



# MKS Throttle Valve Overhaul Procedure

(MKS: 683B-23795) (AMAT:3870-03394)





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## ➤ Basic Information

### Picture



Factory P/N : 683B-23795 .

AMAT P/N:3870-03394

Function : 壓力控制 .

Port Size : KF80 .

Port 方向 : 180度 .

Driver : Device Net .

Driver界面 : NA .

Key parts : Motor,軸心 , Device Net .

Bellow type : NA .

Seal type : 全氟O-Ring .

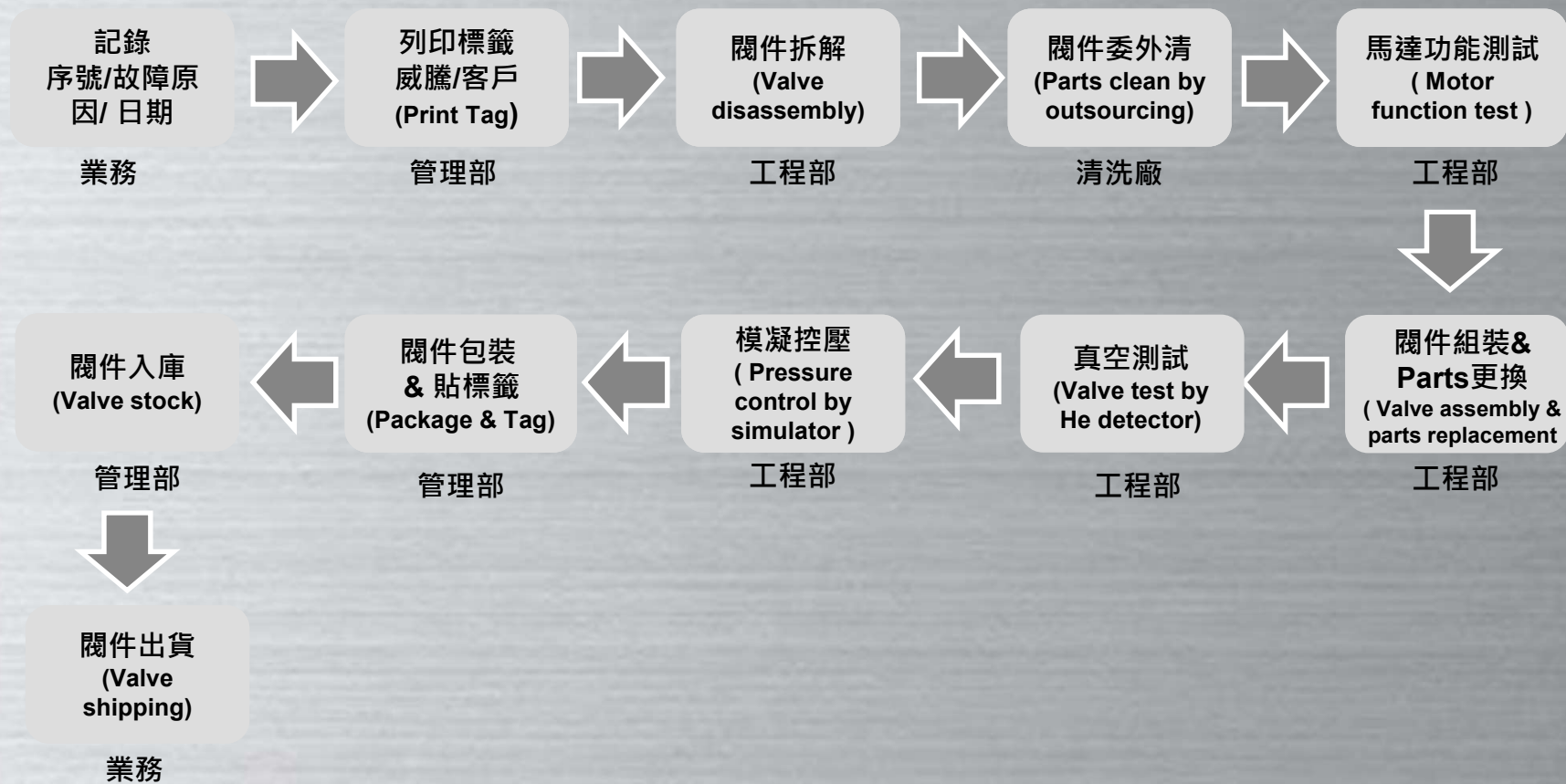
Application : AMAT/CVD F-CUP .



