Matters of inquiry

Please fill in the form below for inquiry

Handling material	a	Name			
	b	Apparent specific gravity	t/m^3	True density	t/m^3
	c	granulometry	Max mm %		
			Max mm %		
	d	Temparature	°C		
	e	Humidity	%		
	f	Other characteristics			
Process capacity	●Max t/h		●Avarage t/h		
Power source	●Voltage V		●Frequency Hz		
Controller (if needed)	●Manual ON･OFF	Manual amplitude control	Manual ON / OFF	Remote amplitude control	
Trough structure	Materials	Buff finishing on SUS Yes / No			
	Dimensions	W： mm	D： mm	H： mm	
	Shape	Open ・ Covered			
	Air proof	Required（ mmAq） ・ Unnecessary			
	Liniear	Required (Material：) ・ Unnecessary			
Motor specification	Covered・Dust proof・Rainproof・Increased safety explosion protection・Pressure resistance explosion protection				
Installation method	Floor mounted・Upstairs・Suspension・On substructure m				
Before and after processes					

For safe and reliable operation, it is essential to read the user's manual carefully before using this equipment.

We have a new slogan in Japan; "ECOing" a combination of "eco" and "ing". This is to promote eco-friendly technological development and manufacturing.
Our ecological activities are of course not limited to Japan and practiced in many countries around the world.

SINFONIA **SINFONIA TECHNOLOGY CO., LTD.**

Shiba NBF Tower, 1-30, Shibadaimon 1-chome, Minato-ku, Tokyo, 105-8564, Japan
TEL +81-3-5473-1864 FAX +81-3-5473-1845

SINFONIA TECHNOLOGY (THAILAND) CO., LTD. **Bangkok Sales Office**
12th Floor Room 1205, 319 Chamchuri Square Building, Phayathai Road, Pathumwan Bangkok Bangkok 10330
TEL +66-2160-5068 FAX +66-2160-5069

SINFONIA TECHNOLOGY (SINGAPORE) PTE. LTD.
33 Ubi Ave. 3, Vertex Tower A, #08-69, Singapore 408868
TEL +65-6223-6122 FAX +65-6225-2729

PT. SINFONIA TECHNOLOGY INDONESIA
Graha Paramita 8th Floor Suite E Jl. Denpasar Raya Block D2 KAV. 8 Kuningan, Jakarta 12940 Indonesia
TEL +62-21-252-3606 FAX +62-21-252-3608

CODE
E93-001
2016 03E Ⅲ Ⓢ

Content of this catalogue may change due to product improvement without notice.
URL http://www.sinfo-t.jp/eng

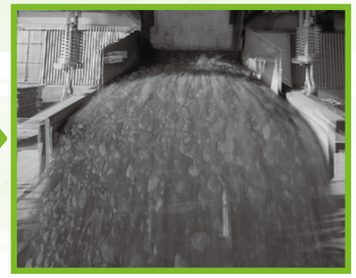
Vibrating Feeders

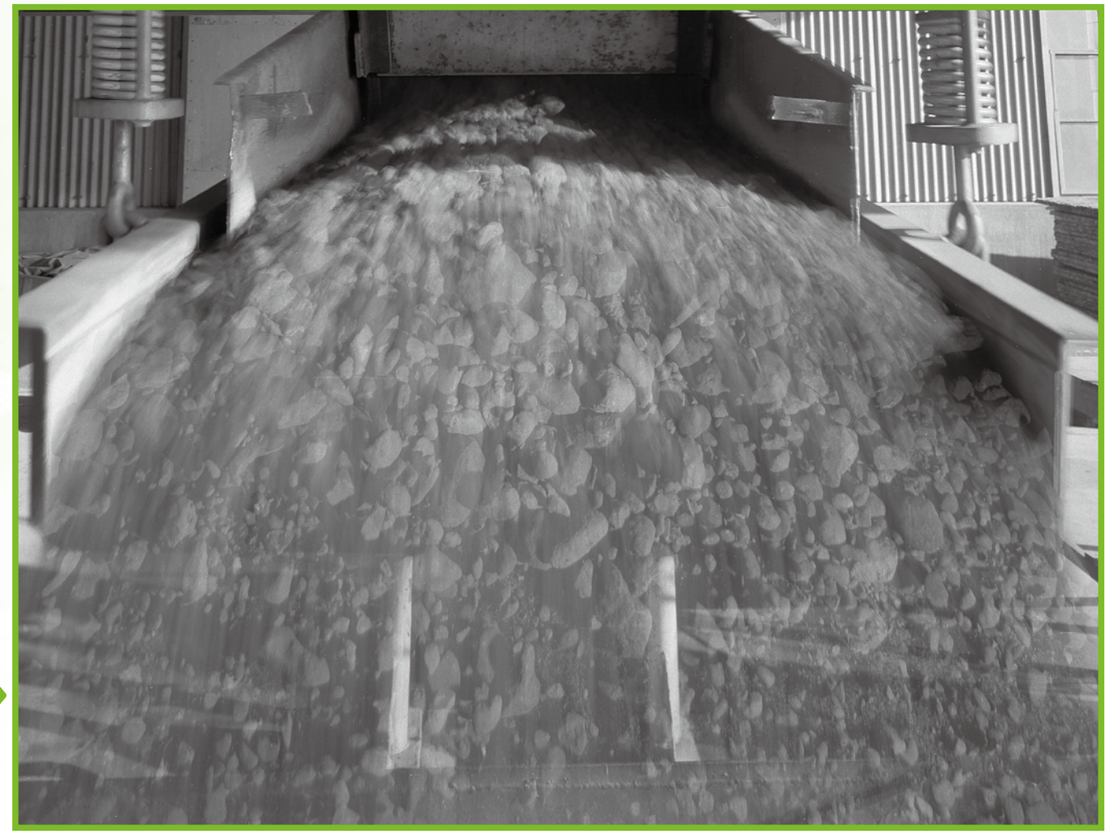
SINFONIA
SINFONIA TECHNOLOGY CO., LTD.

Vibrating Feeders

For controlling bulk materials from fine to coarse with flexible and wide variety of models

Along with the recent tendency towards larger and higher speed powdered stuff process equipment, high-performance feeder models are particularly required in the application of this process. Those are not only to feed materials from hoppers, but are also able to control their flow to subsequent processes speedily and over a wide range. In order to meet the requirement of industries dealing with such powdered stuff, SINFONIA manufactures vibrating feeders utilizing the company's own vibration technology. SINFONIA vibrating feeders, which are the product of many years of accumulated vibration technology and ample experience in manufacturing, help promote process rationalization and improve productivity. They enjoy widespread and high reputation.





Features

Simple automatic control of material flow

SINFONIA vibrating feeders permit free adjustment of feeding simply by turning the control knob during operation. The feeding volume can be easily controlled automatically through combination of a weighing machine, flow meter, thermometer or motor load, and by detecting fluctuations thereof. Especially by being combined with the weighing machine, the feeder is frequently utilized as a hopper scale for mixing raw materials.

Wide range of processed materials

SINFONIA vibrating feeders can process a wide range of materials and efficiently convey a variety of materials from fine to massive bodies, being also suitable for feeding materials of high temperature or with high abrasion.
A large-sized feeder having a capacity of conveying iron ore at a rate of 6,100 tons per hour is also available.

Low running cost

Running cost of SINFONIA vibrating feeders is economical since they consume very small electric power by means of utilizing the resonance phenomenon. Furthermore, no friction exists between a trough surface and conveyed material because the feeder utilizes vibration; thus wear down is limited even after a long period of operation.

Capable to specialized operation

Various customizations are available : dust-or gas-tight troughs; gates for multiple discharge at intermediate points; covers; special inlets and outlets; and trough dividers for multiple materials.
Troughs can be made of alloys to resist the most corrosive materials, or can be covered with a variety of materials as conditions require.

Table for SINFONIA Feeders

Types	Drive mechanism	Power supply	Suitable materials for handling		Adjustment of feeding capacity		Starting	Stopping	Applicability to weighing machine	Maintenance
					Electrical	Mechanical				
CF/F Type Feeder	Resonance type consisting of electromagnet and leaf spring	Commercial single phase	Wide range of materials from fine to massive material		＊30~100%	Opening ratio of gate Angle of inclination	Instantaneous	Instantaneous	Best	Easy
RFH Type Rubber Spring Feeder	Resonance type consisting of 3-phase induction motor, rubber spring and unbalanced weight	Commercial 3-phase	Pulverulent, granular and massive materials		40~100%	Opening ratio of gate Angle of inclination Unbalanced weight	Easy	Possible instantaneously	Better	Easy

＊About F Type, feeding capacity can be freely adjusted between 0-100% by adjusting opening ratio of gate.

Applications and selection of F Type Feeders

F type Feeders feature a special feeding system in which the trough vibrates obliquely to feed materials.
The following equation gives the feeding capacity depending on the material to be handled when F type Syntron Feeder equipped with the uncovered flat bottom standard trough is used. Feeding capacity shows for standard sand (bulk density: 1.6, moisture content: 1%, Particle size: 20mesh), and can be obtained from Table 1

$$Q = \text{Max. feeding cap. (Table 1)} \times \frac{\gamma}{1.6} \times C_1 \times C_2 \times C_3$$

γ : Bulk density of material
C_1: Conversion factor for particle size ..... Fig. 1
C_2: Conversion factor for moisture content ..... Fig. 2
C_3: Conversion factor for trough inclination ..... Fig. 3

Materials having excessive stickiness, nature of flashing, and a large bulk density(γ =over2.8) are excepted from this equation.

