

**Microwave Digestion System**



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# WMD-600/800/1000/1200 Series

## Description

WMD600 series is a new series of microwave digestion system which launched in 2019. It is newly designed and fully upgraded with higher performance and safer protection system. The smart design and perfect performance make it warmly welcomed by users worldwide.

## Features

### Robust Industrial Chamber

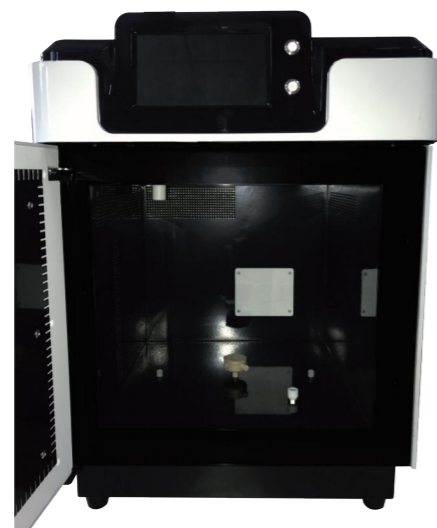
- 316L industrial stainless steel, higher durability and safety.
- Multi-layer PFA coatings, acid and alkali proof, longer service life.

### Higher Safety Protection

- System auto stops running to trigger safety protection scheme if following situations happen.
- \*System error \*Abnormal sound \*No digestion vessel loaded \*Door unclosed \*Over-temperature or over-pressure.

### Real-time Monitoring of T&P

- Real-time pressure and temperature of sample solution in each vessel can be monitored.
- Real-time T&P graph and power running status can be shown on display screen clearly.



### Large Data Storage

- 8 kinds of digestion methods preinstalled.
- Up to 255 groups of digestion method can be created and stored; each method can set up 10 steps.

### Contactless Pressure & IR Sensor

- 2 sets of pressure sensors
- 1 set of IR sensor with special waveband, much more accurate and safer.
- 360 degrees scan monitoring, every digestion vessel can be monitored.

### Multi Options

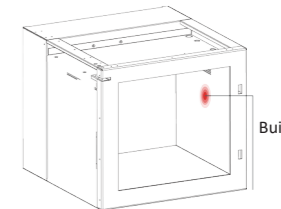
- Vessel quantity is optional.
- 6/8/10/12 positions of sample rotors are available to meet various requests.

## Features

- The whole machine is designed with a 316L stainless steel structure PFA to coating avoid impact, explosion, and corrosion.
- Explosion-proof sensors are installed on the furnace chamber's to ensure safety
- The emergency stop button located outside can quickly and effectively cut off the power supply to prevent accidents.
- The machine is equipped with a dual independent chain sensing device that cuts off power when the door is open and stops microwave output when the door is not completely closed.
- The digestion tank has a self-recovering double-pressure relief structure to prevent sample loss due to overpressure.



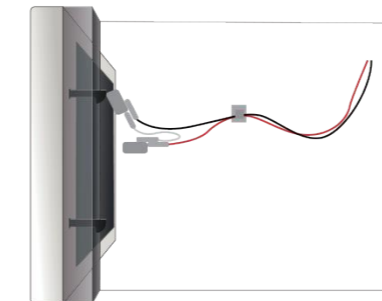
316L Industrial Stainless Steel Chamber



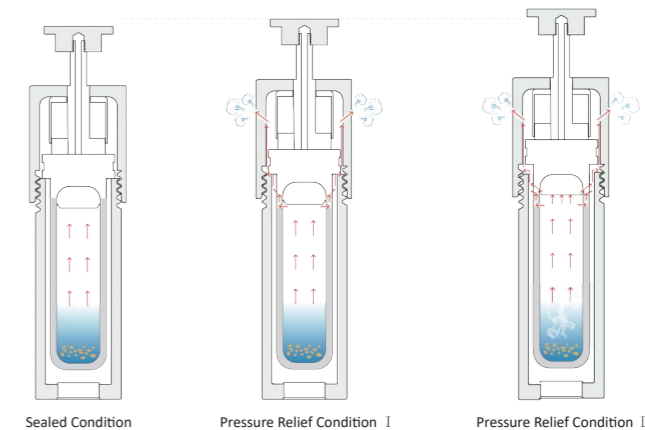
Perspective View Of Instrument Structure



