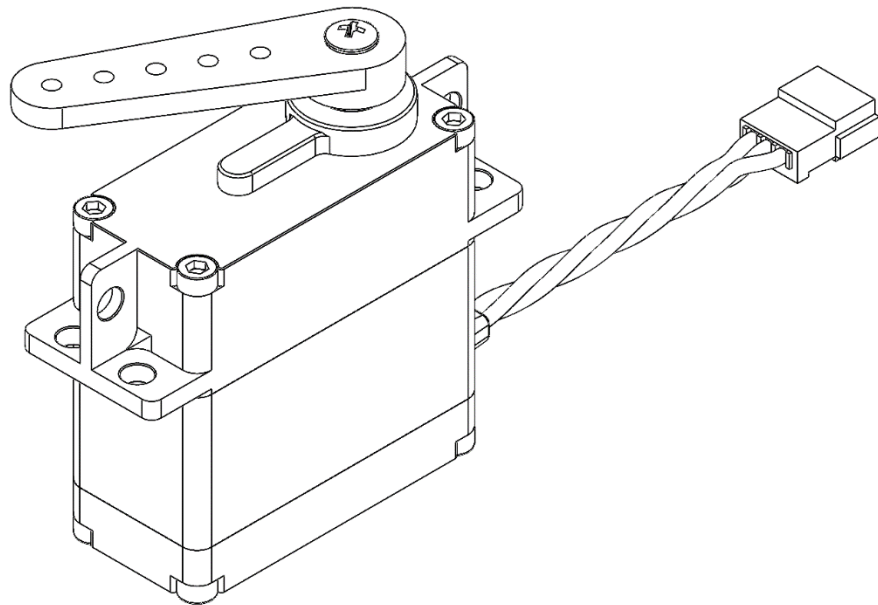


DA 14-N Technical Specification



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1. General Description

The DA 14-N is the successor of the brushed DA 14 and is our smallest and lightest full brushless actuator incorporating contactless position sensing, aluminum housing and a steel gear train.

Its brushless motor and contactless, wear free position sensing system makes the DA 14-N immune to wear, vibrations and shock loads.

The DA 14-N series is equipped with a standard PWM interface and is fully programmable. The actuator is rated for >500 h of operation.

Advantages of the DA 14-N actuator:

1. Maximized service life through vibration-resistant, brushless DC motor
2. Brushless motor technology eliminates the typical electromagnetic noise of brush-type motors and provides ultra-long endurance
3. Contactless, wear free position sensing system
4. Aluminum housing with minimal weight and size in functional design and excellent immunity to electromagnetic interference
5. Saltwater-resistant, HART-coat treated aluminum housing
6. Several programming possibilities, e.g. overload protection of the internal electric brushless motor, which allows to reduce the motor current if the motor is being overloaded