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## ➤ Overhaul process flow

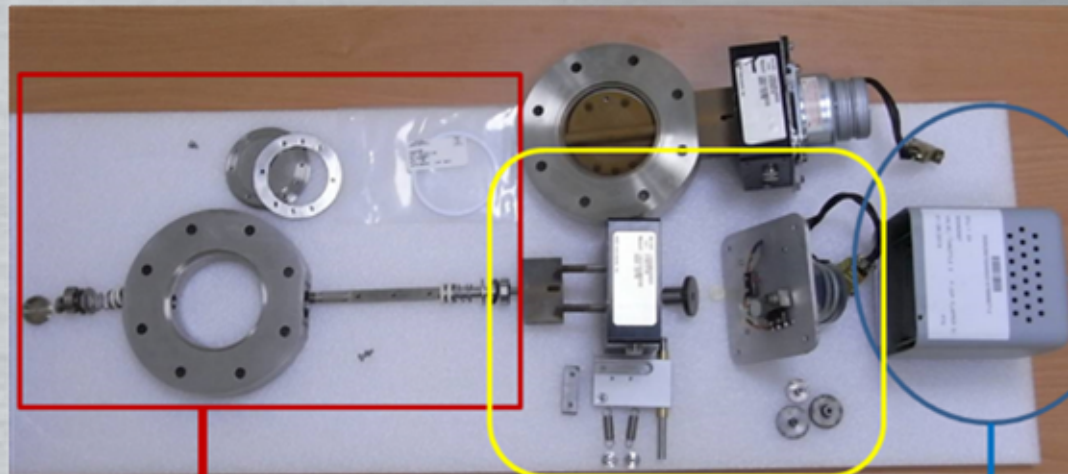
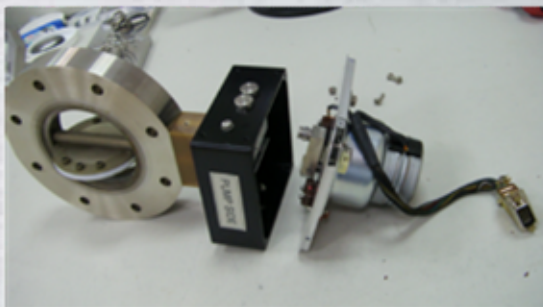




# MKS Throttle Valve Overhaul Procedure

(MKS: 683B-23795) (AMAT:3870-03394)

## 1. Valve disassembly



Parts clean by outsourcing  
(科治, 世禾)



Function check, replace  
& overhaul by 威騰

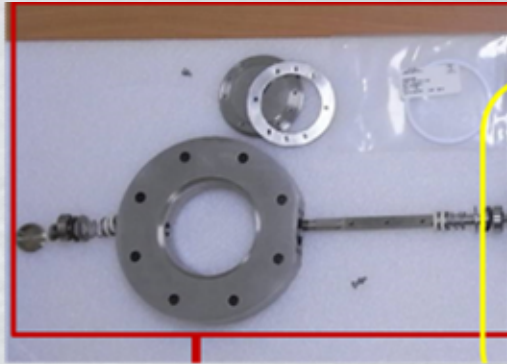
Function check &  
repair by 威騰



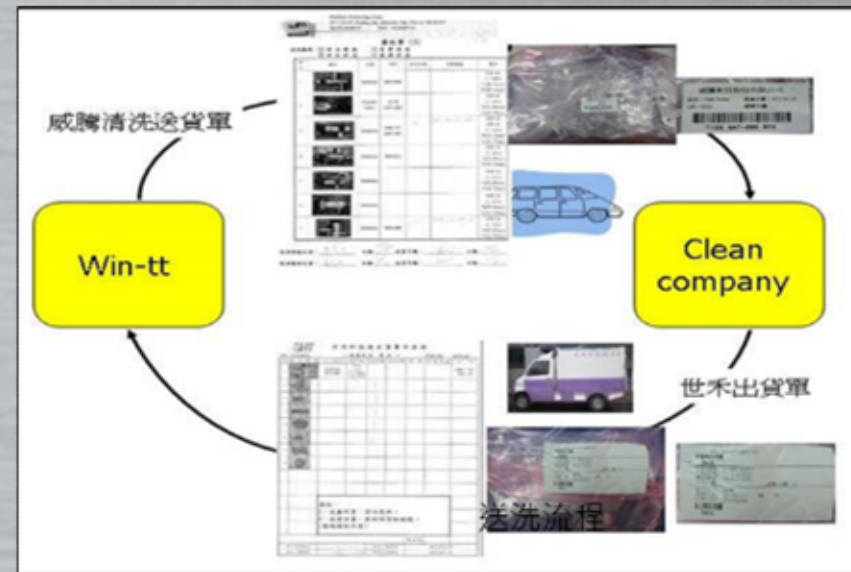


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## 2. Parts clean by outsourcing



