Rovalve L&M Valve

When you need a large diameter knife gate or slide gate valve, choose Rovalve or L&M Valve products for high quality designs from an experienced manufacturer.

Under the Rovalve and L&M Valve brand names, Tyco Flow Control designs and builds some of the largest knife gate valves in the world. Indeed, some of the largest valves in the world, period. 96", 102", 120", 144" … How about a 168" [4300 mm] diameter resilient seated bi-directional bonnetless knife gate, the world's largest knife gate valve?

It takes an experienced team of people to design, build, and ship valves of this size and TFC has the experience necessary to complete your large diameter valve project. Whether it's two 168" valves or thirty two 84" valves, we can handle it.

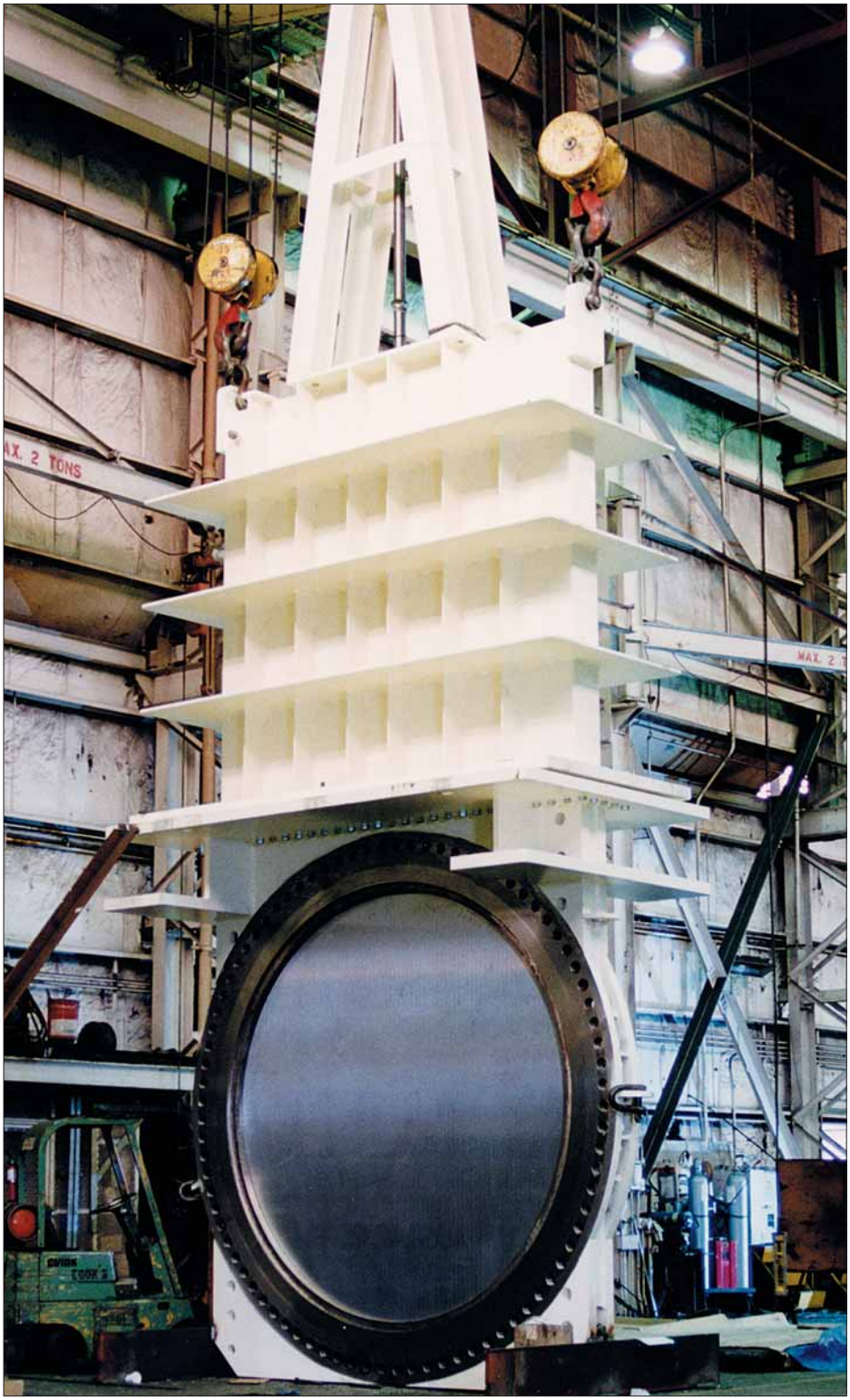
Features and Benefits

- Sizes include 30", 36", 40", 42", 48", 54", 60", 72", 84", 96", 144" or larger.
- Most any size and type of knife gate or slide gate valve.
  - Rovalve F17
  - Rovalve F20
  - Rovalve F220
  - L&M Valve M145
  - L&M Valve M345
- Made from stainless steel, carbon steel, or other materials.
- Pressure ratings of 25 psi, 50 psi, and 150 psi or higher, all are designed to suit your specification.

General Applications

Large diameter knife gate valves are used in most every market and in many applications.

