Installation, Maintenance & Inspection 03

1. Introduction – I&M

All play equipment installed in public areas should be inspected and maintained in accordance with European Standards recommendations for the routine and operational inspection and maintenance of playground equipment: EN1176-7.

The **Tayplay** product warranties are only valid if the inspections and maintenance in this document are followed. The frequency of inspection will vary with the type of equipment/materials used and other factors e.g.: heavy use, levels of vandalism, climate conditions, air pollution, age of equipment.

Records of inspection and maintenance should be kept by the owner/operator in charge of the equipment, detailing what has been carried out.

If parts are discovered to be unsafe during inspection and cannot be replaced or corrected immediately, the equipment (or parts) should be secured against further use (immobilised or removed from site).

Installation

General

All Tayplay product documentation and information should be compiled prior to installation. This will detail space requirements, anchoring depth, choice of ground surface material, assembly instructions, possible need of a machine for excavation, unloading truck or other assistance during installation program. Depending on the vehicle access to the chosen site, different installation solutions at different costs may be required.

Excavations/fillings

Prior to finalising the position for the equipment, an assessment of the existing site should be completed:

- Ensure there are no cables or other services that are in the ground where excavation will be required.
- Ensure there are no overhead cables, mast or similar that could restrict the height of the facility or its access.
- Ensure any existing trees or other natural features are protected, where required.
- Ensure any existing site gradients will not affect any requirements for equipment ground clearances or its use.
- Ensure the existing soil does not contain any contaminates that could create a hazard to users of the facility or those installing. Ensure a suitable assessment of the existing soil materials is carried out.
- Where required, suitable site drainage may also need to be provided.
- Backfill shall be made in such a way that there is no risk for subsidence. Correct backfill material shall be selected, depending on the material chosen for the impact attenuating surface, where this is required. Safety
- All concrete work must be performed by personnel with the appropriate competence and in the right way.

The public must be prevented access to the installation area (please see local or national Code of Practice and safety regulations) until any work on the facility is completed and installation inspection is complete. It also includes the areas of the facility that are to be provided with special surfaces.

Surface

All equipment must be provided with a suitable impact absorbing surface, which will vary depending on the fall height of each product. Different surface options will require different levels of ongoing maintenance, which must be understood and planned for, prior to selecting.

Requirements regarding user and supervisor accessibility of the equipment shall always be considered. For more information, please see CEN/TR 16467.

7 **Checklist**

2. Routine Visual Inspection

A routine visual inspection should be carried out on a weekly base as a minimum. This should consist of the following as a minimum. In the case where the equipment is under intensive use or the object of vandalism, a daily check of this kind could be necessary:

Complete	Task
	General equipment and surface cleanliness.
	Equipment falling height and space is maintained.
	Foundations are not exposed, loose in the ground or cracked.
	Parts are not missing or damaged.
	Surface finish is not damaged, rusting, deteriorating and is free from sharp edges.
	Connections and fasteners are present, secure and tight.
	Bearings are free running with no unexpected movement/noises.
	Safety surface (if installed) not compacted, damaged or contaminated.
	Framework/structure shows no signs of fatigue/cracking.
	Ropes are not excessively worn showing their internal steel wires.
	No finger traps have opened anywhere in the structure between 8mm and 25mm.
	Site is clear of objects and rubbish within the free space of the net.
	Plastic items are not broken, loose, cracked, deformed or have any signs of embrittlement due to UV light.
	Rubber membrane panels are secure and show no signs of excessive ware or cracking.
	Surfaces are free from contamination that can cause the user to lose their balance.
	Manufacturer Labels are present and legible.
	No water is accumulated within the equipment and that all drain holes are open.
	*Where applicable, the rope is correctly tensioned (e.g. Activity Net)
	Within the corner box chambers, foundations and steelwork should not be cracked loose in the ground or exposed.
	Inspect the stainless-steel mast at finished ground level for cracks or deformation in the single structural support.

