

HDL 100


Hultafors



Operating instructions

EN

SCOPE OF DELIVERY FOR HDL 100-S:

1. Laser distance measurement instrument
2. Belt pouch
3. 1.2 V Ni-Mh battery
4. Charging/data cable
5. Tripod B-10

1



2



3



5



4



2.1 Function Buttons



2.2 Display



Operating manual

HDL 100 Laser Distance Measurement Instrument

About this manual

Congratulations on the purchase of your new HDL 100! You have acquired a Hultafors measurement instrument, which can make your work easier, faster and more precise. To utilize the complete functionality range of this measurement instrument, and to ensure a safe operation, please observe the following instructions:

- Please read these operating manual before starting to use the device.
- Always keep the operating manual near the device.
- Only hand over the device to other persons together with the operating manual.
- Never render the attached warning signs unreadable.

Contents

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1. General information

1.1 Signal words and their meaning

DANGER

For an imminent danger that could lead to serious injury or death.

WARNING

For a possibly dangerous situation that could lead to serious injury or death.

CAUTION

For a possibly dangerous situation that could lead to slight injury or property damage.

NOTE

For application notes and other useful information

1.2 Pictograms and other information

1.2.1 WARNING SIGNS



Warning of dangers in general

1.2.2 SYMBOLE



Read instructions before use



Batteries and devices must not be disposed of with household waste



Do not throw batteries into a fire



Warning signs on battery Do not heat the battery above 60 °C.



Class 2 laser device



Do not look into the laser beam!

2. Description

1.2 Function Buttons

1. Measure button
2. ON / OFF/ Delete / Back
3. Camera

2.2 Display

1. Bluetooth
2. Unit of measurement
3. Measurement edge
4. Tilt sensor
5. Turn display
6. Measured value memory

2.3 Intended use

This instrument is designed to measure distances and angles. The measured value, setting, tilt and instrument status can be viewed on the display.

A laser beam is emitted and then sent back to the laser distance measurement instrument from a reflected surface. This is used to calculate the distance. The range depends on the model of the laser distance measurement instrument, on reflectivity, and on the properties of the reflective surface.

3. Technical data

3.1 General

Measurement range	0.2–100 m*
Accuracy	± 1.5 mm**
Unit of measurement	m, in, ft, ft+in
Laser class	2
Laser type	635 nm, < 1 mW
Protection rating	IP 54
Laser auto-shutdown	30 h
Instrument auto-shutdown	180 s
Operations per charge	up to 5000 measurements***
Battery type	3 x 1.2 V Ni-Mh battery (3 x 850 mAh)
Operating temperature	0–40°C
Storage temperature	-10–60°C
Dimensions H x W x L	115 x 50 x 25 mm
Weight with batteries	110 g

*when measuring a target with 100% reflectivity (e.g. a painted white wall), with low backlight and an operating temperature of 25°C

**this degree of precision applies when measuring distances of between 0.2 and 10 m; when measuring distances of between 10 m and 100 m, the maximum tolerance may decrease by 0.1 mm/m

***when used at room temperature

3.2 Functions

- Individual measurement
- Min/Max measurement
- Continuous measurement
- Area measurement
- Volume measurement
- Indirect 2-point measurement
- Indirect 3-point measurement
- Automatic distance measurement
- Indirect measurement via angle
- Indirect distance measurement
- Addition
- Subtraction
- Measured value memory
- Unit of measurement
- Tilt sensor
- Bluetooth
- Turn display
- Camera

4. Safety instructions

4.1 AREA OF RESPONSIBILITY

4.1.1 MANUFACTURER

Hultafors is responsible for the safe delivery condition of the product, including the operating manual and the original accessories.

4.1.2 OPERATOR

The operator is responsible for using the product as intended, the deployment of personnel, their training and the operational safety of the product.

- The operator understands the safety information which is stated on the product and the instructions which are contained in the operating manual.
- The operator shall comply with local regulations relating to safety and accident prevention regulations as well as worker protection laws and regulations.
- The operator shall immediately notify Hultafors if safety-related issues should develop on the product or during its utilization.
- The operator shall ensure that the product is not utilized any further if defects become evident, and he will have the product repaired professionally.