Max. feeding capacity of F type Feeder / Table 1

Models	Max. feeding capacity (T/Hr)	Trough size width×length (mm)	Voltage (V)	Frequency (Hz)	Vibration per min.
CF-1	2	100×380	100/200	50~70	3000~4200
CF-2	5	120×550	100/200	50~70	3000~4200
CF-3	8	150×610	200	50~70	3000~4200
CF-4	25	380×800	200	45~60	2700~3600
F-152BDT	10	200×610	200/400	50/60	3000/3600
F-212BDT	35	310×762	200/400	50/60	3000/3600
F-22BDT	50	356×914	200/400	50/60	3000/3600
FH-22BDT	65	458×914	200/400	50/60	3000/3600
F-33BDT	100	558×1067	200/400	50/60	3000/3600
FH-33BDT	130	610×1067	200/400	50/60	3000/3600
F-44BDT	220	762×1219	200/400	50/60	3000/3600
F-45BDT	330	914×1524	200/400	50/60	3000/3600
FH-45BDT	440	1219×1524	200/400	50/60	3000/3600
F-55BDT	600	1372×1524	200/400	50/60	3000/3600
F-66BDT	800	1524×1829	200/400	50/60	3000/3600
F-88BDT	1250	1829×1829	200/400	50/60	3000/3600

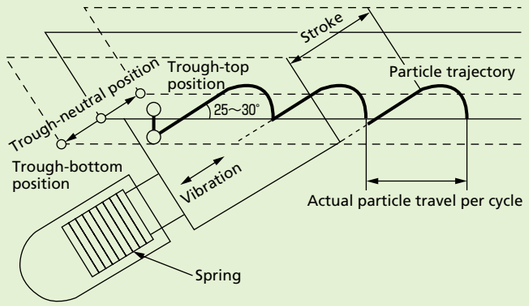
Note: The max.feeding capacities apply to standard flat-bottm open type with skirts when bulk density of sand is 1.6, though angle is 10° and frequency is 60 Hz.

Feeding capacity for respective materials (T/Hr)

Models	Depth of material (mm)	Trough inclination downward	Materials								
			Quick lime	Iron ore	Limestone	Coke	Sintered ore	Chemical fertilizer	Resin pellet	Sugar	Granular foods
F-212BDT	100	6°	17	30	22	9	25	16	8	15	7
		10°	18	33	24	10	27	17	9	16	8
F-22BDT	120	6°	25	42	32	13	35	22	12	20	10
		10°	26	45	34	14	38	23	13	21	11
FH-22BDT	130	6°	31	52	40	17	43	28	15	26	13
		10°	33	56	43	18	47	30	16	28	14
F-33BDT	180	6°	53	89	69	28	76	48	25	44	21
		10°	56	96	73	30	81	51	27	47	23
FH-33BDT	200	6°	65	108	84	35	93	59	31	54	27
		10°	68	118	89	37	98	62	33	57	29
F-44BDT	250	6°	103	173	133	56	147	95	50	86	44
		10°	108	188	143	58	157	100	52	92	46
F-45BDT	320	6°	146	244	188	79	208	136	71	122	62
		10°	153	264	201	83	222	142	75	130	65
FH-45BDT	360	6°	191	319	247	103	272	175	93	159	80
		10°	200	346	263	108	289	185	97	170	84
Bulk density (T/m³)			1.0~1.2	2.1~2.2	1.4~1.6	0.5	1.6~2.0	0.9	0.45	0.8	0.4
Moisture content (%)			0	0~10	0~10	0~5	0~5	1~4	0	0.2	5~15
Particle size (mm)			2~30	5~50	2~30	15~75	5~50	1.5~4	2~5	0.3~1	0.5~3

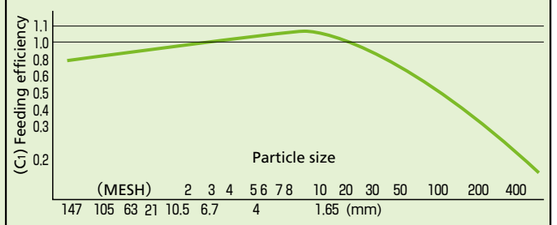
Note: The feeding capacities apply to standard coverd type when voltage is 50 Hz, and adjusted to 1.2 times when frequency is 60 Hz.

Movement diagram of material



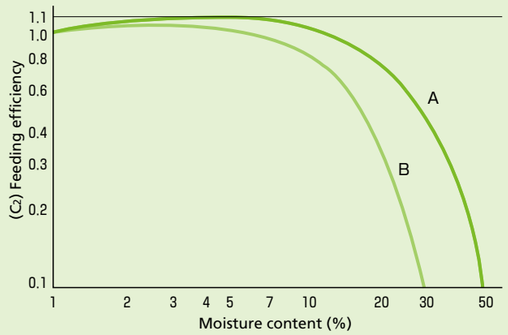
Ratio between particle size of material and feeding efficiency

Fig. 1



Ratio between moisture content of material and feeding efficiency

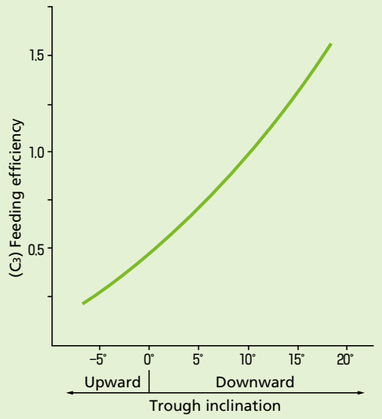
Fig. 2



A: Material having no tendency to absorb moisture (sand, coal, coke)
B: Material having tendency to absorb moisture (salt, clay, gypsum)

Ratio between trough inclination and feeding efficiency

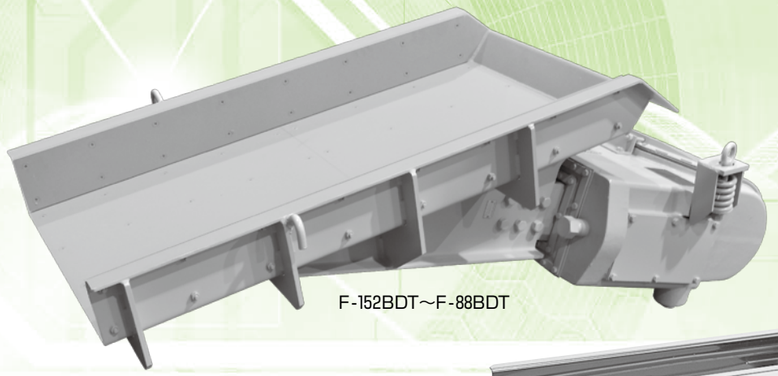
Fig. 3



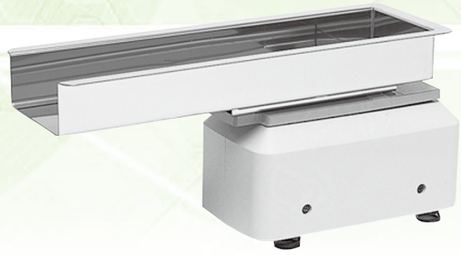
CF/F Type Feeder

Features

**This feeder, using electromagnetic vibration, provides a most effective feeding ability for various materials from fine to large massive material.
The Electromagnetic Vibrating Feeders provide over 3000 controllable vibrations per minute.
Merely turning the rheostat knob in separate control box varies the rate of material flow from minimum to maximum capacities.
There are no working, wearing parts that require excessive maintenance and replacement.**



F-152BDT～F-88BDT

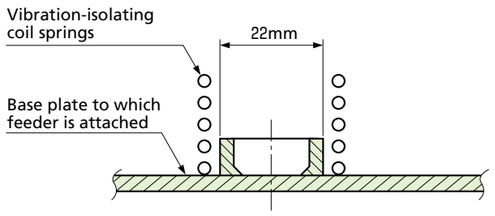


CF-1/2/3

Operating principle

Electromagnetic feeders consist of a trough for material handling, electromagnets as sources of vibration, and leaf springs. When electromagnets are excited by currents from a controller, the trough is rapidly pulled down below. This is due to the pull speed being quick, which results in handling material float for a moment, and then a fall forward on the trough. By recoil of the leaf spring, the trough is pushed back to a fixed position. Materials are conveyed through these movements. The movement is repeated 2700 times per minute. As the movement is extremely fast, conveyance is smooth and material is not harmed.

Mounting of isolation spring (CF-1、2、3、4)

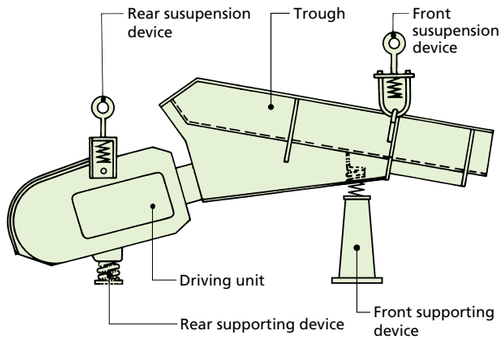


Vibration-isolating spring dimensions:
(Av. diameter/wire diameter×height mm)

Unit：mm

CF-1	CF-2	CF-3	CF-4
φ28/φ3.2×27	φ28/φ3.4×34	φ28/φ4.0×34	

Construction



F-152BDT～F-88BDT

Note: Both suspension type and floor-mounted type are installable.
The trough and the drive unit are hold by suspension device (if you use a suspension type) or supporting device (if you use a floor mounted type).

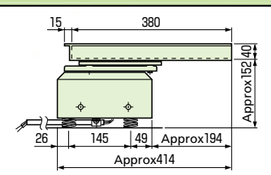
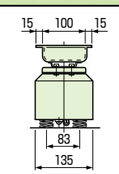
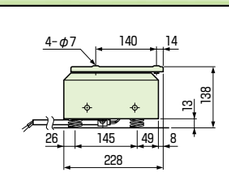
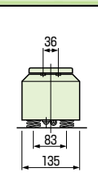
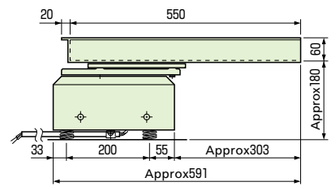
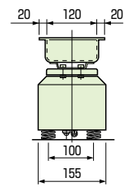
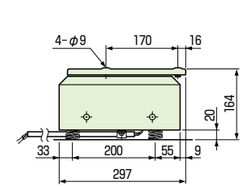
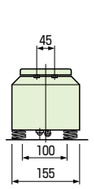
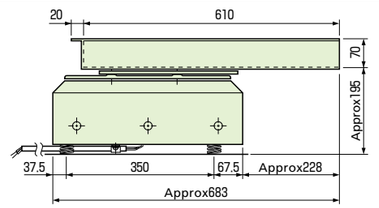
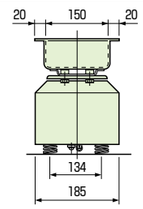
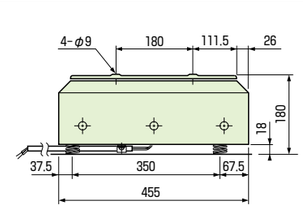
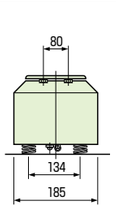
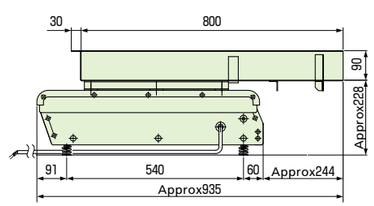
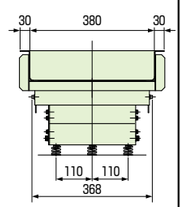
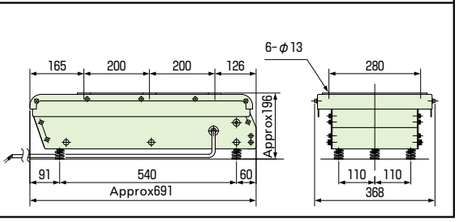
Standard specifications

