



# 動態試驗機

## DYNAMIC TESTING MACHINE



品質、技術、服務

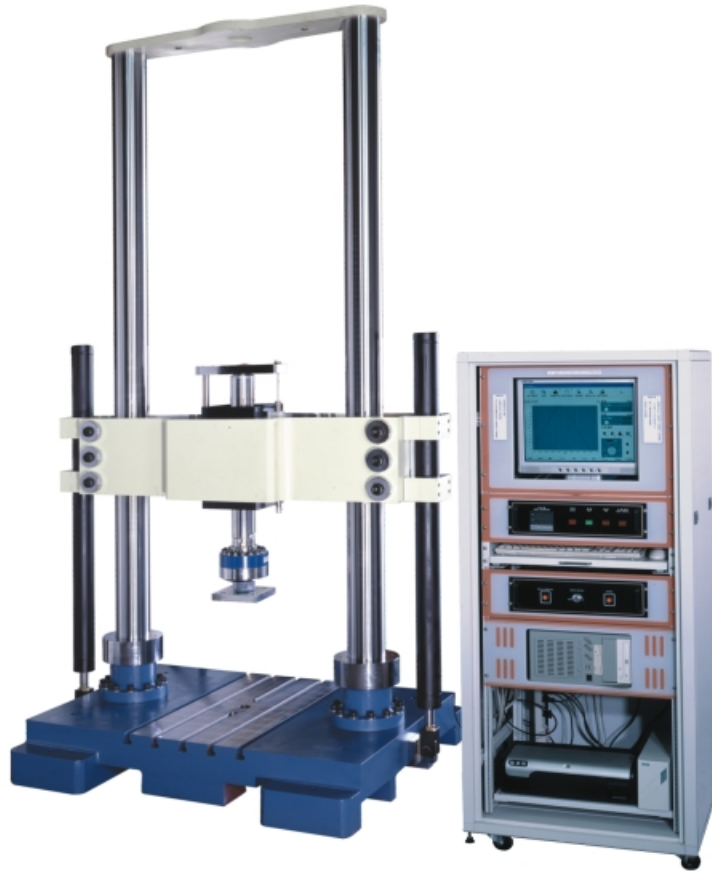
適用行業：金屬、塑膠、橡膠、合成化學製品、汽、機車零件、土木工程、皮革製品、自行車...等。

