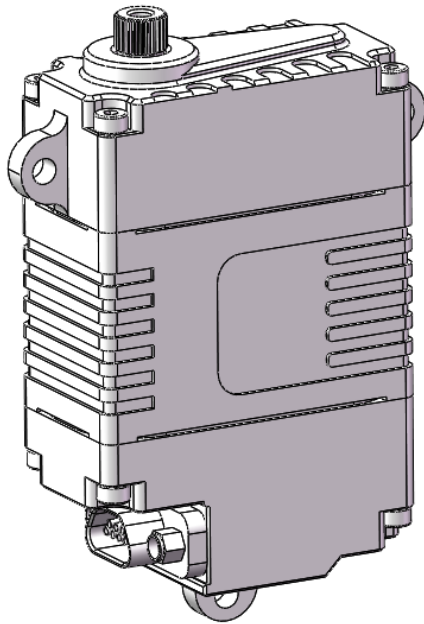
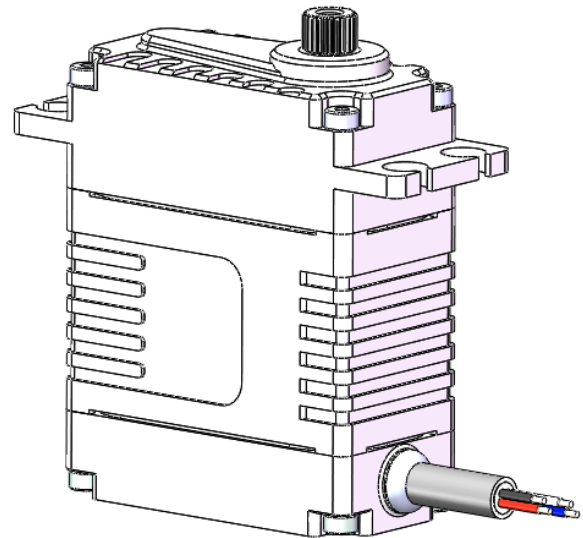


