



Walz & Krenzer

Custom Watertight/Airtight/Blast Doors, Hatches, and Flood Barriers



For Any Pressure, Any Location, Any Size



Walz & Krenzer, Inc.

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Table of Contents for Walz & Krenzer Closures

Chapter 1 – General Information

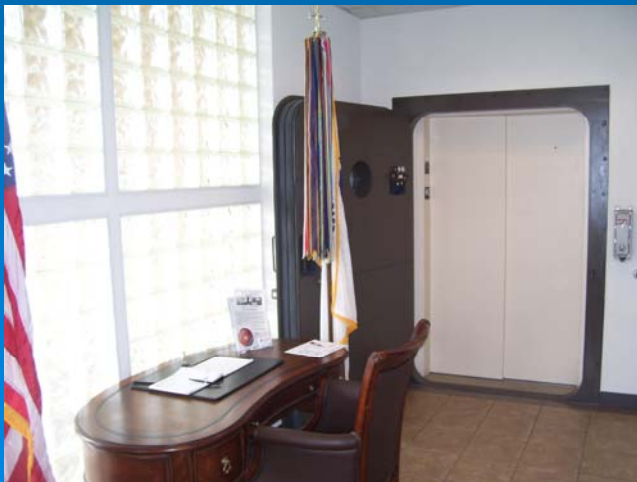
Chapter 2 – Watertight & Airtight
Doors

Chapter 3 – Watertight Hatches

Chapter 4 – Flood Barriers

Chapter 5 – Blast Doors, Hatches,
and Louvers

Chapter 6 – Special Closures



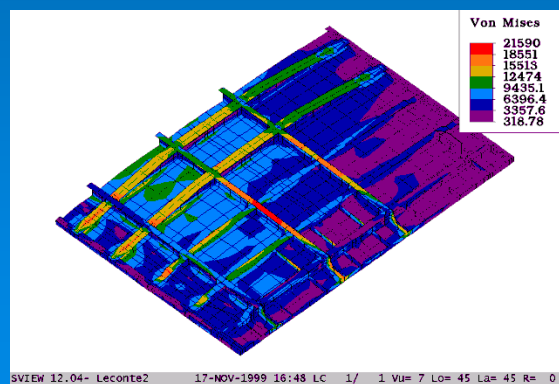
Introduction to Walz & Krenzer

Walz & Krenzer (WK) has designed and manufactured custom watertight, airtight, and blast closures since 1939. A US owned small business, WK specializes in doors, hatches, and flood barriers of any size, for any location, and designed to withstand any pressure requirement.

Whether manually, hydraulically, or pneumatically operated, WK offers many alternate designs to improve operations, reliability, and maintainability.

All WK products are designed in accordance with the AISC “Specification for Design, Fabrication, and Erection of Structural Steel for Builders”, in addition to project specifications. Special criteria such as blast, ADA, vehicular, and loading requirements are considered in addition to pressure, mode of operation, and other variables.

Walz & Krenzer is certified to ISO 9001:2008, and has several on-staff licensed Professional Engineers who approve all fabrication drawings.



Introduction to Walz & Krenzer

Custom designed products include the following:

- Watertight & airtight doors
- Watertight hatches
- Watertight flood barriers
- Blast doors, hatches, and louvers
- High pressure closures

All of our items can also be designed for additional requirements such as tornado, ballistic, chemical, radioactive, and other requirements.

No practical limitations on size or pressure requirements!

Full power operation, including remote operation/indication available

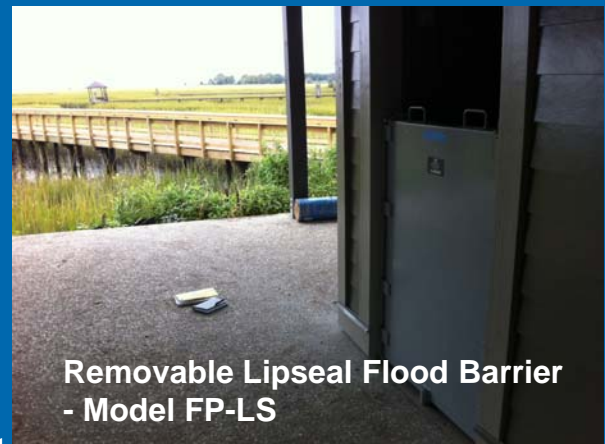


Removable Lipseal Flood Barrier - Model FP-M

Introduction to Walz & Krenzer

WK specializes in custom designed closures of any size, for any location, and for any design pressure. Typical installation locations include:

- Nuclear plants
- Tunnels
- Dams
- Mines
- Commercial Buildings
- Museums
- Factories
- Wastewater Treatment Plants
- Research Facilities
- Homeland Security Locations
- Chemical Facilities
- Storefronts



Side hinged lipseal flood barriers -
Model FG-LS

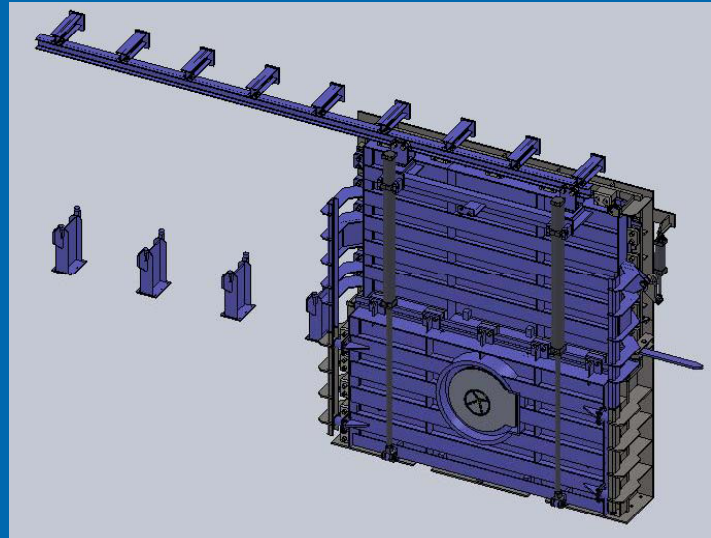


Sliding Lipseal Flood Barrier - Model FG-S

Introduction to Walz & Krenzer

Project Sequence:

- Quote per specifications and customer requirements
- Receive Purchase Order
- Create submittal drawings for customer approval
- Start fabrication after receipt of drawing approval
- Perform shop testing on all products prior to shipment



Introduction to Walz & Krenzer

Fabrication & Testing of our Products

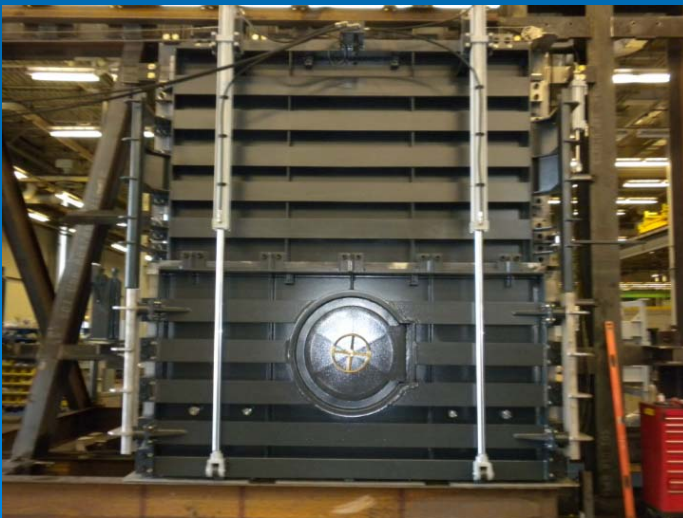
Fabrication and testing is performed in our associated shop, Weldrite Closures in Rochester NY. This 5 year old 50,000 sq. ft. full fabrication shop includes an on-site paint booth, ultrasonic stress relieving capabilities, hydrostatic test tables, and a full machine and welding shop.



