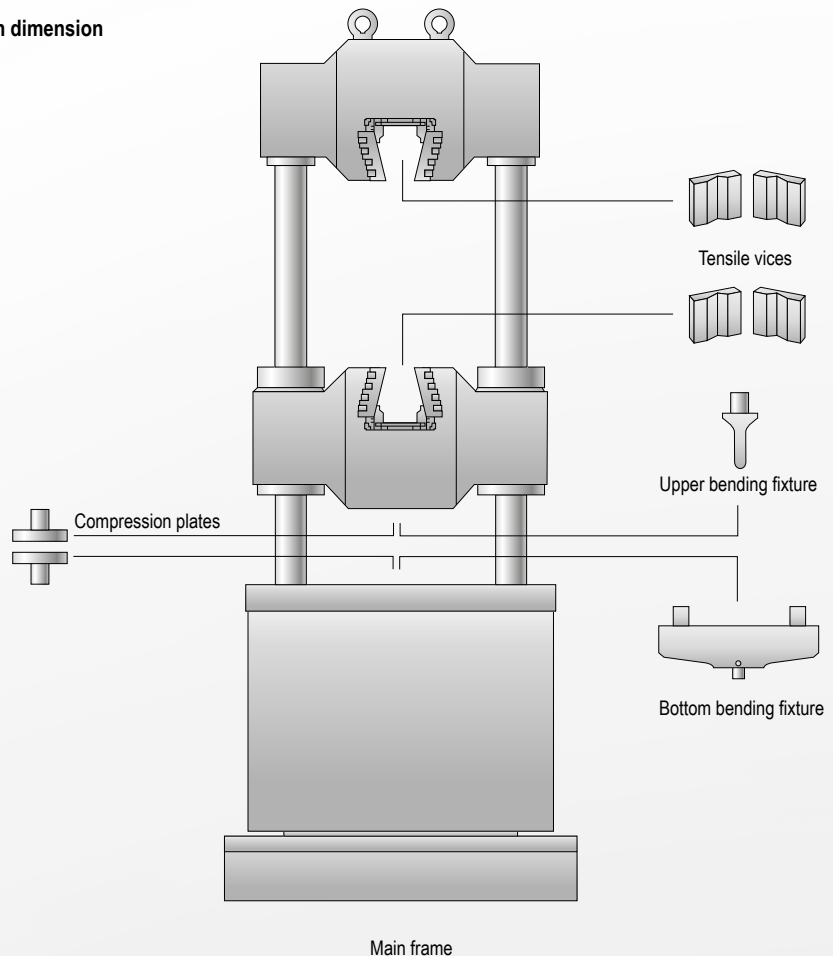


## Servo-Hydraulic Universal Testing Machines

- > HTM series includes a complete range of servo-hydraulic Universal Testing Machines. All models are equipped with lead screw driven crosshead to adjust the test space, quick return hydraulic valve for higher throughput, high quality encoder for high crosshead position measurement accuracy. Furthermore the automatic limit system checking crosshead position, overload, over temperature and other parameters.
- > Equipped with load cells from 200 to 2000kN, HTM series allow to perform wide range of test on different kind of materials such as: metals, composites, fasteners, rebars, chains, welds, pipes etc.
- > Designed to minimize load frame stored energy, while producing reliable, stable and accurate load, strain and modulus values, thanks to high-stiffness six column load frame design, precision guide columns and base beam. All models are dual zone test space to reduce set-up time.
- > The system can return automatically to the starting position after test ends.
- > American bi-directional load cells allows tension and compression tests with high accuracy, precision and repeatability.
- > High speed and closed loop controller of load displacement and elongation, with over-load, over-current, over- voltage, over-speed, and over-travel protection.
- > Built-in port for PC communication, by RS232 or USB.
- > Remote control keypad, with functions of Up, Down, Stop, Jog up, Jog down and Test start simplify operations
- > All models supported by test software to show and analyse graphs and all tests parameters.

Select the correct servo-hydraulic universal testing machine by choosing:

- > Frame type according to the load cell capacity
- > Tensile jaws according to the specimen material and dimensions
- > Compression fixture (if needed) in according to specimen dimensions
- > Bending fixture (if needed) in according to needed bend type (three or four points)
- > Shearing fixture (if needed) in according to specimen dimension
- > Extensometer according to standards indications



Applicable standards:

- > EN 10002-2
- > EN 10002-4
- > ISO 6892
- > ISO 6935
- > ISO 9513
- > ASTM A370
- > ASTM A1034
- > ASTM E4
- > ASTM E8
- > ASTM E83
- > DIN 51221
- > BS 4449
- > BS 4482
- > BS 4483
- > BS 8110

## HTM series

HTM double column series, from 200kN to 2000kN. Designed with strong structure to ensure the linear crosshead travel. High accuracy crosshead alignment reducing variability in measurement .

- > HTMs from 200kN to 2000kN are dual space type.
- > Wide range of test accessories allows to meets test requirements of different standards and for different materials.
- > HTM series is suitable to test: metals, reinforced plastics, wires, composite materials, etc.



