIN - |
| 3 | VIN - |
| 4 | VIN - |
| 5 | VIN - |
| 6 | VIN + |
| 7 | VIN + |
| 8 | VIN + |
| 9 | VIN + |

| STANDARD SHAFT DIMENSIONS | | | | |
|---------------------------|--------|----------|--------|-----------|
| SIZE | CODE | DIAMETER | LENGTH | KEY WxHxL |
| T1, T2, T3 | KA0070 | 22mm | 70mm | 6x6x32 |
| T4 | KB0084 | 28mm | 84mm | 8x7x40 |
| T5 | KC0102 | 36mm | 102mm | 10x8x50 |
| T6 | KD0128 | 48mm | 128mm | 14x9x70 |

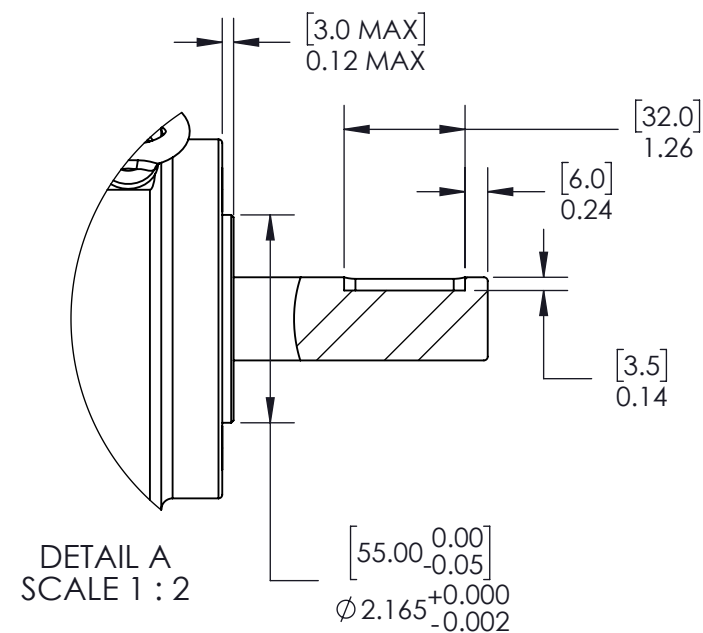
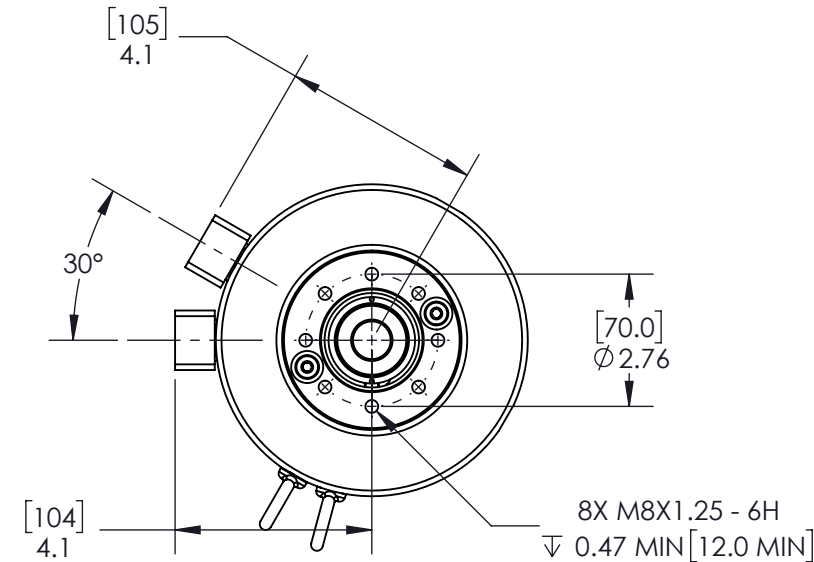
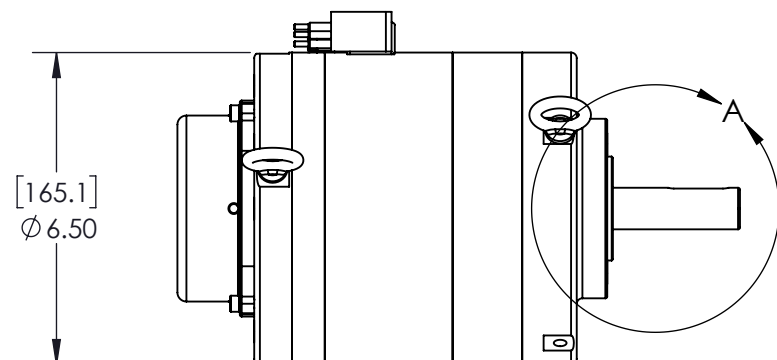
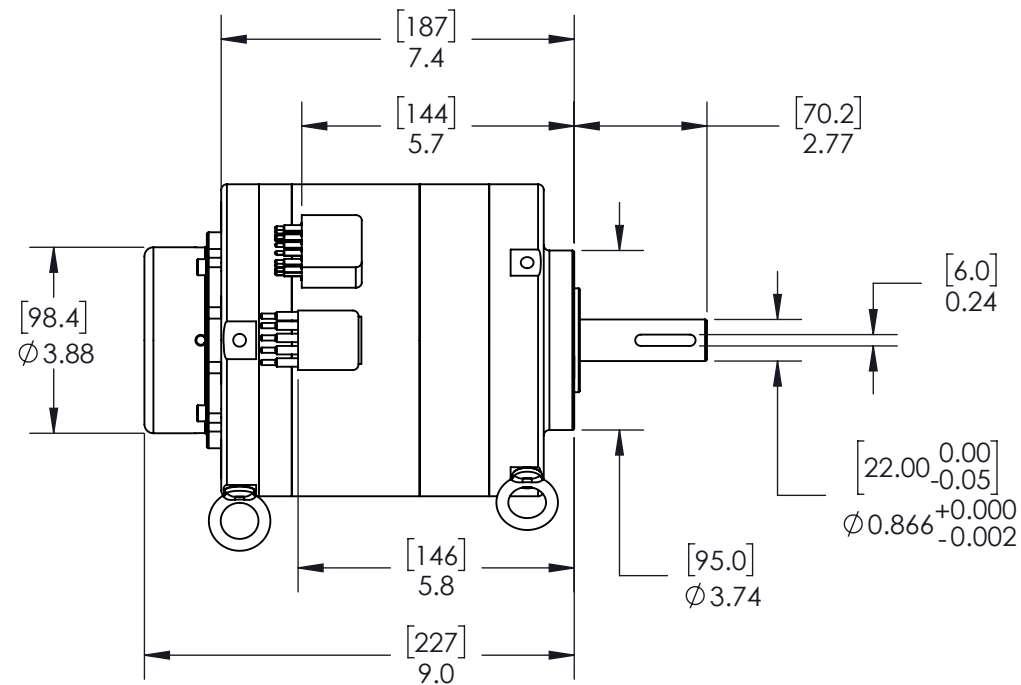
CERTAIN OPTIONS MAY IMPACT DIMENSIONS, PERFORMANCE, OR LEAD TIME. CONTACT 2G TO CONFIRM SPECIFICATIONS FOR YOUR APPLICATION.

