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## RECOMMENDED PERFORMANCE TOOLS ELEVATOR INSTALLATION NEW/MODERNIZATION

July 19, 2023 Rev.7 (2 pages)

TYPE OF ELEVATOR				STANDARD PERFORMANCE				INTERMEDIATE		HIGH PERFORMANCE		PERFORMANCE SENSITIVE APPLICATIONS			
				Hydraulic		Traction		Traction		Traction		Hydraulic		Traction	
Unit of Measurement	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	Metric	Imperial	
Speed (typical range)	m/s	ft/m	0.4 – 0.75	80 - 150	0.63 - 1.25	125 - 250	1.0 and up	200 and up	2.5 and up	500 and up	0.4 – 0.75	80 - 150	0.63 - 1.25	125 - 250	
Capacity	Kg	lb.	1100	2500	1100	2500	1600	3500	1600	3500	1100	2500	1100	2500	
Stops			3	3	7	7	10	10	15	15	3	3	7	7	
Rise	mm	ft	7320	24	21950	72	32920	108	51200	168	7320	24	21950	72	
Floor Height	mm	ft	3660	12	3660	12	3660	12	3660	12	3660	12	3660	12	
<b>MOTION:</b>															
Contract Speed Regulation	+/- %	+/- %	up10/dn20	up10/dn20	10	10	5	5	5	5	up10/dn20	up10/dn20	10	10	
Stopping Zone	+/- mm	+/- in	13	½	13	½	7	¼	7	¼	13	½	13	½	
Acceleration/Deceleration (typical)	m/s <sup>2</sup>	ft/s <sup>2</sup>	0.76	2.5	0.5	1.6	0.6	2.0	1.0	3.2	0.76	2.5	0.5	1.6	
Vertical Vibration Z axis (constant acceleration)	milli-g	milli-g	30	30	25	25	25	25	20	20	30	30	25	25	
Hori. Vibration (S/S) Y axis	milli-g	milli-g	30	30	25	25	25	25	20	20	30	30	25	25	
Horiz. Vibration (F/B) X axis	milli-g	milli-g	30	30	25	25	25	25	20	20	30	30	25	25	
<b>TIMING:</b>															
Performance Time (maximum)	s	s	15	15	13	13	11	11	9	9	16	16	14	14	
<b>DOORS: (See notes 8,9)</b>															
Door Open Time Nominal	SSSO 36"(900mm)	s	s	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	3.5
	SSSO 42"(1100mm)	s	s	3.5	3.5	3.5	3.5	2.7	2.7	2.7	2.7	4.0	4.0	4.0	4.0
	SSCO 42"(1100mm)	s	s	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
	SSCO 48"(1200mm)	s	s	2.6	2.6	2.6	2.6	2.2	2.2	1.9	1.9	3.1	3.1	3.1	3.1
	TSSO 48"(1200mm)	s	s	3.4	3.4	3.4	3.4	3.0	3.0	3.0	3.0	3.9	3.9	3.9	3.9
	TSCO 59" (1500mm)	s	s	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0
Door Close Time Nominal	SSSO 36"(900mm)	s	s	4.5	4.5	4.5	4.5	4.0	4.0	3.5	3.5	5.5	5.5	5.5	5.5
	SSSO 42"(1100mm)	s	s	5.2	5.2	5.2	5.2	4.7	4.7	4.2	4.2	6.2	6.2	6.2	6.2
	SSCO 42"(1100mm)	s	s	3.5	3.5	3.5	3.5	3.0	3.0	3.0	3.0	4.5	4.5	4.5	4.5
	SSCO 48"(1200mm)	s	s	3.8	3.8	3.8	3.8	3.3	3.3	2.8	2.8	4.8	4.8	4.8	4.8
	TSSO 48"(1200mm)	s	s	5.1	5.1	5.1	5.1	4.6	4.6	4.1	4.1	6.1	6.1	6.1	6.1
	TSCO 59"(1500mm)	s	s	4.0	4.0	4.0	4.0	3.5	3.5	3.0	3.0	5.0	5.0	5.0	5.0
<b>SOUND: (maximum)</b>															
Door Sound (opening or closing)	dBA	dBA	70	70	67	67	67	67	64	64	70	70	67	67	
Sound in Car at Rated Speed	dBA	dBA	65	65	60	60	60	60	60	60	65	65	60	60	
Sound in Stopped Car, Door Closed, Fan On	dBA	dBA	65	65	65	65	65	65	60	60	65	65	65	65	
Sound in Machine Room	dBA	dBA	85	85	80	80	80	80	80	80	85	85	80	80	
Sound at Landing, Adjacent to Machine	dBA	dBA	70	70	70	70	65	65	62	62	70	70	70	70	
<b>HEAT EMISSION: (maximum)</b>															
Speed (See Note 14)			0.63	125	0.75	150	1.75	350	3.5	700	0.63	125	0.75	150	
At Hoist Machine Location	W	Btu/h	3200	11000	2000	6600	1200	4000	4000	13500	3200	11000	2000	6600	
At Control Location	W	Btu/h	300	1000	700	2400	3200	11000	2000	6500	300	1000	700	2400	

\* See Notes on back/below.

**Performance Standards based on the following:**

1. Duties are typical for equipment in each classification.
2. Hydraulic application equal to direct hydraulic driving machine.
3. Standard and intermediate performance traction use static drives with resistor braking.
4. High performance applications are thought to have line regenerative static drives.
  
5. Performance Sensitive Applications includes units in buildings like Seniors Homes or Homes Critical Care facilities where passenger transfer times may be slower.
6. Typical are assumed with a maximum of two people in the car.
7. Contract speed on regulation for hydraulic elevator takes the rated speed and operating in the down direction.
8. Vibration measurements do not use door operation and are peak to peak.
9. Door closing times are subject to kinetic energy to help reduce and limit the speeds of doors per ASME A17.1/CSA B44. Times include .5 seconds for verification of lock and "motor ramp up"
10. Door close times are assumed using standard weight hollow metal doors
11. All sound measurements should be with the fan off.
12. Door sound measurements taken with the car not running.
13. Ambient noise shall be a maximum of 50 dBA.
14. Sound in machine rooms and spaces will be measured with only one elevator operating.
15. Heat released is based on 35% duty factor. An surge above 35% will increase heat radiation.
16. Heat radiation is calculated for the car speed indicated and at the typical capacity shown for that elevator.

**PERFORMANCE TIME ADJUSTMENT FACTORS**

(from 12'-0" / 3660mm standard floor height)

150 FPM (.75m/s)	.40 sec/ft	1.31 sec/m
200 FPM (1.02m/s)	.30 sec/ft	.98 sec/m
250 FPM (1.28m/s)	.24 sec/ft	.79 sec/m
350 FPM (1.74m/s)	.17 sec/ft	.56 sec/m
500 FPM (2.54m/s)	.12 sec/ft	.39 sec/m
700 FPM (3.56m/s)	.09 sec/ft	.30 sec/m
1000 FPM (5.08m/s)	.06 sec/ft	.20 sec/m