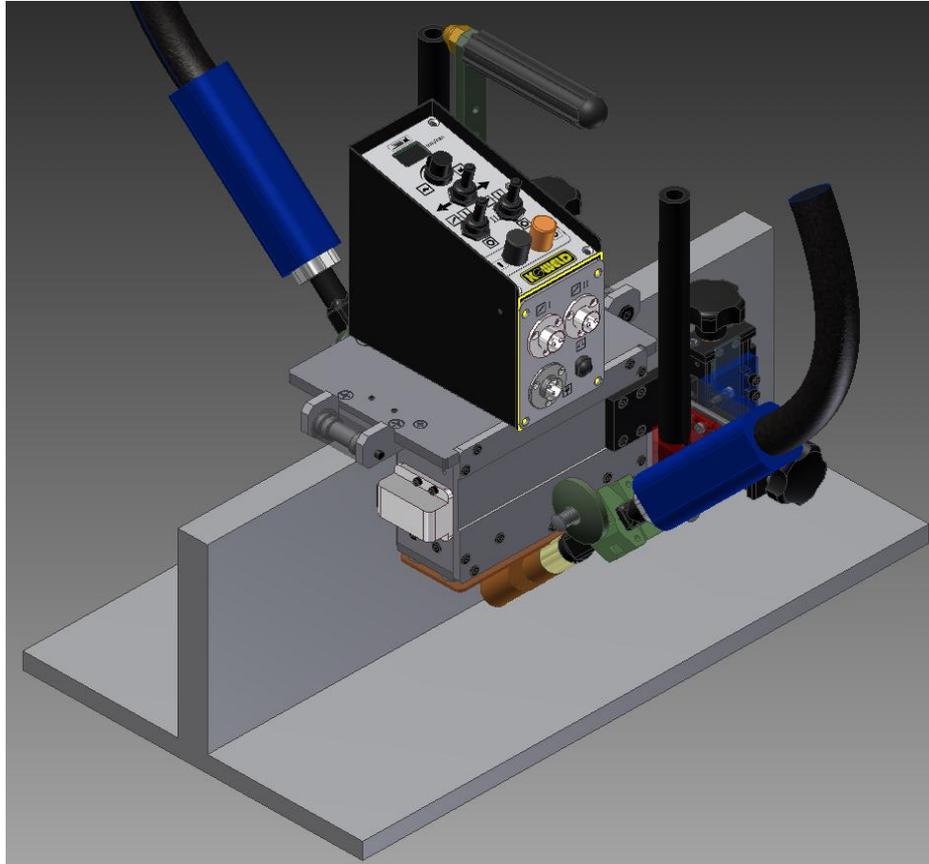


CS-231 USER MANUAL



CHUNG SONG INDUSTRY CO., LTD.

MADE IN KOREA

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1) OUTLINE and CHARACTERISTICS

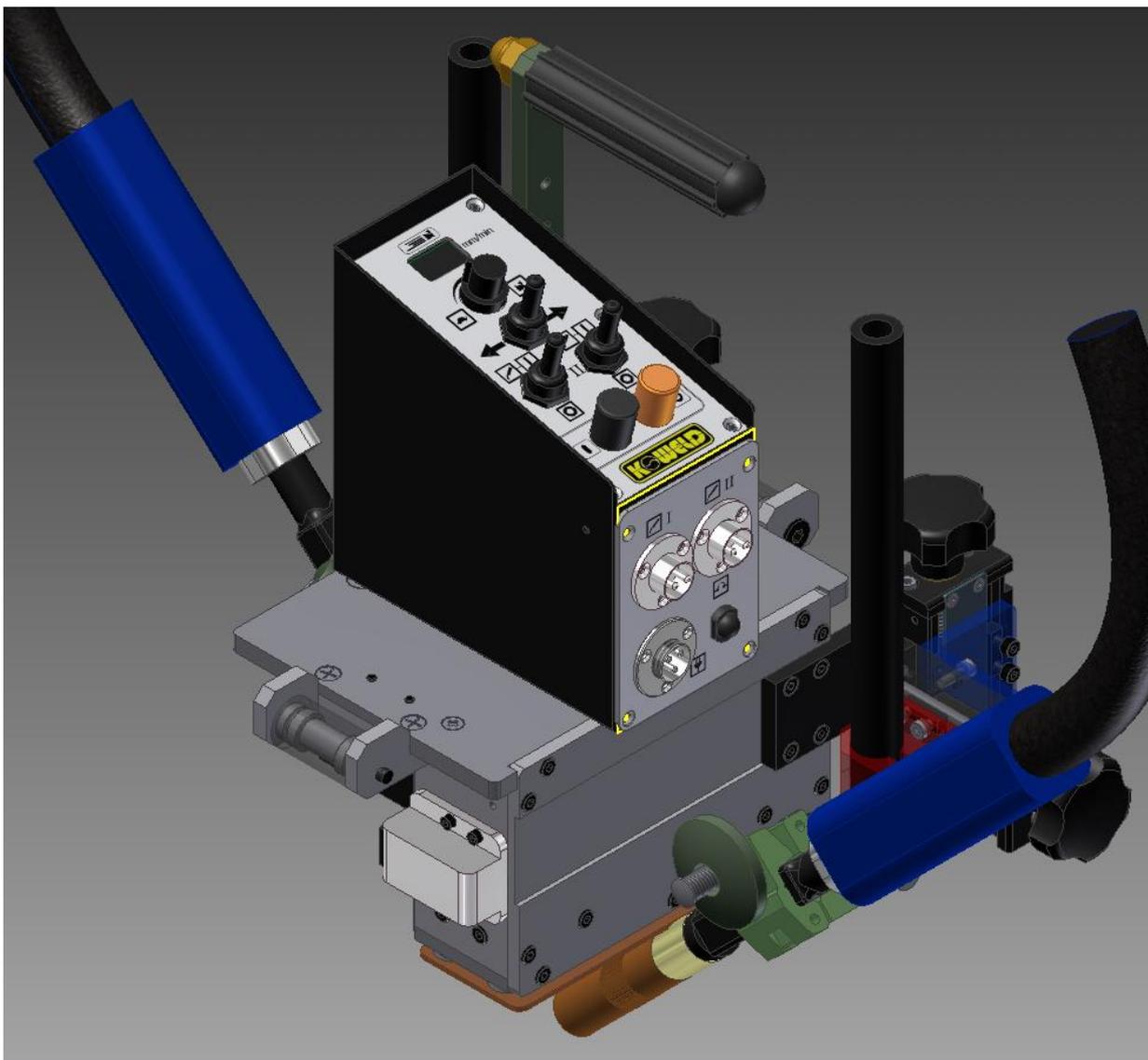
CS - 231 carriage is a 2-pole fillet auto welding machine with 4-rubber-wheel-drive.

The machine can operate on I-BAR-type member without installing any rail, and the 2-pole torch provides faster and highly efficient work.

