

SPECIFICATIONS: “DIGITAL UNIVERSAL TESTING MACHINE”

Code No. _____

Qty. – 01

S.No.	Description of requirement	Required
1	Capacity	Upto 20 Ton
2	Test Speed	
2.1	Minimum test speed	0.01 mm/min.
2.2	Maximum test speed	500 mm/min.
2.3	Full & return speeds	Compatible with above speed
2.4	Maximum force at full speed	Compatible with full speed
3	Dimensions and features of cross heads of UTM	
3.1	Width	Preferably in the range of 1000-1200 mm
3.2	Depth	Preferably in the range of 500-600 mm
3.3	Height	Preferably in the range of 1600-2000 mm
3.4	Total crosshead travel	Preferably in the range of 1200-1400 mm
3.5	Total vertical test space	Preferably in the range of 1200-1400 mm
4	Frame Stiffness	Medium (Higher is preferable)
5	Data Acquisition	As per ASTM E 1856
6	Mechanical test to be carried on UTM	
6.1	Tensile Test	Must able to performed all mentioned test
6.2	Compressive Test	
6.3	Adhesion Test	
6.4	Ductility Test	
6.5	Fatigue/Cyclic Test	
6.6	Flexure / Bending	
6.7	Shear/Torsion Test	
7	Operational Condition	

7.1	Test Temperature	Room Temperature
7.2	Test Humidity	Normal
8	Display/User interface	Digital Readout/Interface
8.1	Video/Graphic Display	Must be there
8.2	Computer Interface	Must be there (Via USB or Ethernet)
8.3	Application Software (Controlled by PC)	Must be there (Suitable and should be compatible with OS)
8.4	Strain Measurement System	Industry Standards that should be followed and their document Grade/Class Range limits
9.1	ASTM E 83 BS 3846 A ISO 9513	Must follow any of mentioned standards
9.2	Accuracy	~ 0.5 μ m
9.3	Repeatability	~0.25 μ m
9.4	Discrimination / Resolution	0.0004% of Range
10	Force measurement System	
10.1	Accuracy	~+ ₋ the larger of 0.5 % of reading or 0.01 % of capacity
10.2	Repeatability	~+ ₋ the larger of 0.25 % of reading or 0.005 % of capacity
	Industry standard that should be followed	
	ASTM E4	
10.3	BS 1610	Must follow one the mentioned standard
	DIN 51221	
	ISO 7500	
11	Load frame & drive system specification	
	~+ 0.25mm (0.01 in.) maximum over full	
11.1	Lateral Motion	Crosshead Travel
11.2	Speed accuracy	~+ 0.1% of set

		speed for all forces within the capacity of the machine when average over the larger of 15 seconds or 50mm (2 inches)
11.3	Position Resolution	~ 0.6 μm (25 micro inches) standard/0.06 μm is optional with high resolution encoder
11.4	Position accuracy	The greater of 0.025 mm (0.001 in.) or 0.025% of movement
12	Measuring Units	
12.1	Micrometer type	Reading to 0.001 mm (0.00005 in)
12.2	Caliper type	Reading to 0.01mm (0.0005 in)
12.3	Dial Indicator type	Reading to 0.025,0.0025 or 0.00025 mm (0.001,0.0001 or 0.00001 in)
13	Standard to be followed	
	ASTME4- Practice for Force verification of testing machine	
	ASTM E74- Practice for calibration of Force measuring instrument for verifying the force indication of Testing machine	
	ASTM E83- Practice for verification and classification on extensometer systems	Must follow one the mentioned standard relating to UTM and testing of materials
	ASTM E E1012- Practice for verification of test frame and specimen alignment under tensile and compressive Axial force application	
	ASTM E1856- Standard guide for evaluating computerized data acquisition systems used to acquire data from	

	Universal Testing Machines	
	ASTM D882	
	ASTM D1938	
	ASTM D3330	Must follow one the mentioned standard relating to UTM and testing of materials
	ASTM F904	
	ASTM D952	
	ASTM E143	
	ASTM E190	
	ASTM E 9	
14	Transmission	Hydraulic Type
15	Should be suitable for mechanical testing of following material	
16	Tension Grip	Grip for rod, grip for plate
17	Compression Grip	Bending grip
	Stainless Steel	
	Modified Stainless Steel such as SS 316, SS 316 LN	Must follow one the mentioned standard relating to UTM and testing of materials
18	Polymer such as FRP, Polyamides, Epoxy esters	
19	Different Metals such as Copper, Aluminum Alloys etc.	

SPECIFICATIONS: “Digital Fabric Tensile Testing Machine.”

