

# Model FDL 115 | Safety drying chambers for limited quantities of solvent

The BINDER FDL 115 with silicone and dust-free inner chamber, as well as symmetric airflow dries specimens containing solvents and thus this safety drying oven meets all EN 1539 requirements.

#### **BENEFITS**

- Safety concept meets the DIN EN 1539-2010-08 standard
- Short drying time with high temperature accuracy and defined ventilation
- · Silicone free and dust-free inner chamber
- · Replaceable fresh air cartridges are easy to change and ensure constant fresh air quality



Model 115

#### **MAIN FEATURES**

- Temperature range: +10 °C above ambient temperature to +300 °C
- APT.line™ preheating chamber technology
- Controller with time-segment and real-time programming
- 2 chrome-plated racks
- Fresh-air monitoring with audible and visual alarm and automatic deactivation of heating
- Replaceable filter cartridge, Class M6



Model 115

- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- Computer interface: RS 422
- $\bullet\,$  Standard door gasket made from solvent-resistant FKM for use at up to 200 °C
- Optional door gasket made from silicone with limited solvent resistance for use at up to 300 °C

#### **ORDERING INFORMATION**

Interior volume [L]	Voltage	Option model	Version	ArtNo.
115	230 V 1~ ph 50/60 Hz	Standard	FDL115-230V	9010-0292