All design, fabrication, and testing is performed under our ISO 9001: 2008 QA plan. Factory testing is performed on all items prior to shipment, and can include the following as required:

- Liquid penetrant inspection of welds in the potential leak path
- Hydrostatic testing
- Special weld inspections by independent 3rd party inspectors including UT & radiographic inspections

Chapter 2 – Watertight & Airtight Doors



Chapter 2 – Watertight & Airtight Doors

Watertight (WT) and airtight (AT) doors are used when the opening must be fully sealed on all 4 sides against water or air pressure. All doors are available with both single or double panel configurations for either hinged or sliding operation.

Doors are sealed utilizing compression gaskets, inflatable gaskets, or o-rings.

- Compression gaskets are typically used for pressure up to 60 psi.
- Inflatable gaskets used for most airtight applications and watertight applications up to 30 psi.
- O-ring gaskets are used for doors with pressure requirements over 60 psi.

Watertight & airtight doors can also be designed to withstand blast, ballistic, tornado, and other special requirements



Quick Acting AT Door -
Model WT-FD-QA



Individually Dogged WT
Door - Model WT-FD-I

Chapter 2 – Watertight & Airtight Doors

Doors with either compression gaskets or o-rings are sealed with individual dogs (latches) or quick-acting mechanisms (handwheels or levers), and can be operable from one or both sides.

Doors utilizing inflatable gaskets require an air source to inflate the gaskets. Dual inflatable gaskets are often used for sensitive locations for redundancy.

All doors are available in either single or double door configurations in both hinged and sliding designs.

Doors can be supplied for manual or power operation.

Frames are available for bolt-on or weld-on installation to existing masonry openings or supplied with an integral masonry subframe for embedding in new concrete.

Watertight & airtight doors are available in both vertically & horizontally sliding designs as well.



Quick Acting WT Door
Model WT-FD-QA



Inflatable Gasket WT Door
Model WT-FD-ID

Chapter 2 – Watertight & Airtight Doors

Individually Dogged WT/AT Doors

Model WT-FD-I



Chapter 2 – Watertight & Airtight Doors

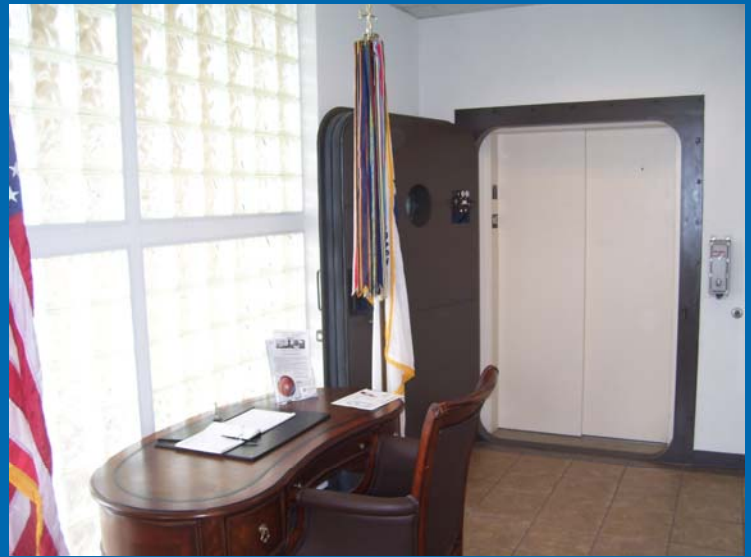
Quick Acting WT/AT Doors Model WT-FD-QA



Chapter 2 – Watertight & Airtight Doors

Inflatable Gasket WT/AT Doors

Model FD-ID



Chapter 2 – Watertight & Airtight Doors

You now have a choice for BSL doors made in the USA!

Inflatable Gasket Bio Hazard Doors for BSL-3 & BSL-4 Containment



Chapter 2 – Watertight & Airtight Doors

Special WT/AT Doors

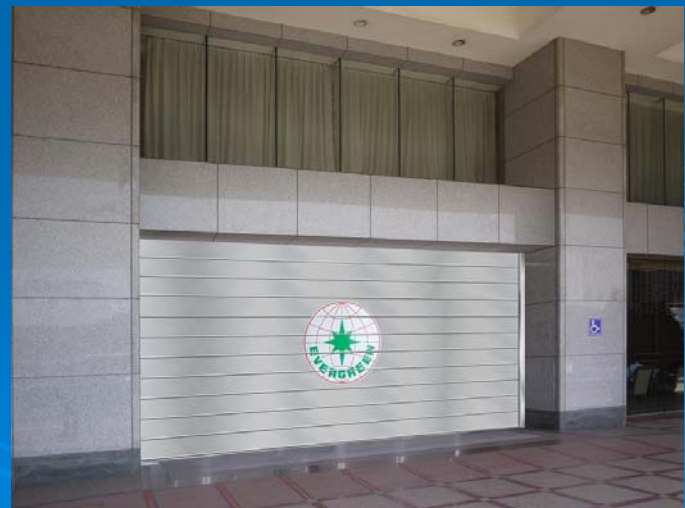


Chapter 2 – Watertight & Airtight Doors

The AutoSeal Watertight Roller Curtain Door

The First Watertight Roller Curtain in the US

- Functions as an overhead roller curtain door
- Powered open and close
- Door becomes watertight with a press of a button
- Automatically deploys at pre-set water level
- Stainless steel frame and flush bottom sill
- Battery backup for operation when power is lost



Model WT-R

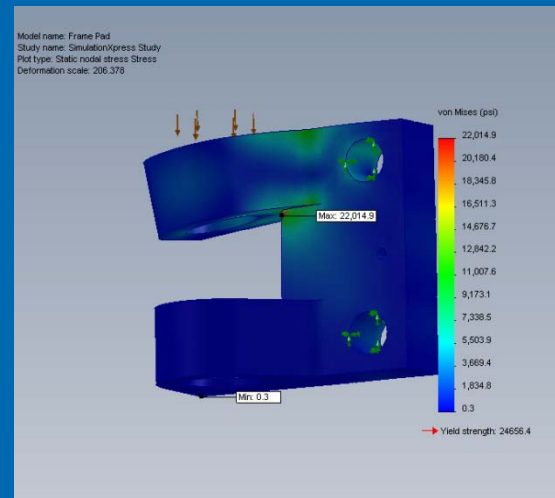
Chapter 2 – Watertight & Airtight Doors

High Pressure Watertight Doors

For Any pressure – Any Size



Hydrostatically testing door to 185 psi



Finite element analysis of hinge



Door designed for 294 psi for mine



Door designed for 502 psi for dam

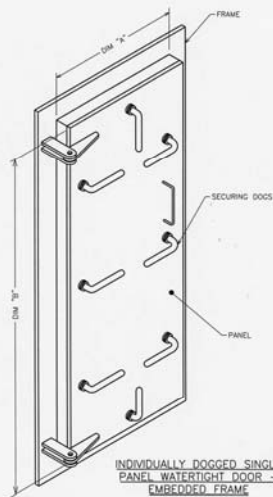
Chapter 2 – Watertight & Airtight Doors

INDIVIDUALLY DOGGED WATERTIGHT DOOR

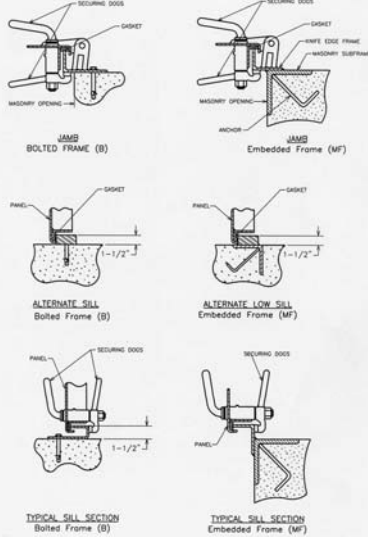
MODEL WT-FD-I



WALZ & KRENZLER, INC.