DESIGNED FOR TESTING : METAL · PLASTICS · RUBBER · COMPOUND CHEMICAL PRODUCTS · BRIDGE · AUTO PARTS... ETC



弘達儀器股份有限公司  
HUNG TA INSTRUMENT CO., LTD

# D Type Material Dynamic Tester 動態材料試驗機

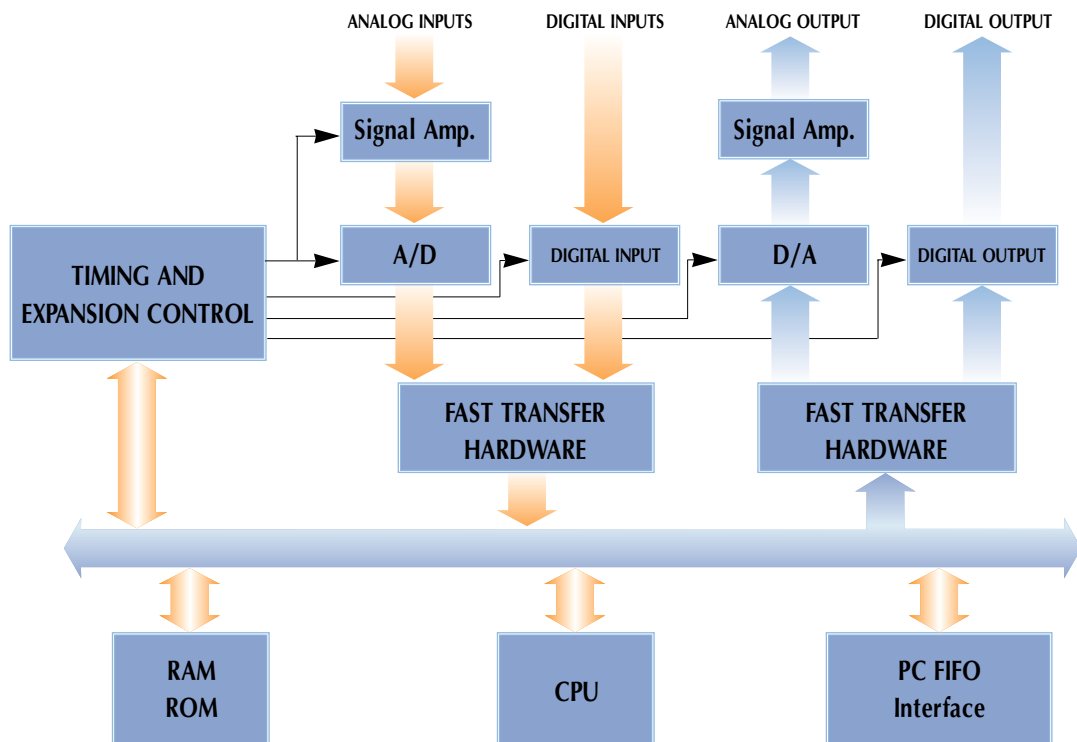


# E Type Material Dynamic Tester 動態材料試驗機

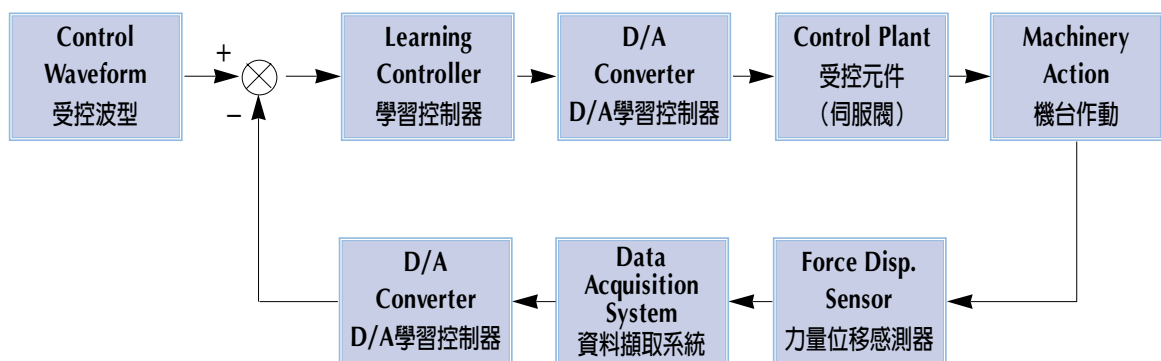


# Data Acquisition System Block Diagram

## 資料擷取系統方塊圖



# 伺服控制軟體 控制功能介紹 (Control Utility)



# Dynamic Tester Specifications

## 動態材料試驗機規格

### Servo-Hydraulic System Specifications

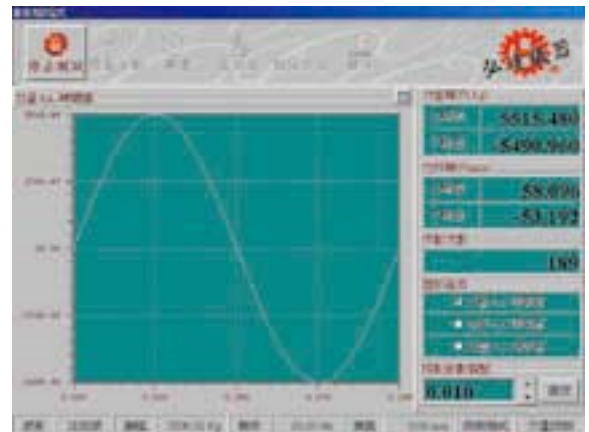
- 動態電液伺服致動器
- 500~50,000 Kg 出力(可依客戶需求定義)
- 液壓動力單元一組  
主泵浦: 流量10~120 L/min, 操作壓力  
210 Kg/cm<sup>2</sup>(option to 310 Kg/cm<sup>2</sup>)  
馬達: 3 Phase, 220 VAC, 60 Hp.(Max)  
油箱: 250 L ~800 L容量  
高壓過濾器: 5 micron  
蓄壓器: 壓力端 1 quart, 回油端 1 quart.(視實際情況  
決定)  
冷卻系統: 1 set  
壓力開關: 1 set  
聯板位置調定動力單元: 與主液壓動力單元分離, 提  
供聯板位置調定及鎖定能量
- 伺服閥: 15~180 L/min 額定流量, 頻寬  $\geq$  50 Hz, 解  
析度  $\leq$  0.5%
- 疲勞測試用力量感測元: 500~50,000 Kg容量,  
0.05% FS 非線性度, 校正誤差  $\leq$  1%
- 直流式差動電壓位移感測器(DC type LVDT): 內建於  
油壓缸內部, 50~300 mm 行程, 0.05%FS 非線性度