Parts clean by outsourcing  
(科治, 世禾)





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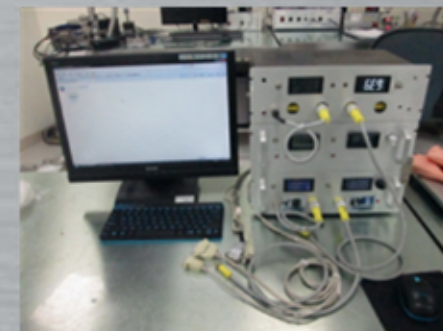
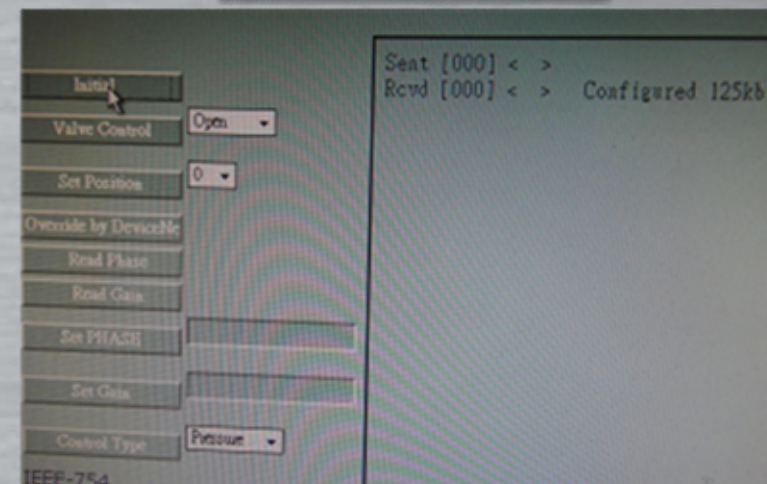
## 3. Motor performance test

To use the simulator to check the motor performance ( within/without loading ) & Device net PCB function.

Motor performance check simulator



Device-net function test.

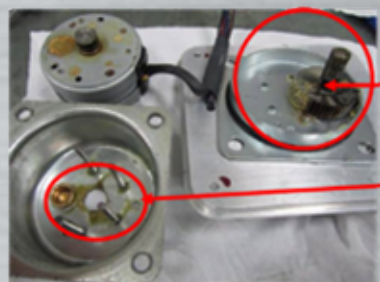
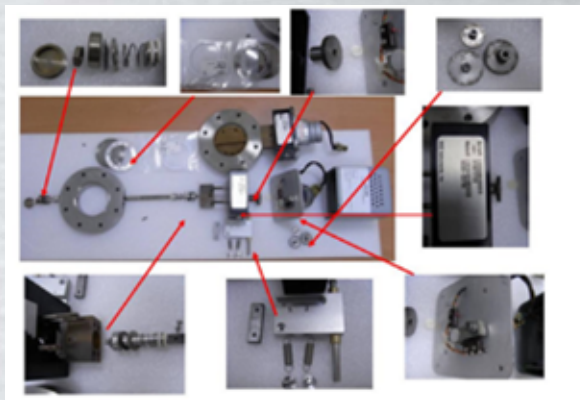




