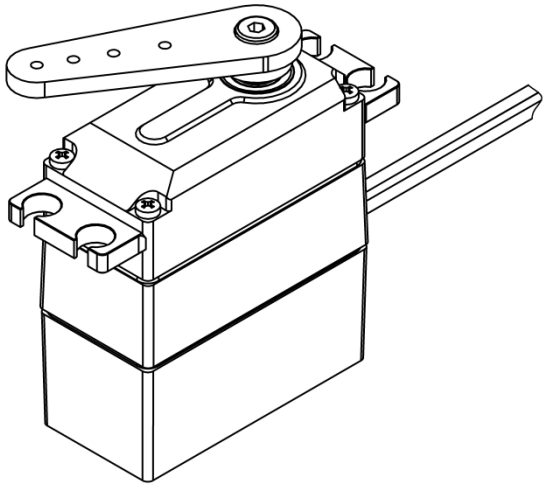
DA 20
Technical Specification



DA 20-06-2505
DA 20-12-2515
DA 20-30-2530

 www.volz-servos.com

Content

1. General Description

The housings of our DA 20 series are made of CNC-machined aluminum elements with a bottom case part made of fibreglass-reinforced plastic. The aluminum parts are rugged, torsion-resistant and dissipate internal heat. As with all our actuators, the DA 20 also has a steel gear train and is fully programmable using our programming tool (available as accessory).

2. Operating Data

2.1. Operating Data 6V-Versions

		DA 20-06-2505…
Supply Voltage (rated)		6 V DC
Supply Voltage Range		5 … 8 V DC
Standby Current [1]	at rated voltage	< 0.01 A
Rated Current [1]	at rated voltage	0.6 A
Peak Current [1]	at rated voltage	2.3 A
Rated Torque [1]	at rated speed	30 Ncm (42 ozf-in)
Peak Torque [1]	at rated voltage	150 Ncm (212 ozf-in)
No Load Speed [1]	at rated voltage	320 °/s
Rated Speed [1]	at rated torque	280 °/s
Default Travel Angle		±45° = 90° total travel
Max. Standard Travel Angle [2]		±85° = 170° total travel
Extended Travel Angle (optional)		±165° = 330° total travel
Backlash (mechanical)		≤ 0.5°
Position Error under Temperature [3]		≤ ±1.0°
Operating Temperature Range		-30°C … +70°C (-22°F … +158°F)
Storage Temperature Range		-35°C … +80°C (-31°F … +176°F)

1) Tolerance ±10%
2) Programming Tool # 985.1 required
3) -20°C … +50°C , Δt = 70°C (-4°F … +122°F , Δt = 126°F)

2.2. Operating Data 12V-Version

		DA 20-12-2515…
Supply Voltage (rated)		12 V DC
Supply Voltage Range		10 … 16 V DC
Standby Current [1]	at rated voltage	< 0.01 A
Rated Current [1]	at rated voltage	0.45 A
Peak Current [1]	at rated voltage	0.8 A
Rated Torque [1]	at rated speed	80 Ncm (113 ozf-in)
Peak Torque [1]	at rated voltage	160 Ncm (227 ozf-in)
No Load Speed [1]	at rated voltage	210 °/s
Rated Speed [1]	at rated torque	130 °/s
Default Travel Angle		±45° = 90° total travel
Max. Standard Travel Angle [2]		±85° = 170° total travel
Extended Travel Angle (optional)		±165° = 330° total travel
Backlash (mechanical)		≤ 0.5°
Position Error under Temperature [3]		≤ ±1.0°
Operating Temperature Range		-30°C … +70°C (-22°F … +158°F)
Storage Temperature Range		-35°C … +80°C (-31°F … +176°F)

1) Tolerance ±10%
2) Programming Tool # 985.1 required
3) -20°C … +50°C , Δt = 70°C (-4°F … +122°F , Δt = 126°F)

