

M660BU, M660BUL, M660BR, M660BRL

Exercise Bike

SERVICE MANUAL

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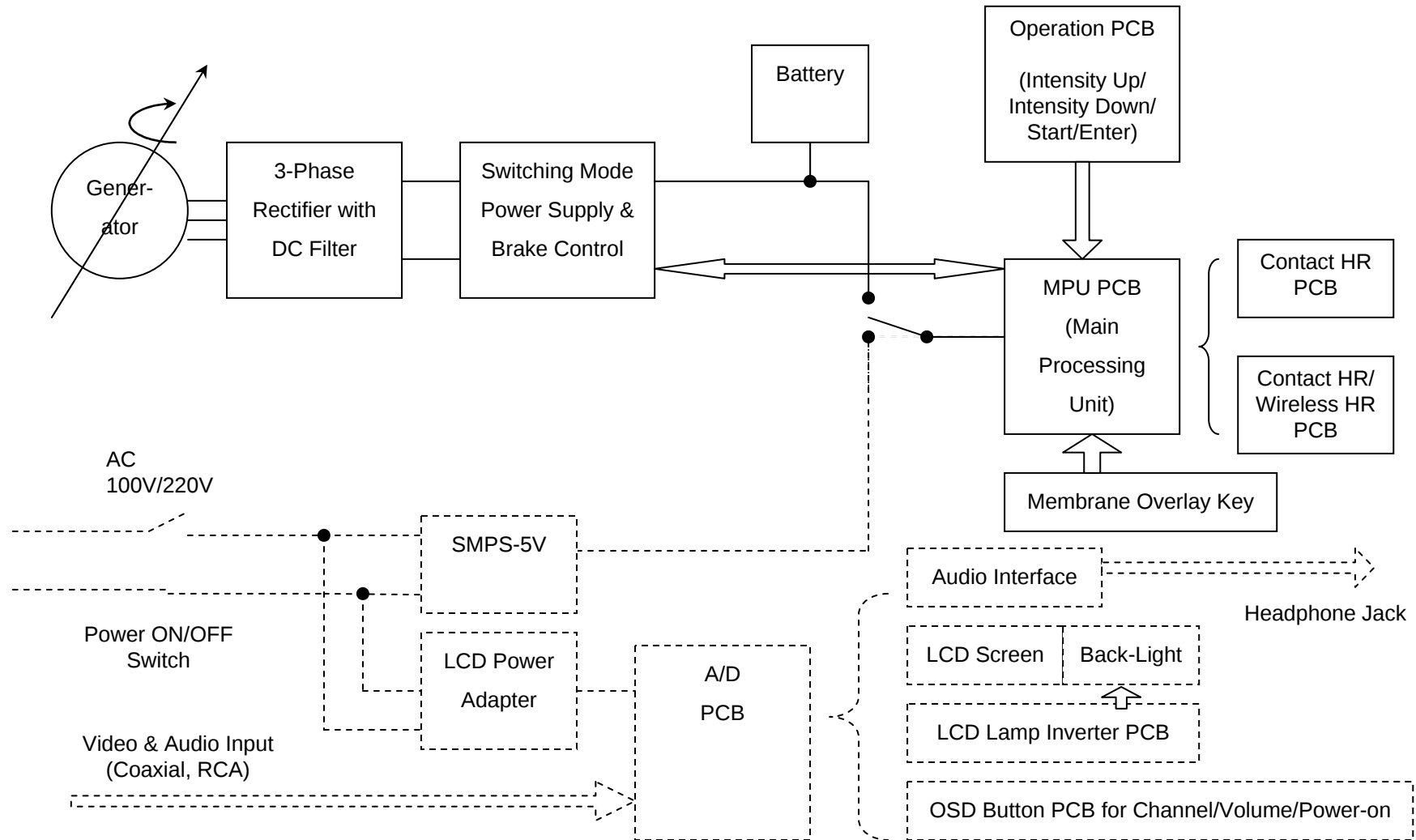
SECTION I

TROUBLESHOOTING GUIDE

- 1.1 System Block Diagram**
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1.1 System Block Diagram

Note: Dotted line is applied to M660BUL/M660BRL



1.2 Troubleshooting Guide

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION	
No power to Console (On M660BUL/BRL)	Line voltage is not present at equipment.	Check the main circuit breaker and wall outlet voltage at the Facility. If wall outlet voltage is present, then replace line cord.	
	Power-on Switch is damaged.	Replace Power-on Switch if the output voltage of Power Switch is not present.	
LCD TV is normal, but Dot-LED and Numeric LED do not light up (On M660BUL/BRL)	Defective SMPS-5V (MPU Power Supply)	Measure the voltage between pin 1 and pin 4 on CN2.	If no voltage, replace Defective SMPS-5V (MPU Power Supply).
	Defective Wire Harness		If no voltage, verify that CBB3 interconnected with CBB4 cable is plugged into both MPU Board and SMPS-5V. Replace if necessary.
	Defective MPU Board		If no voltage, replace MPU PCB.
Dot-LED and Numeric LED are normal, but LCD TV does not light up or is blank	Refer to 1.3 Troubleshooting Guide for LCD.	Refer to 1.3 Troubleshooting Guide for LCD.	
Console LEDs are not illuminating (On M660BU/BR)	Faulty MPU board or Drive board	Using a Multi-meter, verify more than 6VDC at pin-7 and pin-8 on CN1. If voltage is present, replace MPU board. If not, replace Drive board.	
		Test with substitute MPU board or Drive board. Replace if necessary.	
	Cable connection or loose wire connection	Verify that main cable CN1 is securely plugged into both MPU board and Drive board. Replace if necessary.	
	Worn or damaged wire harness	Inspect wire harness. Replace worn or damaged harness.	

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Dot-LED or Numeric LED lights up and then fails. (On M660BU/BR)	Faulty Battery, Note: Battery is used only for M660BU/BR, self-powered model.	Verify that Battery voltage is greater than 6 volts DC. Replace Battery if the voltage is lower than 6 volts DC.
	Faulty MPU board or Drive board	Test with substitute MPU board. Replace if necessary.
		Test with substitute Drive board. Replace if necessary.
	Cable connection or loose wire connection	Verify that main cable CN1 is plugged into both MPU board and Drive board. Replace if necessary.
	Worn or damaged wire harness	Inspect wire harness. Replace worn or damaged harness.
Unit does not Auto Start (On M660BU/BR)	Faulty Battery	Verify that Battery voltage is greater than 6 volts DC. Replace Battery if the voltage is lower than 6 volts DC.
	Cable connection	Verify that the cable connection at MPU board and Drive board or the connection between cables at midpoint is plugged in properly. Using a Multi-meter, verify continuity on all cables. Replace any defective cables.
	Faulty Drive board	If cable connection is verified as good, replace the Drive board.
Unit does not display SPEED on Console	Cable connection	Verify that the cable connection at MPU board and Drive board or the connection between cables at midpoint is plugged in properly. Using a Multi-meter, verify continuity on all cables. Replace any defective cables.
During exercise program, pedaling is insufficiently easy without providing adequate resistance.	Pedaling is too slow.	Pedal faster.
	Program intensity doesn't challenge user ability.	Select higher workout intensity.
	Drive Belt is excessively loose	Inspect Belt tension. Adjust if necessary.
	Cable connection or loose wire connection	Verify that the cable connection at MPU board and Drive board or the connection between cables at midpoint is securely plugged in properly. Using a Multi-meter, verify continuity on all cables. Replace any defective cables.
	Worn or damaged wire harness	Inspect wire harness. Replace worn or damaged harness.
	Faulty Button Switch or Operation Button board	Verify that workout intensity on Console is increased or decreased by pressing UP/DOWN button switch. Replace Button Switch or Operation Button board if there is no change on intensity profile.
	Defective MPU board or Defective Drive board	Test with substitute MPU board or Drive board. Replace if necessary.

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Display Console Keys do not function and Bike does not respond.	Malfunction Overlay, Button Switch or Operation Button board	Replace Overlay, Button Switch or Operation Button board.
	Defective MPU board	Test with substitute MPU board. Replace if necessary.
During MANUAL program, excessive resistance loading occurs.	Defective MPU board	Test with substitute MPU board. Replace if necessary.
	Defective Drive board	Test with substitute Drive board. Replace if necessary.
	Worn or damaged wire harness	Inspect wire harness. Replace worn or damaged harness.
During MANUAL program, resistance variance occurs	Pedaling is too slow	Pedal faster.
Pedaling is difficult with restricted feeling or is not possible when Bike has not been started (no STARY key)	Drive Belt is jammed.	Inspect by opening the body covers. Replace if necessary.
During exercise program, loud noise issuing from Bike	Loose hardware	Verify that all hardware has been tightened. Apply Loctite where necessary.
	Drive Belt is worn	Replace Belt.
	Drive Belt is too loose	Inspect Belt. Replace Belt if necessary.
	Drive Belt is off track, touching other parts	Inspect Belt. Relocate if necessary.

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Heart rate reading is abnormally high or is displayed even when Chest Strap or Contact Heart Rate sensors are not in use.	Electromagnetic interference from television sets, cell phones, refrigerator, or motor driven exercise equipment.	Keep the treadmill away from the probable cause until the heart rate readings are accurate.
	RF energy source from another chest straps.	Keep another chest strap away more than 1 meter until the heart rate readings are accurate.
	Contact Heart Rate cables are pinched at handle bars.	Replace damaged cables.
Heart rate reading using wireless chest strap is erratic or not displayed	Chest strap electrodes are not wet enough to sense accurate heart rate.	Dampen the Chest strap electrodes with tap waters.
	The distance between cardio equipments are too close.	Maintain the distance more than 30 cm.
	Chest strap electrodes are out of monitoring range.	Make sure the chest strap is within 60cm from Wireless HR PCB.
	Chest strap battery is discharged.	Replace chest strap or the battery.
	Chest strap electrodes are not laid flat or horizontally across your skin.	Make sure the chest strap electrodes lies flat and horizontally across your skin.
	Faulty chest strap.	Replace chest strap.
	Faulty Wireless HR PCB.	Replace Wireless HR PCB.
	Defective cable or bad connection between Wireless HR PCB and MPU PCB.	Check the cable and connection is no problem.
Contact Heart Rate reading is erratic or not displayed.	Faulty CHR PCB.	Replace CHR PCB
	Dirty handlebar sensors.	Wipe stainless steel sensors with a clean soft cloth.
	Defective cable or bad connection between CHR PCB and MPU PCB.	Check the cable and connection is no problem
	User may have an unusual heart rate condition.	Let different user grasp sensors to detect any variances.

1.3 Troubleshooting Guide for LCD

Symptom/Condition		PROBABLE CAUSE	CORRECTIVE ACTION
Snow and noise are scattering on LCD screen. Any picture is not found even though channel-up button or channel-down button is pressed.		Air/cable setting is not correct	Follow the set up procedures in LCD manual.
		TV signal source is not supplied.	- Check if the TV signal source is correctly supplied to A/D PCB from external source. - Make sure the cable is properly secure. - If external TV signal is correct, try to connect the coaxial cable directly to the internal connector in AD PCB of Console to check whether the internal cables are wrong or not.
		75 ohm coaxial cable is bad.	Replace 75 ohm coaxial cable.
		A/D Board is damaged.	Replace A/D Board with new one.
LCD screen is uniformly white		Internal cable connection is loose or disconnected.	Check if the connection between LCD screen and A/D Board is tight. In other word, LVDS cable shown in picture.
Vertical large white-stripe or Vertical stripe block on LCD screen		Problem with LCD screen	Replace LCD screen
LCD screen is dark or black.	When LCD power is turned on by pressing TV on/off, "VIDEO" , "S-VIDEO" or "ANALOG" appears temporarily and then disappears on the left upper corner of LCD screen.	TV mode is not set-up.	1) Whenever you press Volume down button, words are displayed in following order on the left upper corner of LCD screen. "ANALOG"=>"VIDEO"=>"S-VIDEO"=>"TV" 2) Press the button until "TV" is displayed. 3) As soon as "TV" is displayed, snow and noise will be scattering on LCD screen or any picture will be captured.
	When LCD power is turned on by pressing TV on/off, "VIDEO" , "S-VIDEO" or "ANALOG" is NOT displayed on the	LCD Power Supply has a problem. Power Supply is used for supplying 12 VDC	Check if LCD Power supply is normally operated or LED lamp on Power supply body is turned on. If LED is off,

	left upper corner of LCD screen.	to LCD Overlay Bezel Assembly.	● replace Power Adapter. If LED is on, ● tighten midpoint (LCD Power Supply side) & endpoint (A/D Board side) connection. ● or make sure the voltage of end point is DC 12 volt.
		The cable related to LCD Lamp Inverter is loose in either side.	Check if the connection is secure.
		TV on/off button is wrong or stuck.	Replace OSD Button Board.
		A/D Board is damaged.	Replace A/D Board.
		LCD Lamp inverter is damaged.	Replace LCD Lamp inverter.
		LCD Back Light is damaged.	Replace LCD screen.
		The connector or cable is bad.	Replace the connector or cable
Channels or Volume does not change		Button to change channels or volume does not work.	Replace the button, OSD Button Board or harness related to it.
No sound	Air/cable setting is not correct	Follow the set up procedures in LCD manual.	
	Faulty headphones	Replace headphones	
	Faulty headphone jack assembly or Audio Interface Board.	Replace Audio Interface Board or headphone jack.	

SECTION II

HOW TO REPLACE & REPAIR GUIDE

General

- 2.1 How to Adjust the Drive Belt (or POLY V-BELT) Tension
- 2.2 How to Replace the Drive Belt (or POLY V-BELT)
- 2.3. How to Replace the PEDAL SHAFT
- 2.4. How to Replace the GENERATOR
- 2.5. How to Replace the SEAT
- 2.6. How to Replace the GAS CYLINDER
- 2.7. How to Replace the PEDAL
- 2.8. How to Replace the IDLER ASSEMBLY

2.1 How to Adjust the Drive Belt (or POLY V-BELT) Tension

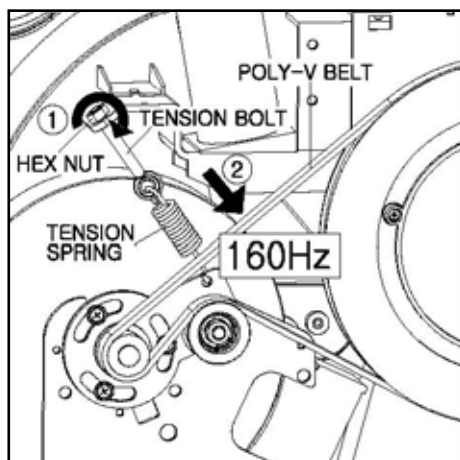
The tension of the Drive Belt can be slackened by a long time use and it can cause a slip between the Drive Belt and Pulleys. The tension is corrected by rotating the TENSION BOLT connected to the TENSION SPRING.

2.1.1 M660BU/BUL

Do the steps below while referring to the following Exploded Views in Appendix.

C.1 M660BU/BUL_MAIN BODY

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.
- 3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.
- 4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).
- 5) Remove five bolts (51, 52) securing the MAIN BODY_R (50) to the Main Body Frame and remove the MAIN BODY_R (50).
- 6) To increase the belt tension, turn the HEX NUT (17) clockwise in two or three turns. It makes the TENSION SPRING (15) tauter.
- 7) Rotate Pedal in two or three turns and then measure the tension of the Drive Belt using Tension Gauge in the position marked in "2".
- 8) Repeat 6) thru 8) until the tension reaches 160 Hz.
- 9) Re-install all of parts in reverse order.



2.1.2 M660BR/BRL

Do the steps below while referring to the following Exploded Views in Appendix.

I.1 M660BR/BRL_MAIN BODY

- 1) Turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove two bolts (52) securing the CENTER FOOT_RE (59) to the Main Body Frame and Remove the CENTER FOOT_RE (59).
- 3) Remove two bolts (50) securing the FRONT BODY CAP_FRONT/REAR(58,57) to the Main

Body Frame and remove the FRONT BODY CAP_FRONT/REAR (58,57).

4) Remove six bolts (46, 56) fastening the FRONT BODY_R (54) to the Body Frame and remove the FRONT BODY_R (54) from the Body Frame.

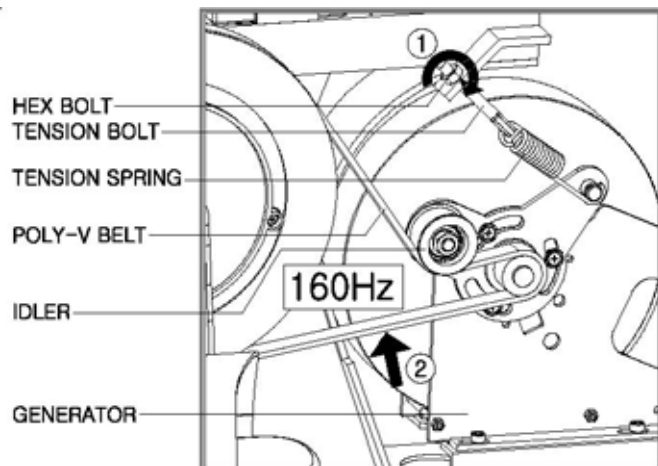
5) To increase the belt tension, turn the HEX NUT (14) clockwise in two or three turns. It makes the TENSION SPRING (12) tauter.

Turning the HEX NUT (14) counter clockwise decreases the belt tension.

6) Rotate Pedal in two or three turns and then measure the tension of the Drive Belt using Tension Gauge in the position marked in "2."

7) Repeat 5) thru 7) until the tension reaches 160 Hz.

8) Re-install all of parts in reverse order.



2.2 How to Replace the Drive Belt (or POLY V-BELT)

The drive belts indicating cracks, fraying or excessive wear should be replaced.

2.2.1 M660BU/BUL

Do the steps below while referring to the following Exploded Views in Appendix.

C.1 M660BU/BUL_MAIN BODY

1) For M660BUL, turn off the unit power at the switch and then unplug the line cord at wall outlet.

2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.

3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.

4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).

5) Remove five bolts (51, 52) securing the MAIN BODY_R (50) to the Main Body Frame and remove the MAIN BODY_R (50).

6) To decrease the belt tension, turn the HEX NUT (17) counterclockwise until the HEX NUT (17) reaches the end side of the TENSION BOLT (16) as shown.

7) Remove the Drive Belt from the PEDAL PULLEY (28) by pushing the upper surface of the Drive Belt outward while rotating the Pedal little by little. Keep in mind that removing the Belt under high tension may make damages to the Belt and Bearings.

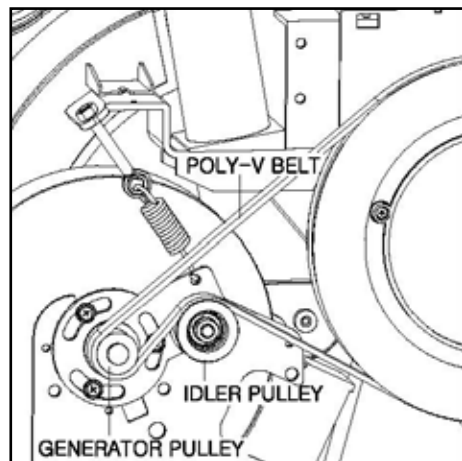
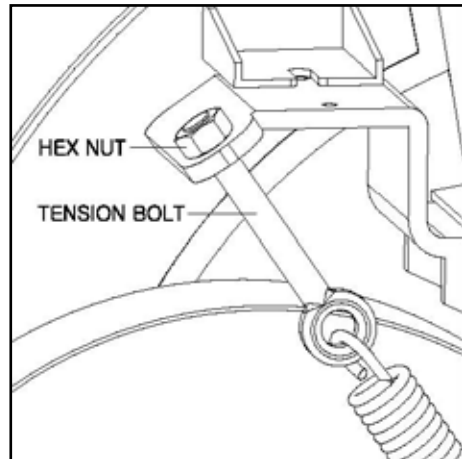
8) Install new Drive Belt in reverse order by installing the Belt around the GENERATOR (5) PULEY first and then walking it onto the IDLER PULLEY (8) and PEDAL PULLEY (28).

You had better install the Belt while rotating the Pedal little by little.

9) Adjust the tension of the Drive Belt. See 2.1 How to Adjust the Drive Belt (or POLY V-BELT) Tension.

10) Re-install all of parts in reverse order.

Caution: To avoid risk of injury, it is recommended that one person replaces the Belt rather than two persons.



2.2.2 M660BR/BRL

Do the steps below while referring to the following Exploded Views in Appendix.

I.1 M660BR/BRL_MAIN BODY

- 1) Turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove two bolts (52) securing the CENTER FOOT_RE (59) to the Main Body Frame and Remove the CENTER FOOT_RE (59).
- 3) Remove two bolts (50) securing the FRONT BODY CAP_FRONT/REAR (58, 57) to the Main Body Frame and remove the FRONT BODY CAP_FRONT/REAR (58, 57).
- 4) Remove six bolts (46, 56) fastening the FRONT BODY_R (54) to the Body Frame and remove the FRONT BODY_R (54) from the Body Frame.
- 5) To decrease the belt tension, turn the HEX NUT (14) counterclockwise until the HEX NUT (14) reaches the end side of the TENSION BOLT (13) as shown.

6) Remove the Drive Belt from the PEDAL PULLEY (27) by pushing the upper surface of the Drive Belt outward while rotating the Pedal little by little. Keep in mind that removing the Belt under high tension may make damages to the Belt and Bearings.

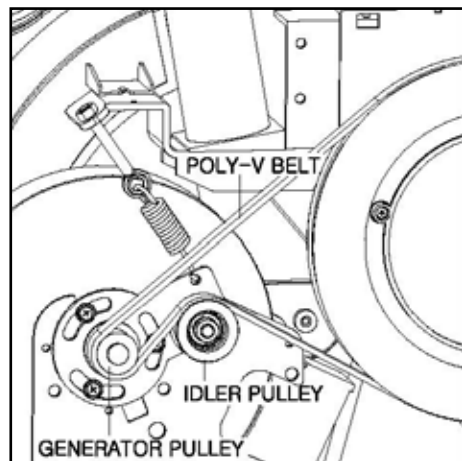
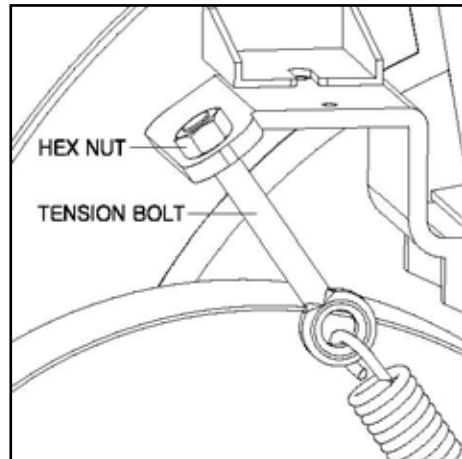
7) Install new Drive Belt in reverse order by installing the Belt around the GENERATOR (2) PULEY first and then walking it onto the IDLER PULLEY (5) and PEDAL PULLEY (27).

