



# **DANGEROUS / HAZARDOUS CHEMICALS TRANSPORT WORTHINESS, PROCESS SAFETY AND EXPLOSIVE/PROPELLANT TESTING SYSTEMS**

**AS PER STANAG ,MIL, EUROPEAN STANDARDS  
& CLASSIFICATIONS**



**DESIGNED & MANUFACTURED BY:**



**Culture Instruments India LLP**



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# EXPLOSIVE PROPERTIES - BY FLAME THERMAL SENSITIVITY - KONEN TUBE

## APPLICATION :

To study the reaction of solids and liquids to intense heating under partial confinement.

## COMPLIANCE :

\* UN Transport of Dangerous Goods recommendations, Manual of Tests and Criteria and to the European Classification, Packaging and Labeling of Dangerous Substances in the European Union guidelines.

\* European Commission Directive 92/69/EEC, method A14: Explosive properties

## STANDARD ACCESSORIES/PARTS

25002-00	A Heavy and Sturdy 4 side closed enclosure	1 No.
25002-01	Bunsen Burners with tubing	4 Nos.
25002-02	Propane Flowmeter stand with valves	1 No
25002-03	Closing device (Consumable)	1 Set.
25002-04	Orifice Plate 6mm (Consumable)	1 No.
25002-05	Orifice Plate 2mm (Consumable)	1 No.
25002-06	Steel test tubes (Consumable)	1 No.
25002-13	Safety cutoff switch with solenoid valve	1 Set

## OPTIONAL ACCESSORIES & SPARES

25002-07	Orifice Plate 1mm	1 No.
25002-08	'K' type sensor 1mm dia	1 No.
25002-09	Temperature logger with sensor and software	1 Set
25002-10	Calibration chemical(Di-butylthelate)	1 No.(500ml)
25002-11	Lubricant	1 Tube
25002-12	Digital Propane flow controller	1 Set

## PRE-INSTALLATION ON-SITE REQUISITES

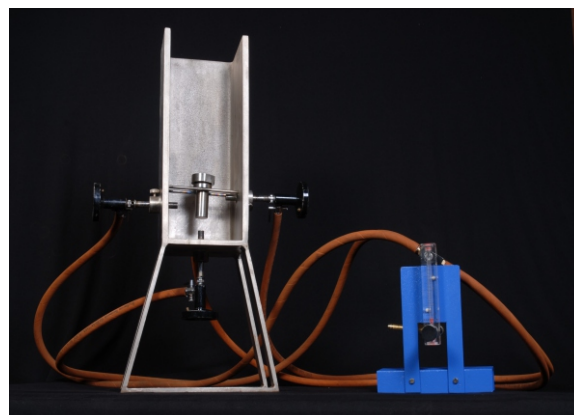
Space : A separate room/enclosure of minimum  
2' x 6' x 10'

Power: 5A plug point with 230V, 50Hz, 1 Ph Ac  
or 110v

Weight: 20 Kg.

The test enclosure should be grouted to the floor

The system should face a wall for safety reasons.





# EXPLOSIVE PROPERTIES - BY SHOCK (BAM FALL HAMMER)

## APPLICATION :

To study the impact sensitivity of solids and liquids.

Impact sensitivity is one of the most important characteristics of energetic materials defining their safety in handling, processing or transportation

## COMPLIANCE :

- \* UN Recommendation on the Transport of Dangerous Goods, Manual of Tests and Criteria, United Nations, New York, 2003 [13.4.2 Test 3(b)(i)]
- \* EN 13631-3:2004 – Explosives for civil uses - High explosives - Part 3: Determination of sensitiveness to friction of explosives
- \* STANAG 4487
- \* MIL-STD-1751A: Safety and Performance Test for the Qualification of Explosives (High Explosives, Propellants, and Pyrotechnics), Method 1024: BAM Friction Test
- \* TB 700-2, DoD Ammunition and Explosives Hazard Classification Procedures (2012), Section 5-3d
- \* Energetic Materials Testing & Assessment Policy Committee Manual of Tests, Volume 1, Issue 4, Nov 2007 (EMTAP TESTING); Test No 44
- \* GB/T 21566-2008: Test method for friction sensitivity of explosives substance
- \* European Commission Directive 92/69/EEC, method A14: Explosive properties

## P.CODE MODELS

25001-00	BFH-BC	Basic system for Non-Energetic Material tes
25001-01	BFH-BE	Basic system for Energetic Material testing
25001-02	BFH-A	Servo carriage with Digital Display, Precise loading and Touch sreen User interface with variable speed
25001-30	BFH-BEL	Basic system for Highly Energetic Material testing

## STANDARD ACCESSORIES/PARTS

25001-xx	A Heavy and Sturdy Base with 1 Meter graduated scale cum guiding system		1 set
25001-03	Anvil 100 x 70		1 set
25001-04	Locating Plate		1 No
25001-05	Intermediate Anvil		1 No.
25001-06	Locating Ring with orifice	(Consumable)	1 No.
25001-07	Impactors	(Consumable)	1 set
25001-08	Co-axial cylinder	(Consumable)	1 No.
25001-09	'O' ring for liquid samples	(Consumable)	1 No.
25001-10	Manual Release device		1 set
25001-11	5Kg. Falling weight		1 No.
25001-12	10Kg. Falling weight		1 No.



