T790 Treadmill

Customer Support Services

SERVICE MANUAL

T790 Treadmill
INTRODUCTION

HOW TO USE SERVICE MANUAL AND CONTACT CUSTOMER SUPPORT SERVICES

This service manual is applicable to Treadmill T790. **Note**: Information represents typical configuration and may differ slightly from actual equipment. The Service Manual provides recommendations of safe and efficient approaches to problem situations. This manual is separated into six sections.

Refer to **TABLE OF CONTENTS** for section topics.

When an operation problem occurs, refer to troubleshooting guides and diagnostic mode to isolate cause. When applicable, guides are listed by problem symptom followed with suggestions of probable cause(s).

Once source of problem is identified, consult" How To…" guides for recommended repair procedures. "How To…" sub-sections are organized by replacement part or assembly name. For convenience, sub-section lists recommended "Tools Required" to complete specific function. Refer to **PARTS IDENTIFICATION** to identify proper name and number of part to order for repair of equipment.

A reproducible FAX order claim form is given in COMMUNICATING BY TELEFACSIMILE for convenient ordering of services parts.

To order, contact HS Customer Support Services.
Via FAX – 24 hrs./day, 7days/week.
Via telephone – Monday through Friday from 8:30 AM to 5:30 PM (GMT+8)
Via post – At address cited.

To speed HS Customer Support Services response to your needs, please provide the following information.
1. Model number
2. Serial number
3. Symptom of problem
4. Part name and number to order (if known)

Before installing part, review "How To…" and follow step by step procedures recommended to install parts safely and efficiently. If you have questions or comments please telephone, FAX or write us. We are:

Healthstream Taiwan Inc. – CUSTOMER SUPPORT SERVICES
16-3, Zichiang 1st Road
Jhongli, Taoyuan 32063 Taiwan R.O.C.

T790 Treadmill
TABLE OF CONTENTS

SECTION VI MISCELLANEOUS INFORMATION

SECTION I

TROUBLESHOOTING GUIDE

ELECTRONIC PROBLEMS

Code	Possible Cause	Recommended Action
Err3 Safety tether key error	a. Safety tether key not inserted b. Human factor – e.g. Something may be put inside the console c. Safety key micro switch defect d. Safety key micro switch terminal inside console looses	I. Insert safety tether key into monitor II. Remove the thing that is inserted III. Replace console
Err5 Incline motor error	a. Time delay problem b. Incline motor sensor cable has problem c. VR of the incline motor sensor is defective d. Incline motor is damaged e. The incline motor is over-loaded or over-heated	a to c : 1. Do calibration 2. Check all wire connections 3. Replace incline motor 4. Replace controller d. Replace incline motor e. Eliminate human factors
Err6 Internal memory error	Console is not able to write and read the internal memory	Turn off and on again to clear Error 6
Err10, 11 Communication error	The motor controller and console lose connection. It will happen if the signal cable is loose.	Insert the signal cable again If it will happen, replace the signal cable
Err20 Over current error	Abnormally high current flows to the motor controller	Cool the motor and motor controller for around 30 minutes and check the deck and belt lubrication
Err21 Over heat error	The motor controller is over heated	Cool the treadmill more than 1 hour and try again. Check the deck and belt lubrication
Err22 High input voltage	The AC input voltage is too high to operate the treadmill normally	Check the AC input voltage
Err23 Low input voltage	The AC input voltage is too low to operate the treadmill normally	Check the AC input voltage

ELECTRICAL PROBLEMS

Problem	Possible Cause	Recommended Action
No display on the console	Power not on	Turn the switch to the ON position
	Line cord damaged	Replace the line cord
	Line cord improperly seated in socket	Inspect power connection at wall outlet and at machine for proper contact
	Insufficient power source	Plug treadmill into a dedicated circuit
	Power switch damaged	Change power switch
	The metal plate of micro switch is out of the off power bracket	Set the metal plate back to the right position
	Micro switch damaged	Change micro switch
	Loose or damaged cable connections	a. Check if all connection cables are well-connected b. Replace connection cables
Can't set power off	Micro switch damaged	Change micro switch
Treadmill stops unexpectedly	Console failure	Change console
	Controller failure	Change controller

MECHANICAL PROBLEMS

Problem	Possible Cause	Recommended Action
Running belt slips	a. Running belt not tight enough b. Drive belt not tight enough	a. Adjust running belt tension b. Adjust drive belt tension
Running belt hesitates when stepped on	a. Insufficient lubrication	a. Apply silicone lubricant
Running belt noise	a. Running belt too tight b. The connection part of the running belt touch the rollers c. Running belt is worn off d. Something unknown on the front or rear roller	a. Adjust running belt or change a new one b. Change running belt c. Change running belt d. Clean the thing out
Running belt is traveling beyond the tracking limits	a. Running belt needs to be re-tensioned or tracking needs adjustment b. Worn running belt or user pushing belt	a. Refer to belt tensioning or tracking adjustment procedure in operation or service manual b. Center running belt according to belt centering technique. See How To… Adjust The Running Belt Tension.
Drive belt noise	a. Drive belt doesn't align to front roller or motor pulley b. Drive belt is worn c. Front roller and motor are not parallel	a. Make sure the alignment of drive belt and front roller and motor pulley b. Check if drive belt is worn. If yes, change drive belt c. Make sure motor and front roller alignment parallel
Roller noise	a. Faulty roller bearings b. Roller is damaged by outside force	Replace roller
Motor noise	a. Motor and front roller are not parallel b. Motor defect	a. Make sure motor and front roller alignment parallel b. Replace motor

OTHER PROBLEMS

Problem	Possible Cause	Recommended Action
Display reads a continuous heart rate	RF interference	Move machine to a different location
No chest strap detected (if equipped)	a. Chest strap sensors not making good contact with body of user. b. User is out of monitoring range. c. Loose connection at receiver. d. Faulty chest strap. e. Faulty receiver.	a. Adjust chest strap and moisten sensors to make better contact with skin. b. Move within 3 ft (1 meter) of receiver. c. Check connection on receiver. d. Replace chest strap. e. Replace receiver in the console board.

SECTION II

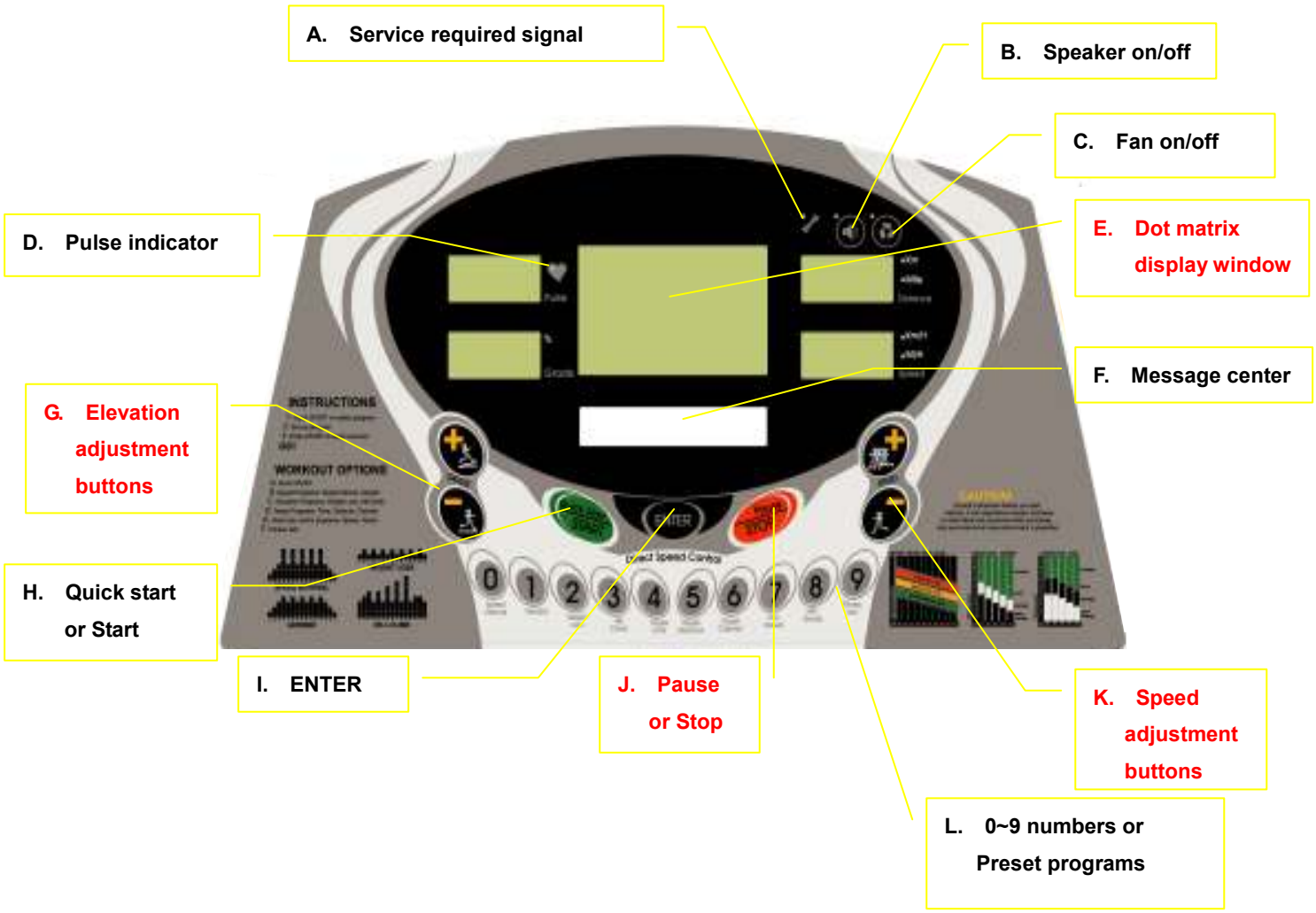
OPERATING CONSOLE

OPERATING T790 CONSOLE

DISPLAY VALUES

Display	Resolution	Range	Increment	Display window
PULSE	XXX	40-240	1	Left top LED window
ELEVATION (%)	XX.X	0.0-15.0	1%	Left bottom LED window
DISTANCE (Miles)	XX.X	00.1 – 99.0	0.1	Right top LED window
DISTANCE (Km)	XX.X	00.1 – 99.0	0.1	Right bottom LED window
SPEED (Miles/H)	XX.X	00.5 – 11.0	0.1	LED window
SPEED (Km/H)	XX.X	01.0 – 18.0	0.1	LED window
TIME	XX:XX	00:01 – 99:00	00:01	LCM
CALORIES	XXX	1-999	1	LCM

FUNCTION KEYS



TWO WORKOUT OPTIONS:

Manual mode (Quick start):

1. Turn power on
2. Use START button to activate treadmill in manual mode. Starts treadmill at 1.0 Km/H and 0% grade
3. During workout manually adjust speed and or elevation
4. Stop treadmill at any time.

Pre-set program mode:

1. Turn power on
2. Select one of pre-set programs
3. During workout treadmill will adjust speed and elevation according to custom program settings. User will still be able to adjust elevation or speed during workout. Program will scale accordingly.
4. Stop treadmill at any time to end the workout.

DISPLAYS

1. Dot matrix will show heart shape change size from small to big. Keep repeating.
2. LCM display message “SELECT WORKOUT or PRESS START” in two segments. Do not-scroll.
3. At the same time, green LED lights for 0-9 will light up one at a time…slowly to show buttons should be used to select program.
4. If user selects one of programs, go to pre-set program display logic.
5. If user presses START button, LCM will display “QUICK START” and dot matrix display will count down 3…2…1…GO
6. Treadmill will activate at 0% grade and 1 Km/H
7. During workout, Calories, Pulse, Distance, Speed will show in the four 7 segment LED display. Time will show in the LCM.
8. During workout in quick start mode, dot matrix will show speed, one column for one minute. Last column shows current speed.
9. During workout, if user presses UP or DOWN key, LCM will change from Time to Elevation and show the elevation old value being changed to the new value. Once the change is made, the view will return to the TIME display.
10. During workout, if user presses FAST or SLOW key, the speed will change.
11. During workout, user may also use the direct speed control keys: 0-9. Example: change speed from 3.4 Km/H to 12 Kph. Just press 1 and 2. And speed will adjust to 12 Km/H. Dot matrix will show new speed. After two seconds, treadmill speed will adjust.
12. During workout when STOP button is press, the LCM display will show “PAUSE” and the Dot matrix window will count down from 3:00 minutes. During this pause mode, only START and STOP buttons will function. If START is pressed during the pause mode, then workout resumes. If STOP is pressed during the pause mode, then workout is stopped.
13. When treadmill is stopped (not paused), total values for calories, distance and time and average speed will be displayed on the LCM – scroll data twice. Pulse will continue to pick up signal and show the current pulse beat per minute. Distance window will show total distance. Speed will show 0. Elevation will show actual.

14. After the total values are displayed twice slowly, the display will go to the beginning and ready treadmill for the next workout. If during the display of totals, STOP is pressed, display will go directly to the beginning and ready treadmill for the next workout.

Pre-set program display logic:

1. When one of the numerical key is pressed before workout, it means program selection. The name of the program will display on the LCM and the program profile will display on the dot matrix. The green LED light will be on for the number button pressed.
2. If ENTER is pressed, it means that the program is selected.
3. LCM will display " ". The difference being, any number value can be displayed on the dot matrix while text is still displayed on the LCM. Value on the dot matrix should flash to indicate default number can be changed.
4. LCM request for age information. If two seconds after number is entered, but ENTER is not pressed, then will display "ENTER to confirm". If user pressed ENTER automatically after value input, then this message does not need to display. (Two HRC program and fitness test only)
5. LCM request for workout duration. If two seconds after number is entered, but ENTER is not pressed, then will display "ENTER to confirm". If user pressed ENTER automatically after value input, then this message does not need to display.
6. LCM request for max speed or max elevation. If two seconds after number is entered, but ENTER is not pressed, then will display "ENTER to confirm". If user pressed ENTER automatically after value input, then this message does not need to display.
7. LCM display "Press START to begin…."
8. If user presses START button, LCM display "GET READY" and dot matrix display will count down 3…2…1…GO
9. Treadmill will activate speed and elevation based on the pre-set program.
10. For programs, time will count down during workout in the LCM display.
11. During workout, the dot matrix will display the workout profile. Since HS preset program has 15 segments while dot matrix has 16 columns, the entire program profile can be displayed in whole. Therefore, the current workout segment will flash to indicate progress in workout.
12. During workout, if user changes the pre-set speed or elevation, the remaining program will scale up or down accordingly.

LED display logic:

1. Red LED light will light up only when fan is on. If fan is off, light will not shine.
2. Red LED light will light up only when voice is on. If voice is off, light will not shine.
3. Red LED light will light up for tool indicating service is required. Once service is done, the LED light can be turned off in the service mode.
4. Red LED light for heart will flash based on pulse rate to indicate that pulse information is being picked up. If no pulse transmission, LED will not light up.
5. Before workout (during key entry) the number keys are used to select workout and also to enter values. During this period, ENTER is used to confirm value input. Before ENTER is pressed, user may change value.
6. During workout, number keys = direct speed control or one touch speed control. No need to press ENTER to confirm. If user pressed 9, then speed will change directly to 9.

Direct Speed Control logic (safety considerations) :

- During workout, when direct speed key is pressed….to make sure that user knows that button he has pushed…no surprises or buttons pressed by mistake….
- The dot matrix will display “speed” and “value” value for the new speed in big size and speed in mid size. This will show user that he has increased/decreased speed. If he wants to make correction, he can do so quickly before the treadmill speed change takes place.
- When user presses 1, assume that it is 10. Only if after two seconds no other number is pressed, then it means 1 Km/H or 1 Mi/H.
- Two seconds display of new speed on the dot matrix. If no other change, then the new speed will be entered into the speed display and the treadmill will adjust speed accordingly.
- If user pressed the button by mistake, he has two seconds to change his mind and change the speed to a slower number.
- We have to test whether the two seconds is appropriate time lag…enough time for safety reaction, but not too slow that most people get bored.