INDIVIDUALLY DOGGED SINGLE PANEL WATERTIGHT DOOR - EMBEDDED FRAME

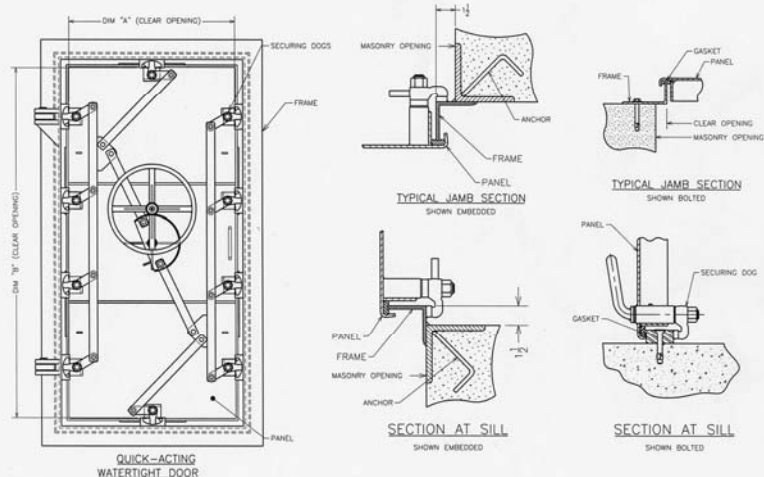


QUICK-ACTING WATERTIGHT DOOR

MODEL WT-FD-QA

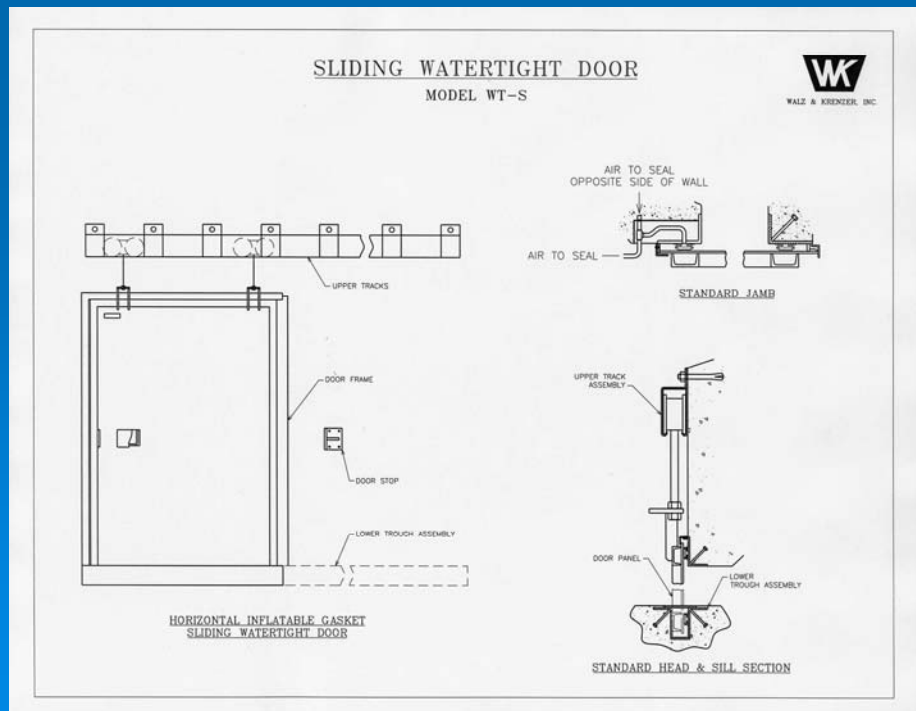
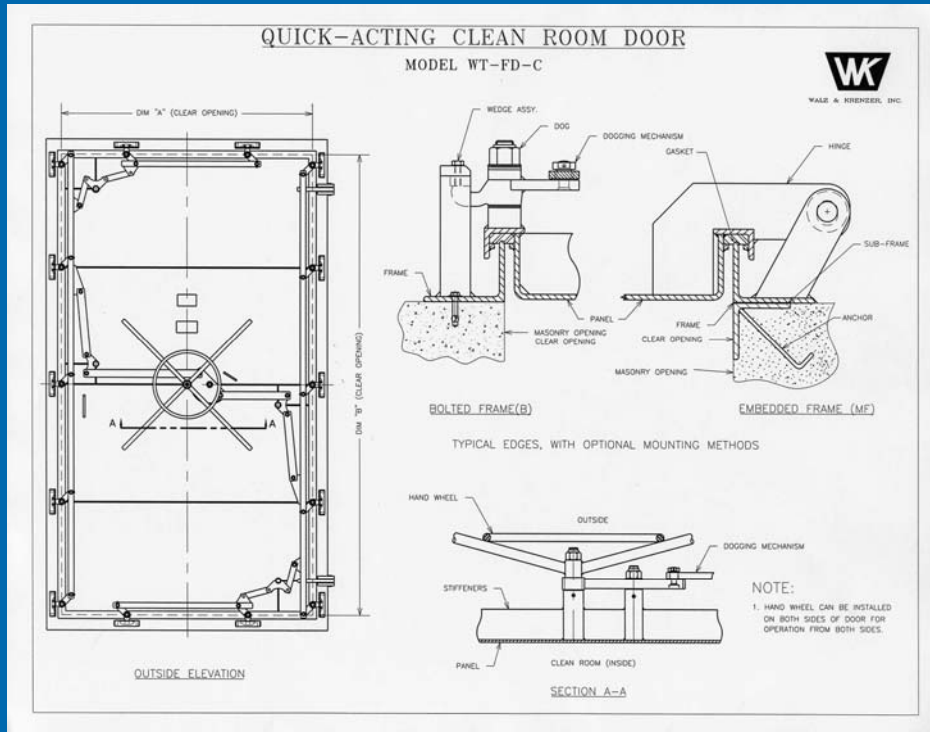


WALZ & KRENZLER, INC.



