ASSEMBLY & INSTALLATION MANUAL

OPCON CONVERTER SYSTEM
FOR RECORD 8000/8100- 6100

Go to www.opconusa.com for shop drawings, architectural details, technical details, hardware, product links and other related information.

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OPERATOR CONVERSION THEORY
& IMPORTANT CONSIDERATIONS
(REVIEW BEFORE STARTING ASSEMBLY AND INSTALLATION)

THEORY OF OPERATION
The Opcon Operator Conversion System is designed to convert standard overhead mounted, swing door operators from overhead mounted to underground/underfloor use. A custom pivot assembly and operator-mounting sled is provided to attach the standard operator, creating a new drive assembly. The entire drive assembly is then placed into a waterproof cement case, sealed, and cemented into place under the door. The drive system Spindle attaches to the bottom arm of the door. The Spindle profile of the unit integrates with many available bottom arms for center hung and offset hung swing doors.

CONSIDERATIONS
1) HANDLING: It is important to note that handing the operator is opposite of standard since the operator is mounted upside down when converted. Specifically, a left hand operator swings a right hand door; and a right hand operator swings a left hand door. Microswitch placement, stop block placement, and programming functions will be affected depending upon the operator selected.

2) DRIVE SPINDLE: The Spindle of the converter is specific to the bottom arm selected for each door. Spindle profiles are available for most Dorma and Rixson bottom arm hardware for center hung, offset pivot hung, and offset butt hung (hinged) doors. The Dorma arm profile is often compatible with CR Laurence hardware. Bottom arms are NOT supplied with the converter. Be certain that the Spindle ordered matches the bottom arm selected. See Opcon website for details.

3) CEMENT CASE SIZE: All cement cases are supplied at the standard size of 35-1/2” long X 7” wide. On pairs of doors, a conduit connects the cement cases and the width is variable. Pairs of doors narrower than 72” are available as a custom order. Contact Opcon for custom size details.

4) FLOOR EXCAVATION & PREPARATION: The typical floor depth for the converter is 7” minimum; but this may be reduced somewhat by the height of the threshold or other flooring material if the converter can be raised under the floor covering. Center hung door excavation is the width between the jambs + ¼” under the jambs; Offset hung door excavation is the width between the jambs + 2-1/4” under the pivot side jambs. Refer to Floor Blockout tab at Opcon website.

5) THRESHOLD & FLOORING: All units are shipped considering a ¾” tall threshold or stone cover unless otherwise advised. Most thresholds must be 10” wide to cover the converter and excavation. Terrazzo stone pans have a variable size between 8” and 10”. Thresholds made to Opcon specifications are available directly from National Guard Products or Pemko. Terrazzo & Stone Pans are also available for stone flooring directly from Opcon. Refer to Thresholds at website.

6) ELECTRICAL & LOW VOLTAGE: The electrical supply and low voltage signal lines must enter the cement case at the non-pivot side of the converter on single doors, and at or near the center on pairs of doors. Liquid Tight conduit fittings must be installed. Wireless activation requires sealed antenna placement through the cement case. Refer to Wiring section of Install Manual.
OPERATOR ASSEMBLY

(PROCEDURE 1)
RECORD 8000/8100-6100

NOTE/PROCEDURE:
1. Reference isometric drawing for more details.
2. Right hand outswing shown; uses left hand outswing operator due to upside-down mounting.
3. After mounting, power operator to 90° hold open stop (internal operator stop).
4. See chain and sprocket assembly to continue.
CHAIN AND SPROCKET ASSEMBLY

(PROCEDURE 2)
RECORD 8000/8100-6100

STEP 2: Install gearbox sprocket/hub assy sequenced as shown. Power unit open to full 90° position.

STEP 3: Install chain over gearbox sprocket; index spindle to full open position; tilt spindle to place chain over sprocket.

STEP 4: Re-install top plate.

STEP 1: Remove top plate & install drive spindle parts sequenced as shown.

*ASSEMBLE CHAIN WITH ALL FURNISHED LINKS (CONNECTING & OFFSET).

*ALT SPINDLE COLLAR (1") USE WHEN SPINDLE MUST BE RANDED HIGHER THAN 9/16" SPINDLE COLLAR PERMITS.