HS20

Technical Specification



Version A



Version B

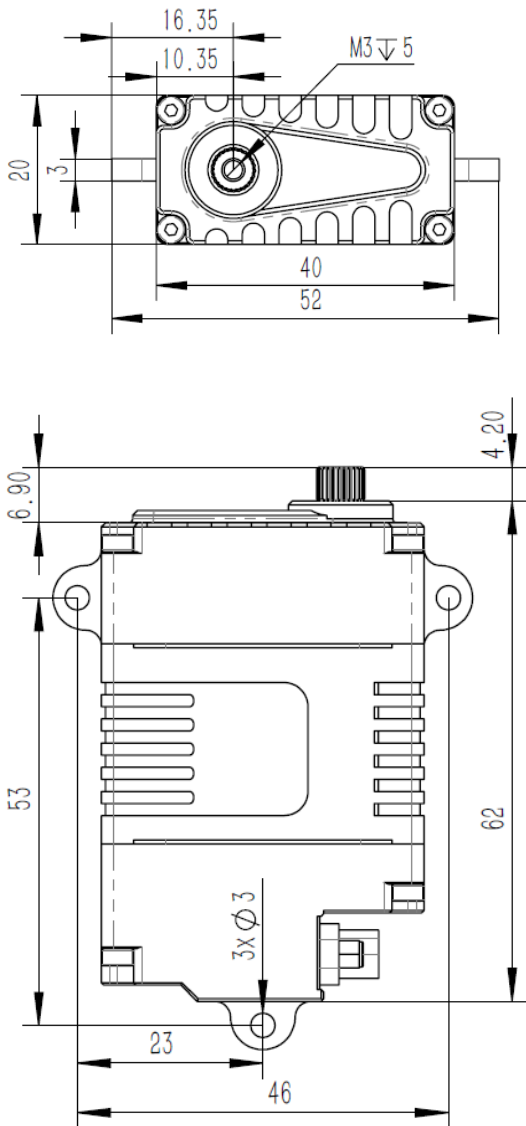
HS20-12-M-5025-1

HS20-12-M-5025-2

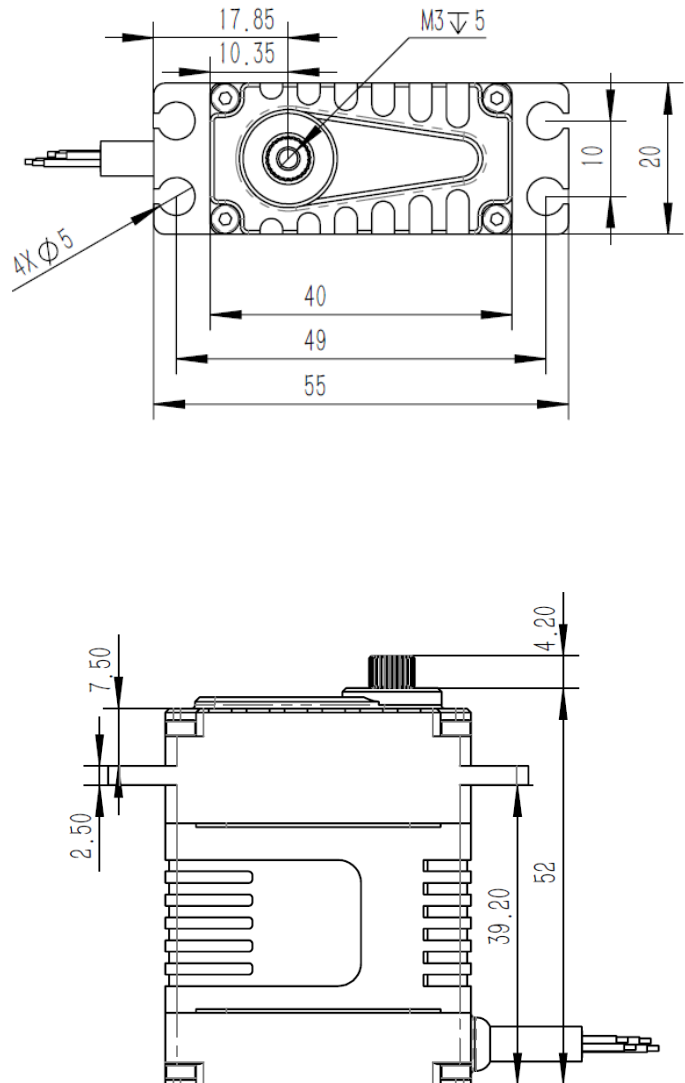
HS20-12-M-5525-1

HS20-12-M-5525-2

1. Installation Dimensions



Version A



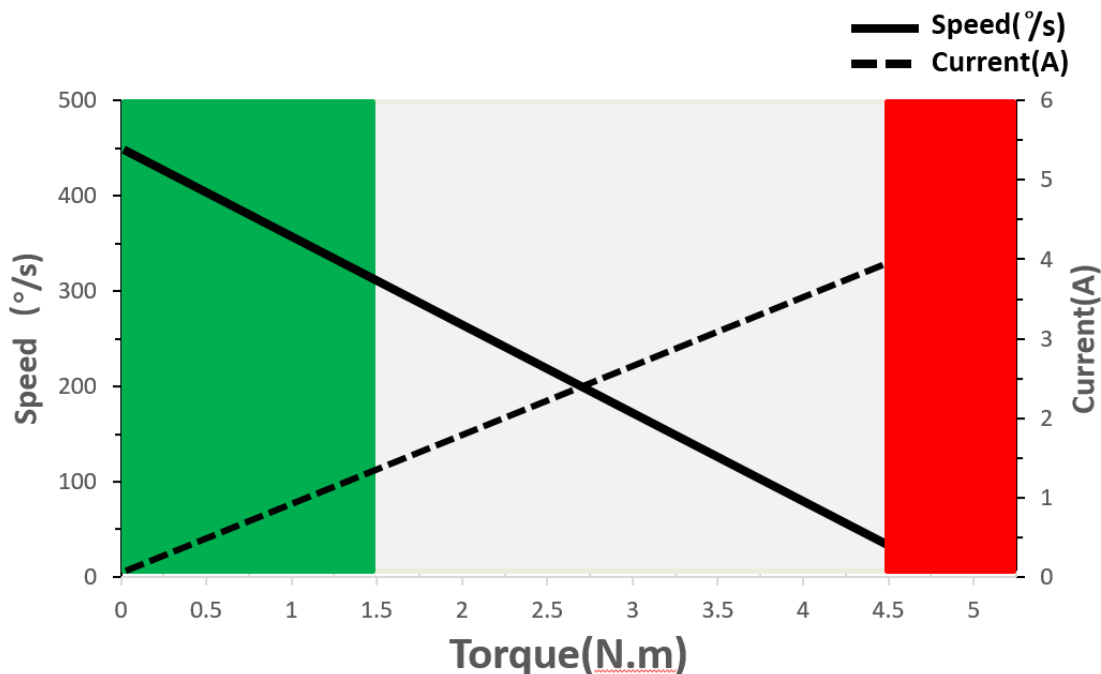
Version B

	Version A	Version B
Case Dimensions	40mm*20mm*62mm	40mm*20mm*52mm
Weight	100g	90g

2. Operating Data

Rated Voltage	DC12V																		
Voltage Range	DC9V-12V																		
Stall Torque	4.50N.m@12V																		
Rated Torque	1.5N.m@12V	Stall Current	4.00A	Rated Current	1.60A	No-load Speed	450°/s @25°C	Rated Speed	300°/s @25°C	Default Travel Angle	±50° = 100° total travel	Max. Standard Travel Angle	±100° = 200° total travel	Extended Travel Angle (optional)	±165° = 330° total travel	Operating Temperature Range	-30°C.....+65°C	Backlash (mechanical)	≤0.5°
Stall Current	4.00A																		
Rated Current	1.60A																		
No-load Speed	450°/s @25°C																		
Rated Speed	300°/s @25°C																		
Default Travel Angle	±50° = 100° total travel																		
Max. Standard Travel Angle	±100° = 200° total travel																		
Extended Travel Angle (optional)	±165° = 330° total travel																		
Operating Temperature Range	-30°C.....+65°C																		
Backlash (mechanical)	≤0.5°																		

3. Performance



Operation Model:

- Continuous
- Short Time<10s Repeat
- <1s,60s Cool down

4. Command Signal

4.1 PWM Command Interface

Signal Voltage	TTL-Level: HIGH:min.3.3V,max.5.0V TTL-Level: Low:min.0.0V,max.1.5V
Pulse Lengths	500us-2500us
Pulse Lengths for Position-50°/0°/+50°	1000us/1500us/2000us

4.2 RS 485 Command Interface

Baud-Rate	115200 ±1.5% bits/s
Protocol (Documentation available)	10 Byte (incl. 1 byte Check Sum)

4.3 RS 485 Protocol Specifications

Number of Data Bits	8
Number of Stop Bits	1
Parity	None

Command / Response Frame

Byte #	Description	Byte #	Description
1	Frame Head(0xFE)	6	Data
2	Version(0xCA)	7	Data
3	Address	8	Data
4	Command code	9	Check Sum
5	Data	10	Frame End