Models	Max. feeding capacity (T/Hr) Sand	Coal	Trough size width×length (mm)	Voltage (V)	Frequency (Hz)	Vibration per min.	Input (W)	Current (A)	Voltage ×Current (VA)	Rating	Weight (kg)	Applicable contoroller
CF-1	2	–	100×380	100/200	50～70	3000～4200	25	1/0.5	100	Continuous	7	C10-1VCF
CF-2	5	–	120×550	100/200	50～70	3000～4200	25	1/0.5	100	Continuous	13	
CF-3	8	–	150×610	200	50～70	3000～4200	50	1	200	Continuous	21	
CF-4	25	–	380×800	200	45～60	2700～3600	150	3	600	Continuous	90	C10-3VF
F-152BDT	10	–	200×610	200/400	50/60	3000/3600	60	1.5/0.7	300	Continuous	40	C4-5B (200V)
＊F-212BDT	35	18	310×762	200/400	50/60	3000/3600	100	2.5/1.25	500	Continuous	120	
F-22BDT	50	26	356×914	200/400	50/60	3000/3600	200	5/2.5	1000	Continuous	200	
＊FH-22BDT	65	34	458×914	200/400	50/60	3000/3600	280	7/3.5	1400	Continuous	230	C6-15SC C5-15EHF
F-33BDT	100	52	558×1067	200/400	50/60	3000/3600	400	10/5	2000	Continuous	460	
＊FH-33BDT	130	68	610×1067	200/400	50/60	3000/3600	560	14/7	2800	Continuous	560	
F-44BDT	220	115	762×1219	200/400	50/60	3000/3600	960	24/12	4800	Continuous	1000	C6-30SC C5-30EHF
＊F-45BDT	330	172	914×1524	200/400	50/60	3000/3600	1200	30/15	6000	Continuous	1500	
FH-45BDT	440	230	1219×1524	200/400	50/60	3000/3600	1440	36/18	7200	Continuous	1800	C6-50SC C5-50EHF
F-55BDT	600	310	1372×1524	200/400	50/60	3000/3600	2000	50/25	10000	Continuous	3200	
F-66BDT	800	420	1524×1829	200/400	50/60	3000/3600	2400	60/30	12000	Continuous	3900	C6-80SC C5-80EHF
F-88BDT	1250	650	1829×1829	200/400	50/60	3000/3600	3200	80/40	16000	Continuous	6500	

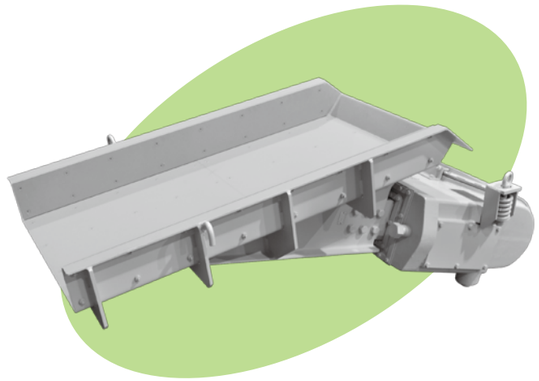
Note: 1. Feeding capacities apply to standard flat-bottom open type with hopper skirts when bulk densities of sand and coal are 1.6 and 0.8, respectively, trough angle is 10° and voltage is 60 Hz.
2. Asterisked (＊) models are also available with explosion-proof structure (eG3) for extra safety.
3. About F Type standard paint color is Munsell 2.5G 7/2.
4. Power supply and wire size should be selected based on VA.
5. Weights for CF-1~CF-4 indicate only driving part. Weights for F-152DBT~F-88BDT indicate when the feeder is flat bottomed open type standard trough (SS400).

Dimensions

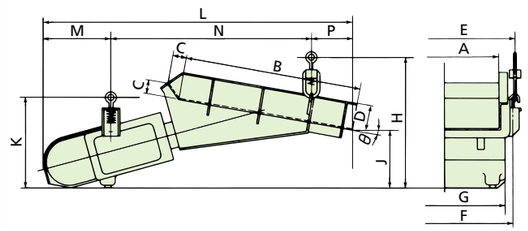
Unit：mm

	Flat-bottomed, Open, Standard Feeder	Drive Unit
CF-1	 	 
CF-2	 	 
CF-3	 	 
CF-4	 	

Dimensions



Uncoverd flat bottom trough



●Dimensions Table

Unit : mm

Models	A	B	C	D	E	F	G	θ	H	J	K	L	M	N	P
F-152BDT	200	610	40	80	282	306	204	10°	365	145	280	870	145	585	140
	152	610	45	80	245	306	204	6°	365	160	280	910	145	645	120
	250	550	—	80	332	306	204	0°	465	270	300	770	135	515	120
	300	500	40	80	383	306	204	0°	460	270	290	730	130	460	140
	350	400	50	80	433	306	204	0°	445	255	295	690	130	460	100
F-212BDT	310	762	60	120	406	412	310	10°	450	185	320	1145	205	750	190
	200	1200	—	130	296	412	310	6°	510	240	330	1348	200	835	313
	250	1000	—	120	346	412	310	0°	610	380	335	1200	180	720	300
	350	762	60	120	446	412	310	10°	445	180	315	1140	205	745	190
	400	600	60	120	496	412	310	0°	580	580	340	990	185	690	115
	450	550	60	120	546	412	310	10°	450	210	320	1008	205	745	58
F-22BDT	356	914	70	140	452	500	380	10°	570	230	450	1375	220	940	225
	250	1500	—	120	346	500	380	0°	725	450	465	1575	190	1015	370
	300	1200	75	150	396	500	380	10°	545	190	450	1550	210	1080	260
	400	800	70	140	496	500	380	10°	555	225	445	1270	210	860	200
	450	700	70	140	556	500	380	6°	600	290	455	1155	200	855	100
	500	800	70	140	596	500	380	10°	570	240	450	1329	210	935	184
FH-22BDT	458	914	70	140	554	500	380	10°	574	232	446	1375	210	940	225
	300	1500	75	150	396	500	380	0°	760	450	460	1700	190	1085	425
	356	1250	70	140	452	500	380	10°	545	200	450	1560	210	1080	270
	356	1400	80	150	452	500	380	6°	640	300	460	1605	200	1130	275
	400	1200	75	150	496	500	380	10°	590	210	450	1510	210	900	400
	500	914	70	140	596	500	380	10°	570	230	445	1365	210	930	225

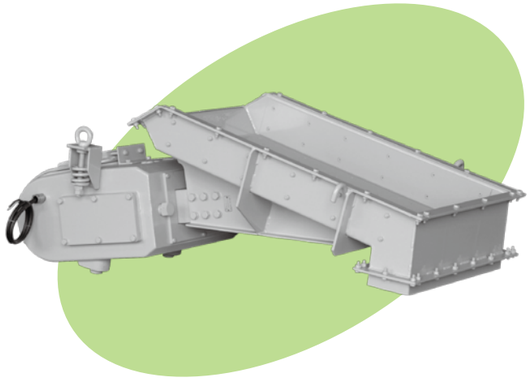
Note: Trough inclination θ may be changed according to feeding capacity or installation conditions.

Unit : mm

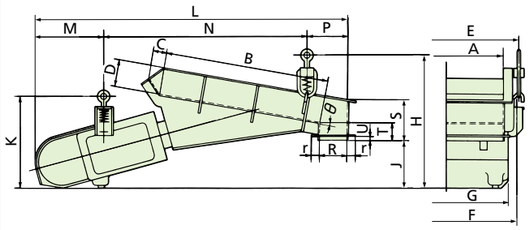
Models	A	B	C	D	E	F	G	θ	H	J	K	L	M	N	P
F-33BDT	558	1067	80	160	730	628	508	10°	775	310	545	1710	350	1040	320
	300	1800	150 100	150	470	628	508	6°	820	390	550	2160	340	1500	320
	450	1200	80	160	622	628	508	10°	775	300	545	1786	350	1056	380
	450	1500	70	140	620	628	508	0°	1000	620	580	1955	315	1360	280
	558	1200	80	160	730	628	508	10°	770	290	540	1775	350	1040	385
	610	900	80	160	782	628	508	10°	792	322	542	1628	352	926	350
FH-33BDT	610	1067	80	160	782	666	546	10°	797	332	567	1710	350	1040	320
	500	1350	90	180	672	666	546	6°	880	430	580	1860	340	1370	150
	500	1500	90	180	672	666	546	10°	760	290	570	1970	350	1410	210
	610	1200	80	160	782	666	546	10°	800	320	570	1775	350	1040	385
	610	1300	80	160	782	666	546	10°	800	320	580	1815	350	1040	425
F-44BDT	762	1219	90	180	982	958	838	10°	913	408	608	2139	470	1384	285
	558	1800	120 140	220	778	954	838	10°	990	380	610	2520	470	1450	600
	610	1800	100	200	826	958	838	10°	915	370	605	2540	470	1670	400
	700	1500	90	220	920	954	838	6°	1070	530	630	2240	450	1360	430
	762	1500	90	180	982	954	838	6°	1030	530	630	2242	455	1360	427
	900	1219	90	180	1120	954	838	10°	920	410	610	2140	470	1385	285
F-45BDT	914	1524	100	200	1136	1143	840	10°	965	440	820	2368	470	1568	330
	440	2200	100	200	660	998	840	10°	910	350	700	2630	470	1610	550
	700	2000	150	250	920	1143	840	10°	1010	380	820	2675	470	1575	630
	800	2000	100	200	1022	998	840	10°	930	360	695	2565	470	1530	565
	914	1900	100	200	1134	1143	840	10°	970	430	820	2640	470	1780	390
	1000	1500	100	200	1222	1143	840	10°	970	450	830	2345	470	1570	305
FH-45BDT	1219	1524	100	200	1441	1143	840	10°	980	460	825	2340	470	1560	310
	610	2900	110 100	220	826	1000	840	10°	910	320	700	3070	470	2000	600
	900	2200	100	200	1122	1143	840	9°	1000	470	825	2930	470	2070	390
	1200	1800	100	200	1422	1143	840	10°	990	440	820	2470	475	1545	450
F-55BDT	1372	1524	110	220	1600	1612	1220	10°	1170	590	870	2840	600	1925	315
	1200	1800	100 110	220	1424	1612	1220	10°	1140	550	860	3020	600	2050	370
	1372	1800	110	220	1600	1612	1220	10°	1160	550	850	3060	610	2020	430
	1500	1524	110	220	1728	1612	1220	6°	1340	780	890	2825	590	1900	335
F-66BDT	1524	1829	110	220	1752	1612	1260	10°	1200	600	900	2915	590	1940	385
	1060	2600	110	220	1288	1612	1260	10°	1170	540	900	3284	590	2140	554
	1524	2130	110	220	1752	1612	1260	6°	1360	780	930	3040	570	1915	555
	1600	1829	110	220	1828	2000	1260	6°	1360	790	1030	2935	570	1960	405
F-88BDT	1829	1829	110	220	2083	1612	1280	10°	1415	685	1145	3090	635	2070	385
	1829	2200	110	220	2083	1612	1280	6°	1590	890	1180	3435	615	2420	400
	2000	2000	110	220	2254	1612	1280	6°	1585	875	1175	3145	615	2040	490

Note: Trough inclination θ may be changed according to feeding capacity or installation conditions.

