

## Additel 783 Pressure Controller



- Pressure ranges from -14.35 psi (-0.99 bar) to 3600 psi (250 bar)
- Two removable internal pressure modules with multi-range selection
- 0.02%FS, 0.01%FS, and 0.01%RD accuracy
- Control stability of 0.003%FS
- Ultra-High speed pressure control
- Absolute & Gauge Pressure
- LAN, USB, RS232, and Ethernet communication
- Large 7" color touch screen display
- Optional barometric pressure module
- Easy-to-use icon driven interface
- I/O alarm
- Emulation mode



### OVERVIEW

These modular pressure controllers combine cutting-edge control/measurement technology, modular design, and user-friendly features. The Additel 783 controller series is optimized for speed without compromising accuracy and stability. For users who require automated production, test, and calibration, Additel has the workload covered with this pressure controller. The ADT783 can quickly be outfitted with two controlling modules and one reference barometric module to cover a wide pressure range. The Additel 783 series offers three base units to choose from, which range from 3600 psi (250 bar) down to low pressure differential.

### ADT783-D

The ADT783-D is designed for differential and gauge pressure calibration to as low as  $\pm 10$  inH<sub>2</sub>O ( $\pm 25$  mbar) up to 36 psi (2.5 bar). Select between one or two pressure control modules. Each module comes with a dual-range calibration, expanding measurement accuracy within each module. This unit has a control stability of 0.003%FS. In addition to the two control modules, an optional barometric module can be added which allows for gauge and absolute measurements.



### ADT783-1K

The ADT783-1K is designed for gauge pressure calibration from -14.35 (-0.99 bar) up to 1000 psi (70 bar). Select between one or two pressure control modules. Each module comes with a dual-range calibration, expanding measurement accuracy within each module. This unit has a control stability of 0.003%FS. In addition to the two control modules and optional barometric module can be added which allows for gauge and absolute measurements.



### ADT783-3.6K

The ADT783-3.6K is designed for gauge pressure calibration from -14.35 (-0.99 bar) up to 3600 psi (250 bar). Select between one or two pressure control modules. Each module comes with a dual-range calibration, expanding measurement accuracy within each module. This unit has a control stability of 0.003%FS. In addition to the two control modules and optional barometric module can be added which allows for gauge and absolute measurements.



### Quick Change Pressure Modules (30 seconds)

Additel's 151 pressure control modules can be installed or replaced within 30 seconds or less. The upper edge of the cabin is simple to open. As the door opens, the controller will automatically release pressure, providing the safe removal and installation of the ADT151 modules. Additel offers various different pressure ranges for the ADT783 controller by utilizing these easy to swap pressure modules. Select from the module ranges listed on page 5 and page 6.





### Convenient Automatic Calibration of Internal Pressure Control Module

Within production environments, higher frequency of calibration and comparison of the pressure control module is important and helps to provide confidence. The ADT783 can be connected with an external high-precision pressure module, which can be used to achieve regular comparison of the internal pressure control module, and can also be used to perform automated calibration of the internal pressure control module.



### Modular Design, Easy Maintenance

The ADT783 adopts a variety of easy maintenance design features, which allows users to quickly change the rear mounted pressure control module, quickly change the pressure control and valve components, quickly clean the solenoid valve, and provides fine filtration of pollution particles.



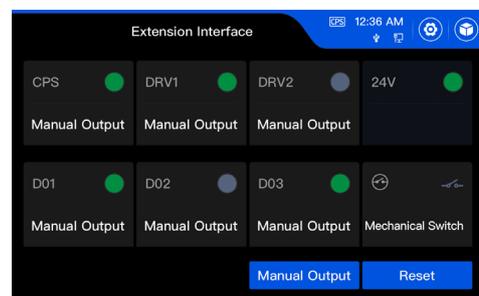
### 20% Pressure Step within 10 Seconds

In the process of efficient and fast-paced production line testing, verification and calibration, users have strict requirements on the speed of pressure controllers. The ADT783 adopts professional control technology to effectively improve control rate and stability: control response time (typical)  $\leq 10$  Seconds, control stability (typical)  $\leq \pm(0.001\sim 0.003)\%$ FS, see specifications for more details.