You had better install the Belt while rotating the Pedal little by little.

8) Adjust the tension of the Drive Belt. See 2.1 How to Adjust the Drive Belt (or POLY V-BELT) Tension.

9) Re-install all of parts in reverse order.

Caution: To avoid risk of injury, it is recommended that one person replaces the Belt rather than two persons.



2.3. How to Replace the PEDAL SHAFT

2.3.1 M660BU/BUL

Do the steps below while referring to the following Exploded Views in Appendix.

C.1 M660BU/BUL_MAIN BODY

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.
- 3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.
- 4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).
- 5) Remove five bolts (51, 52) securing the MAIN BODY_R (50) to the Main Body Frame and remove the MAIN BODY_R (50).

6) Remove the CRANK CAP (45) from the CRANK ARM_R (43) by using a tool with tip.

7) Remove the Bolt (44) securing the CRANK ARM_R (43) to the PEDAL SHAFT (27) by using 6 mm wrench.

8) The PEDAL TOOL for pulling the Crank Arm out is shown. Maintain the PEDAL TOOL as shown in **A** by placing the rear section of the PEDAL TOOL as backward as possible.

9) Install the PEDAL TOOL into the hole of the CRANK ARM_R (43) where the CRANK CAP (45) was extracted.

10) Insert the PEDAL TOOL into the hole of the CRANK ARM_R (43) by turning the front hex-section of the PEDAL TOOL clockwise with Adjustable Spanner as shown.

11) Turn the rear hex-section of the PEDAL TOOL clockwise as shown until the CRANK ARM_R (43) is extracted from the PEDAL SHAFT.

12) Remove three Bolts (32) and remove the PEDAL IN COVER (31).

13) Remove the Drive Belt (46). See 2.2 How to Replace the Drive Belt

14) Remove the PEDAL PULLEY (28) from the unit by removing four Bolts (29).

15) Remove the MAIN BODY_L (49), CRANK CAP (45), CRANK ARM_L (41) and PEDAL IN COVER (31) in opposite side while using same procedures as 5) thru 12).

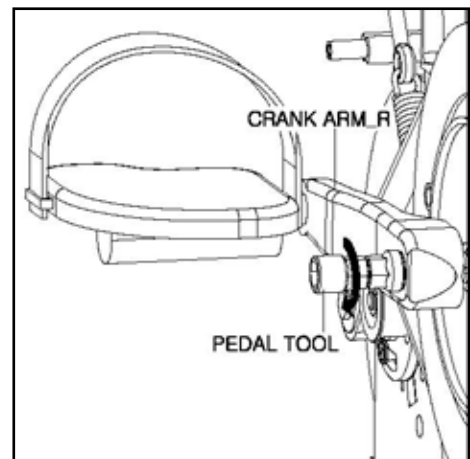
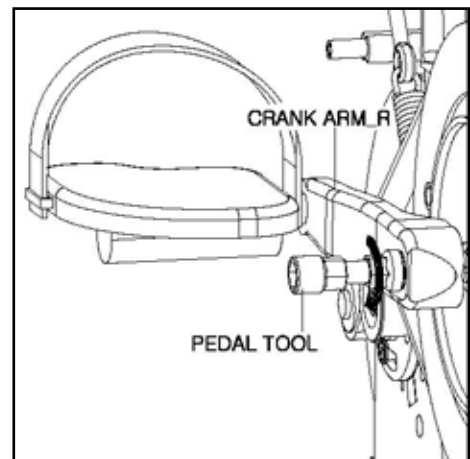
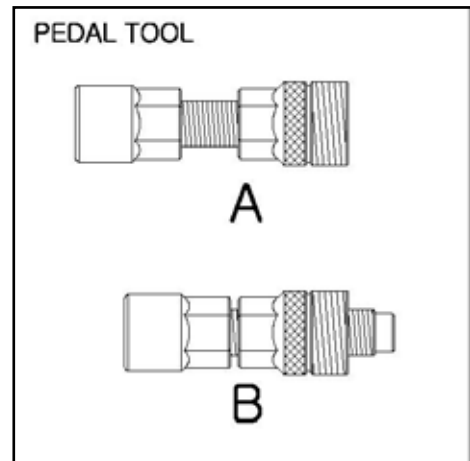
16) Remove the SNAP RING (30) by using Snap Ring Plier.

17) Pull the PEDAL SHAFT (27) out of the unit.

18) Install new PEDAL SHAFT (27) in reverse order.

19) Adjust the Drive Belt Tension before re-assembling the MAIN BODY_R (50). See "How to Adjust the Drive Belt Tension"

20) Re-install all of parts in reverse order.



2.3.2 M660BR/BRL

Do the steps below while referring to the following Exploded Views in Appendix.

I.1 M660BR/BRL_MAIN BODY

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_RE (59) by removing two bolts (56) securing the CENTER FOOT_RE (59) to the Main Body Frame.
- 3) Remove two bolts (50) securing the FRONT BODY CAP_FRONT/REAR (58, 57) to the Main Body Frame and remove the FRONT BODY CAP_FRONT/REAR (58, 57).
- 4) Remove six bolts (46, 56) fastening the FRONT BODY_R (54) to the Body Frame and remove the FRONT BODY_R (54) from the Body Frame.
- 5) Replace the Pedal Shaft while referring to 6) thru 19) in section 2.3.1 *M660BU/BUL*.
- 6) Re-install all of parts in reverse order.

2.4. How to Replace the GENERATOR

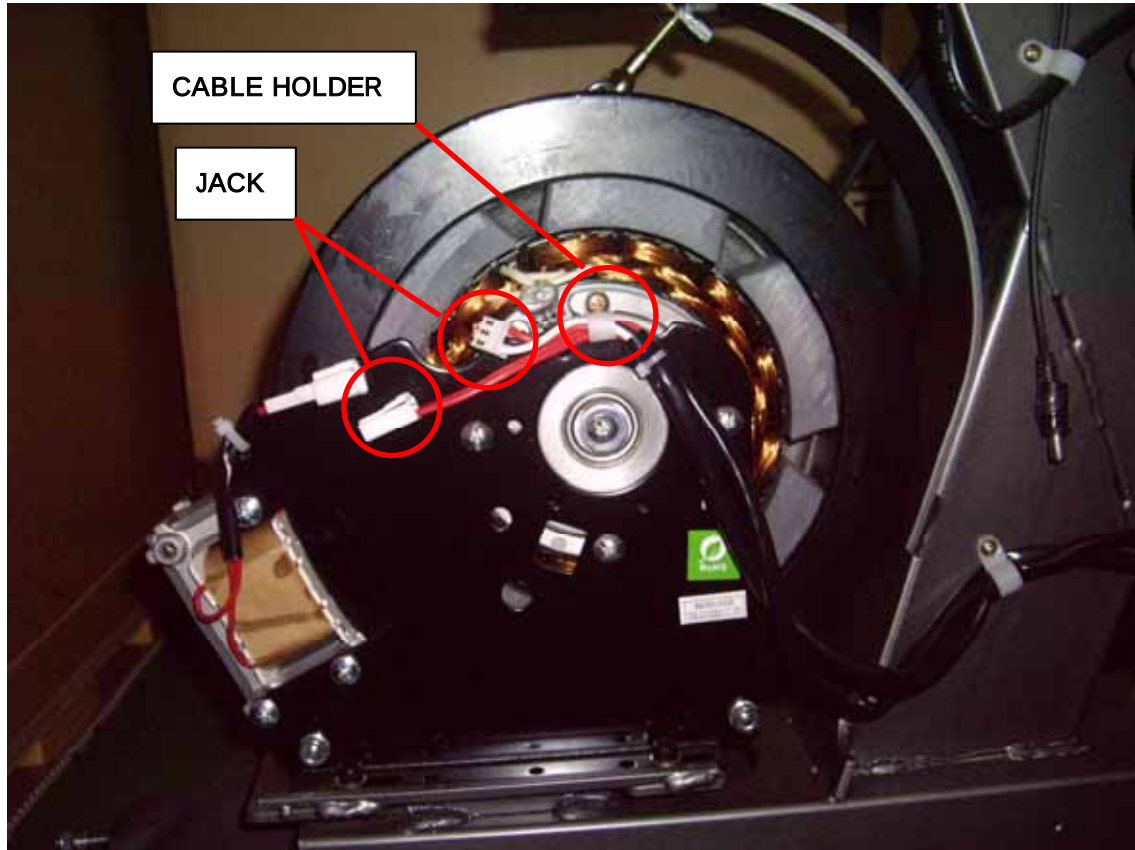
2.4.1 M660BU/BUL

Do the steps below while referring to the following Exploded Views in Appendix.

C.1 M660BU/BUL_MAIN BODY

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.
- 3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.
- 4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).
- 5) Remove five bolts (51, 52) securing the MAIN BODY_R (50) to the Main Body Frame and remove the MAIN BODY_R (50).

6) Remove the CABLE HOLDER and disconnect two JACKs (or connector).



7) Remove the Drive Belt while referring to section 2.2 *How to Replace the Drive Belt*.

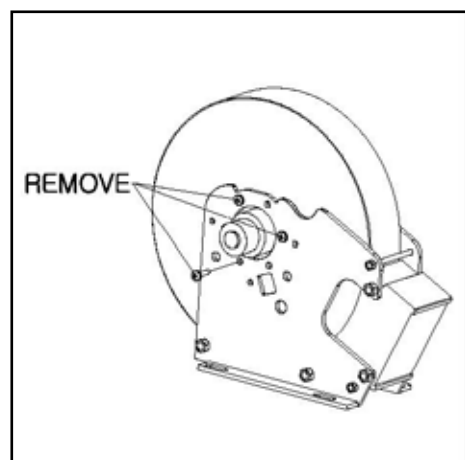
8) Remove the TENSION BOLT (16) and TENSION SPRING (15) by unscrewing the HEX BOLT (17).

9) Remove four ALLEN BOLTS (6) by using 5mm hex wrench.

10) Lift off the GENERATOR (5) from the MAIN FRAME (1).

11) Remove the IDLER BRACKET (7) and IDLER BRACKET BUSH (13) from the GENERATOR (5) by unscrewing three bolts (14) securing the IDLER BRACKET (7) to the GENERATOR.

12) Remove and discard three bolts on the pulley side of new GENERATOR to be replaced as shown.



13) Install the IDLER BRACKET (7) and IDLER BRACKET BUSH (13) onto the new GENERATOR by screwing three bolts (14).

Note: Make sure the IDLER BRACKET (7) moves (or rotates) a little on the pulley as shown.

14) Install new GENERATOR in reverse order.

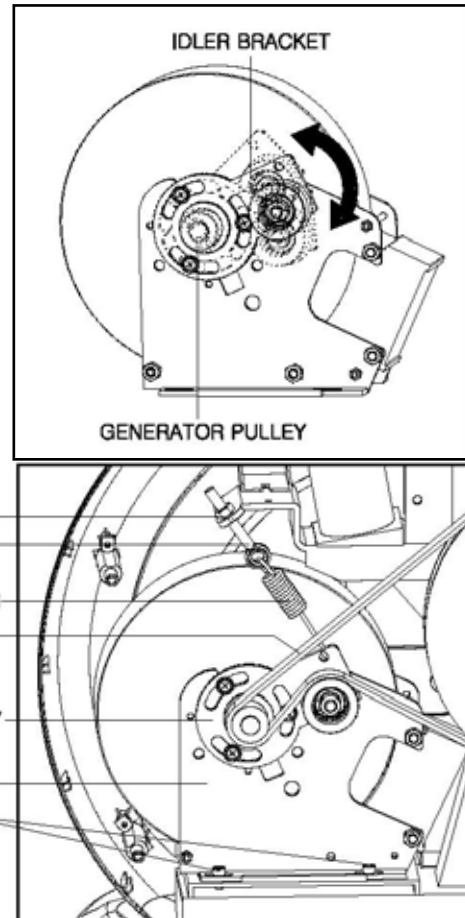
15) re-assemble the TENSION SPRING(15), TENSION BOLT(16) and HEX NUT(17).

16) Install the Drive Belt (46) while referring to section 2.2 *How to Replace the Drive Belt*.

17) Adjust the tension of the Drive Belt while referring to section 2.1 *How to Adjust the Drive Belt (or POLY V-BELT) Tension*.

18) The re-assembled new GENERATOR is shown.

19) Re-assemble all of parts in reverse order.



2.4.2 M660BR/BRL

Do the steps below while referring to the following Exploded Views in Appendix.

I.1 M660BR/BRL_MAIN BODY

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_RE (59) by removing two bolts (56) securing the CENTER FOOT_RE (59) to the Main Body Frame.
- 3) Remove two bolts (50) securing the FRONT BODY CAP_FRONT/REAR (58, 57) to the Main Body Frame and remove the FRONT BODY CAP_FRONT/REAR (58, 57).
- 4) Remove six bolts (46, 56) fastening the FRONT BODY_R (54) to the Body Frame and remove the FRONT BODY_R (54) from the Body Frame.
- 5) Replace the GENERATOR while referring to 6) thru 18) in section 2.4.1 *M660BU/BUL*.
- 6) Re-assemble all of parts in reverse order.

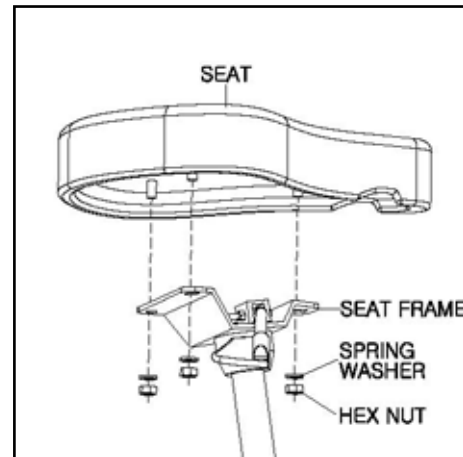
2.5. How to Replace the SEAT

2.5.1. M660BU/BUL

Do the steps below while referring to the following Exploded Views in Appendix.

F.1 M660BU/BUL_SEAT

- 1) Remove the SEAT (6) by unscrewing three HEX NUTS (8) and three SPRING WASHERS (7) securing the SEAT to the SEAT FRAME (1) by the use of 13 mm Spanner or Adjustable Spanner.
- 2) Discard the SEAT and install new SEAT in reverse order.



2.5.2. M660BR/BRL

Do the steps below while referring to the following Exploded Views in Appendix.

K.1 M660BR/BRL_SEAT

2.5.2.1. SEAT

- 1) Remove the SEAT (21) by unscrewing four ALLEN BOLTS (22) and four SPRING WASHERS (23) securing the SEAT to the SEAT FRAME (1)
- 2) Discard the SEAT (21) and install new SEAT in reverse order.

2.5.2.2. SEAT BACK

- 1) Remove the SEAT BACK COVER (25) by unscrewing eight TRUSS SCREWS (26) securing the SEAT BACK COVER to SEAT BACK (24).
- 2) Remove four ALLEN BOLTS (22) and four SPRING WASHERS (23) securing the SEAT BACK (24) to the SEAT FRAME (1).
- 3) Discard the SEAT BACK (24) and then install new SEAT BACK in reverse order.

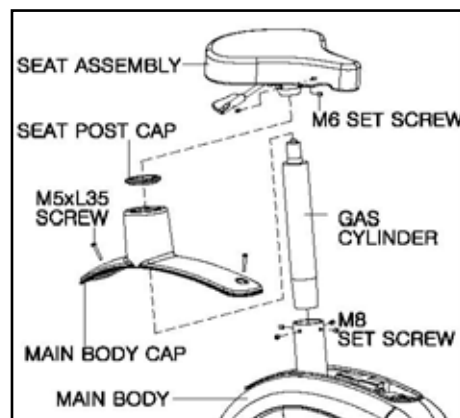
2.6. How to Replace the GAS CYLINDER

Do the steps below while referring to the following Exploded Views in Appendix.

A.1 M660BU

C.1 M660BU/BUL_MAIN BODY

- 1) Remove the SEAT ASSEMBLY (15) from the GAS CYLINDER (38) by unscrewing four setscrews (16).
- 2) Remove the SEAT POST CAP (56).
- 3) Remove the MAIN BODY CAP (54) from the MAIN BODY by unscrewing two screws (55).
- 4) Remove four setscrews (39) securing the GAS CYLINDER (38) to the MAIN FRAME (39).
- 5) Install new GAS CYLINDER in reverse order.

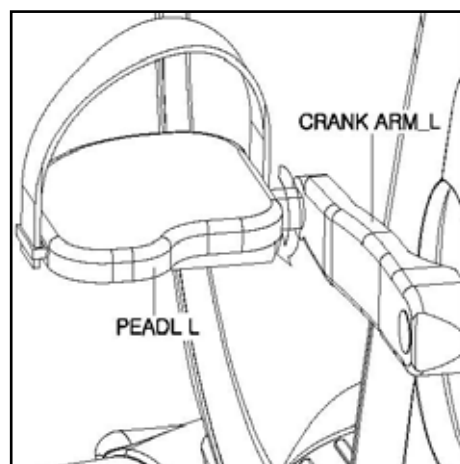


2.7. How to Replace the PEDAL

2.7.1. Left PEDAL

The picture shown is the left Pedal as viewed from the rear side of the bike.

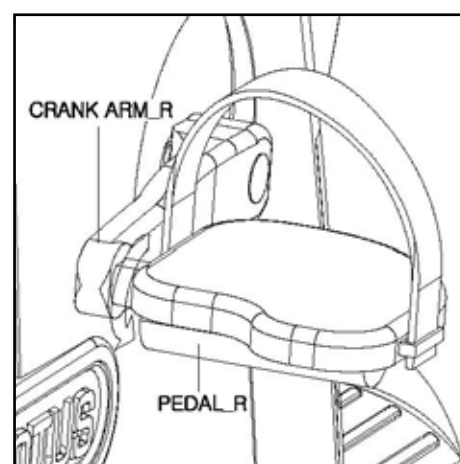
- 1) Turn the connecting section in between the PEDAL_L and CRANK ARM_L clockwise as shown in picture by using Adjustable Spanner or Spanner while holding the CRANK ARM_L.
- 2) Turn the PEDAL_L until it is distracted.
- 3) Discard the PEDAL_L and install new PEDAL_L in reverse order.



2.7.2 Right Pedal

The picture shown is the Right Pedal as viewed from the rear side of the bike.

- 1) Turn the connecting section in between the PEDAL_R and CRANK ARM_R counterclockwise as shown in picture by using Adjustable Spanner or Spanner while holding the CRANK ARM_R.
- 2) Turn the PEDAL_R until it is distracted.
- 3) Discard the PEDAL_R and install new PEDAL_R in reverse order.



2.8. How to Replace the IDLER ASSEMBLY

2.8.1 M660BU/BUL

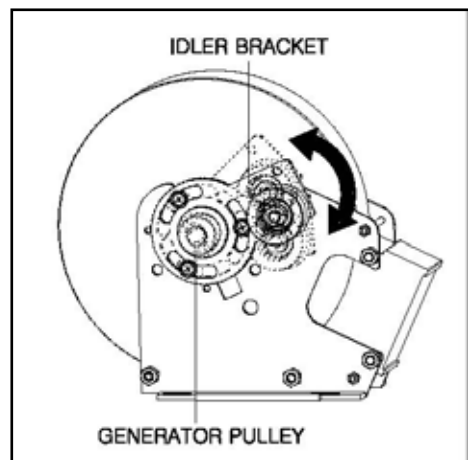
Do the steps below while referring to the following Exploded Views in Appendix.

C.1 M660BU/BUL_MAIN BODY

- 1) For M660BUL, turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.
- 3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.
- 4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).
- 5) Remove five bolts (51, 52) securing the MAIN BODY_R (50) to the Main Body Frame and remove the MAIN BODY_R (50).
- 6) Mark the position of HEX LOCK NUT (17) on HANGER BOLT (16) for restoring BELT tension when reassembling it.
- 7) Loosen HEX LOCK NUT (17) by using 13 mm spanner until it reaches the end of HANGER BOLT (16) to slacken POLY V-BELT (46).
- 8) Remove POLY V-BELT (46) from PEDAL PULLEY (28), IDLER PULLEY (8) and GENERATOR PULLEY. Be careful not to get your hands be caught between the BELT and PULLEYS.
- 9) Remove IDLER BRACKET (7), IDLER BRACKET SPACER (12) and IDLER BRACKET BUSH (13) by removing three bolts (14) securing these to the GENERATOR.

Note If you find IDLER BRACKET SPACER (12), discard both IDLER BRACKET SPACER (12) and IDLER BRACKET BUSH (13) and new IDLER BRACKET BUSH (13) should be used for reassembling. If no IDLER BRACKET SPACER (12), the removed IDLER BRACKET BUSH (13) should be used for reassembling.

- 10) Install new IDLER ASSEMBLY on the GENERATOR by using three bolts (14) and IDLER BRACKET BUSH (13). **Do not tighten three bolts (14) too strongly because it can spoil the threads of GENERATOR plate.** IDLER BRACKET SPACER (12) should not be installed.



- 11) Make sure IDLER BRACKET (7) is partially rotated smoothly on the axis of the GENERATOR. If the rotation is not smooth, make sure it by replace IDLER BRACKET BUSH (13) with another one.
- 12) Install POLY V-BELT (46) in reverse order and then adjust the position of POLY V-BELT (46) to be located in the center of IDLER PULLEY (8) by rotating the pedal. The POLY V-BELT (46) can be aligned by using the Groove of PEDAL PULLEY (28).
- 13) Adjust the tension of the POLY V-BELT (46) by moving HEX LOCK NUT (17) into the position marked in 4).
- 14) Make sure POLY V-BELT (46) is located in the center of IDLER PULLEY (8) when you are pedaling. If the POLY V-BELT (46) drifts off the center of IDLER PULLEY (8), realign the BELT by using the Groove of PEDAL PULLEY (28).
- 15) Install all of other parts in reverse order.

