

6640-00-730-9034



# DAMON/IEC DIVISION

300 SECOND AVE., NEEDHAM HTS., MASS. 02194, TEL: (617) 449-0800

Telex: 92-2499 INTLEQUIPNEDM

Cable: INTERCOBOSTON

## IEC MODELS CL AND CH (CLINICAL, CHEMICAL) CENTRIFUGES

### INSTRUCTIONS

The centrifuge as shipped from the factory has been tested and is ready to be used as received. The unit has been designed for use on a bench. The rubber feet on the base of the machine minimize the transmission of vibration from the machine to the bench top. The unit should be placed on a clean, flat area. If it is desired to fasten the centrifuge directly to the

top of the working surface, substitute wood screws or bolts for the present screws in the rubber feet. Leave the rubber feet in place. It is designed for use on 115 volts 50/60 Hz, or 230 volts, 50/60 Hz as indicated on the data plate. No lubrication is necessary as the motor is equipped with lubricated sealed bearings.

### OPERATING INSTRUCTIONS

1. The Model CL, CH has been designed for ease of operation. When the control knob is turned completely counter clockwise, the unit is shut off. There is no need to disconnect the main power cord when the control knob is in this position, except when servicing the unit.
2. After removing the knurled nut from the top of the shaft, place the desired rotor, or in the case of the Model CH the desired basket, on the tapered shaft. Replace the knurled nut and tighten finger tight in a clockwise direction.
3. Turning the control knob clockwise increases the speed in seven increments. The speed (rpm) of the rotor is a function of how far the control knob is turned clockwise.
4. An automatic timer, IEC Cat. No. 717, (for 115 V only), 2 hours max. - 2 minutes min., may be ordered to insert into the line cord if necessary.
5. Filter media for the model CH may be obtained from: Filter paper: Schleicher and Schuell, Inc., Keene, N. H.; Filter cloth; W. W. Stanley Co., Inc., Hillside, N. J.; Wire cloth; Multi-Metal Wire Cloth, Inc., Tappan, N. Y.
6. Accessory balance is an important factor in prolonging the bearing and motor life. The rotor should always be loaded symmetrically. Only IEC rotors and accessories should be used on this centrifuge.

### MAINTENANCE

**CAUTION - DISCONNECT POWER CORD BEFORE PERFORMING ANY MAINTENANCE.** Occasionally (every 3 - 4 months under normal conditions) inspect the motor brushes. The brushes are removed by taking out the two plastic cap-screws; one on each side of the machine just below the guard bowl. Remove the brush and coil spring. If the brushes are worn to one-half or more of the original length of 3/4 inch replace with IEC Part No. 1780.

At approximately six months intervals have a

qualified IEC serviceman check the commutator. With the rotor removed, locate the two Phillips - head screws on either side of the motor top cap. Before lifting the top cap remove the brushes and springs. Do not lose preload washers. Check the general condition of the commutator. Also, check for burns and an out-of-round condition. If replacement is not necessary, clean the commutator with a suitable industrial solvent and air pressure if available. Clean the carbon and grease from around the brush holders before re-assembling the armature and top cap.