### Included accessories

- Compression fixtures
- Hydraulic wedge action grips
- Anchor bolts

Model		HTM 200	HTM 300	HTM 500	HTM 600	HTM 1000	HTM 1200	HTM 2000	
<b>Load cell</b>									
Load capacity	kN	200	300	500	600	1000	1200	2000	
	kgf	20000	30000	50000	60000	100000	120000	200000	
Calibration standard	-	ISO 7500							
Calibration class	-	0.5							
Accuracy grade	%	0.5 of reading							
Testing load accuracy	%								
Deformation accuracy	%								
Displacement accuracy	%								
Force range	FS	1%-100%							
Force resolution	FS	1/500000							
Force accuracy	%	0.5 of reading							
Force loading speed	FS/s	0.02%-2%							
Extension range	%	1%-100%							
Extension accuracy	%	±0.5							
Extension resolution	-	1/500000 of max extension							
<b>Controller</b>									
Sampling frequency	Hz	Up to 1000							
Closed loop control frequency	Hz	Up to 1000							
Resolution	bit	20							
<b>Software</b>									
Software	-	echoTestPilot							
<b>Main frame</b>									
Frame type	-	Floor type 4 columns			Floor type 6 columns				
Piston speed	mm/min	0-180			0-140		0-90		0-70
Piston travel	mm	150			250				
Tensile space	mm	520			710		760		920
Compression space	mm	520			700		630		750
Distance between columns	mm	405			430				640
Tensile grip jaws	mm	One pair is included with machine and choosable in the accessories table							
Compression fixture	mm	ø120		ø150		200x200		ø240	
Power consumption	kW	5			6		8		
Power supply	V-Hz-ph	400-50/60-3							
Hydraulic unit dimensions	mm	1150x600x900							
Hydraulic unit flow rate	l/min	3.5			5		7.5		
Dimensions	mm	820x570x1955			940x650x2400		1020x670x2600		1370x820x3300
Weight	kg	1500			2500		3500		8000

**HTM series**

**Accessories**

**Hydraulic wedge action tensile grips**

Model	Description	Suitable for:	Application
HTG02001	Tensile grip jaws for round specimen $\phi 10\text{-}\phi 20\text{mm}$	HTM 200	For metal and non-metal specimen
HTG02002	Tensile grip jaws for round specimen $\phi 20\text{-}\phi 32\text{mm}$		
HTG02003	Tensile grip jaws for flat specimen 2-13mm		
HTG02004	Tensile grip jaws for flat specimen 13-25mm		
HTG03001	Tensile grip jaws for round specimen $\phi 10\text{-}\phi 20\text{mm}$	HTM 300	For metal and non-metal specimen
HTG03002	Tensile grip jaws for round specimen $\phi 20\text{-}\phi 32\text{mm}$		
HTG03003	Tensile grip jaws for flat specimen 2-13mm		
HTG03004	Tensile grip jaws for flat specimen 13-25mm		
HTG05001	Tensile grip jaws for round specimen $\phi 10\text{-}\phi 18\text{mm}$	HTM 500	For metal and non-metal specimen
HTG05002	Tensile grip jaws for round specimen $\phi 18\text{-}\phi 29\text{mm}$		
HTG05003	Tensile grip jaws for round specimen $\phi 29\text{-}\phi 40\text{mm}$		
HTG05004	Tensile grip jaws for flat specimen 2-16mm		
HTG05005	Tensile grip jaws for flat specimen 16-30mm		
HTG06001	Tensile grip jaws for round specimen $\phi 10\text{-}\phi 18\text{mm}$	HTM 600	For metal and non-metal specimen
HTG06002	Tensile grip jaws for round specimen $\phi 18\text{-}\phi 29\text{mm}$		
HTG06003	Tensile grip jaws for round specimen $\phi 29\text{-}\phi 40\text{mm}$		
HTG06004	Tensile grip jaws for flat specimen 2-16mm		
HTG06005	Tensile grip jaws for flat specimen 16-30mm		
HTG10001	Tensile grip jaws for round specimen $\phi 15\text{-}\phi 30\text{mm}$	HTM 1000	For metal and non-metal specimen
HTG10002	Tensile grip jaws for round specimen $\phi 30\text{-}\phi 45\text{mm}$		
HTG10003	Tensile grip jaws for round specimen $\phi 45\text{-}\phi 55\text{mm}$		
HTG10004	Tensile grip jaws for flat specimen 2-20mm		
HTG10005	Tensile grip jaws for flat specimen 20-40mm		
HTG12001	Tensile grip jaws for round specimen $\phi 15\text{-}\phi 30\text{mm}$	HTM 1200	For metal and non-metal specimen
HTG12002	Tensile grip jaws for round specimen $\phi 30\text{-}\phi 45\text{mm}$		
HTG12003	Tensile grip jaws for round specimen $\phi 45\text{-}\phi 55\text{mm}$		
HTG12004	Tensile grip jaws for flat specimen 2-20mm		
HTG12005	Tensile grip jaws for flat specimen 20-40mm		
HTG20001	Tensile grip jaws for round specimen $\phi 20\text{-}\phi 40\text{mm}$	HTM 2000	For metal and non-metal specimen
HTG20002	Tensile grip jaws for round specimen $\phi 40\text{-}\phi 60\text{mm}$		
HTG20003	Tensile grip jaws for round specimen $\phi 60\text{-}\phi 80\text{mm}$		
HTG20004	Tensile grip jaws for flat specimen 10-40mm		
HTG20005	Tensile grip jaws for flat specimen 40-70mm		

