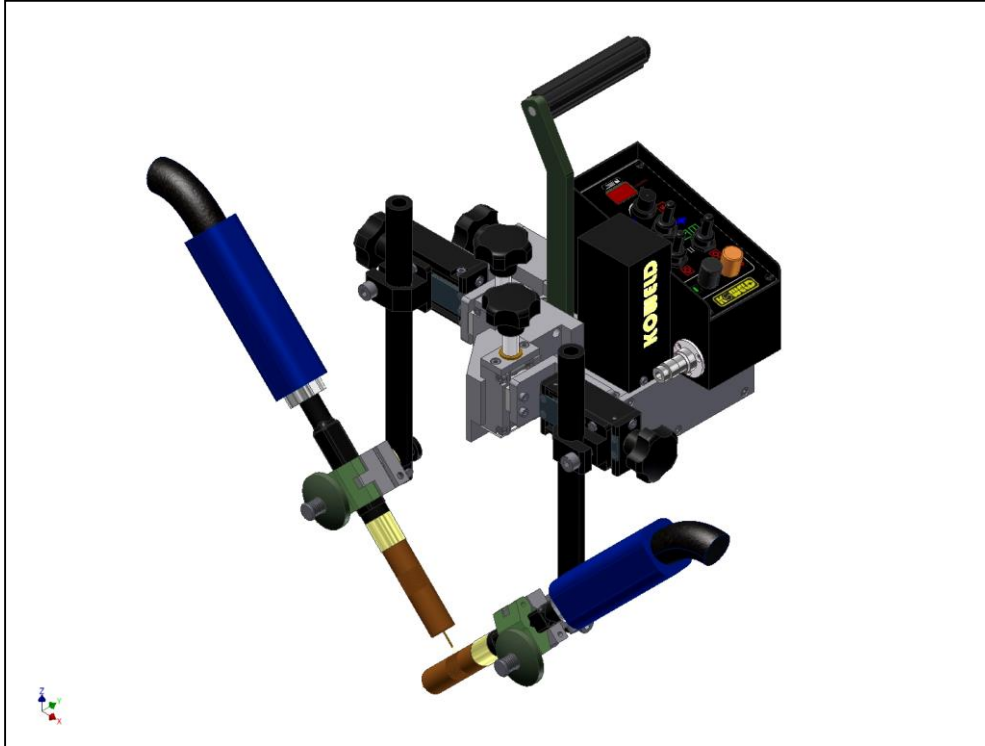


# CS-241 USER MANUAL



**CHUNG SONG INDUSTRY CO., LTD.**

**MADE IN KOREA**

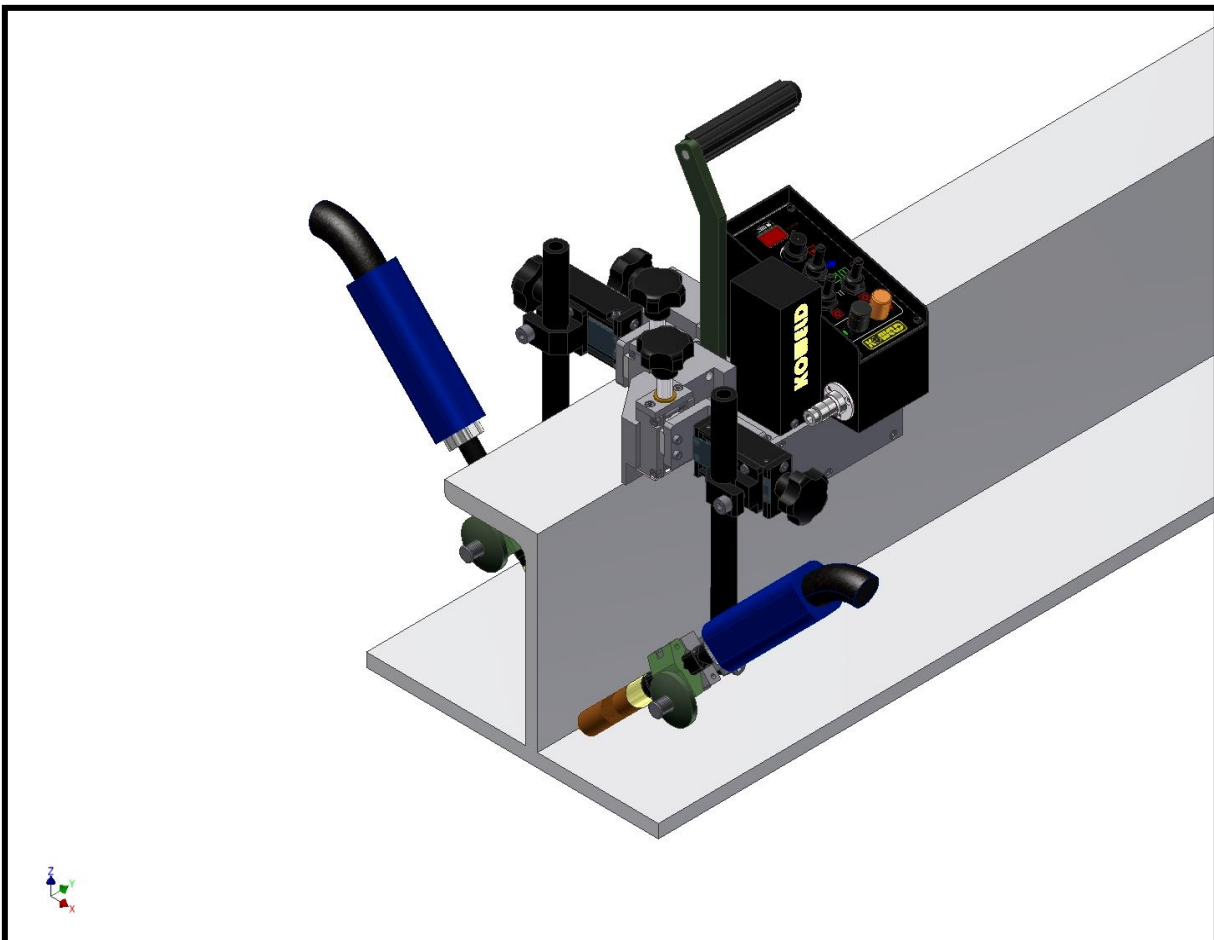
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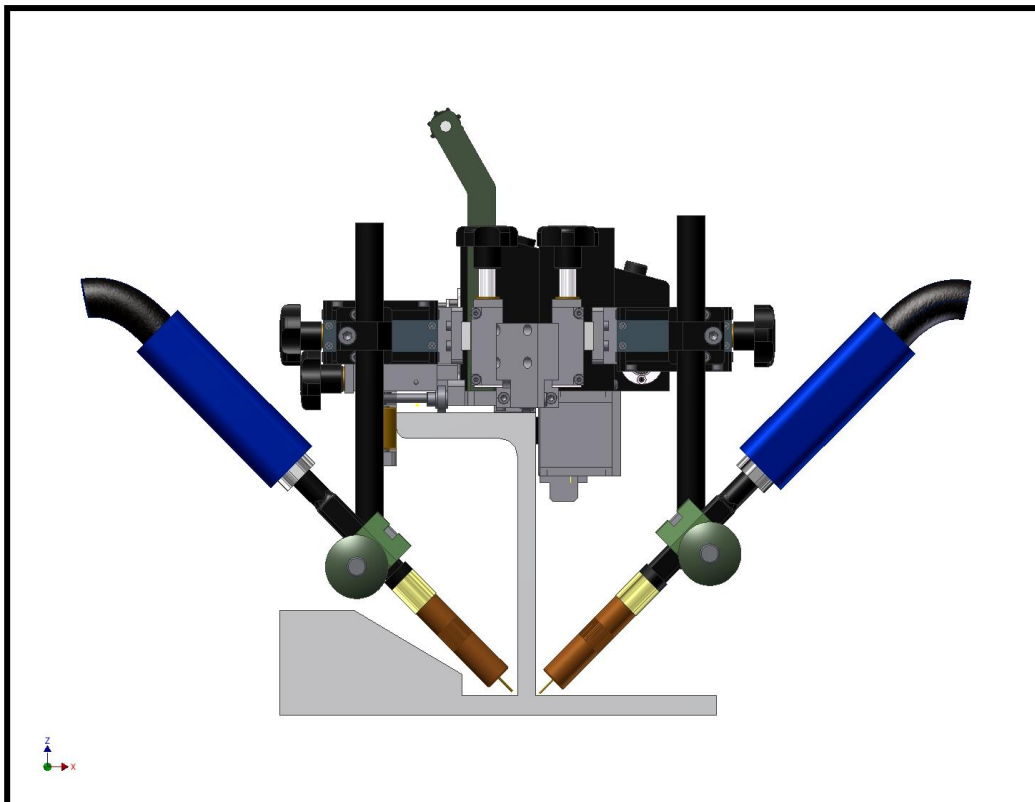
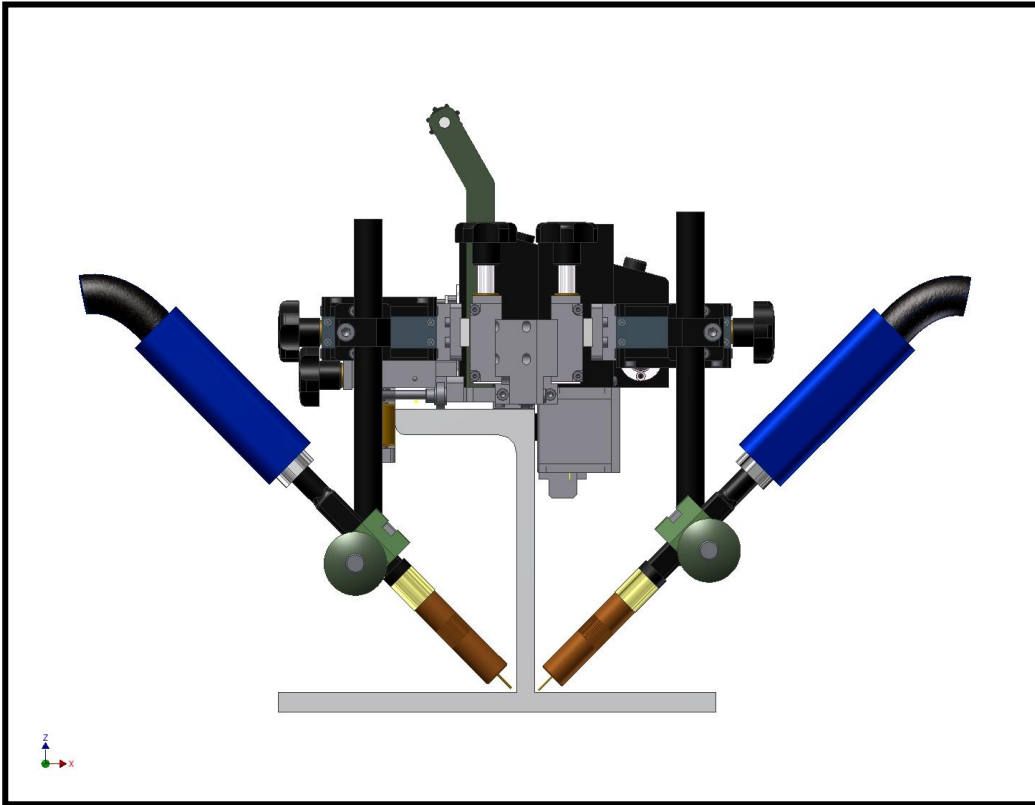
## 1) OUTLINE and CHARACTERISTICS