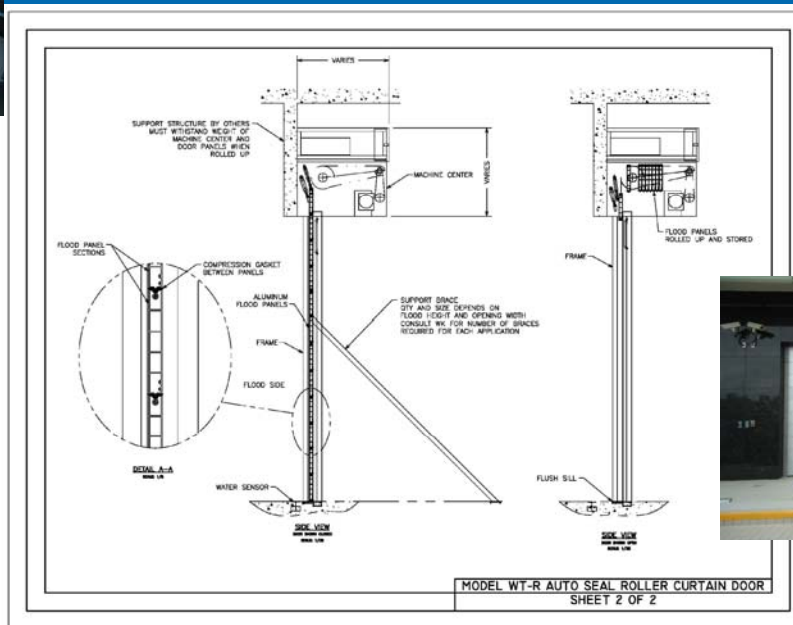
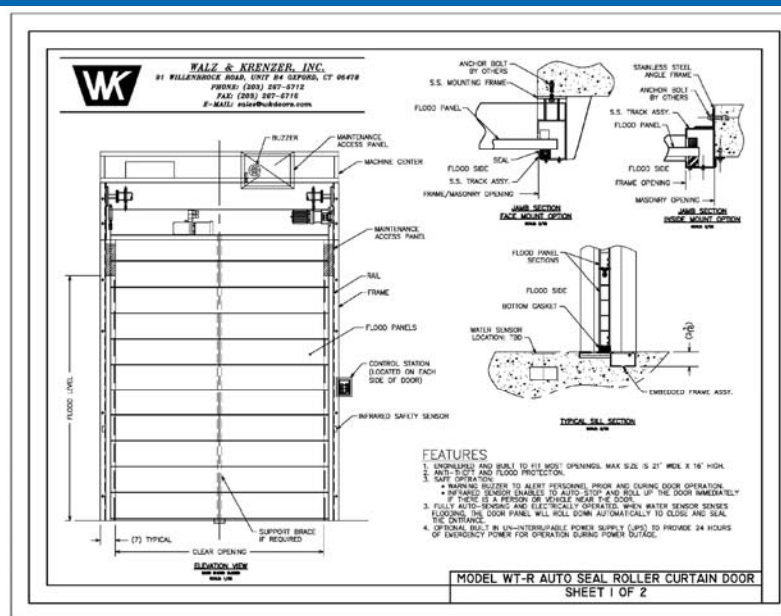
QUICK-ACTING WATERTIGHT DOOR

Chapter 2 – Watertight & Airtight Doors

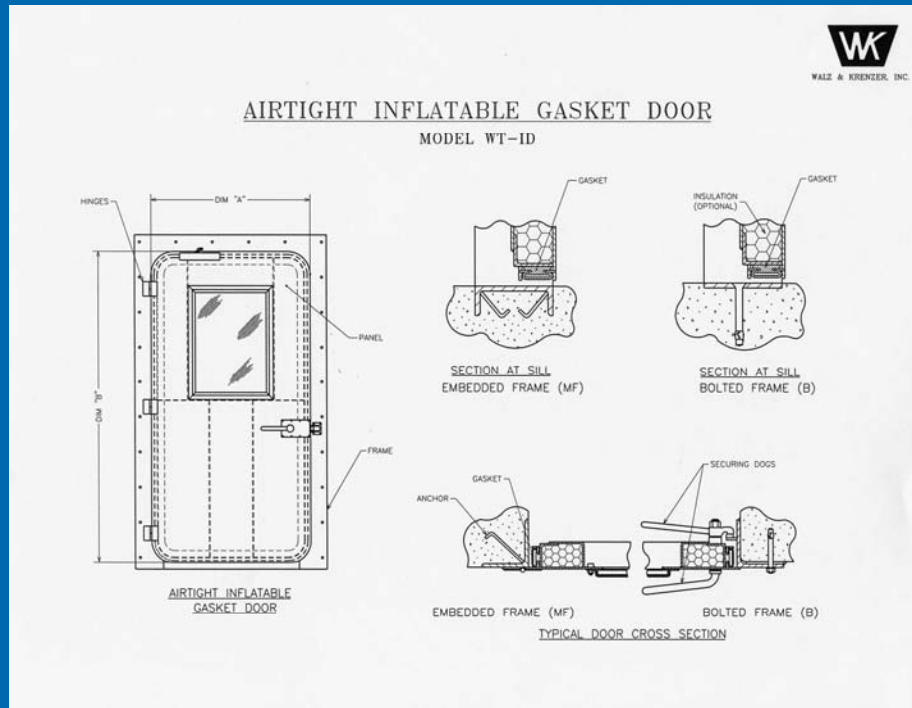


Chapter 2 – Watertight & Airtight Doors

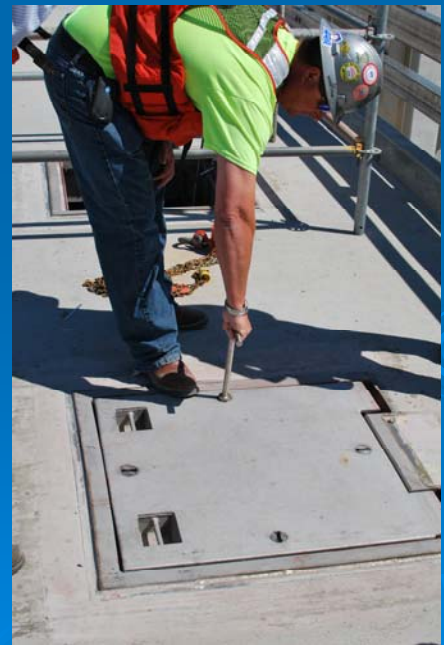
The AutoSeal Watertight Roller Curtain Door



Chapter 2 – Watertight & Airtight Doors



Chapter 3 – Watertight Hatches



Chapter 3 – Watertight Hatches

Watertight hatches are available in any size or shape, and can be designed for any pressure requirement in both flush (WTH-F) and raised (WTH-R) configurations. Flush hatches are most often used in areas of foot or vehicular traffic.

Compression gaskets are used for pressure requirements up to 60 psi while o-rings are used for pressures above that.

The hatches are sealed utilizing dogs (latches) or drop bolts around the hatch periphery. The dogs can be linked together so that a common hand wheel actuates all dogs at once for a quick-acting mechanism.

All hatches can be operable from the top and/or bottom of the hatch.

Large, heavy, or high pressure hatches often require some type of mechanical assist to help raise/lower the hatch panel. This can be accomplished with the use of coil springs, gas springs, cylinders, or counterweights.

Design considerations include H₂O loading, the direction of the water pressure (seating vs. unseating), blast loads, point loads, and more. As with all of our products, power operation or assist is available.