**25001-00/ BFH-BC**



## **PRE-INSTALLATION ON-SITE REQUISITES for Basic System**

Space : W x L x H: 450 x 450 x 1800 mm;

Weight: 340 kg

Concrete block with dimensions of  
700 x 700 x 600 mm for placing the instrument

## **FULLY AUTOMATIC SYSTEM**



**25001-02/ BFH-A**



## MODEL COMPARISON

SPECIFICATION MODELS	25001-00 BFH-BC	25001-01 BFH-BE	25001-02 BFH-A
ENERGY RANGE		0.05J TO 100J	0.005J TO 100J
ENERGY VARIATION			0.001J
DROP WEIGHTS	5KG & 10KG	0.25,0.5,1,2,5,10KG	0.25,0.5,1,2,5,10KG
DROP HEIGHT	1 METER	1 METER	1 METER
SCALE LC	0.5Cm	0.5Cm	0.1Cm
MINIMUM LIFT HEIGHT	0.5Cm	0.5Cm	0.1Cm
WEIGHT LIFTING	MANUAL	MANUAL	AUTOMATIC
QUICK CHANGE WINDOW	NA	PROVIDED	PROVIDED
ACCELERATION MEASUREMENT	NA	NA	PROVIDED
SUCTION DEVICE		OPTIONAL	PROVIDED
SAFETY ENCLOSURE	OPTIONAL	OPTIONAL	PROVIDED
DROP & HOLDING DEVICE	MANUAL	PNEUMATIC	PNEUMATIC
VIDEO RECORDING FACILITY	NA	NA	OPTIONAL
SMOKE DETECTION FACILITY	NA	NA	OPTIONAL
AUDIO RECORDING FACILITY	NA	NA	OPTIONAL
SAMPLE SCOOPS	OPTIONAL	OPTIONAL	PROVIDED

### 25001-30, Model: BFH-BEL :

Is similar to BFH-BE but with smaller weights of 25gm, 50gm, 100gm, 250gm, 500gm, 750gm and 1000gm for testing high sensitivity products

### USP's of Fully Automatic System (25001-02)

- \* PB sliding grooves on weights and Nickel plated slides for max. friction reduction.
- \* Touch Screen based programming console with data logging of energy, drop height and drop weight
- \* PC interface for direct data logging, monitoring and optionally control
- \* Automatic setting of required drop height and weight as per set energy value
- \* Automatic movement of the falling weight to the required height to deliver the set energy, Ensuring precise setting of drop energy
- \* Remotely operated pneumatic release device
- \* Measurement of Acceleration of the falling weight for precise determination of delivered energy
- \* Quick Weight Change Window
- \* Video recording of test (Optional)
- \* Smoke detection (Optional)



- \* Fully synchronised reporting with recording of all parameter (VIDEO, AUDIO, SMOKE DETECTION, FALL HEIGHT, ACCELERATION, ENERGY DELIVERED ETC)
- \* LAN enabled system for access from any where
- \* Common indentor for all weights hence reduced inventory and costs
- \* Light weight fire retardant or SS safety enclosure with PC window.
- \* Operation of 230 or 110V.

### OPTIONAL ACCESSORIES & SPARES

- 25001-13 0.25Kg. Falling Weight
- 25001-14 0.5Kg. Falling Weight
- 25001-15 1Kg. Falling Weight
- 25001-16 2Kg. Falling Weight
- 25001-17 40mm<sup>3</sup> Sampling Scoop
- 25001-18 10mm<sup>3</sup> Sampling Scoop
- 25001-19 Impact head heavy
- 25001-20 Impact head light
- 25001-21 Protective Case
- 25001-22 Pneumatic release device
- 25001-23 Spare PC View Window
- 09127-18 Test sieve of 0.5mm
- 09127-22 Test sieve of 1.0mm



**25001-01/ BFH-BE**

### PRE-INSTALLATION ON-SITE REQUISITES for Automatic system

Space : W x L x H: 450 x 450 x 1800 mm;

Weight: 340 kg

Concrete block with dimensions of 700 x 700 x 600 mm for placing the instrument

Power supply 230V, 50Hz, 1PH

Moisture free compressed air of 10Bar



**FALLING WEIGHTS**



**IMPACTORS AND GUIDE RING**



**LOCATING PLATE**



# EXPLOSIVE PROPERTIES - BY FRICTION

## APPLICATION :

To examine the sensitivity of solids and pastes to sliding (frictional) contact.