- ① Angle-Bar welder both of Stitch and Contineous welds by 2-torch offers the highest work effency.
- ② Minimized gear backlash offers various constant speed/adjustable controls precisely thus the highest quality welding and a long life by means of a Special Motor with a Reducer.
- ③ Limit switches stop carriage travel and welding while activating.
- ④ Crate fill at the beginning and end of welding.
- ⑤ Magnet release handle offers easy to mount and dismount.
- ⑥ Stitch and Contineous welds and the travel speed in Cm/Min or Inch/Min programmable in acc with the User Manual.
- ⑦ Torches accept both Straight and Bent.



## 2) APPLIED MATERIALS SHAPE and POSTURE

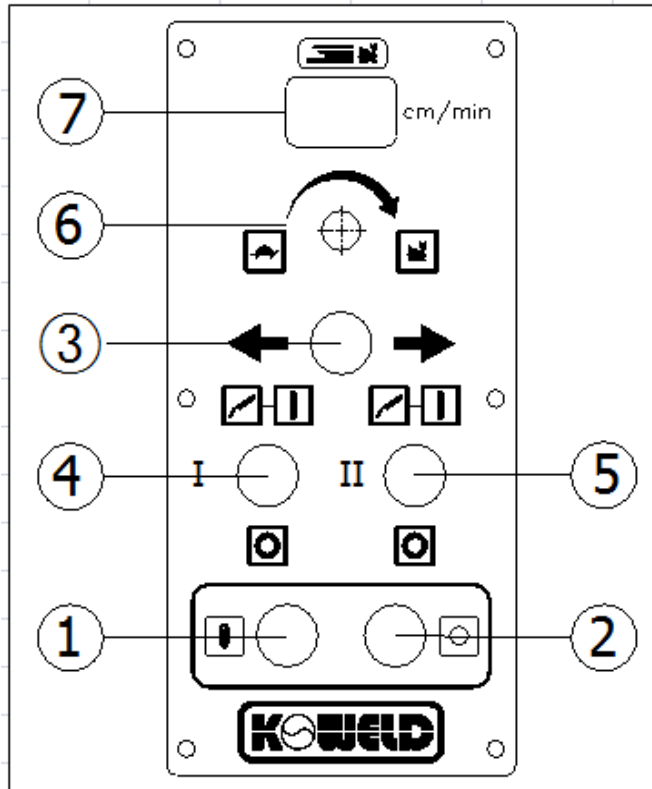
### \* APPLIED MATERIALS SHAPE



### 3) MAIN SPECIFICATIONS

Division	Configuration	Unit	Specification	Remarks
GENERAL	Model	Set	CS-241	Carriage
	Size (WxLxH)	mm	356(W) * 354(L) * 278(H)	-
	Weight	Kg	6.6 Kg	-
BODY	BODY	-	Material : AL6061	-
	Driving Motor	-	DC 24V, 12W, 5000RPM	DC Brushless motor
	Gear Ratio	-	400 : 1	-
	Driving Method	-	2 WHEELS-CHAIN-DRIVER MOTOR	-
	Input Power	-	AC 110V~230V , 50-60Hz	-
	Driving Speed	cm/min	0~98 cm/min	-
	Magnet		Magnetic Power:16kg ,Traction Power:23kg	
SLIDE	ROLLER-SLIDE	mm	0~45mm	-
	X-SLIDE	mm	0~50mm	
	Z-SLIDE	mm	0~20mm	-
TORCH	UP/DOWN ANGLE	mm	35° ~ 55°	-
	RUNNING ANGLE	mm	±3°	
BODY CONTROL		-	Start/Stop,Driving Speed Adjust, Direction Change,Welding/Non-Welding(1),Welding/Non-Welding(2)	-
OTHER	Standard Supply Scope Composed Items for Equipment Warehousing	-	1.CARRIAGE	1PC
			2.POWER CABLE 1.0SQ*3C*30M	1PC
			3.WRENCH	1PC
			4.FUSE 2A	2PCS
			5.CONNECTOR 1-POWER 1-TORCH	2PCS
			6.User Manual	1PC

#### 4) CONTROL PANEL OPERATION EXPLANATION



① DRIVING START BUTTON

CARRIAGE starts operation, if BUTTON is pressed.

