V400 & V500
LINEAR SWING GATE OPERATOR
MECHANICAL INSTALLATION MANUAL
After-sales multi-language Technical Support from 07h00 to 18h00 UTC+2 Monday to Friday

Sales and technical support to Africa, Europe, Asia, the Americas, Australia and the Pacific

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These quick steps are for the experienced installer who needs a checklist to get a standard installation up and running in the minimum of time.

Detailed installation features and functions are referred to later in this manual.

**STEP 1** Gather Required Tools and Equipment

**STEP 2** Heed Necessary Site Considerations

**STEP 3** Check Cabling Requirements

**STEP 4** Determine Gate Swing Angle

**STEP 5** Determine Installation Type
- Inward Opening Installation
- Outward Opening Installation

**STEP 6** Confirm that gate leaf meets allowable wind loading specifications

**STEP 7** Mount the Gate and Wall Bracket(s)

**STEP 8** Install Operator and Link to Gate

**STEP 9** Mount Controller Enclosure
ATTENTION

To ensure the safety of people and possessions, it is important that you read all the following instructions.

Incorrect installation or incorrect use of the product could cause serious harm to people.

The installer, being either professional or DIY, is the last person on the site who can ensure that the operator is safely installed, and that the whole system can be operated safely.

Warnings for the Installer

CAREFULLY READ AND FOLLOW ALL INSTRUCTIONS before beginning to install the product.

- All installation, repair, and service work to this product must be carried out by a suitably qualified person
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety
- Do not activate your gate unless you can see it and can determine that its area of travel is clear of people, pets, or other obstructions
- NO ONE MAY CROSS THE PATH OF A MOVING GATE; always keep people and objects away from the gate and its area of travel
- NEVER LET CHILDREN OPERATE OR PLAY WITH THE GATE CONTROLS
- Secure all easily-accessed gate opener controls in order to prevent unauthorised use of the gate
- Do not in any way modify the components of the automated system
- Do not install the equipment in an explosive atmosphere: the presence of flammable gasses or fumes is a serious danger to safety
- Before attempting any work on the system, cut electrical power to the operator and disconnect the batteries
- The Mains power supply of the automated system must be fitted with an all-pole switch with contact opening distance of 3mm or greater; use of a 5A hydraulic breaker with all-pole circuit break is recommended
- Make sure that an earth leakage circuit breaker with a threshold of 30mA is fitted upstream of the system
• Never short-circuit the battery and do not try to recharge the batteries with power supply units other than that supplied with the product, or manufactured by Centurion Systems (Pty) Ltd

• Make sure that the earthing system is correctly constructed, and that all metal parts of the system are suitably earthed

• Safety devices must be fitted to the installation to guard against mechanical movement risks such as crushing, dragging and shearing

• It is recommended that at least one warning indicator light be fitted to every system

• Always fit the warning signs visibly to the inside and outside of the gate

• The installer must explain and demonstrate the manual operation of the gate in case of an emergency, and must hand the User Guide/Warnings over to the user

• The installer must explain these safety instructions to all persons authorised to use this gate, and be sure that they understand the hazards associated with automated gates

• Do not leave packing materials (plastic, polystyrene, etc.) within reach of children as such materials are potential sources of danger

• Dispose of all waste products like packing materials, worn-out batteries etc, according to local regulations

• Always check the obstruction detection system, and safety devices for correct operation

• Neither Centurion Systems (Pty) Ltd, nor its subsidiaries, accepts any liability caused by improper use of the product, or for use other than that for which the automated system was intended

• This product was designed and built strictly for the use indicated in this documentation; any other use, not expressly indicated here, could compromise the service life/operation of the product and/or be a source of danger

• Everything not expressly specified in these instructions is not permitted

**IMPORTANT SAFETY INSTRUCTIONS**

**SAFETY FIRST**

Never run the operator directly from the battery!
Doing so will cause damage to the operator.
Only run the operator from the V-Series Controller.
This section has been left blank intentionally.
1. General Description

The V400/V500, available in two models with actuation strokes of 400mm and 500mm, respectively, has been designed to automate a wide variety of swing gates, from single light-domestic gates to heavy industrial double swing gates.

The fail-safe and fully-redundant Position and Collision Detection System has been designed and tested to set the standard in safety of operation and to provide an unparalleled level of reliability and durability in operation.

The gate Travel Limits are managed by a sealed double-redundant opto-electronic system that has been designed not only to ensure ultra-reliable operation, but also to ensure precise position and trajectory control. This enables very accurate and reliable collision detection to ensure safe operation even under trying conditions.

This guide covers the mechanical installation of your new swing gate operator.