Model WTH-F

Chapter 3 – Watertight Hatches

Flush Watertight Hatches – Model WTH-F



Chapter 3 – Watertight Hatches

Raised WT Hatches – Model WTH-R



Chapter 3 – Watertight Hatches

Special WT Hatches



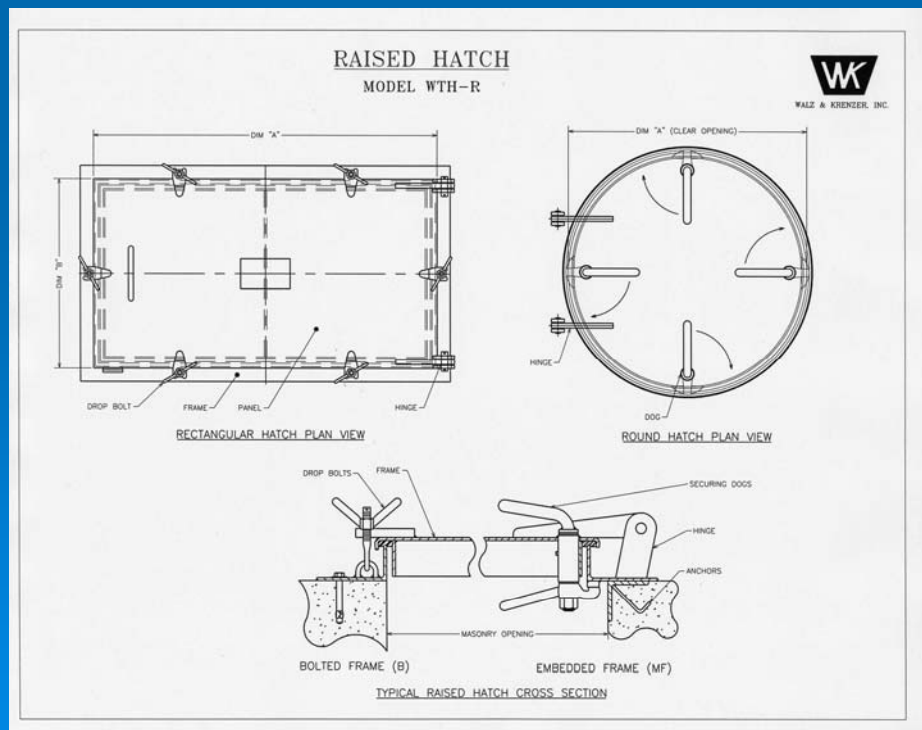
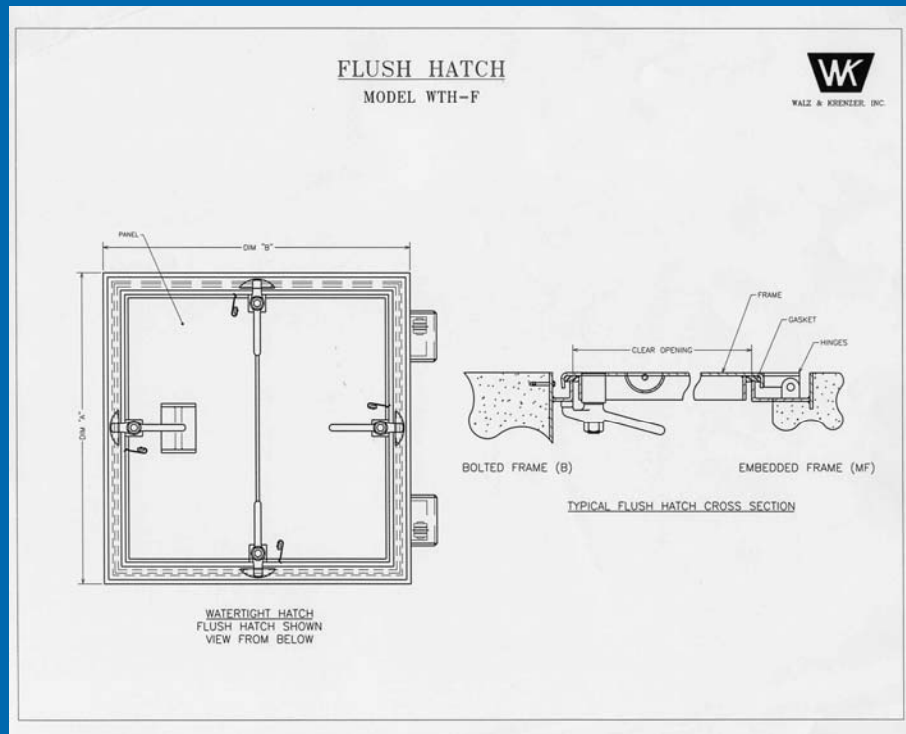
High pressure raised hatch with quick-acting scuttle (Model WTH-R)

High pressure watertight hatch with counter weight (Model WTH-R)



Power operated flush hatch

Chapter 3 – Watertight Hatches



Chapter 4 – Flood Barriers



Vertically Sliding



Removable Lipseal



Side Hinged Lipseal



Removable Lipseal



AutoRising Barrier



Removable Lipseal

Chapter 4 – Flood Barriers

Since all of our products are custom designed, we can supply our products in many different sizes, shapes, and configurations!



Side hinged flood barrier designed to seal over curb and highway (Model FG-C)

WK flood barriers can be designed to seal against curbs, railroad & subway tracks, and other unusual structures.



Removable flood barriers for Paul Brown Stadium (Model FP-C)



Removable flood panel for National Aquarium

Chapter 4 – Flood Barriers

Walz & Krenzer flood barriers are available with 3 different types of gasket configurations. The choice of which type of gasket is determined by the direction of the water pressure, and whether or not a flush bottom sill is required.

- Lipseal gasket flood barriers are extremely popular due to their low cost and their flush sill design. They are most often utilized when the water pressure is from the seating direction. They are extremely easy and quick to install as there are no gaskets to inflate or bolts to install & tighten each time they are used.
- Inflatable gasket flood barriers also utilize a flush bottom sill design, however they require an air source to inflate the gasket. They are typically designed for water pressure from a seating direction, but can be designed to withstand an unseating load. They are more expensive than lipseal gasket barriers. They are best used for interior locations due to the sensitive nature of the inflatable gasket. Dual gaskets can be used for critical applications.
- Compression gasket flood barriers are great for those applications that may see water pressure from both sides or the unseating direction, for applications when a 100% watertight seal is required for extended periods of time, and when compressed air may not be available. Hinged barriers require a 2" high bottom frame. They more expensive than the 2 other types of flood barriers.



Bottom Hinged Barrier



Lipseal
Door/Barrier

Chapter 4 – Flood Barriers

Flood barriers typically seal 3 sides of an opening from floodwaters – the bottom and the two sides. The width is determined by the width of the opening. The height is usually determined by the flood elevation. For buildings in flood plains, FEMA most often requires that the opening height be 1 foot above the flood elevation.

Flood barriers can be designed for any size opening. Single panel flood barriers are preferred, however multiple panel flood barriers can also be used in either side by side or stacked configurations for larger size openings or to limit the weight of removable panels.

Flood barriers are generally categorized by type of operation:

- Removable panel
- Side hinged
- Bottom hinged – manual, AutoRising, or power assist
- Horizontally or vertically sliding



Removable lipseal flood barrier (Model FP-M)



Side hinged lipseal flood barrier
(Model FG-LS)

Chapter 4 – Flood Barriers

Removable Panel Flood Barriers

- Removable Lipseal Flood Barrier Model FP-LS
- Removable Lipseal Flood Barrier (Multiple Panel) Model FP-M
- Removable Inflatable Gasket Flood Barrier Model FP-I
- Removable Compression Gasket Flood Barrier Model FP-C



Model FP-LS



Model FP-M



Model FP-I



Model FP-C

Chapter 4 – Flood Barriers

Side Hinged Flood Barriers

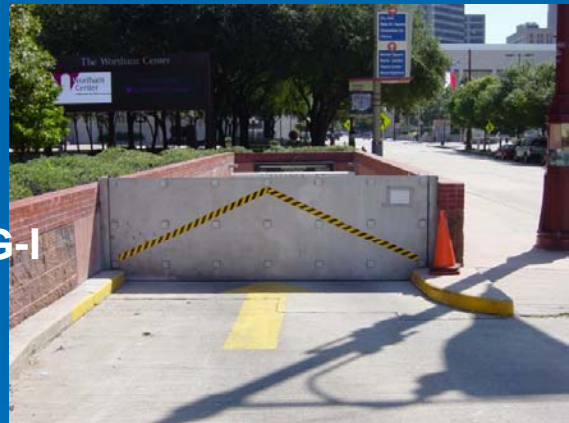
- Side Hinged Lipseal Flood Barrier – Model FG-LS
- Side Hinged Inflatable Flood Barrier – Model FG-I
- Side Hinged Compression Gasket Flood Barrier – Model FG-C



Model FG-LS



Model FG-I



Model FG-C



Chapter 4 – Flood Barriers

The AutoRising Flood Gate

The AutoRising flood barrier is the latest innovation in flood protection.