② DRIVING END BUTTON

All operations of CARRIAGE stop, if DRIVING END BUTTON is pressed during the operation of CARRIAGE.

③ UPWARD/DOWNWARD SELECTION SWITCH

This is a SWITCH to select the Driving Direction of the CARRIAGE.

CARRIAGE drives to upward direction if CARRIAGE is operated after SWITCH is set to upward direction, and drives to downward direction if CARRIAGE is operated after SWITCH is set to downward direction.

④ WELDING/NON-WELDING(1) SELECTION SWITCH

This is the WELDING/NON-WELDING SELECTION SWITCH of the TORCH.

⑤ WELDING/NON-WELDING(2) SELECTION SWITCH

This is the WELDING/NON-WELDING SELECTION SWITCH of the TORCH.

⑥ DRIVING SPEED ADJUSTMENT VOLUME

This is a VOLUME to adjust the DRIVING SPEED of the CARRIAGE.

DRIVING SPEED of the CARRIAGE becomes faster if VOLUME is turned clockwise.

⑦ DISPLAY (F.N.D)

Can see travel speed value as DISPLAY(F.N.D)

## 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-100C TYPE is needed.
- CO<sub>2</sub> Gas Tank for Welding is needed.
- TORCH for CO<sub>2</sub> 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 RAIL at the WELDING Position.
- 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.)
- Adjust the Desired WEAVING WIDTH.
- Select the Desired DWELL TIME.
- Set the Welding Condition that should be fit for a Work to the CARRIAGE.
- Check if CO<sub>2</sub> Gas is properly Supplied.
- Start Welding Work.

(Start the Welding Work by pressing the ①Driving Start BUTTON after switching ON the Welding Selection 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 BOX 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

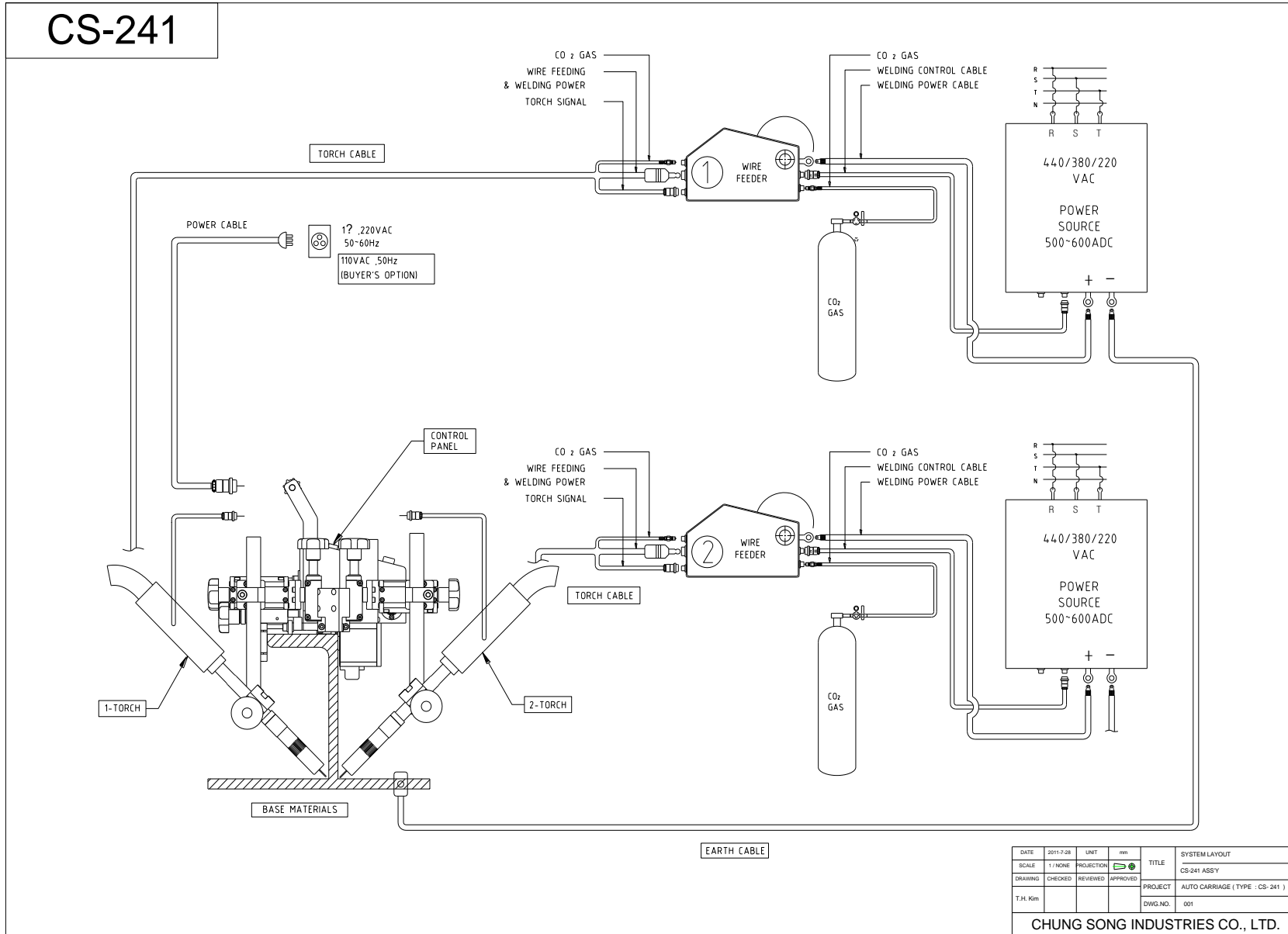
## 8) Part List

CS	NO.	DESCRIPTION	EA	MAT'	REMARK
IB	56	TORCH CLAMP(L)-2	2	AL6061	
IA	11	WHEEL SHAFT BUSH	2	SS400	
GSUB	742	PUSH BUTTON COVER	2	RUBBER	BLACK
GE	1003	FUSE	1	PLASTIC	F8303 FUSE HOLDER
GE	1008	PUSH BUTTON COVER(BS)	2	B.S	
GE	1090	VOLUME KNOB	1	PLASTIC	F9
GE	1108	TOGGLE SWITCH COVER	3	RUBBER	Hex Waterproof Cap
GCON	1006	POWER CONNECTOR	1	-	SCK-20-3R
GCON	1016	TORCH CONNECTOR	2	PLASTIC	SCK-16-2R
DC	18	ROLLER SLIDE BAR	2	S45C	
DC	01	MAIN PLATE	1	AL6061	
DC	02	FRONT PLATE	1	AL6061	
DC	03	LOWER PLATE	1	AL6061	
DC	04	SIDE PLATE(L)	1	AL6061	
DC	04-1	SIDE PLATE(R)	1	AL6061	
DC	05	WHEEL COVER	1	SUS304	
DC	06	SLIDE SHAFT	1	S45C	
DC	07	MOTOR SHAFT	1	S45C	
DC	08	WHEEL	2	ALDC12	ø50
DC	09	Z_SLIDE BRACKET	3	AL6061	
DC	10	SUPPORT BRACKET	1	AL6061	
DC	11	SLIDE ROLLER	1	B.S	
DC	11	GUIDE ROLLER SLIDE BRACKET	1	AL6061	
DC	12	MOVEING PLATE	1	AL6061	2LINE LEFT Screw M12
DC	13	SUPPORT PLATE	1	AL6061	
DC	14	MOTOR SPATTER COVE	1	STEEL	
DC	14	SLIDE ROLLER COLLAR	2	SS400	
DC	15	MOTOR BRACKET	1	AL6061	
DC	15	GUIDE ROLLER SLIDE FLANGE	1	AL6N01	
DC	16	ROLLER FIXED BRACKET-4	1	AL6061	
DC	17	MAGNET CASE	1	AL6061	
DC	18	MOTOR COVER	1	AL6061	
DC	19	ROLLER FIXED BRACKET-3	1	AL6N01	
DC	20	Z-SLIDE SUPPORT	2	AL6061	2LINE LEFT Screw M12