The V400/V500 can be installed on both inward- and outward opening swing gates. Please see the relevant sections for each type of installation, paying attention to any site preparation that needs to be made before the operators are installed.
2. Icons Used in this Manual

This icon indicates tips and other information that could be useful during the installation.

This icon denotes variations and other aspects that should be considered during installation.

This icon indicates warning, caution or attention! Please take special note of critical aspects that MUST be adhered to in order to prevent injury.
3. Specifications

3.1. Physical Dimensions

FIGURE 1. V 400 OVERALL DIMENSIONS

FIGURE 2. V 500 OVERALL DIMENSIONS
### 3.2. Technical Specifications - V400/V500

<table>
<thead>
<tr>
<th></th>
<th>V400</th>
<th>V500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>90V - 240V AC ± 10%, 50/60Hz</td>
<td></td>
</tr>
<tr>
<td>Motor voltage</td>
<td>12V DC</td>
<td></td>
</tr>
<tr>
<td>Motor power supply</td>
<td>Battery-driven (standard capacity - 7Ah)(^1)</td>
<td></td>
</tr>
<tr>
<td>Battery charger (^2)</td>
<td>1.8A @ 13.8V</td>
<td></td>
</tr>
<tr>
<td>Current consumption (Mains)</td>
<td></td>
<td>170mA</td>
</tr>
<tr>
<td>Current consumption (motor at rated load)</td>
<td></td>
<td>15A - maximum</td>
</tr>
<tr>
<td>Operator push force - maximum</td>
<td></td>
<td>250kgf</td>
</tr>
<tr>
<td>Operator stroke</td>
<td>400mm</td>
<td>500mm</td>
</tr>
<tr>
<td>Piston extension/retraction speed</td>
<td>28mm/sec (variable)</td>
<td></td>
</tr>
<tr>
<td>Typical gate opening time(^3)</td>
<td>14.3 sec</td>
<td>17.8 sec</td>
</tr>
<tr>
<td>Manual override</td>
<td>Key release(^4)</td>
<td></td>
</tr>
<tr>
<td>Maximum number of operations per day</td>
<td></td>
<td>250</td>
</tr>
<tr>
<td>Duty cycle - Mains present(^5)(^6)</td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>Operations in standby with 7Ah battery(^7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Half day</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Full day</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Collision Sensing</td>
<td>Electronic</td>
<td></td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-15°C to +50°C</td>
<td></td>
</tr>
<tr>
<td>Mass of unit packed (excluding battery)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single kit (^8)</td>
<td>8.5kg</td>
<td>9kg</td>
</tr>
<tr>
<td>Double kit (^9)</td>
<td>14kg</td>
<td>15kg</td>
</tr>
</tbody>
</table>

1. Can increase battery capacity for longer standby times  
2. Can operate off a solar supply, consult your reseller for assistance  
3. Assumes a full stroke of operator is used  
4. Each operator comes with a unique set of keys  
5. Based on 25°C ambient temperature and unit not in direct sunlight  
6. Based on an operator push force of less than 50% of rated  
7. Based on double kit excluding Infrared Safety Beams  
8. Single kit contains one operator and Wall Box  
9. Double kit contains two operators and one Wall Box
### 3.3. V-Series Controller

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum motor current per channel</td>
<td>15A (fused)</td>
</tr>
<tr>
<td>Maximum input voltage</td>
<td>14.4V DC</td>
</tr>
<tr>
<td>Standby current draw</td>
<td>48mA</td>
</tr>
<tr>
<td>Maximum solenoid current draw</td>
<td>2A DC</td>
</tr>
<tr>
<td>Maximum auxiliary output current</td>
<td>3A (Resettable Electronic Fuse)</td>
</tr>
<tr>
<td>Collision detection</td>
<td>Current sense and redundant-optical</td>
</tr>
<tr>
<td>Position and trajectory control</td>
<td>Redundant optical</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-20°C to +60°C</td>
</tr>
<tr>
<td>Onboard receiver type</td>
<td>Code-hopping multichannel</td>
</tr>
<tr>
<td>Receiver code storage capacity</td>
<td>64 transmitter buttons</td>
</tr>
<tr>
<td>Receiver frequency</td>
<td>433MHZ</td>
</tr>
</tbody>
</table>

**TABLE 2**

### 3.4. Lightning Protection

The **V-Series Controller** utilises the same proven surge protection philosophy that is used in all our products. While this does not guarantee that the unit will not be damaged in the event of a lightning strike or power surge, it greatly reduces the likelihood of such damage occurring. The earth return for the surge protection is provided via the mains power supply earth. In order to ensure that the surge protection is effective, it is essential that the unit is properly earthed.

