

Centrifugal Solid-Liquid Separator

VALUE UP!!

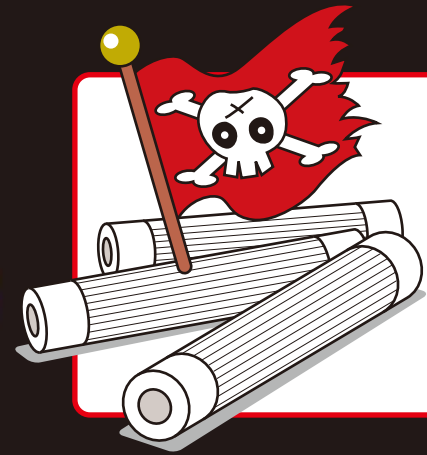
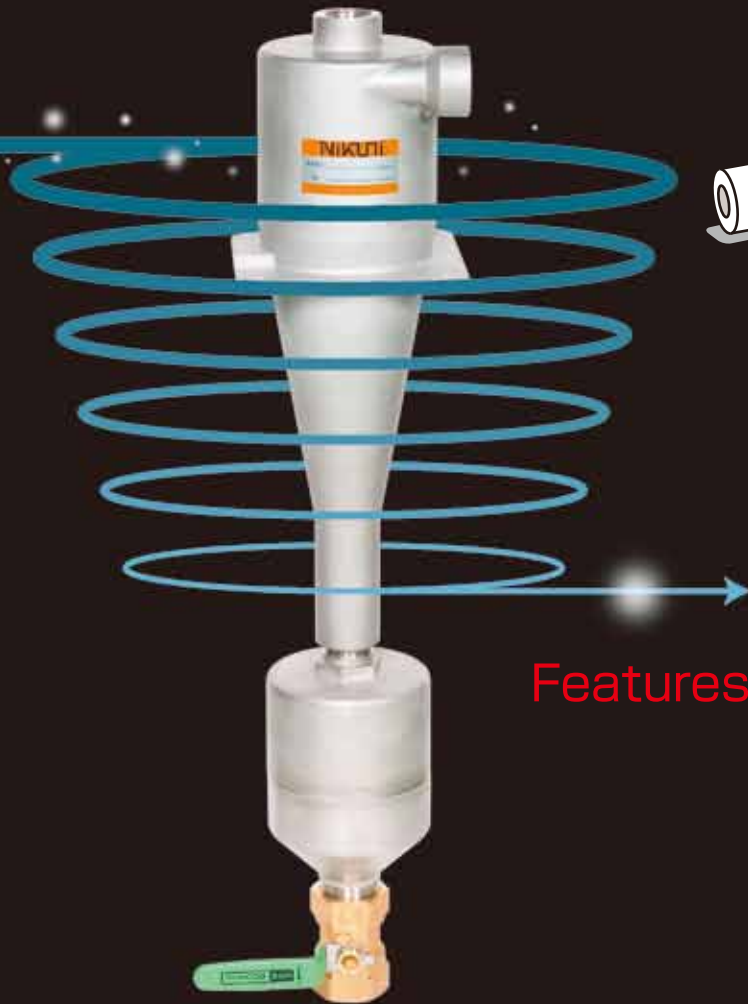
Vortex Dynamic Filter



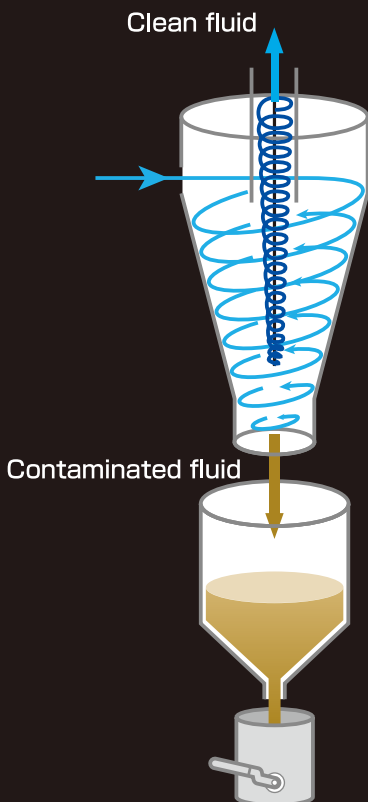
COST DOWN!!