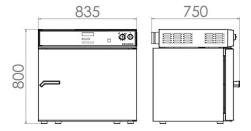
#### **TECHNICAL DATA**

Anticle Number         performance Data Temperature           Performance Data Temperature per vir Labove ambient temperature for (Cl)         500           Temperature anticutation Lr Kl         6.0           Recense prime in sign of (Infil)         2.0           Recensely time alors of (Infil)         2.0           Recensely time alors of (Infil)         2.0           Recensely time alors of (Infil)         4.0           All Calland Supproxi (Infil)         4.0           Valuate Life Own arte of subsass alor acct to Phis spall at 50° (Lin Infil)         4.0           Valuate Life Own are of exhaust alor acct to Phis spall at 50° (Lin Infil)         4.0           Solvent requantity         5.0           Bell State         5.0           Bell State         5.0           Bell State Unity         5.0           Bell State State         5.0           Bell State	Description	FDL115-230V <sup>1</sup>
Remperature range+a °C above ambient temperature lot °C IC         300           Temperature variation at 150 °C Ic NI         2.9           Heading-up time to 150 °C Imin         2.0           Becovery time after 30 seconds door open at 150 °C (min)         2.0           Air chudlatin (approx.) Ix/min         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.0           Volumetric flow rate of exhaust air acc. to Ri 1539 at 50 °C (ca. 1/min)         4.	Article Number	9010-0292
Temperature variation at 150°C [ki]         2.5           Temperature fluctuation [k]         0.8           Recovery time to 50°C [min]         20           Recovery time after 30 seconds door open at 150°C [min]         20           Air change data	Performance Data Temperature	
Reading put lime to 150°C (min)         20           Reacting put lime to 150°C (min)         20           Recovery time after 350°C (min)         20           Air change data         20           Volumetri flow rate of schaust air act, 150°L (315) at 50°C (ca.1/min)         30           Volumetri flow rate of schaust air act, 150°L (315) at 50°C (ca.1/min)         400           Solvent quantity         30           Electrical data         30           Electrical data         30           Read Voltage [V]         30           Power frequency [Hz]         30/60           Nominal power [kW]         30           Power frequency [Hz]         30           Male (barrance back [ma]         30           Power frequency [Mz]         30           All clearnace back [ma]         30           Wall clearnace back [ma]         30           Power frequency [Mz]         30     <	Temperature range +10 °C above ambient temperature to [°C]	300
Recovery time after 30 seconds door open at 350°C (min)         22           Air criculation (approx.) [x/min]         30           Volumetric flow rate of exhaust air act. to EN 1539 at 50°C (ca. 1/min)         40           Solventury         2           Highest permitted solvent quantity (at 7-180°C, M-100x/m3, K-0.) [x/min]         6.5           Electrical data         30           Power frequency [t/z]         30           Rated Voltage [V]         30           Power frequency [t/z]         30           Rominal power [kW]         30           Phase (minial voltage)         30           Phase (minial voltage)         30           Resurres         30           Resurres         30           Resurres         30           Resurres         30           Resurres         30           Permitted load [kg]         30           Built clearance sledwise [mm]         30           Built clearance sledwise [mm]         30           Built clearance sledwise [mm]         33           Built clearance sidewise [mm] <t< td=""><td>Temperature variation at 150 °C [± K]</td><td>2.5</td></t<>	Temperature variation at 150 °C [± K]	2.5
Recovery time after 30 seconds door open at 150 °C (min)         12           Air cliculation (approx.) [x/min]         20           Volumetric flow rate of exhaust air acc. to EN 1539 at 50 °C (e.a. L/min)         400           Solvent quantity         Volumetric flow rate of exhaust air acc. to EN 1539 at 50 °C (e.a. L/min)         6.65           Solvent quantity (at T-180 °C, M-100g/mol, U-40g/m3, K-0, 5) [g]         6.65           Electrical data         Volumetric flow rate of exhaust air acc. to EN 1539 at 50 °C (e.a. L/min)         6.65           Reted Voltage [V]         230           Power frequency [itz]         30,60           Nominal power [kW]         2-9           Phase CWominol voltage)         1-           New assures         1-           Interior volume [L]         155           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         30           Vall clearance sidewise [mm]         160           Wall clearance sidewise [mm]         60           Wall clearance sidewise [mm]         435           Understance lidewise [mm]         435           Understance lidewise [mm]         435           Understance lidewise [mm]         80           Power [mm]         80           Understance lidewise [mm]	Temperature fluctuation [± K]	0.8
Air change data           Air cladation (approx.) [x/min]         20           Volumetric flow rate of exhaust air acc. to EN 1339 at 50 °C [ca. L/min]         40           Solvent quantity (at T-180 °C, M-100g/mol, U-40g/m3, K=0.5) [c]         6.65           Highest permitted solvent quantity (at T-180 °C, M-100g/mol, U-40g/m3, K=0.5) [c]         6.65           Electrical data         230           Power frequency [Hz]         29           Phase (Nomial voltage)         29           Phase (Nomial voltage)         1-           Measures         15           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance slewise [mn]         160           Vall clearance slewise [mn]         60           Vidth [mm]         60           Height [mm]         435           Housing dimensions on line. fittings and connections         435           Hough gimensions on line. fittings and connections         80           Height net [mm]         80           Belight net [mm]         80           Counter [mm]         80           Counter [mm]         80           Counter [mm]         80           Co	Heating-up time to 150 °C [min]	20
Air circulation (approx.) [x/min]         20           Volumetric flow rate of exhaust air acc. to EN 1539 at 50°C (ca. L/min)         40           Solvent quantity         The Circulation (approx.) [x/min] (at 7-180°C, M-100g/m3, K-0)         65           Electrical data         230           Rested Voltage [V]         290           Power frequency [Hz]         29           Nominal power [kW]         29           Phase (Nominal voltage)         15           Measures         15           Permitted load [kg]         90           Permitted load [kg]         90           Permitted load [kg]         90           Wall clearance back [mm]         90           Wall clearance back [mm]         90           Wall clearance sidwes [mm]         90           Height [mm]         40           Dought [mm]         40           Height [mm]         80           Housing dimensions not incl. fittings and connections         80           Well term [mm]         80           Height net [mm]         80           Height net [mm]	Recovery time after 30 seconds door open at 150 °C [min]	12
Volumetric flow rate of exhaust air acc. to EN 1539 at 50 °C (ca. 1/min)         400           Solvent quantity           Highest permitted solvent quantity (at 7-180 °C, M-100g/m0l, U-40g/m3, K=0.5)         6.65           Electrical data         200           Power frequency [Nt]         20,60           Nominal power [kW]         2.9           Phase (Nominal voltage)         1-           Measures         115           Interior volume [L]         115           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Wall clearance back [mm]         160           Interior Normetric [mm]         60           Height [mm]         60           Height [mm]         60           Housing dimensions or incliftings and concettoms         35           Housing dimensions or incliftings and concettoms         35           Width net [mm]         80           Housing dimensions or incliftings and concettom         80           Eleght net [mm]         80           Louis per left [mm]	Air change data	
Solvent quantity           Highers permitted solvent quantity (at 7-180 °C, M-100g/mol, U-40g/mol, K-0.5) [s]         6.65           Electrical data         230           Power frequency [ktz]         50/60           Nominal power [kW]         2.9           Phase (Nominal voltage)         1-           Measures         Western (empty) [kg]           New weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         60           Height [mm]         600           Height [mm]         435           Depth [mm]         435           Lousing dimensions not incl. fittings and connections         830           Height ne [mm]         80           Leight net [mm]         80           Depth per [mm]         80           Energy consumption at 150 °C [Wh/T]         200           Fixtures         50	Air circulation (approx.) [x/min]	20
