CONNECTION TO FUTURE

STOCK CODE: 300351

YONGGUI

Yonggui Electric
Airtight Plug Door System

CONTENTS

I Door System Overview

II Component Description

III Verification & Calculation

IV Product Advantages

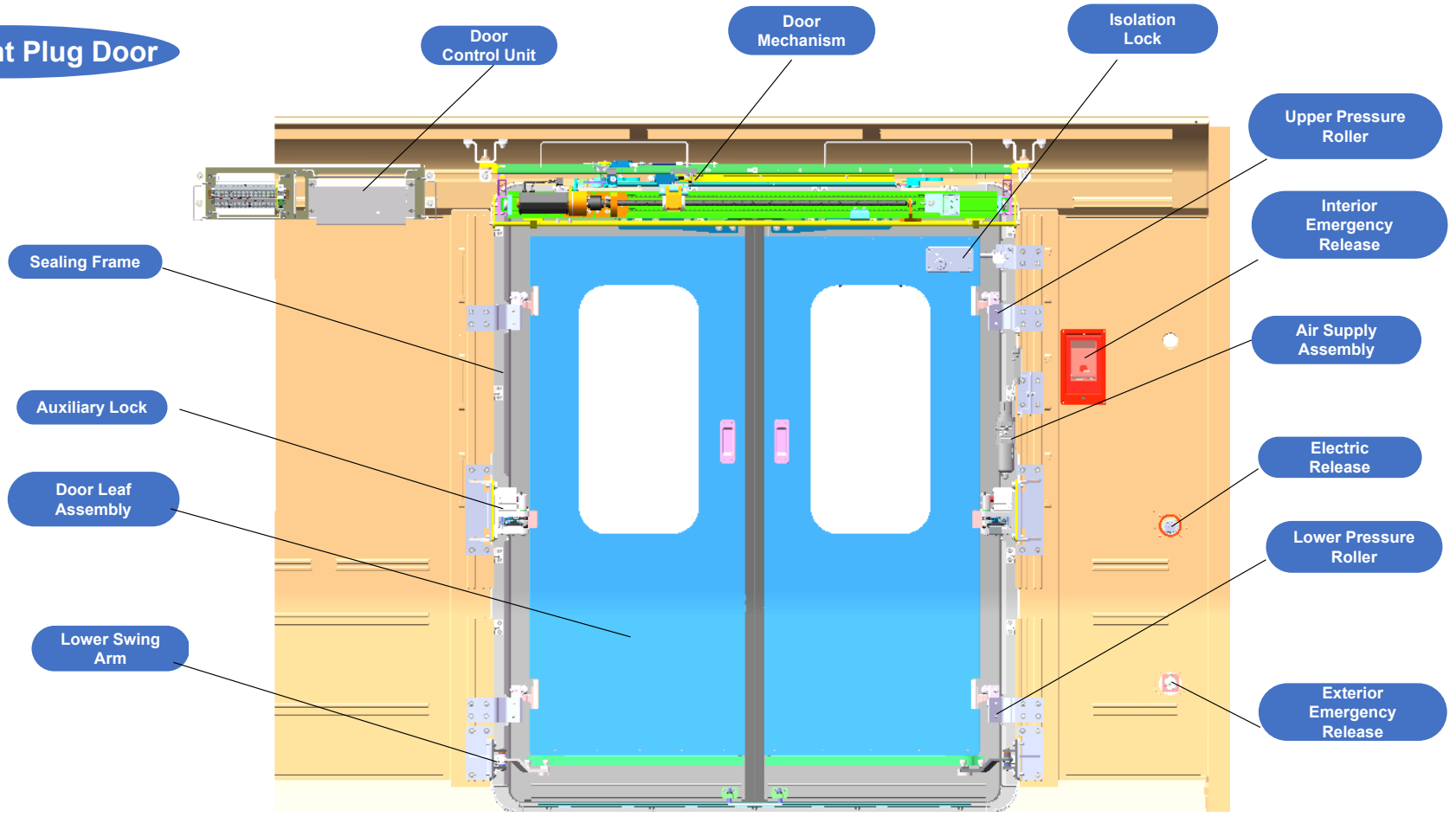
Door System Overview

PART ONE

Door System Overview

Electric Double-Leaf Airtight Plug Door

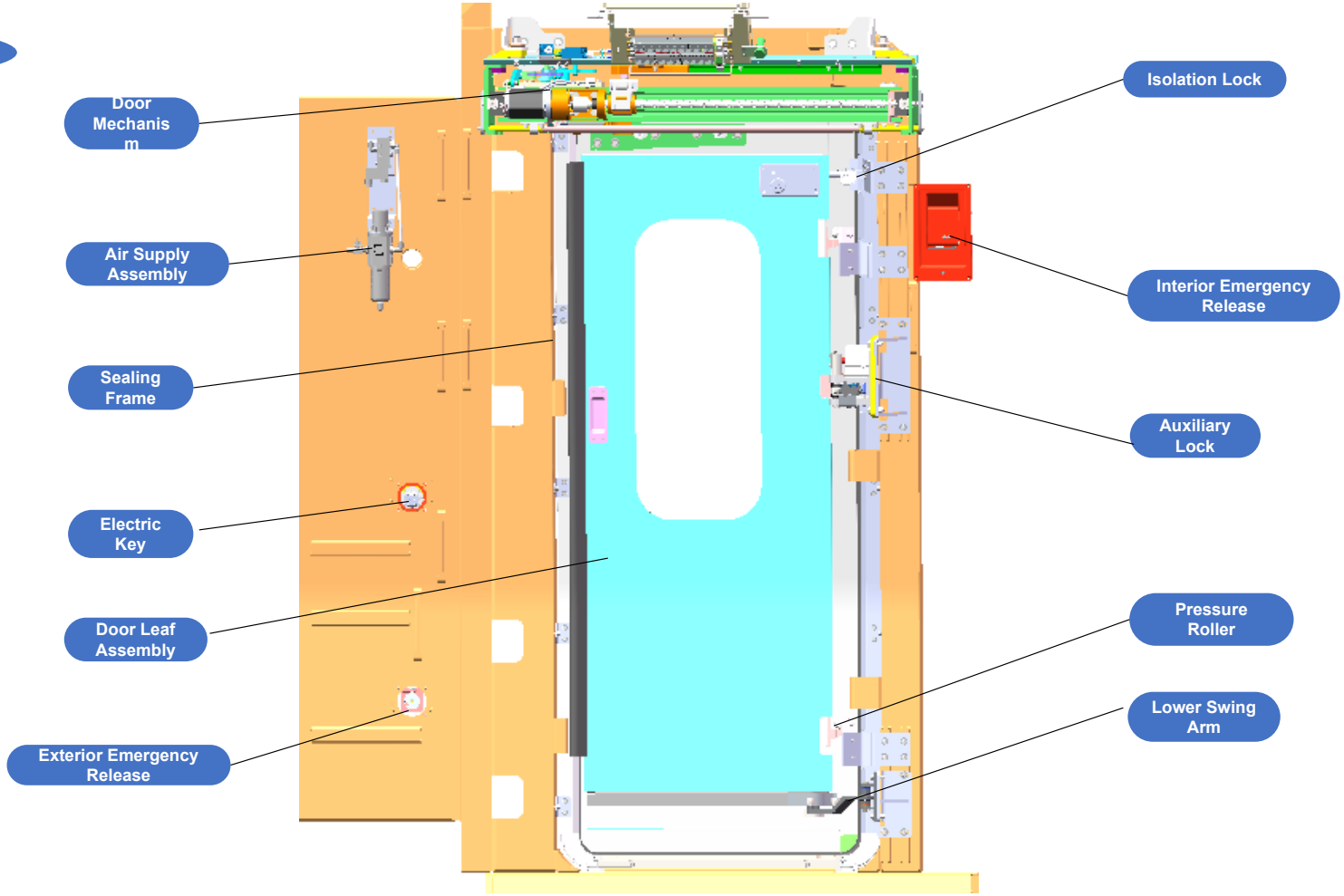
- Direct Motor-to-Screw Main Drive
- Independent Locking, Safe & Reliable
- Linear-Guide Suspension, Stable Operation
- Compact Structure, Easy Maintenance



