

CENTRIFUGES

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**NSI EQUIPMENTS PVT. LTD.** designs & manufactures Basket Centrifuges for various chemical process industries, bulk drugs, fine chemicals, agro chemical, pesticides & insecticides, dyes, intermediates & menthol etc. for the last more than 30 yrs.

NSI EQUIPMENTS offers best possible quality & workmanship & efficient systems.

### PRINCIPLE

In basket centrifuge, the solids & liquids are separated by centrifugal force using a filter media (usually a cloth) mounted over supporting mesh, which are together supported inside the rotating basket. The slurry to be filtered is fed through the feed nozzles to the basket and due to centrifugal force the liquid is forced out through the filter media while solids are retained within the filter media inside the basket. These solids then separated are discharged by various discharging methods namely- manually, bag lifting basket, through scrapper, operated manually/ pneumatically/ hydraulically, for which different models are available.

### SUSPENSION/MOUNTING

All the centrifuge can be supplied either in 3 point type suspension or the newer 4 point type mounting (on VISCO Damper / Sordino Damper) anti vibration mounts.

### MOC OF CENTRIFUGE

**Carbon Steel, Stainless Steel, Rubber Lined, Halar Lined.**

### ADVANTAGES OF 4 POINT MOUNTING

- Level of vibration is much lower & operates very smoothly.
- Can be easily mounted on upper floor.
- Can be easily relocated.
- Almost negligible maintenance cost for suspension / mounting system.

- The working area is free from abstracts and a clean area can be maintained.
- Additional weight of motor is take care by additional supporting points.
- The vibration dampers are almost maintenance free.

## TYPES/MODELS OF CENTRIFUGES

- (A) Pilot Plant Centrifuge
- (B) Bottom Driven Top Discharge Type
- (C) Bag Lifting Type
- (D) Bottom Discharge Type with/without Scapper

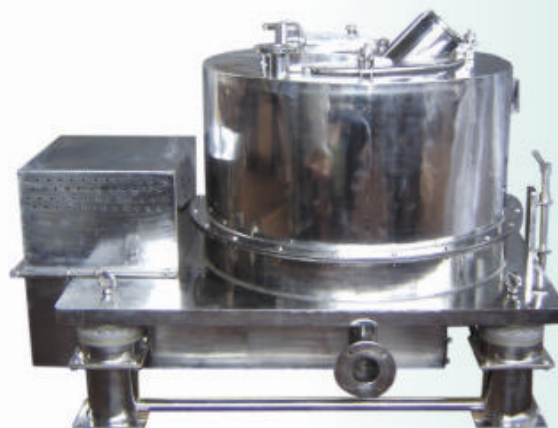
### PILOT PLANT CENTRIFUGE



The pilot plant centrifuges are used for taking small trial batches in plants.

The same centrifuge would be optionally mounted on movable trolley for shifting purpose and during operation the trolley is leveled by suitable locking screw pads provided at the four ends.

### BOTTOM DRIVEN TOP DISCHARGE CENTRIFUGE



This is the most versatile & basic model of basket centrifuge for solid & liquid separation. After centrifugation, the solids are scraped manually using a scoop and removed from basket manually from top.

## BAG LIFT TOP DISCHARGE CENTRIFUGE



These types of centrifuge consists of a tapered shell basket for easy removal of filter bag + solids and after centrifuging the solids are unloaded by lifting the basket top alongwith filter bag and solids. The filter bag is fitted with removal basket top with a bag holding ring. This ring holds the filter bag firmly while filtering & lifting and prevents the bag from tearing and thus preventing solid losses.

The top cover is full mouth opening type and is either manually opened or opened by suitable pneumatically/hydraulically operated cylinders (optional).

### ADVANTAGES OF BAG LIFT CENTRIFUGES

- Easy & fast unloading.
- Complete discharge of solids without residual heel.
- Original crystalline structure intact since scrapping / attrition does not take place.
- Useful for hard, crystalline & amorphous cake.
- Reduced human contact.
- Reduction in batch time & hence increased production.
- Easy inspection and cleaning of basket & monitor cage due to removal ring for basket & fully opening cover for monitor cage.

## BOTTOM DISCHARGE CENTRIFUGES

In these types of centrifuges, the centrifuged solids are discharged from the bottom of basket. The discharge outlet from the centrifuge is either fully opening chute type or a single pocket is provided from where the material is discharged.

The scrapping is done by means of a scrapper operated either (a) manually (b) pneumatically or, (c) through hydraulic cylinder.