2. Operating Data

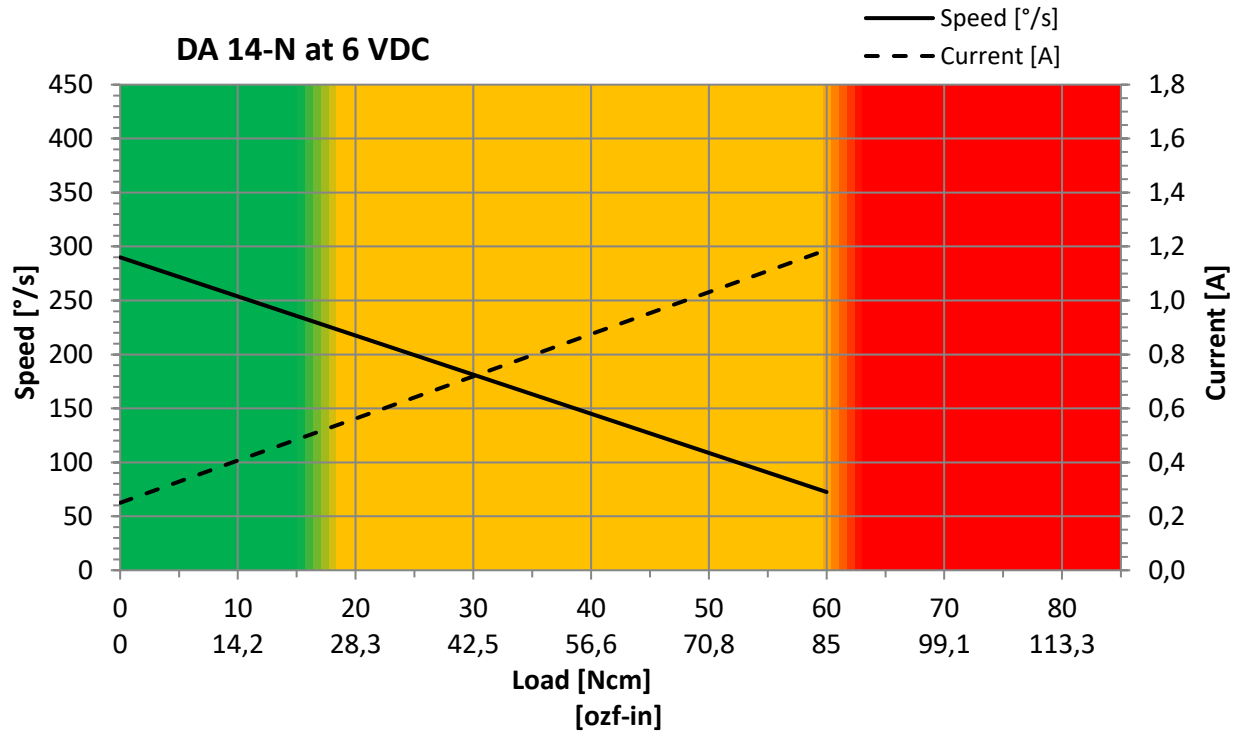
	DA 14-N.06
Supply Voltage (rated)	6 VDC
Supply Voltage Range	5 ... 9 VDC
Standby Current ¹ at rated voltage	0.05 A
Rated Current ¹ at rated voltage	0.5 A
Peak Current ¹ at rated voltage	1.5 A
Rated Torque ¹ at rated speed	16 Ncm (22.7 ozf-in)
Peak Torque ¹ at rated voltage	60 Ncm (85 ozf-in)
No Load Speed ¹ at rated voltage	290 °/s
Rated Speed ¹ at rated torque	235 °/s
Default Travel Angle	±45° = 90° total travel
Max. Travel Angle ²	±90° = 180° total travel
Backlash (mechanical)	≤ 0.5°
Position Sensor Error over Temperature ³	≤ ±1.0°
Operating Temperature Range	-30°C ... +70°C (-22°F ... +158°F)
Storage Temperature Range	-40°C ... +80°C (-31°F ... +176°F)

1) Tolerance ±10%

2) Programming Tool # 985.3 required

3) -20°C ... +50°C , Δt = 70°C (-4°F ... +122°F , Δt = 126°F)

3. Performance



Operation Mode:

■ Continuous

■ Short Time
< 10s, 60s cool down

■ Overload
< 1s, 60s cool down

4. Command Interface

4.1. PWM Command Interface

PWM Signal Voltage	TTL-Level HIGH: min. 3.5 V, max. 5.5 V TTL-Level LOW: min. 0.0 V, max. 1.5 V
Frame Rate	2.6 ... 2000 ms
Valid Pulse Lengths	0.9 ... 2.1 ms
Pulse Length for Position Left / Center / Right	1.0 / 1.5 / 2.0 ms
Resolution	$\leq 1 \mu\text{s}$

5. Materials and Features

Case Material	Saltwater Resistant Aluminum Alloy
Case Surface Treatment	HART® - Coat
Splash Water Resistance	IP 64, waterproof to Water splashing against the enclosure from any direction shall have no harmful effect.
Salt Water Resistance	HART® - Coat treatment
EMI / RFI Shielding	Case Shielding
Motor Type	Brushless DC Motor
Gear Set Material	Steel
Position Sensor	Contactless