SECTION III

HOW TO REPLACE & REPAIR GUIDE

Electronic PCB

- 3.1 How to Replace the LCD Screen in Model M660BUL or M660BRL
- 3.2 How to Replace the A/D Board in Model M660BUL or M660BRL
- 3.3 How to Replace the MPU Board in Model M660BUL or M660BRL
- 3.4 How to Replace the MPU Board in Model M660BU or M660BR
- 3.5 How to Replace the OPERATION BUTTON Board
- 3.6 How to Replace the LAMP INVERTER Board in Model M660BUL or M660BRL
- 3.7 How to Replace the Program BUTTON Board, OSD BUTTON Board & AUDIO INTERFACE & DOWNLOAD Board in Model M660BUL and M660BRL
- 3.8 How to Replace the DRIVE Board.
- 3.9 How to Replace the SMPS-5V (or MPU POWER SUPPLY)
- 3.10 How to Replace the LCD POWER ADAPTER.

3.1 How to Replace the LCD Screen in Model M660BUL or M660BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

D.1 M660BU/BUL_CONSOLE POST

G.1 CONSOLE, M660BUL/BRL_CONSOLE

J.1 M660BR/BRL_CONSOLE POST

Note: The steps below are performed based on Upright Bike while referring to D.1 M660BU/BUL_CONSOLE POST and .G.1 CONSOLE, M660BUL/BRL_CONSOLE.

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the DISPLAY REAR COVER (13, D.1) from the DISPLAY PANEL BOTTM (10, D.1) by unscrewing four screws (8, D.1).
- 3) Remove the DISPLAY PANEL TOP (12, D.1) from the DISPLAY PANEL BOTTOM (10, D.1) by unscrewing four screws (11, D.1) securing the DISPLAY PANEL TOP (12, D.1).
- 4) Disconnect all the cables from the DISPLAY PANEL TOP (12, D.1) and then place the DISPLAY PANEL TOP (12, D.1) on the flat and clean surface so that the LCD screen faces downward.
- 5) Disconnect one end of the OSD BUTTON CABLE (CB21) from the side of A/D BOARD (8, G.1). The OSD BUTTON CABLE (CB21) is connected in between the A/D BOARD (8, G.1) and OSD BOARD (11, G.1).
- 6) Remove the LCD PANEL BRACKET (3, G.1) from the DISPLAY PANEL TOP (1, G.1) by unscrewing six screws (7, G.1).
- 7) Disconnect one end of the LVDS CABLE (CB31) from the side of the LCD PANEL (2, G.1). The other end of the LVDS CABLE (CB31) doesn't need to be disconnected from the A/D BOARD (8, G.1).
- 8) Disconnect the LAMP INVERTER CABLE (CB32) from the LAMP INVERTER (6, G1).
- 9) Place the LCD BRACKET (3, G.1) upside down so that the LCD PANEL (2, G.1) faces upward.
- 10) Remove the LCD PANEL (2, G.1) by unscrewing four screws (4, G.1) securing the LCD PANEL (2, G.1) to the LCD BRACKET.
- 11) Install new LCD PANEL (2, G.1) in reverse order.

3.2 How to Replace the A/D Board in Model M660BUL or M660BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

D.1 M660BU/BUL_CONSOLE POST

G.1 CONSOLE, M660BUL/BRL_CONSOLE

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the DISPLAY REAR COVER (13, D.1) from the DISPLAY PANEL BOTTM (10, D.1) by unscrewing four screws (8, D.1).
- 3) Remove four screws (11, D.1) securing the DISPLAY PANEL TOP (12, D.1) to the DISPLAY PANEL BOTTOM (10, D.1).
- 4) Lift off the DISPLAY PANEL TOP (12, D.1) while disconnecting all the cables from the DISPLAY PANEL TOP (12, D.1) and then place the DISPLAY PANEL TOP (12, D.1) on the flat and clean surface so that the LCD screen faces downward.
- 5) Disconnect all the cables from the A/D BOARD (8, G.1).
- 6) Remove the A/D BOARD (8, G.1) from the LCD PANEL BRACKET (3, G.1) by unscrewing four screws (7, G.1).
- 7) Install new A/D BOARD (8, G.1) in reverse order.

3.3 How to Replace the MPU Board in Model M660BUL or M660BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

D.1 M660BU/BUL_CONSOLE POST

G.1 CONSOLE, M660BUL/BRL_CONSOLE

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the DISPLAY REAR COVER (13, D.1) from the DISPLAY PANEL BOTTM (10, D.1) by unscrewing four screws(8, D.1).
- 3) Remove four screws (11, D.1) securing the DISPLAY PANEL TOP (12, D.1) to the DISPLAY PANEL BOTTOM (10, D.1).
- 4) Lift off the DISPLAY PANEL TOP (12, D.1) while disconnecting all the cables from the DISPLAY PANEL TOP (12, D.1) and then place the DISPLAY PANEL TOP (12, D.1) on the flat and clean surface so that the LCD screen faces downward.
- 5) Disconnect all the cables from the MPU BOARD_FRONT (13, G1).
- 6) Remove three screws (7, G.1) securing the MPU BOARD_BACK (15, G.1) to the MPU BOARD_FRONT (13, G.1).
- 7) Carefully lift the MPU BOARD_BACK (15, G.1) off the MPU BOARD_FRONT (13, G.1) so that the pins on the both edges of the MPU BOARD_FRONT are not damaged or bended.
- 8) Remove four screws (12, G.1) and three HEXGON SPACER (14, G.1) securing the MPU BOARD_FRONT (13, G.1) to the DISPLAY PANEL_TOP (1, G.1).
- 9) Lift off the MPU BOARD_FRONT (13, G.1)
- 10) Install new MPU BOARD_FRONT or MPU BOARD_BACK in reverse order.

3.4 How to Replace the MPU Board in Model M660BU or M660BR

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

D.1 M660BU/BUL_CONSOLE POST

G.1 CONSOLE, M660BU/BR_CONSOLE

- 1) Remove the DISPLAY REAR COVER (13, D.1) from the DISPLAY PANEL BOTTM (10, D.1) by unscrewing four screws (8, D.1).
- 2) Remove four screws (11, D.1) securing the DISPLAY PANEL TOP (12, D.1) to the DISPLAY PANEL BOTTOM (10, D.1).
- 3) Lift off the DISPLAY PANEL TOP (12, D.1) while disconnecting all the cables from the DISPLAY PANEL TOP (12, D.1) and then place the DISPLAY PANEL TOP (12, D.1) on the flat and clean surface so that it faces downward.
- 4) Disconnect all the cables including Ribbon cable from the MPU BOARD (27, G1).
- 5) Remove eight screws (12, G.1) securing the MPU BOARD (27, G1) to the DISPLAY PANEL TOP (1, G.1).
- 6) Lift off the MPU BOARD (27, G1) out of the DISPLAY PANEL TOP (1, G.1).
- 7) Install new MPU BOARD (27, G1) in reverse order.

3.5 How to Replace the OPERATION BUTTON Board

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

D.1 M660BU/BUL_CONSOLE POST

G.1 CONSOLE

- 1) If the machine is M660BUL or M660BRL with LCD monitor, turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the DISPLAY REAR COVER (13, D.1) from the DISPLAY PANEL BOTTM (10, D.1) by unscrewing four screws (8, D.1).
- 2) Remove four screws (11, D.1) securing the DISPLAY PANEL TOP (12, D.1) to the DISPLAY PANEL BOTTOM (10, D.1).
- 3) Lift off the DISPLAY PANEL TOP (12, D.1) while disconnecting all the cables from the DISPLAY PANEL TOP (12, D.1) and then place the DISPLAY PANEL TOP (12, D.1) on the flat and clean surface so that it faces downward.
- 4) Disconnect all of cables from the OPERATION BUTTON BOARD (21, G.1).
- 5) Remove the OPERATION BUTTON BOARD from the DISPLAY BUTTON CONTROL (20, G.1) by unscrewing five screws (12, G.1).
- 6) Install new OPERATION BUTTON BOARD (21, G.1) in reverse order.

3.6 How to Replace the LAMP INVERTER Board in Model M660BUL or M660BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

D.1 M660BU/BUL_CONSOLE POST

G.1 CONSOLE, M660BUL/BRL_CONSOLE

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the DISPLAY REAR COVER (13, D.1) from the DISPLAY PANEL BOTTM (10, D.1) by unscrewing four screws (8, D.1).
- 3) Remove four screws (11, D.1) securing the DISPLAY PANEL TOP (12, D.1) to the DISPLAY PANEL BOTTOM (10, D.1).
- 4) Lift off the DISPLAY PANEL TOP (12, D.1) while disconnecting all the cables from the DISPLAY PANEL TOP (12, D.1) and then place the DISPLAY PANEL TOP (12, D.1) on the flat and clean surface so that the LCD screen faces downward.
- 5) On the side of the LAMP INVERTER board (6, G1), disconnect the LAMP INVERTER CABLE (CB32) which is connected between the LAMP INVERTER board (6, G1) and A/D BOARD (8, G.1).
- 6) Disconnect all the cables between the LAMP INVERTER board (6, G1) and LCD panel (2, G.1).
- 7) Remove the LAMP INVERTER board (6, G1) from the LCD PANEL BRACKET (3, G.1) by unscrewing two screws (12, G.1).
- 8) Install new LAMP INVERTER board in reverse order.

3.7 How to Replace the Program BUTTON Board, OSD BUTTON Board & AUDIO INTERFACE & DOWNLOAD Board in Model M660BUL and M660BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

D.1 M660BU/BUL_CONSOLE POST

G.1 CONSOLE, M660BUL/BRL_CONSOLE

- 1) Turn off the unit power at the switch and then unplug the line cord at wall outlet.
- 2) Remove the DISPLAY REAR COVER (13, D.1) from the DISPLAY PANEL BOTTM (10, D.1) by unscrewing four screws (8, D.1).
- 3) Remove four screws (11, D.1) securing the DISPLAY PANEL TOP (12, D.1) to the DISPLAY PANEL BOTTOM (10, D.1).
- 4) Lift off the DISPLAY PANEL TOP (12, D.1) while disconnecting all the cables from the DISPLAY PANEL TOP (12, D.1) and then place the DISPLAY PANEL TOP (12, D.1) on the flat and clean surface so that the LCD screen faces downward.

Program BUTTON Board

- 5) On the side of the PROGRAM BUTTON Board (10, G.1), disconnect the PROGRAM BUTTON CABLE (CB19) which is connected between the MPU_BOARD_FRONT (13, G.1) and PROGRAM BUTTON Board (10, G.1)
- 6) Remove the PROGRAM BUTTON Board (10, G.1) from the DISPLAY BUTTON_LCD (9, G.1) by unscrewing three screws (12, G.1).
- 7) Install new PROGRAM BUTTON Board (10, G.1) in reverse order.

OSD BUTTON Board

- 5) On the side of the OSD BUTTON Board (11, G.1), disconnect the OSD BUTTON CABLE (CB21) which is connected between the A/D Board (8, G.1) and OSD BUTTON Board (11, G.1),
- 6) Remove the OSD BUTTON Board (11, G.1) from the DISPLAY BUTTON_LCD (9, G.1) by unscrewing three screws (12, G.1).
- 7) Install new OSD BUTTON Board (11, G.1) in reverse order.

AUDIO INTERFACE & DOWNLOAD Board

- 5) Disconnect the AUDIO OUT CABLE (CB21) and DOWNLOAD CABLE (CB10) from the side of the AUDIO INTERFACE & DOWNLOAD Board (24, G.1).

- 6) Remove the AUDIO INTERFACE & DOWNLOAD Board (24, G.1) from the DISPLAY BUTTON_LCD (9, G.1) by unscrewing three screws (12, G.1).
- 7) Install new AUDIO INTERFACE & DOWNLOAD Board (24, G.1) in reverse order.

3.8 How to Replace the DRIVE Board

M660BU/BUL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

C.1 M660BU/BUL_MAIN BODY

- 1) For M660BUL, turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.
- 3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.
- 4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).
- 5) Remove four bolts (51) securing the MAIN BODY_R (50) to the Main Body Frame.
- 6) Remove one bolt (52) securing the MAIN BODY_L (49) to the Main Body Frame and then remove the MAIN BODY_L (49) from the Main Body Frame through the PEDAL_BU_L(40) and CRANK ARM_L (41). Be careful not to make a scratch on the MAIN BODY_L (49) while removing the MAIN BODY_L.
- 7) Remove all the cables which are connected to the DRIVE Board (20).
- 8) Remove the DRIVE Board (20).from the DRIVER BOARD BRACKET (18) by unscrewing two bolts (21).
- 9) Install new DRIVE Board in reverse order.

M660BR/BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

I.1 M660BR/BRL_MAIN BODY

- 1) For M660BRL, turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_RE (59) by removing two bolts (56) securing the CENTER FOOT_RE (59) to the Main Body Frame.
- 3) Remove the FRONT BODY CAP_REAR (57) and FRONT BODY CAP_FRONT (58) by unscrewing two bolts (50).
- 4) Remove four bolts (46) securing the MAIN BODY_R (54) to the Main Body Frame.
- 5) Remove one bolt (56) securing the MAIN BODY_L (53) to the Main Body Frame and then remove the MAIN BODY_L (53) from the Main Body Frame through the PEDAL_BR_L(33) and

CRANK ARM_L (34). Be careful not to make a scratch on the MAIN BODY_L (53) while removing the MAIN BODY_L.

6) Remove all the cables which are connected to the DRIVE Board (15).

7) Remove the DRIVE Board (15).from the body frame by unscrewing two bolts (16).

8) Install new DRIVE Board in reverse order.

3.9 How to Replace the SMPS-5V (or MPU POWER SUPPLY) in M660BUL and M660BRL

M660BUL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

C.1 M660BU/BUL_MAIN BODY

- 1) Turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.
- 3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.
- 4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).
- 5) Remove four bolts (51) securing the MAIN BODY_R (50) to the Main Body Frame.
- 6) Remove one bolt (52) securing the MAIN BODY_L (49) to the Main Body Frame and then remove the MAIN BODY_L (49) from the Main Body Frame through the PEDAL_BU_L(40) and CRANK ARM_L (41). Be careful not to make a scratch on the MAIN BODY_L (49) while removing the MAIN BODY_L.
- 7) Remove all the cables which are connected to the SMPS-5V (36).
- 8) Remove the SMPS-5V (36).from the SMPS BRACKET_UP (34) by unscrewing four bolts (37).
- 9) Install new SMPS-5V (36).in reverse order.

M660BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

I.1 M660BR/BRL_MAIN BODY

- 1) Turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_RE (59) by removing two bolts (56) securing the CENTER FOOT_RE (59) to the Main Body Frame.
- 3) Remove the FRONT BODY CAP_REAR (57) and FRONT BODY CAP_FRONT (58) by unscrewing two bolts (50).
- 4) Remove four bolts (46) securing the MAIN BODY_R (54) to the Main Body Frame.
- 5) Remove one bolt (56) securing the MAIN BODY_L (53) to the Main Body Frame and then

remove the MAIN BODY_L (53) from the Main Body Frame through the PEDAL_BR_L(33) and CRANK ARM_L (34). Be careful not to make a scratch on the MAIN BODY_L (53) while removing the MAIN BODY_L.

6) Remove all the cables which are connected to the SMPS-5V (23).

7) Remove the SMPS-5V (23).from the SMPS BRACKET_RE (22) by unscrewing four bolts (24).

8) Install new SMPS-5V (23).in reverse order.

3.10 How to Replace the LCD POWER ADAPTER

M660BU/BUL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

C.1 M660BU/BUL_MAIN BODY

- 1) Turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_UP (61) by removing two bolts (52) securing the CENTER FOOT_UP (61) to the Main Body Frame.
- 3) Remove two bolts (55) securing MAIN BODY CAP (54) to the Main Body Frame.
- 4) Lift the MAIN BODY CAP (54) and SEAT POST CAP (56) and then fix these to the Gas Cylinder temporarily by a tape to make it easy to remove the MAIN BODY_R (50).
- 5) Remove four bolts (51) securing the MAIN BODY_R (50) to the Main Body Frame.
- 6) Remove one bolt (52) securing the MAIN BODY_L (49) to the Main Body Frame and then remove the MAIN BODY_L (49) from the Main Body Frame through the PEDAL_BU_L(40) and CRANK ARM_L (41). Be careful not to make a scratch on the MAIN BODY_L (49) while removing the MAIN BODY_L.
- 7) Remove the ADAPTER BRACKET (23) by unscrewing two bolts (19).
- 8) Remove all the cables which are connected to the LCD POWER ADAPTER (22).
- 9) Remove the LCD POWER ADAPTER (22) from the BODY FRAME.
- 10) Install new the LCD POWER ADAPTER (22) in reverse order.

M660BR/BRL

Do the steps below while referring to the following Exploded Views in Appendix and Section 4 ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW.

I.1 M660BR/BRL_MAIN BODY

- 1) Turn off the unit power at the switch and unplug the line cord at wall outlet.
- 2) Remove the CENTER FOOT_RE (59) by removing two bolts (56) securing the CENTER FOOT_RE (59) to the Main Body Frame.
- 3) Remove the FRONT BODY CAP_REAR (57) and FRONT BODY CAP_FRONT (58) by unscrewing two bolts (50).
- 4) Remove four bolts (46) securing the MAIN BODY_R (54) to the Main Body Frame.
- 5) Remove one bolt (56) securing the MAIN BODY_L (53) to the Main Body Frame and then remove the MAIN BODY_L (53) from the Main Body Frame through the PEDAL_BR_L(33) and

CRANK ARM_L (34). Be careful not to make a scratch on the MAIN BODY_L (53) while removing the MAIN BODY_L.

6) Remove the ADAPTER BRACKET (18) by unscrewing two bolts (16).

7) Remove all the cables which are connected to the LCD POWER ADAPTER (17).

8) Remove the LCD POWER ADAPTER (17) from the BODY FRAME

9) Install new LCD POWER ADAPTER (17) in reverse order.

SECTION IV

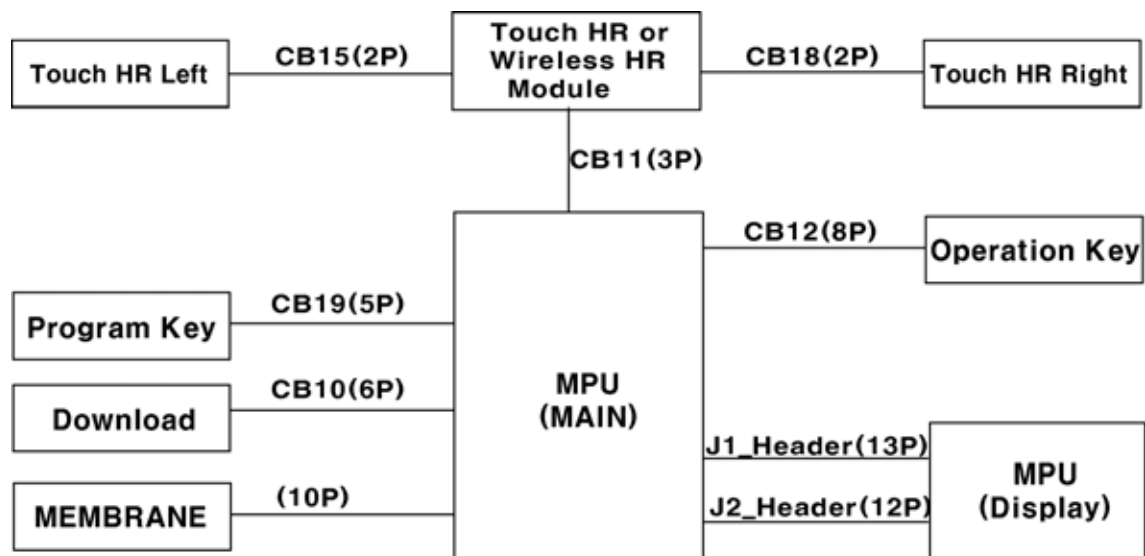
ELECTRONIC PCB, CONNECTOR AND CABLE OVERVIEW

- 4.1 Cable Connection Block Diagram**
- 4.2 Electronic PCB, Connector and Pin Description**
- 4.3 Cables & Connectors**
- 4.4 Cable Diagram**

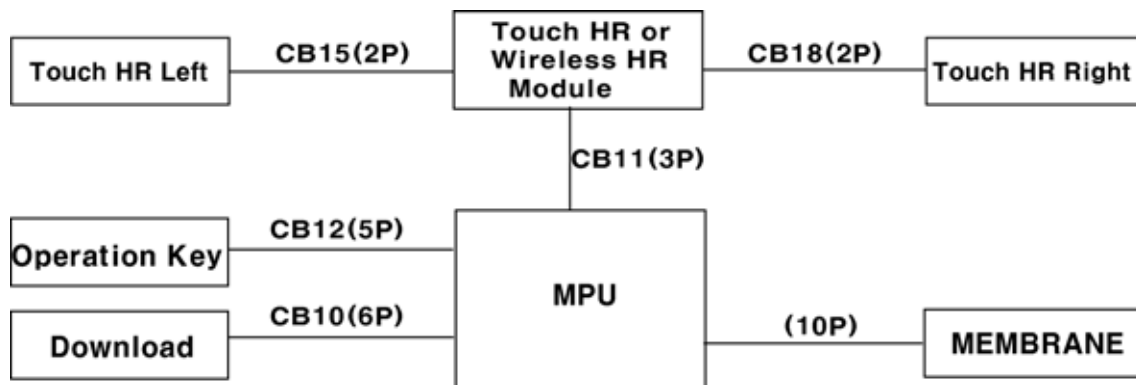
4.1 Cable Connection Block Diagram

1) MPU PCB on M660BUL/M660BRL

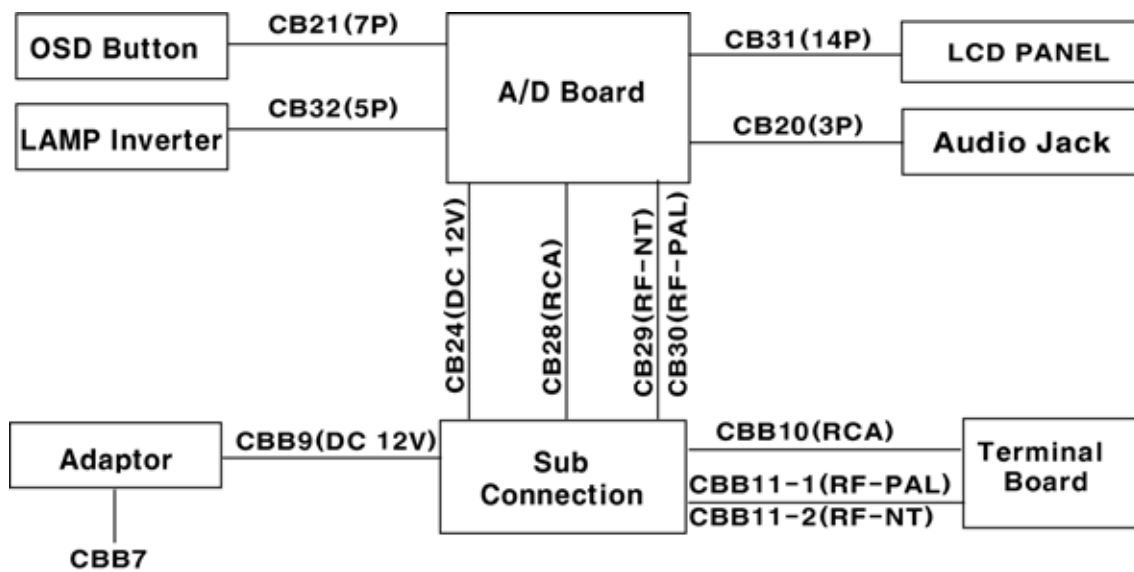
MPU_FRONT (Display), MPU_BACK (MAIN)