## COMPLIANCES :

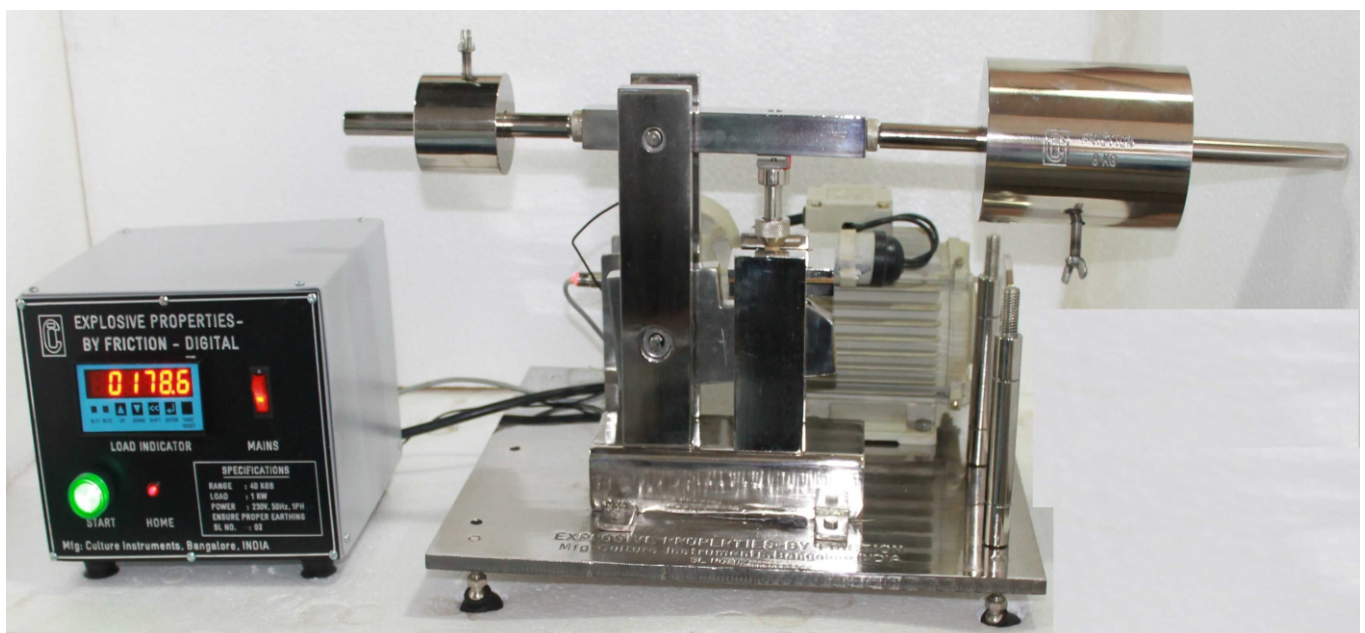
- \* UN Recommendation on the Transport of Dangerous Goods, Manual of Tests and Criteria, United Nations, New York, 2003 [13.4.2 Test 3(b)(i)]
- \* EN 13631-3:2004 – Explosives for civil uses - High explosives - Part 3: Determination of sensitiveness to friction of explosives
- \* European Commission Directive 92/69/EEC, method A14: Explosive properties
- \* STANAG 4487
- \* MIL-STD-1751A: Safety and Performance Test for the Qualification of Explosives (High Explosives, Propellants, and Pyrotechnics), Method 1024: BAM Friction Test
- \* TB 700-2, DoD Ammunition and Explosives Hazard Classification Procedures (2012), Section 5-3d
- \* Energetic Materials Testing & Assessment Policy Committee Manual of Tests, Volume 1, Issue 4, Nov 2007 (EMTAP TESTING); Test No 44
- \* GB/T 21566-2008: Test method for friction sensitivity of explosives substance

## P.CODE MODELS

25003-00	BFA-O	Motorised carriage with cantilever loading
25003-01	BFA-B	Motorised carriage with Digital Display and Precise loading
25003-02	BFA-A	Servo carriage with Digital Display, Precise loading and Touch Screen User interface with variable speed

## STANDARD ACCESSORIES/PARTS

25003-03	Porcelain Peg (pack of 50)	(Consumable)	1 Pack
25003-04	Porcelain Plate (pack of 50)	(Consumable)	1 Pack







## MODEL COMPARISON

SPECIFICATION MODELS	25003-00 BFA-O	25003-01 BFA-B	25003-02 BFA-A
LOADING RANGE	0-360N	0-360N	0-500N
MINIMUM LOAD	5N	1N	0.1N
LOADING LC	NA	1 N	0.1N
LOADING DISPLAY	NA	PROVIDED	PROVIDED
ALTERNATE LOADING SYSTEM	NA	PROVIDED	PROVIDED
MOTOR	Geared AC motor	Geared AC motor	Servo Motor
TEST RPM	FIXED	FIXED	VARIABLE
SUCTION DEVICE	NA	OPTIONAL	PROVIDED
SAFETY SHIELD	NA	OPTIONAL	PROVIDED
VIDEO RECORDING FACILITY	NA	NA	OPTIONAL
SMOKE DETECTION FACILITY	NA	NA	OPTIONAL
AUDIO RECORDING FACILITY	NA	NA	OPTIONAL
DATA RECORDING FACILITY	NA	NA	PROVIDED
SAMPLE SCOOPS	OPTIONAL	OPTIONAL	PROVIDED
PC INTERFACE	OPTIONAL	OPTIONAL	PROVIDED

## FULLY AUTOMATIC MODEL 25003-10 FEATURES

Servo drive motor with variable speed upto 300rpm

All SS construction

Mounted on a sturdy SS table with antistatic rubber sheet

Digital indication of Load

Reduced number of dead weights

Only 1 loading Arm required, hence no need for interchanging and hence reduced testing time

Also provided with a screw based loading system, making it very easy for any body to operate the instrument

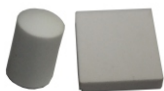
Touchscreen user interface with recording and REPORT GENERATION

Data logging of Sample details, Load, Speed and Result with Date/Time Stamp

**Optional** Programmable motorised loading

**Optional** PC based Video recording of the test.

Operation on 230 or 110V.



### **OPTIONAL ACCESSORIES**

25003-09	Spare Digital Load Indicator	1 Set.
25003-10	Spare Load Sensor	1 No.
25003-11	Calibration certificates	1 Set

### **PRE-INSTALLATION ON-SITE REQUISITES**

A Level base/floor or a sturdy platform or table

Power : 5A, 3 pin power supply

Test Sample



# SELF IGNITION TEST APPARATUS

## APPLICATION :

Useful as a preliminary screening test for solid substances. In view of the complex nature of the ignition and combustion of solids, the self-ignition temperature determined according to this test method should be used for comparison purposes only.

## COMPLIANCE :

- \* European Commission Directive 92/69/EEC, method A16:
- \* NF T 20-036 (September 85). Chemical products for industrial use. Determination of the relative temperature of the spontaneous flammability of solids

## P.CODE MODELS

25004-00 - SI-B      Basic  
25004-01 - SI-A      Automatic

### 25004-00 Self-Ignition Temperature Apparatus - Basic

It consists of an explosion proof all SS oven with provision to suspend a mesh cube containing the powder sample with 2 temperature sensors to monitor and record sample and oven temperature. The temperature is monitored using an external datalogger and analysed post the test time period.

