

**Purpose:** To freeze the plasma to a core temperature of  $-40^{\circ}\text{C}$  within 40 minutes before its components start to decay (chamber temperature  $-80^{\circ}\text{C}$  as per Drug Act).



**Lifetime Comfortable Access**

All-length handle inbuilt to the body for better handling.

**Digital HMI**

7.1" Touch Screen HMI for interacting with the CSF.

**Extra PUF insulated door**

More than 150 mm of PUF filled in the door to prevent temperature loss.

**Ventilation Slits with Pre-filters**

Proper ventilation for the equipment to keep cool and dust elimination by pre filters

**Low-noise Compressor**

Heavy duty Compressors produce much lower sound.

Cat. No. : AIL-20601

In the three chambers provided inside the CSF, a total of 24 bags could be fitted into it for one cycle. The core temperature of the blood bag is reached at  $-30^{\circ}\text{C}$  in just within 40 minutes.

**Model-CSF-24 ( Capacity of 24 Bags per Cycle)**



LCD Screen Display



Heavy-duty Level adjustment and Easy mobility lockable Castor Wheels

## Benefits of Contact Shock/Blast Freezer

Protein	Concentration in Plasma	Regular Deep Freezer	By Contact Shock Freezer	Identification
Albumin	40 g/L	Present	Present	Volume restoration after trauma, shock, burns
Alpha <sub>1</sub> proteinase inhibitor	1.5mg/mL	Not Present	Present	Hereditary emphysema
Anti-D IgG	Titer varies <sup>a</sup>	Not Present	Present	Rh prophylaxis in pregnancy and childbirth
Antithrombin III	100 µg/mL	Not Present	Present	Anti-thrombin III deficiency
C1-Inhibitor	170 µg/mL	Not Present	Present	Hereditary angioedema
Factor IX	10 µg/mL	Not Present	Present	Hemophilia B
Factor VIII	0.5 µg/L	Not Present	Present	Factor VIII deficiency
Fibrinogen	3 g/L	Not Present	Present	Tissue sealant Component
Fibronectin	300µg/mL	Not Present	Present	Wound healing
Hepatitis B IgG	Titer varies <sup>a</sup>	Not Present	Present	Hepatitis immunity
Immunoglobulin G	Up to 12.5 g/L	Not Present	Present	Primary and secondary immune deficiency
Measles IgG	Titer varies <sup>a</sup>	Not Present	Present	Measles protection and treatment
Protein C	4µg/mL	Not Present	Present	Neonatal thrombosis
Rabies IgG	Titer varies <sup>a</sup>	Not Present	Present	Rabies risk
Tetanus IgG	Titer varies <sup>a</sup>	Not Present	Present	Tetanus protection and treatment
Thrombin	150µg/mL <sup>b</sup>	Not Present	Present	Tissue sealant component

## List of some Authentic Contact Shock/ Blast Cabinet users

Installation	Installed at	Company make
SDMH Blood Bank	Jaipur	Authentic
Govt. Medical College	Azamgarh	Authentic
Sawsthya Kalyan Blood Bank	Jaipur	Authentic
City Blood Bank	Raipur	Authentic
Govt. Medical College	Banda (U.P)	Authentic
Ujjawal Blood Bank	Jagdalpur	Authentic
3yrs demonstration at SMS Medical College	Jaipur	Authentic

# Contact Shock/Blast Freezer

## Specification

1. **Purpose:** To freeze the plasma to a core temperature of  $-40^{\circ}\text{C}$  within 40 minutes before its components start to decay (chamber temperature  $-80^{\circ}\text{C}$  as per Drug Act).
2. Vertical upright type
3. Capacity of 24 bags per cycle
4. Rapid freezing to core temperature of plasma bag to  $-40^{\circ}\text{C}$  in just 40 minutes .
5. Working Temperature is  $-80^{\circ}\text{C}$ , and can be controlled within the range of  $-80^{\circ}\text{C}$  to  $+8^{\circ}\text{C}$  with  $0.1^{\circ}\text{C}$  accuracy.
6. Temperature controlling and monitoring done by high-end 7.1" Touch Screen HMI with data storage in form of charts, and equipped with e-mailing facility.
7. Constructed in double wall CFC free PUF (Polyurethane foam) Insulated.
8. PUF thickness  $> 120$  mm.
9. 3 shelves available, with 3 cooling plates and 3 motor controlled movable plates.
10. Inner body made with Stainless steel 304 grade 22 SWG and outer body made with galvanized pre painted sheet (GPPS) 18 SWG with high impact powder coating.
11. External Size : 1000 x 680 x 1790 mm (W x D x H).
12. CFC - HCFC free refrigerant. Hermetically sealed refrigeration compressor are used in cascade refrigeration.
13. Pre Cooling Function with temperature of  $-60^{\circ}\text{C}$ .
14. Defrosting system available.
15. Alarm in case of high/low temperature, door open & power failure.
16. Door opening angle limited to  $90^{\circ}$  to  $110^{\circ}$ , Separate inner door with magnetic latch.
17. Hotline around the mouth of the cabinet to prevent moisture condensation.
18. Mounted on lockable castor wheel.
19. Shock freezing of several batches in succession with optimized cooling systems.
20. State of art compressor technology with optimized cooling system, and air condenser.
21. Separate refrigeration of the fixed cover plate and the electrically adjustable working surface of the upper and lower plates.
22. The preset and recommended operating temperature (set point) of  $-60^{\circ}\text{C}$ , to minimize the risk of bag rupturing.
23. Microprocessor controlled programmable HMI touch screen for temperature controller and operation documentation. (as per drug act).
24. CRP meets current EEC standards.
25. Blood Bag Serial number can be introduced in the program.
26. Noise level is below 65 dB.
27. Power Supply, compatible with 220 V to 240 V, 50 Hz, Single phase A.C.
28. High Voltage protector, available for 160 V to 255 V voltage fluctuations.
29. Product CE European certified.