Door System Overview

Electric Single-Leaf Airtight Plug Door

- Direct Motor-to-Screw Drive
- Independent Locking, Safe & Reliable
- Linear-Guide Suspension, Stable Operation
- Compact Structure, Easy Maintenance



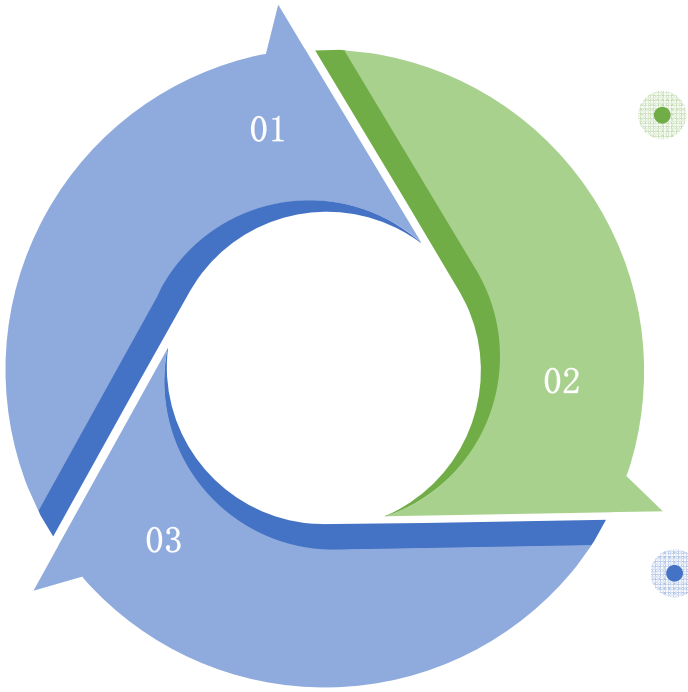
PART TWO

Component Description

Component Description

Drive Mechanism

More compact installation envelope; maintenance can be performed within the doorway area. Mature, stable modular design.



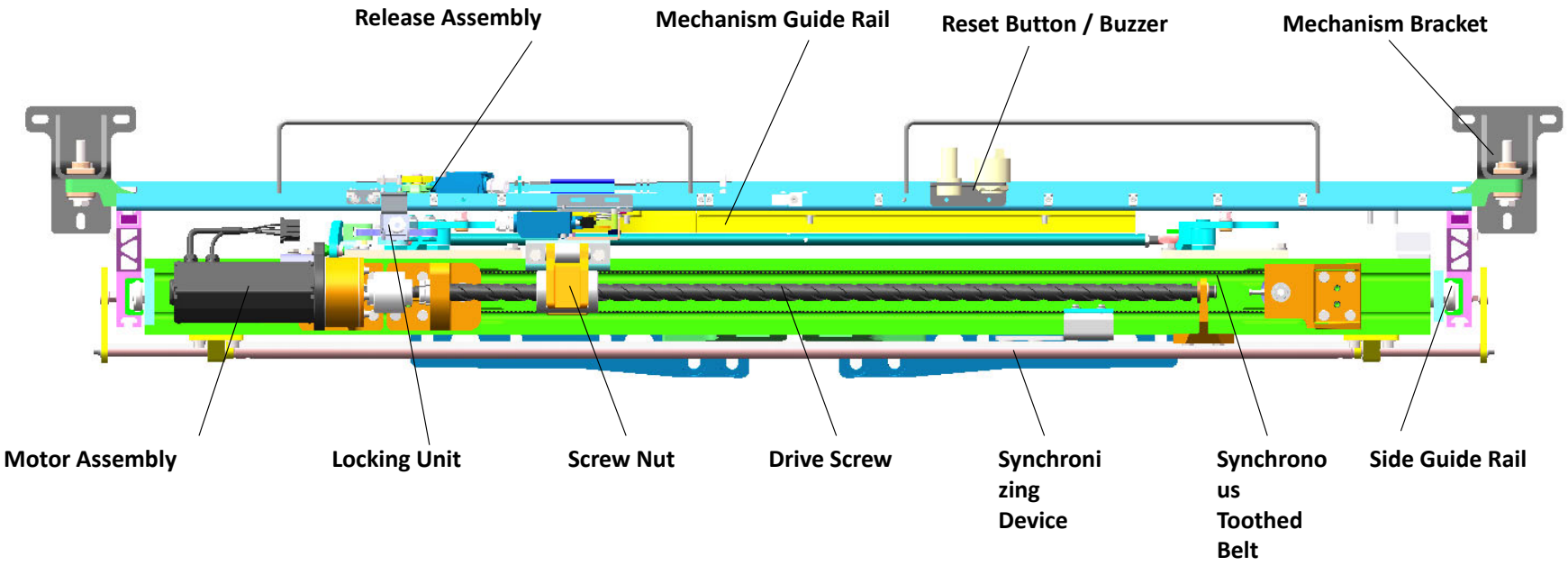
Door Leaf Assembly

Optimized structural design, adaptable to different speed classes with an excellent sealing solution.

Auxiliary Locking

Optimized locking structure for lower noise and a more comfortable passenger experience.

