

**08315/OVE**  
**BuyLine 0777**

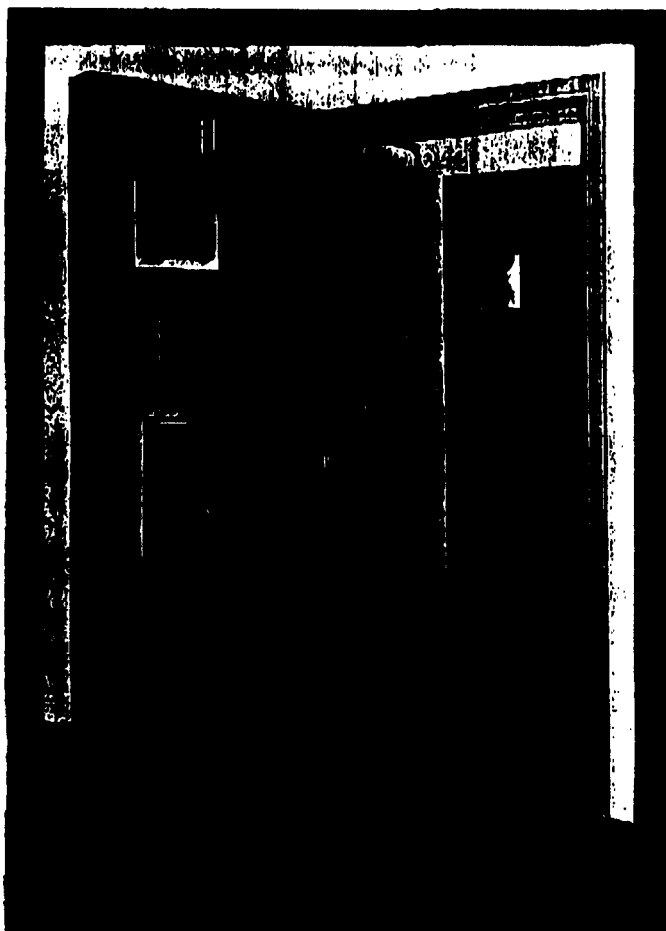
## Pre-Engineered Blast Doors

### Pre-Engineered Blast Door Selector Chart

Single Door Sizes . . . Double leaf pairs available.

| Door Model | Jamb Opening                                                                                                                                     |               |               |               |               | Door Thick. | Latching Points | U.L. Fire Label |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|-------------|-----------------|-----------------|
|            | 3'-0" X 7'-0"                                                                                                                                    | 3'-0" X 8'-0" | 3'-0" X 9'-2" | 4'-0" X 7'-0" | 4'-0" X 8'-0" |             |                 |                 |
| VL.RB      | 1.20 psi                                                                                                                                         | 1.05 psi      | 0.91 psi      | 0.90 psi      | 0.78 psi      | 1-3/4"      | 1               | 3 hr.           |
| LRB        | 2.09 psi                                                                                                                                         | 1.83 psi      | 1.60 psi      | 1.57 psi      | 1.52 psi      | 1-3/4"      | 1               | 3 hr.           |
| MRB-1      | 3.30 psi                                                                                                                                         | 2.89 psi      | 2.52 psi      | 2.48 psi      | 2.17 psi      | 2-3/4"      | 1               | 3 hr.           |
| MRB-2      | 7.04 psi                                                                                                                                         | 6.16 psi      | 6.38 psi      | 5.28 psi      | 4.52 psi      | 2-3/4"      | 1               | 3 hr.           |
| MRB-3      | 12.00 psi                                                                                                                                        | 10.50 psi     | 9.50 psi      | 9.00 psi      | 8.00 psi      | 2-3/4"      | 1               | n.a.            |
| MRB-4      | 20.00 psi                                                                                                                                        | 17.50 psi     | 15.30 psi     | 15.00 psi     | 13.10 psi     | 2-3/4"      | 1               | n.a.            |
| HIRB-1     | Pressures ranging from 25 - 50 psi<br>Pressures ranging from 50 - 100 psi<br>Pressures ranging from 100 - 200 psi<br>Pressures exceeding 200 psi |               |               |               |               | Varies      | 1               | n.a.            |
| HRB-2      |                                                                                                                                                  |               |               |               |               | Varies      | 1               | n.a.            |
| HRB-3      |                                                                                                                                                  |               |               |               |               | Varies      | 1               | n.a.            |
| HRB-4      |                                                                                                                                                  |               |               |               |               | Varies      | 1               | n.a.            |

Loads shown in the table are the maximum equivalent static force the doors can safely resist in the unsealing direction. Sealing load capacities for doors are higher.



A High Flange Door (HIRB-1) designed to withstand a dynamic overpressure of 25 psi for 20 ms.

In addition to being an acknowledged leader in the design of custom blast doors, Overly Manufacturing has developed a series of pre-engineered single and pairs of blast doors. Overly's Pre-Engineered Blast Doors Series - VL.RB (Very Low Range Blast), LRB (Low Range Blast), and MRB (Mid Range Blast) - cover the most often specified blast pressure ranges.

