



Quality and A/S Management Policy on X-GOLF

I. X-GOLF Quality Control

1. X-GOLF Quality Warranty Period
2. X-GOLF Quality Management-Related
 - X-GOLF Production and Quality Control-related Documents(examples)

II. X-GOLF A/S Management

1. X-GOLF Failure Rated-related
2. X-GOLF Measures in the Event of Failure

III. X-GOLF Upgrade Management

1. H/W Upgrade
2. S/W Upgrade and Update

Q1. What is the warranty period of X-GOLF?



“For X-GOLF, we provide 2 year warranty period which is longest in the industry because we have confidence in the world's best technology and quality.”

In the case of a fail of X-GOLF and related optional products that RD-TECH has developed and manufactured, failed parts are replaced free of charge for two years.

However, for the products that RD-TECH have purchased from a third party and supplied (e.g. computer, projector, etc.), we guarantee a free A/S for 1 year according to manufacturer's warranty on each product.



※ Consumables are excluded from the free A/S range. (e.g. rubber tee, artificial turf, halogen lamps, projector

lamps, etc.)

“6 Steps of X-GOLF Quality Control”



- I. We have all personnel for mechanical, electrical, electronic parts and developing S/W and are responsible for all production processes including development, design, assembly and QC of the product, so if there is a problem, we should respond quickly and positively.
- II. As we have been continuing business with advanced subcontractors for over 10 years, we maintain the best quality of all the components of the product.
- III. Depending on the installation and usage environment/condition of the product, we develop and improve a product aggressively.
- IV. We hold a number of patents and certifications.
- V. Meticulous record management for equipment delivery and installation
- VI. Thorough management from of feedback from customers for A/S, failures and upgrades

Related photos on strict quality and performance management of X-GOLF



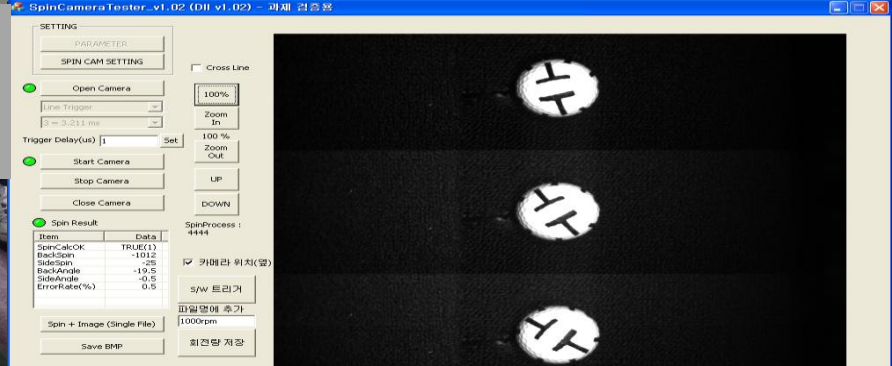
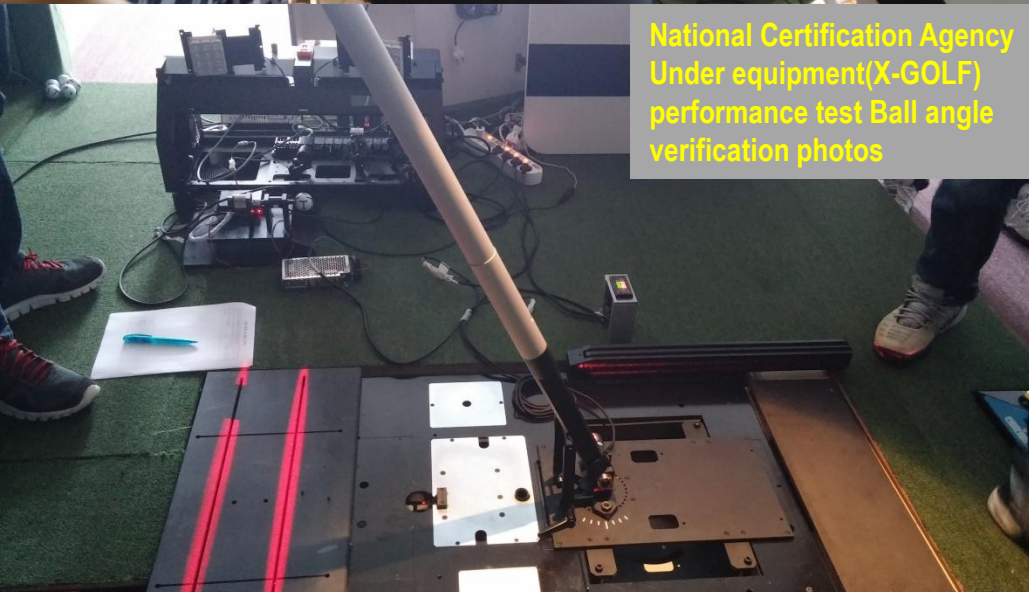
National Certification Agency
Equipment(X-GOLF)
performance test scene photos



National Certification Agency
Ships-based vibration test
scene photos



National Certification Agency
Under equipment(X-GOLF)
performance test Ball angle
verification photos



National Certification Agency
equipment(X-GOLF)performance test
scene photos
Backspin verification screen



X-GOLF production and quality control-related documents (Example)



생산 공정 관리 프로세스 분석서						문서번호	RDT-M001	
						제정일자	2008.06.04	
						개정일자	2006.09.04	
						개정번호	1	
						페이지	1 / 1	
프로세스	입력물	출력물	자원	프로세스 및 제품관리항목	측정/확인 방법 및 주기	목표명	책임자	관련표준
<div>생산계획</div> <div>↓</div> <div>공급업체 선정</div> <div>↓</div> <div>수입검사</div> <div>↓</div> <div>제품조립</div> <div>↓</div> <div>TEST</div> <div>↓</div> <div>출하대기</div>	-주간회의	-주간 계획서 -월간 계획표 -제품 도면철 -BOM -제작 사양서	-제조 부서장 -제조 부서원 -기술연구소 스트 요원 -측정 기구	제품 사양의 이해 공급 업체에 제작사양 및 제품 도면 제작 사양서 배포	사양 협의로 공 급업체의 사양정 도 확인	-납기 준수율 -부적합율	제조부서장	-제작사양서 -검사기준서 -작업표준서 -성적서
	-공급업체 평가표 -견적서 -BOM	-발주서 -직접재료(요소) 구매		공급자로부터 견적서를 받고 업 체 선정 후 발주한다. 탈락 대상업체의 제작 사양 및 도면은 회수한다. 제품 제작 요소부분 구매	납기 및 일정 확인			
	-제품 사양서 -검사 기준서	-검사 성적서 -지출결의서		수입 검사한다.	부적합품 개소 및 Lot 체크			
	-작업표준서 -중간검수 -최종검수	-완제품 -검사 성적서		부품을 조립하여 제품을 생산한 다.	공정중 부적합품 체크			
	-출하대기	-성능 테스트 성적서		장비 테스트 및 출하 대기한다. 제조 부서장은 고객과 협의하여 사내 성능 테스트 시행 후 현지 테스트 날짜를 약속한다.	성능 및 정도 체크			

X-GOLF production and quality control-related documents (Example)



문서 번호 RDT-F070-20-05-02

품질관리공정도

페이지 1 / 1

제품명	X-GOLF I	품명	X-GOLF I	승인		NO	개정일	개정사유	확인
		품번		검토					
공정명	수입검사 및 제품조립	작성일	2011. 01. 10	담당					