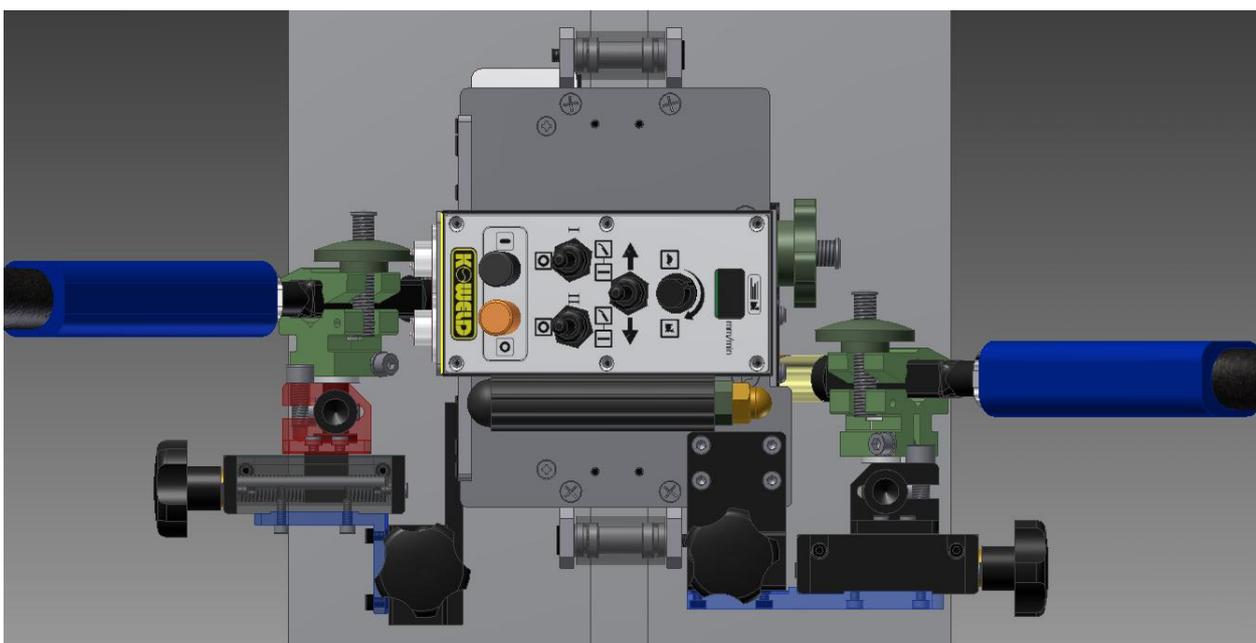
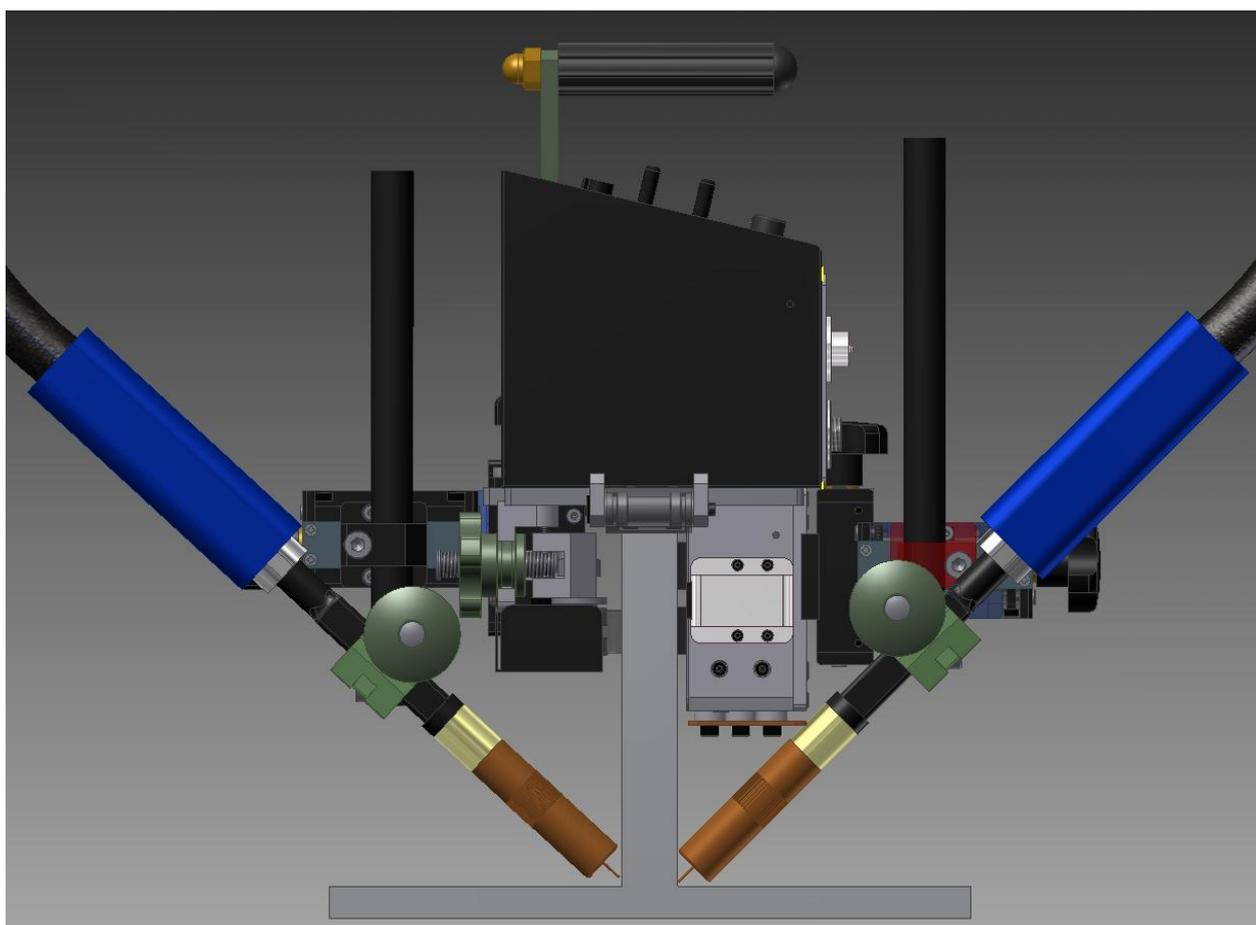
Built-in magnet (neodium) prevents the carriage from getting out of the welding line.

The BLDC motor guarantees smooth operation at both low and high speed.

Torch angle and member height (ARM length) are easily adjusted, and X-Z slide supports fine tuning.



2) APPLIED MATERIALS SHAPE and POSTURE

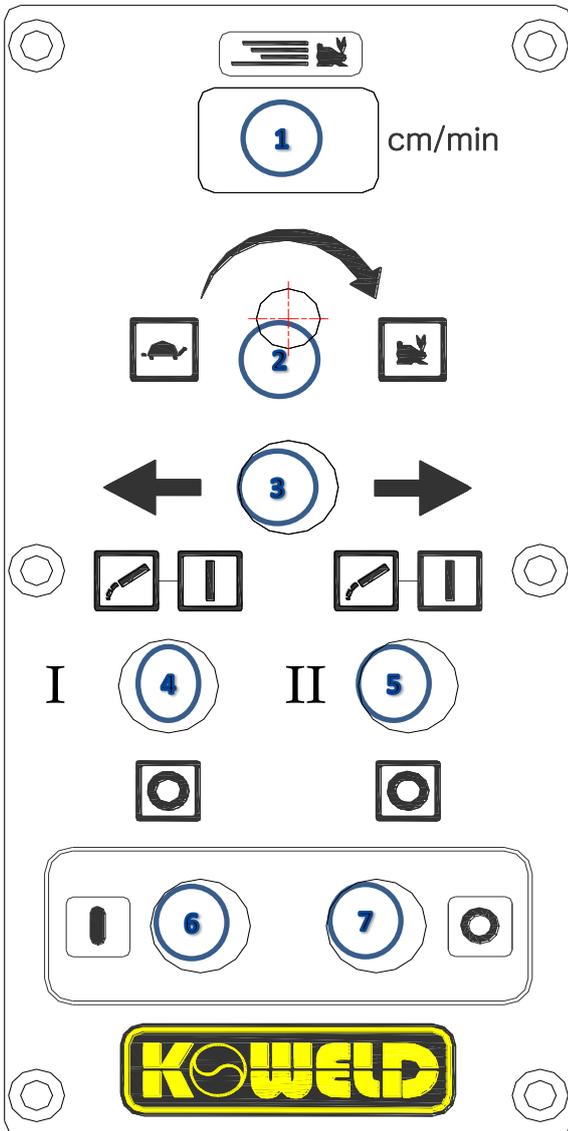


3) MAIN SPECIFICATIONS

Division	Configuration	Unit	Specification	Remarks
GENERAL	Model	Set	CS-231	Carriage
	Size (WxLxH)	mm	405(W) * 270(L) * 300(H)	-
	Weight	Kg	7.8 Kg	-
BODY	BODY	-	Material : AL6061	-
	Driving Motor	-	DC24V, 12W, 5000 RPM	BLDC MOTOR
	Gear Ratio	-	400 : 1	-
	Driving Method	-	4 WHELDS-CHAIN-BLDC MOTOR	-
	Input Power	-	AC 220V , 60Hz	-
	Driving Speed	mm/min	0~99 cm/min	-
TORCH1	WELDING ANGLE	deg.	35° ~ 55°	-
	RUNNING ANGLE	deg.	±3°	-
	CLAMPING-SLIDE	mm	0~27mm	
	X-SLIDE	mm	0~50mm	
	Z-SLIDE	mm	0~50mm	
BODY CONTROL		-	Start, Stop, Driving Speed Adjust, Travel Direction Weld/Not-Weld (1) Weld/Not-Weld (2)	-
OTHER	Standard Supply Scope Composed Items for Equipment Warehousing	-	1.CARRIAGE	1SET
			2.POWER CABLE 1.0SQ*3C*30M	1PC
			3.L-RENCH	1SET
			4.FUSE 2A	2PCS
			5.CONNECTOR POWER-1,TORCH-2	3PCS
			6.User Manual	1PC

