Retractable Seating System

- Code Compliance Features
- Structure of Retractable Platform
- Storage Types of Retractable Seating System
- Construction Proceedings
1. **Design of steel structures and connection is on the basis of:**
   a) DIN (Deutsch Industrie Normen),
   b) JIS (Japanese Industrial Standard) British Standard.
   c) Guidelines outlined in “Recommendations for the Specification and Use of Tiered, Retractable and Demountable Seating” document produced by British Association of Spectator Equipment Supplies (BASES) for the Recreation and Leisure Trades Association (RALTA) UK.
   d) Durability Testing: The seating is to be certified to the following:
      • EN 12727 – “Furniture – Ranked Seating – Test methods and requirements for strength and durability”.
      • BS 4875: 1985 – “Furniture Performance Testing” – Rating 5

2. **Quality Assurance**
   a) Comply with following standards:
      • DIN 1050 Determination for steel in the building section
      • DIN 1055 Load for building
      • DIN 4114 Stability in steel structures
      • DIN 4115 Light steel works and steel
      • Quality – ISO 9001-2000 Quality systems requirements
   b) Comply with the following other standards:

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• BS 5852 Source 0 – “Furniture Assessment of the ignitability of upholstered furniture Part 1 – Smoldering cigarette”

• BS 5852 Source 1 – “Furniture Assessment of the ignitability of upholstered furniture Part 2 – Ignition source, match flame equivalent”

• FMVSS No. 302 – Federal Motor Vehicle Safety Standard No.302
DECK AND FRAME

(1) Front steel channel (150x75x6.5T) is connected to support of the first row (tier) and the first deck through a bolted connection.

(2) Several steel square tube sections (40x40x1.6 (2.3 ) mmT) are welded into the middle of deck frame. This design of the system prevents any problems caused by heavy loads.

(3) Plywood (18mmT) is covered on deck frames and adhered by silicon resin and then finished with options of:
   a) polyurethane clear coat finish.
   b) linoleum (2mmT)
   c) carpet of client choice
   The edge of deck platform is finished with aluminium non slip for safety.

(4) The space between upper and lower deck is minimized by ‘C’ channel riser infill (rear girder steel screen) so prevents rubbish from falling into system below.
Structure of Retractable Platform

1. UNDERSTRUCTURE
   
   a) Wheel is especially designed and produced for ensuring the maximum stability of the system and loading.
   
   b) Wheel (Ø121*38*5T) is comprised of inner part (nylon glass) and outer part (polyurethane). The wheels distribute the load of system when the system is operated.

2. SUPPORT OF SYSTEM
   
   a) Steel support (100x50x3.2mmT) is assembled to wheel cover (110x60x3mmT). Also, the support is connected to the deck frame through bolts and a saddle.
   
   b) Support is linked with the next row of support. This way, when the system is open and closed, it prevents each row from separating.
Structure of Retractable Platform

1. BRACE AND GUIDE ROLLER

   a) Inclined (50x50x2.3mmT) and horizontal brace (40x40x2.3mmT).

   b) One edge of inclined brace is connected to support through bolts and the other edge is fixed on rear deck frame and guide roller which is for operating direction.

   c) Horizontal brace is linked to each of supports together with inclined brace through bolts.

2) GUIDE ROLLER

   a) Other than the final row, the guide roller is located at the rear middle of every row’s deck frame.

   b) The middle steel square tube of upper deck frame is surrounded by 3 steel rollers. When the system operates, the upper deck frame moves, following these rollers. This prevents system from detaching and disharmonised operation.
1. GUARD RAILS

a) Guard rails are finished with powder coating and comprise of 3 kinds:
   i) fixed type
   ii) removable type
   iii) self retracted type

b) Our standard size is Ø32 x 3.2mmT.

c) The guard rails are installed at side and rear of system for spectator’s safety. The size can be adjusted as per client’s request.
1. LOCKING SYSTEM

a) Lower Locking and Upper Locking

b) In order to let the system close and open in sequence, the upper locking mechanism is fixed to the front and rear of the deck frame underneath and also the lower locking is fixed to the front and rear of support.

c) Upper locking operates in system open, and lower locking operates in system close functions

2. STEPS

a) Steps are specially designed according to the type and size of system and seat type. Steps are composed of rectangular steel frame, plywood (18mmT), linoleum and aluminium non slip finishes. Options are:

i) polyurethane clear coat finish

ii) linoleum (2mmT)

iii) carpet of client choice
1. FINISHING OF UNDERSTRUCTURE

a) All of steel parts are treated by powder coating for preventing corrosion. Standard colour finish matt black.

b) Other colours can be selected by the client’s choice.

2. OPTIONS

a) Side, rear and front curtain screens are available as options. In addition, seat number, row number step lights, and emergency lights are available as options.
Storage Type of Retractable Seating System

1. WALL ATTACHED
   The last row of seats are fixed to the wall/floor and the retractable system is moved toward the wall. This is the most common type of storage.

2. WALL RECESSED
   The retractable system is recessed inside a section of a wall to be in line with the balustrade.
Storage Type of Retractable Seating System

3. MOVABLE

a) The retractable system is not fixed to the wall and floor.

b) The retractable system can be moved to any place by portable lift dolly hand trucks.
Cutting and processing

Packing products
Carrying to construction site

Carrying the products into the installation site
Arranging for the positioning of materials. Protective cover material is placed on floor during the assembly process.

Positioning of vertical leg supports
Positioning of deck frames

Assembling deck frame of the first row
Assembling other deck frames progressively to build the system

Positioning of plywood to the deck frame
Fixing plywood to deck frame

Bonding flooring materials on plywood
Complete the processing of the flooring materials

Fixing Aluminium non slip to decking platform
Arrange for the positioning of the seat operating box

Fixing the seat operating box
Fixing the steps to the platform

Finishing steps with Aluminium non-slip
Arrange the positioning of seats to nominated seat centre spacing

Fixing the seat operating box
Assembling motor drive pulling unit to system

Installing the Wiring work of automatic pulling unit (power Drive Unit)
Completion of the first row

Setting the positioning of the retractable seating system
Adjusting the height of riser

Installing the hand rails
Setting the system to correct position

Installation of the upper locking system
Installation of the lower locking system

Finishing the electrical wiring work

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Installation of electrical control box

Checking the seats for operation
Checking close and open for the system

Cleaning

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Completion of system