

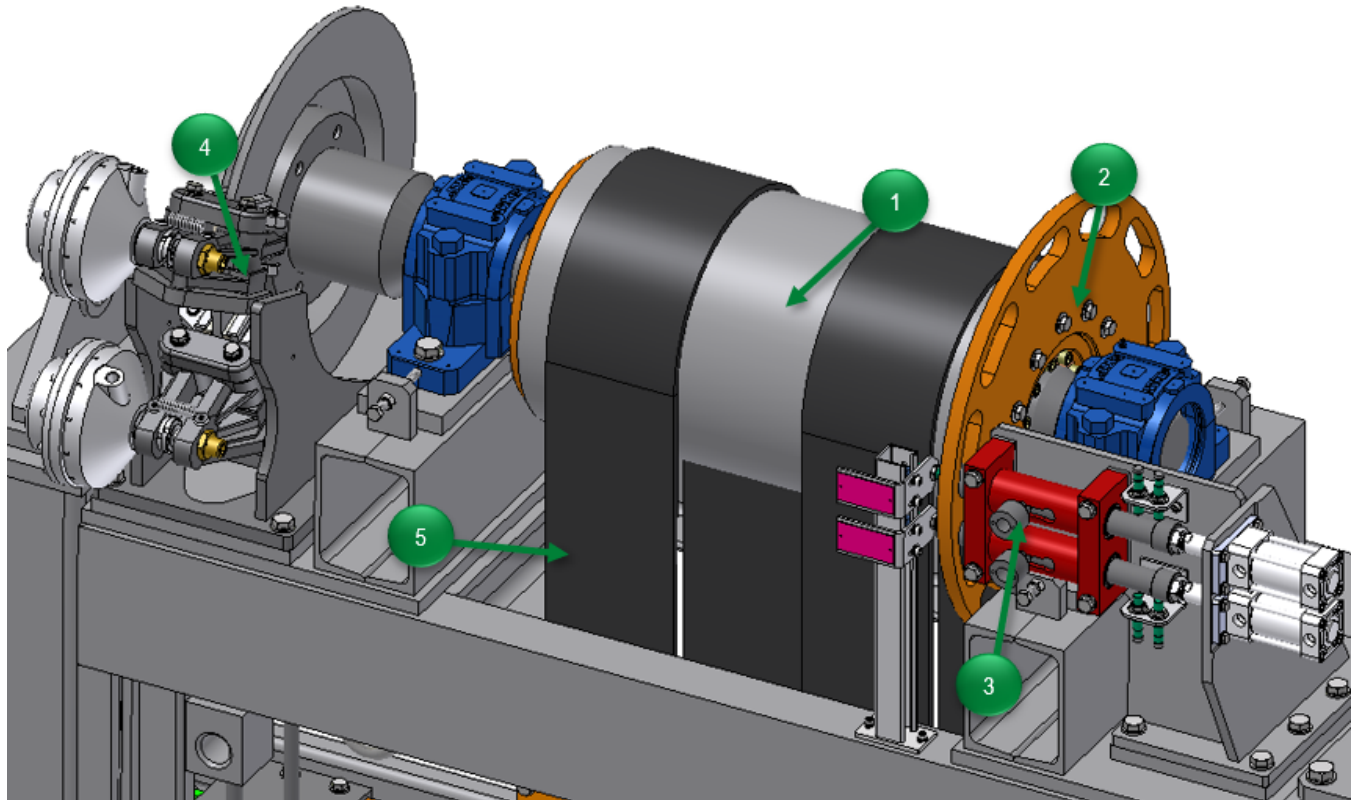
# Vertical Drop Lifter Components

Your Asset system contains the following major components:

- *VDL Drum Assembly*
- *VDL Carriage Assembly*
- *VDL Drive Assembly*



# VDL Drum Assembly



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1 Drum
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3 Safety Shot Pin Assembly
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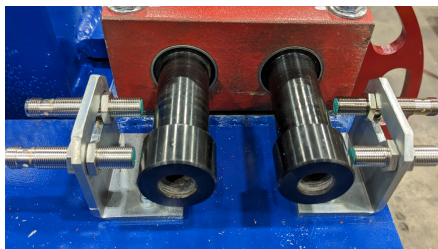
5 Lifting Belts
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2 Star Wheel
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4 Disc Brakes