Actuated by buoyancy, it automatically deploys at a pre-determined water level.

No human intervention or power is required!

The side frame is smaller than other automatically rising flood barriers, resulting in improved aesthetics and simplified installation.

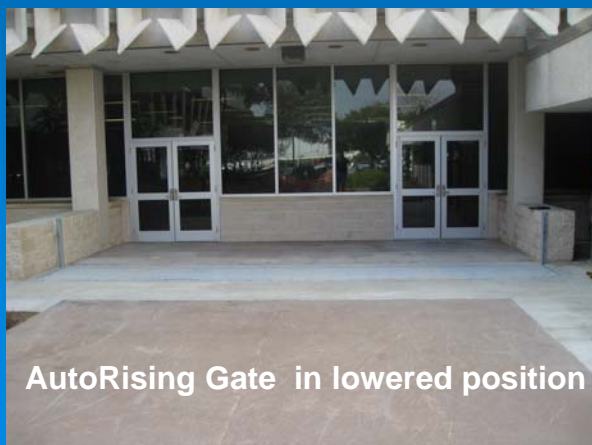
- Provides zero leakage watertight security
- Gate fully seals opening before water reaches the sill
- Can be designed for any size; vehicle loads not a problem
- Panel lies flush with ground in lowered position
- Side sealing walls found on competitor models are not required for a much less obtrusive look!



AutoRising Gate for air vents
(during installation)



AutoRising Gate in lowered position



AutoRising Gate in lowered position



AutoRising Gate in deployed position

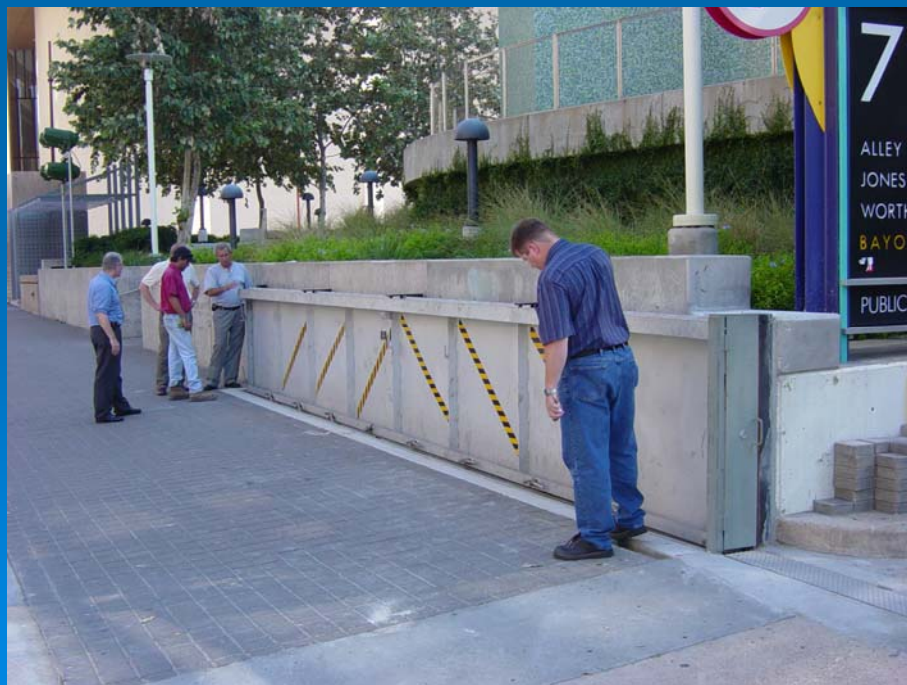
Chapter 4 – Flood Barriers

Bottom Hinged Flood Barriers with Mechanical (winch) Assist



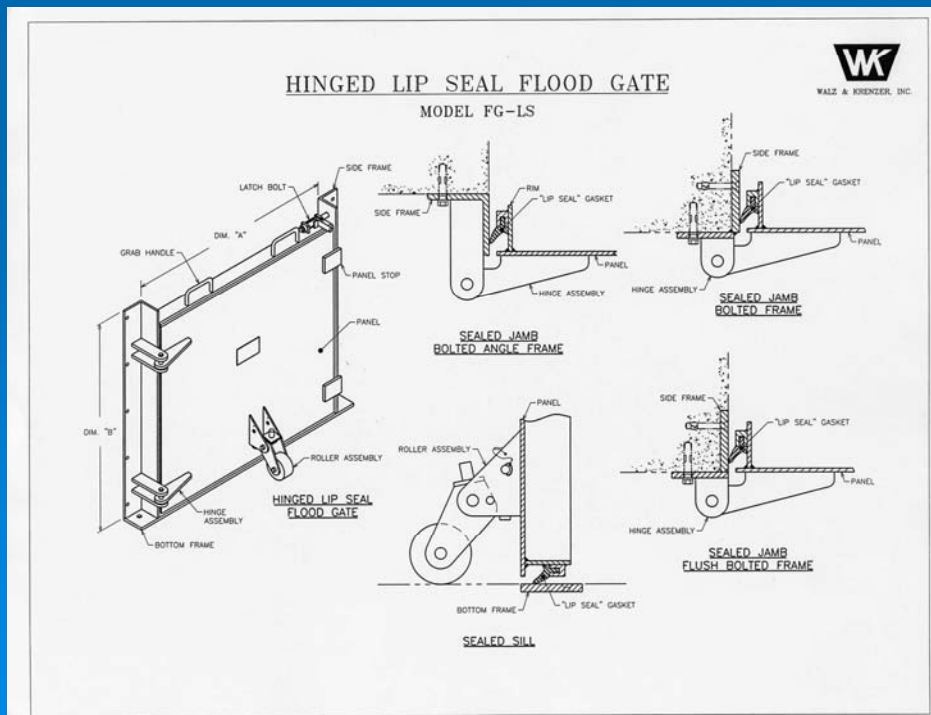
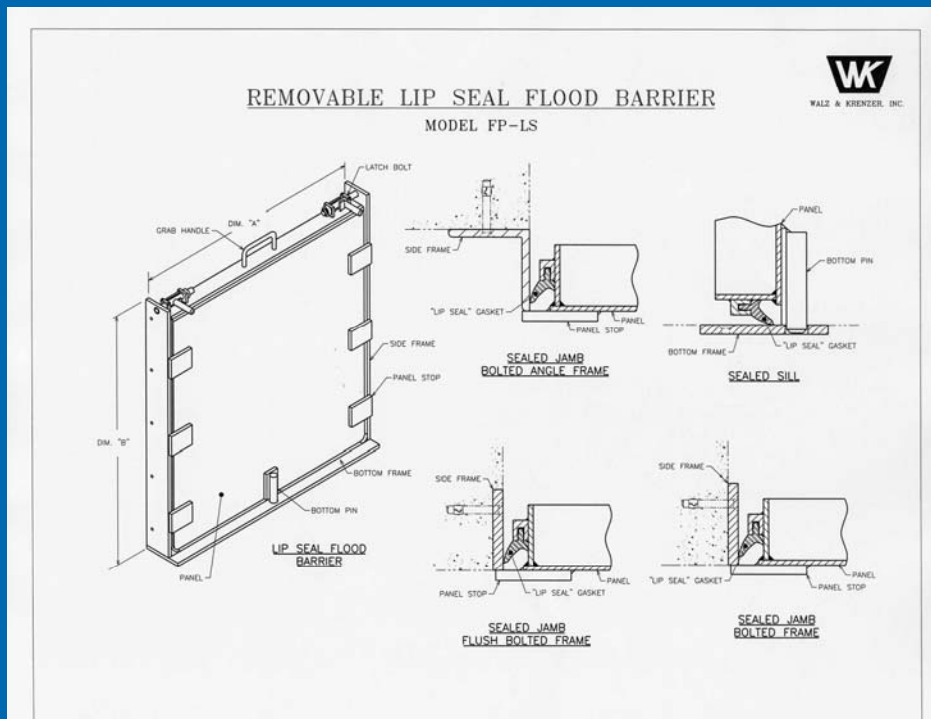
Chapter 4 – Flood Barriers