Overly Pre-Engineered Blast Doors feature a lower cost than custom-designed doors. Calculations cover every load-bearing component of the door, frame, restraining hardware, and anchoring system. Doors are factory hung in the frame, with all hardware applied and checked for fit and operation prior to shipment.



A Very Low Range (VL.RB) Door, designed to withstand up to 1.2 psi static equivalent pressure.

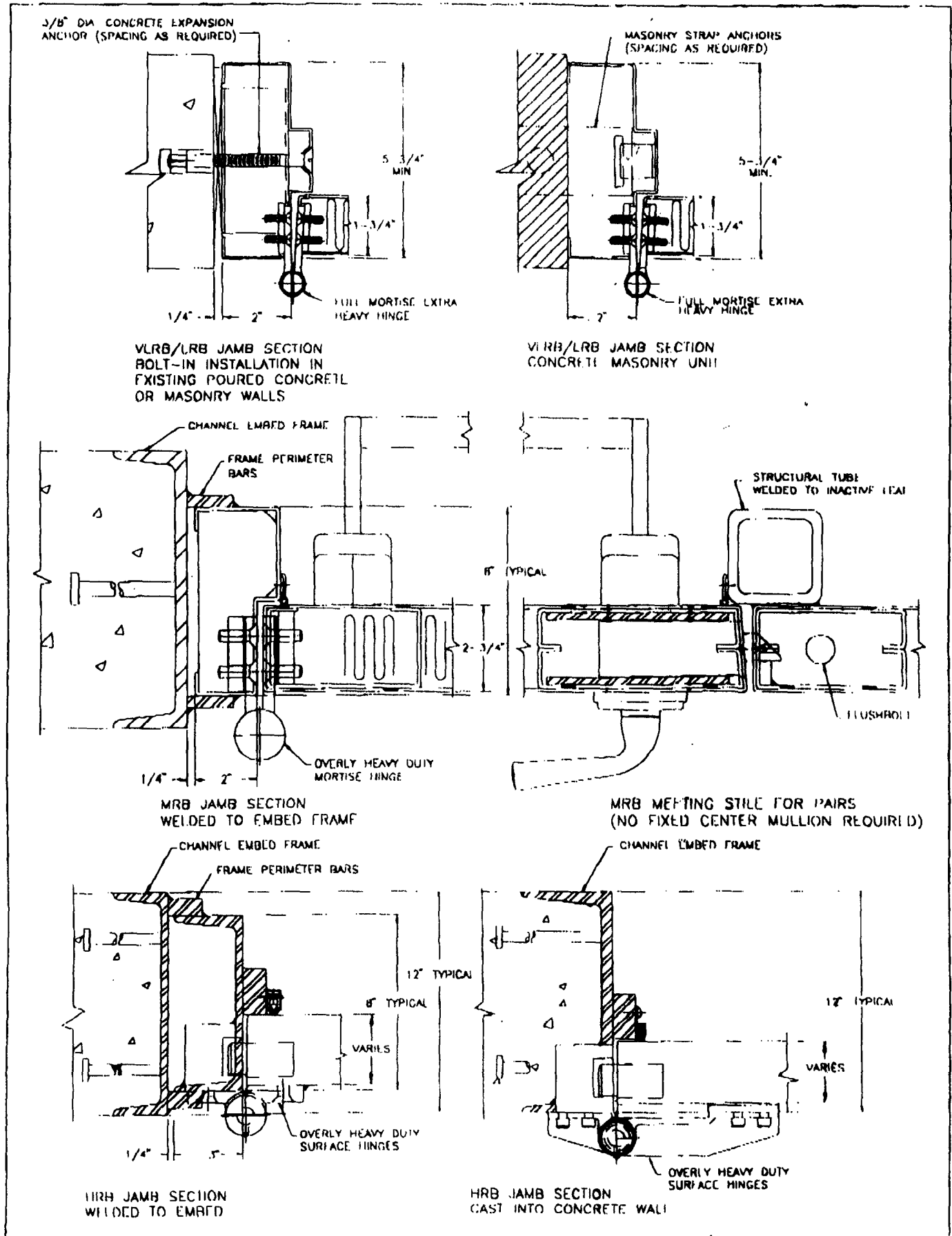
Overly's Pre-Engineered Mid Range Blast Doors are equipped with Overly's concealed single or multi-point locking pin design that is aesthetically pleasing, long lasting, and requires little maintenance. Overly Pre-Engineered Mid Range Blast Doors are available in single and pairs.