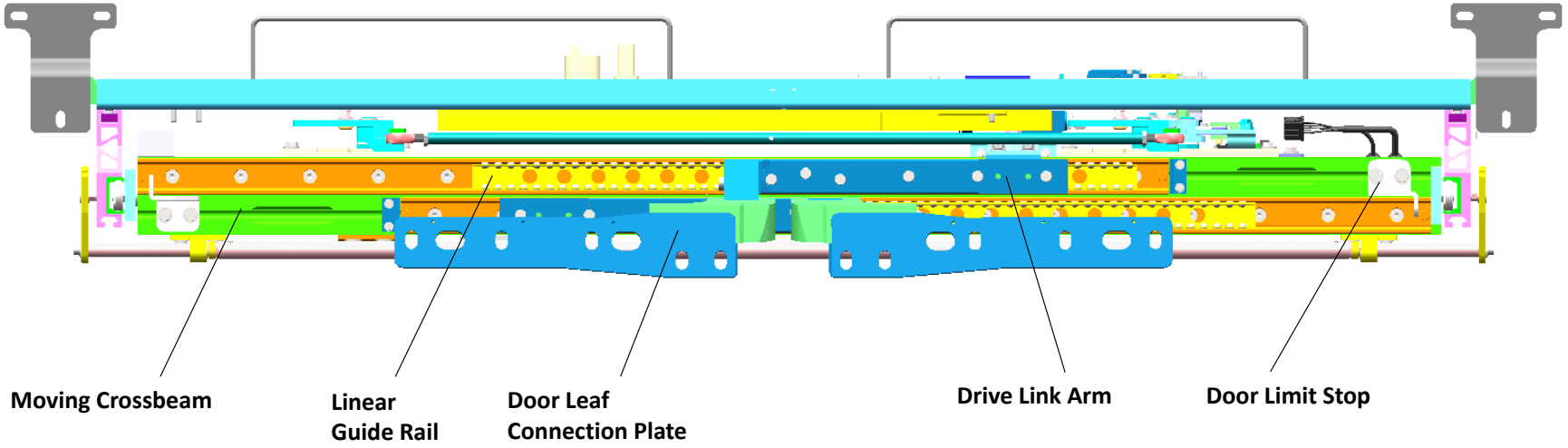
Drive Mechanism



Interior View

Component Description

Drive Mechanism

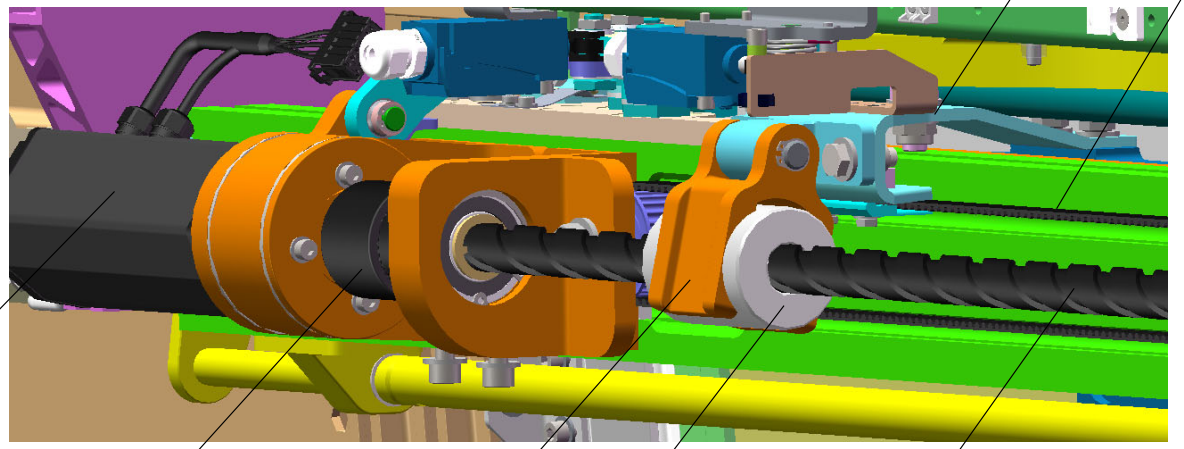


Exterior View

Component Description

Drive Principle

Interior View

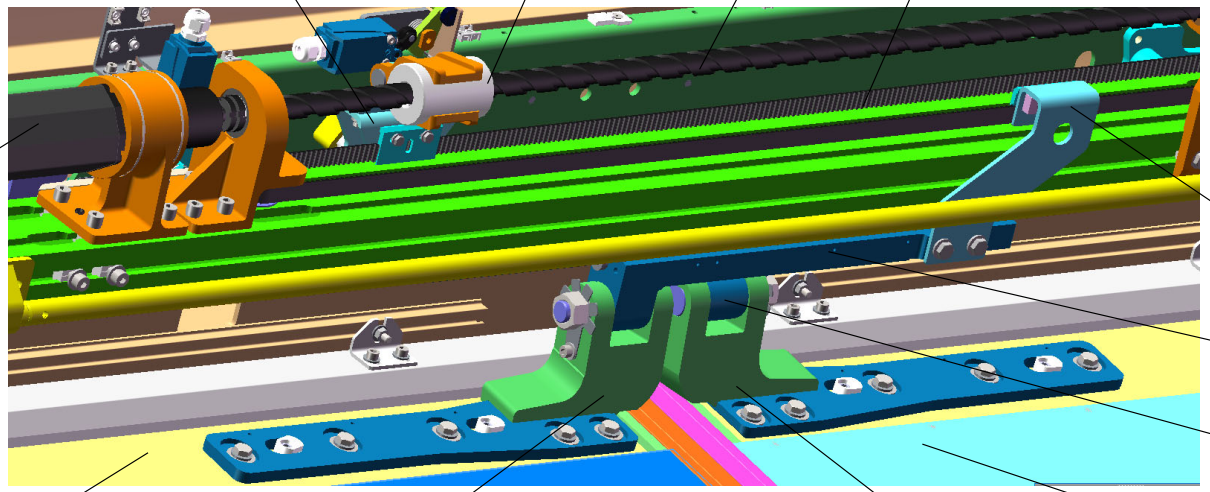


- Motor rotation drives the screw through the coupling, converting rotary motion into linear motion of the screw nut. The screw nut is connected to the toothed-belt connection plate via a fork, driving the synchronous toothed belt to achieve linear reciprocating motion.

Component Description

Drive Principle

Interior View

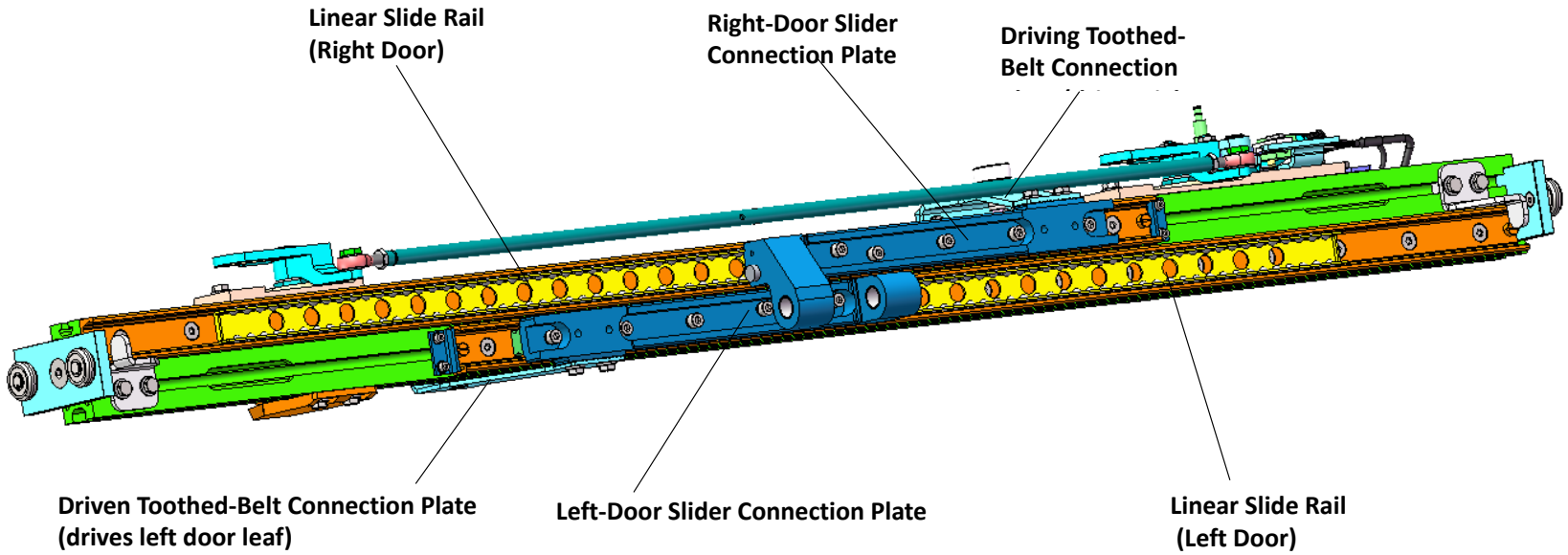


- The driving toothed-belt connection plate is powered by the linear motion of the screw nut, driving the toothed belt linearly and, together with the right-door slider connection plate, moving the right door leaf for opening and closing. Meanwhile, because the upper and lower toothed belts move synchronously, the lower belt drives the driven toothed-belt connection plate and the left-door slider connection plate to move the left door leaf for opening and closing.

Component Description

Drive Principle

Exterior View



- Through the synchronized reciprocating motion of the driving and driven toothed-belt connection plates, the toothed belt drives the left- and right-door slider connection plates to move within the linear slide rails (load-bearing components).