Horizontally & Vertically Sliding Flood Barriers



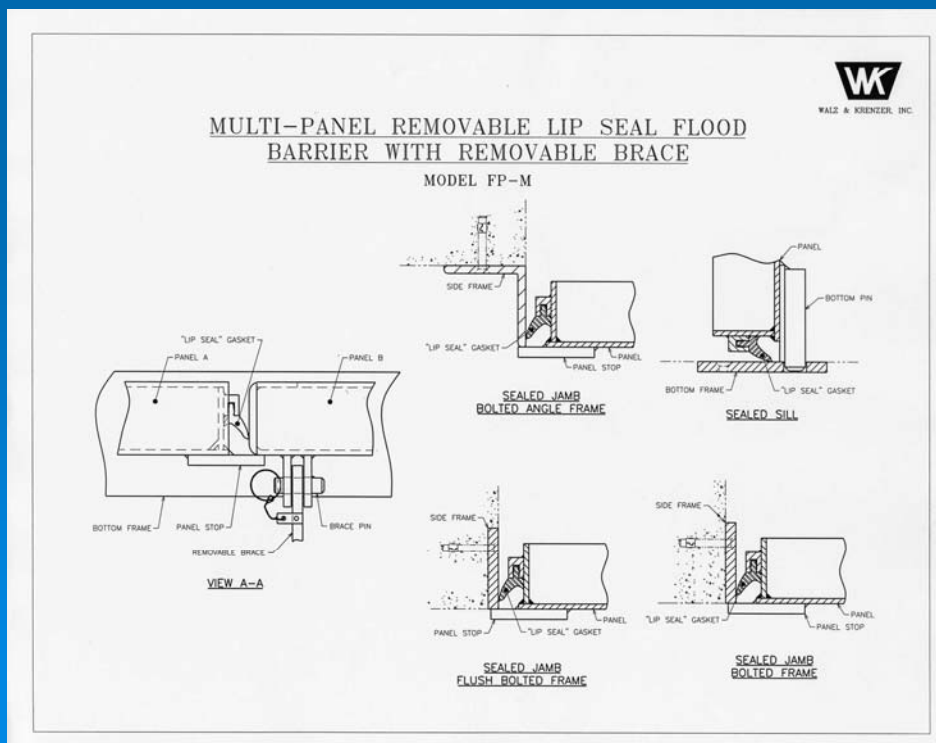
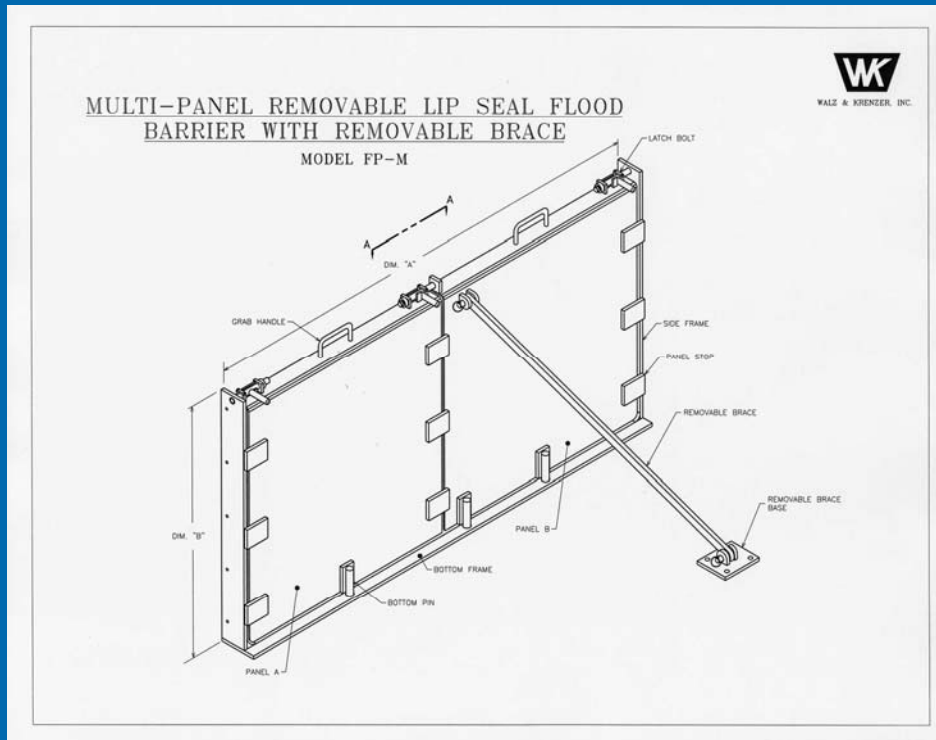
Chapter 4 – Flood Barriers