NIKUNI

VDF Vortex Dynamic Filter



Features



VDF + Sludge Pod

- 1) Sludge-containing fluid flows into the separator via the supply pump through the inlet positioned tangential to the periphery at the top of the separator.
- 2) The fluid flows along the inner wall of the separator, and thereby pressure energy is converted into rotational energy. While turning under strong centrifugal force, the sludge descends toward the narrowed nozzle in the bottom. After passing the nozzle, the sludge is discharged.
- 3) The discharged sludge rapidly loses its turning force, precipitates inside the concentration pod and stays deposited.
- 4) On the other hand, ultra fine sludge which is unable to get sufficient centrifugal force and slow in its descending speed is carried up with ascending clean fluid stream before reaching the inner wall of the separator and discharged from the top opening. During this process, a long narrow cavity of vacuum is present in the core of the separator.

1

Maintenance-free operation with no resulting industrial waste

Centrifugal solid-liquid separation requires no filter replacement. Running cost can be reduced significantly thanks to the operation which requires neither filter replacement nor disposal of industrial waste.

2

Highly efficient, precision filtration

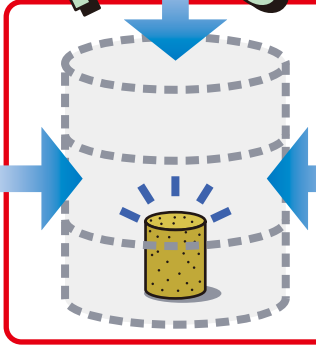
At 0,2 MPa supply pressure, filtration performance reaches as high as 99% for the particles of 25µm size and over 90% for 10µm size. By maintaining cleanliness of the coolant fluid, the system can contribute to enhanced product quality and higher reliability of machining. (See Figure 1 and Table 1 on page 5.)

3

No foams by trapped air

No foams or bubbles are produced by trapped air. Workplace environment is protected against contamination by scattered foams or insufficient pumping.

PRESS



Sludge disposal made easier by concentration of contaminated fluid

Contaminated fluid is concentrated to a high degree in the pre-installed sludge pod to facilitate subsequent disposal. Volume of the sludge collected in the contaminated fluid tank is reduced because the sludge will never be allowed to go back to circulation. This enables high precision treatment with VDF.

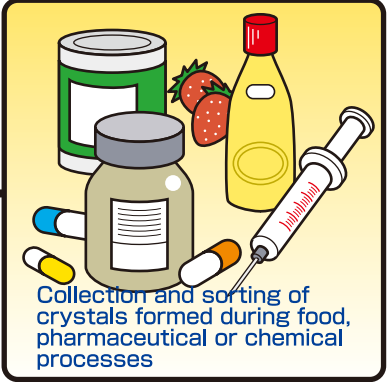
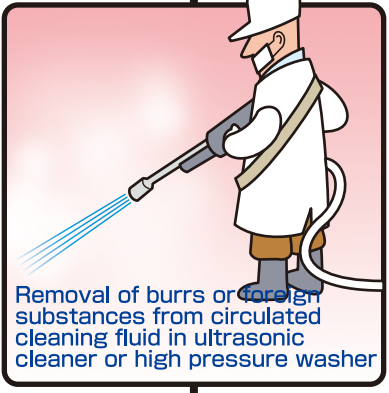
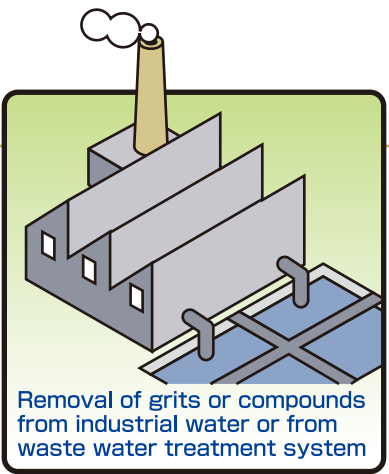
4

Stainless steel employed as standard material to fit for broader range of applications

Rust-proof stainless steel is employed as standard material, which makes the system suitable for wide range of applications. They include industrial water, solvent, coolant and other waste waters in such industries as food, pharmaceutical and electronic components.