Component Description

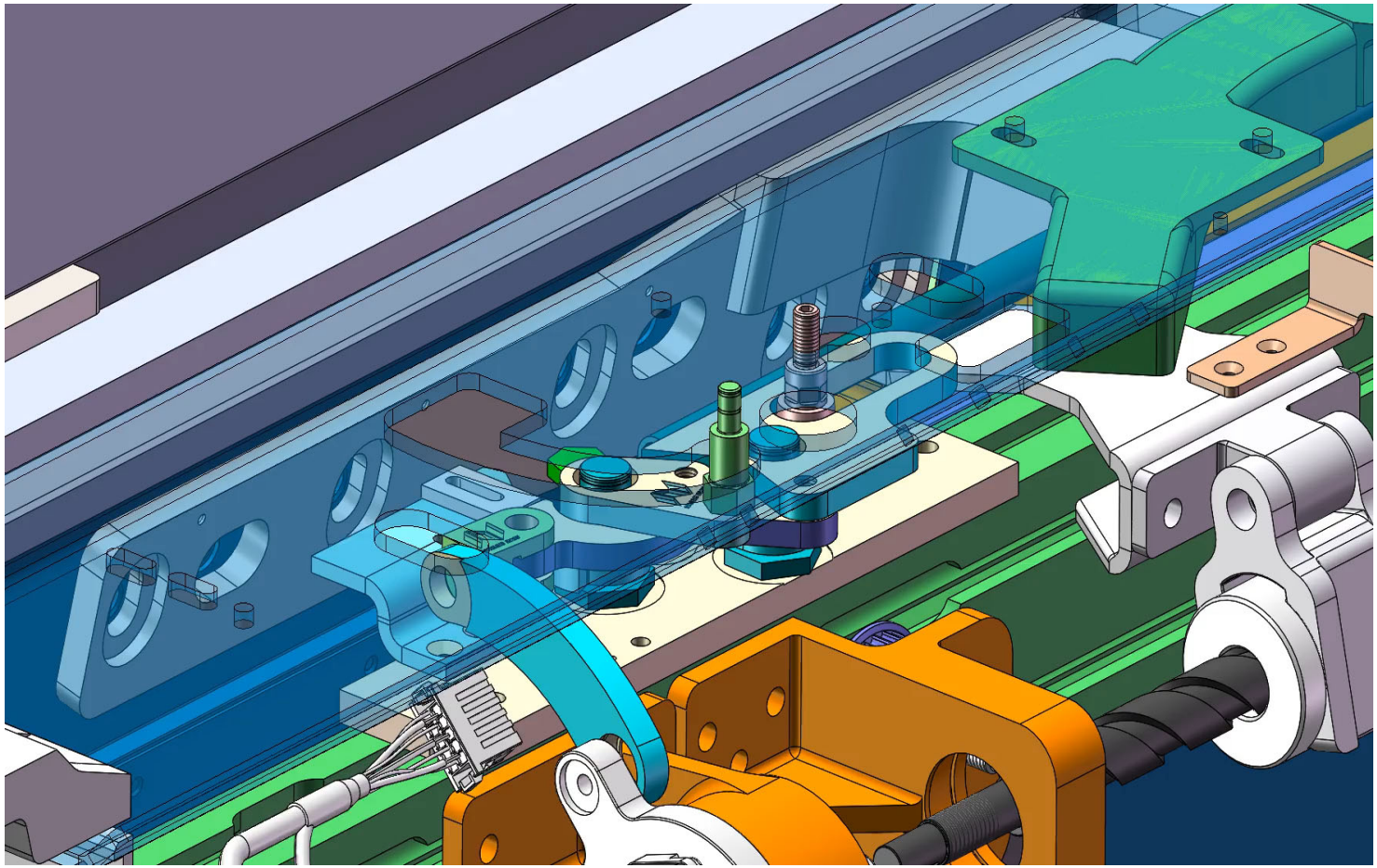
Locking Principle

- Motor rotation drives the locking linkage; rotation of the release swing arm enables locking and release functions.

Advantages

- Mature Bodet Four-Bar Over-Center Locking Principle

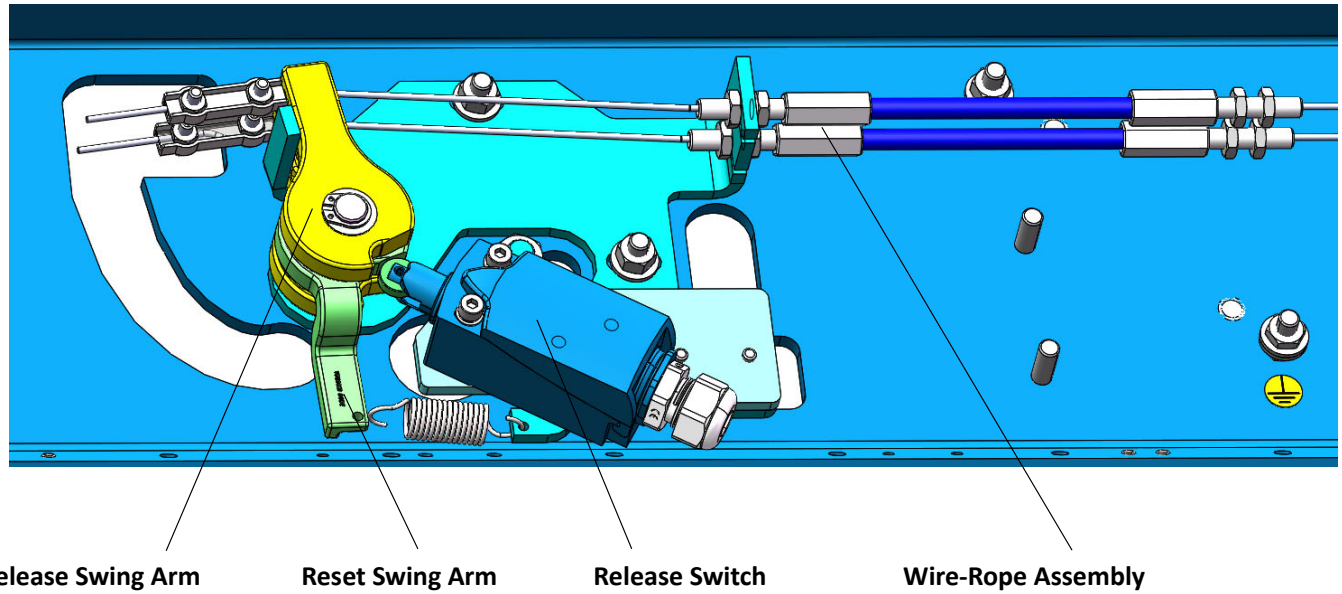
- Independent locking unit for higher strength and improved safety



Component Description

Emergency Release Principle

The wire ropes can respectively rotate the release swing arm to unlock the locking unit. After the interior and exterior emergency releases are reset, the spring returns the reset swing arm to the locked state.



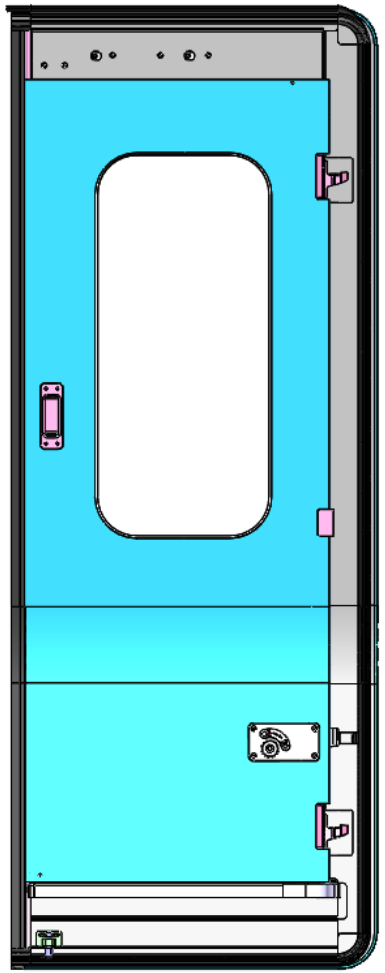
Advantages

Modular release unit design for easy installation and removal. Simple, robust structure with high reliability.

