



Cyclone Test Rig & Hydrocyclones

CONTACT US

Phone: 310-830-6601

FAX: 310-830-9336

Email: info@sepor.com
& services@sepor.com

LOCATIONS

WEST COAST

718 N. Fries Avenue
Wilmington, CA 90744

EAST COAST

3740 NW 124th Ave
Coral Springs, FL 33065



Description

Sepor's Cyclone Test Rig is designed for laboratory testing of hydrocyclone separation of slurries. It comes standard with a 2 inch Krebs Urethane Cyclone, a 190 liter sump (optional larger 283 liter sump available upon request) and a 1-1/2 x 2 slurry pump with a 7.5 HP/220, 380 or 440 V/3 Ph/50-60 Hz TEFC motor. The pump speed is controlled by a frequency inverter for variable speed with a pinch valve to help regulate flow. Also included is internal piping and valves to circulate the slurry through the cyclone from the sump or to re-circulate the slurry, and a pressure gauge to monitor the pressure drop across the cyclone. All equipment is conveniently mounted on a sturdy structural steel frame with swivel castors for mobility.

The Gmax 2-inch cyclone comes standard with the unit and has a typical separation range for particles of 15 microns in size. The cyclone test rig will operate cyclones ranging from 1/2 inch up to 4 inches. Custom cyclone test units can be designed for a larger range of cyclones upon request.

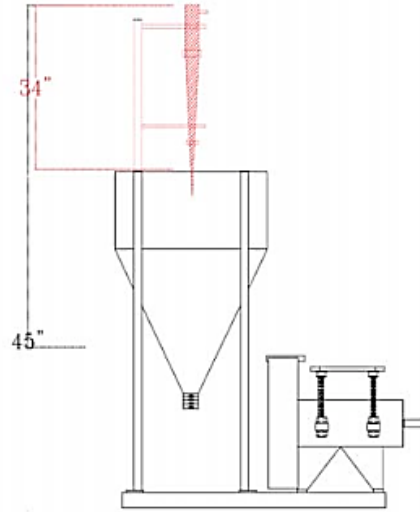
HYDROCYCLONES:


Standard Classifying Cyclones are manufactured with sectionalized metal housings fitted with replaceable molded liners of abrasion resistant elastomers, ceramics or alloys. A combination of high density gum rubber and ceramic liners is commonly used for metallurgical applications.

These cyclones feature involuted feed entry into the cyclone, which minimizes turbulence due to feed entering the cyclone. This allows these cyclones to make a finer particle size separation than would be possible with a tangential feed entry cyclone. Pictured are the classifying cyclones we use on pilot plant applications and the cyclone test rig.

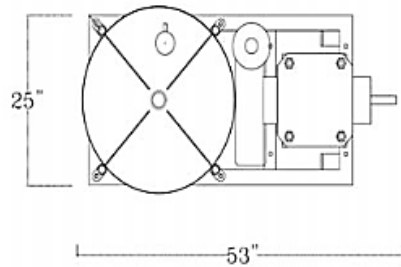
Catalog Number	Description
050K-001	Cyclone test rig assembly, with carbon steel sump
050K-002	Cyclone test rig assembly, with carbon steel sump, lined with polyurethane
050K-004	Cyclone test rig assembly, with stainless steel sump
080B-010	Optional 1725 RPM mixer for sump

FEATURES: Interchangeable orifices can be used to obtain a range of separations with the cyclone. The feed entry nozzle for each cyclone is molded into the inlet head liner and for each cyclone, at least two different size feed nozzles are available. Three sizes of vortex finders are available for each cyclone. Apex valve liners or inserts can be used to change the size of the apex orifice. Some models may be manufactured without the cylinder section, or with a longer than normal cylinder section. Generally, the longer the cylinder section, the finer the particle size separation obtainable. Metal cyclone housings fitted with molded liners offer the advantage of replacing the relatively inexpensive liners instead of the more expensive cyclone. Feed inlet and overflow adapters can be supplied for connection by means of Victaulic couplings, grooved or plain end, or with standard flanges. A typical standard cyclone configuration is cast steel construction with gum rubber lining. We have urethane linings, stainless steel construction or all urethane construction available for our classifying cyclones. For capacities and classifying particle size ranges, refer to the following table.



TITLE		Cyclone Test Rig General Dimensions	
PROJECT	Misc.	DATE	Jan 1994
SCALE	NA	DRAWN BY	ACAD
		SEPOR, INC. Phone: (310)630-9001 718 N FRIES AVE. Fax: (310)630-9136 WILMINGTON, CA 90748	

Cyclone Test Rig



Cyclone Discharge Sump With Centrifugal Recirculating Pump

Catalog Number	Cyclone Size	Capacity (GPM)	Separation Size Range	Maximum Feed Size
050J-001	1/2"	0.6 – 0.95	– 10 μ	48 Mesh
050J-005	1"	2.7 – 4.7	– 14 μ	28 Mesh
050J-010	2"	16 – 27	11 – 22 μ	2 mm
050J-015	3"	13 – 30	– 30 μ	2 mm
050J-020	4"	17 – 70	– 36 μ	4 mm
050J-025	6"	46 – 205	– 47 μ	6 mm
050J-030	10"	200 – 300	– 100 μ	10 mm

Above performance characteristics are based on average operation conditions.