NOTES/PROCEDURE:
1. From procedure #1, operator is mounted to side and powered to 90° open position before installing chain and sprockets.
2. After chain and sprocket assembly, slide operator away from spindle to tension chain (see procedure 3).
STEP 1: Insert rubber block, then turn chain tension-nut counterclockwise to tighten chain. Adjust chain to 3/8" slack when squeezed at center. Lock tension-nut with jam-nut.

STEP 2: Tighten (4) extrusion bolts.

NOTES/PROCEDURES:
1. Operator and speed control not shown for clarity.
2. Adjust opening and closing positions of spindle (pre-load for closing force).
3. Attach control box and tune to Record specifications.
4. Install completed and tuned assembly into cement case.
SPINDLE CENTERING & WEDGING
(PROCEDURE 4)
RECORD 8000/8100-6100

STEP 1: Center spindle using 2 bolts on top plate. Minimize pressure on cement case to avoid misalignment of cover screws.

STEP 2: Adjust hex bar for lateral movement. Insert shims behind spindle housing for alternate spindle locating.

STEP 3: Tighten sled wedges in 2 places. Wedge flat and tight against cement case.

NOTES/PROCEDURES:
1. Operator and speed control not shown for clarity.
2. Insert tuned converter/operator assembly into cement case.
3. Adjust spindle to center of cement case using adjusting bolts and hex bar.
4. Wedge sled assembly firmly within cement case.
SPINDLE HEIGHT ADJUSTMENT

PROCEDURE 5

SPINDLE SHOULDERS

STEP 1: Loosen (2) 9/16” base plate bolts. Do not remove.

STEP 3: Re-tighten (2) 9/16” base plate bolts.

STEP 2: Adjust base-plate height using Allen wrench on 3 threaded posts. Turn clockwise to raise; turn counter-clockwise to lower. Turn each post equally.

NOTES/PROCEDURES:

1. Operator and speed control not shown for clarity.
2. Spindle height adjustment formula:

Assumes cement case cover is 1/4” below finished floor at installation.
Dimensions taken from top of cement case cover to spindle shoulder.
1/4” below finished floor + threshold height + space beneath door + depth of bottom arm if arm is recessed inside bottom of door (max recess 1/8”).
CEMENT CASE & SPINDLE SEALS
(PROCEDURE 6)
COMMON TO ALL CEMENT CASES

STEP 1: Install delrin splice & spindle seal and "V" seal after installing unit in cement case. Set delrin seal and "V" seal onto cement case cover in a bed of gasket sealant and also as "beveled" topping on all 4 sides. Fasten with four 8-32 x 3/4" flat head screws. INSTALL PRIOR TO HANGING DOOR.

STEP 2: Install one-way seal retaining ring. Push only until seal is flush with cover. Cover must be removable.

STEP 3: Install delrin seal and "O" ring and retaining ring after installing floor cover. Set onto floor cover with a bed of gasket sealant. INSTALL PRIOR TO HANGING DOOR.

STEP 4: Seal entire perimeter & splices of floor cover with silicone sealant. DO NOT SCREW INTO CEMENT CASE COVER.

*Perimeter gasket factory installed.

*Set seals in bed of permatax gasket compound

*8-32 x 3/4" pan head screws at non-seal/splice perimeter

*Electrical penetrations require liquid-tite fittings

*See "Thresholds" tab at website for other floor covering options (terrazzo, stone, transition, etc.).

*Leave sealant inside cement case for future access. Use re-seal after opening.

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SINGLE DOOR : LEFT HAND OUTSWING (RHR) SHOWN
RIGHT HAND OUTSWING (LHR) OPPOSITE

OUTSWING DOOR PAIR

NOTES
1. CENTER HUNG DOORS ONLY. DIMENSIONS DIFFERENT ON OFFSET PIVOT AND BUTT HUNG DOORS
2. SEE MANUFACTURERS TEMPLATE FOR LATEST DOOR LEAF AND BOTTOM ARM PREP
3. DEPTH OF EXCAVATION IS 7.125 MINIMUM TO 7.75 MAXIMUM BELOW FINISHED FLOOR
4. SPINDLE CENTER MUST BE PLUMB WITH TOP PIVOT
FIELD LAYOUT TEMPLATE
FLOOR BLOCKOUT WITH STANDARD BOTTOM ARMS ONLY
(RIXSON #27 OR DORMA BTS-80, ETC.)
3/4" OFFSET PIVOT HUNG DOORS ONLY
(SLIDE ARM SYSTEM IS RECOMMENDED FOR BUTT HUNG DOORS - REF. SLIDE ARM DRAWINGS)