## Why use Contact Shock Cabinets instead of Ultra Deep Freezers???

- More than 90% of the blood banks don't have Contact Shock Freezers, rather they use -80 °C Deep Freezer which freezes the plasma at slow rate and the proper processing of the FFP is not attained.
- High Performance Contact Shock Freezers are used for the rapid freezing of blood plasma, preparations to a core temperature of -40 °C with chamber -80 °C for requirement up to the mark.
- Safety of law and compliance with directives for the preparation of blood plasma storage at a core temperature of < -30 °C.
- By the use of Contact Shock Freezers we obtain better **Factor 8**.
- The freezing process can be done by two methods : namely Contact Shock Freezing and Blast Freezing, the Blast Freezing technique is not safe as the temperature of blasted air too low and the operation can not be done by an operator safely.
- CSF is also very useful in case of blood donation camp, where blood is collected in large numbers, they need to be processed fast to prevent cellular decomposition which can't be

<b>Declaration for Design, Installation, Operation, Performance and Maintenance Qualification</b>			
<b>Technical Parameter Specification</b>			
<b>S. Nos</b>	<b>Particulars</b>	<b>Specified/ Std.</b>	<b>Declared</b>
1	Temperature Indicator at -80°C	(-80) ±5°C	-80.1°C
2	Temperature recorder at -80°C	(-80) ±5°C	-80.1°C
3	Temp. Gradient in Chamber	Not more than 4 .8°C	Not more than 4 °C
4	Door Alarm:- Alarming after 5 min. of Gate opening	5 minute	5 minute
5	High Temp. Alarm:-Alarming after -70°C with delay of 2 min.	2 minute	2 minute
6	Contact Shock temperature range	(-55 to -80)°C	(- 80)°C
7	Capacity	24 standard plasma bag	24standard plasma bag
8	Defrosting	Automatic	Automatic
9	Refrigerant	(CFC/HCFC free)	(CFC/HCFC free) R-508
10	Power consumption at -50 °C	3 kW	2 kW
11	Energy Consumption per freezing Cycle	6 kW	4 kW
12	Freezing time depending on load and ambient temperature	45-60 minutes	30-60 minutes
13	Surface Temp. of body at -80°C inside temp after 48hrs	equal to ambient temperature	equal to ambient temperature
14	Frosting at gate	Should never Seen	Never Seen
15	Moisture at door	Should never Seen	Never Seen
16	Defrosting time	10 minutes	10 minutes
17	Hold over time (Full load of plasma packet at -80° to more than -30°C) at 25°C.	1 hours	1 hours
18	ON/OFF Cycle ( compressor ) suitability	90:10	80:30
<b>Electrical Safety</b>			
<b>S. Nos</b>	<b>Particulars</b>	<b>Specified/ Std.</b>	<b>Declared</b>
19	Mains Voltage: Live to Neutral	240 VAC	240 VAC
20	Mains Voltage: Live to Earth	240 VAC	240 VAC
21	Mains Voltage: Neutral to Earth	Max. 5 V AC	Max. 5 V AC
22	Equipment Current	Min 18 Amp	Mini 17 Amp
23	Leakage Earth	5 V AC Max.	5 V AC Max.
24	Noise level test	Less than 60 dB	Less than 55 dB
25	Starting amp.	Max. 23 Amp	Max. 17 Amp
26	Running amp.	11 Amp.	6-8 Amp.
27	Power Failure Alarm	Available	Available
28	High & Low Voltage Indicator	Available	Available
29	Agitation Alarm	Available	Available
<b>PRE INSTALLATION ELECTRICAL REQUIREMENTS FOR SMOOTH WORKING</b>			
<b>VOLTAGE -220-240 V AC ,STABILITY - ±5 V AC, VOLTAGE DROP DURING STARTING 10 V AC MAX</b>			
30	Mains Voltage: Live to Neutral	220-240 VAC	220-240 VAC
31	Mains Voltage: Live to Earth	220-240 VAC	220-240 VAC
32	Mains Voltage: Neutral to Earth	0.5 TO 5 VAC	0.5 TO 5 VAC

