

PRATT®

a MUELLER brand

Pratt Figure P77 Knife Gate Valve

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WARNING:

1. Read and follow instructions carefully. Proper training and periodic review regarding the use of this equipment is essential to prevent possible serious injury and/or property damage. The instructions contained herein were developed for using this equipment on fittings of Mueller manufacturer only, and may not be applicable for any other use.
2. Do not exceed the pressure ratings of any components or equipment. Exceeding the rated pressure may result in serious injury and/or property damage.
3. Safety goggles and other appropriate protective gear should be used. Failure to do so could result in serious injury.

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Pratt Figure P77 Knife Gate Valve

GENERAL INFORMATION / SAFETY MESSAGES

FUNCTIONAL DESCRIPTION

The Pratt Figure P77 is a Perimeter Seated Bi-Directional bonnetless Knife Gate Valve available in 2"–24" sizes, with pressure rating of 150 PSI CWP. The body has an MSS-SP-81 face-to-face and ANSI B16.5, Class 150 flange drilling.

The Pratt Figure P77 features a replaceable 360 degree wrap-around style packing arrangement with a first row elastomer seal with an integrated PTFE gate support/guide combined with a perimeter seal, creating a robust cartridge perimeter seal. The cartridge seat loads into the body through the packing chamber.

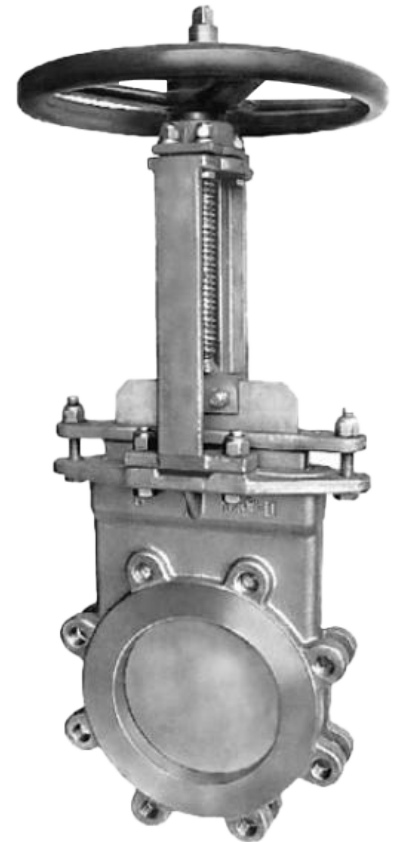
Multiple rows of square braid packing are utilized to complete the seal between the gate and body.

The Pratt Figure P77 is designed, manufactured, and tested per the guides lines identified in MSS-SP-81 and AWWA C520.

Manual operated Pratt Figure P77 valves are handwheel operated for all sizes with optional bevel gear operator, pneumatic cylinder actuator, hydraulic cylinder actuator, and electric actuators available.

SAFETY MESSAGES

All safety messages in the instructions are flagged with an exclamation symbol and the word "Warning". These messages indicate procedures that must be followed exactly to avoid equipment damage, physical injury, or death. Safety labels on the product indicate hazards that can cause equipment damage, physical injury, or death.



WARNING:

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials.

WARNING:

Read all applicable directions and instructions prior to any maintenance, troubleshooting or installation.

Pratt Figure P77 Knife Gate Valve

PARTS & SERVICE

PARTS

Pratt products are designed for long life. The stocking of spare parts is not recommended or required for normal operations. If the need for a replacement part develops, it may be ordered from our After Market / Parts Group.

Please Note: Published part numbers and price lists are not available.

If a need arises, you can contact your Pratt representative or Pratt's After Market / Parts Group directly:

E-Mail: aftermarket@muellerwp.com

Call: (877) 436-7977

Please include valve serial number (if applicable) and description of part requested.

SERVICE

To obtain further information or secure field service, contact your Pratt representative.

Please include the following with your inquiry for service:

- Henry Pratt Order Number
- Henry Pratt Item Number
- Type of Service Requested

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SHIPPING, HANDLING & STORAGE

SHIPPING

The valve will be in closed position during shipment. Small valves sizes 2" - 6" may be shipped in individual boxes. Larger valves and large quantities will be shipped on pallets or skids all of which will require a forklift for unloading and moving.

UNLOADING & HANDLING

Inspect valves on receipt for damage in shipment and conformance with quantity and description. Carefully unload all valves to the ground without dropping, using a fork truck where applicable. Do not lift valves with slings or chain around operating shaft, actuator, or through port.