4.2 Improper Use

- Use of the device and the accessories without instruction.
- Use of third-party accessories or additional equipment.
- Use outside of the intended limits (see Chapter 3/Technical data).
- Use under extreme temperature fluctuations without an adequate acclimatization.
- Disabling of safety devices and removal of hazard notices and labels.
- Unauthorized opening of the device.
- Performance of modifications or alterations the device or the accessories.
- Deliberate blinding of third parties.
- Inadequate safeguarding at the installation site.

4.3 Utilization limitations

The HDL 100 is suitable for a continuous use in an atmosphere which can be inhabited by humans.

- Do not operate the product in explosion-prone or corrosive environments.
- Inform the local safety authorities and safety experts before working in hazardous environments, in close proximity to electrical installations or similar surroundings.

4.4 Usage Hazards

4.4.1 GENERAL



WARNING

Missing or incomplete instructions may result in improper or incorrect use. This can cause accidents with serious damages to persons, property, assets and the environment.

- Follow the manufacturer's and operator's safety instructions.
- Protect equipment and accessories from access by children.



WARNING

Blinding by laser radiation can indirectly lead to serious accidents, especially for people who are driving a vehicle or operating machinery. Do not look into the laser beam.

- Do not set up the laser beam and the laser plane at eye level or aim at people.



CAUTION

A fall, longer storage, transportation or other mechanical effects can lead to erroneous measurement results. Check the unit for damage before use. Do not use damaged equipment.

- Repairs have to be exclusively performed by Hultafors

4.4.2 BATTERIES



DANGER

Mechanical damage can lead to a leakage, fire or explosion of the batteries or trigger the release of toxic substances.

- Batteries and rechargeable batteries may not be opened or exposed to mechanical loads.
- Repairs have to be exclusively performed by Hultafors.



WARNING

High ambient temperatures and immersion into liquids can cause a leakage, fire or explosion of the batteries or trigger the release of toxic substances.

- Protect batteries from mechanical damage during transport.
- Do not overheat batteries and rechargeable batteries or expose them to fire.
- Avoid the ingress of moisture into batteries and rechargeable batteries.
- Do not use damaged batteries or rechargeable batteries. Perform a proper disposal (see Chapter 11/Disposal).



WARNING

A short-circuiting or unintended use can cause batteries to overheat and create an injury or fire hazard.

- Do not transport or store batteries in the pockets of garments.
- Do not bring the battery contacts in contact with jewelry, keys, or other electrically conductive objects.
- Do not charge the batteries.
- Do not discharge the batteries through short-circuiting.
- Do not solder the batteries within the device.
- Do not mix old and new batteries, and do not mix batteries from different manufacturers or with a differing type designation.



WARNING

If disposed of improperly third parties can possibly be seriously injured and the environment polluted. The burning of plastic components generates toxic fumes which may impair health of people. Batteries / rechargeable batteries may explode if they are damaged or heated excessively, and thereby cause poisoning, burning, corrosion or environmental contamination.

If disposed of negligently unauthorized persons are able to use the product improperly.

- The product may not be disposed of together with household waste. Dispose of the device and accessories properly.
(see Chapter 12 / Disposal).

- Protect the product at all times from access by unauthorized persons, and especially children.

4.5 Electromagnetic compatibility (EMC)

The electromagnetic compatibility is the ability of the product to function in an environment where electromagnetic radiation and electrostatic discharges are present, without causing an electromagnetic interference for other devices.

4.5.1 INTERFERENCE OF OTHER DEVICES OF HDL 100

Although the product meets the strict requirements of the relevant directives and standards, Hultafors can not completely exclude the possibility of interference with other devices (for example, when using the product in combination with third-party devices, such as field computers, personal computers, wireless devices, mobile phones, certain cables or external batteries).

- When using computers and radio equipment make sure to observe the vendor-specific information about electromagnetic compatibility.
- Only use original Hultafors equipment and accessories.

4.5.2 INTERFERENCE OF THE HDL 100 BY OTHER DEVICES

Although the product meets the strict requirements of the relevant directives and standards, Hultafors can not entirely exclude the possibility that intense electromagnetic radiation in the immediate vicinity of radio transmitters, two-way radios, diesel generators, etc. can distort the measurement results.

