	SUBJECT: (W/G)O2 Series Installation Guidelines - Plumbing		NUMBER: ENG-SVC-0065
	ISSUE DATE: 07/30/2024	REV: B	PAGE 1 OF 9

Purpose:	Define process of (W/G) Series chiller plumbing connections and installations
Scope:	Applicable to all field personnel participating in installation of defined equipment.
Related Documents:	F-M001.3 Medical Install Checklist Rev 3

Affected Equipment:


All versions of the following product lines.

Table 1: Affected Equipment

WO2-3000	WO2-2-3000
WO2-5000	(W/G)O2-2-5000
(W/G)O2-7500	WO2-2-7500
WO2-10000	(W/G)O2-2-10000

Process:

- Verify chiller model via datatag located on chiller electrical enclosure and that the model aligns as a piece of affected equipment within this document.
- Utilize this document and chiller manual provided to determine that site pipe run is acceptable by DTS requirements. If the provided document does not provide adequate verification, call Dimplex Thermal Solutions' Medical Service team at 800-968-5665 and follow the prompts for Medical Service.
- Refer to recommended piping layout in this document.
- Follow plumbing guidelines listed in this document.
- Complete plumbing connections.
- Leak check piping installation. Ensure chiller is isolated from site piping before putting plumbing under any pressure.
- Flush piping to remove any installation debris.
- Back fill piping with glycol mixture if applicable.
- Wait for chiller startup to be completed to verify no plumbing issues exist.

	SUBJECT: (W/G)O2 Series Installation Guidelines - Plumbing		NUMBER: ENG-SVC-0065
	ISSUE DATE: 07/30/2024	REV: B	PAGE 2 OF 9

Plumbing Recommendations:


- Copper piping is recommended for fluid lines in and out of chiller. Do not utilize carbon steel, black pipe, or PVC. If you need clarification on type of piping you are using, contact DTS at 800-968-5665 and follow the prompts for Medical Service.
- These recommendations are for “Open to atmosphere” fluid systems. These chillers are not pressurized. Do **NOT** install bladder tanks, expansion tanks, shot feeders, pressure sensors, booster pumps, automatic water makeup systems, or any other supplemental equipment on the plumbing of these chiller without express instruction from Dimplex Thermal Solutions.
- IF YOUR PLUMBING INSTALLATION DEVIATES FROM ANY OF THESE PARAMETERS, CONTACT DTS AT 800-968-5665 and follow the prompts for Medical Service FOR RECOMMENDATIONS.
- For chillers located more than 75’ above the process, a booster pump is recommended. Consult factory for details.

Plumbing Pipe Size:

To ensure coolant flow velocities, and corresponding pressure drop, are kept to standard levels, the following sizes are recommended for the following flowrates.

Table 2: Recommended Flowrates

	Pipe Size (Inch)		
	1.25"	1.5"	2.0"
Flowrate Range (GPM)	<10	10-20	20-40


	SUBJECT: (W/G)O2 Series Installation Guidelines - Plumbing		NUMBER: ENG-SVC-0065
	ISSUE DATE: 07/30/2024	REV: B	PAGE 3 OF 9

(W/G)O2-2-3000/5000/7500/10000 Standard Plumbing Pressure Drop:

To ensure that adequate coolant flow is achieved through the process, the fluid pressure drop must be kept within these guidelines. In general, all (W/G)O2-2-3000/5000/7500/10000 units can achieve required flowrates through a total of 500 equivalent linear feet of 2" copper piping. To determine if your system meets this 500ft requirement, add the equivalent feet of all the appropriately sized plumbing fittings found in **Table 3: Equivalent Feet of Fittings** and add it to the sum total of all the straight length of piping. If this number is less than 500ft, all (W/G)O2-2-3000/5000/7500/10000 units will meet flow requirements.

Table 3: Equivalent Feet of Fittings

Fitting Type	Equivalent feet per 1.25" fitting	Equivalent feet per 1.5" fitting	Equivalent feet per 2.0" fitting
90° Standard Elbow	3.3Ft	4.0Ft	5.0Ft
90° Street Elbow	5.6Ft	6.3Ft	8.2Ft
45° Standard Elbow	1.7Ft	2.1Ft	2.6Ft
45° Street Elbow	3.0Ft	3.4Ft	4.5Ft
Globe Valve	38.0Ft	43.0Ft	55.0Ft
Gate Valve	1.5Ft	1.8Ft	2.3Ft
Angle Valve	15.0Ft	18.0Ft	24.0Ft

	SUBJECT: (W/G)O2 Series Installation Guidelines - Plumbing		NUMBER: ENG-SVC-0065
	ISSUE DATE: 07/30/2024	REV: B	PAGE 4 OF 9

Detailed Plumbing Pressure Drop:

For piping that does not fall into the previous standard piping guidelines, follow this pressure drop formula. Be sure to include the 10Psi required for the fluid to travel from the inlet of the chiller, through the brazed plate heat exchanger and back into the tank.