5

Applications



VDF Vortex Dynamic Filter

Ideal Precision Filtration & Maintenance-Free Op

VDF Mounted Filtration Systems

Model	Type	Supply pump	Sludge pod + Stand	Sludge pod open/close valve	Supernatant fluid suction unit	Tank full alarm (Auto stop)	Sludge tank for manual scraping
C-CAT-N(C-SEL-N)	Manual, w/o pump	×	○	Manual	×	×	△
C-CAT-P(C-SEL-P)	Manual, with pump	○	○	Manual	△ (Manual)	×	△
C-JAGUAR	Semi-auto	○	○	Auto	○ (Auto)	○	○
NAX-CS	Full-auto	Equipped with gather-up conveyor (automatic sludge discharge)					

※ 1 ○Standard, △Option

※2 Two types are available for C-CAT. C-CAT-P comes with pump as standard. For C-CAT-N, pump should be arranged by user.

※3 C-SEL is supplied as a kit version of C-CAT. It should be assembled by user.

※4 C-JAGUAR requires manual discharge of sludge deposited in the sludge tank.

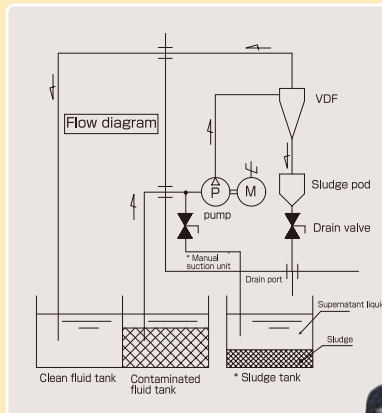
※5 C-CAT does not come with sludge tank as standard. A pail or other suitable container should be prepared by user.

Sludge tank for manual scraping is available for C-CAT as option. (See page 8 for options.)

C-JAGUAR comes with large sludge tank for manual scraping as standard.

C-CAT/SEL

Manual Type VDF Coolant Filtration System



C-CAT-P Features

- 1) Excellent solid-liquid separation performance, which achieves over 90% filtration of 10 μ m size sludge contained in water based coolant and over 80% of 20 μ m sludge even in oil-based one, maintains cleanliness of coolant fluid and enhances machining accuracy. (Refer to the technical data on pages 5 and 6.)
- 2) As sludge separation is done by centrifugal force, filter replacement is not necessary. This prevents industrial wastes and conforms to zero emission objectives.
- 3) Maintenance is made easier by eliminating troublesome filter replacement.
- 4) No foams/bubbles are produced by trapped air. Workplace environment is protected against contamination by scattered foams or insufficient pumping.
- 5) Continuous operation of C-CAT keeps the contaminated fluid tank always clean, reducing the frequency of tank cleaning and prolonging the coolant life.

* Special sludge tank designed for easy scraping of sludge is available as option. (See page 8 for options.)

C-CAT-P Operation

- 1) Before starting C-CAT operation, clean the contaminated fluid tank and remove all deposits.
 - 2) After operation for a fixed period of time, manually open the drain valve positioned at the bottom of the sludge pod to drain the sludge into the sludge tank.
 - 3) When the sludge tank is full after repeated drainage, the supernatant liquid should be either sent back to the contaminated fluid tank or put to disposal. Using optional manual suction unit, you can easily send the supernatant liquid to the supply pump for filtration and reuse. (See page 8 for options.)
- * Note that manual suction unit cannot be installed on C-CAT-N.
- 4) When the sludge tank is full of sludge after repetition of 2) and 3), remove the sludge manually.

Applications

- 1) Removal of minute cutting debris (10 μ m or bigger) such as of cast iron or aluminum that can be deposited in the tank to cause corrosion.
- 2) Removal of fine particles such as grinding chips and abrasive grains resulting in various grinding machines.