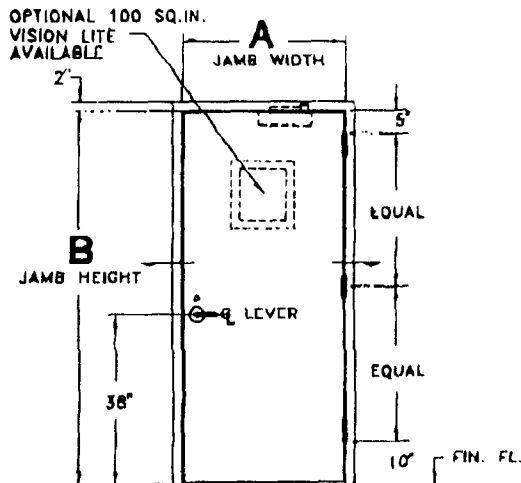
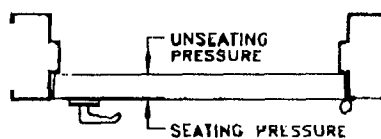
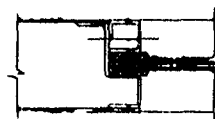
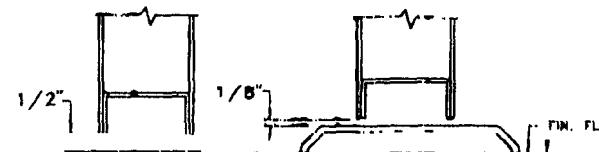
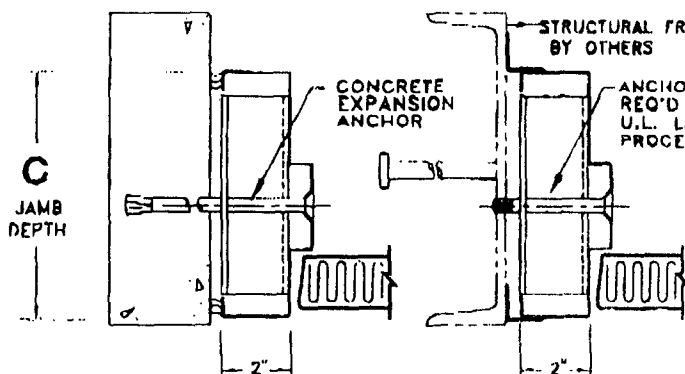
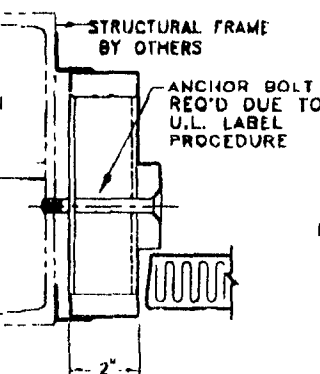
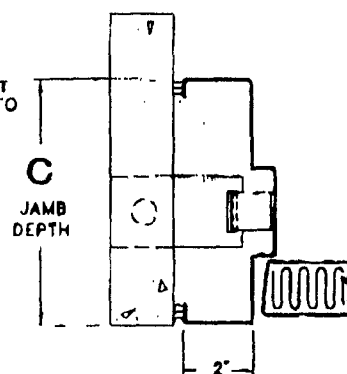
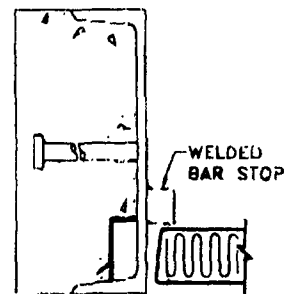
For more detailed information, consult Overly's *Blast-Resistant Door Monograph*.

Sliding Blast Doors and frangible "Blow-out" panels are also available.

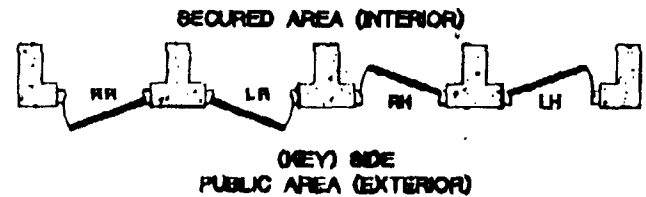
08315/OVE  
BuyLine 0777

## Pre-Engineered Blast Door Details.



**SERIES****VLRB****OVERLY**  
MANUFACTURING COMPANY574 WEST OTTERMAN STREET  
POST OFFICE BOX 70  
GREENSBURG, PA. 15601-0070  
TELEPHONE (412) 834-7300  
FAX (412) 830-2871**VERY LOW RANGE BLAST / SINGLE SWING  
UL FIRE LABELED / DOOR AND FRAME ASSEMBLY****OUTSIDE ELEVATION**  
RR SWING SHOWN LR OPPOSITE**HORIZONTAL SECTION - RR****VISION LITE SECTION****SILL SECTIONS****BOLT-IN DETAIL****WELD-IN DETAIL****BOLT-IN DETAIL****STRUCTURAL****NOTES:**

1. The door and frame are designed to withstand an equivalent total static load as listed below.
2. All exposed surfaces of door and frame to receive one coat of rust inhibitive prime paint.
3. U.L. labeled units require U.L. listed closers.
4. Door can be equipped with conventional mortise lock/latch or mortised panic device. Customer to specify.



