

OWNER'S MANUAL

RD-881IE

IMPORTANT: Read these instructions before installing, operating or servicing this product.

MODEL : TR-3500B / 6000B TURNING ROLLERS

Serial Number : 200706011 for CE

Revised Date: Nov. 21, 2007

UNITED PROARC CORPORATION

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PRIMARY POWER CONNECTION



WARNING

Read and understand this entire manual regarding the rules for users' safety before installing, operating, or servicing the equipment.

Please read this owner's manual carefully before connection of the wires to AC power. Wrong connection may damage the equipment.

Before connecting primary power, check the data plate to verify the voltage required by the TR-XX. Check the power supply line that corresponds to the machine's specification.

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INSTRUCTION



WARNING

A procedure, which if not properly followed, may cause injury to the operator or others in the operating area.



WARNING

Read and understand this entire manual regarding the rules for users' safety before installing, operating, or servicing the equipment.

Equipment Identification

The identification number specification or part number, model, and serial number of this unit usually appear on a nameplate attached to the control panel record these numbers for future reference.

Receipt of Equipment

When you receive the equipment, check it against the shipping documents. Make sure it is complete and inspect the equipment for possible damage during shipping. If there is any damage, notify the carrier immediately to file a claim.

Furnish complete information concerning damage claims or mistake(s) in shipment to United ProArc Corporation: No. 3 Gungye 10th Road, Pingjen Ind. Park, Pingjen City, Taoyuan 324, Taiwan. Include the equipment identification number along with a description of the parts in question.

Move the equipment to the installation site before uncrating the unit. Use care to avoid damaging the equipment when using bars, hammers, etc. to uncrate the unit.

INSTRUCTION



WARNING

Falling machine due to lifting device failure may cause death or injury.

- * Lifting device may fail when overloaded.
- * Avoid sudden jerks, drops or swinging.
- * Check lifting device components visually for looseness and signs of metal fatigue.
- * Before changing any hardware, check grade and size of bolts, and replace with bolts of equal or higher size and grade.

SAFETY PRECAUTIONS



WARNING

Operation and maintenance involves potential hazards. All operators and personnel should be alerted to possible hazards and precautions should be taken to prevent possible injury.

Electrical Safety

Machine :

- *The counter, safety device against excess current and electrical installation, are compatible with its maximum power and its main voltage.
- *The connection, single-phase or three-phase, is possible on a stand compatible with the plug of its cable link.
- *If the cable is connected with the electrical network, the earth must never be cut by the protection device against electrical shocks.

Work Place :

- *Be very careful to avoid contact between metal part and phase conductor and the neutral of electric network.
- *Electrical messes of different electrical machine and apparatus are connected between themselves and with the terminal of earth neutral wire.

Interventions :

- *Before control and repair, see the apparatus is switched off and insulated.
- *Connection with fixed installation cable is impossible.
- *It's on "STOP" and connection is impossible.
- *Some apparatus are provided with starting circuit HT HF (with a plate). Never enter into the corresponding switch cupboard.
- *Only qualified persons are authorized for intervention concerning electrical instillation

SAFETY PRECAUTIONS

Maintenance

- *Often check the insulation and connection good state of apparatus and electrical accessories: taps, appliance cords, coatings, switch, extension cords, etc.
- *Maintenance and repair of insulating coatings operations are very important.
- *Do repair with a specialist or better replace defective accessories.
- *Check regularly the right adjustment and the non-heating of electrical connections.

Individual Safety

- *The operator must be dressed and protected in relation with his work.
- *Avoid contacting metal parts connected or accidentally connected.
- *Wear leather gloves with gauntlet.
- *Safety clothes: gloves, apron, safety shoes protect the operator and his assistants against burns of hot parts, projections and slag.

LIMITED WARRANTY

UNITED PROARC CORPORATION warrants all new equipment to be free from defects in material and workmanship for a period of one (1) year, provided that the equipment is installed and operated according to instructions stated in this manual.

UNITED PROARC's obligation under this warranty policy is expressly limited to the replace or repair, at its option, of the defected part only. ProArc's option to repair or replacement of a defected part under this warranty shall be based on FOB Taiwan basis.

The warranty period begins on the date of sale to the original-purchase user of the equipment.

UNITED PROARC CORPORATION shall not be liable for any loss or consequential damage or express accruing directly or indirectly from the use of equipment covered by this warranty.

This warranty supersedes all previous ProArc warranties and is exclusive with no other guarantees or warranties expressed or implied.

This warranty excludes the consumable parts that are used in normal operation.

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1.1 INTRODUCTION

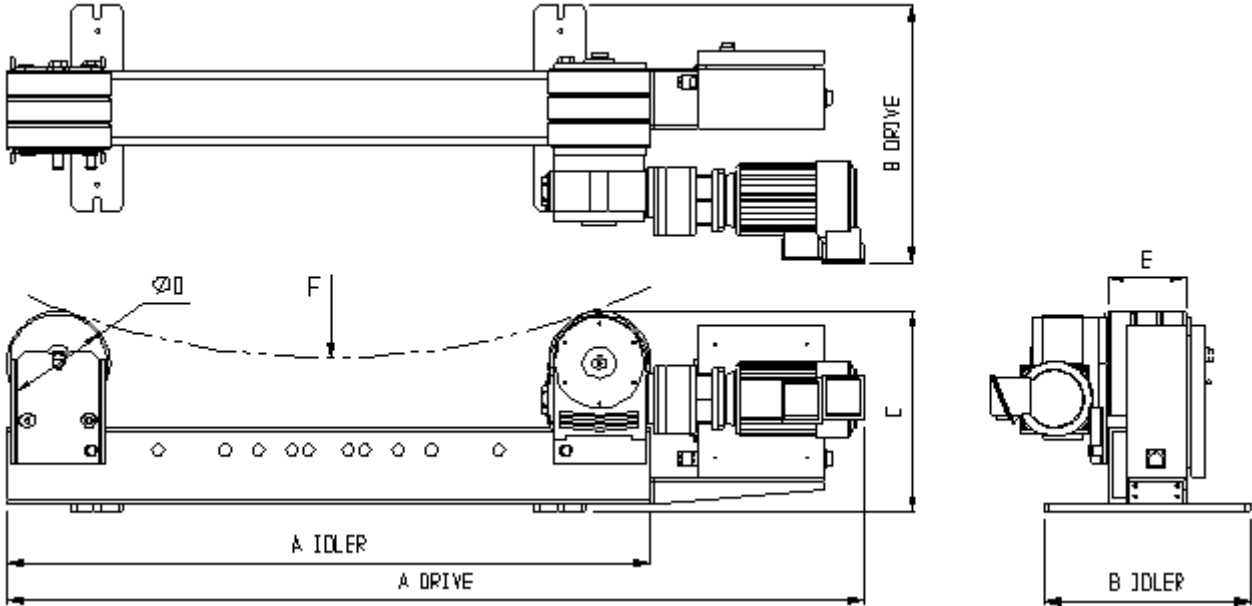
Instruction	<ul style="list-style-type: none">*The turning rollers can be applied on round shaped work pieces, such as tanks, drums, pressure and cylindrical vessels and pipe to do the sequential circumferential rotation.*The turning roller can be associated with manual welding or the automatic welding. For example: manipulator.*Suitable for various kinds of welding process: SMAW, MIG, TIG, Plasma welding.
Features	<ul style="list-style-type: none">*The machine is so designed that uses low-axial single-sided power rolls. The motor drive uses a shaft mounted worm reducer coupled on axis producing high torque and low clearances operation.*The rolls are wrapped with heat resistant, anti-spalling rubber. It has good friction and will minimize work piece slippage. Roll move method is done manually by hand with positioning-bar to lock The option is adjusted roll manually by the L/R screw. The operator must refer to 3.1 Installation & Adjustment (<i>page 4 of this manual</i>) for instruction to match the diameters of work piece.