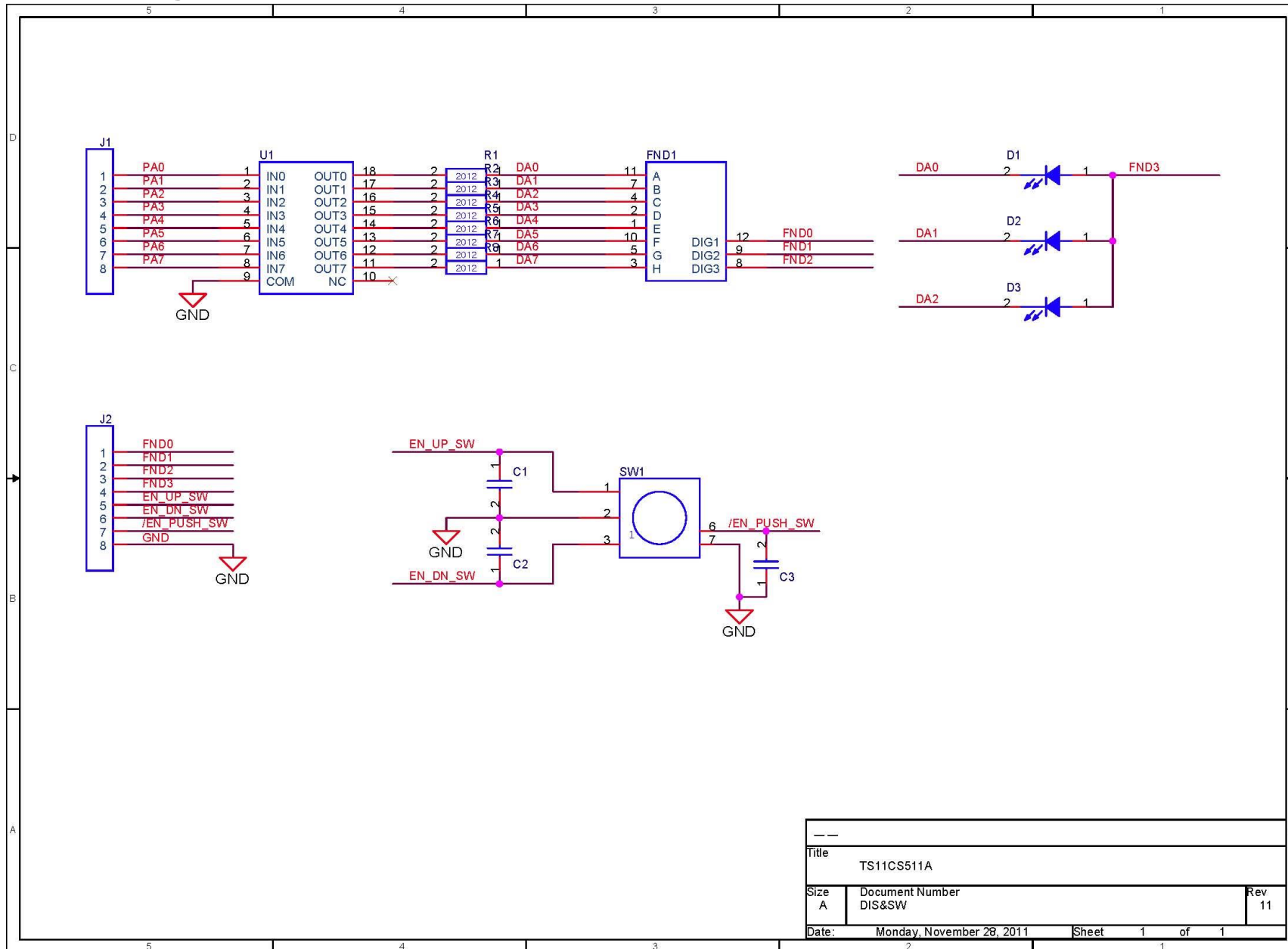
CS	NO.	DESCRIPTION	EA	MAT'	REMARK
DC	20	HANDLE BRACKET(1)	1	AL6061	
DC	21	X-Y SLIDE FIXED BRACKET	2	AL6061	
DC	21	SENSOR COVER	1	AL6061	
DC	23	SENSOR BUSH COVER	1	AL6061	
DC	24	CHAIN	1	STEEL	
DC	25	TENSION BEARING	1	-	606ZZ
DC	26	ROLLER BEARING	4	-	626ZZ
DC	27	SHAFT BEARING	3	-	688Z
DC	28	DU BUSH	2	S70C	DB0610
DC	29	CHAIN SPROCKET	2	S45C	CHAIN TYPE 05 B
DC	30	SENSOR BUSH	1	B.S	
DC	32	SLIDE BOLT	1	S45C	2LINE LEFT Screw M12
DC	33	GUIDE ROLLER BEARING	4	-	686ZZ
DC	34	SLIDE MOVEING BAR	2	S45C	
DC	37	SLIDE BAR (44L)	4	S45C	L50
DC	38	VERTICAL SLIDE FLANGE	2	AL6N01	L55
DC	39	PANEL	1	STEEL	BLACK
DC	42	Y-SLIDE BOLT (L)	2	S45C	2LINE LEFT Screw M12
CP	12	MAGNET	2	N.D	25X40X10
71	09	AC-DC CONVERTER KIKT	1	-	
7	17	SLIDE BOLT COVER	2	AL6061	
7	25	HANDLE BRACKET(2)	1	AL6061	
7	54-1	SLIDE END COVER	2	SUS304	
7	73	STOP SENSOR	1	-	MSP 103B
601	33	DC BRUSHLESS MOTOR	1	-	12W,5000RPM
5WB	56	CLAMP BUSH	2	BAKELITE	
5WB	64	TORCH CLAMP(U)	2	AL6061	
5WB	65	CLAMP FIXED KNOB	2	AL6061	
5WB	66	CLAMP FIXED BOLT	2	S45C	L57
5	03	GRIP BRACKET	1	SS400	
5	04	HANDLE COVER	1	RUBBER	
5	HD	KNOB	5	PLASTIC	
23	03	NAME PANEL(2pole)	1	AL6061	
23	41	Y-SLIDE BRACKET-2	2	AL6061	
23	42	SLIDE SUPPORT	2	AL6061	

CS	NO.	DESCRIPTION	EA	MAT'	REMARK
23	43	SLIDE BAR	4	SS400	
23	44	SLIDE BOLT (L)	2	S45C	
23	45	X-SLIDE FLANGE	2	AL6061	
23	46	Y-SLIDE BRACKET-1	2	AL6061	
23	47	Y-SLIDE COVER-2	2	AL6061	
23	51	TORCH CLAMP BRACKET	2	AL6061	
23	52	ARM	2	AL6061	
23	53	X-ARM CLAMP	2	AL6061	
23	63	MAIN PCB	1	PLASTIC	2-TORCH
100C	32	GEARD MOTOR	1	STEEL	400:1 ∅8

