

EXAMINATION REPORT FOR VERTICAL LIFTING AND HORIZONTAL SLIDING TYPE MECHANIZED VEHICLE PARKING SYSTEMS (MVPS-VLHS)

1. Basic Information and Description of Installation

Location (Address) _____
Lift No. _____ Lift Location ID _____
Brand _____ Model _____ Maximum Vertical Travel _____m
Number of Levels _____ Number of Parking Spaces _____ Number of Lifts _____
Number of Transfer Vehicles _____ Number of Carrier Robots _____
Number of Turntable _____
Max. Allowable Vehicle Dimensions (LxWxH) _____m
Rated Load _____kg
Rated Speed of Lift Car _____m/s Rated Speed of Carrier Robot _____m/s
Rated Speed of Transfer Vehicle _____m/s
Power Supply at Time of Test _____Volt _____Phase _____Hz
Drive Type of Lift _____ Control Type of Lift _____
Levelling Tolerance $\pm$ _____mm Car Floor Area _____m²
Machine Room Location: *above lift well / below lift well / at side / others _____
Model No. and Name of Manufacturer of the Controller _____
No. of the Certificate of Conformity of the MVPS _____
Date of Issue of the Certificate of Conformity of the MVPS _____

2. Static Examination – Mechanical

2.1 Suspension

(a) Suspension Ropes N.A. ☐

Certificate No. & Date of Issue _____

Number of ropes _____ Nominal Diameter _____mm

Number of strands x wires per rope _____

Have the suspension ropes attained the criteria for replacement in accordance with Clause 5.4.8 of the Works Code? Yes ☐ No ☐

Type of Anchorages: Car _____

Counterweight _____

Have the anchorages been examined and found in good working condition? Yes ☐ No ☐

(b) Chains N.A. ☐

Brand and ISO number of drive chain of lifting motor _____

Brand and ISO number of lifting chains _____

Are all chains checked to be without visible cracks, well-lubricated and in good working condition? Yes ☐ No ☐

Are the elongations of all chains within the maximum allowable elongation recommended by the manufacturer? Yes ☐ No ☐

2.2 Safety Gear N.A. ☐

Brand _____ Model _____

Certificate No. & Date of Issue _____

2.3 Energy Dissipation Buffers N.A. ☐

Brand _____ Model _____

Certificate No. & Date of Issue _____

Is the buffer switch functioning properly? Yes ☐ No ☐

2.4 Energy Accumulation Buffers N.A. ☐

Brand _____ Model _____

Certificate No. & Date of Issue _____

Is the buffer switch functioning properly? Yes ☐ No ☐

2.5 Brake

Type: *Drum/ Disc *Single/ Double

Does the brake sustain the static car with 125% of the rated load? Yes ☐ No ☐

(This test is only required to be conducted in examinations with load.)

2.6 Overspeed Governor N.A. ☐

Brand _____ Model _____

Certificate No. & Date of Issue _____

Is the governor rope slack switch working properly? Yes ☐ No ☐

2.7 Door Locking Device

(a) Landing door locking device N.A. ☐

Brand _____ Model _____

Certificate No. & Date of Issue _____

(b) Car door locking device N.A. ☐

Brand _____ Model _____

Certificate No. & Date of Issue _____

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- 2.8 Ascending Car Overspeed Protection Means N.A. ☐
- (a) Overspeed Governor
- (i) Is the overspeed governor using the one as mentioned in item 2.6?
(If 'Yes', skip the following and go to item 2.8 (b).) Yes ☐ No ☐
- (ii) Brand _____ Model _____
Certificate No. & Date of Issue _____
- (iii) Is the governor rope slack switch working properly? Yes ☐ No ☐
- (b) Speed Reducing Element
- (i) Type: Car Safety Gear (acting upwards) ☐ Brake on Sheave ☐
Counterweight Safety Gear (acting downwards) ☐ Rope Gripper ☐
Others (please specify) _____
- (ii) Brand _____ Model _____
Certificate No. & Date of Issue _____
- 2.9 Unintended Car Movement Protection Means N.A. ☐
- (a) Type of Unintended Car Movement Protection Means
- Brake on Sheave ☐ Rope Gripper ☐
Car Safety Gear ☐ Counterweight Safety Gear ☐
- (b) Brand _____ Model _____
Certificate No. & Date of Issue _____