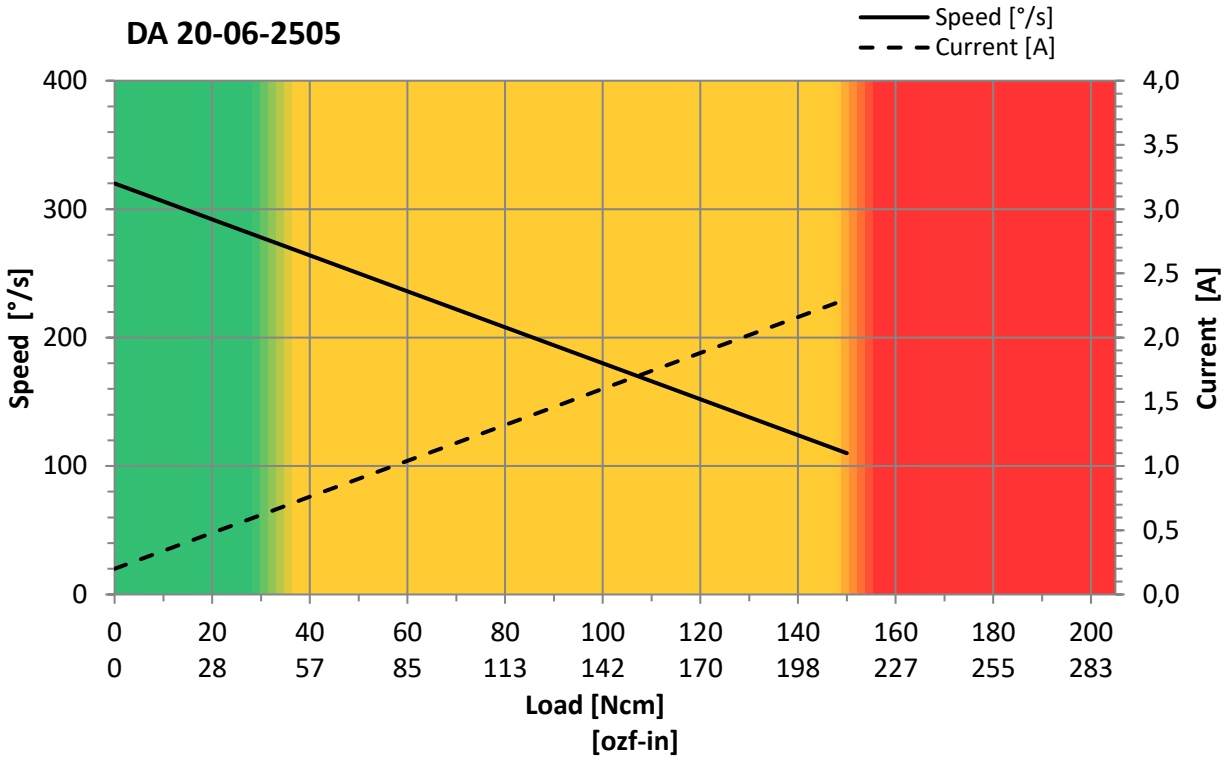
2.3. Operating Data 28V-Versions

		DA 20-30-2530…
Supply Voltage (rated)		28 V DC
Supply Voltage Range		20 … 30 V DC
Standby Current [1]	at rated voltage	< 0.01 A
Rated Current [1]	at rated voltage	0.2 A
Peak Current [1]	at rated voltage	0.3 A
Rated Torque [1]	at rated speed	70 Ncm (99 ozf-in)
Peak Torque [1]	at rated voltage	150 Ncm (212 ozf-in)
No Load Speed [1]	at rated voltage	240 °/s
Rated Speed [1]	at rated torque	160 °/s
Default Travel Angle		±45° = 90° total travel
Max. Standard Travel Angle [2]		±85° = 170° total travel
Extended Travel Angle (optional)		±165° = 330° total travel
Backlash (mechanical)		≤ 0.5°
Position Error under Temperature [3]		≤ ±1.0°
Operating Temperature Range		-30°C … +70°C (-22°F … +158°F)
Storage Temperature Range		-35°C … +80°C (-31°F … +176°F)

1) Tolerance ±10%
2) Programming Tool # 985.1 required
3) -20°C … +50°C , Δt = 70°C (-4°F … +122°F , Δt = 126°F)

