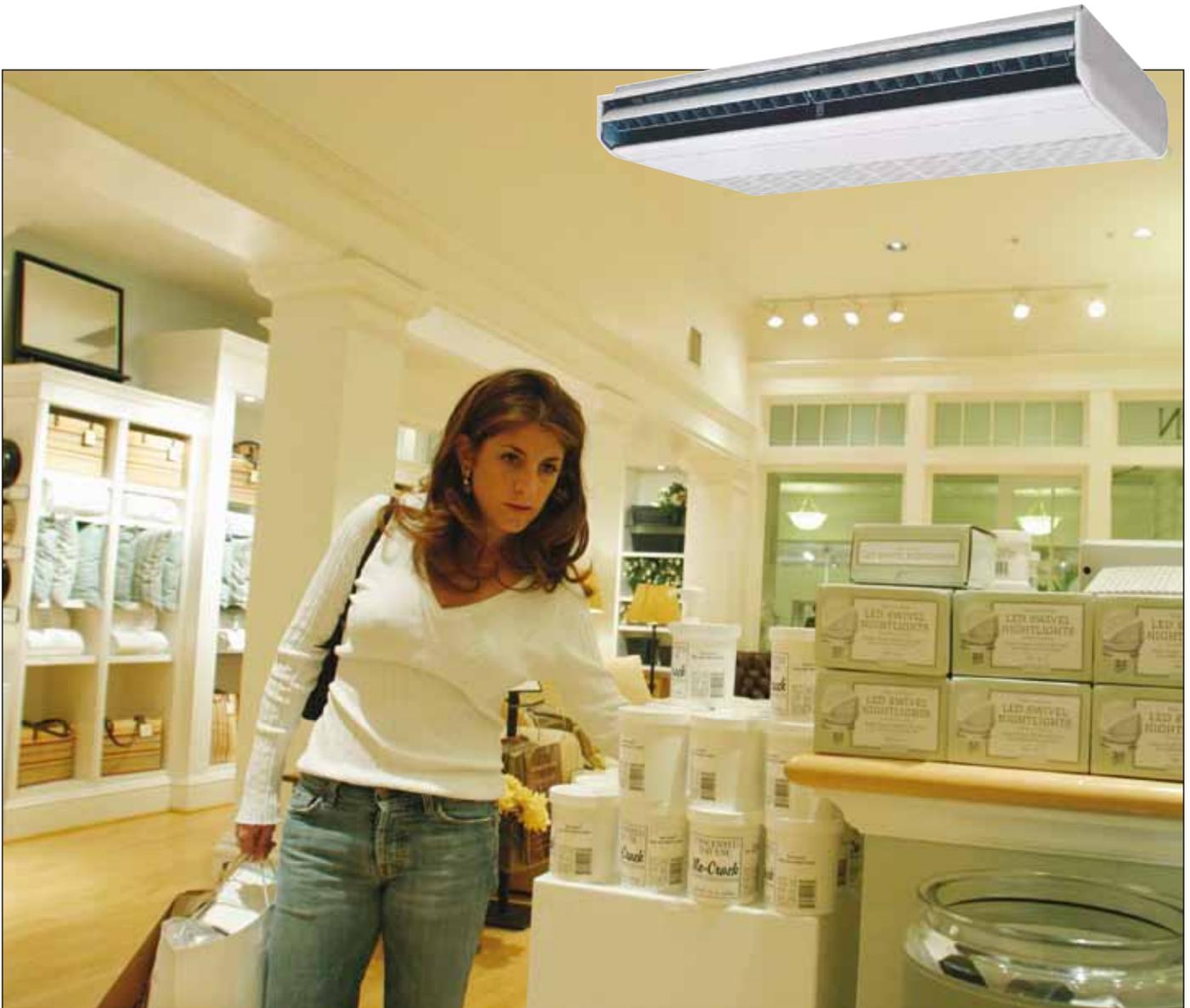


**Underceiling/Console
Split System Air Conditioners**

Technical Data
ISU Series



Featuring
SAT-2 Controller, EC Motor &
Long Life Epoxy Coated Outdoor Coil



Nominal Cooling Capacity
13.1 kW 15.2 kW

ISU SERIES – UNDERCEILING OR CONSOLE SPLIT SYSTEM AIR CONDITIONERS

GENERAL

The ISU indoor unit, together with its associated OSA outdoor unit, provides a reverse cycle (heat pump) split system air conditioner designed and developed to comply with and exceed AS/NZS 3823 specified conditions. The system has been designed and tested to operate at 50°C ambient.

Application

Typically installed in office areas, shops, restaurants, night clubs and other commercial and public spaces where unobtrusive air conditioning is required.

Underceiling units are ideal for rooms with limited or no ceiling space. Sloping ceilings are not a problem as the units can still be suspended level.

ISU/OSA systems are available for reverse cycle (heat pump) applications.

The system includes a temperature sensing head pressure control which enables the system to compensate for outdoor ambient temperatures below 20°C on cooling cycle, and above 15°C on heating cycle.

Design

The slimline low profile styling allows the Indoor Unit to be suspended unobtrusively under the ceiling, where it does not use valuable office wall or floor space. Alternatively, if it is more convenient the unit can be mounted vertically as a console, e.g. under a window.



The Outdoor Unit is designed to be freestanding, or wall mounted with the optional wall mounting brackets.



User Friendly

ISU units are supplied with a SAT-2 Controller. This thermostat has been designed to maintain a high level of comfort for room occupants. Emphasis has been placed on providing controls that are easy to use — despite the sophisticated microprocessor system that runs it. Use of the Auto and Timer function settings allows you to 'set it and forget it'.

Quiet

The carefully designed fans ensure the ISU units' emit minimal noise, while maintaining the efficiency of the unit.