Dimensions



Uncoverd flat bottom trough with outlet

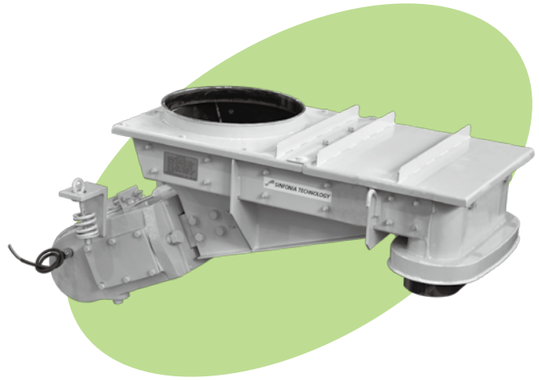


●Dimensions Table

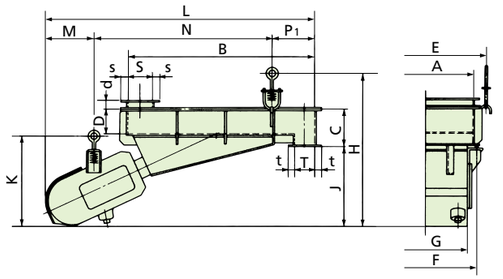
Unit：mm

Models	A	B	C	D	E	F	G	θ	H	J	K	L	M	N	P	R	r	S	T	U
F-212BDT	310	700	60	120	406	412	310	10°	440	135	320	1140	210	750	180	120	35	171	70	15
	310	700	60	120	406	412	310	6°	506	199	328	1120	196	734	190	120	35	178	70	15
	200	625	60	120	296	412	310	10°	455	140	320	1140	210	720	210	φ200	—	170	80	—
F-22BDT	360	750	70	140	456	500	380	10°	580	185	449	1335	211	883	241	140	35	197	80	15
	360	750	70	140	456	500	380	6°	648	261	455	1313	201	867	245	140	35	206	80	15
	350	975	—	170	446	500	380	6°	670	260	455	1540	200	1090	250	150	30	230	75	—
FH-22BDT	460	750	70	140	556	500	380	10°	580	190	450	1318	211	880	227	140	35	197	80	15
	460	750	70	140	556	500	380	6°	650	260	450	1300	200	870	230	140	35	206	80	15
	450	800	90	140	546	500	380	12°	530	130	440	1460	220	1040	200	140	35	198	55	30
	500	610	70	140	596	500	380	10°	580	190	450	1325	220	880	225	140	35	200	80	15
F-33BDT	560	900	80	160	732	628	508	10°	760	240	540	1665	350	1085	230	140	44	238	100	20
	560	900	80	160	732	628	508	6°	854	336	557	1652	338	1073	241	140	45	246	100	20
	560	900	80	160	732	628	508	6°	855	345	555	1710	340	1070	300	200	44	240	100	20
	600	850	80	160	772	628	508	6°	820	330	560	1710	340	1030	340	250	44	215	80	30
FH-33BDT	610	900	80	160	782	666	546	10°	789	264	568	1675	350	1093	232	140	45	238	100	20
	610	900	80	160	782	666	546	6°	877	359	580	1654	338	1075	241	140	45	246	100	20
	610	900	80	160	782	666	546	10°	790	270	565	1760	350	1090	320	250	44	218	100	20
	610	1000	80	160	782	666	546	6°	875	365	580	1725	340	1075	310	140	44	246	100	20
F-44BDT	760	1100	90	180	980	958	838	10°	910	320	610	2120	470	1380	270	180	58	271	120	30
	760	1100	90	180	980	958	838	6°	1137	554	629	2107	454	1372	281	180	60	282	120	30
	760	1000	90	180	980	954	838	6°	1050	455	640	1995	455	1260	280	180	60	285	120	30
	760	1100	90	180	980	958	838	6°	1030	410	630	2090	450	1360	280	180	58	322	160	70
F-45BDT	920	1200	100	200	1142	1143	838	10°	960	350	820	2280	470	1560	250	200	59	308	140	30
	920	1200	100	200	1142	1143	838	6°	1090	480	840	2265	460	1540	265	200	59	320	140	30
	920	1100	100	200	1142	1143	838	6°	1100	490	840	2165	460	1440	265	200	59	320	140	30
	1000	1250	120	200	1137	1143	838	10°	1000	350	815	2340	470	1520	350	200	59	299	131	30
FH-45BDT	1100	1300	100	200	1322	1143	838	10°	960	340	820	2350	470	1565	315	200	59	308	140	30
	1100	1300	100	200	1322	1143	838	6°	1100	470	840	2330	460	1540	330	200	59	320	140	30
	1200	1300	100	200	1422	1143	838	10°	960	340	820	2350	470	1565	315	200	59	308	140	30

Dimensions



Coverd trough with inlet and outlet



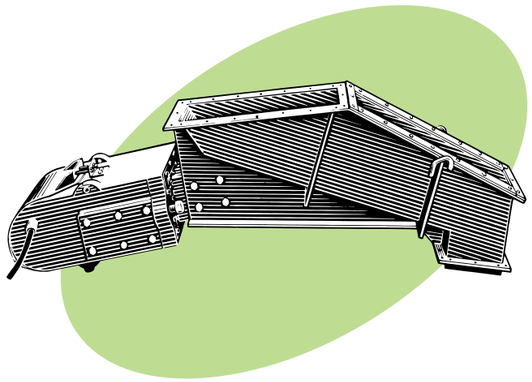
●Dimensions Table

Unit：mm

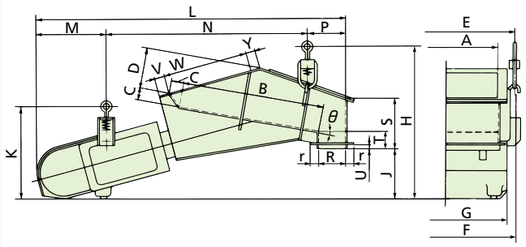
Models	A	B	C	D	d	E	F	G	H	J	K	L	M	N	P1	S	s	T	t
F-152BDT	200	670	130	80	40	292	306	204	465	235	295	870	135	565	170	80	25	60	25
	200	655	130	80	40	292	306	204	465	235	295	870	135	565	170	φ150	25	60	25
	150	570	130	80	40	242	306	204	465	235	295	820	135	565	120	80	25	60	25
	150	820	130	80	40	242	306	204	465	235	295	970	135	665	170	80	25	60	25
	120	870	130	80	40	212	306	204	465	235	295	970	135	665	170	80	25	60	25
F-212BDT	310	840	180	120	50	416	412	310	575	305	335	1125	180	765	180	100	30	80	30
	310	740	180	120	50	416	412	310	575	305	335	1025	180	665	180	□200	30	80	30
	310	840	180	120	50	416	412	310	575	305	335	1125	180	765	180	200	30	80	30
	200	1240	180	120	50	306	412	310	575	305	335	1350	180	870	300	200	30	80	30
	200	1400	220	120	60	306	412	310	575	265	335	1410	180	870	360	φ200	—	φ200	—
F-22BDT	350	1010	210	140	50	456	500	380	725	380	460	1380	190	940	250	120	30	100	30
	450	810	210	140	50	556	500	380	725	380	460	1330	190	940	200	φ200	30	100	30
	310	1140	210	140	50	500	500	380	725	380	460	1475	190	1040	245	φ200	30	80	30
	400	1000	190	120	50	496	500	380	700	380	460	1380	190	940	250	300	30	100	30
	280	1500	210	140	50	386	500	380	725	380	460	1630	190	1150	290	120	30	100	30
FH-22BDT	450	1010	210	140	50	556	500	380	725	380	460	1380	190	940	250	120	30	100	30
	450	1175	250	140	50	546	500	380	720	340	460	1505	190	1050	265	200	30	150	30
	300	1425	205	150	40	396	500	380	620	235	455	1670	200	1000	470	300	30	150	30
	310	1400	180	120	50	416	500	380	710	390	460	1580	190	1030	360	100	30	80	30
	280	1600	210	140	50	376	500	380	720	380	460	1680	190	1200	290	120	30	100	30
F-33BDT	550	1185	240	160	50	722	628	508	960	500	580	1730	315	1140	275	150	45	120	45
	700	835	240	160	50	872	628	508	920	460	570	1490	315	905	270	150	45	120	45
	450	1275	290	140	40	622	628	508	940	430	580	1605	315	990	300	150	45	φ200	45
	380	1700	240	160	50	552	628	508	960	500	580	1995	315	1340	340	150	45	120	45
FH-33BDT	600	1185	240	160	50	772	666	546	980	520	600	1735	320	1140	275	150	45	120	45
	750	835	240	160	50	922	666	546	940	480	590	1495	320	905	270	150	45	120	45
	550	1485	240	160	50	722	666	546	980	520	600	1915	320	1270	325	350	70	120	45
	380	1800	240	160	50	552	666	546	980	520	600	2050	320	1340	390	150	45	120	45

Note: Floor-mounted models are also available upon request.