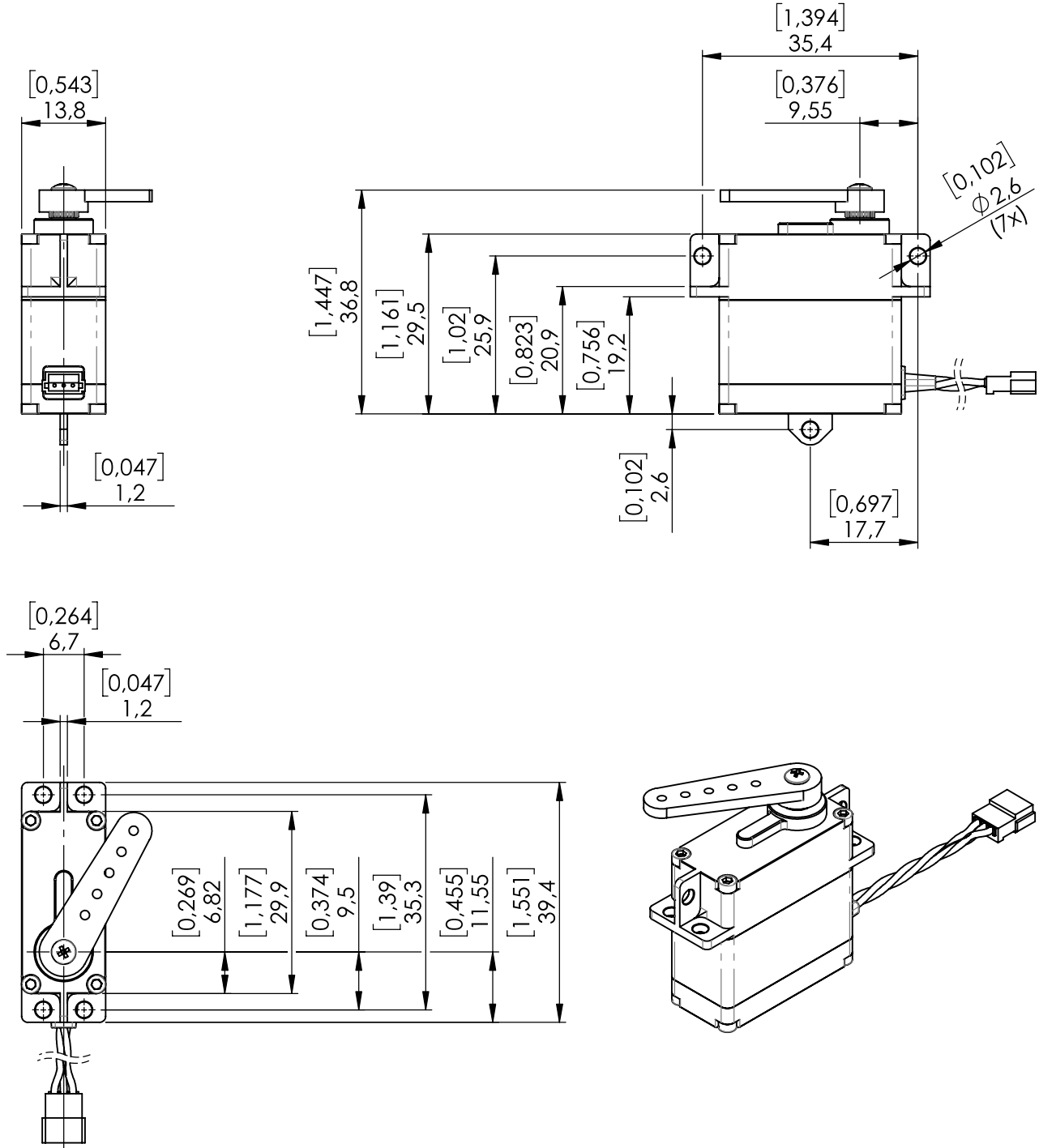
6. Dimensions

Case Dimensions	29.5 mm x 39.4 mm x 13.8 mm ± 0.2 mm (1.161 in x 1.551 in x 0.543 in ± 0.008 in)
Weight	28g (0.99oz) $\pm 10\%$

Standard Tolerances	Unless otherwise specified according to DIN ISO 2768 - m
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6.1. Installation Dimensions