Gmax Cyclone Used	Vortex Finder Size	SG Dry Solids	% Solids	GPM Slurry	TPH Solids	Separation Particle Size
Gmax U2"	1/2"	2.6	20%	20	1.3	15μ
Gmax U3"	3/4"	2.6	20%	40	2.5	20μ
Gmax U4"	1.5"	2.6	20%	80	5	35μ

Cyclones

2 In. CYCLONES



1 In. 1/2 In.



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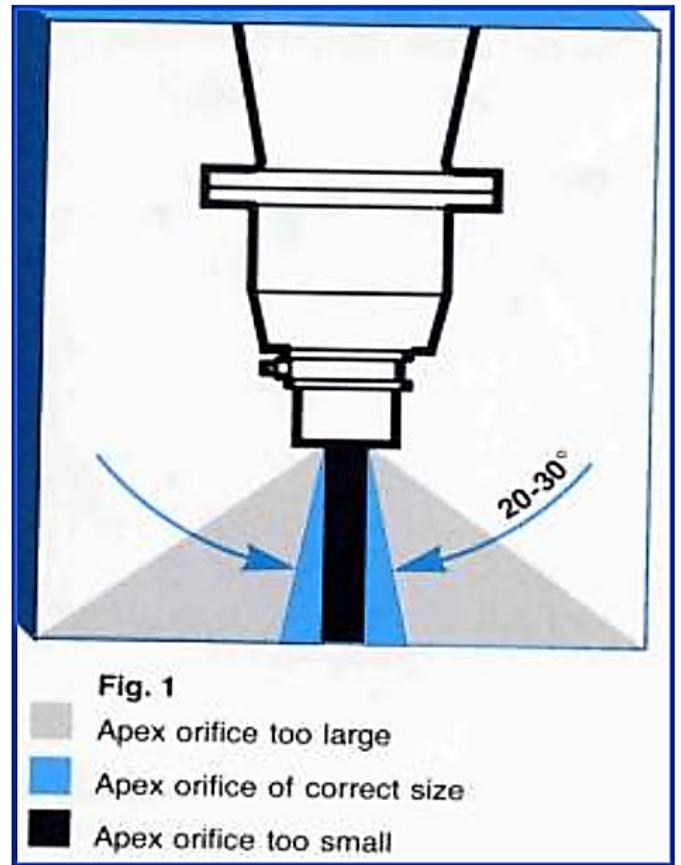
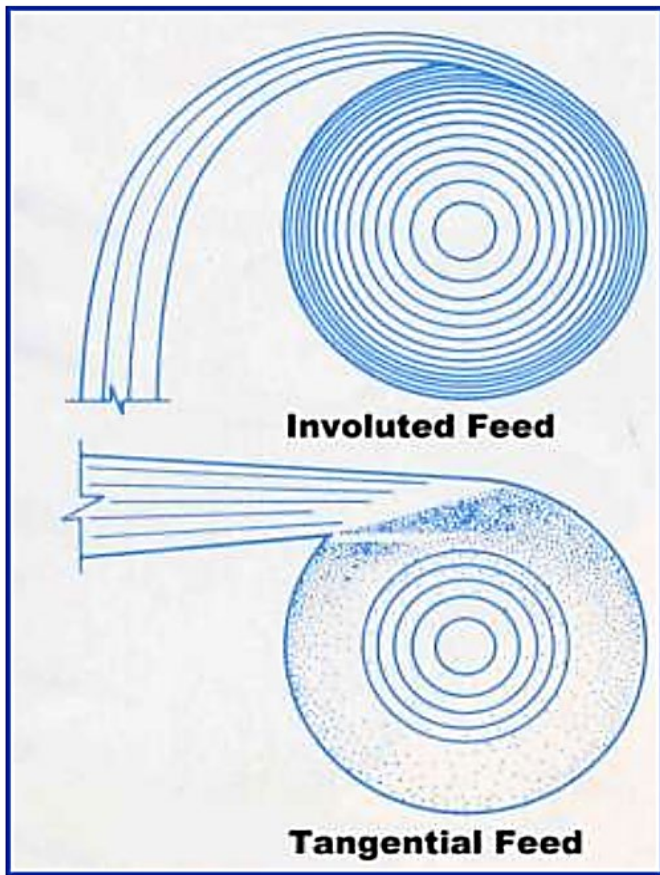
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A cyclone's performance is determined by the particle size distribution, the particle densities, the percent solids of the feed and the volumetric feed rate of the cyclone. Feed to the cyclone should have a density of 156 to 200 pounds per cubic foot (dry solids). These solids should be in a slurry form (a mixture of liquid and solids). The feed solids concentration should be no more than 30% solids by weight. The feed should not be unusually viscous, such as might exist with a high concentration of clays.

Cyclone selection is generally made by determining the cyclone which will make the desired particle size separation, a operating inlet pressure drop of between 5 and 15 PSI and the GPM of cyclone slurry feed required for adequate performance. Then attention must be devoted to details such as corrosion resistance of the construction/lining materials and abrasion resistance of the construction/lining materials.

Laboratory testing is advised prior to selecting a cyclone for an in-plant application. Sepor has available the Laboratory Test Rig for the purpose of laboratory cyclone testing (Catalog Number 050K-001).

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Above is an illustration of an involuted feed flow to a cyclone and a tangential feed to a cyclone. Involved feed has a smooth flow, while the tangential feed generates extreme turbulence.

Above is an illustration of the pattern of flow from the apex of a cyclone.