[1] STANDARD UNIT IS "S" OPTION, WITHOUT BRAKE. BRAKE ADDS LENGTH AND WEIGHT. SEE PAGE 10 FOR DETAILS ON BRAKE OPTION.

[2] STANDARD VOLTAGE OPTION IS "01" (48V NOMINAL). OTHER OPTIONS IMPACT DIMENSIONS. CONTACT 2G FOR DETAILS.

[3] SOFTWARE SELECTABLE. DEFAULT SETTING IS RS-485.

| | | | | | | |
|--|---|-------------------------------|------|--|------------------------------------|------------|
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| MATERIAL COMMENTS: | | DRAWN | DJF | | | 04/03/2025 |
| FINISH: | | APPROVED | DJF | | | 04/03/2025 |
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| INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009 | | SCALE: 1:1 | | SHEET 3 OF 10 | | |



T1 FRAME SIZE

MODEL SHOWN: 6100RT1S-SSKA0070-13S01S

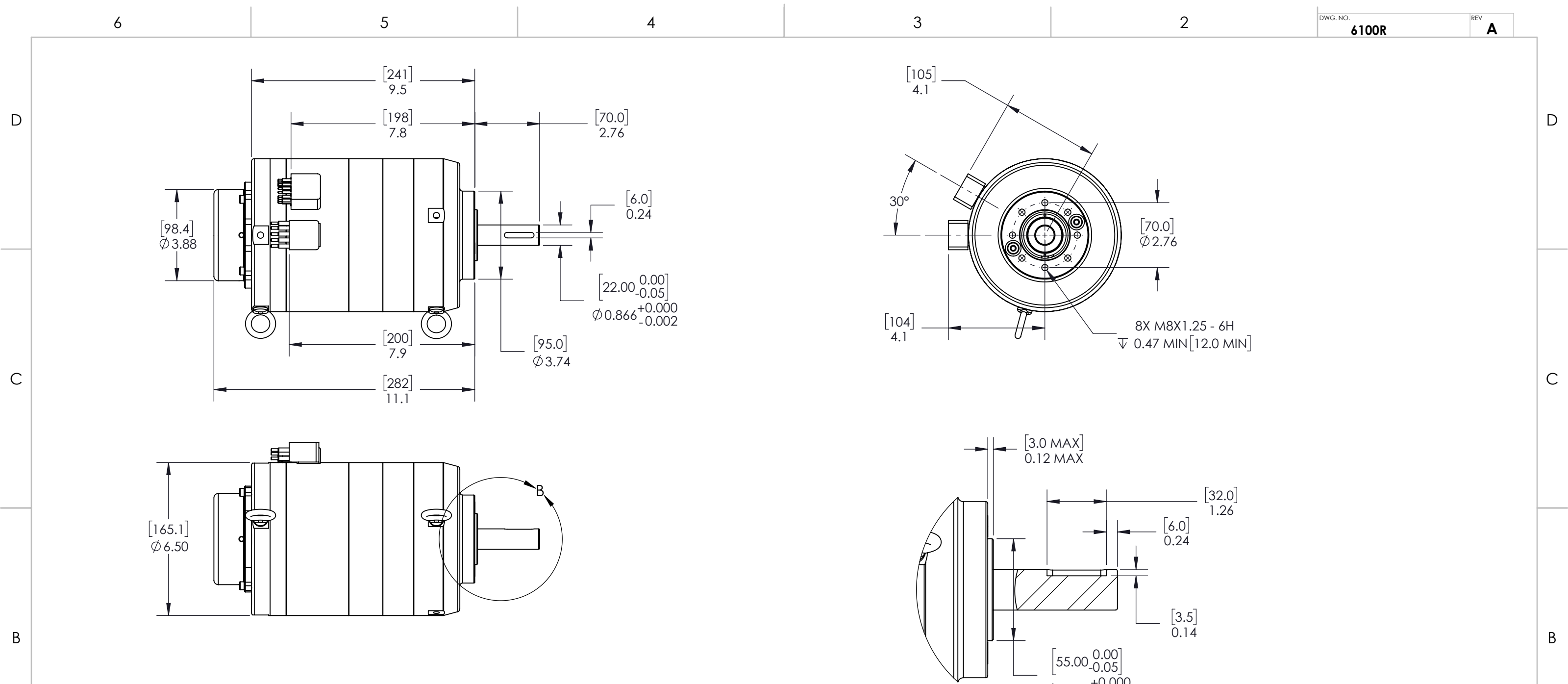
- F07 FLANGE MOUNT
- DIRECT DRIVE
- NO BRAKE
- 48V NOMINAL VOLTAGE

| WEIGHT (LBS) | | STAINLESS | ALUMINUM | TITANIUM |
|--------------|---------------|-----------|----------|----------|
| T1S | DRY/SURFACE | 37 | 19 | 24 |
| | WET/SUBMERGED | 27 | 10 | 15 |
| T1B | DRY/SURFACE | 49 | 27 | 33 |
| | WET/SUBMERGED | 36 | 14 | 20 |