공정 번호	공정 흐름도			공정명	부품명	관리절		관리방법					이상 처리	관련 표준
	MAIN	SUB	외주			점검항목	관리항목	관리기준	검사주기	측정방법	기록양식	담당		
001				수입검사			외관 및 가공치수	수입검사 기준서	샘플검사 1/10	육안, 줄자, 비어니어	수입검사성적서	검사원	부적합품 처리절차	수입검사 기준서
002				detector 조립	center base board block		조립상태	작업표준서	전수	육안	FINAL Q/C Checklist	작업자	*	작업표준서
003				angle sensor 조립	base R base L		조립상태	작업표준서	전수	육안	FINAL Q/C Checklist	작업자	*	작업표준서
004				loading 조립	belt hopper		조립상태	작업표준서	전수	육안	FINAL Q/C Checklist	작업자	*	작업표준서
005				auto tee up 조립	auto tee up		조립상태	작업표준서	전수	육안	FINAL Q/C Checklist-	작업자	*	작업표준서
006				control 조립	junction box1 junction box2		조립상태	작업표준서	전수	육안	FINAL Q/C Checklist-	작업자	*	작업표준서
007				bullet proof film 시공	bullet proof film		접착상태	작업표준서	전수	육안	FINAL Q/C Checklist-	작업자	*	작업표준서
008				전기·전자		전기·전자 별도의 품질관리공정도에 준함								
009				출고대기			수량 및 부품누락	납품목록	전수	육안	납품목록	출고담당	반품수정	납품목록

X-GOLF production and quality control-related documents (Example)



업 체 명	한성금속	기 준 및 성적서						달 당	부서장	
기 종	x-golf_j									
품 명	Sensor -1									
도 번	1226-D016									
항 목	검 사 기 준						결 과		비 고	
1. 육안검사	1. 각 가공면에 녹, 흙, 두드린 흔적, 플래시등이 없을 것.									
	2. 부식방지대책(표면처리)은 일록이 없어야 한다.									
	3. 탭 가공부 주위에 더러운 이물질이 없어야 한다.									
	4. 가공누락이나 형상표면에 색상변화가 없어야 한다.									
2. 측 정	개 소	A	B	C	D	E	F			
	기 준	58	210	9	18	174	18			
	허 용	±1.0	±1.0	±1.0	±1.0	±1.0	±1.0			
	기 구	버어니어	버어니어	버어니어	버어니어	버어니어	버어니어			
	결 과	1								
		2								
		3								
4										
5										

* 주의 사항

1. 취급시 제품의 손상을 방지한다

합 불 판 정	합 격		수 령 확 인	제 조 번 호	
	불 합 격			입 고 일	2010.12.29
	검 사 연 월 일	2010.12.29		개 수	20set

검사기준 수량	<input type="checkbox"/> 전 수 검사	검 토
	<input checked="" type="checkbox"/> 샘플검사 5/lot	

**Q3. The machine seems a little bit complex ...
Doesn't it get a failure frequently?**



**Satellite and car,
Which product would have higher
failure rate?**

Q3. The machine seems a little bit complex ...
Doesn't it get a failure frequently?



Well made products don't have a failure!

The product is aimed to have “0”% failure rate at the design stage,

We have predicted various factors on a failure that may occur during use and reflected them in the product.

X-GOLF is a well made product



◆ **34** failures **2,500** pieces / **6** month(Second half of 2015) = **0.22**%/m

- Cumulative sales X-GOLF : 2,500 pieces
- The number of A/S trip in the second half of 2015 : 34times(Jul ~ Dec)
- A/S occurrence rate against cumulative sales : 0.22%/m

👉 **We haven't received any business trip for repair requests from offshore installations and customers in the last five years.**

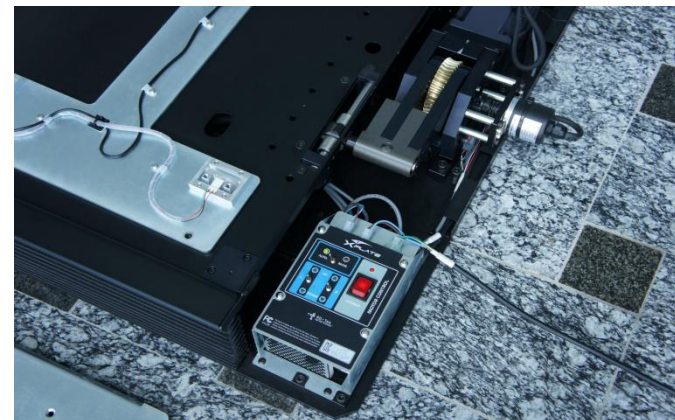
(Some self-repairs have been carried out by remote support)

◆ **The finest components** and **materials** to be used

For X-GOLF, strong impact due to the nature of screen golf continues to occur, so all components and peripheral devices are designed firmly with the highest quality materials and components.

We considered to withstand shock and static electricity in the design phase, and manufactured all the parts to be self-repaired with easy assembly and disassembly.

Thus, it may not be easily deformed or broken for any impact such as hitting by the club or the ball.



We have foreseen the failure and reflected it in the design phase of the product (Example)

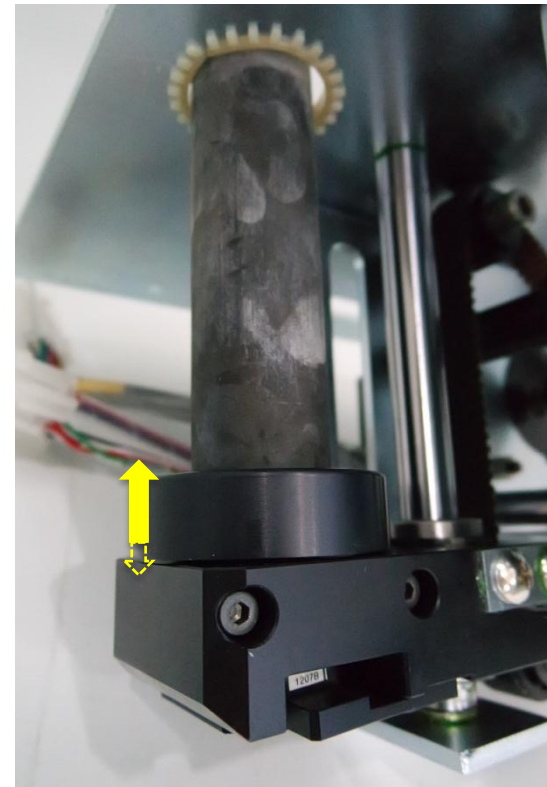
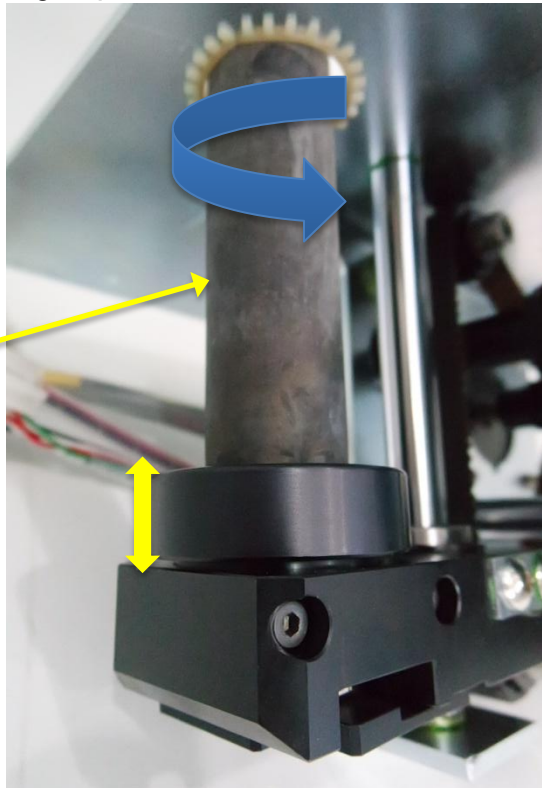


1. 360 ° rotating rubber tee (patented)

Typically, rubber tee is fixed and when the same place continues to be hit, it can be easily damaged.