**Bending fixtures**

**Lower bending fixtures**

Model	Description	Suitable for:
2030BBFX	Maximum span 400mm, adjustable	HTM 200; HTM 300
5060BBFX	Maximum span 400mm, adjustable	HTM 500; HTM 600
1000BBFX	Maximum span 400mm, adjustable	HTM 1000; HTM 1200
2000BBFX	Maximum span 500mm, adjustable	HTM 2000

**Upper bending fixtures**

Model	Description	Suitable for:
018035UF-XXX	Upper fixture for bending nose from $\phi 18$ - $\phi 35$ mm	HTM 200; HTM 300; HTM 500; HTM 600; HTM 1000; HTM 1200; HTM 2000
036060UF-XXX	Upper fixture for bending nose from $\phi 36$ - $\phi 60$ mm	
060120UF-XXX	Upper fixture for bending nose from $\phi 60$ - $\phi 120$ mm	
120200UF-XXX	Upper fixture for bending nose from $\phi 120$ - $\phi 200$ mm	

**NOTE:** To select the correct upper bending fixture must be indicated in the model the  $\phi$  of the bending nose selected e.g. 018035UF-024.  
The example means the needing of  $\phi 24$  bending nose adapter

**NOTE:** If not specified only one type of bending nose and support roller will be supplied:  $\phi 36$ mm for model HTM 200; HTM 300; HTM 500; HTM 600; HTM 1000; HTM 1200;  $\phi 60$ mm for model HTM 2000

**Bending noses for steel rebar bending test**

Model	Bending nose diameter
BN120018	18mm
BN120024	24mm
BN120030	30mm
BN120032	32mm
BN120036	36mm
BN120040	40mm
BN120042	42mm
BN120048	48mm
BN120054	54mm
BN120056	56mm
BN120060	60mm
BN120064	64mm
BN120066	66mm
BN120072	72mm
BN120075	75mm
BN120080	80mm

**Bending noses for steel rebar bending test**

Model	Bending nose diameter
BN120084	84mm
BN120088	88mm
BN120096	96mm
BN120100	100mm
BN120108	108mm
BN120112	112mm
BN120120	120mm
BN120128	128mm
BN120132	132mm
BN120140	140mm
BN120144	144mm
BN120150	150mm
BN120160	160mm
BN120180	180mm
BN120200	200mm

**NOTE:** On request are available different bending noses and support roller diameters e.g. BN120XXX

**NOTE:** On request 4-point bending fixture

## HTM series

### Bolt tensile and nut proof load test grips

Model	Description	Suitable for:	Application
1BTGM424	Grip for M4/M5/M6/M7/M8/M19/M12/M14/M16/M18/M20/M22/M24	HTM 200; HTM 300	For bolt tensile test class 12.9, nut proof load test class 10.9, metric coarse thread
2BTGM430	Grip for M4/M5/M6/M7/M8/M19/M12/M14/M16/M18/M20/M22/M24/M27/M30	HTM 500; HTM 600; HTM 1000; HTM 1200	For bolt tensile test class 12.9, nut proof load test class 10.9, metric coarse thread
BTGM1648	Grip for M16/M18/M20/M22/M24/M27/M30/M36/M42/M48	HTM 2000	For bolt tensile test class 12.9, nut proof load test class 10.9, metric coarse thread

### Concrete compression grips

Model	Description	Suitable for:	Application
100CCG22	Grip dimensions 40x40mm	HTM 200; HTM 300; HTM 500; HTM 600	For concrete compression test

### Shearing test grips

Model	Description	Suitable for:	Application
23SG4600	Shear grip for round sample $\phi$ 10mm; $\phi$ 15mm; $\phi$ 20mm	HTM 200; HTM 300; HTM 500; HTM 600; HTM 1000; HTM 1200	For shearing test of round sample
23SG46W1	Shear grip for welded steel fabric	HTM 200; HTM 300	For shearing test of welded steel fabric
23SG46W2	Shear grip for welded steel fabric	HTM 500; HTM 600; HTM 1000; HTM 1200	For shearing test of welded steel fabric

**NOTE:** For shear grip for welded steel fabric, the sample dimensions are required

Other special grips like shoulder tensile grip or concrete flexural grip, are available on request

### Computer System

Computer System	ECHOCS01	Computer
	ECHOCS02	Monitor
	ECHOCS03	Color printer
	ECHOCS04	Mouse
	ECHOCS05	Keyboard

### Optional accessories

02HTM001	Front protection shield for HTM 200; HTM 300
02HTM002	Front protection shield for HTM 500; HTM 600
02HTM003	Front protection shield for HTM 1000; HTM 1200
02HTM004	Front protection shield for HTM 2000