Code No. _____

Qty. – 01

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Capacity of Tester	1 kg to 500kg.
2	Traverse Speed	300 & 100mm/min.
3	Min. Grip Separation	25 mm
4	Max. Grip Separation	1000 mm
5	Related standard	ASTM D434, ASTM D1578, ASTM D 5034,

		ASTMD 5035,BS 1 BSEN 1002-3, DIN 51221
6	S Type load cell Fixed with Top Grip.	
7	Top Grip is Fixed and Bottom Grip is Movable Type.	
8	Elongation measurement by Steel Scale and Digital Counter Meter Both.	
9	Digital Display of Load and Elongation.	
10	Peak value of last test can be read.	
11	User friendly key panel with switch of Zero setting and value peak value of last test.	

SPECIFICATIONS: “Digital Spring Testing Machine”

Code No. _____

Qty. – 01

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Capacity of Tester	50 kg.
2	Minimum capacity	0.01 kg.
3	Free length of tension spring	150mm (approx.)
4	Diameter of compression spring	10mm to 100 mm
5	Maximum Cross Head Travel	100 mm(approx.)
6	Force Measuring Resolution	1 gm.
7	Display	(i)digital display of force (ii) digital display at displacement
8	Accessories of tension assembly, Graduation scale.	set of ground MS plate, set hooks, encoder meter

SPECIFICATIONS: Digital Hardness Tester Shore “A”

Code No. _____

Qty. – 02

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Scale	Shore “A”
2	Applications	Soft elastomers, soft rubber etc.
3	Min reading	0.5

4	Measuring Range	0-100
5	Type	Compact
6	Function	data hold, Zero – set, SPC data output, Power on/off

SPECIFICATIONS: Digital Hardness Tester Shore “D”

Code No. _____

Qty. – 02

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Scale	Shore “D”
2	Applications	Hard elastomers, plastics, hard rubber, ebonite etc.
3	Min reading	0.5
4	Measuring Range	0-100
5	Type	Compact
6	Function	data hold, Zero – set, SPC data output, Power on/off

SPECIFICATIONS: “Granite Surface Plate (Black)”

Code No. _____

Qty. – 02

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Size	2000x1000mm Approx.
2	Thickness	150mm Approx.
3	Grade	‘0’
4	Flatness	0.007 mm

SPECIFICATIONS: “Digital Vickers Hardness Testing Machine”

Code No. _____

Qty. – 01

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Total Load	5, 10, 20, 30,50, kg
2	Max. Test Height(mm)	200

3	Scale least count(mm)	0.001
4	Throat depth(mm)	135
5	Machine Dimension (Approx.)mm	L 585 x W 290 x H 860
6	Weight (Approx.)	70 kg.
7	Power Supply	220VAC, 50Hz, 1Phase
8	Hardness value	Digital LCD
9	Maesuring Range	1HV-4000 HV
10	Loading Mode	Fully Automatic
11	XY Table	100*100 mm Min

SPECIFICATIONS: “Digital Brinell Hardness Testing Machine”

Code No. _____

Qty. – 01

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Load	250 to 3000 in stages of 250 kgf
2	Initial Load	Nil
3	Max Test Height	380 mm
4	Depth of Throat	200 mm
5	Max depth of Elevating screw below base	180 mm
6	Size of Base	370 mm x 670 mm
7	Machine Height	1185 mm
8	Net Weight (approx.)	500 kg
9	Drive Motor	0.5 - 415 V/p HP

SPECIFICATIONS: “Digital Rockwell Hardness Testing Machine”

Code No. _____

Qty. – 01

<u>Sr.No.</u>	<u>Description of requirement</u>	<u>Required</u>
1	Preliminary test force	98.07N (10 kgf), 29.42 (3 kgf)
2	Test force	588.4N (60 kgf), 980.7N (100 kgf), 1471N (150kgf), 147.1N (15 kgf)
3	Hardness increment	0.1

4	Load Control	Automatic (loading, duration, unloading)
5	Anvil	Flat (Ø64mm)
6	Max. Specimen height	140mm
7	Max. Specimen Depth	122mm (from the centre of the indenter Shaft)
8	Data Output	Digimatic code (SPC) and centronics
9	Dwell Time	1 to 99 seconds selectable

DELIVERY PERIOD INCLUDING INSTALLATION & COMMISSIONING:

The delivery period including installation & commissioning of all of the machines at the destination mentioned in Para 1 on page no. 02 of the tender documents will be _____ months from the date of placement of Purchase Order/work contract.

WARRANTY:

The Entire machine inclusive of all system/accessories should be covered under warranty for a period of 24 months from the date of commissioning.

Note:

1. Machine shall be supplied with 3 sets of comprehensive operation and maintenance manual.
2. Breakdown calls to be attended within 48 hrs.
3. Supply to be done on Turnkey Basis. ALIMCO shall provide electrical supply point near to the place of installation.
4. Civil foundation details and drawings with specifications to be provided by the tenderer.
5. Total power consumption (in KW) to be provided by the tenderer.
6. CAD/CAM solution to be provided by the tender