Contact your Pratt representative for valve specific lifting points.

STORAGE

MANUALLY OPERATED: Valves should be stored in a clean, dry environment such as a warehouse. If outdoor storage cannot be avoided, cover the valve to protect it from sources of heat or direct sunlight. Provide good ventilation to avoid moisture. Valves can be stored vertically or horizontally with the gate in full-open position. Do not stack valves on top of one another.

CYLINDER OPERATED: Valves should be stored in a clean, dry environment such as a warehouse. If outdoor storage cannot be avoided, cover the valve to protect it from sources of heat or direct sunlight. Provide good ventilation to avoid moisture. Do not stack valves on top of one another.

ELECTRIC MOTOR OPERATED: Valves should be stored in a clean, dry environment such as a warehouse, free from excessive vibration and rapid temperature changes. The recommended storage position is with the valve stem and motor shaft in the horizontal position and the actuator limit switch compartment cover vertically up. The gate should be in full-open position. Do not stack valves on top of one another.

Pratt does not recommend long-term outdoor storage.

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INSTALLATION

PRE-INSTALLATION INSPECTION

Prior to installation, inspect the valve body and components for any damage that may have occurred during shipping or storage. Ensure the internal cavities within the valve body are clean. Inspect the pipeline and mating flanges to ensure the pipe is free of foreign material and that the flanges are clean.



WARNING:

- **To avoid personal injury or damage to property from the release of process fluid:**
- **Those in charge of handling and maintenance of the valve must be qualified and trained in valve operations.**
- **Use appropriate personal protection equipment (gloves, safety shoes, etc).**
- **Shut off all operating lines to the valve and place a warning sign.**
- **Isolate the valve completely from the process.**
- **Release process pressure.**
- **Drain the process fluid from the valve.**

INSTALLATION

The Pratt Figure P77 is bi-directional so it is not necessary to determine an upstream or downstream side of the valve as it can be installed either way in the pipeline. The valves can be used at the end of a pipeline without a downstream flange supporting the downstream side of the valve with all the bolts or studs installed. The valves are lugged and available in 2" through 24" sizes.

Install the valve to the mating pipe flange using proper size bolts. See chart below for bolt size. Bolt length is not included for all sizes on since different flanges will require different bolt lengths. Contact your Pratt representative for further information.



It is important to choose the proper length of bolt for the bolt holes in the valve's chest. These holes are bottom drilled and tapped and, in some cases, contain less than a bolt diameter of threads. Be careful not to bottom out bolts in the chest during installation. If necessary, use washers to shorten the penetration of the bolt into the chest holes.

The chart below also provides the recommended bolt torques to be used during installation.

Use the cross-torque pattern bolts evenly on both sides when installing, adjusting and tightening the packing. Recommended torque values during installation may be higher or lower depending on the type of gaskets being used. Do not tighten the bolts more than necessary to stop any leakage.

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INSTALLATION

INSTALLATION (CONTD)

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VALVE SIZE (IN)	BOLT SIZE (IN)	# OF BOLTS	BLIND DEPTH (PLACES)
2-3	5/8-11	4	5/8" (2)
4	5/8-11	8	5/8" (2)
6	3/4-10	8	5/8" (2)
8	3/4-10	8	5/8" (2)
10	7/8-9	12	3/4" (4)
12	7/8-9	12	3/4" (4)
14	1-8	12	7/8" (4)
16	1-8	16	1" (6)
18	1-1/8-7	16	1" (8)
20	1-1/8-7	20	1-1/8" (12)
24	1-1/4-7	20	1-1/8" (12)

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START-UP PROCEDURE / MAINTENANCE & TROUBLE SHOOTING

START-UP

After installation, open and close the valve at least once to assure smooth operation.

POST-INSTALLATION ADJUSTMENTS

The packing gland may require adjustment after installation, especially if the valve has been in storage for a long time. This includes assuring packing gland is properly aligned and tightening the packing gland just enough to stop any leaks that may occur.

MAINTENANCE

- a. It is recommended that the packing be adjusted as needed. However, based on service and operating conditions, it may be necessary to adjust the packing more or less often.
- b. It is recommended that the resilient valve seat be replaced every 10 to 15 years. However, based on service and operating conditions, it may be necessary to replace the seat more or less often.

