

## Equipment Care:

# GENERAL STRENGTH EQUIPMENT MAINTENANCE

---

A major component in fitness facility safety & care involves maintaining the function of the equipment. Preventive maintenance, a series of tasks established by the manufacturers to prolong the life of the equipment, is important for a number of reasons, both in terms of equipment investment and safety of the clients.

Fitness equipment purchases can take up the majority of the budget of a fitness facility and, as a result, are a significant investment. The success or failure of a facility is often directly related to properly functioning equipment and its trend relevance. The goal of a preventive maintenance program is to maintain the operation of the equipment, extend the useful life of the equipment, identify broken or worn-out parts, and promote safety by preventing injuries caused by the use of faulty equipment.

Following the procedures set forth by a well-thought-out preventive maintenance program will not only assure clients of the safest possible workout environment, but will curtail concerns of management in terms of liability risks and equipment headaches. In most cases, a commercial fitness facility will retain the services of a third party company capable of supplying technical service support for fitness equipment. Check with your equipment provider for recommendations.

### LOG BOOK

The first step in any preventive maintenance program is to develop a log book. Your maintenance provider may be capable of providing the majority of the information you will want to accrue. The log book tracks maintenance performed on all of the equipment. Proper use of a log book will flag potential mechanical problems, determine the feasibility of repair versus replacement of equipment, track usage, and provide a checklist of both scheduled maintenance and daily cleaning tasks. Perhaps most important, the log book is the facility's support that, if a member is injured when using a piece of equipment, it

should not be because the equipment malfunctioned due to neglect by the maintenance staff. The log book should track a number of items including equipment manuals, manufacturer's information, maintenance tasks, usage of each piece, parts tracking and maintenance.

### EQUIPMENT INFORMATION

Every piece of equipment should be logged, including the brand, model number, serial number, date of installation and warranty information.

### MANUFACTURER'S INFORMATION

Equipment information should include the manufacturer's and/or dealer's phone number, account number and contact information.

### SERVICE TECHNICIAN

Service Providers contact information.

### MAINTENANCE TASKS

Record daily, weekly and monthly scheduled maintenance tasks, per the manufacturer's recommendation for each piece, in a spreadsheet format.

### USAGE OF EACH PIECE

Track usage to determine whether you need to swap low-traffic pieces with high-traffic pieces.

### PARTS TRACKING

Track parts ordered, parts replaced and date of replacement for each piece of equipment to determine a timeline of future replacement before part failure.

### MAINTENANCE VISITS

Log performed maintenance visits.

### **GENERAL STRENGTH EQUIPMENT MAINTENANCE:**

Strength equipment by definition is generally used with a high degree of force. Many of these machines endure excessive wear and tear in even moderate environments. The inability to keep these pieces clean results in equipment that acts as a prime breeding ground for bacteria and sweat accumulation, which not only poses a health risk to the clientele, but damages the equipment.

Equipment maintenance is best understood by breaking down the equipment into key components. By understanding the basic function of each component, how it relates to the machine as a whole and the specific wear on each system with usage, you can begin to develop your program to keep each individual system clean and free of problems. Although each type of strength equipment has its own specific parts/systems, there are common components consistent among pieces.

**\*\*\*NOTE\*\*\*** *If you plan to engage a third party provider for technical service and maintenance support, the following details are likely unnecessary for you to manage directly. Please consult your provider to confirm their scope of services.*

### **STRENGTH EQUIPMENT MAINTENANCE**

*Pop pin assembly missing/broken.* The pop pin screws into the frame for adjustments to the seat height and angle. Pop pins consist of a cylinder that protrudes into the frame and into the hole of the seat, which, when pulled out, will allow the seat to slide in and out of the frame for seat adjustment. These pins can be simple bolts with a handle, a pop pin assembly with an internal spring, or a combination of both. Malfunctioning of this assembly can result in the seat falling down, putting the user at risk. Inspection should include making sure the unit is functioning properly, that it lines up with the holes in the seat arm, is secured to the frame and is free of rust.

*Seat sleeve missing/broken.* Some seat/frame systems may contain a seat sleeve that fits between the two pieces, allowing them to move with less friction. These pieces are usually made from a hard plastic and can become brittle. In addition, if the seat is not properly aligned with the frame when inserting, it may bind the sleeve and cause it to jam. Broken or malfunctioning sleeves should be replaced immediately.