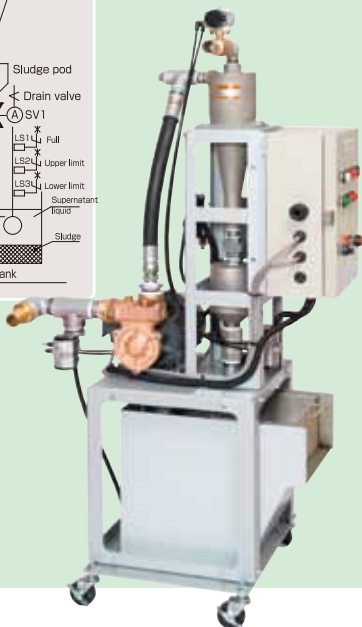
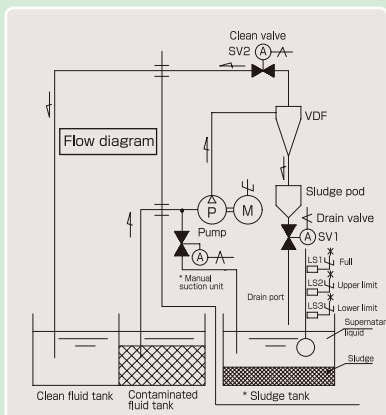
Operation Finally Realized with C-CAT & C-JAGUAR

C-JAGUAR

Semi-Automatic VDF Coolant Filtration System



"Returning of sludge prohibited once captured!"



C-JAGUAR Features

- 1) While maintaining the advantages of C-CAT, the operations except for removal of the sludge deposited in the sludge tank have been automated for higher efficiency.
- 2) Thanks to the small volume sludge tank dedicated to C-JAGUAR and automated suctioning of supernatant liquid, frequency of sludge tank cleaning is dramatically reduced.

C-JAGUAR Operation and Precautions

- 1) Basic flow and operation are the same as C-CAT. Drainage of the sludge pod and suctioning of the supernatant liquid in the sludge tank are automated.
- 2) When sludge is piled up in the sludge tank, scrape and remove it manually.
- 3) When the sludge tank is full, the high sludge alarm is activated and the operation is stopped automatically. It is recommended, however, to remove the sludge well before the alarm is triggered.

Technical Data

Filtration Performance of VDF CL-100

Figure 1 Filtration performance vs. supply pressure

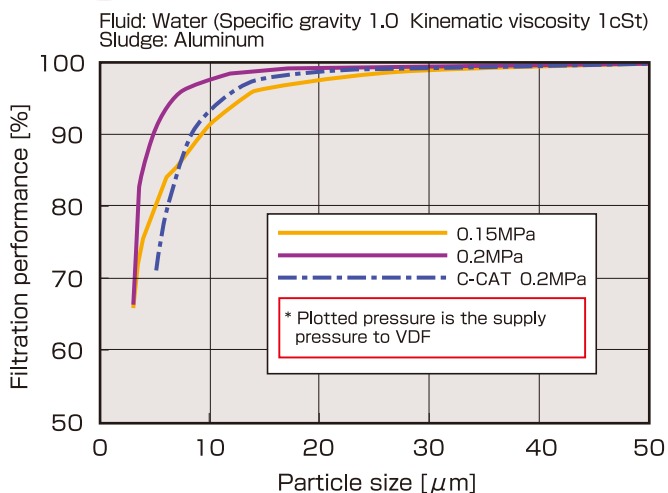


Table 1 Filtration performance per particle size at 0.2 MPa supply pressure

Particle size	3μm	5μm	10μm	15μm	25μm
Filtration performance [%]	65	90	95	98	99

Figure 1 shows VDF CL-100 performance to remove aluminum sludge. VDF provides filtration of approx. 65% of aluminum particles contained in water for 3μm size, over 95% for 10μm, and 99% for 25μm at the supply pressure of 0.2 MPa. Higher performance is expected for FC or SCS material which has higher specific gravity than aluminum.