3. Performance

3.1. Performance 6V-Version



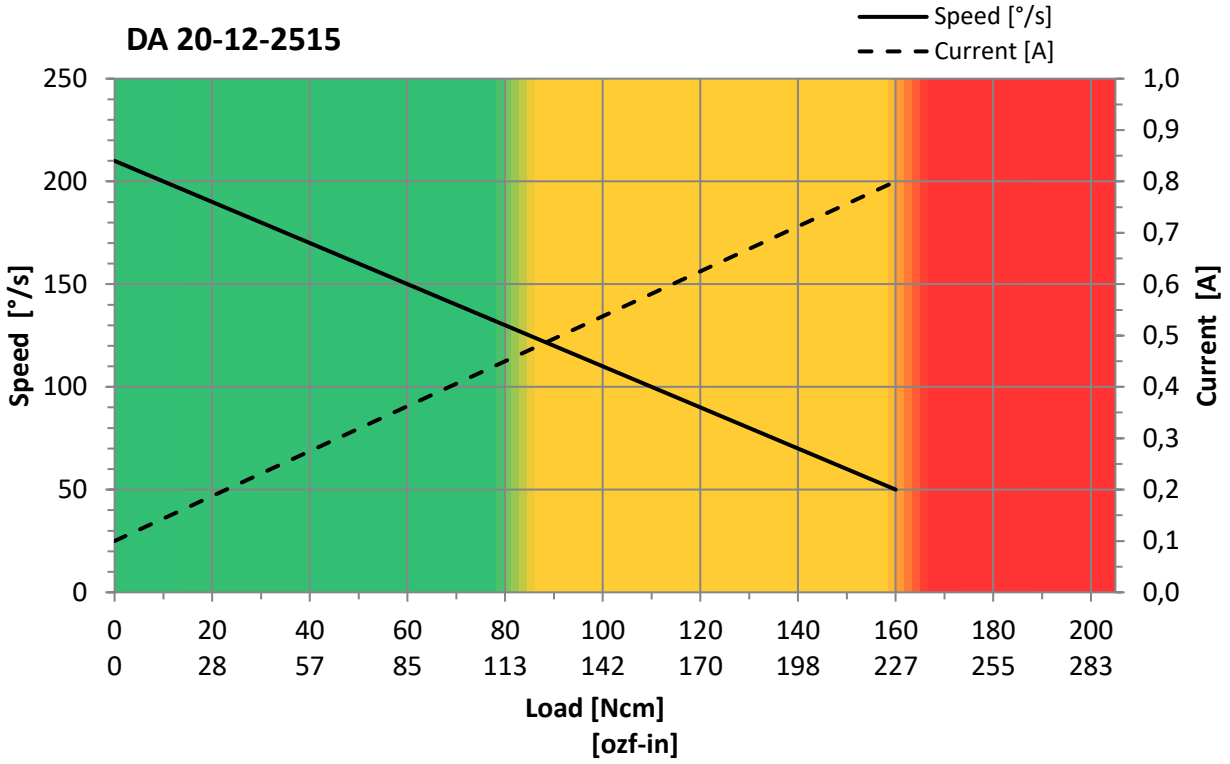
Operation Mode:

Continuous

Short Time
< 10s , 60s cool down

Overload
< 1s , 60s cool down

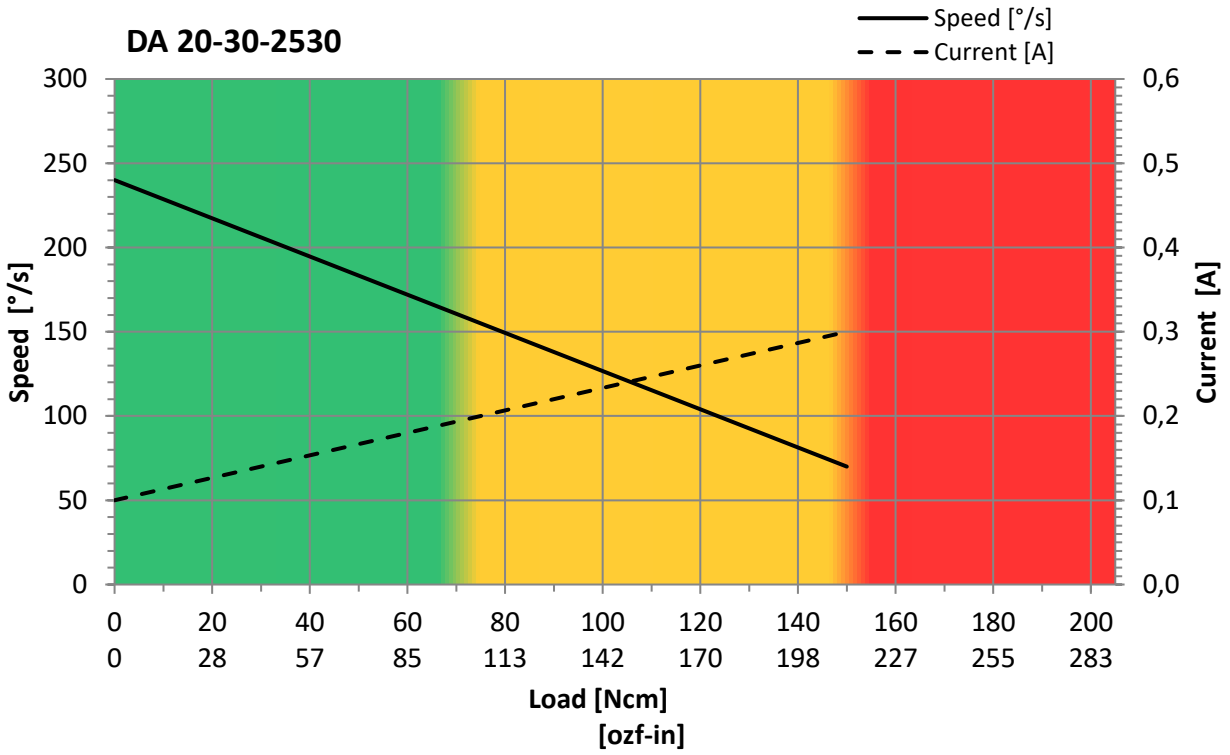
3.2. Performance 12V-Version



Operation Mode:

- Continuous
- Short Time
  < 10s , 60s cool down
- Overload
  < 1s , 60s cool down

3.3. Performance 28V-Version



Operation Mode:

Continuous

Short Time
< 10s , 60s cool down

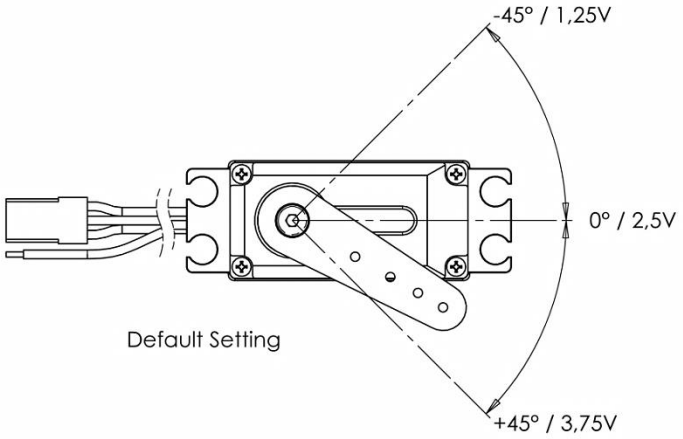
Overload
< 1s , 60s cool down

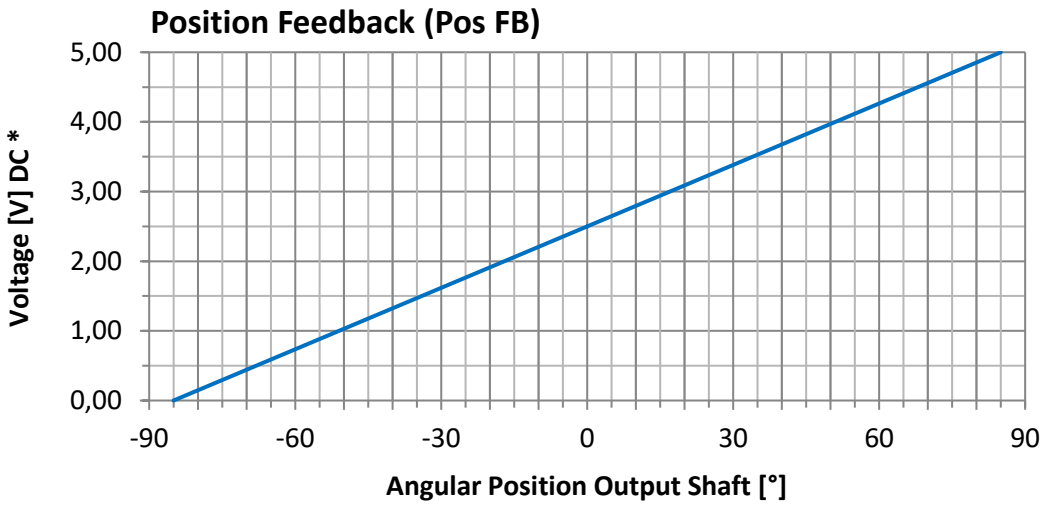
4. PWM Command Signal

Signal Voltage	TTL-Level HIGH: min. 2.2V , max. 5.0V TTL-Level LOW: min. 0.0V , max. 0.8V
Frame Rate	7 … 20 ms
Valid Pulse Lengths	0.8 … 2.2 ms
Pulse Lengths for Position Left / Center / Right	1.0 / 1.5 / 2.0 ms
Resolution	≤ 1.0 µs

4.1. Position Feedback Signal

The Position Feedback signal (Pos FB) is an analog output signal with a voltage value which is directly related to the output shaft's angular position. Reference is Supply Ground (GND).





* Tolerance ±5%

5. Materials and Protective Features

Valid for all Versions

Case Material	Aluminum, Plastic Base
Splash Water Resistance	IP 51
Case Surface Treatment	Not available
Salt Water Resistance	Not available
EMI / RFI Shielding	Not available
Motor Type	Brushed DC Motor
Gear Set Material	Hardened Steel
Position Sensor	Precision Potentiometer
ISS Gear Protection System	Optional
Position Feedback	Optional
Extended Travel Angle	Optional