2) MPU PCB on M660BU/M600BR

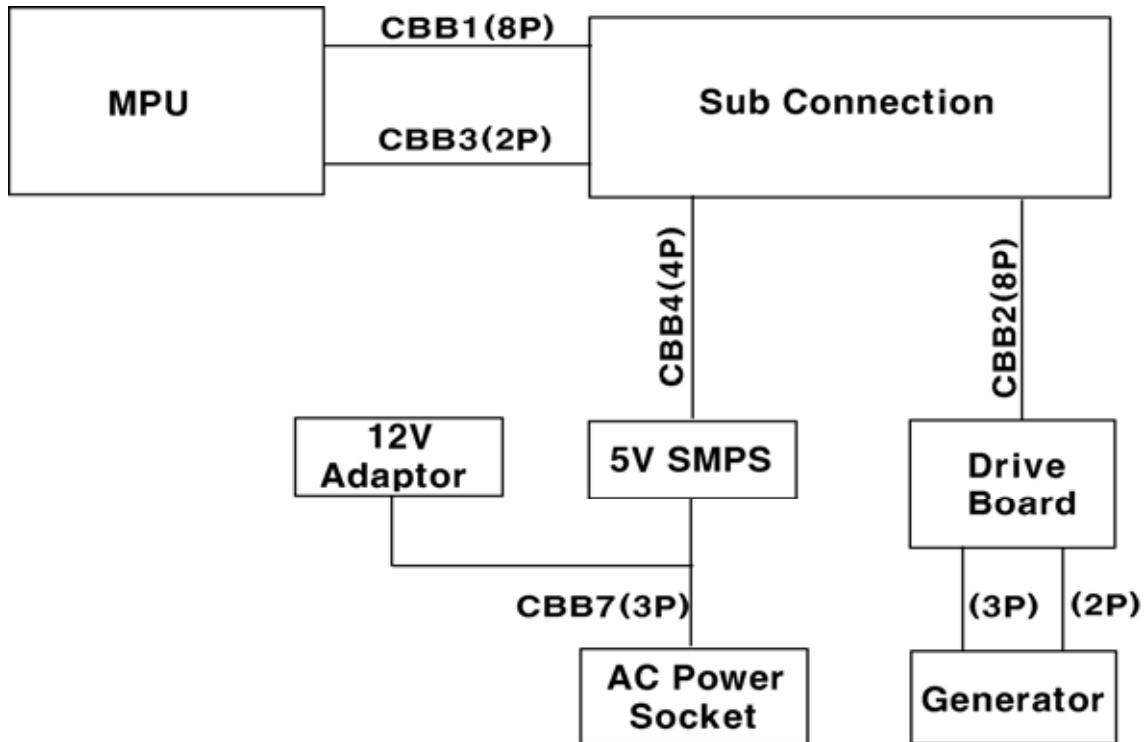


3) A/D BOARD on M600BUL/M660BRL

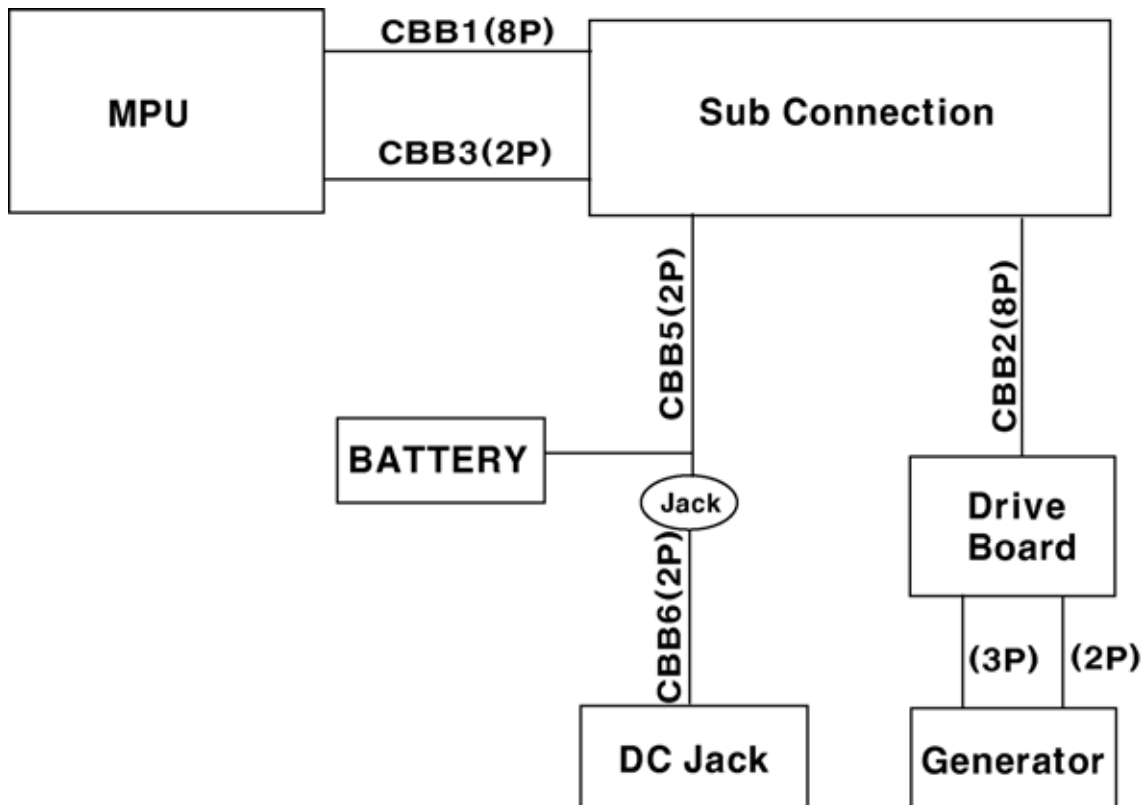


4) POWER BOARD

4-1) M660BUL/M660BRL (DRIVE Board, SMPS-5V, LCD POWER ADAPTER)



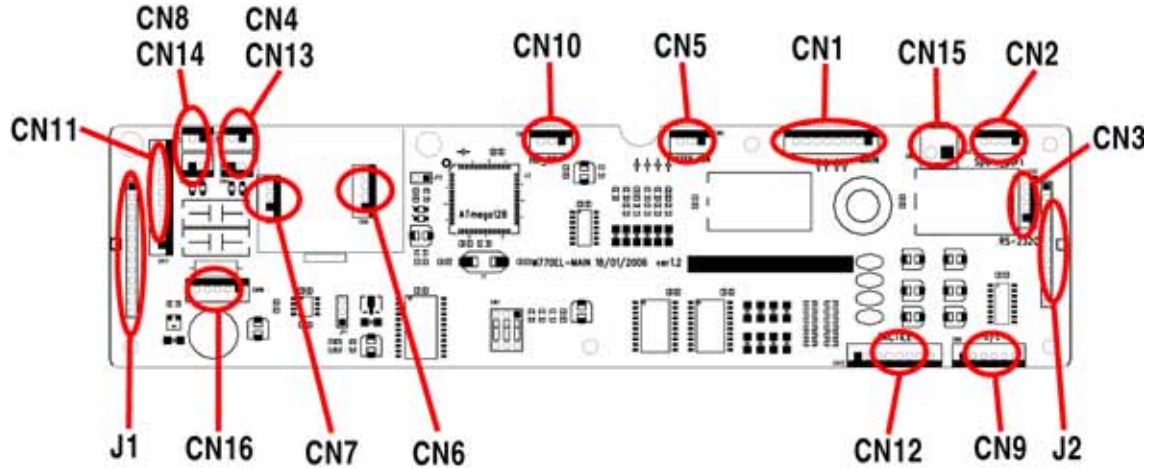
4-2) M660BU/M660BR (DRIVE Board)



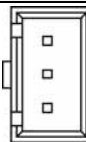
4.2 Electronic PCB, Connector and Pin Description

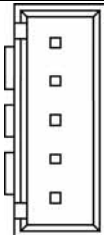
1) MPU PCB, M660BUL/M660BRL

1-1) MPU_BACK (or MPU_Main)



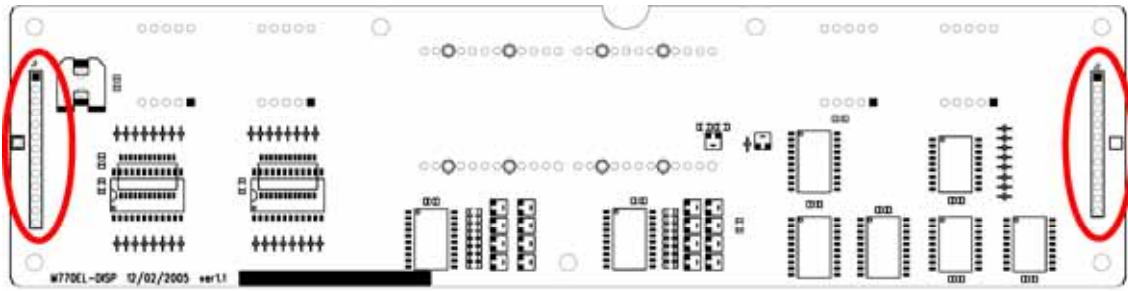
Connector	Location	Pin	Pin Name	Functional Description
CN 1 : Main Cable		1	NC	No Connection
		2	GND	Ground
		3	NC	No Connection
		4	NC	No Connection
		5	PWM	PWM Output
		6	E/P	Encoder Pulse Input
		7	GND	Ground
		8	NC	No Connection
CN 2 : Reserved Port (RS-232)		1	VCC	Not used
		2	TXD_PC	Not used
		3	RXD_PC	Not used
		4	GND	Not used
CN 3 : Serial Port (RS-232)		1	VCC	+5V
		2	TXD_PC	Transmit data (M660B → PC)
		3	RXD_PC	Receive data(PC → M660B)
		4	GND	Ground

Connector	Location	Pin	Pin Name	Functional Description
CN 4, CN 13 : Contact Heart Rate Sensor		1	Signal 1	Sensor Plate signal 1
		2	Signal 2	Sensor Plate signal 2
CN 5 : Step Sensor Not used		1	VCC	+5V
		2	STEP	Not used
		3	GND	Ground
CN 6 : Not used		1	VCC	VCC, Not used
		2	HR_TCH	Not used
		3	VCC	VCC, Not used
		4	GND	Ground, Not used
CN 7 : Not used		1	T_VCC	VCC, Not used
		2	T_GND	Ground, Not used
		3	T_VCC	VCC, Not used
CN 8, CN 14 : Contact Heart Rate Sensor		1	Signal 1	Sensor Plate signal 1
		2	Signal 2	Sensor Plate signal 2
CN 9 : Program Download		1	T232/PDO	Program Data Output
		2	VCC	+5V
		3	SCK	Serial Clock
		4	R232/PDI	Program Data Input
		5	RESET	Receive data
		6	GND	Ground
Connector	Location	Pin	Pin Name	Functional Description
CN 10 : Heart Rate Signal		1	Signal	Signal from Heart Rate Board
		2	VCC	+5V for Heart Rate
		3	GND	Ground for Heart Rate

Connector	Location	Pin	Pin Name	Functional Description
CN 11 : Overlay button (or Membrane)		1	B4	Data In 4
		2	B3	Data In 3
		3	B2	Data In 2
		4	B1	Data In 1
		5	Q6	Data Output 6
		6	Q5	Data Output 5
		7	Q4	Data Output 4
		8	Q3	Data Output 3
		9	Q2	Data Output 2
		10	Q1	Data Output 1
CN 12 : Operation Button		1	GND	Ground
		2	GND	Ground
		3	B4	Key Data Input 4
		4	B3	Key Data Input 3
		5	B2	Key Data Input 2
		6	B1	Key Data Input 1
		7	Q6	Key Scan Output 6
		8	VCC	Vcc
CN 15 : Main Power		1	VCC	VCC
		2	GND	Ground
CN 16 : Program Button		1	Q1	Data Output 1
		2	Q2	Data Output 2
		3	Q3	Data Output 3
		4	Q4	Data Output 4
		5	B4	Data In 4

Connector	Location	Pin	Pin Name	Functional Description
J1 : Display Interface Header 1		1	VCC	Vcc
		2	VCC	Vcc
		3	VCC	Vcc
		4	CS0	Chip Select 0
		5	CS1	Chip Select 1
		6	CS3	Chip Select 3
		7	CS4	Chip Select 4
		8	CS5	Chip Select 5
		9	CS6	Chip Select 6
		10	CS8	Chip Select 8
		11	GND	Ground
		12	GND	Ground
		13	GND	Ground
J2 : Display Interface Header 2		1	AD0	Address/Data 0
		2	AD1	Address/Data 1
		3	AD2	Address/Data 2
		4	AD3	Address/Data 3
		5	AD4	Address/Data 4
		6	AD5	Address/Data 5
		7	AD6	Address/Data 6
		8	AD7	Address/Data 7
		9	D_CLK	Dot Display Clock
		10	D_LE	Dot Display Latch Enable
		11	D_RED	Dot Display RED Data
		12	D_GR	Dot Display GREEN Data

1-2) MPU_FRONT (or MPU_DISPLAY)

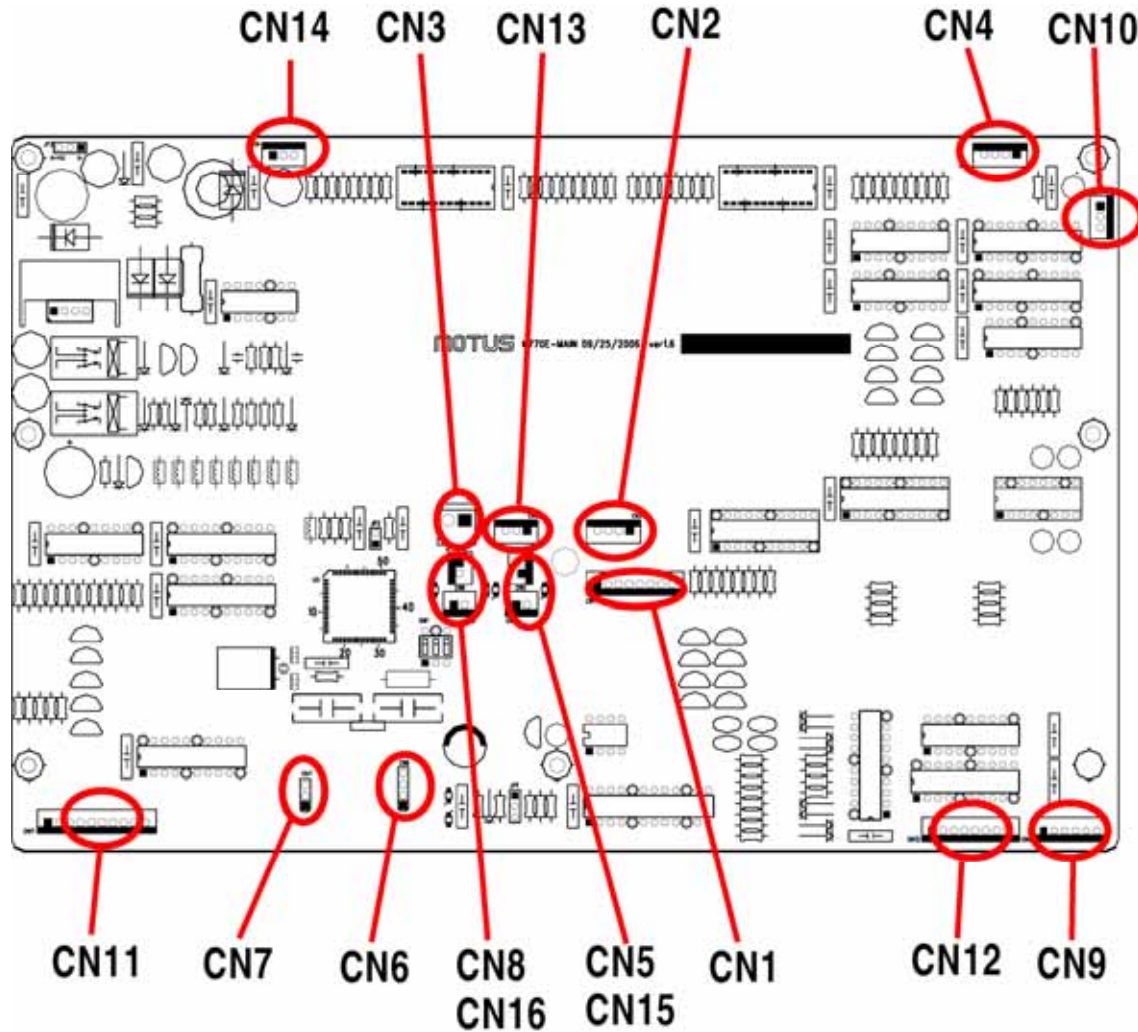


J1

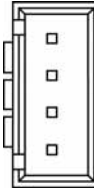
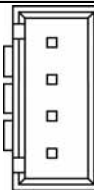
J2

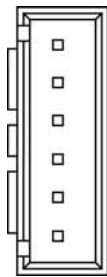
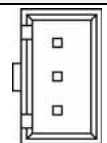
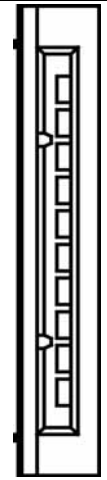
Connector	Location	Pin	Pin Name	Functional Description
J1 : MPU Interface Header 1		1	VCC	Vcc
		2	VCC	Vcc
		3	VCC	Vcc
		4	CS0	Chip Select 0
		5	CS1	Chip Select 1
		6	CS3	Chip Select 3
		7	CS4	Chip Select 4
		8	CS5	Chip Select 5
		9	CS6	Chip Select 6
		10	CS8	Chip Select 8
		11	GND	Ground
		12	GND	Ground
		13	GND	Ground
J2 : MPU Interface Header 2		1	AD0	Address/Data 0
		2	AD1	Address/Data 1
		3	AD2	Address/Data 2
		4	AD3	Address/Data 3
		5	AD4	Address/Data 4
		6	AD5	Address/Data 5
		7	AD6	Address/Data 6
		8	AD7	Address/Data 7
		9	D_CLK	Dot Display Clock
		10	D_LE	Dot Display Latch Enable
		11	D_RED	Dot Display RED Data
		12	D_GR	Dot Display GREEN Data

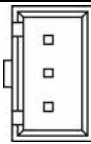
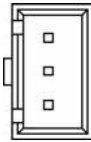
2) MPU PCB, M660BU/M660BR



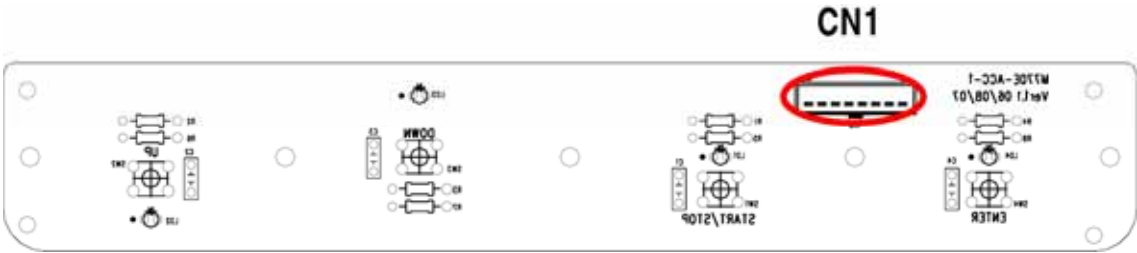
Connector	Location	Pin	Pin Name	Functional Description
CN 1 : Main Cable		1	VCC	Drive VCC 7.5V
		2	GND	Ground
		3	VCC	Drive VCC 7.5V
		4	NC	No Connection
		5	PWM	PWM Output
		6	E/P	Encoder Pulse Input
		7	GND	Ground
		8	VCC	Drive VCC 7.5V

Connector	Location	Pin	Pin Name	Functional Description
CN 2 : Reserved Port (RS-232)		1	VCC	Not used
		2	TXD_PC	Not used
		3	RXD_PC	Not used
		4	GND	Not used
CN 3 : Battery Power		1	VCC	Battery VCC 6V
		2	GND	Ground
CN 4 : Serial Port (RS-232), Not used		1	VCC	+5V, Not used
		2	TXD_PC	Transmit data (M660B → PC), Not used
		3	RXD_PC	Receive data(PC → M660B), Not used
		4	GND	Ground, Not used
CN 5, CN 15 : Contact Heart Rate Sensor		1	Signal 1	Sensor Plate signal 1
		2	Signal 2	Sensor Plate signal 2
CN 6 : Not used		1	VCC	Not used
		2	HR_TCH	Not used
		3	VCC	Not used
		4	GND	Not used
CN 7 : Not used		1	T_VCC	Not used
		2	T_GND	Not used
		3	T_VCC	Not used
CN 8, CN 16 : Contact Heart Rate Sensor		1	Signal 1	Sensor Plate signal 1
		2	Signal 2	Sensor Plate signal 2