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*Tension the Rope – E.g. Activity Nets

Periodic checks on tension will help assist in the durability of the product. It is recommended that subsequent checks on tension should be carried out at monthly intervals and adjusted as required.
After initial tension is complete, the net will stretch approximately 1% over the first two weeks of use. Following this initial period, the net needs to be fully tensioned by releasing the locking nuts and tightening the turnbuckles.

3. Operational Inspections

Operational Inspections should be carried out by trained inspectors (1-3 months intervals) with the results recorded in a permanent log. If anything is noticed below, please see maintenance procedure further on in this document. Care should be taken that the rate of wear and time to the next inspection is taken into account. Each play feature shall be tested with a suitable force to confirm its function.

Complete	Task
	Structures (posts, decks, roofs, panels/barriers etc) and play features are not bending, cracking, loosening, or excessively corroded.
	No damaged paint, rusting, deterioration or contamination. All surfaces are free from sharp edges.
	Foundations not cracked, loose in the ground or exposed due to damage or deterioration of the finished surfacing used.
	Impact Attenuating Surfacing - Ensure there are no obstacles in the safety zone. Impact absorbing surfacing should be maintained in accordance to EN1176, and should follow the suppliers maintenance documentation
	All fixings are tightened and have no protruding sharp edges. No wear in pins or attachment holes.
	Site is clear of all dangerous objects and rubbish.
	Welds show no visible cracks or corrosion.
	No trip points or obstruction within the falling space, free space or surrounding area.
	Plastic items including mouldings, panels, slides, climbing grips, plastic balls on pull handles, plugs etc., are secure and not broken, loose, cracked, sharp edges, burnt, deformed, due to UV light have any signs of embrittlement or missing.
	All parts are secure and that there is no excessive movement between them that may lead to finger traps or any other traps.
	Spinners and bouncing components are operating smoothly without noise, with no unexpected movement within bushes or bearings.
	Ensure any anti-slip components (e.g. decks, platforms, panels, climb walls, step treads & seat treads) have not worn through the top surface.
	Structural HPL components (e.g. decks, platforms, panels, climb walls, step treads & seat treads) -has more than 70% left of its original thickness, and no sharp edges.
	Walking surfaces are free from any contamination that can cause slipperiness.
	Ensure all product use labels and facility signage are still legible.
	No water is accumulated within equipment due to sand, leaves, high water table etc. and that all drain holes are open.

Inspection of Specific Components

Rope Components

Complete	Task
	Ensure that the ropes are smooth all along and are not frayed, deformed or have any visible metal cord.
	All fixings are tight and have no protruding sharp edges.
	Rope end fixings are replaced when the link cross section reaches a size of 70% of its original size compared to a non-wearing surface. All parts should be checked, including; Connections to framework, swaged eye terminals.
	Rope tension is maintained using the Rigging Screws and locknuts are secure. (E.g. Activity net).
	Connections and bolts are secure and tight.
	Surface finishes not damaged, rusting or deteriorating.

Chain

Complete	Task
	The chains are not twisted.
	Chains are replaced when the chain link cross section reaches a size of 70% of its original size on any link compared to a non-wearing surface. All chain parts should be checked, including; end fixings, split links, end chain links, main chain links, swivels and rivets.

Tensioner/Rigging Screw

Complete	Task
	Thread is free from excessive ware or damage.
	An equal amount of thread to the body of the tensioner is fixed inside the body of the turnbuckle.
	The tensioner is secured with the locknuts.

Safety Wire

Complete	Task
	Where applicable, ensure the safety wire is looped between the secure structure and thimble of the rope in the case of failure to the components.
	The safety cable should cable tied secure to prevent trip hazards or probe failures around the play activity.

Shackles

Complete	Task
	Shackles are to be replaced when the link cross section reaches a size of 70% of its original size on any link compared to a non-wearing surface.
	Ensure that Roll pins are inserted and firmly in position.

Bushes, bearings and swivels

Complete	Task
	Inspect bush/bearing/swivel for wear and excessive play (recommended maximum 0.5mm in vertical plane).
	Bush/bearing/swivel is moving freely without squeaks or binding.