OUTSWING DOOR PAIR

NOTES
1. 3/4" OFFSET PIVOT DOORS USING STANDARD BOTTOM ARMS ONLY. DIMENSIONS DIFFERENT ON BUTT HUNG (HINGED), OFFSET SLIDE-ARM, AND CENTER-HUNG DOORS
2. SPINDLE MUST BE PLUMB WITH PIVOT CENTER. SEE MANUFACTURER'S CURRENT TEMPLATE FOR BOTTOM ARM PLACEMENT ON DOOR
3. DEPTH OF EXCAVATION IS 7.125 MINIMUM TO 7.75 MAXIMUM BELOW FINISHED FLOOR
FIELD LAYOUT TEMPLATE
FLOOR BLOCKOUT WITH STANDARD BOTTOM ARMS ONLY
(RIXSON #27 OR DORMA BTS-80, ETC.)
BUTT HINGED - OFFSET HUNG DOORS ONLY
(SLIDE-ARM SYSTEM IS RECOMMENDED FOR BUTT HUNG DOORS.
REF. SLIDE ARM DRAWINGS)

SINGLE DOOR : LEFT HAND OUTSWING (RHR) SHOWN
RIGHT HAND OUTSWING (LHR) OPPOSITE

OUTSWING DOOR PAIR

NOTES:
1. OFFSET BUTT- HUNG DOORS USING STANDARD BOTTOM ARMS ONLY. DIMENSIONS DIFFERENT ON OFFSET PIVOT,
OFFSET SLIDE-ARM, AND CENTER-HUNG DOORS
2. SPINDLE MUST BE PLUMB WITH HINGE CENTER. BOTTOM ARM PLACEMENT ON DOOR WILL DIFFER FROM
MANUFACTURER'S TEMPLATE.
3. DEPTH OF EXCAVATION IS 7.125 MINIMUM TO 7.75 MAXIMUM BELOW FINISHED FLOOR
36" MIN BLOCKOUT WIDTH

35-1/2" CEMENT CASE (STANDARD)
SPECIAL SIZES AVAILABLE FOR CUSTOM DOORS

INTERIOR
FLOOR BLOCKOUT
JAMB (NARROW, SEE NOTE 2)
SPINDLE MAY NOT BE AT E OF JAMB

3/8" - E OF SPINDLE TO INTERIOR FACE OF DOOR

EXTERIOR
FLOOR BLOCKOUT
INTERIOR EDGE OF DOOR
CL OF SPINDLE
CL OF DOOR

FOR 1-3/4" THICK DOOR, SEE NOTE 2

SINGLE DOOR: LEFT HAND OUTSWING (RHR) SHOWN RIGHT HAND OUTSWING (LHR) OPPOSITE

OUTSWING DOOR PAIR

BLOCKOUT WIDTH = DISTANCE BETWEEN JAMBS

EXTRA CLEARANCE MAY BE REQUIRED AT LIQUID TIGHT ELEC. FITTINGS

NOTES:
1. BUTT HUNG (HINGED) & 3/4" OFFSET PIVOT DOORS USING RIXSON OR DORMA BOTTOM ARM AND SLIDE TRACK
2. DIMENSIONS ARE FOR 1-3/4" DOOR THICKNESS. HOLD 1-1/4" DIMENSION FROM INSIDE FACE OF ANY DOOR THICKNESS TO CENTERLINE OF SPINDLE. SPINDLE MAY NOT BE AT CENTERLINE OF JAMB.
3. JAMB WIDTHS VARY. PLACEMENT DIMENSIONS ARE FROM INTERIOR FACE OF JAMB TO CENTER OF SPINDLE.
4. SEE OPCON WEBSITE FOR LATEST DOOR LEAF PREP DRAWINGS
5. DEPTH OF EXCAVATION IS 7.125 MINIMUM TO 7.75 MAXIMUM BELOW FINISHED FLOOR

REF. WEB DWGS
FL-P101-D81
FL-B101-D81
FL-P101-R327
FL-B101-R327

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INSTALLATION PROCEDURE
ALL MANUFACTURERS - ALL STANDARD OPERATORS
CENTER HUNG DOORS

2 3/4" Pivot Setback (Rixson #28, Dorma BTS-80, etc.)