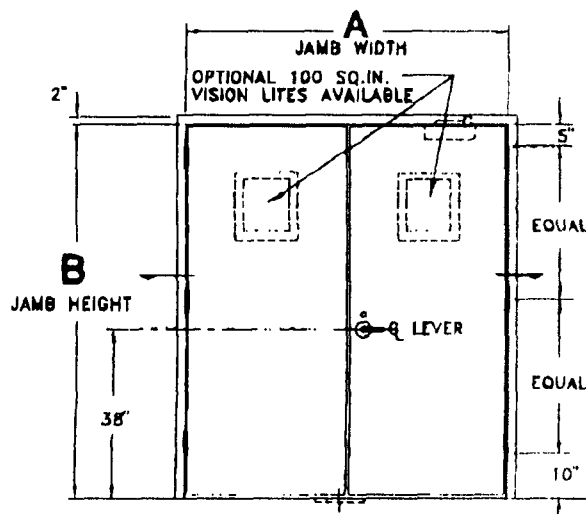
| MODEL NUMBER | JAMB OPENING SIZE | MAXIMUM SEATING PRESSURE | MAXIMUM UNSEATING PRESSURE | UL LABEL  | DOOR THICK | LOCK TYPE                | QTY. HINGES | DOOR WEIGHT |
|--------------|-------------------|--------------------------|----------------------------|-----------|------------|--------------------------|-------------|-------------|
| VLRB         | 36 X 84           | 396 PSF                  | 174 PSF                    | 3 HR. "A" | 1-3/4"     | ANSI 156.13 SINGLE POINT | 3           | 184         |
|              | 36 X 96           | 347 PSF                  | 153 PSF                    |           |            |                          | 4           | 222         |
|              | 42 X 90           | 325 PSF                  | 121 PSF                    |           |            |                          | 4           | 273         |
|              | 48 X 84           | 297 PSF                  | 114 PSF                    |           |            |                          | 3           | 288         |
|              | 48 X 96           | 260 PSF                  | 100 PSF                    | MAX.      |            |                          | 4           | 293         |

NOTE: WALL ANCHORAGE SIZE AND LOCATION TO BE DETERMINED BY OVERLY'S DESIGN ENGINEERS.

# LRB

374 WEST OTTERTMAN STREET  
POST OFFICE BOX 70  
GREENSBURG, PA. 15601-0070  
TELEPHONE: (412) 834-7306  
FAX: (412) 830-2871

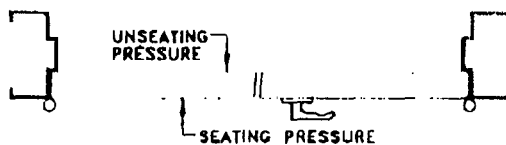
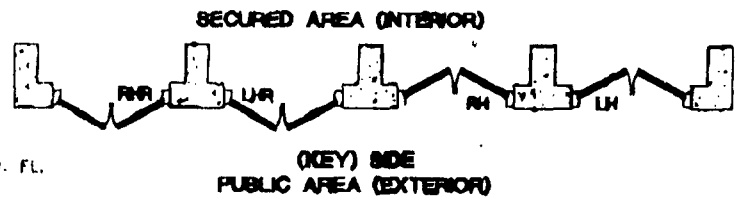
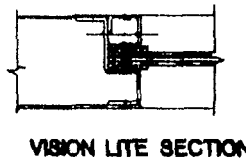
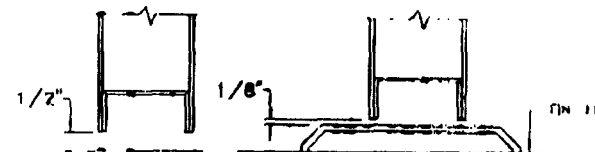
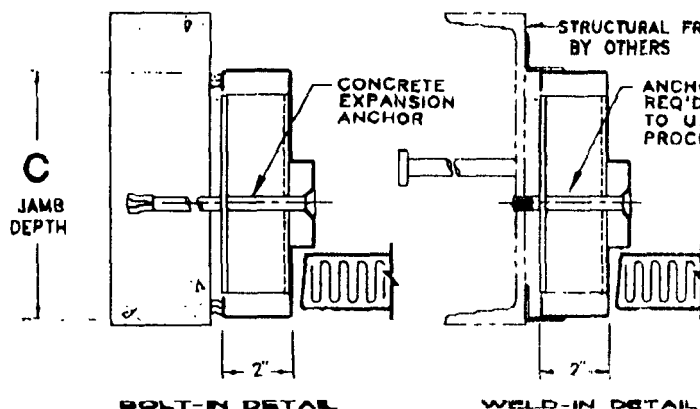
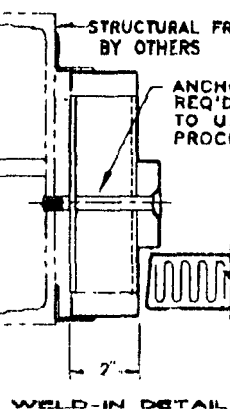
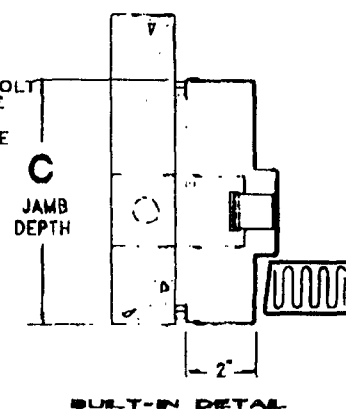
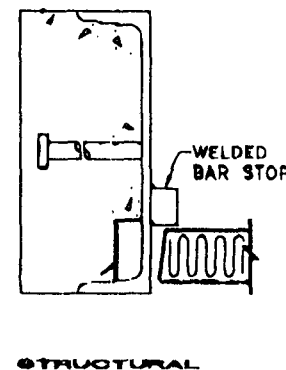
## NYC-WTC 000166813