## VDL Drum Assembly Overview

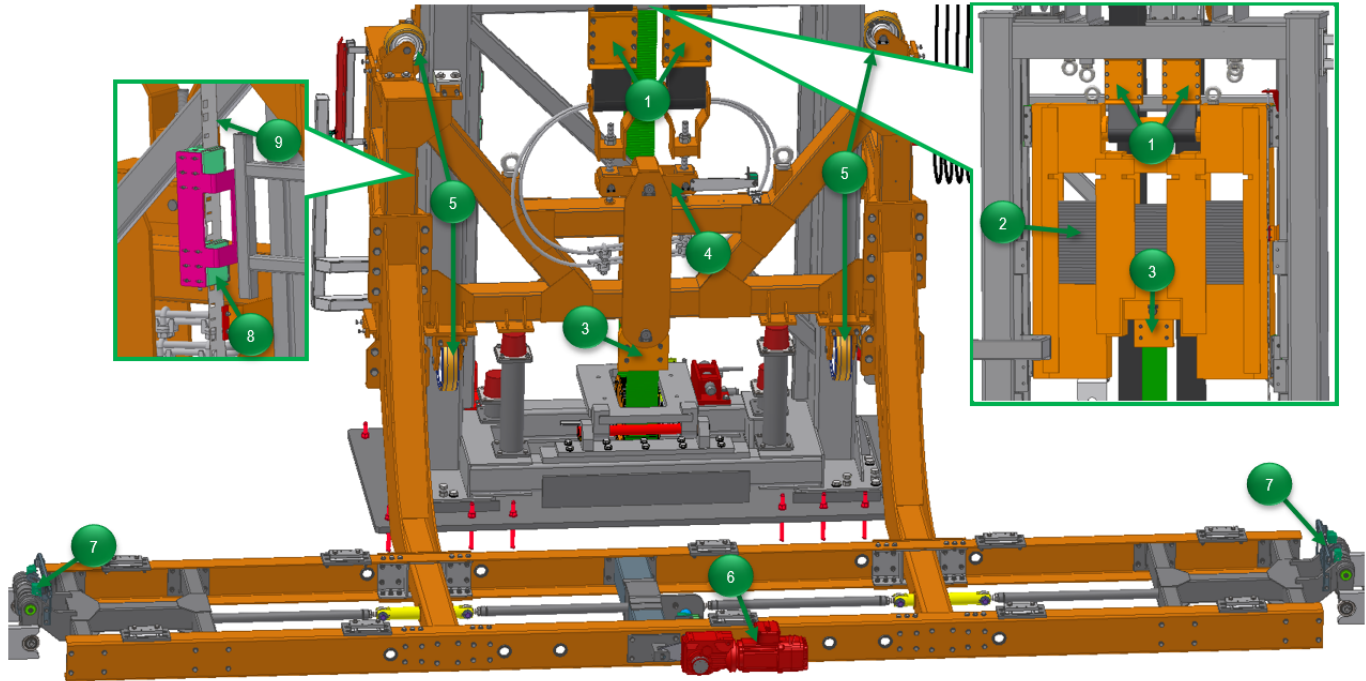
At the top of the VDL are more components of the drive system. They are the belt drum with a star wheel, a pneumatically driven safety shot pin assembly on one side of the drum, and disc brakes on the other side of the drum. A pair of smooth cable-reinforced lift belts rides on the belt drum and carries the combined weight of the lift carriage and counterweight.



 Safety shot pin assembly

During normal operation, the disc brakes engage after the VDL completes a lifting motion. Additionally, the disc brakes will engage if an E-Stop occurs. The cylinders on the safety pin assembly will fire the two safety pins upon which at least one will pass through the star wheel. This will mechanically lock the belt drum preventing any travel by the lift carriage and counterweight. Switches on the safety pin assembly will inform the system if the pins are in the retracted or extended position.

# VDL Carriage Assembly



- |                                      |                                |                             |
|--------------------------------------|--------------------------------|-----------------------------|
| <b>1</b> Drum Belt Connection Plate  | <b>4</b> Pivot Assembly        | <b>7</b> Positioning Device |
| <b>2</b> Counter Weight              | <b>5</b> Guide Wheels          | <b>8</b> Code Rail Reader   |
| <b>3</b> Drive Belt Connection Plate | <b>6</b> Positioning Gearmotor | <b>9</b> Code Rail          |

## VDL Carriage Assembly Overview

The VDL carriage assembly is dual belt supported and anchors to the top of a counterweight assembly. These lift belts attach to a pivot assembly within the carriage to detect a loose or broken belt condition. The lifting action is ribbed belt driven by a floor mounted drive assembly where the belts connect to the carriage and bottom of the counterweight.