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| | | SIZE B THIRD ANGLE PROJECTION | DWG. NO. 6100R |
| | | INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009 | SCALE: 1:4 |


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TITLE: 6100 SERIES ROTARY ACTUATOR



T2 FRAME SIZE

MODEL SHOWN: 6100RT2S-SSKA0070-13S01S

- F07 FLANGE MOUNT
- SINGLE STAGE GEARBOX
- NO BRAKE
- 48V NOMINAL VOLTAGE

| WEIGHT (LBS) | | STAINLESS | ALUMINUM | TITANIUM |
|--------------|---------------|-----------|----------|----------|
| T2S | DRY/SURFACE | 51 | 29 | 36 |
| | WET/SUBMERGED | 39 | 17 | 23 |
| T2B | DRY/SURFACE | 63 | 37 | 45 |
| | WET/SUBMERGED | 48 | 21 | 29 |

MATERIAL:
-

MATERIAL COMMENTS:

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 .XX ±.015
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 - SURFACE FINISH: ≤63 R_a (µin)

INITIALS **DATE**
 DRAWN DJF 04/03/2025
 APPROVED DJF 04/03/2025

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SIZE **THIRD ANGLE PROJECTION**
 B

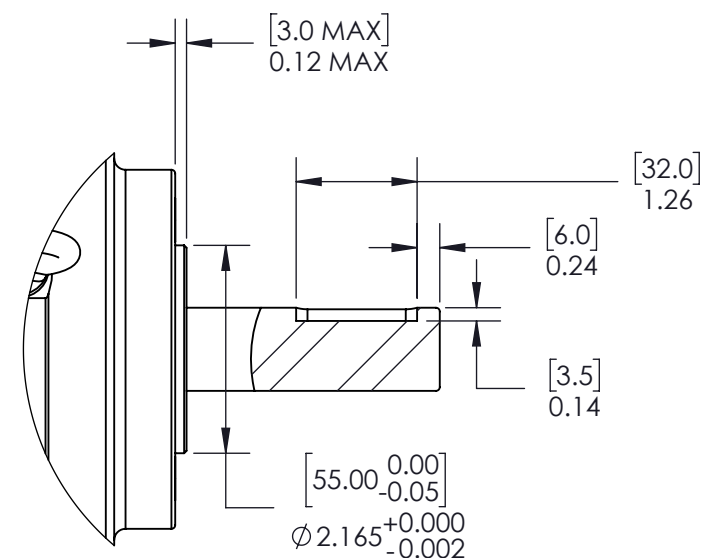
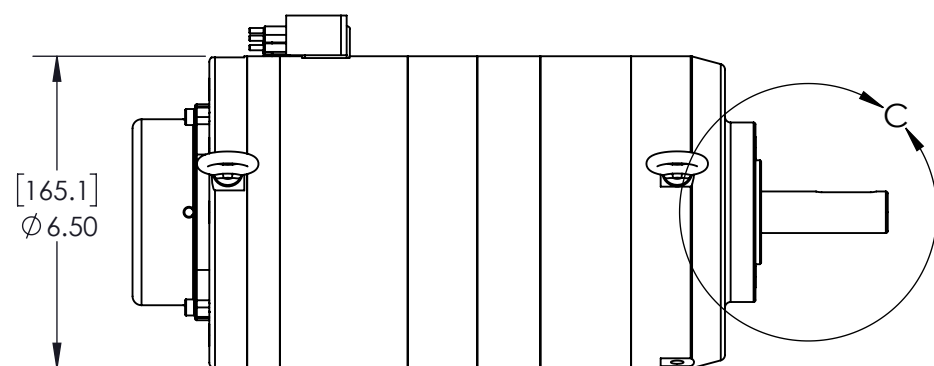
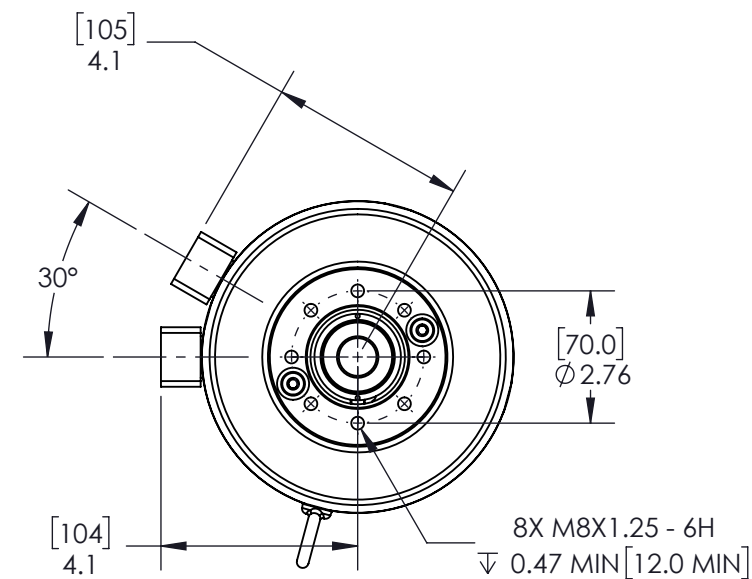
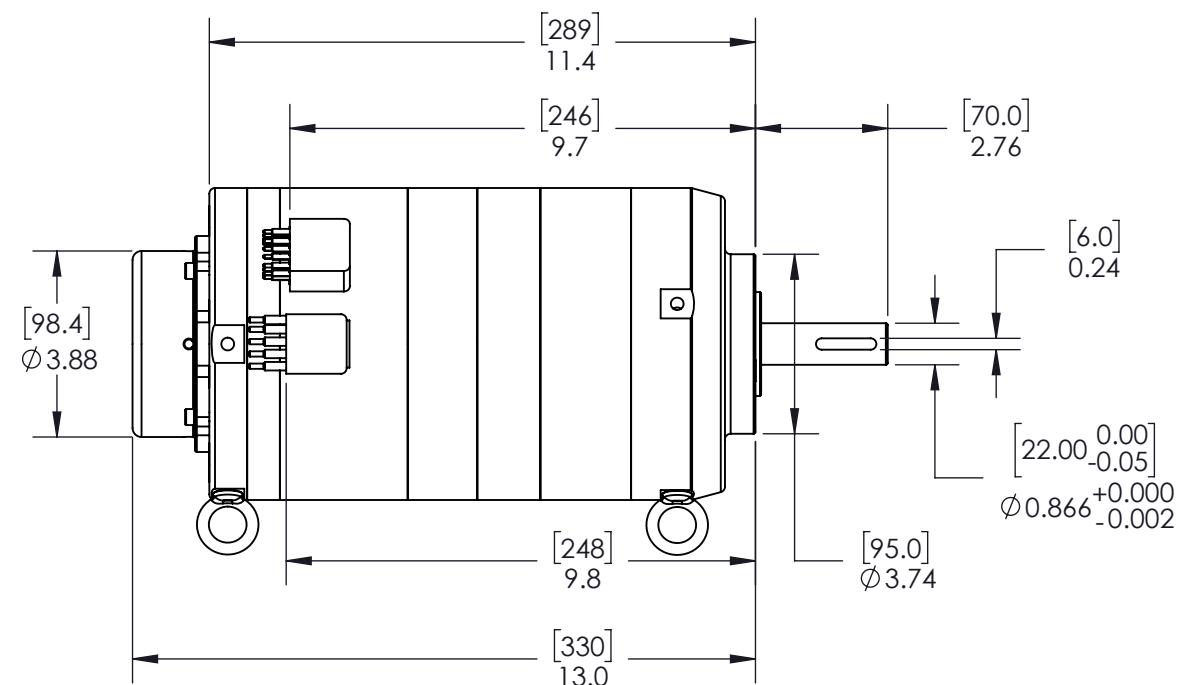
INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009