### 25004-00 Self-Ignition Temperature Apparatus - Automatic

It consists of all the above, but instead of an external datalogger, the system it is provided with a 5", user friendly Colour touch screen integrated controller cum high speed data acquisition.

The various advantages of this system are as below

01. 5" Colour touch screen with user friendly interface
02. Automatic shutdown at end of test
03. Automatic detection of Self ignition temperature- regular
04. Automatic shutdown if sample melts without ignition
05. Software free, hence no issues of licensing.
06. Automatic Report generation
07. High speed Data acquisition
08. 100% GLP compliance
09. Automatic Sensor(s) failure detection
10. LAN Enabled, hence does not require a dedicated PC



## STANDARD ACCESSORIES/PARTS

25004-xx	All SS Heavy duty Oven with slow heating rate upto 400°C	01 Set
25004-02	2 Channel Data logger with Sensors	01 Set
25004-03	SS Mesh sample holder	01 No.

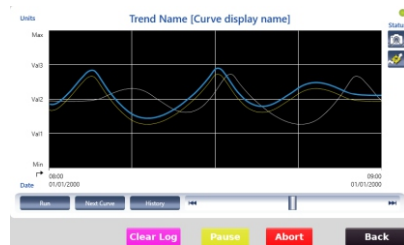
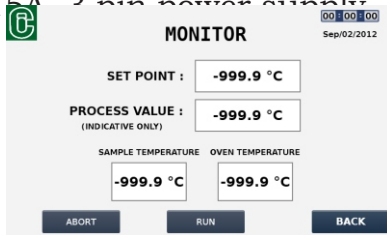
## OPTIONAL ACCESSORIES

25004-03	Spare SS Mesh sample holder	01 No.
25004-04	Spare Heater	01 Set
25004-05	Spare Chamber Sensor	01 No.
25004-06	Spare Sample Sensor	01 No.
25004-07	Spare Mesh Basket	01 No.

## PRE-INSTALLATION ON-SITE REQUIS

A sturdy platform or table

Power : 15A 2 pin power supply



25004-01



25004-00



# AUTO-IGNITION TEMPERATURE

## APPLICATION :

For determination of hot or cool flame ignition of solids, liquids, gases or their mixtures at atmospheric pressure. Ignition temperature is a measure of the tendency of the substance to ignite when in contact with hot surfaces in air.

## COMPLIANCES :

- \* ASTM E659 – 78: Standard Test Method for Autoignition Temperature of Liquid Chemicals
- \* EN 14522: Determination of the auto ignition temperature of gases and vapours
- \* EN 15188: Determination of the spontaneous ignition behaviour of dust accumulations
- \* NF T 20-036: Chemical products for industrial use. Determination of the relative temperature of the spontaneous flammability of solids.

## 25012-11 Auto-Ignition Apparatus - Automatic

It consists of a vertical tube furnace with a high precision temperature controller, a Test Round bottom flask, with holder assembly. An adjustable mirror for visual determination if required. 3 sensors for monitoring of flask external temperatures and 1 sensor to monitor the sample temperature. It is provided with a 5" , user friendly Colour touch screen based integrated profile controller cum high speed data acquisition system.

Supplied complete with a syringe for liquid sample dosing, hot air gun for cleaning and interface cables.

## The various advantages of this system are as below

01. 5" Colour touch screen with user friendly interface
02. Automatic profile setting
03. Automatic determination of Hot flame ignition point
04. Automatic determination of Ignition delay
05. On-line graph plotting
06. Automatic Report generation
07. Barometric pressure Indication (optional)
08. 100% GLP compliance



09. Automatic Heater failure detection
10. Automatic Sensor(s) failure detection
11. LAN Enabled, hence does not required a dedicated PC
12. Software free, hence no issues of licensing.

### STANDARD ACCESSORIES/PARTS

25012-00	Digital Vertical Tube Furnace	01 No.
25012-01	Viewing Mirror	01 No.
25012-02	Data Logger	01 No.
25012-03	500ml Glass flask (Consumable)	01 No.
25012-05	Outer sensors (Consumable)	03 No.
25012-06	Inner sensor (Consumable)	01 No.
25012-07	Syringe	01 No.
25012-08	Flask holder cum lid	01 Set

### OPTIONAL ACCESSORIES

- 25012-09 Calibration Certificate for logger with sensors
- 25012-04 250ml Glass flask
- 25012-10 Spare heater
- 25012-05 Outer sensors
- 25012-06 Inner sensor
- 25012-08 Flask holder cum lid
- 25012-12 Inert gas purging system

### PRE-INSTALLATION ON-SITE REQUISITES

- A sturdy platform or table
- A Dark Room
- Power : 15A, 3 pin power supply
- Aluminum Foil



REPORT		00:00:00	
		Sep/02/2012	
SAMPLE NAME :	Alter Mark	OPERATOR NAME :	Alter Mark
SAMPLE BATCH :	Alter Mark		
AMBIANT TEMPERATURE :	-9999.9	BAROMETRIC PRESSURE :	
HOT FLAME AUTO IGNITION TEMPERATURE :	-9999.9		
IGNITION DELAY TIME :	HH:MM:SS.hhh		
Tested By :		Approved By :	
		BACK	



## TIME/PRESSURE TEST APPARATUS

### APPLICATION :

To examine the effect of an ignition on substances under confinement, the possibility that ignition might lead to a pressure rise with explosive violence

### COMPLIANCES :

\* European Commission Directive 92/69/EEC, method A21

\* UN Transport of Dangerous Goods recommendations, Manual of Tests and Criteria

### P.CODE MODELS

25004-00 - TP-B      Basic

25004-01 - TP-A      Automatic

### 25007-00 Time Pressure Apparatus - Basic

It consists of mains 2 parts. First, a SS pressure vessel with a high precision, high speed pressure sensor with holding stand and Second, a Control unit, with the power source, logger and pressure indicator. The pressure sensor is connected to a data acquisition system with either a usb interface or direct pc interface as per customers requirement to record only pressure vs time.