Flextread components

Complete	Task
	Surface cracks are to be expected on Flextread, particularly where the material is wrapped. Ensure these surface cracks are less than 4mm and do not break through the internal reinforcement layer.
	Check the anti-slip texture surface has not worn away. (Select products)

Wooden items

Complete	Task
	All wooden items (logs etc.) are not broken and have no sharp edges or splinters. Note: All wooden items are prone to expansion and contraction that may cause temporary splits. This will depend on climate and temperature variance. Any cracks should be monitored to ensure they do not grow sufficiently or compromise structural strength.
	All components where repetitive wear does occur (e.g. decks, steps, walkways) has more than 70% left of its original thickness.
	Give a detailed check of all timber parts to confirm if any rot/degradation is present that could compromise its structural capacity. Special attention shall be given to dynamic items like cable ways, swing frames, and those that rely on one post for their stability. The recommended inspection method for identifying early signs of degradation in timber is the use of a small diameter (approx. Ø3-4mm) steel rod with a rounded point. Attempting to insert the device a number of times at evenly spaced points around the outer face of the post, in the accessible zone where moisture and oxygen combine in their optimum, in areas under the highest levels of structural load. The probe shall not easily enter the timber when pushing and there shall be no sign of softness, when compared with a fresh timber part. Any cracks in the timber can also lead to rot establishing from the inside. Care should be taken to not disturb material in the post potentially leading to future acceleration of degradation. Small pockets of rot do not necessarily mean the post will fail catastrophically in the near future and any suggested action should be considered carefully by the inspector depending on the amount and extent of degradation. For structural wooden parts going direct into ground, care should be taken to ensure the inspection method and probing is carried out in the zones of the post at the greatest risk of degradation. For loose-fill surfacing at or below ground level but above the concrete foundation by temporarily scraping back the loose-fill material. For synthetic surfacing directly at or just above/below surface level. If the ground is prone to retaining water or flooding, then extra attention also needs to be taken. For larger sections of timber intended to offer greater structural stability or timbers raising concern, more sophisticated test methods such as digital resi-drill inspections are available if considered necessary. If any concern occurs, please contact a local timber expert or contact Tayplay for further advice. Where necessary products must be taken out of use, until a further investigation has been completed.

Steel items

Complete	Task
	Give a detailed check of all steel parts to confirm if any corrosion/degradation is present that could compromise its structural capacity. The recommended inspection method for identifying early signs of corrosion in steel is visual observation and the use of a small diameter (approx. Ø3-4mm) steel rod with a rounded point. Attempting to insert the device a number of times at evenly spaced points around the outer face of the post in the accessible zone where moisture and oxygen combine in their optimum, in areas under the highest levels of structural load. The probe shall not easily enter the steel when pushing and there shall be no sign of softness. If areas where the surface coating is broken, are detected, special attention should be given as there is a higher risk of corrosion. For structural steel parts going direct into the ground care should be taken to ensure the inspection method and probing is carried out in the zones of the post at the greatest risk of corrosion. For loose-fill surfacing at or below ground level but above the concrete foundation by temporarily scraping back the loose-fill material. For synthetic surfacing directly at or just above/below surface level. If the ground is prone to retaining water or flooding, then extra attention also needs to be taken. Special attention shall be given to dynamic items, and those that rely on one post for their stability. For those steel sections intended to offer greater structural stability or those raising concern, more sophisticated test methods such as 'eddy current' tests are available if considered necessary. If any concern occurs, please contact a local structural steel expert or contact Tayplay for further advice. Where necessary products must be taken out of use, until a further investigation has been completed.

Rubber steps and disks

Complete	Task
	Not broken and secured to posts.
	Not slippery.
	All fasteners tightly secured.

Equipment Group

Cone Climber – Bearing/Rotation System

Complete	Task
	CC04 - Internal Speed Restrictor Periodically, it is advised to remove the mast and net for a detailed internal inspection of the speed restrictor. A detailed view of the components can be found in your installation instructions. Please ensure the locking nut and bolts are secure, the housing moves freely and the 4mm brake pads are not excessively worn. For a breakdown on the bearing and restrictor, please contact: sales@tayplay.com.
	CC05 – HDPE/Nylon Friction Collar When the lower nylon collar seizes this is due to the HDPE/nylon absorbing water. To allow the ring to spin freely, arrange for the lower collar to be machined by a CNC precision engineer. To finish, apply universal grease or silicon spray. Make sure any over spill is clean ed off.