3. Static Examination – Electrical

- 3.1 Lift
- 3.1.1 Insulation Resistance to Earth
- (a) Lift Motor _____ MΩ
- (b) MG Set (if fitted): Motor _____ MΩ Generator _____ MΩ
- (c) Power System _____ MΩ
- (d) Safety Circuits _____ MΩ
- 3.1.2 Earthing
- (a) Is the maximum continuity resistance to earth less than 0.5Ω? Yes ☐ No ☐
- (b) Is the lift connected to controller earthing terminal by a separate conductor $\geq 0.75\text{mm}^2$? Yes ☐ No ☐
- 3.1.3 Protection of Conductors
- Is the fixed wiring in conduit or trunking (or fittings that ensure equivalent protection) throughout? Yes ☐ No ☐

- 3.1.4 Phase Reversal and Phase Failure Devices
- Do the phase reversal and phase failure devices operate correctly? Yes ☐ No ☐
- 3.2 Transfer Vehicle
- 3.2.1 Insulation Resistance to Earth
- (a) Transfer Vehicle Motor _____ MΩ
- (b) Carrier Robot Motor _____ MΩ
- (c) Power System _____ MΩ
- (d) Safety Circuits _____ MΩ
- 3.2.2 Earthing
- (a) Is the maximum continuity resistance to earth less than 0.5Ω? Yes ☐ No ☐
- (b) Is the transfer vehicle connected to controller earthing terminal by a separate conductor $\geq 0.75\text{mm}^2$? Yes ☐ No ☐
- 3.2.3 Protection of Conductors
- Is the fixed wiring in conduit or trunking (or fittings that ensure equivalent protection) throughout? Yes ☐ No ☐
- 3.2.4 Phase Reversal and Phase Failure Devices
- Do the phase reversal and phase failure devices operate correctly? Yes ☐ No ☐
- 3.3 Turntable
- 3.3.1 Insulation Resistance to Earth
- (a) Turntable Motor _____ MΩ
- (b) Power System _____ MΩ
- (c) Safety Circuits _____ MΩ
- 3.3.2 Earthing
- (a) Is the maximum continuity resistance to earth less than 0.5Ω? Yes ☐ No ☐
- (b) Is the turntable connected to controller earthing terminal by a separate conductor $\geq 0.75\text{mm}^2$? Yes ☐ No ☐
- 3.3.3 Protection of Conductors
- Is the fixed wiring in conduit or trunking (or fittings that ensure equivalent protection) throughout? Yes ☐ No ☐
- 3.3.4 Phase Reversal and Phase Failure Devices
- Do the phase reversal and phase failure devices operate correctly? Yes ☐ No ☐

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3.4 Transfer Cabin

3.4.1 Insulation Resistance to Earth

- (a) Power System _____ MΩ
(b) Safety Circuits _____ MΩ

3.4.2 Earthing

- (a) Is the maximum continuity resistance to earth less than 0.5Ω ? Yes ☐ No ☐
(b) Is the transfer cabin connected to controller earthing terminal by a separate conductor $\geq 0.75\text{mm}^2$? Yes ☐ No ☐

3.4.3 Protection of Conductors

- Is the fixed wiring in conduit or trunking (or fittings that ensure equivalent protection) throughout? Yes ☐ No ☐

4. Dynamic Tests

4.1 Lift

- (a) Have the contacts at each landing door been proved to ensure that when broken there is no movement of the car? N.A. ☐ Yes ☐ No ☐
(b) Do the mechanical locks at each landing door engage by at least 7mm before movement of the car is initiated? N.A. ☐ Yes ☐ No ☐
(c) Have the contacts at the lift pit door been proved to ensure that when broken there is no movement of the car? N.A. ☐ Yes ☐ No ☐
(d) Do the final limit switches cut off motor supply before the car or counterweight contact the buffers? N.A. ☐ Yes ☐ No ☐
(e) Have the stopping devices on the car, in the machine room and pit been proved so that when activated no movement of the car occurs? N.A. ☐ Yes ☐ No ☐
(f) Does the earthing of the most remote contact (lock or push button) operate a fuse or trip a breaker without delay? N.A. ☐ Yes ☐ No ☐
(g) Has the car been operated satisfactorily when running at #no load / full load? N.A. ☐ Yes ☐ No ☐
(h) Do the brakes engage and stop a car moving at rated speed when main power supply is cut from the system? N.A. ☐ Yes ☐ No ☐
(i) When triggered, does the chain/rope slack detection

- activate to stop a car moving at rated speed? N.A. ☐ Yes ☐ No ☐
(j) Are all other electromechanical interlocks working properly? N.A. ☐ Yes ☐ No ☐

4.2 Measured Speed of Lift at #no load / full load

- (a) Speed up (at mid-point of travel) _____ m/s
(b) Speed down (at mid-point of travel) _____ m/s

4.3 Carrier Robot

- (a) Have all carrier robots been operated satisfactorily when running at #no load / full load? N.A. ☐ Yes ☐ No ☐
(b) Do the brakes engage and stop a carrier robot moving at rated speed when main power supply is cut from the system? (Tick N.A. if the carrier robot is battery-powered.) N.A. ☐ Yes ☐ No ☐
(c) Is the interlock function, which ensures that no movement of the transfer vehicle occurs during operation of the carrier robot, working properly? N.A. ☐ Yes ☐ No ☐
(d) Is the wheelbase measurement device on the carrier robot working properly? N.A. ☐ Yes ☐ No ☐
(e) Do the anti-collision sensors cut off motor supply to the carrier robot when insufficient clearance between the carrier robot and the obstacle is detected? N.A. ☐ Yes ☐ No ☐
(f) Do the bumper sensors/switches cut off motor supply to the carrier robot when the bumper impacts upon an object? N.A. ☐ Yes ☐ No ☐
(g) Are all other electromechanical interlocks working properly? N.A. ☐ Yes ☐ No ☐

4.4 Measured Speed of Carrier Robot at #no load / full load

- (a) Speed (at mid-point of travel) _____ m/s

4.5 Transfer Vehicle

- (a) Have all transfer vehicles been operated satisfactorily when running at #no load / full load? N.A. ☐ Yes ☐ No ☐
(b) Do the brakes engage and stop a transfer vehicle moving at rated speed when main power supply is cut from the system? N.A. ☐ Yes ☐ No ☐
(c) Have the contacts at the aisle door been proved to ensure that when broken there is no movement of the

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- transfer vehicle? N.A. ☐ Yes ☐ No ☐
- (d) Have the stopping devices on the transfer vehicle been proved so that when activated no movement of the transfer vehicle occurs? N.A. ☐ Yes ☐ No ☐
- (e) Is the interlock function, which ensures that no movement of the carrier robot occurs during operation of the transfer vehicle, working properly? N.A. ☐ Yes ☐ No ☐
- (f) Do the anti-collision sensors cut off motor supply to the transfer vehicle when insufficient clearance between the transfer vehicle and the obstacle is detected? N.A. ☐ Yes ☐ No ☐
- (g) Do the final limit switches cut off motor supply when the transfer vehicle has reached its travel limit? N.A. ☐ Yes ☐ No ☐
- (h) Do the buffer switches cut off motor supply to the transfer vehicle when the buffer impacts upon an object? N.A. ☐ Yes ☐ No ☐
- (i) Are all other electromechanical interlocks working properly? N.A. ☐ Yes ☐ No ☐

4.6 Measured Speed of Transfer Vehicle at #no load / full load
(a) Speed (at mid-point of travel) _____m/s

- 4.7 Turntable
- (a) Have all turntables been operated satisfactorily when running at #no load / full load? N.A. ☐ Yes ☐ No ☐
- (b) Do the brakes engage and stop a turntable moving at rated speed when main power supply is cut from the system? N.A. ☐ Yes ☐ No ☐
- (c) Have the contacts at the aisle door been proved to ensure that when broken there is no movement of the turntable? N.A. ☐ Yes ☐ No ☐
- (d) Have the stopping devices on the turntable been proved so that when activated no movement of the turntable occurs? N.A. ☐ Yes ☐ No ☐
- (e) Are all other electromechanical interlocks working properly? N.A. ☐ Yes ☐ No ☐

4.8 Measured Speed of Turntable at #no load / full load
(a) Speed (at mid-point of travel) _____rpm

- 4.9 Landing Doors
- (a) Type of door *Horizontal / Vertical / Collapsible _____m
- (b) Dimensions of the door (LxWxH) _____V
- (c) Power supply to door control circuit _____N
- (d) Force withstood by the door lock _____s
- (e) Door opening time _____s
- (f) Door closing time _____s

- 4.10 Main door of the transfer cabin
- (a) Type of door *Horizontal / Vertical / Collapsible _____m
- (b) Dimensions of the door (LxWxH) _____V
- (c) Power supply to door control circuit _____N
- (d) Force withstood by the door lock _____s
- (e) Door opening time _____s
- (f) Door closing time _____s

5. Measurements of the Electrical System

5.1 Particulars of Lift Motor
Manufacturer _____ Serial No. _____
Rated Power _____kW Rated Voltage _____V Rated Current _____A
Speed _____rpm Frequency _____Hz

5.2 Particulars of Transfer Vehicle Motor
Manufacturer _____ Serial No. _____
Rated Power _____kW Rated Voltage _____V Rated Current _____A
Speed _____rpm Frequency _____Hz

5.3 Particulars of Carrier Robot Motor
Manufacturer _____ Serial No. _____
Rated Power _____kW Rated Voltage _____V Rated Current _____A
Speed _____rpm Frequency _____Hz

5.4 Particulars of Turntable Motor
Manufacturer _____ Serial No. _____
Rated Power _____kW Rated Voltage _____V Rated Current _____A
Speed _____rpm Frequency _____Hz

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- 5.5 Particulars of *MG Set Drive Motor / Convertor N.A. ☐
 Manufacturer_____ Serial No._____
 Rated Power_____kVA Rated Voltage_____V Rated Current_____A
 Speed_____rpm Frequency_____Hz
 (Note: Speed and frequency not applicable for convertor)

- 5.6 Current and Speed Tests of Lift (at mid-point of travel)

	Lift Motor Speed	Lift Speed	Lift Motor Input		System Input *MG Set/Convertor	
No Load Down	rpm	m/s	V	A	V	A
#No Load / Full Load Up	rpm	m/s	V	A	V	A

- 5.7 Current and Speed Tests of Transfer Vehicle (at mid-point of travel)

	Transfer Vehicle Motor Speed	Transfer Vehicle Speed	Transfer Vehicle Motor Input		System Input *MG Set/Convertor	
No Load	rpm	m/s	V	A	V	A
#Full Load	rpm	m/s	V	A	V	A

- 5.8 Current and Speed Tests of Carrier Robot (at mid-point of travel)

	Carrier Robot Motor Speed	Carrier Robot Speed	Carrier Robot Motor Input		System Input *MG Set/Convertor	
No Load	rpm	m/s	V	A	V	A
#Full Load	rpm	m/s	V	A	V	A

- 5.9 Current and Speed Tests of Turntable (at mid-point of travel)

	Turntable Motor Speed	Turntable Speed	Turntable Motor Input		System Input *MG Set/Convertor	
No Load	rpm	rpm	V	A	V	A
#Full Load	rpm	rpm	V	A	V	A

- 5.10 Overcurrent Protection Devices

	Lift Motor	MG Set Drive Motor	Convertor
Type			

Settings			
	Transfer Vehicle Motor	Carrier Robot Motor	Turntable Motor
Type			
Settings			

6. Overspeed Governor Tests

- 6.1 Car Governor N.A. ☐
 Governor Type_____ Serial No._____

		Electrical	Mechanical
Device Speed	Tripping	Marked	m/s
		Measured	m/s

State how the governor was tested on the installation:

*Simulation / Free Fall / Actual Overspeed / Others (please specify)_____

- 6.2 Counterweight Governor N.A. ☐
 Governor Type_____ Serial No._____

		Electrical	Mechanical
Device Speed	Tripping	Marked	m/s
		Measured	m/s

State how the governor was tested on the installation:

*Simulation / Free Fall / Actual Overspeed / Others (please specify)_____

7. Car Safety Gear Tests

Note: The following tests are only required to be conducted in examinations with load. If the tests are required, they should be conducted with the car descending, with the brake open and the machine continuing to run till the ropes or chains become slack.

- 7.1 Progressive Type N.A. ☐

- (a) Does the safety gear operate correctly when engaging at rated speed with the rated load uniformly distributed in the car?

N.A. ☐ Yes ☐ No ☐

OR

- (b) Does the safety gear operate correctly when engaging at levelling or inspection speed with 125% of the rated load uniformly distributed in the car?

N.A. ☐ Yes ☐ No ☐

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State the speed_____m/s

- 7.2 Instantaneous Type N.A. ☐
Does the safety gear operate correctly when engaging at rated speed with the rated load uniformly distributed in the car? Yes ☐ No ☐

7.3 What was the stopping distance in the test? _____m

- 7.4 After the car was brought to a halt in the above test, was the floor horizontal, or sloping less than 5% from horizontal? Yes ☐ No ☐

8. Counterweight Safety Gear Tests and Counterweight Inspection

Note 1: The following tests should be conducted with the counterweight descending, with the brake open and the machine continuing to run till the ropes or chains become slack.

- 8.1 Progressive Type N.A. ☐
(a) Does the safety gear operate correctly when engaging at rated speed with the car empty? N.A. ☐ Yes ☐ No ☐
OR
(b) Does the safety gear operate correctly when engaging at levelling or inspection speed with the car empty? N.A. ☐ Yes ☐ No ☐
State the speed_____m/s

- 8.2 Instantaneous Type N.A. ☐
Does the safety gear operate correctly when engaging at rated speed with the car empty? Yes ☐ No ☐

8.3 What was the stopping distance in the test? _____m

Note 2: The following inspection should be carried out after all dynamic tests have been completed.

- 8.4 Counterweight
Are there any visual defects on the whole counterweight Including frame, filler weights, brackets and their fixings? Yes ☐ No ☐

9. Ascending Car Overspeed Protection Means Test

9.1 Overspeed Governor Test N.A. ☐

- (a) Car Governor
Governor Type_____ Serial No._____

		Electrical		Mechanical	
Device	Tripping	Marked	m/s	Marked	m/s
Speed (upward)		Measured	m/s	Measured	m/s

State how the governor was tested on the installation:

*Simulation / Actual Overspeed / Others (please specify)_____

- (b) Counterweight Governor N.A. ☐
Governor Type_____ Serial No._____

		Electrical		Mechanical	
Device	Tripping	Marked	m/s	Marked	m/s
Speed (downward)		Measured	m/s	Measured	m/s

State how the governor was tested on the installation:

*Simulation / Actual Overspeed / Others (please specify)_____

9.2 Speed Reducing Element Test

- (a) Car Safety Gear N.A. ☐

The test should be conducted with the car ascending and the brake open.

- i. Does the safety gear operate correctly when engaging at present speed with the car empty? Yes ☐ No ☐
State the measured speed _____m/s
ii. What was the stopping distance in the test? _____m
iii. What was the deceleration in the test? _____m/s²

- (b) Counterweight Safety Gear N.A. ☐

The test should be conducted with the car ascending and the brake open.

- i. Does the safety gear operate correctly when engaging at present speed with the car empty? Yes ☐ No ☐
State the measured speed _____m/s
ii. What was the stopping distance in the test? _____m

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iii. What was the deceleration in the test? _____m/s²

(c) Rope Gripper N.A. ☐

The test should be conducted with the car ascending and the brake open.

i. Does the rope gripper operate correctly when engaging at present speed with the car empty? Yes ☐ No ☐

State the measured speed _____m/s

ii. What was the stopping distance in the test? _____m

iii. What was the deceleration in the test? _____m/s²

(d) Brake on Sheave N.A. ☐

The test should be conducted with the car ascending.

i. Does the brake on sheave operate correctly when engaging at present speed with the car empty? Yes ☐ No ☐

State the measured speed _____m/s

ii. What was the stopping distance in the test? _____m

iii. What was the deceleration in the test? _____m/s²

10. Unintended Car Movement Tests N.A. ☐

10.1 Subsequent to the operation for an upward moving lift car,
(a) the clearance between landing door sill and the apron _____mm
(b) the free distance from car sill to landing door lintel _____mm

10.2 Subsequent to the operation for a downward moving lift car,
(a) the horizontal distance between the well wall and the entrance frame of the lift car (along from the level of the landing sill to 1,200mm downward) _____mm
(b) the free distance from car sill to landing door lintel _____mm

10.3 What was the deceleration in the test? _____m/s²

11. Buffer Tests

11.1 For Car Buffers N.A. ☐

(a) When the car was brought into contact with the buffers at rated load at rated speed, or at a speed for which the stroke of the buffers has been calculated, was the operation satisfactory? (This test is only required to be conducted in examinations with load.) N.A. ☐ Yes ☐ No ☐

(b) Do the buffers recover automatically after operation? Yes ☐ No ☐

11.2 For Counterweight Buffers N.A. ☐

(a) When the counterweight was brought into contact with the buffers with the car empty at rated speed, or at a speed for which the stroke of the buffers has been calculated, was the operation satisfactory? Yes ☐ No ☐

(b) Do the buffers recover automatically after operation? Yes ☐ No ☐

11.3 For Transfer Vehicle Buffers N.A. ☐

(a) When the buffers of the transfer vehicle were brought into contact with its travel limit with the transfer vehicle at rated load at rated speed, or at a speed for which the stroke of the buffers has been calculated, was the operation satisfactory? (This test is only required to be conducted in examinations with load.) N.A. ☐ Yes ☐ No ☐

(b) Do the buffers recover automatically after operation? Yes ☐ No ☐

12. Overload Detection

(a) Overload detection is achieved by _____
(b) Does the overload detection device function satisfactorily? Yes ☐ No ☐

The following tests are only required to be conducted in examinations with load.

(c) Is the overload detection system triggered when a load exceeding 100 – 110% of the rated load of the MVPS is detected? N.A. ☐ Yes ☐ No ☐
(d) Once overload is detected, is the vehicle prohibited from being transferred onto the lift? N.A. ☐ Yes ☐ No ☐
(e) Once overload is detected, are audio and visual alarms activated? N.A. ☐ Yes ☐ No ☐

13. Locking Device Test

(a) Can the locking device fully engage and disengage at each floor level? Yes ☐ No ☐

(b) Can the system detect the fully engaged and fully disengaged position of the locking device? Yes ☐ No ☐

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The following test is only required to be conducted in examinations with load.

- (c) Can the locking device hold up a lift carrying 100% of the rated load, with the ropes/chains normally suspending the lift being tensionless? N.A. ☐ Yes ☐ No ☐

14. Emergency Stop & Traction Tests

- (a) Does the car stop under emergency conditions when travelling upwards at rated speed with the car empty? Yes ☐ No ☐
- (b) With the counterweight resting on its fully compressed buffers, is it impossible for the empty car to be raised under power? (This test is only required to be conducted for lifts that are suspended by ropes.) N.A. ☐ Yes ☐ No ☐

The following tests are only required to be conducted in examinations with load.

- (c) Does the car stop under emergency conditions with 125% of the rated load when travelling downwards in the lower part of the lift well at rated speed? N.A. ☐ Yes ☐ No ☐
- (d) What was the stopping distance of the car travelling downwards at rated speed and carrying 125% of the rated load under emergency stopping conditions? _____m

15. Operational / Safety Devices

15.1 For Transfer Cabin

Are the following devices, where fitted, operating effectively?

- | | | | |
|--------------------------------------|-------------------------------|------------------------------|-----------------------------|
| (a) Emergency Stop Switches | N.A. ☐ | Yes ☐ | No ☐ |
| (b) Over-length Sensors | N.A. ☐ | Yes ☐ | No ☐ |
| (c) Over-width Sensors | N.A. ☐ | Yes ☐ | No ☐ |
| (d) Over-height Sensors | N.A. ☐ | Yes ☐ | No ☐ |
| (e) Positioning Aids | N.A. ☐ | Yes ☐ | No ☐ |
| (f) Cabin Scanners | N.A. ☐ | Yes ☐ | No ☐ |
| (g) Cabin Motion Detectors | N.A. ☐ | Yes ☐ | No ☐ |
| (h) Main Door of Transfer Cabin | N.A. ☐ | Yes ☐ | No ☐ |
| (i) Main Door Obstruction Detectors | N.A. ☐ | Yes ☐ | No ☐ |
| (j) Vehicle Bottom Clearance Sensors | N.A. ☐ | Yes ☐ | No ☐ |
| (k) Vehicle Aligning Devices | N.A. ☐ | Yes ☐ | No ☐ |

- | | | | |
|-----------------------------------|-------------------------------|------------------------------|-----------------------------|
| (l) Wheel Barriers | N.A. ☐ | Yes ☐ | No ☐ |
| (m) Wheelbase Measurement Sensors | N.A. ☐ | Yes ☐ | No ☐ |
| (n) Vehicle Motion Detectors | N.A. ☐ | Yes ☐ | No ☐ |
| (o) CCTV | N.A. ☐ | Yes ☐ | No ☐ |

15.2 For Lift

Are the following devices, where fitted, operating effectively?

- | | | | |
|--|-------------------------------|------------------------------|-----------------------------|
| (a) Emergency Stop Switches | N.A. ☐ | Yes ☐ | No ☐ |
| (b) Locking Devices | N.A. ☐ | Yes ☐ | No ☐ |
| (c) Ultimate Limit Switches | N.A. ☐ | Yes ☐ | No ☐ |
| (d) Chain / Rope Slack Detection Devices | N.A. ☐ | Yes ☐ | No ☐ |
| (e) Landing Doors | N.A. ☐ | Yes ☐ | No ☐ |
| (f) Landing Door Obstruction Detectors | N.A. ☐ | Yes ☐ | No ☐ |
| (g) Vehicle Presence Detectors | N.A. ☐ | Yes ☐ | No ☐ |

15.3 For Transfer Vehicle

Are the following devices, where fitted, operating effectively?

- | | | | |
|--------------------------------|-------------------------------|------------------------------|-----------------------------|
| (a) Emergency Stop Switches | N.A. ☐ | Yes ☐ | No ☐ |
| (b) Ultimate Limit Switches | N.A. ☐ | Yes ☐ | No ☐ |
| (c) Anti-collision Sensors | N.A. ☐ | Yes ☐ | No ☐ |
| (d) Vehicle Presence Detectors | N.A. ☐ | Yes ☐ | No ☐ |

15.4 For Carrier Robot

Are the following devices, where fitted, operating effectively?

- | | | | |
|-------------------------------------|-------------------------------|------------------------------|-----------------------------|
| (a) Emergency Stop Switches | N.A. ☐ | Yes ☐ | No ☐ |
| (b) Bumpers | N.A. ☐ | Yes ☐ | No ☐ |
| (c) Bumper Sensors / limit switches | N.A. ☐ | Yes ☐ | No ☐ |
| (d) Anti-collision Sensors | N.A. ☐ | Yes ☐ | No ☐ |

16. Operation of the MVPS

- | | | | |
|--|-------------------------------|------------------------------|-----------------------------|
| (a) Does the induction loop at the entrance of the transfer cabin detect vehicles satisfactorily? | N.A. ☐ | Yes ☐ | No ☐ |
| (b) Does the user operation panel function satisfactorily? | N.A. ☐ | Yes ☐ | No ☐ |
| (c) Does the main door of the transfer cabin close automatically / remain in closed position after users confirmed completion of the parking procedures? | N.A. ☐ | Yes ☐ | No ☐ |
| (d) Does the main door of the transfer cabin close | | | |

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- automatically after users drove out of the transfer cabin? N.A. ☐ Yes ☐ No ☐
- (e) Are audio and visual alarms activated before opening and closing of the main doors of the transfer cabin? N.A. ☐ Yes ☐ No ☐
- (f) Are audio and visual alarms activated when a vehicle is about to depart from the lift to alert persons in the vicinity of the lift? N.A. ☐ Yes ☐ No ☐
- (g) Does the means to open the main and side door of the transfer cabin in an emergency operate effectively? N.A. ☐ Yes ☐ No ☐
- (h) Are intercoms installed inside and outside of the transfer cabin? N.A. ☐ Yes ☐ No ☐
- (i) Are the intercoms of the MVPS functional? N.A. ☐ Yes ☐ No ☐
- (j) Can a full vehicle storage process (i.e. start from user driving into the transfer cabin, finish with the vehicle parked in the parking space) be completed in automatic mode? N.A. ☐ Yes ☐ No ☐
- (k) Can a full vehicle retrieval process (i.e. start from vehicle being retrieved from the parking space, finish with the user driving out of the transfer cabin) be completed in automatic mode? N.A. ☐ Yes ☐ No ☐

17. Maintenance of the MVPS

- (a) Could the safety buffer zones be activated in the control system to ensure workers can safely access and conduct maintenance works on a transfer vehicle? N.A. ☐ Yes ☐ No ☐
- (b) Are demarcation markings provided to alert workers to stay within the safe zones for work? N.A. ☐ Yes ☐ No ☐
- (c) Are the safety photoelectric sensors, which are to be installed at the ends of the safety buffer zones before maintenance works, provided for the workers? N.A. ☐ Yes ☐ No ☐
- (d) Are the brackets, which are to be erected at the boundary of the safety buffer zones towards the transfer vehicle in service before maintenance works, provided for the workers? N.A. ☐ Yes ☐ No ☐
- (e) Are physical barriers, which are to be erected at a position between the parked TV and the brackets mentioned in part (d) before maintenance works, provided for the workers? N.A. ☐ Yes ☐ No ☐
- (f) Are legible signages provided on the storage levels to prompt workers to erect the safeguards mentioned in part (c) to (e) before maintenance works are conducted

- on a transfer vehicle while the other transfer vehicle on the same level is in service? N.A. ☐ Yes ☐ No ☐
- (g) Has a prop installed in the lift pit or other appropriate mechanical devices been provided to prevent the lift from lowering when workers are in the lift pit? N.A. ☐ Yes ☐ No ☐
- (h) If lowering of the lift is detected when workers are in the lift pit, does the prop or appropriate mechanical device trigger a switch to prohibit movement of the lift car? N.A. ☐ Yes ☐ No ☐
- (i) After workers accessed the lift pit, is the return to normal operation of the lift possible only after:
- the lift pit doors are closed and locked;
 - all stopping devices in the lift pit are inactive; and
 - the electrical reset device outside the lift well is operated?
- N.A. ☐ Yes ☐ No ☐
- (j) When workers are required to carry out works on the lift car top, is the lift only operable by control panels located on the lift car top? N.A. ☐ Yes ☐ No ☐
- (k) Is the machine room artificial lighting adequate for maintenance purposes? N.A. ☐ Yes ☐ No ☐
- (l) Are the machine room conditions satisfactory? N.A. ☐ Yes ☐ No ☐
- (m) Are the provisions for ventilating the machine room adequate? N.A. ☐ Yes ☐ No ☐

18. Retrieval of Vehicles During System Breakdown / Power Outage

- (a) Are the retrieval instructions kept in the machine room and control room? N.A. ☐ Yes ☐ No ☐
- (b) Can vehicles be retrieved during a system breakdown? (The test should be conducted with all equipment switched to local manual mode)) N.A. ☐ Yes ☐ No ☐
- (c) Can vehicles be retrieved during a power outage? (The test should be conducted during a simulated power outage) N.A. ☐ Yes ☐ No ☐

19. Electric Vehicle (EV) Chargers

- (a) Are EV charger(s) installed in the MVPS? Yes ☐ No ☐

The items below are only required to be checked if EV chargers are installed in the MVPS.

- (b) Are the EV charger(s) and their associated equipment

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- properly installed such that they do not affect the safe operation of the MVPS? N.A. ☐ Yes ☐ No ☐
- (c) Are appropriate safety devices installed to check that the devices connecting the EV charger to the vehicle do not affect the safe operation of the MVPS? N.A. ☐ Yes ☐ No ☐
- (d) Are the safety devices mentioned in part (c) properly installed such that they do not affect the safe operation of the MVPS? N.A. ☐ Yes ☐ No ☐

20. General

- (a) Are the maximum vehicle weight and dimensions displayed in a conspicuous position in the proximity of the MVPS? N.A. ☐ Yes ☐ No ☐
- (b) Are the operation instructions and warnings against misuse displayed in a conspicuous position in the proximity of the MVPS? N.A. ☐ Yes ☐ No ☐
- (c) Are the contact details of the MVPS operator displayed in a conspicuous position in the proximity of the MVPS? N.A. ☐ Yes ☐ No ☐
- (d) After pressing the emergency stop switch, does the corresponding part of the MVPS remain inoperable until the system has been reset and the emergency stop switch has been released? N.A. ☐ Yes ☐ No ☐
- (e) Are CCTVs connected to the CCTV monitors installed at the office of the MVPS operator or fault call centre? N.A. ☐ Yes ☐ No ☐
- (f) Is light level of 50 lux provided at locations where users and/or workers have access? N.A. ☐ Yes ☐ No ☐
- (g) Is light level of 200 lux provided at the control panels of the MVPS? N.A. ☐ Yes ☐ No ☐
- (h) Has a safety certificate, issued by a registered structural engineer certifying the MVPS to be structurally safe, been submitted to EMSD? N.A. ☐ Yes ☐ No ☐
- (i) Has a list of Qualified Persons, who have been trained and certified by the manufacturer to be competent in carrying out works on the MVPS, been submitted to EMSD? N.A. ☐ Yes ☐ No ☐
- (j) Has emergency lighting, which would illuminate for at least 1 hour upon power failure, been installed at positions to enable users / workers to evacuate safely? N.A. ☐ Yes ☐ No ☐

21. Declaration

I certify that on _____ the MVPS and all its associated equipment or machinery were thoroughly examined, and found to be free from obvious defects and in safe working order. I confirm also that the design and construction of the MVPS and all its associated equipment or machinery complied with the principles and requirements of **BS EN 14010:2003+A1:2009 Safety of machinery - Equipment for power driven parking of motor vehicles. Safety and EMC requirements for design, manufacturing, erection and commissioning stages** and the type approval document, where applicable, with the exception of the following items (if any, please specify).

Remarks / Exceptions:

The information in this examination report is an accurate record of the examination carried out on the aforementioned date.

Name & Registration No. of
Registered Lift Engineer

Signature

Date