# MKS Throttle Valve Overhaul Procedure

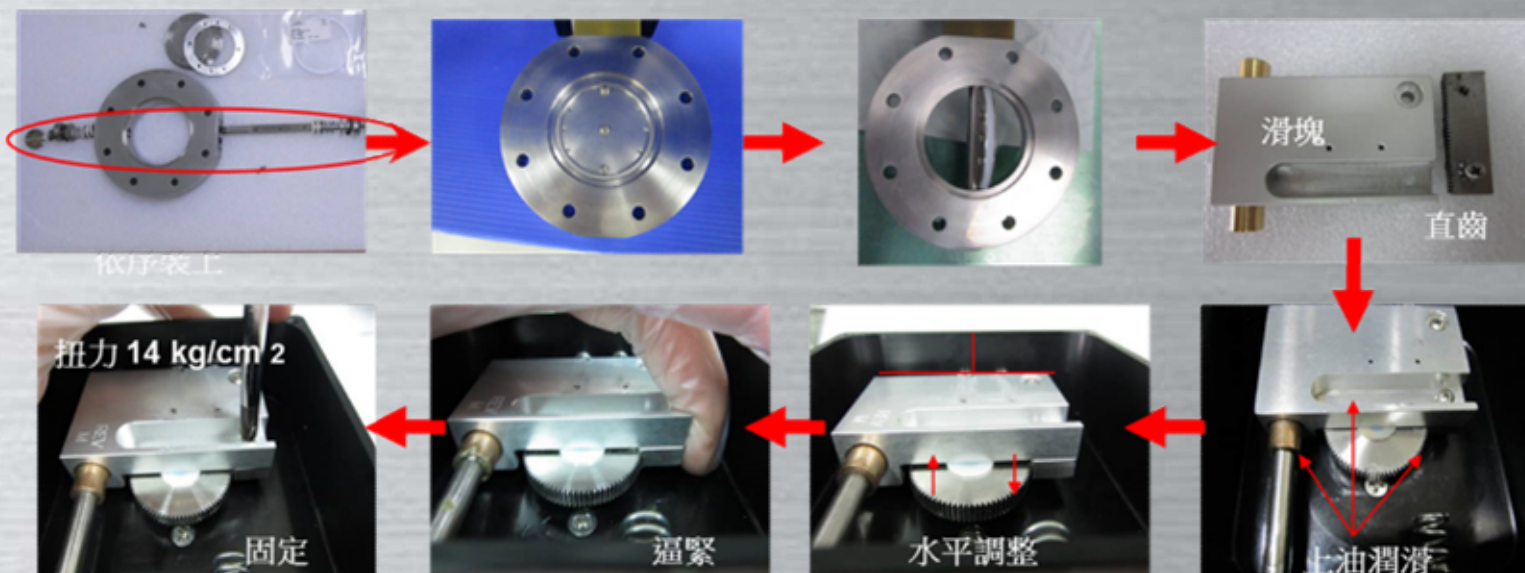
(MKS: 683B-23795) (AMAT:3870-03394)

## 5. Valve Assembly



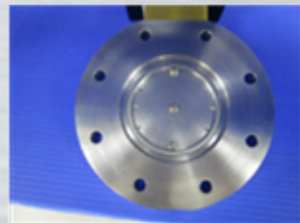
Motor overhaul

組裝閥體各Parts並塗上真空油並調整直尺及滑塊位置

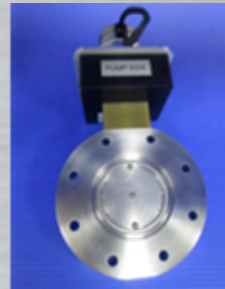


# MKS Throttle Valve Overhaul Procedure (MKS: 683B-23795) (AMAT:3870-03394)

## 5. Valve Assembly



Close處固定通緊

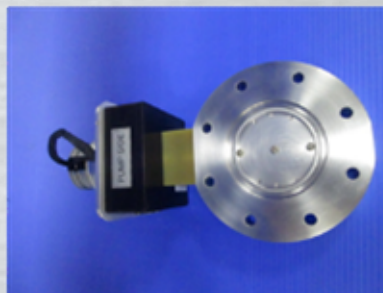


固定Motor



Valve leveling

組裝完成後進行測漏.並壓力校正





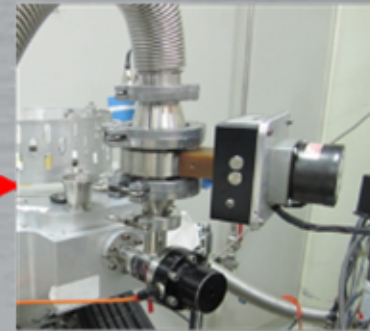
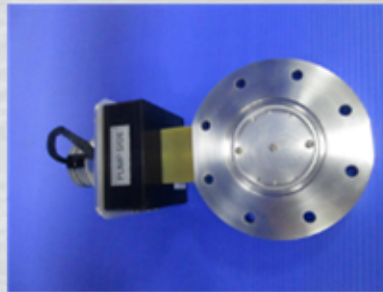
# MKS Throttle Valve Overhaul Procedure

(MKS: 683B-23795) (AMAT:3870-03394)