### Controller and Control Interface Specifications

- 電液伺服致動控制器
- 自學習式閉迴路力量及位置控制器
- 負載及振動控制主題
- 伺服放大器
- 直流感測器訊號處理器
- 類比/數位轉換器: 16 bits 解析度, 1/2 最低位元的非  
線性度
- 數位/類比轉換器: 16 bits 解析度, 1/2 最低位元的非  
線性度
- 數位輸出: 程序控制, 機台聯板位置調定
- 電腦配備: 1 set  
CPU: Intel Pentium III 800 或更高配備  
RAM: 128 MB  
15" super VGA 顯示器, 解析度 1024 x 768  
硬碟: 10 GB or above  
印表機: 噴墨印表機  
1.44 floppy driver  
儀器櫃 1 set

### Servo-Hydraulic System Specifications

- 作業系統: Microsoft Windows<sup>®</sup> 98或以上
- 測試方法資料庫管理
- 定負載調定及行程位置微調
- 自動波形產生 sine, triangular, ramp, and square等波形
- 閉迴路學習控制器控制力量及位移
- 即時圖形顯示
- 測試數據自動儲存, 可完整儲存所有測試過程資料
- 三種圖形放大功能
- 提供力量-時間, 位移-時間, 力量-位移三種圖形顯示  
功能
- 報表功能: 開放使用者自由編輯
- 報表編輯器
- 控制安全偵測及破壞自動停機
- 圖形尺度可自行定義或自動尺度最佳化

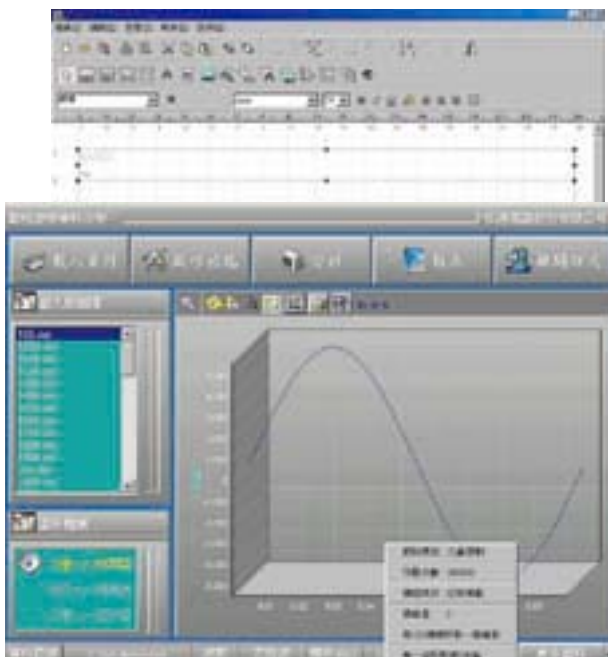


# Dynamic Tester Specifications

## 動態材料試驗機規格

### Servo-Hydraulic System Specifications

- One servo-actuator
- 500~50,000 Kg Force (User Define)
- One Hydraulic Power Package  
Main pump : 10~120 L/min, 210 Kg/cm<sup>2</sup>(option to 310 Kg/cm<sup>2</sup>)  
Motor: 3 Phase, 220 VAC, 60 Hp.(Max)  
Tank: 250 L ~800 L capacity.  
Oil Filter : 5 micron.  
Accumulator : pressure end 1 quart, return end 1 quart.(option)  
Cooling system : 1 set.  
Pressure switch 1 set.  
Crosshead adjustment power package : separate from the main power package, provide power to adjust crosshead position and lock.
- Servovalve : 15~180 L/min rated flow rate, bandwidth  $\geq$  50 Hz(-3 dB), resolution  $\leq$  0.5%
- Fatigue type loadcell : 500~50,000 Kg(5~500 KN), 0.05%FS nonlinearity, calibration error  $\leq$  1%.
- DC type LVDT : built-in-actuator, 50~300 mm stroke, 0.05%FS nonlinearity.