The DRIVE is furnished by a totally enclosed motor controlled by infinitely variable AC inverter drive to vary basket speed with built in dynamic braking system. The AC drive is incorporated with microcomputer and has a facility to interface with Programmable Logic Controller (PLC) for complete automation.

The centrifuge is driven at 3 speeds Le. the feed speed, centrifuging speed & scrapping speed (around 60 rpm)

The basket consists of pockets through which solids are discharged from basket.



### ADVANTAGE OF BOTTOM DISCHARGE CENTRIFUGE MACHINE

- Easy scrapping of cake through scrapper with quick cake discharge and without manual contact.
- Less manual labour and cake handling.
- The centrifuge can be optional under totally vapour tight condition during scrapping.
- Solid discharge from the bottom of the centrifuge and its handling can be done easily to subsequent equipment processing or can be transferred with the help of conveyor and trolley.

## TOP DRIVEN BOTTOM DISCHARGE TYPE

The centrifuge is single point suspension system, having central spindle suspended at top in the bearing housing. The centrifuge basket is mounted over the central spindle. The centrifuged cake is discharged through the pockets provided in the centre of the basket.



## ADDITIONAL FEATURES (OPTIONAL)

- (1) **RESIDUAL HEEL (CAKE) REMOVAL SYSTEM** – Special nozzle can be provided to spray high pressure nitrogen, air or, water to dislodge the residual cake.
- (2) **CLEANING IN PLACE (CIP)** – Special nozzles are provided at strategic location in the machine. When shut, water is sprayed through these nozzles, they reach out most of the inside of centrifuge for effective cleaning.
- (3) **LEAK TEST AS PER DIN 24 400** – The centrifuge can be manufactured for leak tighten at 0.02 to 0.04 bar.
- (4) **NITROGEN BLANKETING SYSTEM** – A Nitrogen Blanketing system can be provided to maintain the pressure in the Centrifuge between 0.02 and 0.03 bar. A high capacity line is provided for initial purging of the body of the centrifuge. Separate lines are provided for the bearing housing for blanketing of the Centrifuge.
- (5) **SPEED INDICATION WITH ZERO SPEED SWITCH** – The speed indicator displays the actual speed of the basket (in rpm). It also positively locks the lid and prevents it from being opened above a predetermined safe speed.
- (6) **AUTOMATION** – A PLC is used to sequence operations and monitor feedback. The necessary feed back is provided by systems like vibration monitoring system, valve position sensors, cake monitor etc. The entire operation of the Centrifuge can thus be automated and the need for the operator to remain present continuously is eliminated.
- (7) **CAKE SENSOR** – The thickness of the cake actually built up in the Centrifuge is monitored continuously with the help of a Cake Monitor.

## TECHNICAL SPECIFICATIONS

MODEL	Units	NSI-14-Lab	NSI-24	NSI-36	NSI-48	NSI-60
Basket Diameter	mm	355 (14")	610 (24")	915 (36")	1220 (48")	1525 (60")
Basket Height	mm	178 (7")	305 (12")	457 (18")	510 (20")	600 (24")
Working Capacity Under Lip	lts.	10	45	165	300	500
Basket Sped (max.)	rpm	1600	1400	1000	800	650
Centrifugal Force	G	510	665	511	436	359
Filteration Area	M2	0.2	0.60	1.30	1.92	2.40
Motor Power	hp	2	3	7.5	15	20
Overall Dimension of the Machine						
(a) Length on Motor Side (Appx.)	mm	1000	1500	1900	2100	2400
(b) Width (appx.)	mm	800	1050	1400	1760	1750
(c) Height (appx.)	mm	900	1000	1200	1185	2000

## OTHER RANGE OF PRODUCT

REACTION VESSEL

HEAT EXCHANGERS

CONDENSERS

ROTARY DRIERS / KILNS

ROTARY VACUUM DRIERS

MICRONIZERS

RIBBON BLENDERS

AUTO CLAVES



# NSI EQUIPMENTS PVT LTD

(An ISO 9001:2000 Certified Company)



ISO 9001:2000 CERTIFIED ORGANISATION

### CORPORATE OFFICE & WORKS :

Opp. Block Development Office, Delhi Road, Meerut - 250 002 (U.P.) India  
 Tel.: (0) 91-121-2519225, 2529956 • Facsimile : +91-121-2521154  
 E-mail : info@nsiequipment.com • Website : www.nsiequipment.com

### REGIONAL OFFICE :

734, Mount Road, Chennai - 600 006, Tamil Nadu, India.  
 TeleFax : +91-44-28297539, 09843027957  
 E-mail : nsie@vsnl.net / kannan@nsiequipment.com