However, X-GOLF is designed and manufactured to rotate the rubber tee 360° and hit point is changed, so it is the product with superior durability because it is not damaged or torn easily even with the strong impact of the driver.

360° rotating rubber
tee(patented)



2. The detailed design of the ball dispenser

The detailed design of the ball dispenser

There was a case that ball dispenser (the component to automatically put the ball in the rubber tee), the core area of the existing X-GOLF auto tee-up equipment has a failure due to a user's negligence. At this time, the ball dispenser was not only damaged but also affected the motor connected to the dispenser damaged. Thus, even if the hit ball hits the dispenser again, only dispenser, affordable consumable parts can be replaced easily and equipment can be used again because we reflected the design digging the groove so that only the dispenser can be broken by pre-eliminating the elements to damage the motor.

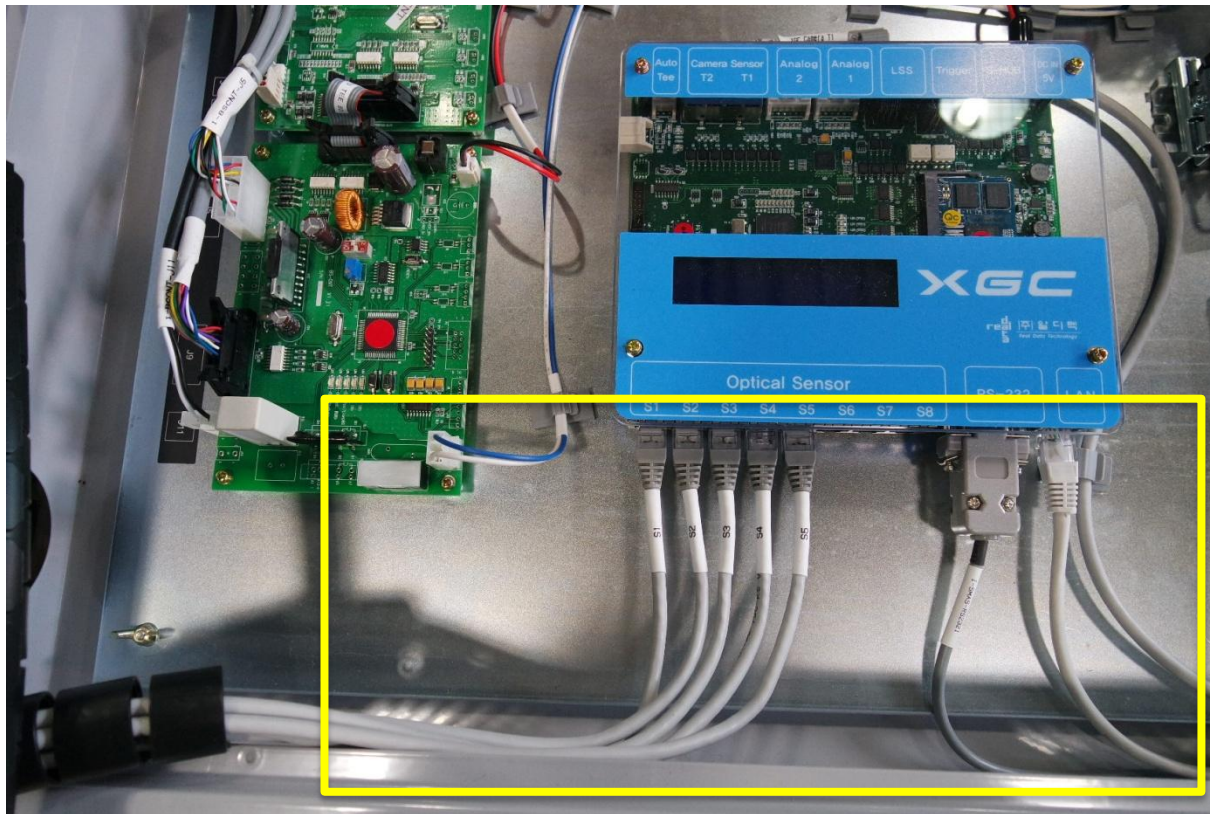


We have foreseen the failure and reflected it in the design phase of the product (Example)



3. Fiber optic cable to be used

All cables including sensor cable of X-GOLF use digital cable in the existing analog communication schemes. Through this, it gets stronger against noise that occurs while using equipment to minimize the failure rate.

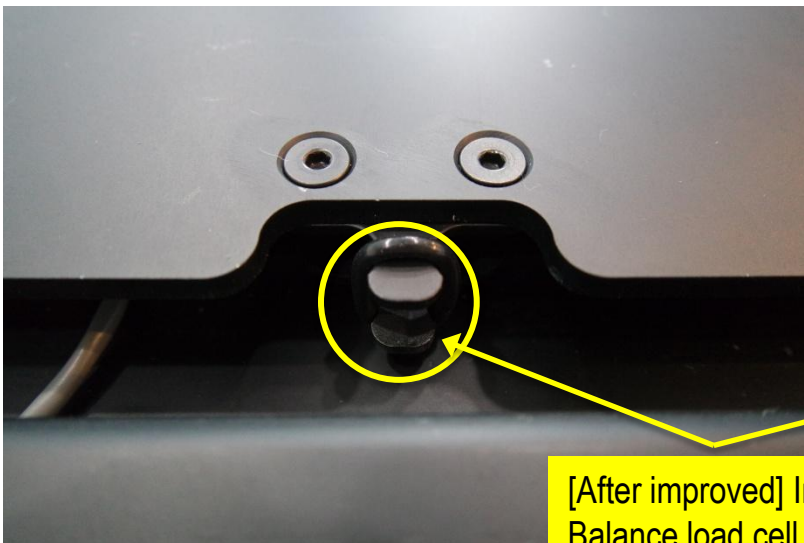
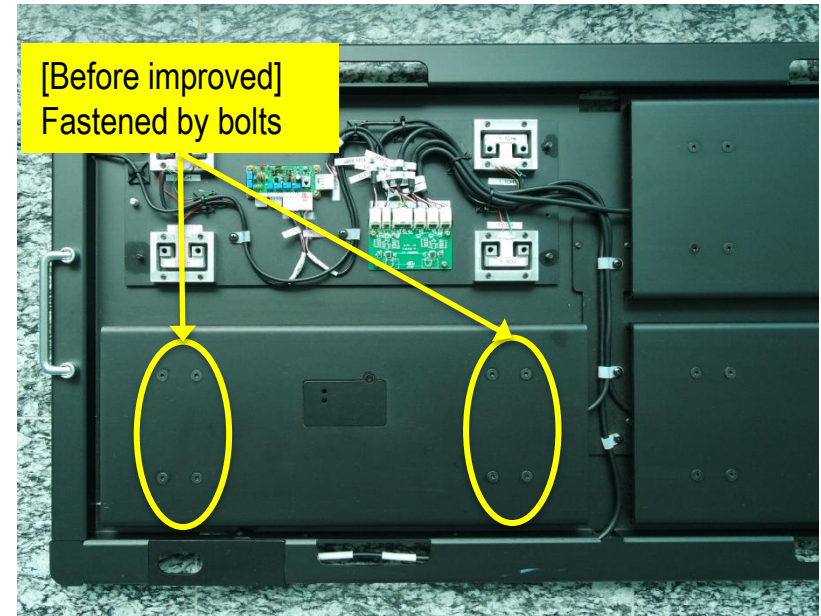


We have foreseen the failure and reflected it in the design phase of the product (Example)