1.2 SPECIFICATION

MODEL	UNIT	TR-3500B	TR-6000B
Power Input	~	1 Phase 220V 50/60Hz 3 Phase 460V 50/60Hz	
Rated capacity	KVA	0.5	0.5
NFB capacity	A	6 / 2	6 / 2
Turning Capacity	kg	3500	6000
Load Capacity	kg	3500	6000
Diameter Range (F)	mm	200-3000	
Speed Range	mm/min	60-1200	
Motor	hp	1/2	
Roller Dia. (D)	mm	200	
Roller Width (E)	mm	100	150
Roller Type	-	PU	
Overall Length (A)	mm	1665/1250 (Drive/Idler)	
Overall Width (B)	mm	505/400 (Drive/Idler)	
Overall Height (C)	mm	390	
Net Weight	kg	150/92 (Drive/Idler)	

Installation location	Altitude 1000M or below , Free from corrosive gas and liquid.
Ambient temperature	0~+40°C (non-condensing and not frozen)
Ambient humidity	Below 90%RH(non-condensing)
Storage temperature	-20~+60°C (non-condensing and not frozen)
Storage humidity	Below 90%RH(non-condensing)
International projection	IP 22

1.2 SPECIFICATION



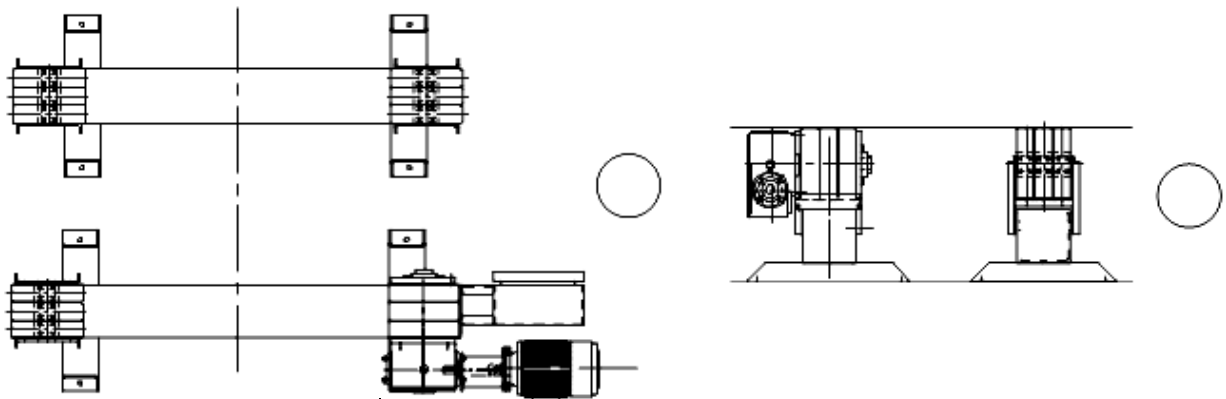
2.1 INSTALLATION & ADJUSTMENT

Instruction

During installation, please pay attention to the parallelism and horizontal height of the bed of drive/idler.

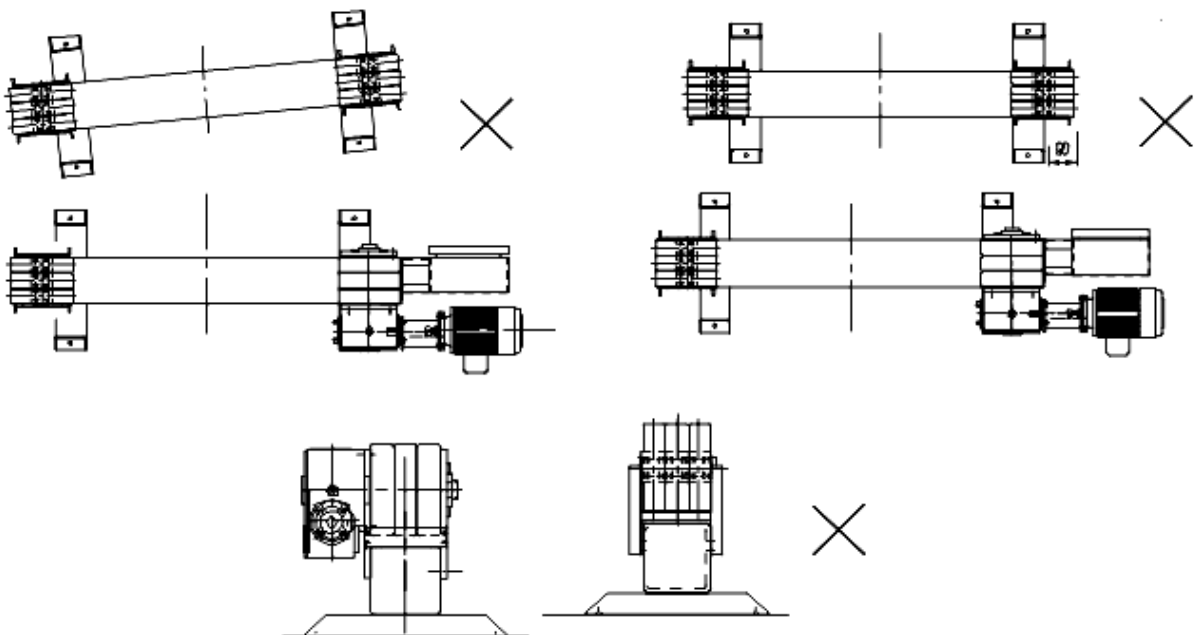
*When the ground is rugged, please adjust the screw of the base to make the height of bed horizontal and to prevent vibrations. Bed needs to be fixed on the ground to prevent any movement caused by vibration during operation.

*The correct installation method is as the following figure:



Faulty installation method:

*The following 3 installation methods should be avoided to prevent the work piece from falling down or prevent the turning roller from being damaged by the outside unusual force.



3.1 OPERATION INSTRUCTION

Instruction

*Correct loading angle--- **40°~ 60°**. When the loading angle is incorrect, the following situations would occur:

A. When the contact angle between work piece and turning roller is more than 60°, the roller would suffer from the improper squeeze or the work piece would be stuck between the rollers, which would cause the damage of the roller and shaft. The drive motor would burn down as well.

B. When the contact angle between work piece and turning roller is less than 40°, the work piece would slip or fall off. Before putting the work piece, the correct loading angle should be identified in advance to make the machine run normally.

*The calculation method of the loading angle and turning roller

C-C:

$$C-C = [(\sin \theta / 2) \times (r + D)] \times 2$$

Ex: Diameter of work piece (D) = ϕ 500mm

Radius of roller (r) = 202.5mm

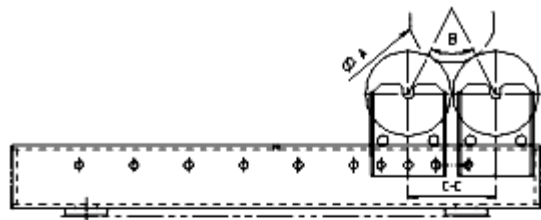
Loading angle = θ

Hence, roller C-C = 702.5

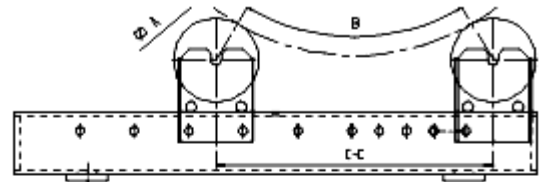
Please check this table before loading work pieces:

Roll-Roll	A-A	B-B	C-C	D-D	E-E	F-F	G-G	H-H	I-I
C-C	207	272	337	402	532	662	792	922	1052
Angle (A) \	Work-pieces Dimension (B)								
38.36~40.22	400	600	\	1000	1400	1800	2200	2600	3000
41.04~44.06	350	550	750	900	1300	1600	2000	2400	2800
44.10~47.32	\	500	650	800	1200	\	1800	2200	2600
47.70~49.32	300	450	600	\	1100	1400	\	2000	2400
51.96~54.52	250	400	550	700	1000	\	1600	1800	2200
57.08~60.18	\	350	500	600	900	1100	1400	\	2000
61.68~61.98	200	\	\	\	\	\	\	1600	1850