# 9) Block Diagram

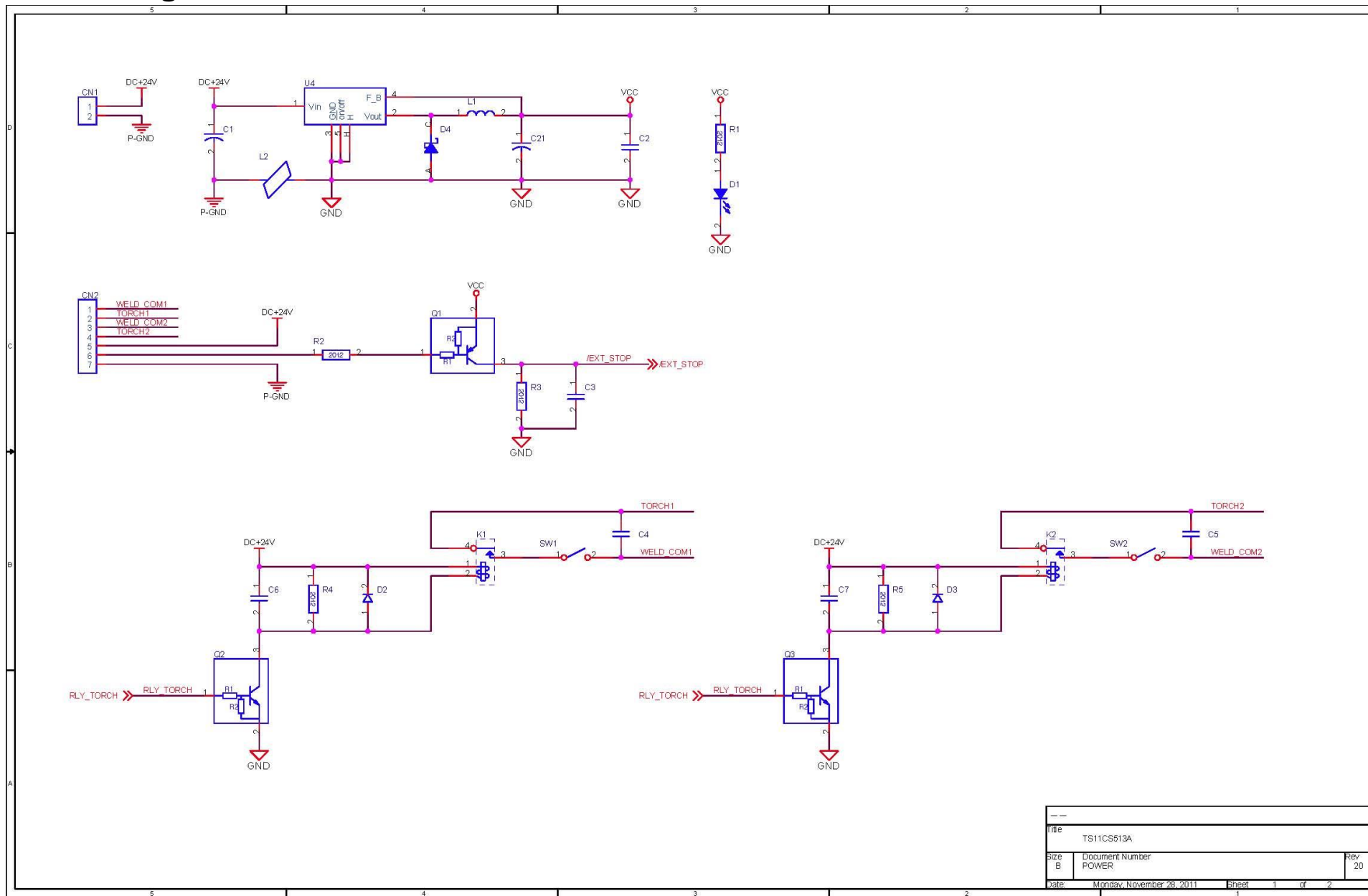


# 10) Circuit diagram



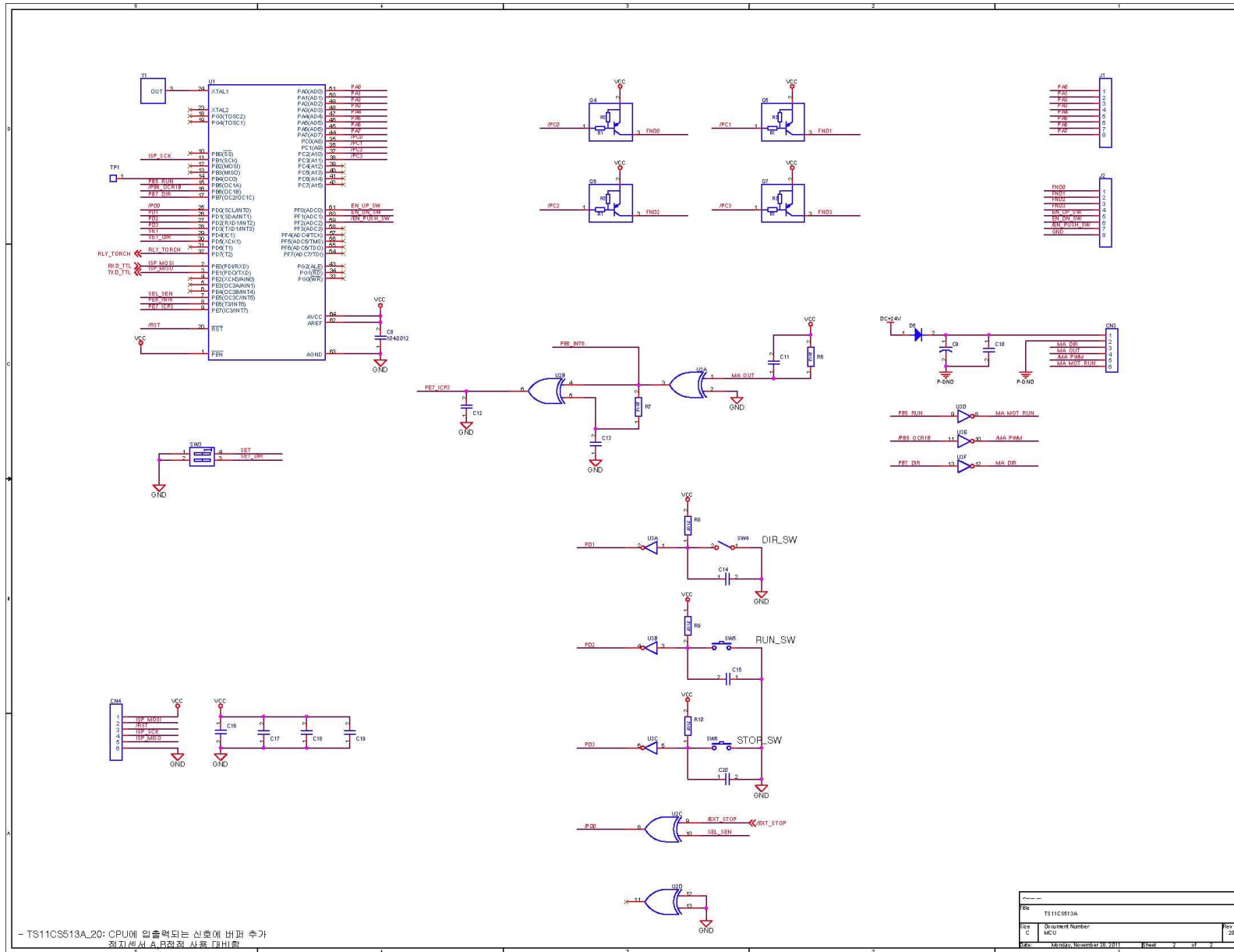
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Size A	Document Number DIS&SW	Rev 11
Date:	Monday, November 28, 2011	Sheet 1 of 1