II-1-2



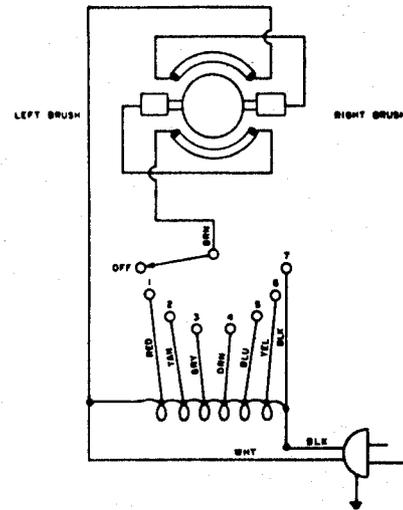
**SPEED AND FORCE TABLE**

**CLINICAL MODEL**

Rotor	Metal Shield	Capacity	Max. speed 120v(rpm)	R.C.F. (G'S)	Radius in cms
215	4-No.320	50 ml	3200	1610	14.1
215	4-No.1018	13 x 100 mm tubes	3400	1720	13.3
215	4-No.369	12 x 75 mm tubes	3800	1840	11.4
221	6-No.303	15 ml	3000	1470	14.6
221	6-No.356	10 ml	3200	1480	13.0
801	6-No.320	50 ml	4500	3170	14.0
801	6-No.305	50 ml (long)	3700	1890	12.4
803	6-No.303	15 ml	4100	2120	11.5
803	6-No.356	10 ml	4250	2020	10.1
803	6-No.302	15 ml	3350	1570	12.6
809	12-No.356	10 ml	3900	1720	10.2
809	12-No.302	15 ml	3400	1640	12.7
809	12-No.303	16 x 100 mm tubes	3800	1790	11.1
930	24 capillary tubes	24x2 mm x 75mm	7100	5130	9.1

**CHEMICAL MODEL**

Basket Rotor	Diameter (inches)	Material	Capacity (Liters)	Max. speed (rpm)	R.C.F. (G'S)
1341a	5	Stainless Steel solid	0.3	4,000	1,150
1341	5	Stainless Steel perforated	0.3	4,000	1,150
1343a	5	Manganese Bronze solid	0.3	4,000	1,150
1343	5	Manganese Bronze perforated	0.3	4,000	1,150



**WIRING DIAGRAM FOR MODEL CL, CH.**

Cat. No. 428, 115 V 50/60 Hz. (CL)  
 429, 230 V 50/60 Hz. (CL)  
 450, 115 V 50/60 Hz. (CH)  
 451, 230 V 50/60 Hz. (CH)

**CL, CH REPLACEMENT PARTS LISTS**

QUANTITY	DESCRIPTION	PART NO.
1	Armature, 115 V	42469
1	Armature, 230 V	43007
1	Base	42985
1	✓ Bearing, Top	9939
1	✓ Bearing, Bottom	9939
1 pr.	✓ Brushes	1780
1 pr.	✓ Brush Holder Cap	9036
1 pr.	✓ Brush Holders	9037
1	Cap Plug # BP-1½	44241
1	Cord Set, 115 V	38805
1	Cord Set, 230 V	38806
3	✓ Cushion Feet	1719
1	Field, 115 V	4173
1	Field, 230 V	9629
1	Guard Bowl Assy.	4154
1	Guard Bowl Assy. (CH)	1399
1	Knob for Cover	38595
1	Knob for Switch	42812
1	✓ Rotor Lock Nut	1729
1	Rubber Bumper Cover - Button	1779
1	Screen Base	36401
1	✓ Switch, Speed and Transformer, 115V	36536
1	Switch, Speed and Transformer, 230V	36537
1	Top Cap Assy.	42470
1	Washer, Preload	41778



## IEC MODEL CL CENTRIFUGE

This centrifuge is for general purpose use for performing separations by centrifugal force.

The following information as per paragraph 167.2 of the FDA requirements dated March 15, 1973 is relative to this instrument. It is to be included in the literature package supplied with this instrument. For details of such specified information see the indicated pages of the literature listed below. (IM refers to Instruction Manual):

- a. *Installation procedures and special requirements* — see front side of IM-174.
- b. *Principles of operation* — see front side of IM-174.
- c. *Performance characteristics and specifications* — see back side of IM-174.
- d. *Operating instructions* — see front side of IM-174.
- e. *Calibration procedures* — none required.
- f. *Operational precautions and limitations* —
  1. The use of any part or accessory in the rotational chamber of this instrument is restricted to those parts or accessories specifically recommended in print by International Equipment Company.
  2. Close cover before operating and leave cover in closed position until unit stops rotating.
- g. *Hazards* —
  1. The use of this instrument in any manner not recommended in print by the manufacturer may result in damage or personal injury.
  2. Removal of any access panel on this instrument may allow contact with points of electric shock hazard. Always disconnect instrument from electric source before any repair or service is attempted.
- h. *Service and maintenance information* — see front side of IM-174.

INTERNATIONAL EQUIPMENT COMPANY  
300 Second Avenue  
Needham Heights, MA 02194

IM-174 Date: 9/6/74

A Multiple Purpose Instrument for use in *in vitro* Diagnostic Purposes.



