



New Concept Servo Gun

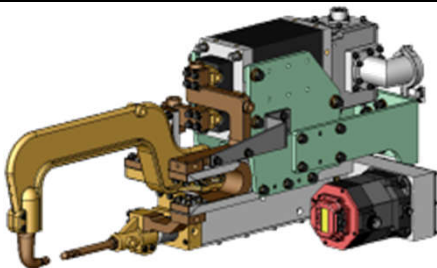
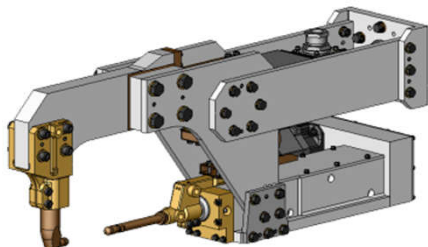
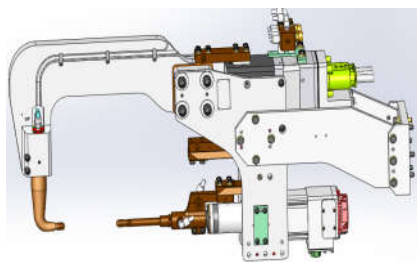
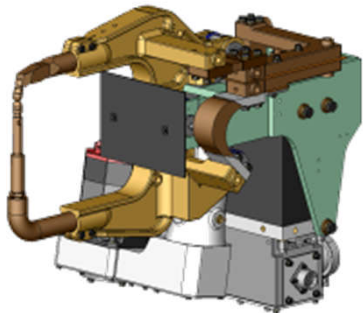
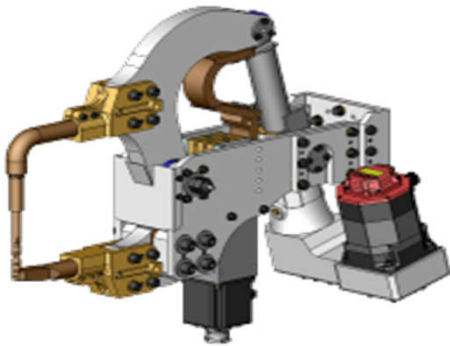
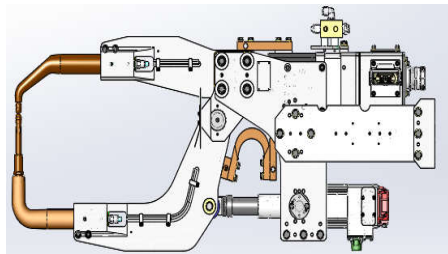
- Lightweight & Advanced Flexibility -

JIL OBARA

Evolution of OBARA SV Gun



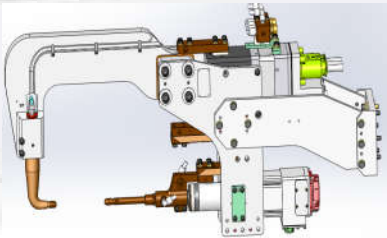
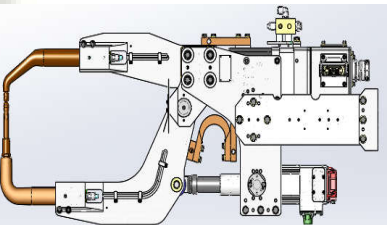
- Lightweight & Compact Design:

	Current Series	Transitional LW Gun	Latest LW Gun
C-Type			
<i>Lighter & More Compact</i>			
X-Type			

Comparison: C-type and X-type



- Basic Specifications of 3th Generation

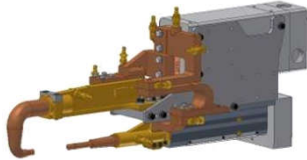
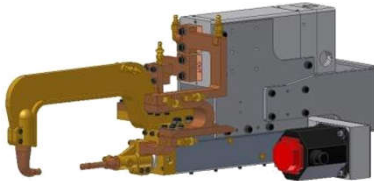
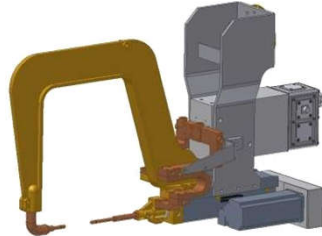
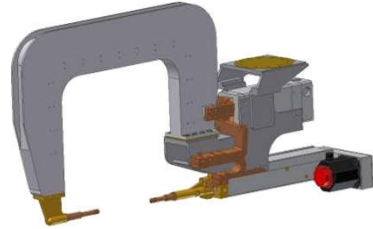
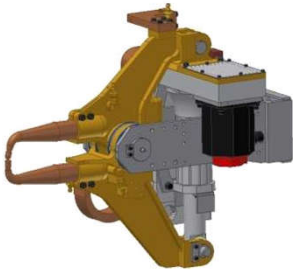
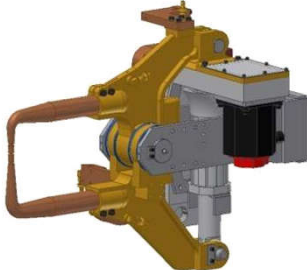
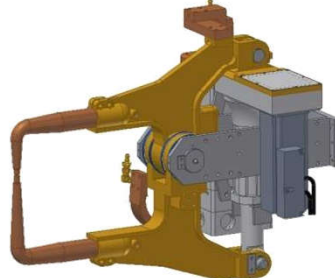
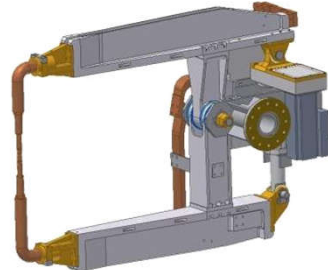
Type	Latest LW Gun	Drive Unit	Welding Force	Max Stroke	Throat Size	Max S.C	Transformer	Weight
C-type		In-line Actuator (hollow core motor)	6000 N	120 mm	Vertical 350 × Horizontal 200	20,000 A	DC 1800Hz (DC 1000Hz)	68 kg (75 kg)
X-type				145 mm	Vertical 311 × Horizontal 300	21,000 A	DC 1800Hz (DC 1000Hz)	78 kg (85 kg)

Advanced Std Body Concept



● Features:

➡ More than 90% of C/X Gun Bodies Throat size less than 450mm*

C-type				
	21%	51%	21%	7%
	~150	150~300	300~450	450~
	Small	Medium	Large	Special
X-type	~150	150~350	350~450	450~
	14%	70%	8%	8%
				