Declaration for Design (DQ), Installation (IQ), Operation (OQ), Performance (PQ) and Maintenance Qualification (MQ)								
PRE INSTALLATION ELECTRICAL REQUIREMENTS FOR SMOOTH WORKING								
Sr.	Particulars	Min. Requirement /	Observed	(DQ)	(IQ)	(OQ)	(PQ)	(MQ)
1	Mains Voltage: Live to Neutral	220-240 V AC FOR	220-240 V AC For	√	√			√
2	Mains Voltage: Live to Earth	220-240 V AC FOR	220-240 V AC For	√	√			√
3	Mains Voltage: Neutral to Earth	0.5 TO 5 V AC FOR	0.5 TO 5 V AC For	√	√			√
Electrical Safety Requirements								
4	Equipment Current	Min 23 Amp.	Min. 17 Amp.	√		√	√	√
5	Power plug unbreakable with Line	Line	Line	√	√			√
6	Leakage Earth	5 V AC Max.	5 V AC Max.	√	√		√	√
7	Noise level test	Less than 58 dB	Less than 55 dB	√	√	√	√	√
8	Starting amp.	Max. 23 Amp.	Max 17 Amp.	√		√	√	√
9	Running amp.	11 Amp.	6-8 Amp.	√		√	√	√
10	Power Failure Alarm	Available	Available	√	√	√	√	√
11	High Voltage Indicator	Available	Available	√		√	√	√
12	Low Voltage Indicator	Available	Available	√		√	√	√
Technical Requirements								
13	Temperature Indicator at -80°C	(-80) ±5°C	-80.1°C	√	√	√	√	√
14	Temperature recorder at -80°C	(-80) ±5°C	-80.1°C	√	√	√	√	√
15	Temp. Gradient in Chamber	Not more than 4 .8°C	Not more than 4 °C	√		√	√	√
16	Door Alarm:- Alarming after 5 min. of Gate opening	5 minute	5 minute	√			√	
17	High Temp. Alarm:-Alarming after -70°C with delay of 2 min.	2 minute	2 minute	√			√	√
18	Capacity	18 standard plasma	18 standard plasma	√			√	
19	Defrosting	Automatic	Automatic	√			√	√
20	Refrigerant	(CFC/HCFC free)	(CFC/HCFC free) R-508	√	√			
21	Power consumption at -50 °C	3 kW	2 kW	√			√	
22	Energy Consumption per freezing Cycle	6 kW	4 kW	√			√	
23	Freezing time depending on load and ambient temperature	45-60 minutes	30-60 minutes	√		√	√	√
24	Surface Temp. of body at -80°C inside temp after 48hrs	equal to ambient temperature	equal to ambient temperature	√		√	√	
25	Frosting at gate	Should never Seen	Never Seen	√			√	√
26	Moisture at door	Should never Seen	Never Seen	√			√	√
27	Defrosting time	10 minutes	10 minutes	√			√	√
28	Hold over time (Full load of plasma packet at -80°C to more than -30°C) at 25°C.	1 hours	1 hours	√			√	√
29	ON/OFF Cycle ( compressor ) suitability	90:10	80:30	√		√	√	

## What is DQ, IQ, OQ, PQ & MQ ?

### **Design Qualification:**

Design qualification (DQ) is the process of completing and documenting design reviews to illustrate that all quality aspects have been fully considered at the design stage. The purpose is to ensure that all the requirements for the final systems have been clearly defined at the start.

### **Installation Qualification:**

The Installation Qualification (IQ) execution; verifies that the equipment, and its ancillary systems or sub-systems have been installed in accordance with installation drawings and or specifications.

### **Operational Qualification:**

Operational qualification (OQ) is the process of testing to ensure that the individual and combined systems function to meet agreed performance criteria and to check how the result of testing is recorded.

### **Performance Qualification:**

Performance qualification (PQ), also called process qualification, is the process of testing to ensure that the individual and combined systems function to meet agreed performance criteria on a **consistent** basis and to check how the result of testing is recorded.

### **Maintenance Qualification:**

The MQ describes and documents any maintenance required on the equipment. This includes routine servicing and any repairs necessary. Details of any maintenance contracts are also documented in this section, together with a list of authorized service engineers. In addition, the MQ includes the routine cleaning of the equipment and also its ultimate disposal.

- Maintenance Qualification should be done yearly for an equipment so that it can be determined whether the equipment is usable or not.
- At the time of maintenance qualification, MQ should match IQ to ensure that the equipment is still working as it was working at the time of Installation, if not the equipment should be serviced or repaired properly.
- If the problem is beyond repairing then the equipment should retire with immediate effect.