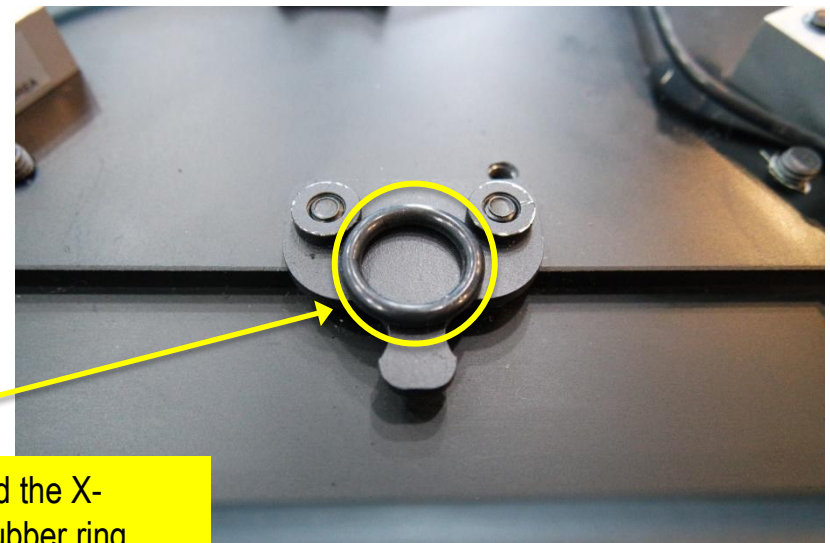


4. Improved X-Balance Load Cell

X-Balance of X-GOLF, as a springboard to measure weight shift (in every direction) while a golfer swings, uses a load cell. Because of the way to be fastened by a bolt to the frame when the load cell of the existing X-Balance is fixed, there was a problem that scales were warped since that the residual stress remained. It was improved in methods that the load cell is installed to be put on the rubber ring and always maintain a zero, not in a manner to be fixed with four-point fastening bolts.

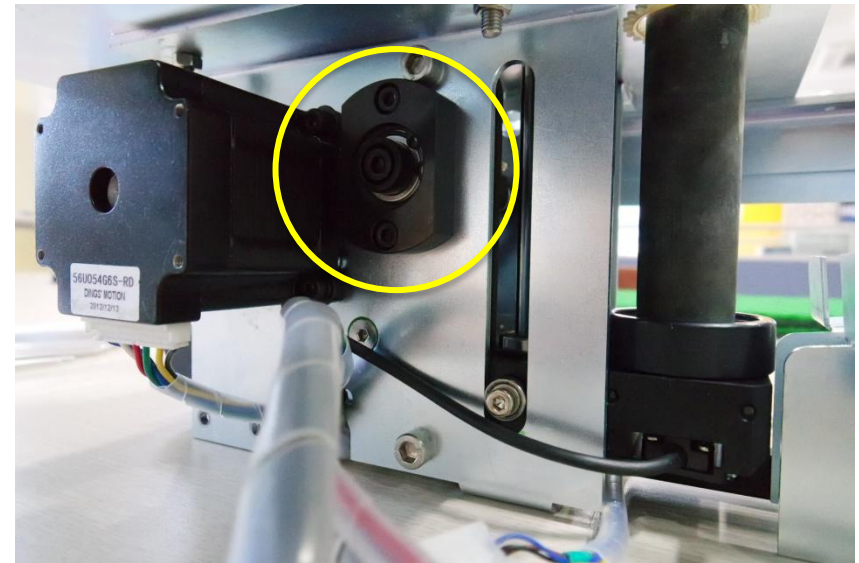


[After improved] Improved the X-Balance load cell using rubber ring



5. Tee-up equipment bearing to be added

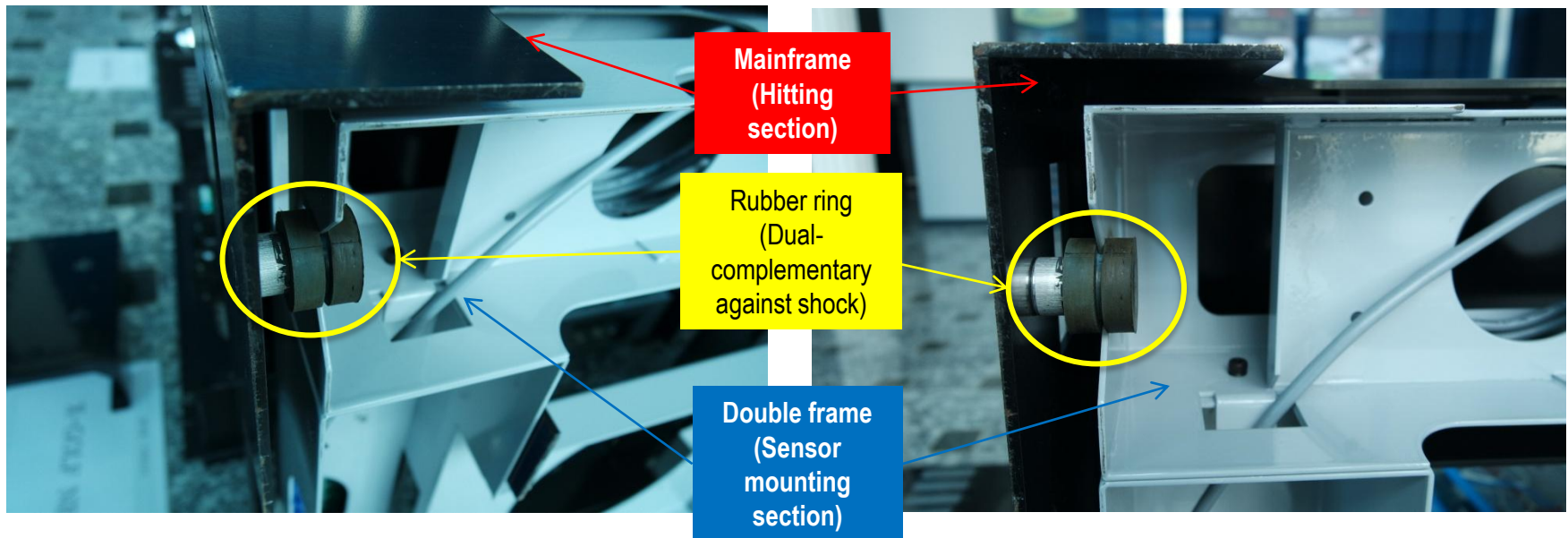
There was a case that ball dispenser (the component to automatically put the ball in the rubber tee), the core area of the existing X-GOLF auto tee-up equipment has a failure due to a user's negligence. At this time, the ball dispenser was not only damaged but also affected the motor connected to the dispenser damaged. Thus, the bearing was added to drive the motor separately from the dispenser and block the elements damaging even the motor to minimize the failure rate.