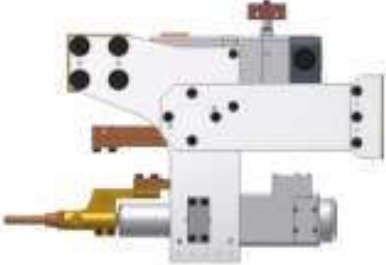
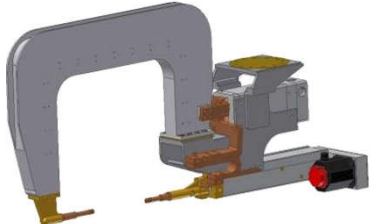
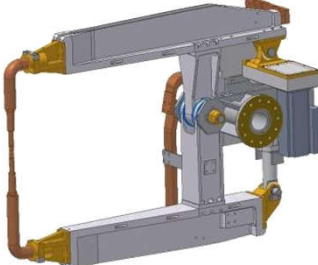
*Based on OBARA's research

Advanced Std Body Concept



● Features :

➡ More than 90% of C/X Gun Bodies Throat size less than 450mm*

C-type				93%	
	~150	150~300	300~450	450~	7%
	Small	Medium	Large	Special	
	~150	150~350	350~450	450~	8%
X-type				92%	

*Based on OBARA's research

X2C Concept

● Common Std Body + Conversion Kits

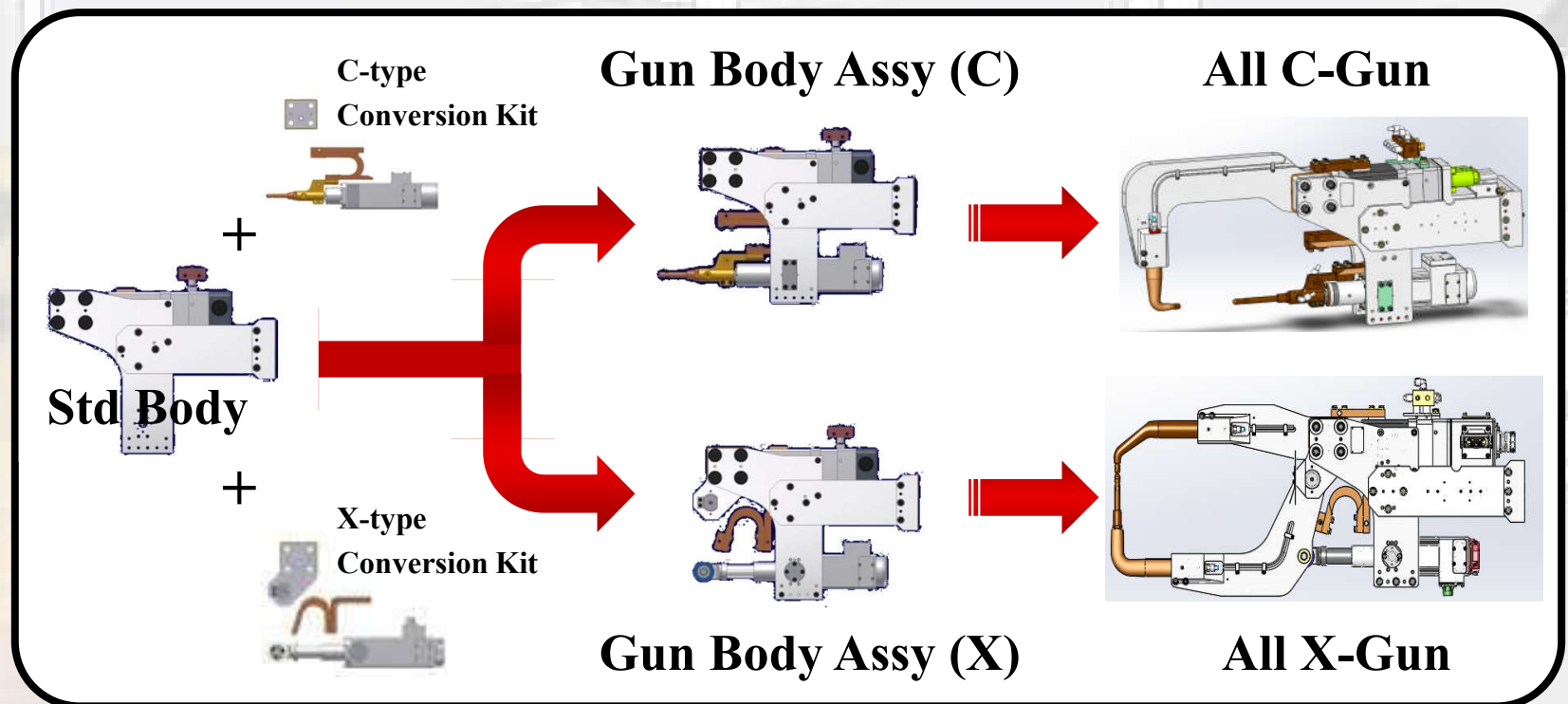
➡ Std Body for All Gun types (both C & X)

✓ The same transformer & side plates

➡ Unique Gun Body Assy for each C & X:

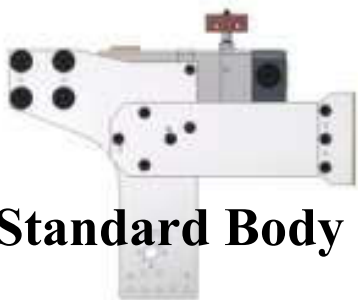
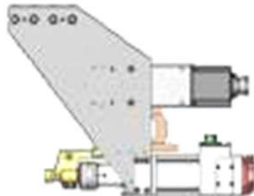
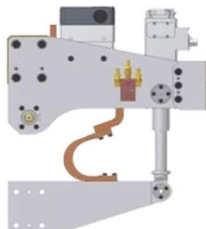
✓ C-type Kit (Actuator (C) + Shunt assy (C) + Spacer assy)

✓ X-type Kit (Actuator (X) + Shunt assy (X) + Fulcrum assy)



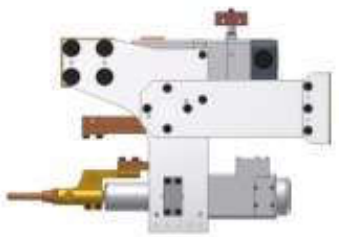
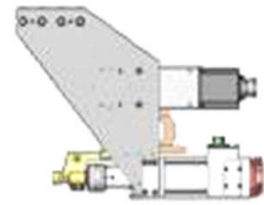
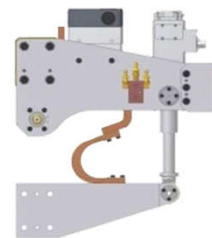
X2C Concept: Basic Structures

- Common Std Body transfer to 2 Main Body types

	Small	Medium	Large	Special
	~150	150~300	300~450	450~
C-type	 Standard Body			
X-type	 C-type Conversion Kit			
	 X-type Conversion Kit			
	~150	150~350	350~450	450~
	Small	Medium	Large	Special