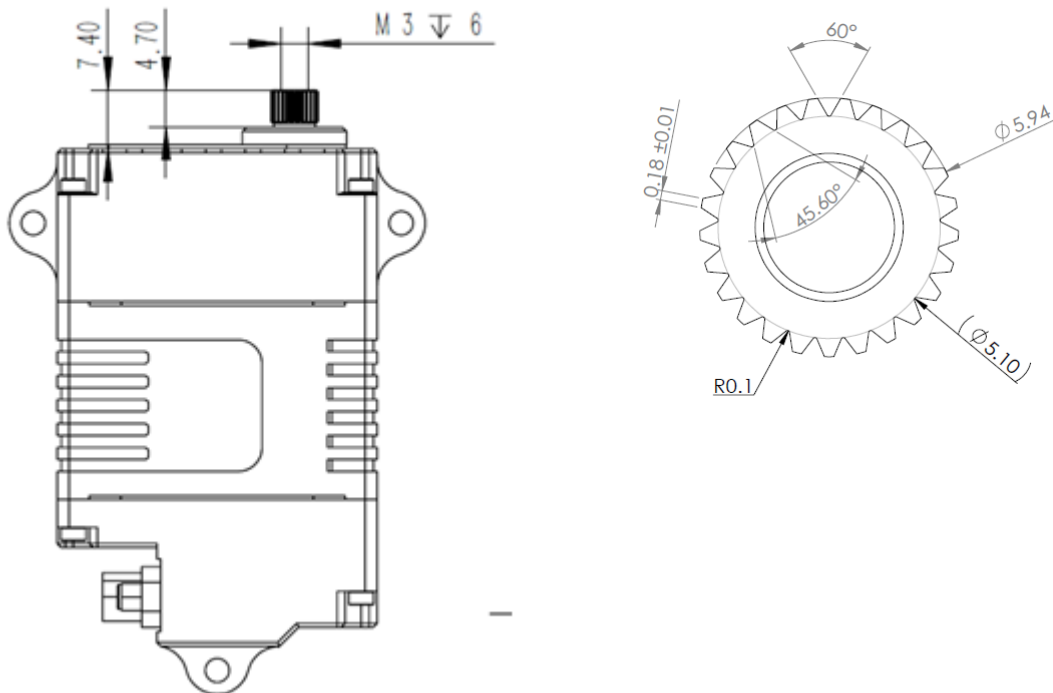
4.4. Position Feedback Value (RS 485 Versions)

Integrated in the RS 485 protocol a Position Feedback Value is available, representing the output shaft's angular position. Value readout by sending a request command. Detailed information is provided in the RS 485 documentation.

5. Materials and Features

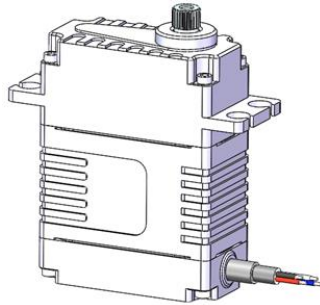
Case Material	Aluminum Alloy 7075
Waterproof Resistance	IP 67, waterproof to 1m depth
Motor Type	Brushless DC Motor
Gear Set Material	Hardened Steel
Position Sensor	Contactless
Shielded Connecting Cable	Optional
RS 485 Communication Interface	Optional

6. Output Shaft Spline



7. Electrical Connection Options

7.1 Shielded Cable, Open leads(Version B)



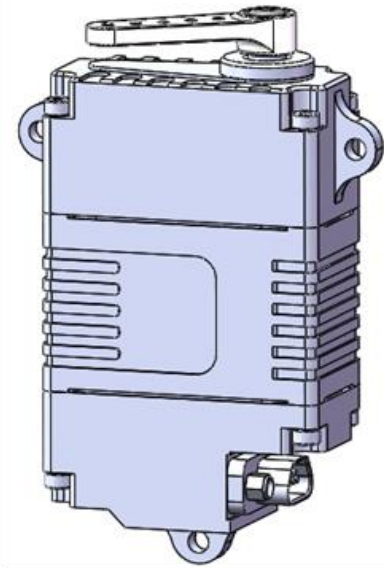
Pin Assignment (PWM)


Pin Assignment(PWM)			
1	Red	+V DC	Supply Voltage
2	Black	GND	Supply Ground, Signal Ground
3	White	SIG	Command Signal
4	Blue	NC	Do not connect


Pin Assignment (RS485)