Table 4: Chiller Pressure Drop Formula

$$(Chiller\ Outlet\ Pressure)Psi - (Piping\ Pressure\ Drop)Psi - (Process\ Pressure\ Drop)Psi - (10Psi) \geq 0Psi$$

- **Chiller Outlet Pressure**

- Refer to **Table 5: Standard Chiller Outlet Pressures** for typical outlet pressure values. Some chillers may be nonstandard, contact Dimplex Thermal Solutions for questions on available outlet pressure.


Table 5: Standard Chiller Outlet Pressures

Chiller Model	Pressure
(W/G)O2-2-3000/5000/7500/10000	70Psi
(W/G)O2-3000/5000/7500/10000 Standard Pressure	40Psi
(W/G)O2-3000/5000/7500/10000 High Pressure	75Psi

- Piping Pressure Drop**

Table 6: Piping Pressure Losses per 100Ft of Pipe

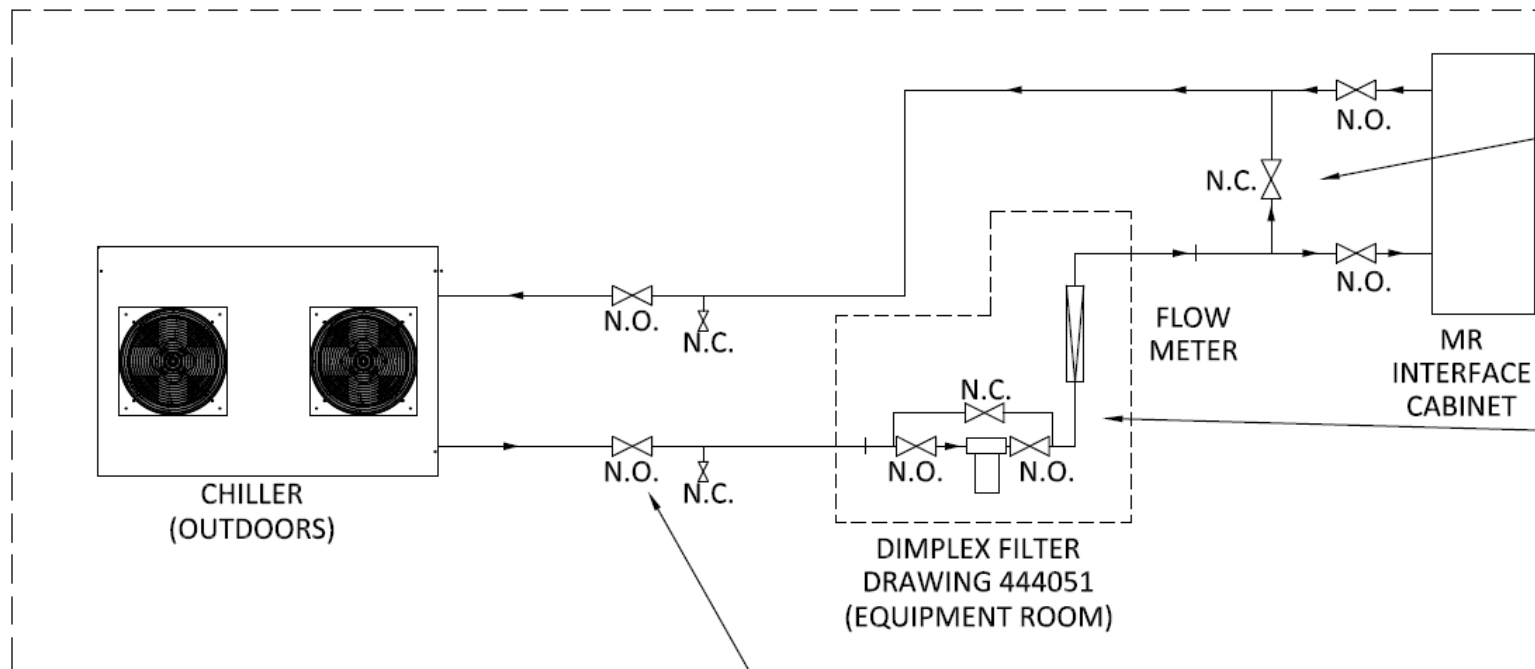
	1.25" Copper Line		1.5" Copper Line		2.0" Copper Line	
GPM	Psi/100Ft Water	Psi/100Ft 50/50 P_Glycol 46°	Psi/100Ft Water	Psi/100Ft 50/50 P_Glycol 46°	Psi/100Ft Water	Psi/100Ft 50/50 P_Glycol 46°
1	0.01	0.02				
2	0.01	0.02				
3	0.08	0.15				
4	0.16	0.31				
5	0.27	0.50				
6	0.38	0.72				
7	0.51	0.98				
8	0.66	1.26				
9	0.83	1.57				
10	1.01	1.91				
11			0.51	0.96		
12			0.60	1.14		
13			0.70	1.33		
14			0.81	1.53		
15			0.92	1.75		
16			1.04	1.98		
17			1.17	2.22		
18			1.30	2.48		
19			1.44	2.74		
20			1.59	3.02		
22					0.49	0.93
24					0.57	1.09
26					0.66	1.25
28					0.75	1.43
30					0.85	1.62
32					0.96	1.81
34					1.06	2.02
36					1.18	2.23
38					1.29	2.46
40					1.42	2.69