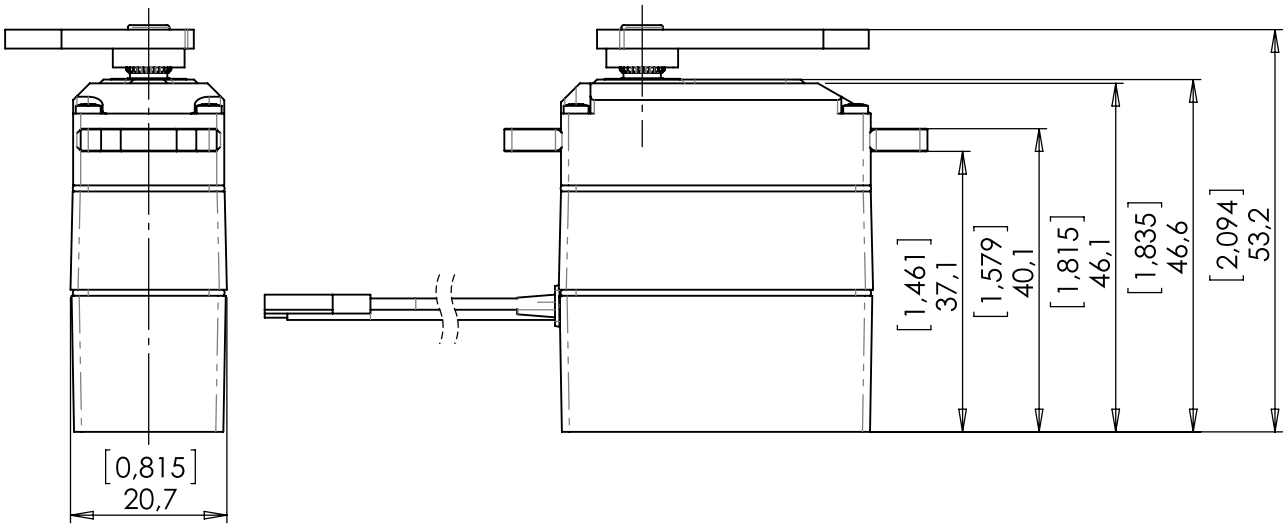
6. Dimensions

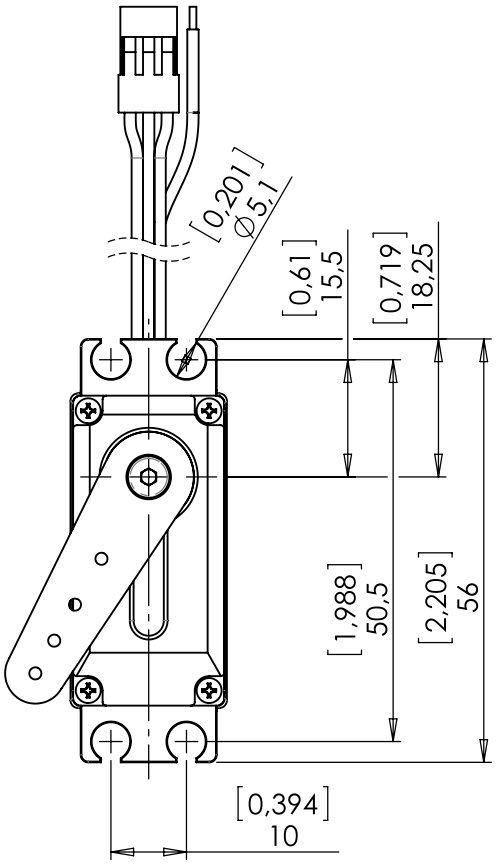
Case Dimensions	41.6 mm x 46.1 mm x 20.7 mm (1.638 in x 1.815 in x 0.815 in)
Weight	88g (3.1 oz) ±10%

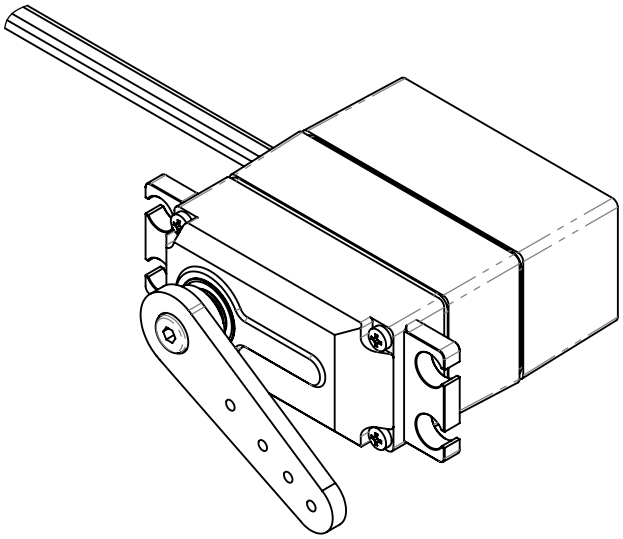
Standard Tolerances	Unless otherwise specified according to DIN ISO 2768 - m