### Vacuum Pump Automatic Start-Stop, Greatly Extending the life of Vacuum Pump

The ADT783 incorporates a built-in positive pressure/vacuum gas source with switching components. When controlling a small pressure above the atmospheric pressure point, it can be controllable and stable without connecting the vacuum pump. When controlling negative pressure or vacuum pressure, there is no need to utilize an external vacuum pump or protection components. A solid-state relay can be connected to the power supply line of the vacuum pump to realize fully automatic vacuum pump start-stop control, greatly extending the life of the vacuum pump.



### Volt Free Contacts

The ADT783 built-in 3-way solenoid valve drive can directly control the external isolation valve without an external power supply. Multiple isolation valve combination applications greatly enhances the flexibility of the test system. Three non-contact relay outputs can be used to realize the alarm output of the device, and can also be used to trigger external devices.

## Pressure Specifications

Specification / Model	ADT783-D	ADT783-1K	ADT783-3.6K
Max Pressure Range	36 psi (2.5 bar)	1000 psi (70 bar)	3600 psi (250 bar)
Min Pressure Range <sup>[1]</sup>	-14.35 psi (-0.99 bar)	-14.35 psi (-0.99 bar)	-14.35 psi (-0.99 bar)
Precision <sup>[2]</sup>	0.015%FS (DP2-DP5) 0.025%FS (DP10-DP1K)	0.01%FS or 0.007%FS or 0.008%RD	0.01%FS or 0.007%FS or 0.008%RD
Accuracy <sup>[3]</sup>	0.05%FS (DP2-DP5) 0.02%FS (DP10-DP1K)	0.02%FS or 0.01%FS or 0.01%RD	0.02%FS or 0.01%FS or 0.01%RD
Control Stability <sup>[4]</sup>	< 0.003%FS, typically 0.001%FS	< 0.003%FS, typically 0.001%FS	< 0.003% FS, typically 0.001%FS
Control Response Time <sup>[5]</sup>	< 10 Seconds	< 10 Seconds	< 10 Seconds
Pressure Type	Differential	Gauge	Gauge
Gauge and Absolute Pressure Switchable <sup>[6]</sup>	Optional	Optional	Optional
Interchangeable Pressure Module Bays	2	2	2
Max Pressure Control Range of Internal Module	-14.5 to 36 psi (-1 to 2.5 bar)	-14.5 to 1000 psi (-1 to 70 bar)	-14.5 to 3600 psi (-1 to 250 bar)
Min Pressure Control Range of Internal Module	±2 inH2O (±2.5 mbar)	±10 psi (±0.7 bar)	-15 psi to 150 psi (-1~10 bar)
Maximum High-low Range Ratio	NA	20:1	NA
Range Switching Mode	Fixed or Auto	Fixed or Auto	Fixed or Auto
Supply Source <sup>[7]</sup>	External air source	External air source	External air source
Maximum Supply Pressure <sup>[8]</sup>	4 bar	80 bar	280 bar
Control Mode	Fast, standard, custom	Fast, standard, custom	Fast, standard, custom
Maximum Overshoot	< 1%FS	< 1%FS	< 1%FS
Maximum Load Volume	1000 mL	1000 mL	1000 mL
Contamination Prevention System (CPS)	Optional	Optional	Optional
Pressure Port	1/8 BSP F	1/8 BSP F	1/8 BSP F
Air Source Port Safe Pressure Limit <sup>[9]</sup>	Air source port: 10 bar Vacuum source port: 5 bar	Air source port: 140 bar Vacuum source port: 5 bar	Air source port: 300 bar Vacuum source port: 5 bar
Port Filter <sup>[10]</sup>	Support	Support	Support

[1] The minimum negative pressure limit is given based on the atmospheric pressure value of 1bar.