### Controller and Control Interface Specifications


- Control one servo-actuator
- Closed-loop force and position learning control.
- Loading and shaking the test article.
- Servo amplifier.
- DC transducer conditioner.
- A/D channel : 16 bits resolution, 3 LSB nonlinearity.
- D/A channel : 16 bits resolution, 3 LSB nonlinearity.
- D/O channel : process control, crosshead position adjustment.
- Computer : 1 set.  
CPU : Intel Pentium III 800 or above.  
RAM : 128 MB.  
15" super VGA monitor, resolution 1024  $\times$  768.  
Hard driver : 10 GB or above.  
Printer : Inkjet printer.  
1.44 floppy driver.  
Rack 1 set.

### Servo-Hydraulic System Specifications

- Operation system : Microsoft Windows<sup>®</sup> 98 or above.
- Set-up test sequence database management.
- Fixture constant load and minor adjustment.
- Auto-generation sine, triangular, ramp, and square wave.
- Closed-loop learning controller, force and position control.
- Real-Time data display.
- Test data auto storage.
- Three kinds graph zooming.
- Provide force-Time, Disp.-Time, Force-Disp. Diagram.
- Present tabular and graphical reports.
- Report editor.
- Auto Stop.
- Control safety diagnostics.
- Diagram auto scale and user define.



## HT-9711 動態疲勞試驗機 DYNAMIC FATIGUE TESTING MACHINE

機型	Model		HT-9711-5 落地型		HT-9711-5 桌上型		
動力來源	Power source		電液伺服控制系統 (Electro-Hydraulic Servo Control System)				
最大出力	Force capacity	(Kg) (KN)	500 5				
工作振幅	Max. Stroke (mm)	靜態 (Static) 動態 (Dynamic)	±50 ±25				
控制模式	Control mode		力量控制、行程控制 (force, displacement control)				
靜態力量感測容量	Static force sensor capacity		×120% ×100% · ×50% · ×20% · ×10% · 自倍率選擇 (Auto Gain selection)				
靜態力量感測精度	Static force sensing error		≤ ±1% 校正精度 (Calibration error)				
動態力量感測放大倍率	Dynamic force sensor capacity		100% · ×50% · ×20% · ×10%				
動態力量感測精度	Dynamic force sensing error		≤ ±1% 校正精度 (Calibration error)				
形式	Style		T type				
支柱有效寬度	Operating width(mm)		400				
支柱有效高度	Operating height(mm)		250~900				
外型尺寸	Dimension(cm)		120 (W) x 65 (D) x 220 (H)				
油壓源型式	Hydraulic powetyper		QR-10	QR-20	QR-40	QR-60	QR-80
最小需求流量	Minimum flow rate(l/min)		10	10	40	60	80
伺服閥額定流量	Servo valve rated flowrate(l/min)		15	15	45	80	120
位移感測器	Displacement sensor		1 L / 1 L (選配Option)		5 L / 5 L (選配Option)		
頻率範圍	Frequency range		內建差動電壓計於致動器後端 (LVDT built-in-actuator); 0.05~100Hz請參閱振幅頻率波德圖				
試驗波型	 (Ramp)      正形波(Sine)      三角波(Triangular)      矩形波(Square)						

外形尺寸,工作臺面,行程及噸數可由客戶定義設計,本公司保有修改權利  
Dimension, Table, Stroke and Capacity could be customer designed



HT-9711-10	HT-9711-25	HT-9711-50	HT-9711-100	HT-9711-200	HT-9711-300	HT-9711-500
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電液伺服控制系統 (Electro-Hydraulic Servo Control System)

1,000	2,500	5,000	10,000	20,000	30,000	50,000
10	25	50	100	200	300	500

±50

±25

力量控制，行程控制 (Force, Displacement Control)

×120%，×100%，×50%，×20%，×10%，自倍率選擇(Auto Gain selection)

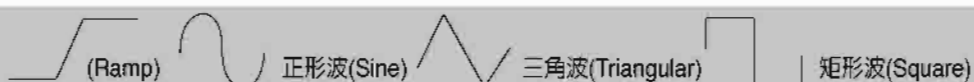
≤±1%校正精度 (Calibration error)

×100%，×50%，×20%，×10%

≤±1%校正精度 (Calibration error)

E type			D type		
530			750		
250~900			250~1100		
980 (W) x 610 (D) x 2350 (H)			1325 (W) x 750 (D) x 2650 (H)		
QR-10	QR-20	QR-40	QR-60	QR-80	
10	20	40	60	80	
15	30	45	80	120	
1 L / 1 L (選Option)			5 L / 5 L (選配Option)		