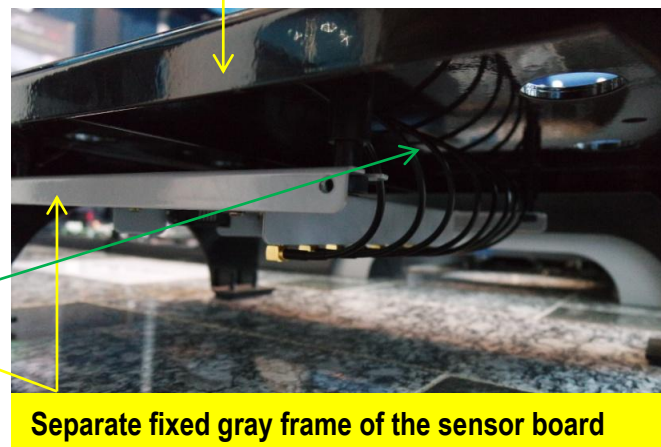
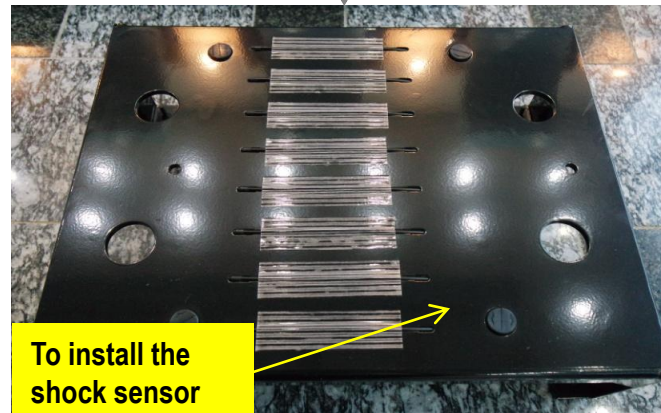
6. Complemented shock resistant design in the optical sensor unit

Optical sensors of X-GOLF ZES and NEX equipment are installed in the equipment body. Equipment body is finished with artificial turf, and it is a region that the user continues to hit for the play. Therefore, in order to block the elements in advance to effect on the sensor due to impact continuously applied to the club while a golfer swings, the frame to be mounted with a sensor part was designed double.

Thus, now matter how much the user applies the blow, no impact is delivered on the sensor board. In addition, the connection of the frame attached to the sensor part and the main frame is made of the rubber ring, which is also complementary to the impact through the double-device.



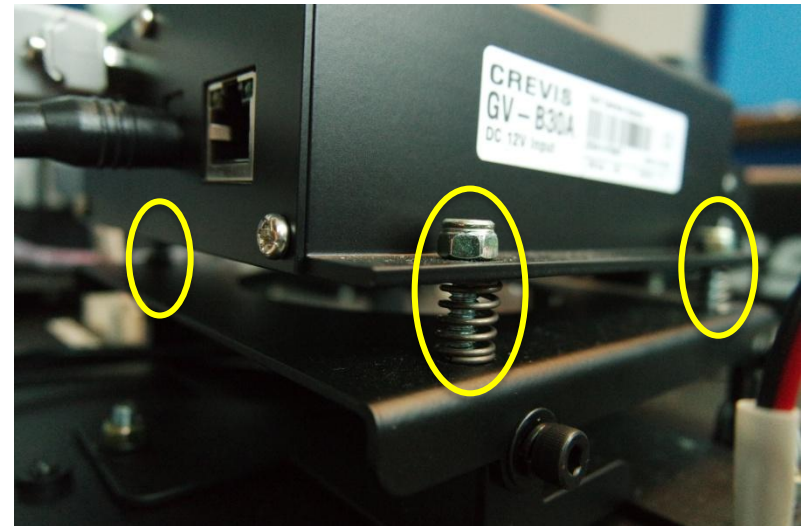
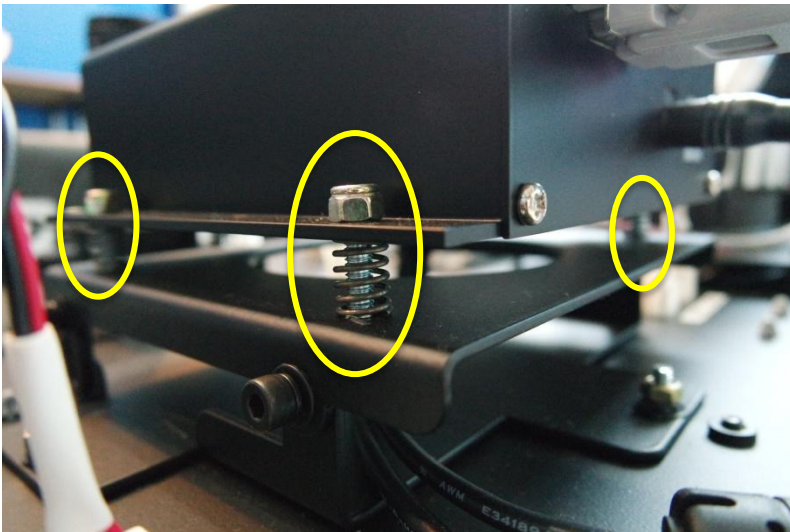
7. Complementary design for anti-shock in the hitting sensor



The floor-hitting sensor that X-GOLF only holds is the sensor to be installed in the lower the only sensor that is hitting the floor sensor is installed in the lower iron grass that will continue to be hit when the golfer makes wood or iron shots. It finds the position exactly how far from where the ball is located the club hits, so it is referred to as back sensor.

Therefore, the board connected to the sensor, not to have the sensor shocked is attached to a separate frame (pictured in gray) and is designed to be fixed with a rubber ring.

8. Anti-vibration of the camera sensor unit spring design for easy adjustment



In order to measure the exact speed, direction and spin value of the ball using the camera sensor, elaborate camera settings are essential. However, when the camera settings and calibration set difficultly become warped due to the vibration of the installation space caused by continuous strike of the ball, it will have a huge influence on the measurement. Thus, we have designed the double-frame in addition to the main frame in X-GLOF when the camera is fixed, and have blocked the fault factor by which the camera can be influenced due to the vibration by adding anti-vibration spring to the double-frame.

Implemented safety system on X-Plate to prevent estimated trouble. (Example)



9. X-Plate 5 step safety system

1st step : Motor control

2nd step : Equipped limit sensor which limits the tilt angle.

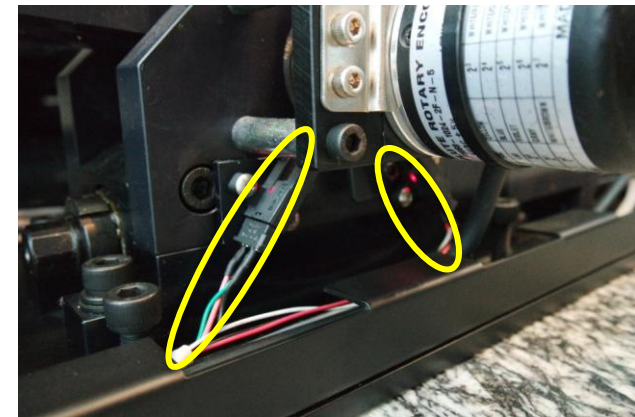
3rd step : Equipped sensor on each 4 corner of plate base frame. If the metal object is about to touch within 1mm then plate will be stopped automatically.

4th step : Case of above 3 steps are broken, over voltage motor power break circuit is implemented for stable use of X-Plate. When the voltage is increasing more than normal, device will be stopped automatically.

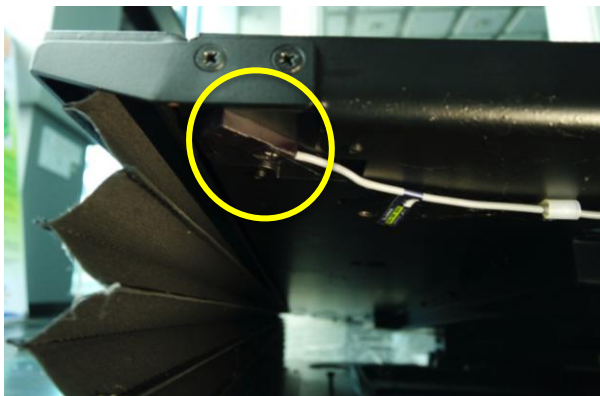
5th step : Implemented manual horizontal restoration equipment.