4) CONTROL PANEL OPERATION EXPLANATION





- ② Travel speed (volume control)
 - Turn the knob in this direction to slow down.
 - Turn the knob in this direction to speed up.
- ③ Traveling direction (TOGGLE S/W)
This switch selects the direction of carriage.
- ④ 1) Welding / Non-welding
You can select welding/non-welding function of Torch No. 1.
- ⑤ 2) Welding / Non-welding
You can select welding/non-welding function of Torch No. 2.
- ⑥ Start switch (Push button: Black)
Push this switch to start operation of the carriage.
- ⑦ Stop switch (Push button: Red)

5) INSTALLATION AND OPERATION

(1) WELDING PREPARATION

- At first, tools for WELDING such as POWER SOURCE and WIRE FEEDER are needed.
- Welding Power Source (3Φ 440,380,220V AC) for the Driving and Control of CS-4A TYPE is needed.
- CO₂ Gas Tank for Welding is needed.
- TORCH for CO₂ Auto Welding is needed.
- Basic Preparation Tools of Welding Works are basically needed.

(2) CONNECTING METHOD of CARRIAGE

- WELDING TORCH CONDUIT CABLE of AUTO CARRIAGE should be connected to the WIRE FEEDER.
- CONNECTOR for TORCH S/W which come out of the WELDING TORCH should be connected to the MAIN CABLE CONNECTOR of the BODY.
- CONTROL CABLE should be connected to the CONTROL BOX CONNECTOR of the BODY. (OPTION)
- CONTROL POWER SOURCE CABLE should be connected to the POWER SOURCE

(3) WELDING PROCESS

- Switch ON the PRIMARY SIDE DISTRIBUTION BOARD of WELDING POWER SOURCE.
- Switch ON the CONTROL POWER SOURCE of FRONT PANEL of WELDING POWER SOURCE.
- Equip the WIRE FEEDER with WIRE, and feed it to the end of TORCH.
- Set the AUTO CARRIAGE at the WELDIING START POINT.
- Adjust the Target Angle and Position of the TORCH with the TORCH ADJUSTMENT SLIDER.
(Fine Adjustment of the Angle and Position is possible with Screw Type.)
- Set the Welding Condition that should be fit for a Work to the CARRIAGE.
- Check if CO₂ Gas is properly Supplied.
- Start Welding Work.
(Start the Welding Work by pressing the ①Driving Start BUTTON after switching ON the Welding Speed Switch ④of the Control Board.)
- Press the STOP BUTTON Switch ② if Welding Work of the Materials is finished.
- Confirm the Welding End.

6) Maintenance and checking

- The auto carriage should be regularly maintained and repaired to use it safely for a long time.

1. Is there much dust on the control panel?

→ Control box, torch adjustment switch should be kept clean, and wipe floating matters off. Be sure to clean around control box.

2. Aren't deposits stuck to?

→ Remove deposits and spatters from tip, nozzle, guide roller, driving wheels, magnets and slide adjustment part. They may cause problems for travelling carriage safely.

3. Are the screws in torch clamps and guide rollers loose?

→ The loose screws may cause bad travelling or uneven bead, and therefore all the screws should be tightened. Especially, floating matters such as dust should be wiped off well.

4. Isn't there any damage on connector, power cable, and torch cable?

→ Check if connectors are loosely connected or damaged. Or, are cable, hose, and torch disconnected or damaged.

5. Isn't there any abnormal noise or overheating?

→ Check the wheel, motor, and welding torch.

7) Breakdown and measures

: If there is any problems with auto carriage, check instructions as follows.

1. Power display light of CONTROL Panel is not turned on.

Cause	Repair measure
Bad control cable (disconnection)	CABLE change(connection)
Control box fuse disconnection	fuse change (if it still makes troubles, contact After-sales team)

2. ARC is not generated, though welding button is pressed.

Cause	Repair measure
Non-welding is selected on welding/non-welding switch	Selected welding
Loose contact of wire	Remove slag(check earthing)
Bad welding start button	Check and repair the button, wiring. Check if stop sensor works.

3. Carriage does not travel, though welding start button is pressed.

Cause	Repair measure
	Check and repair motor driving part
Bad welding start button switch	Check and repair the button, wiring. Check if stop sensor works
Bad main PCB	change, refer to After sales service.

4. Torch targets wrong position.

Cause	Repair measure
Targeting position of torch clamp is loose	Check and tighten screws and change them, if damaged.

5. Slide is hard to adjust

Cause	Repair measure
Deposits or dust are on slide part	Clean slide part and spread around oil

6. Carriage stops during automatic welding.

Cause	Repair measure
Carriage has obstacles in the running	Remove obstacles(stop sensor operation)

7. ARC does not disappears, even though stop switch is pressed.

Cause	Repair measure
bad welding stop button switch	check the switch and change it with a new one
The switch on welding machine is on mode	change the crater switch to off mode