Emergency Stop



Dual Independent Interlocking Sensing Devices



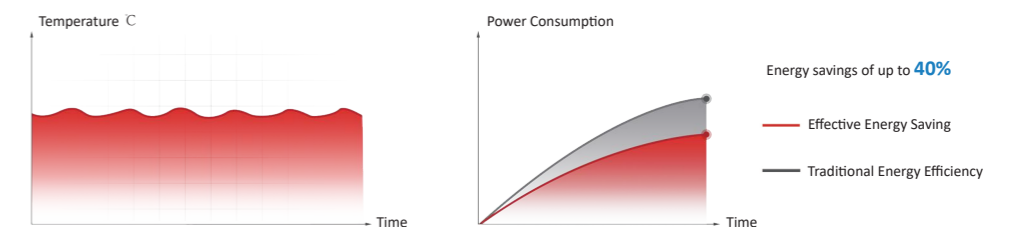
Sealed Condition

Pressure Relief Condition I

Pressure Relief Condition II

Dual-linked sensor technology automatically disables microwave output when the door is opened. The composite door is designed to withstand pressure shocks in the furnace cavity during unexpected events. It has a microporous metal mesh layer inside to prevent any microwave leakage, and the outer layer is made of multi-layer explosion-proof and impact-resistant materials.

Non-pulse microwave automatically adjusts the microwave power output based on temperature and pressure signals to ensure more accurate temperature control during continuous microwave.

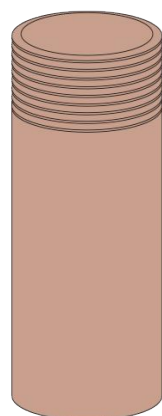


# WMD-600/800/1000/1200 Series

## Saving Cost Of Use

Durable accessories same consumables such as sealing bowls, bursting disk, etc.

### Digestion Vessels



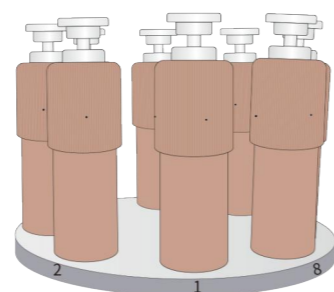
The instrument features a double-ended screw design that ensures good airtightness. The inner vessel is made of imported TFM material. The outer tank is made of PEEK mixed fiberglass material, with great toughness and rigidity. This guarantees the product's safety and reliability during repeated use at high temperatures and pressures over the long term.

The outer vessel is designed based on the 3D directional explosion-proof theory with vertical blasting. In case of explosion, the pressure will release vertically to ensure safety.

The vessel has successfully passed both the pressure resistance test and the simulated intensify test (set 230 °C and keep for 45 mins for over 100 times). Despite these extreme conditions, the tank showed no deformation or breakage and is currently functioning well.

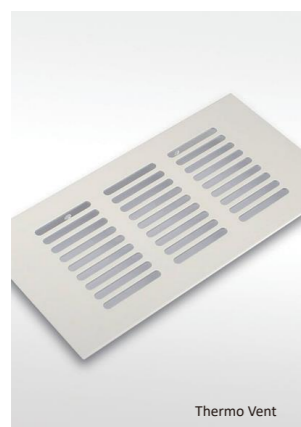
## Batch Processing Volume

Up to 12 vessels with optional 6, 8, 10 or 12 vessels for easy batch processing.



### Heating Uniformity

The turntable rotates at a speed of 2 second-run and completes one rotation in two seconds to ensure uniform sample digestion.



## Programming

The touch screen displays real-time temperature, pressure, and other parameters, providing a clear overview of the digestion process. meanwhile, it can edit save digestion methods, and use the methods at any time.



## No Tool Assistance Required

Three easy steps to assemble and open vessels without any tool.