Initial Install – Cone Climber Collars

Tayplay Cone Climber's have a precision machined diameter to fit the rotating collar and stainless steel ring. When the collars are initially installed there will be movement between the collar and the internal ring creating a minor vibration when spinning. Grease should be injected into the grease nipple to allow for a smooth rotation of the ring, and to reduce any vibrations. This grease will need re-topped up.

Activity Nets - Tension the Rope

Periodic checks on tension will help assist in the durability of the product. It is recommended that subsequent checks on tension should be carried out at monthly intervals and adjusted as required.
After initial tension is complete, the net will stretch approximately 1% over the first two weeks of use. Following this initial period, the net needs to be fully tensioned by releasing the locking nuts and tightening the turnbuckles.

4. Annual Main Inspection (not exceeding 12 months)

A detailed inspection should be carried out by a specialist engineer and the results of such inspections entered into a permanent record. The inspection is intended to establish the overall safety of the equipment, foundation s and playing surfaces. The operational inspection log should also be reviewed as part of this inspection.

Special attention should be given to assess the effects of weather, presence of rotting or corrosion, and any change in the level of safety of the equipment as a result of repairs made, or of added or replaced components.

N.B. This type of inspection may require the equipment not to be in use, as some parts may need to be dismantled to inspect fully.

5. Maintenance Procedure Overview

Whilst any maintenance is carried out the equipment must be secured against use and the public warned of any risks associated with the work.

Any parts replaced must be Tayplay original spare parts or comply with Tayplay specifications. See installation instructions for part numbers, part identification and method of disassembly and assembly.

Clean all equipment once a year unless the provision is within 1500m of the sea in which case it should be carried out every three months. To remove dirt, mould, contamination, salt deposits etc. with mild detergent solution (do not use strong solvents or solutions containing chlorinated hydrocarbons, esters, ketones or abrasive cleaners or polish) using a soft cloth, sponge or brush. Special attention given to walk areas, handrails, wooden items and horizontal surfaces. As required, please clean surfaces with a suitable graffiti remover.

Powder Coated Finish

Periodically, our products should be inspected for mechanical damage, and we recommend that the powder-coated finish to steel components be cleaned with a mild detergent solution and soft cloth. This should generally be carried out at least once a year, unless the provision is within one 1500m of the sea in which case it should be carried out every three months. Any identified breaks or scratches in coating surface, should be made good within a month:

- any bare metal should be thoroughly abraded with a fine grade sand paper to remove any corrosion.
- clean area with a non-aggressive solvent.

Please contact your Tayplay representative for further advice.

Avoid any refurbishment work in direct sun or in temperature less than +10 degrees. Particular attention should be paid to the areas adjacent to stainless steel components where corrosion on bare steel would be accelerated.

Galvanized Steel Components

Any damage or scratches in the coating surface identified should be made good within a month:

- any bare metal should be thoroughly abraded with a fine grade sand paper to remove any corrosion.
- clean area with a non-aggressive solvent.
- then immediately repaint using a suitable cold galvanizing application.

Avoid any refurbishment work in direct sun or in temperature less than +10 degrees.

Wooden Items

The timber parts should have any sharp edges or splinters removed. Any cracks should be monitored to ensure they do not grow sufficiently to be a finger trap or cause rot.

To keep a good look and extend the life of timber parts it is also important to keep them clean, free of contamination and review the surface treatment. However, we recommend that wooden items or treatments are checked to ensure their suitability for use on children's playground equipment.

For wearing components (e.g. decks, steps, walkways) having less than 70% left of its original thickness, shall be replaced.

Hardwood

It is recommended that the hardwood items should be treated if required with a drying wood oil

< 30% dryness. Ensure that all excess oil is removed prior to putting the equipment back into use.

This is particularly important on step treads to ensure they are not slippery.