The Outdoor Unit is also very quiet with a compressor/motor within a hermetically sealed casing which in turn is mounted in an acoustically insulated compartment.

Circulates

The air discharge louvre is motorised to distribute conditioned air high and low into the room. If preferred, however, the motor can be switched off and the louvre can be set at a fixed angle. Left and right air distribution is manually set to suit.

Accessible

The filter is easily accessible for periodic cleaning via the indoor unit's hinge down/removable return air filter panel.

Durable Outdoor Unit

The Outdoor Unit is built to withstand the rigours of the weather, year in and year out. The cabinet is made from the high quality galvanised steel, finished with tough oven-cured polyester powder coating and fixed with stainless steel fasteners. The outdoor coil fins are epoxy coated for extra protection in corrosive environments, e.g. salt laden sea air.

Refrigerant R410A

Each complete system uses refrigerant R410A which is deemed to have zero ozone depletion potential.



Efficient

These reverse cycle (heat pump) systems are very efficient. For every 1 kW of power consumed approx. 3 kW of heating is created. The outdoor unit incorporates a high efficiency scroll compressor. Indoor units include a high efficiency EC motor/s which are also soft starting. Heat exchange coils incorporate inner grooved (rifled) tube for better heat transfer.

Self Diagnostics

The Outdoor Unit's Controller (OUC) has a display of LEDs to indicate faults and running conditions. A general fault indicator is included for interface to external systems.

OPTIONAL ACCESSORIES

Outdoor Unit:

1. Fault indicating auxiliary relay board.
2. Vertical discharge grille (2 required for OSA 159).
3. Wall mounting brackets.

Technical Backup

Manufacturer's representation assures quality technical backup, quick and efficient parts and service.

The manufacturer operates a quality management system that conforms to AS/NZS ISO 9001:2008.