Pin Assignment (RS485)			
1	Red	+VDC	Supply Voltage
2	Black	GND	Supply Ground, Signal Ground
3	White	RS 485 B	Inverted Input / Output line
4	Blue	RS 485 A	Non-Inverted Input / Output line

7.2 Industrial Standard J30J-9ZKP electrical Connector (Version A)



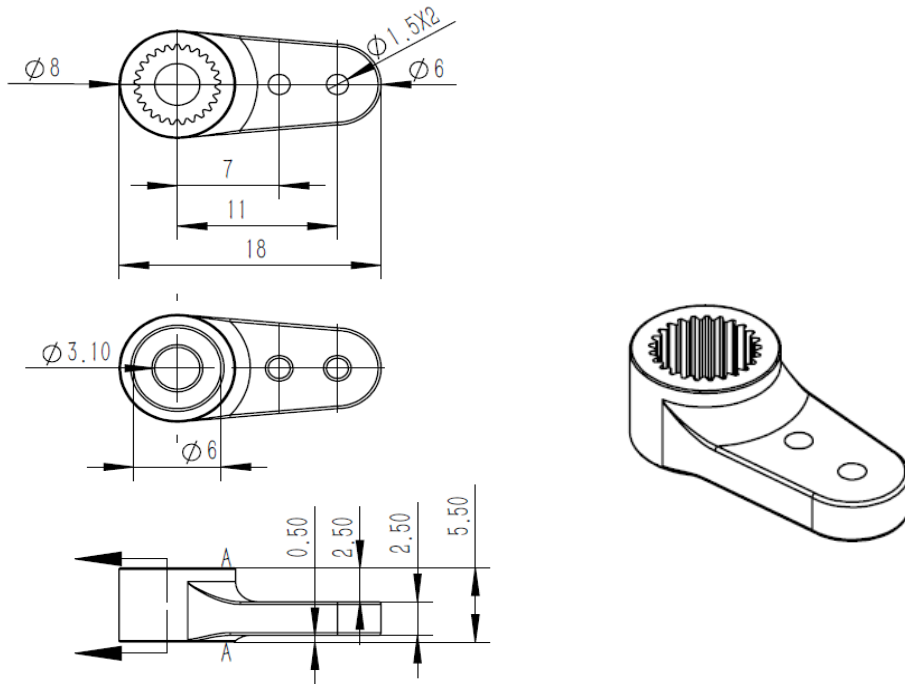
	Standard Connector	
	Type	J30J-9ZKP
	Mating	J30J-9TJL
Pin Assignment (PWM)		
1	□	DC + (Supply Voltage)
2		
3		NC (Do not connect)
4	□	GND (Supply Ground)
5		
6		NC (Do not connect)
7	□	PWM (Command Signal)
8		
9		NC (Do not connect)

	Standard Connector	
	Type	J30J-9ZKP
	Mating	J30J-9TJL
Pin Assignment (RS485)		
1	□	DC +(Supply Voltage)
2		
3		NC (Do not connect)
4	□	GND(Supply Ground)
5		
6	□	RS485A
7		
8	□	RS485B
9		