### 3.5. Power Supply

<table>
<thead>
<tr>
<th>Specification</th>
<th>Specification Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal input voltage</td>
<td>90V - 240V AC ±10% @ 50/60Hz</td>
</tr>
<tr>
<td>AC current draw (maximum)</td>
<td>170mA</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-20°C to +60°C</td>
</tr>
<tr>
<td>Battery charger output current</td>
<td>90V AC input: 1.2A @ 13.8V</td>
</tr>
<tr>
<td></td>
<td>240V AC input: 1.8A @ 13.8V</td>
</tr>
</tbody>
</table>

**TABLE 3**
3.6. Allowable Gate Mass

Ensure that the gate leaf meets Wind Load Specifications

Maximum allowable gate mass for the V400 operator

<table>
<thead>
<tr>
<th>Gate swing angle</th>
<th>Up to 1.5m</th>
<th>Up to 2m</th>
<th>Up to 2.5m</th>
<th>Up to 3m(^1)</th>
<th>Up to 3.5m(^1)</th>
<th>Up to 4m(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°</td>
<td>500kg</td>
<td>500kg</td>
<td>500kg</td>
<td>360kg</td>
<td>260kg</td>
<td>200kg</td>
</tr>
<tr>
<td>100°</td>
<td>500kg</td>
<td>500kg</td>
<td>388kg</td>
<td>160kg</td>
<td>190kg</td>
<td>150kg</td>
</tr>
<tr>
<td>110°</td>
<td>500kg</td>
<td>306kg</td>
<td>198kg</td>
<td>130kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120°</td>
<td>180kg</td>
<td>100kg</td>
<td>65kg</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. An electric lock must be fitted to secure gate in closed position

Maximum allowable gate mass for the V500 operator

<table>
<thead>
<tr>
<th>Gate swing angle</th>
<th>Up to 1.5m</th>
<th>Up to 2m</th>
<th>Up to 2.5m</th>
<th>Up to 3m(^1)</th>
<th>Up to 3.5m(^1)</th>
<th>Up to 4m(^1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°</td>
<td>750kg</td>
<td>750kg</td>
<td>750kg</td>
<td>550kg</td>
<td>410kg</td>
<td>310kg</td>
</tr>
<tr>
<td>100°</td>
<td>750kg</td>
<td>750kg</td>
<td>600kg</td>
<td>420kg</td>
<td>310kg</td>
<td>230kg</td>
</tr>
<tr>
<td>110°</td>
<td>750kg</td>
<td>500kg</td>
<td>320kg</td>
<td>220kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120°</td>
<td>310kg</td>
<td>170kg</td>
<td>110kg</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. An electric lock must be fitted to secure gate in closed position
3.7. Allowable Wind Load

Wind speeds for which operator will still operate the gate.
(V400 or V500 operators)
For a 25% covered gate: (Palisades, etc.) x 1.8 metre high

<table>
<thead>
<tr>
<th>Value of A or B dimension once installed¹</th>
<th>Up to 1.5m</th>
<th>Up to 2m</th>
<th>Up to 2.5m</th>
<th>Up to 3m²</th>
<th>Up to 3.5m²</th>
<th>Up to 4m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mm 100mm</td>
<td>94km/h</td>
<td>66km/h</td>
<td>48km/h</td>
<td>44km/h</td>
<td>41km/h</td>
<td>37km/h</td>
</tr>
<tr>
<td>140mm</td>
<td>119km/h</td>
<td>85km/h</td>
<td>65km/h</td>
<td>57km/h</td>
<td>51km/h</td>
<td>46km/h</td>
</tr>
<tr>
<td>180mm</td>
<td>138km/h</td>
<td>101km/h</td>
<td>78km/h</td>
<td>67km/h</td>
<td>60km/h</td>
<td>53km/h</td>
</tr>
<tr>
<td>220mm</td>
<td>156km/h</td>
<td>114km/h</td>
<td>89km/h</td>
<td>76km/h</td>
<td>67km/h</td>
<td>60km/h</td>
</tr>
<tr>
<td>260mm</td>
<td>171km/h</td>
<td>126km/h</td>
<td>99km/h</td>
<td>84km/h</td>
<td>74km/h</td>
<td>65km/h</td>
</tr>
<tr>
<td>300mm</td>
<td>186km/h</td>
<td>137km/h</td>
<td>108km/h</td>
<td>91km/h</td>
<td>80km/h</td>
<td>71km/h</td>
</tr>
<tr>
<td>340mm</td>
<td>199km/h</td>
<td>147km/h</td>
<td>116km/h</td>
<td>98km/h</td>
<td>86km/h</td>
<td>76km/h</td>
</tr>
</tbody>
</table>