6.1. Installation Dimensions

Valid for all Versions



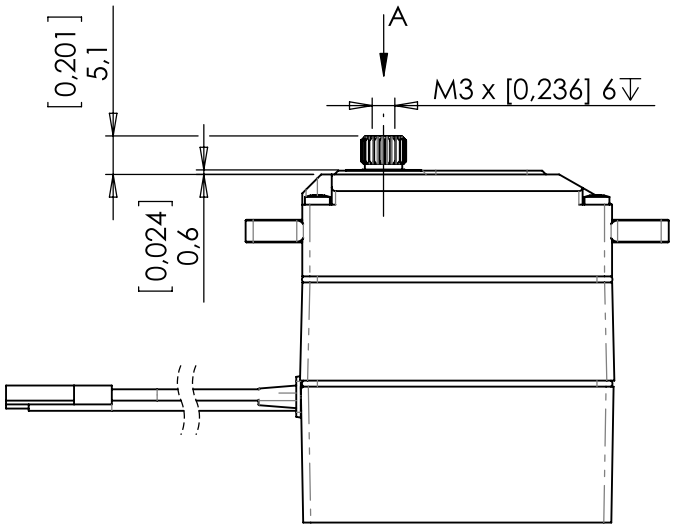


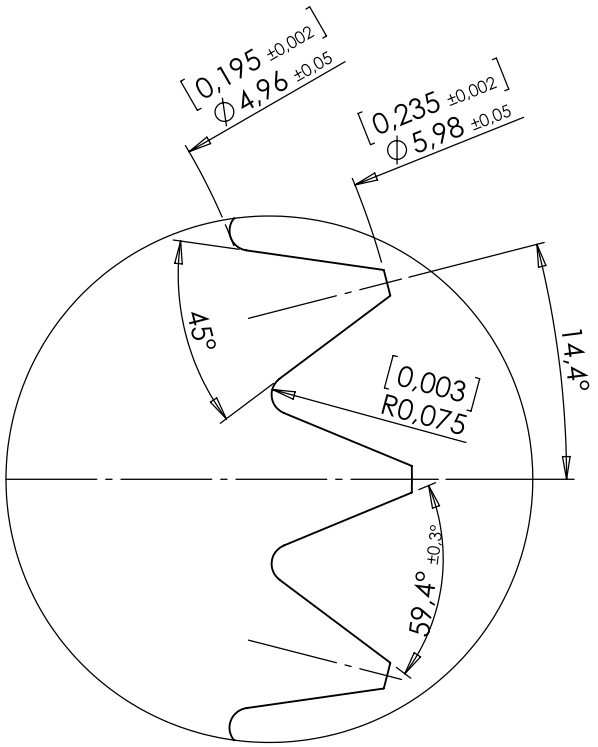


Not to scale

Dimensions [in] , mm

6.2. Output Shaft Spline





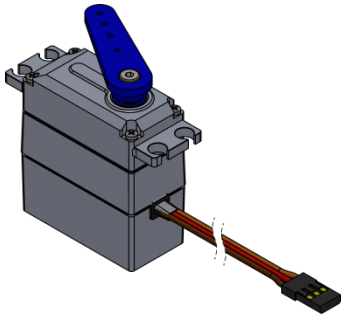
View "A"

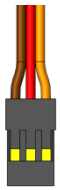
Not to scale

Dimensions [in] , mm

7. Electrical Connection Options

Standard Connector **Item # DA 20._ _.25_ _._.X._**
Leads Length 240mm (9.4in)



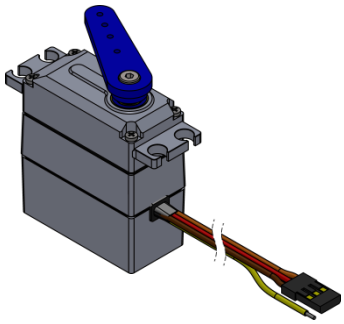


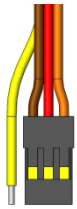
3 2 1

Standard Connector	
Manufacturer	
Type	similar to FCI Mini-PV 65039-034LF
Mating	Standard PCB-Header 2.54mm (0.1in) Pitch

Pin Assignment			
1	Orange	SIG	Command Signal
2	Red	+V DC	Supply Voltage
3	Brown	GND	Supply Ground , Signal Ground

Standard Connector **Item # DA 20._ _.25_ _._.P._**
Leads Length 240mm (9.4in)





4 3 2 1

Standard Connector	
Manufacturer	
Type	similar to FCI Mini-PV 65039-034LF
Mating	Standard PCB-Header 2.54mm (0.1in) Pitch

