

Manufacturing Department

When one aims to build a product that does not differ in the slightest from the design prototype, highly sophisticated manufacturing techniques and a stringent quality control system are essential. The Accuphase production line is not a belt conveyor where products are moved along at a prescribed speed. Rather, it is a place where highly skilled technicians perform careful adjustment, inspection, and listening tests until each single unit performs exactly as intended.

Performance testing in particular is a meticulous process that covers all inputs and outputs, making sure that the guaranteed specifications are fully met. This approach limits the number of products completed per day to slightly more than twenty.

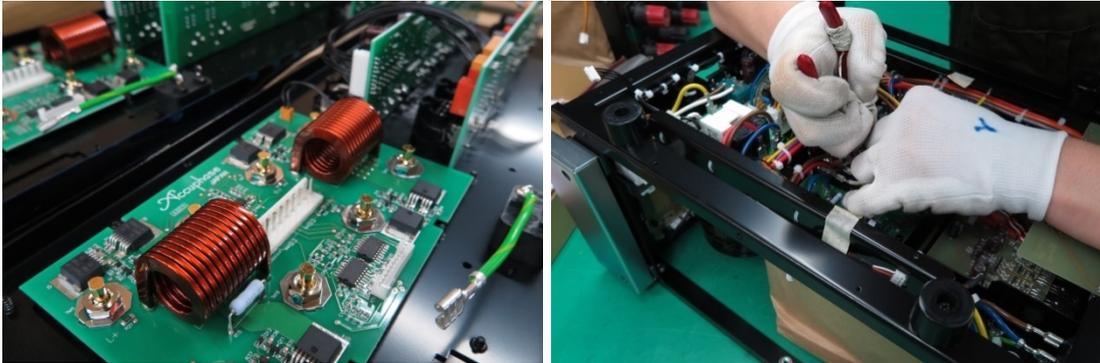
The process steps until completion of an Accuphase product are as follows.

1. Main unit assembly and wiring
2. Wiring and operation inspection
3. Continuous operation test
4. Adjustment and performance measurement
5. External parts mounting
6. Vibration test
7. Actual operation inspection
8. Safety test
9. Shipping inspection
10. Packaging



■ Main unit assembly and wiring

This process comprises the mounting of electronic parts, circuit assemblies and other parts, and establishing the internal wiring.



■ Wiring and operation inspection

The assembled circuits and parts are tested for faults, wiring errors, basic operation etc.



■ Continuous operation test

In order to identify initial failures and to stabilize sound quality, each unit is operated and tested for at least 24 hours.



■ Adjustment and performance measurement

Skilled technicians perform careful adjustment and measure all performance aspects. The adjustment is not aimed simply at clearing the inspection requirement for the respective item, but to reach the optimal performance point that the product is capable of. In the case of a power amplifier for example, the physical location of internal wiring will also be tweaked to minimize distortion and noise.



External parts mounting

External elements such as panels, knobs, and covers are mounted. With general audio equipment, parts such as panels and knobs are designed to fall within a certain tolerance range after mounting. In Accuphase products by contrast, panels and knobs are designed so that their exact position can be adjusted when mounting them. This allows minimizing the tolerances for each individual product. At the same time, careful checking for dust, a scratch etc. is carried out.



Product history card

The product history card is somewhat akin to the medical record of a patient at the doctor's. In the production line, a history card is created for each product, and information about each step of the process is entered into this card. Accuphase has a complete record of all cards since the first product was made in 1973. This provides useful information in case of a problem and for servicing even long after the product has entered the market.

履歴カード		機種名 E-600		電源電圧 ①100v U120v K220v/C E230v		セットNo. 1555		実測						
製造番号 4045-0536		100台/ロット		年月日(開始) 16/4/25 (終了) 5/1/2		シリアルNo. E6X		検査						
配働	①	②	③	④	仕1	⑤	⑥	実1	⑦	実2	⑧	⑨	出検	⑩
配働	ヒューズ又はブレーカの容量が規定通りである事			実2			外観及び操作部分に危険性部位が無い事(バリ、突起物)							
配働	電源一次側の配線、コネクタ及び半田が指示通りである事			実2			絶縁耐圧試験 合格			アース導通試験 合格				
実1	電源一次側の配線、コネクタ及び半田が指示通りである事			出検			外観検査 合格			動作検査 合格				
工程	判定	不良内容		原因及び修理内容		交換部品								
3		歪み調整 OK												
6		バックパネルキズ		バックパネル交換		バックパネル								
8		ガラス内側汚れ		除去										
出検 OK														
フロント		ガラス		バック		<small>各工程の判定基準は検査手順表及び仕様書による</small> <small>Accuphase Form911-4002-00</small>								



■ Vibration test

While the product is operating, it is subject to a given level of vibrations, to test for soldering or contact problems, foreign objects etc. This step is not included in the manufacturing process of most common audio products.



Separate process

The front panel assembly, drive mechanism of a CD player and similar are assembled in a separate process and then supplied to the main production line.



■ Actual operation inspection

While the unit is operating in a real-life type of situation, it is subject to sensory checks using the five human senses. This not only covers general sound quality but also aspects such as display brightness, switch operation feel and sound, and many other details.



■ Safety test

To ensure that the product can be used in full safety, power supply insulation, ground connection and other important aspects are checked.



■ Shipping inspection

The Manufacturing Department is in charge of production up to the safety test, but then the Quality Control Department takes over for the shipping inspection. This department has its own strict standards for determining whether a product is ready to leave the factory.

In most general manufacturing situations, the shipping test is only a sampling inspection where an arbitrarily selected percentage of the total output is checked. By contrast, Accuphase performs total inspection, meaning that every single product is thoroughly checked to determine whether it meets our high quality standards.



■ Packaging

The final product is packaged in a double wall exterior carton using the best quality cardboard available in Japan. The product is then stored in our warehouse.