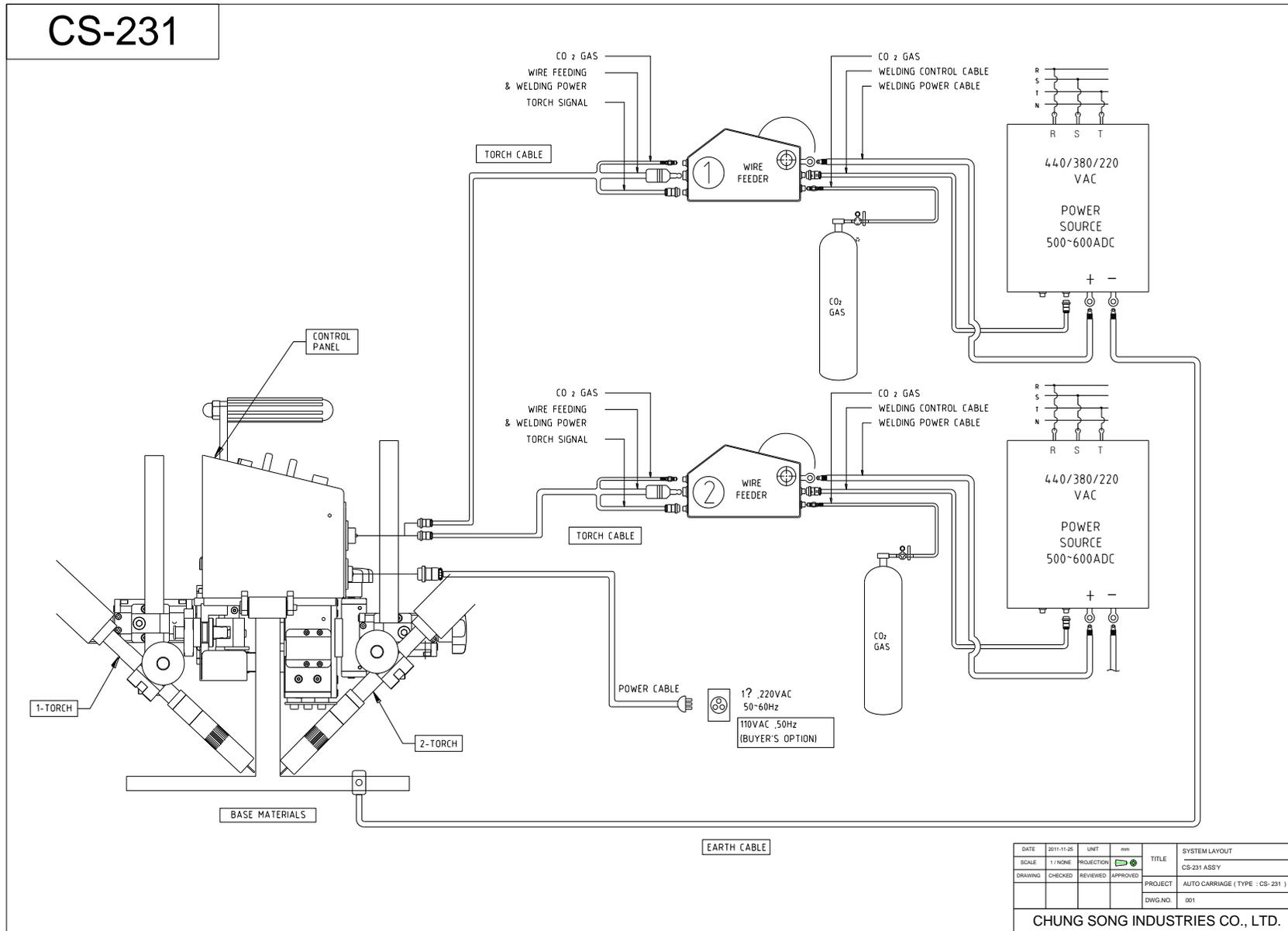
8) Part List

CS	NO.	DESCRIPTION	EA	MAT'	REMARK
BODY PART					
4A	08	BODY(U)	1	AL6061	
4A	09-R	BODY SIDE(L)	1	AL6061	R-TYPE
4A	10	BODY BOTTOM PLATE	1	AL6061	
4A	11-R	BODY SIDE(R)	1	AL6061	R-TYPE
4A	12	BODY TOP PLATE	1	AL6061	
4A	13	WHEEL SHAFT	2	S45C	
4A	14	WHEEL SHAFT COVER-1	2	AL6N01	
4A	15	WHEEL SHAFT COVER-2	2	AL6N01	
4A	16	WHEEL SHAFT BUSH-1	2	SS400	
4A	16-1	WHEEL SHAFT BUSH-2	3	SS400	
4A	18	WHEEL-47	2	RUBBER	ø47
4A	20	CHAIN	1	STEEL	
4A	22	MOTOR BRACKET	1	AL6061	
4A	23	MAGNET BRACKET(1)	1	AL6061	
4A	24	MAGNET BRACKET(2)	2	AL6061	
4A	25	MAGNET PLATE	1	SS400	
4A	26	MAGNET-1	1	ND	25X50X25
4A	28-R	BOTTOM COVER(R-TYPE)	1	SUS304	R-TYPE
4A	29	SENSOR COVER	1	AL6061	
4A	30	SENSOR	1	-	PR185DN
4A	31	TENSION BEARING	1	SUJ2	626ZZ
4A	92	HANDLE	1	PLASTIC	B-GL150
100C	M01	DC BRUSHLESS MOTOR	1	-	12W,5000RPM
100C	M-02	GEARD MOTOR	1	STEEL	400:1 ø8
100C	M-02-1	MOTOR BRACKET(BLDC)	1	AL6061	
100B	P04	ROLLER BEARING	4	SUJ2	688ZZ
5	14	WHEEL-50	2	RUBBER	ø50
5	17	CHAIN SPROCKET	3	S45C	Z=12
5	02	MAGNET	1	ND	60X50X15
Y-Z SLIDE PART					
4A	45	HORIZONTAL SLIDE HOUSING	1	AL6N01	L=80
4A	50	VERTICAL SLIDE HOUSING	1	AL6N01	L=100
4A	78-R	SLIDE BRACKET(R)	1	AL6061	R-TYPE

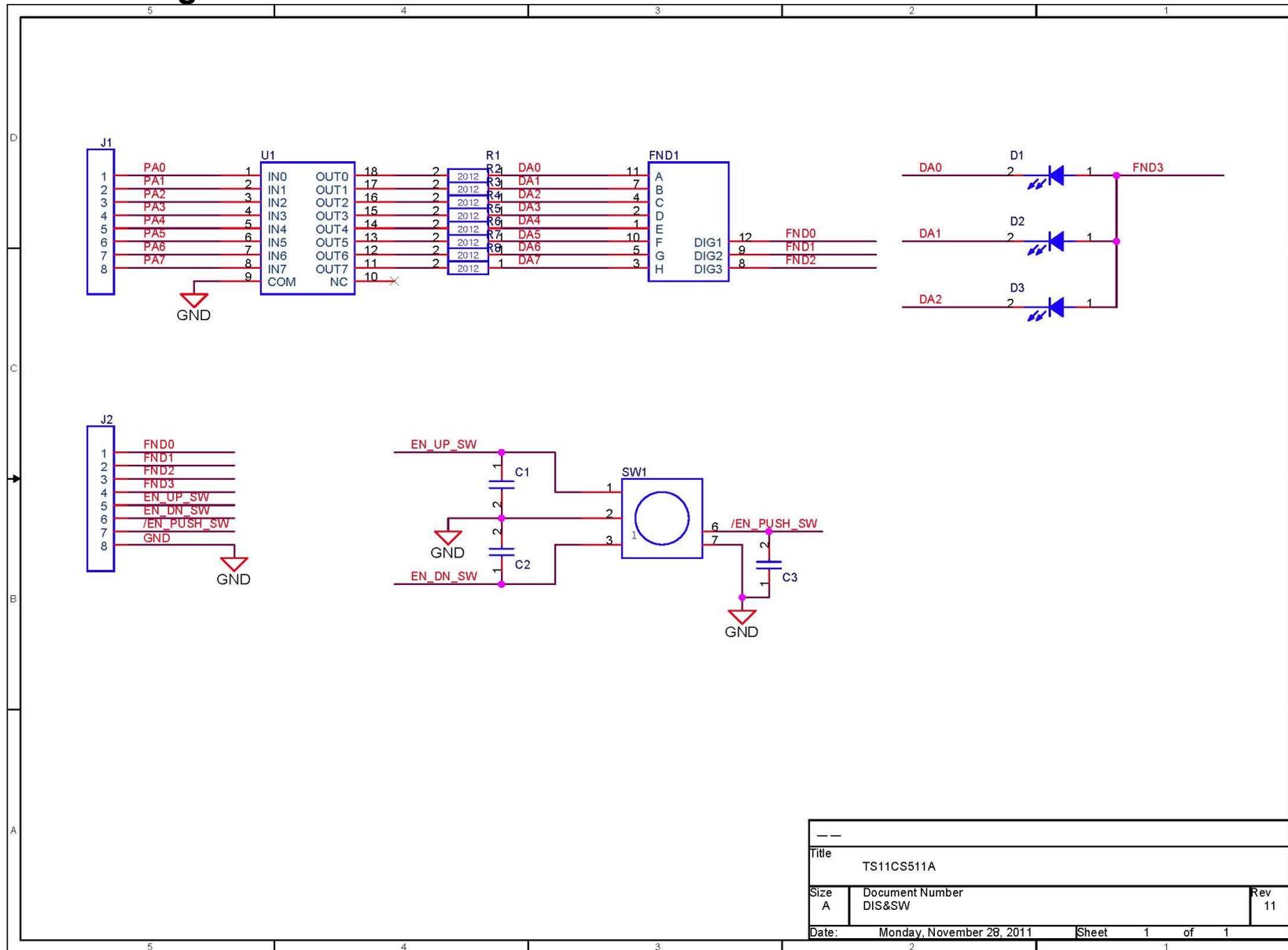
CS	NO.	DESCRIPTION	EA	MAT'	REMARK
20S	37	SLIDE BOLT(R)	1	S45C	2줄 우나사 M12
100B	34	SLIDE BUSH	2	AL6061	
100B	39	SLIDE BOLT(L)	1	S45C	2줄 좌나사 M12
5	23	SLIDE UNIT BRACKET(U)	2	ALDC12	
5	24	SLIDE UNIT BRACKET(D)	2	ALDC12	
5	25	Y-Z SLIDE PLATE	1	ALDC12	
5	26	SLIDE BLOCK(2L)	1	AL6N01	2줄 좌탭
5	26-1	SLIDE BLOCK(2R)	1	AL6N01	2줄 우탭
5	29	GUIDE BAR(L)	2	S45C	
5	29-1	GUIDE BAR(S)	2	S45C	
5	30	SLIDE COVER(L)	1	AL6N01	
5	30-1	SLIDE COVER(S)	1	AL6N01	
5	HD	KNOB 1	2	PLASTIC	
ANGLE SLIDE PART					
20S	57	ANGLE FIXED BRACKET	1	AL6061	
7	13	ANGLE SLIDE BUSH	1	B.S	
7	39	ANGLE SLIDE FLANGE	1	ALDC12	
7	40	ANGLE SLIDE PIN	1	S45C	
7	41	ANGLE SLIDE PLATE	1	ALDC12	
7	43	ANGLE SLIDE BOLT	1	S45C	2줄 우나사 M12
7	44	ANGLE SLIDE BOLT COVER	1	AL6061	
7	46	ANGLE SLIDE BRACKET	1	AL6061	
7	47	ANGLE SLIDE COVER	1	AL2010	
7	48	ANGLE HINGE	1	B.S	2줄 우탭 M12
5	33	BUSH	1	BAKELITE	
5	HD	KNOB	1	PLASTIC	
TORCH CLAMP PART					
5	32	TORCH CLAMP SUPPORT	1	ALDC12	
5	34	TORCH CLAMP(L)	1	AL6N01	
5	35	TORCH CLAMP(T)	1	AL6N01	
5	36	CLAMP FIXED BOLT	1	S45C	
5	37	CLAMP FIXED KNOB	1	AL6061	
GUIDE ROLLER PART					
4A	34	GUIDE ROLLER	2	BUBR	
4A	36	GUIDE BRACKET	1	SS400	