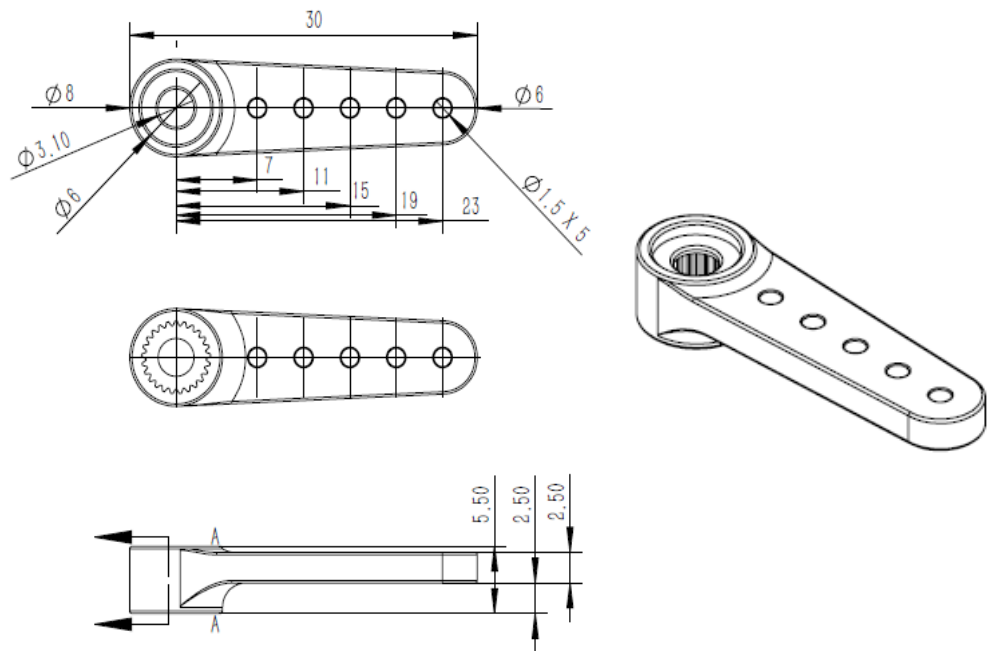
8. Accessories (Optionals)

Item	Item-No.
Aluminum Servo Arm (Single side)	0625.11
Aluminum Servo Arm (Single side)	0625.23
Aluminum Servo Arm (Single side)	0625.40
Aluminum Servo Arm (Double side)	0625.60