**SERIES****LRB****OVERLY**  
MANUFACTURING COMPANY574 WEST OTTERMAN STREET  
POST OFFICE BOX 70  
CRANESBURG, PA. 15601-0070  
TELEPHONE (412) 834-7300  
FAX (412) 830-2871**LOW RANGE BLAST / UL FIRE LABELED / PAIR OF  
DOORS AND FRAME ASSEMBLY****OUTSIDE ELEVATION**

RR SWING SHOWN LR OPPOSITE

**NOTES:**

1. The door and frame are designed to withstand an equivalent total static load as listed below.
2. All exposed surfaces of door and frame to receive one coat of rust inhibitive prime paint.
3. U.L. labeled units require U.L. listed closers.
4. Door can be equipped with conventional mortise lock/latch or mortised panic device. Customer to specify.

**HORIZONTAL SECTION - RR ACTIVE****VISION LITE SECTION****SILL SECTIONS****BOLT-IN DETAIL****WELD-IN DETAIL****BOLT-IN DETAIL****STRUCTURAL**

| MODEL NUMBER | JAMB OPENING SIZE | MAXIMUM SEATING PRESSURE | MAXIMUM UNSEATING PRESSURE | UL LABEL | DOOR THICK | LOCK TYPE           | QTY. HINGES | DOOR WEIGHT |
|--------------|-------------------|--------------------------|----------------------------|----------|------------|---------------------|-------------|-------------|
| LRB          | 72 X 84           | XXX PSF                  | XXX PSF                    | 3 HR.    | 1-3/4"     | OVERLY DOUBLE OUGHT | 6           | 185         |
|              | 84 X 84           | XXX PSF                  | XXX PSF                    | "A"      |            |                     | 6           | 222         |
|              | 96 X 96           | XXX PSF                  | XXX PSF                    | MAX.     |            |                     | 8           | 273         |

**NOTE: WALL ANCHORAGE SIZE AND LOCATION TO BE DETERMINED BY OVERLY'S DESIGN ENGINEERS.**

**VLRB-1**

---

Short Form Specifications  
Overly's Very Low Range Blast Resistant Doors  
Single Swing - Personnel Size  
(The VLRB Series)

---

REV. 01/78

**Part 1 - General****1.1 Related Work:**

Section 08700, Finish Hardware  
Section 05121, Structural Steel

**1.2 Description**

Provide blast-resistant swinging door system where shown on drawings and as specified herein.

**1.3 Submittals**

- A. Shop Drawings and Certification:** Submit \_\_\_\_\_ copies of shop drawings, and certified blast resistance test reports. The drawings shall show details of fabrication, installation, and frame to wall anchorage. The drawings shall also fully detail and describe the latch, hinges, hardware functions, and, if required, thresholds, closers, and weather stripping. The certified test reports shall be from an independent laboratory.
- B. Warranty:** Provide \_\_\_\_\_ copies of the manufacturer's warranty. The manufacturer shall warrant that its products to be free of defects in labor and material for one year after shipment.

**Part 2 - Products****2.1 Design**

- A. Design Basis and Type:** Blast resistant pre-engineered door system designs shall be based on the VLRB series as manufactured by the Overly Manufacturing Company, Greensburg, PA 15601-0070.

## 2 - OVERLY BLAST DOORS - SHORT FORM SPECIFICATION GUIDE

- B. Design Criteria:** Pre-engineered swinging doors to be Overly Model VLRB or equal. The door, frame and restraining hardware shall be designed to withstand \_\_\_\_\_ psf seating the door into the frame and \_\_\_\_\_ psf unseating the door from the frame (rebound). The door system shall be fully operable after application of the specified blast.

*The chart below shows the standard sizes for the Overly Model VLRB single door. Also shown is the maximum safe working load each model can withstand for both the seating and unseating directions. Your design blast pressure must fall within the capacities listed for the applicable opening size. If your blast pressure exceeds the capacities listed below, consider the Overly Model LRB (Low Range Blast) door system. Contact Overly for more information on this product line.*

| Model No. | Door Opn'g Size | Max. Seating Pressure | Max. Unseating Pressure | UL Labels | Door Thick | Lock Type | Qty. Hinges | Leaf Weight (lb) |
|-----------|-----------------|-----------------------|-------------------------|-----------|------------|-----------|-------------|------------------|
| VLRB      | 36 x 84         | 396 psf               | 174 psf                 |           |            |           | 3           | 184              |
|           | 36 x 96         | 347 psf               | 153 psf                 | 3 hr.     |            | ANSI      | 4           | 222              |
|           | 42 x 90         | 325 psf               | 121 psf                 | "A"       | 1 3/4"     | 156.13    | 4           | 273              |
|           | 48 x 84         | 297 psf               | 114 psf                 | Max.      |            |           | 3           | 288              |
|           | 48 x 96         | 260 psf               | 100 psf                 |           |            |           | 4           | 293              |

- C. Product Description:** Doors shall be a nominal 1-3/4" thick, full flush, constructed and reinforced to resist the blast forces specified. Design door hardware and reinforcements to transfer all applicable blast loadings to frame. Design frame anchors to transfer all blast loadings to walls or structural sub-frame embeds. Frames shall be \_\_\_\_\_ [Choose one: Hollow metal formed steel with formed stops /or / structural steel channel with welded stops], three sided, factory reinforced and tapped for hardware. Frame anchorage shall be \_\_\_\_\_ [Choose one: CMU strap anchors / concrete expansion anchors / poured-in-place / weld-in configuration for steel walls].