1st step



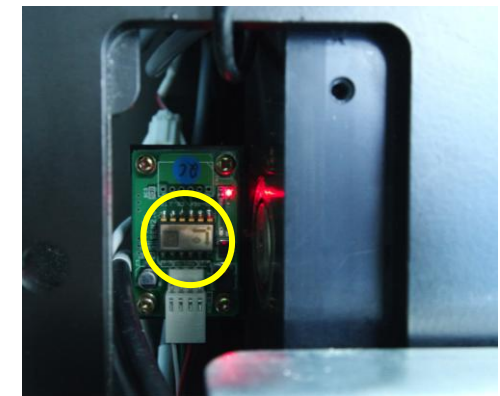
2nd step



3rd step



4th step

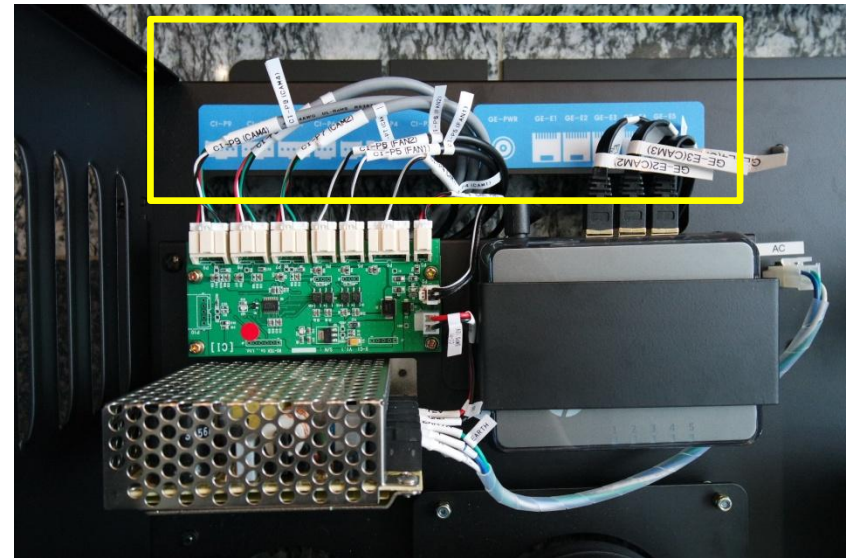
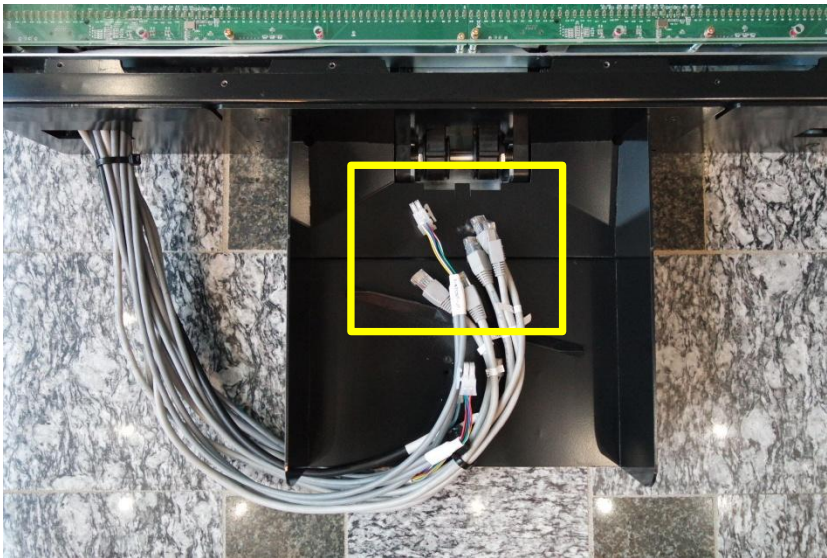


5th step

Implemented safety system on X-Plate to prevent estimated trouble. (Example)



10. Various cable labeling, arranging wires and different shape of each connector



The X-GOLF produces the cables with labeling for easier distinction and to reduce miss matching for cable connecting in regard various sensor cables, device communication cables that X-GOLF uses.

1. Make arrangement of all cables before products delivery.
2. All cables are with its label to be distinguished easily.
3. All cable connector designed differently to prevent breakdown by wrong plugging into incorrect one.

Q4. When the device is broken, what should I do?



“X-GOLF is always trying the best to not disappoint you by trouble of device and inconvenience.”

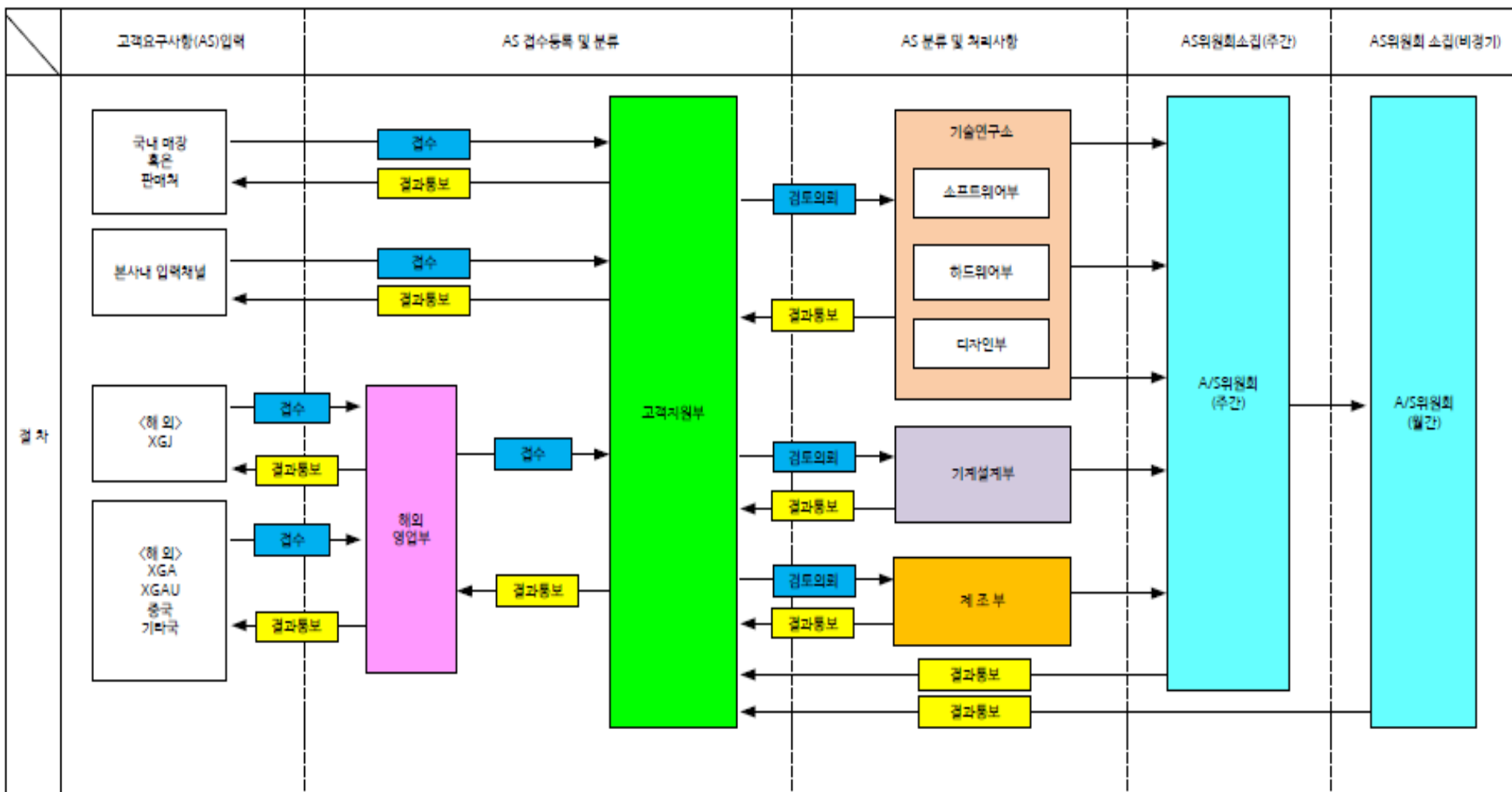
Please feel free to find X-GOLF through below contact, should you have any question or any trouble of device.

