

How To Size A Big Dipper® Unit

The purpose of this sizing procedure is to give a specifying engineer a simple method for determining the proper size Big Dipper unit for various food service facility applications. Many different methods are in use today by the major code bodies for sizing grease traps. However, the sizing formula utilized by most codes becomes inaccurate whenever the facility contains a large number of fixtures. Using such sizing methods can lead to calculations that indicate enormous flow rates being generated. In reality this rarely occurs because:

- 1) the building's potable water supply can not produce this great of a flow rate
- 2) all of the fixtures can not be in use at the same time, and
- 3) the only fixtures that can produce high rates of flow are those that "store and release" large volumes of water such as deep multi-compartment sinks.

The key factor to be considered when sizing a Big Dipper® Automatic Grease & Oils Removal Unit is the peak flow rate. The method shown on the sizing page takes the most commonly used sizing method and adapts it for use in single fixture service applications. An example of a single fixture is a two or three compartment sink. An individual Big Dipper unit could be plumbed to this type of fixture.

The multiple fixture sizing formula takes points 1, 2 and 3 above into consideration. As an illustration, the multiple fixture example describes common kitchen wash equipment and drainage requirements for a typical large full-service restaurant. Using the older multiple fixture unit values, the peak flow rate is calculated to be 15.1 liters per second. Using field experience data and the combined method, we find that the peak flow rate for this "typical" restaurant is actually 3 liters per second. At 3 liters per second maximum peak flow rate, a 3.15 liter per second Big Dipper system could easily handle the effluent discharges of this restaurant. For kitchen effluent flows greater than 3.15 l/s, Big Dipper AST systems should be utilized. Big Dipper AST (Automatic Solids Transfer) centralized grease removal systems are designed for basement locations or for larger, institutional-type kitchens such as hospitals, correctional facilities or casinos.

* Another factor to consider is that of head pressure. Big Dipper internal flow controls are calibrated at 6 feet (1.95 m) of head pressure. If a higher head pressure is present in a location, it is recommended that a larger size Big Dipper unit be installed and the VFCA Flow Control Vent be installed.

NOTE: Drawing for reference only. Equipment must be installed in compliance with all applicable laws, regulations and codes, including plumbing codes. Installation should be performed by a qualified plumber.



BIG DIPPER®

Sizing Point Source Systems

Single Fixture Sizing Suggestions

Use this chart to help size Big Dipper equipment that will service a single fixture. Single fixture Big Dipper equipment is designed to sit on the floor beside the fixture it is servicing. For basement installations or installations where the Big Dipper will be more than 6 feet (1.95 m) beneath the fixture it is servicing Thermaco, Inc. recommends the next larger unit be installed as well as installing the VFCA Vented Flow Control Assembly. Consult a licensed plumber regarding your specific requirements.

Fixture	Description	Compartment Size (in Millimeters)	Pipe Size	l/s Rating	Suggested System
Sink	1-3 Compartments	457 x 457 x 305	50 mm	1.26	W-200-IS-E
Sink	1-4 Compartments	457 x 610 x 381	50 mm	1.6	W-250-IS-E
Sink	1-4 Compartments	610 x 610 x 381	75 mm	2.21	W-350-IS-E
Wok Range	Wok Range with 1-5 Wok Stations		50 mm	1.26	W-200-IS-E
Wok Range	Wok Range with 5+ Wok Stations		50 mm	1.6	W-250-IS-E
Pre-Rinse Station**			N/A		W-200-IS-E
Ventilation Hood			Use equipment manufacturer's peak l/s rating		
Other Fixtures or Appliances			Use equipment manufacturer's peak l/s rating		

*To minimize grease/detergent emulsification, plumbing dishwashers directly into the sanitary sewer line is recommended. Consult local codes or a licensed plumber when considering plumbing a dishwasher to a Big Dipper unit.

** Thermaco recommends the use of the FS-1 Flat Strainer or ESU-1 External Strainer Basket in combination with the Big Dipper in pre-rinse areas.

Single Fixture Big Dipper Equipment

<u>Model</u>	<u>l/s Rating</u>
W-150-IS-E	0.95
W-200-IS-E	1.26
W-250-IS-E & W-250-AST-E	1.6
W-350-IS-E	2.21
W-500-IS-E	3.15



Sizing Multiple Fixture Installations

Multiple Fixture Sizing Suggestions

Use this chart to help size Big Dipper equipment that will service multiple fixtures. Use standard Big Dipper systems for cases where the Big Dipper is less than 4 feet (1.25 m) beneath the fixtures being serviced. For installations where the Big Dipper is servicing multiple fixtures and will be facing more than 6 feet (1.95 m) of head pressure use the next size Big Dipper system or install a Big Dipper AST (Automatic Solids Transfer) Central Grease Removal System. **Never install a smaller Big Dipper system than the rated GPM the chart calculates.** Consult a licensed plumber regarding your specific requirements.

Multiple Fixture Flow Calculation:

Fixture	# Fixtures	Fixture Value (l/s)	Total Fixture (l/s)	Averaging Multiplier	Flow Rating (l/s)
Floor Drains	#	0.47	# x 0.47	0.10	# l/s
3 Compartment sink	#	1.6	# x 1.6	0.25	# l/s
Pre-rinse Sink	#	0.95	# x 0.95	0.25	# l/s
Mop Sink	#	0.95	# x 0.95	0.25	# l/s
2 Compartment Sink	#	1.6	# x 1.6	0.25	# l/s
Hand Sink	#	0.47	# x 0.47	0.25	# l/s

Example:

Fixture	# Fixtures	Fixture Value (l/s)	Total Fixture (l/s)	Averaging Multiplier	Flow Rating (l/s)
Floor Drains	12	0.47	5.64	0.10	0.56
3 Compartment sink	2	1.6	3.2	0.25	0.8
Pre-rinse Sink	2	0.95	0.95	0.25	0.474
Mop Sink	1	0.95	0.95	0.25	0.237
2 Compartment Sink	1	1.6	1.6	0.25	0.4
Hand Sink	2	0.47	0.94	0.25	0.235
					Total 2.706 l/s

Note: Always use next larger size unit than the calculated flow rating. In this case, a W-500-IS-E system would adequately handle the kitchen flow.

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