DA 14-N

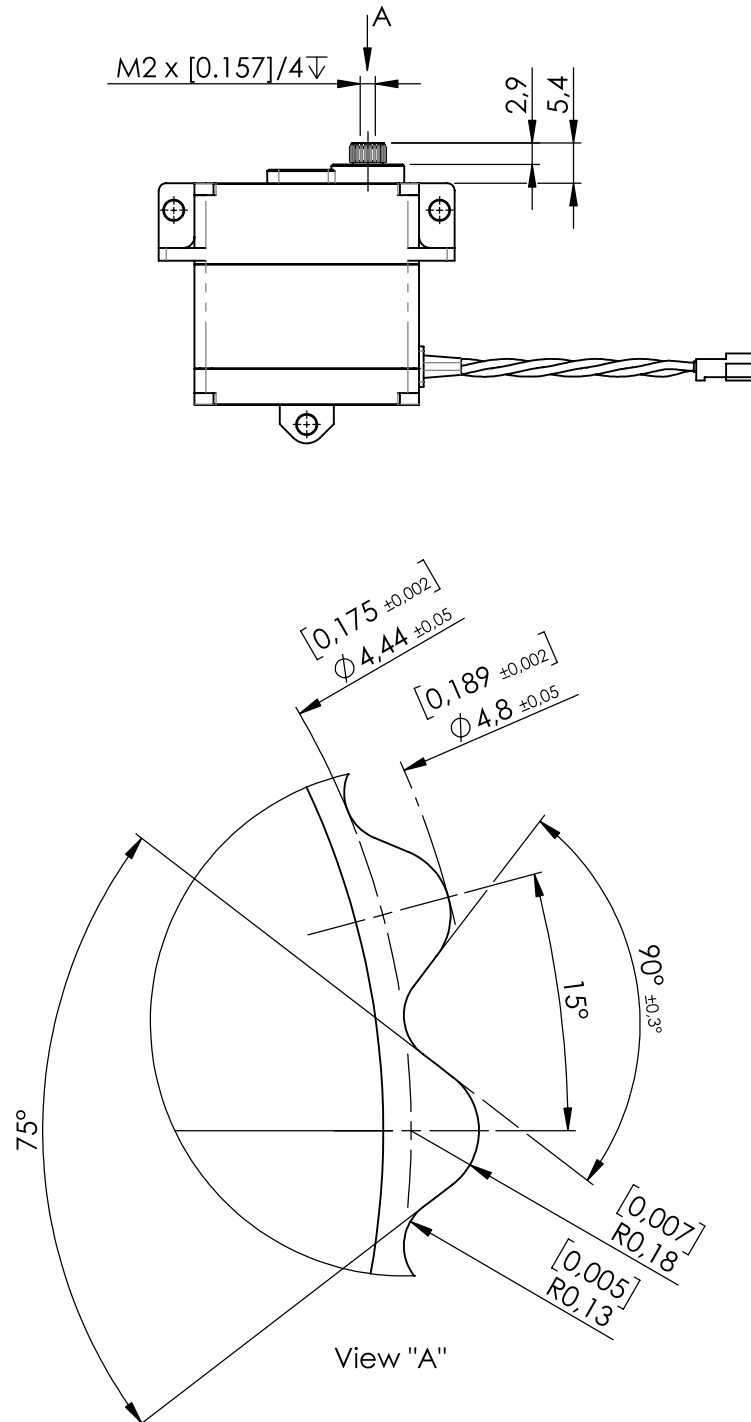


Not to scale

Dimensions [in] , mm

Content is subject to change without notice

6.2. Output Shaft Spline



Not to scale

Dimensions [in] , mm

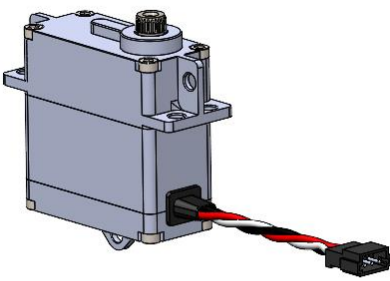
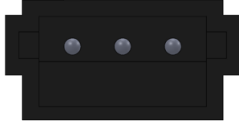
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7. Electrical Connection