## Technical Specification

Model	WMD600	WMD800	WMD1000	WMD1200D
Vessel Quantity	6	8	10	12
Temperature Monitoring System	Temperature Monitoring: Contactless IR Sensor; Scan monitoring for each vessel Temperature Controlling Range: 50~400 °C; Temperature Accuracy: ±0.1°C; Display Accuracy: ±0.1 °C			
Pressure Monitoring System	Pressure monitoring: Contactless Sensor; Scan monitoring for each vessel Pressure Controlling Range: 0~15MPa Pressure Accuracy: ±0.01MPa Display Accuracy: ±0.01Mpa			
Vessel Volume	100mL			
Sample Vessel Material	Imported TFM			
Protection Vessel Material	Peek+Glass Fiber			
Display	7 inch Touch Screen			
Rotation	360°Continuous Rotating			
Microwave Tank	316L Stainless Steel tank With Corrosion-Proof Coating			
Microwave Power	0-1000W(Adjustable)			
Microwave Leakage	<5mw/cm2			
Air Exhaust	High Power Corrosion-Proof Air Blower			
Power	AC220V±10%, 10A, 50/60Hz			
Dimension	490*560*630mm(L*W*H)			
Weight	47kg			

# WMD1800R



## Robust Construction

- 316L industrial stainless steel, higher durability and safety.
- Multi-layer PFA coatings, acid and alkali proof, longer service life.

## 8 inches External Controller

- Large external controller, easier operation
- Touch screen on where graphs and working status can be displayed.

## Higher Safety Protection

- Round chamber with upward-opening door ensures higher safety.

## Contactless Pressure & IR Sensor

- 3 pressure sensors
- IR sensor with special waveband, which ensures accuracy and safety.
- 360 degrees scan monitoring, every digestion vessel can be monitored.

## Real-time Monitoring of T&P

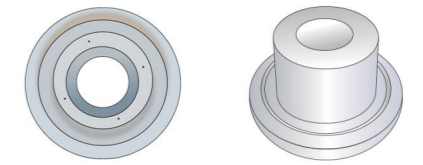
- Real-time pressure monitoring of pressure and temperature for each vessel.
- Real-time T&P graph and power running status can be shown on display screen clearly.

## Frame Protection

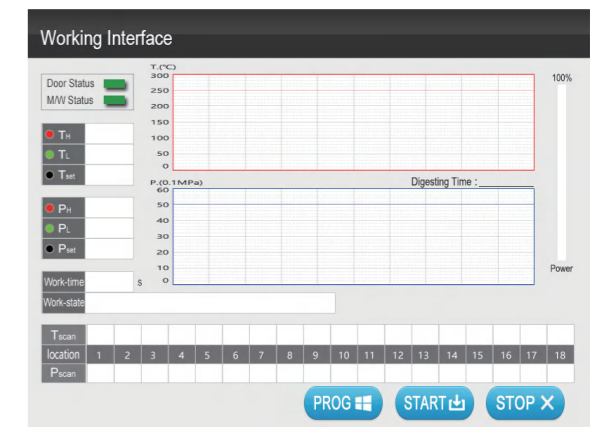
- Each digestion vessel is fixed in protection frame, providing the double protection.

# Up to 12 Security Protections

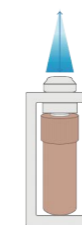
- Over pressure relief by pressure relief rings and holes.



- Explosion-proof frame for which is safer of samples with complex matrixes

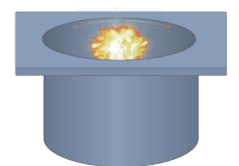


- The tank's non-contact mid-infrared temperature system collects parameters frequency. Once vessel temperature is over set value, the system will stop running to protect the vessels.



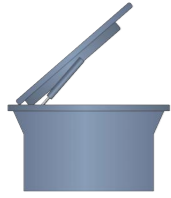
- Non-contact fiber pressure scanning monitoring system monitor each vessel pressure. Once pressure is over set value. Once pressure is over set value, system will stop running to protect the vessels.

- 316L stainless steel furnace chamber with explosion-proof design and multi-layer PFA coating for insulation and corrosion resistance.

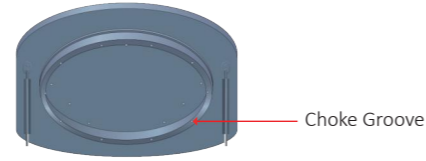


# WMD1800R

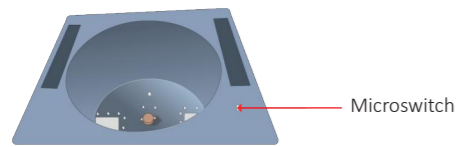
- Semi-automatic lid-opening system explosion-proof mechanical design concepts.



