



COMPUTERISED DEEP THROAT BRINELL HARDNESS TESTING MACHINE

With Servo Controlled Loading, Load Cell Based & With Movable Tables
Model: TEXMACO - 3000 - PC (SERVO)



Mastering the fine art of testing

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Model : TEXMACO-3000-PC (SERVO).

Applicability & Range Of Application :

- The Semi-Automatic Deep throat Brinell hardness testing machine is an inline production machine, highly suitable for batch testing of heavy jobs.
- The machine has a C-frame fabricated rigid design with a deep throat of 400 mm & a vertical clearance of 600 mm
- This machine is more suitable for heavy jobs in the form of wheels, discs, plates, cylinder blocks, etc.
- The indentation measurement is with Optics, CCD Camera & PC. It is therefore very easy & reliable. After measurement, the hardness value is displayed automatically on the PC.
- The machine is provided with a movable table with rollers for moving the job in both XX and YY directions.

Technical Specifications :

MODEL	TEXMACO-3000-PC (SERVO)
Machine frame	C-Type
Test load for Brinell test	750 kgf / 3000 kgf
Dia. of ball indenters	5 mm / 10 mm
Measurement of load	By Load cell
Load control	Servo controlled
Accuracy of test load	± 1% as per IS:2281-2005
Depth of throat	400 mm
Maximum vertical opening	600 mm
Ram stroke of clamping cylinder	600 mm
Ram travel speed of clamping cylinder (approx. on no load) :	
Upward speed -	1200 mm/min (Aprox.)
Downward speed -	600 mm/min (Aprox.)
Movable table :	
Size of table top (work table) -	1100 mm x 600 mm
Maximum job weight capacity -	700 kg
Table movement :	
X-X direction -	1000 mm (500 mm on either side)
Y-Y direction-	200 mm (100 mm on either side)
Load capacity of table	700 kg
Device for indentation measurement	Direct automatic hardness values will be obtained on PC through CCD camera, with box image magnification, hardware & software using advanced image processing technology. (We are providing PC, UPS & Software. Computer table & Printer are to be provided by customer).
Least count of measuring device	0.01 mm
Scales provided in Computer software	5/750 & 10/3000 (Ball dia. in mm / Load in kgf)
Hardness measuring range of :	
5mm ball / 750 kgf load -	105 to 435 HB
10mm ball / 3000 kgfload -	160 to 520 HB
Operation of the machine	By push buttons
Maximum working pressure	70 bar
Oil tank capacity of hydraulic power pack (Servo System 68 or Avalon 68 or Enklo 68, Hydraulic oil to be used)	75 liters (to be arranged by customer)
Power supply	3 Phase, 440 V, 50 Hz, A.C.
Drive motor	1 HP
Net weight (Machine + Power pack)	1600 kg (approx)
Overall dimensions of - Machine (L x W x H) - Power pack (L x W x H) -	2100 x 1262 x 2100 mm (approx.) 700 x 520 x 800 mm (approx.)

Construction of the Machine :

The machine has seven main units :

- 1) **The loading unit**
- 2) **The movable tables**
- 3) **Hydraulic power pack**
- 4) **Electrical control panel**
- 5) **Indexing system**
- 6) **Optics system**
- 7) **Electronic control panel**

The Loading Unit :

- The main body is a rigid fabricated C-frame with lower table assembly bolted to its lower arm.
- There is clamping cylinder piston assembly with 600 mm stroke fixed to the upper arm of the C-frame. At the bottom of the clamping piston, an additional loading cylinder piston assembly with 18 mm stroke is provided. This loading piston is having a through hole through which optics & camera are inserted for viewing the impression. At the bottom end of the loading piston, swivelable ball indenter is provided with a load cell for load measurement. There is a clamping cone at the bottom of the loading head.
- Electric panel box is fixed at the rear side of the main body.

The Movable Tables :

- Middle table is provided with 8 Nos of wheels. Table Wheels rest on two rails provided on lower fixed table. This table is to be manually pushed to either sides for loading & testing the job. Minimum three wheels will be touching the rails at any point of time. The remaining wheels may touch depending on the loading pattern. This table can be locked by operating handle to avoid table movement while testing. End stoppers with rubber bush are provided at either sides on the lower fixed table.
- Top table is provided with 6 Nos of wheels with bearings. Table wheel rest on 4 rails, which are provided on middle table. The table can be pulled or pushed by using handles. Table position can be locked at desired location by operating lock handle. End stoppers with rubber bush are provided. Both the slides are provided for easy positioning of test point below the indenter.

Hydraulic Power Pack :

- The hydraulic power pack consists of oil tank with drain plug, air breather cum oil filter, oil level & temperature indicator, gear pump coupled to motor, pressure relief valves, solenoid operated DC valves, sequence valve, pressure gauge, needle valve & imported Hydra force 'USA make' proportional pressure control valve (Servo valve) with pressure line filter.