Softwood

Maintenance is critical to keep the look and function of the wood. The intervals will depend on use, place of installation, vandalism etc.

Before maintaining the product, you need to judge the status of the surface treatment. If there are minor mechanical damage and a solid surface layer, please use Wood stain – 'Glaze system' (transparent). If there are severe damages to the wood or the surface layer, a 'Solid colour' (opaque) wood stain must be used.

Make sure the surface is clean and free from any loose material or paint cracking.

Do not work in direct sunlight or at temperatures below +10°C.

1. Clean the old surface or damaged area thoroughly with pre-paint cleaner. Rinse carefully with water. Clean between the boards wherever necessary so that moisture run-off will be effective.
2. Let it dry until the moisture content is not above 18%.
3. Scrape or sand the damaged (dis-coloured) areas to remove loose paint and then apply two coats of oil primer. Or treat the entire surface. Let it dry between applications.
4. 4. Leave to dry for at least 4 hours at a temp. of +10°C or above.
5. 5. Then apply two coats of solid colour woodstain to the damaged areas. It may be necessary to apply a final coat to the entire surface. Let it dry between applications.
6. Leave to dry for at least 4 hours at a temp. of +10°C or above.

Although the pigments of our solid colour wood stains have been specially developed to match our transparent wood stain shades, slight differences may arise, as it is technically impossible to guarantee a 100% match at all times.

Please contact your Tayplay representative for further advice.

Rope components

Small cuts in the outer braided layer can be re-sealed by melting the frayed ends with a small naked flame. If done immediately it will stop the plastic filaments from unwinding further. With small amounts of wear the life of the net can be extended with the use of suitable external grade heavy duty tape. This must be securely applied to prevent the introduction of entrapment areas.

For more extensive fatigue or breaks in the rope, the net will need removed and replaced.

During production we make every effort to keep the rope clean, however with each process, grease, dirt & minor fibre abrasion can occur. With post-production quality control inspections of the net we will clean any unacceptable marks. If minor marks occur during packing and shipping of the net, please clean the rope with a mild detergent solution using a soft cloth, sponge or brush.

Bushes, bearings and swivels

If any noise or squeaking occurs or if it does not run smoothly, please apply universal grease or silicon spray.

Make sure any over spill is entirely cleaned off.

If motion is still an issue or if the bush, bearing or swivel has worn out, replacement will be necessary. As a guide we recommend more than 0.5mm movement within component would require replacement.

Plastic components

All Tayplay plastic products are UV stabilised to provide a long trouble-free life. However, after extended UV exposure some colour fading, and material embrittlement can be expected. This will vary depending on the location and orientation of the products, but after a period of 10 years in normal environments, all products should be regularly checked for signs of embrittlement and replaced as required.

Dynamic items and equipment where stability relies on a single structural support.

For Dynamic items of equipment or for equipment where stability relies on a single structural support for stability,

it is recommended that they are scheduled for replacement after a maximum period of 15 years for structural steel and 10 years for timber. This is particularly important for these structures that are subject to fluctuating loads as fatigue to can occur over time, depending on the level of use and abuse.

Surfacing

All Impact Attenuating Surfacing should undergo comprehensive routine and operational inspection and maintenance in accordance to the recommendations of EN 1176.

The frequency of inspection will vary with the type of surface/materials used and other factors e.g.: heavy use, levels of vandalism, coastal location, air pollution, age of equipment, location adjacent trees. The type of Playground equipment will also have an effect, with moving dynamic products being expected to wear and reduce the expected life of the surface more quickly. When an existing surface is viewed as being no longer effective it should be replaced.

For all types of impact attenuating surfacing particular attention shall be given to the effects of ageing (exposure to UV, heat, cold), pollution, causing degradation, or loss of the impact attenuating properties.

If areas are discovered to be unsafe during inspection and cannot be replaced or corrected immediately, the equipment (or parts) should be secured against further use (immobilised or removed from site).