VDF Vortex Dynamic Filter

Affordable C-CAT, Semi-Automatic C-JAGUAR, Full-Automatic NAX-CS _ Choose Any System

NAX-CS



Full-Automatic Cyclone Separator
Coolant Filtration System
with Gather-Up Conveyor

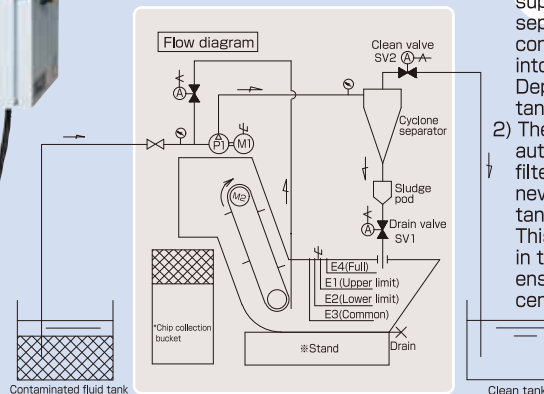
"Returning of sludge prohibited once captured!"

NAX-CS Features

- 1) DVF is combined with the sludge pod and the gather-up conveyor which automatically discharges the sludge to provide the ideal coolant filtration system featuring high performance, fully automatic maintenance-free operation with no industrial waste production.
- 2) Excellent solid-liquid separation performance, which achieves over 90% filtration of 10 μ m size sludge contained in water based coolant and over 80% of 20 μ m sludge even in oil-based one, maintains cleanliness of coolant fluid and enhances machining accuracy as well as helps prolong service life of the coolant.
- 3) No foams are produced by trapped air. Workplace environment is protected against contamination by scattered foams or insufficient pumping.
- 4) As sludge separation is done by centrifugal force, filter replacement is not necessary. This prevents industrial wastes and significantly reduces the running cost.

NAX-CS Operation Flow

- 1) Contaminated fluid is sent to VDF via the supply pump and treated by solid-liquid separation. The sludge thus separated is concentrated in the sludge pod and drained into the sludge tank at controlled time intervals. Deposited sludge is then carried out of the tank by the conveyor.
- 2) The supernatant in the conveyor tank is automatically suctioned by the supply pump, filtered again and reused for circulation. It will never be returned to the contaminated fluid tank due to overflowing. This prevents the concentration of the sludge in the contaminated fluid tank from rising and ensures enhanced cleanliness of the fluid for centrifugal filtration.



Technical Data

Figure 2 CL-100 Filtration performance at 0.2 MPa/water vs. oil

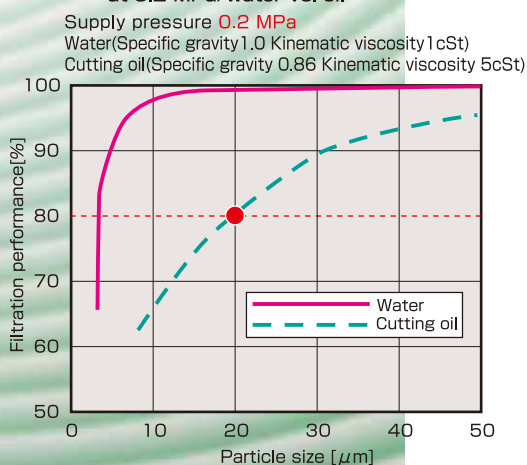
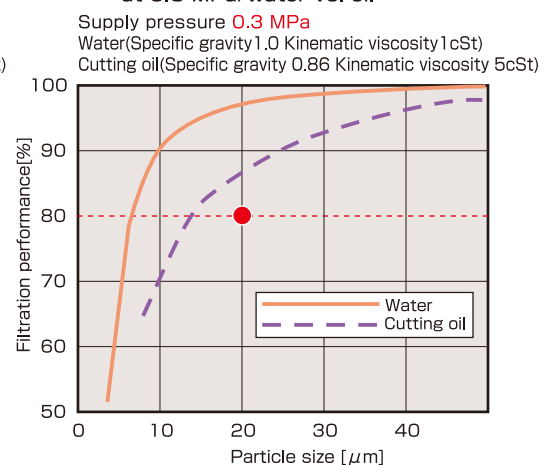