- When performing measurements under these conditions check the plausibility of the results.

5. Laser safety/classification

The HDL 100 emits a visible laser point.
The product corresponds to the Class 2 Laser according to DIN EN 60825-1:2007

Class 2 Laser:

When using Class 2 laser devices the eye is protected by the blink reflex or aversion reaction in case of a random and short-term exposure.



WARNING

Looking directly into the beam with optical aids (e.g. binoculars, telescopes) can be dangerous.



WARNING

Looking into the laser beam may be hazardous to the eye.

- Do not look into the laser beam.
- Do not aim the laser beam at other people.

Labelling on the device:



- Do not remove the type plate!

6. Getting Started

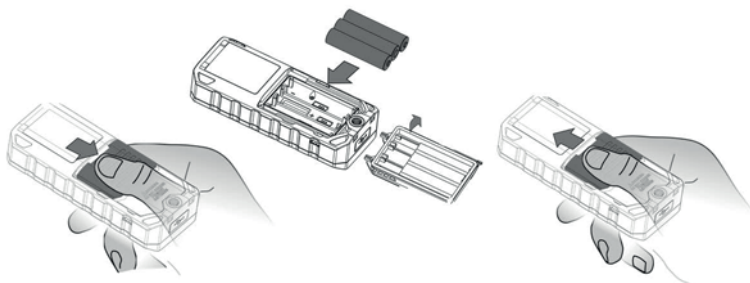
6.1 Batteries

1. Open battery compartment cover on the back of the instrument by sliding it down.
2. Insert the batteries into the instrument, observing the correct polarity.
3. Close battery compartment by sliding the cover back into place.

Remove the batteries if the instrument is not used over a longer period of time.

6.2 Belt Pouch

The laser instrument can be stowed in a belt pouch for transport. It must be removed from the pouch when taking measurements.



7. Operation

7.1 Getting Started

7.1.1 SWITCHING THE INSTRUMENT ON AND OFF

On:

- Hold down the 'ON/OFF/Delete/Back button' for 2 seconds to switch the laser instrument on.

Off:

- Hold down the 'ON/OFF/Delete/Back button' for 2 seconds to switch the laser instrument off.

7.1.2 BACK

Press the 'ON/OFF/Delete/Back button' once in order to cancel the previous process. Press the 'ON/OFF/Delete/Back button' twice to exit the current function and return to individual measurement mode.

7.1.3 SETTING THE MEASUREMENT PLANE

Use the touch display to access the menu. Press the Measurement edge icon to toggle between the front, thread and back of the instrument. The selection is indicated by an arrow on the display. The back of the instrument is set as the measurement edge by default. Each time the instrument is restarted, the back of the instrument is reset as the measurement edge.



7.2 Applications

7.2.1 INDIVIDUAL MEASUREMENT

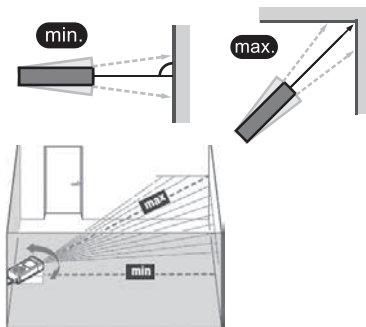
1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Press 'measure button'.

As soon as an audible signal is emitted, the measurement is complete and the distance can be seen on the display. To calculate additional distances, press Measure button again.

7.2.2 MIN/MAX MEASUREMENT

1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Press 'measure button' for 2 seconds.

The minimum and maximum values are shown on the display. To stop the measurement, simply press 'measure button'.



7.2.3 CONTINUOUS MEASUREMENT

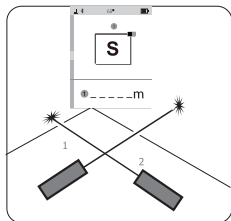
1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Press 'measure button' for 2 seconds.

The laser instrument measures the distance and shows it on the bottom line of the display.