Highest permitted solvent quantity (at T-180 °C, M-100g/mg, K-0.) [r]         6.6           Electrical data         390           Reade Voltage [V]         290           Nominal power [kW]         2.9           Phase (Nominal voltage)         1-           Measures         15           Interior volume [L]         15           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         600           Height [mm]         435           Depth [mm]         435           Height [mm]         435           Depth [mm]         436           Height [mm]         830           Height [mm]         830           Height [mm]         80           Depth net [mm]         80           Depth net [mm]         80           Depth net [mm]         80           Energy consumption at 150 °C [Wh/h]         80           Florage (Twint) [Wh/h]         1200           Sound-pressure level [dB(A)]         97	Volumetric flow rate of exhaust air acc. to EN 1539 at 50 °C [ca. L/min]	400
[g]         6.65           Electrical data         Common Contract of C	Solvent quantity	
Rated Voltage [V]         230           Power frequency [Hz]         50/60           Nominal power [kW]         2.9           Phase (Nominal voltage)            Measures           Interior volume [L]         115           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         60           Wall clearance back [mm]         60           Height [mm]         435           Bepth [mm]         435           Housing dimensions not incl. fittings and connections         830           Width net [mm]         88           Beight net [mm]         85           Beight net [mm]         86           Beight net [mm]         86           Beight net [mm]         80           Beight net [mm]         80 <td></td> <td>6.65</td>		6.65
Power frequency [Hz]         50/60           Nominal power [kW]         2.9           Phase (Nominal voltage)         1-           Measures         Interior volume [L]         115           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         100           Wall clearance sidewise [mm]         60           Wall thinmal         60           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Height net [mm]         85           Depth net [mm]         85           Environment-specific data         Environment-specific data           Energy consumption at 150 °C [Wh/h]         1200           Sound-pressure level [dB(A)]         57	Electrical data	
Nominal power [kW]         2.9           Phase (Nominal voltage)         1~           Measures         Interior volume [L]         115           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         435           Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Bepth net [mm]         685           Environment-specific data         Environment-specific data           Energy consumption at 150 °C (Wh/h]         1200           Sound-pressure level [dB(A)]         57	Rated Voltage [V]	230
Phase (Nominal voltage)         1~           Measures         115           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]         830           Height net [mm]         850           Depth net [mm]         685           Environment-specific data         50           Environment-specific data         57           Fixtures	Power frequency [Hz]	50/60
Measures           Interior volume [L]         115           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Height net [mm]         805           Depth net [mm]         685           Environment-specific data         Energy consumption at 150 °C [Wh/h]         1200           Sound-pressure level [dB(A)]         57           Fixtures         Fixtures         Fixtures	Nominal power [kW]	2.9
Interior volume [L]         115           Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         830           Width net [mm]         805           Depth net [mm]         685           Environment-specific data         800           Environment-specific data         1200           Fixtures         57	Phase (Nominal voltage)	1~
Net weight of the unit (empty) [kg]         90           Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [nm]           Width [nm]         600           Height [nm]         435           Depth [nm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Pepth net [mm]         805           Depth net [mm]         685           Environment-specific data         Energy consumption at 150 °C [Wh/h]         1200           Sound-pressure level [dB(A)]         57           Fixtures         Fixtures         Fixtures	Measures	
Permitted load [kg]         60           Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         830           Width net [mm]         805           Depth net [mm]         685           Environment-specific data         800           Environment-specific data         1200           Sound-pressure level [dB(A)]         57           Fixtures	Interior volume [L]	115
Load per rack [kg]         30           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         ************************************	Net weight of the unit (empty) [kg]	90
Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Height net [mm]         805           Depth net [mm]         685           Environment-specific data         1200           Sound-pressure level [dB(A)]         57           Fixtures	Permitted load [kg]	60
Wall clearance sidewise [mm]         100           Internal Dimensions         600           Width [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Height net [mm]         805           Depth net [mm]         685           Environment-specific data         Energy consumption at 150 °C [Wh/h]           Sound-pressure level [dB(A)]         57           Fixtures	Load per rack [kg]	30
Internal Dimensions           Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Height net [mm]         805           Depth net [mm]         685           Environment-specific data         Energy consumption at 150 °C [Wh/h]         1200           Sound-pressure level [dB(A)]         57           Fixtures	Wall clearance back [mm]	160
Width [mm]         600           Height [mm]         435           Depth [mm]         435           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         830           Height net [mm]         805           Depth net [mm]         685           Environment-specific data         Energy consumption at 150 °C [Wh/h]         1200           Sound-pressure level [dB(A)]         57           Fixtures         Fixtures	Wall clearance sidewise [mm]	100
Height [mm] 435  Depth [mm] 435  Housing dimensions not incl. fittings and connections  Width net [mm] 830  Height net [mm] 805  Depth net [mm] 685  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Sound-pressure level [dB(A)] 57  Fixtures	Internal Dimensions	
Depth [mm] 435  Housing dimensions not incl. fittings and connections  Width net [mm] 830  Height net [mm] 805  Depth net [mm] 685  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Sound-pressure level [dB(A)] 57  Fixtures	Width [mm]	600
Housing dimensions not incl. fittings and connections  Width net [mm] 830  Height net [mm] 805  Depth net [mm] 685  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Sound-pressure level [dB(A)] 57  Fixtures	Height [mm]	435
Width net [mm]         830           Height net [mm]         805           Depth net [mm]         685           Environment-specific data         1200           Sound-pressure level [dB(A)]         57           Fixtures         Fixtures	Depth [mm]	435
Height net [mm] 805  Depth net [mm] 685  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Sound-pressure level [dB(A)] 57  Fixtures	Housing dimensions not incl. fittings and connections	
Depth net [mm]685Environment-specific data1200Energy consumption at 150 °C [Wh/h]1200Sound-pressure level [dB(A)]57FixturesFixtures	Width net [mm]	830
Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Sound-pressure level [dB(A)] 57  Fixtures	Height net [mm]	805
Energy consumption at 150 °C [Wh/h] 1200 Sound-pressure level [dB(A)] 57 Fixtures	Depth net [mm]	685
Sound-pressure level [dB(A)] 57 Fixtures	Environment-specific data	
Fixtures	Energy consumption at 150 °C [Wh/h]	1200
	Sound-pressure level [dB(A)]	57
Number of shelves (std./max.) 2/5	Fixtures	
	Number of shelves (std./max.)	2/5