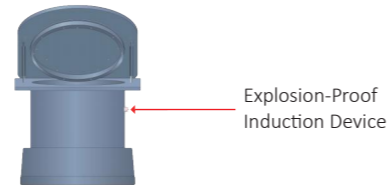
- Choke groove design increases the sealing of the whole machine and further prevents microwave leakage.



- A furnace door sensing element is used to provide additional protection against the door getting locked.



- Explosion-proof sensor on the outer chamber of the furnace chamber for emergent stop.



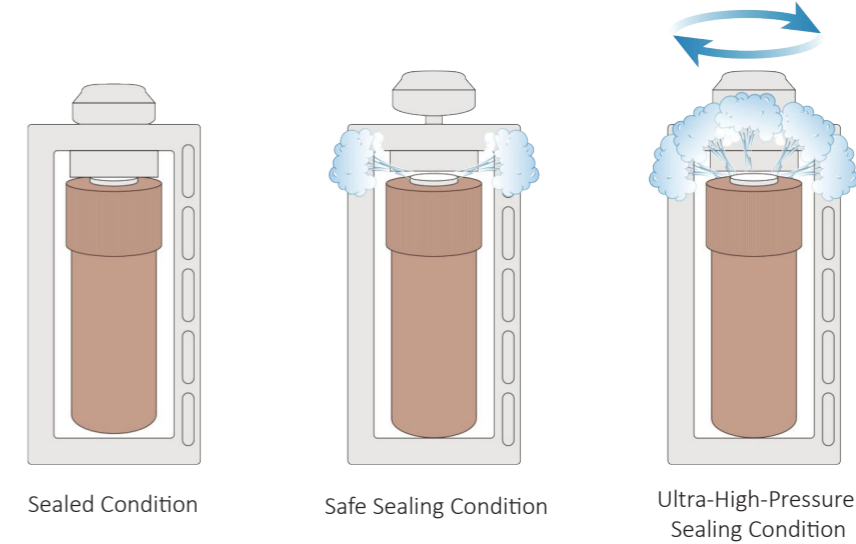
- Monitoring of strange noises in the furnace chamber for timely risk avoidance

- Function for monitoring instrument failures can accurately diagnose abnormalities and prevent obstacles, ensuring reliable equipment operation.

- Microwave's vibration emergency stop function stops microwave output when disturbed externally such as movement or tapping.

## Efficient, Reliable And Trustworthy Results

- Dual magnetron configuration ensures uniform microwave output.
- Built-in turbulent air cooling system reduces cooling time by more than 2 times.
- When it is overpressured, the system will auto stop working, and the excess pressure will be released automatically through the four vents on the sealing cap and venting ring to realize dual self-venting.



## Technical Specification

Model	WMD1800R
Vessel Quantity	18
Vessel Volume	100mL
Temperature Monitoring	Contactless IR Sensor
Display	7 Inches Touch Screen
Maximum Working Pressure	6 MPa
Temperature Control Range	50~400 °C
Dimension	640*630*590mm
Maximum Working Temperature	250 °C
Inner Vessel Temperature Limit	300 °C
Rotation Mode	360 Continuous Rotation
Microwave Power	0-2000W Adjustable/ 0-3000W Adjustable
Temperature Control	Scanning Control Of Each Vessel
Pressure Testing	Contactless Pressure Sensor
Vessel material	Inner: Imported TFM Outer: Imported PEEK+Glass Fiber
Pressure Control range	0-10MPa
Pressure Control Accuracy	0.01MPa
Power	AC 220V, 16A, 50/60Hz
Weight	70KG/75KG
Temperature Control Accuracy	±0.3°C
Microwave Frequency	2450Hz
Microwave Leak	<5mw/cm <sup>2</sup>



## Features

### High Throughput

- The instrument can digest 40 samples in a run, which makes experiment move efficient.

### Multiple Security Protection

- Multiple safety measures ensure temperature and pressure are controlled for security.

### Focus on User Experience

- Equipped with external 8 inches touch screen.
- Floor standing design saves space and makes it easy to load and take out of vessels.
- Semi-automatic lid-opening system with explosion-proof mechanical design is convenient to operate.