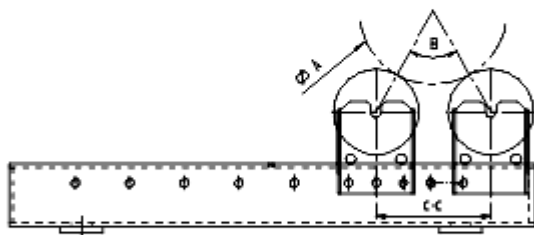
3.1 OPERATION INSTRUCTION



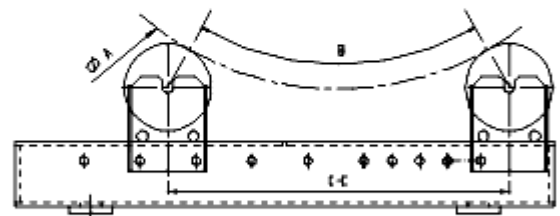
A-A



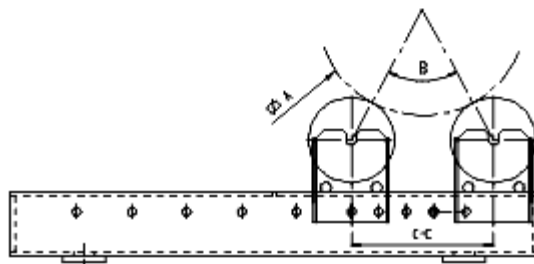
F-F



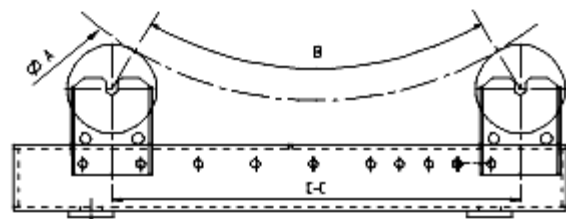
B-B



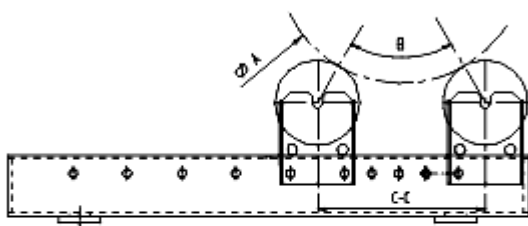
G-G



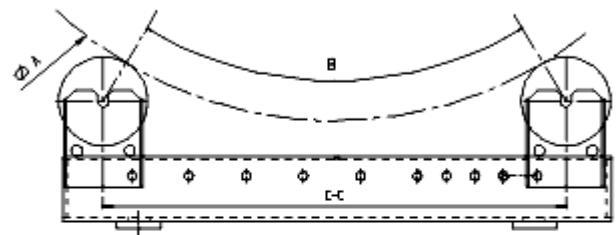
C-C



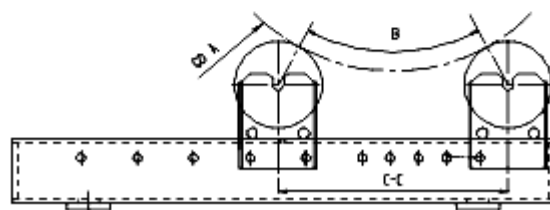
H-H



D-D



I-I



E-E

3.2 REMOTE CONTROL INSTRUCTION

1. Main power switch

System's main power - NFB switch (circuit breaker).

2. "Start" switch

Press to start the system – green light.

3. Remote control device

A. Speed meter

Shows the speed data (Hz.)

B. Speed knob

To increase speed, turn clockwise.

To decrease speed, turn counter clockwise.

C. Forward/Reverse

Indicates forward and reverse direction of the turning rollers.

CAUTION: [WHILE TURNING, PLEASE AVOID CHANGING DIRECTION.]

D. Run/Stop

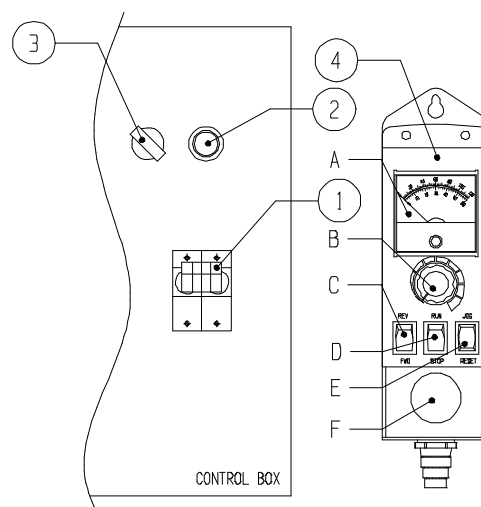
Set the "**Forward/Reverse**" direction followed by pressing the "**Run**" button to turn the rollers continuously. Press "**Stop**" button to stop the turning.

E. Jog/Reset

While the machine is not in motion, you can adjust to desired position slowly by pressing "**Jog**" function. When the inverter driver displays an error message, press "**Reset**" to clear the error and reset the system.

F. E-stop button

Press the emergency stop button to terminate the driver circuit.



4. 1 TROUBLESHOOTING GUIDE

NO.	SYMPTOM	POSSIBLE CAUSE	REMEDY
1	After switch on, the power light doesn't lit	1. NFB jumps off 2. No power input. 3. DC24V no output 4. Control PC board 5.The indicator light breaks down	1. To check the main circuit-disconnect or short 2. To inspect the AC power input voltage and phase 3.1 To inspect and make sure the switching power supply input voltage is correct or not? 3.2 To Check the Fuse was burn down or not? If yes, please replace new one. 4. Please refer the item 2 5.1 To make sure the voltage of indicator-DC24V 5.2 To inspect the indicator
2	Control PC board indicator(LED lamp) wasn't illuminated or damaged.	1.AC or DC power input disconnected 2.Fuse burn down.	1.To inspect power input voltage and phase 2.To inspect the F1 & F2 fuse working or not, If damaged, please replace a new one.
3	Inverter – no display.	1. Inverter has no power input. 2. Inverter has power input.	1.Check if magnetic contactor is defective (replace). 2. Check if inverter's digital remote panel is defective (replace).
4	Inverter – displays ALM.	1.Inverter Driver Display" ALM "data	1 .To make sure the Display status, and refer the inverter driver Trouble shooting.

4.1 TROUBLE SHOOTING GUIDE

NO	SYMPTOM	POSSIBLE CAUSE	REMEDY
5	The turntable has no movement.	1. Remote control breaks down 2 Control PC board 3 Inverter breaks down, no output 4 Failed motor 5 The reducer is damaged	1. Please refer the item 6 2 Please refer the item 2 3 Please refer the item 3&4 4 Check/change a new motor 5 Replace a new reducer
6	Remote switch has no action or speed control knob disable.	1. Snap switch damaged. 2. Potentiometer damaged. 3. Indicator was no work.	1. To check the snap switch connector is normal or not? And replace it. 2. To measuring the potentiometer resistance(5K Ω)is normal or not? If yes, please change a new one. 3. To change the indicator.
7	Remote Foot Control has no response, or cannot control speed.	1. Remote Foot Control limited switch failed 2. Potentiometer damaged.	1.1 Check the limited switch and its connector. Replace when required. 1.2 To make sure the activating position in the dog is correct. Adjust its position if required. 2. Measure the resistance of the potentiometer – should be about 5K Ω . Replace when necessary.

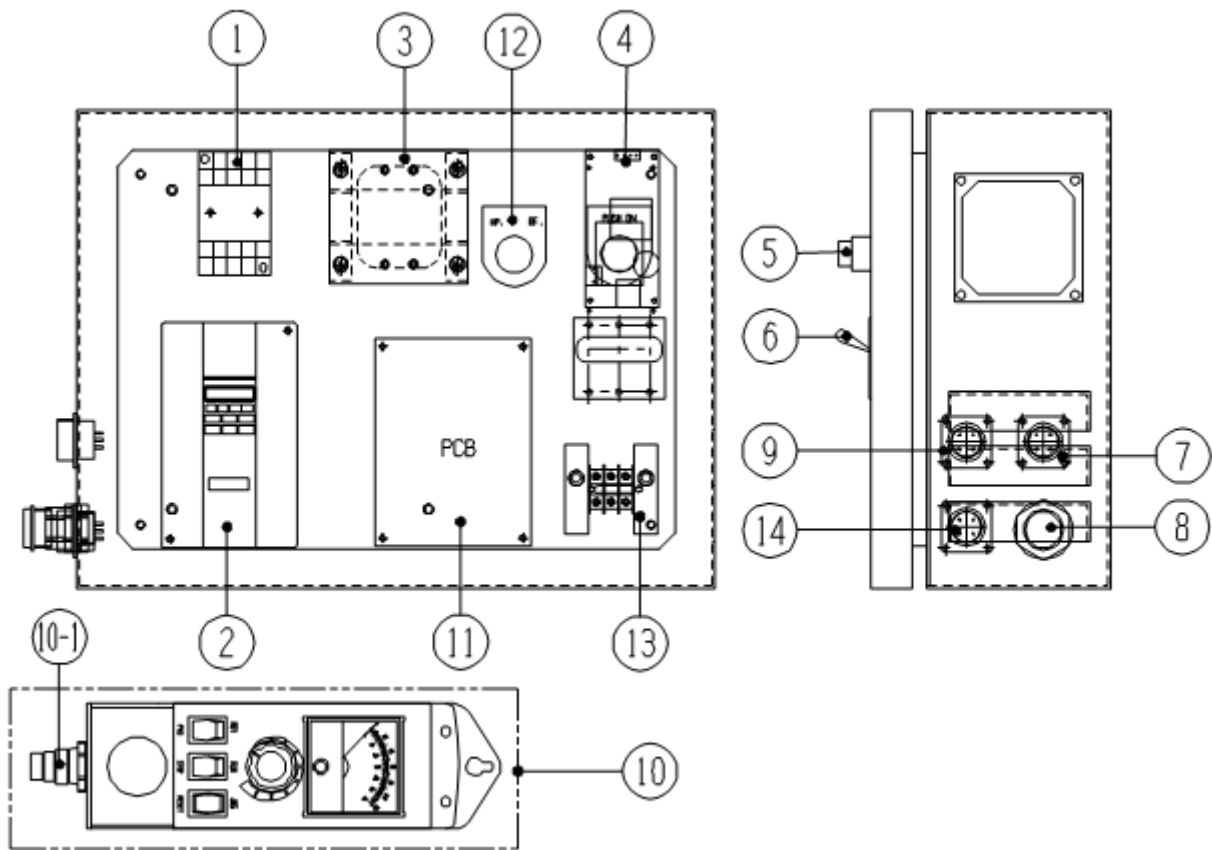
5.1 PARTS LIST – CONTROL BOX

Fig No.	Part No.	Description	Q'ty.	Remark
1	* 3224-1001	Magnetic Contactor	1	MC
2	3021-2001	Inverter 1 phase	1	INV
	** 3021-4003	Inverter 3 phase	1	INV
3	3311-0018	Transformer	1	T1
4	* 3323-0002	Power supply	1	PS
	* 5015-5090000-10	Power supply clamping plate	1	PS
5	3214-4006	Push button (w/ light)	1	PB1
6	** 3222-2002	Circuit Breaker	1	NFB 230VAC
	** 3222-3002	Circuit Breaker	1	NFB 460VAC
7	3121-4003	Male metal connector 7 Pin	1	JN2
	3122-4003	Female male connector 7 Pin	1	JN2
8	3534-3005	Cable clamp	1	P1
9	3122-7002	Socket Female 17 Pin	1	JN4
10	3023-0003	Remote control 7.5M	1	
10-1	3121-7002	Plug Male 17 Pin	1	
11	* 6652-1211	PC Board	1	PCB
12	3211-4105	Select switch	1	SW1
13	3422-0006	Terminal	3	TB
14	3122-4004	Metal connector socket 10 Pin	1	JN5

* Recommended spare parts

** Options

5.1 PARTS LIST – CONTROL BOX



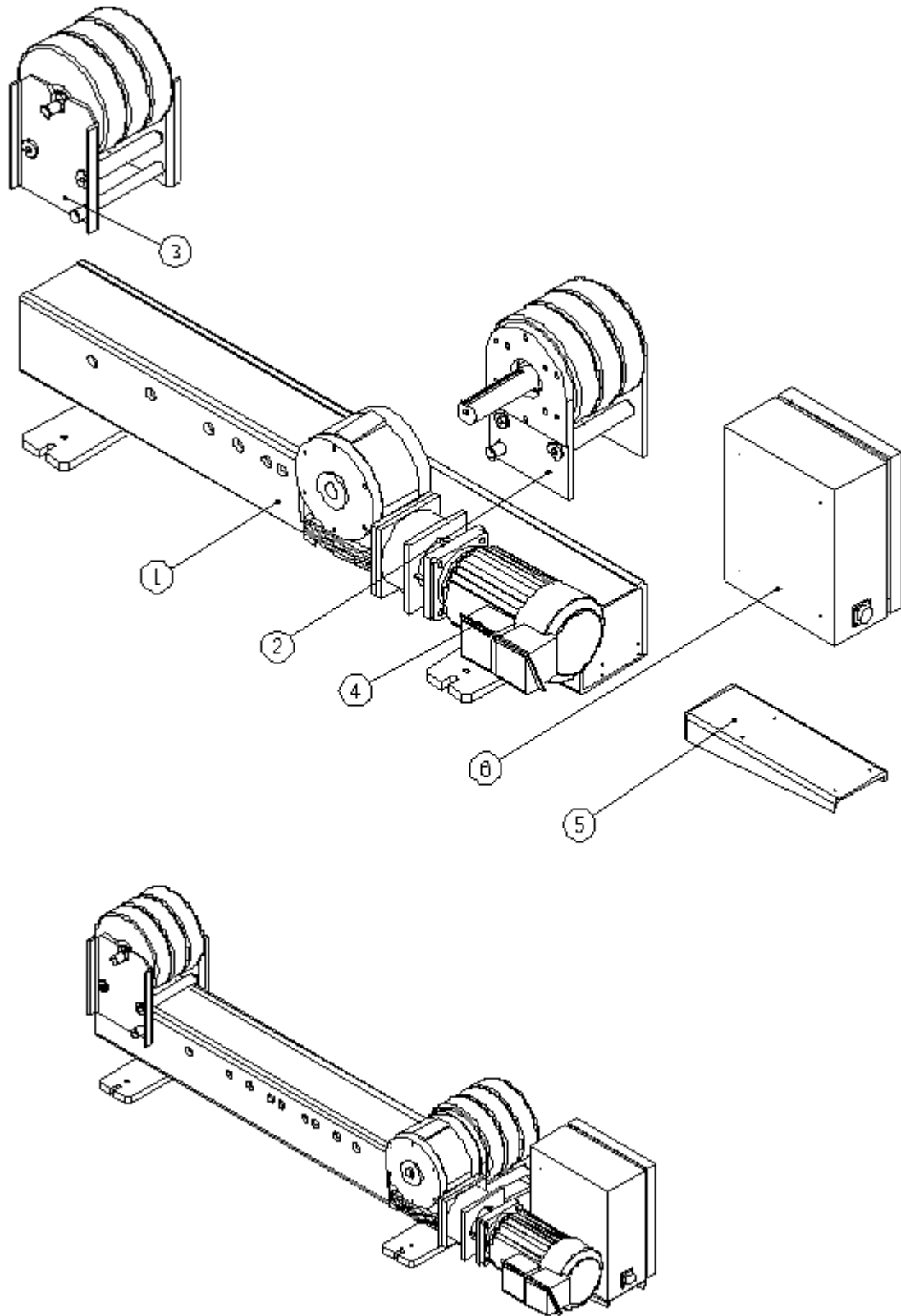
5.2 PARTS LIST – TR-3500B/6000B (P)

Fig No.	Part No.	Description	Q'ty.		Remark
			TR-3500P	TR-6000P	
1	5041-4010000-22	Machine bed	1	1	
2	5041-3600010-21	Main wheel	1		
	5041-4060010-21	Main wheel		1	
3	5041-3700010-20	Idler wheel	1		
	5041-4030010-20	Idler wheel		1	
4	0363-0001	Drive motor	1	1	
	0351-0401	Gear reducer	1	1	
	0353-0102	Worm reducer	1		
	0353-0103	Worm reducer		1	
5	5041-4090000-50	Controller bracket	1	1	
6	** 6501-0513	Control box	1	1	AC 220V
	** 6501-0543	Control box	1	1	AC 460V

* Recommended spare parts

** Options

5.2 PARTS LIST – TR-3500B/6000B (P)



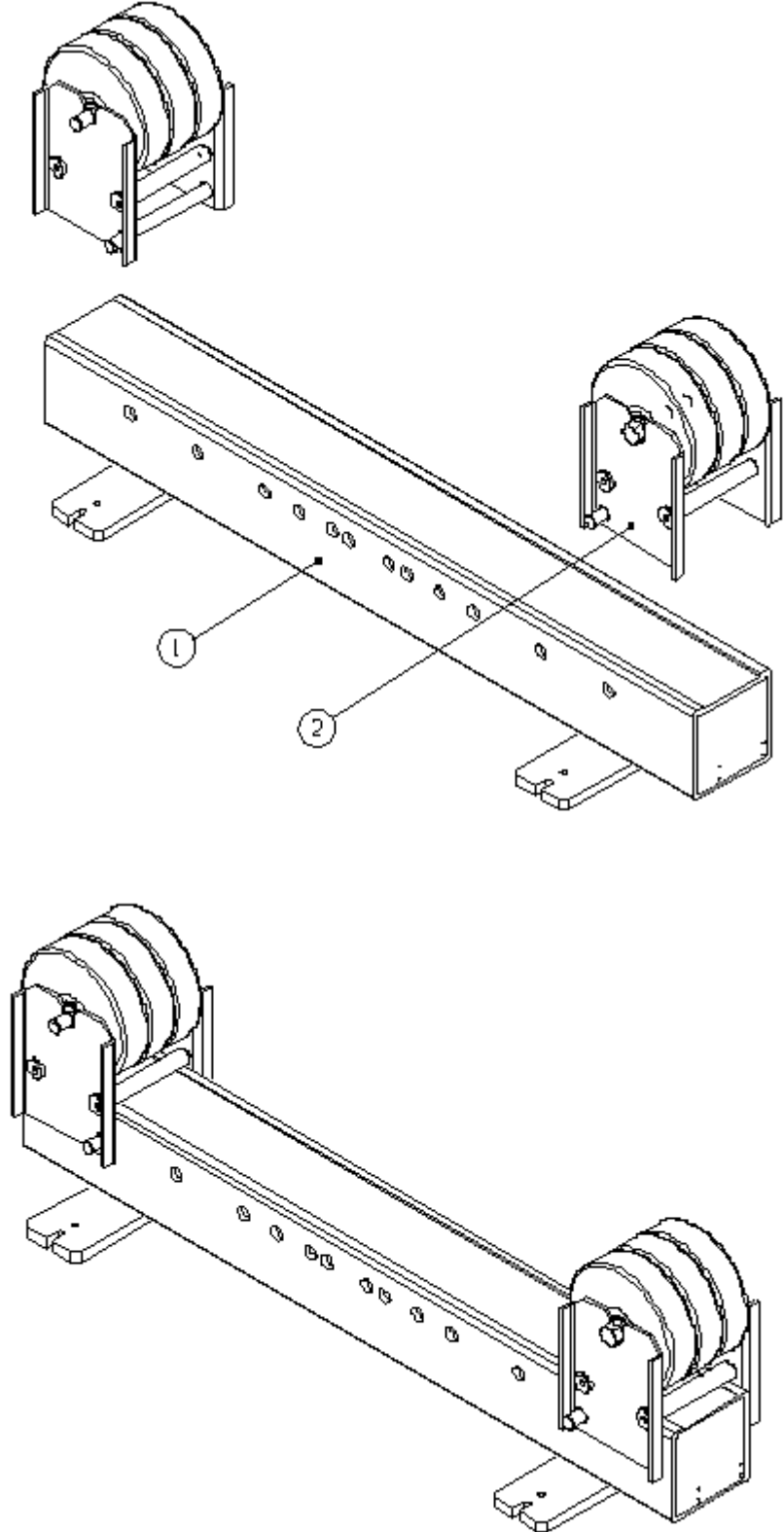
5.2 PARTS LIST – TR-3500B/6000B (I)

Fig No.	Part No.	Description	Q'ty.		Remark
			TR-3500I	TR-6000I	
1	5041-4010000-22	Machine bed	1	1	
2	5041-3700010-20	Idler wheel	2		
	5041-4030010-20	Idler wheel		2	

* Recommended spare parts

** Options

5.2 PARTS LIST – TR-3500B/6000B (I)



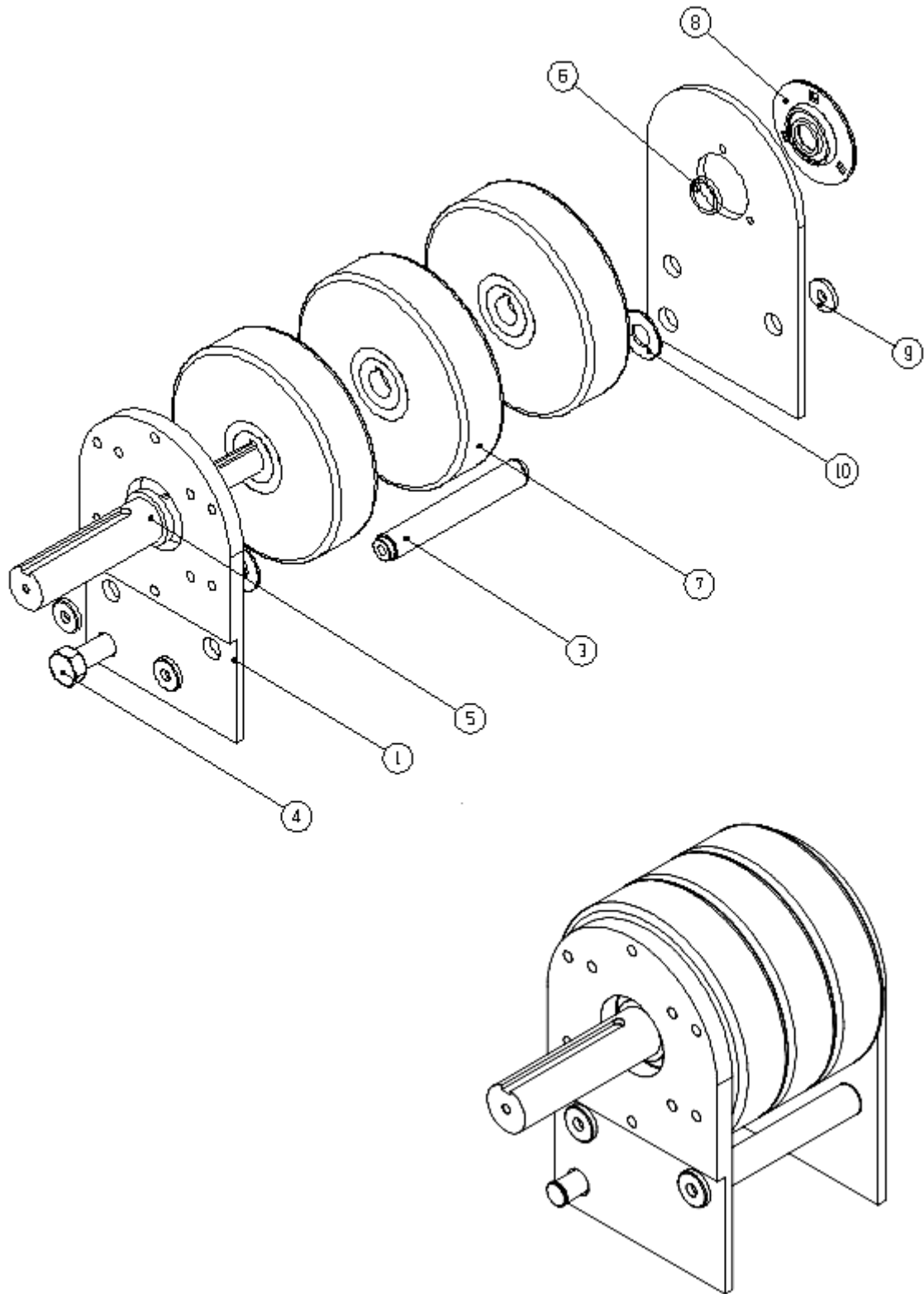
5.2 PARTS LIST – TR-3500B/6000B (MAIN WHEEL)

Fig No.	Part No.	Description	Q'ty.		Remark
			TR-3500B	TR-6000B	
1	5041-4060000-12	Support plate (left)	1	1	
2	5041-4070000-12	Support plate (right)	1	1	
3	5041-4110000-20	Joint-Bar	2	2	
4	5041-4110100-20	Positioning Bar	1	1	
5	5041-3640000-20	Drive shaft	1		
	5041-4120100-20	Drive shaft		1	
6	5041-3650000-20	Spacer	1		
	5041-4120200-10	Spacer		1	
7	5041-4120000-20	PU Rolls	2	3	
8	0312-0501	Pillow Block BPF5	1	1	
9	5034-5820500-20	Washer	4	4	
10	5041-4110200-20	Spacer	2	2	

* Recommended spare parts

** Options

5.2 PARTS LIST—TR-3500B/6000B (MAIN WHEEL)



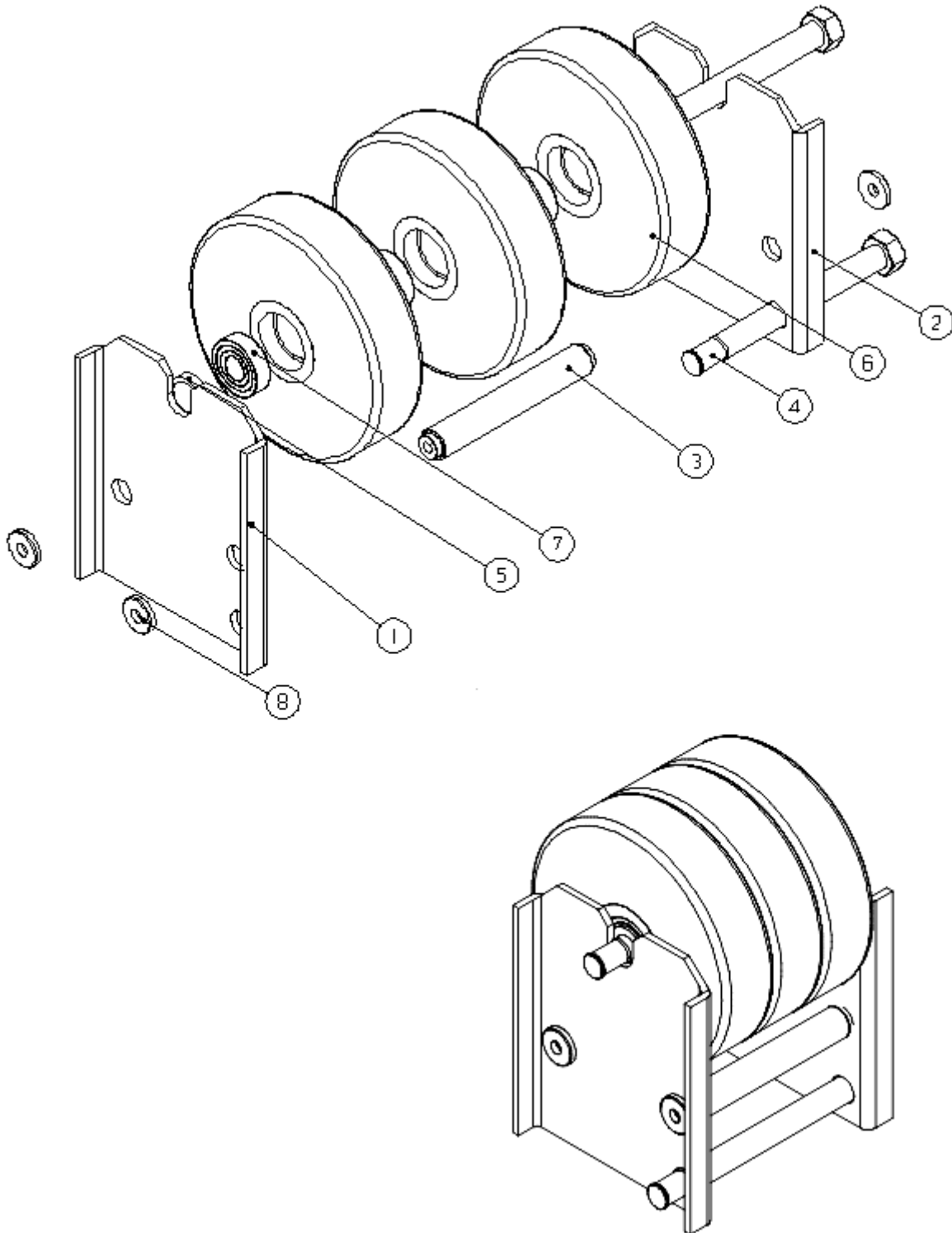
5.2 PARTS LIST—TR-3500B/6000B (IDLER WHEEL)

Fig No.	Part No.	Description	Q'ty.		Remark
			TR-3500B	TR-6000B	
1	5041-4030000-21	Support plate (left)	1	1	
2	5041-4040000-21	Support plate (right)	1	1	
3	5041-4110000-20	Joint-Bar	2	2	
4	5041-4110100-20	Positioning Bar	1	1	
5	5041-3230000-20	Spacer	2		
	5041-4110200-10	Spacer		2	
6	5041-1030000-10	PU Rolls	2	3	
7	0301-0403	Bearing 6204ZZ	4	6	
8	5034-5820500-20	Washer	4	4	