*Missing end caps.* Although seen as purely cosmetic, end caps on frames serve the purpose of protecting it from rust. In the factory, the exterior of the frames are painted with a powdercoat finish, which serves to protect the frame from

corrosion. The inside of the frame, however is not protected, and it is important not to allow any type of corrosive agents, such as sweat, to come in contact with it. End caps should be kept in inventory, and replaced if missing or broken.

*Missing feet.* Some strength equipment comes with rubber feet attachments. These serve the purpose of not allowing the equipment to slide on the floor and, in addition, protect the floor.

### **SEAT/BACK PADS**

The seat/back pad unit consists of a hard backing, usually wood, and a foam padding covered by a naugahyde-type fabric that is affixed to the seat adjustment unit by bolts. It serves as the main contact point of the user, and is susceptible to excessive wear and tear. This is especially true with equipment that places a great deal of pressure on the upholstery pad, such as some of the arm machines, as well as some leg pieces. Often, equipment manufacturers will reinforce problem areas by providing an additional layer of upholstery through the use of a cover.

Problems you may encounter with the seat/back unit include the following:

*Dirty seats.* Seat upholstery should be cleaned with a soft towel and warm water with soap to remove surface dirt and germs. Weekly cleaning should consist of using some type of lanolin cleaner or upholstery cleaner to both clean and condition. Do not use cleaners such as glass cleaners or other multi-use cleaners, as they may damage the upholstery. If stains exist, they should be removed in the following way:

1. Use a non-abrasive household cleaner and dry with a soft cloth.
2. Use a small amount of solvent-type cleaner (rubbing alcohol), dry with a soft cloth, rinse with warm water and dry with a cloth.
3. As a last resort, use a strong active-solvent cleaner (nail polish remover). Use no more than six rubs followed by drying with a soft cloth, rinsing with warm water and drying it again with a soft cloth.

*Torn pads.* Torn pads occur normally over time due to wear and tear. If there is an issue with a torn pad and it is just the protective cover, it can be replaced with another cover (which should be kept in inventory). Otherwise, tears to the actual pad need to be re-upholstered, or a completely new pad from the manufacturer should be installed.

*Compressed padding.* Over time, the padding on the seat compresses. This usually occurs in combination with worn

upholstery, but, unlike the worn upholstery that can simply be replaced, it is usually easier to order a new unit.

*Loose seats.* The seat pad is secured to the seat arm by bolts either underneath or behind the pad. Over time, these bolts may loosen. Weekly inspection should include checking and securing these bolts.

*Difficult to adjust.* The seat arm consists of a long tube that inserts directly into the frame. This shaft is usually chromed to prevent corrosion. When the shaft becomes soiled, it is difficult to adjust the seat. The seat adjustment tube should be cleaned and sprayed weekly with tri-flow or another similar lubricant to keep it clean and protected.

### **CABLES/BELTS**

The biggest liability risk associated with strength equipment involves cables/belts. Serious injury can occur from sudden failure of a worn belt. The goal of the preventive maintenance program is to monitor the cable system for wear, and repair the problem before it becomes a liability issue.

The cable system is the link between the movement arm of the exercise and the weight stack. The system can consist of either a cable wrapped in a protective coating, or a urethane belt. The cable attaches at the machine, and runs through a series of pulleys, finally traveling down the center of the guide rods attaching to the top plate of the weight stack. Cable ends are either directly secured to the equipment, or they wrap around an oval sleeve and are secured with a sleeve stop. This oval sleeve is then secured to the frame. Cable attachment to the weight stack is done in a way that allows some type of tension adjustment.

For preventive maintenance of cables, make sure of the following:

*The cable is firmly attached to both ends.* There are a few different ways cables can be attached at the ends. Regularly checking both ends will ensure that there is no risk of the cable suddenly failing at either end.

*The cable is not damaged.* Improper cable wear can result in the stripping of the protective coat; fraying of the cable; or the creation of a zig-zag pattern, which is a sign of the impending sudden failure of the cable. As soon as the cable exhibits any of these signs, it should be replaced immediately.

*There is no play in the cable.* The machine should function without any slack in the cable. This means as soon as a user begins the exercise movement, the weight stack begins to move. If it is too loose, there is no resistance at the beginning of the exercise movement. If it is too tight,

the user cannot place the pin in the bottom of the weight stack and have it engage. Adjustments to the cable tension usually are found where the cable attaches to the weight stack.

*The stop ball is intact and functioning.* The stop ball is a stop found on strength machines that have a cable attachment, such as the lat pulldown, low row and cable crossover. The stop ball prevents the cable from retracting into the machine.

