

Automated Vertical Bike Rack System

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Abstract

The vertical bike rack storage system addresses an increasing need to store bikes conveniently up and out of the way, without the dangers of manually lifting the bike into position. With the baby boomers generation staying active longer than previous generations and cycling becoming increasingly more popular with contemporary youths the bicycle is a platform that offers both endless recreation and conventional transport, though most homes don't have dedicated space for storing bikes. The Vertical Bike Rack System, also known as the VBR, removes the physical effort and storage boundaries that face many cyclists. By utilizing a ball screw driven trolley and capitalizing on repurposed locking wheel chock technology the VBR uses a push button activated motor to drive the bike up the wall into storage and back down to floor level where the cyclist simply uses a "roll-on" method to lock the bike securely into the trolley. This zero-force method is much safer for the majority of today's riders who ride for recreation rather than sport or exercise purposes. The ease of push button access also eliminates the struggle to get a bike out of storage that normally would discourage a rider from using their bike. In this way the VBR also serves the social imperative of promoting healthy active lifestyle by helping to remove the obstacles between users and equipment. The VBR rigidly secures bikes ensuring that they won't fall out of storage while in the vertical position. The use of the ball screw driven trolley also means that in a black-out situation the VBR trolley will remain in the storage position instead of dropping. The VBR aims to serve a wide audience of users and was designed to mount to standard sixteen inch stud walls. This device fills a niche for automated bike storage that is more stream lined than current industry standard solutions which use wench driven cargo racks that hold bikes in a vertical position and would still require lifting a second or third bike from an above chest height rack.