內建差動電壓計於致動器後端 (LVDT built-in-actuator);0.05~100Hz 請參閱振幅頻率波德圖



標準配件 Standard Accessories



平板拉力  
Tensile for plane

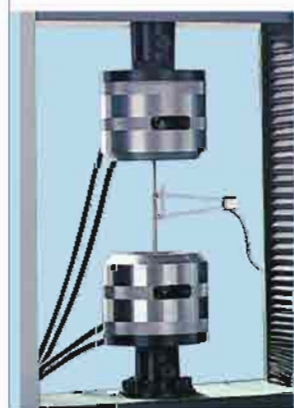


圓棒拉力  
Tensile for round



壓縮  
Compression

選用配件  
Optional Accessories

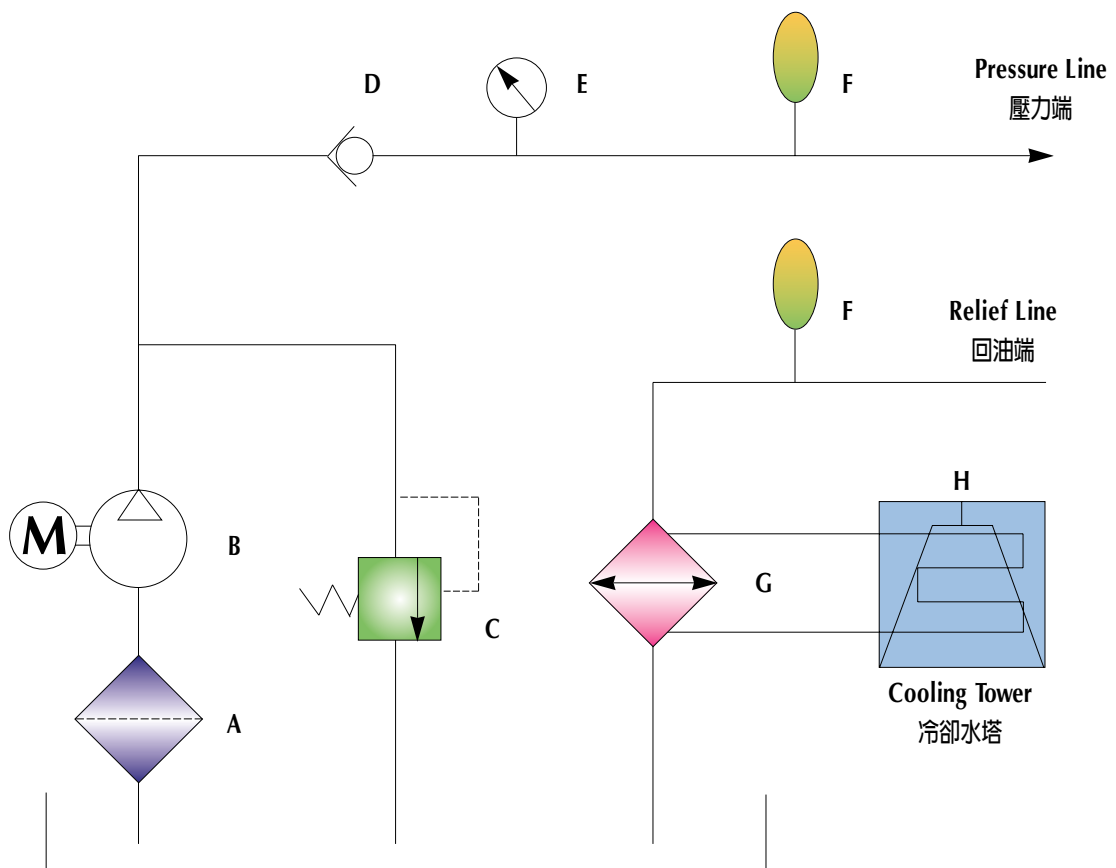


油壓夾具  
Hydraulic Grips

# H

## Hydraulic Power Package 動力單元

機型(Model No.)	QR10	QR20	QR40	QR60	QR80	QR120
流量 (L/Min) (60Hz) Flow rate	10	20	40	60	80	120
操作壓力(Kg/cm <sup>2</sup> ) Operation Pressure	210					
馬達容量(kW) Power(Hp)	5.5 7.5	9.3 15	15.5 25	22 30	30 40	45 60
使用電源Power	ø3, 220V, (50/60Hz)					
冷卻系統形式 Cooling System	水冷式熱交換器 Water Cooling System					
冷卻水流量 (L/min) Cooling water Flowrate	11	20	40	75	100	190