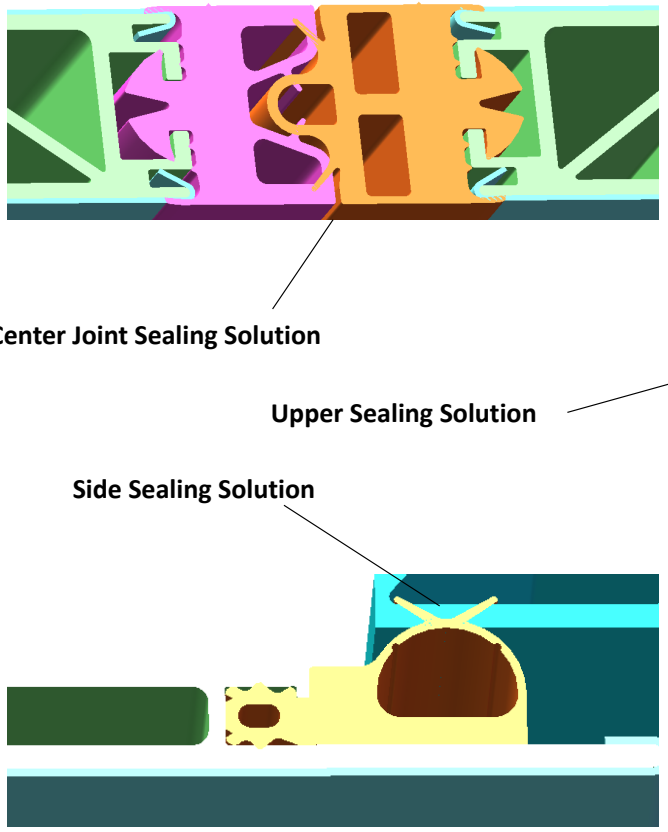
Component Description

Door Leaf Assembly

Thickness	43mm
Structure	Sandwich structure Welded aluminum-profile frame 1 mm aluminum skin on each side Aluminum honeycomb core
	Bonded insulated tempered glass
	Recessed Pull Handle
	Isolation Lock
	Peripheral EPDM Rubber Seal
	Bottom Mounting Rail



Sealing Solution

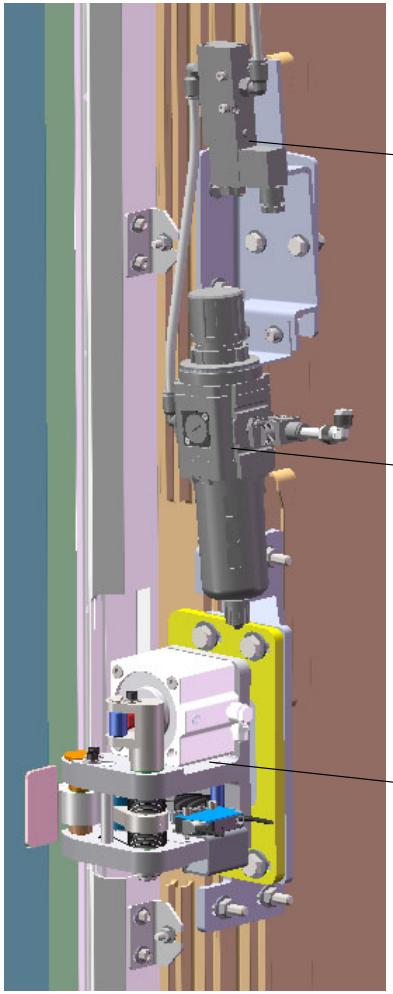


Component Description

Auxiliary Locking

- Auxiliary Lock Assembly:
  Auxiliary Lock
  Cylinder

- Air Supply Assembly:
  Solenoid Valve
  Filter Regulator

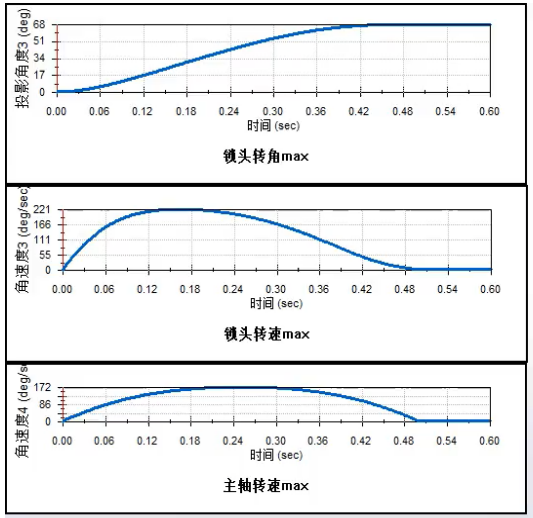


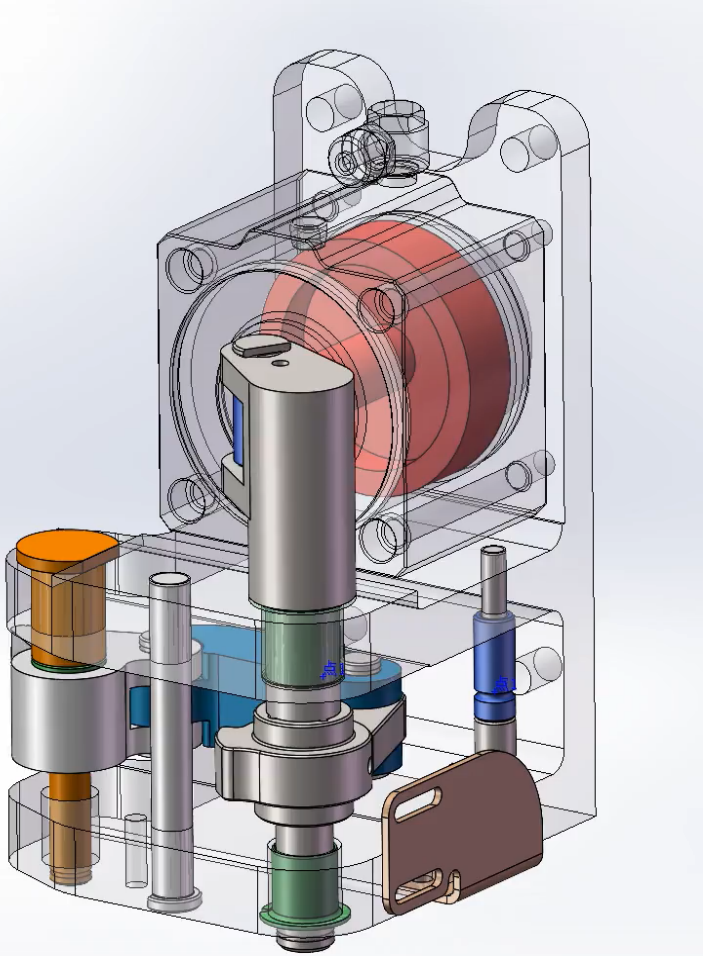
Auxiliary Locking Principle

After air enters the filter assembly, the solenoid valve controls the movement of the auxiliary-lock cylinder. The cylinder actuates the auxiliary lock to engage the door leaf, thereby providing auxiliary locking.