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TITLE: 6100 SERIES ROTARY ACTUATOR

DWG. NO. 6100R **REV. A**

SCALE: 1:4 SHEET 5 OF 10



DETAIL C
SCALE 1 : 2

T3 FRAME SIZE

MODEL SHOWN: 6100RT3S-SSKA0070-13S01S

- F07 FLANGE MOUNT
- 2 STAGE GEARBOX
- NO BRAKE
- 48V NOMINAL VOLTAGE

| WEIGHT (LBS) | | STAINLESS | ALUMINUM | TITANIUM |
|--------------|---------------|-----------|----------|----------|
| T3S | DRY/SURFACE | 64 | 37 | 45 |
| | WET/SUBMERGED | 50 | 23 | 31 |
| T3B | DRY/SURFACE | 76 | 45 | 54 |
| | WET/SUBMERGED | 59 | 27 | 37 |

MATERIAL:

-

MATERIAL COMMENTS:

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- .XX ±.015
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- MACHINED: ±0.5°
- OTHER: ±2°

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- SURFACE FINISH: ≤63 R_a (µin)

| | INITIALS | DATE |
|----------|----------|------------|
| DRAWN | DJF | 04/03/2025 |
| APPROVED | DJF | 04/03/2025 |

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SIZE B THIRD ANGLE PROJECTION
 INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009



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TITLE: 6100 SERIES ROTARY ACTUATOR