LUBRICATION

It is recommended to use Mobilgrease GC40 or equal*

- a. It is recommended to lubricate the stem and stem nut every three (3) months.
- b. It is recommended to lubricate the gear operator once per year.

TROUBLE SHOOTING

LEAKING FROM GATE PACKING

- a. Tighten the packing gland bolts/nuts evenly and slowly. Usually, only 1/8 to 1/4 turn on the bolts/nuts will stop the leakage. Only tighten bolts/nuts enough to stop the leak.

SEAT LEAKAGE

- a. The gate may not be completely closed due to an obstruction between the gate and the seat. Open the gate to 1/4 open and then close to fully closed position. Check for seat leakage.

VALVE IS DIFFICULT TO OPERATE

- a. Lubricate stem and stem nut. Check for improvement.
- b. Loosen packing gland bolts a small amount (not enough to cause a leak around the gate packing). Check for improvement.
- c. If the problem persists consult the factory.

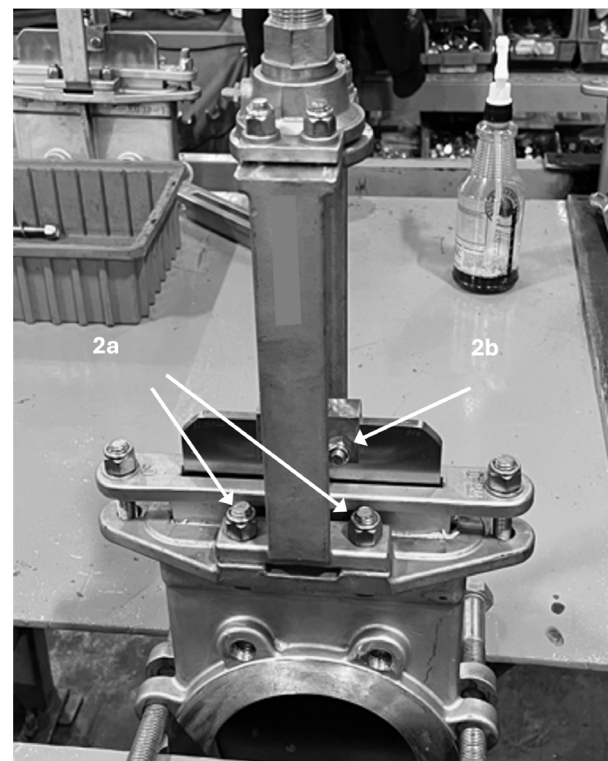
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SEAT PLACEMENT

SEAT AND PACKING REPLACEMENT - DISASSEMBLY

Disassembly :

- 1.Remove valve from installation.
- 2.Remove operator and the “top works” (operator, yoke and stem assembly) and set aside. assembly:
 - 2a. Remove the 4 - yoke to body bolts.
 - 2b. Remove the 2 - gate lifter bolts.

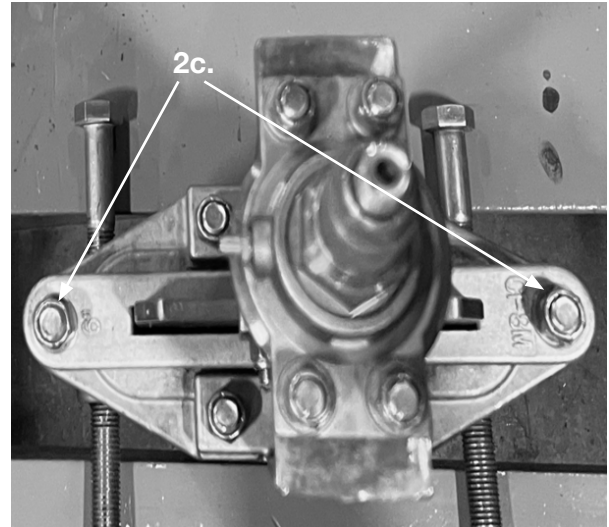


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SEAT PLACEMENT

SEAT AND PACKING REPLACEMENT - DISASSEMBLY

2c. Remove packing gland bolts:



3a. Lift and remove top works from the valve body.



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SEAT PLACEMENT

SEAT AND PACKING REPLACEMENT - DISASSEMBLY

3b. Remove and set aside packing gland.



4a. Remove the gate.



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SEAT PLACEMENT

SEAT AND PACKING REPLACEMENT - DISASSEMBLY (CONTD)

4b. Remove the old packing.