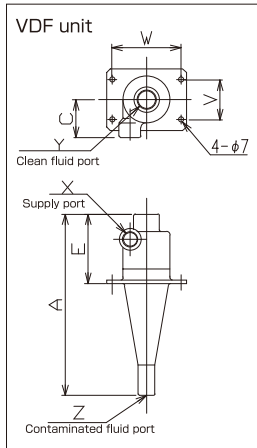
Figure 3 CL-100 Filtration performance at 0.3 MPa/water vs. oil



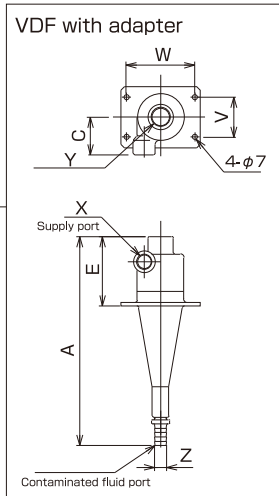
Figures 2 and 3 show the comparison of filtration performance at the supply pressure of 0.2 MPa and 0.3 MPa for water (gravity 1.0 and viscosity 1cSt) and cutting oil (gravity 0.86 and viscosity 5cSt). VDF can remove over 80% of particles of 20 μ m size contained in the cutting oil with 5cSt viscosity, although it shows less performance when used with viscous fluid like cutting oil than with water.

or Best for Your Economy and Application Requirements

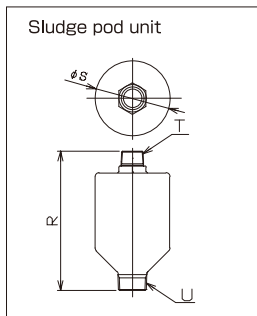
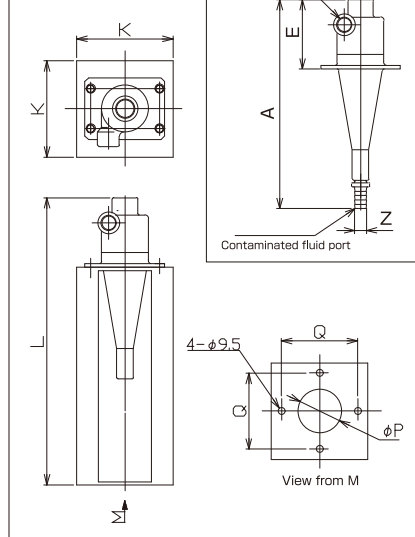
Dimensions