DWG. NO. 6100R

SCALE: 1:4

SHEET 6 OF 10

REV. A

D

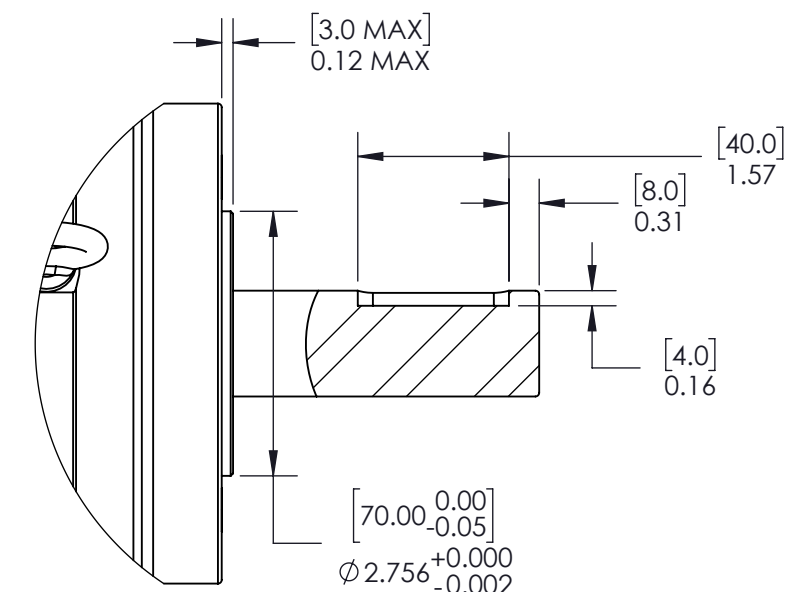
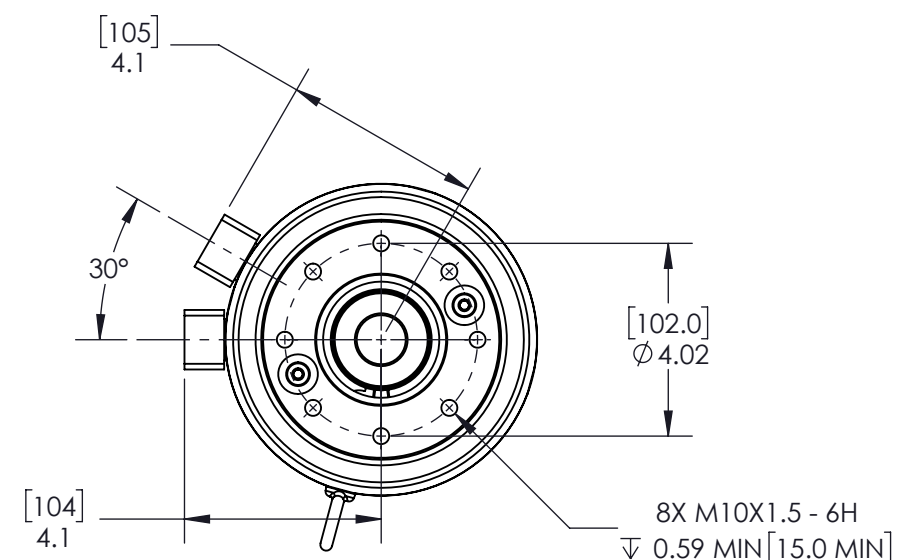
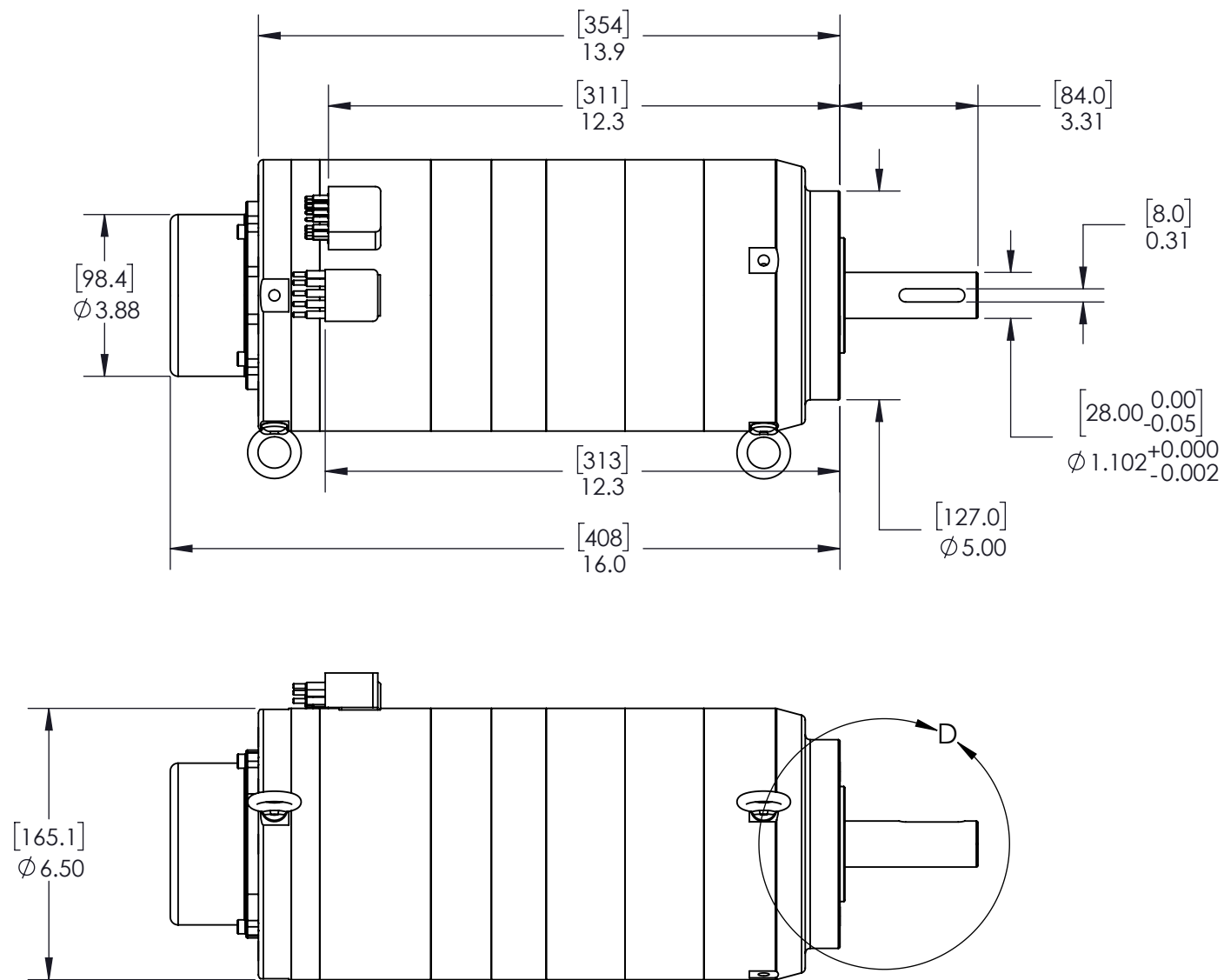
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C