Note: if only the Packing is to be replaced it is not necessary to remove the gate nor the old seat. Once old Packing is removed, skip to Reassembly section 3.

4c. Remove the old seat.



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SEAT PACKING AND REPLACEMENT

SEAT AND PACKING REPLACEMENT - REASSEMBLY

1. Install new cartridge seat:

1a. Fully coat inside and out of the cartridge seat with O-ring silicone grease



1b. Ensure it fully “pops” into the bottom lip, tap with a small hammer to fully seat, if necessary, making sure not to damage



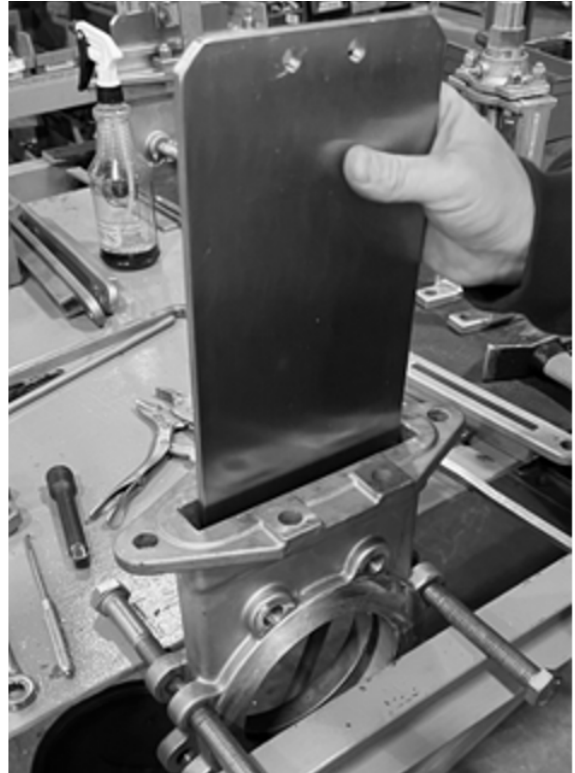
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SEAT PACKING AND REPLACEMENT

SEAT AND PACKING REPLACEMENT - REASSEMBLY (CONTD)

2. Install Gate:

2a. Lubricate edge of gate and seating surface of resilient seat.



2b. Insert gate into valve body and push to full closed position.

Tip: loosely reinstalling the top works can be used to aid gate insertion. Remove again once gate is inserted.



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SEAT PACKING AND REPLACEMENT

SEAT AND PACKING REPLACEMENT - REASSEMBLY (CONTD)

3. Install 2-3 rows of new TLSP Packing:

3a. Insert new packing using flat bar and hammer.



The new Packing will wrap completely around the gate. Snip an end if needed for ends to meet, leaving no gap nor overlap. Press or hammer in so that Packing near flush with top of Body top flange.



3b. Place packing gland, align holes and tighten packing gland bolts.



It is recommended (but not necessary) to use shims to support and center the gate and anti-seize on bolt threads.



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SEAT PACKING AND REPLACEMENT

SEAT AND PACKING REPLACEMENT - REASSEMBLY (CONTD)

4. Reinstall the top works (yoke and operator) in the reverse order of disassembly.

4a. Place yoke on to body.

4b. Tighten 4 -- Yoke to body bolts.

5. Reinstall operator and cycle valve.



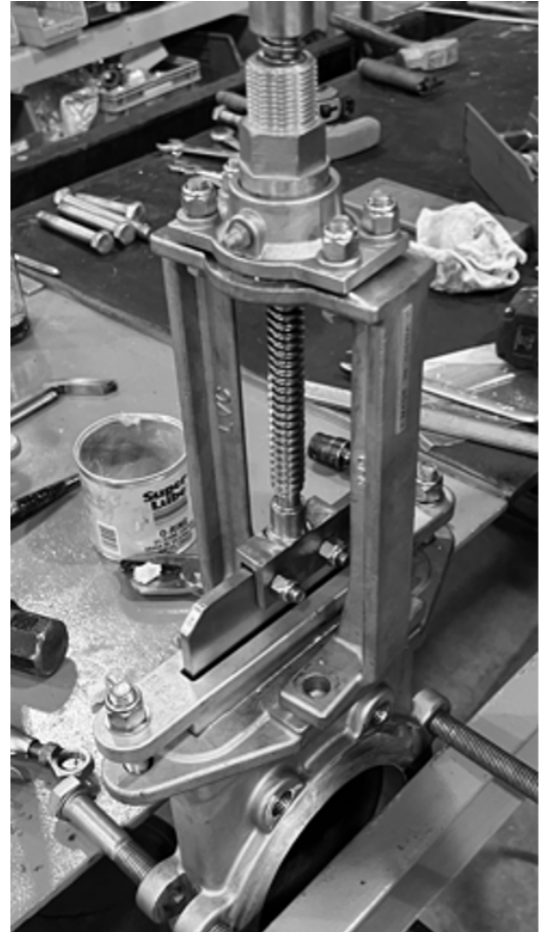
Ensure the resilient seat has been lubricated.