Dimensions



Coverd trough with outlet



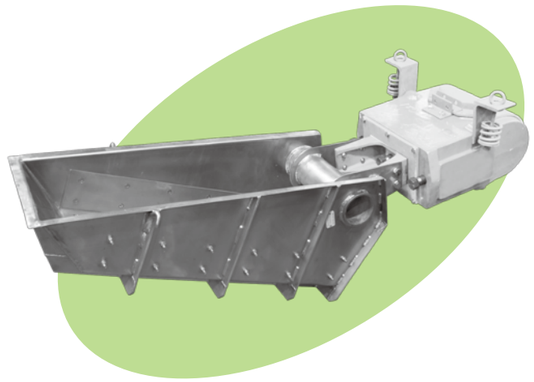
●Dimensions Table

Unit：mm

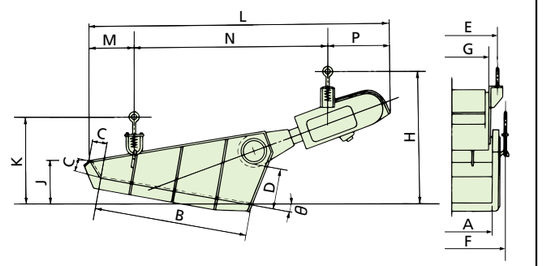
Models	A	B	C	D	E	F	G	θ	H	J	K	L	M	N	P	R	r	S	T	U	V	W	Y
F-212BDT	300	600	50	160	396	412	310	10°	490	140	320	1095	210	705	180	120	30	150	70	15	30	350	35
	300	600	50	160	396	412	310	6°	545	200	330	1080	205	685	190	120	30	160	70	15	30	350	35
	350	580	50	190	446	412	310	10°	500	140	320	1120	210	730	180	140	30	160	70	15	30	380	35
F-22BDT	350	700	60	190	446	500	380	10°	600	190	450	1340	220	940	180	140	35	175	80	15	30	400	50
	350	700	60	190	446	500	380	6°	680	260	460	1320	210	920	190	140	35	185	80	15	30	400	50
FH-22BDT	400	700	60	190	496	500	380	10°	600	190	450	1340	220	940	180	140	35	185	80	15	30	400	50
	400	700	60	190	496	500	380	6°	680	260	460	1320	210	920	190	140	35	185	80	15	30	400	50
	450	700	60	190	546	500	380	10°	600	190	450	1340	220	940	180	140	35	175	80	15	30	400	50
F-33BDT	500	850	80	240	672	628	508	10°	870	255	560	1660	345	1100	215	140	44	280	100	20	45	510	50
	500	850	80	240	672	628	508	6°	960	345	570	1655	340	1080	235	140	45	290	100	20	45	510	50
	500	850	80	240	672	628	508	10°	855	240	550	1715	355	1105	255	180	45	280	100	20	45	510	50
FH-33BDT	550	850	80	240	722	666	546	10°	890	275	580	1665	350	1100	215	140	44	280	100	20	45	510	50
	550	850	80	240	722	666	546	6°	980	365	590	1660	340	1085	235	140	45	290	100	20	45	510	50
	550	850	80	240	722	666	546	10°	900	265	575	1735	355	1110	270	200	45	310	100	20	45	510	50
F-44BDT	700	950	80	270	920	954	838	10°	1020	330	620	2075	465	1355	255	180	56	340	120	30	65	560	60
	700	950	80	270	920	954	838	6°	1130	450	640	2050	455	1315	280	180	56	350	120	30	65	560	60
	700	950	80	270	920	958	838	10°	1050	330	615	2120	470	1350	300	220	60	340	120	30	65	560	60
F-45BDT	850	1150	100	320	1072	1142	840	10°	1140	360	820	2280	470	1540	270	200	60	440	140	30	65	690	60
	850	1150	100	320	1072	1142	840	6°	1270	490	840	2265	450	1520	295	200	60	450	140	30	65	690	60
	850	1150	100	320	1072	1142	840	10°	1175	360	825	2340	475	1540	325	280	60	440	140	30	65	690	60
FH-45BDT	900	1250	120	350	1122	1143	840	10°	1160	340	810	2325	470	1550	305	200	60	470	140	30	65	760	60
	900	1250	120	350	1122	1143	840	6°	1300	480	840	2300	460	1515	325	200	60	480	140	30	65	760	60
	900	1250	120	350	1122	1143	840	10°	1240	375	825	2485	475	1645	365	300	60	470	140	30	65	760	60

Note: Cover material is normally made of canvas. Other materials are also available upon request.

Dimensions



Above deck drive



●Dimensions Table

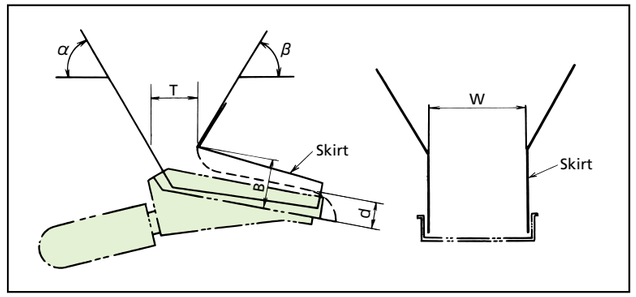
Unit：mm

Models	A	B	C	D	E	F	G	θ	H	J	K	L	M	N	P
F-212BDT	300	762	80	180	412	396	310	10°	550	225	365	1340	235	840	265
	350	500	80	153	412	446	310	0°	580	80	270	1149	199	680	270
	450	550	80	160	412	546	310	0°	590	80	285	1190	115	800	275
F-22BDT	350	914	90	230	500	446	380	10°	760	265	450	1635	265	1085	285
	400	914	90	230	500	496	380	10°	760	265	450	1635	265	1085	285
	410	750	80	180	500	506	380	10°	630	220	405	1580	200	1100	280
FH-22BDT	450	914	90	230	500	546	380	10°	760	265	450	1635	265	1085	285
	500	914	90	230	500	650	380	12°	750	290	475	1645	255	1100	290
	550	900	100	230	500	646	380	0°	835	100	340	1880	310	1270	300
F-33BDT	550	1067	100	280	628	722	508	10°	915	310	600	2110	320	1350	440
	458	1067	100	280	638	820	508	10°	915	310	430	2085	320	1325	440
FH-33BDT	600	1067	100	280	666	772	546	10°	915	310	600	2110	320	1350	440
F-44BDT	750	1219	120	350	958	970	760	10°	1055	355	685	2635	345	1730	560
	750	1067	120	350	958	970	760	10°	1045	340	675	2560	270	1730	560
F-45BDT	900	1524	150	460	1143	1120	760	10°	1370	440	785	3040	465	2000	575
FH-45BDT	1050	1524	150	460	1143	1270	840	10°	1370	440	785	3040	465	2000	575

Note: Trough inclination θ may be changed according to feeding capacity or installation conditions.

Hopper and its mounting example

The shape of the hopper is an important factor which determines the supply capacity of the feeder. The required supply capacity may not be able to be obtained depending on the hopper shape. In designing an ideal hopper economical and essintial to full feeder performance, it is necessary to take the following into account.



① The rear wall angle a shown in the figure should be 60 degrees or more to ensure smooth flow of material. The front wall angle β should be 5 degrees smaller than the angle α.

② The hopper tends to devolop a bridge at the throat indicated by the letter, T, so the part T should meet the following conditions.

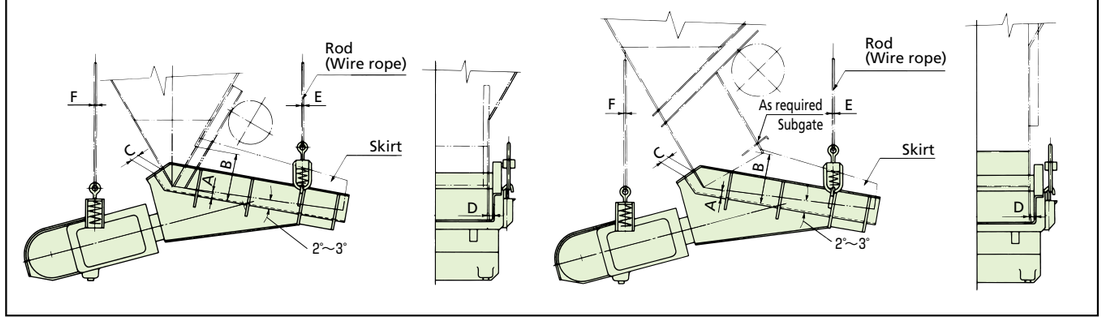
- 2.5 times the largest massive body if material is not uniform in particle size.
- 4 times the largest massive body if material is relativery uniform in particle size.

③ The gate opening B should be at least 2 times the largest massive body, and increase in direct proportion to the required capacity.
The standard gate opening rate B is 1.2 to 1.5 times the material layer thickness d, which can be calculated by the following equation.

④ The hopper opening rate W should be 2.5 times the largest massive body if material is not uniform in particle size, or 5 times the largest massive body if material is relatively uniform in particle size.

$$d\ (mm) = \frac{\text{Supply capacity(T/Hr)} \times 1.667 \times 10^4}{\text{Feeder width(mm)} \times \text{Supply speed(m/min)} \times \text{Apparent specific gravity(T/m}^3\text{)}}$$

Uncovered flat bottom trough



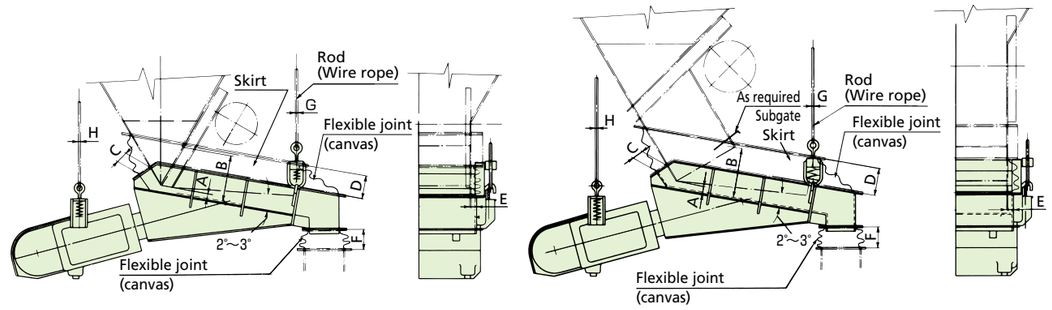
●Dimensions Table

Unit：mm

Models	A	B	C	D	E	F
F-212BDT	30	150	20	10	φ13（φ10）	φ13（φ10）
F-22BDT	30	180	20	10	φ13（φ10）	φ16（φ10）
FH-22BDT	30	200	20	10	φ13（φ10）	φ16（φ10）
F-33BDT	30	250	20	15	φ19（φ12）	φ19（φ12）
FH-33BDT	30	280	20	15	φ19（φ12）	φ19（φ12）
F-44BDT	50	350	30	20	φ25（φ12）	φ25（φ16）
F-45BDT	50	450	30	20	φ25（φ12）	φ32（φ16）
FH-45BDT	50	520	30	20	φ25（φ12）	φ32（φ16）

Note: 1. All the above dimensions are minimums (for the standard supply capacity).
2. Figures in parentheses are wire rope diameters.
3. Rod specifications apply to rods made of SS400 and wire rope specifications to wire ropes of JIS No.3 (19×6).