CS	NO.	DESCRIPTION	EA	MAT'	REMARK
4A	36-1	GUIDE BRACKET-1	1	SS400	
7	16	GUIDE ROLLER BUSH	2	B.S	
7	17	DU BUSH	2	SPCC	
7	21	GUIDE ROLLER COVER	2	B.S	
SUB-GUIDE ROLLER PART					
4A	38	ROLLER BRACKET	2	SS400	
4A	39	ROLLER HOUSING	2	AL6061	
4A	40	GUIDE BUSH	2	B.S	
4A	41	ROLLER(L)	2	SCM435	
71	CP12	TORCH CONNECTOR	1	SUS	SCK-16-2R
71	HD01	KNOB	2	PLASTIC	
PANEL PART					
7D	P02	UPPER PANEL-7D	1	STEEL	
7D	P03	PANEL BOTTOM PLATE	1	SS41(검정)	
7D	P05	PANEL-7D-1	1	SS41(검정)	
7D	P06	PANEL-7D-2	1	SS41(검정)	
5A		MAIN PCB	1	PLASTIC	
4A	62	RUBBER CAP	4	-	
71	P02	NAME PANEL	1	AL	
5	53	TOGGLE SWITCH COVER	2	RUBBER	육각방수캡
5	55	PUSH BUTTON COVER-1	1	RUBBER	BLACK
5	56	PUSH BUTTON COVER-2	1	RUBBER	ORANGE
5	57	VOLUME KNOB	1	PLASTIC	F9
5	58	FUSE	1	PLASTIC	F8303 휴즈홀더
5	59	POWER CONNECTOR	1	SUS	SCK-20-3P
5	61	PUSH BUTTON COVER(BS)	2	B.S	
5	62	TOGGLE SWITCH	2	PLASTIC	WJT 2216 2단
5	65	PUSH BUTTON	2	-	SP-103C
5	97	2PIN TORCH CONNECT	1	SUS	SCK-16-2P