- ◆ HQ phone number : 1544-0779
- ◆ HQ representative mail : XGOLF-AS@xpga.co.kr

A/S process diagram of X-GOLF (internal)



쥬알디텍 유지보수(AS)시스템



※ X-GOLF regulates A/S service system as sending the first reply within 24 hrs by phone call or email.

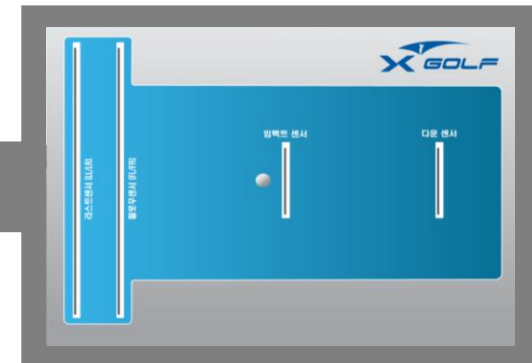
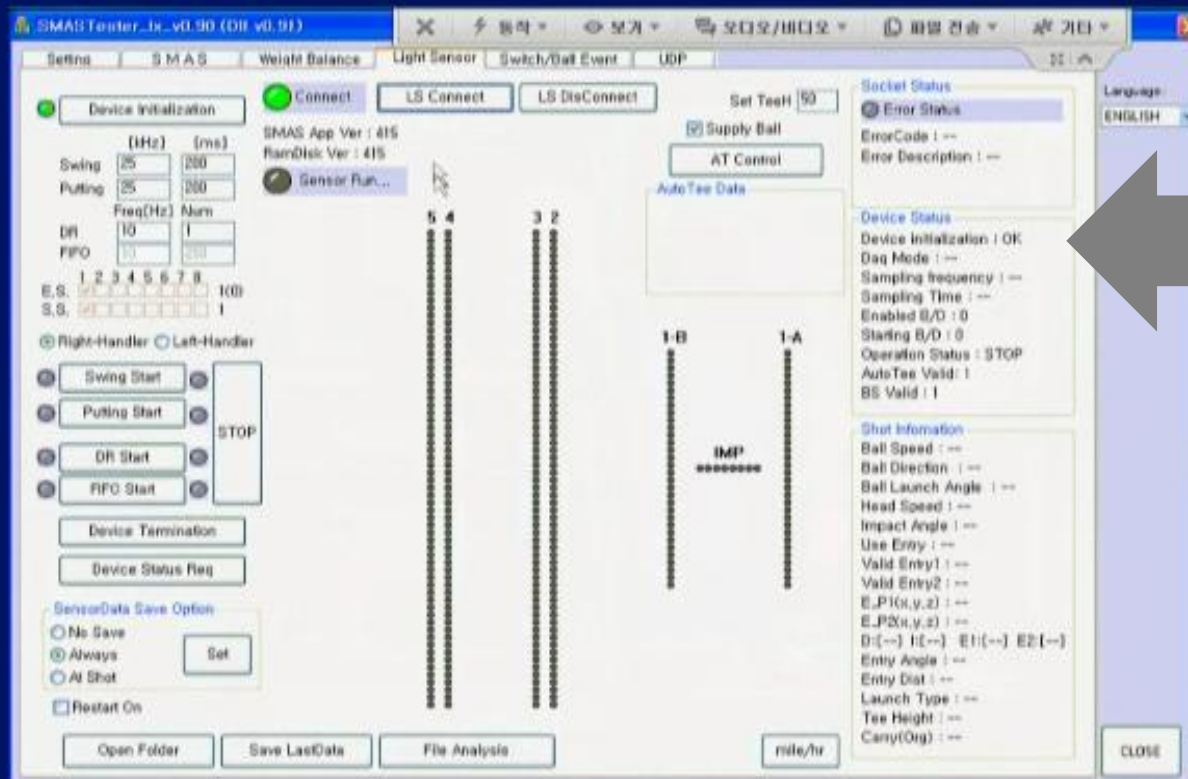
When the remote-checking is not enough for the problem, each department will examine regarding problem and engineer will go business trip to solve the trouble.

For our customers, what X-Golf prepared...

- A. Equipped internal Self-diagnosis function in device**
- B. Designed as module type for Self-diagnosis**
- C. Providing various manual books & A/S video tutorial**
- D. Quick response & action through Online remote support**

A. Equipped internal Self-diagnosis function in device

X-GOLF equipped internal Self-diagnosis function in device therefore it is easy to find the original trouble and available to control the trouble with the function when the device is not working properly.



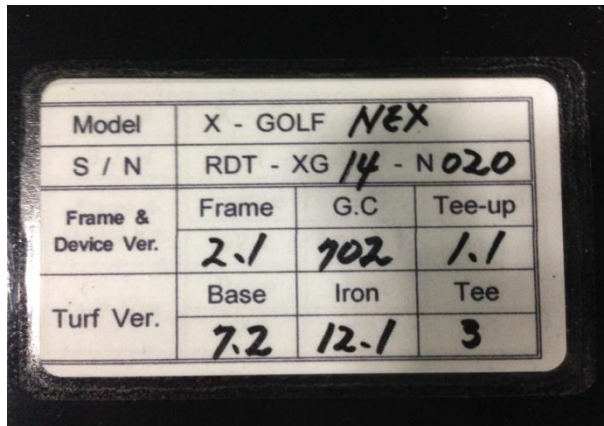
Screen of sensor test in the middle of the X-GOLF game.

B. Designed as module type for Self-diagnosis

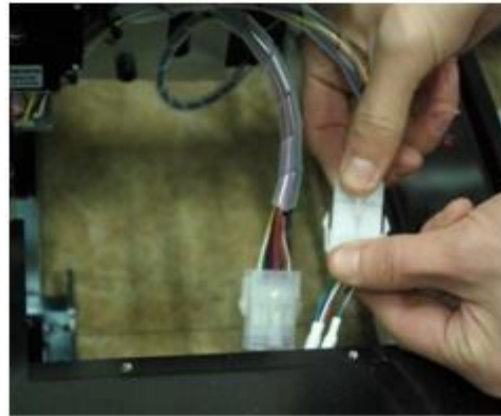
X-GOLF is producing and developing the product for customer can fix and maintain directly ! easily !

All components are designed and made as module to be replaced only broken part easily, labels on all components for convenience of distinct of parts.

Additionally, all X-GOLF cable connectors are different shape to prevent the miss plugging by confusion of same connector between different cables.



[Attached label on the device image]



[Cable connector image]



[Replacing consumable part (Rubber tee) image]



Q4. What should I do when device is not working properly?



C. Providing various manual books & A/S video tutorial

Provide various manuals such as installation booth manual, device setting manual, user manual and more. Additionally, provide A/S video for essential troubles for customer.