1. Cut concrete or floor to dimensions detailed on blockout/template drawing. Blockout must be entire door width between jambs + 1/4" under each pivot jamb.
2. Layout & drill cement case for electrical & signal lines
3. Install electric & low voltage conduit with OPCON supplied liquid-tight fittings.
4. Install top door pivot & locate center of OPCON converter converter spindle using a plumb-bob/laser.
5. Cement case must be parallel with door header.
   CEMENT CASE COVER IS SET 1/4" BELOW FINISHED FLOOR (min.).
6. For PAIRS of doors the cases will be set separately with a connecting conduit at center.
7. Cement case must be level & plumb in all directions.
8. Set cement case into excavation & secure in position.
9. Pourstone ONLY around bottom 1" of cement case.
   INSTALL SPINDLE/SHAFT SEALS NOW.
   Hang door and final adjust position.
10. BE SURE THAT CEMENT CASE COVER IS INSTALLED PRIOR TO POURSTONE.
    POURSTONE WILL COLLAPSE THE CEMENT CASE IF COVER IS NOT ATTACHED.
11. Final pourstone cement case with OPCON converter assembly & door leaf in place.

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1. Cut concrete or floor to dimensions detailed on blockout/template drawing. Blockout must be entire door width between jamb + 2 1/4" under each pivot jamb.
2. Layout & drill cement case for electrical & signal lines
3. Install electric & low voltage conduit with OPCON supplied liquid-tight fittings.
4. Install top door pivot & locate center of OPCON converter converter spindle using a plumb-bob/laser.
5. Cement case must be parallel with door header.
   CEMENT CASE COVER IS SET 1/4" BELOW FINISHED FLOOR (min).
6. For PAIRS of doors the cases will be set separately with a connecting conduit at center.
7. Cement case must be level & plumb in all directions.
8. Set cement case into excavation & secure in position.
9. Pourstone ONLY around bottom 1" of cement case.
   INSTALL SPINDLE/SHAFT SEALS NOW.
   Hang door and final adjust position.
10. BE SURE THAT CEMENT CASE COVER IS INSTALLED PRIOR TO FOURSTONE.
    POURSTONE WILL COLLAPSE THE CEMENT CASE IF COVER IS NOT ATTACHED.
11. Final pourstone cement case with OPCON converter assembly & door leaf in place.

OFFSET HUNG DOORS - PAIR
CENTER LINE OF OPCON PIVOT MATCHES CENTERLINE OF DOOR PIVOT

OFFSET HUNG DOOR - SINGLE

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1. Cut concrete or floor to dimensions detailed on blockout/template drawing. Blockout must be entire door width between jambs.

2. Layout & drill cement case for electrical & signal lines.

3. Install electric & low voltage conduit with OPCON supplied liquid-tight fittings.

4. Establish location of exterior door face and locate center of OPCON converter spindle. DRAWING ASSUMES 1-3/4" THICK DOOR, ADJUST DIMENSIONS FOR THICKER OR THINNER DOORS.

5. Cement case must be parallel with door header. CEMENT CASE COVER IS SET 1/4" BELOW FINISHED FLOOR (min.)

6. For PAIRS of doors the cases will be set separately with a connecting conduit at center.

7. Cement case must be level & plumb in all directions.

8. Set cement case into excavation & secure in position.

9. Pourstone ONLY around bottom 1" of cement case. INSTALL SPINDLE/SHAFT SEALS NOW.

10. BE SURE THAT CEMENT CASE COVER IS INSTALLED PRIOR TO POURSTONE. POURSTONE WILL COLLAPSE THE CEMENT CASE IF COVER IS NOT ATTACHED.