### OPERATIONAL PRECAUTIONS

Please read the Instruction Manual supplied and the following information before operating this centrifuge.

All multiplace horizontal rotors should be loaded with a full complement of shields, cups or carriers before using. This procedure should be followed, even though as few as two samples are being centrifuged.

In normal laboratory use, when constant vibration is noted, it may be directly traceable to imbalance of the load in the rotor. The operator should insure that the rotor is loaded symmetrically and that the accessories are all within 0.5 grams of each other. Also check that each shield, cup or carrier has only one cushion in each cavity.

Angle rotors should be loaded symmetrically with respect to the axis of rotation. Only Damon/IEC rotors and accessories are to be used in this centrifuge. Do not use other manufacturers accessories on Damon/IEC centrifuges. Such use will void our warranty.

Accessory balance is also an important factor in prolonging the bearing and motor life. Damon/IEC rotors, as well as all rotating parts of this centrifuge, are dynamically balanced at the factory. In addition, Damon/IEC trunnion rings, shields, cups and carriers are weighed and matched to one-half gram. The gram weight is stamped on each piece.

Do not operate rotors which do not have a full complement of accessories.

To obtain a good dynamic balance the opposite loads must, in addition to being equal in mass, have the same center of gravity. Care should be taken to select tubes and bottles in pairs that are alike in shape, thickness and distribution of glass or plastic. The larger the container, the more critical the selection should be.

**CAUTION:** Do not use mercury in cups or shields for balancing purposes. Mercury vapors are toxic and will react with aluminum.

Never open the cover while the rotor is spinning.

Do not exceed the speeds listed in the Speed and Force Table for speed-limited rotors.



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## CARE AND CLEANING OF IEC ROTORS AND STRUCTURAL ACCESSORIES

In order to prevent corrosion and subsequent replacement the following information should be well studied.

### 1. CORROSION FATIGUE

An important precaution to be taken by the operator of a centrifuge is to prevent the corrosion of rotors and structural accessories (cups and carriers). These parts are manufactured by IEC to the highest standards and are properly finished and checked by quality control facilities before they leave the factory. Every possible consideration has been exercised to provide the maximum resistance to corrosion.

However, it is essential for proper operation and safety that the operator continue a high standard of preventive maintenance to maintain maximum resistance to corrosion. If corrosion is allowed to continue, small cavities will form within the part which will grow deeper with continuous operation producing corrosion fatigue. The end result of such a condition is a weakening of the structure to the extent that mechanical failure with attendant serious damage can occur under the stress of centrifuging.

### 2. INSPECTION

Before and after each run, the part should be routinely examined for corrosion and cracks. Particular attention should be given to the inside and bottom of rotor cavities, buckets and cups, and to the inside surfaces and corners of rack and multiple type carriers. If this condition is discovered, discontinue the use of the part immediately and consult IEC.

### 3. PREVENTION

The hazard of corrosion fatigue can be completely eliminated by conscientious operator technique. After each run, the part should be rinsed in warm tap water and finally in distilled water. If material is spilled into the part, it should be washed out with a MILD DETERGENT solution, and the cavities scrubbed with a stiff test-tube brush without a sharp metallic point. The part should be rinsed in warm tap water and finally in distilled water. When particularly caustic materials are run, this procedure should be carried out immediately upon termination of run.

### 4. DRYING

After the part has been thoroughly cleaned it is important to dry it properly, preferably by wiping with a clean, absorbent towel. A drying oven may be used,



but the temperature should not exceed 100°C. and the part should not be heated to this temperature for prolonged periods of time. Angle rotors should be stored open to the atmosphere with the lid off, and cavities down, and horizontal rotors with the knuckles down so that all surfaces are exposed. Buckets, cups, and carriers should have their cavities open to the atmosphere. Parts should be stored on a soft surface to prevent damage to anodized or other finished surfaces. Parts may be stored under refrigeration, after the proper cleaning and drying procedures have been followed, when the part is in routine use. However, for general storage, it is advisable to store the part clean and dry at room temperature. Parts should not be stored wrapped in a plastic bag.