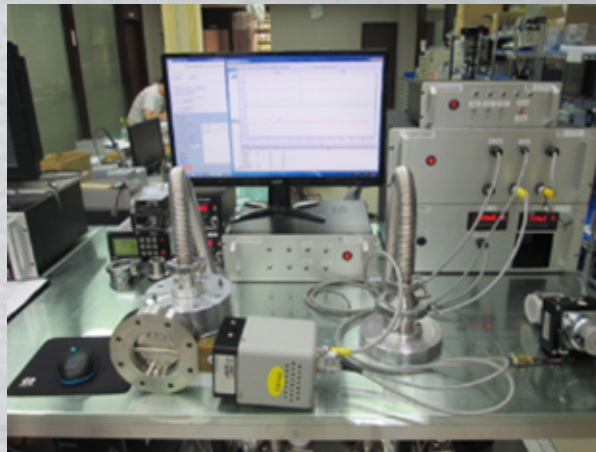
## 6. Valve final test:

Vacuum leakage by He detector

組裝完成後進行測漏.並壓力校正



Pressure Control Test





# MKS Throttle Valve Overhaul Procedure

## (MKS: 683B-23795) (AMAT:3870-03394)

### Check list



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	版別: 01
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表單名稱	MKS 683B Throttle valve(F 80 * Spring seat)(TPV-019)檢驗報告

#### 數據

分類	內容	上限	下限	實際值	單位	Remark
Torque test	馬達扭力測試(Motor loading test)	7100	600		plus Nm	N/A
Position found	Open to close total count	1400	1300		Step	COA Position_Step
Distance test	main shaft size	11.6	11		mm	N/A
Condition check	main shaft vibration	20	8		mm	N/A
Level test	Check valve leveling the off-line(磁鐵測試,檢查閥門是否水平 Housing 中)	0.12	0		mm	N/A
Torque test	馬達扭力測試(Motor loading test)	600	600		plus Nm	N/A
Position found	Switch 閉鎖關閉(Close)	8	0		Step	N/A
Position found	Switch 閉鎖開啟(Open)	8	0		Step	N/A
Vacuum test	Vacuum leakage check <1.0E-6 ton/line	30	1		1.0e-6 Ton US	COA Leakage
Pressure test	N2 25L, Pressure: 600 Ton, Valve angle 1°	14	12		degree	N/A
Pressure test	N2 25L, Pressure: 300 Ton, Valve angle 1°	14	12		degree	N/A
Condition check	PCB_Version	1.04	1.04		xx	COA PCB_Version

#### CHECK

分類	內容
<input type="checkbox"/>	Condition check Gear main shaft 是否漏氣
<input type="checkbox"/>	Condition check Gear box setscrew 需上螺絲固定
<input type="checkbox"/>	Condition check 確認 Limit switch 功能測試, 磁鐵向電壓是否正常
<input type="checkbox"/>	Condition check Device Net Open/Close 功能測試正常
<input type="checkbox"/>	Condition check 將後螺絲上緊(每 6 個上螺絲螺緊)
<input type="checkbox"/>	Condition check 磁鐵固定螺絲扭力 14kg/cm2
<input type="checkbox"/>	Condition check 確認 Node Address 為 MDS: 1, LDS: 3, Baud Rate 500KB
<input type="checkbox"/>	Condition check 這筆設定: TPA: On&Enable Pressure full range: 1000T, TPB: On&Disable
<input type="checkbox"/>	Condition check Open to close cycle 200 times
<input type="checkbox"/>	others Check PCB CPU version , V1.05 . If the version incorrect, engineer need inform customer.

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表單名稱	MKS 683B Throttle valve(F 80 * Spring seat)(TPV-019)檢驗報告

#### CHART

##### On-line pressure trend chart

項次	內容
1	On-line pressure trend chart. *Gas: N2, 20L, *Phase: 2.5, Gain: 2.5 *Pre-pressure target: 350 torr, *Pressure target: 600 torr, *Angel: 13度



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# MKS Throttle Valve Overhaul Procedure

## (MKS: 683B-23795) (AMAT:3870-03394)

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表單名稱	MKS 683B Throttle valve(F 80 · Spring seal)(TPV-019)檢驗報告	表單編號: PD-TPV-019-01

### CHART

On-line pressure trend chart

項次	內容
2	On-line pressure "監視響應" test trend chart. *Pressure target: 350 Torr, *Phase:2.5, Gain:2.5 *Gas flow:20L/30L/20L/30L *Stable time<10sec, 振幅:5Tor



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### CHART

On-line pressure trend chart

項次	內容
3	On-line pressure "監視響應" test trend chart. *Pressure target:600Torr, *Phase:2.5, *Gain:2.5 *Gas flow:20L/30L/20L/30L *Stable time<10sec, 振幅:5Tor



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表單名稱	MKS 683B Throttle valve(F 80 + Spring seal)(TPV-019)檢驗報告	表單編號: PM-TPV-019-01
<b>CHART</b> On-line pressure trend chart		
項次	內容	
4	Vacuum Gauge range switch test 16 to 500 torr pressure control within 5+ .05 sec.	