Supplied complete with a electrode and bursting disk

### 25007-01 Time Pressure Apparatus - Automatic

It is supplied with a tool free, easy operating, quick fit test vessel, along with a 5" , user friendly Colour touch screen based integrated controller cum high speed data acquisition system for more accurate, fully automated and faster testing.

The various advantages of this system are as below

01. 5" Colour touch screen with user friendly interface
02. Automatic Leak test
03. Automatic Coil break detection - Helps reduce test timing.
04. The pressure vessel is of tool free, quick couple design
05. On-line graph plotting
06. Automatic Report generation
07. Recording and reporting of current delivery
08. 100% GLP compliance
09. Automatic Sensor(s) failure detection
- 10, High speed Data acquisition
11. LAN Enabled, hence does not required a dedicated PC
12. Software free, hence no issues of licensing.



## STANDARD ACCESSORIES/PARTS

25007-01/10	Test Vessel		01 Set.
25007-02	Control Box with power supply and logger		01 No.
25007-03	Pressure sensor		01 No.
25007-04	Ignition coil with sleeve	(Consumable)	02 No.
25007-05	Washers	(Consumable)	02 No.
25007-06	Connecting Terminals		01 Set.
25007-07	Bursting disk	(Consumable)	02 No.

## OPTIONAL ACCESSORIES/SPARES

25007-01	Spare Test Vessel	
25007-10	Spare Test Vessel (for Automatic model only)	
25007-03	Spare Pressure sensor	
25007-04	Ignition coil with sleeve (Pack of 30)	
25007-06	Connecting Terminals	
25007-07	Bursting disk (Pack of 30)	
25007-09	Bursting disk (Aluminium ) (Pack of 100)	

## PRE-INSTALLATION ON-SITE REQUISITES

A sturdy platform or table

A partially enclosed space, or Fume hood

Power : 15A, 3 pin power supply







# MODIFIED HARTMAN'S TUBE

## APPLICATION :

Used to determine whether a powder or dust will explode when exposed to an ignition source when in the form of a dust cloud. It is a preliminary test, to be followed with more intensive testing.

The system is Automatic in nature with automatic dispersion of sample and initiation of spark and display of st-0, st-1 or st-2

## STANDARD ACCESSORIES/PARTS

25014-00	1.2Litre Glass Test Vessel	01 No.
25014-01	Safety Enclosure	01 No.
25014-02	Top Lid assembly with flap and sensor	01 Set.
25014-03	Sparking Power Supply	01 No.
25014-04	Sparking Electrodes	02 No.
25014-05	Electrode connecting leads	02 No.
25014-06	Electrode Holder	02 No.
25014-07	Electrode Holder 'O'	04 No.
25014-08	Air release system with atomiser and sample holder	01 Set

## OPTIONAL ACCESSORIES/SPARES

25014-09	Glowing coil	(Consumable)	02 No.
25014-10	Glowing coil holder		01 No.
25014-11	Glowing coil Power Supply		01 No.
25014-12	Spare flap		01 No.
25014-13	Spare position sensor		01 No.
25014-14	Spare Pressure sensor		01 No.
25014-15	Spare Solenoid Valve		01 No.
12010-00	Vacuum Oven		01 No.
09127-	Brass Test sieve		01 No.
	Digital Moisture Balance		01 No.

## PRE-INSTALLATION ON-SITE REQUISITES

A Fume Hood with regulated air draft

Power : 15A, 3 pin power supply

Clean dry and regulated air supply Min. 8 Bar.





## MINIMUM IGNITION ENERGY

### APPLICATION :

To determine the exact and precise energy and concentration at which a dust cloud is combustible or will ignite.

**COMPLIANCE** : ASTM E2019 ; IEC-61241-2-3; EN-13821

### FEATURES

- a. Energy Range : 1mJ to 2000mJ
- b. Dispersion pressure : 7Bar (0.7mpa)
- c. Automatic setting of required Voltage, Current and time
- d. Colour Touch screen user interface
- e. LAN Enabled system
- f. Automatic Pre-run to determine the exact energy delivered
- g. Digital Display of all parameters on the touch screen controller
- h. Auto-detection of ignition by means of a thermal sensor
- i. Recording of all parameters like Required Energy, Actual Dissipated energy, air Pressure, Voltage, Current, sample weight, Concentration ambient temperature, humidity and Result
- j. Can be operated as a stand alone or via PC
- k. Integrated into a fume cupboard for easy connection to your ventilation
- l. Can be interfaced to a balance to record sample weight (**OPTIONAL**)
- m. 100% GLP compliant with password protection at every level and data + event log of all parameters and functions.
- n. Remote diagnostic and support (**OPTIONAL**)
- o. Quick connection/setup design for fast and easy operation.



- p. Can be programmed to auto run with preset energy raise and can also instruct the user to place a certain amount of sample for ignition, hence controlling the concentration. Saving costly skilled manpower. (Available only with balance option)
- q. Provision to calibrate all parameters and sensors connected to the system.
- r. Test vessel made of Borosilicate Glass.

### **OPTIONAL ACCESSORIES/SPARES**

- \* Balance with communication cable
- \* Remote diagnostic capability and function
- \* Calibration of all parameters and sensors
- \* Spare Pressure sensor
- \* Spare Solenoid Valve
- \* Spare Electrode Holder
- \* Spare Electrodes
- \* Vacuum Oven
- \* Test sieve

### **PRE-INSTALLATION ON-SITE REQUISITES**

Ventilation system to connect to the fume hood

Power : 15A, 3 pin power supply

Clean dry and regulated air supply Min. 8 Bar.