Component Description

Auxiliary Locking Simulation



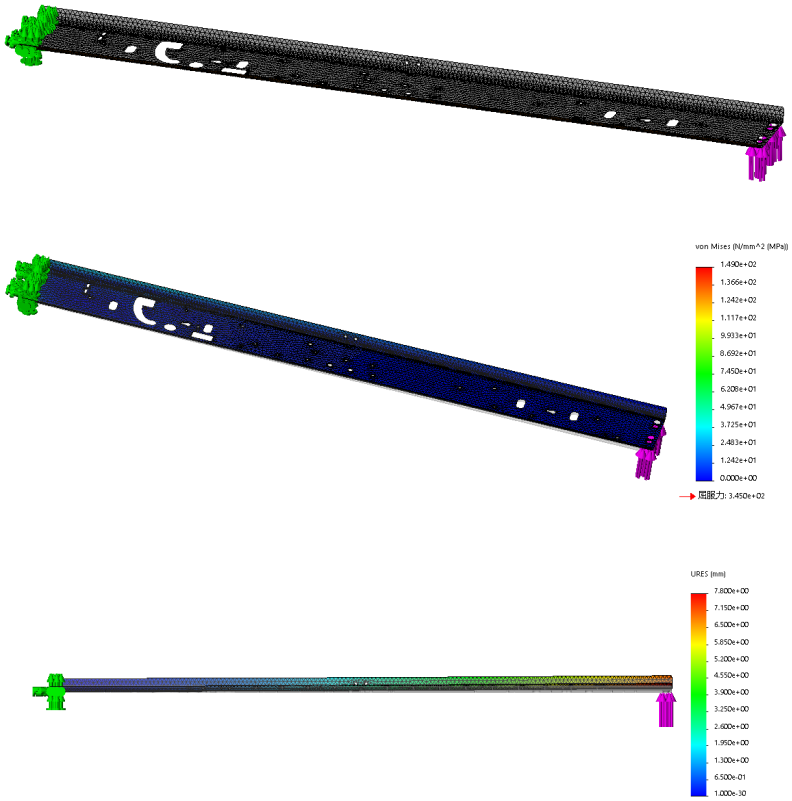


Verification & Calculation

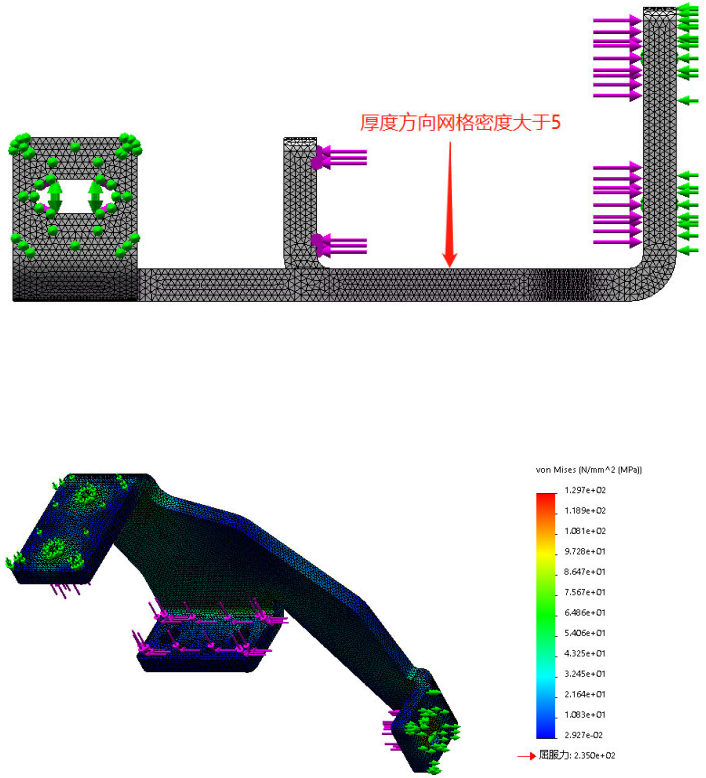
PART THREE

Verification & Calculation

Base Plate Calculation Verification

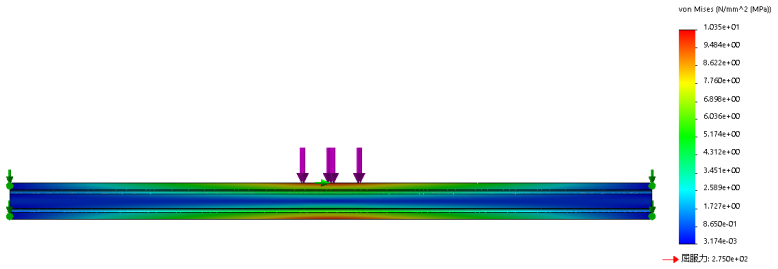


Hanger Calculation Verification

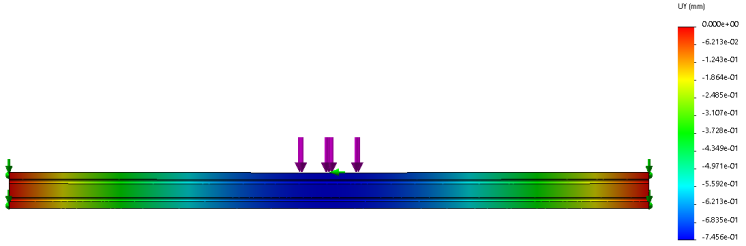


Verification & Calculation

Moving Crossbeam Calculation Verification

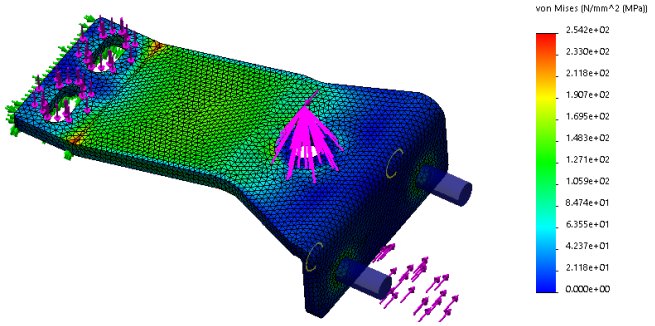


Crossbeam Stress Contour

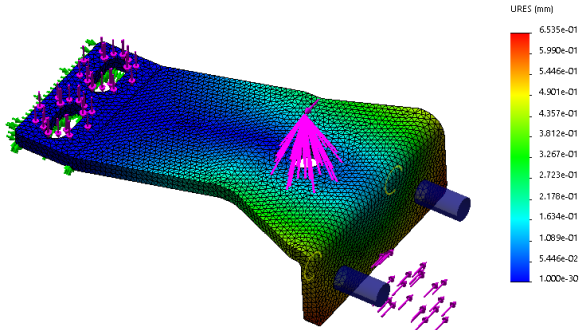


Crossbeam Strain Contour

Drive Connection Plate Calculation Verification



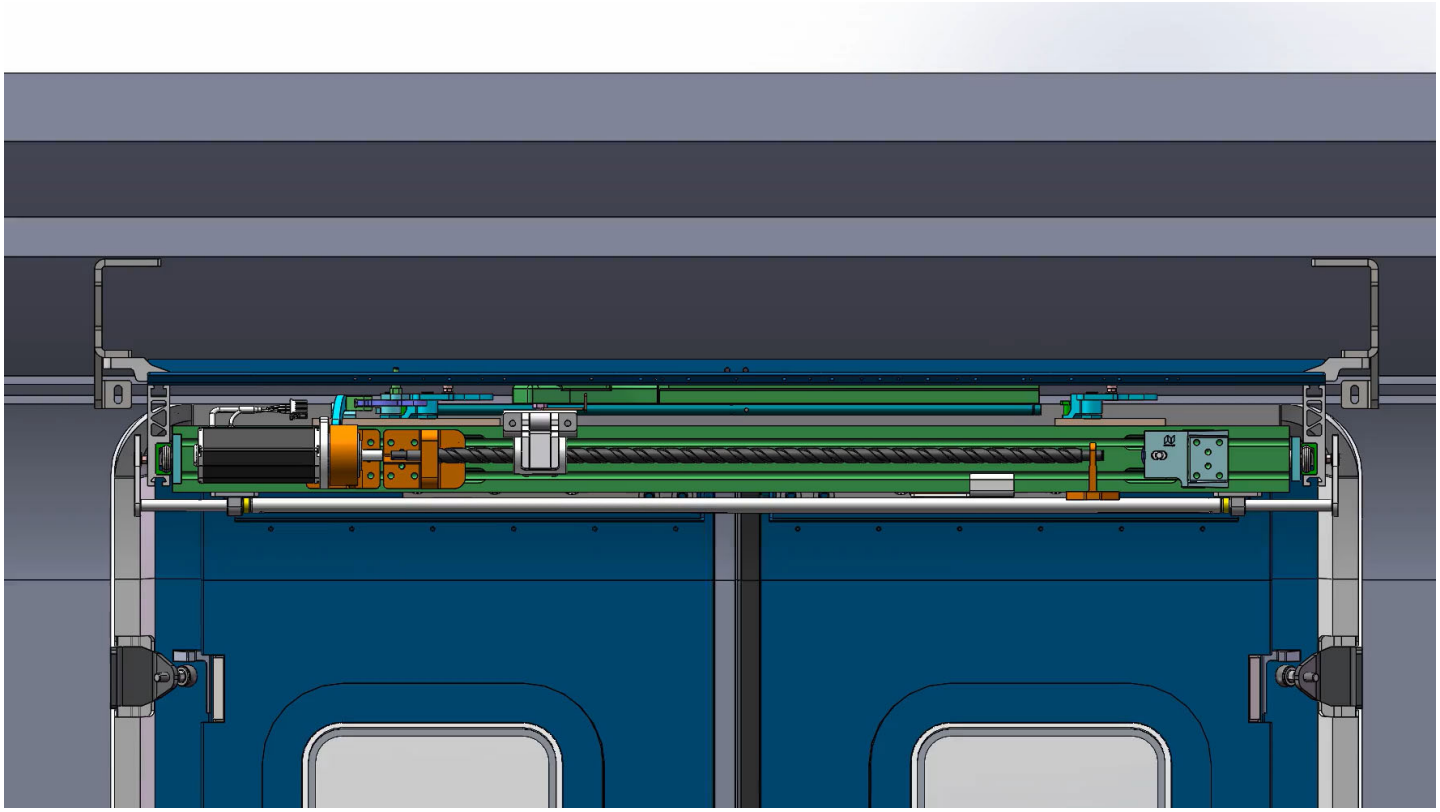
Drive Connection Plate Stress Contour



Drive Connection Plate Strain Contour

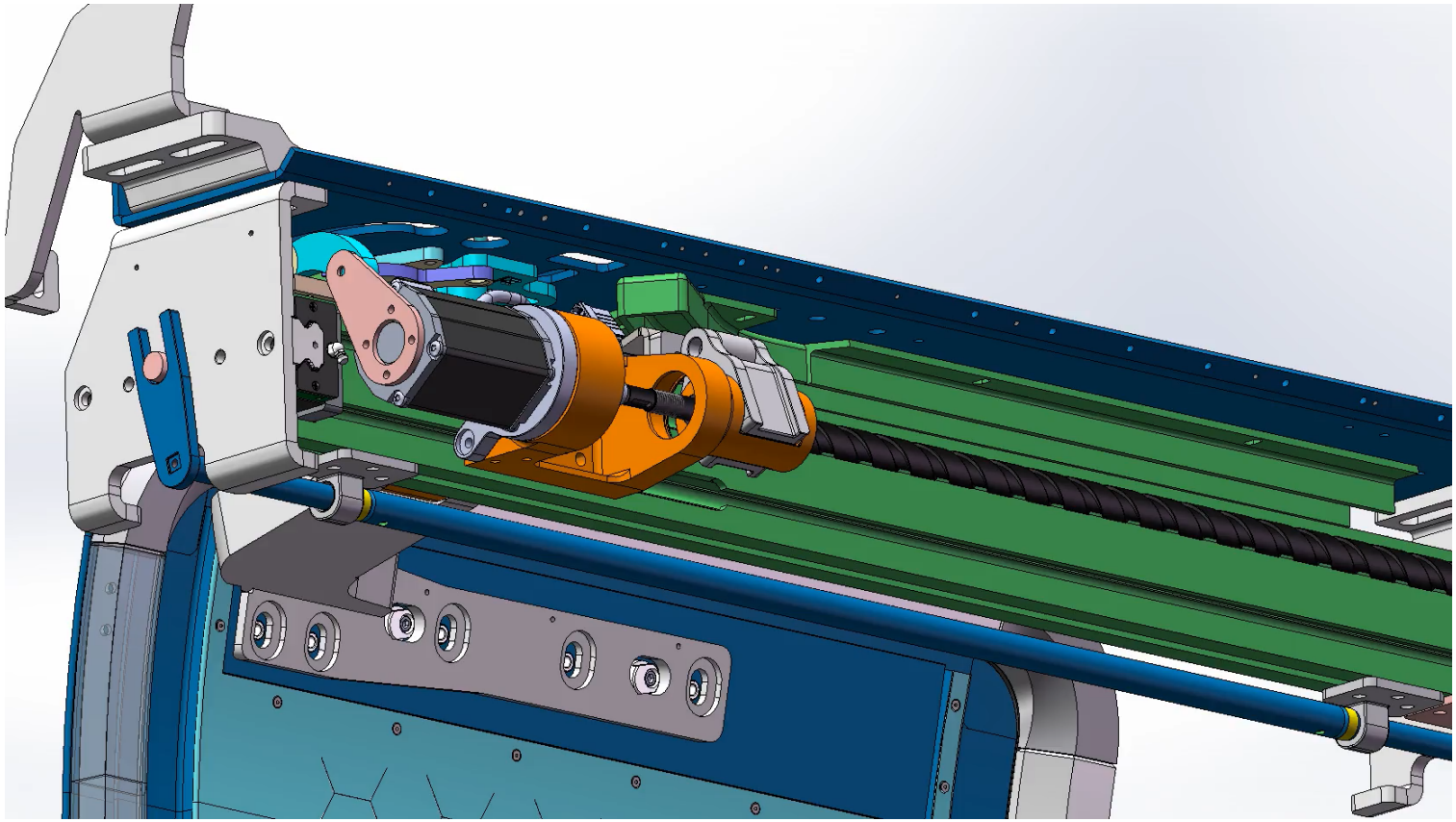
Verification & Calculation

Dynamic Simulation Verification – Passenger Compartment Door



Verification & Calculation

Dynamic Simulation Verification – Cab Door



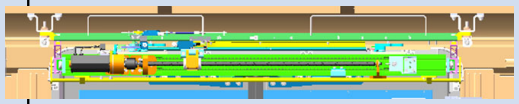