DURING WORKOUT:

Speed or elevation adjustments -

For elevation adjustments use UP or DOWN. For speed adjustments use FAST and SLOW or direct speed control buttons.

If stop is pressed during workout, the program is suspended. Program is paused and the time counts down from three minutes in the center display window. During pause no other keys other than STOP and START are active. If user presses STOP during pause, program ends. If user presses START during pause (within three minutes), then program proceeds where it was stopped. After three minutes, program automatically ends.

LCM display functions:

During programming or key entry – LCM will give instructions to let user know how to set up program
During workout – will show time count down for those preset program that have time setup (speed programs, elevation programs, and HRC programs = 6) and show time count up for those without time (quick start, Target by time, distance, and calories, Fitness test = 5)
During workout – calories count up
If direct speed is activated during workout – LCM will show "Change speed…."
Also during workout – LCM will show messages to guide you throughout your workout
At the end of workout – LCM will provide workout results
Also, any service related messages is also displayed via the LCM

Dot matrix display functions:

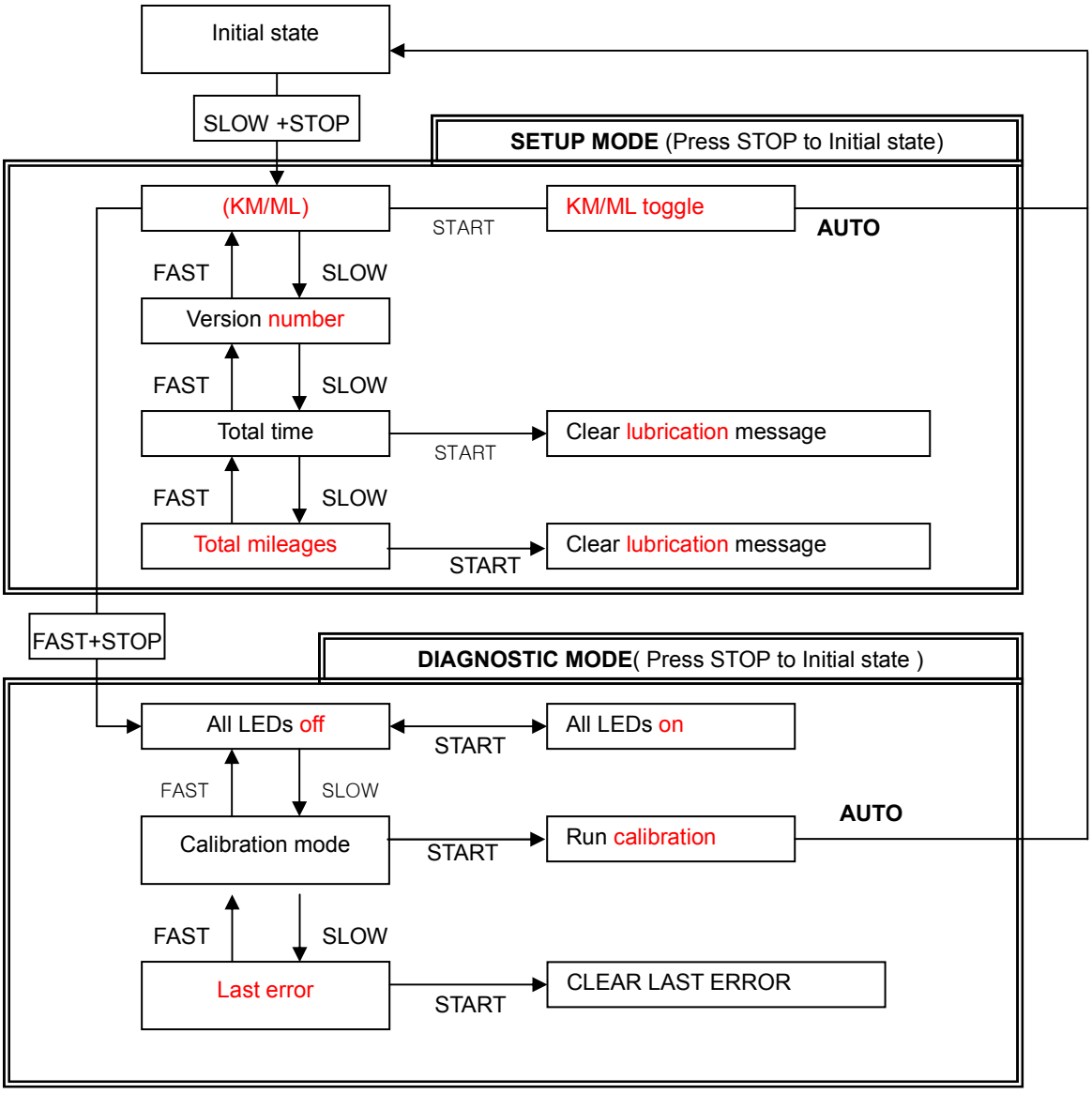
Beginning – show heart change size (indicated HRC program)
During program selection – show program profile or visual indication of program to select
During workout –
Speed programs will show speed program profile
Elevation programs will show elevation program profile, target time, distance and calories
HRC programs – show pulse in beats per minute in big numbers
Fitness test – show level of exertion

ELEVATION FUNCTIONS: For safety reasons, elevation must be manually adjusted at all time. At no time will treadmill automatically adjust elevation except in a program.

1. When power on, treadmill will not check or adjust position of elevation.
2. During programming, elevation up and down keys will not function.
3. During workout the up and down keys will function
4. Pause condition – elevation will not change.
5. After stop, elevation will stay where it is. Treadmill will not automatically return to 0% grade.
6. When safety key is pulled, all movement must stop. Elevation will not automatically lower to 0% grade.
7. After safety key is returned to place, elevation will not automatically adjust to 0%.
8. For user friendly, user must be able to adjust elevation up or down even when treadmill is not running.
9. All pre-set programs at the last segment will bring elevation to 0% grade. So that when program is finished, elevation is already at 0% grade.

Setup Mode

Remark: FAST=SPEED+
SLOW=SPEED-



SECTION III

HOW TO …
SERVICE AND REPAIR GUIDE

T790 Treadmill

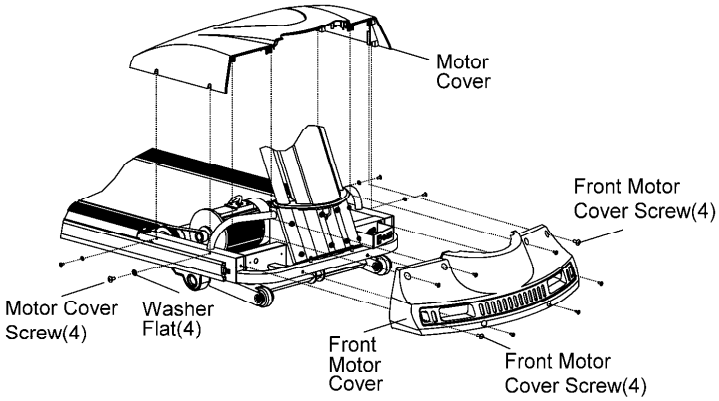
How To… Replace The Running Belt and Deck

Tools Required: Allen key set, Phillips screwdriver, tape measure, rubber hammer, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION

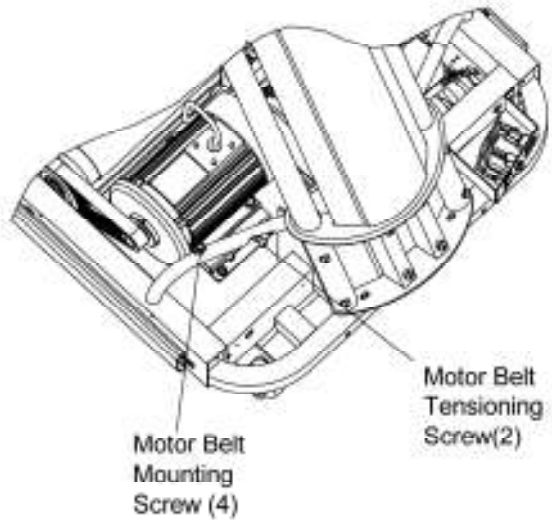
1. At the power switch, turn OFF the unit, and then unplug the power cord at the wall outlet.

2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flat (4) of the motor cover, lift off the motor cover.



3. Loosen the motor belt tensioning screws (2), loosen the four mounting screws securing the motor to the bottom of the frame.

NOTE: To remove front roller easily, release motor belt via loosen motor belt tensioning screws (2) and the four mounting screws.

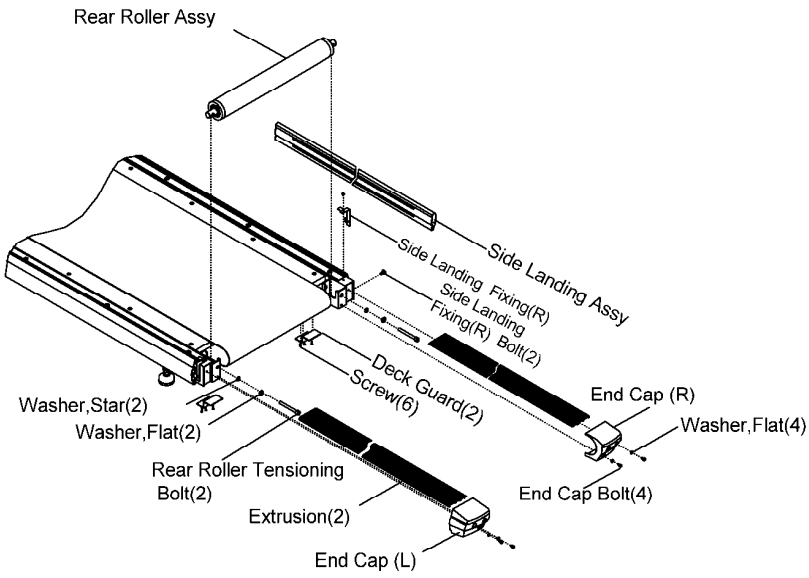


4. Remove the end caps by removing end cap bolts (4) and washer flats (4) from each end cap.

5. Remove the fixing (R) bolts (2), side landing fixing(R) and then side landing assy.

6. Slide the extrusions.

7. Remove the deck guards (2) by removing the screw2 (6) and set aside to be remounted on the new deck.



8. Remove the rear roller tensioning bolts (2), flat washers (2) and star washers (2).

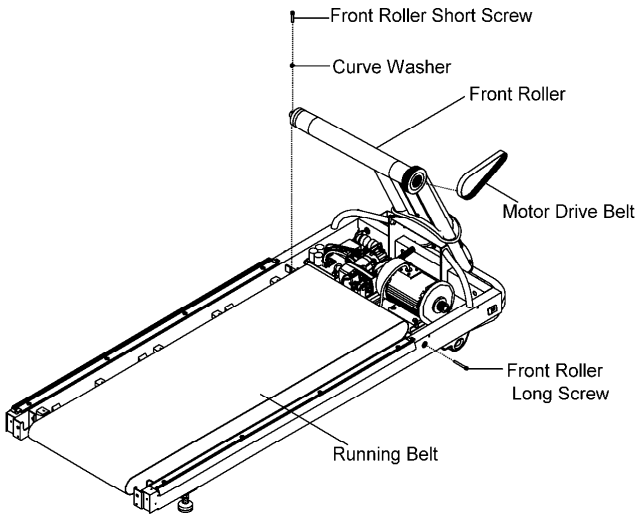
9. Remove the rear roller.

How To… Replace The Running Belt and Deck - Continued

Tools Required: Allen key set, Phillips screwdriver, tape measure, rubber hammer, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION – Continued

10. Remove the front roller long screw, short screw, and curve washer from the front roller mounting brackets, and then lift the front roller out of the running belt. If necessary, remove the motor drive belt.

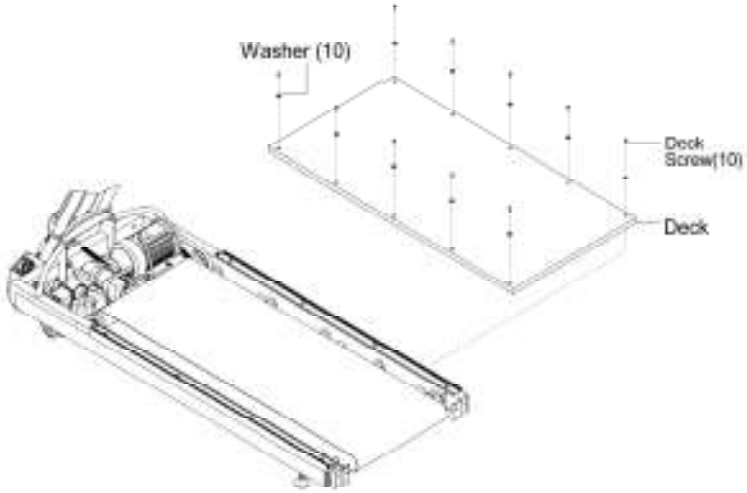


12. Remove the deck screws (10) and washers (10), then lift out the deck.

13. Remove the running belt and discard.

14. Install a new running belt and a new deck in reverse order. Re-tension the motor drive belt to 85~95 lbs. Do not over tighten belt.

NOTE: when adjusting motor belt tension, the four mounting screws should be loosen, and then adjust motor belt tensioning screws (2) to make sure the motor drive belt to 85~95lbs.



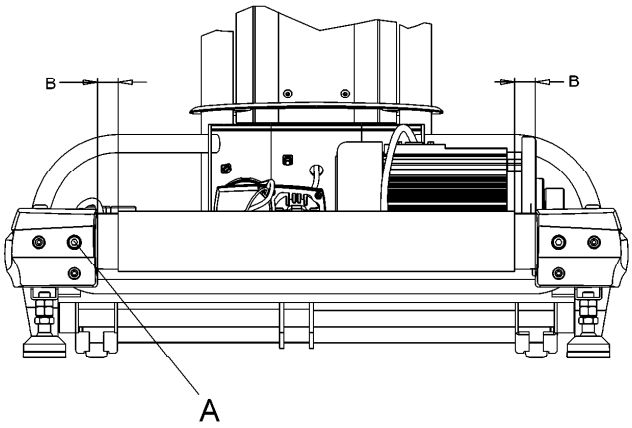
15. Proceed to the following page for proper belt stretching and belt tracking adjustment.

16. Install the deck and running belt in the reverse order

T790 Treadmill
How To… Adjust The Running Belt Tracking

Tools Required: Allen key set. (All fasteners are metric. Make sure that you have metric tools.)

1. After the treadmill has been installed and leveled, the belt must be checked for confirm proper tracking. First, plug the power cord into an appropriate outlet and turn the treadmill ON.



2. Press the QUICK START button then increase speed to 18.0kph motor speed using the UP arrow.

3. Tighten the running belt by turning the running belt tension bolts before adjusting the belt alignment.
If the running belt has moved to the **RIGHT**, turn the RIGHT tension bolt 1/4 turn CLOCKWISE and the left tension bolt (A) 1/4 turn counterclockwise to start the running belt tracking back to the center of the rear roller.
If the running belt has moved to the **LEFT**, turn the LEFT tension bolt (A) 1/4 turn CLOCKWISE and the right tension bolt 1/4 turn counterclockwise to start the running belt tracking back to the center of the rear roller.

4. Repeat this adjustment until the running belt appears centered. The belt should be equal distance (B) on both sides of the rear roller.