X2C Concept: Basic Structures

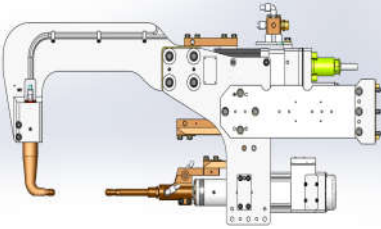
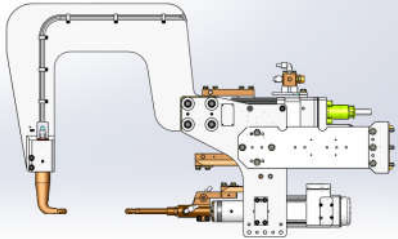
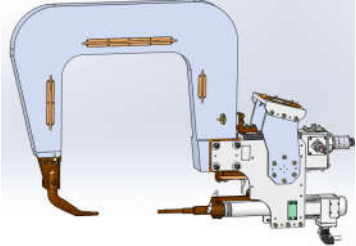
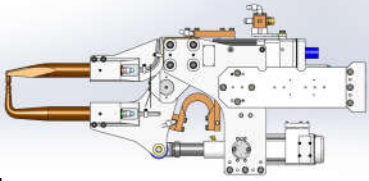
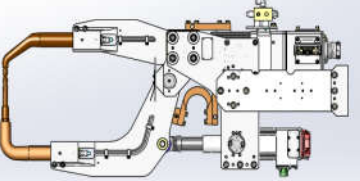
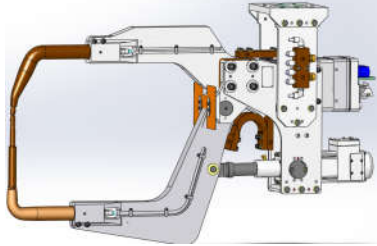
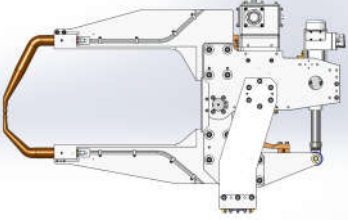
● Common Std Body transfer 2 Main Body types

	Small	Medium	Large	Special
	~150	150~300	300~450	450~
C-type	C-type Gun Body Assy 			
X-type	X-type Gun Body Assy 			
	~150	150~350	350~450	450~
	Small	Medium	Large	Special

X2C Concept: Basic Structures



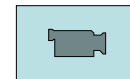
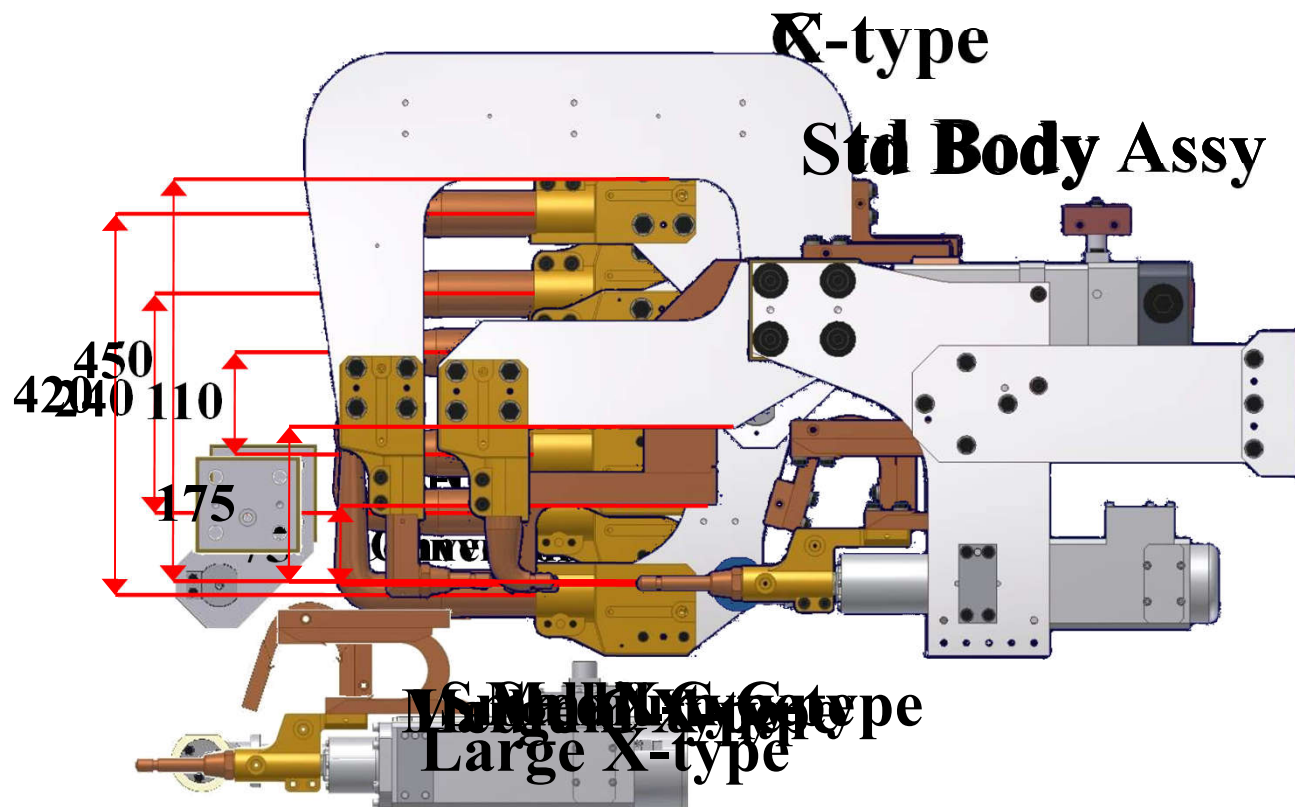
- Common Std Body transfer to 2 Main Body types