# 10) Circuit diagram



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Title TS11CS813A		
Size B	Document Number POWER	Rev 20
Date: Monday, November 28, 2011	Sheet 1	of 2

# 10) Circuit diagram

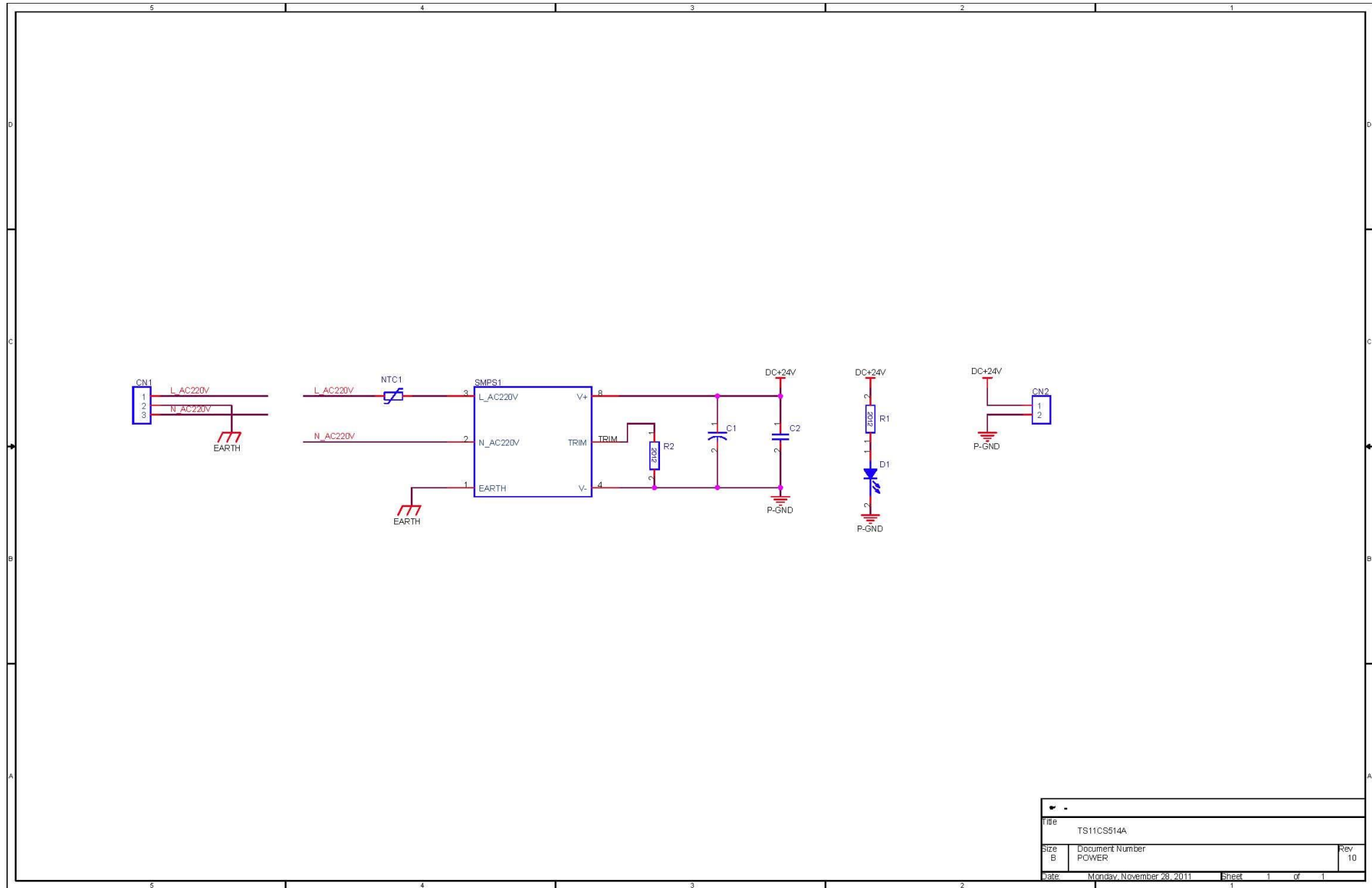


- TS11C5S13A\_20: CPU에 임출력되는 신호에 버퍼 추가  
정지센서 A, B점접 사용 대비함

File	TS11C5S13A	Rev	
Rev	MCU	Doc	20
Date	Monday, November 20, 2011	Sheet	2 of 2



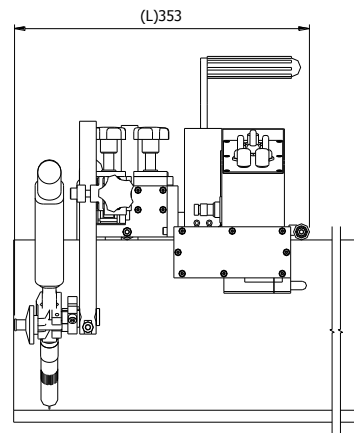
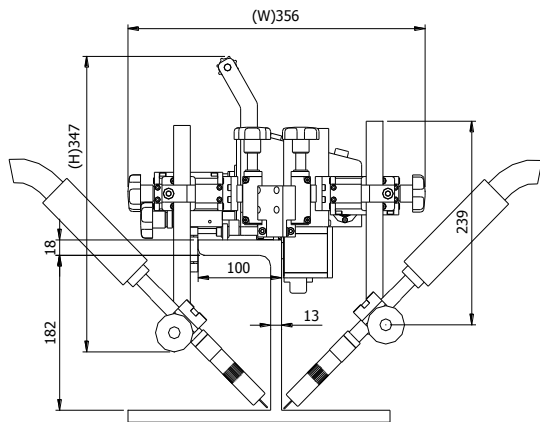
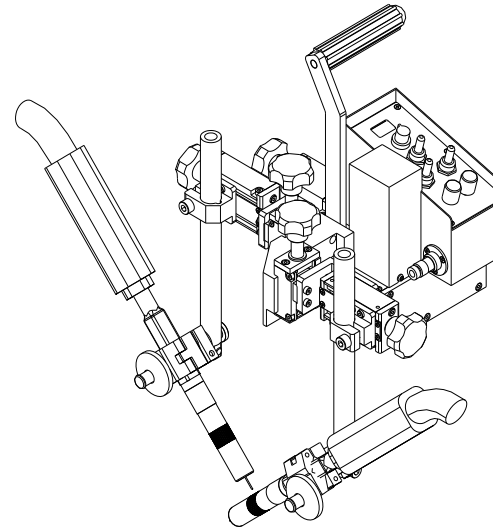
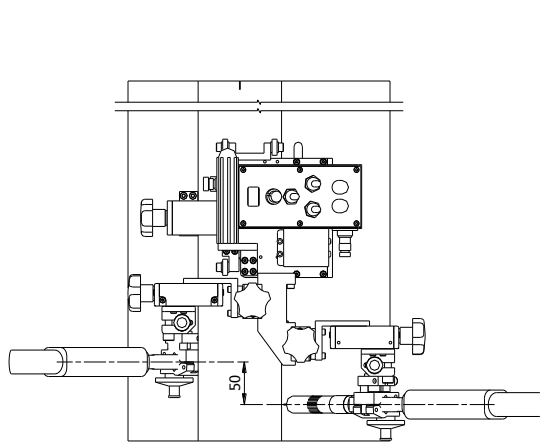
# 10) Circuit diagram