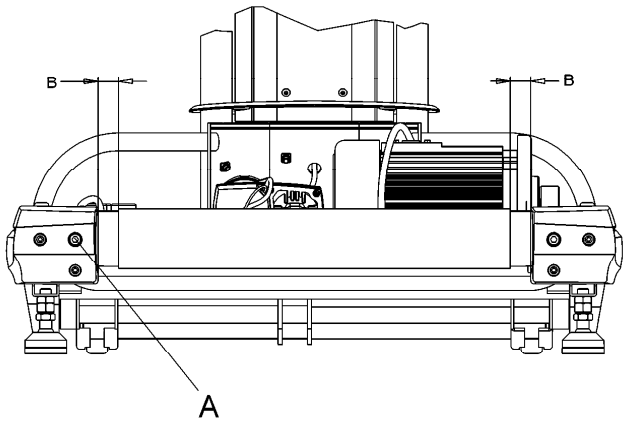
5. Allow the unit to operate for several minutes to see that the belt remains centered.

NOTE: During the adjustment above, DO NOT exceed one full turn of the adjusting screws in either direction.

How To…How To Adjust The Running Belt Tension

Tools Required: Allen key set. (All fasteners are metric. Make sure that you have metric tools.)

1. Locate the two BELT TENSIONING BOLTS on each side of the REAR ROLLER MOUNTING BRACKETS. The TENSIONING BOLTS are accessible from the holes provided in the REAR ROLLER GUARDS.
2. Enter the manual program and adjust the belt alignment by operating at 8.0kph for five minutes. **DO NOT** run on the belt.
3. Enter the speed up to 18kph and check if the belt centers the treadmill.
4. Using the speed DOWN button ▽ to slow down to 1kph. With the RUNNING BELT speed at 2 kph (3.2 kph), begin walking on the treadmill. Tightly grasp the HANDLEBARS and attempt to stall the RUNNING BELT. If it slips, repeat step 4. If it does not slip, the tension is correct.
5. Stop the treadmill and alternately turn the RUNNING BELT TENSION BOLTS (A) 1/4 turn clockwise to tension (See **Tracking (Centering) an Existing or New Running Belt** on previous page). Repeat step 3 and step 4 until slipping is eliminated. **DO NOT EXCEED ONE FULL TURN!**



T790 Treadmill

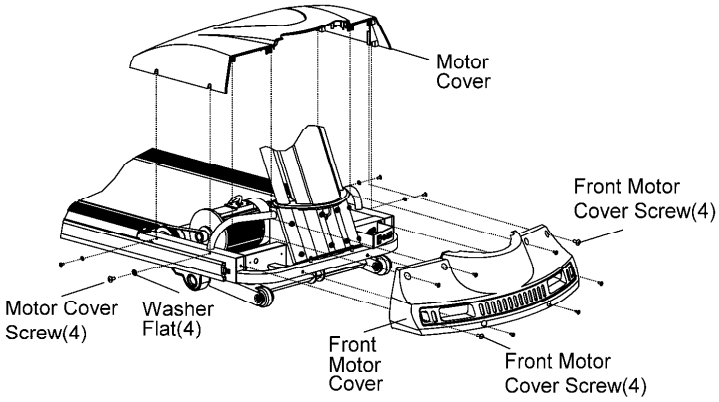
How To… Replace The Motor Drive Belt

Tools Required: Allen key set**,** Phillips screwdriver, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION

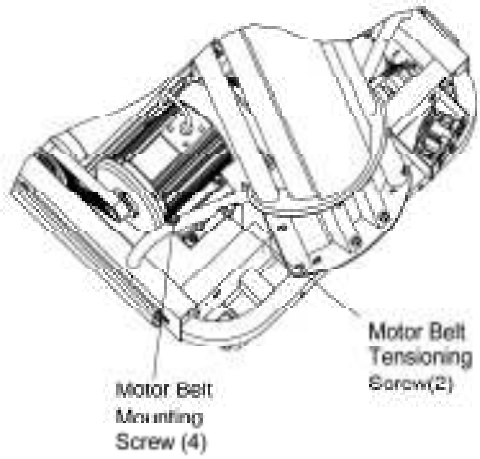
1. At the power switch, turn OFF the unit, then unplug the power cord at the wall outlet.

2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.



3. Loosen the motor belt tensioning screws (2), Loosen the four mounting screws securing the motor to the bottom of the frame.

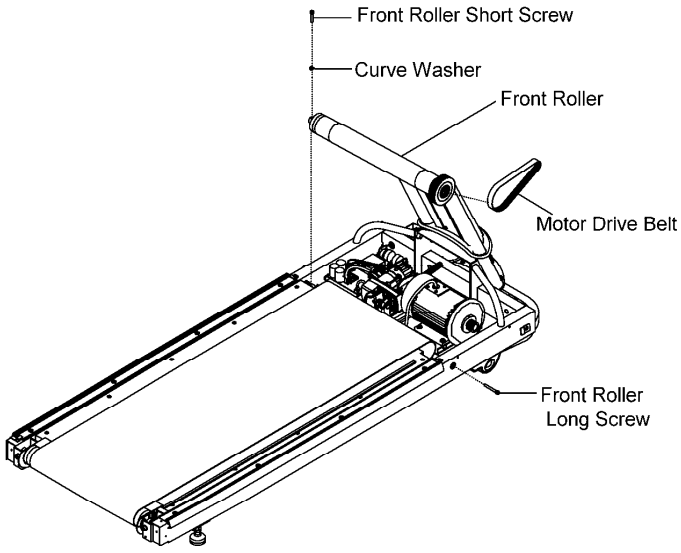
NOTE: To remove front roller easily, release motor belt via loosen motor belt tensioning screws (2) and the four mounting screws.



4. Move the motor mounting plate in the slotted holes towards the rear roller to relieve belt tension. Remove the motor drive belt from the end of the motor drive pulley.

5. Loosen the rear roller tensioning bolts

6. Remove the front roller long screw, short screw and curve washer from the front roller mounting brackets.



7. Lift the front roller out of its frame mount, slip off the motor drive belt from the pulley, and discard the belt.

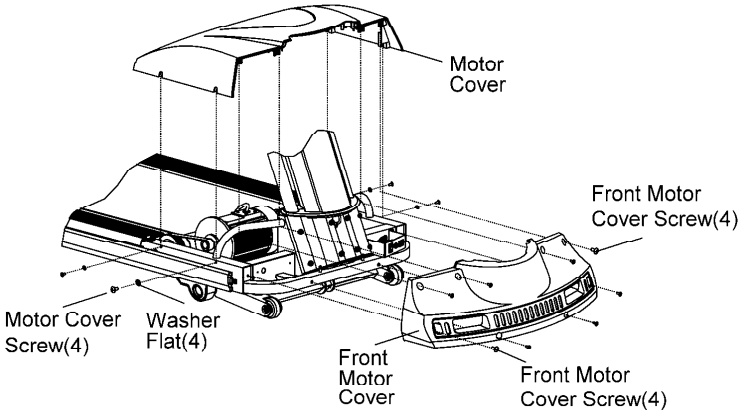
8. Install new motor drive belt in reverse order. Tension the belt to 85~95 lbs (See page 3 of this section).

9. Retension the running belt and reset its tracking. Refer back to running belt tension and tracking procedure in this section.

Tools Required: Allen key set**,** Phillips screwdriver, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

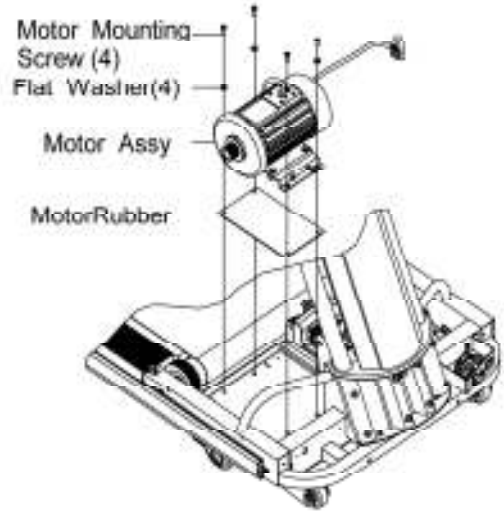
REMOVAL AND INSTALLATION

1. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.



2. Disconnect all connectors from the motor (Please refer to WIRING DIAGRAM – Section IV, page 6).

3. Remove the motor belt tensioning screws (2), Remove the four motor mounting screws.
NOTE: Need two people in this process. One person should hold the motor, in case the motor drop on the floor

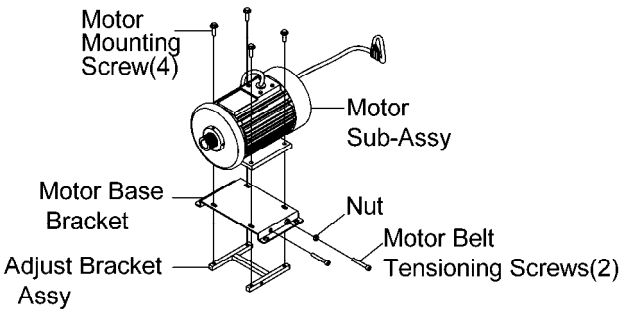


4. Move the motor mounting assembly towards the front roller to relieve belt tension. Remove the drive motor belt off the end of the pulley.

5. Lift out the motor.

6. Remove the motor mounting screw (4) and discard the motor. Set the motor bracket and adjust bracket assembly aside to be remounted on the new motor.

7. Install new drive motor in reverse order and make sure to properly adjust the motor drive belt (85~95 lbs.) (See page 3 of this section) and running belt. (See page 2 of this section)



Section III

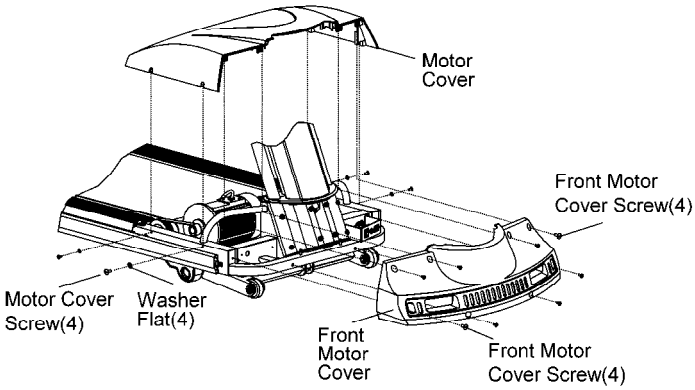
How To… Replace The Front Roller

_Tools Required: Allen key set**,** Phillips screwdriver, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION

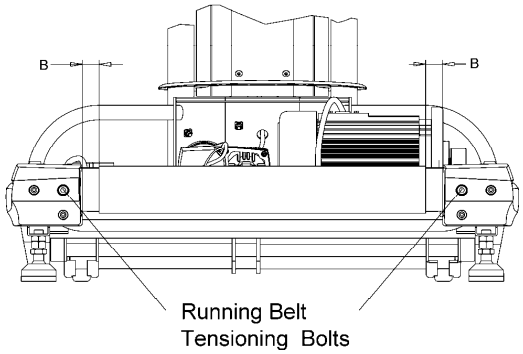
1. At the power switch, turn OFF the unit, and then unplug the power cord at the wall outlet.

2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.



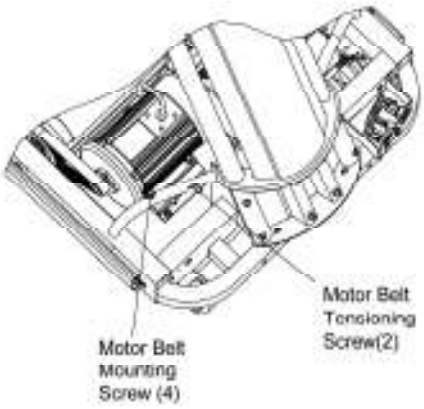
3. Loosen the rear roller tensioning bolts to slacken the running belt.

4. Loosen the motor belt tensioning screws (2). Loosen the four motor mounting screws.



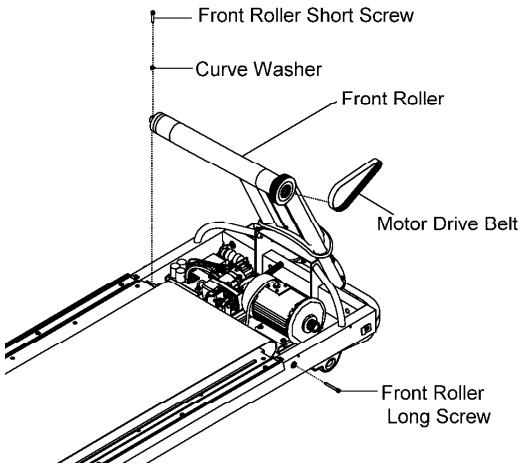
NOTE: To remove front roller easily, release motor belt via loosen motor belt tensioning screws (2) and the four mounting screws.

5. Move the motor mounting plate towards the rear roller to relieve belt tension. Remove the front roller Long screws, short screws, and curve washers from the front roller mounting brackets.



6. Lift out the front roller from the running belt and remove the motor drive belt.

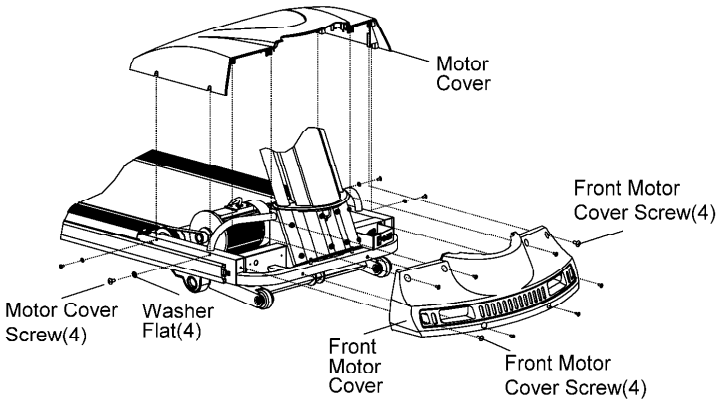
7. Install new front roller in reverse order and make sure to properly adjust the motor drive belt (85~95 lbs.) (See page 3 of this section) and running belt.(See page 2 of this section)



How To…Replace The Rear Roller

Tools Required: Allen key set**,** Phillips screwdriver, rubber hammer, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION



1. At the power switch, turn OFF the unit, and then unplug the power cord at the wall outlet.

2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.

   NOTE: In order to lift rear roller out, extrusions need to be moved out of the way. So motor cover has to be removed to get enough space for sliding the extrusions forward.

3. Remove the end caps by removing end cap bolts (4) and washer flats (4) from each end cap.

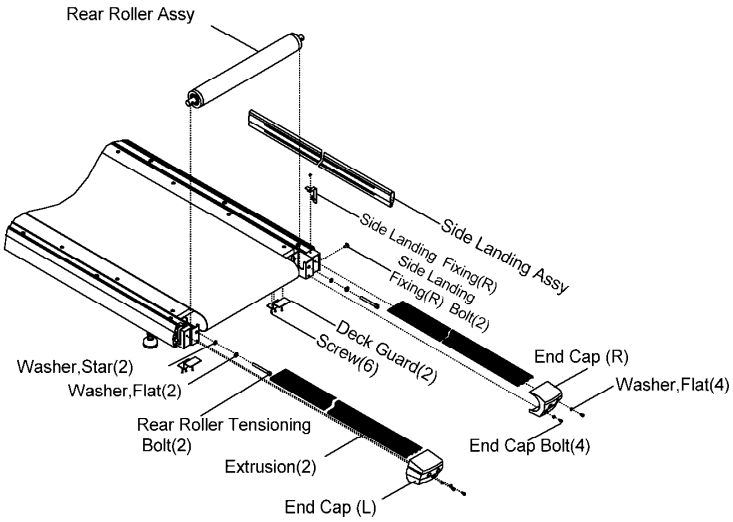
4. Slide the extrusions.

5. Remove the deck guards(2) and screws(6)

6. Remove the rear roller tensioning bolts (2), flat washers (2) and star washers (2).

7. If necessary, remove the deck guards (2) to remove the rear roller conveniently. Then lift the rear roller out from the running belt.