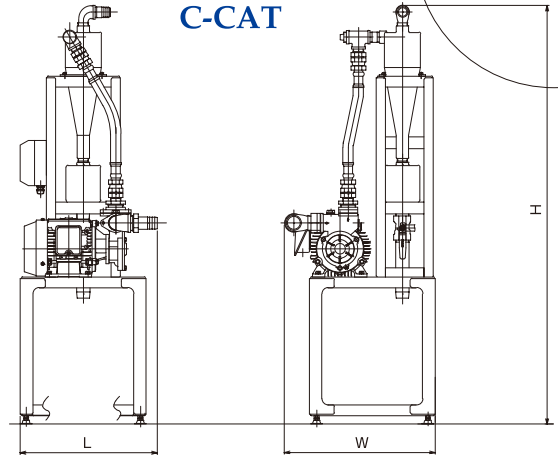
VDF



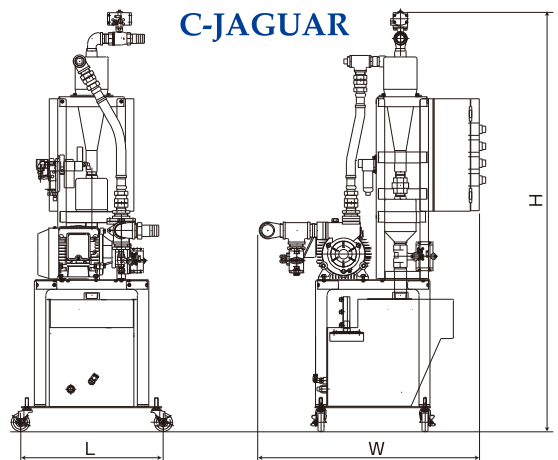
VDF with legs



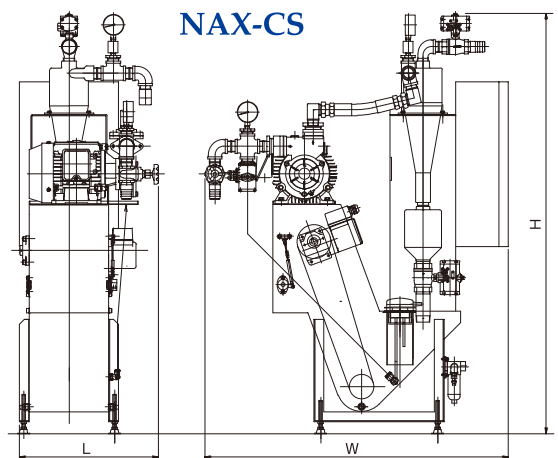
C-CAT



C-JAGUAR



NAX-CS



VDF Unit Dimensions (unit: mm)

Model	A	C	E	V	W	X	Y	Z	Weight(kg)
CL-20LW	214	50	—	—	—	Rc1/2	Rc1/2	Rc3/8	1.1
CL-30LW	250	52	96	55	95	Rc1/2	Rc3/4	Rc3/8	2
CL-50LW	313	62.5	130	99	99	Rc1/2	Rc1	Rc1	3.5
CL-70LW	313	62.5	130	99	99	Rc3/4	Rc1	Rc1	3.5
CL-100LW	430	75	163	120	120	Rc1	Rc1	Rc1	6
CL-200LW	596	105	227	170	170	Rc1-1/2	Rc1-1/2	Rc1-1/2	11
CL-300LW	716	125	261	200	200	Rc1-1/2	Rc1-1/2	Rc1-1/2	16

VDF adapted Dimensions(unit:mm)

Model	A	C	E	V	W	X	Y	Z	Weight(kg)
CL-30LWAD	250	52	96	55	95	Rc1/2	Rc3/4	φ 17	2
CL-50LWAD	313	62.5	130	99	99	Rc1/2	Rc1	φ 27	4
CL-70LWAD	313	62.5	130	99	99	Rc3/4	Rc1	φ 27	4
CL-100LWAD	430	75	163	120	120	Rc1	Rc1	φ 27	6.5

VDF Legged Dimensions (unit: mm)

Model	K	L	P	Q	Weight(kg)
CL-30LWT	133	396	60	105	5.5
CL-50LWT	154	480	80	125	7.5
CL-70LWT	154	480	80	125	7.5
CL-100LWT	198	558	100	168	13
CL-200LWT	280	827	150	230	24
CL-300LWT	330	961	180	280	31

Sludge Pod Dimensions (unit: mm)

Model	R	S	T	U	Weight(kg)
SPD-100LW	210	112	R1	R1 · 1/4	2
SPD-300LW	273	160	R1 · 1/2	R1 · 1/2	3
SPD-100J	163	130	Rc1	Rc1 · 1/4	0.6

*SPD-100J Case:Transparent polycarbonate Cap:ABS resin

C-CAT-P Dimensions (unit:mm)

Model	L	W	H	Weight(kg)
C-CAT M30	410	450	1300	60
C-CAT M50	445	460	1340	65
C-CAT M70	445	460	1340	65
C-CAT M100	445	490	1355	70
C-CAT M200	735	538	1870	100
C-CAT M300	735	538	1903	105

C-JAGUAR Dimensions (unit:mm)

Model	L	W	H	Weight(kg)
C-JAGUAR-30LW	500	750	1445	80
C-JAGUAR-50LW	500	750	1470	85
C-JAGUAR-70LW	500	750	1470	85
C-JAGUAR-100LW	500	785	1500	90

NAX-CS Dimensions (unit:mm)

Model	L	W	H	Weight(kg)
NAX-CS-30LW	430	875	1220	100
NAX-CS-50LW	440	890	1255	105
NAX-CS-70LW	440	890	1255	105
NAX-CS-100LW	420	920	1280	110
NAX-CS-200LW	810	1050	1865	150
NAX-CS-300LW	910	1050	1900	155