Uncovered flat bottom trough with outlet



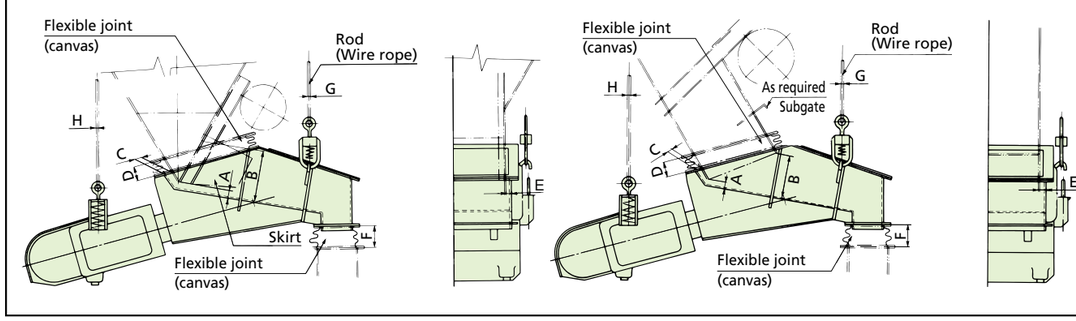
●Dimensions Table

Unit：mm

Models	A	B	C	D	E	F	G	H
F-212BDT	30	150	20	80	10	40	φ13（φ10）	φ13（φ10）
F-22BDT	30	180	20	80	10	40	φ13（φ10）	φ16（φ10）
FH-22BDT	30	200	20	80	10	40	φ13（φ10）	φ16（φ10）
F-33BDT	30	250	20	120	15	40	φ19（φ12）	φ19（φ12）
FH-33BDT	30	280	20	140	15	40	φ19（φ12）	φ19（φ12）
F-44BDT	50	350	30	180	20	60	φ25（φ12）	φ25（φ16）
F-45BDT	50	450	30	260	20	60	φ25（φ12）	φ32（φ16）
FH-45BDT	50	520	30	340	20	60	φ25（φ12）	φ32（φ16）

Note: 1. All the above dimensions are minimums (for the standard supply capacity).
2. Figures in parentheses are wire rope diameters.
3. Rod specifications apply to rods made of SS400 and wire rope specifications to wire ropes of JIS No.3 (19×6).

Covered trough with outlet



●Dimensions Table

Unit：mm

Models	A	B	C	D	E	F	G	H
F-212BDT	30	150	20	50	10	40	φ13（φ10）	φ13（φ10）
F-22BDT	30	180	20	50	10	40	φ13（φ10）	φ16（φ10）
FH-22BDT	30	200	20	50	10	40	φ13（φ10）	φ16（φ10）
F-33BDT	30	240	20	80	15	40	φ19（φ12）	φ19（φ12）
FH-33BDT	30	250	20	80	15	40	φ19（φ12）	φ19（φ12）
F-44BDT	50	300	30	80	20	60	φ25（φ12）	φ25（φ16）
F-45BDT	50	380	30	80	20	60	φ25（φ12）	φ32（φ16）
FH-45BDT	50	410	30	80	20	60	φ25（φ12）	φ32（φ16）

Note: 1. All the above dimensions are minimums (for the standard supply capacity).
2. Figures in parentheses are wire rope diameters.
3. Rod specifications apply to rods made of SS400 and wire rope specifications to wire ropes of JIS No.3 (19×6).

Controller

Features

The electromagnetic feeder is provided with a separate wall controller that has a power switch, flow control dial, and rectifier built in. Floor type controllers and other models ranging from a single control type to central type control panel capable of simultaneously controlling dozens of feeders will also be available to order. A controller with a built-in constant amplitude unit is recommended for applications in which an adhesive material must be fed because it is effective for preventing excessive amplitude due to adhesion.

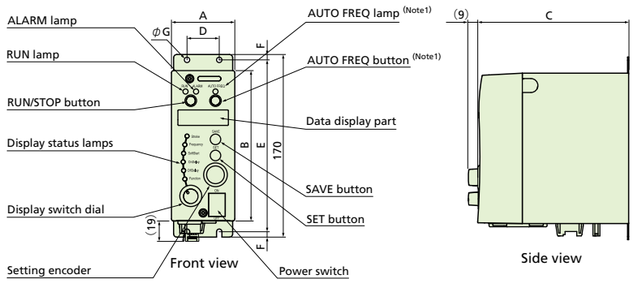
C4-5B

C6-15SC

C10-1VCF

Dimensions / Connection Diagram

Fig. 1 C10-1VCF/3VF



Side view

Fig. 2 C4-5B

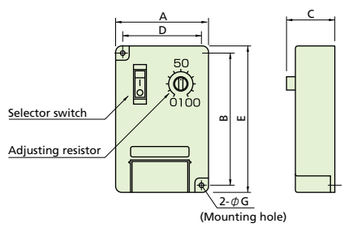
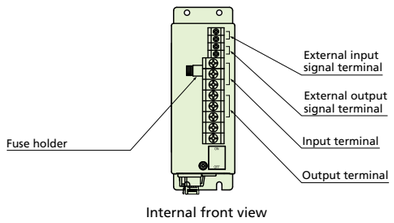
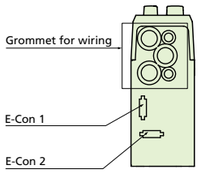


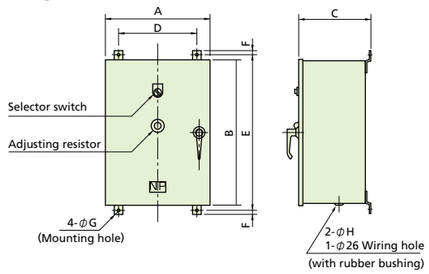
Fig. 3 C6-□□SC



Internal front view



Bottom view



(Note 1) : This function cannot be used in this controller.

●Specifications/Dimensions

Unit : mm

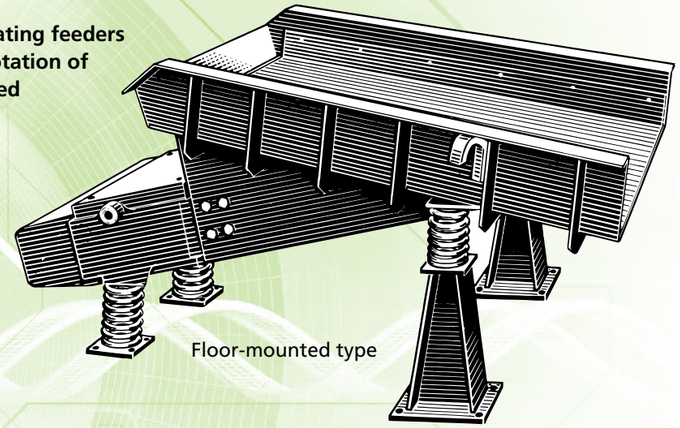
Models	Fig.	Current(A)			Dimensions(mm)								Weight (kg)	Feeder model
		100/110V	200/220V	400/440V	A	B	C	D	E	F	G	H		
C10-1VCF	1	1	1	—	59	140	141	30	160	5	5	—	0.8	CF-1、CF-2、CF-3、WCF-2A
C10-3VF		3	3	—	59	140	141	30	160	5	5	—	0.8	CF-4、WCF-3
C4-5B	2	—	5	—	85	122	45	72	135	—	5	—	0.2	F-152BDT、F-212BDT、F-22BDT
C6-15SC	3	—	15	7.5	300	400	200	250	420	15	9	26	15	FH-33BDT以下
C6-30SC		—	30	15	300	400	200	250	420	15	9	26	15	F-44BDT、F-45BDT
C6-50SC		—	50	—	350	500	270	250	540	15	11	42	20	FH-45BDT、F-55BDT
C6-50SC		—	—	25	300	400	200	250	420	15	9	26	15	FH-45BDT、F-55BDT
C6-80SC		—	80	—	450	700	270	350	740	20	14	42	35	F-66BDT、F-88BDT
C6-80SC		—	—	40	350	500	270	250	540	15	11	42	20	F-66BDT、F-88BDT

Note : 1. All the ratings are continuous.
2. The structure corresponds to that of an indoor wall hanging type.
3. C6 series has a dust-proof structure.
4. The painting color shown in Figure 3 is Munsell 5Y7/1 for both the inside and outside.
5. Concerning the C6 series, we will provide the constant amplitude control type, and the controller EHF type that can adjust the capability by using the external signal.

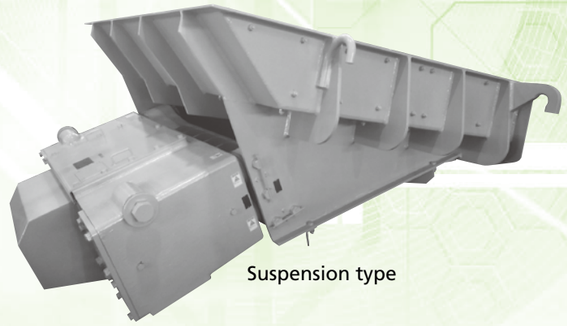
RFH Type Feeder

Features

SINFONIA Rubber Spring Feeders are vibrating feeders in which strong vibration generated by rotation of unbalanced weights is effectively combined with rubber springs.
Due to the use of resonance vibration, high efficiency can be obtained and only a small amount of drive power is required.
As the feeding rate is easily adjusted during feeder operation and instant interruption of the flow of material is possible, this equipment also can be used as a weighing feeder.



