

# AMERISTAR PERIMETER SECURITY USA INC.

## CITYSCAPE GATE SUBMITTAL

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Project:  
Customer:  
Ameristar Project # :

Date:  
Rev:



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# 1 PRODUCT DESCRIPTION

## INTRODUCTION

The Ameristar Cityscape gate has been designed for use in urban environments where a secure, aesthetically pleasing and pedestrian friendly opening for occasional use is required. The gate is manually opened and closed but locked securely, when closed, by a hydraulically driven robust pin. The gate is available with both left hand and right hand hinge positions.

The gate is supplied pre-assembled on a shallow mount foundation frame and is “ready to Go” following the completion of electrical and hydraulic connections therefore minimal commissioning is required.

***It is important to note that, although the gate is not moved automatically, a conduit is required to provide hydraulic power to the locking pin. The same conduit also carries low voltage control cables which connect to the optical position sensors for the locking pin.***

The illustration below shows a left-hand hinged gate assembled on its foundation frame with a short length of duct attached.



The hydraulically driven locking pin is housed in the right hand end of the gate in the above illustration and is driven vertically up and down by a hydraulic ram. If required, the hydraulic power pack and electrical controls needed to operate the ram, to unlock and lock the gate, are housed in a remote control panel which requires a 208/1/60 electrical supply.

## FINISHES

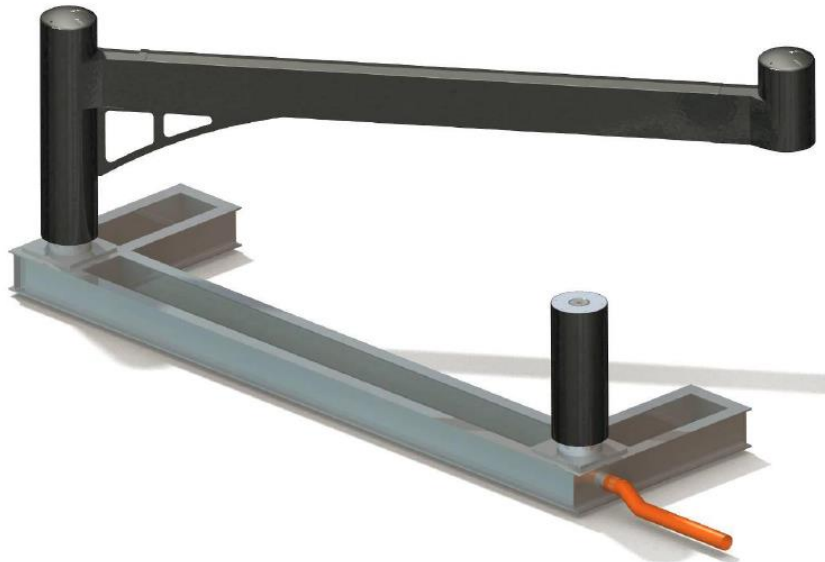
The gate will be provided in black.

## STRUCTURE

The light weight structure has been made possible by a blend of several advanced technologies. Ameristar has pioneered the use of shallow mount technology for anti-terrorist applications with tested and certified products requiring as little as 4.4" (112 mm) installation depth.

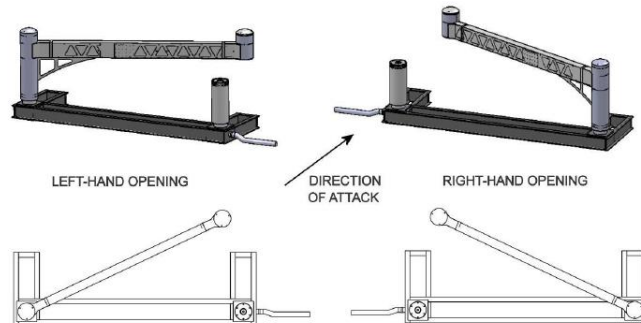
This shallow mount technology, combined with advanced CNC manufacturing techniques, has enabled Ameristar to produce a light weight and aesthetically pleasing structure. The strength of the gate is achieved by the use of advanced synthetic fibres which combine high strength with energy absorbing properties, making this product unique in the market place.

The illustration below shows a left hand hinged gate, before installation, in the partly open position. The retracted locking pin can be seen in the right hand post of the gate.



## HINGING OPTIONS

The Ameristar Cityscape gate is available in either left hand or right hand hinged versions. In the illustration below the gates are shown opening inwards, i.e. into the area to be protected. The “direction of attack” arrow indicates the direction in which an approaching vehicle would be travelling if an attempt were made to ram the gate and enter the site.



**Although the two gates in the above illustration are shown opening into the protected area, it is possible for the gate, when unlocked, to be manually moved in either direction. This can be prevented, if required, by fitting a small bracket, (supplied), underneath the locking end of the gate beam which impinges on a welded stop plate on the post to prevent movement in the wrong direction. This bracket also acts as an aid to alignment when the gate is manually closed to ensure that the locking pin will correctly locate in the end of the gate beam.**

## LENGTHS AVAILABLE

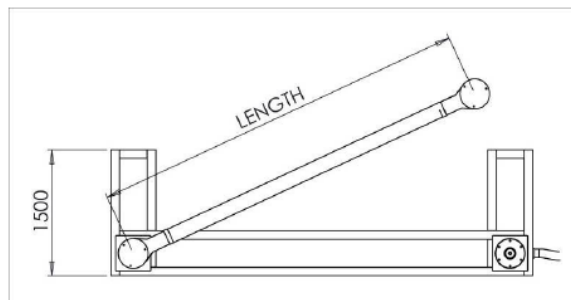
In this instance, the customer has requested a 24-ft clear opening gate. Details can be found in the Appendices section.

The standard gate is available in lengths between 13-ft and 19.5-ft (4.0 metres and 6.0 metres) and in increments of 4” (100mm).

This dimension is measured from the centre of the bearing at the fixed end to the centre of the locking pin at the other.

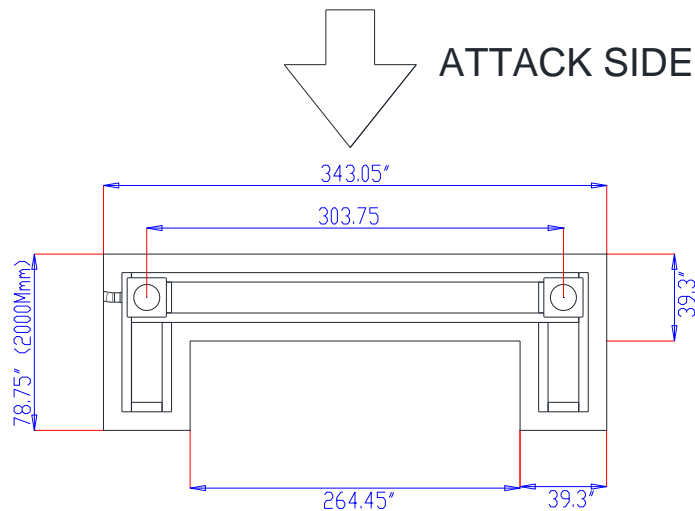
This is shown in the diagram below.

**The actual free opening width with the gate fully open will be 15.75” (400mm) less than the length of the gate, i.e. the free opening width will be “LENGTH “minus 15.75” (400mm).**



## 2 INSTALLATION

The Cityscape gate is delivered to site pre-assembled on a shallow mount frame ready to install into a prepared excavation. The diagram below shows the plan view of the required excavation for any size of gate, whether right hand or left hand opening.



### EXCAVATING THE TRENCH

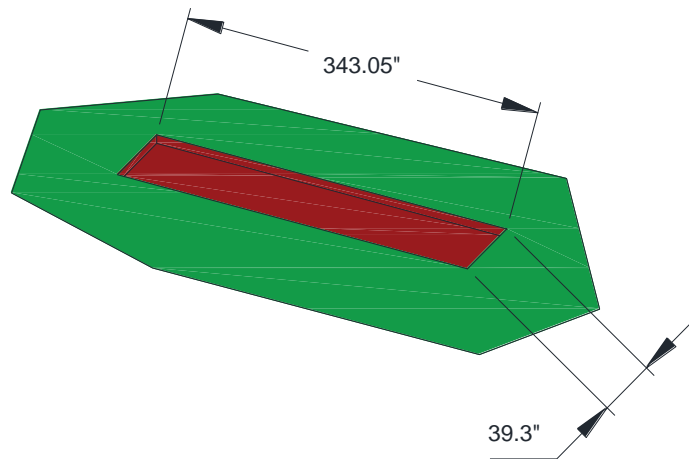
The whole area of the „U“ shaped trench must be excavated to a depth of 15.75” (400mm). If the area is not flat then the excavation must be taken down to 15.75” (400mm) at the lowest point and the ground levelled off as necessary. The bottom of the excavation must be level in all directions.

***Note that it is essential to excavate the trench with the long side facing the direction from which an attack may be expected, as shown in the above diagram. The long side, shown as the top of the diagram, would therefore normally be facing outwards from the protected area.***

The width of the “U” will vary depending on the length of the gate to be installed. The diagram above shows how this dimension is calculated. Reference to the above diagram should make this clear for any size of gate.

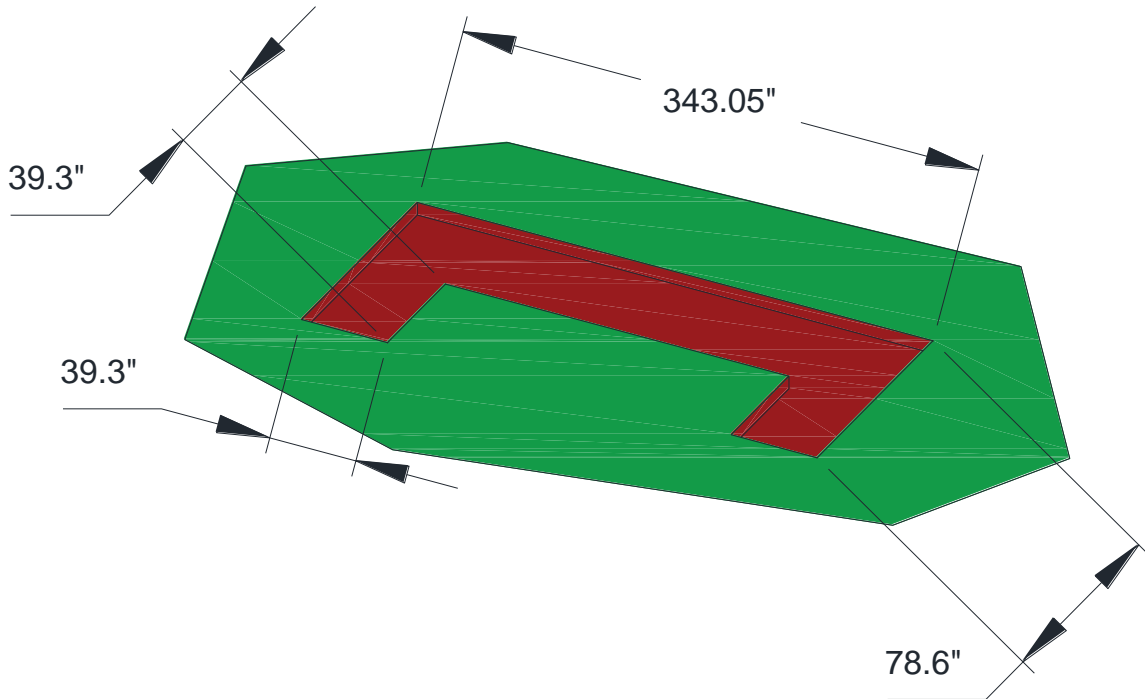
***Do not reduce any of the given dimensions. If the excavation is slightly larger than required it will usually be of no consequence but it must never be smaller.***

The diagram below shows the long side of the trench excavated through a typical road surface. The trench must be positioned centrally at the required location of the gate. The width of the trench must be one metre.

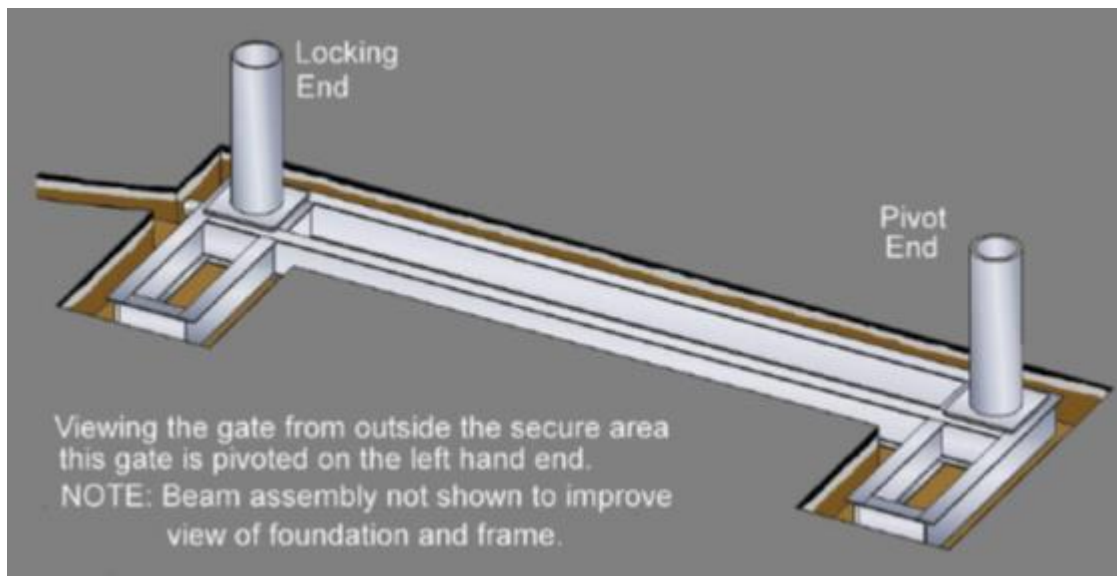


The diagram below shows the final excavation of the „U“ shaped trench, ready for the gate to be lowered into position. The two one metre square extensions have been added on the side of the gate which is to be protected, i.e. on the inside of the site.

***NOTE: that an additional trench is required to install the duct used to carry the hydraulic hoses and low voltage control cables. This must be installed from end of the gate where the locking pin will be located. This is the opposite end to the pivot end of the gate and will depend on whether the gate is right hand or left hand hinged. This trench is not shown in the diagram below.***



Having completed the excavation as described above, the complete gate assembly can be lowered into position using suitable lifting tackle. The gate must be placed centrally in the excavation so that there is an equal distance clear all round, nominally 9.85" (250mm). The diagram below shows a left hand hinged gate located in the excavated trench. The locking end of the gate is therefore on the right as viewed from outside the protected area. The trench for the 4" (100mm) conduit is shown at the locking end of the gate, (on the left in the diagram). The stub conduit can be seen protruding from the end of the frame.





The conduit must be connected to the stub provided at the locking pin end. A 4" (100mm) diameter flexible duct must be connected to the stub using a Bondseal or similar to make a good connection. The conduit must be laid in the trench from the gate to an interrupter pit. The interrupter pit must be located within 9.85-ft (3.0 metres) from the locking end of the gate.

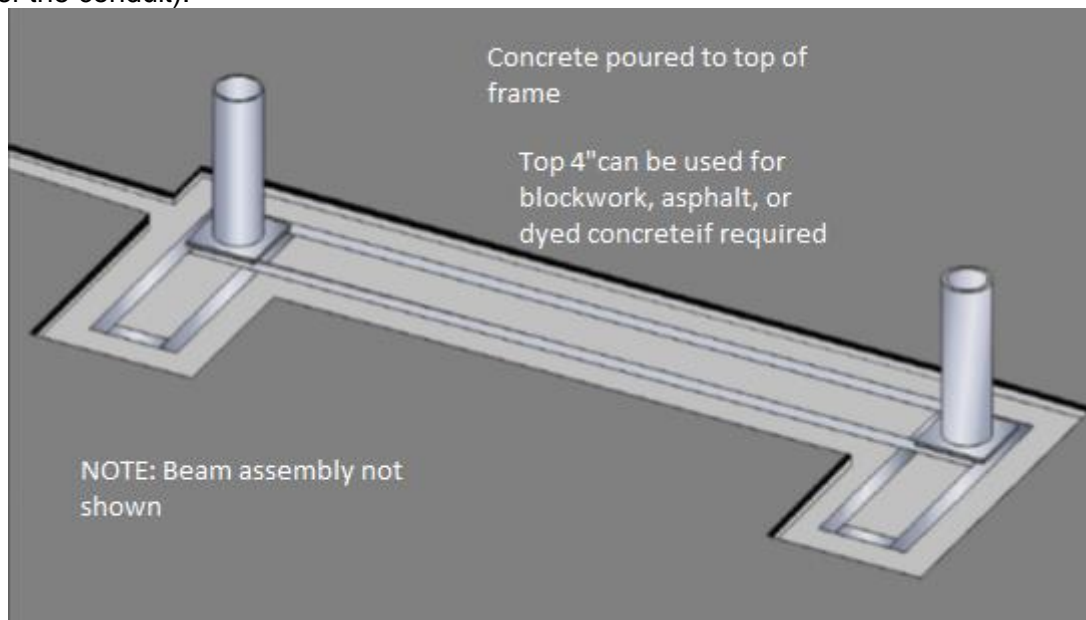
The gate is supplied with two 13-ft (4.0 metre) lengths of 3/8 inch hose which must be extended within the interrupter pit with additional hose of sufficient length to reach the control panel position. For distances up to 100-ft (30 metres) 3/8 inch hose is adequate. For distances beyond 100-ft (30 metres) contact Ameristar for advice.

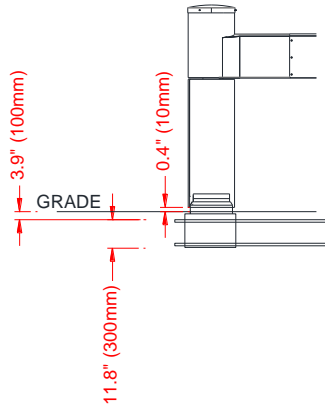
***It is essential to ensure that there are no sharp bends along any part of the conduit run. The absolute minimum allowable angle for any bend is 90°. The total number of bends must be kept to the absolute minimum. Where changes of direction are unavoidable consideration should be given to the installation of further interrupter pits otherwise it might not be possible to pull the hoses through the conduits.***

Having installed the conduits it is essential to also install strong draw cords to facilitate the pulling through of the hydraulic hoses and control cables. Both ends of each cord should be retained by a suitable "tie-off" to prevent the cords being pulled into the conduit and lost.

## CONCRETE FILLING

Having completed the installation of the interrupter pit(s) and the conduits the excavation must be filled with 5000 PSI concrete to the required level. The diagram below shows the concrete poured level with top of the frame, (this should be a depth of approximately 11.8" (300mm)). The trench for the conduit has also been filled to the same level (after installation of the conduit).





If the concrete is to be brought up to ground level then it must be poured to a level of approximately 15.75" (400mm) which should bring it to a level of 0.4" (10mm) below the bottom of the ascetic sleeve on the hinge end of the gate.

The diagram on the right shows the critical dimensions at the hinge end of the gate. If the area is to be finished with blocks, paving slabs or asphalt etcetera then the concrete should be poured to a level of approximately 11.8" (300mm) which should bring it level with the top of the shallow mount frame. If it does not then sufficient concrete **MUST** be poured to ensure that it does reach the top of the frame. This leaves a depth of approximately 4" (100mm) in which to install the required final finishing surface. This is shown in the diagram above.

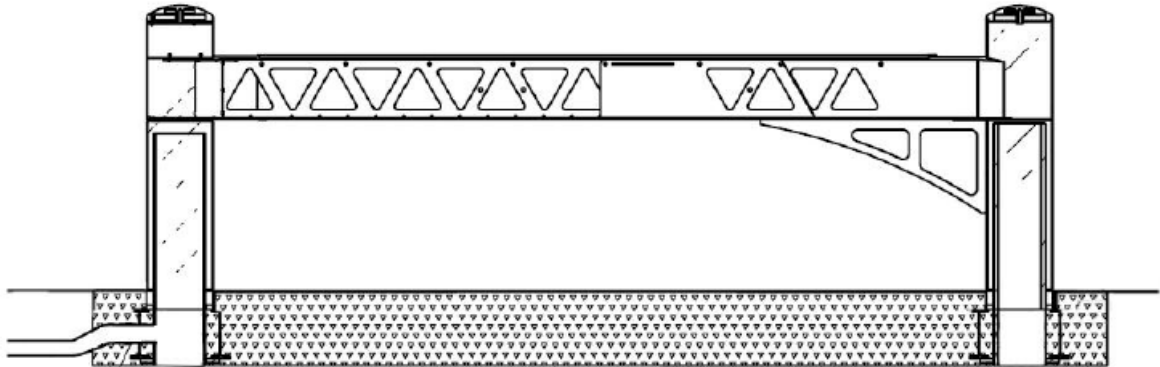
***In both instances the finished level MUST leave a gap of 0.4" (10mm) between the road surface and the bottom of the ascetic sleeve at the hinge end of the gate. This gap is required to ensure that the gate is free to turn and does not foul the road surface.***

## INSTALLING HOSES AND CONTROL CABLES

In addition to the two hydraulic hoses, the conduit will carry the control cables for connection to the optical position sensors fitted to the locking pin mechanism, and optional heat trace cable should that be required. 130-ft (40 metres) of cable is provided for the optic sensors with the gate, already connected to the two optical sensors in the locking pin post. This should be fed through the conduit, together with the two hydraulic hoses and optional heat trace, and along the extension conduit from the interrupter pit to the control panel position. These cables can be extended if required but in that case must be spliced by a suitable waterproof jointing method within an interrupter pit.

***On no account must hose or cable joins be located within the conduit run. If this is done then future maintenance and consequent operation of the gate locking pin will be compromised.***

The diagram below shows a typical gate with the conduit installed at the locking pin end and the concrete poured to a depth of approximately 15.75" (400mm), i.e. up to the finished road surface.



## 3 CONTROL PANEL

### GENERAL

The controls for the Cityscape gate are supplied in a skid mounted cabinet to which power must be connected.

A single phase 208 volt AC electrical supply is required to power the hydraulic pump and electronic control board which control the gate locking pin. The power supply should be fused at 15 amps. The hydraulic hoses and control cables from the gate are also connected within the panel.

Access to the panel interior is via a single lockable hinged door.

### MAINS ISOLATION

Mains isolation is by means of a single phase disconnect, housed within the main panel.

### CONTROL EQUIPMENT

Contained within the control panel are the hydraulic power unit, which drives the locking pin up and down to lock and unlock the gate, and the control components which are used to switch the hydraulic pump on and off.

The standard control configuration comprises of the incoming power disconnect, PLC, and control system, to which are connected the control cables from the two optical position sensors for the locking pin.

### HYDRAULIC POWER UNIT

A single phase motor drives the hydraulic pump which is controlled by the main control system to drive the piston in the hydraulic ram fitted to the locking pin. The control system thus directs hydraulic fluid to one side of the piston or the other in order to raise or lower the locking pin.

### OIL RESERVOIR

A small oil tank is built into the power unit and this contains sufficient reserve of oil to ensure correct operation. The oil level should be checked weekly or immediately if oil loss is suspected.

The oil level should be checked with the locking pin in the unlocked, (fully lowered).

**NOTE: that the level in the tank will fall when the locking pin is raised as some of the oil will be transferred to the operating ram.**

***Do not overfill the tank as this will result in excess oil spilling into the control system. Any spillage should be cleaned up immediately and oil removed from the tank until the correct level is reached.***

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## 4 OPERATION

### PUSH BUTTON CONTROL

The gate control package includes an optional three way control unit. To make the unit active it is necessary to insert the key provided into the key switch labelled “OFF” “ON” and then turn the key to the right. This arms the two push buttons and allows the operator to unlock and lock the gate.

By turning the key switch to the left and removing the key, unauthorised use of the push buttons is prevented.



***Opening or closing the gate is a two person operation.***

***One person must be stationed at the gate position and the other must be at of the control unit location. The two operators must be in Communication by radio or telephone.***

***NOTE: that the onus is on the operator at the control unit to ensure that it is safe to raise or lower the locking pin before doing so.***

### TO OPEN THE GATE

Proceed as follows:

1. Insert the key into the OFF/ON key switch.
2. Turn the key clockwise and leave it in that position.
3. Press the green UNLOCK push button.
4. The locking pin will be hydraulically driven downwards towards the unlocked position.
5. When the locking pin has reached the fully lowered, unlocked, position the gate is free to move.
6. The gate can now be manually opened by the operator at the gate location.



***When the gate has reached the fully open position it must be held in place to prevent it moving into the path of vehicles proceeding through the gate. Failure to do this may result in damage to the gate or a serious accident.***

The photograph on the below shows the locking pin in the lowered position with the gate open.



## TO CLOSE THE GATE

Proceed as follows:

1. Move the gate to the closed position.
2. Ensure that the gate is correctly aligned with the locking post. **Failure to align the gate and post correctly will cause damage to the gate when locking.**
3. Inform the operator at the remote location that it is safe to lock the gate.
4. Insert the key into the OFF/ON key switch.
5. Turn the key clockwise and leave it in that position.
6. Press the red LOCK push button.
7. The locking pin will be hydraulically driven upwards towards the locked position.



The photograph on the right shows the locking pin in the raised position but with the gate open. This is shown as an aid to understanding how the substantial mechanism, normally hidden within the gate post, is operated.

## VEHICLE SPEED CAUTIONS

### Caution

Excessive vehicle speeds can cause premature Cityscape Gate wear and/or dangerous driving conditions.

Vehicle speed over Cityscape Gates shall not exceed 15 mph. Exceeding the speed limit can cause premature Cityscape Gate System wear and/or dangerous driving conditions. Post speed limit signage as appropriate by site conditions.

## OPERATIONAL SAFETY

When giving a verbal instruction to a person who is to be given authority to proceed through a Cityscape Gate system it is imperative that a clear, short and concise message is given in order to ensure safe passage for that person and vehicle. Whilst it may be argued that this is common sense it will remove any doubts or ambiguities from the situation.

When operating the system it is important that a sufficiently large safety zone is established to ensure that if the Cityscape Gates are to be raised then any vehicle or pedestrian will not be affected by the Cityscape Gates movement.



***It is Important to be aware that the automatic Cityscape Gate system does not have any safety devices installed to prevent the Cityscape Gates closing on a vehicle. The onus is on the operator at the control location to ensure that before raising the Cityscape***

***Gates it is ascertained that it is safe to do so.***

The operator must be sure that:-

1. There are no vehicles parked over any opened Cityscape Gates,
2. There are no moving vehicles likely to approach any of the Cityscape Gates.
3. There are no pedestrians in the vicinity.
4. There are no obstructions likely to restrict or prevent Cityscape Gate movement.

## 5 MAINTENANCE

### OWNER/OPERATOR RESPONSIBILITIES

The Owner/Operator is responsible for performing the following during operation, service and/or maintenance of the equipment:

1. The Owner/Operator shall properly maintain service and repair equipment, and keep records of all work. Maintenance shall be performed at scheduled intervals.
2. Maintenance, service and/or repair of equipment shall be performed by trained and experienced Service Technicians only, familiar with the equipment specific requirements, ratings and limitations.
3. Operators and/or Service Technicians shall be properly trained in the use and operation of the equipment.
4. Equipment or components which have failed, are malfunctioning, are improperly adjusted, are worn or in disrepair, shall be repaired prior to resuming operation.
5. Equipment in a malfunctioning or unsafe condition shall not be operated.
6. All components requiring replacement shall be replaced with identical components, including, but not limited to materials and seals. If substitution of a component is required, the Owner/Operator shall verify that the substitution is acceptable with Ameristar prior to use.
7. All equipment shall be used within component and equipment ratings and acceptable limits.

### WEEKLY CHECKS

- Check that the locking pin is moving up and down freely.
- Check that the oil tank on the pump is topped up to the correct level.

***NOTE: that the tank should be full only when the locking pin is lowered. When the locking pin is raised some of the oil will have been transferred to the ram cylinder reducing the level in the tank.***

***The requirement for excessive amounts of oil indicates a leak somewhere in the system and this should be investigated. In any case the hydraulic connections and hoses should be routinely checked whenever the opportunity to do so arises, e.g. during the weekly inspection and when servicing.***

### SIX MONTHLY CLEANING

- The cartridge must be fully removed in order for adequate cleaning to take place. The instructions in this document detailing how to remove and replace the cartridge must be strictly adhered to.
- With the cartridge removed, the inside of the housing should be inspected and any debris should be removed.



- The preferred method of cleaning the casing is to remove any debris by hand using a long handled scoop or other suitable tool. The use of a water pressure jet for this task is not recommended.
- Before replacing the cartridge in the casing the hydraulic and electrical connections should be cleaned. The hydraulic connectors on the ends of the fixed pipes should be wiped clean to remove any water or dirt. This will ensure that a good connection will be made when the hoses are re-connected and that corrosion is minimised.



***The cartridge should not be replaced if there are more than 1/8" (3mm) of water in the bottom of the casing. The bottom of the casing should be made as dry as possible.***

## LEVEL ADJUSTMENT

At the locking end of the gate there should be a small amount of clearance between the bottom of the gate beam and the top of the locking pin post.

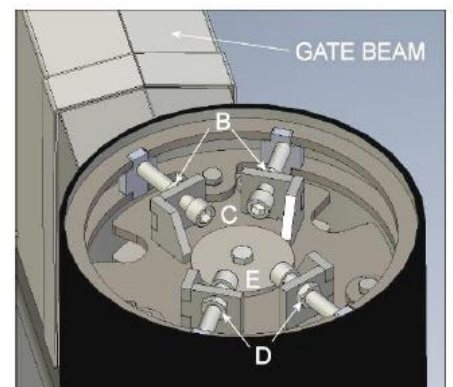
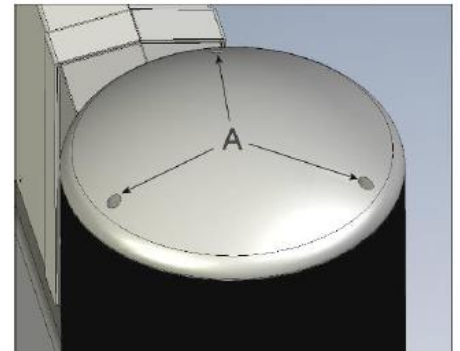
This should be checked regularly and the gate beam adjusted if necessary to maintain a clearance gap of not more than 1/8" (3mm).

To adjust the clearance gap proceed as follows:

1. Unlock the gate so that the locking pin is in the fully lowered position and the gate is free to move.
2. Remove the three retaining screws "A" and lift off the top lid at the pivoting end of the gate beam. (See photograph on right)
3. Ensure the gate is in the fully closed position.
4. Carefully take the weight of the gate beam at the locking pin end with suitable lifting tackle.
5. Place a piece of packing, not more than 1/8" (3mm) thick, under the gate beam at the locking pin end and lower the gate beam on to it.
6. The four 5/8" screws "C" and "E", shown in the photograph on the right, are adjusted to alter the clearance gap at the locking end of the gate beam.
7. Loosen the four locking nuts, "B" and "D".
8. To increase the clearance gap tighten screws "C" and loosen screws "E".
9. To decrease the clearance gap tighten screws "E" and loosen screws "C".

***Do not use the screws to actually lift and lower the gate beam. Use only sufficient tightness against the vertical metal plates to hold the beam in the required position while the packing is in place.***

10. Re-tighten the four locking nuts, "C" and "E"
11. Release the gate beam from the lifting tackle and allow it to settle back into position.
12. Check the clearance under the gate beam at the locking pin end and repeat the above procedure if necessary so that the gate swings freely with a gap of no more than 1/8" (3mm).



## LOCKING PIN POSITION SENSING

The position of the locking pin is detected by two photocells located within the cartridge of the hydraulic operator.

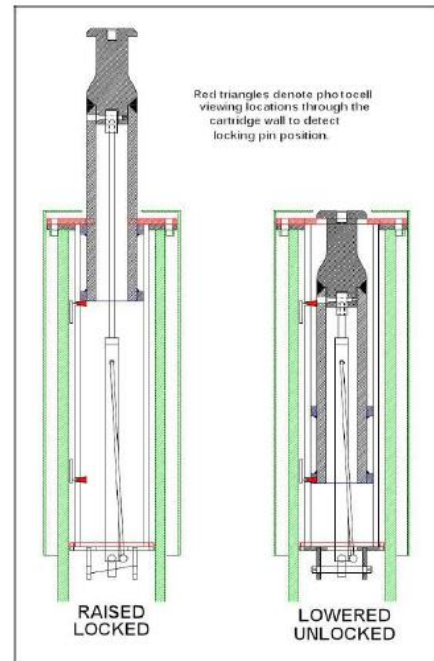
One photocell detects when the locking pin is in the fully raised position. The other photocell detects when the locking pin is in the fully lowered position.

In the diagram on the right the two photocell viewing locations are shown as red triangles.

If a photocell fault occurs it will be necessary to remove the hydraulic cartridge in order to clean or replace the photocell.

The photograph at bottom right shows the type of photocell fitted. For reference the Ameristar part number for the photocell is 15652.

A special connecting lead is also used and must be replaced if necessary with the correct Ameristar part number 15653.



### To gain access to the photocells.

In order to gain access to the photocells it is necessary to remove the complete hydraulic cartridge from within the outer casing. This is a two stage process which requires lifting equipment.

The process is as follows:

1. Remove the Flange and Sleeve
2. Remove Cartridge

These procedures are described in the following pages.



### TO REMOVE THE FLANGE AND SLEEVE



***The sleeve is very heavy and weighs in excess of 50kg. It must be lifted with appropriate lifting equipment.***

Proceed as follows:

1. Remove the 6 countersunk screws that secure the flange and sleeve.
2. Lift off the flange
3. Screw two ½" lifting eyes into the sleeve.
4. Feed a short spreader bar through the two eyes and secure with nuts to prevent it sliding out
5. Lift the sleeve clear of the fixed post casing using the lifting equipment



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## TO REMOVE THE CARTRIDGE



***This item is very heavy and must be lifted with appropriate lifting equipment. A special lifting bar must be used which is shown in the photograph on the right.***



The lifting bar is secured to the top of the slide tube by two bolts. A sling can then be passed through the ring so that the weight can be supported by suitable lifting equipment.

1. Remove the six countersunk 5/8" bolts.
2. Remove the stainless steel disk.
3. Attach the lifting frame using two bolts.
4. Locate and open the chamber that contains the slack for the hoses and cables.
5. Lift the cartridge clear of the fixed post tube using the lifting equipment taking care not to damage the cables.

***It will be necessary to feed some slack for the hoses and cables.***

## TO REFIT THE CARTRIDGE

1. Lower the cartridge into the fixed post keeping the hoses tight and taking care to avoid cable damage.
2. Fit the stainless steel disk.
3. Refit the six countersunk M16 bolts.
4. Remove the lifting frame.

## TO REFIT THE SLEEVE

1. Lower the cartridge into the fixed post keeping the hoses tight and taking care to avoid cable damage.
2. Fit the stainless steel disk.
3. Refit the six countersunk 5/8" bolts.
4. Remove the lifting frame.

## 6 SERVICE

### Warranty Period

The warranty period runs in line with Ameristar standard warranty.



***IMPORTANT: The warranty period should not be considered as a maintenance free time as, like any mechanical device, routine servicing is essential to ensure satisfactory and safe operation following hand-over of the system to the customer. Failure to carry out pre-scheduled preventative maintenance may invalidate the warranty on one or more parts and result in charges for the replacement parts.***

***A Service Contract is strongly recommended starting from the date of hand-over.***

### Service during warranty period

It is important to understand that the warranty covers parts only where the gate is non-operational due to a failed part supplied by Ameristar and then only when the recommended servicing has been carried out during the warranty period.

Parts required for repairs following a failure of the gate caused by, for example, vehicle impact, vandalism or failure to have the recommended warranty period service carried out will be chargeable.

### Service outside warranty period

Following expiry of the warranty period all parts become chargeable.

### Requests for Parts

All requests for parts, even within the warranty period, must be received in writing by Ameristar before a call can be logged and parts allocated. A telephone call alone will not enable Ameristar to allocate resources to a request for parts and a call must always be followed up in writing. An official order number must also be given, even if the equipment is still under warranty.