9) Block Diagram

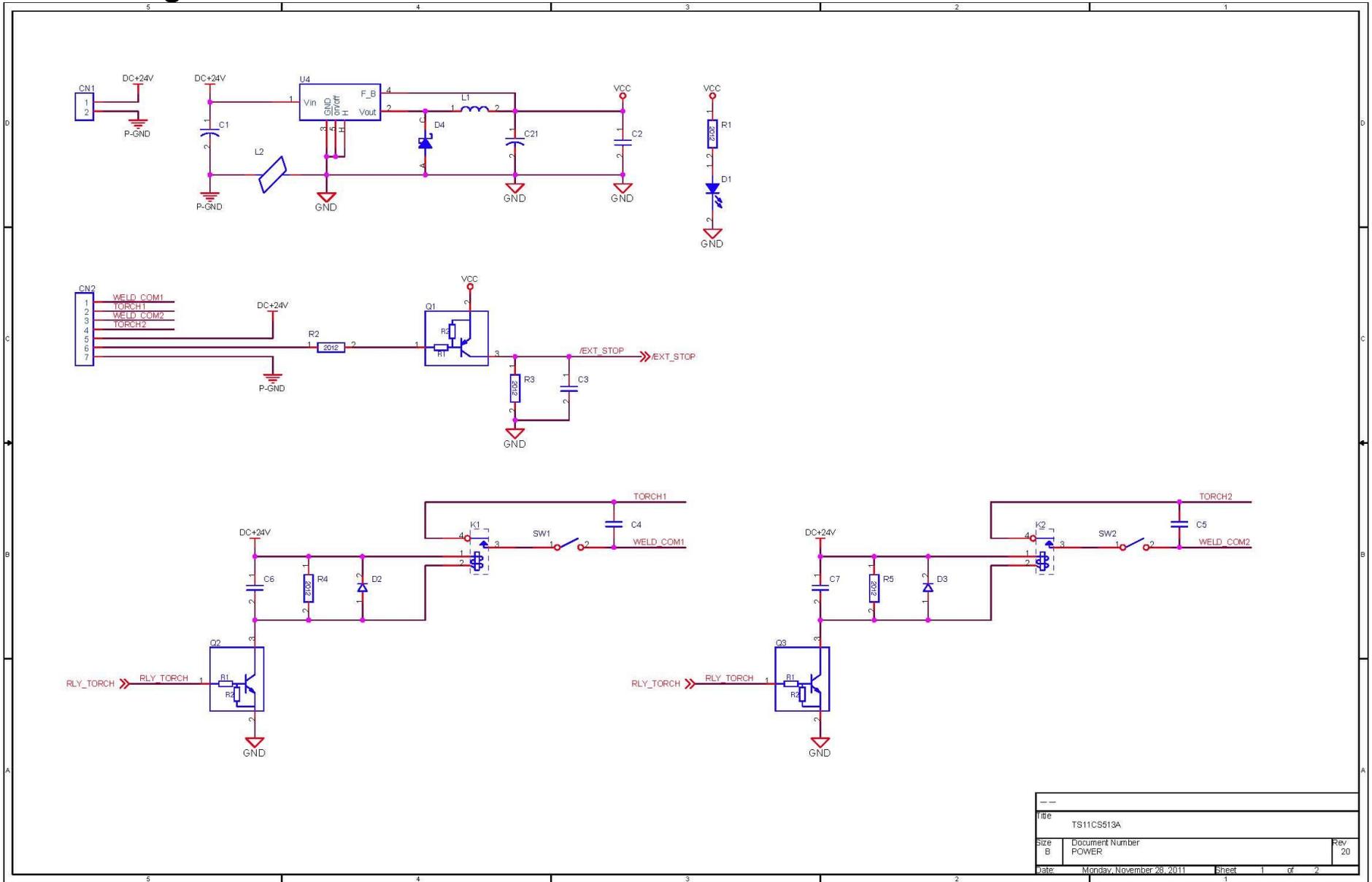


10) Circuit diagram

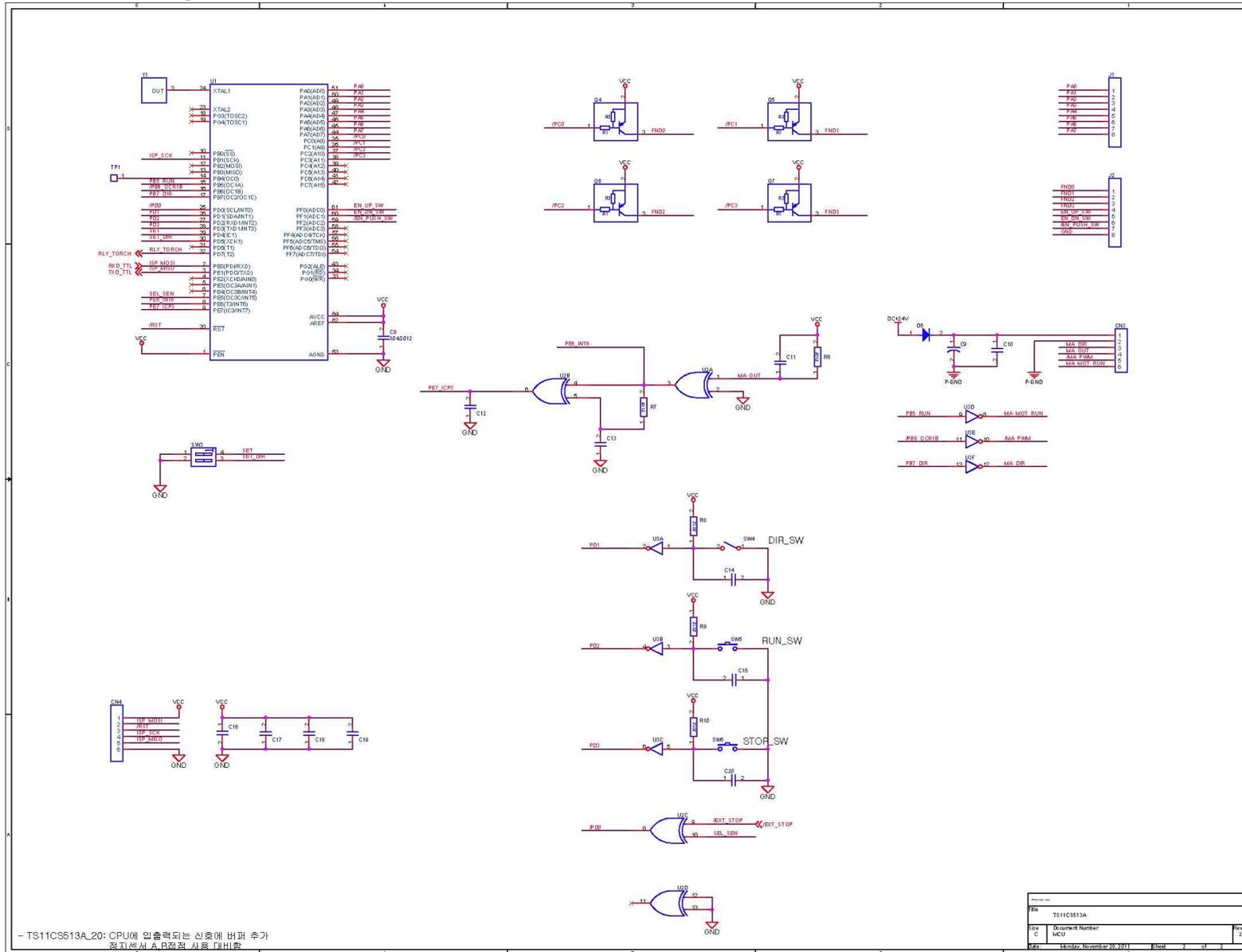


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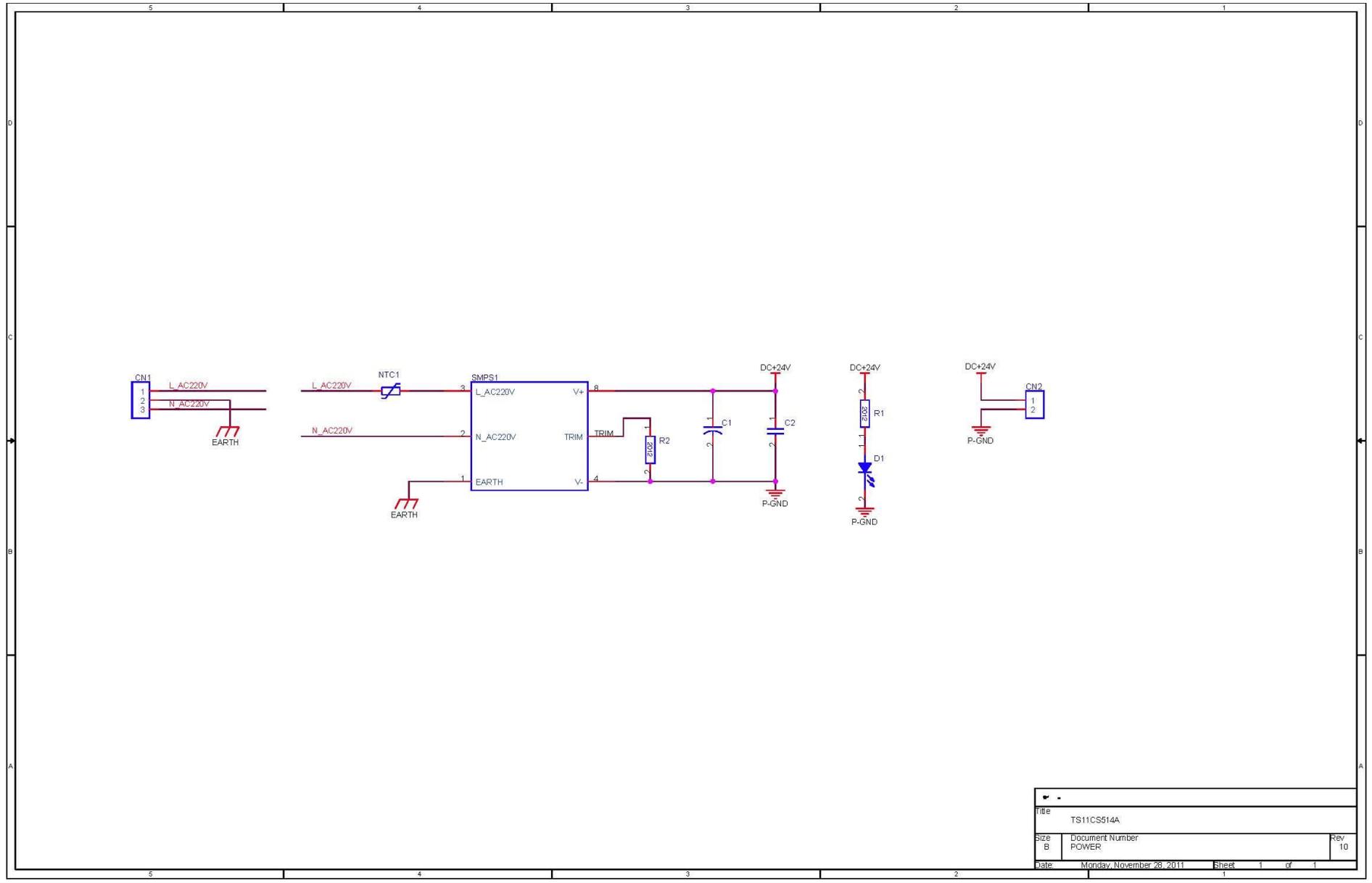
10) Circuit diagram