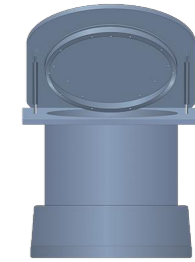
### Stable and Efficient Microwave Output Technology

- Non-pulsed continuous microwave technology enables automatic and linear change of microwave power output based on temperature and pressure feedback signals which improves stability, and safety.

### Fast Cooling Technology

- Multiple high-power turbulent air cooling systems enable rapid air cooling which reduces digestion time and improves efficiency.

## High-Throughput Microwave Digestion System



### Fully Thermal Insulation and Corrosion Resistance Design

- 316 industrial stainless steel chamber with multi layer coating insulates heat and avoid corrosion.

### Precise Temperature And Pressure Control Technology

- Multiple non-contact temperature and pressure measurement systems are configured to accurately measure and adjust according to feedback signals.

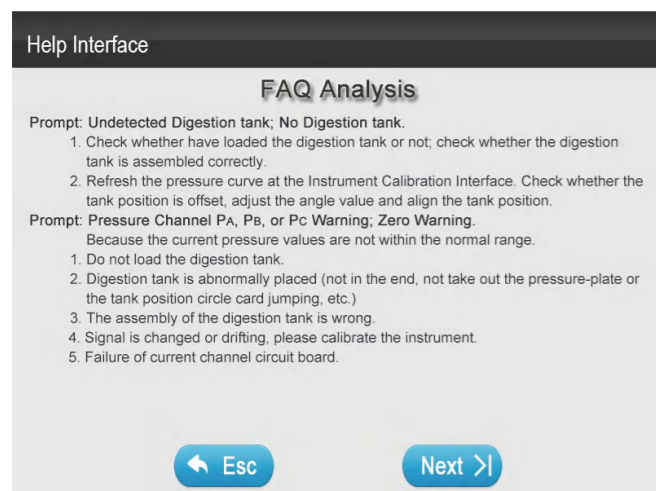
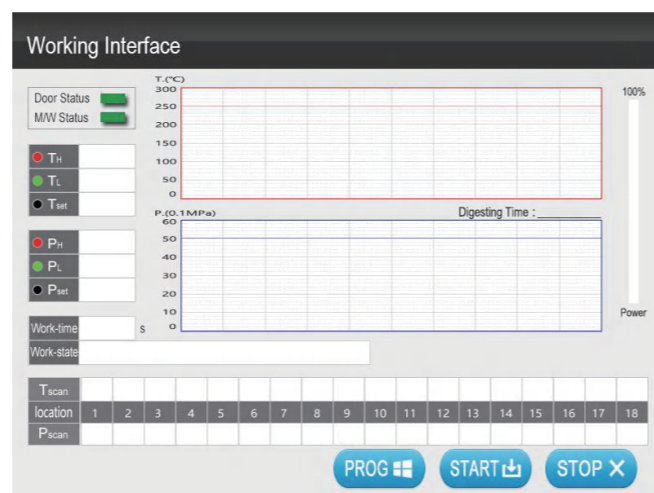
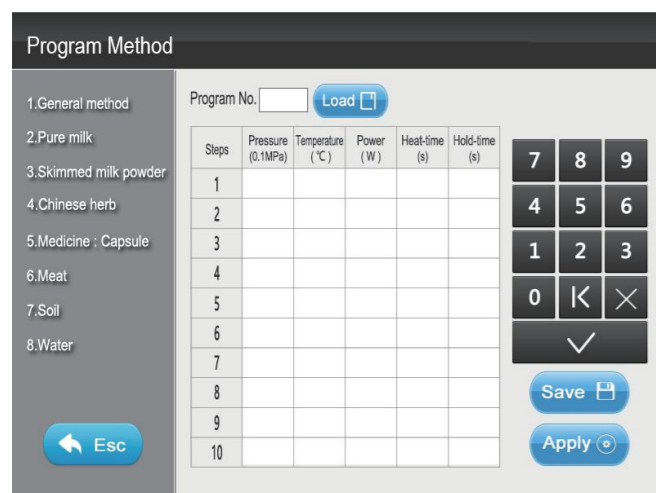
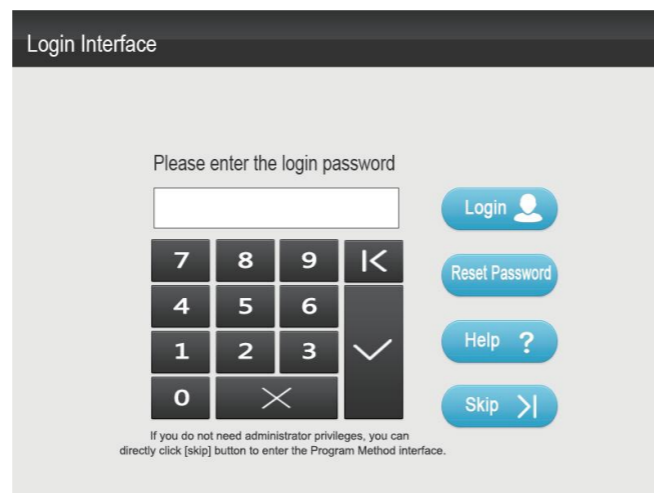
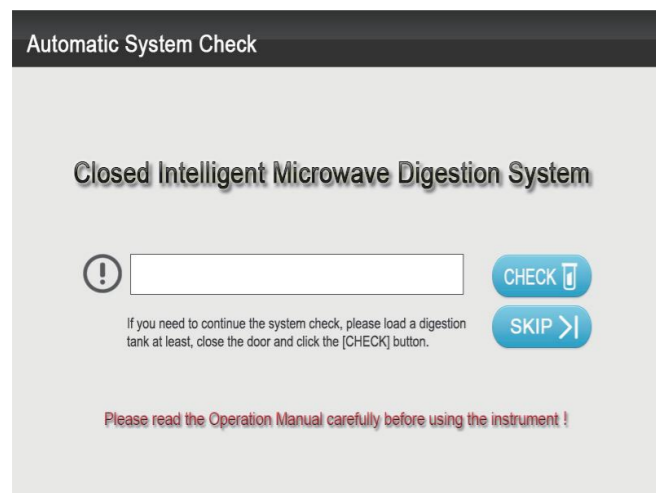
### Subtle Design For Uniform Handling

