

### Application Information

#### Resultant Door Force from Stairwell Pressurization

As multi-story buildings grow in height and complexity, there is a continued need to provide safe working environments for the occupants in these massive complexes. Building codes require the design of stairwells that provide access to escape routes in case an emergency evacuation is necessary.

In order to keep smoke from entering the stairwells and impede a safe evacuation path, controlled pressurized air is generated by the air handling units of the HVAC system and pumped into the stairwell shafts. If not properly controlled and balanced, the HVAC system can provide too much air pressure in the shafts creating excessive force and resistance on each level's entry doors. This excessive level of pressurized force can make it difficult for many occupants to open the door to gain access to the safety route stairwell.

To find this balance between the necessary air pressurization in relation to the ideal door force that enables easy occupant access, a top-tier HVAC building solutions integrator needed to test their system's settings on a new installation. Utilizing a Shimpo FGE-10XY 10lb (4.5 kg) digital force gauge, a technician with gauge in-hand performed a simple push test on several floor's entry points. The force gauge displayed the maximum amount of force required to open the interior doors to the stairwell. After a few iterations and adjustments on the HVAC air supply, the technicians obtained the door force levels they required that were within the accepted local government building codes. They passed this information along to the general contractor that all systems were properly commissioned for occupants to start moving into the facilities.

#### Equipment Used

- FGE-10XY with included flat compression fitting.



Checking door force to access pressurized stairwell.