	Small	Medium	Large	Special
	~150	150~300	300~450	450~
C-type				
				
X-type	~150	150~350	350~450	450~
	Small	Medium	Large	Special

X2C Concept: Actual Conversion

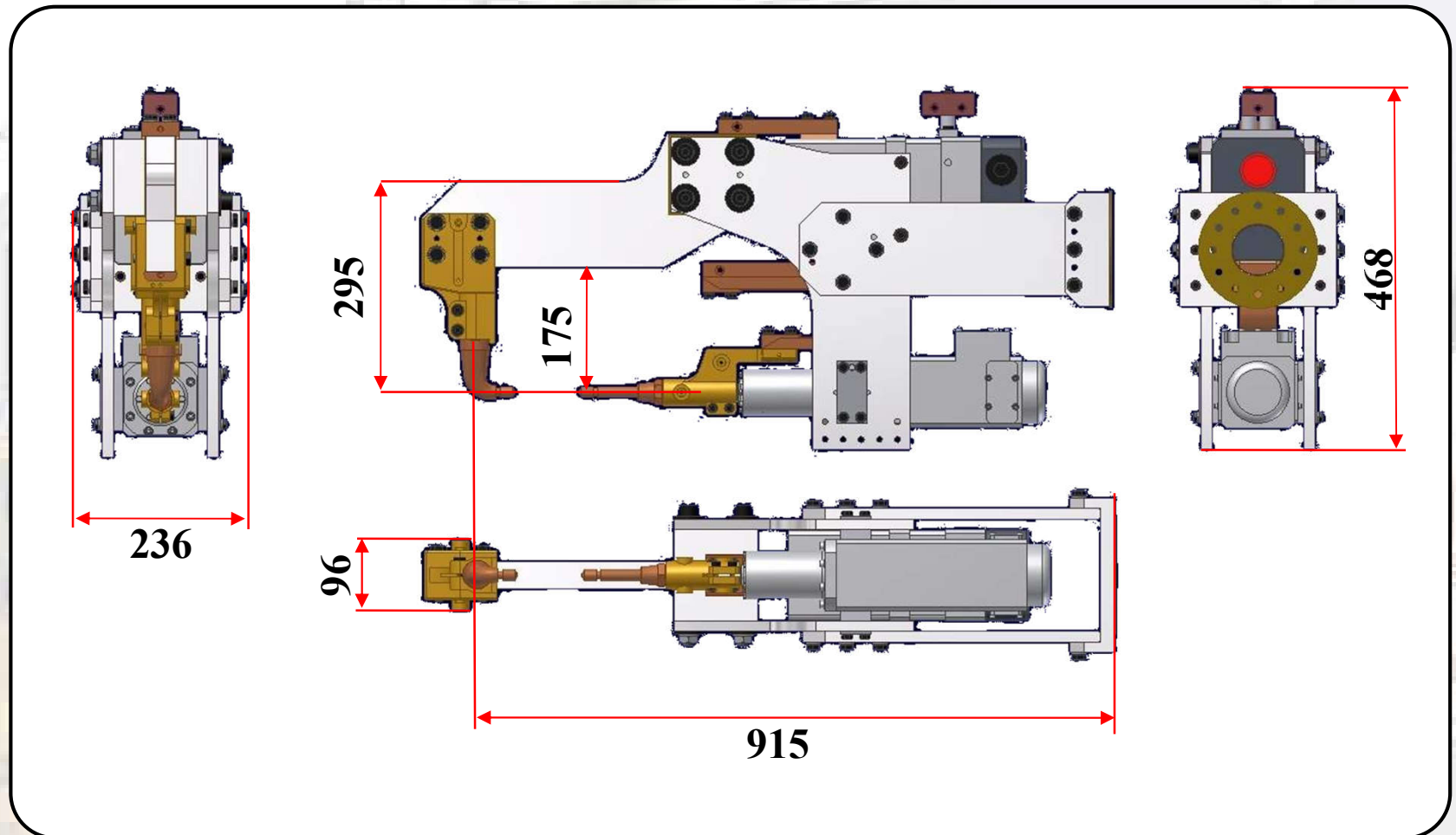


- Various Sizes & “X to C” Conversions



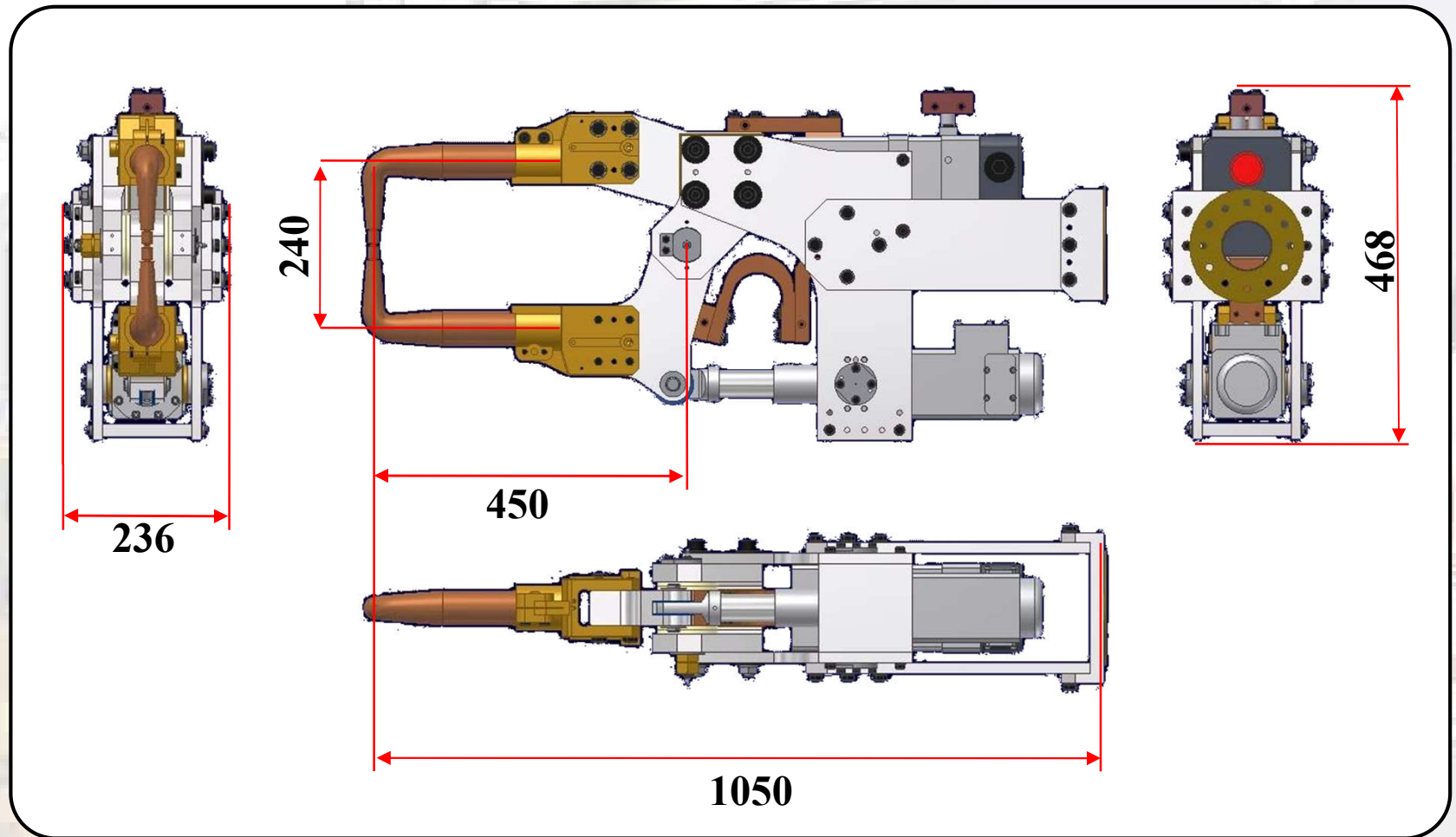
X2C Concept: Example Model

- Std Medium C-gun:



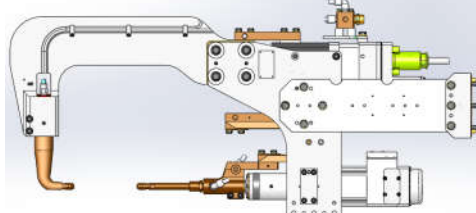
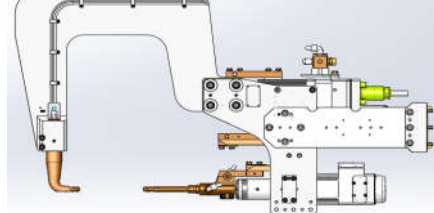
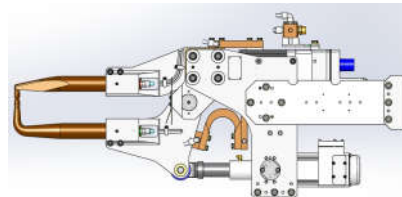
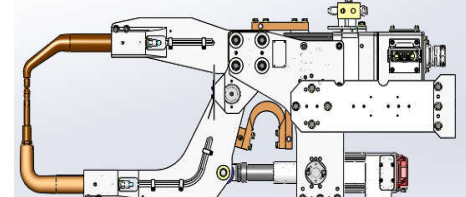
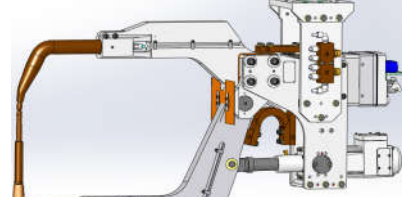
X2C Concept: Example Model

- Std Medium X-gun:



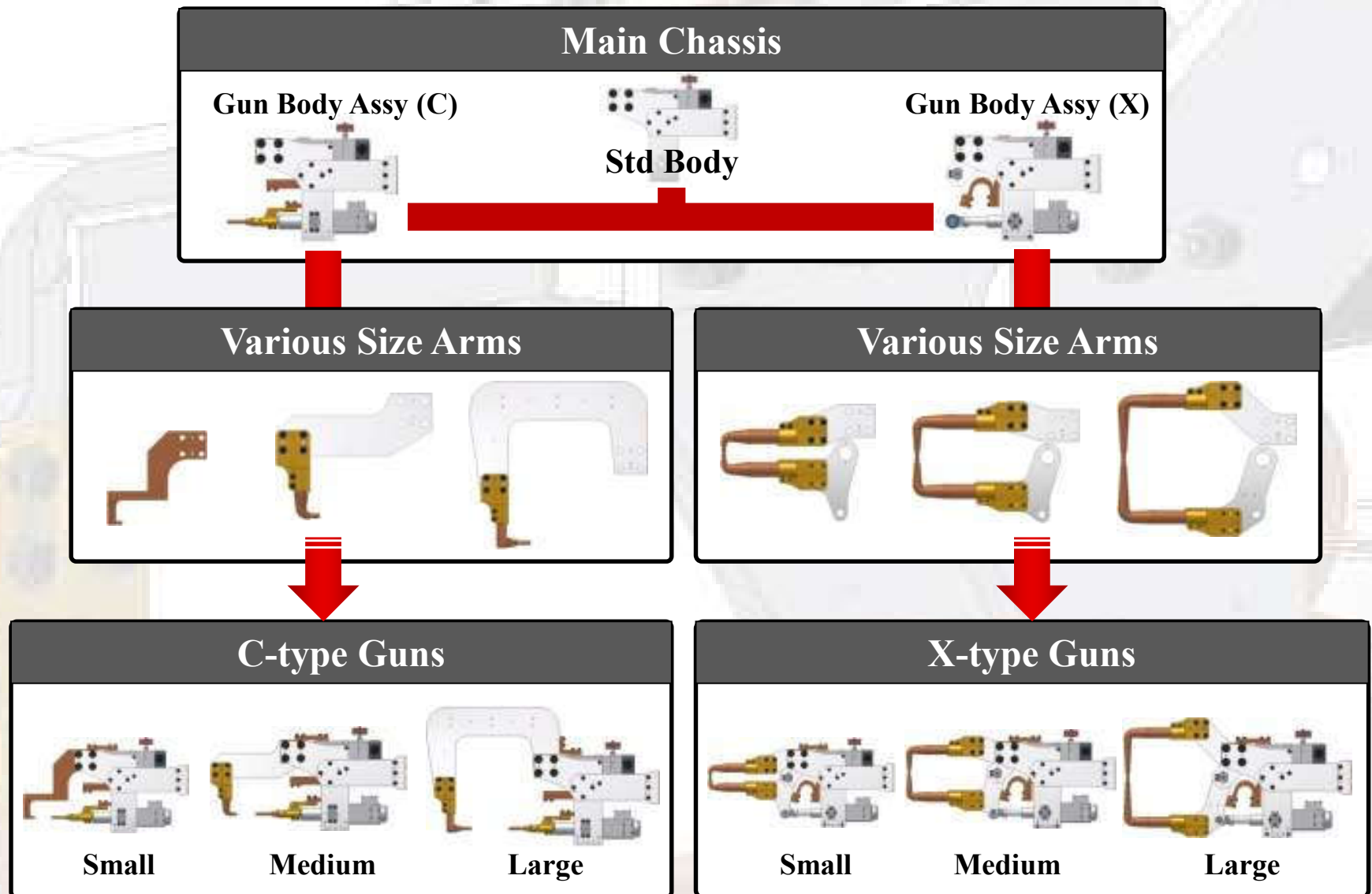
X2C Concept: Basic Specifications



					
~70 kg		~75 kg		~80 kg	
Small		Medium		Large	
~83 kg		~85 kg		~90 kg	
					
Type	C-type			X-type	
Force	6000N				
Stroke	Up to 190mm			Up to 170mm	
Transformer	Std: 1000Hz / 100Kva				
Max SCC	Up to 20,000A			Up to 19,000A	
Size	Up to 450mm x 325mm			Up to 420mm x 450mm	