[2] Precision: the error components includes linearity, hysteresis, repeatability, resolution, and temperature compensation.

[3] Accuracy: the error components include linearity, hysteresis, repeatability, resolution, reference standard measurement uncertainty, annual drift, temperature compensation, K=2.

[4] In order to achieve 0.001% FS control stability, some additional stabilization time at the desired pressure may be needed depending on the configuration and pressure level.

[5] The air pressure is tested under an external load volume 50 ml, 20% step, and the time to reach 0.005%FS stability.

[6] After the reference atmospheric pressure module is installed, users can select gauge or absolute pressure.

[7] Gas refers to clean and dry nitrogen or air.

[8] In order to achieve the best control effect, the air source pressure should be adjusted to about 110% of the maximum range of the internal pressure control module or 1bar, whichever is greater.

[9] In order to prevent the inlet pressure of the air source from exceeding the safety limit, it is recommended to install a suitable pressure safety valve at the outlet of the air source.

[10] All pressure ports are installed with 40-100 µm filters.

## Specifications for ADT783 Pressure Modules

The following tables provide information regarding our ADT151 modular pressure sensors that are designed to easily mount in the front bays of the ADT783 Pressure controller. Our differential pressure (DP) and compound pressure (CP) module accuracy specifications include linearity, hysteresis, repeatability, temperature compensation and annual drift, precision specifications include linearity, hysteresis, repeatability, resolution, and temperature compensation. Both the DP and CP style gauges can be zeroed by the controller from time to time to mitigate the effect of zero drift. The specifications are valid from 15°C~35°C. We recommend that these pressure models be calibration annually.



Standard Compound Gauge Pressure Module for ADT783-1K / 3.6K						
Model	Compound Gauge pressure		Measurement Type	Media	Precision <sup>[2]</sup> (%FS)	Accuracy <sup>[3][4]</sup> (% FS)
	1st range <sup>[1]</sup>	2nd range				
ADT151-XX-CP3.6K	(-15~3600) psi / (-1~250) bar	(-15~1500) psi / (-1~100) bar	Sealed gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP2K	(-15~2000) psi / (-1~160) bar	(-15~1000) psi / (-1~70) bar	Sealed gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP1K	(-15~1000) psi / (-1~70) bar	(-15~500) psi / (-1~35) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP500	(-15~500) psi / (-1~35) bar	(-15~300) psi / (-1~20) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP300	(-15~300) psi / (-1~20) bar	(-15~150) psi / (-1~10) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP150	(-15~150) psi / (-1~10) bar	(-15~60) psi / (-1~4) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP100	(-15~100) psi / (-1~7) bar	(-15~50) psi / (-1~3.5) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP50	(-15~50) psi / (-1~3.5) bar	(-15~30) psi / (-1~2) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP30	(-15~30) psi / (-1~2) bar	(-15~15) psi / (-1~1) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)
ADT151-XX-CP15	(-15~15) psi / (-1~1) bar	(-10~10) psi / (-0.7~0.7) bar	Gauge	G,L	0.007 (0.01)	0.01 (0.02)

[1] The overload pressure of all pressure modules is 110%FS, and the burst pressure is 200%FS, the burst pressure of CP150 is 130%FS.

[2] Precision: the error components includes linearity, hysteresis, repeatability, resolution, and temperature compensation.

[3] For the full-scale accuracy, FS refers to the upper limit of the range - the lower limit of the range.

[4] Accuracy: the error components include linearity, hysteresis, repeatability, resolution, reference standard measurement uncertainty, annual drift, temperature compensation, K=2.

