



MILWAUKEE VALVE

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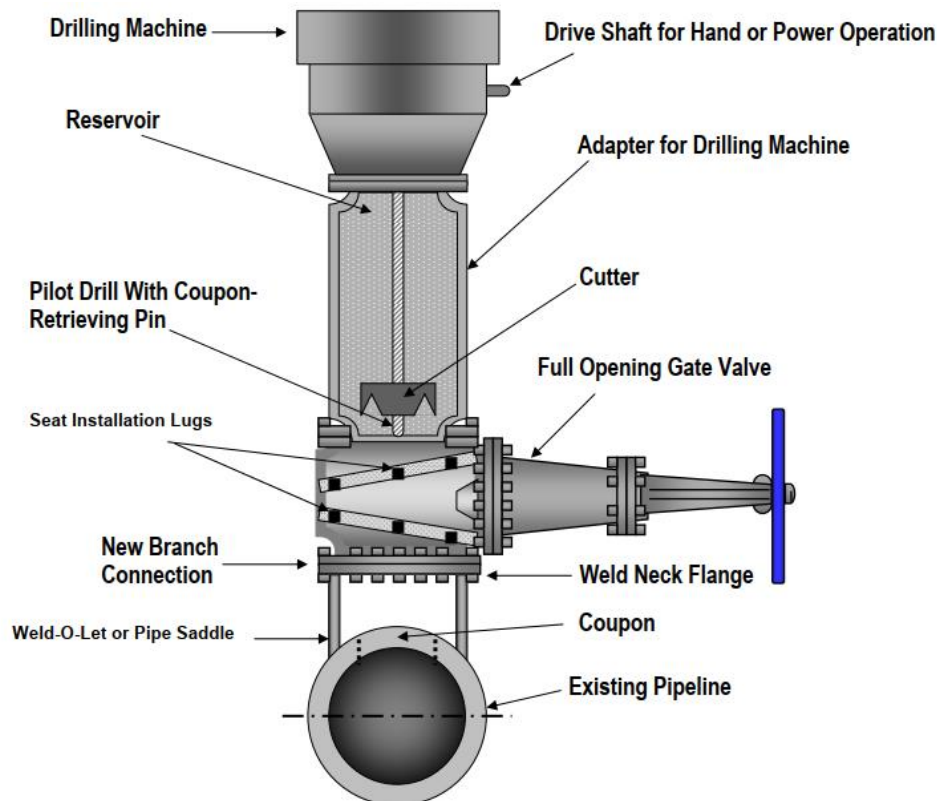
TECHNICAL BULLETIN

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Hot Tap Sizing with Milwaukee Gate Valves

Hot tapping is the method used to attach a branch connection, by drilling or cutting, to a pressurized system without removing the pipe or tank from service. Hot tapping is usually performed when it is impractical to take the equipment or piping out of service, or clean it by conventional methods. The typical procedure is as follows:

1. A weld-o-let or pipe saddle is attached to the pipe.
2. A weld neck flange is applied to the weld-o-let or a flange is applied to a saddle.
3. Install gate valve or full port ball valve. Ensure valve gate completely clears waterway.
4. Mount hot tapping machine to the piping system. The tapping machine will cut a hole in the existing line and retract while removing the coupon.
5. The valve is then closed to isolate the tapping machine from the media.
6. Remove the tapping machine. The new line is created.



Cast Steel Gates

The information in the table below is applicable to bolted bonnet cast steel gate valves, which are manufactured in compliance with ASME B16.34. The maximum tap diameter is the largest size that Milwaukee Valve recommends due to other factors such as the seat ring angle, manufacturing tolerances, and tool clearances. Extreme caution should be applied if a larger tap size is used, as damage to the seat ring can occur.

See Table 1 for the max tap diameter sizes for CL 150 (1550CB2), CL 300 (3050CB2) and CL 600 (6050CB2) steel gate valves. Contact the factory for information on sizes 14" and larger.