Connector	Location	Pin	Pin Name	Functional Description
CN 9 : Program Download		1	T232/PDO	Program Data Output
		2	VCC	+5V
		3	SCK	Serial Clock
		4	R232/PDI	Program Data Input
		5	RESET	Receive data
		6	GND	Ground
CN 10 : Heart Rate Signal		1	Signal	Signal from Heart Rate Board
		2	VCC	Heart Rate +5V
		3	GND	Heart Rate Ground
CN 11 : Overlay (or Membrane)		1	B4	Data In 4
		2	B3	Data In 3
		3	B2	Data In 2
		4	B1	Data In 1
		5	Q6	Data Output 6
		6	Q5	Data Output 5
		7	Q4	Data Output 4
		8	Q3	Data Output 3
		9	Q2	Data Output 2
		10	Q1	Data Output 1
CN 12 : Operation Button		1	GND	Ground
		2	GND	Ground
		3	B4	Key Data Input 4
		4	B3	Key Data Input 3
		5	B2	Key Data Input 2
		6	B1	Key Data Input 1
		7	Q6	Key Scan Output 6
		8	VCC	Vcc

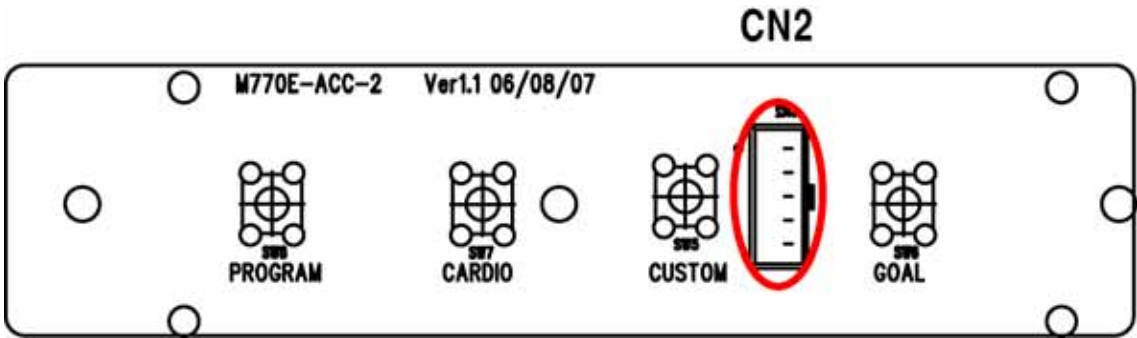
Connector	Location	Pin	Pin Name	Functional Description
CN 13 : Step Sensor		1	VCC	Not used
		2	STEP	Not used
		3	GND	Not used
CN 14 : Test Power		1	B+VCC	Not used
		2	GND	Not used
		3	VCC	Not used

3) Operation Button Board



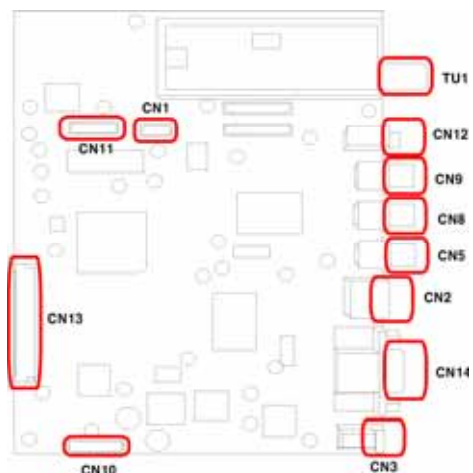
Connector	Location	Pin	Pin Name	Functional Description
CN 1 : Operation Button (Start/Stop, Intensity Up, Intensity Down)		1	GND	Ground
		2	GND	Ground
		3	START/STOP	Start/Stop Key
		4	UP	Level UP Key
		5	DOWN	Level Down Key
		6	ENTER	ENTER Key
		7	SCAN	Signal Scan
		8	VCC	VCC

4) Program Button Board



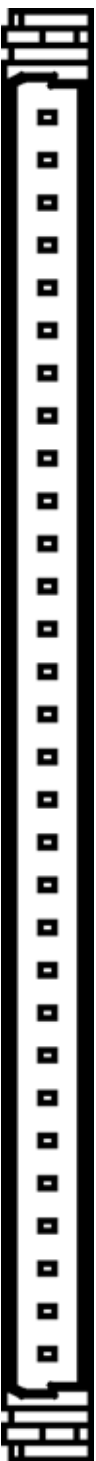
Connector	Location	Pin	Pin Name	Functional Description
CN 1 : Program Button		1	Q1	Data Output 1
		2	Q2	Data Output 2
		3	Q3	Data Output 3
		4	Q4	Data Output 4
		5	B4	Data In 4

5) A/D Board



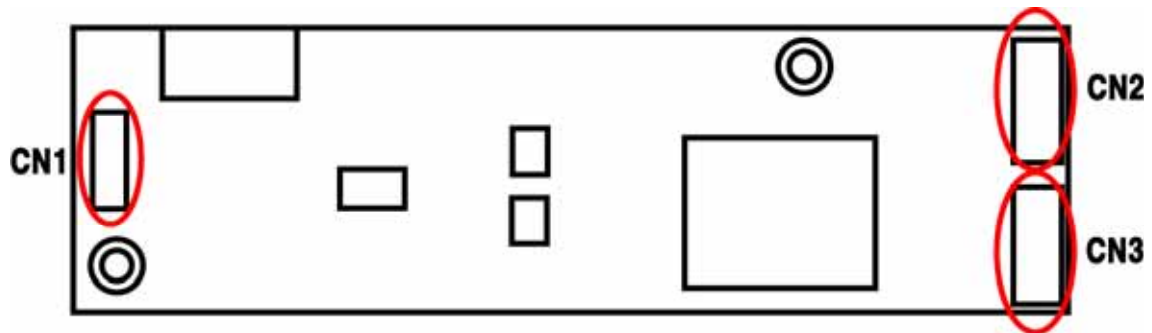
Connector	Location	Pin	Pin Name	Functional Description
CN 1 : Audio Out		1	Audio Left	Audio Left
		2	GND	Ground
		3	Audio Right	Audio Right
		4	GND	Ground
CN 2 : SVIDEO				S-VIDEO Input
CN 3 : DC In				DC 12V/3.5A Input
CN 5 : Video In				Video Input (Yellow)
CN 8 : Audio In				Audio Input (Red)
CN 9 : Audio In				Audio Input (White)

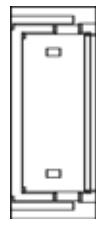
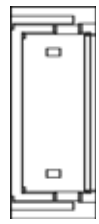
Connector	Location	Pin	Pin Name	Functional Description
CN 10 : LAMP Inverter Control		1	VCC	DC 12V/3.5A Vcc
		2	VCC	DC 12V/3.5A Vcc
		3	VCC	DC 12V/3.5A Vcc
		4	GND	Ground
		5	GND	Ground
		6	GND	Ground
		7	DIM CTRL	Back Light Intensity Adjust (DC 0 ~ 5V)
		8	On/Off	Back Light On/Off Control
CN 11 : OSD Key In		1	LED1	LDE Lamp
		2	KEY1	Key Input
		3	KEY2	Key Input
		4	5V	Vcc, DC 5V
		5	GND	Ground
		6	LED2	LED Lamp
		7	IR	IR Sensor
CN 12 : S-AUDIO In				S-AUDIO Input
CN 14 : RGB In				RGB Analog In (Monitor)
TU 1 : RF ANT In				RF ANT In

Connector	Location	Pin	Pin Name	Functional Description
CN 13 : LVDS Control CN 13 : LVDS Control		1	Vcc	Power for LCD panel
		2	Vcc	Power for LCD panel
		3	Vcc	Power for LCD panel
		4	NC	No Connection
		5	NC	No Connection
		6	NC	No Connection
		7	GND	Ground
		8	E 3+	LVDS EVEN
		9	E 3-	LVDS EVEN
		10	E CLK +	LVDS EVEN
		11	E CLK -	LVDS EVEN
		12	E 2+	LVDS EVEN
		13	E 2-	LVDS EVEN
		14	GND	Ground
		15	E 1+	LVDS EVEN
		16	E 1-	LVDS EVEN
		17	GND	Ground
		18	E 0+	LVDS EVEN
		19	E 0-	LVDS EVEN
		20	O 3+	LVDS ODD
		21	O 3-	LVDS ODD
		22	O CLK +	LVDS ODD
		23	O CLK -	LVDS ODD
		24	GND	Ground
		25	O 2+	LVDS ODD
		26	O 2-	LVDS ODD
		27	O 1+	LVDS ODD
		28	O 1-	LVDS ODD
		29	O 0+	LVDS ODD
		30	O 0-	LVDS ODD

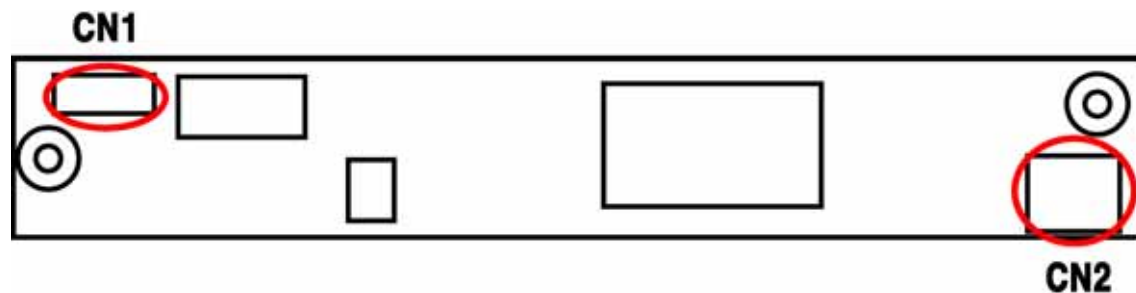
6) LAMP Inverter Board

6-1) Lamp Inverter Board for two-lamp LCD screen



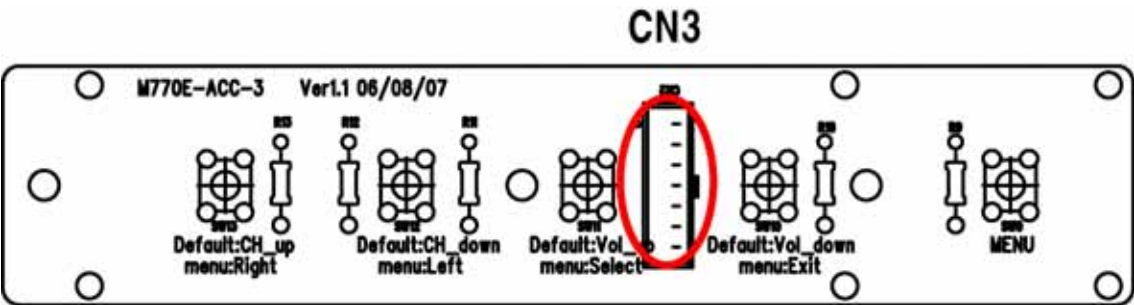
Connector	Location	Pin	Pin Name	Functional Description
CN 1 : Input Connector		1	VCC	DC 12V/3.5A Vcc
		2	GND	Ground
		3	On/Off	Back Light On/Off Control
		4	CTRL	Adjustment for Back Light Bright (DC 0 ~ 5V)
		5	GND	Ground
CN 2 : Output Connector 1		1	Lamp H1	High Voltage connection to high side of lamp
		2	Lamp L1	Low Voltage connection to low side of lamp
CN 3 : Output Connector 2		1	Lamp H2	High Voltage connection to high side of lamp
		2	Lamp L2	Low Voltage connection to low side of lamp

6-2) Lamp Inverter Board for one-lamp LCD screen



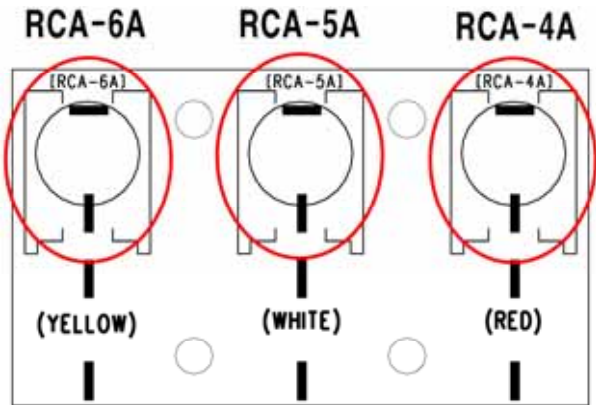
Connector	Location	Pin	Pin Name	Functional Description
CN 1 : Input Connector		1	GND	Ground
		2	CTRL	Adjustment for Back Light Bright (DC 0 ~ 5V)
		3	On/Off	Back Light On/Off Control
		4	VCC	DC 12V/3.5A Vcc
		5	GND	Ground
CN 2 : Output Connector 1		1	Lamp H1	High Voltage connection to high side of lamp
		2	Lamp L1	Low Voltage connection to low side of lamp

7) OSD Button Board



Connector	Location	Pin	Pin Name	Functional Description
CN 3 : OSD Button		1	NC	No Connection
		2	KEY1	Key 1 Output (Volume_up, Channel_down, Channel_up)
		3	KEY2	Key 2 Output (Volume_down, Power)
		4	5V	Vcc 5V
		5	GND	Ground
		6	NC	No Connection
		7	NC	No Connection

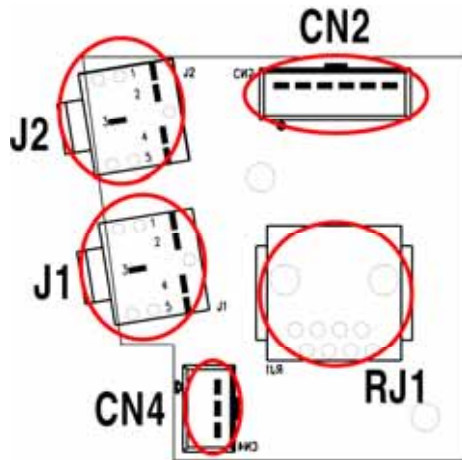
8) RCA Jack Board

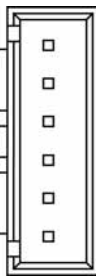
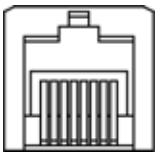


Connector	Location	Pin	Pin Name	Functional Description
RCA-4A :			RED	Audio Input
RCA-5A			WHITE	Audio Input

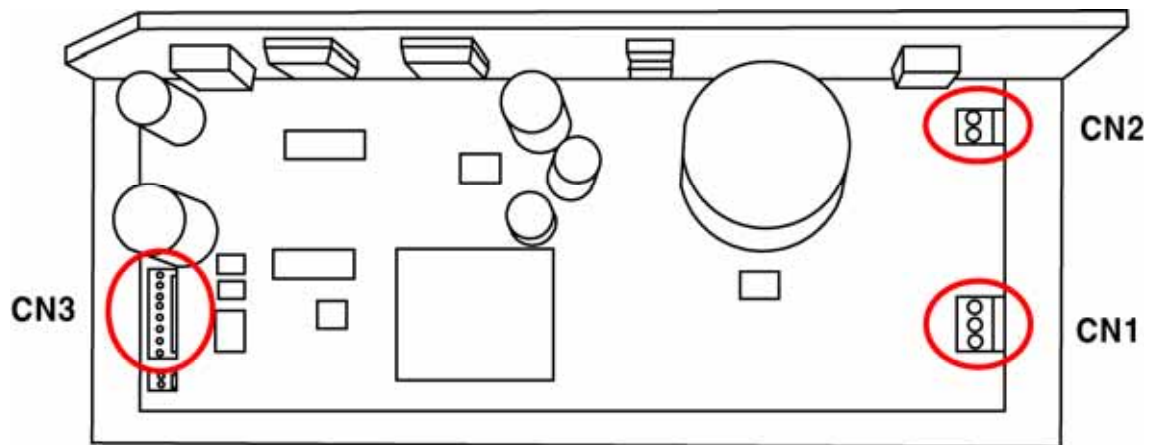
RCA-6A			YELLOW	Video Input
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9) Audio Interface & Download Board



Connector	Location	Pin	Pin Name	Functional Description
CN 4 : Audio Interface		1	Audio_L	Stereo Left
		2	Audio_R	Stereo Right
		3	GND	Ground
CN 2 : Program Download		1	PD-Out	Program Data Output
		2	VCC	+5V
		3	SCK	Serial Clock
		4	PD-In	Program Data Input
		5	RESET	Receive data
		6	GND	Ground
RJ1 : Download Interface from External		1	PD-Out	Program Data Output
		2	VCC	+5V
		3	SCK	Serial Clock
		4	PD-In	Program Data Input
		5	RESET	Receive data
		6	GND	Ground
		7	GND	Ground
		8	NC	No Connection

10) Drive Board



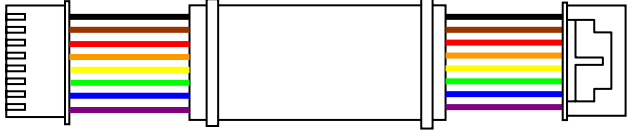
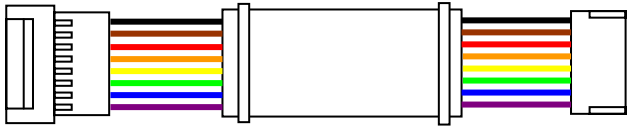
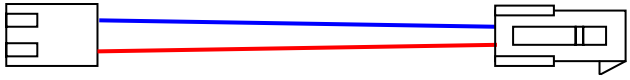
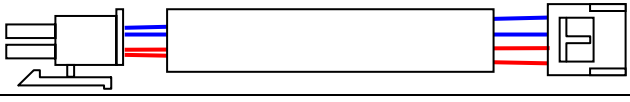
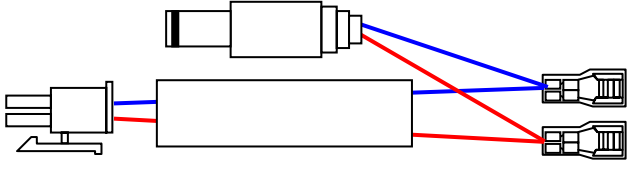
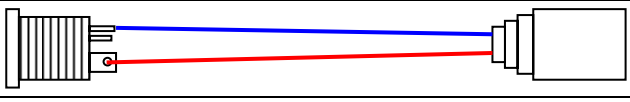
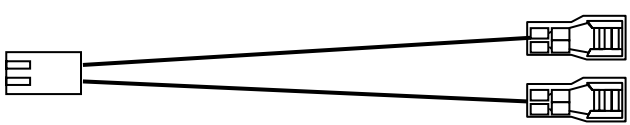
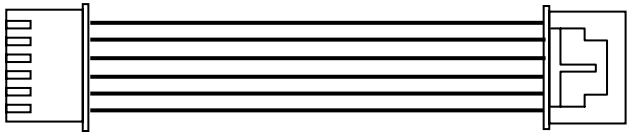
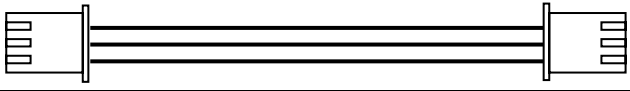
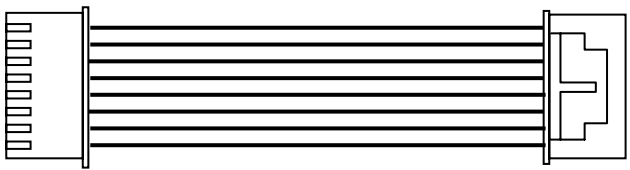
Connector	Location	Pin	Pin Name	Functional Description
CN 1 :		1	U-phase input	Voltage Source to Drive Board
		2	V-phase input	Voltage Source to Drive Board
		3	W-phase input	Voltage Source to Drive Board
CN 2 :		1	Brake Control	PWM Output for brake
		2	Brake Control	PWM Output for brake
CN 3 :		8	VCC	Voltage output
		7	GND	Ground
		6	E/P	Pulse for checking a rotation speed
		5	PWM	PWM Input for brake
		4	N.C	N.C
		3	VCC	Voltage output
		2	GND	Ground
		1	VCC	Voltage output

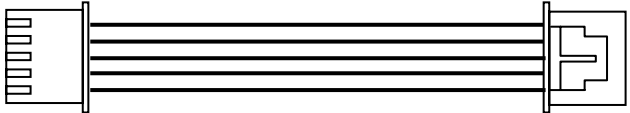
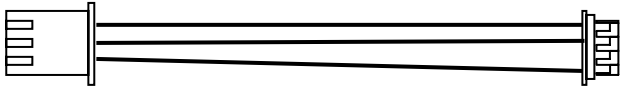
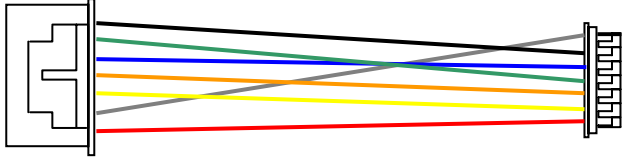
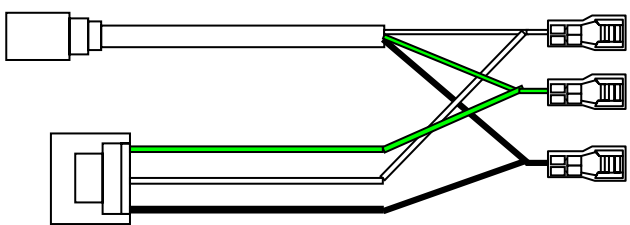
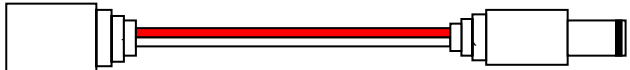
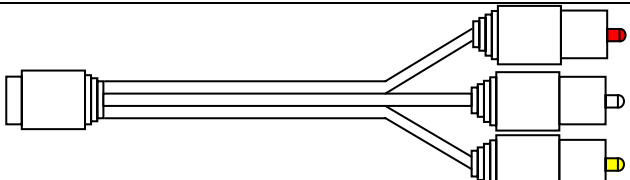
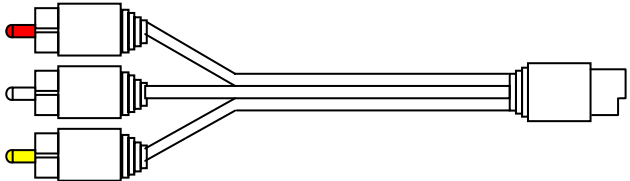
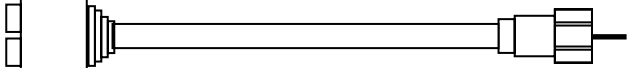
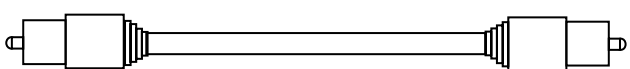
4.3 Cables & Connectors