Device	Category	Manual list	Remark
EYE	Installation	Booth installation manual	KR, CN,JP,EN
		Device setting manual (Camera setting manual)	KR, CN,JP,EN
	Manual	User manual (Device instruction)	KR, CN,JP,EN
		Device inspection manual (Daily inspection)	KR, CN,JP,EN
NEX	Installation	Booth installation manual	KR, CN,JP,EN
		Device setting manual (Camera setting manual)	KR, CN,JP,EN
	Manual	User manual (Device instruction)	KR, CN,JP,EN
		Device inspection manual (Daily inspection)	KR, CN,JP,EN
ZES	Installation	Booth installation manual	KR, CN,JP,EN
		Device setting manual	KR, CN,JP,EN
	Manual	User manual (Device instruction)	KR, CN,JP,EN
		Device inspection manual (Daily inspection)	KR, CN,JP,EN
Common	Manual	AS measures manual by example cases	KR, EN
X-Fitting	Manual	X-Fitting user manual	KR, CN,JP,EN
Common	Manual	X-Birdie user manual	KR, CN,JP,EN
Common	Manual	X-Manager user manual	KR, CN,JP,EN
Option	Manual	X-Plate manual	KR, CN,JP,EN

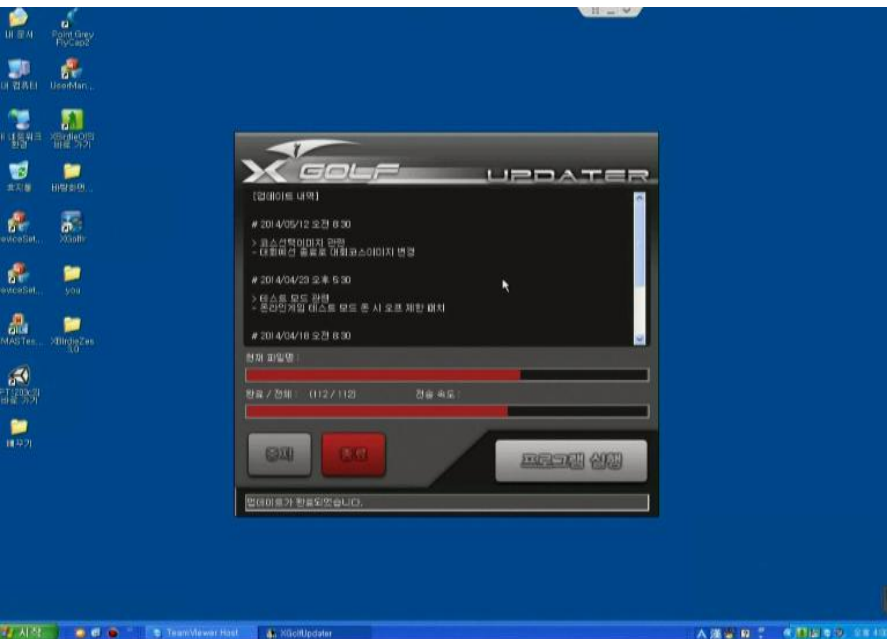
A/S video list	Device model
Replacing the Rubber Tee of the Auto-Tee Up Device	ZES, I series, Pro
Replacing Dispenser on Auto-Tee Up Device	ZES, I series, Pro
Replacing Tee-Up Device	ZES, I series, Pro
Replacing Ball Feed Button	ZES, I series, Pro
Replacing Tee Control Button	ZES, I series, Pro
Replacing the Switch of Tee Control Button	ZES, I series, Pro
Adjust and Replace Ceiling Laser Projector	ZES, I series, Pro
Sensor Cleaning Method	ZES, I series, Pro
Replacing halogen lamp bulbs	ZES, I series, Pro
Replacing the Reset Button (Red)	ZES, I series, Pro

※ Currently recording A/S videos for NEX and EYE device.

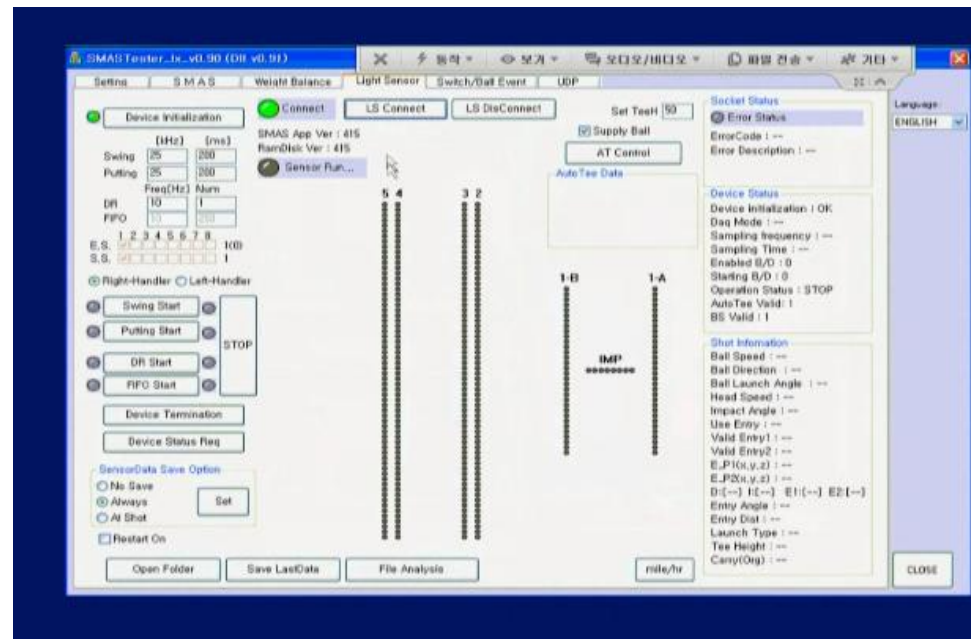
D. Quick response & action through Online remote support

X-GOLF loads the remote support program in the system, whenever there is trouble or difficulty of any problem, customer can find us by email, phone call then our engineer will try the best to resolve the problem by remote control as soon as possible.

Additionally, where the device is always connected on network, customer can keep the device with newest version by live update.



[Image of live update]



[image of online remote support]

Q5. How is the upgrade policy of X-GOLF?



“**X-GOLF** is providing the
H/W & S/W upgrade and
S/W live update
for you to use the
newest and best product.”



1. H/W

X-GOLF announce the specification of upgrade of H/W and cost of new product when there is new product and H/W version is upgraded.

If customer wants to upgrade the product, our engineer (from HQ or X-GOLF shop) will visit for installation support. Invoice in regard these installation trip cost will be sent.

2. S/W

- When new program and graphic is launched, we will notice you the specification of new program in detail and if customer wants to install the new program, we will deliver the new program.
- In terms of upgrade cost, domestic online member shops are paying through the fee of using CC.

Q6. How is the process of S/W update of X-GOLF?



X-GOLF is regularly release the program averagely per 2 – 3 months.

The way to release the program is producing DVD, installing manual and deliver them to world-wide by EMS.



Case of delivery of program as DVD producing,

1. When new 3D golf course is added

2. When essential function is changed or added on the program.

(But, to release the new 3D golf course, condition(free or pay) of release would be depended on S/W spec. or contract condition therefore in regard new course, please find us.)

Additionally, after program installation, when there is error of program while using the device, we support automatic update by online to install the patch file to resolve the error.

(But, only when the device is on online.)

We pledge that we will continue to try our best to understand our customers with world-class products and assure them with our technological innovations.

We appreciate your continued interest and kind advice.



CONFIDENTIAL NOTICE

This document contains information confidential and proprietary to RD-Tek. The information may not be used, disclosed or reproduced without the prior written authorization of RD-TEK and those so authorized may only use the information for the purpose of evaluation consistent with authorization. Reproduction of any section of this document must include this legend.

Real Data Technology

RD-Tek (HQ)

Address: 461-30, Jeonmin-Dong, Yuseong-Gu
Taejeon, 603-220, Republic of Korea
Phone: 82-42-935-9700
Fax: 82-42-936-8737
Website: www.theGolf.com

© 2005 Rd-Tek Corporation. All rights reserved. Swingmate, XGolf, thegolf.com and other product names are or may be registered trademarks and/or trademarks in the Korea. The information herein is for informational purposes only and represents the current view of RD-Tek Corporation as of the date of this presentation. Because RD-Tek must respond to changing market conditions, it should not be interpreted to be a commitment on the part of RD-Tek, and RD-Tek cannot guarantee the accuracy of any information provided after the date of this presentation.
RD-Tek MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS PRESENTATION.