11. Final pourstone cement case with OPCON converter assembly & door leaf in place.
END VIEW W/STANDARD THRESHOLD CENTER HUNG

END VIEW W/TERRAZZO OR STONE PAN - OFFSET PIVOT HUNG

PLAN VIEW - TYPICAL FLOOR COVER PREP
*SEE WEBSITE FOR DETAILED DRAWINGS & OPTIONS

FLOOR COVERING OPTIONS

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CONDUIT CONNECTIONS
ELECTRIC & LOW VOLTAGE LINES
TYPICAL FOR ALL INSTALLATIONS
(Standard System for Single and Dual Cement Cases)

1. Verify power requirements with operator manufacturer & layout cement case for conduit.

2. Verify low voltage signal lines for accessories & layout cement case for conduit.

3. Conduit to cement case connection MUST be OPCON supplied "liquid-tight" water tight fittings specifying Arlington #LT7. Field drilled as required by supplied drawing detail. Conduit & liquid-tight fittings required for both 120VAC and low voltage signal runs.

4. Conduit connections to convertor must be at the strike side of single doors and near center of dual doors as shown. Holes may be located at sides, bottom, or end (on single doors) of cement case. MUST be liquid-tight fittings (Arlington #LT7). Use of other fittings may cause leaks & void warranty.

5. Install converter/operator/door assembly. INSTALL SPINDLE SEALS PRIOR TO HANGING DOOR.

6. Install cement case cover/gasket assembly. Do not overtighten screws.

SINGLE CASES

DUAL CASES
Power required to one case only

NOTE: Holes with arrows show the best locations for conduit penetrations. Jobsite conditions will dictate actual location. Locations vary by operator.

PVC Conduit Connector (provided by Opcon.) Silicone in place (all sides-inside & out) when leveling & prior to pourstone.

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SIMPLY PUSH LIQUID-TIGHT CONDUIT OVER FERRULE END OF FITTING. WHILE PUSHING CONNECTOR, TURN CONDUIT SLIGHTLY CLOCKWISE TO SEAT IT.

#LT-7 FITTING

BORE CEMENT CASE 1-1/16" MIN. TO 1-1/8" MAX. TO ACCEPT LIQUID TIGHT FITTING. SEE OPCON PENETRATION DRAWING FOR ACCEPTABLE BORE LOCATIONS.

LEAVE ENOUGH SPACE AT FLOOR BLOCKOUT TO ACCEPT FITTINGS

2" MIN.

GASKET

NUT

PLAN VIEW

ARLINGTON #LT-7 LIQUID-TIGHT FITTING MUST BE USED FOR ELECTRICAL AND LOW VOLTAGE PENETRATIONS ON CEMENT CASE. OTHER FITTINGS HAVE NOT BEEN TESTED OR APPROVED; AND MAY CAUSE LEAKS THAT MAY VOID WARRANTY.

ARLINGTON #LT-7 FOR 3/4" CONDUIT

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WIRING REQUIREMENTS
STANDARD INSTALL

ALL WIRING TO NON-PIVOT SIDE OF DOOR LEAF. WIRES TO CENTER ON PAIRS. WIRES TO STRIKE SIDE ON SINGLES. SEE ELECTRICAL PENETRATION DRAWING IN MANUAL FOR CONDUIT FITTING LOCATION ON CEMENT CASE.

SEE OPERATOR MANUFACTURER'S MANUAL FOR SPECIFIC WIRING REQUIREMENTS.

12-GUAGE WIRE UP TO 100' RUN; SEE SPEC OVER 100'.

CEMENT CASES SHOWN BELOW SLEDS FOR CLARITY.

SINGLE DOOR WIRING SIMILAR USE LIQUID TIGHT CONDUIT FITTINGS.

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WIRING REQUIREMENTS
ELECTRIC PANIC DEVICE INSTALLATION

ALL WIRING TO NON-PIVOT SIDE OF DOOR LEAF. WIRES TO CENTER ON PAIRS, WIRES TO STRIKE SIDE ON SINGLES. SEE ELECTRICAL PIERCING DRAWING IN MANUAL FOR CONDUIT FITTING LOCATION ON CEMENT CASE. SEE OPERATOR/DEVICE MANUFACTURER'S MANUAL FOR SPECIFIC WIRING.

ON/OFF/HD

DEDICATED 120VAC-GFCI

Dedicated 120VAC-GFCI

PANIC DEVICE POWER SUPPLY

PANIC DEVICE POWER SUPPLY

CEMENT CASE

CEMENT CASE

12-GUAGE WIRE, UP TO 100' RUN; SEE SPEC OVER 100' 20-GUAGE WIRE, 4 CONDUCTOR MINIMUM

FRONT ELEVATION SCALE = 1:20

Security Access System or Push Plates

Security Access System or Push Plates

Cement cases shown below are for clarity. Single door wiring similar-use liquid tight conduit fittings.