# VACUUM STABILITY

## APPLICATION :

To study the chemical sensitivity and stability of solids and liquid explosives in nature. Designed and manufactured to permit testing to UN/NATO and other similar standards for Dangerous Goods and explosives.

The instrument continuously monitors and records the pressure change in the tube containing the sample at set temperature.

The apparatus is supplied complete with heating block, glass assemblies, pressure sensors and high speed recording device with pc interface.

## COMPLIANCE :

- \* STANAG 4556: Explosives, Vacuum Stability Test
- \* STANAG 4147: Chemical Compatibility of Ammunition Components with Explosives
- \* STANAG 4022/4, 4023, 4230, 4284 and 4566 Stability tests of energetic ingredients.

## SPECIFICATION

Temperature range	: 50 – 160 °C/260 °C
Temperature control accuracy	: ±0.1 °C
Temp. Display Resolution	: ±0.1 °C
Pressure transducer range	: 0 to 100 kPa, accuracy: 0.25%
Barometric pressure transducer	: 80 to 120 kPa, accuracy: 0.25%
Glass Test Vessels	: 18dia x 160mmL, volume approx. 25 ml
Sampling rate	: 10 s-1
Minimal vacuum	: 0.3 kPa
Typical sample weight	: 5g

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF AND ALARM
- \* OVER PRESSURE CUTOFF AND ALARM
- \* TEMPERATURE SENSOR FAILURE CUTOFF
- \* HEATER FAILURE TRIP AND ALARM
- \* DUAL TEMPERATURE CONTROLLERS WITH ALARM FUNCTIONS IN BOTH
- \* EXTERNAL CIRCULATION PROVISION



## PRE-INSTALLATION ON-SITE REQUISITES

A Fume Hood with regulated air draft  
Power : 15A, 3 pin power supply  
PC or Laptop (optional)



## P.CODE MODELS

25015-00	VST-1B	With Single Test Block
25015-01	VST-2B	With Dual Test Block

## STANDARD ACCESSORIES/PARTS

25015-xx	10 Test Block	01/02 No.
25015-02	Glass test vessels	12/24 No.
25025-12	Quartz test vessels	12/24 No.
25015-03	Pressure sensors 0-100Kpa	10/20 No.
25015-04	Barometric Pressure Sensor	01 No.
25015-05	SS conical adapter	10/20 No.
25015-06	10 way Manifold	01/02 Set
25015-07	SS Pressure sensor & Glass tube stand	01 Set.
25015-08	Rotary Vane Pump	01 No.
	Vacuum Grease 500gm	01 No.
	Glass funnel	01 No.
25015-11	Fully automatic PLC based control with 5.7" colour Touch screen console with LAN connectivity and data acquisition speed of 10s-1 and higher	

## OPTIONAL ACCESSORIES/SPARES

25015-01	Spare Glass test vessel
25015-02	Spare pressure Sensor
25015-04	Barometric Pressure Sensor
25015-09	Spare Heaters for Block
25015-10	Temperature Sensor
	Hand Held Temp. Indicator

Sep/02/2012  
00 00 00

REPORT

SL. NO.	BATCH	SAMPLE	DENSITY	MASS	GAS EVOLVED	VOL/DENSITY
1.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
2.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
3.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
4.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
5.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
6.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
7.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
8.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
9.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0
10.	BATCH	SAMPLE	0.9999999.0	0.9999999.0	0.9999999.0	0.9999999.0

TESTED BY:

APPROVED BY:  PRINT





# METHYL VIOLET TEST APPARATUS

## APPLICATION :

This instrument is used for determination of chemical stability of nitrocellulose, gun propellants, nitroglycerine and other nitrate esters.

In the Methyl Violet Test, the sample is heated under standardized conditions in a test tube until nitrogen oxides above the sample are detected by means of a standard methyl violet paper. The time elapsed from the start of heating until the detection is recorded as a chemical stability value.

The apparatus is supplied complete with heating block, glass assemblies, methyl violet strips and cork with hook

## COMPLIANCE :

\* MIL-STD-286C

## P.CODE    MODEL

25016-00    MVT-B    Methyl Violet Test Apparatus

## SPECIFICATION

No. of Holes	: 10/12
Temperature range	: 50 – 180 °C
Temperature control accuracy	: ±0.2 °C
Temp. Display Resolution	: ±0.1 °C
Indicator	: Methyl Violet Indicator Paper

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF
- \* TEMPERATURE SENSOR FAILURE CUTOFF





# ABEL HEAT TEST APPARATUS

## APPLICATION :

Apparatus for determining the thermal stability of nitrocellulose powders and other nitro-containing explosives, according to the Abel-Test at 80°C.

The apparatus is supplied complete with heating block, glass test tubes, indicator paper and cork with hook.