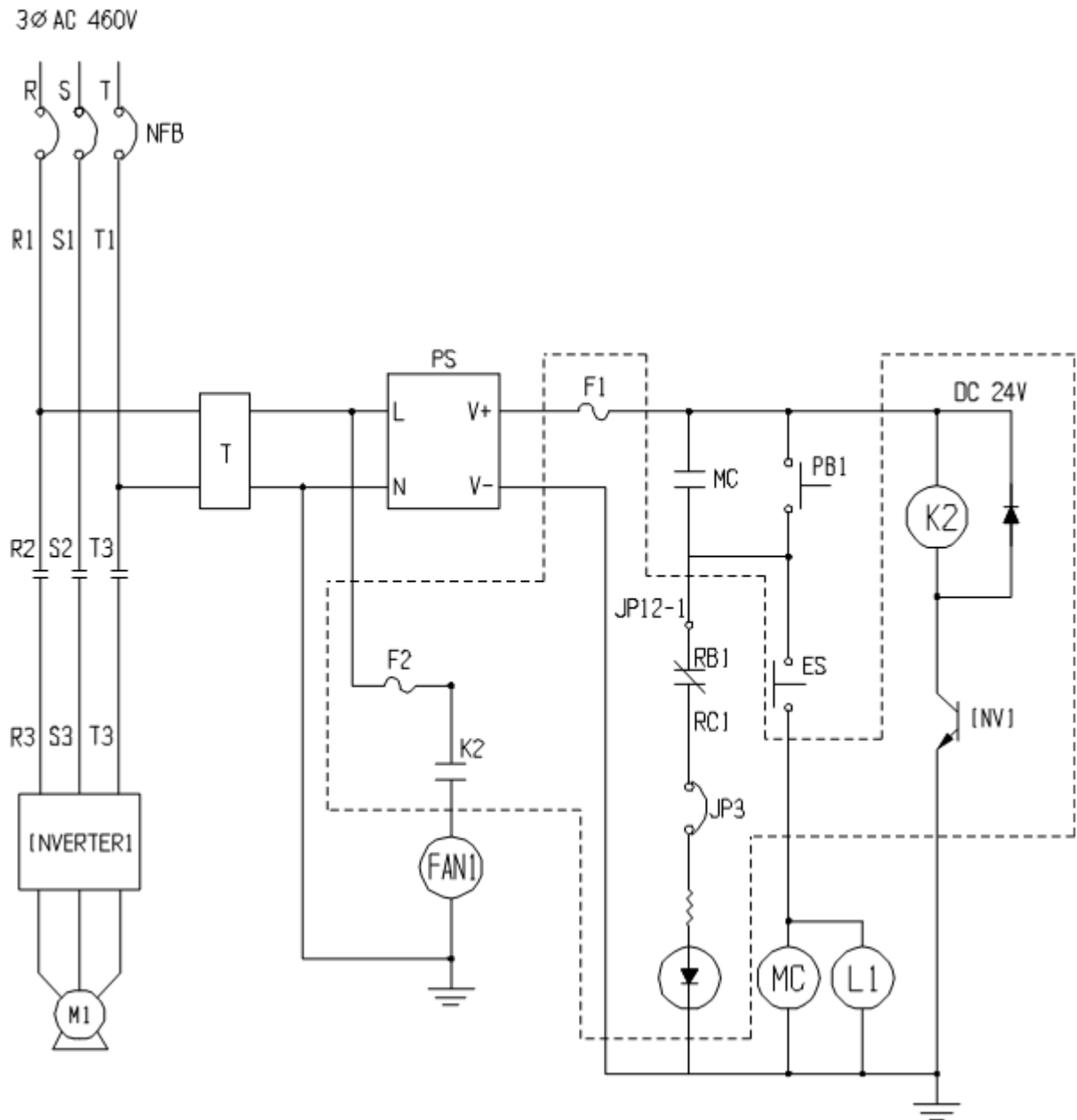
* Recommended spare parts

** Options

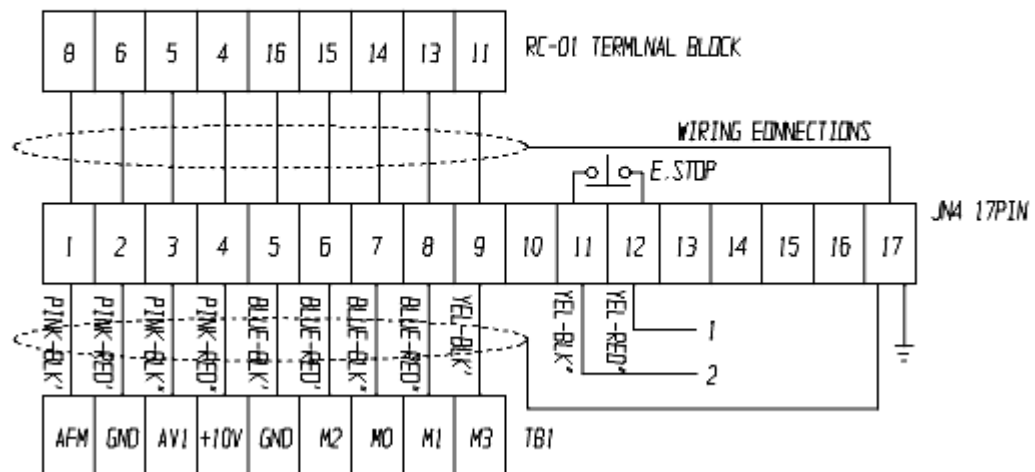
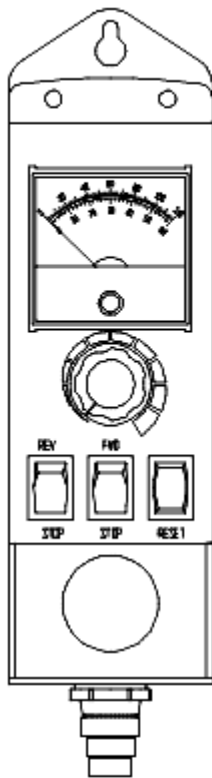
5.2 PARTS LIST—TR-3500B/6000B (IDLER WHEEL)



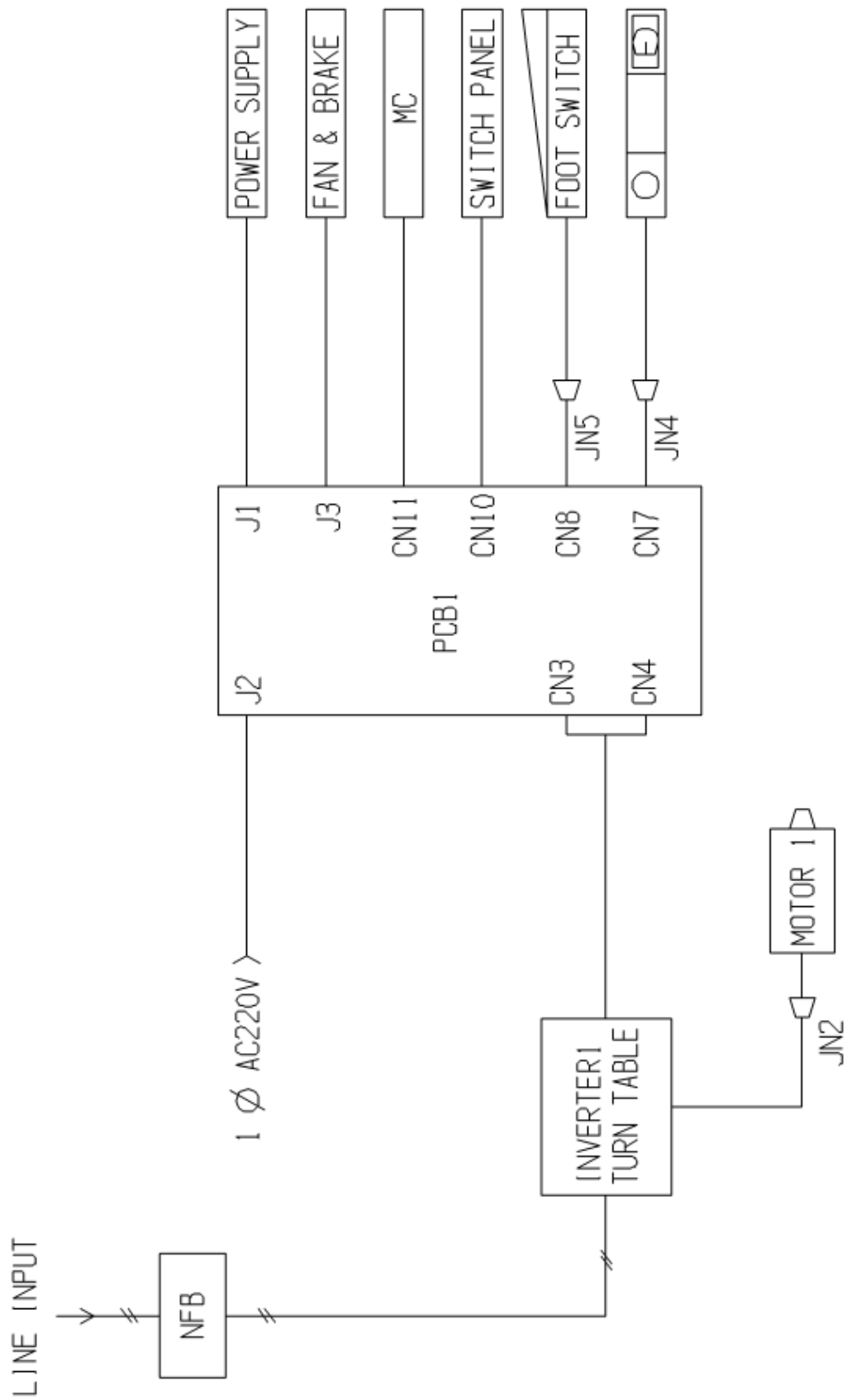
6.1 CONTROL BOX CIRCUIT (3 φ 460V)