Floor-mounted type

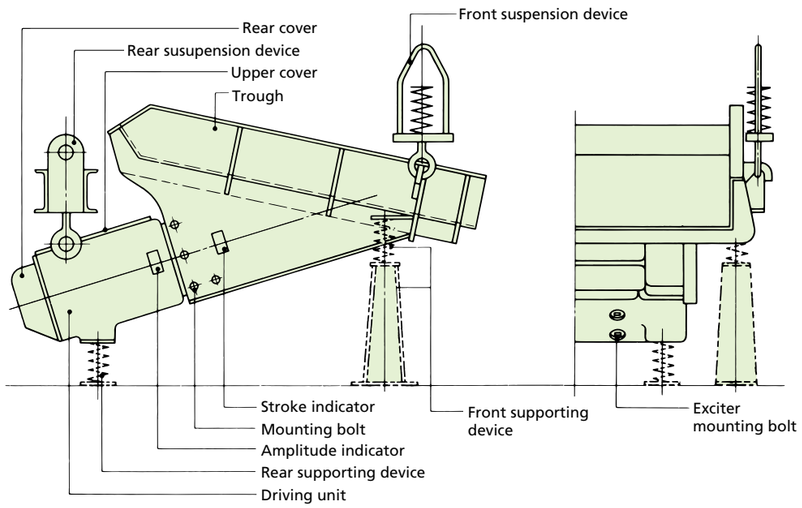


Suspension type

Operating principle

Rubber spring feeders consist of a trough for handling materials, driving parts to create vibration, and rubber springs for resonant vibration to hold those parts together. Elliptic motion from the rotation of unbalanced weight gives the same effect as rectilinear vibration to materials on the trough. Therefore, spring feeders are able to handle quickly and supply a large amount of granular materials and lumps.

Construction



Note: Both suspension type and floor-mounted type are installable. The trough and the drive unit are hold by suspension device (if you use a suspension type) or supporting device (if you use a floor mounted type).

Standard specifications

Models	Feeding capacity (T/Hr)			Motor (kW)	Trough size width×length (mm)	Weight (kg)	Applicable controller
	○Iron ore	△Sand	●Coal				
RFH-10A	150	130	60	0.2	450×800	100	CA-2FR
RFH-20A	250	210	100	0.4	600×1000	200	CA-4FR
RFH-45A	450	370	180	0.75	800×1200	400	CA-7FR
RFH-60A	650	530	260	1.5	900×1500	600	CA-15FR
RFH-85B	800	680	350	2.2	1100×1500	800	CA-22FR
RFH-160B	1200	1100	600	3.7	1300×1650	1600	CA-37FR
RFH-260B	1700	1500	900	5.5	1500×1800	2600	CA-55FR
RFH-350B	2200	1800	1100	7.5	1800×2000	3400	CA-75FR
RFH-500B	3000	2500	1500	11	2200×2200	5000	CA-110FR
RFH-700B	3800	3100	2000	15	2400×2400	7000	CA-150FR
RFH-1000B	5000	4000	2600	22	2600×2600	10000	CA-220FR
RFH-1500B	6100	5000	3200	22	2800×2800	13000	CA-220FR

Note: 1. ○Based on dry iron (C=2.0), △Based on dry sand (C=1.6), ●Based on dry coal (C=0.8)
2. Painting color is Munsell 2.5G 7/2.

Examples of hopper mounting

●Dimensions Table

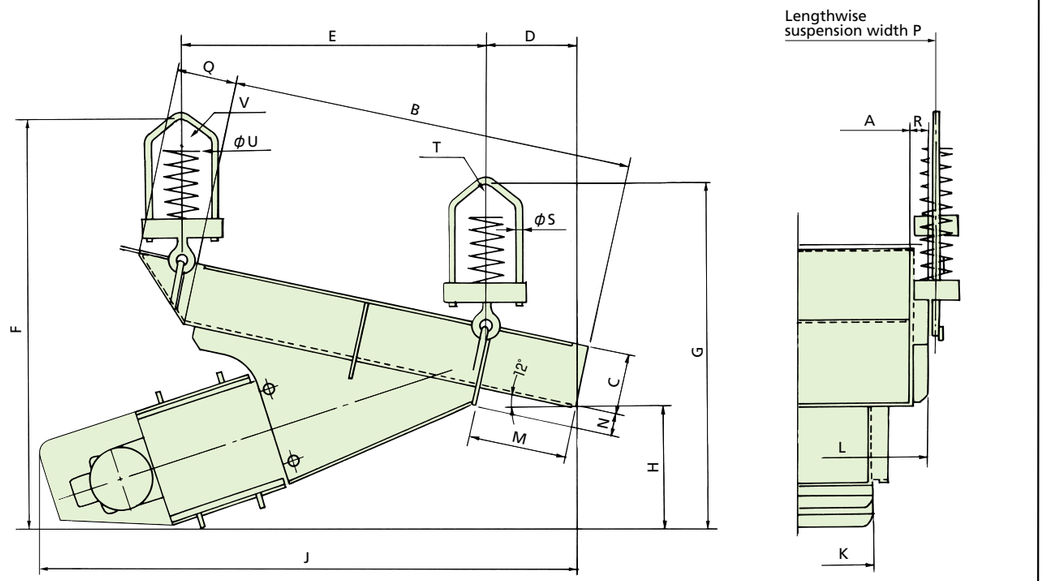
Unit：mm

Models	A	B	C	D	E	F
RFH-10A	50	280	50	20	φ13（φ8）	φ13（φ8）
RFH-20A	50	350	75	20	φ13（φ8）	φ13（φ8）
RFH-45A	50	420	75	25	φ19（φ11.2）	φ19（φ11.2）
RFH-60A	75	480	100	25	φ22（φ14）	φ22（φ14）
RFH-85B	75	580	100	25	φ22（φ14）	φ22（φ14）
RFH-160B	75	730	100	25	φ30（φ20）	φ30（φ20）
RFH-260B	100	820	150	40	φ36（φ25）	φ36（φ25）
RFH-350B	100	940	150	40	φ44（φ30）	φ44（φ30）
RFH-500B	100	950	150	75	φ50（φ33.5）	φ44（φ30）
RFH-700B	150	1050	200	75	φ60（φ37.5）	φ55（φ33.5）
RFH-1000B	150	1150	200	75	φ70（φ37.5）	φ70（φ37.5）
RFH-1500B	150	1300	200	75	————	————

Note: 1. All the dimensions in the table are minimums except for the dimensions in column B which apply to sand and are subject to some change depending on the material.
2. Figures in parentheses are wire rope diameters.
3. Rod specifications apply to rods made of SS400 and wire rope specifications to wire ropes of JIS No.3 (19×6).
4. Figures in column D apply only to the uncovered flat bottom trough.

Dimensions

RFH-10A~60A Below-deck drive, suspension type



●Dimensions Table

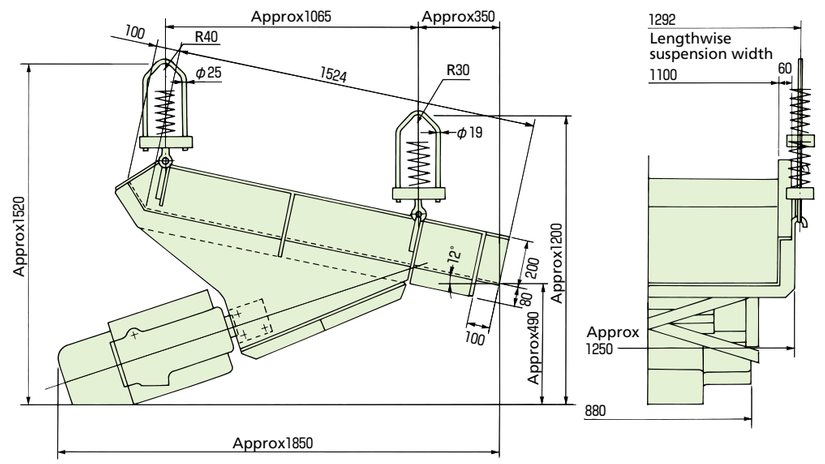
Unit：mm

Models	A	B	C	D	*E	*F	*G	*H	*J	K	*L	M	N	P	Q	R	Suspension type			
																	S	T	U	V
RFH-10A	450	800	120	180	600	850	720	270	1080	305	520	200	41	546	120	35	13	20	13	20
RFH-20A	600	1000	150	180	795	990	800	310	1200	385	690	200	55	769	120	45	13	20	13	20
RFH-45A	800	1200	180	295	890	1270	1080	390	1540	510	922	50	56	972	150	55	19	30	19	30
RFH-60A	900	1524	200	340	1130	1390	1180	480	1850	580	1042	100	81	1092	100	60	19	30	19	30

Figures in the asterisked (*) columns are approximate.