## COMPLIANCE :

- \* STANAG 4178
- \* DEFSTAN 13-189/1
- \* AOP-7, ČOS137601

## P.CODE MODEL

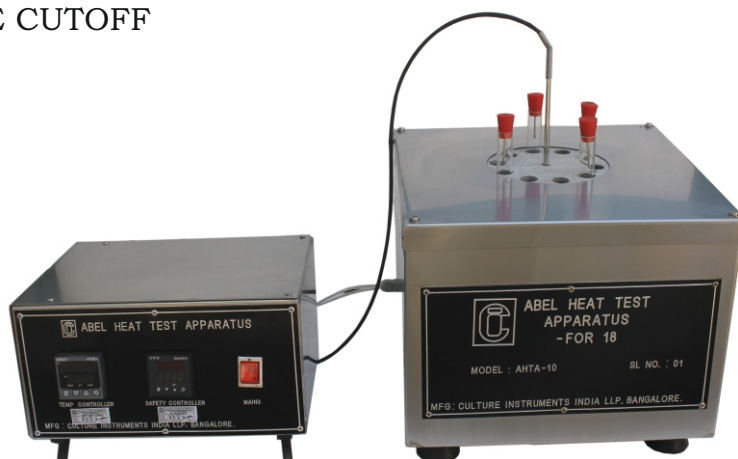
25017-00 AHT-B Abel Heat Test Apparatus

## SPECIFICATION

Temperature range	: 50 – 100 °C
Temperature control accuracy	: ±0.2 °C
Temp. Display Resolution	: ±0.1 °C
Glass Test Vessels	: 17dia x 135mmL, volume approx. 20 ml with 3 markings
Cork /Stopper	: Silicone cork with platinum hood with glass impregnation for height adjustment
Indicator	: Potassium Starch Iodide paper strips

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF
- \* TEMPERATURE SENSOR FAILURE CUTOFF





# BERGMANN JUNK TEST APPARATUS

## APPLICATION :

To study the chemical sensitivity and stability of solids and liquid explosives in nature. Designed and manufactured to permit testing to UN/NATO and other similar standards for Dangerous Goods and explosives.

The instrument continuously monitors and records the pressure change in the tube containing the sample at set temperature.

The apparatus is supplied complete with heating block, glass assemblies, pressure sensors and high speed recording device with pc interface.

## COMPLIANCE :

\* STANAG 4178 5C or CQAE

## P.CODE MODEL

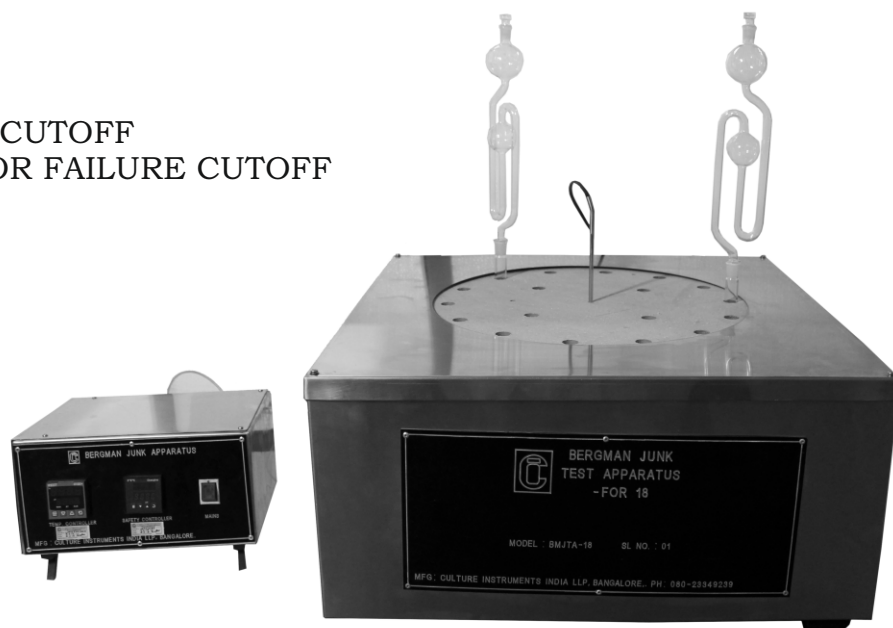
25018-00 BJT-B BERGMAN JUNK HEAT Test Apparatus

## SPECIFICATION

Temperature range	: 50 – 160 °C
Temperature control accuracy	: ±0.2 °C
Temp. Display Resolution	: ±0.1 °C
Glass Test Vessels	: 19dia x 270mmL,
Globe Extenders	: Double globe design
Stand	: To house 6-12 assemblies

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF
- \* TEMPERATURE SENSOR FAILURE CUTOFF







# HEATING BLOCKS

## APPLICATION :

Heating Blocks for the determination of the chemical stability of energetic materials

All Systems for testing thermal stability consist of temperature controllers and heating blocks, each containing multiple holes of appropriate size.

These are designed as per user requirement with high precision and accuracy of heating control and are oil/water free hence are low maintenance and hassle free.

## SPECIFICATION

Temperature range	: 50 – 300 °C
Temperature control accuracy	: $\pm 0.5$ °C
Temp. Display Resolution	: $\pm 0.1$ °C
Safety Controller	: Digital
Blocks	: Single or Double
Timer	: Auto cutoff timer to end the test (OPTIONAL)
Holes	: As per test and user requirement
Accessories	: Glass/Quartz tubes and others as required.

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF (OPTIONAL)
- \* TEMPERATURE SENSOR FAILURE CUTOFF





# EXPLOSION/DETONATION TEMPERATURE TEST APPARATUS

## APPLICATION :

The 'CI' - ETA is the most frequently used quality-control instrument in the manufacture of explosives, pyrotechnic mixtures and propellants. It can also determine **time-to-explosion data (time needed for the ignition of a sample at a given constant temperature)**. It, provides a fast and simple evaluation of the thermal sensitivity of energetic materials with up to 6 samples simultaneously

It automatically detects explosion temperature by means of thermocouples, and generates data both in report and graphical format for easy evaluation, without user intervention.