7.2.4 AREA MEASUREMENT

1. Switch on the laser instrument.
2. Choose the area measurement icon in the functions menu.
3. Measure the length and then the width separately using the individual measurement method. The laser beam remains switched on between the two measurements.

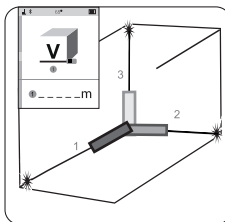
Once the second measurement is complete, the area is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1 and 2. The perimeter is also shown in measured value line 3.



7.2.5 VOLUME MEASUREMENT

1. Switch on the laser instrument.
2. Choose the volume measurement icon in the functions menu.
3. Measure the length, the width, and then the height separately using the individual measurement method. The laser beam remains switched on between the three measurements.

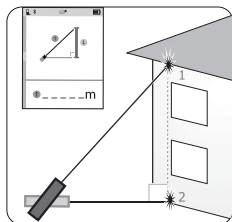
Once the third measurement is complete, the volume is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1, 2, and 3.



7.2.6 INDIRECT 2-POINT MEASUREMENT

1. Switch on the laser instrument.
2. Choose the indirect 2-point measurement icon in the functions menu.
3. Measure the two points separately using the individual measurement method. The laser beam remains switched on between the two measurements.

Once the second measurement is complete, the length is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1 and 2.



Once the second measurement is complete, the length is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1 and 2.



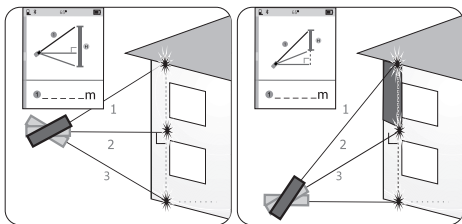
CAUTION

The two points measured must be in line and the second measurement must be taken at a right angle to the measured surface; otherwise measured values may be incorrect.

7.2.7 INDIRECT 3-POINT MEASUREMENT

1. Switch on the laser instrument.
2. Choose the indirect 3-point measurement icon in the functions menu.
3. Measure the three points separately using the individual measurement method. The laser beam remains switched on between the three measurements.

Once the third measurement is complete, the length is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1, 2, and 3.



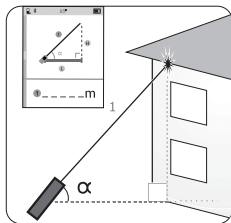
CAUTION

The three points measured must run in a line and the second measurement must be taken at a right angle to the measured surface; otherwise measured values may be incorrect.

7.2.8 AUTOMATIC DISTANCE MEASUREMENT

1. Switching on the laser instrument.
2. Choose the automatic distance measurement icon in the functions menu.
3. The measurement is taken in the same manner as a single measurement.

Once this has been completed, the length is calculated automatically and is shown in the bottom line of the display. The measured distance and height are displayed in measured value lines 1 and 2.



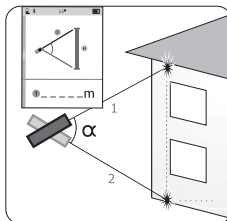
CAUTION

The two points measured must be in line otherwise the measured values may be incorrect.

7.2.9 INDIRECT MEASUREMENT VIA ANGLE

1. Switching on the laser instrument.
2. Choose the indirect measurement via angle icon in the functions menu.
3. Measure the two points separately using the individual measurement method. The laser beam remains switched on between the two measurements.

Once the second measurement is complete, the length is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1 and 2.



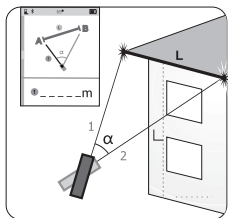
CAUTION

The two points measured must be in line otherwise the measured values may be incorrect.

7.2.10 INDIRECT DISTANCE MEASUREMENT

1. Switching on the laser instrument.
2. Choose the indirect distance measurement icon in the functions menu.
3. Measure the two points separately using the individual measurement method. The laser beam remains switched on between the two measurements.

Once the second measurement is complete, the length is automatically calculated and shown on the bottom line of the display. The individual measured values are shown in measured value lines 1 and 2.



CAUTION

The two points measured must be in line otherwise the measured values may be incorrect.