- A. 高壓過濾器 (Filter)
- B. 馬達及幫浦 (Hydraulic Pump and Motor)
- C. 卸載閥 (Relief Valve)
- D. 止回閥 (Check Valve)

- E. 壓力錶 (Pressure Gauge)
- F. 蓄壓器 (Accumulator)
- G. 液壓油熱交換器 (Oil Heat Exchanger)
- H. 冷卻水塔 (Cooling Tower)



# H ydraulic Power Package 動力單元

QR-10~QR60

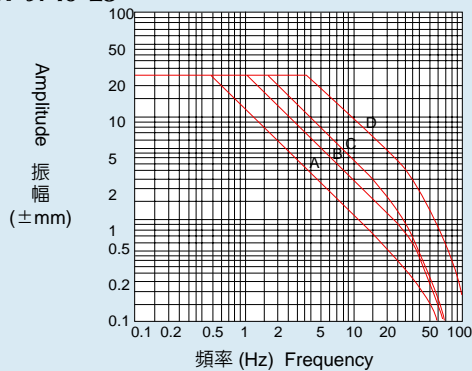


QR-80~QR120

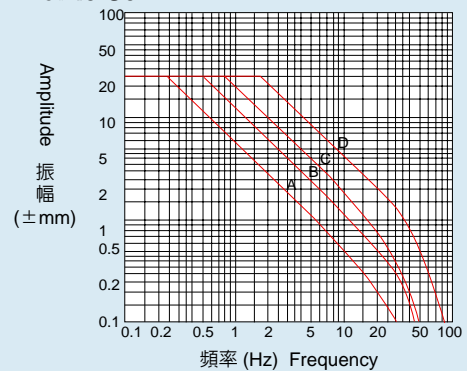


# A mplitude v.s. Frequency Bode Plot 振幅-頻率波德圖

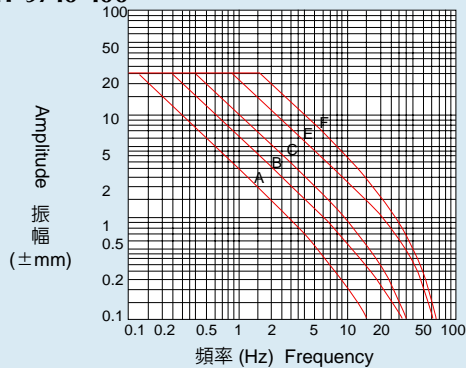
HT-9710-25



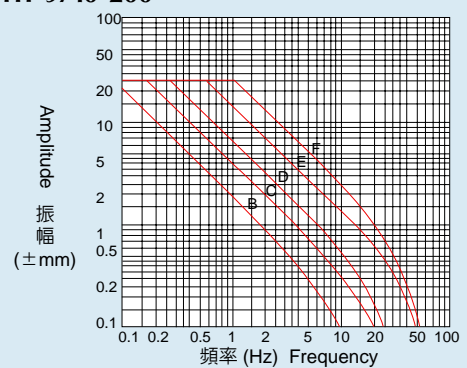
HT-9710-50



HT-9710-100



HT-9710-200