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## Part Apply

### Basic Parts Replacement

PM KIT	紙張編號	品名	規格	備註/描述	數量
E00001033	E00000246	全氣 O-ring	AS-111	材質:全氣 SC-513(OPEN PO)	2
E00001034	E00000702	Omni Seal	PN 730301501	彈簧材質:316SS/50EA單價	1
E00001035	E00000344	Bearing	R6ZZ SRL	NA	2
E00001818	E00000560	全氣 O-ring	AS-111	全氣 94/300ea	2
E00000971	E00000735	拉針彈簧	線徑:0.76mm 總長:31.46mm 線圈長:17.83mm 線圈外徑:7.61mm	材質:SWPB,防鏽處理,大量購買	2

### Optional parts replacement

更換	紙張編號	品名	規格	備註/描述	數量
<input type="checkbox"/>	E00000246	全氣 O-ring	AS-111	材質:全氣 SC-513(OPEN PO)	
<input type="checkbox"/>	E00000316	Omni Seal	13311020920G/P N 730003329	彈簧材質:301SS/50EA單價	
<input type="checkbox"/>	E00000340	直齒/Linear Gear	長: 38.20 mm 寬: 12.18 mm 高: 4.8 mm	NA	
<input type="checkbox"/>	E00000343	齒輪軸心	總長: 187 mm · 直徑: 11.1 mm	齒輪與軸心可分離	
<input type="checkbox"/>	E00000344	Bearing	R6ZZ SRL	NA	
<input type="checkbox"/>	E00000496	Limits Switch/限位開關	11SM1-T SPDT5A/250Vac	Honeywell	
<input type="checkbox"/>	E00000499	薄片 新品	TPV-019		
<input type="checkbox"/>	E00000526	滑動組	本體:長62.3 mm 寬38 mm 滑軌寬9.56mm 長:46.95mm	NA	
<input type="checkbox"/>	E00000560	全氣 O-ring	AS-111	全氣 94/300ea	
<input type="checkbox"/>	E00000702	Omni Seal	PN 730301501	彈簧材質:316SS/50EA單價	
<input type="checkbox"/>	E00000725	齒輪Front Gear	1400 step(中)	253B	
<input type="checkbox"/>	E00000726	齒輪Rear Gear	1400 step(小)	253B	
<input type="checkbox"/>	E00000735	拉針彈簧	線徑:0.76mm 總長:31.46mm 線圈長:17.83mm 線圈外徑:7.61mm	材質:SWPB,防鏽處理,大量購買	

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# MKS Throttle Valve Overhaul Procedure

## (MKS: 683B-23795) (AMAT:3870-03394)

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				版別: 01	
				編者: JJ	
表單名稱				MKS 683B Throttle valveKF 80 · Spring seal)(TPV-019)檢驗報告	
				表單編號: P04-TPV-019-01	
<input type="checkbox"/>	E0000808	MKS 683B 電路板 維修(基板維修)	683B	NA	
<input type="checkbox"/>	E0000841	螺絲	圓頭十字 #6*1/16 白鐵件(SUS 九十)	NA	
<input type="checkbox"/>	E0000842	螺絲	圓頭十字 #6*1/4 白 鐵(SUS 九十)	NA	
<input type="checkbox"/>	E0000844	Spring Washer 彈 簧墊片	#6(SUS SPWS)	NA	
<input type="checkbox"/>	E0000886	旋轉軸墊	OD20.5*ID10.5*10	材質:Viton	
<input type="checkbox"/>	E0000891	滾桿	直徑: 6.32mm 長 度: 91.2mm	10ea單價	
<input type="checkbox"/>	E0000895	六角螺帽	5/8-18		
<input type="checkbox"/>	E0000939	鐵嘴	FG-04/4公分/A- 26	NA	
<input type="checkbox"/>	E0001059	Washer 平墊片	外11.8*內6.3*厚1.5	材質:SUS/100EA單價	
<input type="checkbox"/>	E0001060	齒輪 Main Gear	1400 step(大)	253B	
<input type="checkbox"/>	E0001090	MKS Motor	1400 step	中古品價格	
<input type="checkbox"/>	E0001096	MKS 683B 電路板 維修(基板維修)	683B	NA	
<input type="checkbox"/>	E0001493	舌環	S-3/8	軸用(防熱線)	
<input type="checkbox"/>	E0001672	擺管Bearing	SRW166ZZ	NA	
<input type="checkbox"/>	E0001711	螺絲	止付螺絲 #6*3/16 (SUS SET)	白鐵	
<input type="checkbox"/>	E0001759	圓鋼螺絲孔加工	NA	NA	
<input type="checkbox"/>	E0001899	PIN	1.5*7.5mm	NA	
<input type="checkbox"/>	E0002067	683B 電路板漆修 (基板維修)	683B	MKS	
<input type="checkbox"/>	E0002421	轉膠白點真瓷	NA	材質:POLYMER(本色)	
<input type="checkbox"/>	E0002497	MKS Motor	1400 step(銀色頭)	新品	
<input type="checkbox"/>	E0002499	壓縮彈簧	0.28*3.8*7*5.6mm	彈徑*外徑*齒數*長度	
<input type="checkbox"/>	E0002599	齒輪(齒圈)	NA	TPV-019齒輪(只有齒圈不含 軸心)	
<input type="checkbox"/>	E0002606	圓鋼新品(圓片本體)	KF80	NA	
<input type="checkbox"/>	E0002630	圓鋼新品(圓片本體)	KF90(φ151mm,T 25.38mm)	材質:SUS304	