> **Note 1:** Lack of maintenance may reduce the impact attenuation properties of the surface and reduce its performance from the original EN 1177 test performance.
>
> **Note 2:** Tayplay are equipment suppliers, and do not handle surfacing material. For correct maintenance please consult the distributor of the playground, and/or the supplier of the surfacing material for their guidance. Surfacing should undergo the same Routine, Operational, and Annual Maintenance Checks as the equipment.
>
> **Note 3:** Ensure all loose-fill surfacing levels are up to the correct surfacing levels mark as indicated on the structure.
>
> **Note 4:** Activity Net Corner Box Lids should undergo the same criteria. Please check to see that all bolts are secure, and under the finished surfacing level. There should be no sharp objects, the surface should not be cracked, and the surface should be cleaned of organic growths.

Initial Inspection and Sign-Off

Your playground should be signed off by a certified inspector. All certified equipment is checked by TUV,

Retiring Old Equipment

At the end of its working life Tayplay equipment may be dismantled and the component parts sorted by material type for re-cycling and or disposal. Please refer to the Tayplay installation instructions for erection sequences, tools required and any Safe Working Practices that may be required.

For full dismantling information on the rope net, please contact sales@tayplay.com for more information. We supply a separate document on how to strip down the fibres, core, and steel-strands.

Once dismantled parts may be sorted by material type:

1. **Mild Steel –** Powder coated steel parts, bolt fixings etc.
2. **Stainless Steel** – Slides, bolt fixings, banister rails, chains etc.
3. **Galvanised Steel –** Chains, anchoring, steel reinforced ropes and other steel parts.
4. **Thermo plastics –** Graphic panels, rota-moulded items, post-/bolt caps etc.
5. **PUR –** handles, swing seats etc.
6. **Tyres –** swing seats, dampers, anchoring's etc.
7. **HPL (High Pressure Laminate) –** panels, springers, climbing walls etc.
8. **Wood -** Timber sections supplied prior to 2003, please treat as hazardous waste and disposed of accordingly (must not be burnt). Timber sections supplied after 2003 can be recycled as normal timber.
9. **Glass –** covers, panels etc.
10. **Aluminium –** rungs, handles etc.

Tayplay would urge, wherever possible, that parts are passed to on to specialist recycling companies.

Additional information can be found at, for example; www.environmental-expert.com

Routine Visual Inspection (Every 0-1 month)

Inspections Results Fault Log

Faults Noticed	
Faults Corrected	
Faults Outstanding and Need Further Action	
Name	
Profession	
Signature	

**For additional routine maintenance please copy this page and keep a log of all routine reports.*

Notes

Operational Inspection (Every 1-3 months)

Year	Name (Print)	Signature	Date Carried Out
Year 1.1			
Year 1.2			
Year 1.3			
Year 2.1			
Year 2.2			
Year 2.3			
Year 3.1			
Year 3.2			
Year 3.3			
Year 4.1			
Year 4.2			
Year 4.3			
Year 5.1			
Year 5.2			
Year 5.3			
Year 6.1			
Year 6.2			
Year 6.3			
Year 7.1			
Year 7.2			
Year 7.3			
Year 8.1			
Year 8.2			
Year 8.3			
Year 9.1			
Year 9.2			
Year 9.3			
Year 10.1			
Year 10.2			
Year 10.3			
Year 11.1			
Year 11.2			
Year 11.3			
Year 12.1			
Year 12.2			
Year 12.3			
Year 13.1			
Year 13.2			
Year 13.3			
Year 14.1			
Year 14.2			
Year 14.3			
Year 15.1			
Year 15.2			
Year 15.3			

**Operational Inspection Reports should be kept on file.*

***Log finishes at year 15 when the steel warranty expires. Logs should continue through your selected I&M (inspection and maintenance).*

Notes

Annual Inspection (Less than 12 months between inspections)

Year	Name (Print)	Signature	Date Carried Out
Year 1			
Year 2			
Year 3			
Year 4			
Year 5			
Year 6			
Year 7			
Year 8			
Year 9			
Year 10			
Year 11			
Year 12			
Year 13			
Year 14			
Year 15			

**Annual Inspection Reports should be kept on file.*

***Log finishes at year 15 when the steel warranty expires. Logs should continue through your selected I&M (inspection and maintenance).*

Notes