<sup>1</sup> All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. Technical data refers to 100 % fan speed. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.



# **DIMENSIONS** incl. fittings and connections [mm]



# **OPTIONS**

Designation	Description	*	ArtNo.
	back		
	10 mm	01	8012-1284
	left		
Access port with silicone	10 mm	01	8012-1277
plug	30 mm	01	8012-1360
	right		
	10 mm	01	8012-1270
	30 mm	01	8012-1355
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	-	8012-1117
	for temperature, measurement in center of chamber at specified temperature	-	8012-1136
Calibration certificate,	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1595
temperature	temperature measurement incl. certificate, 15-18 measuring points at specified temperature	-	8012-1574
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1553
Coil coating door flap	door flap for coil coating tests	-	8012-0179
Door gasket	made from silicone, resistant to high temperatures for operating temperatures above 200 °C. Note: The gasket wears out more quickly in temperatures above 250 °C	-	8012-0499
Door lock	lockable door handle	-	8012-1248
Measurement of air exchange rate	in accordance with ASTM D5374, definition and protocol according to ambient temperature	-	8012-1196

<sup>\*</sup> Notes > See last page

# **ACCESSORIES**

Designation	Description	*	ArtNo.
APT-COM™ 4 BASIC- Edition	for simple logging and documentation requirements with up to 5 networked units.		
	version 4, BASIC edition	-	9053-0039
APT-COM™ 4 GLP-	for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11.		
Edition	version 4, GLP edition	_	9053-0042
APT-COM™ 4	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.		
PROFESSIONAL-Edition	version 4, PROFESSIONAL edition	-	9053-0040
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016

<sup>\*</sup> Notes > See last page



Designation	Description	*	ArtNo.
	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, CO <sub>2</sub> , O <sub>2</sub> , pressure, depending on unit		
	Digital in PDF format	-	7057-0001
Qualification documents	Hard copy inside folder	-	7007-0001
	IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature, $CO_2$ , $O_2$ – or pressure, depending on unit		
	Digital in PDF format	-	7057-0005
	Hard copy inside folder	-	7007-0005
Rack	chrome plated	-	8012-2034
	stainless steel	-	8012-2048
Shelf, perforated	Stainless steel	-	6004-0030
Table on castors	stable cart, casters with locking brakes, dimensions: W 1,000 x D 800 x H 780 mm	-	9051-0018

<sup>\*</sup> Notes > See last page

# **SERVICES**

*	ArtNo.
05	DL10-0100
05	DL10-0500
05	DL20-0710
05	DL20-0910
05	DL20-0200
05	DL20-0810
03, 04, 05	DL30-0101
03, 04, 05	DL30-0102
03, 04, 05	DL33-0000
03, 04, 05	DL30-0118
03, 04, 05	DL30-0127
03, 04, 05	DL30-0109
05	DL40-0100
05	DL44-0500
-	DL50-0010

<sup>\*</sup> Notes > See last page



#### **NOTES**

- Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge. UL mark is not granted when this option is used.
- 02
- Sensor calibration is performed in an accredited calibration laboratory. 03
- Calibration is performed according to the BINDER factory standard.
- Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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