8. Install new rear roller in reverse order of removal. Make sure to adjust the running belt tension. Refer back to belt adjustment in this section.



T790 Treadmill

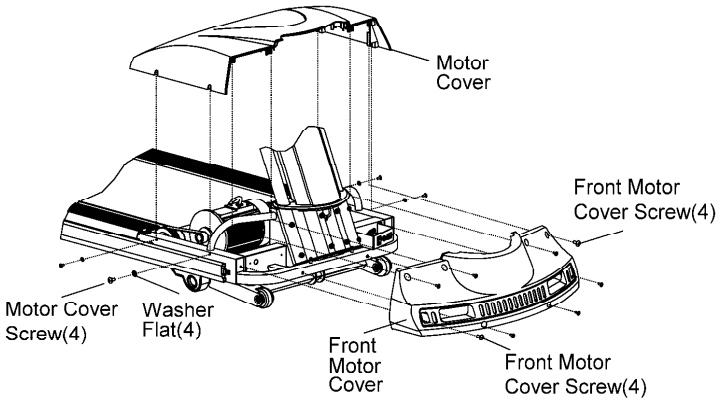
How To… Replace The Deck Cushion

Tools Required: Allen key set, Phillips screwdriver, tape measure, rubber hammer, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION

1. At the power switch, turn OFF the unit, and then unplug the power cord at the wall outlet.

2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.

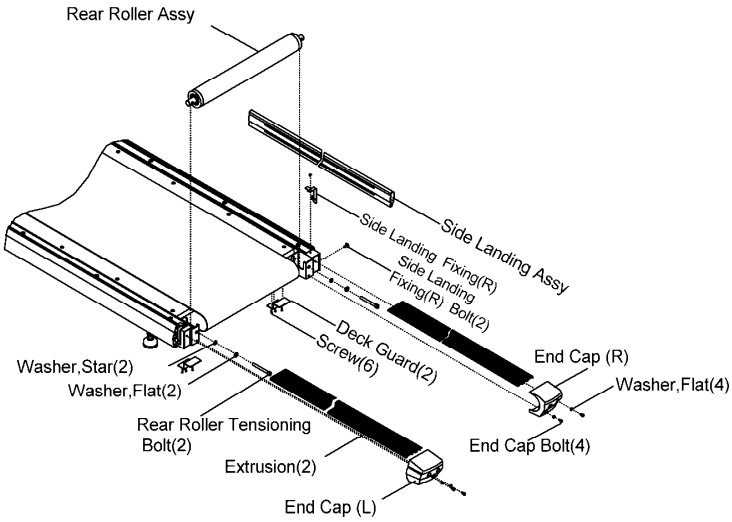


3. Remove the end caps by removing end cap bolts(4) and washer flats (4) from each end cap.

4. Slide each extrusion (2) back.

5. Remove the deck guards(2) and screws(6)

6. Remove the rear roller tensioning bolts (2), flat washers (2) and star washers (2).

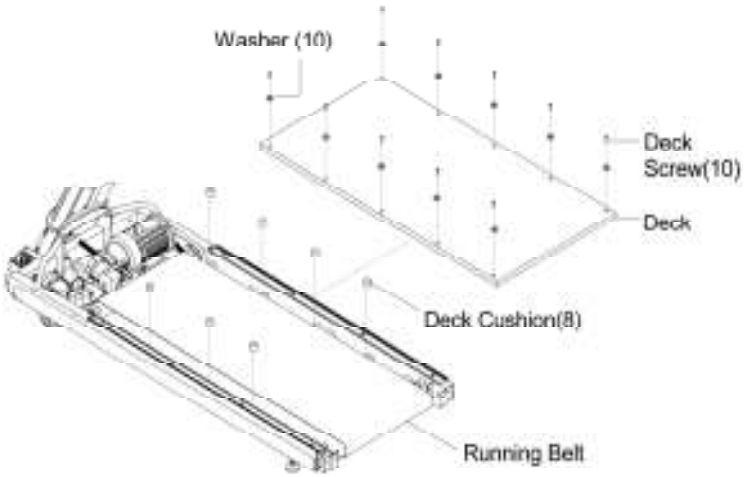


7. Remove the deck screws(10) and washers(10)，then lift the deck out of the running belt.

8. Remove deck cushions (8) from the frame.

9. Install new deck cushions in reverse order.

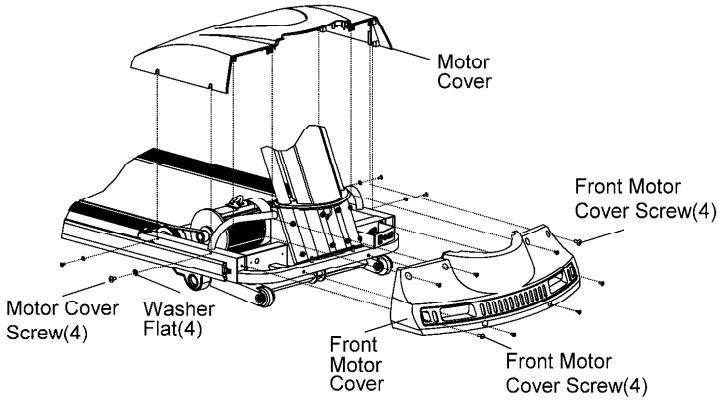
10. Retension and center the running belt as described in the beginning of this section.



How To…Replace The Incline Motor

Tools Required: Phillips screwdriver, Sharp nose pliers, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION



1. Turn power on. Check to see if treadmill is at **7 or 8%** incline.

2. If unable to operate at the console, then connect incline motor wires directly to AC lines. This power will make incline go to **7 or 8%**.

   Caution: For safety purpose, put blocks between the frames to hold up the main frame.

3. At the power switch, turn OFF the unit, and then unplug the power cord at the wall outlet.

4. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.

5. Disconnect all cable connectors from the incline motor (Please refer to WIRING DIAGRAM – Section IV, page 6).

6. Remove the incline motor screws (2).

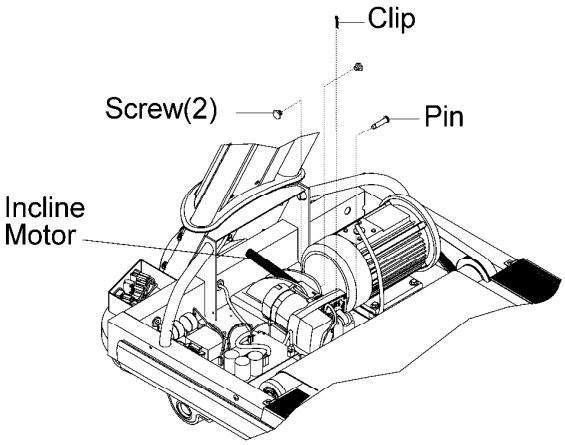
7. Remove the incline motor pin and clip.

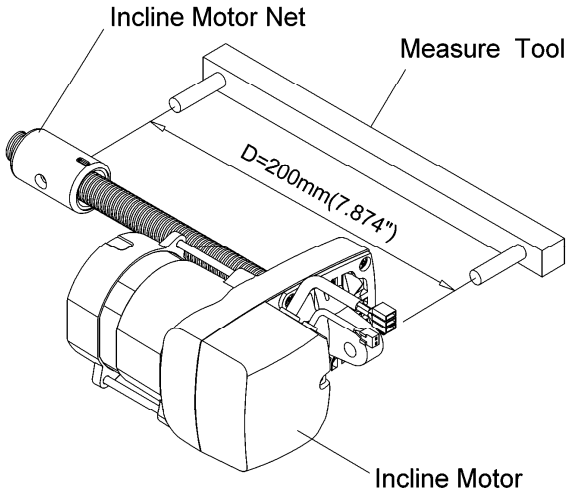
8. Remove incline motor

9. Checks new incline motor. Adjust the nut location so that the distance (D) between holes on the incline motor is 266mm.
   NOTE: Make sure D=200mm (7.874inch)

10. Install new incline motor in reverse order.
    NOTE: Treadmill must be in the elevated position to assemble new incline motor.

11. Proceed to the following page for calibrating the incline motor.





How To…Replace The Incline Motor - Continued

Tools Required: Phillips Screwdriver (All fasteners are metric. Make sure that you have metric tools.)

When incline motor needs calibration:

1. When controller is changed.
2. When incline motor is changed.
3. When both controller and incline motor are changed.
4. When controller CPU is changed.

CALIBRATION

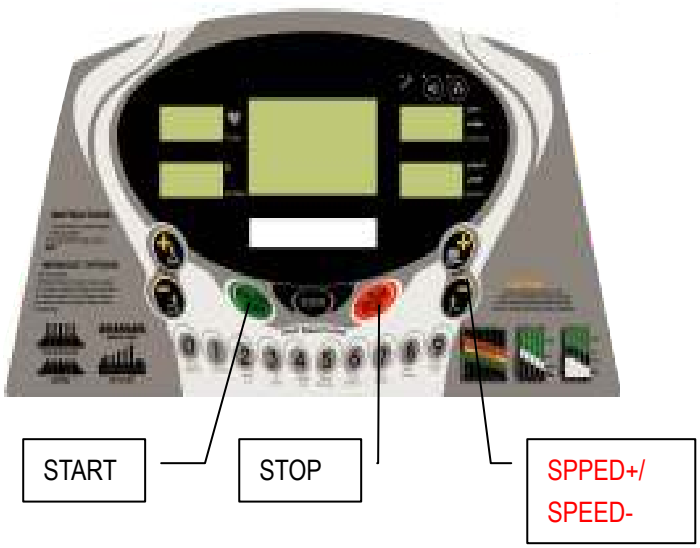
1. To calibrate, make sure the treadmill is not running (running belt not moving).

2. Turn power on. Wait for a few seconds.

3. Press the STOP and SPEED- buttons at the same time, then both STOP and SPEED+, and then SPEED-. Now the treadmill is in calibration mode.

   Press the START button. The treadmill will run calibration the incline motor.

4. Run through a few functions to make sure everything is in good condition.

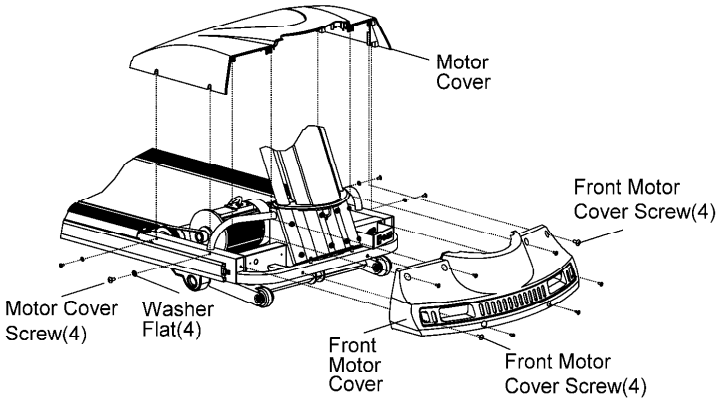


T790 Treadmill

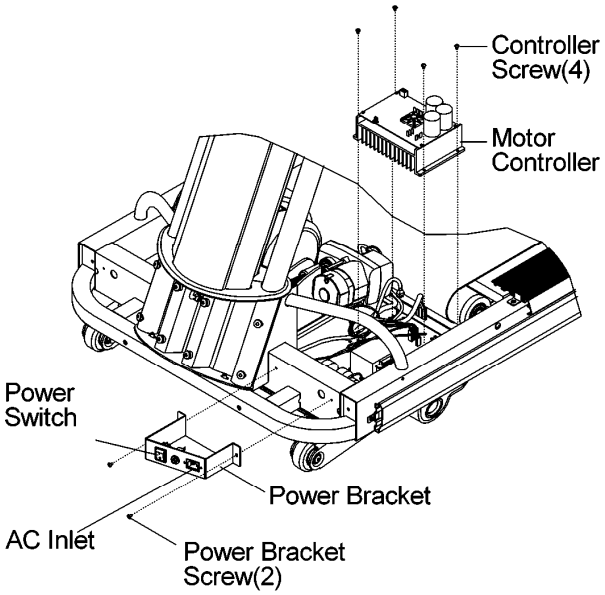
How To…Replace The Motor Controller

Tools Required: Phillips Screwdriver (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION



1. At the power switch, turn OFF the unit, then unplug the power cord at the wall outlet.
2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.



3. Disconnect all electrical connectors from the motor controller board.(Please refer to WIRING DIAGRAM – Section IV, page 6)
4. Remove the power bracket by removing the power bracket screws (2)
5. Remove the controller screws (4) and lift out the motor controller from the frame.
6. Install new motor controller in reverse order.
7. Make sure to calibrate incline motor. Refer back to incline motor calibration in this section.

T790 Treadmill

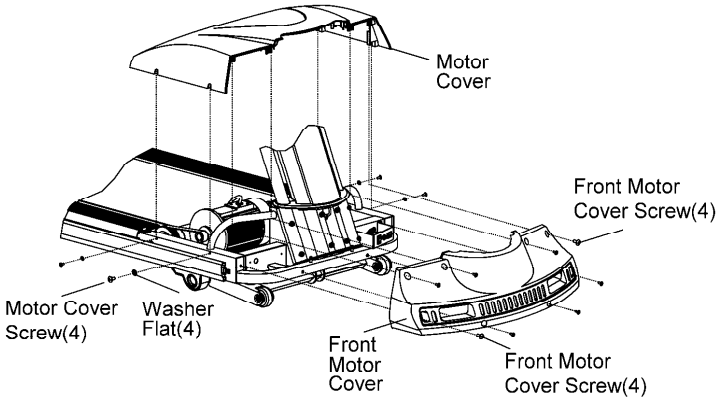
How To…Replace The Aluminum Side Landing

Tools Required: Phillips screwdriver, Sharp nose pliers, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION

1. At the power switch, turn OFF the unit, then unplug the power cord at the wall outlet.

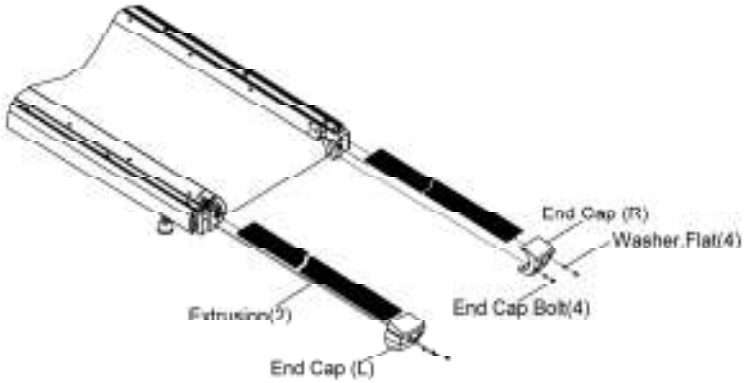
2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.



3. Remove the end caps by removing end bolts (4) and washer flats (4) from each end cap.

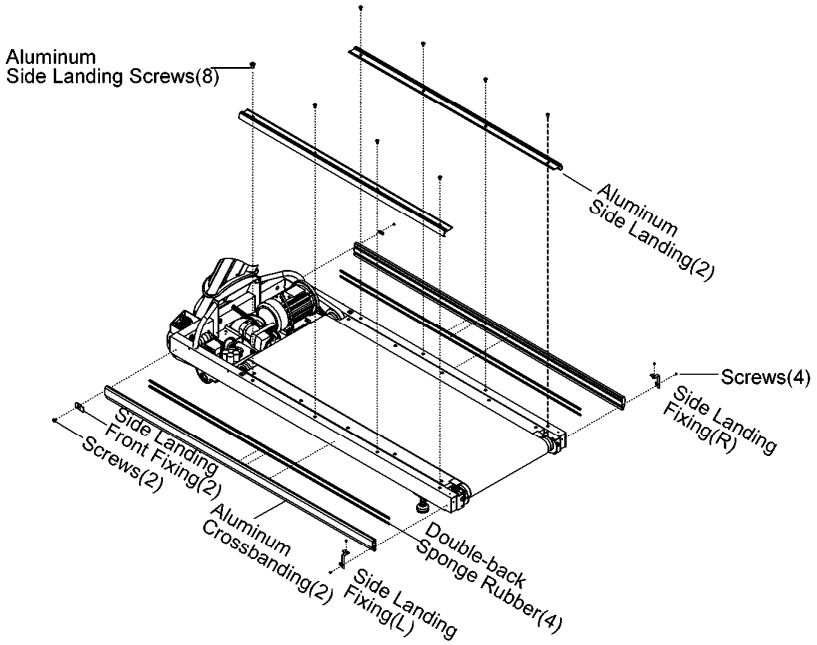
4. Remove the fixing bolts (6) and side landing fixings.