X2C Concept: Arm Configuration

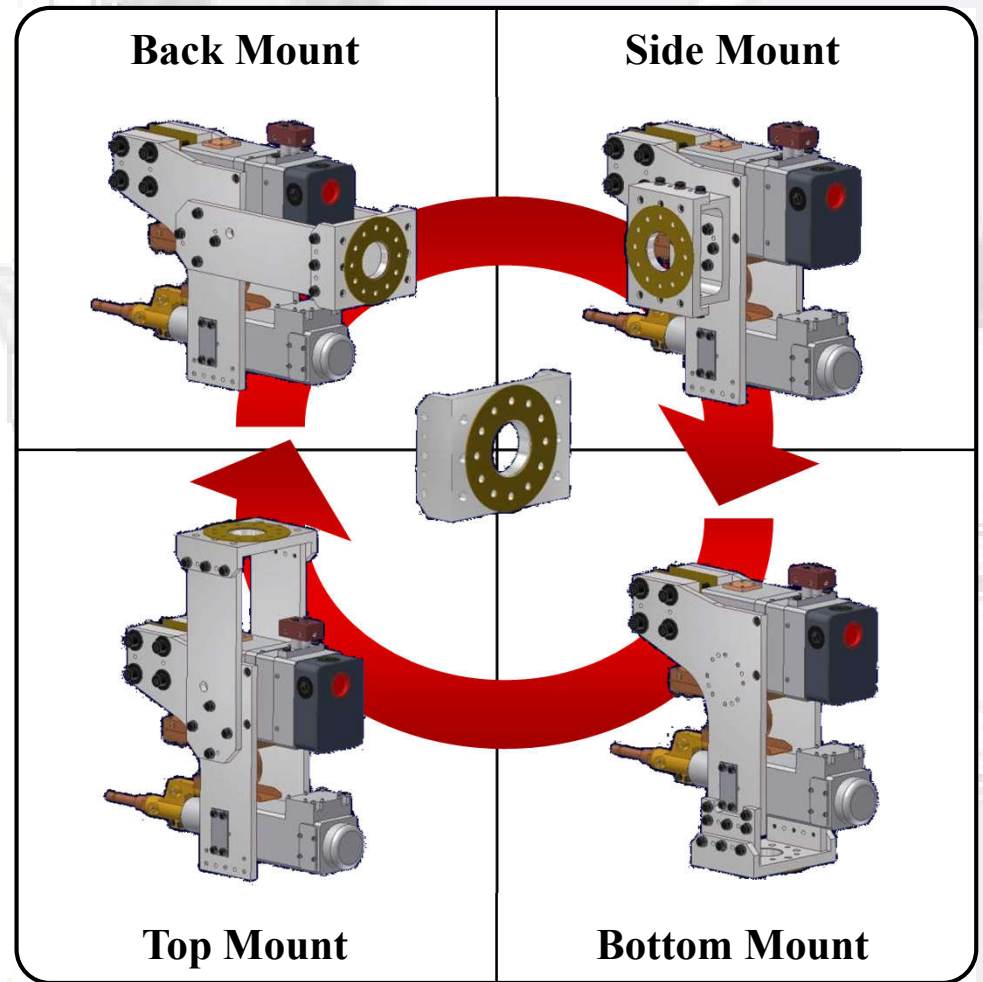
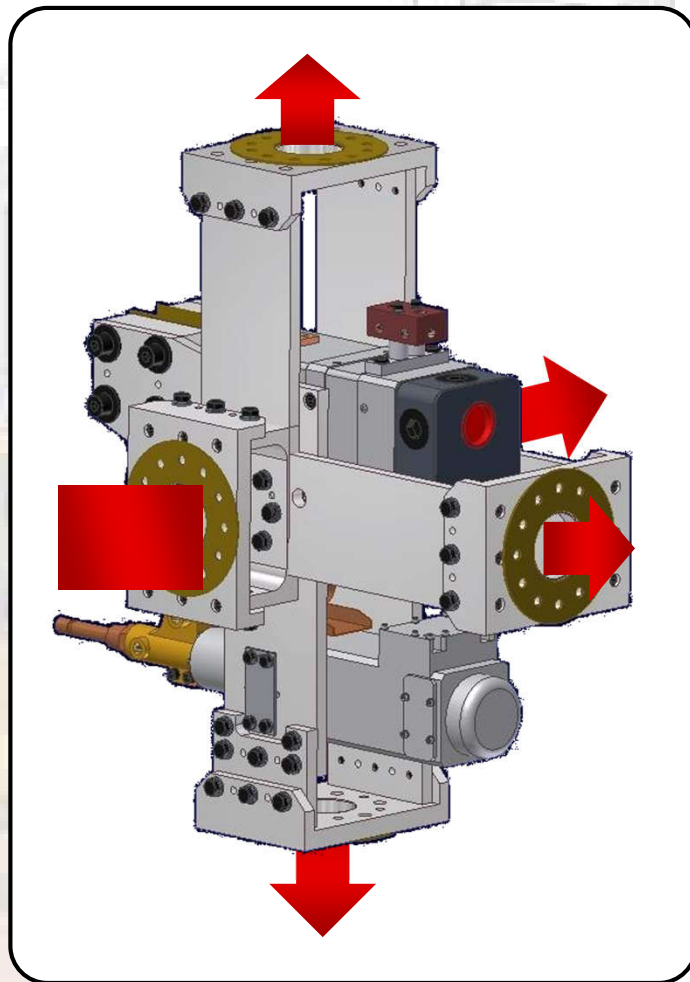
- **Standard Body Assemblies + C & X Arm Configurations**



X2C Concept: Bracket Configuration **JL OBARA**

- Universal between C & X types

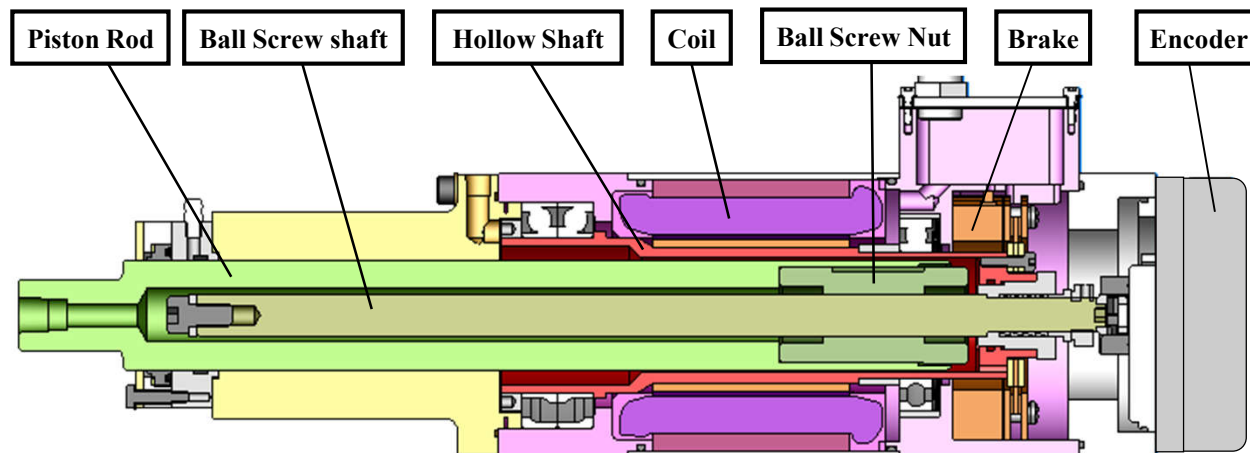
➡ The same mounting plate used in all directions



Enhanced Drive Unit

● Basic Specifications:

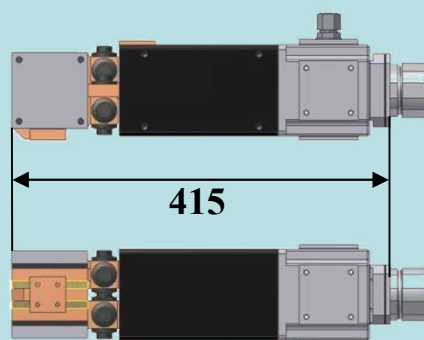
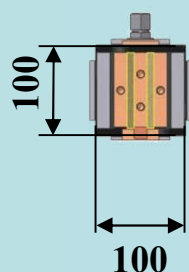
Motor	Spec	
Rated Capacity	2	KW
Rated Torque	6.4	N•m
Instant Max Torque	19.1	N•m
Rated Rotating Speed	3000	rpm
Max Rotating Speed	4500	rpm
Insulation Class	F	Class
Instant Max Elect Current	36	A(rms)
Brake Voltage	24	V



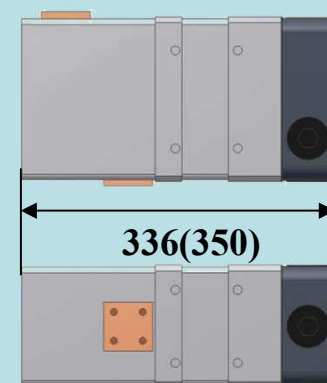
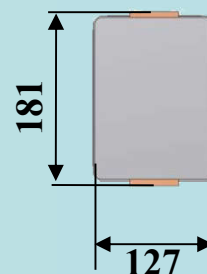
Transformer

● Designed for LW Gun

P/N	Rated Capacity (50% D.C)	Rated Primary Voltage	Frequency	Secondary Voltage	Turn Ratio	Weight	Cooling water
TDC-1064	100KVA	650V	1000Hz	9.0V	72	32.0kg	7.5L
TDC-1129	150KVA	650V	1000Hz	13.0V	50	32.0kg	7.5L
							
ITS85-600-180	85KVA	600V	1800Hz	13.6V	44	13.5 kg	4.0 L x 2
DB6-100R1	100KVA	500V	1000Hz	9.1V	55	20.5 kg	7.5 L
TDC-6551	150KVA	650V	1000Hz	13.0V	50	23.2 kg	7.5 L



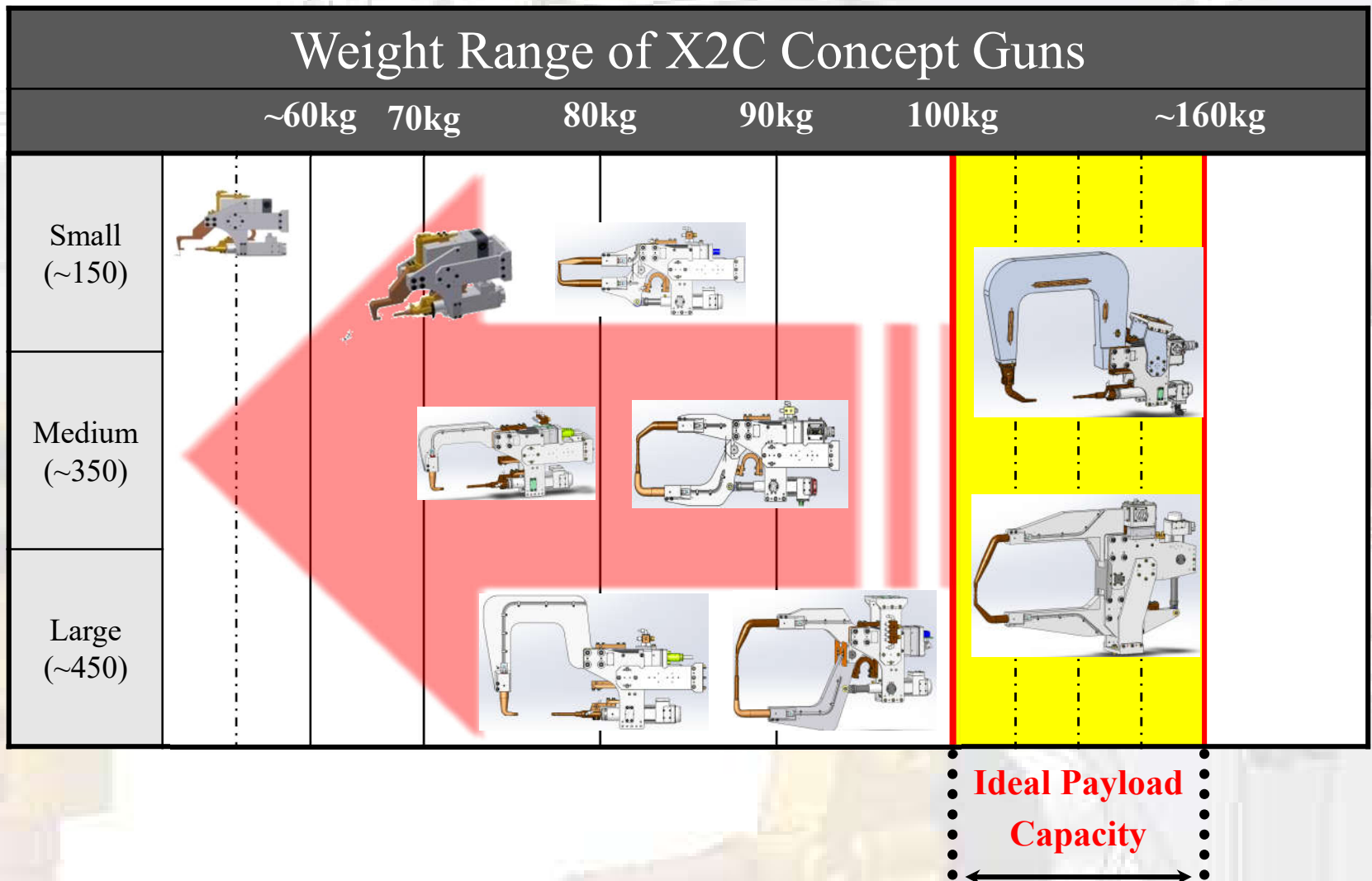
1800Hz: ITS85-600-180



1000Hz: DB6-100R1(TDC-6551)

X2C Concept: Weight Range

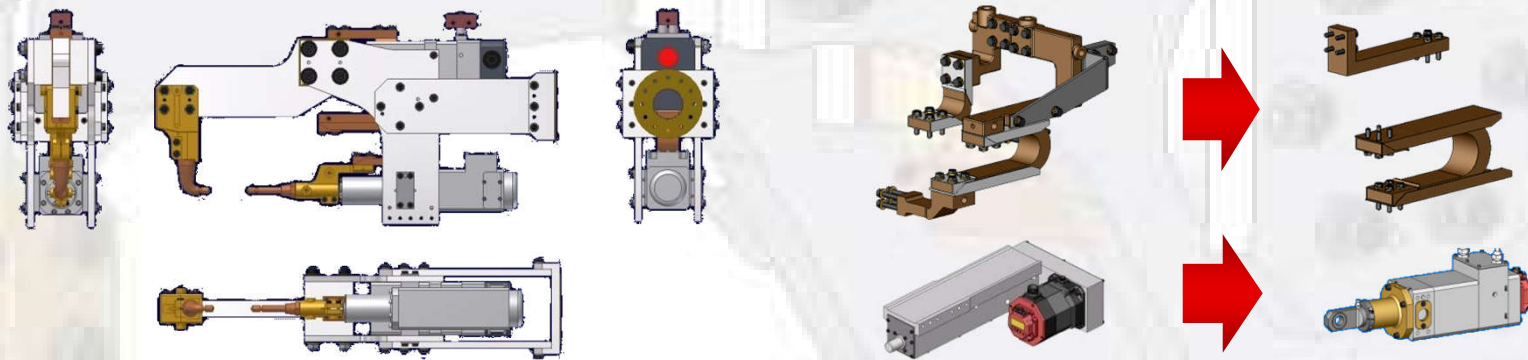
● Gun Weight vs. Robot Payload Capacity:



Direct Benefits

- **Standardized Design:**

- ➡ **Std Gun Body & Common Spare Parts**
- ➡ **Redesigned Symmetrical Components**
- ➡ **In-line Actuator Standard**
- ➡ **Maintenance Friendly Design**



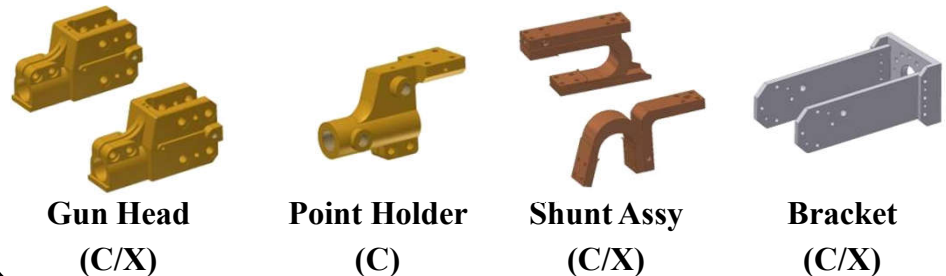
Standard Gun Body



C-type

X-type

Common Spare Parts



Gun Head
(C/X)

Point Holder
(C)

Shunt Assy
(C/X)

Bracket
(C/X)

Indirect Benefits

● Advanced Space Saving Concept:

- ➡ Able to use Slim Robot (Payload Capacity: 80kg~130kg)
- ➡ Suitable for multi-layered installation
- ➡ Able to increase the number of welds per cell
- ➡ Able to decrease total length (area) of production line (cell)
- ➡ Able to reduce tact time

Std Robot (160/200)

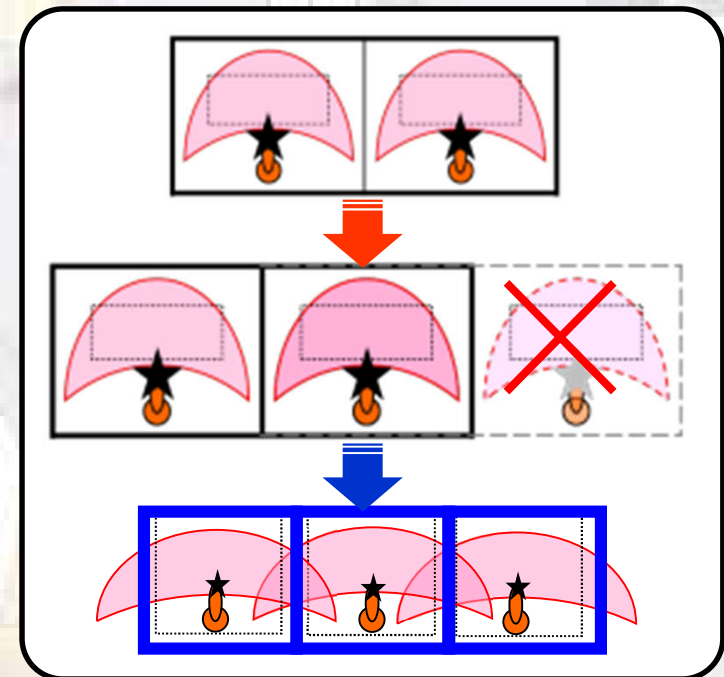


1100 × 1100

Slim Robot

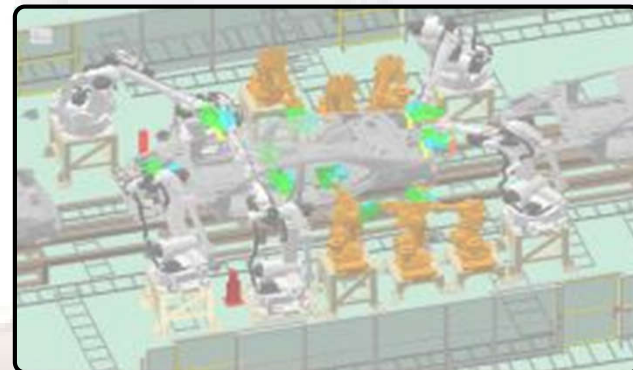
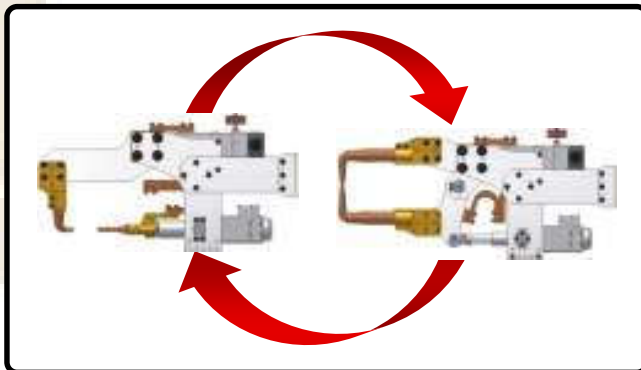


450 × 450



Summary of X2C Concept

- Suitable for Small Robots
 - ➡ Lightweight & Compact In-line Actuator
 - ➡ No reduction in Transformer capacity
- Ideal for Smaller Cells
 - ➡ Symmetrical Design
 - ➡ Narrow Body
- Suitable for Increased Robot Speed
 - ➡ Lighter design results less stress and higher speed
 - ➡ Designed to accommodate stress up to 3G



SV GUN SALES PERFORMANCE IN CHINA(PART)

JL OBARA

Unit: PCS

No.	Customer	QTY
1	SGM	2320
2	Ford (China)	1756
3	Toyota (China)	1420
4	Honda (China)	430
5	Mazda (China)	550
6	Nissan (China)	430
7	Mitsubishi (China)	120
8	Chery Jaguar Land Rover	320
9	Hyundai (China)	1200

No.	Customer	QTY
10	SAIC Motor	120
11	Changan Motor	520
12	Great Wall Motor	1200
13	Geely Motor	480
14	JAC Motor	320
15	Chery Motor	350
16	Brilliance Group	60

Other customers	Situation
Volkswagen	Ongoing Test
PSA	Ongoing endurance test
VOLVO	Ongoing communication



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