7.1. PWM Interface

Cable
Length 45mm (1.77in), Connector

Item # DA 14-N.06.JST

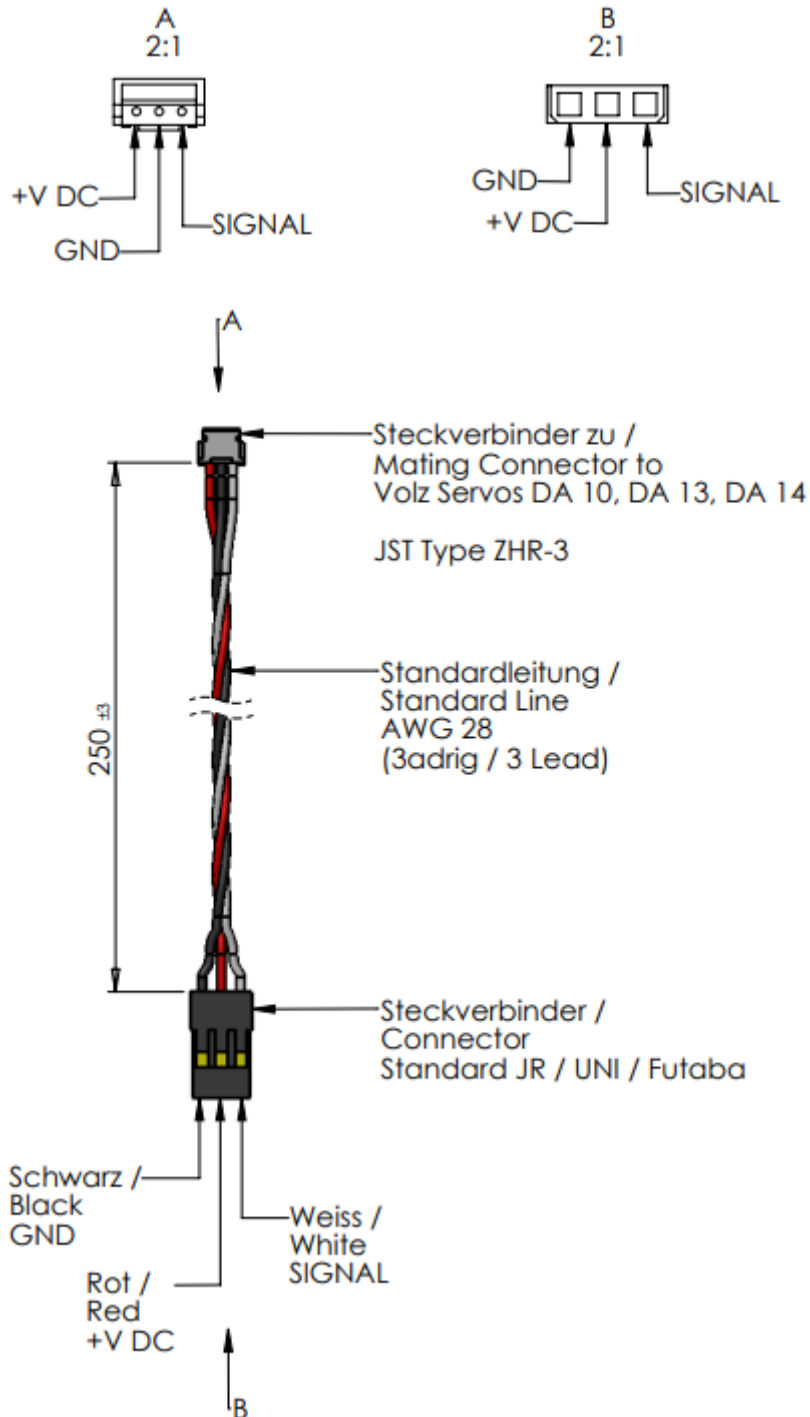
	 <p>1 2 3</p>	Cable		
		Connector	JST ZMR-03	
		Cable Type	Style 1061, AWG 26	
		Wire Gauge	3x AWG 26 (3x 0.129 mm ²)	
	Pin Assignment			
	1	Red	+VDC	Supply Voltage
2	Black	GND	Supply Ground, Signal Ground	
3	White	SIG	PWM Command Signal	

8. Accessories

Item	Item-No.
Plastic Arm-Set	1521.20 (included)
Twisted lead - JST to JR connector cable - 25 cm	110.025 (included)
Aluminum Servo Arm, short, single sided	1521.21
Aluminum Servo Arm, long, single sided	1521.22
Programming Tool (PWM)	985.3
Cable with twisted lead - JST 50 cm	110.050
Cable with twisted lead - JST 80 cm	110.080
Cable with twisted lead - JST 100 cm	110.100
Cable with twisted lead - JST 150 cm	110.150