Differential Pressure Module for ADT783-D						
Model <sup>[1]</sup>	Differential Pressure		Measurement Type	Media	Precision <sup>[3][4]</sup> (%FS)	Accuracy <sup>[5]</sup> (% FS)
	1st range <sup>[2]</sup>	2nd range				
ADT151-XX-DP1K	(-400~1000) inH2O (-1000~2500) mbar	(-400~400) inH2O (-1000~1000) mbar	DP	G	0.015	0.02
ADT151-XX-DP800	(-400~800) inH2O (-1000~2000) mbar	(-400~400) inH2O (-1000~1000) mbar	DP	G	0.015	0.02
ADT151-XX-DP400	(-400~400) inH2O (-1000~1000) mbar	(-200~200) inH2O (-500~500) mbar	DP	G	0.015	0.02
ADT151-XX-DP300	(-300~300) inH2O (-700~700) mbar	(-150~150) inH2O (-350~350) mbar	DP	G	0.015	0.02
ADT151-XX-DP200	(-200~200) inH2O (-500~500) mbar	(-100~100) inH2O (-250~250) mbar	DP	G	0.015	0.02
ADT151-XX-DP150	(-150~150) inH2O (-350~350) mbar	(-100~100) inH2O (-250~250) mbar	DP	G	0.015	0.02
ADT151-XX-DP100	(-100~100) inH2O (-250~250) mbar	(-50~50) inH2O (-125~125) mbar	DP	G	0.015	0.02
ADT151-XX-DP50	(-50~50) inH2O (-125~125) mbar	(-30~30) inH2O (-75~75) mbar	DP	G	0.015	0.02
ADT151-XX-DP30	(-30~30) inH2O (-75~75) mbar	(-20~20) inH2O (-50~50) mbar	DP	G	0.015	0.02
ADT151-XX-DP20 <sup>[6]</sup>	(-20~20) inH2O (-50~50) mbar	(-10~10) inH2O (-25~25) mbar	DP	G	0.015	0.02
ADT151-XX-DP10 <sup>[6]</sup>	(-10~10) inH2O (-25~25) mbar	(-5~5) inH2O (-10~10) mbar	DP	G	0.015	0.02
ADT151-XX-DP5 <sup>[6]</sup>	(-5~5) inH2O (-10~10) mbar	(-2~2) inH2O (-5~5) mbar	DP	G	0.025	0.05
ADT151-XX-DP2 <sup>[6]</sup>	(-2~2) inH2O (-5~5) mbar	(-1~1) inH2O (-2.5~2.5) mbar	DP	G	0.025	0.05

[1] DP300 to DP1000 provides positive range, accuracy and precision specifications continue to apply;

P10 to DP150 provides a positive range with accuracy and precision specifications of 0.02%FS and 0.015%FS, respectively;

DP2 to DP5 provides a positive range, with accuracy and precision specifications of 0.05%FS and 0.025%FS, respectively.

[2] The overload pressure of all pressure modules is 150%FS, and the burst pressure of modules: DP20 / DP 10 / DP5 / DP2: 100mbar, DP100 / DP50 / DP30:1000mbar, DP400 / DP300 / DP200 / DP150: 4000 mbar, DP800 / DP1000:10000 mbar.

[3] FS means upper range - lower range.

[4] Precision: the error components includes linearity, hysteresis, repeatability, resolution, and temperature compensation.

[5] Accuracy: the error components include linearity, hysteresis, repeatability, resolution, reference standard measurement uncertainty, annual drift, temperature compensation, K=2.

[6] Recommended calibration period 180 days.

**High-precision Compound Gauge Pressure Module Specification for ADT783-1K / 3.6K**

Model	Gauge pressure range <sup>[1]</sup>	Absolute Pressure Range <sup>[2]</sup>	Measurement Type	Media	Precision <sup>[3][4]</sup>	Accuracy <sup>[5][6]</sup>
ADT151-XX-CP3.6KM	(-15~3600) psi	(0~3515) psi	Sealed gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP2KM	(-15~2000) psi	(0~2015) psi	Sealed gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP1.5KM	(-15~1500) psi	(0~1515) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP1KM	(-15~1000) psi	(0~1015) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP500M	(-15~500) psi	(0~515) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP300M	(-15~300) psi	(0~315) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP150M	(-15~150) psi	(0~165) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP100M	(-15~100) psi	(0~115) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP50M	(-15~50) psi	(0~65) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater
ADT151-XX-CP30M	(-15~30) psi	(0~45) psi	Gauge	G,L	0.008% rdg or 0.004% FS whichever is greater	0.01% rdg or 0.005% FS whichever is greater

[1] The overload pressure of all pressure modules is 110%FS, and the burst pressure is 200%FS, the burst pressure of CP150M is 130%FS.