SAT-2 CONTROLLER

Features

- Cool / Dry / Fan modes.
- Heat / Auto modes
- Auto / High / Medium / Low fan speed selection.
- Temperature setting range from 16°C – 30°C.
- LED to indicate status of the unit [Power On/Off].
- Room temperature display.
- Real time clock.
- 7 day timer – two start and/or stops per day
- On demand countdown run timer, up to 9 hours.
- Auto-Restart or No Restart after power failure.
- Continuous or Intermittent selection of fan run-on in dead zone.
- Backlit screen for ease of reading; changes colour for each mode.
- Soft touch tab keys
- Battery backup (Lithium).
- Sleep function.
- Audible beep to acknowledge key entry or wireless remote control.



- Low voltage control cable.
- Colour: white and light grey (Keypad - gold and blue).
- Optional:
 - Infra Red Remote controller
 - Remote return air sensor,
 - Extended interface lead,
 - Extra Wall Control plaque.

COOLING CAPACITY (kW)

MODELS Outdoor / Indoor Unit / Unit	INDOOR FAN		INDOOR COIL E.A.T.		OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B.											
	SPEED	AIR l/s	D.B. °C	W.B. °C	23		27		31		35		39		43	
					Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.
ISU 139 / OSA 139	HIGH	730	21	15	12.9	10.2	12.7	10.2	12.3	10.0	11.8	9.6	11.0	9.1	10.0	8.4
			23	17	13.5	9.9	13.4	9.9	13.0	9.8	12.4	9.5	11.7	9.0	10.7	8.3
			27	19	14.2	11.4	14.1	11.4	13.7	11.2	13.1	10.9	12.3	10.4	11.4	9.7
			31	21	14.9	13.5	14.7	13.5	14.4	13.3	13.8	12.9	13.0	12.4	12.1	11.6
ISU 159 / OSA 159	HIGH	790	21	15	14.9	11.8	14.7	11.8	14.3	11.6	13.6	11.2	12.8	10.6	11.6	9.8
			23	17	15.7	11.5	15.5	11.5	15.1	11.4	14.4	11.0	13.5	10.4	12.4	9.7
			27	19	16.5	13.2	16.3	13.2	15.9	13.0	15.2	12.6	14.3	12.0	13.2	11.2
			31	21	17.3	15.6	17.1	15.7	16.7	15.5	16.0	15.0	15.1	14.4	14.0	14.0

Total = Total Capacity (kW)
Sens. = Sensible Capacity (kW)

E.A.T. = Entering Air Temperature
○ = Nominal Capacity (kW)

Note: Allow for pipe length capacity loss (refer below).

Indoor Air Flow Correction Factors @ nominal conditions

	Indoor Air Flow (%)			
	-20%	-10%	Rated	+10%
Total Capacity	0.95	0.975	1.0	1.025
Sensible Capacity	0.89	0.950	1.0	1.050

HEATING CAPACITY (kW) – Reverse Cycle Systems

MODELS Outdoor / Indoor Unit / Unit	INDOOR ENTERING AIR TEMP. °C D.B.	OUTDOOR COIL ENTERING AIR TEMPERATURE (E.A.T.) °C D.B.															
		- 5		- 3		- 1		1		3		5		7		9	
		G	N	G	N	G	N	G	N	G	N	G	N	G	N	G	N
ISU 139 / OSA 139R	15	8.7	7.9	9.4	8.5	10.1	9.0	10.8	9.3	11.4	9.8	12.3	11.7	13.1	13.1	13.7	13.7
	20	8.6	7.7	9.3	8.4	9.9	8.8	10.6	9.1	11.2	9.6	12.0	11.4	12.8	12.8	13.4	13.4
	25	8.3	7.4	8.9	8.0	9.6	8.5	10.2	8.8	10.8	9.2	11.6	10.9	12.3	12.3	12.9	12.9
ISU 159 / OSA 159R	15	10.0	9.0	10.9	9.8	11.6	10.3	12.3	10.6	13.1	11.2	14.1	13.5	15.0	15.0	15.7	15.7
	20	9.8	8.8	10.6	9.6	11.4	10.1	12.1	10.4	12.8	11.0	13.8	13.1	14.7	14.7	15.4	15.4
	25	9.5	8.5	10.2	9.2	11.0	9.7	11.7	10.0	12.4	10.6	13.3	12.5	14.1	14.1	14.8	14.8

G = Gross Heating Capacity kW, based on nominal air flow.
N = Net Heating Capacity kW allowing for average defrost.