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B

B



T4 FRAME SIZE

MODEL SHOWN: 6100RT4S-SSKB0084-13S01S

- F10 FLANGE MOUNT
- 3 STAGE HS GEARBOX
- NO BRAKE
- 48V NOMINAL VOLTAGE

| WEIGHT (LBS) | | STAINLESS | ALUMINUM | TITANIUM |
|--------------|---------------|-----------|----------|----------|
| T4S | DRY/SURFACE | 84 | 50 | 60 |
| | WET/SUBMERGED | 66 | 32 | 42 |
| T4B | DRY/SURFACE | 97 | 58 | 69 |
| | WET/SUBMERGED | 75 | 36 | 48 |

| | | | |
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| MATERIAL COMMENTS: | | DRAWN | DJF 04/03/2025 |
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| | | SIZE B THIRD ANGLE PROJECTION | |

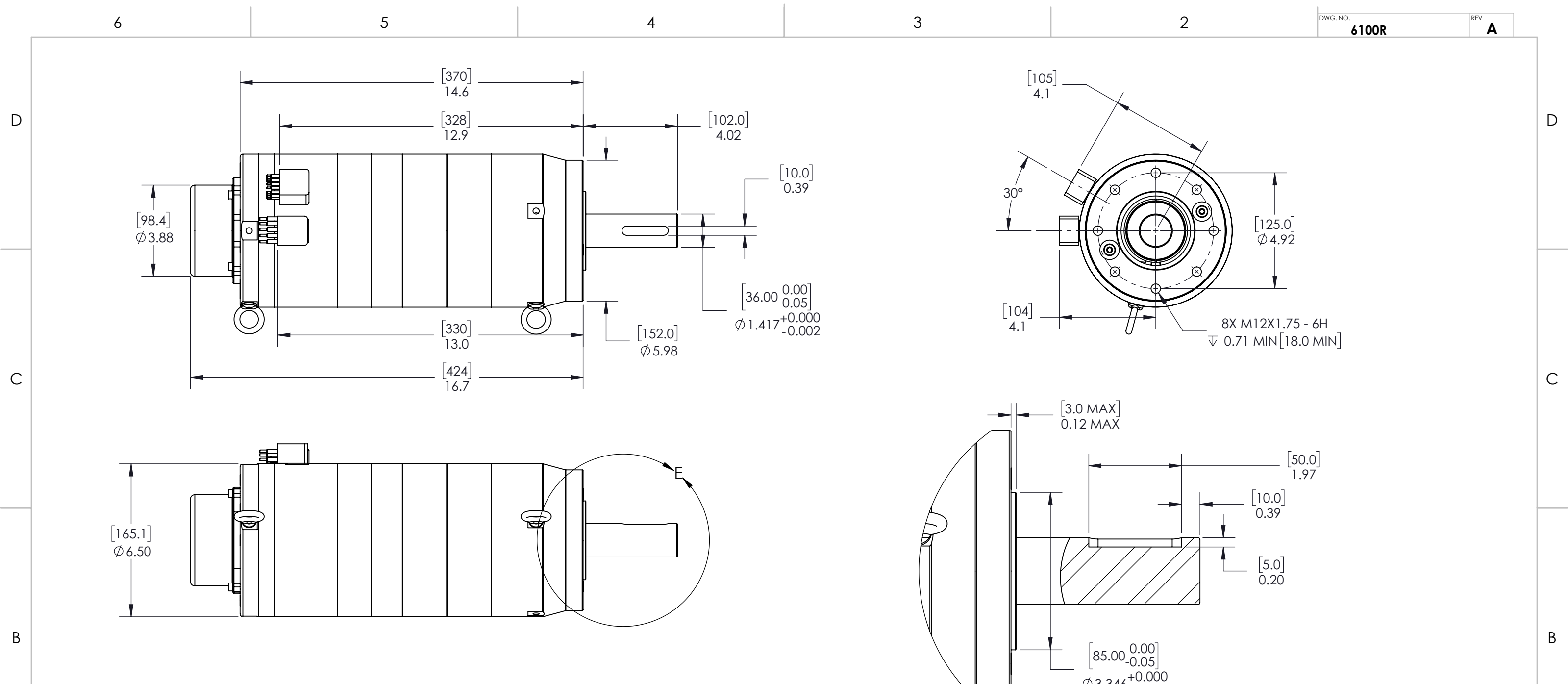
2G ENGINEERING
 WWW.2G-ENG.COM 608-825-4799

TITLE: 6100 SERIES ROTARY ACTUATOR

| | |
|-----------------------|---------------|
| DWG. NO. 6100R | REV. A |
| SCALE: 1:4 | SHEET 7 OF 10 |

A

A



T5 FRAME SIZE

MODEL SHOWN: 6100RT5S-SSKC0102-13S01S

- F12 FLANGE MOUNT
- 3 STAGE HT GEARBOX
- NO BRAKE
- 48V NOMINAL VOLTAGE

| WEIGHT (LBS) | | STAINLESS | ALUMINUM | TITANIUM |
|--------------|---------------|-----------|----------|----------|
| T5S | DRY/SURFACE | 93 | 57 | 66 |
| | WET/SUBMERGED | 73 | 38 | 47 |
| T5B | DRY/SURFACE | 105 | 65 | 76 |
| | WET/SUBMERGED | 82 | 42 | 53 |

MATERIAL:
-

MATERIAL COMMENTS:

FINISH:

UNLESS OTHERWISE SPECIFIED:
 - DIMENSIONS ARE IN INCHES
 - DIMENSIONS IN [] ARE IN mm
 - TOLERANCES:
 DECIMALS:
 .X ±.05
 .XX ±.015
 .XXX ±.005
 ANGULAR:
 MACHINED: ±0.5°
 OTHER: ±2°
 - THREAD DEPTHS ON TAPPED HOLES ARE MINIMUMS
 - TAP DRILL DIAMETERS ARE REFERENCE
 - MAX FILLET RADIUS ON INSIDE SHARP CORNERS: 0.005
 - BREAK ALL SHARP EDGES 0.010 MAX AND REMOVE BURRS
 - SURFACE FINISH: ≤63 Ra (µin)