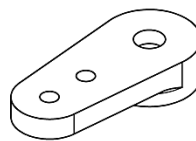
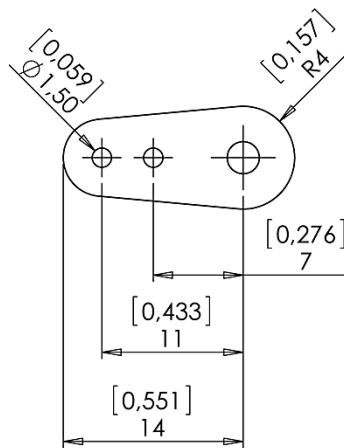
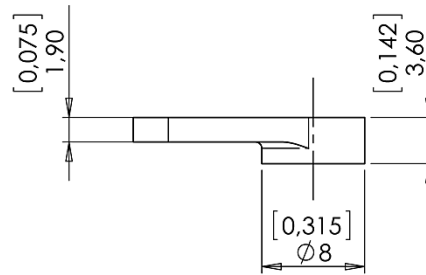
8.1. Twisted lead - JST to JR connector cable - 25 cm

110.025 (included)



8.2. Aluminum Servo Arm, short

1521.21



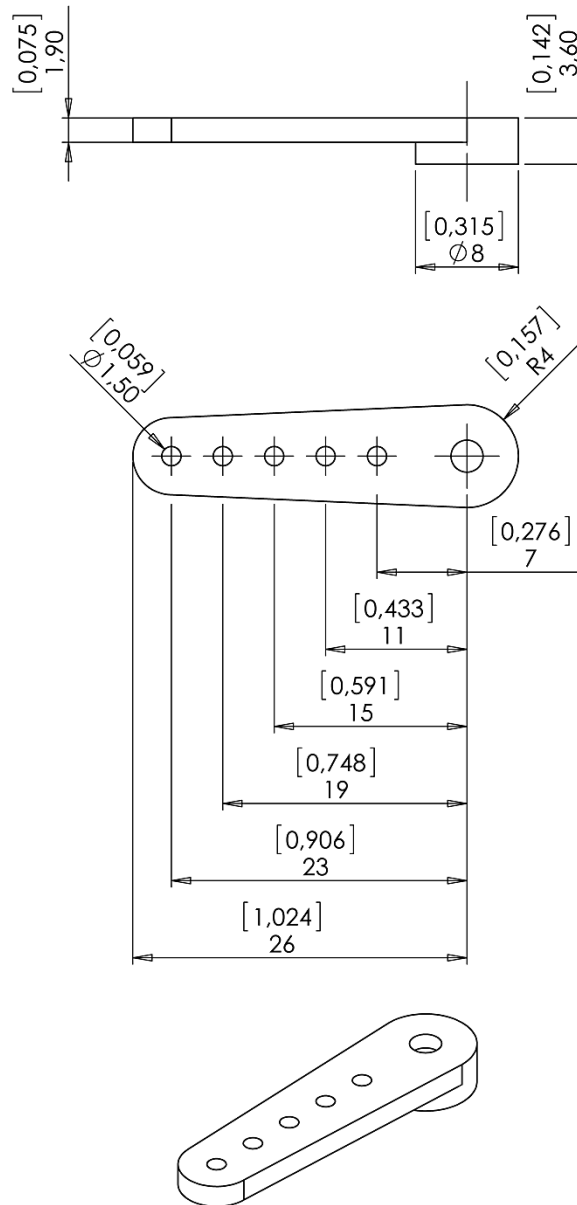
Not to scale

Dimensions [in] , mm

Content is subject to change without notice

8.3. Aluminum Servo Arm, long

1521.22



Not to scale

Dimensions [in] , mm

Content is subject to change without notice

9. Item Number System

1	2	3	4
DA 14-N	.06		.JST

1	Type of Actuator	DA 14-N	14mm Class Actuator with brushless Motor
2	Supply Voltage	06	6V Supply Voltage
3	Interface	-	PWM Interface
4	Electrical Connection	JST	JST Connector, 3pin



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