**Fire rating:** Those openings scheduled as fire rated shall have been tested by and bear the labels of Underwriters Laboratories marked for 3 hour, A label for flush doors and 1-1/2 hour, B label for doors with a vision lite. (Maximum vision area: 100 square inches).

The lockset shall conform to ANSI Standard A156.13. Functions as specified. The lockset shall be suitable for use with project masterkeyed key cylinders were specified.

### 3 - OVERLY BLAST DOORS - SHORT FORM SPECIFICATION GUIDE

---

Hydraulic Closers [ *if required* ] shall conform to ANSI Standard A156.4.

Hinges shall be heavy duty ball bearing butts of sufficient size and quantity to withstand blast loadings and door weight. Hinges shall conform to ANSI Standard A156.1.

#### 2.2 Fabrication

- A. **General:** Assemble work using all welded construction conforming to the applicable requirements of AWS D1.1.
- B. **Materials:** Construct from formed sheet conforming to ASTM A366 or ASTM A569. Steel plate and shapes for reinforcing and/or framing members shall conform to ASTM A36 and bars shall conform to ASTM A108 Grade 1018. Hardware shall be corrosion resistant steel of the appropriate design for the function intended.
- C. **Weatherstripping [if required]:** Provide \_\_\_\_ [Choose one: Closed cell sponge /or/ solid] neoprene elastomer seals.
- D. **Painting and Cleaning:** After fabrication, remove all tool marks and surface imperfections, and dress all welded joints smooth and coat with a rust-inhibitive primer.

#### Part 3 - Quality Control

Quality Control: Manufacturer shall submit evidence of having been engaged in the design and manufacture of similar blast resistant door assemblies for a minimum of 10 years.

#### Part 4 - Execution

- 4.1 Site Storage and protection of Materials: Store all material in a dry controlled area to protect from damage.
- 4.2 Installation: Install work in strict accordance with approved shop drawings and recommended installation instructions of the manufacturer. Any required field welding must be performed by certified welders in accordance with AWS D1.1.

**LRB-1**

---

Short Form Specifications  
Overly's Low Range Blast Resistant Doors  
Single Swing - Personnel Size  
(The LRB Series)

---

REV. 07/7/03

**Part 1 - General****1.1 Related Work:**

Section 08700, Finish Hardware  
Section 05121, Structural Steel

**1.2 Description**

Provide blast-resistant swinging door system where shown on drawings and as specified herein.

**1.3 Submittals**

- A. Shop Drawings and Certification:** Submit \_\_\_\_\_ copies of shop drawings, and certified blast resistance test reports. The drawings shall show details of fabrication, installation, and frame to wall anchorage. The drawings shall also fully detail and describe the latch, hinges, hardware functions, and, if required, thresholds, closers, and weather stripping. The certified test reports shall be from an independent laboratory.
- B. Warranty:** Provide \_\_\_\_\_ copies of the manufacturer's warranty. The manufacturer shall warrant the its products to be free of defects in labor and material for one year after shipment.

## 2 - OVERLY BLAST DOORS - SHORT FORM SPECIFICATION GUIDE

### Part 2 - Products

#### 2.1 Design

- A. Design Basis and Type:** Blast resistant pre-engineered door system designs shall be based on the LRB series as manufactured by the Overly Manufacturing Company, Greensburg, PA 15601-0070.
- B. Design Criteria:** Pre-engineered swinging doors to be Overly Model LRB or equal. The door, frame and restraining hardware shall be designed to withstand \_\_\_\_ psf seating the door into the frame and \_\_\_\_ psf unseating the door from the frame (rebound). The door system shall be fully operable after application of the specified blast.

*The chart below shows the standard sizes for the Overly Model LRB single door. Also shown is the maximum safe working load each model can withstand for both the seating and unseating directions. Your design blast pressure must fall within the capacities listed for the applicable opening size. If your blast pressure exceeds the capacities listed below, consider the Overly Model MRB (Mid Range Blast) door system. Contact Overly for more information on this product line.*

| Model No. | Door Opn'g Size | Max. Seating Pressure | Max. Unseating Pressure | UL Labels | Door Thick | Lock Type | Qty. Hinges | Leaf Weight (lb) |
|-----------|-----------------|-----------------------|-------------------------|-----------|------------|-----------|-------------|------------------|
| LRB       | 36 x 84         | 576 psf               | 312 psf                 |           |            |           | 3           | 210              |
|           | 36 x 96         | 504 psf               | 273 psf                 | 3 hr.     |            | Overly    | 4           | 247              |
|           | 40 x 92         | 473 psf               | 256 psf                 | "A"       | 1 3/4"     | Double    | 4           | 302              |
|           | 48 x 84         | 432 psf               | 234 psf                 | Max.      |            | Ought     | 3           | 315              |
|           | 48 x 96         | 378 psf               | 204 psf                 |           |            |           | 4           | 320              |

- C. Product Description:** Doors shall be a nominal 1-3/4" thick, full flush, constructed and reinforced to resist the blast forces specified. Design door hardware and reinforcements to transfer all applicable blast loadings to frame. Design frame anchors to transfer all blast loadings to walls or structural sub-frame embeds. Frames shall be \_\_\_\_ [Choose one: Hollow metal formed steel with formed stops /or / structural steel channel with welded stops], three sided, factory reinforced and tapped for hardware. Frame anchorage shall be \_\_\_\_ [Choose one: CMU strap anchors / concrete expansion anchors / poured-in-place / weld-in configuration for steel walls].