- Wastewater/water
- Pulp and paper
- Power
- Hydro-electric



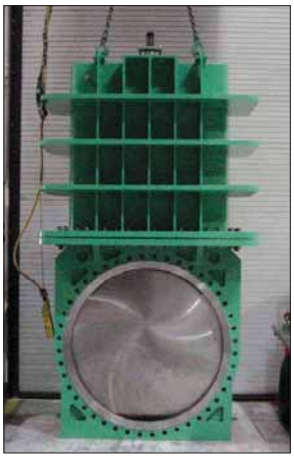
tyco Flow Control

Large Diameter Valve Designs

The Rovalve F17, F20, and F220 along with the L&M Valve M145 and M345 are all available in larger diameters. Each offers varying levels of performance and are well suited to a range of applications.

Rovalve F17 and F20
F17 – Providing bi-directional, zero leakage shut-off, the F17 is a perimeter resilient seat design and has been built up to 72". Since it does not require pressure against the gate to create a seal, the F17 is well suited to many large valve applications which can be low pressure.

F20 – A bonnetless, metal to metal seated product, the F20 is available in a square bottom design. It is the most cost effective of the big valve designs and has been provided in a 168" [4300 mm] diameter.



Rovalve F220
The F220 is a fully bonneted metal-to-metal seat knife gate valve. The bonneted design encloses the gate completely and provides a lower maintenance packing assembly. It can be adapted to a fully buried installation. Bonneted valves are normally recommended above 96" in size. The largest F220 provided to date is 144".

L&M Valve M145 and M345
Featuring a unique three-piece replaceable polymer liner, the L&M Valve is well suited to cost-effective large knife gates. The superior gate support and packing assembly means we can take bonnetless designs into much larger diameters (and higher pressures) without concern about packing performance. Sizes built include 54", 60", 72" and now, 84".

Design Criteria for Large Valves

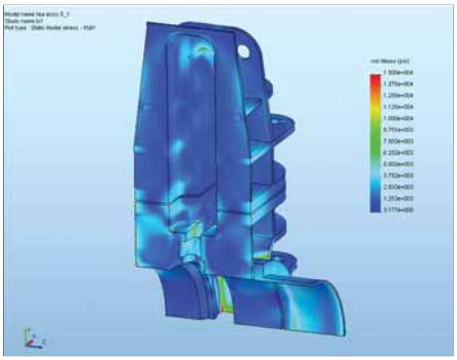
When MSS SP-81 (the controlling specification for knife gate valves) was first introduced in 1976, it only dealt with sizes 2" to 24". Because of that, manufacturers of large diameter valves established their own design criteria. In the late 1990's, MSS SP-81 was revised to include sizes 30" and 36" but anything larger is still up to the individual manufacturer.

Tyco Flow Control applies the body design parameters as dictated by MSS SP-81 in the design and manufacture of all of its large diameter Rovalve and L&M Valve knife gate valve products unless otherwise requested or indicated.

MSS SP-81 requires the valve body (pressure vessel and related structure) to be designed for and hydrostatically pressure tested to 1.5 times the rated working pressure:

Size	Valve Rated Pressure	Body Test Pressure
2" - 24"	150 psi	225 psi
30" and 36"	100 psi	150 psi
Above 36"	Per application	Rated times 1.5

Note: Face-to-face dimensions are relative to pressure ratings. 54" 25 psi valve may have a narrower take-out dimension than a 54" 75 psi design.



Full finite elemental analysis is a standard part of the design process for every large diameter valve.

Since larger valves are fabricated, you can take advantage of an additional opportunity to tailor the pressure rating of the valve to the specific application. This can be very cost effective, since the cost difference between a 25 CWP valve and a 150 CWP valve is significant. As noted above, no matter what the desired pressure rating, we will apply the 1.5 times design factor.

Not all manufacturers use the same criteria, make sure to specify a Rovalve or L&M Valve product that is designed to meet your requirements.

Suggested Specification for Large Diameter Valves

Rovalve F17

Bi-directional, resilient seated knife gate valve, [specify pressure] psi design for [specify pressure] psi CWP. Valve body shall be made with a fabricated steel frame (flanges and gussets) and heavy plate formed body liner (wetted parts). Valve to be provided with full round gate (not square bottom) with flat edge designed to engage elastomer seat. Valve seating shall be provided by a mechanically retained resilient seat positioned to seal around perimeter of gate for uninterrupted flow, designed to provide zero leakage* of water in both directions from full vacuum to the full rated pressure of the valve. The resilient seat shall be molded or extruded elastomer suitable for the application with an internal stainless steel rod or bar for stiffening. To help prevent atmospheric leakage, the valve features an adjustable packing assembly consisting of multiple layers of braided asbestos free Teflon® impregnated synthetic (AFPL**) or equal packing compressed by an adjustable, fabricated packing gland. Mating flanges shall be full round port flanges drilled and tapped to MSS-SP44 through 60" (to be specified by customer for above 60"), with machined raised gasket faces. Valve is equipped with a heavy duty foot mounted yoke and 304 stainless steel rising stem. All ferrous exterior surfaces shall be painted to TFC standard. Specify Rovalve Figure F17 as manufactured by Tyco Flow Control.