Note: Allow for pipe length capacity loss.

○ = Nominal Capacity (kW)

PIPE LENGTH CAPACITY LOSS

ON COOLING CYCLE DUE TO PRESSURE DROP

Note: Loss percentage is approximate only. No allowance made for vertical piping or bends.

MODELS Indoor / Outdoor Unit / Unit	Interconnecting Pipe Size OD (mm)		Equivalent Pipe Length (m)				
	Liquid	Suction	5	10	15	20	30
ISU 139 / OSA 139	10	19	0.75 %	1.5 %	2.25 %	3 %	5 %
ISU 159 / OSA 159	13	22	0.7 %	2.1 %	3.4 %	4.7 %	6.1 %

Additional Pipe Length to allow per Bend		
Suction Pipe Size OD	19 mm	22 mm
Long 90° Radius (2 x pipe dia.)	0.43 m	0.46 m

SOUND LEVELS

ISU Indoor Units

Sound Pressure Levels (SPL)

As measured in an anechoic chamber, 1 m below and to the side of the unit. No allowance for sound reflection within a room. Add 13 dB to convert to Sound Power Levels (SWL).

MODEL	FAN SPEED	SPL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
SOUND PRESSURE LEVELS (SPL) dB								

INDOOR UNITS

ISU 139	LOW	48	45	46	48	42	32	28
	MED	51	48	49	50	47	37	34
	HIGH	54	51	52	53	50	40	37
ISU 159	LOW	50	47	48	50	45	35	32
	MED	53	50	51	52	49	39	36
	HIGH	56	52	54	54	53	43	40

Sound Pressure Levels (SPL) Within A Room

Indoor Units: Add the room reflection effect below to the anechoic Sound Pressure Levels above to obtain Sound Pressure Levels within a room.

ROOM TYPE	OCTAVE BAND FREQ. Hz					
	125	250	500	1k	2k	4k
ROOM REFLECTION EFFECT						
SOFT	9	5	2	2	2	2
MEDIUM	10	6	5	4	4	4
HARD	13	12	10	9	9	8

OSA Outdoor Units

Sound Power Levels (SWL)

MODEL	FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
SOUND POWER LEVELS (SWL) dB								

OUTDOOR UNITS

OSA 139	LOW	70	77	71	68	65	59	52
	MED	71	77	73	69	66	60	52
OSA 159	MED	64	72	63	61	59	53	47
	HIGH	66	77	63	62	60	55	48

Sound Pressure Levels (SPL)

Outdoor Units: Deduct 16 dB from Sound Power Level above to obtain Sound Pressure Level at 3 metres.

DIMENSIONS (mm)