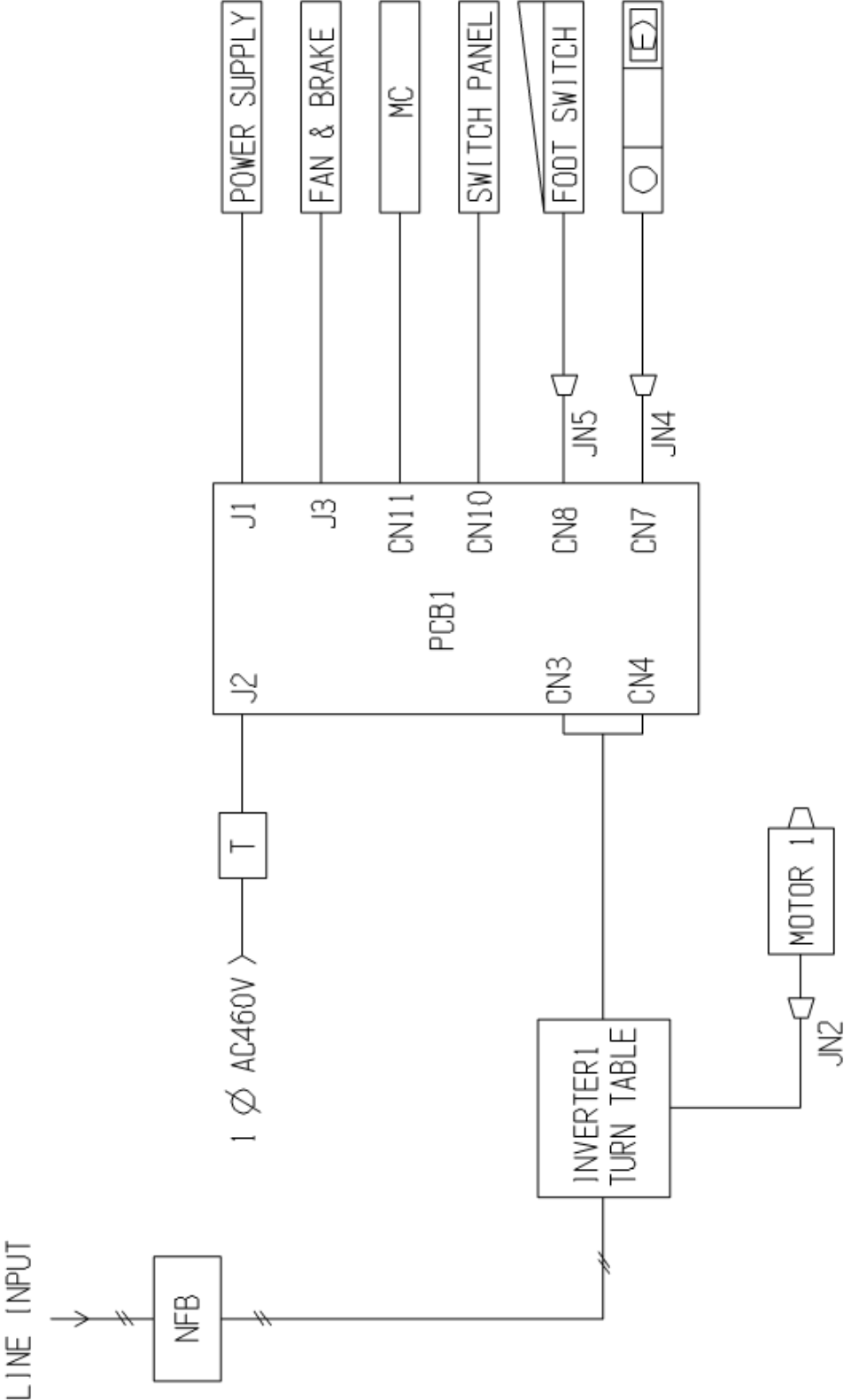
6.1 CONTROL BOX CIRCUIT



6.2 CONTROL SYSTEM BOX (1 ϕ 220V)



6.2 CONTROL SYSTEM BOX (3 ϕ 460V)



6.3 INSIDE INPUT/OUTPUT CONNECT INTERFACE : PCB1

J1 CONNECTOR		
J1	POWER SUPPLY	DESCRIPTION
1	CON1-1	220V-L
2	CON1-3	220V-N
3	CON2-4	DC24V
4	CON2-1	DC0V

J3 CONNECTOR		
J3	INVERTER CTL	DESCRIPTION
1	JN2-5	INV1-F1
2	JN2-6	INV1-F2
3	JN1-5	INV2-B1
4	JN1-6	INV2-B2
5	FAN1	FAN1
6	FAN2	FAN2

CN3 CONNECTOR		
CN3	INVERTER 1	DESCRIPTION
1	RA	RA
2	RB	RB
3	RC	RC

6.3 INSIDE INPUT/OUTPUT CONNECT INTERFACE : PCB1

CN4 CONNECTOR		
CN4	INVERTER 1	Description
1	M0	M0
2	M1	M1
3	M2	M2
4	M3	M3
5	M4	M4
6	M5	M5
7	GND	GND
8	AFM	AFM
9	AVI	AVI
10	+10V	+10V
11	MCM	MCM
12	M01	M01

CN7 CONNECTOR		
CN7	HAND PENDANT	Description
1	1	AFM1
2	2	GND1
3	3	AVI1-HP
4	4	10V1
5	5	GND1
6	6	M12
7	7	M10-HP
8	8	M11
9	9	M13
10	10	NC
11	11	ES-1
12	12	ES-2

6.3 INSIDE INPUT/OUTPUT CONNECT INTERFACE : PCB1

CN8 CONNECTOR		
CN8	REMOTE FOOT SWITCH	Description
1	JN5-2	RMV
2	JN5-6	GND1
3	JN5-3	RMI
4	JN5-1	GND1
5	JN5-4	M10-RF
6	JN5-5	GND1

CN10 CONNECTOR		
CN10	FRONT SW	Description
1	PB1-1	PB1-1
2	PB1-2	PB1-2
3	L1-1	L1-1
4	L1-2	L1-2
5	DN1	DN1
6	DN2	DN2
7	UP1	UP1
8	UP2	UP2
9	SW1-1	SW1-1
10	SW1-2	SW1-2
11	SW2-1	SW2-1
12	SW2-2	SW2-2

CN11 CONNECTOR		
CN11	MC	Description
1	A1	MC-A1
2	A2	MC-A2
3	13	MC-C1
4	14	MC-C2

6.4 INPUT/OUTPUT CONNECT INTERFACE

JN2 CONNECTOR		
JN2	PCB-J3	Description
1		U1
2		V1
3		W1
4		G
5	1	INV1-F1
6	2	INF1-F2
7		

JN4 CONNECTOR		
JN4	PCB-CN7	Description
1	1	AFM1
2	2	GND1
3	3	AVI1-HP
4	4	10V1
5	5	GND1
6	6	M12
7	7	M10-HP
8	8	M11
9	9	M13
10	10	NC
11	11	ES-1
12	12	ES-2
13		
14		
15		
16		
17		G

6.4 INPUT/OUTPUT CONNECT INTERFACE

JN5 CONNECTOR		
JN5	PCB-CN8	Description
1	4	GND1
2	1	RMI
3	3	RMV
4	5	M10-RF
5	6	GND1
6	2	GND1
7		
8		
9		
10		G

APPENDIX A: INVERTER SETTINGS

ITEM	NO	NAME	Setting Value	Remark
1	Pr00	Source of Frequency Command	01	
2	Pr01	Source of Operation Command	01	
3	Pr03	Maximum Output Frequency	60	
4	Pr04	Maximum Voltage Frequency	60	
5	Pr05	Maximum Output Voltage	220	
6	Pr06	Mid-Point Frequency	3.0	
7	Pr07	Mid-Point Voltage	23	
8	Pr08	Minimum Output Frequency	1.5	
9	Pr09	Minimum Output Voltage	18	
10	Pr10	Acceleration Time 1	1	
11	Pr11	Deceleration Time 1	1	
12	Pr12	Acceleration Time 2	1	
13	Pr13	Deceleration Time 2	1	
14	Pr14	Acceleration / Deceleration S-Curve	3	
15	Pr16	Jog Frequency	60	
16	Pr38	Multi-function Input Terminal (M0,M1)	01	
17	Pr40	Multi-function Input Terminal (M3)	09	
18	Pr45	Multi-function Output Terminal 1	00	
19	Pr46	Multi-function Output Terminal 2	07	
20	Pr54	Torque Compensation	0	
21	Pr58	Electronic Thermal Overload Relay Selection	1	
22	Pr59	Electronic Thermal Motor Overload	60	
23	Pr60	Over-Torque Detection Mode	03	
24	Pr61	Over-Torque Detection Level	150	
25	Pr62	Over-Torque Detection Time	01	
26	Pr76	Parameter Lock and Configuration	01	
27	Pr114	Cooling Fan Control	02	

REVISIONS

Manual Number	Print Data	Changed Page	Revisions
RD-8811	2007,01.18		For CE
	2007,11.21	1.2 (P2)	Revisions Specification
		3.2 (P7)	Revisions Remote control instruction
		5.1 (P11~12)	Revisions Part list control box
		6.1 (P21~22)	Revisions Control box circuit
		6.2 (P24~25)	Revisions Control system box
		Appendix A	Revisions WIRING DIAGRAM