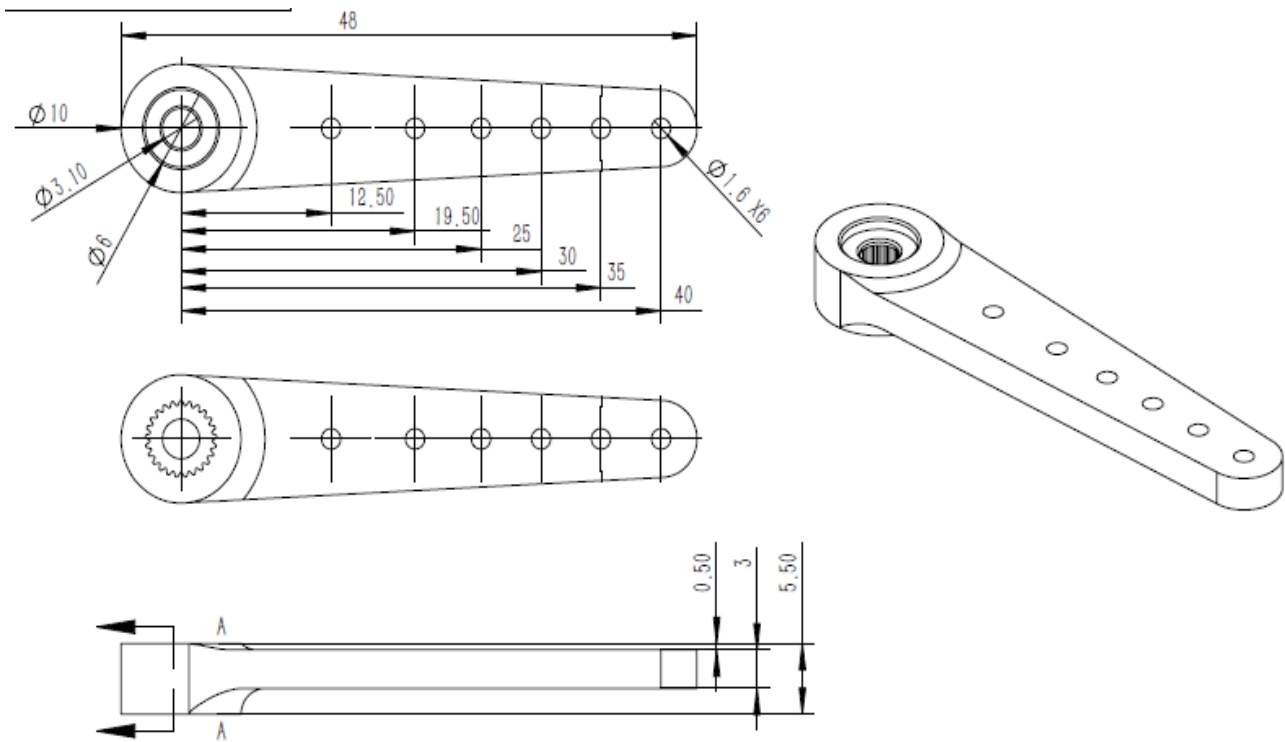
Item# 0625.11



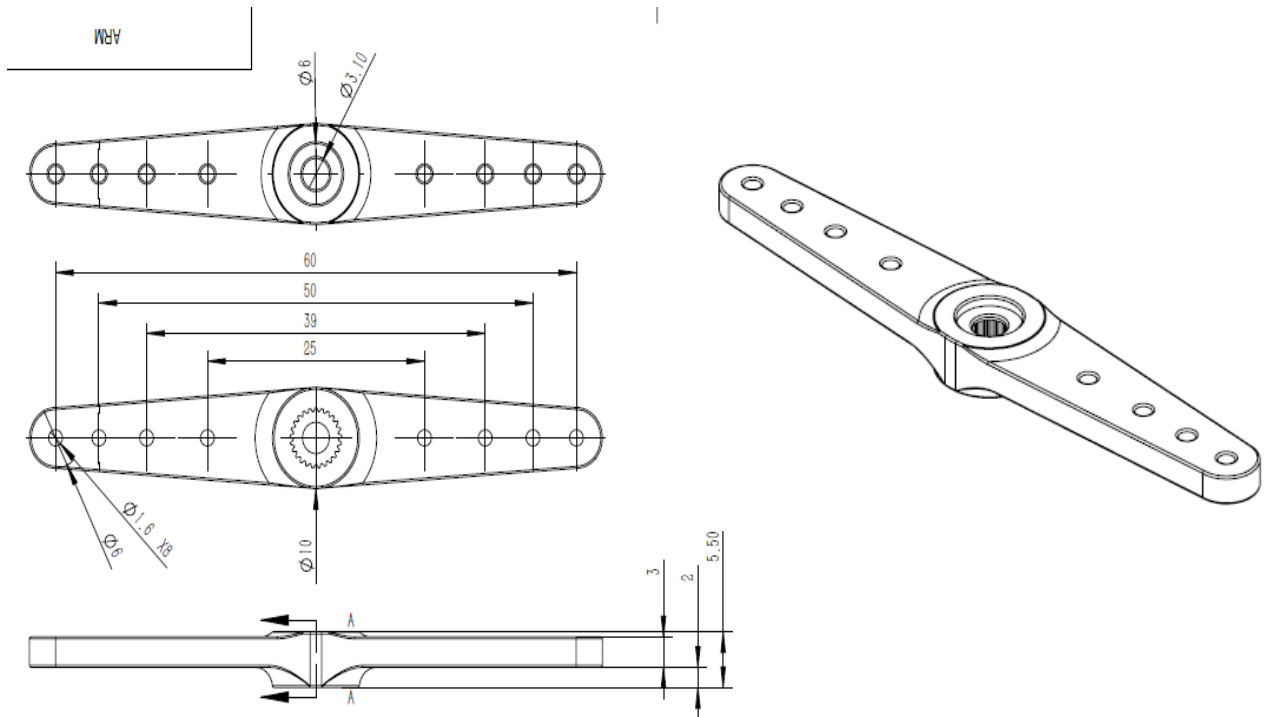
Item# 0625.23



Item# 0625.40



Item# 0625.60



09. Item Number System