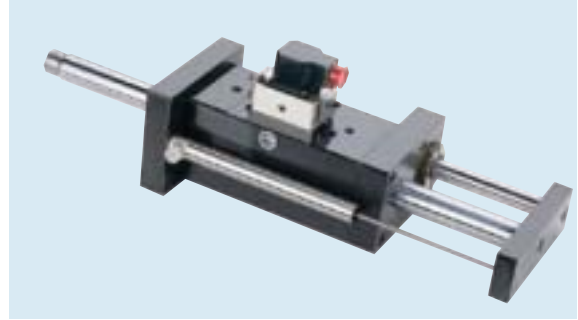


## 動力單元型號(Power Package)

機型(Type)	A	B	C	D	E	F
油壓源(Power package)	QR-10	QR-20	QR-40	QR-60	QR-80	QR-120

# H

## T-2110 Dynamic Actuators 動態伺服缸

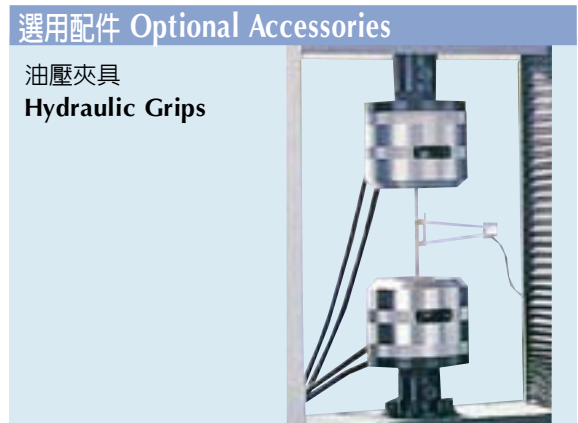
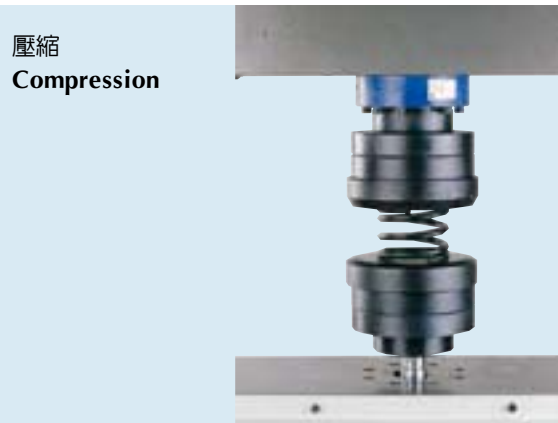
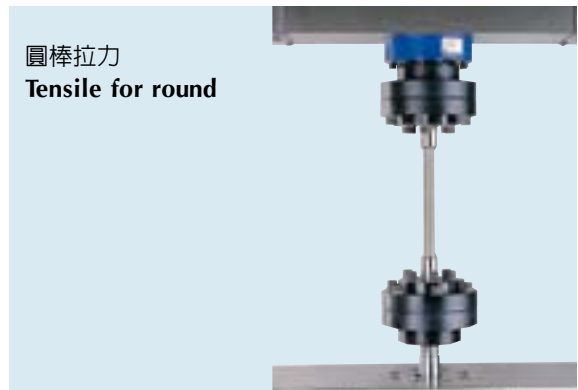
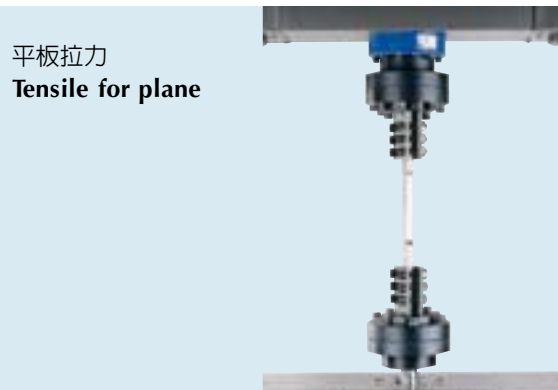


機型(Type)	A-10	A-25	A-50	A-100	A-200	A-500
容量(KN)	10	25	50	100	200	500
Capacity(Ton)	1	2.5	5	10	20	50
行程 Stroke	50(±25)~150(±75)mm					
工作壓力 Working pressure	210kg/cm <sup>2</sup>					