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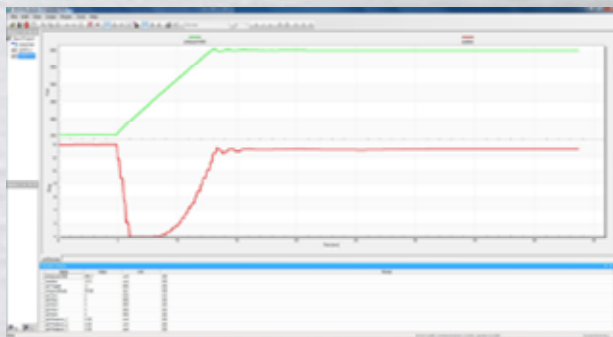
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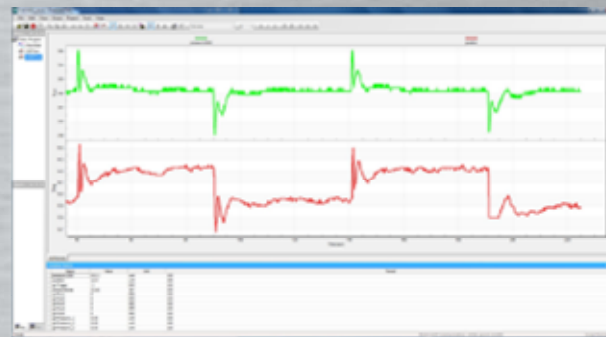
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(MKS: 683B-23795) (AMAT:3870-03394)