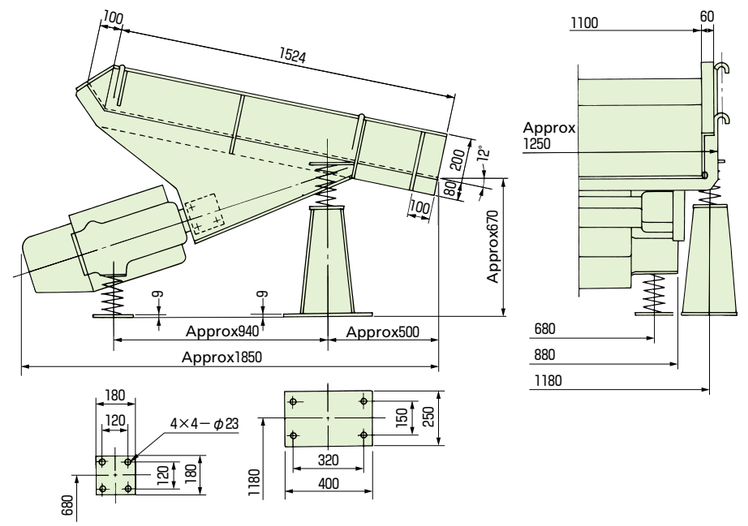
Dimensions

RFH-85B Below-deck drive, suspension type



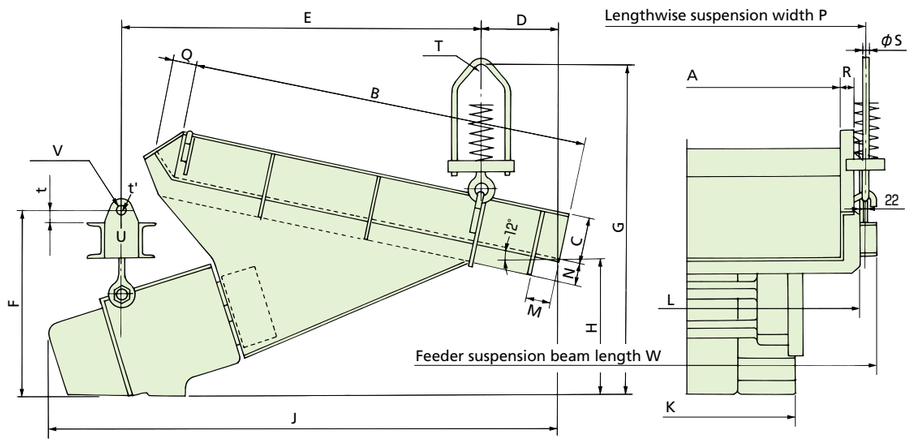
Unit : mm

RFH-85B Below-deck drive, floor mounted type

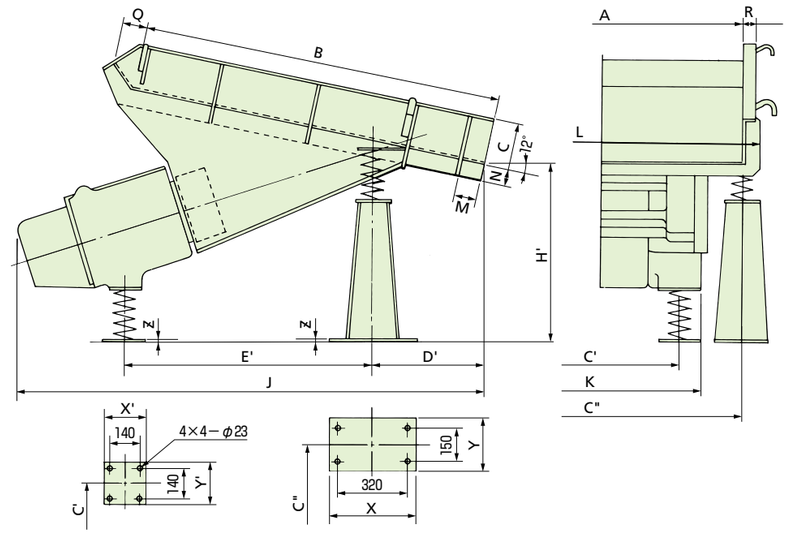


Unit : mm

RFH-160B~1500B Below-deck drive, suspension type



RFH-160B~1500B Below-deck drive, floor mounted type



Unit : mm

Models	A	B	C	*D	*E	*F	*G	*H	*J	K	*L	M	N	P	Q	R	Suspension type dimensions							Floor mounted type dimensions									
																	S	T	U	V	t	t'	W	*H'	*E'	*D'	C'	C"	X	Y	X'	Y'	Z
RFH-160B	1300	1650	200	320	1500	820	1380	600	2140	930	1480	100	87	1524	100	70	25	R40	22	2－ϕ40	50	R50	1600	825	1120	510	730	1300	400	250	200	200	9
RFH-260B	1500	1800	250	435	1730	990	1620	720	2510	1180	1770	150	112	1804	125	75	32	R50	25	2－ϕ45	50	R65	1900	835	1320	620	900	1600	400	250	200	200	9
RFH-350B	1800	2000	300	330	2030	1140	1700	670	2710	1280	2090	100	112	2104	150	85	38	R50	32	2－ϕ50	100	R70	2200	930	1630	540	1030	1900	400	250	210	210	9
RFH-500B	2200	2200	350	420	2230	1240	2100	710	3060	1430	2530	150	164	2548	175	90	32	2－ϕ65	32	2－ϕ65	100	R100	2650	950	1580	830	1080	2160	460	460	260	460	12
RFH-700B	2400	2400	350	425	2460	1340	2100	710	3360	1900	2730	150	166	2748	175	90	38	2－ϕ65	38	2－ϕ65	120	R100	2786	925	1870	850	1500	2600	460	460	260	460	12
RFH-1000B	2600	2600	400	420	2760	1610	2210	780	3690	2140	2930	150	172	3028	200	100	50	2－ϕ75	50	2－ϕ75	120	R120	3180	1120	2120	810	1500	2800	460	460	260	460	12
RFH-1500B	2800	2800	400	511	2909	1595	2290	865	3940	2140	3130	150	172	3028	200	100	50	2－ϕ75	50	2－ϕ75	120	R120	3180	1120	2120	810	1500	2800	460	460	260	460	12

Figures in the asterisked (*) columns are approximate.

Controller

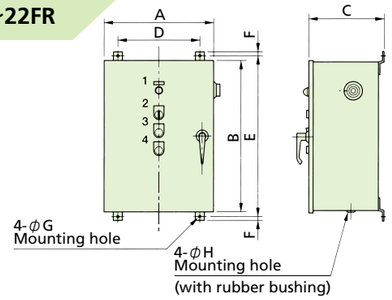
Features

**The rubber spring feeders have a controller which is used to continuously control the feeding volume.
In other words, the input voltage to the drive motor is changed to vary the rate of vibration and the amplitude.
RHF-85B and higher models are so designed that, without voltage regulation, the feeding volume can be adjusted by increasing or decreasing the vibration force of the unbalanced weight.**

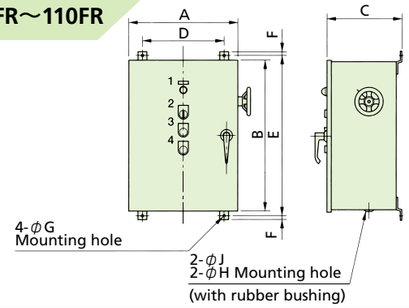
Dimensions / Connection Diagram

Unit : mm

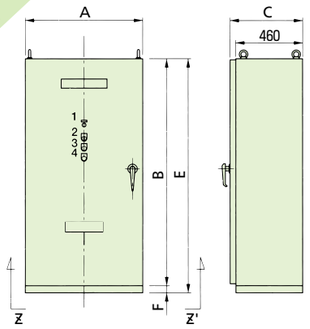
CA-2FR～22FR



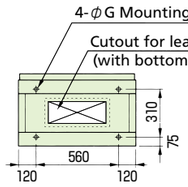
CA-37FR～110FR



CA-150FR/220FR



As viewed in direction Z-Z'



No.	Nomenclature	Symbol
1	Indicator	RL
2	Selector switch	COS
3	Push button switch ON	PB1
4	Push button switch OFF	PB2

●Specifications/Dimensions

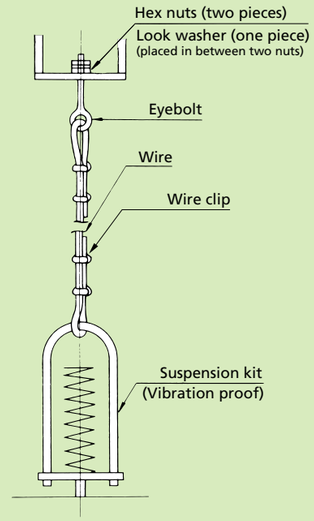
Models	Dimensions (mm)									Weight (kg)	Current (A)		Feeding volume control	Full voltage start control	Negative phase control	Feeder model
	A	B	C	D	E	F	G	H	J		200/220V	400/440V				
CA-2FR	400	600	250	300	640	15	11	26	—	36	2	2	○	○	○	RFH-10A
CA-4FR	400	600	250	300	640	15	11	26	—	36	3	2	○	○	○	RFH-20A
CA-7FR	500	650	270	400	690	20	14	26	—	46	4	2	○	○	○	RFH-45A
CA-15FR	500	650	270	400	690	20	14	26	—	55	7	4	○	○	○	RFH-60A
CA-22FR	500	650	270	400	690	20	14	26	—	55	10	5	○	○	○	RFH-85B
CA-37FR	550	750	350	450	790	20	14	26	26	98	15	8	○	○	○	RFH-160B
CA-55FR	550	750	350	450	790	20	14	26	26	110	21	11	○	○	○	RFH-260B
CA-75FR	700	900	470	600	940	20	14	42	26	145	28	14	○	○	○	RFH-350B
CA-110FR	700	900	470	600	940	20	14	42	26	160	43	22	○	○	○	RFH-500B
CA-150FR	800	1600	500	—	1650	50	16	—	—	300	51	27	○	○	○	RFH-700B
CA-220FR	800	1600	500	—	1650	50	16	—	—	320	81	41	○	○	○	RFH-1000B RFH-1500B

Note: 1. All ratings are continuous.
2. The paint color of both the inner and outer surfaces is Munsell 5Y7/1.
3. Inverter control panels are also optionally available.
4. The pushbutton ON is green, the pushbutton OFF red, and the run indicator red.
5. All models have a negative phase control.
6. Models CA-2FR to CA-110FR and an indoor wall suspension, dustproof type; models CA-I50FR and CA-220FR an indoor floor-mounting, dustproof type.

Suspending Device

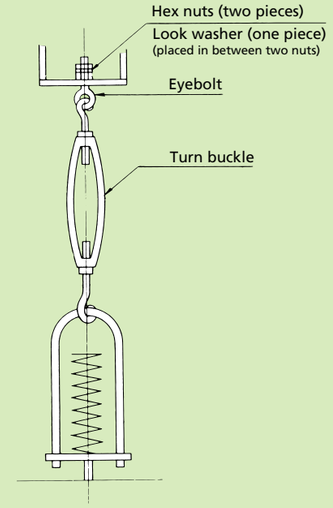
Wire

● **In case of long suspending distance**



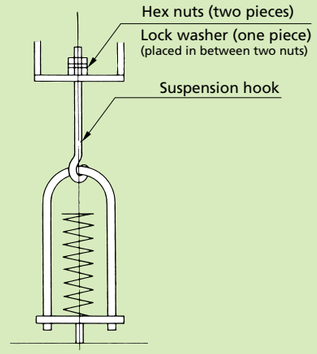
Turn buckle

● **Adjustable to some extent**



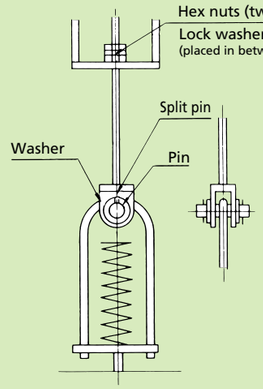
Suspending hook

● **In case of short suspension distance**



Special suspension tools

● **When the feeder is especially large and turn buckles & suspension hooks are not available in the market.**



Caution **Never tighten the bracket as shown in the illustration figure.**