7.2.11 ADDITION

1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Take an individual measurement.
4. Choose the addition (+) icon in the

calculation menu (plus symbol + appears on the display).

5. Take an individual measurement.

The laser instrument shows the result on the bottom line of the display. This process can be repeated as many times as required.

7.2.12 SUBTRACTION

1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Take an individual measurement.
4. Choose the subtraction (+) icon in the calculation menu (minus symbol - appears on the display).
5. Take an individual measurement.

The laser instrument shows the result on the bottom line of the display. This process can be repeated as many times as required.

7.2.13 MEASURED VALUE MEMORY

1. Switch on the laser instrument.
2. Use the touch display to access the menu. Choose measured value memory icon. Swipe to left or right on the touch display to toggle between measured values.
3. By pressing the camera button, single measuring results can be deleted.

7.2.14 UNIT OF MEASUREMENT

1. Switch on the laser instrument.
2. Use the touch display to access the menu. Choose measured value icon.

Pressing the icon switches the measurement unit from 'm' to 'ft' then to 'in' and then 'ft+in'. Each time the instrument is restarted, the unit of

measurement is reset to the measurement unit that was last used.

7.2.15 TILT SENSOR

1. Switch on the laser instrument.
2. Use the touch display to access the menu.
Choose inclinometer icon.

The display shows a tilt sensor that displays the degrees in both axial directions.

7.2.16 BLUETOOTH

1. Switch on the laser instrument.
2. Use the touch display to access the menu.
Select Bluetooth icon.

Bluetooth can be activated and deactivated by pressing the icon.

Bluetooth M is for manual connection, Bluetooth A is for automatic connection.

Fast and efficient data transfer of measured values can be made directly to a smartphone via Bluetooth.



NOTE

To pair with a smartphone, launch the HDL 100 Measure & Sketch app and connect using one of the function options.

7.2.17 TURN DISPLAY

1. Switch on the laser instrument.
2. Use the touch display to access the menu.
Choose turn display icon.

The turn display function can be activated and deactivated by pressing the icon.

7.2.18 CAMERA

1. Switch on the laser instrument.
2. Direct the laser point at the target.
3. Press 'camera button'.

The display shows an image of the surroundings. By pressing the 'camera button' again, you can toggle between 2 and 4 x zoom. The cross hairs in the centre of the display can help find the laser point.

4. Press 'measure button'.

The result will appear in the bottom line of the display.

7.3 Guidance for Operation

The laser instrument must not be moved while measuring. A fixed mounting surface with a stop is therefore recommended. The laser outlet and receiving area must not be covered during measuring. Depending on the measured surface, it cannot be guaranteed that all measurements are completely accurate. Avoid surfaces that are textured, reflective, transparent, or porous.

8. Maintenance, storage and transportation

8.1 Cleaning

- Wipe off the dirt with a soft damp cloth.
- Check the outlet openings of the laser regularly, and thoroughly clean them if necessary. Do not touch the glass with your fingers.
- Do not use aggressive cleaning agents or solvents.
- Do not immerse the device into water!
- Clean and dry wet equipment, accessories and transport containers prior to packaging them. Only pack equipment again when it is completely dry.
- Keep plug connections clean and protected from moisture.

8.2 Storage

8.2.1 GENERAL

- The equipment may only be stored within the specified temperature limits (see Chapter 3 / Technical data).
- After prolonged storage check the accuracy of the measuring device before using it.

8.2.2 BATTERIES

- For storage, remove the batteries from the device or from the charging station.
- The storage should preferably be in a dry environment at room temperature (see Chapter 3 / Technical data).

- Protect from moisture and humidity. Dry wet or damp batteries before storage before usage.

8.3 Transport

8.3.1 GENERAL

The device may be damaged by strong vibrations or by falling.

- Never transport the product loose. Always use the original packaging or an equivalent transport container.
- Switch off the measuring device before transporting it.
- Check the unit for damages before use.

8.3.2 BATTERIES

When transporting or shipping batteries, the operator is responsible for complying with the applicable national and international laws and regulations.

- Before shipping, remove the batteries from the device.