10) Circuit diagram



10) Circuit diagram



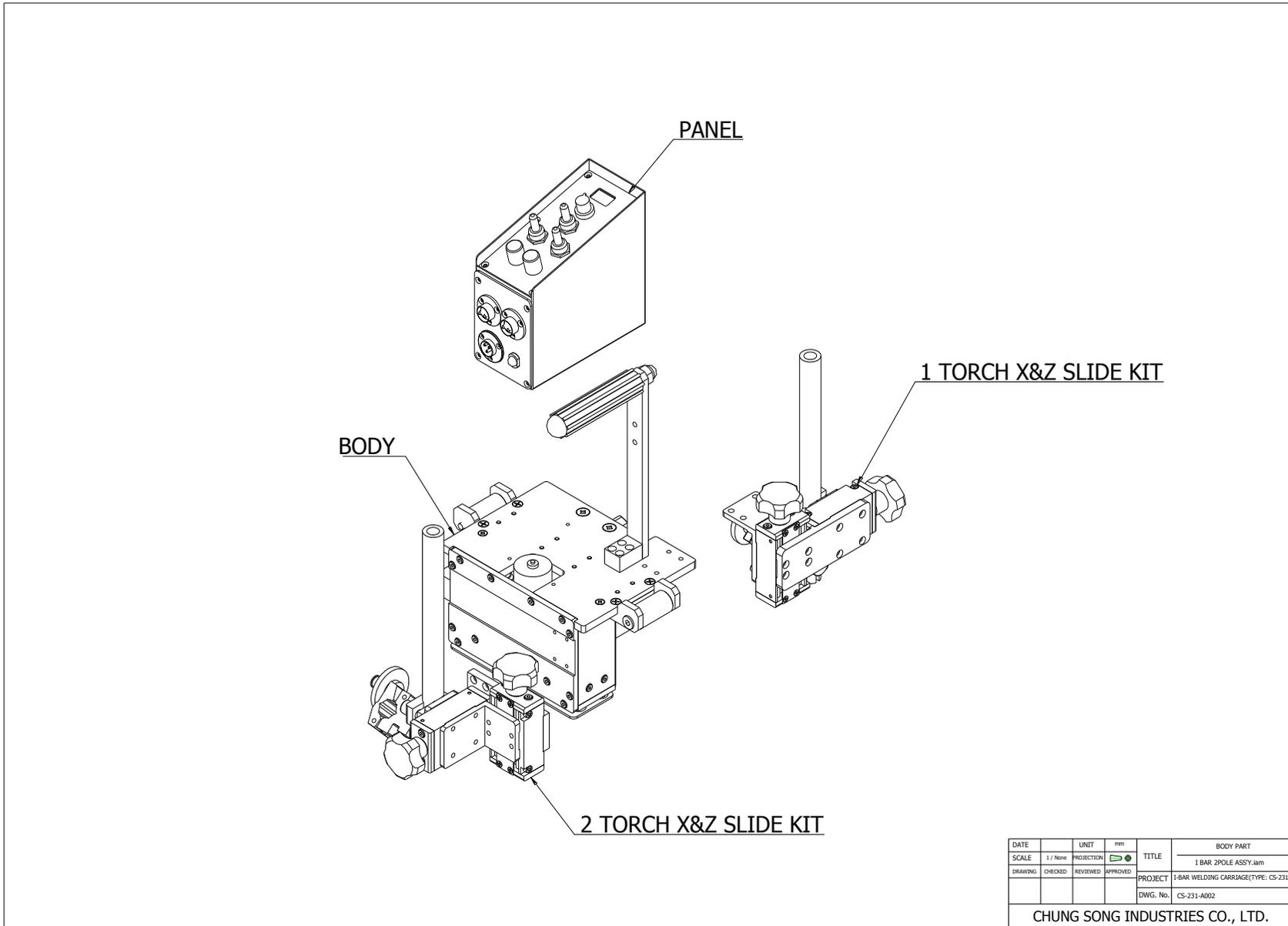
11) Assembly plan

I-BAR 2POLE WELDING CARRIAGE 개략도

GENERAL SPECIFICATION		
구분	형식 및 사양	중량(Kg)
형식	4WHEEL 기어구동, 용접 수행시 용접선 이탈방지 ROLLER(SUS) 부착	
재원	DIMENSION : 270(L) X 405(W) X 300(H)	8 Kg
BODY	주행속도 : 0~1060 mm/min±5%, WHEEL : ■50 주행 모터 : 24V 12W 5000RPM, 감속비 : 400 : 1, SPUR GEAR 2:1	
SLIDE	전후 상하 이송 거리 : 0~50mm±5%	
GUIDE	전후 이송거리 : 0~20mm±5%	

DATE	UNIT	mm	TITLE	BODY PART
SCALE	1 / None		I BAR 2POLE(TORCH).iam	
DRAWING	CHECKED	REVIEWED	APPROVED	PROJECT I-BAR WELDING CARRIAGE(TYPE: CS-231)
				DWG. No. CS-231-A001
CHUNG SONG INDUSTRIES CO., LTD.				