5. Remove the aluminum side landing screws (8), and the aluminum side landing washers (8), lift off the aluminum side landings (2).



6. Remove the aluminum crossbandings (2) and double-back sponge rubbers (4)

7. Install new the aluminum side landings (2), the aluminum crossbandings (2) and double-back sponge rubbers (4)



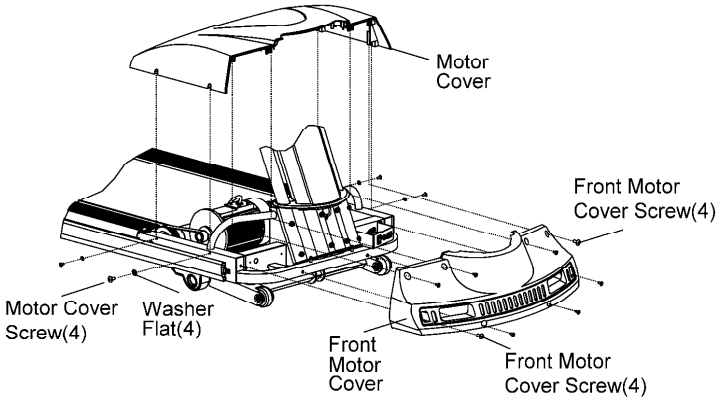
How To…Replace The Incline Structure

Tools Required: Phillips screwdriver, Sharp nose pliers, and open end wrench set. (All fasteners are metric. Make sure that you have metric tools.)

REMOVAL AND INSTALLATION

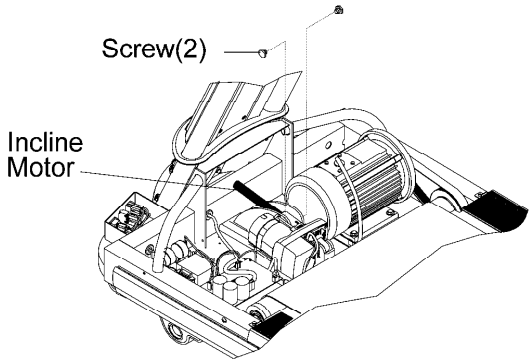
1. At the power switch, turn OFF the unit, then unplug the power cord at the wall outlet.

2. Remove the front motor cover screws (8) and front motor cover, then remove the motor cover screws (4) and washer flats (4) of the motor cover, lift off the motor cover.
Caution: For safety purpose, put blocks between frames to hold up the main frame.



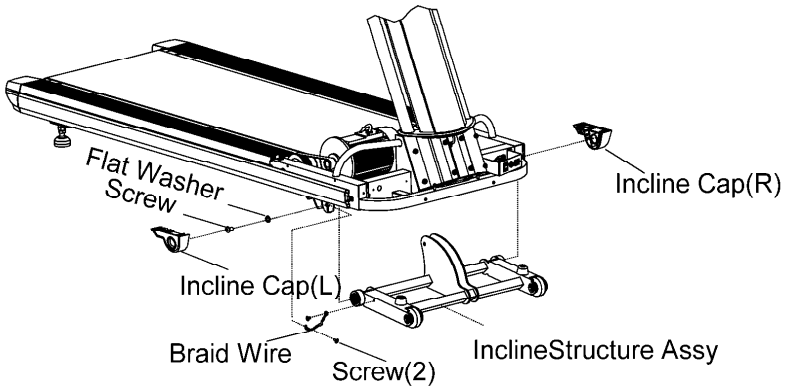
3. Remove the incline cap (L) and the incline cap (R).

4. Remove the screws and flat washers.



5. Remove the incline structure assy from the main frame.

6. Replace a new incline structure assy in reverse order.

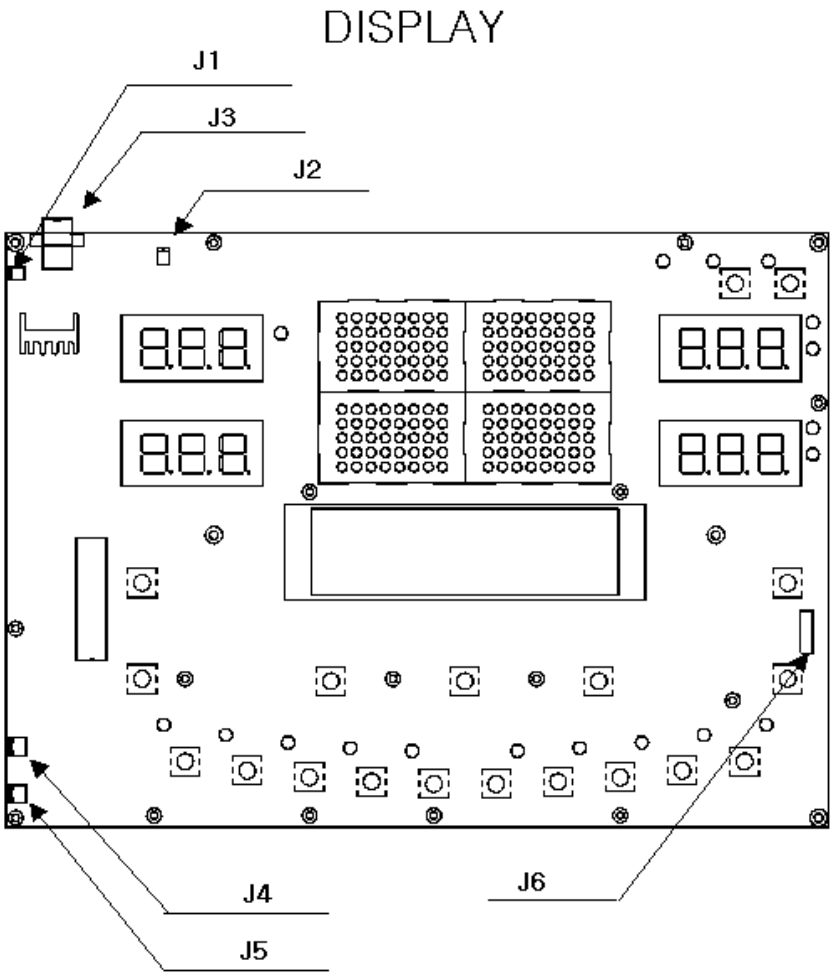


SECTION IV

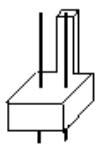
ELECTRONIC OVERVIEW AND WIRING BLOCK DIAGRAM

Function Description

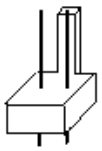
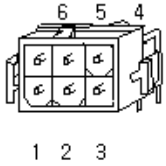
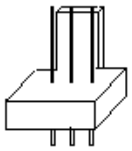
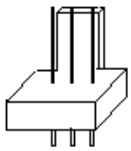
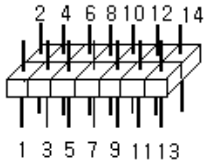
The T790 console is designed to act as an intelligent display and keypad interface. It is intended to work in conjunction with the Motor Control module to form the nucleus of the I/O and control system. The console board periodically reads the keypad input port to check for user's inputs, updates, refreshing the status of LEDs, data display and communicating with the Motor Control module.



Connector and Pin Functions

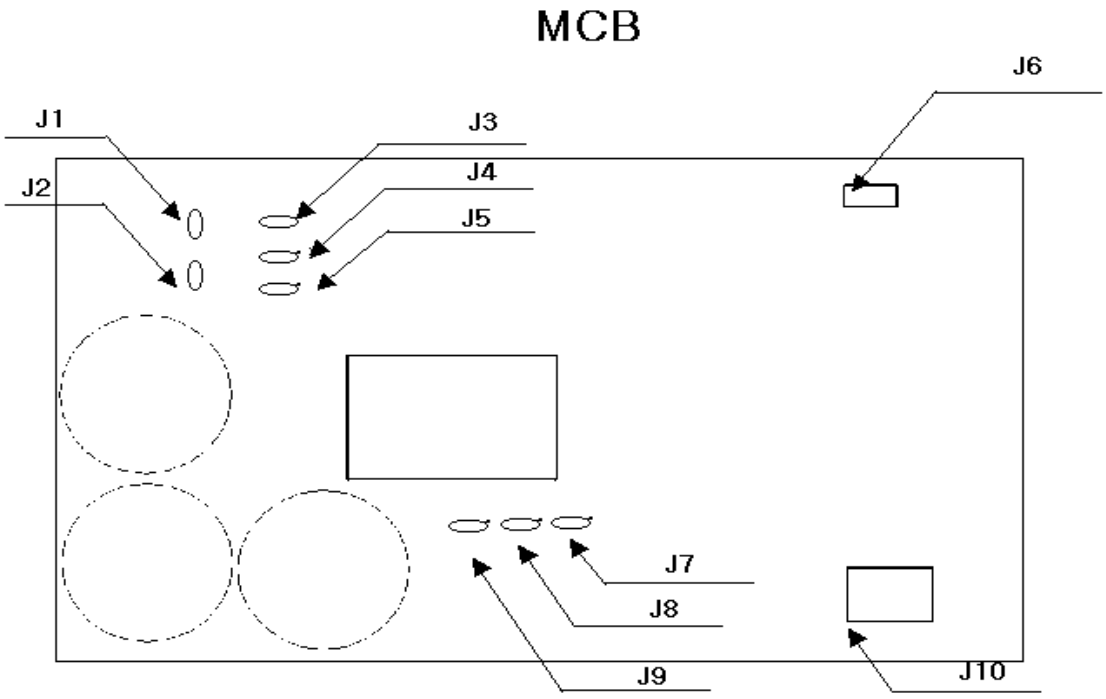
Connector	Location	Pin	Functional Description
J1		1	INT -Skey
		2	GND

Connector and Pin Functions

Connector	Location	Pin	Functional Description
J2		1	INT – FAN
		2	GND
J3 is a 6pin connector is used for connection with MCB.		1	Safety key
		2	Ground
		3	Ground
		4	Vcc
		5	Receive
		6	Send
J4		1	SIG – INPUT(hand-pulse)
		2	VCC (5V)
		3	GND
J5		1	SIG – INPUT(pulse)
		2	VCC (5V)
		3	GND
J7 is a 14pin connector is used for VOICE BOARD.		1	SPA0
		2	SPA1
		3	SPA2
		4	SPA3
		5	SPA4
		6	SPA5
		7	SPA6
		8	SPA7
		9	SPA8
		10	SPCE
		11	SPPD
		12	SPEOM
		13	VCC
		14	Ground

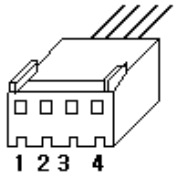
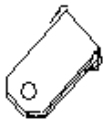
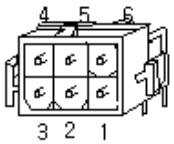
Function Description

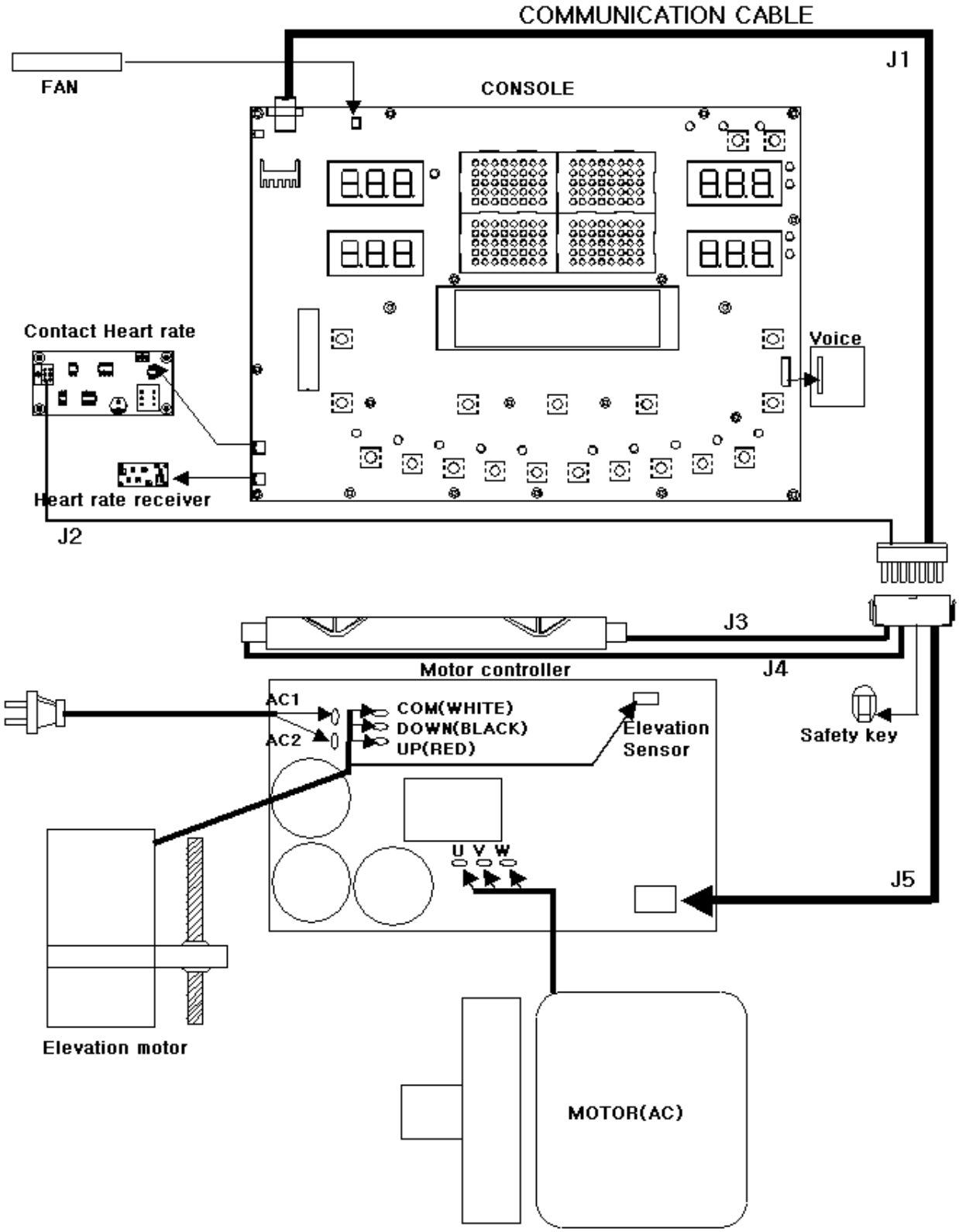
The Motor Controller PCBs are designed to act as an interface between the Drive motor, Display Console and the Incline Motor. The desired belt speed and elevation is sent down to the motor controller and incline motor via the users selected input into the console. The motor is driven by a fixed frequency variable duty cycle signal. If an error condition is detected, the main power relay receives its bus voltage from the console through the emergency pull switch. This relay can be energized by having the emergency pull switch in its proper place. Opening of the relay does not remove power to the console or the logic on the motor control board, but will interrupt power to the incline and drive motors.