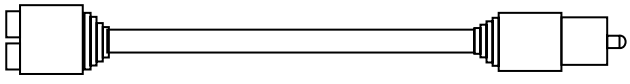
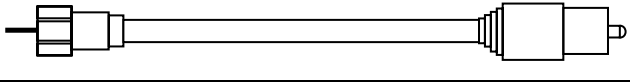
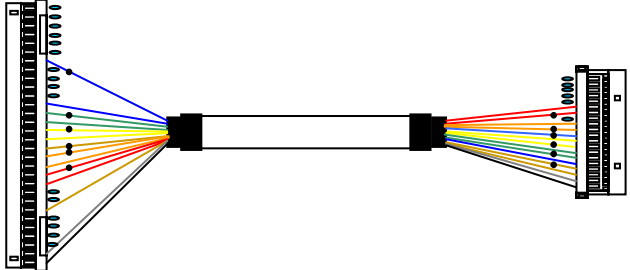
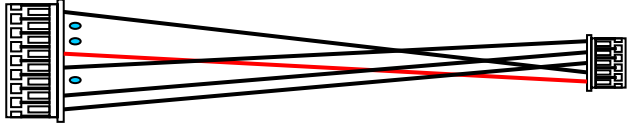
Cable No.	Start Board	Connector No.	End Board	Connector No.	Wire	Length [mm]	Housing	Remark
CBB1+CBB2	Main (Dot)	CN1	Driver Board	CN3	8P	1350	SMH250-08	
CBB3+CBB5		CN3	Battery	-	2P	1300	CH1143-02	
CB15		CB5	Touch-L	-	2P	950	SMH250-02	
CB18		CN8	Touch-R	-	2P	950	YH025-02	
CB12		CN12	Operation Board	CN1	8P	150	SMH250-08	
CB9		CN9	Audio Interface & Download Board	CN2	6P	150	SMH250-06	
CB10		CN10	RF-HR(POLAR)	-	3P	900	SMH250-03	
-		CN11	Membrain	-	-			
CBB1+CBB2	Main (LCD)	CN1	Driver Board	CN3	8P	1350	SMH250-08	
CB15		CN4	Touch-L	-	2P	950	SMH250-02	
CB18		CN8	Touch-R	-	2P	950	YH025-02	
CB9		CN9	Audio Interface & Download Board	CN2	6P	150	SMH250-06	
CB12		CN12	Operation Board	CN1	8P	150	SMH250-08	
CB10		CN10	RF-HR(POLAR)	-	3P	900	SMH250-03	
CB19		CN16	Program Key	CN2	5P	300	SMH250-05	
CBB3+CBB4		CN15	SMPS-5V	-	2P	1350	CH1143-02	
-		J1	MPU Display	J1	13P		Box Header	
-		J2	MPU Display	J2	12P		Box Header	
-		CN11	Membrane	-	-			
CB31	AD Board	CN13	LCD Panel	-	14P	250		
CB32		CN10	LAMP Inverter	-	5P	160		
CB21		CN1	OSD Board	CN3	7P	200		
CB20		CN11	Audio Interface & Download Board	CN4	3P	350		
CBB9+CBB24	Adaptor	-	AD Board	CN3		1500		
CBB11-2+CB29	Terminal	-	AD Board	TU1		2210		NTSC
CBB11-1+CB30	Plate	-		TU1		2210		PAL/SECAM

Cable No.	Start Board	Connector No.	End Board	Connector No.	Wire	Length [mm]	Housing	Remark
CBB10+CB28	Terminal Plate	-	AD Board	CN5		2060		Yellow
CBB10+CB28		-		CN8		2060		Red
CBB10+CB28		-		CN9		2060		White
-	Driver Board	CN1	Genurator	-	3P			
-		CN2		-	2P			

4.4 Cable Diagram

Cable No.	Cable Name	Cable Spec
CBB1	Main Cable (Top)	
CBB2	Main Cable (Bottom)	
CBB3	DC Cable	
CBB4	SMPS 5V Cable	
CBB5	Battery Cable	
CBB6	Adapter Cable	
CB15	Touch HR Left Cable	
CB18	Touch HR Right Cable	
CB10	DownLoad Cable	
CB11	POLAR Cable	
CB12	Tact Switch (Operation) Cable	

Cable No.	Cable Name	Cable Spec
CB19	Program Key Cable	
CB20	Audio output Cable	
CB21	OSD Cable	
CBB7	Power Cable	
CB24	SMPS 12V Cable (TOP)	
CBB9	SMPS 12V Cable (Bottom)	
CB28	RCA Cable (TOP)	
CBB10	RCA Cable (Bottom)	
CB29	Coaxial Cable (NTSC-TOP)	
CBB11-2	Coaxial Cable (NTSC-Bottom)	

Cable No.	Cable Name	Cable Spec
CB30	Coaxial Cable (PAL/SECAM-TOP)	
CBB11-1	Coaxial Cable (PAL/SECAM-Bottom)	
CB31	LVDS Cable	
CB32	LAMP Inverter Cable	

APPENDIX

EXPLODED VIEW

A. M660BU - PART LIST

A.1 M660BU - EXPLODED VIEW

B. FOOT - PART LIST

B.1 FOOT - EXPLODED VIEW

C. M660BU/BUL_MAIN BODY - PART LIST

C.1 M660BU/BUL_MAIN BODY - EXPLODED VIEW

D. M660BU/BUL_CONSOLE POST - PART LIST

D.1 M660BU/BUL_CONSOLE POST – EXPLODED VIEW

E. M660BU/BUL_HANDLE – PART LIST

E.1 M660BU/BUL_HANDLE- EXPLODED VIEW

F. M660BU/BUL_SEAT – PART LIST

F.1 M660BU/BUL_SEAT - EXPLODED VIEW

G. CONSOLE – PART LIST

G.1 COLSOLE – EXPLODED VIEW

H. M660BR/BRL - PART LIST

H.1 M660BR/BRL - EXPLODED VIEW

I. M660BR/BRL_MAIN BODY - PART LIST

I.1 M660BR/BRL_MAIN BODY - EXPLODED VIEW

J. M660BR/BRL_CONSOLE POST – PART LIST

J.1 M660BR/BRL_CONSOLE POST – EXPLODED VIEW

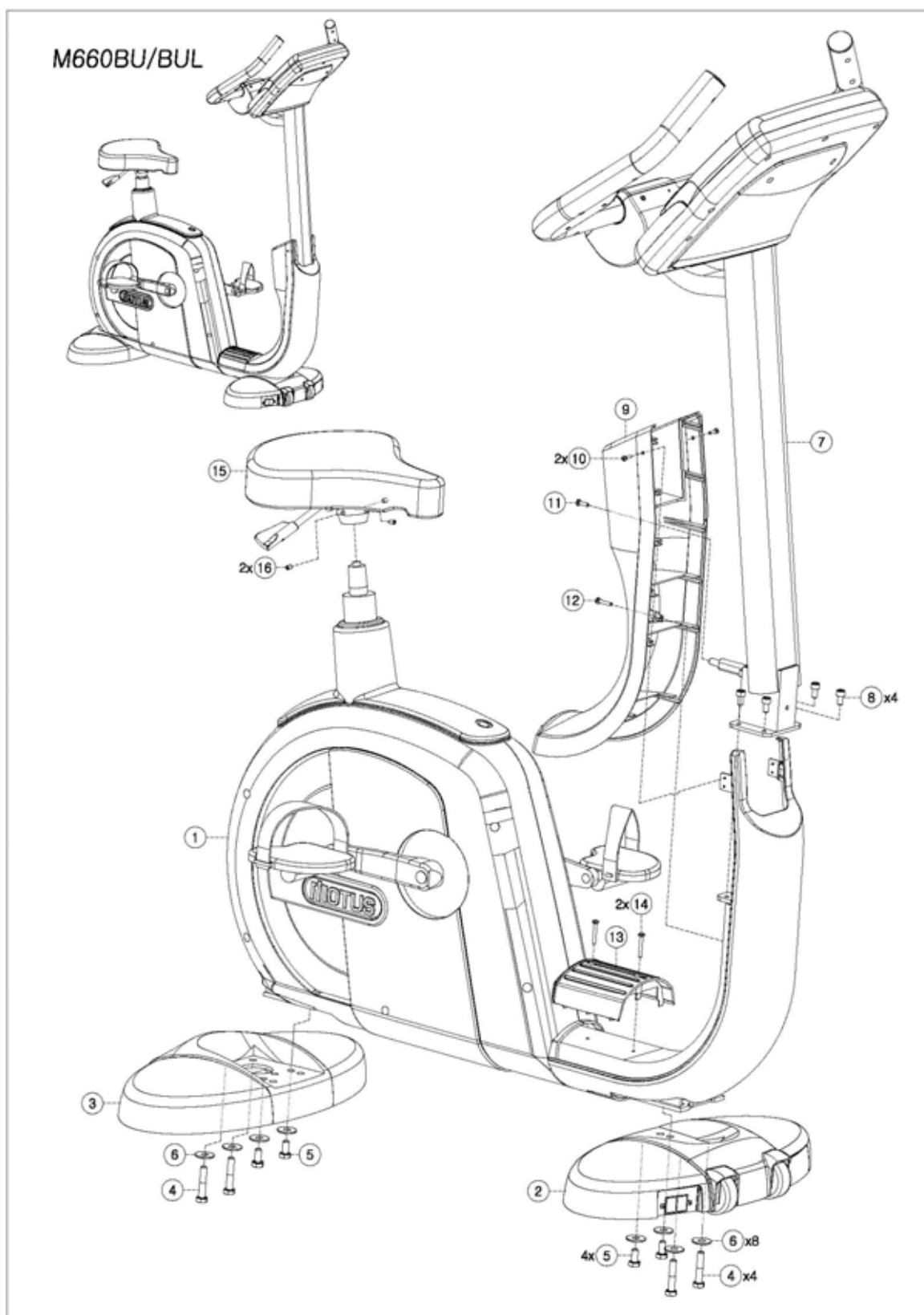
K. M660BR/BRL_SEAT – PART LIST

K.1 M660BR/BRL_SEAT – EXPLODED VIEW

A. M660BU

NO.	CODE	P/NAME	SPEC	Q'TY
1		MAIN BODY ASSEMBLY		1
2	MAY116000	FOOT_FRONT	DOT TYPE	1
2	MAY116001	FOOT_FRONT	LCD TYPE(NT)	1
2	MAY116002	FOOT_FRONT	LCD TYPE(PAL)	1
3	MAY116003	FOOT_REAR		1
4	MA0J10050	H/S HEX BOLT	M10 X L50	4
5	MA0K10020	HEX BOLT	M10 X L20	4
6	MA0S10003	PLAIN WASHER	M10, 3t, OD25	8
7	MAY150000	CONSOLE POST ASSEMBLY_DOT	M660BU	1
7	MAY150002	CONSOLE POST ASSEMBLY_LCD	M660BUL	1
8	MA0A08015	ALLEN BOLT	M8 X L15	4
9	MAY190020	FRONT BODY_REAR	ABS	1
10	MA0M04012	TRUSS CROSS BOLT	M4 x L12	2
11	MA0F05015	BUTTON CROSS BOLT	M5 x L15	1
12	MA1G05035	BUTTON SCREW	M5 X L35	1
13	MAY190030	CENTER FOOT_UP	ABS	1
14	MA0F05035	BUTTON CROSS BOLT	M5 X L35	2
15		SEAT ASSEMBLY		1
16	MA0V06010	SET SCREW	M6 X L10	4

A.1 M660BU

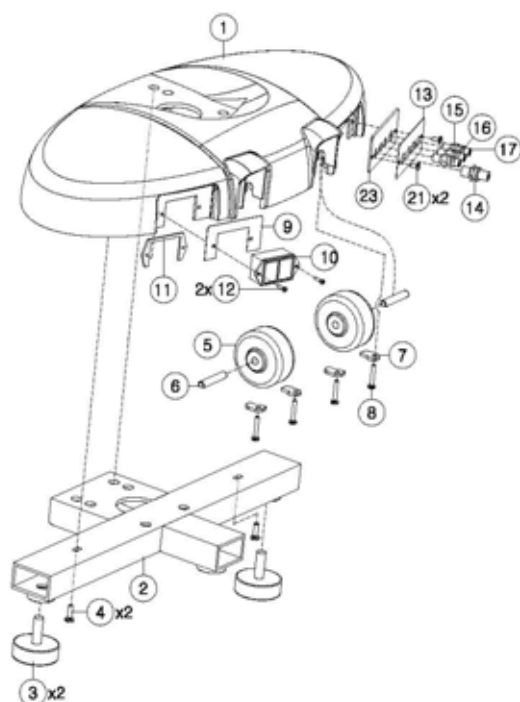


B. FOOT

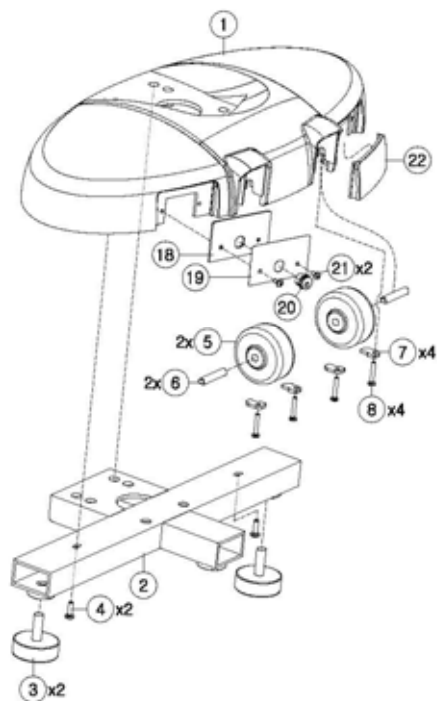
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1	MAY190100	FOOT FRAME COVER_FRONT	ABS	1
2	MAY116010	FOOT FRAME		1
3	MAY114000	STABILIZER		5
4	MA0W05018	TRUSS SCREW	M5 X L18	4
5	MAJ121020	CASTER	OD64, ID8, W35	2
6	MAY116030	CASTER SHAFT		2
7	MAY116020	CASTER FIXING BRACKET		4
8	MA1G04020	BUTTON SCREW	M4 X L20	4
9	MAY194040	STICKER TERMINAL LCD_R	ON/OFF	1
10	MAU195020	AC POWER S/W INLET	AC POWER	1
11	MAY116050	AC POWER S/W INLET PLATE	2t	1
12	MA0Y03012	PILLOW CROSS BOLT	M3 X L12	2
13	MAY194050	STICKER TERMINAL LCD_L	TV GENDER	1
14	MAO174010	RF GENDER	NT-PAL	1
15	MAZ19017E	RCA GENDER	YELLOW	1
16	MAZ19019E	RCA GENDER	WHITE	1
17	MAZ19018E	RCA GENDER	RED	1
18	MAY116060	CHARGER JACK PLATE	2t	1
19	MAY194010	STICKER TERMINAL DOT_R	CHARGER JACK	1
20	MAV194030	DC POWER JACK		1
21	MA1G04012	BUTTON SCREW	M4 X L12	2
22	MAY190120	JACK COVER_L	ABS	1
23	MAY116070	TERMINAL PLATE	2t	1
24	MAY190110	FOOT FRAME COVER_REAR	ABS	1

B.1 FOOT

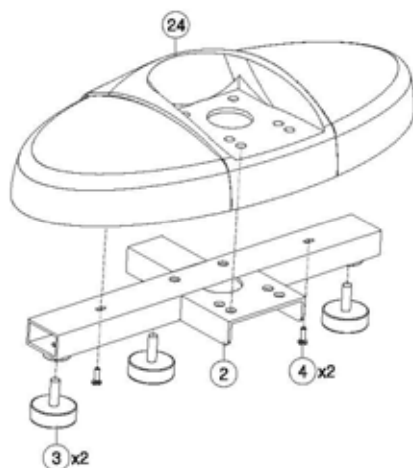
FOOT_FRONT_LCD TYPE



FOOT_FRONT_DOT TYPE



FOOT_REAR



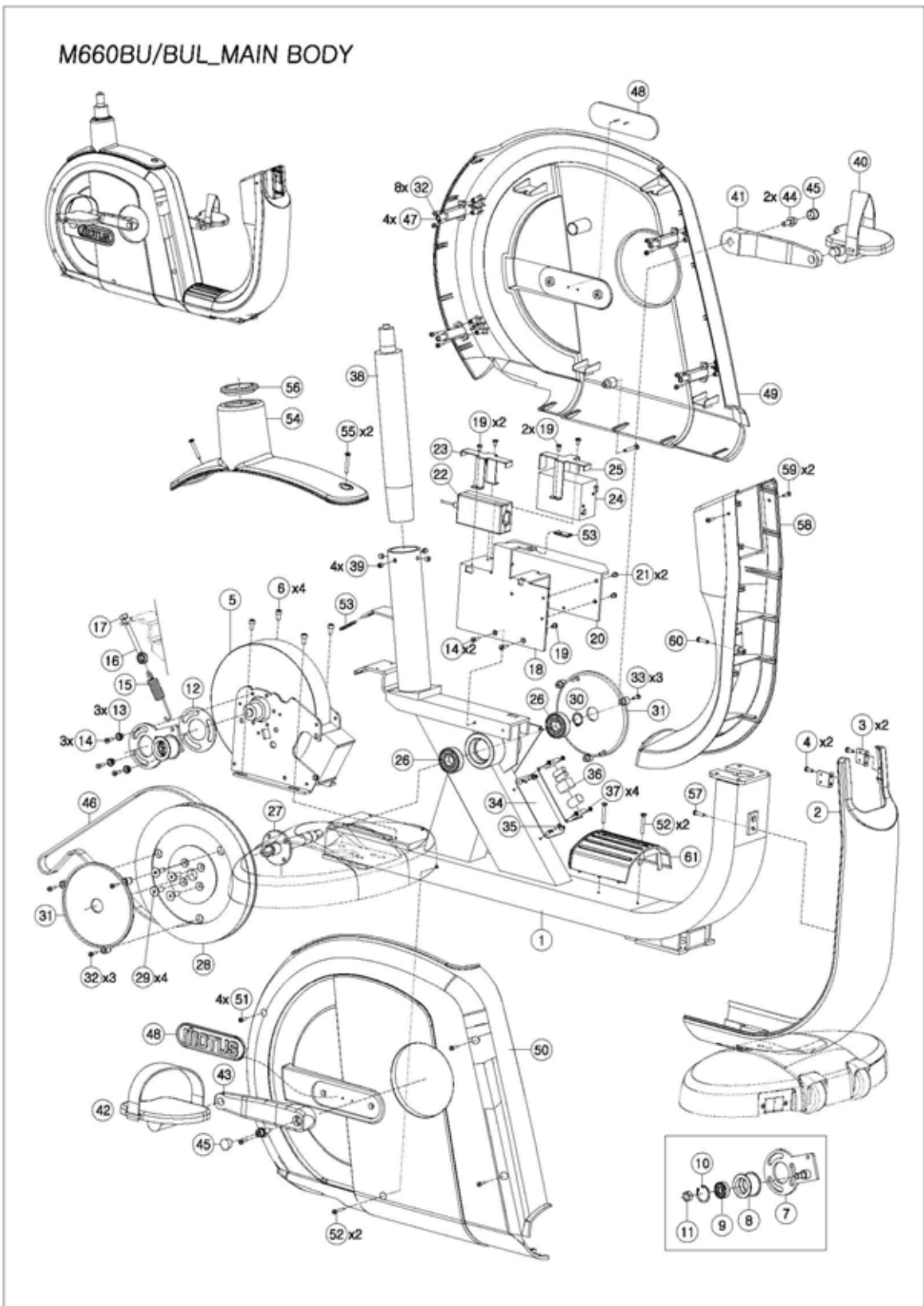
C. M660BU/BUL_MAIN BODY

NO	CODE	P/NAME	SPEC	Q'TY
1	MAY110010	MAIN FRAME		1
2	MAY190010	FRONT BODY_FRONT	ABS,SILVER	1
3	MAY110070	FRONT BODY BRACKET		2
4	MA1G04010	BUTTON SCREW	M4 X L10, 2	2
5	MAF131000	GENERATOR	B6001 HYBRID TYPE	1
6	MA0A06015	ALLEN BOLT	M6 X L15	4
7	MAY132010	IDLER BRACKET		1
8	MAY132020	IDLER PULLEY		1
9	MAZ182130	BALL BEARING-DEEP	B6200ZZ	1
10	MA0Y31031	SNAP RING	H30	1
11	MA0O10000	HEX LOCK NUT	M10	1
12	MAY132040	IDLER BRACKET SPACER		1
13	MAY132030	IDLER BRACKET BUSH		3
14	MA0Y05015	PILLOW CROSS BOLT		5
15	MAZ134010	TENSION SPRING		1
16	MA0Y08060	HANGER BOLT	M8 X L60	1
17	MA0O08000	HEX LOCK NUT	M8	1
18	MAY110020	DRIVER BOARD BRACKET		1
19	MA0F05008	BUTTON CROSS BOLT	M5 X L8	3
20	MAU135010	DRIVER BOARD	7.5V, 1.5A	1
21	MA0M05008	TRUSS CORSS BOLT	M5 X L8	2
22	MAO167090	LCD POWER ADAPTER	12V, 3.5A(BUL)	1
23	MAY110040	ADAPTER BRACKET	(BUL)	1
24	MAF136000	BATTERY	6V, 4A(BU)	1
25	MAY110030	BATTERY BRACKET	(BU)	1
26	MAU142040	BALL BEARING-DEEP	B6204ZZ	2
27	MAY141010	PEDAL SHAFT		1
28	MAY142010	PEDAL PULLEY	MC NYLON	1