Specifications

C-CAT-P C-SEL-P

C-CAT-P Model	C-SEL-P Model	Filtration Capacity (50/60Hz) L/min (GPM)	Power Input(50/60Hz) · current value
C-CAT M30	C-CAT M30K	30/35 (7.9/9.2)	AC200/200-220V · 4.1A
C-CAT M50	C-CAT M50K	55/65 (14.4/17.1)	AC200/200-220V · 7.6A
C-CAT M70	C-CAT M70K	68/80 (17.9/21)	AC200/200-220V · 7.6A
C-CAT M100	C-CAT M100K	85/100 (22.3/26.3)	AC200/200-220V · 7.6A

※Options: 1. Sludge tank for manual scraping 2. Supernatant suction unit

C-CAT-P Model	Filtration Capacity 50Hz	Filtration Capacity 60Hz	Power Input 50Hz) · current value	Power Input 60Hz) · current value
C-CAT M200-5E	190L/min (50GPM)	—	AC200V · 10A	—
C-CAT M200-6E	—	195L/min (51GPM)	—	AC200-220V · 9A
C-CAT M300-5E	270L/min (71GPM)	—	AC200V · 10A	—
C-CAT M300-6E	—	280L/min (74GPM)	—	AC200-220V · 9A

C-CAT-N C-SEL-N

C-CAT-N Model	C-SEL-N Model	
C-CAT M30N	C-CAT M30KN	※Filtration capacity, power input and current will differ depending on the pump arranged by user. Pump power switch box and piping are not included.
C-CAT M50N	C-CAT M50KN	
C-CAT M70N	C-CAT M70KN	
C-CAT M100N	C-CAT M100KN	
C-CAT M200N	—	
C-CAT M300N	—	

※Option: 1. Sludge tank for manual scraping

C-JAGUAR

Model	Filtration Capacity (50/60Hz) L/min (GPM)	Power Input(50/60Hz) · current value	Air pressure (Mpa)
C-JAGUAR-30LW	30/35 (7.9/9.2)	AC200/200-220V · 5A	0.4
C-JAGUAR-50LW	55/65 (14.4/17.1)	AC200/200-220V · 8A	
C-JAGUAR-70LW	68/80 (17.9/21)	AC200/200-220V · 8A	
C-JAGUAR-100LW	85/100 (22.3/26.3)	AC200/200-220V · 8A	
C-JAGUAR-200LW	190/195 (50.0/51.0)	AC200/200-220V · 9A	
C-JAGUAR-300LW	270/280 (71.0/74.0)	AC200/200-220V · 9A	

NAX-CS

Model	Filtration Capacity (50/60Hz) L/min (GPM)	Power Input(50/60Hz) · current value	Air pressure (Mpa)
NAX-CS-30LW	30/35 (7.9/9.2)	AC200/200-220V · 4.5A	0.4
NAX-CS-50LW	55/65 (14.4/17.1)	AC200/200-220V · 8A	
NAX-CS-70LW	68/80 (17.9/21)	AC200/200-220V · 8A	
NAX-CS-100LW	85/100 (22.3/26.3)	AC200/200-220V · 8A	

Model	Filtration Capacity 50Hz	Filtration Capacity 60Hz	Power Input 50Hz) · current value	Power Input 60Hz) · current value	Air pressure (Mpa)
NAX-CS-200LW-5E	190L/min (50GPM)	—	AC200V · 10A	—	0.4
NAX-CS-200LW-6E	—	195L/min (51GPM)	—	AC200-220V · 9A	
NAX-CS-300LW-5E	270L/min (71GPM)	—	AC200V · 10A	—	
NAX-CS-300LW-6E	—	280L/min (74GPM)	—	AC200-220V · 9A	

※Options: 1. Installation stand 2. Chip collection bucket

- Please consult us if you have specific power requirements.
- As the pump for C-CAT-N (C-SEL-N) should be arranged by user, it is the responsibility of user to confirm filtration capacity and current. Also note that pump ON/OFF switch is not included.

Options



Circular tank



Sludge tank



Stand for NAX-CS



Manual suction unit



Anticorruption equipment for the water-soluble coolant.

ELC cartridge

Applicable to C-CAT, C-JAGUAR and NAX-CS