[2] Absolute pressure is achieved through the synthesis of the basic gauge pressure module and the optional atmospheric pressure module.

[3] FS refers to the positive range, and the accuracy of the negative pressure part is equal to that of the positive pressure part.

[4] Precision: the error components includes linearity, hysteresis, repeatability, resolution, and temperature compensation.

[5] The accuracy of the negative pressure part is equal to the accuracy of the positive pressure part, such as the maximum error of -15 psi is equal to the maximum allowable error of 15 psi.

[6] Accuracy: the error components include linearity, hysteresis, repeatability, resolution, reference standard measurement uncertainty, annual drift, temperature compensation, K=2.

## BAROMETRIC MEASUREMENT SPECIFICATIONS

Barometer Type <sup>[1]</sup>	Absolute Pressure Range	Accuracy
ADT151-BP	(60~110) kPa	±22 Pa
ADT151-BPH	(60~110) kPa	±10 Pa

[1] A barometric pressure module is optional. After inserting the barometric pressure module, the controller can be toggled to and from gauge and absolute pressure units.

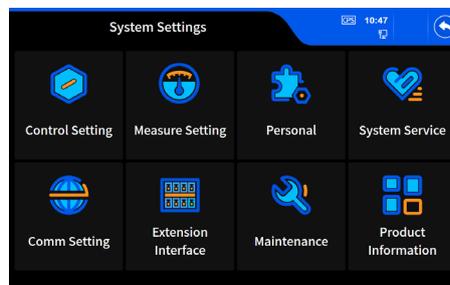
## General Specifications



Specification	Description
Power Requirements	Power supply: AC100~240 V, 50/60 Hz
	Fuse: T3.15A 250V AC
	Maximum Power consumption: 150W
Size /Weight	Chassis Size: 17.32 × 5.23 × 14.96 in (440(W) × 133(H) × 380(D) mm)
	Rack Mount Dimensions: 3U-19" rack, Horizontal Direction
	Chassis weight: 16.9 kg
	Pressure module weight: 0.5 kg
Environment	Operating Ambient: 10°C ~50°C
	Storage Temperature: -20°C ~70°C
	Operating humidity: 5%RH~95%RH, non-condensing
	Altitude (Operation): <2000 m
	Ingress Protection: IP20, Indoor use only
	Vibration level: 2 G
	Impact intensity: 4 G
	Warmup Time: 15 minutes
Conformity	Machine drop height: 250 mm
	CE, UKCA
Communications	RS232, USB-A*2, LAN
	WIFI, Bluetooth, GPIB, mouse, keyboard and other peripheral components can be expanded based on the USB port.
	SCPI Command set is compatible with ADT780, PACE5000/6000, DRUCK DPI520, user customizable
External drive valve port	3-channel external drive valves, green terminal connector with lock
	Maximum driving ability 24 V / 12 W, 30 V max
	One channel fixed to the CPS pollution prevention device, the remaining 2 channels, users can be used to Control the external vacuum Pump and external isolation valve
I/O Alarm port	3-channel, green terminal connector with a lock
	Volt-Free No/Nc relay, the maximum current-carrying capacity: 24 V / 0.5 A, 30 V max
Pressure switch test port	One channel, green terminal connector with lock
	Maximum load 24 V / 0.1 A 30 V max
	Support mechanical switch, electronic switch testing
Display	7-inch capacitive touch screen, 1280 * 800 resolution, reflective panels, black, white background can switch
	Communication update speed: 10 times per second
	Display refresh rate: 5 times per second
	Pressure value maximum displays: + 9999999, display digits is adjustable
External pressure module	Measurement only
Internal pressure control module port	Opening the cabin door will automatically release the pressure for safe removal of modules
	Inside of cabin, 3 pressure module bays, from left to right
	including a high pressure module bay, a low pressure module bay, and a barometric pressure module bay
Warranty	1 year