## 6. Valve final test:



350 to 600 torr  
Gas: N<sub>2</sub>, 20L  
Phase/Gas : 2.5



350 torr stable test  
Gas: N<sub>2</sub>, 20L +5L  
Phase/Gas: 2.5

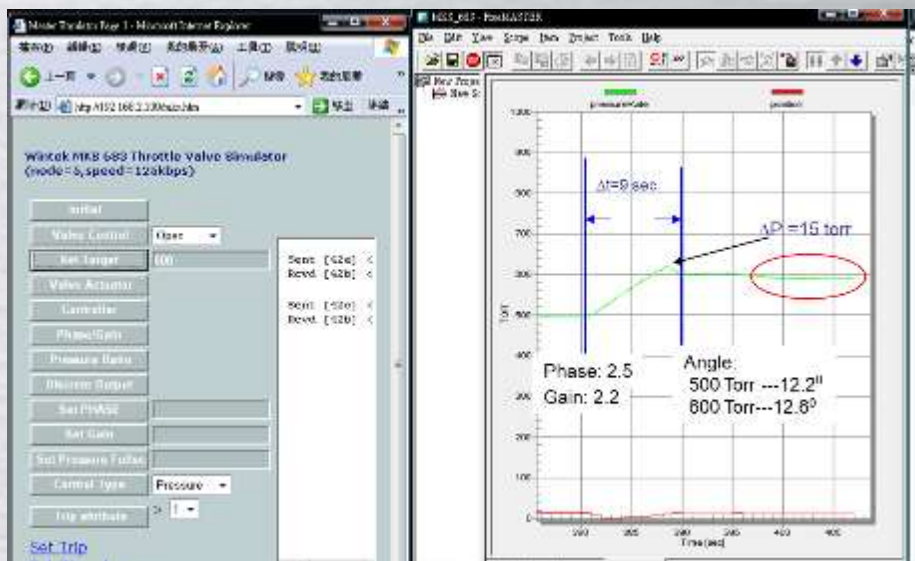
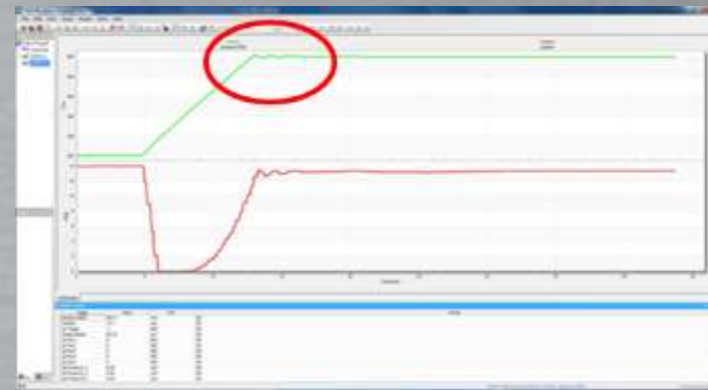
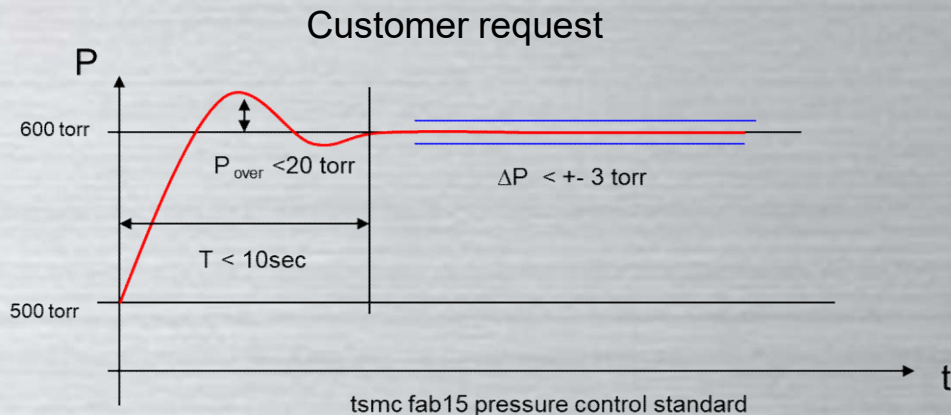


600 torr stable test  
Gas: N<sub>2</sub>, 20L+ 5L  
Phase/Gas: 2.5

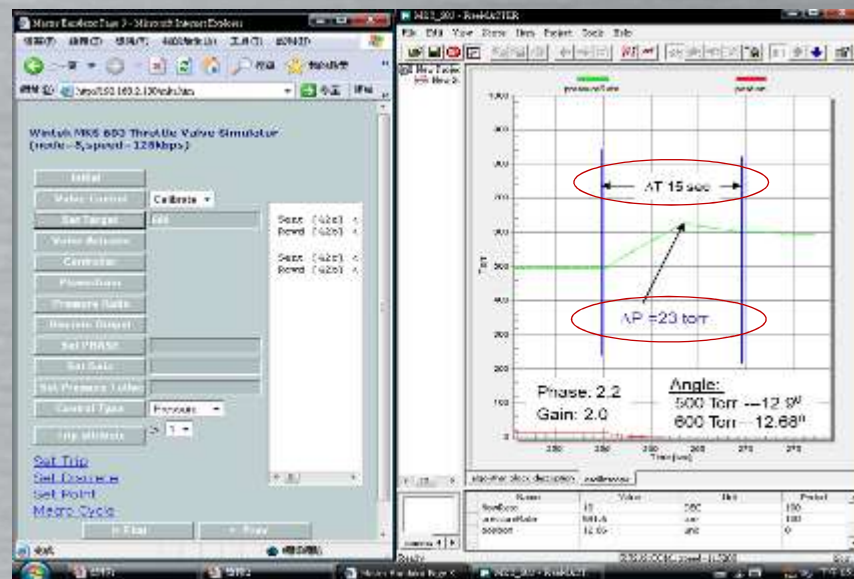


# MKS Throttle Valve Overhaul Procedure (MKS: 683B-23795) (AMAT:3870-03394)

Remark:



威騰 overhaul



MKS ( out of spec.)