The apparatus is supplied complete with heating block, glass tubes, temperature sensors, **Touch screen Colour user interface, high speed recording device with usb based data transfer and ethernet capability. Inbuilt memory to store 10000+ records and logs**

## COMPLIANCE :

- STANAG 4491

## P.CODE MODEL

25020-00

AET

Automatic Explosion Temperature Recorder

## SPECIFICATION :

Temperature range	: 50 – 180 °C
Temperature control accuracy	: ±0.1 °C
Temp. Display Resolution	: ±0.1 °C
Sensor(s)	: Thermocouple
DAQ speed	: 10s-1
User Interface	: Colour Touch screen
Reporting	: Automatic

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF
- \* TEMPERATURE SENSOR FAILURE CUTOFF
- \* AUTOMATIC COOLANT CIRCULATION PROVISION





# WATER JACKETED OVENS

## APPLICATION :

For Sensitive sample drying or ageing. The test chamber is heated indirectly by means of water from all sides, for uniformity and to isolate the samples from any electrical sparks, which may arise or from high temperatures which may occur due to any malfunction in a regular oven.

## P.CODE    MODEL

25019-00    HAO-14W Water jacketed oven 14"x14"x14"

25019-01    HAO-18W Water jacketed oven 18"x18"x18"

## SPECIFICATION

Temperature range	: 50 – 80 °C (GENERALLY 75°C)
Temperature control accuracy	: ±0.5 °C
Temp. Display Resolution	: ±0.1 °C
Timer	: Auto cutoff timer to end the test after set test time

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF (OPTIONAL)
- \* TEMPERATURE SENSOR FAILURE CUTOFF
- \* PRESSURE RELIEF
- \* WATER LEVEL INDICATION
- \* OVERLOAD PROTECTION

## On-site Requirements

- \* Distill Water - 50-70ltr
- \* Vibration free level Platform/table
- \* 12-18A, 230V, 50Hz, 1Ph power supply





# THERMAL STABILITY TEST APPARATUS

## APPLICATION :

The apparatus is used for the determination of the thermal stability of all types of propellants, explosives and dangerous substances in order to meet the criteria for safe handling and transportation.

The apparatus is supplied complete with thermal chamber, glass assemblies, pressure sensors and recording device with pc interface.

## COMPLIANCE :

- \* UN Recommendation on the Transport of Dangerous Goods, Manual of Tests and Criteria, United Nations, New York, 1999, Test 3 ©
- \* EN 13631-2:2002, Explosives for civil uses - High explosives - Part 2: Determination of Thermal Stability of Explosives

## P.CODE MODEL

25019-00	TS75-B	Thermal Stability Apparatus 75
25019-01	TS75-A	Thermal Stability Apparatus 75 AUTOMATIC

## SPECIFICATION

Temperature range	: 50 – 80 °C (GENERALLY 75°C)
Temperature control accuracy	: ±0.1 °C
Temp. Display Resolution	: ±0.1 °C
Glass Test Vessels	: with sealing top assembly and holding stand
Data Recording/logging	: Sample temperature & Pressure Reference temperature & Pressure Oven temperature Test vessel surface temperature
Timer	: Auto cutoff timer to end the test after set test time (GENERALLY 48 HOURS)

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF
- \* TEMPERATURE SENSOR FAILURE CUTOFF
- \* HIGH PRESSURE CUTOFF
- \* EXPLOSIVE RESISTANT DOUBLE GLASS VIEW WINDOW FOR SAFE OBSERVATION
- \* AUDIO VISUAL ALARM ON EVENT





# DIFFERENTIAL THERMAL ANALYSER

## APPLICATION :

The 'CI' - DTA is a very versatile compact equipment with application across multiple fields, for both R & D and QC requirements. It is used extensively for determination of Melting Points, Thermal decomposition, Phase change(transformation), Purity and many other similar studies and applications.

The DTA-E model is different in the sense that it is a all metal furnace with probe type sensor in direct contact with the sample to prevent damage to the instrument due to explosion.

The system primarily consists of a high stability furnace with 2 high precision sensors coupled to a high speed Data Acquisition System and pc based software for user analysis and compilation.

## COMPLIANCE :

- STANAG 4515

## P.CODE      MODEL

25021-00	DTA	Differential Thermal Analyser
25021-00	DTA-E	Differential Thermal Analyser for Explosives

## SPECIFICATION :

Temperature range	: 50 – 800/400(E) °C
Temperature control accuracy	: ±0.1 °C
Temp. Display Resolution	: ±0.1 °C
Sensor(s)	: Thermocouple
DAQ speed	: 30s-1
User Interface	: Colour Touch screen
Reporting	: Automatic

## SAFETY FEATURES

- \* OVER TEMPERATURE CUTOFF
- \* TEMPERATURE SENSOR FAILURE CUTOFF
- \* AUTOMATIC COOLANT CIRCULATION PROVISION

## On-site Requirements

- \* Air draft free Location
- \* Vibration free level Platform/table
- \* Coolant/water circulation system
- \* 5A, 230V, 50Hz, 1Ph power supply



## **OTHER TEST EQUIPMENT FOR SAFETY AND EXPLOSIVES TESTING**

BOMB CALORIMETER  
SETTING TIME OF TNT  
CLOSED CUP FLASH AND FIRE POINT APPARATUS  
OPEN CUP FLASH AND FIRE POINT APPARATUS  
POWDER RESISTIVITY TESTER  
LIQUID RESISTIVITY TESTER  
REACTION/PRESSURE TEST VESSEL  
20LTR SPHERE  
BALLISTIC MORTAR/BALLASTIC PENDULUM,  
GAS QUANTITY,



OTHER SPECIAL PURPOSE TESTING SYSTEMS CAN BE DESIGNED AND DEVELOPED AS PER REQUIREMENT OR AS PER REQUIRED STANDARDS.

**NOTE : DUE TO CONTINUOUS DEVELOPMENT DESIGN SUBJECT TO CHANGE WITHOUT PRIOR INTIMATION.**

**DESIGNED & MANUFACTURED BY:**



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