PLAN VIEW SCALE = 1:16

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WIRING REQUIREMENTS
OVERHEAD LOCK INSTALL
ALL WIRING TO NON-PIVOT SIDE OF DOOR LEAF. WIRES TO CENTER ON PAIRS,
WIRE TO STRIKE SIDE ON SINGLES. SEE ELECTRICAL PENETRATION DRAWING IN
MANUAL FOR CONDUIT FITTING LOCATION ON CEMENT CASE. SEE LOCK &
OPERATOR MANUFACTURER'S MANUALS FOR SPECIFIC WIRING REQUIREMENTS.

FRONT ELEVATION SCALE = 1:20
CEMENT CASE

PLAN VIEW SCALE = 1:16
CEMENT CASE

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NOTES:
1. MINIMUM 10" WIDE THRESHOLD
2. LOCK SECTION OF THRESHOLD IS PERMANENTLY ATTACHED TO CEMENT CASE COVER AS SHOWN
3. ADD SHIMS AS REQUIRED BETWEEN BOTTOM OF THRESHOLD AND TOP OF CEMENT CASE COVER
4. USE TEMPLATES FOR LAYOUT BASED ON LOCK LOCATION IN DOOR

LOCK ENCLOSURE - BOTTOM RAIL LOCK BASED ON LOCKNETICS MODEL GF3000-BDR
(DRAWING DETAILS FOR CENTER HUNG AND SLIDE-ARM TYPE DOORS)

OPCON™

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OPCON MANUFACTURING SYSTEMS, INC.

WARRANTY POLICY ON OPCON PRODUCTS

Opcon Manufacturing Systems, Inc. (Opcon) manufactures its products from high-grade materials with first class workmanship. Subject to the other conditions of the Warranty, if any parts of our own manufacture prove defective in material or workmanship within one (1) year after original installation, we shall repair or replace such parts free of cost. If any equipment or parts not of our own manufacture are utilized in connection with this automatic door operator conversion system, we shall assume responsibility and liability for defects only to the extent of such adjustment as the manufacturer thereof makes to us. The warranty shall not extend beyond one (1) year from the original date of installation regardless of any replacements that may be made. This is a parts replacement warranty. Field labor shall be the responsibility of the installing or servicing entity.

Our obligations under this Warranty are conditional upon (1) the owner’s having filed the Warranty Registration Card with us at the time of the original installation, (2) giving us prompt written notice of alleged defects, and (3) upon our request, returning the allegedly defective items to us in Carlsbad, California, freight prepaid, for our inspection.

We shall have no obligation or liability, under this Warranty or otherwise, in the event of improper installation of this automatic door operator conversion system unless and until the installation is corrected. However, in no case shall we have any obligation or liability beyond one (1) year after the original installation for any replacement or repairs that may be made. We reserve the right, without obligation, to inspect all installations of Opcon door operator conversion systems and equipment for the protection of both the owner and ourselves. Only authorized automatic door installers may install or service the Opcon conversion system and/or the interfaced automatic door operator equipment.

In no event shall we have any obligation or liability, under this Warranty or otherwise, resulting in whole or in part from damage to defects in the door operator or equipment caused by abuse, misuse, malicious mischief, acts of God, casualty, improper handling or the negligence of the owner or others. Nor shall we have any obligation or liability for any loss, cost or expense incurred in the repair of replacement of the door operator or equipment except on express written authority from our office in Carlsbad, California.

The owner’s sole remedy against us for any alleged defects in the Opcon Conversion System shall be as provided in this Warranty. We hereby disclaim all other obligations and liability for damages, including any incidental consequential damages. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This Warranty may not be changed, expanded or modified in any way. Any warranty requiring field labor is the responsibility of the Opcon factory-authorized installer.
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PATENT NUMBER:
US 6,176,044 B1 OF 2001

PATENTS PENDING:
Pub. No. 2008/0256869 A1
Sealing Arrangement For Door Operating Apparatus

Pub. No. 2008/0256870 A1
Adjustable Spindle Arrangement For Door Operating Apparatus