Not to Scale

Fig. 1 ISU 139KYD, 159KYD Underceiling/Console

Indoor Units

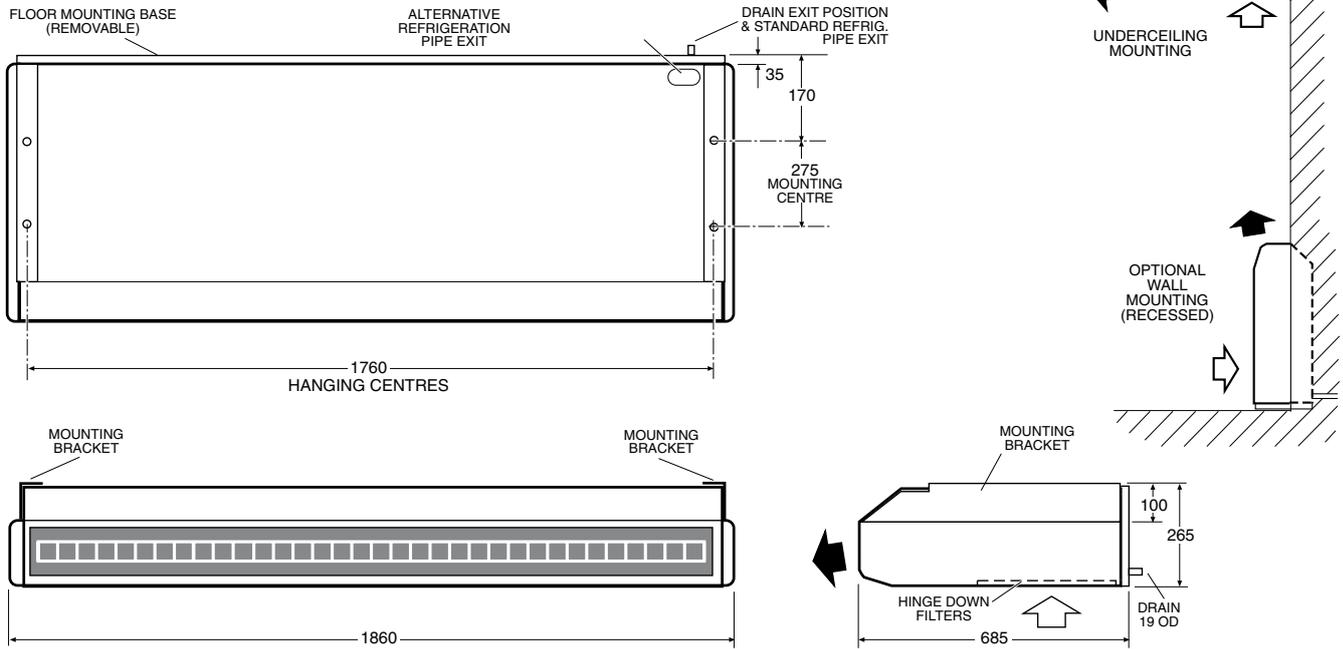
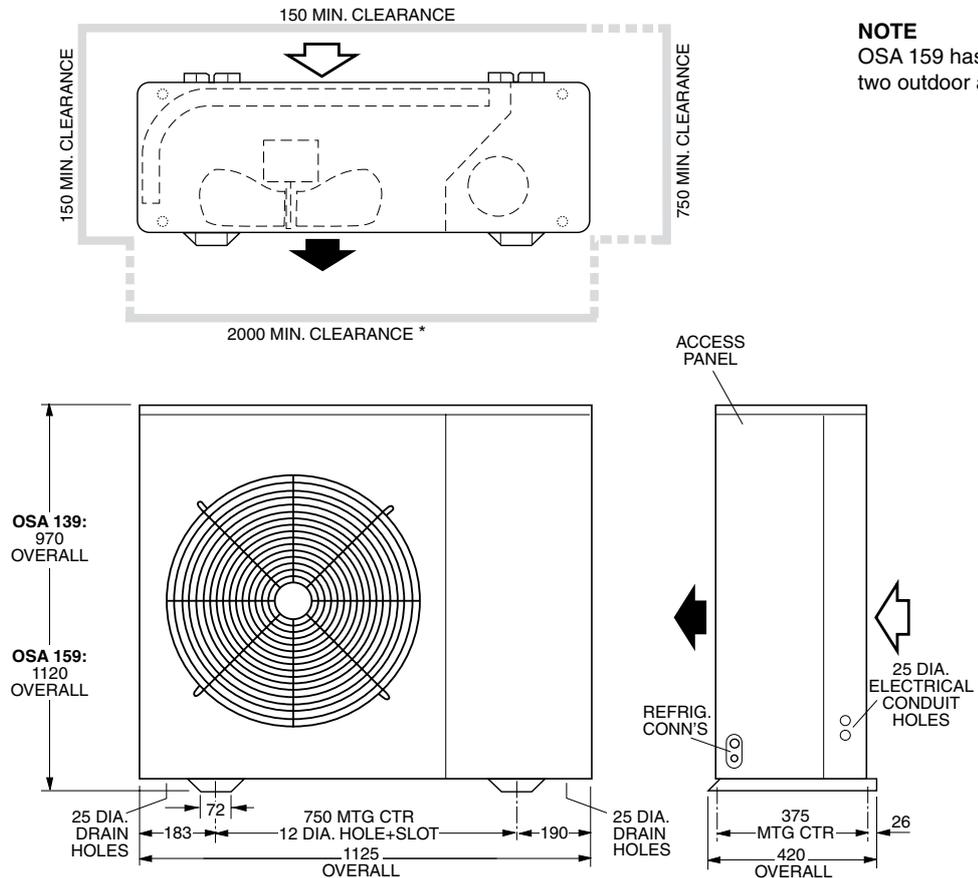