- The 360° rotator reduces drive shaft loss and improves sample processing uniformity by periodically changing vessel position.

## Technical Specification

Model	WMD4000
Vessel Quantity	40
Vessel Volume	50mL
Temperature Monitoring	Contactless IR Sensor
Display	7 Inches Touch Screen
Maximum Working Pressure	6 MPa
Temperature Control Range	50~400 °C
Dimension	640*630*590mm
Maximum Working Temperatur	250 C
Inner Vessel Temperature Limit	300 °C
Rotation Mode	360 Continuous Rotation
Microwave Power	0-3000W Adjustable
Temperature Control	Scanning Control Of Each Vessel
Pressure Testing	Contactless Pressure Sensor
Vessel material	Inner: Imported TFM Outer: Imported PEEK+Glass Fiber
Pressure Control range	0-10MPa
Pressure Control Accuracy	0.01MPa
Power	AC 220V, 16A, 50/60Hz
Weight	78KG
Temperature Control Accuracy	±0.3°C
Microwave Frequency	2450Hz
Microwave Leak	<5mw/cm <sup>2</sup>

## Touch Screen Interface



## Heating Blocks

Heating blocks is the optional accessory of Welso microwave digestion system.

It is mainly used for pre-heating of some food, cosmetics and organic samples to check the intensity of sample reaction before digestion; it is also used for acid evaporation after digestion.



## Features

- Coated with PFA which is of high temperature and corrosion resistance, also extends device service life.
- Equipped with AI and PID smart temperature controlling system to realize automatic temperature adjustment and improve the accuracy.
- Over-temperature protection and alarm system greatly improve experiment safety.

## Touch Screen Interface

Model	WPBM-200	WPBM-400	WPBM-500
Sample Number	12	20	56
Applicable Models	WMD600 Series	WMD1200R/1800R	WMD4000
Aperture And Hole Depth	Φ 39*65mm	Φ 41*150mm	Φ 32*118mm
TemperatureControl Range	RM Temperature~250°C	RM Temperature~250°C	RM Temperature~250°C
Temperatur Control Accuracy	±0.5°C	±0.5°C	±0.5°C
Temperature Setting Resolution	0.1°C	0.1°C	0.1°C
Heating Power	1600W	2000W	2000W
Power	AC220V±10%	AC220V±10%	AC220V±10%
Weight	13kg	34kg	40kg