INITIALS DATE
 DRAWN DJF 04/03/2025
 APPROVED DJF 04/03/2025

PROPRIETARY AND CONFIDENTIAL
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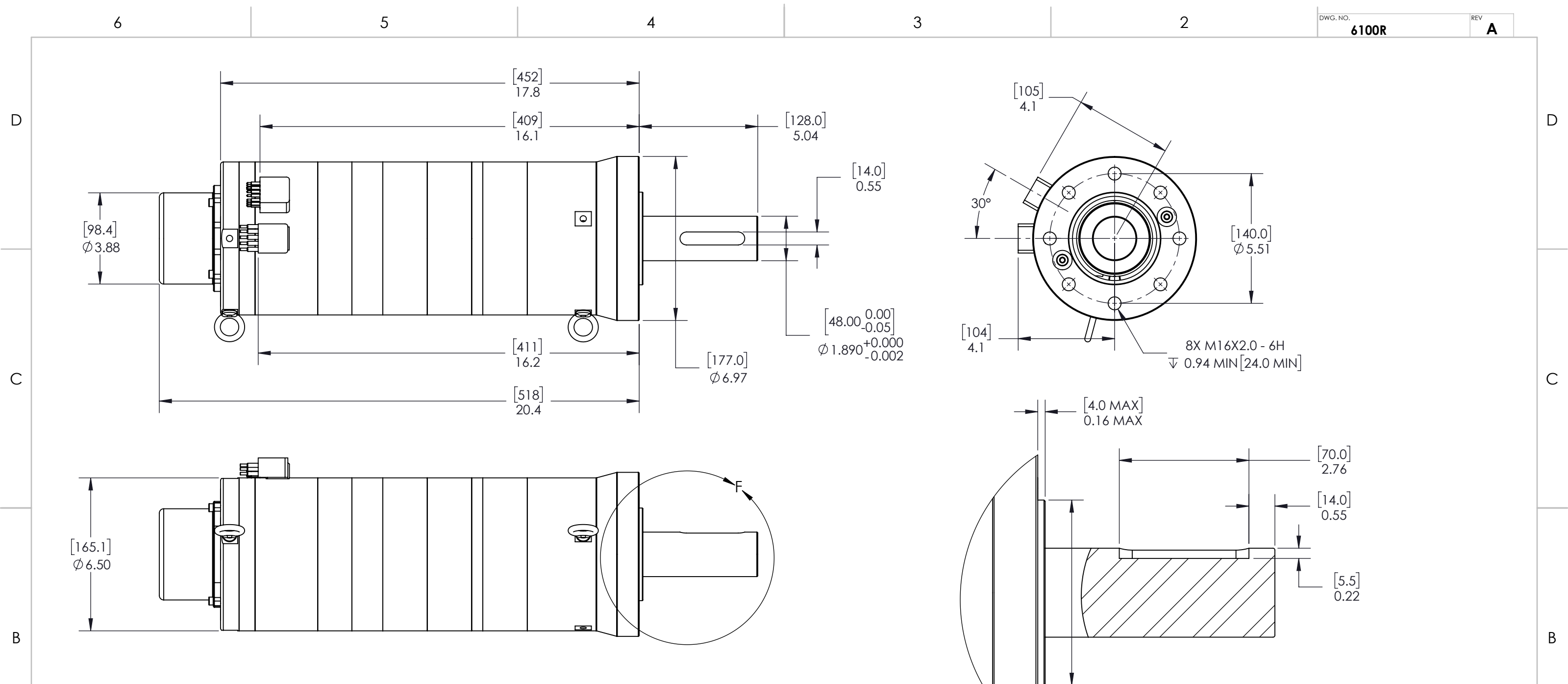
SIZE THIRD ANGLE PROJECTION
 B

INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009

2G ENGINEERING
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TITLE: **6100 SERIES ROTARY ACTUATOR**

DWG. NO. **6100R** REV. **A**



T6 FRAME SIZE:

MODEL SHOWN: 6100RT6S-SSKD0128-13S01S

- F14 FLANGE MOUNT
- 4 STAGE GEARBOX
- NO BRAKE
- 48V NOMINAL VOLTAGE

| WEIGHT (LBS) | | STAINLESS | ALUMINUM | TITANIUM |
|--------------|---------------|-----------|----------|----------|
| T6S | DRY/SURFACE | 123 | 78 | 88 |
| | WET/SUBMERGED | 98 | 53 | 63 |
| T6B | DRY/SURFACE | 136 | 85 | 97 |
| | WET/SUBMERGED | 107 | 57 | 69 |

MATERIAL:
-

MATERIAL COMMENTS:

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 - DIMENSIONS IN [] ARE IN mm
 - TOLERANCES:
 DECIMALS:
 .X ± 0.05
 .XX ± 0.015
 .XXX ± 0.005
 ANGULAR:
 MACHINED: $\pm 0.5^\circ$
 OTHER: $\pm 2^\circ$
 - THREAD DEPTHS ON TAPPED HOLES ARE MINIMUMS
 - TAP DRILL DIAMETERS ARE REFERENCE
 - MAX FILLET RADIUS ON INSIDE SHARP CORNERS: 0.005
 - BREAK ALL SHARP EDGES 0.010 MAX AND REMOVE BURRS
 - SURFACE FINISH: ≤ 63 Ra (μ in)

INITIALS DATE
 DRAWN DJF 04/03/2025
 APPROVED DJF 04/03/2025

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SIZE THIRD ANGLE PROJECTION
 B

INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009

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TITLE: **6100 SERIES ROTARY ACTUATOR**