Electrical Control Panel :

- The electrical panel box is fitted at the rear side of the C-frame. The pendant is fitted to the upper arm of C-frame with push button station facing towards operator (front) side of the machine. There are six push buttons provided (Motor-ON, Motor-OFF, Loading Piston-UP, Loading Piston-DOWN, Auto Cycle Start & Declamp), along with one Mode selection switch (Manual/ Auto).
- Fuses & over load relays are been provided for safety against short circuit & over loads. Adjustable timers are provided for time controlled operations of maintaining the set load (3000/750 kgf) & moving up of indenter respectively. The load cell senses the set load for required load (3000/750 kgf) & signals the circuit for further operations.

Indexing System (Swivelling System):

- The system is basically for bringing the indenter axis at the center of loading axis while loading & also for tilting the indenter after loading, so that the CCD Camera axis is made clear for viewing the indentation on the PC.

Optic System:

- This system consists of three sub assemblies :
 - a) Illumination system - Consists of LED for Camera.
 - b) Magnification System - Consists of Matched optics, High resolution CCD Camera with box image magnification, Hardware & software using advanced image processing technology.
 - c) Measuring Device - Automatic direct hardness values are obtained on PC, with measurement least count of 0.01 mm.

Electronic Control Panel :

- The set dwell time during operation will be controlled by the servo controlled load indicating panel provided separately with the machine.
- This unit works as the load indicator. It also works as load controller as per the setting set by the user. It has a 20 x 4 large alphanumeric display & 6 keys.

Display: The display screen shows four lines. The first line shows the current selected load (750 or 3000 kgf). The second line shows actual load on the test piece in kgf. The third line indicates the set dwell time in seconds. The fourth line shows the past dwell time in seconds.

Keypad : There are 6 keys on the keypad, only 3 keys are used viz 'LOAD' key toggles the set load, the 'UP & DOWN' arrow keys are used to increase or decrease the dwell time.

Operation of the Machine :

- Fix dia. 5 mm or dia. 10 mm ball indenter to the indexing system (fitted to loading piston), depending upon the set load of 750 kg for 3000 kgf respectively.
- Timers are set once for proper operation.
- Push the table towards extreme left or right side of the operator. Load the job on the table by crane. The area where the indentation is taken should be ground or polished, so that clear indentation can be seen & measured accurately.
- Now push 'ON' button to start the hydraulic motor.
- Keep the mode selector switch in manual position.
- Press clamping piston 'UP' button & keep it pressed till the piston goes to top most position.
- Manually push the table under the machine & adjust in both XX and YY directions such that the test point is vertically below the indenter.
- Keep the loading unit with clamping cone up by about 25 to 50 mm from test face.
- Keep mode selector switch in Auto position.
- Press cycle start button. Following operations will take place automatically -
 - a) Clamping piston moves down till the clamping cone clamps the job with 500 kg force.
 - b) The indenter will get indexed (Vertical) & move down for application of load.
 - c) The load applied will be measured by load cell & display digitally on the panel in the close loop system with the controller & the proportional valve (Servo valve), till the set load is reached.
 - d) The set load will be kept constant till preset time.
 - e) The load will be removed, the indenter will get indexed.
 - f) The image will be measured automatically through optics, CCD camera, hardware & software and displayed on the PC.
 - g) Now press declamp button, the job will be declamped & the loading head will return to the start position.
 - h) After measurement of hardness, move the table to extreme right or left & unload the job.

Standard Accessories :

Ball holder with tungsten carbide ball dia.5 mm	1 No
Ball holder with tungsten carbide ball dia.10 mm	1 No
Test Block HBW - 5/750	1 No
Test Block HBW - 10/3000	1 No
Set of Spanners	1 Set
Instruction Manual	1 Book
Branded PC 18.5" (With license copy & Anti-Virus loaded in it)	1 No
UPS 600 VA	1 No
Software CD	1 No
V-Table (For maximum dia. upto 300 mm)	1 Set

Optional Accessories (at Extra Cost) :

Test Block of desired hardness range
NABL Certification of any standard or extra test blocks
Computer table & Printer with Printer interface.

Note : Unloading of machine to customer site, Unpacking of machine, Foundation of machine with foundation bolts & nuts in it, Keeping the machine on foundation, Hydraulic oil of required quantity & Electric supply to be arranged by customer at his cost.

We can also supply : Universal testing machines, Compression testing machines, Tensile testing machines, Horizontal chain & rope testing machines, Spring testing machines, Vickers / Brinell / Rockwell hardness testing machines, Vertical & Horizontal Dynamic balancing machines, Impact testing machines, Torsion testing machines, Fatigue testing machines, Portable Dynamic hardness tester & Special purpose Material testing machines, etc.



Manufactured by :

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