	SUBJECT: (W/G)O2 Series Installation Guidelines - Plumbing		NUMBER: ENG-SVC-0065
	ISSUE DATE: 07/30/2024	REV: B	PAGE 6 OF 9

- **Process Pressure Drop**

- Refer to process specific documentation to determine the pressure drop of the piece of equipment the chiller is connected too.

RECOMMENDED BASIC FIELD INSTALLATION



NC VALVE ACROSS THE MR INTERFACE CAN TEMPORARILY BE USED TO START UP THE CHILLER BEFORE THE ARRIVAL OF THE MAGNET.

NC VALVE AROUND FILTER CAN BE USED TO TEMPORARILY BYPASS THE FILTER WHILE CHANGING FILTER CARTRIDGES.

THESE FOUR VALVES CAN BE USED FOR FLUSHING THE FIELD PIPING BEFORE START UP.


THE MR MANUFACTURE'S INSTALLATION GUIDE TAKES PRECEDENT OVER THIS SUGGESTED PIPING GUIDE.

ALL DIMENSIONS ARE IN INCHES

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DATE	DESCRIPTION OF REVISION	APPROVED BY
9-28-16	ADDED FLUSH VALVES @ CHILLER	JMK

	SUBJECT: (W/G)O2 Series Installation Guidelines - Plumbing		NUMBER: ENG-SVC-0065
	ISSUE DATE: 07/30/2024	REV: B	PAGE 8 OF 9

Filling the Plumbing Lines and Fluid Tank:

- Complete rigging and setting of chiller at end user location.
- Ensure site plumbing has been flushed clean and has no residual installation debris. DO NOT FLUSH PLUMBING THROUGH CHILLER OR PROCESS EQUIPMENT AS DAMAGE MAY RESULT.
- If needed, source glycol and water for mixture.
- Remove air filters from chiller. (WO2 only)
- Add correct fluid mixture to chiller reservoir.
- Pump directly into the tank until the appropriate level is reached, sight glass should show fluid at “Max” level.
- Reinstall reservoir cap once system is full and free of air.
- Reinstall chiller air filters. (WO2 only)
- If the plumbing system has fill ports or other ways to backfill the piping, add the same concentration of fluid mixture used in the reservoir to fill the pipelines.
- Wait for startup of chiller to verify correct concentration and fluid level is achieved with system fully operational.
- Make any corrections necessary.
- When installing a chiller outdoors, the water to glycol mix must be 50%. If the chiller is indoors, the water to glycol mix must be 30% glycol to 70% water.
- When utilizing 100% glycol concentration, the fluid must be diluted to the correct concentration mixture. This must be accomplished with demineralized water. i.e. distilled water, Deionized water, reverse osmosis water, etc. TAP WATER MAY NOT BE USED TO MIX WITH GLYCOL.
- The water and glycol can be premixed prior to filling the system or can be added separately to the reservoir and self-mix when the fluid circulates through the system.
- After the system has been filled, test the mixture with a refractometer or hydrometer to ensure correct concentration level.
- DTS recommends that the chillers be filled with an industrial inhibited propylene glycol. If this cannot be sourced in your local area, reach out to DTS’ Parts Department for information on sourcing.
- You cannot backfill the chiller reservoir through the piping. The system utilizes check valves or anti-backflow solenoids to prevent this. The pipes and chiller reservoir need to be filled separately.
- Note what brand, type, concentration of glycol was used to fill the system, and date of system filling on the inside of the electrical panel door with permanent marker. This will ensure that the correct type of glycol is used going forward when the system requires refilling.

	SUBJECT: (W/G)O2 Series Installation Guidelines - Plumbing		NUMBER: ENG-SVC-0065
	ISSUE DATE: 07/30/2024	REV:B	PAGE 9 OF 9

Gallons Required to Fill One Linear Foot Of Piping:

Table 7: Gallons to Fill Lines

Line Size	Gallons per linear foot
1.25"	0.08
1.5"	0.11
2"	0.17
2.5"	0.25

Gallons Required to Fill Chiller Tank:

Table 8: Chiller Tank Sizes

Model	Tank Size
WO2-2-3000/5000/7500/10000	75 Gallons
WO2-3000/5000/7500/10000	60 Gallons
GO2-7500	
GO2-2-5000/10000	

Revision History:

Version	Revision Date	Description of Change	Changes Made By (Name & Title):
A	09/12/2024	Initial release of document	Ben Post, Engineer
B	12/3/2025	Included GO2 series to document.	Andrew Mora, Engineer