Table 1: Cast Steel Metal-Seated Gate Valves

MVC Valve Size	Seat Ring ID	Max Tap Diameter	Seat Ring ID	Max Tap Diameter
	CL 150 CL 300		CL 600	
2"	2"	1.5"	2"	1.5"
2.5"	2.5"	2"	2.5"	2"
3"	3"	2.5"	3"	2.5"
4"	4"	3.5"	4"	3.5"
5"	5"	4.5"	5"	4.5"
6"	6"	5.25"	6"	5.25"
8"	8"	7"	7.87"	6.87"
10"	10"	9"	9.75"	8.75"
12"	12"	11"	11.75"	10.75"

Cast Iron Gates

Milwaukee Valve CL125/250 flanged iron gate valves are manufactured in accordance with MSS SP-70 and are primarily designed as shut-off valves for general utility services such as steam, water, oil and various gases.

As a point of information, MSS SP-70 does not require the gate to fully lift out of the waterway on gate valves. Additionally, SP-70 also allows drive lugs on the seat rings which protrude into the waterway and reduce the overall port area. API pipeline type valves are generally better suited for hot tapping service because the port design provides the ability to run pipeline pigs and through-tools.

This is not to say that end users do not use Milwaukee Valve cast iron gate valves for hot tap applications and do so successfully. We are aware of successful installations; however, using this type of valve for hot tap service has risks. End users using Milwaukee Valve iron gates for hot tap service do so at their own risk. Any unsuccessful attempt at hot tapping is not covered under warranty. This does not mean the valve does not meet the specification it was made or sold to.

As a reminder, due to the low ductility of cast iron, proper support of the valve and the hot tapping equipment is highly recommended to minimize the risk of damaging the valve or the valve flange. The alignment of flange faces and control of assembly bolt torque is also essential to not over-stress the cast iron flanges.

The following are the max tap diameters recommended for CL 125 (F-2882, F-2885) and CL 250 (F-2894) cast iron gate valves.

Table 2: Cast Iron Metal-Seated Gate Valves

MVC Valve Size	Seat Ring ID	Max Tap Diameter
2"	2.07"	1.50"
2.5"	2.62"	2.00"
3"	3.17"	2.50"
4"	4.07"	3.50"
5"	5.02"	4.50"
6"	6.06"	5.25"
8"	8.07"	7.00"
10"	10.08"	9.00"
12"	12.09"	11.00"
14"	14.06"	13.00"
16"	16.02"	15.00"
18"	18.03"	17.00"
20"	20.04"	18.75"
24"	24.06"	22.50"
30"	30.12"	27.75"

Resilient Wedge Gates

Dimensions for hot tapping Milwaukee Valve Resilient Wedge Gates (F-2882-MRW and F-2885-MRW) are shown below in Table 3.

Table 3: Resilient Wedge Gate Valves

MVC Valve Size	Actual Valve ID	Ductile Iron Pipe ID	Max Tap Diameter
4"	3.94"	4.30"	3.50"
6"	5.91"	6.40"	5.25"
8"	7.87"	8.55"	7.00"
10"	9.84"	10.58"	9.00"
12"	11.81"	12.64"	11.00"
14"	13.78"	14.74"	12.75"
16"	15.75"	16.80"	14.75"

Extra precaution must be taken when hot tapping through a resilient wedge gate valve. The softer materials involved (body coating and wedge coating) must not be compromised during the hot tapping activity to ensure the valve continues to function properly.

Though it is imperative to be sure to backseat the wedge out of the waterway when hot tapping any gate valve, it is more especially critical with an **elastomeric-encapsulated wedge**. A nick, cut, or tear will essentially undermine the rubber-coated wedge's sealing capability.

Unlike metal-seated valves, where a slight nick on the bottom of the wedge wouldn't affect seating faces, such damage would compromise the ability of the resilient wedge to seat against the epoxy-coated body.

Additionally, a scrape or scratch on the epoxy coating on the body will expose the iron substrate underneath. This can lead to oxidation of the iron body and ultimately undermining the epoxy coating on the valve, leading to catastrophic failure due to corrosion.

The utmost diligent care must be undertaken to clean out the waterway after hot tapping a resilient wedge valve, to prevent any shavings or debris from the tapping operation from damaging the rubber on the wedge or the epoxy on the body.

Please consult the factory with any installation questions or for additional information.