### **PULLEYS**

The pulley system on strength machines is responsible for directing the cable through the machine from one end to the other. Pulleys are either plastic or metal, depending on the machine. The cheaper pulleys simply rotate around a bolt through the frame, while the higher-end pieces of equipment use pulleys with internal bearings to allow for less friction within the pulley when in use. Proper maintenance should ensure that the pulley is turning freely when the machine is in use. Additional problems may include the following:

*The cable is not set in the pulley.* Sometimes the cable jumps out of the pulley and gets wedged in the side. If this happens, remove the load from the equipment, reset the cable in the pulley and ensure that the cable is still intact. The pulley guard is missing/misaligned. Some pulleys that function over a large range of motion close to the pulley have a tendency to slip out of the pulley groove. Some pulleys contain a pulley guard that sits directly over the groove so that the cable is not able to jump out of the pulley.

*The pulley is cracked or bent.* If the pulley is cracked or bent, it should be immediately replaced by spare pulleys in stock. To replace the pulley, undo the bolt that acts as the pulley axis and slide the old pulley out to replace it with the new.

*The pulley does not rotate freely.* When the pulley does not rotate freely, it can be the sign of two different issues:

1. The bolt attaching the pulley to the frame is too tight, squeezing the pulley and preventing it from rotating freely.
2. The bearings inside the pulley may be bad and should be replaced.

### **GUIDE RODS**

Strength equipment weight stacks contain two guide rods. These usually sit in a hole in the frame of the machine on large washers and thick rubber donuts, and attach to the top of the frame with either bolts or snap washers. When

the machine is in use, the weight stacks glide up and down the guide rods. An important step in machine maintenance is ensuring that the guide rods are always clean and lubricated so that the weight stacks can function with little resistance. Guide rods should be regularly wiped down using a soft cloth and a small amount of Teflon or silicon spray.

### **WEIGHT STACKS**

Weight stacks consist of metal plates stacked on top of each other and fed down through guide rods. The top weight plate attaches to the cable and has a selector rod that extends down into the rest of the weight stack. The rod and weight plates have holes, into which the weight selector pin can be inserted to use the desired weight. The top plate usually contains some sort of bearing or bushing, and higher-end machines also include bushings on each weight plate. Proper lubrication of the bushings should take place at the same time the guide rods are lubricated to ensure proper functioning of the stack.

Problems to look for include the following:

*Weight plates are cracked.* Any plates that are cracked should be replaced immediately. To replace, you must first separate the top of the guide rods from the frame and feed the plates up through the top of the guide rods until the broken plate is removed.

*Weight stack bushings are not intact.* Any weight plate bushing that is broken should be replaced, because the stack will not move freely up and down the guide rod.

*Weight plate bumper/springs are not intact.* Most weight stacks sit on either thick rubber donuts or springs that function to absorb the downward force of the weight stack. When these become damaged, the weight stack force may cause damage to the frame or the floor. To replace, remove the entire weight stack to gain access.

*Pin selector is not intact or functioning properly.* The pin selector is inserted into the weight stack to engage the weights. These pins usually contain a push button at the end with one or two balls on the shaft, allowing the pin to remain in place when inserted into the stack. A faulty pin selector may dislodge itself from the weight plate, causing the entire stack to fall and possibly injure the user. Broken pin selectors should be replaced immediately.

*Proper pin is not being used.* Different machines use different types of weight selector pins. To be assured the proper pin is being used for each piece, pin selectors should be secured to their respective pieces through the use of some type of lanyard attached to the cable directly above the weight stack.

### **ATTACHMENTS**

Attachments are used with strength pieces that have cable attachments, such as the lat pulldown, low row or cable crossover. These attachments attach to the cable via a snap hook, which is a spring-loaded hook. Preventive issues to look for involving the attachments include the following:

*The snap hook is worn or gate does not close.* Snap hooks that do not close can result in the attachment dislodging from the cable end, resulting in serious injury. Faulty snap hooks should be immediately replaced.

*The hand grip is torn/missing.* While some hand grips are made from gnarling the bars, others use hard plastic or some type of grip. Torn or missing handles can cause the attachments to slip out of the user's hands, resulting in injury.

*The handle does not rotate freely.* Some of the handle attachments allow for rotation of the handle while it is attached to the cable. If the handles do not rotate freely, they should be sprayed with a lubricant. If that does not help, then there is probably an internal problem and it should be replaced.