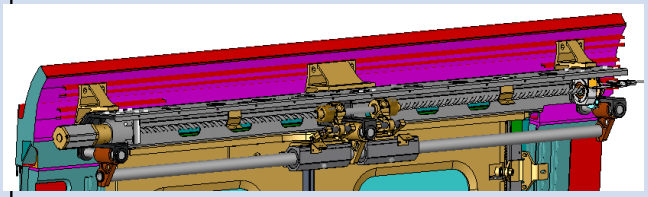
IV

Product Advantages

PART FOUR

Product Advantages

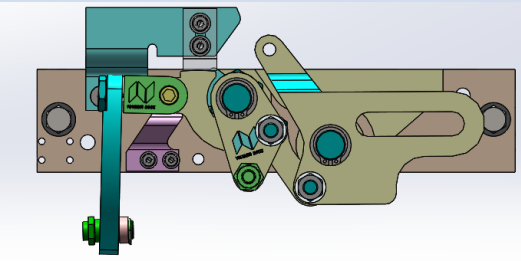
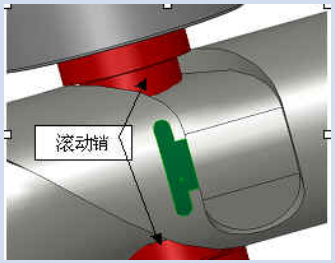
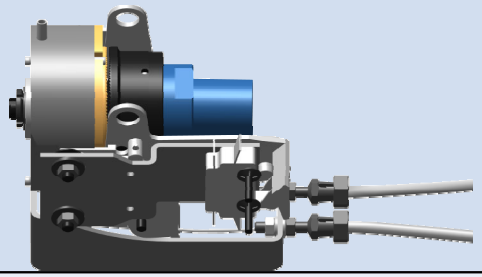
Mechanism Maintenance Space

Door Parameters	Yonggui Bodet	KN	IFE
Clear Door Opening: 1300 mm			
Doorway Opening: 1700 mm	1. Mechanism length: 1600 mm < 1700 mm 2. Direct motor-to-screw drive 3. Maintenance only requires opening the door-area cover panel	1. Mechanism length: 2047 mm > 1700 mm 2. Direct motor-to-screw drive 3. Maintenance requires opening the door-area and side-window cover panels; at vehicle ends near cab doors, the mechanism extends into the cab, making maintenance difficult.	1. Mechanism length: 1900 mm > 1700 mm 2. Motor drives the screw through a toothed belt 3. Maintenance requires opening the door-area and side-window cover panels

Advantage: Direct screw drive keeps the mechanism within the doorway envelope, making all components easier to access for inspection and maintenance.