Lipseal Flood Barriers



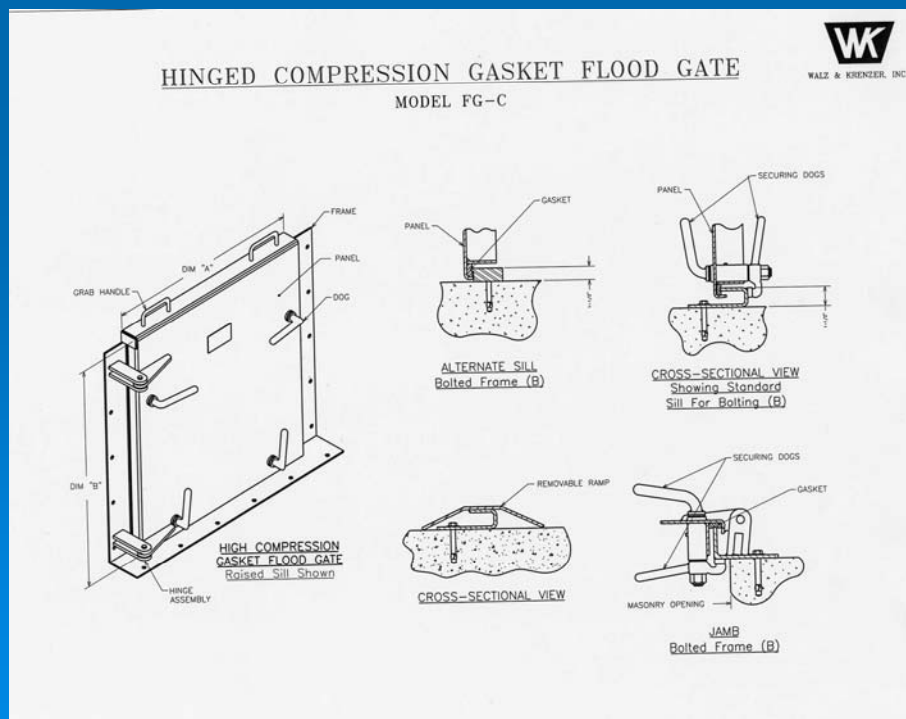
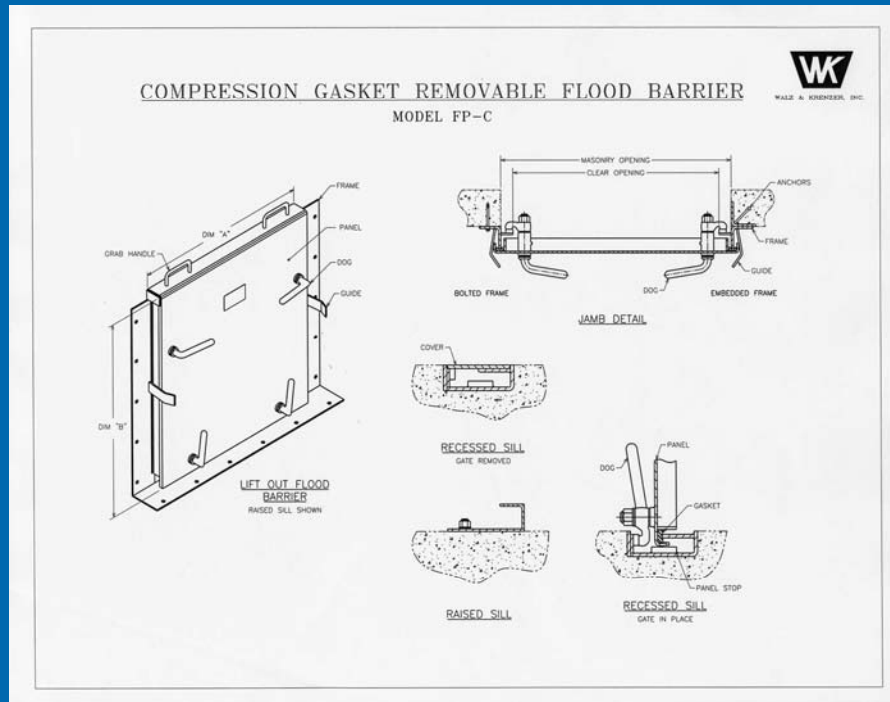
Chapter 4 – Flood Barriers

Lipseal Flood Barriers – Multiple Panel



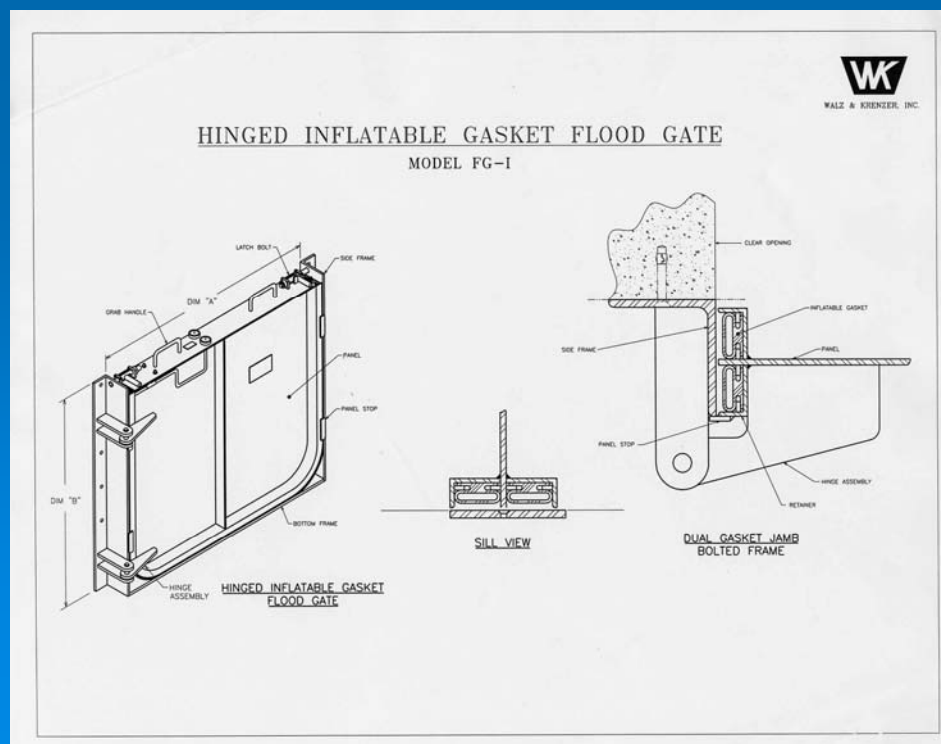
Chapter 4 – Flood Barriers

Compression Gasket Flood Barriers



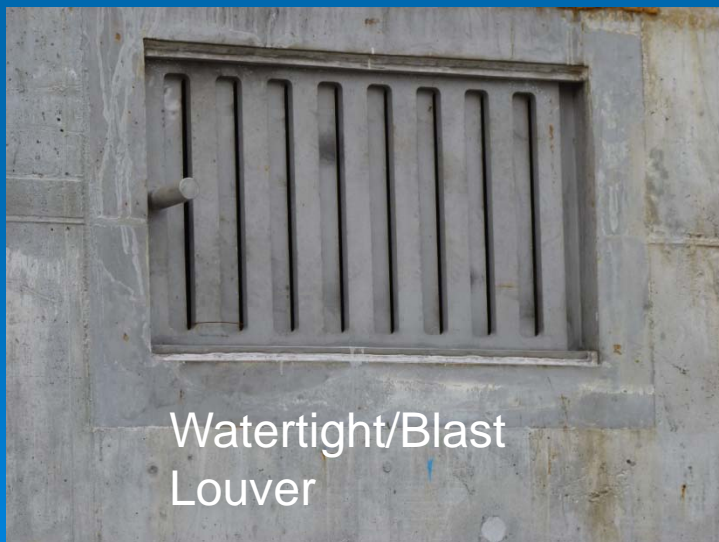
Chapter 4 – Flood Barriers

Inflatable Gasket Flood Barriers



Chapter 5 - Blast Doors, Hatches, & Louvers

WK door
(undercover)
during shock
testing



Watertight/Blast
Louver



Watertight/Blast Door

Chapter 5 - Blast Doors, Hatches, & Louvers

For our engineers, blast pressures are just another number.

All of our products can be designed for blast, ballistic, shock, or other special requirements



Blast door for chemical facility



Blast door for tunnel



Shock testing manholes

Chapter 6 – Special Closures

The more special the technical requirements, the more excited our engineers get. Our 70+ years of experience includes designing custom closures for high pressure, radioactive, tornado, blast/ballistic, chemical, and other special requirements. Give us a call with your requirements.



Outage door for nuclear facility during construction



High pressure hydraulically actuated watertight/blast door for homeland security application. Includes quick-acting access door.

Chapter 6 – Special Closures

Dams, mines, tunnels, laboratories, aquariums, nuclear plants, NASA, museums, Homeland Security locations..... The list goes on and on.



BSL-3 Bio Lab Airtight Door



Watertight door for nuclear facility



High Pressure watertight door designed for 502 psi & 200 year continuous submersion life for a dam



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