Bring valve up to working pressure and tighten the packing gland just enough to stop any leaks or drips.

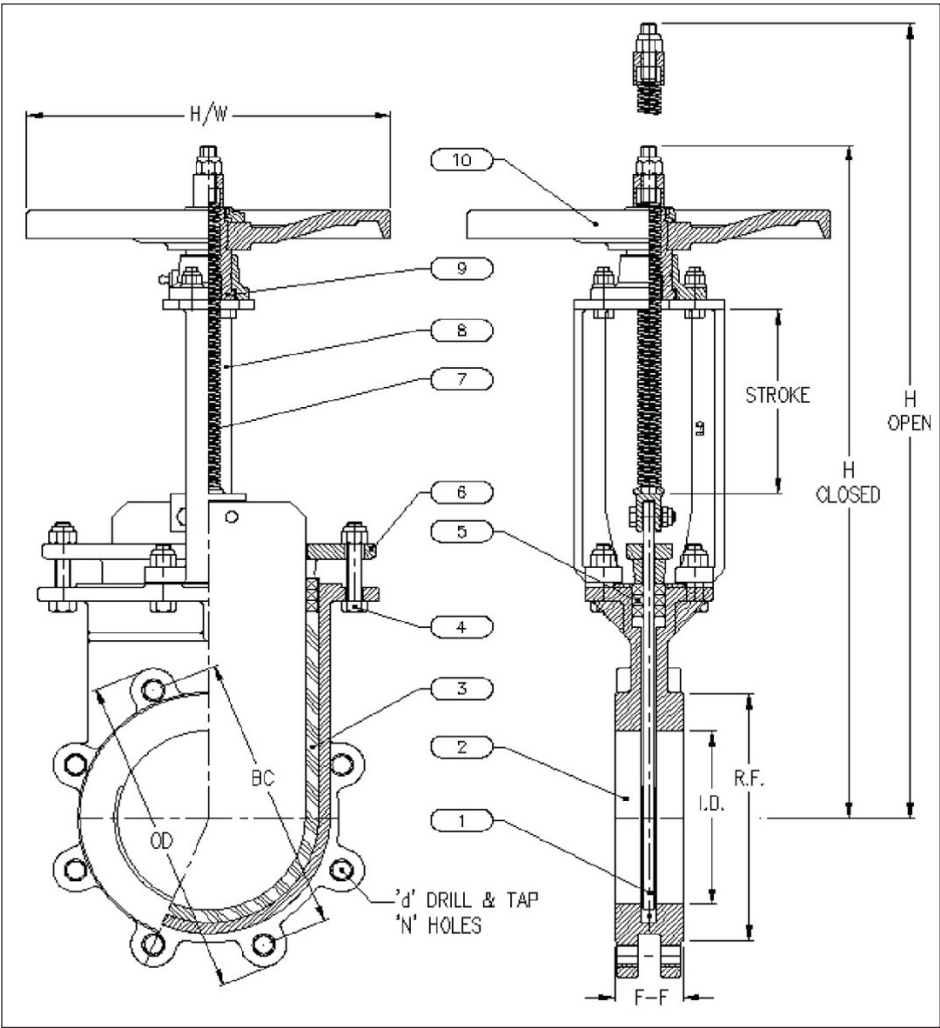


Overtightening of the gland will result in reduced packing life.



Pratt Figure P77 Knife Gate Valve

PARTS LIST



PART #	PART	MATERIAL
1	GATE	SS
2	BODY	SS
3	SEAT	EPDM
4	BOLTS	SS
5	PACKING	TLSP
6	GLAND	SS
7	STEM	SS
8	YOKE	SS
9	STEM NUT	BRONZE
10	HANDWHEEL	DI

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