NO	CODE	P/NAME	SPEC	Q'TY
29	MA0D08020	ALLEN PILLOW BOLT	M8 X L20	4
30	MA0Y31020	SNAP RING	S20	1
31	MAY190140	PEDAL IN COVER	ABS, SILVER	2
32	MA1G04016	BUTTON SCREW	M4 X L16	11
33	MA0F04015	BUTTON CROSS BOLT	M4 X L15	3
34	MAY110060	SMPS BRACKET_UP		1
35	MA0F04010	BUTTON CROSS BOLT	M4 X L10	2
36	MAU185060	SMPS-5V	2SF15-05	1
37	MA0L03008	SEMS BOLT	M3 X L8	4
38	MAY182030	GAS CYLINDER		1
39	MA0V08006	SET SCREW	M8 X L6	4
40	MAG144000	PEDAL_BU_L	JD22-B	1
41	MAF143000	CRANK ARM_L		1
42	MAG144010	PEDAL_BU_R		1
43	MAF148000	CRANK ARM_R		1
44	MA0F08025	ALLEN SEMS BOLT	M8 X L25	2
45	MAF146000	CRANK CAP		2
46	MAF145000	POLY-V BELT	430J 7R	1
47	MAY190180	SUPPORTER		4
48	MAY190091	LOGO BADGE	ALUMINUM	2
49	MAY190040	MAIN BODY_L		1
50	MAY190050	MAIN BODY_R		1
51	MA0F05015	BUTTON CROSS BOLT	M5 X L15	4
52	MA0F05035	BUTTON CROSS BOLT	M5 X L35	4
53	MA0Y90103	SPEED NUT	M5	2
54	MAY190060	MAIN BODY_CAP	ABS	1
55	MA0G05035	BUTTON SCREW	M5 X L35	2
56	MAY182040	SEAT POST CAP		1
57	MA1G05018	BUTTON SCREW	M5 X L18	1
58	MAY190020	FRONT BODY_REAR	ABS	1
59	MA0M04012	TRUSS CROSS BOLT	M4 X L12	2

NO	CODE	P/NAME	SPEC	Q'TY
60	MA1G05035	BUTTON SCREW	M5 X L35	1
61	MAY190030	CENTER FOOT_UP	ABS	1

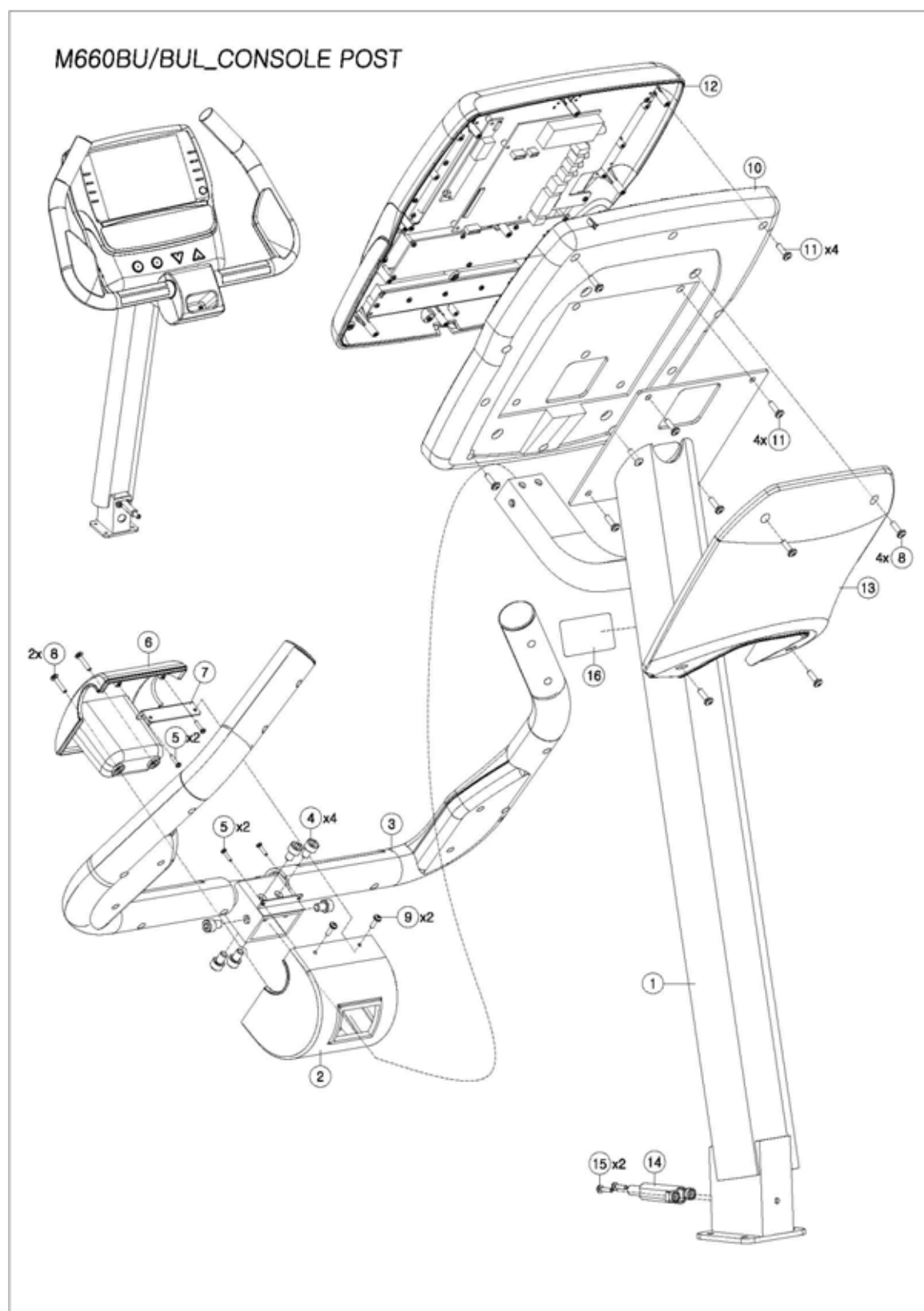
C.1 M660BU/BUL_MAIN BODY



D. M660BU/BUL_CONSOLE POST

NO.	CODE	P/NAME	SPEC	Q'TY
1	MAY150010	CONSOLE POST FRAME		1
2	MAY190160	POCKET_BOTTOM	ABS	1
3		HANDLE ASSEMBLY		1
4	MA0A08015	ALLEN BOLT	M8 X L15	4
5	MA1G03012	BUTTON SCREW	M3 X L12	4
6	MAY190150	POCKET_TOP	ABS	1
7	MAY110050	POCKET BRACKET		1
8	MA1G04020	BUTTON SCREW	M4 X L20	6
9	MA0M04012	TRUSS CROSS BOLT	M4 X L12	2
10	MAU152010	DISPLAY PANEL BOTTOM	ABS	1
11	MA0F05020	BUTTON CROSS BOLT	M5 X L20	8
12		DISPLAY PANEL TOP		1
13	MAY190170	DISPLAY REAR COVER	ABS	1
14	MAY190180	SUPPORTER		1
15	MA0F04015	BUTTON CROSS BOLT	M4 X L15	2
16	MAY115000	STICKER-SERIAL NO.		1

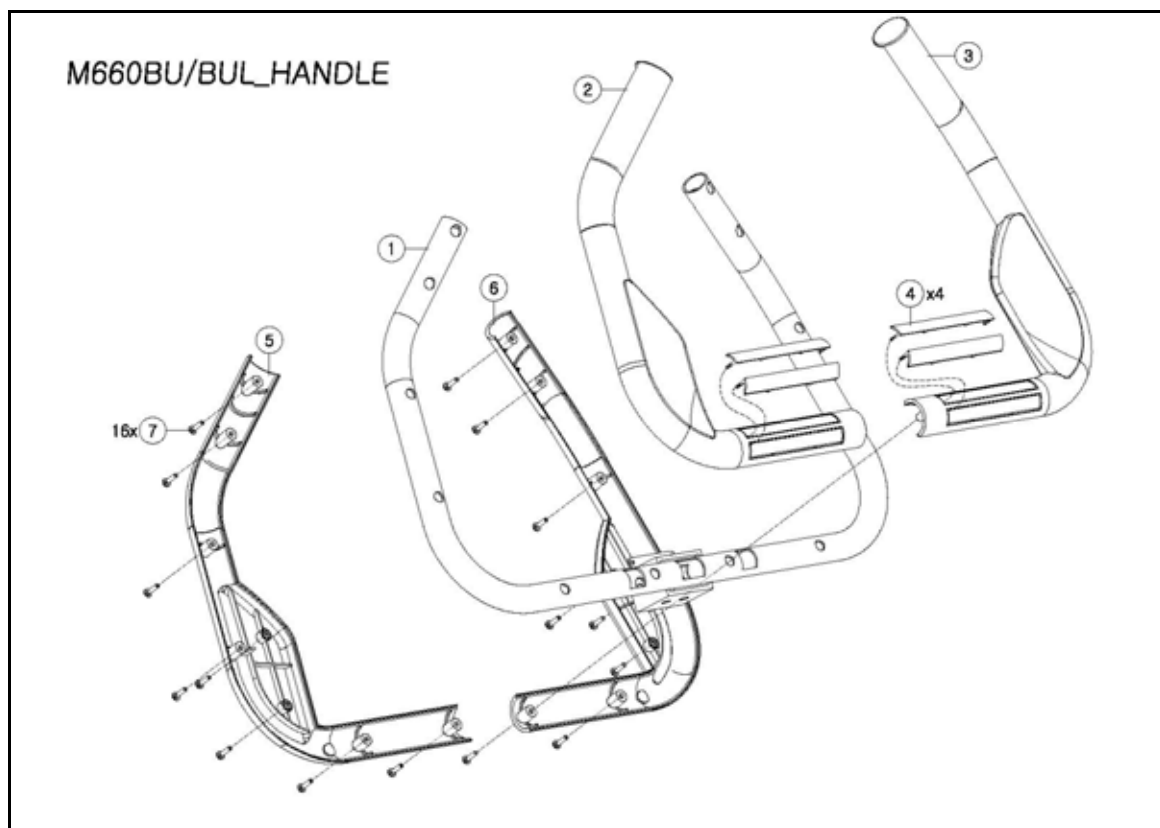
D.1 M660BU/BUL_CONSOLE POST



E. M660BU/BUL_HANDLE

NO.	CODE	P/NAME	SPEC	Q'TY
1	MAY150020	HANDLE FRAME		1
2	MAY290010	HANDLE TOP_L	ABS	1
3	MAY290020	HANDLE TOP_R	ABS	1
4	MAJ182030	SENSOR PLATE		4
5	MAY290030	HANDLE BOTTOM_L	ABS	1
6	MAY290040	HANDLE BOTTOM_R	ABS	1
7	MA1G04016	BUTTON SCREW	M4 X L16	16

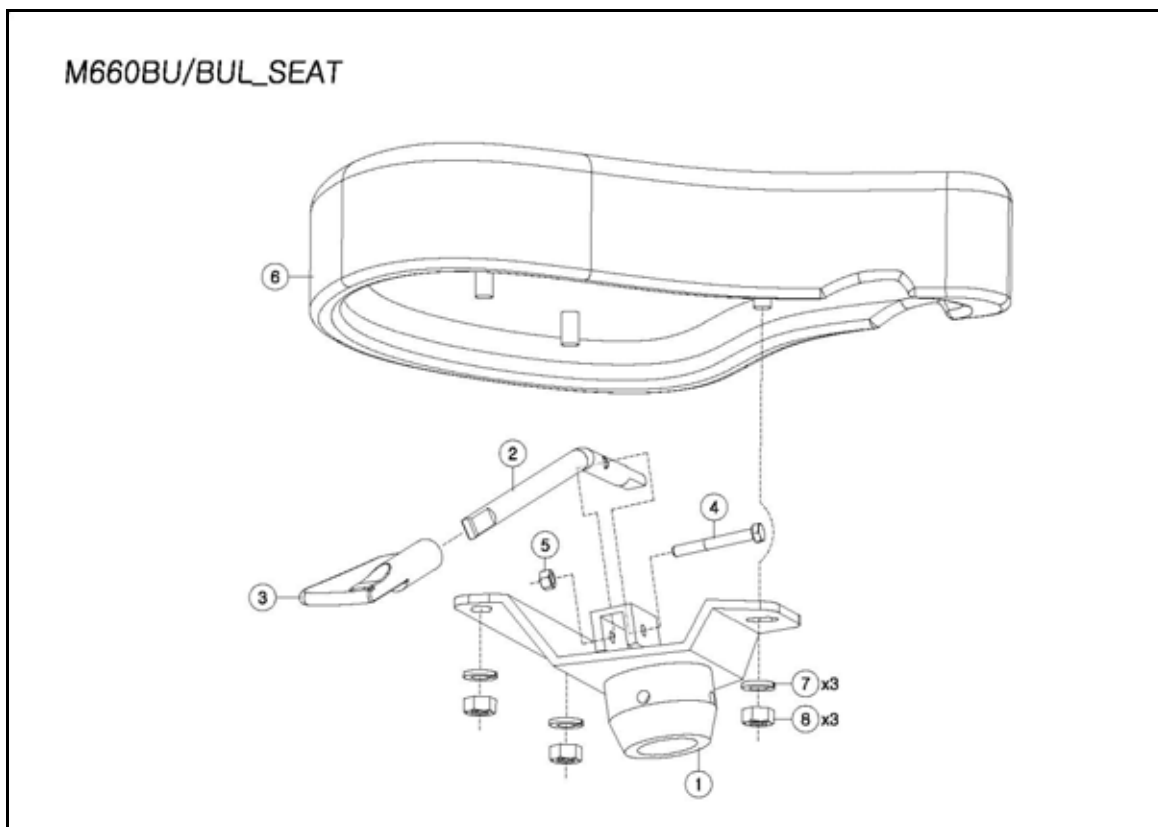
E.1 M660BU/BUL_HANDLE



F. M660BU/BUL_SEAT

NO.	CODE	P/NAME	SPEC	Q'TY
1	MAY182010	SEAT FRAME		1
2	MAY182020	SEAT LEVER		1
3	MAY190080	SEAT LEVER_UP	ABS	1
4	MA0K05040	HEX BOLT	M5 X L40	1
5	MA0P05000	HEX NUT	M5	1
6	MAG181010	SEAT		1
7	MA0T31008	SPRING WASHER	M8	3
8	MA0O08000	HEX LOCK NUT	M8	3

F.1 M660BU/BUL_SEAT

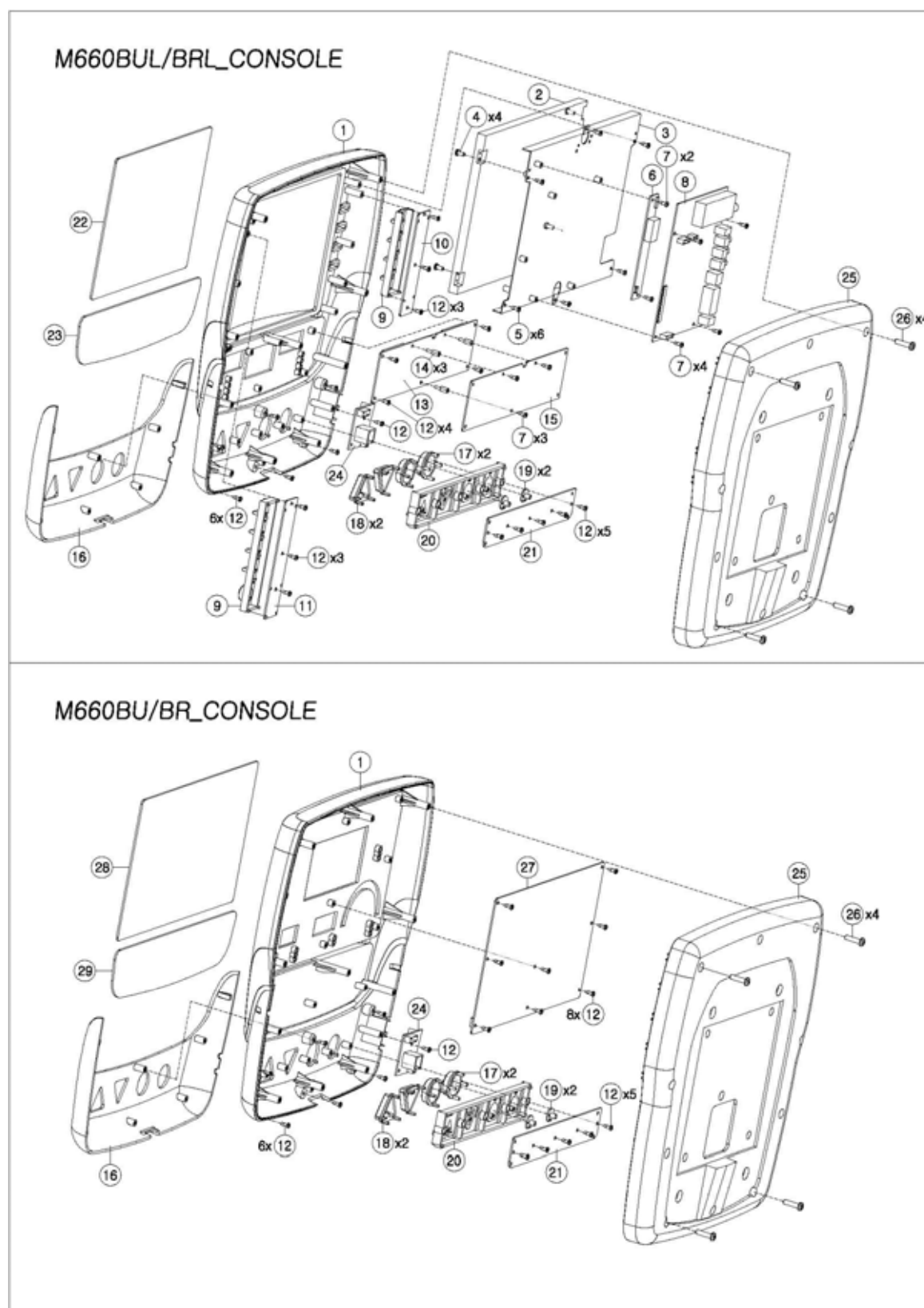


G. CONSOLE

NO.	CODE	P/NAME	SPEC	Q'TY
1	MAU151010	DISPLAY PANEL TOP	ABS	1
2	MAU166010	LCD PANEL	10.4"	1
3	MAU166020	LCD PANEL BRACKET		1
4	MA0F04008	BUTTON CROSS BOLT	M4 X L8	4
5	MA1G03012	BUTTON SCREW	M3 X L12	6
6	MAU166050	LAMP INVERTER BOARD	FIF 1311-03A	1
7	MA0L03008	SEMS BOLT	M3 X L8	9
8	MA0167070	A/D BOARD	NTSC	1
9	MAU151070	DISPLAY BUTTON_LCD	ABS	2
10	MAU167010	PROGRAM BUTTON BOARD	M770EL-ACC2	1
11	MAU167020	OSD BOARD	M770EL-ACC3	1
12	MA1G03008	BUTTON SCREW	M3 X L8	22(LCD)/20(DOT)
13	MAU168020	MPU BOARD_FRONT	M770EL-LCD DISP	1
14	MA0Y03005	HEXGON SPACER	M3,M3XL5,H9	3
15	MAU168010	MPU BOARD_BACK	M770EL-LCD	1
16	MAU151030	DISPLAY PANEL DECORATION	ABS	1
17	MAU151040	DISPLAY LIGHTING BUTTON-C	PC	2
18	MAU151050	DISPLAY LIGHTING BUTTON-T	PC	2
19	MAU151080	DISPLAY LIGHT DOT	PC	2
20	MAU151060	DISPLAY BUTTON CONTROL	ABS	1
21	MAU162010	OPERATION PCB	M770E-ACC1	1
22	MAU169010	ACRYLIC PANEL_LCD	M770EL-DISP- WINDOW	1
23	MAU169020	MEMBRANE KEY_LCD		1
24	MAU163010	AUDIO INTERFACE & DOWNLOAD BOARD	M770E-ACC4	1
25	MAU152010	DISPLAY PANEL BOTTOM	ABS	1
NO.	CODE	P/NAME	SPEC	Q'TY
26	MA0F05020	BUTTON CROSS BOLT	M5 X L20	4

27	MAV161010	MPU BOARD	M770E-DOT	1
28	MAV165010	MEMBRANE DISPLAY DOT		1
29	MAV165020	MEMBRANE KEY DOT		1

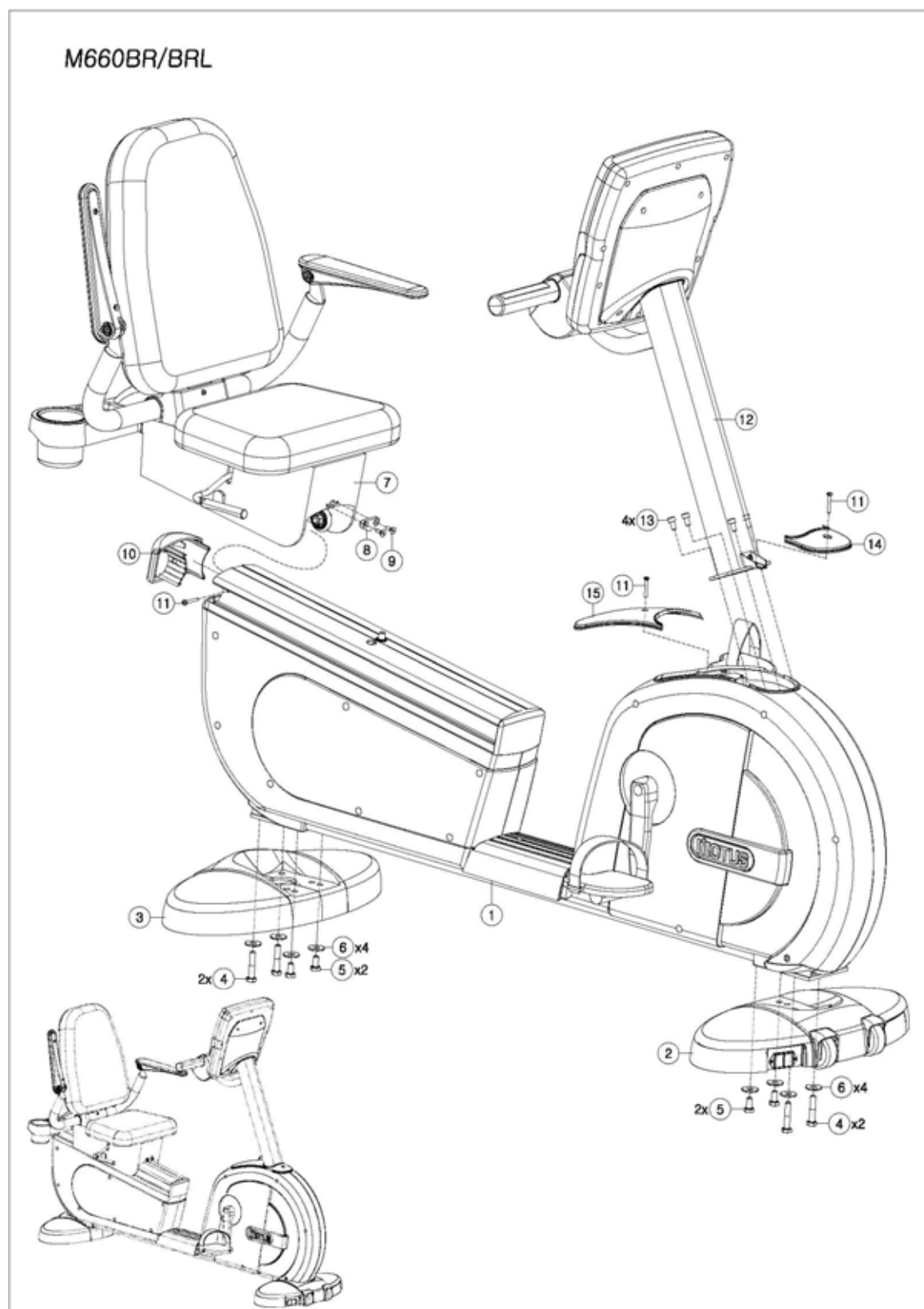
G.1 CONSOLE



H. M660BR/BRL

NO.	CODE	P/NAME	SPEC	Q'TY
1		MAIN BODY ASSEMBLY		1
2	MAZ116000	FOOT_FRONT	DOT TYPE	1
2	MAZ116001	FOOT_FRONT	LCD TYPE(NT)	1
2	MAZ116002	FOOT_FRONT	LCD TYPE(PAL)	1
3	MAY116003	FOOT_REAR		1
4	MA0J10050	H/S HEX BOLT	M10 X L50	4
5	MA0K10020	HEX BOLT	M10 X L20	4
6	MA0S10003	PLAIN WASHER	M10	8
7	MAZ180000	SEAT ASSEMBLY		1
8	MAZ182090	SEAT FRONT COVER		1
9	MA0D06015	ALLEN PILLOW BOLT	M6 X L15	2
10	MAZ190100	SEAT RAIL COVER_REAR		1
11	MA0G05035	BUTTON SCREW	M5 X L35	3
12	MAZ150000	CONSOLE POST ASSEMBLY_DOT	M660BR	1
12	MAZ150002	CONSOLE POST ASSEMBLY_LCD	M660BRL	
13	MA0A08015	ALLEN BOLT	M8 X L15	4
14	MAZ190030	FRONT BODY CAP_FRONT		1
15	MAZ190040	FRONT BODY CAP_REAR		1