### 3 - OVERLY BLAST DOORS - SHORT FORM SPECIFICATION GUIDE

Fire rating: Those openings scheduled as fire rated shall have been tested by and bear the labels of Underwriters Laboratories marked for 3 hour, A label for flush doors and 1-1/2 hour, B label for doors with a vision lite. (Maximum vision area: 100 square inches). *Note: Some restrictions apply. Consult Overly Manufacturing Company.*

The lockset shall be Overly Manufacturing Company Double Aught Series Single Point Mortise Lockset [Latchset] equipped with a solid stainless steel latchbolt. Functions as specified. The lockset shall be suitable for use with project masterkeyed key cylinders were specified.

*The following functions are available:*

#### Overly Double Aught Series Mortise Locks

| NUMBER   | LOCK FUNCTION AND GRADE     |                                                                                                                                             |
|----------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| (*) 0022 | ANSI F14 Grades 1, 2 and 2L | Use "S" prefix for standard lock.<br>Use "A" prefix for armored lock.<br>Use "H" prefix for armored front and wrench resistant escutcheons. |
| (*) 0024 | Fed. Spec 86B               |                                                                                                                                             |
| (*) 0025 | ANSI F01 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0034 | ANSI F15 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0039 | ANSI F02 Grades 1, 2 and 2L | If electric operation is required add suffix "F" for failsafe (unlocked) and "FL" for failsafe (locked) function.                           |
| (*) 0042 | ANSI F09 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0045 | ANSI F05 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0048 | ANSI F10 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0066 | ANSI F04 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0069 | ANSI F07 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0061 | ANSI F13 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0067 | ANSI F12 Grades 1, 2 and 2L |                                                                                                                                             |
| (*) 0069 | ANSI F02 Grades 1, 2 and 2L |                                                                                                                                             |

Hydraulic Closers [ *if required* ] shall conform to ANSI Standard A156.4

Hinges shall be heavy duty ball bearing butts of sufficient size and quantity to withstand blast loadings and door weight. Hinges shall conform to ANSI Standard A156.1.

#### 2.2 Fabrication

- A. **General:** Assemble work using all welded construction conforming to the applicable requirements of AWS D1.1.
- B. **Materials:** Construct from formed sheet conforming to ASTM A366 or ASTM A569. Steel plate and shapes for reinforcing and/or framing members shall conform to ASTM A36 and bars shall conform to ASTM A108 Grade 1018. Hardware shall be corrosion resistant steel of the appropriate design for the function intended.

#### **4 - OVERLY BLAST DOORS - SHORT FORM SPECIFICATION GUIDE**

---

- C. Weatherstripping [if required]:** Provide \_\_\_\_\_ [Choose one: Closed cell sponge /or/ solid] neoprene elastomer seals.
- D. Painting and Cleaning:** After fabrication, remove all tool marks and surface imperfections, and dress all welded joints smooth and coat with a rust-inhibitive primer.

#### **Part 3 - Quality Control**

Quality Control: Manufacturer shall submit evidence of having been engaged in the design and manufacture of similar blast resistant doors assemblies for a minimum of 10 years.

#### **Part 4 - Execution**

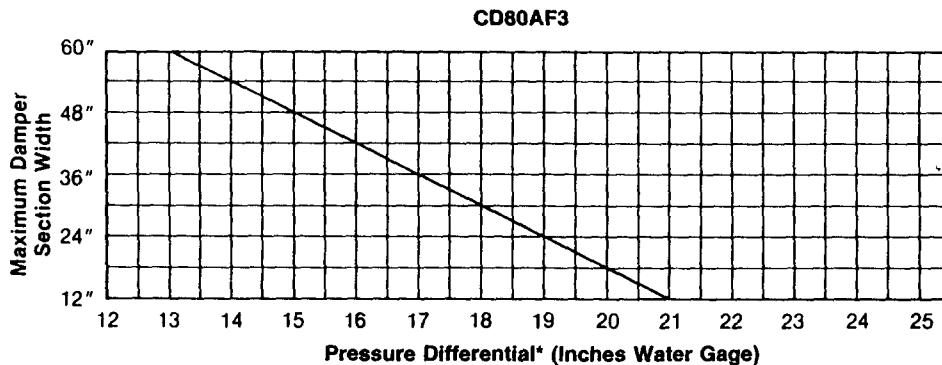
- 4.1 Site Storage and protection of Materials:** Store all material in a dry controlled area to protect from damage.
- 4.2 Installation:** Install work in strict accordance with approved shop drawings and recommended installation instructions of the manufacturer. Any required field welding must be performed by certified welders in accordance with AWS D1.1.