* Zero leakage is defined as no visible leakage of water past the seat at any test pressure up to the fully rated pressure of the valve

Rovalve F20

Bonnetless, knife gate valve, [specify pressure] psi design for [specify pressure] psi CWP. Valve body shall be a square bottom design to reduce overall height, made with a fabricated steel frame (flanges and gussets) and heavy plate formed body liner (wetted parts) with purge ports located to flush the body corners. Valve to be provided with [specify material] finish ground or machined gate with beveled tip to cut through solids. Valve seating shall be provided by a machined metal seat for tight shut-off per MSS SP-81 in one direction with gate guides and seating wedges adequate to withstand full reverse pressure without damage with gate in fully closed position. To help prevent atmospheric leakage, the valve features an adjustable packing assembly consisting of multiple layers of braided asbestos free Teflon® impregnated synthetic (AFPL*) or equal packing which goes all-around the around gate compressed by an adjustable, fabricated packing gland. Mating flanges shall be full round port flanges drilled and tapped to MSS SP-44 through 60", (larger diameter flanges should be specified by customer) with machined raised gasket faces. Valve is equipped with a heavy duty foot mounted yoke and 304 stainless steel rising stem. All ferrous exterior surfaces shall be painted to TFC standard. Specify Rovalve Figure F20.

Rovalve Figure F220

Bonneted knife gate valve, [specify pressure] psi design for [specify pressure] psi CWP. Valve body shall be a square bottom design to reduce overall height, made with a fabricated steel frame (flanges and gussets) and heavy plate formed body liner (wetted parts) with purge ports located to flush the body corners. Valve to be provided with [specify material] finish ground or machined gate with beveled tip to cut through solids. Valve seating shall be provided by a machined metal seat for tight shut-off per MSS SP-81 in one direction with gate guides and seating wedges adequate to withstand full reverse pressure without damage with gate in fully closed position. The bonnet to be fabricated from heavy plate and sheet with the wetted parts the same material as the body wetted parts complete with carbon steel or better bonnet flanges and external stiffeners. To help prevent atmospheric leakage, the valve features an adjustable packing assembly consisting of multiple layers of braided asbestos free Teflon® impregnated synthetic (AFPL*) or equal packing which goes all-around the around stem. Mating flanges shall be full round port flanges drilled and tapped to MSS SP-44 through 60", (larger diameter flanges should be specified by customer) with machined raised gasket faces. Valve is equipped with a heavy duty foot mounted yoke and stainless steel rising stem the same material as the body. All ferrous exterior surfaces shall be painted to TFC standard. Specify Rovalve Figure F220.

L&M Valve M145

Bonnetless universal knife gate valve, [specify pressure] psi design for [specify pressure] psi CWP, wafer type with bi-directional shut-off up to the full rated pressure of [specify pressure] psi CWP. Valve shall be designed to provide a maximum leakage rate of no more than 20 cc per inch of diameter per minute at 40 psi in both directions without the use of O-rings, guides, or wedges obstructing the port. The liner shall be made from a resilient material suitable for the application and field replaceable. Made from three or more separate pieces (the front, back, and T-lock insert), the liner shall line the interior of the valve body, supporting the gate. The liner insert is to be T-shaped to accommodate the front and back liner pieces, helping prevent insert pullout in severe applications. To deter atmospheric leakage, the valve features an adjustable packing assembly consisting of multiple layers of braided packing around the gate, evenly compressed by a one-piece packing gland. The valve is to have 100 percent full port flow area with no guides or wedges obstructing the port. Valve to be provided with full round gate (not square bottom), finished ground on both sides. The body shall be fabricated steel with full round mating flanges drilled and tapped to MSS SP-44 through 60" (larger diameter flanges should be specified by customer), with raised gasket faces. Valve is equipped with a heavy-duty foot-mounted yoke and 304 stainless steel rising stem. All ferrous exterior surfaces shall be painted to TFC standard. Specify the L&M Valve Model M145.

Large Diameter Mating Flange Dimensions

Valve Size	Flange O.D.	Raised Face	Bolt Circle	No. Bolts	Tap Size
30	38.75	33.75	36.00	28	1 1/4
36	46.00	40.25	42.75	32	1 1/2
40	50.75	44.25	47.25	36	1 1/2
42	53.00	47.00	49.50	36	1 1/2
48	59.50	53.50	56.00	44	1 1/2
52	64.00	57.50	60.5	44	1 3/4
54	66.25	59.50	62.75	44	1 3/4
60	73.00	66.00	69.25	52	1 3/4
66	80.00	73.00	76.00	52	1 3/4
72	86.50	79.50	82.50	60	1 3/4
84	99.75	92.50	95.50	64	2
96	113.25	105.50	108.50	68	2 1/4
102	120	–	114.5	72	2 3/4
120	140.25	–	132.75	76	2 7/8
144	167.25	–	158.25	84	3 3/8

Note: Face-to-face and other envelope dimensions are based on pressure rating. 30" to 60" flange drilling is per MSS-SP44, 66" and larger are per AWWA C207, Class B & D. Other flange drillings are available, please specify.