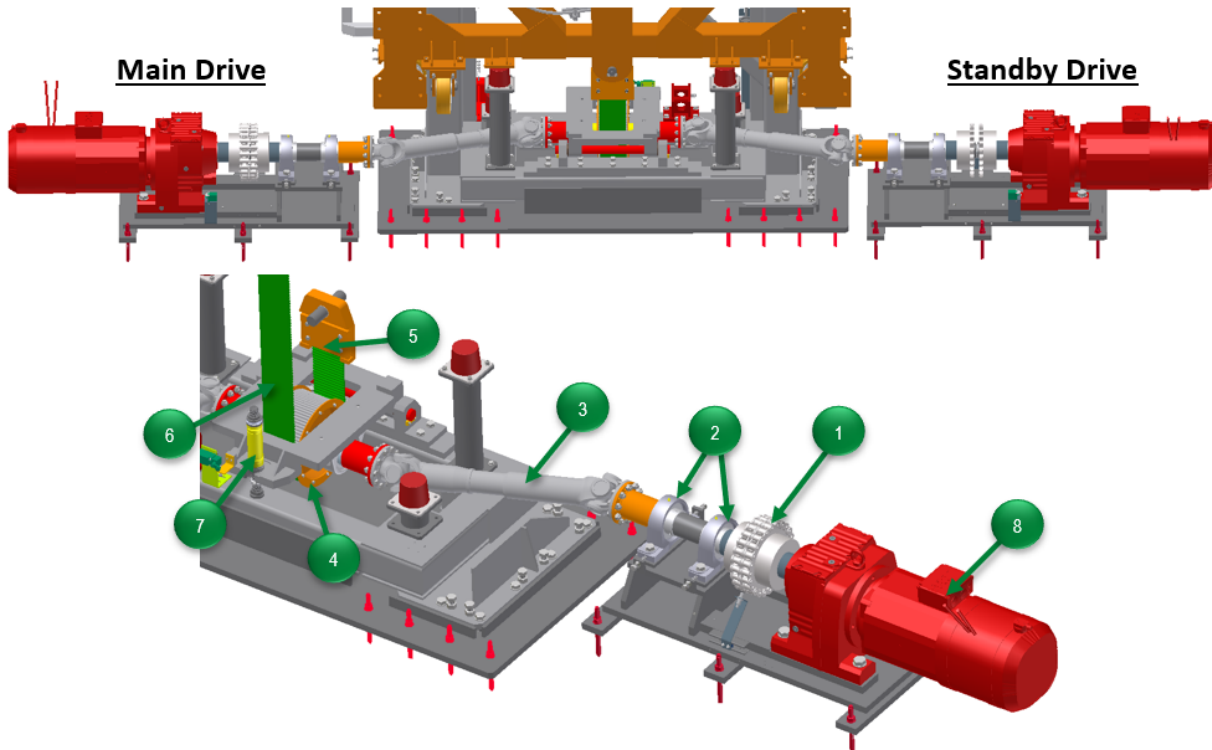
To provide lateral and transverse stability, guide wheels are mounted to the outer portion of the H-Beam posts and guides the VDL carriage assembly. Likewise slide pads at the corners of the counterweight assembly ride on the flange on the inner portion of the H-Beam to control side-to-side and back-and forth swaying.

The VDL uses a code rail mounted on a vertical rail between the beams and a code rail reader mounted on the carriage to accurately position the carriage. An electric motor driven positioning device extends levers at each side into an external reference positioning device assembly that mounts to the floor and positions the carriage. The system also has a carriage overtravel limit switch.



▲ Carriage positioning device

# VDL Drive Assembly



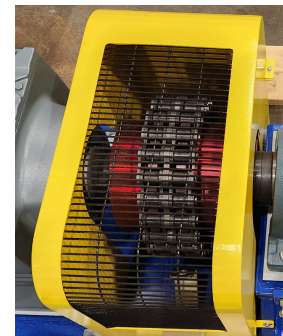
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|-----------------------|-----------------------------|-----------------------|
| Chain coupling        | Drive Belt Pulley           | Torque Tension Spring |
| Pillow Block Bearings | Drive Belt Connection Plate | Gearmotor             |
| Cardan Shaft          | Drive Belt                  |                       |

## VDL Drive Assembly Overview

The drive assembly is at floor level and mounts to the base of the lift frame. There are two gearmotors installed: main drive and standby drive. A chain couple is utilized to ensure engagement and is monitored by sensors.

The drive assembly consists of a belt pulley whose shaft is bearing supported, the gearmotor and a driveshaft with universal joints that connects the gearmotor to the pulley. This part of the lift assembly powers the toothed belt that pulls either the lift carriage or counterweight down.

A torque tension spring is installed at the base of the drive assembly and maintains tension for the drive belt within the pulley.



Chain coupling engaging the gearmotor