11) Assembly plan

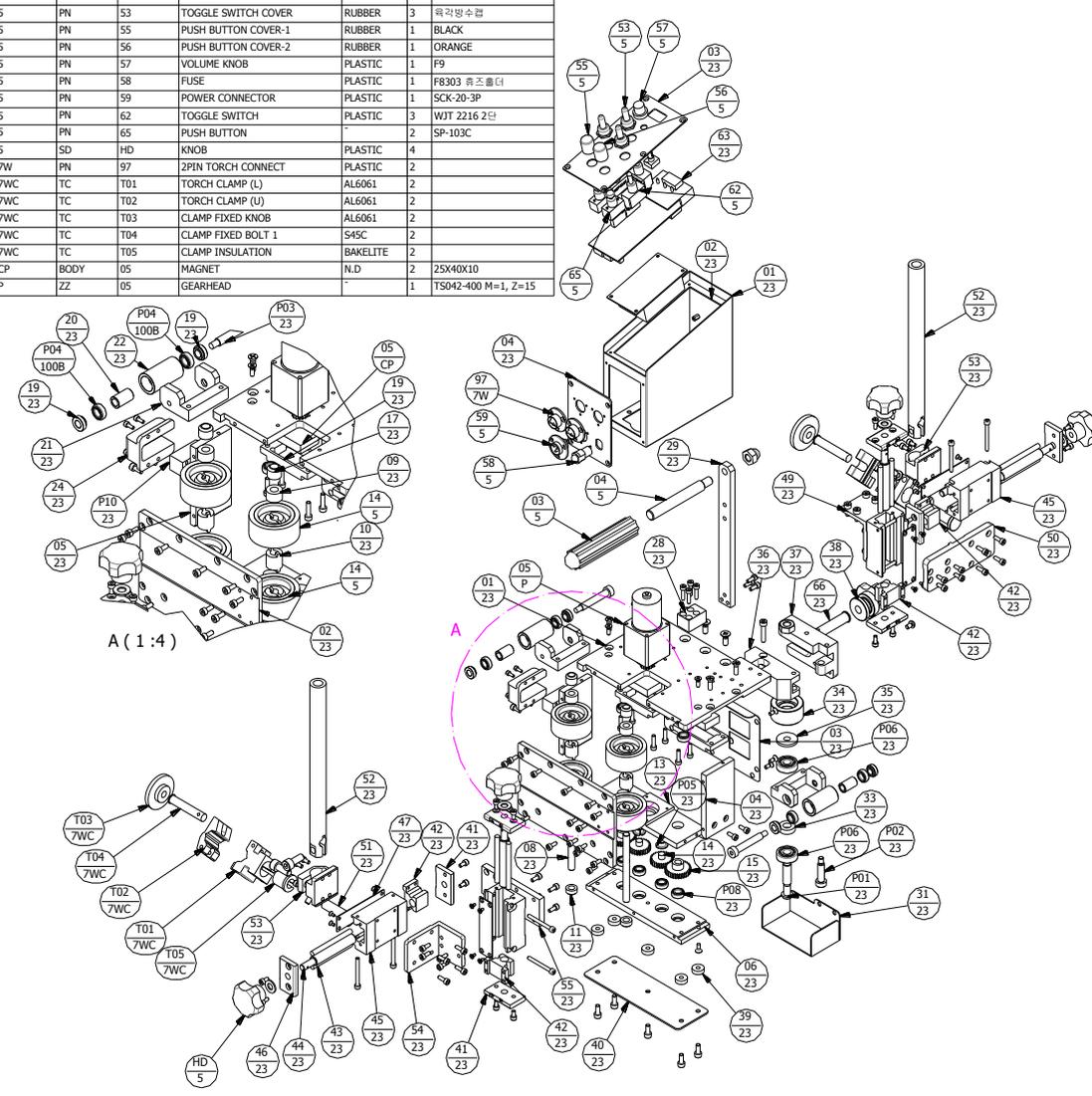


DATE		UNIT	mm	TITLE	BODY PART
SCALE	1 / None	PROJECTION			1 BAR 2POLE ASSY.dwg
DRAWING	CHECKED	REVIEWED	APPROVED	PROJECT	1-BAR WELDING CARRIAGE(TYPE: CS-231)
				DWG. No.	CS-231-4002
CHUNG SONG INDUSTRIES CO., LTD.					

11) Assembly plan

Parts List						
CS	PART	NO	DESCRIPTION	MATERIAL	Q'T	COMMENTS
5	BD	03	HANDLE COVER	RUBBER	1	
5	BD	04	GRIP BRACKET	SS400	1	
5	BD	14	WHEEL-2	RUBBER	4	φ50
5	BD	14	WHEEL-1	AL6061	4	
5	PN	53	TOGGLE SWITCH COVER	RUBBER	3	흑각방수캡
5	PN	55	PUSH BUTTON COVER-1	RUBBER	1	BLACK
5	PN	56	PUSH BUTTON COVER-2	RUBBER	1	ORANGE
5	PN	57	VOLUME KNOB	PLASTIC	1	F9
5	PN	58	FUSE	PLASTIC	1	F8303 유즈홀더
5	PN	59	POWER CONNECTOR	PLASTIC	1	SCK-20-3P
5	PN	62	TOGGLE SWITCH	PLASTIC	3	WJT 2216 2단
5	PN	65	PUSH BUTTON	-	2	SP-103C
5	SD	HD	KNOB	PLASTIC	4	
7W	PN	97	2PIN TORCH CONNECT	PLASTIC	2	
7WC	TC	T01	TORCH CLAMP (L)	AL6061	2	
7WC	TC	T02	TORCH CLAMP (U)	AL6061	2	
7WC	TC	T03	CLAMP FIXED KNOB	AL6061	2	
7WC	TC	T04	CLAMP FIXED BOLT 1	S45C	2	
7WC	TC	T05	CLAMP INSULATION	BAKELITE	2	
CP	BODY	05	MAGNET	N.D	2	25X40X10
P	ZZ	05	GEARHEAD	-	1	TS042-400 M=1, Z=15

Parts List						
CS	PART	NO	DESCRIPTION	MATERIAL	Q'T	COMMENTS
100B	BD	P04	ROLLER BEARING	SUJ2	4	688ZZ
23	BD	01	BODY BASE	AL6061	1	
23	BD	02	BACK PLATE	AL6061	1	
23	BD	03	BOTTOM COVER	SUS	1	
23	BD	04	SIDE PLATE(R)	AL6061	1	
23	BD	05	SIDE PLATE(L)	AL6061	1	
23	BD	06	BOTTOM BRACKET	AL6061	1	
23	BD	08	WHEEL SHAFT	S45C	2	
23	BD	09	WHEEL SHAFT BUSH(U)	AL6061	2	
23	BD	10	SHAFT HOUSING BRACKET	AL6061	2	
23	BD	11	WHEEL SHAFT BUSH(D)	AL6061	2	
23	BD	13	SUPR CASE-1	AL6061	1	
23	BD	14	스피어 기어1	S45C	2	M=1, Z=26
23	BD	15	스피어 기어2	S45C	2	M=1, Z=30
23	BD	17	CHAIN SPROCKET BUSH(R)	AL6061	2	
23	BD	19	MAGNET CASE-1	AL6061	2	
23	BD	19	UPPER GUIDE ROLLER BUSH	SS400	4	
23	BD	20	UPPER GUIDE ROLLER BUSH-2	SS400	2	
23	BD	21	UPPER GUIDE BRACKET-1	AL6061	2	
23	BD	22	UPPER GUIDE ROLLER	SUS	2	
23	BD	24	SENSOR COVER	AL6061	1	
23	BD	28	HANDLE BRACKET(2)	AL6061	1	
23	BD	29	HANDLE BRACKET(1)	AL6061	1	
23	BD	31	SPATTER COVER-2	AL6061	1	
23	BD	33	SLIDE ROLLER BUSH-2	SS400	1	
23	BD	34	SLIDE ROLLER	SUS	1	
23	BD	35	SLIDE ROLLER BUSH	SS400	1	
23	BD	36	SLIDE ROLLER HOUSING	AL6061	1	
23	BD	37	WHEEL SLIDE BSAE	AL6061	1	
23	BD	38	SLIDE ROLLER KNOB	AL6061	1	
23	BD	39	HEATING SPACE	AL6061	5	
23	BD	40	HEATING COVER	B.S	1	
23	BD	66	CLAMP FIXED BOLT	S45C	1	
23	BD	P01	남반미리리 흑연나사(+), M10-45L	SUS	1	
23	BD	P02	STRIPPER BOLT (2)	SCM435	1	8X25L
23	BD	P03	STRIPPER BOLT(1)	SCM435	2	8X45L
23	BD	P05	DU BUSH	-	2	플랜지타입 축경φ8X6L
23	BD	P06	SLIDE ROLLER SHAFT BEARING	STEEL	2	6000ZZ
23	BD	P08	SHAFT BEARING	S45C	6	688Z
23	BD	P10	SENSOR_PSN17-5DN	PLASTIC	1	
23	PN	01	PANEL(2POLE)	SS41(광경)	1	
23	PN	02	NAME PANEL FRAME	SS41(광경)	1	
23	PN	03	NAME PANEL(2pole)	AL6061	1	
23	PN	04	CONNECT PLATE	AL6061	1	
23	PN	63	MAIN PCB	PLASTIC	1	
23	SD	41	Y-SLIDE BRACKET-2	AL6061	4	
23	SD	42	SLIDE SUPPORT	AL6061	4	
23	SD	43	SLIDE BAR	SS400	8	
23	SD	44	SLIDE BOLT (L)	S45C	4	
23	SD	45	X-SLIDE FLANGE	AL6061	4	
23	SD	46	Y-SLIDE BRACKET-1	AL6061	4	
23	SD	47	Y-SLIDE COVER-2	AL6061	4	
23	SD	49	SLIDE FIXED BRACKET(L)	AL6061	1	L-TYPE
23	SD	50	Z-SLIDE FIXED BRACKET(I)	AL6061	1	I-TYPE
23	SD	51	TORCH CLAMP BRACKET	AL6061	2	
23	SD	52	ARM	AL6061	2	
23	SD	53	ARM CLAMP	AL6061	2	
23	SD	54	Z-SLIDE FIXED BRACKET(L)	AL6061	1	L-TYPE
23	SD	55	SLIDE FIXED BRACKET(I)	AL6061	1	I-TYPE



DATE	2023-11-20	UNIT	mm	TITLE	ASSEMBLY
SCALE	1/1 New	PROJECTION		TITLE	1 BAR 2POLE ASSY
DRAWING	CHECKED	REVIEWED	APPROVED	PROJECT	AUTO CARRIAGE (TYPE : CS)
CS				DWG. No.	001
CHUNG SONG INDUSTRIES CO., LTD.					