H.1 M660BR/BRL



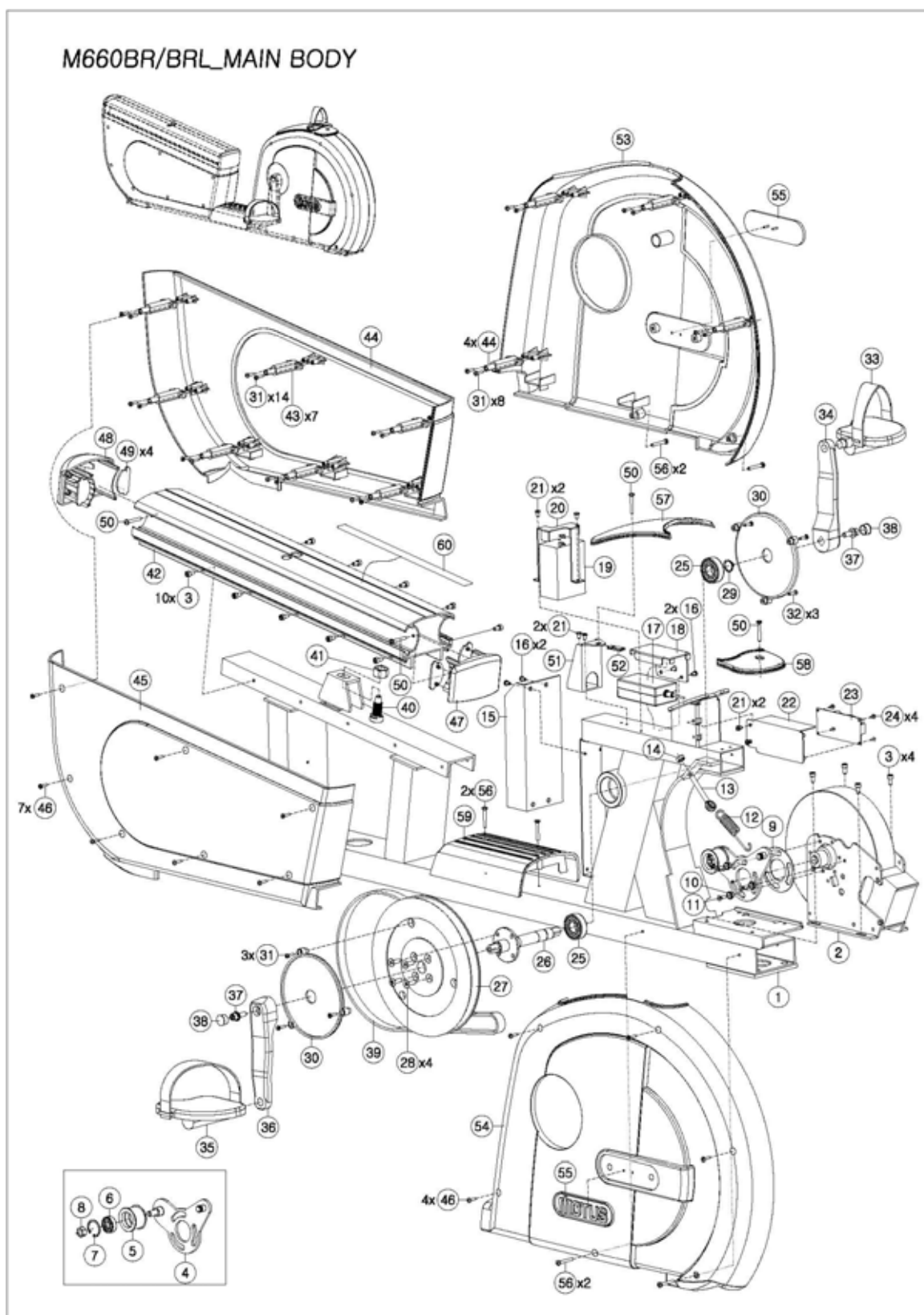
I. M660BR/BRL_MAIN BODY

NO.	CODE	P/NAME	SPEC	Q'TY
1	MAZ110010	MAIN FRAME		1
2	MAF131000	GENERATOR	B6001 HYBRID TYPE	1
3	MA0A06015	ALLEN BOLT	M6 X L15	14
4	MAY132010	IDLER BRACKET		1
5	MAY132020	IDLER PULLEY		1
6	MAZ182130	BALL BEARING-DEEP	B6200ZZ	1
7	MA0Y31031	SNAP RING	H30	1
8	MA0O10000	HEX LOCK NUT	M10	1
9	MAY132040	IDLER BRACKET SPACER		1
10	MAY132030	IDLER BRACKET BUSH		3
11	MA0Y05015	PILLOW CROSS BOLT		5
12	MAZ134010	TENSION SPRING		1
13	MA0Y08060	HANGER BOLT	M8 X L60	1
14	MA0O08000	HEX LOCK NUT	M8	1
15	MAU135010	DRIVER BOARD	7.5V, 1.5A	1
16	MA0M05008	TRUSS CORSS BOLT	M5 X L8	4
17	MAO167090	LCD POWER ADAPTER	12V, 3.5A(BUL)	1
18	MAZ110040	ADAPTER BRACKET	(BRL)	1
19	MAF136000	BATTERY	6V, 4A(BR)	1
20	MAY110030	BATTERY BRACKET	(BR)	1
21	MA0F05008	BUTTON CROSS BOLT	M5 X L8	6
22	MAZ110060	SMPS BRACKET_RE		1
23	MAU185060	SMPS-5V	2SF15-05	1
24	MA0L03008	SEMS BOLT	M3 X L8	4
25	MAU142040	BALL BEARING-DEEP	B6204ZZ	2
26	MAY141010	PEDAL SHAFT		1
27	MAY142010	PEDAL PULLEY	MC NYLON	1
28	MA0D08020	ALLEN PILLOW BOLT	M8 X L20	4

NO.	CODE	P/NAME	SPEC	Q'TY
29	MA0Y31020	SNAP RING	S20	1
30	MAY190140	PEDAL IN COVER	ABS, SILVER	2
31	MA1G04016	BUTTON SCREW	M4 X L16	25
32	MA0F04015	BUTTON CROSS BOLT	M4 X L15	3
33	MAF144000	PEDAL_BR_L	JD22-B	1
34	MAF143000	CRANK ARM_L		1
35	MAF144010	PEDAL_BR_R		1
36	MAF148000	CRANK ARM_R		1
37	MA0F08025	ALLEN SEMS BOLT	M8 X L25	2
38	MAF146000	CRANK CAP		2
39	MAF145000	POLY-V BELT	430J 7R	1
40	MAZ182140	SEAT LOCK BOLT		1
41	M0O16000	HEX LOCK NUT	M16	
42	MAZ147010	SEAT RAIL	ALUMINUM	1
43	MAY190180	SUPPORTER		11
44	MAZ190060	REAR BODY_L	ABS	1
45	MAZ190070	REAR BODY_R	ABS	1
46	MA0F05015	BUTTON CROSS BOLT	M5 X L15	11
47	MAZ190090	SEAT RAIL COVER_FRONT	ABS	1
48	MAZ190100	SEAT RAIL COVER_REAR	ABS	1
49	MAZ190110	SEAT RAIL COVER_CAP	ABS	4
50	MA0G05035	BUTTON SCREW	M5 X L35	2
51	MAZ110020	FRONT BODY CAP BRACKET_REAR		1
52	MA0Y90103	SPEED NUT	M5	1
53	MAZ190010	FRONT BODY_L	ABS	1
54	MAZ190020	FRONT BODY_R	ABS	1
55	MAY190091	LOGO BADGE	ALUMINUM	2
56	MA0F05035	BUTTON CROSS BOLT	M5 X L35	4
57	MAZ190040	FRONT BODY CAP_REAR	ABS	1
58	MAZ190030	FRONT BODY CAP_FRONT	ABS	1

NO.	CODE	P/NAME	SPEC	Q'TY
59	MAZ190050	CENTER FOOT_RE	ABS	1
60	MAZ147020	STICKER(SEAT RAIL)		1

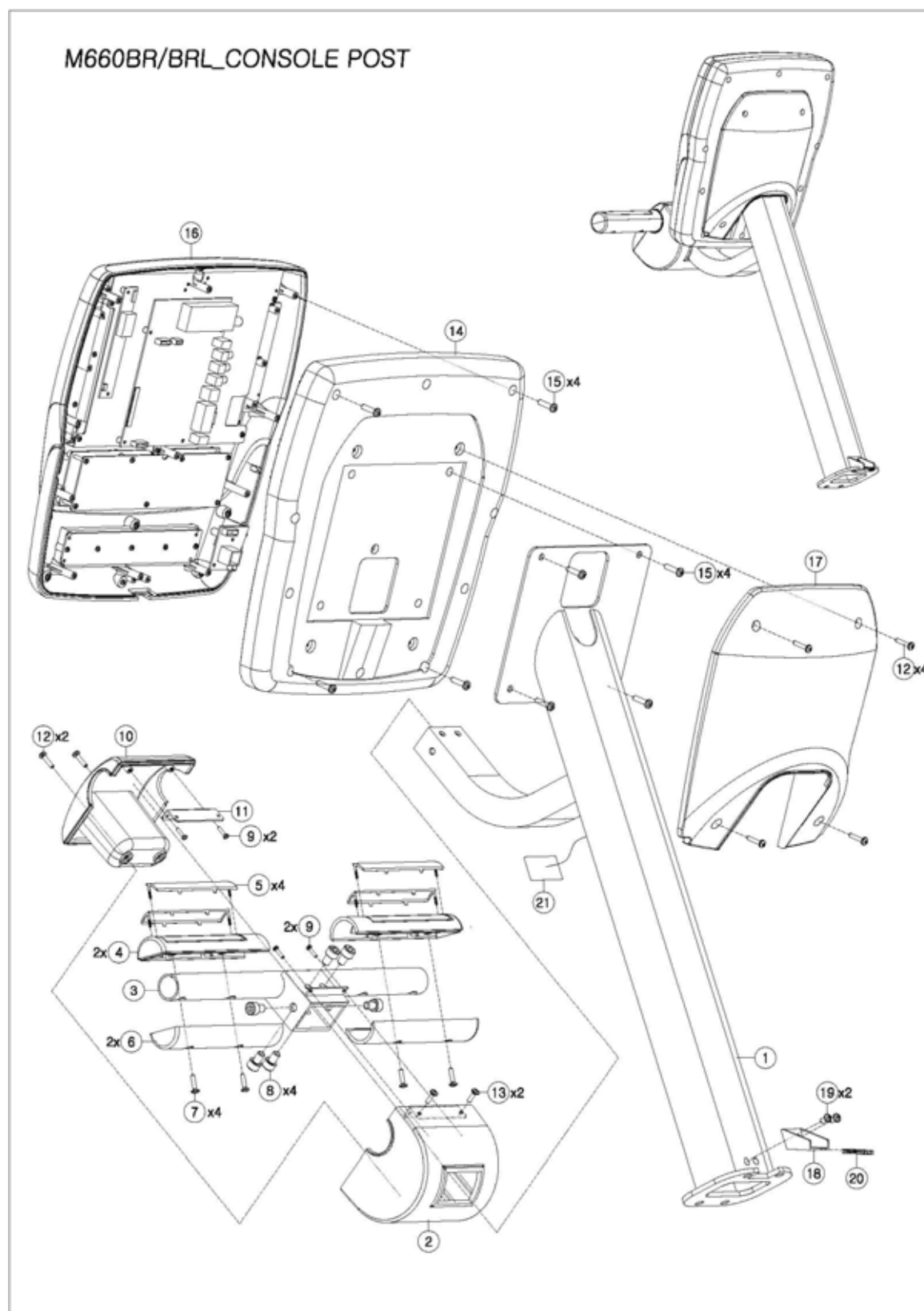
I.1 M660BR/BRL_MAIN BODY



J. M660BR/BRL_CONSOLE POST

NO.	CODE	P/NAME	SPEC	Q'TY
1	MAZ150010	CONSOLE POST FRAME		1
2	MAY190160	POCKET_BOTTOM	ABS	1
3	MAZ150020	FRONT HANDLE FRAME		1
4	MAZ290030	HANDLE_TOP	ABS	2
5	MAJ182030	SENSOR PLATE	SUS	4
6	MAZ290040	HANDLE_BOTTOM	ABS	2
7	MA1G04016	BUTTON SCREW	M4 X L16	4
8	MA0A08015	ALLEN BOLT	M8 X L15	4
9	MA1G03012	BUTTON SCREW	M3 X L12	4
10	MAY190150	POCKET_TOP	ABS	1
11	MAY110050	POCKET BRACKET		1
12	MA1G04020	BUTTON SCREW	M4 X L20	6
13	MA0M04012	TRUSS CROSS BOLT	M4 X L12	2
14	MAU152010	DISPLAY PANEL BOTTOM	ABS	1
15	MA0F05020	BUTTON CROSS BOLT	M5 X L20	8
16		DISPLAY PANEL TOP		1
17	MAY190170	DISPLAY REAR COVER	ABS	1
18	MAZ150030	FRONT BODY CAP BRACKET_FRONT		1
19	MA0F05008	BUTTON CROSS BOLT	M5 X L8	2
20	MA0Y90103	SPEED NUT	M5	1
21	MAY115000	STICKER-SERIAL NO.		1

J.1 M660BR/BRL_CONSOLE POST

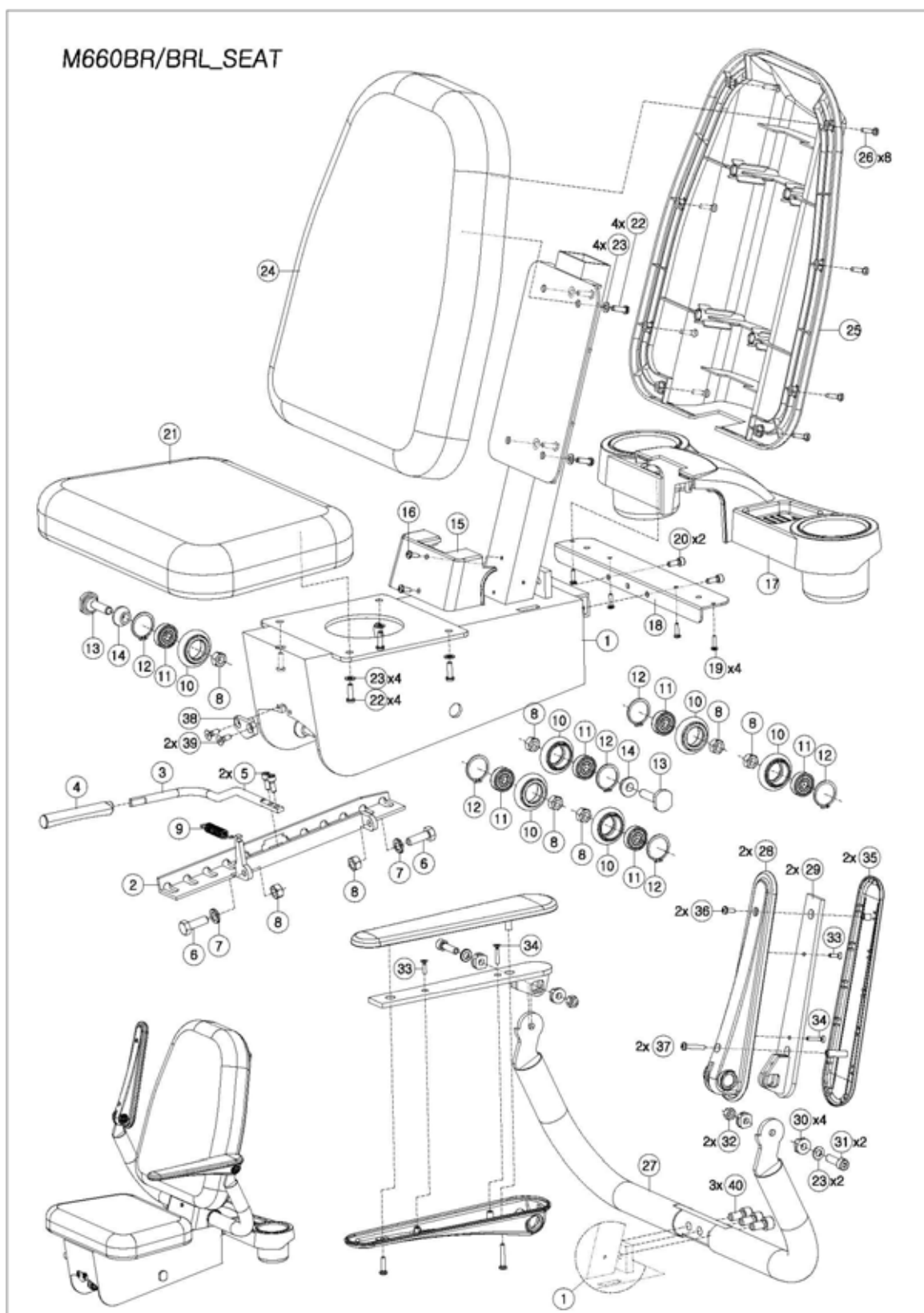


K. M660BR/BRL_SEAT

NO.	CODE	P/NAME	SPEC	Q'TY
1	MAZ182010	SEAT FRAME		1
2	MAZ182030	SEAT SLIDING STOPPER		1
3	MAZ182050	SEAT LEVER		1
4	MAZ190160	SEAT LEVER_RE	ABS	1
5	MA0A06010	ALLEN BOLT	M6 X 10	2
6	MA0J10040	H/S HEX BOLT	M10 X L40	2
7	MA0S10002	PLAIN WASHER	M10 X 2t	2
8	MA0O10000	HEX LOCK NUT	M10	8
9	MAZ182110	SLIDING LOCK SPRING		1
10	MAZ182080	SEAT SLIDING ROLLER		6
11	MAZ182130	BALL BEARING-DEEP	B6200ZZ	6
12	MA0Y31031	SNAP RING	H30	6
13	MAZ182060	TOP ROLLER BOLT	M10	2
14	MAZ182070	TOP ROLLER SPACER		2
15	MAZ190120	CUP HOLDER_FRONT	ABS	1
16	MA0F05012	BUTTON CROSS BOLT	M5 X L12	2
17	MAZ190130	CUP HOLDER_REAR	ABS	1
18	MAZ182120	CUP HOLDER BRKT		1
19	MA1G04016	BUTTON SCREW	M4 X L16	4
20	MA0A06015	ALLEN BOLT	M6 X L15	2
21	MAF181090	SEAT (SEAT BOTTOM)		1
22	MA0A08020	ALLEN BOLT	M8 X L20	8
23	MA0T31008	SPRING WASHER	M8	10
24	MAF181010	SEAT BACK (SEAT TOP)		1
25	MAZ190080	SEATBACK COVER	ABS	1
26	MA0W05020	TRUSS SCREW	M5 X L20	8
27	MAZ282010	ARMREST PIPE		1
28	MAZ290020	ARMREST_BOTTOM	ABS	2
29	MAZ282020	ARMREST FRAME		2

NO.	CODE	P/NAME	SPEC	Q'TY
30	MAZ282030	ARMREST BUSH		4
31	MA0A08030	ALLEN BOLT	M8 X L30	2
32	MA0O08000	HEX LOCK NUT	M8	2
33	MA1G04012	BUTTON SCREW	M4 X L12	2
34	MA1G04025	BUTTON SCREW	M4 X L25	2
35	MAZ290010	ARMREST_TOP	ABS	2
36	MA1G05012	BUTTON SCREW	M5 X L12	2
37	MA1G05025	BUTTON SCREW	M5 X L25	2
38	MAZ182090	SEAT FRONT COVER		1
39	MA0D06015	ALLEN PILLOW BOLT	M6 X L15	2
40	MA0A10020	ALLEN BOLT	M10 X L20	3

K.1 M660BR/BRL_SEAT



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