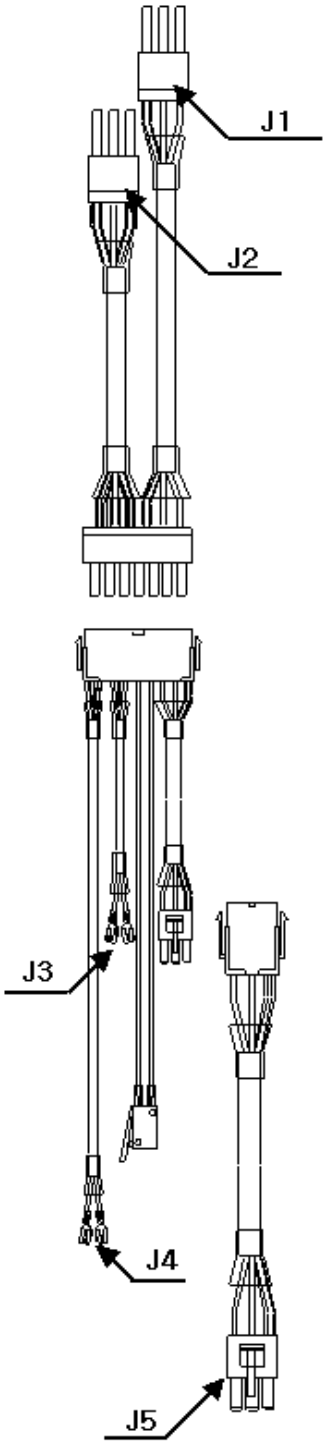
Connector and Pin Functions

Connector	Location	Pin	Functional Description
J1 is AC INPUT (1)connect tab.		1	AC230V (1)
J2 is AC INPUT (2)connect tab.		1	AC230V (2)
J3 is COM LINE(WHITE) to the elevation motor connect.		COM	COM LINE(WHITE) connecter tab.
J4 is elevation motor DOWN LINE(BLACK) connect tab.		1	DOWN LINE(BLACK) connect tab.

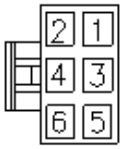
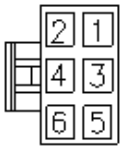
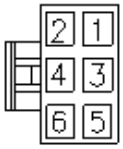
Connector	Location	Pin	Functional Description
J5 is elevation motor UP LINE(RED) connect tab.		1	UP LINE(RED) connect tab.
J6 is a 4pin connector is used for incline sensor connection.		1	Shield
		2	Vcc
		3	GRADE
		4	Ground
			``
J7 is AC Moter Output (U) to the AC drive.		U	AC MOTOR LINE(U) connecter tab.
J8 is AC Moter Output (V) to the AC drive.		V	AC MOTOR LINE(V) connecter tab.
J9 is AC Moter Output (W) to the AC drive.		W	AC MOTOR LINE(W) connecter tab.
J10 is a 6pin connector used to connect to the console.		1	Safety key
		2	Ground
		3	Ground
		4	Vcc
		5	Receive
		6	Send


COMMUNICATION CABLE
J1
FAN
CONSOLE
Contact Heart rate
Voice
Heart rate receiver
J2
J3
J4
Motor controller
AC1
AC2
COM(WHITE)
DOWN(BLACK)
UP(RED)
Elevation Sensor
Safety key
U V W
J5
Elevation motor
MOTOR(AC)

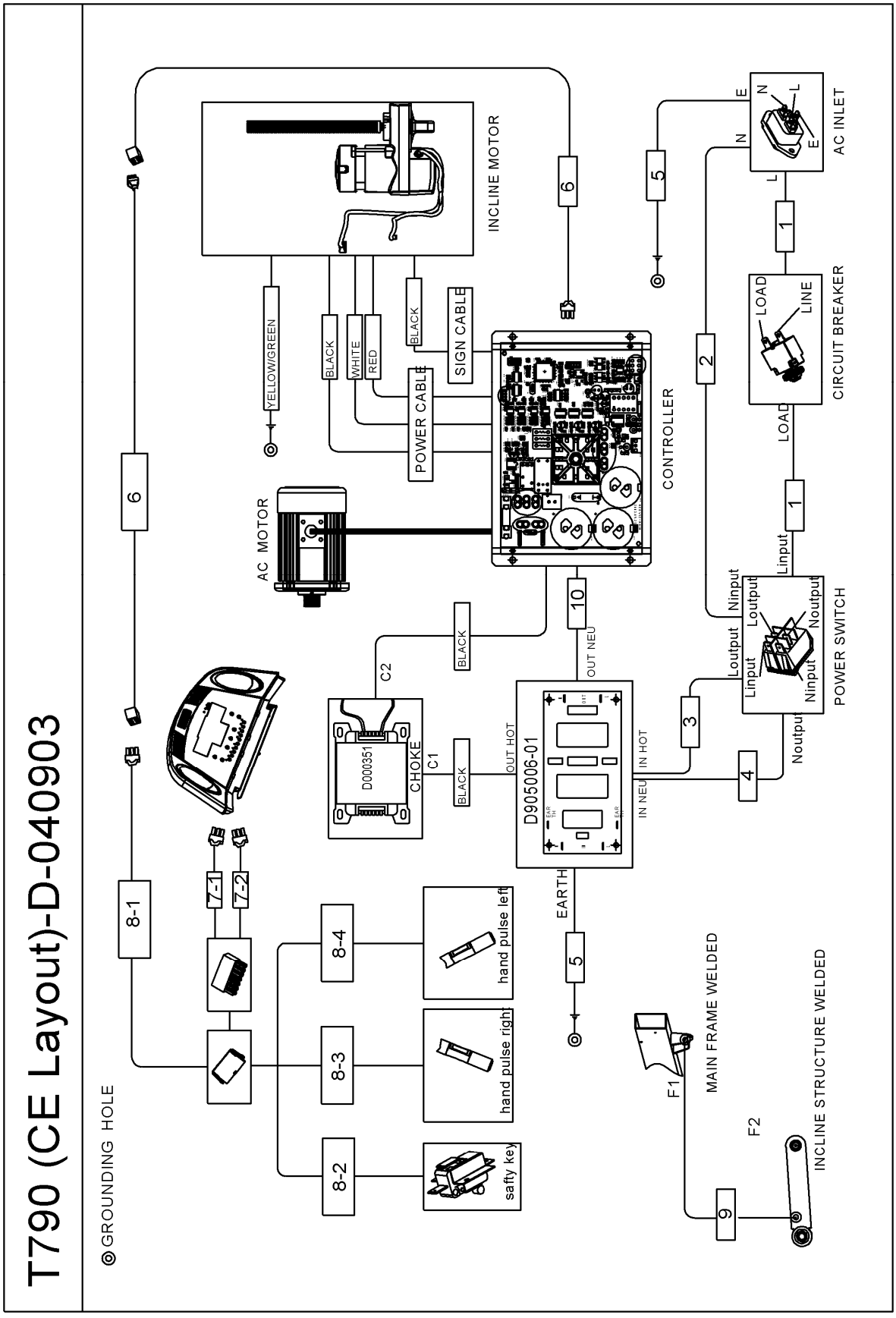
COMMUNICATION CABLE



Connector and Pin Functions

Connector	Location	Pin	Functional Description
J1 is a 6pin connector used to connect to the console.		1	Safety key
		2	Ground
		3	Ground
		4	Vcc
		5	Receive
		6	Send
J2 is a 6pin connector used to connect to the contact HR.		1	GND
		2	Left - Input
		3	Reference
		4	Right - Input
		5	Reference
		6	GND
J3 is a 2pin TAB used to connect to the Contact HR Sensor.		1	Right side sensor
		2	
J4 is a 2pin TAB used to connect to the Contact HR Sensor.		1	Left side sensor
		2	
J5 is a 6pin connector used to connect to the Motor controller.		1	Safety key
		2	Ground
		3	Ground
		4	Vcc
		5	Receive
		6	Send

Section IV

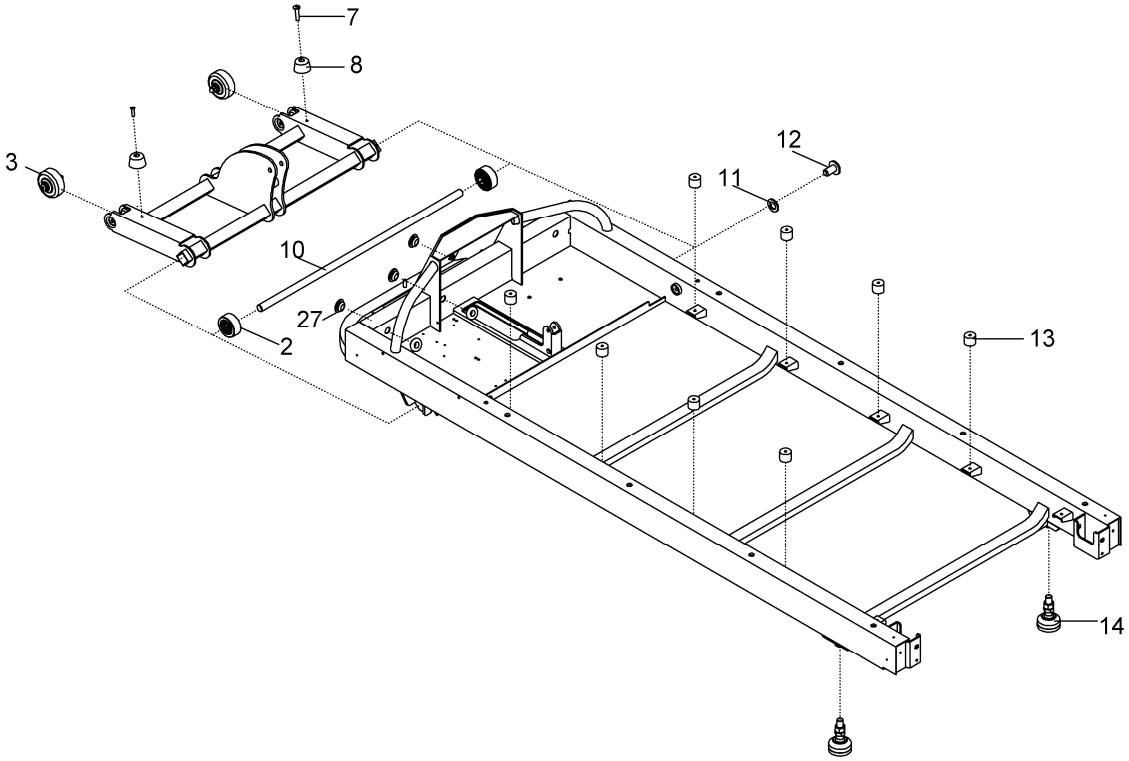

T790 (CE Layout)-D-040903
GROUNDING HOLE
INCLINE MOTOR
AC MOTOR
CONTROLLER
CIRCUIT BREAKER
AC INLET
POWER SWITCH
CHOKE
D000351
D905006-01
MAIN FRAME WELDED
INCLINE STRUCTURE WELDED
hand pulse left
hand pulse right
safty key
YELLOW/GREEN
BLACK
WHITE
RED
POWER CABLE
SIGN CABLE
OUT HOT
OUT NEU
IN HOT
IN NEU
EARTH
LOAD
LINE
Linput
Ninput
Loutput
Noutput
C1
C2
F1
F2

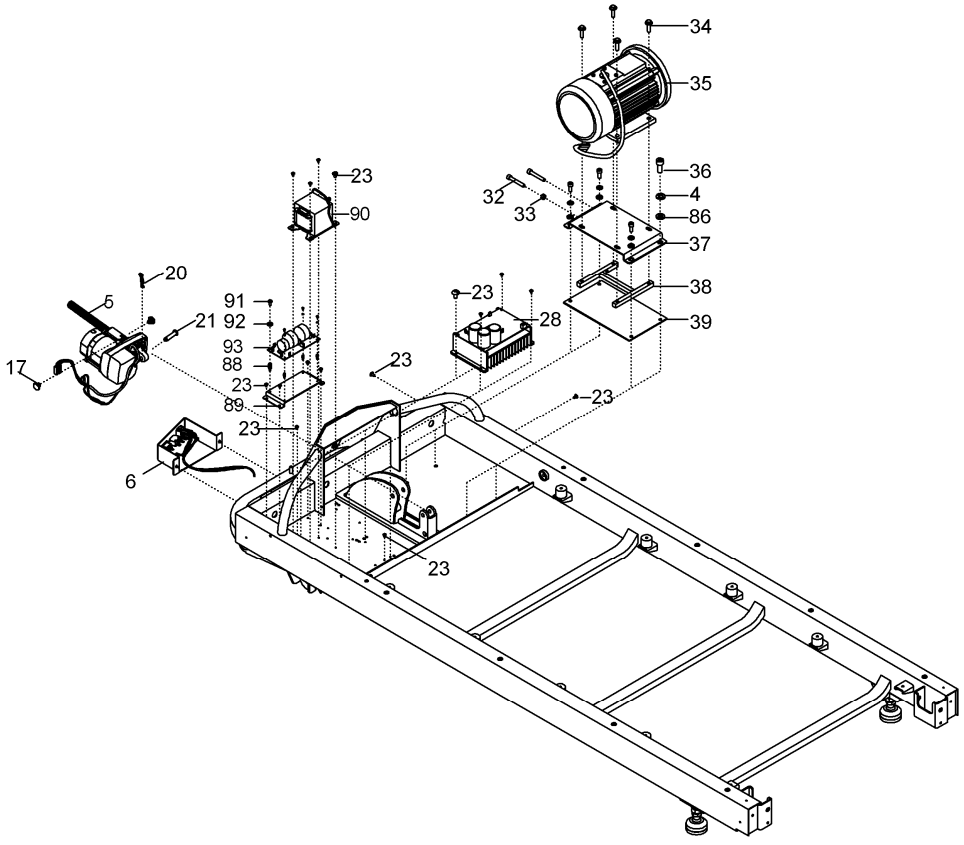
T790 CE Layout-D-040903					
Item.	**PART NO.**	**Color**	**Length**	**QTY**	**Remark**
1	WI221100	BLACK	100mm	2	
2	WI222170	WHITE	170mm	1	
3	WI221270	BLACK	270mm	1	
4	WI222270	WHITE	270mm	1	
5	WI233100	YELLOW/GREEEN	100mm	2	
6	D300030	BLACK	1000mm	2	
7-1	D300032	BLACK	590mm	1	
7-2		BLACK	300mm		
8-1	D300031	BLACK	500mm	1	
8-2		BLACK	650mm		
8-3		RED	500mm		
		GREEN			
8-4		WHITE	1200mm		
		BLACK			
9	WI336120	BRAID	120mm	1	
10	WI222320	WHITE	320mm	1	