Title		
TS11CS614A		
Size	Document Number	Rev
B	POWER	10
Date	Monday, November 28, 2011	Sheet 1 of 1

# 11) Assembly plan

## CS-241



## CS-241

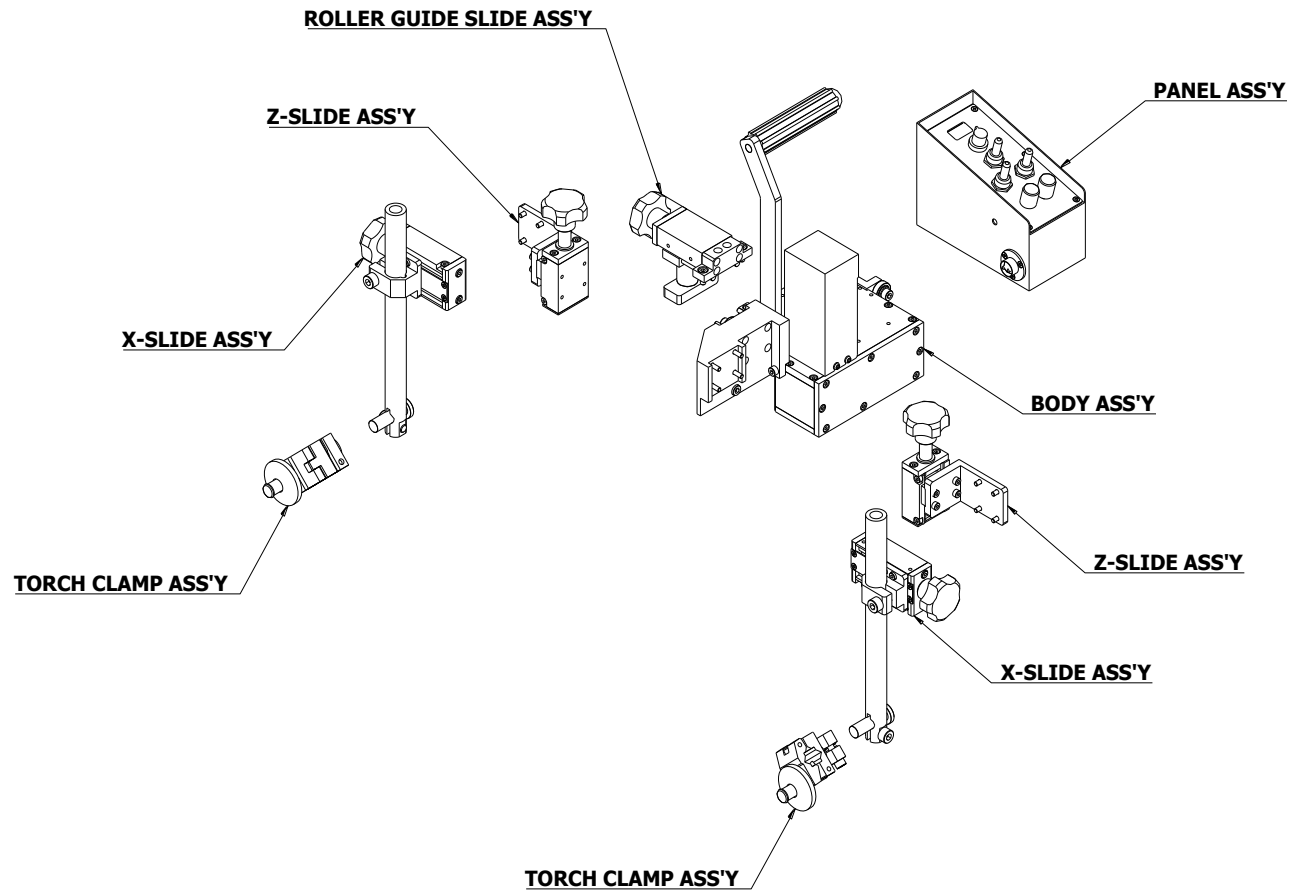
GENERAL SPECIFICATION		
구분	형식 및 사양	중량(Kg)
형식	ZWHEEL 재인구형, 용접 수행시 용접선 이탈방지 MAGNET 부착, 2 TORCH 사용	
재원	DIMENSION : 354(L) X 356(W) X 347(H)	약 6.6 Kg
BODY	주행속도 : 0~98 Cm/min±5% , 출력력/간인력 : 16Kg /23Kg 주행 모터 : BLDC 24V 12W 5000RPM 60Hz 1700RPM, 감속비 : 400 : 1	
ROLLER-SLIDE	좌우 이송 거리 : 0~45mm±5%	
Y-SLIDE	좌우 이송 거리 : 0~50mm±5%	
Z-SLIDE	상하 이송 거리 : 0~25mm±5%	
LEVER	고정형	
TORCH CLAMP	작업 각도 조절 35° ~55°, 진행각도 조절 ±3°	
CONTROL PANEL	입력전원 : AC220V, CONNECTOR: POWER 20-3P,TORCH 16-2P(2EA) 주행 시작 장치, 1번 용접, 2번 용접, 주행속도 조절, 방향 전환	

DATE	2010-05-03	UNIT	mm	TITLE	241 ASSEMBLY
SCALE	1 / None	PRODUCTION			241
DRAWING	CHECKED	REVIEWED	APPROVED	PROJECT	AUTO CARRIAGE ( TYPE : CS-241 )
CS				DWG. No.	001

CHUNG SONG INDUSTRIES CO., LTD.

# 11) Assembly plan

## PART ASS'Y



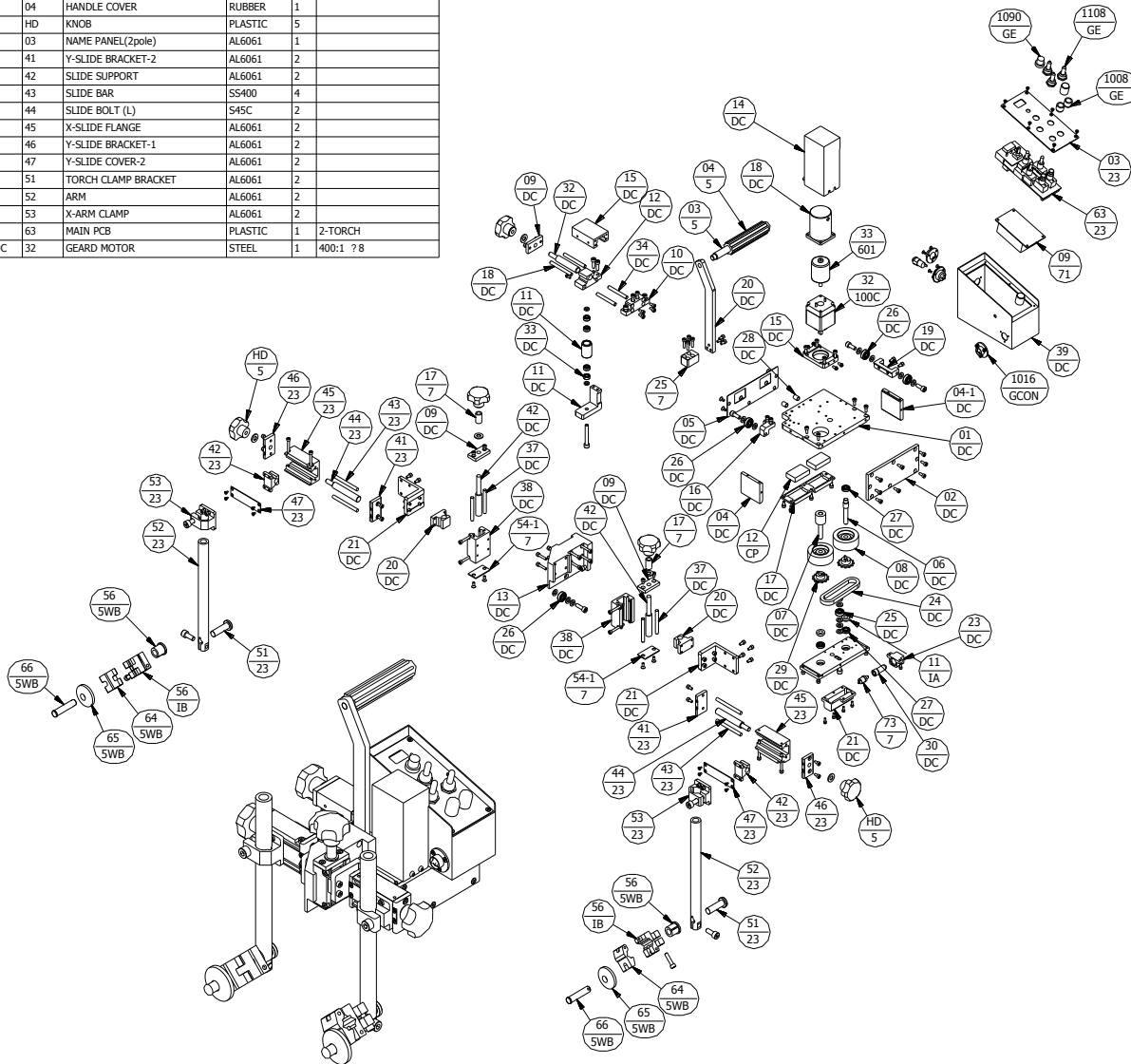
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SCALE	1 / None	PROJECTION			24
DRAWING	CHECKED	REVIEWED	APPROVED	PROJECT	AUTO CARRIAGE ( TYPE : CS-24 )
CS				DWG. No.	002
CHUNG SONG INDUSTRIES CO., LTD.					

# 11) Assembly plan

## CS-241

Parts List					
CS	NO	DESCRIPTION	MATERIAL	QT	COMMENTS
SWB	64	TORCH CLAMP(U)	AL6061	2	
SWB	65	CLAMP FIXED KNOB	AL6061	2	
SWB	66	CLAMP FIXED BOLT	S45C	2	L57
5	03	GRIP BRACKET	SS400	1	
5	04	HANDLE COVER	RUBBER	1	
5	HD	KNOB	PLASTIC	5	
23	03	NAME PANEL(2pole)	AL6061	1	
23	41	Y-SLIDE BRACKET-2	AL6061	2	
23	42	SLIDE SUPPOT	AL6061	2	
23	43	SLIDE BAR	SS400	4	
23	44	SLIDE BOLT (L)	S45C	2	
23	45	X-SLIDE FLANGE	AL6061	2	
23	46	Y-SLIDE BRACKET-1	AL6061	2	
23	47	Y-SLIDE COVER-2	AL6061	2	
23	51	TORCH CLAMP BRACKET	AL6061	2	
23	52	ARM	AL6061	2	
23	53	X-ARM CLAMP	AL6061	2	
23	63	MAIN PCB	PLASTIC	1	2-TORCH
100C	32	GEARD MOTOR	STEEL	1	400:1 ? 8

Parts List					
CS	NO	DESCRIPTION	MATERIAL	QT	COMMENTS
IB	56	TORCH CLAMP(L)-2	AL6061	2	
IA	11	WHEEL SHAFT BUSH	SS400	2	
GSUB	742	PUSH BUTTON COVER	RUBBER	2	BLACK
GE	1003	FUSE	PLASTIC	1	F8303 퓨즈홀더
GE	1008	PUSH BUTTON COVER(BS)	B.S	2	
GE	1090	VOLUME KNOB	PLASTIC	1	F9
GE	1108	TOGGLE SWITCH COVER	RUBBER	3	흑각방수캡
GCON	1006	POWER CONNECTOR	-	1	SCK-20-3R
GCON	1016	TORCH CONNECTOR	PLASTIC	2	SCK-16-2R
DC	18	ROLLER SLIDE BAR	S45C	2	
DC	01	MAIN PLATE	AL6061	1	
DC	02	FRONT PLATE	AL6061	1	
DC	03	LOWER PLATE	AL6061	1	
DC	04	SIDE PLATE(L)	AL6061	1	
DC	04-1	SIDE PLATE(R)	AL6061	1	
DC	05	WHEEL COVER	SUS304	1	
DC	06	SLIDE SHAFT	S45C	1	
DC	07	MOTOR SHAFT	S45C	1	
DC	08	WHEEL	ALDC12	2	? 50
DC	09	Z_SLIDE BRACKET	AL6061	3	
DC	10	SUPPORT BRACKET	AL6061	1	
DC	11	SLIDE ROLLER	B.S	1	
DC	11	GUIDE ROLLER SLIDE BRACKET	AL6061	1	
DC	12	MOVEING PLATE	AL6061	1	2중 좌입 M12
DC	13	SUPPORT PLATE	AL6061	1	
DC	14	SLIDE ROLLER COLLAR	SS400	2	
DC	14	MOTOR SPATTER COVE	STEEL	1	
DC	15	GUIDE ROLLER SLIDE FLANGE	AL6N01	1	
DC	15	MOTOR BRACKET	AL6061	1	
DC	16	ROLLER FIXED BRACKET-4	AL6061	1	
DC	17	MAGNET CASE	AL6061	1	
DC	18	MOTOR COVER	AL6061	1	
DC	19	ROLLER FIXED BRACKET-3	AL6N01	1	
DC	20	HANDLE BRACKET(1)	AL6061	1	
DC	20	Z-SLIDE SUPPORT	AL6061	2	2중 좌 M12
DC	21	X-Y SLIDE FIXED BRACKET	AL6061	2	
DC	21	SENSOR COVER	AL6061	1	
DC	23	SENSOR BUSH COVER	AL6061	1	
DC	24	CHAIN	STEEL	1	
DC	25	TENSION BEARING	-	1	606ZZ
DC	26	ROLLER BEARING	-	4	626ZZ
DC	27	SHAFT BEARING	-	3	688Z
DC	28	DU BUSH	S70C	2	DB0610
DC	29	CHAIN SPROCKET	S45C	2	제인 유휴 05 B
DC	30	SENSOR BUSH	B.S	1	
DC	32	SLIDE BOLT	S45C	1	2중 좌나사 M12
DC	33	GUIDE ROLLER BEARING	-	4	686ZZ
DC	34	SLIDE MOVEING BAR	S45C	2	
DC	37	SLIDE BAR (44L)	S45C	4	L50
DC	38	VERTICAL SLIDE FLANGE	AL6N01	2	L55
DC	39	PANEL	STEEL	1	BLACK
DC	42	Y-SLIDE BOLT (L)	S45C	2	2중 좌 M12
CP	12	MAGNET	N.D	2	25X40X10
71	09	AC-DC CONVERTER KIKT	-	1	
7	17	SLIDE BOLT COVER	AL6061	2	
7	25	HANDLE BRACKET(2)	AL6061	1	
7	54-1	SLIDE END COVER	SUS304	2	
7	73	STOP SENSOR	-	1	MSP 103B
601	33	DC BRUSHLESS MOTOR	-	1	12W,5000RPM
SWB	56	CLAMP BUSH	BAKELITE	2	



DATE	2010-05-03	UNIT	mm	TITLE	24 ASSEMBLY
SCALE	1 / None	PROJECTION			24
DRAWING	CHECKED	REVIEWED	APPROVED	PROJECT	AUTO CARRAGE ( TYPE : CS-24 )
CS				DWG. No.	003
CHUNG SONG INDUSTRIES CO., LTD.					