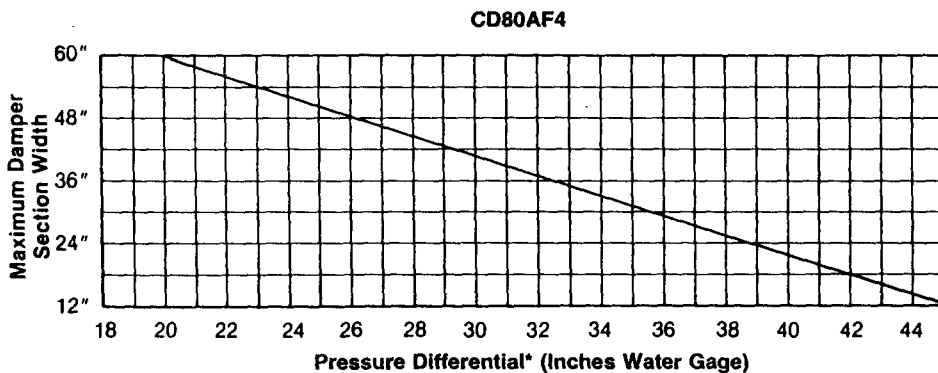
## CD80AF3 and CD80AF4 PERFORMANCE DATA

### PRESSURE LIMITATIONS



Pressure limitations shown on charts at left allow maximum blade deflection of 1/180 of span on 60" damper widths. Deflections in other damper widths (less than 48") at higher pressures shown will result in blade deflection substantially less than 1/180 of span.

The CD80AF3 may be used in systems with total pressure exceeding 13" w.g. by reducing the damper section width as indicated in the chart. A maximum design total pressure of 17" w.g. would require a CD80AF3 damper with maximum section width of 36".



**\*NOTE:** Damper should be specified for fan shut off pressure. Pressure differential is **not** system pressure, but is the maximum pressure the damper will encounter with blades closed.

The CD80AF3 may be used in systems with total pressure exceeding 20" w.g. by reducing the damper section width as indicated in the chart. A maximum design total pressure of 26" w.g., for example, would require a CD80AF3 damper with maximum section width of 48".

The CD80AF dampers may tolerate higher pressure limitations than those shown here. Conservative ratings are presented intentionally in an effort to avoid misapplication. Consult Ruskin or your Ruskin representative when a damper is to be applied in conditions exceeding recommended maximums.



## LEAKAGE

### TOTAL CFM LEAKAGE AT ONE INCH WATER GAGE STATIC PRESSURE DIFFERENTIAL For Damper Equipped With Standard Seals

| DAMPER<br>WIDTH | DAMPER HEIGHT |    |    |     |     |     |     |     |     |     |     |     |     |     |     |
|-----------------|---------------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                 | 12            | 14 | 24 | 36  | 48  | 60  | 72  | 84  | 96  | 108 | 120 | 132 | 144 | 156 | 168 |
| 12              | 15            | 23 | 30 | 38  | 45  | 53  | 60  | 68  | 75  | 83  | 90  | 98  | 105 | 113 | 120 |
| 24              | 20            | 30 | 40 | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 |
| 36              | 24            | 36 | 48 | 60  | 72  | 84  | 96  | 108 | 120 | 132 | 144 | 156 | 168 | 180 | 192 |
| 48              | 32            | 48 | 64 | 80  | 96  | 112 | 128 | 144 | 160 | 176 | 192 | 208 | 224 | 240 | 256 |
| 60              | 40            | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 |

### DETERMINING LEAKAGE

To determine leakage at static pressure differentials higher than one inch water gage, multiply leakage at one inch (determined from table) by correction factor for higher static pressure (determined from the Leakage Correction Factor Table).

#### Example:

Find leakage for a 36" wide x 24" high damper at 3 inches water gage: 48 CFM x 1.7 = 81.6 CFM leakage at 3 inches water gage.

Leakage ratings are based on AMCA Standard 500 using Test Setup Apparatus Figure 5.5. Torque applied holding damper closed at 10 in. lbs. per sq. ft. of damper with minimum of 20 in. lbs.

### LEAKAGE CORRECTION FACTOR

| Static Pressure (in. w.g.) | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9 | 10  | 12  | 14  | 16  | 18  | 20  |   |     |     |     |     |
|----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|
| Correction Factor          | 1.0 | 1.4 | 1.7 | 2.0 | 2.2 | 2.4 | 2.6 | 2.8 | 3 | 3.2 | 3.3 | 3.5 | 3.6 | 3.7 | 3.9 | 4 | 4.1 | 4.2 | 4.4 | 4.5 |

## INSTALLATION

For proper operation, damper must be installed square and free from racking. Opposed blade dampers must be operated from a power blade or drive axle.

#### NOTE:

Dampers are designed for operation with blades running horizontally. Dampers to be installed with vertical blades require thrust collars be added at time of damper manufacture and at additional cost. Some standard features are not available with vertical blade dampers.

**RUSKIN®**

P.O. Box 129  
Grandview, MO 64030  
(816) 761-7476  
FAX (816) 765-8955

**PHILIPS  
INDUSTRIES INC.**