SECTION V

PARTS IDENTIFICATION

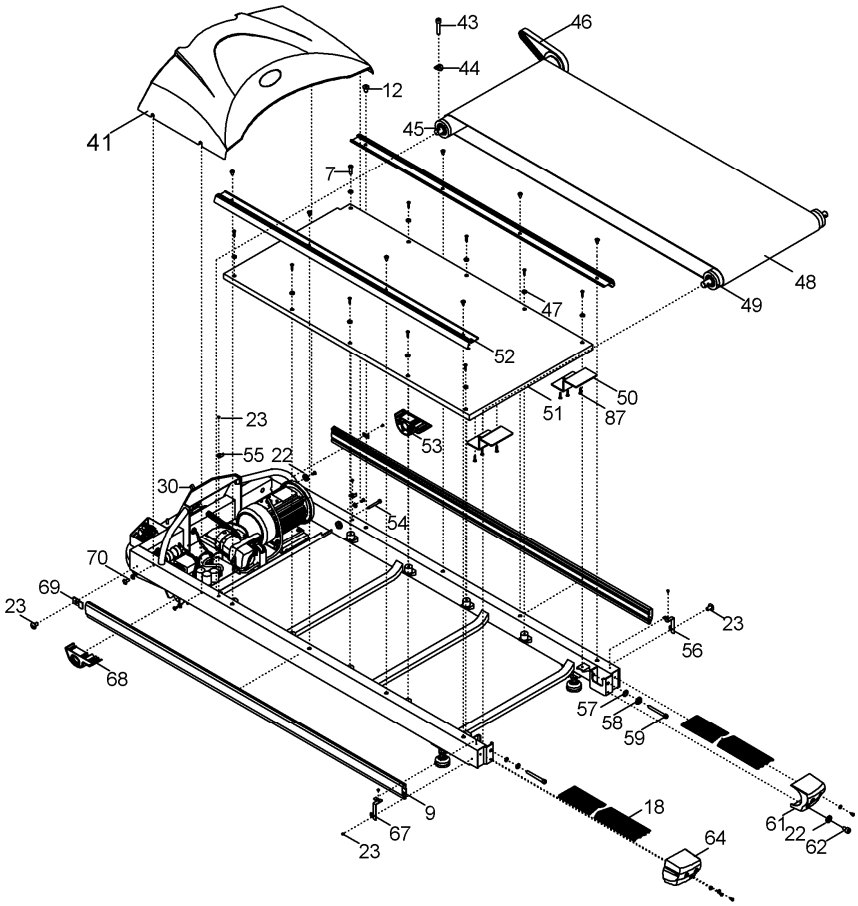
T790 (Rev.C) ***Update: 2005.04.05***

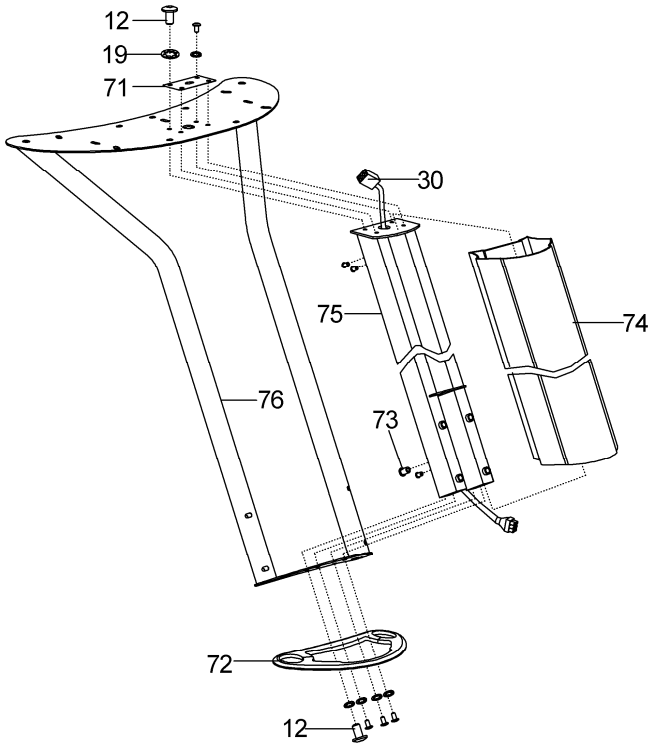




Explode drawing & part list 050405

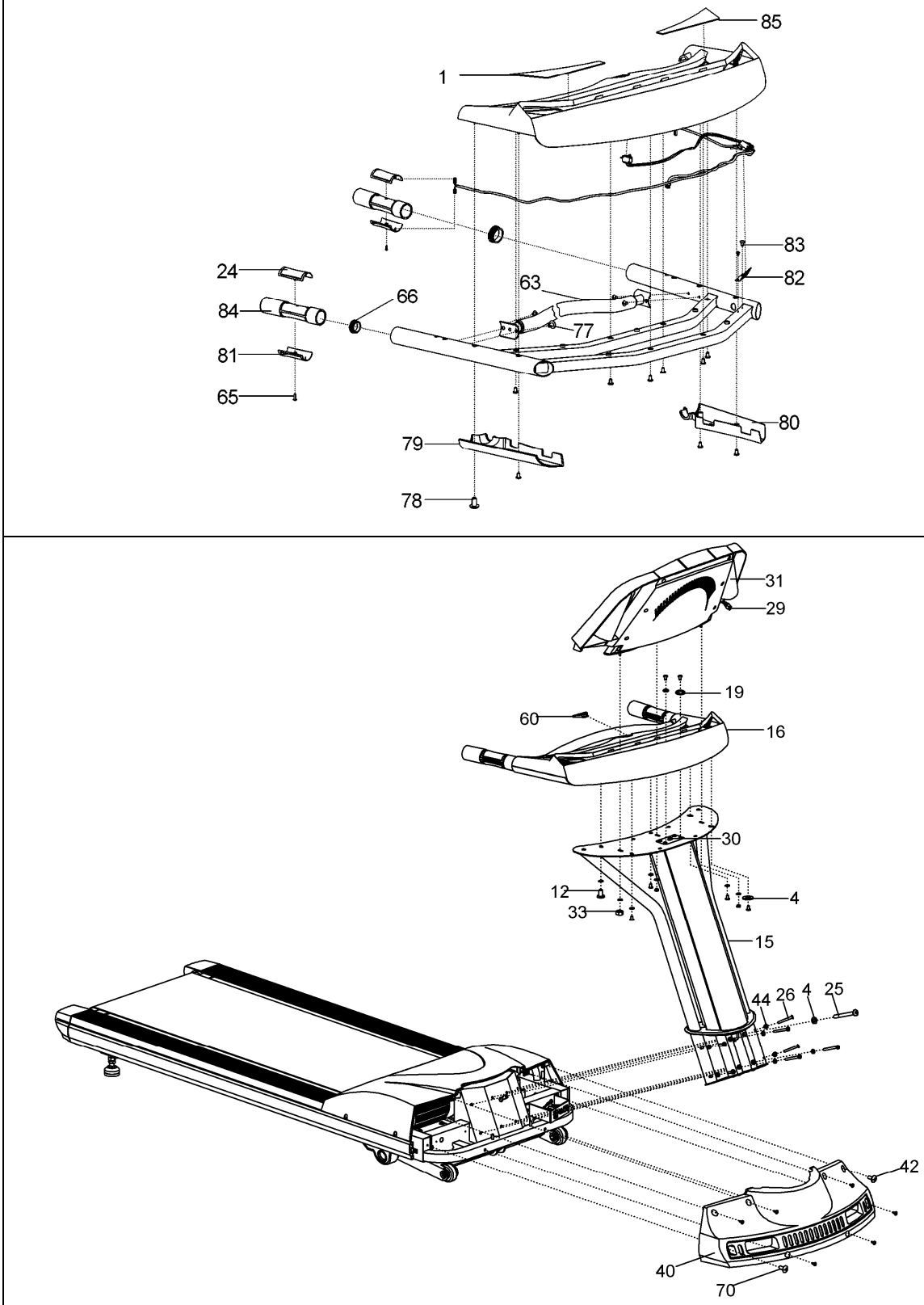
T790 (Rev.C) ***Update: 2005.04.05***





Explode drawing & part list 050405

T790 (Rev. C) ***Update: 2005.04.05***



Explode drawing & part list 050405

PART LIST

ITEM No.	PART LIST SEPARATE + EXPLODED DRAWING	QTY.
1	Anti-slip rubber(R)	1
2	Connection tube bushing	2
3(3a~3d)	Incline moving wheel assy	2
3a	Screw, dome head, M8x60mm.	1
3b	Washer, flat, M8X1.6mm	2
3c	Incline moving wheel	1
3d	Nut, crown, M8x6.5mm	1
4	Washer, flat, M8X1.6mm	16
5(5a~5b)	Incline motor assy	1
5a	Incline motor nut	1
5b	Incline motor	1
6(6a~6g)	Power supply unit	1
6a	Power switch	1
6b	Screw, dome head, M4x8mm.	2
6c	Washer, star	2
6d	Power bracket	1
6e	Ac inlet	1
6f	Screw, dome head, M4x6mm.	2
6g	Circuit breaker	1
6h	Connect wire	1
6i	Connect wire	1
6j	Connect wire	1
6k	Connect wire	1
7	Screw, dome head, M6x25mm.	12
8	PVC foot	2
9(9a~9b)	Side landing assy	2
9a	Double-back sponge rubber	2
9b	Aluminium cross banding	1
10	Fixed shaft	1
11	Washer, flat, M8x2mm.	1
12	Screw, dome head, M8x15mm.	22

ITEM No.	PART LIST SEPARATE + EXPLODED DRAWING	QTY.
13	Deck cushion	8
14	Support foot assy	2
15	Upright post assy	1
16	Console base assy	1
17	Special screw hex head	2
18(18a~18e)	Side landing assy	2
18a	Single-back sponge rubber	1
18b	Side landing	1
19	Washer, star	8
20	R pin	1
21	Incline motor pin	1
22	Washer, flat, M6x1.5mm.	8
23	Screw, dome head, M4x8mm.	25
24	Top sensor assy	2
25	Screw, dome head, M8x80mm.	4
26	Screw, dome head, M8x60mm	4
27	Snap bushing	5
28	Controller assy(ADT)	1
29	Signal cable, console	1
30	Signal cable, upright post and main frame	2
31	Console sub assy	1
32	Screw, socket head, M8x55mm	2
33	Nut, hex, M8x7.8mm.	3
34	Screw, fringe head, M8x25mm.	4
35	Motor sub assy	1
36	Screw, socket head, M8x20mm.	4
37	Motor base bracket welded	1
38	Adjust bracket welded	1
39	Motor rubber	1
40	Front motor cover	1
41	Motor cover assy	1
41a	Motor cover	1
41b	Nut plate	4

ITEM No.	PART LIST SEPARATE + EXPLODED DRAWING	QTY.
42	Screw, dome head, M6x15mm.	4
43	Screw, socket head, M8x40mm.	1
44	Washer, curve, M8x1.5mm	5
45	Front roller assy	1
46	Drive belt	1
47	Washer, flat M6x1.6mm	10
48	Running belt	1
49	Rear roller assy	1
50	Deck guard	2
51	Deck	1
52	Aluminium side landing	2
53	Incline cap(R)	1
54	Screw, socket head, M8x65mm.	1
55	Side landing bracket	2
56	Side landing fixing(R)	1
57	Washer, star, M10x0.9mm	2
58	Washer, flat, M10x2.0mm.	2
59	Screw, socket head, M10x95mm.	2
60	Safety key assy	1
61	End cap(R)	1
62	Screw, socket head, M6x10mm.	4
63	Horizontal bar	1
64	End cap(L)	1
65	Screw, Phillips head, M3x10mm.	2
66	Side bar end cap	2
67	Side landing fixing (L)	1
68	Incline cap (L)	1
69	Side landing front fixing	2
70	Screw, dome head, M6x15mm.	8
71	Wire fixing bracket	1
72	Motor cover rubber	1
73	Bolt-chain ring, M8x1.25Px15mm	4

ITEM No.	PART LIST SEPARATE + EXPLODED DRAWING	QTY.
74	Upright post (Aluminium)	1
75	Upright post sub welded	1
76	Upright post welded	1
77	Screw, dome head, M6x10mm.	4
78	Screw, dome head, M5x10mm	10
79	Handle bar cover(R)	1
80	Handle bar cover (L)	1
81	Bottom sensor assy	2
82	Console connector bracket	1
83	Screw, dome head, M4x8mm.	2
84	Hand pulse base	2
85	Anti-slip rubber (L)	1
86	Motor washer	4
87	Screw, dome head, M5x15mm.	6
88	Filter	1
89	Cu screw sleeve	4
90	Filter bracket	1
91	Choke	1
92	Screw, Phillips head	4
93	Washer, spring	4

SECTION VI

MISCELLANEOUS INFORMATION

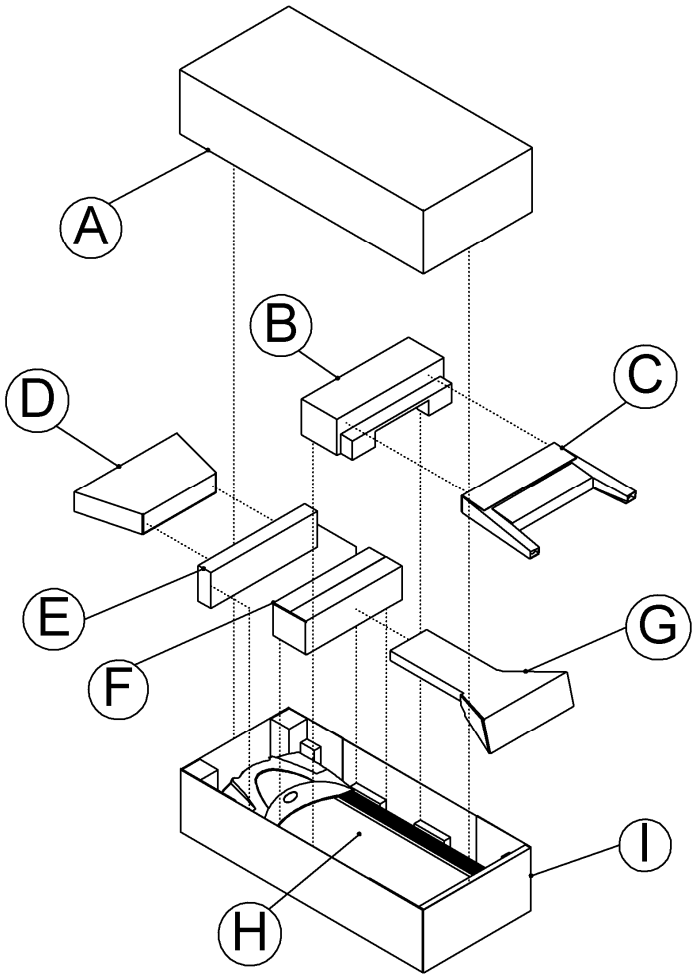
Preventive Maintenance Schedule

ITEM	WEEKLY	MONTHLY	QUARTERLY	BI-ANNUAL	ANNUAL
CONSOLE ASSY					
Hardware				Inspect	
Overlay	Clean			Inspect	
CONSOLE BASE ASSY					
Hardware				Inspect	
Handlebar				Inspect	
Side Hand Rails				Inspect	
Emergency Switch/Key	Clean			Inspect	
MAIN FRAME ASSY					
Hardware				Inspect	
Motor Cover	Clean				
Drive Belt				Inspect	
Front Roller				Inspect	
Rear Roller				Inspect	
UPRIGHT POST ASSY					
Overlay	Clean			Inspect	
Upright Post(Aluminum)	Clean			Clean	
FRONT MOTOR COVER					
Front Motor Cover	Clean				

CAUTION: For your own safety, remove the treadmill from the carton.

1. Remove all banding from the corrugated shipping container. Carefully lift the shipping container (A) up and off of the base tray (I).
2. Remove the handle bar box(C).
3. Remove all the packaging materials (B) and (E) etc.
4. Remove the console box (D)、front motor cover box (F)、upright post box (G) and main frame(H).
5. Find and read the assembly instructions before putting together the treadmill.
6. Assemble the treadmill according to assembly instructions.

NOTE: BE SURE NOT TO DAMAGE THE LINE CORD WHEN MOVING THE TREADMILL OUT OF THE BASE TRAY.



IMPORTANT

IMPORTANT SAFETY INSTRUCTIONS!