DWG. NO. **6100R**

SCALE: 1:4

SHEET 9 OF 10

REV. **A**

D

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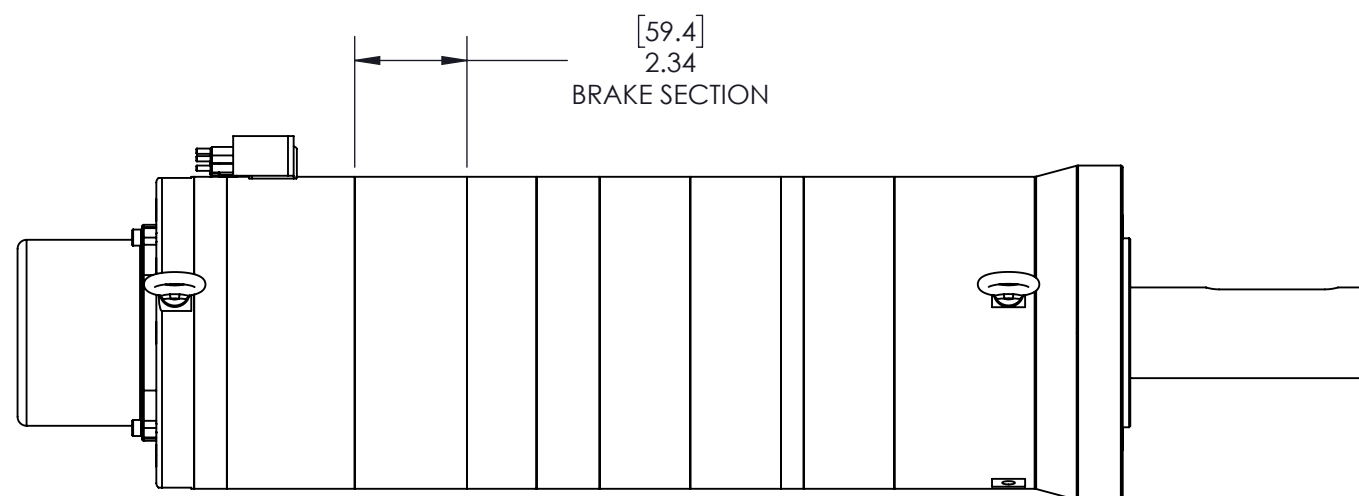
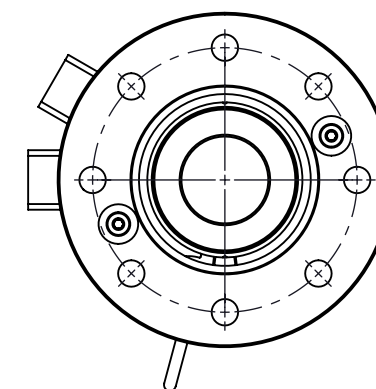
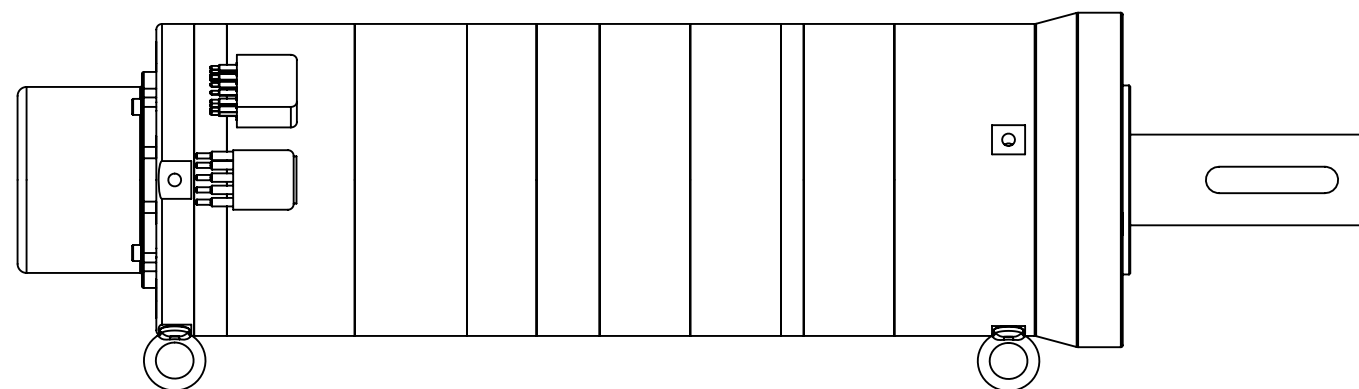
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FAIL-SAFE BRAKE OPTION

MODEL SHOWN: 6100RT6B-SSKD0128-13S01S
 BRAKE MAY BE ADDED TO ANY UNIT.
 ADDS LENGTH AND WEIGHT AS LISTED.
 BRAKE ENGAGES ON POWER LOSS.
 STATIC HOLDING TORQUE EXCEEDS CONTINUOUS RATED TORQUE.

| ADDED WEIGHT (LBS) | | STAINLESS | ALUMINUM | TITANIUM |
|--------------------|---------------|-----------|----------|----------|
| BRAKE OPTION | DRY/SURFACE | +12 | +8 | +9 |
| | WET/SUBMERGED | +9 | +4 | +6 |

MATERIAL:

-

MATERIAL COMMENTS:

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- .XXX ±.005
- ANGULAR:
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| | INITIALS | DATE |
|----------|----------|------------|
| DRAWN | DJF | 04/03/2025 |
| APPROVED | DJF | 04/03/2025 |

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SIZE B THIRD ANGLE PROJECTION

INTERPRET GEOMETRIC DIMENSIONING & TOLERANCING PER ASME Y14.5-2009



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SCALE: 1:4

REV. A

SHEET 10 OF 10