# G

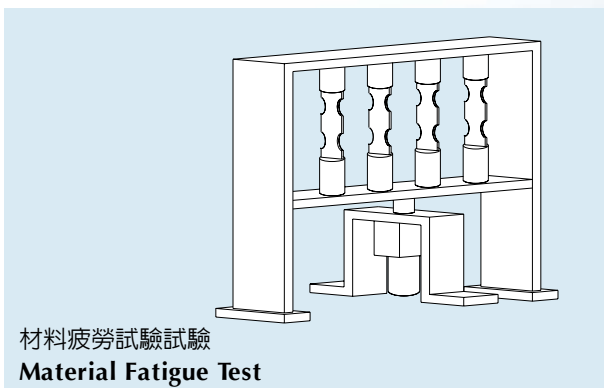
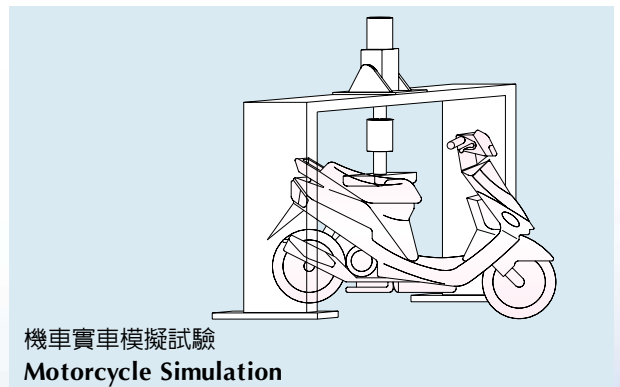
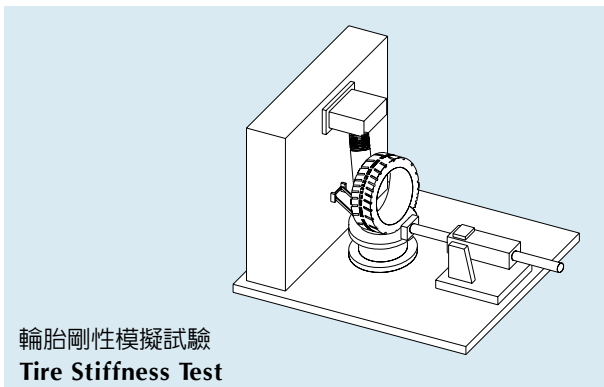
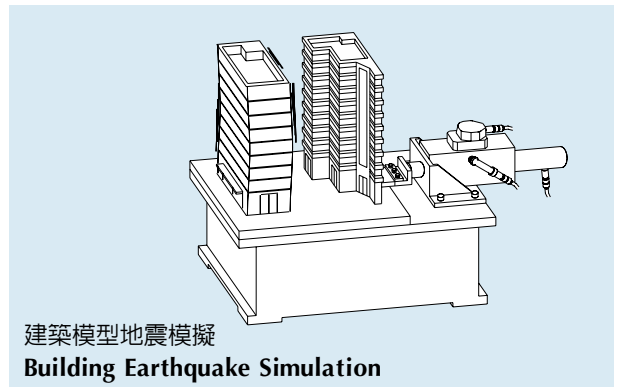
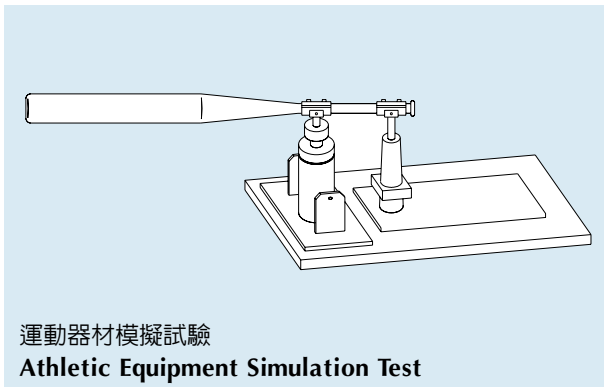
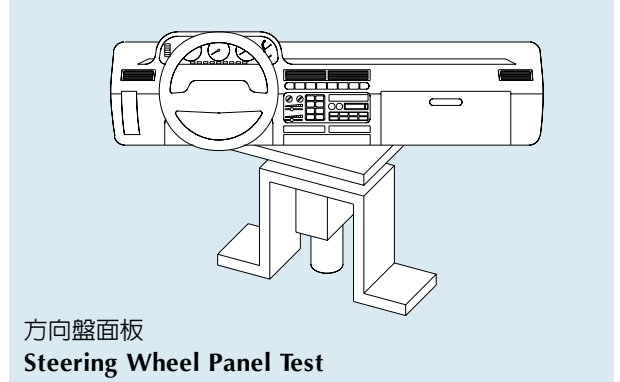
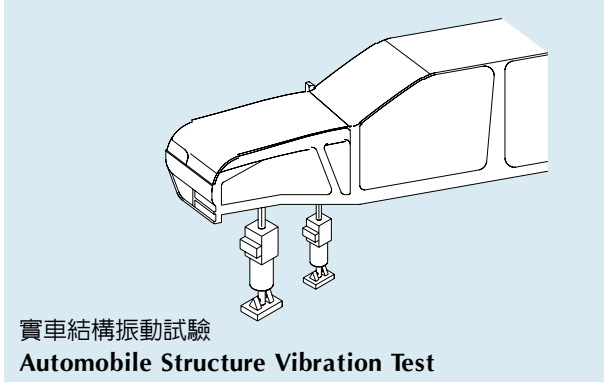
## rips 夾具

### 標準配件 Standard Accessories



# A pplication 應用

(應用夾具價格另議；Applied grips available at extra charges)



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