Fig. 2 OSA 139, 159

Outdoor Units



NOTE
OSA 159 has added height and two outdoor air fans

SPECIFICATIONS SUMMARY

SPLIT SYSTEMS		Single Phase		Three Phase		
		Indoor Unit :	ISU 139KYD	ISU 159KYD	ISU 139KYD	ISU 159KYD
		Outdoor Unit :	OSA 139RKS	OSA 159RKS	OSA 139RKT	OSA 159RKT
Cooling Capacity *1	kW	13.0	14.9	13.0	14.9	
Heating Capacity *2	kW	12.8	14.7	12.8	14.7	
EER / AEER (Cooling)		3.23 / 3.20	3.14 / 3.12	3.23 / 3.20	3.14 / 3.12	
Power Source *3	volts	230	230	400	400	
Recom'd Max. Line Length	m	60	60	60	60	
Max. Height Separation Between Indoor & Outdoor Units: (Indoor Unit above Outdoor / Outdoor Unit above Indoor)						
	m	20 / 20	20 / 20	20 / 20	20 / 20	
Running Amps (Total) / Ext'l Fuse	A	19.7 / 32	23 / 32	10,6,6 / 25	9.7,7,7 / 25	

INDOOR UNITS

Air Flow (l/s)	Min.	600	670	600	670
	Max.	780	790	780	790
Sound Pressure dB(A) (SPL) *4	Low	48	47	48	47
	Med	51	48	51	48
	High	54	50	54	50
Holding Charge		dry Nitrogen			
Heat Exchanger Type		aluminium corrugated plate fins to expanded inner grooved copper tube			
Indoor Fan Type		forward curved centrifugal			
Weight	kg	81	81	81	81

OUTDOOR UNITS

Sound Pressure (SPL) *5	dB(A)	71	71	71	71
Refrigerant		HFC - 410A (R410A)			
Heat Exchanger Type		epoxy coated aluminium corrugated plate fins to expanded inner grooved copper tube			
Outdoor Fan Type		propeller			
Finish		grey polyester powder coat			
Approx. Weight	kg	132	149	132	149

Notes:

Capacities are for close coupled systems. Allowance must be made for pipe length, pipe size and bends.

*1 Cooling Capacity (net) to AS/NZS 3823 conditions: Indoor Entering Air Temperature 27°C D.B., 19°C W.B.;
Outdoor Entering Air Temperature 35°C D.B.

*2 Heating Capacity to AS/NZS 3823 conditions: Indoor Entering Air Temperature 21°C D.B.;
Outdoor Entering Air Temperature 7°C D.B., 6.1°C W.B.

*3 Voltage fluctuation limits: 1 phase 200–252 V a.c. 50 Hz; 3 phase 342–436 V a.c. 50 Hz.

*4 Sound Pressure Level (SPL) for Indoor Units measured in an anechoic chamber 1 m below and to the side of the unit.

*5 Sound Pressure Level (SPL) for Outdoor Units is measured 3 m from exhaust air fans.

Materials and specifications subject to change without notice due to the manufacturer's ongoing research and development programme.



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