⇒ ***DO NOT*** *position the rear of the treadmill within 6 feet (2 meter) of the nearest obstruction. The sides of the treadmill should maintain a minimum clearance of 8 inches (20 cm) from the nearest treadmill or other obstruction.*

⇒ ***DO NOT*** *locate the treadmill outdoors, near swimming pools, or in areas of high humidity.*

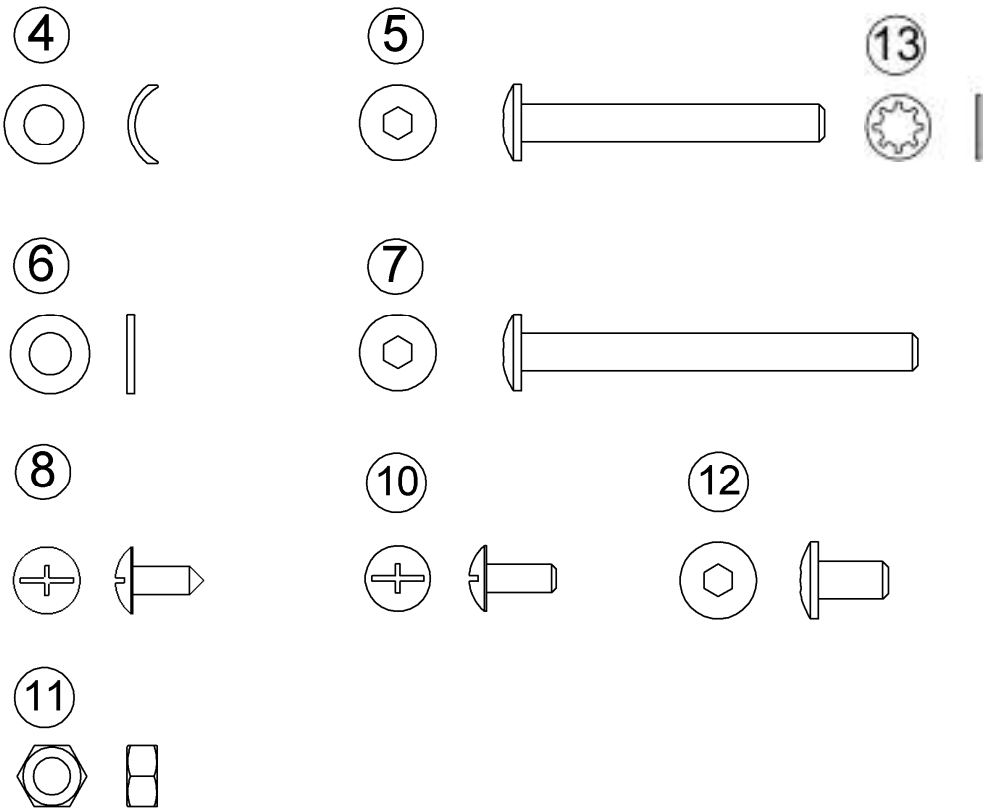
⇒ ***DO*** *verify the contents of the delivery carton against the accompanying parts listing prior to setting the cartons and shipping material aside. If any part is missing, contact the Customer Support Services at the number listed on the back page of this assembly instruction booklet.*
Save the shipping cartons in case of return.

⇒ ***DO*** *read the entire Operation Manual prior to attempting to operate this machine, as this is essential for proper use. The Manual explains how to properly use the treadmill and helps you design an aerobic workout tailored to your personal fitness needs or requirements.*

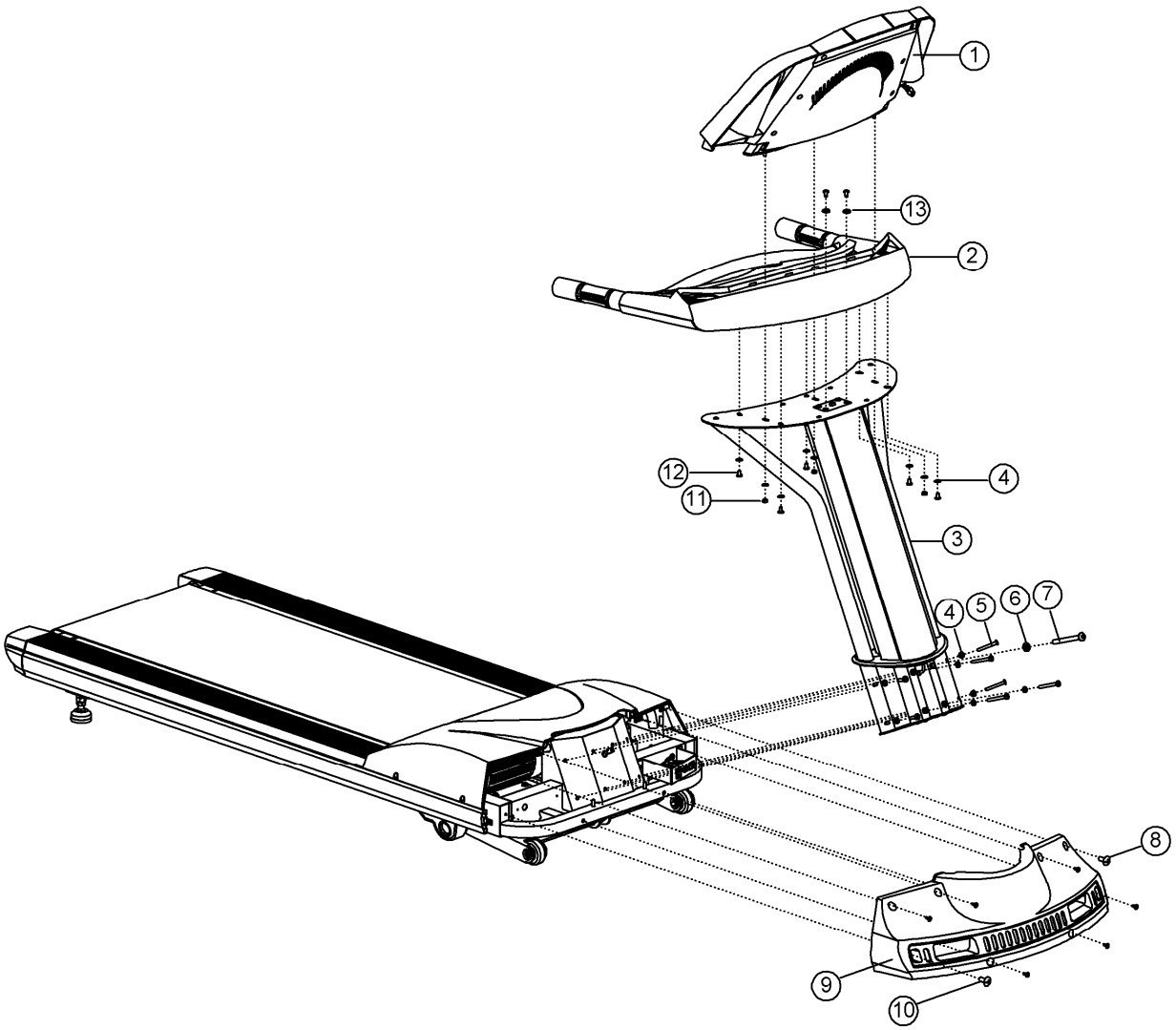
TOOLS REQUIRED FOR ASSEMBLEY…
6mm Hex wrench, 6mm T wrench, 13mm combo wrench and Phillips screwdriver (provided)

PARTS DESCRIPTION

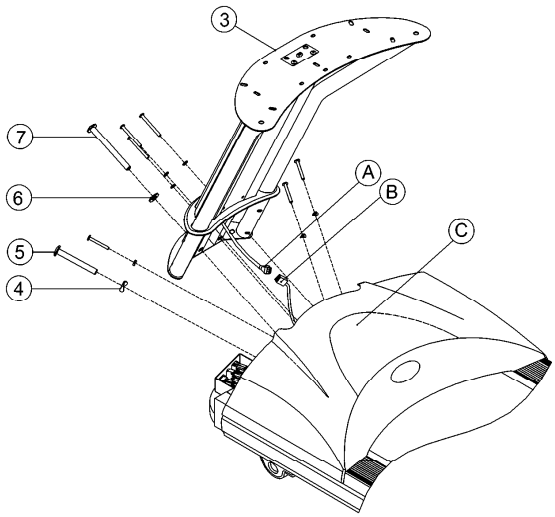
1	CONSOLE	**Qty: 1**
2	CONSOLE BASE	**Qty: 1**
3	UPRIGHT POST	**Qty: 1**
4	WASHER, CURVE M8*1.5mm	**Qty: 4**
5	SCREW, DOME HEAD M8*60mm	**Qty: 4**
6	WASHER, FLAT M8*1.6mm	**Qty: 12**
7	SCREW, DOME HEAD M8*80mm	**Qty: 4**
8	SCREW, DOME HEAD M6*15mm (Self tapping screw)	**Qty: 4**
9	FRONT MOTOR COVER	**Qty: 1**
10	SCREW, DOME HEAD M6*15mm	**Qty: 4**
11	NUT, HEX M8*6.5mm	**Qty: 3**
12	SCREW, DOME HEAD M8*15mm	**Qty: 7**
13	WASHER, STAR M8*0.8mm	**Qty: 2**



Section VI


1
13
2
12
11
4
3
4
5
6
7
8
9
10

IMPORTANT! DO NOT DISCARD THE TOOLS AND HARDWARE KIT. ALL COMPONENTS ARE NEEDED TO COMPLETE THE INSTALLATION



1. ASSEMBLE THE UPRIGHT POST

Use 6mm hex wrench to perform this assembly procedure.

Connect the cables (A, B) before you assemble the upright post (3) to the base frame(C);

Align the upright post to the two pins on the base frame before gently setting down;

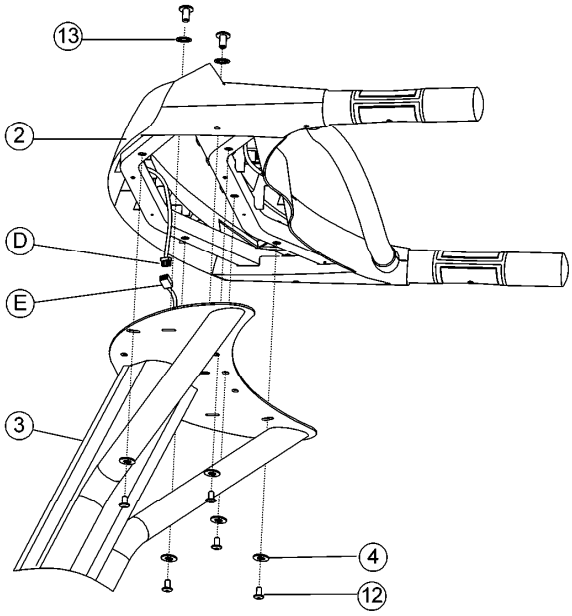
Lightly secure the upright post(3) to base frame(C) with four screws (7) and four washers (6) in the center of the post;

Then secure the round tubes on both sides of the center post to base frame with two screws(5) and two curve washers(4) on each side;

Tighten the eight bolts on the upright post (3) after they are in position.

NOTE:

Take care that the cables do not get trapped or pinched



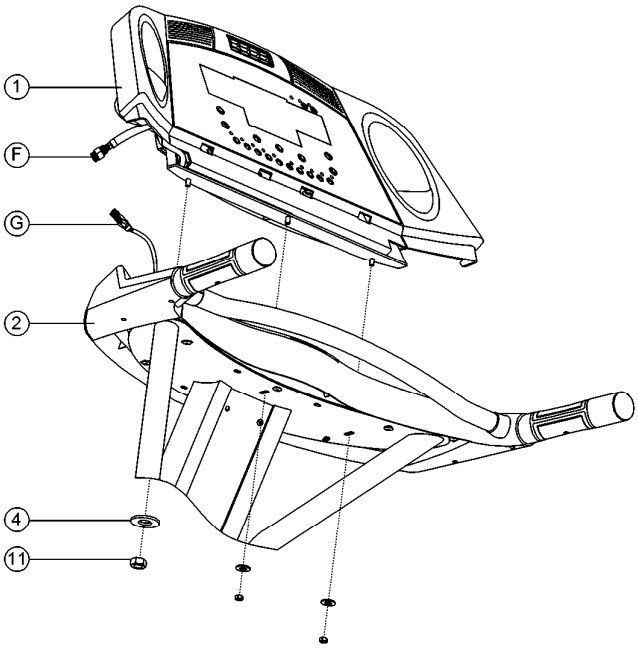
2. ASSEMBLE THE CONSOLE BASE

Use 6mm hex wrench to perform this assembly procedure.

Secure console base(2) to the upright post(3) with five bolts(12) and five flat washers(4) from the bottom and secure two bolts(12) and two star washers(13) from the top. Be careful not to pinch or damage the cables;

Tighten all the bolts as tightly as possible;

Do not pull on the cables(E). Carefully connect the cables(E) and (D). Push down the cables so that they lay inside plastics.



3. ASSEMBLE THE CONSOLE BASE

Use 13mm combo wrench to perform this assembly procedure.

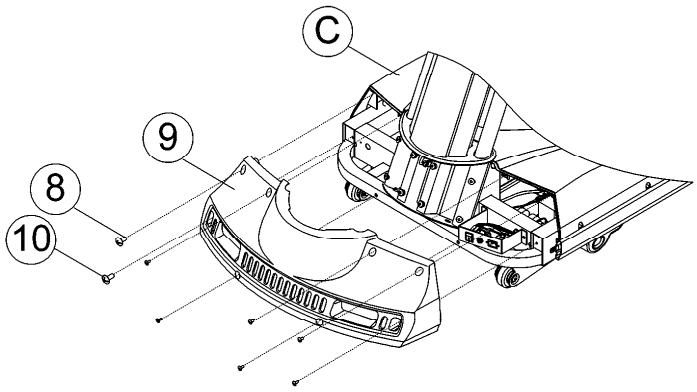
Do not pull on the cable(G). Carefully connect the cables (G) and (F). Push down the cables

Section VI

so that they lay inside plastics. Then gently set the console (1) on the console base (2) by aligning the three pins. Be careful not to pinch or damage the cables.
Once you have the console in place, secure the console with three nuts (11) and washers (4). Tighten the three nuts on the console base (2) after they are in position.

4. ASSEMBLE THE FRONT COVER

Use Phillips screwdriver to perform this assembly procedure.
Turn on the treadmill to ensure that all connections are connected properly by checking that the console display functions properly;
Then secure the front motor cover (9) to the base frame(C) with four self-tapping screws (8) along the top and four screws (10) along the bottom;
Tighten the eight screws （8） and （10） on the front motor cover (9) after they are in position.



PRE-OPERATION CHECKLIST

- ✓ *Ensure that all fasteners are tight.*
- ✓ *Make sure the RUNNING BELT is properly tensioned and aligned according to the Operation Manual.*
- ✓ *Check the operation of the STOP switch and tether switch assembly. (See Operation Manual.)*
- ✓ *Confirm the display console is set to English or Metric units. (See Optional Settings ENGIMET in Operation Manual.)*
- ✓ *Read the entire Operation Manual before using the treadmill.*

I*f you would like to submit a part order, or if you need help troubleshooting a problem, we have included, for your convenience, a FAX form on the following page. Simply make a copy (or copies) of the FAX sheet and fill in the necessary information. You may FAX us at any time, 24 hours a day, to either of the numbers shown. A HS service representative will process your order, or respond to your problem, as quickly as possible.*

☐ **PARTS ORDER** (IF BOTH PLEASE INDICATE) ☐ **SALE**

☐ **PRODUCT TROUBLESHOOTING** ☐ **WARRANTY**

NAME:	**CUSTOMER NO:**	**DATE:**
PHONE:	**FAX:**	**CONTACT NAME:**

METHOD OF SHIPMENT: ☐ **1 DAY** ☐ **2 DAY** ☐ **GROUND**

PARTS ORDER FORM

ITEM NO.	PART NUMBER	DESCRIPTION	QUANTITY
1			
2			
3			
4			
5			
6			
7			

PRODUCT TROUBLESHOOTING

PRODUCT NAME:	**SERIAL NO.**
DETAILED DESCRIPTION OF PROBLEM:	
PRODUCT NAME:	**SERIAL NO.**
DETAILED DESCRIPTION OF PROBLEM:	

TIME RECEIVED:	**TIME COMPLETED:**	**TECHNICIAN NAME:**

Healthstream Taiwan Inc.

CUSTOMER SUPPORT SERVICES

Address: 16-3, Zichiang 1st Road
Jhongli, Taoyuan 32063 Taiwan R.O.C.
Telephone: 886.3.433.6269
FAX : 886.3.733.6259

NOTES: