RIDE QUALITY

Case Study: Boston Luxury Condominium

THE PLACE:

A Luxury Condominium In Boston

THE PROBLEM:

Poor Ride Quality

In early 2007, ELSCO received a series of phone calls from an elevator consultant and a major elevator contractor, who had just completed work on a high-profile luxury condominium development in downtown Boston. Both consultant and contractor reported very poor ride quality in the newly-installed 1,000 fpm, 3,500 lbs capacity (5.0 m/s, 1,600 kg capacity) passenger elevators. Condo owners in the building had begun to complain, feeling that the ride quality was not commensurate with the multimillion-dollar prices of their homes.

THE ROOT CAUSE:

Poor Rail Alignment

ELSCO personnel visited the job site to assess the problem, and determined that the root cause of the ride quality issues was poor rail alignment, caused by a rushed installation schedule. DBG (distance between guide rails) measurements varied at different points in the hoistway by nearly one full inch (25 mm). The root-cause fix to this problem would have been a thorough rail re-alignment. Unfortunately, such re-alignments in occupied buildings are expensive, time-consuming, and logistically problematic – taking new elevators out of service is never popular with building owners. Both contractor and consultant needed a cost-effective solution with minimal downtime.

THE ELSCO SOLUTION:

Express-3 10-inch Roller Guides

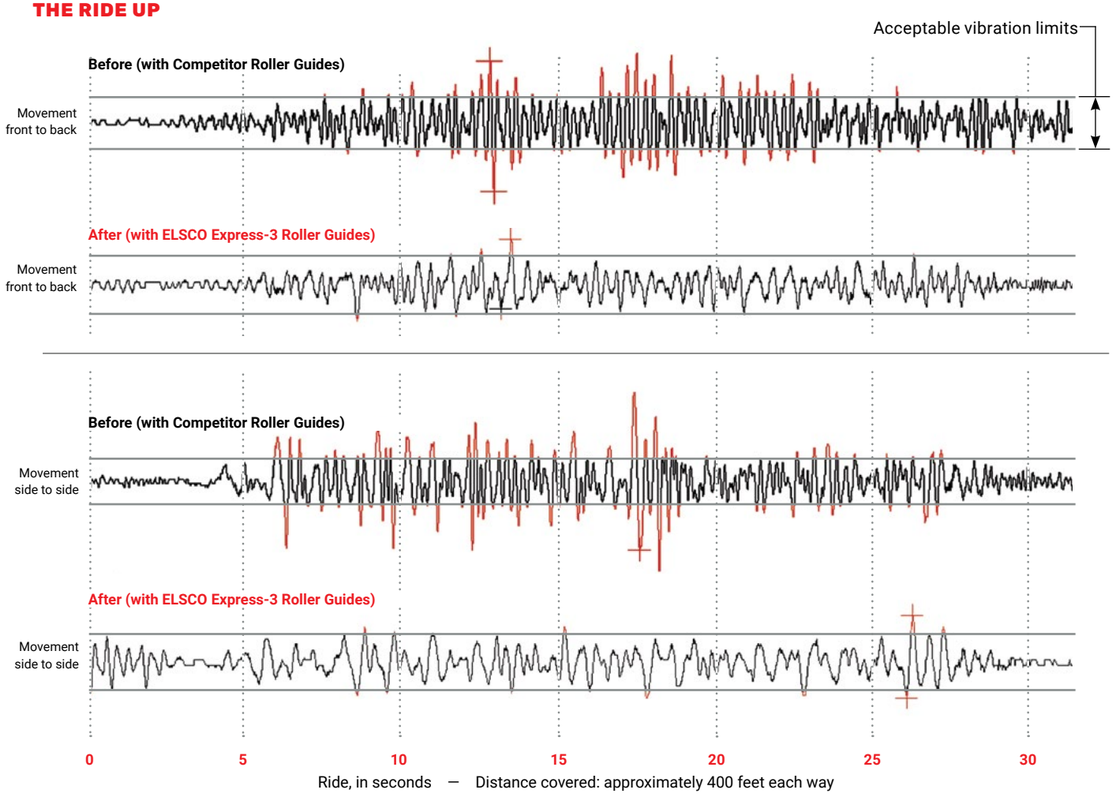
ELSCO proposed replacement of the existing roller guides with ELSCO Express-3 roller guides. Express-3 guides incorporate patented, shock-absorbing elastomeric pivot bushings, 10-inch (254 mm) neoprene roller wheels, and high-quality construction to dramatically reduce the effects of misaligned rails – at a fraction of the cost of rail re-alignment. Furthermore, the simple mounting and comprehensive instructions included with all ELSCO roller guides make for quick and painless installation. Contractor and consultant agreed to try ELSCO Express-3 roller guides, and together with ELSCO technicians, they took ride quality readings to measure the results.

THE RESULT:

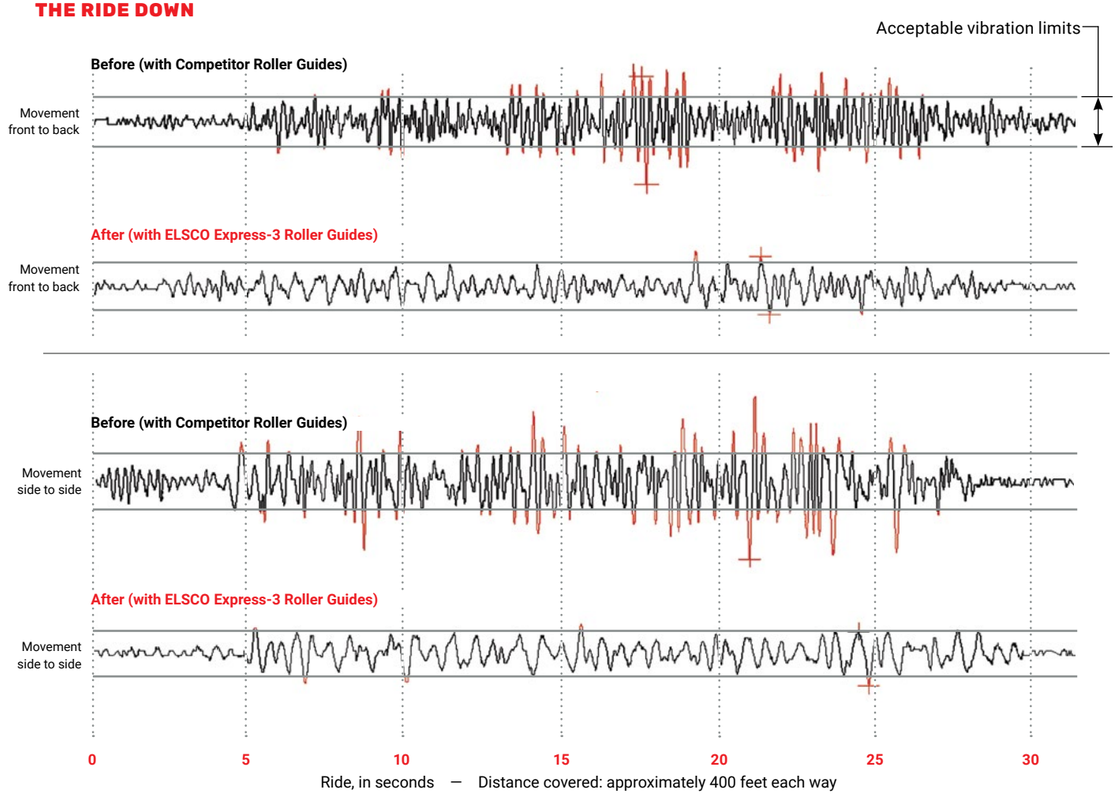
Dramatic Improvements in Ride Quality

ELSCO Express-3 guides improved the ride quality in a dramatic, measurable fashion. With the help of ride quality analysis instrumentation, ELSCO was able to determine that maximum peak-to-peak lateral accelerations and A95 “average” lateral accelerations were reduced by 50% or more. (See chart next page.) Both consultant and contractor were pleased with the ease, low cost, and effectiveness of the ELSCO solution.

THE RIDE UP



THE RIDE DOWN



THE RESULT, CONTINUED

The chart below summarizes actual ride quality measurements from before and after the installation of ELSCO Express-3 roller guides, as measured by the Physical Measurement Technologies EVA-625 elevator vibration measurement device. All vibration units shown are in milli(g) of acceleration and represent the car's lateral motion during the ride.

X-Axis readings represent vibration in the car's front-to-back direction – towards and from the elevator doors. Y-Axis readings represent vibration in the car's side-to-side direction.

Max Pk-Pk values show the amplitude of the single largest peak-to-peak vibration experienced during the ride. Maximum peak values are useful for isolating particularly bad rail joints or problem spots in the hoistway, but represent only one point in the ride. A95 values are defined as the range within which 95% of the vibrations experienced during the ride fall. A95 readings are useful because they provide a more general description of the entire ride.

Actual Ride Quality Measurements

High Speed (1,000 fpm = 5.0 m/s) Elevator Cars, Condominium Tower in Boston. As measured with PMT EVA-625.

		X-AXIS (FRONT-TO-BACK)		Y-AXIS (RAIL-TO-RAIL)	
		MAX PK-PK	A95	MAX PK-PK	A95
COMPETITOR ROLLER GUIDES					
Ride #1	Down	21.2	14.3	29.0	19.2
Ride #2	Up	25.7	15.9	34.3	19.6
Ride #3	Down	20.8	14.7	27.8	20.0
Ride #4	Up	25.3	16.3	35.5	20.8
Competitor Averages		**23.3**	**15.3**	**31.7**	**19.9**
ELSCO EXPRESS-3 ROLLER GUIDES					
Ride #1	Down	11.8	7.3	11.0	10.2
Ride #2	Up	11.8	7.3	14.3	9.8
Ride #3	Down	11.8	7.8	11.4	9.8
Ride #4	Up	11.4	7.8	14.7	10.2
ELSCO Averages		**11.7**	**7.6**	**12.9**	**10.0**
Improvement from ELSCO Guides		**50%**	**51%**	**59%**	**50%**

Check out our full range of high-performance roller guides, designed to reduce noise and improve ride quality in every elevator application. Our 70 years of supplying top quality product to the industry prove that, at ELSCO...We are ride quality.


EXPRESS-3


EXPRESS-6


MODEL A


MODEL B


MODEL C


MODEL D


MODEL E


SWIVEL SLIDE GUIDES