Pin Assignment			
1	Orange	SIG	Command Signal
2	Red	+V DC	Supply Voltage
3	Brown	GND	Supply Ground , Signal Ground
4	Yellow	Pos FB	Position Feedback

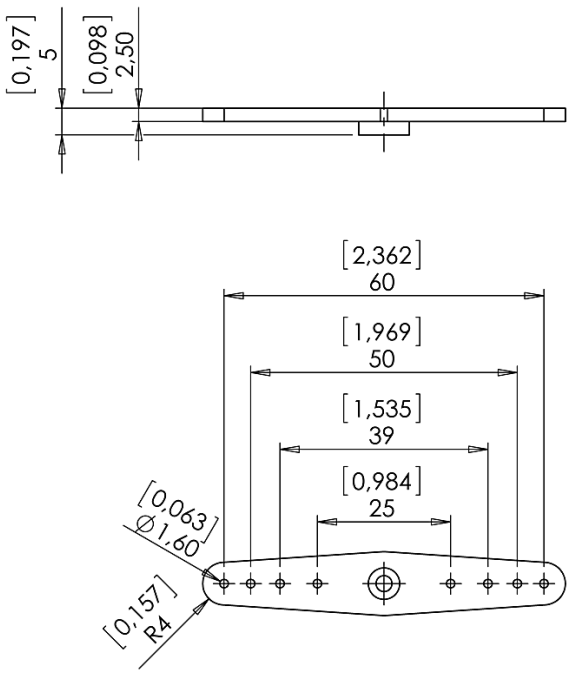
8. Accessories

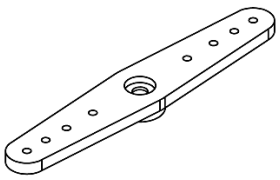
Item		Item-No.
Aluminum Servo Arm	(double sided)	1641.20
Aluminum Servo Arm	(single sided)	1641.21
Programming Tool DA 20		985.1

All accessories to be purchased separately.

8.1. Aluminum Servo Arm, double sided

1641.20
Valid for all Versions



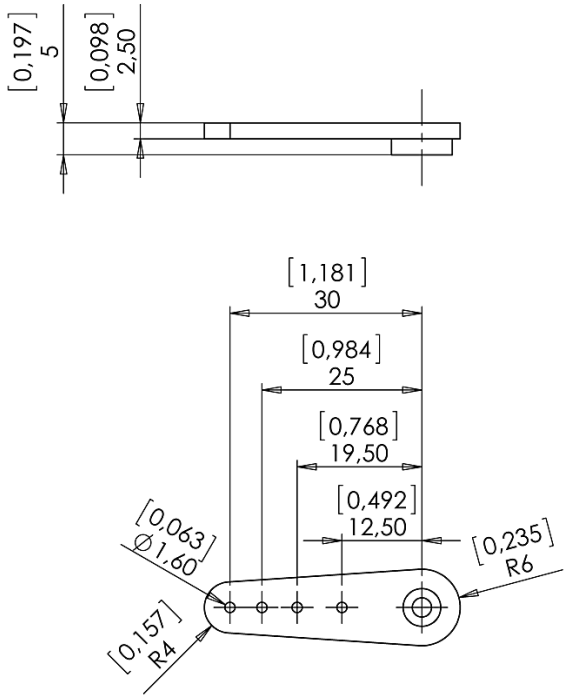


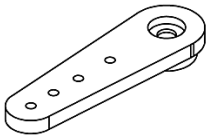
Not to scale

Dimensions [in] , mm

8.2. Aluminum Servo Arm, single sided

1641.21
Valid for all Versions





Not to scale

Dimensions [in] , mm

9. Item Number System

DA 20 . 06 . 25 03 . I . P . E

Servo Class
20mm Class

Supply Voltage

6 V DC	**06**
12 V DC	**12**
30 V DC	**30**

Servo Type

6 V	**2505**
12 V	**2515**
30 V	**2530**

ISS Gear Protection System

I	integrated
X	without

Position Feedback

P	integrated
X	without

Extended Travel Angle

E	integrated
X	without

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