1. See Section 9/10 for installation details
2. An electric lock must be fitted

### TABLE 6

Wind speeds for which operator will still operate the gate.
(V400 or V500 operators)
For a 100% covered gate: (Fully-clad gates, etc.) x 1.8 metre high

<table>
<thead>
<tr>
<th>Value of A or B dimension once installed¹</th>
<th>Up to 1.5m</th>
<th>Up to 2m</th>
<th>Up to 2.5m</th>
<th>Up to 3m²</th>
<th>Up to 3.5m²</th>
<th>Up to 4m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>100mm 100mm</td>
<td>47km/h</td>
<td>33km/h</td>
<td>24km/h</td>
<td>22km/h</td>
<td>47km/h</td>
<td>19km/h</td>
</tr>
<tr>
<td>140mm</td>
<td>59km/h</td>
<td>43km/h</td>
<td>32km/h</td>
<td>28km/h</td>
<td>59km/h</td>
<td>23km/h</td>
</tr>
<tr>
<td>180mm</td>
<td>69km/h</td>
<td>50km/h</td>
<td>39km/h</td>
<td>34km/h</td>
<td>69km/h</td>
<td>27km/h</td>
</tr>
<tr>
<td>220mm</td>
<td>78km/h</td>
<td>57km/h</td>
<td>44km/h</td>
<td>34km/h</td>
<td>78km/h</td>
<td>30km/h</td>
</tr>
<tr>
<td>260mm</td>
<td>86km/h</td>
<td>63km/h</td>
<td>49km/h</td>
<td>42km/h</td>
<td>86km/h</td>
<td>33km/h</td>
</tr>
<tr>
<td>300mm</td>
<td>93km/h</td>
<td>63km/h</td>
<td>54km/h</td>
<td>46km/h</td>
<td>93km/h</td>
<td>35km/h</td>
</tr>
<tr>
<td>340mm</td>
<td>100km/h</td>
<td>74km/h</td>
<td>58km/h</td>
<td>49km/h</td>
<td>100km/h</td>
<td>38km/h</td>
</tr>
</tbody>
</table>

1. See Section 9/10 for installation details
2. An electric lock must be fitted

### TABLE 7
4. Product Identification

1. Gate Bracket pin
2. 14mm snap ring
3. Swing gate operator (complete assembly)
4. Wall Bracket
5. Wall Bracket mounting plate
7. Gate operator keys
8. Stainless steel cap screw M5 x 25
9. Origin clamp
10. M5 barrel nut
11. Gate Bracket
12. Gate Warning Decal

1. Keys are specific to each operator - key number must be recorded
4.1. V-Series Wall Box

1. 12V 7.2Ah Battery
2. **V-Series** Controller with built-in receiver
3. **V-Series** User Guide
4. **V-Series** Electrical Setup & Commissioning Guide
5. Charger
6. Code-hopping remote controls

1. Batteries can be of a larger capacity for longer power failure autonomy and are not included in the kit; Consult your local authorised dealer for assistance
5. Required Tools & Equipment

- Spanners 17mm/15mm preferably socket set
- Hammer
- Electric drilling machine
- Screwdrivers 6mm Phillips 3.5mm Flat
- Pliers
- Crimping tool and Pin lugs
- Connector block
- Hole saw 20mm
- G-clamps x2
- Allen key 5mm
- Ø12mm masonry drill bit for wall mount bracket
- Ø6.5mm steel drill bit for gate bracket
- Angle grinder
- Pin punch 6mm
- Measuring tape
- Hacksaw
- Spirit level
- Measuring tape
- Welding machine (including consumables) and safety equipment
- Marking pen/chalk
- Extension cord
- Soldering iron
- Safety equipment (goggles, gloves etc.)

FIGURE 5
6.1. General Consideration for the Installation

Always recommend the fitment of additional safety equipment such as safety edges and Safety Beams (i5 or Photon), for additional protection against entrapment or other mechanical risks.

Check that no pipes or electrical cables are in the way of the intended installation.

Check that enough space is available for the gate operator with the gate in the required open position (see Figure 6).

If the swing gate leaf is longer than 3 metres, ensure that an electric lock can be fitted.

For security reasons, never fit an operator on the outside of the gate, where the public has access to it (refer to the instructions for an Outward-opening swing gate).

Never run an operator directly off the 12V battery.

Install the gate operator only if:

- It will not pose a hazard to the public
- There is sufficient clearance to a roadway and/or public thoroughfares
- The installation will meet all municipal and/or local authority requirements once completed
- The gate mass, leaf width, wind loading and application is within the operator specifications
- The gate is in good working order, meaning:
  - that it swings freely;
  - does not move on its own if left in any position;
  - each gate leaf is strong and rigid;
- Once installed, there is sufficient clearance between moving parts during operation of the gate to reduce the risk of personal injury and/or entrapment
- It is recommended that Pushbuttons and Keyswitches, if fitted, be positioned in such a way that the gate is in line of sight of the user
6.2. Determine Gate Opening Angle

Use this procedure to accurately determine the gate opening angle:

6.2.1. Step 1

Close the gate and measure a distance of one metre from the centreline of the gate hinge.

Make a mark on the ground.

6.2.2. Step 2

Open the gate and measure along the gate a distance of one metre from the centreline of the gate hinge.

Make a mark on the ground.

Measure the distance on the ground between the two marks (Z).

Using this Z-Value, read off the gate opening angle from the Table below.

6.2.3. Step 3

Gate opening angle based on Z-Value

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Use gate swing angle of</th>
</tr>
</thead>
<tbody>
<tr>
<td>1414mm</td>
<td>1521mm</td>
<td>90° - 99°</td>
</tr>
<tr>
<td>1532mm</td>
<td>1638mm</td>
<td>100° - 110°</td>
</tr>
</tbody>
</table>

TABLE 8
6.3. Key Terms Used in this Section

6.3.1. Pillar maximum
The maximum allowable distance measured from the centre of the gate hinge to the edge of the pillar.

6.3.2. Wall minimum
This value denotes the minimum amount of space needed to install the operator and is measured from the side wall to the gate when the gate is in the open position.

6.4. Side Wall Limitation - Inward Opening

Figure 7 shows the side wall limitations for an Inward opening gate. The operator must be installed in accordance with these limitations. If the wall minimum cannot be achieved, consider using an outward swing configuration.

![Figure 7. Side Wall Limitation for Inward Opening Gate](image)

<table>
<thead>
<tr>
<th>Wall minimum of 200mm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operator</strong></td>
</tr>
<tr>
<td>V400</td>
</tr>
<tr>
<td>V500</td>
</tr>
</tbody>
</table>

**TABLE 9**
6.5. Pillar Hinge Depth Limitation - 90° Inward Opening

Figure 8 shows the pillar hinge depth limitation for a **90° Inward opening gate**. An operator must be installed in accordance with these limitations to ensure that it does not interfere with the operation of the gate during movement. The hinge depth of the gate on the pillar, needs to be checked against the pillar maximum values in Table 10 to determine if the installation is possible. If the hinge depth of the gate is excessive, the gate may have to be relocated on the pillar to achieve the required pillar maximum values. This does not apply to gates opening more than 90° as the gate would need to swing beyond 90° without colliding with the pillar.

![Diagram of pillar hinge depth limitation for 90° inward opening gate](image)

**FIGURE 8. PILLAR HINGE DEPTH LIMITATION FOR 90° INWARD OPENING GATE**

<table>
<thead>
<tr>
<th>Operator</th>
<th>Pillar Maximum</th>
<th>Swing Gate Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>V400</td>
<td>165mm</td>
<td>90°</td>
</tr>
<tr>
<td>V500</td>
<td>245mm</td>
<td>90°</td>
</tr>
</tbody>
</table>

**TABLE 10**
6.6. Wall Bracket Mounting Methods

The following recommended methods may be used to install the operator.

### 6.6.1. Through-wall

Applications:
- Pre-fabricated walling
- For heavy gates operating frequently

![FIGURE 9](image9.png)

### 6.6.2. Chemical anchors

Applications:
- Masonry pillars
- Frequent use

![FIGURE 10](image10.png)

### 6.6.3. Welding

Application:
- Steel pillars

![FIGURE 11](image11.png)
6.6.4. Sleeve anchors
Applications:
- Lighter gates
- Domestic

6.6.5. Rawl bolts
Applications:
- Lighter gates
- Domestic
6.7. Strength of the Gate and Gate Bracket

6.7.1. Welding
Applications:
- Domestic
- Medium gates
- Frequent use

![FIGURE 14]

6.7.2. Through-bolts
(high-tensile)
Applications:
- Domestic
- Light gates
- Infrequent use

![FIGURE 15]

TEK screws and mild steel bolts are not recommended.
7. Cabling Requirements

Legend

1. 90V - 240V AC Mains cable via Mains isolator\(^4\) switch (3 core LNE 0,5mm\(^2\))^\(^3\), or low-voltage 16V AC battery charger supply\(^3\) (2 core 1,5mm\(^2\)).
2. Intercom cable (n1 + 6 core) to house.
3. Master Motor (MTR M) or Slave Motor (MTR S) cable. (Minimum, 2 core 1.5mm\(^2\) + 4 core 0.22mm\(^2\) multi-stranded)^\(^4\).
4. Optional radio receiver cable (3 core 0,5mm\(^2\) multi-stranded, optional)^\(^5\).
5. Optional Pedestrian Keyswitch (2 core 0,5mm\(^2\) multi-stranded) or optional keypad (3 core 0,5mm\(^2\) multi-stranded).
6. Optional, but recommended infrared Safety Beams (3 core 0,5mm\(^2\) multi-stranded or 4 core 0.5mm\(^2\) for CE compliance).
7. Optional intercom cable (n2+2 core 0,5mm\(^2\) multi-stranded) to gate station.
8. Optional electric lock (2 core 0.5mm\(^2\)).
9. Optional Pillar Light cable (3 core, size according to power regulations).
10. Optional ground loop for free-exit (1 core 0.5mm\(^2\) multi-stranded - silicone-coated)^\(^6\).

1. Mains isolator supplied with V-Series wall box
2. Increase cable thickness if Pillar Lights are to be installed
3. Screened cable is always recommended to provide better protection against lightning - earth one end of screening
4. Please use V-Series cabling. Order reference: CABLEVEC68 (10M maximum from Vseries controller to operator)
5. For optimum range an external receiver can be mounted on the wall
6. Consult manufacturer of loop detector for specific details

- **All cables must be routed in conduit unless underground cable is being used**
- **Mains isolator must be less than one metre from the operator**
- **Safety Beams are always recommended, i5 or Photon**
8. Critical Installation Checklist

The following is a list of critical requirements that must be adhered to in order to ensure reliable operation of your operator(s):

- Ensure that the Wall Bracket is securely anchored
- Make sure that the operator’s maximum stroke is being utilised
- Only use V-Series cable for the installation
- Leave a 350mm long loop in the cable
- Fit an electric gate lock if the leaf width is greater than 3 metres
- Ensure that the opening and closing angles conform to the installation guidelines
- Ensure that your gate and operator(s) are equipped to deal with Wind Loading (refer to the Table 6 and 7 on page 14)

Never run the operator directly from the battery! Doing so will cause damage to the operator. Only run the operator from the V-Series Controller.
9. Operator Installation - Inward Opening Gates

Figure 17 illustrates the values corresponding to the Inward Opening Gate Installation Tables.

![Diagram of Inward Opening Gate Installation](image)

The length of the wall bracket should equal B minus E. When looking at the example above, the wall bracket should measure 240mm (B) - 160mm (E) = 80mm (wall bracket length)

FIGURE 17. BRACKET POSITION - INWARD OPENING GATE

Ensure that the gate mass does not exceed the specifications on page 14.

9.1. Key terms used in this section

9.1.1. E-Value
The distance from the centre of the gate hinge to the edge of the pillar.

9.1.2. A-Value
The horizontal distance from the Wall Bracket/pivot pin to the center of the gate hinge.

9.1.3. B-Value
The vertical distance from the Wall Bracket/pivot pin to the center of the gate hinge.

9.2. Step 1
Measure the E-Value and ensure that it does not exceed the values shown in Table 10 on page 21. Using Table 11 for the V 400 or Table 14 for the V 500, along with the E-Value limitation, choose the relevant A & B values for the installation that are as close as possible to the optimum installation position.
Example: 90° Inward Opening gate (V 400):

Assume that the E-Value has been measured as 160mm. By looking at this Table at E-Values that are smaller than (<) 165mm, the relevant A- and B-Values are: A=145mm and B=240mm.

<table>
<thead>
<tr>
<th>E-Value Depth of gate hinge to pillar</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;165mm</td>
<td>145mm</td>
<td>240mm</td>
</tr>
<tr>
<td>&lt;175mm</td>
<td>130mm</td>
<td>250mm</td>
</tr>
</tbody>
</table>

TABLE 11

V400 Inward Opening Gate Geometry Tables:

90° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value Depth of gate hinge to pillar</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;120mm</td>
<td>195mm</td>
<td>200mm</td>
</tr>
<tr>
<td>&lt;130mm</td>
<td>180mm</td>
<td>210mm</td>
</tr>
<tr>
<td>&lt;140mm(^1)</td>
<td>170mm(^1)</td>
<td>220mm(^1)</td>
</tr>
<tr>
<td>&lt;150mm</td>
<td>160mm</td>
<td>230mm</td>
</tr>
<tr>
<td>&lt;165mm</td>
<td>145mm</td>
<td>240mm</td>
</tr>
<tr>
<td>&lt;175mm</td>
<td>130mm</td>
<td>250mm</td>
</tr>
</tbody>
</table>

TABLE 12

100° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value Depth of gate hinge to pillar</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>205mm</td>
<td>160mm</td>
</tr>
<tr>
<td></td>
<td>195mm</td>
<td>170mm</td>
</tr>
<tr>
<td></td>
<td>185mm(^1)</td>
<td>180mm(^1)</td>
</tr>
<tr>
<td></td>
<td>175mm</td>
<td>190mm</td>
</tr>
<tr>
<td></td>
<td>165mm</td>
<td>200mm</td>
</tr>
</tbody>
</table>

TABLE 13
### 110° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value Depth of gate hinge to pillar</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A Pillar can’t interfere with gate</td>
<td>211mm</td>
<td>120mm</td>
</tr>
<tr>
<td></td>
<td>203mm</td>
<td>130mm</td>
</tr>
<tr>
<td></td>
<td>195mm</td>
<td>140mm</td>
</tr>
<tr>
<td></td>
<td><strong>191mm</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td><strong>145mm</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**TABLE 14**

### 120° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value Depth of gate hinge to pillar</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A Pillar can’t interfere with gate</td>
<td>212mm</td>
<td>90mm</td>
</tr>
<tr>
<td></td>
<td><strong>205mm</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td><strong>100mm</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**TABLE 15**
## V500 Inward Opening Gate Geometry Tables:

### 90° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;140mm</td>
<td>275mm</td>
<td>230mm</td>
</tr>
<tr>
<td>&lt;150mm</td>
<td>260mm</td>
<td>240mm</td>
</tr>
<tr>
<td>&lt;160mm</td>
<td>250mm</td>
<td>250mm</td>
</tr>
<tr>
<td>&lt;170mm</td>
<td>235mm</td>
<td>260mm</td>
</tr>
<tr>
<td>&lt;180mm</td>
<td>220mm</td>
<td>270mm</td>
</tr>
<tr>
<td>&lt;190mm¹</td>
<td>205mm¹</td>
<td>280mm¹</td>
</tr>
<tr>
<td>&lt;200mm</td>
<td>195mm</td>
<td>290mm</td>
</tr>
<tr>
<td>&lt;215mm</td>
<td>180mm</td>
<td>300mm</td>
</tr>
<tr>
<td>&lt;225mm</td>
<td>170mm</td>
<td>310mm</td>
</tr>
<tr>
<td>&lt;235mm</td>
<td>155mm</td>
<td>320mm</td>
</tr>
<tr>
<td>&lt;235mm</td>
<td>140mm</td>
<td>330mm</td>
</tr>
</tbody>
</table>

1. Optimum Installation

<table>
<thead>
<tr>
<th>E-Value</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Pillar can’t interfere with gate</td>
<td></td>
</tr>
</tbody>
</table>

### 100° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>260mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>245mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>235mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>225mm¹</td>
<td></td>
<td>230mm¹</td>
</tr>
<tr>
<td>215mm</td>
<td></td>
<td>240mm</td>
</tr>
<tr>
<td>205mm</td>
<td></td>
<td>250mm</td>
</tr>
<tr>
<td>195mm</td>
<td></td>
<td>260mm</td>
</tr>
</tbody>
</table>

1. Optimum Installation
### 110° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value Depth of gate hinge to pillar</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A Pillar can’t interfere with gate</td>
<td>260mm</td>
<td>160mm</td>
</tr>
<tr>
<td></td>
<td>250mm</td>
<td>170mm</td>
</tr>
<tr>
<td></td>
<td>240mm</td>
<td>180mm</td>
</tr>
<tr>
<td></td>
<td>235mm¹</td>
<td>190mm¹</td>
</tr>
<tr>
<td></td>
<td>225mm</td>
<td>200mm</td>
</tr>
</tbody>
</table>

1. Optimum Installation

### 120° Inward Opening Gate

<table>
<thead>
<tr>
<th>E-Value Depth of gate hinge to pillar</th>
<th>A-Value</th>
<th>B-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A Pillar can’t interfere with gate</td>
<td>270mm</td>
<td>110mm</td>
</tr>
<tr>
<td></td>
<td>263mm</td>
<td>120mm</td>
</tr>
<tr>
<td></td>
<td>257mm</td>
<td>130mm</td>
</tr>
<tr>
<td></td>
<td>250mm</td>
<td>140mm</td>
</tr>
<tr>
<td></td>
<td>243mm¹</td>
<td>150mm¹</td>
</tr>
</tbody>
</table>

1. Optimum Installation
9.2. Step 2
Determine a suitable height for the Wall Bracket.

Ensure that this mounting height will allow the Gate Bracket to be securely mounted to the Gate Leaf.

Take care to make sure the operator is mounted level.

9.3. Step 3
Mark the determined length on the Wall Bracket.
Cut off excess length.
Insert the Wall Bracket into the mounting plate.
Weld the brackets together.

9.4. Step 4
Mount the Wall Bracket according to the A- and B-Values obtained in Step 1 on page 27.

It is critical that the Wall Bracket is securely mounted.

See page 18 for Site Considerations.
9.5. Step 5
Fit the Gate Bracket to the operator and secure it with a snap ring.

As additional security to the snap ring, fit a padlock and the optional padlock shield.

9.6. Step 6
Fit the motor end of the operator to the Wall Bracket.

Support the operator to prevent damage

9.7. Step 7
Manually rotate the piston to the fully extended position, and then retract it by half to one full turn.

With the gate in the closed position, use a G-clamp or spot weld the Gate Bracket in position to temporarily hold the Gate Bracket in place.

The G-clamp should only be used to secure the Gate Bracket in place, and should never be used as a means of securing the operator piston arm as this could result in damage.
9.8. Step 8
Manually release the operator using the key provided with the kit, and swing the gate to the desired open position.

Slide the origin clamp along the piston tube, right up to the end to the operator.

Secure origin clamp in place, and tighten properly with an Allen Key.

9.9. Step 9
If the gate opening angle is sufficient and the operator is utilising the majority of its stroke, then secure the Gate Bracket using the most appropriate means.

Remove the operator before welding, if welding is required.

If this is not the case or the operator does not have enough stroke for the gate to open fully, re-check the A- and B-Values from Table 10 on page 29 to Table 15 on page 31.
Attach warning labels to the inside and outside of the gate as shown.

The Mechanical part of the installation is now complete.
10. Operator Installation - Outward Opening Gates

10.1. Step 1

Depending on the gate opening angle determined in Section 6.2, refer to Figures 27 to 28 for the correct installation geometry.

In most cases it will be necessary to make up a suitable extension bracket on which to mount the operator’s Wall Bracket.

Ensure that the gate mass does not exceed the specifications on page 13.

V400 Outward Opening Gate:

![Diagram of V400 Outward Opening Gate]

**FIGURE 27. V400 OUTWARD OPENING GATE**

V400 Outward Opening Geometry Tables:

<table>
<thead>
<tr>
<th>Gate Opening Angle</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°</td>
<td>220mm</td>
<td>170mm</td>
</tr>
<tr>
<td>100°</td>
<td>210mm</td>
<td>150mm</td>
</tr>
<tr>
<td>110°</td>
<td>200mm</td>
<td>130mm</td>
</tr>
<tr>
<td>120°</td>
<td>185mm</td>
<td>135mm</td>
</tr>
</tbody>
</table>

**TABLE 20**
V500 Outward Opening Gate:

<table>
<thead>
<tr>
<th>Gate Opening Angle</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>90°</td>
<td>280mm</td>
<td>205mm</td>
</tr>
<tr>
<td>100°</td>
<td>265mm</td>
<td>180mm</td>
</tr>
<tr>
<td>110°</td>
<td>260mm</td>
<td>150mm</td>
</tr>
<tr>
<td>120°</td>
<td>248mm</td>
<td>140mm</td>
</tr>
</tbody>
</table>

TABLE 21
10.2. Step 2
Determine a suitable height for the Wall Bracket.

Ensure that this mounting height will allow the Gate Bracket to be securely mounted to the Gate Leaf.

Take care to make sure the operator is mounted level.

10.3. Step 3
Mark the determined length on the Wall Bracket.
Cut off the excess length.
Insert the Wall Bracket into the mounting plate.
Weld the brackets together.

10.4. Step 4
Mount the Wall Bracket according to the A- and B-Values obtained in Step 1 on page 36.

It is critical that the Wall Bracket is securely mounted and is adequately rigid.

See page 18 for site considerations.
10.5. Step 5
Fit the Gate Bracket to the Operator.

FIGURE 32

10.6. Step 6
Fit the motor end of the operator to the Wall Bracket.

Support the operator to prevent damage

FIGURE 33

10.7. Step 7
Manually rotate the piston to the fully retracted position, and then extend it by half to one full turn.

With the gate in the closed position, use a G-clamp or spot weld the Gate Bracket in position to temporarily hold the Gate Bracket in place.

The G-clamp should only be used to secure the Gate Bracket in place, and should never be used as a means of securing the operator piston arm as this could result in damage.

FIGURE 34
10.8. Step 8
Manually release the operator using the key provided with the kit, and swing the gate to the desired open position.

10.9. Step 9
If the gate opening angle is sufficient and the operator is utilising the majority of its stroke, then secure the Gate Bracket using the most appropriate means.

- Remove the operator before welding, if welding is required.

If this is not the case or the operator does not have enough stroke for the gate to open fully, re-check the A- and B-Values from Table 16 on page 36 to Table 17 on Page 37.
Attach warning labels to the inside and outside of the gate as shown.

The Mechanical part of the installation is now complete.