9. Delivery contents and accessories

9.1 Delivery contents of HDL 100-S

- 1 Laser distance measurement instrument
- 3 1.2 V Ni-Mh batteries
- 1 Belt pouch
- 1 Charging/data cable
- 1 B-10 Tripod

9.2 ACCESSORIES (optional)

- LB laser goggles
- TP target plate

Further information on accessories can be found
at **www.hultafors.com**

10. Troubleshooting

Error	Possible cause	Remedy
204	<ul style="list-style-type: none">• Calculation error	<ul style="list-style-type: none">• Check specifications. Repeat process.
208	<ul style="list-style-type: none">• Overvoltage	<ul style="list-style-type: none">• Contact supplier.
220	<ul style="list-style-type: none">• Battery empty	<ul style="list-style-type: none">• Replace battery.
252	<ul style="list-style-type: none">• Temperature too high	<ul style="list-style-type: none">• Allow instrument to cool to the specified temperature.
253	<ul style="list-style-type: none">• Temperature too low	<ul style="list-style-type: none">• Allow instrument to warm up to the specified temperature.
255	<ul style="list-style-type: none">• Reception signal too weak	<ul style="list-style-type: none">• Increase reflectivity of target.
256	<ul style="list-style-type: none">• Reception signal too strong	<ul style="list-style-type: none">• Limit reflectivity of target.
261	<ul style="list-style-type: none">• Outside of measurement range	<ul style="list-style-type: none">• Observe measurement range given in specifications.
500	<ul style="list-style-type: none">• Component error	<ul style="list-style-type: none">• Switch instrument on and off repeatedly. If the error continues, contact the supplier.

12. Disposal

If disposed of improperly third parties can possibly be seriously injured and the environment polluted.

The burning of plastic components generates toxic fumes which may impair the health of people.

Batteries may explode if they are damaged or heated excessively, and thereby cause poisoning, burning, corrosion or environmental contamination.

If disposed of negligently unauthorized persons may be able to use the product improperly.

Measuring tools, accessories and packaging must be recycled in an environmentally-friendly manner.



The product as well as the accessories - especially the batteries and rechargeable batteries - must not be disposed of with household waste.

- Dispose of the device and the accessories properly
- Only dispose of batteries in a discharged state.
- Observe the country-specific disposal requirements.

Your Hultafors dealership will take back batteries as well as old equipment, and will ensure proper disposal.

Only for EU countries



Electric tools may not be disposed of with household waste!

According to the European Directive 2002 / 96 / EC on Waste Electrical and Electronic Equipment and its implementation in national law, no longer usable electrical and electronic equipment must be collected separately and recycled in an environmentally friendly manner.

13. Manufacturer's Guarantee

The manufacturer warrants to the original purchaser stated on the guarantee card, freedom from defects the device for a period of two years, with the exception of batteries, as of the point in time the device is handed over. The guarantee is limited to repairs and / or replacements at manufacturer's discretion.

Defects which are caused through improper handling by the purchaser or third parties, natural wear and optical flaws that do not affect the usability of the equipment, are not covered by this guarantee. Claims under this guarantee can only be invoked if the device is submitted along with the guarantee card, completely filled out by the dealer, dated and provided with the company stamp. If the guarantee claim is justified, the manufacturer shall bear the transport costs. The duration of the guarantee will not be extended through repair or spare parts work which is carried out within the scope of the guarantee.

Further claims are excluded, unless there are provided by the respective national legislation. In particular the manufacturer shall not be liable for any direct, indirect, incidental or consequential damages, losses or expenses in connection with the use or because of the inability to use the tool for any purpose whatsoever.

Implied warranties for the usage or suitability for a particular purpose are expressly excluded.

14. EC conformity declaration



Declaration of Conformity



We **Hultafors Group AB, Hultaforsvägen 21, Hultafors**

declare under our sole responsibility that the Product(s)

HDL 100

to which this declarations relates is in conformity with the following standards.

HDL 100:

- EN 55022: 2010
- EN 61000
- EN 55024: 2010
- EN 60825-1:2007

Following the provisions of Directive(s)

Electromagnetic compatibility 2004/108/EC

Low Voltage Directive 2006/95/EC