Product Advantages

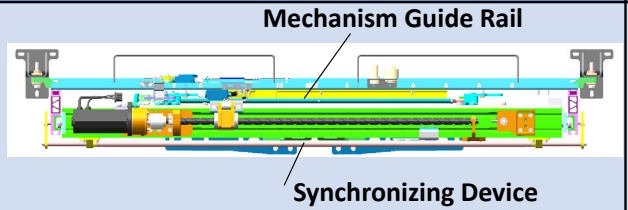
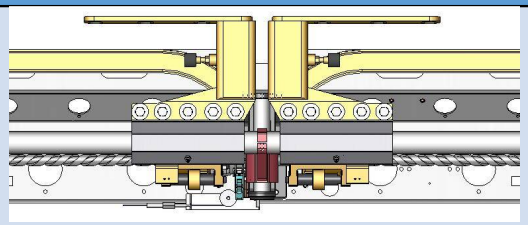
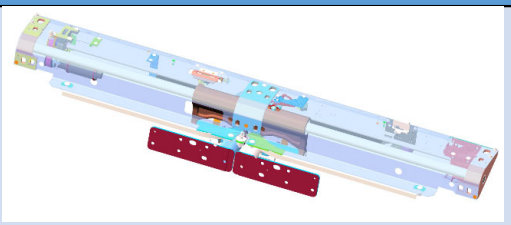
Locking Structure

Door Parameters	Yonggui Bodet	KN	IFE
Locking Type			
Locking Principle	Four-bar over-center independent locking structure; system-level locking. Note: At the locked door position, the drive-unit screw and toothed belt cannot move. Even if the screw or toothed belt is removed, the door remains locked.	Zero-lift self-locking; locks the drive screw. Note: The screw may still rotate, and because the screw radius is small, the release stroke is also small. Due to space limitations, true locking-switch monitoring is difficult to achieve.	The braking unit locks the screw continuously, locking the drive component. Note: Highly integrated imported system; the braking unit is used to lock the screw.

Advantage: System-level locking provides higher mechanical locking safety and greater strength; the locking switch can truly monitor the locking-unit status.

System Comparison

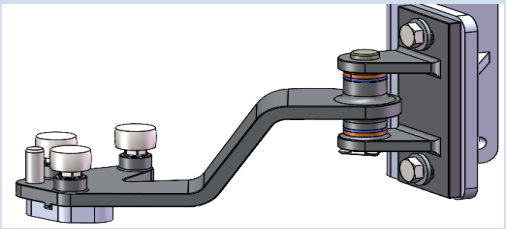
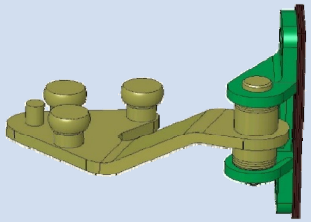
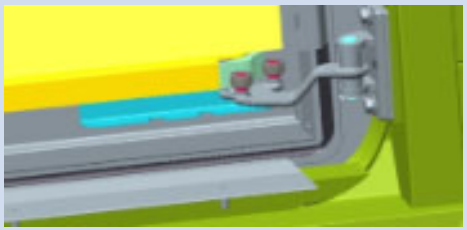
Synchronous Centering

Door Parameters	Yonggui Bodet	KN	IFE
Guide Rail			
Parameter / Performance Comparison	1. Single guide rail; double-leaf doors are synchronized and continuously centered. 2. Synchronizing device ensures more stable operation. Note: When the door is open, if the drive device fails, a single door leaf cannot close independently, preventing train operation with doors open and improving operational safety.	1. Two separate guide rails. Door centering and synchronization must be ensured. Note: When the door is open, if the drive device fails, one door leaf may close fully while the other remains open, e.g., in case of a single screw-nut failure.	1. Two separate guide rails. Door centering and synchronization must be ensured. Note: When the door is open, if the drive device fails, one door leaf may close fully while the other remains open, e.g., in case of a single screw-nut failure.

Advantage: The synchronized mechanical centering design provides higher safety and prevents operation with one side of the door open.

System Comparison

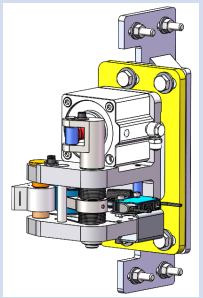
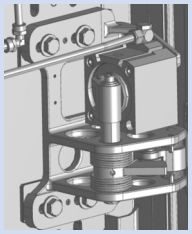
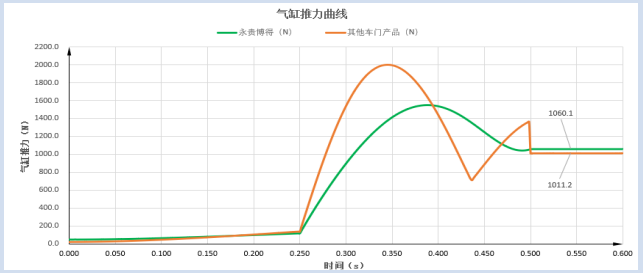
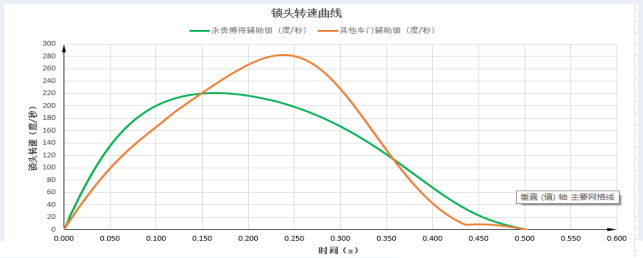
Lower Swing Arm Anti-Derailment Design

Door Parameters	Yonggui Bodet	KN	IFE
Lower Swing Arm Assembly			
Anti-Derailment Measures	1. Anti-derailment pin prevents the door leaf from disengaging after internal roller bolt fracture. 2. Anti-derailment block prevents the door leaf from jumping out of the lower slide rail.	1. Anti-derailment pin prevents the door leaf from disengaging after internal roller bolt fracture.	1. Anti-derailment measures are provided at the closed position to prevent the door leaf from disengaging.

Advantage: The Yonggui Bodet lower swing arm adopts full-stroke anti-derailment design to ensure safe and stable door operation.

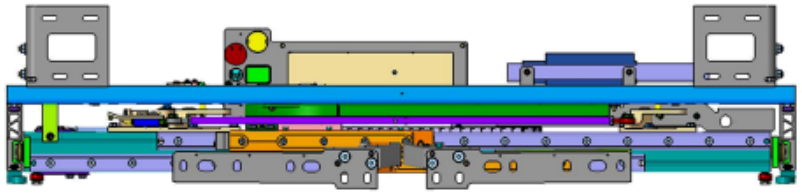
System Comparison

Auxiliary Locking

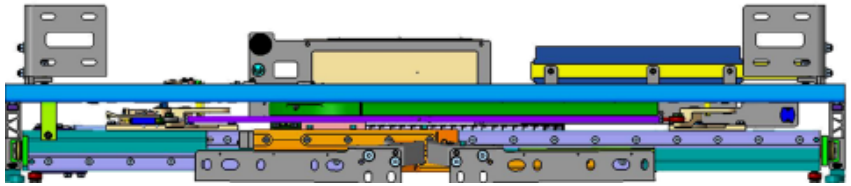
Door Parameters	Yonggui Bodet	KN	Parameter Comparison
Auxiliary Locking			
Functional Description	Mature traditional Bodet linkage structure: 1. Smoother operation and lower noise. 2. Triple protection for the return spring provides longer service life and prevents door-out-of-service conditions caused by torsion-spring fracture.	Cam structure: Abrupt transition points occur during motion, which can easily generate noise.	

Advantage: Compared with similar products, the optimized structure delivers smoother operation, lower noise, longer service life, and a longer maintenance-free interval. 3.5 million life-cycle tests have been completed.

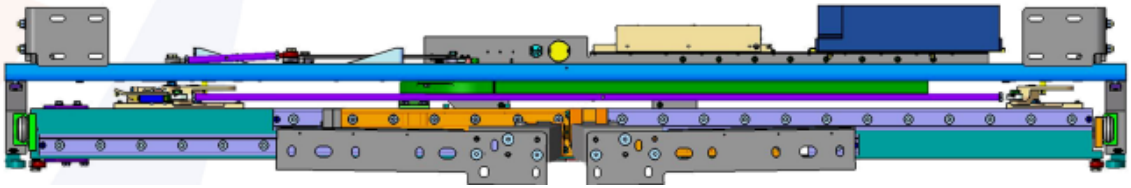
Product Advantages



1300 mm
clear entrance width



1400 mm
clear entrance width



1950 mm
clear entrance width

Stock Name: Yonggui Electric
Stock Code: 300351

Diligence Brings Reward·
Create Win-Win Together

YONGGUI

• TECHNOLOGY CONNECTS •
THE FUTURE