Main Interface



System Settings

## ORDERING INFORMATION

### ■ Model Number (Base Unit Only - No Pressure Modules)

ADT783	Model: ADT783-D ADT783-1K ADT783-3.6K
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### Model Number (Pressure Modules)

ADT151	01	CP3.6K
Accuracy: 01 = 0.01% of full span 01RD = 0.01% of reading 02 = 0.02% of full span		See internal module specification table



ADT151-01-CP3.6K

ADT151	BP
Model: ADT151-BP ( $\pm 22$ Pa) ADT151-BPH ( $\pm 10$ Pa)	



ADT151-BP

Standard Accessories			
Model number	Quantity	Picture	
1311000014 AC power cord (10 A 250 V)	1 pc		
ISO17025 accredited calibration certificate	1 pc		
Green terminal plug (For switch test)	2 pcs		
O-ring 3.5*1.5 (For sealing pressure control module)	10 pcs		
Festo plug (6 mm) (Only for ADT783-D)	2 pcs		
Festo connector (Only for ADT783-D)	2 pcs		
Standard vent assembly (plug with vent valve) (Only for ADT783-1K / 3.6K)	1 set		

General Optional Accessories			
Model number	Description	Picture	
9050	USB to 232 cable		
9055-1	USB to Bluetooth module		
9055-2	USB to WIFI module		
9053	USB to GPIB cable		
9050-EXT	RS232 communication cable		
9054	Calibration fixture for ADT151 (Including adapter base w/ 1/4BSP male fitting, RS232/power supply cable, 9V adapter, calibration software)		
9245	Rack mount assembly		
Waiting	Green terminal plug (Drive valve, for I/O)		

Optional Accessories of ADT783-D			
Model number	Description	Picture	Note
1650800039	Polyurethane tube 6 mm x 1.5 m		one set: 8 mm silicone tube outlet, which can be connected to a single-head instrument frame or DUTs with barb hose connector interface.
1220700199	Adapter assembly 6 mm to Bar hose adapter		
1710400040	Silicone tube 8 mm x 0.5 m		
1650800039	Polyurethane tube 6 mm x 1.5 m		one set: 1/4BSP outlet, can be connected to CPS gas-liquid separator or 121 manifold
Waiting	Adapter 6 mm to 1/4 BSP F		
9240A	Single head instrument rack Bar hose connector with air chamber		Alternative
ADT121	Manifold 4 ports, 25 MPa		
1650700087	Quick connector (6 mm)		one set: for drainage of vent port
1650800039	Polyurethane tube (6 mm x 1.5 m)		
1650700087	Quick connector (6 mm)		6 mm outlet, ADT783-D connect with positive pressure and vacuum air source
ADT108-X-KIT	Contamination Prevention System		If the DUT is dirty or with liquid, please choose CPS

Optional Accessories of ADT783-1K / 3.5K			
Model number	Description	Picture	Note
1611300048	O ring 10*2-NBR70		one set: 1/4BSP outlet, can be connected to CPS gas-liquid separator or 121 manifold
Waiting	Adapter 1/8 BSP M -1/4BSP M		
121	Manifold 4 ports 25 MPa		
ADT108-X-KIT	Contamination Prevention System		If the DUT is dirty or with liquid, please choose CPS
1611300048	O ring 10*2-NBR70		1/4BSP outlet, connecting with positive pressure air source
Waiting	Adapter 1/8 BSP M -1/4BSP M		
1650700087	Quick connector (6 mm)		6 mm outlet, connecting with vacuum air source
1650700087	Quick connector (6 mm)		
1650800039	Polyurethane Tube (6 mm)		
			one set: for drainage of vent port