## 5. CORROSION

If corrosion occurs, it is of the utmost importance to remove it as fast as possible. The following procedure should be carried out.

- a. The part should be soaked for several hours to remove corrosion deposits from the metal surface. Use a mild, warm detergent solution. Do not use soaps and detergents containing strong alkalies.
- b. Scrub the part thoroughly with a stiff test-tube brush without a sharp metallic point. Pay particular attention to the bottom of the tube cavities and multiple carrier corners.
- c. Allow the part to soak again in clear warm water for a minimum of one hour.
- d. Rinse the part well in warm water and finally rinse thoroughly in distilled water.
- e. Dry the part thoroughly with a clean, absorbent cloth.
- f. If corrosion cannot be removed with test tube brush, send the part to IEC for inspection, rework or replacement after obtaining proper IEC return forms.

## 6. OPERATING CAUTION

To prolong maintainability of critical dimensions and to continue operation within design parameters, all multiplace horizontal rotors should be loaded with a full complement of shields, cups or carriers before centrifuging. This procedure should be followed even though as few as two samples are being centrifuged. Tubes and accessories should always be loaded symmetrically in a rotor.







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## WARRANTY REGISTRATION

(Please Print or Type)

MODEL CLINICAL SERIAL NO. 428 23672

Institution \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Customer Name \_\_\_\_\_

Title \_\_\_\_\_ Dept. \_\_\_\_\_

Bldg. \_\_\_\_\_ Room \_\_\_\_\_

Telephone \_\_\_\_\_

### Reason For Selecting This System

(Circle Most Important)

1	2	3	4
Price	Previous Experience With IEC	Salesman	Advertising

5	6	7	8
Performance Suitability	Appearance Size	Reputation	Other

### Customer Type (Circle One)

1	2	3	4
Gov't	Industrial	Educational	Clinical/Hospital

Primary Application Planned for This System: \_\_\_\_\_

I certify that I have received proper installation of this system, proper operating instructions, necessary safety precautions, and knowledge of the equipment's capabilities and have the Operating Manual in my possession.

Customer Signature \_\_\_\_\_ Date \_\_\_\_\_

### PLEASE RETAIN THIS PORTION FOR YOUR RECORDS

MODEL CLINICAL SERIAL NO. 428 23672

### Equipment Sold By

Dealer Name \_\_\_\_\_

Address \_\_\_\_\_

Date Delivered \_\_\_\_\_



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## INSTALLATION REPORT

(Please Print or Type)

### Installation Checkout

Initial Condition	1	2	3	4
(Circle One)	Excellent	Good	Fair	Poor

User Instructed	Yes	No
Instrument Calibrated	Yes	No

Final Operation	1	2	3	4
(Circle One)	Excellent	Good	Fair	Poor

### PROBLEM CODES:

A-Missing Item (Please Specify)	M-Mechanical Failure
B-Broken	P-PC Board
C-Calibration	R-Refrigeration
E-Electrical Failure	S-Shipping Damage
F-Freon Leak	T-Training Required
I-Incomplete	W-Wiring
X-Other (Please Specify in Comments)	

### ACTION CODES:

1 - Repair	2 - Replace	3 - To Be Taken
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Component Catalog No.	Codes		Explanation
	Prob	Action	

I certify that this equipment was installed and checked out in an operating condition in the laboratory. It is operating properly and the customer has full and complete knowledge of the equipment's capabilities as well as its limitations including the necessary safety precautions.

Dealer Signature \_\_\_\_\_ Date \_\_\_\_\_

Dealer Name \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

### DEALER OBLIGATION

- Any instrument having a retail value of over \$1000 will be installed by an Authorized Factory-Trained Dealer Serviceperson and the customer will be instructed in its use by a dealer representative.
- Customers requesting service for an instrument during the period covered by warranty should receive a response, within a 48-hour period, from the Authorized Dealer who sold the instrument. If this obligation is not met and the customer so advises Damon/IEC Division, such Authorized Dealer will be notified of, and responsible for, the action taken, and expenses incurred, by Damon/IEC Division in satisfying the customer.





